



Order code: INTELIPRO

Protection Relay for Parallel Applications

Datasheet

Product description

InteliPro is highly flexible protection relay for grid connected applications like generator sets, renewable energy sources, cogeneration, micro turbines, etc.

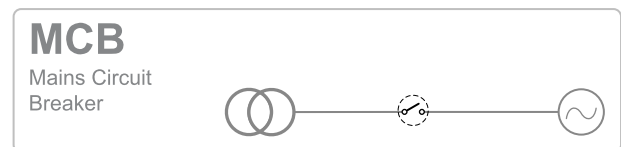
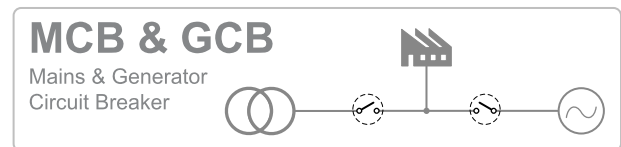
Key functions

- > Voltage, frequency and current based protections for on-grid distributed power generation

Key features

- > True RMS measurement
- > 3-phase voltage and current measurement
- > Automatic fault reset with adjustable time delay
- > Two stage protection settings
- > Optional functions for extended protection
- > Free assignment of 8 binary inputs, 9 binary outputs and 3 analog inputs
- > Full and easy configuration through the front panel or LiteEdit PC software
- > Expandable extensions and communication modules
- > Remote access
- > 3 level password protection
- > Event history log

Application overview



Technical data

Power Supply

| | |
|-----------------------------------|---------------------------------------|
| Power supply range | 8 - 36 VDC |
| Power supply drop-out immunity | 50 ms (from min. 10 V) |
| Backup battery type | approx. 200 mA / 8 V; 50 mA / 36 V |
| Backup battery type | CR 1225 |
| Estimated backup battery lifetime | 10 years |

Operating conditions

| | |
|---------------------------------|---|
| Operating temperature | -20-70 °C |
| Operating humidity | 95% non-condensing (IEC/EN 60068-2-30) |
| Protection degree (front panel) | IP65 |
| Vibration | 5-25 Hz, +/- 1,6 mm 25-100 Hz, a = 4 g |
| Shocks | a _{max} 200 m/s ² |
| Storage temperature | -30-80 °C |

Mains measurement

| | |
|-----------------------|--|
| Measurement inputs | 3 phase mains voltage 3 phase mains current |
| Measurement type | True RMS |
| Voltage range | 480 V Ph-Ph (277 V Ph-N) |
| Max. measured voltage | 340 V Ph-N 588 V Ph-Ph |
| Min. measured voltage | 30 V Ph-N |
| Voltage accuracy | 1% from the range at 20°C and 50 or 60 Hz; 1,5% on the complete frequency and temperature range |
| Current range | 5 A |
| Max. measured current | 9 A |
| Max. allowed current | 12 A continuous, 50 A/1 s |
| Current accuracy | 2 % from the range at CT Ratio = 50 A / 5 A or higher |
| CT input burden | < 0.5 VA |
| Frequency range | 30 - 70 Hz, measured from L3 |
| Frequency accuracy | 0.05 Hz |

Binary inputs

| | |
|-----------------------|---|
| Number | 9 non-isolated |
| Input resistance | 4,2 kΩ |
| Close/Open indication | 0-2 V DC close contact > 4 V DC open contact |

Binary outputs

| | |
|--------------|---|
| Number | 8 non-isolated |
| Max. current | 500mA (suppression diodes required for inductive loads) |
| Switching to | negative supply terminal |

Analog inputs

| | |
|------------------------|--|
| Number | 3 non-isolated |
| Electrical range | 0 - 2500 Ω |
| Resolution | 10 bits, 4 digits |
| Supported sensor types | Predefined: VDO 10 Bar, VDO Temperature, VDO Fuel level User defined: 10 points non-linear sensors can be defined by the user |
| Precision | 1% from the range |

