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EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/11 – 4803

Addition 4

This addition replaces all previous versions of this certificate in full wording.

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In accordance with: with Directive 2004/22/EC of the European Parliament and of the Council as amended implemented in Czech Republic by Government Order No. 464/2005 Coll. as amended that lays down technical requirements on measuring instruments.

Manufacturer: FLOW SYSTEMS
Rua Vasco da Gama 68
4750-220 Barcelos
Portugal

For: water meter – volumetric
type: SV-RTK
accuracy class: 2
temperature class: T30 and T50

Valid until: 6 January 2021

Document number: 0115-CS-A001-11

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate. This certificate contains 9 pages.

Date of issue: 14 December 2015

Certificate approved by:




RNDr. Pavel Klenovský

1. Measuring device description

The volumetric water meters type SV-RTK are designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer in the sense of the Directive of the European Parliament and of the Council no. 2004/22/EC of measuring instruments, as amended.

The water meters type SV-RTK are positive displacement meters with rotary piston.

The water meters type SV-RTK(E3) consist of a brass or bronze casted body with connecting threads and inlet strainer (optional), a wet measuring unit, a dry mechanical indicating device with a glass disc, a brass closing ring with a plastic cover or super dry mechanical indicating device (Copper Can Calculator) with brass head ring with a plastic lid.

The water meters type SV-RTK(E4) consist of a brass or bronze casted or plastic body with connecting threads and inlet strainer (optional), a wet measuring unit, a pressure plate, an o-ring, a gasket, a screwed plate, a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator) and clamp on plastic lid.

The water meters type SV-RTK(E6) consist of a brass or bronze casted body with connecting threads and inlet strainer (optional), a wet measuring unit, an o-ring, a register chamber, a dry mechanical indicating device and brass head ring with a plastic lid..

The water meters type SV-RTK (E8) consist of a cast brass or bronze or plastic body (plastic body for DN 15 only) with connecting screw threads and inlet strainer, an o-ring, a wet measuring unit, pressure plate, gaskets, a screw plate, a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator) and clamp on plastic cover with a lid. The measuring unit consists of an internal strainer, a piston chamber with plastic shaft with stainless steel holder, a bush, a plate, a piston with stainless steel shaft, a piston chamber cover, an o-ring, a transmission shaft with magnetic holder.

The mechanical indicating device, dry (Plastic Calculator) or super dry (Copper Can Calculator), can be formed by 5 numbered drums and 4 rotary pointers with scales or 7 numbered drums and 2 rotary pointers with scales or 8 numbered drums and 1 rotary pointer with scale. There is a star wheel with six arms which can be used for rapid testing. The mechanical indicating device, dry (Plastic Calculator), can optionally include a condensed wiper. The indicating device of DN15 can be designed for flat or inclined reading.

The water meters type SV-RTK can be equipped by a reed impulse transmitter which can be used for remote reading. The meters can be equipped with parts for mounting of an AMR device and with an inductive pointer for AMR reading, which were not part of this certification.

The water meters type SV-RTK shall be installed to operate in arbitrary positions.

The volumetric water meters type SV-RTK are manufactured according to assembly drawings of the company FLOW SYSTEMS, No. ZN1.632.009 010 019 from 12/2010, No. ZN1.632.066 080 from 12/2010, No. ZN1.632.015 022 025 from 12/2010, No. ZN1.632.087 088 from 12/2010 and No. ZN1.632.205 206 from 11/2013, No. ZN1.632 300 from 1/2014, No. ZN1.632 301 from 1/2014 and No. ZN1.632.251 252 from 10/2015.

2. Basic technical data

Basic technical data of water meters type SV-RTK DN15 to DN25:

Nominal diameter (DN) [mm]:	15	20	25
Overload flowrate (Q_4) [m^3/h]:	≤ 3.13	≤ 5.00	≤ 7.88
Permanent flowrate (Q_3) [m^3/h]:	$\leq 2.50^1$	$\leq 4.00^1$	$\leq 6.30^1$
Transitional flowrate (Q_2) [m^3/h]:	≥ 0.0100	≥ 0.0160	≥ 0.0252
Minimum flowrate (Q_1) [m^3/h]:	≥ 0.0063	≥ 0.0100	≥ 0.0158
Ratio Q_3 / Q_1 :	$\leq 400^2$		
Ratio Q_2 / Q_1 :	1.6		
Ratio Q_4 / Q_3 :	1.25		
Accuracy class:	2		
Maximum permissible error for the lower flowrate zone (MPE _l):	$\pm 5\%$		
Maximum permissible error for the upper flowrate zone (MPE _u):	$\pm 2\%$ for water having a temperature $\leq 30\text{ }^\circ\text{C}$ $\pm 3\%$ for water having a temperature $> 30\text{ }^\circ\text{C}$		
Temperature class:	T30 and T50		
Water pressure classes:	MAP 16		
Pressure-loss classes:	ΔP 63		
Indicating range [m^3]:	99 999		

