Datasheet TeleController TC102

The TC102 is a TeleController in a series of Remote Terminal Units (RTU) that Inter Act has developed for telemetry over internet. The TC102 can be used as stand-alone controller or can be connected to a private and secured (remote) SCADA domain in TeleControlNet.

TeleControlNet.nl is a Software as a Service (SaaS) for WEBscada and WEBmes applications.

The TC102 is a combination of a Programmable Logic Controller (PLC) and a generic computing platform with onboard 2G/3G-modem for (wireless) data communication.

The TC102 is an solution for process control, data acquisition and remote access via internet or TeleControlNet. It benefits from the combination of a PLC function and flexible computing power with data storage capability.

PLC module
The TC102 contains a full-function PLC, with onboard I/Os. The TC102 is specifically designed to control small processes and machines and to perform simple-to-medium automation tasks. Compact and economical, the TC102 enables you to use a low-budget unit without compromising on features and technology. The TC102 offers the flexibility of Ladder programming (48K Ladder code, virtual) and onboard I/O configurations.

Computing module
The embedded computing module consists of an ARM9 generic computing platform and various communication options. It performs tasks such as data storage, mini webserver interface and (wireless) communications. The TC102 contains configuration software enabling connection to TeleControlNet. The connection with TeleControlNet can be realized via a wireless mobile 2G/3G APN network or any wired network connection. TeleControlNet is an internet SCADA/MES SaaS for remote process data collection, data registration and data presentation. As well as a remote web-based HMI user interface to control the process from wherever there is internet access.

Tasks

The TC102 performs five major tasks:

1. It stores process data locally.
2. It allows remote users to control the local process.
3. It controls and monitors local processes and machines.
4. It synchronizes the central TeleControlNet database with the local data.
5. It sends process alarms in real time to TeleControlNet and from there it can send an alarm message as e-mail or sms.

▶ Main features

- Dedicated Programmable Logic Controller with digital and analog I/O.
- Intelligent 2G/3G/ethernet router.
- Large local data buffer (> 10 million data records, incl. date- and timestamp).
- Flexible and powerful computing power.
- Mountable on a 35 mm DIN rail.
- Applicable in PLC-controlled systems, such as an HMI (WEBscada) terminal.
- Capable of standalone operation.
- Cost-efficient solution for e.g. one- or two-pump installations.

▶ Specifications

Supported frequency bands
- GSM/GPRS/EDGE: 850/900/1800/1900 MHz
- UMTS/HSDPA/HSUPA: 800-850/900/1900/2100 MHz (B1, B2, B5, B6, B8)

Max connectivity speeds
- GSM: 14.4 Kbps DL/14.4 Kbps UL
- GPRS: 85.6 Kbps DL/85.6 Kbps UL (class 12)
- EDGE: 236.8 Kbps DL/236.8 Kbps UL (class 12)
- UMTS: 384 Kbps DL/384 Kbps UL
- HSDPA: 14.4 Mbps (Cat 10) downlink speed
- HSUPA: 5.76 Mbps (Cat 6) uplink speed
- HSPA+ Rel 7 SW features CPC (DTX/DRX), HS-SCCH-less operation, Enhanced CELL_FACH, Enhanced L2, EF-DPCH

Max RF output power
- Power Class 4 (2 W, 33 dBm) for GSM/GPRS 850/900 MHz bands
- Power Class 1 (1 W, 30 dBm) for GSM/GPRS 1800/1900 Mhz bands
- Power Class E2 (0.5 W, 27 dBm) for EDGE 850/900 MHz bands
- Power Class E2 (0.4 W, 26 dBm) for EDGE 1800/1900 MHz bands
- Power Class 3 (0.25 W, 24 dBm) for UMTS 850/900/1900/2100 MHz bands

Standalone GPS
- Wideband GPS receiver

Interfaces
- 1 x 2G/3G antenna
- 1 x GPS antenna
- 1 x 10/100 Mbps Ethernet
- 1 x USB 2.0
- 1 x microUSB/USB 2.0 (shared)
- 1 x SIM card
- 1 x SD card
- 1 x microSD card

Dimensions (h × w × d)
- Height: 119 mm (4.7")
- Width: 105 mm (4.1")
- Depth: 60 mm (2.5")

Weight
- 360 g

Supply voltage
- 20.4 VDC to 28.8 VDC (max. 10% ripple)

Supply current
- 290 mA @ 24 VDC, ~ 7 W, external 0.5 A fuse required

Environmental
- Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
- Storage temperature: -20 °C to 60 °C (-4 °F to 140 °F)
- Relative humidity (RH): 10% to 95% (non-condensing)
- Mounting method:
  - DIN rail mounted (IP20/NEMA1)

