

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI004-033

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

In accordance with the Danish Safety Technology Authority's statutory order no. 1382 of November 25, 2016 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
Denmark

Type of instrument: Heat Meter, flow sensor

Type designation: ULTRAFLOW® 54
(Types: 65-5-XXHX-XXX, 65-5-XXJX-XXX, 65-5-XXKX-XXX, 65-5-XXLX-XXX)

Valid until: 2024-10-20

Number of pages: 13, including appendix

Date of issue: 2018-01-04

Version No.: 3
This new version of DK-0200-MI004-033 is issued due to five new meter variants.
The previous certificate is withdrawn.

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.
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.: 118-20653.01 and ID no.: 0200-MID-03536

Appendix to

EU-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI004-033

Issued by FORCE Certification A/S, Denmark

EU-notified body number 0200

Revision	Issue date	Changes
DK-0200-MI004-033	2014-10-20	Original certificate
DK-0200-MI004-033 rev. 1	2015-03-02	SW update, logo/inscriptions update
DK-0200-MI004-033 ver. 2	2017-06-23	EN 1434-4:2015 update Cable Extender Box added Climatic class condensing, closed location added Protection class added New flow sensors qp 1.5 and 2.5 m ³ /h added New flow sensors qp 3.5-6-10 m ³ /h added
DK-0200-MI004-033 ver. 3	2018-01-04	New flow sensors qp 3.5-6-10 m ³ /h added Type label to Cable Extender Box added

Applied standards and documents:

EN 1434:2015

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

Type designation:

ULTRAFLOW® 54 (Types: 65-5-XXHX-XXX, 65-5-XXJX-XXX, 65-5-XXKX-XXX, 65-5-XXLX-XXX)

Description:

The flow sensor is measuring the transit time difference of an ultrasound signal running along or against the flow direction in order to calculate the volume flow. The measuring unit consists of a body in brass or stainless steel. Two ultrasound transducers are mounted on the same side parallel to the meter housing. The ultrasound signal needs therefore to be guided by 2 (qp 0.6...2.5 m³/h; Types 65-5-XXHX-XXX and 65-5-XXKX-XXX) or 4 (qp 3.5...10 m³/h; Types 65-5-XXJX-XXX and 65-5-XXLX-XXX) reflektors through the measuring pipe.

Depending on the meter size for qp 0.6...2.5 m³/h combinations of 2 types of threaded (G3/4B, G1B) housings (DN15, DN20) are used with the corresponding reflector bases as well as 3 measuring pipes with a varying inner diameter. For meter sizes qp 3.5...10 m³/h 3 additional measuring pipes with 4 integrated reflectors and varying inner diameter are used.

Two different kinds of plastic cabinets including a PCB, to which the signal cable is connected, are mounted on the meter. Both of the two types of PCB include a four-pinned plug. In connection with verification this plug can be used to supply the meter, pick-up pulses, change to high-resolution condition, control start/stop during serial verification as well as read serial data, respectively.

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The flow sensor can be connected to a separate Pulse Transmitter / Pulse Divider or Cable Extender Box. The flow sensor is supplied by a build in supply module in a separate Pulse Transmitter / Pulse Divider or a calculator e.g. MULTICAL® 603.

Technical documentation:

Reference No.:

- 118-20653.01
- 117-29700.01
- 114-33017.04.10
- 114-21535.0004.0019

Technical data

Instrument type according to	: EN 1434:2015
Instrument type	: Combined instrument, sub-assembly flow sensor. The flow sensor allows building in a temperature sensor (M10x1 connection).
Temperature of medium, flow sensor	: θ_{\min} - θ_{\max} : 15...130°C (or narrower range)
Pressure stage	: PN16, PS16 and PN25, PS25
Nominal flow rate q_p [m ³ /h]	: 0.6, 1.5, 2.5, 3.5, 6 and 10

Nom. flow q_p [m ³ /h]	Installation dimensions				
	0.6	G $\frac{3}{4}$ Bx110 mm	G1Bx130 mm	G1Bx190 mm	
1.5	G $\frac{3}{4}$ Bx110 mm	G $\frac{3}{4}$ Bx165 mm	G1Bx110 mm	G1Bx130 mm	G1Bx190 mm
2.5	G1Bx130 mm	G1Bx190 mm			
3.5	G1 $\frac{1}{4}$ Bx135 mm	G1 $\frac{1}{4}$ Bx150 mm	G1 $\frac{1}{4}$ Bx260 mm		
6	G1 $\frac{1}{4}$ Bx135 mm	G1 $\frac{1}{4}$ Bx150 mm	G1 $\frac{1}{4}$ Bx260 mm	G1 $\frac{1}{4}$ Bx260 mm	
10	G2Bx200 mm	G2Bx300 mm			

Dynamic range $q_i:q_p$: 1:100, and 1:50
 q_p 0.6 $q_s:q_p$: 2:1

Dynamic range $q_i:q_p$: 1:250, 1:100 and 1:50
 q_p 1.5...10 m³/h $q_s:q_p$: 2:1 and 1.8:1

Accuracy class : 2 and 3

Environment class :
 Types 65-5-XXHX-XXX and 65-5-XXKX-XXX – q_p 0.6...2.5 m³/h) : E1 and E2, M1 and M2

Types 65-5-XXJX-XXX and 65-5-XXLX-XXX – q_p 3.5...10 m³/h) : E1 and E2, M1

Climatic class : 5...55°C, non-condensing, closed location and
 : 5...55°C, condensing, closed location

Protection class :
 Flow sensor : IP 65
 Pulse Transmitter/ Pulse Divider : IP 67

Durability specification : Minimum 10 years
 (Long life flow sensor)

Installation angle : Horizontally, vertically or at an angle

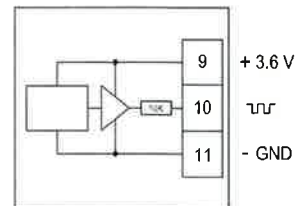
Technical data (continued)

Power supply	: 3.6 VDC ±0.1 VDC
Power supply	: 230 VAC
(Build in supply module, Pulse Transmitter or Pulse Divider)	: 24 VAC 3.65 VDC, Lithium battery, D-cell
Software version 5098-1060 (Flow sensors qp 0.6...2.5 m ³ /h)	: Revision B1, CRC sum (hex) 0xEAB0 Revision C1, CRC sum (hex) 0x8667
Software version 5098-467 (Flow sensors qp 3.5...10 m ³ /h)	: Revision B1, CRC sum (hex) 0x7F8A Revision C1, CRC sum (hex) 0x5C16 Revision D1, CRC sum (hex) 0x9898
Software version 5098-1026 (Pulse Divider)	: Revision B1, CRC sum (dec) 27343
Meter factor	: 0.04...300 imp./l (depending on programming)
Pulse output	
Pulse duration	: 2...100 ms (depending on programming)
Pause	: Depending on the actual pulse frequency

Technical data (continued)

Pulse output ULTRAFLOW®
(Galvanically connected)

Type Push-Pull
Output impedance ~10 kΩ

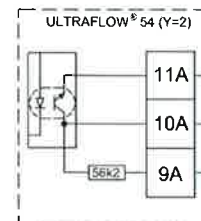


Pulse output Pulse Transmitter (Type 66-99-903-YZ-XXX) and
Pulse Divider (Type 66-99-907-YZ-XXX)

(Galvanic separated output module (Y = 2))
Open collector.

2-wire connection or 3-wire connection via the integrated pull-up resistor of 56.2 kΩ

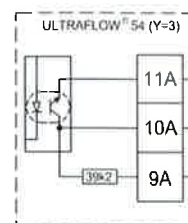
Module Y=2	OC and OD	(OB) Kam
Max input voltage	6 V	30 V
Max input current	0.1 mA	12 mA
ON condition	$U \leq 0.3 \text{ V @ } 0.1 \text{ mA}$	$U_{CE} \leq 2,5 \text{ V @ } 12 \text{ mA}$
OFF condition	$R \geq 6 \text{ M}\Omega$	$R \geq 6 \text{ M}\Omega$



(Galvanic separated output module (Y = 3))
Open collector.

