Patch Panels

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Introduction

Patch Panels are central switching gears between audio equipments. They are used to switch and route analog and digital audio signals from and to equipments in recording or broadcast studios, OB vans, churches, theatres, stadiums, arenas, etc.
Neutrik® Patch Panels are available in a variety of jack types, wiring and grounding possibilities. Common versions accommodating Bantam TT, 1/4" A-gauge and longframe B-gauge jacks on the front rows are available. The mechanical size is designed to fit into 1U 19" standard racks. All Neutrik Patch Panels offer various normalling possibilities between top and bottom row.

All Neutrik® Patch Panels are able to handle digital audio signals acc. AES3, 48kHz sampling rate.

Audio Normalling

Audio Normalling is usually used with audio patch panels and is a wiring pattern in which a circuit path is established from one piece of audio equipment to another without the use of a patch cord. This pattern is then considered to be the „normal" circuit path that is desired most of the time. If a patch cord is inserted, the normal circuit path is interrupted and rerouted to a different circuit path.
Normalled patch panels are most commonly found in vertical jack pairs: the top jack is designated as the source and the bottom jack is the destination.

Normalling example: HALF NORMALLED BOTTOM ROW

This is the most common configuration, very often called HALF NORMALLED. In this configuration internal normalling contacts
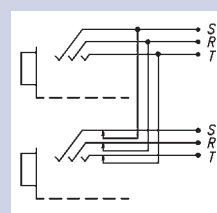
connect the top jack contact with the corresponding bottom jack contact. Inserting a plug in the bottom jack will interrupt this internal normalling connection, while inserting a patch cord into the top jack doesn't interrupt the circuit. (Can be used to monitor the normalling circuit)
Other versions of normalling are Half Normalled Top Row, Full Normalled, Parallel and Isolated.

|					
Robust front design	Easy assembly	Jack-pair	IDC terminals	Push terminals	ELCO connectors
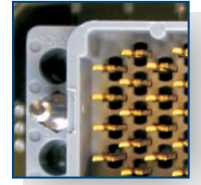
N P P A - S e r i e s — 9 6 B a n t a m (T T) J a c k s

NPPA-TT-PT

- Innovative and compact patching system (just 1U high) for 19" rack mounting
- Robustly housed in a black coated steel shell
- New high quality long life gold plated Neutrik® prewired double jacks with drastically improved contact integrity
- Available in all common normalling configurations (default HNB)
- Qualified for analog and digital signals acc. AES 3, 48 kHz sampling frequency
- Different choices of wiring

Dimensional Drawing

482 [19"]
44 [00]
178
435
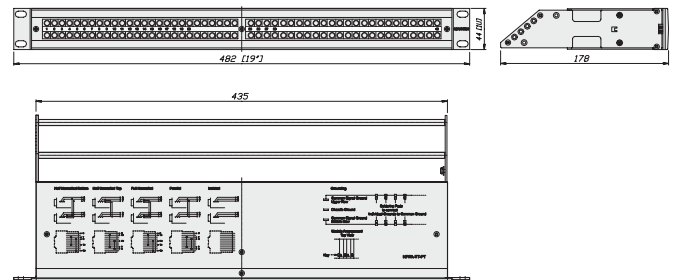
Design Criteria

All panels are fitted with high quality, long life Neutrik® NJ3TTA gold plated double contact jacks (2 x 48), featuring drastically improved contact integrity and are available with a wide choice of wiring terminations. The unit is finished off with a built in cable bar and two large channel ident strips for perfect management of the system.

The new generation of the Neutrik® "Easy-Patch" is easily programmable for any one of five configurations (standard is half normalled bottom row) and for the grounding system of your choice. Each individual pair of jacks can be changed

or reconfigured quickly and without fuss even while the panel is "on air". The NJ3TTA jacks offer also two contact points per terminal (TRS) with a special designed mechanism for the normalling contact. Simply remove the front panel to reveal the easy access jack. Remove, replace or reconfigure the jack and refix the panel.

The "Easy-Patch" is an innovative and compact patching system (just 1U high) for 19" rack mounting. Robustly housed in a black coated steel shell and featuring precision aluminium fittings it is built to last.

