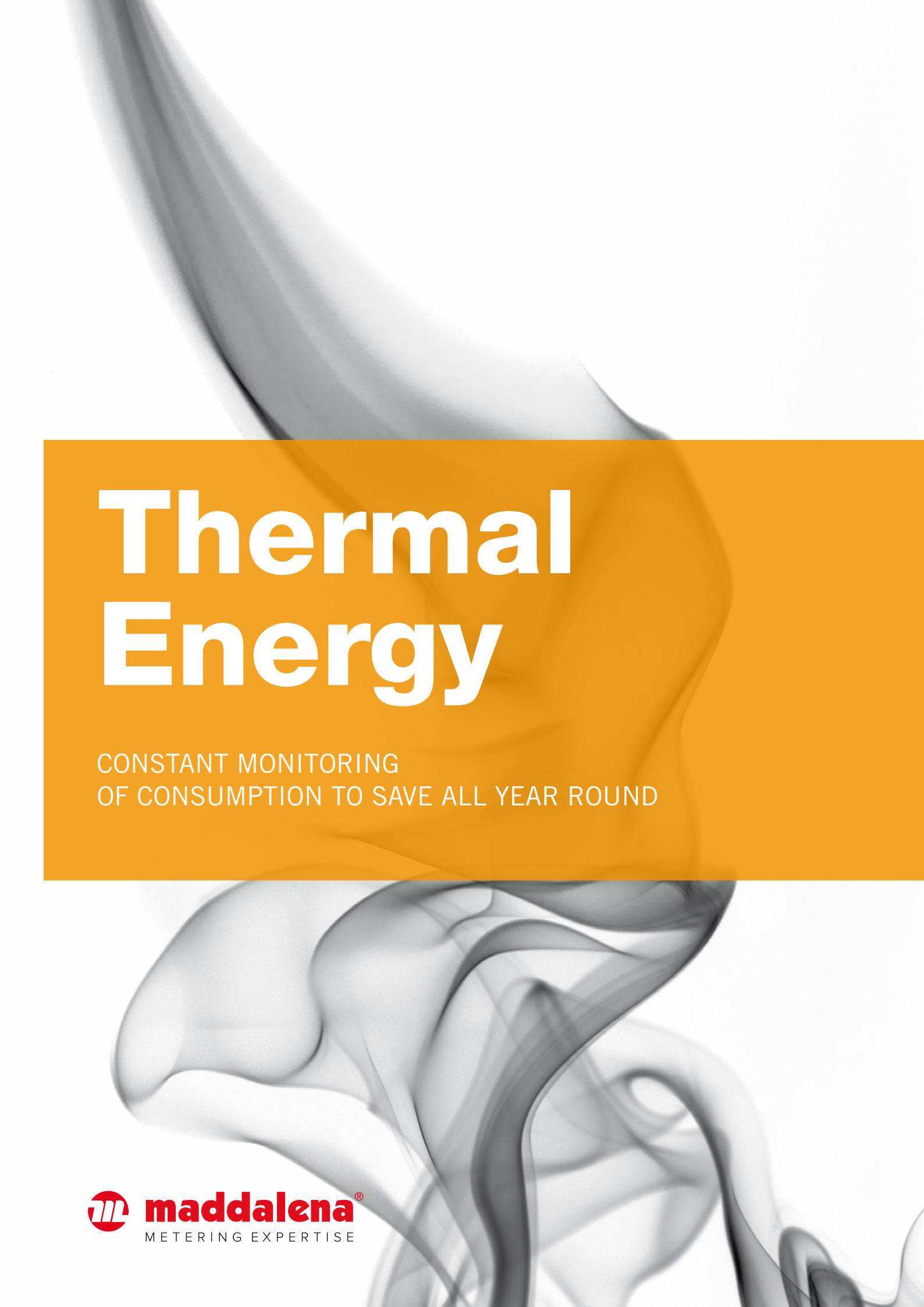


Thermal Energy

CONSTANT MONITORING
OF CONSUMPTION TO SAVE ALL YEAR ROUND

maddalena®
METERING EXPERTISE

Nowadays there is global need for energy saving and responsible consumption.

