

RTU587

- Wide application range, from a few tens signals to thousands.
- Modular hardware, based on RS485 networks.
- Connectivity, 12 RS232, up to 2 ethernet.
- Modular software.
- Gateway function.
- Concentrated or distributed assembling.
- SOE ability.
- PLC ability.
- Local or remote administration.

Hardware properties

- Extensive autotest ability including: watchdog, software and hardware module supervision, etc.
- Power supply and communications redundancy.
- Digital inputs with a resolution of 1 ms, SOE function.
- Very reliable because of the low quantity of parts.
- Very easy maintenance.
- Very low time needed for reparation.

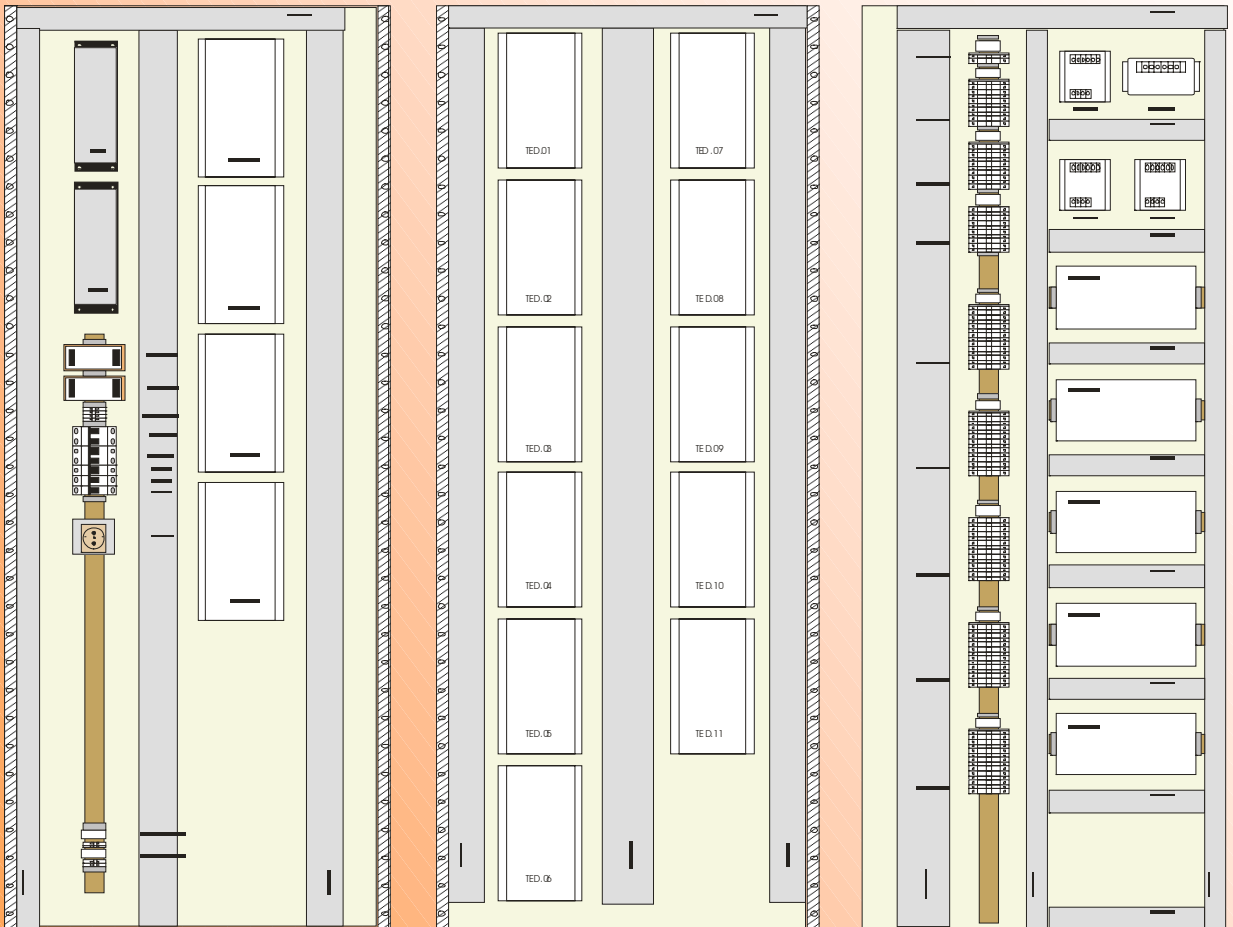
Properties related with the software

- Standard real time operating system very reliable.
- Software formed by independent removable modules.
- Local or remote administration based on Windows by TCP/IP.
- Gateway function for slave equipment, IED, with serial communication in multiple protocols.
- Simultaneous communication with multiple control centres with multiple protocols.
- PLC ability according to standard IEC 61131, that allows the integration of new functions by the user and facilitate the actualisation.
- Master ability for another RTU.
- Ability to synchronise the time with GPS or by protocol.

Assembling

- Apt to be assembled and maintained by integrating companies in new or recycled existing enclosures.
- Extremely simple assembling over trays with components that form local data networks.
- Admit concentrated or distributed structures.
- Very apt to reconfigure increasing or decreasing its own capacity because of the non-necessity of special hardware like sub-racks, back planes, etc.
- It doesn't require intermediate terminals or cabling associated with the digital inputs and outputs.

