



Order code: MAINSPRO

## Mains Decoupling Protection Relay

# Datasheet

### Product description

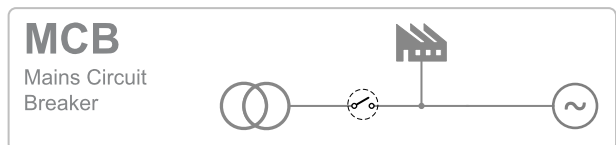
- > Protection relay for on-grid applications like generator sets, renewable energy sources, cogeneration, micro turbines, etc.
- > Adjustable voltage, frequency and loss of mains protections to protect both the distribution network and the generators

- > Integrated mechanical lock to secure user settings
- > Breaker failure protection
- > Full and easy configuration through the front panel

### Key features

- > True RMS measurement
- > Vector Shift and Rate of Change of Frequency (ROCOF) protection in one unit
- > Voltage symmetrical components evaluation for better detection of voltage asymmetry failures
- > Two stage settings of voltage and frequency protections (3 stage overvoltage protection)
- > Adjustable time delay of Automatic fault reset\*
- > Free assignment of 5 relay outputs
- > Free assignment of 4 binary switches
- > Support of 3-phase and 1-phase applications
- > Last 5 trips record providing evidence of cause of trip
- > Universal power supply
- > Suitable for standard DIN rail installation or door-mount (optional)

### Application overview



## Technical data

### Power Supply

Power supply range	8-40 V DC
	85-263 V AC
	110-370 V DC
Maximal power consumption	8 W
Max. Power Dissipation	13 W

### Operating conditions

Operating Temperature	-20 °C to +70 °C
Protection degree	IP20
Heat radiation	13 W

### Voltage measurement

Measurement inputs	3 phase mains voltage
Measurement type	True RMS
Voltage range	120-230 V Ph-N
	400 V Ph-Ph
Maximal measured voltage	340 V Ph-N
	600V Ph-Ph
Voltage accuracy	1 % from nominal value at (50 Hz ±5 %) and 25 °C
	1.5 % within the complete temperature range
Measurement input impedance	400 kΩ

### Frequency measurement

Frequency range	40-70 Hz
Frequency accuracy	0.1 Hz within 40-70 Hz

### Signal relay contacts

Max switched voltage / current	250 V / 4 A
Max switched power	Resistive load: 1000 VA AC, 200 W DC
	Inductive load 50 VA AC, 25 W DC
Rated voltage / current relay	Resistive load: 250 V / 4 A AC, 200 V / 1 A 24 V / 4 A DC
	Inductive load: 250 V / 2 A AC, 200 V / 1A 24 V / 3 A DC
Minimum load	1 W / 1 VA at $U_{min} > 10 V$
Lifetime	$10^5$ cycles

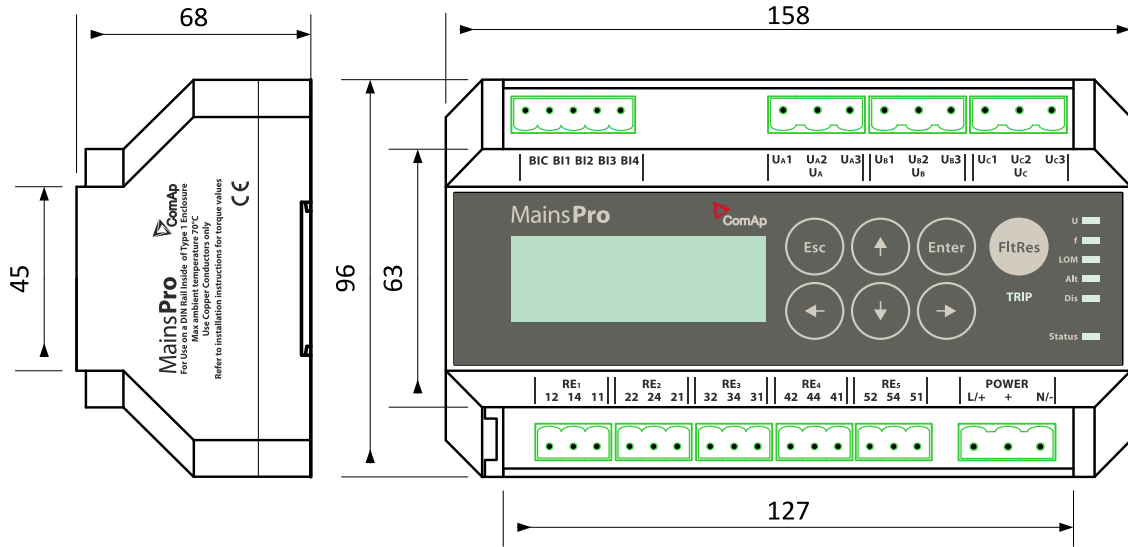
### Binary inputs

Number	4 isolated
Input resistance	4.2 kΩ
Close/Open indication	0-2 V DC close contact 0-36 V DC open contact

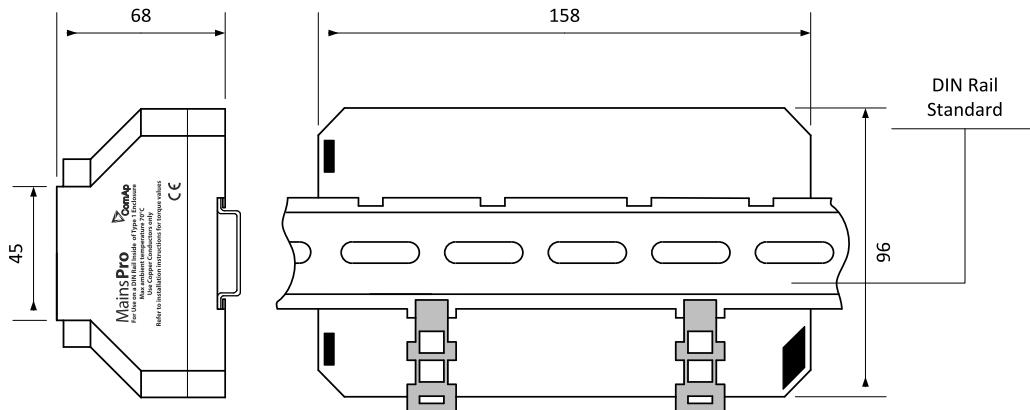
### Display

Type	Build-in monochromatic
Resolution	4 lines × 20 symbols

## Dimensions, terminals and mounting



## DIN rail mounting



MainsPro can be also mounted into panel doors as a standalone unit. For this way of installation is recommended to use MainsPro Frame.

## Functions and protections

The described product fully supports the following functions and protections as defined by ANSI (American National Standards Institute):

Description	ANSI code	Description	ANSI code
Undervoltage	27	Underfrequency	81L
Overvoltage	59	Overfrequency	81H
Voltage asymmetry	47	Rate of change of frequency	81R
Vector shift	78		


## Related products

Product	Description	Order code
MainsPro G99TT	Mains Decoupling Relay	<a href="#">MP1G99TTAAB</a>

## Certificates and standards

Description	Code	Description	Code
Electromagnetic compatibility	EN 50263	Electrical fast transient/burst immunity	IEC 60255-22-4 EN 61000-4-4 IEEE C37.90.1
Safety standard	IEC 61010-1	Surge immunity test	IEC 60255-22-5 EN 61000-4-5
Electrical relays test	IEC 60255-3 IEC 60255-5 IEC 60255-6	Immunity to conducted disturbances induced by radio-frequency field	IEC 60255-22-6 EN 61000-4-6 IEEE C37.90.2
Sine vibration tests	IEC 60255-21-1	Test of power frequency magnetic field	IEC 61000-4-8
Shock and impact test	IEC 60255-21-2	Power frequency immunity tests	IEC 60255-22-7 EN 61000-4-16
Seismic test	IEC 60255-21-3	Interruptions to an alternative component (ripple) in DC auxiliary energizing quantity of measuring relay	IEC 60255-11 EN 61000-4-17 EN 61000-4-26
Electromagnetic compatibility requirements	IEC 60255-26	Voltage dips, short interruptions and voltage variations	IEC 61000-4-11
1 MHz burst immunity test	IEC 60255-22-1 IEC 61000-4-18 IEEE C37.90.1	Environmental testing (- 30 °C)	IEC 60068-2-1
Damped oscillatory wave 100 kHz immunity test	IEC 61000-4-18 IEEE C37.90.1	Environmental testing (+70 °C)	IEC 60068-2-2
Ring oscillatory wave immunity test	IEC 61000-4-12 IEEE C37.90.1	Environmental testing - temperature change (-25 °C to +70 °C)	IEC 60068-2-14
Test of electric discharge resistance	IEC 60255-22-2 EN 61000-4-2	Environmental testing Damp heat, steady state Temp. +40 °C, humidity: 93 %	IEC 60068-2-78
Radiated electromagnetic field immunity test	IEC 60068-2-2 EN 61000-4-3 IEEE C37.90.2		

## Certificates and standards

<ul style="list-style-type: none"> <li>&gt; G98, G99</li> <li>&gt; IEC 60255</li> <li>&gt; IEn NR 005/2012</li> <li>&gt; VDE-A-RN 4105</li> <li>&gt; IEC 60255-1</li> </ul>	<ul style="list-style-type: none"> <li>&gt; IEC 60255-26</li> <li>&gt; IEC 60255-27</li> <li>&gt; IEC 60255-127</li> <li>&gt; IEC 60255-181</li> <li>&gt; EN 60068-2-30:2005 25/55°C, RH 95%, 48hours</li> </ul>	
List of standards is available on: <a href="http://webstore.iec.ch">webstore.iec.ch</a>		



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