

EC-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI004-008

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-8600 Skanderborg

Reference No.: 112-23383.0004.0001

Type of instrument: Heat meter, flow sensor

Type designation: ULTRAFLOW[®] 54, ULTRAFLOW[®] 34

Valid until: 2017-12-06

Number of pages: 10, including appendix


Date of issue: 2012-04-10

Revision No.: 1 - 2012

Approved by


Michael Møller Nielsen
Certification Manager

Processed by


Lars Poder
Examinator

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.

Appendix to

EC-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI004-008

Issued by FORCE Certification A/S, Denmark

EC-notified body number 0200

Revision – 2012: Adding outputmodule.

Applied standards and documents:

EN1434: 2007

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

Type designation:

ULTRAFLOW[®] 54, (34)

Description:

The flow sensor functions according to the ultrasonic principle. The measuring unit consists of a body in brass, red brass or stainless steel. The meter housing includes two or four ultrasound transducers depending on their meter size. The position of these transducers as well as their sound tracks depends on the meter size. A plastic cabinet including a PCB, to which the signal cable is connected, is mounted on the meter. This PCB also includes 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. The flow sensor can be connected to a separate Pulse Transmitter or Pulse Divider. The flow sensor is supplied by a build in supply module a separate Pulse Transmitter, Pulse Divider or a calculator i.e. MULTICAL[®] 601.

Technical documentation:

Force Certification A/S File no. 80.976-105/09, 80.976-210/11 and 112-23383.0004.0001.

DK-0200-MI004-008

Technical data

Instrument type according to		: EN1434: 2007
Instrument type		: Combined instrument Part: Flow sensor with possibility of build in sensor (M10x1 connection); G3/4 and G1 flow sensors (threaded).
Temperature of medium, flow sensor		: $\theta_{\min} - \theta_{\max}$: 15...90°C and 15...130°C
Temperature of medium, flow sensor		: $\theta_{\min} - \theta_{\max}$: 15...90°C, 2...130°C, 15...130°C,
q_p 150...1000 m ³ /h		2...150°C and 10...150°C
Pressure stage q_p 0.6...1000 m ³ /h		: PN16 and PN25
Pressure stage q_p 3.5, 10, 15, 25, 40, 60 and 100 m ³ /h		: PN40
Nominal flow rate	q_p [m ³ /h]	: 0.6 1.0 1.5 2.5 3 3.5 6 10 15 25 40 60 100 150, 250, 400, 600 and 1000
Dynamic range	$q_i:q_p$: 1:100, 1:50 and 1:25
q_p 0.6...1000 m ³ /h	$q_s:q_p$: 2:1 and 1.8:1
Dynamic range q_p 1.5, 6.0, 15, 25, 40, (DN80x350) and q_p 100 m ³ /h	$q_i:q_p$: 1:250, 1:100, 1:50 and 1:25
	$q_s:q_p$: 2:1 and 1.8:1
Accuracy class		: 2 and 3
Environment class		: E1 and E2, M1
Environment class q_p 150...1000 m ³ /h		: E1 and E2, M1 and M2
Climatic class		: 5...55°C, non-condensing, closed location.
Durability specification		: Normal flow sensor, typical 5 years and longer (Long life flow sensor)
Installation angle		: Horizontally, vertically or at an angle
Power supply		: 3.6 V \pm 0.1 V
Power supply (Build in supply module, Pulse Transmitter or Pulse Divider)		: 230 VAC 24 VAC 3.65 VDC, Lithium battery, D-cell
Software version q_p 0.6...100 m ³ /h		: B1 and C1
Software version q_p 150...1000 m ³ /h		: B1

DK-0200-MI004-008

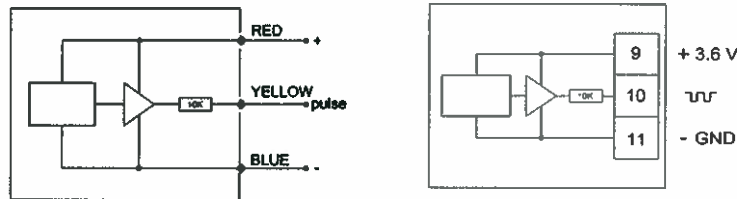
Cable length

Pulse Transmitter / Pulse Divider input and flow sensor. Max. 10 m
Galvanic separated output module / Pulse Transmitter / Pulse Divider output. No limitation
Flow sensor galvanic connected to calculator. Max. 10 m

