



# EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/16 - 5435

## Addition 2

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

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**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:** APATOR POWOGAZ S.A.  
Jaryszki 1c  
62-023 Žerniki  
Poland

**For:** flow sensor for thermal energy meters – mechanical  
type: JS 90-XX-NC, JS 90-XX-NCP, JS130-XX-NC, JS130-XX-NCP

Accuracy class: 3  
temperature range: 5 °C ... +55 °C  
mechanical environment class: M1

**Valid until:** 15 December 2026

**Document No:** 0511-CS-A042-16

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

**Date of issue:** 29 April 2022

**Certificate approved by:**



RNDr. Pavel Klenovský

## 1 Characteristics of instrument

The single jet, mechanical flow sensors for thermal energy meters JS 90-XX-NC, NCP, JS130-XX-NC, NCP with nominal flowrates of: 0,6 m<sup>3</sup>/h, 1,0 m<sup>3</sup>/h, 1,5 m<sup>3</sup>/h, 2,5 m<sup>3</sup>/h, 3,5 m<sup>3</sup>/h, 6 m<sup>3</sup>/h, 10 m<sup>3</sup>/h are sub-assemblies for thermal energy meters that are an instrument designed to measure the thermal energy which, in a thermal energy exchange circuit, is given up by a liquid call the thermal energy-conveying liquid in the sense of the Directive of the European Parliament and of the Council no. 2014/32/EC of measuring instruments, as amended.

The flow sensor type JS90-XX-NC, NCP with nominal flowrates of 0,6 m<sup>3</sup>/h, 1,0 m<sup>3</sup>/h, 1,5 m<sup>3</sup>/h, 2,5 m<sup>3</sup>/h and JS130-XX-NC, NCP with nominal flowrates of 3,5 m<sup>3</sup>/h, 6 m<sup>3</sup>/h, 10 m<sup>3</sup>/h consist of a wet measuring section and dry mechanical indicating device. Water flows in the measuring section and rotates the vane wheel of transducer. The rotation is transmitting by a magnetic clutch to the system of gear wheels to register. Flow sensors may be equipped with units that improve their resistance to external magnetic field. The register consists of four pointers and a fives rollers or one pointer and eight rollers. The measuring section and dry mechanical indicating device are connected to meter body by retaining ring or by a shield of counting mechanism.

The adjustment of the flow sensor is executed by turn of sealing plate with ribs. The flow sensor shall be installed to operate in horizontal or vertical position.

There is version NC with a reed contact pulse transmitter and NCP with socket pre-equipped for later installation of pulse transmitter or remote reading devices – radio module. (Radio module is not covered by this certification). There is a magnet on one of the pointers in the counting mechanism in the both version NC and NCP. There is also the performance of the flow sensor to the mechanism of counting the degree of protection IP68 as well as NC or NCP.

In the version adapted for fitting the radio or remote meter reading devices on one of the pointers a magnet has been suited to fit a radio device for wireless reading or a remote meter reading device.

## 2 Main characteristics

Basic technical data of flow sensors type JS90:

Flow sensor type:			-	JS90-0,6-NC JS90-0,6- NCP	JS90-1,0-NC JS90-1,0-NCP	JS90 -1,5-NC JS90 -1,5-NCP JS90-1,5-G1-NC JS90-1,5-G1- NCP	JS90 -2,5-NC JS90 -2,5- NCP
Nominal diameter:	DN	mm		15	15	15 / 20	20
Accuracy class:			-	3			
The lower limit of flow – rate:	H	$q_i$	dm <sup>3</sup> /h	12	20	30	50
	V			24	40	60	100
The permanent flow – rate:		$q_p$	m <sup>3</sup> /h	0.6	1.0	1.5	2.5
The upper limit of flow – rate:		$q_s$	m <sup>3</sup> /h	1.2	2.0	3.0	5.0
Maximum admissible working pressure (PS):			bar	16			
Nominal pressure:			-	PN16			
Maximum pressure loss at $q_p$ ( $\Delta P$ ):			bar	0.25			
Maximum admissible temperature:			°C	90			
Limits of temperature range ( $\Theta_{min}$ ÷ $\Theta_{max}$ ):			°C	0.1 ÷ 90			
Minimum length of straight pipe before/after flow sensor:			-	0			
Liquid specification:			-	Water			
Direction of flow:				One direction			
Orientation limitation:			-	H, V			
Connection type: Screw thread: Total length [ mm ]:	G	“		G <sup>3/4</sup>	G <sup>3/4</sup>	G <sup>3/4</sup> , G <sup>7/8</sup> / G1	G 1
	L	mm		110, 105, 115, 80	110, 105, 115, 80	110,105, 115,80 115,130	115,130
Weight			kg	0.49	0.49	0.49 / 0.56	0.58
Ratio $q_p / q_i$ :	H	-		50			
Ratio $q_p / q_i$ :	V	-		25			

