InteliCompact^{NT}

EASY TO USE PARALLELING CONTROLLER

Description

InteliCompact^{NT} models are integrated controllers for gen-sets operating in both standby and parallel modes. Functionality is optimized for ease of use, whilst the installation and configuration, includes a built-in synchronizer and digital isochronous load sharer. One feature that comes as standard is the native cooperation of up to 32 gen-sets.

InteliCompact^{NT} controllers are able to operate in a group parallel to each other, sharing the load and automatically running the optimum number of the gen-sets, according to the actual load. The running gen-set can be automatically swapped based on running hours value to equalize their workload and wear.

The InteliCompact^{NT} models are coming together with the MainsCompact^{NT} mains controller, which provides synchronization of group of gen-sets to mains, import/export and mains protection.

InteliCompact^{NT} provides all the standard protections for gen-set including Earth fault current protection, Loss of excitation and Vector shift protection.

The controller can communicate via standard and proprietary CAN J1939 or Modbus communication protocols to a wide range of EFI engines.

The controller comes with PC software enabling the user to freely configure the inputs and outputs to suit individual requirements.

The real time clock and event and performance history log are priceless when it comes to troubleshooting. Remote control and monitoring is possible via analog/GSM/GPRS modem or the Internet (including Web server) supporting our new AirGate technology and WebSupervisor for fleet management monitoring.

Benefits

- Simple paralleling (easy wiring, installation and configuration)
- Remote monitoring helps reduce call-out costs of service engineers
- Optional Internet with control and monitoring over web pages or via WebSupervisor
- Support of wireless Internet
- Optional extension I/O modules
- Optional 1 mains phase current measurement
- Protections – Loss of excitation, Earth fault current protection, Vector shift and others
- Run Hours equalization
- Support of High Voltage and monophase applications
- Direct communication with EFI engines
- History log – easy troubleshooting and warranty claim handling

AMPS MEMBER

ComAp is a member of AMPS (The Association of Manufacturers of Power generating Systems).

AirGate
simply connected

AirGate
Modern communications made simple. ComAp's powerful AirGate technology is provided in a range of our controllers and makes remote internet connection to the ComAp controller easy. Just register the AirGate enabled controller on our website and from then on let ComAp's unique system locate and maintain contact with the controller, no need to worry about VPN's, Static IP addresses or corporate firewalls, simple! "AirGate – Simply connected."

DEKRA certified

ComAp products meet the highest standards, with every stage of production undertaken in accordance with the ISO certification obtained in 1998.

