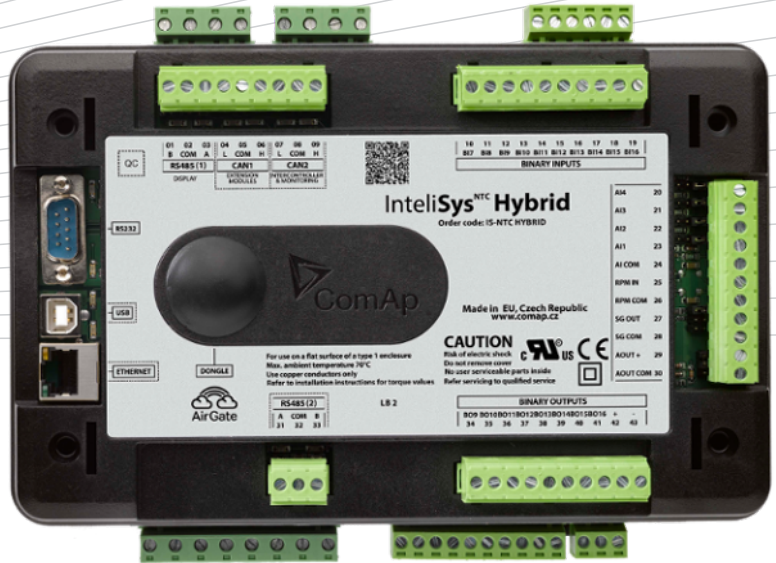


InteliSys^{NTC} Hybrid



Order code: IS-NTC HYBRID
PV/Diesel hybrid controller

Datasheet

Product description

IS-NTC-Hybrid controller offers complex control of PV/Diesel hybrid applications. It allows smooth integration of renewable energy to conventional power generation from reciprocating gen-sets while maintaining high reliability, safety and efficiency of the site.

Key functions

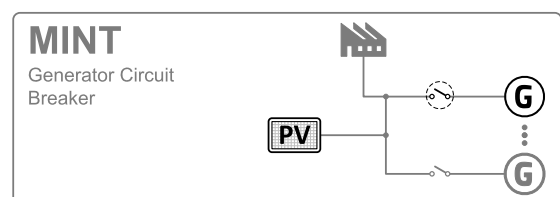
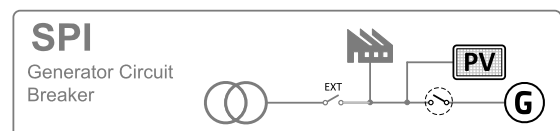
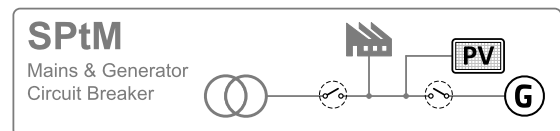
- ▶ Full gen-set control with interface to PV inverters
- ▶ Inbuilt power management and load sharing
- ▶ Protection against gen-set underloading
- ▶ Dynamic spinning reserve calculation for maximized fuel savings
- ▶ Support of up to 100% renewable energy penetration*

Key features

- ▶ Extensive flexibility due to built-in PLC
- ▶ Interface with various site components (PV inverters, BMS, gen-set controllers, etc.)
- ▶ Smooth integration of renewable energy sources
- ▶ Fuel save function for optimum power management
- ▶ PV output control via analog output or Modbus
- ▶ Continuous monitoring of all sources of energy

- ▶ Inputs and outputs configurable for various customer needs
- ▶ Interface to remote display units (InteliVision 8, InteliVision 5 RD, InteliVision 17Touch)
- ▶ USB 2.0 slave interface
- ▶ Ethernet, Modbus and CAN communication
- ▶ Pre mortem history (50 records)
- ▶ Event-based history (up to 4000 records)
- ▶ 160 additional programmable protections

Application overview



*if energy storage or weather prediction system is used

Technical data

Power supply

| | |
|--------------------|--|
| Power supply range | 8-36 VDC |
| Power consumption | 0.4 A / 8 VDC 0.15 A / 24 VDC 0.1 A / 36 VDC |
| RTC battery | 10 years (replaceable by official service) |
| Fusing | 2 A (without BOUT consumption) |