Maximum permissible error (MPE):	$E_f$	%	$E_f = \pm(3 + 0,05 q_p/q)$ but not more than $\pm 5\%$ , class 3
Indicating range:		$m^3$	99 999
Resolution of the indicating device:		$dm^3$	0.05
Environmental classification ( EN-1434-1:2015, p. 10.2 )			Class A - Ambient temperature: (+5 to +55) °C - Low level humidity conditions - Normal electrical and electromagnetic conditions - Low level mechanical conditions
Mechanical classification ( EN 1434-1:2015, p. 10.5 )			Class M1

## Interface

Reed contact K-factor	$dm^3 / imp.$	0.25; 0.5; 1; 2.5; 5; 10; 25; 50; 100; 250; 500; 1000
Pulse output device class: (EN 1434-2:2015, p. 8.2.3)	-	Class OA "OFF"
Reed contact power supply ( $U_{max} / I_{max}$ ): (EN 1434-2:2015, p. 8.2.4)		Max. 24 V / 0.1 A

## Basic technical data of flow sensors type JS130:

Flow sensor type:			JS130-3,5-NC JS130-3,5-NCP	JS130 -6-NC JS130 -6-NCP JS130-6-G1 <sup>1</sup> / <sub>4</sub> -NC JS130-6-G1 <sup>1</sup> / <sub>4</sub> -NCP	JS130 -10-NC JS130 -10-NCP
Nominal diameter:	DN	mm	25	25 / 32	40
Accuracy class:			3		
The lower limit of flow – rate:	$\frac{H}{V}$	$q_i$	$dm^3/h$	70 350	120 600 200 1000
The permanent flow – rate:		$q_p$	$m^3/h$	3.5	6 10
The upper limit of flow – rate:		$q_s$	$m^3/h$	7	12 20
Maximum admissible working pressure(PS):		bar	16		
Nominal pressure:			PN16		
Maximum pressure loss at $q_p$ ( $\Delta P$ ):		bar	0.25		
Maximum admissible temperature:		°C	130		
Limits of temperature range ( $\ominus_{min} \div \ominus_{max}$ ):		°C	0.1 $\div$ 130		
Minimum length of straight pipe before/after flow sensor:			0		
Liquid specification:			Water		
Direction of flow:			One direction		
Orientation limitation:			H, V		
Connection type: Screw thread:	G	"	G1 <sup>1</sup> / <sub>4</sub>	G1 <sup>1</sup> / <sub>4</sub> / G <sup>1</sup> / <sub>2</sub>	G 2
Total length [ mm ]:	L	mm	165, 190, 260	165, 260	300
Weight		kg	1.9 / 2 / 2.25	2.15 / 2.45	2.7
Ratio $q_p / q_i$ :	H	-	50		
Ratio $q_p / q_i$ :	V	-	10		
Maximum permissible error (MPE):	$E_f$	%	$E_f = \pm(3 + 0,05 q_p/q)$ but not more than $\pm 5\%$ , class 3		
Indicating range:		$m^3$	99 999		
Resolution of the indicating device:		$dm^3$	0.05		
Environmental classification ( EN-1434-1:2015, p. 10.2 )			Class A - Ambient temperature: (+5 to +55) °C - Low level humidity conditions - Normal electrical and electromagnetic conditions - Low level mechanical conditions		
Mechanical classification ( EN 1434-1:2015, p. 10.5 )			Class M1		

**Interface:**

Reed contact K-factor	dm <sup>3</sup> / imp.	0.25; 0.5; 1; 2.5; 5; 10; 25; 50; 100; 250; 500; 1000
Pulse output device class: (EN 1434-2:2015, p. 8.2.3)	-	Class OA "OFF"
Reed contact power supply (U <sub>max</sub> / I <sub>max</sub> ): (EN 1434-2:2015, p. 8.2.4)		Max. 24 V / 0.1 A

**3 Tests**

Technical tests of the JS90-XX-NC, NCP and JS130-XX-NC, NCP flow sensors were performed in compliance with the International Recommendation OIML R 75 Edition 2006 (E) with conformity to EN 1434:2015, Test Reports No. 6015-PT-P0037-16 and 6015-PT-P0054-18.