The energy used for heating and cooling our homes and public buildings should be correctly and constantly monitored both in winter and summer.

Energy monitoring creates awareness of the consumption thus enabling a responsible and sustainable management.

Many European countries have adopted regulations prescribing that buildings should have thermal energy accounting systems, which combine the efficiency of a centralized heating plant with the possibility of managing individual consumption avoiding waste of energy.

Metering is fundamental in order to safeguard energy resources.
Maddalena provides metering solutions that help improve the management of energy allowing users to be aware of their consumption.

THERMAL ENERGY METERS: A RESPONSIBLE CHOICE FOR THE ENVIRONMENT AND THE USER

We have manufactured measuring instruments for over ninety years and we have been in the field of thermal energy metering for several years.

Our “Thermal Energy” range is designed to satisfy a variety of metering applications offering small, efficient and reliable instruments for residential use, large and resistant devices for medium and large-sized heating systems, sophisticated and accurate ultrasonic systems, and devices for managing communication with a centralized data collection system.

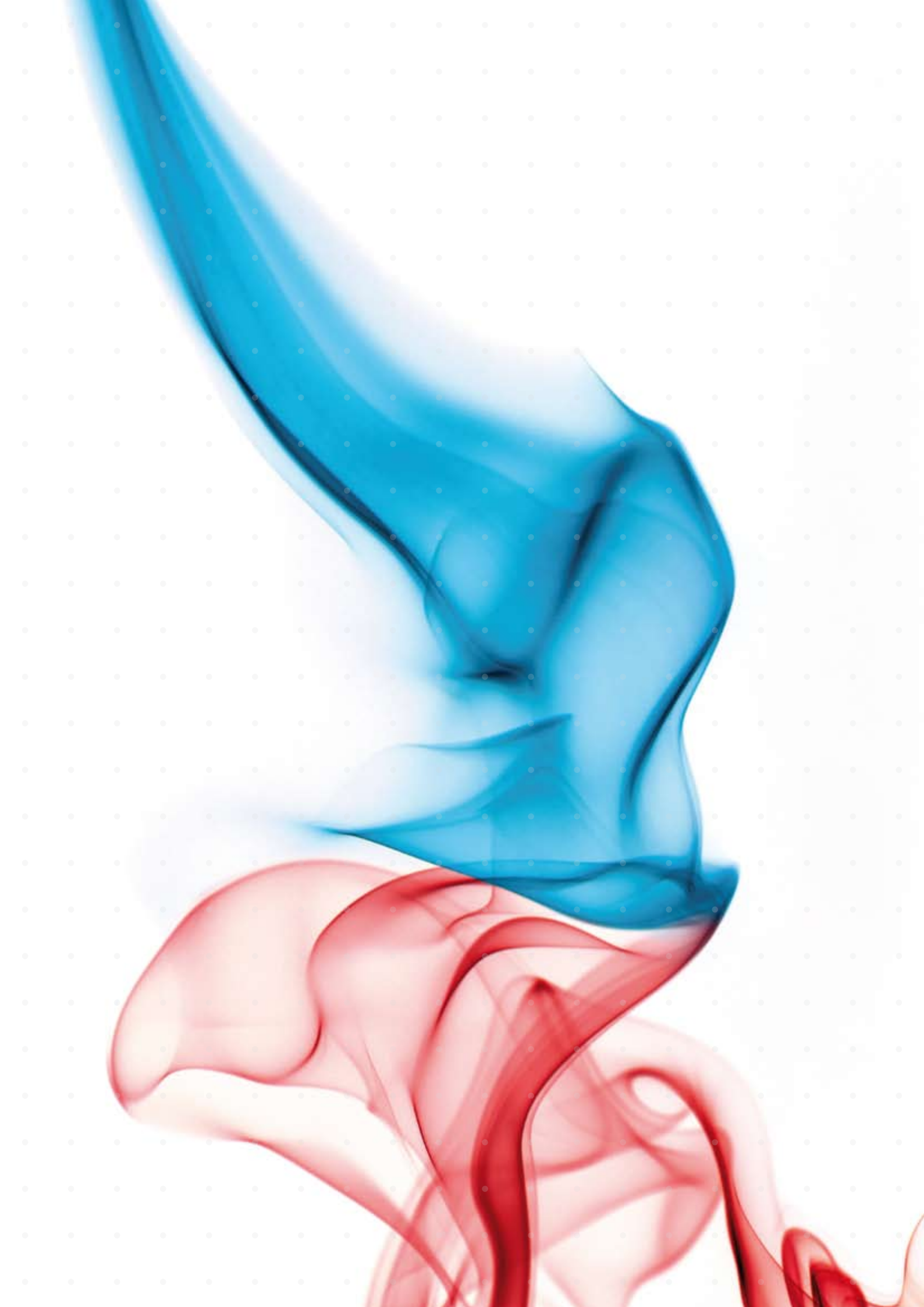
We have always considered legal and fiscal metrology to be important. Our instruments comply with the Directive 2014/32/EU (Annex MI-004) and European standard EN 1434, which establishes the performance and the metrological requirements of thermal energy meters.

