Czech Metrology Institute
Notified Body No. 1383
Okružní 31, 638 00 Brno, Czech Republic
tel. +420 545 555 111, fax +420 545 222 728
www.cmi.cz

V 3112

EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/11 - 4803

Addition 8

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

In accordance: with Directive 2014/32/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.).

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

For: water meter - volumetric, dry dial

Type: SV-RTK

Accuracy class: 2

Temperature class: T30 and T50

Valid until: 5 January 2031

Document No: 0115-CS-A001-11

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

Date of issue: 7 December 2020

Certificate approved by:

Český metrologický institut

RNDr. Pavel Klenovský

1 Characteristics of instrument

The 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 2014/32/EU of the European Parliament and of the Council of the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.), 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 cover.
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 cover. The indicating devices of DN15 can be designated for flat or an inclined reading.
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 cover.
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 numbered rollers with five drums and four rotary pointers, or eight drums and one rotary pointer. There is star wheel with six arms which can be used for rapid testing in mechanical indicating device. 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 water meters can be equipped by inductive sensor which was not part of this certification.
The water meters type SV-RTK shall be installed to operate in arbitrary positions with indicating device positioned at the top or side.

2 Main characteristics

Basic technical data of water meters type SV-RTK:

Manufacturer:	Flow Systems				
Model number:	SV-RTK				
Nominal diameter:	*15 / 20*	*20 / 25*	*25 / 32*	*32*	*40*
Type details:					
Q_1 [m³/h]:	flowrates are shown in Table *Basic metrological data (flowrates)*				
Q_2 [m³/h]:					
Q_3 [m3/h]:					
Q_4 [m³/h]:					
Q_3/Q_1:	800*, 630*, 500, 400, 315, 250, 200, 160, 125, 100, 80; 63; 50; 40 for any position	800*, 630*, 500*, 400, 315, 250, 200, 160, 125, 100, 80; 63; 50; 40 for any position	400, 315, 250, 200, 160, 125, 100, 80; 63; 50; 40 for any position	400, 315, 250, 200, 160, 125, 100, 80; 63; 50; 40 for any position	400, 315, 250, 200, 160, 125, 100, 80; 63; 50; 40 for any position
Q_2/Q_1:	1.6				

Q_4/Q_3:	1.25				
Measuring principle:	volumetric				
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 or T50				
Water pressure class:	MAP 16				
Pressure loss class:	*ΔP63*				
Maximum admissible temperature [°C]:	50				
Maximum admissible pressure [MPa]:	1.6				
Orientation limitation:	arbitrary positions with indicating device positioned at the top or side				
Indicating range [m^3]:	*99 999*				
Resolution of the indicating device [m^3]:	0.00002				
Resolution of the device for rapid testing [m^3]:	71.185	40.264	26.745	13.2	4.941
EUT testing requirements (OIML R 49-2:2013, 8.1.8):					
Category:	Positive displacement meters and turbine water meters				
Case:	A				
Installation details:					
Connection type (screw thread):	G¾B or G⅞B or G1B	G1B or G1¼B	G1¼B or G1½B	G1½B	G2B
The installation sensitivity class:	U0D0				
Minimum straight length of inlet pipe [mm]:	0				
Minimum straight length of outlet pipe [mm]:	0				
Flow conditioner (details if required):	No				
Mounting:	in line meter				
Length [mm]:	110 - 190	154 - 190	168 - 260	260	300
Reed switch power supply (U_{max} / I_{max}):	Max. 24V / 0,01A				
Reed switch K-factor (impulse / L):	1, 0.1, 0.01 and 0.001				
Inductive K- factor (impulse / L)	1				0.1 or 1

* available for E4 variant only

Basic metrological data (flowrates)

Manufacturer:	FLOW SYSTEMS Rua Vasco da Gama, 68													
Model number:	SV RTK													
Nominal diameter:	15 / 20													
Type details:														
Q_1 [m^3/h]:	0.00313	0.00397	0.005	0.0063	0.008	0.010	0.0125	0.0156	0.020	0.025	0.0313	0.0397	0.050	0.0625
Q_2 [m^3/h]:	0.005	0.00635	0.008	0.010	0.013	0.016	0.020	0.025	0.032	0.040	0.050	0.0635	0.080	0.100
Q_3 [m^3/h]:	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Q_4 [m^3/h]:	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125	3.125
Q_3/Q_1:	800*	630*	500	400	315	250	200	160	125	100	80	63	50	40

