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- ORGANISMO NOTIFICATO IN CONFORMITÀ A REGOLAMENTO PRODOTTI DA COSTRUZIONE 305/2011/EU
- ORGANISMO NOTIFICATO IN CONFORMITÀ A DISPOSITIVI DI PROTEZIONE INDIVIDUALE DIR. 89/686/CEE
- ORGANISMO NOTIFICATO DIRETTIVA EQUIPAGGIAMENTI MARITTIMI 2014/90/EU
- MEMBRO EGOLF e UNIFER
- RICONOSCIUTO USCG ADMINISTRATION
- RICONOSCIUTO CERTIFER
- RICONOSCIUTO ITALCERTIFER
- CERTIFICATO REGISTRO AERONAUTICO ENAC CIT 1013/L
- AUTORIZZAZIONE MINISTERO INTERNO D.M. 26/03/85
- ACCREDITATO ACCREDIA N 0086 - EN 17025
- RICONOSCIUTO DIR. 2014/90/EU MARINE EQUIPMENT - BUREAU VERITAS - DNV-GL - LLOYD'S REGISTER
- PROVE SU AUTOVEICOLI AI SENSI DELLA DIRETTIVA 95/28 CE E REG. 118
- AUTORIZZATO BHF CALIFORNIA, CARB CALIFORNIA, CPSC USA
- AUTORIZZATO VKF SVIZZERA E EBA GERMANIA



Spettabile
NetModule AG
Meriedweg 11
3172 Niederwangen (Switzerland)



Prato, 02/05/2017

RICHIEDENTE / SPONSOR

NetModule AG

Meriedweg 11 - 3172 Niederwangen (Switzerland)

DENOMINAZIONE DEL MATERIALE / DENOMINATION OF THE MATERIAL

NetModule Router NB3720

- Compliance document N° 075/VIT/17 - **UNI EN 45545-2 : 2015**
- A documentation annexed:
- N° 1 - Declaration of conformity of the Sponsor.
- N° 2 - NB3720 PCB Material and Conformal Coating.
- N° 3 - Data Connectors.
- N° 4 - Top Level BOM NB3720-L2Wac8EnCl-G
- N° 5 - Photos of the apparatus Router NB3720.

Best regards

LAPI S.p.A.





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Compliance document N° 075/VIT/17



VALUTAZIONE IDONEITÀ TECNICA Evaluation of technical worthiness

RICHIEDENTE / SPONSOR

NetModule AG

Meriedweg 11 - 3172 Niederwangen (Switzerland)

DENOMINAZIONE DEL MATERIALE / DENOMINATION OF THE MATERIAL

NetModule Router NB3720

Norma di riferimento ai sensi della / Reference standard according to

UNI EN 45545-2 : 2015

Metodi di prova come previsti da / Test methods as foreseen by : UNI EN 45545-2: 2015

PREMESSA / INTRODUCTION

Il presente documento riporta l'esito complessivo delle verifiche documentali e sperimentali sui componenti rilevanti contenuti nei materiali di cui sopra. Esso è stato redatto tenendo in considerazione quanto segue:

- la presenza di materiali e prodotti considerabili come "non-listed"
- le regole di grouping per i materiali prescritte da UNI EN 45545-2: 2015 punto 4.3
- le prescrizioni per i NON LISTED PRODUCTS contenute nella stessa norma
- le prescrizioni per i LISTED PRODUCTS ove applicabili

La valutazione è stata effettuata su base documentale a seguito della verifica della presenza dei risultati di prova applicabili e della loro congruenza con la costruzione della apparecchiatura e con le informazioni tecniche fornite dal Richiedente.

Si deve notare che la presente valutazione si riferisce esclusivamente alle caratteristiche di reazione al fuoco di componenti dell'apparato e non prende in alcun modo in considerazione le caratteristiche di funzionalità dell'apparato stesso e/o la conformità a specifiche, norme, Regolamenti, Direttive al di fuori di quanto strettamente previsto dalla UNI EN 45545-2: 2015.

Inoltre, le valutazioni riportate si applicano solo all'apparato in oggetto e non considerano gli eventuali cablaggi verso altre apparecchiature.

This document reports the cumulative outcome of the documental and experimental checks on the relevant components contained in the above materials. It has been issued considering the following:

- the presence of materials and products that can be considered as "non-listed"
- the grouping rules for the materials prescribed by UNI EN 45545-2 : 2015 point 4.3
- the prescriptions for the NON LISTED PRODUCTS contained in the same standard
- the prescriptions for the LISTED PRODUCTS where applicable

The evaluation has been effected on a documental basis after checking the presence of the applicable test results and of their coherence with the construction of the apparatus and with the technical information supplied by the Sponsor.

It has to be noticed that this evaluation refers solely to the characteristics of fire reaction of components extracted from the apparatus and it does not take into consideration the functionality characteristics of the apparatus itself and/or the compliance to specifications, standards, Regulations, Directives which are outside of what is strictly foreseen by UNI EN 45545-2: 2015.

Moreover, the evaluations reported apply only to the apparatus in object and they do not take into account any cabling connection towards other apparatuses.

FUNZIONI E DATI TECNICI DELLE APPARECCHIATURE / FUNCTIONS AND TECHNICAL DATA OF THE APPARATUS

L'oggetto della presente valutazione consiste in un router. L'apparato è contenuto in uno chassis metallico. Le dimensioni nominali di ingombro e i pesi dell'esemplare inviato dal Richiedente (modello NB 3720) per l'esame fisico delle caratteristiche generali sono i seguenti: (190 x 12.5 x 100) mm, peso 1500 g.

Il Richiedente dichiara che l'apparecchiatura in oggetto non svolge alcuna funzione relativamente alla emergenza, alla sicurezza o in relazione alle TSI applicabili o alla running capability (EN 50553) in caso di incendio.

The object of this evaluation consists of a router. The apparatus is contained in a metallic chassis. The nominal hindrance dimensions and the weight of the apparatus sent by the Sponsor (model NB 3720) for the physical examination of the general characteristics are the following ones: (190 x 12.5 x 100) mm, weight 1500 g.

The Sponsor declares that the apparatus in question does not performs any function relative to emergency, safety or in connection with applicable TSI or to the running capability (EN 50553) in case of fire.

Prato, 02/05/2017

Il Responsabile Certificazione
The Certification Manager

Il Direttore del Laboratorio
The Director of the Laboratory

Valid until: 01/05/2020

Dr. Massimo Borsini

Dr. Luca Ermini

Questo documento deve essere letto congiuntamente al Rapporto di Prova, per la descrizione del prodotto e per ogni altra notizia di dettaglio.

Questo documento non costituisce approvazione di tipo né certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor.

This document has to be read in conjunction with the Test Report, for the description of the product and for every other detail. This document does not represent type approval or certification of the product neither declaration of compliance, that is exclusively under the responsibility of the Manufacturer or Sponsor.

SVOLGIMENTO DELLA VALUTAZIONE / TREATMENT OF THE EVALUATION

L'analisi della apparecchiatura è stata sviluppata sulla base della distinta dei componenti presenti in esse ed in base ai loro pesi. I dati necessari ad effettuare tale analisi sono stati forniti dal Richiedente. Sulla base dei pesi dei componenti e ispezionando un esemplare di relativo al modello NB 3720 fornito appositamente dal Richiedente per tale valutazione, si conclude che i componenti da prendere in considerazione in modo da valutare la loro conformità alla EN 45545-2 sono le seguenti PCB:

The analysis of the apparatus has been developed on the base of the list of the components present in them and on the base of their weights. The data needed to effect this analysis have been supplied by the Sponsor. On the base of the weights of the components and inspecting an apparatus relative to model NB 3720 supplied for this scope by the Sponsor, it is concluded that the components to be considered are the following PCB's:

- no. 1000 MC board with conformal coating
- no. 1001 PSE Board 4xRJ45 with conformal coating
- no. 1002 PSE Extension board 4xRJ45, 1 x EXT with conformal coating
- CP module with conformal coating

A questo proposito, Il Richiedente dichiara che tali componenti sono fabbricati identicamente al materiale MC Board V4.2 già sottoposto a prova dal Laboratorio (rif. Laboratorio no. 1687/16, vedi dichiarazione allegata).

I risultati ottenuti dal suddetto materiale sono riportati nella tabella seguente.

Concerning this point, the Sponsor declares that these components are fabricated as the material MC Board V4.2 already tested by this Laboratory (re. Laboratory no. 1687/16, see the declaration annexed).

The results obtained by the above told material are reported in the following table.

Sulla base delle considerazioni di cui sopra, pertanto, sono stati selezionati i componenti riportati nella tabella sottostante, per essere sottoposti alle prove indicate nella stessa tabella.

Therefore, on the base of the above considerations, the components reported in the table below have been selected to be tested according to the tests indicated in the same table.

No.	Re. Lab.	Descrizione / Description	Rapporto di Prova / Test Report
1	894/17	Apparato completo Complete apparatus	///
2	1687/16	MC Board V4.2	no. 1687.11S0050/16 (LAPI S.p.A. - 10/10/2016): CITnlp = 0.22 no. 1687.0CI0030/16 (LAPI S.p.A. - 10/10/2016) Conforme con il requisito per la prova EN 60695-2-11 come richiamata da EN 45545-2 : 2015 <i>Compliant with the requirement for the test EN 60695-2-11 as recalled by EN 45545-2 : 2015</i>

Il Laboratorio, sulla base delle informazioni fornite dal Richiedente ha concluso che l'apparato non contiene altri componenti da esaminare sperimentalmente o documentalmente.

The Laboratory, on the base of the information supplied by the Sponsor has concluded that the apparatus does not contain other components to be examined either experimentally or on the base of the documents.

CONCLUSIONI / CONCLUSIONS

Per quanto sopra considerato, l'apparato **RISULTA ESSERE IDONEO** relativamente ai materiali sopraelencati rispetto ai requisiti di comportamento al fuoco applicabili previsti dalla norma

UNI EN 45545-2: 2015 per i livelli di rischio HL1 - HL2 - HL3

*Therefore, following the above considerations, the appliance **OBTAIN THE WORTHINESS** with respect to the materials listed above to the applicable requirements of fire behaviour prescribed by the standard*
UNI EN 45545-2: 2015 for Hazard Levels HL1 - HL2 - HL3

Nota: questo documento è esclusivamente un parere tecnico di valutazione di ammissibilità e non costituisce in alcun modo approvazione di tipo né tantomeno certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor. Saranno poi gli enti o organismi deputati alla verifica e al controllo a definire la conformità di tale prodotto all'uso finale indicato e previsto.

Note: this document is only a technical assessment of worthiness and it is not to be considered in any way type approval neither product certification nor declaration of conformity which pertains exclusively to the Manufacturer / Sponsor. The Bodies charged of verification and control will define the compliance of this product for the indicated and intended end use.

Prato, 02/05/2017

Il Responsabile Certificazione

The Certification Manager

Dr. Massimo Borsini

Il Direttore del Laboratorio

The Director of the Laboratory

Dr. Luca Ermini

Valid until: 02/05/2020

Questo documento deve essere letto congiuntamente al Rapporto di Prova, per la descrizione del prodotto e per ogni altra notizia di dettaglio.
Questo documento non costituisce approvazione di tipo né certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor.

This document has to be read in conjunction with the Test Report, for the description of the product and for every other detail. This document does not represent type approval or certification of the product neither declaration of compliance, that is exclusively under the responsibility of the Manufacturer or Sponsor.



Annex n° 1

Declaration of conformity of the Sponsor

**EVALUATION OF TECHNICAL WORTHINESS
CONFORMITY DECLARATION**



LA.P.I. S.p.A.

