![ComAp - The heart of smart control]

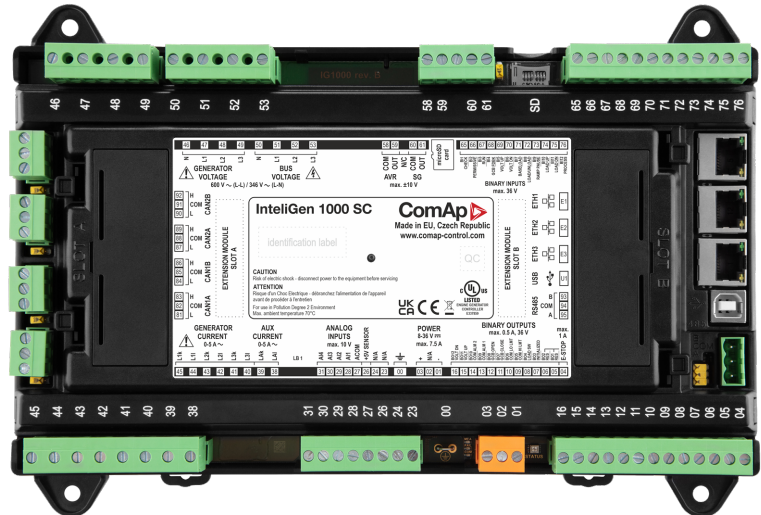# InteliGen 1000 SC

Datasheet

Paralleling generator synchronizer and load sharing controller for switchgear applications

Product description

The InteliGen 1000 SC is a state-of-the-art paralleling generator synchronizer and load sharing controller designed for use where an external PLC is used to dictate the system sequence of operation. Designed to simply "do what it's told", the InteliGen 1000 SC can simplify the system PLC programming effort by delegating the generator operation and sequencing to a non-proprietary controller that is easy to configure yet feature rich. The InteliGen 1000 SC provides comprehensive generator protection and control without the complexity of a modern paralleling controller, or requiring additional programming to turn off inherent functionality that is not needed in PLC based systems.
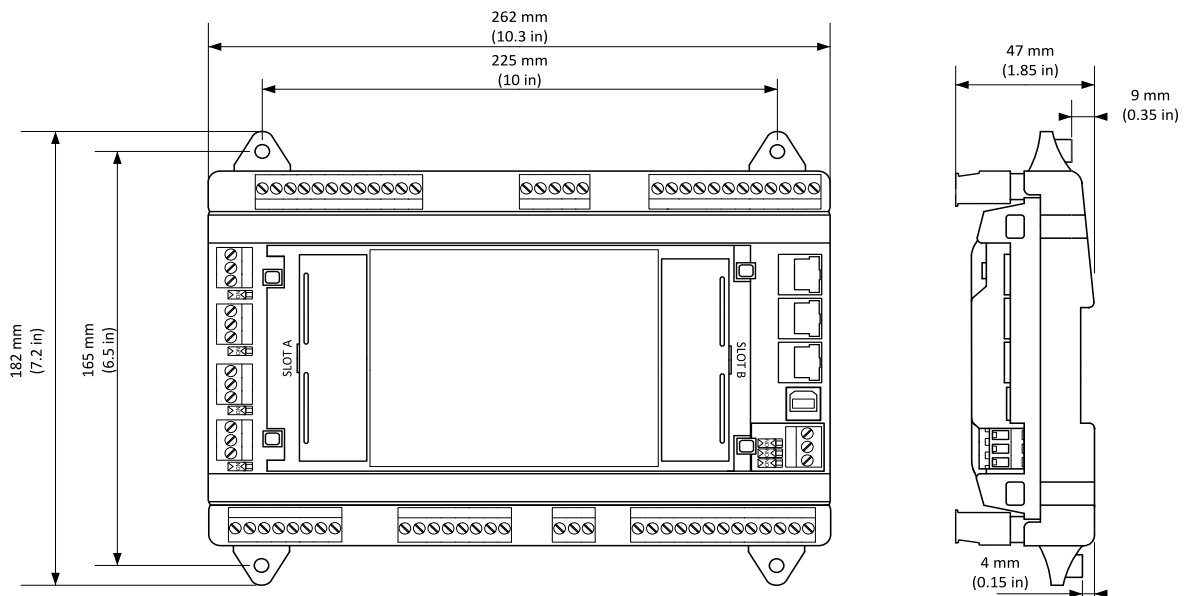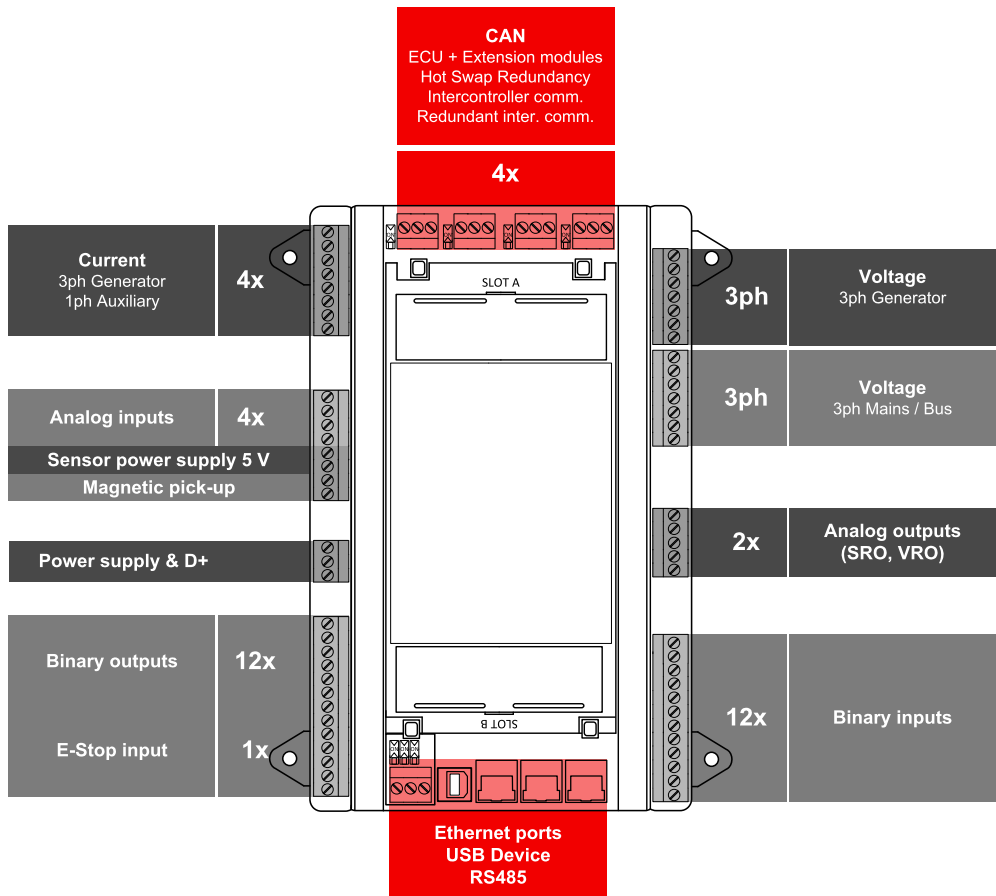
Key features

