

INGESAS

IC3

Substation Control Unit

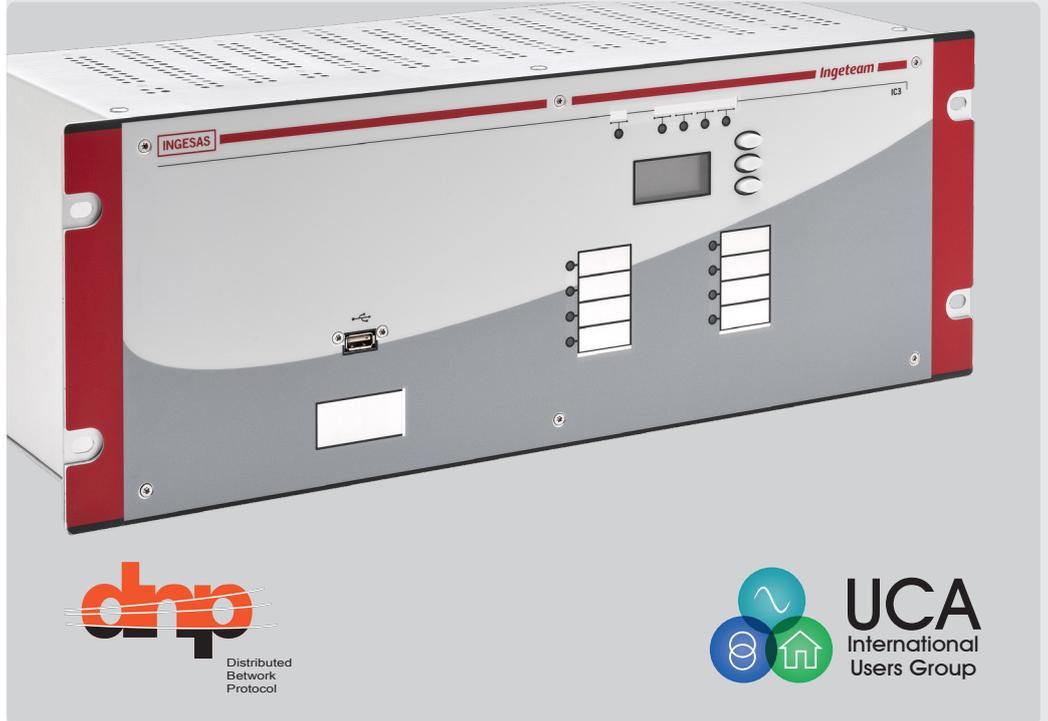


Software

All the equipment in the INGEPAC™ family can be accessed using powerful software tools developed by Ingeteam and which run on Windows®.

The application software is specifically designed for simple and user-friendly access to the equipment.

INGESYS EFS



INGESAS™ IC3 consists of a high-performing gateway designed for **substation environments**, providing **high reliability and availability** thanks to the various redundancy mechanisms that it offers.

Its main functions are as follows:

- **Collects** all the substation **information** (alarms, states, measurements, counters, etc.) and **sends** it to different control centres, following telecontrol standards.
- **Receives commands** and set points from different telecontrol centres and transmits them to the corresponding IEDs.
- Performs **general logic operations** at substation level, receiving the necessary information from the IEDs at bay level.
- These logic operations are developed using **IEC61131-3 compliant tools**.
- It provides the most recent **cybersecurity** features such as: firewall, cryptographic techniques, role-based access, user accounts control...
- Acts as a **synchronisation pattern** for all the devices connected to the communications network via the Sntp protocol.

Substation Automation

INGESAS™ IC3 is able to manage the following **communication protocols**:

- **IEC 61850** Client and Server
- **IEC 61400-25** Client and Server
- **IEC 60870-5-101** Master and Slave
- **IEC 60870-5-104** Client and Server
- **IEC 60870-4-103** Master
- **DNP 3.0** Master and Slave
- **MODBUS RTU / TCP** Master and Slave
- **PROCOM** Serial / TCP Master

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Ingeteam

Insulation and Electromagnetic

· Dielectric withstand	IEC 60255-27
· Insulation resistance measurement	IEC 60255-27
· Impulse voltage	IEC 60255-27
· Electrostatic discharge immunity	IEC 61000-4-2
· Radiated radiofrequency electromagnetic field immunity	IEC 61000-4-3
· Electrical fast transient/burst immunity	IEC 61000-4-4
· Surge immunity	IEC 61000-4-5
· Immunity to conducted disturbances, induced by radiofrequency fields	IEC 61000-4-6
· Power frequency magnetic field immunity	IEC 61000-4-8
· Impulse magnetic field immunity	IEC 61000-4-9
· Damped oscillatory magnetic field immunity	IEC 61000-4-10
· Ripple on DC input power port	IEC 61000-4-17
· Damped oscillatory wave immunity	IEC 61000-4-18
· Voltage clips, short interruptions and voltage variations immunity	IEC 61000-4-29
· Power frequency immunity	IEC 60255-22-7
· Withstand to radiated electromagnetic interference from transceivers	IEEE 37.90.2
· Measurements of radiated and conducted radiofrequency disturbances	EN 55022

Climatic

· Cold	IEC 60068-2-1
· Dry heat	IEC 60068-2-2
· Change of temperature	IEC 60068-2-14
· Damp heat, cyclic	IEC 60068-2-30
· Damp heat steady	IEC 60068-2-78
· External protection level	IEC 60529

Mechanical

· Vibrations	IEC 60255-21-1
· Shock and bump	IEC 60255-21-2
· Seismic	IEC 60255-21-3

Advantages

- Can be configured with IEC 61850 compliant tools
- One single device makes it possible to centralise all of the information for different main telecontrol centres, whilst also managing different protocols
- The information sent to each telecontrol centre can be configured
- Logic programming is carried out using IEC 61131-3 compliant tools
- Allows redundancy in devices, communications and power supply improving the system's overall availability
- Easily expandable database, being possible to add new IEDs to the system simply and securely
- Provides an embedded HTML5 web server, all the information recollectored from the IEDs and INGESAS™ IC3's information can be shown in user's defined panels that can include graphical dynamic objects, historical event list and alarm management
- Different mechanisms for accessing to the information: front USB port, sFTP or HTTPS
- All access follows cybersecurity standards and requires user identification
- The device incorporates a firewall functionality through which any port communications can be blocked

Basic features

- 4 Ethernet ports, 2 individual and 2 switched with 2 inlets each (6 connectors)
- 2 RS232/RS485 serial ports
- Synchronization through IEEE1588, IRIG-B input, SNTP or telecontrol protocols
- USB front port
- Alphanumeric display
- 11 signalization LEDs, plus 5 status LEDs

Options

- PRP/HSR redundant network connection module
- RS232/RS485 or Fibre Optic serial ports up to 21
- Redundant power supply
- Digital input / output modules, up to 56 inputs and 21 outputs

