



EC-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI004-003

Issued by FORCE-Dantest CERT, Denmark
EC-notified body number 0200

In accordance with The Danish Safety Technology Authority 's 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-8660 Skanderborg

Reference No.: 80.970.6-005B/06

Type of instrument: Heat Meter, flow sensor

Type designation: ULTRAFLOW® (type 65-S, 65-R and 65-T)

Valid until: February 02, 2017

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Appendix to EC-Type Examination Certificate Measuring Instrument Directive

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Applied standards and documents:

prEN1434: 2006 except test 6.14 which is replaced by OIML D11, test 12.1.2

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

Type designation

ULTRAFLOW[®] (type 65-S, 65-R and 65-T)

Description

The flow sensor functions according to the ultrasonic principle. The measuring unit consists of a body in brass, red brass or stainless steel depending on the meter size. The meter case includes two or four ultrasound transducers depending on the 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 an eight-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 separate PULSE TRANSMITTER, PULSE DIVIDER or a calculator i.e. MULTICAL[®] 601.

Technical documentation

FORCE-Dantest CERT File no.80.970.6-005B/06



Technical data

Instrument type according to: prEN1434:2006

Instrument type:

Combined instrument

Part: Flow sensor with possibility of build in temperature sensor
(M10x1 connection): G3/4 and G1 flow sensors (threaded).

Temperature of medium,
flow sensor:

$\theta_{min} - \theta_{max} : 15...130^{\circ}C$

Flow sensor, position: Mounted in either flow or return

Pressure stage PN16 and PN25

Nominal volume q_p [m³/h] : 0.6 1.5 3 3.5 6 10 15 25 40 40
flow rate DN80

Nominal volume q_p [m³/h] : 60 100 150 250 400 400
flow rate DN150

Dynamic range up till DN100 $q_i:q_p : 1:100$ and $1:50$

$q_s:q_p : 2:1$ and $1.8:1$

Dynamic range from DN100

$q_i:q_p : 1:25$

$q_s:q_p : 2:1$ and $1.8:1$

Accuracy class up till DN100 : 2 and 3

Accuracy class from DN100 : 3

Environment class: E1, M1

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: 230 VAC

(PULSE TRANSMITTER 24 VAC

PULSE DIVIDER) 3.65 VDC, Lithium battery, D-cell

Software version: A3

Cable length:

PULSE TRANSMITTER/PULSE DIVIDER input and flow sensor: Max. 10 m

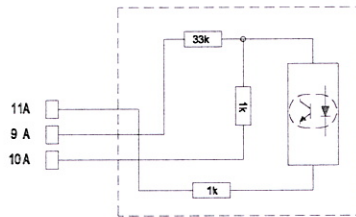
PULSE TRANSMITTER/PULSE DIVIDER output: No limitation

Flow sensor to calculator: Max. 10 m

Pulse output: Type Open collector. 2 or 3-wire connection via the
(PULSE TRANSMITTER/PULSE DIVIDER) integrated pull-up resistance of 33 kΩ

	Output impedance	~2 kΩ
	I _{max}	0.2 mA
	Supply (9A)	3...10 VDC
	Pulse duration	2...5 ms (PULSE TRANSMITTER)
	Pulse duration	Programmable (PULSE DIVIDER)
	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...10 VDC
	I _{max}	0.2 mA

Block diagram pulse output PULSE TRANSMITTER/PULSE DIVIDER



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Verification



Errors: Maximum permissible errors according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), Annex MI-004

Procedure:

Test points and verification requirements according to prEN1434-5:2006

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 eight-pin plug of the measuring electronics.

For all dynamic ranges $q_i:q_p$ 1:100 can be used.

During verification a water temperature of $20 \pm 5^\circ\text{C}$ can be used.

Sealing

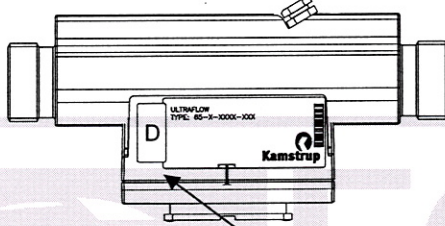
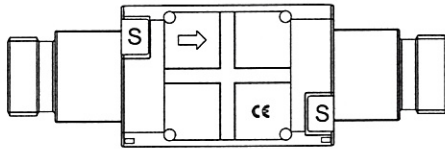
D Security seal or module D/F label (Depending on type label)

