TRMC-18 GSM/GPRS AND RADIO DATALOGGER/ DATACONCENTRATOR

TETRAEDRE has developed a generation of datalogger based on the GSM/GPRS technology. This device fulfills the most demanding requirements and will help you to create an effective, affordable and open remote metering network. It is programmable according to your wishes, the measures and information sent are accurate and punctual. The TRMC-18 has two important advantages : it is flexible according to your needs and it is battery operated.

Applications

- ✔ Meter statement (water, gas, electricity)
- ✔ Remote control and monitoring of facilites
- ✔ Automated billing
- ✔ Consumption management
- ✔ Leak detection
- ✔ « Live » network monitoring
- ✔ Detailed review of customer consumption
- ✔ Big consumer's meter reading
- ✔ Building's meter's reading

Product description

TRMC-18 datalogger have been developed by TETRAEDRE to fulfill the requirements expressed by energy distributors (water, gas, electricity)
The main function is to store and transmit index and load profile. Data can be transmitted either in GSM CSD (data) or GPRS. Index values and load profiles are read by the TRMC through its radio receiver.
The device is fully autonomous. Thanks to its extremely low power consumption, it can work for

years with battery (which is integrated in the device). The device is available either with Lithium battery for the highest possible autonomy or with Li-Ion accumulators to reduce the maintenance costs.
The integrated non-volatile memory can store up to several months of measurements. The TRMC stores data at regular time interval and then transmits then to the server. Thanks to several security mechanism, the communication with the server is very reliable. The data arrive directly on the server.
Tetraedre provides several software tools, including an infrastructure manager and export interfaces to other softwares (like SAP, EDM,...).

These devices are delivered in enclosures Polyester IP66.

GSM/GPRS COMMUNICATION

The TRMC is equipped with a multiband modem GSM / GPRS.

GSM Data (CSD)

The TRMC is able to communicate with a PC via the GSM CSD protocol (also named DATA). The transmission speed is not so high, but it is extremely reliable et available everywhere where the GSM network exists.
Once the TRMC's GSM modem is powered on, the device waits for incoming DATA calls.
To use the DATA mode, the device will be called by a PC equipped with a modem. The phone number of the TRMC is composed and a "point-to-point" connection is established once the PC has transmitted the required access code. The data do not travel over the Internet.
All operations (data download, device configuration,...) can be performed through the GSM data mode.
To save battery, the PC can send a GSM power-off command to the TRMC.

Automatic call
The TRMC can be configured to call the server just after the GSM power-on. This functionality reduces power consumption

GPRS

The TRMC-18 can also download data by using the GPRS protocol. In this case, the data go through Internet.
If the GPRS mode is activated, the TRMC will open an HTTP connection with the server and transmit the last data as well as a status of the device (battery voltage,....). The web server is a dynamic site, enabling to store the data in a database and can send order to the module. but also to send configurations back to the TRMC device. During establishment of the connection, the TRMC sends several authentification informations to the server (username, password,...) to protect the server.
In mode GPRS, the TRMC tries to establish two consecutive connections that improves more the reliability.

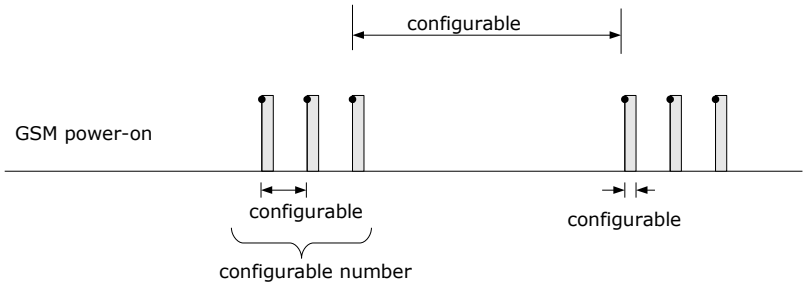
If the HTTP server did not send order of extinction of the GSM, the TRMC switches then in mode DATA and is ready to receive DATA calls. This allows to improve the reliability and to call the module if the connection GPRS did not work
Thanks to an arrangement with your telephone operator, it is possible to integrate SIM cards into your network VPN (CNA). In that case, the exchanged data are secured and your server GPRS is also protected.

Power management

The GSM modem consumes most of the energy of the TRMC, so it is switched off most of the time. Several configuration parameters define the power control of the GSM. This gives maximum flexibility.

We can settle also, the duration of the ignition and the interval between two ignitions. And we can define a number of grouped ignitions, with another interval.

It is also possible to define communication groups, increasing system flexibility and/or reliability.



For example, it is possible to configure the device so that it makes two GSM connections per day (for example at 10 am and 3 pm).

We can also, for example, configure it to switch on the GSM from Monday to Friday at 6:45 am. And this every week (that avoids ignitions Saturday and Sunday, that reduces the consumption (+40% of autonomy).