Operating conditions

| | |
|-----------------------|---|
| Operating temperature | -40°C to +70°C |
| Storage temperature | -40°C to +80°C |
| Operating humidity | 95 % w/o condensation |
| Vibration | 5 - 25 Hz, ± 1.6 mm 25-100 Hz, $a = 4$ g |
| Shocks | $a=200$ m/s ² |

Voltage measurement

| | |
|---------------------|--|
| Measurement inputs | 3 ph-n Gen voltage 3 ph-n Mains/Bus voltage |
| Measurement range | 110V / 277V |
| Max allowed voltage | 125 % |
| Accuracy | 1 % of 110V / 277V |
| Frequency range | 40-70 Hz (at accy 0.1 Hz) |
| Input impedance | 0.6 M Ω ph-ph 0.3 M Ω ph-n |

Current measurement

| | |
|--------------------------------|--|
| Measurement inputs | 3 ph Gen current 1 ph Mains current |
| Measurement range | 1A / 5A |
| Max allowed continuous current | 1000% / 200% |
| Accuracy | 2 % of 1A / 5A |
| Input impedance | < 0.1 Ω |

Binary inputs

| | |
|-----------------------|---|
| Number | 4 non-isolated |
| Input resistance | 4.7 k Ω |
| Close/Open indication | 0 - 2 VDC close contact > 4 VDC open contact |

Binary outputs

| | |
|--------------|-----------------------------------|
| Number | 4 non-isolated |
| Max current | 0.5 A (2 A per group) |
| Switching to | negative/positive supply terminal |

Analog inputs

| | |
|-----------------|---|
| Number | 1 non-isolated |
| Type | Switchable (Voltage, Resistance, Current) |
| Resolution | 10 bits, max 4 decimals |
| Range | 0-5 VDC/0-2500 Ω /0-20 mA |
| Input impedance | >100 k Ω / >100 k Ω /180 Ω |
| Accuracy | ± 1 % of meas. value ± 1 mV ± 2 % of meas value ± 2 Ω ± 1 % of meas value ± 0.5 mA |

Analog outputs

| | |
|------------------|--|
| Number | 1 |
| Type | Switchable (Voltage, Current) |
| Range | 0 - 10 VDC / 0 - 20 mA |
| Max current/load | 5 mA/500 Ω |
| Accuracy | ± 0.5 % of output value ± 20 mV ± 0.5 % of output value ± 100 μ A |

Magnetic pick-up

| | |
|---------------------------------|---------------------|
| Voltage input range | 2 Vpk-pk to 50 Veff |
| Frequency input range | 4 Hz to 15 kHz |
| Frequency measurement tolerance | 0.2 % |

Voltage regulator output

| | |
|------|---|
| Type | 5 V TTL PWM / ± 10 VDC with IG-AVRi interface |
|------|---|

