

Speakon® Loudspeaker Connectors



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Introduction

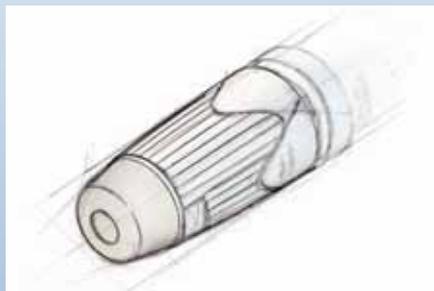
The Neutrik® Speakon® Series, also in the Pro Audio industry often called "The loudspeaker connector", became the state of the art for speaker and amplifier connections.

Invented by Neutrik® as a result of various customer requests, the first Speakon® had been introduced in 1987. The pro audio market realized very quickly the advantages of this completely new connection system. The design has been optimized for loudspeaker applications with an outstanding cost-performance ratio.

As market leader for speaker connections we are proud to offer an all-embracing product line for the specific needs of this market today. Latest designs as the STX series or the Speakon® Combo also meet the demands of niche applications or extremely rough conditions and complete the product range.

Integrated Design

Neutrik's aim to be distinctively recognizable is realized by the technological head start on the one hand as well as both patent and trademark protection on the other hand. To draw a clear line between Neutrik® and competition products we give our customer the possibility to easily identify the original.



Therefore all of our new products as the SPX and the STX series are designed according the protected integrated design. (EU-Pat.: DM/057 379, US-Pat. Pending, CHINA-Pat.: 0230519 2.2/193.0/194.9/195.7)



Features & Benefits

Today's Speakon® series is a result of a continuous product improvement process. The principal idea has been kept and optimized with material and design modifications over the years.

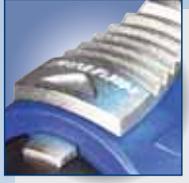
A traditional Speakon® stands for:

- Reliable and robust, easy and fast to assemble
- 2, 4 and 8-pole cable and chassis connectors in various versions
- Optimal "Quick Lock" system for speaker applications
- Neutrik® proven and unique chuck type cable strain relief
- Outstanding cost-performance ratio
- De-facto standard
- Meets all Worldwide Safety requirements (IEC, UL, ...)

Beyond that, the latest designs as the SPX and STX series offer:

- Up to 50 Amps current rating
- Only 3 parts with 1 piece strain relief design for even easier assembly
- Convertable right-angle version
- Weatherproof and extremely robust all metal designs
- Complete system, 4 pole female chassis and male cable connector

Q u a l i t y T h i n k i n g



Speakon® SPX Series 4 Pole Cable Connector



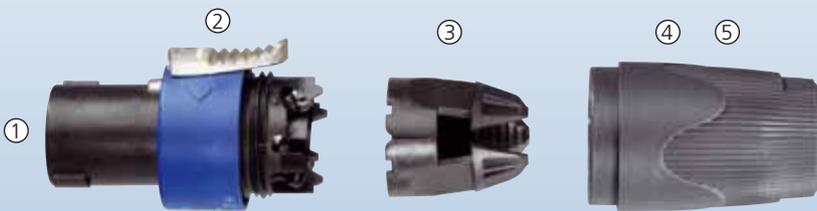
NL4FX



NL4FRX

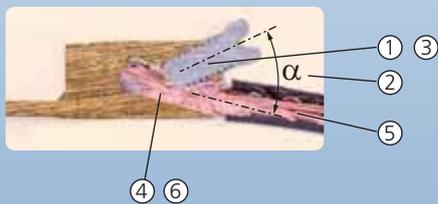
Features

- Up to 50 A rms current rating
- Only 3 parts, easy to assemble
- High Impact Materials

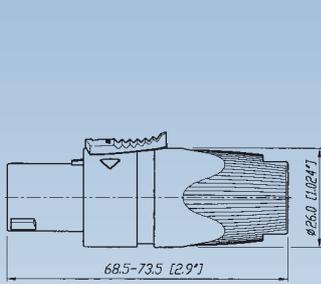


- ① Easy and extremely precise locking system "Quick Lock"
- ② Improved grip on latch
- ③ 1 piece strain relief, chuck for 6 to 14.5 mm cable O.D.
- ④ Color coding possible
- ⑤ Integrated Design guaranties "Made by Neutrik®"

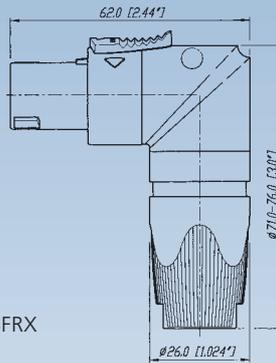
Improved SPX-Series screw contacts! (Wire position after assembly.)



- ① Progressive clamping as wire is pushed forward
- ② Acts as screw locking device due to side forces
- ③ Large combi drive - M4 screw
- ④ Wire size 1.5 - 4 mm² (AWG 12) for 6 mm² (AWG 10) remove screw & solder
- ⑤ Pullout force > 300 N @ 80 cNm
- ⑥ Gas tight connection



NL4FX



NL4FRX

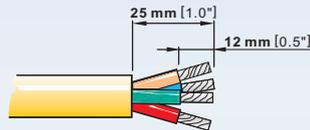
Design Criteria

This second generation of Speakon® connectors features higher current rating for the operation of high power speakers and amplifiers carrying more than 1000 Watts. Only 3 parts make it fast and easy to assemble with a more reliable

performance. Our unique design makes it possible to change easily and quickly from a straight connector to the right-angle version, even without disconnecting the cable.

Assembly

Prepare cable as shown.



HINT:

For easy wiring especially on big cables, first screw on the inner contacts 1+ and 2+ and afterwards the outer contacts 1- and 2- !



Ordering Information

Cable Connector with chuck and bushing	NL4FX
Cable Connector with chuck and red bushing	NL4FX-2
Cable Connector with chuck and yellow bushing	NL4FX-4
Cable Connector with chuck and green bushing	NL4FX-5
Cable Connector with chuck and white bushing	NL4FX-9
Right-angle Cable Connector with chuck and bushing	NL4FRX

Accessories



LCR-*



LRX

Colored coding rings for SPX Series. Available in blue (Standard), white, red, green and yellow	LCR-*
Right-angle Speakon® Conversion Kit for changing the straight connector into a right-angle version without removing the cable from the insert.	LRX

L o o k f o r t h e L o g o





Speakon® FC Series, 2 and 8 Pole Cable Connector



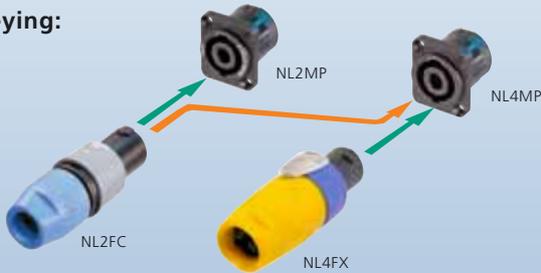
NL2FC



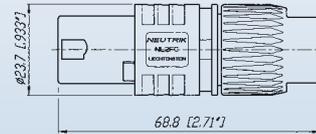
NL8FC

- Up to 40 A rms current rating
- Glass reinforced materials for housing and inserts
- Unique Neutrik® chuck type strain relief
- Precise keyway for secure mating
- Accurate twist lock latching system

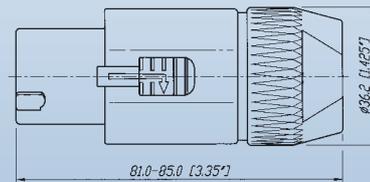
Keying:



NL2FC



NL8FC



Ordering Information

2 Pole Cable Connector with locking ring. Integrated cable clamp. Inter-mates with 4-pole chassis connector and makes contact with +1/-1.	NL2FC
8 Pole Cable Connector with latch lock.	NL8FC

t o i d e n t i f y t h e o r i g i n a l



Speakon® Adapter



NA4LX



NL4MMX



NL8MM

NL4MMX:

Features permanent secure connection on a Speakon® cable connector using 2nd lock.



