ComAp
The heart of smart control

InteliSys 2000

Datasheet

Paralleling gas gen-set controller for switchgear applications

Product description

InteliSys 2000 provides flexible solution for complex power generation application with synchronous or asynchronous generator, including gas gen-sets and co-generation heat and power units, it ensures cutting- edge performance with unrivalled PLC resources, modular expandability, and supreme control algorithm flexibility.
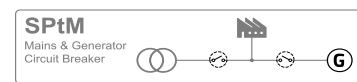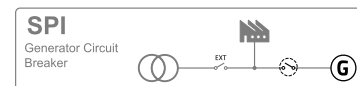
Key Benefits

> Pre-programmed controller functions allow customers to make the gen-set running quickly and focus on engine management

> Communication with majority of on-engine products like Ignitions, Breakers, AVRs, Speed governors, Inverters and others allows engine up-time optimisation and new business generation.

> Cyber secure concept (in compliance with ISA 62443) allows easy, simple and secure monitoring of controlled assets from anywhere around the globe.

> Opened platform allows adopting controller to any system with synchronous or asynchronous generator.

> Controller complies with the lates markets requirements as Grid Codes, Emissions standards (stage V, Tier IV Final) and Cyber security.

> State-of-the-art AC accuracy measurements, enabling participation in primary frequency control mechanisms, grid balancing, and demand response projects
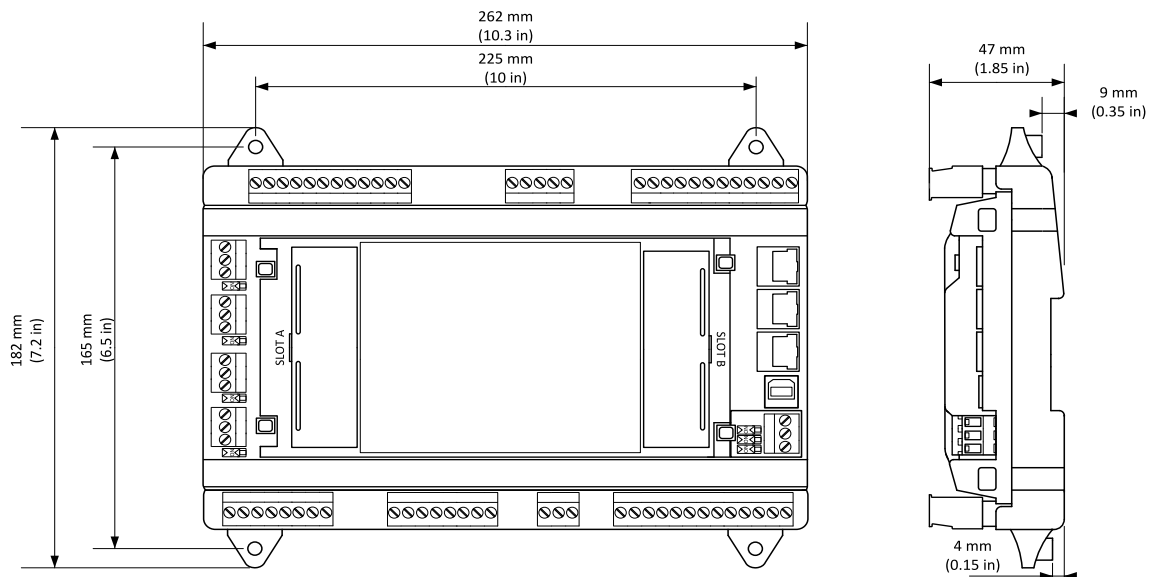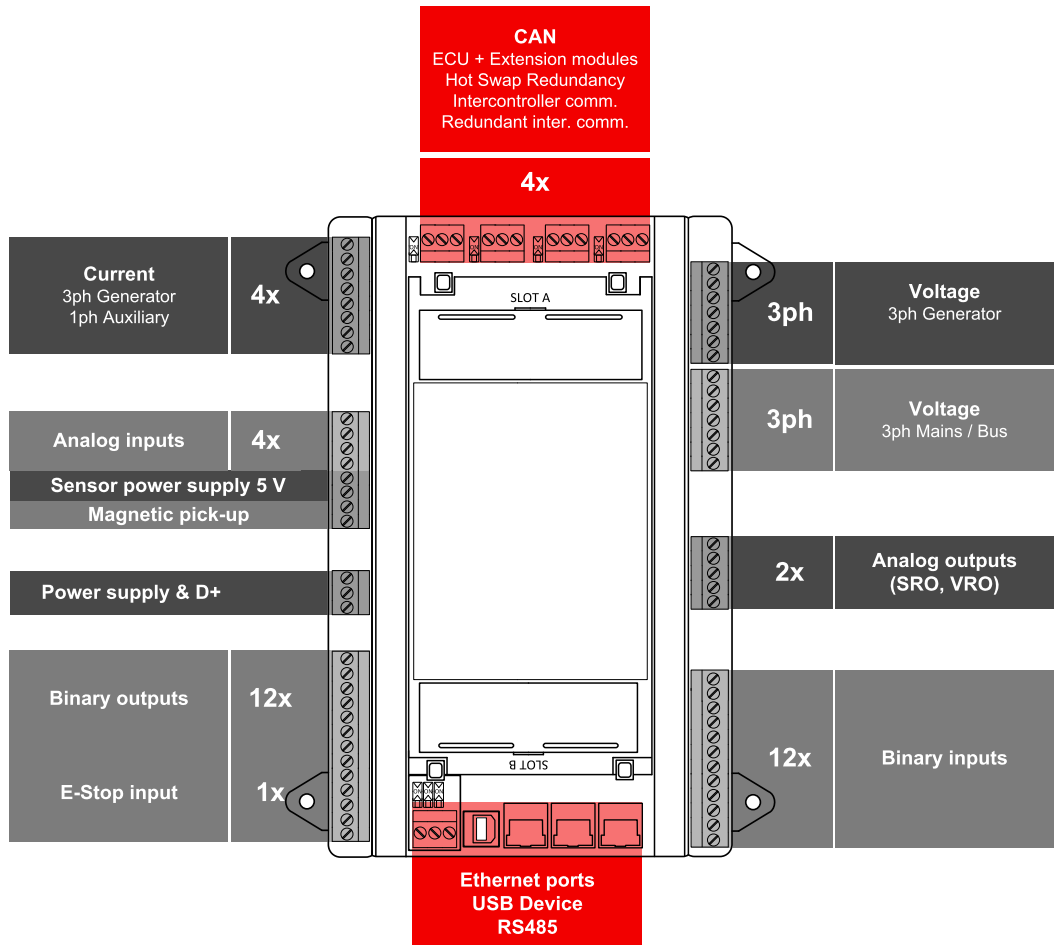
Key Features