2-wire connection or 3-wire connection via the integrated pull-up resistor of 39.2 kΩ

Module Y=3	OC and OD
Max input voltage	6 V
Max input current	0.1 mA
ON condition	$U \leq 0.3 \text{ V @ } 0.1 \text{ mA}$
OFF condition	$R \geq 6 \text{ M}\Omega$



Cable length:	From flow sensor to galvanic connected calculator	Max. 10 m
	From flow sensor to galvanic connected calculator using cable extender box nr. 66-99-036	Max. 30 m
	From flow sensor to Pulse Transmitter / Pulse Divider input	Max. 10 m
	From galvanic separated output module / Pulse Transmitter / Pulse Divider output	Max. 100 m

Verification procedure

According to: EN 1434-5 and EN 1434-1

The flow sensor can be verified by picking up the volume proportional pulses in either standard or high-resolution condition. Furthermore, verification can be carried out using the serial data output.

Initial verification can be carried out via the four-pin plug of the measuring electronics.

For dynamic ranges $q_i:q_p$ 1:50 and 1:100, 1:100 can be used.

For dynamic ranges $q_i:q_p$ 1:50, 1:100 and 1:250, 1:250 can be used.

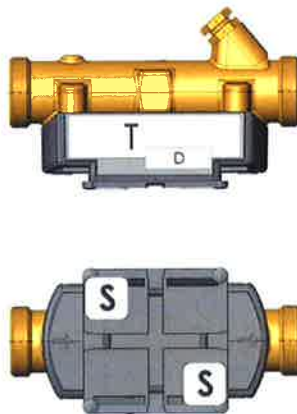
During verification a water temperature of (20 ± 5) °C can be used.

After verification before sealing Meter factor and Pulse duration can be configured.

Seals and markings

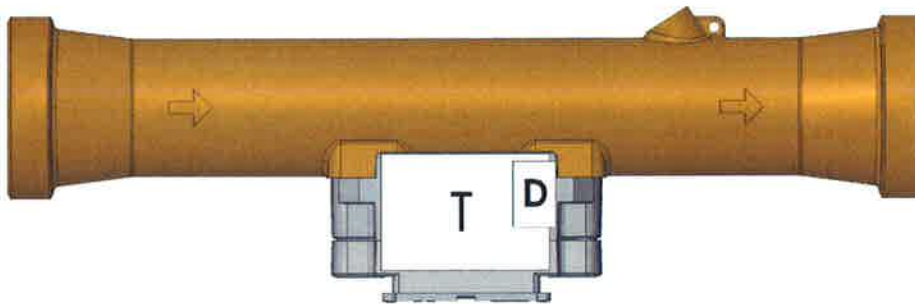
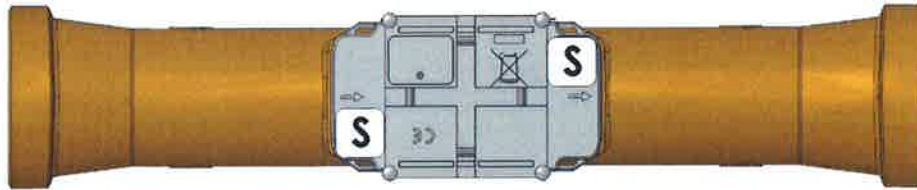
- D** Security seal or module D/F label (Depending on type label)
- S** Security seals. Covering screws
- T** Type label (as void label or with security seal D)
- I** Installation seals (wire and seal or sealing label)

ULTRAFLOW® 54 (Types 65-5-XXHX-XXX and 65-5-XXKX-XXX; q_p 0.6, 1.5 and 2.5 m³/h)

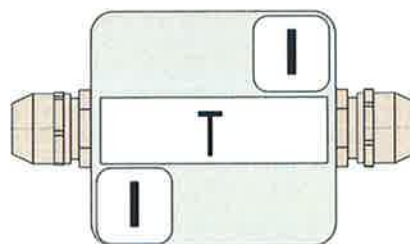


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ULTRAFLOW® 54 (Types 65-5-XXJX-XXX and 65-5-XXLX-XXX; q_p 3.5, 6 and 10 m³/h)



