

TEST REPORT COVER

ExTR Reference Number.....:	H1-70488-0,1,11
Prepared by + signature (ExTL).....:	E. Ranjbar
Reviewed by + signature (ExTL).....:	M. Ghanbariha
Approved by + signature (ExTL).....:	S.M. Mirfalah
Date of issue	February 21, 2026
Ex Testing Laboratory (ExTL).....:	Ex EPIL
Address	Kavosh research city, supa blv, 8th km . karaj-Qazvin freeway , iran.
Applicant's name	Control System Co. (PrismaTech)
Address	PrismaTech Company, 8th Street, Phase II, Payam Special Economic Zone, Mehrshahr, Karaj
Standards	IEC 60079-0:2017, IEC 60079-1:2014, IEC 60079-11:2023
Test procedure.....:	IEC 60079-0:2017, IEC 60079-1:2014, IEC 60079-11:2023
Equipment.....:	Coriolis Flowmeter Transmitter
Model/type reference.....:	PTMT
Code (e.g. Ex II T).....:	Ex db [ia Ga] IIC T6 Gb
Rating	Rated current: Max. 100 mA Rated Voltage: 24VDC (Um = 60VDC) Rated Power: Max. 2.4 W



Manufacturer's name.....:	Control System Co. (PrismaTech)
Address	PrismaTech Company, 8th Street, Phase II, Payam Special Economic Zone, Mehrshahr, Karaj
Trademark	PrismaTech®
Classification of installation and use	Stationary
Ingress protection	IP66/67
ambient temperature range (°C).....	-20°C ≤ Ta ≤ +60°C
General remarks: The test results presented in this Test Report relate only to the item or product tested. ▪ "(Refer to Appendix #)" refers to additional information appended to this document. ▪ "(Refer appended Doc #)" refers to a document table that is linked to this document. ▪ Throughout this document, a point is used as the decimal separator. The technical content of this Ex Test Report shall not be reproduced except in full without the written approval of the Issuing NB and TL. The statement of conformity decision on the measured values is made based on guard band w=U, r=1 (ISO/IEC Guide 98-4). The specific false accept/reject risk is up to 2.5%.	

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هرگونه تکثیر این گزارش به صورت جزئی یا کلی بدون تایید کتبی اپیل ممنوع می باشد. نتایج آزمون‌ها تنها در رابطه با نمونه آزمون شده معتبر است. این گزارش بدون مهر فاقد اعتبار است.

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Copy of Marking Plate:

Manufacturer: Control System Co. (PrismaTech)	Product: Coriolis Flowmeter Transmitter
Type: PTMT	Supply Voltage: Max. 24VDC (Um: 60VDC)
Power Rating: 2.4 W	Rated current: max. 100 mA
Date of production: 20XX	Ex db [ia Ga] IIC T6 Gb
$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +60^{\circ}\text{C}$	
IP: 66	Sr. No.: XXXXXXXXXX
Control System Co. (PrismaTech) PrismaTech Company, 8th Street, Phase II, Payam Special Economic Zone, Mehrshahr, Karaj Tel: +98(26) 34095091-3 Fax: +98(26) 34095094	

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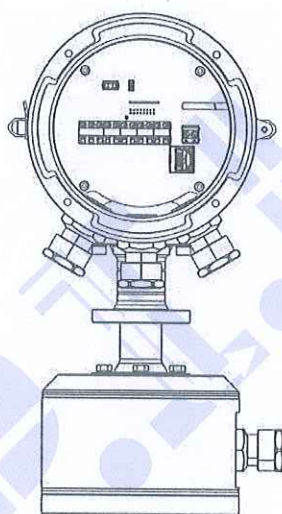
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General product information:

The PrismaTech Coriolis Transmitter Unit is the signal processing and control component of the PTMas-EX flowmeter system. It receives measurement signals from the sensor and performs digital signal processing to calculate mass flow rate, volumetric flow rate, density, temperature, and totalized values.

The transmitter enclosure is certified as Ex db IIC Gb and provides associated intrinsically safe outputs for connection to the remote sensor ([ia Ga]). It is suitable for installation in Zone 1 and Zone 2 hazardous gas atmospheres. The flameproof enclosure ensures containment of any internal ignition and prevents propagation to the surrounding environment.



Sketch of products

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TEST REPORT
IEC 60079-0:2017
Explosive atmospheres – Part 0:
Equipment – General requirements

ExTR Reference Number.....:	H1-70488-0
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Address	PrismaTech Company, 8th Street, Phase II, Payam Special Economic Zone, Mehrshahr, Karaj
Standard.....	IEC 60079-0:2017
Test procedure.....	IEC 60079-0:2017



Possible test case verdicts:

- test case does not apply to the test item:N/A
- test item does meet the requirement:Pass

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
1	Scope		
2	Normative references		
3	Terms and definitions		
4	Equipment grouping		
4.1	General	The equipment is intended for Group II.	Pass
4.2	Group I	The equipment is not intended for Group I.	N/A
4.3	Group II	The equipment is intended for Group II.	Pass
4.4	Group III	The equipment is intended for Group II.	N/A
4.5	Equipment for a particular explosive gas atmosphere	The equipment is not tested and verified for a particular explosive gas atmosphere.	N/A
5	Temperatures		
5.1	Environmental influences		
5.1.1	Ambient temperature	The equipment is intended for use in the ambient temperature range of -20°C to +60°C.	Pass
5.1.2	External source of heating or cooling	The equipment is not intended to be physically connected to or influenced by a separate external source of heating or cooling.	N/A
5.2	Service temperature	Refer to 26.5.1.	Pass

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
5.3	Maximum surface temperature		
5.3.1	Determination of maximum surface temperature	The selected maximum surface temperatures are T6. Refer to 26.5.1 for details.	Pass
5.3.2	Limitation of maximum surface temperature		
5.3.2.1	Group I electrical equipment	The equipment is not intended for Group I.	N/A
5.3.2.2	Group II electrical equipment	Refer to 5.3.1.	Pass
5.3.2.3	Group III electrical equipment		
5.3.2.3.1	Maximum surface temperature for EPL Da	The equipment is not intended for group III.	N/A
5.3.2.3.2	Maximum surface temperature for EPL Db	The equipment is not intended for Group III.	N/A
5.3.2.3.3	Maximum surface temperature determined without a layer of dust for EPL Dc	The equipment is not intended for group III.	N/A
5.3.3	Small component temperature for Group I or Group II electrical equipment	The equipment is not considered a small component.	N/A
5.3.4	Component temperature of smooth surfaces for Group I or Group II electrical equipment	Not relevant for this case.	N/A
6	Requirements for all electrical equipment		
6.1	General	The balance of this report describes compliance with Clause 6.1. Compliance with 6.1 is the manufacturer's responsibility and is so indicated by marking the equipment enclosure in accordance with Clause 29 and by stating the basis of compliance in the documentation according to Clause 28.	Pass

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
6.2	Mechanical strength of equipment	The equipment described in this report meets the requirements of Clause 26.4. The equipment samples were subjected to the related tests of 26.4 and the results were satisfactory.	Pass
6.3	Opening times	The equipment is marked with the enclosure opening marking, "WARNING – DO NOT OPEN WHEN ENERGIZED", as required by item d) of 29.12.	Pass
6.4	Circulating currents in enclosures (e.g. of large electric machines)	No circulation current is possible due to construction	N/A
6.5	Gasket retention	The O-ring/gaskets used in components meet the requirements for mechanical retention. For details see manufacturer's drawings.	Pass
6.6	Electromagnetic and ultrasonic energy radiating equipment		
6.6.1	General	The equipment is not a source of these types of energy.	N/A
6.6.2	Radio frequency sources	Refer to 6.6.1	N/A
6.6.3	Ultrasonic sources	Refer to 6.6.1	N/A
6.6.4	Lasers, luminaires, and other non-divergent continuous wave optical sources	Refer to 6.6.1	N/A
7	Non-metallic enclosures and non-metallic parts of enclosures		
7.1	General		
7.1.1	Applicability	The equipment contains no non-metallic enclosure parts except for the glass, Cement, Epoxy Resin, Gasket and O-ring.	Pass
7.1.2	Specification of materials		

