Loudspeaker Connectors

Content

Introduction

The Neutrik® Speakon® Series, 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.

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.

Integrated Design

Neutrik's aim to be distinctively recognizable is realized by the technological head start on the one hand as well as both pat-

ent 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)

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 design
- Complete system, 4 pole female chassis and male cable connector

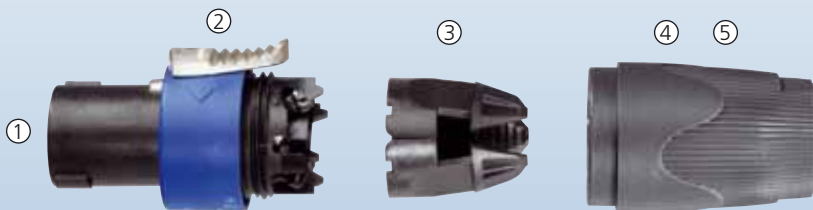# Quality Thinking
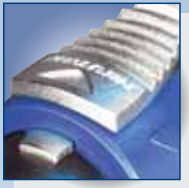
## Speakon® SPX Series 4 Pole Cable Connector

NL4FX

NL4FRX

Features

| • Up to 50 A 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®"

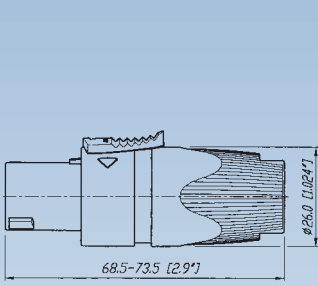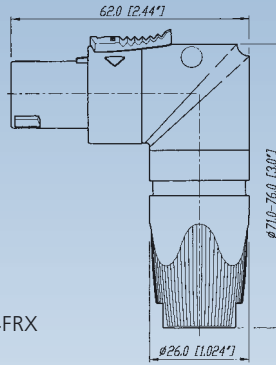**Improved SPX-Series screw contacts!** (Wire position after assembly.)
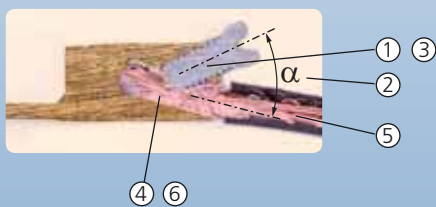
① Progressive clamping as wire is pushed forward
② Acts as screw locking device due to side forces
③ Large combi drive - M4 screw
④ Wire size 1.5 - 4 mm² (AWG 12)
   for 6 mm² (AWG 10) remove screw & solder
⑤ Pull out force > 300 N @ 80 cNm
⑥ Gas tight connection

- Q u a l i t y   D e s i g n

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.

25 mm [1.0"]
12 mm [0.5"]
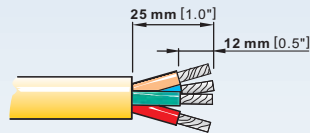
HINT:

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

Use screwdriver Pozidrive #1 only.

Ordering Information

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

Assessories

LCR-*

LRX

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

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

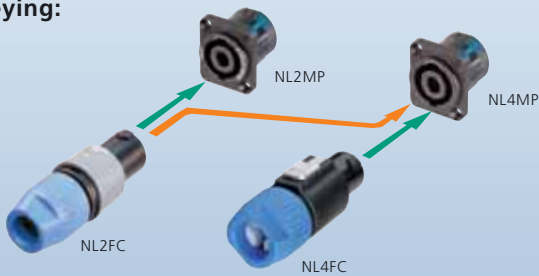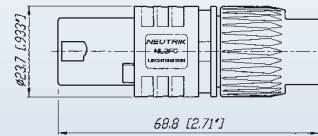## S p e a k o n ® F C C a b l e C o n n e c t o r S e r i e s

NL2FC

NL4FC

NL8FC

- Up to 30 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

NL2FC

Ø23.7 [.933"]

68.8 [2.71"]