Configuration

The standard version of the NPPA Panel is delivered bottom row half normalled for each jack pair by default. Further patch versions are available with fully loaded jack-pairs as:
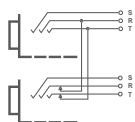
- Full Normalled
- Half Normalled
- Isolated
- Parallel

For individual normalling single pre-configured jack-pairs are offered.
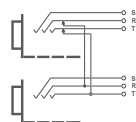NPPA-TT-IDC is equipped with jumper blocks for individual switching configurations of each jack channel.

Note: Take care when handling digital signals. Do not use parallel configuration and avoid other parallel paths when using half normalled configurations. Parallel paths may lead to mismatching.
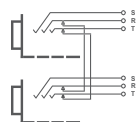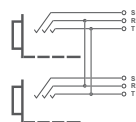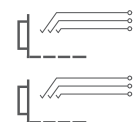
| Half Normalled Bottom | Half Normalled Top | Full Normalled | Parallel | Isolated |

Grounding

The flexible grounding system provides the following versions:

- Individual: Each channel is individually grounded by its corresponding cable shield (default configuration).
- Group: Selected channel grounds are connected via the ground bus on the PCB using solder bridges and track cuts to form a group that is connected to one common cable shield.
- Central: All channel grounds (individual top and bottom row) are connected via the ground bus on the PCB using solder bridges and wired with only one cable shield.
- Chassis-Common: The same as central grounding but with the addition of the common ground bus (top and / or bottom rows) connected to the patch panel chassis by means of jumpers

Wiring Terminations

TT Patch Panels offer different choices of wiring:

- Spring loaded push terminals
- 56 pin Elco/Edac male connectors
- 90 pin Elco/Edac connectors
- 50 pin D-SUB connectors
- 25 pin D-SUB connectors
- IDC-Krone terminals
- Solder lugs

The spring loaded terminal blocks enable fast and easy wiring. No soldering and screwing necessary. Simply insert the stripped wire after pressing down the white key. Terminals accommodate stranded wires up to AWG 20 (0.5 mm^2) and solid wires up to AWG 18 (0.75 mm^2). Push terminals are gas tight connections.

For Pin assignment of ELCO / EDAC and D-SUB connectors please refer to website.

Individual colour coding

Galvanized metal housing

N P P - T B - S e r i e s – 4 8 B - G a u g e J a c k s
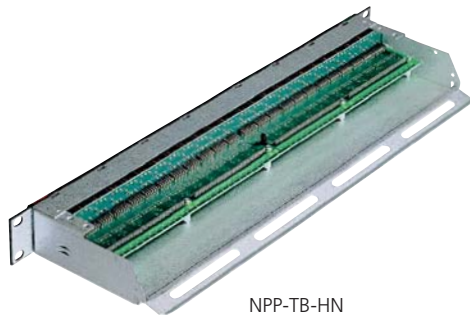
NPP-TB-HN
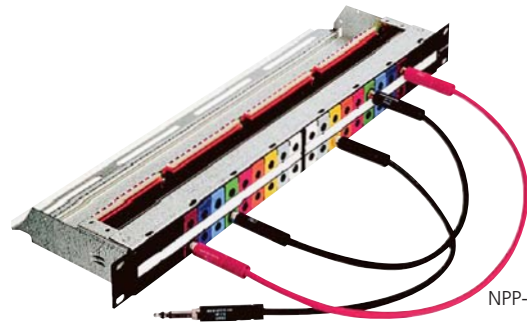
NPP-TB + NPP-LB*

- Features 2 x 24 Neutrik® NJ6TB-V long frame 1/4" TRS jacks according to BPO 316 / MIL-P-641/3
- Very robust and compact galvanized metal housing
- Eye catching channel identification through coloured snap-on coding tabs
- Six easily programmable switching configurations
- Qualified for analog and digital signals acc. AES 3, 48 kHz sampling frequency
- With high quality long life gold plated Neutrik® jacks

