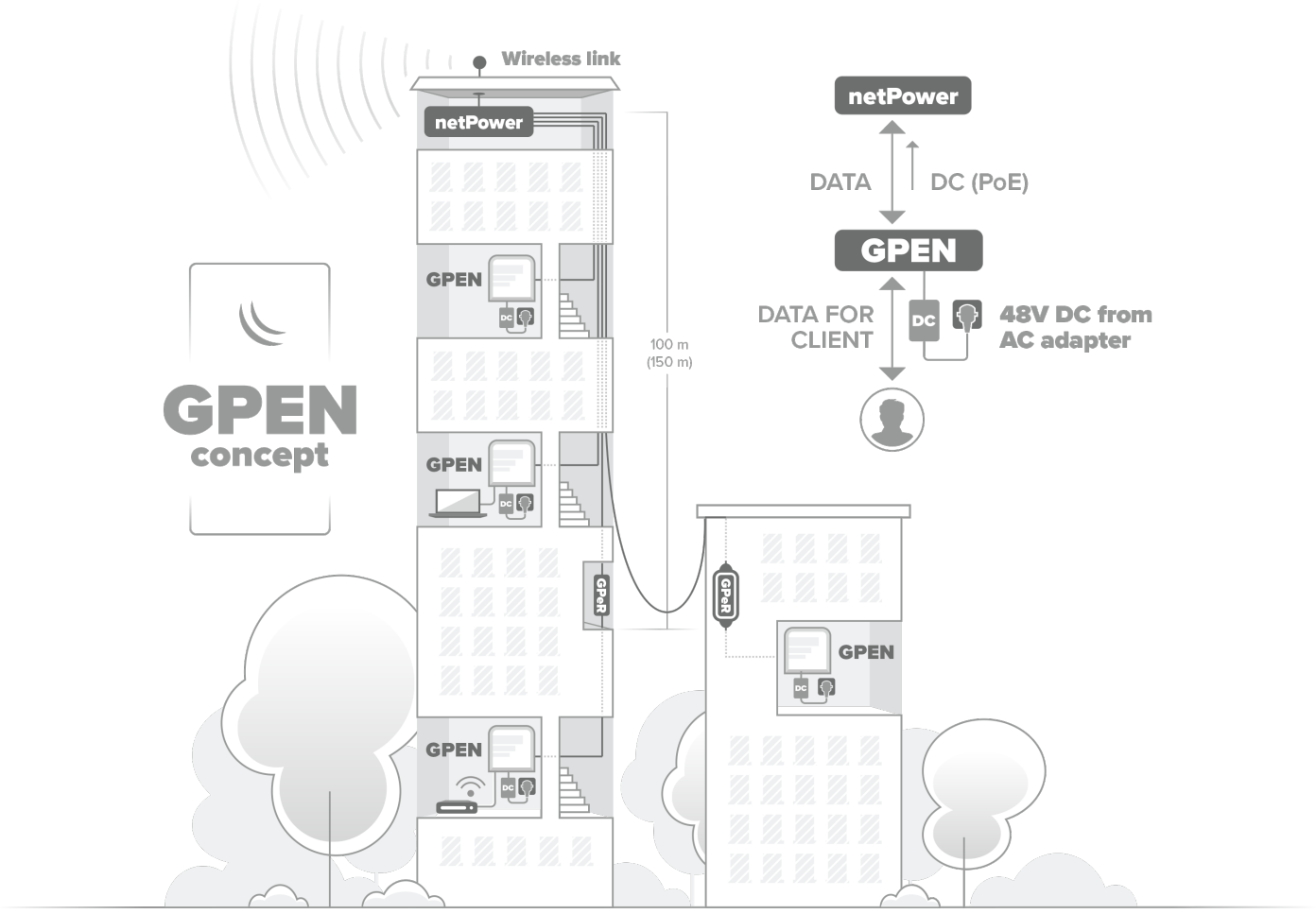
GPEN (Gigabit Passive Ethernet Network) Concept

Cut costs, not speed – forget about the expensive GPON!

This is the cheapest way for any ISP to deliver high-speed internet to individual apartments.



