kamstrup

Data sheet

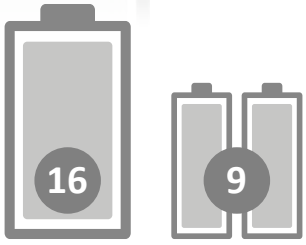
MULTICAL® 603

The future-proof heat and cooling meter with full flexibility

- Fully programmable data logger with minute loggers
- 2-second integration interval
- 16-years battery lifetime at a reading interval down to 10 seconds
- Possibility of built-in M-Bus
- 2 communication modules
- 7- or 8-digit display resolution
- User-friendly interface with 3 push buttons
- Possibility of backlit display
- Auto Detect of ULTRAFLOW®
- Mixed fluid compatible

MID 2014/32/EU
CE M23 0200
EN 1434

DK-BEK 1178 – 06/11/2014
DK 268 23
EN 1434



Contents

Description

MULTICAL® 603 is an all-round calculator, suitable as heat meter, cooling meter or combined heat/cooling meter together with 1 or 2 flow sensors and 2 or 3 temperature sensors. The meter is intended for energy measurement in almost all types of thermal installations where water is used as the energy-conveying medium.

MULTICAL® 603 can, in addition to heat and cooling measurement, be used for leakage monitoring, permanent performance monitoring, as power and flow limiter with valve control as well as for energy measurement in both open and closed systems.

According to EN 1434 and MID, MULTICAL® 603 can be designated as a "calculator" with separate type approval and verification, and it can be delivered either as a separate calculator or as a complete meter, with mounted temperature sensors and flow sensor according to customer requirements.

MULTICAL® 603 has 2 flow sensor inputs that can be used for both electronic and mechanical flow sensors. The pulse figure can be programmed from 0.001 to 300 pulses/liter, and the calculator can be programmed to all nominal flow sensor sizes from 0.6 to 15,000 m^3/h. The calculator can be delivered with both galvanically connected and separated flow sensor inputs.

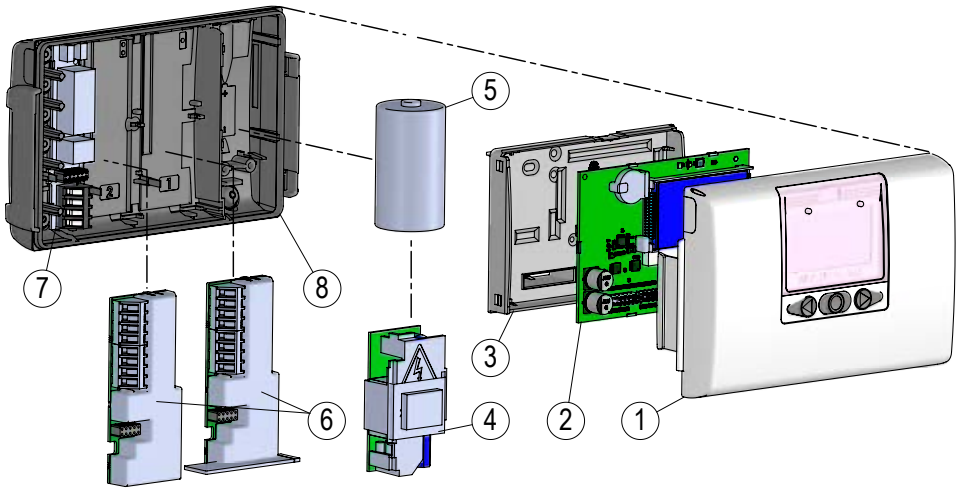
The accumulated heat energy and/or cooling energy can be displayed in kWh, MWh, GJ or Gcal, all in the form of seven or eight significant digits plus measuring unit. The display has been specially designed with a view to obtaining long lifetime and sharp contrast in a wide temperature range. Furthermore, MULTICAL® 603 can be delivered in a variant with backlit display (type 603-F).

MULTICAL® 603 is powered by an internal D-cell lithium battery with a lifespan of up to 16 years or a 2xAA lithium packet with a lifespan of up to 9 years. Alternatively, the meter can be mains supplied, either by 24 VAC or 230 VAC.

In designing MULTICAL® 603, great importance has been attached to flexibility through programmable functions and plug-in modules in order to secure optimum use in a wide range of applications. The meter has been configured from the factory and is ready for use. It can, however, be changed/reconfigured after installation via the front keys of the meter, READy or METERTOOL HCW.

Auto Detect enables the exchange of ULTRAFLOW® X4 on MULTICAL® 603 without the need for reconfiguration (change of the CCC code). MULTICAL® 603 can automatically adjust the pulse figure and q_p to match the connected ULTRAFLOW® X4 via Auto Detect. Auto Detect is active with CCC code 8xx and is initiated when the calculator top and base are separated and reassembled.

Mechanical design



1 Calculator top with front keys and laser engraving
2 PCB with microcontroller, display, etc.
3 Verification cover (may only be opened at an authorised laboratory)
4 Either a power supply module can be mounted...
5 ... or a battery can be mounted
6 1 or 2 communication modules
7 Connection of temperature sensors and flow sensors
8 Calculator base

Mechanical data

Weight	450 g
Ambient temperature	5...55 °C. Non-condensing, closed location (indoor installation)
Protection class	IP65
Medium temperatures ULTRAFLOW®	2...130 °C

At medium temperatures below ambient temperature or above 90 °C in the flow sensor, we recommend that the calculator is wall-mounted.

Medium in ULTRAFLOW®	Water (district heating water as described in AGFW FW510)
Storage temperature	-25...60 °C (drained flow sensor)
Connection cable	ø3.5...6 mm
Supply cable	ø5...8 mm

Materials

Calculator case – Top and base – Verification cover	 Thermoplastic, PC 10 % GF with TPE (thermoplastic elastomer) ABS
Cables	Silicone cable with inner Teflon insulation

Approved meter data

Approvals	
– Heat meter	DK-0200-MI004-040
- Temperature range	θ: 2 °C...180 °C
- Differential area	ΔΘ: 3 K...178 K
– Cooling meter	TS 27.02 012
- Temperature range	θ: 2 °C...180 °C
- Differential area	ΔΘ: 3 K...178 K
– Bifunctional heat/cooling meter	Marked with DK-0200-MI004-040 and TS 27.02 012 as well as yearly mark of MID
- Temperature range	θ: 2 °C...180 °C
- Differential area	ΔΘ: 3 K...178 K
– Mixed fluid meter	EN 1434 without MID approval
- Temperature range	θ: -40 °C...140 °C
- Differential area	ΔΘ: 3 K...180 K

The stated minimum temperatures apply to the type approval only. The meter has no cut-off for low temperature and thus measures as low temperatures as 0.01 °C and 0.01 K.

The temperature area -40 °C ...140 °C indicates the technical functional area in which the calculator calculates energy.

The temperature area for any installation depends on the design of the installation and the type of fluid and solution used.

