



Recloser/sectionalizer controller

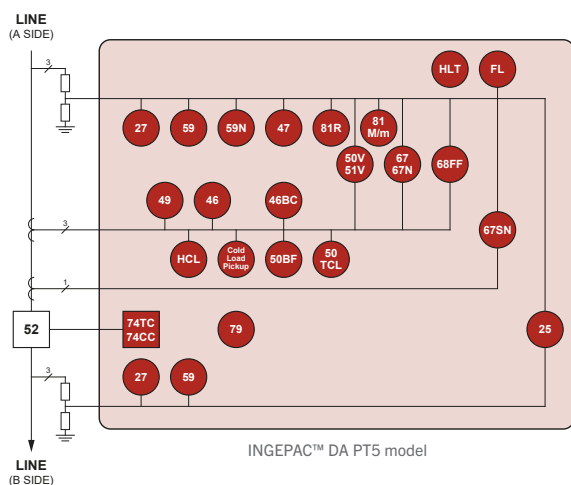
INGEPAC™ DA PT multifunctional devices offer a comprehensive solution for protecting and controlling distribution **reclosers** or **sectionalizers**. Optionally they can provide **loop automation** (6 voltage inputs).

Besides the main protection functions, they include **monitoring and operation** features as well as logic programming, and events and fault reporting providing comprehensive switchgear (circuit breaker, recloser or LBS) management **local and remote** capabilities.

INGEPAC™ DA range is a cost-effective solution for protection and control systems for which **IEC 61850** standard compliance is required, including access in other protocols and web services as well.

Applications

- 3 voltages recloser/sectionalizer protection and control (INGEPAC™ DA PT4 model)
- 6 voltages recloser/sectionalizer protection and control (INGEPAC™ DA PT5 model)



Functions

3x50/51 (67), 50N/51N (67N)
 50NS/51NS (67NS)*
 67NA*, 67NC*
 46TOC (67Q), 46IOC(67Q)
 46BC Broken conductor
 50 CSC 2nd harmonic restraint
 27, 59, 59N, 47
 27, 59 (side B in DA PT5 models)
 81M/m, 81 ROCOF
 49 Thermal image
 32 Power
 78 Phase shift
 HCL, CLP

51V
 HLT, Live line, Maintenance
 86
 Fault detection
 Fault isolation
 Loop automation (modelos DA PT5)
 50BF Breaker failure
 25 Synchrocheck
 79 Recloser
 68 Fuse failures
 Fault locator
 Breaker supervision
 Optic arc-flash protection (optional)

* Available depending on the hardware configuration of the device

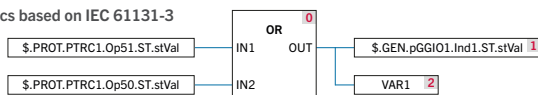
Data acquisition

SOE (2000) y 20 fault reports
 Oscillography: 8 analog and 100 digital channels
 Measurements: I, V, P, U, Q, f, etc.
 Quality: sags and swells, THD, harmonics (15),
 CBEMA curve, interruptions, etc.
 Statistic data and reliability index

Local HMI

3,5" graphical
 programmable display
 I/O/L/R pushbuttons
 Function keys
 24 configurable LEDs

Logics based on IEC 61131-3



Communications

Protocols: IEC 61850, IEC 60870-5-101/103/104,
 DNP3, Modbus
 Redundancy: PRP, HSR, D-link failure, switch mode
 Web services: HTTP/HTTPS, FTP/sFTP

Synchronization

IEEE 1588 v2
 SNTP
 IRIG-B

INSULATION AND ELECTROMAGNETIC TESTS

Electromagnetic compatibility requirements	IEC 60255-26
Dielectric withstand	IEC 60255-27
Insulation resistance measurement	IEC 60255-27
Voltage impulse	IEC 60255-27
Electrostatic discharge immunity	IEC 61000-4-2
Radiated radiofrequency electromagnetic field immunity	IEC 61000-4-3
Electrical fast transient / burst immunity	IEC 61000-4-4
Surge immunity	IEC 61000-4-5
Immunity to conducted disturbances, induced by radiofrequency fields	IEC 61000-4-6
Power frequency magnetic field immunity	IEC 61000-4-8
Impulse magnetic field immunity	IEC 61000-4-9
Damped oscillatory magnetic field immunity	IEC 61000-4-10
Immunity to conducted, common mode disturbances	IEC 61000-4-16
Ripple on DC input power port	IEC 61000-4-17
Damped oscillatory wave immunity	IEC 61000-4-18
Voltage dips, short interruptions and voltage variations immunity	IEC 61000-4-29
Withstand to radiated electromagnetic interference from transceivers	IEEE 37.90.2

CLIMATIC TESTS

Cold	IEC 60068-2-1
Dry heat	IEC 60068-2-2
Change of temperature	IEC 60068-2-14
Damp heat cyclic	IEC 60068-2-30
Damp heat steady	IEC 60068-2-78
External protection level	IEC 60529

MECHANICAL TESTS

Vibrations	IEC 60255-21-1
Shock and bump	IEC 60255-21-2
Seismic	IEC 60255-21-3
Random vibrations	IEC 60068-2-64

MAIN FEATURES

High precision in direct measurements (0.2 class in currents and voltages)

Wide range current inputs allowing the same device to be connected to 1 A and 5 A CT secondary

Breaker monitoring: KI2, tripping and closing circuits, excessive number of trips, inactivity, open/close times, SAIFI, SAIDI, etc.

It offers an analog and digital simulation mode for testing

The device can send oscillographic records automatically to an FTP server

Voltage inputs from VT or LPIT (only INGEPACTM DA PT4 models)

Through the front USB you can access the device to retrieve reports and equipment CID, load an external CID, load the firewall configuration or update the device firmware

Synchronization from communications protocols, SNTP, IEEE 1588 v2 (PTP), demodulated IRIG-B input or PPS input, pacFactory or display

Web server for monitoring and setting without needing additional software

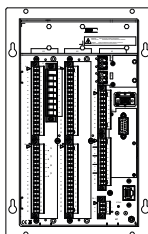
Cybersecurity features: sFTP, HTTPs, firewall, audit log, password accessing, RBAC, LDAP, session management, etc.

HARDWARE OPTIONS

Mounting options

Flush or backplate surface mounting:

- 1/3 19" rack (up to 2 I/O slots)



Power supply

- Available voltages:
24/48 Vdc or 125/220 Vdc

Boards options

- 15 DI + 8 DO
- 24 DI + 16 DO
- 8 AI from converter (mA or V)
- 4 V + 4 I + 4 DI + 5 DO
- 4 V + 4 I + 13 DI
- Voltage inputs from VT or LVIT (DA PT5 models, only sensors inputs)

Optional

- High speed digital outputs

Communication ports

- 1 serial + 2 Ethernet

Optional IP55 front protection

SOFTWARE

All the devices in the INGEPACTM product range can be accessed using powerful software tools developed by Ingeteam which run on Windows®

Application specifically designed for simple and user-friendly access to the equipment

INGESYS eFS



CYBERSECURITY