



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.

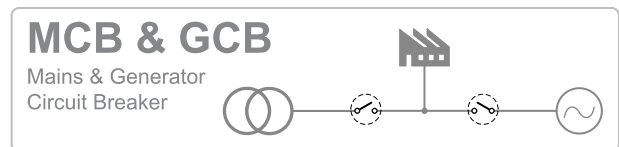
### Key functions

- > 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 <sub>max</sub> 200 m/s <sup>2</sup>
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	<b>Predefined:</b> VDO 10 Bar, VDO Temperature, VDO Fuel level <b>User defined:</b> 10 points non-linear sensors can be defined by the user
Precision	1% from the range

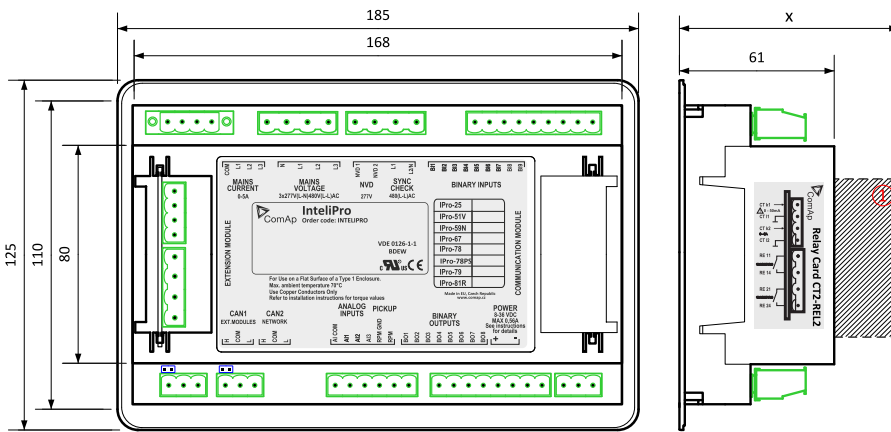
## Communication

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

<b>Relay Contacts</b>	
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
<b>Input 1 (CT k1, I1):</b>	
Current range	50 mA
Max. allowed current	120 mA
Current accuracy	2 % from the range
CT input burden	<0.05 VA
<b>Input 2 (CT k2, I2):</b>	
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

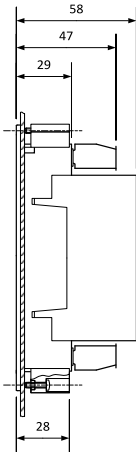
# Dimensions, terminals, mounting and EMC



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	<a href="#">IC-NT-CT-BIO7</a>
IG-IOM	Analog/binary input/output module	<a href="#">IG-IOM</a>
IGS-PTM	Analog/binary input/output module	<a href="#">IGS-PTM</a>
IL-NT-AIO	Analog input/output module	<a href="#">IL-NT-AIO</a>
CT2-REL2	Relay output and analog input module (default)	<a href="#">CT2-REL2</a>
IL-NT RS232	Direct connection (PC) by RS232	<a href="#">IL-NT-232</a>
IL-NT RS232-485	Dual Port Extension Board with RS232 and RS485	<a href="#">IL-NT-232-485</a>
IL-NT S-USB	Service USB Module	<a href="#">IL-NT-S-USB</a>
IB-Lite	Internet / Ethernet Module including Web Server	<a href="#">IB-Lite</a>
IL-NT GPRS	GSM / GPRS Modem Plug-In Module	<a href="#">IL-NT-GPRS</a>

## Related products

Product	Description	Order code
MainsPro	Mains Decoupling Relay	<a href="#">MAINSPRO</a>
InteliPro SYNC	Synchronization and protection relay	<a href="#">IP1SYNCXBAA</a>

## 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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## Certificates and standards

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



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