



2TCA

RTU with FPI



MV Supervision & Automation RTU with built-in directional Fault Passage Indicator

The 2TCA is a MV supervision and automation device for secondary substation ring main units (RMU) in underground power networks, and sectionalizers and reclosers in overhead power lines.

The built-in directional fault passage indicator in combination with the RTU functionality allows reliable location of faulty sections of the network by the operators, reducing power outage time.

There are two different models:

2TCA-A Load break switch and sectionalizer supervision

Suitable to supervise and monitor single load break switches, 2TCA-A model provides fault passage indication, V, I, P, Q, S and power factor measurements, substation alarm monitoring and communications with the SCADA system.

Daisy chaining multiple 2TCA-A allows monitoring and controlling up to three switchgears in the same secondary substation.

2TCA-B/C RMU automation

2TCA-B/C models have been especially designed to control and supervise ring main units and compact switchgears (up to 3LxP/3KxTS configuration), providing fault passage indication, V, I, P, Q measurements, substation alarm monitoring and communications with the SCADA system.

2TCA-B/C offers a keyboard for local operation.

Programmable Logic & Automation

In the 2TCA, digital outputs and LEDs are configured as a logical combination of internal states and digital inputs using the device's internal programmable logic. These interfaces provide valuable information either for local and for remote operation.

The 2TCA-A unit controls the correct execution of the commands, sequence and timing, and checks the final state of the switches or breakers, providing feedback to the operator.

Communication Protocols & Cybersecurity

The 2TCA RTUs communicate with control centres or SCADA systems using the IEC 60870-5-104 communications protocol.

Remote firmware update, device configuration, remote command execution and other operations on the device are performed through webUI or web services.

All remote commands are transmitted over secure transport protocols like HTTPS or SSH.

User authentication over LDAP and TACACS+ protocols is provided.

Automatic service restoration

The 2TCA devices have been designed to operate as part of an automatic service restoration system.

Settings and configurations can be adaptatively modified for optimal network operation.

Technical Information

Protection Functions	
3 x Phase Overcurrent Ground Overcurrent 3 x Phase & Ground Directional	Undervoltage / Overvoltage Breaker Supervision
Analog Inputs (for each monitored unit)	
Channels Accuracy Current Range Voltage Range Frequency	4 I + 3 V 0.5 % typ. 1 A _{nom} 2.309 (4 / $\sqrt{3}$) V _{AC} 50 / 60 Hz \pm 5%
Digital Inputs & Outputs	
Channels (2TCA-A) (2TCA-B/C) V _{nom} for digital inputs Switching Current for DO	Up to 12 DI, up to 7 DO 16 DI, 8 DO per module 48 V _{DC} 8A@250V _{AC} 2A@48 V _{DC}
Event Record Capacity	2500 events max
Communication Interfaces & Protocols	
Ethernet Serial (2TCA-A) (2TCA-B/C) Remote control Protocol	2 x 10/100 BaseTx (RJ45) 1 x RS232 (9 way D Type DTE) 2 x RS232 (9 way D Type DTE) IEC 60870-5-104
Certification	IEC 60870-5-104 KEMA certified
Electromagnetic Immunity	
IEC 60255-5 IEC 60255-22-1 EN 55022 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5	IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-9 IEC 61000-4-10 IEC 61000-4-16 IEC 61000-4-17 IEC 61000-4-18
Environmental Conditions	
IEC 60068-2 IEC 60068-2-6 Vibration	IEC 60068-2-6 for Drop & Topple
Power Supply (2TCA-B/C)	18-72 V _{DC} @ 8W typ.
Power Supply (2TCA-A)	18-72 V _{DC} @ 6W typ.
Dimensions (2TCA-B/C)	300 x 173 x 167 mm
Dimensions (2TCA-A)	220 x 140 x 105 mm
Mounting	DIN rail / panel

