



# Loudspeaker Connectors

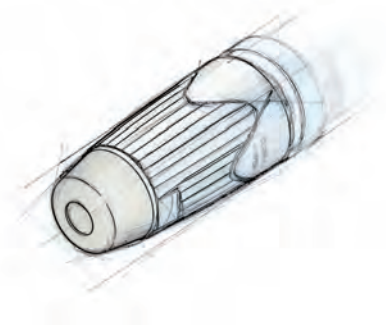
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## Introduction

The Neutrik speakON® Series, known in the professional audio industry as "The loudspeaker connector" has become the state of the art in speaker and amplifier connectivity. Introduced in 1987 speakON was invented by Neutrik as a result of customer demand for a reliable speaker connection. The pro audio market quickly realized the advantages of this completely new connection system.

The design is optimized for loudspeaker applications with an outstanding cost-performance ratio. As market leader for speaker connections we are proud to offer an all-encompassing product line for the specific needs of today's market. Recent designs such as the STX series and the speakON Combo offer solutions for nearly every speaker application.



## Integrated Design

One of Neutrik's goals is to create products that are easily distinguished from other manufacturers. We have successfully achieved this in our engineering efforts as well as the patent and trademark protection granted for our unique products. To further establish a clear difference between Neutrik and our competitor's products we give our customer the means to easily identify original Neutrik products. Therefore all of our new products such as the SPX and the STX series are designed according to the protected integrated design. (EU-Pat.: DM/057 379, US-Pat. Pending, CHINA-Pat.: 02305192.2/193.0/194.9/195.7)

## 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.

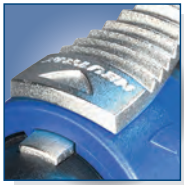


A traditional speakON stands for:

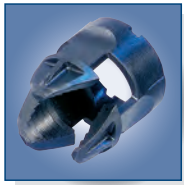
- Reliable and robust, easy and fast to assemble
- 2, 4 and 8-pole cable and chassis connectors in various versions
- Optimal "Quick Lock" system for speaker applications
- Neutrik® proven and unique chuck type cable strain relief
- Outstanding cost-performance ratio
- De facto standard
- Meets all Worldwide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



Quick lock



Chuck type strain relief



Right angle conversion



**speakON SPX Series 4 Pole Cable Connector**



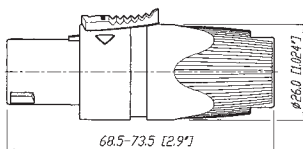
NL4FX



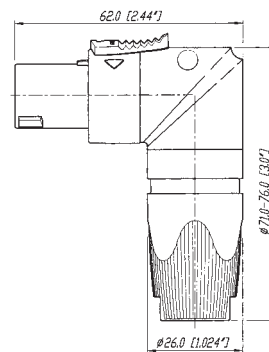
NL4FRX

- Current rating 40 A rms continuous
- Up to 50 A audio signal, duty cycle 50%
- Only 3 parts, easy to assemble
- High impact materials - long-lasting and reliable
- Easy and extremely precise locking system "Quick Lock"
- Improved grip on latch
- 1 piece strain relief, chuck for 7 to 14.5 mm cable O.D.
- Color coding possible
- Improved screw-type termination for highest pull-out force
- Integrated design guarantees "Made by NEUTRIK®"

NL4FX



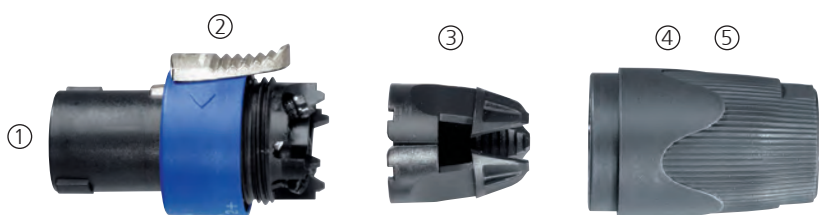
NL4FRX



## Design Criteria

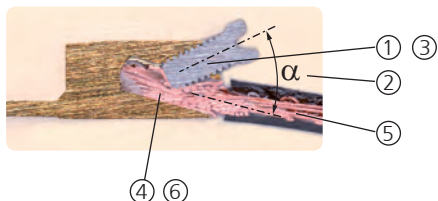
This second generation of speakON connectors features higher current rating for the operation of high power speakers and amplifiers carrying more than 1000 Watts. Only 3 parts make it fast and easy to assemble with a more reliable performance.

