



(1) **EU-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **ICQC 18 ATEX 0406 X**

(4) Equipment: **Vortex Flowmeter EMIS-VIHR 200 models EV-200, EV-200-PPD**

(5) Manufacturer: **EMIS CJSC**

(6) Address: **Lenina Avenue 3, Office 308, Chelyabinsk, 454091, Russia**

(7) This equipment and any acceptable variation, also documents which are specified in the schedule to this certificate.

(8) The certification body ICQC, Notified body No. 2549 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.


The examination and test results are recorded in confidential report no **406/2018/08/ATEX**

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with: **EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-11:2012**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and the construction of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture and supply of this equipment. These are not covered by the certificate

(12) The marking of the equipment or protective system shall include the following:

 **See table 1 in schedule to certificate**

Head of Certification Body:



Sergey Kovalev

Date of issue: 26 October, 2018
 Jurmala, Latvia

(13) **SCHEDULE**

(14) **to EU-TYPE EXAMINATION CERTIFICATE: ICQC 18 ATEX 0406 X**

(15) **Description of Equipment:**

Vortex flow transmitter EMIS VIHR 200 models EV-200 and EV-200-PPD (hereinafter referred to as Flowmeter EV-200) is intended for measuring volume and volume flow rate of liquids, gases (natural, APG, oxygen, air, etc.), saturated and overheated steam, corrosive process under working pressure and temperature; it can be applied for different industries and commercial accounting as a part of gas and steam meters. Flow transmitter of EV-200-PPD configuration can be applied in reservoir pressure maintenance systems, for measuring Cenomanian water and other high-pressure liquids. Flow transmitter can be installed as a part of automatic operating and control systems and local automation schemes.

There are two types of structure of Flowmeter EV-200: integrate (transmitter and flow tube are integrated) and remote types. Ex-proof parameters are the same for both types of Flowmeters.

Flowmeter EV-200 consists of:

- transmitter;
- support bar;
- flow tubes with sensor;
- a kit of additional parts for remote type transmitter.

Transmitter is an explosion-proof cylindrical shape metal body, is sealed by a threaded cap on two sides. There is a threaded hole for support bar (integrated type of Flowmeter) or cable entry plug (remote type) in the bottom part of the body. There are two threaded holes for cable glandes on the side of the body. The set of main boards is installed inside the body, including indication board and optical button board.

Support bar is cylindrical shape metal tube. There is an attachment flange in the bottom part of the Flowmeter's body, and threaded adapter on the top, that is screwed into the transmitter (integrated type) or adapter with cable entry (remote type). There are sensors wires inside of the support bar, amplifier module is placed on the top part.

Flow tubes is a hollow cylinder 15 - 300 millimeters in diameter with bluff body installed in cross-sectional area. Sensor is installed behind the bluff body.

A kit of additional parts for remote type Flowmeters includes a bracket, plug, adapter, armoured cable and two cable entries.

Depending on used electrical circuit, Flowmeter EV-200 has 3 configurations: "Exd", "ExiaB" and "ExiaC".

Depending on the process temperature and flowmeter's configuration, EV-200 has explosion protection marking listed in Table 1.

Table 1. Explosion protection marking of EV-200

Configuration	Process temperature range, °C	Ambient temperature range, °C	Explosion protection marking
"Exd"	from -60/-40 to +70	$-50 \leq T_a \leq +70$	II 2G Ex db [ia Ga] IIC T6 Gb or II 1/2G Ex db [ia Ga] IIC T6 Ga/Gb
	from -60/-40 to +100		II 2G Ex db [ia Ga] IIC T5 Gb or II 1/2G Ex db [ia Ga] IIC T5 Ga/Gb
	from -60/-40 to +130		II 2G Ex db [ia Ga] IIC T4 Gb or II 1/2G Ex db [ia Ga] IIC T4 Ga/Gb
	from -60/-40 to +200		II 2G Ex db [ia Ga] IIC T3 Gb or II 1/2G Ex db [ia Ga] IIC T3 Ga/Gb
	from -60/-40 to +250		II 2G Ex db [ia Ga] IIC T2 Gb or II 1/2G Ex db [ia Ga] IIC T2 Ga/Gb
	from -60/-40 to +320		II 2G Ex db [ia Ga] IIC T1 Gb or II 1/2G Ex db [ia Ga] IIC T1 Ga/Gb
	from -60/-40 to +350		II 2G Ex db [ia Ga] IIC T1 Gb or II 1/2G Ex db [ia Ga] IIC T1 Ga/Gb
"ExiaB"	from -60/-40 to +70	$-50 \leq T_a \leq +70$	II 2G Ex db ia [ia Ga] IIB T6 Gb or II 1/2G Ex db ia [ia Ga] IIB T6 Ga/Gb
	from -60/-40 to +100		II 2G Ex db ia [ia Ga] IIB T5 Gb or II 1/2G Ex db ia [ia Ga] IIB T5 Ga/Gb
	from -60/-40 to +130		II 2G Ex db ia [ia Ga] IIB T4 Gb or II 1/2G Ex db ia [ia Ga] IIB T4 Ga/Gb
	from -60/-40 to +200		II 2G Ex db ia [ia Ga] IIB T3 Gb or II 1/2G Ex db ia [ia Ga] IIB T3 Ga/Gb
	from -60/-40 to +250		II 2G Ex db ia [iaGa] IIB T2 Gb or II 1/2G Ex db ia [ia Ga] IIB T2 Ga/Gb
	from -60/-40 to +320		II 2G Ex db ia [iaGa] IIB T1 Gb or II 1/2G Ex db ia [ia Ga] IIB T1 Ga/Gb
	from -60/-40 to +350		II 2G Ex db ia [ia Ga] IIB T1 Ga/Gb
"ExiaC"	from -60/-40 to +70	$-50 \leq T_a \leq +70$	II 2G Ex db ia [ia Ga] IIC T6 Gb or II 1/2G Ex db ia [ia Ga] IIC T6 Ga/Gb
	from -60/-40 to +100		II 2G Ex db ia [iaGa] IIC T5 Gb or II 1/2G Ex db ia [ia Ga] IIC T5 Ga/Gb
	from -60/-40 to +130		II 2G Ex db ia [iaGa] IIC T4 Gb or II 1/2G Ex db ia [ia Ga] IIC T4 Ga/Gb
	from -60/-40 to +200		II 2G Ex db ia [ia Ga] IIC T3 Gb or II 1/2G Ex db ia [ia Ga] IIC T3 Ga/Gb
	from -60/-40 to +250		II 2G Ex db ia [ia Ga] IIC T2 Gb or II 1/2G Ex db ia [ia Ga] IIC T2 Ga/Gb
	from -60/-40 to +320		II 2G Ex db ia [ia Ga] IIC T1 Gb or II 1/2G Ex db ia [ia Ga] IIC T1 Ga/Gb
	from -60/-40 to +350		II 2G Ex db ia [ia Ga] IIC T1 Ga/Gb