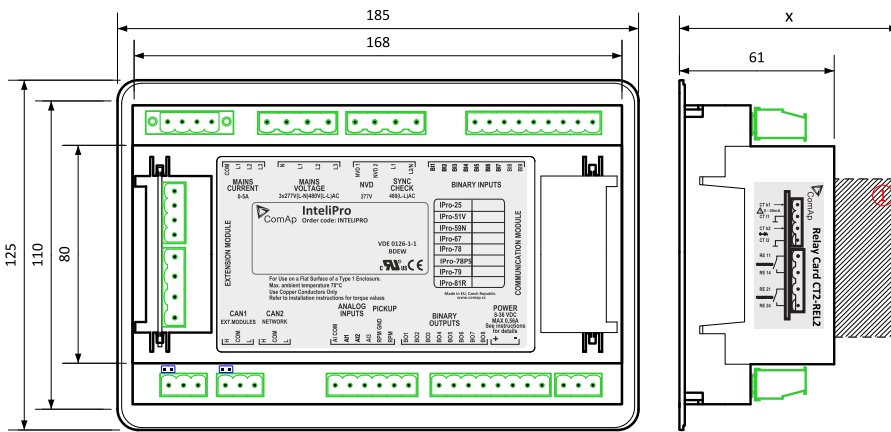
Communication

| | |
|------|---|
| CAN1 | External modules 250 kbps, max 200 m Isolated |
| CAN2 | Intercontroller and comm extensions 250/50 kbps, max 200/800 m Isolated |

Relay card CT2-REL2

| | |
|------------------------------|-----------------------------|
| Relay Contacts | |
| Number of relay outputs | 2 |
| Type | Dry contacts |
| Operating voltage | 250 VAC |
| Max switched voltage/current | 250 V/10 A |
| Current measurement inputs | 2 x 1ph current measurement |
| Measurement type | True RMS |
| Number of current inputs | 2 |
| Input 1 (CT k1, I1): | |
| Current range | 50 mA |
| Max. allowed current | 120 mA |
| Current accuracy | 2 % from the range |
| CT input burden | <0.05 VA |
| Input 2 (CT k2, I2): | |
| Current range | 5 A |
| Max. measured current | 9 A |
| Max. allowed current | 12 A continuous, 50 A/1 s |
| Current accuracy | 2 % from the range |
| CT input burden | <0.5 VA |

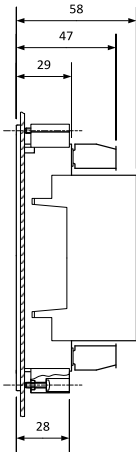
Dimensions, terminals, mounting and EMC



① Plug-in module

Note: Dimension x depends on plug-in module

Panel door mounting



Overview of parameter x

| Plug-in module | Parameter x [mm] |
|-----------------|--------------------------|
| IC-NT-CT-BIO7 | 76 |
| CT2-REL2 | 80 |
| IL-NT-RS232 | 113 |
| IL-NT-RS232-485 | 115 @ RS232 / 74 @ RS485 |
| IL-NT-S-USB | 128 |
| IB-Lite | 108 |
| IL-NT-GPRS | 122 |

Note: IntelliPro can be mounted into panel doors as a standalone unit using provided plastic holders. The cut-out for the unit should be 1mm wider than the unit on each side (i.e. cut-out dimensions 175x115mm).