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.



- ① Easy and extremely precise locking system "Quick Lock"
- ② Improved grip on latch
- ③ 1 piece strain relief, chuck for 8 to 14.5 mm cable O.D., with accessory NLRR 5-8 mm
- ④ Color coding possible
- ⑤ Integrated design guaranties "Made by NEUTRIK®"

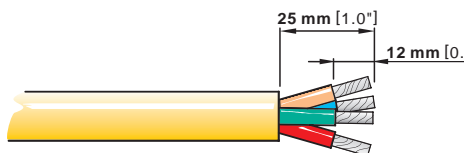
### Improved SPX-Series screw contacts! (Wire position after assembly)



- 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 mm<sup>2</sup> (AWG 12) for 6 mm<sup>2</sup> (AWG 10) remove screw & solder
- ⑤ Pull out force > 300 N @ 80 cNm
- ⑥ Gas tight connection

## Assembly

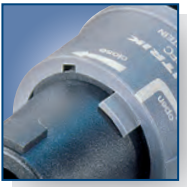
Prepare cable as shown.



### HINT:

For easy wiring especially of thick cables, first screw on the inner contacts 1+ and 2+ and afterwards the outer contacts 1- and 2- !  
Use screwdriver Pozidriv #1 only.





Locking ring



Quick lock



## speaKON FC Cable Connector Series



NL2FC



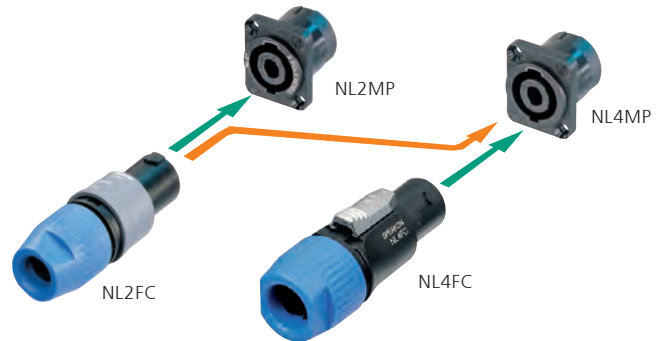
NL4FC



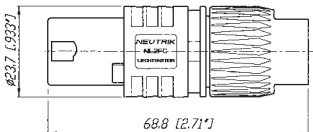
NL8FC

- 4 pole - Branded with unique hologram - guarantees genuine and authentic NEUTRIK® product
- 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
- 4 pole in new design with more ergonomic latch

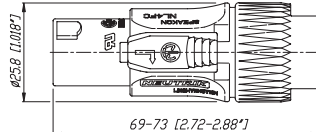
### Keying:



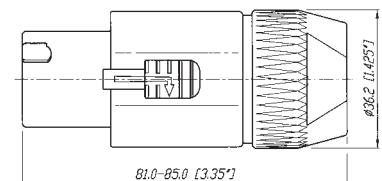
NL2FC



NL4FC



NL8FC





1/4" Jack adapter



Extention coupler

**s p e a k O N Adapter**



NA4LIX



NL4MMX



NL8MM

**NL4MMX:**

Features permanent secure connection on a speakON cable connector using 2<sup>nd</sup> lock.



Secure Lock!

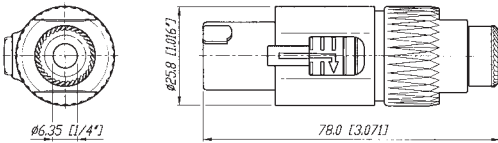
**NL4MMX + NL4FX:**

(locked on the cable)

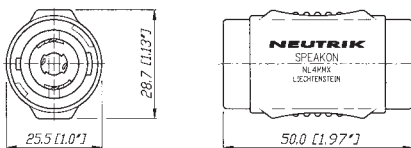
Changes gender to male when permanently locked on the cable.



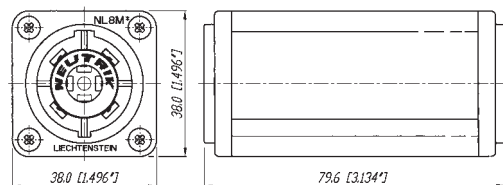
**NA4LJ**



**NL4MM**

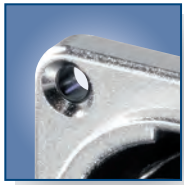


**NL8MM**





Reinforced locking area



Nickel housing



3/16" flat tabs



Vertical PCB mount



## speaKON Chassis Connector



NL2MP



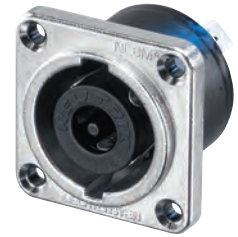
NL4MD-H-1



NL4MD-H-3



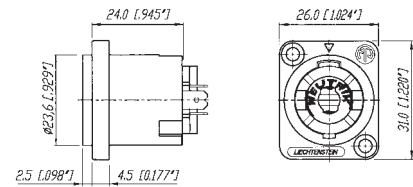
NL4MPR



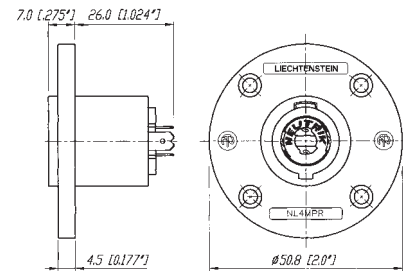
NL8MPR

- 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
- 4 pole branded with unique hologram

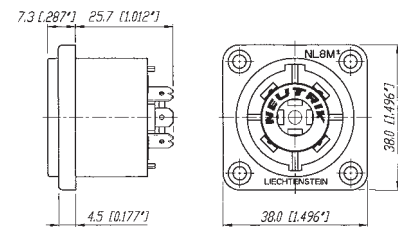
### NL4MP



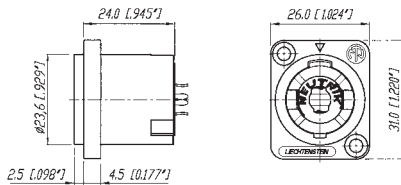
### NL4MPR



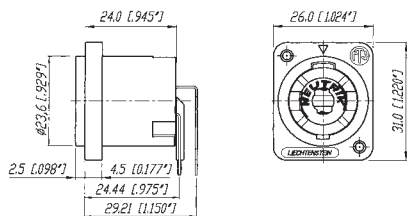
### NL8MPR



### NL4MD-V



### NL4MD-H







Locking key



PCB solder pins



s p e a k O N C o m b o



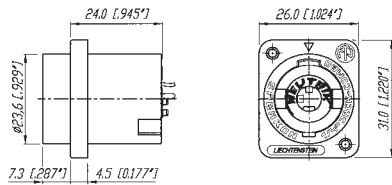
NLJ2MD-V

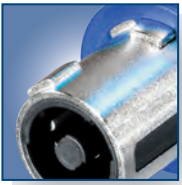
- D-size flange
- Compatible PCB layout and panel mount to NL4MD-V-1 (NL4MD-H)
- Cost saving - combines two connectors in one housing
- Mates with all 2, 4-pole speakON® and 1/4" Phone Plugs
- PA-wiring: 1+ is connected to TIP, 1- to the SLEEVE
- PCB layout of NLJ2MD-V is compatible with NL4MD-V and PCB layout of NLJ2MD-H is compatible with NL4MD-H

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

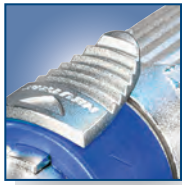


NLJ2MD-V





Reinforced locking



Latch lock



XL-solder contacts

**speakON STX Series Cable Connectors**



NLT4FX-BAG

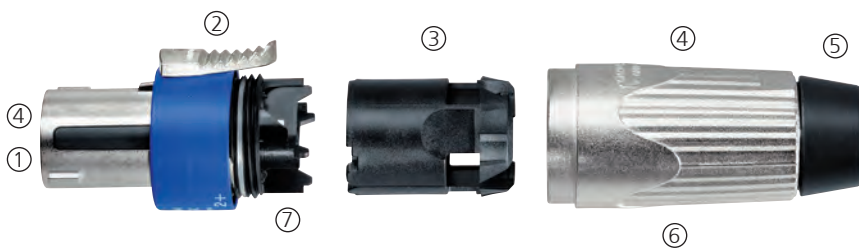


NLT4MX



NLT8FX

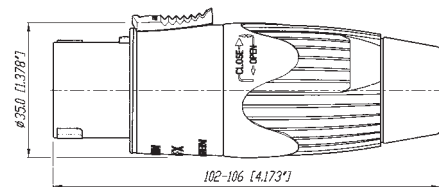
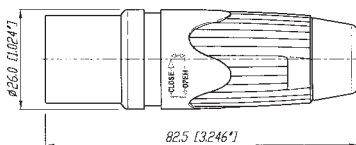
- Up to 50 A current rating
- Robust and durable all metal housing
- Sealing ring provides weatherproof IP54 rating in mated condition
- Reinforced metal quick lock system for ease and precise locking
- Extra large solder contacts for up to 6mm<sup>2</sup> (AWG10) wires
- Mate with all available speakON products



- 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 guarantees "Made by NEUTRIK®"
- ⑦ X-large solder contacts for up to 6 mm<sup>2</sup> (AWG 10) wires

NLT4MX

NLT8FX





Robust metal housing



XL-solder contacts



1/4" flat tabs

speaKON® STX Series Chassis Connectors



NLT4FP-BAG



NLT4MD-V



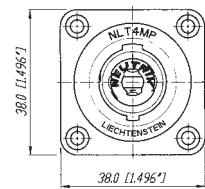
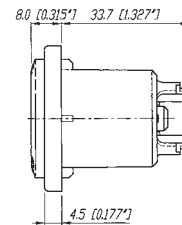
NLT4MP-BAG



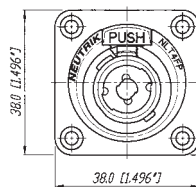
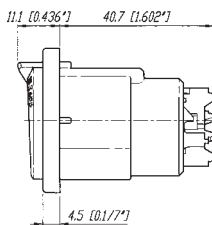
NLT8MP-BAG

- 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
- 4 pole version has UL recognized components, CSA listed

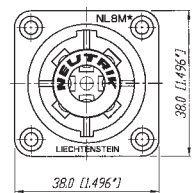
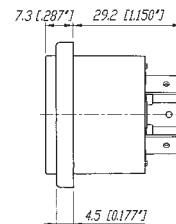
NLT4MP



NLT4FP



NLT8MP



Specification		SPX Series Cable Con.	STX Series Cable Con.	speakON FC Cable Con	speakON Chassis + Combo	Adapter	STX Series Chassis
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## 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**	15 A	●
	50 A audiosignal, duty cycle 50%	●	●	40 A	40 A	30 A	●
Combo:	15 A rms continuous	-	-	-	●	-	-
CSA approved rating:	25 A (4 pole)	●	●	-	10 A	-	-
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)	2 Pole	-	-	6 - 10	-	-	-
	4 Pole	7 - 14.5	-	5 - 15	-	-	-
	8 Pole	-	8 - 20	8 - 20	-	-	-
Wiring:	screw type terminals	4 mm <sup>2</sup> (AWG 12)	-	4 mm <sup>2</sup> (AWG 12)	● (ST)	-	-
	soldering	6 mm <sup>2</sup> (AWG 10)	6 mm <sup>2</sup> (AWG 10)	4 mm <sup>2</sup> (AWG 12)	●	-	●
	flat tabs for 3/16" FASTON® (4.8x0.5 mm)	-	-	-	●	-	-
	flat tabs for 1/4" FASTON® (6.3x0.8 mm)	-	-	-	● (UC)	-	●
	PCB-version	-	-	-	●	●	●
Insertion / withdrawal force:	Combo Jack: ≤ 20 N / > 10 N	-	-	-	-	●	-
Cable retention force:	≥ 220 N*	●	●	●	-	-	-