Digital inputs

- Number of inputs: 18 (two groups)
- Input type: pnp (source) or npn (sink)
- Galvanic isolation: None
- Input voltage:
    - pnp (source): 0-5 VDC for Logic '0'; 17-28.8 VDC for Logic '1'
    - npn (sink): 17-28.8 VDC for Logic '0'; 0-5 VDC for Logic '1'
    - I0-I15: Input current 3.7 mA @ 24 VDC - Response time 10 ms typical
    - I16-I17: Input current 1.2 mA @ 24 VDC - Response time - 20 ms typical
- Input cable length: Up to 100 meters, unshielded
- High speed inputs (specifications below apply when wired as H.S.C)
    - Frequency - 10 kHz maximum
    - Minimum pulse width - 40 µs

Digital outputs

- Number of outputs: 11 relay (in two groups)
- Output type: SPST-NO (Form A)
- Isolation: By relay
- Type of relay: Tyco PCN-124D3MHZ or compatible
- Output current: 3 A maximum per output (resistive load); 8 A maximum total for common
- Rated voltage: 250 VAC / 30 VDC
- Minimum load: 1 mA @ 5 VDC
- Life expectancy: 100k operations at maximum load
- Response time: 10 ms (typical)
- Contact protection: External precautions required

Analog inputs

- Number of inputs: 4
    - AN0 and AN1: Input range 0-20 mA, 4-20 mA; Input impedance 154 Ω; Maximum input rating 30 mA
    - AN2 and AN3: Input range 0-10 VDC; Input impedance 20 KΩ; Maximum input rating 28.8 V
- Galvanic isolation: None
- Conversion method: Successive approximation
- Resolution: 10-bit (0 to 1023)
- Conversion time: All analog inputs are updated every 8 PL scans, regardless of how many inputs are actually configured
- Precision: ± 2%
- Status indication: Yes, if an analog input deviates above the permissible range, its value will be 1024
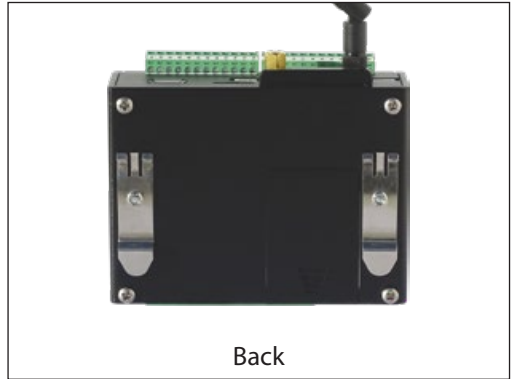- Input cable length: Up to 30 meters, shielded twisted pair

Program
- Ladder code memory: 48K (virtual)
- Execution time: 1.5 ms for bit operations (typical)
- Memory bits (coils): 256
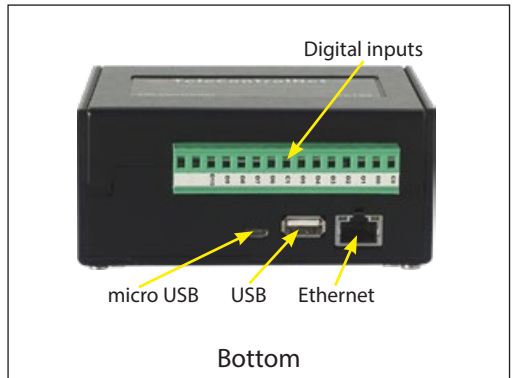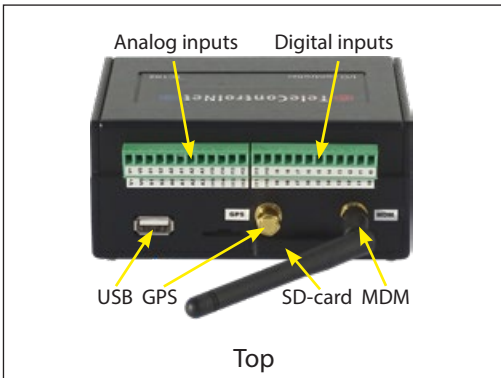- Memory integers (registers), 16 bit: 256
- Timers: 64

Miscellaneous
- Clock (RTC): Real-time clock functions (date and time)
- Battery back-up: 7 years typical at 25 °C, battery back-up for RTC and system data, including variable data

Views

In perspective

Back

Connections

Analog inputs   Digital inputs

USB GPS   SD-card MDM

Top

Digital inputs

micro USB   USB   Ethernet

Bottom

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