DANAK
PROD Reg. No. 7025

FORCE Certification

EC-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-016
Issued by FORCE Certification A/S, Denmark
EC-notified body number 0200

In accordance with The Danish Safety Technology Authority's statutory order no. 436 of 16th May 2006 with later amendments which implements the Directive 2004/22/EC of the European Parliament and Council of March 31st, 2004 on measuring instruments (MID) and later amendments.

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

Reference No.:	114-33017.03.06
Type of instrument:	Water meter
Type designation:	MULTICAL® 62 (type 62-Z)
Valid until:	2022-03-16
Number of pages:	14, including appendix
Date of issue:	2015-04-13
Revision No.:	5

Approved by

Michael Møller Nielsen
Certification Manager

Processed by

Lars Poder
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.

Appendix to

EC-Type Examination Certificate
Measuring Instrument Directive

Number: DK-0200-MI001-016
Issued by FORCE Certification A/S, Denmark
EC-notified body number 0200

Revision history:

Revision	Issue date	Changes
DK-0200-MI0016	2012-03-16	Original certificate
DK-0200-MI0016 rev 1-2012	2012-09-18	3 new modules added
DK-0200-MI0016 rev 1-2013	2013-09-30	New module added to type number combination
DK-0200-MI0016 rev 1-2014	2014-03-28	New module added to type number combination
DK-0200-MI0016 rev 2-2014	2014-09-29	New text for table of software version
DK-0200-MI0016 rev 5	2015-04-13	New photos and revision history added

Applied standards and documents:
OIML R49:2006

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

Type designation:
MULTICAL® 62 (type 62-Z)

Description:

Instrument type: Complete meter

The MULTICAL® 62 water meter consists of a calculator MULTICAL® 602 and a flow sensor ULTRAFLOW® 24 (type 65-2).

MULTICAL® 62 is a static water meter based on the ultrasonic principle.
Volume measurement is carried out by means of bidirectional ultrasound technique according to the transit time method.

The flow sensor is without any electronic circuits. A 2-wire shielded signal cable of 2.5 meters is connected to the base part of the calculator which contains the electronic circuits to convert the ultrasonic piezo transducer signal into adjusted volume-pulses. The connections are sealed in both ends.

The calculator unit has a display indicating the registered volume, and via a pushbutton other information can be shown on the display. If the pushbutton is left untouched for 240 seconds, the display automatically reverts to the indication of registered volume. System errors, if any, will appear on the display.

The meter is supplied from an internal lithium battery with a lifetime of up to 13 years. Alternatively, the meter can be supplied either from 24 VAC or 230 VAC.

MULTICAL® 62 can be extended by several communication modules. A survey of approved modules is in the type number combination table.

The PULSE TRANSMITTER, type 66-99-618 is an extension flex without electronic, which makes it possible to read the MULTICAL® 62 with a 3-wire un-shielded pulse cable of up to 10 m length.

Technical documentation:

Reference no. :

- 114-33017.03.06
- 114-21535.0001.0009
- 114-21535.0001.0007
- 113-21029.0001.0004
- 112-23383.0001.0004
- 112-23383.0001.0001

Technical data

Instrument type	: Complete meter
ULTRAFLOW® 24	: Flow sensor without any electronic circuits. A 2-wire shielded signal cable, of 2.5 metres is connected to the base part of MULTICAL® 62, which contains the electronic circuits to convert the ultrasonic piezo transducer signal into adjusted volume-pulses. The connection is sealed in both ends.
MULTICAL® 62	: Calculator
PULSE TRANSMITTER	: Type 66-99-618, Extension flex kit, up to 10 m
Accuracy class	: 2
Pressure stage: Theaded meter Flanged meter	 : PN16 : PN25
Media temperature	: T30 Also approved as T50, T70, T90, T30/70 and T30/90 according to OIML R49:2006
Environmental class	: E1, M1, B
Climatic environment	: +5 to +55°C, non-condensing, closed location
Protective class: ULTRAFLOW® 24 MULTICAL® 62 PULSE TRANSMITTER	 : IP65 : IP54 : IP54

Flow rate Q_3 and connection:			
Threaded meter	:	1.6 m³/h	G¾x110, G¾x165, G1x190, G1x110
		2.5 m³/h	G1x190
		4.0 m³/h	G5/4x260
		6.3 m³/h	G5/4x260
		10 m³/h	G2x300
Flanged meter	:	16 m³/h	DN50x270
		25 m³/h	DN65x300
		40 m³/h	DN80x300
Cold water verification tolerance	:	±5%	$Q_1 \leq Q < Q_2$
		±2%	$Q_2 \leq Q \leq Q_4$
Power supply	:	230 VAC	
	:	24 VAC	
Battery	:	3.65 VDC, D-cell Lithium battery	
Back-up battery	:	3.0 VDC, BR-cell Lithium battery	
Replacement interval	:	13 years @ t_{bat} < 30°C	
Installation angle	:	Horizontally, vertically or at an angle	