MikroTik GPEN concept can replace any existing or future GPON solution. It provides all the benefits of GPON, but utilizes well-proven, simple and inexpensive Ethernet solutions.

GPEN doesn't require expensive GPON OLT equipment in your server rooms, just a regular switch port!

Similar to GPON, GPEN solution will require clients to provide power, but instead of powering GPON's ONT device, power will be used for extending the Ethernet cable (with our GPeR devices) and powering the netPower device. That is the GPEN analogue of GPON splitters – netPower provides additional functionality and possibilities.

And the best part of this technology – it gives you all the flexibility for a fraction of the price. You can connect netPower to your server room by Ethernet, Active optical line or use it to power one end of point-to point backbone wireless link. GPEN – the evolution of GPON done right!

GPEN11

The GPEN11 is a power injector that can power your uplink devices via PoE. It is part of the GPEN (Gigabit Passive Ethernet Network) concept, which aims to replace GPON installations with lower cost and more easy to deploy Ethernet alternative.

It also has a designated space for an ISP sticker on the front. Sticker size: 66 x 25 mm (2,5 x 1 Inches).

GPEN11 can be mounted inside customer premises, next to the wireless router which provides connectivity to the users. The GPEN11 itself will then power the ISP router, whether it is an outdoor wireless unit mounted on the roof or a network switch somewhere in the building. The GPEN unit can be securely attached to a wall or the communications cabinet. The Ethernet cable can be routed either directly through its bottom cable opening or into the wall, as preferred.

Specifications

Product code	GPEN11
Number of 1 GbE Ethernet ports	2
Number of DC inputs	1
PoE-out	Yes, Passive PoE
Supported input voltage	12 - 57 V
Dimensions	92 x 104 x 24 mm
Operating temperature	-40°C to +70°C tested

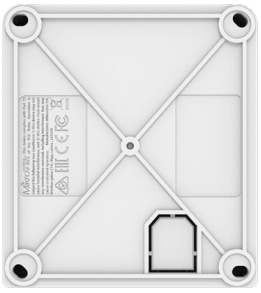
Included parts

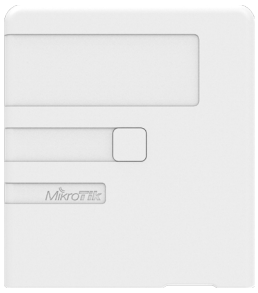
Screw kit

GPEN21

The GPEN21 is a smart power injector that serves as an advanced software controlled repeater. Not only can it power your uplink devices via PoE, it can also provide a range of useful software features:

- Interface management and monitoring
- GPEN link fault detection
- VLAN support
- SNMP reporting
- Basic Traffic Shaping





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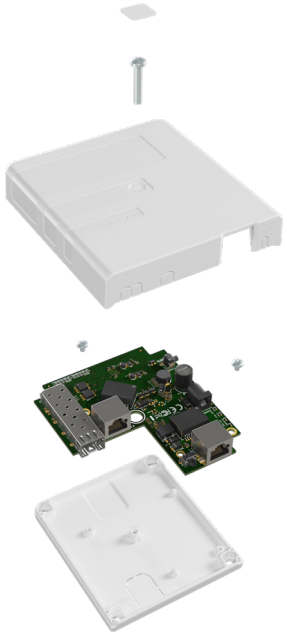


GPEN21 has an Ethernet and SFP port for fiber connectivity. Customers can choose to use GPEN21 to power optical module for uplink to provider, or to provide PoE to power Ethernet uplink to provider (that uses our GPER and/or NetPower products) The GPEN unit can be securely attached to a wall or the communications cabinet. The Ethernet cable can be routed either directly through its bottom cable opening or into the wall, as preferred.