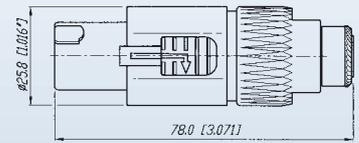
Secure Lock!

NL4MMX + NL4FX (locked on the cable)

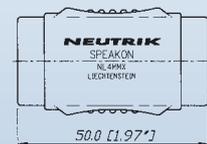
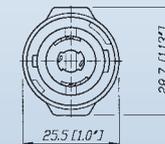
Changes gender to male when permanently locked on the cable.



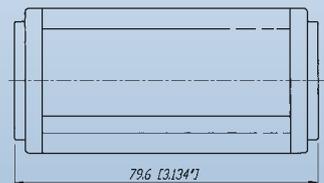
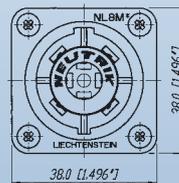
NA4LJ



NL4MMX



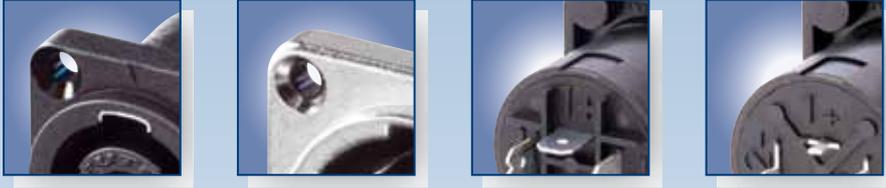
NL8MM



Ordering Information

Adapter from Speakon® Cable Connector to 2 pole 1/4" Jack. Wiring: +1 to TIP and -1 to SLEEVE.
 4 Pole lockable coupler to extend two 4-pole cables
 8 Pole coupler to extend two 8-pole cables

NA4LX
 NL4MMX
 NL8MM



Speakon® Chassis Connector



NL2MP



NL4MD-H-1



NL4MD-H-3



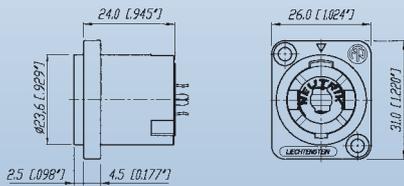
NL4MPR



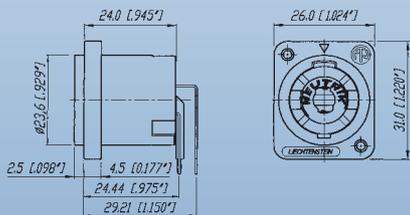
NL8MPR

- Standard version up to 40 A rms, ultra high current version up to 50 A rms
- Glass reinforced materials
- Precise keyway for secure mating
- Accurate twist lock latching system
- Metal front plate (8-pole) or metal insert in locking area (2 & 4-pole)
- Various mounting and wiring possibilities
- "Air tight design", optimized for speaker applications
- D or G panel cutouts to be easily mounted on audio industry standard panels

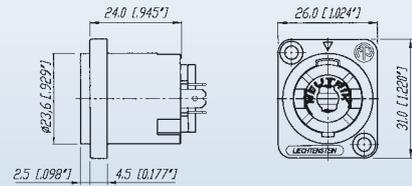
NL4MD-V



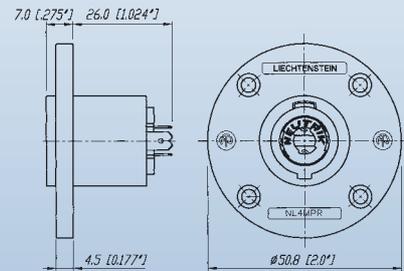
NL4MD-H



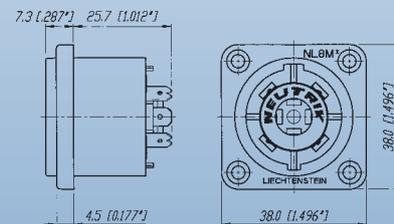
NL4MP



NL4MPR



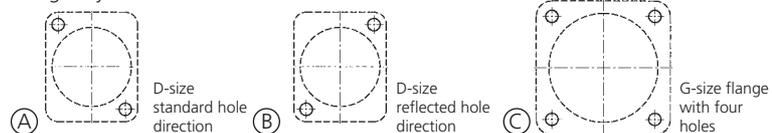
NL8MPR



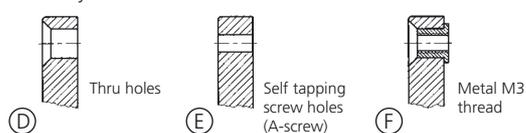
- Quality Design

Ordering Information

Flange layout:



Hole layout:



	Pole	Flange size	Flange layout	Hole layout	Color	Wiring	Remarks
NL2MP	2	D-size	A	D	black	3/16" flat tabs*	Does not intermate with 4-pole cable connector
NL2MD-H	2	D-size	A	D	black	horizontal PCB	Does not intermate with 4-pole cable connector
NL2MD-V	2	D-size	A	D	black	vertical PCB	Does not intermate with 4-pole cable connector
NL4MP	4	D-size	A	D	black	3/16" flat tabs*	
NL4MP-1	4	D-size	A	E	grey	3/16" flat tabs*	
NL4MP-2	4	D-size	B	E	black	3/16" flat tabs*	
NL4MP-3	4	D-size	A	E	black	3/16" flat tabs*	
NL4MP-M3	4	D-size	A	F	black	3/16" flat tabs*	
NL4MD-H	4	D-size	A	E	grey	horizontal PCB	
NL4MD-H-1	4	D-size	A	D	black	horizontal PCB	
NL4MD-H-2	4	D-size	B	E	black	horizontal PCB	
NL4MD-H-3	4	D-size	A	E	black	horizontal PCB	
NL4MD-V	4	D-size	A	D	black	vertical PCB	
NL4MD-V-1	4	D-size	A	E	grey	vertical PCB	
NL4MD-V-2	4	D-size	B	E	black	vertical PCB	
NL4MP-ST	4	D-size	A	D	black	screw terminal	
NL4MP-UC	4	D-size	A	D	black	1/4" flat tabs*	Ultra high current, up to 50 A rms
NL4MPR	4	round G-size flange	C	D	black	3/16" flat tabs*	
NL8MD-V	8	square G-size flange	C	D	Ni	vertical PCB	
NL8MD-V-BAG	8	square G-size flange	C	D	black chrome	vertical PCB	
NL8MD-V-1	8	square G-size flange	C	E	Ni	vertical PCB	
NL8MPR	8	square G-size flange	C	D	Ni	3/16" flat tabs*	
NL8MPR-BAG	8	square G-size flange	C	D	black chrome	3/16" flat tabs*	

*: flat tabs to be used with FASTON® connectors or to solder the wire (FASTON® is a trademark of AMP Inc.)

