



Došlo na právní oddělení ČZU dne:

18. 07. 2018

KUPNÍ SMLOUVA

(dále jen „smlouva“)

uzavřená ve smyslu § 2079 a násl. zákona č. 89/2012 Sb., občanského zákoníku, ve znění pozdějších předpisů (dále jen „občanský zákoník“)

I.

Smluvní strany

1.1. Kupující:

Česká zemědělská univerzita v Praze

Sídlo: Kamýcká 129, 165 00 Praha – Suchbát

Zastoupený: Ing. Janou Vohralíkovou, kvestorkou

bankovní spojení: Česká spořitelna, a. s.

číslo účtu: 500022222/0800

IČO: 60460709

DIČ: CZ60460709

(dále jen „kupující“) na straně jedné

a

1.2. Prodávající:

Dimension Data Czech Republic s.r.o.

Sídlo: Milevská 2095/5, 140 00 Praha 4 - Krč

Zastoupený: Ing. Petrem Hüblem, jednatelem

Bank. spojení: HSBC Bank plc.

Číslo účtu: 2346403105/8150

IČO: 26175738

DIČ: CZ26175738

Zapsaný v obchodním rejstříku vedeném Městským soudem v Praze, oddíl C, vložka 77064

(dále jen „prodávající“) na straně druhé

(společně dále také jako „smluvní strany“)

uzavírají na základě výsledku zadávacího řízení dle zákona č. 134/2016 Sb., o zadávání veřejných zakázek, ve znění pozdějších předpisů, k plnění veřejné zakázky „Modernizace AVT vybavení ve výukových prostorách PEF“ smlouvu následujícího znění:

II.

Předmět smlouvy

- 2.1. Prodávající se zavazuje kupujícímu dodat audiovizuální techniku do učeben, seminárních prostor, přednáškových sálů, zasedacích místností a konzultačních prostor pro Provozně ekonomickou fakultu (dále jen „zboží“), a to v rozsahu a za podmínek stanovených touto smlouvou, a převést na kupujícího vlastnické právo k tomuto zboží. Přesná specifikace zboží je uvedena v přílohách této smlouvy, které tvoří její nedílnou součást. Součástí závazku prodávajícího je rovněž provedení služeb souvisejících s odevzdáním zboží, a to tak, jak jsou definovány v čl. 2.4. této smlouvy (dále jen „související služby“).
- 2.2. Kupující se zavazuje zboží dodané prodávajícím převzít a zaplatit za ně sjednanou kupní cenu způsobem a v termínu sjednaném touto smlouvou.
- 2.3. Předmět smlouvy dle čl. 2.1 této smlouvy se skládá z těchto částí:

- a. Modernizace AVT v budově PEF.
 - b. AVT vybavení konzultačních prostor PEF.
 - c. Modernizace výukových řetězců pavilonu T.
 - d. HW a SW vybavení pro tvorbu digitálního záznamu výuky.
- 2.4. Součástí závazku prodávajícího, stanoveného v čl. 2.1. této smlouvy je rovněž provedení souvisejících služeb, spočívajících zejména v dopravě zboží kupujícímu, instalaci, uvedení do provozu a úklidu místa plnění, přičemž:
- a. dopravou zboží se rozumí jeho dodání do místa plnění dle čl. III. této smlouvy, včetně zajištění jeho vynesení do příslušného patra a místnosti v místě plnění, dle pokynů kupujícího;
 - b. instalací zboží se rozumí jeho usazení, sestavení a napojení na zdroje v místě plnění (zejména připojení ke elektrickým rozvodům, slaboproudým, datovým a optickým rozvodům), a to tak, aby zboží mohlo být uvedeno do provozu, součástí instalace dodaného zboží bude též demontáž stávajícího vybavení kupujícího v rozsahu uvedeném v příloze č. 2 této smlouvy;
 - c. uvedením do provozu se rozumí seřízení zboží a ověření jeho řádné funkčnosti, jakož i provedení dalších úkonů nutných pro to, aby zboží bylo způsobilé sloužit svému obvyklému účelu uvedenému v příloze č. 2 této smlouvy;
 - d. úklidem místa plnění se rozumí zajištění odvozu a likvidace všech obalů a dalších materiálů použitých při plnění této smlouvy, a to v souladu se zákonem č. 185/2001 Sb., o odpadech a o změně některých dalších zákonů, ve znění pozdějších předpisů, a provedení řádného úklidu veškerých prostor dotčených instalací zboží.
- 2.5. Součástí dodávky zboží je též dodání související dokumentace, tj. zejména uživatelská a servisní dokumentace, a to v tištěné i elektronické podobě (na CD-ROM nebo obdobném nosiči dat a ve formátu docx, pdf nebo odt).
- 2.6. Nebude-li dohodnuto jinak, platí, že prodávající je oprávněn provádět související služby každý pracovní den, v době od 8.00 hod do 16.00 hod. Kupující je oprávněn v případě změny svých provozních podmínek tuto dobu omezit písemným pokynem prodávajícímu.
- 2.7. Smluvní strany se dohodly, že pokud k řádnému splnění předmětu této smlouvy (zejména pro odevzdání a zprovoznění zboží) bude zapotřebí provést další dodávky a práce v této smlouvě a jejích přílohách neuvedené, o nichž však prodávající s ohledem na předmět plnění věděl nebo musel vědět, je prodávající povinen tyto dodávky a práce na své náklady obstarat a provést, a to bez nároku na zvýšení kupní ceny uvedené v čl. 4.2. této smlouvy.

III.

Doba, místo a způsob plnění

- 3.1. Prodávající se zavazuje, že sjednané zboží dodá kupujícímu nejpozději do 6 týdnů od účinnosti této smlouvy.
- 3.2. Místem plnění je budova Provozně ekonomické fakulty a Pavilonu T na adrese areálu sídla zadavatele, tj.: Kamýcká 129, 165 00 Praha – Suchbátka.
- 3.3. Zboží bude předáno prodávajícím a převzato kupujícím na základě oboustranně podepsaného protokolu.

- 3.4. Povinným obsahem protokolu o předání a převzetí zboží je:
- a. údaj o prodávajícím a kupujícím;
 - b. popis zboží, které je předmětem předání a převzetí;
 - c. údaj o stavu zboží a jeho bezvadnosti, v případě vady uvedení termínu jejího odstranění;
 - d. datum podpisu předávacího protokolu (toto datum je považováno za den uskutečnění zdanitelného plnění ve smyslu zákona č. 235/2004 Sb., o dani z přidané hodnoty, ve znění pozdějších předpisů).

IV.

Cena a platební podmínky

- 4.1. Kupní cena za zboží v rozsahu dohodnutém v této smlouvě a za podmínek v ní uvedených je stanovena na základě nabídky prodávajícího předložené v rámci zadávacího řízení jakožto cena maximální (tj. cena, kterou není přípustné překročit).
- 4.2. Kupní cena je uvedena v české měně a je stanovena ve výši: **17 670 166,- Kč** (slovy: sedmnáct milionů šest set sedmdesát tisíc jedno set šedesát šest korun českých) bez DPH. DPH bude stanoveno a odvedeno v souladu s platnými právními předpisy ke dni uskutečnění zdanitelného plnění. Jednotková cena jednotlivých položek dodaného zboží je uvedena v Příloze č. 2 této smlouvy
- 4.3. Kupní cena je sjednána jako nejvýše přípustná, včetně všech poplatků a veškerých dalších nákladů spojených s plněním předmětu této smlouvy. Cena zahrnuje provedení souvisejících služeb uvedených v čl. 2.4. této smlouvy. Kupní cena zahrnuje také veškeré související náklady, zejména případné náklady na správní poplatky, daně, cla, schvalovací řízení, provedení předepsaných zkoušek, zabezpečení prohlášení o shodě, certifikáty a atesty, převod práv, pojištění, přepravní náklady či náklady na případnou ostrahu zboží do doby jeho řádného odevzdání kupujícím, apod. Kupní cena je nezávislá na vývoji cen a kurzových změnách.
- 4.4. Kupní cena bude kupujícím uhrazena v české měně na základě daňového dokladu – faktury, a to bezhotovostním převodem na bankovní účet prodávajícího. Fakturu je prodávající povinen vystavit do 15 dnů po řádném a včasném dodání a převzetí zboží kupujícím dle této smlouvy na základě protokolu o předání a převzetí zboží.
- 4.5. Proávající podpisem této smlouvy prohlašuje, že je plně seznámen s rozsahem a povahou předmětu plnění a že správně vyhodnotil a ocenil veškeré související služby a práce, jejichž provedení je pro řádné splnění závazku vyplývajícího z této smlouvy nezbytné, a že při stanovení kupní ceny dle této smlouvy:
- a. řádně zjistil předmět plnění této smlouvy,
 - b. prověřil místní podmínky pro provedení předmětu plnění této smlouvy,
 - c. při kalkulaci kupní ceny zohlednil veškeré technické a obchodní podmínky uvedené ve smlouvě a jejích přílohách.
- 4.6. Není-li uvedeno jinak, rozumí se veškeré ceny uvedené v této smlouvě bez daně z přidané hodnoty (DPH). DPH bude prodávajícím účtována dle zákona č. 235/2004 Sb., o dani z přidané hodnoty, ve znění pozdějších předpisů, ke dni uskutečnění zdanitelného plnění.
- 4.7. Daňový doklad – faktura musí obsahovat všechny náležitosti řádného účetního a daňového dokladu ve smyslu příslušných právních předpisů, zejména zákona č. 235/2004 Sb., o dani

z přidané hodnoty, ve znění pozdějších předpisů. Zároveň musí být na faktuře uvedeno označení projektu a operačního programu, z něhož je dodávka financována: „Rozvoj studijního prostředí na ČZU“ (reg. č. OP VVV CZ.02.2.67/0.0/0.0/17_044/0008530) financovaného z Operačního programu Výzkum, vývoj a vzdělávání. V případě, že faktura nebude mít odpovídající náležitosti, je kupující oprávněn ji vrátit ve lhůtě splatnosti zpět prodávajícímu k doplnění, aniž se tak dostane do prodlení se splatností. Lhůta splatnosti počíná běžet znovu od opětovného doručení náležitě doplněné či opravené faktury kupujícímu.

- 4.8. Splatnost faktury je 30 dnů ode dne jejího prokazatelného doručení kupujícímu. Fakturu je prodávající povinen doručit na adresu: Česká zemědělská univerzita v Praze, Ekonomický odbor, Kamýčká 129, 165 00 Praha – Suchbátka. Jiné doručení nebude považováno za řádné s tím, že kupujícímu nevznikne povinnost fakturu doručitou jiným způsobem uhradit.
- 4.9. Za den platby se považuje den odepsání fakturované částky z bankovního účtu kupujícího ve prospěch bankovního účtu prodávajícího.
- 4.10. Úhrada kupní ceny nebo její části bude prodávajícímu převedena na jeho účet zveřejněný správcem daně podle § 98 zákona č. 235/2004 Sb., o dani z přidané hodnoty, ve znění pozdějších předpisů, a to i v případě, že na faktuře bude uveden jiný bankovní účet. Pokud prodávající nebude mít bankovní účet zveřejněný podle § 98 zákona č. 235/2004 Sb., o dani z přidané hodnoty, ve znění pozdějších předpisů, správcem daně, provede kupující úhradu na bankovní účet až po jeho zveřejnění správcem daně, aniž by byl kupující v prodlení s úhradou. Zveřejnění bankovního účtu správcem daně oznámí prodávající bezodkladně kupujícímu. Toto ustanovení se neuplatní v případě, že prodávající není povinen zveřejňovat účet dle zákona č. 235/2004 Sb., o dani z přidané hodnoty, ve znění pozdějších předpisů.

Pokud bude v okamžiku uskutečnění zdanitelného plnění o prodávajícím zveřejněna příslušným správcem daně informace, že je nespolehlivým plátcem DPH, vyhrazuje si kupující, jakožto ručitel, právo o částku odpovídající výši DPH uvedenou v čl. 4.2 této smlouvy snížit částku poskytnutou na úhradu kupní ceny prodávajícímu dle této smlouvy. Tuto skutečnost je kupující povinen prodávajícímu předem oznámit. Uplatněním tohoto postupu dojde ke snížení pohledávky prodávajícího za kupujícího o příslušnou částku DPH a prodávající není oprávněn po kupujícího uhrazení částky odpovídající výši DPH jakkoliv vymáhat.

- 4.11. Stane-li se prodávající nespolehlivým plátcem DPH po uhrazení kupní ceny ze strany kupujícího, je kupující oprávněn od této smlouvy odstoupit. V takovém případě smluvní strany vrátí vše, co si navzájem dosud plnily. Tímto ustanovením zůstávají nedotčena práva kupujícího na náhradu škody.

V.

Práva a povinnosti stran

- 5.1. Prodávající je povinen dodat zboží v dohodnutém množství, jakosti a provedení. Veškeré zboží dodávané prodávajícím kupujícímu z titulu této smlouvy musí splňovat kvalitativní požadavky dle této smlouvy.
- 5.2. Prodávající je povinen dodat zboží bez vad kupujícímu v souladu s podmínkami této smlouvy, zejména jejími přílohami, přičemž za řádné dodání zboží se považuje jeho převzetí kupující, a to na základě potvrzení této skutečnosti v protokolu o předání a převzetí zboží. Předávací protokol může být podepsán nejdříve v okamžiku, kdy bude beze zbytku řádně realizována dodávka zboží prodávajícím včetně souvisejících služeb sjednaných touto smlouvou.

- 5.3. Prodávající je povinen kupujícímu předat všechny doklady, které jsou nutné k převzetí a k řádnému užívání zboží (zejména uživatelská dokumentace a záruční listy). Vše v českém, případně anglickém jazyce a podle předpisů platných v ČR, pokud nebude dohodnuto jinak.
- 5.4. Kupující nabývá vlastnického práva ke zboží dnem převzetí zboží od prodávajícího. Stejným okamžikem přechází na kupujícího také nebezpečí škody na věci.
- 5.5. Prodávající je povinen neprodleně vyzoomět kupujícího o případném ohrožení doby plnění a o všech skutečnostech, které mohou předmět plnění znemožnit.
- 5.6. Prodávající odpovídá kupujícímu za škodu způsobenou porušením povinností podle této smlouvy nebo povinností stanovené obecně závazným právním předpisem.
- 5.7. Prodávající se zavazuje zajistit průmyslově-právní, resp. autorskoprávní nezávadnost zboží a podmínek jeho užívání kupujícím. Pokud prodávající při plnění realizovaném na základě této smlouvy užíje výsledek činnosti třetího subjektu chráněný právem průmyslového nebo jiného duševního vlastnictví a uplatní-li oprávněná osoba z tohoto titulu své nároky vůči kupujícímu, provede prodávající na své náklady vypořádání majetkových důsledků a je odpovědný za jakoukoliv škodu způsobenou kupujícímu.
- 5.8. Prodávající je povinen se seznámit se všemi informacemi, údaji a jinými dokumenty, které jsou součástí smlouvy nebo mu byly v souvislosti s ní poskytnuty ze strany kupujícího. Pokud by některé informace, údaje nebo hodnoty dodané kupujícím byly nekompletní nebo nepřesné do té míry, že by tato skutečnost mohla ovlivnit řádné dodání zboží, je v takovém případě povinností prodávajícího upřesnit či zajistit chybějící informace a údaje. V případě, že kupujícím poskytnuté hodnoty či údaje mají zásadní význam pro dodání zboží, je vždy povinností prodávajícího si dané údaje ověřit. Kupující se zavazuje poskytnout prodávajícímu nezbytnou součinnost v termínech dle svých provozních možností. Prodávající nemá nárok na žádné dodatečné platby ani prodloužení termínu dodání zboží z důvodu chybné interpretace jakýchkoliv podkladů vztahujících se k předmětu této smlouvy.
- 5.9. Strany se dohodly a prodávající určil, že osobou oprávněnou k jednání za prodávajícího ve věcech, které se týkají této smlouvy a její realizace je:
- Jméno: Miloš Klein
e-mail: milos.klein@dimensiondata.com
tel.: +420 725 503 560
- 5.10. Strany se dohodly a kupující určil, že osobou oprávněnou k jednání za kupujícího ve věcech, které se týkají této smlouvy a její realizace je:
- Jméno: Ing. Tereza Jedlanová
e-mail: jedlanova@pef.czu.cz
tel.: +420 224 382 354
- Jméno: Ing. Ondřej Hradecký
e-mail: hradecky@pef.czu.cz
tel.: +420 224 384 338
- 5.11. Veškerá korespondence, pokyny, oznámení, žádosti, záznamy a jiné dokumenty vzniklé na základě této smlouvy mezi smluvními stranami nebo v souvislosti s ní budou vyhotoveny v písemné formě v českém jazyce a doručují se buď osobně nebo doporučenou poštou, faxem či e-mailem, k rukám a na doručovací adresy oprávněných osob dle této smlouvy.

VI. Záruka na zboží

- 6.1. Prodávající přebírá záruku za zboží na dobu 60 měsíců. Záruční doba počíná běžet dnem dodání zboží kupujícímu, tj. dnem podpisu předávacího protokolu kupujícím v souladu s čl. 3.3. a 3.4. této smlouvy.
- 6.2. Požadavek na odstranění vad zboží uplatní kupující u prodávajícího bez zbytečného odkladu po jejich zjištění, přičemž i reklamace odeslaná v poslední den záruční doby se považuje za včas uplatněnou. Kupující je povinen ohlásit prodávajícímu záruční vady, a to na e-mailovou adresu prodávajícího: servicedesk.cz@dimensiondata.com nebo na adresu uvedenou v záhlaví této smlouvy. V písemné reklamaci uvede kupující popis vady nebo informaci o tom, jak se vada projevuje, a způsob, jakým požaduje vadu odstranit. Kupující je oprávněn způsob odstranění vady zvolit a po prodávajícím požadovat:
- a. odstranění vady její opravou, je-li vada odstranitelná;
 - b. odstranění vady dodáním nového zboží nebo části zboží, je-li vada neodstranitelná;
 - c. přiměřenou slevu z kupní ceny.
- 6.3. Kupující si výslovně vyhrazuje právo místo záruční opravy požadovat odstranění reklamovaných vad dodáním náhradního zboží za zboží vadné ve lhůtě 15 kalendářních dnů od obdržení reklamace ze strany kupujícího, a to bez ohledu na druh vyskytnuté vady, pakliže zboží již vykazovalo vady a bylo kupujícím alespoň jednou reklamováno, a to pro jakýkoliv druh vady (odstranitelná i neodstranitelná).
- 6.4. Záruční opravy se prodávající zavazuje provést bezplatně ve lhůtě do 5 pracovních dnů od ohlášení vady kupujícím. Prodávající je oprávněn na základě písemné a odůvodněné žádosti požádat kupujícího o prodloužení této lhůty, a to nejdéle o 15 kalendářních dnů. V případě nedodržení těchto prováděcích termínů je kupující oprávněn nedostatky nechat odstranit třetí osobou na náklady prodávajícího, a to i bez předchozího upozornění na tuto skutečnost.
- 6.5. V případě opravy v záruční době se tato prodlužuje o dobu od oznámení závady kupujícím do jejího řádného odstranění prodávajícím.
- 6.6. Smluvní strany se výslovně dohodly a souhlasí, že v případě dodání nového zboží za zboží vadné v souladu s ustanovením tohoto článku, se záruční doba stanovená v čl. 6.1 této smlouvy prodlužuje o 12 (slovy: dvanáct) měsíců a kupujícímu zůstávají zachována veškerá práva z vadného plnění dle této smlouvy a občanského zákoníku.
- 6.7. Veškerá práva z vadného plnění v tomto článku neupravená se dále řídí platnými ustanovení občanského zákoníku.

VII. Záruční a pozáruční servis

- 7.1. Prodávající je povinen v průběhu záruční doby provádět bezplatně veškeré servisní úkony, jejichž provedením podmiňuje platnost záruky.
- 7.2. Prodávající se zavazuje provést preventivní pozáruční servis v termínu nejpozději do 30 dnů od písemné výzvy kupujícího, nestanoví-li kupující jinou (delší) lhůtu.

VIII. Sankční ujednání

- 8.1. V případě, že prodávající nedodá zboží v termínu dle této smlouvy, zavazuje se kupujícímu uhradit smluvní pokutu ve výši 0,5% z kupní ceny stanovené v čl. 4.2. této smlouvy za každý, byť i jen započatý den prodlení.
- 8.2. Prodávající je povinen kupujícímu uhradit smluvní pokutu ve výši 0,05% z kupní ceny v čl. 4.2. této smlouvy za každou jednotlivou vadu a každý započatý den prodlení a s odstraněním reklamovaných vad ve lhůtě dle čl. 6.3. této smlouvy popř. za každý i započatý den prodlení s provedením pozáručního servisu dle čl. 7.2. této smlouvy.
- 8.3. V případě prodlení kupujícího s úhradou faktury je prodávající oprávněn uplatnit vůči kupujícímu úrok z prodlení ve výši 0,05% z dlužné částky za každý i jen započatý den prodlení s úhradou faktury.
- 8.4. Okolnosti vylučující odpovědnost nemají vliv na povinnost platit smluvní pokutu.
- 8.5. Kupující je oprávněn jakoukoli smluvní pokutu jednostranně započítat proti jakékoli pohledávce prodávajícího za kupujícím (včetně pohledávky prodávajícího na zaplacení kupní ceny).
- 8.6. Neodstraní-li prodávající vadu či nedodělek uvedený v protokolu o předání a převzetí zboží v termínu uvedeném tamtéž (nebo do 5 pracovních dnů ode dne předání a převzetí zboží, není-li termín odstranění vady v protokolu uveden), zavazuje se prodávající zaplatit smluvní pokutu ve výši 1.000,- Kč za každou vadu či nedodělek a každý započatý den prodlení s jejich odstraněním.
- 8.7. V případě, že kupující zjistí, že prodávající porušil podmínky a povinnosti zadávacích podmínek k veřejné zakázce, jež vedla k uzavření této smlouvy, na to aby veškeré informace, které uvedl prodávající jakožto účastník v nabídce a při jakékoli komunikaci s kupujícím jakožto zadavatelem (zejména při vysvětlení nabídky), odpovídaly skutečnosti, vyhrazuje si kupující právo odstoupit od této smlouvy bez jakýchkoli sankcí a prodávající je současně povinen uhradit kupujícímu smluvní pokutu ve výši 100.000,- Kč (slovy: jednostotísíc korun českých).
- 8.8. Povinná smluvní strana se zavazuje uhradit vyúčtovanou smluvní pokutu (smluvní pokuty) ve lhůtě do 14 dnů ode dne obdržení příslušného vyúčtování. Stejná lhůta se vztahuje rovněž na úhradu úroků z prodlení.
- 8.9. Úhradou smluvní pokuty zůstávají nedotčena práva kupujícího na náhradu škody v plné výši. Úhradou smluvní pokuty zůstávají nedotčena práva kupujícího na řádné splnění povinností ze strany prodávajícího.

IX. Náhrada újmy a náhrada škody

- 9.1. Náhrada újmy se řídí ustanoveními § 2894 a násl. občanského zákoníku. Smluvní strany tímto výslovně sjednávají povinnost náhrady nemajetkové újmy (např. poškození dobrého jména), pakliže na ni dotčené smluvní straně vznikne nárok.

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- 9.2. Nárok na náhradu škody vzniká vedle nároku na smluvní pokutu sjednaného dle této smlouvy a vedle dalších sjednaných povinností.
- 9.3. Úhradou vzniklé škody se povinná smluvní strana nezproští povinnosti k poskytnutí plnění v souladu s touto smlouvou.

X.

Platnost a účinnost smlouvy

- 10.1. Tato smlouva nabývá platnosti dnem podpisu smlouvy oprávněnými zástupci obou smluvních stran. Tato smlouva nabývá účinnosti okamžikem vydání rozhodnutí o poskytnutí dotace k projektu Rozvoj studijního prostředí na ČZU v rámci Operačního programu Výzkum, vývoj a vzdělávání, výzva č. 02_17_044 Podpora rozvoje studijního prostředí na VŠ nebo uveřejněním v registru smluv v souladu se zákonem č. 340/2015 Sb., o zvláštních podmínkách účinnosti některých smluv, uveřejňování těchto smluv a o registru smluv (zákon o registru smluv), ve znění pozdějších předpisů, podle toho, která z událostí nastane později.
- 10.2. Vydání rozhodnutí o poskytnutí dotace kupující bez zbytečného odkladu oznámí prodávajícímu.
- 10.3. Smluvní vztah založený touto smlouvou může být ukončen:
- a) písemnou dohodou smluvních stran,
 - b) odstoupením od smlouvy.
- 10.4. Odstoupit od smlouvy lze pouze z důvodů stanovených ve smlouvě nebo zákonem. Smluvní strana dotčená porušením povinnosti druhé smluvní strany může od této smlouvy jednostranně odstoupit pro podstatné porušení této smlouvy, přičemž za podstatné porušení se zejména považuje:
- 10.4.1. Na straně kupujícího:
- a) nezaplacení kupní ceny podle této smlouvy ve lhůtě delší 30 dní po dni splatnosti příslušné faktury,
 - b) poruší-li podstatným způsobem své povinnosti vyplývající z této smlouvy (zejména neposkytne-li prodávajícímu potřebnou součinnost, a to ani po stanovení dodatečné lhůty prodávajícím).
- 10.4.2. Na straně prodávajícího:
- a) jestliže nedodá řádně a včas předmět této smlouvy a nezjedná nápravu do 5 pracovních dnů od písemného upozornění kupujícím na neplnění této smlouvy,
 - b) postupuje-li prodávající při plnění smlouvy v rozporu s ujednáními této smlouvy, s pokyny oprávněného zástupce kupujícího či s právními předpisy,
 - c) nebude-li schopen dodat nové a originální zboží, v souladu s podmínkami v této smlouvě uvedenými,
 - d) podá-li na sebe insolvenční návrh dle zákona č. 182/2006 Sb., o úpadku a způsobech jeho řešení (insolvenční zákon) nebo v insolvenčním řízení vůči majetku prodávajícího zahájeném na návrh věřitele bylo vydáno rozhodnutí o úpadku, nebo byl insolvenční návrh zamítnut proto, že majetek nepostačuje k úhradě nákladů insolvenčního řízení, nebo byla zavedena nucená správa prodávajícího podle zvláštních právních předpisů,
 - e) dojde-li k nepodstatnému porušení povinností uložených prodávajícímu smlouvou, pakliže nedostatky prodávající v dodatečně poskytnuté lhůtě neodstraní,

- f) převede-li své závazky, povinnosti nebo práva plynoucí z této smlouvy na jiný subjekt, a to bez předchozího souhlasu kupujícího.
- 10.5. Účinnost odstoupení od smlouvy nastává doručením oznámení o odstoupení druhé smluvní straně na její adresu uvedenou v záhlaví této smlouvy.
- 10.6. Kupující je oprávněn od smlouvy odstoupit v případě, že podle údajů uvedených v registru plátců DPH se prodávající stane nespolehlivým plátcem DPH.
- 10.7. Skončením účinnosti smlouvy zanikají všechny závazky smluvních stran ze smlouvy. Skončením účinnosti smlouvy nebo jejím zánikem však nezanikají nároky na náhradu škody a zaplacení smluvních pokut sjednaných pro případ porušení smluvních povinností vzniklých před skončením účinnosti (zánikem) smlouvy, a ty závazky smluvních stran, které podle smlouvy nebo vzhledem ke své povaze mají trvat i nadále, nebo u kterých tak stanoví zákon.
- 10.8. Proávající přebírá riziko změny okolností dle občanského zákoníku.

XI.

Střet zájmů

- 11.1. Proávající se zavazuje, že bez předchozího písemného souhlasu kupujícího nebude v souvislosti s plněním veřejné zakázky uvedené v čl. I. této smlouvy přijímat žádné jiné odměny, provize či jakékoliv další výhody, nežli ty, které jsou výslovně uvedeny v této smlouvě.
- 11.2. Proávající se zavazuje, že se nebude podílet na žádné činnosti, která by mohla být v rozporu se zájmy kupujícího danými nebo souvisejícími s plněním předmětu této smlouvy. K tomuto závazku je prodávající povinen zavázat své případné poddávatele, použije-li je pro účely plnění této smlouvy.

XII.

Vyšší moc

- 12.1. Smluvní strany jsou zbaveny odpovědnosti za částečné nebo úplné neplnění povinností daných touto smlouvou v případě (a v tom rozsahu), kdy toto neplnění bylo výsledkem události nebo okolnosti způsobené vyšší mocí. Odpovědnost za nesplnění smluvní povinnosti však nevylučuje překážka, která vznikla v době, kdy povinná smluvní strana byla v prodlení s plněním své povinnosti nebo vznikla z jejích hospodářských poměrů.
- 12.2. Pro účely této smlouvy se vyšší mocí rozumí taková mimořádná a neodvratitelná událost, která je mimo kontrolu smluvní strany, jež se na ni odvolává, kterou smluvní strana nemohla při uzavření této smlouvy předvídat a která smluvní straně brání v plnění závazků vyplývajících z této smlouvy. Takovými událostmi jsou zejména (avšak nikoliv výlučně): válka, živelná katastrofa apod. Za vyšší moc není považována chyba nebo zanedbání ze strany prodávajícího, místní a podnikové stávky, výpadky ve výrobě, v dodávce energií apod. Vyšší mocí není rovněž selhání poddávatele, nastalo-li z jiných než shora uvedených důvodů.
- 12.3. Nastane-li situace vyšší moci, je dotčená smluvní strana povinná okamžitě o takovém stavu, jeho příčině a předpokládaném termínu skončení informovat druhou smluvní stranu. Smluvní strany se zavazují hledat alternativní prostředky pro splnění předmětu této smlouvy a poskytnout za tímto účelem druhé smluvní straně veškerou součinnost.

- 12.4. Trvá-li vyšší moc nebo její účinky delší dobu než 3 měsíce a nenajdou-li smluvní strany alternativní řešení, má kterákoliv ze smluvních stran právo od smlouvy odstoupit. V takovém případě je na volbě kupujícího, který může rozhodnout, zda (i) si dosud přijaté plnění ponechá za část kupní ceny odpovídající rozsahu a kvalitě dosud přijatého plnění, anebo (ii) zda si smluvní strany vzájemně poskytnuté plnění vrátí.

XIII.

Závěrečná ustanovení

- 13.1. Vztahy mezi stranami se řídí českým právním řádem. Ve věcech smlouvou výslovně neupravených se právní vztahy z ní vznikající a vyplývající řídí příslušnými ustanoveními občanského zákoníku a ostatními obecně závaznými právními předpisy.
- 13.2. Veškeré změny či doplnění smlouvy lze učinit pouze na základě písemné dohody smluvních stran. Takové dohody musí mít podobu datovaných, číslovaných a oběma smluvními stranami podepsaných dodatků smlouvy. Jinou než písemnou formu dodatku v listinné podobě smluvní strany tímto vylučují.
- 13.3. Vztahuje-li se důvod neplatnosti jen na některé ustanovení smlouvy, je neplatným pouze toto ustanovení, pokud z jeho povahy, obsahu anebo z okolností, za nichž bylo sjednáno, nevyplývá, že jej nelze oddělit od ostatního obsahu smlouvy.
- 13.4. Smluvní strany budou vždy usilovat o přátelské urovnání případných sporů vzniklých ze smlouvy. Pokud nebylo dosaženo přátelského urovnání sporu ani do 30 pracovních dnů po jeho prvním oznámení druhé straně, je kterákoliv ze smluvních stran oprávněna obrátit se svým nárokem k příslušnému soudu.
- 13.5. Smlouva se vyhotovuje ve 4 (čtyřech) stejnopisech, z nichž každý má platnost originálu. Každá ze smluvních stran obdrží po 2 (dvou) stejnopisech.
- 13.6. Nedílnou součástí této smlouvy jsou následující přílohy:
Příloha č. 1 – Podrobná technická specifikace
Příloha č. 2 – Projektová dokumentace „Modernizace výukových řetězců pavilonu T“
Příloha č. 3 – Oceněný výkaz výměr
- 13.7. Prodávající bezvýhradně souhlasí se zveřejněním plného znění smlouvy tak, aby tato smlouva mohla být předmětem poskytnuté informace ve smyslu zákona č. 106/1999 Sb., o svobodném přístupu k informacím, ve znění pozdějších předpisů. Prodávající rovněž souhlasí se zveřejněním plného znění smlouvy dle § 219 zákona č. 134/2016 Sb., o zadávání veřejných zakázek, ve znění pozdějších předpisů a zákona č. 340/2015 Sb., o zvláštních podmínkách účinnosti některých smluv, uveřejňování těchto smluv a o registru smluv, ve znění pozdějších předpisů (zákon o registru smluv).
- 13.8. Prodávající bere na vědomí a souhlasí, že je osobou povinnou ve smyslu § 2 písm. e) zákona č. 320/2001 Sb., o finanční kontrole, ve znění pozdějších předpisů. Prodávající je povinen plnit povinnosti vyplývající pro něho jako osobu povinnou z výše citovaného zákona.
- 13.9. Smluvní strany prohlašují, že mezi nimi nebyla vedena žádná další jednání ani učiněny žádné dohody, ať ústní či písemné, vztahující se jakkoliv k předmětu této smlouvy.

13.10. Smluvní strany prohlašují, že si smlouvu před jejím podpisem přečetly a s jejím obsahem bez výhrad souhlasí. Smlouva je vyjádřením jejich pravé, skutečné, svobodné a vážné vůle. Na důkaz pravosti a pravdivosti těchto prohlášení připojují oprávnění zástupci smluvních stran své vlastnoruční podpisy.

V Praze dne 18 - 07 - 2018

V Praze dne 20.6.2018

Za kupujícího:
Česká zemědělská univerzita v Praze

Za prodávajícího:
Dimension Data Czech Republic s.r.o.

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.....
Ing. Petrem Hüblem, jednatelem

dimension data 

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Prověřeno právním odd. ČZU v Praze
mačel

PROJEKT/ZAKÁZKA

- ▶ MODERNIZACE VÝUKOVÝCH ŘETĚZCŮ
- ▶ POSLUCHÁRNA TI
- ▶ ČESKÁ ZEMĚDĚLSKÁ UNIVERZITA



ČÍSLO ZAKÁZKY

18Zak00183

INVESTOR/ZÁKAZNÍK

- ▶ Česká zemědělská univerzita v Praze
- ▶ Kamýcká 129
- ▶ 16500, Praha - Suchdol

PROJEKTANT

AVT Group a.s.
V Lomech 2376/10a
Praha 4
cz 149 00



STUPEŇ PROJEKTU

- ▶ Dokumentace pro výběr dodavatele

ZKRATKA

DVD

ZODPOVĚDNÝ

PROJEKTANT

ing. Roman Chýle

VYPRACOVAL

ing. Roman Chýle

PROFESE

KÓD PROFESE

AVT

- ▶ Audiovizuální technologie

DATUM

03/2018

KONTROLOVAL

ing. Jiří Hulík

REVIZE

00

ČÍSLO PARE

PŘÍLOHA	ČÍSLO PŘÍLOHY	# FORMÁT	POZNÁMKA
Obsah dokumentace	OD	1x A4	tabelární část
Technická zpráva	TZ	6x A4	textová část
Půdorys - dispozice koncových prvků	V01	8x A4 (A1)	M 1:50
Blokové schéma zapojení	SCH	8x A4 (A1)	bez měřítka
		celkem	24x A4
			včetně desek

PROJEKT/ZAKÁZKA ▶ MODERNIZACE VÝUKOVÝCH ŘETĚZCŮ ▶ POSLUCHÁRNA TI ▶ ČESKÁ ZEMĚDĚLSKÁ UNIVERZITA		ČÍSLO ZAKÁZKY 18Zak00183	
INVESTOR/ZAKAZNIK ▶ Česká zemědělská univerzita v Praze ▶ Kamýcká 129 ▶ 16500, Praha - Suchdol		PROJEKTANT AVT Group a.s. V Lomech 2376/10a Praha 4 cz 149 00	
STUPEŇ PROJEKTU ▶ Dokumentace pro výběr dodavatele		ZKRATKA DVD	
PROFESE ▶ Audiovizuální technologie		KÓD PROFESE AVT	
PŘÍLOHA /VYKRES ▶ Obsah dokumentace		DATUM 03/2018	
		FORMAT 1xA4	
		ČÍSLO PŘÍLOHY OD	
		VYPRACOVAL ing. Roman Chýle	
		KONTROLOVAL ing. Jiří Hulík	
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INVESTOR/ZÁKAZNÍK ▶ Česká zemědělská univerzita v Praze ▶ Kamýcká 129 ▶ 16500, Praha - Suchbát		PROJEKTANT AVT Group a.s. V Lomech 2376/10a Praha 4 cz 149 00	
STUPEŇ PROJEKTU ▶ Dokumentace pro výběr dodavatele		ZODPOVĚDNÝ PROJEKTANT ing. Roman Chýle	VYPRACOVAL ing. Roman Chýle ing. Jiří Hulík
PROFESE ▶ Audiovizuální technologie		KÓD PROFESE AVT	KONTROLOVAL ing. Jiří Hulík
PŘÍLOHA /VÝKRES ▶ Technická zpráva		DATUM 03/2018	REVIZE 00
		FORMÁT 6xA4	ČÍSLO PŘÍLOHY TZ
			ČÍSLO PŘÍLOHY TZ

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1 ZADÁNÍ

Tato zpráva byla zpracována jako textová část projektové dokumentace pro výběr dodavatele provozního souboru AV technologie velké posluchárny a jejího technického zázemí v pavilonu T. Podklady pro výkresovou část jsou půdorysy a řezy v elektronické podobě, které byly součástí dokumentace skutečného stavu po realizaci AV řetězce v roce 2013. Před finalizací projektové dokumentace probíhaly kontrolní dny projektu, kde byly průběžně prezentovány dílčí části celého navrhovaného řešení. Výchozím podkladem pro zpracování projektu byl koncept popsáný ve studii pro rozvojový projekt, zpracované ve spolupráci se zástupci OIKT.

Projektová dokumentace řeší revitalizaci a modernizaci audiovizuálního řetězce při zachování celkové původní koncepce. Nově navržené technologie jsou navázány na části stávajícího řetězce, důraz je kladen na maximální využití současných IP AV technologií pro transport a zpracování signálů v řetězci. V následující části jsou popsány v rámci rekonstrukce navržené změny oproti původnímu řešení, které zajistí optimální provozní podmínky dle současných nároků na řetězec.

2 ZOBRAZOVACÍ SYSTÉM

Za účelem dosažení ještě lepších pozorovacích podmínek a též díky dosavadním zkušenostem z provozu, byl stávající systém se třemi projektory nahrazen novou projekční sestavou. Řešení nové projekční sestavy vyplývá ze zkušenosti, kdy ve více než 90% případů byl pro projekci během výuky provozován centrální projektor, který optimálně pokrýval celou stávající promítací plochu s rozměrem 8x5m. V režimu dvojité projekce nebylo díky technickým limitům možné optimálně využít celou plochu plátna.

Nový systém využívá pro projekci zvětšené plátno s rozměrem 14x5m. Projekce je zajištěna dvojicí projektorů s téměř dvojnásobným světelným výkonem oproti původní projekci, se svítivostí převyšující 20000 ANSI lm. Světelný zdroj v nových projektorech je realizován laserovou technologií s očekávanou provozní životností přesahující 20000 h. Obrazy z obou projektorů budou na plátně bezešvým způsobem propojeny v jednu velkou obrazovou plochu. Navržený prezentační obrazový procesor umožní současné zobrazení až osmi nezávislých obrazových zdrojů. Velikost a pozici těchto obrazových oken bude možné libovolně rozmístit po projekční ploše dle potřeb aktuálního provozního režimu a požadavků na rozložení obrazové plochy.

Geometrie zobrazení a umístění projektorů vůči plátnu jsou navrženy tak, aby v případě potřeby nouzového provozního režimu, například při výpadku obrazového procesoru, bylo možné okamžitě zahájit projekci pouze z jednoho projektoru na střed plátna. Tohoto principu je dosaženo díky objektivům s pamětí pozic, které je možno vyvolávat povel. Celková situace je detailně vyobrazena ve výkresové části dokumentace, kde jsou uvedeny projekční vzdálenosti, rozteč projektorů, velikost prolnutí a další parametry optického systému. Projektory jsou vybaveny aktualizovanou licencovanou verzí firmwaru, která umožňuje nasazení autokalibračního softwaru pro automatické nastavení geometrie a barevné uniformity spojeného obrazu.

3 KAMEROVÝ ŘETĚZEC

Na pozice stávajících kamer s HDSDI konektivitou, které budou demontovány, jsou navrženy nové moderní PTZ kamery. Nové kamery kromě HDSDI výstupů, které jsou v novém designu zachovány díky dostupnosti stávající kabeláže, budou nově vybaveny též IP výstupy formátu NDI. Jedna z kamer je vybavena funkcí automatického sledování snímaných objektů.

4 BEZDRÁTOVÝ MIKROFONNÍ ŘETĚZEC

S ohledem na aktualizovaný plán využití radiového spektra pro zařízení krátkého dosahu, vydaný Českým telekomunikačním úřadem a uvedeným ve všeobecném oprávnění č. VO-R/10/11.2016-13, který byl naposledy aktualizován v lednu 2018, není nadále povoleno provozování stávajících bezdrátových mikrofonů provozovaných v pavilonu T. Další omezení frekvenčního pásma pro provoz bezdrátových mikrofonů nastane dle všeobecného oprávnění v roce 2021. Naopak bylo nově uvolněno pásmo 1785 – 1805 MHz, které bylo zvoleno pro využívání nově navrženým systémem bezdrátových mikrofonů.

Koncepce i sestava v novém řešení bude zachována, pouze budou nahrazeny přijímače a vysílače. Sada obsahuje 4x ruční bezdrátový mikrofon, 2x klopový a 2x náhlavní. Pozice i napojení na stávající elektroakustický řetězec budou zachovány. Ovládání a monitoring nového řetězce bude nově možné provádět i v aplikaci přes přehledné grafické rozhraní na tabletu.

5 AUDIOŘETĚZEC

Stávající digitální jádro zvukového distribučního systému postavené na procesorech BSS bude bezezbytku zachováno pro svojí vysokou provozní spolehlivost, variabilitu a rozšiřitelnost. Stávající digitální zvukový distribuční okruh BLU-LINK bude doplněn o interface s rozhraním DANTE. V takto doplněném stávajícím distribučním systému bude dále nahrazena digitální mixážní konzole Yamaha o adekvátního nástupce s DANTE konektivitou. Dojde tak k razantní eliminaci stávajících analogových rozvodů a bude zajištěna přímočará návaznost na nově navržený obrazový řetězec NDI.

AV signály rekonstruovaného řetězce bude nově možné přenášet po dostupné síti ethernet s optimalizovanou strukturou pomocí VLAN sítí. Do budoucna tedy bude možné velmi rychlé vzájemné propojení s nově vznikajícími obdobně vybavovanými systémy v rámci ČZU.

Stávající tlumočnický systém BOSCH a ozvučovací řetězec budou plně integrovány do nově navrženého řetězce. Stávající zesilovač BOSE hlavního ozvučení umístěný pod katedrou bude v rámci přechodu na DANTE protokol též doplněn o příslušný modul, který umožní přímou integraci do digitálního řetězce bez analogového přechodu mezi systémy. Propojení nových i stávajících komponent v řetězci je patrné ze schématu zapojení ve výkresové části této dokumentace.

6 SIGNÁLOVÝ MANAGEMENT

Dosavadní negativní zkušenosti s navázáním běžné prezentační techniky na HDSDI přenosový řetězec byla katedra v sále pavilonu T v novém návrhu přezbrojena aktivními přípojnými místy s integrovanými přepínači signálu s konektivitou VGA, HDMI a DP s přenosem po CATx kabeláži. Pevné zdroje signálu v katedře byly doplněny o moduly pro přenos po nově realizované CATx kabeláži. Zpětný převod, konverze a odbočení do NDI řetězce je provedeno sadou přijímačů a scalerů, které zajistí definované stálé přizpůsobení prezentačních zdrojů signálu vůči broadcast řetězci. HDSDI konektivita byla v katedře zachována stejně jako přípojný body pro analogové audio linky či mikrofony. Součástí instalace budou dva nové ethernetové switche s 1Gbps porty koncová zařízení a 10Gbps porty pro propojení obou switchů a propojení do stávající univerzitní sítě.

Přepínání vstupů a jejich prezentace na projekční plochu je realizována v prezentačním obrazovém procesoru bez nutnosti provozu obrazové střížny a matice. Obrazový procesor zároveň zajišťuje bezešvé napojení obrazových signálů pro oba hlavní projektory. Běžný režim výuky tak bude zjednodušen a bude na obrazové režii zcela nezávislý.

7 TELEVIZNÍ TECHNIKA

Stávající televizní technologie bude z části nahrazena zařízeními na současné technologické úrovni a z části doplněna o novou funkcionalitu. Nejvýznamnější změnou je nahrazení stávající jednoduché obrazové režie novou, která dovoluje zpracovávat kromě signálů ve formátu SDI i IP signály ve formátu NDI. Kromě nových kamer bude jako zdroje signálu možné použít signál z PC umístěného v katedře, signál z vizualizéru, signál z několika přípojných míst nebo výstup PC v režii. Nová režie současně rovněž umožní využití komunikační platformy Skype, vícekanálový záznam obrazu a zvuku, obsahuje interní přehrávače videa a grafiky nebo bude schopna generovat streamy pro využití v sociálních a jiných sítích. Použitý protokol NDI dále v budoucnu umožní sdílení zdrojů v rámci celého areálu ČZU. Projekt televizní technologie navazuje na část zobrazovací techniky a zaručuje provoz projektorů nezávisle na televizní technologii nebo možnost zachování základního provozu posluchárny v případě závady.

8 INTEGROVANÉ OVLÁDÁNÍ

Centrála řídicího systému AMX byla v řetězci ponechána. Nově napojená zařízení jsou řízena přes IP protokol bez nutnosti komplikované instalace RS232 kabeláže. Vnitřní kód centrály bude aktualizován a přizpůsoben vůči nově instalovaným zařízením, provozní scénáře budou aktualizovány s ohledem na nové možnosti řetězce.

Stávající řízení osvětlení a prvků, které byly v instalaci ponechány, zůstane zachováno.

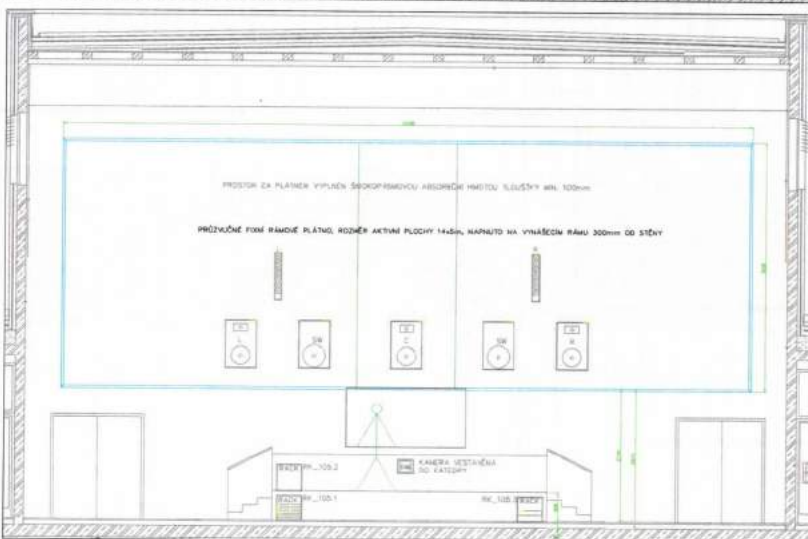
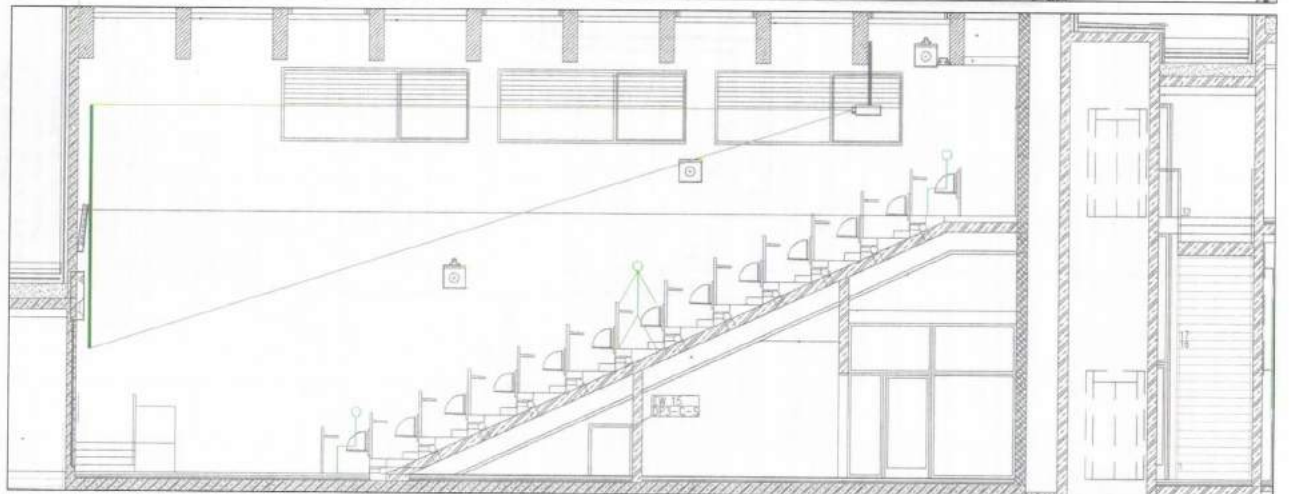
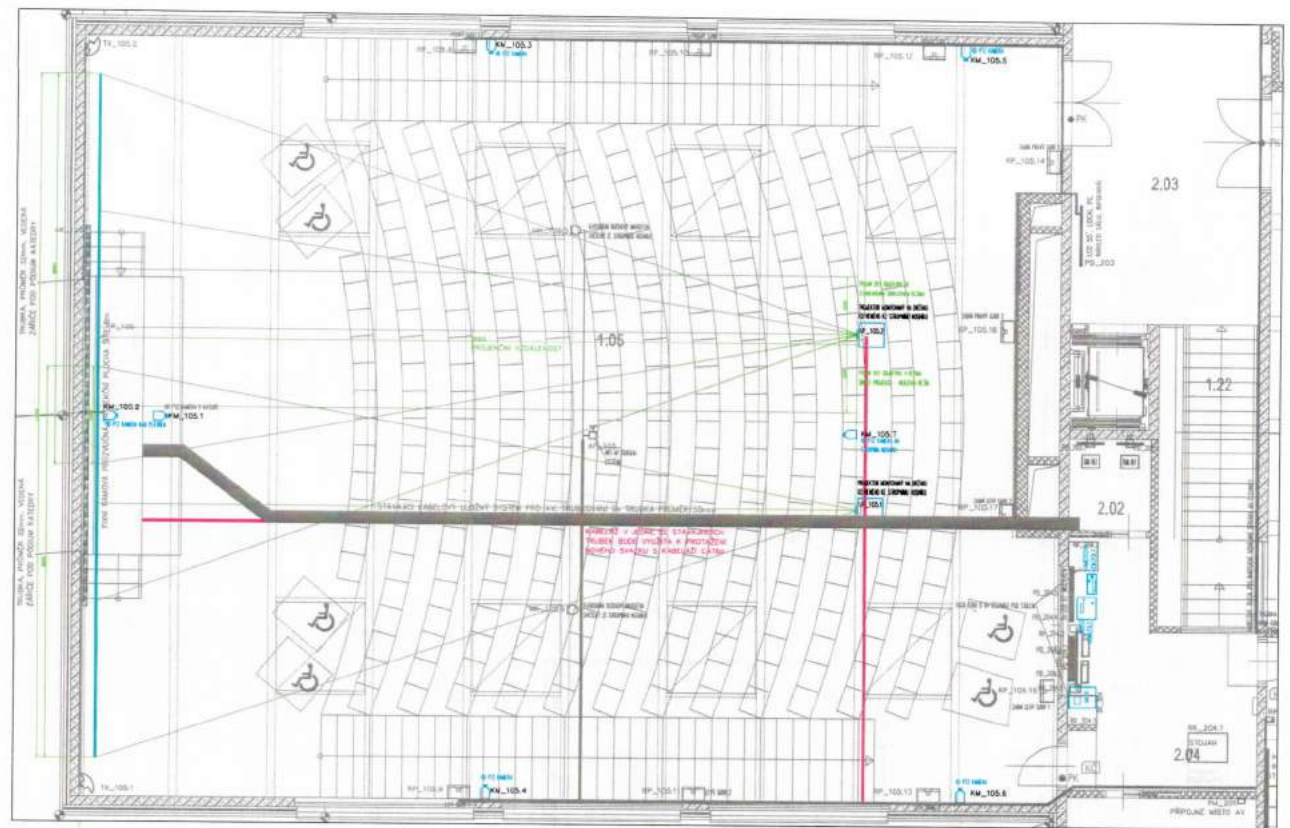
9 ZÁVĚR

AV systém velké posluchárny pavilonu T a jejího technického zázemí v obnovené podobě zajistí optimální provozní podmínky pro všechny nové i stávající provozní režimy. Návrh obnovy vychází z precizovaných požadavků a provozních zkušeností s maximálním ohledem na zjednodušení instalace. Navržená koncepce pro splnění uvedených požadavků využívá současných znalostí na poli AV technologií s drobným výhledem do budoucnosti.

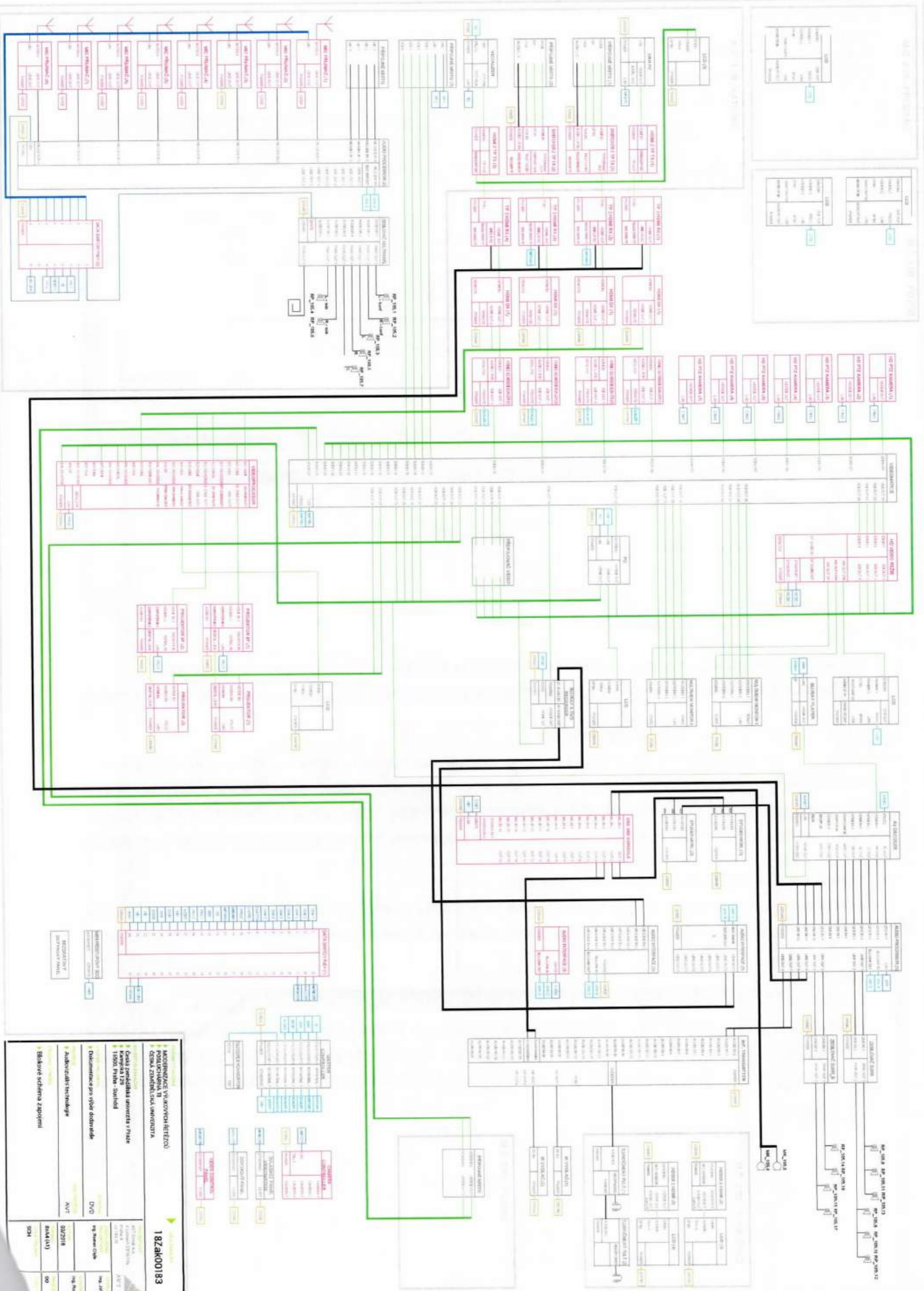
Obsah této dokumentace se zabývá provozním souborem AV technologie pouze pro řešený objekt pavilonu T. Dokumentace jako celek ani její jednotlivé části nelze šířit elektronicky ani v tištěné formě bez souhlasu jejích autorů, neboť obsah podléhá autorskému zákonu.

S ohledem na překotný vývoj v oblasti multimediálních technologií, a to jak po technické, tak velmi významně i po cenové stránce, lze považovat tuto dokumentaci za aktuální maximálně 6 měsíců od jejího předání investorovi. Bude-li dodávka AV technologie projektované v této dokumentaci z jakéhokoliv důvodu probíhat v termínu delším než rok po odevzdání PD, bude nevyhnutelná revize výkazu výměr a v opodstatněných případech i funkčních částí schémat zapojení.

Mají-li být bezesbytku garantovány veškeré funkce navržené v této projektové dokumentaci, musí být jakákoliv změna vyvolaná investorem či třetími stranami před jejím schválením konzultována s projektantem.



18Zak00183	
MODERNIZACE VÝUKOVÝCH ŘETĚZÍ POSILUJÍCÍNA T1 ČESKÁ ZEMĚDĚLSKÁ UNIVERZITA	AVT GROUP
Česká zemědělská univerzita v Praze Kampuska 1.20 16500, Praha - Suchbát	Ing. Roman Chytrý Ing. Roman Chytrý
Dokumentace pro výběr dodavatele	DVD
Audiovizuální technologie	AVT
Půdorys - dispoziční koncových prvků	03/2018 RM4 (A1) M 1:50 V01



182AK00183

MODERNIZACE VÝKONOVÝCH OKRUHŮ
PŘI PŘÍSTAVBĚ KATEDRY FYZIKY
V KATEDRĚ FYZIKY UNIVERZITY
PRAHY

Číslo projektové dokumentace v příloze
15008 Příloha: Standard

Projektová dokumentace pro výstavbu
Elektroinstalace

Projektová dokumentace pro výstavbu
Elektroinstalace

Projektová dokumentace pro výstavbu
Elektroinstalace

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1. Modernizace AVT v budově PEF						
Č. položky	Popis položky	Počet	Jednotková cena [Kč]	Celková cena [Kč]	Specifikace	Výrobce, typ
1.1	Laserový projektor	14	94 500,00 Kč	1 323 000,00 Kč	Laserový projektor pro seminární učebny včetně stropního držáku (DLP projektor s laserovým zdrojem, minimální parametry: výkon 5000 lumenů, kontrast 15000:1, rozlišení Full HD nebo vyšší, H/V posun objektivu: minimálně +/-0,25 horiz. a +/-0,43 vert. obrazové vstupy digitální i analog., 1 vstup ve standardu HDBaseT, řízení RS232, LAN, provozní hlučnost projektoru max. 39 dB. Životnost světelného zdroje min. 20 000 hodin.). Stropní držák projektoru kompatibilní s dodávaným typem projektoru, max. délka držáku musí umožňovat volný pohyb vzpřímené osoby pod instalací.	NEC P502HL-2
1.2	Prezentační AV přepínač	14	93 600,00 Kč	1 310 400,00 Kč	Prezentační přepínač/switcher s minimální konektivitou: Vstupy: VGA, 4xHDMI, stereo audio (sym.), mikrofonní (48V fantomové napájení), HDCP kompatibilní výstupy: 2x HDMI, 1x TP výstup ve standardu HDBaseT, výkonový zesilovač min. 2x 50W. Řízení: LAN, RS-232. Výška max. 1U.	EXTRON IN1608xi SA
1.3	Digitalizace kabelových tras	14	8 800,00 Kč	123 200,00 Kč	Sada propojovací AV kabeláže pro zprovoznění řetězce instalovaného v katedře a mezi katedrou a projektorem za využití stávajících prvků typu hnutí křík a kabelových lišt : HDMI, RJ45, UTP, audio. Realizace kabelových tras BEZ aktivních převodníků. Stávající délka trasy od katedry k projektoru je zhruba 15-20m.	SCHRACK SFTP CAT6
1.4	Bezdrátová mikrofonní sada	16	23 600,00 Kč	377 600,00 Kč	Sada bezdrátového přijímače s vysílačem, diverzní přijímač UHF s rackovou montáží, ruční kondenzátorový superkardioidní mikrofon (max SPL min. 150 dB, THD do 1 %, odstup signál/šum větší než 115 dB(A), 2x audio výstup), vysílací jednotka, min. 1500 laditelných frekvencí, squelch řízený pilotním tónem, automatické prohledávání dostupných frekvencí, robustní kovové pouzdro vysílače i přijímače, systém potlačení šumu v požadovaném pásmu, indikátor stavu baterií, šířka VF pásma min. 42 MHz, přepínatelný VF výkon min. 10mW/30mW, připojení na LAN s možností řízení samostatným programem.	SENNHEISER SLDW 865 Rack
1.5	Bezdrátová reportážní sada	6	18 740,00 Kč	112 440,00 Kč	Mobilní reportážní sada bezdrátového přijímače s vysílačem (bodypack), diverzní přijímač UHF, klopový kondenzátorový mikrofon, vysílací jednotka, min. 1500 laditelných frekvencí, squelch řízený pilotním tónem, automatické prohledávání dostupných frekvencí, robustní kovové pouzdro vysílače i přijímače, systém potlačení šumu v požadovaném pásmu, indikátor stavu baterií, šířka VF pásma min. 42 MHz	SENNHEISER AVX-MKE 2
1.6	Jednotka pro bezdrátovou prezentaci	2	40 470,00 Kč	80 940,00 Kč	Multiplatformní brána pro bezdrátovou prezentaci a přepínání až čtyř uživatelů. Min. HDMI a VGA výstup, USB.	EXTRON ShareLink 250 W

2. AVT vybavení konzultačních prostor PEF						
Č. položky	Popis položky	Počet	Jednotková cena [Kč]	Celková cena [Kč]	Specifikace	Výrobce, typ
2.1	Interaktivní projektor vč. držáku	8	91 500,00 Kč	732 000,00 Kč	Interaktivní LCD projektor s ultra krátkou projekční vzdáleností, min. parametry: jas 3500 ANSI Lumen, kontrast 6000:1, rozlišení 1280 x 800 nebo vyšší, včetně kompatibilního nástěnného držáku, ovládání např. elektronickým perem, apod.	EPSON EB-710U1
2.2	Projekční plocha ve formě keramické tabule	8	14 700,00 Kč	117 600,00 Kč	Keramická tabule pro popis fixem, bílá, magnetická. Tloušťka desky min. 22 mm, sendvičová konstrukce. Šířka 150cm, montáž na stěnu.	EKOTAB Manažer K
2.3	Projektor vč. stropního držáku	7	97 800,00 Kč	684 600,00 Kč	Projektor o svítivosti min. 5000Lm, min. Full HD rozlišení, min. dva HDMI a VGA vstupy, stropní držák.	NEC P502HL-2
2.4	Elektrické stahovací plátno	7	21 110,00 Kč	147 770,00 Kč	Elektrické stahovací plátno (roletové), 16:9, šířka min. 270cm, šířka max. 300cm, černě okraje, bílé tělo, matné bílé plátno, variabilní montáž na stěnu či strop.	MW Screens rollfix pro electric 3036RN8032
2.5	Připojné místo zaříze do stolu	15	16 700,00 Kč	250 500,00 Kč	Připojné místo zápusné. Materiál kov, integrovaná AV kabeláž s konektivitou min.: HDMI, DP, VGA a audio. Vč. 230VAC	EXTRON Cable Cubby 202
2.6	Kabelová trasa	15	1 320,00 Kč	19 800,00 Kč	Propojení připojného místa a projektoru. Realizace kabelových tras BEZ aktivních převodníků	Schrack SFTP CAT6a
2.7	Jednotka pro bezdrátovou prezentaci	20	40 470,00 Kč	809 400,00 Kč	Multiplatformní brána pro bezdrátovou prezentaci a přepínání až čtyř uživatelů. Min. HDMI a VGA výstup, USB.	EXTRON ShareLink 250W
2.8	Přenosné reproduktory	20	2 150,00 Kč	43 000,00 Kč	Dvojice aktivních reproduktorů, dvoupásmový aktivní systém, min. parametry: výkon 2 x 10 watt / 4 Ω, Basový reproduktor: 3", výškový reproduktor: 1", frekvenční rozsah: 80 Hz – 20 kHz, konektivita: 1/8 " TRS Stereo (Jack), vstupní impedance: 50k ohms a lepší, napájení: 230V. Černá barva.	M-Audio AV32
2.9	Prezentér	40	1 550,00 Kč	62 000,00 Kč	Bezdrátový prezentér s laserovým ukazovátkem, konektivita přijímače - USB, min. dosah 10 m, černá barva	Logitech Wireless Presenter R400
2.10	Přenosný flipchart popisovatelný fixem	20	2 750,00 Kč	55 000,00 Kč	Mobilní flipchart s magnetickým povrchem. Plynule nastavitelný až do min. výšky 200 cm. Lísty pro zavěšení papíru. Možnost natáčení a pojištění. Min. rozměry desky v x š: 100 x 65 cm	Magnetoplan Young Edition plus
2.11	Mobilní PA reproduktor s bezdrátovým a drátovým mikrofonem	20	9 950,00 Kč	199 000,00 Kč	Mobilní PA 2 pásmové zařízení s integrovanou baterií (akumulátorem) (výdrž baterie min. 6 hodin provozu), USB a SD konektory a dvojitou sekci mikrofonu, 1 bezdrátový mikrofonu a 1 mikrofon připojený kabelem. Min. požadavky: výkon: 200 W, výkon RMS: 100 W, max. SPL: 100 dB a lepší, basový reproduktor: 10", výškový reproduktor: 1", frekvenční rozsah: 70 Hz - 17 kHz.	LD Systems ROADBUDDY 6 HS

3. Modernizace výukových řetězců pavilonu T						
Č. položky	Popis položky	Počet	Jednotková cena [Kč]	Celková cena [Kč]	Specifikace	Výrobce, typ
3.A	Centrální digitální laserové projekce					
3.A.1	Digitální laserový projektor	2	1 510 000,00 Kč	3 020 000,00 Kč	Projektor s laserovým zdrojem, 3xDLP nebo 3xLCD, min výkon 20000 lumenů, rozlišení min. WUXGA, min 1x HDMI a 1x 3G-SDI vstup, řízení RS232, LAN, systémové rozhraní (UTP 8A), provozní hlučnost projektoru max. 46 dB. Životnost světelného zdroje min. 20 000 hodin. Možnost automatické kalibrace geometrie a barevné uniformity zobrazení pro spojitou projekci.	Panasonic PT-RZ21K

3.A.2	Objektiv pro projektor	2	119 000,00 Kč	238 000,00 Kč	Motorický objektiv pro projektor v poloze 3.A.1 s projekčním faktorem v rozsahu alespoň 1,7 - 2,2:1 s možností uložení parametrů, posun osy objektivu H min +0,2 V min. +0,5.	Panasonic ET-D3LE520
3.A.3	Precizní stropní držák projektoru	2	33 990,00 Kč	67 980,00 Kč	Precizní kovový systém pro pevnou stropní instalaci projektorů optimalizovaný pro přesné nastavení polohy při spojitě projekci z více projektorů. Šestiosý mechanismus s aretací nastavené polohy. Minimální rozsah korekce úhlu H/V/Otočení +5/+5/+5 stupňů, minimální rozsah posuvu horizontální/vertikální/předo-zadní +50/+50/+50 mm. Kompatibilní s projektorem v poloze 3.A.1	Panasonic ET-PKD130
3.A.4	Vstupní modul projektoru	2	29 000,00 Kč	58 000,00 Kč	Vstupní modul projektoru využívající systémové rozhraní projektoru (UTP 6A). Min vstupy 2x HDMI, 2x VGA, RS232, LAN. Lokální ovládací panel volby vstupu. Provedení pro montáž do stojanu.	Panasonic ET-YFB100G
3.B	Velkoplošná rámová projekční plocha					
3.B.1	Velkoplošná rámová projekční plocha	1	279 500,00 Kč	279 500,00 Kč	Hliníkový rám s vnesením plátna 30cm od stěny, rozměr projekční plochy 14x5m, napínací hliníkový rám o šířce 5cm, průsvitné, barva plátna matně bílá	MW Wall Frame + Sonora matte white
3.C	Prezentační obrazový procesor					
3.C.1	Prezentační obrazový procesor	1	620 000,00 Kč	620 000,00 Kč	Obrazový procesor a bezeřový signálový přepínač. Fixní hardwarová koncepce v provedení pro instalaci do 19" racku, minimálně čtyř obrazové vrstvy a nezávislé pozadí pro každý výstup, nejméně 140 paměťových pozic pro uložení přednastavených obrazových režimů, minimálně 99 paměťových pozic pro uložení grafických symbolů a log s možností libovolné změny velikosti (rozišení), minimální výstupní rozišení obrazového signálu 2560x1600 (DVI-DL) nastavitelné v krocích směrem dolů po jednom pixelu. Minimální vstupní konektivita: 4x HDMI (z toho alespoň 2x pro rozišení 4K@30Hz), 6x DVI-I (z toho alespoň 2x DVI-DL), 2x DisplayPort, 8x 3G HD-SDI, 4x Univerzální analogový vstup D-SUB HD15 (VGA). Minimální výstupní konektivita: 2x univerzální analogový výstup D-SUB HD15 (VGA), 2x DVI-DL, 2x 3G HD-SDI. Výstupy pro náhled (preview) min. : 1x DVI-DL. Vstup pro synchronizaci, ethernet, GPIO.	Analogway Nextage 16-4K
3.D	Bezdrátový mikrofon ruční 1,9 GHz - sada přijímače a vysílače					
3.D.1	Bezdrátový mikrofon ruční 1,9 GHz - sada přijímače a vysílače	4	21 500,00 Kč	86 000,00 Kč	Digitální ruční sada bezdrátového mikrofonního vysílače s přijímačem. Min. parametry: citlivost 1,6 mV/Pa, doba provozu na baterie až 15 h, dyn. rozsah >120 dB(A), THD < 0,1% (1 kHz), modulace GFSK se zpětným kanálem, výstupní konektory XLR / 2 x RCA. Možnost instalace do racku.	Sennheiser SLDW 865 Rack
3.E	Bezdrátový mikrofon klopový 1,9 GHz - sada přijímače a vysílače					
3.E.1	Bezdrátový mikrofon klopový 1,9 GHz - sada přijímače a vysílače	2	25 700,00 Kč	51 400,00 Kč	Digitální mikroportová sada bezdrátového mikrofonního vysílače s přijímačem, klopový bezdrátový mikrofon (všesměrový) s kapesním vysílačem. Citlivost min. 5 mV/Pa, dynamický rozsah >120 dB(A), harmonické zkreslení (THD): < 0,1% (1 kHz). Modulace: GFSK se zpětným kanálem. Provozní doba alespoň 15 hodin, dobíjení přes USB rozhraní nebo v originálním nabíječi. 19" rack montáž.	Sennheiser SLDW MKF1 Rack
3.F	Bezdrátový mikrofon náhlavní 1,9 GHz - sada přijímače a vysílače					
3.F.1	Bezdrátový mikrofon náhlavní 1,9 GHz - sada přijímače a vysílače	2	29 000,00 Kč	58 000,00 Kč	Digitální sada bezdrátového mikrofonního vysílače s náhlavním kondenzátorovým mikrofonem s přijímačem a rack, držákem. Min. parametry: citlivost 5 mV/Pa, doba provozu na baterie až 15 h, dyn. rozsah >120 dB(A), THD < 0,1% (1 kHz), modulace GFSK se zpětným kanálem, výstupní konektory XLR / 2 x RCA.	Sennheiser SLDW Head
3.G	Kombinovaný převodník VGA+A, DP a HDMI na TP					
3.G.1	Kombinovaný převodník VGA+A, DP a HDMI na TP	2	28 940,00 Kč	57 880,00 Kč	Multiformátový přepínač minimálně se třemi video vstupy, integrovaný TP převodník (pro vzd. min. 70m, kompatibilní s HDBaseT standardem, napájení pro TP přijímač). Vstupy min.: DisplayPort, HDMI, VGA + audio, automatické přepínání vstupů, podporované rozišení až 4K, kompatibilní se stávajícím řídicím systémem poslucháři. Možnost montáže do 19"/1RU stojanu.	Extron DTP T DSW 4K 233
3.G.2	Rozdělovací zesilovač HDMI	4	13 339,00 Kč	53 356,00 Kč	Rozdělovací zesilovač pro signál s minimálními parametry: HDMI 2.0b 1:2, rozišení 4096x2160/60p 4:4:4 8bit, šířka pásma 18 Gbps, HDCP 2.2. Minimální konektivita: 1x HDMI vstup, 2x HDMI výstup, RS232 a napájení VDC. Provedení pro montáž do racku 19". Minimálně 6 let záruka na napájecí zdroj.	Extron DA2 HD 4K
3.G.3	Scaler HDMI/3G-SDI	4	41 600,00 Kč	166 400,00 Kč	HDMI vstup, 3G-SDI výstup. Podpora vstupních rozišení do 2k, výstupní rozišení až do 1080p. Možnost vzdáleného řízení parametrů převodu. Kompatibilní se stávajícím řídicím systémem poslucháři. Možnost montáže do 19"/1RU stojanu.	Extron DSC HD-3G A
3.H	Převodník HDMI (s náhled, výstupem) na TP					
3.H.1	Převodník HDMI (s náhled, výstupem) na TP	2	17 200,00 Kč	34 400,00 Kč	Převodník HDMI na UTP s HDMI výstupem pro lokální monitoring (separátní výstupní obvody). UTP trasa minimálně 70 m, přenos signálů s rozišením minimálně UHD. Přenosová rychlost nejméně 10,2 Gb/s, barevná hloubka nejméně 8 bitů, bezdrátové HD audio, podpora HDCP 2.2. Kompatibilní s HDBaseT standardem. Možnost montáže do 19"/1RU stojanu.	Extron DTP T HD2 4K 230
3.H.2	Převodník TP na HDMI	4	9 800,00 Kč	39 200,00 Kč	Přijímač AV signálu přenášeného po UTP kabelu. Převod na HDMI výstup a analogové stereo audio, minimální délka UTP trasy 70m, minimální rozišení UHD. Minimální přenosová rychlost 10,2 Gb/s, barevná hloubka nejméně 8 bitů, bezdrátové HD audio, HDCP 2.2. Možnost montáže do 19"/1RU stojanu.	Extron DTP HDMI4K 230 Rx
3.I	Revitalizace řízení kamerového systému					
3.I.1	PTZ kamera	6	123 000,00 Kč	738 000,00 Kč	PTZ kamera, rozsah optické transkace min 20x, rozišení min 1920x1080, min. výstup 3G-SDI (1080p50) a současně NDI (1080p50), PoE+, řízení po IP	Panasonic AW-UN70
3.I.2	PTZ kamera s funkcí autotracking	1	157 000,00 Kč	157 000,00 Kč	PTZ kamera, rozsah optické transkace min 20x, rozišení min 1920x1080, min. výstup 3G-SDI (1080p50) a současně NDI (1080p50), PoE+, řízení po IP, funkce autotracking (automatické sledování snimané osoby)	Panasonic AW-UN70 + AW-SF100

3.1.3	Obrazová režie	1	390 000,00 Kč	390 000,00 Kč	Obrazová režie s podporou rozlišení min do 4k50p Min 16 IP vstupů s podporou protokolu NDI Min 4 SDI vstupy s podporou min 1080p Min 4 IP výstupy s podporou protokolu NDI Min 4 SDI výstupy s podporou min 1080p Min 3 výstupy pro multiviewer včetně měření základních parametrů signálu (waveform, vectorscope) Min 1x analogový stereofonní zvukový vstup (XLR) Min 1x analogový stereofonní zvukový výstup (XLR) Integrace protokolu Dante Interní zpracování zvuku včetně embedovaného (řízení úrovní, routing) Podpora řízení PTZ kamer po IP Min 2 videokonferenční zdroje Min 2 nezávislé výstupy streamů pro distribuci (Youtube, Facebook, CDN) včetně současného záznamu streamů Min 4 M/E řady Min 4 klíče pro každou M/E řadu Min 2 kanály interního přehrávače klipů Min 10 kanálů paměti pro přehrávání grafiky Interní generátor jednoduché grafiky s podporou dynamických datových zdrojů Podpora maker Min 4 interní kanály pro záznam s podporou souborového exportu (FTB, SMB) Interní úložiště pro média min 2x3TB Podpora tally Min 2x 1Gbps Ethernet Provedení pro montáž do stojanu	Newtek Tricaster TC1
3.1.4	Ovládací panel obrazové režie	1	310 000,00 Kč	310 000,00 Kč	Ovládací panel pro režii v poloze 3.1.3 Min 2 M/E řady včetně pákového ovladače režijních přechodů Min 24 tlačítek pro volbu zdrojů v každé M/E řadě Joystick pro ovládání PTZ kamer	Newtek Tricaster TC1 CSL
3.1.5	SW ovládací panel obrazové režie	1	23 000,00 Kč	23 000,00 Kč	SW panel pro ovládání obrazové režie v poloze 3.1.3 Řešení založené na webové aplikaci kompatibilní s MS Edge, IE 11+, Chrome (pro PC a Android) a Safari (pro macOS a iOS) Možnost uživatelských úprav GUI	Newtek LivePanel
3.1.6	Ovládací panel pro PTZ kamery	1	49 000,00 Kč	49 000,00 Kč	Ovládací panel pro PTZ kamery uvedené v položkách 3.1.1 a 3.1.2. Připojení kamer pomocí IP. Joystick pro pan/tilt, kolečkový ovladač pro ovládání transkace, otočné ovladače pro řízení ostření a clony, nastavení bílé/černé a rychlosti závěrky, tlačítka pro přímou volbu min. 7 kamer, min. 50 pozic pro uložení nastavení pro každou kameru. Provedení pro umístění na stole	Panasonic AW-HP50
3.1.7	Ethernetový switch	1	37 000,00 Kč	37 000,00 Kč	Min. 48x 1Gbps, 4x 10Gbps (2x 10GBASE-T, 2x SFP), PoE+, podpora VLAN, Diffserv QoS, managed, přenosová kapacita min. 176Gbps	Netgear S3300-52X-PoE+
3.1.8	Ethernetový switch	1	28 000,00 Kč	28 000,00 Kč	Min. 24x 1Gbps, 4x 10Gbps (2x 10GBASE-T, 2x SFP), PoE+, podpora VLAN, Diffserv QoS, managed, přenosová kapacita min. 128Gbps	Netgear S3300-28X-PoE+
3.1.9	Digitální mixážní pult	1	56 100,00 Kč	56 100,00 Kč	Kompaktní mixážní konzole pro zapuštění do režijního stolu. Minimální specifikace: 17 motorizovaných faderů (z toho 1 master), 40 kanálů (32x mono + 2 stereo + 2 return), 20x ext. sběrnice (8 mono + 6 stereo), 8x DCA, integrované DSP (8x efekt, 10x ekvalizér), 16 analogových vstupů (XLR/TRS, mic/line), 2 RCA stereo, 16 analog. výstupů (XLR). Vzorkování 48 kHz, latence 2,8 ms, THD < 0,05%, dynamický rozsah > 109 dB, přeslech > 99 dB. Kmitočtový rozsah 20 Hz – 20 kHz (+0,5/-1,5 dB, +4 dBu). Min. datová konektivita: USB, rozšiřující slot pro DANTE rozhraní. Maximální rozměry 550 x 600 mm (š x h).	Yamaha TF1
3.1.10	Dante rozhraní pro mixážní pult	1	12 000,00 Kč	12 000,00 Kč	Rozšiřující karta s rozhraním DANTE. Schopnost přímé komunikace s modulem v sále/katedře (stagebox), nastavení zisku na vstupních zesilovačích. Celkem 128 kanálů (64 vstupů a výstupů), nekompresovaný přenos audiosignálů v rozlišení 48 kHz / 24 bitů.	Yamaha NY64-D
3.1.11	Rozhraní Dante pro BSS	1	25 000,00 Kč	25 000,00 Kč	Doplnění stávající sestavy audioprocesorů BSS o protokol Dante. BSS BLU-DAN	BSS BLU-DAN
3.1.12	Rozhraní Dante pro Bose	1	25 000,00 Kč	25 000,00 Kč	Doplnění stávajícího zesilovače Bose PM8500 o protokol Dante. Bose PowerMatch Dante card (359844-0020).	Bose 359844-0020
3.J	Instalační práce	1				
3.J.1	Sada instalační AV kabeláže	1	25 000,00 Kč	25 000,00 Kč	Sada propojovací AV kabeláže pro zprovoznění řetězce instalovaného v katedře: HDMI, RJ45, UTP, audio. Uvádí se celková částka za kompletní kabeláž.	
3.J.2	UTP cat 6A	200	25,00 Kč	5 000,00 Kč	Dvojčítý kabel pro přenos dat a AV signálu s šířkou pásma nejméně 475MHz. Uvádí se částka za 1m.	
3.J.4	Demontážní práce původního vybavení	1	52 500,00 Kč	52 500,00 Kč	Stanovuje se rozsah práce celkovou částkou.	
3.J.6	Montážní a instalační práce	1	162 600,00 Kč	162 600,00 Kč	Stanovuje se rozsah práce celkovou částkou.	
3.J.7	Programování řídicího systému	1	144 000,00 Kč	144 000,00 Kč	Stanovuje se rozsah práce celkovou částkou.	

