



AQUIP

**HOW TO SAVE
MONEY AND
TIME WITH YOUR
NEXT THERMAL
METER PROJECT**

How many times have you had any or all of the following happen on your previous thermal metering projects?

Flow sensor installed on incorrect pipes (supply vs return)?

Mechanical Contractor installs temperature sensors incorrectly?

Calculators are mounted in inconvenient places?

Cables run poorly, or damaged during construction or installation?

Damage to calculators during construction or installation?

Matching calculators to bus addresses problematic, due to poor record keeping by contractors ?

Changes to design or communications requirements?

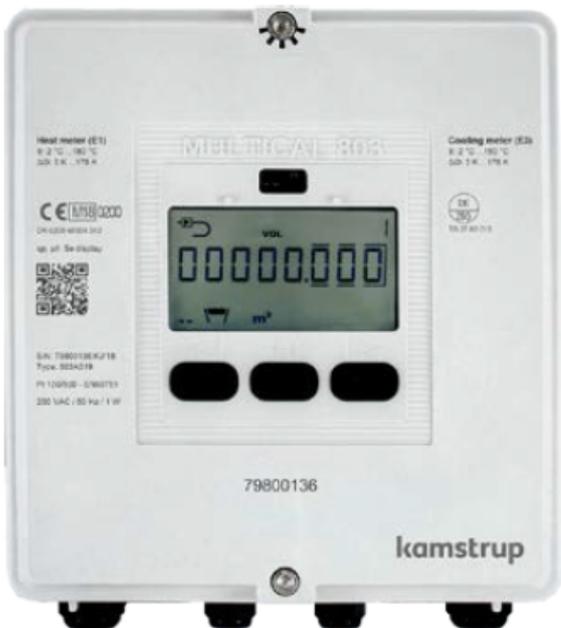
Re-ordering complete thermal meters due to damaged or incorrectly configured meters?

Costly time delays from any of the above?

How much do these problems add to your project metering costs? 5 %? 10 %? 15 %? or more?

The solution is Kamstrup's MULTICAL® 603 or 803

kamstrup



With this solution, the ULTRAFLOW® flow sensor and the MULTICAL® calculator are supplied separately and so you can now provide the ULTRAFLOW® flow sensor to your mechanical contractor to install without the fear of either damage to cables, or incorrect installation of temperature sensors and MULTICAL® calculator.

During the later stages of the project, simply have your skilled technician connect the MULTICAL® calculator to the already installed ULTRAFLOW® flow sensor and power up the MULTICAL® calculator. The MULTICAL® calculator will be supplied pre-assembled with the specified power supply, communications modules, temperature sensors and time zone.

Once powered, the MULTICAL® calculator will automatically detect the ULTRAFLOW® flow sensor and configure itself to read the flow correctly. Ensure the correct (supply/return) location is selected on the MULTICAL® calculator, install the temperature sensors correctly and you're up and metering.

ULTRAFLOW® Flow Sensor



During the initial phase of installation all your mechanical contractor has to do is install the ULTRAFLOW® flow sensor and the temperature pockets

As seen in the picture, the ULTRAFLOW® meter includes:

- ULTRAFLOW® Flow sensor with cable
- Gaskets (couplings for threaded meters)
- Temperature pockets
- Optional labelling of box with meter location ID



MULTICAL® Calculator Assembly - Assembled

When you're ready, the MULTICAL® calculator can be connected to the flow sensor.

The calculator can be mounted in the best location using the wall bracket and temperature cables can be run and installed in the correct pockets.

Information such as meter location, serial numbers, bus addresses, tag numbers and correct installation parameters can be set and/or recorded for later integration into the BMS system.

As seen in the picture, the MULTICAL® calculator assembly includes:

MULTICAL® 603/803

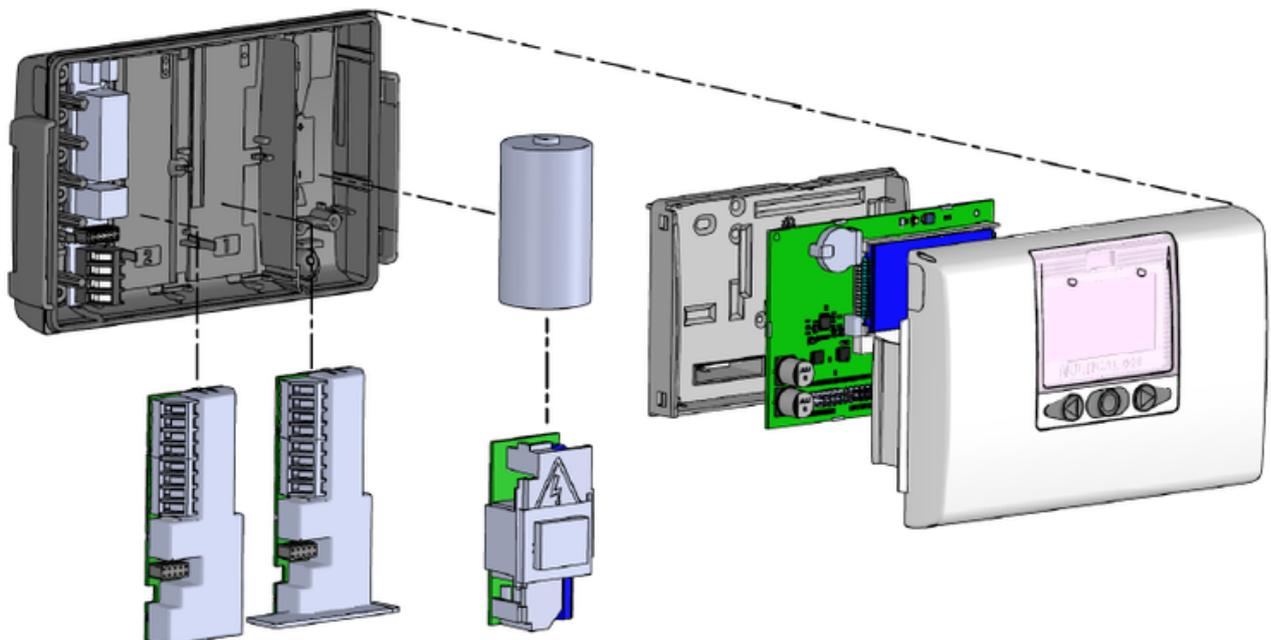
Selected Communications Module(s)