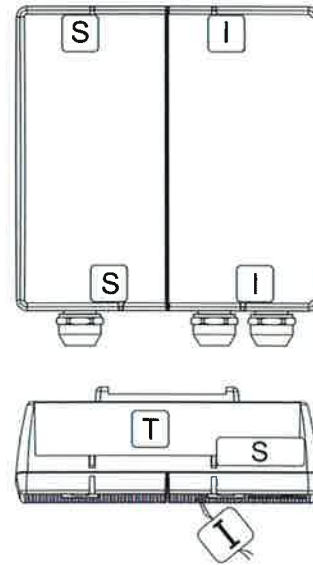
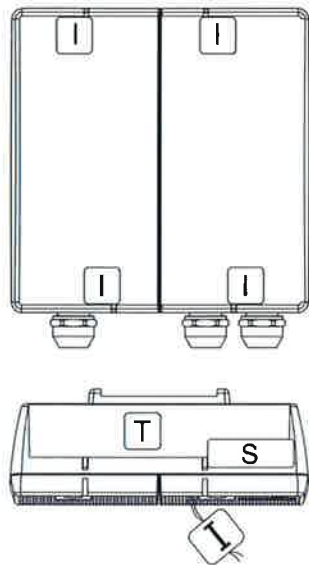
Cable Extender Box (Type 66-99-036)



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Pulse Transmitter (Type 66-99-903-YZ-XXX)

Pulse Divider (Type 66-99-907-YZ-XXX)



Labeling and inscriptions

Type label placed on the flow sensor with the following imprint:

System designation
Manufacturer's designation or logo
Manufacturer's address
Type, production year and serial number
Accuracy class
Mechanical and electromagnetic environment classes
Flow limits q_i , q_p , q_s
Temperature of medium (θ_{\min} - θ_{\max})
Nominal pressure (PN)
Maximum admissible working pressure (PS)
Meter Factor
Software Version

Additional inscriptions for Pulse Transmitter:
Supply

Additional inscriptions for Pulse Divider:
"Meter factor input and Meter factor output" or "Division factor"
Duration of output pulse
Supply
Software Version

Modules


Output and supply modules for Pulse Transmitter and Pulse Divider:

1606-064	Battery, D-cell with 2 pin connector
5550-1051	24 VAC supply module
5550-1052	230 VAC supply module
5550-1062	Galvanic separated output module (Y=2)
5550-1219	Galvanic separated output module "Low power" (Y=3)


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Example of type labels

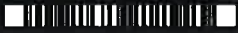
ULTRAFLOW® 54 (Types: 65-5-XXHX-XXX and 65-5-XXKX-XX) q_p 0.6, 1.5 and 2.5 m³/h

ULTRAFLOW® 54	S/N:2017/301234567	→
TYPE: 65-5-CDHA-219	DK-0200-MI004-033	SW:C1 Cl:2 (M2,E2)
G3/4B (R½) x 110 mm	PN16, PS16	5925123
qp: 1.5 m ³ /h	100 imp/l	
qi: 0.015 m ³ /h	Δp: 0.09 bar	
qs: 3.0 m ³ /h	θ 15 ... 130°C	
kamstrup		DK-8660


ULTRAFLOW® 54 (Types: 65-5-XXJX-XXX and 65-5-XXLX-XXX) q_p 3.5, 6 and 10 m³/h

ULTRAFLOW® 54	S/N:2017/301234567
TYPE: 65-5-CHJG-219	
DK-0200-MI004-033	Cl: 2 (M1, E2)
G5/4B (R1) x 260 mm	25 imp/l
PN16, PS16	qp: 6.0 m ³ /h
θ 15 ... 130°C	qi: 0.06 m ³ /h
Δp: 0.06 bar	qs: 12 m ³ /h
SW:D1	
5925123	kamstrup
	← DK-8660

Pulse Transmitter type 66-99-903-YZ-XXX

Pulse Transmitter	Type: 6699903-32-219 000-00-0-001	S/N: 2017/70500000
Supply: Battery	kamstrup	
		

Pulse Divider type 66-99-907-YZ-XXX

Pulse Divider	Type: 6699907-32-219 119-33-4-001	S/N: 2017/70500000
Pulse Input: 100 imp/l	kamstrup	
Pulse Output: 1.0 l/imp, 20 ms		
Div. factor: 100		
Supply: Battery		
 SW:B1		

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Photos of ULTRAFLOW® 54 and Pulse Transmitter / Pulse Divider / Cable Extender Box

ULTRAFLOW® 54 (H)



ULTRAFLOW® 54 (J)



Pulse Divider / (Pulse Transmitter)



Cable Extender Box

