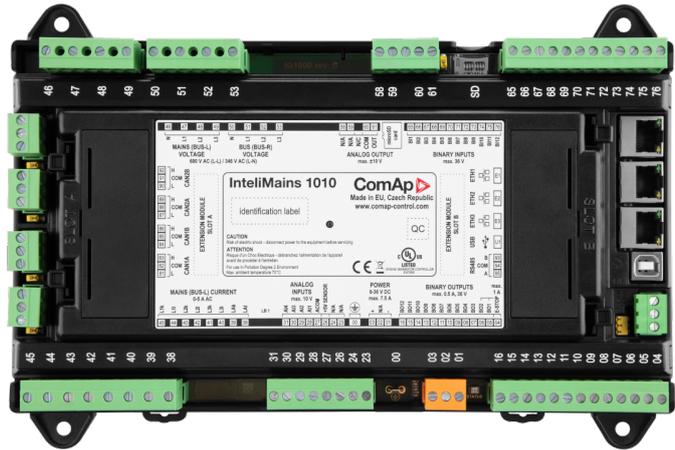


# InteliMains 1010



Order code: IM31010XBBB

## Mains supervision/Utility breaker controller

# Datasheet

### Product description

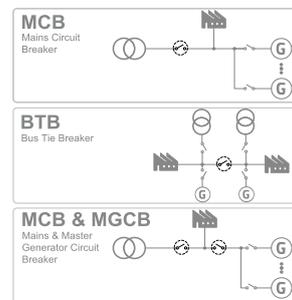
- True RMS measurement is used with Voltage, Current and Power measurement.
- Comprehensive Mains/Utility breaker controller for any site
- Synchronize set of gen-sets to the Mains/Utility when needed
- Acts as Mains protection relay
- Pre-programmed functions allow fast and easy system set-up
- Large in-built PLC interpreter allows customization at no extra costs