Assembling plan

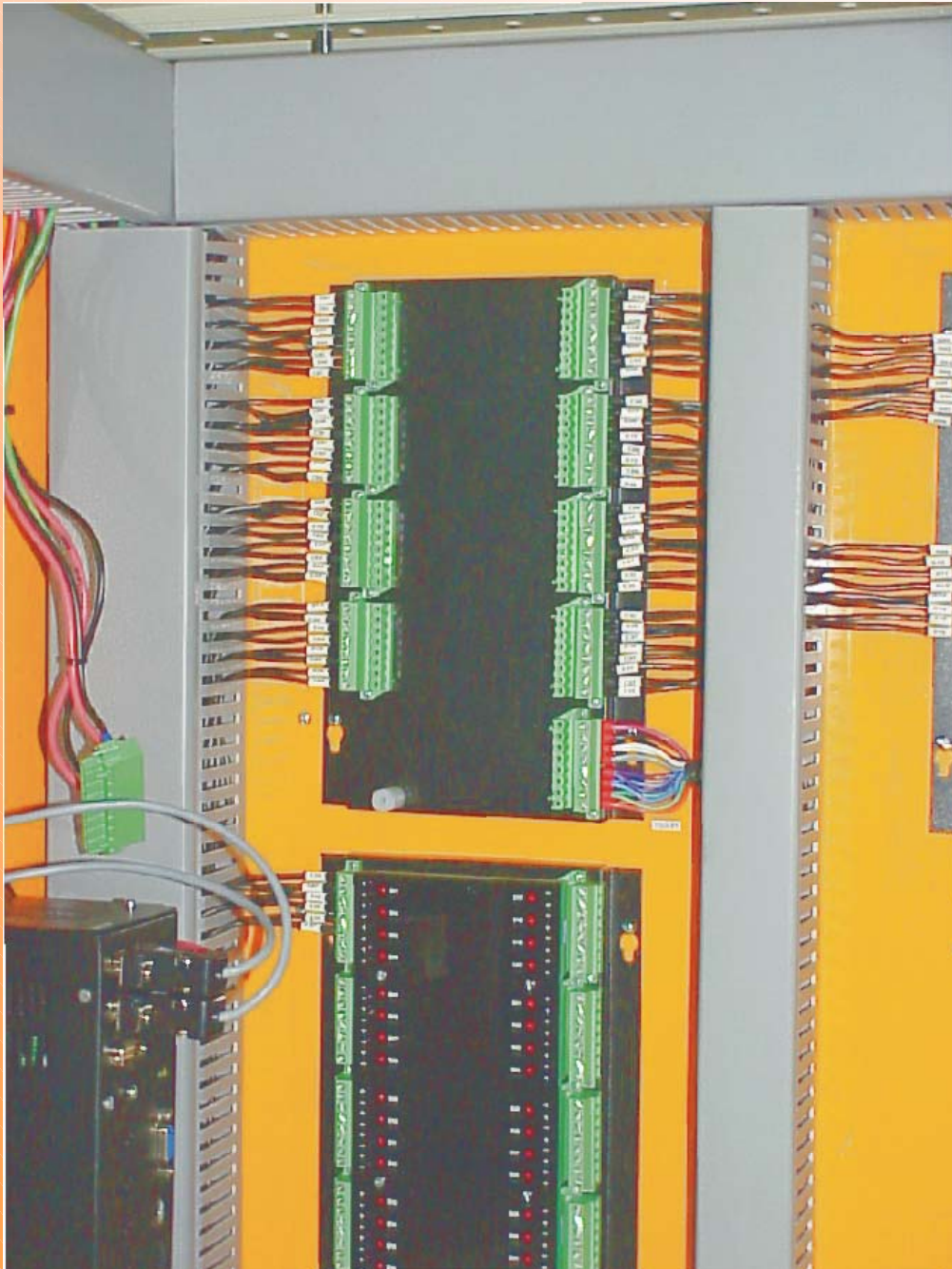


0.80 x 0.80 x 2.00 m enclosure with three trays

