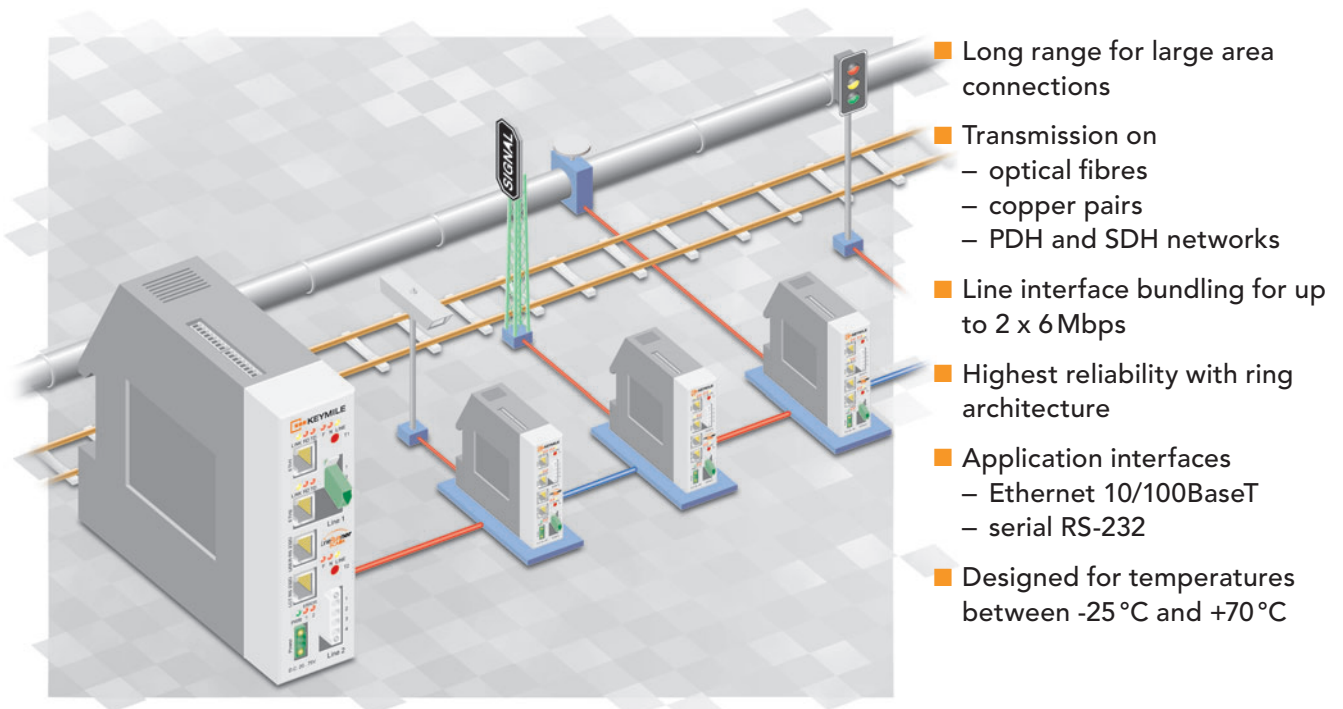


LineRunner SCADA NG

Broadband transmission technology for telecontrol systems



- Long range for large area connections
- Transmission on
 - optical fibres
 - copper pairs
 - PDH and SDH networks
- Line interface bundling for up to 2 x 6 Mbps
- Highest reliability with ring architecture
- Application interfaces
 - Ethernet 10/100BaseT
 - serial RS-232
- Designed for temperatures between -25 °C and +70 °C

LineRunner SCADA NG – for all fields of telecontrol technology

■ LineRunner SCADA NG

LineRunner SCADA NG (SCADA = Supervisory Control and Data Acquisition) is the broadband transmission system for reliable and cost-optimised transmission with up to 6 Mbps in telecontrol systems of:

- Railroad and transport authorities
- Motorways
- Waterways
- Airports
- Pipelines and industry equipment

LineRunner SCADA NG is a modular design. It is possible to operate on copper pairs, optical fibres or in SDH/PDH networks in a single system. On optical route sections ranges up to 35 km can be achieved. Radio relay equipment and leased lines can also be integrated into the system.

Interchangeable line interfaces can be used to allow conversion between the different transmission media for any SCADA NG.

■ SCADA network

LineRunner SCADA is a multidrop system of the latest generation. Multidrop means that data are exchanged via a network.

LineRunner SCADA NG is a multidrop system with a maximum of 63 LineRunner SCADA systems permitted on a single transmission route.

The SCADA network can be arranged in either a linear or ring topology. With it LineRunner SCADA NG supports variable network topologies using almost any desired infrastructure.

■ Future safety

LineRunner SCADA NG can transport Ethernet traffic transparently over any established transmission media.