Software version calculator

Version no.	**Checksum for metrological part of the software**
A3 [0103]	22548
B1 [0201]	7978
C1 [0301]	22184
D1 [0401]	21140
E1 [0501]	50975
F1 [0601]	25669
G1 [0701]	55389
H1 [0801]	15774

Meter is approved as the following	:	Without check valve and strainer With check valve and strainer With strainer With check valve
Type of check valve	:	Anti-pollution check valve

Type number composition

MULTICAL® 62	62 -	Z	□	□□	□	00	□	□	□□
Top module									
No module			0						
RTC + data output + hourly data logger			5						
RTC + M-Bus			7						
RTC + 2 pulse outputs for CE and CV + prog. data logger			B						
2 Pulse output CE and CV			C						
Base module									
No module				00					
Data + pulse inputs				10					
M-Bus + pulse inputs				20					
RadioRouter + 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 (connection for external antenna) 434 or 444 MHz				26					
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 + pulse inputs				30					
Wireless M-Bus Mode T1 Std. reg. (Individual key)				31					
Wireless M-Bus Mode T2 Std. reg. (Individual key)				32					
Wirelees M-Bus Mode C2 Std. reg. + pulsindgange				33					
Wireless M-Bus Mode C1 Alt. reg. (Individual key) + pulse inputs				35					
Wireless M-Bus Mode T1 Std. reg. (Commen 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					
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)	Require High-Power supply modules			80					
3G GSM/GPRS module (GSM8H)				81					
Ethernet/IP module (IP201)				82					
High Power Radio Router + pulse inputs				84					
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				
Flow sensor									
Supplied with one ULTRAFLOW® 24							1		
Meter type									
Hot water meter								7	
Cold water meter								8	
Delivery code (language on label etc.)									XX

ULTRAFLOW® 24

Type number			Q_3 [m^3/h]	Connection	Length [mm]
65-2	-CDA1	-XXX	1.6	G1B (R¾)	110
65-2	**-CDAA**	**-XXX**	**1.6**	**G¾B (R½)**	**110**
65-2	-CDAC	-XXX	1.6	G¾B (R½)	165
65-2	**-CDAF**	**-XXX**	**1.6**	**G1B (R¾)**	**190**
65-2	-CEAF	-XXX	2.5	G1B (R¾)	190
65-2	**-CGAG**	**-XXX**	**4.0**	**G5/4B (R1)**	**260**
65-2	-CHAG	-XXX	6.3	G5/4B (R1)	260
65-2	**-CJAJ**	**-XXX**	**10**	**G2B (R1½)**	**300**
65-2	-CKCE	-XXX	16	DN 50	270
65-2	**-CLCG**	**-XXX**	**25**	**DN 65**	**300**
65-2	-CMCH	-XXX	40	DN 80	300
65-2	**-CKBE**	**-XXX**	**16**	**DN 50**	**270**
65-2	-CLBG	-XXX	25	DN 65	300
65-2	**-CMBH**	**-XXX**	**40**	**DN 80**	**300**

PULSE TRANSMITTER

66-99-618.0 PULSE TRANSMITTER (Extension flex kit, without cable)
66-99-618.1 PULSE TRANSMITTER (Extension flex kit, including 5 m cable)
66-99-618.2 PULSE TRANSMITTER (Extension flex kit, including 10 m cable)

Verification

Errors:	Maximum permissible errors according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measurement instruments (MID), Annex MI-001
Procedure:	The test points and verification according to OIML R49:2006 It is also a possibility to use water at a temperature of 20°C ±10°C

Flows: $Q_1 \leq Q \leq 1.1\ Q_1$
$Q_2 \leq Q \leq 1.1\ Q_2$
$0.9\ Q_3 \leq Q \leq Q_3$

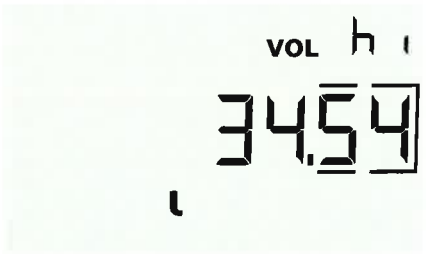
The water meter can be verified in the following way:

Test of MULTICAL® 62

In order to check MULTICAL® 62 in a test rig, is it possible to make a manual test in high resolution mode.
The test shall be performed in a "standing" start/stop test of the flow sensor.