This is guaranteed by Maddalena: manufacturer of high quality measuring instruments for the past century.

A COMPLETE AND EASY-TO-USE SYSTEM FOR QUICK MEASUREMENT OF HEAT AND COOLING ENERGY

Detail of the automatic assembly line

Testing bench



microCLIMA evo
SINGLE JET AND COAXIAL

microCLIMA is a thermal energy meter designed for heating systems that use heated water as energy conveying medium.
microCLIMA determines the real thermal energy consumption by calculating the total flowed water volume and the difference between forward and return water temperature. The consumption is indicated on the display. microCLIMA has large application in systems that use overheated water, in conditioning systems and domestic heating systems.

Main Features

- MID approved (Directive 2014/32/EU, Annex MI-004); PTB approved as cooling meter (German approval)
- Inductive water meter, two-spool design (for backflow detection), 90 °C, class 2 or 3, PN 16
- Two Pt1000 platinum temperature sensors
- Dynamic temperature measuring cycle: 2 seconds with water flowing and 60 seconds with no water passage
- Installation in any position; no straight pipe requirements apply before or after the meter
- Inlet or outlet and unit of measurement can be set on site
- Powered by a replaceable lithium battery; service life 10 years
- Ready for external power supply
- 360-degree rotatable and, on request, detachable calculator for easy reading (cable length: 50 cm)
- Large display; up to 6 menus; 2 configurable tariff registers
- Stores monthly and semi-monthly values
- Optical interface as standard (configuration kit sold separately)
- Pre-equipped for retrofit installation modules

MID MI-004

M-Bus

M-Bus wireless

OMS

Versions

- Size (qp): 15 mm (0.6 or 1.5); 20 mm (2.5)
- Water meter: single jet or coaxial concentric connections (compatible with thermal energy meters of other manufacturers)
- Suitable for heat and heat and cooling energy applications; automatic switch-over between heating and cooling energy metering; two separate registers
- Optional: version suitable for use with water and glycol (glycol type and concentration are configurable)
- Retrofit communication modules:
  - wireless M-Bus
  - wireless M-Bus + 3 pulse inputs
  - M-Bus
  - M-Bus + 3 pulse inputs
  - 2 pulse outputs
- Mains powered and galvanically isolated wired M-Bus interface Unlimited daily readings.

MADDALENA SUGGESTS

CD SD PLUS/EVO MID

Our CD SD PLUS domestic hot water meters are recommended for use with microCLIMA thermal energy meters. The compact design allows easy installation, both in horizontal and vertical position, and mounting in meter boxes or narrow places.
A pulser (provided as an optional extra) enables connection with the thermal energy meter (pulse inputs). Also available with M-Bus interface or wireless M-Bus interface (CD SD EVO).

