

# TP-MFRG

## PROTECTION & CONTROL RELAY FOR PRIMARY SUBSTATION

EN



A3 PANELS | PROTECTION AND CONTROL



## FEATURES AND APPLICATIONS

Tesmec Group, understanding the issues of a modern power grid management, develops an innovative device that supports IEC 61850 protocol with GOOSE messaging communication for high-speed protection, fault isolation and restoration. TP-MFRG meets today's requirements for smart grids and it is designed to be installed in primary distribution substation. The device can be configured to protect different types of bay (i.e. feeders, bus-couplers, power factor correction capacitors, neutral forming transformer (NFT), ...). TP-MFRG can control, by optical fiber connection, remote modules named TP-RIO3 to acquire I/O far away. The device is housed in 3U rugged metal box suitable to be installed in 19-inch racks.

TP-MFRG comes with four Ethernet ports:

- One 10/100 Base-TX port on front panel for calibrations and local monitoring
- One 100 BASE-FX port with fiber-optic LC connector on the rear for data exchange (IEC61850: Station-Bus)
- Two 100 BASE-FX ports with fiber-optic LC connector on the rear for connection to remote modules T-RIO (IEC61850 or MODBUS ZTCP-IP: Process-Bus)

TP-MFRG supports different types of neutral connection: isolated neutral, resistance-earthed, compensated (Petersen coil) and solidly-earthed grids. It uses conventional current and voltage transformer to receive measurement signals.

TP-MFRG is equipped with:

- 5 solid state control relays
- 6 signalling relays
- 6 opto-insulated inputs
- 4 analog voltage channels
- 4 analog current channels

### MAIN FEATURES

- Protection
- Control
- Measurement
- Communication (RTU)
- Diagnostic
- Automation (IEC61131)
- DFR (Data Fault Recorder)
- Compliant IEC61850

**TESMEC**

# TECHNICAL FEATURES

TP-MFRG	Features	Value
General ratings	Supply voltage	50 : 142 Vdc / 36 : 101 Vac, Protected against polarity inversion
	Power consumption	22 VA
	Transient overload (1 sec)	2 Vn
	Max inrush current (10 msec)	8 A
Voltage analog channels	Voltage channels	4
	Inputs voltage level	0 - 100 Vac / 0 - (100/ $\sqrt{3}$ ) Vac
	Operating frequency	45 - 70 Hz
	Accuracy class	0,001 Vn
	Permanent overload	1,3 Vn
	Transient overload (10sec)	2 Vn
	Power consumption (single channel)	< 0,2 VA
Current analog channels	Current channels	4
	Inputs current level	1 A / 5 A
	Measurement range	0,5 % - 3000 % In
	Operating frequency	45 - 70 Hz
	Accuracy class	0,005 In
	Permanent overload	5 In
	Transient overload	250 A (1s), 800 A (half-wave, 10 msec)
	Power consumption (single channel)	< 0,05 VA
Protection functions (ANSI / IEEE)	51 (overcurrent)	
	50 N / 51 N (earth overcurrent)	
	67 / 67 N (Negative sequence overcurrent / Unbalance)	
	59 / 59 N (Overvoltage/ Neutral Overvoltage)	
	79 (auto reclosing)	
	25 (Syncro-Check)	
	27 (Undervoltage)	
	32 P (Directional / Reverse power)	
	81 (Frequency)	
	2 ndH REST (INrush current)	

**TESMEC Automation S.r.l.**  
 Headquarters:  
 Via Zanica, 17/O  
 24050 Grassobbio (BG) - Italia  
 Tel.: +39 035 4232911  
 Email: [automation@tesmec.com](mailto:automation@tesmec.com)

**TESMEC**

**Stay in touch  
with us:**



[tesmec.com](http://tesmec.com)