OUR MISSION

Our Mission is to design and manufacture solutions to manage the energy in an efficient, comfortable and measurable way.
1. HEAT METERING - ALLOCATORS
2. WIRELESS TEMPERATURE CONTROL PROGRAMMABLE THERMOSTATS + ELECTRONIC VALVES
3. WIRELESS TEMPERATURE CONTROL THERMOSTATS + ELECTRONIC VALVES
4. WIRELESS TEMPERATURE CONTROL FOR UNDERFLOOR HEATING SYSTEMS
5. MANUAL TEMPERATURE CONTROL THERMOSTATIC VALVES/THERMOSTATIC HEADS/LOCKSHIELDS
6. WIRED TEMPERATURE CONTROL PROGRAMMABLE THERMOSTATS AND THERMOSTATS
7. HEAT METERING DIRECT METERS
8. METERS FOR HOT/COLD WATER
9. DATALOGGER M-BUS
10. REMOTE READING OF ENERGY CONSUMPTION
11. GAS SAFETY IN THERMAL PLANT
12. MULTIJET METERS/WOLTMANN METERS/ULTRASONIC METERS
About us
Perry Electric is an Italian company based in Veniano in the province of Como with branches in the major European countries. Perry Electric operates in the electrical and electronics field for over 45 years, designing and producing equipment and systems for the control of energy, temperature, time and safety according to European directives. The company complies with the requirements of UNI EN ISO 9001:2008 and the company’s commitment is to develop quality products that meet the needs of markets in continuous evolution. The operational structure of Perry Electric is dedicated to follow the market’s needs (marketing), to design and produce with ability the desired products (R&D) and to communicate innovation to the market (the sale).

Mission
Our mission is to develop innovative and cutting edge systems for the management of heat optimizing the users costs by protecting the environment in accordance with European regulations signed by Italy in compliance with the Kyoto Protocol on 11 December 1997.

Heat cost allocation
Perry Electric is an Italian manufacturer of electronic allocators for allocating the heating expenses according to EN 834 regulation.
**INDIRECT METERING**

**1RP 100101N - CONTO-100N COMPACT ALLOCATOR**

An advanced heating cost allocation device, entirely developed in Italy, which is to be applied to each radiator to detect the heat consumption in condominiums equipped with centralised vertical heat distribution systems. Consumption can be allocated individually, thereby allowing for actual quantification of the thermal consumption and hence the expenses. The consumption data are read via radio from outside the apartment and processed by the measuring services offices to calculate the individual costs. Conoto-100N is safe and precise and self-powered with a long lasting lithium battery. During the radio reading, the consumption data of each heater is transmitted and the daily consumption data saved. Conoto-100N allocator is approved in accordance with the European Standard EN834.

NB: allocator is not provided with plate. It must be purchased separately or with one of mounting kits.

**CONSULTING THE CONSUMPTION DATA**
The consumption “charges” appear directly on the display and are clear for the user thanks to the parameterisation of the allocator according to the power and type of radiator. Conoto-100N stores the daily data of the entire heating season, which is an exclusive feature that is required to associate the costs of specific periods to the respective tenants who should occupy the same apartment in different periods during the same heating season.

**INSTALLATION**
The installer must use the EQUO program and the special wireless key WSL868 to autonomously secure and parameterise the distributor in one single call. The fastening elements, which are found in the catalogue, are specific for the different types of radiators. The estimated average installation time is just 5 minutes per device.

**READING THE CONSUMPTION DATA**
The meter reader can take the reading from the staircase, without having to access the homes by having the specific accounting package “Equo” installed on a laptop together with the use of the special radio key. Alternatively, concentrators can be installed for remote GPRS readings.

**TAMPER-PROOF SAFETY AND INSTALLATION**
The device is installed on all radiators of the building with the same procedures and with tamper-proof mechanical and software systems. It has an internal log of detected failures and/or tampering together with the date and time, in order to trace the precise moment of the event. Communications are password-protected and the device is self-powered, with a long lasting lithium battery. Fastening systems, which are found in the catalogue, are specific for the different types of radiator. Each device is generally installed in only five minutes.

**1RP 100102N - CONTO-100NE COMPACT ALLOCATOR WITH EXTERNAL PROBE**

Electronic allocator of heating costs with remote probe. Applied to convectors or traditional radiators if not easily accessible due to radiator covers or other types of obstruction. The operating characteristics are similar to those of Conoto-100N, with the difference that the external probe is fastened to the radiator, equipped with a tamper-proof system, and the device is fixed to the wall according to the specifications required by the Standard.

The code include:
- 1 compact allocator
- 1 zama plate with remote probe
- 2 screws
- 2 fisher
- 2 plastic strips
- 1 tamper-proof strips
- 1 tamper label
- 1 cover for probe

**1RP 100900 - YARDSTICK POSITIONING TOOL**
A specifically designed metre to easily and safely identify 75% of the height of the heating body.
## DISPLAY VISUALIZATION

<table>
<thead>
<tr>
<th>PRESS KEY</th>
<th>MESSAGE</th>
<th>MEANING</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>“88:88:88”</td>
<td>Blank</td>
<td>LOW POWER</td>
<td>It indicates that the display is off, low-power mode</td>
</tr>
<tr>
<td>“E XXXX”</td>
<td>“88:88:88”</td>
<td>DISPLAY TEST</td>
<td>It is used to visually verify that all display segments are functioning</td>
</tr>
<tr>
<td>“E XXXX”</td>
<td>“E XXXX”</td>
<td>CURRENT CONSUMPTION</td>
<td>Consumption of current period</td>
</tr>
<tr>
<td>“d GG.MM”</td>
<td>“d GG.MM”</td>
<td>CURRENT DATE</td>
<td>Current day and month: to be used in the manual consumption reading</td>
</tr>
<tr>
<td>“d GG.MM”</td>
<td>“d GG.MM”</td>
<td>CURRENT YEAR</td>
<td>Current day and month: to be used in the manual consumption reading</td>
</tr>
<tr>
<td>“L XXX”</td>
<td>“L XXX”</td>
<td>READING CHECK CODE</td>
<td>To check the current reading value with current date</td>
</tr>
<tr>
<td>“F XXXX”</td>
<td>“F XXXX”</td>
<td>LAST CONSUMPTION</td>
<td>Consumption of last period</td>
</tr>
<tr>
<td>“FLXXXX” o “FRXXXX”</td>
<td>“FLXXXX” o “FRXXXX”</td>
<td>ERROR CODE</td>
<td>Last (FL) or current (FR) error code</td>
</tr>
<tr>
<td>“SEnS-X”</td>
<td>“SEnS-X”</td>
<td>MEASURING METHOD</td>
<td>Measuring method: X = 2 counting with two sensors X = 1 counting with one sensor' room temperature fixed to 20°C</td>
</tr>
<tr>
<td>“b GG.MM”</td>
<td>“b GG.MM”</td>
<td>RESET DATE</td>
<td>Day and month of counting reset</td>
</tr>
<tr>
<td>“UX.XX.XX”</td>
<td>“UX.XX.XX”</td>
<td>FW VERSION</td>
<td>Installed firmware version</td>
</tr>
<tr>
<td>“OPErAt”</td>
<td>“OPErAt”</td>
<td>STATUS</td>
<td>Current status is &quot;Operative&quot;</td>
</tr>
<tr>
<td>“-100nX”</td>
<td>“-100nX”</td>
<td>RADIATOR SENSOR</td>
<td>Show the set radiator temperature sensor: “-100n” = internal sensor “-100nE” = remote probe sensor</td>
</tr>
</tbody>
</table>

## OTHER VISUALIZATIONS DIFFERENT FROM THOSE SHOWN ABOVE ARE STRICTLY DEDICATED TO QUALIFIED PERSONNEL
1RP 130102 - DIRETTO-302R PULSE COUNTER FOR HEAT AND VOLUMETRIC METERS

An advanced device that is applied to the meter with pulse emitters for calculating, storing and transmitting via radio the consumption. When combined with a heat and/or cooling energy meter or a hot or cold water meter equipped with pulse emitting system, consumption can be detected in order to calculate the expenses of a single dwelling. The consumption data are collected via radio and processed by the measuring services offices to calculate the individual consumption and costs. We guarantee the right functionality of DIRETTO-302R only with the products that we have in our catalogue.

CONSUMPTION READING
Acquires, stores and transmits the calculation of consumption deriving from water and / or heat meters. Allows equity in the costs allocation related to heating and cooling, domestic hot water or cold water, which is no longer in thousandths but according to consumption.

It has two inputs that can be combined indifferently with volumetric and / or thermal meters fitted with pulse emitters. Self-powered with a long lasting lithium battery. Calculation of the pulses emitted by the meter, converted to K coefficient (litres / pulse or kWh / pulse) set during installation.

CONSULTING THE CONSUMPTION DATA
The consumption “ticks” in kW/h or cubic meters appear in 6 digits directly on the display and are clear for the user to understand, by pressing a key. Allows for consumption transparency thanks to the daily calculation in addition to the monthly and annual calculation. Very low radio emission, in compliance with the reference European Standards.

READING THE CONSUMPTION DATA
The meter reader can take the reading from the staircase, with no need to access to the home by having the specific accounting package “EQUO” installed on a laptop together with the use of the special radio key. Alternatively, concentrators can be installed for remote GPRS readings.

TAMPER-PROOF SAFETY AND INSTALLATION
The installation stability and protection is guaranteed by an internal tamper-proof button, a tamper-proof seal and a specific fastening kit. Installation is simple as it connects to the meter that is set up with the pulse output, with no external power supply and is wall-mounted.

POSSIBLE APPLICATIONS WITH DIRETTO-302R

DIRETTO 302R + COMPACT HEAT METER WITH PULSE OUTPUT
DIRETTO 302R + COLD/HOT WATER METERS WITH PULSE OUTPUT
DIRETTO 302R + CLC / CW METERS WITH THERMAL ENERGY CALCULATOR WITH PULSE OUTPUT
**INDIRECT METERING**

**1RP MBR02 - WIRELESS RADIO M-BUS MODULE FOR M-BUS READY METERS**

The M-BUS compact radio module can be applied to hot and cold residential water meters and to the coaxial M-BUS water meters. Factory pre-configured, the compact radio module sends the consumption data to the control units Rete-1000R / Rete-1000RG / Rete-1001ME or to the WSL key connected to the laptop.

**POSSIBLE APPLICATIONS WITH M-BUS RADIO MODULE**

<table>
<thead>
<tr>
<th>M-BUS ready single jet sanitary water meter</th>
<th>Wireless radio M-BUS module</th>
<th>M-BUS ready coaxial residential water meter</th>
<th>Wireless radio M-BUS module</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS*02 / 03</td>
<td>1RP MBR02</td>
<td>1RP CACS15P - 1RP CAFS15P</td>
<td>1RP MBR02</td>
</tr>
<tr>
<td>1RP CAFS*02 / 03</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**1RP 100911 - CALDO-200R TEMPERATURE LOGGER**

Indoor room temperature logger with display and key for viewing data. Detects the room temperature and calculates the average temperature value detected during 3 time bands. The device stores the 3 average temperatures T1, T2 and T3 every day for 18 months. The stored data are read via password protected radio communication from outside the home, with the use of WSL small key 1RP 100801 or WSL key 1RP 100802. In alternative, if the system is equipped with Rete-1000R / Rete-1000RG control units, Caldo-200R can be read from remote. The device has a tamper-proof system.

**MEASURING THE CONSUMPTION**

It detects the room temperature every 2 minutes and calculates the average temperature value detected at three time bands:

- T1 from HA to HB  e.g. T1 band 06 – 14
- T2 from HB to HC  T2  band 14 – 22
- T3 from HC to HA  T3  band 22 – 06

HA HB HC can be configured during the parameterisation phase.

The temperature resolution is in tenths of a degree [e.g. 20.3 °C].

The device stores the 3 average progressive temperatures Tp1, Tp2 and Tp3 every day (as from the beginning of the season) for 18 months. The average progressive temperatures reset when the heating season starts. The averages can be blocked during summer time, for example, from 16th April to 15th October.

Measuring range: +0 °C to +50 °C
Accuracy: ± 3%
Dynamic: 1 °C/1 min
## INDIRECT METERING

### FIXING ACCESSORIES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Package Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 007KTS</td>
<td>Standard fixing kit for 1RP 100101N: 1 tamper proof seal, 1 zama plate, 2 trapezoidal anchor, 2 screws TC m4x40</td>
<td>50 pcs.</td>
</tr>
<tr>
<td>1RP 100201</td>
<td>TAMPER-PROOF SEAL for 1RP 100102 and 1RP 100911 - package 50 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100202</td>
<td>TAMPER-PROOF SEAL for 1RP 100101N - package 50 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100304</td>
<td>STANDARD ZAMA PLATE for 1RP 100101N - 10 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100303</td>
<td>WIDE 88 ALUMINIUM PLATE - 88 mm wide - package 10 pcs. Order separately: 1RP 100304.</td>
<td></td>
</tr>
<tr>
<td>1RP 100401</td>
<td>STANDARD TRAPEZOIDAL ANCHOR - 35 mm wide on long side - package 50 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100402</td>
<td>WIDE 50 TRAPEZOIDAL ANCHOR - 50 mm wide on long side - package 20 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100403</td>
<td>SHAPED ANCHOR P.45 - distance between pipe (pitch) 45 / 46 mm - package 20 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100404</td>
<td>EXPANSION CORNER - the package includes the expansion corners, M4 hex nuts and M4 x 35 cylinder head screws</td>
<td></td>
</tr>
<tr>
<td>1RP 100405</td>
<td>M3 THREADED PLATE 16x8x4 - for M3 screws - package 50 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100407</td>
<td>M4 THREADED PLATE 30x8x6 - for M4 screws - package 50 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100701</td>
<td>M3 FLANGED HEX NUT - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 009KTS</td>
<td>Metal clamp kit composed by: a 1 meter metal belt, 4 steel heads with screw, 4 washers, 4 Yellow tamper-proof seals, 4 M3 nuts and 4 studs M3x10</td>
<td></td>
</tr>
<tr>
<td>1RP 008KTS</td>
<td>U-Bolt kit composed by: 1 U clevis, 4 nuts M3 and central aluminium body</td>
<td></td>
</tr>
</tbody>
</table>

### SELF-TAPPING SCREW

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Package Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 100601</td>
<td>Self-Tapping Screw. Made of galvanized iron, cylindrical head 2.9 x 25 mm - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100602</td>
<td>Self-Tapping Screw. Made of galvanized iron, cylindrical head 3.9 x 25 mm - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100610</td>
<td>Self-Tapping Screw. Made of galvanized iron, cylindrical head 4.2 x 16 mm - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100603</td>
<td>Self-Tapping Screw. Made of galvanized iron, cylindrical head 4.8 x 25 mm - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100608</td>
<td>Self-Tapping Screw. Made of galvanized iron, cylindrical head 5.5 x 25 mm - package 100 pcs.</td>
<td></td>
</tr>
</tbody>
</table>

### WELDING STUD

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Package Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 100501</td>
<td>M3 X 10 welding stud - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100502</td>
<td>M3 X 20 welding stud - package 100 pcs.</td>
<td></td>
</tr>
</tbody>
</table>

### CYLINDRICAL HEAD SCREW

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Package Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 100604</td>
<td>M3 x 30 cylindrical head screw - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100606</td>
<td>M4 x 40 cylindrical head screw - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100607</td>
<td>M4 x 50 cylindrical head screw - package 100 pcs.</td>
<td></td>
</tr>
<tr>
<td>1RP 100609</td>
<td>M4 x 100 cylindrical head screw - package 100 pcs</td>
<td></td>
</tr>
</tbody>
</table>

### DEVICES FIXING ACCESSORIES

The installation of the allocators Conto-100N via two-component adhesive, despite being positively assessed by the EN 834 certification body, it's not considered a certified installation method. It is permissible to use it only and exclusively when no other installation method can be used. Installation instructions provided by Perry Electric must be followed.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Package Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 100800</td>
<td>Pattex two-component adhesive 2K tube Metal</td>
<td></td>
</tr>
<tr>
<td>1RP 004KTS</td>
<td>Fixing kit for use of two-component adhesive on Conto-100NE comprehensive of: 1pc. standard aluminum plate with 2pcs. M3x10 studs. Order separately: 2pcs. M3 hex nuts [1RP 100701], 1pc. tamper-proof seal [1RP 100202]</td>
<td></td>
</tr>
<tr>
<td>1RP 005KTS</td>
<td>Fixing kit for use of two-component adhesive on Conto-100NE comprehensive of: 1pc. standard aluminum plate with 2pcs. M3x10 studs. Order separately: 2pcs. M3 hex nuts [1RP 100701], 1pc. tamper-proof seal [1RP 100202]</td>
<td></td>
</tr>
</tbody>
</table>
1RP 100901 - RETE-1000R LANDBING REPEATER 3V BATTERY OPERATED

Landing control unit to collect via radio and transmit data concerning consumption of a number of apartments to the concentrator gateway RETE-1000RG. Generally, a RETE-1000R is installed every three floors, depending on the geometry of the building and the actual radio range coverage. The repeater node, which is installed in the staircase, is battery operated. It is associated to the reference concentrator during installation. During the operational phase, the repeater node reads the associated radio devices according to the set schedule and forwards data to the concentrator.

1RP 100810 - REPLACEMENT BATTERY FOR RETE-1000R

1RP 100902 - RETE-1000RG CONCENTRATOR WITH GPRS MODEM 230V a.c.

Concentrator and gateway with built-in GPRS modem, allows the communication of consumption together with any faults and tampering. It also acts as a control unit to the landing (as RETE-1000R). Generally, a RETE-1000RG is installed for each building or staircase, depending on the geometry of the building and the actual radio range obtainable. The concentrator node can be installed in the staircase where 230V mains supply is available together with the GPRS signal. During installation, the complete project is downloaded on EQUO software and the reading schedule is set together with the sub-network of RETE-1000R associated to it. During the operational phase, it reads the devices of its radio area according to the set schedule and collects the readings from any repeater, stores the data and sends it to the server.

1RP 100903- RETE-1001ME CONCENTRATOR WITHOUT GPRS MODEM 230V a.c.

Concentrator and gateway predisposed for an external modem shared with the remote management unit of the thermal plant. The concentrator RETE-1001ME allows the operator to use only one GPRS modem (only one phone number) to connect the plant and for remote management of the thermal power plant to download the data of the allocators.
EQUO SOFTWARE

It’s a software to carry out the measurement of the thermal power installed in a condominium, parameterizes the allocators and pulse counters, reads the seasonal consumption and allocates the heating costs. It is easily installed on a standard PC and interacts via radio with the WSL Key for reading and managing the allocators. EQUO is not available for Apple computers.

The reading and management of the allocators can be performed remotely through the installation of repeaters and concentrators RETE-1000R, RETE-1000RG.

It is available in 3 versions:

1RP 101201 - EQUO PROFESSIONAL: for thermo-technical professionals
1. enter user details;
2. selection heater / input heater data, determine the installed power via EN442 radiator database [photos, dimensions, data sheets];
3. design of heat regulation components [valves, heads, lockshields];
4. calibrate the presetting of the thermostatic valves;
5. guidelines to size the circulation pump;
6. connect heat / cooling and hot / cold water meters;
7. generate the report of the installed thermal power for certification by authorized technical personnel.

1RP 101202 - EQUO ENTERPRISE: for allocation service managers
1. manage user details;
2. acquisition of faults on allocators and pulse counters via radio;
3. read data, via radio, memorised by allocators and pulse counters;
4. estimates for the calculation of missing readings and consumption validation;
5. individual allocation of the heating costs in accordance with EN834;
6. allocation and billing of hot and cold water meters, heat / cooling meters;
7. historical archive of allocations and billings;
8. generation of allocation reports in PDF and EXCEL.

1RP 101203 - EQUO FULL: for installers
Offers the functionalities of the two versions Professional and Enterprise, and also allows the installation and maintenance of allocators and pulse counters, the local and remote parameterisation as well as protection enabling of the system.