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
7.1.2.1	General	Cement specifications: Manufacturer: Sikasil Model: WS-305 EU Material: Silicone Service temperature: -40°C to +150°C Display cap O-ring specification: Manufactured by M Seals Material: NBR Service temperature: -40 to +100°C Terminal cap Gasket specification: Manufactured by Kerouk company Model: SR70 Material: Silicone rubber Service temperature: -60 to +210°C Glass specifications: Manufacturer: Dongguan Jiameite glass Co., LTD Temperature Resistance: -50°C to +250°C Model: Thermal tempered type Epoxy Resin specifications: Manufacturer: Poly Composite Model: PC127 Material: Epoxy resine Service temperature: -40°C to +180°C For more details see related datasheet.	Pass
7.1.2.2	Plastic materials	Not used.	N/A
7.1.2.3	Elastomers	Refer to 7.1.2.1.	Pass
7.1.2.4	Materials used for cementing	Refer to 7.1.2.1.	Pass

7.2	Thermal endurance		
7.2.1	Tests for thermal endurance	The endurance to heat and cold of the enclosures or parts of enclosures of non-metallic materials was satisfactory (see 26.8 and 26.9).	Pass
7.2.2	Material selection	Refer to 7.1.2.1.	Pass
7.2.3	Alternative qualification of elastomeric sealing O-rings	Alternative qualification of elastomeric sealing O-rings was not used.	N/A

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
7.3	Resistance to ultraviolet light	The equipment does not contain any non-metallic materials which are exposed to UV light in service with regard to this clause.	N/A
7.4	Electrostatic charges on external non-metallic materials		
7.4.1	Applicability	This clause applies to the painted equipment enclosures. The requirements of 7.4 also apply to non-metallic parts which are applied to the external surface of an enclosure.	Pass
7.4.2	Avoidance of a build-up of electrostatic charge for Group I or Group II	The maximum thickness of non-metallic layer is 0.17 mm and is in compliance with table 8 limitation.	Pass
7.4.3	Avoidance of a build-up of electrostatic charge for Group III	The equipment is not intended for Group III.	N/A
7.5	Attached external conductive parts	All accessible metal parts of the component body are connected to ground. After installation, the equipotential bonding shall be considered.	Pass
8	Metallic enclosures and metallic parts of enclosures		
8.1	Material composition	The manufacturer's documents according to Clause 24 provide the material specifications of the equipment parts.	Pass
8.2	Group I	The equipment is not intended to Group I.	N/A
8.3	Group II	The equipment is intended to group II. The equipment materials of construction do not contain, by weight, more than 7.5% in total of magnesium, titanium and zirconium for EPL Gb. See Material analysis reports.	Pass

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
8.4	Group III	The equipment is not intended to group III.	Pass
8.5	Copper Alloys	Not used.	N/A
9	Fasteners		
9.1	General	All equipment entries details including thread form, location and number of entries are specified in the manufacturer's dimensional drawings. Thread size of entries for integral model: three M20×1.5. Thread size of entries for remote model: one M20×1.5. For more details see manufacturer's drawings.	Pass
9.2	Special fasteners	During the assembly of the equipment, four M4×20 retaining bolts were employed to secure the display cap, five M5×20 bolts to fasten the terminal cap, and six M5×20 bolts to fasten the neck transmitter. Refer to manufacturer's drawings.	Pass
9.3	Holes for special fasteners		
9.3.1	Thread engagement	Refer to 9.2.	Pass
9.3.2	Tolerance and clearance	Refer to 9.2.	Pass
9.4	Hexagon socket set screws	Not used.	N/A
10	Interlocking devices	Not relevant.	N/A
11	Bushings	Not used.	N/A
12	(Reserved for future use)		

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
13	Ex Components		
13.1	General	The equipment is not an Ex component, but the manufacturer shall use the suitable Ex d component for cable gland, Stopping plug.	N/A
13.2	Mounting	Refer to 13.1.	N/A
13.3	Internal mounting	Refer to 13.1.	N/A
13.4	External mounting	Refer to 13.1.	N/A
13.5	Ex Component certificate	Refer to 13.1.	N/A
14	Connection facilities		
14.1	General	For connecting to external circuits suitable Ex cable gland with at least IP66 protection shall be used.	Pass
14.2	Type of protection	Refer to 14.1.	Pass
14.3	Creepage and clearance	Not relevant.	N/A
15	Connection facilities for earthing or bonding conductors		
15.1	Equipment requiring earthing or bonding		
15.1.1	Internal earthing	Meet the requirements. Provided on PCB connection. For more details see manufacturer's drawings.	Pass
15.1.2	External bonding	Meet the requirements. Provided on main bodies of enclosures.	Pass

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
15.2	Equipment not requiring earthing	Not relevant.	N/A
15.3	Size of protective earthing conductor connection	Meet the requirements.	Pass
15.4	Size of equipotential bonding conductor connection	Meet the requirements.	Pass
15.5	Protection against corrosion	The earthing connection materials of construction provide suitable protection against corrosion.	Pass
15.6	Secureness of electrical connections	The arrangement of the earthing connection parts provides suitable protection against loosening and twisting.	Pass
15.7	Internal earth continuity plate	Not relevant.	N/A
16	Entries into enclosures		
16.1	General	All equipment entries details including thread form, location and number of entries are specified in the manufacturer's dimensional drawings. Thread size of entries for integral model: three M20×1.5. Thread size of entries for remote model: one M20×1.5. For more details see manufacturer's drawings.	Pass
16.2	Identification of entries	Refer to 16.1.	Pass

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
16.3	Cable glands	The EUT is a not cable gland but suitable certified cable glands shall be used in the EUT entries.	N/A
16.4	Blanking elements	The EUT is not a blanking element but suitable certified blanking elements shall be used in the EUT entries.	N/A
16.5	Thread adapters	Not used.	N/A
16.6	Temperature at branching point and entry point	Not relevant.	N/A
16.7	Electrostatic charges of cable sheaths	This clause contains no requirements.	N/A
17	Supplementary requirements for electric machines		
17.1	General	The equipment is not a rotating machine.	N/A
17.2	Ventilation		
17.2.1	Ventilation openings	Not relevant.	N/A
17.2.2	Materials for external fans	Not relevant.	N/A
17.2.3	Cooling fans of rotating electric machines	Not relevant.	N/A
17.2.3.1	Fans and fan hoods	Not relevant	N/A
17.2.3.2	Construction and mounting of the ventilating systems	Not relevant.	N/A
17.2.3.3	Clearances for the ventilating system	Not relevant.	N/A
17.2.4	Auxiliary motor cooling fans	Not relevant.	N/A
17.2.5	Room ventilating fans		
17.2.5.1	Applicability	Not relevant.	N/A
17.2.5.2	General	Not relevant.	N/A

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
17.2.5.3	Fan and fan hoods	Not relevant.	N/A
17.2.5.4	Construction and mounting	Not relevant.	N/A
17.2.5.5	Clearances for rotating parts	Not relevant.	N/A
17.3	Bearings	Not relevant.	N/A
18	Supplementary requirements for switchgear		
18.1	Flammable dielectric	Not relevant.	N/A
18.2	Disconnectors	Not relevant.	N/A
18.3	Group I – Provisions for locking	Not relevant.	N/A
18.4	Doors and covers	Not relevant.	N/A
19	Reserved for future use		
20	Supplementary requirements for external plugs, socket outlets and connectors for field wiring connection		
20.1	General	Not relevant.	N/A
20.2	Explosive gas atmospheres	Not relevant.	N/A
20.3	Explosive dust atmospheres	Not relevant.	N/A
20.4	Energized plugs	Not relevant.	N/A
21	Supplementary requirements for luminaires		