Dimensional Drawing
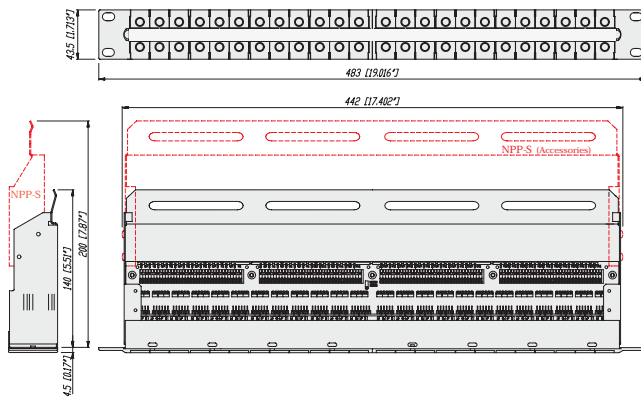
Design Criteria

The TB Patch Panel is a very robust and compactly designed Patch Panel for 19" rack mount (19" x 1U) with galvanized metal housing, a built-in cable bar on the rear for securing wires. There is a rear extension bar (NPP-S) available as an option for some panel types. On the front side we have an attractive additional lettering facility for each channel pair with a marking strip and individual snap-on colour coding plates.

The NPP is easily programmable for six switching configurations and for changing the flexible grounding system. All panels have the high quality long life gold plated Neutrik® NJ6TB-V Jack for the BPO / MIL style plugs. We have two variants of rear connection. The standard is equipped with spring loaded terminals strips and an optional version offers solder lugs.
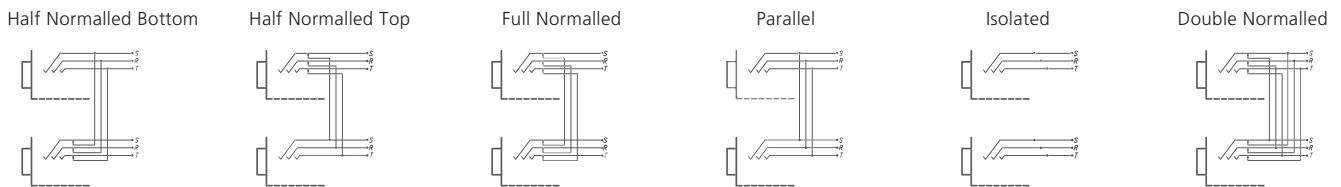
Configuration

Due to the jumper blocks capability provided, the switching configurations available per jack channel are:

- Half Normalled Bottom Row
- Full Normalled
- Parallel
- Isolated

The TB Panel is delivered in a full normalled configuration for each jack channel. A non-configurable half normalled ("-HN") bottom row version with solder lugs is also available.

NOTE: Take care when handling digital signals. Do not use Parallel configuration and avoid other parallel paths with Half / Double Normalled configurations. Parallel paths may lead to mismatching.

Half Normalled Bottom	Half Normalled Top	Full Normalled	Parallel	Isolated	Double Normalled

Grounding

The flexible grounding system allows four possibilities to fit your needs:

- Individual: Each channel ground is separately connected with the corresponding cable shield (default configuration).
- Group: Some channel grounds are PCB connected by making soldering joints on the PCB and by cutting tracks respectively to form a group that is connected to one common cable shield.
- Central: All channel grounds are PCB connected by making soldering joints and wired with only one cable shield.
- Chassis-Common: Same as central grounding with additional connection of the common ground to the Patch Panel chassis by means of a jumper.

Wiring Terminations

TB Patch Panels are available with:

- Spring loaded push terminals (NPP-TB)
- Solder lugs (NPP-TB-HN)

The spring loaded terminal blocks are fast and easy to connect and disconnect the wires.
No soldering and screwing necessary. Simply insert the stripped wire after pressing down the white key.
Accommodates stranded wires up to AWG 20 (0.5 mm^2) and solid wires up to AWG 18 (0.75 mm^2).

Ruggedized metal housing

Imprinted grounding instruction

Module
NYS-SPCR1

1 / 4 "   P a t c h   P a n e l

NYS-SPP-L1

- Individual grounding available for each channel separately
- Ruggedized metal housing
- Improved contact design minimises wear on mated plugs
- Economic and versatile designed 1/4" modular Patch Panel with 2 rows of jack sockets
- 48 balanced channels with fully PCB wired jack (24 vertical PC boards), 24 front pairs and corresponding 24 rear pairs
- Jack PC card contains 4 balanced 1/4" jacks with non-tarnishing contacts, is held securely in place without the use of nuts - no little pieces to drop, break or lose
- Easy to change configuration by just flipping individual PC board
- Normalling jack is coloured grey for easy identification
- 4 designation strips included for front and rear panel