EQUO PROFESSIONAL

Allows you to store neatly the data for the calculation of the power of radiators, evaluated according to the UNI EN 442:2004 [manufacturer’s data archive]. Imputes, eventually, the power of the intake pipes flow and return; stores the data of valves and lockshields. Suited to detect the total power of the apartment with detail of single radiator, the thousandths chart of the power installed, the total power of the system. Processes data to perform the calibration of pre-adjustable valves.

EQUO ENTERPRISE

Offers the functionality of the Professional version and in addition it performs the allocator’s data reading via radio, allows the validation of consumption for periods [seasons, monthly] and allows the use of different algorithms for estimating consumption of any missing reading. In the cost allocation phase it allows you to produce a breakdown of pertaining expenses split into thermal power involved and consumption expenses. The cost allocation also includes the use of direct heat / cooling meters and hot / cold water meters.

1RP 101301 - Supplying of software updates.

1RP 100801 - WSL SMALL KEY

[Wireless Serial Link] for radio communication from the landing of the building between laptop and allocators / pulse counters via EQUO software. Necessary to carry out readings onsite and to manage the devices. The key allows up to 10,000 parameterizations.

1RP 100802 - WSL KEY

[Wireless Serial Link] for radio communication from the outside of the building between laptop and allocators / pulse counters via EQUO software. Necessary to carry out readings onsite and to manage the devices. The key allows up to 10,000 parameterizations.

ACCESSORIES

1RP 100809 - Replacement antenna for WSL KEY
EXAMPLE OF ALLOCATION

COVER PAGE (Fig. 1)
Cost allocation report, it includes the detailed costs of the various expenses that have to be shared between the tenants, the allotment criteria, the quota to consumption and the quota in thousandths.

ALLOCATION SUMMARY (Fig. 2)
Allocation between individual apartments, with a breakdown of expenditures for single expense, for each radiator.

LEGEND
- RID: Possible factor reducing the consumption of housing unit
- Millisimals Installed Power (%): table used to divide the millesimal amount.
- CONSUMES: consumes related to the apartment.
- UR: Allocation unit
- COSTS: additional cost related to the apartment.
- TOTAL: total amount of heat cost related to the apartment.
DETAILS PER APARTMENT (Fig. 3–4)
The rooms associated to the allocators are specified together with the shots + expenses.
**INDIRECT METERING**

**OTHER FEATURES**

The thermal power of the heater is determined quickly by searching the heater in the EN 442 heaters database. Once selected, the calculation is carried out automatically by the software. If the brand / model are not available, the data can be entered and memorized.

It is possible to determine the presetting values of individual pre-adjustable thermostatic valves. Once data on the original project, the additional components (e.g. thermostatic valves, heat generator, heat meter - if any), and data on the new project are entered in the software, it calculates the presetting values.

According to a specific algorithm, the software determines the presetting values for each individual pre-adjustable valve, as shown above.
WEB PORTAL
The Web Perry portal was designed for data to be clear and transparent and readily available to the user. The read data from the various accounting devices are acquired with the Equo software, developed and validated by the person in charge of the accounting service, to then be published on the Web portal to allow the end user to consult the relevant consumption.

The portal allows the following to be viewed and saved:
• Heating consumption;
• Consumption of domestic hot and cold water.
The portal framework is designed to provide different information and different levels of interaction to the three intended user profiles: Apartment, Building Manager, Heat Manager.

The profiles are as specified below:
USER Apartment (Apartment owner): Logging in to the Web portal, this user can view the latest readings, the historical readings and the consumption trend of their own apartment.

USER Building Manager (Building administrator): Logging in to the Web portal, this user can manage several Apartment users. In particular, the Building Manager user can view the latest readings, the historical readings and the trends of the accounting devices of all condominiums managed by this user.

USER Heating Manager: Logging in to the Web portal, this user manages the Building Manager and Apartment users. The Manager user has all the write and read privileges and is the only one who can publish consumption, once certified, on the Website using the Equo software. The Heat Manager records and grants the access profiles and privileges to all other users of the subordinate levels.

HOW THE WEB PORTAL WORKS

1. Reading consumption data with Equo Software
2. Data validation
3. Publication of consumption data
4. User
5. Android Smartphone
6. Web portal
7. INTERNET
1- Screen for the Heat Manager User, displaying the list of systems managed by this user.

<table>
<thead>
<tr>
<th>Condomini</th>
<th>Codice importo</th>
<th>Rev. Note</th>
<th>Richiesta Riscossi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condominio 1</td>
<td>8967454321</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Condominio 2</td>
<td>5543218906</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Condominio 3</td>
<td>3210987654</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

2- Screen for the Heat Manager User, displaying the list of apartments of a system.

**Residenza di Vicod Morrona**

<table>
<thead>
<tr>
<th>Scaletta</th>
<th>Appartamento</th>
<th>Piano</th>
<th>Largo</th>
<th>Mazzo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16NEW6CA0910NY0001</td>
<td>1</td>
<td>12</td>
<td>Mario Rossi</td>
</tr>
<tr>
<td>2</td>
<td>16NEW6CA0910NY0002</td>
<td>1</td>
<td>7</td>
<td>Luca Bianchi</td>
</tr>
</tbody>
</table>

3- Screen for the Apartment User, displaying the list of devices installed in the apartment.

<table>
<thead>
<tr>
<th>Appartamento</th>
<th>Stanza</th>
<th>Consumi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>543298</td>
<td>987654</td>
</tr>
<tr>
<td>2</td>
<td>654329</td>
<td>876543</td>
</tr>
</tbody>
</table>

4- Screen for the Apartment User, displaying the consumption for each room within a given period of time, by means of a pie chart.
5- Screen for the Apartment User, displaying the consumption for each room within a given period of time, by means of a bar chart.

6- Screen for the Apartment User, displaying the trend of consumption of the apartment compared with the average trend of consumption of the condominium.

7- Screen for the Apartment User, displaying the trend of consumption of the apartment compared with the average trend of consumption of the condominium.
WIRELESS TEMPERATURE CONTROL
Perry Electric wireless RF temperature control system: the desired temperature at each time of the day in every room.

The wireless temperature control system allows the user to adjust the temperature of each room of the house according to specific comfort needs in different time slots without any need for masonry works and/or anything else.

A large part of heating systems are built with insufficient possibility of adjusting the temperature in the environments:

The centralized systems with vertical columns, do not allow the individual adjustment of the temperature in each apartment.

The centralized systems with ring type distribution allow the temperature adjustment of the apartment only in one place of the house: normally using a thermostat installed in the living room, as it happens in most of the heating systems with individual boilers.

This means a great waste of energy to maintain in temperature unused rooms or occupied only in certain periods of the day, and, the temperature in some rooms may be too high or too low without any possibility to make a careful setting.

Perry Electric allows to transform a centralized system into a zone system without any intervention on the piping distribution system.

Perry Electric allows the temperature setting in each room on two adjustment levels over the 24 hours.

Perry Electric accounts consumption as actually consumed regardless of thousandths of property.

Perry Electric, with the rational use of heat, ensures considerable savings in energy consumption, lower management costs and fewer harmful emissions in the atmosphere protecting the environment around us.
Perry Electric: an innovative user friendly temperature control system.

Perry Electric innovative temperature control system for the installation practicality and the ease of use.

Perry electric operates in 868.35 MHz radio frequency established for general use on the European territory. The construction technology ensures immunity from interference with other devices because each device is protected by a pairing code. During installation of the system each device will be programmed for univocal operation between transmitters and receivers.

The transmission power of about 10 mW is less than the authorized power and about 100 times lower than that of mobile phones.

The system allows to adjust the temperature in each room through the wireless control of the valves mounted on radiators in each room or in the zone manifolds.

- Ease of installation: no masonry works, without laying cables allows to transform any type of plant in a zone system obtaining substantial energy savings.

- Flexibility of use. Who is most sensitive to cold temperatures at home, will set higher temperatures, office workers can adjust their system according to their needs: temperature control according to the specific needs in each room.

Can be used in any type of installation: with radiators, underfloor heating, electric heating, hot air heating ...

- The use of a zone heating system enables savings on heating costs of about 25–30% (statistical survey) but above all the reduced use of the system helps you minimise the atmospheric pollution to benefit the community.
**Perry Electric** finds application in existing systems through the radio command of electronic valves to be installed on radiators in the apartment.

**Perry Electric** transforms centralized systems in individual ones with no need for masonry work and/or modifications in the heating system.

**Perry Electric** the application of our devices on centralized heating systems together with heat cost allocation system allow to pay according to consumption regardless of thousandths of property.

**Perry Electric** is easy to install, but still easier to use by the user.

**Perry Electric** offers a solution comprehensive of the following elements:

- Programmable thermostats daily & weekly with RF transmitters.
- Electronic thermostats with RF transmitters
- Electronic valves to be installed on radiators, equipped with RF receivers, 3V battery operated and/or RF receivers to be installed to command fan-coils, convectors, etc.
- 1 or 2 channels radio receivers for controlling zone valves in distribution boxes
- 8 channels receiver for controlling control boxes
- 4 or 8 zones control boxes for controlling zone valves

---

**EXAMPLE OF WIRELESS TEMPERATURE CONTROL**

**1 ZONE TEMPERATURE CONTROL**

**2 ZONES TEMPERATURE CONTROL**
Normally the system foresees the installation of 2 programmable thermostats, one for the day zone and one for the night zone.

On each of these the time profile will be programmed corresponding to the heating needs of the rooms in the day zone and in the night zone.

To obtain fine adjustment, the thermostats installed in the various rooms will be associated with the programmable thermostat.

The desired room temperature is set on the thermostat for the comfort time periods set on the zone programmable thermostat. In the time periods of reduction, the temperature in the rooms will be the one programmed on the zone programmable thermostats: the room thermostats will make sure that the temperature does not fall below such setting.

The programmable thermostats and thermostats composing the system will command the circulation of hot water in the heating elements through the opening and / or closing of the valves on the radiators.

The system can be realized with multiple zones: 2, 3, 4, etc.

The system allows to appoint one of the installed programmable thermostats as "master" of the system. In this case the setting applied on the master will determine that the whole apartment will follow the profiles and programming set on the same.

Example:
- entire home in comfort mode
- entire home in reduction mode
- entire home in antifreeze mode
- holiday mode: heating suspension for a certain period with automatic restart
- heating suspension for house cleaning, air exchange, etc.
- telephone programming: switching On and OFF of the heating from remote by telephone
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Temperature levels</th>
<th>Anti-freeze temperature</th>
<th>Power supply</th>
<th>Contact output</th>
<th>Type of output</th>
<th>Transmission power</th>
<th>Adjustment range</th>
<th>Operation mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature levels</td>
<td>+4 °C to +15 °C</td>
<td>+4 °C to +39 °C</td>
<td>2 x 1.5 V - AA type - Alkaline batteries</td>
<td>ON/OFF with adjustable differential 0.2 °C to 0.7 °C</td>
<td>residential / tertiary</td>
<td>white</td>
<td>120 x 27.6 x 82 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-freeze temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact output</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of output</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission power</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustment range</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Operation mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## PARTNERS FEATURES

- Allows the regulation of temperature in apartment zones according to set of comfort and reduction as well as time slots.
- 3 Preset programs, 2 free, 1 holiday, activation of manual override.
- Interruption of heating mode for cleaning operations, with automatic restart after 3 hours.
- Anti-freeze temperature program.
- Minimum programming 30 minutes.
- Error message when temperature out of range and probe failure.
- Test signal transmission for coupling with wireless actuators and verification of radio connections.
- Operational safety guaranteed by a double transmission to the actuators.
- No limit to the maximum number of wireless actuators combined.

 Transmission frequency - 868.35 MHz

## ACCESSORIES

| 1PA BTCRTX01 | Table base for programmable thermostat 1TX CRTX05 |
| 1PA BTTEXTX01 | Table base for thermostat 1TX TETX04 |
| 1PR PSA01 | Battery for 1TX CRTX05 and 1TX TETX04 |

## KITS

- **1TX CRTX05RX01**: RF weekly programmable thermostat 1TX CRTX05 + 1 zone RF receiver 1TX RX01/P
- **1TX TETX04RX01**: RF daily digital thermostat 1TX TETX04 + 1 zone RF receiver 1TX RX01/P

## DESCRIPTION

- Use
- Color
- Dimensions (L x W x H)

## GENERAL DATA

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Protection degree (IP)</th>
<th>Insulation class</th>
<th>Battery lifetime</th>
<th>Accuracy</th>
<th>Thermal gradient</th>
<th>Range</th>
<th>Operating temperature limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>wall mounting</td>
<td>IP 30</td>
<td>III</td>
<td>2 years (approx)</td>
<td>± 0.5 °C</td>
<td>1 °K / 15 minutes</td>
<td>30 °C to 120 °C (depending on possible obstacles)</td>
<td>-5 °C to +55 °C</td>
</tr>
</tbody>
</table>

## WIRELESS TEMPERATURE CONTROL

- **1TX CRTX05**: RF weekly programmable thermostat
  - Type: Digital electronic - LCD 3" ¾ display
  - Temperature levels: +4 °C to +15 °C
  - Anti-freeze temperature: +4 °C to +39 °C
  - Power supply: 2 x 1.5 V - AA type - Alkaline batteries
  - Contact output: ON/OFF with adjustable differential 0.2 °C to 0.7 °C
  - Operation mode: Residential / Tertiary, white, 120 x 27.6 x 82 mm

- **1TX TETX04**: RF daily digital thermostat
  - Type: Digital electronic - LCD 2" 1/3 display
  - Temperature levels: +4 °C to +15 °C
  - Anti-freeze temperature: +4 °C to +39 °C
  - Power supply: 2 x 1.5 V - AA type - Alkaline batteries
  - Contact output: ON/OFF with adjustable differential 0.3 °C or 0.6 °C
  - Operation mode: Residential / Tertiary, white, 84 x 23 x 84 mm

## WIRELESS TEMPERATURE CONTROL

- **1TX CRTX05**: RF weekly programmable thermostat
  - Allows the regulation of temperature in apartment zones according to set of comfort and reduction as well as time slots.
  - 3 Preset programs, 2 free, 1 holiday, activation of manual override.
  - Interruption of heating mode for cleaning operations, with automatic restart after 3 hours.
  - Anti-freeze temperature program.
  - Minimum programming 30 minutes.
  - Error message when temperature out of range and probe failure.
  - Test signal transmission for coupling with wireless actuators and verification of radio connections.
  - Operational safety guaranteed by a double transmission to the actuators.
  - No limit to the maximum number of wireless actuators combined.

 Transmission frequency - 868.35 MHz

- **1TX TETX04**: RF daily digital thermostat
  - Keys for adjusting the ambient temperature
  - Test signal transmission for coupling with wireless actuators and verification of radio connections.
  - Operational safety guaranteed by a double transmission to the actuators.
  - No limit to the maximum number of wireless actuators combined.

 Transmission frequency - 868.35 MHz

- **1TX CRTX05RX01**: RF weekly programmable thermostat 1TX CRTX05 + 1 zone RF receiver 1TX RX01/P
- **1TX TETX04RX01**: RF daily digital thermostat 1TX TETX04 + 1 zone RF receiver 1TX RX01/P

 Transmission frequency - 868.35 MHz

- **1TX CRTX05**: RF weekly programmable thermostat
  - Type: Digital electronic - LCD 3" ¾ display
  - Temperature levels: +4 °C to +15 °C
  - Anti-freeze temperature: +4 °C to +39 °C
  - Power supply: 2 x 1.5 V - AA type - Alkaline batteries
  - Contact output: ON/OFF with adjustable differential 0.2 °C to 0.7 °C
  - Operation mode: Residential / Tertiary, white, 120 x 27.6 x 82 mm

- **1TX TETX04**: RF daily digital thermostat
  - Type: Digital electronic - LCD 2" 1/3 display
  - Temperature levels: +4 °C to +15 °C
  - Anti-freeze temperature: +4 °C to +39 °C
  - Power supply: 2 x 1.5 V - AA type - Alkaline batteries
  - Contact output: ON/OFF with adjustable differential 0.3 °C or 0.6 °C
  - Operation mode: Residential / Tertiary, white, 84 x 23 x 84 mm

 Transmission frequency - 868.35 MHz

- **1TX CRTX05RX01**: RF weekly programmable thermostat 1TX CRTX05 + 1 zone RF receiver 1TX RX01/P
- **1TX TETX04RX01**: RF daily digital thermostat 1TX TETX04 + 1 zone RF receiver 1TX RX01/P

 Transmission frequency - 868.35 MHz

- **1TX CRTX05**: RF weekly programmable thermostat
  - Allows the regulation of temperature in apartment zones according to set of comfort and reduction as well as time slots.
  - 3 Preset programs, 2 free, 1 holiday, activation of manual override.
  - Interruption of heating mode for cleaning operations, with automatic restart after 3 hours.
  - Anti-freeze temperature program.
  - Minimum programming 30 minutes.
  - Error message when temperature out of range and probe failure.
  - Test signal transmission for coupling with wireless actuators and verification of radio connections.
  - Operational safety guaranteed by a double transmission to the actuators.
  - No limit to the maximum number of wireless actuators combined.

 Transmission frequency - 868.35 MHz

- **1TX TETX04**: RF daily digital thermostat
  - Keys for adjusting the ambient temperature
  - Test signal transmission for coupling with wireless actuators and verification of radio connections.
  - Operational safety guaranteed by a double transmission to the actuators.
  - No limit to the maximum number of wireless actuators combined.