**4 Conformity marks and inscription:**

The flow sensors type JS90-XX-NC, NCP and JS130-XX-NC, NCP shall be clearly and indelibly marked with the following information:

- Manufacturer (including post address)
- Type identification;
- Accuracy class;
- Limits of flow rate ( $q_i$ ,  $q_p$  and  $q_s$ );
- Nominal pressure (PN);
- Maximum pressure lost (pressure loss at  $q_p$ );
- Maximum admissible temperature;
- Limits of temperature ( $\Theta_{\min}$  and  $\Theta_{\max}$ );
- Nominal meter factor (liters / pulse or corresponding factor);
- Year of manufacture;
- The serial number (as near as possible to the indicating device);
- Unit of measurement (m<sup>3</sup>);
- Direction of flow arrow on both sides of the meter body;
- Environmental, mechanical classification
- Number of EU-type examination certificate;
- CE marking and metrology marking in line with the Directive 2014/32/EU

These markings shall be visible without dismantling the flow sensor after the instrument has been placed on the market or put into use. Examples are in Figure 4 and Figure 5.

**5 Additional specifications:**

The flow sensors for thermal energy meters types JS90-XX-NC, NCP and JS130-XX-NC, NCP 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 1434:2015, respectively OIML R 75:2006.

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 flow sensors types JS90-XX-NC, NCP and JS130-XX-NC, NCP meters have to be sealed by connecting the cover of the indicating device to the body using a wire with a lead or plastic seal such that the cover cannot be removed without damaging the seal or the sealing wire or by clamp on the plastic ring connecting the body and cover of register. The plastic ring has to be equipped with safeguarding mark (Figure 3) or leaden/plastic seal (Figure 1). The cover can be removed only destroying plastic ring or damaging safeguarding mark or seal on fastening ring.

The impulse output is sealed to the screw on the upper part of cover

The screw fixing the impulse transmitter to the meter have to be sealed. The location and type of the seal is described in Figure 1.

Alternatively the sealing is realized by embedding of the clamp on cover of the meter to the body of the meter and the cover has to be equipped with safeguarding marks (Figure 1).

### 7 Drawing of the instrument:

The flow sensor types JS90-XX-NC, NCP and JS130-XX-NC, NCP are manufactured according to the technical documentation of manufacturer. Technical documentation contains following drawings:

Document reference	Date	Brief description
9065-040000	16.9.2016	JS90-1,5-NC, body
9007-150000	20.10.2009	JS90-1,5-NC, gears
9007-800800	18.8.2016	JS130-10-NC, dial
9007-810800	8.9.2016	JS130-6-NC, dial
9007-820800	18.8.2016	JS130-3,5-NC, dial
1295-000000	13.7.2018	JS130-3,5-165-NC
1297-000000	13.7.2018	JS130-3,5-NC
1261-000000	13.7.2018	JS130-6-NC
1262-000000	13.7.2018	JS130-6-G11/4-NC
1241-000000	13.7.2018	JS130-10-NC
9210-000000	6.4.2017	JS90-0,6-NC
9200-000000	16.9.2016	JS90-1,0-NC
9065-000000	16.9.2016	JS90-1,5-NC
9105-000000	16.9.2016	JS90-1,5-G1-NC
9085-000000	16.9.2016	JS90-2,5-NC

### History of additions

Addition No.	Description
Addition 0	Issuing certificate
Addition 1	Added plastic seal; revision of certificate
Addition 2	Change of address from Klemensa Janickiego 23/25, 60 542 Poznań to Jaryszki 1c, 62-023 Żemiki

Figure 1: The flow sensor type JS90-XX-NC – sealing by lead, plastic seals or by alternative marks:

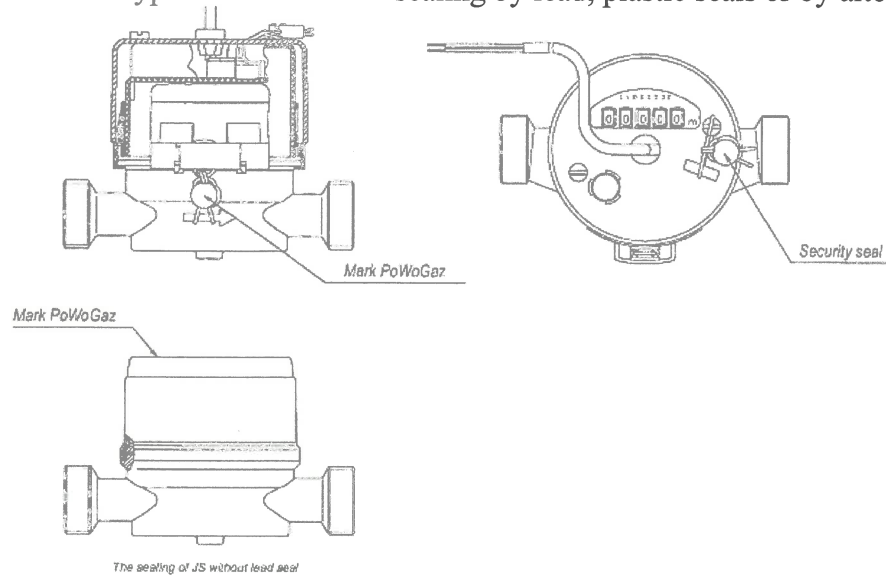


Figure 2: The flow sensor type JS130-XX-NC – sealing:

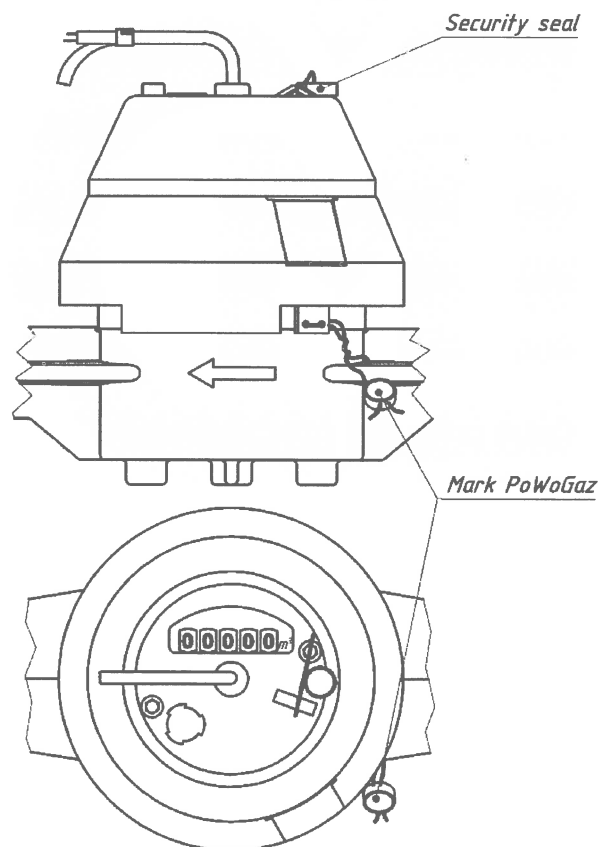


Figure 3: The flow sensor types JS90-XX-NC, NCP and JS130-XX-NC, NCP – alternative sealing:

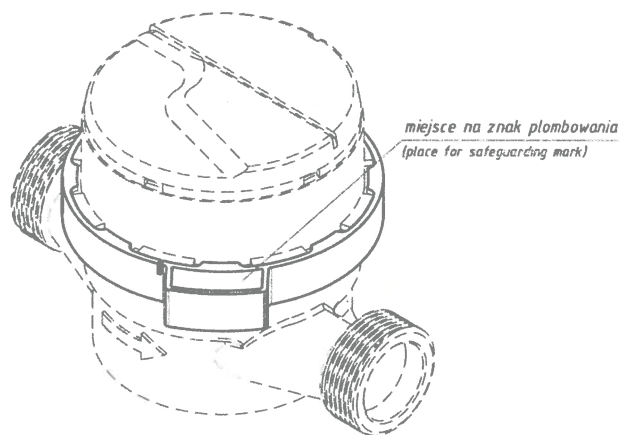


Figure 4: The flow sensor types JS90-XX-NC, NCP and JS130-XX-NC, NCP – data shield of the meter concerning the point 4 of this certificate on the surface side of magnetic shielding:

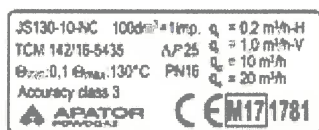


Figure 5: The flow sensor types JS90-XX-NC, NCP and JS130-XX-NC, NCP – an example description of dial of the meter:

