

Order code: IG3100XBBB

# Datasheet

## Paralleling gen-set controller for switchgear applications

### Product description

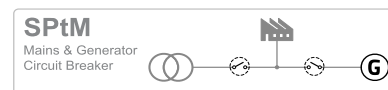
- > True RMS measurement is used with Voltage, Current and Power measurement.
- > Comprehensive paralleling Gen-set controller for island or mains parallel operation
- > Cooperation with up to 64 gen-set / mains / tie controllers
- > Direct communication with ECU
- > Secure Remote control and monitoring
- > Highly flexible yet configurable solution for switchgear applications

### Key features

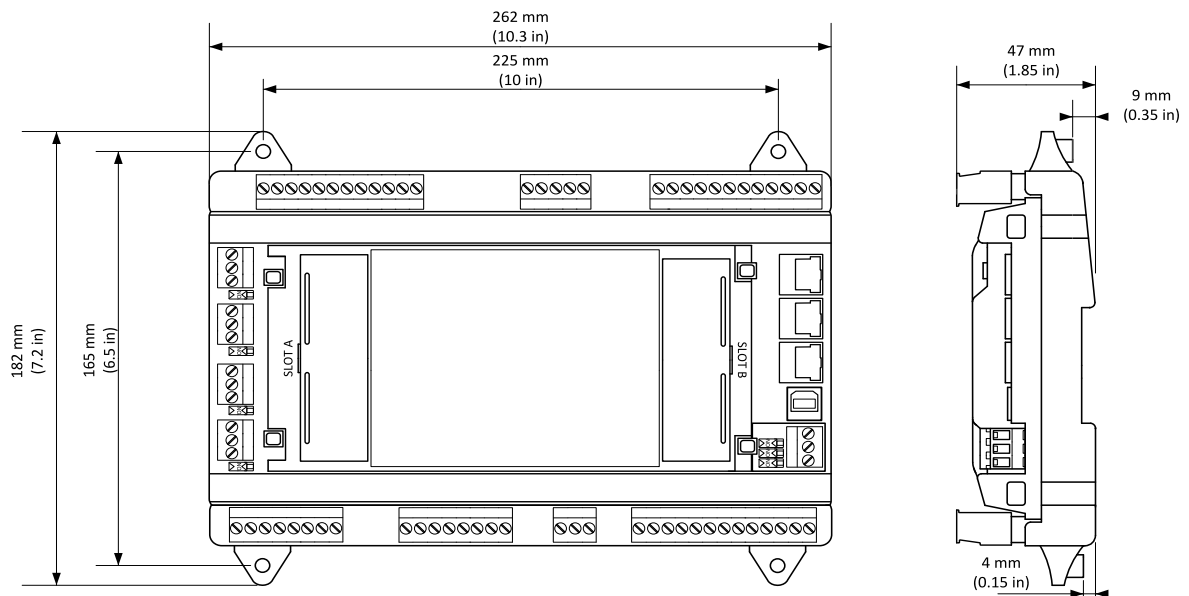
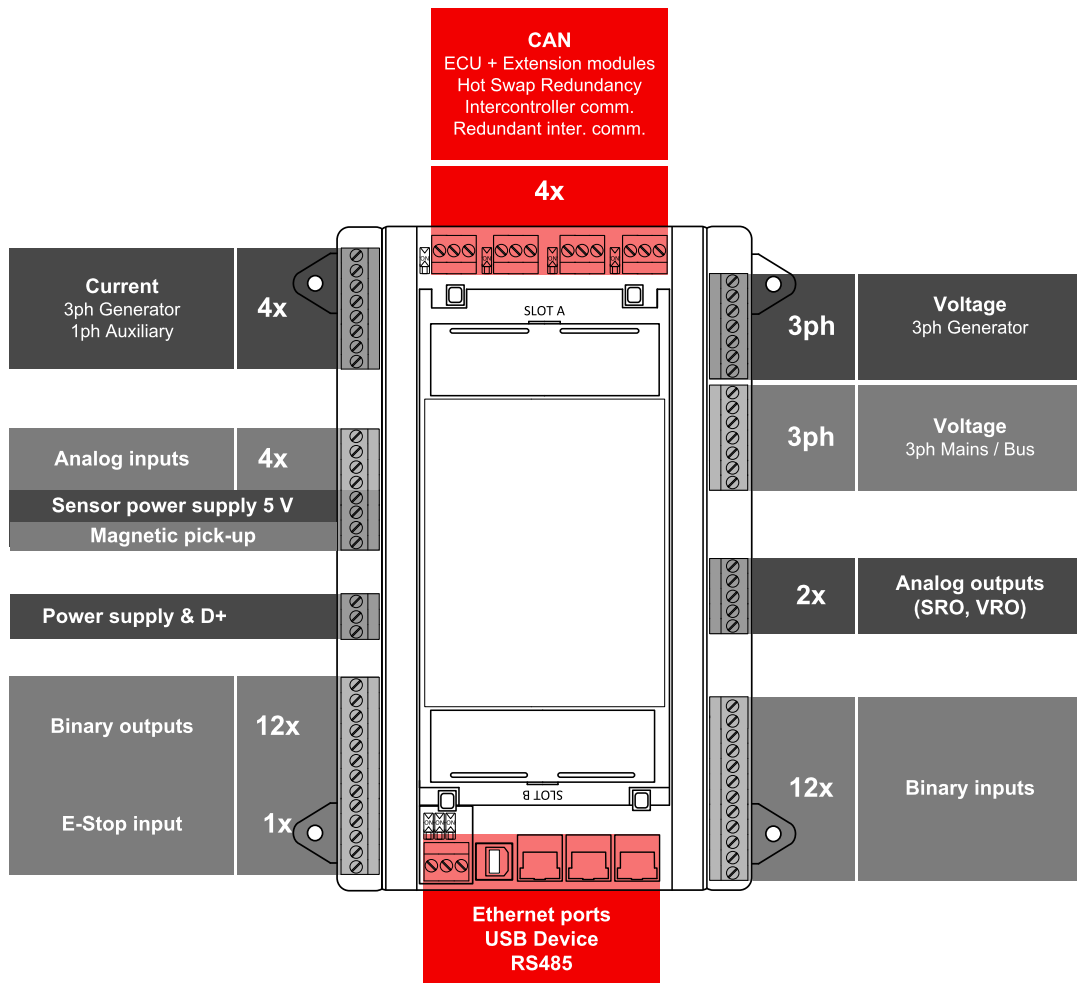
- > Hardware compliant to the latest switchgear market needs
- > State of the art AC accuracy measurements which allows to participate on primary frequency control mechanism, grid balancing and demand response projects
- > Cybernetic security by design, based on the ANSI/ISA-62443 standard
- > Large portion of both local and remote monitoring options, with high number of at once connected clients split into "trusted" and "untrusted" zones
- > Mains parallel operation with support of Grid codes, compliant to European Grid codes ( Requirements for Generators, VDE-AR-N 4110:2018, VDE-AR-N 4105:2019, G99), American IEEE 1547
- > Multiple Island operation with cooperation up to 64 additional gen-set/mains/tie controllers
- > Several load transfer options with possibility of less than 100ms load transfer
- > Redundant inter-controller line for critical applications like datacentres, hospitals
- > Double redundancy of the kW and kVAr sharing
- > User management allowing to handle up to 30 unique users

