ComAp
The heart of smart control

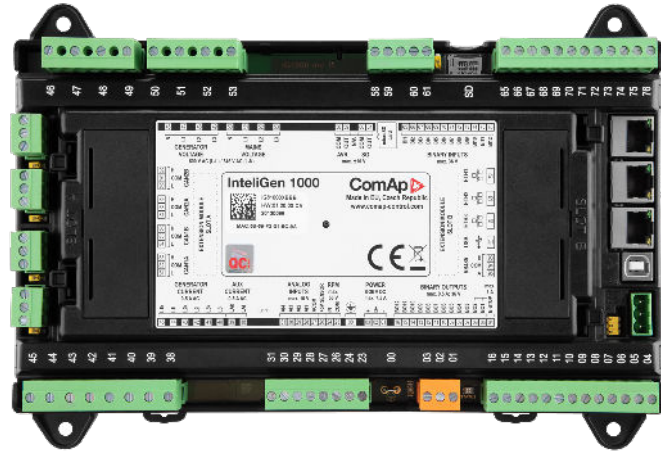# InteliGen 1000

Datasheet

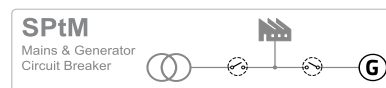# Paralleling gen-set controller for switchgear applications

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

> True RMS measurement is used with Voltage, Current and Power measurement.