Features

- **3 phase AMF function**[1]
  - Over/Under frequency
  - Over/Under voltage
  - Vector shift
  - Voltage asymmetry
- **3 phase generator protections**
  - Over/Under frequency
  - Over/Under voltage
  - Current/Voltage asymmetry
  - Overcurrent/Overload
- **True RMS Voltage measurement**
  - 3 phase generator and mains/bus voltages
  - Voltage range 277 V p-n, 480 V p-p
  - Maximal measured voltage 300 V p-n
  - Nominal voltage up to 20.000 V
  - PT ratio range 0.1–500
- **True RMS current measurements**
  - 3 generator phase currents
  - 1 mains phase current[2]
  - Earth fault current[3]
  - Current range 5 A
  - Maximal measured current 10 A
  - CT ratio range 1–10.000
- **Power measurements**
  - Active/Reactive Power and Power Factor per phase
  - Genset Active and Reactive Energy counter
  - Mains Active and Reactive Energy counter
  - Apparent power
- **Paralleling functions**
  - Automatic synchronization and power control
  - Voltage and PF control (AVR)
  - Active Load Sharing[4]
  - VAr Sharing[4]
  - Optimizing number of running engines[4]
  - Run Hours equalization[4]
  - High tariff avoidance
  - Peak shaving[1]
  - Mains export limit[2]
- **Event and performance log + RTC**
  - Event based history (200 records)
  - Reason, Date and Time + all important values are stored
  - Battery backed-up RTC
  - Test Run scheduler
- **User interface**
  - Graphic 128 × 64 pixels display
  - 2 languages, user changeable from PC; Default English + Chinese (wide range of languages in package)
  - Setpoints adjustable via controller buttons or PC
  - Buttons with mechanical feedback
- **Inputs and outputs**
  - 9 or up to 25[5] binary inputs
  - 8 or up to 24[5] binary outputs
  - 3 or up to 7[6] analog inputs
  - Up to 9[7] analog outputs
  - Output to engine speed governor
  - Output to engine voltage regulator (via IG-AVRi)
  - Magnetic pick-up input
  - D+ pre-excitation terminal
- **EFI engine support**
  - Cummins Modbus
  - Engine specific J1939 for all major manufacturers (see table right)
  - Diagnostic messages in plain text
- **Active calls**
  - 2 channels
  - SMS or E-mail
  - Alarm and event SMS
  - SMS commands
- **Communication interfaces**
  - Optional RS232 (including Modem support), RS485 or USB plug-in interface
  - Modbus RTU/TCP (requires RS485 interface/IB-Lite)
  - Optional Internet/Ethernet via IB-Lite
  - On-line control and monitoring over web pages via IB-Lite (embedded Web server)
  - Optional GSM/GPRS modem/wireless Internet via IL-NT GPRS
  - AirGate support (requires IL-NT GPRS/IB-Lite)
- **Mechanical and operation parameters**
  - Unit dimension 120 × 180 mm
  - Sealed front face rated for IP65
  - Hard plexiglass LCD cover
  - Operation temperature
    - –20°C to +70°C standardver sion
    - –40°C to +70°C low temperature version
  - Power supply voltage 8–36 V
  - Voltage drops shorter than 50 ms do not affect operation

ANSI CODES

ANSI code	Protection
12	Engine overspeed
14	Underspeed
25	Synchronism Check
32	Generator overload
32R	Generator reverse power
40	Excitation Loss
59, 27	Generator under/overvoltage
47	Generator voltage unbalance
81H, 81L	Generator under/overfrequency
51	Generator overcurrent
50	Generator short current
46	Generator current unbalance
47	Phase sequence
50N+64	Earth fault
25	Synchronism check
71	Gas (fuel) level
78	Vector shift

InteliCompact^{NT} controllers support J1939 for all major brands:

- Caterpillar
- Cummins
- Detroit Diesel
- Deutz
- GM
- Isuzu
- Iveco
- John Deere
- MAN
- MTU
- Perkins
- Scania
- Sisu
- VM Motori
- Volvo Penta and others

Accessories and PC tools

EXTENSION MODULES

- **IGS-PTM** – Analog/Binary Input/Output Module
- **IG-IOM** – Analog/Binary Input/Output Module
- **IGL-RA15** – Remote Annunciator
- **IC-NT CT-BIO7** – 1 Phase Current Input and Binary Input/Output Module[8]
- **IL-NT BIO8** – Binary Input/Output Module
- **IL-NT AOUT8** – Analog Outputs for PWM Gauges Module

REMOTE DISPLAY

- **IC-NT RD (SW)** – Remote Display Software for InteliCompact^{NT} controllers

COMMUNICATION MODULES

- **InternetBridge-NT** – Communication Module with Cellular/Ethernet Connection
- **I-LB+** – Local Bridge
- **IB-Lite** – Internet/Ethernet Plug-in Module including Web Server
- **IL-NT GPRS** – GSM Modem/Wireless Internet Module
- **IL-NT RS232** – RS232 Extension Board
- **IL-NT RS232-485** – Dual Port Extension Board
- **IL-NT S-USB** – Service USB Module