NL4FC

Ø25.8 [1.016"]

69.0–73.0 [2.72-3.2.88"]

NL8FC

Ø36.2 [1.425"]

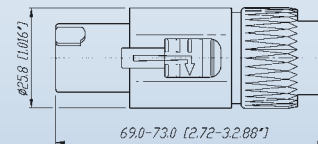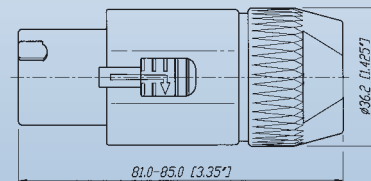81.0–85.0 [3.35"]

Keying:

NL2MP

NL4MP

NL2FC

NL4FC

Ordering Information

NL2FC	2 pole Cable Connector with locking ring, integrated cable clamp, intermates with 4-pole chassis connector and makes contact with +1/-1
NL4FC	4 pole Cable Connector with latch lock
NL8FC	8 pole Cable Connector with latch lock

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

Speakon® Adapter

NA4LJX

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

Ø6.35 [1/4"] Ø25.8 [1.016"] 78.0 [3.071]

NL4MMX

28.7 [1.13"] 25.5 [1.0"] 50.0 [1.97"]

NL8MM

38.0 [1.496"] 38.0 [1.496"] 79.6 [3.134"]
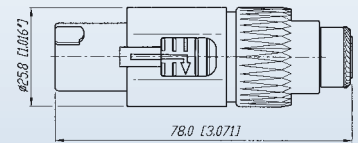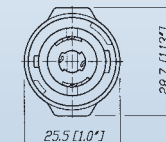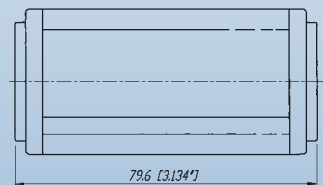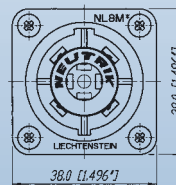
Ordering Information

NA4LJX	Adapter from Speakon® Cable Connector to 2 pole 1/4" Jack, wiring: +1 to TIP and -1 to SLEEVE
NL4MMX	4 pole lockable coupler to extend two 4-pole cables
NL8MM	8 pole coupler to extend two 8-pole cables

Q u a l i t y T h i n k i n g
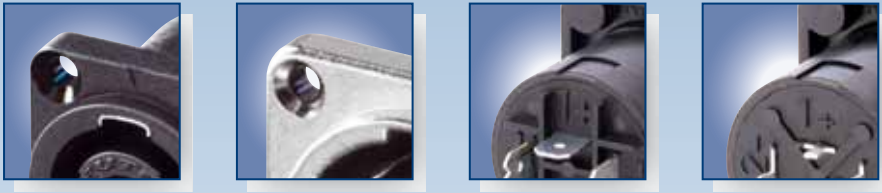
Speakon® Chassis Connector

| NL2MP | NL4MD-H-1 | NL4MD-H-3 | NL4MPR | NL8MPR |
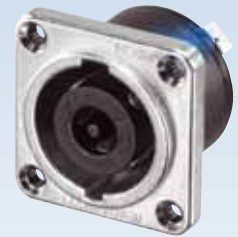
- Standard version up to 30 A rms, ultra high current version up to 50 A audio current
- Glass reinforced materials
- Precise keyway for secure mating
- Accurate twist lock latching system
- Metal front plate (8-pole) or metal insert in locking area (2 & 4-pole)
- Various mounting and wiring possibilities
- "Air tight design", optimized for speaker applications
- D or G panel cutouts to be easily mounted on audio industry standard panels

