



EC-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-010

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

In accordance with The Danish Safety Technology Authority's statutory order No. 339 of 29 March 2010 on changes to statutory order No. 436 of 16 May 2006 which implements the Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID).

Issued to: **Kamstrup A/S**
 Industrivej 28, Stilling
 DK-8600 Skanderborg

Reference No.: 80.976-217/11

Type of instrument: Water meter

Type designation: MULTICAL[®] 61 (type 67-Z)

Valid until: Feb. 03, 2019

Number of pages: 12, including appendix

Date of issue: May 19, 2011

Revision No.: 1 - 2011

Approved by


Hans Falster
Director

Processed by


Lars Poder
Certification Manager

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 EC-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.



DK-0200-MI001-010

Appendix to

EC-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI001-010

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

Revision: 1 - 2011

Applied standards and documents:

OIML R49:2006

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

Type designation:

MULTICAL[®] 61 (type 67-Z)

Description:

Instrument type: Complete meter

The MULTICAL[®] 61 water meter consists of a calculator MULTICAL[®] 601 and a flow sensor ULTRAFLOW[®] 24 (type 65-2).

MULTICAL[®] 61 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 12 years. Alternatively, the meter can be supplied either from 24 VAC or 230 VAC.

MULTICAL[®] 61 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[®] 61 with a 3-wire un-shielded pulse cable of up to 10 m length.

Technical documentation:

80.976-106/09 and 80.976-217/11.



DK-0200-MI001-010

Technical data

Instrument type according to	: OIML R49:2006
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 [®] 61, which contains the electronic circuits to convert the ultrasonic piezo transducer signal into adjusted volume-pulses. The connection is sealed in both ends.
MULTICAL [®] 61	: Calculator
PULSE TRANSMITTER	: Type 66-99-618, Extension flex kit, up to 10 m
Accuracy class	: 2
Pressure stage:	
Thaded meter	: PN16
Flanged meter	: PN25
Media temperature	: T30, T50, T70, T90, T30/70, T30/90
Environmental class	: E1, M1, B
Climatic environment	: +5 to +55°C, non-condensing, closed location
Protective class:	
ULTRAFLOW [®] 24	: IP65
MULTICAL [®] 61	: IP54
PULSE TRANSMITTER	: IP54



DK-0200-MI001-010

Flow rate Q_3 and connection:

Threaded meter : 1.6 m³/h G³/₄x110, G³/₄x165, 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% $Q_2 \leq Q \leq Q_4$

Durability specification : 12 years

Power supply : 230 VAC
24 VAC
3.65 VDC, Lithium battery, D-cell

Replacement interval : 12 years @ $t_{bat} < 30^\circ\text{C}$

Installation angle : Horizontally, vertically or at an angle

Software version, according to : DK-0200-MI004-004 (MULTICAL[®] 601) and
DK-0200-MI004-008 (ULTRAFLOW[®] 54 & 34)

The meter is approved as followed : Without check valve and strainer
With check valve and strainer
With strainer
With check valve

Type of check valve : Anti-pollution check valve



DK-0200-MI001-010

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 $20^{\circ}\text{C} \pm 10^{\circ}\text{C}$

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 one of the following ways:

Test of MULTICAL[®] 61

In order to check MULTICAL[®] 61 in a test rig with pulse inputs, a PULSE TESTER, type 66-99-279, must be used.

PULSE TESTER (66-99-279) has the following functions:

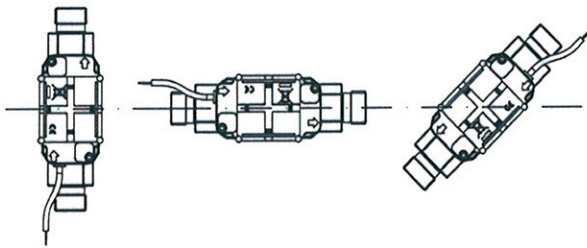
- Galvanic separated pulse outputs
- Integral supply for ULTRAFLOW[®]
- LC-Display with counter
- Externally controlled "Hold" function
- Can be fitted directly on a MULTICAL[®] base unit

The PULSE TESTER can be used in following ways:

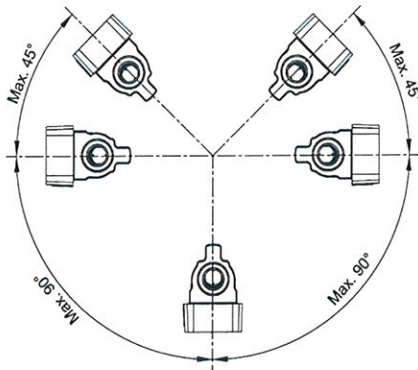
- Standing start/stop of flow sensor using the integral pulse counters
- Standing start/stop of flow sensor using the pulse outputs for external test equipment
- Flying start/stop of flow sensor using the integral counters controlled by external equipment (Sample & Hold)
- Flying start/stop of flow sensor using the pulse outputs controlled by external equipment (Sample & Hold)

DK-0200-MI001-010

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® 61 must not be evacuated (subjected to vacuum).