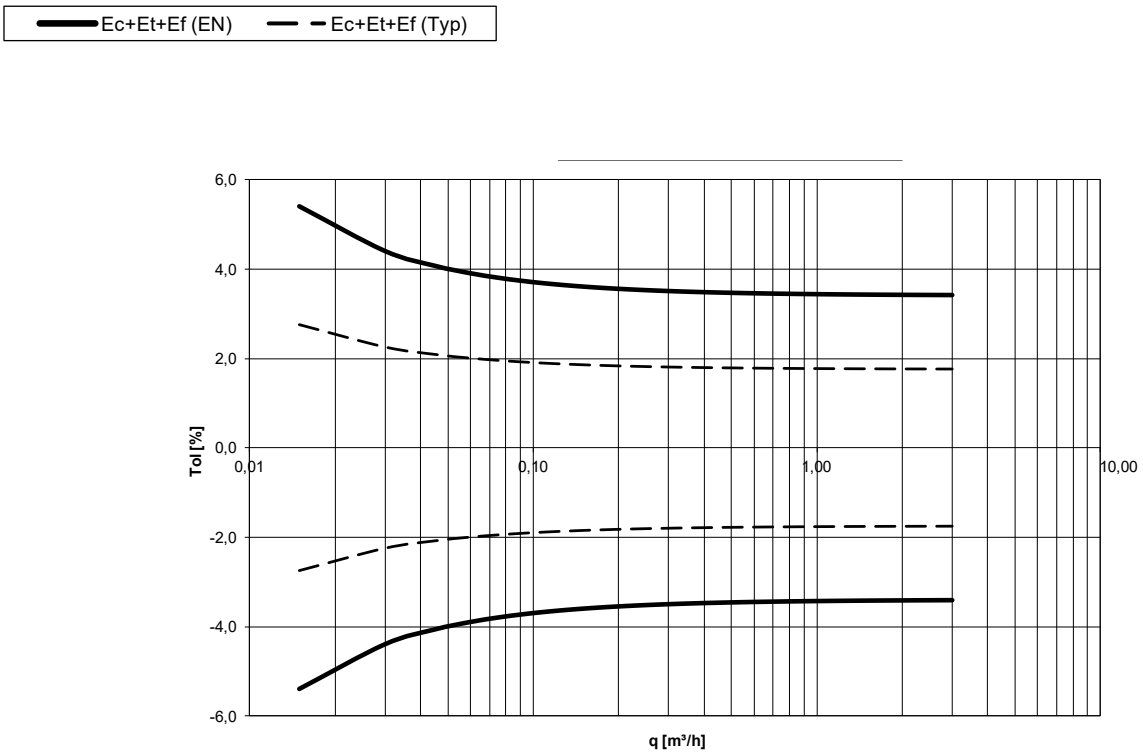
Standard	EN 1434:2007/AC:2007 EN 1434:2015+A1:2018 FprEN 1434:2022 from 2022-04
EU directives	Measuring Instrument Directive Low Voltage Directive Electromagnetic Compatibility Directive Radio Equipment Directive RoHS Directive Pressurised Equipment Directive
EN 1434 designation	Environmental class A and C
MID designation	
– Mechanical environment	Class M1 and M2
– Electromagnetic environment	Class E1 and E2 Non-condensing environment, closed location (indoors), 5...55°C
Temperature sensor connection	
– Type 603-A	Pt100 – EN 60751, 2-wire connection
– Type 603-B	Pt100 – EN 60751, 4-wire connection
– Type 603-C/E/F/M	Pt500 – EN 60751, 2-wire connection
– Type 603-D/G/H	Pt500 – EN 60751, 4-wire connection

Accuracy

Heat meter components	MPE according to EN 1434-1	Typical accuracy
MULTICAL® 603	$E_c = \pm (0.5 + \Delta\Theta \text{ min}/\Delta\Theta)$ %	$E_c = \pm (0.15 + 2/\Delta\Theta)$ %
ULTRAFLOW®	$E_f = \pm (2 + 0.02\ q_p/q)$, but not above ± 5 %	$E_f = \pm (1 + 0.01\ q_p/q)$ %
Temperature sensor set	$E_t = \pm (0.5 + 3\ \Delta\Theta \text{ min}/\Delta\Theta)$ %	$E_t = \pm (0.4 + 4/\Delta\Theta)$ %

MULTICAL® 603 and ULTRAFLOW® q_p 1.5 m³/h @$\Delta\Theta$ 30K

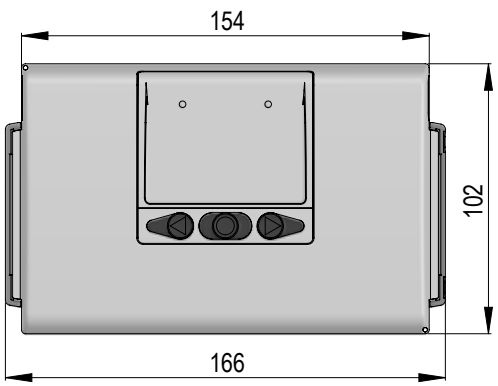
Total typical accuracy of MULTICAL® 603, sensor pair and ULTRAFLOW® compared to EN 1434-1.

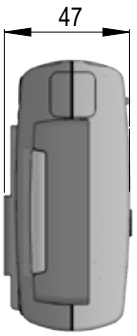


Dimensioned sketches

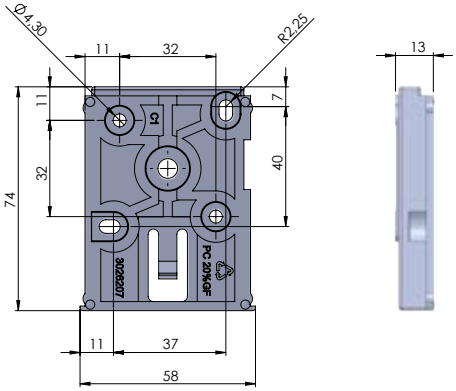
All measurements in [mm].