Accessories



NLFASTON



A-Screw-1-8



SCL



SCDF

Faston® receptacle for tabs with "positiv lock" for use with NL4MP, NL4MPR, NL8MPR. Pack of 100 pcs.	NLFASTON
Black self tapping Plastite® screw 2.9 x 8 for rear panel mount.	A-Screw-1-8
Plastic sealing cover to protect the connectors against dust and moisture.	SCL
Rubber sealing cover to protect the connectors against dust and moisture.	SCDF



Speakon® STX Series Cable Connector



NLT4FX-BAG



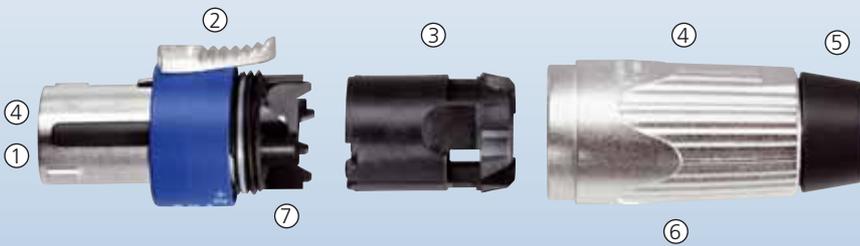
NLT4MX



NLT8FX

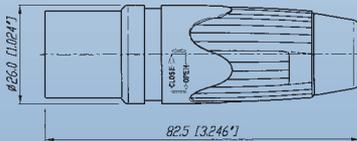
Features

- Up to 50 A rms current rating
- Only 3 parts, easy to assemble
- All metal housing
- IP 54 sealing gasket

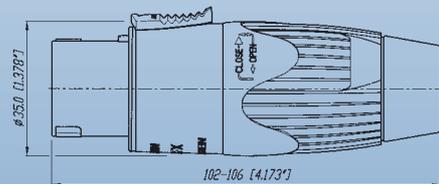


- ① Easy and extremely precise locking system "Quick Look", reinforced with metal
- ② Improved grip on latch
- ③ 1 piece strain relief, chuck for cable from 9 to 16 mm O.D.
- ④ Rugged Extreme "Touring Approved"
- ⑤ Rubber sealing boot
- ⑥ Integrated Design guarantees "Made by Neutrik®"
- ⑦ X-large solder contacts for up to 6 mm² (AWG 10) wires

NLT4FX



NLT8FX



Look for the Logo





Speakon® STX Series Chassis Connector



NLT4FP-BAG



NLT4MP



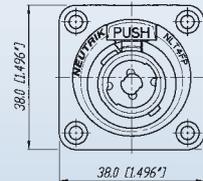
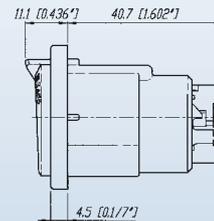
NLT4MD-V



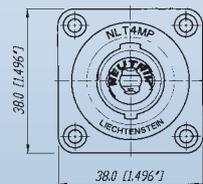
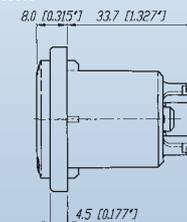
NLT8MP-BAG

- Extremely robust metal housing designed for harsh and demanding environment
- Weatherproof design features sealing gaskets
- 4 type range - also male cable connector and female receptacle on 4-pole version
- All-metal housing makes the STX Series rugged and durable
- Weatherproof built-in gasket meets IP 54 protection class (4 pole)
- Ideal product for touring applications and harsh environments
- Best electrical performance up to 50 Amps
- Uses precise "quick lock" system
- Mates with all currently available Speakon® products

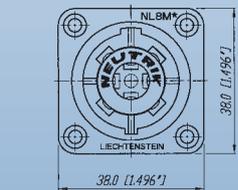
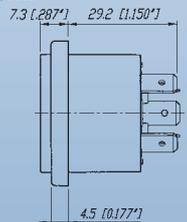
NLT4FP



NLT4MP



NLT8MP



t o i d e n t i f y t h e o r i g i n a l

Design Criteria

The new Speakon® STX Series is the next generation of 4 & 8 pole Speakon® connectors especially designed for loudspeaker - amplifier applications in harsh and demanding environment such as professional touring. The STX Series features a metal housing which is extremely

rugged and durable; built-in gaskets make it weatherproof. This new series offers beside the female cable connector and male receptacle now also a 4 pole male cable and female chassis connector.

Ordering Information

Cable Connector

4 Pole Female Cable Connector in nickel metal housing, chuck and bushing	NLT4FX
4 Pole Female Cable Connector in black-chrome metal housing, chuck and bushing	NLT4FX-BAG
4 Pole Male Cable Connector in nickel metal housing, chuck and bushing	NLT4MX
4 Pole Male Cable Connector in black-chrome metal housing, chuck and bushing	NLT4MX-BAG
8 Pole Female Cable Connector in nickel metal housing, chuck and bushing	NLT8FX
8 Pole Female Cable Connector in black-chrome metal housing, chuck and bushing	NLT8FX-BAG

Receptacle

4 Pole Female Chassis Connector in nickel metal housing, solder contacts	NLT4FP
4 Pole Female Chassis Connector in black-chrome metal housing, solder contacts	NLT4FP-BAG
4 Pole Male Chassis Connector in nickel metal housing, 1/4" flat tabs*	NLT4MP
4 Pole Male Chassis Connector in black-chrome metal housing, 1/4" flat tabs*	NLT4MP-BAG
4 Pole Male Chassis Connector in nickel metal housing, PCB contacts	NLT4MD-V
8 Pole Male Chassis Connector in nickel metal housing, 1/4" flat tabs*	NLT8MP
8 Pole Male Chassis Connector in black-chrome metal housing, 1/4" flat tabs*	NLT8MP-BAG

*: flat tabs to be used with FASTON® connectors or to solder the wire (FASTON® is a trademark of AMP Inc.)

Accessories



SCNLT



Example: SCNLT + NLT4MP



SCL



A-Screw-1-8

Gasket for NLT4MP. (To make a cabinet with an Amphenol EP cutout airtight, the rubber scaling covers the entire hole.)	SCNLT
Plastic sealing cover to protect the connectors against dust and moisture.	SCL
Black self tapping Plastite® screw 2.9 x 8 for rear panel mount.	A-Screw-1-8

Technical Data

Specification		SPX Series Cable Con.	STX Series Cable Con.	Speakon® FC Cable Con	Speakon® Chassis + Combo	Adapter	STX Series Chassis
Electrical							
Number of contacts:		4	4 + 8	2 + 8	2, 4, 8	2, 4, 8	4 + 8
Rated current per contact:	40 A rms continuous	●	●	30 A	30 A	20 A	●
	50 A audiosignal, duty cycle 50%	●	●	40 A	40 A	30 A	●
Combo:	15 A rms continuous	-	-	-	●	-	-
Rated insulation voltage:	250 V ac	●	●	●	●	●	●
Contact resistance after lifetime:	< 2 mΩ	●	●	≤ 3	≤ 3	≤ 3	●
Insulation resistance after dampheat:	> 1 GΩ	●	> 10 GΩ	●	●	●	> 10 GΩ
Dielectric strength:	4 kV peak	●	●	●	●	●	●
	1/4" Jack: 1.5 kV peak	-	-	-	-	●	-
Mechanical							
Locking System:	Quick lock (latch)	●	●	●	●	●	●
Life time (mating cycles):	> 5'000	●	●	●	●	●	●
Cable O.D. range:	mm	6 - 14.5	9 - 16	6 - 10 (2 Pole)	-	-	-
				8 - 20 (8 Pole)	-	-	-
Wiring:	screw type terminals	4 mm² (AWG 12)	-	4 mm² (AWG 12)	● (ST)	-	-
	soldering	6 mm² (AWG 10)	6 mm² (AWG 10)	4 mm² (AWG 12)	●	-	●
	flat tabs for 3/16" FASTON® (4.8 x 0.5 mm)	-	-	-	●	-	-
	flat tabs for 1/4" FASTON® (6.3 x 0.8 mm)	-	-	-	● (UC)	-	●
	PCB-version	-	-	-	●	●	●
Insertion / withdrawal force:	Combo Jack: ≤ 20 N / > 10 N	-	-	-	-	●	-
Cable retention force:	≥ 220 N*	●	●	●	-	-	-
Solderability:	complies with IEC 68-2-20	●	●	●	●	●	●
	*: subject to cable O.D. and material						
Material							
Housing:	Polyamide PA 6 30% GR	-	-	●	●	●	-
	PBTP 20% GR	●	-	-	-	-	-
	Zinc diecast (ZnAlCu1)	-	●	-	-	-	●
Insert:	Polyamide PA 6 30% GR	-	●	-	-	●	●
	PBTP 20% GR	●	-	●	-	-	-
Contacts:	Brass (CuZn39Pb3)	●	●	●	-	-	-
	Brass (CuSn6)	-	-	-	●	●	-
	Spring copper	-	●	-	● (UC)	-	●
Contact plating:	4 μm Ag	●	●	●	●	●	●
Locking Element:	Zinc diecast (ZnAl4Cu1)	●	●	●	-	-	● (FP)
Chuck:	Polyacetal (POM)	●	●	●	-	-	-
Bushing:	Polyamide (PA 6 15% GR)	●	●	●	-	-	-
Environment							
Temperature range:	-30°C to +80°C	●	●	●	●	●	●
Protection class:	IP 54 (mated condition)	-	●	-	-	-	●
	IP 52 (8-pole, mated cond.)	-	●	-	-	-	●
Flammability:	UL94HB	●	●	●	●	●	●
Safety Requirements:	EN/IEC 61984	●	●	●	●	●	●
Approvals:	UL-Recognized, CSA listed	●	●	●	●	●	●

