EC-Type Examination Certificate
Measuring Instrument Directive

Number: DK-0200-MI004-008

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.:	80.976-024/07
Type of instrument:	Heat meter, flow sensor
Type designation:	ULTRAFLOW® 54, ULTRAFLOW® 34
Valid until:	December 6, 2017
Number of pages:	7, including appendix
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Appendix to
EC-Type Examination Certificate
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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 ultrasound transducers. 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 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 separate PULSE TRANSMITTER, PULSE DIVIDER or a calculator i.e. MULTICAL® 601.

Technical documentation:
FORCE-Dantest CERT File no. 80.976-024/07

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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

Flow sensor, position Mounted in either flow or return

Pressure stage   PN16 and PN25
Nominal volume q_p : 0.6 1.0 1.5 2.5   3 3.5   6   10   15   25   40
flow rate   [m³/h]

Dynamic range $q_i{:}q_p$: 1:100 and 1:50
                           $q_s{:}q_p$: 2:1 and 1.8:1
Dynamic range qp 1.5, 6.0, 15 $q_i{:}q_p$: 1:250, 1:100 and 1:50
and qp 40 m³/h (DN80x350)

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

Accuracy class   : 2 and 3

Environment class: E1 and E2, 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: B1

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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: (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
	Imax	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...10 VDC
	I_{max}	0.2 mA

Block diagram pulse output PULSE TRANSMITTER/PULSE DIVIDER
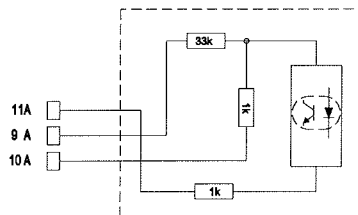
## Verification procedure

According to EN1434-5 and EN1434-1

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

For dynamic ranges qi:qp 1:50 and 1:100, 1:100 can be used.
During verification a water temperature of 20 ±5°C can be used.

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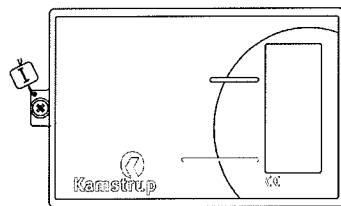| D | Security seal or module D/F label (Depending on type label) |

| S | Security seals. Covering screws |

| T | Type label |

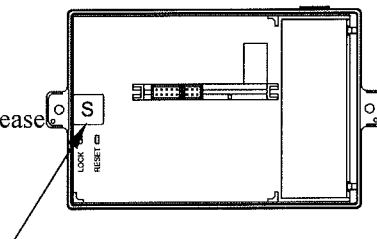| I | Installation seals |

qp 0.6...40 m³/h, ≤ DN80
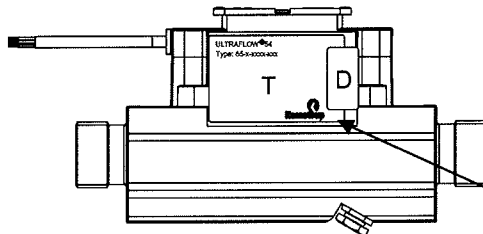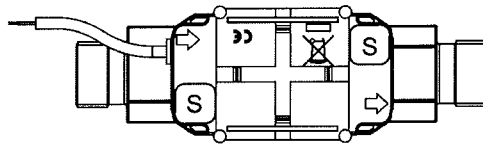
Covering part
of type label

PULSE TRANSMITTER and PULSE DIVIDER

Wire and seal
or sealing label

Covering release
for PCB box

(Only PULSE DIVIDER)

Labeling and inscriptions

Type label placed on the flowsensor with the following imprint:

System designation.
Manufacturer designation or logo
Type, production year and serial number
Accuracy class
Mechanical and electromagnetic environment classes
Climatic class
Flow limits q_i, q_p, q_s
Temperature of medium (θ_{min} - θ_{max})
Maximum working pressure (PN 16 or 25)
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

Supply modules for PULSE TRANSMITTER and PULSE DIVIDER:

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

Example

ULTRAFLOW® 54 **S/N:2007/301234567**
TYPE: 65-5-CDAA-219
DK-0200-MI004-008   CI:2(M1, E2)
Non–Cond/Closed
5...55°C SW:B1
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
5925341

Kamstrup

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