

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI004-020

Issued by FORCE Certification A/S, Denmark
EU-notified body number 0200

In accordance with The Danish Safety Technology Authority's statutory order no. 544 of May 28, 2018 which implements the Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID).

Issued to: **Kamstrup A/S**
Industrivej 28, Stilling
DK-8660 Skanderborg

Type of instrument: Heat Meter, calculator

Type designation: MULTICAL® 602 (type 602-A, 602-B, 602-C and 602-D) or
SVM S6 (type S6-A, S6-B, S6-C and S6-D) or
MULTICAL® 6L2 (type 6L2-F)

Valid until: 2021-07-06

Number of pages: 12, including appendix

Date of issue: 2018-11-14

Version: 12
This new version of DK-0200-MI001-020 is issued due to changes to the product.
All previous certificates are withdrawn.

Approved by

Processed by



Lars Poder
Certification Manager



Michael Møller Nielsen
Examiner

The conformity markings may only be affixed to the above type approved equipment. The manufacturer's Declaration of Conformity may only be issued and the notified body identification number may only be affixed on the instrument when the production/product assessment module (D or F) of the Directive is fully complied with and controlled by a written inspection agreement with a notified body. This EU-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.

FORCE Certification references:
TASK no.: 118-34881.01 and ID. No.: DK-0200-MID-05204

DK-0200-MI004-020

Appendix to

EU-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI004-020

Issued by FORCE Certification A/S, Denmark

EU-notified body number 0200

| Revision | Issued | Changes |
|------------------------------|------------|---|
| DK-0200-MI004-020 | 2011-07-06 | Original certificate |
| DK-0200-MI004-020 rev 1-2011 | 2011-10-14 | - |
| DK-0200-MI004-020 rev 1-2012 | 2012-01-10 | <ul style="list-style-type: none"> • New software revision • Changed LONWorks module • New module added |
| DK-0200-MI004-020 rev 2-2012 | 2012-03-30 | New module added |
| DK-0200-MI004-020 rev 3-2012 | 2012-09-18 | <ul style="list-style-type: none"> • Two new modules added • New software revision added • New text added to section "Description" |
| DK-0200-MI004-020 rev 1-2013 | 2013-04-02 | New software revision added |
| DK-0200-MI004-020 rev 2-2013 | 2013-09-30 | New module added to type number combination |
| DK-0200-MI004-020 rev 1-2014 | 2014-03-28 | New module added to type number combination |
| DK-0200-MI004-020 rev 2-2014 | 2014-08-25 | New software version |
| DK-0200-MI004-020 rev 3-2014 | 2014-12-19 | <ul style="list-style-type: none"> • New meter variant, MULTICAL® 6L2, added • Minor editorial clarifications |
| DK-0200-MI004-020 rev 10 | 2015-12-11 | <ul style="list-style-type: none"> • Revision history added • Overview of SW revision and checksum added • New module added to type number combination |
| DK-0200-MI004-020 ver 11 | 2016-09-21 | <ul style="list-style-type: none"> • Language neutral type label added • Previous versions of this certificate withdrawn |
| DK-0200-MI004-020 ver 12 | 2018-11-14 | <ul style="list-style-type: none"> • New module added (LoRA, type No. 52) • References to EN 1434 updated • Informative annex added |

Applied standards and documents:

EN 1434:2015

The instruments/measuring systems shall correspond with the following specifications:

Type designation:

 MULTICAL® 602 (type 602-A, 602-B, 602-C and 602-D), or
 SVM S6 (type S6-A, S6-B, S6-C and S6-D) and 602-D), or
 MULTICAL® 6L2 (type 6L2-F).

Description:

The meter consists of a calculator, which constitute a heat meter together with type approved temperature sensor pairs and type approved flow sensors.

The calculator unit has a display indicating registered thermal energy, and additionally via a pushbutton, other values can be shown.

MULTICAL® 602 (SVM S6) can be extended by two internal modules.

