# LineRunner SCADA NG

## Reliable Transmission System for SCADA and Telecontrol Applications


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because connectivity matters

# LineRunner SCADA NG

## Transmission System Requirements for Telecontrol/SCADA Applications

The requirements of a telecontrol and SCADA data transmission system (SCADA = Supervisory Control and Data Acquisition) vary greatly from established transmission systems. Telecontrol/SCADA applications are concerned with transmitting mission-critical data, so transmission must be particularly reliable.

The systems connected are often spread far apart and accommodated in an outdoor housing (e.g. street cabinets). As a result, the transmission system must be outdoor-capable and function perfectly - even in tough environments.

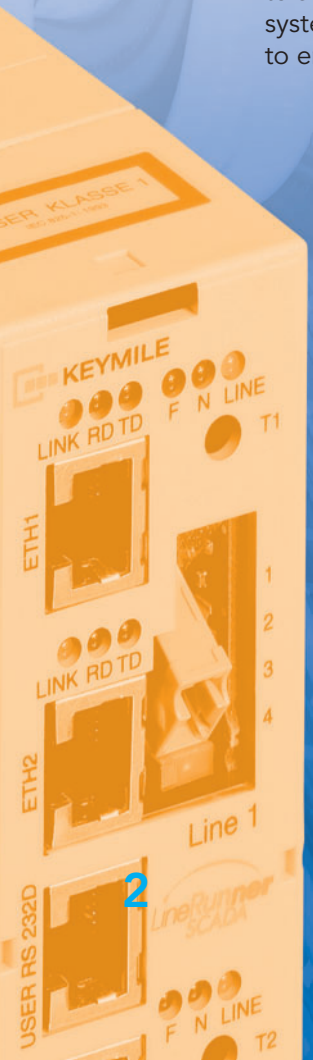
Similarly to public telecommunications networks, Ethernet/IP is also becoming more important in telecontrol and SCADA networks. Due to the rising application of these protocols, Ethernet/IP data also increasingly has to be transmitted in these networks - in addition to serial data. Consequently, the transmission system should be able to transmit both in order to ensure seamless migration.

LineRunner SCADA NG fulfils these demands and is therefore ideal for data transmission in dedicated networks for:

- linking up actors/sensors
- control signals and traffic lights
- video surveillance
- control and monitoring valves
- PLC linking

These dedicated networks are often located along:

- motorways
- railway tracks
- electricity lines
- oil and gas pipelines





## Components of the flexible LineRunner SCADA NG System

LineRunner SCADA NG is a flexible-to-configure system and was specially developed for telecontrol/SCADA networks. The system allows you to achieve reliable and cost-effective data transmission.

LineRunner SCADA NG is the basic transmission unit. The line interfaces can be exchanged, allowing data transmission on copper wire pairs, optical fibres, or SDH/PDH networks with just one system.

Ranges of up to 35 km are possible on optical fibres. You can also integrate radio relay systems and leased lines in the transmission paths. Exchangeable, freely combinable line interfaces permit the crossover between the different transmission media with any LineRunner SCADA NG.