> 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
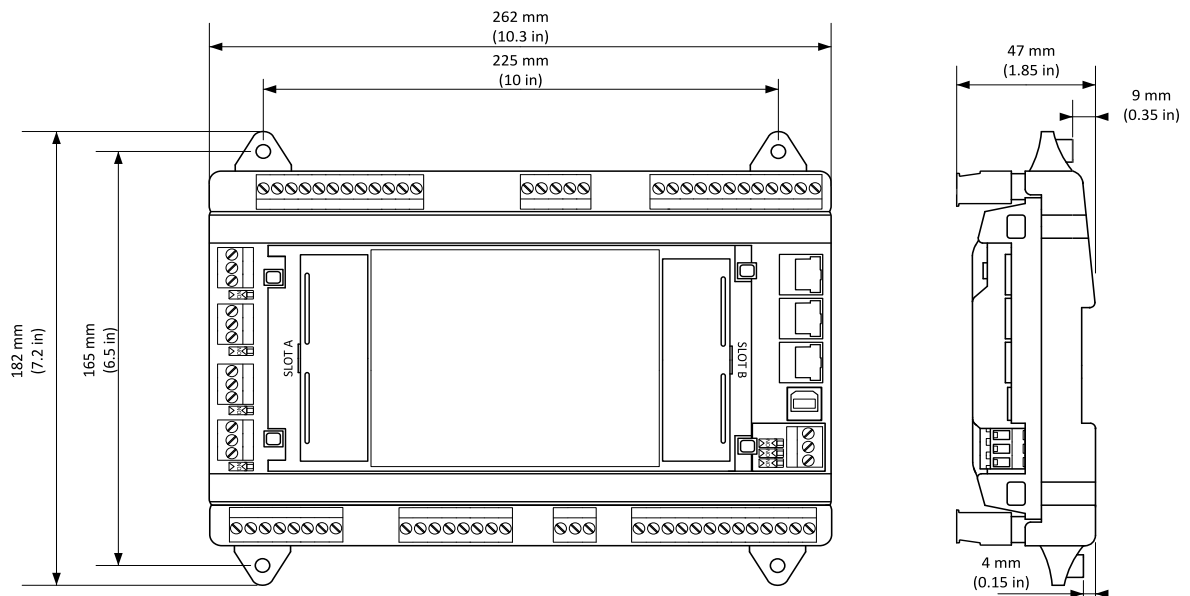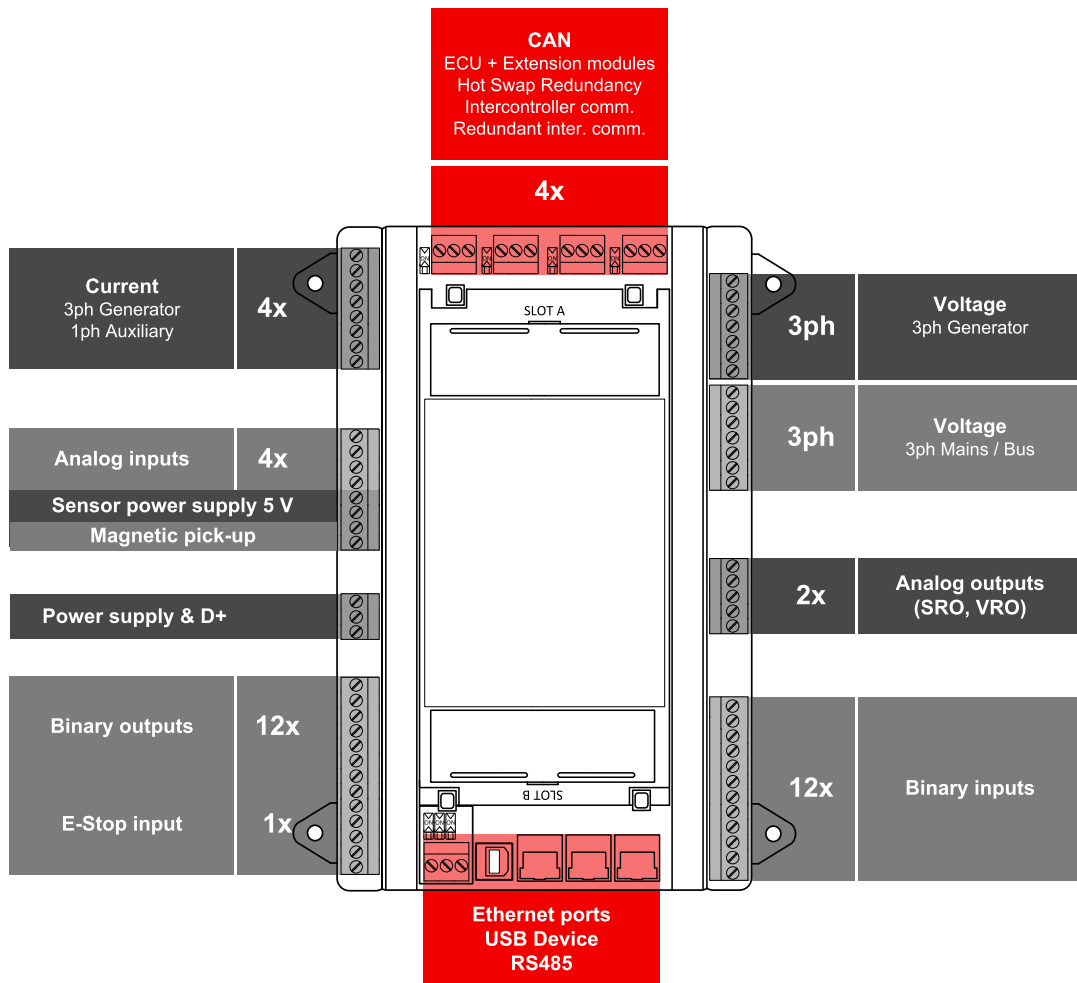
Key features

> 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, compliant to the ISA62443 norm

> 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

Application overview

MINT
Generator Circuit Breaker

SPtM
Mains & Generator Circuit Breaker

Terminals and dimensions

CAN
ECU + Extension modules
Hot Swap Redundancy
Intercontroller comm.
Redundant inter. comm.