4. HW a SW vybavení pro tvorbu digitálního záznamu výuky						
Č. položky	Popis položky	Počet	Jednotková cena [Kč]	Celková cena [Kč]	Specifikace	Výrobce, typ
4.1	Záznamové zařízení jednokanálové	5	126 640,00 Kč	633 200,00 Kč	H.264 streamovací procesor, zpracování min. dvou AV vstupních signálů s min. HD rozlišením současně. Souběžný záznam a streaming. Integrovaný scaler pro dvouokenní obrazový management. Výstupní soubory záznamu MP4 kompatibilní s externími mediaplayery, bezlicenční provoz, min. 2 vstupy HDMI, volitelné SDI, minimální kapacita vnitřního úložiště 80GB, ovládání RS232, Ethernet, GPIO, USB porty pro myš a klávesnici, montáž do 19" racku.	EXTRON SMP 351

4.2	Záznamové zařízení dvoukanalové	10	218 640,00 Kč	2 186 400,00 Kč	Záznam a stream min. dvou nezávislých zdrojů, H.264/MPEG AVC komprese (High, Main, Baseline, úroveň 4.1, 4.0, 3.2, 3.1, 3.0) datový tok až 10Mbps, podporované rozlišení min. 1080p, interní min. 400GB SSD, CIFS/SMB automatický upload, singlecast/multicast stream, min. konektivita: 3x HDMI vstup (s HDCP), 1x kompozitní/komponentní vstup, 2x audio vstup, 1x HDMI výstup, audio výstup, 3x H.264/AVC stream, Ethernet rozhraní, RS232, montáž do 19" racku.	EXTRON SMP 352
4.3	Integrace ovládání v řídícím systému	15	3 600,00 Kč	54 000,00 Kč	Rozšíření softwaru ve stávajícím řídícím systému o funkce související se záznamem výuky.	Atyp řešení
4.4	Diskové úložiště	1	799 000,00 Kč	799 000,00 Kč	Rozšíření stávajícího diskového pole 3PAR 7200c (S/N: 1688309): - Pole má v současné době licence na neomezený počet HDD. - Pole má v současné době osazené všechny diskové police plným počtem HDD. - Pole má dnes HDD typu SAS 1,2 TB a NL 6 TB. - Požadujeme dodání potřebných diskových polic na 2,5" HDD. - Požadujeme dodání diskové kapacity 21 TiB užité kapacity při uvažovaném RAID5 5+1 a standardní SPARE konfiguraci. - Požadujeme dodání disků odpovídající kvalitou SAS 3Gb, 10 tisíc otáček, nebo lepší. - Požadujeme dodání veškeré potřebné kabeláže a rackových ližin. - Požadujeme odbornou instalaci dané kapacity do stávajícího pole jak po HW, tak po SW stránce. - Požadujeme podporu garantovanou výrobcem na dodávané disky a diskovou polici v úrovni 24x7 po dobu minimálně tří let s odezvou 4 hodiny. - Hardware musí být dodán zcela nový, plně funkční a kompletní (včetně příslušenství) a musí být určený pro český trh. - Je požadována technická podpora výrobce zařízení včetně poskytování aktualizace software (nové verze programového vybavení zařízení) po dobu minimálně 36 měsíců.	HP 3PAR
4.5	Integrace do elearningových systémů	1	480 000,00 Kč	480 000,00 Kč	Softwarová integrace do prostředí ČZU. Položka se skládá z dodávky detailní analýzy a návrhu požadovaného informačního systému, vytvoření požadovaného systému, instalace systému na HW zadavatele, dokumentace k systému a zaškolení zadavatelem určených správců systému. Základní požadavky na systém: 1. Informační systém ve třívrstvé architektuře (datová, aplikační a prezentační vrstva) pro pořízení, správu, zpracování a distribuci videí min. v kvalitě Full HD. 2. Hierarchický přístup do systému pomocí dvoufaktorové autentizace (LDAP AD, univerzitní identifikační karta typu Mifare Desfire). 3. Pořízení videa pomocí aplikace komunikující se záznamovým zařízením v poloze 4.1 a 4.2. Možnost nahrání videa do systému pomocí uživatelského uploadu. 4. Správa videí popisem záznamu pomocí uživatelských metadat. 5. Zpracování videí minimálně na úrovni vytvoření úvodních a závěrečných titulků, titulků ke kapitolám, základní střih (vyjmutí části videa). 6. Distribuce videí pomocí jejich přípravy pro encoding v uživatelsky nastavitelné kvalitě a jeho distribuci na centrální univerzitní stream server. 7. Součástí dodávky je i vytvoření nového modulu v univerzitním LMS Moodle pro přístup uživatelů k pořízeným videím. Odhadovaný rozsah prací je 500-600 hodin. Je požadována min. 5 letá podpora systému.	Atyp řešení
Celková částka				17 670 166,00 Kč		

4

P502HL-2

Laserový projektor

Produktový list



Zařízení NEC P502HL-2 - projektor s ultra nízkým požadavkem údržby, pro maximální všestranné využití

S projektorem NEC P502HL-2 ohromíte své obecenstvo ostrou kvalitou obrazu, a to i při náročných světelných podmínkách. Projektor byl vyvinut pomocí laserové světelné technologie, poskytuje až 20 000 hodin provozu bez potřeby údržby a představuje převrat v oblasti délky životnosti projektorů tím, že odstraňuje vysoké náklady za výměnu lampy. Vychutnejte si výhody integrované technologie NEC MultiPresenter, která vám umožňuje bezdrátové prezentování (vyžaduje volitelný USB WLAN adaptér) a těšte se z rychlého připojení pomocí 4-místného PIN kódu, který umožňuje bezdrátovou interakci s publikem.

Široký optický zoom, vertikální/horizontální posun objektivu a pokročilé možnosti připojení jako HDBaseT, nejkompaktnější laserový projektor na světě s jasnem 5000 ANSI lumenů, poskytuje možnost využití existujících prostředků, např. stropních držáků, a zabezpečení, aby byla vaše investice v budoucnu chráněna. Díky projekci obrazu s velikostí až 300 palců představuje projektor NEC P502HL-2 řešení, které je ideální do poslucháren, velkých konferenčních místností a učeben, prostorů muzeí a na zobrazování nápisů.

Výhody

Professional and Flexible Installation – versatile projection characteristics allow for simple positioning of the projector, making installation easy and potentially saving set up costs.

Bezdrátové sdílení obrazu – zrcadlete obraz zařízení Android s Miracast nebo jednoduše sdílejte obsah pomocí internetového prohlížeče díky výkonné schopnosti síťového propojení, což umožňuje uživatelům simultánní spojení.

Vysoká spolehlivost a nízké pořizovací náklady – díky laserovému světelnému zdroji s jasnem 5000 ANSI lmenů, který poskytuje až 20.000 h provozu bez údržby.

Skvělá propojitelnost – díky mnohým analogovým a digitálním připojovacím terminálům včetně HDBaseT, 2 x HDMI s podporou 3D.

Jednoduché naklonění a projekce v režimu Portrét – umožňuje tvořivé umístění v muzeích a k zobrazování nápisů.

Lepší barevná prezentace – nejlepší reprodukce barev, nyní s ještě přirozenějšími barvami pro věrný a realistický obraz.

Rychlejší vypínání – projektor se zchladí již 10 sekund po vypnutí.

Riziková skupina 2 Riziková skupina 2 vás ušetří námahy spojené s instalací a provozem – z důvodu dodržení podmínek rizikové skupiny 2 nejsou nutná žádná bezpečnostní opatření.

Informace o výrobcích

Název výrobku	P502HL-2
Skupina produktů	Laserový projektor
Objednací kód	60004400

Image

Projekční technologie	1-chip DLP™ Technology
Nativní rozlišení	1920 x 1080 (Full HD)
Aspect Ratio	16:9
Kontrastní poměr ¹	20000:1
Jas ¹	5000 ANSI lumenů
Lampa	Laserový světelný zdroj
Životnost lampy [hod.]	20000
Objektiv	F= 2–2,5, f= 18,2–31,1 mm
Posun čočky	H:±0,25, V:±0,62,-0
Posun čočky [%]	0-62
Korekce lichoběžníkového zkreslení	+/- 25° manuálně horizontální / +/- 30° manuálně vertikální
Projekční faktor	1,24 – 2,1 : 1
Projekční vzdálenost [m]	0,8 – 14,2
Velikost obrazovky (diagonální) [cm] / [palce]	Maximum: 762 / 300"; Minimum: 76.2 / 30"
Zoom	Manual; x1,7
Nastavení zaostření	Manual
Podporované rozlišení	1920x1200 (maximální rozlišení analogového vstupu); 1920 x 1080 (maximální rozlišení digitálního vstupu)
Frekvence	Horizontal: 15–100 kHz (RGB: 24 kHz); Vertikální: 50 – 120 Hz

Connectivity

ComputerAnalog	Vstup: 1 x Mini D-sub 15 pin Výstup: 1 x Mini D-sub 15 pin
Digital	Input: 1 x HDBaseT; 2 x HDMI™ podpora HDCP
Video	Vstup: 1 x RCA
Audio	Vstup: 1 x 3,5 mm Stereo Mini Jack pro Computer analog; 1 x RCA Stereo for Video; 2 x HDMI audio Výstup: 1 x 3.5 mm Stereo Mini Jack (variable)
Control	Vstup: 1 x D-Sub 9 pin (RS-232) (male)
LAN	1 x RJ45; Opcionální WLAN
USB	1 x Type B (for Service); 2 x Type A (USB 2.0)
3D synchronizace	Výstup: 1 x Mini DIN 3 kolík
Video signály	NTSC 3,58; NTSC 4,43; PAL; PAL-M; PAL-N; PAL60; SECAM

Remote Control

Dálkové ovládání	Audio Control; automatické nastavení; Eco Mode Control; funkce Freeze (zmrazení obrazu); funkce Magnify (zvětšení); funkce nápovědy; Korekce trapézu; Nastavení ID; nastavení obrazu; poměr stran; Power (On-OFF); Select (nahoru, dolů, doleva, doprava); strana (nahoru, dolů); vypnutí obrazu; výběr zdroje; Řízení prezentace myši
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Electrical

Napájení	100-240 V AC; 50 - 60 Hz
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Mechanical

Rozměry (W x H x D) [mm]	469 x 137 x 365 (bez objektivu a nožiček)
Hmotnost [kg]	8,8
Hlučnost ventilátoru [dB (A)]	31 / 39 (Eco / Normal)

Environmental Conditions

Operating Temperature [°C]	5 to 40
Operating Humidity [%]	20 to 80
Storage Temperature [°C]	-10 to 50
Storage Humidity [%]	20 to 80

Ergonomics

Bezpečnost a ergonomie	CE; ERP; RoHS; TUEV Type Approved
Speakers [W]	1 x 20 (mono)

Další funkce

Speciální Charakteristika	3D ready; Bezpečnostní Kensington slot; Carbon Savings metr; funkce Auto Power ON/OFF; Funkce Control ID; funkce Direct Power-Off; Funkce MultiPresenter; Funkce rychlého spuštění Quick Start; Geometric correction by software; Konektivita Miracast; manuální korekce podle barvy zdi; Nastavení světelného zdroje; NaViSet Administrator 2; nápověda; ochrana heslem; OSD v 27 jazycích; Ovládání HTTP prohlížeče; Ovládání myši s USB displejem; Plug&Play W-LAN Option; Režim konstantního jasu; simulace DICOM; Testovací vzor; Timer-Function; Unique Power Saving Functions; USB displej se zvukem; USB Viewer; Virtual Remote for direct PC control; volitelné uživatelské logo; výběr zdroje s funkcí Pip; Zvětšení; zámek klávesnice; Časovač vypnutí
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Environmentální vlastnosti

Ecological Materials	Downloadable manuals; ECO packaging
Ecological Standards	ErP compliant; RoHS compliant

Warranty

Projektory	3 roční celoevropský servis
Zdroj světla	3 roky/roků nebo 10000h (podle toho, co nastane dříve)

Shipping Content

Obsah balení	bezpečnostní nálepka; IR dálkové ovládání (RD-472E); Mini D-SUB signální kabel (1,8 m); napájecí kabel (1,8 m); projektor; Rychlý instalační průvodce; Utility software; uživatelský manuál
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Optional Accessories

Volitelné příslušenství	3D brýle (Volfoni-Fit podporující technologii DLP-Link; Bezdrátový modul LAN (NP05LM2; NP05LM4; NP05LM5); Bezplatná aplikace Wireless Image Utility; Cable Cover (NP08CV); Emitter XpanD 3D RF (AD025-RF-X1); univerzální stropní držák (PJ01UCM, PJ02UCMPF); XpanD 3D brýle (X105-RFX2)
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¹ Compliance with ISO21118-2012



TUEV Type
Approved



CE



RoHS

Tento výrobek je vybaven laserovým modulem a je klasifikován jako zařízení třídy 1 podle normy IEC60825-1, 3. vydání z roku 2014, a jako zařízení RG2 podle normy IEC62471-5, 1. vydání z roku 2015.
NEDÍVEJTE SE DO PAPRSKU.

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Specifications

IN1608 xi

Video input

Number/signal type	
Local input	2 RGB, RGBcvs, component video (YUVi/YUVp/HDTV), S-video, composite 4 HDMI/DVI (HDCP compliant)
Remote inputs	2 DTP 330 (HDCP compliant)
Connectors	2 female 15-pin HD 4 female HDMI type A 2 female RJ-45 connectors
HDMI equalization	Automatic
HDMI input cable length	Up to 75' (22.9 m) for all supported input rates
Nominal level	1 Vp-p for Y of component video and S-video, and for composite 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	Analog: 0.0 V to 1.0 Vp-p with no offset at unity gain
Impedance	75 ohms
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency	24 Hz to 75 Hz
Resolution range	640x480 to 1600x1200 and 1920x1200* NTSC, PAL, SECAM, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, and 2K *reduced blanking
Return loss	>30 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

Video processing

Decoder	12 bit digital (3D adaptive comb filter)
Analog sampling	12 bits per color; 13.5 MHz standard (video) 170 MHz standard (RGB)
Digital pixel data bit depth	8, 10, or 12 bits per channel; 165 MHz pixel clock (HDMI)
Colors	1 billion (10 bit processing)

Video output

Number/signal type	
Local output	2 HDMI/DVI (HDCP compliant)
Remote output	1 DTP 330 or HDBaseT (configurable HDCP compliant)
Connectors	2 female HDMI 1 female RJ-45 connector
HDMI peripheral device power	200 mA per output
Scaled resolution	640x480 ^{5,8,9} , 800x600 ^{6,8,9} , 852x480 ^{6,8,9} , 1024x768 ^{6,8,9} , 1024x852 ^{6,8,9} , 1024x1024 ^{6,8,9} , 1280x768 ^{6,8,9} , 1280x800 ^{6,8,9} , 1280x1024 ^{6,8,9} , 1360x765 ^{6,8,9} , 1360x768 ^{6,8,9} , 1365x768 ^{6,8,9} , 1365x1024 ^{6,8,9} , 1366x768 ^{6,8,9} , 1400x1050 ^{6,8} , 1440x900 ^{6,8,9} , 1600x900 ^{6,8} , 1600x1200 ^{6,8} , 1680x1050 ^{6,8} , 1920x1200 ^{6,8} HDTV 480p ^{7,8} , 576p ⁶ , 720p ^{3,4,5,6,7,8} , 1080i ^{6,7,8} , 1080p ^{1,2,3,4,5,6,7,8} , 2048x1080 ^{1,2,3,4,5,6,7,8} ¹ = at 23.98 Hz, ² = at 24 Hz, ³ = at 25 Hz, ⁴ = at 29.97 Hz, ⁵ = at 30 Hz, ⁶ = at 50 Hz, ⁷ = at 59.94 Hz, ⁸ = at 60 Hz, ⁹ = at 75 Hz

Sync

Input type	RGBHV, RGBS, RGsB, RGBcvS, bi-level or tri-level component video
Input standards.....	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	2.75 V to 5.0 Vp-p for RGBHV or RGBS 0.6 Vp-p for component video with tri-level sync 0.3 Vp-p for component video with bi-level sync or RGsB
Input impedance.....	Horizontal: 510 ohms Vertical: 510 ohms
Max. input voltage.....	5.0 Vp-p

Shielded twisted pair interconnection

Connectors	3 female RJ-45
Termination standard.....	TIA/EIA-T568B
Signal transmission distance	
DTP 330.....	Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable
HDBaseT.....	Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable
Cable requirements.....	Solid conductor, 24 AWG or better
Cable recommendations	400 MHz bandwidth, STP (shielded twisted pair)

NOTE: Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

NOTE: Output signals:

DTP: HDMI with embedded audio, analog audio, RS-232 and IR, and remote power

HDBaseT: HDMI with embedded audio, RS-232, and IR

Audio

Gain.....	Unbalanced output: -6 dB; balanced output: 0 dB
Frequency response	20 Hz to 20k Hz, ± 0.5 dB
THD + Noise	<0.1%, 20 Hz to 20k Hz at nominal level
S/N	>90 dB at maximum balanced output (unweighted)
Crosstalk	≤ -80 dB @ 1 kHz, fully loaded
Stereo channel separation.....	>80 dB @ 1 kHz
Bass	+12 dB to -24 dB @ 100 Hz
Treble.....	+12 dB to -24 dB @ 8 kHz

Audio input

Number/signal type.....	8 stereo line level balanced or unbalanced 2 mono mic/line level balanced or unbalanced (with available phantom power) 4 stereo, de-embedded from HDMI (PCM only) 2 DTP (de-embedded from HDMI [PCM only], or remote balanced/unbalanced, analog)
Connectors	(6) 3.5 mm captive screw connectors, 5 pole for line (2) 3.5 mm captive screw connectors, 3 pole for mic/line 4 female HDMI type A 2 female RJ-45 connectors
Impedance.....	>10k ohms unbalanced, >20k ohms balanced
Nominal level.....	Line inputs: +4 dBu, -10 dBV, adjustable Mic/line inputs: -60 dBV, +4 dBu, -10 dBV, adjustable
Maximum level	+21 dBu at rated THD+N when input gain is set to 0 dB
CMRR.....	>80 dB @ 1 kHz

Specification • IN1608 xi (Continued)

Input gain adjustment.....	Line inputs: -18 dB to +24 dB, 1 dB steps, adjustable per input Mic/line inputs: -18 dB to +60 dB, 1 dB steps, adjustable per input LPCM-2Ch: -18 dB to +24 dB, 0.1 dB steps, adjustable per input
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NOTE: Unbalanced analog inputs applied at a DTP transmitter input have +12 dB of gain applied to bring the signal to a nominal level for balanced operation.

DC phantom power	+48 VDC $\pm$ 10% (can be switched on or off per mic/line input)
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Audio output

Number/signal type	
Local outputs	1 balanced or unbalanced stereo (variable) 1 balanced or unbalanced stereo; can be configured as stereo or two independently mixed mono channels 2 HDMI embedded
Remote output	1 DTP (embedded digital and remote balanced/unbalanced analog) or 1 HDBaseT (embedded digital)
Connectors	(2) 3.5 mm captive screw connectors, 5 pole 2 female HDMI 1 RJ-45 connector
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Gain error.....	$\pm$ 0.5 dB channel to channel
Maximum level (Hi-Z).....	>+20 dBu, balanced; >+14 dBu, unbalanced
Output volume range	0 to -100 dB in 1 dB steps

NOTE: System gain for the analog DTP receiver output is rated at -12 dB (unbalanced) and -6 dB (balanced).

Audio output — power amplifier (MA and SA models only)

Number/signal type	
Stereo models	1 stereo (default) or 2 mono (2 channels total)
Mono models	1 mono, 70 V line
Connectors	

NOTE: This connector accepts wires of 22 AWG to 12 AWG.

Stereo models	(1) 5 mm screw lock captive screw connector, 4 pole
Mono models	(1) 5 mm screw lock captive screw connector, 2 pole
Load impedance	
Stereo models	4 ohms minimum
Mono models	50 ohms minimum
High pass filter — MA models only.	100 Hz, 12 dB/octave roll off
Frequency response	
Stereo models	20 Hz to 20 kHz, -3 dB to +1 dB @ 1 W
Mono models	100 Hz to 20 kHz, -3 dB to +1 dB @ 1 W
THD + Noise	<0.1% @ 1 kHz, 3 dB below clipping
S/N	>90 dB, 20 Hz to 20 kHz, unweighted
Amplifier type	Class D
Output power	
Stereo models	25 watts per channel, 8 ohms, 1 kHz, 0.1% THD 50 watts per channel, 4 ohms, 1 kHz, 0.1% THD
Mono models	100 watts (rms) @ 70 V, 1 kHz, 0.1% THD
Protection	Clip limiting, thermal, short circuit, DC output

Communications — scaling presentation switcher

Serial control port.....	1 bidirectional RS-232, 3.5 mm captive screw connector, 3 pole (rear panel)
Baud rate and protocol	9600, 8 data bits, 1 stop bit, no parity (default)
Serial control pin configuration	1 = Tx, 2 = Rx, 3 = Gnd
USB control port.....	1 front panel female mini USB B
USB standards	USB 2.0, high speed
All models except IPCP models	
Ethernet control port.....	1 female RJ-45 connector
Ethernet protocol	ARP, ICMP (ping), IP, TCP, DHCP, HTTP, Telnet
Ethernet data rate	10/100Base-T, half/full duplex with autodetect
Ethernet default settings	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer®

Communications — external device (pass-through, unidirectional or bidirectional) (RS-232/IR over DTP or RS-232/IR over HDBT)

NOTE: Protocol is mirrored between the connected twisted pair endpoints and the "Over DTP" or "Over TP" ports on the IN1608 xi. Signals from a control device pass into each IN1608 xi "Over DTP" or "Over TP" port, are embedded with the twisted pair signal, and sent to individual twisted pair Tx or Rx endpoints for control of remote sink or source devices. The "Over DTP" or "Over TP" IR connections are simply pass-through connections to twisted pair endpoints, and there is no IR insert from any IN1608 xi control port to "Over DTP" or "Over TP" ports. RS-232 can be inserted from the IN1608 xi Ethernet connection.

Serial control pass-through ports	
IN1608 xi input/DTP Tx	RS-232 via (2) 3.5 mm, 5 pole captive screw connectors (shared with IR ports)
IN1608 xi output/TP Rx	RS-232 via (1) 3.5 mm, 5 pole captive screw connector (shared with IR port)
Baud rates	Up to 115200 baud
Protocol	6 - 8 data bits 1 or 2 stop bits no parity (default) even or odd parity flow control = XON, XOFF, none
Serial control pin configuration	1 = Tx, 2 = Rx, 3 = Gnd
IR pass-through control ports.....	TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
IN1608 xi input/DTP Tx	(2) 3.5 mm captive screw connectors, 5 pole (shared with RS-232 ports)
IN1608 xi output/TP Rx	(1) 3.5 mm captive screw connector, 5 pole (shared with RS-232 port)
IR control pin configuration	3 = Gnd, 4 = IR Tx, 5 = IR Rx

Communications — IPCP Pro dual-NIC embedded control processor — IPCP models only

Memory	
SDRAM.....	512 MB
Flash	4.5 GB
Software and control options	
Software.....	Extron Global Configurator® Plus and Professional for Windows®
Control options.....	GlobalViewer®, Extron control for iPad and web, or TouchLink Pro touchpanels, or eBUS® button panels

Specification • IN1608 xi (Continued)

Ethernet control

Network interface controllers (NICs)	2: 1 LAN, 1 AV LAN
Network switch	1 AV unmanaged 3 port switch
Connectors	LAN: 1 female RJ-45 connector AV LAN: 3 female RJ-45 connectors
Data rate	10/100/1000Base-T, half/full duplex with autodetect
Protocols.....	DHCP, DNS, HTTP, HTTPS, ICMP, NTP, SFTP, SMTP, SNMP, SSH, TCP/IP, UDP/IP
Default settings	
LAN.....	Link speed and duplex level = autodetected IP address = 192.168.253.250 Subnet mask = 255.255.255.0 Gateway = 0.0.0.0 DHCP = off DNS: 127.0.0.1
AV LAN.....	Link speed and duplex level = autodetected IP address = 192.168.254.250 Subnet mask = 255.255.255.0 Gateway = 0.0.0.0 DHCP server = disabled DNS: 127.0.0.1
DHCP server disabled ...	IP address = 192.168.254.250 DNS: 127.0.0.1
DHCP server enabled....	IP address = 192.168.254.1 Dynamic leased IP address pool = 192.168.254.100 - 192.168.254.149 Maximum lease count = 50 Lease time = 24 hours

Serial control

Quantity/type.....	1 bidirectional RS-232, RS-422, RS-485 (port 1) 2 bidirectional RS-232 (ports 2 and 3)
Connectors	(1) 3.5 mm captive screw connector, 5 pole (2) 3.5 mm captive screw connectors, 3 pole
Baud rate and protocol.....	300 to 115200 baud (9600 baud = default); 8 (default) or 7 data bits; 1 (default) or 2 stop bits; no parity (default), even, or odd parity

NOTE: The 5-pole ports support both hardware and software flow control.
The 3-pole ports support software flow control.
The default for both types of ports is no flow control.

Pin configurations, serial, 5-pole captive screw

RS-232 (default).....	Pin 1 = Tx, 2 = Rx, 3 = Gnd, 4 = RTS, 5 = CTS
RS-422.....	Pin 1 = Tx-, 2 = Rx-, 3 = Gnd, 4 = Tx+, 5 = Rx+
RS-485.....	Pins 1 and 2 (tied together) = data-, 3 = Gnd, 4 and 5 (tied together) = data+

Pin configurations, serial,

3-pole captive screw	Pin 1 = Tx, 2 = Rx, 3 = Gnd
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Digital I/O control

Quantity/type.....	4 digital input/output (configurable)
Connectors	(1) 3.5 mm captive screw connector, 5 pole

Digital inputs

Input voltage range	0 to 24 VDC, clamped at +30 VDC
Input impedance.....	>10k ohms
Programmable pullup.....	1k ohms to +5 VDC
Threshold low to high.....	>2.8 VDC
Threshold high to low.....	<2.0 VDC

Digital outputs 250 mA sink from 24 VDC max.

Pin configurations..... 1, 2, 3, 4 = digital I/Os 1, 2, 3, 4; 5 = Gnd

Specification • IN1608 xi (Continued)

IR/serial control	
Quantity/type.....	2 programmable: unidirectional RS-232 (± 5 V), or TTL level (0 to 5 V) infrared (carrier and non-carrier) up to 300 kHz
Connector	(1) 3.5 mm captive screw connector, 5-pole
Baud rate and protocol (RS-232).....	300 to 115200 baud (9600 baud = default); 8 (default) or 7 data bits; 1 (default) or 2 stop bits; no parity (default), even, or odd parity
Pin configurations.....	For each port, pin 1 = signal, 2 = Gnd
IR output carrier frequency	30 kHz to 300 kHz
Relay control	
Quantity/type.....	4 normally open relays
Relay control connectors	(1) 3.5 mm captive screw connector, 6 pole
Relay control contact rating	24 VDC, 1 A
eBUS control	
eBUS control ports.....	(1) 3.5 mm captive screw connector, 5 pole (uses 4 poles)
eBUS pin configuration.....	+V = +12 VDC; +S = + signal; -S = - signal; G = ground
Recommended cable type.....	Extron STP20-2/1000 or STP20-2P/1000 cable
Maximum system cable length	1000 feet (305 meters) sum total for the eBUS system, regardless of topology. Power injection may be required depending on system cabling topology and primary power supply wattage. See the eBUS Technology Reference Guide for details.
eBUS power output.....	6 watts

General

Power supply.....	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	
Full load (amp output at 1/8 power)	
IN1608 xi.....	42 watts
All xi amplifier models except IPCP models	67 watts
All xi IPCP models.....	76 watts
Power save mode	
IN1608 xi.....	<33 watts
All xi amplifier models except IPCP models	<42 watts
All xi IPCP models.....	<47 watts
Remote power capability	
HDBaseT mode.....	Supports up to two endpoints (two DTP Tx)
DTP mode.....	Supports up to three endpoints (two DTP Tx, one DTP Rx)
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling.....	Fans, air flows right to left (as viewed from front panel)
Fan noise.....	<37 dB(A) at 1 m
Thermal dissipation	
Full load (amp output at 1/8 power)	
IN1608 xi.....	123 BTU/hr
All xi amplifier models except IPCP models	149 BTU/hr
All xi IPCP models.....	179 BTU/hr
Power save mode	
IN1608 xi.....	<94 BTU/hr
All xi amplifier models except IPCP models	<110 BTU/hr
All xi IPCP models.....	<144 BTU/hr

Specification • IN1608 xi (Continued)

Mounting

Rack mount..... Yes, with included, pre-installed brackets

Enclosure type..... Metal

Enclosure dimensions

IN1608 xi..... 1.72" H x 17.5" W x 9.5" D (1U high, full rack wide)
(4.4 cm H x 44.4 cm W x 24.1 cm D)
(Depth excludes connectors and knobs. Width excludes rack ears.)

All other models..... 3.47" H x 17.5" W x 9.5" D (2U high, full rack wide)
(8.8 cm H x 44.4 cm W x 24.1 cm D)
(Depth excludes connectors and knobs. Width excludes rack ears.)

Product weight

IN1608 xi..... 5.0 lbs (2.3 kg)

All amplifier models
except IPCP models..... 7.4 lbs (3.4 kg)

All IPCP models..... 7.9 lbs (3.6 kg)

Vibration ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

Safety..... CE, c-UL, UL

EMI/EMC..... CE, C-tick, FCC Class A, ICES, VCCI

Environmental..... Complies with the appropriate requirements of RoHS, WEEE.

Warranty 3 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.

4135-D2

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High Speed HDMI™ cable with Ethernet

High-speed cable for HD and 3D TV

Experience movies and games in crystal clear, high resolution, stunning quality, also in 3D. What does this cable do to an audio video signal? Nothing at all. But this is what makes it perfect. Due to having the purest materials, most precise workmanship and state-of-the-art technology it connects your TV to other devices and the internet. This is how it should be for ultimate high end equipment. This way you make sure your experience will be as it was intended.

- silver plated copper conductor and 4 layers of shielding for optimum signal quality
- shielded high precision full metal connector
- High Speed HDMI™ for 3D and HDTV up to 4K (2160p) for cables up to 7.5 m of length
- Standard HDMI™ for 3D and HDTV up to Full HD (1080p) for cables starting from 10 m of length
- integrated Ethernet channel saves additional network or audio cables
- 24 carat gold plated contacts for minimum transfer resistances



Designed in
Germany

10 Years
Warranty

High-Quality
Assurance

SPC

99,99% Silver
Plated Copper

24 Carat
Gold

Anti Resistance
Connections

4x

Cable
Shielding



Technical Data

Connectors

Plug material:	High precision full metal
Contact material:	24-Karat gold plated
Shielding:	yes
Port 1, type:	HDMI™ connector (type A)
Connector 1, connector length (mm):	42.1 (0.5-3 m) 47.3 (5-20 m)
Connector 1, connector width (mm):	20.4 (0.5-3 m) 20.9 (5-20 m)
Connector 1, connector height (mm):	11,4
Port 2, type:	HDMI™ connector (type A)
Connector 2, connector length (mm):	42.1 (0.5-3 m) 47.3 (5-20 m)
Connector 2, connector width (mm):	20.4 (0.5-3 m) 20.9 (5-20 m)

Connector 2, connector 11,4

height (mm):

Cable

Type:	Round cable
Length (m):	0.5 – 1 – 1.5 – 2 – 3 – 5 – 7.5 – 10 – 15 – 20
Inner conductor material:	SPC (silver plated, oxygen free copper)
Inner conductor diameter (mm):	1x0.250 (0.5-3 m) 1x0.410 (5 m) 7x0.20 (7.5-20 m)
AWG:	30 (0.5-3 m) 26 (5 m) 24 (7.5-20 m)
Number of shieldings:	4 x
Type of 1st shielding	Aluminium foil
Type of 2nd shielding	Copper braid 112 wires x 0.10 mm cross section (0.5-3 m) Copper braid 160wires x 0.10 mm cross section (5-20 m)
Type of 3rd shielding	Aluminium foil
Type of 4th shielding	fully conductive and shielding PVC
Outer sheath material:	highly elastic PVC
Outer sheath diameter (mm):	6 (0.5-3 m) 8 (5 m) 9.5(7.5-20 m)
Kink protection:	on both sides

Signal transmission

Transmission modes:	digital audio and video signals
max. Bandwidth (MHz):	340 (0.5-7.5 m) 195 (10 m) 75 (15-20 m)
max. transfer rate (Gb / s)	10.2 (0.5-7.5 m) 4.95 (10 m) 2.25 (15-20)
max. resolution:	4K (2160p) (0.5-7.5 m) Full HD (1080p) (10-20 m)
supported color spaces:	16/24 bit RGB/YUV, Deep Color, x.v.Color™
supported audio standards:	Audio-Return Channel (ARC), Dolby Digital/Plus, Dolby TrueHD, DTS-HD Master Audio™, DVD-Audio, SA-CD
other supported standards:	HDMI™ Ethernet Channel (HEC), 3D, HDCP, CEC, 4K (2160i/p), Full HD (1080i/p), HD ready (720i/p), SDTV (480i/p)

Characteristic	100
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impedance (Ω):	
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General	
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Operating temperature	-10 / +80
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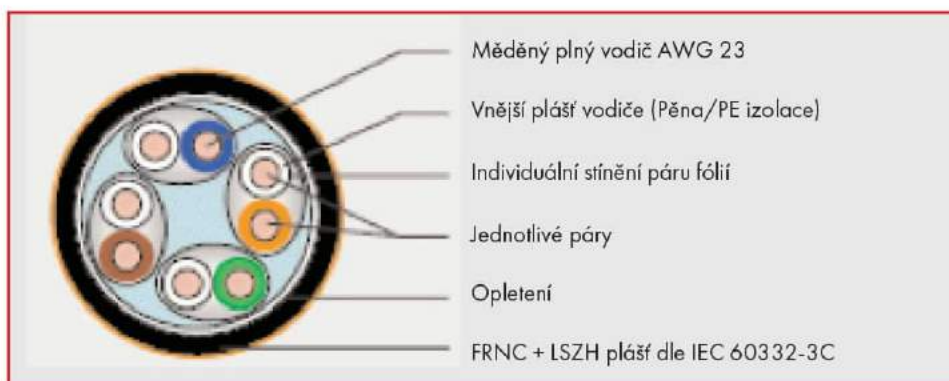
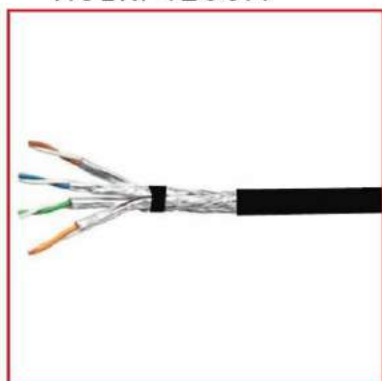
from / to ($^{\circ}\text{C}$):	
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Certification:	(ATC) Authorized Testing Centers
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Warranty (years):	10
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TECHNICKÝ LIST:

KABEL S/FTP KATEGORIE 6_A 4x2xAWG23/1 LSOH-3 (IEC 60332-3C) HSEKP4233A



APLIKACE A POUŽITÍ

Kabel HSEKP4233A – S/FTP kategorie 6_A je specifikován pro přenos signálu do 500 MHz. Plně odpovídá požadavkům kategorie 6_A dle EN 50288 a IEC 61156-2. Výkonové charakteristiky ho předurčují k přenosu aplikací třídy E_A, tedy 10 Gigabitového Ethernetu dle IEEE 802.3an. Kabel má vynikající přenosové parametry, mimo jiné skew a propagation delay. Individuální stínění každého datového páru (PiMF konstrukce) včetně celoplášťového opletení výrazným způsobem snižuje vliv parametrů NEXT a ANEXT včetně jejich variant (FEXT, POWERSUM,....). Kabel lze využít jako páteřní kabel v datových centrech, kde je požadován 10 Gb Ethernet, též jako záložní okruh páteřní optické trasy.

SCHRACK INFO

- Měřený výkon: třída E_A, 500 MHz
- Plně odpovídá požadavkům na kategorii 6_A podle EN 50288 a IEC 61156-5
- Vynikající přenosové charakteristiky
- Individuální stínění jednotlivých párů (PiMF)
- Standardní barevné značení vodičů (párů): bílá/modrá, bílá/oranžová, bílá/zelená, bílá/hnědá
- Celkové opletení měděnými vodiči (30%)
- Bezhalogenový plášť
- Nehořlavý plášť podle IEC 60332-3C
- Oheň retardující plášť podle IEC 60754-2 a EN 50267
- Nízkokouřivý podle IEC 61034 a EN 50268

KONSTRUKČNÍ PROVEDENÍ

Objednací číslo	Kategorie	Průměr vodiče	Počet párů	Výhřevnost [MJ/m]	Bezhalogenový	Maximální tažná síla [N]	Vnější průměr [mm]	Váha [kg/km]
HSEKP4233A	6 _A	AWG 23	4	0,5	ano	113	7,2	49

Mechanická odolnost dle EN 50289-3-5: 1000 N/100mm/1 min (elektrické a přenosové vlastnosti podle EN 50288-4-1 jsou zachovány).

■ ELEKTRICKÉ VLASTNOSTI PŘI TEPLOTĚ 20 °C

- Maximální impedance ve smyčce: 165 Ω /km
- Maximální odchylka impedance: 1%
- Rázová odolnost: > 5000 M Ω x km
- Charakteristická impedance: < 10 m Ω na 1 metr při 10 MHz
- NVP: > 10 MHz (NVP*c): 0.79 c
- Propagation delay: $\geq$ 10 MHz: 4.2 ns/m
- Skew: < 25 ns/100m
- Typická hodnota vazebního útlumu: 80 dB

Frekvence [MHz]	1	10	16	20	31,25	62,5	100	250	500
Útlum v dB/100 m dle standardu*	2,1	5,9	7,5	8,4	10,5	15	19,1	31,1	45,3
Útlum [dB/100 m]	1,8	5,3	6,8	7,6	9,6	13,6	17,3	27,7	41,9
NEXT v dB/100m dle standardu*	75,3	60,3	57,2	55,8	52,9	48,4	45,3	39,3	34,8
NEXT [dB/100 m]	>100	>100	>100	>100	>100	97	95	90	83
PSNEXT v dB/100 m dle standardu*	72,3	57,3	54,2	52,8	49,9	45,4	42,3	36,3	31,8
PSNEXT [dB/100 m]	98	98	98	98	98	95	93	88	81
ACR-F v dB/100m dle standardu*	68	48	43,9	42	38,1	32,1	28	20	14
ACR-F [dB/100 m]	93	93	93	93	90	86	83	70	57
PS ACR-F v dB/100 m dle standardu*	65	45	40,9	39	35,1	29,1	25	17	11
PS ACR-F [dB/100 m]	90	90	90	90	87	83	80	67	54
ACR-N v dB/100m dle standardu*	73,2	54,4	49,8	47,4	42,4	33,4	26,2	8,3	-10,4
ACR-N [dB/100 m]	98,2	94,7	93,2	92,4	90,4	83,4	77,7	62,3	41,1

*] Standard: ISO/IEC 61156-5

■ MECHANICKÉ VLASTNOSTI

- Teplotní rozsah - instalační: 0 °C až + 50 °C
- Teplotní rozsah - provozní: -20 °C až + 60 °C
- Minimální poloměr ohybu - provozní: 3 x vnější průměr kabelu
- Minimální poloměr ohybu - instalační: 8 x vnější průměr kabelu

POPIS	OBSAH MĚDI [kg/km]	OBJEDNACÍ ČÍSLO
Kabel S/FTP PiMF kategorie 6A 500 MHz 4x2xAWG23, IEC 332-3C, černý	24	HSEKP4233A

SpeechLine DW

SpeechLine Digital Wireless System Specification

FEATURES

- Automatic frequency and interference management
- Speech optimized gain automatics
- License free 1.9 GHz frequency range
- Secure 256 bit AES encryption
- Remote control via Ethernet
- Advanced power management and Li-Ion rechargeables
- Up to 20 channels per range



SpeechLine Digital Wireless is a presentation solution dedicated to speech. The digital wireless microphone system is a future-proof solution that's easy to set up, use and manage. A microphone which lets the presenter concentrate on their words, not on the technology.

SpeechLine Digital Wireless comprises of mobile transmitters (hand-held or bodypack) tailored for presentation, speech optimized microphone capsules (condenser capsules, lavalier or headworn microphone) and an easy-to-integrate stationary receiver. For convenience, the system relies on lithium-ion technology with a battery lifetime of more than 15 h and flexible charging solutions of multi-device chargers or USB-charging on the fly. Thanks to the Automatic Frequency Management, the system always finds a free frequency (no frequency planning is necessary anymore). The Automatic Interference Management always maintains a stable connection, which makes the system very reliable. The Automatic Sensitivity Management makes the setup even more convenient, no more gain settings are required. With seamless network integration the system can be controlled via AMX, Crestron or a dedicated remote control software, which makes SpeechLine DW easy to monitor and to manage.

For secure communication, SpeechLine Digital Wireless uses the secure advanced 256-bit AES encryption for secure wireless transmission.

Due to the 1.9 GHz frequency range SpeechLine DW is the future proof of investment and already DD ready. Moreover, the 1.9 GHz is license free and requires no registration.

ARCHITECT'S SPECIFICATION

A wireless RF transmission system designed for presentation use and other applications where maximum speech intelligibility is required.

The system shall consist of a stationary receiver, a handheld transmitter with a condenser microphone head and a bodypack transmitter with a condenser clip-on or headset microphone and shall be available in different sets of receiver/transmitter/microphone combinations. The system shall also feature a Dante™ interface for use with the microphone receivers designed to add analog mic/line inputs to a Dante™ system.

Operating in the license-free 1.9 GHz band (frequency ranges are between 1,880 and 1,930 MHz, depending on country-specific regulations), the system shall use automatic frequency management to determine the best free available frequency and to automatically start the transmission. Additionally, the system shall incorporate automatic interference management, allowing the transmitter and receiver to move to an undisturbed, compatible frequency with no audio signal interruption, should interference occur. Furthermore, advanced 256-bit AES encryption shall be used for secure wireless transmission.

To allow optimum use of the 1.9 GHz frequency band, the system shall offer two operating modes: Adaptive Power Mode for up to 20 links used simultaneously and Multi-Room Mode. In Multi-Room Mode, the transmission power shall be adjustable in steps to adapt the coverage to the corresponding room size in order to allow a significantly larger number of links. This makes the system the optimum solution for a great variety of projects with widely differing installation sizes at the same location.

Furthermore, the system shall be compatible with Sennheiser software for network-based remote setup, control and monitoring of large installations with hundreds of devices.

The system's AF frequency response shall range from 20 – 20,000 Hz. The dynamic range shall be > 120 dB(A). Total harmonic distortion (THD) at 1 kHz shall be typical 0.1 %. Signal-to-noise ratio shall be > 90 dB(A). Latency shall be 19 ms. Operating temperature shall range from -10 °C to +55 °C (+14 °F to +131 °F).

Architect's Specification continued

The user interface of the receiver shall be operated by jog dial and OLED display. The receiver shall have dedicated pairing, escape and power buttons.

The receiver shall feature a low-cut filter as well as speech-optimized sound profiles or custom settings with a 7-band graphic equalizer. The receiver's RF sensitivity shall be -90 dBm. RF output power of the receiver's back channel shall be adaptive and up to 250 mW (country-specific).

The receiver's audio output shall utilize a balanced XLR-3M socket with a maximum output of +18 dBu along with two unbalanced RCA sockets with a maximum output of +6 dBu. The receiver shall feature automatic gain optimization. Two reverse SMA sockets shall be provided for connecting the antennas.

The receiver shall feature RJ-45 network connectivity compatible with IPv4 and IPv6 networks. For remote control the receiver shall have media control protocol integration.

The receiver shall operate on 12 V DC power supplied from the NT 12-4C power supply unit (100-240 V AC, 50/60 Hz, for use in the USA, the UK, and Europe) or the NT 2-3 power supply unit (100-240 V AC, 50/60 Hz, for use in countries other than the USA, the UK, and Europe). Power consumption shall be 350 mA. The dimensions shall be approximately 168 x 212 x 43 mm (6.61" x 8.35" x 1.69"). Weight shall be approximately 828 grams (1.83 lbs). The receiver shall be the Sennheiser SL Rack Receiver DW.

The transmitters shall be powered by either one Sennheiser Lithium-Ion rechargeable accupack with a typical operating time of 15 hours or with an optional battery case for two 1.5V AA size batteries. The accupack can be quickly charged through a wide variety of charging options, including micro USB. The accupack shall have charging contacts on the outside for charging in the dedicated CHG 2 charger.

The handheld transmitter shall be equipped with a mute switch, which can be deactivated via the user interface. The handheld transmitter's AF frequency response shall range from 50 – 20,000 Hz. RF output power shall be adaptive and up to 250 mW (country-specific). The handheld transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 215 x 40 mm (8.46" x 1.57"). Weight (with microphone head, without accupack) shall be approximately 262 grams (9.24 oz). The handheld transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The handheld transmitter shall be the Sennheiser SL Handheld DW.

The microphone head suitable for use with the handheld transmitter shall be a condenser type with a super-cardioid pick-up pattern and a sensitivity of 1.6 mV/Pa. Maximum sound pressure level shall be 152 dB SPL. The microphone head shall be the Sennheiser MME 865-1.

The bodypack transmitter's microphone/line input shall utilize a lockable 3.5 mm jack socket. The AF frequency response shall range from 50 – 20,000 Hz (mic) and from 20 – 20,000 Hz (line). RF output power shall be adaptive and up to 250 mW (country-specific). The maximum input level shall be 2.2 Vrms (mic) or 3.3 Vrms (line). Input impedance shall be 1 MΩ (line). The bodypack transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 100 x 65 x 24 mm (3.94" x 2.56" x 0.94"). Weight (without accupack) shall be approximately 88 grams (3.10 oz). The bodypack transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The bodypack transmitter shall be the Sennheiser SL Bodypack DW.

The microphone suitable for use with the bodypack transmitter shall be a condenser type with an omni-directional pick-up pattern and a sensitivity of 5 mV/Pa. Maximum sound pressure level shall be 142 dB SPL. The clip-on microphone shall be the Sennheiser MKE 1 and the headset microphone shall be the Sennheiser SL Headmic 1.

The Dante™ interface shall feature four balanced and RF filtered mic/line inputs on female XLR-3 connectors and two RJ-45 Ethernet connectors to allow Dante™ daisy chaining (DDC) of multiple units. Audio frequency response shall range from 20 – 20,000 Hz. Input impedance shall be > 1.8 kΩ at any gain setting. Equivalent input noise shall be -113 dBu. The Dante™ interface shall be powered over the CAT5 Ethernet cable from an 802.3af PoE compliant network switch or from an external +12 V DC power supply. The unit shall support daisy chaining of two units when powered via PoE and shall accept daisy chaining of up to three units when powered via an external +12 V DC power supply. Power consumption shall be 2.7 W (225 mA) @ +12 V DC without phantom power and 5.5 W (460 mA) @ +12 V DC with a 10 mA phantom power load per input. The Dante™ interface shall have a rugged metal housing with integrated mounting brackets; dimensions (W x H x D) shall be 219 x 38 x 120 mm (8.63" x 1.50" x 4.74"). Weight shall be 0.77 kg (1.7 lbs). Operating temperature shall range from 0 °C to 40 °C (32 °F to 104 °F).

The Dante™ interface shall be the Sennheiser SL DI 4 XLR.

The wireless RF transmission system shall be the Sennheiser SpeechLine Digital Wireless.

Architect's Specification continued

The software shall enable the user to set up, control and monitor all components of a SpeechLine Digital Wireless system via a network. The browser-based responsive software shall be accessible across all platforms from any device (e.g. tablet, computer) in the network. The software shall provide a complete overview of all network-enabled SpeechLine Digital Wireless devices together with status information such as link status, battery life information, alerts and notifications. The software shall allow the user to edit settings of one device or multiple devices at a time. The software shall also feature a room list view, which shows the locations of all devices in the network as well as the number of devices per room.

The software shall be the Sennheiser Control Cockpit

SPECIFICATIONS**System**

AF frequency response	20 to 20,000 Hz
Dynamic range	> 120 dB(A)
THD (1 kHz)	typ. 0.1 %
Audio sampling	24 bit/48 kHz
Signal-to-noise ratio	> 90 dB(A)
Encryption	AES 256
RF frequency ranges	EU: 1,880 to 1,900 MHz USA: 1,920 to 1,930 MHz Brazil: 1,910 to 1,920 MHz Taiwan: 1,880 to 1,895 MHz Japan: 1,893 to 1,906 MHz
Modulation	GFSK with back channel
Transmission method	TDMA, space diversity
Latency	19 ms
Relative air humidity	max. 95 %
Temperature range*	Operation: -10 °C to 55 °C (14 °F to 131 °F) Storage: -20 °C to 70 °C (-4 °F to 158 °F)

* The temperature range is influenced by the battery characteristics

SL Rack Receiver DW

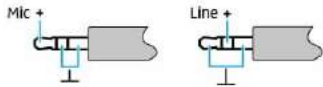
RF sensitivity	< -90 dBm
RF output power back channel	adaptive, up to 250 mW (country-specific)
XLR output level, balanced	max. +18 dBu
RCA output level, unbalanced	max. +6 dBu
Audio effects	Low cut: -3 dB at 120 Hz Equalizer: 7-band graphic equalizer with sound presets Sound profiles: • Female Voice • Male Voice • Media
Display	OLED
Network protocol	Media Control Protocol, TCP/IP IPv4 (DHCP, manual)/ IPv6
Power supply	12 V DC
Current consumption	350 mA
AF connection sockets	XLR/2 x RCA
Antenna sockets	2 x reverse SMA
Network sockets	RJ-45
DC socket for power supply	hollow jack
Weight	approx. 828 g

SL Handheld DW

RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	50 to 20,000 Hz
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 10 (Li-Ion, 3.6 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 10 h
Display	LCD
Mute switch	available
Weight (w/o accupack)	approx. 262 g incl. microphone head

* optional accessory

SL Bodypack DW

RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	Mic: 50 to 20,000 Hz Line: 20 to 20,000 Hz
Max. input level	Mic: 2.2 V RMS Line: 3.3 V RMS
Line input impedance	1 MΩ
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 30 (Li-Ion, 3.7 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 11 h
AF connection socket	3.5 mm jack socket, lockable 
Weight (w/o accupack)	approx. 88 g

* optional accessory

Microphones

	MME 865-1	MKE 1	SL Headmic 1
Microphone type		pre-polarized condenser microphone	
Sensitivity	1.6 mV/Pa	5 mV/Pa	5 mV/Pa
Pick-up pattern	super-cardioid	omni-directional	omni-directional
Max. SPL	152 dB SPL	142 dB SPL	142 dB SPL

Power supply units (for SL Rack Receiver DW)

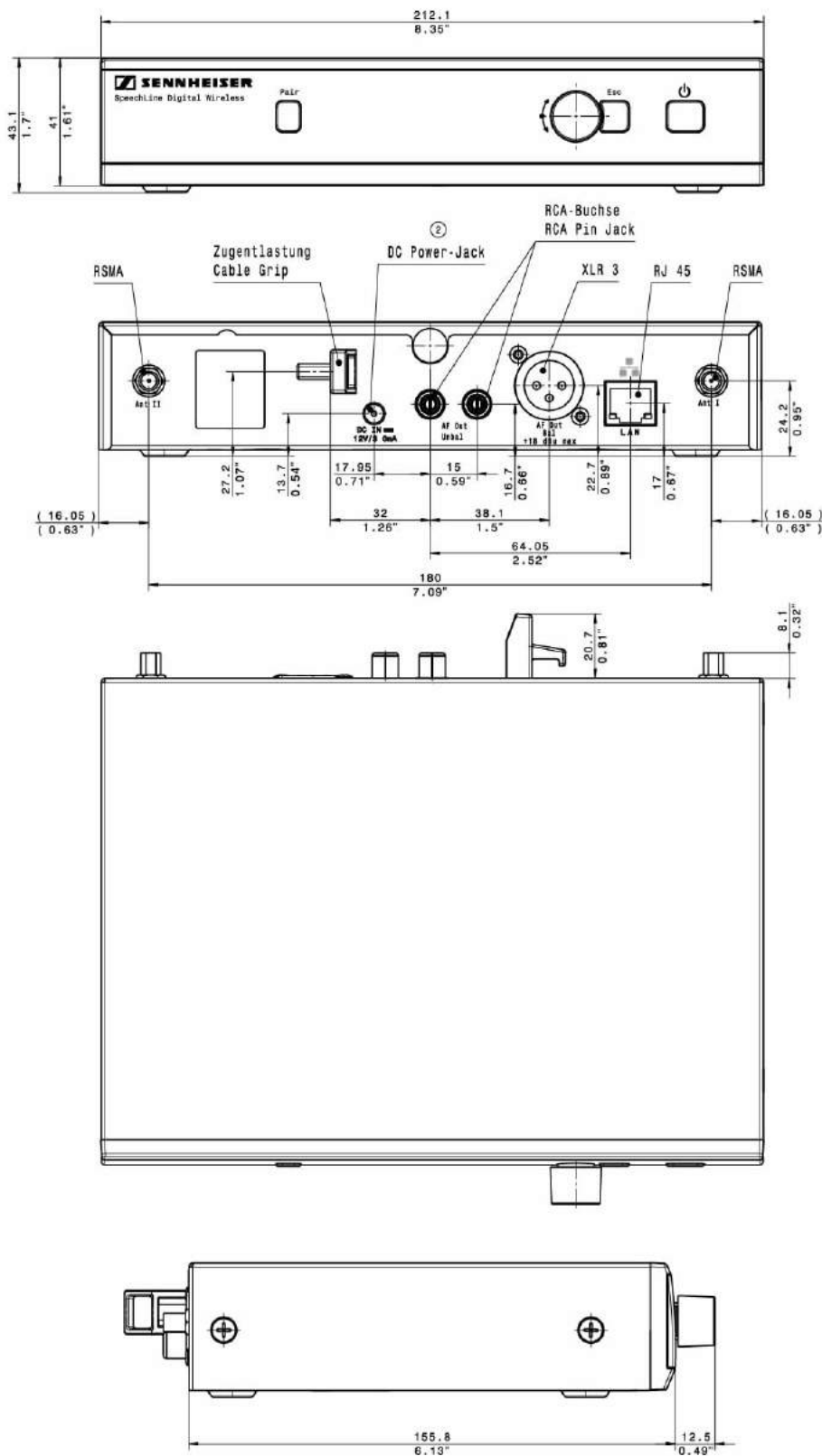
	NT 12-4C	NT 2-3
Nominal input voltage	100 to 240 V~	
Power frequency	50 or 60 Hz	
Input current	max. 120 mA	
Nominal output voltage	12 V — —	
Standby power consumption	≤ 0.3 W	
Energy efficiency level	V	IV
Operating temperature	-10 °C to 55 °C (14 °F to 131 °F)	
Storage temperature	-20 °C to +70 °C (-4 °F to 158 °F)	
Relative air humidity	max. 95 %	
Weight	approx. 100 g	approx. 105 g

Accupacks

	BA 10	BA 30
Charging capacity	2200 mAh	2030 mAh
Output voltage	3.6 V	3.7 V

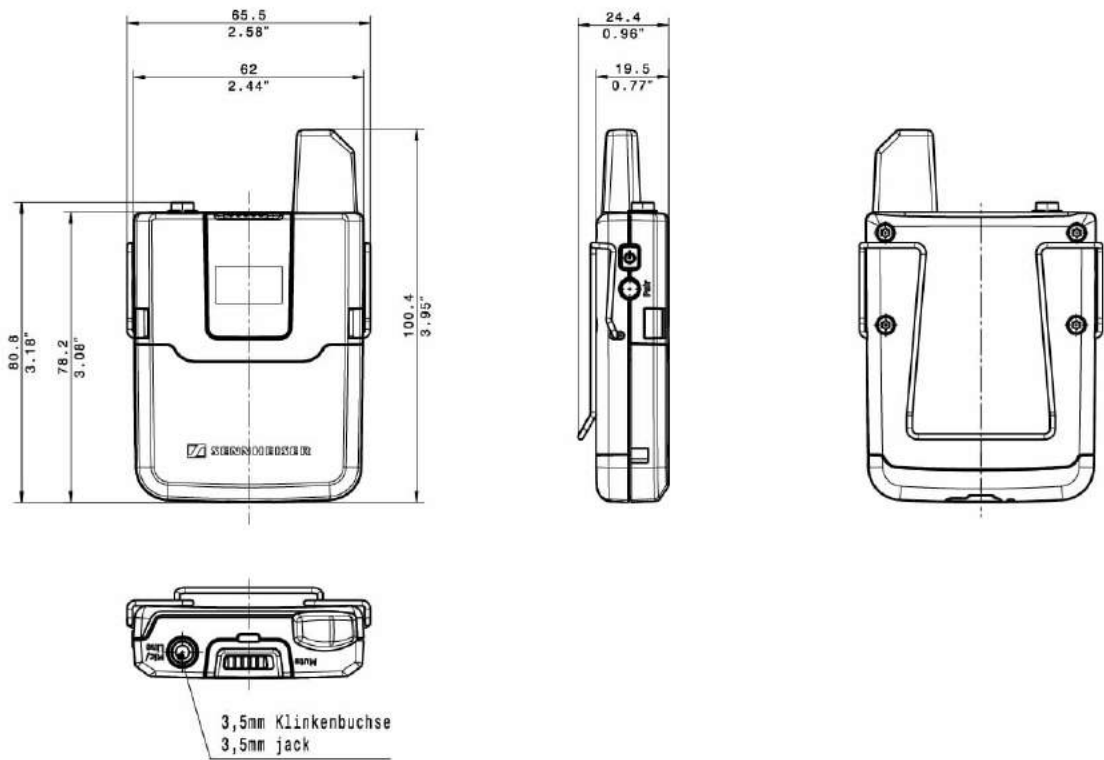
DIMENSIONS

SL Rack Receiver DW

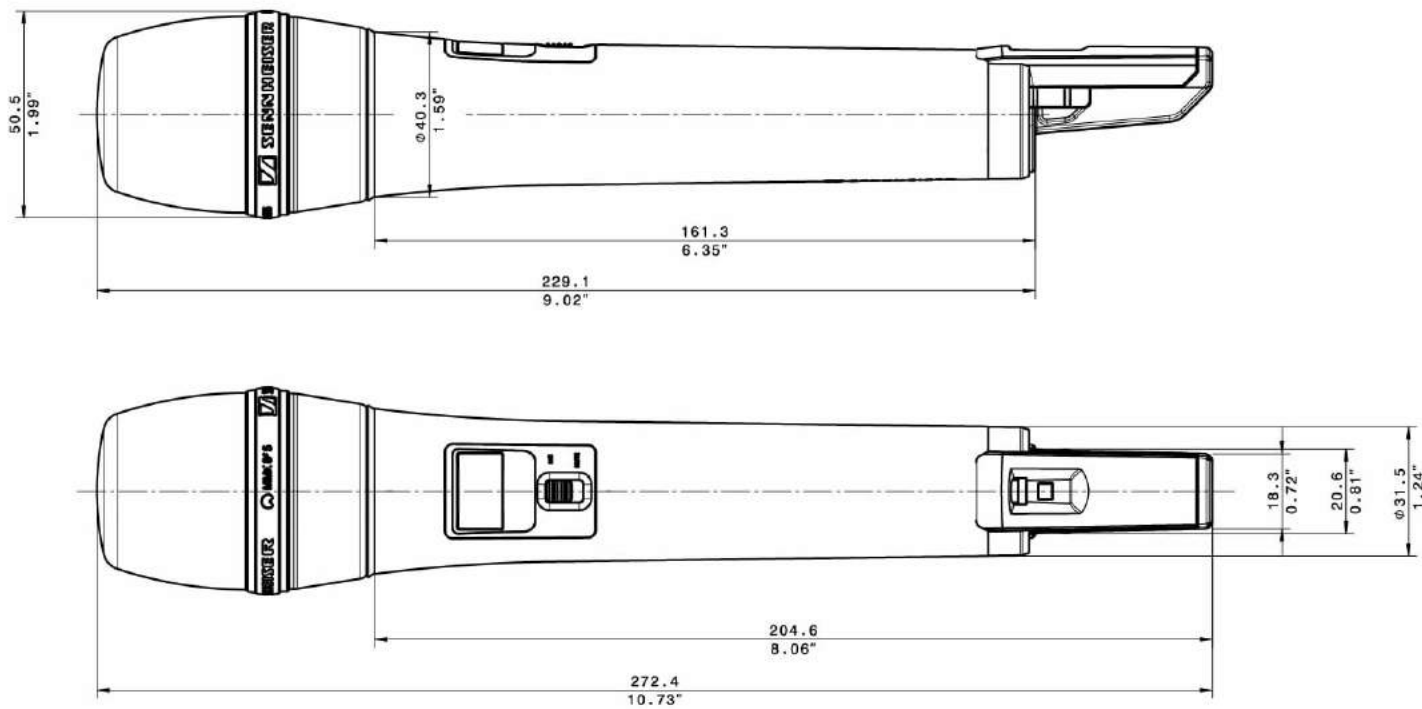


DIMENSIONS

SL Bodypack DW

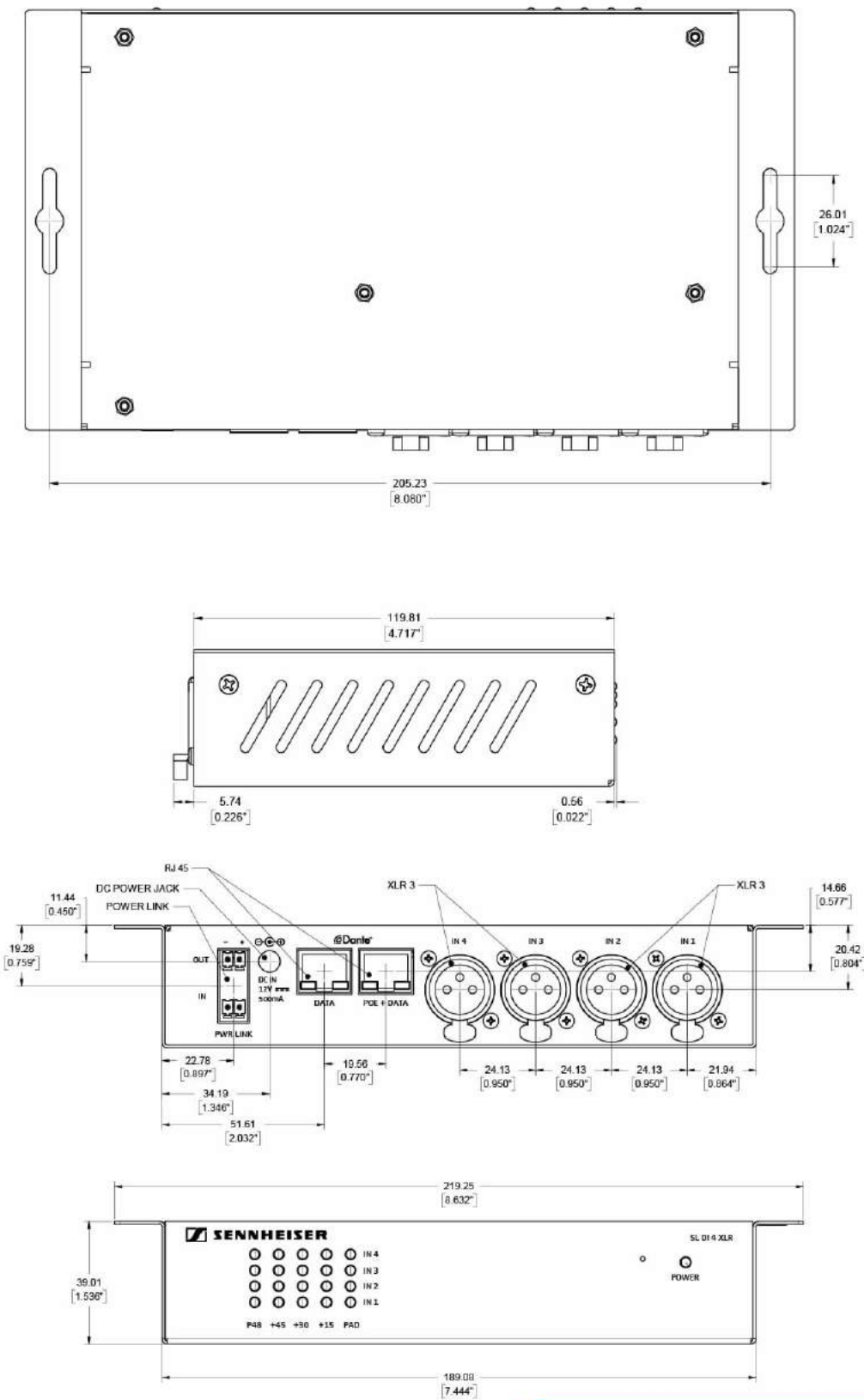


SL Handheld DW



DIMENSIONS

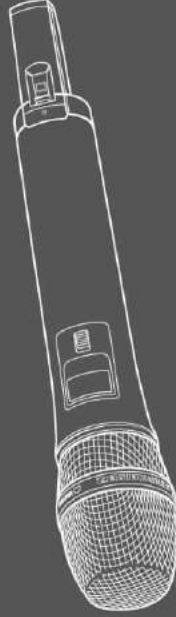
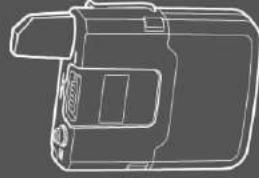
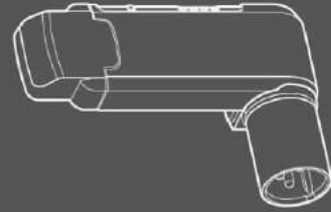
SL DI 4 XLR



ACCESSORIES

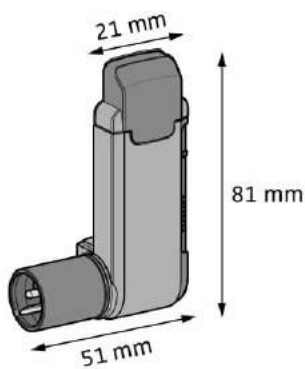
Product	Features	Description
AWM 2	• Unobtrusive antenna wall or tripod mounting • Robust metal housing	With the AWM 2, the antennas can be installed in an optimum way and nearly invisible, in case the stationary receiver shall be invisible or needs to be further away. It can be easily mounted on a mobile microphone tripod or permanently installed on a wall.
CHG 2	• Two bay charger for SL DW • Universal charging slots for either bodypack and handheld • External DC adaptor	The CHG 2 charger makes battery management really easy. The mobile transmitters, while not in use, are charged in the two charging bays. Thus, the devices are always ready-to-use when needed. The bi-color LED indicates the status. For seamless installation, the external power supply provides the necessary flexibility.
BA 10 / BA 30	• Li-Ion rechargeable battery • USB charging socket • Dedicated charging contacts	With the BA 10 / BA 30 the SpeechLine Digital Wireless transmitters' long operation time is guaranteed. With more than 15 hours of battery life time even an entire day of operation can be covered. The integrated USB socket allows instantaneous charging.
CL 5/10/20	• Robust, step-proof antenna cable • Sturdy R-SMA connectors	With the robust and step-proof CL 5/10/20 antenna cables the distance between the antenna and the SL Rack Receiver DW can be covered. This allows flexible integration of SpeechLine Digital Wireless in various applications.
Sennheiser Control Cockpit	• Remote control of SpeechLine Digital Wireless • Convenient setup and handling • Detailed status monitoring • Flexible browser-based application	The dedicated Sennheiser Control Cockpit software allows for an easy setup and handling of SpeechLine Digital Wireless even in large installations or events. Monitoring all status information is very easy. All system and device settings can be adjusted remotely.
SL Headmic 1	• Most comfortable-to-use presenter microphone • Outstanding sound quality, omni-directional • Sleek and unobtrusive appearance • Extremely lightweight, but sturdy metal frame • Soft-case for convenient transport and storage • Available in black, silver and beige	The SL Headmic 1 is an extremely unobtrusive and comfortable-to-use headworn microphone. It features the proven omni-directional MKE 1 microphone capsule. The adjustable neck band makes its use convenient for everyone. The extremely lightweight (7 g) but robust metal frame makes long-term usage most convenient. It comes with a sturdy and sleek soft-case, which can also hold a bodypack transmitter. It is available in black or beige.
SL DI 4 XLR	• 4 XLR balanced and RF filtered mic/line inputs • 802.3af compliant PoE powered to work with any compliant PoE network switch, or an external +12 V DC supply • +48 V phantom power • Dante™ Daisy Chaining allows multiple SL DI 4 XLRs to be connected over a single home-run to the Ethernet switch	The SL DI 4 XLR four input Dante™ preamp is the ideal interface for wireless microphone receivers and adding mic/line inputs to a Dante™ system. The small form factor of the SL DI 4 XLR allows them to be mounted almost anywhere, putting them close to audio sources and minimizing interference-prone analog wiring.