NL4MD-V
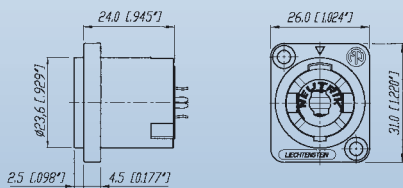
NL4MD-H
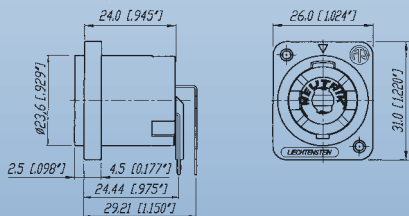
NL4MP

NL4MPR

NL8MPR

- Quality Design

Ordering Information

Flange layout:

(A) D-size standard hole
(B) D-size mirrored hole position
(C) G-size flange with four holes

Hole layout:

(D) Thru holes
(E) Self tapping screw holes (A-screw)
(F) Metal M3 thread

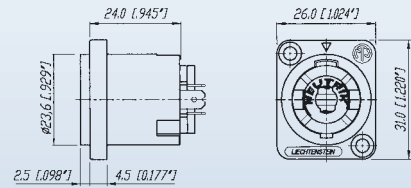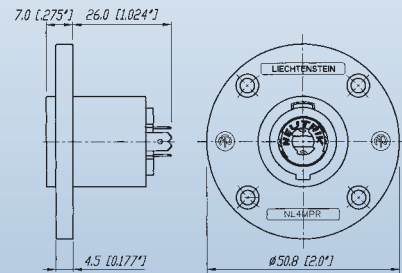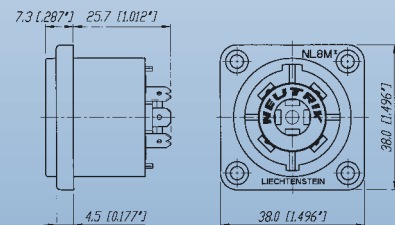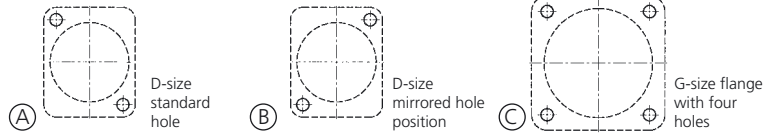|	Pole	Flange size	Flange layout	Hole layout	Color	Wiring	Remarks
NL2MP	2	D-size	A	D	black	3/16" flat tabs*	Does not intermate with 4-pole cable connector
NL2MD-H	2	D-size	A	D	black	horizontal PCB	Does not intermate with 4-pole cable connector
NL2MD-V	2	D-size	A	D	black	vertical PCB	Does not intermate 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 40 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*	
NLT4MP	4	square G-size flange	C	D	nickel	1/4" flat tabs*	
NLT4MP-BAG	4	square G-size flange	C	D	black chrome	1/4" flat tabs*	
NLT4MD-V	4	square G-size flange	C	E	nickel	vertical PCB	
NLT4FP	4	square G-size flange	C	D	nickel	solder contacts	
NLT4FP-BAG	4	square G-size flange	C	D	black chrome	solder contacts	
NLT8MP	8	square G-size flange	C	D	nickel	1/4" flat tabs*	
NLT8MP-BAG	8	square G-size flange	C	D	black chrome	1/4" flat tabs*	

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

Assessories

NLFASTON

A-Screw-1-8

SCL

SCDF

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

Quality Thinking

Speakon® Combo

NLJ2MD-V

Combines a Speakon®
and 1/4" Phone Jack - one for two

- D-size flange
- Compatible PCB layout and panel mount to NL4MD-V-1
  (NL4MD-H)
- Cost saving - combines two connectors in one housing
- Mates with all 2, 4-pole Speakon® and 1/4" Phone Plugs
- PA-wiring: 1+ is connected to TIP, 1- to the SLEEVE

NLJ2MD-V
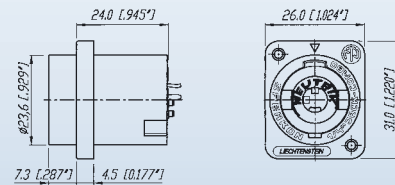
Ordering Information

NLJ2MD-V	2 pole Chassis Connector, vertical PCB version
NLJ2MD-H	2 pole Chassis Connector, horizontal PCB version