To support already existing applications with serial interfaces, the LineRunner SCADA NG has a serial interface (via the RJ45 jack) in addition to the two Ethernet interfaces, which can be used at the same time.

For serial data, a guaranteed bandwidth of up to 128 kbps is available.

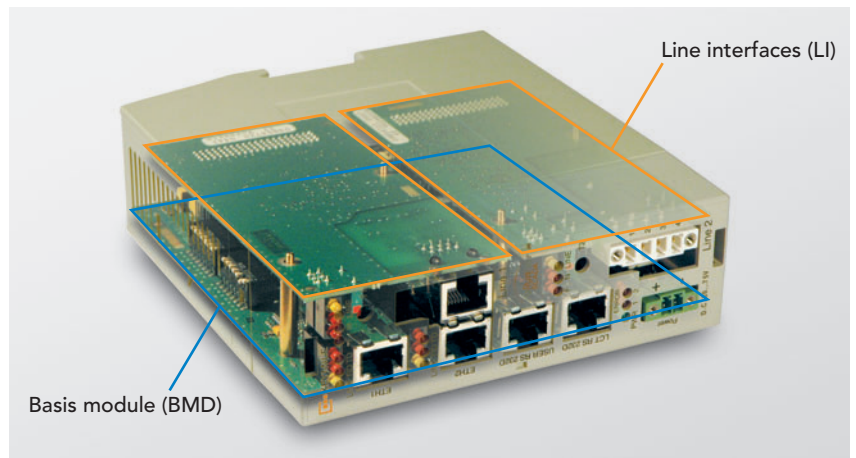
■ Operation

The LineRunner SCADA NG comes in a robust plastic housing. It is designed for DIN rail installation as well as for desktop deployment.

When the LineRunner installation frame SCADA MF3 is used, up to four SCADA NG can be deployed in a subrack (3 RU, 84 SU) in a central office.

All interfaces and indicator lamps on the LineRunner SCADA NG are arranged at the front panel easily accessible by operations personnel.

The low supply voltage and power consumption of the SCADA NG system means it can



Design of a LineRunner SCADA NG

be operated even with solar power supplies. Apart from the user interface each LineRunner SCADA NG comes with two line interfaces. In addition, it can be operated as repeater or media converter.

■ Robustness

LineRunner SCADA NG is designed for operation in extreme climatic conditions.

It can be deployed in the temperature range of -25°C to +70°C. It is also shock resistant and can be operated in environments with high level of electromagnetic interference.

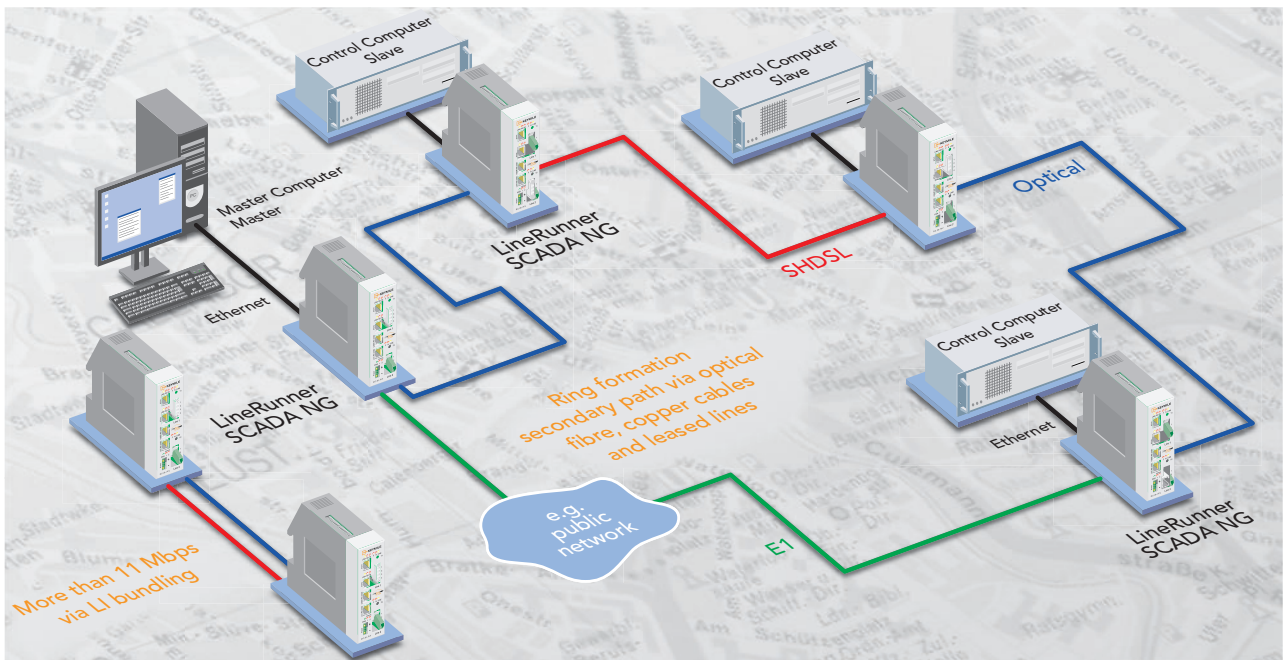
■ Variety of interfaces

The LineRunner SCADA NG can be quickly and easily configured for use in a transmission network. Depending on the transmission medium, it may only be a matter of plugging in the corresponding line interface.