AVX

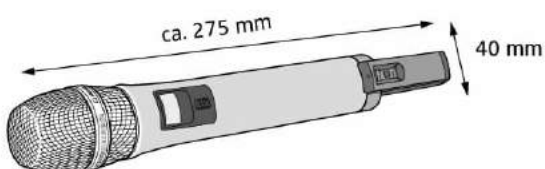


Specifications

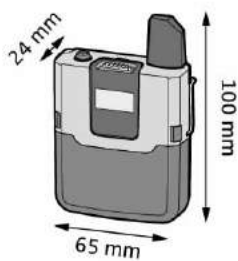
EKP AVX



SKM AVX/SKM AVX-S



SK AVX



AVX Specifications

System

AF frequency response	20 to 20,000 Hz
Dynamic range	> 120 dB (A)
THD (1 kHz)	typ. 0.1 %
Audio sampling	24 bit/48 kHz
Signal-to-noise ratio	> 90 dB (A)
RF frequency ranges	1,880 to 1,930 MHz (country-specific)
Modulation	GFSK with back channel
Transmission method	TDMA
	fast switching antenna diversity
Latency	19 ms
Relative air humidity	max. 95 %
Temperature range*	Operation: -10 °C to +55 °C Storage: -20 °C to +70 °C

* The temperature range is influenced by the battery characteristics

EKP AVX



RF sensitivity	< -90 dBm
RF output power back channel	typ. 15 dBm e.i.r.p.
Audio output	adjustable
Power supply	-30 dBu to 0 dBu in 4 steps
Operating time	BA 20 (Li-Ion 3.7 V DC)
AF connection socket	> 4 h
Weight (incl. BA 20)	XLR, male
	approx. 87 g

SKM AVX



RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	50 to 20,000 Hz
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 10 (Li-Ion, 3.6 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 10 h
Display	LCD
Weight (w/o accupack)	approx. 282 g incl. microphone head

* optional accessory

SK AVX



RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	Mic: 50 to 20,000 Hz Line: 20 to 20,000 Hz
Max. input level	Mic: 1.5 V RMS Line: 3.1 V RMS
Line input impedance	1 M Ω
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 30 (Li-Ion, 3.7 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 11 h
AF connection socket	3.5 mm jack socket, lockable connector assignment: Mic Line
Weight (w/o accupack)	approx. 87 g
* optional accessory	



MMD 835-1 MMD 42-1

Microphone type	dynamic	
Sensitivity	2.1 mV/Pa	1,8 mV/Pa
Pick-up pattern	cardioid	omni-directional
Max. SPL	154 dB SPL	154 dB SPL

ME 2-2



Microphone type	pre-polarized condenser microphone
Sensitivity	20 mV/Pa
Pick-up pattern	omni-directional
Max. SPL	130 dB SPL

MKE 2



Microphone type	pre-polarized condenser microphone
Sensitivity	5 mV/Pa
Pick-up pattern	omni-directional
Max. SPL	142 dB SPL

In compliance with

Europa		Radio	EN 301406
		EMC	EN 301489-1/-6
		Safety	EN 60950-1
			EN 62311 (SAR)
		RoHS	EN 50581
USA		FCC 47 CFR 15	
Canada		Industry Canada RSS 210	
		CAN ICES-3 (B)/NMB-3(B)	

Approved by

USA	SKM	FCC ID: DMOSKM1G9WE
	SK	FCC ID: DMOSK1G9WE
	EKP	FCC ID: DMOEKP1G9WE
Canada	SKM	IC: 2099A-SKM1G9WE
	SK	IC: 2099A-SK1G9WE
	EKP	IC: 2099A-EKP1G9WE
Australia/New Zealand		
Japan		
	SKM	R 202-SMC049
	SK	R 202-SMC050
	EKP	R 202-SMC051

NT 5-10U

Nominal input voltage	100 to 240 V~
Power frequency	50 or 60 Hz
Nominal output voltage	5 V 
Output current	1 A
Standby power consumption	≤ 0.1 W
Energy efficiency level	V
Operating temperature	0 °C to +40 °C
Storage temperature	-20 °C to +70 °C
Relative air humidity	max. 90 %
Weight	approx. 55 g

In compliance with

Europe		EMC	EN 55022, EN 55024
		Safety	EN 60950-1
		RoHS	EN 50581
		Commision Regulation (EC) No. 1275/2008	
USA/ Canada		EMC	FCC 47 CFR 15 B
			ICES 003, CAN ICES-3(B)/NMB-3(B)
		Safety	UL 60950-1
			CAN/CSA-C22.2 No. 60950-1
Australia		EMC	AS/NZ CISPR 22
		Safety	AS/NZL 60950.1

Certified by

Europe	ENEC 22 SIQ
USA/Canada	
Australia/New Zealand	
Japan	 ゼンハイザージャパン(株)

Accupacks



	BA 10	BA 20	BA 30
Charging capacity	2200 mAh	430 mAh	2030 mAh
Output voltage	3.6 V	3.7 V	3.7 V

In compliance with

Europe		EMC	EN 301489-1/-6/-17
		Safety	IEC/EN 62133
USA/Canada		Rechargeable battery cells	UL 1642
		Accupack	UL 2054
Japan		DENAN Ordinance Article 1; Appendix 9 Lithium Ion	
Korea		Safety	K 62133
UN transportation test		according to UN Manual of Tests and Criteria, Part III, section 38.3 Lithium-ion batteries	

Certified by

USA/Canada	
Japan	 ゼンハイザージャパン(株)
Korea	

Manufacturer Declarations

Warranty

- Sennheiser electronic GmbH & Co. KG gives a warranty of 24 months on this product.
- For the current warranty conditions, please visit our website at www.sennheiser.com or contact your Sennheiser partner.

FOR AUSTRALIA ONLY

Sennheiser goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

This warranty is in addition to other rights or remedies under law. Nothing in this warranty excludes, limits or modifies any liability of Sennheiser which is imposed by law, or limits or modifies any remedy available to the consumer which is granted by law.

To make a claim under this warranty, contact Sennheiser Australia Pty Ltd, Unit 3, 31 Gibbes Street Chatswood NSW 2067, AUSTRALIA. Phone: (02) 9910 6700, email: service@sennheiser.com.au.

All expenses of claiming the warranty will be borne by the person making the claim.

The Sennheiser International Warranty is provided by Sennheiser Australia Pty Ltd (ABN 68 165 388 312), Unit 3, 31 Gibbes Street Chatswood NSW 2067 Australia.

In compliance with the following requirements

- WEEE Directive (2012/19/EU)
 Please dispose of the products at the end of their operational lifetime by taking them to your local collection point or recycling center for such equipment.
- Battery Directive (2006/66/EC)
The supplied batteries or rechargeable batteries can be recycled. Please dispose of them as special waste or return them to your specialist dealer. In order to protect the environment, only dispose of exhausted batteries or rechargeable batteries.

CE Conformity

- **CE 0682**
- R&TTE Directive (1999/5/EC)
- RoHS Directive (2011/65/EU)
- EMC Directive (2004/108/EU)
- Low Voltage Directive (2006/95/EU)

The declarations are available at www.sennheiser.com. Before putting the products into operation, please observe the respective country-specific regulations.

FCC

NOTICE:

These devices comply with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications made to this equipment not expressly approved by Sennheiser Electronic Corporation may void the FCC authorization to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

These class B digital devices comply with the Canadian ICES-003.

Japanese Radio Law and Japanese Telecommunications Business Law Compliance.

This device is granted pursuant to the Japanese Radio Law (電波法)
This device should not be modified (otherwise the granted designation number will become invalid)

Licenses

CELT Codec

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Version 1.0

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 1. retain the name of the Original Version and
 2. add additional naming elements to distinguish the Modified

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Sennheiser electronic GmbH & Co. KG

Am Labor 1, 30900 Wedemark, Germany
www.sennheiser.com
Publ. 01/15, 554644/A03

Specifications

ShareLink 250 W and ShareLink 200 N

Software and control options

Software	ShareLink™ Software
Operating systems	Windows® 7/8/10, macOS® 10.7-10.13
Supported formats	

NOTE: The following formats apply only to the Share Media feature in the ShareLink software. These formats may include video and audio codecs that are not supported.

Video file formats	MP4, MPG, MPEG, AVI, MOV, MKV, WMV
Audio file formats	MP3, WAV, WMA, AAC
Image file formats	JPG, BMP, PNG, GIF

Supported codecs

NOTE: The following codecs apply only to the Share Media feature in the ShareLink software.

Video codecs.....	MPEG-2, MPEG-4 (Microsoft® MPEG-4 v1-3 is not supported), Motion JPEG, WMV9 (only WMV3/WVC1 is supported)
-------------------	---

NOTE: All video formats support up to 1920x1080, 30 fps, and 20 Mbps.

Audio codecs	LPCM, AAC, MP3, WMA
--------------------	---------------------

NOTE: The software supports up to 48 KHz, 320 Kbps.

Image codecs.....	JPG, BMP, PNG, GIF
-------------------	--------------------

NOTE: The software supports up to 25 megapixels for JPG files, and 9 megapixels for all other formats.

Mobile apps and features

MirrorOp® for Extron ShareLink

NOTE: This app supports Dropbox, Google Drive™, and OneDrive™. The iOS version of the app also supports iCloud. For details, see the user guide for your ShareLink model.

Operating systems.....	Apple® iOS 7.0 or later, Android™ 4.0 or later
Supported formats.....	Image file formats: JPEG, PNG Document file formats: Microsoft Word (.doc, .docx), PowerPoint (.ppt, .pptx), Excel (.xls, .xlsx); Keynote for iOS (.key) (iOS only); PDF

MirrorOp Sender for Galaxy

Operating system	Android 4.0 or later
Control function	Full mirroring of device screen
iOS Mirroring	Apple iOS 10.0-11.2

Network connectivity

ShareLink 250 W only

Standards.....	IEEE 802.11 a/b/g/n 2.4 GHz/5 GHz
Security Encryption	
Standards.....	IEEE Standard 64/128 bit WEP, WPA PSK, WPA2 PSK, WPA Enterprise, WPA2 Enterprise
Antennae.....	(2) Dual dipole

ShareLink 250 W and ShareLink 200 N

Standards.....	IEEE 802.3 (10BASE-T), IEEE 802.3u (100BASE-TX), IEEE 802.3ab (1000BASE-T)
Protocol.....	TCP/IP, SNMP, SNTP/NTP
IP configuration	DHCP (default), static IP - configurable
Management.....	Web based configuration, SNMP v3

Video output

Number/signal type.....	1 HDMI 1 RGBHV
Connectors	1 female HDMI type A 1 female 15-pin HD connector
Output resolution	800x600 @60Hz, 1024x768 @60Hz, 1280x720 @60Hz (720p) (default), 1280x768 @60Hz, 1280x800 @60Hz, 1360x768 @60Hz, 1440x900 @60Hz, 1600x1200 @60Hz, 1920x1080 @30Hz (1080i), 1920x1080 @60Hz (1080p)

Audio output

Number/signal type	1 digital, 2-channel PCM 1 analog stereo, unbalanced
Connectors	(1) embedded on HDMI (1) 3.5 mm, stereo mini jack: tip (L), ring (R), sleeve (Gnd)

Ethernet port

Ethernet port.....	1 female RJ-45 connector
Ethernet data rate	10/100/1000Base-T, half/full duplex with autodetect
Ethernet default settings	IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = On DNS = 192.168.254.254

USB ports

Number/signal type.....	3 high-speed USB 2.0
Connectors	3 USB type A connectors
USB standards	USB 2.0, USB 1.1, USB 1.0 compatible
USB player feature	
Supported formats	
Video file formats	MP4, MPG, MPEG, AVI, MOV, MKV, WMV
Audio file formats	MP3, WAV, WMA, AAC
Image file formats	JPG, BMP, PNG, GIF
Document file formats.....	Microsoft Word (.doc, .docx), PowerPoint (.ppt, .pptx), Excel (.xls, .xlsx); PDF
Supported codecs	
Video codecs.....	MPEG-2, MPEG-4 (Microsoft MPEG-4 v1-3 is not supported), Motion JPEG, WMV9 (only WMV3/WVC1 is supported)
NOTE: All video formats support up to 1920x1080, 30 fps, and 20 Mbps.	
Audio codecs	LPCM, AAC, MP3, WMA
NOTE: The USB player supports up to 48 KHz, 320 Kbps.	
Image codecs.....	JPG, BMP, PNG, GIF
NOTE: The USB player supports up to 25 megapixels for JPG files, and 9 megapixels for all other formats.	

Specifications • ShareLink 250 W and ShareLink 200 N (Continued)

General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 5 VDC, 2.6 A, 13 watts
Power input requirements	5 VDC or Power over Ethernet (PoE 802.3at, class 0)
Power consumption	
ShareLink 250 W	
Device	9.5 watts
Device and power supply...	11.5 watts
ShareLink 200 N	
Device	9.5 watts
Device and power supply...	11.8 watts
Power over Ethernet (PoE)	Complies with PoE 802.3at, class 0 (type 1)
Temperature/humidity	Storage: +14 to +140 °F (-10 to +60 °C) / 10% to 90%, noncondensing Operating: +32 to +104 °F (0 to +40 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Thermal dissipation	
ShareLink 250 W	
Device	6.4 BTU/Hr
Device and power supply...	14.6 BTU/Hr
ShareLink 200 N	
Device	7.8 BTU/Hr
Device and power supply...	15.9 BTU/Hr
Mounting	
Rack mount.....	Yes, with optional 1U rack shelf
Furniture mount.....	Yes, with optional MBU 125 mounting kit
Enclosure type	Metal
Enclosure dimensions	1.0" H x 6.51" W x 3.3" D (1 inch high, 3/8th rack wide) (2.5 cm H x 16.5 cm W x 8.5 cm D) (Depth excludes connectors.)
Product weight	1.0 lb (0.5 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	UL, c-UL, CE UL Listed for use in plenum air handling spaces: meets UL 2043 for heat and smoke release
EMI/EMC	
Both models	CE, FCC Class B, ICES, VCCI Class B, C-tick
ShareLink 250 W only	IDA
Environmental.....	Complies with the appropriate requirements of RoHS, WEEE
Warranty	3 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping dimensions and weights are available at www.extron.com.

4261-D7

EB-710Ui



Bezúdržbové interaktivní řešení, které nabízí velký škálovatelný obraz s úhlopříčkou až 100 palců, díky kterému bude výuka probíhat bez problémů

Vyhnete se potížím a nákladům spojených s údržbou díky tomuto interaktivnímu laserovému projektoru s velmi krátkou projekční vzdáleností, který vám umožní spolupracovat v hodinách na velké škálovatelné ploše, a dosáhnout tak lepší spolupráce ve třídě a aktivní účasti žáků. Představujeme projektor s dvěma interaktivními pery a dotykovým ovládáním, s rozlišením Full HD WUXGA, s možností promítání dvou zdrojů na jedné ploše a volitelnou možností bezdrátového připojení.

Oživte své prezentace pomocí škálovatelného obrazu o úhlopříčce až 100 palců
Díky velké škálovatelné laserové ploše s rozlišením Full HD WUXGA a jasným 4 000 lumenů zajistíte, že žáci budou schopni přečíst vše, co je zobrazeno. Technologie Epson 3LCD dodává stejně vysoké výstupy bílého a barevného světla.

Bezproblémové hodiny

Snadná možnost připojení a jednoduché nastavení umožňují zahájit hodinu bez zdržování. Jakmile je detekováno kabelové připojení, funkce automatického zapnutí spustí zařízení. Díky možnosti připojení přes HDMI mohou žáci také těžit z jasnějšího a ostřejšího obsahu. Integrovaný reproduktor o výkonu 16 W a vstup pro mikrofon eliminují potřebu instalovat další audio prvky.

Hladká spolupráce

Bezdrátové připojení přes volitelné USB dongle umožňuje snadné připojení různých mobilních zařízení pomocí aplikace Epson iProjection¹. Software pro projekci z několika počítačů umožňuje učitelům a studentům sdílet obsah současně. S funkcí moderátora si učitelé zachovávají úplnou kontrolu, dle potřeby mohou zobrazit příspěvky studentů, a to včetně obsahu z notebooků nebo mobilních zařízení. Díky dvěma perům a dotykovému ovládání mohou učitelé a žáci vkládat poznámky přímo do promítaného obrazu.

Rozdělení obrazovky

Promítejte obsah ze dvou zdrojů současně, například program hodiny a přímý přenos z vizualizéru, aniž byste potřebovali dvě samostatná zobrazovací zařízení.

DATOVÝ LIST



ZÁKLADNÍ FUNKCE

- **Snížené náklady a bezproblémový provoz**
Bezúdržbová laserová technologie vám zajistí delší životnost a zbaví vás starostí
- **Až 100" kvalitní laserová promítací plocha**
Rozlišení Full HD WUXGA a technologie Epson 3LCD
- **Bezproblémové hodiny**
Snadná možnost připojení a jednoduché nastavení
- **Zkvalitnění integrace a spolupráce**
Sdílení obsahu z různých zařízení současně
- **Rozdělení obrazovky**
Dva obrazy v jednom – promítejte obrázky z různých zdrojů současně



EPSON
WORLD LEADER
IN PROJECTORS

Source: Futuresource Consulting Ltd.

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PRODUKTOVÉ SPECIFIKACE

TECHNOLOGIE

Projekční systém	Technologie 3LCD
LCD panel	0,67 palců s MLA (D10)

OBRAZ

Barevný světelný výstup	4.000 lumenů- 2.800 lumenů (ekonomický) v souladu s normou IDMS15.4
Bílý světelný výstup	4.000 lumenů - 2.800 lumenů (ekonomický) v souladu s normou ISO 21118:2012
Rozlišení	WUXGA, 1920 x 1200, 16 : 10
Kontrastní poměr	2.500.000 : 1
Korekce lichoběžníku	Manuální vertikální: $\pm 3^\circ$, Manuální horizontální $\pm 3^\circ$
Reprodukce barev	Až 1,07 miliardy barev

OPTIKA

Projekční poměr	0,27 - 0,37:1
Zoom	Digital, faktor: 1 - 1,35
Úhlopříčka promítaného obrazu	70 palců - 100 palců
Projekční vzdálenost - Wide	0,4 m (70 palců displej)
Projekční vzdálenost - Tele	0,6 m (100 palců displej)
Clonové číslo projekčního objektivu	1,8
Ohnisková vzdálenost	4,2 mm
Ostření	Manuální
Posun	5,8 : 1

MOŽNOSTI PŘIPOJENÍ

Funkce USB Display	3v1: obraz / myš / zvuk
Rozhraní	USB 2.0 typu A (2x), USB 2.0 typu B, RS-232C, Ethernetové rozhraní (100 Base-TX / 10 Base-T), bezdrátová síť LAN IEEE 802.11 b/g/n (volitelně), VGA vstup, VGA výstup, HDMI vstup (3x), S-Video vstup, MHL, audiovýstup, stereofonní konektor mini-jack, audiovstup, stereofonní konektor mini-jack (2x), vstup pro mikrofon, Rozhraní pro dotykové ovládání, Vstup synchronizace, Výstup synchronizace
Připojení chytrého zařízení	Ad-hoc / infrastruktura

POKROČILÉ FUNKCE

Bezpečnost	Kensington ochrana, Zámek ovládacího panelu, ochrana heslem, Otvor pro visací zámek, Otvor pro bezpečnostní kabel, Zámek jednotky bezdrátové sítě LAN, zabezpečení bezdrátové sítě LAN, ochrana heslem
Funkce a vlastnosti	Automatická kalibrace, Automatické zapnutí, Automatická úprava jasu, automatická volba vstupního signálu, vestavěný reproduktor, Přizpůsobitelné logo uživatele, Digitální přiblížení, funkce přímého zapnutí a vypnutí, kompatibilní s vizualizéry, Instalace bez ovladačů, Podpora dvou per, Snadné předvolby nabídky OSD, Podpora dotykového ovládání, domovská obrazovka, Interaktivní, Vstup pro mikrofon, Interaktivita více obrazovek, PC Interactive, Poznámky bez použití počítače, aplikace iProjection pro Chromebook, funkce rozdělení obrazovky, aplikace iProjection
Interaktivita	Ano – pero a dotykové ovládání
Barevné režimy	tabule, kino, dynamický, prezentace, sRGB

OBEČNÉ INFORMACE

Spotřeba energie	423 W, 332 W (ekonomický), 0,5 W (pohotovostní režim)
Rozměry výrobku	494 x 437 x 175 mm (šířka x hloubka x výška)
Hmotnost výrobku	11,2 kg
Max. hladina hluku	Normální režim: 38 dB (A) - úsporný režim: 27 dB (A)

OSTATNÍ

Záruka	60 měsíců u dodavatele nebo 12.000 h Je dostupné volitelné prodloužení záruky
--------	--

EB-710Ui

OBSAH DODÁVKY

- Jednotka pro dotykové ovládání
- Digitální pera
- napájecí kabel
- dálkové ovládání vč. baterií
- SMART Notebook software entitlement booklet
- USB kabel
- Úvodní příručka
- záruční list
- Příručka na CD
- Nástěnný držák
- Držák pera
- Hlavní zařízení

VOLITELNÉ PŘÍSLUŠENSTVÍ

EB-710Ui

- Wireless LAN Adapter - ELPAP10
V12H731P01
- Control and Connection Box - ELPCB02
V12H614040
- ELPSP02
V12H467040
- Replacement Pen Tip - ELPPS04 (Felt) x 4 pieces
V12H776010
- Interactive Pen - ELPPN05B - Blue - EB-6xxWi/Ui / 14xxUi
V12H774010
- Replacement Pen Tip - ELPPS03 (Teflon) x 2 pieces
V12H775010
- Interactive Pen - ELPPN05A - Orange - EB-6xxWi/Ui / 14xxUi
V12H773010
- Air Filter - ELPAF43
V13H134A43

LOGISTICKÉ INFORMACE

SKU	V11H877040
Čárový kód	8715946641058
Země původu	Čína



EPSON
WORLD LEADER
IN PROJECTORS

Source: Futurusource Consulting Ltd.

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www.epson.cz

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Informace o produktu mohou být změněny bez předchozího upozornění.

1. – Vyžaduje aplikaci iProjection a připojení k internetu
– kompatibilní pouze se zařízeními iOS, Android a Google Chromebook. Sdílení souborů může být omezeno.

EPSON®



Jednodílná keramická tabule pro projekci - MANAŽER K LG

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Jednodílná bílá magnetická tabule s projekčním keramickým povrchem e3 nejvyšší kvality. Tento typ povrchu je vhodný pro nejvyšší zatížení, při běžném provozu je téměř nezničitelný.

Keramický povrch se sníženým odleskem je ideální pro promítání vašich materiálů.

Videonávod k použití a údržbě keramických tabulí pro popis fixem na [youtube.com](https://www.youtube.com).

- Barva povrchu bílá, matná.
- Lze popisovat fixy na bílé tabule.
- Rám tabule z eloxovaného hliníku v přírodním odstínu, plastové rohy.
- Tloušťka tabule 22 mm, sendvičová konstrukce - tabule se nekrouť.
- Odkládací políčka pro popisovače po celé délce tabule.
- Standardně montážní sada pro upevnění na stěnu.
- Lze upevnit na stěnu, [Lištový systém](#), [Stojan stabilní](#), [STOJAN ZVEDACÍ AL](#), [PYLON AL](#).
- Vyrobíme pro vás tabule i nestandardní velikosti - až do rozměru 600 x 120 cm

Tento web používá k poskytování služeb a analýze návštěvnosti soubory cookie. Používáním tohoto webu s tím souhlasíte. Více informací

Přijímám



Typové produkty

Kód	Název	Rozměr	Hmotnost	
V10180120-3100	MANAŽER K 180x120 LG	180 x 120 cm	22,5 kg	☐
V10200120-3100	MANAŽER K 200x120 LG	200 x 120 cm	26 kg	☐
Atypický rozměr	Příplatek za atypické provedení			☐

[Všechny články](#)



[Zvedací systém
PYLON AL](#)



[STOJAN ZVEDACÍ AL](#)



[Univerzální hliníkové
rameno na stěnu](#)



[Základní sady BT a
BT+](#)

UNIVERSAL PROJECTOR CEILING MOUNT PJ01UCM

ORDER CODE: 100014003

Universal Projector ceiling mount for installation of NEC V, M, P and PA Series projector.

The PJ01UCM is engineered for compact strength and is designed with superior grip adjustment knobs to deliver the easiest fine-tuning for precise image alignment, with the capacity to hold up to a 20kg projector. While stout and sturdy in structure, this mount boasts premium adjustability and enhanced functionality. No tools are required for image alignment, thanks to the dual-knobs design which provides a hassle-free method for micrometrical adjustment of the gears.

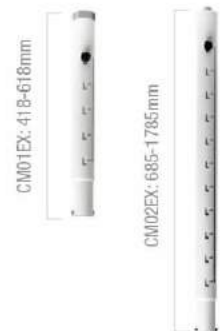
PJ01UCM



Tilt Mechanism – up to 30°

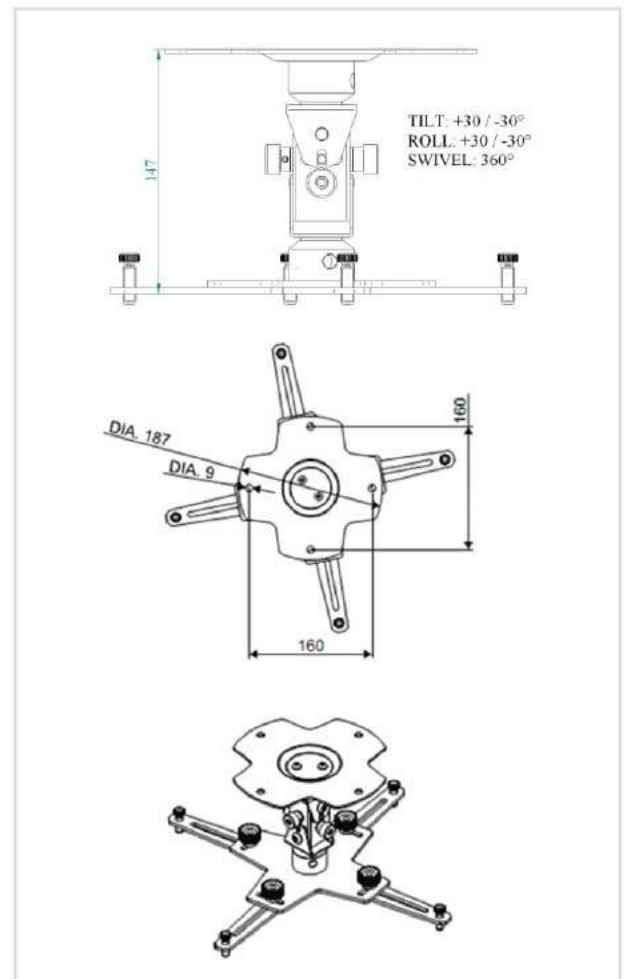


OPTIONAL EXTENSION COLUMNS



TECHNICAL DRAWINGS

PROJECTOR CEILING MOUNT – PJ01UCM



Delivering Genuine Benefits

Easy fine-tuning for precise image alignment

No tools required for image alignment

Integrated cable management through optional extension column for clean appearance

Adjustable extension lengths with optional extension columns

Universal adapter plate to fit NEC V, M, P and PA series projectors

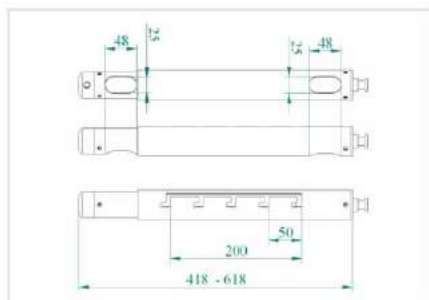
5 years warranty



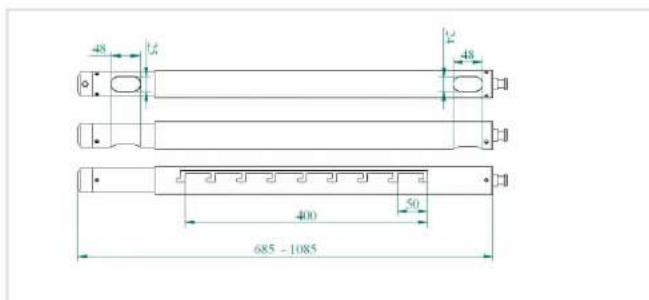
UNIVERSAL PROJECTOR CEILING MOUNT PJ01UCM

ORDER CODE: 100014003

MEDIUM EXTENSION COLUMN – CM01EX



LARGE EXTENSION COLUMN – CM02EX



TECHNICAL SPECIFICATIONS

ORDER CODES	
PJ01UCM	100014003
CM01EX (418-618mm)	100014001
CM02EX (685-1785mm)	100014002
Max. Load (kg)	20
LENGTH	
PJ01UCM (mm)	147
CM01EX (mm)	418 - 618
CM02EX (mm)	685 - 1.785
TILT ANGLE	up to 30°
SWIVEL	360°
WEIGHT	
PJ01UCM (kg)	2,1
CM01EX (kg)	1,4
CM02EX (kg)	2,1
PACKAGE DIMENSIONS (W X H X D)	
PJ01UCM (mm)	250 x 250 x 210
CM01EX (mm)	90 x 90 x 470
CM02EX (mm)	90 x 90 x 750
SHIPPING CONTENT - PJ01UCM	Ceiling mount (ceiling plate, calibration device, projector adapter plate), 5 x M4 screws, 4 x 105mm adjustable arms, 2 x 150mm adjustable arms
COLOUR	White
COMPATIBLE NEC PROJECTORS:	V, M, P and PA Series
WARRANTY	5 years
For additional pictures, drawings and Solutions overview, visit www.nec-display-solutions.com	* Please consider the overall weight of the complete construction. It is the installers responsibility to make certain the structure to which the mount is being attached is capable of supporting all equipment. For this NEC does not take any responsibility. Please consult your local vendor if advise is needed.

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Email: infomail@nec-displays.com

www.nec-display-solutions.com

Empowered by Innovation

NEC

P502HL-2

Laserový projektor

Produktový list



Zařízení NEC P502HL-2 - projektor s ultra nízkým požadavkem údržby, pro maximální všestranné využití

S projektorem NEC P502HL-2 ohromíte své obecenstvo ostrou kvalitou obrazu, a to i při náročných světelných podmínkách. Projektor byl vyvinut pomocí laserové světelné technologie, poskytuje až 20 000 hodin provozu bez potřeby údržby a představuje převrat v oblasti délky životnosti projektorů tím, že odstraňuje vysoké náklady za výměnu lampy. Vychutnejte si výhody integrované technologie NEC MultiPresenter, která vám umožňuje bezdrátové prezentování (vyžaduje volitelný USB WLAN adaptér) a těšte se z rychlého připojení pomocí 4-místného PIN kódu, který umožňuje bezdrátovou interakci s publikem.

Široký optický zoom, vertikální/horizontální posun objektivu a pokročilé možnosti připojení jako HDBaseT, nejkompaktnější laserový projektor na světě s jasnem 5000 ANSI lumenů, poskytuje možnost využití existujících prostředků, např. stropních držáků, a zabezpečení, aby byla vaše investice v budoucnu chráněna. Díky projekci obrazu s velikostí až 300 palců představuje projektor NEC P502HL-2 řešení, které je ideální do poslucháren, velkých konferenčních místností a učeben, prostorů muzeí a na zobrazování nápisů.

Výhody

Professional and Flexible Installation – versatile projection characteristics allow for simple positioning of the projector, making installation easy and potentially saving set up costs.

Bezdrátové sdílení obrazu – zrcadlete obraz zařízení Android s Miracast nebo jednoduše sdílejte obsah pomocí internetového prohlížeče díky výkonné schopnosti síťového propojení, což umožňuje uživatelům simultánní spojení.

Vysoká spolehlivost a nízké pořizovací náklady – díky laserovému světelnému zdroji s jasnem 5000 ANSI lmenů, který poskytuje až 20.000 h provozu bez údržby.

Skvělá propojitelnost – díky mnohým analogovým a digitálním připojovacím terminálům včetně HDBaseT, 2 x HDMI s podporou 3D.

Jednoduché naklonění a projekce v režimu Portrét – umožňuje tvořivé umístění v muzeích a k zobrazování nápisů.

Lepší barevná prezentace – nejlepší reprodukce barev, nyní s ještě přirozenějšími barvami pro věrný a realistický obraz.

Rychlejší vypínání – projektor se zchladí již 10 sekund po vypnutí.

Riziková skupina 2 Riziková skupina 2 vás ušetří námahy spojené s instalací a provozem – z důvodu dodržení podmínek rizikové skupiny 2 nejsou nutná žádná bezpečnostní opatření.

Informace o výrobcích

Název výrobku	P502HL-2
Skupina produktů	Laserový projektor
Objednací kód	60004400

Image

Projekční technologie	1-chip DLP™ Technology
Nativní rozlišení	1920 x 1080 (Full HD)
Aspect Ratio	16:9
Kontrastní poměr ¹	20000:1
Jas ¹	5000 ANSI lumenů
Lampa	Laserový světelný zdroj
Životnost lampy [hod.]	20000
Objektiv	F= 2–2,5, f= 18,2–31,1 mm
Posun čočky	H:±0,25, V:±0,62,-0
Posun čočky [%]	0-62
Korekce lichoběžníkového zkreslení	+/- 25° manuálně horizontální / +/- 30° manuálně vertikální
Projekční faktor	1,24 – 2,1 : 1
Projekční vzdálenost [m]	0,8 – 14,2
Velikost obrazovky (diagonální) [cm] / [palce]	Maximum: 762 / 300"; Minimum: 76.2 / 30"
Zoom	Manual; x1,7
Nastavení zaostření	Manual
Podporované rozlišení	1920x1200 (maximální rozlišení analogového vstupu); 1920 x 1080 (maximální rozlišení digitálního vstupu)
Frekvence	Horizontal: 15–100 kHz (RGB: 24 kHz); Vertikální: 50 – 120 Hz

Connectivity

ComputerAnalog	Vstup: 1 x Mini D-sub 15 pin Výstup: 1 x Mini D-sub 15 pin
Digital	Input: 1 x HDBaseT; 2 x HDMI™ podpora HDCP
Video	Vstup: 1 x RCA
Audio	Vstup: 1 x 3,5 mm Stereo Mini Jack pro Computer analog; 1 x RCA Stereo for Video; 2 x HDMI audio Výstup: 1 x 3.5 mm Stereo Mini Jack (variable)
Control	Vstup: 1 x D-Sub 9 pin (RS-232) (male)
LAN	1 x RJ45; Opcionální WLAN
USB	1 x Type B (for Service); 2 x Type A (USB 2.0)
3D synchronizace	Výstup: 1 x Mini DIN 3 kolík
Video signály	NTSC 3,58; NTSC 4,43; PAL; PAL-M; PAL-N; PAL60; SECAM

Remote Control

Dálkové ovládání	Audio Control; automatické nastavení; Eco Mode Control; funkce Freeze (zmrazení obrazu); funkce Magnify (zvětšení); funkce nápovědy; Korekce trapézu; Nastavení ID; nastavení obrazu; poměr stran; Power (On-OFF); Select (nahoru, dolů, doleva, doprava); strana (nahoru, dolů); vypnutí obrazu; výběr zdroje; Řízení prezentace myši
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Electrical

Napájení	100-240 V AC; 50 - 60 Hz
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Mechanical

Rozměry (W x H x D) [mm]	469 x 137 x 365 (bez objektivu a nožiček)
Hmotnost [kg]	8,8
Hlučnost ventilátoru [dB (A)]	31 / 39 (Eco / Normal)

Environmental Conditions

Operating Temperature [°C]	5 to 40
Operating Humidity [%]	20 to 80
Storage Temperature [°C]	-10 to 50
Storage Humidity [%]	20 to 80

Ergonomics

Bezpečnost a ergonomie	CE; ERP; RoHS; TUEV Type Approved
Speakers [W]	1 x 20 (mono)

Další funkce

Speciální Charakteristika	3D ready; Bezpečnostní Kensington slot; Carbon Savings metr; funkce Auto Power ON/OFF; Funkce Control ID; funkce Direct Power-Off; Funkce MultiPresenter; Funkce rychlého spuštění Quick Start; Geometric correction by software; Konektivita Miracast; manuální korekce podle barvy zdi; Nastavení světelného zdroje; NaViSet Administrator 2; nápověda; ochrana heslem; OSD v 27 jazycích; Ovládání HTTP prohlížeče; Ovládání myši s USB displejem; Plug&Play W-LAN Option; Režim konstantního jasu; simulace DICOM; Testovací vzor; Timer-Function; Unique Power Saving Functions; USB displej se zvukem; USB Viewer; Virtual Remote for direct PC control; volitelné uživatelské logo; výběr zdroje s funkcí Pip; Zvětšení; zámek klávesnice; Časovač vypnutí
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Environmentální vlastnosti

Ecological Materials	Downloadable manuals; ECO packaging
Ecological Standards	ErP compliant; RoHS compliant

Warranty

Projektory	3 roční celoevropský servis
Zdroj světla	3 roky/roků nebo 10000h (podle toho, co nastane dříve)

Shipping Content

Obsah balení	bezpečnostní nálepka; IR dálkové ovládání (RD-472E); Mini D-SUB signální kabel (1,8 m); napájecí kabel (1,8 m); projektor; Rychlý instalační průvodce; Utility software; uživatelský manuál
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Optional Accessories

Volitelné příslušenství	3D brýle (Volfoni-Fit podporující technologii DLP-Link; Bezdrátový modul LAN (NP05LM2; NP05LM4; NP05LM5); Bezplatná aplikace Wireless Image Utility; Cable Cover (NP08CV); Emitter XpanD 3D RF (AD025-RF-X1); univerzální stropní držák (PJ01UCM, PJ02UCMPF); XpanD 3D brýle (X105-RFX2)
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¹ Compliance with ISO21118-2012



TUEV Type
Approved



CE



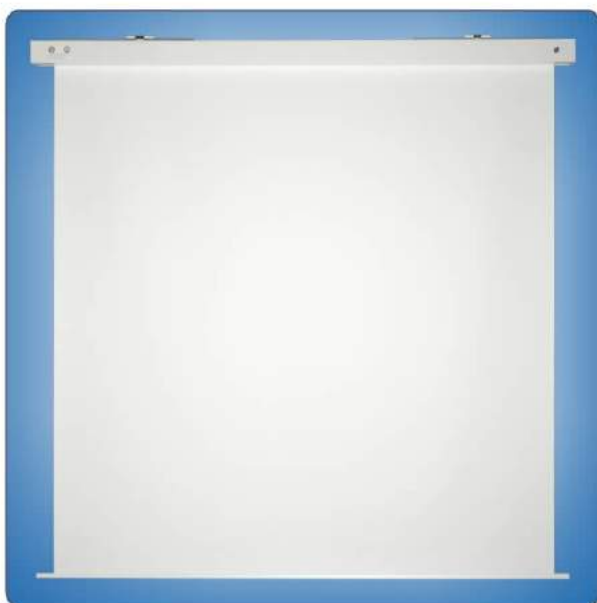
RoHS

Tento výrobek je vybaven laserovým modulem a je klasifikován jako zařízení třídy 1 podle normy IEC60825-1, 3. vydání z roku 2014, a jako zařízení RG2 podle normy IEC62471-5, 1. vydání z roku 2015.
NEDÍVEJTE SE DO PAPRSKU.

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Rollfix Pro Electric



detail tubusu



zatěžovací tyč



posuvné držáky 55 cm



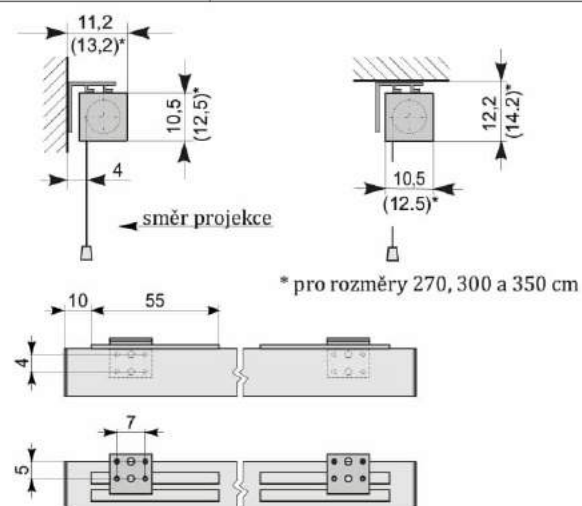
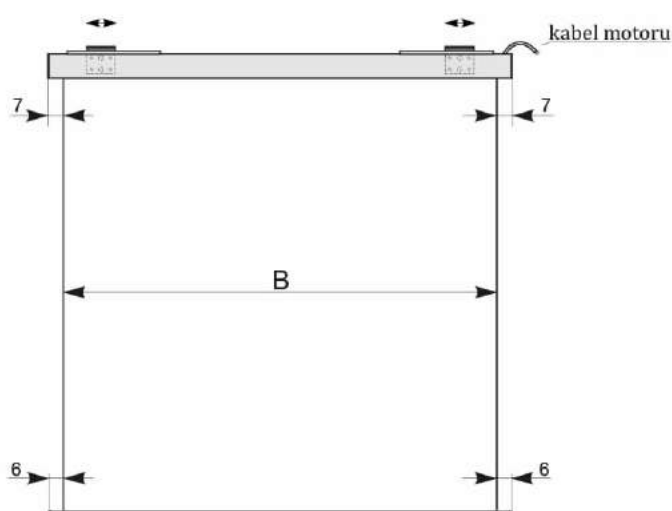
otočný vypínač

Popis výrobku

- motoricky ovládané promítací plátno, splňuje vysoké nároky na projekci
- **vhodný pro projektory s ultra krátkou projekční vzdáleností**
- ocelový čtvercový tubus 10,5x10,5 cm bílé barvy do rozměru 240x240 cm a tubus 12,5 x 12,5 cm od rozměru 270x270 cm
- automatické koncové spínače zajišťují bezpečnou obsluhu
- **upevňovací elementy posuvné 55cm po délce tubusu vpravo a vlevo**
- upevnění na zeď/strop
- **bezúdržbový, bezhlučný motor**
- **inovovaná navíjecí hřídel napomáhá optimální rovinnosti projekční plochy**
- trapézová zatěžovací tyč uzavírá při plném navinutí plochy celou šterbinu tubusu
- **rám pro vestavbu do podvěšených stropů k dodání jako příslušenství**
- **možnost výroby nestandardních rozměrů, barev tubusů a různých typů projekčních povrchů dle přání zákazníka**

Projekční plocha

- Typ D - matně bílá na textilní bázi, zadní strana šedá
- **formát projekční plochy 1 : 1 bez černého rámečku, 4 : 3, 16 : 9 a 16:10 s černým rámečkem**
- **TOP promítací plocha Blankara matt white ve všech rozměrech**



* pro rozměry 270, 300 a 350 cm

rozměry v cm

B	180	200	240	270	300	350
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Specifications

Cable Cubby® 202

General

Power output

US AC module 125 VAC, 50-60 Hz, 12 A max total

Non-US AC module..... 240 VAC, 50-60 Hz, 10 A max total

Mounting Furniture mount

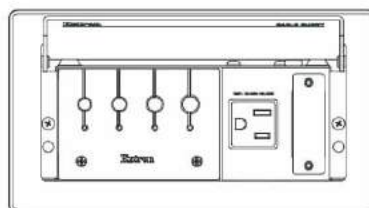
Min./max. table thickness 0.25" to 1.75" (6 mm to 44 mm)

Enclosure dimensions

Top plate (outer rim)..... 7.99" W x 4.39" D (203 mm W x 112 mm D)

Surface cutout (inside rim) 7.00" W x 3.25" D (178 mm W x 82 mm D)

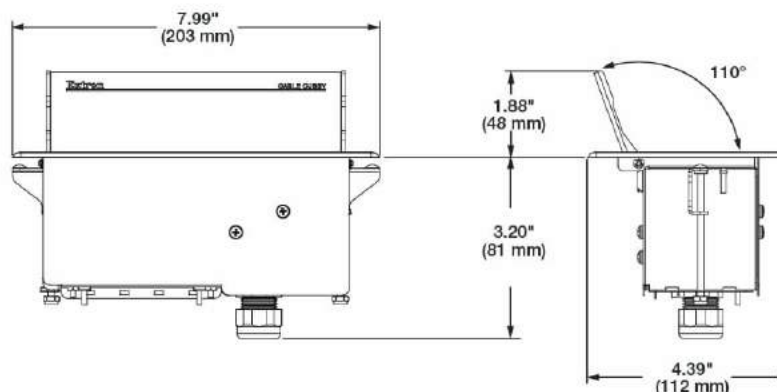
Enclosure depth 3.20" H (81 mm H)



Lid Closed



Lid Open



Material..... Metal

Product weight

US model 2.5 lbs (1.1 kg)

Non-US models..... 1.8 lbs (0.8 kg)

Regulatory compliance..... CE, RoHS, WEEE

US models UL, c-UL

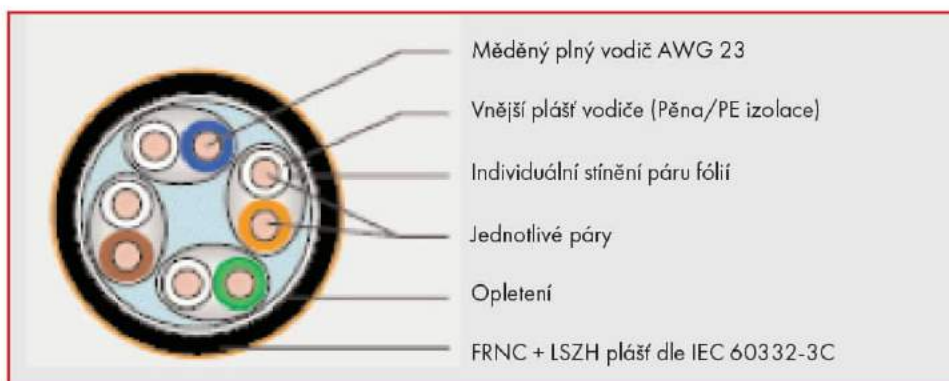
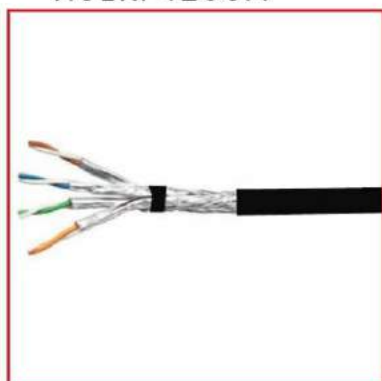
Warranty 3 years parts and labor

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.

TECHNICKÝ LIST:

KABEL S/FTP KATEGORIE 6_A 4x2xAWG23/1 LSOH-3 (IEC 60332-3C) HSEKP4233A



APLIKACE A POUŽITÍ

Kabel HSEKP4233A – S/FTP kategorie 6_A je specifikován pro přenos signálu do 500 MHz. Plně odpovídá požadavkům kategorie 6_A dle EN 50288 a IEC 61156-2. Výkonové charakteristiky ho předurčují k přenosu aplikací třídy E_A, tedy 10 Gigabitového Ethernetu dle IEEE 802.3an. Kabel má vynikající přenosové parametry, mimo jiné skew a propagation delay. Individuální stínění každého datového páru (PiMF konstrukce) včetně celoplášťového opletení výrazným způsobem snižuje vliv parametrů NEXT a ANEXT včetně jejich variant (FEXT, POWERSUM,....). Kabel lze využít jako páteřní kabel v datových centrech, kde je požadován 10 Gb Ethernet, též jako záložní okruh páteřní optické trasy.

SCHRACK INFO

- Měřený výkon: třída E_A, 500 MHz
- Plně odpovídá požadavkům na kategorii 6_A podle EN 50288 a IEC 61156-5
- Vynikající přenosové charakteristiky
- Individuální stínění jednotlivých párů (PiMF)
- Standardní barevné značení vodičů (párů): bílá/modrá, bílá/oranžová, bílá/zelená, bílá/hnědá
- Celkové opletení měděnými vodiči (30%)
- Bezhalogenový plášť
- Nehořlavý plášť podle IEC 60332-3C
- Oheň retardující plášť podle IEC 60754-2 a EN 50267
- Nízkokouřivý podle IEC 61034 a EN 50268

KONSTRUKČNÍ PROVEDENÍ

Objednací číslo	Kategorie	Průměr vodiče	Počet párů	Výhřevnost [MJ/m]	Bezhalogenový	Maximální tažná síla [N]	Vnější průměr [mm]	Váha [kg/km]
HSEKP4233A	6 _A	AWG 23	4	0,5	ano	113	7,2	49

Mechanická odolnost dle EN 50289-3-5: 1000 N/100mm/1 min (elektrické a přenosové vlastnosti podle EN 50288-4-1 jsou zachovány).

■ ELEKTRICKÉ VLASTNOSTI PŘI TEPLOTĚ 20 °C

- Maximální impedance ve smyčce: 165 Ω /km
- Maximální odchylka impedance: 1%
- Rázová odolnost: > 5000 M Ω x km
- Charakteristická impedance: < 10 m Ω na 1 metr při 10 MHz
- NVP: > 10 MHz (NVP*c): 0.79 c
- Propagation delay: $\geq$ 10 MHz: 4.2 ns/m
- Skew: < 25 ns/100m
- Typická hodnota vazebního útlumu: 80 dB

Frekvence [MHz]	1	10	16	20	31,25	62,5	100	250	500
Útlum v dB/100 m dle standardu*	2,1	5,9	7,5	8,4	10,5	15	19,1	31,1	45,3
Útlum [dB/100 m]	1,8	5,3	6,8	7,6	9,6	13,6	17,3	27,7	41,9
NEXT v dB/100m dle standardu*	75,3	60,3	57,2	55,8	52,9	48,4	45,3	39,3	34,8
NEXT [dB/100 m]	>100	>100	>100	>100	>100	97	95	90	83
PSNEXT v dB/100 m dle standardu*	72,3	57,3	54,2	52,8	49,9	45,4	42,3	36,3	31,8
PSNEXT [dB/100 m]	98	98	98	98	98	95	93	88	81
ACR-F v dB/100m dle standardu*	68	48	43,9	42	38,1	32,1	28	20	14
ACR-F [dB/100 m]	93	93	93	93	90	86	83	70	57
PS ACR-F v dB/100 m dle standardu*	65	45	40,9	39	35,1	29,1	25	17	11
PS ACR-F [dB/100 m]	90	90	90	90	87	83	80	67	54
ACR-N v dB/100m dle standardu*	73,2	54,4	49,8	47,4	42,4	33,4	26,2	8,3	-10,4
ACR-N [dB/100 m]	98,2	94,7	93,2	92,4	90,4	83,4	77,7	62,3	41,1

*) Standard: ISO/IEC 61156-5

■ MECHANICKÉ VLASTNOSTI

- Teplotní rozsah - instalační: 0 °C až + 50 °C
- Teplotní rozsah - provozní: -20 °C až + 60 °C
- Minimální poloměr ohybu - provozní: 3 x vnější průměr kabelu
- Minimální poloměr ohybu - instalační: 8 x vnější průměr kabelu

POPIS	OBSAH MĚDI [kg/km]	OBJEDNACÍ ČÍSLO
Kabel S/FTP PiMF kategorie 6A 500 MHz 4x2xAWG23, IEC 332-3C, černý	24	HSEKP4233A

Specifications

ShareLink 250 W and ShareLink 200 N

Software and control options

Software	ShareLink™ Software
Operating systems	Windows® 7/8/10, macOS® 10.7-10.13
Supported formats	

NOTE: The following formats apply only to the Share Media feature in the ShareLink software. These formats may include video and audio codecs that are not supported.

Video file formats	MP4, MPG, MPEG, AVI, MOV, MKV, WMV
Audio file formats	MP3, WAV, WMA, AAC
Image file formats	JPG, BMP, PNG, GIF

Supported codecs

NOTE: The following codecs apply only to the Share Media feature in the ShareLink software.

Video codecs.....	MPEG-2, MPEG-4 (Microsoft® MPEG-4 v1-3 is not supported), Motion JPEG, WMV9 (only WMV3/WVC1 is supported)
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NOTE: All video formats support up to 1920x1080, 30 fps, and 20 Mbps.

Audio codecs	LPCM, AAC, MP3, WMA
--------------------	---------------------

NOTE: The software supports up to 48 KHz, 320 Kbps.

Image codecs.....	JPG, BMP, PNG, GIF
-------------------	--------------------

NOTE: The software supports up to 25 megapixels for JPG files, and 9 megapixels for all other formats.

Mobile apps and features

MirrorOp® for Extron ShareLink

NOTE: This app supports Dropbox, Google Drive™, and OneDrive™. The iOS version of the app also supports iCloud. For details, see the user guide for your ShareLink model.

Operating systems.....	Apple® iOS 7.0 or later, Android™ 4.0 or later
Supported formats.....	Image file formats: JPEG, PNG Document file formats: Microsoft Word (.doc, .docx), PowerPoint (.ppt, .pptx), Excel (.xls, .xlsx); Keynote for iOS (.key) (iOS only); PDF

MirrorOp Sender for Galaxy

Operating system	Android 4.0 or later
Control function	Full mirroring of device screen

iOS Mirroring	Apple iOS 10.0-11.2
---------------------	---------------------

Network connectivity

ShareLink 250 W only

Standards.....	IEEE 802.11 a/b/g/n 2.4 GHz/5 GHz
Security Encryption	
Standards.....	IEEE Standard 64/128 bit WEP, WPA PSK, WPA2 PSK, WPA Enterprise, WPA2 Enterprise
Antennae.....	(2) Dual dipole

ShareLink 250 W and ShareLink 200 N

Standards.....	IEEE 802.3 (10BASE-T), IEEE 802.3u (100BASE-TX), IEEE 802.3ab (1000BASE-T)
Protocol.....	TCP/IP, SNMP, SNTP/NTP
IP configuration	DHCP (default), static IP - configurable
Management.....	Web based configuration, SNMP v3

Video output

Number/signal type.....	1 HDMI 1 RGBHV
Connectors	1 female HDMI type A 1 female 15-pin HD connector
Output resolution	800x600 @60Hz, 1024x768 @60Hz, 1280x720 @60Hz (720p) (default), 1280x768 @60Hz, 1280x800 @60Hz, 1360x768 @60Hz, 1440x900 @60Hz, 1600x1200 @60Hz, 1920x1080 @30Hz (1080i), 1920x1080 @60Hz (1080p)

Audio output

Number/signal type	1 digital, 2-channel PCM 1 analog stereo, unbalanced
Connectors	(1) embedded on HDMI (1) 3.5 mm, stereo mini jack: tip (L), ring (R), sleeve (Gnd)

Ethernet port

Ethernet port.....	1 female RJ-45 connector
Ethernet data rate	10/100/1000Base-T, half/full duplex with autodetect
Ethernet default settings	IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = On DNS = 192.168.254.254

USB ports

Number/signal type.....	3 high-speed USB 2.0
Connectors	3 USB type A connectors
USB standards	USB 2.0, USB 1.1, USB 1.0 compatible
USB player feature	
Supported formats	
Video file formats	MP4, MPG, MPEG, AVI, MOV, MKV, WMV
Audio file formats	MP3, WAV, WMA, AAC
Image file formats	JPG, BMP, PNG, GIF
Document file formats.....	Microsoft Word (.doc, .docx), PowerPoint (.ppt, .pptx), Excel (.xls, .xlsx); PDF
Supported codecs	
Video codecs.....	MPEG-2, MPEG-4 (Microsoft MPEG-4 v1-3 is not supported), Motion JPEG, WMV9 (only WMV3/WVC1 is supported)
NOTE: All video formats support up to 1920x1080, 30 fps, and 20 Mbps.	
Audio codecs	LPCM, AAC, MP3, WMA
NOTE: The USB player supports up to 48 KHz, 320 Kbps.	
Image codecs.....	JPG, BMP, PNG, GIF
NOTE: The USB player supports up to 25 megapixels for JPG files, and 9 megapixels for all other formats.	

Specifications • ShareLink 250 W and ShareLink 200 N (Continued)

General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 5 VDC, 2.6 A, 13 watts
Power input requirements	5 VDC or Power over Ethernet (PoE 802.3at, class 0)
Power consumption	
ShareLink 250 W	
Device	9.5 watts
Device and power supply...	11.5 watts
ShareLink 200 N	
Device	9.5 watts
Device and power supply...	11.8 watts
Power over Ethernet (PoE)	Complies with PoE 802.3at, class 0 (type 1)
Temperature/humidity	Storage: +14 to +140 °F (-10 to +60 °C) / 10% to 90%, noncondensing Operating: +32 to +104 °F (0 to +40 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Thermal dissipation	
ShareLink 250 W	
Device	6.4 BTU/Hr
Device and power supply...	14.6 BTU/Hr
ShareLink 200 N	
Device	7.8 BTU/Hr
Device and power supply...	15.9 BTU/Hr
Mounting	
Rack mount.....	Yes, with optional 1U rack shelf
Furniture mount.....	Yes, with optional MBU 125 mounting kit
Enclosure type	Metal
Enclosure dimensions	1.0" H x 6.51" W x 3.3" D (1 inch high, 3/8th rack wide) (2.5 cm H x 16.5 cm W x 8.5 cm D) (Depth excludes connectors.)
Product weight	1.0 lb (0.5 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	UL, c-UL, CE UL Listed for use in plenum air handling spaces: meets UL 2043 for heat and smoke release
EMI/EMC	
Both models	CE, FCC Class B, ICES, VCCI Class B, C-tick
ShareLink 250 W only	IDA
Environmental.....	Complies with the appropriate requirements of RoHS, WEEE
Warranty	3 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping dimensions and weights are available at www.extron.com.

4261-D7



AV32

Compact Desktop Speakers for Professional
Media Creation

[[FIND A DEALER](#)]

Features

3-inch polypropylene-coated woofers for tight, accurate bass

1-inch ferrofluid-cooled silk cone tweeters for clear, pristine highs

OptImage IV tweeter wave guides for superior imaging and detail

10-watt per channel amplifier

RCA inputs for connecting gaming systems, DJ gear, mixers, and more

Front-panel 1/8-inch stereo auxiliary input for connecting your laptop or desktop computer, MP3 player, or other audio sources

Front-panel 1/8-inch headphone output

Front-panel volume control

Acoustically-inert MDF cabinet with bass reflex design for deep, rich sound

Attractive black vinyl laminate finish

Specifications

High-Frequency Driver: 1" diameter, silk cone tweeter

Frequency Response: 80 Hz – 20 kHz

Crossover Frequency: 3.3 kHz

RMS SPL: 101.5 dB @ 1 meter

Signal-To-Noise Ratio: > 90 dB (typical, A-weighted)

Input Connectors: Left and right RCA line input and 1/8" aux input

Polarity: Positive signal at "+" input produces outward low-frequency cone displacement

Dynamic Power: 10 watts continuous, per channel into 4 Ω

Input Impedance: 10 k Ω unbalanced

Input Sensitivity: 100 mV pink noise input produces 90 dBA output SPL at 1 meter with volume control at maximum

Protection: RF interference, output current limiting, over temperature, turn on/off transient, subsonic filter

Indicator: Blue power LED for aligning wave guide

Power Requirements: 100-120V/~50/60 Hz, 220-240V/~50/60 Hz; powered via detachable 2-conductor line cord

Cabinet: Vinyl-laminated MDF



HLAVNÍ FUNKCE

PODPORA SEBEVĚDOMÍ

Díky intuitivním ovládacím prvkům a červenému laserovému ukazovátku budou prezentace hračkou i v těch nejtemnějších sálech.¹

PŘIPRAVEN K AKCI

Žádný software není potřeba - stačí připojit přijímač k portu USB a můžete zařízení začít používat.

POHYBUJTE SE VOLNĚ

Dosah 15 metrů a indikátor baterie vám umožní udělat ze všední prezentace nevšední.

INTUITIVNÍ OVLÁDACÍ PRVKY PREZENTACE

Tlačítka lze snadno najít po hmatu. Příjemný tvar skvěle padne do ruky. Budete mít prezentaci pod kontrolou od prvního do posledního snímku.

ČERVENÉ LASEROVÉ UKAZOVÁTKO

Vaše publikum snadno uvidí, na co právě ukazujete.¹

INDIKÁTOR STAVU BATERIE

Pouhým pohledem zjistíte, kolik energie ještě zbývá.

PARAMETRY A PODROBNOSTI

SYSTÉMOVÉ POŽADAVKY

Počítač se systémem Windows®

Windows Vista®, Windows 7, Windows 8, Windows 10 nebo novější

Port USB

DOSAŽ AŽ 15 METRŮ

Bezdrátová technologie 2,4 GHz vám dává možnost volně se pohybovat po místnosti a vmísit se do publika, a zvýšit tak působivost prezentace.

BEZDRÁTOVÝ PŘIJÍMAČ PLUG-AND-PLAY

Nemusíte instalovat žádný software. Stačí přijímač zapojit do portu USB a začít. A když je show u konce, můžete přijímač uložit do prezentačního zařízení.

TECHNICKÉ PARAMETRY

Rozměry (výška x šířka x hloubka):

37,8 mm x 115,5 mm x 27,4 mm

Hmotnost: 57 g

Rozměry přijímače (výška x šířka x hloubka):

16,5 mm x 58,6 mm x 7,9 mm

Hmotnost přijímače: 6 g

Barva: Černá

Laserová třída: Laserový produkt 2. třídy

Maximální výstupní výkon: Méně než 1 mW

Vlnová délka: 640-660 nm (červené světlo)

Typ baterií: 2 baterie velikosti AAA

Životnost baterií (laserové ukazovátko): 20 hodin maximálně

Životnost baterií (prezentační zařízení): 1050 hodin maximálně

Provozní dosah bezdrátového připojení: Cca 10 m²

Bezdrátová technologie: Bezdrátová technologie 2.4 GHz

Podporované OS:

Windows Vista, Windows 7, Windows 8

Rozhraní: USB

Příslušenství: Cestovní pouzdro

Původ produktu: Čína

OBSAH BALENÍ

Prezentační zařízení Logitech® Wireless Presenter TBD

Bezdrátový minipřijímač

2 baterie velikosti AAA

Cestovní pouzdro

Příručka rychlého spuštění

INFORMACE O ZÁRUCE

Tříletá omezená záruka na hardware

ČÍSLO DÍLU

Číslo produktu: 910-001356

Flipchart "Young-Edition Plus"



Flipchart "Young-Edition Plus"

Schreibfläche 710 x 1000 mm

Artikelnr.: 1227014

Preis netto:

Preis brutto:

zzgl. Versandkosten

● auf Lager, gewöhnlich versandfertig in 1-3 Werktagen.

Menge:

1

Ähnliche Produkte



Flipchart "de Luxe", mobil



 [Katalog-Bestellseite öffnen](#)

Flipchart „Young-Edition Plus“

Flipchart "Young Edition Plus" mit Dreibeinstativ, für hohen Qualitätsanspruch:

- Attraktives Modell mit hoher Standfestigkeit
- Rückwand aus Metall, für mehr Stabilität
- Solides Dreibeinstativ, stufenlos höhenverstellbar bis 1,80 m
- Magnethaftende, pulverbeschichtete Metalloberfläche. Mit Boardmarkern beschreibbar + trocken abwischbar
- Komplett mit 2 einsteckbaren Seitenarmen (magnethaftend), für 3-fache Präsentationsfläche
- Elegante, abgerundete Klappleiste und verstellbare Aufhängezapfen. Für alle handelsüblichen Papierblöcke
- Durchgehende Ablageschale für Marker + Zubehör
- Farbe: weiß / lichtgrau.

+ Tafelgröße: 680 x 950 mm

+ Max. Höhe: 1,94 m

+ Bodenfläche: 800 x 101 mm (B x T)

+ Gewicht: 10 kg

Flipchart "evolution plus"



Flipchart "Junior Plus"



Flipchart "Junior Plus, mobil"



Flipchart "Junior SP"



Wand-Flipchart



let the world be **your stage!**

ROAD SERIES

PORTABLE BATTERY POWERED ACTIVE PA SPEAKERS

Designed for maximum portability and versatility the battery powered ROAD Series loudspeakers shine in a wide range of mobile applications.

With advanced features such as MP3 or Bluetooth players with USB port, SD card slot and infrared remote control, integrated UHF wireless and comprehensive connectivity the compact ROAD loudspeakers provide a perfect all-in-one solution. For easy coverage extension the series includes a selection of battery powered and passive slave loudspeakers.

- ✓ Battery powered all-in-one loudspeakers
- ✓ Models with built-in Bluetooth players and UHF wireless
- ✓ Slave loudspeakers for extended coverage
- ✓ Maximum mobility with mains independent operation

ROADBUDDY

BATTERY POWERED BLUETOOTH® LOUDSPEAKER
WITH MIXER AND WIRELESS MICROPHONE

BATTERY POWERED **SPEAKERS**

ROAD SERIES

WIRELESS MICROPHONE AVAILABLE
WITH THREE FREQUENCY RANGES:

Standard: 863 - 865 MHz
B5: 584 - 607 MHz
B6: 655 - 679 MHz

CONNECT ALMOST ANY AUDIO SOURCE

The integrated mixer sports three channels with individual volume controls, a 2-band EQ plus adjustable echo and master volume. It delivers up to a stunning 480 watts of class D peak power and comes in 6" and 10" woofer versions.



TAKE IT EASY

The Road Buddy speakers come with a handy IR remote control and convenient pole mount insert.



LESS WIRE. MORE FREEDOM.

The Road Buddy incorporates an UHF receiver available with three different frequency bands (863 - 865 MHz // B5: 584 - 607 MHz // B6: 655 - 679 MHz) and features a slot for an additional unit available as accessory. It comes with a choice of handheld or headset wireless microphones.

VERSATILE MEDIA PLAYER

A major Road Buddy feature, the built-in Bluetooth® player also supports USB storage devices and SD cards and includes multiple genre specific presets for instant EQ adjustment.



READY FOR TAKE OFF

A rechargeable battery pack provides up to 8 hours of continuous operation. With built-in wheels and extension handles for carting convenience the Road Buddy active 2-way systems take your sound everywhere.

ALSO AVAILABLE
WITH HEADSET MICROPHONE.



ROADBUDDY 6
BATTERY POWERED BLUETOOTH LOUDSPEAKER
WITH MIXER AND WIRELESS MICROPHONE
200 W



ROADBUDDY 10
BATTERY POWERED BLUETOOTH LOUDSPEAKER
WITH MIXER AND WIRELESS MICROPHONE
480 W

S P E C F I L E

Product Number : **PT-RZ21K**

Product Name : 3-Chip DLP™ Projector

Specifications

Main unit

Power supply	AC 200V-240V, 7.7A, 50/60Hz The light output will decrease to approximately 1/2 when using the projector with AC 100V to AC 120V [9.6A].	
Power consumption	1,510 W (1,525 VA [AC200V]) (0.3 W with Standby Mode set to Eco* ¹ , 4 W with Standby Mode set to Normal) 1,217W (Normal Mode), 972 W (Eco Mode) Operating Temperature: 25 °C (77 °F), Altitude: 700m (2,297ft), IEC627087: 2008 Broadcast contents, Picture mode: Standard, Dynamic contrast [2] Max 5,159 BTU	
BTU value	Panel size Display method Pixels	24.4 mm (0.96 inches) diagonal (16:10 aspect ratio)
DLP™ chip		DLP™ chip × 3, DLP™ projection system 6,912,000 (1920 × 1200 × 3) pixels
Refresh rate	120 Hz* ²	
Lens	Optional (no lens included with this model), powered zoom, powered focus lens	
Light source	Laser Diode (Laser class: Class 1)*Class 3R for North America.	
Illumination life of set	Varies depending on operation mode setting. 20,000 hours at half luminance (Normal) 24,000 hours at half luminance (Eco) * IEC62087: 2008 Broadcast contents, Dynamic contrast [3] (NORMAL/ECO Temperature: 30°C (86°F), Altitude 700m (2,297 ft), Dynamic Contrast [3] Under conditions of 0.15 mg/m ³ of particulate matter	
Screen size (diagonal)	1.78–25.4 m (70–1,000 in) with 16:10 aspect ratio 1.78–15.24 m (70–600 in) with the ET-D75LE8, 16:10 aspect ratio 3.05–15.24 m (120–600 in) with the ET-D75LE95, 16:10 aspect ratio 21,000 lm (Center)* ^{3a5} / 20,000 lm (Normal)* ^{4a5}	
Brightness	90 %	
Center-to-corner uniformity	20,000:1 (Full On/Full Off, Dynamic Contrast Mode: 3)	
Contrast* ³	1920 × 1200 pixels	
Resolution	Video/YC RGB	fH:15.73KHz fV:59.94Hz, fH:15.63KHz fV:50Hz
Scanning frequency		- Resolution: 640 × 400 pixels to 1920 × 1200 pixels - Dot clock frequency: 162MHz or less - PIAS (Panasonic Intelligent Auto Scanning)
	YPBPR(YCBCR)	- Resolution: 480i/576i to 1920 × 1080 pixels - Dot clock frequency: 148.5MHz or less - The SYNC/HD and VD terminals do not support 3 value SYNC.
	DVI	- Moving image signal resolution: 480i*⁹/576i*⁶ to 1920x1080 - Still image signal resolution: 640 × 400 to 1920 × 1200 (non-interlace)
	HDMI/DIGITAL LINK	- Dot clock frequency: 25 MHz to 162 MHz - Moving image signal resolution: 480i*⁹/576i*⁶ to 1920x1080 - Still image signal resolution: 640 × 400 to 1920 × 1200 (non-interlace)
	SDI	- Dot clock frequency: 25 MHz to 162 MHz - SD-SDI signal - HD-SDI signal 3G-SDI signal
Optical axis shift	Vertical (from center of screen) ±55 % (±44 % with ET-D75LE6, +68 % – +78 % with ET-D75LE95) (powered) Horizontal (from center of screen) ±20 % (±15 % with ET-D75LE6, ±12 % with ET-D75LE95) (powered)	

NOTE: Optical axis shift function cannot be operated when used with the ET-D75LE50.