Att. To Dr. Luca Ermini, Certification Manager

The undersigned Dr. Thomas Siegrist in his/her capacity of legal representative of the Company **NetModule AG**, situated in **Niederwangen, Switzerland** with address **Meriedweg 11**

declares that the following elements:

1. Component denominated NB3720 MC Board V4.3
production batch Pro_NB3720-01, dated 13.5.2016
2. Component denominated NB3720 PSE Board 4 xRJ45 V1.3
production batch Pro_NB3720-01, dated 13.5.2016
3. Component denominated NB3720 PSE Extension Board 4 xRJ45, 1xEXT V1.1
production batch Pro_NB3720-01, dated 13.5.2016
4. Component denominated NB3720 PSE Board Adapter Print 7HE V1.0
production batch Pro_NB3720-01, dated 13.5.2016
5. Component denominated NB3720 CP Module V4.3
production batch Pro_NB3720-01, dated 13.5.2016
6. Component denominated NB3720 Adapter Print 7HE V1.0
production batch Pro_NB3720-01, dated 13.5.2016
7. Component denominated NB3720 Power & Data Cable
production batch Pro_NB3720-01, dated 13.5.2016
8. Component denominated NB3720 Antenna Cable
production batch Pro_NB3720-01, dated 13.5.2016

used to manufacture the electric or electronic device denominated **NetModule Router NB3720** and employed on board on trains for **ground-to-vehicle communication, passenger WiFi and further communication applications** verified on the basis of the Evaluation of Technical Worthiness requirements according to the standard/s **EN45545-2:2015 are being sampled** directly by the device or by batches destined to be used in the setting up of the device, and that they are in conformity to the components employed in the conventional production as sent manuals and documentation related to the evaluation activity (experimental and not).

In case of components' changes (raw materials, supplier, dimensions, ...and so on), the undersigned declares to suspend the production and to communicate immediately to LA.P.I. S.p.A. in order to arrange the possible substitutive and integrative checking activities necessary to restore the initial conditions, preceding the Evaluation of Technical Worthiness.

Furthermore, declares that no modifications have been effected or will be, even on the components that have been not considered for testing in force of the derogation possibly applied considering the reference standard.

Therefore, is accepted that not abiding the mentioned conditions imply the invalidation of the verifications' validity carried out without Responsibility of LA.P.I. S.p.A.

March 21, 2017

NetModule AG

Dr. Thomas Siegrist
Technical CEO

**EVALUATION OF TECHNICAL WORTHINESS
CONFORMITY DECLARATION**

The undersigned, as legal representative of NetModule AG, declares that the apparatus is not involved in any activity related to emergency or safety and is not considered part of the running capabilities (EN 50553) of the train in case of fire as prescribed by the TSI (Technical Specification of Interoperability).

March 21, 2017

NetModule AG



Dr. Thomas Siegrist
Technical CEO



Annex n° 2

NB3720 PCB Material and Conformal Coating



Niederwangen, March 21, 2017

NB3720 PCB Material and Conformal Coating

We herewith confirm that the following items of the **Top Level BOM NB3720-L2Wac8EnCI-G**, dated **29.4.2016** contain the same PCB material und the same conformal coating as the MC Board V4.2 tested by LAPI (test report 1687/16):

Item	Description
1000	MC Board with conformal coating
1001	PSE Board 4 xRJ45 with conformal coating
1002	PSE Extension Board 4 xRJ45, 1xEXT with conformal coating
1003	PSE Board Adapter Print 7HE, no conformal coating required
1005	CP Module with conformal coating
1006	Adapter Print 7HE, no conformal coating required

Best regards,

NetModule AG



Dr. Thomas Siegrist
Technical CEO



Annex n° 3

Data Connectors



Data Connectors





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Introduction

Neutrik's continuously growing range of data connectors copes with the increasing and versatile demand of digital connections in the professional audio, broadcast and entertainment industry.

Networking and computerized controls have to be equipped with reliable and rugged interconnection systems, since conventional data connectors can not meet the demanding requirements of live / rental or broadcast applications.

Neutrik early understood this trend and realized a range of ruggedized connection systems based on standard digital interconnection products like fiber optic and network interconnections as well as Digital Interfaces HDMI, USB, D-SUB and Firewire to suit the high demands of professional users in the entertainment industry.

NEUTRIK®, crystalCON®, etherCON®, maxCON®, miniCON®, nanoCON®, neutriCON®, opticalCON®, powerCON®, Profi®, rearTWIST®, silentPLUG®, speakON®, DIWA®, XIRIUM®, are registered trademarks of Neutrik AG.



Fiber Optic

A few years ago, fiber optic cables were used for specific applications only. With the transition to HD-signals and the upcoming 4K / 8K technology the need for fiber optics has increased significantly. Today, fiber optic cables are widely-used for various applications in the fields of professional broadcast, pro audio and touring/rental industries.

- Digital HD video transmissions > 15m (e.g. DVI, HDMI or KVM projection) using fiber optic media converters
- Increased bandwidth, especially for professional broadcast applications
- Efficient handling due to smaller and lighter cables
- Minimized cabling by embedding multiple data signals in single cables
- Future-proof installations designed to eliminate distance limitations, noise and EMI protection on audio or video (LED walls) applications

With the increased use of fiber optics for pro audio and broadcast new connections had to be developed. Conventional data-communication connectors (ST, SC, LC, etc.) are optimized for permanent, one-time connections and cannot cope with the harsh and demanding environment occurring in the entertainment business.

Neutrik solved the various problems associated with mobile fiber optic connectivity by launching the opticalCON series in 2005.

The simple and rugged design of opticalCON provides low fiber maintenance, high mating cycles and easy handling. Well known professional equipment manufacturers as well as key users in the pro broadcast and touring industry trust in the opticalCON system for years. It's Neutrik's goal to turn opticalCON into an industry standard comparable to the widely used etherCON series.

Design Criteria

Neutrik solved the various problems associated with mobile fiber optic connectivity with the launch of the opticalCON DUO fiber optic connection system in 2005.

opticalCON's reliable and simple concept, with ruggedness and low maintenance at its core, has gained wide acceptance in the pro audio and broadcast industries. Well-known professional equipment manufacturers as well as key users in broadcast and rental/ touring trust in opticalCON for years. It is Neutrik goal to turn opticalCON into an industry standard comparable to the widely used etherCON series.

opticalCON DUO is most typically used for equipment connections, including various audio, lighting, and video applications. Typical uses include audio and DMX networks (ring switch), video projection based on fiber optic DVI, HDMI, or KVM signal converters, mobile LED panels, and various broadcast applications.

Following on the success of opticalCON DUO, the newer **opticalCON QUAD** series doubles the fiber count to four per cable and is designed with point-to-point connections in mind. opticalCON QUAD has been successfully deployed in such applications as data routing for big and, especially, OB outdoor broadcast applications.

The **opticalCON MTP®** increases the numbers of fibers in one connector to 12 and is the ideal solution for multi-fiber point-to-point applications as often required for broadcast applications.

Alternatively **SPLIT** cables, assembled with opticalCON DUO or QUAD, support a connector standardization and offers advantages with regard to field assembly and repair costs.

With the brand new **opticalCON LITE**, a cost effective lightweight connector based on LC based ferules. Neutrik offers a high performance fiber connection system for permanent and temporary installations like server rooms, patch fields and indoor cabling.

Fiber optic systems

opticalCON ADVANCED

- MOBILE USE
- RUGGED
- LOW MAINTENANCE
- SIMPLE INTEGRATION

UHD 4K8K

Lockable, O-ring sealed
metal protection cap

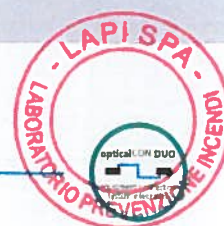
Custom color coding

Protective rubber coating

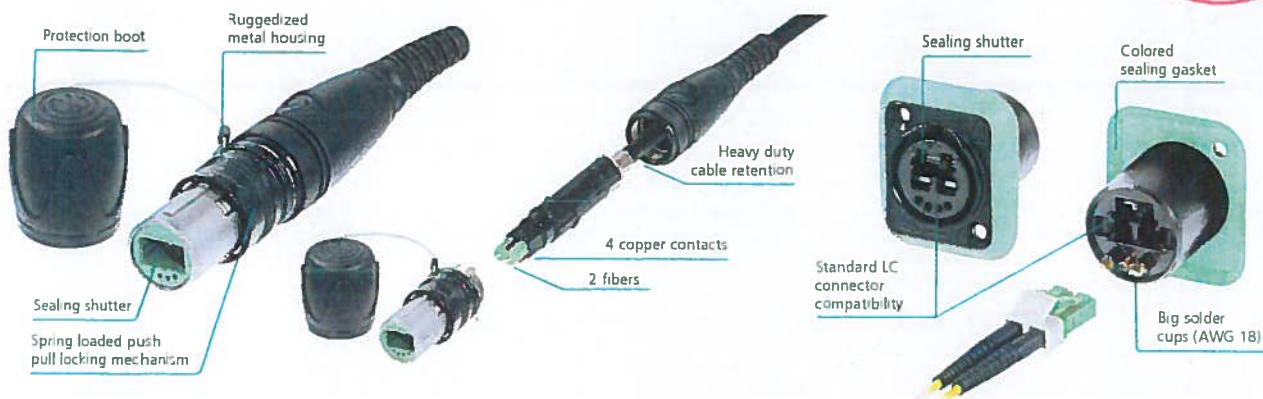
Ratched lock bushing

Ergonomic anti-kink boot
for various cable O.D.s

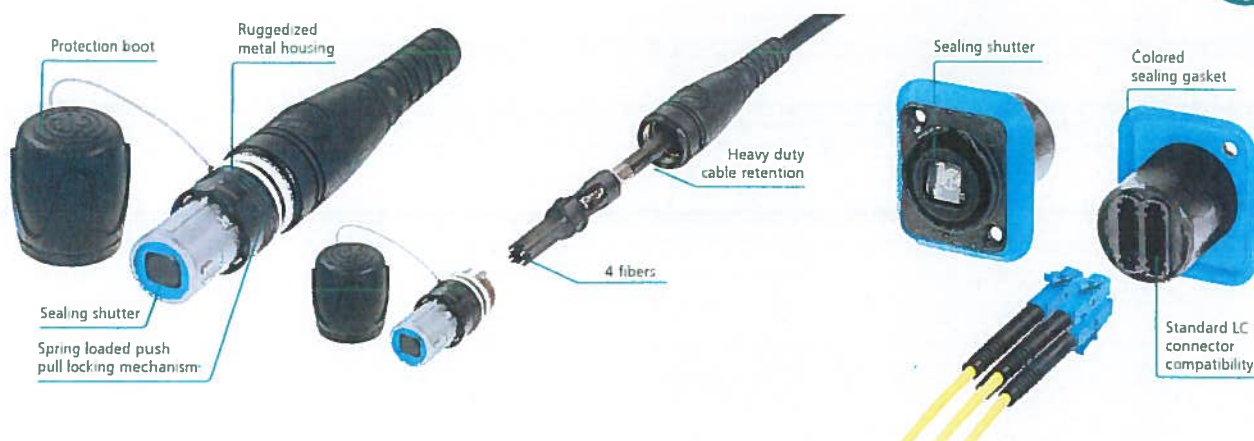




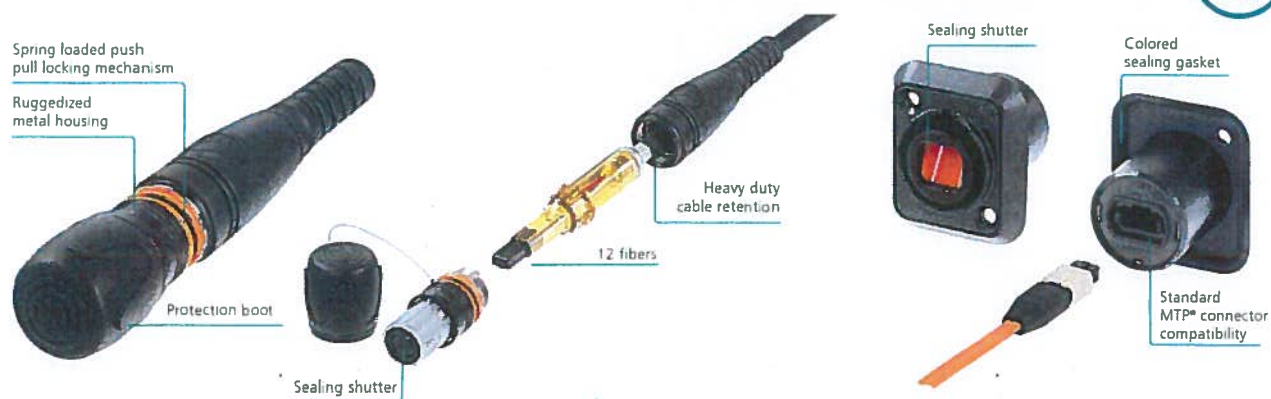
opticalCON DUO



opticalCON QUAD



opticalCON MTP®





Rugged metal housing



Cable drum



Rubber coated protection cover



Rear LC connection



Chassis with transceiver adapter



Sealing shutters



Cable Connector Assembly



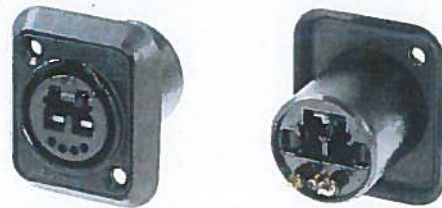
NK02S-A*

- Ruggedized and dirt-protected 2 channel fiber optic connection system
- Waterproof acc. to IP 65 in mated condition
- Color-coded cable connector comes pre-assembled with a choice of mobile field cables
- Accommodates standard optical LC-Duplex connectors
- Dust and dirt protection due to automatic sealing shutter with silicone gasket
- Reliable Push-Pull locking mechanism
- Easy to clean, no tools required
- Field repairable
- Hybrid assembly available