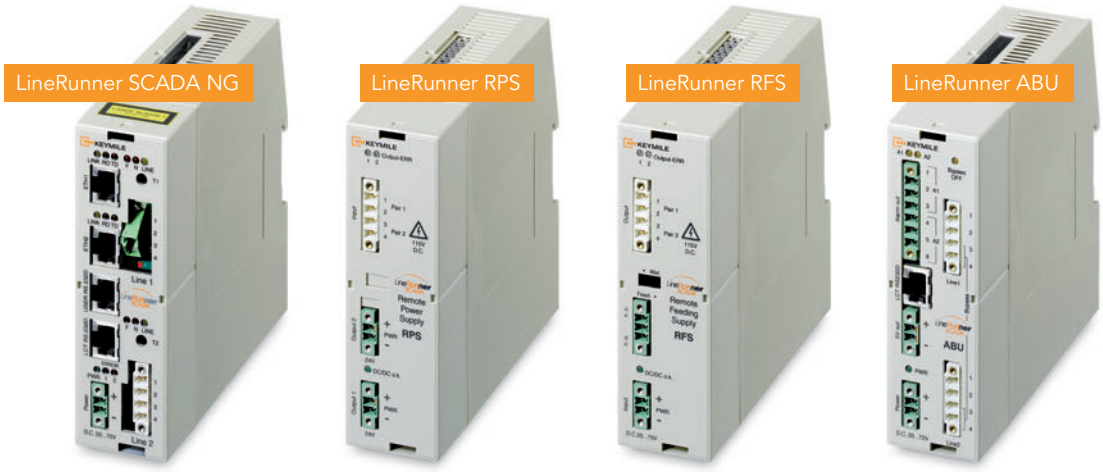
The LineRunner SCADA NG lets you set up a variety of network topologies, like star, ring, point-to-point, chain connections and mesh networks. Therefore, different infrastructures can be used.

LineRunner SCADA NG RFS and RPS are optional remote-supply units that feed other units in remote locations with the voltage required. Remote-supply voltage is transmitted via the same copper wire pair that is used for the SHDSL path too.

Therefore, you can implement very long SHDSL transmission paths, by using LineRunner SCADA NG as a regenerator – also in places where no local electricity supply exists. Remote supply can also be utilised for equipment from third-party manufacturers.

LineRunner SCADA NG ABU (alarm and bypass unit) is an optional unit. It has two alarm ports which can transmit alarms reported in the SCADA network to an external alarm system. The ABU also provides power (5 V) for equipment from third-party manufacturers.