Assessories

A-Screw-1-8	Black self tapping Plastite® screw 2.9 x 8 for rear panel mount
SCL	Plastic sealing cover to protect the connectors against dust and moisture

- Q u a l i t y   D e s i g n

Speakon® STX Series Cable Connectors

NLT4FX-BAG

NLT4MX

NLT8FX

Features

- Up to 50 A current rating
- Only 3 parts, easy to assemble
- All metal housing
- IP 54 sealing gasket
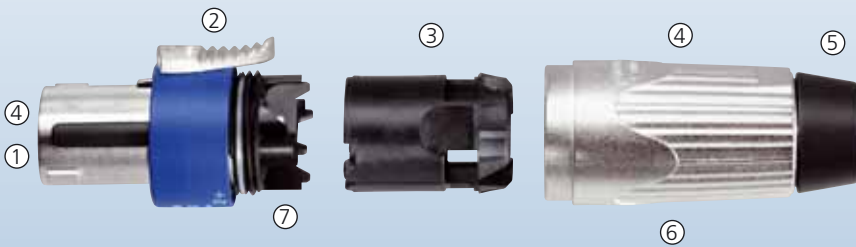
① Easy and extremely precise locking system "Quick Look", reinforced with metal
② Improved grip on latch
③ 1 piece strain relief, chuck for cables from 9 to 16 mm O.D.
④ Extreme rugged "Touring Approved"
⑤ Rubber sealing boot
⑥ Integrated Design garanties "Made by Neutrik®"
⑦ X-large solder contacts for up to 6 mm² (AWG 10) wires

NLT4FX
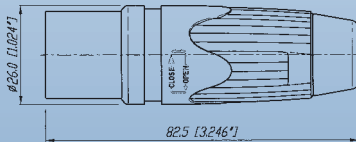
NLT8FX
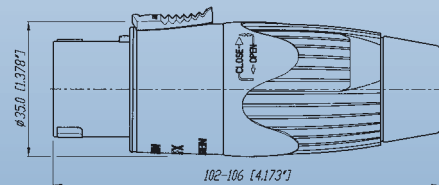
S p e a k o n ® S T X S e r i e s C h a s s i s C o n n e c t o r s

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 audio current
- Uses precise "Quick Lock" system
- Mates with all currently available Speakon® products

NLT4FP

11.1 [0.436"]   40.7 [1.602"]
38.0 [1.496"]
4.5 [0.17"]
38.0 [1.496"]

NLT4MP

8.0 [0.315"]   33.7 [1.327"]
38.0 [1.496"]
4.5 [0.177"]
38.0 [1.496"]

NLT8MP

7.3 [.287"]   29.2 [1.150"]
38.0 [1.496"]
4.5 [0.177"]
38.0 [1.496"]
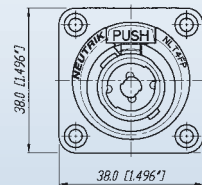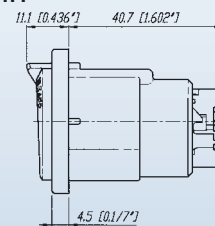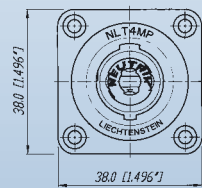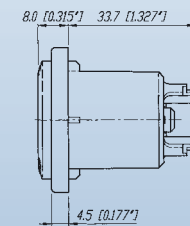
Design Criteria

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 Connectors

NLT4FX	4 pole female cable connector,nickel metal housing, chuck and bushing
NLT4FX-BAG	4 pole female cable connector, black-chrome metal housing, chuck and bushing
NLT4MX	4 pole male cable connector, nickel metal housing, chuck and bushing
NLT4MX-BAG	4 pole male cable connector, black-chrome metal housing, chuck and bushing
NLT8FX	8 pole female cable connector, nickel metal housing, chuck and bushing
NLT8FX-BAG	8 pole female cable connector, black-chrome metal housing, chuck and bushing