Resolution of the indicating device [m ³]:	0.00002		
Resolution of the device for the rapid testing [pulse/L]:	71.185	40.264	26.745
Flow profile sensitivity classes:	U0 D0		
Orientation limitation:	Arbitrary orientation		
Length L [mm]:	110 - 190	154 - 190	168 - 260
Connection type– Screw thread size:	G¾B or G¾B or G1B	G1B or G1¼B	G1¼B or G1½B
Reed switch power supply (U_{max} / I_{max}):	max. 24 V / 0.01 A		
Reed switch K-factor [impulse / L]:	1, 0.1, 0.01 and 0.001		
Inductive K-factor [impulse/L]:	1		

Basic technical data of water meters type SV-RTK DN32 to DN40:

Nominal diameter (DN) [mm]:	32	40
Overload flowrate (Q_4) [m ³ /h]:	≤ 12.5	≤ 20.0
Permanent flowrate (Q_3) [m ³ /h]:	≤ 10.0 ¹	≤ 16.0 ¹
Transitional flowrate (Q_2) [m ³ /h]:	≥ 0.040	≥ 0.064
Minimum flowrate (Q_1) [m ³ /h]:	≥ 0.025	≥ 0.040
Ratio Q_3 / Q_1 :	≤ 400 ²	
Ratio Q_2 / Q_1 :	1.6	
Ratio Q_4 / Q_3 :	1.25	
Accuracy class:	2	
Maximum permissible error for the lower flowrate zone (MPE _l):	± 5 %	
Maximum permissible error for the upper flowrate zone (MPE _u):	± 2 % for water having a temperature ≤ 30 °C ± 3 % for water having a temperature > 30 °C	
Temperature class:	T30 and T50	
Water pressure classes:	MAP 16	
Pressure-loss classes:	ΔP 63	
Indicating range [m ³]:	99 999	
Resolution of the indicating device [m ³]:	0.00002	
Resolution of the device for the rapid testing [pulse/L]:	13.2	4.941
Flow profile sensitivity classes:	U0 D0	
Orientation limitation:	Arbitrary orientation	
Length L [mm]:	260	300
Connection type– Screw thread size:	G1½B	G2B
Reed switch power supply (U_{max} / I_{max}):	max. 24 V / 0.01 A	
Reed switch K-factor [impulse / L]:	1, 0.1, 0.01 and 0.001	
Inductive K-factor [impulse/L]:	1	0.1 or 1

¹ The value of Q_3 shall be chosen from the R5 line of ISO 3:1973.

² The ratio Q_3 / Q_1 shall be chosen from the R10 line from ISO 3:1973 and this value shall be higher than 10.

3. Test

Technical tests of the water meters type SV-RTK were performed in compliance with the International Recommendation OIML R 49 Edition 2006 (E) with conformity to EN 14154-1:2005+A2:2011, Test Reports No. 6015-PT-P0001-11 from 4 January 2011, No. 6015-PT-P0142-11 from 21 November 2011 and No. 6015-PT-P0040-13 from 15 November 2013, No. 6015-PT-P0005-14 from 4 February 2014 and Test Report No. 6015-PT-P0044-15.

4. The measuring device data

The water meters type SV-RTK shall be clearly and indelibly marked with the following information:

- The “CE” marking and supplementary metrology marking
- Number of EC-type examination certificate
- Manufacturer’s mark and name and postal address
- Year of manufacture (last two digit)



- Serial number (as near as possible to the indicating device)
- Measuring device type
- Unit of measurement (m^3)
- Accuracy class 2
- Numerical value Q_3 in m^3/h ($Q_3 \times \times$)
- The ratio Q_3 / Q_1 , ($R \times \times$)
- The temperature class ($T \times \times$)
- The maximum admissible pressure (MAP $\times \times$)
- The pressure loss class ($\Delta P \times \times$)
- Classes on sensitivity to irregularities in velocity field ($U \times D \times$)
- Direction of flow arrow on both sides of the meter body

There are additional data required if the water meter is equipped with impulse transmitter:

- Output signals for ancillary devices (type / levels)
- External power supply requirements (voltage – frequency)

5. Sealing

The connection of water meter body and brass head ring has to be sealed on water meters types SV-RTK (E3), SV-RTK (E4) body dimensions DN32 and DN40 and SV-RTK (E6) (Figure 1 and Figure 6).

The connection of water meter body and indicating device has to be sealed by clamp on plastic cover on water meters types SV-RTK (E4) (Figure 2, Figure 4 and Figure 5) and SV-RTK (E8) (Figure 7). This plastic cover has to be identified by safeguarding marks .