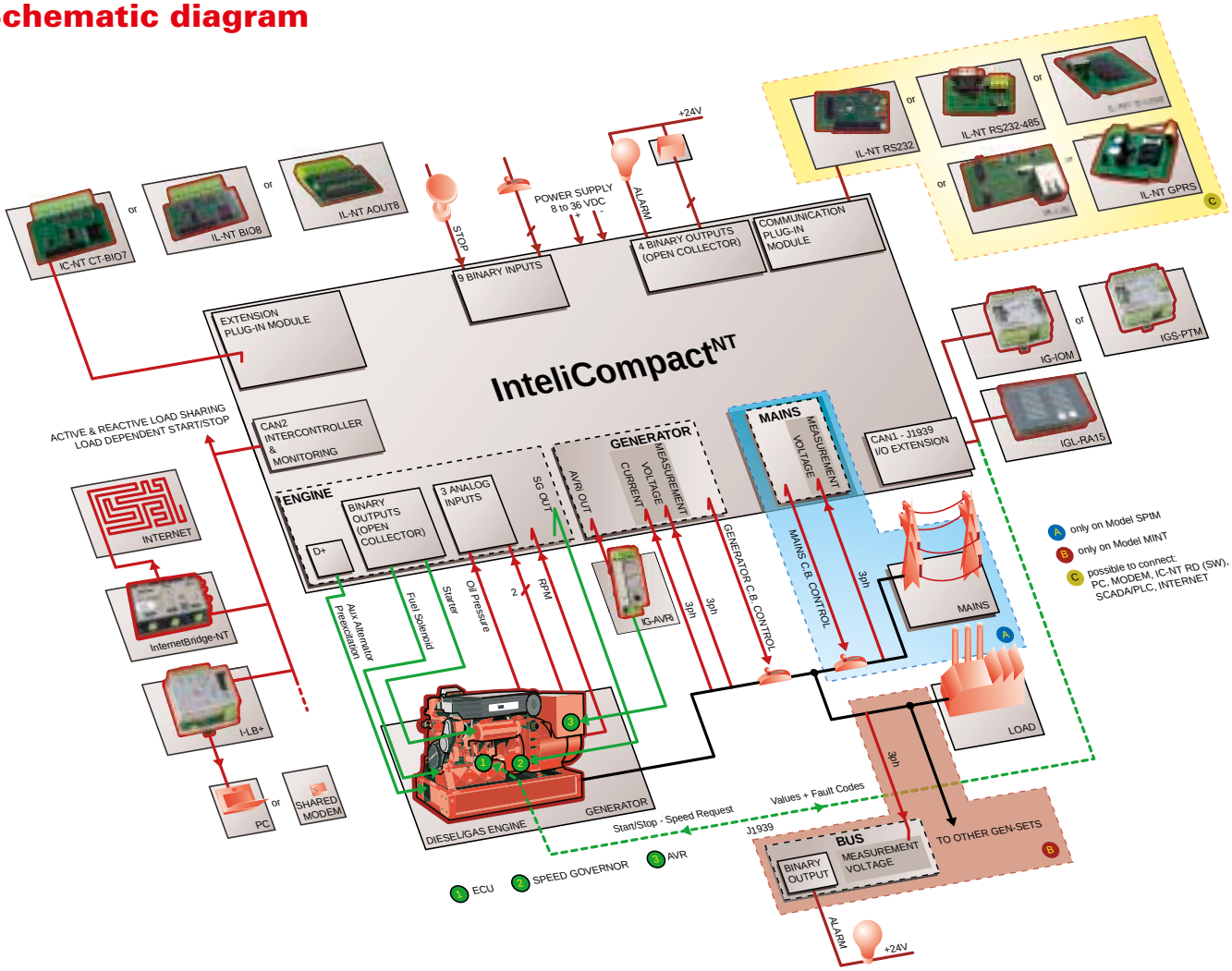
KEY
SPtM – single gen-set in parallel to mains controller
MINT – multiple paralleling gen-sets with internal load-sharing controller

