

NEOXPacketRaven Hybrid 1G Singlemode Fiber TAPs

FULL NETWORK VISIBILITY | FPGA CHIPSET | DATA DIODE FUNCTION
HARDENED MODELS AVAILABLE | INDIVIDUALLY CONFIGURABLE



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Hybrid Fiber TAPs with media conversion and signal regeneration are decoupling elements for passive, secure and reliable tapping of network data in optical networks. These TAPs are looped into the fibre-optic line to be monitored and route out the entire data traffic while maintaining data integrity, without interruption and without packet loss.

By using conventional SPAN ports, also called mirror ports, on the other hand, the result can be distorted. Since this copying process works in store-and-forward mode and, for example, discards FCS/CRC faulty packets on OSI layer 2 instead of providing these Ethernet frames to the security or monitoring tool.

Our Network TAPs do not have a MAC or IP address, but work entirely on OSI Layer 1 and cannot be traced in the network without special and expensive measuring equipment. Hackers and attackers therefore have no chance. As the integrity of the outgoing data remains unaltered due to this tapping method, our Network TAPs are increasingly used in the areas of network forensics, security and monitoring.

Furthermore, our 1G hybrid TAPs behave passively on the network side, which means that there is no interruption of network traffic in the event of a power failure. In order to ensure the highest possible reliability on the monitoring side, our hybrid Fiber TAPs are equipped with redundant power supplies, but can also be additionally operated or protected with 12-48V DC voltage.

Additionally our TAPs work like a data diode and the monitoring ports are physically isolated from the network ports, which prevents access to the network via the monitoring ports on the hardware side for security reasons. Therefore, our hybrid Fiber TAPs guarantee a reliable network analysis or security investigation without compromise.

These models in the PacketRaven Network TAPs product family were designed as portable TAPs, but can also be installed in a 19" mounting frame in data centers using a mounting kit or on a DIN rail using a DIN rail clip.

Our active Fiber TAPs support a network speed of 1Gbps (1000Base-LX and 1000Base-ZX).

Our portable TAPs with RJ45/copper monitoring port are also available in a specially hardened version (Hardened TAPs) for high-security areas according to IEC 62443. They also have secure and encrypted firmware, security seals to prevent unnoticed opening, security screws to prevent unwanted opening and are optionally preconfigured.

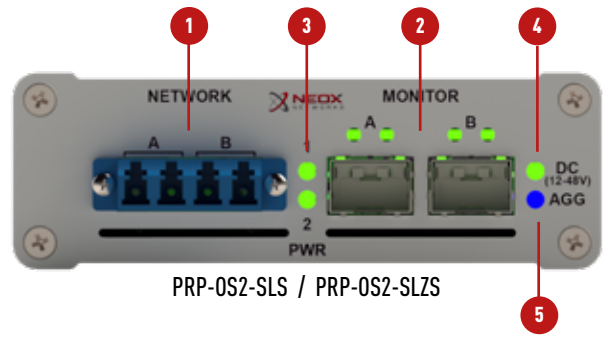
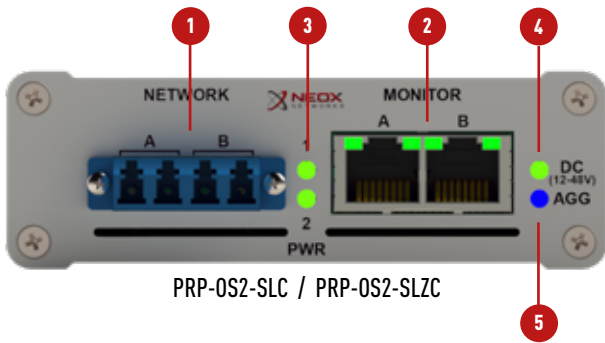
With PacketRaven Fiber TAPs you get permanent network access without risk and provide e.g. your monitoring tools with 100% reliable network data - without introducing a single point of failure.