 Transmission frequency - 868.35 MHz
**WIRELESS TEMPERATURE CONTROL**

**ACCESSORIES**

1. **1PA ASVT01**
   - Angle adapter for electronic valve VTRX02

2. **1PR PMS01**
   - Battery for 1TX TETX03

3. **1PR PMT02**
   - Battery for 1TX VTRX02

**1TX TETX03**
- RF daily electronic thermostat
- The desired ambient temperature is set through the rotating knob
- Summer / Winter control
- Low Battery indicator
- Operational safety guaranteed by a double transmission to the actuators
- Test signal transmission for coupling with wireless actuators and verification of radio connections
- No limit to the maximum number of wireless actuators combined

**1TX VTRX02**
- RF electronic valve
- Combined with the wireless weekly programmable thermostat / daily thermostats, controls the opening / closing of the thermostatic valve installed on the heater (radiator, convector, ring type system)
- Led signaling valve open / close status
- Tamper alarm transmission
- Low Battery indicator
- Auto-adaptation to the thermostatic valve to which it is fixed
- Led to check signal strength of radio transmitters.
- Automatic key lock enabled 10 minutes after inserting the batteries.
- Automatic descaling operation
- Device for the manual shutdown of the radiator

**1TX VTRX02**
- RF electronic valve
- Combined with the wireless weekly programmable thermostat / daily thermostats, controls the opening / closing of the thermostatic valve installed on the heater (radiator, convector, ring type system)
- Led signaling valve open / close status
- Tamper alarm transmission
- Low Battery indicator
- Auto-adaptation to the thermostatic valve to which it is fixed
- Led to check signal strength of radio transmitters.
- Automatic key lock enabled 10 minutes after inserting the batteries.
- Automatic descaling operation
- Device for the manual shutdown of the radiator

**TECHNICAL DATA**

**1TX TETX03**
- Type: digital electronic - LCD 2” 1/3 display
- Temperature levels: +5 ÷ +15 °C
- Power supply: 2 x 1.5 V - AA type - Alkaline batteries
- Contact output: radio signal
- Transmission power: below 10 mW
- Adjustment range: +4 ÷ +39 °C
- Operation mode: ON/OFF with adjustable diff. 0.3 °C or 0.6 °C

**1TX VTRX02**
- Type: electronic
- Temperature levels: +5 ÷ +15 °C
- Power supply: 2 x 1.5 V - C type - Alkaline batteries
- Contact output: piston
- Transmission power: below 10 mW
- Adjustment range: +4 ÷ +39 °C
- Operation mode: ON/OFF with adjustable diff. 0.3 °C or 0.6 °C

**DESCRIPTION**

**1TX TETX03**
- Use: residential / tertiary
- Color: white
- Dimensions (L x W x H): 86 x 23 x 84 mm

**1TX VTRX02**
- Use: residential / tertiary
- Color: white
- Dimensions (L x W x H): 62 x 97 x 70 mm

**GENERAL DATA**

**1TX TETX03**
- Installation type: wall mounting
- Protection degree (IP): III
- Battery lifetime: 2 years (approx)
- Thermal gradient: ± 1 °C
- Range: 30 ÷ 120 m (depending on possible obstacles)
- Operating temperature limits: -5 °C ÷ +55 °C

**1TX VTRX02**
- Installation type: wall mounting
- Protection degree (IP): III
- Battery lifetime: 2 years (approx)
- Thermal gradient: ± 1 °C
- Range: 30 ÷ 120 m (depending on possible obstacles)
- Operating temperature limits: -5 °C ÷ +55 °C

**PARTICULAR FEATURES**

**1TX TETX03**
- Transmission frequency - 868.35 MHz
- Reception frequency - 868.35 MHz
- Test function for checking the radio range
- Slave mode in combination with programmable weekly thermostat only with master mode enabled
- Electromagnetic emissions compliant with R&TTE 1999/5/EC European directive

**1TX VTRX02**
- Transmission frequency - 868.35 MHz
- Reception frequency - 868.35 MHz
- RF signal level LED indicators
- Battery charge and / or anomalies LED indicator
- On status LED indicator
- OFF status LED indicator
- Not usable in slave mode
- Electromagnetic emissions compliant with R&TTE 1999/5/EC European directive

**1TX RX01/P - 1TX RX02/P**
- Type: electronic
- Power supply: 230 V c.a. 50 ÷ 60 Hz (24V a.c. for RX02/P)
- Contact output: 5 (2) A / 250V (for each output)
- Type of output: +1 pump (RX02/P)
- Operation mode: ON/OFF with adjustable diff. 0.3 °C or 0.6 °C
- Range: 30 ÷ 120 m (depending on possible obstacles)
- Operating temperature limits: -20 °C ÷ +70 °C

**ACCESSORIES**

1. **1PA ASVT01**
   - Angle adapter for electronic valve VTRX02

2. **1PR PMS01**
   - Battery for 1TX TETX03

3. **1PR PMT02**
   - Battery for 1TX VTRX02

**1TX RX01/P**
- 1 zone RF receiver 230V

**1TX RX01PS24**
- 1 zone RF receiver 24V

**1TX RX02/P**
- 2 zones RF receiver
  - +1 additional relay output
  - Receivers with 1 or 2 relay outputs for the control of motorized zone valves, fan coils, air heaters, electric pumps, in combination with RF weekly programmable thermostat / daily thermostat
  - The 2 zones receiver also includes an additional relay output which switches when none of the zones requires heat (for switching OFF the pump)
  - Key for manual control.
  - RF signal level

**1TX RX01/P - 1TX RX02/P**
- 1 zone RF receiver 230V
- 2 zones RF receiver
  - +1 additional relay output
  - Receivers with 1 or 2 relay outputs for the control of motorized zone valves, fan coils, air heaters, electric pumps, in combination with RF weekly programmable thermostat / daily thermostat
  - The 2 zones receiver also includes an additional relay output which switches when none of the zones requires heat (for switching OFF the pump)
  - Key for manual control.
  - RF signal level
### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Power supply</th>
<th>Contact output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1TX RX0801/P</strong></td>
<td>electronic</td>
<td>BUS RS 485</td>
</tr>
<tr>
<td><strong>1TX BC0401/230</strong></td>
<td>electronic</td>
<td>BUS RS 485</td>
</tr>
<tr>
<td><strong>1TX BC0601/230</strong></td>
<td>electronic</td>
<td>BUS RS 485</td>
</tr>
<tr>
<td><strong>1TX BC0801/230</strong></td>
<td>electronic</td>
<td>BUS RS 485</td>
</tr>
</tbody>
</table>

#### DESCRIPTION

<table>
<thead>
<tr>
<th>Use</th>
<th>Color</th>
<th>Dimensions (L x W x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential / Tertiary</td>
<td>White</td>
<td>133 x 90 x 25 mm</td>
</tr>
</tbody>
</table>

#### GENERAL DATA

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Protection degree (IP)</th>
<th>Insulation class</th>
<th>Range</th>
<th>Operating temperature limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>In distribution boxes, wall mounting with supplied brackets IP 52 - IP 32 with cable glands upon request</td>
<td>IP 30</td>
<td>Residential / Tertiary</td>
<td>White</td>
<td>133 x 90 x 25 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1 additional output for pump control</th>
<th>Circulation pump is activated with at least one load connected</th>
</tr>
</thead>
</table>

### PARTICULAR FEATURES

- Radio receiver with 8 channels for the control of thermo-electric valves mounted in distribution manifolds or other zone devices operated electrically
- To be used exclusively in combination with the control box.
- Key for manual control.
- RF signal level
- Power supply from the control box

- Radio receiver with 8 channels and an output for the switching OFF of the pump, boiler or zone valve when all inputs are de-activated
- Key for manual control
- RF signal level LED indicators
- Power supply 230 V a.c.
WIRED TEMPERATURE CONTROL
PROGRAMMABLE WI-FI THERMOSTAT

The range of Perry chronothermostats and thermostats is enhanced thanks to the new chronothermostat that can be managed from a smartphone. The ideal solution to control the temperature in different rooms of your home, even remotely, thanks to a secure internet connection. The new chronothermostat is simple to use and always connected to the Internet through the Smartbox so as to be programmed via your smartphone or tablet (Android or iOS) or PC. Through the App, which is available in the App Store and Play Store, you can in fact configure the device on your network within seconds.

The new Wi-Fi chronothermostat offers various advanced features, such as geolocalisation that allows you to adjust the temperature according to the distance. More precisely, the Wi-Fi chronothermostat intelligently adjusts the temperature by lowering it $X^\circ$C according to the distance (up to a maximum of $5^\circ$C) when you leave the home, and increasing it when you are about to return. The reduction in temperature is linked to the distance at which you are from your home.

The electricity consumption is read by the energy meter (optional) that transmits the dwelling consumption in real time.

The modulating action device is suitable for any type of system (floor-installation, with radiators or fan coils) and thanks to the shortcut keys, it provides quick access to certain functions: the Window Opening function, which automatically suspends heating when a $2^\circ$C drop is detected and it then checks the stability of the environment for the system to resume; the Descaling Cycle function, through which the chronothermostat automatically starts up the valve or pump device for two minutes every day (even during suspension periods), to prevent fouling and possible seizures as a result of prolonged inactivity, thereby eliminating any risk when the system is reactivated. The large display with white backlight and all-glass finish allow for easy management and elegant integration into any environment.

*Energy meter required

Advanced Features

Geolocation

The perfect heating system must know when the home is empty so as to reduce the set temperature and increase it when you are about to return home.

The device combines the analysis of the electrical consumption* and the position of your smartphone to decrease or increase the set temperature so as to have the best energy efficiency and comfort.

*Energy meter required
### WIRED TEMPERATURE CONTROL

#### 1DO TECR028WIFI
**Programmable Wi-Fi thermostat**
- Wireless connection to the Smartbox
- Equipped with a back-lit LCD display with "white-LED" technology
- "All glass" finish for a pleasant and modern design
- Easily programmable via the APP, available for both Android and iOS
- Weekly programming
- Battery powered
- It connects directly to the boiler

#### 1DO RX01WIFI
**Smartbox**
- Connected via Ethernet to the router
- It requires no configuration
- No computer required
- Powered via a micro USB adapter
- It manages the data collected from the various devices connected
- Connected to the cloud, it sends data and downloads weather information and messages
- Each home requires a Smartbox

#### 1DO ME01WIFI
**Energy meter**
- Measures and collects data on electric energy consumption in real time
- Only one DIN module

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>1DO TECR028WIFI</th>
<th>1DO RX01WIFI</th>
<th>1DO ME01WIFI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply</strong></td>
<td>External 5V 500mA</td>
<td>200-260V, 50Hz</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LCD 4.3&quot; backlit</td>
<td>- LED</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>5(3)A - 250V adjustable 0.2-0.3-0.5-0.7°C with ON/OFF operation</td>
<td>- 0.65-0.9W</td>
</tr>
<tr>
<td><strong>Temperature control period</strong></td>
<td>10/15/20/25 minutes with modulating operation</td>
<td>- Margin of error &lt;3%</td>
</tr>
<tr>
<td><strong>Temperature levels</strong></td>
<td>for set points of 0.5 °C (5 °C - 35 °C)</td>
<td>DIN rail mounting</td>
</tr>
<tr>
<td><strong>Adjustable temperature</strong></td>
<td>max 10 a day</td>
<td>Current sensor max 80 A included</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>summer/winter</td>
<td><strong>USB 230V power supply included</strong></td>
</tr>
<tr>
<td><strong>Programming</strong></td>
<td>min. 1 minute</td>
<td><strong>Micro USB adapter included</strong></td>
</tr>
<tr>
<td><strong>Transmission</strong></td>
<td>868 Mhz RF</td>
<td><strong>0.5 m Ethernet cable included</strong></td>
</tr>
<tr>
<td><strong>PCB antenna</strong></td>
<td>integrated</td>
<td></td>
</tr>
</tbody>
</table>

### GENERAL DATA

| Programs | max 10 a day |
| Manual operation | permanent/temporary |
| Indication | rel. status / temp. / set T / hour and date |
| Leaving home OFFSET | from 0 to 5°C |

### SPECIAL NOTES

- Descaling pump management
- Low Battery warning
- 200 m transmission range in open field 30 m transmission range in environment

In the case of homes with distribution manifolds, the dwelling can be divided into several thermal zones (maximum 5) by adding other Chrono Thermostats

---

**1DO KT28RX01WIFI**

**Starter kit.** The ready to use solution to adjust the temperature of your home directly from your smartphone, even remotely. The kit include the programmable Wi-Fi thermostat 1DO TECR028WIFI and the Smartbox 1DO RX01WIFI.
WIRED TEMPERATURE CONTROL

WALL-MOUNTED PROGRAMMABLE ROOM THERMOSTATS and DAILY ROOM THERMOSTATS

ACCESSORY
1PA STE02
NTC temperature probe with 4 m cable (CR028A, CR028B, CR026A, CR026B)

1CR CR028A/B
Menu driven weekly digital programmable thermostat, 3V, anthracite color
White color

1CR CR029A/B
Menu driven weekly digital programmable thermostat, 230V, anthracite color
White color

- White led backlight with optimized contrast: with “WHITE LED” technology designed to optimize the displaying of digits for perfect reading. The elegant white color backlight makes information readable in all lighting conditions.
- Navigation menu: enhances the user experience guaranteeing access to all functions with few simple steps.
- Indication of consumption: the 230V models are provided with four buttons that change color according to the temperature programmed, giving a visual indication of consumption.
- “ALL GLASS” surface finishing: the particular plastics processing allows to obtain a nice “glass” effect on the whole front surface.
- Perfect for any type of heating system: can adjust the temperature according to an ON / OFF or modulating method making the products suitable for all kinds of systems characterized by different thermal inertias.
- Navigation menu: allows, with a few simple steps, to manage all issues related to temperature control by saving time and achieving maximum convenience.
- External temperature probe: the battery operated versions have the option of connecting an external temperature probe: adjust the heating or cooling according to the temperature detected by the external probe, view the remote temperature, set a maximum operating temperature of the underfloor heating beyond which the heating is disabled.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Power supply</th>
<th>1CR CR028A/B</th>
<th>1CR CR029A/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>LCD 4.3” backlit</td>
<td>LCD 4.3” backlit</td>
</tr>
<tr>
<td>Differential</td>
<td>adj. 0.2-1.2 °C with ON/OFF operation</td>
<td>adj. 0.2-1.2 °C with ON/OFF operation</td>
</tr>
<tr>
<td>Output</td>
<td>1 potential-free changeover contact</td>
<td>1 potential-free changeover contact</td>
</tr>
<tr>
<td>Temperature control period</td>
<td>7/10/15/20” with modulating operation</td>
<td>7/10/15/20” with modulating operation</td>
</tr>
<tr>
<td>Temperature levels</td>
<td>3 + anti-freeze</td>
<td>3 + anti-freeze</td>
</tr>
<tr>
<td>Adjustable temperature</td>
<td>for set points of 0˚C (5 ÷ 37.7 °C)</td>
<td>for set points of 0.1˚C (5 ÷ 37.7 °C)</td>
</tr>
<tr>
<td>Control</td>
<td>summer/winter</td>
<td>summer/winter</td>
</tr>
<tr>
<td>Programming</td>
<td>minimum 30 minutes</td>
<td>minimum 30 minutes</td>
</tr>
</tbody>
</table>

GENERAL DATA

| Programs | 4 pre-set (2 Winter + 2 Summer) | 4 pre-set (2 Winter + 2 Summer) |
| Manual operation | permanent/temporary | permanent/temporary |
| Indication | relay status / temp. profile / low battery | relay status / temp. profile |
| Input | telephone control | telephone control |
| Lock | temperature set point | temperature set point |
| Measured temperature correction (OFFSET) | depending on position | depending on position |

SPECIAL NOTES

- Program pause for household cleaning
- Holiday program
- Pump activation program
- Ready for external temperature probe (option)
- Daylight savings automatic change

DIMENSIONS mm

CR028A/B - CR029A/B
### 1CR CR026A
3V battery operated weekly digital programmable thermostat with TOUCH SCREEN - anthracite color

### 1CR CR026B
White color

### 1CR CR25B
230 V weekly digital programmable thermostat with TOUCH SCREEN - anthracite color

### 1CR CR017AG
3V battery operated daily digital programmable thermostat, anthracite color

### 1CR CR017BG
White color

### 1CR CR018AS
3V battery operated weekly digital programmable thermostat, anthracite color

### 1CR CR018BS
White color

- Minimum and maximum temperature set point lock: For systems installed in homes, public environments, hotels, offices, and where it is necessary to fix the minimum and maximum temperature (password-protected).
- Anti-scale cycle: The programmable thermostat automatically starts the pump device or valve every day for two minutes to prevent seizure due to prolonged inactivity.
- Protection password (Mod. CR026 - CR017 - CR018): The settings of this product can be password-protected in order to be modified exclusively by enabled users (normally the plant manager). Minimum and maximum temperatures may be determined for the temperature regulation of the environments, in particular domestic and public environments, hotels, and offices.
- LOW BAT indication: Symbol  appears when the batteries are low and must be replaced within approximately 30 days. If the discharged batteries are not replaced within this time the display will turn off, showing symbol  steady. All the settings are saved and will be restored as soon as the batteries are replaced.
- Relay status indication: indication of the system operation status through the ON indication and symbols  and  flashing.

<table>
<thead>
<tr>
<th>1CR CR026A/B</th>
<th>1CR CR025B</th>
<th>1CR CR017AG/BS</th>
<th>1CR CR0308/G</th>
</tr>
</thead>
<tbody>
<tr>
<td>3V-2x1.5V AA (alkaline)</td>
<td>3V-2x1.5V AA (alkaline)</td>
<td>3V-2x1.5V AAA (alkaline)</td>
<td>3V-2x1.5V AA (alkaline)</td>
</tr>
</tbody>
</table>
| LCD 3" % backlit TOUCH SCREEN | LCD 3" % (backlit CR024B) | LCD 4" % | LCD 2" /
| adj. 0.2-1.2 °C with ON/OFF operation | adj. 0.2-2 °C with ON/OFF operation | adj. 0.1-0.9 °C with ON/OFF operation | adj. 0.3/0.5/0.7/0.9 °C with ON/OFF operation |
| 1 potential-free changeover contact 5/15/250V a.c. | 1 potential-free changeover contact 8/22A/250V a.c. | 1 potential-free changeover contact 5/15/250V a.c. | 1 potential-free changeover contact 5/15/250V a.c. |
| 7/10/15/20° with modulating operation 3 + anti-freeze | 7/10/15/20° with modulating operation 3 + anti-freeze | 7/10/15/20° | 7/10/15/20° |
| for set points of 0.1 °C (S = 37.7 °C) | for set points of 0.1 °C (S = 37.7 °C) | for set points of 1 °C (S = 36°C) | for set points of 1 °C (S = 36°C) |
| summer/winter | summer/winter | summer/winter | on graduated scale with set-point mechanical index (S = 37.7 °C) |
| minimum 30 minutes | minimum 30 minutes | minimum 60 minutes | minimum 30 minutes |

- 4 pre-set:
  - permanent/temporary
  - system fault
  - telephone control
  - temperature set point
  - depending on position

- 5 pre-set + 1 free (4+1 for CR025B)
  - permanent/temporary
  - system fault
  - telephone control
  - temperature set point
  - depending on position

Program pause for household cleaning
holiday program
pump activation program
preset date and time + heating program
daylight savings automatic change

Program pause for household cleaning
holiday program
pump activation program
daylight savings automatic change

Program pause for household cleaning
holiday program
pump activation program
daylight savings automatic change

CR026 A/B - CR025B
CR017AG/BS - CR018AS/BS
CR0308/G - CR039/S
## TECHNICAL DATA

### 1TP TE028A/B
- **Power supply:** 3V-2x1.5V AA (alkaline)
- **Display:** LCD 4.3” backlit
- **Differential:** adj. 0.2-1.2 °C with ON/OFF operation
- **Output:** 1 potential-free changeover contact 5(3)A/250V a.c.
- **Temperature control period:** 7/10/15/20” with modulating operation
- **Temperature levels:** 2 + anti-freeze for set points of 0.1 °C (5 ÷ 37.7 °C)
- **Adjustable temperature:** summer/winter
- **Control:** for user and installer
- **Password protection:**
- **Programs:**
  - Manual operation
  - Relay status / low battery
  - Telephone control and remote contact
  - Temperature set point
  - Depending on position
- **Special notes:**
  - Program pause for houseold cleaning
  - Holiday program
  - Pump activation program
  - Ready for external temperature probe (option)

### 1TP TE029A/B
- **Power supply:** 230V 50-60Hz
- **Display:** LCD 4.3” backlit
- **Differential:** adj. 0.2-1.2 °C with ON/OFF operation
- **Output:** 1 potential-free changeover contact 5(3)A/250V a.c.
- **Temperature control period:** 7/10/15/20” with modulating operation
- **Temperature levels:** 2 + anti-freeze for set points of 0.1 °C (5 ÷ 37.7 °C)
- **Adjustable temperature:** summer/winter
- **Control:** for user and installer
- **Password protection:**
- **Programs:**
  - Manual operation
  - Relay status
  - Telephone control and remote contact
  - Temperature set point
  - Depending on position
- **Special notes:**
  - Program pause for houseold cleaning
  - Holiday program
  - Pump activation program

## GENERAL DATA

### Programs
- Manual operation
- Telephone control and remote contact
- Temperature set point
- Depending on position

### Indication
- Telephone control and remote contact
- Temperature set point
- Depending on position

### Lock
- Telephone control and remote contact
- Temperature set point
- Depending on position

### Measured temperature correction (OFFSET)
- Telephone control and remote contact
- Temperature set point
- Depending on position

## SPECIAL NOTES

- Program pause for houseold cleaning
- Holiday program
- Pump activation program
- Ready for external temperature probe (option)