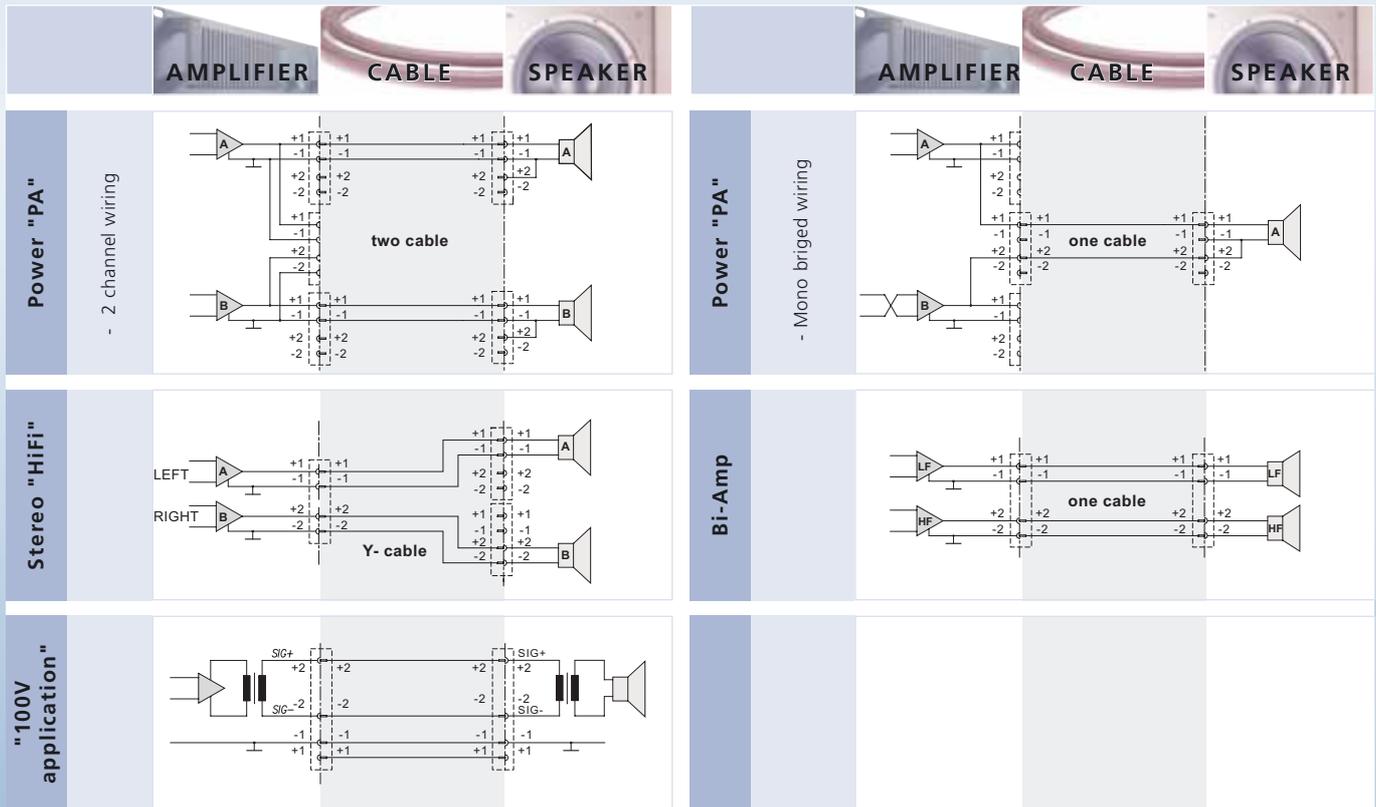
- Quality Design

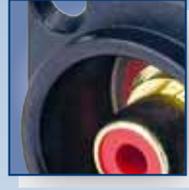
Wiring Suggestion

Positive signal on speaker pin "+" produces positive waveform from driver (moves cone outwardly)

"+" = In phase (high) "-" = Ground (out of phase, low)
Lower numbers for lower frequencies.

	AMPLIFIER	CABLE	SPEAKER
Stereo ("HiFi")	one NL4MP socket left channel pins 1+/1- right channel pins 2+/2-	NL4FC on amplifier end, four conductor cable splits into two pairs with NL4FC on each end	one NL4MP per speaker left speaker pins 1+/1- right speaker pins 2+/2-
POWER ("PA") Standard	three NL4MP sockets "A" socket: left channel pins 1+/1- "B" socket: right channel pins 1+/1-	a two-conductor cable for each channel with NL4FC on both ends	NL4MP pins 1+ to speaker coil "+" NL4MP pins 1- and 2+ to speaker coil "-"
Bridged mono	"M" socket: left channel pins 1+/1- right channel pins 2+/2-	a special two-conductor cable, on both ends wired to pin 1+/2+ of NL4FC	NL4MP pin 1+ to speaker coil "+" NL4MP pins 1- and 2+ to speaker coil "-"
Bi-Amp	one NL4MP socket low frequency pins 1+/1- high frequency pins 2+/2-	a four-conductor cable on both ends wired to pins 1+/1-, 2+/2- of NL4FC	one NL4MP socket low frequency pins 1+/1- high frequency pins 2+/2-





Profi® RCA Series

Phono Socket



NF2C-B-2



NF2D-4



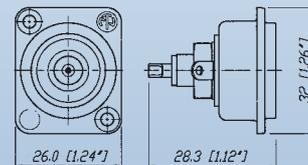
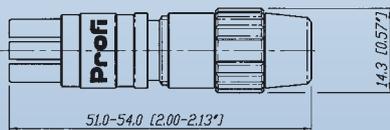
NF2D-B-6

- Makes ground before signal contact and breaks signal before ground
- No more disturbing noise and broken speaker cones
- Precisely machined to our demanding quality standards
- Neutrik® unique chuck type strain relief
- Gold plated contacts

- Makes ground before signal contact and breaks signal before ground
- No more disturbing noise and broken speaker cones
- Precisely machined to our demanding quality standards
- Neutrik® unique chuck type strain relief
- Gold plated contacts

NF2C

NF2D-*



* available in 9 colours see page 54

Specification		Profi®	Phono Socket
Electrical			
Rated current per contact:	16 A rms continuous	•	•
Rated insulation voltage:	50 V ac	•	•
Contact resistance:		> 100 GΩ	< 5 GΩ
Dielectric strength:		1500 V dc	500 V dc
Capacitance (pin to shell):	7 pf	•	-
Mechanical			
Life time (mating cycles):	> 5000	•	•
Cable O.D. range:	3.0 - 7.3 mm	•	-
Wiring:	soldering	•	•
Max. wire size :	2.5 mm ² / 14 AWG	•	-
Cable anchoring:	Neutrik® chuck type strain relief	•	-
Solderability:	complies with IEC 68-2-20	•	•
Material			
Housing:	Brass (CuZn39Pb3)	•	-
	Zinc diecast (ZnAlCu1)	-	•
Insert:	PBTP 20% GR	•	-
Contacts:	Brass (CuZn39Pb3)	•	•
Contact plating:	5 μm Au plated over 5 μm Ni	•	•
Chuck:	Polyacetal (POM)	•	-
Environment			
Temperature range:	-30°C to +80°C	•	•
Protection class:	IP 40	•	•
Flammability:	UL 94 HB	•	•