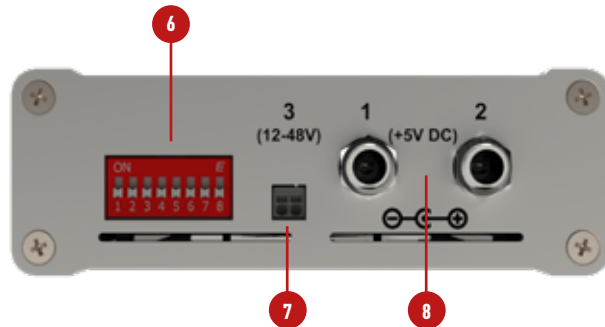
HIGHLIGHTS

- Secure, rock-solid FPGA-based design
- 1000Base-LX & 1000Base-ZX - supported network speed 1G
- Alternative to SPAN ports - mirrors 100% of traffic including FCS/CRC errored packets that may be dropped by SPANs
- Invisible on the network, no IP address, no MAC address, cannot be hacked
- 100% reaction-free due to galvanic isolation (Data Diode Function)
- Power supply via redundant 5V AC/DC power supply and/or 12-48V DC voltage
- Available in different split ratios - e.g. 50:50, 60:40, 70:30, 80:20, 90:10
- 100% passive without affecting the active network connection, no additional latency
- Support breakout, aggregation and regeneration mode
- Easy configuration via DIP switch
- Guaranteed no package loss
- Support up to 16k Jumbo Frames
- Plug-n-Play, operating mode change via DIP switch
- Specially hardened IEC62443 models available for CRITIS applications
- Various mounting options available
- Designed, assembled, certified and tested in Germany

Front View



Back View



INTERFACES

1	LC Network Ports A & B	5	Aggregation LED
2	RJ45/SFP Monitoring Ports A & B and Status LEDs	6	DIP switch for setting the TAP mode
3	2x AC/DC-Power (5V) LED	7	Connection for 12-48V DC voltage
4	12-48V DC-Power LED	8	Redundant connections for 2 AC/DC power (5V) supplies

MOUNTING OPTIONS



TAPs with rack mount frame bracket or DIN rail clip can of course also be used in mobile applications!

1. Mobile Use

Portable models - these models have no special mounting options and are primarily designed for mobile use.



PacketRaven Network TAP for mobile use



Handy & portable

2. Server Rack Mounting

To install our portable TAPs in a server rack, you need our server rack mounting frame with item number PRP-1U3-V2, as well as a rackmount frame mounting kit (item number PRP-1U3-CLIP) for the TAP.

The server rack mounting frame PRP-1U3-V2 provides space for up to 3 portable PacketRaven Network TAPs.

Both components are available as accessories.



Server rack mounting frame PRP-1U3-V2 for up to 3 PacketRaven portable Network TAPs



TAP with rack mounting kit for server rack mounting frame PRP-1U3-V2

3. DIN Rail Mounting

As a further alternative, we also offer a top-hat rail clip for our TAPs for mounting on a TS35/7.5 DIN top-hat rail. This clip can be rotated by 180° so that the connections of the TAP can be aligned according to the respective requirements. This DIN rail clip, available as an accessory, has the item number PRP-DIN-CLIP.

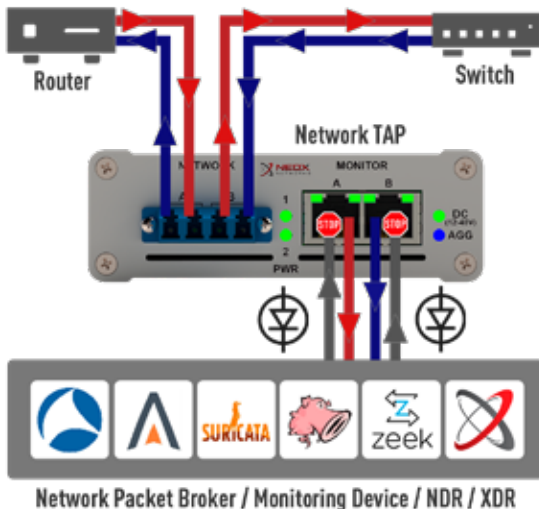


TS35/7.5 DIN rail



Network TAP with DIN rail clip

DATA DIODE FUNCTION



Data diodes ensure unidirectional communication and ensure that data traffic can only flow in one direction.