NK02*



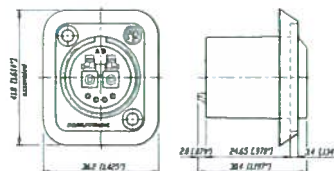
Chassis Connector



NO2-4FDW-A with SCDP-0

- Suggested OEM equipment connectors due to LC front compatibility
- Accommodates standard LC connectors on the rear for simple installation
- Automatic shutter with silicone gasket protects optical connection from dust and dirt
- Waterproof acc. to IP 65 ingress protection in mated condition
- Connection on the front side either with rugged opticalCON or standard LC connector
- Compatible with opticalCON ADVANCED, LITE and standard LC connector

NO2-4FDW-A





Colour Coding



Sealed and rugged housing



Sealing shutter



Sealed housing



Rear LC connection

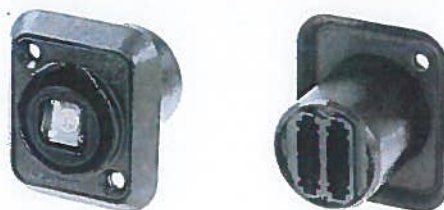
Cable Connector Assembly



NKO4S-A*

- Ruggedized and dirt protected 4 channel fiber optic connection system
- Designed for POINT-TO-POINT multichannel routing
- Innovative shutter guarantees low maintenance
- Dust and water resistant according to IP 65 in mated condition
- Color-coded cable connector comes pre-assembled with a choice of mobile field cables
- Field repairable

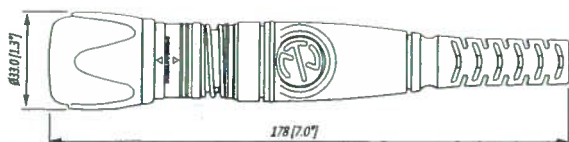
Chassis Connector



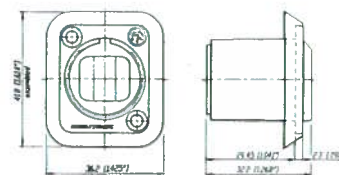
NO4FDW-A with SCDP-0

- Rugged 4 channel POINT-TO-POINT multi-channel routing solution
- Laser protective metal shutter seals dust proof with two-component rubber gasket
- Waterproof acc. IP 65 in mated condition
- Accommodates standard LC connectors on the rear for cost effective and simple installations
- Compatible with opticalCON ADVANCED, and LITE connector

NKO4*



NO4FDW-A



Find more details in the opticalCON Guide and on www.neutrik.com.



Rugged metal housing



Spherical shutter



Rubber sealing gasket



Rear MTP® connection

Cable Connector Assembly



NKO12S*

- Ruggedized and dirt-protected 12 channel fiber optic connection system
- For POINT-TO-POINT multichannel routing based on MTP® technology
- Cable connector features rugged all-metal housing and heavy-duty cable retention
- Innovative shutter guarantees low maintenance
- Dust and water resistant according to IP 65 in mated condition
- Enhanced maintenance
- Reliable Push-Pull locking mechanism

NKO12*



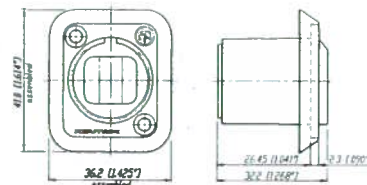
Chassis Connector



NO12FDW-A with SCDP-0

- Ruggedized and dirt-protected 12 channel fiber optic connection system
- For POINT-TO-POINT multichannel routing
- Laser protective metal shutter seals dust-proof with two-component rubber gasket
- Dust and water resistant according to IP 65 in mated condition
- Accommodates standard MTP® connectors on the rear for simple installation
- Rubber sealing gasket (black, blue, green to identify fiber mode)
- Compatible with opticalCON ADVANCED, and LITE connector

NO12FDW-A





Color coding



DUO, QUAD & MTP® Couplers



Frame with opticalCON



Individual frame application

Breakout Boxes & Coupler



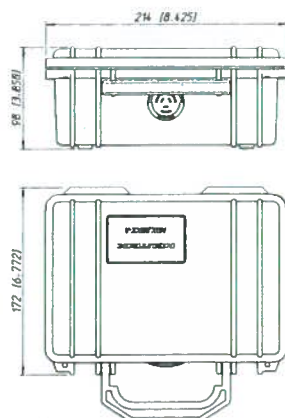
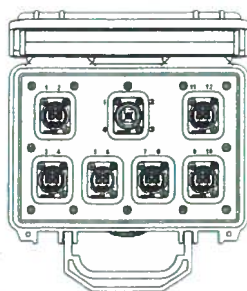
NO12SABB6D-A



NAO2S-H1W-A

- Breakout boxes are used to split multichannel connections like the opticalCON QUAD and MTP® to either dual or single channels
- Dust and waterproof according to IP 65 in mated condition
- Weather proof opticalCON DUO, QUAD and MTP® coupler (adapter) for cable extensions

NO12SABB6D-A



19" Z-Panel & Plates



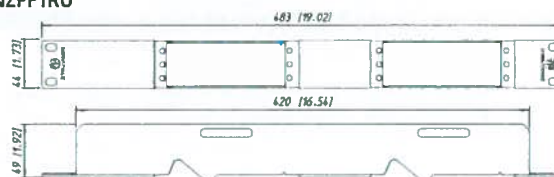
NZPF1RU



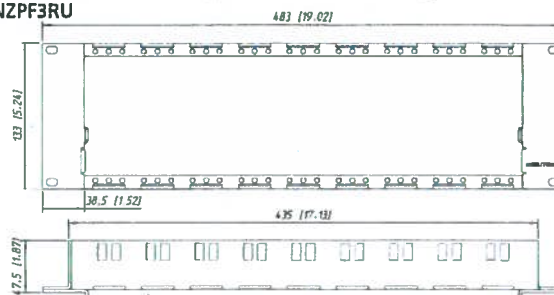
NZPF3RU equipped with frame plates

- Space saving design, ideal for cramped rack applications such as OB truck I/O panels
- Frame plate can be loaded with opticalCON DUO or QUAD and E2000, ST or SC
- Frames can be equipped with frame plates (D-shape) or blind plates
- Best cable bend protection
- 1 RU or 3 RU frame

NZPF1RU



NZPF3RU



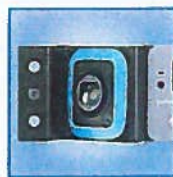
Find more details in the opticalCON Guide and on www.neutrik.com



Breakout Box with powerMONITOR



3RU frame with up to 9 powerMONITORs



1RU rack mount



Robust rear connection

powerMONITOR



NO4S-4F-2R-PM-A

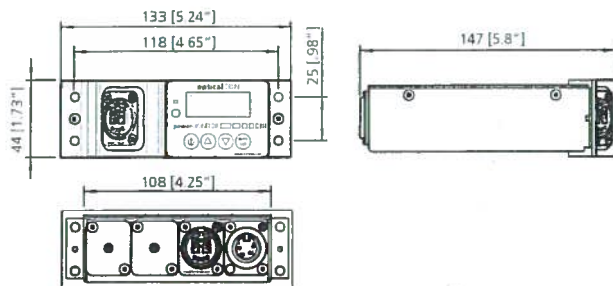


The opticalCON powerMONITOR is a cost-saving, purpose-built measurement (monitoring) device for professional fiber optic broadcast, audio and video applications.

With simultaneous monitoring of attenuation for up to 4 transmission channels, powerMONITOR provides an immediate, "on air" view into fiber optic signal strength. Visual and audible alarms can be set individually for each fiber channel, based on each channel's power budget. powerMONITOR provides clear status information, delivers early warnings for potential problems, and assists with maintenance scheduling.

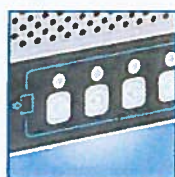
- On-air monitoring of fiber optic transmission quality
- Simultaneous power measurement (+0.0 / -0.1 dB measurement accuracy) of up to 4 channels
- Programmable threshold alarms
- Rack mount and mobile units
- Operates on rechargeable battery power or on mains power with fail-safe battery backup in case of unexpected mains power interruption
- Low loss (0.5 dB maximum split loss)
- Wavelength selectable: multimode 850 nm or 1'300 nm, single mode 1'310 nm, 1'550 nm or WDM (wave division multiplexing)
- External output for alarm signal

NO4S-4F-2R-PM-A





19" x 1 1/2 RU Rack unit



Ergonomic panel



Wieland rear connection



Coupler NAO4MW-A



Breakout Cable



opticalCON Field assembly

Accessories & opticaSWITCH



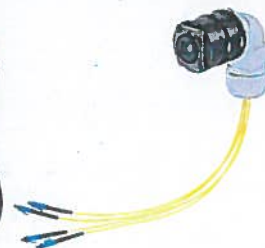
opticaSWITCH



CAS-FOCD-ADV



CAS-FOMD



NAOBO

The opticaSWITCH is the ultimate solution for fiber optic camera routing within broadcast studios. The device allows switching of unlimited camera positions between several studios and control rooms, eliminating the need for high-maintenance, risky matrix patch fields using SMPTE patch cables. The device works on trendsetting, silica-based PLC (planar lightwave circuits) equipped with TO (thermo optic) switches. The innovative design guarantees rugged and safe non-blocking fiber plus camera power switching without any moving parts. The LAN-based remote control software simplifies work, shows switching and camera status, and enables broadcast production automation.

- Thermo Optic PLC Switch
- 8 x 4 Non Blocking Structure
- Intelligent Power Working Circuit
- LAN Remote Control

- Rugged couplers to extend two opticalCONs
- Breakout cables
- NAOBO Kit – for flexible chassis mounting solution
- Assembly Tools:
 - Case for opticalCON field assembly
 - Fiber Optic Cleaning Devices (CAS-FOCD-ADV)
- Transceiver adapter connects opticalCON chassis and multi / singlemode transceivers
- Color coding
- Sealing covers

Find more details in the opticalCON Guide and on www.neutrik.com.

opticalCON LITE

- SMALL FORM FACTOR
- TACTICAL PATCH CABLE
- SAFE CONNECTION
- COST EFFECTIVE

UHD 4K8K

Compatible with
opticalCON DUO chassis

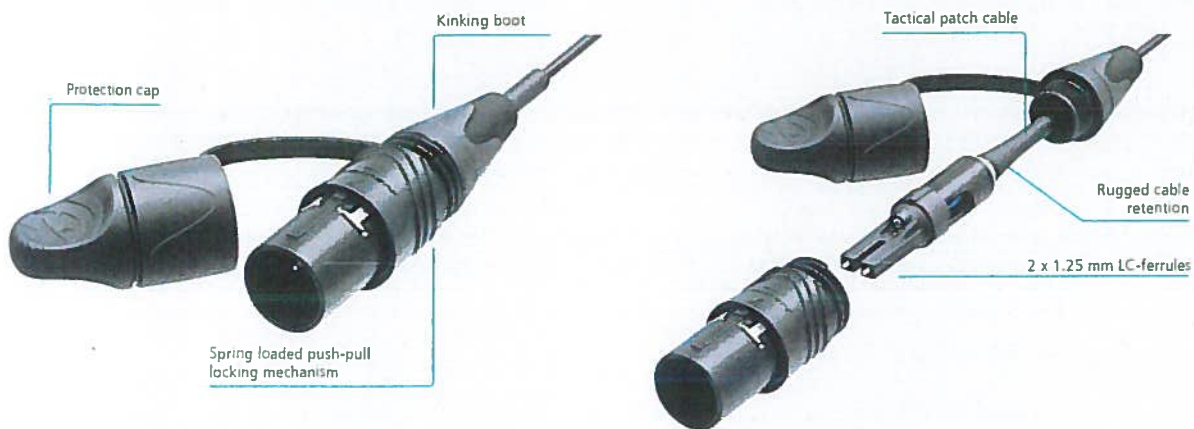
Custom color coding

Rubber protection cap

Cost effective rugged housing

Robust lightweight fiber

opticalCON DUO LITE



opticalCON QUAD LITE



opticalCON MTP® LITE





Push-pull locking



Custom color Coding



Color-coded cable connector



4 channel fiber optic



Color coded cable connector

opticalCON DUO LITE



NKO2M-L-0-*

- 2 channel fiber optic connection system
- Cost optimized fiber connection for semi and permanent installations
- Waterproof acc. to IP65 safety standard in mated condition
- Space saving design
- Push-Pull locking mechanism for save connection
- Easy to clean, no special tools required
- Compatible with standard opticalCON DUO chassis NO2-4FDW-A*

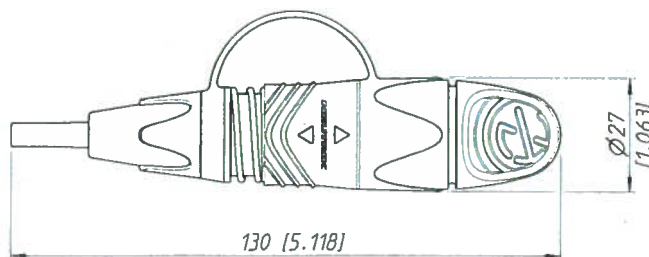
opticalCON QUAD LITE



NKO4M-L-0-*

- 4 channel fiber optic connection system
- Waterproof acc. to IP65 safety standard in mated condition
- Push-pull locking mechanism
- Recommended for POINT-TO-POINT connection
- Easy to clean, no special tools required
- Tactical patch cable
- Compatibel with standard opticalCON QUAD NO4FDW-A chassis

NKO2M-L-0-*





12 channel MTP®


Color coded cable
connector

opticalCON MTP® LITE

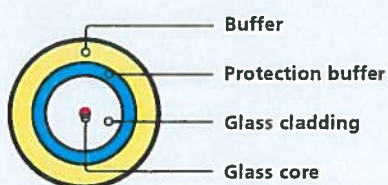


NKO12M-L-0-*

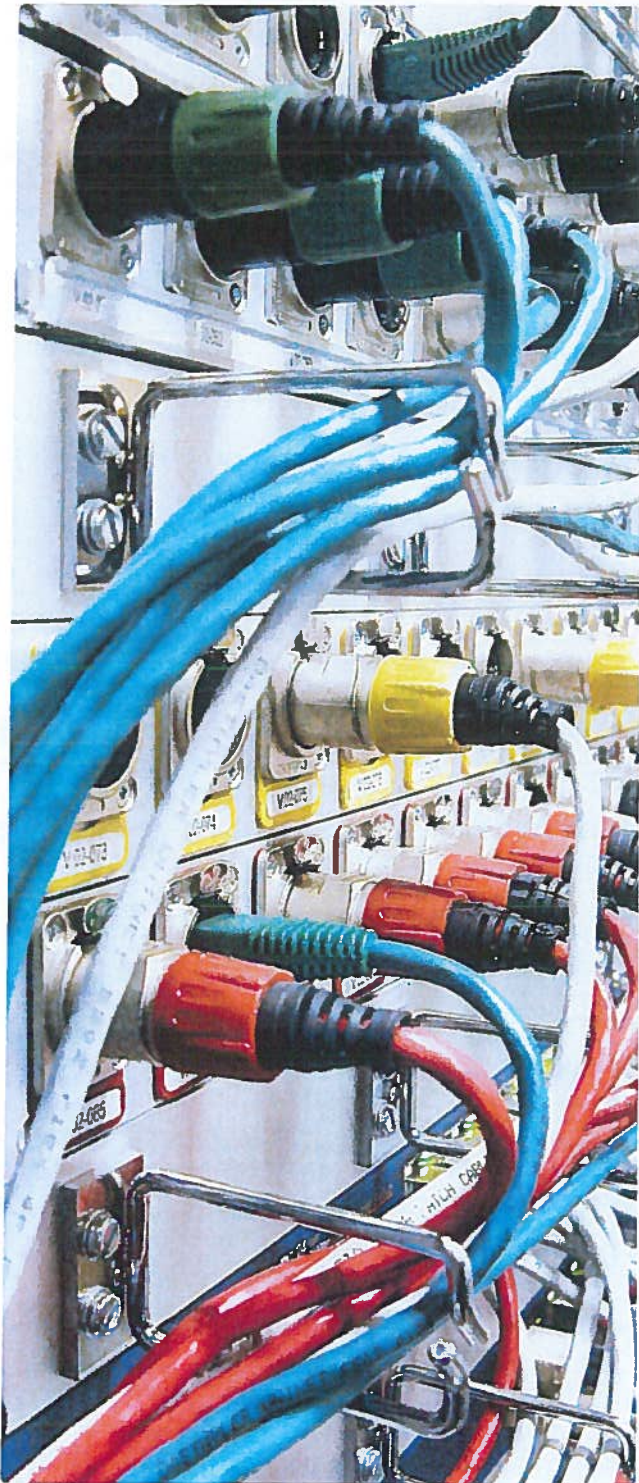
- 12 channel MTP® based fiber optic connection system
- Waterproof acc. to IP65 safety standard in mated condition
- Recommended for multi-signal transmission
- Push-pull locking mechanism
- Custom color coding
- Rugged plastic housing
- Rubber protection cap

Tactical Patch Cable

Conventional patch cables are sensitive in terms of undercutting the minimum bending radius and lateral pressure. Neutrik's tactical patch cables feature unique fiber design including a protection buffer which allows bendings with minimal radius and increased lateral pressure. Therefore the tactical patch cables are the right choice for permanent or semi-permanent applications.



Find more details in the opticalCON Guide and on www.neutrik.com.



etherCON

Ruggedized RJ45 Data Connector

etherCON provides solutions for data transfer in harsh and demanding applications. These connectors are especially applicable for Ethernet networking in audio, commercial, entertainment, live stage production, DMX lighting, industrial and outdoor internet access environments.

The etherCON series offers tailor-made products to suit all state-of-the-art transmission classes like CAT6A, CAT6, CAT5e as well as class D according to TIA / EIA 568C.2 and ISO / EC 11801 respectively EN 50173-1 standard. The broadly based product range includes male cable carriers, assembled female receptacles, feedthrough jacks, cable couplers and shielded versions with or without illumination possibilities by LEDs. For pre-assembled RJ45 cables Neutrik offers a rugged diecast metal shell as a male cable carrier, which does not require the re-termination of the cable assembly.

Female chassis receptacles are based on the well known Neutrik "A & B" series as well the "D" series of XLR receptacles with either secure latching system or push pull locking (CAT6) – features not found on other RJ45 receptacles. Terminations available do include horizontal and vertical PCB mount or IDC. Ingress protection of IP 54 is achieved on the CAT 5 version by assembling the waterproof sealing kit SE8FD while CAT 6 versions are IP 65 rated as standard and at the new CAT6A range it is customers choice to use the IP 65 protected receptacles or the unprotected versions.



Rugged diecast shell



Feedthrough



IDC Version



IP 65 Protected

etherCON CAT6A Series



NE8MX6



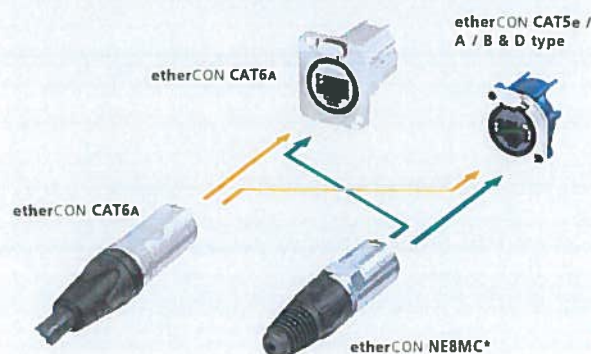
NE8FDX-P6



NE8FDX-Y6-W

- Ruggedized connector range with CAT6A component compliance according to ISO / IEC 11801 respectively EN50173-1 and CAT6A according to TIA / EIA 568-C.2
- D-size chassis connector for IDC self-termination or as feedthrough adapter
- IP 65 protected version available
- PoE+ compliant according to 802.3at Type2
- Downwards compatible with the existing etherCON CAT5 range

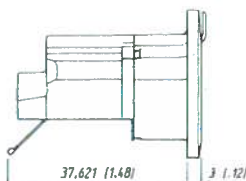
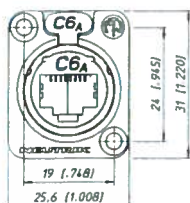
CAT6A / CAT5* compatibility:



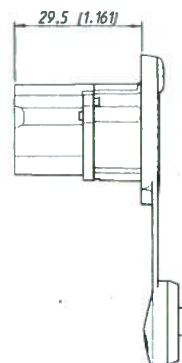
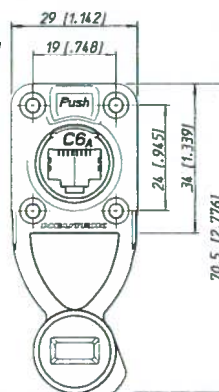
NE8MX6



NE8FDX-Y6



NE8FDX-P6-W





Technical Data

		Receptacle	Cable connector
--	--	------------	-----------------

Electrical

Number of contacts	8	•	•
Rated current per contact	1.5 A	•	•
TIA / EIA rating	CAT6A	•	•
IEC / ISO / EN rating	CAT6A	•	•
Input to output resistance	< 200 mΩ	-	-
Insulation resistance	> 500 MΩ	•	•
Dielectric strength	1 kV dc	•	•
PoE + acc. IEEE 802.3at		•	•

Materials

Housing	Zinc diecast	•	•
Adapter	Polyamide PA 6	-	-
Strain relief clamp	POM	-	•
Contacts	Bronze CuSn	-	-
	Spring steel	•	•
Contact surface	Gold	•	•
Bushing	PU / PA	-	•

Mechanical

Retention method	Latch Lock	•	•
Life time (mating cycles)	> 1'000	•	•
Cable O.D. range	7.0 - 9.5 mm	•	•
Wire size	solid	NE8FDX-Y6(-B)(-W):	AWG 26/1 - 22/1
	stranded wire		NE8MX6(-B):
			AWG 26/7 - 22/7
Insulation diameter			> 0.85 - 1.6 mm
Wire size	solid	-	NE8MX6(-B)-T
	stranded wire	-	AWG 26/1 - 24/1
			AWG 27/7 - 24/7
Insulation diameter		-	> 0.85 - 1.10 mm

Environmental

Operating temperature / Storage temperature	-40 °C to +70 °C	•	•
Flammability	UL94V-0	•	•
Protection class	IP 65 in combination with "-W" receptacle	•	•

Ordering Information

Cable Connector

Receptacle

NE8MX6	CAT6A, nickel plating, ≥ AWG 24	NE8FDX-P6	CAT6A shielded feedthrough, nickel plating
NE8MX6-B	CAT6A, black plating, ≥ AWG 24	NE8FDX-P6-B	CAT6A shielded feedthrough, black plating
NE8MX6-T	CAT6A, nickel plating, ≤ AWG 24	NE8FDX-Y6	CAT6A shielded IDC, nickel plating
NE8MX6-B-T	CAT6A, black plating, ≤ AWG 24	NE8FDX-Y6-B	CAT6A shielded IDC, black plating
		NE8FDX-P6-W	CAT6A shielded feedthrough, with integrated rubber sealing cap, IP 65
		NE8FDX-Y6-W	CAT6A shielded IDC, with integrated rubber sealing cap, IP 65

