

INGEPAC

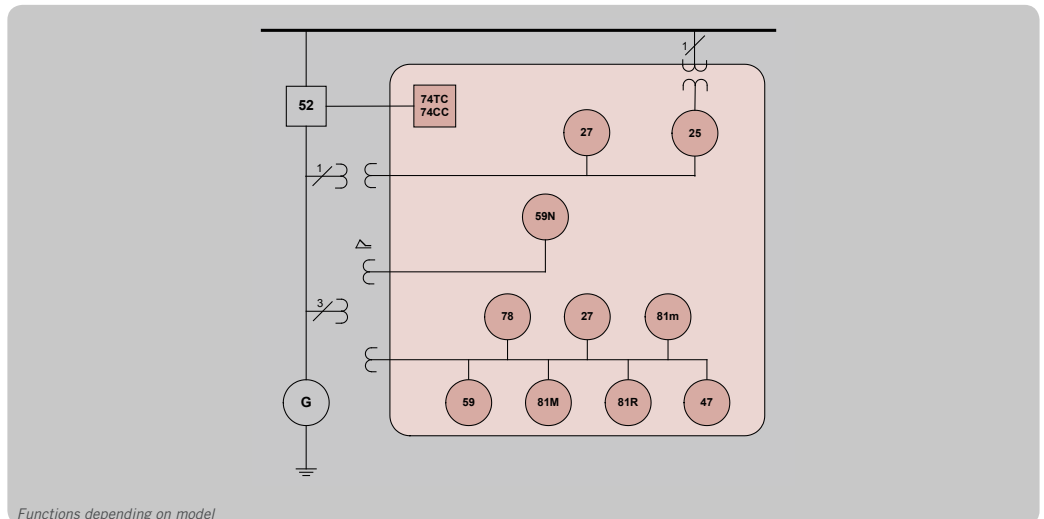
PL 70

Relay Voltage protection



INGEPAC™ PL70 offers protection for a wide variety of applications.

The PL70 family provides a cost effective comprehensive protection for general purposes. In addition to the main protection and automation functions (overcurrent, voltage, breaker failure, frequency, phase shift, field loss, autoreclose, synchrocheck), these devices offer other functions, such as communications, event recording, logic programming, breaker monitoring, etc., making of these devices a suitable solution for the automation of electric systems.



Functions depending on model

Software

- All of the equipment in the INGEpac™ family can be accessed using powerful software tools developed by Ingeteam and which run on Windows®.
- Application software specifically designed for simple and user-friendly access to the equipment.

INGESAS EFS

INGESAS SIPCON

Protection functions

- 27 Minimum voltage
- 59 Overvoltage
- 47 Voltage unbalance, phase inversion
- 59N (64) Open delta overvoltage (earth fault)
- 78 Phase shift
- 81M Maximum frequency
- 81m Minimum frequency
- 81 Frequency rate of change

Other functions

- 25 Synchrocheck
- Breaker monitoring**
- 74TC/CC trip and close circuit supervision
- Openings, closures counters
- Command failure
- Pulse opening/closure command or change of state detection (latch)

Data Acquisition Functions

- Measurements historical report (maximum/minimum)

Events recording

- Faults recording
- Oscillography recording
- Voltage measurement (fundamental and sequences)
- Digital inputs and outputs

Communications

- DB9 RS232 PROCOME protocol front port
- Up to 2 rear ports: RS232, RS485, Glass Fibre Optic, Plastic Fibre Optic, Ethernet
- PROCOME, Modbus, DNP 3.0, IEC60870-5-101 protocols

Synchronisation

- Via communications protocol or via demodulated IRIG-B input.

Local interface

- Keypad + local display (2 rows x 8 characters)
- SIPCON software running on Windows for PC, front or rear port access.

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Ingeteam

Electromagnetic and Insulation

- Measurement of conducted radioelectric emissions in DC power port IEC60255-25/EN55022
- Measurement of radiated radioelectric emissions IEC60255-25/EN55022
- Insulation resistance test IEC60255-5
- Dielectric test IEC60255-5
- Impulse voltage test IEC60255-5
- Electrostatic discharges immunity test IEC61000-4-2
- Radiated radiofrequency fields immunity test ENV 50204/IEC 61000-4-3
- Electrical fast transients immunity test IEC61000-4-4
- Surge immunity test IEC61000-4-5
- Conducted disturbances induced by radio-frequency fields immunity test IEC61000-4-6
- 50 Hz magnetic fields immunity test IEC61000-4-8
- Pulse magnetic fields immunity test IEC61000-4-9
- Damped oscillatory magnetic fields immunity test IEC61000-4-10
- 50 Hz magnetic fields immunity test IEC61000-4-17
- Damped oscillatory waves immunity test IIEC61000-4-18/IEC60255-22-1
- DC supply voltage polarity inversion, variations, dips and interruptions immunity test IEC61000-4-29/IEC60255-11
- Power frequency immunity test IEC60255-22-7
- IEEE C37.90-1 SWC Fast Transients Oscillatory Wave

Climatic

- Cold test IEC 60068-2-2
- Dry heat test IEC 60068-2-1
- Damp heat test, steady state IEC 60068-2-78
- Change of temperature (thermal shock) IEC 60068-2-14

Mechanical

- Vibration test IEC60255-21-1
- Shock and bump test IEC 60255-21-2
- Seismic IEC 60255-21-3

Main Features

- Voltage and frequency protection for multiple applications
- Intuitive configuration and monitoring software supplied with the equipment. It does not require a previous configuration to communicate with the equipment.
- User-defined logic signals
- Digital inputs and outputs and programmable LED indicators
- Serial and Ethernet communication
- Real time monitoring and recording of the parameters of the breaker
- Events and faults recording
- 4 setting groups for the automatic adaptation of the relay's programming to the grid conditions.
- Synchronisation via demodulated IRIG-B or through communication protocols

Options

- Connections Connector for pin or ring type terminals
- Field interfaces

Configuration	Digital inputs	Digital outputs	Others
0	2	6	-
1	8	11	-
2	7	11	IRIG-B

- Power supply: 12 Vcc; 24/48 Vcc; 125/220 Vcc; 220 Vca
- Power supply: voltage measurement
- Communications ports: All of the devices have a front RS232 port for local access and additionally: 1 serial; 2 serial; 1 serial + 1 Ethernet
- Communication ports connection types
 - Serial: RS232, RS485, Glass Fibre Optic, Plastic Fibre Optic
- IP54 front lid
- Models by protection functions:
 - PL70TH (1xV): 59N (64), 74TC/CC
 - PL70TF (1xV): 27, 59, 81m, 81M, 81R, 74TC/CC
 - PL70TT (3xV phases + 1xV open delta): 27, 59, 47, 81m, 81M, 81R, 59N (64), 74TC/CC
 - PL70SV (3xV phases + 1xV open delta): 27, 59, 47, 81m, 81M, 81R, 78, 59N (64), 74TC/CC
 - PL70SY (1xV busbar side + 1xV line side): 25, 27, 74TC/CC

Applications

- Motor and generator protection (voltage and frequency)
- Voltage and frequency busbar protection
- Earth fault protection
- Tie connection protection

