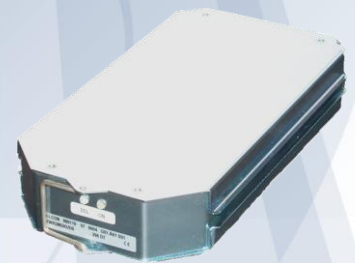


# ETHERNET OVER COPPER SHDSL EFM 1-PAIR REPEATER ELCONnect®

**SIMPLE** Plug&Play installation

**FIELD-PROVEN** High quality and dependability

**POWERFUL**  
Range extension for SHDSL systems



ZWR2MSKU 1P EFM

## THE PRODUCT

In many cases the standard DSL range is too short to reach the target business customer or the needed bandwidth for this customer can not be offered due to the physical limitations of the DSL interface. This eSHDSL repeater ZWR2MSKU 1P EFM of the product series ELCONnect xtend is the solution, which allows it to deliver the right bandwidth to such distant customers. By using of up to 2 cascaded repeaters the operating range of a standard SHDSL access between the COT / DSLAM and the NT / Customer Premises Equipment (CPE) can be tripled. Depending on the cable diameters, cable parameters and the supported bandwidth of the equipment it becomes possible to transfer about 5.7 Mbps over a distance of minimum 5 km. This is realized by regenerating the attenuated and distorted incoming SHDSL signal by the ZWR2MSKU 1P EFM. By using the Power back-off feature the signal level will hereby be reduced to the minimal necessary value, which results in lower interference with any other service and a reduced power consumption.

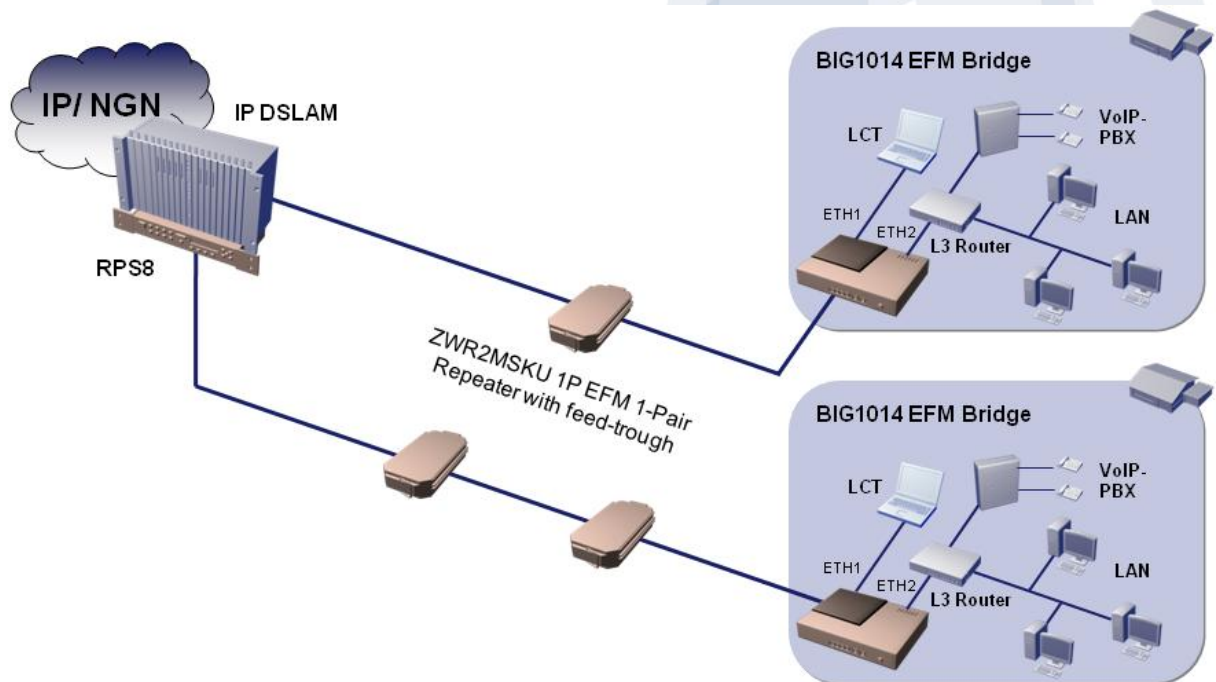
The eSHDSL repeater ZWR2MSKU 1P EFM supports the Ethernet First Mile (EFM) technology at net data rates of  $n \times 64k$  from 192 kbps to 5696 kbps per line pair and can therefore be used in a wide range of applications.

