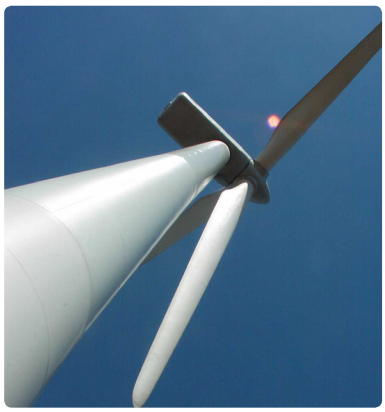
INGESAS

UCS

Substation Control unit



The INGESAS™ UCS device is the global data base manager of the Substation Automation System SIPC.

Substation automation

Applications:

High and médium voltaje substations, PV plants, windfarms, transmission and distribution of energy, energetic telecontrol, etc...

Features

- **Data acquisition:** Several combinations of digital and analogue values modules, that allow to acquire all the substation general purposes signalization not supplied by the bay units.
- **Local monitoring and command:** Front panel with 5 push-buttons, LCD graphic display and 5 programmable LED indicators. The LCD graphic display shows:
  - Substation general information as automatic processes status, batteries status, building alarms, auxiliary services information and voltage measurements, etc.
  - Digital inputs and digital outputs status
  - Hardware status
  - User defined alarm indications
  - Current date and hour
- **Event recording:** Event data stamp and non-volatile memory buffering.
- **Substation level automatisms:** Several user defined automatisms can be implemented in the INGESAS™ UCS, in order to operate automatically a number of bay elements under the conditions programmed. Some examples are: Automatic High Voltage service restoring after a substation disconnection (e. g. due to a blackout), Medium Voltage busbar load shedding due to overload or underfrequency, resistive earth faults detection when the feeders' relays don´t have the functionality, etc.
- **Communications:** Multiple communication ports, that can be used indistinctly as communications master of several local networks, or as slave of different local and remote HMIs and higher-level control centres.
- **Synchronization:** INGESAS™ UCS can be synchronized from a control centre via communications protocol, via SNTP protocol or via demodulated IRIG-B input. In serial architectures it can also send synchronization messages via protocol to those devices working as slave of this unit.
- **Modularity:** INGESAS™ UCS has been developed as a modular design, in order to offer the most suitable capabilities and prices of these devices in each case
- **Configuration tools**

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General Description

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Insulation and electromagnetic tests

· Dielectric strength	**IEC 60255-5**
· Insulation resistance	**IEC 60255-5**
· Impulse voltage	**IEC 60255-5**
· Radiated radioelectrical emission measurement	**EN 60255-5 / EN 55022 / EN 5511**
· DC power supply terminal conducted radiolectrical emissions measurement	**EN 60255-25 / EN 55022**
· Electrostatic discharge immunity test	**IEC 61000-4-2**
· Immunity to radiofrequency-radiated fields	**IEC 61000-4-3 / ENV 50204**
· Electrical fast transients immunity test	**IEC 61000-4-4**
· Surge pulses immunity test	**IEC 61000-4-5**
· Immunity to radiofrequency induced signals	**IEC 61000-4-6**
· Damped wave immunity test	**IEC 60255-22-1**
· Immunity to interruptions, dips and variations in DC power supply	**IEC 61000-4-29 / IEC 60255-11**
· Immunity to low frequency magnetic fields	**IEC 61000-4-8**
· Immunity to pulsing magnetic fields	**IEC 61000-4-9**
· Immunity to damped oscillatory magnetic fields	**IEC 61000-4-10**

Climatic

· Cold test	**IEC 60068-2-1**
· Dry heat test	**IEC 60068-2-2**
· Damp heat test, steady state	**IEC 60068-2-78**
· Damp heat test, cyclic	**IEC 60068-2-30**
· Change of temperature (thermal shock)	**IEC 60068-2-14**

Mechanical

· Vibrations test	**IEC 60255-21-1**
· Shock and bump test	**IEC 60255-21-2**

Advantages

- **Modularity:** A customized INGESAS™ UCS device can be defined for each installation, in terms of:
  - Modular hardware, that allows multiple digital and analogue inputs, digital outputs and communication ports combinations.
  - Number of communication networks connected (hardware links, protocols).
  - Different CPU cards
  - Auxiliary power supply levels
  - Redundancy applications (in auxiliary supply, communication ports, wired commands, etc.)
- **Security:** Able to fit to different criteria of redundant schemes.
- **Flexibility:** INGESAS™ UCS high programmability performance makes these devices able to suit to multiple control and automation applications.
  - Supervision and command of the substation, by means of connection to up to 5 local or remote HMI.
  - Give access from HMIs to any bay control and protection unit, to view status, set parameters or grab reports, oscillography, etc.
  - Remote Terminal Unit and Gateway applications, thanks to its multiple protocols communicating capabilities.
  - Substation general purposes control and alarm panel.
  - Substation level automatisms
- **Easy to set:** SIPCON® software tools provide an easy configuration environment for the user to program logical application instructions to be performed by the UCS. These logical features and settings can be charged in the device: Directly, via serial or Ethernet port, or remotely, through communication devices as MODEMS, routers, etc.
- **Additional features:** A frontal 16 indicators panel offers a lot of possibilities for local supervision: Substation level alarm status checking, auxiliary services panel information, Substation Automation System internal status, etc.

Hardware Characteristics

- 19" rack mounting chassis. Height: 4 U or 5 U.
- Up to 6 serial and 2 Ethernet communication ports main CPU module
- Demodulated IRIG-B input integrated in the CPU module
- Single or redundant power supply module
- Up to 6 serial and 2 Ethernet communication ports CPU extension module
- 16 digital inputs & 8 digital outputs extension module
- 16 digital inputs & 16 digital outputs with common polarity extension module
- 16 digital inputs & 7 converter analog inputs extension module
- 32 digital inputs extension module
- 1 x 5 plastic or glass fibre optic hub extension module

- **Maximum UCS capability:** All UCS are equipped by one CPU module and one power supply module. Additionally, in 4U housing up to 6 extension modules of the inputs & outputs type, fiber optic hubs or CPU are admitted*. 5U housing can be equipped with up to 2 CPU modules and 6 digital & outputs or fiber optic hub boards.
  *Only one secondary CPU extension card or Multitrans is admitted per UCS. Any other cards combinations is possible.

- **Communication ports connections:**
  Serial ports: RS232, RS485, GFO, PFO
  Ethernet ports: RJ45, GFO

Communication Protocols

UCS supports all the commonly substation applied standard communications protocols as:

- IEC 60870-5-101
- IEC 60870-5-103
- IEC 60870-5-104
- DNP3.0
- Modbus
- PROCOME

Note: Other protocols can be considered under demand.

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