

Order code: IP1SYNCXBAA

Synchronization and protection relay

Datasheet

Product description

InteliPro SYNC is a highly reliable protection relay designed for synchronization in parallel to mains applications, such as generators, gen-sets and cogeneration units connected to distribution network.

InteliPro SYNC is an ideal substitute for manual synchronizing relay.

Key functions

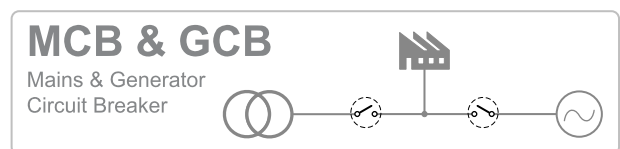
- ▶ Synch check, over/undervoltage and reverse power protection in one unit
- ▶ Over/underfrequency, Instantaneous overcurrent, IDMT overcurrent and Earth Fault protection as optional features
- ▶ Extensive flexibility for various applications through set of optional functions

Key features

- ▶ Quick and easy installation
- ▶ Intuitive and simple wiring
- ▶ True RMS measurement
- ▶ 3 phase voltage and current measurement
- ▶ Two stage protection settings
- ▶ Display with synchroscope

- ▶ Breaker failure protection and battery voltage protection
- ▶ Automatic fault reset with adjustable time delay
- ▶ Freely assignable 8 binary inputs, 9 binary outputs and 3 analog inputs
- ▶ Easy configuration through the front panel or a PC software
- ▶ Expandable extension and communication modules
- ▶ Remote access
- ▶ 3 levels of 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 |

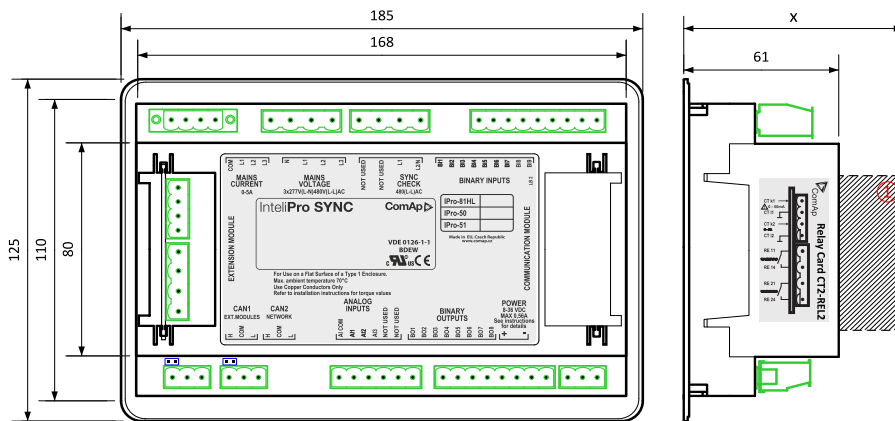
Communication

| | |
|------|---|
| 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 |

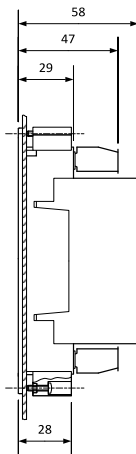
Dimensions, terminals, mounting and EMC



① Plug-in module

Note: Dimension *x* depends on plug-in module

Panel door mounting



Overview of parameter *x*

| Plug-in module | Parameter <i>x</i> [mm] |
|-----------------|--------------------------|
| IC-NT-CT-BIO7 | 76 |
| 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 |
| 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 | Utility Protection Relay | INTELIPRO |

Functions and protections

| Standard features | | Optional functions | |
|--------------------------------------|-----------|---------------------------|-----------|
| Description | ANSI code | Description | ANSI code |
| Sync Check | 25 | Under/overfrequency | 81L, 81H |
| Under/overvoltage | 27, 59 | Instantaneous overcurrent | 50 |
| Reverse power | 32 | IDMT overcurrent | 51 |
| Breaker failure protection | 50BF | Earth fault current | 50N, 51N |
| Auxiliary battery voltage protection | | | |

Note: In order to use the 50N, 51N function, please install a CT2-REL2 plug-in module (sold separately).

Certificates and standards

| | | | |
|--|------------------|---|---|
| ▶ IEC 60255 | ▶ VDE V 0126-1-1 |  |  |
| ▶ G83 | ▶ UL 508 | | |
| List of standards is available on: https://webstore.iec.ch/ | | | |