Note 1:

-60°C is the minimum process temperature of special configuration of EV-200; -40°C is the minimum process temperature of special configuration of EV-200-PPD and standard configuration of EV-200.

Note 2:

LCD display operates at following temperature conditions:

- not lower than -50°C for Flowmeter of "Exd" configuration;
- not lower than -30°C for Flowmeter of "ExiaB" and "ExiaC" configuration.

Basic technical characteristics are listed in Table 2.

Table 2 - Basic technical characteristics of Flowmeter EV-200

Parameter	Value
Degree of protection of enclosure (IP)	IP 67
Output signal	4 - 20 mA HART RS-485 MODBUS Frequency/Pulse
1. Circuit Parameters of Flowmeter EV-200, "Exd" configuration	
1.1. Supply circuit (terminal block XT11):	
- nominal voltage;	DC 12...30 V
- maximum voltage U_m .	AC 250 V
1.2. Output Frequency/Pulse circuit (terminal board XT12):	
- nominal voltage;	DC 5...27 V
- input current I_{in} ;	0.1...50 mA
- maximum voltage U_m .	AC 250 V
1.3. Digital output signal circuit RS-485 (terminal board XT13):	
- nominal voltage;	DC 12...30 V
- maximum voltage U_m .	AC 250 V
1.4. Analogue circuit of 4-20mA signal (terminal boards XT14, X9):	
- input current I_{in} ;	4-20 mA
- maximum voltage U_m .	AC 250 V
2. Maximum values of intrinsically safe circuits of Flowmeter EV-200, "ExiaB" and "ExiaC" configurations, only for connection to a certified intrinsically safe circuit Ex ia IIC for Configuration "ExiaC" or Ex ia IIC/IIB for Configuration "ExiaB"	
2.1. Supply circuit (terminal block XT11)	
- maximum input voltage U_i ;	28,0 V
- maximum input current I_i ;	410,0 mA
- maximum input power P_i ;	2,2 W
- maximum internal capacity C_i ;	10,0 nF
- maximum internal inductance L_i .	10,0 μ H
2.2. Output Frequency/Pulse circuit (terminal board XT12)	
- maximum input voltage U_i ;	28,0 V
- maximum input current I_i ;	110,0 mA
- maximum input power P_i ;	0,8 W
- maximum internal capacity C_i ;	10,0 nF
- maximum internal inductance L_i .	10,0 μ H
2.3. Analogue output circuit of 4-20mA signal (terminal boards XT14):	
- maximum input voltage U_i ;	28,0 V
- maximum input current I_i ;	110,0 mA
- maximum input power P_i ;	0,8 W
- maximum internal capacity C_i ;	10,0 nF
- maximum internal inductance L_i .	10,0 μ H
2.4. Digital output signal circuit RS-485 (terminal board XT13):	
- maximum input voltage U_i ;	12,0 V
- maximum input current I_i ;	250,0 mA
- maximum input power P_i ;	0,75 W
- maximum internal capacity C_i ;	0,1 μ F
- maximum internal inductance L_i .	10,0 μ H

Routine tests:

Routine tests according to cl. 11.2 of EN 60079-11 shall be conducted for Exi base board transformer T1 with a test voltage of 1500 V

Routine tests according to cl. 16 of EN 60079-1 shall be conducted for Exd electronic compartment with a test pressure of 1,47 MPa

(16) Descriptive Documents:

Vortex flowmeter EMIS-VIHR 200 Operation manual.

EV-200.000.000.000.00AOM

The drawings are listed in Evaluation report No: 406/2018/08/ATEX

(17) Specific conditions of use:

17.1 Painted transmitters can be the source of electrostatic discharge. Wipe only with wet or antistatic cloth.

17.2. For remote type Flowmeter use heat-resistant cables to connect flow tubes with transmitter.

(18) Essential Health and Safety Requirements:

Met by compliance with the standards mentioned in clause (9).