Electron

Analog to Digital Signal Converter

Catalogue

INDEX

INTRODUCTION

The CFAD is a piece of equipment developed to convert analog signals into digital signals and send them remotely over great distances through optical fiber. This ensures the immunity and integrity of the signals, as well as the saving of physical space within the channels.

Ideal for electrical substation environments, oil platforms, industries, automation systems and communication networks, CFAD allows the conversion and transport of signals without loss, being able to convert analog signals from 0 to 20mA and/or 0 to 24Vdc into digital signals that travel on only one multimode optical fiber with ST standard connector. these signals can be converted in the same module (Receiver) to the Modbus RTU or DNP3 protocols in the RS485 standards (ANSI/TIA/EIA-485-A two-wire).

In the Transceiver module solution, the CFAD receives the analog signal, converts it into a digital signal and transmits it via optical fiber. At the other end, the Receiver module reconverts the digital signal into analog. The received signal is totally immune to electrical noise, electromagnetic inductions, lightning discharges and voltage surges, increasing the reliability of data transmission, communication speed and distances between IEDs, data servers or supervisory systems (SCADA).

In addition to these features, the equipment also has a USB port for parameterization via UseEasy software, developed by Electron, ensuring even more practicality and ease in configuring the system.

CFAD was built according to strict quality standards and uses state-of-the-art electronic components (SMD). Its hardware is designed to withstand severe working conditions, and can be installed directly in power substation panels. Meets the levels of demand, supportability and reliability according to IEC, DIN, IEEE and ABNT standards.

TECHNICAL DATA

ANALOG TO CFAD FIBER CONVERTER	
Operating Voltage	24 a 275 Vcc/Vca 50/60Hz;
Operating Temperature	-20°C to +70°C;
TECHNICAL DATA OF FIBER INTERFACE	
Maximum length	3000 meters (multimode fiber optics, 62.5/125 µm);
Fiber Connector	ST Standard;
Minimum transmit power	-14.0 dB.m (multimode optical fiber, 62.5/125 µm);
Maximum transmit power	-10.0 dB.m (multimode optical fiber, 62.5/125 µm);
Minimal receive sensitivity	-24 dB.m (multimode optical fiber, 62.5/125 µm);
Compatibility	Multimode optical fiber 50/125 µm, 62.,5/125 µm, 100/140 µm and 200 µm;
Wavelength	850 ηm;
LED indication for status	Connected, data transmission/reception and link;
Resistance to interference	EMI/RFI and current surges, ideal for data communications near transformers, heavy electrical equipment, and other electrical or radio interference;

Table 1 – Technical data

ANALOG INPUT FEATURE	
Maximum Analog Input Error	0.1% end of scale;
Current reading	0 to 20 mA;
Voltage reading	0 to 24 Vdc;
Isolation between busbar and power supply	4 KV / 60 Hz / 1 minute;
Analog input isolation	3.5 KV / 60 Hz / 1 minute;
Isolation between RS485 digital output(ANSI/TIA/EIA-485-A)	3.5 KV / 60 Hz / 1 minute;
ANALOG OUTPUT CHARACTERISTIC	
Maximum Analog Output Error	0.1% end of scale;
Current output	0 a 1, 0 a 5, 0 a 10, 0 a 20 e 4 a 20 mA;
Maximum load	, 0 to 5, 0 to 10, 0 to 20 and 4 to 20 mA;
	0 to 1mA – 20KΩ;
	0 to 5mA – 4 KΩ;
	0 to 10mA – 2 KΩ;
	0 to 20mA – 1 KΩ;
	4 to 20mA – 1KΩ;
Voltage output	0 to 10 Vdc;
Isolation between busbar and power supply	4 KV / 60 Hz / 1 minute;
Analog input isolation	3.5 KV / 60 Hz / 1 minute;
Isolation between RS485 digital output(ANSI/TIA/EIA-485-A)	3.5 KV / 60 Hz / 1 minute;
RS485 OUTPUT FEATURE (ANSI/TIA/EIA-485-A)	
Maximum cable length	1,200 meters;
Transmission Mode	Half Duplex;
Auto Baud Rate	1,200 to 57,600 bps (Also automatically detects the speed of the communication network);
Maximum capacity of devices on the network	32 pieces of equipment;
Termination Resistor	120 Ohms (jumper-enabled);
RS485 bus protection	± 30 KV ESD. 3-stage protection (Rugged);
Resistance to interference	Resistant to lightning and damage caused by electrostatic discharges;
Isolation between busbar and power supply	4 KV / 60 Hz / 1 minute;
Isolation between auxiliary input	4 KV / 60 Hz / 1 minuto de 2W / 24Vcc;
Analog input isolation	3.5 KV / 60 Hz / 1 minute;
Analog output isolation	3.5 KV / 60 Hz / 1 minute;

Used to power transducers along with analog input.

Table 2 – Technical data

CONNECTION DIAGRAM

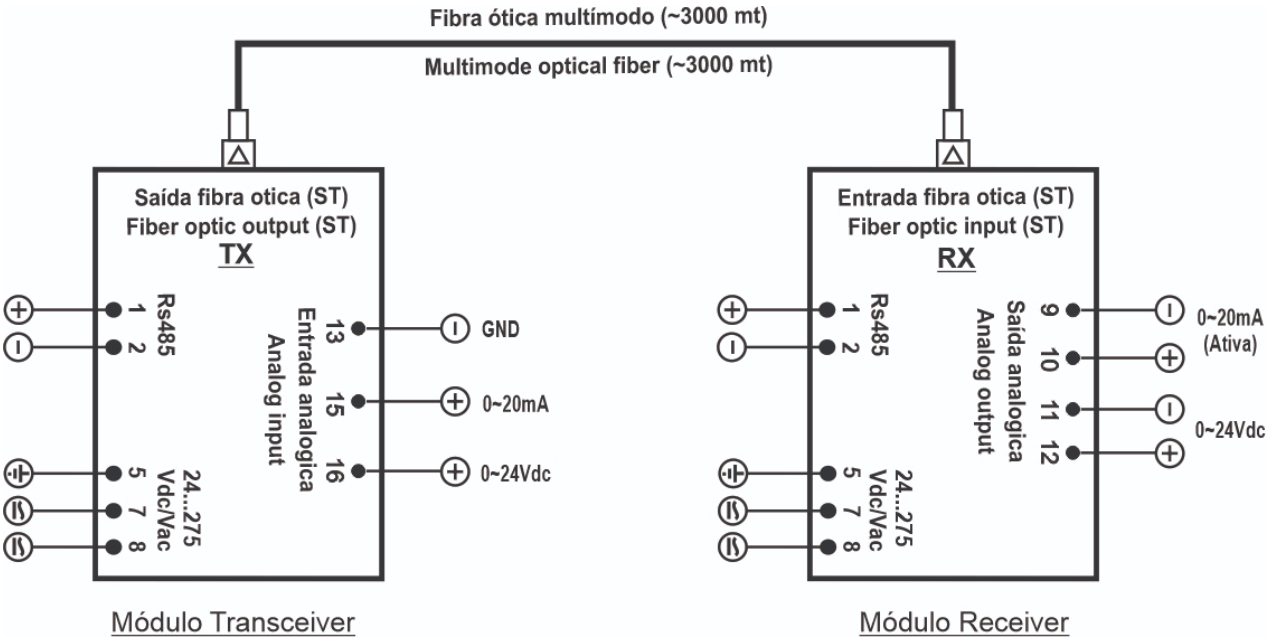

Image 1 – Connection diagram

DIMENSIONS

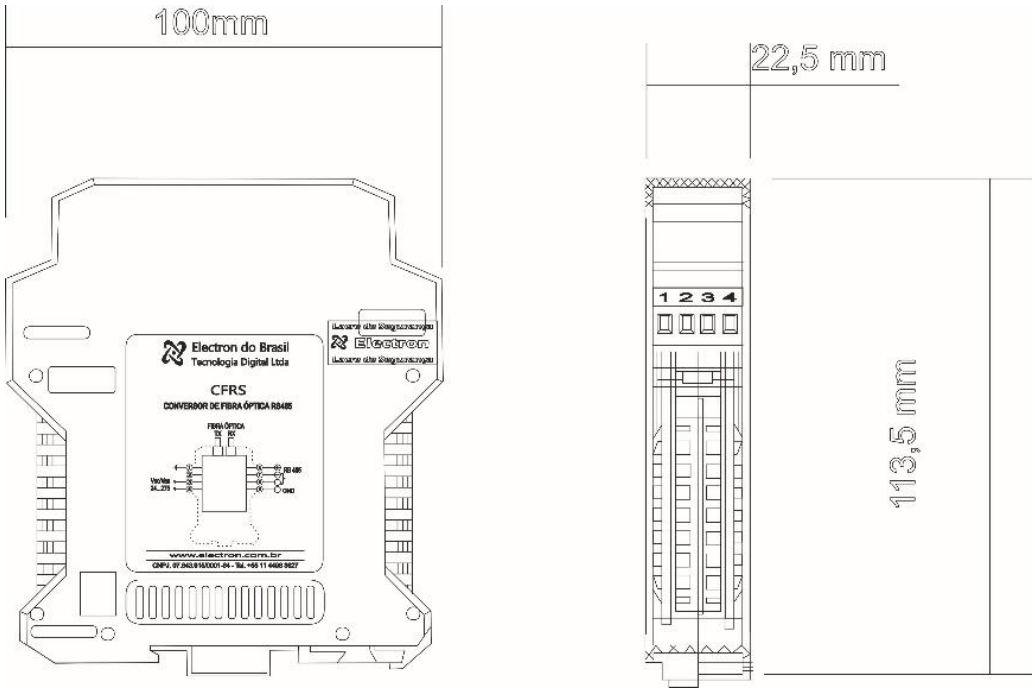