> Support for gas engines and CHP applications

> A large and easy-to-use internal PLC editor

> Support of multiple on-engine equipment communication

> Integrated Modbus Client functionality

> Unit's lifetime history stored on a micro-SD card

> Use of True RMS measurement for Voltage, Current, and Power measurement

> A large portion of both local and remote monitoring options, with a high number of simultaneously connected clients split into "trusted" and "untrusted" zones

> Support for a high number of physical Inputs/Outputs via CAN extension modules

> Cooperation with up to 64 gen-set/mains/tie controllers

> Role-based user management with up to 30 unique users

> Hot-swap redundancy

> On-board integrated inter-controller communication redundancy and sampling

> Integrated AVR interface

> Open communication with J1939 and Modbus-based devices

> A large number of freely configurable inter-controller messages for customer use

> 31 characters for Names, Parameters, Alarms, etc.

> Fast and robust remote connection from practically anywhere in the world

> User protection designer for any signal

> New User Setpoints Groups management

> Compatibility with ComAp InteliSys GAS, IG/IS/IM-NT line, IG200, IG500 controllers

Application overview

Terminals and dimensions

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

4x

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**

SLOT A

SLOT B

3ph	**Voltage** 3ph Generator
3ph	**Voltage** 3ph Mains / Bus
2x	**Analog outputs** (SRO, VRO)
12x	**Binary inputs**

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 @ 8 V
Fusing E-STOP	1 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, 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
Upper-harmonics filtering	Active Low-Pass filter, Cutoff frequency 3100Hz (-3bB)
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	4 fast binary inputs; Bin 9-12 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 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 18Touch G2	18.5" Touchscreen display unit with 1366 × 768 px resolution	RD2IV18TBPE

Available CAN modules

Product	Description	Order code
Denox 2, Denox 20	An engine knocking detection unit	
ECON-4	Digital speed governor dedicated for speed control of gas or diesel engines.	ECON-4
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
I-CR	CAN Repeater Module, compatible when using 32C/8C CAN Intercontroller Comm Mode	I-CR
I-Step	Stepper motor driver module	I-STEP
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

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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Description	ANSI code	Description	ANSI code	Description	ANSI code
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

CE UKCA

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Grid Codes Certifications

- EN 50549-1 (-2)

List of SW Key Features

SW Key Feature	Order Code
Air-fuel regulation function	SKAFRXXXX01
CAN bus redundancy	SKREDCAN201
Hot Swap Redundancy	SKHOTSWAP01
Load Sharing & Power management	SKLSMPMSX01
Modbus Client	SKMODBCLI01
Variable Speed Generator	SW1VSGXXXXX

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