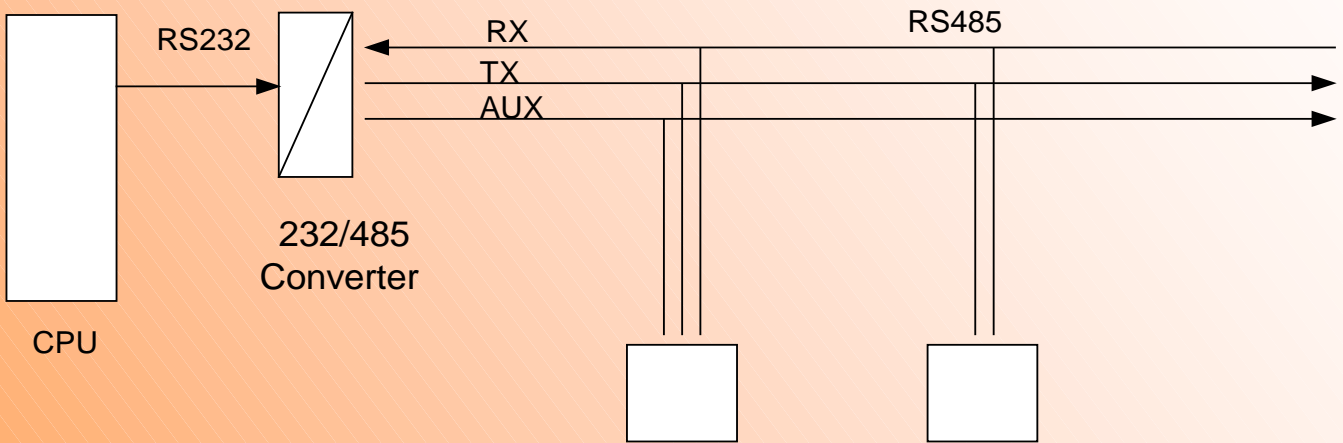
Cabled TED32



TED32 cabled base



Internal bus circuit



Characteristics:

- 9600bps
- Up to 16 devices

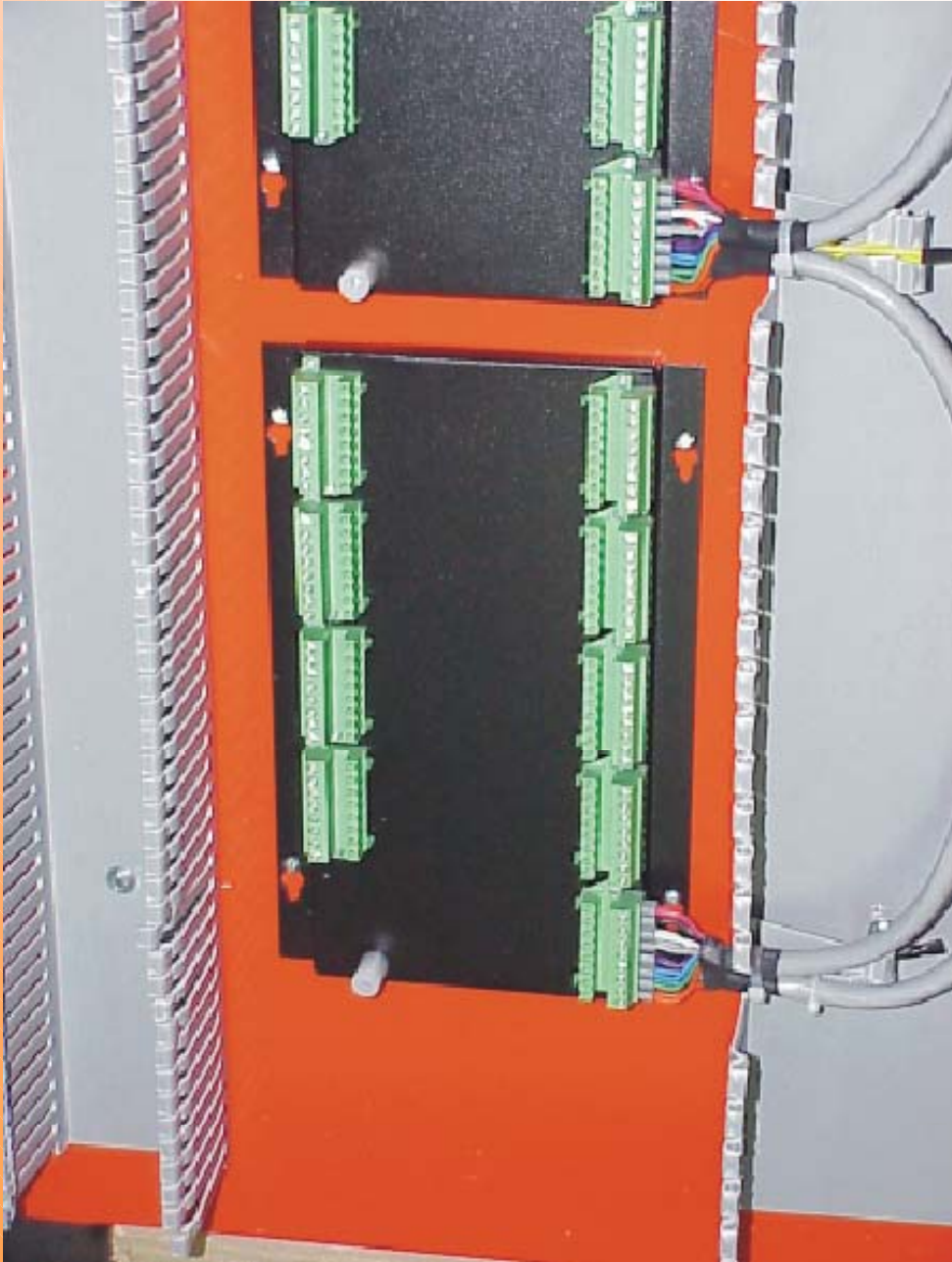
Synchronisable
peripherals

TED32,
Subrack
supervisor

Non
synchronisable
peripherals

TSR16
TEA8A
TIN521
TSA4
TEA02

TED32 base with power supply and communications cables



CPU

- Model: CPURTU
- Totally of solid state without mobile parts.
- Very low consumption and single power supply.
- Based on a PC104 bus, that allows to expand it with normal market cards.
- Static RAM memories in socket, extendable.
- 4 or 12 communication ports.
- One or two ethernet ports.
- Assembling over panel.
- Watchdog.