Ordering Information

Phono Profi®

Professional "phono Plug" (RCA or CINCH type), two plugs with red and black coding, two strain relief chucks for a second cable diameter

NF2C-B-2

Phono (RCA) Socket

Chassis Phono (RCA) socket in D Shape housing
Chassis Phono (RCA) socket in black D Shape housing

NF2D-*

NF2D-B-*

Accessories

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

SCL

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

Data Connectors



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Introduction

Neutrik's data connector range copes with the increasing demand of digital connections in the professional audio and entertainment industry. Digitalization in the audio business for networking and computerized controls requires also reliable and rugged interconnection systems. Neutrik® early understood this trend and realized Pro Audio proof connector systems based on standard digital interconnection products like fiber optic, Ethernet, USB or Firewire. The Neutrik® data connector line fulfils the stringent requirements of the Pro Audio market and offers ruggedized and reliable optical and RJ45 cable and chassis connectors as well USB and Firewire panel mount connectors.

Example of EtherCon® RJ45 Data Connector.

Q u a l i t y T h i n k i n g

Design Criteria

During the past few years signal digitalization found its way into the Pro Audio & Entertainment business, revolutionizing equipment and applications.

Nowadays one fiber optic cable can transmit hundreds of channels, is light and easy to pass, and avoids grounding problems or noise.

The weak spot has been again the connector. Fragile fiber optic network connectors like the ST, SC, LC etc. are optimized for a one time permanent connection but can not meet the rough requirements of the entertainment industry. Military extended beam lens coupling connectors are very expensive and have the disadvantage of an extensive attenuation increase.

Neutrik®, as Pro Audio & Video technology leader when it comes to cables and connectors, kept up with the time and developed a suitable fiber optic connection system - the OpticalCon®.

The system is based on a standardized optical LC-Duplex connection but eliminates its weakness and guarantees a safe and rugged connection.

Because of the compatibility with conventional LC connectors it offers the choice of using a cost effective LC connector as a permanent connection (e.g. patch cable) or our rugged OpticalCon® cable connector for mobile applications. The system enables a run of up to 4 copper wires for power supply or any data signal, a special SMPTE-version has been optimized for broadcast applications and offers an additional ground-shell contact. The chassis connector acts as "feed through" and guarantees a simple installation by simply connecting a conventional LC-Duplex connector (e.g. with a permanent installation cable) on the rear.

The cable connector comes pre-assembled onto a choice of mobile field cables, currently 4 types and their variations (Multimode, Singlemode, APC) can be offered in any length.



Cable Connector Assembly



NK02M-4S75

- Ruggedized and dirt protected fiber optic connection system
- Cable connector comes pre-assembled with a choice of three mobile field cables
- Accommodates standard optical LC-Duplex connectors
- Cable connector features rugged all metal housing and heavy duty cable retention
- Excellent dust and dirt protection due to automatic sealing shutter with silicone gasket
- Reliable Push-Pull locking mechanism
- Easy to clean, no tools required
- Range of cables include rugged hybrid (fiber + 4 copper wires), robust and lightweight mobile field cable with 2 multi- or singlemode fibers, a 4 pole Y-split and a SMPTE type cable
- Cable packed in case, on drum or air spool



Chassis Connector

Coupler



NO2-4FD-R



NO2-4FD



NKO2M-4S75

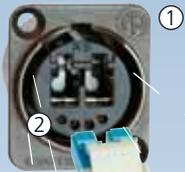
- Designed as feedthrough with automatic sealing shutter
- Shutter with silicone gasket protects optical connection from dust and dirt
- Accommodates standard LC connectors on the rear for simple installation
- Connection on the front side either by rugged OpticalCon® or standard LC connector
- Colour coding to identify fiber mode:
 - Multimode – black
 - Singlemode PC – blue
 - Singlemode APC – green

- OpticalCon® coupler (adapter) in „D“ size housing for cable extensions
- Available in three versions - LC-Duplex multi and single mode all with 4 copper wires
- Colour coding to indicate fiber mode

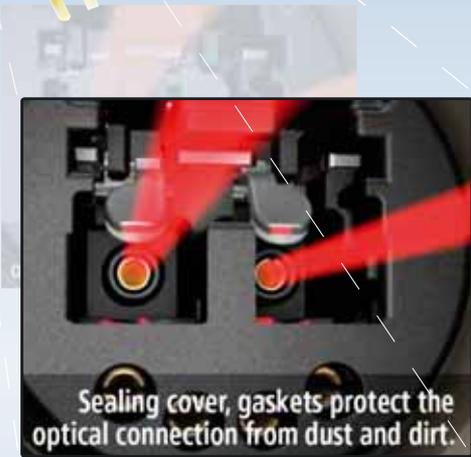
L o o k f o r t h e L o g o



Features and Benefits



- ① D-housing
- ② 4 additional female copper contacts
- ③ Mates and locks also with standard LC-Duplex connectors



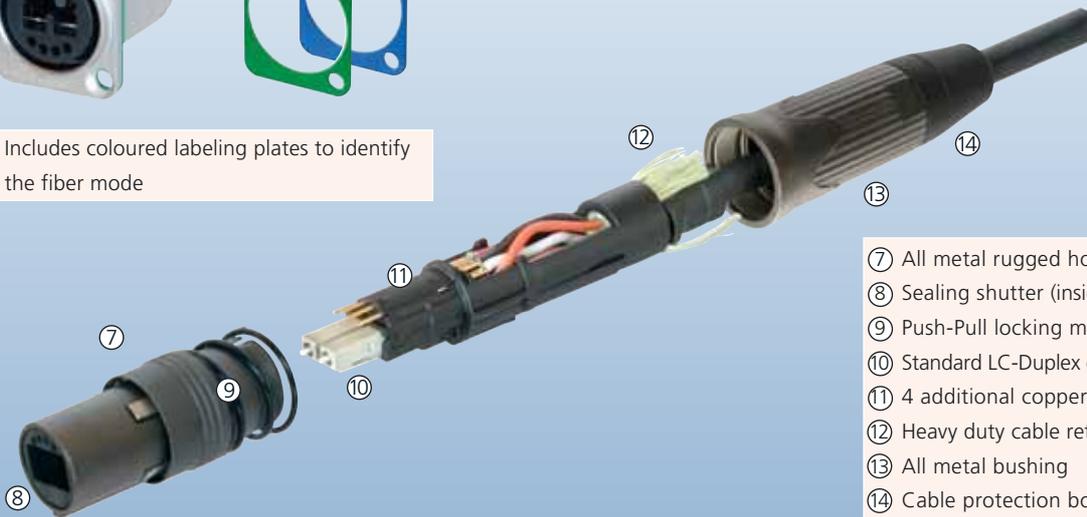
- Wiring:
- ④ Big solder cups (AWG 18)
 - ⑤ Mates with conventional LC-Duplex



- ⑥ Dirtprotection



- ⑮ Includes coloured labeling plates to identify the fiber mode



- ⑦ All metal rugged housing
- ⑧ Sealing shutter (inside)
- ⑨ Push-Pull locking mechanism
- ⑩ Standard LC-Duplex connectors, easy to clean
- ⑪ 4 additional copper contacts
- ⑫ Heavy duty cable retention
- ⑬ All metal bushing
- ⑭ Cable protection boot

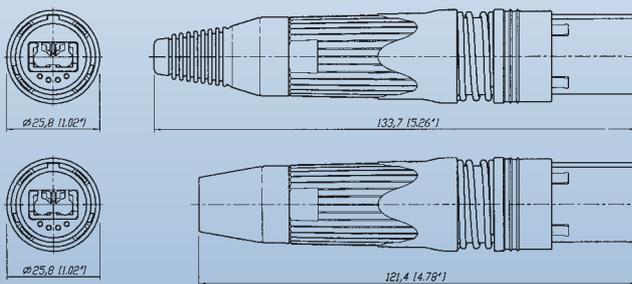
t o i d e n t i f y t h e o r i g i n a l