Receptacles

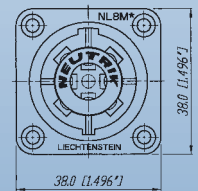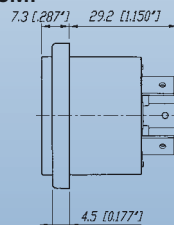|	
NLT4FP	4 pole female chassis connector, nickel metal housing, solder contacts
NLT4FP-BAG	4 pole female chassis connector, black-chrome metal housing, solder contacts
NLT4MP	4 pole male chassis connector, nickel metal housing, 1/4" flat tabs*
NLT4MP-BAG	4 pole male chassis connector, black-chrome metal housing, 1/4" flat tabs*
NLT4MD-V	4 pole male chassis connector, nickel metal housing, PCB contacts
NLT8MP	8 pole male chassis connector, nickel metal housing, 1/4" flat tabs*
NLT8MP-BAG	8 pole male chassis connector, black-chrome metal housing, 1/4" flat tabs*
	*: flat tabs to be used with FASTON® connectors or to solder the wire (FASTON® is a trademark of AMP Inc.)

Assessories

| SCNLT | Example: SCNLT + NL4MP | SCL | A-Screw-1-8 |

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

Quality Thinking

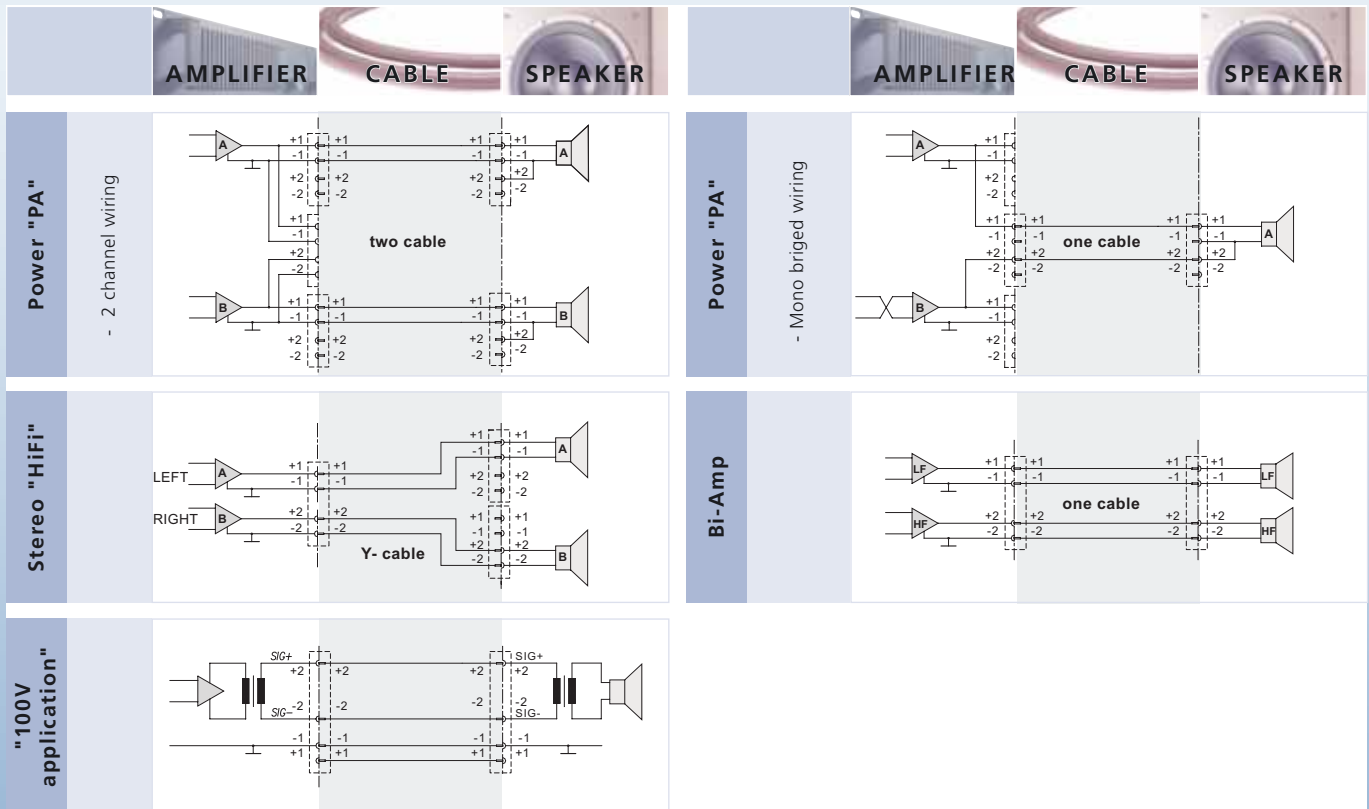| Specification		SPX Series Cable Con.	STX Series Cable Con.	Speakon® FC Cable Con	Speakon® Chassis + Combo	Adapter	STX Series Chassis
Electrical							
Number of contacts:		4	4 + 8	2, 4, 8	2, 4, 8	2, 4, 8	4 + 8
Rated current per contact:	40 A rms continuous	●	●	30 A	30 A	20 A	●
	50 A audiosignal, duty 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	7 - 14.5	9 - 16	6 - 10 (2 Pole)	-	-	-
				5 - 15 (4 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	●	●	●	●	●	●

