



The multimode to singlemode converter, is designed to extend the maximum connection distance between two substation protection relays.

Features 21-203 Fiber optic IEEE C37.94 MM/SM Converter

- Standards compliant for power substation installation.
- Protocol independent up to 2Mbit/s MM 850nm (IEEE C37.94).
- Powerbudget 30dB, 46dB up to 50dB in SM 1550nm.
- Single supply range from 48VDC to 250VDC or 110VAC to 230VAC.
- 19" mounting with only 200mm depth.

Optical Interfaces IEEE C37.94

The optical interfaces uses standard LC connectors for multimode and LC connectors for singlemode fibers. The multimode interfaces uses 850nm light and the singlemode interface uses 1550nm.

Function

The 21-203 is a protocol independent optical-electrical-optical long haul converter link with data integrity control for high reliability. The incoming multimode signal is sampled and packaged in 4B/5B code before transmission on the singlemode interface. The incoming singlemode signal is decoded and error detected before reassembled and transmitted out the multimode 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 21-203 MM/SM converter is intended to extend optical reach for any low speed optical data signal into the long haul distances. Using a 21-203 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 Fibersystems teleprotection communication product line this converter allows for a very cost effective solution. The 21-203 is particularly useful in differential line protection setups where dedicated fiber is available thus eliminating the need for multiplexers for the teleprotection traffic. The 21-203 is compatible with the standards based IEEE C37.94 optical interface for teleprotection equipment and its protocol independence makes ideal for interoperation with any teleprotection equipment suppliers products.

*The 21-203 products are part of a wide **product family** of 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 21-203 product has been **tested and approved** to be used with the product lines from ABB Power Technologies.*

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

Fiber optic link - Multimode Interface

Wavelength	850nm.
Fiber optical connector	LC
Optical system budget	15dB in multimode fiber 62.5/125um.
Typical distance	2km

Fiber optic link - Singlemode Interface

Wavelength	1310/1550nm.
Fiber optical connector	LC
Optical system budget 21-203	30dB in singlemode fiber 9/125um.
Optical system budget 21-203M/R	46dB in singlemode fiber 9/125um.
Optical system budget 21-203L/R	50dB in singlemode fiber 9/125um.
Typical distance	0-120, 0-200, 0-250km
Fiber optic protocol	125Mbit/s, multimode data is sampled at 25MSamples/s and coded with 4B/5B coding.

Power Supply

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

Environmental

Temperature range	Operating, -20 to +55 °C. Storage, -40 to +85 °C.
Relative humidity	Operating, 5 to 95 % . Storage, 5 to 95 % 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 MC 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
60-00-5593	21-203	Fo MM/SM 4B/5B converter SC-LC 30 dB typical 80km up to 120km
60-00-7171	21-203M/R	Fo MM/SM 4B/5B medium range converter SC-LC 46 dB typical up to 200km
60-00-7250	21-203L/R	Fo MM/SM 4B/5B long range converter SC-LC 50 dB up to 250 km