Technical documentation:

Reference No.:

- 118-34881.01
- 116-26997.04
- 114-33017.04.07.03
- 114-33017.04.07.01
- 114-21535.0004.0017
- 114-21535.0004.0013
- 113-21029.0004.0006
- 113-21029.0004.0002
- 112-23383.0004.0007
- 112-23383.0004.0003
- 80.976-268/12
- 80.976-258/11
- 80.976-223/11

Technical data

| | |
|--|---|
| Instrument type according to | : EN 1434:2015 |
| Instrument type | : Combined instrument |
| Parts | : Calculator or Calculator and temperature sensors |
| Energy indication | : GJ, kWh or MWh (Wh in calibration mode) |
| Temperature range | : θ_{\min} - θ_{\max} : 2°C...180°C (Alternative 20°C...110°C) |
| Temperature diff. range | : $\Delta\theta_{\min}$ - $\Delta\theta_{\max}$: 3 K...170 K (Alternative 5 K...90 K) |
| Flow sensor, range | : From qp 0.6 m ³ /h to qp 3,000 m ³ /h |
| Flow sensor, position | : Inlet or outlet pipe (programmable) |
| Environment class | : E1 and E2, M1 |
| Climatic class | : 5...55°C, non-condensing, closed location |
| Durability specification | : 12 years |
| Protection class | : IP 54 |
| Mains supply | : 230 VAC, 48...62 Hz 24 VAC, 48...62 Hz |
| Battery | : 3.65 VDC, D-cell Lithium battery |
| Back-up battery | : 3.0 VDC, BR-cell Lithium battery |
| Temperature sensor cables (un-shielded) | : Max. 100 m sensors cables for 4-wire connections Or max. 10 m cables for Pt100 2-wire connections Or max. 20 m cables for Pt500 2-wire connections (Minimum cross sectional area acc. to EN 1434-2, table 2) |
| Flow meter cables (un-shielded) | : Max. 10 m for ULTRAFLOW® flow sensors Max. 10 m for flow sensors w/electronic pulse output Max. 20 m for mechanical flow meters with Reed-switch Max. 100 m for flow sensors with 24 V active pulses |

Software identification

| Version no. | Checksum for metrological part of the software |
|---------------|--|
| xxxx0103 / A3 | 22548 |
| xxxx0201 / B1 | 7978 |
| xxxx0301 / C1 | 22184 |
| xxxx0401 / D1 | 21140 |
| xxxx0501 / E1 | 50975 |
| xxxx0601 / F1 | 25669 |
| xxxx0701 / G1 | 55389 |
| xxxx0801 / H1 | 15774 |

(xxxx is the meter type)

The SW version and checksum can be shown on the display of the meter (display No. 10 and No. 11)

