

MULTICAL®

The intelligent meter

Multi-functional thermal heating and cooling meter

The new MULTICAL® is an exceptionally versatile meter with a wide range of features including data logging, PQ limiter and leak detection.

This district heating meter is an integrated, intelligent unit. MULTICAL® utilises the latest technology and sets the standard for future energy metering methods.



A multitude of applications

Multi-functional energy meter



Kamstrup's ultrasonic heat meters are developed on the basis of input from our customers, tempered to ensure that the meters we produce today are designed for tomorrow's applications. The new MULTICAL® is thoroughly tested, not only by us but also by national authorities.

During the development process, flexibility has been very much in focus. Programmable functions and plug-in modules - that can be retrofitted - ensure that the meter can be dedicated to a wide range of applications.

MULTICAL® can be used in both open and closed systems and is ideal in installations demanding particular data displays, data logging, monthly reports etc. which can be transmitted or printed as required.

Metering thermal heat and cooling energy



The prime function of MULTICAL® is thermal heat metering. In order that MULTICAL® can be utilised in regions with large temperature fluctuations, the meter has been designed as a multifunctional meter with the ability to measure both thermal heat and cooling energy in all plants using water as the energy-bearing medium.

Installed in a system used for heating in the winter season and cooling in the summer season, MULTICAL® is able to measure both, which reduces installation as well as operating expenses.

Energy used for heating and cooling is stored in separate registers, which facilitates differentiated user fees.

Closed district heating systems



MULTICAL® can be used for measuring thermal energy in closed systems with special requirements to readings, data-logging and printed monthly reports. Two extra flow meters can be installed, enabling MULTICAL® to meter accumulated volume and mass for both flow meter inlets V1 and V2.

The water pressure in the system can be monitored simply by connecting two pressure transmitters. The water pressure in the flow and return pipes can then be displayed, as required. The data will also be logged in the appropriate register.

Open district heating systems



MULTICAL® is ideal for use in open district heating systems, where tap water is heated by a boiler station and then circulated to high rise flats and other buildings housing more than one family.

A MULTICAL® is simply installed in each building together with two flow meters and three temperature sensors. The

temperature sensors measure flow, return and tap water temperatures. All three values are taken into account when calculating energy consumption.

The water pressure in the open system can also be measured, as described above.

A multitude of features

Data communication

Data can be read by means of a hand-held terminal, IR head or various plug-in communication modules.

All communication modules can be fitted, as required, by hand. Modules can even be retrofitted in existing installations - without reverification.

Kamstrup's standard communication systems can be used for remote reading, database management and billing via a central computer.

The following communication modules are currently available:

- Modem
- M-Bus
- LonWorks
- RS 232



Data logging



MULTICAL® stores data for up to 15 years. A facility which opens up new dimensions within data logging, providing essential input about periodic consumer problems.

Data can be logged daily (60 days), hourly (960 hours), monthly (36) and annually (15 years). Furthermore an info-

logger stores data pertaining to events that have occurred in the system. All logged data can be read by METERTOOL - a computer program developed by Kamstrup, or by means of MULTITERM hand-held terminal. Data can be printed to a standard printer simply by placing an IR-head on the meter.

Tariff functions

MULTICAL® is supplied with two additional registers for accumulating consumption within a given tariff range.

The tariff billing facility makes it possible to bill consumption in a differentiated way, based on time and consumption data.

In addition, the tariff function can be used to control the motor valve.

9 different tariff installation possibilities are available:

- Power tariff
- Flow tariff
- Cooling tariff
- Return temperature tariff
- Average for t_f and t_r per month
- Average for t_f and t_r per year
- Time-controlled tariff
- PQ limiter

Leak detection

MULTICAL® can control the amount of water running in and out of the system. If a programmed limit is exceeded, the meter will send an alarm message, e.g. via a built-in modem module.

Installing two flow meters enables constant leak monitoring based on a temperature corrected comparison between the flow and return masses. Information on detected leakages is sent

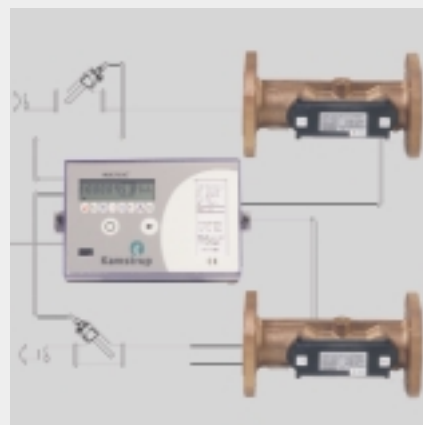
automatically to the monitoring system at the district heating plant or to the security centre via an internal modem module

In addition, MULTICAL® is able to register pulses from cold-water meters which makes it possible to monitor leaks in the water system too.

Valve control

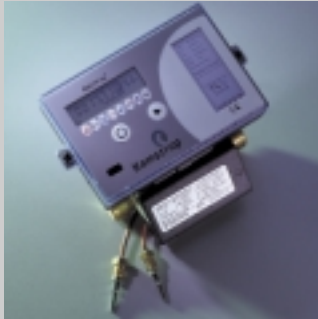
MULTICAL® can control a 3-point, motor-operated valve. This feature is an inexpensive alternative to an external regulator and is equally capable of limiting power or flow.

MULTICAL® utilises existing information from the meter in a new and revolutionary way, enabling MULTICAL® to limit water flow or heat flow rate based on programmed limits.



Specification

Technical Data



MULTICAL® 66CDE features:

- Measures heat and cooling
- Nominal flow of 0.6 - 3000 m³/h
- Electricity and water meters can be connected
- Leak detection
- Battery backup
- Data is logged for 15 years
- Power and flow limiter
- Net supply or 10 year battery

Power supply

- 230 V AC, ± 15/-30%, 48...52 Hz
- 24 V AC/DC ± 30%
- D-cell Lithium HiCap battery, 10 year lifetime when mounted on the wall

Inputs

- 3 temperature inputs (0...165°C) sensor type Pt500 - EN 60 751
- 2 flow meter inputs
- 2 pulse inputs

Data

- Galvanically insulated serial data output. Can be converted into RS232
- Memory EEPROM

Tarif funktion

- Peak tariff
- Average tariff
- Time tariff
- PQ-limiter

Measuring data

- Temperature range 0°C...160°C
- Differential range 3K...150K

General

- Ambient temperature 0°C...55°C
- Protection class IP54

Type approvals

- Complies with following norms: EN 1434, DS 2340, OIML R75, PTB
- CE-mark LVD, EN 50 081-1 and EN 50 082-1

TS 27.01 062 TS 27.01 098
DS 2340 EN 1434

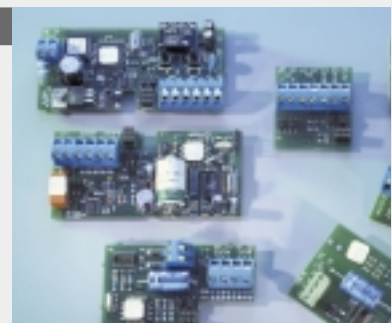
PTB

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Ellipse communication system

Plug and play communication modules and all necessary software can be combined as required – modules can be installed by Kamstrup when you place your meter order – or on site in meters already installed. Simply remove the cover and fit the module by hand. Reverification is NOT required.

All modules communicate with the meter via an internal data bus.




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