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
21.1	General	Not relevant.	N/A
21.2	Covers for luminaires of EPL Mb, EPL Gb, or EPL Db	Not relevant.	N/A
21.3	Covers for luminaires of EPL Gc or EPL Dc	Not relevant.	N/A
21.4	Sodium lamps	Not relevant.	N/A
22	Supplementary requirements for caplights and handlights		
22.1	Group I caplights	Not relevant.	N/A
22.2	Group II and Group III caplights and handlights	Not relevant.	N/A
23	Equipment incorporating cells and batteries		
23.1	General	Not used.	N/A
23.2	Interconnection of cells to form batteries	Not used.	N/A
23.3	Cell types	Not used.	N/A
23.4	Cells in a battery	Not used.	N/A
23.5	Ratings of batteries	Not used.	N/A
23.6	Interchangeability	Not used.	N/A

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
23.7	Charging of primary batteries	Not used.	N/A
23.8	Leakage	Not used.	N/A
23.9	Connections	Not used.	N/A
23.10	Orientation	Not used.	N/A
23.11	Replacement of cells or batteries	Not used.	N/A
23.12	Replaceable battery pack	Not used.	N/A
24	Documentation	The manufacturer provides a full and correct specification of the safety aspects of the electrical equipment. See drawings and other technical files.	Pass
25	Compliance of prototype or sample with documents	The samples of the equipment submitted by the manufacturer complied with the definitive documents referred to in Clause 24.	Pass
26	Type tests		
26.1	General	All necessary tests contained in this standard were conducted and recorded. Full justifications have been provided for omitted tests.	Pass
26.2	Test configuration	Each test on the equipment test samples was conducted under the conditions considered to be the most unfavorable.	Pass

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
26.3	Tests in explosive test mixtures	The required tests from EN 60079-1 and EN IEC 60079-11 and EN IEC 60079-26 have been addressed. See EN 60079-1, EN IEC 60079-11 and ENIEC 60079-26 assessment.	Pass

26.4	Tests of enclosures		
26.4.1	Order of tests		
26.4.1.1	Metallic enclosures, metallic parts of enclosures and glass parts of enclosures	Tests on the equipment were conducted in the order as per this clause.	Pass
26.4.1.2	Non-metallic enclosures or non-metallic parts of enclosures		
26.4.1.2.1	General	Tests for non-metallic enclosures or non-metallic parts of enclosures were performed according the requirements of this standard.	Pass
26.4.1.2.2	Group I equipment	The equipment is not intended to Group I.	N/A
26.4.1.2.3	Group II and Group III equipment	Thermal endurance to heat/cold, Impact and IP tests have been performed.	Pass
26.4.2	Resistance to impact	The metallic and glass surfaces of the equipment enclosures satisfied the 70 cm to body of enclosure and 40 cm to glass impact tests. Refer to relevant test record.	Pass
26.4.3	Drop test	The equipment is not intended to be hand held.	N/A
26.4.4	Acceptance criteria	The impact tests did not produce damage that would invalidate the component Type of Protection.	Pass
26.4.5	Degree of protection (IP) by enclosures		
26.4.5.1	Test procedure	The equipment enclosures were verified for an IP66 ingress rating.	Pass
26.4.5.2	Acceptance criteria	The acceptance criteria were in accordance with EN 60529 and EN IEC 60079-0. No penetration of dust or water was seen after tests.	Pass

26.5	Thermal tests		
26.5.1	Temperature measurement		

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
26.5.1.1	General	Temperature measurement tests were successfully carried out in accordance with 26.5.1.	Pass
26.5.1.2	Service temperature	Service temperatures was measured and the result of test was satisfactory.	Pass
26.5.1.3	Maximum surface temperature	The maximum surface temperature was measured for EUT models corresponding to temperature classes T6, in accordance with the applicable test requirement.	Pass
26.5.2	Thermal shock test	The glass window of the equipment enclosure satisfies the thermal shock test with 1 mm water jet at +10°C. The test did not produce damage that would invalidate the equipment Type of Protection. Details in relevant test record.	Pass
26.5.3	Small component ignition test (Group I and Group II)		
26.5.3.1	General	Not relevant	N/A
26.5.3.2	Procedure	Not relevant	N/A
26.5.3.3	Acceptance criteria	Not relevant	N/A
26.6	Torque test for bushings		
26.6.1	Test procedure	The equipment contains no bushings used for connection facilities.	N/A
26.6.2	Acceptance criteria	Refer to 26.6.1.	N/A
26.7	Non-metallic enclosures or non-metallic parts of enclosures		
26.7.1	General	The equipment contains no non-metallic enclosure parts except for the glass, cement, epoxy resin, gasket and O-ring.	Pass
26.7.2	Test temperatures	During performing the related tests the requirements of this clause have been considered.	Pass
26.8	Thermal endurance to heat	Meet the requirements	Pass
26.9	Thermal endurance to cold	Meet the requirements	Pass

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
26.10	Resistance to UV light		
26.10.1	General	The EUT does not contain any non-metallic materials which are exposed to UV light in service with regard to this clause.	N/A
26.10.2	Light exposure	Refer to 26.10.1	N/A
26.10.3	Acceptance criteria	Refer to 26.10.1	N/A
26.11	Resistance to chemical agents for Group I equipment	Group II.	N/A
26.12	Earth continuity	Not relevant.	N/A
26.13	Surface resistance test of parts of enclosures of non-metallic materials	Not relevant.	N/A
26.14	Measurement of capacitance		
26.14.1	General	Not relevant	N/A
26.14.2	Test procedure	Not relevant	N/A
26.15	Verification of ratings of ventilating fans	Not relevant.	N/A
26.16	Alternative qualification of elastomeric sealing O-rings	Not relevant.	N/A
26.17	Transferred charge test		
26.17.1	Test equipment	Not relevant.	N/A
26.17.2	Test sample	Not relevant.	N/A
26.17.3	Test procedure	Not relevant.	N/A
27	Routine tests	Pressure applied equal to 1.5 times reference pressure in order to do routine test by manufacturer. See EN 60079-1.	Pass

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
28	Manufacturer's responsibility		
28.1	Conformity with the documentation	The manufacturer's responsibility to ensure that the component produced complies with the documentation will be indicated by placing the relevant marking on the product. The manufacturer shall carry out the verifications or tests necessary to ensure that the equipment produced complies with the documentation.	Pass
28.2	Certificate	The manufacturer shall prepare, or have prepared, a certificate confirming that the equipment is in conformity with the requirements of this standard along with its other applicable parts.	Pass
28.3	Responsibility for marking	The manufacturer's responsibility will be indicated by placing the relevant marking on the product. By marking the equipment, the manufacturer attests that the equipment has been constructed in accordance with the applicable requirements of the relevant standards and the routine verification and tests (if applicable) have been successfully completed and that the product complies with the documentation.	Pass
29	Marking		
29.1	Applicability	The manufacturer shall assure that the marking system indicated in this clause are only applied to product which comply with EN IEC 60079-0, EN 60079-1 and EN IEC 60079-11	Pass
29.2	Location	The marking plate is placed on the component body and it is fully legible. See manufacturer's instruction and drawings for more details.	Pass