Mechanical measurements for MULTICAL® 603 calculator

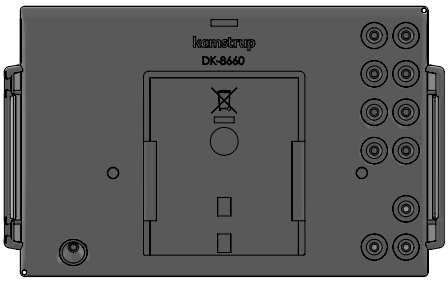


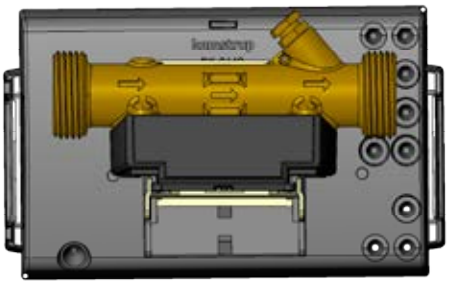


Bracket for wall mounting

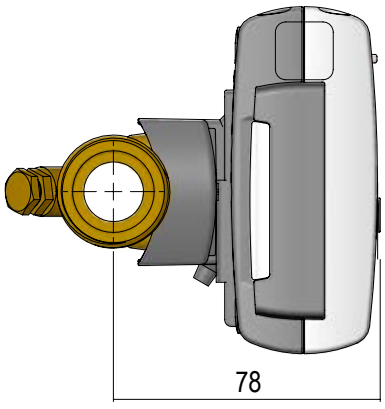


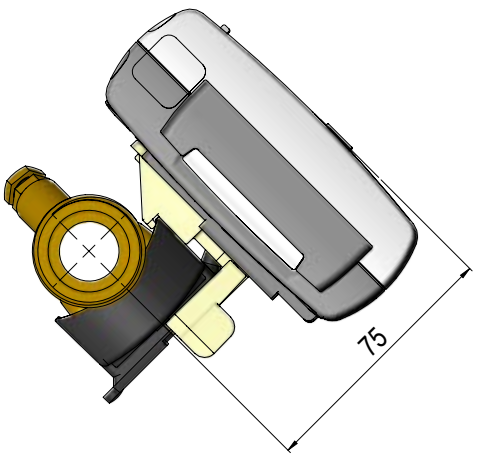
Calculator base separate and mounted on ULTRAFLOW®





MULTICAL® 603 mounted on ULTRAFLOW® with G¾ threaded connection





Electrical data

Calculator data

Display	LCD – 7 or 8 digits, digit height 8.2 mm
Resolutions	999,9999 - 9999,999 – 99999,99 – 999999,9 – 9999999 9999,9999 - 99999,999 – 999999,99 – 9999999,9 – 99999999
Energy units	MWh – kWh – GJ – Gcal
Data logger (EEPROM)	
– Logger contents	Programmable – all registers can be selected
– Logging interval	Programmable – from 1 minute to 1 year
– Logging depth	Programmable – standard: 20 years, 36 months, 460 days, 1400 hours
Info logger (EEPROM)	250 info codes (last 50 are shown in the display)
Clock/calender (with backup battery)	Clock, calendar, leap year compensation, target date
Daylight saving time/wintertime (DST)	Programmable This function can be disabled so that "technical normal time" is used
Time accuracy	Without external adjustment: Less than 15 min./year With external adjustment every 48 hours: Less than 7 s from legal time
Data communication	KMP protocol with CRC16 used for optical communication as well as for modules
Power in temperature sensors	< 10 µW RMS
Power supply	3.6 VDC ± 0.1 VDC

Electrical data

Battery

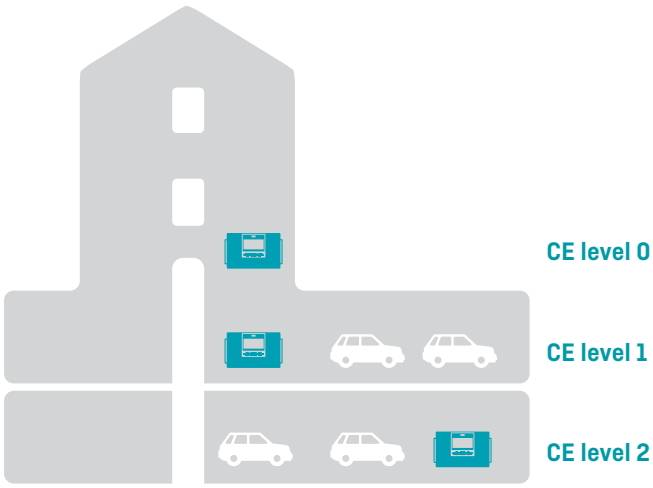
	3.65 VDC, D-cell lithium	3.65 VDC, 2xA cell lithium
Wall-mounted	16 years @ t_{BAT} < 30 °C	9 years @ t_{BAT} < 30 °C
Mounted on flow sensor	14 years @ t_{BAT} < 40 °C	7 years @ t_{BAT} < 40 °C