Specifications

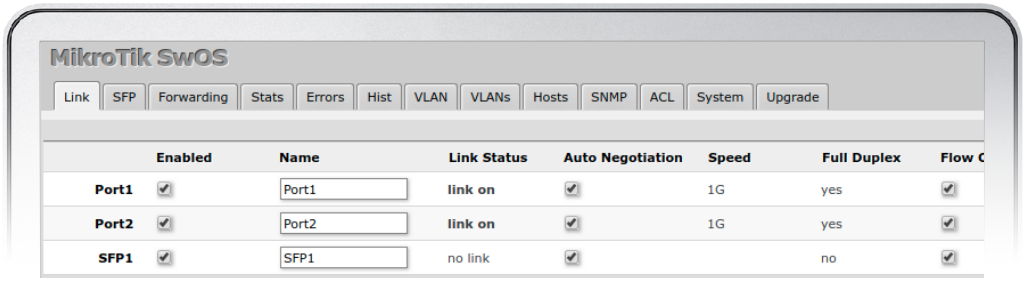
Product code	GPEN21
Number of 1 GbE Ethernet ports	2
Number of 1G SFP ports	1
Number of DC inputs	2
PoE-out	Yes, Passive PoE up to 57 V
PoE-in	802.3af/at
Supported input voltage	12 - 57 V
Dimensions	92 x 104 x 24 mm
Operating temperature	-40°C to +70°C tested

Included parts

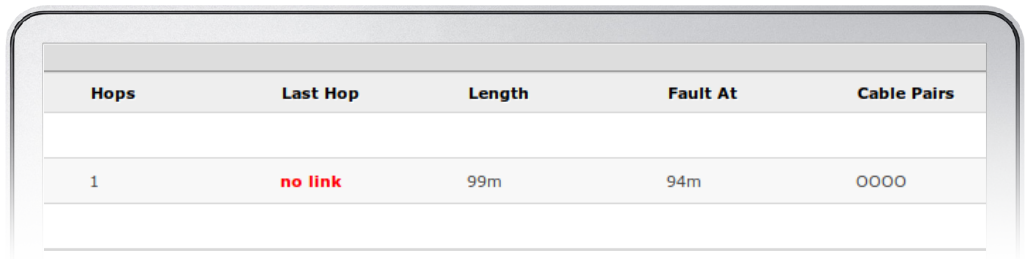
Screw kit

GPEN21 software provides

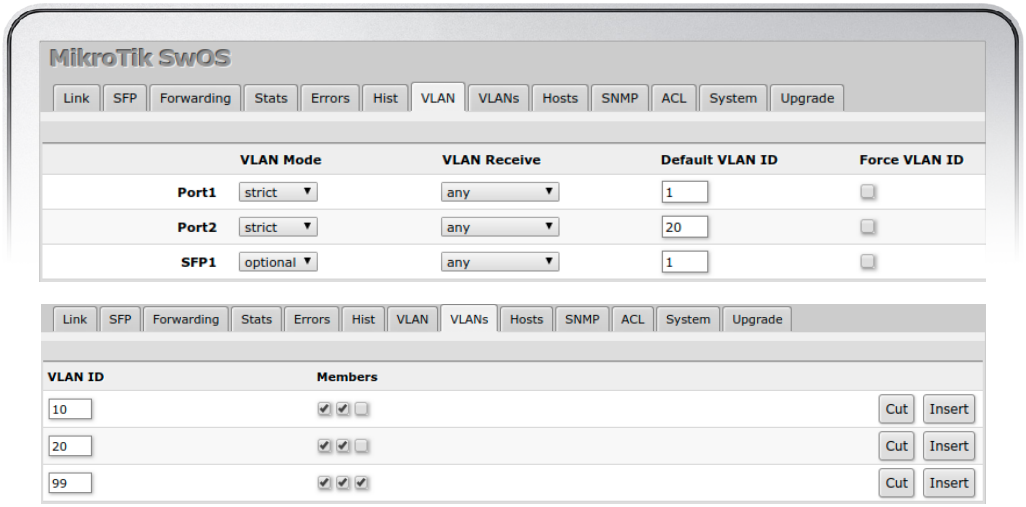
Interface management and monitoring



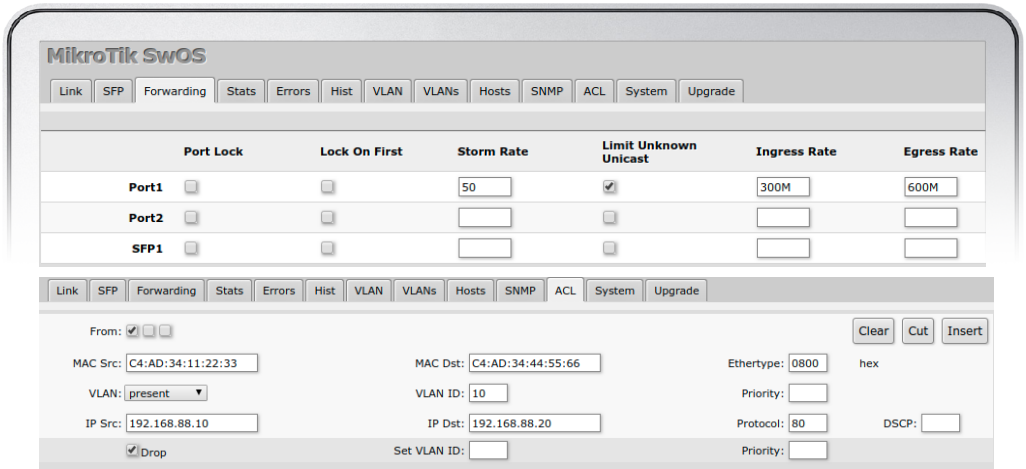
GPEN link fault detection



VLAN support



Basic traffic shaping



GPeR

The Gigabit Passive Ethernet Repeater (GPeR) is part of our new GPEN (Gigabit Passive Ethernet Network) concept, which aims to replace GPON installations with lower cost and more easy to deploy Ethernet alternative.

The GPeR unit allows to extend Ethernet cable by additional hop (< 100 - 150 m to regular network devices, and up to 210 m to another GPeR unit) up to 1,500 m. Handy for highrise buildings, multi-apartment buildings, with many floors and sections, where very long Ethernet cables might be a problem.

Maximium allowed length of CAT6 Ethernet cable between GPeR and power source/router is up to 100 m (depending on cable quality, high quality - up to 150 m).

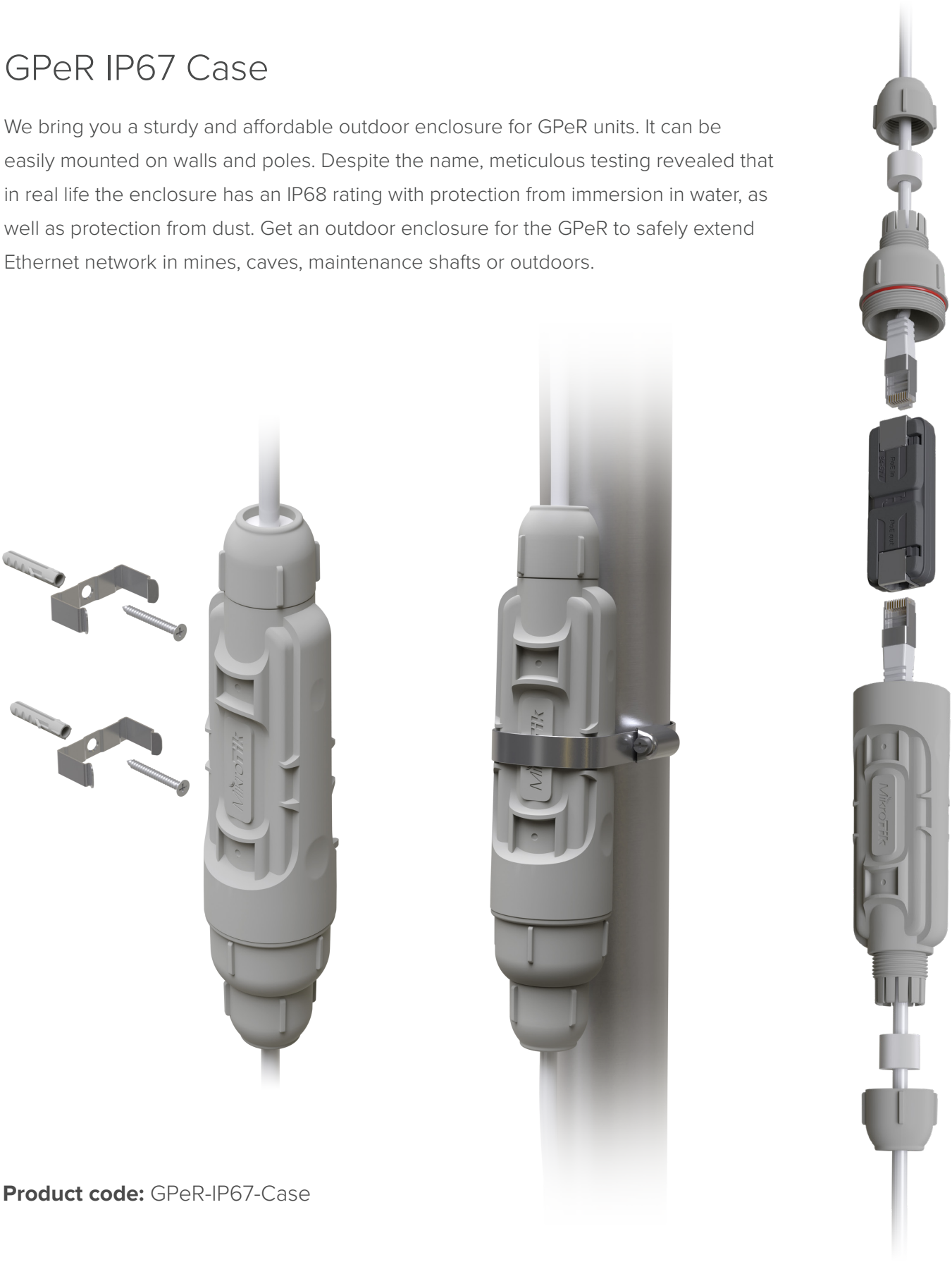
Maximium allowed distance of CAT6 Ethernet cable between two GPeR devices is up to 210 m (depending on cable quality).