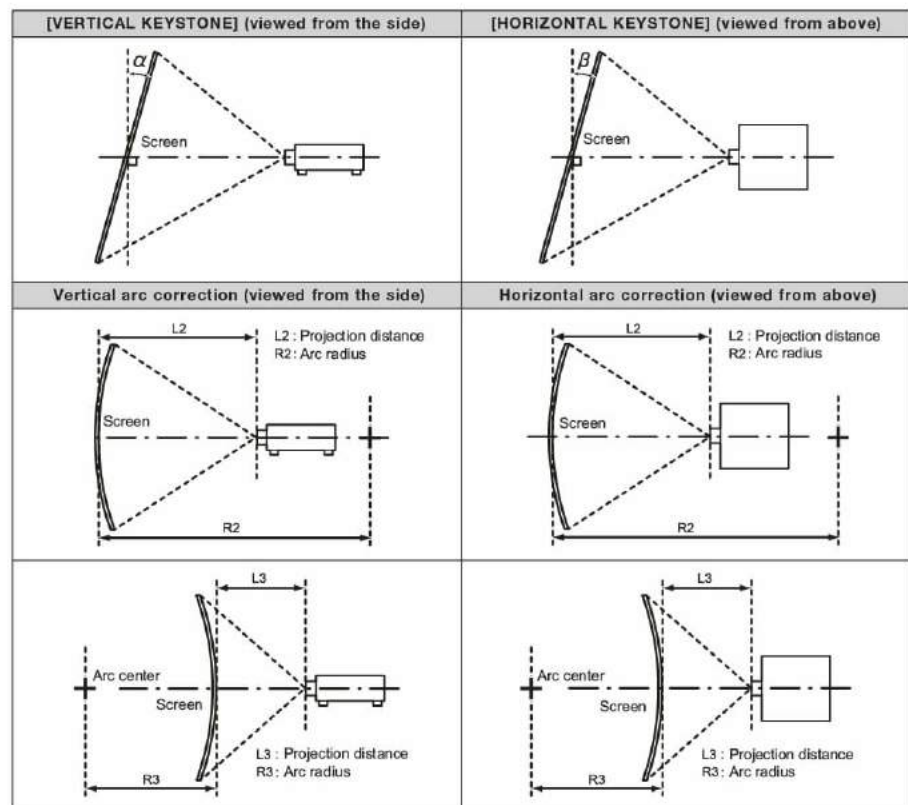
Keystone correction range

Projection lens Model No.	Only [KEYSTONE] used		[KEYSTONE] and [CURVED] used together				Only [CURVED] used	
	Vertical keystone correction angle α (°)	Horizontal keystone correction angle β (°)	Vertical keystone correction angle α (°)	Horizontal keystone correction angle β (°)	Min. value of R2/L2	Min. value of 3/L3	Min. value of R2/L2	Min. value of R3/L3
ET-D75LE6	±28	±15	±10	±10	1.6	3.9	0.9	2.3
ET-D75LE8	±40	±15	±20	±15	0.2	0.4	0.2	0.3
ET-D75LE10	±40	±15	±20	±15	1.1	2.6	0.6	1.5
ET-D75LE20	±40	±15	±20	±15	0.9	1.7	0.5	1.0
ET-D75LE30	±40	±15	±20	±15	0.6	1.2	0.4	0.7
ET-D75LE40	±40	±15	±20	±15	0.4	0.7	0.2	0.4
ET-D75LE50	±22	±15	±8	±8	2.0	4.9	1.2	2.9
ET-D75LE95* ⁷	+5 / -0	0	-	-	-	-	-	-

When using the optional Upgrade Kit (Model No.: ET-UK20)

Projection lens Model No.	Only [KEYSTONE] used* ⁸		[KEYSTONE] and [CURVED] used together* ⁹				Only [CURVED] used	
	Vertical keystone correction angle α (°)	Horizontal keystone correction angle β (°)	Vertical keystone correction angle α (°)	Horizontal keystone correction angle β (°)	Min. value of R2/L2	Min. value of 3/L3	Min. value of R2/L2	Min. value of R3/L3
ET-D75LE6	±28	±15	±10	±10	1.2	3.0	0.7	1.7
ET-D75LE8	±45	±40	±20	±15	0.2	0.3	0.1	0.2
ET-D75LE10	±40	±40	±20	±15	0.9	2.0	0.5	1.1
ET-D75LE20	±40	±40	±20	±15	0.7	1.3	0.4	0.7
ET-D75LE30	±45	±40	±20	±15	0.5	0.9	0.3	0.5
ET-D75LE40	±45	±40	±20	±15	0.3	0.5	0.2	0.3
ET-D75LE50	±22	±15	±8	±8	1.5	3.7	0.9	2.2
ET-D75LE95* ⁷	+5 / -0	0	-	-	-	-	-	-

Keystone correction range



Installation

Terminals

RGB1 IN	Ceiling/floor, front /rear, free 360-degree installation
R,G,B	BNC × 5
	R: 0.7 Vp-p, 75 ohms,
	G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms,
	B: 0.7 Vp-p, 75 ohms
	HD, VD/SYNC: TTL, high impedance, positive/negative automatic
Y, Pb, Pr (Y, Cb, Cr)	Y: 1.0 Vp-p (including sync signal), Pb/Pr (Cb/Cr): 0.7 Vp-p, 75 ohms
Y/C	Y: 1.0 Vp-p (including sync signal), C: 0.286 Vp-p, 75 ohms
VIDEO IN	BNC × 1, 1.0 Vp-p, 75 ohms
RGB2 IN	D-sub HD 15-pin (female) × 1
R,G,B	R: 0.7 Vp-p, 75 ohms,
	G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms,
	B: 0.7 Vp-p, 75 ohms
	HD, VD/SYNC: TTL, high impedance, positive/negative automatic
Y, Pb, Pr (Y, Cb, Cr)	Y: 1.0 Vp-p (including sync signal), Pb/Pr (Cb/Cr): 0.7 Vp-p, 75 ohms
DVI-D IN	DVI-D 24-pin × 1
	Single link, DVI 1.0 compliant, HDCP compatible
HDMI IN	HDMI 19-pin x1
	HDCP compatible, Deep Color compatible
SDI IN 1	BNC × 1
	SD-SDI signal SMPTE ST 259 compliant
	HD-SDI signal SMPTE ST 292 compliant
	3G-SDI signal SMPTE ST 424, 425-2 compliant
	Dual link HD-SDI (LINK A) signal SMPTE ST 372 compliant
	Dual link 3G-SDI (Link 1) signal SMPTE ST 425-3 compliant
SDI IN 2	BNC × 1
	SD-SDI signal SMPTE ST 259 compliant
	HD-SDI signal SMPTE ST 292 compliant
	3G-SDI signal SMPTE ST 424, 425-2 compliant
	Dual link HD-SDI (LINK B) signal SMPTE ST 372 compliant
	Dual link 3G-SDI (Link 2) signal SMPTE ST 425-3 compliant

Terminals	DIGITAL LINK	RJ-45
		HDBaseT™ compliant, HDCP compatible, Deep Color compatible
	3D SYNC1 IN/OUT /	
	MULTI PROJECTOR SYNC IN	BNC × 1, IN : TTL Hi-z OUT : TTL max10mA
	3D SYNC2 OUT /	
	MULTI PROJECTOR SYNC OUT	BNC × 1, TTL max10mA
	SERIAL IN	D-sub 9-pin × 1 for external control (RS-232C compliant)
	SERIAL OUT	D-sub 9-pin × 1 for link control
	REMOTE 1 IN	M3 jack × 1 for wired remote control
	REMOTE 1 OUT	M3 jack × 1 for link control
	REMOTE 2 IN	D-sub 9-pin × 1 for external control (parallel)
	DIGITAL LINK/LAN	RJ-45 × 1 for network connection, 100Base-TX PjLink™ (class 2) compatible, Art-Net compatible
	DC OUT 5V	USB connector (type A) × 2 for power supply only (DC 5V, Max 2A)
Power cord length	3.0 m(9 ft 10 in)	
Cabinet materials	Molded plastic	
Dimensions (W × H × D)	598 × 270 × 725 mm (23 17/32" × 10 5/8" × 28 17/32")	(not including protruding parts)
Weight* ⁹	Approximately 49kg (108 lbs)	(not including lens)
Operation noise* ³	46dB	
Operating environment	Operating temperature: 0–50 °C (32–122 °F)* ¹⁰ ; Operating humidity: 10–80 % (no condensation)	

Remote control unit

Power supply	DC 3 V (AAA/R03/LR03 battery × 2)
Operation range	Approx. 30 m (98 ft 5 in) when operated from directly in front of the signal receptor
Dimensions (W × H × D)	47.5 × 181.5 × 27.5 mm (1-7/8" × 7-5/32" × 1-3/32")
Weight	Approx. 150g (5.3 ozs.) (including batteries)

Supplied accessories

Power cord with secure lock (×2)
Wireless/wired remote control unit (×1)
Batteries for remote control (AA/R6 type ×2)
Lens hole cover (× 1)
Lens drop-prevention screw (× 1)

Optional accessories

Zoom lens (0.924–1.10:1)	ET-D75LE6	Zoom lens (1.30–1.67:1)	ET-D75LE10
Zoom lens (1.67–2.41:1)	ET-D75LE20	Zoom lens (2.40–4.66:1)	ET-D75LE30
Zoom lens (4.62–7.38:1)	ET-D75LE40	Zoom lens (7.34–13.8:1)	ET-D75LE8
Fixed-focus lens (0.694:1)	ET-D75LE50	Fixed-focus lens (0.364:1)	ET-D75LE95
Ceiling Mount Bracket (for High ceilings)	ET-PKD520H	Ceiling Mount Bracket (for Low ceilings)	ET-PKD520S
Ceiling Mount Bracket (Projector Mount Bracket)	ET-PKD520B		
Stepping Motor kit	ET-D75MKS10	Frame	ET-PFD510
Upgrade kit	ET-UK20	Auto Screen Adjustment Upgrade Kit (PC)	ET-CUK10P
Auto Screen Adjustment Upgrade Kit	ET-CUK10	Lens Fixed Attachment	ET-PLF10
Digital Interface Box	ET-YFB100G	DIGITAL LINK switcher	ET-YFB200G

Compatible Software

Logo Transfer Software	Smart Projector Control (iOS/android)
Early Warning Software (Basic license/3-year license) (ET-SWA100series*) *The suffix of the Model No. differs according to the license type.	

*1 When Standby Mode is set to ECO, network functions such as power on over LAN will not operate. Additionally, only certain commands can be received for external control using the serial terminal.

*2 Refresh rate varies depending on scanning frequency.

*3 Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards.

*4 The value of the light output at the center region of the projected image is extracted based on the light output measurement method defined by the ISO/IEC 21118:2012 international standards.

*5 In AC200V, When using a projection lens other than ET-D75LE95.

*6 Pixel-Repetition signal(dot clock frequency 27.0MHz) only

*7 Only the vertical keystone correction angle can be corrected in the direction in which the projector body moves away from the screen.

*8 When [VERTICAL KEYSTONE] and [HORIZONTAL KEYSTONE] are used simultaneously, correction cannot be made exceeding total of 55°.

*9 Average value. May differ depending on the actual unit.

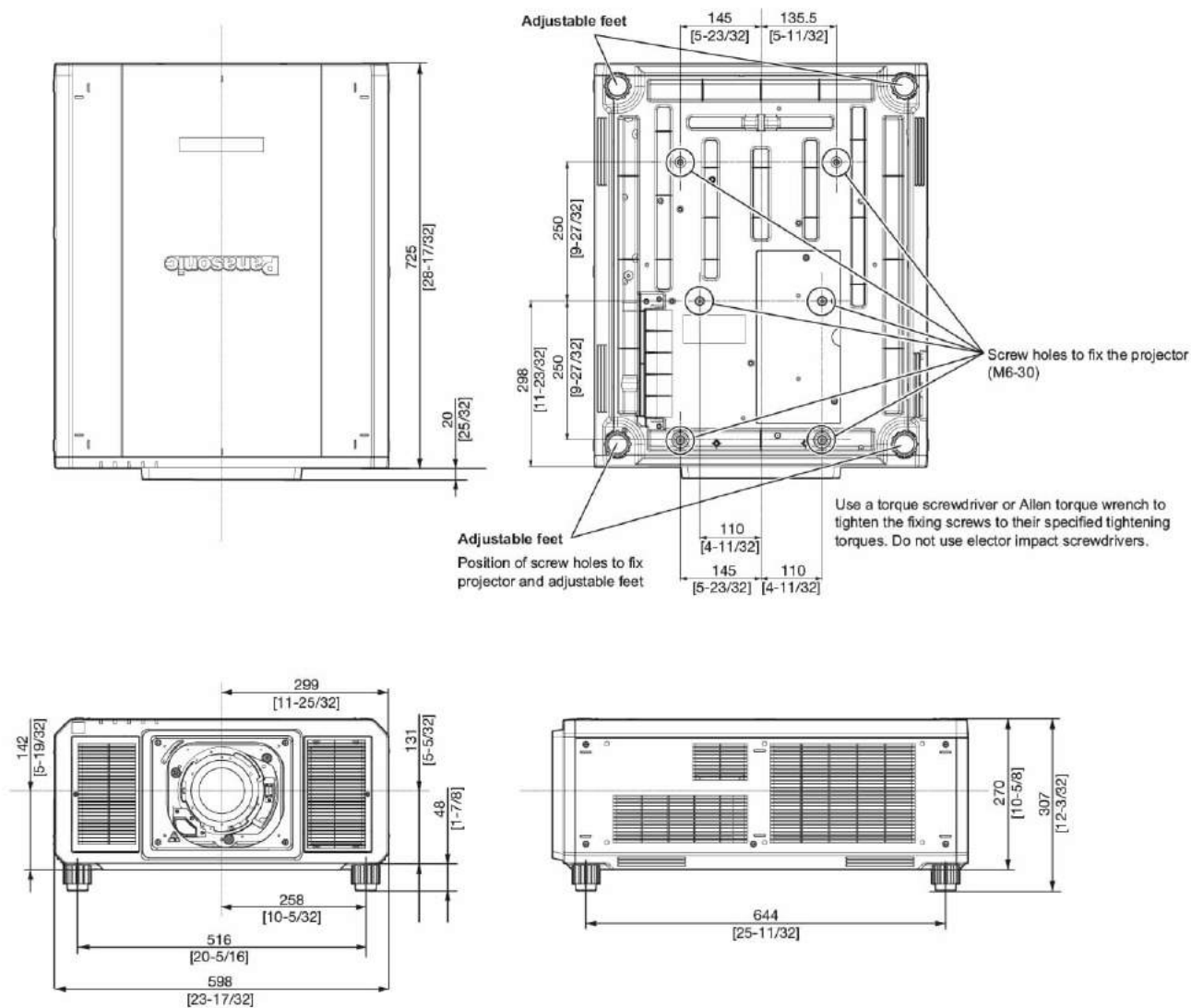
*10 Operating temperature is 0–45 °C (32–113 °F) when used in locations from 1,400 m to 4,200 m (4,593 ft to 13,779 ft) above sea level.

When the [PROJECTOR SETUP] menu → [OPERATION SETTING] → [OPERATING MODE] is set to [NORMAL], and the operating environment temperature exceeds the following value, the light output may be reduced to protect the projector.

•When using the projector at an altitude lower than 2,700m (8,858') above sea level: 35°C (95°F)

•When using the projector at an altitude between 2,700m (8,858') and 4,200m (13,780') above sea level: 25°C (77°F)

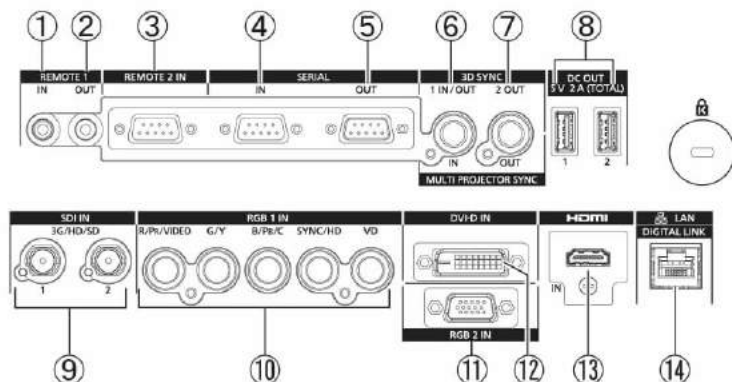
Dimensions



unit : mm (inch)

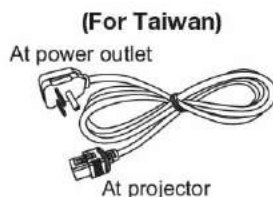
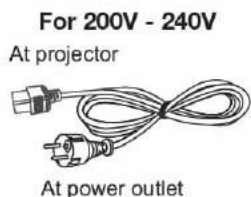
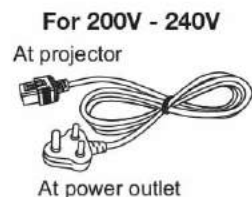
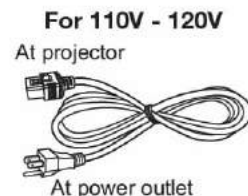
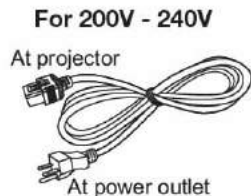
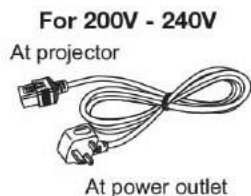
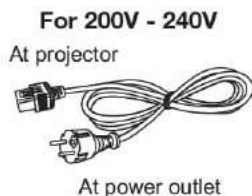
NOTE: This illustration is not drawn to scale.

Terminals

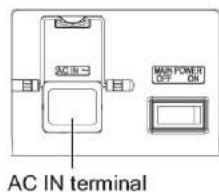


- 1 Remote 1 input
- 2 Remote 1 output
- 3 Remote 2 input
- 4 Serial input
- 5 Serial output
- 6 MULTI PROJECTOR SYNC IN
3D SYNC 1 IN/OUT
- 7 MULTI PROJECTOR SYNC OUT
3D SYNC 2 OUT
- 8 DC output 1/DC output 2
- 9 SDI 1 input/SDI 2 input
- 10 RGB 1 input
- 11 RGB 2 Input
- 12 DVI-D input
- 13 HDMI input
- 14 LAN/DIGITAL LINK connector

Power cord



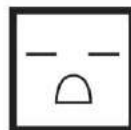
At projector



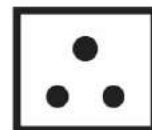
Power outlets that can be used



2P/3W 15 A 250 V



2P/3W 15 A 250 V



2P/3W 15 A 250 V



2P/3W 15 A 250 V

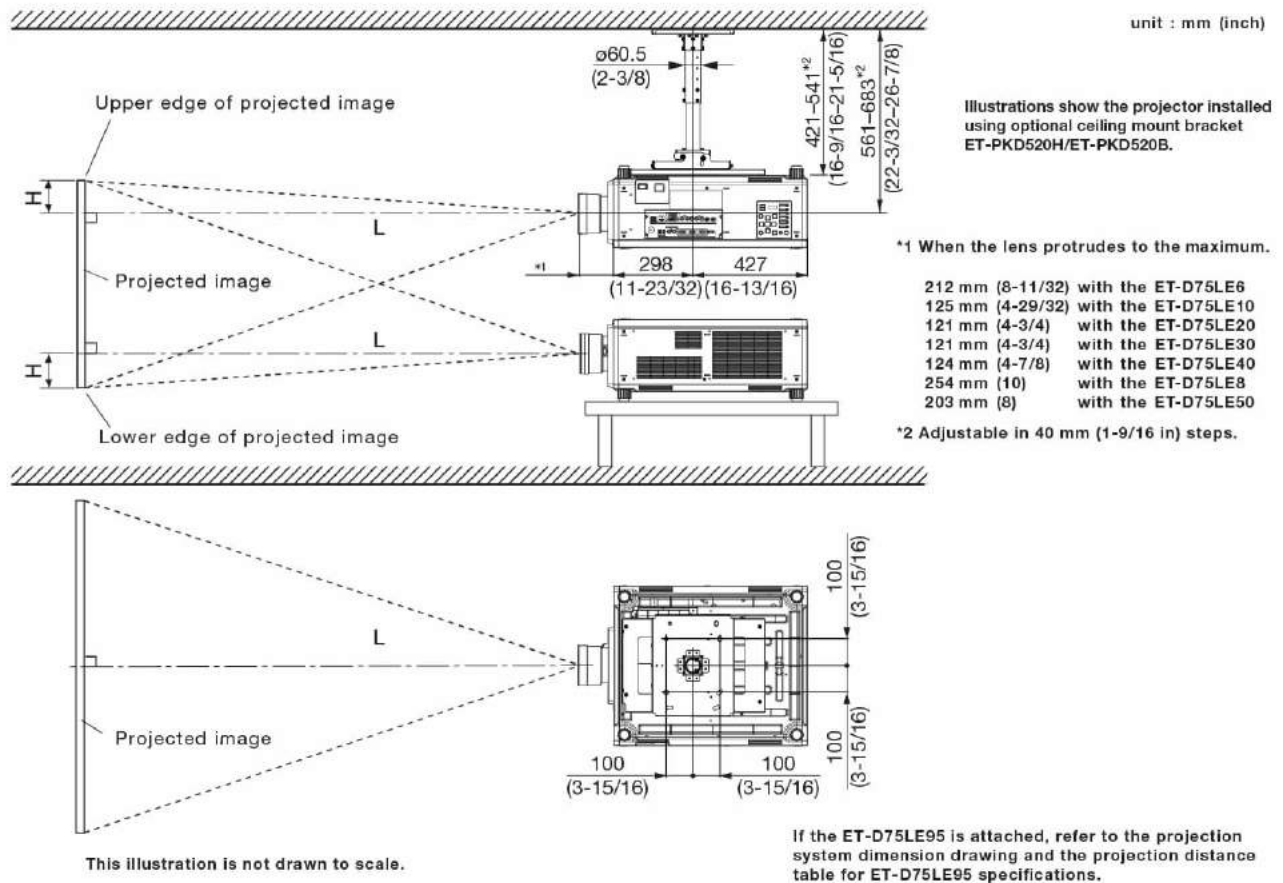


2P/3W 15 A 125 V

This projector supports AC100 V to AC120 V, and AC 200 V to AC 240 V as the power supply. A grounding outlet supporting 15 A is required with either voltage.

The shape of the usable outlet differs depending on the power supply. Following illustrations are examples.

Standard setting-up position



Caution:

- All construction work should be done by a qualified technician.

Projection distance for 16:10 aspect ratio screen

(ET-D75LE6/D75LE10/D75LE20/D75LE30/D75LE40/D75LE8/D75LE50)

Unit: meters

Screen size (diagonal)	Distance to screen (L)														Height from the edge of screen to center of lens (H)				
	Zoom												Fixed-focus						
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE40 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE50 Fixed-focus lens	Zoom lenses Except ET-D75LE6		ET-D75LE6	Fixed- focus lens		
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.							
[m] / [in]																			
1.78 / 70	1.36	1.63	1.90	2.46	2.46	3.58	3.56	6.94	6.87	11.04	10.85	20.69	1.01	-0.047–	0.989	0.057–	0.886	0.47	
2.03 / 80	1.56	1.87	2.19	2.83	2.82	4.11	4.08	7.96	7.88	12.65	12.45	23.70	1.16	-0.054–	1.131	0.065–	1.012	0.54	
2.29 / 90	1.77	2.11	2.47	3.20	3.19	4.64	4.61	8.98	8.88	14.25	14.06	26.71	1.32	-0.061–	1.272	0.073–	1.139	0.61	
2.54 / 100	1.97	2.35	2.76	3.56	3.55	5.17	5.13	9.99	9.88	15.85	15.66	29.71	1.47	-0.067–	1.414	0.081–	1.265	0.67	
3.05 / 120	2.38	2.84	3.32	4.30	4.28	6.22	6.18	12.03	11.89	19.05	18.88	35.73	1.78	-0.081–	1.696	0.097–	1.519	0.81	
3.81 / 150	2.98	3.57	4.18	5.40	5.37	7.81	7.75	15.08	14.90	23.85	23.69	44.75	2.24	-0.101–	2.120	0.121–	1.898	1.01	
5.08 / 200	4.00	4.78	5.60	7.24	7.19	10.45	10.38	20.16	19.92	31.86	31.72	59.79	3.01	-0.135–	2.827	0.162–	2.531	1.35	
6.35 / 250	5.01	6.00	7.02	9.07	9.00	13.09	13.00	25.25	24.95	39.86	39.74	74.82	3.78	-0.168–	3.534	0.202–	3.164	1.68	
7.62 / 300	6.02	7.21	8.44	10.91	10.82	15.73	15.62	30.34	29.97	47.87	47.77	89.86	4.56	-0.202–	4.241	0.242–	3.796	2.02	
8.89 / 350	7.04	8.42	9.86	12.74	12.64	18.37	18.24	35.42	34.99	55.87	55.79	104.90	5.33	-0.236–	4.947	0.283–	4.429	2.36	
10.16 / 400	8.05	9.64	11.28	14.58	14.46	21.01	20.86	40.51	40.01	63.87	63.82	119.94	6.10	-0.269–	5.654	0.323–	5.062	2.69	
12.70 / 500	10.08	12.07	14.12	18.25	18.09	26.29	26.11	50.68	50.05	79.88	79.87	150.01	7.64	-0.337–	7.068	0.404–	6.327	3.37	
15.24 / 600	12.10	14.49	16.96	21.92	21.73	31.58	31.35	60.85	60.09	95.89	95.92	180.08	9.18	-0.404–	8.481	0.485–	7.593	4.04	
17.78 / 700	14.13	16.92	19.80	25.60	25.36	36.88	36.60	71.02	70.13	111.90	111.97	–	10.72	-0.471–	9.895	0.565–	8.858	4.71	
20.32 / 800	16.16	19.35	22.64	29.27	29.00	42.14	41.84	81.19	80.17	127.91	128.02	–	12.27	-0.538–	11.308	0.646–	10.123	5.39	
22.86 / 900	18.18	21.78	25.48	32.94	32.63	47.42	47.09	91.36	90.21	143.92	144.07	–	13.81	-0.606–	12.722	0.727–	11.389	6.06	
25.40 / 1000	20.21	24.21	28.33	36.61	36.27	52.70	52.33	101.53	100.25	159.93	160.13	–	15.35	-0.673–	14.135	0.808–	12.654	6.73	

Unit: feet

Screen size (diagonal)	Distance to screen (L)														Height from the edge of screen to center of lens (H)				
	Zoom												Fixed-focus						
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE40 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE50 Fixed-focus lens	Zoom lenses Except ET-D75LE6		Fixed- focus lens			
[m] / [in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.							
1.78 / 70	4.5	5.3	6.2	8.1	8.1	11.7	11.7	22.8	22.5	36.2	35.6	67.9	3.3	-0.2–	3.2	0.2–	2.9	1.5	
2.03 / 80	5.1	6.1	7.2	9.3	9.3	13.5	13.4	26.1	25.9	41.5	40.8	77.8	3.8	-0.2–	3.7	0.2–	3.3	1.8	
2.29 / 90	5.8	6.9	8.1	10.5	10.5	15.2	15.1	29.5	29.1	46.8	46.1	87.6	4.3	-0.2–	4.2	0.2–	3.7	2.0	
2.54 / 100	6.5	7.7	9.1	11.7	11.6	17.0	16.8	32.8	32.4	52.0	51.4	97.5	4.8	-0.2–	4.6	0.3–	4.2	2.2	
3.05 / 120	7.8	9.3	10.9	14.1	14.0	20.4	20.3	39.5	39.0	62.5	61.9	117.2	5.8	-0.3–	5.6	0.3–	5.0	2.6	
3.81 / 150	9.8	11.7	13.7	17.7	17.6	25.6	25.4	49.5	48.9	78.2	77.7	146.8	7.3	-0.3–	7.0	0.4–	6.2	3.3	
5.08 / 200	13.1	15.7	18.4	23.8	23.6	34.3	34.1	66.1	65.4	104.5	104.1	196.2	9.9	-0.4–	9.3	0.5–	8.3	4.4	
6.35 / 250	16.4	19.7	23.0	29.8	29.5	42.9	42.7	82.8	81.9	130.8	130.4	245.5	12.4	-0.6–	11.6	0.7–	10.4	5.5	
7.62 / 300	19.8	23.7	27.7	35.8	35.5	51.6	51.2	99.5	98.3	157.1	156.7	294.8	15.0	-0.7–	13.9	0.8–	12.5	6.6	
8.89 / 350	23.1	27.6	32.3	41.8	41.5	60.3	59.8	116.2	114.8	183.3	183.0	344.2	17.5	-0.8–	16.2	0.9–	14.5	7.7	
10.16 / 400	26.4	31.6	37.0	47.8	47.4	68.9	68.4	132.9	131.3	209.5	209.4	393.5	20.0	-0.9–	18.5	1.1–	16.6	8.8	
12.70 / 500	33.1	39.6	46.3	59.9	59.4	86.3	85.7	166.3	164.2	262.1	262.0	492.2	25.1	-1.1–	23.2	1.3–	20.8	11.0	
15.24 / 600	39.7	47.5	55.6	71.9	71.3	103.6	102.9	199.6	197.1	314.6	314.7	590.8	30.1	-1.3–	27.8	1.6–	24.9	13.2	
17.78 / 700	46.4	55.5	65.0	84.0	83.2	120.9	120.1	233.0	230.1	367.1	367.4	–	35.2	-1.5–	32.5	1.9–	29.1	15.5	
20.32 / 800	53.0	63.5	74.3	96.0	95.1	138.3	137.3	266.4	263.0	419.7	420.0	–	40.3	-1.8–	37.1	2.1–	33.2	17.7	
22.86 / 900	59.6	71.5	83.6	108.1	107.1	155.6	154.5	299.7	296.0	472.2	472.7	–	45.3	-2.0–	41.7	2.4–	37.4	19.9	
25.40 / 1000	66.3	79.4	92.9	120.1	119.0	172.9	171.7	333.1	328.9	524.7	525.4	–	50.4	-2.2–	46.4	2.7–	41.5	22.1	

- The value for L (distance to screen) varies slightly within $\pm 5\%$ depending on the zoom lens characteristics.
- At the shortest projection distance, the zoom lens characteristics may cause slight image distortion.
- When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.

NOTE: When the ET-D75LE50 is mounted, the optical lens shift function cannot be used.

Projection distance for 16:9 aspect ratio screen

(ET-D75LE6/D75LE10/D75LE20/D75LE30/D75LE40/D75LE8/D75LE50)

Unit: meters

Screen size (diagonal)	Distance to screen (L)														Height from the edge of screen to center of lens (H)			
	Zoom												Fixed-focus		Zoom lenses Except ET-D75LE6			Fixed- focus lens
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE40 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE50 Fixed-focus lens					
	[m] / [in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.					
1.78 / 70	1.40	1.67	1.96	2.53	2.53	3.68	3.66	7.14	7.07	11.36	11.16	21.28	1.04	-0.087	0.959	0	0.872	0.44
2.03 / 80	1.61	1.92	2.25	2.91	2.91	4.23	4.20	8.19	8.10	13.00	12.81	24.37	1.20	-0.100	1.096	0	0.996	0.50
2.29 / 90	1.82	2.17	2.54	3.29	3.28	4.77	4.74	9.23	9.13	14.65	14.46	27.46	1.36	-0.112	1.233	0	1.121	0.56
2.54 / 100	2.03	2.42	2.83	3.67	3.65	5.31	5.28	10.28	10.16	16.29	16.11	30.55	1.51	-0.125	1.370	0	1.245	0.62
3.05 / 120	2.44	2.92	3.42	4.42	4.40	6.40	6.35	12.37	12.23	19.58	19.41	36.73	1.83	-0.149	1.644	0	1.494	0.75
3.81 / 150	3.07	3.67	4.29	5.55	5.52	8.03	7.97	15.50	15.32	24.52	24.36	46.00	2.31	-0.187	2.055	0	1.868	0.93
5.08 / 200	4.11	4.92	5.75	7.44	7.39	10.74	10.67	20.73	20.48	32.75	32.61	61.46	3.10	-0.249	2.740	0	2.491	1.25
6.35 / 250	5.15	6.17	7.21	9.33	9.26	13.46	13.36	25.96	25.64	40.97	40.86	76.91	3.89	-0.311	3.424	0	3.113	1.56
7.62 / 300	6.19	7.41	8.67	11.21	11.13	16.17	16.06	31.18	30.80	49.20	49.11	92.37	4.68	-0.374	4.109	0	3.736	1.87
8.89 / 350	7.23	8.66	10.13	13.10	12.99	18.88	18.75	36.41	35.96	57.43	57.35	107.82	5.48	-0.436	4.794	0	4.358	2.18
10.16 / 400	8.28	9.91	11.59	14.99	14.86	21.60	21.45	41.64	41.12	65.65	65.60	123.28	6.27	-0.498	5.479	0	4.981	2.49
12.70 / 500	10.36	12.40	14.51	18.76	18.60	27.03	26.84	52.09	51.44	82.11	82.10	154.19	7.85	-0.623	6.849	0	6.226	3.11
15.24 / 600	12.44	14.90	17.44	22.54	22.33	32.46	32.23	62.54	61.76	98.56	98.60	185.10	9.44	-0.747	8.219	0	7.472	3.74
17.78 / 700	14.52	17.39	20.36	26.31	26.07	37.89	37.62	73.00	72.08	115.02	115.10	—	11.02	-0.872	9.589	0	8.717	4.36
20.32 / 800	16.61	19.89	23.28	30.09	29.81	43.31	43.01	83.45	82.41	131.47	131.59	—	12.61	-0.996	10.958	0	9.962	4.98
22.86 / 900	18.69	22.39	26.20	33.86	33.54	48.74	48.40	93.90	92.73	147.92	148.09	—	14.19	-1.121	12.328	0	11.207	5.60
25.40 / 1000	20.77	24.88	29.12	37.63	37.28	54.17	53.79	104.36	103.05	164.38	164.59	—	15.78	-1.245	13.698	0	12.453	6.23

Unit: feet

Screen size (diagonal)	Distance to screen (L)														Height from the edge of screen to center of lens (H)			
	Zoom												Fixed-focus					
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE40 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE50 Fixed-focus lens	Zoom lenses Except ET-D75LE6		Fixed- focus lens		
[m] / [in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.						
1.78 / 70	4.6	5.5	6.4	8.3	8.3	12.1	12.0	23.4	23.2	37.3	36.6	69.8	3.4	-0.3	3.1	0	2.9	1.4
2.03 / 80	5.3	6.3	7.4	9.5	9.5	13.9	13.8	26.9	26.6	42.7	42.0	80.0	3.9	-0.3	3.6	0	3.3	1.6
2.29 / 90	6.0	7.1	8.3	10.8	10.8	15.6	15.6	30.3	30.0	48.1	47.4	90.1	4.5	-0.4	4.0	0	3.7	1.8
2.54 / 100	6.7	7.9	9.3	12.0	12.0	17.4	17.3	33.7	33.3	53.4	52.9	100.2	5.0	-0.4	4.5	0	4.1	2.0
3.05 / 120	8.0	9.6	11.2	14.5	14.4	21.0	20.8	40.6	40.1	64.2	63.7	120.5	6.0	-0.5	5.4	0	4.9	2.5
3.81 / 150	10.1	12.0	14.1	18.2	18.1	26.3	26.1	50.9	50.3	80.4	79.9	150.9	7.6	-0.6	6.7	0	6.1	3.1
5.08 / 200	13.5	16.1	18.9	24.4	24.2	35.2	35.0	68.0	67.2	107.4	107.0	201.6	10.2	-0.8	9.0	0	8.2	4.1
6.35 / 250	16.9	20.2	23.7	30.6	30.4	44.2	43.8	85.2	84.1	134.4	134.1	252.3	12.8	-1.0	11.2	0	10.2	5.1
7.62 / 300	20.3	24.3	28.4	36.8	36.5	53.1	52.7	102.3	101.0	161.4	161.1	303.1	15.4	-1.2	13.5	0	12.3	6.1
8.89 / 350	23.7	28.4	33.2	43.0	42.6	61.9	61.5	119.5	118.0	188.4	188.2	353.7	18.0	-1.4	15.7	0	14.3	7.1
10.16 / 400	27.2	32.5	38.0	49.2	48.8	70.9	70.4	136.6	134.9	215.4	215.2	404.5	20.6	-1.6	18.0	0	16.3	8.2
12.70 / 500	34.0	40.7	47.6	61.5	61.0	88.7	88.1	170.9	168.8	269.4	269.4	505.9	25.8	-2.0	22.5	0	20.4	10.2
15.24 / 600	40.8	48.9	57.2	74.0	73.3	106.5	105.7	205.2	202.6	323.4	323.5	607.3	31.0	-2.5	27.0	0	24.5	12.3
17.78 / 700	47.6	57.1	66.8	86.3	85.5	124.3	123.4	239.5	236.5	377.4	377.6	–	36.2	-2.9	31.5	0	28.6	14.3
20.32 / 800	54.5	65.3	76.4	98.7	97.8	142.1	141.1	273.8	270.4	431.3	431.7	–	41.4	-3.3	36.0	0	32.7	16.3
22.86 / 900	61.3	73.5	86.0	111.1	110.0	159.9	158.8	308.1	304.2	485.3	485.9	–	46.6	-3.7	40.4	0	36.8	18.4
25.40 / 1000	68.1	81.6	95.5	123.5	122.3	177.7	176.5	342.4	338.1	539.3	540.0	–	51.8	-4.1	44.9	0	40.9	20.4

- The value for L (distance to screen) varies slightly within $\pm 5\%$ depending on the zoom lens characteristics.
- At the shortest projection distance, the zoom lens characteristics may cause slight image distortion.
- When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.

NOTE: When the ET-D75LE50 is mounted, the optical lens shift function cannot be used.

Projection distance for 4:3 aspect ratio screen

(ET-D75LE6/D75LE10/D75LE20/D75LE30/D75LE40/D75LE8/D75LE50)

Unit: meters

Screen size (diagonal)	Distance to screen (L)												Height from the edge of screen to center of lens (H)				
	Zoom												Fixed-focus				
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE40 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE50 Fixed-focus lens	Zoom lenses Except ET-D75LE6		Fixed- focus lens	
[m] / [in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.					
1.78 / 70	1.55	1.85	2.17	2.80	2.80	4.07	4.04	7.88	7.80	12.52	12.33	23.47	1.15	0 – 1.067	0.107 – 0.960	0.53	
2.03 / 80	1.78	2.13	2.49	3.22	3.21	4.67	4.64	9.03	8.94	14.34	14.15	26.88	1.33	0 – 1.219	0.122 – 1.097	0.61	
2.29 / 90	2.01	2.40	2.81	3.63	3.62	5.27	5.23	10.19	10.07	16.15	15.97	30.28	1.50	0 – 1.372	0.137 – 1.234	0.69	
2.54 / 100	2.24	2.68	3.13	4.05	4.03	5.86	5.82	11.34	11.21	17.96	17.78	33.69	1.67	0 – 1.524	0.152 – 1.372	0.76	
3.05 / 120	2.70	3.22	3.77	4.88	4.86	7.06	7.01	13.64	13.48	21.59	21.42	40.50	2.02	0 – 1.829	0.183 – 1.646	0.91	
3.81 / 150	3.38	4.05	4.74	6.13	6.09	8.85	8.79	17.09	16.89	27.02	26.87	50.71	2.55	0 – 2.286	0.229 – 2.057	1.14	
5.08 / 200	4.53	5.42	6.35	8.21	8.15	11.84	11.76	22.85	22.58	36.09	35.96	67.73	3.42	0 – 3.048	0.305 – 2.743	1.52	
6.35 / 250	5.68	6.80	7.96	10.28	10.20	14.83	14.73	28.61	28.26	45.15	45.04	84.75	4.29	0 – 3.810	0.381 – 3.429	1.91	
7.62 / 300	6.83	8.17	9.56	12.36	12.26	17.82	17.70	34.36	33.94	54.21	54.13	101.78	5.17	0 – 4.572	0.457 – 4.115	2.29	
8.89 / 350	7.97	9.55	11.17	14.44	14.32	20.81	20.67	40.12	39.63	63.27	63.21	118.80	6.04	0 – 5.334	0.533 – 4.801	2.67	
10.16 / 400	9.12	10.92	12.78	16.52	16.38	23.80	23.63	45.88	45.31	72.33	72.30	135.82	6.91	0 – 6.096	0.610 – 5.486	3.05	
12.70 / 500	11.41	13.67	16.00	20.68	20.49	29.78	29.57	57.39	56.68	90.45	90.47	169.87	8.66	0 – 7.620	0.762 – 6.858	3.81	
15.24 / 600	13.71	16.42	19.21	24.83	24.61	35.76	35.51	68.91	68.05	108.58	108.64	203.91	10.40	0 – 9.144	0.914 – 8.230	4.57	
17.78 / 700	16.00	19.17	22.43	28.99	28.72	41.74	41.45	80.42	79.41	126.70	126.81	–	12.15	0 – 10.668	1.067 – 9.601	5.33	
20.32 / 800	18.30	21.92	25.65	33.15	32.84	47.72	47.38	91.93	90.78	144.82	144.98	–	13.90	0 – 12.192	1.219 – 10.973	6.10	
22.86 / 900	20.59	24.66	28.86	37.31	36.95	53.70	53.32	103.45	102.15	162.95	163.15	–	15.64	0 – 13.716	1.372 – 12.344	6.86	
25.40 / 1000	22.89	27.41	32.08	41.46	41.07	59.68	59.26	114.96	113.52	181.07	181.33	–	17.39	0 – 15.240	1.524 – 13.716	7.62	

Unit: feet

Screen size (diagonal)	Distance to screen (L)												Height from the edge of screen to center of lens (H)				
	Zoom												Fixed-focus				
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE40 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE50 Fixed-focus lens	Zoom lenses Except ET-D75LE6		Fixed- focus lens	
[m] / [in]	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.					
1.78 / 70	5.1	6.1	7.1	9.2	9.2	13.4	13.3	25.9	25.6	41.1	40.5	77.0	3.8	0 – 3.5	0.4 – 3.1	1.8	
2.03 / 80	5.8	7.0	8.2	10.6	10.5	15.3	15.2	29.6	29.3	47.0	46.4	88.2	4.4	0 – 4.0	0.4 – 3.6	2.0	
2.29 / 90	6.6	7.9	9.2	11.9	11.9	17.3	17.2	33.4	33.0	53.0	52.4	99.3	4.9	0 – 4.5	0.4 – 4.0	2.3	
2.54 / 100	7.3	8.8	10.3	13.3	13.2	19.2	19.1	37.2	36.8	58.9	58.3	110.5	5.5	0 – 5.0	0.5 – 4.5	2.5	
3.05 / 120	8.9	10.6	12.4	16.0	15.9	23.2	23.0	44.8	44.2	70.8	70.3	132.9	6.6	0 – 6.0	0.6 – 5.4	3.0	
3.81 / 150	11.1	13.3	15.6	20.1	20.0	29.0	28.8	56.1	55.4	88.6	88.2	166.4	8.4	0 – 7.5	0.8 – 6.7	3.8	
5.08 / 200	14.9	17.8	20.8	26.9	26.7	38.8	38.6	75.0	74.1	118.4	118.0	222.2	11.2	0 – 10.0	1.0 – 9.0	5.0	
6.35 / 250	18.6	22.3	26.1	33.7	33.5	48.7	48.3	93.9	92.7	148.1	147.8	278.1	14.1	0 – 12.5	1.3 – 11.3	6.3	
7.62 / 300	22.4	26.8	31.4	40.6	40.2	58.5	58.1	112.7	111.4	177.9	177.6	333.9	17.0	0 – 15.0	1.5 – 13.5	7.5	
8.89 / 350	26.1	31.3	36.6	47.4	47.0	68.3	67.8	131.6	130.0	207.6	207.4	389.8	19.8	0 – 17.5	1.7 – 15.8	8.8	
10.16 / 400	29.9	35.8	41.9	54.2	53.7	78.1	77.5	150.5	148.7	237.3	237.2	445.6	22.7	0 – 20.0	2.0 – 18.0	10.0	
12.70 / 500	37.4	44.8	52.5	67.8	67.2	97.7	97.0	188.3	186.0	296.8	296.8	557.3	28.4	0 – 25.0	2.5 – 22.5	12.5	
15.24 / 600	45.0	53.9	63.0	81.5	80.7	117.3	116.5	226.1	223.3	356.2	356.4	669.0	34.1	0 – 30.0	3.0 – 27.0	15.0	
17.78 / 700	52.5	62.9	73.6	95.1	94.2	136.9	136.0	263.8	260.5	415.7	416.0	–	39.9	0 – 35.0	3.5 – 31.5	17.5	
20.32 / 800	60.0	71.9	84.2	108.8	107.7	156.6	155.4	301.6	297.8	475.1	475.7	–	45.6	0 – 40.0	4.0 – 36.0	20.0	
22.86 / 900	67.6	80.9	94.7	122.4	121.2	176.2	174.9	339.4	335.1	534.6	535.3	–	51.3	0 – 45.0	4.5 – 40.5	22.5	
25.40 / 1000	75.1	89.9	105.2	136.0	134.7	195.8	194.4	377.2	372.4	594.1	594.9	–	57.1	0 – 50.0	5.0 – 45.0	25.0	

- The value for L (distance to screen) varies slightly within $\pm 5\%$ depending on the zoom lens characteristics.
 - At the shortest projection distance, the zoom lens characteristics may cause slight image distortion.
 - When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.
- NOTE: When the ET-D75LE50 is mounted, the optical lens shift function cannot be used.

Calculation of the projection distance

For a screen size different from the above, use the equation below to calculate the projection distance.

Aspect ratio 16:10**Zoom lenses**

ET-D75LE6	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02027 - 0.0566$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02428 - 0.0736$
ET-D75LE10	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02841 - 0.0857$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.03672 - 0.1085$
ET-D75LE20	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.03635 - 0.0832$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.05282 - 0.1162$
ET-D75LE30	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.05244 - 0.1131$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.10171 - 0.1765$
ET-D75LE40	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.10041 - 0.1577$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.16009 - 0.1615$
ET-D75LE8	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.16051 - 0.3862$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.30074 - 0.3598$

Fixed-focus lens

ET-D75LE50	$L (m) = (\text{diagonal screen size in inches}) \times 0.01542 - 0.0713$
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Aspect ratio 16:9**Zoom lenses**

ET-D75LE6	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02083 - 0.0566$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02495 - 0.0736$
ET-D75LE10	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02920 - 0.0857$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.03774 - 0.1085$
ET-D75LE20	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.03736 - 0.0832$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.05429 - 0.1162$
ET-D75LE30	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.05390 - 0.1131$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.10453 - 0.1765$
ET-D75LE40	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.10320 - 0.1577$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.16454 - 0.1615$
ET-D75LE8	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.16497 - 0.3862$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.30910 - 0.3598$

Fixed-focus lens

ET-D75LE50	$L (m) = (\text{diagonal screen size in inches}) \times 0.01585 - 0.0713$
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Aspect ratio 4:3**Zoom lenses**

ET-D75LE6	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02294 - 0.0566$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.02749 - 0.0736$
ET-D75LE10	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.03216 - 0.0857$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.04157 - 0.1085$
ET-D75LE20	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.04115 - 0.0832$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.05980 - 0.1162$
ET-D75LE30	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.05937 - 0.1131$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.11514 - 0.1765$
ET-D75LE40	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.11367 - 0.1577$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.18123 - 0.1615$
ET-D75LE8	minimum	$L (m) = (\text{diagonal screen size in inches}) \times 0.18171 - 0.3862$
	maximum	$L (m) = (\text{diagonal screen size in inches}) \times 0.34046 - 0.3598$

Fixed-focus lens

ET-D75LE50	$L (m) = (\text{diagonal screen size in inches}) \times 0.01746 - 0.0713$
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• Distances calculated with the above equations will include slight deviations.

Shift range

Optical axis shift function allows to shift the position of a projected image as shown below.

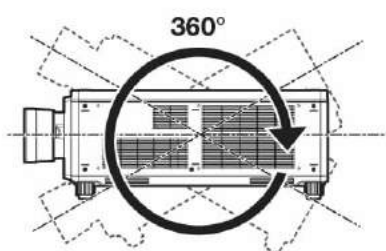
Projection lens Model No.	ET-D75LE8, ET-D75LE10, ET-D75LE20, ET-D75LE30, ET-D75LE40	ET-D75LE6
Lens shift range		
Projection lens Model No.	ET-D75LE95	ET-D75LE90
Lens shift range		

NOTE: Use the projection lens in the standard projection position without adjusting the lens shift when the optional Fixed-focus Lens (Model No. : ET-D75LE50) is attached.

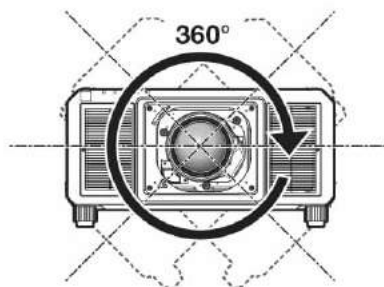
Installable angle

Install the projector at an angle within the range shown below.

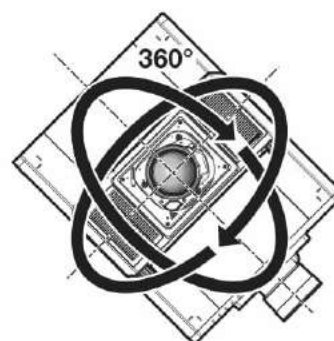
FULL 360-degree projection



Vertical 360-deg.



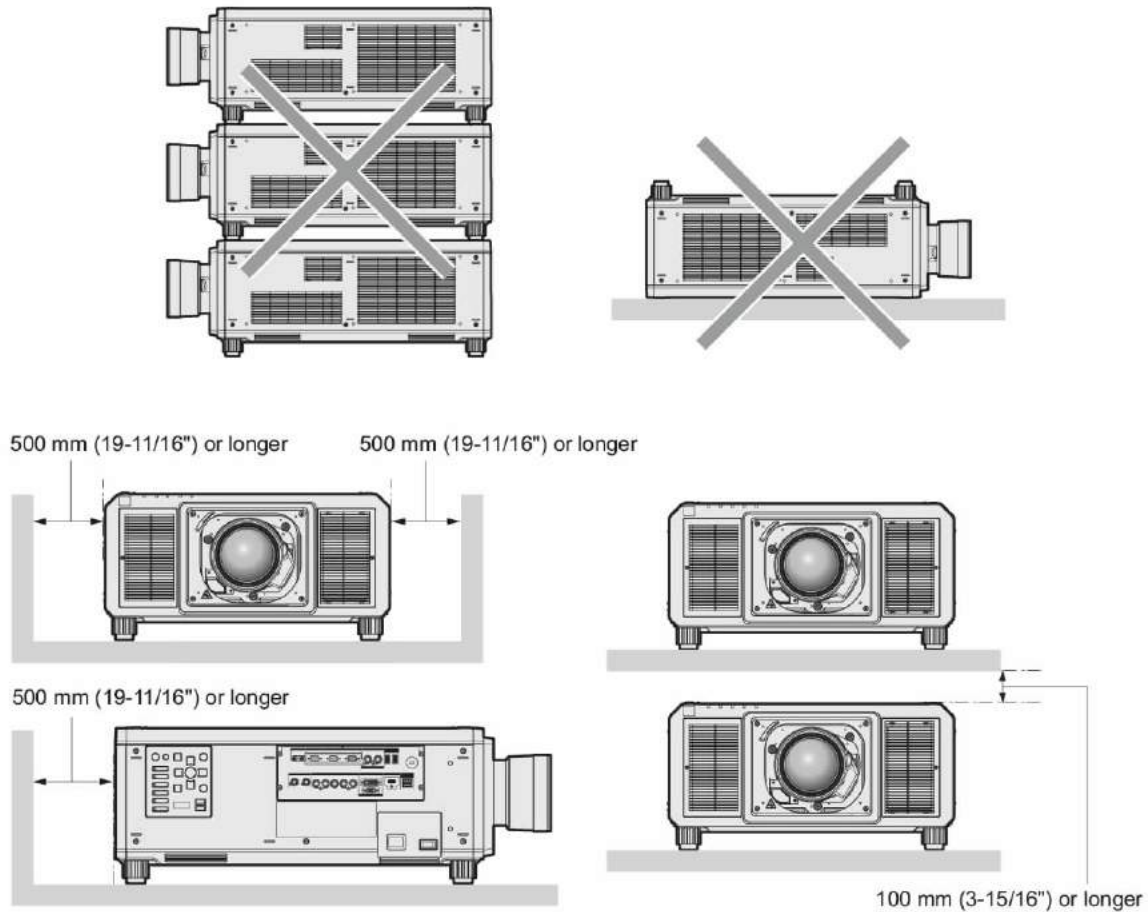
Horizontal 360-deg.



Tilting 360-deg.
(V&H combination)

Notes on projector placement and operation

- Prevent hot and cool air from the air conditioning system to blow directly to the ventilation ports (intake and exhaust) of the projector.



- Do not install the projector in a confined space.
When installing the projector in a confined space, provide air conditioning or ventilation separately. Exhaust heat may accumulate when the ventilation is not enough, triggering the protection circuit of the projector.

List of compatible signals

The following table specifies the video signals compatible with the projector.

- Symbols that indicate formats are as follows.
 - V : VIDEO, Y/C
 - R: RGB (analog)
 - Y: YCbCr/YPbPr (analog)
 - D: DVI-D
 - H: HDMI
- Input corresponding to each item in the plug and play column is as follows.
 - RGB2: RGB2 input
 - DVI-D: DVI-D input
 - HDMI/DL: HDMI input, DIGITAL LINK input

Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	Format	RGB2	Plug and Play**			HDMI DL
		H (KHz)	V (Hz)				EDID1	DVD-D EDID2	EDID3	
NTSC/NTSC4.43/PAL-M/PAL60	720 × 480i	15.7	59.9	—	V	—	—	—	—	—
PAL/PAL-N/SECAM	720 × 576i	15.6	50.0	—	V	—	—	—	—	—
480/60i	720 × 480i	15.7	59.9	13.5	R/Y	—	—	—	—	—
576/50i	720 × 576i	15.6	50.0	13.5	R/Y	—	—	—	—	—
480/60i	720(1440) × 480i*2	15.7	59.9	27.0	D/H	—	—	—	—	—
576/50i	720(1440) × 576i*2	15.6	50.0	27.0	D/H	—	—	—	—	—
480/60p	720 × 480	31.5	59.9	27.0	R/Y/D/H	—	✓	—	✓	✓
576/50p	720 × 576	31.3	50.0	27.0	R/Y/D/H	—	✓	—	✓	✓
720/60p	1280 × 720	45.0	60.0	74.3	R/Y/D/H	—	✓	—	✓	✓
720/50p	1280 × 720	37.5	50.0	74.3	R/Y/D/H	—	✓	—	✓	✓
1080/60i	1920 × 1080i	33.8	60.0	74.3	R/Y/D/H	—	✓	—	✓	✓
1080/50i	1920 × 1080i	28.1	50.0	74.3	R/Y/D/H	—	✓	—	✓	✓
1080/24p	1920 × 1080	27.0	24.0	74.3	R/Y/D/H	—	✓	—	✓	✓
1080/24sF	1920 × 1080i	27.0	48.0	74.3	R/Y/D/H	—	—	—	—	—
1080/25p	1920 × 1080	28.1	25.0	74.3	R/Y/D/H	—	✓	—	✓	—
1080/30p	1920 × 1080	33.8	30.0	74.3	R/Y/D/H	—	—	—	—	—
1080/60p	1920 × 1080	67.5	60.0	148.5	R/Y/D/H	—	✓	—	✓	✓
1080/50p	1920 × 1080	56.3	50.0	148.5	R/Y/D/H	—	✓	—	✓	✓
640 × 400/70	640 × 400	31.5	70.1	25.2	R/D/H	—	—	—	—	—
640 × 400/85	640 × 400	37.9	85.1	31.5	R/D/H	—	—	—	—	—
640 × 480/60	640 × 480	31.5	59.9	25.2	R/D/H	✓	✓	✓	✓	✓
640 × 480/67	640 × 480	35.0	66.7	30.2	R/D/H	—	—	—	—	—
640 × 480/73	640 × 480	37.9	72.8	31.5	R/D/H	✓	—	✓	✓	✓
640 × 480/75	640 × 480	37.5	75.0	31.5	R/D/H	✓	—	✓	✓	✓
640 × 480/85	640 × 480	43.3	85.0	36.0	R/D/H	—	—	—	—	—
800 × 600/56	800 × 600	35.2	56.3	36.0	R/D/H	✓	—	✓	✓	✓
800 × 600/60	800 × 600	37.9	60.3	40.0	R/D/H	✓	—	✓	✓	✓
800 × 600/72	800 × 600	48.1	72.2	50.0	R/D/H	✓	—	✓	✓	✓
800 × 600/75	800 × 600	46.9	75.0	49.5	R/D/H	✓	—	✓	✓	✓
800 × 600/85	800 × 600	53.7	85.1	56.3	R/D/H	—	—	—	—	—
832 × 624/75	832 × 624	49.7	74.6	57.3	R/D/H	✓	—	✓	✓	✓
1024 × 768/50	1024 × 768	39.6	50.0	51.9	R/D/H	—	—	—	—	—
1024 × 768/60	1024 × 768	48.4	60.0	65.0	R/D/H	✓	—	✓	✓	✓
1024 × 768/70	1024 × 768	56.5	70.1	75.0	R/D/H	✓	—	✓	✓	✓
1024 × 768/75	1024 × 768	60.0	75.0	78.8	R/D/H	✓	—	✓	✓	✓
1024 × 768/82	1024 × 768	65.5	81.6	86.0	R/D/H	—	—	—	—	—
1024 × 768/85	1024 × 768	68.7	85.0	94.5	R/D/H	—	—	—	—	—
1024 × 768/100	1024 × 768*3	81.4	100.0	113.3	R/D/H	—	—	—	—	—
1024 × 768/120	1024 × 768*3	98.7	120.0	139.1	R/D/H	✓	—	✓	✓	✓
1152 × 864/60	1152 × 864	53.7	60.0	81.6	R/D/H	—	—	—	—	—
1152 × 864/70	1152 × 864	64.0	70.0	94.2	R/D/H	—	—	—	—	—
1152 × 864/75	1152 × 864	67.5	75.0	108.0	R/D/H	—	—	—	—	—
1152 × 864/85	1152 × 864	77.1	85.0	119.7	R/D/H	—	—	—	—	—
1152 × 870/75	1152 × 870	68.7	75.1	100.0	R/D/H	✓	—	✓	✓	✓
1280 × 720/50	1280 × 720	37.1	49.8	60.5	R/D/H	—	—	—	—	—
1280 × 720/60	1280 × 720	44.8	59.9	74.5	R/D/H	—	—	—	—	—
1280 × 720/100	1280 × 720*3	76.3	100.0	131.8	R/D/H	—	—	—	—	—
1280 × 720/120	1280 × 720*3	92.6	120.0	161.6	R/D/H	—	—	—	—	—

Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	Format	RGB2	Plug and Play ^{*1}			HDMI DL
		H (KHz)	V (Hz)				EDID1	DVD-D EDID2	EDID3	
1280 × 768/50	1280 × 768	39.6	49.9	65.3	R/D/H	—	—	—	—	—
1280 × 768/60	1280 × 768	47.8	59.9	79.5	R/D/H	—	—	—	—	—
	1280 × 768* ⁴	47.4	60.0	68.3	R/D/H	—	—	—	—	—
1280 × 768/75	1280 × 768	60.3	74.9	102.3	R/D/H	—	—	—	—	—
1280 × 768/85	1280 × 768	68.6	84.8	117.5	R/D/H	—	—	—	—	—
1280 × 800/50	1280 × 800	41.3	50.0	68.0	R/D/H	—	—	—	—	—
1280 × 800/60	1280 × 800	49.7	59.8	83.5	R/D/H	—	—	—	—	—
	1280 × 800* ⁴	49.3	59.9	71.0	R/D/H	—	—	—	—	—
1280 × 800/75	1280 × 800	62.8	74.9	106.5	R/D/H	—	—	—	—	—
1280 × 800/85	1280 × 800	71.6	84.9	122.5	R/D/H	—	—	—	—	—
1280 × 960/60	1280 × 960	60.0	60.0	108.0	R/D/H	—	—	—	—	—
1280 × 1024/50	1280 × 1024	52.4	50.0	88.0	R/D/H	—	—	—	—	—
1280 × 1024/60	1280 × 1024	64.0	60.0	108.0	R/D/H	—	—	—	—	—
1280 × 1024/66	1280 × 1024	72.3	66.3	125.0	R/D/H	—	—	—	—	—
1280 × 1024/72	1280 × 1024	78.2	72.0	135.1	R/D/H	—	—	—	—	—
1280 × 1024/75	1280 × 1024	80.0	75.0	135.0	R/D/H	✓	—	✓	✓	✓
1280 × 1024/85	1280 × 1024	91.1	85.0	157.5	R/D/H	—	—	—	—	—
1366 × 768/50	1366 × 768	39.6	49.9	69.0	R/D/H	—	—	—	—	—
1366 × 768/60	1366 × 768	47.7	59.8	85.5	R/D/H	—	—	—	—	—
1400 × 1050/50	1400 × 1050	54.1	50.0	99.9	R/D/H	—	—	—	—	—
1400 × 1050/60	1400 × 1050	64.0	60.0	108.0	R/D/H	—	—	—	—	—
	1400 × 1050	65.2	60.0	122.6	R/D/H	✓	—	✓	✓	✓
	1400 × 1050	65.3	60.0	121.8	R/D/H	—	—	—	—	—
1400 × 1050/72	1400 × 1050	78.8	72.0	149.3	R/D/H	—	—	—	—	—
1400 × 1050/75	1400 × 1050	82.2	75.0	155.9	R/D/H	—	—	—	—	—
1440 × 900/50	1440 × 900	46.3	49.9	86.8	R/D/H	—	—	—	—	—
1440 × 900/60	1440 × 900	55.9	59.9	106.5	R/D/H	—	—	—	—	—
1600 × 900/50	1600 × 900	46.4	49.9	96.5	R/D/H	—	—	—	—	—
1600 × 900/60	1600 × 900	55.9	60.0	119.0	R/D/H	✓	—	✓	✓	✓
1600 × 1200/50	1600 × 1200	61.8	49.9	131.5	R/D/H	—	—	—	—	—
1600 × 1200/60	1600 × 1200	75.0	60.0	162.0	R/D/H	✓	—	✓	✓	✓
1680 × 1050/50	1680 × 1050	54.1	50.0	119.5	R/D/H	—	—	—	—	—
1680 × 1050/60	1680 × 1050	65.3	60.0	146.3	R/D/H	—	—	—	—	—
1920 × 1080/50	1920 × 1080	55.6	49.9	141.5	R/D/H	—	—	—	—	—
1920 × 1080/60	1920 × 1080* ⁴	66.6	59.9	138.5	R/D/H	—	—	—	—	—
	1920 × 1080* ⁵	67.2	60.0	173.0	R	—	—	—	—	—
1920 × 1200/50	1920 × 1200	61.8	49.9	158.3	R/D/H	—	—	—	—	—
1920 × 1200/60	1920 × 1200* ⁶	74.6	59.9	193.3	R	—	—	—	—	—
1920 × 1200/60RB	1920 × 1200* ⁴	74.0	60.0	154.0	R/D/H	✓	—	✓	✓	✓

*1 Signal with ✓ in the plug and play column is a signal described in the EDID (extended display identification data) of the projector. The signal that does not have ✓ in the plug and play column can also be input if it is described in the format column. The resolution may not be selected in the computer even if the projector is compatible with the signal that does not have ✓ in the plug and play column.

*2 Pixel-Repetition signal (dot clock frequency 27.0 MHz) only

*3 Image is displayed as 3D image in the frame sequential format when [3D INPUT FORMAT] is set to [AUTO].
To display images in 2D, set [3D INPUT FORMAT] to [NATIVE].

*4 VESA CVT-RB (Reduced Blanking)-compliant.

*5 Image resolution is reduced by the image processing circuit before projection.

NOTE:

- A signal with a different resolution is converted to the number of display dots. The number of display dots is as follows. 1920 x 1200
- The "i" at the end of the resolution indicates an interlaced signal.
- When interlaced signals are connected, flickering may occur on the projected image.
- DIGITAL LINK input compatible signal is the same as HDMI input compatible signal.

List of SDI compatible signals

•Single link

Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	Format	Color space	Sampling
		H (KHz)	V (Hz)				
480/60i	720 × 480i	15.7	59.9	27.0	SD-SDI	YCbCr	4:2:2 10bit
576/50i	720 × 576i	15.6	50.0	27.0	SD-SDI	YCbCr	4:2:2 10bit
720/60p	1280 × 720	45.0	60.0* ¹	74.3	HD-SDI	YPbPr	4:2:2 10bit
720/50p	1280 × 720	37.5	50.0	74.3	HD-SDI	YPbPr	4:2:2 10bit

Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	Format	Color space	Sampling
		H (KHz)	V (Hz)				
1080/60i	1920 × 1080i	33.8	60.0 ^{*1}	74.3	HD-SDI	YPbPr	4:2:2 10bit
	1920 × 1080i	33.8	60.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080i	33.8	60.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080i	33.8	60.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080i	33.8	60.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
1080/50i	1920 × 1080i	28.1	50.0	74.3	HD-SDI	YPbPr	4:2:2 10bit
	1920 × 1080i	28.1	50.0	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080i	28.1	50.0	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080i	28.1	50.0	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080i	28.1	50.0	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
1080/24p	1920 × 1080	27.0	24.0 ^{*1}	74.3	HD-SDI	YPbPr	4:2:2 10bit
	1920 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
1080/24sF	1920 × 1080i	27.0	48.0 ^{*1}	74.3	HD-SDI	YPbPr	4:2:2 10bit
	1920 × 1080i	27.0	48.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080i	27.0	48.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080i	27.0	48.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080i	27.0	48.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
1080/25p	1920 × 1080	28.1	25.0	74.3	HD-SDI	YPbPr	4:2:2 10bit
	1920 × 1080	28.1	25.0	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080	28.1	25.0	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080	28.1	25.0	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080	28.1	25.0	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
1080/30p	1920 × 1080	33.8	30.0 ^{*1}	74.3	HD-SDI	YPbPr	4:2:2 10bit
	1920 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
1080/60p	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:2:2 10bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:2:2 10bit
1080/50p	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-A	YPbPr	4:2:2 10bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-B	YPbPr	4:2:2 10bit
2K/24p	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-A	XYZ	4:4:4 12bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-B	XYZ	4:4:4 12bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
2K/25p	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-A	XYZ	4:4:4 12bit
	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-B	XYZ	4:4:4 12bit
	2048 × 1080	28.1	25.0	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
2K/30p	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 10bit
	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 10bit
	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-B	RGB	4:4:4 12bit
	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-A	XYZ	4:4:4 12bit
	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-B	XYZ	4:4:4 12bit
	2048 × 1080	33.8	30.0 ^{*1}	74.3	3G-SDI Level-A	YPbPr	4:2:2 10bit
2K/48p	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:2:2 10bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:2:2 10bit
2K/50p	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-A	YPbPr	4:2:2 10bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-B	YPbPr	4:2:2 10bit
2K/60p	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:2:2 10bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:2:2 10bit

*1 Compatible with VERTICAL SCAN FREQUENCY 1/1.001

List of SDI compatible signals

•Dual link

Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	Format	Color space	Sampling
		H (KHz)	V (Hz)				
1080/60i	1920 × 1080i	33.8	60.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 10bit
	1920 × 1080i	33.8	60.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 12bit
1080/50i	1920 × 1080i	28.1	50.0	74.3	HD-SDI	RGB	4:4:4 10bit
	1920 × 1080i	28.1	50.0	74.3	HD-SDI	RGB	4:4:4 12bit
1080/24p	1920 × 1080	27.0	24.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 10bit
	1920 × 1080	27.0	24.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 12bit
1080/24sF	1920 × 1080i	27.0	48.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 10bit
	1920 × 1080i	27.0	48.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 12bit
1080/25p	1920 × 1080	28.1	25.0	74.3	HD-SDI	RGB	4:4:4 10bit
	1920 × 1080	28.1	25.0	74.3	HD-SDI	RGB	4:4:4 12bit
1080/30p	1920 × 1080	33.8	30.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 10bit
	1920 × 1080	33.8	30.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 12bit
1080/60p	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:4:4 10bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:4:4 10bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:4:4 12bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:4:4 12bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	RGB	4:4:4 12bit
1080/50p	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-A	YPbPr	4:4:4 10bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-B	YPbPr	4:4:4 10bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-A	YPbPr	4:4:4 12bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-B	YPbPr	4:4:4 12bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-A	RGB	4:4:4 10bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-B	RGB	4:4:4 10bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-A	RGB	4:4:4 12bit
	1920 × 1080	56.3	50.0	148.5	3G-SDI Level-B	RGB	4:4:4 12bit
2K/24p	2048 × 1080	27.0	24.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 10bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	HD-SDI	RGB	4:4:4 12bit
	2048 × 1080	27.0	24.0 ^{*1}	74.3	HD-SDI	XYZ	4:4:4 12bit
2K/48p	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:4:4 10bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:4:4 10bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:4:4 12bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:4:4 12bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-A	RGB	4:4:4 10bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-B	RGB	4:4:4 10bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	54.0	48.0 ^{*1}	148.5	3G-SDI Level-B	RGB	4:4:4 12bit
2K/50p	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-A	YPbPr	4:4:4 10bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-B	YPbPr	4:4:4 10bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-A	YPbPr	4:4:4 12bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-B	YPbPr	4:4:4 12bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-A	RGB	4:4:4 10bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-B	RGB	4:4:4 10bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	56.3	50.0	148.5	3G-SDI Level-B	RGB	4:4:4 12bit
2K/60p	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:4:4 10bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:4:4 10bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	YPbPr	4:4:4 12bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	YPbPr	4:4:4 12bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	RGB	4:4:4 10bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	RGB	4:4:4 10bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-A	RGB	4:4:4 12bit
	2048 × 1080	67.5	60.0 ^{*1}	148.5	3G-SDI Level-B	RGB	4:4:4 12bit

*1 Compatible with VERTICAL SCAN FREQUENCY 1/1.001

List of simultaneous input 2D compatible signals

2D compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	HDMI/DVI	SDI 1/SDI 2
		H (KHz)	V (Hz)			
1080/60p	1920 x 1080	67.5	60.0	148.5	✓	✓
1080/50p	1920 x 1080	56.3	50.0	148.5	✓	✓
1366 x 768/50	1366 x 768	39.6	49.9	69.0	✓	-
1366 x 768/60	1366 x 768	47.7	59.8	85.5	✓	-
1400 x 1050/50	1400 x 1050	54.1	50.0	99.9	✓	-
1400 x 1050/60	1400 x 1050	65.3	60.0	121.8	✓	-
1920 x 1080/50	1920 x 1080	55.6	49.9	141.5	✓	-
1920 x 1080/60	1920 x 1080	66.6	59.9	138.5	✓	-
1920 x 1200/50	1920 x 1200	61.8	49.9	158.3	✓	-
1920 x 1200/60	1920 x 1200	74.0	60.0	154.0	✓	-

List of compatible 3D signals

FP: Frame packing format

SBS: Side by side format

TB: Top and bottom format

LBL: Line by line format

FS: Frame sequential format

3G: 3G-SDI Level B simultaneous format

H-D: HDMI & DVI-D input simultaneous format

R1-2: RGB1 & RGB2 input simultaneous format

S1-2: SDI1 & SDI2 input simultaneous format

3D Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	HDMI				DVI				RGB1/RGB2				SDI1/SDI2				H-D		
		H (KHz)	V (Hz)		FP	SBS*1	TB	FS	SBS*1	TB	LBL	FS	SBS*1	TB	LBL	FS	SBS*1	TB	LBL	3G	R1-2	S1-2	
720/60p	1280 x 720	45.0	60.0	74.3	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
720/50p	1280 x 720	37.5	50.0	74.3	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
1080/60i	1920 x 1080i	33.8	60.0	74.3	✓	✓	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
1080/50i	1920 x 1080i	28.1	50.0	74.3	✓	✓	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
1080/24p	1920 x 1080	27.0	24.0	74.3	✓	✓	✓	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
1080/24sF	1920 x 1080i	27.0	24.0	74.3	-	-	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
1080/25p	1920 x 1080	28.1	25.0	74.3	-	-	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
1080/30p	1920 x 1080	33.8	30.0	74.3	-	-	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
1080/60p	1920 x 1080	67.5	60.0	148.5	-	✓	✓	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
1080/50p	1920 x 1080	56.3	50.0	148.5	-	✓	✓	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
640 x 480	640 x 480	31.5	59.9	25.2	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
800 x 600	640 x 480	37.9	60.3	40.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1024 x 768	1024 x 768	39.6	50.0	51.9	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1024 x 768	48.4	60.0	65.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1024 x 768	81.4	100.0	113.3	-	-	-	✓	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-
	1024 x 768	98.8	120.0	139.1	-	-	-	✓	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-
1152 x 864	1152 x 864	53.7	60.0	81.6	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1280 x 720	1280 x 720	37.1	49.8	60.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 720	44.8	59.9	74.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 720	76.3	100.0	131.8	-	-	-	✓	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-
	1280 x 720	92.6	120.0	161.6	-	-	-	✓	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-
1280 x 768	1280 x 768	39.6	49.9	65.3	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 768	47.8	59.9	79.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 768*2	47.4	60.0	68.3	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1280 x 800	1280 x 800	41.3	50.0	68.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 800	49.7	59.8	83.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 800*2	49.3	59.9	71.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1280 x 960	1280 x 960	60.0	60.0	108.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1280 x 1024	1280 x 1024	52.4	50.0	88.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1280 x 1024	64.0	60.0	108.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1366 x 768	1366 x 768	47.7	59.8	85.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
	1366 x 768	39.6	49.9	69.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
1400 x 1050	1400 x 1050	54.1	50.0	99.9	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	✓	✓	-
	1400 x 1050	64.0	60.0	108.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	✓	✓	-
	1400 x 1050	65.2	60.0	122.6	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	✓	✓	-
	1400 x 1050	65.3	60.0	121.8	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	✓	✓	-

3D Compatible signal	Resolution (Dots)	Scanning freq.		Dot clock freq. (MHz)	HDMI				DVI				RGB1/RGB2				SDI1/SDI2				H-D R1-2 S1-2			
		H (KHz)	V (Hz)		FP	SBS*1	TB	FS	SBS*1	TB	LBL	FS	SBS*1	TB	LBL	FS	SBS*1	TB	LBL	3G	H-D	R1-2	S1-2	
1440 x 900		55.9	59.9	106.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
		46.3	49.9	86.8	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
1600 x 900		46.4	49.9	96.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
		55.9	60.0	119.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
1600 x 1200		75.0	60.0	162.0	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
		61.8	49.9	131.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
1680 x 1050		65.3	60.0	146.3	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
		54.1	50.0	119.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
1920 x 1080		55.6	49.9	141.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
		66.6	59.9	138.5	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-
1920 x 1200		61.8	49.9	158.3	-	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-	-	✓	✓	-	-
		74.0	60.0	154.0	-	-	-	-	✓	-	✓	-	✓	-	✓	-	-	-	-	-	✓	✓	-	-

*1 Supports half.