With the ABU's bypass functions, the reliability of an SHDSL path in a chain topology is increased. If a LineRunner SCADA NG fitted with SHDSL interfaces fails, the ABU interconnects the lines so that data can still be exchanged along the path.



# LineRunner SCADA NG

## Flexibility of the Network Topology

LineRunner SCADA NG can be fitted with two line interfaces. As a result, you are flexible when connecting up to the network. An SHDSL interface (2-wire or 4-wire) for transmission via copper wire pairs is available. There are three different interfaces for transmission via optical fibres that vary in terms of bandwidth and transmission range. Additionally the data can be transmitted via an E1 interface over SDH/ PDH networks.

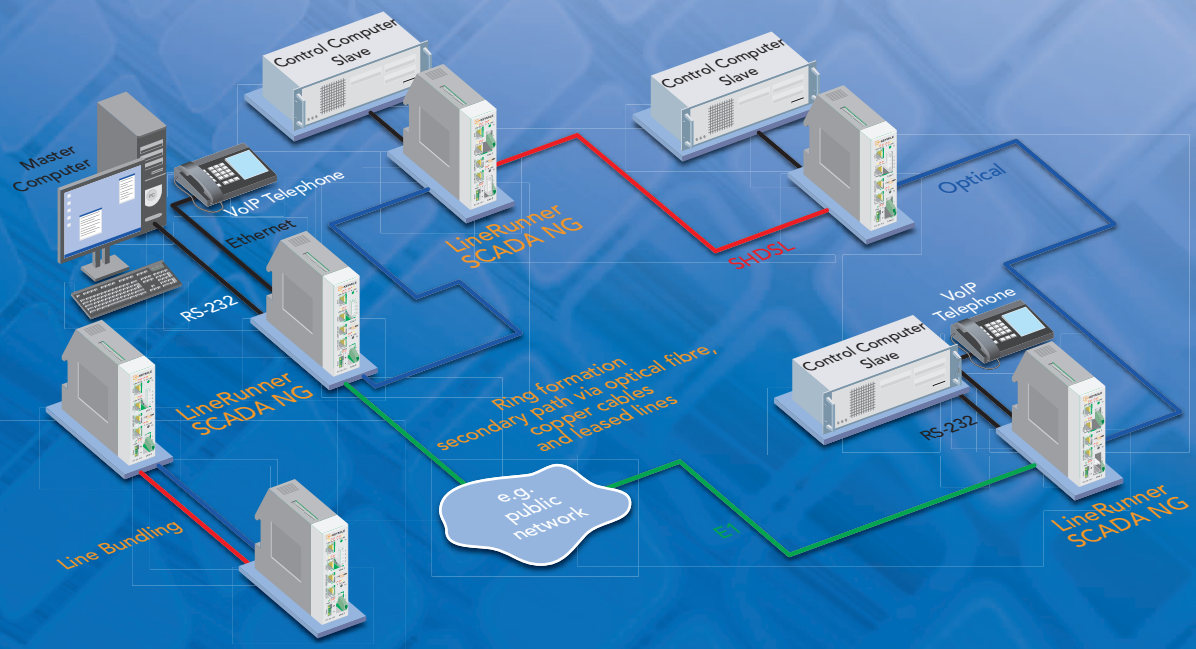
Each LineRunner SCADA NG acts as a media converter. Therefore, you can change the medium at any subrack and respond to local parameters flexibly. This degree of flexibility allows you to implement point-to-point, chain, or ring networks, even with branch lines. Every LineRunner SCADA NG is also a regenerator. You can bridge very long transmission paths too, without losing data integrity.