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IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
29.3	General	Marked with: 1-manufacturer name 2-type identification 3-serial number 4-year of construction 5-Equipment group and category 6-type of protection 7-temperature range See manufacturer's instruction and drawings for more details.	Pass
29.4	Ex marking for explosive gas atmospheres	Ex db [ia Ga] IIC T6 Gb	Pass
29.5	Ex marking for explosive dust atmospheres	Not relevant.	N/A
29.6	Combined types (or levels) of protection	Meet the requirements	Pass
29.7	Multiple types of protection	No Multiple types of protection were used.	Pass
29.8	Ga equipment using two independent Gb types (or levels) of protection	Not relevant.	N/A
29.9	Boundary wall	Not relevant.	N/A
29.10	Ex Components	Equipment.	Pass
29.11	Small Ex Equipment and small Ex Components	Not relevant.	N/A

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Clause	Requirement – Test	Result – Remark	Verdict
29.12	Extremely small Ex Equipment and extremely small Ex Components	Not relevant.	N/A
29.13	Warning markings	The equipment is marked with "WARNING - DO NOT OPEN WHEN ENERGIZED."	Pass
29.14	Cells and batteries	Not used.	N/A
29.15	Electric machines operated with a converter	Not relevant	N/A
29.16	Examples of marking	The clause contains examples of marking.	N/A
30	Instructions		
30.1	General	The instruction Manual contains the required Information. For details see manufacturer's Instructions.	Pass
30.2	Cells and batteries	Not relevant.	N/A
30.3	Electrical machines	Not relevant.	N/A
30.4	Ventilating fans	Not relevant.	N/A
30.5	Cable glands	Not relevant.	N/A
Annex A (Normative)	Supplementary requirements for cable glands		
A.1	General	No cable glands.	N/A

IEC 60079-0:2017			
Clause	Requirement – Test	Result – Remark	Verdict
Annex B (Normative)	Requirements for Ex Components		
Table B.1	Applicability of clauses to Ex Components	Equipment.	Pass
Annex C (Informative)	Example of rig for resistance to impact test		
Annex D (Informative)	Electric machines connected to converters		
Annex E (Informative)	Temperature evaluation of electric machines		
Annex F (Informative)	Guideline flowchart for tests of non-metallic enclosures or non-metallic parts of enclosures (26.4)		
Annex G (Informative)	Guidance flowchart for tests of cable glands		
Annex H (Informative)	Shaft voltages resulting in motor bearing or shaft brush sparking Discharge energy calculation		

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TEST REPORT IEC 60079-1:2014 Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures “d”	
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Address	Kavosh research city, supa blv, 8th km . karaj-Qazvin freeway , iran.
Applicant's name	Control System Co. (PrismaTech)
Address	PrismaTech Company, 8th Street, Phase II, Payam Special Economic Zone, Mehrshahr, Karaj
Standard	IEC 60079-1:2014
Test procedure	IEC 60079-1:2014
Possible test case verdicts: - test case does not apply to the test item:N/A - test item does meet the requirement:Pass	
General remarks: The test results presented in this Test Report relate only to the item or product tested. "(Refer to Appendix #)" refers to additional information appended to this document. "(Refer appended Doc #)" refers to a document table that is linked to this document. - Throughout this document, a point is used as the decimal separator. The technical content of this Ex Test Report shall not be reproduced except in full without the written approval of the Issuing NB and TL. The statement of conformity decision on the measured values is made based on guard band $w=U$, $r=1$ (ISO/IEC Guide 98-4). The specific false accept/reject risk is up to 2.5%.	



IEC 60079-1:2014			
Clause	Clause	Clause	Clause
1	Scope		
2	Normative references		
3	Terms and definitions		
4	Level of protection (equipment protection level, EPL)		
4.1	General	The equipment grouping defined in EN 60079-0 for the use in explosive gas atmospheres apply to Ex d enclosures.	Pass
4.2	Requirements for level of protection "da"	level of protection is "db". Not relevant.	N/A
4.3	Requirements for level of protection "db"	The level of protection of enclosures is "db".	Pass
4.4	Requirements for level of protection "dc"		
4.4.1	General	"db"	N/A
4.4.2	Construction of "dc" devices		
4.4.2.1	General	level of protection is "db". Not relevant	N/A
4.4.2.2	Free internal volume	level of protection is "db". Not relevant	N/A
4.4.2.3	Seal protection	level of protection is "db". Not relevant	N/A
4.4.2.4	Continuous operating temperature (COT) requirements	level of protection is "db". Not relevant	N/A
4.4.2.5	Ratings	level of protection is "db". Not relevant	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
4.4.3	Tests for "dc" devices	level of protection is "db" Not relevant	N/A
5	Flameproof joints		

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

5.1	General requirements	All flameproof joints, whether permanently closed or designed to be opened from time to time, is comply in the absence of pressure with the appropriate requirements of Clause 5. Joint details of integral and remote models: Transmitter terminal cap joint for integral and remote model: Internal free volume for integral model: 1370 cm³ and for remote model: 1600 cm³ Type of joints: cylindrical Width of joint: 16.5 mm Maximum gap: 0.14 mm Junction box terminal cap joint for remote model: Internal free volume: 1600 cm³ Type of joints: cylindrical Width of joint: 15mm Maximum gap: 0.14 mm Transmitter display cap joint for integral and remote model: Type of joints: Threaded joint Threaded form: M124.9 × 1.5 –6g/6H Thread Length: 17.6 mm Number of thread engaged: 11 Cemented joint for integral and remote model: Volume: > 100 cm³ Width of cemented joints: 11.5 mm Spigot joint details between transmitter body and neck for integral and remote models: Internal free volume for integral model: 1370 cm³ and for remote model: 1600 cm³ Width of joint (L): 15 mm c: 7 mm > 6 mm d: 8mm > 0.5L (7.5 mm) f: 0.5 mm < 1 mm Maximum gap: 0.14 mm Cable entry joints: Type of joints: Threaded joint Threaded form: three M20 × 1.5 –6H for integral model and one M20 × 1.5 –6H for remote model Thread Length: 13 mm minimum number of thread engaged: 8 Spigot joint details between junction box body and neck for remote model: Internal free volume for remote model: 1600 cm³	Pass
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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
5.2	Non-threaded joints		
5.2.1	Width of joints (L)	Refer to 5.1.	Pass
5.2.2	Gap (i)	Refer to 5.1.	Pass
5.2.3	Spigot joints	Refer to 5.1.	Pass
5.2.4	Holes in joint surfaces		
5.2.4.1	General	Refer to 5.1.	N/A
5.2.4.2	Flanged joints with holes outside the enclosure (see Figures 3 and 5)	Refer to 5.1.	N/A
5.2.4.3	Flanged joints with holes inside the enclosure (see Figure 4)	Refer to 5.1	N/A
5.2.4.4	Spigot joints where, to the edges of the holes, the joint consists of a cylindrical part and a plane part (see Figure 6)	Refer to 5.1	N/A
5.2.4.5	Spigot joints where, to the edges of the holes, the joint consists only of the plane part (see Figures 7 and 8), in so far as plane joints are permitted (see 5.2.7)	Refer to 5.1	N/A
5.2.5	Conical joints	Refer to 5.1	N/A
5.2.6	Joints with partial cylindrical surfaces (not permitted for Group IIC)	Refer to 5.1	N/A
5.2.7	Flanged joints for acetylene atmospheres	Refer to 5.1	N/A
5.2.8	Serrated joints	Refer to 5.1	N/A
5.2.9	Multi-step joints	Refer to 5.1	N/A
5.3	Threaded joints	Refer to 5.1	Pass

IEC 60079-1:2014			
Clause	Clause	Clause	Clause
5.4	Gaskets (including O-rings)	Gaskets and O-rings are used and meet the requirements of this clause. Refer to 5.1.	Pass
5.5	Equipment using capillaries	Not used.	N/A
6	Sealed joint		
6.1	Cemented joints		
6.1.1	General	The cemented joint has been used to adhere the glass to the transmitter display cap. For details, see cemented joint drawing and glue data sheet. Also, For the integral transmitter model, the space between the transmitter and the junction box, which have different types of protection, is filled with resin, and the signal wires pass through the resin. For more details, see manufacturer's drawings.	Pass
6.1.2	Mechanical strength	Cemented joints are fixed structurally, so that the mechanical strength does not depend only on the adhesion of the cement.	Pass
6.1.3	Width of cemented joints	Refer to 5.1.	Pass
6.2	Fused glass joints		
6.2.1	General	Not used.	N/A
6.2.2	Width of fused glass joints	Not used.	N/A
7	Operating rods	Not relevant	N/A
8	Supplementary requirements for shafts and bearings		
8.1	Joints of shafts		
8.1.1	General	Not relevant	N/A
8.1.2	Cylindrical joints	Not relevant	N/A
8.1.3	Labyrinth joints	Not relevant	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
8.1.4	Joints with floating glands	Not relevant	N/A
8.2	Bearings		
8.2.1	Sleeve Bearings	Not relevant	N/A
8.2.2	Rolling-element bearings	Not relevant	N/A
9	Light-transmitting parts	Meet the requirements.	Pass
10	Breathing and draining devices which form part of a flameproof enclosure		
10.1	General	Not relevant	N/A
10.2	Openings for breathing or draining	Not relevant	N/A
10.3	Composition limits	Not relevant	N/A
10.4	Dimensions	Not relevant	N/A
10.5	Elements with measurable paths	Not relevant	N/A
10.6	Elements with non-measurable paths	Not relevant	N/A
10.7	Removable devices		
10.7.1	General	Not relevant	N/A
10.7.2	Mounting arrangements of the elements	Not relevant	N/A
10.8	Mechanical strength	Not relevant	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

10.9	Breathing devices and draining devices when used as Ex components		
10.9.1	General	Not relevant	N/A
10.9.2	Mounting arrangements of the elements and components	Not relevant	N/A
10.9.3	Type tests for breathing and draining devices used as Ex components		
10.9.3.1	General	Not relevant	N/A
10.9.3.2	Thermal tests		
10.9.3.2.1	General	Not relevant	N/A
10.9.3.2.2	Test procedure	Not relevant	N/A
10.9.3.2.3	Acceptance criteria	Not relevant	N/A
10.9.3.3	Test for non-transmission of an internal ignition		
10.9.3.3.1	General	Not relevant	N/A
10.9.3.3.2	Test procedure	Not relevant	N/A
10.9.3.3.3	Acceptance criteria	Not relevant	N/A
10.9.3.4	Test of the ability of the breathing and draining device to withstand pressure		
10.9.3.4.1	Test procedure	Not relevant	N/A
10.9.3.4.2	Acceptance criteria	Not relevant	N/A
10.9.4	Ex component certificate	Not relevant	N/A

11	Fasteners and openings		
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11.1	Type of fastener	All equipment entries details including thread form, location and number of entries are specified in the manufacturer's dimensional drawings. Refer to 5.1.	Pass
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11.2	Plastic material or light alloys	Not relevant.	N/A
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11.3	Yield stress	Not relevant.	N/A
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11.4	Studs	Not relevant.	N/A
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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
11.5	Fasteners through walls	Not relevant.	N/A
11.6	Blind holes	Not relevant.	N/A
11.7	Screws into blind holes	Not relevant.	N/A
11.8	Closing of through holes	Not relevant.	N/A
11.9	Separate fastening arrangements for threaded doors/covers	Meet the requirements. Refer to 5.1.	Pass
12	Materials		
12.1	Tests prescribed by Clauses 14 to 16	The EUTs have been subjected to the appropriate tests as detailed in 14 through 16.	Pass
12.2	Assembly of multiple flameproof enclosures	Not relevant	N/A
12.3	Intercommunicating enclosure compartments	Not relevant.	N/A
12.4	Use of cast iron	Not relevant.	N/A
12.5	Use of liquids	Not used.	N/A
12.6	Insulating materials for Group I apparatus	The product is not intended for Group I.	N/A
12.7	Zinc content	The zinc content of body is less than 80%.	Pass

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
12.8	Copper or copper alloys in explosive gas atmospheres containing acetylene	Not relevant	N/A
13	Entries for flameproof enclosures		
13.1	General	All equipment entries details including thread form, location and number of entries are specified in the manufacturer's dimensional drawings. Details: Three M20 × 1.5 –6H entries for the integral model and one M20 × 1.5 –6H entry for the remote model have been used for cable gland entries. For more details see manufacturer's drawing.	Pass
13.2	Threaded holes	Refer to 13.2.	Pass
13.3	Non-threaded holes (for Group I only)	Not relevant.	N/A
13.4	Cable glands	Not cable gland.	N/A
13.5	Conduit sealing devices		
13.5.1	Conduit sealing devices, whether integral or separate,	Not relevant.	N/A
13.5.2	Permitted for Group II only	Not relevant.	N/A
13.5.3	Sealing device such as a stopping box with setting compound	Not relevant.	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
13.6	Plugs and sockets and cable couplers		
13.6.1	Construction & mounting	Not relevant.	N/A
13.6.2	Flameproof joints of contact parts	Not relevant.	N/A
13.6.3	Flameproof properties in the event of internal explosion	Not relevant.	N/A
13.6.4	Not connected to an interlocking switch	Not relevant.	N/A
13.6.5	Exemption & warning label	Not relevant.	N/A
13.7	Bushings	Not relevant.	N/A
13.8	Blanking elements	Not relevant.	N/A
14	Verification and tests	In addition to compliance with this standard, the equipment also complies with EN IEC 60079-0.	Pass
15	Type tests		
15.1	General	Type tests were carried out in accordance with this sub-clauses. The product is equipment therefore; all three tests were applied to samples which have been subjected to the tests of EN IEC 60079-0. The type tests were carried out with below sequence : i. Reference pressure ii. Overpressure iii. Non-transmission of an internal ignition	Pass
15.2	Tests of ability of the enclosure to withstand pressure		

IEC 60079-1:2014			
Clause	Clause	Clause	Clause
15.2.1	General	After the tests no deformation & damage was seen in the enclosures & theirs joints. The EUTs have been tested in accordance with clause 15.2.2 & 15.2.3 and it was determined that no permanent deformation or damage has occurred.	Pass
15.2.2	Determination of explosion pressure (reference pressure)		
15.2.2.1	General	The explosion pressure was measured according to method of this clause.	Pass
15.2.2.2	Test procedure	The explosive mixture was ignited by one ignition source installed in the EUT. No gasket was used in the flameproof joint. The EUT is group IIC so : For IIC groups, five tests with $(14 \pm 1) \%$ acetylene and five tests with $(31 \pm 1) \%$ hydrogen have been done. Maximum measured reference pressure considering the negative peak of curve to maximum position peak. The maximum explosion pressure is: 5.12 bar	Pass
15.2.2.3	Rotating electrical machines	Not relevant	N/A
15.2.2.4	Pressure-piling	Not occurred	N/A
15.2.2.5	Apparatus intended for use in a single gas	The equipment is not intended for use in a single gas.	N/A
15.2.3	Overpressure test		
15.2.3.1	General	Overpressure test was performed on samples which previously subjected to the tests of enclosures in EN IEC 60079-0. Overpressure test was conducted in all cases using the static method at normal ambient temperature.	Pass
15.2.3.2	Overpressure test - First method (static)	The overpressure test with static method shall be performed according to EN 60079-1 at 8 bar at least 10 seconds to cover all models. Details in relevant test record.	Pass