*2 VESA CVT RB (Reduced Blanking) compliant

Note : DIGITAL LINK input compatible signal is the same as HDMI input compatible signal.

Zoom Lens

ET-D3LES20

This zoom lens is designed for use with Panasonic's applicable projectors. The lens makes it possible to vary the projection distance by changing the focal distance.

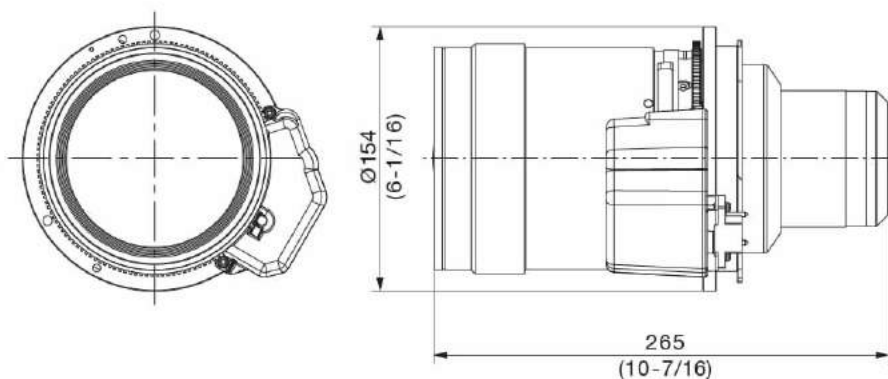
NOTE: Please use the lens only on the specified Panasonic projector.

Specifications

F value:	2.5
Focal distance (f):	35.0–50.9 mm
Throw ratio:	1.79–2.59:1 for PT-RQ32K (16:10 aspect ratio) 1.67–2.41:1 for PT-RZ31K/RZ21K (16:10 aspect ratio) 1.80–2.61:1 for PT-RS30K/RS20K (4:3 aspect ratio)
Lens ID	Compatible models : PT-RQ32K/PT-RZ31K/PT-RS30K/PT-RZ21K/PT-RS20K
Dimensions (W × H × D):	154 × 154 × 265 mm (6-1/16 × 6-1/16 × 10-7/16 inches)
Weight:	Approximately 5.2 kg* (11.5 lbs*)
Applicable projector	[Group A] PT-RZ21K/RS20K [Group B] PT-RZ31K/RS30K PT-RQ32K

*Average value. May differ depending on the actual unit.
The throw ratio is an approximate value calculated by dividing the screen width by the projection distance.

Dimensions

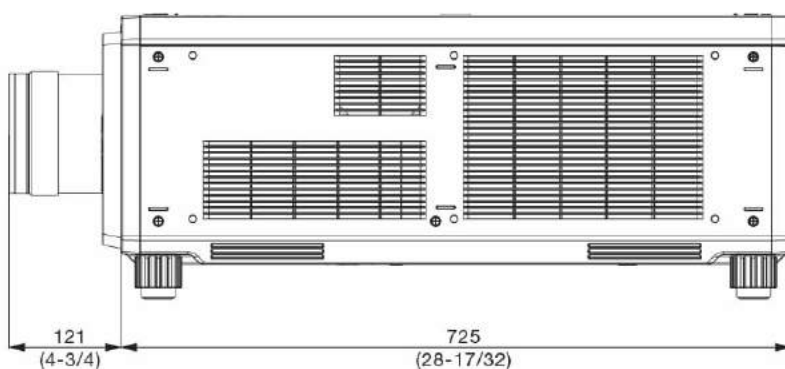


unit : mm (inch)

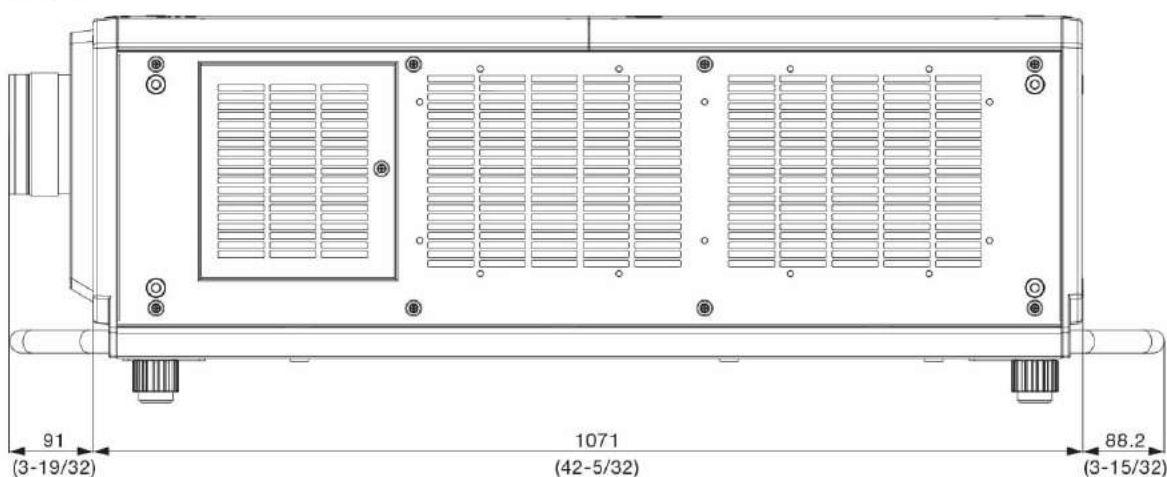
NOTE: This illustration is not drawn to scale.

NOTE: Please read the projector's instruction manual for throw distances.
Weights and dimensions shown are approximate. Specifications subject to change without notice.

[Group A]



[Group B]



unit : mm (inch)
NOTE: This illustration is not drawn to scale.

NOTE: Please read the projector's instruction manual for throw distances.
Weights and dimensions shown are approximate. Specifications subject to change without notice.

High-ceiling mount bracket (6-axis adjustment mechanism)

Description

This bracket is a special mount bracket with a 6-axis adjustment mechanism which is useful for installing the ET-DLE030 to applicable Panasonic projectors to enable short focal-length projection.

NOTE: This ceiling mount bracket cannot be used by itself. Combine it with the optional bracket assembly.

Specifications

Vertical correction angle:	±5°
Horizontal slant correction angle:	±5°
Horizontal turn correction angle:	±5°
Horizontal slide amount	±50 mm
Forward-back slide amount	±50 mm
Vertical slide amount	±50 mm
Dimensions (W × H × D):	380 × 329–489 × 308 mm (14-31/32 × 12-15/16–19-1/8 × 12-1/8 inches)
Weight:	10 kg*
Applicable bracket assembly:	ET-PKD130B/PKD120B
Applicable projectors	[Group A] PT-DZ870K/DZ870W/DZ870LK/DZ870LW/ DW830K/DW830W/DW830LK/DW830LW/DX100K/DX100W/DX100LK/DX100LW [Group B] PT-DZ770S/DZ770K/DZ770LS/DZ770LK/ DW740S/DW740K/DW740LS/DW740LK/DX810S/DX810K/DX810LS/DX810LK/ DZ680S/DZ680K/DZ680LS/DZ680LK/ DW640S/DW640K/DW640LS/DW640LK/DX610S/DX610K/DX610LS/DX610LK/ DZ6710/DZ6710L/ DW730S/DW730K/DW730LS/DW730LK/DX800S/DX800K/DX800LS/DX800LK/ DZ6700/DZ6700L/DW6300S/DW6300K/DW6300LS/DW6300LK/ D6000S/D6000K/D6000LS/D6000LK/D5000S/D5000LS

* Average value. May differ depending on models.

Weights and dimensions shown are approximate. Specifications and appearance are subject to change without notice.

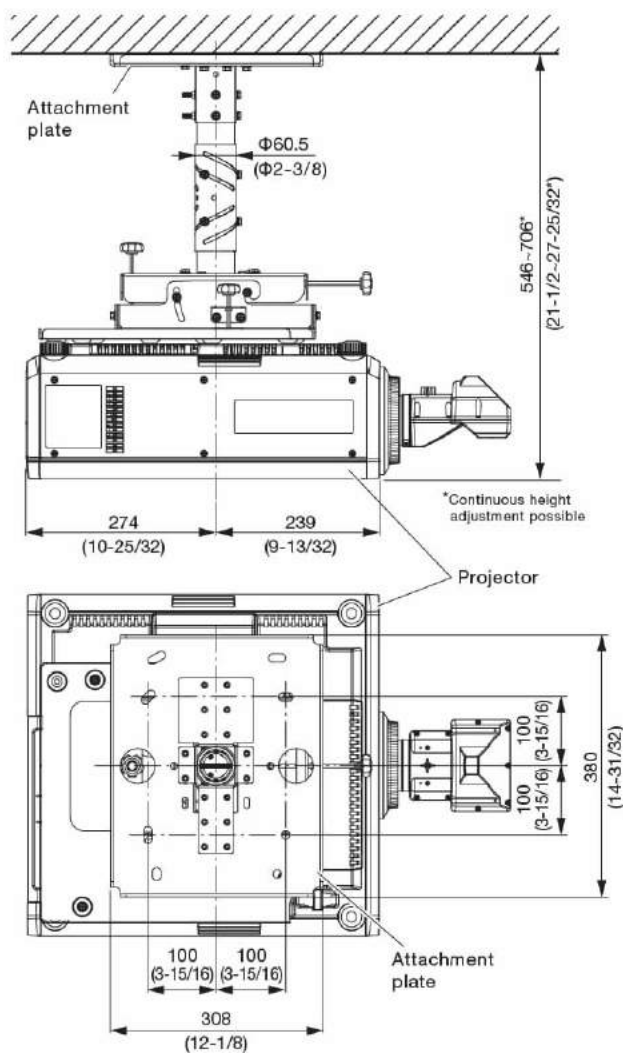
Parts	Attachment plate	1	Washer-fitted hexagonal bolts (M6 × 80)	2
	Adjustment pole unit	1	Washer-fitted bolts (M6 × 16)	26
	Angle adjustment unit	1	Hexagonal head bolt (M8×130)	2
	Pole support bracket 1	1	Plain washers	2
	Pole support bracket 2	1	Hexagonal nuts (M6)	2
	Adjustment knob bracket	1		

Caution:

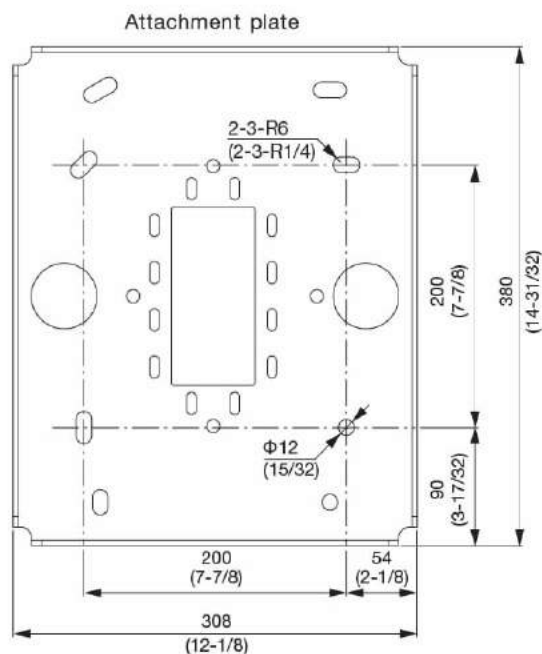
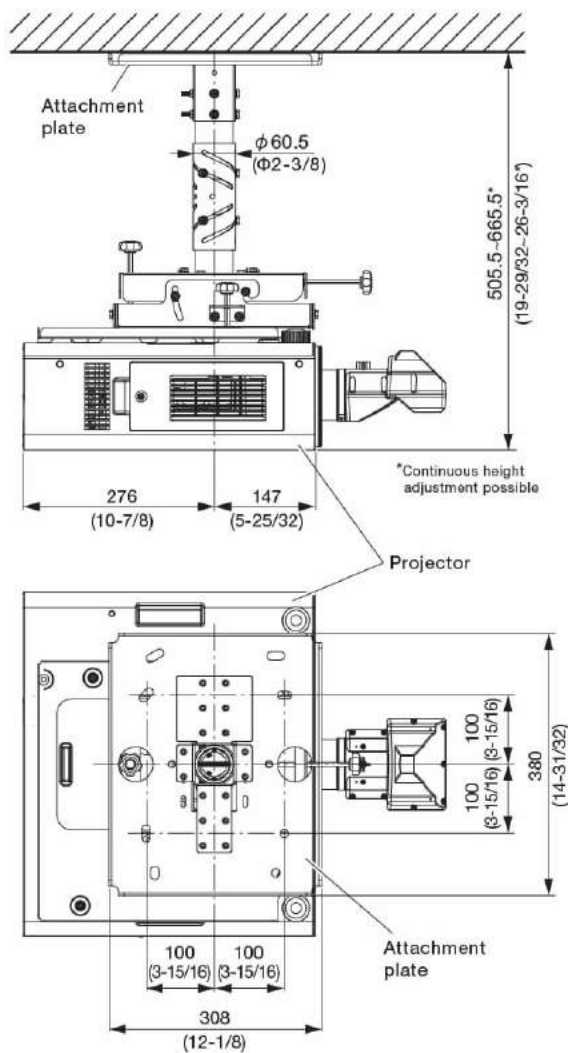
- Mounting should be done by a qualified technician.
- Make sure that the mounting (ceiling) area has sufficient strength.
- Read the enclosed mounting instructions thoroughly before starting.
- Do not use an electric screwdriver or impact driver to tighten screws. (Use a torque driver or similar tool.)
- When the product is no longer going to be used, have it disposed of quickly by a professional disposal service.

Dimensions

<Diagram showing installation together with the ET-PKD130B/PKD120B to a Group A projector>



<Diagram showing installation together with the ET-PKD130B/PKD120B to a Group B projector>



unit : mm (inch)
NOTE: This illustration is not drawn to scale.

S P E C F I L E



Product Number : **ET-YFB100G**

Product Name : Digital Interface Box

Description

This digital interface box is designed for use with an applicable Panasonic projector. It operates as a switcher for DIGITAL LINK. Video, audio and control (LAN/serial) signals can be transmitted over distances of up to 100 meters using only a LAN cable (CAT5e or greater STP cable). In addition to video and RGB signals, HDMI signals can be input. Switching is done using the projector's wireless remote control or the control buttons of the digital interface box.

Specifications

Power supply		16 V DC (DC input connector)
Power consumption		16 W (0.2 W with the power off, including the power consumption of AC adaptor)
AC adaptor	Input	100–240 V AC, 1.5–0.8 A, 50/60 Hz
	Output	16 V DC, 3.75 A
Scanning frequency	HDMI	f _H : 27–99 kHz, f _V : 24–119.8 Hz, dot clock: 25.2–162 MHz
	RGB	f _H : 15.6–99 kHz, f _V : 24–119.8 Hz, dot clock: 13.5–162 MHz
	YPbPr (YCbCr)	480i (525i): f _H 15.75 kHz; f _V 60 Hz, 576i (625i): f _H 15.63 kHz; f _V 50 Hz, 480p (525p): f _H 31.50 kHz; f _V 60 Hz, 576p (625p): f _H 31.25 kHz; f _V 50 Hz, 720 (750)/60p: f _H 45.00 kHz; f _V 60 Hz, 720 (750)/50p: f _H 37.50 kHz; f _V 50 Hz, 1080 (1125)/60i: f _H 33.75 kHz; f _V 60 Hz, 1080 (1125)/50i: f _H 28.13 kHz; f _V 50 Hz, 1080 (1125)/25p: f _H 28.13 kHz; f _V 25 Hz, 1080 (1125)/24p: f _H 27.00 kHz; f _V 24 Hz, 1080 (1125)/30p: f _H 33.75 kHz; f _V 30 Hz, 1080 (1125)/60p: f _H 67.50 kHz; f _V 60 Hz, 1080 (1125)/50p: f _H 56.25 kHz; f _V 50 Hz,
	Video/S-Video	f _H : 15.75 kHz, f _V 60 Hz [NTSC/NTSC4.43/PAL-M/PAL60] f _H : 15.63 kHz, f _V 50 Hz [PAL/PAL-N/SECAM]
Terminals	HDMI IN	HDMI 19-pin × 2, Deep Color, HDCP compatible 480p (525p), 576p (625p), 720 (750)/60p, 720 (750)/50p, 1080 (1125)/60i, 1080 (1125)/50i, 1080 (1125)/24p, 1080 (1125)/25p, 1080 (1125)/30p, 1080 (1125)/60p, 1080 (1125)/50p VGA (640 × 480)–WUXGA ^{**} (1,920 × 1,200), audio signal: linear PCM (sampling frequencies: 48 kHz, 44.1 kHz, 32 kHz)
	COMPUTER (RGB) IN R, G, B	D-sub HD 15-pin (female) × 1 G: 0.7 Vp-p (1.0 Vp-p for sync on G), 75 ohms; B, R: 0.7 Vp-p, 75 ohms; HD/VD, SYNC: high impedance, TTL (positive/negative) NOTE: SYNC/HD and VD terminals do not accept tri-level sync signals.
	Y, Pb (Cb), Pr (Cr)	Y: 1.0 Vp-p (including sync signal); Pb (Cb), Pr (Cr): 0.7 Vp-p, 75 ohms
	COMPUTER (RGB) 2 IN / 1 OUT R, G, B	D-sub HD 15-pin (female) × 2 G: 0.7 Vp-p (1.0 Vp-p for sync on G), 75 ohms; B, R: 0.7 Vp-p, 75 ohms; HD/VD, SYNC: high impedance, TTL (positive/negative)
	VIDEO IN	RCA pin × 1, 1.0 Vp-p, 75 ohms
	S-VIDEO IN	Mini DIN 4-pin × 1, Y: 1.0 Vp-p; C: 0.286 Vp-p, 75 ohms
	AUDIO IN	M3 (L, R) × 1, 0.5 Vrms
	AUDIO OUT	M3 (L, R) × 1 (monitor out: 0–2.0 Vrms, variable)
	SERIAL IN	D-sub 9-pin (female) × 1, for external control (RS-232C compliant)
	REMOTE IN	D-sub 9-pin (female) × 1 for external control (parallel)
	LAN	RJ-45 × 1, for network connection, 100Base-TX/10Base-T
	DIGITAL LINK	RJ-45 × 1, for Digital Link connection

Dimensions (W x H x D)		210 x 44 x 250* ² mm (8-9/32 x 1-23/32 x 9-27/32* ² inches)
Weight	Main unit	Approx. 1.15 kg (2.5 lbs)
	AC adaptor	Approx. 0.20 kg (0.4 lbs)
Operating temperature		0–40 °C (32–104 °F)
Operating humidity		20%–80% (no condensation)
Applicable projector		PT-RZ470K/RZ470W/RW430K/RW430W/RZ370/RW330/VW431D

Supplied accessories

AC adaptor (x 1)
Power cord (2 m) (x 3)
AC power cord holder (x 1)
Mounting brackets for rack or countertop installation (x 2)
Mounting bracket for rack installation (x 1)
Countersunk screws (x 6)
Legs (x 4)
Screws for installing legs (x 4)

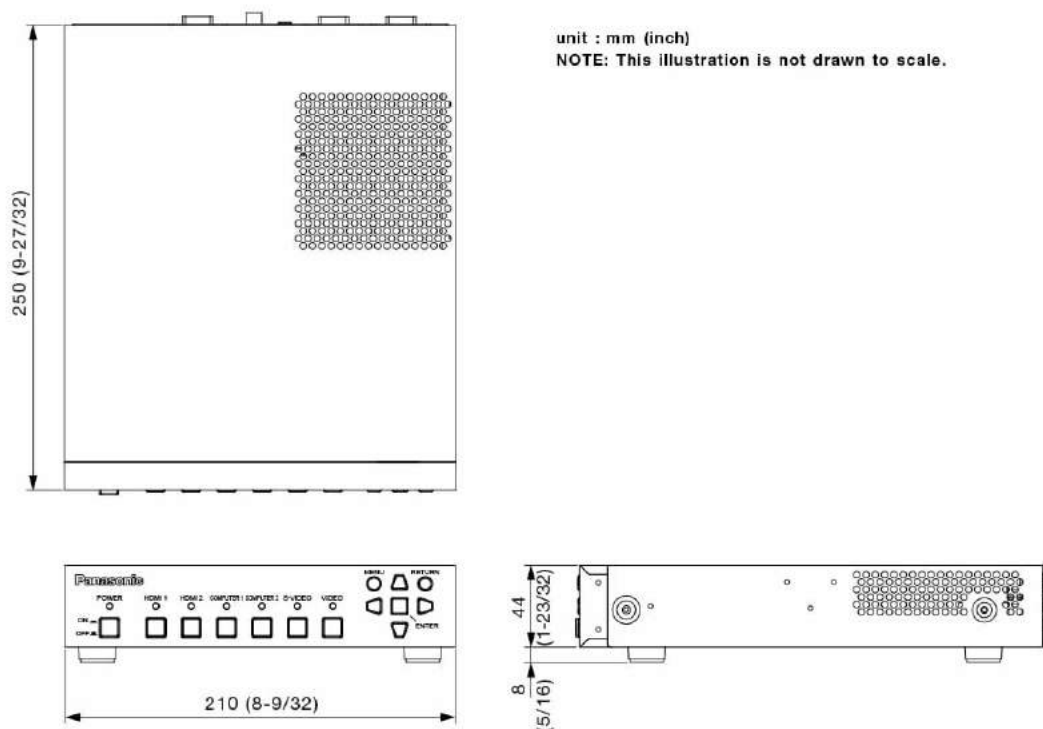
Weights and dimensions shown are approximate. Specifications subject to change without notice.

*1 Supported only when the signals are compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking).

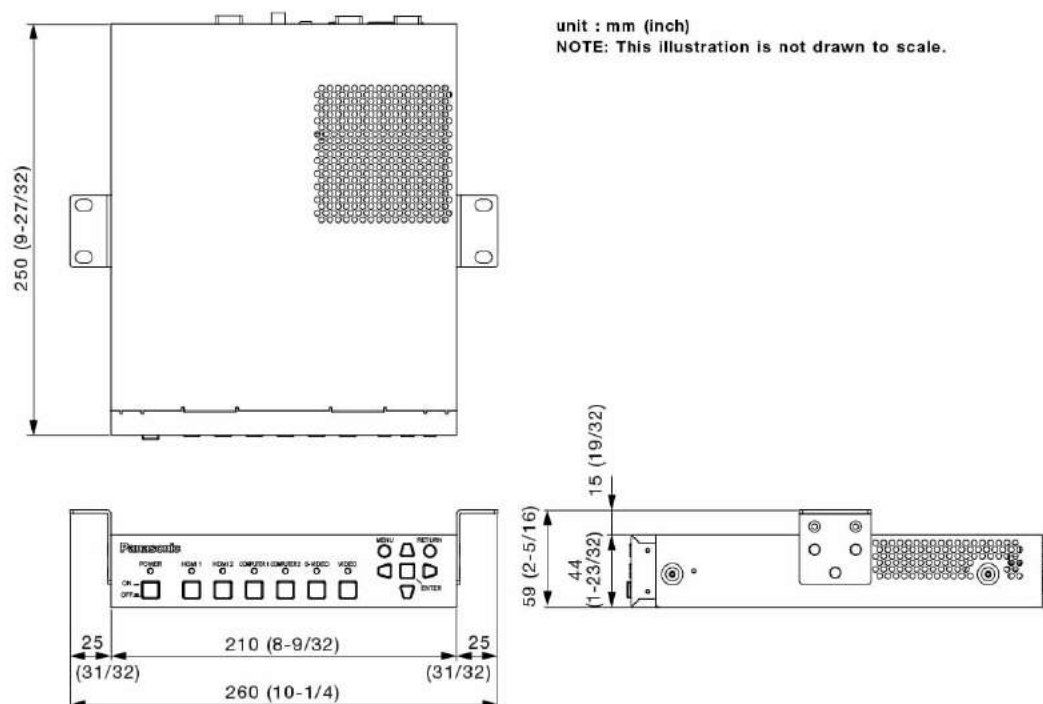
*2 Protruding parts not included.

Dimensions

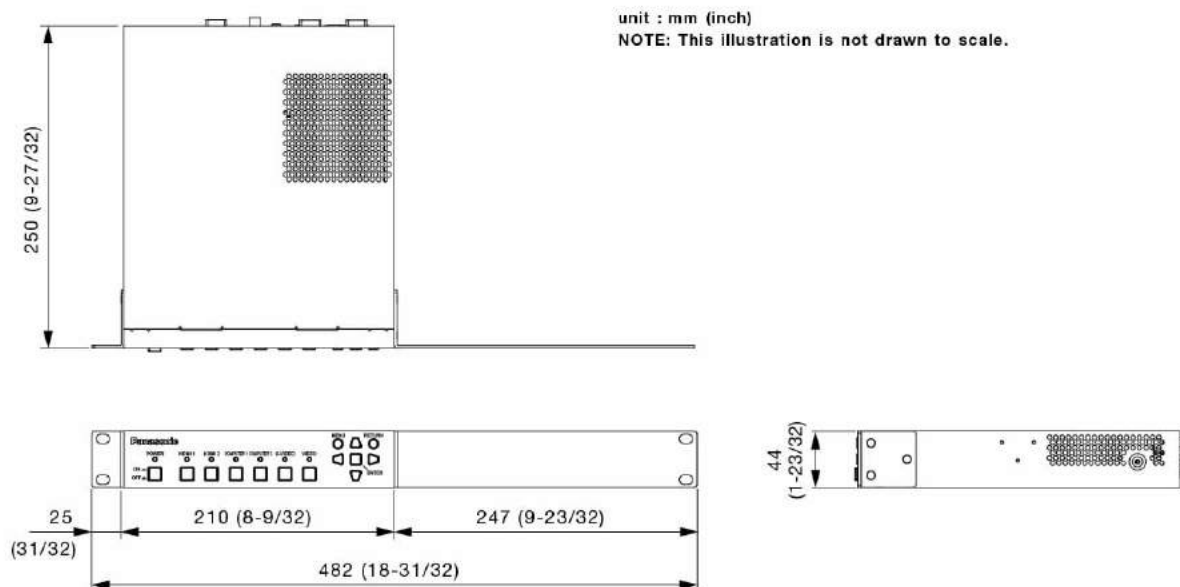
The illustration shows the ET-YFB100G with legs attached.



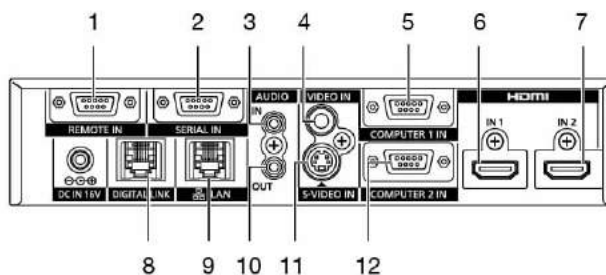
The illustration shows the ET-YFB100G with the mounting bracket for countertop installation attached.



The illustration shows the ET-YFB100G with the mounting bracket for rack installation attached.



Terminals



- | | |
|--------------------|-----------------------|
| 1 Remote input | 7 HDMI 2 input |
| 2 Serial input | 8 DIGITAL LINK output |
| 3 Audio input | 9 LAN connector |
| 4 Video input | 10 Audio output |
| 5 Computer 1 input | 11 S-Video input |
| 6 HDMI 1 input | 12 Computer 2 input |

List of compatible signals

The signals that can be input to this projector are shown in the table below. Horizontal scanning frequencies of 15.6 kHz to 99 kHz, vertical scanning frequencies of 24 Hz to 119.8 Hz, and a dot clock of 162 MHz maximum can be input.

NOTE: If the display resolution of the input signal is different from the native resolution, image compression or expansion will be used to convert the input signal to a level within the native resolution.

Display mode	Display resolution (dots)*	Scanning frequency		Dot clock frequency (MHz)	Format
		H (kHz)	V (kHz)		
NTSC/NTSC4.43/PAL-M/PAL60	720 × 480i	15.7	59.9	–	VIDEO/S-VIDEO
PAL/PAL-N/SECAM	720 × 576i	15.6	50.0	–	
480i (525i)	720 × 480i	15.7	59.9	13.5	YPbPr/RGB
576i (625i)	720 × 576i	15.6	50.0	13.5	
480p (525p)	720 × 483	31.5	59.9	27.0	HDMI/YPbPr/RGB
576p (625p)	720 × 576	31.3	50.0	27.0	
720p (750p)/60p	1280 × 720	45.0	60.0	74.3	
720p (750p)/50p		37.5	50.0	74.3	
1080 (1125)/60i	1920 × 1080i	33.8	60.0	74.3	
1080 (1125)/50i		28.1	50.0	74.3	
1080 (1125)/24p	1920 × 1080	27.0	24.0	74.3	
1080 (1125)/25p		28.1	25.0	74.3	
1080 (1125)/30p		33.8	30.0	74.3	
1080 (1125)/60p		67.5	60.0	148.5	
1080 (1125)/50p		56.3	50.0	148.5	HDMI/RGB
VESA400	640 × 400	37.9	85.1	31.5	
VGA	640 × 480	31.5	70.1	25.2	
		31.5	59.9	25.2	
		35.0	66.7	30.2	
		37.5	75.0	31.5	
		37.9	72.8	31.5	
		43.3	85.0	36.0	
SVGA	800 × 600	35.2	56.3	36.0	
		37.9	60.3	40.0	
		46.9	75.0	49.5	
		48.1	72.2	50.0	
		53.7	85.1	56.3	
MAC16	832 × 624	49.7	74.6	57.3	
XGA	1024 × 768	39.6	50.0	51.9	
		48.4	60.0	65.0	
		60.0	75.0	78.8	
		56.5	70.1	75.0	
		65.5	81.6	86.0	
		68.7	85.0	94.5	
		80.0	100.0	105.0	
		99.0	119.8	137.8	
MXGA	1152 × 864	64.0	70.0	94.2	
		67.5	74.9	108.0	
		77.1	85.0	119.7	
MAC21	1152 × 870	68.7	75.1	100.0	
1280 × 720	1280 × 720	37.1	49.8	60.5	
		44.8	59.9	74.5	
1280 × 768	1280 × 768	39.6	49.9	65.3	
		47.8	59.9	79.5	
1280 × 800	1280 × 800	41.3	50.0	68.0	
		49.7	59.8	83.5	
MSXGA	1280 × 960	60.0	60.0	108.0	

* The "i" appearing after the resolution indicates an interlaced signal.

Display mode	Display resolution (dots)	Scanning frequency		Dot clock frequency (MHz)	Format
		H (kHz)	V (kHz)		
SXGA	1280 × 1024	64.0	60.0	108.0	HDMI/RGB
		80.0	75.0	135.0	
		91.1	85.0	157.5	
SXGA+	1400 × 1050	65.2	60.0	122.6	
		65.3	60.0	121.8	
		82.2	75.0	155.9	
WXGA+	1440 × 900	55.9	59.9	106.5	
UXGA	1600 × 1200	75.0	60.0	162.0	
WSXGA+	1680 × 1050	65.3	60.0	146.3	
1920 × 1080*	1920 × 1080	66.6	59.9	138.5	
WUXGA*	1920 × 1200	74.0	60.0	154.0	

* Supported only when the signals are compliant with VESA CMT-RB (Coordinated Video Timing-Reduced Blanking).

List of compatible 3D signals

The 3D signals that can be input to this unit are shown in the table below.

NOTE: 3D images can be projected only when 3D signals compatible with the projector are input.

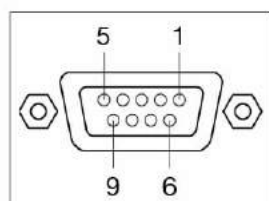
Display mode	Display resolution (dots)	Scanning frequency		Dot clock frequency (MHz)	HDMI		
		H (kHz)	V (Hz)		Frame packing	Side by side	Top and bottom
750 (720)p/60p	1280 × 720	45.0	60.0	74.3	√ *	√	√ *
750 (720)p/50p		37.5	50.0				
1125 (1080)/60i	1920 × 1080i	33.8	60.0		-	√ *	-
1125 (1080)/50i		28.1	50.0				
1125 (1080)/24p	1920 × 1080	27.0	24.0	148.5	√ *	√	√ *
1125 (1080)/60p		67.5	60.0		-		
1125 (1080)/50p		56.3	30.0				

* A 3D mandatory format for the HDMI standard.

Serial connector

A computer can be connected to the serial terminal of the digital interface box to control the RZ470K/RZ470W/RW430K/RW430W/RZ370/RW330/VW431D projector. The serial connector complies with RS-232C. To control the projector from a computer, commands must be input through communication software, based on the format and satisfying the communication conditions shown below. See the specifications of the RZ470K/RZ470W/RW430K/RW430W/RZ370/RW330/VW431D for control details.

Pin assignments and signal names



D-sub 9-pin (female)
Serial input

No.	Signal name	Description	No.	Signal name	Description
1	-	NC	6	-	NC
2	TXD	Send data	7	CTS	Connected internally
3	RXD	Receive data	8	RTS	Connected internally
4	-	NC	9	-	NC
5	GND	Ground			

Communication conditions (factory setting)

Signal level	RS-232C-compliant
Synchronization method	Start-stop synchronization
Baud rate	9,600 bps
Parity	None

Character length	8 bits
Stop bit	1 bit
X parameter	None
S parameter	None

Cable specifications

Projector		PC (DTE)	
1	NC	NC	1
2			2
3			3
4	NC	NC	4
5			5
6	NC	NC	6
7			7
8			8
9	NC	NC	9



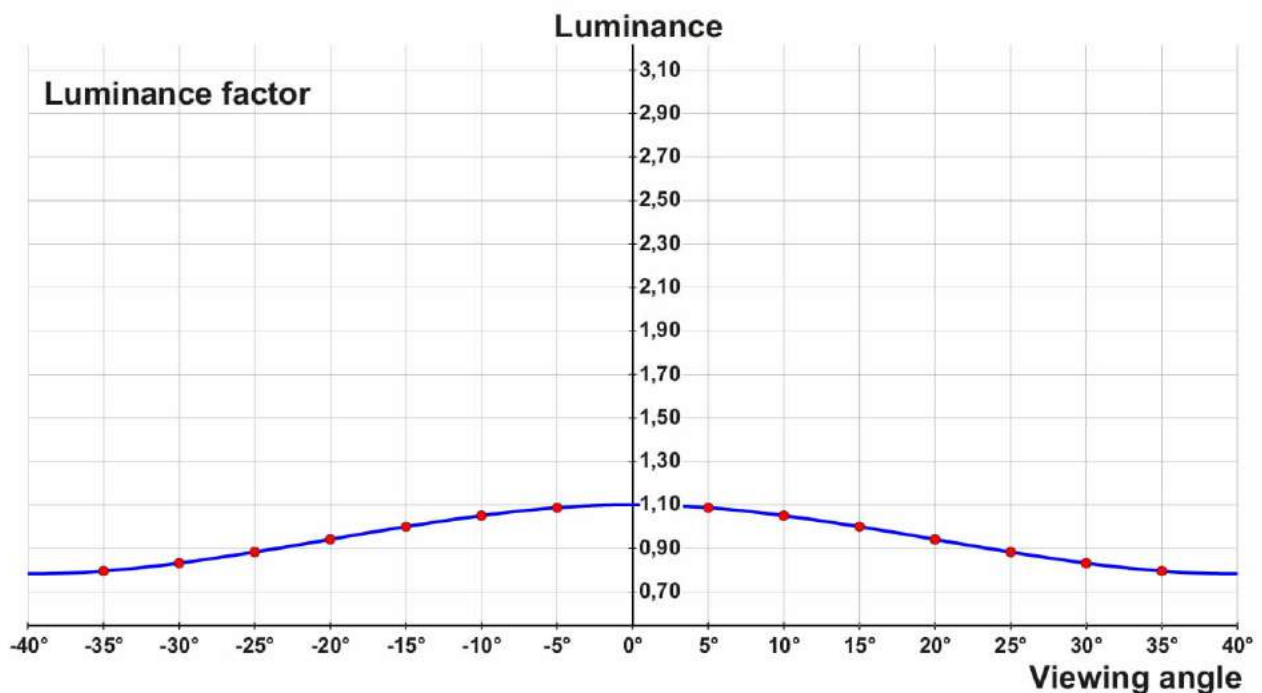
Sonora Tener matt white NC

Application:

- For 2D auditoria

Projection surface:

- Perforated / Non-perforated
- Wide viewing angle
- Natural colour transmission

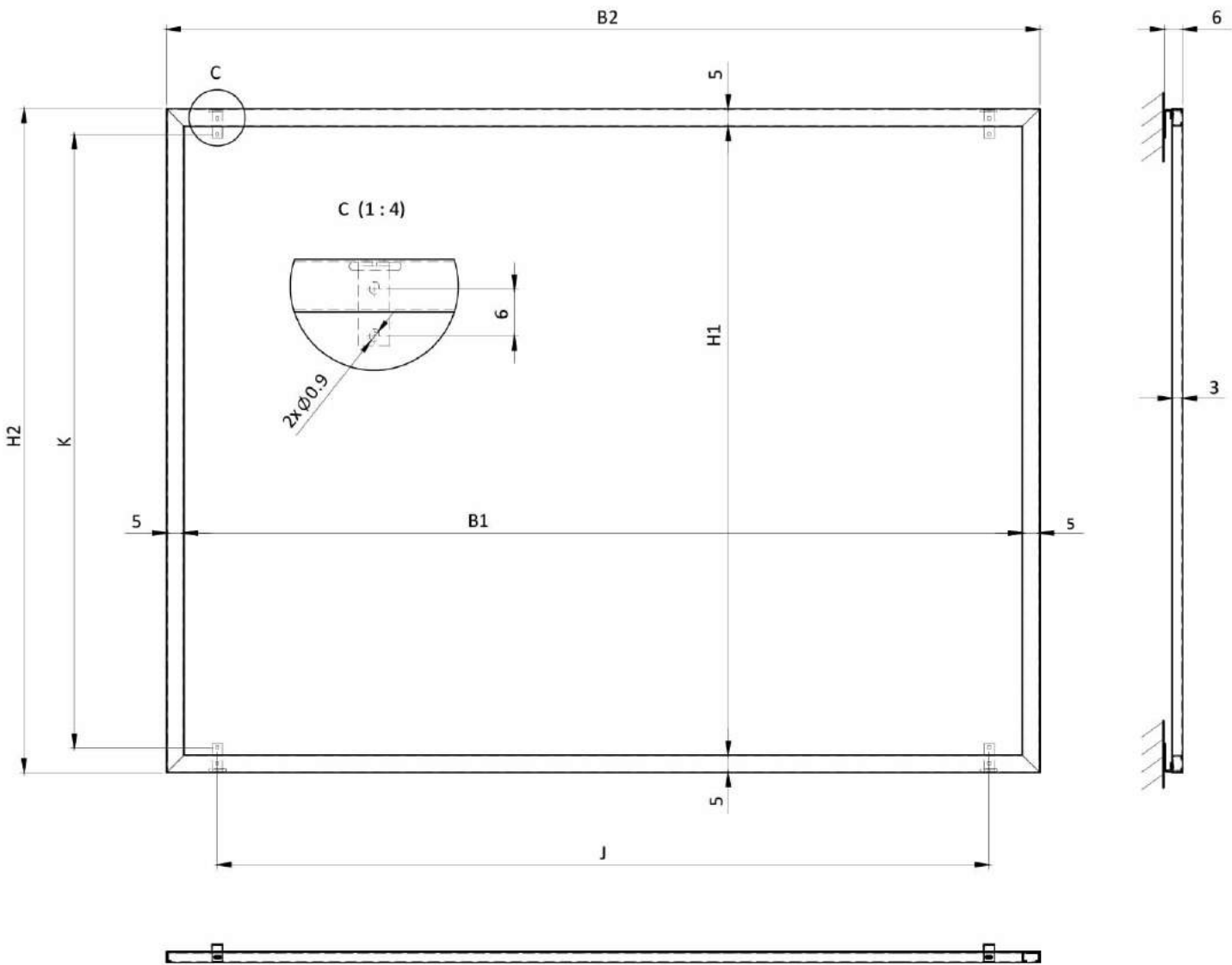


Mechanical characteristics:

- Material: Stretchable PVC
- Colour: White
- Gain: 1,1
- Viewing angle 90° to axis
- Perforation: Standard / Mini
- Weight: 380 g/sqm
- Transparency: <20%
- Thickness: 250 µm
- Packaging and delivery: Rolled

Reflection behavior

- Measurement procedure: luminance factor β measured with reference to barium sulphate according to DIN 19045



Rozměry v cm

Modul plochy	Vnější rozměr/Rozměr obrazu v cm (š x v)	Formát	Katalogové číslo	B1	H1	Uhlopříčka	B2	H2	J	K	Hmotnost
200	204x124 / 194x114	16:10	46390	194	114	225	204	124	179	115.6	45
240	244x154 / 234x144	16:10	46392	234	144	275	244	154	219	145.6	55

NeXtage 16 - 4K - Ref. NXT1604 - 4K

Powerful true-Seamless AV processor based on **Analog Way's** new **LiveCore™** platform, state-of-the-art processing, Soft Edge Blend and 4K capabilities for top-notch presentations



INPUTS



OUTPUTS



FEATURES



NeXtage 16 - 4K at a glance

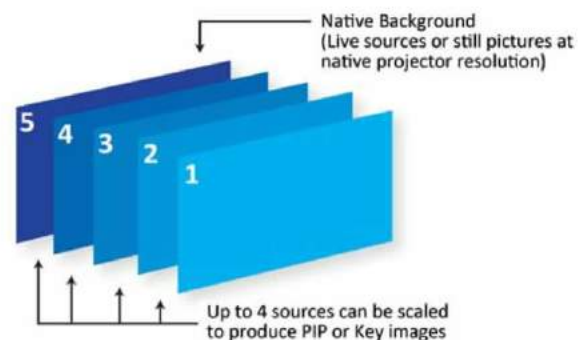
- ▶ 8 Seamless inputs and 28 input plugs (incl. 2 x 4K HDMI plugs)
- ▶ Input format up to 4K 30Hz 4:4:4
- ▶ Output format up to 4K 30Hz 4:4:4
- ▶ Independent Preview/Mosaic/Monitoring output
- ▶ Full live Preview of all sources (Preview/Mosaic/Monitoring)
- ▶ Customization of monitoring layouts (up to 8 templates stored)
- ▶ 4 true-Seamless scaled layers + 1 native background layer
- ▶ Advanced Layer Management
- ▶ Rotation capability in output (step by 90 degrees)
- ▶ Outstanding visual effects (Flying, Cut and Fill...)
- ▶ Communicative architecture
- ▶ Ruggedized and heavy-duty design
- ▶ Associative modularity
- ▶ User-friendly and intuitive Graphic Interface
- ▶ Remote Services
- ▶ Swappable power supply

To Control NeXtage 16 - 4K

- ▶ Web-based Remote Control Software (Web RCS)
- ▶ VRC300: Vertige™
- ▶ SB80-T: Shot Box²
- ▶ SB124T-2: Control Box²
- ▶ AMX and Crestron drivers*

Option

- ▶ 500130: Extension Warranty 2 years (5 years total)
- ▶ SPU001: Secure Power Unit



Up to 4 independent true-Seamless scaled layers are available per screen, offering the capability to control each layer individually in time and transition.

*Available on www.analogway.com



ANALOG WAY®
Pioneer in Analog. Leader in Digital

Key features

► 8 Seamless inputs and 28 input plugs

- 4 x HDMI (incl. 2 HDMI 4K 30Hz)
- 6 x DVI-I (2 DVI Dual Link included)
- 2 x DisplayPort (4-Lanes)
- 8 x 3G/HD/SD-SDI
- 8 x Universal Analog (4x HD15 & 4xDVI-A)

► 2 outputs with 5 output plugs

- Universal Analog (HD15 & DVI-A)
- DVI-I (DVI Dual Link available on output #1, HDMI 4K available on output #2 through DVI connector)
- 3G/HD/SD-SDI
- Video Optical SFP module cage

► Features & Effects

- Up to 4 true-Seamless scaled layers per screen
- Independent Native Background
- 100 memories for frames and logos
- 144 presets memories and 144 master preset memories
- Frames and Logos: fully resizable
- True A/B mix
- Output capability up to 2560x1600 and 4K
- 4-Customizable display layouts: Full Preview, Live Mosaic, Monitoring and Recording
- Display configurations: Mixer, Hybrid, Hard Edge & embedded Soft Edge
- Associative modularity: up to 4 units linked together using **Vertige™** console
- Luma/Chroma Key/DSK
- Layer border: Edge/Smooth/Shadow/Smooth Edge (Edge: color/width/height)
- New tools box for layers: Transitions, Effects, Speed, Timing, Faders, Strobe, Mirror,...
- Numerous effects: Cut, Dissolve, Slide, Wipe, Stretch, Circle, Depth, Flip, Flying Curve, Background Cut, Transparency, Luma/Chroma Key, DSK, Cut and Fill
- Web-based Remote Control Software for multiple users: **Web RCS**
- Remote Tools
- Remote Services

Web RCS



- The **Web RCS** offers a user-friendly graphic interface consisting of 3 independent sections: Setup, Edit and Live. A Preconfig. mode indicates how to easily configure the device step by step.
- With dynamic snapshots of the connected sources available in the interface, the intuitive dashboard allows operators to fully prepare their shows and control them live during their events.
- An innovative Sequences mode allows easy organization of presets through drag and drop.

In addition to its two main outputs, NeXtage 16 - 4K features an independent Dual-Link output for monitoring purposes.

This specific output offers versatile display options, ensuring safe monitoring and flawless show control. All images are live and can be labelled through Web Remote Control Software. Additional information on each source is also available directly on the different live pictures.

Full Preview



Live Mosaic



Dimensions:

- D 21.41" x W 17.51" x H 5.23" ("Rack ears" not included)
- D 544 mm x W 444.8 mm x H 133 mm ("Rack ears" not included)

Weight:

- 14 kg
- 30.86 lbs

Power Supply:

100-240 VAC ; 4.8A ; 50/60Hz ; 225 W

Supplied with:

- 1 x Power supply cord
- 1 x Ethernet cross cable (for device control)
- 1 x MCO 10 pin connector
- 1 x Web-based Remote Control Software included and hosted on the device
- 1 x Rack mount kit (front ears and rear support)
- 1 x User Manual (PDF version)*
- 1 x Quick Start Guide*

Warranty:

3-year warranty on parts and labor back to factory.



* All User Manuals and Quick Start Guides are also available on www.analogway.com

ⓘ Specifications subject to change without prior notice

All technical specifications are available on our website

SpeechLine DW

SpeechLine Digital Wireless System Specification

FEATURES

- Automatic frequency and interference management
- Speech optimized gain automatics
- License free 1.9 GHz frequency range
- Secure 256 bit AES encryption
- Remote control via Ethernet
- Advanced power management and Li-Ion rechargeables
- Up to 20 channels per range



SpeechLine Digital Wireless is a presentation solution dedicated to speech. The digital wireless microphone system is a future-proof solution that's easy to set up, use and manage. A microphone which lets the presenter concentrate on their words, not on the technology.

SpeechLine Digital Wireless comprises of mobile transmitters (hand-held or bodypack) tailored for presentation, speech optimized microphone capsules (condenser capsules, lavalier or headworn microphone) and an easy-to-integrate stationary receiver. For convenience, the system relies on lithium-ion technology with a battery lifetime of more than 15 h and flexible charging solutions of multi-device chargers or USB-charging on the fly. Thanks to the Automatic Frequency Management, the system always finds a free frequency (no frequency planning is necessary anymore). The Automatic Interference Management always maintains a stable connection, which makes the system very reliable. The Automatic Sensitivity Management makes the setup even more convenient, no more gain settings are required. With seamless network integration the system can be controlled via AMX, Crestron or a dedicated remote control software, which makes SpeechLine DW easy to monitor and to manage.

For secure communication, SpeechLine Digital Wireless uses the secure advanced 256-bit AES encryption for secure wireless transmission.

Due to the 1.9 GHz frequency range SpeechLine DW is the future proof of investment and already DD ready. Moreover, the 1.9 GHz is license free and requires no registration.

ARCHITECT'S SPECIFICATION

A wireless RF transmission system designed for presentation use and other applications where maximum speech intelligibility is required.

The system shall consist of a stationary receiver, a handheld transmitter with a condenser microphone head and a bodypack transmitter with a condenser clip-on or headset microphone and shall be available in different sets of receiver/transmitter/microphone combinations. The system shall also feature a Dante™ interface for use with the microphone receivers designed to add analog mic/line inputs to a Dante™ system.

Operating in the license-free 1.9 GHz band (frequency ranges are between 1,880 and 1,930 MHz, depending on country-specific regulations), the system shall use automatic frequency management to determine the best free available frequency and to automatically start the transmission. Additionally, the system shall incorporate automatic interference management, allowing the transmitter and receiver to move to an undisturbed, compatible frequency with no audio signal interruption, should interference occur. Furthermore, advanced 256-bit AES encryption shall be used for secure wireless transmission.

To allow optimum use of the 1.9 GHz frequency band, the system shall offer two operating modes: Adaptive Power Mode for up to 20 links used simultaneously and Multi-Room Mode. In Multi-Room Mode, the transmission power shall be adjustable in steps to adapt the coverage to the corresponding room size in order to allow a significantly larger number of links. This makes the system the optimum solution for a great variety of projects with widely differing installation sizes at the same location.

Furthermore, the system shall be compatible with Sennheiser software for network-based remote setup, control and monitoring of large installations with hundreds of devices.

The system's AF frequency response shall range from 20 – 20,000 Hz. The dynamic range shall be > 120 dB(A). Total harmonic distortion (THD) at 1 kHz shall be typical 0.1 %. Signal-to-noise ratio shall be > 90 dB(A). Latency shall be 19 ms. Operating temperature shall range from -10 °C to +55 °C (+14 °F to +131 °F).

Architect's Specification continued

The user interface of the receiver shall be operated by jog dial and OLED display. The receiver shall have dedicated pairing, escape and power buttons.

The receiver shall feature a low-cut filter as well as speech-optimized sound profiles or custom settings with a 7-band graphic equalizer. The receiver's RF sensitivity shall be -90 dBm. RF output power of the receiver's back channel shall be adaptive and up to 250 mW (country-specific).

The receiver's audio output shall utilize a balanced XLR-3M socket with a maximum output of +18 dBu along with two unbalanced RCA sockets with a maximum output of +6 dBu. The receiver shall feature automatic gain optimization. Two reverse SMA sockets shall be provided for connecting the antennas.

The receiver shall feature RJ-45 network connectivity compatible with IPv4 and IPv6 networks. For remote control the receiver shall have media control protocol integration.

The receiver shall operate on 12 V DC power supplied from the NT 12-4C power supply unit (100-240 V AC, 50/60 Hz, for use in the USA, the UK, and Europe) or the NT 2-3 power supply unit (100-240 V AC, 50/60 Hz, for use in countries other than the USA, the UK, and Europe). Power consumption shall be 350 mA. The dimensions shall be approximately 168 x 212 x 43 mm (6.61" x 8.35" x 1.69"). Weight shall be approximately 828 grams (1.83 lbs). The receiver shall be the Sennheiser SL Rack Receiver DW.

The transmitters shall be powered by either one Sennheiser Lithium-Ion rechargeable accupack with a typical operating time of 15 hours or with an optional battery case for two 1.5V AA size batteries. The accupack can be quickly charged through a wide variety of charging options, including micro USB. The accupack shall have charging contacts on the outside for charging in the dedicated CHG 2 charger.

The handheld transmitter shall be equipped with a mute switch, which can be deactivated via the user interface. The handheld transmitter's AF frequency response shall range from 50 – 20,000 Hz. RF output power shall be adaptive and up to 250 mW (country-specific). The handheld transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 215 x 40 mm (8.46" x 1.57"). Weight (with microphone head, without accupack) shall be approximately 262 grams (9.24 oz). The handheld transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The handheld transmitter shall be the Sennheiser SL Handheld DW.

The microphone head suitable for use with the handheld transmitter shall be a condenser type with a super-cardioid pick-up pattern and a sensitivity of 1.6 mV/Pa. Maximum sound pressure level shall be 152 dB SPL. The microphone head shall be the Sennheiser MME 865-1.

The bodypack transmitter's microphone/line input shall utilize a lockable 3.5 mm jack socket. The AF frequency response shall range from 50 – 20,000 Hz (mic) and from 20 – 20,000 Hz (line). RF output power shall be adaptive and up to 250 mW (country-specific). The maximum input level shall be 2.2 Vrms (mic) or 3.3 Vrms (line). Input impedance shall be 1 M Ω (line). The bodypack transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 100 x 65 x 24 mm (3.94" x 2.56" x 0.94"). Weight (without accupack) shall be approximately 88 grams (3.10 oz). The bodypack transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The bodypack transmitter shall be the Sennheiser SL Bodypack DW.

The microphone suitable for use with the bodypack transmitter shall be a condenser type with an omni-directional pick-up pattern and a sensitivity of 5 mV/Pa. Maximum sound pressure level shall be 142 dB SPL. The clip-on microphone shall be the Sennheiser MKE 1 and the headset microphone shall be the Sennheiser SL Headmic 1.

The Dante™ interface shall feature four balanced and RF filtered mic/line inputs on female XLR-3 connectors and two RJ-45 Ethernet connectors to allow Dante™ daisy chaining (DDC) of multiple units. Audio frequency response shall range from 20 – 20,000 Hz. Input impedance shall be > 1.8 k Ω at any gain setting. Equivalent input noise shall be -113 dBu. The Dante™ interface shall be powered over the CAT5 Ethernet cable from an 802.3af PoE compliant network switch or from an external +12 V DC power supply. The unit shall support daisy chaining of two units when powered via PoE and shall accept daisy chaining of up to three units when powered via an external +12 V DC power supply. Power consumption shall be 2.7 W (225 mA) @ +12 V DC without phantom power and 5.5 W (460 mA) @ +12 V DC with a 10 mA phantom power load per input. The Dante™ interface shall have a rugged metal housing with integrated mounting brackets; dimensions (W x H x D) shall be 219 x 38 x 120 mm (8.63" x 1.50" x 4.74"). Weight shall be 0.77 kg (1.7 lbs). Operating temperature shall range from 0 °C to 40 °C (32 °F to 104 °F).

The Dante™ interface shall be the Sennheiser SL DI 4 XLR.

The wireless RF transmission system shall be the Sennheiser SpeechLine Digital Wireless.

Architect's Specification continued

The software shall enable the user to set up, control and monitor all components of a SpeechLine Digital Wireless system via a network. The browser-based responsive software shall be accessible across all platforms from any device (e.g. tablet, computer) in the network. The software shall provide a complete overview of all network-enabled SpeechLine Digital Wireless devices together with status information such as link status, battery life information, alerts and notifications. The software shall allow the user to edit settings of one device or multiple devices at a time. The software shall also feature a room list view, which shows the locations of all devices in the network as well as the number of devices per room.

The software shall be the Sennheiser Control Cockpit

SPECIFICATIONS**System**

AF frequency response	20 to 20,000 Hz
Dynamic range	> 120 dB(A)
THD (1 kHz)	typ. 0.1 %
Audio sampling	24 bit/48 kHz
Signal-to-noise ratio	> 90 dB(A)
Encryption	AES 256
RF frequency ranges	EU: 1,880 to 1,900 MHz USA: 1,920 to 1,930 MHz Brazil: 1,910 to 1,920 MHz Taiwan: 1,880 to 1,895 MHz Japan: 1,893 to 1,906 MHz
Modulation	GFSK with back channel
Transmission method	TDMA, space diversity
Latency	19 ms
Relative air humidity	max. 95 %
Temperature range*	Operation: -10 °C to 55 °C (14 °F to 131 °F) Storage: -20 °C to 70 °C (-4 °F to 158 °F)

* The temperature range is influenced by the battery characteristics

SL Rack Receiver DW

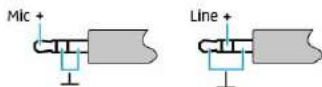
RF sensitivity	< -90 dBm
RF output power back channel	adaptive, up to 250 mW (country-specific)
XLR output level, balanced	max. +18 dBu
RCA output level, unbalanced	max. +6 dBu
Audio effects	Low cut: -3 dB at 120 Hz Equalizer: 7-band graphic equalizer with sound presets Sound profiles: • Female Voice • Male Voice • Media
Display	OLED
Network protocol	Media Control Protocol, TCP/IP IPv4 (DHCP, manual)/ IPv6
Power supply	12 V DC
Current consumption	350 mA
AF connection sockets	XLR/2 x RCA
Antenna sockets	2 x reverse SMA
Network sockets	RJ-45
DC socket for power supply	hollow jack
Weight	approx. 828 g

SL Handheld DW

RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	50 to 20,000 Hz
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 10 (Li-Ion, 3.6 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 10 h
Display	LCD
Mute switch	available
Weight (w/o accupack)	approx. 262 g incl. microphone head

* optional accessory

SL Bodypack DW

RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	Mic: 50 to 20,000 Hz Line: 20 to 20,000 Hz
Max. input level	Mic: 2.2 V RMS Line: 3.3 V RMS
Line input impedance	1 MΩ
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 30 (Li-Ion, 3.7 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 11 h
AF connection socket	3.5 mm jack socket, lockable 
Weight (w/o accupack)	approx. 88 g

* optional accessory

Microphones

	MME 865-1	MKE 1	SL Headmic 1
Microphone type		pre-polarized condenser microphone	
Sensitivity	1.6 mV/Pa	5 mV/Pa	5 mV/Pa
Pick-up pattern	super-cardioid	omni-directional	omni-directional
Max. SPL	152 dB SPL	142 dB SPL	142 dB SPL

Power supply units (for SL Rack Receiver DW)

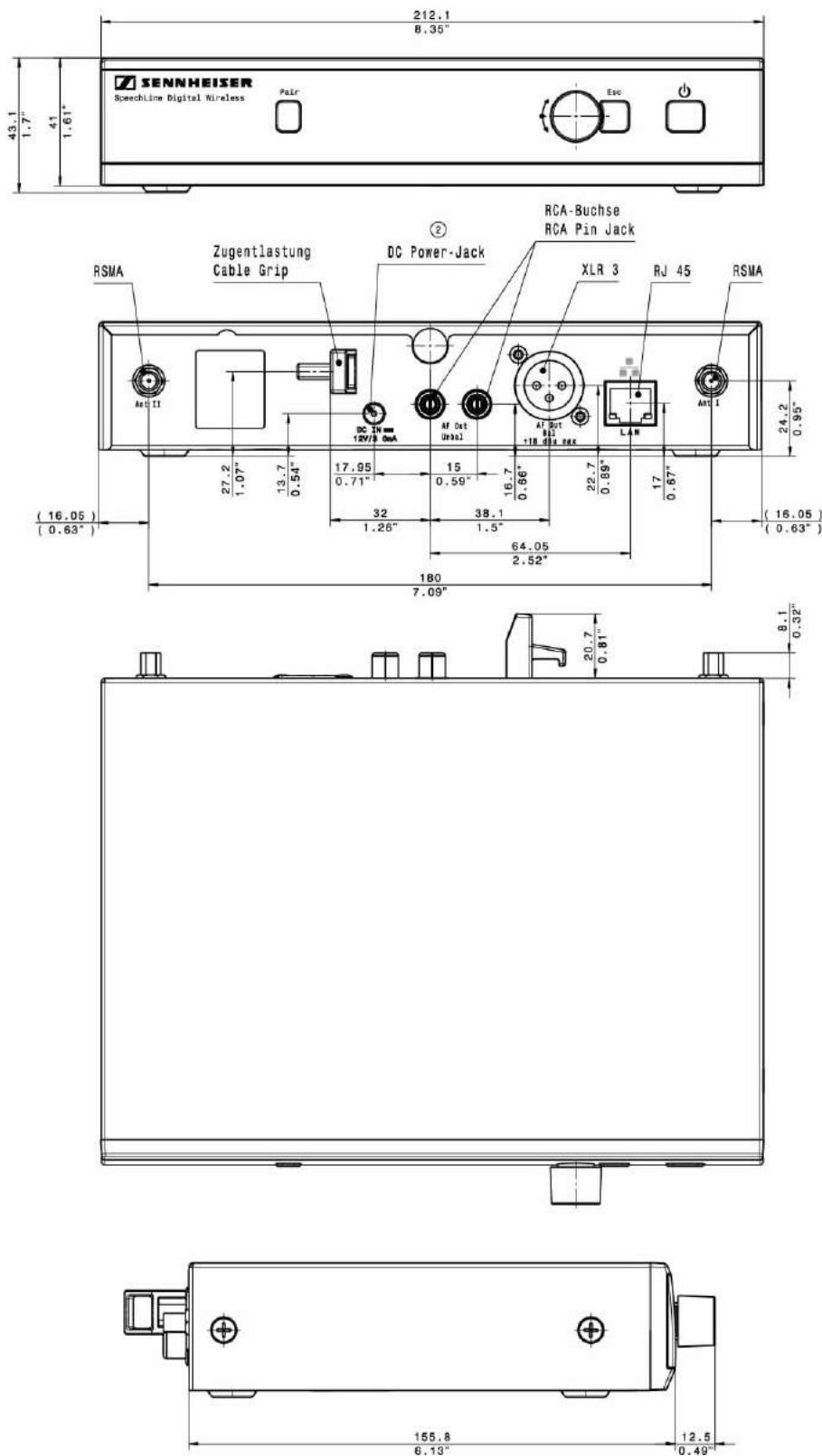
	NT 12-4C	NT 2-3
Nominal input voltage	100 to 240 V~	
Power frequency	50 or 60 Hz	
Input current	max. 120 mA	
Nominal output voltage	12 V — —	
Standby power consumption	≤ 0.3 W	
Energy efficiency level	V	IV
Operating temperature	-10 °C to 55 °C (14 °F to 131 °F)	
Storage temperature	-20 °C to +70 °C (-4 °F to 158 °F)	
Relative air humidity	max. 95 %	
Weight	approx. 100 g	approx. 105 g

Accupacks

	BA 10	BA 30
Charging capacity	2200 mAh	2030 mAh
Output voltage	3.6 V	3.7 V

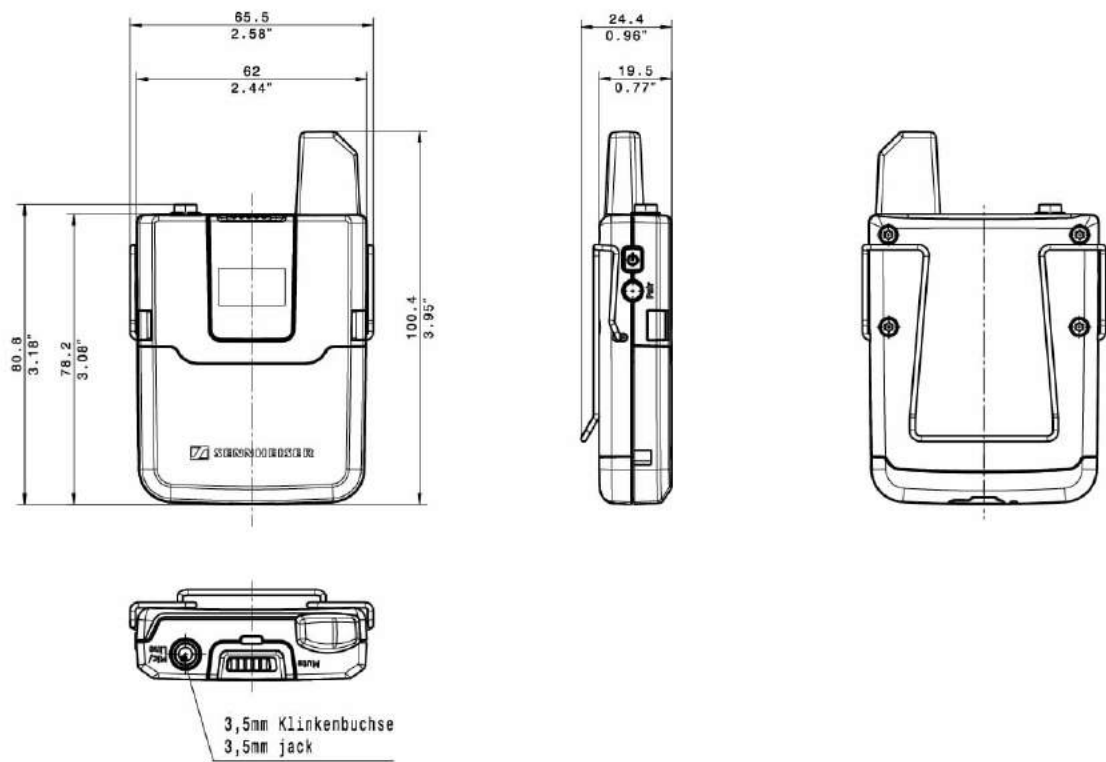
DIMENSIONS

SL Rack Receiver DW

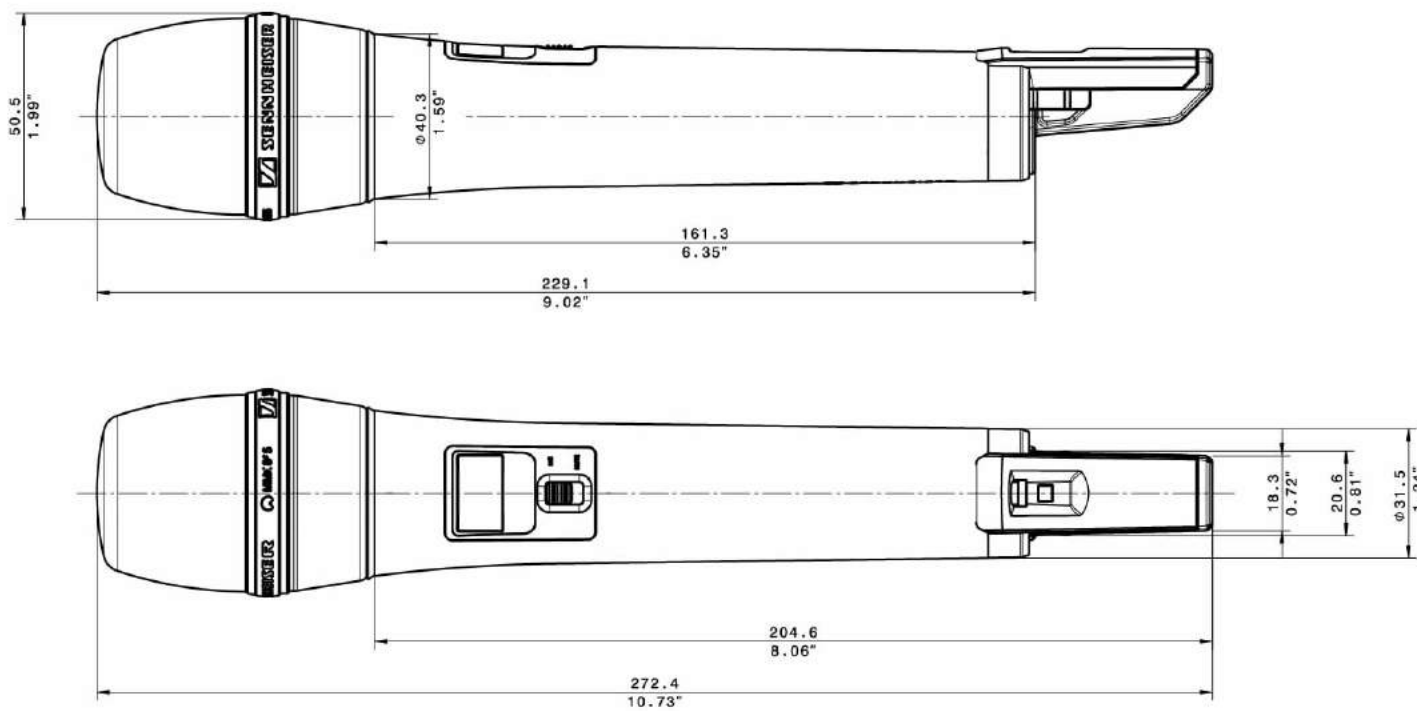


DIMENSIONS

SL Bodypack DW

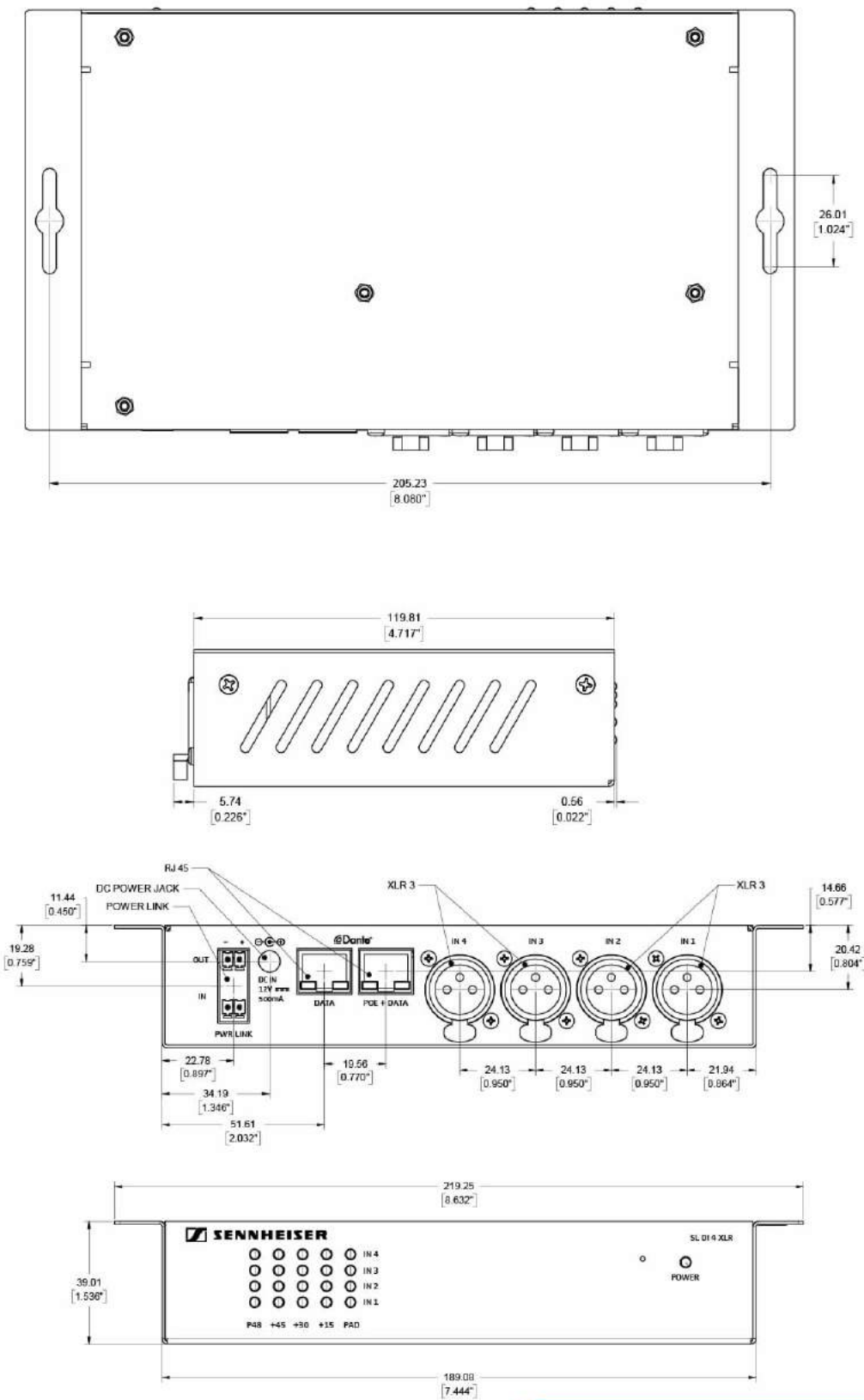


SL Handheld DW



DIMENSIONS

SL DI 4 XLR



ACCESSORIES

Product	Features	Description
AWM 2	• Unobtrusive antenna wall or tripod mounting • Robust metal housing	With the AWM 2, the antennas can be installed in an optimum way and nearly invisible, in case the stationary receiver shall be invisible or needs to be further away. It can be easily mounted on a mobile microphone tripod or permanently installed on a wall.
CHG 2	• Two bay charger for SL DW • Universal charging slots for either bodypack and handheld • External DC adaptor	The CHG 2 charger makes battery management really easy. The mobile transmitters, while not in use, are charged in the two charging bays. Thus, the devices are always ready-to-use when needed. The bi-color LED indicates the status. For seamless installation, the external power supply provides the necessary flexibility.
BA 10 / BA 30	• Li-Ion rechargeable battery • USB charging socket • Dedicated charging contacts	With the BA 10 / BA 30 the SpeechLine Digital Wireless transmitters' long operation time is guaranteed. With more than 15 hours of battery life time even an entire day of operation can be covered. The integrated USB socket allows instantaneous charging.
CL 5/10/20	• Robust, step-proof antenna cable • Sturdy R-SMA connectors	With the robust and step-proof CL 5/10/20 antenna cables the distance between the antenna and the SL Rack Receiver DW can be covered. This allows flexible integration of SpeechLine Digital Wireless in various applications.
Sennheiser Control Cockpit	• Remote control of SpeechLine Digital Wireless • Convenient setup and handling • Detailed status monitoring • Flexible browser-based application	The dedicated Sennheiser Control Cockpit software allows for an easy setup and handling of SpeechLine Digital Wireless even in large installations or events. Monitoring all status information is very easy. All system and device settings can be adjusted remotely.
SL Headmic 1	• Most comfortable-to-use presenter microphone • Outstanding sound quality, omni-directional • Sleek and unobtrusive appearance • Extremely lightweight, but sturdy metal frame • Soft-case for convenient transport and storage • Available in black, silver and beige	The SL Headmic 1 is an extremely unobtrusive and comfortable-to-use headworn microphone. It features the proven omni-directional MKE 1 microphone capsule. The adjustable neck band makes its use convenient for everyone. The extremely lightweight (7 g) but robust metal frame makes long-term usage most convenient. It comes with a sturdy and sleek soft-case, which can also hold a bodypack transmitter. It is available in black or beige.
SL DI 4 XLR	• 4 XLR balanced and RF filtered mic/line inputs • 802.3af compliant PoE powered to work with any compliant PoE network switch, or an external +12 V DC supply • +48 V phantom power • Dante™ Daisy Chaining allows multiple SL DI 4 XLRs to be connected over a single home-run to the Ethernet switch	The SL DI 4 XLR four input Dante™ preamp is the ideal interface for wireless microphone receivers and adding mic/line inputs to a Dante™ system. The small form factor of the SL DI 4 XLR allows them to be mounted almost anywhere, putting them close to audio sources and minimizing interference-prone analog wiring.