Type number combination

| MULTICAL® 602 (SVM S6) | | Type 602 (S6)- | □ | □ | □□ | □ | □□ | □ | □ | □□ |
|--|------------------------------------|----------------|---|---|----|---|----|---|---|----|
| Sensor connection | | | | | | | | | | |
| Pt100 | 2-wire (T1-T2) | A | | | | | | | | |
| Pt500 | 4-wire (T1-T2) | B | | | | | | | | |
| Pt500 | 2-wire (T1-T2-T3) | C | | | | | | | | |
| Pt500 | 4-wire (T1-T2) w/24 V pulse inputs | D | | | | | | | | |
| Top module | | | | | | | | | | |
| No module | | | | | | | | | | |
| RTC + ΔEnergy calculation + hourly data logger | | | | | | | | | | |
| RTC + PQ or Δt-limiter + hourly data logger | | | | | | | | | | |
| RTC + data output + hourly data logger | | | | | | | | | | |
| RTC + M-Bus | | | | | | | | | | |
| RTC + ΔVolume + hourly data logger | | | | | | | | | | |
| RTC + 2 pulse outputs for CE and CV + hourly data logger + scheduler | | | | | | | | | | |
| RTC + 2 pulse outputs for CE and CV + prog. data logger | | | | | | | | | | |
| 2 Pulse outputs (CE and CV) | | | | | | | | | | |
| Base module | | | | | | | | | | |
| No module | | | | | | | | | | |
| Data + pulse inputs | | | | | | | | | | |
| M-Bus + pulse inputs | | | | | | | | | | |
| Radio Router + pulse inputs | | | | | | | | | | |
| Prog. data logger + RTC + 4...20 mA inputs + pulse inputs | | | | | | | | | | |
| 0/4...20 mA outputs | | | | | | | | | | |
| LonWorks module + pulse inputs | | | | | | | | | | |
| Radio + pulse inputs (internal antenna) 434 or 444 MHz | | | | | | | | | | |
| Radio + pulse inputs (external antenna connection) 434 or 444 MHz | | | | | | | | | | |
| M-Bus module with alternative registers + pulse inputs | | | | | | | | | | |
| M-Bus module with medium data package + pulse inputs | | | | | | | | | | |
| M-Bus module with MC-III data package + pulse inputs | | | | | | | | | | |
| Wireless M-Bus Mode C1 Std. reg. + pulse inputs | | | | | | | | | | |
| Wireless M-Bus Mode T1 Std. reg. (Individual Key) | | | | | | | | | | |
| Wireless M-Bus Mode T2 Std. reg. (Individual Key) | | | | | | | | | | |
| Wireless M-Bus Mode C2 Std. reg. (Individual Key) + pulse inputs | | | | | | | | | | |
| Wireless M-Bus Mode C1 Alt. reg. (Individual Key) + pulse inputs | | | | | | | | | | |
| Wireless M-Bus Mode T1 OMS 16 sec. (Individual Key) | | | | | | | | | | |
| Wireless M-Bus Mode T1 Std. reg. (Common Key) | | | | | | | | | | |
| Wireless M-Bus Mode C1 Fixed network (Individual key) + pulse inputs | | | | | | | | | | |
| Radio, 434 or 444 MHz, Int+ext. Ant. NET0 + 2 pulse Inputs (VA, VB) | | | | | | | | | | |
| Radio, 434 or 444 MHz, Int+ext. Ant. NET1 + 2 pulse Inputs (VA, VB) | | | | | | | | | | |
| LoRa Wan (NAS) | | | | | | | | | | |
| ZigBee 2.4 GHz int.ant. + 2 pulse inputs (VA, VB) | | | | | | | | | | |
| Metasys N2 (RS485) + 2 pulse inputs (VA, VB) | | | | | | | | | | |
| SIOX module (Auto detect Baud rate) | | | | | | | | | | |
| BACnet MS/TP module | | | | | | | | | | |
| Modbus RTU + pulse inputs | | | | | | | | | | |
| KNX module | | | | | | | | | | |
| GSM/GPRS module (GSM6H) | | | | | | | | | | |
| 3G GSM/GPRS module (GSM8H) | | | | | | | | | | |
| Ethernet/IP module (IP201) | | | | | | | | | | |
| High Power Radio Router + pulse inputs | | | | | | | | | | |
| Supply | | | | | | | | | | |
| No supply | | | | | | | | | | |
| Battery, D-cell | | | | | | | | | | |
| 230 VAC high power isolated SMPS | | | | | | | | | | |
| 24 VAC high power isolated SMPS | | | | | | | | | | |
| 230 VAC isolated linear supply | | | | | | | | | | |
| 24 VAC isolated linear supply | | | | | | | | | | |
| Pt500 sensor set | | | | | | | | | | |
| No sensor set | | | | | | | | | | |
| Pocket sensor set w/1.5 m cable | | | | | | | | | | |
| Pocket sensor set w/3.0 m cable | | | | | | | | | | |
| Pocket sensor set w/5 m cable | | | | | | | | | | |
| Pocket sensor set w/10 m cable | | | | | | | | | | |
| Short direct sensor set w/1.5 m cable | | | | | | | | | | |
| Short direct sensor set w/3.0 m cable | | | | | | | | | | |
| 3 Pocket sensors in sets w/1.5 m cable | | | | | | | | | | |
| 3 Short direct sensors in sets w/1.5 m cable | | | | | | | | | | |
| Flow sensor /pick-up unit | | | | | | | | | | |
| Supplied w/1 pcs. ULTRAFLOW® (Please specify type) | | | | | | | | | | |
| Supplied w/2 pcs. (identical) ULTRAFLOW® (Please specify type) | | | | | | | | | | |
| Prepared for 1 pcs. ULTRAFLOW® (Please specify type) | | | | | | | | | | |
| Prepared for 2 pcs. (identical) ULTRAFLOW® (Please specify type) | | | | | | | | | | |
| Prepared for meters w/electronic pulse output | | | | | | | | | | |
| Prepared for meters w/Reed switch output (both V1 and V2) | | | | | | | | | | |
| Prepared for meters w/24 V active pulses | | | | | | | | | | |
| Meter type | | | | | | | | | | |
| Heat meter, (MID module B) | | | | | | | | | | |
| Heat meter, (MID module B+D) | | | | | | | | | | |
| Heat meter, (MID module B+D) E1 & E3 displayed | | | | | | | | | | |