Pulse output ULTRAFLOW®
(Galvanic connected)

Type	Push-Pull
Output impedance	~10 kΩ
Meter factor	0.0004...300 imp/l
Pulse duration	2...100 ms
Pause	Depending on current pulse frequency

Block diagram pulse output ULTRAFLOW®:



Pulse output qp 0.6...100 m³/h
(Pulse Transmitter,
Pulse Divider)

Type: Open collector. 2 or 3-wire connection via the integrated pull-up resistance of 33 kΩ.

Output impedance	~2 kΩ
I _{max}	0.2 mA
Supply (9A)	3...10 VDC
Pulse duration (Pulse Transmitter)	2...5 ms
Pulse duration (Pulse Divider)	Programmable
Pause time	Depending on the actual pulse frequency

2-wire connection

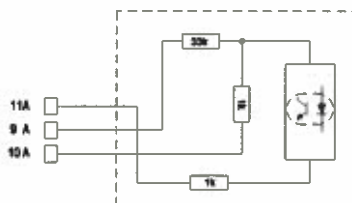
Voltage range	3...6 VDC
Max leak current	1 μA
Min R _{load}	30 kΩ
Max R _{load}	1 MΩ

3-wire connection

Supply (9A)	3...6 VDC
I _{max}	0.2 mA

DK-0200-MI004-008

Block diagram pulse output PULSE TRANSMITTER/PULSE DIVIDER

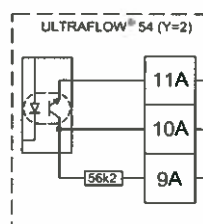


Pulse output qp 150...1000 m³/h

Galvanic separated output module (Y=2)

Open collector. 2-wire connection or 3-wire connection via the integrated pull-up resistor of 56.2 k Ω

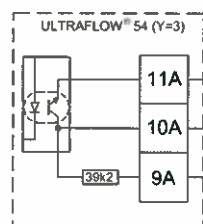
Module Y=2	OC and OD	(OB) Kam
Max input voltage	6 V	30 V
Max input current	0,1 mA	12 mA
ON condition	$U \leq 0.3 \text{ V @ } 0.1 \text{ mA}$	$U_{CE} \leq 2.5 \text{ V @ } 12 \text{ mA}$
OFF condition	$R \geq 6 \text{ M}\Omega$	$R \geq 6 \text{ M}\Omega$



Galvanic separated output module (Y=3)

Open collector. 2-wire connection or 3-wire connection via the integrated pull-up resistor of 39.2 k Ω

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	$R \geq 6 \text{ M}\Omega$



Verification procedure

According to EN1434-5 and EN1434-1

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 $q_i:q_p$ 1:25 ,1:50 and 1:100, 1:100 can be used.
During verification a water temperature of $20 \pm 5^\circ\text{C}$ can be used.

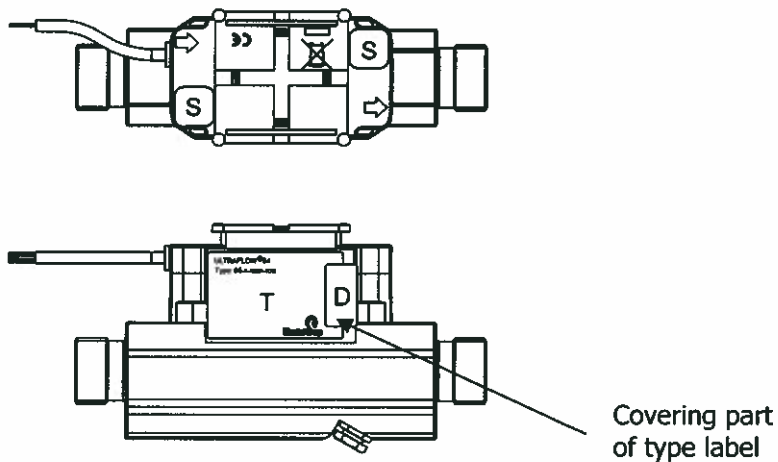
After verification before sealing Meter factor and Pulse duration can be configured.