- > AirGate 2.0 makes sure that the connection to the controller is established faster from all around the world, and is more reliable than ever before.
- > Internal PLC interpreter with easy to use PLC Editor, for simple and fast creation of specific logic
- > Up to 31 characters in texts, parameters, Alarms for system clarity and easy troubleshooting
- > Compatibility with ComAp IG/IS/IM-NT line, IG200, IG500 controllers
- > ENABLE/DISABLE concept of features and protections makes the system highly versatile yet simple and easy for both commissioning engineers and operators

### 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 Gen current 1ph Mains 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 Gen voltage 3ph-n Mains 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

Dedicated terminal for safe Emergency Stop input.
Physically disconnects BO 1 & BO 2 from power supply.

## 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

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

## Speed governor output

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

## Magnetic pick-up

Minimum input voltage	4 V pk-pk to 50 V pk-pk in range 4 Hz to 1 kHz
Working voltage range	6 V pk-pk to 50 V pk-pk in range 4 Hz to 5 kHz 10 V pk-pk to 50 V pk-pk in range 4 Hz to 10 kHz
Frequency input range	4 Hz to 10 kHz
Frequency measurement tolerance	0.2 % from range 10 kHz

## 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 simulator

Product	Order code
InteliGen1000 StarterKit	SM4IG1K5BAB

## 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 uni 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="#">CM11FGATBBB</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	Description	ANSI code
Master unit	1	Reverse power	32R	Power factor	55
Stopping device	5	Master sequence device	34	Overvoltage	59
Multi-function device	11	Undercurrent	37	Pressure switch	63
Overspeed	12	Excitation loss	40	Liquid level switch	71




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Underspeed	14	Unit sequence starting	44	Alarm relay *	74
Speed and frequency matching device	15	Current unbalance	46	Vector shift	78
Data communications device	16EFT 16SC	Voltage unbalance	47	Reclosing relay	79
Starting-to-running transition contractor	19	Incomplete sequence relay	48	Overfrequency	81H
Synchronizing-check	25	Temperature monitoring	49T	Underfrequency	81U
Thermal relay	26	Overcurrent	50/50TD	ROCOF	81R
Undervoltage	27	Earth fault current	50N+64	Auto selective control/transfer	83
Annunciator	30	Overcurrent IDMT	51	Regulating device	90
Overload	32	Earth fault current IDMT	51+64		
Load shedding	32P	AC circuit breaker	52		

\* 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	
<ul style="list-style-type: none"> <li>&gt; German VDE-AR-N 4110:2018</li> <li>&gt; American IEEE 1547</li> </ul>	<ul style="list-style-type: none"> <li>&gt; UK ENA EREC G99</li> <li>&gt; Austrian TOR</li> </ul>

## List of SW Key Features

SW Key Feature	Order Code
CAN bus redundancy	SKREDCAN201
Hot Swap Redundancy	SKHOTSWAP01
Modbus Client	SKMODBCLI01
PLC package	SKPLCCKG01
Variable Speed Generator	SW1VSGXXXXX



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