Digital inputs 1

- TED32 card with 32 digital inputs.
- Configurables in fabric for 48, 110, 125, 220 Vdc.
- Insulated with opto couplers, respect the usual insulation standards.
- SOE quality for all digital inputs, 1 ms resolution.
- Logger quality or data storage, with memory for 200 events with time stamp.
- Each input could be configurable as simple, double or meter.
- Hot Plug or recharge on service, that facilitate the maintenance.

Digital inputs 2

- Two parts presentation, passive base with frontal terminals and active part with electronic that is connected to the base.
- Decrease the required space and increase the reliability because it doesn't need terminals and intermediate external cables.
- Both poles of each input are available in the terminal, allowing diverse cable configuration.
- Filters: RC and software.
- Signalling by relay led.

Digital outputs

- TSR8 and TSR16 cards with 8 and 16 digital outputs.
- High power relays, eliminate intermediate relays , 5A @ 125 Vdc.
- Actuation by pulse or state.
- Configurable pulse duration.
- Consumption bobbin supervisor to prevent simultaneous actuation.
- Group actuation relays, for example by two to open and close a circuit breaker.
- Decrease the required space because it doesn't need external terminals or additional relays.
- Increase the reliability because of the decrease of the cabling.
- Both poles of each relay available in the terminal allowing different configuration cabling.
- Filter by varistor.
- Signalling by relay led.

Analog inputs

- Cards
 - TEA02 with 16 non insulated inputs
 - TEA8A with 8 insulated inputs
- TEA02 and TEA8A are factory configurables for diverse signal types.
- Resolution
 - TEA02 11 bits and sign
 - TEA8A 12 bits
- Conversion each 100 ms.
- Filter combined in hardware and software.
- The TEA8A is presented in two parts, passive base frontal terminals and active part with electronic that is connected to the base.

Direct analog inputs

- TIN521 card
- Transducer integrated with
 - 5 direct inputs of current 5 A
 - 2 direct inputs of tension 120 Vac
 - 1 input 4 to 20 mA
- The TIN521 is designed to be connected directly to the measurement transform secondary.
- Substitutes the separated transducers eliminating the necessity of two conversion stages of the signal.
- Decreases the assembling costs, cabling and maintenance.
- Decreases the required space.
- Increases the reliability.
- Combined filter of hardware and software.
- Provides galvanic insulation required by standards.

Analog outputs

- TSA4 card
- Number of analog outputs: 4
- Type: 4 to 20 mA
- Galvanic insulated
- Resolution: 16 bits
- Connection in data bus RS485 with the CPURTU
- To assemble at the back of the panel
- Two analog outputs terminals available
- Two parts presentation, passive base with frontal terminals and active part with electronic that is connected to the base.

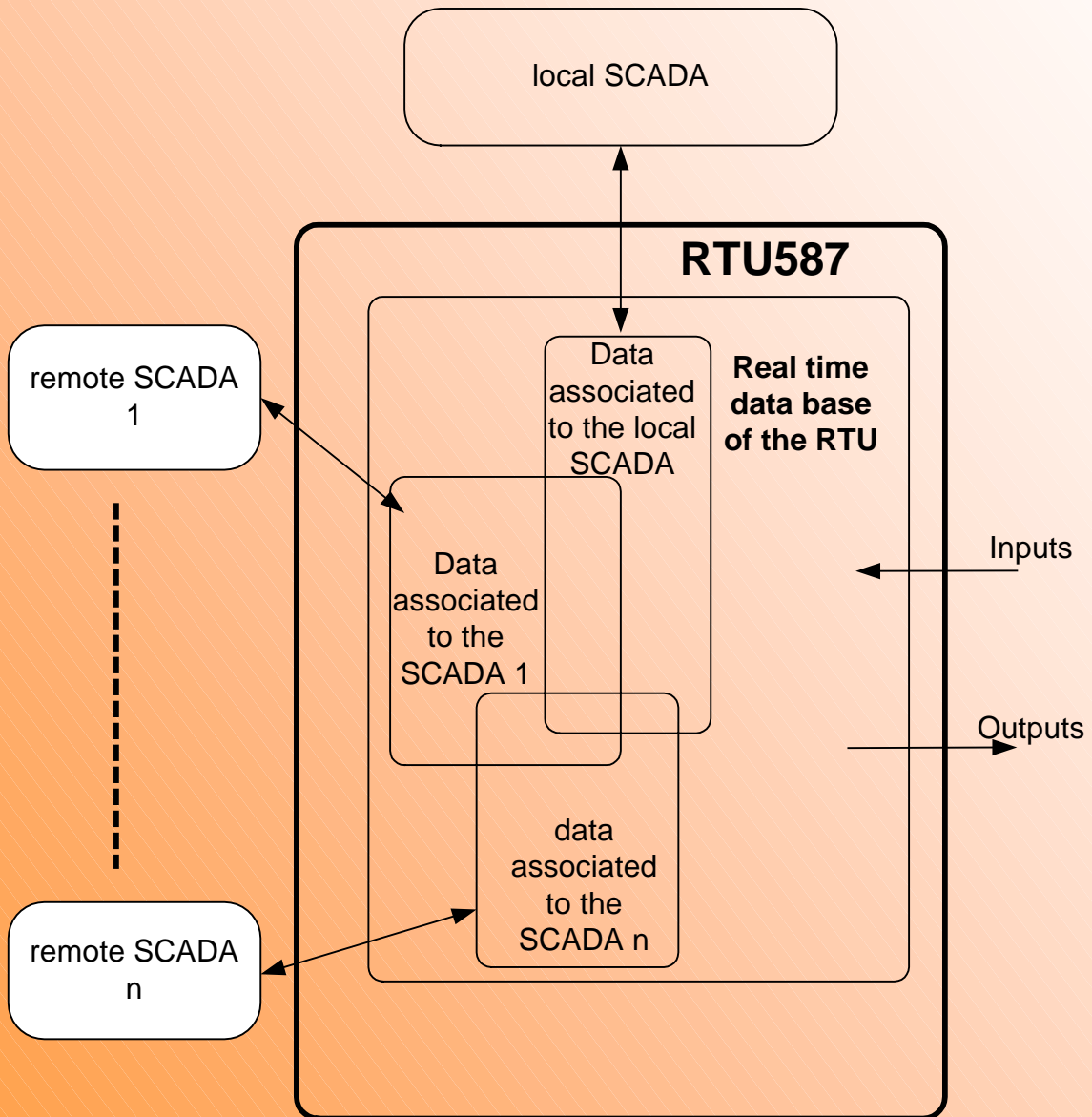
Power and energy measures

- Admit the internal integration of power multifunction transducers.
- These transducers measure:
 - Active and reactive power
 - Currents and voltages
 - Active and reactive energy
 - Frequency
- Some models allows the harmonic measure.
- They are connected directly to the secondary of the measure transformers.
- Substitute the separated transducers eliminating the necessity of two stages for the conversion of the signal.
- Decrease the assembling costs, cabling and maintenance.
- Decreases the required space.
- Increase the reliability.
- Provide the galvanic insulation.

Administration

- Local or remote
 - Local from a common or portable PC
 - Remote by a serial link or ethernet network
- Properties of the remote administration
 - It has the same administration facilities that it has a PC that is contiguous to the RTU.
 - It allows to establish a control centre for maintenance where it could administrate all the RTU587 in the network
 - It allows actualise the software at distance
 - It is possible to diagnose the events or faults at distance
 - Allows to organise the reparations, disposing a diagnosis after the fault
 - An unique program to administrate all the modules.