SpeechLine DW

SpeechLine Digital Wireless System Specification

FEATURES

- Automatic frequency and interference management
- Speech optimized gain automatics
- License free 1.9 GHz frequency range
- Secure 256 bit AES encryption
- Remote control via Ethernet
- Advanced power management and Li-Ion rechargeables
- Up to 20 channels per range



SpeechLine Digital Wireless is a presentation solution dedicated to speech. The digital wireless microphone system is a future-proof solution that's easy to set up, use and manage. A microphone which lets the presenter concentrate on their words, not on the technology.

SpeechLine Digital Wireless comprises of mobile transmitters (hand-held or bodypack) tailored for presentation, speech optimized microphone capsules (condenser capsules, lavalier or headworn microphone) and an easy-to-integrate stationary receiver. For convenience, the system relies on lithium-ion technology with a battery lifetime of more than 15 h and flexible charging solutions of multi-device chargers or USB-charging on the fly. Thanks to the Automatic Frequency Management, the system always finds a free frequency (no frequency planning is necessary anymore). The Automatic Interference Management always maintains a stable connection, which makes the system very reliable. The Automatic Sensitivity Management makes the setup even more convenient, no more gain settings are required. With seamless network integration the system can be controlled via AMX, Crestron or a dedicated remote control software, which makes SpeechLine DW easy to monitor and to manage.

For secure communication, SpeechLine Digital Wireless uses the secure advanced 256-bit AES encryption for secure wireless transmission.

Due to the 1.9 GHz frequency range SpeechLine DW is the future proof of investment and already DD ready. Moreover, the 1.9 GHz is license free and requires no registration.

ARCHITECT'S SPECIFICATION

A wireless RF transmission system designed for presentation use and other applications where maximum speech intelligibility is required.

The system shall consist of a stationary receiver, a handheld transmitter with a condenser microphone head and a bodypack transmitter with a condenser clip-on or headset microphone and shall be available in different sets of receiver/transmitter/microphone combinations. The system shall also feature a Dante™ interface for use with the microphone receivers designed to add analog mic/line inputs to a Dante™ system.

Operating in the license-free 1.9 GHz band (frequency ranges are between 1,880 and 1,930 MHz, depending on country-specific regulations), the system shall use automatic frequency management to determine the best free available frequency and to automatically start the transmission. Additionally, the system shall incorporate automatic interference management, allowing the transmitter and receiver to move to an undisturbed, compatible frequency with no audio signal interruption, should interference occur. Furthermore, advanced 256-bit AES encryption shall be used for secure wireless transmission.

To allow optimum use of the 1.9 GHz frequency band, the system shall offer two operating modes: Adaptive Power Mode for up to 20 links used simultaneously and Multi-Room Mode. In Multi-Room Mode, the transmission power shall be adjustable in steps to adapt the coverage to the corresponding room size in order to allow a significantly larger number of links. This makes the system the optimum solution for a great variety of projects with widely differing installation sizes at the same location.

Furthermore, the system shall be compatible with Sennheiser software for network-based remote setup, control and monitoring of large installations with hundreds of devices.

The system's AF frequency response shall range from 20 – 20,000 Hz. The dynamic range shall be > 120 dB(A). Total harmonic distortion (THD) at 1 kHz shall be typical 0.1 %. Signal-to-noise ratio shall be > 90 dB(A). Latency shall be 19 ms. Operating temperature shall range from -10 °C to +55 °C (+14 °F to +131 °F).

Architect's Specification continued

The user interface of the receiver shall be operated by jog dial and OLED display. The receiver shall have dedicated pairing, escape and power buttons.

The receiver shall feature a low-cut filter as well as speech-optimized sound profiles or custom settings with a 7-band graphic equalizer. The receiver's RF sensitivity shall be -90 dBm. RF output power of the receiver's back channel shall be adaptive and up to 250 mW (country-specific).

The receiver's audio output shall utilize a balanced XLR-3M socket with a maximum output of +18 dBu along with two unbalanced RCA sockets with a maximum output of +6 dBu. The receiver shall feature automatic gain optimization. Two reverse SMA sockets shall be provided for connecting the antennas.

The receiver shall feature RJ-45 network connectivity compatible with IPv4 and IPv6 networks. For remote control the receiver shall have media control protocol integration.

The receiver shall operate on 12 V DC power supplied from the NT 12-4C power supply unit (100-240 V AC, 50/60 Hz, for use in the USA, the UK, and Europe) or the NT 2-3 power supply unit (100-240 V AC, 50/60 Hz, for use in countries other than the USA, the UK, and Europe). Power consumption shall be 350 mA. The dimensions shall be approximately 168 x 212 x 43 mm (6.61" x 8.35" x 1.69"). Weight shall be approximately 828 grams (1.83 lbs). The receiver shall be the Sennheiser SL Rack Receiver DW.

The transmitters shall be powered by either one Sennheiser Lithium-Ion rechargeable accupack with a typical operating time of 15 hours or with an optional battery case for two 1.5V AA size batteries. The accupack can be quickly charged through a wide variety of charging options, including micro USB. The accupack shall have charging contacts on the outside for charging in the dedicated CHG 2 charger.

The handheld transmitter shall be equipped with a mute switch, which can be deactivated via the user interface. The handheld transmitter's AF frequency response shall range from 50 – 20,000 Hz. RF output power shall be adaptive and up to 250 mW (country-specific). The handheld transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 215 x 40 mm (8.46" x 1.57"). Weight (with microphone head, without accupack) shall be approximately 262 grams (9.24 oz). The handheld transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The handheld transmitter shall be the Sennheiser SL Handheld DW.

The microphone head suitable for use with the handheld transmitter shall be a condenser type with a super-cardioid pick-up pattern and a sensitivity of 1.6 mV/Pa. Maximum sound pressure level shall be 152 dB SPL. The microphone head shall be the Sennheiser MME 865-1.

The bodypack transmitter's microphone/line input shall utilize a lockable 3.5 mm jack socket. The AF frequency response shall range from 50 – 20,000 Hz (mic) and from 20 – 20,000 Hz (line). RF output power shall be adaptive and up to 250 mW (country-specific). The maximum input level shall be 2.2 Vrms (mic) or 3.3 Vrms (line). Input impedance shall be 1 MΩ (line). The bodypack transmitter shall have automatic sensitivity adjustment. Dimensions shall be approximately 100 x 65 x 24 mm (3.94" x 2.56" x 0.94"). Weight (without accupack) shall be approximately 88 grams (3.10 oz). The bodypack transmitter shall feature an LC display showing wireless link name, battery status, and reception quality. The bodypack transmitter shall be the Sennheiser SL Bodypack DW.

The microphone suitable for use with the bodypack transmitter shall be a condenser type with an omni-directional pick-up pattern and a sensitivity of 5 mV/Pa. Maximum sound pressure level shall be 142 dB SPL. The clip-on microphone shall be the Sennheiser MKE 1 and the headset microphone shall be the Sennheiser SL Headmic 1.

The Dante™ interface shall feature four balanced and RF filtered mic/line inputs on female XLR-3 connectors and two RJ-45 Ethernet connectors to allow Dante™ daisy chaining (DDC) of multiple units. Audio frequency response shall range from 20 – 20,000 Hz. Input impedance shall be > 1.8 kΩ at any gain setting. Equivalent input noise shall be -113 dBu. The Dante™ interface shall be powered over the CAT5 Ethernet cable from an 802.3af PoE compliant network switch or from an external +12 V DC power supply. The unit shall support daisy chaining of two units when powered via PoE and shall accept daisy chaining of up to three units when powered via an external +12 V DC power supply. Power consumption shall be 2.7 W (225 mA) @ +12 V DC without phantom power and 5.5 W (460 mA) @ +12 V DC with a 10 mA phantom power load per input. The Dante™ interface shall have a rugged metal housing with integrated mounting brackets; dimensions (W x H x D) shall be 219 x 38 x 120 mm (8.63" x 1.50" x 4.74"). Weight shall be 0.77 kg (1.7 lbs). Operating temperature shall range from 0 °C to 40 °C (32 °F to 104 °F).

The Dante™ interface shall be the Sennheiser SL DI 4 XLR.

The wireless RF transmission system shall be the Sennheiser SpeechLine Digital Wireless.

Architect's Specification continued

The software shall enable the user to set up, control and monitor all components of a SpeechLine Digital Wireless system via a network. The browser-based responsive software shall be accessible across all platforms from any device (e.g. tablet, computer) in the network. The software shall provide a complete overview of all network-enabled SpeechLine Digital Wireless devices together with status information such as link status, battery life information, alerts and notifications. The software shall allow the user to edit settings of one device or multiple devices at a time. The software shall also feature a room list view, which shows the locations of all devices in the network as well as the number of devices per room.

The software shall be the Sennheiser Control Cockpit

SPECIFICATIONS

System

AF frequency response	20 to 20,000 Hz
Dynamic range	> 120 dB(A)
THD (1 kHz)	typ. 0.1 %
Audio sampling	24 bit/48 kHz
Signal-to-noise ratio	> 90 dB(A)
Encryption	AES 256
RF frequency ranges	EU: 1,880 to 1,900 MHz USA: 1,920 to 1,930 MHz Brazil: 1,910 to 1,920 MHz Taiwan: 1,880 to 1,895 MHz Japan: 1,893 to 1,906 MHz
Modulation	GFSK with back channel
Transmission method	TDMA, space diversity
Latency	19 ms
Relative air humidity	max. 95 %
Temperature range*	Operation: -10 °C to 55 °C (14 °F to 131 °F) Storage: -20 °C to 70 °C (-4 °F to 158 °F)

* The temperature range is influenced by the battery characteristics

SL Rack Receiver DW

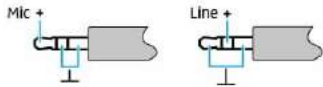
RF sensitivity	< -90 dBm
RF output power back channel	adaptive, up to 250 mW (country-specific)
XLR output level, balanced	max. +18 dBu
RCA output level, unbalanced	max. +6 dBu
Audio effects	Low cut: -3 dB at 120 Hz Equalizer: 7-band graphic equalizer with sound presets Sound profiles: • Female Voice • Male Voice • Media
Display	OLED
Network protocol	Media Control Protocol, TCP/IP IPv4 (DHCP, manual)/ IPv6
Power supply	12 V DC
Current consumption	350 mA
AF connection sockets	XLR/2 x RCA
Antenna sockets	2 x reverse SMA
Network sockets	RJ-45
DC socket for power supply	hollow jack
Weight	approx. 828 g

SL Handheld DW

RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	50 to 20,000 Hz
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 10 (Li-Ion, 3.6 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 10 h
Display	LCD
Mute switch	available
Weight (w/o accupack)	approx. 262 g incl. microphone head

* optional accessory

SL Bodypack DW

RF output power	adaptive, up to 250 mW (country-specific)
AF frequency response	Mic: 50 to 20,000 Hz Line: 20 to 20,000 Hz
Max. input level	Mic: 2.2 V RMS Line: 3.3 V RMS
Line input impedance	1 MΩ
Input sensitivity	automatic sensitivity adjustment
Power supply	Accupack: BA 30 (Li-Ion, 3.7 V) Batteries*: 2 x AA size battery (1.5 V)
Operating time	Accupack: typ. 15 h Batteries*: typ. 11 h
AF connection socket	3.5 mm jack socket, lockable 
Weight (w/o accupack)	approx. 88 g

* optional accessory

Microphones

	MME 865-1	MKE 1	SL Headmic 1
Microphone type		pre-polarized condenser microphone	
Sensitivity	1.6 mV/Pa	5 mV/Pa	5 mV/Pa
Pick-up pattern	super-cardioid	omni-directional	omni-directional
Max. SPL	152 dB SPL	142 dB SPL	142 dB SPL

Power supply units (for SL Rack Receiver DW)

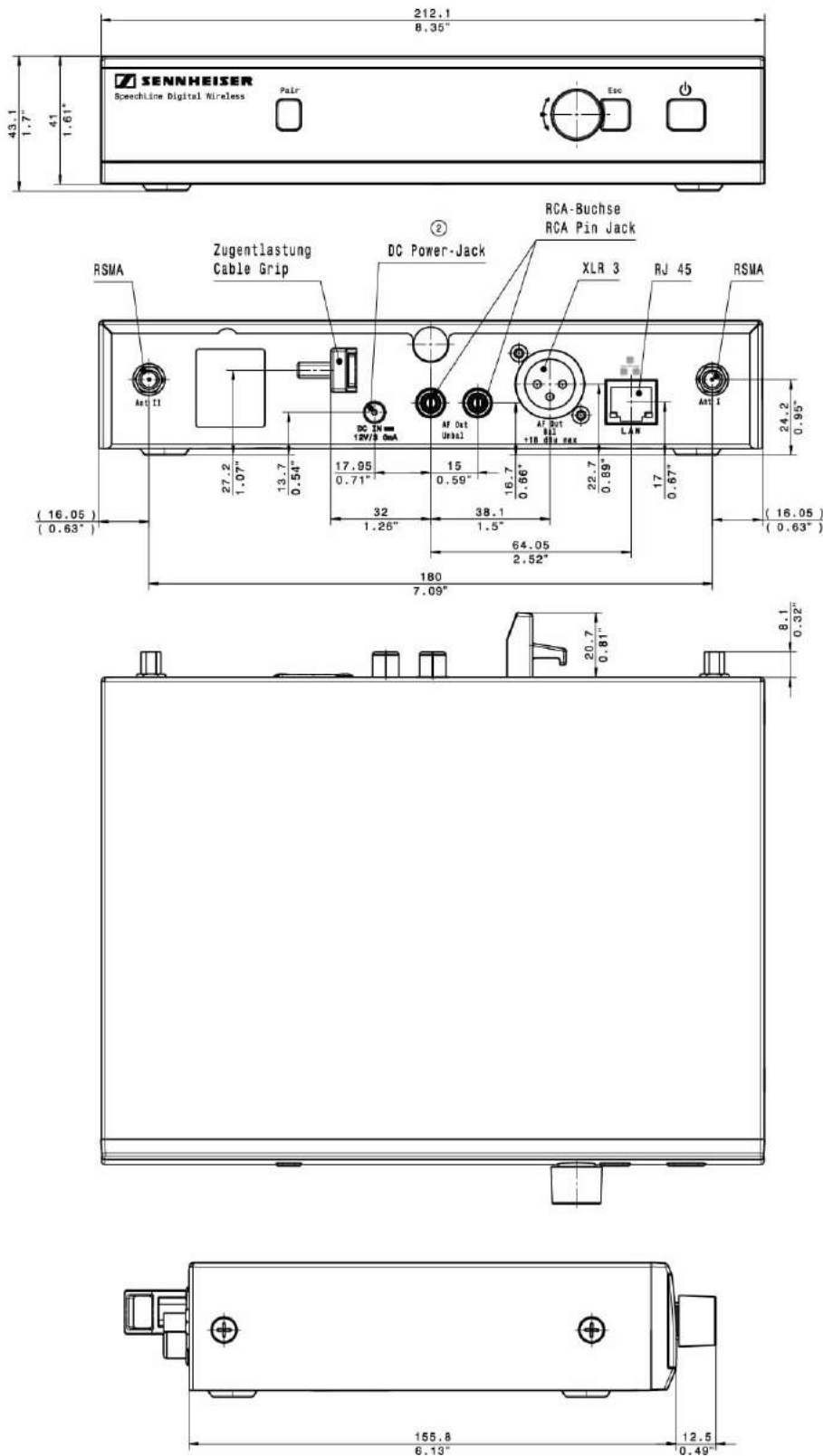
	NT 12-4C	NT 2-3
Nominal input voltage	100 to 240 V~	
Power frequency	50 or 60 Hz	
Input current	max. 120 mA	
Nominal output voltage	12 V — —	
Standby power consumption	≤ 0.3 W	
Energy efficiency level	V	IV
Operating temperature	-10 °C to 55 °C (14 °F to 131 °F)	
Storage temperature	-20 °C to +70 °C (-4 °F to 158 °F)	
Relative air humidity	max. 95 %	
Weight	approx. 100 g	approx. 105 g

Accupacks

	BA 10	BA 30
Charging capacity	2200 mAh	2030 mAh
Output voltage	3.6 V	3.7 V

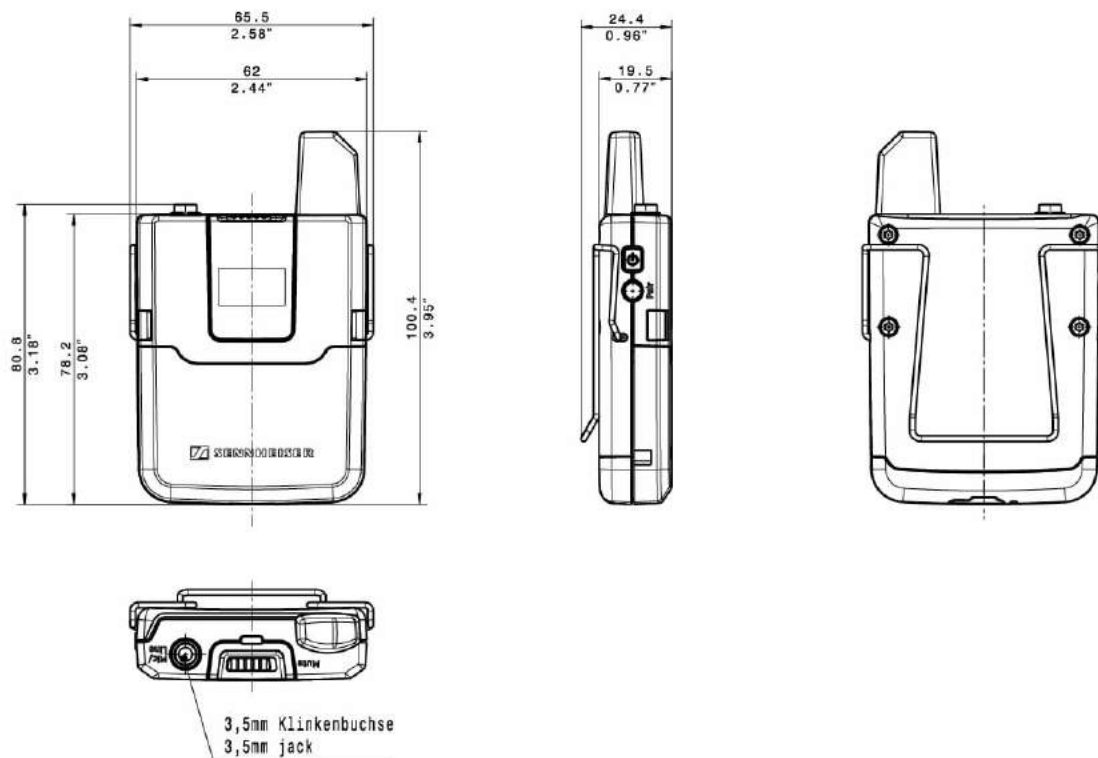
DIMENSIONS

SL Rack Receiver DW

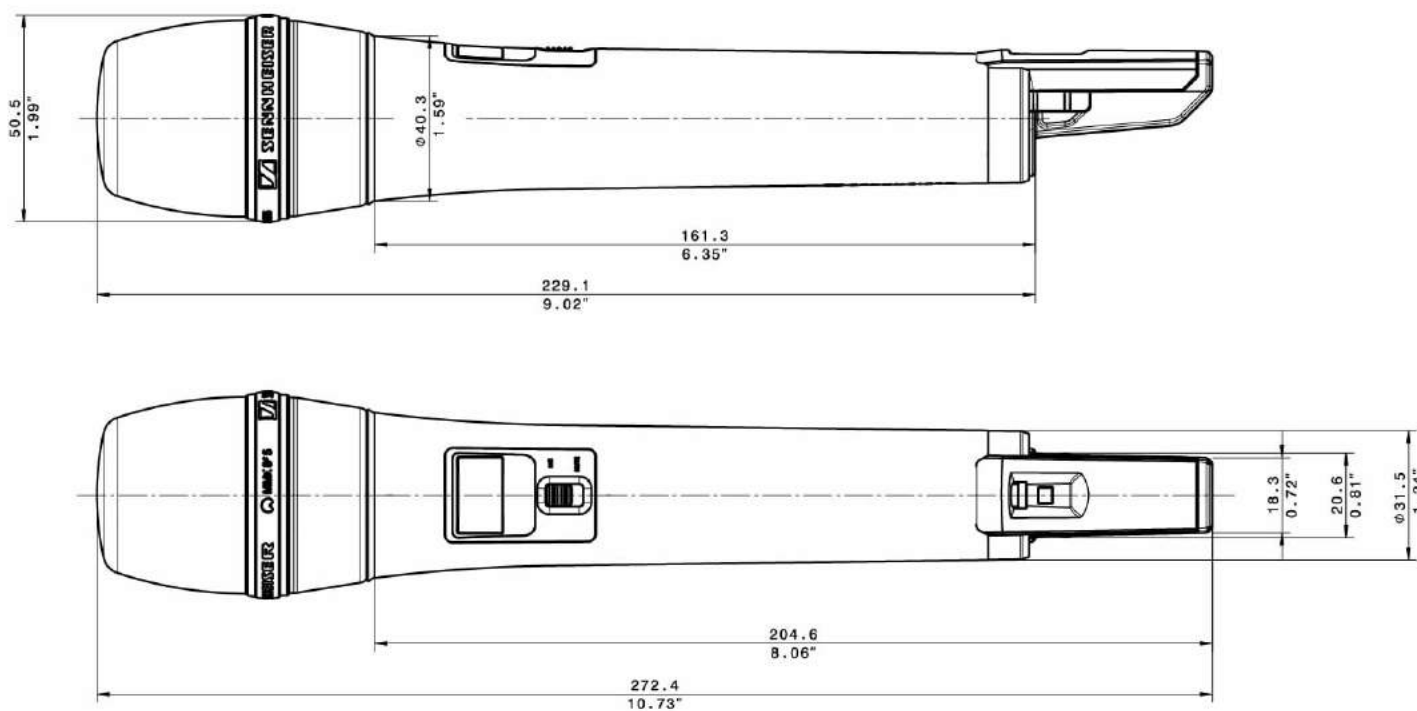


DIMENSIONS

SL Bodypack DW

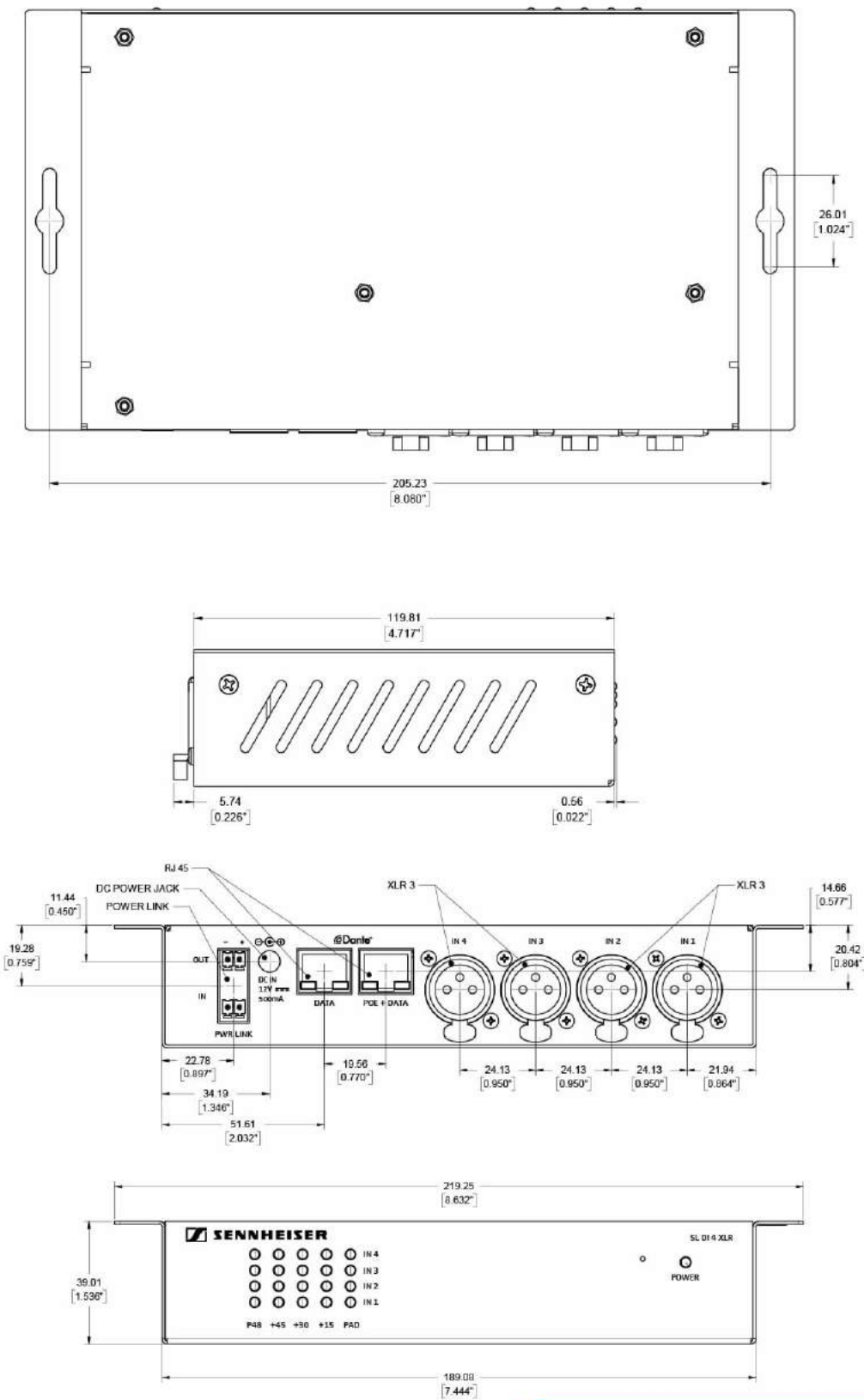


SL Handheld DW



DIMENSIONS

SL DI 4 XLR



ACCESSORIES

Product	Features	Description
AWM 2	• Unobtrusive antenna wall or tripod mounting • Robust metal housing	With the AWM 2, the antennas can be installed in an optimum way and nearly invisible, in case the stationary receiver shall be invisible or needs to be further away. It can be easily mounted on a mobile microphone tripod or permanently installed on a wall.
CHG 2	• Two bay charger for SL DW • Universal charging slots for either bodypack and handheld • External DC adaptor	The CHG 2 charger makes battery management really easy. The mobile transmitters, while not in use, are charged in the two charging bays. Thus, the devices are always ready-to-use when needed. The bi-color LED indicates the status. For seamless installation, the external power supply provides the necessary flexibility.
BA 10 / BA 30	• Li-Ion rechargeable battery • USB charging socket • Dedicated charging contacts	With the BA 10 / BA 30 the SpeechLine Digital Wireless transmitters' long operation time is guaranteed. With more than 15 hours of battery life time even an entire day of operation can be covered. The integrated USB socket allows instantaneous charging.
CL 5/10/20	• Robust, step-proof antenna cable • Sturdy R-SMA connectors	With the robust and step-proof CL 5/10/20 antenna cables the distance between the antenna and the SL Rack Receiver DW can be covered. This allows flexible integration of SpeechLine Digital Wireless in various applications.
Sennheiser Control Cockpit	• Remote control of SpeechLine Digital Wireless • Convenient setup and handling • Detailed status monitoring • Flexible browser-based application	The dedicated Sennheiser Control Cockpit software allows for an easy setup and handling of SpeechLine Digital Wireless even in large installations or events. Monitoring all status information is very easy. All system and device settings can be adjusted remotely.
SL Headmic 1	• Most comfortable-to-use presenter microphone • Outstanding sound quality, omni-directional • Sleek and unobtrusive appearance • Extremely lightweight, but sturdy metal frame • Soft-case for convenient transport and storage • Available in black, silver and beige	The SL Headmic 1 is an extremely unobtrusive and comfortable-to-use headworn microphone. It features the proven omni-directional MKE 1 microphone capsule. The adjustable neck band makes its use convenient for everyone. The extremely lightweight (7 g) but robust metal frame makes long-term usage most convenient. It comes with a sturdy and sleek soft-case, which can also hold a bodypack transmitter. It is available in black or beige.
SL DI 4 XLR	• 4 XLR balanced and RF filtered mic/line inputs • 802.3af compliant PoE powered to work with any compliant PoE network switch, or an external +12 V DC supply • +48 V phantom power • Dante™ Daisy Chaining allows multiple SL DI 4 XLRs to be connected over a single home-run to the Ethernet switch	The SL DI 4 XLR four input Dante™ preamp is the ideal interface for wireless microphone receivers and adding mic/line inputs to a Dante™ system. The small form factor of the SL DI 4 XLR allows them to be mounted almost anywhere, putting them close to audio sources and minimizing interference-prone analog wiring.

Specifications

DTP T DSW 4K 233

DTP T DSW 4K 333

TRUE 4K specification

Max. 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max. Bit Depth per Color
4096x2160 at 30 Hz	4:4:4	8 bit
3840x2160 at 30 Hz		
4096x2160 at 60 Hz	4:2:0	
3840x2160 at 60 Hz		

Frame rate ¹	24, 25, 30, 50 ² , or 60 ² fps
Chroma sampling ¹	4:4:4, 4:2:2, or 4:2:0 ²
Color bit depth ¹	8 bits per color
Signal type ¹	HDMI 1.4, DisplayPort 1.1a, HDCP 1.4
Maximum video data rate ¹	
HDMI	10.2 Gbps (3.4 Gbps per color)
DisplayPort	10.8 Gbps (2.7 Gbps per lane)

NOTE: ¹Subject to the maximum data rate limit. Use our calculator (www.extron.com/4Kdata rate) to determine video parameters supported by this data rate.

²Applicable to HDMI signals only.

Video

VGA input

Gain	Unity
Bandwidth	170 MHz (-3 dB)
Crosstalk	-50 dB @ 10 MHz, -30 dB @ 100 MHz

HDMI input

Maximum data rate	10.2 Gbps (3.4 Gbps per color)
Maximum pixel clock	300 MHz
Resolution range	Up to 2560x1600* @ 60 Hz or 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz, 4K/UHD @ 60 Hz with 4:2:0 chroma subsampling (*Reduced blanking)
Color bit depth	8, 10, or 12 bits — subject to the maximum data rate limit
Formats	RGB and YCbCr digital video
Standards	DVI 1.0, HDMI 1.4, HDCP 1.4, CEA-861E

DisplayPort input

Maximum data rate	10.8 Gbps (2.7 Gbps per lane)
Maximum pixel clock	300 MHz
Resolution range	Up to 2560x1600* @ 60 Hz or 4K (4096x2160) @ 30 Hz (*Reduced blanking)
Formats	RGB and YCbCr digital video
Standards	DisplayPort 1.1a

Video input

Number/signal type	
VGA input.....	1 VGA-WUXGA RGBHV
HDMI input.....	1 single link HDMI (or DVI-D*)
DisplayPort input	1 DisplayPort

NOTE: *Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.

Connectors

VGA input.....	1 female 15-pin HD
HDMI input.....	1 female HDMI, type A
DisplayPort input	1 female DisplayPort

VGA input

Nominal level	1.0 Vp-p
Minimum/Maximum levels	Analog 0.3 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Horizontal frequency.....	15 kHz to 145 kHz
Vertical frequency	30 Hz to 170 Hz
Return loss.....	<-40 dB @ 5 MHz

Video output

Number/signal type	
DTP T DSW 4K 233	1 DTP 230 (output)
DTP T DSW 4K 333	1 DTP 330 (output)

Interconnection between transmitter and receivers

Connector.....	1 RJ-45 jack
Termination standards.....	TIA/EIA T568B
Signal transmission distance	
DTP T DSW 4K 233	
1080p @ 60 Hz.....	Up to 230' (70 m) using shielded twisted pair (STP) cable or XTP DTP 24 cable
2560x1600 @ 60 Hz.....	Up to 130' (40 m) using STP cable or XTP DTP 24 cable
4K/UHD @ 30 and 60 Hz...	Up to 130' (40 m) using STP cable or XTP DTP 24 cable
DTP T DSW 4K 333	
1080p @ 60 Hz.....	Up to 330' (100 m) using shielded twisted pair (STP) cable or XTP DTP 24 cable
2560x1600 @ 60 Hz.....	Up to 330' (100 m) using STP cable or XTP DTP 24 cable
4K/UHD @ 30 and 60 Hz...	Up to 330' (100 m) using STP cable or XTP DTP 24 cable
Cable requirements	Solid conductor, 24 AWG or better
Cable recommendations.....	400 MHz bandwidth STP cable

NOTE: Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

NOTE: Output mode signaling:

DTP:	HDMI with embedded audio, analog audio, RS-232 and IR, and remote power
HDBaseT:	HDMI with embedded audio plus RS-232 and IR

Sync – VGA

Input type	RGBHV, bi-level and tri-level sync
Input level	1.9 V to 5.0 Vp-p
Input impedance.....	510 ohms
Max input voltage.....	5.0 Vp-p

Audio

Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	0.03% @ 1 kHz at nominal level
S/N	>90 dB at maximum input (unweighted)
Stereo channel separation.....	>80 dB @ 1 kHz

Audio input

Number/signal type.....	1 stereo, unbalanced
Connector.....	(1) 3.5 mm mini audio jacks; tip (L), ring (R), sleeve (Gnd)
Impedance.....	>10k ohms, DC coupled
Nominal level.....	-10 dBV (316 mVrms)
Maximum level.....	+6 dBV, unbalanced

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV $\approx$ 2 dBu

Control/remote — switcher

Serial control port.....	RS-232 via 1 rear panel 3.5 mm, 3-pole captive screw connector
Pin configuration.....	Pin 1 = Tx, Pin 2 = Rx, Pin 3 = Gnd
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Contact closure	(1) 3.5 mm 4-pole captive screw connector
Pin configuration.....	Pin 1 = input 1 contact, Pin 2 = input 2 contact, Pin 3 = input 3 contact, Pin 4 = Gnd
Tally output	(1) 3.5 mm 4-pole captive screw connector
Pin configuration.....	Pin 1 = input 1 tally ground, Pin 2 = input 2 tally ground, Pin 3 = input 3 tally ground, Pin 4 = +5 V
USB control port.....	1 front panel female mini USB B
USB standards	USB 2.0, low speed
Program control	Extron Simple Instruction Set (SIS™)

Communications — external device (RS-232/IR over TP)

NOTE: Protocol is mirrored between the connected DTP 230 Rx or DTP 330 Rx endpoints and the "Over TP" ports on the DTP T DSW 4K series. Signals from a control device pass into each "Over TP" port, are embedded with the DTP signal, and sent to the individual DTP 230 Rx or DTP 330 Rx endpoints for control of remote sink or source devices. The "Over TP" ports are pass-through connections to DTP endpoints. There is no RS-232 or IR insertion from any DTP T DSW 4K control port to the "Over TP" ports.

Serial control port.....	Bidirectional RS-232 via 1 rear panel 3.5 mm, 5-pole captive screw connector (connector is shared with IR control ports)
Baud rate and protocol	300 to 115200 baud, 8 or 7 data bits, 1 or 2 stop bits, non-parity (default), even or odd parity
Serial control pin configuration	1 = Tx, 2 = Rx, 3 = Gnd
IR pass-through control port	1 bidirectional rear panel 3.5 mm, 5-pole captive screw connector (connector is shared with RS-232 control port) TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
IR control pin configuration	3 = Gnd, 4 = IR Tx, 5 = IR Rx

General

Power supply	External
	Input: 100-240 VAC, 50-60 Hz
	Output: 12 VDC, 2 A, 24 watts

NOTE: This product requires a locally connected power supply. It can provide remote DC power to a connected DTP receiver over twisted pair.

Power consumption

Device

DTP T DSW 4K 233.....	11.4 watts
DTP T DSW 4K 333.....	12.0 watts

Device and power supply

DTP T DSW 4K 233.....	14.1 watts
DTP T DSW 4K 333.....	14.7 watts

Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
	Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Cooling	Convection, vents on top and sides
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Thermal dissipation

Device

DTP T DSW 4K 233.....	22.7 BTU/hr
DTP T DSW 4K 333.....	24.4 BTU/hr

Device and power supply

DTP T DSW 4K 233.....	32.0 BTU/hr
DTP T DSW 4K 333.....	33.6 BTU/hr

Rack mount	Yes, with optional rack shelf kit
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Enclosure type	Metal
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Enclosure dimensions	1.0" H x 8.75" W x 6.0" D (1" high, half rack wide)
	2.5 cm H x 22.2 cm W x 15.2 cm D (depth excludes connectors)

Product weight	1.1 lbs (0.5 kg)
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Vibration	ISTA 1A in carton (International Safe Transit Association)
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Regulatory compliance

Safety	CE, c-UL, UL
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EMI/EMC.....	CE**, C-tick, FCC Class A**, ICES
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Environmental.....	Complies with the appropriate requirements of RoHS, WEEE
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NOTE: **CE and FCC testing is conducted with STP cable.

Warranty	3 years parts and labor
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NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping dimensions and weights are available at <http://www.extron.com>.

8.1-071116-D3

Specifications

DA HD 4K Series

TRUE 4K

Max. 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max. Bit Depth per Color
4096 x 2160 at 30 Hz	4:4:4	8 bit
3840 x 2160 at 30 Hz		
4096 x 2160 at 60 Hz	4:2:0	
3840 x 2160 at 60 Hz		

Frame rate¹ 24, 25, 30, 50, or 60 fps
 Chroma sampling¹ 4:4:4, 4:2:2, or 4:2:0
 Color bit depth¹ 8 bits per color
 Signal type HDMI 1.4, HDCP 1.4
 Max. video data rate 10.2 Gbps (3.4 Gbps per color)

NOTE: ¹Subject to the maximum data rate limit. Use our [calculator](#) to determine video parameters supported by this data rate.

Video

Maximum data rate 10.2 Gbps (3.4 Gbps per color)
 Maximum pixel clock 300 MHz
 Resolution range Up to 1920x1200 or 1080p @ 60 Hz, 12-bit color, 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz
 Formats RGB and YCbCr digital video
 Standards DVI 1.0*, HDMI 1.4, HDCP 1.4

NOTE: Extron strongly recommends compatibility testing while designing, and before installing any 3D system. There are several unique 3D formats in use by source devices and display manufacturers. The level of 3D product support is governed by pixel clock, signal format, and communication between source and sink devices. Please contact an Extron Application Engineer for more information.

NOTE: *Appropriate DVI-D to HDMI cables or adapters are required for DVI signal input/output.

Video input

Number/signal type 1 single link HDMI (or DVI-D*)
 Connectors 1 female 19-pin HDMI type A

Video output

Number/signal type
 DA2 HD 4K 2 single link HDMI (or DVI-D*)
 DA4 HD 4K 4 single link HDMI (or DVI-D*)
 DA6 HD 4K 6 single link HDMI (or DVI-D*)
 Connectors
 DA2 HD 4K 2 female 19-pin HDMI type A
 DA4 HD 4K 4 female 19-pin HDMI type A
 DA6 HD 4K 6 female 19-pin HDMI type A

Control/communications

Serial control port.....	RS-232, 3.5 mm, 3-pole captive screw connector
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, non-parity
Serial control pin configuration	1 = Tx, 2 = Rx, 3 = GND
USB control port.....	1 front panel, female, mini USB B
USB standards	USB 2.0, low speed
Program control	Extron Simple Instruction Set (SIS™)

General

Power	
DA2 HD 4K	External
	Input: 100-240 VAC, 50-60 Hz
	Output: 12 VDC, 1 A 12 watts
DA4 HD 4K and DA6 HD 4K ...	Internal
	Input: 100-240 VAC, 50-60 Hz
Power consumption	
DA2 HD 4K	
Device	3.3 watts
Device and power supply...	4.3 watts
DA4 HD 4K	8 watts
DA6 HD 4K	10 watts
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
	Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, vents on top
Thermal dissipation	
DA2 HD 4K	
Device	8.9 BTU/hr
Device and power supply...	12.4 BTU/hr
DA4 HD 4K	23.5 BTU/hr
DA6 HD 4K	28.2 BTU/hr
Mounting	
Rack mount.....	Yes, with optional rack shelf kit
Enclosure type	Metal
Enclosure dimensions	
DA2 HD 4K	1.0" H x 4.3" W x 3.0" D (one quarter rack wide)
	2.5 cm H x 10.9 cm W x 7.6 cm D (depth excludes connectors)
DA4 HD 4K and DA6 HD 4K ...	1.75" H x 8.75" W x 6.0" D (1U high, half rack wide)
	4.4 cm H x 22.2 cm W x 15.2 cm D (Depth excludes connectors)
Product weight	
DA2 HD 4K	0.35 lbs (0.2 kg)
DA4 HD 4K and DA6 HD 4K ...	1.6 lbs (0.7 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC.....	CE, C-Tick, FCC Class A, ICES, VCCI
Environmental.....	Complies with the appropriate requirements of RoHS, WEEE.
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.

8.1-032316-D3

Specifications

DSC HD-3G A

Video input

Number/signal type	1 HDMI/DVI
Connectors	1 female HDMI type A
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency	24 Hz to 120 Hz
Resolution range	640x480 to 1920x1200 (with reduced blanking), 480i, 576i, 480p, 720p, 1080i, 1080p, and 2K (2048x1080)

Video processing

Digital sampling	30-bit, 8, 10, and 12 bits per color; 165 MHz standard (pixel clock)
Colors	1.07 billion (10-bit processing)

Video output

Number/signal type	(2) 3G/HD/SD-SDI — digital component video SMPTE: 259M-C, 292M, 424M
Connectors	2 female BNC: SDI
Scaled resolutions	480i ⁷ , 576i ⁶ , 720p ^{1,2,3,4,5,6,7,8} , 1080i ^{6,7,8} , 1080p (HD-SDI) ^{1,2,3,4,5} , 1080p (A) ^{6,7,8} , 1080p (B) ^{6,7,8} , 2K (2048x1080) ^{1,2,3,4,5,6,7,8} ¹ = at 23.98 Hz, ² = at 24 Hz, ³ = at 25 Hz, ⁴ = at 29.97 Hz, ⁵ = 30 Hz, ⁶ = at 50 Hz, ⁷ = at 59.94 Hz, ⁸ = at 60 Hz
Data rates	270 Mbps to 2.97 Gbps
Nominal level	0.8 Vp-p ± 10%
Impedance	75 ohms
DC offset	± 0.5 Vp-p with input at 0 offset
Jitter	<0.35 UI
Rise and fall time	0.6 ns ± 100 ps

External sync (genlock)

Number/signal type	1 female BNC for genlock input 1 female BNC for genlock loop output
Connectors	2 female BNC
External sync level	Auto-sensing: tri-level (high definition: 720p-2K), bi-level (standard definition: 480i and 576i)
Impedance	75 ohms
Return loss	>30 dB @ 5 MHz (genlock input) ≥21 dB @ 5 MHz (genlock loop output)

Audio

Frequency response	20 Hz to 20 kHz, ±0.5 dB
THD + Noise	0.1% @ 1 kHz, 20 kHz (at nominal level)
S/N	>90 dB, at full scale output (unweighted)
Stereo channel separation	>80 dB @ 1 kHz

Audio input

Number/signal type	1 stereo/multi-channel, de-embedded from HDMI (PCM only) 1 stereo/mono, balanced/unbalanced
Connectors	1 female HDMI type A (1) 5 pole captive screw
Impedance	>10k ohms unbalanced, >20k ohms balanced
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVRMS), adjustable
Maximum level	+21 dBu (balanced), +15 dBu (unbalanced)
Input gain adjustment	-18 dB to +12 dB, 1 dB steps (analog input only)

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output

Number/signal type	2 AES3, SDI embedded audio, up to 8 channels
Connectors	2 female BNC

Control/remote

Serial control port	1 RS-232 rear panel 3 pole captive screw connector
Serial control pin configuration	Pin 1 = Tx, pin 2 = Rx, pin 3 = ground
Baud rate and protocol	9600 (default), 8 data bits, 1 stop bit, no parity
USB control port	1 female mini USB-B
USB standards	USB 2.0, high speed
Program control	On-screen display (OSD) via front panel control Extron Simple Instruction Set (SIS™)

General

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	11.6 watts
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Fan, air flows from front to rear.
Thermal dissipation	38.2 BTU/hr
Mounting	
Rack mount	Yes, with optional rack shelf
Furniture mount	Yes, with optional under-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.66" H x 8.69" W x 8.5" D (1U high, half rack wide) (4.2 cm H x 22.1 cm W x 21.6 cm D) (Depth excludes connectors.)
Product weight	1.8 lbs (0.8 kg)
Shipping weight	3 lbs (2 kg)
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

8.1-022216-D5

Specifications

DTP T HD2 4K 230

TRUE 4K specifications

Max. 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max. Bit Depth per Color
4096x2160 at 30 Hz	4:4:4	8 bit
3840x2160 at 30 Hz		
4096x2160 at 60 Hz	4:2:0	
3840x2160 at 60 Hz		

Frame rate¹ 24, 25, 30, 50, or 60 fps
Chroma sampling¹ 4:4:4, 4:2:2, or 4:2:0
Color bit depth¹ 8 bits per color
Signal type¹ HDMI, HDCP
Maximum video data rate¹ 10.2 Gbps (3.4 Gbps per color)

NOTE: ¹Subject to the maximum data rate limit. Use our calculator (<http://www.extron.com/product/videotools.aspx>) to determine video parameters supported by this data rate.

Video

Maximum data rate 10.2 Gbps (3.4 Gbps per color)
Maximum pixel clock 300 MHz
Resolution range Up to 2560x1600* @ 60 Hz or 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz, 4K/UHD @ 60 Hz with 4:2:0 chroma subsampling (*Reduced blanking)
Color bit depth 8, 10, or 12 bits — subject to the maximum data rate limit
Formats RGB and YCbCr digital video
Standards DVI 1.0, HDMI, HDCP, CEA-861E

Video input

NOTE: *Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.

Number/signal type 1 single link HDMI (or DVI-D*)
Connector 1 female 19-pin HDMI type A
Input cable length Up to 50' (15 m) with 225 MHz signal, 100' (30 m) with 165 MHz signal

Video output

Number/signal type 1 single link HDMI (Loop Thru)
1 DTP 230 (Output)

Interconnection between transmitter and receivers

Connector 1 RJ-45 jack
Termination standards TIA/EIA T568B

Signal transmission distance

1080p @ 60 Hz	Up to 230' (70 m) using shielded twisted pair (STP) cable or XTP DTP 24 cable
2560x1600 @ 60 Hz.....	Up to 130' (40 m) using STP cable or XTP DTP 24 cable
4K/UHD @ 30 and 60 Hz.....	Up to 130' (40 m) using STP cable or XTP DTP 24 cable
Cable requirements	Solid conductor, 24 AWG or better
Cable recommendations.....	400 MHz bandwidth STP cable

NOTE: Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

NOTE: Output mode signaling:

DTP:	HDMI with embedded audio, analog audio, RS-232 and IR, and remote power
HDBaseT:	HDMI with embedded audio plus RS-232 and IR

Control/remote

USB control port.....	1 front panel female mini USB B
USB standards	USB 2.0, low speed
Program control	Extron Simple Instruction Set (SIS™), Extron Product Configuration Software (PCS)

Communications — external device (RS-232/IR over TP)

NOTE: Protocol is mirrored between the connected DTP 230 Rx or DTP 330 Rx endpoints and the "Over TP" ports on the DTP T HD2 4K series. Signals from a control device pass into each "Over TP" port, are embedded with the DTP signal, and sent to the individual DTP 230 Rx or DTP 330 Rx endpoints for control of remote sink or source devices. The "Over TP" ports are simply pass-through connections to DTP endpoints. There is no RS-232 or IR insertion from any DTP T HD2 4K control port to the "Over TP" ports.

Serial control port.....	RS-232 via (1) 3.5 mm, 5-pole captive screw connector (connector is shared with IR control ports)
Baud rate and protocol	300 to 115200 baud, 8 or 7 data bits, 1 or 2 stop bits, non-parity (default), even or odd parity
Serial control pin configuration	Captive screw connectors: 1 = Tx, 2 = Rx, 3 = Gnd
IR pass-through control port	(1) 3.5 mm, 5-pole captive screw connector (connector is shared with RS-232 control port) TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
IR control pin configuration	3 = Gnd, 4 = IR Tx, 5 = IR Rx

General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts
Power consumption	
Device	10.3 watts
Device and power supply	12.8 watts
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, with vents
Thermal dissipation	
Device	18.1 BTU/hr
Device and power supply	26.8 BTU/hr
Rack mount.....	Yes
Enclosure type.....	Metal
Enclosure dimensions	1.0" H x 4.3" W x 6.0" D (1" high, 1/4 rack wide) 2.5 cm H x 10.9 cm W x 15.2 cm D (depth excludes connectors)
Product weight	0.5 lb (0.3 kg)
Shipping weight	1.0 lb (0.5 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

Safety	CE, c-UL, UL
EMI/EMC.....	CE**, C-tick, FCC Class A**, ICES, VCCI
Environmental.....	Complies with the appropriate requirements of RoHS, WEEE

NOTE: **CE and FCC testing is conducted with STP cable.

Warranty 3 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

8.1-110315-D3

Specifications

DTP HDMI 230 4K Tx/Rx

TRUE 4K specification

Max. 4K Capabilities		
Resolution and Frame Rate	Chroma Sampling	Max. Bit Depth per Color
4096x2160 at 30 Hz	4:4:4	8 bit
3840x2160 at 30 Hz		
4096x2160 at 60 Hz	4:2:0	
3840x2160 at 60 Hz		

Frame rate¹ 24, 25, 30, 50, or 60 fps
 Chroma sampling¹ 4:4:4, 4:2:2, or 4:2:0
 Color bit depth¹ 8 bits per color
 Signal type HDMI 1.4, HDCP 2.2
 Max. video data rate 10.2 Gbps (3.4 Gbps per color)

NOTE: ¹Subject to the maximum data rate limit. Use our calculator (<http://www.extron.com/product/videotools.aspx>) to determine video parameters supported by this data rate.

NOTE: This product consists of a transmitter (DTP HDMI 4K 230 Tx) and a receiver (DTP HDMI 4K 230 Rx), sold separately, with twisted pair cables linking the transmitter and receiver.

NOTE: *Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.

Video

Maximum data rate 10.2 Gbps (3.4 Gbps per color)
 Maximum pixel clock 300 MHz
 Resolution range Up to 2560x1600* @ 60 Hz or
 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz,
 4K/UHD @ 60 Hz with 4:2:0 chroma subsampling
 (* reduced blanking)
 Color bit depth 8, 10, or 12 bits — subject to the maximum data rate limit
 Formats RGB and YCbCr digital video
 Standards DVI 1.0, HDMI 1.4, HDCP 2.2, CEA-861E

Video input — transmitter

Number/signal type 1 single link HDMI (or DVI-D*)
 Connectors 1 female HDMI type A

Interconnection between transmitter and receiver

Connectors.....	1 female RJ-45 per unit
Termination standard.....	TIA/EIA T568B
Signal transmission distance	
1080p @ 60 Hz	Up to 230' (70 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable
2560x1600 @ 60 Hz.....	Up to 130' (40 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable
4K/UHD @ 30Hz and 60 Hz	Up to 130' (40 m) using shielded twisted pair (STP) cable or XTP DTP 24 STP cable
Cable requirements.....	Solid conductor, 24 AWG or better
Cable recommendations.....	400 MHz bandwidth, STP (shielded twisted pair)

NOTE: Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

Video output – receiver

Number/signal type.....	1 single link HDMI (or DVI-D*)
Connectors.....	1 female HDMI type A

Audio

Gain.....	Unbalanced output: 0 dB; balanced output +6 dB
Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	0.03% @ 20 Hz to 20 kHz at maximum output
S/N.....	>90 dB, at maximum output (15 dBu), balanced (unweighted)
Stereo channel separation.....	>80 dB @ 1 kHz to 20 kHz

Audio input

Number/signal type.....	1 PC level stereo, unbalanced
-------------------------	-------------------------------

NOTE: Analog audio is not embedded onto the digital video signal. Embedded digital audio is not de-embedded from the digital video signal.

Connectors.....	(1) 3.5 mm stereo jack, 2 channel; tip (L), ring (R), sleeve (ground)
Impedance.....	>10k ohms, DC coupled
Nominal level.....	-10 dBV (316 mVrms)
Maximum level.....	+7 dBV (unbalanced)

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV $\approx$ 2 dBu.

Audio output

Number/signal type.....	1 stereo (2 channel), balanced/unbalanced
Connectors.....	(1) 3.5 mm captive screw connector, 5 pole
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Gain error.....	± 0.1 dB channel to channel
Maximum level (600 ohm)	>+11 dBu, balanced

Control/remote — external device (pass-through, unidirectional or bidirectional)

Serial control port input/output	
Transmitter	RS-232 via (1) 3.5 mm, 5 pole captive screw connector for RS-232 control (± 5 V) (connector is shared with IR control port)
Receiver	1 set of proprietary signals on a female RJ-45 jack
Serial control port output/input	
Transmitter	1 set of proprietary signals on a female RJ-45 jack
Receiver	RS-232 via a 3.5 mm, 3 pole captive screw connector
Baud rate and protocol	300 to 115200 baud, 8 or 7 data bits, 1 or 2 stop bits, non-parity (default), even or odd parity
Serial control pin configuration	1 = Tx, 2 = Rx, 3 = Gnd
IR control port	(1) 3.5 mm, captive screw connector, 5 pole (connector is shared with RS-232 control port)
	TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
IR control pin configuration	3 = Gnd, 4 = IR Tx, 5 = IR Rx

General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts
Power consumption	
Transmitter	
Device	2.5 watts, 12 VDC
Device and power supply...	3.4 watts, 100-240 VAC, 50-60 Hz
Receiver	
Device	4.2 watts, 12 VDC
Device and power supply...	5.8 watts, 100-240 VAC, 50-60 Hz

NOTE: Each transmitter or receiver can be powered either locally by an external power supply or remotely by receiver or transmitter on the other end of the twisted pair cable.

Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Thermal dissipation	
Transmitter	
Device	7.4 BTU/hr
Device and power supply...	10.4 BTU/hr
Receiver	
Device	13.0 BTU/hr
Device and power supply...	18.7 BTU/hr
Mounting	
Rack mount	Yes, with optional 1U high rack shelf
Furniture mount	Yes, with optional under-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	
Transmitter	1.0" H x 4.3" W x 3.0" D (quarter rack wide) (2.5 cm H x 10.9 cm W x 7.6 cm D) (Depth excludes connectors.)
Receiver	1.0" H x 4.3" W x 6.0" D (quarter rack wide) (2.5 cm H x 10.9 cm W x 15.2 cm D) (Depth excludes connectors.)
Product weight	
Transmitter	0.5 lbs (0.3 kg)
Receiver	1.0 lb (0.5 kg)
Shipping weight	3 lbs (2 kg)

Vibration ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance
Safety CE, c-UL, UL
UL rated for use in plenum airspaces: meets UL 2043 for heat and smoke release,
excluding the power supply.
EMI/EMC CE**, C-tick, FCC Class A**, ICES, VCCI, KCC

NOTE: **CE and FCC testing is conducted with STP (shielded twisted pair) I/O cable.

Warranty 3 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

8.1-072315-D17

2018 PROFESSIONAL PTZ REMOTE CAMERA LINEUP

NEW

N SERIES

		4K PROFESSIONAL	
			
MODEL		AW-UE70	
NDI® Network Device Interface		AW-UN70	
Color		Black (K) or White (W)	
GENERAL			
Sensor		1/2.3" MOS	
Optical Zoom		20x	
i.Zoom		30x	
Digital Zoom		12x	
FOV (Horizontal)		65.1° (W) - 3.26° (T)	
FOV (Vertical)		39.5° (W) - 1.83° (T)	
FOV (Diagonal)		72.4° (W) - 3.74° (T)	
Focus		Auto / Manual	
Horizontal Resolution		1300 Lines (UHD)	
Minimum Illumination		0.35 lx	
Gain		0 dB - 48 dB	
Control		Serial / IP / IR	
Power		PoE+ or AC	
Weight		3.30 lbs	
Installation		Tripod, Wall, Ceiling	
Mount Position		Invertible: Ceiling or Desktop	
Standard Warranty		1 Year	
PTZ			
Pan Range		±175 degrees	
Tilt Range		-30 to 90°	
Pan / Tilt Speed		300°/s [Preset] 90°/s [M]	
Operation Noise		NC35 or Less	
VIDEO OUTPUT			
LAN		✓	
NDI/HX		✓	
3G-SDI		✓	
HD-SDI		✓	
SD-SDI		-	
HDMI		✓	
Composite		-	
USB		✓	
CONTROL			
Browser (PC/Mac/Mobile) via IP		✓	
USB		✓	
VISCA		✓	
Auto Tracking* / Auto Tracking Server*		AW-SF100 / AW-SF200	
Live Production Center (Streaming Switcher/Controller)		AV-HLC100	
iPad		LIVECTRL App	
Wide-Angle Tablet Control		AW-HEA10	
IR Remote Control		AW-RM50	
Compact Controller		AW-RP50	
Full-Size Controller		AW-RP120	
Remote Operation Panel		AK-HRP200	
Compact Live Switcher		AW-HS50N	
Software Controller (Windows)		PTZ Control Center	
FEATURES			
IP Live Preview		✓	
Simultaneous Multi-Stream		✓	
Image Stabilization		Optical	
Night Mode (for IR)		✓	
Dynamic Range Stretch (DRS)		✓	
Audio Input / Embedding		✓	
Color Temperature Adjustment		✓	
Presets		Up to 100	
microSD Card Recording		✓	
High Dynamic Range (HDR)		✓	
Fanless Design		✓	
ND Filters		✓	
Genlock		✓	
Advanced Color Adjustment		-	
Digital Noise Reduction (DNR)		-	
High-Wind Resistance		-	
Lens Wiper		-	
Built-In Heater / Defroster		-	
Haze Reduction		-	
Water & Dust Proof		-	
OPTIONS & ACCESSORIES			
Portable Recorder		AG-UMR20	
Wall Mount (Black) / Wall Mount (White)		FEC-40WMK / FEC-40WMW	
Wall Mount (Stainless Steel)		-	
Ceiling Mount		Included with Camera	
Weatherproof Enclosure	Cooled	D2CD12V70	
	Heated	D2HBMVP570	
3 Year Warranty		AG-SVCPREF2Y	
5 Year Warranty		AG-SVCPREM4Y	
On-Site Training		AJ-S09TFMCNS	
MSRP (BASE)			
MSRP (NDI/HX MODEL)			

*Auto Tracking works in IP Priority Mode (Not USB or NDI/HX Priority Mode).

NDI® is a registered trademark of NewTek, Inc. All specifications, availability and pricing are subject to change without notice.

Panasonic

BUSINESS

Auto Tracking Software Key

AW-SF100

AW-SF200

2 Additional Licenses **AW-SF202**

3 Additional Licenses **AW-SF203**



Clear, Sharp Video with Auto Tracking of Speaker



Motion
Detection

+

Face
Recognition

&

Smooth
Control

High-precision Tracking by Motion Detection and Face Recognition



"Motion Detection" and "Face Recognition" used for high-precision auto tracking with minimum tracking error

The use of high-performance "Motion Detection" and high-accuracy "Face Recognition" enables high-precision auto tracking of the subject with minimum tracking error regardless of the direction the person is facing, even in situations where a lecturer is writing on a blackboard with his/her back to the camera. In addition, since this function does detection/tracking with streaming video from the camera, it is not necessary to have the video capture board needed for capture on a PC. This reduces the processing load for video capture, thereby eliminating the need for a high-performance PC.

GUI for intuitive setting

The auto-tracking settings can be easily made with an intuitive GUI only with the necessary icons to minimize the setting up labor and assist smooth operation. Tracking adjustment tools, such as masking, limiters, tracking disable zone and sensitivity level adjustment, are also available.

AW-SF100 View



AW-SF200 View



● Depending on the usage conditions, there may be errors in detection of tracking subjects or proper tracking. Please use this software in an environment in which corrections can be made by an operator. The face recognition software of PUX Corporation is used for the face recognition function. *1 : This refers to the application version. If the Web application version is to be used, the Auto Tracking Software is installed on an HTTP server and used from there.

Using IP-based software to support remote operation

Adoption of IP-based software brought system flexibility and it achieved IP connection (IP streaming/IP control), installation/operation of camera in classroom in remote location.

Simple, low-cost installation to easily migrate to the existing system without additional devices

If Auto Tracking Software is installed on a PC*1 or Server, it is possible to easily set up an auto tracking system by connecting an AW-UE70W/K 4K integrated camera or an AW-HE40 Series or AW-HE130W/K HD integrated camera. New installation of sensors and other equipment are not necessary. Since the system configuration is simple and new devices do not need to be added, the initial cost can be reduced.

AW-SF100 has standalone and Web application versions to choose from; AW-SF200 operates on a server

You can choose to use AW-SF100 as a Web application, so it also supports control from a tablet, smartphone, desktop PC, etc. Providing centralized control of multiple cameras, AW-SF200 uses a floating license for flexible operations matched to the user environment.

Software key usage examples

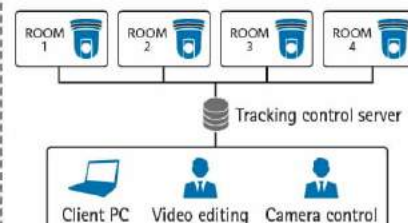
AW-SF100

With auto tracking, full-time manual tracking is not necessary. Auto tracking remote camera can record dynamic video with simple operations.



AW-SF200

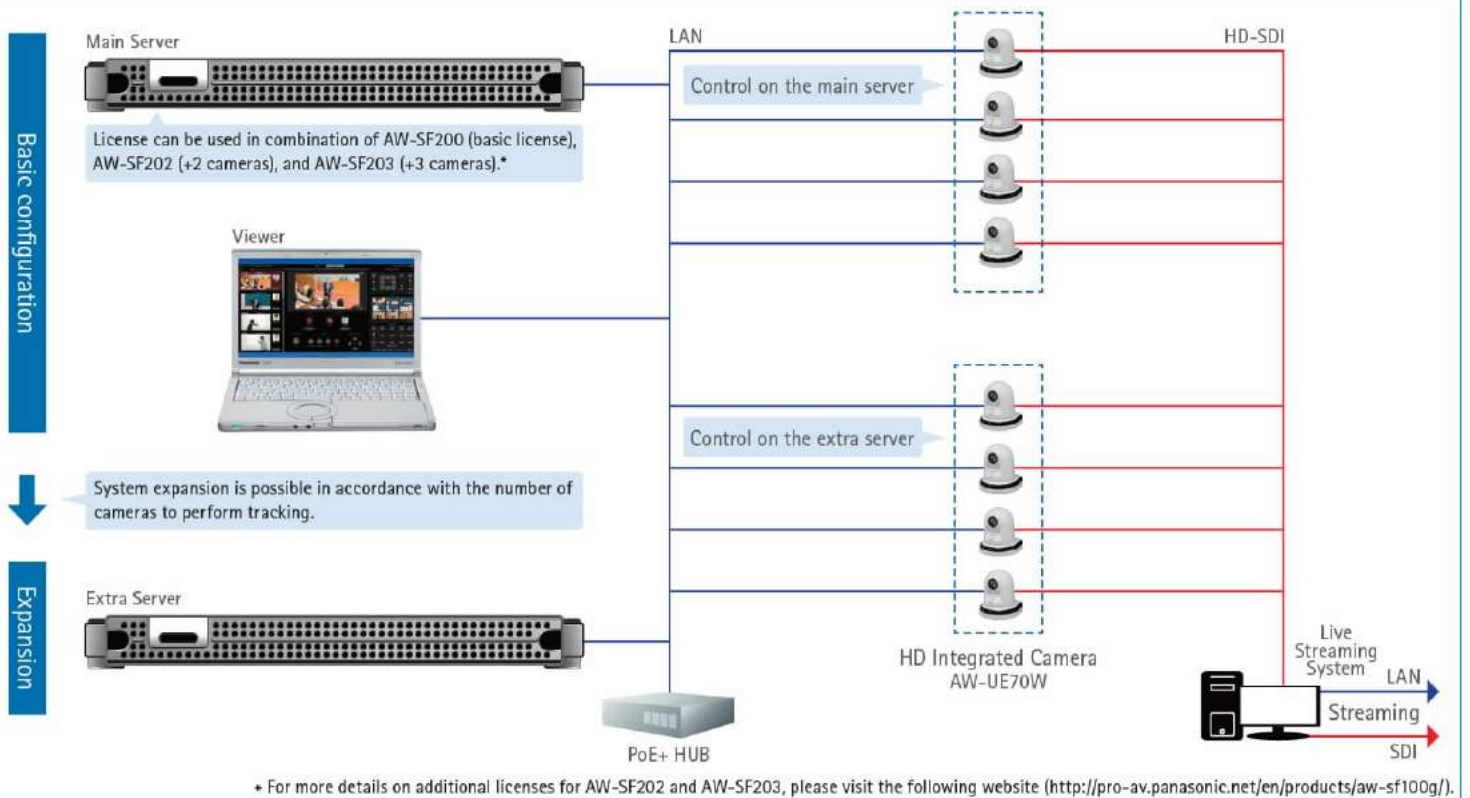
Simultaneous auto tracking and centralized control of multiple cameras are possible. A server and simplified operations enable efficient lecture capture in multiple classrooms.



- AW-SF200 system example: Lecture capture of entire school

Use of central servers for simultaneous auto tracking and centralized control of multiple cameras in a large hall and cameras in multiple classrooms.

Example of System Configuration



* For more details on additional licenses for AW-SF202 and AW-SF203, please visit the following website (<http://pro-av.panasonic.net/en/products/aw-sf100g/>).

- AW-SF100 system example: Lecture capture of a classroom

Auto tracking and control of one camera with one PC.

Example of System Configuration



Example of System Configuration (WEB Application)



● Various applications of Auto Tracking



AW-SF100 [Requirements]

Minimum System Requirements

- CPU: Core i5-3320M (2.60 GHz) or above
- Memory: 4 GB or above
- Display Resolution: 1600 x 900 or higher
- OS
 - Windows 7 Professional (SP1), Ultimate (SP1) 32 bit/64 bit
 - Windows 8.1 32 bit/64 bit
 - Windows 10 32 bit/64 bit

Recommended System Requirements

- CPU: Core i7-4710MQ (2.50 GHz) or above
- Memory: 8 GB or above
- Display Resolution: 1920 x 1080 or higher
- OS
 - Windows 7 Professional (SP1), Ultimate (SP1) 64 bit
 - Windows 8.1 64 bit
 - Windows 10 64 bit

AW-SF200 [Requirements]

Server PC

- CPU: Xeon E5-2640 v4 2.40 GHz 1P/10C or above
- Memory: 8 GB or above
- OS: Windows Server 2012 R2

Client PC

- CPU: Core i5-2520M 2.50 GHz or above
- Memory: 4 GB or above
- Display Resolution: 1920 x 1080 or higher
- Web browser: Google Chrome

30-Day Free Trial

There is a 30-day free trial available for Auto Tracking Software. Please purchase this "Auto Tracking Software Activation Key" after checking precautions and confirming that this will work in your environment during this free trial period.

4K/HD Integrated Camera Lineup (indoor use only)

4K Integrated Camera



AW-UE70W
[White Model]



AW-UE70K
[Black Model]

HD Integrated Camera



AW-HE130W
[White Model]



AW-HE130K
[Black Model]

Remote Camera Controller



AW-HE40SW
[SDI/White Model]

AW-HE40HW
[HDMI/White Model]



AW-HE40SK
[SDI/Black Model]

AW-HE40HK
[HDMI/Black Model]

For external control, API is released supporting connection with a variety of devices.

<http://pro-av.panasonic.net/en/pass/remote.html>

For more information, please visit Panasonic web site



<http://pro-av.panasonic.net/>

* Specifications are subject to change without notice.

Panasonic®

Panasonic Corporation
Connected Solutions Company

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<http://pro-av.panasonic.net/>

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Australia	+61 (0) 2 9491 7400
Brazil	+55 11 3889 4035
Canada	+1 905 624 5010
China	+86 10 6515 8828
Hong Kong	+852 2313 0888
Czech Republic	+421 (0) 903 447 757
Denmark	+45 43 20 08 57
Egypt	+20 2 23938151
Finland, Latvia, Lithuania, Estonia	+358 (9) 521 52 53
France	+33 (0) 1 47 91 64 00
Germany, Austria, Switzerland	+49 (0) 6103 313887
Greece	+30 210 96 92 300
Hungary	+36 (1) 382 60 60
India	+91 1860 425 1860
Indonesia	+65 6277 7284
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Italy	+39 02 6788 367
Jordan	+962 6 5859801
Kazakhstan	+7 727 298 0891
Korea	+82 2 2106 6641

Kuwait	+96 522431385
Lebanon	+96 11665557
Malaysia	+60 3 7809 7888
Mexico	+52 55 5488 1000
Mongolia	+976 70115577
Netherlands, Belgium	+31 73 640 2729
New Zealand	+64 9 272 0100
Norway	+47 67 91 78 00
Pakistan	+92 21 111 567 111
Palestine	+972 2 2988750
Panama	+507 229 2955
Philippines	+65 6277 7284
Poland	+48 (22) 338 1100
Portugal	+351 21 425 77 04
Romania, Albania, Bulgaria, Macedonia	+40 (0) 729 164 387
Russia & CIS	+7 495 9804206
Saudi Arabia	+966 (1) 4790499
Singapore	+65 6277 7284
Slovak Republic, Croatia, Serbia, Bosnia, Montenegro, Slovenia	+421 (0) 903 447 757
South Africa	+27 11 3131022
Spain	+34 (93) 425 93 00

Sweden	+46 (8) 680 26 41
Taiwan	+886 2 2227 6214
Thailand	+662 731 8888
Turkey	+90 216 578 3700
U.A.E. (for All Middle East)	+971 4 8862142
Ukraine	+380 44 4903437
U.K.	+44(0)1344 70 69 13
U.S.A.	+1 877 803 8492
Vietnam	+85 6277 7284



Factories of AVC Networks Company have received ISO14001 2004-the Environmental Management System certification. (Except for 3rd party's peripheral.)

2018 PROFESSIONAL PTZ REMOTE CAMERA LINEUP

NEW

N SERIES

		4K PROFESSIONAL	
			
MODEL		AW-UE70	
NDI® Network Device Interface		AW-UN70	
Color		Black (K) or White (W)	
GENERAL			
Sensor		1/2.3" MOS	
Optical Zoom		20x	
i.Zoom		30x	
Digital Zoom		12x	
FOV (Horizontal)		65.1° (W) - 3.26° (T)	
FOV (Vertical)		39.5° (W) - 1.83° (T)	
FOV (Diagonal)		72.4° (W) - 3.74° (T)	
Focus		Auto / Manual	
Horizontal Resolution		1300 Lines (UHD)	
Minimum Illumination		0.35 lx	
Gain		0 dB - 48 dB	
Control		Serial / IP / IR	
Power		PoE+ or AC	
Weight		3.30 lbs	
Installation		Tripod, Wall, Ceiling	
Mount Position		Invertible: Ceiling or Desktop	
Standard Warranty		1 Year	
PTZ			
Pan Range		±175 degrees	
Tilt Range		-30 to 90°	
Pan / Tilt Speed		300°/s [Preset] 90°/s [M]	
Operation Noise		NC35 or Less	
VIDEO OUTPUT			
LAN		✓	
NDI/HX		✓	
3G-SDI		✓	
HD-SDI		✓	
SD-SDI		-	
HDMI		✓	
Composite		-	
USB		✓	
CONTROL			
Browser (PC/Mac/Mobile) via IP		✓	
USB		✓	
VISCA		✓	
Auto Tracking* / Auto Tracking Server*		AW-SF100 / AW-SF200	
Live Production Center (Streaming Switcher/Controller)		AV-HLC100	
iPad		LIVECTRL App	
Wide-Angle Tablet Control		AW-HEA10	
IR Remote Control		AW-RM50	
Compact Controller		AW-RP50	
Full-Size Controller		AW-RP120	
Remote Operation Panel		AK-HRP200	
Compact Live Switcher		AW-HS50N	
Software Controller (Windows)		PTZ Control Center	
FEATURES			
IP Live Preview		✓	
Simultaneous Multi-Stream		✓	
Image Stabilization		Optical	
Night Mode (for IR)		✓	
Dynamic Range Stretch (DRS)		✓	
Audio Input / Embedding		✓	
Color Temperature Adjustment		✓	
Presets		Up to 100	
microSD Card Recording		✓	
High Dynamic Range (HDR)		✓	
Fanless Design		✓	
ND Filters		✓	
Genlock		✓	
Advanced Color Adjustment		-	
Digital Noise Reduction (DNR)		-	
High-Wind Resistance		-	
Lens Wiper		-	
Built-In Heater / Defroster		-	
Haze Reduction		-	
Water & Dust Proof		-	
OPTIONS & ACCESSORIES			
Portable Recorder		AG-UMR20	
Wall Mount (Black) / Wall Mount (White)		FEC-40WMK / FEC-40WMW	
Wall Mount (Stainless Steel)		-	
Ceiling Mount		Included with Camera	
Weatherproof Enclosure	Cooled	D2CD12V70	
	Heated	D2HBMVP570	
3 Year Warranty		AG-SVCPREF2Y	
5 Year Warranty		AG-SVCPREM4Y	
On-Site Training		AJ-S09TFMCNS	
MSRP (BASE)			
MSRP (NDI/HX MODEL)			

*Auto Tracking works in IP Priority Mode (Not USB or NDI/HX Priority Mode).

