



USC3000

REMOTE TERMINAL UNIT

Remote Terminal Units (RTU's) for the remote control of industrial process.

GENERALITIES

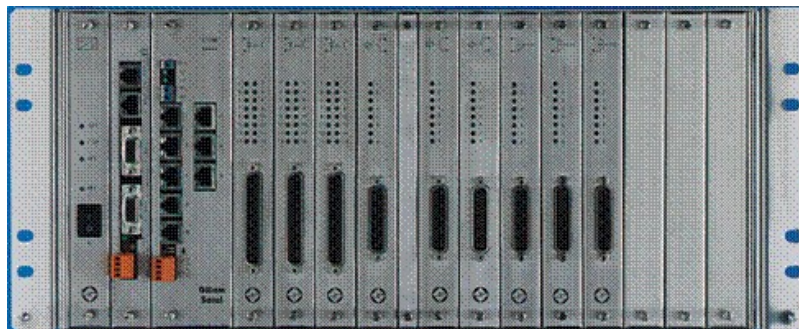
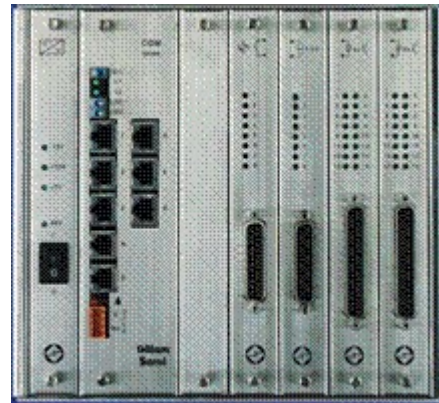
The USC-3000's are Remote Terminal Units (RTU's) dedicated to the remote control of industrial processes.

The USC-3000's are designed around a powerful main CPU card driving a set of Input/Output cards.

The system is modular. It is offered in 19" or half 19" chassis with a height of 5 DIN Units.

In the basic 19" rack configuration, the maximum number of points handled is 224 (DI's only). The average capacity depends on the relative quantities of I/O types required. For instance, a single rack can accommodate an average mix such as 128 simple DI's, 32 simple DO's and 16 AI's, yielding a total of 176 points.

For more demanding requirements, the basic one rack configuration can be extended significantly by chaining a number of identical racks, in a parent/child configuration.





The Main CPU Card

The main CPU card has a high processing power, with its IXP425 processor, 32 Mbytes of Flash, 64 Mbytes of SDRAM, 4 RS-232 lines (2 with RS-485 capacity).

Another level of connectivity is offered through two independent 10Base-T, 100Base-T network links, and one USB device port.

The main CPU card is responsible, amongst others, for the management of the internal bus, for data processing (automates, archiving, periodic tests,..).

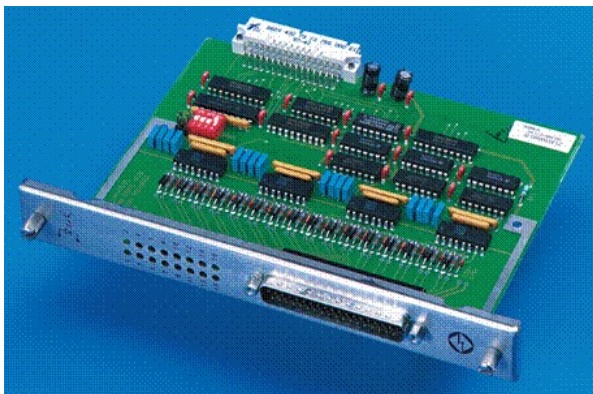
It is also in charge of the communication with the Control Center and external devices via serial buses, or LAN connections.

Time synchronization may be achieved through NTP.

Various software protocols are available,

Digital Inputs Card (DI)

The DI card is used for the acquisition of input signals necessary to the management of the process under control by the Control Center.



such as :

- From RTU to control center server
 - ◆ Serial Port Server
 - ◆ Telegam (GILLAM protocol)
 - ◆ CEI 870 / USC 3000 (GILLAM protocol)
 - ◆ RP570
 - ◆ CEI870-5-101 (RS-232)/104(TCP-IP)
- Engineering operations
 - ◆ Telnet : remote configurations
 - ◆ TFTP
- From RTU to substation local equipment
 - ◆ JBUS/MODBUS
 - ◆ CEI870/USC-3000
 - ◆ CEI870-5-103

The DI input cards may be indifferently used for reading simple signalizations, double (complementary) signalizations, binary coded analog values and the acquisition of counting (totaling) pulses.