DK-0200-MI004-008

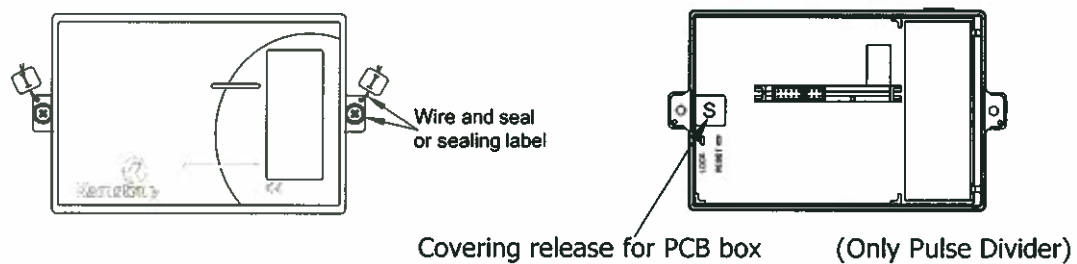
Seals and markings

- 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)

qp 0.6...100 m³/h

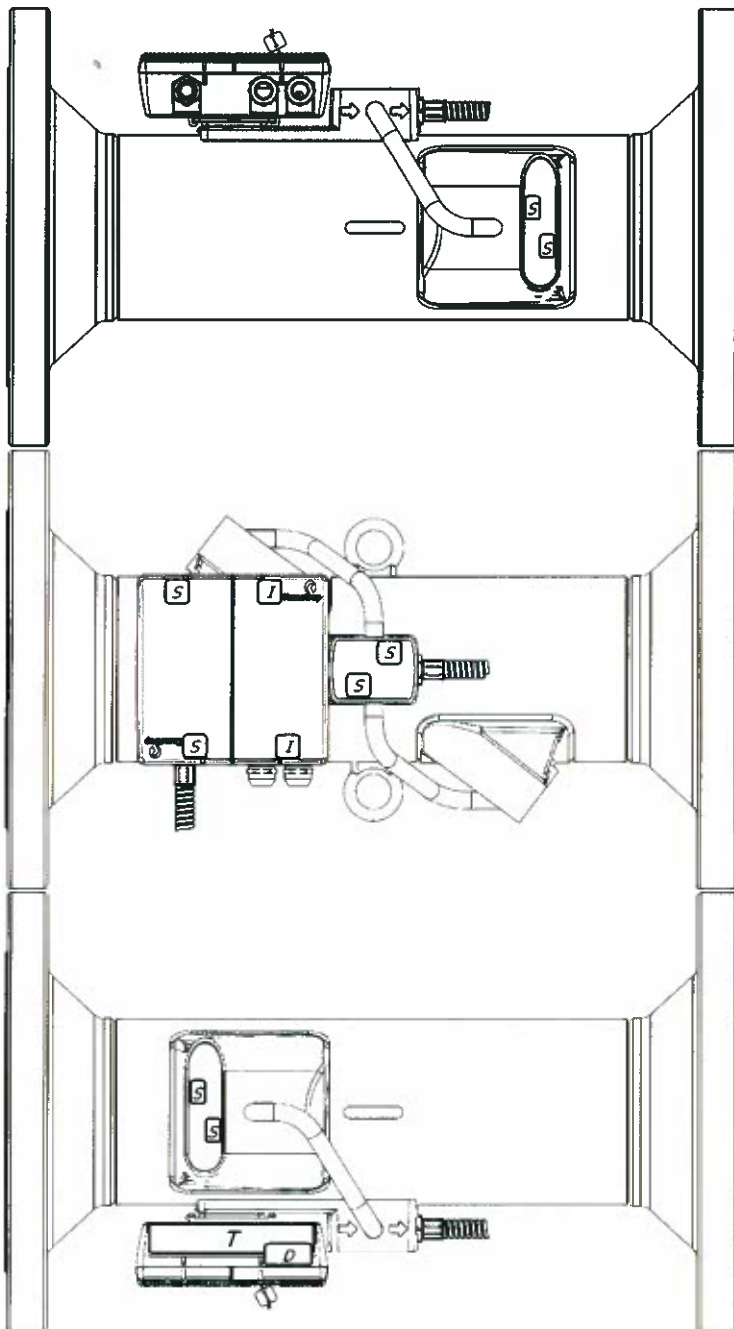


Pulse Transmitter and Pulse Divider



DK-0200-MI004-008

qp ≥ 150 m³/h



Labeling and inscriptions

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

System designation
Manufacturer 's mark or name
Type, production year and serial number
Accuracy class
Mechanical and electromagnetic environment classes
Flow limits q_{lr} , q_{pr} , q_s
Temperature of medium (θ_{min} - θ_{max})
Maximum working pressure (PN)
Meter factor
Software version

Additional inscriptions for Pulse Divider:

Meter factor input
Division factor
Meter factor incl. flow sensor and pulse divider
Duration of output pulse

Modules

Output and supply modules qp 150...1000:

1606-064	Battery, D-cell
5550-1052	230 VAC supply module
5550-1051	24 VAC supply module
5550-1061	Galvanic connected output module (Y=1)
5550-1062	Galvanic separated output module (Y=2)
5550-1219	Galvanic separated output module "Low power" (Y=3)

Supply modules for Pulse Transmitter and Pulse Divider:

66-00-200-XXX	Battery, D-cell
66-00-700-XXX	230 VAC supply module
66-00-800-XXX	24 VAC supply module