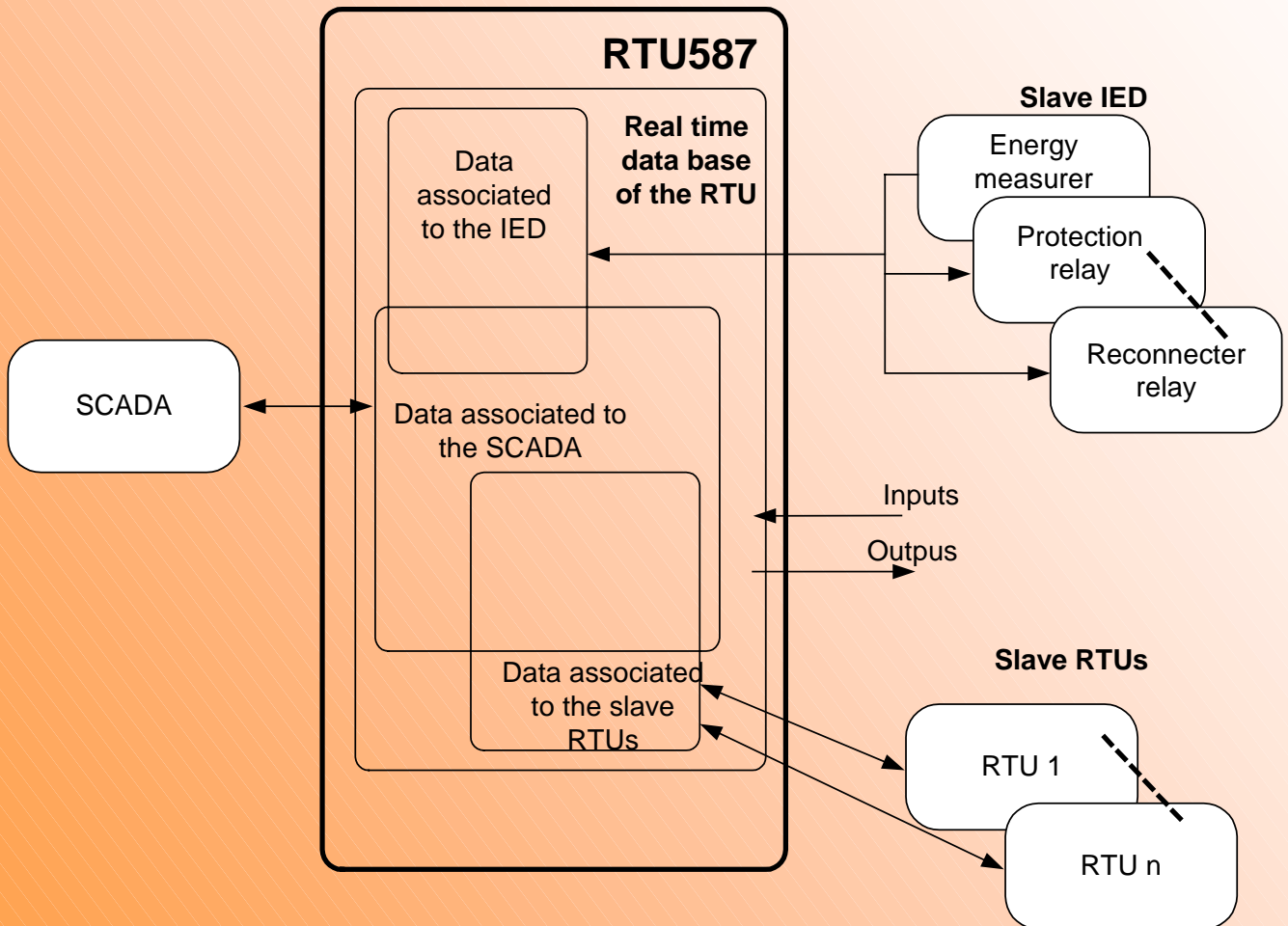
RTU virtual property



Applications of the RTU virtual function

- RTU that reports to two independent SCADA for example, one of distribution and other of transmission.
- Local SCADA to operate from the site, substituting the traditional panel.
- The communications with the different SCADA could be by different protocols and simultaneous channels.
- The number of SCADA that the RTU reports, is limited by the number of available ports.
- The data of the data base of the RTU could adjudicate to all the SCADA that are necessary, taking into account the possible command collisions.