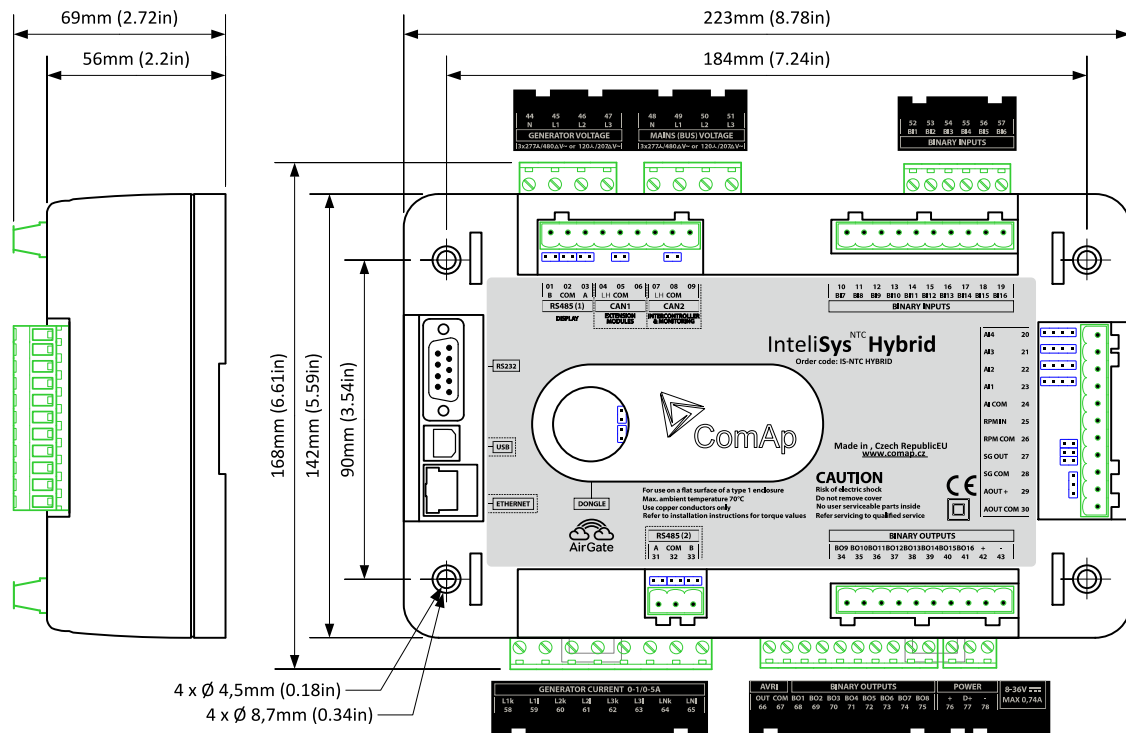
Speed governor output

| | |
|-----------------------------|---|
| Voltage output | ± 10 VDC / max. 15 mA |
| Voltage output via resistor | ± 10 VDC via 10 k Ω resistor / max. 1 mA |
| PWM | 500-3000 Hz / 5V / max. 10mA |

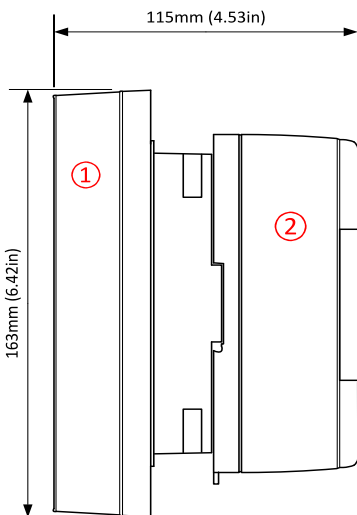
Communications

| | |
|---------------|--|
| RS232 | Direct/Modbus, non-isolated |
| RS485 | Direct/Modbus, isolated |
| Display port | non-isolated RS485, only terminal connection |
| USB port | Direct, isolated |
| Ethernet port | LAN/Internet, Modbus TCP, SNMP, WebServer, AirGate |
| CAN1 | External modules 250 kbps, max 200 m, Isolated |
| CAN2 | Intercontroller and comm extensions 250 / 50 kbps, max 200 / 1000 m, Isolated |