The verification-menu is activated in the following way:

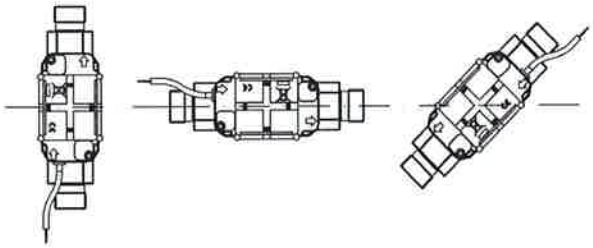
- Remove the calculator from the base.
- Wait until the display goes blank (up to 2.5 minutes). Meanwhile do not touch the front keys
- While replacing the calculator on the base, press and hold the sub-key for approx. 8 seconds.
- The verification-menu has now been activated.



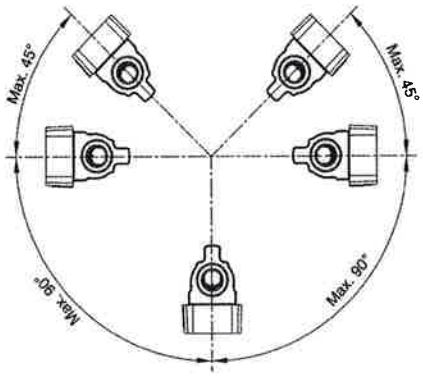
A display image in high-resolution verification mode.

The HighRes verification mode will remain activated, until one of the buttons are pressed, or the meter is reset again.

Regulations regarding installation angle



The flow sensor may be installed vertically, horizontally or at an angle.



Important!

The electronics/plastic case must be placed on the side (when installed horizontally).

The flow sensor may be turned upwards to max. 45° and downwards to max. 90° in relation to the pipe axis.

MULTICAL® 62 must not be evacuated (subjected to vacuum).

Alternative verification method

Test of flow sensor

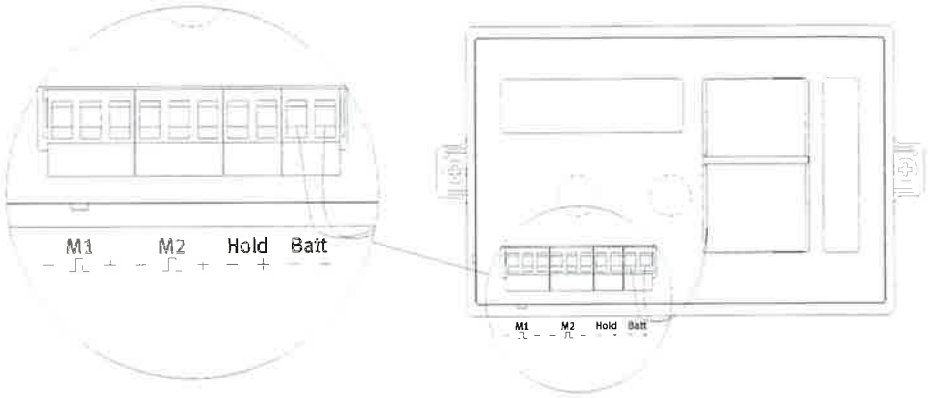
- Mount the flow sensor in a test rig
- Dismount the cover of MULTICAL® 62
- Mount PULSE TESTER, type 66-99-279 on MULTICAL® base unit
- Counter flow (start)
- Disconnect flow (stop)
- Read the LC-Display and compare the reading to the actual volume

Test of display unit

It is possible to connect the display unit to the pulse output (M1) of the PULSE TESTER.

- Connect M1 or M2 to the pulse input V1 in a MULTICAL® base unit
- Fit the display unit on the MULTICAL® base unit
- Ensure that the volume from the test corresponds to the counted volume

PULSE TESTER, type 66-99-279 (M1)