PC TOOLS

- **LiteEdit** – PC Configuration and Monitoring Tool
- **WebSupervisor** – Cloud-based System for Monitoring and Controlling of ComAp Controllers
- **WinScope** – Special Graphical Controllers' Monitoring Software
- **InteliMonitor** – PC Monitoring Tool

1) For MINT models is available only in case that is used together with MainsCompact^{NT} controller
2) Only for SPtM models
3) With IC-NT CT-BIO7
4) Only for MINT models
5) With IL-NT BIO8 and IG-IOM or IGS-PTM
6) With IG-IOM or IGS-PTM
7) With IL-NT AOUT8 and IG-IOM or IGS-PTM
8) IC-NT CT-BIO7 is already included in SPtM model

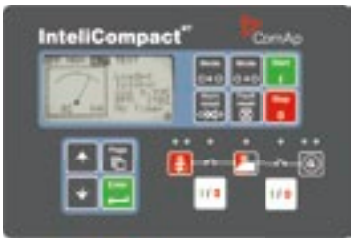
Schematic diagram



Available models

SPtM

SINGLE GEN-SET IN PARALLEL TO MAINS CONTROLLER

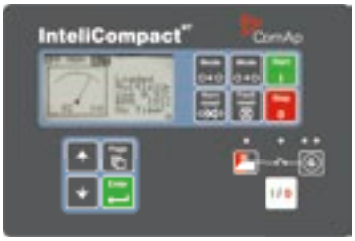


For single gen-set in parallel with mains:

- AMF function
- Automatic synchronizing and power control
- Interrupt free load transfers
- Voltage and PF control
- Baseload power control
- Peak shaving
- High tariff avoidance
- Mains export limit
- 1 mains phase current measurement

MINT

MULTIPLE PARALLELING GEN-SETS WITH INTERNAL LOAD-SHARING CONTROLLER



For multiple gen-sets running in island operation or in parallel with mains:

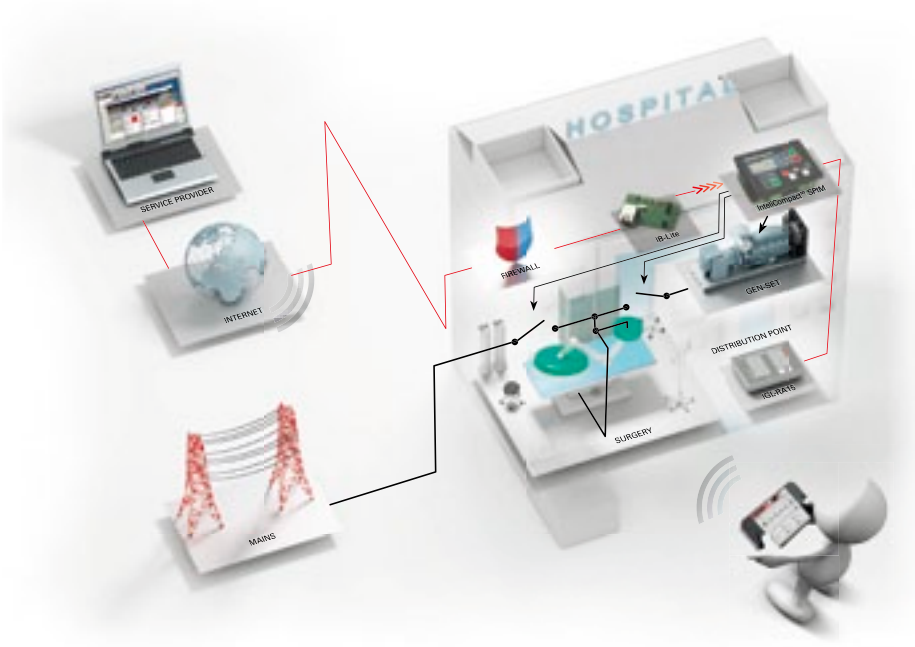
- Automatic synchronizing and power control
- Voltage and PF control
- Active load-sharing
- VAr sharing
- Power management based on relative load (optimization of running gen-sets according to the load demand) including Run Hours equalization

