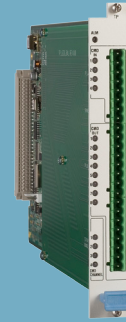


Megaplex-4

TP

Distance Teleprotection Module



- 4 110 VDC/220 VDC inputs and 8 outputs, galvanically isolated with high EMC immunity for harsh environments
- Ultralow end-to-end propagation delay for commands and automation
- 1+1 path protection with less than 10 msec recovery time
- Secured and reliable end-to-end command transmission
- Unidirectional broadcast for Automation commands
- T-line support

The TP module offers ultralow end-to-end propagation delay for immediate delivery of teleprotection commands and automation, from protective relay/contact transfer to remote-end substations.

Megaplex-4 with its TP modules delivers teleprotection commands and automation with mission critical accuracy over dedicated fiber, TDM or IP, to help central control better manage the power grid load and to protect termination and transformation equipment from severe damages resulting from faulty high-voltage lines.

The TP module supports up to 4 command/automation inputs and 8 outputs, enabling teleprotection equipment to utilize the advanced transport capabilities offered by Megaplex.

Teleprotection commands can be locally output or be carried to a peer card/ Megaplex unit over TDM/SDH or packet switch network. Up to 4 commands can be carried over a single DS0.

The teleprotection command and automation is triggered by 220 VDC or 110 VDC input signal to the TP module.

The module is also used for the automation processes by exchange of

data between the relay protection devices and the control center, thus allowing for uninterrupted power supply throughout the grid when fault occurs.

Megaplex's advanced carrier Ethernet and pseudowire capabilities guarantee the performance levels required when migrating to packet networks with hard QoS, as well as robust latency and jitter protection.

The module operates in conjunction with other Megaplex modules catering for a variety of interfaces, such as voice, high speed, low speed and others, to provide any possible service needed in a substation.

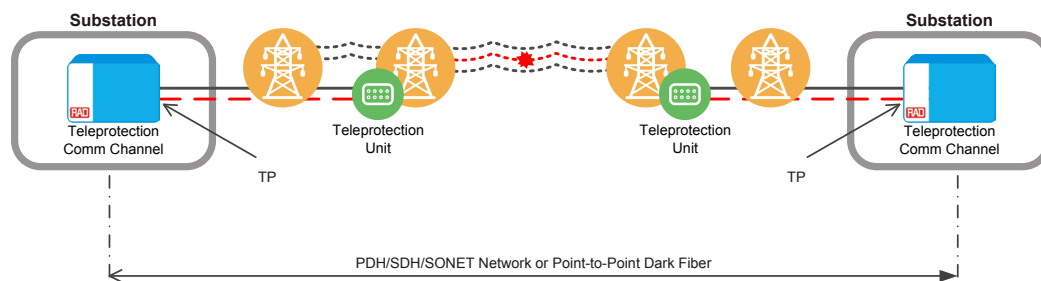


Figure 1. Teleprotection Connectivity with Ultra-Low End-to-End Delay



TP

Distance Teleprotection Module

Specifications

TELEPROTECTION INTERFACES

Compliance

IEC 60834-1

Input

Connector: Terminal block, 8-pin

Number of command inputs: 4

Nominal input control voltage:

- ± 220 VDC
- ± 110 VDC

Configurable Debounce for noise filtering

Output

Connectors: 2 terminal blocks, 8-pins each

Total number of outputs: 8 (4 primary + 4 secondary):

- For each secondary output one primary command can be selected.
- More than one secondary output can be bound to one primary command

Independent Rx/Tx processing

Switching: up to 250 VDC, 0.25A on inductive load

Wire diameter: up to 2.5 sq. mm

Command-configurable prolongation time

Optimization

Security- or speed-optimized according to application

Isolation

2500 VRMS between protection circuits and chassis

RESILIENCY

Protection

Equipment protection

On-board CMD Channel protection

Megaplex TDM traffic protection

Protection Recovery

Less than 10 msec

MONITORING AND DIAGNOSTICS

Local loopback per command

Remote loopback per command

End-to-end delay measurements

Events time stamping with 1 msec accuracy

Accepting GPS time via IEC-60870-5-104 or SNTP

GENERAL

Environment

Operating temperature:

-10°C to 55°C (14°F to 131°F)

Storage temperature: -20°C to +70°C
(-4°F to +158°F)

Humidity: up to 95%, non-condensing

Indicators

See Table 1

Power Consumption

10W max.

Ordering

RECOMMENDED CONFIGURATIONS

MP-4100M-TP/#/*

Legend

Nominal input control voltage:

110 ± 110 VDC**220** ± 220 VDC

* Relay:

SSR Solid-state relay**EMR** Electro-mechanical relay

Table 1. Teleprotection Indicators

Indicator	Quantity per Module	Color	Function
CMD CHANNEL	4 (2 per port)	Red/green	Green On: Port synchronized Red On: RAI/LOF/Add mismatch Red Blinking: CRC Errors Off: Shutdown
CMD IN	4	Red/green	Green: No alarms Red On: Alarm state Off: Shutdown
CMD OUT	8	Red/green	Green: Steady State Red On: Alarm State Off: Shutdown
ALM	1	Red	Red Blinking: Events detected Off: No events

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