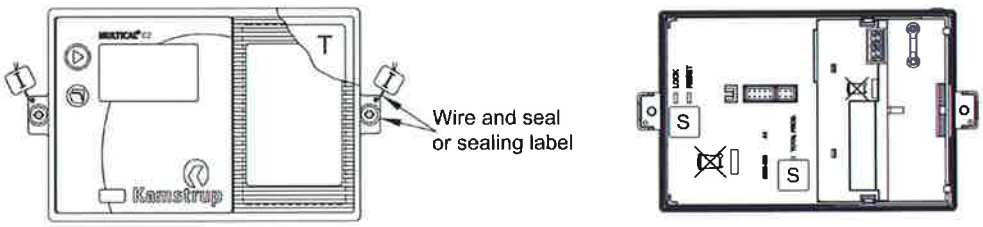
V1 Connection

		V1
Red	(3.6 V)	9
Yellow	(Signal)	10
Blue	(GND)	11

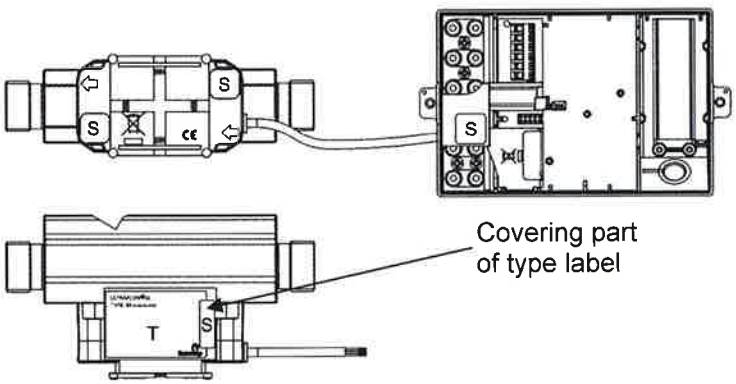
Seals and markings

S	Security seal or module D/F label (Label or integrated part of PCB box)
T	Type label
I	Installation seals

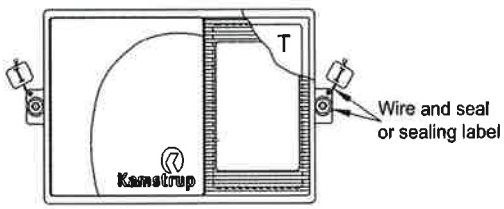
MULTICAL® 62



ULTRAFLOW® 24



PULSE TRANSMITTER



Labeling and inscriptions

Front label for MULTICAL® 62

System designation
Manufacturer designation or logo
Type, production year and serial number
Accuracy class
Mechanical and electromagnetic environment classes
Protective class
Temperature of medium
Flow limits Q_3
Certificate number

Software version in the display
Unit of measurement in the display

Label placed on ULTRAFLOW® 24

Manufacturer designation or logo
Type, production year and serial number
Protective class
Temperature of medium
Direction of flow
Maximum working pressure (PN16 or PN25)
Numerical value of Q_3
Ratio Q_1 / Q_3
Software version

Label for PULSE TRANSMITTER

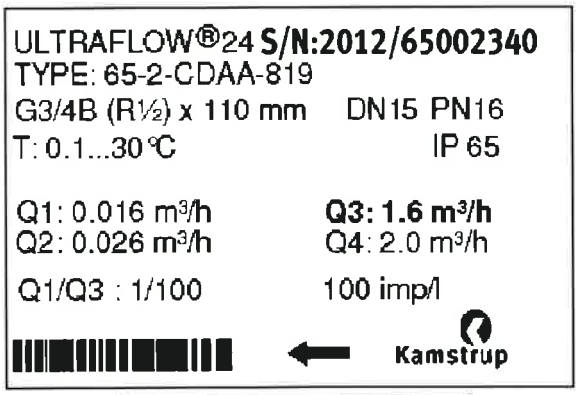
Manufacturer designation or logo
Type, production identification

Examples of type labels for: **MULTICAL® 62**
ULTRAFLOW® 24
PULSE TRANSMITTER

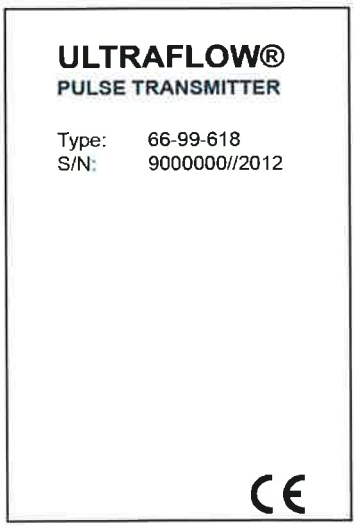
Front label for MULTICAL® 62

Customer specific area

Label for ULTRAFLOW® 24



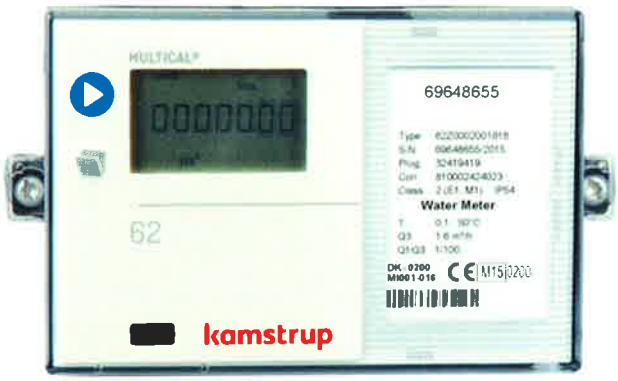
Label for PULSE TRANSMITTER



Photos of MULTICAL® 62

MULTICAL® 62
Cold water meter

MULTICAL® 62
Hot water meter



Flow sensor
ULTRAFLOW® 24

Calculator
MULTICAL® 62