Note: Depends on the meter and module configuration

Battery lifetime expected for a meter fitted with a NB-IoT module

Up to 16 years (daily transmission) depending on the installation site and the NB-IoT coverage level called "CE level"

CE level	C-Cell IoT
0	Up to 16 years
1	Up to 15 years
2	Up to 12 years



Mains supply

230 VAC +15/-30 %, 50/60 Hz
24 VAC ±50 %, 50/60 Hz or 24 VDC +75/-25 % (24 VDC only High Power SMPS)

Insulation voltage

3.75 kV

Power consumption

< 1 W

Backup supply

Integrated supercap eliminates interruptions due to short-term power failures (only supply modules type 7 and 8)

Electrical data

Temperature measurement	t1 Inlet	t2 Outlet	t3 Control	t4 Extra	ΔΘ (t1-t2) Heat measurement	ΔΘ (t2-t1) Cooling measurement	t5 Preset for A1 and A2
Measuring range							
603-A, 2-wire, Pt100	0.00…185.00 °C (t1 and t2: Approved for 2.00…180.00°C)						
603-B, 4-wire, Pt100	0.00…185.00 °C (t1 and t2: Approved for 2.00…180.00°C)						
603-C/E/F, 2-wire, Pt500	0.00…185.00 °C (t1 and t2: Approved for 2.00…180.00°C)						
603-D/G/H, 4-wire, Pt500	0.00…185.00 °C (t1 and t2: Approved for 2.00…180.00°C)						
603-M, 2-wire, Pt500	-42,00…143,00 °C (Labelled -40 °C…140 °C on the meter)						
Offset adjustment	± 0.99 K joint zero point adjustment for t1, t2 and t3 **Note:** The offset adjustment is only active on measured temperatures. If, for example, t3 has been selected for a preset value, the offset adjustment will not influence the preset value.						

Max cable lengths (max ø6 mm cable)	Pt100, 2-wire	Pt100, 4-wire	Pt500, 2-wire	Pt500, 4-wire
	2 x 0.25 mm²: 2.5 m 2 x 0.50 mm²: 5 m 2 x 1.00 mm²: 10 m	4 x 0.25 mm²: 100 m	2 x 0.25 mm²: 10 m	4 x 0.25 mm²: 100 m

Flow measurement V1/V2	ULTRAFLOW® V1: 9-10-11 V2: 9-69-11	Reed contacts V1: 10-11 V2: 69-11	FET contacts V1: 10-11 V2: 69-11	24 V active pulses V1: 10B-11B V2: 69B-79B
CCC-code	1xx-2xx-4xx-5xx-8xx	0xx	9xx	2xx and 9xx
EN 1434 pulse class	IC	IB	IB	(IA)
Pulse input	680 kΩ pull-up to 3.6 V	680 kΩ pull-up to 3.6 V	680 kΩ pull-up to 3.6 V	12 mA at 24 V
Pulse ON	< 0.4 V in > 1 ms	< 0.4 V in > 300 ms	< 0.4 V in > 30 ms	< 4 V in > 3 ms
Pulse OFF	> 2.5 V in > 4 ms	> 2.5 V in > 100 ms	> 2.5 V in > 70 ms	> 12 V in > 4 ms
Pulse frequency	< 128 Hz	< 1 Hz	< 8 Hz	< 128 Hz
Integration frequency	< 1 Hz	< 1 Hz	< 1 Hz	< 1 Hz
Electrical isolation	No	No	No	2 kV
Max cable length	10 m	10 m	10 m	100 m
Max cable length with Cable Extender Box, Type 66-99-036	30 m	30 m	30 m	-