All DI's are isolated from each other, from ground and from any RTU voltage through opto-isolators.

Each card offers 16 simple DI's. Input voltages are 12Vdc, 24Vdc or 48Vdc. Nominal current is 6 mA.



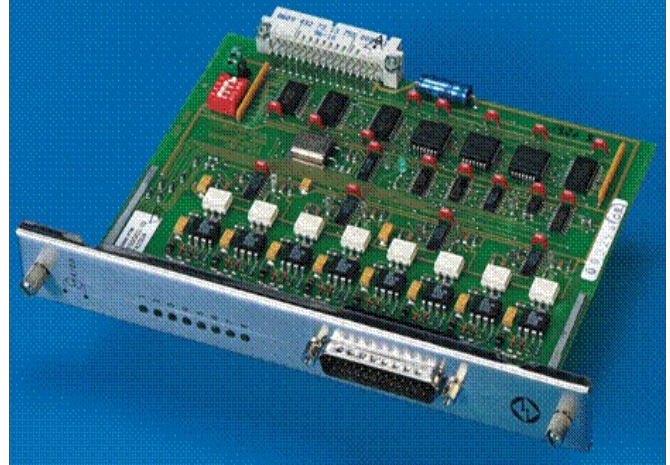
Self Monitored Digital Inputs Card (SMDI)

The SMDI card is used for the acquisition of input signals necessary to the management of the process under control by the Control Center, where surveillance of the wiring needs to be performed.

Compared to a standard DI, the SMDI performs the monitoring of the cable state. It checks for normal, short or open circuit situations.

Each card offers 8 simple SMDI's. They require the use of a special adapter located near the contact to be read.

All SMDI's are isolated from each other, from ground and from any RTU voltage through opto-isolators.

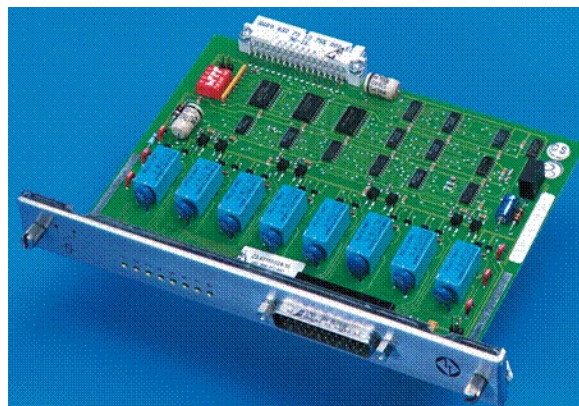


Digital Output Card (DO)

The DO cards are used to transfer the commands from the Control Center to the process under control.

These outputs are either permanent or momentary (pulse), on monostable or bi-stable relays. A secured process is set to work by the microprocessor of the main CPU card and dedicated logic on the I/O card to make sure that the right relay is activated.

Each output offers Common/NO contacts. All outputs are fully free of any potential, and varistor protected.



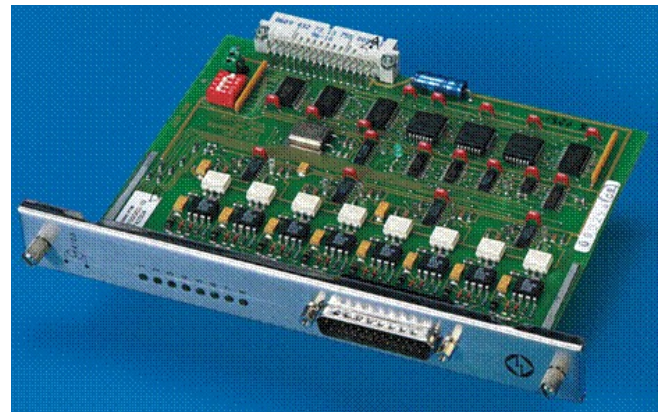


Analog Input Card (AI)

The AI cards are used to return to the Control Center the value of analogue measurements of the process under control.

The card offers 8 analogic inputs, 4 - 20 mA , 0.5 %.

All AI's are isolated from each other, from ground and from any RTU voltage through opto-isolators.



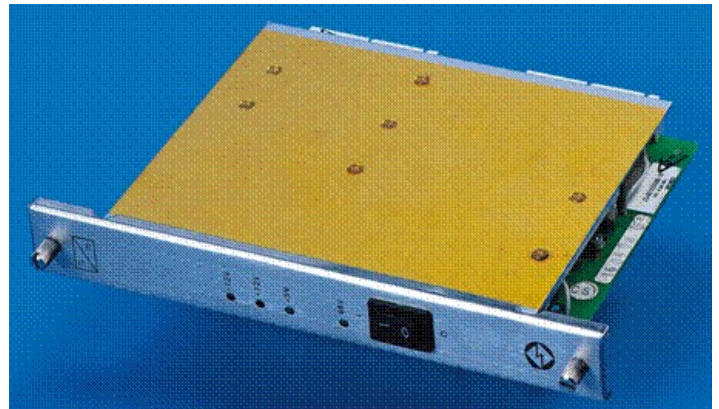
Power Supply Card

Input voltages supported :

- 40 to 60 Vdc
- 90 to 140 Vdc
- 190 to 250 Vac

Power : 20 W

Redundancy (option) : Splitting of the modules with load sharing





USC3000 SPECIFICATIONS

½ 19" shelf

| | |
|--------------------------|-----------------|
| Dimensions (lxhxd) in mm | 243x200x200 |
| Material | Stainless steel |
| Number of slots | 8 |

19" shelf

| | |
|--------------------------|-----------------|
| Dimensions (lxhxd) in mm | 486x200x200 |
| Material | Stainless steel |
| Number of slots | 16 |

Power supply card

| | |
|--------------------------------------|-----------------------|
| Input voltage range for 48Vdc type | 40 to 60 Vdc |
| Input voltage range for 110Vdc type | 90 to 140 Vdc |
| Input voltage range for 230Vac range | 190 to 250 Va |
| Power consumption | <20 Watts |
| Internal voltages | +5Vdc; +12Vdc; -12Vdc |

CPU card

| | |
|---------------------------|---|
| Processor | Intel IXP425 |
| Frequency | 266 MHz |
| SDRAM Memory | 64 MB |
| FLASH Memory | 32 MB |
| Integrated logic | Real-Time clock/calendar, watchdog, reset, alarm |
| Ethernet ports | 2 independent 10/100 Base-T ports |
| Serial Line #1 | RS-232 (or integrated modem) |
| Serial Line #2 | RS-232 |
| Serial Line #3 | RS-232 or RS-485 non isolated fieldbus |
| Serial Line #4 | RS-232 or RS-485 non isolated fieldbus or Time Of Day |
| USB port | 1 for configuration PC |
| Optional integrated modem | PSTN or leased line : V22bis, V23bis, V34, V92 |



USC3000 SPECIFICATIONS

DI card

| | |
|----------------------|---------------------|
| Quantity (per card) | 16 |
| Voltage types | 12Vdc, 24Vdc, 48Vdc |
| Current consumption | 6mA |
| Filter delay time | 24 msec |
| Connector type | SUBD-37 male |
| Dielectric isolation | 2 kV |

SMDI Card

| | |
|-----------------------------------|---|
| Quantity (per card) | 8 |
| Standard operating voltage | 48Vdc Other values on request |
| Dielectric isolation | 2kV |
| Current Levels for discrimination | 0-4 mA default (cable open) 4-7 mA DI Off 7-16 mA DI On 16-20 mA default (short circuit) |
| Connector type | SUBD-25 male |

DO Card

| | |
|---------------------------|--|
| Quantity (per card) | 8 |
| Contact type | NO |
| Maximum switching current | 2A |
| Breaking voltage | 60Vdc 0.5A 24Vdc 1A 0.5A 120 Vac resistive |
| Connector type | SUBD-25 male |
| Dielectric strength | 1500 Vac between coil and contact |

AI Card

| | |
|---------------------------|---------------------------------|
| Quantity (per card) | 8 |
| Dielectric strength | Opto-coupler isolation (2kVrms) |
| Current range | 0...4mA to 20mA |
| Minimum operating voltage | 5.8V@4mA |
| Maximum operating voltage | 7V@20mA |
| Precision class | 0.5% |



USC3000 SPECIFICATIONS

Environmental conditions

| | |
|-------------------|------------------------------|
| Temperature range | -20 to +70°C |
| Humidity | 90% relative, non condensing |

Applicable standards

| | |
|-----------------|--|
| EN60950 | Safety of information technology equipment |
| EN55011 Class A | Conducted emission |
| EN55011 Class A | Radiated emission |
| IEC 61000-4-2 | ESD Immunity |
| IEC 61000-4-3 | Radiated immunity |
| IEC 61000-4-4 | Fast transients immunity |
| IEC 61000-4-5 | Surge immunity |
| IEC 61000-4-6 | Conducted immunity |