Dimensional Drawing
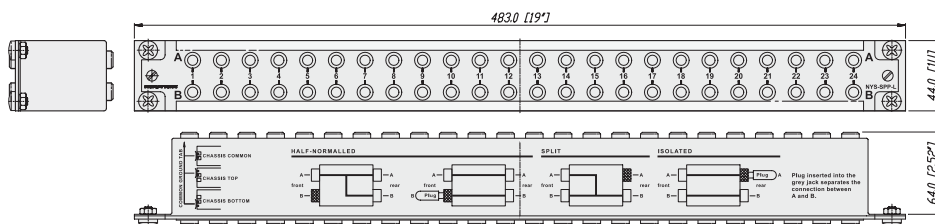
Design Criteria

The NYS-SPP-L1 is a economical and remarkable sleek designed 1/4" modular Patch Panel for 19" rack mount (19" x 1U) with a reinforced metal housing. Each of it's 48 PCB wired balanced channels (24 front pairs and corresponding 24 rear pairs) can either be grounded separately or in groups of inividually chooseable channel numbers (detailed information see below).
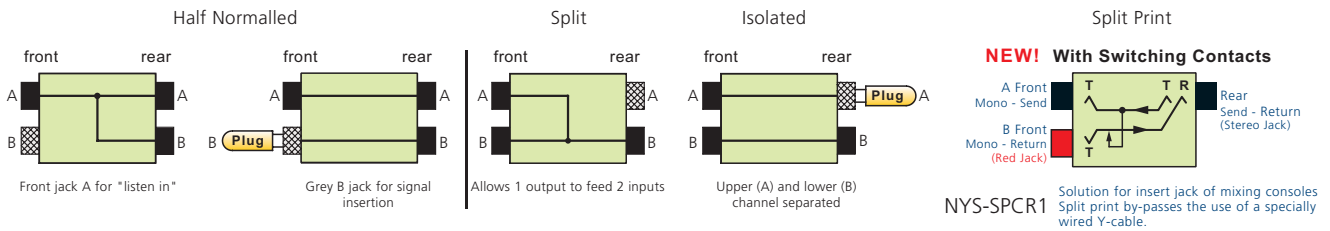
The PCBs are held securely in place by being clamped between the front and the rear panel, this grants an easy reconfiguration of the Patch Panel without the danger of loosing any small parts (e.g. nuts). The grey jack serves as an easy and distinguishable normalling identification.

Configuration

Standard configuration, when delivered, is Half Normalled bottom row. The configuration can easily be changed by just flipping the individual PCB. Inserting a plug into the grey jack will always isolate the top against the bottom row. Alternative solution for send/return applications by use of NYS-SPCR1 module (see accessories below).
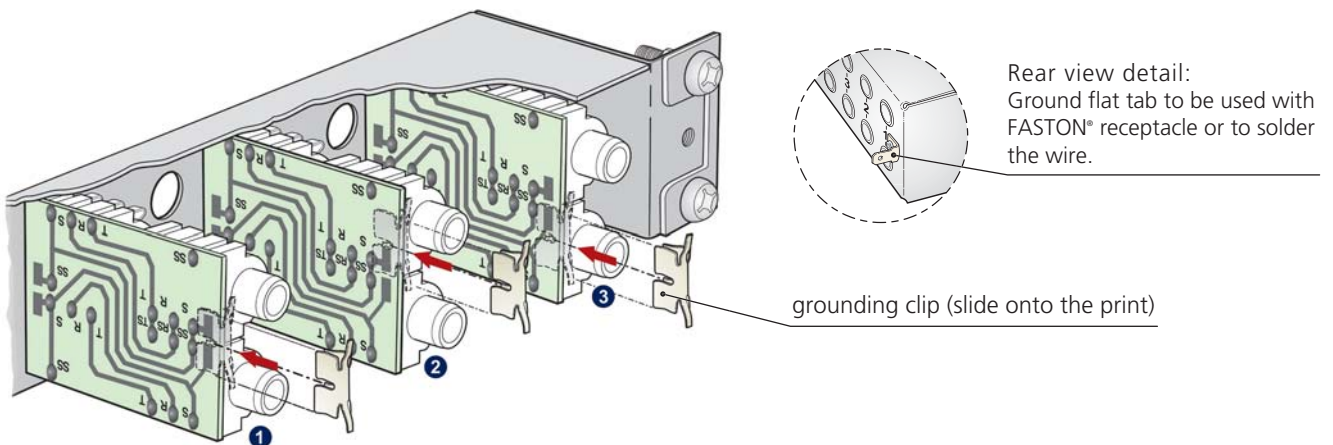
The following configurations are available:

Half Normalled	Split	Isolated	Split Print

Half Normalled — Front jack A for "listen in"

Grey B jack for signal insertion

Split — Allows 1 output to feed 2 inputs

Isolated — Upper (A) and lower (B) channel separated

NEW! With Switching Contacts

A Front Mono - Send
B Front Mono - Return (Red Jack)
Rear Send - Return (Stereo Jack)

NYS-SPCR1 — Solution for insert jack of mixing consoles Split print by-passes the use of a specially wired Y-cable.

Grounding

The flexible grounding system, applicable for each channel separately by simply attaching the loose supplied grounding clips to the grounding pad of the corresponding channel, offers the following alternatives:

- Individual (without grounding clip): Each channel ground (sleeve contact) is connected to the dedicated ground contact of the incoming 1/4" plug only. This is the standard configuration for delivery.
- Chassis common ①: The relevant channel grounds (sleeve contacts; top and bottom row) is connected to the ground flat tab via grounding clip and chassis.
- Chassis top ②: The dedicated top channel ground (sleeve contact) is connected to the ground flat tab via grounding clip and chassis.
- Chassis bottom ③: The dedicated bottom channel ground (sleeve contact) is connected to the ground flat tab via grounding clip and chassis.

Rear view detail:
Ground flat tab to be used with FASTON® receptacle or to solder the wire.
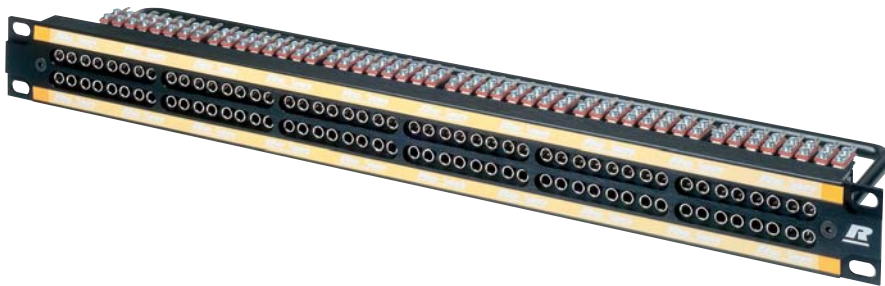
grounding clip (slide onto the print)

Standard 4.4mm
bantam jack

Long frame jack
socket

MA 96 and XPM 96 Bantam Patchbays

- Robust designed patchbay to accept standard 4.4 mm Bantam jack connectors (acc. MIL-D-642/13)
- Fitted with 96 Rean die-cast jack sockets
- Constructed from rigid aluminium extrusion which includes 2 integral slots for designation strips
- 96 channels grouped in two row 12 x 8 stereo jacks
- XPM96 features traditional 2 row, 4 x 24 stereo jacks
- Available in 4 colours: black, silver, red or blue
- Suitable for audio, broadcast, data and industrial applications XPM96

Dimensional Drawing
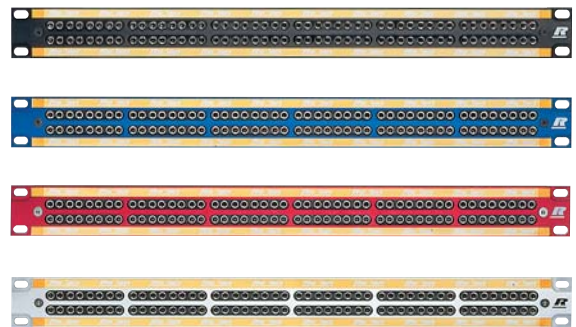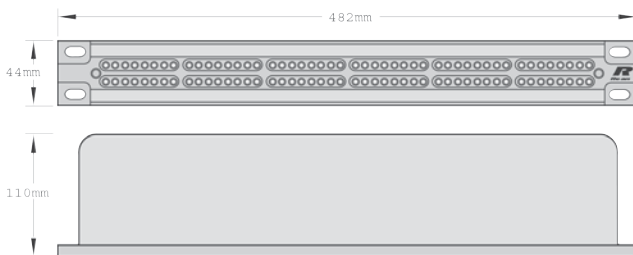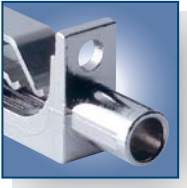
Die-cast frame

