



The multimode to single mode 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 2 Mbps MM 850 nm (IEEE C37.94).
- Power budget: 30 dB, 46 dB, up to 50 dB in SM 1550 nm.
- Single supply range from 48 VDC to 250 VDC or 110 VAC to 230 VAC.
- 19" mounting with only 200 mm depth.

Optical Interfaces IEEE C37.94

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

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 single mode interface.

The incoming single mode signal is decoded and error detected before being 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 to 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 Fibersystem's 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 it 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 offers 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 fiber optic technology in the delivery of solutions fulfilling the customers' multitude of needs.*

Fiber optic link - multimode interface

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

Fiber optic link - single mode interface

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

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 %RH non condensing

Designed to meet CE compliance

Immunity	EN 61000-6-2, EN 61000-6-4, EN 50178
----------	--------------------------------------

Designed to meet mechanical

Vibration	IEC 60255-21-1, IEC 60255-21-2, IEC 60255-21-3
-----------	--

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 IEEE C37.94 converter. 80 km up to 120 km
60-00-7171	21-203M/R	Fo MM/SM IEEE C37.94 converter, up to 200 km
60-00-7250	21-203L/R	Fo MM/SM IEEE C37.94 converter, up to 250 km