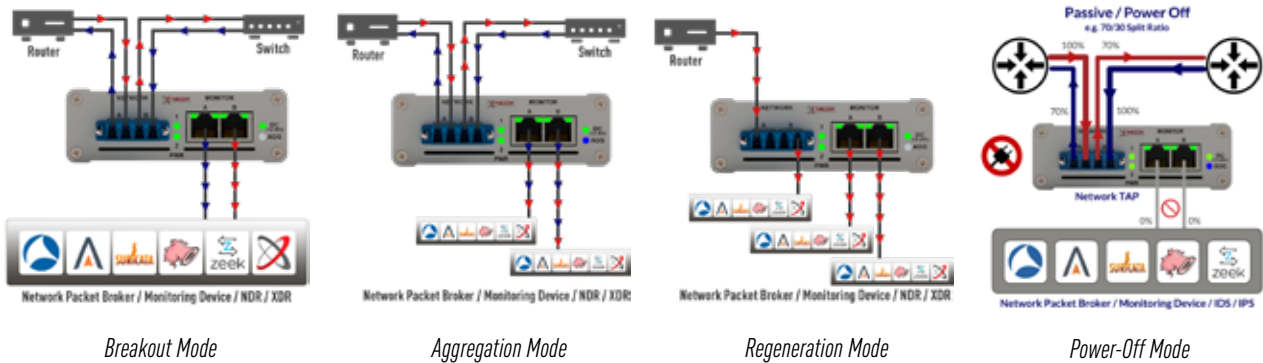
Unidirectional network devices are typically used to ensure information security or the protection of critical digital systems, such as industrial control systems or production networks from cyber attacks.

Our TAPs work like a diode and do not allow access to the network via the monitoring ports for security reasons.

By adding this further layer of security, it is therefore not possible to compromise the network connection and the productive network.

AVAILABLE TAP MODES

- Breakout:** Each Ethernet packet transmitted via the network line is mirrored separately in this mode while maintaining data integrity in the TAP. The send and receive directions are output separately on the two monitoring ports so that the network traffic can be analysed per data direction in this case.
 Another great advantage of the Breakout mode is the visibility of the network traffic even with a fully loaded network connection. In this mode, the set network speed is transferred to the monitoring ports.
- Aggregation:** In this mode, the data streams are bundled and output aggregated on both of the monitoring ports. This allows you to evaluate the network data of a full duplex line simultaneously with a single network interface on your analyzer. Due to the aggregation in hardware (FPGA), faulty packet sequences during recording are a thing of the past in this mode.
 For example, you can analyse the entire data traffic aggregated in 100Base-Tx lines without loss.
- Regeneration:** Regeneration is used to capture 100% full duplex traffic that can be sent to multiple monitoring devices (up to 3 in this case) to analyse your network.

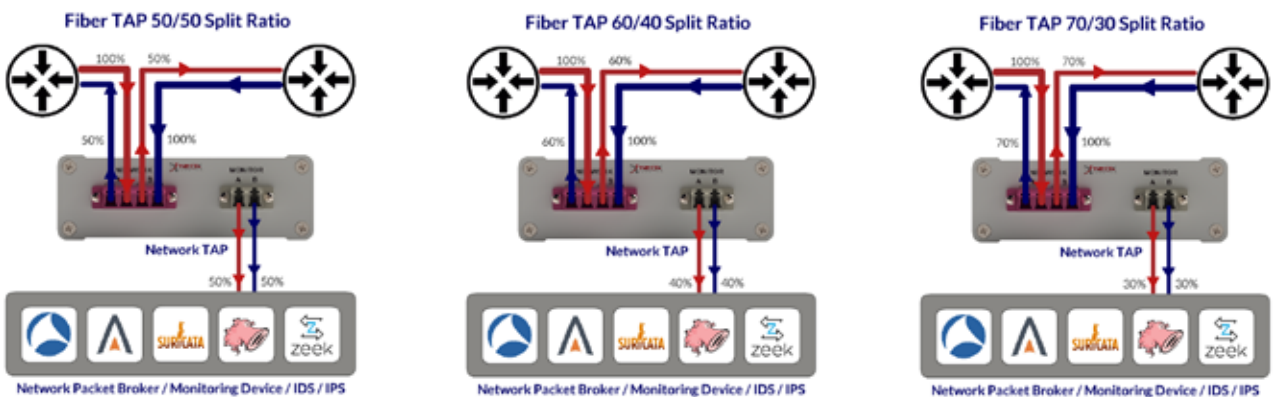


Passiv/Power-Off Mode: If the power supply fails, the active network connection is not interrupted. Only the devices connected to the monitoring port are no longer supplied with data.

SPLIT RATIOS / LIGHT SPLITTING

In order to tap data from an optical network connection, it is necessary to decouple or split a part of the available light signal. The split ratio is the ratio of the amount of light that is still available for the fiber optic network connection in relation to the amount of light that is diverted or split off to the monitoring ports of the (passive) fiber optic Network TAPs. A split ratio of e.g. 70/30 means that 70% of the light is still available for the network connection and 30% is split off for the monitoring ports.

