

INGEPAC

PL 70

Protection Electric motors and generators



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.

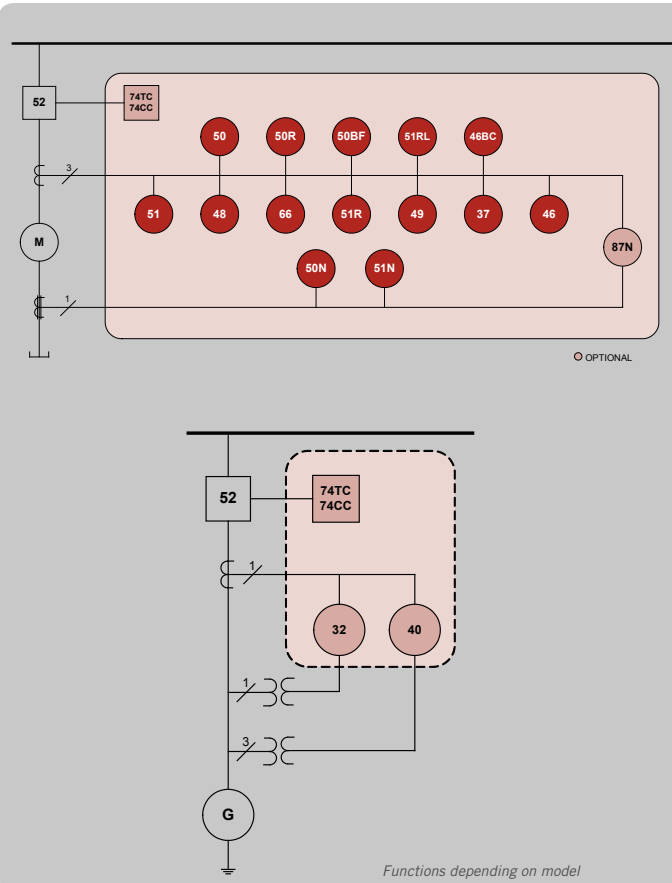
Software

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

INGESAS EFS

INGESAS SIPCON



Protection functions

- 50/51, 50/51N Three-phase and earth overcurrent
- 50/51R Residual overcurrent
- 46 Reverse sequence overcurrent (unbalance)
- 46BC Broken conductor
- 37 Minimum current
- 49 Thermal image
- 51RB Rotor block
- 48 Long start
- 66 Starts per hour unit
- 87N Restricted earth protection
- 40 Field loss
- 32 One phase maximum and minimum active power, maximum reactive power and reverse power unit

Breaker monitoring

- 74TC/CC trip and close circuit supervision
- Openings, closures, k12 counter
- Excessive number of trips alarm
- 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
- Current measurement (fundamental and sequences), demand maximeter, power
- 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.

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 | IEC61000-4-18/ 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 60068-2-1 |
| · Dry heat test | IEC 60068-2-2 |
| · 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

- Economic protection solution for small motors and specific generator applications
- Intuitive configuration and monitoring software supplied with the equipment. It does not require a previous configuration to communicate with the device.
- User-defined logic signals
- Programmable digital inputs and outputs and LED indicators
- Serial and Ethernet communication
- Real time monitoring and recording of the parameters of the breaker
- Events and faults recording
- 4 setting groups allowing automatic re-setting in case of conditions change.
- Synchronisation via demodulated IRIG-B or through communication protocols

Options

- Connections 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
Ethernet: RJ45
- IP54 front lid
- Models by protection functions:
PL70PC (3xV + 1xI): 40, 74TC/CC
PL70PO (1xI + 1xV): 32, 74TC/CC
PL70MO (3xI phases + 1xI neutral): 50/51, 50/51N, 50/51R, 49, 46, 46FA,87N, 52RB, 37, 48, 66, 74TC/CC

Applications

- Motor protection
- Power protection for interconnection and generators
- Field loss protection for synchronous motors