## Flexibility of the Application Interfaces

A traditional RS-232 and two Ethernet interfaces are provided as an application interface. So LineRunner SCADA NG allows you to react flexibly to the demands of the application.

All three interfaces can be operated at the same time. They transfer the application data in different channels that are separate from and do not influence one another. Fair queuing distributes the maximum transmission bandwidth to the channels used. The two Ethernet interfaces operate like separate switches in one unit.

By delivering traditional and Ethernet transmission, seamless migration is possible. Nowadays, network operators can transmit serial data and use an Ethernet interface at the same time (e.g. for video surveillance). At a later point in time, serial transmission can be switched to the second Ethernet interface.



## Flexibility of the Installation

LineRunner SCADA NG and the associated equipment turn the system into a compact, flexible and reliable transmission solution. Accessories are available that make installation in a variety of locations easier. With these accessories, in addition to standard installation on a top DIN rail, LineRunner SCADA NG can also be installed on poles, in a street cabinet, a 19" rack or in underground containers.

If there is no local power supply, LineRunner SCADA NG can be supplied remotely via the LineRunner SCADA NG RFS/RPS units. Power is supplied simultaneously with data transmission via the same copper wire pairs.

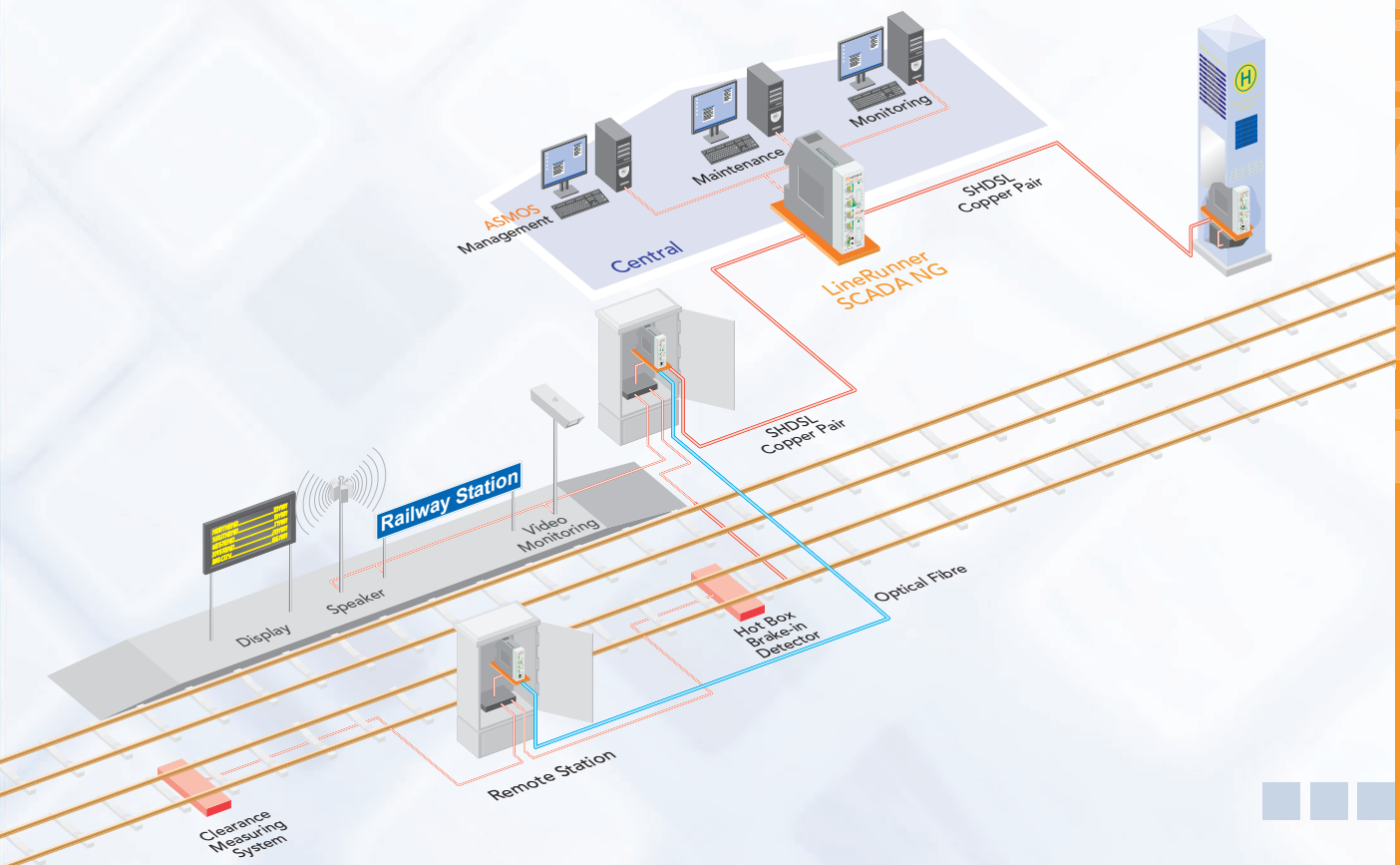
The power injector is used to transmit remote supply voltage via Ethernet cable. Consequently, remote devices (e.g. a VoIP phone or a surveillance camera) without any local power source, can be supplied via Power-over-Ethernet with the required voltage.

## Flexibility and reliability

LineRunner SCADA NG offers many functions that can be used flexibly to achieve maximum data reliability. To protect against failure, you can set up longer transmission paths in a ring structure. If this type of ring is disrupted in one place, the data can still be transferred to all the stations.

Two line interfaces can be bundled in single point-to-point connections. When operating under normal conditions, the maximum bandwidth doubles. If an error occurs on one of the two bundled lines, the remaining one is automatically used for all the data volume.

In an SHDSL line structure, individual LineRunner SCADA NGs can be protected with the LineRunner ABU subrack. Should a protected unit malfunction, the ABU will automatically switch the transmission path through.



