



P-2M Fiber-Optic Converter



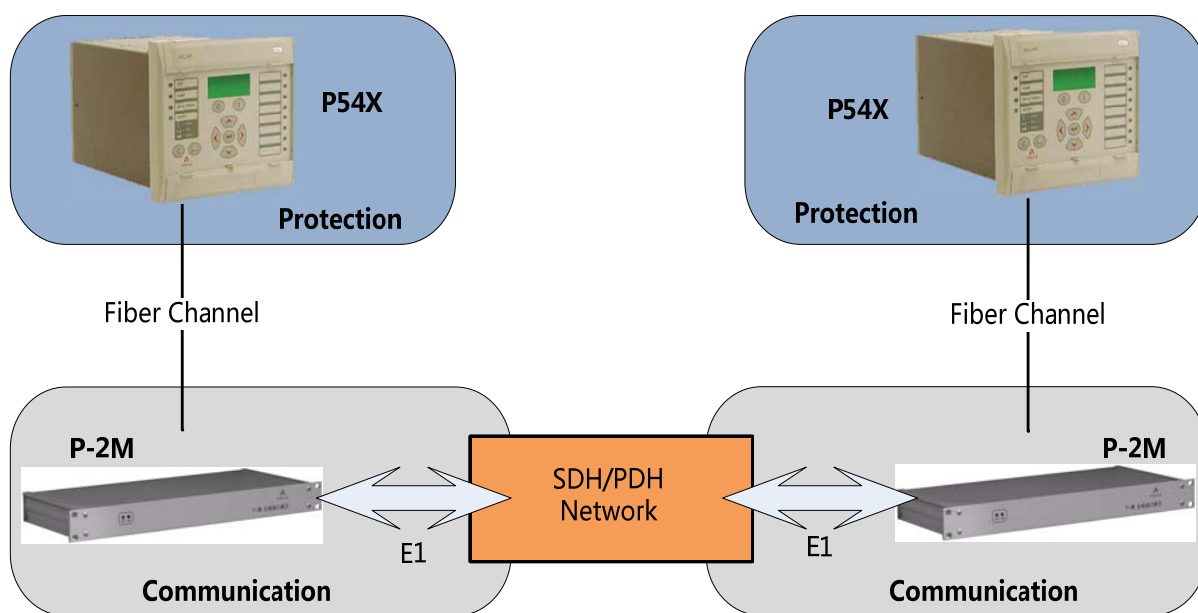
USER's Manual v2.1

1. General Description

The P-2M Fiber-Optic Converter is designed for Teleprotection Equipment (such as P54x). It convert the optic signal from Tele protection Equipment to the electric signal (compliant with ITU-T G.703 64Kbit/s or 2048Kbit/s). The converters can be connected to a telecom network to expand the Teleprotection Equipment's communication distance.

The P-2M has the fault alarm indicator and alarm relay output nodes.

2. Typical Application



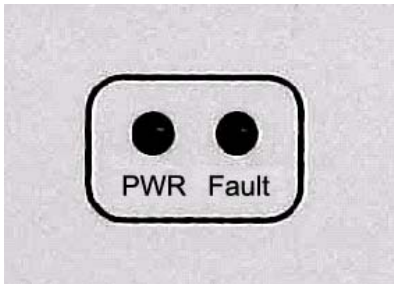
The typical application of P-2M

3. P-2M Ordering Information

P-2M	X		X		X		X	
	Data Speed		Power Supply (V)		Wave Length		Number of unit	
	2048Kbit/s	1	110Vdc	1	850nm(multimode)	A	1 unit	1
	64Kbit/s	2	48Vdc	2	1310nm(single mode)	B	2 units	2

4. Signal Interface and Connection

The P-2M Fiber-Optic Converter's front and rear panels are shown in the attached figure.