Accessories and Assembly Tools

HTXX-14	Handtool to tighten the NE8MX6* bushing	XXR*	Colored coding ring (see page 38)
HX-CAT6A	Parallel press tool for etherCON CAT6A Series	XXCR	Translucet coding ring (see page 38)



IDC Terminals



Horizontal PCB



Vertical PCB with lightpipes



D shape metal shell



PCB Version

etherCON CAT5e A/B & D type Receptacle



NE8FAH-C5



NE8FBH-C5-LED



NE8FBV-C5-LED-S



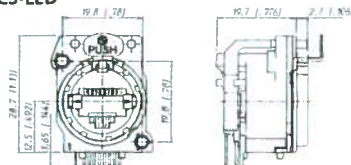
NE8FDV-Y110-B



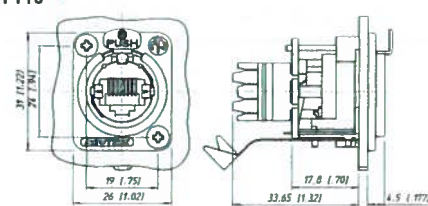
NE8FDH-C5E

- Space saving A or B type receptacles - horizontal or vertical PCB design available
- Vertical PCB design at 24 mm distance to front panel - fits the widely accepted industry standard dimensions for XLRs, 1/4" jacks etc.
- PoE+ compliant according to 802.3at Type2
- CAT5e performance according to ISO/IEC 11801 and TIA/EIA 568-C.2
- Shielded or non-shielded versions available
- Two types of light pipes available to accommodate through hole LEDs or SMD-LEDs
- Accommodates rugged etherCON NE8MC* cable carriers or any standard RJ45 plug
- D type receptacles - horizontal PCB or punch terminal (Krone or 110) design available

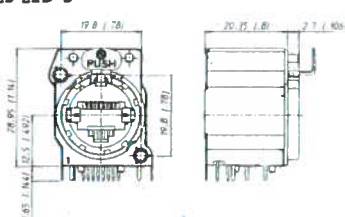
NE8FBH-C5-LED



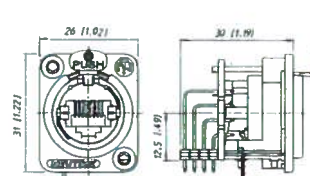
NE8FDV-Y110



NE8FBV-C5-LED-S



NE8FDH-C5E





Horizontal PCB



Vertical PCB



NE8FDV-SE – Vertical PCB receptacle combined with waterproof kit

etherCON – Receptacles



NE8FAV + ACRF-2



NE8FBH



NE8FDV

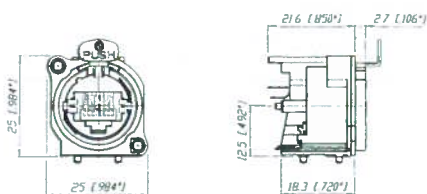


NE8FDV-SE

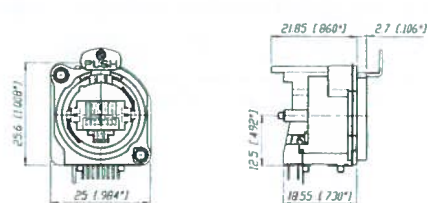
- "A / B" and "D" sized receptacles available in vertical and horizontal PCB or IDC terminations
- Accommodates NE8MC carriers or any standard RJ45 Plug
- D-versions with unified metal flange equal to "D" series- XLR, speakON, powerCON and BNC Bulkhead

- Receptacles comply with Class D (PCB versions) or CAT 5e (IDC versions and NE8FDH-C5E) according to TIA / EIA 568B and ISO / IEC 11801 standard
- Version with screw domes to fix connector onto PCB securely (NE8FAV-SD)

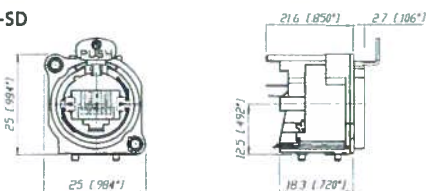
NE8FAV



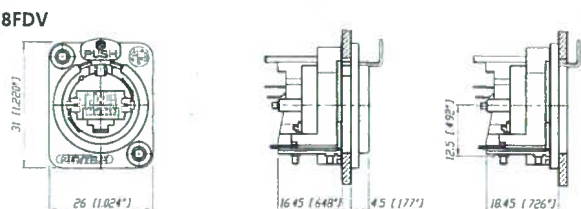
NE8FBH



NE8FAV-SD



NE8FDV





Completely closed housing



Light pipe



NE8FDP-R rear side



Locking latch



Rugged aluminium extrusion housing

Shielded & Lighted



NE8FBH-S



NE8FBH-LED

- Comprehensive shielding granted by completely closed metal housing
- Improves EMC performance of appliance even in unmated condition
- Light pipes illuminated by standard 3 mm LEDs – to be mounted on PCB by customer
- Receptacles comply with class D Link performance.

Feedthrough



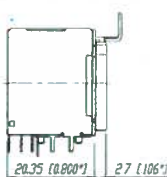
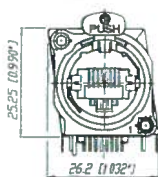
NE8FDP-R



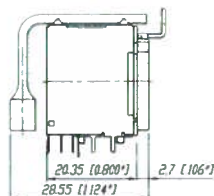
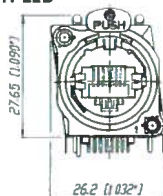
NE8FF

- Feedthrough as panel mount receptacle and as cable coupler
- NE8FDP feedthrough connector in D series housing for use in patchfields – rear side accommodates standard RJ45 plug.
- New: Right angle version available (NE8FDP-R).
- NE8FF coupler (adapter) for cable to cable mating – use with NE8MC carriers or any standard RJ45 plugs

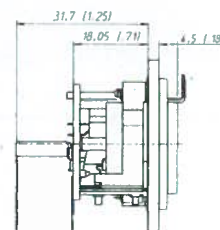
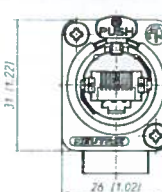
NE8FBH-S



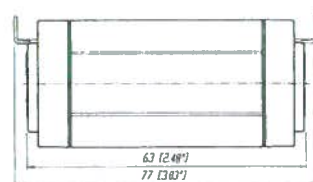
NE8FBH-LED



NE8FDP-R



NE8FF





Rugged diecast shell


Colored coding
Bushing

etherCON – Cable Carriers



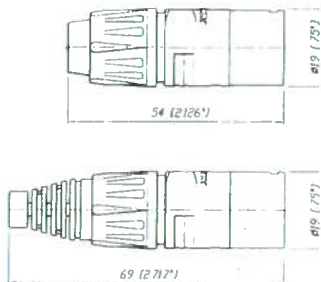
NE8MC-1



NE8MC-B

- The RJ45 system for harsh and demanding environment
- Cable connector carrier accepts the most common RJ45 plugs
- Cable connector carrier has rugged diecast shell and unique chuck type strain relief
- NE8MC-1 version with weatherproof Chromium plating and O-ring gasket
- Protects Ethernet connections in a variety of commercial type applications and is designed to prevent breakage of the fragile components of standard RJ45 connectors
- Cable connector carrier does not include RJ45 plug

NE8MC



NE8MC-1



Technical Data



Specification		NE8MC* Cable Con.	NE8FA/B* (A + B Series)	NE8FD* (Series)
Electrical				
Number of contacts	8	- ¹⁾	•	•
Rated current per contact	< 1.5 A	- ¹⁾	•	•
Rated voltage	< 50 V ac	- ¹⁾	•	•
Contact resistance	< 10 mΩ	- ¹⁾	•	•
Insulation resistance	> 500 MΩ	- ¹⁾	•	•
Dielectric strength	> 1'000 V ac rms	- ¹⁾	•	•
Frequency bandwidth	1 - 100 MHz	- ¹⁾	•	•
Transmission class acc. TIA / EIA 568B or IEC 11801 - CAT 5e		- ¹⁾	NE8*-C5* / NE8FA*-Y*	NE8FD*-C5e / NE8FD*-Y*
	Class D	- ¹⁾	•	•
PoE + acc. IEEE 802.3at		- ¹⁾	•	•
Mechanical				
Retention method	latch lock	•	•	•
Life time (mating cycles)	> 1'000 mating cycles	•	•	•
	> 200 mating cycles	-	-	SE8FD
Insertion / withdrawal force	≤ 20 N	•	•	•
Cable O.D. range	3.5 - 8 mm	•	-	-
Wire size	AWG 26 - 20	- ¹⁾	NE8*-Y*	NE8*-Y*
Panel thickness	max. 3 mm / 0.12"	-	•	4 mm / 0.16"
Material				
Housing	PBT D202G30	-	•	•
	Zinc diecast (ZnAlCu1, gal Ni / bl Cr / Chromium)	•	-	-
B / D-flange	Zinc diecast (ZnAlCu1, gal Ni / bl Cr)	-	•	•
Strain relief clamp	POM	•	-	-
	CuZn35Pb2, Tin plated	-	NE8*-Y*	NE8*-Y*
Contacts	Bronze (CuSn8)	- ¹⁾	•	•
	Spring steel	NE8*C5*	•	•
Contact surface	Au (gal 0.2 μm over Ni plating)	- ¹⁾	•	•
Locking Element	Ck 67 steel, treated	-	•	•
Bushing	Polyamide (PA 6 15% GR)	•	-	-
Boot	Polyamide (PA 6)	•	-	-
Sealing gasket	EPDM	-	-	SE8FD
Environment				
Operating Temperature	-30 °C to +80 °C	•	•	•
	-20 °C to +60 °C	-	-	SE8FD
Protection class	IP 54	-	-	SE8FD
Flammability	UL94V-0	UL94 HB	•	•
Solderability complies with	IEC 68-2-20	-	PCB Version	PCB Version
Mating screw		-	A screw	E screw
Color coding		BSE-* / BSX-*	ACRF-*	DSS-*

¹⁾: Specs depend on type of RJ45 plugs used

Ordering Information



Ordering Information

	Shape				Termination					Remarks
	A	B	D	H	V	IDC	IDC110	LED	S	
CAT 5e Receptacle										
NE8FAH-C5	•			•						
NE8FAV-C5	•				•					
NE8FAV-YK*	•					•				
NE8FAV-Y110*	•						•			
NE8FBH-C5		•		•						
NE8FBH-C5-S		•		•					•	
NE8FBH-C5-LED		•		•				•		through hole LED
NE8FBH-C5-LED1		•		•				•		SMD LED
NE8FBH-C5-LED-S		•		•				•	•	through hole LED
NE8FBH-C5-LED1-S		•		•				•	•	SMD LED
NE8FBV-C5		•			•					
NE8FBV-C5-S		•			•				•	
NE8FBV-C5-LED		•			•			•		through hole LED
NE8FBV-C5-LED1		•			•			•		SMD LED
NE8FBV-C5-LED-S		•			•			•	•	through hole LED
NE8FBV-C5-LED1-S		•			•			•	•	SMD LED
NE8FDH-C5e			•	•						
NE8FDH-C5e-SE			•	•						with sealing kit SE8FD
NE8FDV-YK*			•			•				
NE8FDV-Y110*			•				•			
NE8FDP*; NE8DFP-B			•							feedthrough; black plating
NE8FDP-SE			•							with sealing kit SE8FD
NE8FDP-R*			•							right angle port, feedthrough
NE8FDP-R-B*			•							right angle port, feedt., black plating
NE8FF			•							coupler, black plating

CLASS D Receptacle

NE8FAH	•			•							
NE8FAV	•				•						
NE8FAV-SD*	•				•						Screw dome
NE8FBH		•		•							
NE8FBV		•			•						
NE8FDV			•		•						
NE8FDV-SE			•		•						with sealing kit SE8FD