Selected temperature probes

Selected power supply

Wall bracket

Installation manual



MULTICAL® Calculator Assembly - Assembled

Key features of the MULTICAL® calculator

- ✓ **Backlit Display**
- ✓ **ULTRAFLOW® Flow sensor location supply/return can be changed on site**
- ✓ **Auto detects which Kamstrup Flow Meter it is connected to**
- ✓ **Up to three communication modules are possible in a MULTICAL® 603 (four in a MULTICAL® 803)**

Calibration Certificates

One each for the flow sensor, the calculator and the temperature sensor pair will be provided by pdf.

All Kamstrup Flow sensor, Calculators and Temperature sensors are certified to EN1434:Class 2



CALIBRATION CERTIFICATE
MC403

Certificate No.: 260-055-0000235
 Ordered by: ISO H/C Meters PR
 Address: 0660 DENMARK
 Make: Kamstrup A/S
 Type: 603W4020100000
 Serial No.: 71330950

Test	Flow [l/h]
Qp	1448,95
Q9	15,89
0.1*Qp	144,80

Reference: 5504-310
 Date of calibration: 2019-03-15

Test	True T Inlet [°C]	True T Outlet [°C]
1	44,02	60,73
2	79,26	65,02
3	159,58	20,02
4	15,08	18,38
5	6,01	20,02

Reference: 1700939-14
 Date: 2019-03-06

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95 %.
 This certificate provides traceability of measurement to recognized national or international standards.

5519-300 rev. 80 /



CALIBRATION CERTIFICATE
MC603

Certificate No.: 260-055-0000235
 Ordered by: ISO H/C Meters PREVEDET
 Address: 0660 DENMARK
 Make: Kamstrup A/S
 Type: 603P91970030000
 Serial No.: 80180010
 Prog. No.: 6400791000267610391303000

Test	True T Inlet [°C]	True T Outlet [°C]
1	44,02	60,74
2	79,26	65,03
3	159,60	20,01
4	15,08	18,38
5	6,03	20,01

Reference: 1700939-14
 Date: 2019-03-06

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95 %.
 This certificate provides traceability of measurement to recognized national or international standards.

5519-300 rev. 80 /



CALIBRATION CERTIFICATE
MC803

Certificate No.: 260-060-0000049
 Ordered by: ISO H/C Meters Development
 Address: DENMARK
 Make: Kamstrup A/S
 Type: 603A319P00C67662022
 Serial No.: 79800138
 Prog. No.: 34134310200556960951030000

Ambient temp.: 21 °C ± 5 °C
 MDR: EN 1434
 Date of calibration: 2019-11-06
 Calibrated by: ABO

Test	True T Inlet [°C]	True T Outlet [°C]	True V [l]	True E [kWh]	Measured E [kWh]	Error [%]	Uncertainty [%]	MPE [%]
1	44,05	60,75	1.000,00	3.001,69	3.797,40	-0,16	0,70	1,63
2	79,26	65,03	1.000,00	16.109,84	16.109,40	0,00	0,21	0,71
3	159,57	20,02	1.000,00	148.345,78	148.395,20	0,01	0,03	0,32
4	15,07	18,39	1.000,00	3.050,45	3.052,40	0,06	0,71	1,61
5	6,00	20,03	1.000,00	16.310,23	16.304,60	-0,03	0,18	0,71
6	43,90	60,68	1.000,00	3.798,74	3.793,70	-0,12	0,25	1,61
7	79,09	65,03	1.000,00	16.933,70	16.934,30	0,01	0,09	0,71
8	150,34	20,01	1.000,00	148.373,48	148.370,10	0,01	0,03	0,52
9	15,01	18,31	1.000,00	3.074,58	3.077,50	-0,05	0,21	1,61
10	6,03	20,01	1.000,00	16.368,25	16.267,60	0,60	0,09	0,71

Reference: PT500: 55041644 (Test 1-5)
 Reference: PT100: 55051666 (Test 6-10)
 Calibration procedure: 5500-167

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 This certificate provides traceability of measurement to recognized national or international standards.

Date: 2019-03-06
 Approved by: 
 John J. Brandt

Details from the certificate must not be reproduced without written acceptance of Kamstrup A/S.
 The calibration results apply to the calibrated objects only.

5519-301 rev. 83 / Kamstrup A/S, Industrivej 28, Billund, DK-8060 Brandstøvvej Page 1 of 1

Training

Aquip provide training on all products that we supply and can easily ensure that your team has all the support that they need to get the job done with minimal fuss.

Commissioning

Commissioning is a simple process however as a third party, Aquip offer meter checks including: documenting that the meter is installed in accordance with the manufacturer's recommendations, temperature sensors are orientated correctly, set bus addresses as required, etc.

To find out more about our products and solutions, or how we can advance the intelligence and efficiency of your energy and flow metering process, please contact our local offices or visit us at aquip.com.au

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