NEOX NETWORKS
NEXT GENERATION NETWORK VISIBILITY

NEOX**PacketRaven 10M/100M/1000M Copper TAPs**

FULL NETWORK TRANSPARENCY FROM 10M TO 1G | FPGA CHIPSET DATA DIODE FUNCTION | REDUNDANT POWER SUPPLIES

CRITIS APPROVED

IEC62443 CERTIFIED

SecurITy
made in Germany
Trust Seal
www.teletrust.de/itsmig

Our Copper TAPs are active decoupling elements for the secure and reliable tapping of network data in copper-based networks. These TAPs are looped into the network line to be monitored and forward the entire data traffic without interruption and without packet loss, while maintaining data integrity.
Using conventional SPAN ports, also known as mirror ports, on the other hand, can distort the result, as 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.
On top, our copper 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 copper TAPs guarantee a reliable network analysis or security investigation without compromise.

Furthermore, our copper TAPs behave passively on the network side. By means of fail-safe, the TAP behaves like a cable bridge in the event of a power failure or arbitrary deactivation and ensures that the active network connection is not interrupted or at least continues to function without the TAP. Thus, the active line is not negatively affected.
To ensure the highest possible reliability on the monitoring side, our copper TAPs have redundant power supplies, but can also be additionally or exclusively operated or secured with 12-48V DC voltage and/or via a PoE power supply.

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 portable copper TAPs support network speeds of 10Mbps, 100Mbps and 1Gbps.

These portable TAPs 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 Network 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.

Full Network Transparency
No Impairment of Data Traffic
100% Network Data
Invisible for Attackers
No Network Access via Monitoring Port
Flexible to Use
Plug-n-Play
Failure Protection on Power Loss
PoE+ Power over Ethernet
Redundant Power Supply
Fast and Precise
Support Jumbo Frames
Made in Germany

HIGHLIGHTS

Safe, rock-solid FPGA-based design
10Base-T, 100Base-TX, 1000Base-T, 10/100/1000 BaseT - support 10M, 100M, and 1G network speeds
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 through galvanic isolation (Data Diode Function)
Power supply via redundant AC/DC power supply units and/or DC voltage
Supports PoE 802.3af Passthrough and power supply via PoE
Supports failsafe mode for resilience in the event of a power failure
Supports breakout, aggregation and regeneration mode
Guaranteed no packet loss
Supports up to 16k Jumbo Frames
Plug-n-Play, no complex configuration necessary
Simple configuration via DIP switches
Specially hardened models available
Various mounting options available
Designed, assembled, certified and tested in Germany

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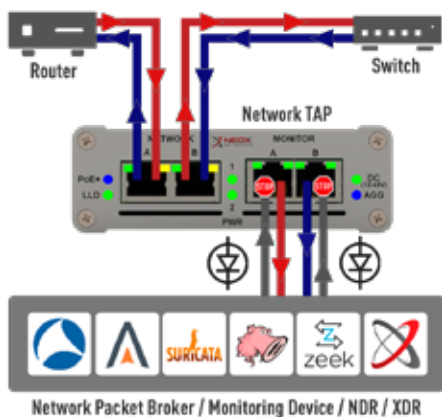
Data diodes guarantee unidirectional communication and ensure that data traffic can only flow in one direction.

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

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

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

POE - POWER OVER ETHERNET FUNCTIONS

The TAP supports both passive PoE and active PoE for passing through the power supply to a PoE-capable device:

- PoE/PoE+ pass-through according to IEEE802.af - the maximum power consumption that an end device can draw via the TAP is 12.95W
- Power supply of the TAP via PoE according to IEEE802.af (active/passive)

TAP Power Supply via PoE

To connect the TAP to a PoE port according to IEEE802.af, please follow the installation steps below:

1. First connect the TAP to the PSE (Power Sourcing Equipment) device and make sure that the PoE+ LED lights up.
2. As soon as this lights up, the PSE and the TAP have negotiated the power supply and you can now connect your PoE end device to the TAP.

This sequence must be followed so that the TAP can properly establish power supply via a PSE device per IEEE802.af.
All other power supply inputs on the TAP can still be used; the PoE power supply increases the redundancy in this case.