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

15.2.3.3	Overpressure test - Second method (dynamic)	Refer to 15.2.3.1.	N/A
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15.3	Test for non-transmission of an internal ignition		
15.3.1	General	Samples, previously subjected to the overpressure test in clause 15.2.3, was subjected to the test for flame non-transmission.	Pass
15.3.2	Electrical equipment of groups I, IIA and IIB		
15.3.2.1	Test gap and test gas	IIC group	N/A
15.3.2.2	Increasing of gaps for test	Refer to 15.3.2.1.	N/A
15.3.2.3	Number of tests and acceptance criterion	Refer to 15.3.2.1.	N/A
15.3.3	Electrical apparatus of group IIC		
15.3.3.1	General	The EUTs were subjected to the test for flame non-transmission.	Pass
15.3.3.2	First method – Testing by increased test gap	Refer to 15.3.3.4	N/A
15.3.3.3	Second method – Testing by increased pressure	Refer to 15.3.3.4	N/A
15.3.3.4	Third method – Testing by oxygen enrichment of test gases	Group IIC non-transmission of internal ignition testing was satisfactorily performed on the samples. Ten tests were conducted: five using a 40% hydrogen and 20% Oxygen and rest nitrogen test gas mixture and five using a 10% acetylene and 24% oxygen and rest nitrogen. The non-transmission of internal ignition tests were conducted at normal ambient temperature. See non-transmission test record for details	Pass
15.3.3.5	Number of tests for single piece production	The equipment is not a single construction.	N/A

15.4	Tests of flameproof enclosures with breathing and draining devices		
15.4.1	General	Not relevant	N/A
15.4.2	Tests of ability of the enclosure to withstand pressure		

IEC 60079-1:2014			
Clause	Clause	Clause	Clause

15.4.2.1	General	Not relevant	N/A
15.4.2.2	Replacement of breathing and draining devices	Not relevant	N/A
15.4.2.3	Overpressure test	Not relevant	N/A
15.4.3	Thermal tests		
15.4.3.1	Test procedure	Not relevant	N/A
15.4.3.2	Acceptance criterion	Not relevant	N/A
15.4.4	Tests for non-transmission of an internal ignition		
15.4.4.1	General	Not relevant	N/A
15.4.4.2	Test procedure	Not relevant	N/A
15.4.4.3	Non-transmission test for breathing and draining devices		
15.4.4.3.1	General	Not relevant	N/A
15.4.4.3.2	Method A – Testing by increased pressure	Not relevant	N/A
15.4.4.3.3	Method B – Testing by oxygen enrichment of test gases	Not relevant	N/A
15.4.4.4	Acceptance criterion	Not relevant	N/A

15.5	Tests for "dc" devices		
15.5.1	General	db	N/A
15.5.2	Preparation of "dc" samples	Not relevant	N/A
15.5.3	Test conditions for "dc" devices		
15.5.3.1	General	Not relevant	N/A
15.5.3.2	Test procedure	Not relevant	N/A

16	Routine tests
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16.1	General
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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
16.1.1	Overview	The routine test according to this clause of standard shall be performed in the production line on all end products. The overpressure routine test shall be performed according to clause of 15.2.3.	Pass
16.1.2	Routine overpressure test – first method	On 100% of production, EUTs shall be subjected to an overpressure test of at least 8 bar at least 10 seconds.	Pass
16.1.3	Routine test – second method	Refer to 16.1.1.	N/A
16.1.4	Routine test – empty enclosure & parts of enclosure	Refer to 16.1.1.	N/A
16.2	Enclosures not incorporating a welded construction	Not relevant.	N/A
16.3	Enclosures incorporating a welded construction	Not relevant.	N/A
16.4	Bushings not specific to one flameproof enclosure	Not applicable for this case..	N/A
16.5	Acceptance criteria	Refer to 16.1.1.	N/A
16.6	Batch testing	Not relevant.	N/A
17	Switchgear for Group I		
17.1	General	Not relevant.	N/A
17.2	Means of isolation		
17.2.1	General	Not relevant.	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
17.2.2	Fitted inside Ex d enclosure	Not relevant.	N/A
17.2.3	Fitted inside another enclosure	Not relevant.	N/A
17.2.4	Plug and socket or a cable coupler – Compliance with 13.3	Not relevant.	N/A
17.3	Doors or covers		
17.3.1	Quick-acting doors or covers	Not relevant.	N/A
17.3.2	Doors or covers fixed by screws	Not relevant.	N/A
17.3.3	Threaded doors or covers	Not relevant.	N/A
18	Lampholders and lamp caps		
18.1	General	Not relevant.	N/A
18.2	Device preventing lamps working loose	Not relevant.	N/A
18.3	Holders and caps for lamps with cylindrical caps		
18.3.1	Holders and caps for tubular fluorescent lamps	Not relevant.	N/A
18.3.2	Other holders	Not relevant.	N/A
18.4	Holders for lamps with threaded caps		
18.4.1	Resistant to corrosion	Not relevant.	N/A
18.4.2	Contact separation	Not relevant.	N/A
18.4.3	E26/E27 and E39/E40 threaded lampholders	Not relevant.	N/A
19	Non-metallic enclosures and non-metallic parts of enclosures		

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
19.1	General	The equipment contains no non-metallic enclosure parts except for the gasket, O-ring cement, glass and epoxy resin.	N/A
19.2	Resistance to tracking and creepage distances on internal surfaces of the enclosure walls	Refer to 19.1	N/A
19.3	Requirements for type tests	Refer to 19.1.	N/A
19.4	Test of erosion by flame	Not relevant	N/A
20	Marking		
20.1	General	Ex db [ia Ga] IIC T6 Gb	Pass
20.2	Caution and warning markings	The equipment is marked with: "DO NOT OPEN WHEN ENERGIZED". For more details: See technical file and drawings	Pass
20.3	Informative markings	Not used.	N/A
21	Instructions	The equipment is accompanied by instructions as required by EN IEC 60079-0. Refer to TCF (Instructions).	Pass
Annex A (Normative)	Additional requirements for crimped ribbon elements and multiple screen elements of breathing and draining devices		
A.1	Crimped ribbon and multiple screen elements	Not relevant.	N/A
A.2	Path dimensions	Not relevant.	N/A
A.3	Annex B requirements	Not relevant.	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

A.4	Type tests	Not relevant.	N/A
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Annex B (Normative)	Additional requirements for elements, with non-measurable paths, of breathing and draining devices		
B.1	Sintered metal elements		
B.1.1	Construction	Not relevant.	N/A
B.1.2	Bubble test pore size	Not relevant.	N/A
B.1.3	Density	Not relevant.	N/A
B.1.4	Open porosity and/or fluid permeability	Not relevant.	N/A
B.1.5	Identification	Not relevant.	N/A
B.2	Pressed metal wire elements		
B.2.1	Construction	Not relevant.	N/A
B.2.2	Specifications	Not relevant.	N/A
B.2.3	Bubble test pore size	Not relevant.	N/A
B.2.4	Density	Not relevant.	N/A
B.2.5	Open porosity and or fluid permeability	Not relevant.	N/A
B.2.6	Identification	Not relevant.	N/A
B.3	Metal foam elements		
B.3.1	Construction	Not relevant.	N/A
B.3.2	Chromium content	Not relevant.	N/A
B.3.3	Bubble test pore size	Not relevant.	N/A
B.3.4	Density	Not relevant.	N/A
B.3.5	Open porosity and/or fluid permeability	Not relevant.	N/A
B.3.6	Identification	Not relevant.	N/A

Annex C (Normative)	Additional requirements for flameproof entry devices		
C.1	General	Not applicable.	N/A
C.2	Constructional requirements		