Cable Carriers

NE8MC	Cable housing with chuck and bushing (two antikink boots, one up to 5 mm and one up to 8 mm cable O.D.) (standard bushing in black, 9 different coding colours on request)		
NE8MC-B	Black chromium housing with chuck and bushing (two antikink boots, one for 5 mm and one for 8 mm cable O.D.) (standard bushing in black, 9 different coding colours on request)		
NE8MC-1	Cable housing with chuck and X-series bushing, Collinox plating and O-ring gasket (perfect for waterproof applications, standard bushing in black, 9 different coding colours on request)		
NE8MC-B-1	Black chromium housing with chuck and X-series bushing (standard bushing in black, 9 different coding colours on request)		
IMPORTANT:	Cable connectors do not include RJ45 plug. RJ45 cable assembly must be provided by end-user!		
INFORMATION:	A	A-shape receptacle (all plastic)	IDC IDC terminals
	B	B-shape receptacle (Nickel ring)	IDC 110 .. IDC 110 punch down terminals
	D	D-shape receptacle	LED Light pipe
	H	Horizontal PCB mount	S shielded metal housing
	V	Vertical PCB mount	* Including 2 mounting screws



Accessories



A screw



E screw



E screw Nickel



ACRF-*



DSS-*



BSE-*



BSX-*



SCDP-*



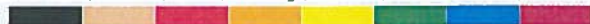
SCDX



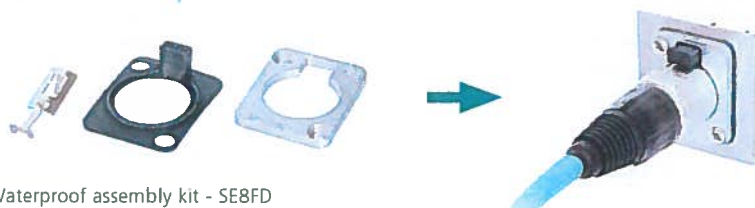
SCCD-W

A-Screw	Mounting screw for A / B -shape (black self-tapping PLASTITE® screw 2.9 x 8, panhead)
E-Screw	Mounting screw for D-shape (black self-tapping PLASTITE® screw 2.9 x 12, countersunk)
E-Screw-Ni	Mounting screw for D-shape (Nickel self-tapping PLASTITE® screw 2.9 x 12, countersunk)
ACRF-*	Colored coding rings for A-shape receptacles (Box of 100 pcs.)
BSE-*	Colored boot for cable connector carrier (Box of 100 pcs.)
BSX-*	Colored bushing for NE8MC-1 and NE8MC-B-1 cable connectors
DSS-*	Lettering plate for D series, colored plastic
NZP1RU	Panel1RU D-shape housing
SCDP-*	D-Size sealing gaskets, color coding (*: 0- black, 2- red, 4- yellow, 5- green, 6- blue, 9- white)
SCDX	Hinged cover seals D-size chassis connectors, IP 42 rated
SCCD-W	Spring-loaded cover to seals for D-size chassis connectors, IP 65 rated

*: 0 - Black, 1 - Brown, 2 - Red, 3 - Orange, 4 - Yellow, 5 - Green, 6 - Blue, 7 - Violet, 8 - Grey, 9 - White



Waterproof kit for etherCON D-Series



Waterproof assembly kit - SE8FD

SE8FD	Waterproof kit, IP 54, consists of push, gasket, frontplate Suitable for all NE8FD*, perfect in combination with NE8MC-1 (with Chromium plating and sealing gasket)
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CAT 6



Push Pull locking



IP65 in mated condition



D-shape metal shell



Closed shielding

CAT6 Patch Cable

CAT6 Receptacles



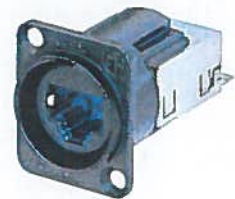
NKE6S-4



NE8MC6-MO



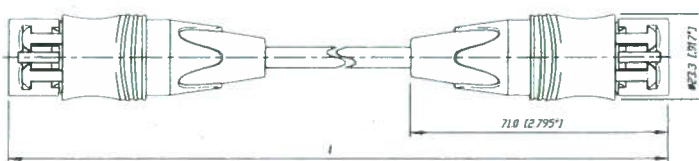
NE8FDY-C6



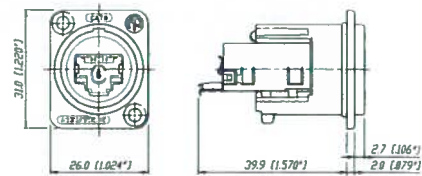
NE8FDY-C6-B

- CAT6 compliant – according to ISO / IEC 11801, TIA / EIA 568C.2, EN50173-1
- Dust and water resistant according IP 65 in mated condition
- Push Pull mating design provides secure locking system
- Shielded system – high noise immunity and EMI protection
- IDC contacts for tool-free assembly offer gas-tight termination
- Ready made patch cables or cable connector for self termination with rugged diecast cable carrier and unique chuck-type strain relief

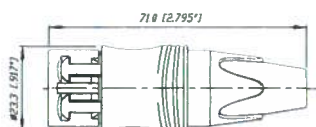
NKE6S-4



NE8FDY-C6



NE8MC6-MO





Technical Data

		Receptacle	Patch Cable
Electrical			
Number of contacts	8	•	•
Rated current per contact	1.5 A	•	•
TIA / EIA rating	CAT6	•	•
IEC / ISO / EN rating	CAT6a	-	-
Input to output resistance	< 200 mΩ	•	•
Insulation resistance	> 500 MΩ	•	•
Dielectric strength	1 kV dc	•	•
PoE + acc. IEEE 802.3at		-	-
Materials			
Housing	Zinc diecast	•	•
Adapter	Polyamide PA 6	•	•
Strain relief clamp	POM	-	•
Contacts	Bronze CuSn	•	•
	Spring steel	-	-
Contact surface	Gold	•	•
Bushing	PU / PA	-	•
Mechanical			
Retention method	Push-Pull	•	-
Life time (mating cycles)	> 1'000	•	•
Cable O.D. range	5.5 - 6.5 mm	•	•
Wire size (solid)	0.205 - 0.324 mm ² (AWG 24 - AWG 22)	•	•
Stranded wire	0.141 - 0.355 mm ² (AWG 26 / 7 - 22 / 7)	•	•
Environmental			
Operating temperature	-10 °C to +60 °C	•	•
Storage temperature	-40 °C to +70 °C	•	•
Flammability	UL94HB	•	•
Protection class	IP 65	•	•
Ordering Information CAT6			
Cable Connector			
NE8MC6-MO	RJ45 cable plug with carrier offering a robust metal shell with Push-Pull locking system		
Patch Cable			
NKE6S-*	Standard lengths: 0.5, 1, 2, 3, 5, 10, 30 m		
NKE6S-*-WOC	Equipped on one side with metal shell, standard lengths: 1, 2, 3, 5, 10, 30 m		
	Custom length in meter steps on request		
Receptacle			
NE8FDY-C6	CAT6 with Nickel D-shell		
NE8FDY-C6-B	CAT6 with Black Chrome D-shell		
Accessories	see page 111 / 116 / 120		

U S B A d a p t e r



Push Pull locking



USB type B



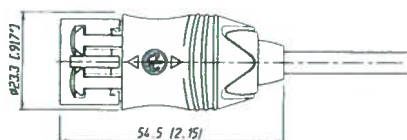
U S B P a t c h C a b l e



NKUSB-*

- USB 2.0 compliant – data rate up to 480 MBit/s
- Dust and water resistant sealing in combination with NAUSB-W*
- Push Pull mating design provides secure locking system if mated with NAUSB-W*
- Shielded connection – high noise immunity and EMI protection
- Ready made patch cables (1 m, 3 m and 5 m) with removable rugged diecast cable carrier
- Mates with conventional USB receptacles if cable carrier is removed

NKUSB



USB Adapter



D-shape metal housing



USB type B

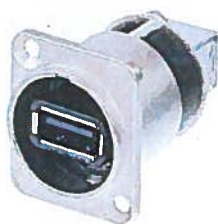


USB 3.0 Type B



Rugged housing

USB 2.0 Receptacle



NAUSB-W



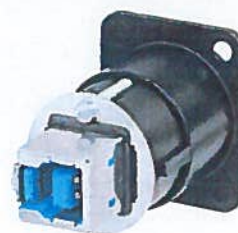
NAUSB-W-B

- USB 2.0 gender changer type A-B (B-A)
- Ideal for audio networking and integration of computerbased equipment into audio systems
- Lockable connection and water protection if mated with Neutrik USB cable NKUSB-*
- Optional screen to chassis grounding
- Reversible insert offering type A or B on front or rear end
- Universally accepted standard D-shape housing

USB 3.0 Receptacle



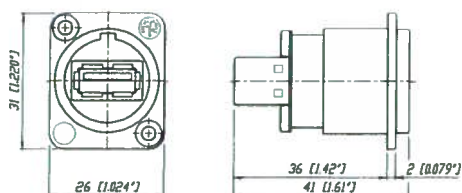
NAUSB3



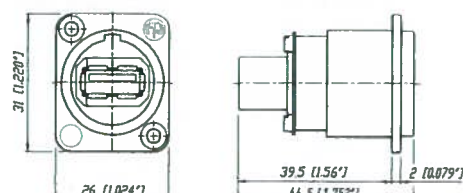
NAUSB3-B

- Rugged USB 3.0 feedthrough adapter
- Standardized D-shape housing
- Reversible insert offering type A or B on front or rear end
- Optional screen to chassis grounding
- Nickel and black chrome plating available

NAUSB-W



NAUSB3



USB Adapter



Technical Data

Mechanical and Electrical

	Receptacle	Patch Cable
Conform with USB 2.0 Standard	•	•

Material

Shell	Zinc diecast (ZnAl4Cu1)	•	•
Shell plating	Nickel or black Chrome	•	Nickel
Insert		PBTP 15% GR	PVC
Contacts	Brass (CuZn39Pb3)	•	•
Contact finish	Gold	•	•

Environmental

Operating temperature	-25 °C to +85 °C	•	•
Flammability	UL94 V-0	•	•
Protection class	IP 65	•	•

Ordering Information

Chassis

NAUSB-W	USB 2.0: USB A – USB B Adapter (reversible), sealing ring, optional grounding, nickel housing
NAUSB-W-B	USB 2.0: USB A – USB B Adapter (reversible), sealing ring, optional grounding, black housing
NAUSB3	USB 3.0: USB A – USB B Adapter (reversible), sealing ring, optional grounding, nickel housing
NAUSB3-B	USB 3.0: USB A – USB B Adapter (reversible), sealing ring, optional grounding, black housing

Patch Cable

NKUSB-*	USB 2.0 cable with overmolded flex relief and metal cable carrier, standard lengths: 1, 3, 5 m
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Accessories



DSS-*



SCM



SCDX



SCCD-W



SCD-W



SCDP-*

DSS-**	Lettering plate for D series, colored plastic
SCM	Plastic sealing cover to protect the Firewire connectors against dust and moisture.
SCDP-*	D-Size sealing gaskets, color coding (*: 0- black, 2- red, 4- yellow, 5- green, 6- blue, 9- white)
SCDX	Hinged cover seals D-size chassis connectors, IP 42 rated
SCCD-W	Spring-loaded cover seals for D-size chassis connectors, IP 65 rated
SCD-W	D-Size sealing cap, IP 65 rated
NZP1RU-8	Panel1RU housing with 8 D-shape cutouts
NZP1RU-12	Panel1RU housing with 12 D-shape cutouts

** : 0 - Black, 1 - Brown, 2 - Red, 3 - Orange, 4 - Yellow, 5 - Green, 6 - Blue, 7 - Violet, 8 - Grey, 9 - White



HDMI Adapter



Push Pull locking



HDMI 1.4



D-shape metal housing



HDMI 1.4 receptacle



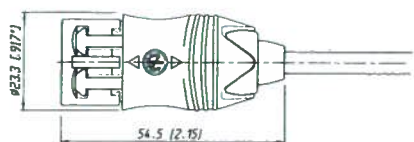
HDMI Patch Cable



NKHDMI-*

- HDMI 1.4 – data rate up to 10.2 GBit/s
- Push Pull mating design provides secure locking system if mated with NAHDMI-W*
- Shielded connection – high noise immunity and EMI protection
- Ready made patch cables (0.6 m, 1 m, 3 m, 5 m and 10 m) with removeable rugged diecast cable carrier
- Mates with conventional HDMI receptacles if cable carrier is removed
- Dust and water resistant sealing in combination with NAHDMI-W*