Technical Data OpticalCon® Connectors

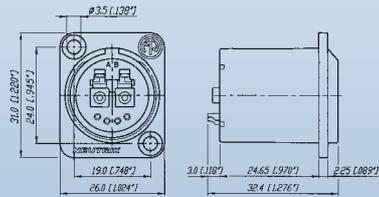
Optical		Cable Connector	Chassis Connector
Optical connector		LC-Duplex	LC-Duplex Feedthrough
Fiber		Multimode, Singlemode PC, Singlemode APC	
Insertion loss		< 0.5 dB / connection	
Mechanical			
Insertion / withdrawal force		< 45 N	
Lifetime		> 1'000 cycles	
Cable retention force	2M-4S75	500 N	
	2S/2M	500 N	
	SMPTE	350 N	
Electrical			
Number of electrical contacts		4	4 (5)
Rated current	6 A	NKO2M-4S75*	
	10 A (contact 1+4)	NKO2S(A)-SMPTE*	
Contact resistance		< 7 mΩ	
Insulation resistance	- initial:	> 10 GΩ	
	- after damp heat test:	> 1 GΩ	
Dielectric strength		1500 V dc	
Rated voltage		50 V ac	
Material			
Shell	Zinc diecast (ZnAl4Cu1)	(hard Nickel or Ruthenium plating)	
Insert / Insulation		Polyamid PA 6, PBT 30% GR, PBT 50% GR	
Contacts	- male:	Brass (CuZn39Pb3)	
	- female:	Bronze (CuSn6)	
Contact surface		Gold (gal 0.2 μm Au over 2 μm Ni)	
Strain relief		POM (brass)	
Bushing		EPDM, ZnAl4Cu1, diecast rubber boot	
Slit sleeve		-	ceramics
Environmental			
Operating temperature	-25°C to +75°C	flammability UL94 HB	
Solderability complies with IEC 68-2-20			

* ... Not compatible to the SMPTE standard, suitable for indoor studio applications acc. IEC 60664-1 (pollution degree 1, over voltage category 1)

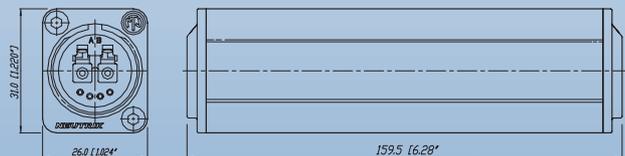
Cable Connector



Chassis Connector: NO2-4FD

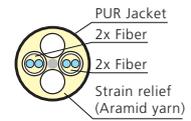
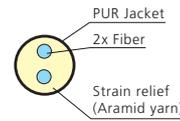
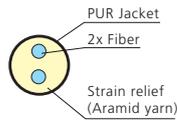
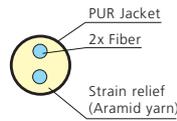


Coupler: NK02M-4S75



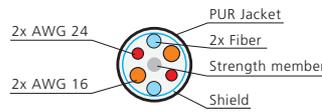
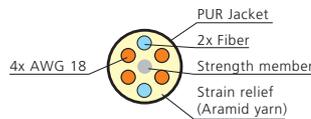
Quality Thinking

Technical Data Mobile Fiber Cables



	2M	2S	2SA	4MY
Number of Fibers	2	2	2	4
Fiber type	Multimode	Singlemode	Singlemode	Multimode
Core diameter	50 µm	9 µm	9 µm	50 µm
Cladding diameter	125 µm	125 µm	125 µm	125 µm
Copper wires	-	-	-	-
Outer shield	-	-	-	-
Strength member	-	-	-	-
Cable retention	Aramid yarn	Aramid yarn	Aramid yarn	Aramid yarn
Overall diameter	5 mm	5 mm	5 mm	9.5 mm
Jacket	PUR	PUR	PUR	PUR
Optical connector	LC-Duplex	LC-Duplex	LC-Duplex	2 x LC-Duplex
Type	Multimode	Singlemode PC	Singlemode APC	Multimode
Colour	black, matte	black, matte	black, matte	black, matte
Min. bending radius	4 cm	4 cm	4 cm	10 cm
Weight	23 kg/km	23 kg/km	23 kg/km	103 kg/km
Wiring				

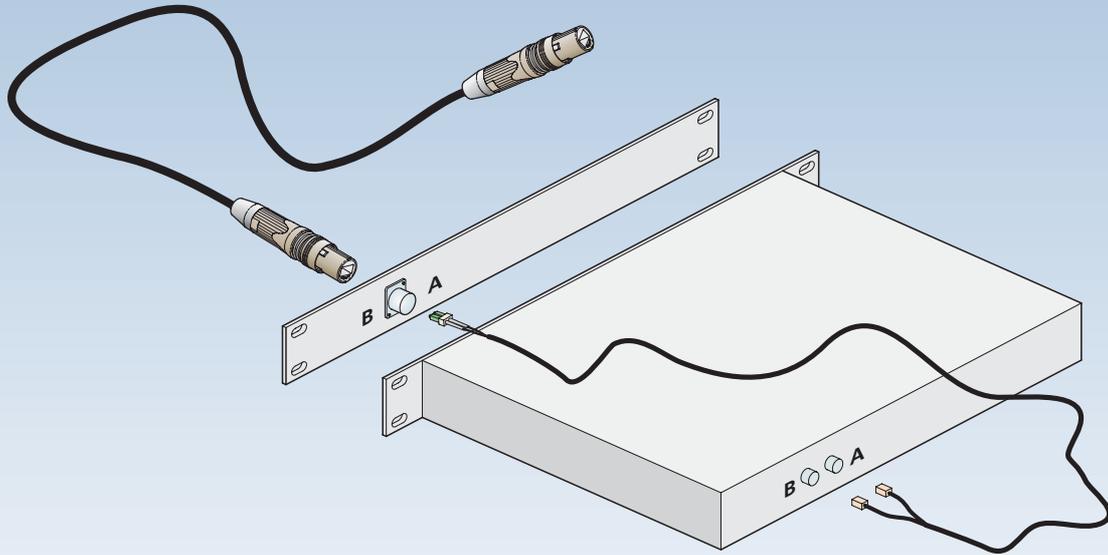
Technical Data Mobile Hybrid Cables



	2M-4S75	2S-SMPTE	2SA-SMPTE
Number of Fibers	2	2	2
Fiber type	Multimode	Singlemode	Singlemode
Core diameter	50 µm	9 µm	9 µm
Cladding diameter	125 µm	125 µm	125 µm
Copper wires	4 x AWG 18 (0.75mm ²)	2 x AWG 24 + AWG 16	2 x AWG 24 + AWG 16
Outer shield	-	Copperbraid-Tinned	Copperbraid-Tinned
Strength member	GFK	Stainless Steel	Stainless Steel
Cable retention	Aramid yarn	Crimp type	Crimp type
Overall diameter	8.9 mm	9.2 mm	9.2 mm
Jacket	PUR	PVC	PVC
Optical connector	LC-Duplex	LC-Duplex	LC-Duplex
Type	Multimode	Singlemode PC	Singlemode APC
Colour	black, matte	black, matte	black, matte
Min. bending radius	10 cm	10 cm	10 cm
Weight	78 kg/km	118 kg/km	118 kg/km
Wiring			

OpticalCon® Wiring and hook up suggestion

In order to achieve uniform and compatible systems we recommend to follow the hook up suggestions of the ISO / IEC 11801 which defines channel A (right) as input and B (left) as output.



**Extract of the ISO / IEC 11801
Patch cord termination configuration**

It is recommended that connection of patch cords and equipment cords to the duplex adapter be made by means of a duplex connector assembly.