4.1 Indicators

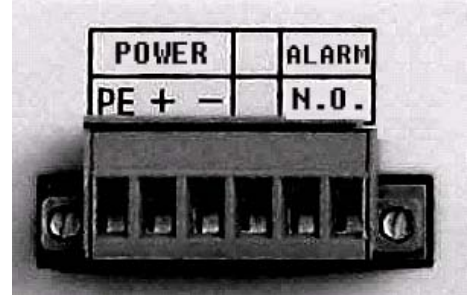
The front panel has 2 LED indicators

Name	Color	Description
PWR	GREEN	Power supply indicator, Light when power on.
Fault	RED	Fault indicator, Light when lost optical signal or the electric signal received from multiplexer's BER (Bit Error Rate) is over 10^{-3}

4.2 Power supply interface and alarm relay

4.2.1 P-2M1xxx

The P-2M1xxx's power supply and relay co-exist in a 6-pins connector, which is a product of PHOENIX CONTACT Ltd. (model: **MSTB2.5/6-GF-5.08**) and should match the relevant plug (model: **MSTB2.5/6-STF-5.08**).The definitions of its pins are as follows:

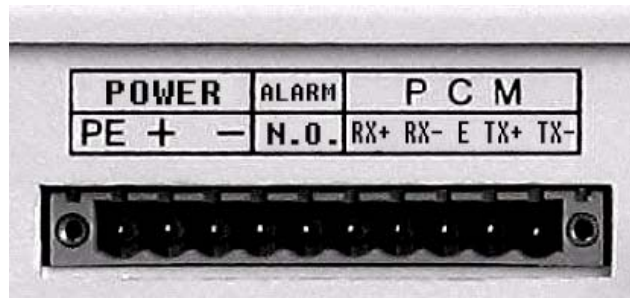


POWER	PE	protection earth, which is connected to the chassis interiorly
	+ / -	positive and negative polarity of power supply, care should be taken, not to be mistake.
ALARM	alarm relay output, constant-on node, it will be closed if the alarming appears. The relay is Panasonic's product (model: ST1-DC5V), please refer to the configuration for its output load.	

ST1-DC5V's Characteristics

Max. switching power	2000VA / 150W
Max. switching voltage	380V AC / 250V DC
Max. switching current	8A

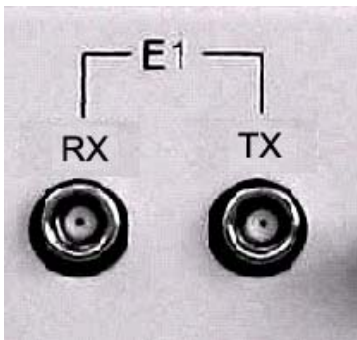
4.2.2 P-2M2xxx



The P-2M2xxx's power supply , relay and the PCM interface node co-exist in a 10-pins connector, which is a product of POENIX CONTACT Ltd. (model: **MSTB2.5/10-GF-5.08**) and should match the relevant plug (model: **MSTB2.5/10-STF-5.08**).The definitions of its pins are same as P-2M1xxx.

4.3 The electric port connected to the multiplexer

4.3.1 P-2M1xxx



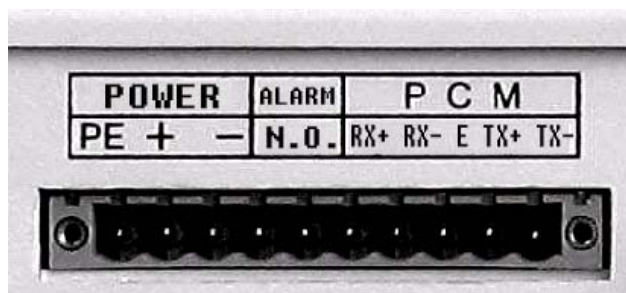
The P-2M1xxx's electric signal port connecting to the multiplexer, namely E1 interface, is a pair of type SMB RF connectors.

E1	RX	E1 electric signal input, its shell is not grounded.
	TX	E1 electric signal output, its shell is grounded.

Note :

The 75Ω coaxial-cable should be used, and its length should be as short as possible, normally not more than 100 m.

4.3.2 P-2M2xxx



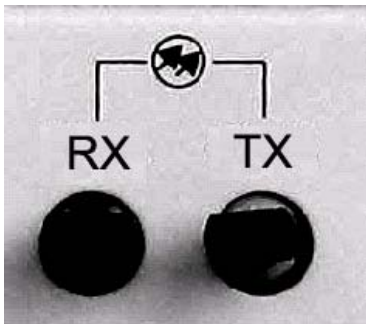
The P-2M2xxx's electric signal port connected to the multiplexer, is also called PCM interface, co-exists in a 10-pins connector with the power supply and the relay interface

PCM	RX	the input of a pair of 120Ω balance electric signals
	E	the exterior shielding layer connected to the shielded cable.
	TX	the output of a pair of 120Ω balance electric signals.