## 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)	●	●	●	-	-	-
	Bronze (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	●	4 pole	●	●	●	4 pole
Solderability:	complies with IEC 68-2-20	●	●	●	●	●	●

\*: subject to cable O.D. and material

\*\* : NL4MD-V-S - Rated current per contact: 20A



## Cable Connectors

### SPX Series

NL4FX	4 pole	Cable connector with chuck and black bushing
NL4FX-2	4 pole	Cable connector with chuck and red bushing
NL4FX-4	4 pole	Cable connector with chuck and yellow bushing
NL4FX-5	4 pole	Cable connector with chuck and green bushing
NL4FX-9	4 pole	Cable connector with chuck and white bushing
NL4FRX	4 pole	Right-angle cable connector with chuck and black bushing

### FC Series

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

### Adapters

NA4LJX	4/2 pole	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

### STX Series

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

## Accessories



### SPX Series

LCR-*	Colored 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-angle version without removing the cable from the insert.
NLRR	Strain relief reduction ring for NL4FX for thin loudspeaker cables with an O.D. of 5 to 8 mm

### FC Series

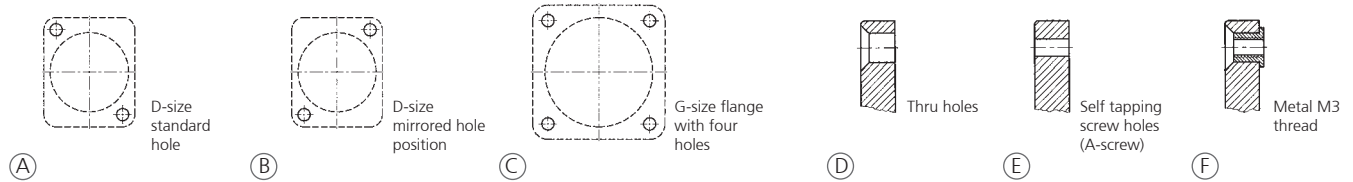
BSL-*	Colored bushing for NL4FC
BSL-WR	Weather resistant dripboot

\*: 0 - Black, 1- Brown, 2 - Red, 3 - Orange, 4 - Yellow, 5 - Green, 6 - Blue, 7 - Violet, 8 - Grey, 9 - White; Must be ordered in multiples of 100.

## Chassis Connectors

Flange layout:

Hole layout:



Pole	Flange size	Flange layout	Hole layout	Color	Wiring	Remarks
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### Traditionally

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
NL4MD-V-S	4	D-size	A	E	black	vertical PCB switched contacts
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*

### STX Series

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*

### Combo Series

NLJ2MD-V	2	D-size	A	D	green	vertical PCB
NLJ2MD-H	2	D-size	A	D	green	horizontal PCB

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



## Accessories



A-Screw-1-8	Black self tapping PLASTITE® screw 2.9 x 8 for rear panel mount
NLFASTON	FASTON® receptacle for tabs with "positiv lock" for use with NL4MP, NL4MPR, NL8MPR, Pack of 100 pcs.
MFD	M3 mounting frame for D-size chassis
NDL	dummyPLUG for 2 & 4 Pole chassis connector
NZP1RU	Panel 1RU D-shape housing
SCL	Plastic sealing cover to protect the connectors against dust and moisture
SCDR	Rear end protection cover for D-size chassis connectors
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, IP42 rated
SCNLT	Gasket for NLT4MP (To make a cabinet with an Amphenol EP cutout airtight, use the rubber sealing which covers the entire hole.)

## Wiring Suggestion

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

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

	AMPLIFIER	CABLE	SPEAKER
<b>Stereo ("HiFi")</b>	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-
<b>POWER ("PA") Standard</b>	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 "-"
<b>Bridged mono</b>	"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 "-"
<b>Bi-Amp</b>	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-
<b>4 Way System</b>	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-