Optical fibre patch cords, whether they are used for cross-connection or interconnection to equipment, shall be of a cross-over orientation such that Position A goes to Position B on one optical fibre, and Position B goes to Position A on the other optical fibre of the optical fibre pair (Figure 17). Each end of the optical fibre patch cord shall be identified to indicate Position A and Position B if the connector can be separated into its simplex components. For alternate connector designs utilising latches, the latch defines the positioning in the same manner as the keys.

For simplex connectors, the connector that plugs into the receiver shall be considered Position A, and the connector that plugs into the transmitter shall be considered Position B.



Figure 17 - Optical

Legend:

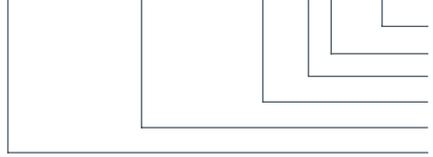


Note: Shading For Clarification Only

Ordering Information

Coding of Mobile Cables

N K O 2 M - 4 S 7 5 - R - 1 F - 1 5 0 (Example)



Length [m]
 Gender: No suffix ... Male-Male; F ... Male-Female
 Packaging 0 to 4
 Plating: No suffix ... hard Nickel; R ... Ruthenium
 Cable (Assembled)
 Neutrik® Optical Cable

Gender

Male-Male

Male-Female



Standard product
(two cable ends)

wired chassis connector
(one cable end)

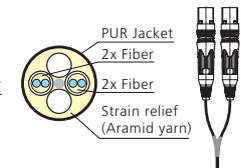
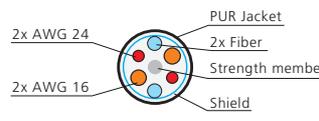
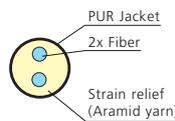
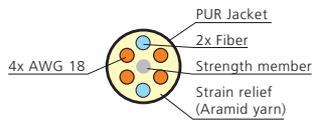
Cable

Field cable + copper

2 pole field cable

SMPTE cable

4 pole Y-split cable



Multimode PC (black)	2M-4S75 ²⁾	2M	-	4MY ^{1) 2)}
Singlemode PC (blue)	-	2S	2S-SMPTE ²⁾	-
Singlemode APC (green)	-	2SA	2SA-SMPTE ²⁾	-

¹⁾ ...Gender: Male-male only (no suffix)

Packaging

0 ... Airspool

1 ... OpticalCon Case

2 ... Drum Schill GT310

3 ... Drum Schill GT380

4 ... Drum Schill HT582



²⁾ ...Packaging "2" not possible

Find a convenient OpticalCon® part number generator on www.neutrik.com

Chassis Connectors	Colour	Plating	Fiber	Solder contacts	Shell ground contact
NO2-4FD	*	hard Nickel	2 x	4 x	-
NO2-4FD-R	*	Ruthenium	2 x	4 x	-
NO2-4FD-1	*	hard Nickel	2 x	4 x	1 x
NO2-4FD-1-R	*	Ruthenium	2 x	4 x	1 x

* ... Coloured labeling plates to indicate the fiber mode included.

Coupler	Colour (fiber mode)	Plating	Fiber	Copper wire
NAO2M-4S75	black	black	LC-Duplex Multimode PC	4 x 0.75 mm ²
NAO2S-4S75	blue	black	LC-Duplex Singlemode PC	4 x 0.75 mm ²
NAO2SA-4S75	green	black	LC-Duplex Singlemode APC	4 x 0.75 mm ²



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 male cable carriers, assembled female receptacles, feedthrough jacks, cable coupler and new shielded versions with or without illumination possibilities by LEDs. The male cable end offers a rugged diecast metal shell as a carrier for pre-assembled RJ45 plugs, which does not require the re-termination of the cable assembly. Female chassis receptacles are based on the current Neutrik® "A & B" series as well the "D" series of XLR receptacles with secure latching system - a feature not found on other RJ45 receptacles. Terminations include horizontal and vertical PCB or IDC. Colour coding is available for both the cable carrier and the receptacles for ease of identification.

Neutrik® Ethercon® receptacles comply with CAT5e (IDC versions) or Class D (PCB versions) shielded or unshielded according to TIA / EIA 586B and ISO / EC 11801 standards.



Cable Carrier

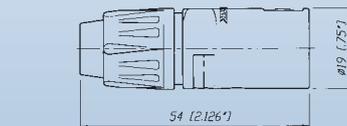


NE8MC

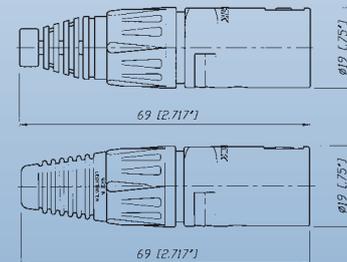
NE8MC-B-1

- The RJ45 system for harsh and demanding environment
- Cable connector carrier accepts the most common RJ45 plugs
- Cable carrier has rugged diecast shell and unique chuck type strain relief
- NE8MC-1 version with weatherproof Collinox 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 carrier does not include RJ45 plug

NE8MC



NE8MC-1



L o o k f o r t h e L o g o





Receptacle



NE8FAV



NE8FBH



NE8FAV-YK



NE8FDV

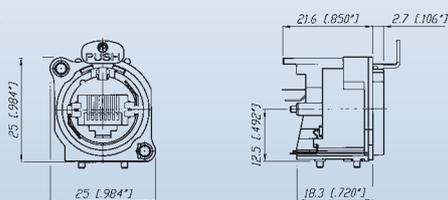


NE8FDV-Y110-B

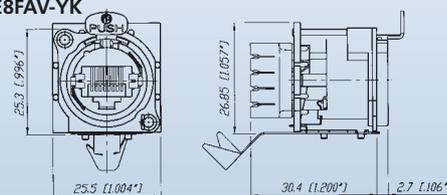
- "A / B" and "D" sized receptacles available in vertical and horizontal PCB or IDC terminations
- Accommodates NE8MC carriers or any standard RJ45 Plug
- D-versions with unified metal flange equal to "D" series-XLR, Speakon®, PowerCon® and BNC Bulkhead

- Receptacles comply with Class D (PCB versions) or CAT 5e (IDC versions) according to TIA / EIA 568B and ISO / IEC 11801 standard
- D-version mountable from the front or rear of the panel
- Version with screw domes to fix connector onto PCB securely (NE8FAV-SD)

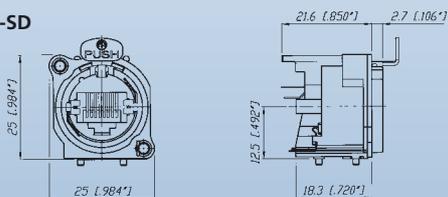
NE8FAV



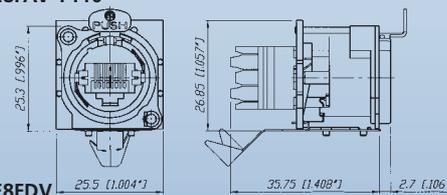
NE8FAV-YK



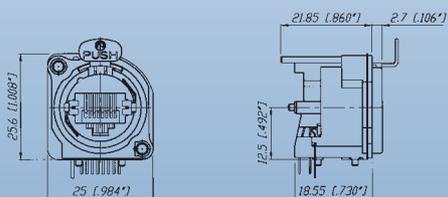
NE8FAV-SD



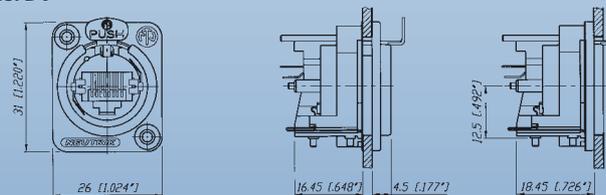
NE8FAV-Y110



NE8FBH



NE8FDV



t o i d e n t i f y t h e o r i g i n a l



Shielded & Lighted

Feedthrough



NE8FBH-S



NE8FBH-LED



NE8FDP

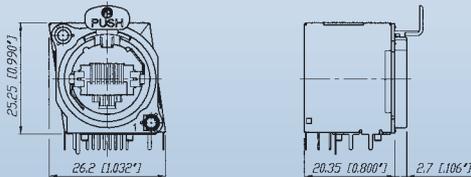


NE8FF

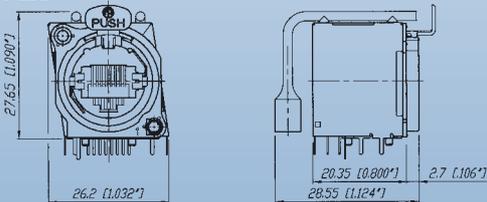
- Comprehensive shielding granted by completely closed metal housing
- Improves EMC performance of appliance even in unmated condition
- Lighted version offers in addition various illuminating indication possibilities by means of two separate light pipes
- Light pipes illuminated by standard 3 mm LEDs - to be mounted on PCB by customer