XX

As an option the meter can be supplied with pulse transmitter module type 66-99-608/-609/-610/-615 or -624

Type number combination

| MULTICAL® 6L2 | Type 6L2- | □ | □ | □□ | □ | □□ | □ | □ | □□ |
|--|-----------------------|---|---|----|---------------|----|---|----|----|
| Sensor connection | | | | | | | | | |
| Pt500 2-wire (T1-T2) | | F | | | | | | | |
| Top module | | | | | | | | | |
| No module | | | 0 | | | | | | |
| Base module | | | | | | | | | |
| No module | | | | 00 | | | | | |
| Data + pulse inputs | | | | 10 | | | | | |
| M-Bus + pulse inputs | | | | 20 | | | | | |
| Radio Router + pulse inputs | | | | 21 | | | | | |
| Prog. data logger + RTC + 4...20 mA inputs + pulse inputs | | | | 22 | | | | | |
| 0/4...20 mA outputs | | | | 23 | | | | | |
| LonWorks module + pulse inputs | | | | 24 | | | | | |
| Radio + pulse inputs (internal antenna) 434 or 444 MHz | | | | 25 | | | | | |
| Radio + pulse inputs (external antenna connection) 434 or 444 MHz | | | | 26 | | | | | |
| M-Bus module with alternative registers + pulse inputs | | | | 27 | | | | | |
| M-Bus module with medium data package + pulse inputs | | | | 28 | | | | | |
| M-Bus module with MC-III data package + pulse inputs | | | | 29 | | | | | |
| Wireless M-Bus Mode C1 Std. reg. + pulse inputs | | | | 30 | | | | | |
| Wireless M-Bus Mode T1 Std. reg. (Individual Key) | | | | 31 | | | | | |
| Wireless M-Bus Mode T2 Std. reg. (Individual Key) | | | | 32 | | | | | |
| Wireless M-Bus Mode C2 Std. reg. (Individual Key) + pulse inputs | | | | 33 | | | | | |
| Wireless M-Bus Mode C1 Alt. reg. (Individual Key) + pulse inputs | | | | 35 | | | | | |
| Wireless M-Bus Mode T1 OMS 16 sec. (Individual Key) | | | | 36 | | | | | |
| Wireless M-Bus Mode T1 Std. reg. (Common Key) | | | | 37 | | | | | |
| Wireless M-Bus Mode C1 Fixed network (Individual key) + pulse inputs | | | | 38 | | | | | |
| Radio, 434 or 444 MHz, Int+ext. Ant. NET0 + 2 pulse Inputs (VA, VB) | | | | 42 | | | | | |
| Radio, 434 or 444 MHz, Int+ext. Ant. NET1 + 2 pulse Inputs (VA, VB) | | | | 44 | | | | | |
| LoRa Wan (NAS) | | | | 52 | | | | | |
| ZigBee 2.4 GHz int.ant. + 2 pulse inputs (VA, VB) | | | | 60 | | | | | |
| Metasys N2 (RS485) + 2 pulse inputs (VA, VB) | | | | 62 | | | | | |
| SIOX module (Auto detect Baud rate) | | | | 64 | | | | | |
| BACnet MS/TP module | | | | 66 | | | | | |
| Modbus RTU + pulse inputs | | | | 67 | | | | | |
| KNX module | | | | 69 | | | | | |
| GSM/GPRS module (GSM6H) | | | | 80 | | | | | |
| 3G GSM/GPRS module (GSM8H) | | | | 81 | Require High- | | | | |
| Ethernet/IP module (IP201) | | | | 82 | Power supply | | | | |
| High Power Radio Router + pulse inputs | | | | 84 | modules | | | | |