4x

SLOT A

Current
3ph Generator
1ph Auxiliary

4x

Analog inputs

4x

Sensor power supply 5 V

Magnetic pick-up

Power supply & D+

Binary outputs

12x

E-Stop input

1x

3ph | **Voltage**
3ph Generator

3ph | **Voltage**
3ph Mains / Bus

2x | **Analog outputs**
(SRO, VRO)

12x | **Binary inputs**

SLOT B

**Ethernet ports
USB Device
RS485**

262 mm
(10.3 in)

225 mm
(10 in)

47 mm
(1.85 in)

9 mm
(0.35 in)

182 mm
(7.2 in)

165 mm
(6.5 in)

SLOT A

SLOT B

4 mm
(0.15 in)

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
Fusing ESTOP	1.2 A
Max. Heat Dissipation	16 W

D+

Max. excitation current	250 mA
Charging fail threshold	80 % of Usupply

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, RH 95%, 48hours, without condensation
Protection degree	IP20
Vibration	5-25 Hz, ± 1.6 mm 25-100 Hz, a = 4 g
Shocks	a = 500 m/s^2
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	0.68 MΩ ph-ph , 0.34 MΩ ph-n
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 external displays

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

Available CAN modules

Product	Description	Order code
Inteli AIN8	8 Analog Input Channels and 1 RPM/Impulse Input Module	I-AIN8
Inteli AIN8TC	8 Analog Input Channels for termocouples measurement	I-AIN8TC
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	I-AIO9/1
Inteli IO8/8	16 Configurable Binary Inputs/Outputs and Analog Outputs Module	I-IO8/8
IGL-RA15	Remote Annunciator w/ 15 programmable LEDs	EM2IGLRABAA
IGS-PTM	4 Analog Inputs, 1 Analog Output, 8 Binary Inputs and 8 Binary Outputs	IGS-PTM
I-AOUT8	8 configurable analog outputs	I-AOUT8
IS-AIN8	8 configurable analog inputs	IS-AIN8
IS-AIN8TC	8 configurable analog inputs	IS-AIN8TC
IS-BIN16/8	16 galvanically separated inputs, 8 binary outputs, 2 pulse inputs	IS-BIN16/8
InteliFieldbus Gateway	Modbus TCP/RTU Communication gateway	CM1IFGATBBB
I-CR	CAN Repeater Module, compatible when using 32C/8C CAN Intercontroller Comm Mode	I-CR

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	Load shedding	32P	AC circuit breaker	52
Stopping device	5	Reverse power	32R	Power factor	55
Multi-function device	11	Master sequence device	34	Overvoltage	59
Overspeed	12	Undercurrent	37	Pressure switch	63
Underspeed	14	Excitation loss	40	Liquid level switch	71
Speed and frequency matching device	15	Unit sequence starting	44	Alarm relay *	74
Data communications device	16EFT 16SC	Current unbalance	46	Vector shift	78
Starting-to-running transition contractor	19	Voltage unbalance	47	Reclosing relay	79
Distance relay	21	Incomplete sequence relay	48	Overfrequency	81H
Synchronizing-check	25	Temperature monitoring	49T	Underfrequency	81U
Thermal relay	26	Overcurrent	50/50TD	ROCOF	81R

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Web: www.comap-control.com

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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		

* extension module IGL-RA15 required

Certifications and standards

- EN 61000-6-2
- EN 61000-6-4
- EN 61010-1
- EN 60255-1
- EN 60529 (IP20)

- EN 60068-2-1 (-40 °C/16 h)
- EN 60068-2-2 (70 °C/16 h)
- EN 60068-2-6 (2÷25 Hz / ±1,6 mm; 25÷100 Hz / 4,0 g)
- EN 60068-2-27 (a=500 m/s^2; T=6 ms)
- EN 60068-2-30 (25/55 °C, RH 95%, 48 h)

- UL6200
- UKCA

Grid codes

European Requirements for Generators, 2016/631

- German VDE-AR-N 4110:2018
- American IEEE 1547

- UK ENA EREC G99
- Austrian TOR

List of SW Key Features

SW Key Feature	Order Code
CAN bus redundancy	SKREDCAN201
Modbus client	SKMODBCLI01
PLC package	SKPLCPCKG01
Hot Swap Redundancy	SKHOTSWAP01
Variable Speed Generator	SW1VSGXXXXX

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information
Unique identifier: IG31000XBBB
Responsible Party:
Kevin Counts
10 N Martingale Rd #400
60173 - Schaumburg, IL
USA
Tel: +1 815 636 2541
E-mail: info.us@comap-control.com
FCC Compliance Statement
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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