Pulse inputs In-A/In-B	Electronic switch	Reed-switch
Pulse input	680 kΩ pull-up to 3.6 V	680 kΩ pull-up to 3.6 V
Pulse ON	< 0.4 V in > 30 ms	< 0.4 V in > 500 ms
Pulse OFF	> 2.5 V in > 30 ms	> 2.5 V in > 500 ms
Pulse frequency	< 3 Hz	< 1 Hz
Electrical isolation	No	No
Max cable length	25 m	25 m
Requirements to external contact	Leakage current at function open < 1 µA	

Pulse outputs Out-C/Out-D	HC-003-11 HC-003-21/-31 (before 2017-05) (before 2018-04)	HC-003-11 HC-003-21/-31 (after 2017-05) (after 2018-04)
Pulse output type	Open collector (OB)	Opto FET
External voltage	5…30 VDC	1…48 VDC/VAC
Current	< 10 mA	< 50 mA
Residual stress	U_{CE} ≈ 1 V at 10 mA	R_{ON} ≤ 40 Ω
Electrical isolation	2 kV	2 kV
Max cable length	25 m	25 m

Product variants

MULTICAL® 603 type number

					Statistical data Written on the meter's front 603-X X XX –			Dynamic data Appearing from display X XX X XX XX				
				Type 603-	□	□	□□	– □	□□	□	□□	□□
Calculator type												
Pt100 2-wire	t1-t2	V1	M-Bus	A								
Pt100 4-wire	t1-t2	V1	M-Bus	B								
Pt500 2-wire	t1-t2	V1	M-Bus	C								
Pt500 4-wire	t1-t2	V1	M-Bus	D								
Pt500 2-wire	t1-t2-t3	V1-V2		E								
Pt500 2-wire	t1-t2-t3	V1-V2	Backlit display	F								
Pt500 4-wire	t1-t2	V1 (24 V active pulses)	M-Bus	G								
Pt500 4-wire	t1-t2-t3	V1-V2		H								
Pt500 2-wire	t1-t2-t3	V1-V2	(Mixed fluid only)	M								
Meter type												
Heat meter		MID module B				1						
Heat meter		MID module B+D				2						
Heat/cooling meter		MID module B+D & TS 27.02 *	θ_{HC} = OFF			3						
Heat meter		National approval				4						
Cooling meter		TS 27.02+BEK1178				5						
Heat/cooling meter		MID module B+D & TS 27.02 *	θ_{HC} = ON			6						
Volume meter, hot						7						
Volume meter, cold						8						
Energy meter						9						
Country code												
Determined by Kamstrup upon receipt of order							XX					

* In some countries bi-functional meters type 3 and 6 are only allowed to be assigned with the MID marking, due to national law.