Image 2 – Dimensions

APPLICATION EXAMPLES

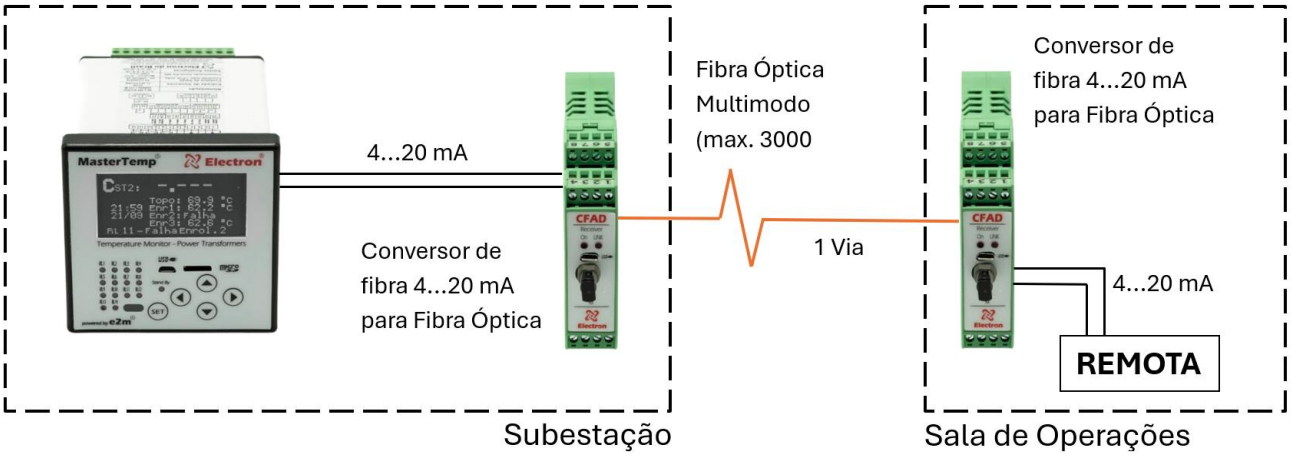

Image 3 – application examples

SPECIFICATION FOR ORDER

CFAD | | |

Modelo	
RX	Receiver
TX	Transeiver

Comunicação serial RS-485	
0	Sem RS-485
1	Com RS-485