S Security seals. Covering screws

T Type label

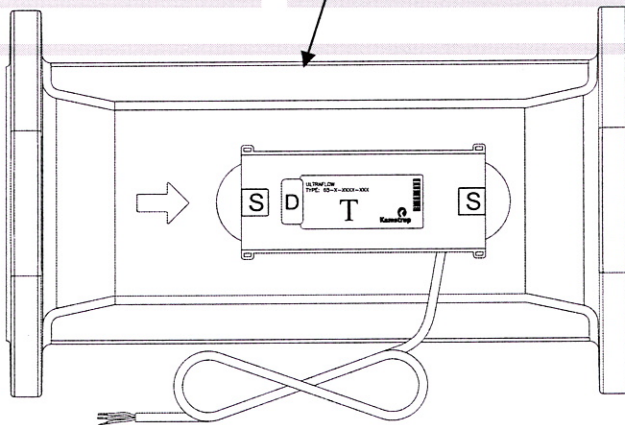
I Installation seals

qp 0.6...40 m³/h, ≤ DN80

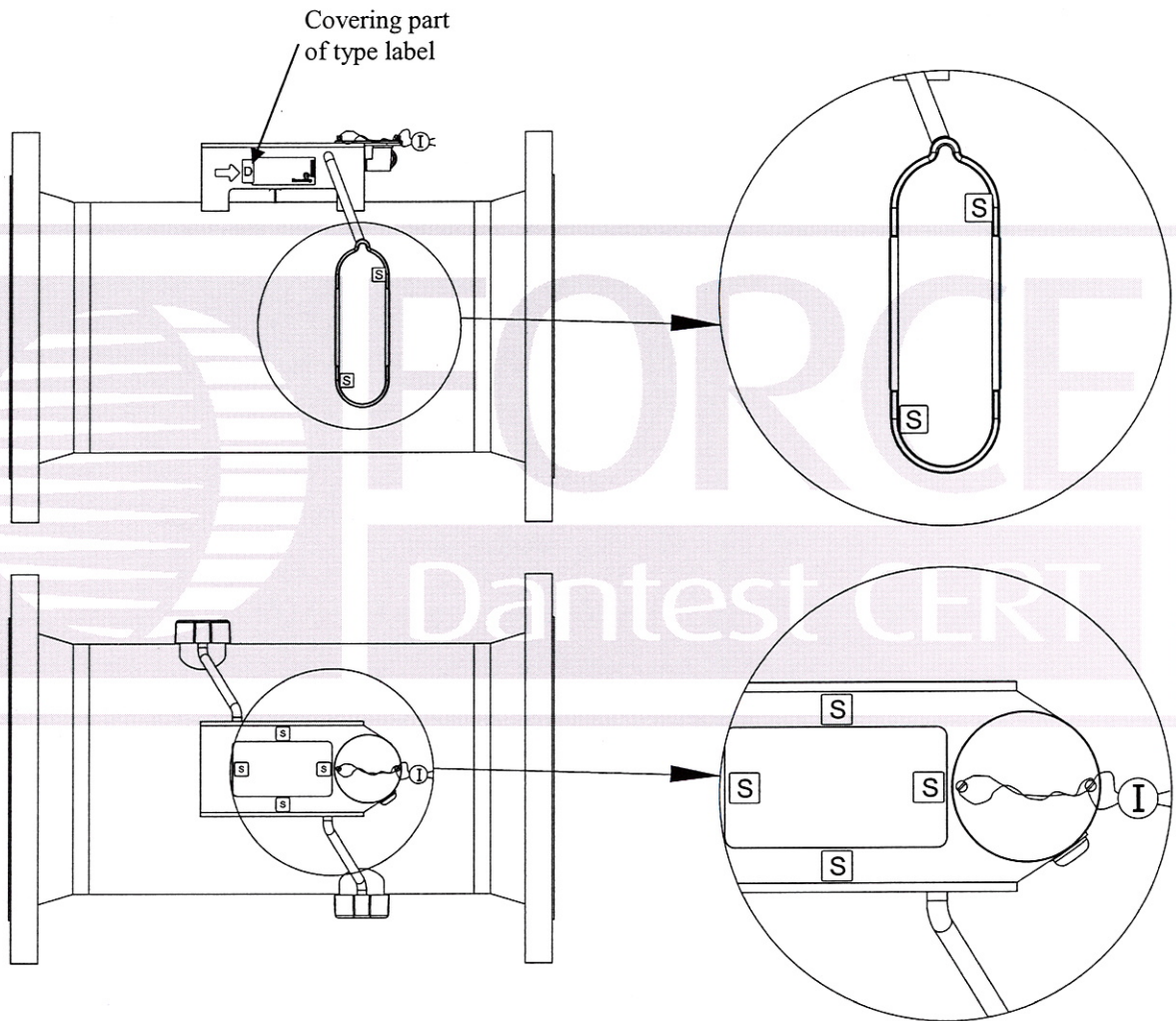


Covering part
of type label

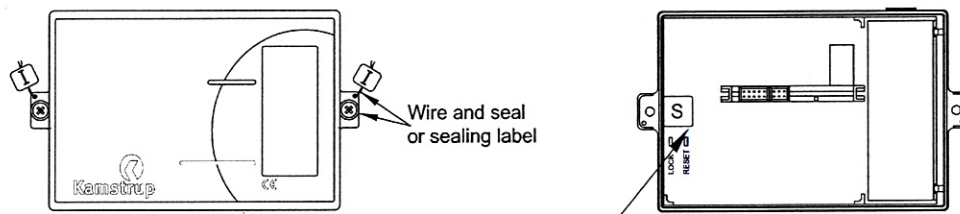
qp 60...100 m³/h, DN100



qp 150...400 m³/h, stainless steel



PULSE TRANSMITTER and PULSE DIVIDER



Covering release
for PCB box

Labeling and inscriptions

- Type label
- Examination certificate number
- Manufacturer designation or logo
- Type, production year and serial number
- Temperature limits (Θ_{\min} - Θ_{\max})
- Temperature sensor type
- Mounting in forward or return pipe
- Maximum working pressure (PN 16 or 25)
- Accuracy class
- Mechanical and electromagnetic environment classes;
- Software version
- Flow limits q_i , q_p , q_s