Note :

The **STP** (Shielded Twisted Pair) cable should be used, and its length should be as short as possible, normally not more than 100 m.

4.4 The optical interface connected to the protective relays



The optical signal interface connected to the protective relays is a pair of ST optical connectors.

OPT	RX	the optical receiver
	TX	the optical sender

The different between P-2MxxAx and P-2MxxBx

P-2M	xxAx	The optical fiber adopts the multi-mode , fiber of 50/125um or 62.5/125um, its transmission length is less than 1km.
	xxBx	The optical fiber adopts the single-mode, fiber compliant G.652 , its transmission length is less than 10km.

5. Installation and Operation

5.1 Installation

The **P-2M** is in a standard 19" 1U rack, and can be installed directly.

5.2 Cables connection

The cables should be connected correctly as the above mentioned.

The length of cables connected to the multiplexer should not be more than 100 m.

The multi-mode fiber of 50/125um or 62.5/125um is chosen, and its transmission length shall be less than 1km.

The single-mode fiber should compliant G.652, and its transmission length shall be less than 10km.

The following special points should be noticed:

- A. Voltage value and its + / - polarity of the power supply
- B.. Good conductivity to the protective earth
- C. Contact capacity of alarm relay
- D. Rx/Tx ports of Electric and optical signals.

5.3 Operation

After power on, please check the LED's status is correct, and measure the Device's optic power.

If possible, check the channel's BER with Transmission tester.

6 Technical Specifications

6.1 Optical interface

	P-2MxxAx	P-2MxxBx
Typical distance	≤1Km	≤10Km
Wave length	850nm	1310nm
Fiber type	multi-mode	Single-mode
Optical Output Power	-19.8dBm (50/125um)	-13.0dBm (G.652)
Receive Sensitivity	-25.4dBm	-30dBm
Connector	ST	ST

6.2 Electric interface

	P-2M1xxx	P-2M2xxx
Protocols	G.703.6 2048kbit/s	G.703.1 64kbit/s
Connector	SMB	MSTB2.5/10-STF-5.08
Cable type	75Ω coaxial-cable	balanced 120 Ω STP

6.3 Fault indication

Indication	Fault type		
	LED is on	OLOS	ELOS/ERR3
Fault relay output is closed	OLOS	ELOS/ERR3	POWERDOWN

Note: OLOS: Optic signal loss; ERR3: Bit Error Rate over 10⁻³;
ELOS: Electric signal loss ;