INTERFACES

1	RJ45 Network Ports A & B and Status LEDs	5	Power over Ethernet (PoE Plus) and Link Loss Detection (LLD) LEDs
2	RJ45/SFP Monitoring Ports A & B and Status LEDs	6	DIP Switch for LLD on/off, TAP Mode and Speed
3	Aggregation LEDs	7	Connector for 12-48V DC Voltage
4	DC-Power LEDs (2x for AC/DC (5V), 1x for 12-48V DC)	8	Redundant AC/DC (5V) Power Supply Connections

Front View

PRP-SCC-1GA/1GB

PRP-SCS-1GA/1GB
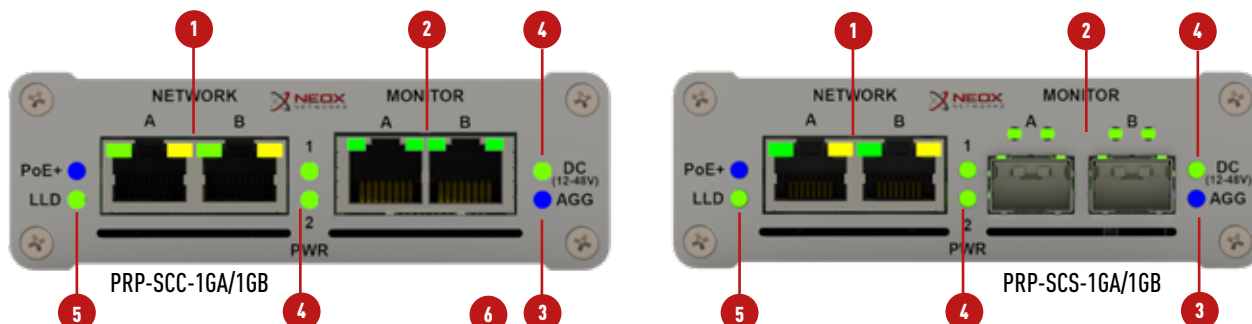
Back View
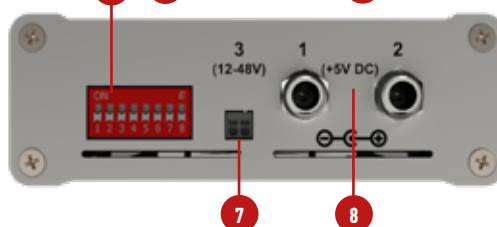
MOUNTING OPTIONS

⚠ 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 are designed for mobile use (without additional accessories), but can also be installed in a server rack using an additional server rack mounting frame (PRP-1U3-V2) and rackmount frame mounting kit (PRP-1U3-CLIP), or mounted on a DIN top-hat rail using a DIN top-hat rail clip (PRP-DIN-CLIP).