## DIMENSIONS mm

### TE028A/B - TE029A/B

**1TP TE028A/B**
- Anthracite color
- White color

**1TP TE029A/B**
- Anthracite color
- White color

---

- **White led backlight with optimized contrast:** with "WHITE LED" technology designed to optimize the displaying of digits for perfect reading. The elegant white color backlight makes information readable in all lighting conditions.
- **Navigation menu:** enhances the user experience guaranteeing access to all functions with few simple steps.
- **Indication of consumption:** the 230V models are provided with four buttons that change color according to the temperature programmed, giving a visual indication of consumption.
- **"ALL GLASS" surface finishing:** the particular plastics processing allows to obtain a nice "glass" effect on the whole front surface.
- **Perfect for any type of heating system:** can adjust the temperature according to an ON / OFF or modulating method making the products suitable for all kinds of systems characterized by different thermal inertias.
- **Navigation menu:** allows, with a few simple steps, to manage all issues related to temperature control by saving time and achieving maximum convenience.
- **External temperature probe:** the battery operated versions have the option of connecting an external temperature probe: adjust the heating or cooling according to the temperature detected by the external probe, view the remote temperature, set a maximum operating temperature of the underfloor heating beyond which the heating is disabled.
- Perfect for any type of heating system (TE526-530-531-532): can adjust the temperature according to an ON / OFF or modulating method making the products suitable for all kinds of systems characterized by different thermal inertias.
- Inaccessible controls (TE532): ideal for public areas as the keys are protected by a cover, so only the installer can change the settings.
- Telephone control (TE526): the connection of a remote telephone programmer allows you to control the thermostat from a distance.
- Temperature offset: if for any reason the thermostat must be installed in a position where the detected temperature can be affected (e.g., an external wall), an Offset value (correction value) can be set.
- Minimum and maximum temperature set point lock: the values can be fixed and protected by password

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
<th>1TP TE526A/B</th>
<th>1TP TE530B</th>
<th>1TP TE400/B - TE410/B</th>
<th>1TP TE402/B - TE411/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>230V 50-60Hz</td>
<td>3V-2x1.5V AA (alkaline)</td>
<td>3V-2x1.5V AA (alkaline)</td>
<td>3V-2x1.5V AA (alkaline)</td>
</tr>
<tr>
<td>Display</td>
<td>LCD 3”/4” backlit</td>
<td>LCD 2”/3” backlit</td>
<td>LCD 1” backlit</td>
<td>LCD 1” backlit</td>
</tr>
<tr>
<td>Differential</td>
<td>adj. 0.2-1.2 °C with ON/OFF operation</td>
<td>adj. 0.2-1.2 °C with ON/OFF operation</td>
<td>adj. 0.3/0.5/0.7/0.9 °C with ON/OFF operation</td>
<td>adj. 0.3/0.5/0.7/0.9 °C with ON/OFF operation</td>
</tr>
<tr>
<td>Output</td>
<td>1 potential-free changeover contact 5/3/1A/250V a.c.</td>
<td>1 potential-free changeover contact 5/3/1A/250V a.c.</td>
<td>1 potential-free changeover contact 8/2/1A/250V a.c.</td>
<td>1 potential-free changeover contact 8/2/1A/250V a.c.</td>
</tr>
<tr>
<td>Temperature control period</td>
<td>7/20 minutes with modulating operation</td>
<td>7/20 minutes with modulating operation</td>
<td>7/20 minutes with modulating operation</td>
<td>7/20 minutes with modulating operation</td>
</tr>
<tr>
<td>Temperature levels</td>
<td>2 + anti-freeze for set points of 0.1 °C (5 ÷ 37.7 °C)</td>
<td>2 + anti-freeze for set points of 0.1 °C (5 ÷ 37.7 °C)</td>
<td>2 + anti-freeze for set points of 0.1 °C (5 ÷ 37.7 °C)</td>
<td>2 + anti-freeze for set points of 0.1 °C (5 ÷ 37.7 °C)</td>
</tr>
<tr>
<td>Adjustable temperature</td>
<td>summer/winter</td>
<td>summer/winter</td>
<td>summer/winter</td>
<td>summer/winter</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programming</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENERAL DATA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured temperature correction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECIAL NOTES
- LCD Touch Screen display timed backlighting
- controls not accessible, because reserved to installation technicians (mod. 1TP TE532B)
- ON/OFF/Night reduction (TE401/TE410)
- SUMMER/OFF/WINTER (TE402/TE411)

DIMENSIONS mm
- TE526A/B
- TE530B - TE531B - TE532B
- TE400/B - TE410/B
- TE402/B - TE411/B
## WALL-MOUNTED ROOM THERMOSTATS

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>Power supply</th>
<th>Output</th>
<th>Operation</th>
<th>Temperature levels</th>
<th>Adjustment range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TP TE500A/B</td>
<td>230 V</td>
<td>1 potential-free adjustable changeover</td>
<td>ON/OFF (differential fixed at 0.4 °C)</td>
<td>5 ÷ 30 °C</td>
<td>0 ÷ 60 °C (TE502B)</td>
</tr>
<tr>
<td>1TP TE501A/B</td>
<td>230 V</td>
<td>1 potential-free adjustable changeover</td>
<td>ON/OFF (fixed control period)</td>
<td>5 ÷ 30 °C</td>
<td></td>
</tr>
<tr>
<td>1TP TE502B</td>
<td>230 V</td>
<td>1 potential-free adjustable changeover</td>
<td>ON/OFF (differential fixed at 0.4 °C)</td>
<td>5 ÷ 30 °C</td>
<td></td>
</tr>
<tr>
<td>1TP TE503A/B</td>
<td>230 V</td>
<td>1 potential-free adjustable changeover</td>
<td>ON/OFF (differential fixed at 0.4 °C)</td>
<td>5 ÷ 30 °C</td>
<td></td>
</tr>
</tbody>
</table>

### GENERAL DATA

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote input</td>
<td>LED</td>
</tr>
<tr>
<td>Relay status indication</td>
<td>LED</td>
</tr>
<tr>
<td>Supply presence indication</td>
<td>S01B - S02B</td>
</tr>
<tr>
<td>ON/OFF status selector</td>
<td>S03B</td>
</tr>
<tr>
<td>Summer/OFF/Winter selector</td>
<td></td>
</tr>
</tbody>
</table>

### SPECIAL NOTES

- Temperature regulation on graduated scale with set-point mechanical index
- Set-point with temperature mechanical block

**1TP TE500A/B - 1TP TE501B - 1TP TE503B**
- Wall mounted and / or semi-recessed installation

**1TP TE565B**
- Temperature regulation on graduated scale with set-point mechanical index
- Set-point with temperature mechanical block

**1TG TEG130 - 1TG TEG131**
- Temperature regulation on graduated scale with set-point mechanical index
- Set-point with temperature mechanical block

**1TG TEG131RA - 1TG TEG132**
- Temperature regulation on graduated scale with set-point mechanical index
- Set-point with temperature mechanical block

**1TG TEG136**
- Temperature regulation on graduated scale with set-point mechanical index
- Set-point with temperature mechanical block

### DIMENSIONS mm

<table>
<thead>
<tr>
<th>Model</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TP TE500B</td>
<td>76</td>
<td>40</td>
</tr>
<tr>
<td>1TP TE501B</td>
<td>81</td>
<td>33.5</td>
</tr>
<tr>
<td>1TP TE503B</td>
<td>107</td>
<td>120</td>
</tr>
</tbody>
</table>
**WIRED CONTROL BOXES**

**ACCESSORIES**

1PA PPBC01
Cable glands for control boxes

**1AC BPO4230**
4-zones control box with 4+1 relay outputs

- The control boxes are electronic devices equipped with 4-8 inputs and 4-8 outputs for control of opening / closing of the electro valves mounted on distribution manifolds.

- Intelligent operation mode to start or stop any circulation pump installed in the hydraulic distribution box and / or the circulation pump of the individual boiler and / or the zone valve. When all the electro valves are close, the control box stops the pump / zone valve. When even only one of electro valves is open, the control box restarts the pump or the zone valve.

- Input for the connection of a time switch for programming the operating times of the heating system of the apartment (and of offices) and input for remote control switching of the system for winter / summer mode.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>230V 50Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeover contact</td>
<td>10A/250V c.a. pot. free changeover contact</td>
</tr>
<tr>
<td>Controllable zones</td>
<td>4/8</td>
</tr>
<tr>
<td>Output</td>
<td>controlled by time switch</td>
</tr>
<tr>
<td>Summer/winter output</td>
<td>controlled remotely</td>
</tr>
<tr>
<td>Indication winter operation</td>
<td>LED</td>
</tr>
<tr>
<td>Indication summer operation</td>
<td>LED</td>
</tr>
<tr>
<td>ON/OFF indication pump control</td>
<td>LED</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP 30</td>
</tr>
</tbody>
</table>

**PARTICULAR FEATURES**

In order to avoid damage to the system, the pump is activated only when at least one zone valve is open. There are two operation modes: instant or delayed.

**WIRING DIAGRAM**

- GREEN LED ON = ON (mains voltage ON)
  - HEATING mode operation
- GREEN LED ON = ON (mains voltage ON)
  - COOLING mode operation
- ON/OFF LED status of thermal zones
- Status of the Pump command output
- LED ON = output activated

**DIMENSIONS mm**

- Width: 76
- Height: 273
- Depth: 69
MECHANICAL INDUSTRIAL THERMOSTATS

**1TC TB060**
Contact thermostat for piping

**1TC TB065**
Thermostat with immersion bulb

**1TC TB071**
Thermostat for hot air generators

**1TC TB081**
Thermostat with external probe

**1TC TB088**
Thermostat with external probe

**1TC TB090**
Thermostat with external probe

**1TC TB091**
Thermostat with external probe

### TECHNICAL DATA

- **Output**: 1 potential free change over contact 16(5)A/250V a.c.
- **Operation**: ON/OFF (fixed differential 4 °C ± 2 °C)
- **Temperature levels**:
  - +30/°C +90 °C
- **Adjustment range**: 1 with continuous regulation
- **Protection degree**: IP20

### SPECIAL NOTES

- **Installation in piping with supplied elastic strap**
- **Bulb diameter**: 14 mm
- **Bulb for immersion installation**
- **Safety limiting device**: T = 100 °C
- **Installation in hot air generators**

---

1TC TB060
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 4 °C ± 2 °C)
- 1 with continuous regulation
- +30/°C +90 °C
- Protection degree: IP20

1TC TB065
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 4 °C ± 2 °C)
- 1 with continuous regulation
- +30/°C +90 °C
- Protection degree: IP20

1TC TB071
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 4 °C ± 2 °C)
- 1 with continuous regulation
- +30/°C +90 °C
- Protection degree: IP20

1TC TB081
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 4 °C ± 2 °C)
- 1 with continuous regulation
- +30/°C +90 °C
- Protection degree: IP20

1TC TB088
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 1.5 °C ± 1 °C)
- 1 with continuous regulation
- +4/°C +40 °C
- Protection degree: IP20

1TC TB090
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 1.5 °C ± 1 °C)
- 1 with continuous regulation
- -5/°C +35 °C
- Protection degree: IP4

1TC TB091
- 1 potential free change over contact 16(5)A/250V a.c.
- ON/OFF (fixed differential 1.5 °C ± 1 °C)
- 1 with continuous regulation
- +20/°C +60 °C
- Protection degree: IP20
HEAT AND WATER DIRECT METERING
RF METERS WITH PULSE COUNTER 1RP 130102 / M-BUS RADIO

- Compact meters for heat/cooling with pulse output
  - 1RP CC1501ME
  - 1RP CC2501ME

- Pulse counter with two pulse inputs
  - 1RP 130102

- 1 fitting kit (2pcs)
  - 1RP 131205002 (1RP CC1501ME)
  - 1RP 131207002 (1RP CC2501ME)

- 1 m/f valve
  - 1RP 19560500B (1RP CC1501ME)
  - 1RP 19560700B (1RP CC2501ME)

- 1 f/f valve
  - 1RP 19540500S (1RP CC1501ME)
  - 1RP 19540700S (1RP CC2501ME)

- 1 Filter
  - 1RP 192405001 (1RP CC1501ME)
  - 1RP 192407001 (1RP CC2501ME)

- 1 Ball valve with probe holder
  - 1RP 195405711 (1RP CC1501ME)
  - 1RP 195407711 (1RP CC2501ME)

  Alternative
  - TEE
    - 1RP PTEE15 (1RP CC1501ME)
    - 1RP PTEE20 (1RP CC2501ME)

- Single jet residential hot water meter with pulse output, fittings included
  - 1RP CACS*02
  - 1RP CAFS*02

- Pulse meter with two pulse inputs
  - 1RP 130102

- Single jet residential hot water meter M-BUS ready
  - 1RP CACS15P
  - 1RP CAFS15P

- Wireless M-BUS compact radio module
  - 1RP MBR02

- Coaxial meters
  - 1RP CACS15P
  - 1RP CAFS15P

- Wireless M-BUS compact radio module
  - 1RP MBR02

- Multi-jet heat meter
  - 1RP CLC*

- Electronic thermal energy calculator with pulse output
  - K10
    - 1RP CEC02EK10

- Pulse counter with two pulse inputs
  - 1RP 130102

- 1 fitting kit (2pcs)
  - 1RP 131210002 (1RP CLC352502)
  - 1RP 131212002 (1RP CLC603202)
  - 1RP 131215002 (1RP CLC1004002)
  - 1RP 131220002 (1RP CLC1505002)

- Two Ø 5mm L 3 m probes
  - 1RP ST25PT500 (DN32-65)

- Two probe holder pits
  - 1RP PPST3265 (DN32-65)

- TEE
  - 1RP PTEE25 (1RP CLC352502)

- Two Ø 6mm L 3 m probes
  - 1RP STPT500

- Two probe holder pits
  - 1RP PPST80125 (DN 80-125)
  - 1RP PPST150200 (DN 150)

- Electronic thermal energy calculator with pulse output
  - K100
    - 1RP CEC02EK100

- Pulse counter with two pulse inputs
  - 1RP 130102

- Woltmann heat meter
  - 1RP CW*

- Electronic thermal energy calculator with pulse output
  - K100
    - 1RP CEC02EK100

- Pulse counter with two pulse inputs
  - 1RP 130102

- Two Ø 6mm L 3 m probes
  - 1RP STPT500

- Two probe holder pits
  - 1RP PPST3265 (DN 32-65)
  - 1RP PPST80125 (DN 80-125)
  - 1RP PPST150200 (DN 150)

DATA READING
- VIA FLOOR CONCENTRATOR / REPEATERS
  - 1RP 100901
  - 1RP 100902

- OR VIA LAPTOP EQUIPPED WITH WSL KEY
  - 1RP 100802

38
### WIRED M-BUS METERS

**M-BUS compact meters**
for heat/cooling

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CC15M02</td>
<td>1RP CC25M02</td>
</tr>
</tbody>
</table>

**1 fitting kit** (2pcs)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 131205002</td>
<td>(1RP CC15M02)</td>
</tr>
<tr>
<td>1RP 131207002</td>
<td>(1RP CC25M02)</td>
</tr>
</tbody>
</table>

**1 m/f valve**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 195605008</td>
<td>(1RP CC15M02)</td>
</tr>
<tr>
<td>1RP 195607008</td>
<td>(1RP CC25M02)</td>
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</table>

**1 f/f valve**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 195405005</td>
<td>(1RP CC15M02)</td>
</tr>
<tr>
<td>1RP 195407005</td>
<td>(1RP CC25M02)</td>
</tr>
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</table>

**1 Filter**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1RP 192405001</td>
<td>(1RP CC15M02)</td>
</tr>
<tr>
<td>1RP 192407001</td>
<td>(1RP CC25M02)</td>
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</tbody>
</table>

**1 Ball valve with probe holder**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1RP 195405701</td>
<td>(1RP CC15M02)</td>
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<tr>
<td>1RP 195407701</td>
<td>(1RP CC25M02)</td>
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**Alternative TEE**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1RP PTEE15</td>
<td>(1RP CC15M02)</td>
</tr>
<tr>
<td>1RP PTEE20</td>
<td>(1RP CC25M02)</td>
</tr>
</tbody>
</table>

**1 fitting kit** (2pcs)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 131210002</td>
<td>(1RP CLC352502)</td>
</tr>
<tr>
<td>1RP 131212002</td>
<td>(1RP CLC603202)</td>
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<tr>
<td>1RP 131215002</td>
<td>(1RP CLC1004002)</td>
</tr>
<tr>
<td>1RP 131220002</td>
<td>(1RP CLC1505002)</td>
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</table>

**1 Ball valve**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP 195405711</td>
<td>(1RP CC15M02)</td>
</tr>
<tr>
<td>1RP 195407711</td>
<td>(1RP CC25M02)</td>
</tr>
</tbody>
</table>

**Two Ø 5mm L 3 m probes**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP ST25PT500</td>
<td>(1RP CLC352502)</td>
</tr>
<tr>
<td>1RP ST25PT500</td>
<td>(1RP CLC352502)</td>
</tr>
</tbody>
</table>

**Two Ø 6mm L 3 m probes**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP STPT500</td>
<td>(DN32-65)</td>
</tr>
<tr>
<td>1RP STPT500</td>
<td>(DN32-65)</td>
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</tbody>
</table>

**Two probe pits**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1RP PPST3265</td>
<td>(DN 32-65)</td>
</tr>
<tr>
<td>1RP PPST80125</td>
<td>(DN 80-125)</td>
</tr>
<tr>
<td>1RP PPST150200</td>
<td>(DN 150)</td>
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</table>

**Woltmann heat meters**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1RP CW*</td>
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**Two Ø 6mm L 3 m probes**

<table>
<thead>
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<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1RP STPT500</td>
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</table>

**M-BUS electronic thermal energy calculator K10**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1RP CEC02MK10</td>
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</table>

**DATA READING VIA DATALOGGER**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1RP CDMB06001</td>
<td></td>
</tr>
<tr>
<td>1RP CDMB12001</td>
<td></td>
</tr>
<tr>
<td>1RP CDMB25001</td>
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</tr>
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</table>

**Coaxial meters**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS15P</td>
<td></td>
</tr>
<tr>
<td>1RP CAFS15P</td>
<td></td>
</tr>
</tbody>
</table>

**M-BUS module**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1RP BMF02</td>
<td></td>
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</tbody>
</table>

**M-BUS electronic thermal energy calculator K100**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CEC02MK100</td>
<td></td>
</tr>
</tbody>
</table>
COMPACT METERS FOR HEAT AND COOLING

- Inductive non-magnetic single jet meter
- Two PT500 temperature probes
- Electronic unit with LCD display
- Electronic correction error curve
- Storage of monthly read-outs
- The calculator can be rotated around 360° and can be removed from the meter for easy reading
- Certified to directive MID 2004/22/EC (MID MI-004) and EN 1434

DIRECT READ

1RP CC1502
Meter for heat and cooling
DN15
Flow rate Qn 1.5 m³/h direct read

1RP CC2502
Meter for heat and cooling
DN20
Flow rate Qn 2.5 m³/h direct read

M-BUS WIRED / RADIO

1RP CC15M02 / 1RP CC15R02
Meter for heat and cooling DN15
Flow rate Qn 1.5 m³/h direct read, M-BUS wired (M02) or radio (R02) with two auxiliary inputs for DHW and DCW meters with pulse output

1RP CC25M02 / 1RP CC25R02
Meter for heat and cooling DN20
Flow rate Qn 2.5 m³/h direct read, M-BUS wired (M02) or radio (R02) with two auxiliary inputs for DHW and DCW meters with pulse output

PULSE OUTPUT

1RP CC1501ME
Meter for heat and cooling DN15
Flow rate Qn 1.5 m³/h direct read with pulse output

1RP CC2501ME
Meter for heat and cooling DN20
Flow rate Qn 2.5 m³/h direct read with pulse output

DIRECT METERING

1RP MBUSB01
Parameterisation optical head with configuration software. Accessory required only for radio meters

1RP 130102
Radio transmitter module Diretto-302 with two pulse inputs

TECHNICAL DATA

Nominal flow rate Qp
Max. flow rate
Sensitivity
Head loss ∆p at Qn
Nominal pressure Pn
Nominal diameter
Assembly length
Connection threading
Operating temperature limits
Maximum temperature
Type of temperature sensor
Temperature sensor cable length
Power supply
Lifetime
Protection degree
LCD display
Pulse value
Assembly position on return

ACCESSORIES

1RP 131205002
DN20 ¾”x½” fitting kit for CC15 heat meters

1RP 131207002
DN25 1”x¾” fitting kit for CC25 heat meters

1RP 195405005
F/F ¾” ball valve full flow with throttle handle

1RP 195407005
F/F ¼” ball valve full flow with throttle handle

1RP 195405711
¾” threaded ball valves with CC15 probe holder pit

1RP 195407711
¼” threaded ball valves with CC25 probe holder pit

1RP PTEE15
TEE wet mounting DN15-¼”