| Supply | | | | | | | | | |
| No supply | | | | | | | 0 | | |
| Battery, D-cell | | | | | | | 2 | | |
| 230 VAC high power isolated SMPS | | | | | | | 3 | | |
| 24 VAC high power isolated SMPS | | | | | | | 4 | | |
| 230 VAC isolated linear supply | | | | | | | 7 | | |
| 24 VAC isolated linear supply | | | | | | | 8 | | |
| Pt500 sensor set | | | | | | | | | |
| No sensor set | | | | | | | | 00 | |
| Pocket sensor set w/1.5 m cable | | | | | | | | 0A | |
| Pocket sensor set w/3.0 m cable | | | | | | | | 0B | |
| Pocket sensor set w/5 m cable | | | | | | | | 0C | |
| Pocket sensor set w/10 m cable | | | | | | | | 0D | |
| Short direct sensor set w/1.5 m cable | | | | | | | | 0F | |
| Short direct sensor set w/3.0 m cable | | | | | | | | 0G | |
| 3 Pocket sensors in sets w/1.5 m cable | | | | | | | | 0L | |
| 3 Short direct sensors in sets w/1.5 m cable | | | | | | | | Q3 | |
| Flow sensor /pick-up unit | | | | | | | | | |
| Supplied w/1 pcs. ULTRAFLOW® | (Please specify type) | | | | | | | | 1 |
| Supplied w/2 pcs. (identical) ULTRAFLOW® | (Please specify type) | | | | | | | | 2 |
| Prepared for 1 pcs. ULTRAFLOW® | (Please specify type) | | | | | | | | 7 |
| Prepared for 2 pcs. (identical) ULTRAFLOW® | (Please specify type) | | | | | | | | 8 |
| Prepared for meters w/electronic pulse output | | | | | | | | | K |
| Prepared for meters w/Reed switch output | (both V1 and V2) | | | | | | | | L |
| Prepared for meters w/24 V active pulses | | | | | | | | | M |
| Meter type | | | | | | | | | |
| Heat meter, (MID module B) | | | | | | | | | 1 |
| Heat meter, (MID module B+D) | | | | | | | | | 2 |
| Heat meter, (MID module B+D) E1 & E3 displayed | | | | | | | | | 3 |
| Country code (language on label etc.) | | | | | | | | | |
| | | | | | | | | | XX |

As an option the meter can be supplied with pulse transmitter module type 66-99-608/-609/-610/-615 or -624

Verification

| | |
|------------|---|
| Errors: | Maximum permissible errors according to Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measurement instruments (MID), Annex MI-004 |
| Procedure: | Test points and verification requirements according to EN 1434:2015 |
| | Calculator according to 6.4 |
| | Calculator with temperature sensors according to 6.5 |

Test points

| Inlet pipe | Outlet pipe | | Inlet pipe | Outlet pipe | | Inlet pipe | Outlet pipe |
|------------|-------------|----|------------|-------------|----|------------|-------------|
| a) 43°C | 40°C | or | a) 43°C | 40°C | or | a) 53°C | 50°C |
| b) 80°C | 60°C | | b) 50°C | 40°C | | b) 70°C | 50°C |
| c) 160°C | 20°C | | c) 160°C | 40°C | | c) 175°C | 20°C |

After verification, but before verification sealing, the meter can be reprogrammed with a view to:

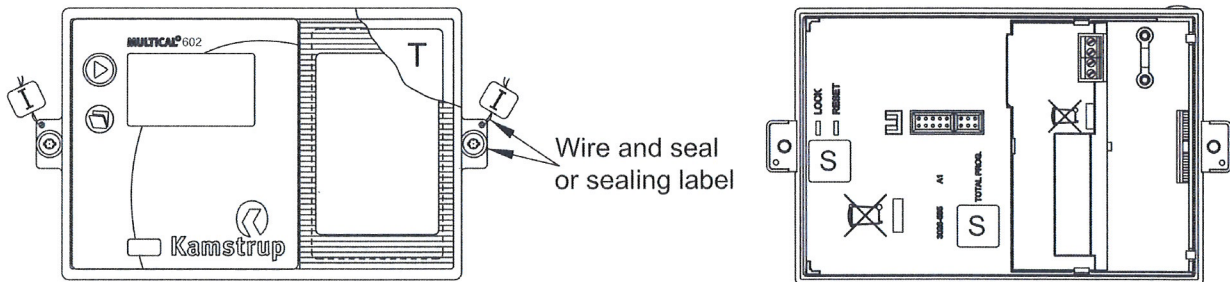
Placing of flow sensor in inlet or outlet pipe, according to type label
Measuring unit of energy indication (kWh, MWh or GJ)*
Decimal point in energy* and volume* indication*

*) Register resolution requirements according to EN 1434:2015, point 6.3.7 must be observed

Security measures

Sealing

- S** Security seals. Covering release for PCB box (Label or integrated part of PCB box)
- T** Type label
- I** Installation seals



Labeling and inscriptions

Front label for MULTICAL® 602, SVM S6 and MULTICAL® 6L2

System designation
Manufacturer designation or logo
Type, production year and serial number
Mechanical and electromagnetic environment classes
Climatic class
Temperature limits (θ_{\min} - θ_{\max})
Differential temperature limits ($\Delta\theta_{\min}$ - $\Delta\theta_{\max}$)
Temperature sensor type (Pt500 or Pt100)
Mounting the flow sensor in inlet or outlet pipe
Non-cond/closed – on the label and/or in the installation manual