Tinned tags

M A J   5 0 1   B a n t a m   J a c k   S o c k e t
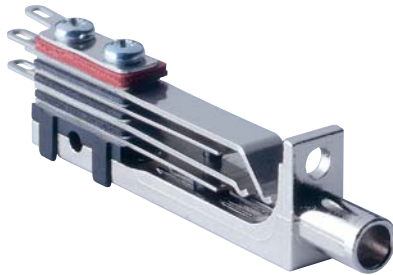
- 5-point Bantam jack socket (Tip, Ring, Sleeve, Tip Normal, Ring Normal)
- Rigid nickel plated die-cast frame, featuring considerable frame strength eliminating physical distortion when plug is inserted
- Nickel-silver spring contacts, palladium plated switch contacts
- Tinned tags for easy soldering

Termination

End Elevations

15.3mm   6.4mm
           5.6mm
7.4mm   4.0mm

Plan Elevations

0.75 mm
1.95 mm

6.35mm
9.5mm   48.4mm

Circuit Detail

S
R
T   RN
     TN

look for the logo
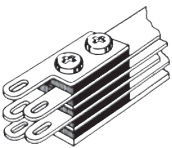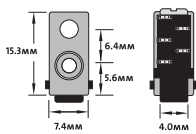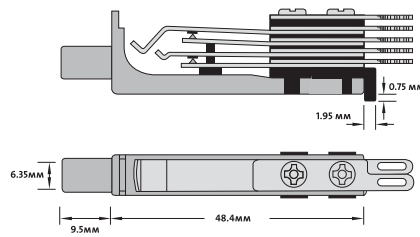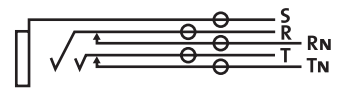
B-Gauge patchbay

48 way longframe

LF 48 B-Gauge Patchbays

- 48 way Longframe B-Gauge patchbay
- Accepts both European BPO 316 and US MIL-P-642/2 style phono plugs
- 2 rows of 24 LF501 jack connectors
- Jack designed from rigid nickel-plated die-cast aluminium with nickel-silver spring contacts
- Available in 4 colours: black, silver, red or blue
- Reliable support for connecting looms by steel lacing bar

Dimensional Drawing

482mm

44mm

115mm
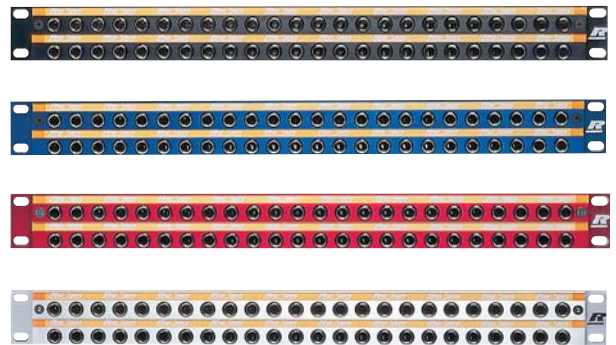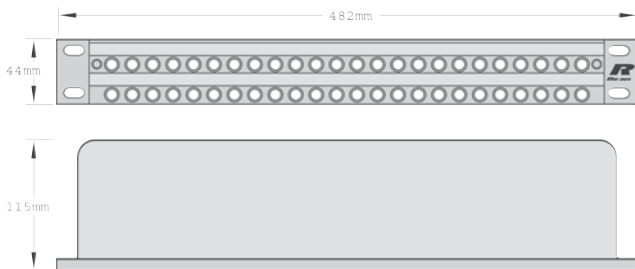
Solder lugs

LFJ 501 B-Gauge Jack Socket

- 5-point B-Gauge jack socket
- Nickel-silver spring contacts
- Palladium plated switch contacts
- Durable die-cast body with bright nickel plated nose
- Termination solder lugs