-   Q u a l i t y   D e s i g n

Wiring Suggestion

Positive signal on speaker pin "+" produces positive wave-form 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 NL4FX 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 NL4FX 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 NL4FX	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 NL4FX	one NL4MP socket low frequency pins 1+/1- high frequency pins 2+/2-
4 Way System	one NL8MPR socket low frequency pins 1+/1- low mid frequency pins 2+/2- high mid frequency pins 3+/3- high frequency pins 4+/4-	an eight-conductor cable wired on both ends to pins 1+/1-, 2+/2-, 3+/3-, 4+/4- of NL8FC	one NL8MPR socket low frequency pins 1+/1- low mid frequency pins 2+/2- high mid frequency pins 3+/3- high frequency pins 4+/4-

AMPLIFIER   CABLE   SPEAKER

AMPLIFIER   CABLE   SPEAKER

Power "PA" – 2 channel wiring

two cable

Power "PA" – Mono briged wiring

one cable

Stereo "HiFi"

Y- cable

Bi-Amp

one cable

"100V application"

Profi® RCA Series
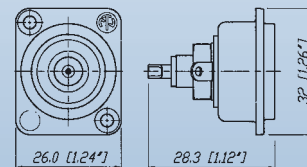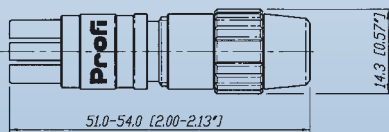
Phono Socket

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
- Gold plated contacts

NF2C

51.0–54.0 [2.00–2.13"]

14.3 [0.57"]

**NF2D-*

26.0 [1.24"]

28.3 [1.12"]

32 [1.26"]

* available in 9 colours see page 58

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 m² / 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®

NF2C-B2	Professional "phono Plug" (RCA or CINCH type), two plugs with red and black coding, two strain relief chucks for a second cable diameter

Phono (RCA) Socket

NF2D-*	Chassis Phono (RCA) socket in D Shape housing
NF2D-B-*	Chassis Phono (RCA) socket in black D Shape housing

Assessories

SCL	Plastic sealing cover to protect the connector sockets against dust and moisture

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