Product variants

MULTICAL® 603 type number

			Statistical data Written on the meter's front 603-X XX X –	Dynamic data Appearing from display X XX X XX XX				
Type 603-			□ □ □□ –	□	□□	□	□□	□□
Flow sensor connection type								
Delivered with one ULTRAFLOW®				1				
Delivered with two identical ULTRAFLOW®				2				
Prepared for one ULTRAFLOW®				7				
Prepared for two identical ULTRAFLOW®				8				
Prepared for flow sensor with fast and bounce-free electronic pulses				C				
Prepared for flow sensor with slow and bounce-free electronic pulses				J				
Prepared for flow sensor with slow pulses with bounce				L				
Prepared for flow sensor with 24 V active pulses				P				
Delivered with one flow sensor (Mixed fluid only)				G				
Temperature sensor set								
Supplied without temperature sensors					00			
2-wire Pt500 temperature sensors								
Direct short temperature sensors, 2 pcs.	DS 27.5 mm	L 1.5 m - 3.0 m			5x			
Direct short temperature sensors, 2 pcs.	DS 38.0 mm	L 1.5 m - 3.0 m			2x			
Pocket temperature sensors, 2 pcs.	PL ø5.8 mm	1.5 m - 10 m			8x			
2-wire Pt100 temperature sensors								
Direct short temperature sensors, 2 pcs.	DS 27.5 mm	L 2.0 m			J6			
4-wire Pt500/Pt100 temperature sensors								
Pocket temperature sensors with connection head, 2 pcs.	PL ø6.0 mm	L 105 mm - 230 mm			Ax			
Pocket temperature sensors with connection head, 2 pcs.	PL ø5.8 mm	L 65 mm - 180 mm			Cx			
Supply								
No supply						0		
Battery, 1 x D-cell						2		
230 VAC high-power SMPS						3		
24 VAC/VDC high-power SMPS						4		
Battery, 1 x D-cell IoT						5		
230 VAC power supply						7		
24 VAC power supply						8		
Battery, 2 x A-cells						9		
Communication module (2 module slots)							**M1**	**M2**
No module							00	00
Data Pulse, inputs (In-A, In-B)							10	10
Data Pulse, outputs (Out-C, Out-D)							11	11
Wired M-Bus, inputs (In-A, In-B)							20	20
Wired M-Bus, outputs (Out-C, Out-D)							21	21
Wired M-Bus, Thermal Disconnect							22	22
linkIQ/wM-Bus, inputs (In-A, In-B), EU							32	32
linkIQ/wM-Bus, outputs (Out-C, Out-D), EU							33	33
wM-Bus, inputs (In-A, In-B), 912,5/915/918,5 MHz							34	34
Analog outputs 2 x 0/4...20 mA							40	40
Analog inputs 2 x 4...20 mA/0...10 V							41	41
PQT Controller							43	43
Low Power Radio, inputs (In-A, In-B), 434 MHz							50	50
Low Power Radio GDPR, inputs (In-A, In-B), 434 MHz							51	51
NB-IoT, inputs (In-A, In-B)							56	56
LON TP/FT-10, inputs (In-A, In-B)							60	60
BACnet MS/TP, inputs (In-A, In-B)							66	66
Modbus RTU, inputs (In-A, In-B)							67	67
2G/4G Network							80	80
BACnet IP, inputs (In-A, In-B)							81	81
Modbus/KMP TCP/IP, inputs (In-A, In-B)							82	82
READy TCP/IP, inputs (In-A,In-B)							83	83
High Power Radio Router, inputs (In-A, In-B), 444 MHz							84	84
High Power Radio Router GDPR, inputs (In-A, In-B), 444 MHz							85	85

Contact Kamstrup A/S for further information about product variants.

Meter configuration

	A	B	CCC	DDD	EE	FF	GG	L	M	N	PP	RR	T	VVVV
Flow sensor position														
Inlet	3													
Outlet	4													
Measuring unit														
GJ		2												
kWh		3												
MWh		4												
Gcal		5												
Auto Detect CCC codes (UF x4)														
Normal resolution (7 digits)			807											
High resolution (8 digits)			818											
Static CCC codes														
Reed contact (7 digits)			0xx											
Electronic, fast pulses (7 digits)			1xx											
Electronic, fast pulses (8 digits)			2xx											
Kamstrup, UF X4 (7 digits)			4xx											
Kamstrup, UF X4 (8 digits)			5xx											
Electronic, slow pulses (7 digits)			9xx											
Display														
Heat meter (standard)				210										
Heat/cooling meter (standard)				310										
Cooling meter (standard)				510										
Tariffs														
No active tariff					00									
Power tariff					11									
Flow tariff					12									
t1-t2 tariff					13									
Inlet tariff					14									
Outlet tariff					15									
Time-controlled tariff					19									
Heat/cooling volume tariff					20									
PQ tariff					21									
Pulse inputs In-A/In-B														
10 m³/h, 10 l/imp, pre-counter 1 (standard)						24	24							
Integration mode														
Adaptive mode (2-64 s)	Display on							1						
Normal mode (32 s)	Display on							2						
Fast mode (8 s)	Display on							3						
Fast mode (2 s)	Display on							4						
Adaptive mode (2-64 s)	Display off							5						
Normal mode (32 s)	Display off							6						
Fast mode (8 s)	Display off							7						
Leakage limits (V1/V2)														
OFF									0					
1.0 % of q_p + 20 % of q									1					
1.0 % of q_p + 10 % of q									2					
0.5 % of q_p + 20 % of q									3					
0.5 % of q_p + 10 % of q									4					
Cold water leakage limits (In-A/In-B)														
OFF										0				
30 min. without pulses										1				
One hour without pulses										2				
Two hours without pulses										3				

Meter configuration

A - B - CCC - DDD - EE - FF - GG - L - M - N _		PP	-	RR	-	T	-	VVVV
Pulse outputs Out-C/Out-D								
Out-C: V1/4	5 ms	73						
Out-C: V1/1, Out-D: V2/1	3.9 ms	80						
Out-C: V1/1	3.9 ms	82						
Out-C: V1/4	22 ms	83						
E1 and V1 or E3 and V1	10 ms	94						
E1 and V1 or E3 and V1	32 ms	95						
E1 and V1 or E3 and V1	100 ms (0.1 s)	96						
Controlled output based on data commands		99						
Data logger profile								
Standard data logger profile				10				
Encryption level								
Individual key						3		
Customer label								
Serial number								0000

Contact Kamstrup A/S for further information about meter configuration.