Order codes

Product	Order code
InteliCompact^{NT} SPtM	IC-NT SPTM

Product	Order code
InteliCompact^{NT} MINT	IC-NT MINT

Typical applications

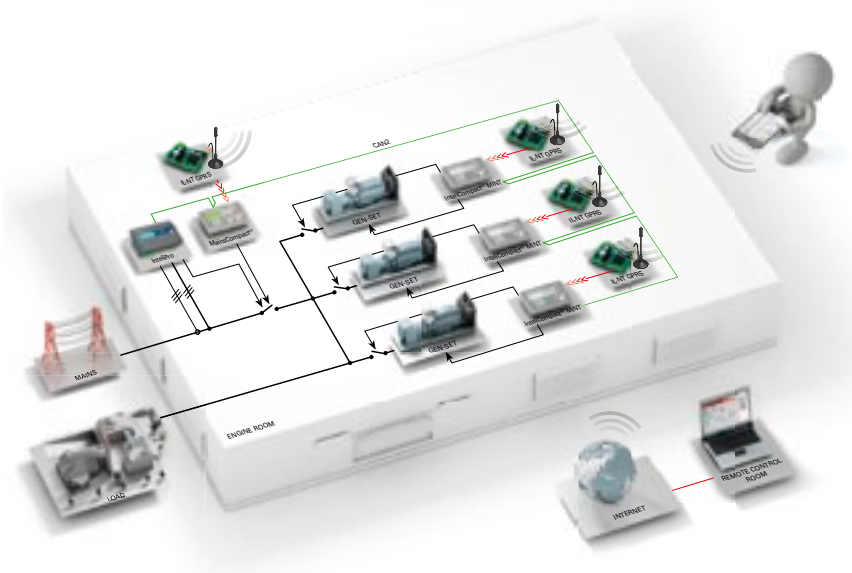


AirGate simply connected

WebSupervisor

STANDBY SYSTEM WITH SOFT RETURN

- Stand-by emergency gen-set accomplishes power supply to essential load during power drop.
- The controller automatically starts the gen-set in case of mains failure and switches load to generator. When mains returns, it synchronizes the generator back, softly unloads it and stops the engine.
- The generator automatically synchronizes to mains in its Test mode. Test mode can be used to check the gen-set condition and to provide uninterrupted power supply in case of expected mains failure.
- The status of the gen-set is displayed in the distribution point.
- InteliMonitor is used for remote monitoring and control; connected via IB-Lite.
- History file with performance log stored in InteliCompact^{NT} SPtM allows easy backtracking and problem solving.
- Seamless communication with engine's electronic injection control unit, all important values and alarms are visible on screen of InteliCompact^{NT} and stored to the history file in plain language.