Gateway property or communications node

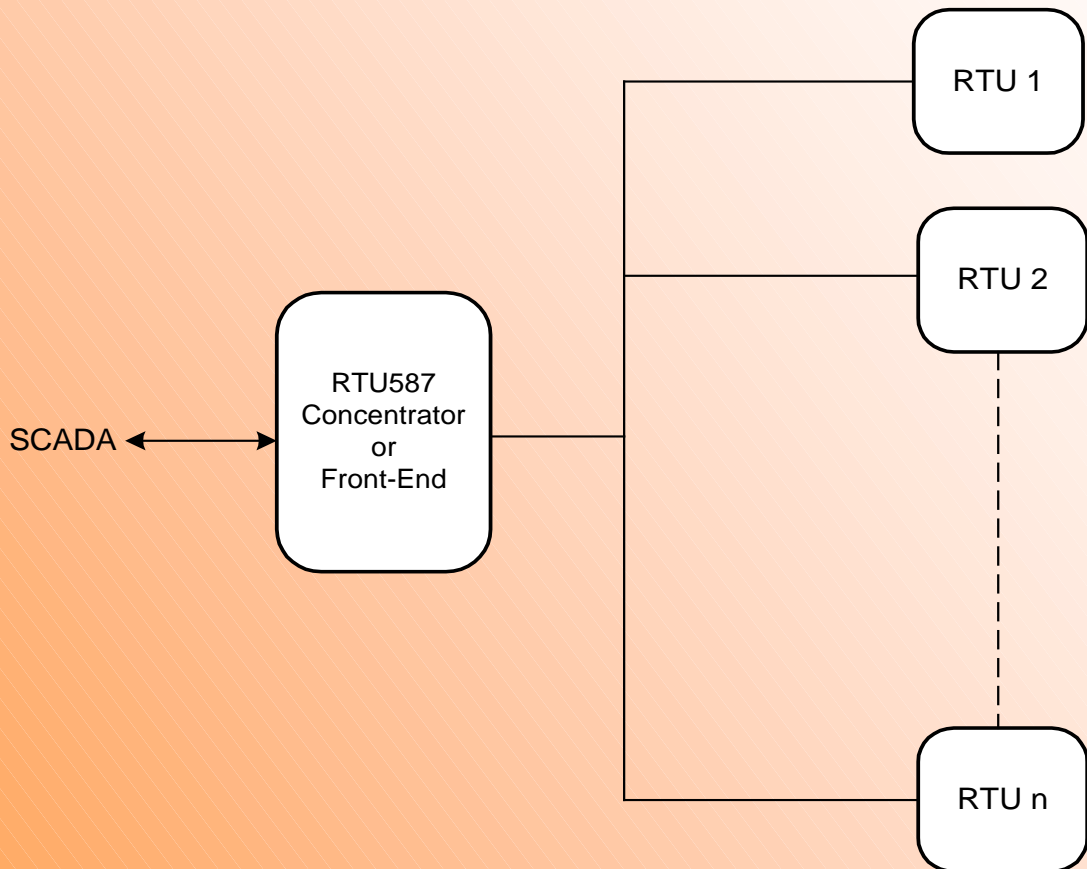


Applications of the gateway function

- **Applications**

- To communicate the SCADA with the IED of the station with different protocols and means
- Equipment that could be connected
 - Distance relays, protection, reconnectors
 - Voltage regulators
 - Reactive controllers
 - Energy measurers
 - Other equipment with communication port
- Better use of the communication channels of long distance placing a RTU as a concentrator of other close RTUs.
- Establish a communication ranked network.
- The number of networks and slave equipment is limited by the number of available ports.

Concentrator function



Applications:

- Concentrate in a link the signals of multiple RTUs
- Works as a Front-End of a Scada system.

PLC ability

- MSPLCRQ module
- Allows to execute programmed process by the user.
- Allows to add qualities to the RTU software
- According to standard IEC 61131.
- Withstands the 5 languages of the standard.
- It is presented in two modules: development system and run time.
- The routines are saved in Flash Eprom.
- Typical applications: interblockades, voltage control, accumulation of circuit breaker shots for maintenance, alarm association.