The connection of water meter body and plastic camp on cover has to be sealed by a wire with metallic or plastic seal on water meters type SV-RTK (E4) body dimensions DN32 and DN40 (Figure 3). Optionally this sealing can also be applied for DN15 to DN25. Optionally the meters can be equipped with a safety pin between the dial window and the dial plate to indicate a rough treatment of the meter.

The connection of water meter body and reed impulse transmitter or inductive sensor has to be sealed, if equipped.



Figure 1: The water meter type SV-RTK (E3) – view and sealing:



Figure 2: The water meter type SV-RTK (E4) – view and sealing:

a) with flat dial



b) with an inclined dial:



Figure 3: The water meter type SV-RTK (E4) – view and sealing:



Figure 4: The water meter type SV-RTK (E4) with Super Dry Register (Copper Can) – view and sealing:



Figure 5: The water meter type SV-RTK (E4) with plastic body – view and sealing:



Figure 6: The water meter type SV-RTK (E6) – view and sealing:



Figure 7: The water meter type SV-RTK (E8) DN 15 with plastic body – view and sealing:



Figure 8: The dial plate of the water meter type SV-RTK with register 5+4. Variant with inductive pointer or magnetic pointer is also possible.

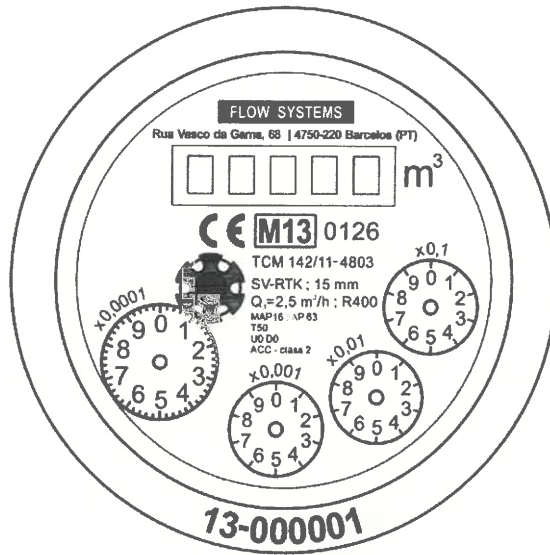


Figure 9: The dial plate of the water meter type SV-RTK with register 7+2 and placing of safeguarding marks. Variant with inductive pointer or magnetic pointer is also possible.

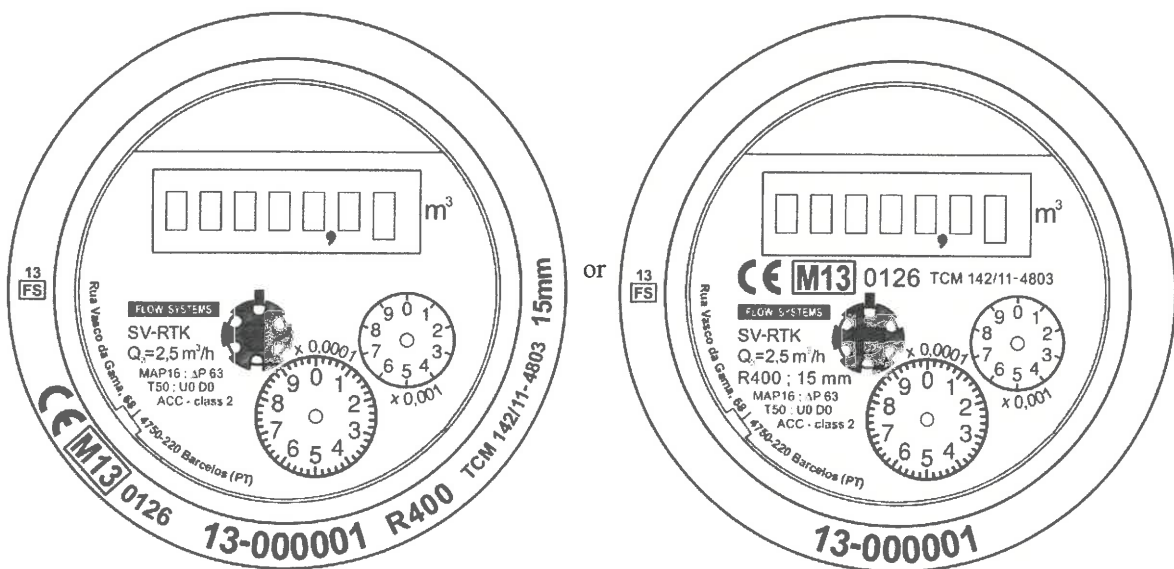


Figure 10: The dial plate of the water meter type SV-RTK with register 8+1 and placing of safeguarding marks. Variant with inductive pointer or magnetic pointer is also possible.