DK-0200-MI004-008



Example of type label

qp 0.6...100 m³/h

ULTRAFLOW® 54 S/N:2011/301234567
 TYPE: 65-5-CDAA-219
 DK-0200-MI004-008 CI:2(M1, E2)
 SW:C1
 G3/4B (R½) x 110 mm 100 imp/l
 PN16, PS16 qp: 1.5 m³/h
 θ 15 ... 130°C qi: 0.015 m³/h
 Δp:0.22 bar qs: 3.0 m³/h
 5925123



 

ULTRAFLOW® 54 S/N:2011/301234567
 TYPE: 65-5-CAAA-295
 DK-0200-MI004-008 CI:2(M1, E2)
 SW:C1
 G3/4B (R½) x 110 mm 1 l/imp
 PN16, PS16 qp: 0,6 m³/h
 θ 15 ... 130°C qi: 0,006 m³/h
 Δp:0,04 bar qs: 1,2 m³/h
 5925123



 

qp ≥ 150 m³/h

ULTRAFLOW® 54 TYPE: 65-5-FCCN-219 **S/N: 2011/301234567**
 qp: 150 m³/h DN150x500 DK-0200-MI004-008
 qi: 1,5 m³/h PN25, PS25 CI:2(M2, E2) SW:B1
 qs: 300 m³/h Δp: 0,02 bar
 1 imp/l
 θ: 2 ... 150°C 5925123

ULTRAFLOW® 54 TYPE: 65-5-FCCN-27-219 Prog: 36-4 **S/N: 2011/123456789**
 qp: 150 m³/h DN150x500 DK-0200-MI004-008
 qi: 1.5 m³/h PN25, PS25 CI: 2(M2, E2) SW: B1
 qs: 300 m³/h Δp: 0.02 bar
 1000 l/imp 20 ms Galv. separated 5925341
 θ: 2...150°C 230 VAC

ULTRAFLOW® 54 TYPE: 65-5-FCCN-28-295 Prog: 35-5 **S/N: 2011/123456789**
 qp: 150 m³/h DN150x500 DK-0200-MI004-008
 qi: 1.5 m³/h PN25, PS25 CI: 2(M2, E2) SW:B1
 qs: 300 m³/h Δp: 0.02 bar
 100 l/imp Galv. separated 5925341
 θ: 2...150°C 230 VAC

Photos of ULTRAFLOW® X4

