

INGEPAC

DA PT4 / PT5

Controller
Recloser or sectionalizer



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.

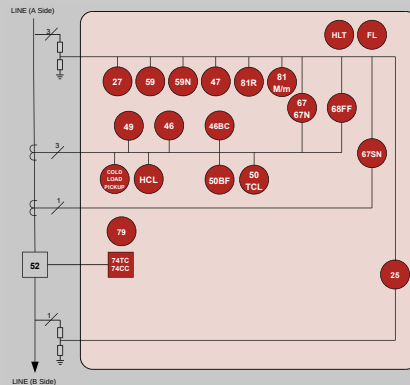
The INGEpac™ DA range is a **cost-effective solution** for protection and control systems for which **IEC 61850** standard compliance is required, including access in other protocols and **web services** as well.

Software

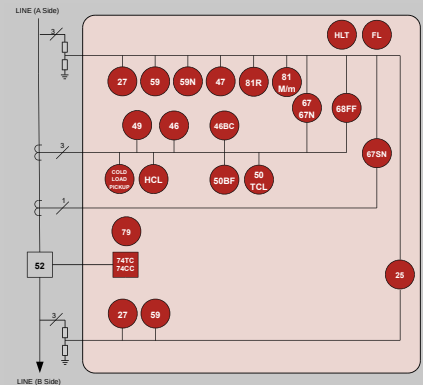
All INGEpac™ range devices can be set and monitored with powerful software tools by INGETEAM running in a Windows® environment.

This application software has been specifically designed for simple and user-friendly access to the devices.

INGESYS EFS



DA PT4 model



DA PT5 model

Protection Functions

- 50/51 (67)
- 50N/51N (67N)
- 50SN/51SN (67SN) SEF Sensitive Earth Fault
- 67IN Isolated neutral directional / compensated neutral
- 46TOC (67Q), 46IO (67Q)
- 46BC Broken conductor
- 2nd harmonic restraint
- 27, 59
- 59N Neutral overvoltage
- 47 V2 overvoltage
- 81M/m
- 81R Rate Of Change Of Frequency

(ROCOF)

- 27, 59 (B Side) (only DA PT5)
 - HCL High current locking
 - CLP Cold load pickup
 - HLT Hot Line Tag
 - Function 86
 - 50BF Breaker failure
- Fault locator**
- Monitoring Units**
- 68FF Fuse failure
 - Breaker Monitoring
 - kI2 per pole
 - Closing and trip circuit monitoring
 - Excessive number of trips
 - Breaker status logic

Automation

- 25 Synchrocheck
 - 79 Auto-reclose
 - Sequence coordination
 - Loop Automation (PT3 and PT5)
 - Auto-sectionalizing
- Data Acquisition Functions**
- Phase and neutral current
 - Active and reactive power
 - Active and reactive energy counters, both directions
 - Event recording and fault reports
 - Oscillography
 - Measurements historical data record

Communications

- Rear ports: 1 serial RS232/485 and 2 Ethernet
 - Protocols: IEC 61850 Ed. 2, DNP 3.0, IEC 60870-5-103, IEC 60870-5-104
 - Web and FTP server
- Synchronisation**
- IEEE 1588, SNTP and IRIG-B input
- Local Interface**
- Keyboard and operational buttons (optional)
 - Graphic display (optional)

Electromagnetic and Insulation Tests

· Measurements of conducted radioelectric disturbances	EN 55022
· Measurements of radiated disturbance field strength	EN 55022
· Insulation resistance measurement	IEC 60255-5
· Dielectric withstand	IEC 60255-5
· Impulse voltage	IEC 60255-5
· Electrostatic discharge immunity	IEC 61000-4-2
· Radiated radiofrequency electromagnetic field immunity	EN 61000-4-3
· Electrical fast transient/burst immunity	IEC 61000-4-4
· Surge immunity	IEC 61000-4-5
· Immunity to conducted disturbances, induced by radio-frequency fields	IEC 61000-4-6
· Power frequency magnetic field immunity test	IEC 61000-4-8
· Impulse magnetic field immunity	IEC 61000-4-9
· Damped oscillatory magnetic field immunity	IEC 61000-4-10
· 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
· Power frequency immunity	IEC 60255-22-7
· Withstand to radiated electromagnetic interference from transceivers	IEEE C37.90.2

Climatic

· 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

Mechanical

· Vibration	IEC 60255-21-1 / EN 60068-2-6
· Shock and bump	IEC 60255-21-2 / EN 60068-2-27
· Seismic	EN 60255-21-3
· Random vibrations	IEC 60068-2-64

Main features

- Recloser and overhead switchgear control
- Local operation and setting by means of a graphic display, and remotely through serial and Ethernet protocols
- User-friendly configuration and supervision software. The device data model is integrated automatically to the software when connected, not needing any previous configuration work
- Wide range current inputs allowing the same device to be connected to 1A and 5A CT secondary
- Sensor voltage inputs or conventional transformers
- User logic signals according to the IEC 61131-3 standard
- Different options for programmable digital inputs and outputs number
- Local signalling through programmable LED indicators
- Circuit breaker and operation monitor
- Fault Passover Detection (FPD)
- Fault location
- Faults and events recording
- Automatic reclosing function, for application in overhead lines
- Secure access using password

Options

- With display, for flush mounting or without display, for back plate surface mounting
- Supply voltage: 24/48 Vdc
- Voltage inputs from Voltage transformers or from sensors / resistive or capacitive dividers
- Optional 7V sensor inputs with Loop Automation function (only DA PT5)
- PRP/HSR redundant communications

Applications

- Reclosers management
- Load Break Switches management