However, as these hybrid TAPs have a copper or SFP-based monitoring output, 100% signal strength is available by means of OEO conversion - i.e. conversion of the optical signal into an electrical signal - in contrast to fiber-based monitoring ports.



ADVANCED FUNCTIONS OF THE HARDENED TAPS



Preconfigured

Our Network TAPs with RJ45 monitoring output work like a data diode and thus physically isolate the monitoring ports from the network ports. This ensures that, for security reasons, access to the network via the monitoring ports is prevented on the hardware side.



Secure Boot

PacketRaven Network TAPs are therefore already in the standard version among the network components through which an attack vector is excluded.



For high-security areas according to IEC 62443 and critical infrastructures (CRITIS), however, even this is sometimes not sufficient, which is why NEOX Networks now also offers a specially hardened version of its TAPs.



Security Seal

If desired, these TAPs can be delivered pre-configured and then do not allow any subsequent configuration changes.

In addition, they are secured against unwanted or unnoticed opening by special screws and security seals.



Safety Screws

And to round it all off, these TAPs also have a specially secured and encrypted firmware. Secureboot checks each time the TAP is started whether the firmware to be executed has a valid signature and an authorised public key. If this is not the case, the TAP cannot be put into operation.

CONNECTION RELIABILITY IN CASE OF POWER LOSS

With all our active Network TAPs (except the SFP TAP) it is guaranteed that a loss of the TAP power supply will not lead to a failure of the active network line.



Only the devices connected to the monitoring port may no longer be supplied with data.

INDIVIDUALLY CONFIGURED AVAILABLE



Due to the FPGA chipset on which our active TAPs are based, it is possible to programme these models according to customer-specific requirements.

For example, TAPs with fixed operating mode and/or fixed speed, time stamping of outgoing packets, and much more.

TECHNICAL SPECIFICATIONS

NETWORK TAPS			
Dimensions:	10.60 cm x 3.50 cm x 16.40 cm	Operating temperature:	0° to 55°C
Weight:	430 g	Storage temperature:	-40° to 70°C
Consumption:	max. 3 Watt at 5V/0,6A	Certification:	CE, FCC, RoHS, WEEE, EN 55032 KL. A/B, EN 55035, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 50121-4:2016*, EN 50129*
Relative humidity in operation:	20% to 80%, non-condensing		

* Hardened TAPs

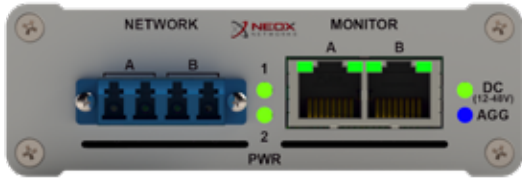
ATTENUATION VALUES

SPLIT RATIO (OTHERS ON REQUEST)	50:50	60:40	70:30
Singlemode OS1, OS2	3.4 dB / 3.4 dB	2.5 dB / 4.5 dB	1.7 dB / 5.8 dB

TAP MODELS



If you need a TAP with DIN rail mounting clip, please additionally order the mounting clip **PRP-DIN-CLIP!**
 If you need a TAP with rackmount frame front panel, please order the **PRP-1U3-CLIP** front panel additionally!
 (see „Mounting Options“)



PRP-OS2-SLC-x / PRP-OS2-SLZC-x



PRP-OS2-SLS-x / PRP-OS2-SLZS-x

1000BASE-LX - STANDARD MODELS

All TAPs for fiber type OS2 are also OS1 compatible!

ITEM NO.	STANDARD	NET- WORK	FIBER TYPE	WAVE- LENGTH	INTERFACE NETWORK	INTERFACE MONITOR.	OPERATING MODES
PRP-OS2-SLC-*	1000Base-LX	1G	OS2	1310 nm	LC Singlemode	RJ45	Aggregation, Breakout, Regeneration
PRP-OS2-SLS-*	1000Base-LX	1G	OS2	1310 nm	LC Singlemode	SFP	Aggregation, Breakout, Regeneration

* respective split ratio - e.g. „70“ for a split ratio of 70:30, „60“ for 60:40, and „50“ for 50:50

1000BASE-ZX - STANDARD MODELS

All TAPs for fiber type OS2 are also OS1 compatible!