LFJ 501

Plan Elevations

10.0мм
7.5мм
15.0мм
11.4мм
14.1мм
63.4мм

Circuit Detail

S
R
T
RN
TN

look for the logo

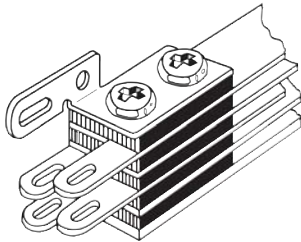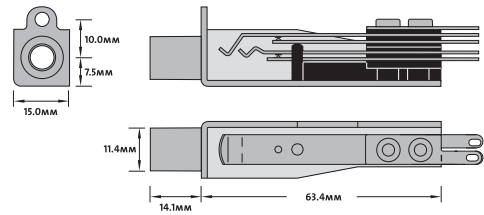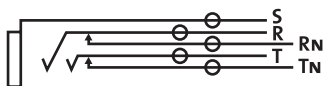| Specifications		NPPA Series	NPP-TB Series	NYS Series	MA 96 and XPM 96	LF 48 Series
Electrical						
Contact resistance:		< 20 mΩ	< 10 mΩ	< 10 mΩ	< 24 mΩ	< 20 mΩ
Switch contact resistance:		< 25 mΩ	< 15 mΩ	< 10 mΩ	< 26 mΩ	< 15 mΩ
Insulation resistance:	> 1 GΩ @ 500 V dc	●	●	●	●	●
Dielectric strength:	> 500 V ac	●	●	●	●	●
	> 1`000 V dc	●	●	●	-	-
Frequency range:	DC to > 50 MHz	●	●	●	●	●
Channel separation:	> 100 dB @ 10 kHz, 600 Ω terminated	●	●	●	●	●
	> 40 dB @ 6 MHz, 110 Ω terminated	●	●	●	●	●
AES / EBU Signals (digital) suitable:		●	●	●	●	●
Handles Phantom Power:		●	●	●	●	●
Mechanical						
Life time:	> 20`000 cycles	-	-	-	●	●
	> 10`000 cycles	-	-	●	-	-
	> 5`000 cycles	●	●	-	-	-
Insertion force:	< 25 N	-	-	-	●	●
	< 20 N	-	-	●	-	-
	< 10 N	●	●	-	-	-
Withdrawal force:	> 10 N	●	●	●	●	●
	> 8 N	●	●	-	-	-
Dimensions:	482 x 44 mm (19" x 1U)	●	●	●	●	●
Depth:		178 mm (7")	140 mm (5.5")	64 mm (2.52")	110 mm (4.33")	115 mm (4.53")
Dimension Patch Box:	168 x 77 x 77 mm (6.0 x 3 x 3")					
Temperature range:	- 30°C to + 80°C	●	●	●	●	●
Mating plug:		4.4 mm (0.173")	B-Gauge 1/4" plug	A-Gauge 1/4" plug	4.4 mm (0.173")	Longframe
		Bantam plug		acc. EIA RS-453	Bantam plug	B-Gauge plug
	according	MIL-P-642/13	BPO316/MIL-P-642/2	TEC60603-11	MIL-P-642/13	BPO316/MIL-P-642/2
Groundin wiring	flat tab for 3/16"	-	-	●	-	-
	FASTON® (4.8 x 0.8 mm)					
Materials						
Housing:		Steel	Steel	Steel	anodised Al	anodised Al
Front panel:		anodised Al	Pocan B 3225	Steel	anodised Al	anodised Al
Lacing bar:		Brass	Steel	N / A	coated steel	coated steel
Jack housing:		PA 66 blend	PA 6.6 30% GR	ABS	diecast alloy	diecast Al
Jack contacts:		CuSn6	CuSn6	CuSn6	Ni-Silver	Ni-Silver
		Tribor® plated	Au plated	tin plated	(CuNi18Zn20)	(CuNi18Zn20)
Switch contacts:		Au plated	Au plated	Bronze, tin plated	Palladium plated	Palladium plated
Grounding clip:		-	-	CuSn6, SnCu plated	-	-

Operating Accessories

Labeling software:

Patchlabel is a program to Label Patch Panel designation strips.
Free Download of Patch Label Program (ZIP - 347 KB) on the Web "www.neutrik.com" section "Patch Panels".