1RP PTEE20
TEE wet mounting DN20-¼”

1RP PTEE15
TEE wet mounting DN15-¼”

1RP PTEE20
TEE wet mounting DN20-¼”

FILTERS F/F VALVES

BALL VALVES

FITTINGS

M/F VALVES FITTINGS

FILTERS F/F VALVES

BALL VALVES

FITTINGS
RESIDENTIAL HOT/COLD WATER METERS

- Single jet dry dial meter
- Nominal flow rate
  On 2.5 / 4 m³/h
- Magnetic drive
- 360° rotating cover
- Condensation-proof dial
- Certified to directive 2004/22/EC
  (Annex MI-001)
- Range 1/2" to 1”
- For residential use

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum flow rate (m³/h)</th>
<th>Nominal flow rate (m³/h)</th>
<th>Minimum flow rate (l/h)</th>
<th>Min. reading (l)</th>
<th>Max. reading (m³)</th>
<th>Operating pressure (bar)</th>
<th>Pulse value</th>
<th>Max. operative temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS25E03</td>
<td>2.5 / 4</td>
<td>2.5 / 4</td>
<td>0.05</td>
<td>100,000</td>
<td>100,000</td>
<td>16</td>
<td>10</td>
<td>water at 50°C or 90°C</td>
</tr>
<tr>
<td>1RP CACS25E02</td>
<td>2.5 / 4</td>
<td>2.5 / 4</td>
<td>0.05</td>
<td>100,000</td>
<td>100,000</td>
<td>16</td>
<td>10</td>
<td>water at 50°C or 90°C</td>
</tr>
<tr>
<td>1RP CACS40E02</td>
<td>4.0 / 6</td>
<td>4.0 / 6</td>
<td>0.05</td>
<td>100,000</td>
<td>100,000</td>
<td>16</td>
<td>10</td>
<td>water at 50°C or 90°C</td>
</tr>
<tr>
<td>1RP CAFS40E02</td>
<td>4.0 / 6</td>
<td>4.0 / 6</td>
<td>0.05</td>
<td>100,000</td>
<td>100,000</td>
<td>16</td>
<td>10</td>
<td>water at 50°C or 90°C</td>
</tr>
</tbody>
</table>

DIMENSIONS

<table>
<thead>
<tr>
<th>Calibre</th>
<th>L (mm)</th>
<th>H (mm)</th>
<th>h (mm)</th>
<th>B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 15</td>
<td>73.2</td>
<td>14.5</td>
<td>72.8</td>
<td></td>
</tr>
<tr>
<td>DN 20</td>
<td>80</td>
<td>14.5</td>
<td>72.8</td>
<td></td>
</tr>
</tbody>
</table>

ACCESSORIES

- Single jet dry dial meter
- Magnetic drive.
- Valve connector equipped with a tap to open/close the valve
- Certified MID MI-001
- For residential use

M-BUS READY

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS2503</td>
<td>Residential hot water meter On 2.5 m³/h - DN15 ¾” direct read dial and M-BUS READY with L 80 mm fittings</td>
</tr>
<tr>
<td>1RP CACS2502</td>
<td>Residential hot water meter On 2.5 m³/h - DN15 ¾” direct read dial and M-BUS READY with L 110 mm fittings</td>
</tr>
<tr>
<td>1RP CACS4002</td>
<td>Residential hot water meter On 4 m³/h - DN20 1” direct read dial and M-BUS READY with L 130 mm fittings</td>
</tr>
</tbody>
</table>

PULSE OUTPUT

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS25E03</td>
<td>Residential hot water meter On 2.5 m³/h - DN15 ¾” direct read dial with pulse output and L 80 mm fittings</td>
</tr>
<tr>
<td>1RP CACS25E02</td>
<td>Residential hot water meter On 2.5 m³/h - DN15 ¾” direct read dial with pulse output and L 110 mm fittings</td>
</tr>
<tr>
<td>1RP CACS40E02</td>
<td>Residential hot water meter On 4 m³/h - DN20 1” direct read dial with pulse output and L 130 mm fittings</td>
</tr>
</tbody>
</table>

COAXIAL METERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS2503</td>
<td>Residential hot water meter On 2.5 m³/h - DN15 ¾” direct read dial and M-BUS READY or for pulse output, includes 40 mm ½” fitting</td>
</tr>
<tr>
<td>1RP CACS2502</td>
<td>Residential hot water meter On 2.5 m³/h - DN15 ¾” direct read dial and M-BUS READY or for pulse output, includes 40 mm ½” fitting</td>
</tr>
<tr>
<td>1RP CACS4002</td>
<td>Residential hot water meter On 4 m³/h - DN20 1” direct read dial and M-BUS READY or for pulse output, includes 40 mm ½” fitting</td>
</tr>
</tbody>
</table>

ACCESSORIES

- Single jet dry dial meter
- Magnetic drive.
- Valve connector equipped with a tap to open/close the valve
- Certified MID MI-001
- For residential use

COAXIAL

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP CACS15P</td>
<td>Residential hot water meter On 1.5 m³/h - DN15 ¾” direct read dial and M-BUS READY or for pulse output, includes 40 mm ½” fitting</td>
</tr>
<tr>
<td>1RP CAFS15P</td>
<td>Residential cold water meter On 1.5 m³/h - DN15 ¾” direct read dial and M-BUS READY or for pulse output, includes 40 mm ½” fitting</td>
</tr>
</tbody>
</table>

ACCESSORIES

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RP M15P</td>
<td>Pulse transmitter module for coaxial meters</td>
</tr>
<tr>
<td>1RP MBF02</td>
<td>M-BUS transmitter module for M-BUS READY coaxial meters</td>
</tr>
<tr>
<td>1RP MBR02</td>
<td>Wireless M-BUS compact radio module for M-BUS READY coaxial meters</td>
</tr>
<tr>
<td>1RP 070A</td>
<td>40 mm ¾” fitting</td>
</tr>
<tr>
<td>1RP 062A</td>
<td>80 mm ½” fitting</td>
</tr>
</tbody>
</table>
THERMAL PLANT T90°C

1RP CLC352502
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 3.5 m³/h - DN25

1RP CLC603202
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 6.0 m³/h - DN32

1RP CLC1004002
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 10.0 m³/h - DN40

1RP CLC1505002
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 15 m³/h - DN50

THERMAL SOLAR T130°C

1RP CLC352502S
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 3.5 m³/h - DN25

1RP CLC603202S
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 6.0 m³/h - DN32

1RP CLC1004002S
Multi-jet meter for direct read dial with pulse output and without fittings
MI-004 approved EN 1434 - Qn 10.0 m³/h - DN40

• The meter can be used in the thermal plant on the heating and DHW lines (T 90°C max). Complete with reed pulse emitter, which can be connected to the thermal energy calculator. The meters T130°C can be used for solar accounting.
• Must be installed in horizontal position
• The pulse emitter is equipped with a 1.5 m cable
• Certified to directive MID 2004/22/EC (Annex MI-001)
• Environmental class B
• Accuracy class 3 (EN 1434)

TECHNICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>352502</th>
<th>603202</th>
<th>1004002</th>
<th>1505002</th>
<th>352502S</th>
<th>603202S</th>
<th>1004002S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal flow rate Qn (m³/h)</td>
<td>3.5</td>
<td>6</td>
<td>10</td>
<td>15</td>
<td>3.5</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Minimum flow rate Qmin (l/h)</td>
<td>7</td>
<td>12</td>
<td>20</td>
<td>30</td>
<td>7</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Maximum flow rate Qmax (m³/h)</td>
<td>25</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>25</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>Nominal diameter DN (mm)</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>130</td>
<td>130</td>
<td>90</td>
</tr>
<tr>
<td>Maximum operating pressure (bar)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Pulse value (l)</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>130</td>
<td>130</td>
<td>90</td>
</tr>
<tr>
<td>Maximum operating temperature (°C)</td>
<td>260</td>
<td>260</td>
<td>300</td>
<td>300</td>
<td>260</td>
<td>260</td>
<td>300</td>
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DIMENSIONS

<table>
<thead>
<tr>
<th></th>
<th>352502</th>
<th>603202</th>
<th>1004002</th>
<th>1505002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length without fittings (mm)</td>
<td>260</td>
<td>260</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Length with fittings (mm)</td>
<td>374</td>
<td>374</td>
<td>434</td>
<td>454</td>
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<tr>
<td>B (mm)</td>
<td>137</td>
<td>137</td>
<td>177</td>
<td>177</td>
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<tr>
<td>C (mm)</td>
<td>94</td>
<td>94</td>
<td>117</td>
<td>120</td>
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<tr>
<td>WEIGHTS Kg</td>
<td>2.7</td>
<td>2.8</td>
<td>5.2</td>
<td>5.8</td>
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</table>

ACCESSORIES

1RP ST25PT500
PT500 Temperature probes Ø 5mm x 45mm for DN25 meter

1RP STPT500
PT500 Temperature probes Ø 5mm x 45mm for meters from DN32 to DN50

1RP STPT50010M
PT500 Temperature probes Ø 6mm x 45mm with 10 m cable (from DN32 to DN50)

1RP PT4504711
1” threaded ball valve with probe holder pit

1RP PTEE25
TEE wet mounting for DN25 meter

1RP PPST3265
Two probe holder pits with dry mounting DN32-65 6 mm probes

1RP CEC02EK10
K10 themari energy calculator (pulse output version)

1RP CEC02MK10
K10 themari energy calculator (M-BUS version)

Pressure drop diagram

ASSEMBLY ACCESSORIES

1RP 131210002
DN32 fitting kit - 1” x 1” for CLC 35 2502 meters

1RP 131212002
DN40 fitting kit - 1” x 1” for CLC 60 3202 meters

1RP 131215002
DN50 fitting kit - 2” x 1” for CLC 100 4002 meters

1RP 131220002
DN65 fitting kit - 2” x 1” for CLC 150 5002 meters

DIMENSIONS mm
THERMAL PLANT METERING COMPONENTS

- The meter can be used in the thermal power plant on the heating and DHW lines. It is equipped with a pulse emitter, which can be connected to the thermal energy calculator.
- The measurement elements operate according to the Woltmann principle, suitable for high flow rate values.
- Suitable for horizontal or vertical installation positions.
- The pulse emitter is equipped with a 3 m cable.
- 355° rotatable dial.
- IP68.
- Certified to directive MID 2004/22/EC (Annex Mi-004).

ACCESSORIES

- **1RP STPT500**: PT500 temperature probes Ø 6mm x 45mm.
- **1RP STPT50010M**: PT500 temperature probes Ø 6mm x 45mm with 10 m cable (from DN32 to DN50).
- **1RP PST3265**: Two probe holder pits with dry mounting DN80-125 b mm probes.
- **1RP PPST155002**: Two probe holder pits for dry mounting DN150-200 for 6 mm probes.
- **1RP CEC02E100K**: K100 thermal energy calculator (pulse output version).
- **1RP CEC02E2MK100**: K100 thermal energy calculator (M-Bus version).
- **1RP CEC02E2K1000**: K1000 thermal energy calculator (pulse output version) for DN150.

TECHNICAL DATA

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<thead>
<tr>
<th></th>
<th>1505002</th>
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<th>4008002</th>
<th>60010002</th>
<th>100012502</th>
<th>150015002</th>
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<tbody>
<tr>
<td>Horizontal permanent flow rate Qp (m³/h)</td>
<td>15</td>
<td>25</td>
<td>40</td>
<td>60</td>
<td>120</td>
<td>150</td>
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<tr>
<td>Horizontal min. flow rate Qih (m³/h)</td>
<td>0,6</td>
<td>1</td>
<td>1,6</td>
<td>2,4</td>
<td>4</td>
<td>b</td>
</tr>
<tr>
<td>Vertical min. flow rate Qvi (m³/h)</td>
<td>1,5</td>
<td>2,5</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>b</td>
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<tr>
<td>Max flow rate Qs (m³/h)</td>
<td>30</td>
<td>50</td>
<td>80</td>
<td>120</td>
<td>200</td>
<td>300</td>
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<td>Nominal diameter DN (mm)</td>
<td>50</td>
<td>65</td>
<td>80</td>
<td>100</td>
<td>125</td>
<td>150</td>
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<tr>
<td>Pressure drop ∆p (bar) at max flow rate</td>
<td>0,04 (30)</td>
<td>0,08 (60)</td>
<td>0,13 (80)</td>
<td>0,2 (120)</td>
<td>0,1 (200)</td>
<td>0,1 (300)</td>
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<tr>
<td>Pulse value (l)</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Readable minimum value (l)</td>
<td>0,5</td>
<td>0,5</td>
<td>0,5</td>
<td>0,5</td>
<td>0,5</td>
<td>5</td>
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<tr>
<td>Maximum operating temperature (°C)</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
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<td>PESI Kg</td>
<td>7,7</td>
<td>10</td>
<td>14</td>
<td>18</td>
<td>20,5</td>
<td>35,5</td>
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DIMENSIONS mm

<table>
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<th>4008002</th>
<th>60010002</th>
<th>100012502</th>
<th>150015002</th>
</tr>
</thead>
<tbody>
<tr>
<td>L (mm)</td>
<td>200</td>
<td>200</td>
<td>225</td>
<td>250</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td>H (mm)</td>
<td>120</td>
<td>120</td>
<td>150</td>
<td>150</td>
<td>160</td>
<td>177</td>
</tr>
<tr>
<td>h (mm)</td>
<td>73</td>
<td>85</td>
<td>95</td>
<td>105</td>
<td>118</td>
<td>135</td>
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<tr>
<td>g (mm) - disassembly height</td>
<td>200</td>
<td>200</td>
<td>270</td>
<td>270</td>
<td>280</td>
<td>356</td>
</tr>
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Pressure drop diagram DN50 - DN65 - DN80 - DN100

Typical error diagram DN50 - DN150

Pressure drop diagram DN125 - DN150
THERMAL POWER PLANT METERING COMPONENTS

1RP CEC02EK10
Electronic thermal energy calculator with pulse output for CLC meters
Input: 1 pulse = 10 l
Output: 1 pulse = 10 kWh

1RP CEC02EK100
Electronic thermal energy calculator with pulse output for CW meters
Input: 1 pulse = 100 l
Output: 1 pulse = 100 kWh

1RP CEC02EK1000
Electronic thermal energy calculator with pulse output for CW meters DN150
Input: 1 pulse = 1000 l
Output: 1 pulse = 1000 kWh

1RP CEC02MK10
M-BUS Electronic thermal energy calculator with 2 auxiliary pulse inputs for CLC meters
Input: 1 pulse = 10 litres

1RP CEC02MK100
M-BUS Electronic thermal energy calculator with 2 auxiliary pulse inputs for CW meters
Input: 1 pulse = 100 litres

1RP ST25PT500
Two water temperature probes
Ø = 5 mm / 45mm / 3 m

1RP STPT500
Two water temperature probes
Ø = 6 mm / 45mm / 3 m

1RP STPT50010M
Two water temperature probes
Ø = 6 mm / 45mm / 10 m

1RP 195409711
1" threaded ball valve with probe holder pit

1RP PTEE25
TEE wet mounting DN25 for probe Ø 6 mm

1RP PPST3265
Two probe holder pits for dry mounting DN32-65 for probes Ø 6 mm

1RP PPST80125
Two probe holder pits for dry mounting DN80-125 for probes Ø 6 mm

1RP PPST150200
Two probe holder pits for dry mounting DN150-200 for probes Ø 6 mm

1RP AL230VCEC02
230-50Hz power supply for CEC meters

• Combined with multi-jet meters and Woltmann meters and temperature sensors, are suitable for recording heating consumptions in thermal plants.
• The main features are:
  - combined heat/cooling
  - platinum high-precision measurement probes
  - can be connected to any meter with pulse output
  - battery power supply

TECHNICAL DATA
Calibrated temperature range
Calibrated temperature difference
Types of temperature probes
Temperature difference - Heat
Temperature difference - Cold
Power supply
Battery lifetime
Protection degree
Operating temperature range
Type of input pulses
Display
Standard energy indication
Monthly values
Memories
Reading data
Data storage

DIMENSIONS
Length
Width
Depth (mm)

DIRECT METERING
ULTRASONIC METERS FOR HEAT/COOLING

**M-BUS compact ultrasonic thermal energy meters**
1RP UL1520MI01
1RP UL3525MI01
1RP UL6032MI01

**Compact ultrasonic thermal energy meters with pulse output**
1RP UL1520E01
1RP UL3525E01
1RP UL6032E01

1 fitting kit
(2pcs)
1RP 131205002
(RP UL1520MI01)
(RP UL1520E01)
1RP 131207002
(RP UL3525MI01)
(RP UL3525E01)
1RP 131210002
(RP UL6032MI01)
(RP UL6032E01)

1 m/f valve
1RP 19560500B
(RP UL1520MI01)
(RP UL1520E01)
1RP 19560700B
(RP UL3525MI01)
(RP UL3525E01)
1RP 19561000B
(RP UL6032MI01)
(RP UL6032E01)

1 f/f valve
1RP 195405005
(RP UL1520MI01)
(RP UL1520E01)
1RP 195407005
(RP UL3525MI01)
(RP UL3525E01)
1RP 195410008
(RP UL6032MI01)
(RP UL6032E01)

1 Filter
1RP 192405001
(RP UL1520MI01)
(RP UL1520E01)
1RP 192407001
(RP UL3525MI01)
(RP UL3525E01)
1RP 192410001
(RP UL6032MI01)
(RP UL6032E01)

1 Ball valve with probe holder
1RP 195405711
(RP UL1520MI01)
(RP UL1520E01)
1RP 195407711
(RP UL3525MI01)
(RP UL3525E01)
1RP 195409711
(RP UL6032MI01)
(RP UL6032E01)

Alternative TEE
1RP PTEE15
(RP UL1520MI01)
(RP UL1520E01)
1RP PTEE25
(RP UL3525MI01)
(RP UL3525E01)
1RP PTEE20
(RP UL6032MI01)
(RP UL6032E01)

**DATA READING VIA FLOOR CONCENTRATORS / REPEATERS**
1RP 100901
1RP 100902

**OR ON SITE VIA LAPTOP EQUIPPED WITH WSL KEY**
1RP 100802

**Compact ultrasonic thermal energy meters with pulse output**
1RP UL1520E01
1RP UL3525E01
1RP UL6032E01

**RADIO SYSTEM**

**Pulse counter**
1RP 130102

**1 Fit ting kit**
(2pcs)
1RP 131215002
(RP UL10040*)

**Two probe holder pits**
1RP PPST3265 (DN 32-65)
1RP PPST80125 (DN 80-125)

**Pulse counter**
1RP 130102

**Flanged ultrasonic energy meter with thermal energy calculator (pulse output) and probes**

**M-BUS DN40 threaded ultrasonic energy meter with thermal energy calculator and probes**

**M-BUS flanged ultrasonic energy meter with thermal energy calculator and probes**

**Two probe holder pits**
1RP PPST3265 [DN 32-65] - 1RP PPST80125 [DN 80-125]
**COMPACT ULTRASONIC THERMAL ENERGY METERS WITH PULSE OUTPUT**

<table>
<thead>
<tr>
<th>DN (mm)</th>
<th>PN (bar)</th>
<th>Maximum flow rate Qmax (m³/h)</th>
<th>Minimum flow rate Qmin (m³/h)</th>
<th>Temperature range (°C)</th>
<th>Pulse value (KWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>12</td>
<td>3</td>
<td>0.015</td>
<td>15...90</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
<td>7</td>
<td>0.035</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