EMC

| | |
|---|---|
| Electrical disturbance test (1MHz burst immunity) | IEC 60255-22-1; IEC 61000-4-18; IEEE C37.90.1 |
| Electrostatic discharge tests | IEC 60255-22-2; IEC 61000-4-2 |
| Radiated electromagnetic field immunity test | IEC 60255-22-3; IEC 61000-4-3; IEEE C37.90.2 |
| Electrical fast transient/burst immunity test | IEC 60255-22-4; IEC 61000-4-4; IEEE C37.90.1 |
| Surge immunity tests | IEC 60255-22-5; IEC 61000-4-5 |
| Immunity to conducted disturbances induced by radiofrequency fields | IEC 60255-22-6; IEC 61000-4-6; IEEE C37.90.2 |
| Power frequency magnetic field immunity tests | IEC 60255-22-8; IEC 61000-4-8 |
| Voltage dips, short interruptions and voltage variations on dc input power port | IEC 60255-11; IEC 61000-4-29 |
| Electromagnetic emission tests | CISPR 22; IEC 60255-25 |
| Vibration tests (sinusoidal) | IEC 60255-21-1; IEC 60068-2-6 |
| Shock and bump tests | IEC 60255-21-2; EN 60068-2-27 |
| Environmental testing (Cold: -30 °C) | IEC 60068-2-1 |
| Environmental testing (Dry heat: +70 °C) | IEC 60068-2-2 |
| Environmental testing (Temperature cycle: 20-55-20°C, Humidity: 97%) | IEC 60068-2-3; IEC60068-2-30 |
| Insulation coordination (Overvoltage category III) | IEC 60255-5 |
| Emission standard for industrial environments | IEC 61000-6-4 |
| Immunity for industrial environments | IEC 61000-6-2 |

Available extension modules

| Product | Description | Order code |
|-----------------|--|-------------------------------|
| IC-NT CT-BIO7 | 1 phase current input and binary input/output module | IC-NT-CT-BIO7 |
| IG-IOM | Analog/binary input/output module | IG-IOM |
| IGS-PTM | Analog/binary input/output module | IGS-PTM |
| IL-NT-AIO | Analog input/output module | IL-NT-AIO |
| CT2-REL2 | Relay output and analog input module (default) | CT2-REL2 |
| IL-NT RS232 | Direct connection (PC) by RS232 | IL-NT-232 |
| IL-NT RS232-485 | Dual Port Extension Board with RS232 and RS485 | IL-NT-232-485 |
| IL-NT S-USB | Service USB Module | IL-NT-S-USB |
| IB-Lite | Internet / Ethernet Module including Web Server | IB-Lite |
| IL-NT GPRS | GSM / GPRS Modem Plug-In Module | IL-NT-GPRS |

Related products

| Product | Description | Order code |
|----------------|--------------------------------------|-----------------------------|
| MainsPro | Mains Decoupling Relay | MAINSPRO |
| InteliPro SYNC | Synchronization and protection relay | IP1SYNCXBAA |

Functions and protections

| Standard functions | | | |
|---|-----------|---|------------|
| Description | ANSI code | Description | ANSI code |
| Under/overvoltage | 27, 59 | Breaker failure protection | 50BF |
| Positive sequence undervoltage | 27D | Dynamic grid support | |
| Voltage asymmetry | 47 | QU (Reactive power undervoltage) protection | |
| Under/overfrequency | 81L, 81H | Phase sequence supervision | |
| Instantaneous overcurrent | 50 | Auto fault reset | |
| Time overcurrent | 51 | Maximum parallel time | |
| Current asymmetry | 46 | Battery voltage protection | |
| Earth fault current | 50N, 51N | Ground surge current | 50GS, 51GS |
| Directional/reverse power with time delay | 51 | | |
| Optional functions | | | |
| Sync Check | 25 | Rate of change of frequency + rocof filter | 81R |
| Single Phase Reverse Power | 32 | Vector shift | 78 |
| Time overcurrent with voltage restraint | 51V | Pole slip | 78PS |
| Neutral voltage displacement | 59N | AC-reclosing relay | 79 |
| Directional overcurrent | 67 | | |


Note: Optional functions are an addition on a chargeable item.



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ComAp 
 The heart of smart control

Certificates and standards

| | | | |
|--|--|---|---|
| <ul style="list-style-type: none">> IEC 60255> G99, G98, G10, G100> VDEV 0126-1-1 | <ul style="list-style-type: none">> IEC60255-1:2009> IEC60255-26:2013> IEC60255-27:2013> IEC60255-127:2010> IEC60255-181:2019 | <ul style="list-style-type: none">> BDEW> IEEE 1547*> UL 508 |  |
| *Internal confirmation of extent of compliance to IEEE1547 | | | |
| List of standards is available on: https://webstore.iec.ch/ | | | |



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