AirGate simply connected

WebSupervisor

LOCATE

MULTIPLE GEN-SETS IN PARALLEL TO GRID

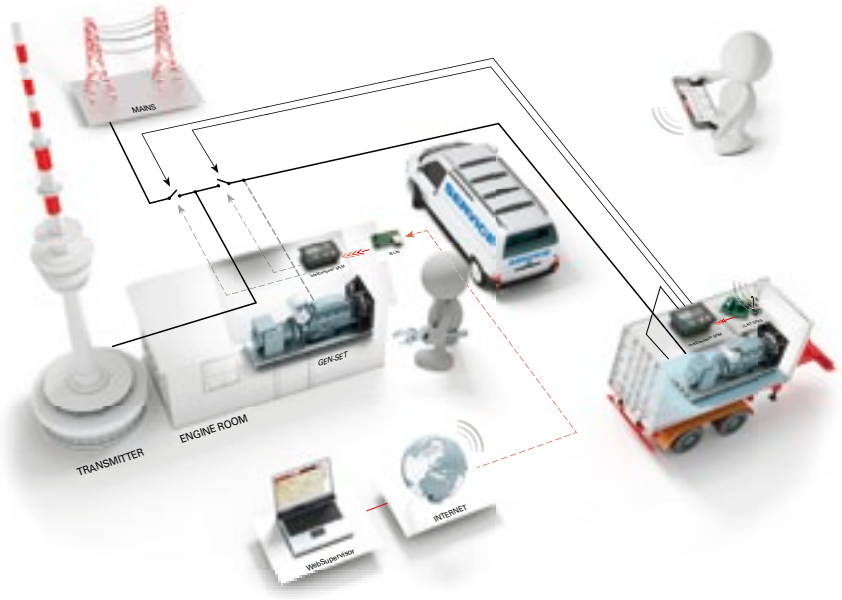
- Fully automatic system reduces electric energy bill by keeping the mains power below high tariff level during peak hours.
- At the same time it accomplishes emergency standby power in case of mains failure.
- Remote control and monitoring via IL-NT GPRS.
- WebSupervisor is used for remote monitoring.
- Wide range of engine and generator protections, including vector-shift protection, loss of excitation and earth fault current protection.
- Automatic forward and reverse synchronization with soft load ramp-up and ramp-down during changeover.
- Common synchronization of InteliCompact^{NT} MINT controllers provided by MainsCompact^{NT}
- Active and reactive load import/export control and load-sharing.
- Automatic optimization of number of running sets according to load (including Run Hours equalization).
- Peak shaving controlled by built in Scheduler, engines automatically run during peak period.
- History file with performance log stored in InteliCompact^{NT} MINT allows easy backtracking and problem solving.
- Seamless communication with engine's electronic injection control unit, all important values and alarms are visible on screen of InteliCompact^{NT} and stored to the history file in plain language.
- Mains protection InteliPro provides wider range of protective features for higher reliability and increased safety of the system operation.

Typical applications

AirGate simply connected WebSupervisor LOCATE

MULTIPLE GEN-SETS IN ISLAND

- For use in a fully independent, non-grid connected system, which is the only available power source.
- Automatic forward and reverse synchronization with soft load ramp-up and ramp-down during changeover.
- In built Power management system, enabling automatic optimization of number of running gen-sets according to load (including Run Hours equalization).
- Remote control and monitoring via IL-NT GPRS or IB-Lite (easy with AirGate technology).
- WebSupervisor or LiteEdit can be used for remote monitoring and control.
- Wide range of engine and generator protections, including vector-shift protection, loss of excitation and earth fault current protection.
- Option to control the gen-sets via SMS.
- Extensive history file, with performance log, stored in InteliCompact^{NT} MINT allows easy backtracking and problem solving.
- Seamless communication with the engine's electronic injection control unit, all important values and alarms are visible on the InteliCompact^{NT} screen and stored to the history file in plain language.



AirGate simply connected WebSupervisor LOCATE

RENTAL STANDBY SYSTEM WITH SOFT RETURN

- Rental stand-by emergency gen-set to provide power to essential services during a power drop, as a backup to a common stand-by system.
- The controller automatically starts the gen-set in case of mains failure and switches the load to the generator. When mains power returns, it synchronizes the generator back, softly unloads it and stops the engine.
- The generator automatically synchronizes to the mains in its Test mode. The Test mode can be used to check the gen-set condition and to provide uninterrupted power supply in case of expected mains failure.
- The status of the gen-set is displayed at the distribution point and can also be monitored via smartphone.
- WebSupervisor is used for remote monitoring and control; connected via an IL-NT GPRS. It is also possible to control localization and sequential movement of a rental gen-set.
- History file with performance log stored in InteliCompact^{NT} SPtM allows easy backtracking and problem solving.
- Seamless communication with the engine's electronic injection control unit, all important values and alarms are visible on screen of InteliCompact^{NT} and stored to the history file in plain language.
- The function of FuelTheft is to monitor fuel levels, and provide notification alarms in case of fuel theft or fuel leak.