# LineRunner SCADA NG – Benefits

## A clever Concept for reliable Data Transmission

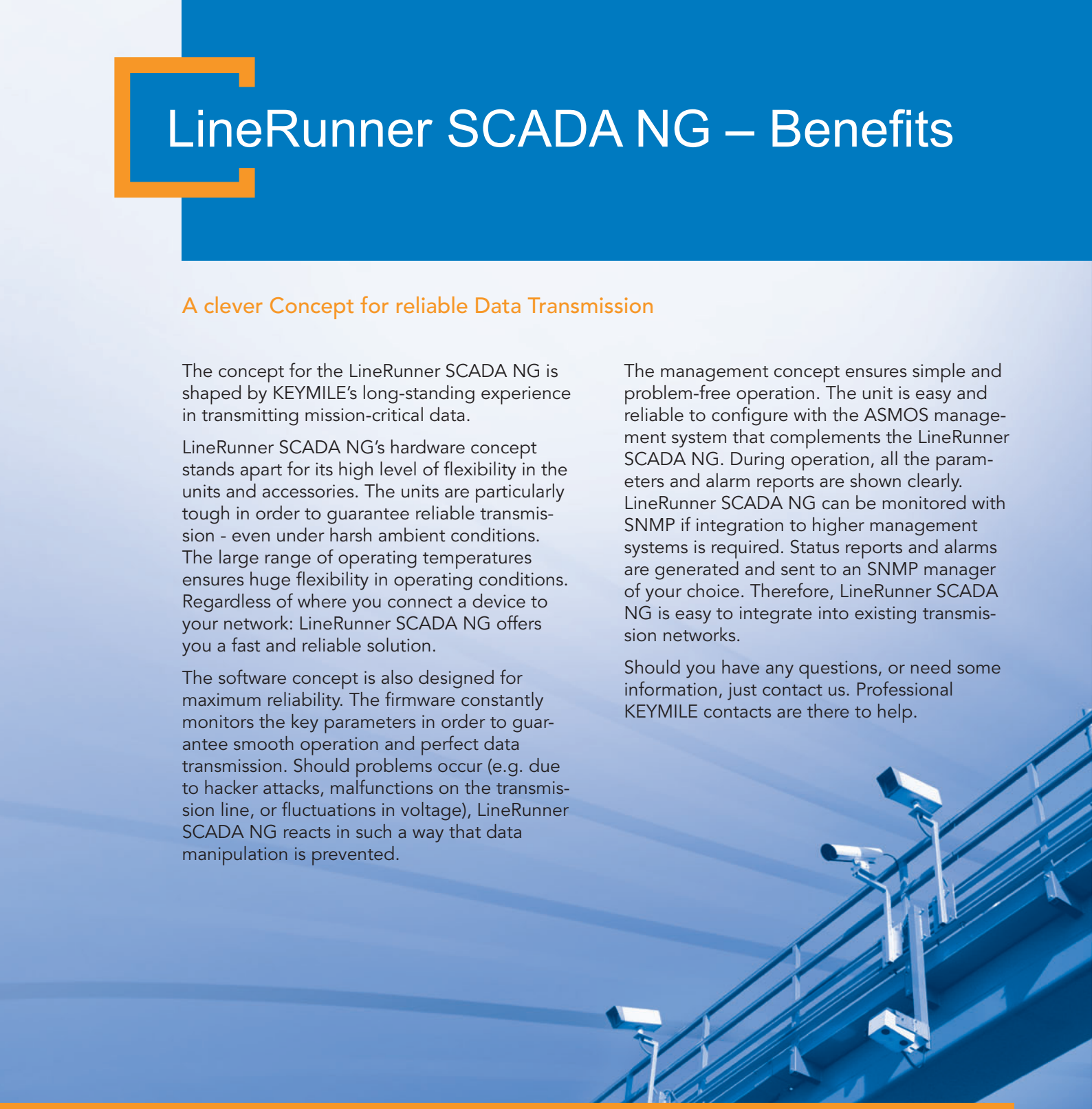
The concept for the LineRunner SCADA NG is shaped by KEYMILE's long-standing experience in transmitting mission-critical data.

LineRunner SCADA NG's hardware concept stands apart for its high level of flexibility in the units and accessories. The units are particularly tough in order to guarantee reliable transmission - even under harsh ambient conditions. The large range of operating temperatures ensures huge flexibility in operating conditions. Regardless of where you connect a device to your network: LineRunner SCADA NG offers you a fast and reliable solution.