- 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
- NE8FF coupler (adapter) for cable to cable mating - use with NE8MC carriers or any standard RJ45 plugs

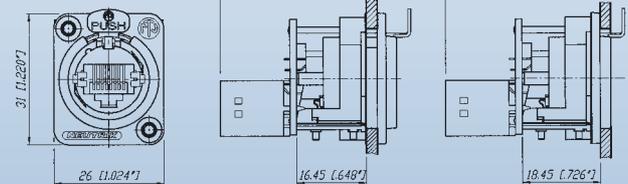
NE8FBH-S



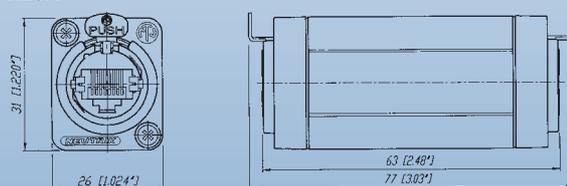
NE8FBH-LED



NE8FDP



NE8FF



Specification		NE8MC* Cable Con.	NE8FA/B* (A + B Series)	NE8FD* (D Series)
Electrical				
Number of contacts:		- ¹⁾	8	8
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⁾	●	●
	Class D	- ¹⁾	PCB Versions	PCB Versions
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:	PBTP 15% GR	-	●	●
	Zinc diecast (ZnAlCu1, gal Ni / bl Cr / Collinox)	●	-	-
B / D-flange:	Zinc diecast (ZnAlCu1, gal Ni / bl Cr)	-	●	●
Strain relief clamp:	POM	●	-	-
	CuZn35Pb2, Tin plated	-	NE8*-Y*	NE8*-Y*Contacts:
Bronze (CuSn6)		- ¹⁾	●	●
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:	IP54	-	-	SE8FD
Flammability:	UL94 HB	●	●	●
Solderability complies with IEC 68-2-20:		-	PCB Version	PCB Version
Mating screw:		-	A screw	E screw
Colour coding:		BSE-* / BSX-*	ACRF-*	DSS-*
¹⁾ ...Specs depend on type of RJ45 plugs used				

Ordering Information

Cable Connector

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
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-B
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-1
Black chromium housing with chuck and X-series bushing (standard bushing in black, 9 different coding colours on request)	NE8MC-B-1
IMPORTANT: Cable connectors do not include RJ 45 plug. RJ 45 cable assembly must be provided by end-user!	

Receptacle	A-shape (all plastic)	B-shape (Nickel ring)	D-shape
Horizontal PCB	NE8FAH	NE8FBH	
Vertical PCB	NE8FAV	NE8FBV	NE8FDV
Vertical PCB with additional screw domes	NE8FAV-SD**		
IDC terminals	NE8FAV-YK **		NE8FDV-YK **
IDC 110 punch down terminals	NE8FAV-Y110 **		NE8FDV-Y110 **
Horizontal PCB with metal housing (shielded)		NE8FBH-S	
Horizontal PCB with metal housing and light pipe		NE8FBH-LED	

Feedthrough

Receptacle	NE8FDP **
Coupler	NE8FF
**: includes 2 mounting screws	

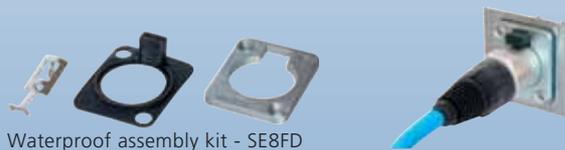
Accessories



Mounting screw for A / B -shape (black self-tapping PLASTITE® screw 2.9 x 8, panhead)	A-Screw
Mounting screw for D-shape (black self-tapping PLASTITE® screw 2.9 x 12, countersunk)	E-Screw
Mounting screw for D-shape (Nickel self-tapping PLASTITE® screw 2.9 x 12, countersunk)	E-Screw-Ni
Coloured coding rings for A-shape receptacles (Box of 100 pcs.)	ACRF-*
Coloured boot for cable connector carrier (Box of 100 pcs.)	BSE-*
Coloured bushing for NE8MC-1 and NE8MC-B-1 cable connectors	BSX-*
Lettering plate for D series, coloured plastic	DSS-*

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

USB and Firewire Adapter



USB

Firewire



NAUSB

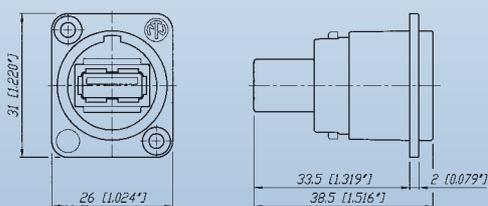


NA1394-6-B

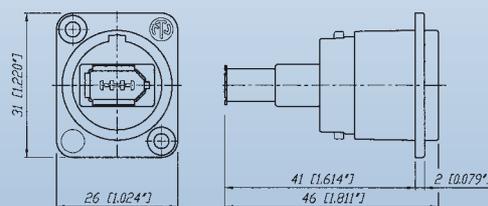
- Ideal for audio networking and integration of computer-based equipment into audio systems
- USB gender changer type A-B (B-A)
- Reversible insert offering type A or B on front or rear end
- Built in universally accepted standard D-shape housing

- Ideal for audio networking and integration of digital equipment into audio systems
- Firewire feedthrough with 6-pole IEEE 1394 receptacle at both ends
- Built in universally accepted standard D-shape housing

NAUSB



NA1394-6



- Quality Design

USB and Firewire Adapter

Technical Data

Mechanical		USB	Firewire
Insertion / withdrawal force	< 35 N / > 10 N	•	•
Lifetime	> 1'500 cycles	•	•
Electrical			
Rated current	1.5 A	•	•
Contact resistance	< 30 mΩ (mated pair)	•	•
Insulation resistance		> 1 GΩ	> 100 MΩ
Dielectric withstanding voltage	500 V ac (1 min)	•	•
Rated voltage		< 30 V ac	< 40 V dc
Material			
Shell	Zinc diecast (ZnAl4Cu1)	Nickel or black Chrome	•
Insert / Insulation		Polyamid PA 6	•
Contacts		Brass (CuZn39Pb3)	-
Contact finish		Gold	•
Shell finish		Nickel	•
Environmental			
Operating temperature	0°C to +50°C	0°C to +50°C	+15°C to +85°C
Flammability	UL94 V-0	•	•

Ordering Information

USB

USB A – USB B Adapter (reversible), Nickel housing	NAUSB
USB A – USB B Adapter (reversible), black housing	NAUSB-B

Firewire

6-pole Firewire Adapter (IEEE 1394), Nickel housing	NA 1394-6
6-pole Firewire Adapter (IEEE 1394), black housing	NA 1394-6-B

Accessories



DSS-*



SCD

Lettering plate for D series, coloured plastic	DSS-*
Plastic sealing cover to protect the connectors against dust and moisture.	SCD

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