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
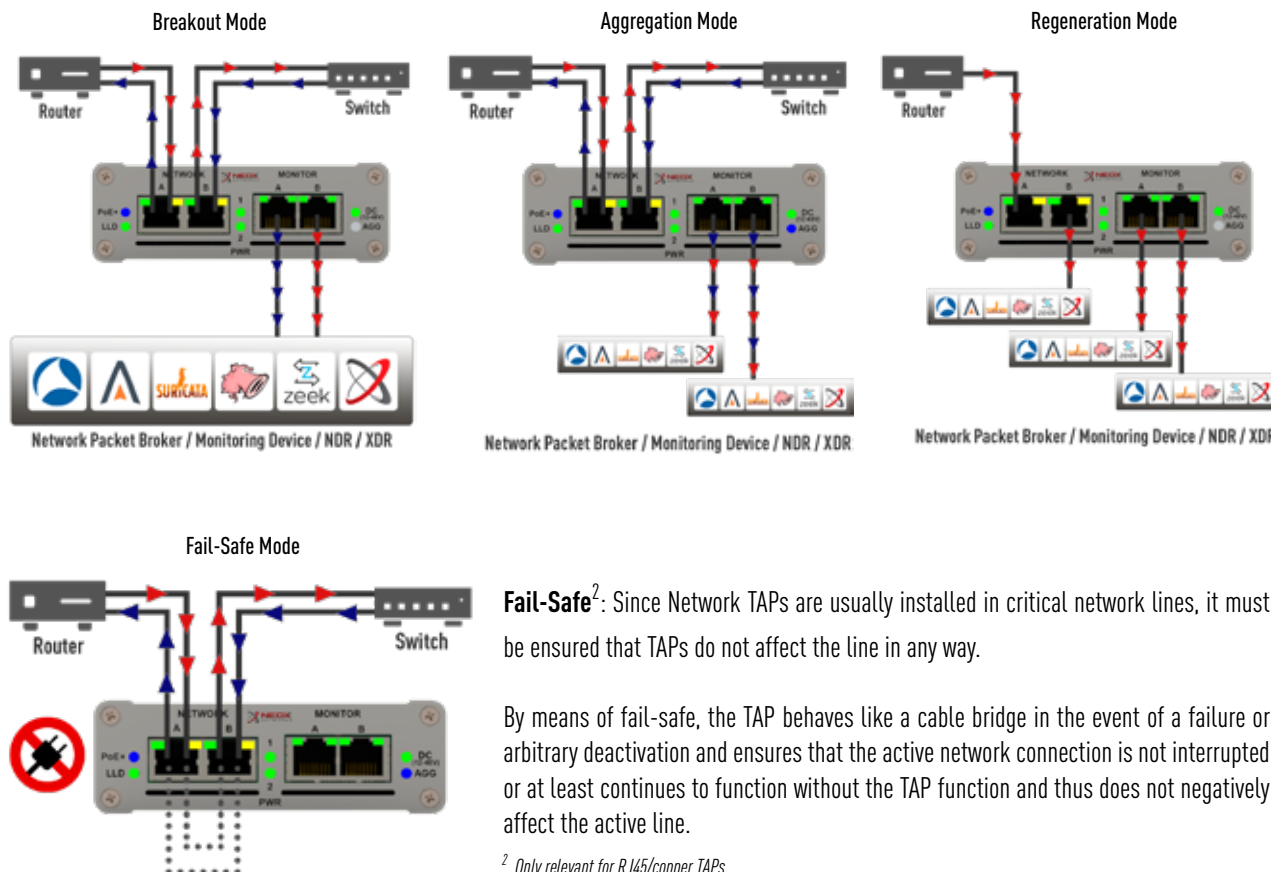
CONNECTION RELIABILITY IN CASE OF POWER LOSS

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.

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.
  For example, if the TAP is configured for 100Base-T, then both monitoring ports will communicate on 100Base-T accordingly.

- **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.
  The monitoring ports will always boot the link with 1000Base-TX, no matter what is negotiated on the network side.

- **Regeneration**: Regeneration is used to capture 100% full duplex traffic that can be sent to multiple monitoring devices (up to 3 in this case) for analysis of your network. In this mode, the network speed settings are synchronised as in breakout mode and the setting on the DIP switch is applied to all ports.

Breakout Mode

Aggregation Mode

Regeneration Mode

Network Packet Broker / Monitoring Device / NDR / XDR

Network Packet Broker / Monitoring Device / NDR / XDR

Network Packet Broker / Monitoring Device / NDR / XDR

Fail-Safe Mode

Fail-Safe[2]: Since Network TAPs are usually installed in critical network lines, it must be ensured that TAPs do not affect the line in any way.

By means of fail-safe, the TAP behaves like a cable bridge in the event of a failure or arbitrary deactivation and ensures that the active network connection is not interrupted or at least continues to function without the TAP function and thus does not negatively affect the active line.

[2] *Only relevant for RJ45/copper TAPs*

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.

ADVANCED FUNCTIONS OF THE HARDENED TAPS

Preconfigured

Secure Boot

Security Seal

Safety Screws

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.

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.

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.

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.