NDI® is a registered trademark of NewTek, Inc. All specifications, availability and pricing are subject to change without notice.

Technical Specifications

Video Input

16 x simultaneous external video inputs, supporting any combination of compatible sources in resolutions up to 4K UHD at frame rates up to 60fps (2160p 59.94)

Network Video Input

16 x IP video inputs via NDI®, resolution-independent, with support for key and fill

SDI Video Input¹

4 x 3G/HD/SD-SDI connections supporting video input in any combination of standard formats, resolutions, and frame rates²

- 1080p: 59.94, 50, 29.97, 25, 24, 23.976
- 1080i: 59.94, 50
- 720p: 59.94, 50, 29.97, 25, 24, 23.976
- 576i 50
- 480i 59.94

¹Optionally supports up to 16 simultaneous 3G/HD/SD-SDI video inputs or quad-link 3G-SDI video inputs (4K UHD) via network integration with applicable NewTek NC1 conversion modules

²Available frame rates determined by session video standard (NTSC or PAL)

PTZ

Support for up to 16 simultaneous Pan-Tilt-Zoom (PTZ) robotic cameras via serial and network protocols, including RS232, RS422 and IP, with integrated controls and preset system

Skype TX

Native support for up to 2 simultaneous Skype® video call inputs via Skype TX software integration

Video Output

Configurable for up to 4 independent video mix outputs, with simultaneous delivery via IP and SDI

Network Video Output

IP video output via NDI, optionally configurable for:

- 4 x independent video mix outputs

- 1 x 4K UHD video mix output

SDI Video Output

4 x 3G/HD/SD-SDI connections, optionally configurable for:

- 4 x independent 3G/HD/SD video mix outputs
- 1 x 4K UHD video mix output via 3G-SDI quad-link grouping

Stream Output

2 x resolution-independent streaming video outputs, independently configurable, with simultaneous stream archive

Multiviewer Output

3 x multiviewer outputs supporting standard display resolutions

- 1 x DVI user interface with multiviewer
- 1 x HDMI multiviewer
- 1 x DisplayPort multiviewer

Mix/Effect Buses (M/E)

4 x M/E buses supporting video re-entry

- 1 x Mix/Effect channel per bus with support for up to 4 sources
- 4 x KEY layers per bus
- 9 x memory slots per bus

1 x PREVIZ configuration and preview bus

DSK Channels

4 x DSK channels

Media

5 x media players

- 2 x DDR
- 2 x GFX
- 1 x Sound

15 x media buffers

- 10 x animation buffers
- 5 x graphic buffers

30 x clip players (available for use as transitions or media depending on function)

Keyers

Integrated LiveMatte™ chroma and luma keying technology on all source channels and M/E buses

- 16 x input keyers
- 4 x media player keyers
- 4 x M/E keyers
- 1 x PREVIZ keyer

- 15 x buffer keyers

COMPs

Integrated video composition engine on the switcher and each M/E bus to create, store, and apply layer configurations and DVE-style motion sequences

16 x configurable COMP presets per bus

Virtual Sets

Integrated LiveSet™ technology with 30+ live virtual sets and box effects included

DataLink

Integrated DataLink™ technology enabling real-time, automated data input from internal and external sources, including webpages, spreadsheets, scoreboards, databases, RSS feeds, watch files, XML, CSV, ASCII and more

Macros

Record, store, edit and automate commands and user-configured operation sequences

- Attach to control panel buttons, keyboard shortcuts, hotspots, MIDI and X-keys® buttons or GPI triggers
- Attach to internal events and state changes, including audio, media playback, tally and specific switcher actions
- Supports control via web-based interface

Recording

12 x configurable video recording channels via IsoCorder™ technology

- 4 x QuickTime® archival video recorders (XDCAM HD compatible, 4:2:2 encoding, 24-bit audio, with timecode)³
- 8 x H.264 distribution video recorders (multiple profiles)
- 1 x MP3 audio recorder

³ QuickTime Player not required for playback in common NLE applications

Storage

2 x 3TB internal drive

- Capacity varies by format, resolution and file specification
- Supports recording to external storage via USB 3.0 and eSATA
- Supports shared storage integration and third-party partner solutions

Grab

Grab full-resolution, deinterlaced still images from external video sources and outputs

Export

Export video and image files to social media, FTP, local or external volumes, and network servers, with optional transcoding

Audio Mixer

Integrated multi-channel audio mixer with support for quad-channel audio, DSPs and 4x4x4 audio input routing

Local Audio Input

4 x SDI embedded

1 x Balanced XLR stereo pair (Line)

3 x Balanced 1/4" stereo pairs (Line)

Support for USB audio device input via compatible WDM audio drivers

Local Audio Output

4 x SDI embedded

1 x Balanced XLR stereo pair

1 x Balanced 1/4" stereo pair

1 x Stereo 1/4" (phones)

Network Audio

- Native support for network audio input and output via NDI
- Embedded audio supported for all NDI input and output video signals
- Integrated support⁴ for Dante™ networking protocol from Audinate®
- Support for AES67 protocol via compatible WDM audio drivers⁵

⁴*Requires Dante Virtual Soundcard license from Audinate (sold separately)*

⁵*Requires third-party virtual sound card license (sold separately)*

Supported Media File Formats

Import, store, and play back multimedia files, with optional transcoding, including:

- Video: AVI, DV, DVCPro, DVCProHD, FLV, F4V, H.263, H.264, MOV, MKV, MJPEG, MPEG, MP4, WMV, WebM, and more
- Image: PSD, PNG, TGA, BMP, JPEG, JPEG-XR, JPEG2000, EXR, RAW, TIF, WebP, and more
- Audio: AIFF, MP3, WAV, and more

Monitoring

Support for up to 3 multiviewer displays with configurable workspaces and viewports

Signal Monitoring

Integrated waveform and vectorscope, full field rate with digital calibration, color preview and support for ITU-R Rec. 709

Processing

Video: Floating Point YCbCr +A 4:4:4:4

Audio: Floating Point, 96 kHz

Throughput Latency

~1.0-1.5 frames

A/V Standards

- 4K UHD video conforms to SMPTE 2036 (UHDTV1 using Square Division Quad Split)
- 3G-SDI video conforms to SMPTE 424M (Level A)
- HD-SDI video conforms to SMPTE 292M
- SD video conforms to SMPTE 259M and ITU-R BT.656
- Analog audio levels conform to SMPTE RP-155

Tally

Support for hardware tally via HD15 GPI connector, network tally via NDI, and Blackmagic Design® SDI tally standard

Genlock

Genlock input supporting SD (Bi-level) or HD (Tri-level) reference signals

GPI

Supports GPI signals via JLCopier Electronics eBox GPI interface

MIDI

Support for standard MIDI protocol enabling third-party device control

System Drive

120GB SSD

NIC

2 x 1 Gigabit NIC

System Physical

TriCaster TC1

2RU chassis with 400W PSU and multi-tiered hardware and software fail-safe
19.0 x 3.5 x 19.57 in (48.3 x 8.9 x 49.7 cm) with rack ears attached

TriCaster TC1 (Redundant Power Option)

3RU chassis with 500W redundant PSU and multi-tiered hardware and software fail-safe
19.0 x 5.25 x 19.57 in (48.3 x 13.34 x 49.7 cm) with rack ears attached

Subject to change without notice.

NewTek TriCaster TC1 Backplane (2RU)



NewTek TriCaster TC1 Backplane (3RU)



Technical Specifications

TriCaster TC1LP Control Panel

TriCaster TC1SP Control Panel

Stripes

2 x panel stripes

1.5 x panel stripes

Source Buttons

24 x switcher source buttons

24 x M/E source buttons

14 x switcher source buttons

11 x M/E source buttons

Joystick

1 x multi-mode joystick (3-axis)

1 x multi-mode joystick (3-axis)

T-Bar

2 x multi-mode T-Bars

1 x multi-mode T-Bar

Connectivity

1 Gigabit NIC

USB

Physical

TriCaster TC1LP chassis with 25W PSU

34.69 x 13.96 x 5.47 in (88.11 x 35.46 x 13.9 cm)

TriCaster TC1SP chassis

23.31 x 12.01 x 5.28 in (59.2 x 30.51 x 13.41 cm)

Subject to change without notice.

Introducing NewTek LivePanel™

Power to Control in the Palm of Your Hand.

A flexible and easy-to-use browser-based interface for TriCaster® TC1, IP Series, and 3Play® 3P1.

NewTek LivePanel™, the new face of a modern IP video workflow that makes it easier for more people to have control of the live production process. Providing the ability to configure a custom user interface that delivers exactly the tools and functions you need, easily accessible through any Web browser or operating system. NewTek LivePanel is a free upgrade for IP Series VMC1 users and a paid upgrade for TriCaster TC1 and 3Play 3P1 users.



Connect and direct over IP with NewTek LivePanel.

- Browser-based, software-driven control system included with the NewTek IP Series Video Mix Engine and available as an optional purchase for TriCaster TC1 and 3Play 3P1
- Compatible with workstations, laptops, tablets, and mobile devices running any current OS, to include Windows, Mac, Linux, Android, and iOS
- Includes Keystrokes panel allowing configuration of manually triggered hotkeys
- Compatible with modern web browsers to include Google Chrome, Microsoft Edge and Internet Explorer, Mozilla Firefox, and Apple Safari
- Includes LivePanel Builder, a customizable control panel creation tool allowing the

user to define grid squares as buttons or video windows

- Provides direct access to product documentation, video tutorials, workflow tips, and more via the Resources panel

NEWTEK LIVEPANEL FOR TC1 AND 3P1 - \$995^{USD}

[Buy Now](#)

Provided free with latest VMC1 [download](#)

Run your live productions from anywhere on the network.

Talent can trigger from tablet

Graphics from laptop

Scorekeeper from mobile phone

Switching from PC

Audio from laptop or PC

Data from laptop

Extend control of your live video operations to everyday devices, remotely accessing your NewTek production systems from your laptop, tablet, or smartphone.

With NewTek LivePanel, you can command live switching, compositing, mix effects, media playback, audio, automation, and more from the Web browser of any device connected to the same local network.



Replay

Builder



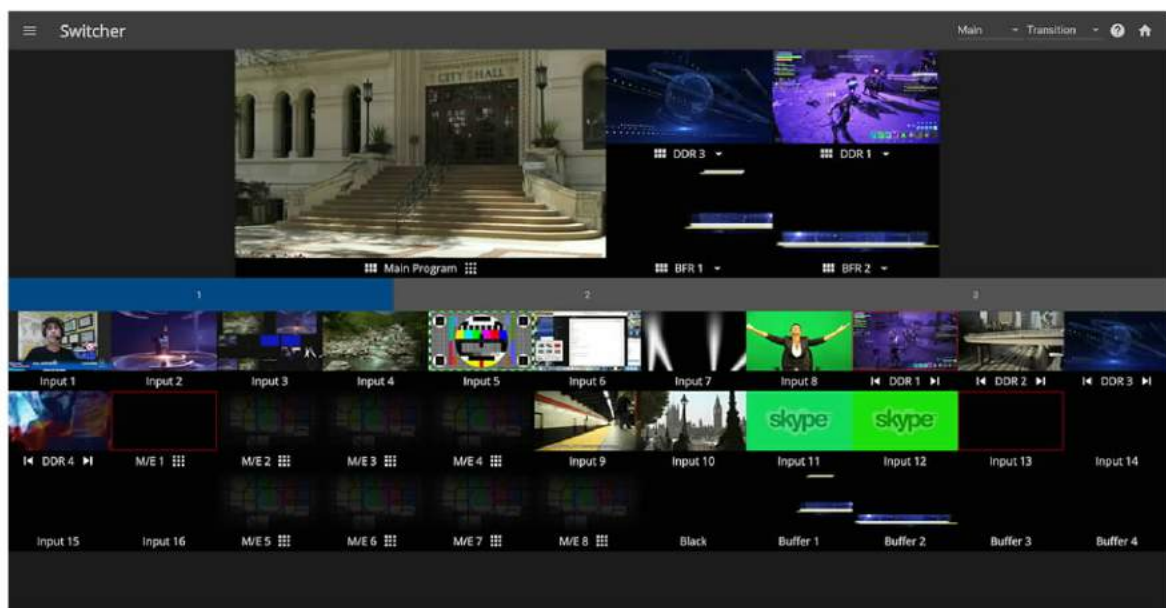
User-friendly interface.

With an intuitive, touch-friendly user interface, everyone from certified operators and seasoned live production professionals to volunteers, freelancers, and trainees can take control of a specific task or the entire show with confidence.

Crewmembers can even share production responsibilities with the ability to link multiple networked devices to the same system, providing the ability to have dedicated screens for each control category.

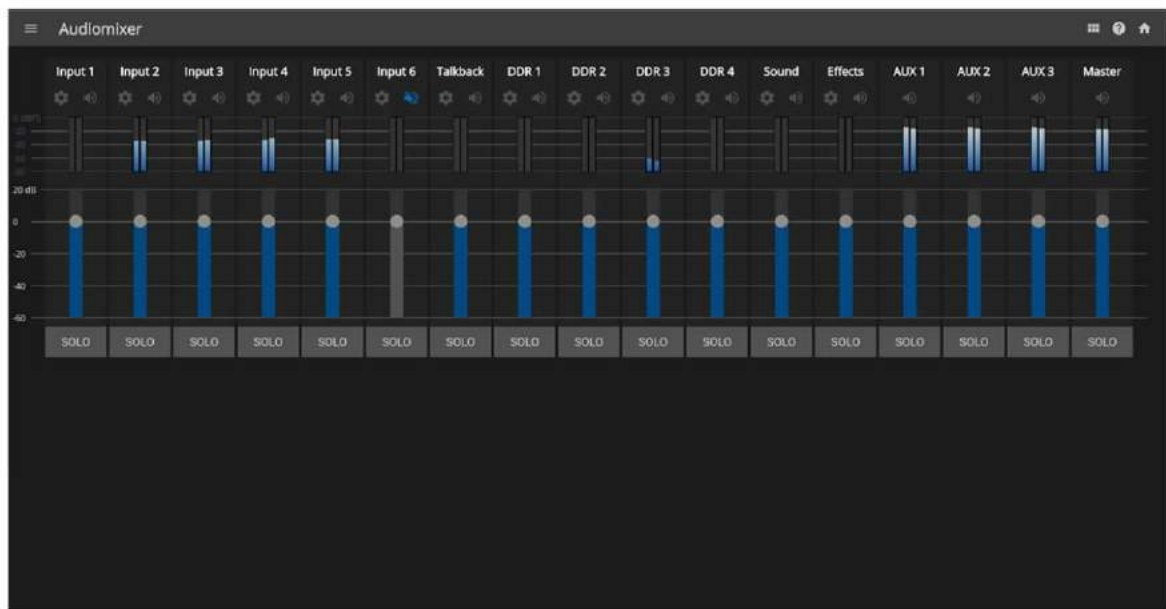
Interface Options Included in LivePanel™

-



TC1 and IP Series: Switcher

-



TC1 and IP Series: Audio Mixer

•



TC1 and IP Series: Media

•

Datalink

New Key/Value Pair

Source Comment

Value

DATE

ADD

Custom

Switcher

Session

Source Path/Segment

16.9

Destination Path/Segment

Description

SUBMIT

Source Path

1000-100

Destination Path

WTSC

SUBMIT

Source Path/Segment

Name

2017-07-26

SUBMIT

Source Path/Segment

C:\Program Files\NewSoft\MC1\bin\def\media\def\TitleImage.png

SUBMIT

Media

Webkey

NOI

Time

Event

TC1 and IP Series: Datalink

•

Baseball

Home

Eagles

Visitor

Cats

Score

3

+

Score

2

+

Errors

1

+

Errors

2

+

Inning

7

+

Top

Bottom

Balls

3

+

Strikes

2

+

Outs

2

+

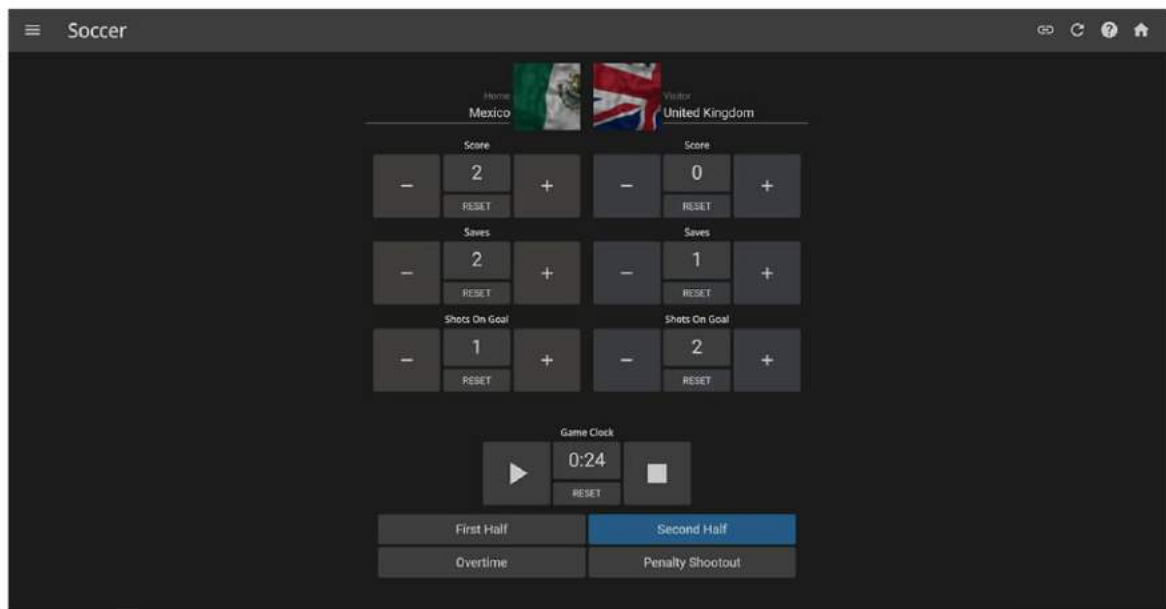
On Base

1

+

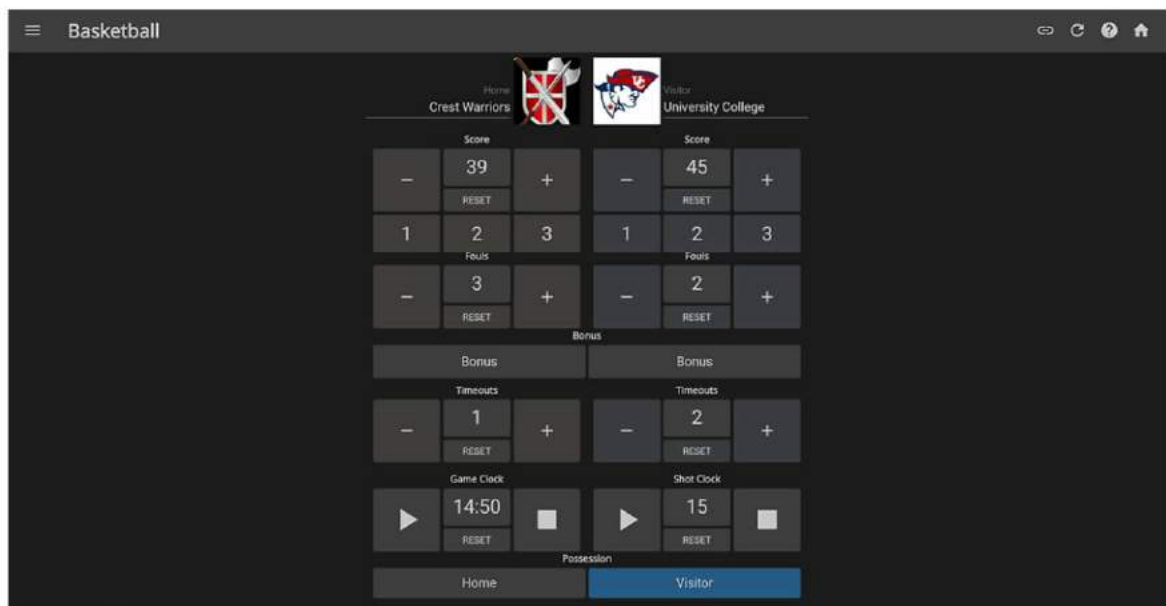
TC1 and IP Series: Baseball

•



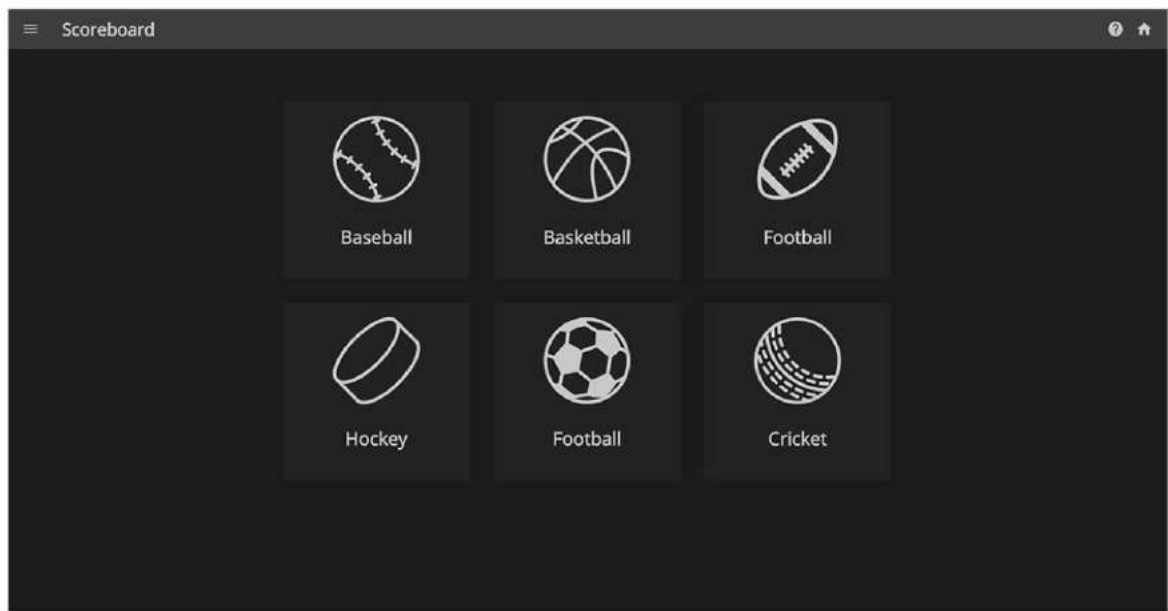
TC1 and IP Series: Soccer

•



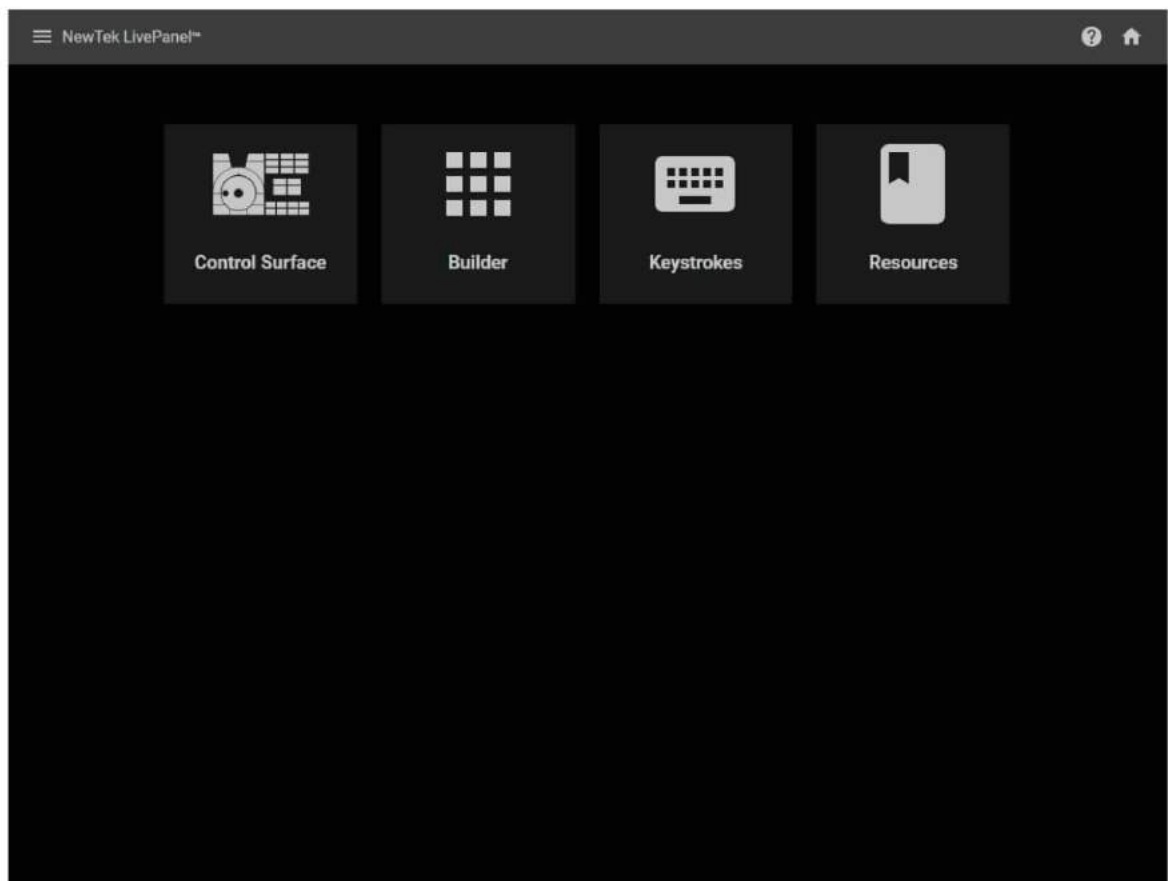
TC1 and IP Series: Basketball

•



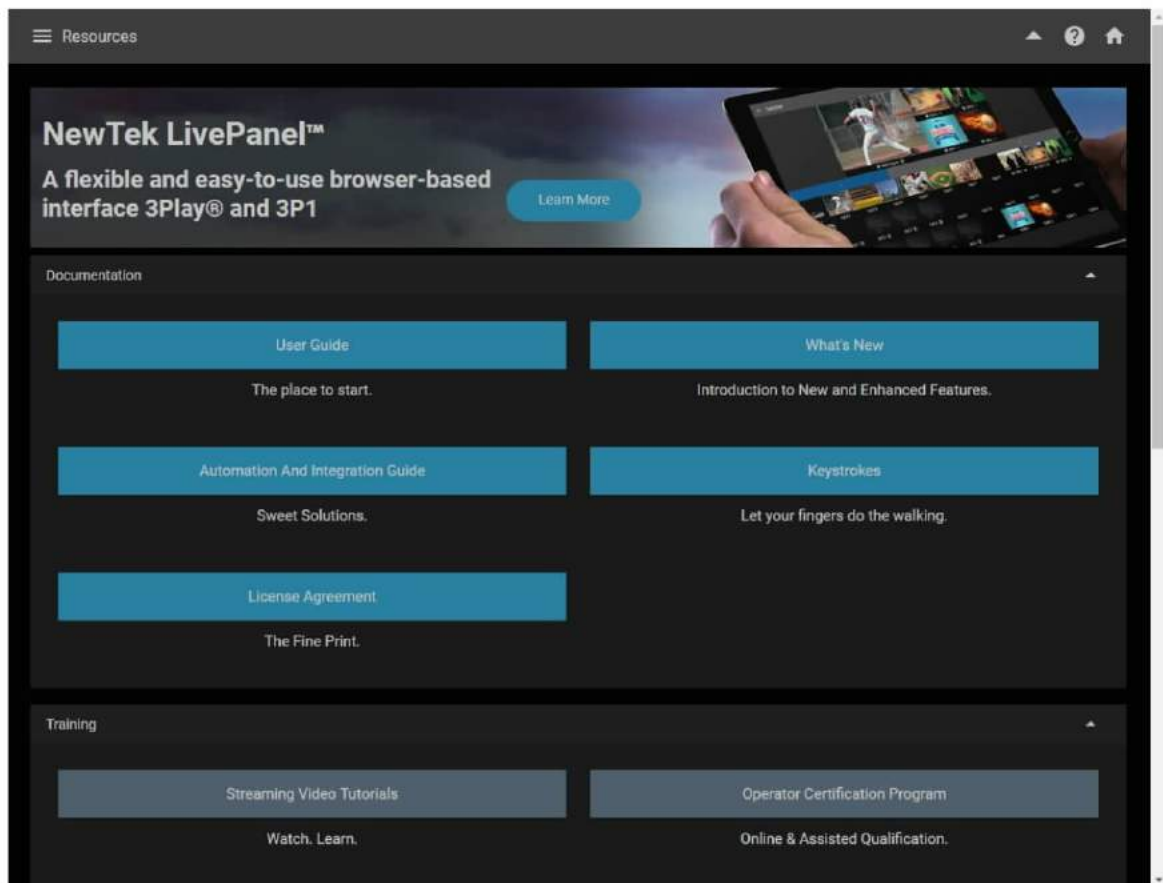
TC1 and IP Series: Scoreboard

•

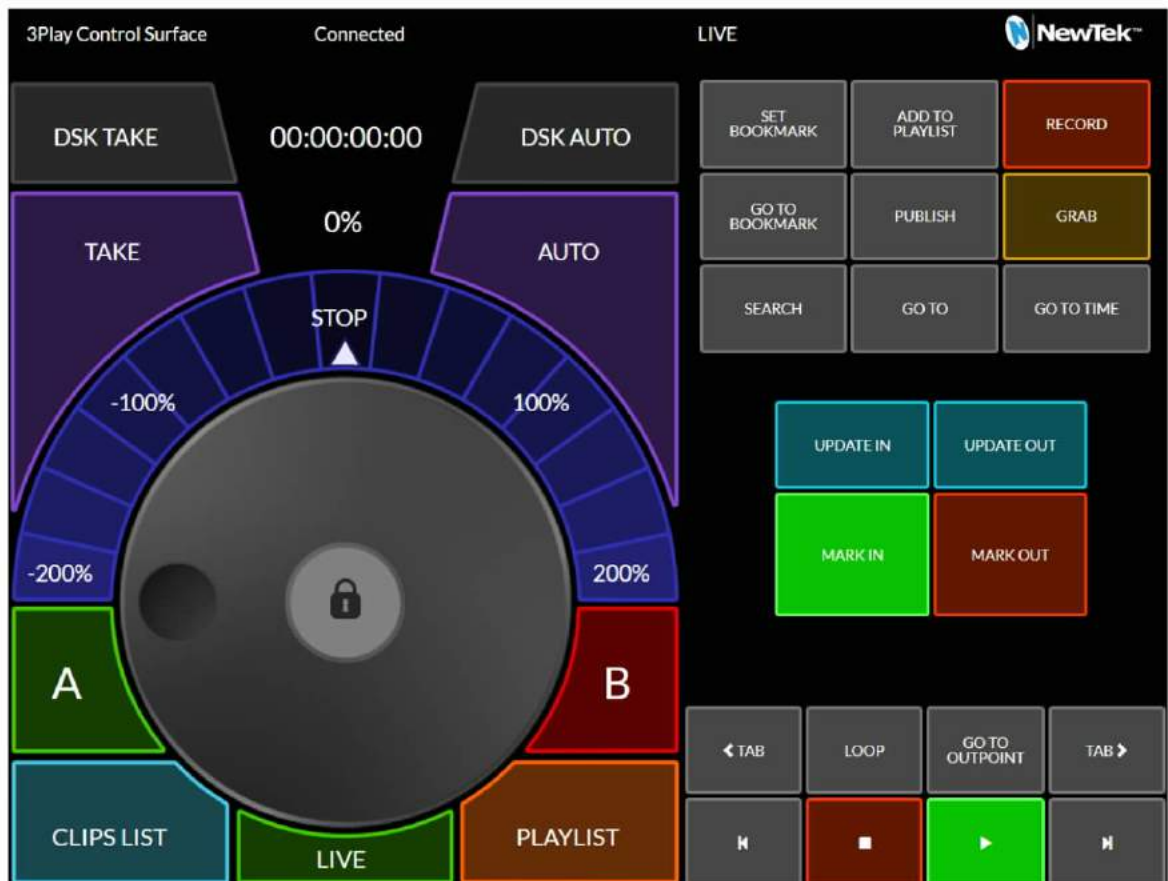


3P1: LivePanel Main

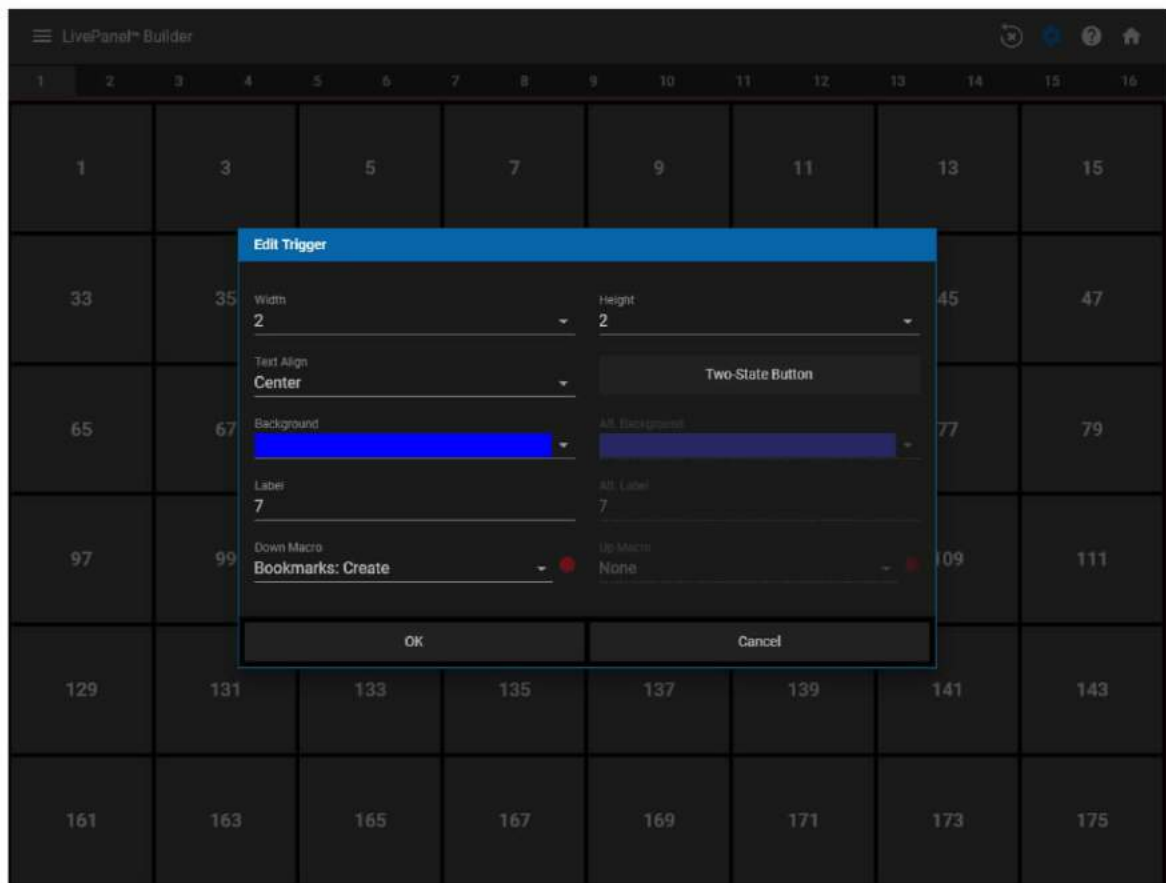
•



3P1: Resources

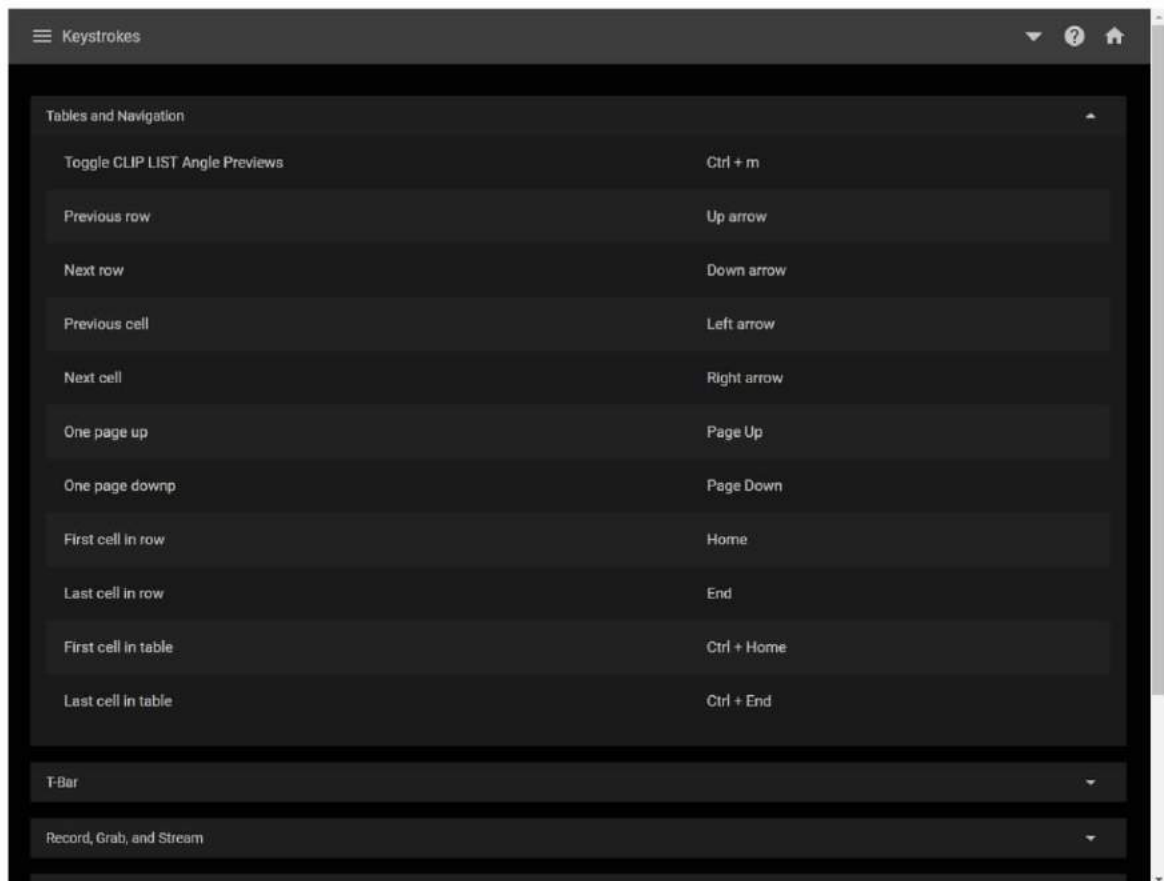


3P1: Control Surface



3P1: Edit Trigger

•



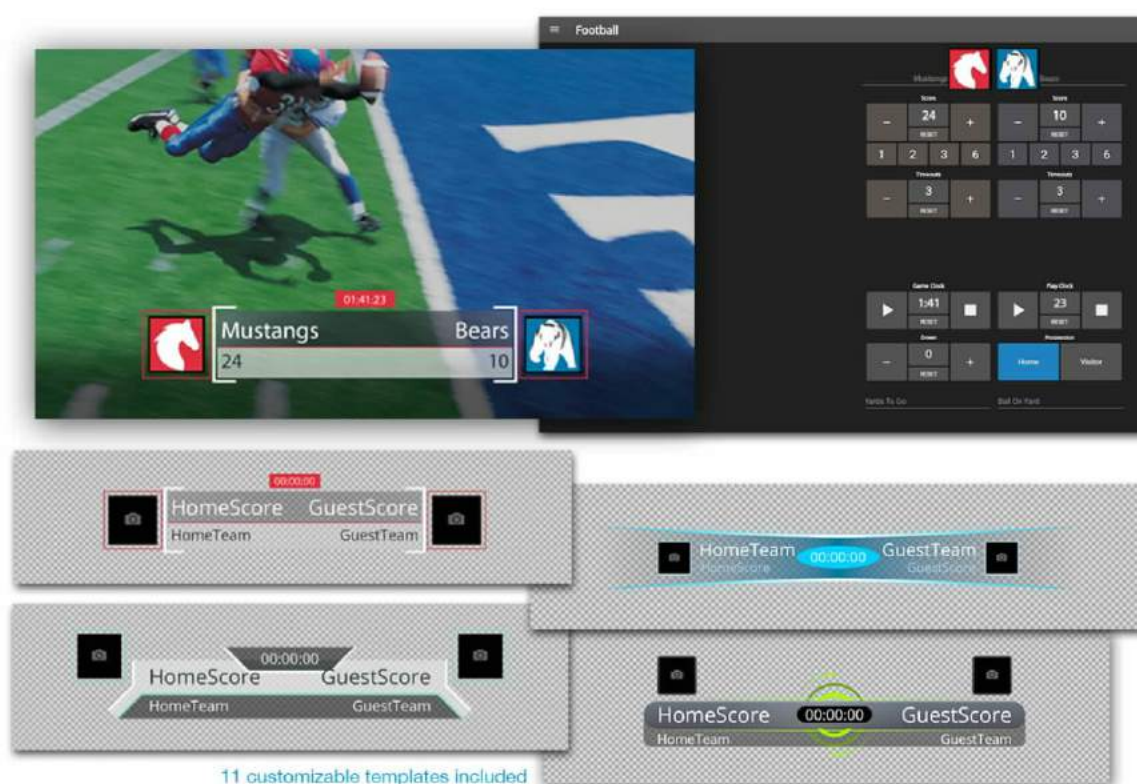
3P1: Keystrokes



On-the-fly Scoreboard Control for TC1 and IP Series

Deliver your scoreboard updates from anywhere in the venue using LivePanel scoreboard control. At your fingertips you have graphics designed for baseball, basketball, football, hockey, soccer and cricket, with instant updates of scores and game statistics through DataLink.

LivePanel comes with 11 customizable scoreboard graphics templates included, ready to give your sports shows a sophisticated look, simply and easily.





Customize with LivePanel™ Builder

In addition to the pre-built panels that are part of the product, LivePanel™ Builder makes it easy to create custom controls for your productions.

- Define grid squares as buttons
- Assign existing macros to buttons
- Record new macros for button assignment
- Assign grid squares as video windows
- Create multiple tabs for different panels

NewTek LivePanel™ For TriCaster TC1 · NewTek IP Series · 3Play 3P1

[Buy Now](#)

NewTek LivePanel Compatibility

- Compatible with NewTek IP Series Video Mix Engine, TriCaster TC1, and 3Play 3P1.
- Compatible with modern Web browsers: Google Chrome (including Chrome for Android™), Microsoft Edge and Internet Explorer (11+), Mozilla Firefox, and Safari for macOS (10.9+) and iOS (7.1+) Wired Ethernet connection recommended for best results.

Remote Camera Controller

AW-RP120G

• AC adaptor (DC12 V) is required separately.

Power supply	DC12 V/0.5 A (DC Input range: DC10 V to DC16 V)
Power consumption	6.0 W
Weight	Approx. 3.0 kg (Approx. 6.61 lb)
Dimensions (W x H x D)	Approx. 342 mm x 77 mm x 265 mm (Approx. 13-15/32 inches x 3-1/32 inches x 10-7/16 inches) [excluding protrusions]



* There is a possibility of requiring software update. For details, see "Support & Download" on the Panasonic website (<http://pro-av.panasonic.net/en/>).

Highly Functional Remote Controller with Joystick and Other Operating Enhancements.

- **IP connection:** Up to 100 remote cameras can be connected and controlled via a switching hub. Automatic IP allocation simplifies the configuration of large-scale systems. In addition, it allows five AW-RP120G controllers to simultaneously control one remote camera.
- **Serial control compatibility:** Up to five remote cameras can be connected and controlled. Also compatible with existing systems, and an RS232C port enables external control.
- **Linkage with AW-HS50:** IP connection allows linking with an AW-HS50 Compact Live Switcher, for a highly efficient operating environment.
- **Newly designed control panel:** Features a pan/tilt joystick, seesaw zoom lever, focus dial, and iris dial. A special speed adjustment dial is provided for each of the pan/tilt, zoom and focus functions.
- **Tracing memory:** The remote camera operations (pan, tilt, zoom, focus, iris, and white balance modes) can be memorized and recalled. Up to ten memory items can be stored for each camera.
- **Preset memory:** Up to 100 camera angle settings (pan, tilt, zoom operation) can be registered and retrieved for each camera to greatly simplify a variety of camera controls.
- **Preset batch retrieval function:** By creating groups of any desired preset memories (up to four groups), multiple camera angle settings (up to ten cameras) can be retrieved in a single batch.
- **Camera Image Quality Adjustment:** Equipped with an AWB button for automatic white balance, and an ABB button for automatic black balance. Dedicated dials allow pedestal and gain adjustment for Rch and Bch. Colors can also be easily adjusted by manual control.
- **Direct Selection Buttons:** Ten camera selection buttons are provided. Also, numerical buttons from 1 to 50 and a page button enable quick recall of 100 preset memories and 10 tracing memories.
- **SD Memory Card:** Settings can be backed up on a SD memory card. This also allows settings to be copied to other controllers.

Remote Camera Controller

AW-RP50

Power supply	DC12 V $\pm$ 10 % (AC adaptor provided)
Power consumption	0.5 A (With DC12 V)
Weight	Approx. 1.1 kg (Approx. 2.4 lb)
Dimensions (W x H x D)	210 mm x 67 mm x 177 mm (8-1/4 inches x 2-9/16 inches x 6-15/16 inches) [excluding protrusions]
Accessory	AC adaptor, Power cable



* There is a possibility of requiring software update. For details, see "Support & Download" on the Panasonic website (<http://pro-av.panasonic.net/en/>).

Compact, easy-to-operate remote controller

- **IP Control:** Up to 100 remote camera units can be controlled by AW-RP50 via IP and Ethernet hubs.
- **Multi-Control:** Up to 5 AW-RP50 can simultaneously control one remote camera unit.
- **Serial Control:** Up to 5 cameras/pan-tilt heads can be controlled via serial connection.
- **AW-HS50 Link:** Linkage with AW-HS50 is available via IP connection, which enables smoother operation.
- **Preset Memory:** Up to 100 preset memories can be set and recalled.

Remote Operation Panel

AK-HRP200G

Power supply	DC12 V
Power consumption	4.2 W
Weight	Approx. 1.3 kg (Approx. 2.87 lb)
Dimensions (W x H x D)	92 mm x 308 mm x 55 mm (3-5/8 inches x 12-1/8 inches x 2-3/16 inches) [excluding protrusions]



* There is a possibility of requiring software update. For details, see "Support & Download" on the Panasonic website (<http://pro-av.panasonic.net/en/>).

Compact operation panel also compatible with Studio Handy Cameras

- **Remote Operation:** The camera can be remotely operated via serial control or IP control. In addition to the AK-HC3800*1 Studio Handy Camera, it is also possible for Panasonic Multi-purpose Cameras, HD Convertible Cameras, and 4K/HD Integrated Cameras.
- **Compact 6U Size:** The unit is compact, with a width of 92 mm and a 6U height suitable for easy rack mounting.
- **ROP Menu/Camera Menu Setting:** The menu can be displayed on a monitor connected to the Camera Control Unit, so detailed camera settings can be made by operating the Remote Operation Panel.
- **Joystick Control Lever:** The joystick control lever enables fine manual iris/pedestal adjustment.
- **SD Memory Card Slot:** Scene files, user files*2 and lens file*2 can be saved on to a SD memory card. SD memory cards can also be used for firmware upgrades.
- **IP Connection*3:** A LAN terminal enables IP connection via Ethernet (RJ45 LAN cable).

*1: When power is supplied from the Camera Control Unit. *2: Only Studio Handy Camera can handle.

*3: External power supply (DC 12 V) required when LAN cable is used.



S3300-28X, S3300-28X-PoE+, S3300-52X and S3300-52X-PoE+

The S3300 Series are a new generation of Gigabit Stackable Smart Managed Pro Switches inclusive of 4 10G ports, which can be used for uplinks and/or stacking between other S3300 switches. Mixed stacking with select M4300 10G switches (12X12F and 24X) allows 10G architecture that can both scale as organization networks grows and be powerful enough for server and storage applications. As SMBs produce and consume more data, Gigabit to the desktop increasingly needs to be underpinned with 10GbE connectivity to the core to ensure a consistent, seamless user experience. This new generation of switches provides SMB customers with the most cost-effective 10G connections between the access and aggregation layer of the network.

The S3300 Smart Managed Pro Stackable Series is the blueprint for a dependable future-proof network. From greenfield network requirements to network refresh projects, the S3300 series sets new standards in defining flexibility and choice for SMBs looking to leverage reliable, future proof technologies at affordable price points. Packed with rich enterprise-class feature sets and advanced security measures, it is the only advanced smart managed switch platform to offer both dedicated 10GBASE-T and SFP+ uplink and stacking connectivity in both PoE+ and non PoE configurations – a combination that delivers an unrivalled and powerful interconnect solution for access to core connectivity.

With a choice of 24 or 48 port models, these switches can deliver on demanding tasks such as data replication and backup, video on demand and high volume transaction processing. Up to 6 switches across the series can be stacked for a total of 288 Gigabit access network ports, with 40Gbps stacking bandwidth and full redundancy for unsurpassed reliability. Add in the ability to deliver PoE+ to every port with supplemental RPS and application diversity is readily supported from PTZ IP camera surveillance solutions through to high powered wireless access points and VoIP phones. The inclusion of 10GBASE-T uplink capability as standard ensures an affordable way to leverage existing copper installations – if Gigabit speeds and link aggregation meets current requirements, simply migrate to 10GbE connectivity at a pace and time to suit your needs. With lifetime warranty, lifetime NBD and lifetime online technical chat to back you up, you'll have access to an extensive support service to help protect your investment and reduce downtime risk over the long term.

Highlights

Most Flexible and Cost-Effective Migration path to 10G

- 4 Dedicated 10G ports
- Gigabit and 10G network migration path
- A powerful interconnect link between access and aggregation
- 10G Fiber and copper can be used flexibly for either stacking and/or uplinks

Enhanced and Powerful

- Auto-Voice VLAN for easy development of VoIP
- Auto-Video for simple deployment of IP Surveillance
- Static routing, helps to route internal traffic for more efficient use of network resources
- IGMP and MLD snooping, providing advanced multicast filtering
- Extensive PoE+ capabilities extendable to 1,440W with supplemental RPS solution

- Solid performance with non-blocking architecture, 8K MAC addresses, 256 VLANs, 480 shared ACL entries, 32 static routes, and 1,024 Multicast Groups
- Comprehensive IPv6 supporting management, QoS and ACL, ensuring investment protection and a smooth migration to IPv6-based network
- Dedicated SFPs instead of combo ports, offering more connectivity ports and providing better value and usability at no extra cost
- Energy Efficient Ethernet (IEEE 802.3az) support for more energy saving in the future when more IEEE-compliant end devices come to market
- Advanced QoS with IPv4/IPv6 ingress traffic filtering (ACLs) and prioritization (QoS - DiffServ)
- Dynamic VLAN assignment for easy user authentication and location-independent access to network
- USB for easy access firmware updates

Smart IT, not Big IT

- Easy to manage via web-Based Management GUI or Smart Control Center (Windows PC required) for multi-switch deployment
- Smart Control Center, a powerful tool for multi-switch discovery, deployment, monitoring and firmware upgrade
- Network Management System (NMS300), allowing all NETGEAR business products to be deployed and managed through this single interface
- Dual firmware images, improving reliability and uptime to your network
- Worry-free with NETGEAR Lifetime warranty*, Lifetime online Technical chat support and Lifetime Next Business Day replacement



Hardware at a Glance

	PORT CONFIGURATION				
Model Name	10/100/1000Base-T RJ45 ports	PoE+ ports	100/1000/10GBASE-T RJ45 ports	1000/10GBASE-X Fiber SFP+ ports	Part Number
S3300-28X	24		2 dedicated	2 dedicated	GS728TX
S3300-28X-PoE+	24	24	2 dedicated	2 dedicated	GS728TXP
S3300-52X	48		2 dedicated	2 dedicated	GS752TX
S3300-52X-PoE+	48	48	2 dedicated	2 dedicated	GS752TXP

	SYSTEM SPECIFICATION					
Model Name	Redundant Power Supply (RPS) (Optional)	RPS Connector	PoE Budget	Storage (image, config, log files)	Fan	Part Number
S3300-28X			-	1 x USB	1	GS728TX
S3300-28X-PoE+	1 (RPS4000v2)	1 (RPS)	195W (extendable to 720W with RPS solution)		2	GS728TXP
S3300-52X			-		2	GS752TX
S3300-52X-PoE+	1 (RPS4000v2)	1 (RPS)	390W (extendable to 1,440W with RPS solution)		3	GS752TXP



S3300-28X: 28-port Gigabit Stackable Smart Managed Pro Switch

- 24 Gigabit copper ports
- 2 dedicated 10G SFP+ Fiber ports supporting 10G and 1000M speeds (stacking at 10G only)
- 2 dedicated 10GBASE-T copper ports supporting 10G/1G/100M speeds (stacking at 10G only)



S3300-28X-PoE+: 28 PoE+ port Gigabit Stackable Smart Managed Pro Switch

- 24 PoE+-capable Gigabit copper ports
- PoE Budget of 195W extendable to 720W with supplemental RPS
- 2 dedicated 10G SFP+ Fiber ports supporting 10G and 1000M speeds (stacking at 10G only)
- 2 dedicated 10GBASE-T copper ports supporting 10G/1G/100M speeds (stacking at 10G only)



S3300-52X: 52-port Gigabit Stackable Smart Managed Pro Switch

- 48 Gigabit copper ports
- 2 dedicated 10G SFP+ Fiber ports supporting 10G and 1000M speeds (stacking at 10G only)
- 2 dedicated 10GBASE-T copper ports supporting 10G/1G/100M speeds (stacking at 10G only)



S3300-52X-PoE+: 52 PoE+ port Gigabit Stackable Smart Managed Pro Switch

- 48 PoE+-capable Gigabit copper ports
- PoE Budget of 390W extendable to 1,440W with RPS
- 2 dedicated 10G SFP+ Fiber ports supporting 10G and 1000M speeds (stacking at 10G only)
- 2 dedicated 10GBASE-T Copper Ports supporting 10G/1G/100M speeds (stacking at 10G only)

Software at a Glance

	LAYER 2+ FEATURES						
Model Name	IPv4/IPv6 ACL and QoS	IPv4/IPv6 Multicast Filtering	Auto-VoIP Auto-Video	VLANs	Convergence	IPv4 Static Routing	Part Number
S3300-28X	L2, L3, L4, ingress	IGMP and MLD Snooping and Querier mode, MVR	Yes	Port, Dynamic, Voice, Video, MAC, Protocol-based, Private VLANs Guest VLANs	LLDP-MED, RADIUS, 802.1x, PoE timer	Yes (Port-based, and VLANs)	GS728TX
S3300-28X-PoE+							GS728TXP
S3300-52X							GS752TX
S3300-52X-PoE+							GS752TXP

Performance at a Glance

	TABLE SIZE							
Model Name	Packet buffer	CPU	ACLs	MAC ARP VLANs	Static Routes	Multicast IGMP Group membership	IP Multicast Forwarding Entries	Part Number
S3300-28X	16Mb	800Mhz 512M RAM 128M Flash	100 shared ACLs (MAC, IPv4, IPv6 and TCP/UDP based)	16K MAC 512 ARP VLANs: 256	32 IPv4	512	512	GS728TX
S3300-28X-PoE+	16Mb							GS728TXP
S3300-52X	16Mb							GS752TX
S3300-52X-PoE+	16Mb							GS752TXP

S3300 True Stacking

NETGEAR stacking feature provides resilient network architecture: up to six (6) S3300 switches can be stacked with a single management IP address, which simplifies network operations. VLAN and QoS can be managed in a unified fashion across the stack. Up to 288 Gigabit access ports and 12 available 10-Gigabit uplinks offer support for high-density developments as well as flexibility for future network expansion need.

The S3300 architecture offers a 40Gbps bi-directional stacking backplane with two (2) 10G stacking ports per switch, built-in redundancy and auto-failover. The stacking capability allows for master and slave switches with a secondary master as back-up. The backup master can quickly take over the failed master switch function. Failed switches can be hot-swapped with the rest of the switches in the stack unaffected and operational.

Please note that stacking is supported at 10-Gigabit speeds (with either 10GBASE-T Copper or SFP+ Fiber modules) only. 1G stacking is not supported.

Now stacking with 10G switches: for additional 10G connectivity, S3300 switches can stack with M4300-12X12X and M4300-24X 10G models. M4300 switches scale down to S3300 feature set when mixed stacking. Four (4) 10G stacking ports per switch can be used on each M4300 model running S3300 code. S3300 1G models can still use two (2) 10G stacking ports when mixed stacking, the stacking topology remains the same.

Features at a glance

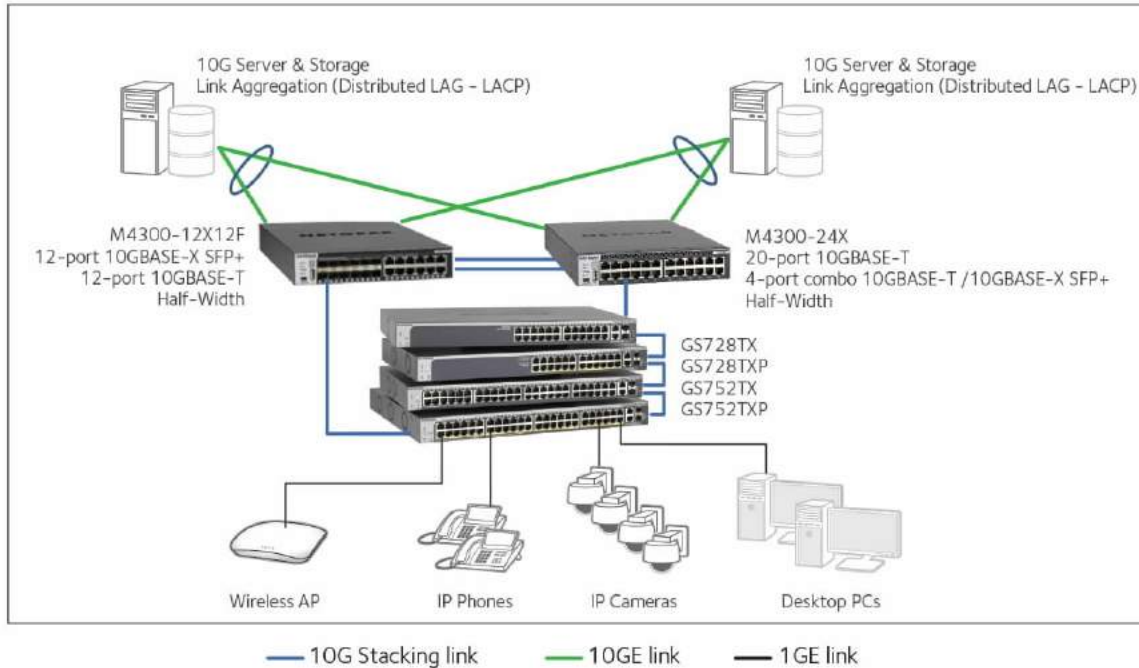
S3300-28X, S3300-28X-PoE+, S3300-52X and S3300-52X-PoE+

HARDWARE FEATURES	BENEFITS
2 Dedicated SFP+Fiber uplinks/stacking ports	Dedicated SFP+ ports provides fiber uplinks without sacrificing any downlink Gigabit port. 2 SFP+ ports provide not only redundant uplinks, but can also build dual redundancy by a trunked uplink with link aggregation and failover redundancy. Note that stacking requires the use of SFP+ (10G) modules only.
2 Dedicated 10GBASE-T uplink/stacking ports	Dedicated 10GBASE-T ports supporting 10G/1G/100M speeds can be used for redundant uplinks, or for stacking at 10G speeds only.
PoE+ Support on all ports (PoE models)	Flexible to plug-in or change into high-power PD devices on any port without worrying which one port to plug in and whether it will be running out of PoE+ ports.
One USB port on the rear of chassis	Quickly and conveniently upgrade or restore firmware.
Energy Efficient Ethernet (IEEE 802.3az)	Maximum power reduction for ongoing operational cost savings.
Stacking with up to 6 switches and 40G bi-directional bandwidth	Improved network reliability and resiliency. Easy management and great Solution for virtualized environments.
SOFTWARE FEATURES	BENEFITS
Dynamic VLAN assignment	IP phones and PCs can authenticate on the same port but under different VLAN assignment policies. Users are free to move around and enjoy the same level of network access regardless of their physical location in the network.
Static routing	A simple way to provide segmentation of the network with internal routing through the switch – reserving the router for external traffic routing only, making the entire network more efficient.
Comprehensive IPv6 support for management, ACL and QoS	Build current network with future in mind. Ensure investment protection and a smooth migration to IPv6-based network without switch replacement.
IGMP snooping and MLD snooping	Facilitate fast receiver joins and leaves for multicast streams. Save cost and improve network efficiency by ensuring multicast traffic only reaches designated receivers without the need of an extra Multicast router.
Robust security features	Build a secured, converged network with all types of traffic by preventing external attacks and blocking malware while allowing secure access for authorized users. • 802.1x authentication (MD5) • DHCP Filtering • Port-based security by locked MAC • ACL filtering to permit or deny traffic based on MAC and IP addresses
Auto-Voice and Auto-Video	Automatic Voice over IP prioritization with Auto-VoIP simplifies most complex multi-vendor IP telephone deployments either based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address; providing the best class of service to VoIP streams (both data and signaling) over other ordinary traffic by classifying traffic, and enabling correct egress queue configuration. When deployed IP phones are LLDP-MED compliant, the Voice VLAN will use LLDP-MED to pass on the VLAN ID, 802.1P priority and DSCP values to the IP phones, accelerating convergent deployments.
Comprehensive QoS features	Advanced controls for optimized network performance and better delivery of mission-critical traffic such as voice and video. • 802.1p-based prioritization • Layer 3-based (DSCP) prioritization • Port-based egress rate limiting
DHCP snooping	Ensure IP address allocation integrity by allowing only clients with specific IP/MAC addresses to have access to the network.
Dual firmware Images and configuration files	Dual firmware image and dual configuration file for transparent firmware updates/configuration changes with minimum service interruption.
Protected ports	Ensure no exchange of unicast, broadcast, or multicast traffic between the protected ports on the switch, therefore, improve the security of your converged network where your sensitive phone conversation can stay private and your surveillance video clips can be forwarded to their designated storage device without leakage or alteration.
Dynamic ARP inspection	Prevents a class of man-in-the-middle attacks, where an unfriendly station intercepts traffic for other stations by poisoning the ARP caches of its unsuspecting neighbors.
Multicast VLAN registration	Eliminates the replication of the same multicast traffic for every VLAN by sending multicast traffic only on to the dedicated multicast/source VLAN, resulting in more efficient utilization of network bandwidth.
EAV (Ethernet Audio/Video Bridging) support ¹	Extends Ethernet usage to support multimedia streaming. The Ethernet AVB standard adds QoS (Quality of Service) features like time-synchronized low latency streaming services and bandwidth reservation to make it possible to carry professional quantity audio and video signals on a standard Ethernet line.

¹ EAV support can be acquired through the purchase of EAV software license that is sold separately from the switch. Please refer to ordering information for part numbers of these licenses.

Migration path to 10G Networks for SMB

Collapsed Core: Mixed Stacking with M4300 models

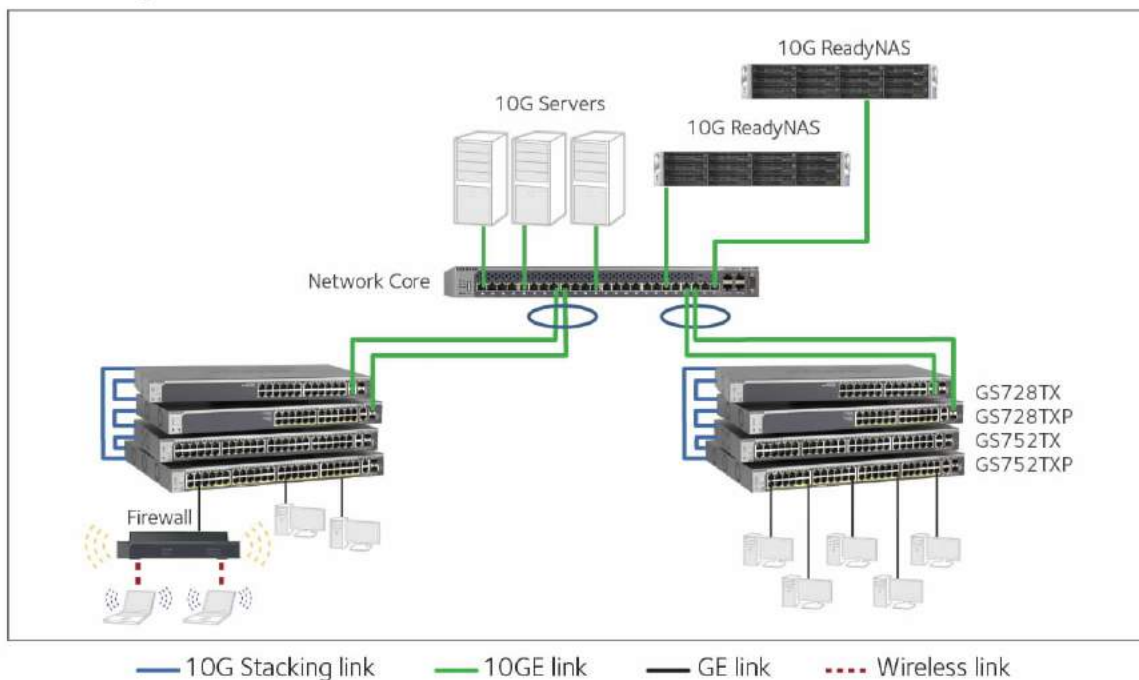


Why the NETGEAR latest generation of Gigabit Stackable Smart Managed Pro Switch with 10G links is the right choice for SMBs?

NETGEAR Gigabit Stackable Smart Managed Pro Switches offer the most cost-effective migration path to 10G network:

- Well-positioned for 10G network upgrade into aggregation switches, servers and network storage devices while offering Gigabit to the network edge
- Stacking capability for redundancy, improved resiliency and ease-of-management
- Improved usability for easier and smoother deployment of voice, video and WLAN on the same converged platform
- Lifetime warranty on hardware, lifetime next-business-day (NBD) replacement, lifetime tech support online chat, and 1-year Free Advanced Tech Support* for peace-of-mind.

Access Layer: S3300 Stack



Technical Specifications

PRODUCT	S3300-28X	S3300-28X-PoE+	S3300-52X	S3300-52X-PoE+
				
10/100/1000Mbps ports	24	24	48	48
10-Gigabit ports	4 Dedicated (2 Copper and 2 Fiber)			
PERFORMANCE SPECIFICATION				
Forwarding modes	Store-and-forward			
Bandwidth	128Gbps	128Gbps	176Gbps	176Gbps
Packet Forwarding Rate (64 byte packet size) (Mfps or Mpps)	95.2	95.2	130.9	130.9
Priority queues	8	8	8	8
Priority queuing	Weighted Round Robin (WRR)			
MAC address database size	16k media access control (MAC) addresses			
Addressing	48-bit MAC address			
Multicast groups	512			
Number of static routes	32			
Number of routed VLANs	15			
Number of ARP cache entries	512			
Number of DHCP snooping bindings	8K			
Access Control Lists (ACLs)	100 shared for MAC, IP and IPv6 ACLs			
Jumbo frame support (bytes)	Up to 9,216 bytes packet size			
Acoustic noise (ANSI-S10.12)	40dBA	36.8dBA	39dBA	40dBA
Mean Time Between Failures (MTBF) @ 25°C	278,559 hours	147,965 hours	279,970 hours	216,809 hours
L2 SERVICES - VLANS				
IEEE 802.1Q VLAN tagging	Yes			
IP-based VLANs	Yes			
MAC-based VLANs	Yes			
Auto-Voice VLAN	Based on phones OUI bytes (internal database, or user-maintained) or protocols (SIP, H323 and SCCP)			
Auto-Video VLAN	Yes			
L2 SERVICES - AVAILABILITY				
IEEE 802.3ad - LAGs	Yes			
Broadcast storm control	Yes			
IEEE 802.3x (full duplex and flow control)	Yes			
IEEE 802.1D Spanning Tree Protocol	Yes			
IEEE 802.1w Rapid Spanning Tree Protocol	Yes			
IEEE 802.1s Multiple Spanning Tree Protocol	Yes			
Layer 2 DHCP Relay	Yes			

Technical Specifications

PRODUCT	S3300-28X	S3300-28X-PoE+	S3300-52X	S3300-52X-PoE+
L2 SERVICES - MULTICAST FILTERING				
IGMP snooping (v1, v2 and v3)	Yes			
MLD snooping support (v1 and v2)	Yes			
IGMP snooping queries	Yes			
Block unknown multicast	Yes			
Multicast VLAN Registration (MVR)	Yes			
L3 SERVICES - DHCP				
DHCP client	Yes			
DHCP snooping	Yes			
L3 SERVICES - IPV4 ROUTING				
Static routing	32			
Host ARP table	512			
Router Discovery (IRDP)	Yes			
LINK AGGREGATION				
IEEE 802.3ad - LAGs	Yes			
Manual LAG	Yes			
# of LAGs / # of members in each LAG	26 LAGs with max 8 members in each LAG			
STACKING				
Stacking Interface	10G SFP+ or 10GBASE-T copper (both at 10G speeds only)			
Max. number of switches within a stack	up to 6			
Stacking bandwidth	40G bi-directional (two 10G stacking ports per switch)			
Mixed stacking	S3300 switches can stack with M4300 select 10G models (M4300-12X12F and M4300-24X) running S3300 software. Upgrading procedures and restrictions apply: please refer to the "Mixed Stacking with M4300" Application Note.			
NETWORK MONITORING AND DISCOVERY SERVICES				
802.1ab LLDP	Yes			
SNMP	v1, v2c, v3			
RMON group 1,2,3,9	Yes			
NETWORK SECURITY				
IEEE 802.1x	Yes			
Guest VLAN	Yes			
RADIUS-based VLAN assignment via .1x	Yes			
MAC-based .1x	Yes			
RADIUS accounting	Yes			
Access Control Lists (ACLs)	L2 / L3 / L4			
IP-based ACLs (IPv4 and IPv6)	Yes			

Technical Specifications

PRODUCT	S3300-28X	S3300-28X-PoE+	S3300-52X	S3300-52X-PoE+
MAC-based ACLs		Yes		
TCP/UDP-based ACLs		Yes		
MAC lockdown		Yes		
MAC lockdown by the number of MACs		Yes		
IEEE 802.1x RADIUS port access authentication		Yes		
Port-based security by locked MAC addresses		Yes		
IP source guard		Yes		
Dynamic ARP inspection		Yes		
Dynamic learned entries		600		
Static entries		20		
Network storm protection, DoS		Yes		
Broadcast, unicast, multicast DoS protection		Yes		
DoS attacks prevention		Yes		
QUALITY OF SERVICE (QoS)				
Access Lists		Yes		
L2 MAC, L3 IP and L4 port ACLs		Yes		
Port-based rate limiting		Egress only		
Port-based QoS		Yes		
Support for IPv6 fields		Yes		
DiffServ QoS		Yes		
IEEE 802.1p COS		Yes		
Destination MAC and IP		Yes		
IPv4 and v6 DSCP		Yes		
TCP/UDP-based		Yes		
WRR (Weighted Round Robin)		Yes		
Strict priority queue technology		Yes		
Timing and Synchronization for Time-Sensitive Applications (IEEE 802.1AS)		Yes ¹		
Stream Reservation Protocol (SRP) (IEEE 802.1Qat)		Yes ¹		
Forwarding and Queuing for Time-Sensitive Streams (IEEE 802.1Qav)		Yes ¹		
Audio Video Bridging Systems (IEEE 802.1BA)		Yes ¹		
Auto-VoIP	Yes, based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address			
Auto-Video	Yes (up to 24 ports simultaneously)			

¹ EAV support can be acquired through the purchase of EAV software license that is sold separately from the switch. Please refer to ordering information for part numbers of these licenses.

Technical Specifications

PRODUCT	S3300-28X	S3300-28X-PoE+	S3300-52X	S3300-52X-PoE+
IEEE NETWORK PROTOCOLS				
• IEEE 802.3 Ethernet • IEEE 802.3i 10BASE-T • IEEE 802.3u 100BASE-T • IEEE 802.3ab 1000BASE-T • IEEE 802.1Q VLAN Tagging • IEEE 802.3x Full-Duplex Flow Control • IEEE 802.1Qav¹ • IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX • IEEE 802.3ae 10-Gigabit Ethernet Over Fiber (10GBASE-SR, 10GBASE-LR, 10GBASE-ER, 10GBASE-LX4) • IEEE 802.3an 10GBASE-T 10 Gbit/s Ethernet Over Copper Twisted Pair Cable		• IEEE 802.3ad Trunking (LACP) • IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED) • IEEE 802.1p Class of Service • IEEE 802.1Qat¹ • IEEE 802.1D Spanning Tree (STP) • IEEE 802.1s Multiple Spanning Tree (MSTP) • IEEE 802.1w Rapid Spanning Tree (RSTP) • IEEE 802.1x RADIUS Network Access Control • IEEE 802.1BA¹ • IEEE 802.1AS¹		
MANAGEMENT				
Password management		Yes		
Configurable management VLAN		Yes		
Admin access control via RADIUS and TACACS+		Yes		
Web-based graphical user interface (GUI)		Yes		
Smart Control Center (SCC) for multi-switch management		Yes		
IPv6 management		Yes		
Dual software (firmware) image		Yes		
Dual configuration file		Yes		
SNTP client over UDP port 123		Yes		
SNMP v1/v2c		Yes		
SNMP v3 with multiple IP addresses		Yes		
RMON group 1,2,3,9		Yes		
Port mirroring		Yes		
Many-to-one port mirroring		Yes		
Cable test utility		Yes		
SSL/HTTPS and TLS v1.0 for Web-based access		Yes		
File transfers (uploads, downloads)		TFTP / HTTP		
HTTP upload/download (firmware)		Yes		
Syslog (RFC 3164)		Yes		
USB port for firmware and config upload/download		Yes		

¹ EAV support can be acquired through the purchase of EAV software license that is sold separately from the switch. Please refer to ordering information for part numbers of these licenses.