* available for E4 variant only

Manufacturer:	FLOW SYSTEMS Rua Vasco da Gama, 68													
Model number:	SV RTK													
Nominal diameter:	20 / 25													
Type details:														
Q_1 [m³/h]:	0.005	0.00635	0.008	0.010	0.0127	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.100
Q_2 [m³/h]:	0.008	0.0102	0.0128	0.016	0.0203	0.0256	0.032	0.040	0.0512	0.064	0.080	0.102	0.128	0.160
Q_3 [m³/h]:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Q_4 [m³/h]:	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Q_3/Q_1:	800*	630*	500*	400	315	250	200	160	125	100	80	63	50	40

* available for E4 variant only

Manufacturer:	FLOW SYSTEMS Rua Vasco da Gama, 68										
Model number:	SV RTK										
Nominal diameter:	25 / 32										
Type details:											
Q_1 [m³/h]:	0.0158	0.020	0.0252	0.0315	0.0394	0.0504	0.063	0.0788	0.100	0.126	0.1575
Q_2 [m³/h]:	0.0252	0.032	0.0403	0.0504	0.063	0.0806	0.1008	0.0126	0.160	0.2016	0.252
Q_3 [m³/h]:	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Q_4 [m³/h]:	7.875	7.875	7.875	7.875	7.875	7.875	7.875	7.875	7.875	7.875	7.875
Q_3/Q_1:	400	315	250	200	160	125	100	80	63	50	40

Manufacturer:	FLOW SYSTEMS Rua Vasco da Gama, 68										
Model number:	SV RTK										
Nominal diameter:	32										
Type details:											
Q_1 [m³/h]:	0.025	0.0317	0.040	0.050	0.0625	0.080	0.100	0.125	0.1587	0.200	0.250
Q_2 [m³/h]:	0.040	0.0508	0.064	0.080	0.100	0.128	0.160	0.200	0.254	0.320	0.400
Q_3 [m³/h]:	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Q_4 [m³/h]:	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Q_3/Q_1:	400	315	250	200	160	125	100	80	63	50	40

Manufacturer:	FLOW SYSTEMS Rua Vasco da Gama, 68										
Model number:	SV RTK										
Nominal diameter:	40										
Type details:											
Q_1 [m³/h]:	0.040	0.0508	0.064	0.080	0.100	0.128	0.160	0.200	0.254	0.320	0.400
Q_2 [m³/h]:	0.064	0.0813	0.1024	0.128	0.160	0.2048	0.256	0.320	0.4063	0.512	0.640
Q_3 [m³/h]:	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Q_4 [m³/h]:	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Q_3/Q_1:	400	315	250	200	160	125	100	80	63	50	40

3 Tests

Technical tests of the water meters type SV-RTK were performed in compliance with the International Recommendation OIML R 49 Edition 2013 and ISO 4064:2017, Test reports No. 6015-PT-P0056-20, No. 6015-PT-P0040-19 and Test report No. 6015-PT-P0008-19 with consideration of issued Test Reports No. 6015-PT-P0001-11, No. 6015-PT-P0142-11, No. 6015-PT-P0040-13, No. 6015-PT-P0005-14 and No. 6015-PT-P0044-15.

4 Conformity marks and inscription

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

- Water meter type
- Unit of measurement (m^3)
- Numerical value Q_3 in m^3/h (Q_3 ×.×) and the ratio Q_3/Q_1,
- EU-type examination certificate number
- Manufacturer´s name, registered trade name or registered trade mark
- Post address of manufacturer
- Year of manufacture, two last digits of the year of manufacture, or the month and year of manufacture
- Serial number (as near as possible to the indicating device)
- Direction of flow, by means of an arrow (shown on both sides of the body or on one side only provided the direction of flow arrow is easily visible under all circumstances)
- Maximum admissible pressure (MAP ××)
- The temperature class (T××)
- The pressure loss class (ΔP ××)
- The installation sensitivity class (Ux Dx)
- CE marking and metrology marking in line with the Directive 2014/32/EU

These markings shall be visible without dismantling the water meter after the instrument has been placed on the market or put into use. Examples are in Figure 8, Figure 9 and Figure 10.

5 Additional specifications

The water meters type SV-RTK shall be put onto the market in line with the procedure of conformity assessment according to the Annex D or F of the Directive 2014/32/EU as well as in compliance with the technical description of this report and shall be tested in accordance with the requirements determined in EN ISO 4064-1:2017, respectively OIML R 49-1:2013.

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure by the D or F Annexes of the Directive 2014/32/EU, respectively.

6 Ensuring the integrity of the instruments

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.