Function Overview of InteliCompact^{NT} and InteliGen^{NTC} BaseBox Controllers

Controller	InteliCompact^{NT} SPtM	InteliCompact^{NT} MINT	InteliGen^{NTC} BaseBox
Order code	IC-NT SPTM	IC-NT MINT	IG-NTC-BB
Binary Inputs/Outputs	9/8 (up to 25/24)[1]	9/8 (up to 25/24)[1]	12/12 (108/60)[10]
Analog Inputs/Outputs	3/0 (up to 7[2]/9[3])	3/0 (up to 7[2]/9[3])	3/0 (83/32)[10] (configurable as tristate)
AMF function	●	●[9]	●
GCB control with feedback	●	●	●
Integrated PLC	–	–	●
Input configuration	●	●	●
Output configuration	●	●	●
Voltage measurement Gen/Mains (bus)	3ph/3 ph 277V	3ph/3 ph 277V	3 ph/3 ph 120V/277V
Current measurement	3 ph + 1[4], IDMT overcurrent 5A	3ph + 1[4], IDMT overcurrent 5A	3ph + 1/6w IDMT overcurrent 1A/5A
kW/kWh/kVA measurement	● / ● / ●	● / ● / ●	● / ● / ●
Extension modules (via CAN)	IGL-RA15, IG-IOM, IGS-PTM	IGL-RA15, IG-IOM, IGS-PTM	IS-AIN8, IS-AIN8TC, IS-BIN16/8, I-AOUT8, IGL-RA15, IGS-PTM
Extension plug-in modules	IL-NT AOUT8, IL-NT BIO8, IC-NT CT-BIO7[5]	IL-NT AOUT8, IL-NT BIO8, IC-NT CT-BIO7	–
Remote displays	IC-NT RD (SW)	IC-NT RD (SW)	InteliVision 5, InteliVision 8, IG-Display LT GC
Communication modules (via CAN)	InternetBridge-NT, I-LB+	InternetBridge-NT, I-LB+	InternetBridge-NT, I-LB+, I-CR, I-CB
Communication plug-in modules	IB-Lite, IL-NT GPRS, IL-NT RS232, IL-NT RS232-485, IL-NT S-USB	IB-Lite, IL-NT GPRS, IL-NT RS232, IL-NT RS232-485, IL-NT S-USB	–
Communication interfaces	CAN1, CAN2, RS232[6], RS485[6], USB[6], Ethernet[6], GPRS[6], Modbus[6], Modbus TCP[6], AirGate[6], Web server[6]	CAN1, CAN2, RS232[6], RS485[6], USB[6], Ethernet[6], GPRS[6], Modbus[6], Modbus TCP[6], AirGate[6], Web server[6]	CAN1, CAN2, RS232, 2× RS485, USB, Ethernet, Modbus, Modbus TCP, AirGate, Web server
ECU support	●	●	●
Modem support	o	o	●/o [11]
Active call/SMS support	o/●	o/●	o/●
Forward/Reverse synchronizing/Mains parallel operation	●/●/●	●/●[9]/●[9]	●/●/●
Multiple operation/Power Management System	–	●	●[12]
Display	LCD 128×64	LCD 128×64	External
Battery charging alternator circuit (D+)	●	●	●
Multilanguage support	Western Europe, Eastern Europe, Cyrillic, Turkish, GC[7]	Western Europe, Eastern Europe, Cyrillic, Turkish, GC[7]	Western Europe, Eastern Europe, Cyrillic, Turkish, GC[7]
Direct Bus–tie application support	–	–	●
Binary/Analog signal sharing	–	–	●
History (max records)[8]	200	200	1000