ITEM NO.	STANDARD	NET- WORK	FIBER TYPE	WAVE- LENGTH	INTERFACE NETWORK	INTERFACE MONITOR.	OPERATING MODES
PRP-OS2-SLZC-*	1000Base-ZX	1G	OS2	1550 nm	LC Singlemode	RJ45	Aggregation, Breakout, Regeneration
PRP-OS2-SLZS-*	1000Base-ZX	1G	OS2	1550 nm	LC Singlemode	SFP	Aggregation, Breakout, Regeneration

* respective split ratio - e.g. „70“ for a split ratio of 70:30, „60“ for 60:40, and „50“ for 50:50



1000BASE-LX/ZX - HARDENED MODELS

All TAPs for fiber type OS2 are also OS1 compatible!

ITEM NO.	STANDARD	NET- WORK	FIBER TYPE	WAVE- LENGTH	INTERFACE NETWORK	INTERFACE MONITOR.	OPERATING MODES
PRP-OS2-SLC-*-1GA-S	1000Base-LX	1G	OS2	1310 nm	LC Singlemode	RJ45	Aggregation, Breakout, Regeneration
PRP-OS2-SLC-*-1GA0-S	1000Base-LX	1G	OS2	1310 nm	LC Singlemode	RJ45	Aggregation
PRP-OS2-SLC-*-1GB0-S	1000Base-LX	1G	OS2	1310 nm	LC Singlemode	RJ45	Breakout
PRP-OS2-SLZC-*-1GA-S	1000Base-ZX	1G	OS2	1550 nm	LC Singlemode	RJ45	Aggregation, Breakout, Regeneration
PRP-OS2-SLZC-*-1GA0-S	1000Base-ZX	1G	OS2	1550 nm	LC Singlemode	RJ45	Aggregation
PRP-OS2-SLZC-*-1GB0-S	1000Base-ZX	1G	OS2	1550 nm	LC Singlemode	RJ45	Breakout

* respective split ratio - e.g. „70“ for a split ratio of 70:30, „60“ for 60:40, and „50“ for 50:50

ACCESSORIES

INSTALLATION & MOUNTING

ITEM NO.	DESCRIPTION
PRP-1U3-V2	Server rack mounting frame for 3 portable TAPs
PRP-1U3-BP-V2	Blank plate for mounting frame PRP-1U3-V2
PRP-1U3-CLIP	TAP rackmount frame bracket for server rack monuting frame PRP-1U3-V2
PRP-DIN-CLIP	TAP DIN rail mounting clip



PRP-1U3-V2

PRP-1U3-BP-V2

PRP-1U3-CLIP

POWER SUPPLIES & ACCESSORIES

ITEM NO.	DESCRIPTION
PRP-PS-INT	PSU with EU, UK, and US plug head
PRP-PS-*-A	Plug head *EU, *UK or *US
PRP-PS-EU	Power supply unit with EU plug (head)
PRP-PS-UK	Power supply unit with UK plug (head)
PRP-PS-US	Power supply unit with US plug (head)
PRP-PS-C14-25W	Power supply unit with C14 socket - connected to PSU via C13-C14 cable



PRP-PS-INT

PRP-PS-C14-25W

ITEM NO.

SFP TRANSCEIVER

NX-SFP-TX-1G	10/100/1000Base-T SFP transceiver, supports connection lengths of up to 100 m
NX-SFP-FX-100M	100Base-FX SFP transceiver, Multimode, 1310nm, supports connection lengths of up to 2 km
NX-SFP-SX-1G	1000Base-SX SFP transceiver, Multimode, 850nm, supports connection lengths of up to 550 m
NX-SFP-LX10-1G	1000Base-LX SFP transceiver, Singlemode, 1310nm, supports connection lengths of up to 10 km
NX-SFP-LX20-1G	1000Base-LX SFP transceiver, Singlemode, 1310nm, supports connection lengths of up to 20 km
NX-SFP-LX40-1G	1000Base-LX SFP transceiver, Singlemode, 1310nm, supports connection lengths of up to 40 km
NX-SFP-ZX80-1G	1000Base-ZX SFP transceiver, Singlemode, 1550nm, supports connection lengths of up to 80 km
NX-SFP-ZX120-1G	1000Base-ZX SFP transceiver, Singlemode, 1550nm, supports connection lengths of up to 120 km
NX-SFP-ZX160-1G	1000Base-ZX SFP transceiver, Singlemode, 1550nm, supports connection lengths of up to 160 km



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