### Key features

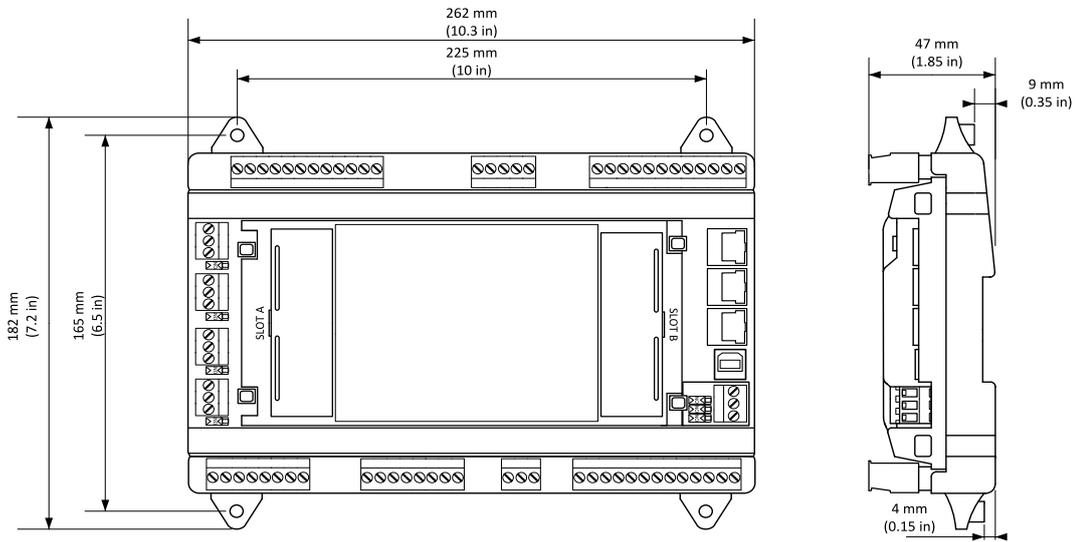
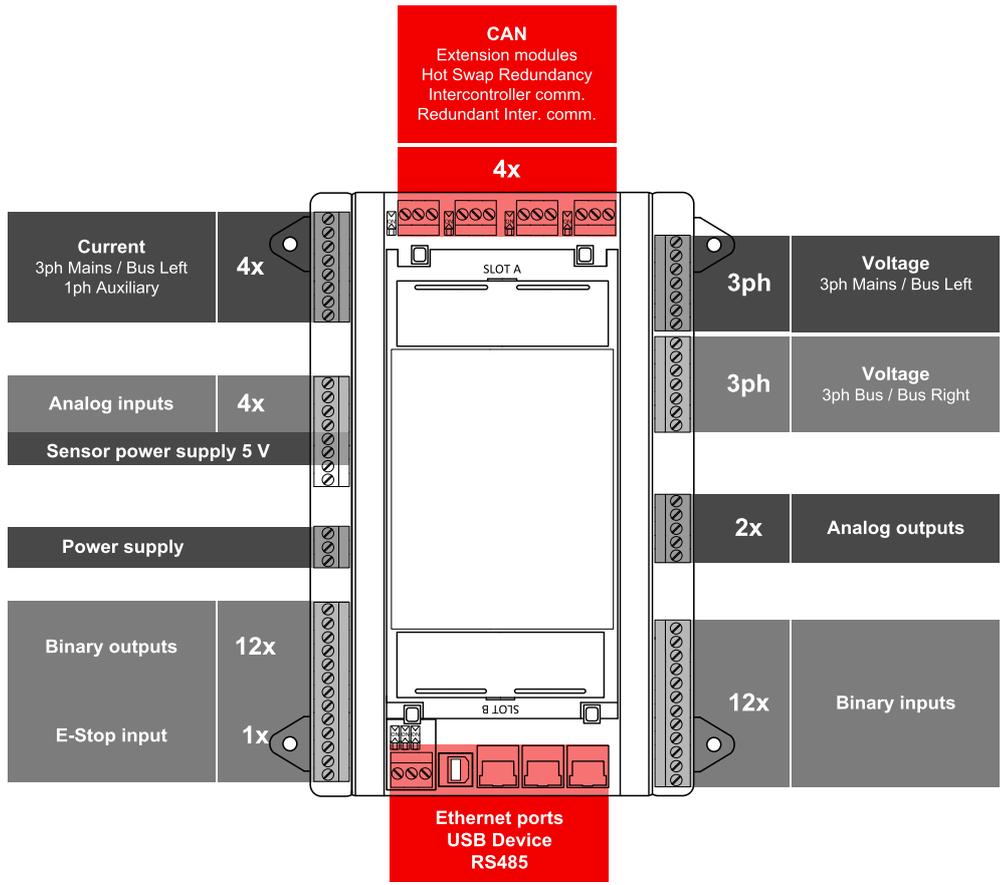
- Hardware compliant to the latest switchgear market needs
- Supports latest Grid codes requirements from Europe, USA or Australia
- Cooperates with other controllers forming a solution with up to 64 units without any extra repeaters or extensions
- Concept of pre-programmed functions and internal PLC interpreter allows to make the basic solution fast and easy. Shall the project require any specific requirements this can be done easily at no extra costs and with minimum effort or programming skills
- Cybernetic security by design, based on the ANSI/ISA-62443 standard
- Handles large number of simultaneously connected clients like HMIs, SCADA, BMS and others, allowing easy and convenient monitoring from both local and remote areas
- AirGate 2.0 allows faster, more reliable remote connection from all around the world
- Modbus client (master) functionality allows easy integration of Modbus based devices into the InteliMains 1010 to benefit from provided data – e.g. diagnostics
- Load transfer from gen-sets back to Mains/Utility is adjustable, with an option of short time parallel operation, even below 100ms

- Double redundancy of the communication line with other controllers allows usage in complex applications like Data centres and others
- For easy handling for operators or troubleshooting purposes the InteliMains 1010 offers up to 31 characters in text fields which makes Parameters, Values and Alarms self-explanatory and easy to handle for anyone

### Application overview



# Terminals and dimensions



# Technical data

## Power supply

Power supply range	8-36 V DC
Power consumption	16 W
RTC battery	Replaceable, type CR1632 3V
Fusing power	8 A
Consumption	2.5 A Controller + 10 x 0.5 A BOUTs @ 8 V
Fusing E-STOP	1 A
Max. Heat Dissipation	16 W

## Operating conditions

Operating temperature	-40 °C to +70 °C
Storage temperature	-40 °C to +80 °C
Operating humidity (norm 60068-2-30)	25/55°C, 48hours, 95 % non-condensing (EN 60068-2-30)
Protection degree	IP20
Vibration	5-25 Hz, ± 1.6 mm 25-100 Hz, a = 4 g
Shocks	a = 500 m/s <sup>2</sup>
Surrounding air temperature rating 70 °C.	
Suitable for pollution degree 2.	

## AC Current measurement

Measurement inputs	3ph Mains (Bus Left) current 1ph Bus (Bus Right) current (Auxiliary current)
Measurement range	1 A / 5 A
Maximum continuous current	2 A / 10 A
Allowed overload	18 A for 15 sec.
Accuracy	±3 mA / ±15 mA for 0.0 to 0.4 A / 0.0 to 2.0 A 0.75 % of value for 0.4 to 1.0 A / 2.0 to 5.0 A
Frequency range	40-70 Hz (accuracy 0.002 %)
Input impedance	< 0.1 Ω

## AC Voltage measurement

Measurement inputs	3ph-n Mains (Bus Left) voltage 3ph-n Bus (Bus Right) voltage
Measurement range	115 V ph-N / 200 V ph-ph suitable also for VTs output 231 V ph-N / 400 V ph-ph UL, cUL: 346 V ph-N / 600 V ph-ph
Linear measurement and protection range (maximal voltage)	433 V ph-N / 750 V ph-ph
Accuracy	0.25 %
Frequency range	40-70 Hz (accuracy 0.002 %)
Input impedance	0.72 MΩ ph-ph , 0.36 MΩ ph-n
Upper-harmonics filtering	Active Low-Pass filter, Cutoff frequency 3100Hz (-3dB)
Measurement category CAT III, overvoltage category III	

## E-Stop

Physically disconnects BO 1 & BO 2 from power supply.
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## Binary inputs

Number	12, non-isolated
Close/Open indication	0-2 V DC close contact 6-36 V DC open contact
Configurable	Pull-up / Pull-down
Pulse input	Bin 9 and 10 max. 50 Hz

## Binary outputs

Number	12, non-isolated
Max. current	0.5 A
Switching to	Positive supply terminal

## Analog inputs

Number	4, switchable (R/U/I)
Range	R = 0-10000 Ω; U = 0-10 V; I = 0-20 mA
Accuracy	R: 2 % from value for 0-250 Ω R: 4 % from value for 250-2500 Ω R: 6 % from value for 5000-10000 Ω U: 1 % from value ±100 mV I: 1 % from value ±200 uA

## Voltage regulator output Analog output 1

Protection	Reinforced isolation
Type	Switchable: U ±10 V, I ±20 mA, PWM: 0 V/5 V
Accuracy	U: 1 % from value ±100 mV I: 1 % from value ±200 uA

## Analog output 2

Protection	Basic isolation
Type	Switchable: U ±10 V, I ±20 mA, PWM: 0 V/5 V
Accuracy	U: 1 % from value ±100 mV I: 1 % from value ±200 uA

## Communications

USB Device	Basic isolation, USB type B
RS 485	Basic isolation
ETH1 ETH2 ETH3	10/100 Mbit
CAN 1A CAN 2A CAN 1B CAN 2B	Basic isolation, 1000/250/50 kbps , nominal impedance 120 Ω

## Weight

Controller	750 g
Package	920 g

Controller handles 300 million records into the History, which represents roughly 1 record per second during 9,5 years. Shall be the History recording faster, the controller lifetime will become smaller.

## Available plug-in modules

Product	Description	Order code
CM-4G-GPS	An easy-to-use and highly efficient solution for connecting the controllers online via 4G network.	<a href="#">CM24GGPSXBX</a>
CM-RS232-485	Communication module enabling integration of the controller into the local monitoring system	<a href="#">CM223248XBX</a>
*EM-BIO8-EFCP	Binary I/O plug-in module with 8 binary inputs or outputs.	<a href="#">EM2BIO8EXBX</a>

**Note:** Controller has 2 slots for plug-in modules.

**Note:** \*EFCP is already included on the CU as aux current measurement, EFCP on BIO8 module is not available.

## Available external displays

Product	Description	Order code
InteliVision 5.2	5" TFT external display with 800x480 px resolution	<a href="#">RD2IV5BXBAA</a>
InteliVision 10Touch	10.1" Touchscreen display unit with 1280 x 800 px resolution	<a href="#">RD1IV10TBPF</a>
InteliVision 13Touch	13.3" Marine certified display unit with 1920 x 1080 px resolution	<a href="#">RD1IV13TBME</a>
InteliVision 18	18.5" Touchscreen display unit with 1366 x 768 px resolution	<a href="#">RD31840PBIE</a>

## Available CAN modules

Product	Description	Order code
Inteli AIN8	8 Analog Input Channels and 1 RPM/Impulse Input Module	<a href="#">I-AIN8</a>
Inteli AIN8TC	8 Analog Input Channels for termocouples measurement	<a href="#">I-AIN8TC</a>
Inteli AIO9/1	4 Analog Inputs for differential voltage measurement, 4 Analog Input equipment channels, 1 Analog Input for resistance measurement and 1 Analog Output	<a href="#">I-AIO9/1</a>
Inteli IO8/8	16 Configurable Binary Inputs/Outputs and Analog Outputs Module	<a href="#">I-IO8/8</a>
IGL-RA15	Remote Annunciator w/ 15 programmable LEDs	<a href="#">EM2IGLRABAA</a>
IGS-PTM	4 Analog Inputs, 1 Analog Output, 8 Binary Inputs and 8 Binary Outputs	<a href="#">IGS-PTM</a>
I-AOUT8	8 configurable analog outputs	<a href="#">I-AOUT8</a>
IS-AIN8	8 configurable analog inputs	<a href="#">IS-AIN8</a>
IS-BIN16/8	16 galvanically separated inputs, 8 binary outputs, 2 pulse inputs	<a href="#">IS-BIN16/8</a>
InteliFieldbus Gateway	Modbus TCP/RTU Communication gateway	<a href="#">CM1IFGATBBB</a>
I-CR	CAN Repeater Module, compatible when using 32C/8C CAN Intercontroller Comm Mode	<a href="#">I-CR</a>
InteliGateway 300	Communication gateway with configurable interfaces between Modbus TCP/RTU, ComAp CAN, WebSupervisor and InteliScada protocols allowing user-defined interconnection of all attached devices	<a href="#">CM2GW300BAB</a>

## Functions and protections

Support of functions and protections as defined by ANSI (American National Standards Institute):

Description	ANSI code	Description	ANSI code
Master unit	1	Temperature monitoring	49T
Multi-function device	11	Overcurrent	50/50TD
Speed and frequency matching device	15	Overcurrent IDMT	51
Data communications device	16ECFM+16SC	AC circuit breaker	52
Synchronizing-check	25	Power factor	55
Thermal relay	26	Overvoltage	59
Undervoltage	27	Pressure switch	63
Annunciator	30	Liquid level switch	71
Overload	32	Alarm relay *	74
Load shedding	32P	Vector shift	78



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Master sequence device	34	Reclosing relay	79
Undercurrent	37	Overfrequency	81H
Unit sequence starting	44	Underfrequency	81U
Current unbalance	46	ROCOF	81R
Voltage unbalance	47	Auto selective control/transfer	83
Incomplete sequence relay	48	Regulating device	90

\* extension module IGL-RA15 required

## Certifications and standards

<ul style="list-style-type: none"> <li>&gt; EN 61000-6-2</li> <li>&gt; EN 61000-6-4</li> <li>&gt; EN 61010-1</li> <li>&gt; EN 60255-1</li> <li>&gt; EN 60529 (IP20)</li> </ul>	<ul style="list-style-type: none"> <li>&gt; EN 60068-2-1 (-40 °C/16 h)</li> <li>&gt; EN 60068-2-2 (70 °C/16 h)</li> <li>&gt; EN 60068-2-6 (2÷25 Hz / ±1,6 mm; 25÷100 Hz / 4,0 g)</li> <li>&gt; EN 60068-2-27 (a=500 m/s<sup>2</sup>; T=6 ms)</li> <li>&gt; EN 60068-2-30 (25/55 °C, RH 95%, 48 h)</li> </ul>	<ul style="list-style-type: none"> <li>&gt; UL6200 *</li> <li>&gt; UKCA</li> </ul>	
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\* ULC 6200:2019 Certified (see the NFL File for the FW version with the Witness test if it is required by the certification of the end product)

## Grid Codes

European Requirements for Generators, 2016/631			
> German VDE-AR-N 4110:2018	> UK ENA EREC G99		
> American IEEE 1547	> Austrian TOR		

## List of SW Key Features

SW Key Feature	Order Code
CAN bus redundancy	SKREDCAN201
Hot Swap Redundancy	SKHOTSWAP01
Modbus Client	SKMODBCLI01
PLC package	SKPLCPCKG01



E-mail: [info@comap-control.com](mailto:info@comap-control.com)  
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