Test of flow sensor

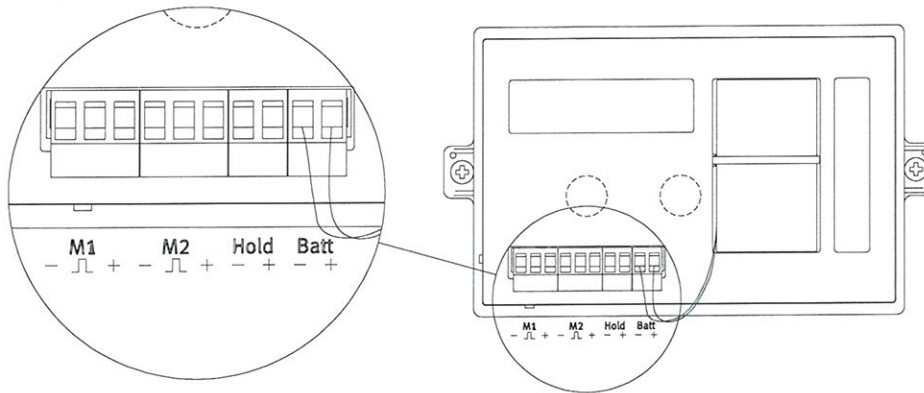
- Mount the flow sensor in a test rig
- Dismount the cover of MULTICAL® 61
- Mount PULSE TESTER, type 66-99-279 on MULTICAL® base unit
- Counter flow (start)
- Disconnect flow (stop)
- Read the LC-Display and compare the reading to the actual volume

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

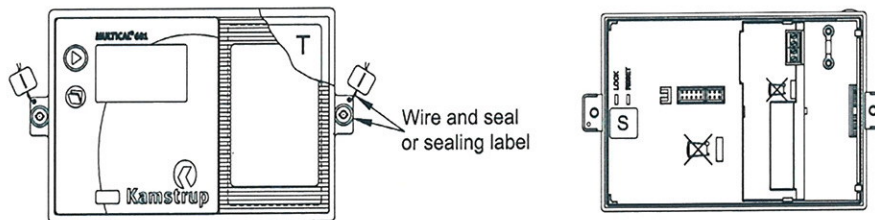
	V1
Red (3.6 V)	9
Yellow (Signal)	10
Blue (GND)	11

DK-0200-MI001-010

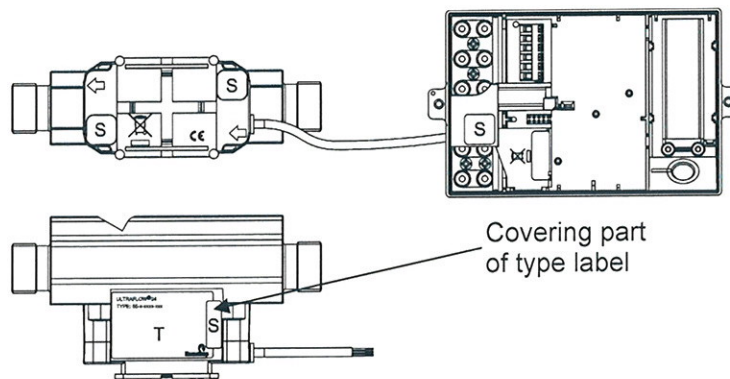
Seals and markings

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

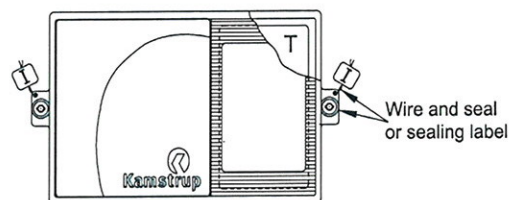
MULTICAL® 61



ULTRAFLOW® 24



PULSE TRANSMITTER



DK-0200-MI001-010



Labeling and inscriptions

Front label for MULTICAL® 61

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



DK-0200-MI001-010

Examples of type labels for: **MULTICAL® 61**
ULTRAFLOW® 24
PULSE TRANSMITTER

Front label for **MULTICAL® 61**

Customer specific area

6044052

Type: 67Z000201817
S/N: 6044052/2009
Prog: 33137137
Con: 81200040300
Class: 2 (E1, M1) IP54

Water Meter

T: 0.1...30°C
Q3: 10 m³/h


DK-0200
MI001-010




Label for **ULTRAFLOW® 24**

ULTRAFLOW®24 S/N:2009/301234567
TYPE: 65-2-CDAA-819
G3/4B (R½) x 110 mm DN15 PN16
T: 0.1...30°C SW:B1 IP 65

Q1: 0.016 m³/h **Q3: 1.6 m³/h**
Q2: 0.026 m³/h Q4: 2.0 m³/h
Q1/Q3 : 1/100 100 imp/l




 ← Kamstrup

Label for **PULSE TRANSMITTER**

ULTRAFLOW®
PULSE TRANSMITTER

Type: 66-99-618
S/N: 9000000//2008



DK-0200-MI001-010

Photos of MULTICAL® 61

Calculator MC 601

Flow sensor UF 24