Part Number	Description

NPPA Series

Part Number	Description	Configuration*	Wiring	Grounding
NPPA-TT-PT**	2 x 48 jacks	half normalled bottom	288 push terminals	individual
NPPA-TT-PT-FN**	2 x 48 jacks	full normalled	288 push terminals	individual
NPPA-TT-PT-HNT**	2 x 48 jacks	half normalled top row	288 push terminals	individual
NPPA-TT-PT-I**	2 x 48 jacks	isolated	288 push terminals	individual
NPPA-TT-PT-P**	2 x 48 jacks	parallel	288 push terminals	individual
NPPA-TT-S**	2 x 48 jacks	half normalled bottom	288 solder terminals	individual
NPPA-TT-S-FN**	2 x 48 jacks	full normalled	288 solder terminals	individual
NPPA-TT-S-HNT**	2 x 48 jacks	half normalled top row	288 solder terminals	individual
NPPA-TT-S-I**	2 x 48 jacks	isolated	288 solder terminals	individual
NPPA-TT-S-P**	2 x 48 jacks	parallel	288 solder terminals	individual
NPPA-TT-PT-PH	2 x 48 jacks	half normalled bottom	288 Phoenix push terminals	individual
NPPA-TT-SD50	2 x 48 jacks	half normalled bottom	4 x 50 pole D-SUB	groups of 12 channels
NPPA-TT-SD25	2 x 25 jacks	half normalled bottom	10 x 25 pole D-SUB	groups of 12 channels
NPPA-TT-E56	2 x 48 jacks	half normalled bottom	6 x 56 pole ELCO male connectors	individual
NPPA-TT48-E56	2 x 24 jacks	half normalled bottom	3 x 56 pole ELCO male connectors	individual
NPPA-TT-E90	2 x 48 jacks	half normalled bottom	4 x 90 pole ELCO male connectors	individual
NPPA-TT-IDC	2 x 48 jacks	programmable by jumpers	288 IDC terminals (KRONE-Type)	individual

* fully loaded jack pairs only, to built patch panels with mixed configuration use pre-config jackpairs
** in case of need added normalling bars can be used to reconfigure up to 4 jackpairs

Pre-configured Jack-Pairs

Part Number	Description	Configuration		Grounding
NJ3TTA-4-HNB	blocks of 2 channels	half normalled bottom row	cover ident color: clear	
NJ3TTA-4-HNT	blocks of 2 channels	half normalled top row		cover ident color: yellow
NJ3TTA-4-FN	blocks of 2 channels	full normalled		cover ident color: green
NJ3TTA-4-P	blocks of 2 channels	parallel		cover ident color: red
NJ3TTA-4-I	blocks of 2 channels	isolated		cover ident color: orange

Accessories

Part Number	Description
NPPA-S	Strain Relief bar

NPP-TB Series

Part Number	Description	Configuration	Wiring
NPP-TB	2 x 24 TB (BP0316/MIL-P-642/2) jacks	programmable for all commonly used configurations	push terminals
NPP-TB-HN	2 x 24 TB (BP0316/MIL-P-642/2) jacks	half Normalled Bottom Row	solder tags

Accessories

Part Number	Description
NPP-LB-**	Channel identification and status plates, pack of 100 per color, 9 different colors
NPP-C	Metal dust cover
NPP-S	A second rear extention bar for fix the very large cables.
NKTB*	Patch cord with NP3TB plugs. Available in black and red. Length: 30, 40, 60, 90 cm

**: 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.

NYS SPPL

Part Number	Description
NYS-SPP-L1	1/4" Patch Panel, 2 x 24 channels, configuration half normalled, isolated, split
NYS-SPCR1	Send / Return module (Split Print)

Ordering Information

Part Number	Description

Re'an Bantam Patchbays

MA96-1A	96 way, Red front panel - grouped 12 x 8
MA96-1D	96 way, Blue front panel - grouped 12 x 8
MA96-1O	96 way, Black front panel - grouped 12 x 8
MA96-1S	96 way, Silver front panel - grouped 12 x 8
XPM-96SS	96 way, Silver front panel - grouped 4 x 24
XPM-96SO	96 way, Black front panel - grouped 4 x 24

Bantam Jack Socket

MAJ-501	Standard Solder Tag

Re'an Longframe B-Gauge Patchbays

LF48-1A	48 way, Red front panel
LF48-1D	48 way, Blue front panel
LF48-1O	48 way, Black front panel
LF48-1S	48 way, Silver front panel
LFJ-501	Longframe B-Gauge jack socket, standard solder tag

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