The table on page 2 gives an outline on the interfaces available and the typical transmission ranges between two LineRunner SCADA NG.

Technical data of the line interfaces

Designation	Features	Typical range per route	
LI NG OF1S	1 fibre monomode optical fibre, connector F-3000	at 0,625 dB/km:	20.0 km
LI NG OF1L-6 LT, LI NG OF1L-6 NT	1 fibre monomode optical fibre, connector F-3000	at 0,625 dB/km	35.0 km
LI NG SHDSL	1-pair SHDSL transmission with connector Mini Combicon (range with low noise)	2.3 Mbps; ø 0,4 mm	3.2 km
		2.3 Mbps; ø 0,8 mm	6.0 km
		512 kbps; ø 0,4 mm	5.2 km
		512 kbps; ø 0,8 mm	10.3 km
LI NG 2M	G.703 or 4 ... 31 TS with connector RJ45	max. 6 dB attenuation	



Typical construction of a LineRunner SCADA NG point-to-point and ring installation

■ Protocols

Computers can be connected via Ethernet (TCP/IP) or serially via master/slave (asynchronous to the computer) to the LineRunner SCADA NG.

■ Ring formation

Any SCADA network can be connected to a ring. The advantage of ring architecture is an improved system fail safety. Whenever a transmission route is broken at one place due to external influences (e.g. excavations) data can continue to be exchanged between LineRunner SCADA NGs. There are no downtimes.

■ Line interface (LI) bundling

To achieve a maximum transmission rate you can bundle two LIs to one transmission route in point-to-point applications.

This way you can dispose of up to 12 Mbps on two copper pairs. You can even interconnect different LIs and thus different transmission media.

If one of the interconnected LIs fails data are being transmitted via the remaining LI.

■ Remote power supply

LineRunner SCADA NGs at remote locations can be remotely supplied via LineRunner SCADA RFS/RPS modules. The remote supply voltage is transmitted via the same copper pair that is employed for the SHDSL route.

Hence you can realise very long SHDSL transmission routes if you employ a LineRunner SCADA NG as regenerator – even at installation sites without local power supply.

Remote powering can also be used for units of 3rd party suppliers.

■ ABU

LineRunner ABU (Alarm and Bypass Unit) was developed for three applications.

- Alarm output: The ABU provides two alarm outputs. Configured alarms can be forwarded to an external alarm concentrator unit.
- Bypass function: If a LineRunner SCADA NG assembled with SHDSL-LIs fails, the ABU bridges the wires. Thus data transmission via the network is still ongoing.
- DC/DC converter: The unit provides a power supply (5V) for units of 3rd party suppliers.

■ Management

All LineRunner SCADA NG functions will be managed via the management system ASMOS centrally. Alarms and inventory data can be received via SNMP in parallel.

Technical Data

User Interfaces	
RS-232D	Asynchronous, max. 230.4 kbps
Ethernet	10BaseT, 10/100BaseT (Layer 2 Bridge)
Line Interfaces	
Laser	Safety class 1 OF1S wavelength: 1310 nm OF1L-6 wavelength: 1310/1550 nm OF1S data rate: 2 Mbps (with LI bundling x 2) OF1L-6 data rate: 6 Mbps (with LI bundling x 2)
SHDSL	According to ITU-T 991.2 16/32 TCPAM Data rates: various between 256 kbps and 5696 kbps (with LI bundling x 2)
2M	G.703/G.704, 120 ohm (symmetrical) Data rate 2 Mbps
Topologys	Point-to-point, point-to-point with LI bundling, chain, Ring, ring with branch line
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 IEEE Std 802.3i
Power Supply	
Operating voltage	20 ... 75VDC
Power consumption	<6 W
Remote Power feeding	Via LineRunner SCADA NG RFS/RPS (only with SHDSL LI)
Environmental Conditions	
EMV	EN 300 386 V1.3.2 ETSI ES 201 468 V1.2.1 (Test Level 2)
Device safety	EN 60950
CE label	Yes
GS label	Yes
Temperature range operation	-25 ... +70 °C (+55 °C in case of horizontal mounting)
Temperature range transport	-25 ... +70 °C
Temperature range storage	40 ... +85 °C
Vibration test	EN 300019-2-3
Dimensions (h x w x d) and Weight	
LineRunner SCADA NG	135 x 43 x 150 mm, approx. 400g
Other Features	
MTBF	>70 years



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