

MULTI-POWER PLANT CONTROL SOLUTION

The INGECON® SUN Multi-Plant Controller helps the grid operator to manage the performance of multiple power plants and to guarantee the quality and stability of the electricity supply at a specific point of interconnection.

Maximum power plant control

Advanced algorithms combined with a fast and efficient communications system, allow for a precise control of the active and reactive power delivered by the multiple power plants to the grid.

The INGECON® SUN Multi-Plant Controller controls the inverters and converters by means of the INGECON® SUN Plant Control-

ler and a wind PPC, ensuring compliance with the grid operator's requirements at the point of interconnection of the renewable energy hub.

This is a flexible system that can easily be adapted to the needs and configurations of each particular project, whilst complying with the country-specific standards and regulations.

Continuous communication with all the devices

This multi-power plant controller can dynamically receive the grid operator's setpoints. Furthermore, the INGECON® SUN Multi-Plant Controller permits communication with the hub's SCADA to transmit the interconnection point data. Several features are available to ease the temporary maintenance or engineering operations.

In addition to previous interfaces, a number of optional communication protocols can be incorporated such as Modbus TCP, Modbus UDP, OPC, etc. Likewise, it is also possible to add digital and analogue I/O modules in order to extend the communication capabilities with third-party devices.



INCLUDED ITEMS

- PLC.
- Power analyzer.
- Communications switch.
- Power supply.
- Protections.
- O&M socket.

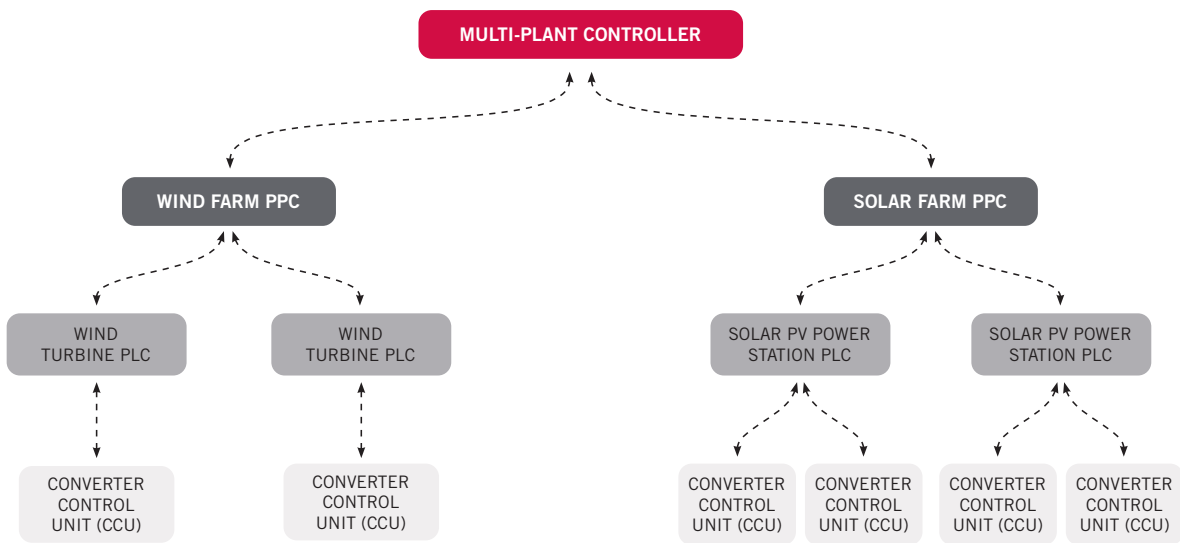
OPTIONAL INPUTS / OUTPUTS

- Analogue inputs V/I.
- Analogue outputs V/I.
- Digital inputs.
- Digital outputs @24 Vdc or potential-free digital outputs.