NKHDMI-*



HDMI Receptacles

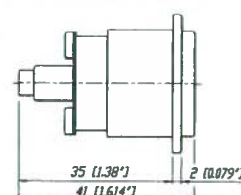
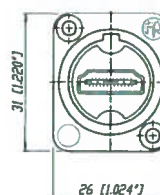


NAHDMI-W



- Audio / Video interface to transmit any digital TV and PC Video format including high-definition video (HDTV).
- HDMI 1.4 feedthrough adapter with 19 pole HDMI receptacle at both ends
- Optional screen to chassis grounding
- Universally accepted standard D-shape housing

NAHDMI-W



Firewire Adapter



D-shape metal housing



IEEE 1394 receptacle



D-SUB data connector



D-shape metal housing



9 pole or 15 pole available

Firewire Receptacle



NA1394-6-W-B



NA1394-6-W

- Ideal for audio networking and integration of digital equipment into audio systems
- Firewire feedthrough adapter with 6 pole IEEE 1394 receptacle at both ends
- Optional screen to chassis grounding
- Universally accepted standard D-shape housing

D-SUB Feedthrough

NEW



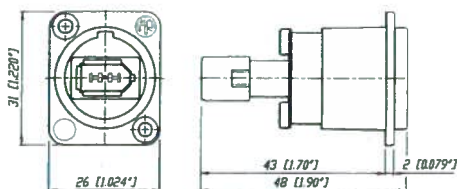
NADB9MF-B



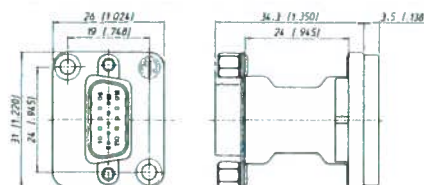
NADB15FF

- D-SUB feedthrough adapter
- Optimized ground connection
- Standardized D-shape housing
- 9 pole and 15 pole versions available
- "Male - Female" and "Female - Female" versions available
- Nickel and black chrome plating available

NA1394-6-W



NADB9MF





Technical Data

Mechanical and Electrical

	HDMI Receptacle	HDMI Patch Cable	Firewire	D-SUB
Conform with Standards	HDMI 1.4	HDMI 1.4	IEEE	-

Material

Shell	Zinc diecast (ZnAl4Cu1)	•	•	•	•
Shellplating	Nickel or black Chrome	•	•	•	•
Insert		ABS	Nickel	PBTP 15% GR	Steel, tin plated
		-	PVC	-	PBT
Contacts	Brass (CuZn39Pb3)	•	•	•	•
Contact finish	Gold	•	•	•	•

Environmental

Operating temperature	-25 °C to +85 °C	•	•	•	•
Flammability	UL94 V-0	•	•	•	•
Protection class	IP 65	•	•	-	-

Ordering Information Firewire

NA1394-6-W	6 pole Firewire Adapter (IEEE 1394), sealing ring, optional grounding, nickel housing
NA1394-6-W-B	6 pole Firewire Adapter (IEEE 1394), sealing ring, optional grounding, black housing

Ordering Information HDMI

Chassis

NAHDMI-W	HDMI – HDMI Adapter, sealing ring, optional grounding, nickel housing
NAHDMI-W-B	HDMI – HDMI Adapter, sealing ring, optional grounding, black housing

Patch Cable

NKHDMI-*	HDMI 1.4 cable with overmolded flex relief and metal cable carrier, standard lengths: 0.6, 1, 3, 5, 10 m
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Ordering Information D-SUB

NADB9MF	9 pole D-SUB feedthrough male-female, D-shape nickel housing
NADB9MF-B	9 pole D-SUB feedthrough male-female, D-shape black chrome housing
NADB9FF	9 pole D-SUB feedthrough female-female, D-shape nickel housing
NADB9FF-B	9 pole D-SUB feedthrough female-female, D-shape black chrome housing
NADB15MF	15 pole D-SUB feedthrough male-female, D-shape nickel housing
NADB15MF-B	15 pole D-SUB feedthrough male-female, D-shape black chrome housing
NADB15FF	15 pole D-SUB feedthrough female-female, D-shape nickel housing
NADB15FF-B	15 pole D-SUB feedthrough female-female, D-shape black chrome housing

Accessories



DSS-*



SCM



SCDX



SCCD-W



SCD-W



SCDP-*

DSS-*

Lettering plate for D series, colored plastic

SCM

Plastic sealing cover to protect the Firewire connectors against dust and moisture.

SCDP-*

D-Size sealing gaskets, color coding

(* 0- black, 2- red, 4- yellow, 5- green, 6- blue, 9- white)

SCDX

Hinged cover seals D-size chassis connectors, IP 42 rated

SCCD-W

Spring-loaded cover seals for D-size chassis connectors, IP 65 rated

SCD-W

D-Size sealing cap, IP 65 rated (not suitable for NADB*)

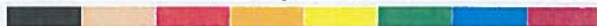
NZP1RU-8

Panel1RU housing with 8 D-shape cutouts

NZP1RU-12

Panel1RU housing with 12 D-shape cutouts

** 0 - Black, 1- Brown, 2 - Red, 3 - Orange, 4 - Yellow, 5 - Green, 6 - Blue, 7 - Violet, 8 - Grey, 9 - White





Annex n° 4

Top Level BOM NB3720-L2Wac8EnCI-G

Top Level BOM NB3720-
L2Wac8EnCI-G

1510g

29/04/2016

#	Description	pcs	Total Weight [g]	Part Weight [g]	Fire Certification	CC	Supplier	Order Number (Part Designation)	(Fire Safety) Datasheet
1000	MC Board with conformal coating	1	104			x	WE	NBHW_08 MC Board V4.3 (14.8.2015), variant '6_Slots(A)'	WE Material Datenblatt TG135.pdf
	- PCB 160 x 98.5 x 1.680mm	1		60	UL94 V0	x	WE	499072 A00	WE Material Datenblatt TG135.pdf
	- PCB Base Material	1				x	Isola	TG135	WE Material Datenblatt TG135.pdf
	- Conformal Coating	1		8		x	HumiSeal Europe	HumiSeal 1873 EPA	1b73 epa german mscs.pdf
1001	PSE Board 4 xRJ45 with conformal coating	1	216			x	WE	NBHW_08 PSE 8xRJ45 V1.3 (25.08.2015), variant 4xRJ45	WE Material Datenblatt TG135.pdf
	- PCB 160 x 98.5 x 1.475mm	1		60	UL94 V0	x	WE	499221 A00	WE Material Datenblatt TG135.pdf
	- PCB Base Material	1				x	Isola	TG135	WE Material Datenblatt TG135.pdf
	- Conformal Coating	1		6		x	HumiSeal Europe	HumiSeal 1873 EPA	1b73 epa german mscs.pdf
	- Glue to attach THT capacitors	1		10		x	Dow Corning	3145 RTV	SDS DC 3145 RTV Seallant.pdf
	- Neutrik connector	4	52	12.9	UL94 V0	x	Neutrik	NE8FBH-S	Neutrik Product Guide Section Data Connectors.pdf
1002	PSE Extension Board 4 xRJ45, 1xEXT with conformal coating	1	124			x	WE	NBHW_08 PSE Extension 8xRJ45 V1.1 (31.03.2015), variant 4xRJ45+1xEXT	WE Material Datenblatt TG135.pdf
	- PCB 160 x 85 x 1.490mm	1		60	UL94 V0	x	WE	499222 A00	WE Material Datenblatt TG135.pdf
	- PCB Base Material	1				x	Isola	TG135	WE Material Datenblatt TG135.pdf
	- Conformal Coating	1		6		x	HumiSeal Europe	HumiSeal 1873 EPA	1b73 epa german mscs.pdf
	- Neutrik connector	5	65	12.9	UL94 V0	x	Neutrik	NE8FBH-S	Neutrik Product Guide Section Data Connectors.pdf
1003	PSE Board Adapter Print 7HE, no conformal coating required	1	3			x	WE	PSE Board(8x Neutrik RJ45 front)_Adapter 7HE, V1.0 (27.08.2014), variant Standard	WE Material Datenblatt TG135.pdf
	- PCB 20.3 x 27 x 1.470mm	1		3	UL94 V0	x	WE	499223 A00	WE Material Datenblatt TG135.pdf
	- PCB Base Material	1				x	Isola	TG135	WE Material Datenblatt TG135.pdf
1004	Light pipes for Ethernet LEDs	8			UL94 V0	x	Bivar	PLP1-100-F	PLP1-XXX-F.pdf
1005	CP Module with conformal coating	1	26			x	WE	CP-Module V4.3, variant NBHW_08 (7.7.2014)	WE Material Datenblatt TG135.pdf
	- PCB 80 x 67.6 x 1.000mm	1		17	UL94 V0	x	WE	499042 A00	WE Material Datenblatt TG135.pdf
	- PCB Base Material	1				x	Isola	TG135	WE Material Datenblatt TG135.pdf
	- Conformal Coating	1		3		x	HumiSeal Europe	HumiSeal 1873 EPA	1b73 epa german mscs.pdf
1006	Adapter Print 7HE, no conformal coating required	1	3			x	WE	PCle Adapter 7HE V1.0 (27.08.2014)	WE Material Datenblatt TG135.pdf
	- PCB 34.5 x 27 x 1.470mm	1		3	UL94 V0	x	WE	499224 A00	WE Material Datenblatt TG135.pdf
	- PCB Base Material	1				x	Isola	TG135	WE Material Datenblatt TG135.pdf
1007	Current NetModule Router Software	1				x	NetModule	NBSW 3.8.2 x (fbd)	
1008	WWAN module (UMTS or LTE)	1	10			x	Huawei	Huawei ME909	
1009	WWAN module	2	6			x	Complex	Complex WL600VX	
1010	CAN/RS-485 Module	1	2			x	NetModule	mini PCle CAN/RS-485 Module Rev. 1.1 (29.8.2014)	
1011	IBIS/RS-232 Module	1	4			x	NetModule	mini PCle IBIS/RS-232 Module Rev. 1.0 (11.1.2014)	
1012	Module Heat Sink: Aluminium Block	2				x	NetModule Asia	Full size module heat sink	
1014	Module Heat Sink: Heat Pad 1	2	19	9.4	UL94 V0	x	DETAkTA	Wärmeleitpad DETAKTHERM SB-V0-3, 35x50x2.5mm	Detakta Wärmeleitfolien und Wärmeleitpads.pdf
1013	Module Heat Sink: Heat Pad 2	2	0.2	0.1	UL94 V0	x	DETAkTA	48 Teile kiss-cut aus Matte 305x305mm	Detakta Wärmeleitfolien und Wärmeleitpads.pdf
1015	M2.5 screw, spacing bolt, nut to fix CP Module	2					Sibalco*	Wärmeleitpad DETAKTHERM 14-SBC-3, 30x40x0.5mm	
								70 Teile kiss-cut aus Matte 305x305mm	
								1x Pan head screw FN405 M2.5x4	
								1x Spacing bolt Distriex 2550M-06 (Sibalco)	
								1x Washer FN503 M2.5	
								1x Nut M2.5x2.0	
1016	M2.5 screw, spacing bolt, nut and 1 washers as base to fix module and heat sink	12					NetModule	1x Spacing bolt M2.5x3.5	
								1x Washer FN503 M2.5	
								1x Nut M2.5x2.0	
1017	M2.5 screw to fix module and heat sink	4					Hasler*	P2 oval head screw BN14068 M2.5x8	
1018	M2.5 screw to fix module	6					NetModule	1x Pan head screw FN405 M2.5x4	
1019	Washer	0					Sibalco*	DIST2550M-01	
1020	Case top	1					NetModule	KO HL 18 - 100 ME	
1021	Case bottom	1					Distrelec*	KO LL 2 - 100 ME	
							Astral*		
1022	Front panel	1					GravoPrintec*	NB3720 Front Panel	
							Algra*		
1023	Rear panel	1					GravoPrintec*	NB3720 Rear Panel	
							Algra*		
1024	Screw M3, length 10mm, Torx TX, INOX A2	8					SFS*	M3x10, BN3803 (INOX A2)	
1025	Sheet metal screw 2.9 x 9.5mm, Torx TX, INOX A2	17					SFS*	2.9x9.5, BN15856 (INOX A2)	
1026	Spacer M3 33.9mm	7					NetModule	SPACER BOLT 33.9MM	
1027	Nut M3	4						Nut M3	
1028	Screw M3 DIN965 length 10mm	4						crosshead screw FN405 M3x6	
1029	Washer M3	4						washer M3 BN126 (diam. 6mm)	
1030	Antenna connector with cable 340mm U.F.L./QMA4 (incl. lock washer, nut)	7	46	6.5		x	IMS	K-2861-05, Art.-Nr. 1074468	K-2861-XX C PDF