7 Drawing of the instrument

Water meters type SV-RTK are manufactured according to the technical documentation of manufacturer. Technical documentation contains following drawings:

Document reference	Date	Brief description
ZN1.632.009 010 019	12/2010	SVK-RTK(E3)
ZN1.632.066 080	12/2010	SVK-RTK(E4) with Copper Can Calculator
ZN1.632.015 022 025	12/2010	SVK-RTK(E4)
ZN1.632.087 088	12/2010	SVK-RTK(E6)
ZN1.632.300	28.1.2014	Standard Totalizer
ZN1.632.301	28.1.2014	Inclined Totalizer
ZN1.632.251 252	10/2015	SVK-RTK(E8)

History of additions

Addition No.	Description
Addition 0	Issuing certificate
Addition 1	Inclusion of additional thread dimensions for DN 15 and DN 20
Addition 2	Inclusion of nominal diameters DN32 and DN40
Addition 3	Inclusion of inclined version totalizer
Addition 4	Inclusion of SV-RTK(E8)
Addition 5	Revision according to OIML R49:2013 and ISO 4064:2017 DN15 – R500
Addition 7	Inclusion of R630, R800 for DN15/20 size and R500, R630, R800 for DN20/25 size
Addition 8	Prolonging the certificate

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 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.

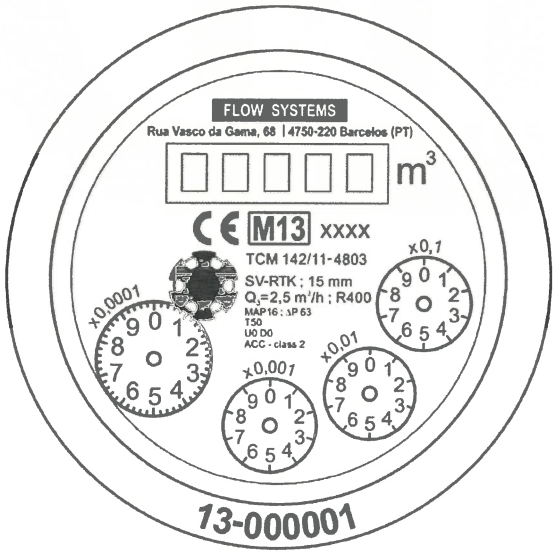

Figure 9: The dial plate of the water meter type SV-RTK with register 7+2 and placing of safeguarding marks. Variant with inductive pointer or magnetic pointer is also possible.

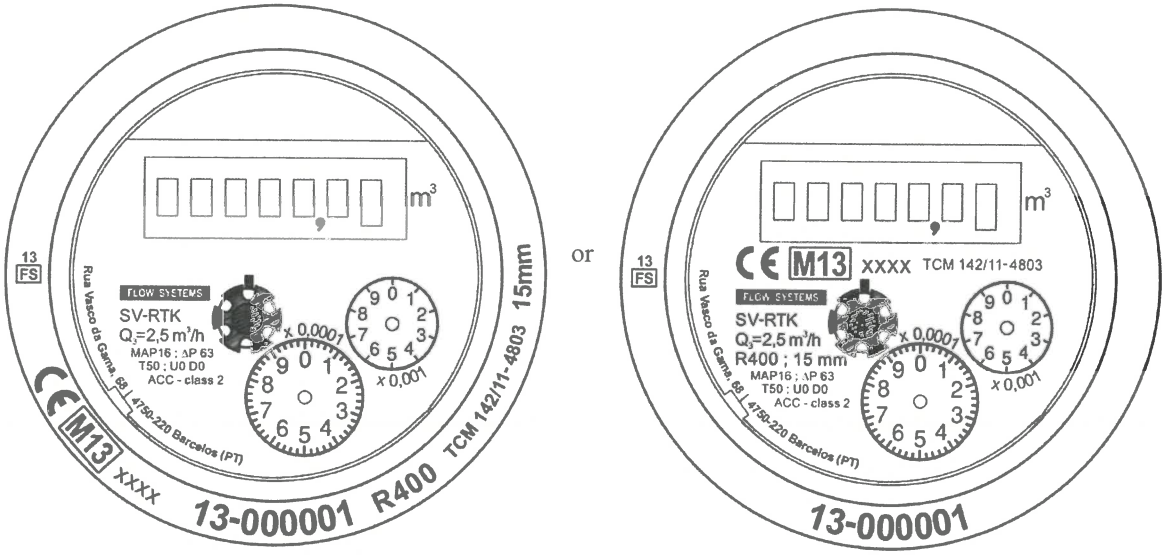

Figure 10: The dial plate of the water meter type SV-RTK with register 8+1 and placing of safeguarding marks. Variant with inductive pointer or magnetic pointer is also possible.