CD SD PLUS

CD SD EVO

microCLIMA U
COMPACT ULTRASONIC

microCLIMA U is designed for systems having a more complex design than residential heating systems. It is ideally suited for high-temperature applications and water carrying solids or dirt. Size: DN 15, 20 and 25

Main Features

- MID approved (Directive 2014/32/EU, Annex MI-004); PTB approved as cooling meter (German approval)
- Ultrasonic water meter (detection of backflow and air), maximum temperature 90 °C or 130 °C, class 2, PN 16
- Minimum head loss
- Two Pt1000 platinum temperature sensors
- Dynamic temperature measuring cycle: 2 seconds with water flowing and 60 seconds with no water passage
- Installation in any position; no straight pipe requirements apply before or after the meter
- Inlet or outlet and unit of measurement can be set on site
- Powered by a replaceable lithium battery; service life 10 years
- Ready for external power supply
- 360-degree rotatable and detachable calculator for easy reading (cable length: 85 cm)
- Large display; up to 6 menus; 2 configurable tariff registers. Stores monthly and semi-monthly values
- Optical interface as standard (configuration kit sold separately)
- Pre-equipped for retrofit installation modules

Versions

- Size (qp): 15 mm (0.6 or 1.5), 20 mm (2.5 or 3.5) and 25 mm (3.5 or 6)
- Suitable for heat and heat and cooling energy applications; automatic switch-over between heat and cooling energy metering; two separate registers
- Retrofit communication modules:
  - wireless M-Bus
  - wireless M-Bus + 3 pulse inputs
  - M-Bus
  - M-Bus + 3 pulse inputs
  - 2 pulse outputs
- Mains powered and galvanically isolated wired M-Bus interface; unlimited daily readings.

MADDALENA SUGGESTS

microCLIMA ULTRA

microCLIMA ULTRA is especially designed for industrial high-temperature applications and larger meters. It complies with the Directive 2014/32/EU and is available in sizes from 40 mm (qp 10 m3/h) to 100 mm (qp 60 m3/h).
microCLIMA ULTRA is Ideally suited for district heating where water reaches up to 150 °C.
Communication interfaces available: M-Bus, M-Bus + 2 pulse inputs, wireless M-Bus, wireless M-Bus + 2 pulse inputs, pulse outputs.

microCLIMA
CALCULATOR

Universal calculator designed for measurement of thermal energy (suitable for usage with primary meters in heating installations (mainly in thermal power stations) and cooling installations that use water as cooling medium.
It ensures high performance and great flexibility. It must be connected to a pair of temperature sensors (provided separately).
The calculator features a liquid crystal display with 8 digits and special characters.
Data are arranged on three menus: main, technical and statistical menu.
Data and levels may be displayed with the pushbutton on the device.

Main Features

- MID approved (Directive 2014/32/EU, Annex MI-004). The combined version (heat and cooling energy applications) is PTB approved (cooling meter)
- Optical interface as standard
- Lithium battery or externally powered.
  Battery service life: 10 years
- Two pulse inputs for management of two pulsed water meters.
  Standard pulse value: 1 pulse/10 litres; other pulse values may be set with the opto head and the configuration software (upon request)
- Data logger: 24 monthly values may be downloaded to a PC and 15 monthly values may be read directly on the display
- Two configurable tariff registers
- Connector board designed for easy connection
- Suitable for wall or DIN rail mounting

Versions

- Pulse options (pulses/litre): to be stated on order; a user-configurable version (TX) is also available
- Designed for heating applications or heating and cooling applications with automatic switch-over between heat and cooling energy metering; two separate registers
- Optional communication interfaces:
  - 2 pulse outputs (in place of 2 pulse inputs)
  - M-Bus (EN 13757)
  - Wireless M-Bus radio interface - 868 MHz (EN 13757-4)
    The data collected can be sent via radio or M-Bus.

METERS FOR HOT AND OVERHEATED WATER

Meters designed for use with water containing abrasive suspended particles and at a temperature up to 130 °C; suitable for use with a separate thermal energy meter consisting of a separate calculator and a pair of temperature sensors.
A full range of single jet, multi-jet and Woltmann meters are available (upon request).