> For island or mains parallel operation, with several load transfer options and <100ms closed-transfer capable.

> When used with the InteliMains 1010 SC for control of mains and bus tie breakers, up to 64 controllers can be combined in a system.

> True RMS voltage and current measurement with .25% accuracy; power calculation to .50% accuracy.

> CAN communication with ECU for reading engine values.

> Cybersecure remote control and monitoring to ANSI/ISA-62443 standard.

> Compliant to European Grid codes (Requirements for Generators, VDE-AR-N 4110:2018, VDE-AR-N 4105:2019, G99) and American IEEE 1547.

> Options for critical applications (datacenters, hospitals):

> Redundant CAN inter-controller communication.

> Redundant controller hot-swap in <10ms.

> Internal PLC functionality with easy-to-use PLC Editor, for simple and fast creation of specific logic for local control when desired (ex. running cooling fans).

> ENABLE/DISABLE of features and protections makes the system highly versatile yet simple and easy for both commissioning engineers and operators.

> Ethernet communication networks for local and remote monitoring options, with connected clients split into "trusted" and "untrusted" zones.

Application overview

MINT
Generator Circuit Breaker

Terminals and dimensions

CAN ECU + Extension modules Hot Swap Redundancy Intercontroller comm. Redundant inter. comm.	**4x**

Current — 3ph Generator, 1ph Auxiliary — **4x**

Voltage — 3ph Generator — **3ph**

Analog inputs — **4x**

Voltage — 3ph Mains / Bus — **3ph**

Sensor power supply 5 V

Magnetic pick-up

Power supply & D+

Analog outputs (SRO, VRO) — **2x**

Binary outputs — **12x**

E-Stop input — **1x**

Binary inputs — **12x**

SLOT A

SLOT B

Ethernet ports USB Device RS485

262 mm (10.3 in)

225 mm (10 in)

182 mm (7.2 in)

165 mm (6.5 in)

SLOT A

SLOT B

47 mm (1.85 in)

9 mm (0.35 in)

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 E-STOP	1.2 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^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 A0.75 % 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	0.68 MΩ ph-ph , 0.34 MΩ ph-n

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
Measurement category CAT III, overvoltage category III	

E-Stop

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

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 external displays

Product	Description	Order code
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-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
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	CM2GW300BAB

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
Multi-function device	11	Excitation loss	40	Overvoltage	59
Speed and frequency matching device	15	Current unbalance	46	Pressure switch	63
Data communications device	16EFT 16SC	Voltage unbalance	47	Liquid level switch	71
Starting-to-running transition contractor	19	Temperature monitoring	49T	Alarm relay *	74
Synchronizing-check	25	Overcurrent	50/50TD	Overfrequency	81H
Undervoltage	27	Earth fault current	50N+64	Underfrequency	81U
Annunciator*	30	Overcurrent IDMT	51		
Overload	32	Earth fault current IDMT	51+64		
Reverse power	32R	AC circuit breaker	52		
Undercurrent	37	Power factor	55		

* 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

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List of SW Key Features

SW Key Feature	Order Code
Modbus client	SKMODBCLI01
Hot Swap Redundancy	SKHOTSWAP01

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

Unique identifier: IG31000SCBB

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.