6.4 Power Supply

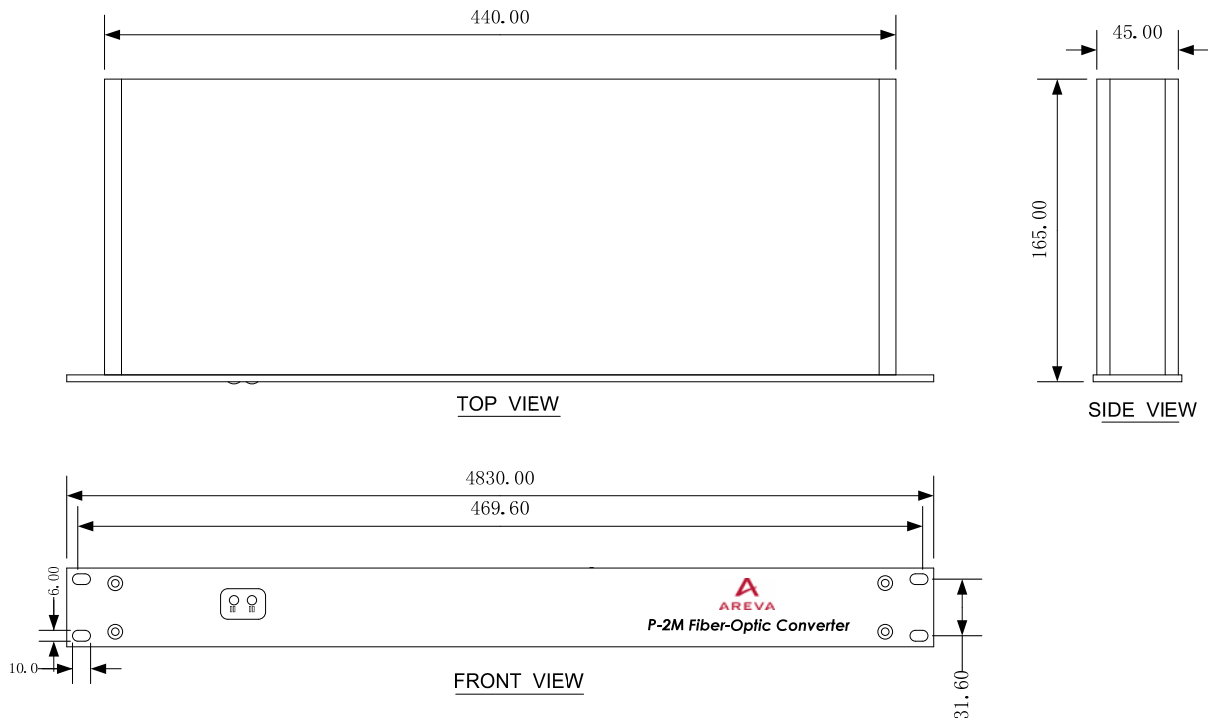
	P-2Mx1xx	P-2Mx2xx
Supply voltage	85VDC~264VDC	36VDC~72VDC
Power consumption	<4W	<4W

6.5 Environment

Operating temperature range	0°C ~ +45°C
Storage temperature range	-25°C ~ +70°C

6.6 Dimensions

The unit is intended to be mounted in a 19" 1U rack.



7 Technical support

We will provide overall technical support for our products, including before sales (system plan, products selection), after sales (product application, update and maintenance). Please contact us whenever you meets any problem, we will provide you satisfactory solution on time.

Tel: 0086 21 5439 9932

Fax: 0086 21 5439 9932

Web: <http://www.aerodev.com>

Attachment

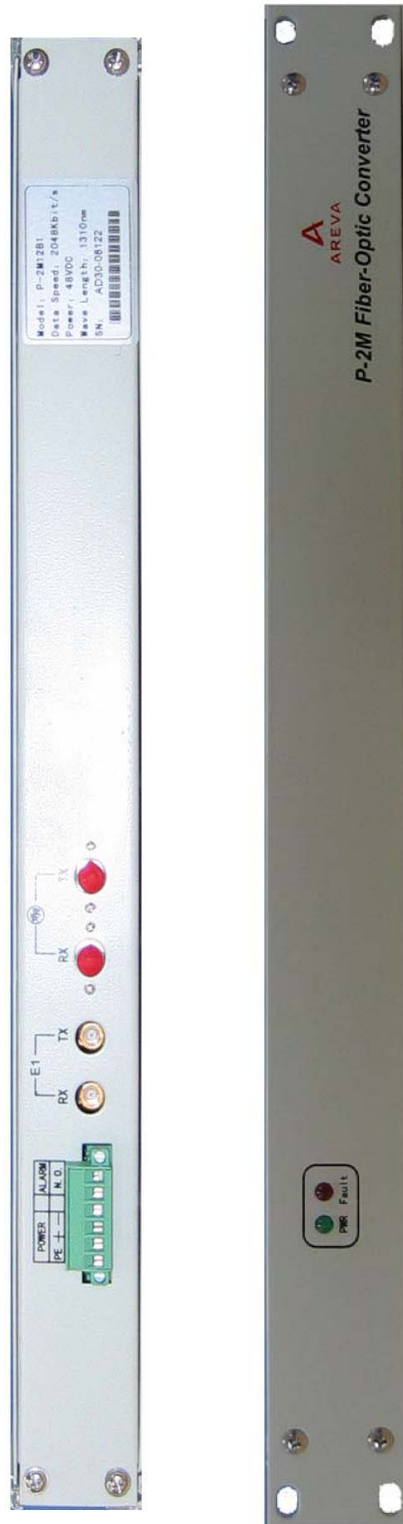


Fig: front and rear panel sketch-map