Technical Specifications

PRODUCT	S3300-28X	S3300-28X-PoE+	S3300-52X	S3300-52X-PoE+
LEDS				
Per port	Speed, Link, Activity			
Per device	Power, Fan, and PoE (GS728TXP and GS752TXP only)			
POE CONFIGURATION				
Number of PoE+ ports		24		48
Total PoE power budget (watts), without RPS		195W		390W
RPS support: RPS mode, max. PoE power budget with RPS		720W		1440W
PHYSICAL SPECIFICATIONS				
Dimensions	440 x 257 x 43mm	440 x 257 x 43mm	440 x 257 x 43mm	440 x 345 x 43mm
Weight	3.14kg	3.77kg	3.66kg	5.54kg
POWER CONSUMPTION (WHEN ALL PORTS USED, LINE-RATE TRAFFIC AND MAX POE)				
Worst case, all ports used, line-rate traffic	28.18W	748.18W	44.12W	1484.12W
ENVIRONMENTAL SPECIFICATIONS				
Operating				
Operating temperature	32° to 122°F (0° to 50°C)			
Humidity	90% maximum relative humidity, non-condensing			
Altitude	10,000 ft (3,000 m) maximum			
Storage				
Storage temperature	– 4° to 158°F (–20° to 70°C)			
Humidity	95% maximum relative humidity, non-condensing			
Altitude	10,000 ft (3,000 m) maximum			
ELECTROMAGNETIC EMISSIONS AND IMMUNITY				
Certifications	CE: EN 55032:2012+AC:2013/CISPR 32:2012, EN 61000-3-2:2014, Class A, EN 61000-3-3:2013, EN 55024:2010			
	UL listed (UL 1950)/cUL IEC 950/EN 60950			
	CE LVD: EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013			
	RCM (AS/NZS) 60950.1:2015			
	CCC (China Compulsory Certificate): GB4943.1-2011; YD/T993-1998; GB/T9254-2008 (Class A)			
	BSMI: CNS 14336-1			

Technical Specifications

PRODUCT	S3300-28X	S3300-28X-PoE+	S3300-52X	S3300-52X-PoE+
SAFETY				
Certifications	CB report / certificate IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013			
	UL listed (UL 1950)/cUL IEC 950/EN 60950			
	CE LVD: EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013			
	RCM (AS/NZS) 60950.1:2015			
	CCC (China Compulsory Certificate): GB4943.1-2011; YD/T993-1998; GB/T9254-2008 (Class A)			
	BSMI: CNS 14336-1			
WARRANTY AND SUPPORT				
ProSAFE Lifetime Warranty	Included, Lifetime*			
Lifetime 24x7 Online Technical Support*	Included, Lifetime*			
Lifetime Next-Business-Day (NBD) Replacement	Included, Lifetime*			
ProSUPPORT OnCall 24x7, Category 2** Service Packs	PMB0312 (1 yr.) PMB0332 (3 yrs.) PMB0352 (5 yrs.)			
PACKAGE CONTENT				
All Models	Gigabit Stackable Smart Managed Pro Switch, S3300 Series			
	Power cord			
	Rack-mounting kit			
	Hardware installation guide			
	Resource CD with links to online documentation, installation guides, Web-management user manual, Smart Control Center (SCC) software and user guide.			

Ordering Information

ORDERING INFORMATION	
GS728TX-100NES	North America, Latin America and Europe
GS728TX-100AJS	Asia Pacific
GS728TX-100PRS	China
GS728TX-100INS	India
GS728TXP-100NES	North America, Latin America and Europe
GS728TXP-100AJS	Asia Pacific
GS728TXP-100PRS	China
GS752TX-100NES	North America, Latin America and Europe
GS752TX-100AJS	Asia Pacific
GS752TX-100PRS	China
GS752TXP-100NES	North America, Latin America and Europe
GS752TXP-100AJS	Asia Pacific
GS752TXP-100PRS	China
OPTIONAL MODULES, SOFTWARE LICENSES AND ACCESSORIES	
GS728TXAV-10000S	Ethernet Audio/Video (EAV) software license for GS728TX-100
G728TXPAV-10000S	Ethernet Audio/Video (EAV) software license for GS728TXP-100
GS752TXAV-10000S	Ethernet Audio/Video (EAV) software license for GS752TX-100
G752TXPAV-10000S	Ethernet Audio/Video (EAV) software license for GS752TXP-100
AXM761-10000S	SFP+ Transceiver 10GBASE-SR (Short range, multimode)
AXM762-10000S	SFP+ Transceiver 10GBASE-SR (Long range, single mode)
AXM763-10000S	SFP+ Transceiver 10GBASE-LRM (Long range, multimode)
AXM764-10000S	SFP+ Transceiver 10GBASE-LR Lite (Long range lite, single mode)
AXM765-10000S	SFP+ Transceiver 10GBASE-T Copper RJ45 GBIC - up to 30 meters only
AGM731F-10000S	SFP Transceiver 1000BASE-SX (Short range, multimode). Note: Stacking requires 10G SFP+ modules.
AGM732F-10000S	SFP Transceiver 1000BASE-LX (Long range, single mode). Note: Stacking requires 10G SFP+ modules.
AGM734-10000S	SFP Transceiver 1000BASE-T (Short range, RJ45 copper). Note: Stacking requires 10G SFP+ modules.
AFM735-10000S	SFP Transceiver 100BASE-FX (Long range, multimode). Note: Stacking requires 10G SFP+ modules.
AXC761-10000S	SFP+ DAC CABLE (1m)
AXC763-10000S	SFP+ DAC CABLE (3m)
RPS4000v2	External Redundant Power Supply
APS1000W	Power supply unit; provides 800W power in combination with an RPS4000 (2 x APS1000W to provide up to 1,440W full PoE+)

* This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller, and modifications to product may void the warranty; covers hardware, fans, and internal power supplies—not software or external power supplies; see <http://www.netgear.com/about/warranty/> for details. Lifetime technical support includes basic phone support for 90 days from purchase date and lifetime online chat support when purchased from a NETGEAR authorized reseller.

** The NETGEAR OnCall 24x7 contract provides unlimited phone and email technical support for your networking product. For ProSAFE products purchased prior to 06/2014, also includes next-business-day hardware replacement.

* NETGEAR #1 in Fixed Web(Smart)-Managed Worldwide Market Share according to IHS Infonetics Ethernet Switches Market Share and Forecast, 1Q15 Edition, June 2015. NETGEAR #1 in US Market Share according to NPD data for Unmanaged and Web/Smart Switches, April 2015.

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Specifications

TF Serie General Specifications

	TF5	TF3	TF1
Fader Configuration	32 + 1 (Master)	24 + 1 (Master)	16 + 1 (Master)
Mixing Capacity	Input Channels: 48 (40 mono + 2 stereo + 2 return) Main Buses: Stereo + Sub Aux Buses: 20 (8 mono + 6 stereo) Groups: 8 DCA Groups	Input Channels: 24 mic/line (XLR/TRS combo) + 2 stereo line (RCA pin) Main Buses: Stereo + Sub Aux Buses: 20 (8 mono + 6 stereo) Groups: 8 DCA Groups	Input Channels: 16 mic/line (XLR/TRS combo) + 2 stereo line (RCA pin) Main Buses: Stereo + Sub Aux Buses: 20 (8 mono + 6 stereo) Groups: 8 DCA Groups
I/O Connectors	Inputs: 32 mic/line (XLR/TRS combo) + 2 stereo line (RCA pin) Outputs: 16 (XLR) Expansion Slot: 1	Inputs: 24 mic/line (XLR/TRS combo) + 2 stereo line (RCA pin) Outputs: 16 (XLR) Expansion Slot: 1	Inputs: 16 mic/line (XLR/TRS combo) + 2 stereo line (RCA pin) Outputs: 16 (XLR) Expansion Slot: 1
Signal Processors	via Windows/Mac	8 Effects + 10 GEQ	8 Effects + 10 GEQ
Recording	via USB Storage Device	34x34 USB Audio Interface	34x34 USB Audio Interface
Sampling Frequency	Internal Clock	2-track	2-track
Signal Delays		48 kHz	48 kHz
Fader		Less than 2.6 ms, INPUT to OMNI OUT, Fs=48 kHz	Less than 2.6 ms, INPUT to OMNI OUT, Fs=48 kHz
Frequency Response		100 mm motorized, Resolution = 10-bit, +10 dB to -138 dB, ∞ dB all faders	100 mm motorized, Resolution = 10-bit, +10 dB to -138 dB, ∞ dB all faders
Total Harmonic Distortion*		+0.5, -1.5 dB 20 Hz-20 kHz, refer to +4 dBu output @1kHz, INPUT to OMNI OUT	+0.5, -1.5 dB 20 Hz-20 kHz, refer to +4 dBu output @1kHz, INPUT to OMNI OUT
Hum & Noise**		Less than 0.05 % 20 Hz-20 kHz @+4 dBu into 600 Ω, INPUT to OMNI OUT, Input Gain=Min.	Less than 0.05 % 20 Hz-20 kHz @+4 dBu into 600 Ω, INPUT to OMNI OUT, Input Gain=Min.
Dynamic Range		-128 dBu typ., Equivalent Input Noise, Input Gain=Max., -85 dBu, Residual output noise, ST master off	-128 dBu typ., Equivalent Input Noise, Input Gain=Max., -85 dBu, Residual output noise, ST master off
Crosstalk@1 kHz		110 dB typ., DA Converter, 107 dB typ., INPUT to OMNI OUT, Input Gain=Min.	110 dB typ., DA Converter, 107 dB typ., INPUT to OMNI OUT, Input Gain=Min.
Dimensions (W x H x D)	866 mm x 225 mm x 599 mm (34.1in x 8.9in x 23.6in)	716 mm x 225 mm x 599 mm (28.2in x 8.9in x 23.6in)	510 mm x 225 mm x 599 mm (20.1in x 8.9in x 23.6in)
Net Weight	20.0 kg (44.1lb)	17.0 kg (37.5lb)	13.5 kg (29.8lb)
Power Requirements (wattage)	120 W	110 W	100 W
Power Requirements (voltage and hertz)		100-240 V 50/60 Hz	100-240 V 50/60 Hz
Temperature Range		Operating temperature range: 0-40 °C Storage temperature range: -20-80 °C	Operating temperature range: 0-40 °C Storage temperature range: -20-80 °C
Included Accessories		Quick Guide, Power Cord, CUBASE AI download information	Quick Guide, Power Cord, CUBASE AI download information
Options		Rack-mount Kit RK5014 (for TF1), Expansion Card, Foot Switch (FCS)	Rack-mount Kit RK5014 (for TF1), Expansion Card, Foot Switch (FCS)

*1 Crosstalk is measured with a -30 dB/octave filter@22 kHz. *2 Total Harmonic Distortion is measured with a -18 dB/octave filter@80 kHz.

*3 Hum & Noise are measured with an A-Weight filter.

TF Serie Input / Output Specifications

Analog input characteristics

Input Terminals	GAIN	Load Impedance	For Use With Nominal	Input Level Nominal	Max. before clip	Connector	balanced / Unbalanced
INPUT1-32 (TF5)	+86dB	7.5kΩ	50-6000 Mics or 6000 Lines	-82dBu (0.618mV)	+42dBu (6.18mV)	Combo Jack (XLR-3-31 type **)	Balanced
INPUT1-24 (TF3)	-6dB	7.5kΩ	50-6000 Mics or 6000 Lines	-10dBu (2.45mV)	+30dBu (24.5V)	Combo Jack (XLR-3-31 type **)	Balanced
INPUT1-16 (TF1)	-6dB	7.5kΩ	50-6000 Mics or 6000 Lines	-10dBu (2.45mV)	+30dBu (24.5V)	Combo Jack (XLR-3-31 type **)	Balanced
ST IN 1,2	—	10kΩ	6000 Lines	-90dBV (31.6μV)	+10dBV (3.16V)	RCA Pin Jack	Unbalanced

*1 Sensitivity is the lowest level that will produce an output of +4dBu (1.23V) or the nominal output level when the unit is set to maximum gain. (All faders and level controls are at maximum position.)

*2 1: GND. 2: HOT. 3: COLD. *3 1to: HOT, Ring: COLD, Sleeve: GND. *4 In these specifications, 0dBu = 0.775Vrms.

*5 +48V DC (phantom power) can be supplied to INPUT XLR type connectors via each individual software controlled switch.

Analog output characteristics

Output Terminals	Source Impedance	For Use With Nominal	GAIN SW	Output Level Nominal	Max. before clip	Connector	balanced / Unbalanced
OMNI OUT 1-16	75Ω	6000 Lines	" +24dBu" position (default)	+4dBu (1.23 V)	+24dBu (12.3 V)	XLR-3-32 type **	Balanced
PHONES **	100Ω	400 Phones	—	3mW	75mW	Stereo Phone Jack (TRS) **	Unbalanced

*1 1: GND. 2: HOT. 3: COLD. *2 Tip: LEFT, Ring: RIGHT, Sleeve: GND. *3 In these specifications, 0dBu = 0.775Vrms.

*4 All output DA converters are 24bit, 128times oversampling.

*5 The position of the level control is lowered by 16dB from the maximum.

Digital input / output specifications

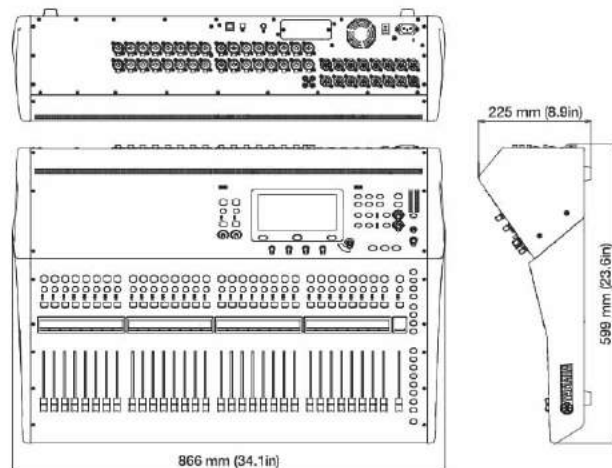
Terminals	Format	Data length	Audio	Connector
USB (TO HOST)	USB	24bit	34ch input / 34ch output, PCM	USB (B type)
iPad	USB	—	Playback: MP3 or WAV file data / Record: WAV file data	USB (A type)

Control I/O specifications

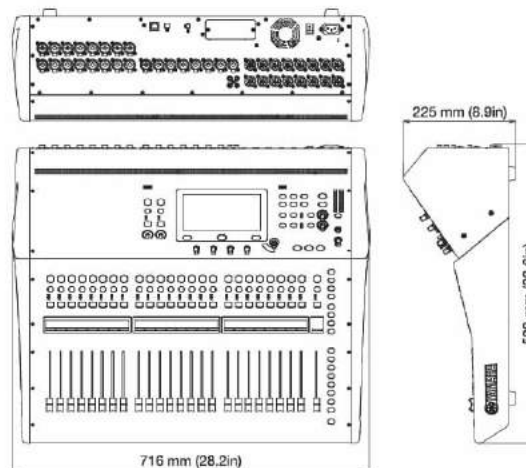
Terminals	Format	Level	Connector
NETWORK	IEEE802.3	10BASE-T/100Base-TX	RJ-45
FOOT SW	—	—	TS Phone

Dimensions

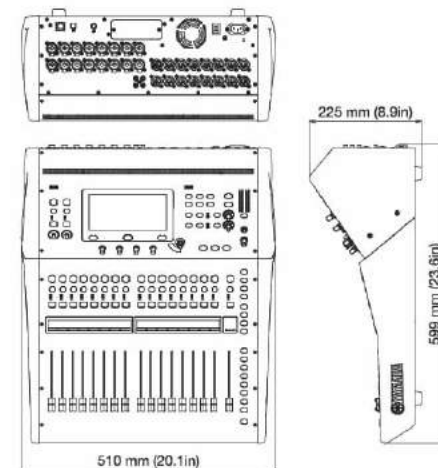
TF5



TF3



TF1



Overview

NY64-D is Dante Interface Card for TF series digital mixers. It can give your system additional 64 Dante inputs and outputs.



Features

- Supports 64 inputs and 64 outputs of 32-bit, 48 kHz uncompressed digital audio signals
- In addition to simple daisy chaining, supports redundant connections through its primary and secondary data paths
- Dimensions: 100mm x 38.5mm x 132.5 mm (3.9" x 1.5" x 5.2")

Specifications

Sampling Frequency

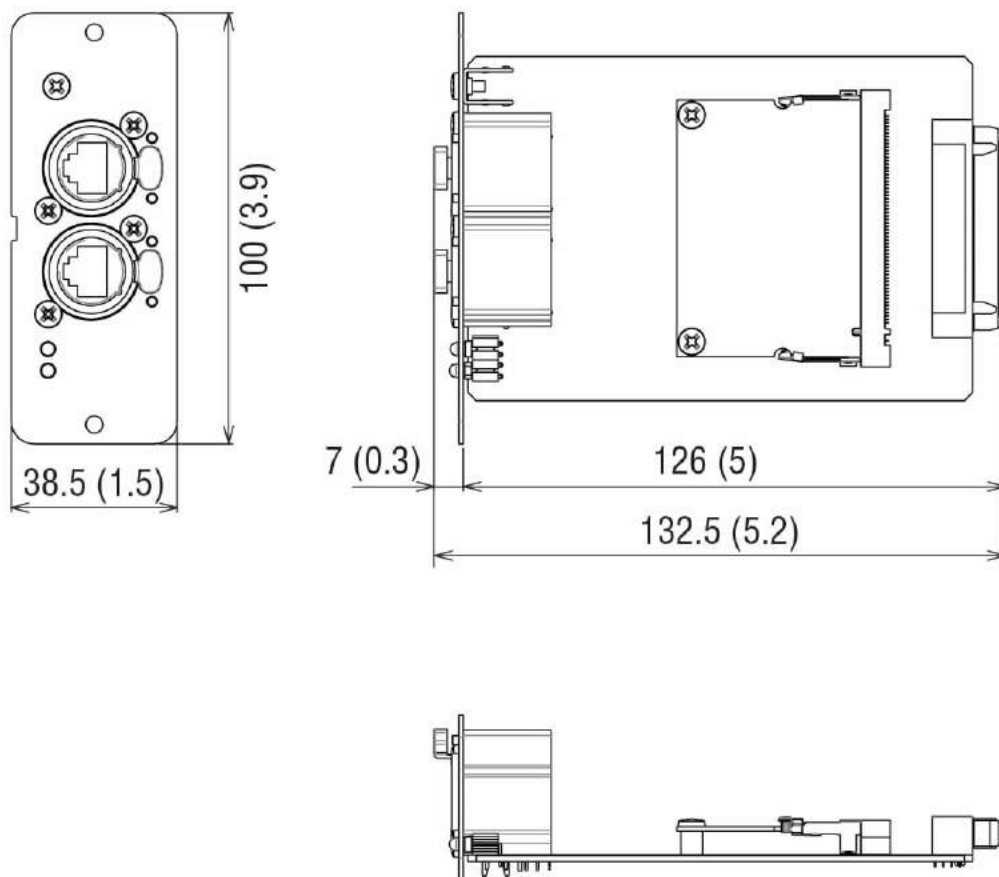
		Conditions	Min.	Typ.	Max.	Unit
External Clock	Frequency	44.1kHz / 48kHz	-200		+200	ppm
	Accuracy	+4.1667%/+0.1%/-0.1%/-4.0% to all of the above	-200		+200	ppm

Digital Input/Output Specifications

Terminal	Format	Data length	Level	Audio	Connector
Primary/Secondary	Dante	24 or 32 bit	1000BASE-T	64ch (NY64-D to other devices) 64ch (Other devices to NY64-D)	etherCON Cat5e

Dimensions

Unit: mm (inch)



Architectural and Engineering Specifications

The Yamaha NY64-D shall be an optional Dante Interface card for TF series digital mixers. It shall have built-in Dante digital audio networking capability and allow flexible, easy system setup. It shall support 64 inputs and 64 outputs of 32-bit, 48 kHz uncompressed digital audio signals. Dimensions shall be 100 (W) x 38.5 (H) x 132.5 (D) mm. Weight shall be 0.2kg.

*All information subject to change without notice.

*All trademarks and registered trademarks are property of their respective owners.

Created in March, 2017

YAMAHA CORPORATION
P.O.BOX 1, Hamamatsu Japan
www.yamahaproaudio.com

soundweb™ LONDON



BLU-DA (BLU-DAN) networked signal processor



Overview

Formerly known as BLU-DAN, the Soundweb London BLU-DA offers Dante audio and BLU link. This means that the BLU-DA can be used to 'add' Dante™ / AES67 to one or more BLU link devices.

The BLU-DA is configurable through HiQnet Audio Architect™. A rich palette of logic objects and a "drag and drop" method of configuration provide a simple and familiar design environment.

The BLU-DA features Dante™ / AES67 audio. The BLU-DA is capable of simultaneously transmitting and receiving up to 64 channels of Dante™ / AES67 audio (64 x 64). Primary and Secondary ports are provided for fault tolerance. Control is through a separate Ethernet port.

The BLU-DA also features BLU link, a low latency, fault tolerant digital audio bus of 256 channels which uses standard Category 5e cabling giving a distance of 100m between compatible devices. Fiber media converters can be used to increase the distance between devices to over 40km.

A bi-directional locate function allows devices to be identified both from and within HiQnet Audio Architect.

The BLU-DA and the other members of the Soundweb London family provide the building blocks of the perfectly tailored system solution.

Key Features

- Dante™ / AES67 Audio
- BLU link - 256 channel, low latency, fault tolerant digital audio bus
- 'Add' Dante™ / AES67 to one or more BLU link devices
- Clear front panel LED indication
- Bi-directional locate functionality
- HiQnet device
- Configuration, control and monitoring from HiQnet Audio Architect
- 1RU, half-rack device
- AES67 Compatible

Technical Specifications

Chassis	19" (single rack space)
Dante™ / AES67	yes
SWL Digital Audio Bus	256
RS-232	yes

PowerMatch® Dante™ network card

Product Overview

The Dante™ network card for Bose® PowerMatch® configurable professional power amplifiers provides 8 input channels of low-latency digital audio using the Dante audio networking solution from Audinate®. Eight output channels are available for diagnostic monitoring from remote locations.

The Dante network card is installed into the digital expansion slot of the amplifier and includes a primary and secondary Gigabit Ethernet port. The secondary port can be configured for switched (default), redundant, or filtered for legacy product network connections. Up to 10 devices can be daisy-chained using the switched port configuration.

Bose ControlSpace® Designer™ software offers comprehensive device configuration and control for Dante endpoints, Bose ESP processors and PowerMatch amplifiers to help streamline system design and installation.

Technical Specifications

Audio Channels	
Channels In	8 (PM4500/N and PM4250/N models must select from upper or lower 4-channel groups)
Channels Out	8, post-processing
Flows	Up to 16 simultaneous
Interface	
Connectors	Two 1 Gb (Gigabit) Ethernet RJ-45
Secondary Port Modes	Switched (default) / Redundant / Legacy Hardware (multicast filtered)
Format	48 kHz / 24 bit PCM
Interface Data	Dante network audio
Indicators	
Rear Panel	Network speed indicator: yellow (1 Gb), green (100 Mb) Link/Act indicator: solid green (link established), flashing green (data activity)
Software Application	
ControlSpace® Designer™ Software v4.1 or later	
General	
Product Code	359844-0020
Compatible With	PowerMatch PM8500 / PM8500N configurable professional power amplifier PowerMatch PM8250 / PM8250N configurable professional power amplifier PowerMatch PM4500 / PM4500N configurable professional power amplifier PowerMatch PM4250 / PM4250N configurable professional power amplifier
Box Contents	(1) expansion card, (1) installation guide

Connector Panel



BOSE

TECHNICAL DATA SHEET



Key Features

- 8x8 channel I/O
- Diagnostic audio monitoring bus
- Gigabit Ethernet connections
- Port mode options for networking flexibility
- Supports redundant connections

Applications

The PowerMatch Dante network card provides 8x8 channels of digital audio using Dante, a digital audio networking solution. Dante operates over standard IP Ethernet networks with sample accurate synchronization and automatic device and channel discovery.

This card supports both switched and redundant operation – allowing PowerMatch amplifiers to be integrated into small systems without additional network hardware or larger systems utilizing multiple endpoints with redundant network design.

Designed for a wide range of applications, including:

- Performing arts venues
- Hotels and conferencing facilities
- Religious and worship facilities
- Health clubs
- Retail and shopping centers
- Sports venues
- Schools and universities

Dante™

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Dante™ is a trademark of Audinate Pty Ltd.

Specifications

SMP 351 Series

Input

Number/signal type.....	3 HDMI digital video (HDCP compliant), 1 component video (Y, R-Y, B-Y; interlaced, progressive, HD), or composite video Optional: 1 SDI, HD-SDI, or 3G-SDI digital component video
Connectors.....	4 female HDMI type A, 3 inputs and 1 loop-through 3 female BNC; component video, composite video Optional: 1 female BNC: 3G-SDI, HD-SDI, SDI
Nominal level.....	1 Vp-p for Y of component video and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.8 Vp-p for 3G-SDI
Minimum/maximum level.....	Analog: 0.0 V to 1.0 Vp-p with no offset
Impedance.....	75 ohms
Horizontal frequency.....	15 kHz to 100 kHz
Vertical frequency.....	24 Hz to 75 Hz
Resolution range.....	640x480 to 1920x1200 (reduced blanking), 480p, 480i, 576p, 720p, 1080i, 1080p, NTSC, and PAL, sampled pixel for pixel
Return loss (input 3).....	<-30 dB @ 5 MHz (input 3)
Return Loss (input 5, 3G-SDI).....	≥15 dB @ 5 MHz to 1.5 GHz ≥10 dB @ >1.5 GHz to 2.97 GHz
DC offset (max. allowable).....	0.5 V
Input cable equalization.....	Automatic for up to -30 dB of cable loss
3G-SDI.....	60 m (200 ft) using Extron RG6 cable 45 m (150 ft) using Extron RG59 cable
HD-SDI.....	120 m (400 ft) using Extron RG6 cable 90 m (300 ft) using Extron RG59 cable
SDI.....	150 m (500 ft) using Extron RG6 cable 120 m (400 ft) using Extron RG59 cable

Video processing

Analog sampling.....	12 bits per color, 13.5 MHz standard (low resolution video), 165 MHz standard (RGB, Y UVp, DVI)
Digital sampling.....	8-, 10-, or 12-bits per channel
Digital processing.....	4:2:2, 8-bits per color
Compression.....	H.264/AVC (ITU H.264, ISO/IEC 14496-10) 4:2:0, 8-bit color Encoding profiles: High, Main, Baseline; Encoding levels: 4.1, 4.0, 3.2, 3.1, 3.0; configurable GOP
Bit rate.....	200 kbps to 10 Mbps
Bit rate control.....	Selectable (variable, constrained, or constant)
Latency.....	130 msec* (encode), 600 msec* (encode/decode) *Indicates minimum latency. Encoder, decoder, and network dependencies apply.

Video output

Number/signal type	
SMP 351, SMP 351 3G-SDI....	2 H.264/AVC digital video over Ethernet 1 HDMI digital video (HDCP compliant)
Models with LinkLicense.....	3 H.264/AVC digital video over Ethernet 1 HDMI digital video (HDCP compliant)
Connectors.....	1 female RJ-45 (streaming) 1 female HDMI type A
Scaled resolution	Archive/record: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom Confidence: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom
Frame rate	Up to 30 fps for all output rates
Formats	H.264/AVC (Profile type: High, Main, Baseline. Profile level: 4.1, 4.0, 3.2, 3.1, 3.0)

NOTE: Appropriate HDMI to DVI-D cables or adapters are required for DVI signal output.

Sync

Input type	Tri-level or bi-level component video
Standards	Input: NTSC 3.58, NTSC 4.43, PAL SDI (SMPTE 259M-C, 270 Mbps), HD-SDI (SMPTE 292M, 1.485 Gbps), 3G-SDI (SMPTE 424M, 2.97 Gbps)
Input level	0.6 Vp-p for component video tri-level sync 0.3 Vp-p for component video bi-level sync
Maximum level.....	5 Vp-p
Input impedance.....	75 ohms

Recording and storage

File system for USB storage.....	FAT32, NTFS, VFAT long file name extensions, EXT2, EXT3, EXT4
File types	H.264 and AAC in an MP4 container, JPEG, JSON, XML
File transfer protocols.....	FTP, SFTP, CIFS
Network file share protocols.....	CIFS/SMB, NFS
Resolution.....	Same as primary streamed resolution: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom
Recording frame rate support	Same as primary streamed frame rate, up to 30 fps for all output rates
Internal storage capacity.....	80 GB (75 GB for recording files) or 400 GB (400 GB for recording files)
External USB ports	1 (front panel), 1 (rear panel), USB 2.0 (Each port is current limited to 1.5 A.)
Background image format.....	PNG

Audio input

Analogue	
Number/signal type	
SMP 351, SMP 351 3G-SDI	2 stereo, balanced or unbalanced, 1 with loop-through
Models with LinkLicense....	Ch. A: 1 stereo, balanced or unbalanced, with loop-through Ch. B: 1 stereo, balanced or unbalanced, or 2 mono, unbalanced
Connectors	(3) 3.5 mm captive screw connectors, 5-pole
Digital	
Number/signal type	3 stereo, digital de-embedded from HDMI 1 loop-through from HDMI 1 stereo, digital de-embedded from SDI (optional)
Connectors	4 female HDMI type A
Impedance.....	>10k ohms unbalanced, >20k ohms balanced
Nominal level.....	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms), adjustable via input gain
Maximum level.....	+18 dBu, (balanced or unbalanced)
CMRR.....	>70 dB @ 20 Hz to 20 kHz
Input gain adjustment.....	-18 dB to +24 dB, 1 dB steps, adjustable per input

Audio system (line input to line output)

Gain.....	-6 dB unbalanced, 0 dB balanced
Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	<0.03%, 20 Hz to 20 kHz at maximum output
S/N.....	>90 dB, at maximum balanced output (unweighted)
Stereo channel separation.....	>90 dB @ 1 kHz
Crosstalk	≤ -103 dB, at 20 Hz to 20 kHz, full loaded
Bass	LinkLicense models only: +12 dB to -24 dB @ 100 Hz
Treble.....	LinkLicense models only: +12 dB to -24 dB @ 8 kHz

Audio processing

Sampling rate.....	16 bit, 48 kHz or 44.1 kHz sampling
Compression	AAC-LC MPEG-4 (ISO/IEC 14496-3:2005)
Bit rate.....	80 kbps to 320 kbps, stereo

Audio output — analog

Number/signal type.....	1 stereo, balanced/unbalanced
Connectors.....	(1) 3.5 mm captive screw connector, 5 pole
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Maximum level (Hi-Z).....	>+18 dBu balanced, +12 dBu unbalanced
Gain error.....	± 0.1 dB channel to channel

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV $\approx$ 2 dBu

Audio output — digital

Number/signal type.....	1 stereo, HDMI (re-embedded local preview) 1 AAC-LC digital audio over Ethernet
Connector.....	1 female HDMI type A 1 female RJ-45

Digital I/O control

Number/signal type.....	4 digital input/output (configurable)
Connector.....	(1) 3.5 mm captive screw connector, 5-pole
Digital inputs	
Input voltage range.....	0 to 24 VDC, clamped at +30 VDC
Input impedance	29k ohms
Programmable pullup	1k ohms to +5 VDC
Upper threshold.....	2.8 VDC
Lower threshold.....	2.0 VDC
Digital outputs.....	250 mA sink from 24 VDC maximum
Pin configurations	1, 2, 3, 4 = digital I/O numbers 1, 2, 3, 4. 5 = Gnd

Communication

USB	
USB configuration ports	1 front panel female mini USB B
Mouse and keyboard port	2 rear panel USB type A
USB standards.....	USB 1.1, USB 2.0, high/full/low speed hosts
Serial control	
Serial control port.....	1 bidirectional RS-232, rear panel 3.5 mm captive screw connector, 3-pole
Host control.....	Host control (Extron SIS), bidirectional
Protocols.....	Data bits: 7 or 8 (default) Stop bits: 1 (default) or 2 Parity: odd, even, or no (default) Flow control: no flow control (default)
Baud rates.....	9600 (default), 19200, 38400, 57600, 115200
Serial control pin configurations	1 = Tx, 2 = Rx, 3 = Gnd

Specification • SMP 351 Series (Continued)

Ethernet control

Ethernet host port	1 female RJ-45
Ethernet data rate.....	10/100/1000Base-T, half/full duplex with autodetect
Maximum Transmission Unit	68 - 1500 MTU, adjustable
Protocols	
Streaming	Pull: RTP/RTCP (RFC 3550), RTSP (RFC 2326), Interleaved RTSP (RTP/RTSP), RTP/RTSP tunneled through HTTP unicast or multicast Push: MPEG2-TS/UDP* (ISO/IEC 13818-1), MPEG2-TS/RTP* (RFC 2250, IPTV-ID-0087, ETSI TS 102 034), Direct RTP (RFC 3984), SAP (RFC2974), SDP (RFC4566), unicast or multicast, RTMP
Transport	TCP, UDP, multicast IGMPv3 (RFC 3376) or unicast
All supported	IGMPv3 (RFC 3376), IP, UDP, SSL, DHCP, HTTP, HTTPS, RTMP, RTP, RTSP, SNMP V2 (RFC 1213), SAP (RFC 2974), SDP (RFC 4566), QoS (RFC 2474), NTPv4 (RFC 4330)

NOTE: *Indicates that portions of the RFC and other standards may apply.

Ethernet default settings	IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = off
Program control	Extron Simple Instruction Set™ (SIS™) Extron DataViewer, Microsoft® Internet Explorer®, Microsoft Edge™, Apple® Safari®, Mozilla® Firefox®, Google® Chrome™ (*Certain browser dependencies may apply.)

General

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption.....	30 watts typical
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Fans, air flow left to right
Thermal dissipation	96 BTU/hr
Mounting	
Rack mount.....	Yes, with pre-installed brackets
Enclosure type	Metal
Enclosure dimensions	1.7" H x 17.5" W x 11.5" D (1U high, full rack wide) (43 mm H x 444 mm W x 292 mm D) (Depth excludes connectors.)
Product weight	6.0 lbs (2.7 kg)
Regulatory compliance.....	CE, C-Tick, c-UL, FCC Class A, ICES, KCC, UL, VCCI

NOTE: CE and FCC testing is conducted with STP (shielded, twisted pair) cable.

Product warranty	3 years parts and labor
Everlast power supply warranty.....	7 years parts and labor

NOTE: All nominal levels are at $\pm 10\%$.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.

4236-D7-032218

Specifications

SMP 352 Series

Input

Number/signal type.....	3 HDMI digital video (HDCP compliant), 1 component video (Y, R-Y, B-Y; interlaced, progressive, HD), or composite video Optional: 1 SDI, HD-SDI, or 3G-SDI digital component video
Connectors	4 female HDMI type A, 3 inputs and 1 loop-through 3 female BNC; component video, composite video Optional: 1 female BNC: 3G-SDI, HD-SDI, SDI
Nominal level.....	1 Vp-p for Y of component video and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.8 Vp-p for 3G-SDI
Minimum/maximum level.....	Analog: 0.0 V to 1.0 Vp-p with no offset
Impedance.....	75 ohms
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency.....	24 Hz to 75 Hz
Resolution range.....	640x480 to 1920x1200 (reduced blanking), 480p, 480i, 576p, 720p, 1080i, 1080p, NTSC, and PAL, sampled pixel for pixel
Return loss (input 3).....	<-30 dB @ 5 MHz (input 3)
Return Loss (input 5, 3G-SDI)	≥15 dB @ 5 MHz to 1.5 GHz ≥10 dB @ >1.5 GHz to 2.97 GHz
DC offset (max. allowable).....	0.5 V
Input cable equalization.....	Automatic for up to -30 dB of cable loss
3G-SDI.....	60 m (200 ft) using Extron RG6 cable 45 m (150 ft) using Extron RG59 cable
HD-SDI.....	120 m (400 ft) using Extron RG6 cable 90 m (300 ft) using Extron RG59 cable
SDI.....	150 m (500 ft) using Extron RG6 cable 120 m (400 ft) using Extron RG59 cable

Video processing

Analog sampling	12 bits per color, 13.5 MHz standard (low resolution video), 165 MHz standard (RGB, YUVp, DVI)
Digital sampling.....	8-, 10-, or 12-bits per channel
Digital processing.....	4:2:2, 8-bits per color
Compression	H.264/AVC (ITU H.264, ISO/IEC 14496-10) 4:2:0, 8-bit color Encoding profiles: High, Main, Baseline; Encoding levels: 4.1, 4.0, 3.2, 3.1, 3.0; configurable GOP
Bit rate.....	200 kbps to 10 Mbps
Bit rate control	Selectable (variable, constrained, or constant)
Latency.....	130 msec* (encode), 600 msec* (encode/decode) *Indicates minimum latency. Encoder, decoder, and network dependencies apply.

Video output

Number/signal type.....	3 H.264/AVC digital video over Ethernet 1 HDMI digital video (HDCP compliant)
Connectors.....	1 female RJ-45 (streaming) 1 female HDMI type A
Scaled resolution	Archive/record: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom Confidence: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom
Frame rate	Up to 30 fps for all output rates
Formats	H.264/AVC (Profile type: High, Main, Baseline. Profile level: 4.1, 4.0, 3.2, 3.1, 3.0)

NOTE: Appropriate HDMI to DVI-D cables or adapters are required for DVI signal output.

Sync

Input type	Tri-level or bi-level component video
Standards	Input: NTSC 3.58, NTSC 4.43, PAL SDI (SMPTE 259M-C, 270 Mbps), HD-SDI (SMPTE 292M, 1.485 Gbps), 3G-SDI (SMPTE 424M, 2.97 Gbps)
Input level	0.6 Vp-p for component video tri-level sync 0.3 Vp-p for component video bi-level sync
Maximum level.....	5 Vp-p
Input impedance.....	75 ohms

Recording and storage

File system for USB storage.....	FAT32, NTFS, VFAT long file name extensions, EXT2, EXT3, EXT4
File types	H.264 and AAC in an MP4 container, JPEG, JSON, XML
File transfer protocols.....	FTP, SFTP, CIFS
Network file share protocols.....	CIFS/SMB, NFS
Resolution.....	Same as primary streamed resolution: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom
Recording frame rate support	Same as primary streamed frame rate, up to 30 fps for all output rates
Internal storage capacity.....	400 GB (400 GB for recording files)
External USB ports	1 (front panel), 1 (rear panel), USB 2.0(Each port current limited to 1.5 A.)
Background image format.....	PNG

Audio input

Analog	
Number/signal type	Ch A: 1 stereo, balanced or unbalanced, with loop-through Ch B: 1 stereo, balanced or unbalanced, or 2 mono, unbalanced
Connectors	(3) 3.5 mm captive screw connectors, 5-pole
Digital	
Number/signal type	3 stereo, digital de-embedded from HDMI 1 loop-through from HDMI 1 stereo, digital de-embedded from SDI (optional)
Connectors	4 female HDMI type A
Impedance.....	>10k ohms unbalanced, >20k ohms balanced
Nominal level.....	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms), adjustable via input gain
Maximum level.....	+18 dBu, (balanced or unbalanced)
CMRR.....	>70 dB @ 20 Hz to 20 kHz
Input gain adjustment.....	-18 dB to +24 dB, 1 dB steps, adjustable per input

Audio system (line input to line output)

Gain.....	-6 dB unbalanced, 0 dB balanced
Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	<0.03%, 20 Hz to 20 kHz at maximum output
S/N.....	>90 dB, at maximum balanced output (unweighted)

Stereo channel separation.....	>90 dB @ 1 kHz
Crosstalk	≤ -103 dB, at 20 Hz to 20 kHz, full loaded
Bass	+12 dB to -24 dB @ 100 Hz
Treble.....	+12 dB to -24 dB @ 8kHz

Audio processing

Sampling rate.....	16 bit, 48 kHz or 44.1 kHz sampling
Compression	AAC-LC MPEG-4 (ISO/IEC 14496-3:2005)
Bit rate.....	80 kbps to 320 kbps, stereo

Audio output — analog

Number/signal type.....	1 stereo, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Maximum level (Hi-Z).....	>+18 dBu balanced, +12 dBu unbalanced
Gain error.....	±0.1 dB channel to channel

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output — digital

Number/signal type.....	1 stereo, HDMI (re-embedded local preview) 1 AAC-LC digital audio over Ethernet
Connector.....	1 female HDMI type A 1 female RJ-45

Digital I/O control

Number/signal type.....	4 digital input/output (configurable)
Connector.....	(1) 3.5 mm captive screw connector, 5-pole
Digital inputs	
Input voltage range.....	0 to 24 VDC, clamped at +30 VDC
Input impedance	29k ohms
Programmable pullup	1k ohms to +5 VDC
Upper threshold.....	2.8 VDC
Lower threshold.....	2.0 VDC
Digital outputs.....	250 mA sink from 24 VDC maximum
Pin configurations	1, 2, 3, 4 = digital I/O numbers 1, 2, 3, 4. 5 = Gnd

Communication

USB

USB configuration ports	1 front panel female mini USB B
Mouse and keyboard port	2 rear panel USB type A
USB standards.....	USB 1.1, USB 2.0, high/full/low speed hosts

Serial control

Serial control port.....	1 bidirectional RS-232, rear panel 3.5 mm captive screw connector, 3-pole
Host control.....	Host control (Extron SIS), bidirectional
Protocols.....	Data bits: 7 or 8 (default) Stop bits: 1 (default) or 2 Parity: odd, even, or no (default) Flow control: no flow control (default)
Baud rates.....	9600 (default), 19200, 38400, 57600, 115200
Serial control pin configurations	1 = Tx, 2 = Rx, 3 = Gnd

Specification • SMP 352 Series (Continued)

Ethernet control

Ethernet host port	1 female RJ-45
Ethernet data rate.....	10/100/1000Base-T, half/full duplex with autodetect
Maximum Transmission Unit	68 - 1500 MTU, adjustable
Protocols	
Streaming	Pull: RTP/RTCP (RFC 3550), RTSP (RFC 2326), Interleaved RTSP (RTP/RTSP), RTP/RTSP tunneled through HTTP unicast or multicast Push: MPEG2-TS/UDP* (ISO/IEC 13818-1), MPEG2-TS/RTP* (RFC 2250, IPTV-ID-0087, ETSI TS 102 034), Direct RTP (RFC 3984), SAP (RFC2974), SDP (RFC4566), unicast or multicast, RTMP
Transport	TCP, UDP, multicast IGMPv3 (RFC 3376) or unicast
All supported	IGMPv3 (RFC 3376), IP, UDP, SSL, DHCP, HTTP, HTTPS, RTMP, RTP, RTSP, SNMP V2 (RFC 1213), SAP (RFC 2974), SDP (RFC 4566), QoS (RFC 2474), NTPv4 (RFC 4330)

NOTE: *Indicates that portions of the RFC and other standards may apply.

Ethernet default settings	IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = off
Program control	Extron Simple Instruction Set™ (SIS™) Extron DataViewer, Microsoft® Internet Explorer®, Microsoft Edge™*, Apple® Safari®, Mozilla® Firefox®, Google® Chrome™ (*Certain browser dependencies may apply.)

General

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption.....	30 watts typical
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Fans, air flow left to right
Thermal dissipation	96 BTU/hr
Mounting	
Rack mount.....	Yes, with pre-installed brackets
Enclosure type	Metal
Enclosure dimensions	1.7" H x 17.5" W x 11.5" D (1U high, full rack wide) (43 mm H x 444 mm W x 292 mm D) (Depth excludes connectors.)
Product weight	6.0 lbs (2.7 kg)
Regulatory compliance.....	CE, C-Tick, c-UL, FCC Class A, ICES, UL, VCCI

NOTE: CE and FCC testing is conducted with STP (shielded, twisted pair) cable.

Product warranty	3 years parts and labor
Everlast power supply warranty.....	7 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.

4237-D2-032218

HP 3PAR StoreServ 7000 Storage

Make storage effortless



Key features and benefits

Grow with freedom in any direction

- One architecture and a single stack for HDDs and SSDs, from midrange to high end
- Meet block, file, and even object storage needs as they arise
- Ease data migration with storage federation software
- Affordable entry pricing and nondisruptive scalability to four nodes³

Get Tier 1 features, resiliency, and data mobility at a midrange price

- Automated disaster recovery (DR) configuration protects your data with one step
- Mixed workload support increases consolidation opportunities
- Persistent technologies deliver high availability and Tier 1 resiliency
- Snapshots for online recovery
- Storage federation for data mobility, including load balancing and painless data migration
- HP 3PAR Data-At-Rest (DAR) Encryption meets security and compliance requirements
- Industry-leading thin technologies cut capacity requirements in half
- Automated sub-volume tiering enhances service levels and reduces costs
- Flexible priority policy to assure service levels

Simple to install, own, and upgrade

- Software suites simplify purchasing and lower costs
- HP SmartStart and HP 3PAR Rapid Provisioning get you up and running in minutes
- Reconfigurable in just seconds without disruption
- Shared management console across all HP 3PAR StoreServ arrays simplifies administration
- Self-diagnostic and “phone home” capabilities automate support
- HP 3PAR Online Import makes upgrading from HP EVA Storage effortless

Bulletproof Tier 1 storage at a midrange price

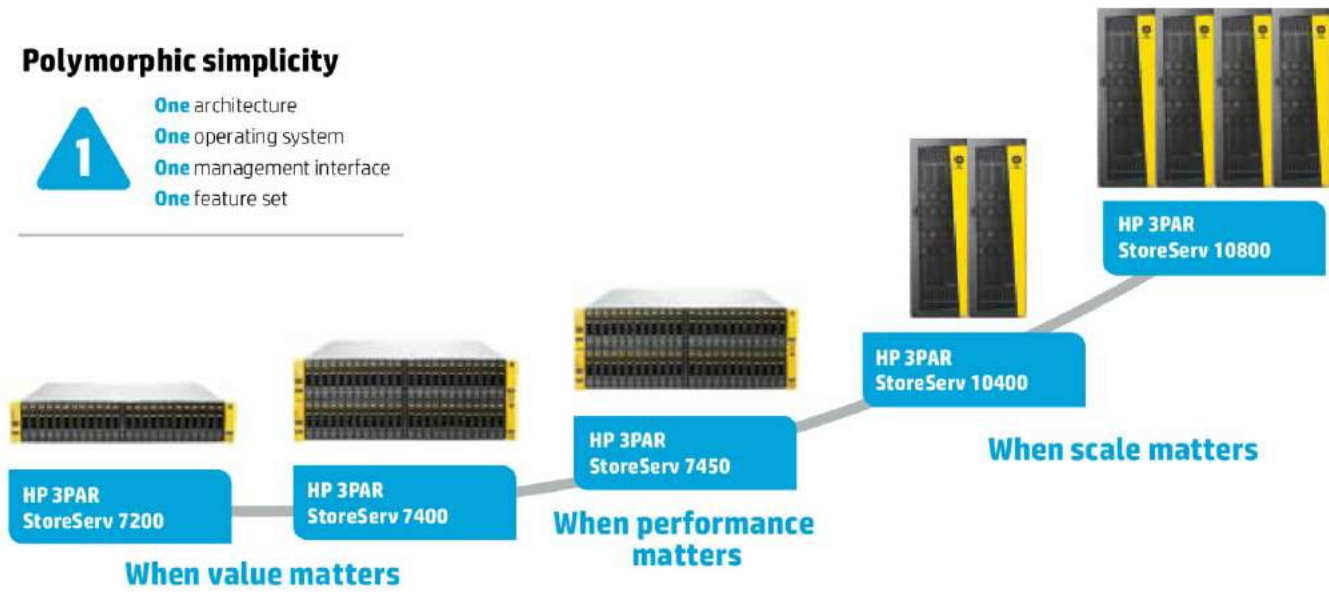
Have budget constraints forced you to settle for midrange storage that compromises performance and scalability? Is managing your storage taking up more and more time while delivering diminishing returns?

The gold standard storage platform for Tier 1 storage has extended its midrange offerings—delivering effortless, efficient, bulletproof, and future-proof storage for the entire midrange. HP 3PAR StoreServ 7000 Storage delivers the same industry-leading architecture chosen by 3 out of 4 of the world’s largest managed service providers (MSPs)¹ with pricing that makes compromises a thing of the past. Store all of your data on a single system that supports advanced features including storage federation and automated tiering, and that enables you to start small and grow without disruption. Make storage effortless.

With models that give you a range of options including the use of solid-state drives (SSDs), HP 3PAR StoreServ 7000 Storage is effortless to install, own, and upgrade. You’ll be up and running in just minutes, meeting mixed workload demands with improved service levels and virtually unlimited scalability options. You’ll spend less time managing your storage and be able to meet new demands with increased responsiveness. You’ll get an architecture that meets your current block and file storage needs with enhanced efficiency using traditional spinning media, SSD-based media, or a combination of both. You’ll get an architecture also designed to meet your object storage needs as they emerge. You’ll rid yourself of tradeoffs that have forced you to sacrifice critical capabilities like performance for scalability or Tier 1 data services. You’ll even be able to double virtual machine (VM) density on your physical servers—guaranteed.²

The HP 3PAR Operating System Suite that comes with HP 3PAR StoreServ 7000 Storage includes everything you need to get started, a true extension of DRAM cache and offering lower latency for read intensive workloads. Optional software suites are also available to offer advanced data optimization, replication, security, reporting, and application integration—making enterprise Tier 1 features available at a price that you can afford. It’s storage that offers the performance and flexibility you need to accelerate new application deployment and support server virtualization, the cloud, new service delivery models, data growth, or whatever else your future may hold—effortlessly.

Figure 1. HP 3PAR StoreServ Storage



Inline zero block deduplication

- Improve performance and extend media endurance by automatically detecting zero-pages inline and updating metadata table without writing to SSDs
- Reduce expensive replication bandwidth by automatically detecting zero pages
- Increase storage efficiency across arrays by automatically detecting zeros with Peer Motion

Ready for whatever your future may hold

The one thing we know about the future is that it's unpredictable. So how do you prepare for data growth and new business initiatives in such an environment? You need storage that gives you the power to master the unpredictable. Storage that is scalable and can grow with you. Storage that's adaptable, so it supports a variety of different applications and workloads without sacrificing performance. Storage that supports data mobility, so the right data is in the right place at the right time, making painful data migrations a thing of the past. And you need it all for a price you can afford.

With rich capabilities at an unbelievably low entry price and nondisruptive scalability to four nodes, HP 3PAR StoreServ 7000 Storage eliminates tradeoffs. You no longer need to choose between affordability and Tier 1 resiliency or flash-optimized performance and Tier 1 data services. That's because HP 3PAR StoreServ 7000 Storage shares the same flash-optimized architecture and software stack with the entire line of HP 3PAR StoreServ arrays, so you'll not only get an industry-leading advanced storage platform, but you'll also be able to meet block and file storage needs today and object storage needs as they arise.

HP 3PAR StoreServ File Services offer a tightly integrated, converged solution that allows you to provision file shares and block volumes from a single user interface via native SMI-S capability on HP 3PAR StoreServ Storage. With this solution, the HP 3PAR StoreServ File Controller leverages HP 3PAR Thin Technologies to autonomically reclaim unused capacity on the array. With combined deduplication and thin provisioning capabilities, HP 3PAR StoreServ Storage provides the most efficient converged file and block solution available.

Mastering the unpredictable also means being able to move data and workloads between arrays without impact to your applications, users, or services. With HP 3PAR StoreServ 7000 Storage, you can simply and nondisruptively shift data between HP 3PAR StoreServ systems of any model without additional management layers or appliances. The underlying storage federation capabilities that make this seamless data movement possible can also help improve availability in clustered VMware environments. And if you are currently an HP EVA Storage customer, this seamless data mobility allows you to effortlessly import your data from your current EVA system onto your new HP 3PAR StoreServ array, providing you with a simple upgrade path.

¹ 451 Research—Market Monitor, 2012.

^{2,7} The above is intended to highlight certain aspects of our Get Virtual Guarantee and does not contain the full terms, conditions, limitations, definitions, and other provisions ("terms") of the Get Virtual Guarantee. The terms shall be contained in a written Get Virtual Guarantee terms and conditions, which shall take precedence over the above. Qualification for the Get Virtual Guarantee is subject to your acceptance of the Get Virtual Guarantee terms and conditions and your compliance with such terms. A copy of the Get Virtual Guarantee terms and conditions will be provided to you by your sales representative.

³ Scalability to four nodes restricted to the HP 3PAR StoreServ 7400.

The gold standard for Tier 1 storage, now for all of the midrange

High availability and uncompromising data protection are must-haves for any enterprise data center—not just those that can afford high-end storage. With HP 3PAR StoreServ 7000 Storage, you can dramatically reduce the cost of remote data replication and DR with highly efficient, multimode replication across all HP 3PAR StoreServ models.

Part of the HP 3PAR 7000 Replication Software Suite, HP 3PAR Remote Copy software allows you to achieve low recovery-time objectives (RTOs) and zero-data-loss recovery-point objectives (RPOs) with complete distance flexibility. And because HP 3PAR Remote Copy configuration is autonomic, you can simply and quickly complete set-up in one step to ensure that your data is protected from the start.

A suite of unique persistent technologies powers HP 3PAR StoreServ 7000 Storage in delivering high availability and Tier 1 resiliency to the midrange. HP 3PAR Persistent Cache preserves service levels so they are not impacted by unplanned component failures—a key requirement for the virtual data center. HP 3PAR Persistent Ports allows nondisruptive upgrades to HP 3PAR StoreServ 7000 Storage systems without relying on multipathing software or failover initiation and now automatically fails over a front-end controller node port that experiences physical connection loss such as a cable or switch failure.

Effortless resilience is delivered by HP 3PAR Peer Persistence software, with VMware vSphere Metro Storage Cluster (vMSC) certification. With Peer Persistence, you'll also be able to federate storage across data centers, regardless of physical boundary constraints. Automated failover and failback between two sites or data centers is transparent to hosts, which keeps your VMware deployments seamlessly running even in the event of a disaster.

A flash-optimized architecture enables optimal performance of flash-based SSDs while block-level storage tiering and mixed workload optimization enable high levels of performance for both spinning and non-spinning media, so you can put more applications on the same storage to lower total infrastructure cost. Unlike traditional arrays that require you to “scale up” to support growth or increase performance, the platform's clustered, Mesh-Active design, with fine-grained virtualization and system-wide striping, delivers capacity and performance that scales even at extremely high capacity utilization levels.

Flash-optimized software innovations like the HP 3PAR Adaptive Read and Write features enable a more granular approach than can be achieved with spinning media by matching host I/O size reads and writes to flash media to avoid unnecessary data reads and writes. This significantly reduces latency and enhances backend performance to meet the requirements of response-time sensitive applications like Oracle Database and Microsoft® Exchange. Reducing unnecessary writes also helps extend the life of flash-based media for better cost-efficiency. Additional innovations to the HP 3PAR StoreServ Storage platform deliver media endurance benefits that enable you to extend the life of your SSDs to get the most out of every dollar and I/O for increased storage return on investment (ROI).

A high-performance architecture also allows you to get more out of your VMware vSphere deployment, where extensive use of virtual memory pages to disk can limit VM consolidation on your physical servers when paired with legacy storage, but not with HP 3PAR StoreServ Storage. In fact, HP stands behind your ability to double VM density on your physical servers when replacing legacy storage with HP 3PAR StoreServ Storage, including the 7000 series models, with the industry's only Get Virtual Guarantee.⁴

In the area of effortless efficiency, unlike bolt-on thin storage on legacy arrays, HP 3PAR StoreServ 7000 Storage features hardware-enabled thin technologies that allow the system to run in a state of consistent high capacity utilization without performance tradeoffs. This allows you to save on the cost of a storage technology refresh and then increase storage ROI by keeping incremental purchases, administration, and operating costs low over time. In fact, the HP Get Thin Guarantee promises new HP 3PAR StoreServ customers at least 50 percent reduction in capacity requirements by replacing legacy storage with HP 3PAR StoreServ—guaranteed.⁵

⁴The above is intended to highlight certain aspects of our Get Virtual Guarantee and does not contain the full terms, conditions, limitations, definitions, and other provisions (“terms”) of the Get Virtual Guarantee. The terms shall be contained in a written Get Virtual Guarantee terms and conditions, which shall take precedence over the above. Qualification for the Get Virtual Guarantee is subject to your acceptance of the Get Virtual Guarantee terms and conditions and your compliance with such terms. A copy of the Get Virtual Guarantee terms and conditions will be provided to you by your sales representative.

⁵The above is intended to highlight certain aspects of our Get Thin Guarantee and does not contain the full terms, conditions, limitations, definitions, and other provisions (“terms”) of the Get Thin Guarantee. The terms shall be contained in a written Get Thin Guarantee terms and conditions, which shall take precedence over the above. Qualification for our Get Thin Guarantee is subject to your acceptance of the Get Thin Guarantee terms and conditions and your satisfaction of those terms.

Currently an HP EVA Storage customer? Upgrading to HP 3PAR StoreServ Storage is effortless!

If you are an existing HP EVA Storage customer looking for a pain-free evolution that takes the best of EVA into the future of storage, then look no further than HP 3PAR StoreServ 7000 Storage. With the new Online Import feature, you can quickly and easily move data from HP EVA to HP 3PAR StoreServ Storage using HP Command View EVA. The upgrade process couldn't be simpler, and HP 3PAR StoreServ Storage is everything you could want in a next generation of EVA—and more.

Policy-driven, autonomic storage tiering technologies also make efficiency effortless by balancing cost and performance to meet service-level requirements for the lowest cost, while increasing business agility and mitigating risk. For example, HP 3PAR Adaptive Optimization software leverages a proven, fine-grained data movement engine and applies it to independent regions within a volume to deliver highly reliable, nondisruptive, autonomic-tiered storage to provide the right quality of service (QoS) to the right data at the right time so you can meet service level targets.

The HP 3PAR StoreServ Data at Rest Encryption solution protects data from both internal and external security breaches. If your application or environment requires protection from unauthorized access of the data on a drive, then you should consider this solution. HP 3PAR StoreServ models are available with self-encrypting drives (SEDs), where data is encrypted as it is written to the drive. You get the peace of mind in knowing that all data contained on these drives is protected against unauthorized access, even if a drive is stolen, fails, or has to be retired. 3PAR StoreServ now offers drives that are FIPS 140-2 validated, which is often a compliance requirement in Health Care, Financial and Public Sector market segments.

Support for multitenant storage is a must-have requirement in modern data centers. But multitenancy can create resource contention. With HP 3PAR Priority Optimization software, you can reduce this contention by limiting maximum performance or setting a minimum goal for IOPs and bandwidth for a specific application, tenant, or workload. It provides high-priority applications with all the resources they need to meet service levels. It enables certainty and predictability for all applications and tenants.

Incredibly simple to install, own, and upgrade

Simplicity saves you money, but it must be there from the start. With HP 3PAR StoreServ 7000 Storage, streamlined software suites make selecting and purchasing enterprise-class features simple and affordable.⁶ In addition, you get:

- **HP 3PAR SmartStart:** New SmartStart installation gets you up and running in six quick and easy steps, while Rapid Provisioning reduces array planning by intelligently and autonomically managing system-wide striping of data across internal resources.
- **HP 3PAR Autonomic Groups:** Autonomic Groups gives you the flexibility to create host, volume, and domain groups to further automate and expedite storage provisioning, both now and in the future. Three clicks and 60 seconds are all you need to fully create and provision multiple volumes to multiple servers. All of these volumes are reconfigurable in just seconds, without disruption and without compromise.
- **HP 3PAR Management Console:** A unified, point-and-click interface that supports all HP 3PAR StoreServ arrays, makes management effortless. Rich instrumentation and robust, customizable reporting capabilities remove the need for add-on software tools as well as diagnosis and troubleshooting that require professional services.
- **Open administration support:** Open administration support is provided via SNMP, Storage Management Initiative Specification (SMI-S), and a recently added Web services application programming interface (API).
- **Secure Services Architecture:** Ongoing support is also effortless with HP 3PAR StoreServ 7000 Storage, which features automated support and is designed to be self-healing. Behind this capability is the HP 3PAR StoreServ technical services enablement platform known as the Secure Services Architecture. This platform creates a dedicated, enhanced-security communication channel between the system and remote support resources. Diagnostic information such as system health statistics, configuration data, performance data, and system events are periodically collected on each HP 3PAR StoreServ array and transferred to HP for remote diagnostic analysis and proactive fault detection.

⁶See page 7 for descriptions of each of these suites.

Storage built for server virtualization

Virtualizing your data center? Then you probably know that server virtualization can stretch traditional storage to the breaking point when it comes to performance, availability, efficiency, and manageability. Addressing these requirements is critical to achieving full business benefit from server virtualization. HP 3PAR StoreServ 7000 Storage is designed from the ground up to help you optimize VM density, reduce storage costs, and simplify management with virtualization software from VMware, Microsoft, and Citrix.

HP 3PAR StoreServ Storage removes storage as a bottleneck from your virtualization deployment by delivering high I/O performance and workload agility—effortlessly. As a result, you can double VM density on your physical servers for greater consolidation and cost savings and lower application deployment costs.⁷

HP 3PAR StoreServ integration with VMware vCenter and Microsoft System Center gives you enhanced visibility into storage resources and precise insight into how VMs are mapped to data stores and system volumes. HP 3PAR Recovery Manager for VMware vCenter provides vSphere administrators with superior granularity and control of array-based snapshots that can be used for rapid online data protection and recovery. Integration with VMware VAAI, vSphere APIs for Storage Awareness (VASA), Microsoft Offload Data Transfer (ODX), and HP 3PAR Thin Provisioning enables HP 3PAR StoreServ Storage to improve virtual infrastructure performance, efficiency, and scalability.

In client virtualization environments, HP 3PAR StoreServ Storage delivers industry-leading performance, high availability, dynamic tiering, and advanced storage virtualization features. This delivers a seamless user experience, enables “bring your own device” (BYOD) and desktop modernization, and drives down IT administration costs. Organizations that have deployed HP 3PAR StoreServ Storage in client virtualization environments consistently cite reduced total cost of ownership (TCO) and increased ROI as two of the key advantages it has delivered.

Storage customized for your applications

Your critical business infrastructure and applications require a single storage infrastructure that can deliver the service levels, application availability, and efficiencies that your business requires. HP 3PAR StoreServ 7000 Storage allows you to consolidate applications onto a single, high-performance system, giving your business the flexibility to meet changing business needs on demand.

In Microsoft SQL Server 2012 and Oracle Database deployments, HP 3PAR StoreServ 7000 Storage meets the performance demands of your databases via mixed workload support and the ability to scale down to smaller system capacities, while HP 3PAR Adaptive Optimization software delivers balanced performance and cost. HP 3PAR Thin Provisioning software and the use of Common Provisioning Groups (CPGs) allow your database deployment to grow over time, simplifying your initial design and sizing. With HP 3PAR Recovery Manager for Microsoft SQL Server and Oracle, you can automatically create and manage hundreds of application-consistent, reservationless, point-in-time (PIT) snapshots of Microsoft SQL Server and Oracle databases for rapid online recovery and near-continuous data protection. Oracle Database 11g with Automatic Storage Management (ASM) and HP 3PAR Thin Provisioning simplify database storage management and enable enhanced resource utilization, resulting in unmatched cost of storage.

With Microsoft Exchange 2010, HP 3PAR StoreServ 7000 support for HP 3PAR Rapid Provisioning simplifies deployment of new Exchange mailboxes by provisioning storage, creating RAID groups, and adjusting logical unit numbers (LUNs) in seconds with no preplanning required. HP 3PAR Thin Technologies remove the need for full provisioning of storage since Exchange database availability groups (DAGs) consume only what they need. Autonomic storage tiering gives you the flexibility to meet a wide variety of Exchange workloads within the same mailbox database while also reducing cost. HP 3PAR Recovery Manager for Microsoft Exchange uses a unique asynchronous periodic mode to deliver a DR solution that provides data integrity and application-consistent snapshots at the remote site.

SAP landscapes feature unique challenges such as exponentially growing SAP database instances, the need to improve storage performance while increasing availability for SAP systems, and the need to keep up with rapid deployment of virtualized SAP systems. HP 3PAR StoreServ 7000 Storage addresses these challenges with capabilities such as industry-leading thin technologies for defining the SAP database size of tomorrow while paying for the hardware requirements of today. HP 3PAR Autonomic Groups and HP 3PAR Virtual Domains simplify SAP database provisioning and organization of storage resources, while system-wide striping meets SAP environment demands for low-latency I/O response times under all conditions.

In Microsoft Windows® Server 2012 environments, built-in, fine-grained virtualization, system-wide striping, and support for multitenancy give you the ability to consolidate mixed workloads onto a single HP 3PAR StoreServ 7000 system. With Windows Server 2012 Offload Data Transfer (ODX) and HP 3PAR StoreServ 7000 Storage, you can migrate large files—such as databases or video assets—up to seven times faster with near-zero network impact due to zero-detection capability built into the HP 3PAR StoreServ ASIC. HP 3PAR Thin Technologies and Windows Server 2012 automatic reclamation of storage automate storage growth and shrinkage, while HP 3PAR Adaptive Optimization software delivers the right QoS to the right data at the right time in Windows Server 2012 environments.

Technical specifications



HP 3PAR StoreServ 7200



HP 3PAR StoreServ 7400

	HP 3PAR StoreServ 7200	HP 3PAR StoreServ 7400
Controller nodes	2	2/4
Max. SFF drives	240 ⁸	240/480
Max. LFF drives	216 ⁹	216/432
Cache	24 GB	32/64 GB
Max. 8 Gb/s FC ports	12 = 4 (built in) + 8 (optional)	24 = 4/8 (built in) + 8/16 (optional)
Max. 10 Gb/s iSCSI/FCoE	4 (optional)	4/8 (optional)
Built-in IP remote copy port (can also use FC ports)	2	2/4
Controller enclosure	2U with 24 SFF drive slots (2x for a 4-node 3PAR StoreServ 7400)	
Drive enclosure (can be mixed behind one controller pair)	SFF drive enclosure: 24 slots in 2U LFF drive enclosure: 24 slots in 4U	

^{8,9} For systems running HP 3PAR OS 3.1.3 or later. For more information on technical specifications, refer to the [QuickSpec](#).

Software suites for HP 3PAR StoreServ Storage

HP 3PAR StoreServ Storage supports the same OS and software offerings as the other members of the HP 3PAR StoreServ family. As with all HP 3PAR StoreServ models, you have the opportunity to purchase software bundled into a series of suites designed to simplify purchasing and save you money. Selected software titles may also be purchased separately, as indicated below.

HP 3PAR Operating System Software Suite	Required for all new HP 3PAR StoreServ systems, this foundational software suite gives you everything you need to get up and running quickly and efficiently. This suite includes the HP 3PAR Operating System, including HP 3PAR Management Console, HP 3PAR Host Explorer, and HP 3PAR SmartStart ¹⁰ —software designed to get you off to a quick start with your new HP 3PAR StoreServ system. It also includes all of the platform's thin software offerings—HP 3PAR Thin Provisioning, HP 3PAR Thin Conversion, and HP 3PAR Thin Persistence. Other highlights of this suite include HP 3PAR Full Copy, autonomic rebalancing capabilities that help you get optimal use out of future capacity expansions, and support for standard multipathing software for high availability in clustered environments. A 180-day license for online import is included to enable migration from HP EVA Storage.
HP 3PAR Replication Software Suite	This optional suite bundles HP 3PAR Virtual Copy with HP 3PAR Remote Copy software, both also sold separately for all HP 3PAR StoreServ models. Included in this bundle is Peer Persistence, which enables peer federation for VMware clusters to improve overall availability. Licensed based on system capacity.
HP 3PAR Data Optimization Software Suite	This optional software bundle combines HP 3PAR Dynamic Optimization, HP 3PAR Adaptive Optimization, HP 3PAR Peer Motion, and HP 3PAR Priority Optimization software so you can move data and workloads between arrays without impacting applications, users, or services. Licensed based on system capacity, the four software titles bundled in this suite are also sold separately for all HP 3PAR StoreServ models. Depending on purchase date, titles included in this suite may vary. Check the HP 3PAR Software QuickSpec for complete details. For the 10000 models only, HP 3PAR Optimization Suite is available and includes Adaptive Optimization and Dynamic Optimization.
HP 3PAR Security Software Suite	This optional suite bundles HP 3PAR Virtual Domains and HP 3PAR Virtual Lock Software, both also sold separately for all HP 3PAR StoreServ models. With this suite, you can segregate access and deliver robust storage services for different applications and user groups with additional security attached to the retention of storage volumes. Licensed based on system capacity.
HP 3PAR Application Software Suite for VMware	Everything you need to make your VMware environment more agile and efficient—including HP 3PAR Recovery Manager for VMware, Host Explorer for VMware, VASA support, and three essential plug-ins: the VMware Site Replication Manager (SRM) Adapter, the HP 3PAR VAAI Plug-in, and the HP 3PAR Management Plug-in for VMware View. This suite is optional and licensed on a per-system basis.
HP 3PAR Application Software Suite for Hyper-V	Protect your Microsoft Hyper-V environment with HP 3PAR Recovery Manager for Microsoft Hyper-V and the HP 3PAR VSS Provider software, included in this optional suite and licensed on a per-system basis.
HP 3PAR Application Software Suite for Exchange	This bundle gives you the essentials for use with Microsoft Exchange, including HP 3PAR Recovery Manager for Exchange and the VSS Provider software. This suite is optional and licensed on a per-system basis.
HP 3PAR Application Software Suite for Oracle	Everything you need for protecting Oracle Databases, including HP 3PAR Recovery Manager for Oracle and Oracle space reclamation capabilities, sold as an optional suite and licensed on a per-system basis.
HP 3PAR Application Software Suite for SQL	Protect Microsoft SQL DB with HP 3PAR Recovery Manager for Microsoft SQL and the HP 3PAR VSS Provider software, bundled with this optional suite and licensed on a per-system basis.
HP 3PAR Reporting Software Suite	Enhance system visibility and reporting capabilities with this optional suite, which includes HP 3PAR System Reporter software and the HP 3PARinfo application, licensed on a per-system basis.

¹⁰ HP 3PAR SmartStart is available for the 7200, 7400, and 7450 models only.

Customize your IT lifecycle management, from acquisition of new IT, management of existing assets, and removal of unneeded equipment.
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HP Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory—helping speed deployment. Visit hp.com/go/factoryexpress.

HP Technology Services

Choose from a rich portfolio of services to make the most of HP Storage, so you can move with confidence to take full advantage of the broadest, most advanced portfolio in the industry.

Discover, plan, and design—services to help you understand your options and build it right from day one:

- HP Backup Recovery Efficiency Analysis
- HP Backup Recovery Impact Analysis
- HP Backup Recovery Modernization
- HP Storage Cloud Design Service

Gain the skills you need with ExpertOne training and certification from HP. With HP Converged Storage training, you will accelerate your technology transition, improve operational performance, and get the best return on your HP investment. Our training is available when and where you need it, through flexible delivery options and a global training capability.

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Take five minutes to calculate the potential three-year cost savings and ROI you can expect by migrating from your current storage to an HP 3PAR StoreServ solution. [Click here](#) to go to the HP Storage Quick ROI Tool.

Deploy and integrate—increase uptime and decrease risk as you free up your resources:

- HP 3PAR StoreServ Storage Installation and Startup Service
- HP 3PAR Software Installation and Startup Service
- HP EVA to HP 3PAR StoreServ Acceleration Service
- HP Data Replication Solution Service
- HP Enhanced Implementation Service for SANs
- HP 3PAR Adaptive Optimization Policy Implementation Service
- HP Storage Virtual Volume Design and Implementation Service
- HP Thin Volume Conversion Service
- HP 3PAR StoreServ Health Check
- HP Performance Analysis Service
- HP 3PAR Rebalance Service
- HP 3PAR Storage Assessment Service
- HP Proactive Select
- HP 3PAR StoreServ Replication Software Suite Installation and Startup Service

Operate and support—meet service level agreements (SLAs) with the right support level. Choose from three levels of operate and support care:

- **Optimized Care**—delivers the highest levels of performance and stability through deployment and proactive management practices:
HP Critical Service
Additional options: 10 HP Proactive Select credits per year, per array
- **Standard Care**—maintains a high level of uptime, along with expert help to cut the cost and complexity of implementation and support:
HP Proactive Care 24x7—plus, 20 credits per year, per array
Additional options: HP Proactive Care Personalized Support (once per each new Proactive Care support environment), HP Personalized Support Additional Day, and an additional 10 HP Proactive Select credits per year, per array
- **Basic Care**—minimum recommended support
Proactive Care 24x7—plus, 10 credits per year, per array
Additional options: HP Proactive Care Personalized Support (once per each new Proactive Care support environment), HP Personalized Support Additional Day, and an additional 10 HP Proactive Select credits per year per array

If none of our support recommendations meets your needs, we can tailor a service solution for your unique support requirements. Only HP brings together deep expertise, proactive and business-critical support, and a strong partner network—plus a full set of infrastructure services designed to power a converged infrastructure.

For more information, visit hp.com/services/storage.

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