



Features 21-223 Fiber optic IEEE C37.94 - G.703 E1 Extender (converter)

- Protocol independent up to 2 Mbps 1310 nm (IEEE C37.94).
- Power budget 30 dB, 46 dB up to 50 dB in single mode 1550 nm.
- Standards compliant for power substation installation.
- 19" mounting with only 200 mm depth.
- Single supply range from 48 VDC to 250 VDC or 110 VAC to 230 VAC.
- 80-120 km, Up to 200 km or Up to 250 km

Optical Interfaces IEEE C37.94

The optical interfaces uses standard LC connectors. The single mode 1310 interfaces uses 1310 nm light and the single mode 1550 interface uses 1550 nm.

Function

The 21-223 is a protocol independent optical-electrical-optical long haul converter link with data integrity control for high reliability. The incoming single mode 1310 signal is sampled and packaged in 4B/5B code before transmission on the single mode 1550 interface. The incoming single mode 1550 signal is decoded and error detected before being reassembled and transmitted out the single mode 1310 interface. This conversion method offers a better (lower) error rate for low speed signals compared to transparent converters suitable only for high speed signals.

Usage

The 21-223 SM/SM Extender is intended to extend optical reach for any low speed optical data signal into the long haul distances.

Using a 21-223 the optical short reach signals can be sent without the need for additional and expensive communication systems normally found in long haul communications. When combined with the other products in Fibersystem's teleprotection communication product line, this converter allows a very cost effective solution.

The 21-223 is particularly useful in differential line protection setups where dedicated fiber is available, thus eliminating the need for multiplexers for the teleprotection traffic.

The 21-223 is compatible with the standards based IEEE C37.94 1310 nm optical interface for teleprotection equipment and its protocol independence makes it ideal for interoperability with any teleprotection equipment suppliers products.

*The 21-223 product is part of a wide **product family** of equipment for signaling, controlling and communication over fiber.*

*Fibersystem also offer **many related products** like interface, speed, and protocol converters, teleprotection modems and multiplexers, asynchronous modems, 19" rack based interface conversion and operator station KVM extensions.*

*The 21-223 product has been **tested and approved** to be used with the REL and RED product lines from ABB Power Technologies.*

***Fibersystem AB** is an inventive Swedish company who since 1982 has been working with the application of fiber optic technology in the delivery of solutions fulfilling the customers' multitude of needs.*

Fiber optic link

Wavelength	1310 nm
Fiber optical connector	LC
Optical system budget	15 dB in single mode fiber 9/125 µm

Fiber optic link - Extender

	21-223	21-223M/R	21-223L/R
Wavelength	1550 nm	1550 nm	1550 nm
Fiber optical connector	LC	LC	LC
Optical system budget 9/125 µm	30 dB	46 dB	50 dB
Typical distance	80-120 km	Up to 200 km	Up to 250 km
Fiber optical protocol	Single mode 1310 data is sampled at 25 Samples/s and coded with 4B/5B coding Single mode 1550 data 125 Mbps		

Power Supply

DC	48 VDC to 250 VDC, ±20 %
AC	110 VAC to 230 VAC ±20 %, 50–60 Hz
AC/DC connector	IEC 320, 3 pin
Power consumption	<15 W

Environmental

Temperature range	Operating: -20 to +55 °C. Storage: -40 to +85 °C
Relative humidity	Operating: 5 to 95 %RH. Storage: 5 to 95 %RH1 non condensing

Designed to meet CE compliance

Immunity	EN 61000-6-2, EN 61000-6-4, EN 50178
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Designed to meet mechanical

Vibration	IEC 60255-21-1, IEC 60255-21-2, IEC 60255-21-3
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Designed to meet EMC compliance

IEC 60255-22-1, IEC 60255-22-2, IEC 60255-22-3, IEC 60255-22-4

Designed to meet insulation

IEC 60255 / EN 50178 , IEC 60255-5, IEC 60255-5

Dimensions and weight

Physical size	Height 45 mm, width 483 mm, depth 173 mm
Weight	3 kg

Ordering information

Product number	Model	Description
60-00-7251	21-223	Fo SM/SM Extender 80 km up to 120 km
60-00-6682	21-223M/R	Fo SM/SM medium range Extender up to 200 km
60-00-7252	21-223L/R	Fo SM/SM long range Extender up to 250 km