1RP 130102
Radio transmitter module Diretto-302 with two pulse inputs

**ULTRASONIC THERMAL ENERGY METERS WITH PULSE OUTPUT**

<table>
<thead>
<tr>
<th>DN (mm)</th>
<th>PN (bar)</th>
<th>Maximum flow rate Qmax (m³/h)</th>
<th>Minimum flow rate Qmin (m³/h)</th>
<th>Temperature range (°C)</th>
<th>Pulse value (KWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>165</td>
<td>165</td>
<td>125</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>185</td>
<td>200</td>
<td>145</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>200</td>
<td>235</td>
<td>160</td>
<td>8</td>
<td>1</td>
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<tr>
<td>40</td>
<td>235</td>
<td>235</td>
<td>190</td>
<td>8</td>
<td>1</td>
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</table>

**ACCESSORIES**

1RP 130102
Radio transmitter module Diretto-302 with two pulse inputs

1RP 195605008
M/F ½" ball valve full flow with throttle handle

1RP 195607008
M/F ¾" ball valve full flow with throttle handle

1RP 195610008
M/F 1" ball valve full flow with throttle handle

1RP 195405005
F/F ½" ball valve full flow with throttle handle

1RP 195407005
F/F ¾" ball valve full flow with throttle handle

1RP 195410008
F/F 1" ball valve full flow with throttle handle

1RP 195405711
1/4" threaded ball valve with UL15 probe holder pit

1RP 195407711
1/4" threaded ball valves with UL35 probe holder pit

1RP 195409711
1" threaded ball valves with probe holder pit

1RP 192405001
Impurity collection cartridge filter ½"

1RP 192407001
Impurity collection cartridge filter ¾"

1RP 192410001
Impurity collection cartridge filter 1"

1RP TEE15
TEE wet mounting DN15-½"

1RP TEE20
TEE wet mounting DN20-¾"

1RP TEE25
TEE wet mounting DN25-1"

**ACCESSORIES**

1RP 130102
Radio transmitter module Diretto-302 with two pulse inputs

1RP PTEE25
TEE wet mounting DN25 for 0.5 mm probe

1RP PPST3265
Two dry mounting probe holder pits DN32-65 for 6 mm probes

1RP PPST80125
Two dry mounting probe holder pits DN80-125 for 6 mm probes

1RP 131215002
DN50 - 2”x 1½” fitting kit
THERMAL POWER PLANT METERING COMPONENTS

TECHNICAL DATA

Nominal flow rate $Q_n$ (m³/h)
- DN
- PN (bar)
Maximum flow rate $Q_s$ (m³/h)
Minimum flow rate $Q_i$ (m³/h)
Pressure drop (0.1 bar) (m³/h)
Temperature range (°C)
Pulse value
External diameter $c$ (mm)
Diameter $d$ (mm)
Number of holes $n$
$a$ (mm)
$f$ (mm)
b (mm)
d ("")

M-BUS COMPACT ULTRASONIC THERMAL ENERGY METERS

<table>
<thead>
<tr>
<th>$Q_n$</th>
<th>1.5</th>
<th>3.5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>20</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>0.015</td>
<td>0.035</td>
<td>0.060</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
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</table>

<table>
<thead>
<tr>
<th>Temperature range (°C)</th>
<th>15...90</th>
</tr>
</thead>
</table>

M-BUS ULTRASONIC THERMAL ENERGY METERS

<table>
<thead>
<tr>
<th>$Q_n$</th>
<th>10</th>
<th>15</th>
<th>25</th>
<th>40</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>50</td>
<td>65</td>
<td>80</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1b</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>30</td>
<td>50</td>
<td>80</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>0.10</td>
<td>0.15</td>
<td>0.25</td>
<td>0.40</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>8.9</td>
<td>13.3</td>
<td>30</td>
<td>36</td>
<td>50.6</td>
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<table>
<thead>
<tr>
<th>Pulse value</th>
<th>1Kwh</th>
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<table>
<thead>
<tr>
<th>Number of holes $n$</th>
<th>5 ... 130</th>
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DIRECT METERING

1,5 3,5 6
15 20 25
16
3 7 12
0.015 0.035 0.060
- - -

<table>
<thead>
<tr>
<th>Temperature range (°C)</th>
<th>15...90</th>
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</thead>
</table>

ACCESORIES

1RP 131102
Radio transmitter module Diretto-302 with two pulse inputs

1RP PTEE25
TEE wet mounting DN25 for Ø 5 mm probe

1RP PPST3D5
Two dry mounting probe holder pits DN32-65 for 5 mm probes

1RP PPSTBD125
Two dry mounting probe holder pits DNB0-125 for 8 mm probes

1RP 13112002
DN50 - 2" x 1½" fitting kit

1RP 195405701
F/F ½" ball valve full flow with probe holder pit

1RP 195407701
F/F ¾" ball valve full flow with probe holder pit

1RP 195410701
F/F 1" ball valve full flow with probe holder pit

1RP 195405007
F/F ½" ball valve full flow with throttle handle

1RP 195407007
F/F ¾" ball valve full flow with probe holder pit

1RP 195410007
F/F 1" ball valve full flow with probe holder pit

1RP 192405001
Impurity collection cartridge filter ½"

1RP 192407001
¼" Impurity collection cartridge filter

1RP 192410001
1" Impurity collection cartridge filter

1RP 195405005
F/F ½" ball valve full flow with throttle handle

1RP 195407005
F/F ¾" ball valve full flow with probe holder pit

1RP 195410005
F/F 1" ball valve full flow with probe holder pit

1RP PTEE15
TEE wet mounting DN15-½"

1RP PTEE20
TEE wet mounting DN20-¾"

1RP PTEE25
TEE wet mounting DN25-1"

<table>
<thead>
<tr>
<th>Temperature range (°C)</th>
<th>5 ... 130</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pulse value</th>
<th>1Kwh</th>
</tr>
</thead>
</table>

MAIN FEATURES

- Temperature range:
  - compact version 15°C...+90°C
  - standard version 5°C...+130°C
- Sensitive to low flow rate
- Flow measurement without moving parts
- Installable in all positions
- Straight sections not required
- MID 2004/22/EC certification (EN 1434), class 2

CALCULATOR FEATURES

- Power supply: battery, 6 years
- Protection degree:
  - compact version IP54
  - standard version IP65
- Dimensions (mm):
  - compact version 75 x 110
  - standard version 198 x 123.7 x 45.8

ACCESSORIES

1RP 131205002
DN20 ¾" x ½" fitting kit for UL15 heat meters

1RP 131207002
DN25 1" x ¾" fitting kit for UL35 heat meters

1RP 131210002
DN32 1¼" x 1½" fitting kit for UL60 heat meters

1RP 195605008
M/F ½" ball valve full flow with throttle handle

1RP 195607008
M/F ¾" ball valve full flow with throttle handle

1RP 195610008
M/F 1" ball valve full flow with throttle handle

1RP 195605711
½" threaded ball valve with UL15 probe holder pit

1RP 195607711
¾" threaded ball valves with UL35 probe holder pit

1RP 195610008
1" threaded ball valve with probe holder pit

1RP 192405001
Impurity collection cartridge filter ½"

1RP 192407001
¼" Impurity collection cartridge filter

1RP 192410001
1" Impurity collection cartridge filter

1RP 195405005
F/F ½" ball valve full flow with throttle handle

1RP 195407005
F/F ¾" ball valve full flow with probe holder pit

1RP 195410005
F/F 1" ball valve full flow with probe holder pit

1RP PTEE15
TEE wet mounting DN15-½"

1RP PTEE20
TEE wet mounting DN20-¾"

1RP PTEE25
TEE wet mounting DN25-1"
**DIRECT METERING**

**METERING ENERGY CARRIERS**

1SD SD05CEM/2
Single-phase energy counter
- 2 DIN

- It records the consumption of ACTIVE energy in single-phase 230V systems, up to a maximum current of 30A with one open-collector 100ms impulsive output every 10W consumed

**1SD SD07CET/4**
Three-phase energy counter 5/
TA - 4 DIN

- It records the consumption of ACTIVE energy in three-phase 400V a.c. systems with neutral, with connection TA…/5° and the possibility to program the ratio, one programmable impulsive output, through a reed relay for the remote signalling of consumptions up to a maximum 30A current with one open-collector 100ms impulsive output every 10W consumed

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>1SD SD05CEM/2</th>
<th>1SD SD07CET/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>230V C.A. ± 10% 50-60Hz</td>
</tr>
<tr>
<td>Reading resolution</td>
<td>0.01 kWh</td>
</tr>
<tr>
<td>Accuracy</td>
<td>CLASS A</td>
</tr>
<tr>
<td>Number of digits</td>
<td>5 INTEGERS + 2 DECIMALS</td>
</tr>
<tr>
<td>Connection on TA</td>
<td>230</td>
</tr>
<tr>
<td>Rated voltage (V)</td>
<td>5 (MAX 30)</td>
</tr>
<tr>
<td>Rated current (A)</td>
<td>EN50470-1, EN50470-3, EN62059-41</td>
</tr>
<tr>
<td>Standards</td>
<td>0.01 kWh</td>
</tr>
<tr>
<td>Dimensions (L x W x H) mm</td>
<td>35 x 63 x 85</td>
</tr>
</tbody>
</table>

**CURRENT TRANSFORMERS**

1TA TA00/10
Wound primary current transformer 10/5 A

1TA TA00/25
Wound primary current transformer 25/5 A

**ACCESSORIES**

1RP 130102
Radio transmitter module with two pulse inputs

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>1TA TA00/10</th>
<th>1TA TA00/25</th>
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</thead>
<tbody>
<tr>
<td>Accuracy Class</td>
<td>0.5</td>
</tr>
<tr>
<td>Power</td>
<td>6kVA</td>
</tr>
<tr>
<td>Installation</td>
<td>DIN rail or wall mounted</td>
</tr>
<tr>
<td>Dimensions (L x W x H) mm</td>
<td>74 x 44 x 109</td>
</tr>
</tbody>
</table>
1RP 130102
RF pulse counter with 2 pulse inputs
It accepts two meters with pulse output and performs calculation, storage and radio transmission of consumption. Consumption data can be collected on site by using the small radio key 1RP 100801 or the radio key 1RP 100802. Alternatively, it's possible to collect remotely consumption data by using the control units Rete-1000R (1RP 100901) or Rete-1000RG (1RP 100902).

The mounting stability and protection is guaranteed by an internal tamper-proof switch, a tamper-proof seal and a specific fastening kit. Installation is simple and it does not require external power supply.

1RP 100801 - WSL small key
The WSL small key (Wireless Serial Link) enables the wireless connection from the landing between the laptop on which EQUO software is installed and the allocators and / or pulse counters, for reading and managing the devices. The key allows up to 10,000 parameterizations.

1RP 100802 - WSL key
The WSL key (Wireless Serial Link) enables the wireless connection from outside the building between the laptop on which EQUO software is installed and the allocators and / or pulse counters, for reading and managing the devices. The key allows up to 10,000 parameterizations.

ACCESSORIES
1RP MBUSB01
Optical parameterization head complete with configuration software.
Accessory needed only in case of installation of 1RP BMROI2 module after installation of the meter. In case the M-BUS module and the meter are installed simultaneously, the accessory 1RP MBUSB01 is not necessary because the radio connection is activated automatically.

1RP 100901
Floor repeater RETE-1000R, battery operated
The 1RP 100901 control unit acquires the consumption readings of several meters via radio and transmits this data to the data concentrator. Generally, it is installed every 2 or 3 floors depending on the building geometry and effective achievable radio range. The control unit, installed in the staircase, is battery operated. During installation it’s associated to the data concentrator equipped with modem. During the operational phase, the repeater reads the associated radio devices according to the set schedule and forwards the data to the concentrator.

1RP 100902
Data concentrator with integral GPRS modem, 230V mains supply
Concentrator and gateway with integral GPRS modem performs remote communication of consumptions, failures, and tampering. Generally, a control unit is installed for every building or staircase depending on the building geometry and effective achievable radio range. The concentrator must be installed in the staircase with 230V mains supply and GPRS signal. During installation, the project data is uploaded from EQUO software, the reading schedule is set, and the associated floor control unit network is built.

In the operational phase, it reads the devices within its radio coverage with the set schedule, collects readings from repeaters, stores data and sends it to the recipient. The device works with data SIM cards.
M-BUS DATALOGGERS
M-BUS DATALOGGERS

For reading, interpreting, and storing consumptions from:
- heat and cooling meters
- residential cold water meters
- residential hot water meters

The M-BUS Dataloggers operate as interface between the individual meters and the control device (PC or modem).
They are connected to measurement devices (meters) equipped with M-Bus interface and acquire and save data readings. This way, consumption control is easier and faster. The internal memory stores the historical data.

The M-BUS Datalogger allows you to read the data locally or remotely via GSM modem.

Local reading: connect a PC provided with software to the RS 232 port to download the relative consumption data.
Remote reading: the Datalogger connected to a GSM modem [code 1RP MGSM01], allows you to consult the data from a remote PC equipped with GSM modem.

Software for reading data from PC
To read data, connect the PC to the Datalogger via RS 232 serial interface or via GSM modem for remote reading.
If you use a PC to consult the data, specific software must be installed to perform this operation [code 1RP T90WINCD included with the device].
**1RP CDMB06001/12001/25001**

Data concentrator for M-BUS network up to 60/120/250 inputs

The M-BUS Datalogger records and processes data detected by the peripheral M-BUS installations. The time and intervals for the automatic reading can be programmed and the saved data can be read locally via PC. It is also possible to transfer data from the M-BUS Datalogger to remote stations via GSM modem. The exported data can be processed with normal calculation sheets. The control unit is supplied with power supply (6 DIN MODULES) and cable.

Other main features are:
- Power supply to bus devices connected to 2 wires.
- Remote reading of consumptions.
- Disconnection of transmission protocol.
- Exportation of all measurements on PC.
- Simple configuration with just one click.
- Suitable for industrial and residential use.
- Compliance with European directives (EN '9434).

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>Power supply</th>
<th>Max current absorption</th>
<th>Max. meter current</th>
<th>M-Bus line</th>
<th>Bit rate</th>
<th>Temperature range</th>
<th>Storage temperature</th>
<th>Protection degree</th>
<th>Dimensions</th>
<th>Safety (RF emissions)</th>
<th>Noise immunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDMB 06001 - 12001 - 25001</td>
<td>36 Vdc (12 ÷ 24 V.d.c.)</td>
<td>630mA</td>
<td>1.5 mA</td>
<td>min: 24Vdc - max: 42Vdc</td>
<td>min: 300bps - max: 38400 bps</td>
<td>0 - 55 °C</td>
<td>-20°C ÷ +60°C</td>
<td>IP30</td>
<td>6 DIN modules</td>
<td>DIN EN 50081-1 EN 55022 class B EN 60555</td>
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<td>DIN EN 50082-2 ENV 50140 ENV 50204 EN 61000-4-4</td>
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</tr>
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</table>

### M-BUS NETWORK INSTALLATION

We recommend using a cable with two twisted wires and cross section of 0.5 - 1.5 mm² to connect the M-BUS meters. The following chart highlights the section and length of the cable, the number of devices and the communication speed in relation to the possible applications.

<table>
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<tr>
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</tr>
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<tbody>
<tr>
<td>250</td>
<td>4000</td>
<td>0.8</td>
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<tr>
<td>1</td>
<td>10000</td>
<td>1.5</td>
<td>10000</td>
<td>300</td>
</tr>
</tbody>
</table>

**1RP T90WINCD**

Configuration and data reading software

The device management software is supplied with the M-BUS datalogger control unit and it allows the following functions:
- Automatic mapping of the devices in the network, in both local and remote connection (via GSM modem). The devices’ mapping consists in automatically searching the secondary addresses (factory numbers) and detecting the features of the devices in the network.
- Direct count value reading of the devices in the field, with historical record (if required).
- Download of data collected in standard formats, which can be used in other softwares.

**1RP MGSM01**

GSM modem with antenna

The M-BUS Datalogger records and processes data detected by the peripheral M-BUS installations. The time and intervals for the automatic reading can be programmed and the saved data can be read locally via PC. It is also possible to transfer data from the M-BUS Datalogger to remote stations via GSM modem. The exported data can be processed with normal calculation sheets. The control unit is supplied with power supply (6 DIN MODULES) and cable.

Other main features are:
- Power supply to bus devices connected to 2 wires.
- Remote reading of consumptions.
- Disconnection of transmission protocol.
- Exportation of all measurements on PC.
- Simple configuration with just one click.
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<td>10000</td>
<td>1.5</td>
<td>10000</td>
<td>300</td>
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</table>
HYDRAULIC COMPONENTS
**1RP TT001**

Thermostatic head

- Type of sensor: liquid
- Adjustment range: 6 - 30° C
- Minimum and maximum set-point block
- Adjustment scale: from $\frac{1}{5}$
- Maximum admissible differential pressure: 1 Bar
- Connection: M30x1.5
- Maximum temperature for heat transfer fluid: 120° C
- Colour: white
- Made in Italy

**1RP TT002**

Thermostatic head with remote sensor

- Type of sensor: liquid
- Adjustment range: 6 - 28° C
- Minimum and maximum set-point block
- Adjustment scale: from $\frac{1}{5}$
- Maximum admissible differential pressure: 1 Bar
- Connection: M30x1.5
- Maximum temperature for heat transfer fluid: 120° C
- Colour: white
- Made in Italy

**1RP AEDS**

Electro-thermal actuator for thermostatic valve

- Power supply: 230 V a.c.
- State: Normally closed

The normally closed electro-thermal actuator is used with thermostatic valves with iron or copper connection to check the flow of the fan coils, thermal-ventilation batteries, etc.

**TECHNICAL DATA**

- **Power supply**: 220 Vac
- **Consumption**: 1.8 VA
- **Peak absorption**: 50 VA
- **Opening/closing time**: 3 min.
- **Maximum run**: 4 mm
- **Rated force**: 90 N
- **Operation**: from 2 to 90°C
- **Protection degree**: IP44
- **Locking ring**: M30x1.5
- **Type of cable**: 2 x 0.75mm²
- **Cable length**: 2 m
- **Weight**: 188 gr
HYDRAULIC COMPONENTS

TECHNICAL DATA

Max operating temperature (°C)
Max. operating pressure (bar)
Max differential pressure (bar)
Transfer fluid

<table>
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<tr>
<th>DIMENSIONS (mm)</th>
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1RP VTQ10 - 1RP VTQ15 - 1RP VTQ20
1RP VTL10 - 1RP VTL15 - 1RP VTL20
1RP DTQ10 - 1RP DTQ15 - 1RP DTQ20
1RP DTL10 - 1RP DTL15 - 1RP DTL20

ANGLE THERMOSTATIC VALVES WITH PRESETTING AND LOCKSHIELDS WITH IRON PIPE CONNECTION
made in Italy

1RP VTQ10
Angle thermostatic valve with presetting and iron pipe connection DN10-1/4"

1RP VTQ15
Angle thermostatic valve with presetting and iron pipe connection DN15-5/8"

1RP VTQ20
Angle thermostatic valve with presetting and iron pipe connection DN20-3/4"

1RP DTQ10
Angle lockshield with iron pipe connection DN10-1/4"

1RP DTQ15
Angle lockshield with iron pipe connection DN15-5/8"

1RP DTQ20
Angle lockshield with iron pipe connection DN20-3/4"

STRAIGHT THERMOSTATIC VALVES WITH PRESETTING AND LOCKSHIELDS WITH IRON PIPE CONNECTION
made in Italy

1RP VTL10
Straight thermostatic valve with presetting and iron pipe connection DN10-1/4"

1RP VTL15
Straight thermostatic valve with presetting and iron pipe connection DN15-5/8"

1RP VTL20
Straight thermostatic valve with presetting and iron pipe connection DN20-3/4"

1RP DTL10
Straight lockshield with iron pipe connection DN10-1/4"

1RP DTL15
Straight lockshield with iron pipe connection DN15-5/8"

1RP DTL20
Straight lockshield with iron pipe connection DN20-3/4"

Transfer fluid: water and glycol solutions (max 30%)
HYDRAULIC COMPONENTS

ANGLE VALVES WITH PRESETTING AND LOCKSHIELDS WITH COPPER/MULTILAYER PIPE CONNECTION
made in Italy

1RP VTQ10C
Angle thermostatic valve with presetting and copper/multilayer pipe connection ¾”x16x ¾”

1RP VTQ15C
Angle thermostatic valve with presetting and copper/multilayer pipe connection ¾”x16x ¾”

1RP DTQ10C
Angle lockshield with copper/multilayer pipe connection ¾”x16x ¾”

1RP DTQ15C
Angle lockshield with copper/multilayer pipe connection ¾”x16x ¾”

STRAIGHT VALVES WITH PRESETTING AND LOCKSHIELDS WITH COPPER/MULTILAYER PIPE CONNECTION
made in Italy

1RP VTL10C
Straight thermostatic valve with presetting and copper/multilayer pipe connection ¾”x16x ¾”

1RP VTL15C
Straight thermostatic valve with presetting and copper/multilayer pipe connection ¾”x16x ¾”

1RP DTL10C
Straight lockshield with copper/multilayer pipe connection ¾”x16x ¾”

1RP DTL15C
Straight lockshield with copper/multilayer pipe connection ¾”x16x ¾”

TECHNICAL DATA

Max operating temperature (°C) 100
Max. operating pressure (bar) 10
Max differential pressure (bar) 1
Transfer fluid water and glycol solutions (max 30%)

DIMENSIONS (mm)

<table>
<thead>
<tr>
<th></th>
<th>VTQ10C</th>
<th>VTQ15C</th>
<th>DTQ10C</th>
<th>DTQ15C</th>
<th>VTL10C</th>
<th>VTL15C</th>
<th>DTL10C</th>
<th>DTL15C</th>
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<td>¾”</td>
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<td>23</td>
<td>23</td>
<td>33</td>
<td>33</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>
HYDRAULIC COMPONENTS

3 WAYS THERMOSTATIC VALVES AND LOCKSHIELDS WITH IRON PIPE CONNECTION
made in Italy

1RP VTR1001TM
3 ways thermostatic valve with iron pipe connection DN 10 - 3/8"

1RP VTR1501TM
3 ways thermostatic valve with iron pipe connection DN15-1/2"

1RP DTQ1001
Angle lockshield with iron pipe connection DN10-3/8"

1RP DTQ1501
Angle lockshield with iron pipe connection DN15-1/2"

The 3 ways thermostatic valves can be mounted both on right and left side of the radiator thanks to a special plug that allows the reversibility.