TECHNICAL SPECIFICATIONS

| NETWORK TAPS	
Dimensions:	10.60 cm x 3.50 cm x 16.40 cm
Weight:	460g
Consumption:	max. 3 Watt at 5V/0.6A
Storage temperature:	-40° to 70°C
Operating temperature:	0° to 55°C
Relative humidity in operation:	20% to 80%, non-condensing
Certifications:	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*, IEC 62443-4-2:2019*

* Hardened TAPs

POWER SUPPLIES	
Input voltage:	110V-240V AC 50-60Hz
Output voltage:	5V DC
Output current:	2A
Power:	max. 10 Watt
Power plug:	with interchangeable plug head
5V Cable	with ferrite ring
5V Connector	- Screwable hollow plug - 5.5 mm outer diameter - 2.1 mm inner diameter

* Optional power supply units for connection via C13-C14 cable available (s. accessories)
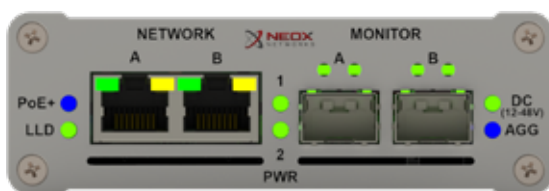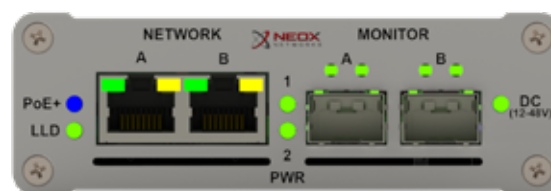
TAP MODELS
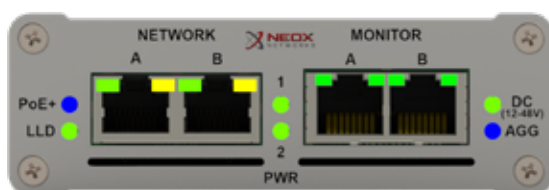
PRP-SCC-1GAx
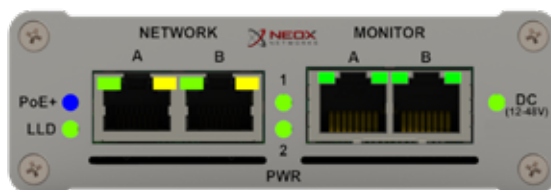
PRP-SCC-1GBx

PRP-SCS-1GA

PRP-SCS-1GB

⚠ 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")!

STANDARD MODELS

ITEM NO.	STANDARDS	NETWORK	INTERFACE NET.	INTERFACE MON.	OPERATING MODES
PRP-SCC-1GA	10/100/1000Base-T	10M/100M/1G	RJ45	RJ45	Aggregation, Breakout, Regeneration
PRP-SCS-1GA	10/100/1000Base-T	10M/100M/1G	RJ45	SFP	Aggregation, Breakout, Regeneration
PRP-SCC-1GB	10/100/1000Base-T	10M/100M/1G	RJ45	RJ45	Breakout
PRP-SCS-1GB	10/100/1000Base-T	10M/100M/1G	RJ45	SFP	Breakout

HARDENED MODELS

ITEM NO.	STANDARDS	NETWORK	INTERFACE NET.	INTERFACE MON.	OPERATING MODES
PRP-SCC-1GA-S	10/100/1000Base-T	10M/100M/1G	RJ45	RJ45	Aggregation, Breakout, Regeneration
PRP-SCC-1GA0-S	10/100/1000Base-T	10M/100M/1G	RJ45	RJ45	Aggregation
PRP-SCC-1GB0-S	10/100/1000Base-T	10M/100M/1G	RJ45	RJ45	Breakout

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-DIN-CLIP

PRP-1U3-V2

PRP-1U3-BP-V2

PRP-1U3-CLIP

ITEM NO.	POWER SUPPLIES & ACC.	ITEM NO.	POWER SUPPLIES & ACCESSORIES
PRP-PS-INT	PSU with EU, UK, and US plug head	PRP-PS-UK	Power supply unit with UK plug (head)
PRP-PS-*-A	Plug head *EU, *UK or *US	PRP-PS-US	Power supply unit with US plug (head)
PRP-PS-EU	Power supply unit with EU 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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