Main Features

- MTW (multi-jet) and WP (Woltmann) water meters are MID approved (Directive 2014/32/EU, MI-004, as primary meters)
- Hard metal vane wheel's pivot and bearings
- Protective metal cover
- All meters are hydraulic tested
- Built-in pulser

Versions

- Size: multi-jet meters 15 mm (qp 1.5) to 50 mm (qp 15); Woltmann meters 50 (qp 25) to 150 mm (qp 150)
- Pulse options (pulse/litre): 1/1, 1/10, 1/100, 1/1000 (to be stated on order)
- Maximum temperature: 90 °C, 130 °C
- Multi-jet for installation in vertical position: 15 mm (qp 1.5) to 40 mm (qp 10)

FUE 380 ultrasonic primary meters are also available for special installation requirements

- Size from DN 50 to DN 1200; also available MID approved (MI-004)
- Maximum temperature: 120 °C, 200 °C
- Built-in pulser.

MADDALENA SUGGESTS

ELECTO LIGHT MID

Single jet inductive non-magnetic water meter (RFA); MID approved (MI-004). Suitable for heating systems with water up to 90 °C. Blind cover and built-in pulser. Pulse options: natural or conditioned pulses (1 pulse/litre or 10 pulses/litre). Suitable for industrial applications or for use as a primary meter with thermal energy meters. Size: 15 mm (qp 1.5), 20 mm (qp 2.5)

TEMPERATURE SENSORS & ACCESSORIES

Temperature sensors

Pt500 platinum sensors, MID certified (Annex MI-004).

- Sizes:
  5 mm (for meters from 15 to 25 mm)
  6 mm (for meters from DN 32 to DN 200)
- Length: 3 m or 10 m

Standard tee pipe or with ball valve

Tee pipe for 5 mm temperature sensors, thread M10 (direct/wet mounting).

- Sizes: 15, 20 and 25 mm
- Also available with ball valve for easy mounting/maintenance

Sensor pockets

Pair of pockets for 6 mm temperature sensors (dry mounting).

- Various length options available depending on the pipe size
- Complete with screw, bushes (standard or 45 °) and gaskets
- Kit for DN 32 to DN 200 pipes also available.

MID
MI-004

SOFTWARE

Our software for managing the devices is available for download at www.maddalena.it/en/my-maddalena (prior registration is required).
The opto head for microCLIMA energy meters and Gradus heat cost allocators is available on request.

GRADUS
ELECTRONIC ALLOCATOR

Thermal energy meters are not suitable for use in riser heating systems (direct billing). In this case, heat cost allocation is only possible through electronic heat cost allocators (indirect billing). The consumption of each flat is calculated on the basis of the data collected from each device.
Heat cost allocators are radiator-mounted devices and configuration depends on the radiator type.

Main Features

Gradus is a two-sensor electronic cost allocator. The charged amount is calculated from the difference between the room temperature measured with the extra sensor and the radiator temperature. The two-sensor technology allows for higher accuracy compared to one-sensor heat cost allocators and offers higher protection against tampering.
An optical interface and a wireless radio interface come as standard and comply with the Standard EN 13757-4.
Gradus is designed to enable users to read their own consumption.
The validity of the read-out is checked with the check number indicated on the display. The device can be deactivated during summer months (no summer counting).

- EN 834 compliant
- Two-sensor technology
- Retrofittable with remote sensor
- Wireless M-BUS 868 MHz radio system (EN 13757-4) set at factory
- Optical interface for configuration and manual reading
- AES-128 encryption for secure data transmission (must be activated)
- The heat from external sources is not measured
- No measurement during summer months
- Blocco lettura estiva attivabile
- 11 years of maintenance-free operation
- Check number for verification of readings
- Tamper alarm
- Compact design
- Wide range of approved Kc correction factors

Versions

- Available with or without radio interface
- Remote sensor available as optional
- It may be used both with fixed or variable scale
- Wide range of mounting accessories to fit different types of radiators (sectional, plate, towel radiators, layer convectors).