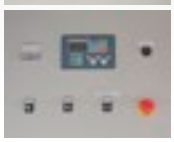
KEY

- • included
- – excluded
- o optional (plug-in module required)

CAN1 for peripheral modules and ECU (J1939)
CAN2 intercontroller can; monitoring

1) with IL-NT BIO8 and IG-IOM or IGS-PTM
2) with IG-IOM or IGS-PTM
3) with IL-NT AOUT8 and IG-IOM or IGS-PTM
4) with IC-NT CT-BIO7
5) IC-NT CT-BIO7 is already included in the controller
6) with communication modules
7) covers any language with "Graphical Chars" like Chinese, Korean and others
8) depends on number of values in history record
9) with MainsCompact^{NT}
10) with IS-AIN8, IS-AIN8TC, IS-BIN16/8, I-OUT8 or IGS-PTM
11) including modems without HW control signals
12) with IGS-NT-LSM+PMS dongle

References



Italy
ELETTROSYSTEM

Elettrosystem Snc di Vittadello Sergio & C is an Italian company with 30 years experience of developing power control packages, and supplies control panels featuring ComAp controllers to a number of high profile manufacturers including Green Power Systems, one of Italy's top 5 gen-set manufacturers.

Mr. **Vittadello Sergio**, Managing Director of Elettrosystem explains the reason for selecting ComAp products:

"We use InteliCompact^{NT} controllers for parallel control panels with gen-sets and/or with the mains. Because our customers are looking for simple and reliable equipment for gen-sets in continuous use or emergency applications, we've found the intuitive programming helps customers gain a quick understanding of operational features. The InteliCompact^{NT} controller has proved to be very stable during operation and highly durable. It offers a well-designed interface and a menu of easy reference and understanding – perfect for those who want to create a parallel service without any unnecessary complications."

Ecuador
PETROAMAZONAS EP

Petroamazonas EP, the Ecuadorian state owned petroleum company, is currently operating a number of major oil wells deep within the Amazon forest and relies on Caterpillar gen-sets for the only means of power in these remote locations. In most situations, each oil well needs a load demand of 300kW, with only one gen-set works at a time, performing a closed transition between gen-sets every seven days.

The company specifies Caterpillar powered gen-sets for most of their oil fields, and they select ComAp controllers such as InteliCompact^{NT} because synchronism between gen-sets has proven to be very reliable and simple – a key purchasing criteria in product selection.

Another major advantage of using ComAp InteliCompact^{NT} is the user friendly history log that collects key operating values and makes them accessible via LiteEdit software. Petroamazonas EP routinely use this function to download history activity from each of their operational gen-sets.

Peru
HIDRANDINA

The final user of gen-sets equipped with ComAp controllers is in this case **Hidrandina**, the distributor and seller of electricity in northern Peru. This particular installation involves a 2MW substation called Shingal. It is located in the city of Caraz, Perú, 2300 meters above sea level.

It includes 5 gen-sets working in parallel with the mains, plus one more gen-set in standby mode. This system has proven to be very trustworthy and simple, and withstands the strong requirements of the high altitude in which it is operated. The customer is absolutely satisfied with it.

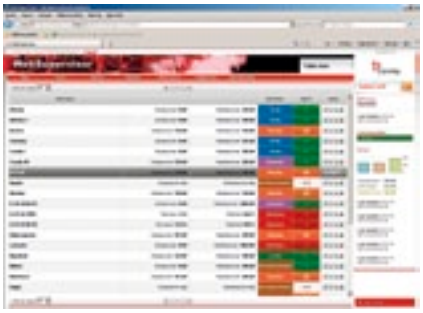
See more on our YouTube channel!

AVAILABLE IN VARIOUS LANGUAGES

Register

Register your ComAp controllers and be connected with them everywhere.

websupervisor.comap.cz



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Customer satisfaction is our mission. We continuously develop our people to be the best to succeed in our mission.

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