Specifications

Product code	GPeR
Gigabit Ethernet ports	2
Switch chip	Marvell E6341
Powering	PoE
PoE-in	802.3af/at or Passive PoE (24 - 57 V)
PoE-out	Jumper selectable Passive PoE passthrough
Max power consumption	2 W
Operating temperature	-40°C to +70°C tested

GPeR IP67 Case

We bring you a sturdy and affordable outdoor enclosure for GPeR units. It can be easily mounted on walls and poles. Despite the name, meticulous testing revealed that in real life the enclosure has an IP68 rating with protection from immersion in water, as well as protection from dust. Get an outdoor enclosure for the GPeR to safely extend Ethernet network in mines, caves, maintenance shafts or outdoors.



Product code: GPeR-IP67-Case

netPower 15FR

With netPower 15FR switch you can forget about expensive GPON base stations and optical splitters. This switch is a part of our GPEN concept – aimed to bring the speed and versatility of fiber networking while using the advantages of Ethernet. It is an easy to deploy, low-cost way for any ISP to deliver the Internet to individual apartments.

You don't have to worry about power options in the attic or the utility room – netPower 15FR has 15 reverse PoE ports. Depending on your setup, netPower can draw the necessary power even from a single client! Another Ethernet port has PoE-out – you can use it to power an aggregate link such as our Wireless Wire Dish or a security camera, for example.

netPower 15FR
– bringing the cost down and the speed up!

There are two SFP ports for fiber connectivity. The outdoor enclosure allows you to install this switch in all kinds of environments – from damp attics to elevator shafts and different poles with hose clamps.

netPower 15FR has a non-blocking throughput of 3.6 Gbps, switching capacity of 7.2 Gbps and forwarding rate of 5.4 Mpps.

Specifications

Product code	CRS318-1Fi-15Fr-2S-OUT
CPU	98DX224S 800 MHz
Size of RAM	256 MB
Storage type	Flash
Storage size	16 MB
Switch chip model	98DX224S
Number of 100 Mbps Ethernet ports	16
SFP ports	2
Operating system	SwOS / RouterOS (Dual boot)
RouterOS license level	5
PoE-in	Ports 1 - 14 and 16
PoE-out	On Ether15
Supported input voltage	18 - 57 V (DC jack); 36 - 57 V (PoE-in)
Number of DC jacks	1 *
Dimensions	304 x 212 x 71 mm
Operating temperature	-40°C to +70°C tested
Max power consumption	29 W