DATA CENTRALIZATION
M-BUS AND WIRELESS M-BUS

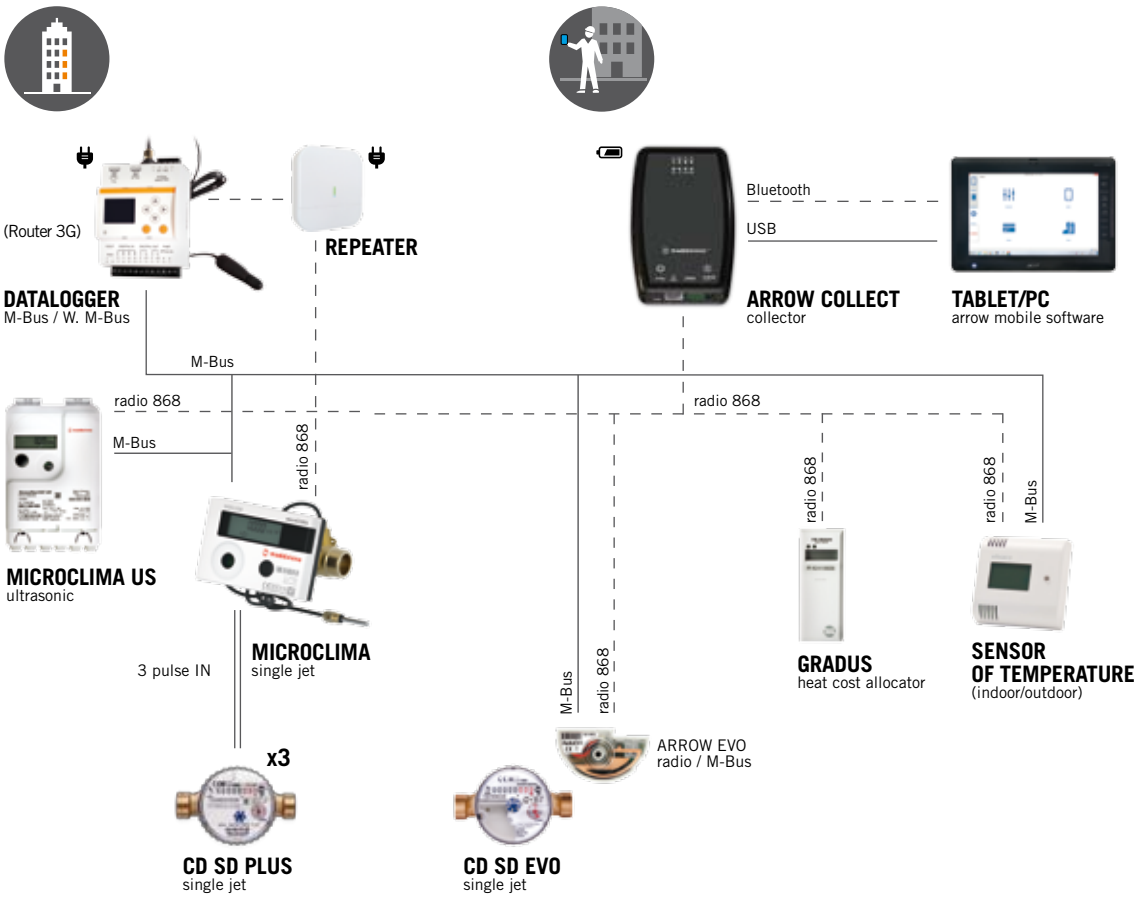
The M-Bus

The M-Bus is a communication interface which complies with European Standards EN 1434 and EN 13757.
The M-Bus has been developed in Germany and is constantly updated by a working group. Over the years it has become the most used interface for remote reading of consumption meters, such as heat, domestic hot water, gas and electricity meters, cost allocators etc., and for data centralization.
A wireless M-Bus radio interface (EN 13757-4) is now also available.

Benefits

Open system: interoperability between master (different manufacturers) and EN 13757 compliant meters.

- Wired or wireless networks
- Safe data transmission
- Low cost
- Fixed or mobile data centralization systems
- Large number of connectable devices
- Automatic detection of networked devices
- Wide range of standard components and devices.



M-BUS

Full range of data loggers, repeaters and M-Bus accessories compatible with any meter with M-Bus interface (EN 13757). Data loggers enable direct (display/serial cable) or remote (3G router) reading of consumption. Data are then saved in csv/Excel files.

- **SMART KIT > DATA LOGGER 60-240**
  It is designed to automatically collect consumption data from water meters and to simplify management of the devices connected to the network. It is comprised of a data logger with display (multilanguage), keypad and internal storage; a repeater for 60 meters/M-Bus devices; an external power supply unit. A maximum of 3 repeaters can be added in order to support up to 240 devices. The data logger collects and displays the consumption data of the M-Bus meters and has a built-in web server to manage the meter data, retrieve stored readings and create reports locally on a computer or remotely (3G router sold separately).

  Standard supported: M-Bus EN 13757.

- **M-Bus accessories**
  Pulse/M-Bus adapters, direct M-Bus modules and temperature sensors.

MADDALENA SUGGESTS

Please refer to our product catalogue “Systems” for more information.

WIRELESS M-BUS

Our thermal energy meters, water meters and heat cost allocators are now available with a wireless M-Bus radio communication interface (EN 13757-4) operating in the 868 MHz band.
A number of solutions are available to collect and centralize the data received from these meters or from wireless M-Bus compatible meters.

- **USB radio receivers - 868 MHz**
  Designed for use in walk-by reading systems and for connection to a laptop via USB. Data are collected and transmitted to a computer via serial port; Maddalena reading software is necessary.
  - Power supply: M-Bus
  - Supported modes: T1 and C1
  - The number of meters that can be managed is unlimited

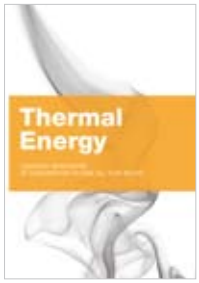
- **ARROW COLLECT radio receiver - 868 MHz**
  It has a built-in Bluetooth interface which makes it an alternative to the USB 868 MHz radio receivers.
  - Powered by a replaceable lithium battery
  - Supported modes: T1 and C1
  - The number of meters that can be managed is unlimited
  - Long range transmission
  - Internal storage

- **SMART KIT > DATA LOGGER MESH/WM-BUS**
  Ideally suited for indoor wireless systems where meters are read directly or remotely. It is comprised of a data logger for 480 wireless M-Bus devices and 20 M-Bus devices, a power supply unit and a multi-hop wireless M-Bus repeater powered externally.
  In multistorey buildings the network can be extended limitless by placing additional repeaters in cascade, which will connect automatically and transmit data (1 every 3 storeys).

  The data logger collects and displays the consumption data of the M-Bus meters and has a built-in web server to manage the meter data, retrieve stored readings and create reports locally, on a computer, or remotely (3G router sold separately).
  Standard supported: M-Bus EN 13757 and OMS operating in the 868 MHz band; transmission modes T1, C1, S1.

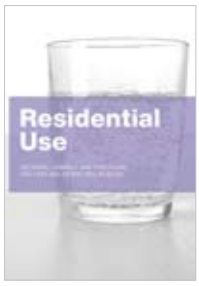

maddalena

OUR PRODUCT RANGE



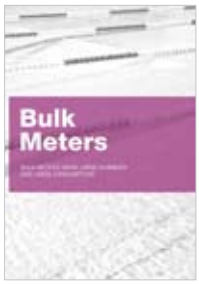
THERMAL ENERGY

Constant monitoring of consumption to save all year round



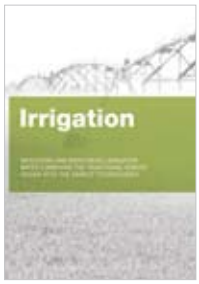
RESIDENTIAL USE

Accurate, compact and functional water meters for easy and error free reading



BULK METERS

Bulk meters mean large numbers and large consumption



IRRIGATION

Measuring and monitoring irrigation water combining the traditional robust design with the latest technologies

INSTRUMENTS AND INDUSTRY

Special purpose instruments for accurate measurement of liquids

SYSTEMS

Systems designed for monitoring, remote control and remote reading

direWeb - www.direweb.it

maddalena®
METERING EXPERTISE

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