The software concept is also designed for maximum reliability. The firmware constantly monitors the key parameters in order to guarantee smooth operation and perfect data transmission. Should problems occur (e.g. due to hacker attacks, malfunctions on the transmission line, or fluctuations in voltage), LineRunner SCADA NG reacts in such a way that data manipulation is prevented.

The management concept ensures simple and problem-free operation. The unit is easy and reliable to configure with the ASMOS management system that complements the LineRunner SCADA NG. During operation, all the parameters and alarm reports are shown clearly. LineRunner SCADA NG can be monitored with SNMP if integration to higher management systems is required. Status reports and alarms are generated and sent to an SNMP manager of your choice. Therefore, LineRunner SCADA NG is easy to integrate into existing transmission networks.

Should you have any questions, or need some information, just contact us. Professional KEYMILE contacts are there to help.



**LineRunner SCADA NG is the multi-purpose transmission system for telecontrol and SCADA applications. It offers reliable and flexible broadband data transmission for mission-critical networks.**

## Technical Data

| | |
|---|---|
| **User Interfaces** | |
| RS-232D | Asynchronous, max. 230.4 kbps |
| Ethernet | 10BaseT, 10/100BaseT (Layer 2 Bridge) |
| **Basic Module** | |
| BMD | 2x LI 2M, LI SHDSL, LI OF-1S/L<br>1x LI SHDSL-2, OF-SFP |
| BM2 | 2x all LIs |
| **Line Interfaces** | |
| Laser | Safety class 1 |
| | OF1S wavelength: 1310 nm |
| | OF1L-6 wavelength: 1310/1550 nm |
| | OF1S data rate: 2 Mbps (with Line Bundling x 2) |
| | OF1L-6 data rate: 6 Mbps (with Line Bundling x 2) |
| | OF-SFP data rate: 12.5 Mbps * |
| SHDSL | 2 wire, According to ITU-T 991.2, 16/32 TCPAM |
| | Data rates: various between 256 kbps and 5696 kbps (with Line Bundling x 2), max. 11 Mbps |
| SHDSL-2 | 4 wire, According to ITU-T 991.2, 16/32 TCPAM |
| | Data rates: various between 256 kbps and 4096 kbps (with Line Bundling x 2) |
| 2M | G.703/G.704, 120 ohm (symmetrical) |
| | Data rate 2 Mbps |
| Topologys | Point-to-point, point-to-point with Line Bundling, chain, |
| | Ring, ring with branch line, meshed networks |
| **Configuration and Monitoring** | |
| Management | LineRunner ASMOS (serial or Ethernet) |
| | Monitoring and alarming SNMP (Ethernet) |
| **Operation Modes** | |
| RS-232D | Serial asynchronous to the computer |
| Ethernet, MAC (Layer 2) | IEEE Std 802.1 |
| | IEEE Std 802.3ab - 1000BASE-T |
| | IEEE Std 802.3i - 10BASE-T |
| | IEEE Std 802.1Q - VLAN |
| **Power Supply** | |
| Operating voltage | 20 ... 75 V DC |
| Power consumption | <6 W BMD / <12 W, BM2 |
| Remote Power feeding | Via LineRunner SCADA NG RFS/RPS (only with LI NG SHDSL) |
| **Environmental Conditions** | |
| EMV | ETSI EN 300 386 |
| | ETSI ES 201 468 (Test Level 2) |
| | EN 50121-4 |
| Device safety | EN 60950-1 |
| CE label | Yes |
| GS label | Yes |
| Temperature range operation | -40 ... +70 °C (+55 °C in case of horizontal mounting) |
| Temperature range transport | -40 ... +70 °C |
| Temperature range storage | -40 ... +85 °C |
| Mechanical robustness | ETSI EN 300 019-2-3 (Class 3M5) |
| **Dimensions (h x w x d) and Weight** | |
| LineRunner SCADA NG | 135 x 43 x 150 mm, approx. 400 g |
| **Other Features** | |
| MTBF | >70 years |

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