** power adapter not included*

Included parts

Hose clamp 1

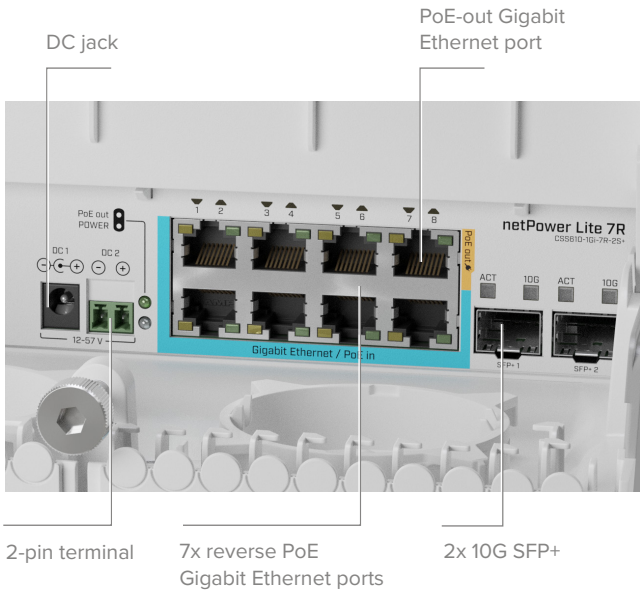
Hose clamp 2

K-66 fastening set

DC to Terminal block adapter

netPower Lite 7R

With netPower Lite 7R switch you can forget about expensive GPON base stations and optical splitters. This switch is a part of our GPEN concept – aimed to bring the speed and versatility of fiber networking while using the advantages of Ethernet. It is an easy to deploy, low-cost way for any ISP to deliver the Internet to individual apartments.



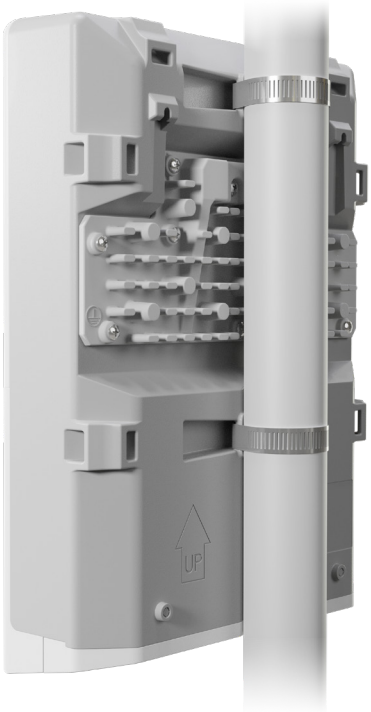
This version of the innovative netPower switches features 8 PoE Gigabit Ethernet ports and 2 SFP+ ports for 10G fiber connectivity.

With this switch you won't have to worry about power issues, as there are many options. netPower Lite 7R has 7 reverse PoE ports. Depending on your setup, netPower can draw the necessary power even from a single client! Ethernet port 8 can power other PoE capable devices with the same voltage as applied to the unit. There is also a DC jack and a 2-pin terminal for alternative powering.

netPower Lite 7R – highest efficiency for the lowest cost!

The outdoor enclosure allows you to install this switch in all kinds of environments – from damp attics to elevator shafts and different poles with hose clamps.

netPower Lite 7R has a non-blocking throughput of 28 Gbps, switching capacity of 56 Gbps and forwarding rate of 41.7 Mpps.