Information codes in display

Display digit								Description
1	2	3	4	5	6	7	8	
Info	t1	t2	t3	V1	V2	In-A	In-B	
1								No voltage supply
2								Low battery level
9								External alarm (e.g. via KMP)
	1							t1 Above measuring range or switched off
		1						t2 Above measuring range or switched off
			1					t3 Above measuring range or switched off
	2							t1 Below measuring range or short-circuited
		2						t2 Below measuring range or short-circuited
			2					t3 Below measuring range or short-circuited
	9	9						t1-t2 Invalid temperature difference
				1				V1 Communication error
					1			V2 Communication error
				2				V1 Wrong pulse figure
					2			V2 Wrong pulse figure
				3				V1 Air
					3			V2 Air
				4				V1 Wrong flow direction
					4			V2 Wrong flow direction
				6				V1 Increased flow (flow1 > q_s, for more than 1 hour)
					6			V2 Increased flow (flow2 > q_s, for more than 1 hour)
				7				V1/V2 Burst, water loss (flow1 > flow2)
					7			V1/V2 Burst, water penetration (flow1 < flow2)
				8				V1/V2 Leakage, water loss (M1 > M2)
					8			V1/V2 Leakage, water penetration (M1 < M2)
						7		In-A2 Leakage in the system
						8		In-A1 Leakage in the system
						9		In-A1/A2 External alarm
							7	In-B2 Leakage in the system
							8	In-B1 Leakage in the system
							9	In-B1/B2 External alarm

Example:								
1	0	2	0	0	0	9	0	

Note: Info codes are configurable. Therefore, it is not certain that all the parameters are available in a given MULTICAL® 603.

An info logger saves the info code every time the info log is changed. It is possible to read the latest 250 changes of the info code and the date of the change.

Accessories

Article number	Description
HC-993-02	Battery module with one D-cell
HC-993-03	230 VAC High Power supply module
HC-993-04	24 VAC/VDC High Power supply module
HC-993-05	Battery module with one D-cell IoT
HC-993-07	230 VAC supply module
HC-993-08	24 VAC supply module
HC-993-09	Battery module with two A-cells
2105-002	Sealing cap, G¾B (R½)
3026-1148	Sealing cap, self locking, G¾B (R½)
3026-207.A	Wall bracket with screws and plugs for MULTICAL® 603
3026-517	Sealing cap for temperature sensors, blue 2 pcs.
3026-518	Sealing cap for temperature sensors, red 2 pcs.
3026-858	Angle fitting ULTRAFLOW® (qp 0.6...2.5)
3026-909	Holder for optical readout head
3026-963	Disassemble tool for MULTICAL® 603
3130-262	Blind plug with O-ring
3130-269	Cable clamp with screws
5000-337	Module cable, 2 m (2 x 0.25 mm²)
6699-035	USB module configuration cable
6699-036	Cable Extender Box
6699-042	Metal plate for optical read-out head (20 pcs)
6699-047	Supply label MULTICAL® 403/603, 10 pcs. (2006-681)
6699-099	Infrared optical read-out head w/USB plug
6699-110	Panel bracket
6699-403	230/24 VAC safety transformer 5 VA
6699-404	230/24 VAC safety transformer 10 VA
6699-405	230/12/24 VAC safety transformer 63 VA
6699-447.E	Internal antenna for Kamstrup radio, 434 MHz
6699-448	Mini Triangle antenna for Wireless M-Bus and 2G/4G Network Module
6699-482.E	Internal antenna for Wireless M-Bus 868 MHz
6699-724	METERTOOL HCW
6699-725	LogView HCW

Calibration units

Article number	Description
6699-363	2-wire Pt500, heat/cooling (used with METERTOOL HCW)
6699-364	4-wire Pt500, heat/cooling (used with METERTOOL HCW)
6699-365	2/4-wire Pt100, heat/Cooling (used with METERTOOL HCW)

For further information on MULTICAL® 603 and its accessories, please refer to the technical description, which you can find on Kamstrup Product Centre.

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