Enclosure (bottom part) MULTICAL® 602, SVM S6 and MULTICAL® 6L2

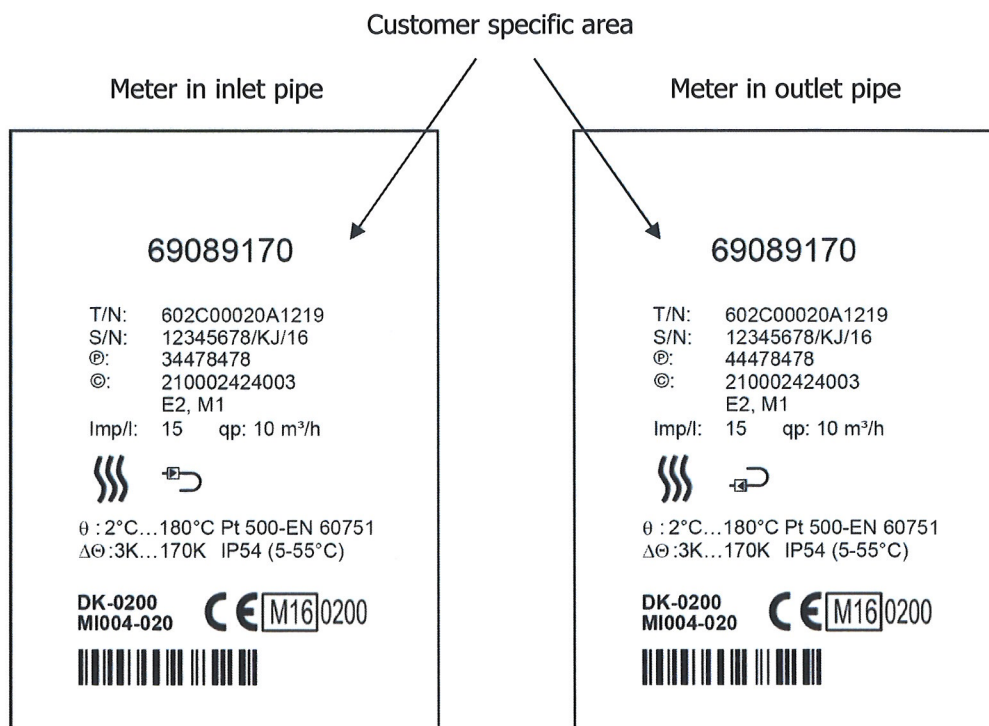
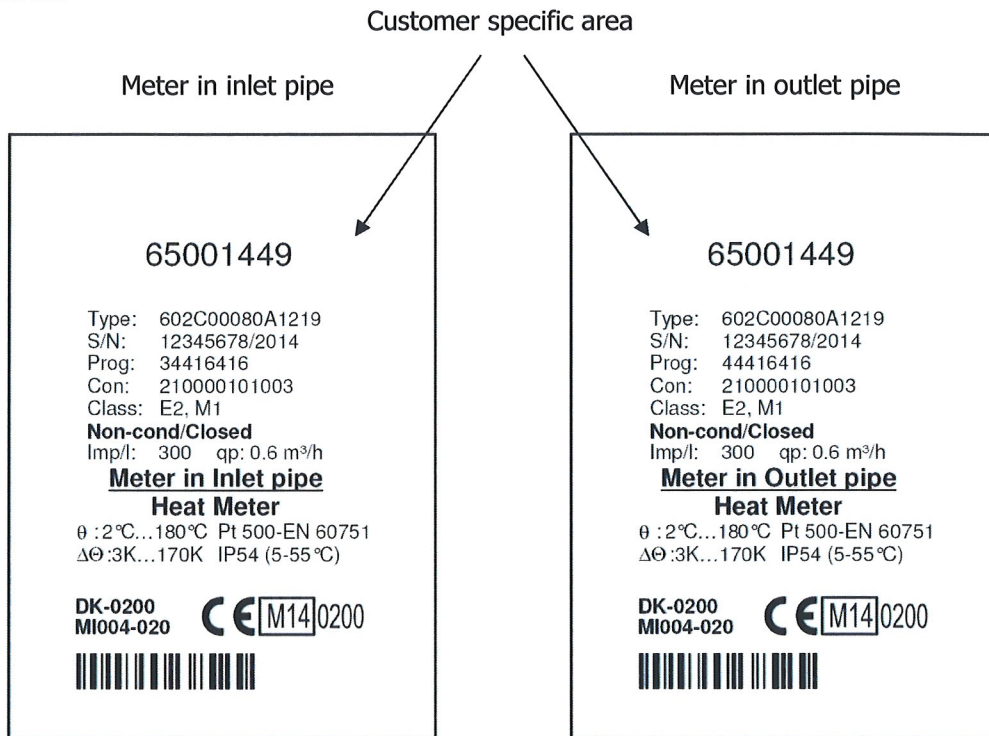
Manufacturer postal address

Other information about the product

Software version in the display
Unit of measurement in the display

Example of type label for: MULTICAL® 602

Front label:



Symbols, as an alternative to textual inscriptions, are acceptable if explained in the manual that accompanies the instrument.

Photos of MULTICAL® 602, SVM S6 and MULTICAL® 6L2



Informative Annex

Integrated functions not subject to the Measuring Instruments Directive:

Integrated bi-functional Heat/Cooling function

The MULTICAL® 602 is type tested as Heating, Cooling and as bi-functional Heating/Cooling energy meters according to EN 1434-4:2015.

On this basis the energy meter is national type approved for Cooling according to the Danish law¹, System designation TS 27.02 003.

The integrated bi-functional Heating/Cooling function can therefore be utilized under the operating conditions as described in this certificate.

¹ BEK No. 1178 of 06/11/2014, Ordinance on metrological control of meters used for measuring consumption of cooling energy in district cooling systems and central cooling systems as amended by BEK. No. 549 of 01/06/2016.