Specifications

Product code	CSS610-1Gi-7R-2S+OUT
Number of 1G Ethernet ports	8
Number of 10G SFP+ ports	2
Operating system	SwOS
Dimensions	304 x 212 x 71 mm
Operating temperature	-40°C to +70°C tested

Powering

PoE-in	Passive PoE
PoE-in input voltage	12-57 V
PoE-out ports	Ether8
Max out per port output (input < 30 V)	600 mA
Max out per port output (input > 30 V)	450 mA
Number of DC inputs	9 (7x PoE-in, 2-pin terminal, DC jack)
DC jack input voltage	12-57 V
2-pin terminal input voltage	12-57 V
Max power consumption without attachments	7 W
Max power consumption	29 W

Certification & Approvals

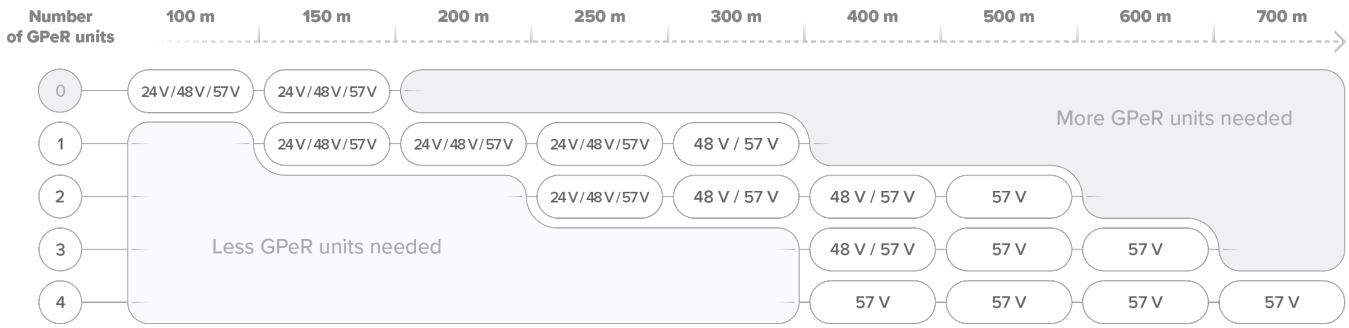
Certification	FCC, IC, CE

Included parts

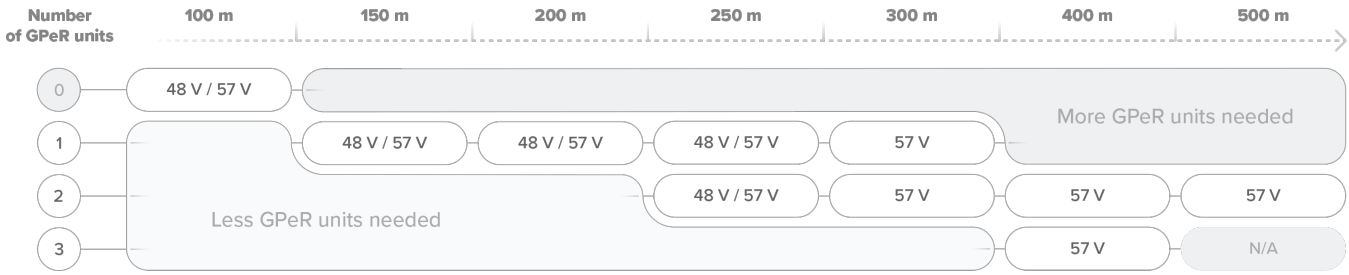
2x hose clamps

K-66 fastening set

To power netPower from a single GPEN



To power netPower that provides PoE-out to uplink from a single GPEN



Examples

Power supply	Distance	Number of GPeR units	Powers netPower	Available for PoE-out on netPower
24 V > 1.3 A	100 m	0	YES, no PoE-out	N/A
	175 m	1	YES, no PoE-out	N/A
	310 m	2	NO	N/A
	500 m	3	NO	N/A
48 V > 0.95 A	100 m	0	YES	15 W - 17 W
	175 m	1	YES	13 W - 14.5 W
	310 m	2	YES	4.5 W - 9.5 W
	500 m	3	YES, no PoE-out	N/A
57 V > 0.8 A	100 m	0	YES	19.5 W - 20.5 W
	175 m	1	YES	17.5 W - 18.5 W
	310 m	2	YES	10 W - 14 W
	500 m	3	YES	3.5 W - 7 W

Power adapters

48POW
48 V, 1.46 A, 70 W

24HPOW
24 V, 2.5 A, 60 W

48V2A96W
48 V, 2 A, 96 W

MT48-480095-11DG
48 V, 0.95 A, 45.6 W

MT48-570080-11DG
57 V, 0.8 A, 45.6 W