- Copper body

TECHNICAL DATA
Max operating temperature (°C) 110
Max. operating pressure (bar) 10
Fluid water and water+glycol at 50% (only 1RP VTR)

DIMENSIONS (mm)

<table>
<thead>
<tr>
<th></th>
<th>VTR1001TM</th>
<th>VTR1501TM</th>
</tr>
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<tbody>
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DIMENSIONS (mm)

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<tr>
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</tr>
<tr>
<td>F2</td>
<td>3/8&quot;</td>
<td>1/2&quot;</td>
</tr>
</tbody>
</table>

ADAPTERS
made in Italy

1RP ATC1610
Pre-assembled adapter for COPPER tube - Valve thread diameter x copper pipe diameter 16x10

1RP ATC1612
Pre-assembled adapter for COPPER tube - Valve thread diameter x copper pipe diameter 16x12

1RP ATC1614
Pre-assembled adapter for COPPER tube - Valve thread diameter x copper pipe diameter 16x14

1RP ATC1616
Pre-assembled adapter for COPPER tube - Valve thread diameter x copper pipe diameter 16x16

1RP ATC1818
Pre-assembled adapter for COPPER tube - Valve thread diameter x copper pipe diameter 18x18 (for NRE1520)

1RP ACM1620
Universal compression adapter for MULTILAYER - Valve thread diameter (or straight fitting) x multilayer pipe diameter x pipe thickness 16x16x2

1RP ACM1820
Eurocone adapter for MULTILAYER - Valve thread diameter (or straight fitting) x multilayer pipe diameter x pipe thickness 18x18x2 for NRE1520

1RP ACM2025
Eurocone adapter for MULTILAYER - Valve thread diameter (or straight fitting) x multilayer pipe diameter x pipe thickness 18x20x2.5 for NRE1520

NIPLE
made in Italy

1RP NRU1015
Universal niple reduced 3/8"x1/2x16 for valve/lockshield transformation from iron to copper

1RP NRU1515
Universal niple reduced 1/2"x3/4x16 for valve/lockshield transformation from iron to copper

1RP NRE1520
Eurocone niple reduced 1/2"x3/4x18 for valve/lockshield transformation from iron to copper for ATC1818, ACM1820 and ACM2025

THERMOSTATIC SCREW
made in Italy

1RP 33800171
Key for thermostatic screw replacement

1RP VTP1015
Replacement thermostatic valve insert for angle and straight thermostatic valves

1RP 228700005
Replacement thermostatic valve insert for 3 ways thermostatic valves
1RP 22215
2 ways full bore zone ball valve for actuator - threaded ends M-M ½"n

1RP 22220
2 ways full bore zone ball valve for actuator - threaded ends M-M ¾"n

1RP 22225
2 ways full bore zone ball valve for actuator - threaded ends M-M 1"

1RP 22232
2 ways full bore zone ball valve for actuator - threaded ends M-M 1¼"

The 1RP 222 ball valves can be motorised with 1RP 215 actuator. The actuator is fixed on the valve by inserting a steel split pin.

Construction features:
- nickel-plated brass body
- PTFE seals (seat and washer)
- FPM and HNBR O-ring
- Gasket made with heat-resistant fibre
- Chromed brass rod

1RP 23720
3 ways full bore zone ball valve for actuator - threaded ends M-M-M ¾"n

1RP 23725
3 ways full bore zone ball valve for actuator - threaded ends M-M-M 1"

1RP 24220
3 ways full bore zone ball valve for actuator - threaded ends M-M-M ¾"

1RP 24225
3 ways full bore zone ball valve for actuator - threaded ends M-M-M 1"

The 1RP 237/242 ball valves can be motorised with 1RP 215 actuator. The actuator is fixed on the valve by inserting a steel split pin.

ASSEMBLY SEQUENCE

1. Hooking spring
2. Spring hooking seat
3. Once you have inserted the actuator outlet shaft in the "female" seat of the valve body, turn the first one so that both coupling joints are aligned.
4. Then, press the actuator on the valve body until you reach the coupling guaranteed by the spring seal.

TECHNICAL DATA

Max operating temp. (°C) -10/+100
Max. operating press. [bar] 32

DIMENSIONS mm

<table>
<thead>
<tr>
<th>DIMENSIONS (mm)</th>
<th>22215</th>
<th>22220</th>
<th>22225</th>
<th>22232</th>
<th>22220</th>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
GAS SECURITY
SYSTEM CONFIGURATION

The detection systems of explosive or toxic gas leaks in the technical rooms of residential, tertiary and industrial buildings consist of microprocessor control units, industrial sensors with IP55 and IP66 protection ratings and manually reset gas solenoid valves.

Probes with IP55 and IP66 protection ratings consist of microprocessor technology which ensures diagnostic functions and automatic calibration; they automatically adapt to any type of environment, avoiding the occurrence of false alarms in response to abnormal events.

The control units, when installed on a DIN bar or wall or front panel, are fitted with a microprocessor that can control up to 4 probes and carry out system diagnostic functions, signalling the states and controlling the solenoid valves. In particular, 2 - 3 alarm levels are foreseen for each model of the control unit.

The electronic control unit 1GA 2004 accepts signals from smoke and temperature detectors to set up fire protection systems; indoor and outdoor self-powered sirens and resettable buttons complete the fire protection system.

CE MARKING RULES

<table>
<thead>
<tr>
<th>LVD</th>
<th>2006/95/CE</th>
<th>EN 161, EN 60730-1, EN 60335-1, EN 60529</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC</td>
<td>2004/108/CE</td>
<td>EN 55014-1, EN 55014-2</td>
</tr>
</tbody>
</table>

RULES FOR ELECTROVALVES

<table>
<thead>
<tr>
<th>PED DIRECTIVE</th>
<th>97/23/CE</th>
<th>CE HOMOLOGATION EN161</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX DIRECTIVE</td>
<td>94/9/CE</td>
<td>2009/142/CE - GAS DIRECTIVE</td>
</tr>
<tr>
<td>ELECTROMAGNETIC COMPATIBILITY DIRECTIVE</td>
<td>2004/108/CE</td>
<td></td>
</tr>
<tr>
<td>LOW TENSION DIRECTIVE</td>
<td>2006/95/CE</td>
<td></td>
</tr>
</tbody>
</table>

CERTIFICATION OF SMOKE AND TEMPERATURE DETECTORS

| EN 54 PART 5/9 |
| EN 54 PART 7/9 |

DEFINITIONS

L.I.E.: the lower explosive limits of a gas or vapours of a liquid are limits that define the range of concentration within which, if the air - vapour mixture or flammable gas is adequately triggered (for example by a spark), the mixture is ignited. This combustion can be an explosion or just a “flare” (deflagration), depending on many factors (primarily the concentration of fuel and the type of container). The explosive limit is considered within a range from a minimum to a maximum percentage of fuel in the air (or more rarely, in other oxidizers)
**CONTROL UNIT**

**1GA 100M**
- 1-zone control unit for wall mounting installation
- Microprocessor control unit to set up a complete supervision and control system, with high flexibility.
- Three levels of danger:
  - 1st alarm set for all probes to 8% of the L.E.L. (120 ppm)
  - 2nd alarm set for all probes to 13% of the L.E.L. (200 ppm)
- General alarm set to 20% of the L.E.L. (300 ppm)
- Equipped with a series of micro switches through which you can:
  - Select or eliminate the probe when not installed or when it malfunctions;
  - Choose the type of light gas (Toxic or Explosive);
  - Choose the relay operating mode (Jog or continuous);
  - Choose the connection or disconnection of the Positive Safety
- TEST button facilitates total control and the probe and control unit verification
- Changeable colour display according to the operating status (1GA 300M)

**1GA 300M**
- 3-zones control unit for toxic and explosive gases DIN
- Microprocessor control unit manufactured to remotely control the presence of explosive and/or toxic gases by means of probes.
- Precise self-diagnosis systems perform a continuous control of probe conditions and connection.
- RESET and TEST commands
- Warning buzzer

**1GA 32002**
- 1-zone control unit for toxic and explosive gases DIN
- Microprocessor control unit manufactured to remotely control the presence of explosive and/or toxic gases by means of probes.
- Accepts signals from probes for explosive and toxic gases and optical smoke detectors and temperature probes for fire protection systems
- Precise self-diagnosis systems perform a continuous control of probe conditions and connection.
- RESET and TEST commands
- Warning buzzer
- Protection degree IP 20

### TECHNICAL DATA

<table>
<thead>
<tr>
<th><strong>1GA 100M</strong></th>
<th><strong>1GA 300M</strong></th>
<th><strong>1GA 32002</strong></th>
<th><strong>1GA 32004</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary power supply</td>
<td>230V a.c. 50Hz</td>
<td>230V a.c. 50Hz</td>
<td>230V a.c. 50Hz</td>
</tr>
<tr>
<td>Secondary power supply battery</td>
<td>12V d.c. ±10%</td>
<td>12V d.c. ±10%</td>
<td>12V d.c. ±10%</td>
</tr>
<tr>
<td>Consumption</td>
<td>7 W in alarm</td>
<td>11 W in alarm</td>
<td>5 W in alarm</td>
</tr>
<tr>
<td>Pre-alarm output relay</td>
<td>ON-OFF</td>
<td>ON-OFF</td>
<td>ON-OFF</td>
</tr>
<tr>
<td>Alarm relay</td>
<td>in exchange</td>
<td>in exchange</td>
<td>in exchange</td>
</tr>
<tr>
<td>Failure relay</td>
<td>ON-OFF</td>
<td>ON-OFF</td>
<td>ON-OFF</td>
</tr>
<tr>
<td>Max gas probes</td>
<td>1 - catalytic, electrochemical, semiconductor</td>
<td>3 - catalytic, electrochemical, semiconductor</td>
<td></td>
</tr>
<tr>
<td>Max probes fire</td>
<td>8 - 13 - 20% L.I.E.</td>
<td>8 - 13 - 20% L.I.E.</td>
<td>B-13 - 20% L.I.E.</td>
</tr>
<tr>
<td>Explosive warning threshold</td>
<td>120 - 200 - 300 ppm</td>
<td>120 - 200 - 300 ppm</td>
<td>120 - 200 - 300 ppm</td>
</tr>
<tr>
<td>Toxic warning threshold</td>
<td>4÷20mA (220 Ohm)</td>
<td>4÷20mA (220 Ohm)</td>
<td>4÷20mA (220 Ohm)</td>
</tr>
<tr>
<td>Input signal</td>
<td>1% FS</td>
<td>1% FS</td>
<td>1% FS</td>
</tr>
<tr>
<td>Accuracy</td>
<td>selectable</td>
<td>selectable</td>
<td>selectable</td>
</tr>
<tr>
<td>Positive safety</td>
<td></td>
<td></td>
<td>15 - optical smoke, temperature from 13 to 20% L.I.E.</td>
</tr>
<tr>
<td>Operating temperature limit (°C)</td>
<td>-10 °C / +60 °C</td>
<td>-10 °C / +60 °C</td>
<td>-10 °C / +60 °C</td>
</tr>
<tr>
<td>Protection degree</td>
<td></td>
<td></td>
<td>IP 20</td>
</tr>
<tr>
<td>Installation</td>
<td>wall mounting / panel</td>
<td>wall mounting / panel</td>
<td>DIN rail</td>
</tr>
</tbody>
</table>

### DIMENSIONS

<table>
<thead>
<tr>
<th><strong>1GA 100M</strong></th>
<th><strong>1GA 300M</strong></th>
<th><strong>1GA 32002</strong></th>
<th><strong>1GA 32004</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions L x H x W mm</td>
<td>144x144x100</td>
<td>144x144x100</td>
<td>105x90x58</td>
</tr>
<tr>
<td>Weight gr</td>
<td>850</td>
<td>900</td>
<td>455</td>
</tr>
</tbody>
</table>

### DIMENSIONS mm

**1GA 100M - 1GA 300M**

**1GA 32002**

**1GA 32004**
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Feature</th>
<th>1GA 4200MET - 1GA 4200GPL</th>
<th>1GA 4200MET / A - 1GA 4200GPL / A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>12±24 V d.c. ±10%</td>
<td>12±24 V d.c. ±10%</td>
</tr>
<tr>
<td>Consumption</td>
<td>1 W max 13.5 V</td>
<td>1 W max 13.5 V</td>
</tr>
<tr>
<td>Warnings</td>
<td>GREEN LED: regular</td>
<td>GREEN LED: regular</td>
</tr>
<tr>
<td></td>
<td>YELLOW LED: warning</td>
<td>YELLOW LED: warning</td>
</tr>
<tr>
<td></td>
<td>RED LED: alarm</td>
<td>RED LED: alarm</td>
</tr>
<tr>
<td>Sensor</td>
<td>catalytic</td>
<td>catalytic</td>
</tr>
<tr>
<td>Sensor duration</td>
<td>5 years</td>
<td>5 years</td>
</tr>
<tr>
<td>Operating temperature limit (°C)</td>
<td>-10°C / +50°C</td>
<td>-10°C / +50°C</td>
</tr>
<tr>
<td>Sensor replacement</td>
<td>autonomous</td>
<td>autonomous</td>
</tr>
<tr>
<td>Operative range</td>
<td>0-20% or 0-100%</td>
<td>0-20% or 0-100%</td>
</tr>
<tr>
<td>Output signal</td>
<td>4÷20mA (220 Ohm)</td>
<td>4÷20mA (220 Ohm)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP 55</td>
<td>IP 55</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
<td>aluminium</td>
</tr>
<tr>
<td>Maximum distance probe-control unit</td>
<td>100 m</td>
<td>100 m</td>
</tr>
<tr>
<td>Electromagnetic compatibility</td>
<td>EN 50270</td>
<td>EN 50270</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>1GA 4200MET - 1GA 4200GPL</th>
<th>1GA 4200MET / A - 1GA 4200GPL / A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L x H x W) mm</td>
<td>78x14x58</td>
<td>100x100x50</td>
</tr>
<tr>
<td>Weight gr</td>
<td>250</td>
<td>500</td>
</tr>
</tbody>
</table>

**SENSORS**

1GA HESSES
- IP55 replacement sensor for 1GA 4200MET, 1GA 4200GPL, 1GA 4400CO

1GA HESSES
- IP66 replacement sensor for 1GA 4200MET/A, 1GA 4200GPL/A, 1GA 4400CO/A

1GA 4200MET
- CH4 catalytic sensor, IP55

1GA 4200GPL
- LPG catalytic sensor, IP55

1GA 4200MET/A
- CH4 catalytic sensor, IP66, die-cast aluminum case

1GA 4200GPL/A
- LPG catalytic sensor, IP66, die-cast aluminum case

- A catalytic gas detection unit, connected to a microprocessor control unit, allows you to detect the presence of explosive gases (methane/LPG).
- A linear output 0-20% of L.E.L. is present, working with the standard 4-20mA.
- Probe with microprocessor with self-diagnosis and AUTOMATIC calibration to adapt to harsh environments and variable temperatures to avoid false alarms due to anomalous events.
- The 1 mm connecting cables of the probe must not be laid together with the power cables. If the connecting cables are laid together with the power cables, you must use a shielded cable.
- Probe positioning:
  - 30 cm from the lowest point of the floor to detect heavy gases: LPG
  - 30 cm from the highest point of the ceiling to detect light gases: Methane

The probe must not be installed close to the appliance which is to be controlled but on the opposite wall. The probe must not be hit by smoke, vapours, etc. which could falsify the detection, and must be placed away from heat sources and extractors or fans.
Microprocessor probes with self-diagnosis to detect TOXIC GAS such as carbon monoxide. They are activated when the maximum permissible concentration of CO, 300 ppm, is exceeded or when low concentrations persist in the environment for long periods (30ppm for 2 hours).

- Probe positioning:
  - >60 cm from the lowest point of the floor up to 30 cm from the ceiling (average height of the area to be detected)
  - The probe must not be installed close to the appliance which is to be controlled (boiler, burner, etc.) but on the opposite wall.
  - The probe must not be hit by smoke, vapours, etc. which could falsify the detection, and must be placed away from heat sources and extractors or fans.

- Diagram EN 50291 of detection of the intervention times according to the detected CO concentration (left)

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>1GA 4400CO</th>
<th>1GA 4400CO/A</th>
<th>1GA 6020 - 1GA 6030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>12±24V d.c. ±10%</td>
<td>12±24V d.c. ±10%</td>
</tr>
<tr>
<td>Consumption</td>
<td>1W max Ø13.5V</td>
<td>1W max Ø13.5V</td>
</tr>
<tr>
<td>Measuring range</td>
<td>300 ppm</td>
<td>300 ppm</td>
</tr>
<tr>
<td>Pre-alarm relay</td>
<td>0-5000 ppm</td>
<td>0-5000 ppm</td>
</tr>
<tr>
<td>Failure relay</td>
<td>5A SELV 30 VDC</td>
<td>5A SELV 30 VDC</td>
</tr>
<tr>
<td>Sensor</td>
<td>electrochemical cell</td>
<td>electrochemical cell</td>
</tr>
<tr>
<td>Sensor duration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C / +50 °C</td>
<td>-20 °C / +50 °C</td>
</tr>
<tr>
<td>Sensor replacement</td>
<td>autonomous</td>
<td>autonomous</td>
</tr>
<tr>
<td>Output signal</td>
<td>4±20mA (220 Ohm)</td>
<td>4±20mA (220 Ohm)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP 5S</td>
<td>IP 66</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
<td>aluminium</td>
</tr>
<tr>
<td>Maximum distance</td>
<td>100 m</td>
<td>100 m</td>
</tr>
<tr>
<td>Probe-control unit</td>
<td>EN 50270</td>
<td>EN 50270</td>
</tr>
</tbody>
</table>

### DIMENSIONS

<table>
<thead>
<tr>
<th>1GA 4400CO</th>
<th>1GA 4400CO/A</th>
<th>1GA 6020 - 1GA 6030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L x H x P)</td>
<td>78x114x58 mm</td>
<td>100x100x60 mm</td>
</tr>
<tr>
<td>Peso gr</td>
<td>300 g</td>
<td>570 g</td>
</tr>
</tbody>
</table>

### DIMENSIONS mm

<table>
<thead>
<tr>
<th>1GA 4400CO</th>
<th>1GA 4400CO/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>114</td>
<td>100</td>
</tr>
<tr>
<td>78</td>
<td>60</td>
</tr>
<tr>
<td>58</td>
<td>100</td>
</tr>
</tbody>
</table>
GAS SECURITY

PROBES, SIRENS, BELLs AND BUTTONs

1GA HEATES
Replacement probe for 1RP B95MET and 1RP B95GPL

1GA B95MET
Nonexplosive ATEX CH4 gas sensor

1GA B95GPL
Nonexplosive ATEX LPG gas sensor

• ATEX certified gas detection probe with control prerogative with catalytic technology sensors for explosive and toxic gases.
• Microprocessor controlled probe that emits a warning signal to the control unit which it is connected to and allows for self-diagnosis and automatic calibration, to maintain the highest accuracy of detection over time. Self-calibration allows the probe to adapt in difficult environments and at variable temperature, avoiding false alarms due to anomalous events.
• The sensors must be mechanically installed so that the detection cell is facing downwards.
• Probe positioning:
  - 30 cm from the lowest point of the floor to detect heavy gases; LPG
  - 30 cm from the highest point of the appliance to detect light gases; Methane
• The probe must not be installed close to the appliance which is to be controlled but on the opposite wall.
• The probe must not be hit by smoke, vapours, etc. which could falsify the detection, and must be placed away from heat sources and extractors or fans.

TECHNICAL DATA

| Power supply | DC 12-24V | 100 mA in alarm max 813.9V |
| Detection sensor | catalytic |
| Operative range | 100% L.I.E. |
| Signals | GREEN LED: regular / YELLOW LED: warning / RED LED: alarm |
| Operative range | 0-20% or 0-100% |
| Precision | 1% fs |
| Analog output signal | 4-20mA (220 Ohm) |
| Operating humidity | 20-90% RH/40°C |
| Operating temperature limit (°C) | -20°C / +60°C |
| Maximum distance probe-control unit | 100 m |
| Section connecting cables | 1 mm |
| Housing material | Pressofusione in alluminio |
| Protection degree | IP66 |
| Electromagnetic compatibility | EN 50270 |
| Certificate number | EUM110 ATEX 01/09 |
| Reference standards | EN 60079-0, EN 60079-1, EN 61241-0, EN 61241-1 |

DIMENSIONS

Dimension (L x H x P) mm

Peso gr

DIMENSIONS mm

1GA B95MET - 1GA B95GPL

1GA 3615O
Fire Siren piezoelectric optical-acoustic indoor

• Flashing with written "FIRE"
• Housing ABS red
• Power 90 dB
• Three types of sound modulation type: siren, bell and early warning
• 12-24V c.c. power supply
• EN 54 – 3

1GA 3616O
Outdoor self powered fire siren

• Steel housing with lid polycarbonate, red color
• Power 115 dB
• Accommodation 12V 2Ah battery (not included)
• 24V c.c. power supply
• EN 54-3
• Battery replacement: 1PESBSA01

1GA 3617O
Fire bell

• Electromechanical fire Badenia 6” Red
• With holder for fixing
• 24V c.c. power supply
• EN 54-3

1GA 3618O
Resettable manual fire button for conventional systems

• Key Complete rearmament
• Transparent safety cover
• For surface mounting support
• Red
• EN 54-11

1GA 38PA01
Wall mount for fire button support
GAS SOLENOID VALVES

Technical features
- Threaded connections Rp: DN15 + 50 according to EN 10266
- PN16 flanged connections: DN32 + 300 according to ISO 7005
- Tolerance on supply voltage: -15% ... +10%
- Protection degree: IP65
- Class [DN15 + DN200] A
- Closing time: <1s
- Ambient temperature: -20 to +60 °C
- Maximum surface temperature: 80 °C
- Threaded connections Rp (brass body): DN15 to 25 according to EN 10226

Materials
- 11S Aluminium (UNI 9002-5)
- Die-cast aluminum (IEN 1706)

**GAS SOLENOID VALVES, with automatic reset NORMALLY CLOSED N.C. in Class “A”**
Threaded connections DN 15 (EV005) - DN 20 (EV006b) - DN 25 (EV007)
Power supply: 230V a.c.

**GAS SOLENOID VALVES, with automatic reset NORMALLY CLOSED N.C. in Class “A”**
Threaded connections - DN 32 (EV017) - DN 40 (EV008b) - DN 50 (EV009)
Power supply: 230V a.c.

**GAS SOLENOID VALVES, with automatic reset NORMALLY CLOSED N.C. in Class “A”**
Flanged connections DN 65 (EV010) - DN 80 (EV011) - DN100 (EV012)
Power supply: 230V a.c.

Solenoide valves for gas, normally closed which open when the coil is powered and close when there is no power. These solenoide valves may be controlled by pressure switches, thermostats, etc.

Omologazione CE secondo EN 161.
CE approval in accordance with EN 161, Compliance directive 2009/142 / EC (gas directive), Compliance with directive 94/9 / EC [Atex directive], Compliance with directive 2004 / 108 / EC (Electromagnetic compatibility), Compliance with DIRECTIVE 2006 / 95 / EC (low voltage)

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Use</th>
<th>Maximum operating pressure (mbar)</th>
<th>Connections</th>
<th>Supply voltage (Vac)</th>
<th>Tolerance of power</th>
<th>Absorbed power (VA)</th>
<th>Energy Saving function (ES)</th>
<th>Absorbed power in ES mode (VA)</th>
<th>Ambient temperature (°C)</th>
<th>Maximum surface temperature (°C)</th>
<th>Protection degree</th>
<th>Closing time (s)</th>
<th>Opening time (s)</th>
<th>Group</th>
<th>Minimum time OFF (s)</th>
<th>Max cycles/hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1EV EV005-006-007</td>
<td>not aggressive gases of the 3 families dry gases</td>
<td>3b0</td>
<td>threaded Rp according to EN 10226</td>
<td>230V 50 - 60 Hz</td>
<td>-15%÷+10%</td>
<td>yes</td>
<td>9 (005-006b) - 18 (007)</td>
<td>-20÷+60</td>
<td>85</td>
<td>85</td>
<td>IP65</td>
<td>&lt;1</td>
<td>1</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>1EV EV017-008-009</td>
<td>not aggressive gases of the 3 families dry gases</td>
<td>3b0</td>
<td>threaded Rp according to EN 10226</td>
<td>230V 50 - 60 Hz</td>
<td>-15%÷+10%</td>
<td>yes</td>
<td>9 (005-006b) - 18 (007)</td>
<td>-20÷+60</td>
<td>85</td>
<td>85</td>
<td>IP65</td>
<td>&lt;1</td>
<td>1</td>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

**DIMENSIONS (mm)**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1EV EV005</td>
<td>70</td>
<td>137</td>
<td>74</td>
<td>1EV EV010</td>
<td>290</td>
<td>321</td>
</tr>
<tr>
<td>1EV EV006</td>
<td>70</td>
<td>137</td>
<td>74</td>
<td>1EV EV011</td>
<td>310</td>
<td>328</td>
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<tr>
<td>1EV EV007</td>
<td>70</td>
<td>137</td>
<td>74</td>
<td>1EV EV012</td>
<td>350</td>
<td>389</td>
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<tr>
<td>1EV EV017</td>
<td>160</td>
<td>210</td>
<td>140</td>
<td>1EV EV008</td>
<td>160</td>
<td>210</td>
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<tr>
<td>1EV EV009</td>
<td>160</td>
<td>210</td>
<td>140</td>
<td>1EV EV008</td>
<td>160</td>
<td>210</td>
</tr>
</tbody>
</table>

GAS SECURITY
GENERAL CONDITIONS

1 Validity and field of application
1.1 These General Conditions of Sale apply to all goods and/or services provided by the Supplier.
1.2 The provisions which differ from these General Conditions of Sale or those prescribed by law, are only binding for the Supplier if accepted in writing.
1.3 The supply of goods and services or the acceptance of payment without any reservation does not imply acceptance by the Supplier of conditions other than those stipulated herein.

2 Definitions
2.1 The “Supplier” is the entity that provides the goods and/or services which these General Conditions apply to.
2.2 The “Customer” is the person to whom the Supplier intends to provide or provides goods and/or services.
2.3 The “Parties” are the Supplier and the Customer.
2.4 The “Contract” is a set of written documents, exchanged between the Parties, which consists of a quotation request, an offer, an order and an order confirmation, which are governed by the specific conditions of supply, that is the service, and to which these General Conditions apply.

3 Finalising the contract, conditional acceptance
3.1 The offers of the Supplier are non-binding. A contract is only finalised, with the clauses stipulated in paragraph 3.2, when the offer of the Supplier is accepted by the Customer or the Customer’s order is countersigned by the Supplier, which means the order has been implemented.
3.2 In special cases and with explicit emphasis in the Contract, the Supplier accepts orders placed by the Customer with reservation, in terms of quantities and delivery times. In this case, the Supplier will not be liable to the Client for any supplies that are not dispatched as well as in cases where the magnitude of the orders is reduced, or in case of a delay or a postponed dispatch, and for whatever cause or reason.

4 Using information on goods and services
All drawings, models, data, plans, studies, calculations and technical and commercial information used before or after the Contract is finalised are and remain the property of the Supplier. They cannot be used, copied, reproduced or transferred in any way other than to finalise the purposes of the Contract or only after written consent is provided by individuals who are adequately authorised by the Supplier.

5 Specifications and Information
All specifications and information regarding features, properties and capacities of the goods and services indicated in the catalogues, photos, website, brochures, price lists or the like are purely indicative. The Supplier reserves the right to change the above specifications and information at any time without prior notice.

6 Risks, delivery obligations
6.1 The liability of the Supplier with regards to the delivery of goods ceases upon the date of delivery or service provision (installation, commissioning, etc.) is considered the latest date between:
   a) the date of delivery or provision scheduled in the Contract;
   b) the date when the Contract is finalised;
   c) the date when payment is actually made if intended to coincide with the date of delivery of the goods and services;
   d) the date stipulated in the Contract delayed by the number of days of no access to places to provide the service.

7 Date of delivery or provision of the service
The date of delivery or provision of the service (installation, commissioning, etc.) is considered the latest date between:
   a) the date of delivery or provision scheduled in the Contract;
   b) the date when the Contract is finalised;
   c) the date when payment is actually made if intended to coincide with the date of delivery of the goods and services;
   d) the date stipulated in the Contract delayed by the number of days of no access to places to provide the service.

8 Delay in delivery times
8.1 In the case of contracts which are accepted with no reservation, if the Supplier delays to deliver the goods and/or services according to the deadlines defined in the “Date of delivery or service provision” clause or to fulfil a contractual obligation, the Customer will set another reasonable deadline of no less than 2 (two) and no more than eight (8) weeks.
8.2 Where the delivery of the goods or provision of the service is not implemented within the above additional period and the delay is attributable to the Supplier, the Customer has the right to withdraw from the Contract. In this case, the Customer must provide written notification to the Supplier within 3 (three) days from the last deadline agreed.

9 Force majeure
9.1 The Supplier’s obligations related to the delivery of goods and the provision of a service are considered suspended in case of force majeure. To this end, force majeure also includes no power, shortage of raw materials, strikes, measures adopted by public administration, circulation impediments, war, riots, civil unrest, government intervention, fire, epidemics, floods, earthquakes, interruptions of transport, export and/or import embargoes, production activities, any other similar reason or if the sub-contractors of the Supplier are not able to implement the deliveries on time or regularly due to force majeure or for the events described above.
9.2 If the delay is not exceeding four (4) weeks, is foreseen for the normal conditions to be resumed once the force majeure causes cease.

10 Rejection upon delivery
If the Customer refuses delivery, the Supplier may store the goods, at its sole discretion, at the Customer’s expense and take out a risk insurance policy on the goods themselves. The Supplier will charge these costs plus 20% to the Customer, who will accept them. Once 7 (seven) days elapse from the rejection, except for action for damages, the Supplier has the right to sell the goods considering this contract as terminated. In any case, nothing will be due to the Customer.

11 Returns
The Supplier does not accept any goods that have been regularly ordered and delivered to the Customer to be returned. In special cases whereby the Supplier should authorise the returns in writing, the Customer will organise the return of the goods. The Supplier will credit the Customer 80% of the equivalent value if the returned goods amount to less than Euro 1,000.00 (one thousand), and 90% of the equivalent value if the returned goods amount to at least Euro 1,000.00 (one thousand).

12 Checking delivered goods
12.1 It is the Customer’s responsibility to check the quantity, quality and integrity of the delivered goods immediately upon receiving them. If the packaging is not perfectly intact or parts are missing, the Customer must specifically report this on the Transport document and then report this to the Supplier as well as the carrier. If the carrier does not accept the note on the Transport document and the Customer wishes to reject the delivery, the Customer must immediately inform the Supplier by fax or by certified email.
12.2 Failure to check the goods upon delivery will not allow the Customer to make subsequent claims. Any claim related to the delivered goods or services provided must be made according to the methods and terms stipulated in Art.1495 in the Italian Civil Code.

13 Complaints
13.1 Any claim made by the Customer and, in particular, a complaint related to the quantity or quality of the goods supplied, or the adequacy of the services provided must be received by the Supplier in writing without delay, within ten (10) days from the delivery date of the goods or the provision of the service.
13.2 If the Customer has not submitted a claim or reported defects in accordance with the methods and deadlines set forth in the previous point, the delivery of the goods or the provision of services shall be deemed successful notwithstanding the provisions of the Italian Civil Code.

14 Warranty period. Forfeiture and specifications
14.1 The warranty is applicable against non-conformities with respect to the characteristics defined in the product data sheet. The Customer is responsible for proving manufacturing, assembly or material defects.
14.2 The warranty expires within 2 months from the discovery of the defect. In any case, the warranty will expire 24 months after delivery.
14.3 The warranty is not extended in the case of repairs or alterations to the goods.
15 Enforcement of the warranty
15.1 The defective goods will be sent by the Customer to the authorised offices of the Supplier, and the latter will repair or replace the goods and return them to the Customer. The costs of removal, installation and transportation are borne by the Customer.
15.2 If the intervention to implement the warranty is required at the premises of the Customer, the Supplier will not charge for the hours of work and the material but will charge for the hours of travel and non-operational hours at a working day rate of Euro 55/hour as well as the expenses for room and board with payment being required to be settled within 30 days end of month.

16 Forfeiture of the warranty
The warranty of the Supplier on goods and services is forfeited if:

a) repairs have been carried out by third parties not specifically authorised by the Supplier;
b) the installation and use of the goods and services differ from those stipulated in the instruction manuals of the Supplier;
c) the recommendations and limits of use have not been complied with and not all precautions have been adopted to safeguard and protect the goods from faults or damage or defects;
d) the faults or damage or defects are caused by inexperience, negligence or tempering with;
e) the faults or damage or defects are not attributable to the construction or assembly of the goods;
f) the faults or damage or defects are caused or consist of wear, oxidation, corrosion or any other form of progressive deterioration;
g) the faults or damage or defects are caused by any external agent;
h) the Customer who reported the defect refuses to send the goods to the authorised offices of the Supplier for them to be repaired or replaced.

17 Rights of the Customer in case of defects
17.1 The Customer cannot make a warranty claim for defective goods or services if the magnitude of the defect does not significantly reduce the value or usability of the good or service.
17.2 In the case of claims related to the quality of the goods or services which have been duly reported and acknowledged as justified, the Supplier reserves the right to repair or replace the defective goods at its discretion. A reasonable period of time must be given for the repairs or replacement to be implemented.
17.3 The guarantee is not applicable to parts that deteriorate due to wear.

18 Compensation for damages - liability limits
18.1 The Supplier is not held liable for any damage due to the unintentional non-compliance with caution and diligence regulations that do not compromise the actual contract in itself. In any case, the Supplier will be liable to pay the foreseeable damage, the amount of which cannot exceed Euro 3,000.00.
18.2 The above mentioned provisions concerning exemption and/or limited liability will be applicable in all cases governed by these General Conditions except for personal injury or harm caused to the health or property of third parties for whom there lies the liability of the manufacturer or in all other cases where the excluded or limited liability is not permitted by law.
18.3 The Supplier declines all liability for the occurrence of defects and/or malfunctions that are not directly related to the installation of the supplied devices.
18.4 The Supplier declines all liability for the occurrence of data that are not consistent with current regulations derived from installations carried out by third parties not directly commissioned by the Supplier and any previous consumer data provided to the Supplier prior to the engagement.

19 Prices
19.1 The prices listed in the Contract are in Euro and are excluding VAT. The value added tax is payable according to the amount established by the law in force as at the date of the invoice.
19.2 The prices of the goods listed in the Contract do not include the costs of packaging and shipping.
19.3 Without prejudice to any automatic updates indicated in the specific conditions, the prices listed in the Contract are subject to change due to possible fluctuations in the prices of materials, subcontracting costs, taxes and duties, exchange rates, wages and the like. Should the Supplier require in writing a change in prices, by registered letter with acknowledgement of receipt and with minimum prior notice of 60 days because of the above reasons, the Customer will be free to accept the new conditions or withdraw from the Contract by informing the Supplier in writing.

20 Payment terms
20.1 The payment of the goods will be settled by the Customer according to the methods stipulated in the Contract. The intended terms are to be considered final.

21 Late payments
21.1 If payment for the goods and/or services is not settled within the time limits agreed upon in the Contract, interest on arrears will be automatically applied to the charges, as stipulated by Legislative Decree 231/02. In case of non-compliance or delay, the Customer must also reimburse the Supplier, pursuant to Legislative Decree 231/02, the most damage sustained by the latter as a result of such behaviour.
21.2 The usual payment terms may be changed by the Supplier should the conditions referred to in Art. 1461 of the Italian Civil Code occur.
21.3 In case of non-payment upon maturity, the Supplier reserves the right not only to suspend the shipment of the goods and/or provision of the services ordered but also the implementation of any other orders in the portfolio, all without prejudice to damages and interest.
21.4 No claim of the Customer can lead to a change or suspension in the payment of the invoices issued by the Supplier, under the conditions specified above, and neither can it authorise the Customer to pay any compensation with any sum that may be due.

22 Retention of ownership
The delivered goods remain the property of the Supplier until all sums owed in accordance with the Contract have been settled in full. If the goods are subjected to treatment or processing by the Customer, the retention of ownership is extended to the new goods derived from such changes.

23 Occupational safety
23.1 In accordance with the law, the Customer undertakes to pay the obligations related to the protection of occupational health and safety (Legislative Decree 81/08) related to the implementation of the Contract, considering that other contracting companies and/or self-employed personnel will be employed.

24 Privacy
In accordance with Art. 13 of Legislative Decree 196/03 the Customer is informed that their data and those required for the implementation of the contractual obligations will be stored in the computerised and printed databases of the Supplier. The Supplier is the data controller and the data will be used to possibly send administrative, accounting, sales and promotional material. Pursuant to Art. 7 of Legislative Decree 196/03 the Customer has the right to know, update and correct their data, as well as exercise all other rights stipulated therein, by written notification being submitted to the administration offices of the Supplier. By signing these General Conditions of Sale, the Customer specifically authorises the Supplier to send commercial offers by fax, mail and email.

25 Changes in the conditions of sale
The general and specific conditions may be changed by the Supplier should the conditions referred to in Art. 1461 of the Italian Civil Code occur.

26 In writing
26.1 Any modification, addition or cancellation of a Contract or the General Conditions of Sale, including this clause, will only be effective if done in writing.
26.2 Any communication by the Customer once the Contract is finalised will only be effective if done in writing.

27 Jurisdiction
27.1 Any dispute arising from these general conditions of sale, or related to them in any way, will only be settled by the Court of Milan.