1031	Antenna cable 100mm U FL/F - U FL/F	1	3	UL94 V0	x	IMS	PK-11573 Hirose U FL-2LP-066N1-A-100 M5x8, BN10649, INOX A2	Hirose U FL-series.pdf
1032	Linsenschraube ecosyn®-fix mit Innensechseckrund M5x8, INOX A2	0				Hasler*		
1033	Hexagon nut with flange, M5, INOX A2	0				Hasler*	Nut M5 with flange, BN14476 (INOX A2)	
1034	O-Ring NBR 70 5.0x2.0	0				Maagtechnic*	O-Ring NBR 70 5.0x2.0 (Nr. 10011757)	
1035	Power connector, 4-pole, M12 A-codec, with wires, coated by heat shrink tube (see below)	1	17	UL94 V0	x	Phoenix Contact	1523450 (SACC-E-MS-4CON-M16/0.5 SCO)	Power connector
1036	Dual-Choke, coated by heat shrink tube (see below)	1	8	UL94 V0	x	Farnell*	Schaffner RN114-2/02 (Farnell 1191481)	RN series.pdf
1037	Bracket for dual-choke	1				Gary, Solothurn	NB3700-Ferrit-Hallebügel	
1038	Contact case 2x1P	1				Molex	Mini-Fit Jr 5557-02R / 3901-2020	
1039	Crimp contact female	2				Molex	Mini-Fit crimp contact female 5556-T2L / 3900-0047	
1040	Heat shrink tube	1	-	UL 224	x	Raytronics	VERSAFIT-3/32-O-R (approx. 8cm per device)	VERSAFIT en.pdf
1041	Hybrid screening braid	1	-		x	Distrelec*	PMA F-HY 20 (approx. 4cm per device)	
1042	Heat shrink tube	1	-	UL 224	x	Raytronics	VERSAFIT-1-0 (approx. 2.5cm per device)	VERSAFIT en.pdf
1043	Heat shrink tube	1	-	UL 224	x	Raytronics	VERSAFIT-1-1/4 (approx. 4.5cm per device)	VERSAFIT en.pdf
1044	Cable tie	1	-		x	Thomas&Betts	TY100-18-39-100	
1045	DVO connector, M12, 8-pole, with wires, coated with heat shrink tube (see below)	1	19	UL94 V0	x	Phoenix Contact	1523476 (SACC-E-FS-8CON-M16/0.5 SCO)	DIO connector
1046	Contact case 1x8P	1				Molex	Micro-Fit 1x8 / 43645-0800	
1047	Crimp contact female	8				Molex	Micro-Fit crimp contact female / 43030-0007	
1048	Heat shrink tube	1	-	UL 224	x	Raytronics	VERSAFIT-1/4 (approx. 15cm per device)	VERSAFIT en.pdf
1049	M16 nut	2				Lumberg*	Lumberg Automation RSKFM 16	
1050	CAN cable, coated by heat shrink tube (see below)	1	-		x		NB3720 CAN Cable v1.1 (04.03.2015)	CAN cable
1051	Heat shrink tube	1	-		x	Raytronics	VERSAFIT-1/4 (approx. 20cm)	VERSAFIT en.pdf
1052	IBIS Connector incl. cable, coated by heat shrink tube (see below)	1	~20		x		NB3720 IBIS Cable v1.1 (11.09.2015)	IBIS cable
1053	Screw M3, length 10mm, Torx TX, INOX A2	4				SFS*	M3x10, BN3803 (INOX A2)	
1054	Nut M3	4				SFS*	1x Nut M3, 0.6d	
1055	Aluminium cover plate 77.4 x 14mm incl. 2 M2.5x4mm Torx screws	1				GravoPrintac*		
1056	M12 cap	1	1		x	Binder*	Binder Schutzkappe (Compona 187 450-D)	binder 187450-0.pdf
1057	Hexagon screw M6x20, INOX A2	1				Hasler*	M6x20, BN622	
1058	Hexagon nut M6, INOX A2	1				Hasler*	M6 BN628 (INOX A2)	
1059	Washer M6, INOX A2	2				Hasler*	M6, BN670 (INOX A2)	
1060	Federring M6, INOX A2	1				Hasler*	M6, BN672 (INOX A2)	
1061	Kontaktscheibe mit Schneidzähnen M6 (INOX A4, A2 auch genügend)	1				ettlinger.de*	M6 (ettlinger.de, part-no. 03.20.069)	
1062	Label with serial number on all 3 PCBs	3	-		x	BRADY	B-496 JTHTCLT-02-496-5	B-496.pdf
1063	Type label on device and on packaging, 76x51mm	2	-		x	Orima AG	76x51mm, PVC, Tamper Evident 03-503, silver, destroyable	
1064	Label with order number on device and on packaging, 25,4x10mm	2			n/a	NetModule		
1065	Quick Start Guide, format A6	1			n/a	Optimo*	GSN NetModule Router	
1066	Packaging	1			n/a	Equisa AG	230 x 150 x 155mm (Bezeichnung: 680081, Angebot 160205)	
1067	Test protocol	1			n/a	Verpackungen*		

* means less than 2g

CC Compostible components



Annex n° 5

Photos of the apparatus Router NB3720



Foto 1: apparato completo Routers NB3720
Photo 1: Routers NB3720 complete apparatus



Foto 2: etichetta sotto l'apparato
Photo 2: label under the apparatus

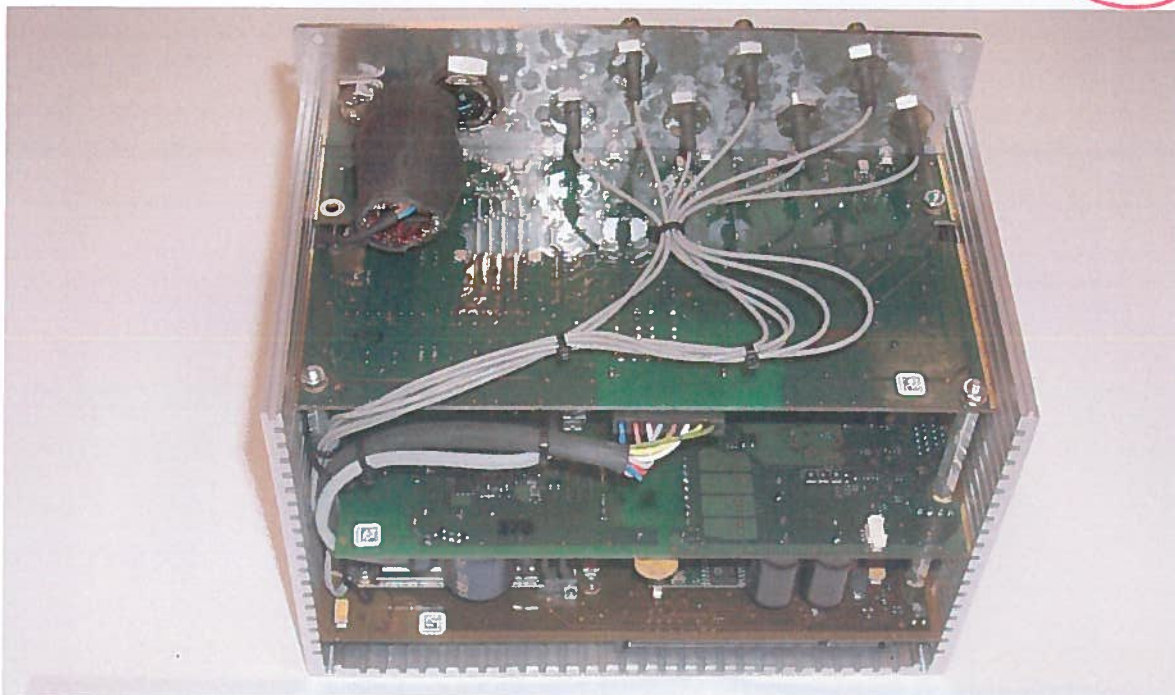


Foto 3: apparato completo Router NB3720 (interno)
Photo 3: Router NB3720 complete apparatus (inside)

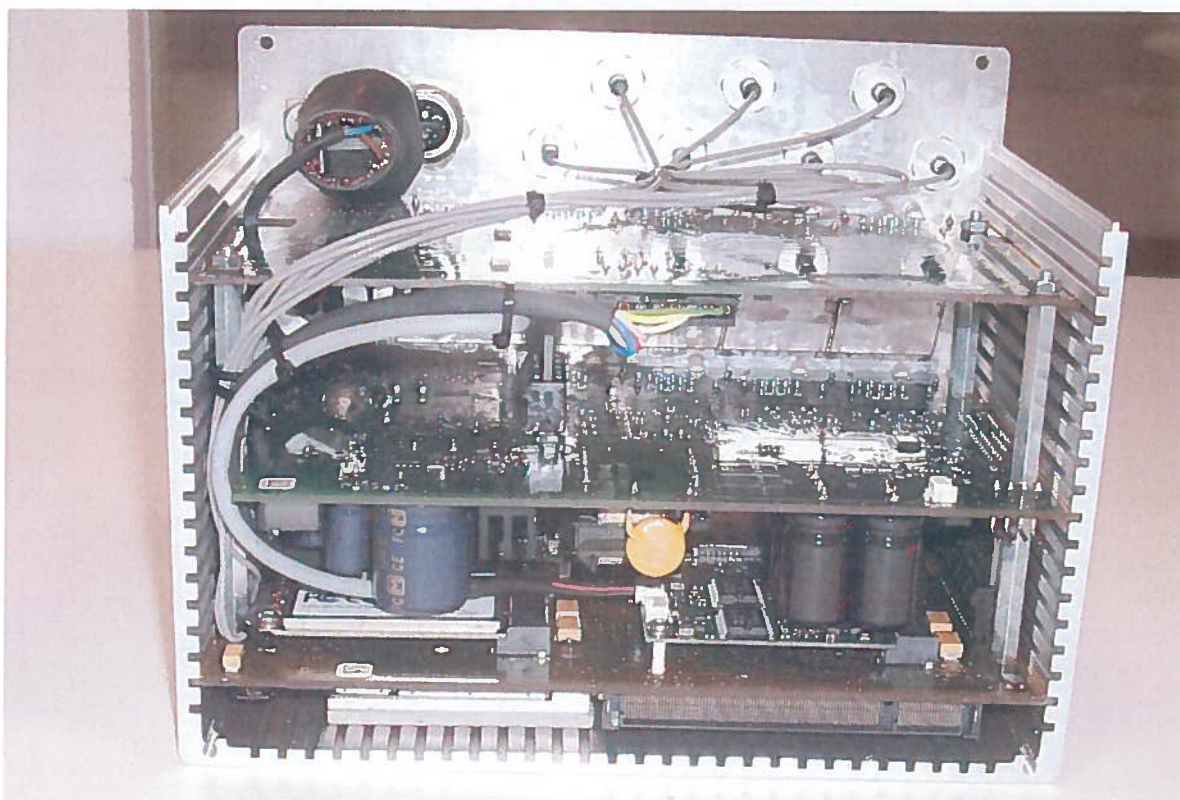


Foto 4: apparato completo Router NB3720 (interno)
Photo 4: Router NB3720 complete apparatus (inside)