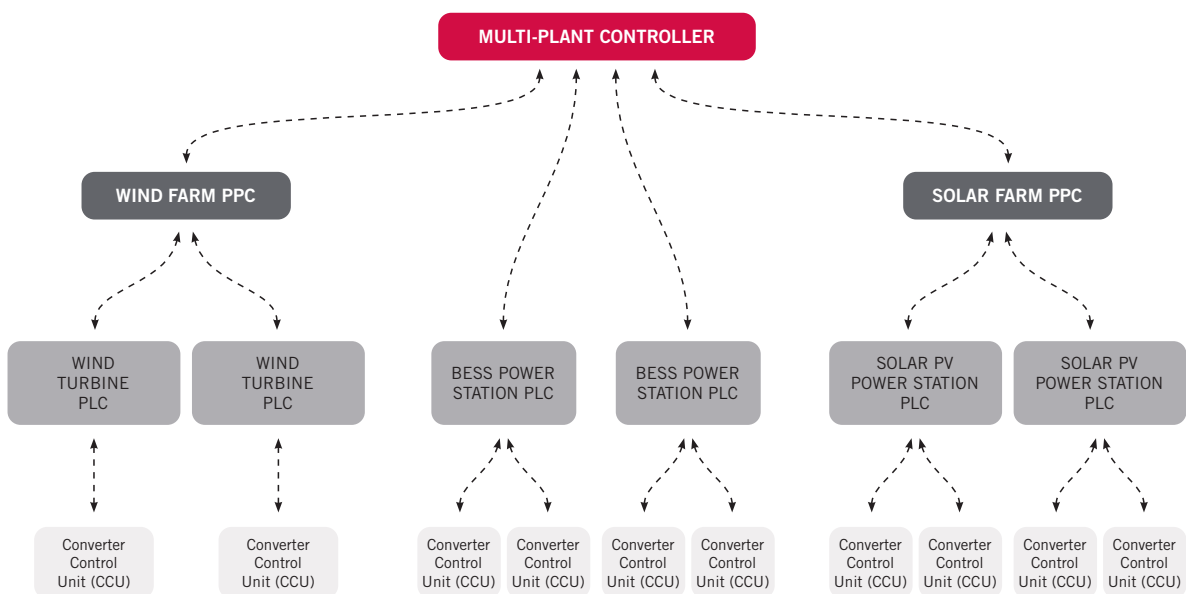
WARRANTY

- Standard 3-year warranty.

Solar-wind hybrid system



Solar-wind-storage hybrid system



Multi-Plant Controller	
Power Analyzer	
Energy metering accuracy	0.1%
Voltage metering accuracy	0.1%
Current metering accuracy	0.1%
Frequency metering accuracy	10 mHz
Power metering accuracy	0.2%
THD metering accuracy	0.25%
Voltage and current harmonics metering	1..50
Input voltage metering range	110..690 V
Input current metering range	0..5 A
Voltage input impedance	> 3 MΩ
Current input burden	< 10 mVA at 5 A
Production quality registration (PQ)	Optional
Redundancy	Optional
Samples per cycle	1,024
Conformity of standards	IEC 61000-4-15, IEC 61000-4-30, IEC 62053-22/23
Power Supply	
Voltage supply	100-240 Vac, 50..60Hz / 110-250 Vdc
Typical consumption ⁽¹⁾	225 W
Maximum consumption ⁽¹⁾	270 W
UPS capacity ⁽²⁾	15 Wh / 288 Wh
Redundancy	Optional
Communication	
Standard protocols	Modbus TCP, UDP (client and server), FTP (server), NTP (client and server)
Optional protocols	Modbus RTU (Master and slave), 101 (Slave), 104 (Slave), DNP3 (Slave), OPC (Server)
Outer connectivity	100 / 1000 BaseTX, 100 / 1000 BaseFX with patch panels
Managed communication	Yes, with SNMP v1/2/3, VLAN, DHCP, Flow control, NTP, MAC filter
Redundancy	Optional
Fail-safe mechanism	Included, configurable
Compatibility	
PPCs	INGECON® SUN Plant Controller (contact Ingeteam regarding compatibility with wind PPCs)
Batteries	Main manufacturers
SCADA	Modbus interface
Reactive power compensation systems	Modbus or hard-wired interface
On load tap changer	Modbus or hard-wired interface
Weather Stations	Modbus interface
O&M Functions	
Datalogger	Industrial compact flash memory. 100 ms register period
Equipment start up / stop	General start up or stop of the inverters, BESS and capacitor banks
Power plant surveillance	Monitoring of the status of every single element inside the plant
Others	Ripple control, Soft shutdown, Watchdog, Bumpless transition between modes, Night-time reactive power management ⁽³⁾
CPU	
Typical processing time	< 20 ms
Clock	Internal RTC synchronizable through NTP
Surveillance system	Watchdog, working times surveillance, CPU temperature and input/output status
Redundancy	Optional
General Data	
Dimensions (H/W/D)	2,000 / 800 / 800 mm
Weight ⁽³⁾	460 kg
Protection class	IP65
Impact resistance	IK10
Overvoltage protection	Type 2
Installation	Ground
Operating temperature	-20 to 50 °C / -4 to 122 °F
Storage temperature	-25 to 60 °C / -13 to 140 °F
Relative humidity (non-condensing)	10 - 90%
Maximum altitude ⁽⁶⁾	2,000 m
Marking	CE
Standards	IEC 62586-1, IEC 61131-3, IEC 60204-1, IEC 61439

Notes: ⁽¹⁾ Values measured with the highest possible number of hardware elements inside ⁽²⁾ If the installation does not feature an energy storage system, the autonomy will be 2 seconds ⁽³⁾ For other configurations, please contact Ingeteam's solar sales department ⁽⁴⁾ For more information, please refer to the user manual.



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