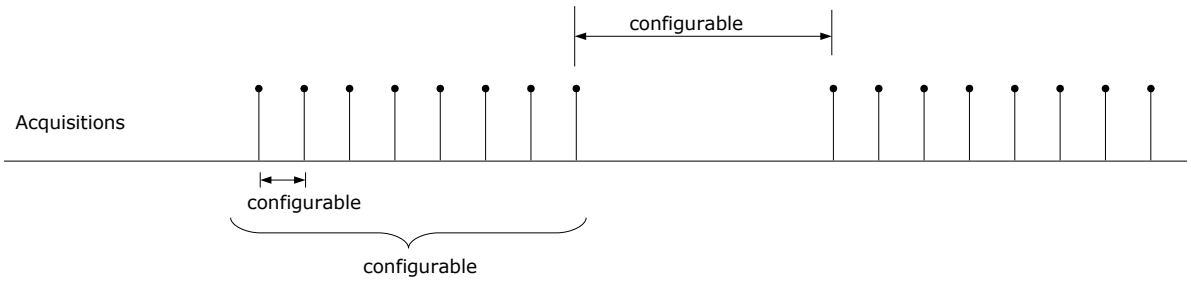
But we can also, for example, choose to use these ignition's opportunities to implement a security system of communication. We can settle adjust the system so that it switches on the GSM for example on June 1st at 03:00 am, 05:00 am, 07:00 am. And this every 30 days. Also by configuring the server GPRS (see section GPRS), it is possible to make so that if the communication did not work at 3 am, the module is going to re-try at 5 am, then at 7 am. So it retries several times.

SIM Card

The TRMC device must be equipped with the appropriated SIM card subscription (GPRS, data,...).
The SIM card's PIN code is stored inside the TRMC configuration memory and is transmitted from the TRMC to the GSM modem after it has been powered on. This increases security in case of theft (the SIM card is protected).

ACQUISITIONS-MEASURES

The TRMC can measure different parameters in a very advanced manner. It is a versatile and opened system. To perform its sequence of acquisition, the TRMC executes a kind of small program (script) stored in the device configuration. This script is very flexible.
The sequence of acquisition is started at a regular time interval (see drawing hereafter).



For example, it is possible to configure the device so that it makes one acquisition every hour (at 1:00, 2:00,..) more a special measurement at midnight.
The device can also be configured to make a measurement every six hours, for example or one measurement at 10 am, 2 pm, 6 pm and then the day after at 10 am,...

Real time clock

The TRMC has a internal clock GTM. All measurements are timestamped. When data are downloaded, we know exactly when they were made.
Usually the clock of the TRMC is up-to-date in each connection GPRS, so deleting any drift.
The progress of all the operations of the TRMC are synchronized by the internal clock. This clock works with a quartz that makes it very accurate.

INTERFACES

Radio-GWF Coder

The TRMC has a radio interface 868 MHz able of receiving the information transmitted by modules RCM-PI, RCM-PI2 and RCM-PI3 for meters (timer) GWF Coder.

The TRMC gets and saves the index value, the serial number of the meter, the position of the decimal point.

The TRMC is also able to receive and to record the "historic" values supplied by the module RCM-PI3 of GWF. It is also compatible wireless M-Bus.
We can configure a software filter to receive only some meters (max 16 meters)

Radio-XEMTEC Comet

The TRMC has a radio interface 868 MHz able to receive the information transmitted by the radio modules XEMTEC Comet.

The TRMC gets and records the profile stored in Comet. In that case, it reads the values in memory, the date and the hour of the last value of the historic, the step of measure, the serial number of Comet and the serial number of the meter (stored in Comet). It also stores a « reliable » information which indicates if there was an error during the reading of the index.

The configuration of the TRMC contains the list of Comet to read. We can define until 12 Comet.

SOFTWARE

The TRMC-18 is delivered with the software Axiom BASIC and Light Axiom. A management platform of the network of TRMC, named TDS is also available. Please consult the specific brochure of the software.

POWER SUPPLY, BATTERIES

The TRMC is powered by internal batteries. The autonomy depends on the frequency of the use of the GSM. According to the configuration, we can reach many years of autonomy.
The TRMC has an external power input which allows to save batteries if an external power is present.

The TRMC measures the battery voltage automatically a few seconds after the turning on of the GSM. This allows to measure the tension in load, what is more representative. This measure is transmitted with the status of the device.

The device has been designed to work in a wide temperature range (-30°C to +70°C)

USB COMMUNICATION

The TRMC is equipped with a connector which allows to connect to a computer (port RS-323 or USB). With this connection we can configure the device, get back the measures, test the connection GSM,....

To use this interface, it is necessary to have a cable adaptater available at Tetraedre.

ORDER INFORMATION

Designation	***Description***
TRMC-18-CA	- 3.9V, 16Ah, lithium battery - no external power supply input - nominal operation at 3.9V
TRMC-18-CC	- 3.7V, 4.8Ah, Li-Ion accumulator - no external power supply input - nominal operation at 3.7V
TRMC-18-CD	- 3.7V, 4.8Ah, Li-Ion accumulator - external power supply input (max.15V) regulated at 4.0V (Li-Ion accumulator charger) - nominal operation at 3.7V

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