For easy, fast and flexible deployment in the network the repeater can be remote-feed, by means of the FSP12AMS via the deployed copper lines or powered through the existing local power supply. The repeater is further equipped with low power components, which consume less than 50% of comparable solutions, and allows the feed-through technology to feed a second repeater serial in line. For the use of repeaters in any location ELCON is offering different enclosures for mounting into underground places, in a manhole-, on a pole or wall and for operation in outdoor cabinets (e.g. KVz, MFG).

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## ELCONNECT®

### APPLICATION



### ZWR2MSKU 1P EFM

The ZWR2MSKU 1P EFM has a DSL-port that enables one-pair operation. The ZWR2MSKU 1P EFM can either be powered remotely from the exchange (DSLAM with own integrated or external FSP12AMS module) or from subscriber side (BIGxx) via the optionally FSP12AMS, or locally. In addition, the ZWR2MSKU 1P EFM can transmit the remote power supply to another ZWR.

### HARDWARE AND MANAGEMENT

The repeater ZWR2MSKU EFM is accommodated in a metal casing (protected as per IP 40). The ZWR2MSKU 1P EFM can be installed either in a cable fitting, in a pole- and wall-mounting box or in a repeater rack ZWRE, which is specifically designed for installation in street cabinets (KVz, MFG). Up to six ZWR2MSKU 1P EFM can be placed in one repeater subrack or a cable fitting. The pole mounting box offers place for up to two repeaters.

The ZWR2MSKU 1P EFM is supporting the ELCON Business Gateway's as well as many DSLAM products. The adaptation of the repeater to new and currently unsupported 3<sup>rd</sup> party DSLAM's resp. CPE's can be done optionally to achieve interoperability.

Management, remote control and software update of the ZWR2MSKU 1P EFM can optionally be effected via IP-DSLAM or via CPE using the EOC channel. The local and remote management system (NMS) of the DSLAM vendor can optionally support the configuration and monitoring of the connected repeaters (if implemented).

### ADVANTAGES OF THE ELCON SYSTEM

- Support of bit rates in steps of  $n \times 64k$  from 192 kbps to 5696 kbps
- Very low power consumption (max. 2.8 W) to safe OPEX
- Support of different powering options (local, remote power) with Feed-Through Technology for feeding 2<sup>nd</sup> repeater in line.
- Support of different mounting options
- Integration into 3<sup>rd</sup> party equipment, if required
- Remote configuration and management by the central transmission equipment

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### TECHNICAL DATA

#### DSL interface

- as per ETSI TS 101 524 or ITU-T G.991.2
- Net data rate: 192 kbps ... 5696 kbps per pair
- Line code: TC-16/32-PAM
- Line impedance: 135 Ω
- Degree of protection: TNV3

#### Power supply

- Input voltage:
  - 112 V DC ± 3 V DC (60 mA) (Remote power supply)
  - -40.5 V DC ... -75 V DC (Local power supply)
- Power consumption:
  - < 2.2 W (in case of remote power supply);
  - < 2.8 W (in case of local power supply)
- Output voltage: ~100 V (depending on the distance to the feeding source)
- Feeding range: max. 4000 m (with 1-pair PE-cable 0.4 mm)

#### Physical parameters

Dimensions (W × D × H): 109.4 mm × 194 mm × 30 mm

#### Environmental conditions

- as per ETS 300 019
- Operation:
  - Air temperature: -25 °C ... +55 °C;
  - Rel. air humidity: 5 % ... 95 %
- Storage:
  - Air temperature: -25 °C ... +55 °C;
  - Rel. air humidity: 10 % ... 100 %
- Transport:
  - Air temperature: -25 °C ... +70 °C;
  - Rel. air humidity: 60% ... 95%

#### EMC & Safety

- EMC: EN 55022, class B; ITU-T K.21, enhanced level; ETSI EN 300 386; ETSI TS 201 468 OTC-Level2
- Safety: EN 60950-1

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### PURCHASE ORDER INFORMATION

Product designation	Order number
ZWR2MSKU 1P EFM (1-port SHDSL)	900247-049-SN