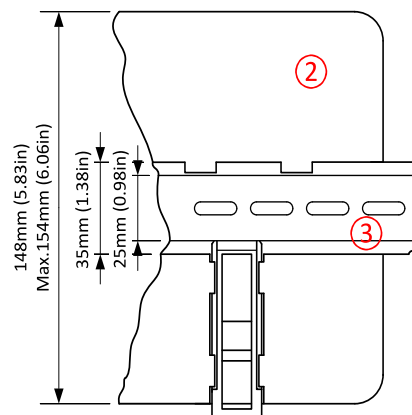
Dimensions, terminals and mounting



Panel door mounting with IntelliVision 5

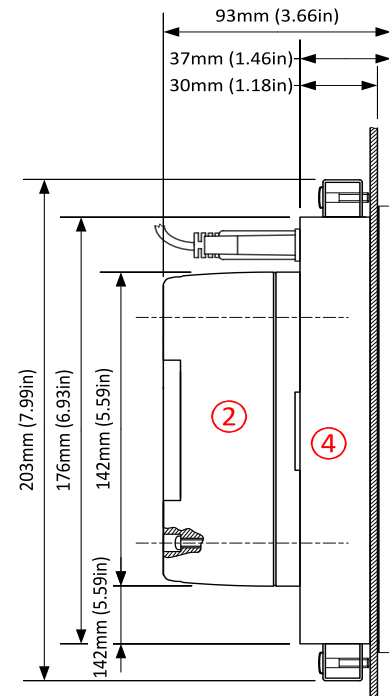


DIN-rail mounting



- ① IntelliVision5
- ② IntelliGen-NT-BaseBox
- ③ DIN-rail
- ④ IntelliVision 8

Panel door mounting with IntelliVision 8



Note: IntelliSys^{NTC} Hybrid can be mounted on a standard DIN rail or, in combination with IntelliVision 5 or IntelliVision 8, it can be door mounted. IntelliVision 5 features mounting rail for direct mounting. Mounting in combination with IntelliVision 8 uses four screws provided in the IntelliSys^{NTC} Hybrid package.

Available Extension modules

| Product | Description | Order code |
|-------------------|---|--------------------------|
| Inteli IO8/8 | 8 Binary inputs, 8 Binary outputs and 2 Analog outputs packed in a small unit (HW switchable to IO16/0) | I-IO8/8 |
| Inteli IO8/8 | HW switchable to IO16/0 - 16 Binary inputs packed in a small unit | I-IO8/8 |
| Inteli AIN8 | 8 Analog inputs (R, I, V) and 1 pulse/frequency input in a small unit | I-AIN8 |
| Inteli AIN8TC | 8 Thermocouple Analog inputs in a small unit | I-AIN8TC |
| Inteli AIO9/1 | 9 Analog inputs (4x DC, 4x thermocouples, 1x R) in a small unit | I-AIO9/1 |
| IS-AIN8 | 8 Analog inputs packed in a rugged metal unit | IS-AIN8 |
| IGS-PTM | 8 Binary inputs, 8 Binary outputs, 4 Analog inputs and 1 Analog output in a unit | IGS-PTM |
| IGL-RA15 | 15 Binary LED output (3 colors) packed in a rugged metal unit | IGL-RA15 |
| I-AOUT8 | 8 Analog outputs packed in a rugged metal unit | I-AOUT8 |
| InternetBridge-NT | Multiple Internet connections (PC and Modbus) to all controllers on CAN2 or RS485 | IB-NT |
| I-LB+ | Direct connection (PC) to all controllers on CAN2 or RS485 | I-LB+ |

Related products


| Product | Description | Order code |
|----------------------|--|--------------------------------|
| InteliVision 5 | Color 5.6" display for monitoring and control | INTELIVISION 5 |
| InteliVision 8 | Color 8" display for advanced monitoring, control & trending, USB capable | INTELIVISION 8 |
| InteliVision 17Touch | Color 17" touchscreen display designed for complete monitoring and control of multiple controllers or cogeneration installation. | IV17T2 |
| ECON-4 | Digital speed governor dedicated for speed control of gas or diesel engines. | ECON-4 |

Functions and protections

The product fully supports the following functions and protections as defined by ANSI (American National Standards Institute):

| Description | ANSI code | Description | ANSI code | Description | ANSI code | Description | ANSI code |
|-------------------|-----------|--------------------------------------|-----------|--------------------------|-----------|----------------|-----------|
| Synchronism check | 25 | Excitation loss | 40 | Overcurrent (IDMT) | 51 | AC reclosing | 79 |
| Undervoltage | 27 | Current unbalance | 46 | Earth fault current IDMT | 51N+64 | Overfrequency | 81H |
| Overload | 32 | Voltage asymmetry and phase sequence | 47 | Power factor | 55 | Underfrequency | 81L |
| Load shedding | 32P | Temperature monitoring | 49T | Overvoltage | 59 | ROCOF | 81R |
| Reverse power | 32R | Generator overcurrent | 50 | Gas (fuel) level | 71 | | |
| Undercurrent | 37 | Earth fault current | 50N+64 | Vector shift | 78 | | |

Certificates and standards

| | | | |
|--|---------------------------|-------------------|---|
| This product is CE compliant. | | | |
| ▶ EN 60068-2-6 ed.2:2008 | ▶ EN 60068-2-30, May 2000 | ▶ EN 61010-1:2003 |  |
| ▶ EN 60068-2-27 ed.2:2010 | ▶ EN 60068-2-64 | | |
| List of standards is available on: https://webstore.iec.ch/ | | | |