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
C.2.1	Sealing methods		
C.2.1.1	Cable glands with elastomeric sealing rings		
C.2.1.1.1	Minimum uncompressed axial height	Refer to C.1.	N/A
C.2.1.1.2	Cable glands with only one specific elastomeric sealing ring	Refer to C.1.	N/A
C.2.1.2	Cable glands sealed with setting compound	Refer to C.1.	N/A
C.2.1.3	Conduit sealing devices with setting compound	Refer to C.1.	N/A
C.2.1.4	Bushings	Refer to C.1.	N/A
C.2.2	Flameproof joints		
C.2.2.1	Threaded joints	Refer to C.1.	N/A
C.2.2.2	Non-threaded joints (Group I only)	Refer to C.1.	N/A
C.2.3	Constructional requirements for Ex blanking elements		
C.2.3.1	General requirements	Refer to C.1	N/A
C.2.3.2	Metric Ex blanking elements	Refer to C.1	N/A
C.2.3.3	NPT Ex blanking elements	Refer to C.1	N/A
C.2.3.4	Non-threaded Ex blanking elements (Group I only)	Refer to C.1	N/A
C.2.4	Constructional requirements for Ex thread adapters		
C.2.4.1	Compliance of threads	Refer to C.1	N/A
C.2.4.2	Threads co-axial	Refer to C.1	N/A
C.2.4.3	Length and internal volume	Refer to C.1	N/A
C.3	Type tests		
C.3.1	Sealing test		
C.3.1.1	General	Refer to C.1	N/A
C.3.1.2	Cable glands and conduit sealing devices with sealing ring	Refer to C.1	N/A
C.3.1.3	Cable glands sealed with setting compound	Refer to C.1	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

C.3.1.4	Conduit sealing devices sealed with setting compound	Refer to C.1	N/A
C.3.2	Test of mechanical strength		
C.3.2.1	Cable glands with a threaded compression element	Refer to C.1	N/A
C.3.2.2	Cable glands with a compression element fixed by screws	Refer to C.1	N/A
C.3.2.3	Cable glands sealed with setting compound	Refer to C.1	N/A
C.3.2.4	Acceptance criteria	Refer to C.1	N/A
C.3.3	Type tests for Ex blanking elements		
C.3.3.1	Torque test	Refer to C.1	N/A
C.3.3.2	Over-pressure test	Refer to C.1	N/A
C.3.4	Type tests for Ex thread adapters		
C.3.4.1	Torque test	Refer to C.1	N/A
C.3.4.2	Impact test	Refer to C.1	N/A
C.3.4.3	Over-pressure test	Refer to C.1	N/A

Annex D (Normative)	Empty flameproof enclosures as Ex components		
D.1	General	Not applicable	N/A
D.2	Introductory remarks	Refer to D.1	N/A
D.3	Ex component enclosure requirements		
D.3.1	Compliance with IEC 60079-0 & 60079-1	Refer to D.1	N/A
D.3.2	Geometry of enclosure	Refer to D.1	N/A
D.3.3	Rotating machines	Refer to D.1	N/A
D.3.4	Means of mounting	Refer to D.1	N/A
D.3.5	Drilled holes	Refer to D.1	N/A
D.3.6	Reference pressure	Refer to D.1	N/A
D.3.7	Overpressure	Refer to D.1	N/A
D.3.8	Marking internally	Refer to D.1	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

D.3.9	External marking provision	Refer to D.1	N/A
D.3.10	Information in certificate	Refer to D.1	N/A
D.4	Utilization of an Ex component enclosure certificate to prepare an equipment certificate		
D.4.1	Procedure	Refer to D.1	N/A
D.4.2	Application of the schedule of limitations	Refer to D.1	N/A

Annex E (Normative)	Cells and batteries used in flameproof "d" enclosures		
E.1	Introductory remarks	Not relevant.	N/A
E.2	Acceptable electrochemical systems	Not relevant.	N/A
E.3	General requirements for cells (or batteries) inside flameproof enclosures		
E.3.1	Restrictions	Not relevant.	N/A
E.3.2	Warning label	Not relevant.	N/A
E.3.3	Mounting	Not relevant.	N/A
E.3.4	Relative movement	Not relevant.	N/A
E.3.5	Verification before and after the tests of enclosures	Not relevant.	N/A
E.4	Arrangement of safety devices		
E.4.1	Prevention of excessive temperature and cell damage		
E.4.1.1	Short circuit condition	Not relevant.	N/A
E.4.1.2	Infallible components	Not relevant.	N/A
E.4.2	Prevention of cell polarity reversal or reverse charging by another cell in the same battery		
E.4.2.1	Additional protection	Not relevant.	N/A
E.4.2.2	Protection against polarity reversal or reverse charging	Not relevant.	N/A
E.4.3	Prevention of inadvertent charging of a battery by other voltage sources in the enclosure	Not relevant.	N/A
E.5	Recharging of secondary cells inside flameproof enclosures		
E.5.1	Allowable cell type	Not relevant.	N/A

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IEC 60079-1:2014			
Clause	Clause	Clause	Clause

E.5.2	Charging condition and safety devices	Not relevant.	N/A
E.5.3	Reverse charging	Not relevant.	N/A
E.5.4	Additional safety device(s)	Not relevant.	N/A
E.5.5	Recharging within enclosure	Not relevant.	N/A
E.6	Rating of protection diodes and reliability of protection devices		
E.6.1	Voltage rating & compliance with E.4.2	Not relevant.	N/A
E.6.2	Voltage rating & compliance with E.4.3	Not relevant.	N/A
E.6.3	Current rating	Not relevant.	N/A
E.6.4	Safety integrity	Not relevant.	N/A

Annex F (Informative)	Mechanical properties for screws and nuts
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Annex G (Normative) See also	Additional requirements for flameproof enclosures with an internal source of release (containment system)		
G.1	General	Not relevant.	N/A
G.2	Release conditions		
G.2.1	No release	Not relevant.	N/A
G.2.2	Limited release of a gas or vapour	Not relevant.	N/A
G.2.3	Limited release of a liquid	Not relevant.	N/A
G.3	Design requirements for the containment system		
G.3.1	General design requirements	Not relevant.	N/A
G.3.2	Infallible containment system	Not relevant.	N/A
G.3.3	Containment system with a limited release	Not relevant.	N/A
G.4	Type tests for the containment system		
G.4.1	Overpressure test	Not relevant.	N/A

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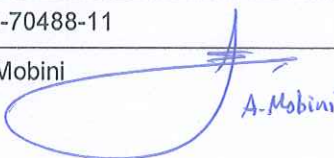
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IEC 60079-1:2014			
Clause	Clause	Clause	Clause
G.4.2	Leakage test for an infallible containment system	Not relevant.	N/A
G.4.3	Leakage test for a containment system with a limited release	Not relevant.	N/A
Annex H (Normative)	Requirements for machines with flameproof "d" enclosures fed from converters		
H.1	General	Not relevant.	N/A
H.2	Construction requirements for bearings	Not relevant.	N/A
H.3	Temperature requirements	Not relevant.	N/A

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TEST REPORT IEC 60079-11:2023 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"	
Test Report Number.....:	H1-70488-11
Prepared by + signature (ExTL).....:	A.Mobini 
Reviewed by + signature (ExTL).....:	M. Ghanbariha 
Approved by + signature (ExTL).....:	S.M. Mirfalah 
Date of issue	February 21, 2026
Ex Testing Laboratory (ExTL).....:	Ex EPIL
Address	Kavosh research city, Supa blv, 8th km . Karaj-Qazvin freeway , Iran.
Applicant's name	Prismatech
Address	Karimkhan Zand Ave., Ghaemmagham Farahani St., Sanaei St., Ghaemmagham, Tehran City, central Dist, Tehran City, Tehran Province, Iran.
Standards	IEC 60079-11:2023
Test procedure.....:	IEC 60079-11:2023
Possible test case verdicts: - test case does not apply to the test item :N/A - test item does meet the requirement..... :Pass	
General remarks: The test results presented in this Test Report relate only to the item or product tested. ▪ "(Refer to Appendix #)" refers to additional information appended to this document. ▪ "(Refer appended Doc #)" refers to a document table that is linked to this document. ▪ Throughout this document, a point is used as the decimal separator. The technical content of this Ex Test Report shall not be reproduced except in full without the written approval of the Issuing NB and TL.	



IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
1	Scope		
2	Normative references		
3	Terms and definitions		
4	Equipment grouping, classification and Levels of Protection of apparatus	This Equipment has been divided into the following Group. Group II.	Pass
5	Ignition compliance requirements		
5.1	General	In level of protection "ia".	Pass
5.2	Conditions for assessment		
5.2.1	General		
5.2.2	Level of Protection "ia"	In level of protection "ia".	Pass
5.2.3	Level of Protection "ib"	Refer to 5.2.2	N/A
5.2.4	Level of Protection "ic"	Refer to 5.2.2	N/A
5.2.5	Non-shock hazard equipment or systems	Not applicable.	N/A
5.3	Spark ignition compliance		
5.3.1	General	Refer to Appendix A for details	Pass
5.3.2	Levels of Protection "ia" and "ib"	In level of protection "ia".	Pass
5.3.3	Level of Protection "ic"	Refer to 5.3.2	N/A
5.3.4	Application of safety factors		
5.3.4.1	Safety factor 1,0	Refer to 5.3.4.2	N/A
5.3.4.2	Safety factor 1,5	level of protection "ia".	Pass
5.3.5	Circuits without controlled semiconductor limitation	Not used.	N/A

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IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
5.3.6	Circuits with controlled semiconductor limitation	Refer to Appendix A for details	Pass

5.4	Thermal ignition compliance		
5.4.1	General	Ref. Below.	Pass
5.4.2	Temperature of small components for Group I and Group II	The equipment has small components and Requirements for temperatures of small components used in Group II equipment are met by assessment based on Table 3 & Table 4 of 60079-0	Pass
5.4.3	Wiring within intrinsically safe apparatus for Group I and Group II	With a maximum current of 0.4A through the equipment when operated at 30V, the surface temperature rise of internal wiring is considered to be negligible.	Pass
5.4.4	PCB tracks for Group I and Group II	Temperature classification of tracks on printed circuit board is evaluated based on the maximum permissible current in the circuit. according to table 4 Temperature classification T6 is accepted since the track width is 0.2 mm and the Maximum current is 40 mA. Board Thickness: 1.6 mm – Factor 1: 1.0 Under component : yes – Factor 2: 0.67 Number of track layer : 4 – Factor 3: 0.5 Ambient temperature : 55°C – Factor 4: 0.4 copper thickness : 35 µm – Factor 5: 1.00 according to table 4, T6...T1 is derived as temperature class.	Pass
5.4.5	Intrinsically safe apparatus and component temperature for dusts	The equipment is intended for Group II	N/A

5.5	Simple apparatus	Not applicable.	N/A
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6	Apparatus construction		
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6.1	General		
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6.2	Enclosures		
6.2.1	General	The degree of protection IP66.	Pass

IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
6.2.2	Apparatus complying with Table 7	based on Table 7	Pass
6.2.3	Apparatus complying with Table 8 or Table 9	Refer to 6.2.2	N/A
6.2.4	Enclosures for Group IIIC intrinsically safe apparatus	The equipment is intended for Group II.	N/A
6.2.5	Protection of separations		
6.2.5.1	Protection by enclosure	Refer to 6.2.2	N/A
6.2.5.2	Protection by other means	Refer to 6.2.2	N/A

6.3	Connection facilities for external circuits		
6.3.1	Terminals	Power Supply Voltage range: 16–28 V Maximum current: 150 mA Digital Input 1 channel Digital Outputs 2 channels Analog Outputs 2 channels Communication Ports RS-485 Ethernet	Pass
6.3.2	Earth Terminals	It is essential that the installation includes a proper earth ground connection to the transmitter's body and cable shield for both safety and noise immunity. Grounding the device housing and cable shield helps protect against electromagnetic interference and lightning surges. The external wiring must be done using appropriate cabling and conduit as required for the hazardous location rating, ensuring the integrity of the explosion-proof seal around the terminal housing.	Pass
6.3.3	Plugs and sockets	Not used.	N/A

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IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
6.3.4	Permanently connected cable	Not applicable, does not have permanently connected cables.	N/A
6.3.5	Connections and accessories for intrinsically safe apparatus for use in non-hazardous area		
6.3.5.1	General	Not applicable.	N/A
6.3.5.2	Protection against spark ignition while in the hazardous area	Not applicable.	N/A
6.3.5.3	Protection of components on which intrinsic safety depends	Not applicable.	N/A

6.4	Internal connections and connectors		
6.4.1	General	For Levels of Protection "ia", if not complying with Clause 6.4.2, the open-circuit failure of any conductor, connector, or PCB track (including its connections) is considered as a non-countable fault.	Pass
6.4.2	Infallible connections		
6.4.2.1	General		
6.4.2.2	Connectors	Connectors are not considered infallible and their faults considered as a non-countable fault.	Pass
6.4.2.3	Wiring	Meet the requirements	Pass
6.4.2.4	Printed circuit boards	open-circuit failure of PCB track (including its connections) is considered as a non-countable fault. Solder Mask : LPI Solder Mask (Green) Taiyo PSR-4000 CTI ≥ 600V	Pass
6.4.2.5	Other connections	Other connections are not considered infallible and their faults considered as a non-countable fault.	Pass
6.4.3	Connectors for internal connections, plug-in cards and components	See Appendix.	Pass
6.4.4	Earth conductors and connections	Earth conductors and connections are not considered infallible and their faults considered as a non-countable fault.	Pass

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IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
6.5	Separation of conductive parts		
6.5.1	Separations on which intrinsic safety depends	All distance requirements (including clearance and creepage) have been fulfilled in compliance with the standard for Protection Level "ia"	Pass
6.5.2	Separation distances according to Table 7	All separations are based on Table 7	Pass
6.5.3	Reduced separation distances		
6.5.3.1	General	Refer to 6.5.2	N/A
6.5.3.2	Reduced separation distances according to Table 8	Refer to 6.5.2	N/A
6.5.3.3	Reduced separation distances for Level of Protection "ic"	level of protection "ia" and Refer to 6.5.2	N/A
6.5.4	Failure of separations		
6.5.4.1	General		
6.5.4.2	Infallible separations	Separation distances are in accordance with the values given in Table 7. Clearance between the isolated and the non-isolated circuitries is about 1mm. Connection between two sections is carried out using optocoupler and transformer Creepage > distance of the optocoupler is 2.5mm	Pass
6.5.4.3	Distances according to Table 7	Refer to 6.5.4.2	Pass
6.5.4.4	Distances according to Table 8	Refer to 6.5.4.2	N/A
6.5.4.5	Distances according to Table 9	Refer to 6.5.4.2	N/A
6.5.5	Voltage between conductive parts	30 VDC	Pass
6.5.6	Types of separation		
6.5.6.1	Clearance	Clearance between the isolated and the non-isolated circuitries is about 1mm.	Pass
6.5.6.2	Separation distances through casting compound	Not used.	N/A
6.5.6.3	Separation distances through solid insulation	Not applicable, solid insulation distances not Considered.	N/A

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Clause	Requirement – Test	Result – Remark	Verdict
6.5.6.4	Creepage distance	Connection between two sections is carried out using optocoupler and transformer Creepage > distance of the optocoupler is 2.5mm	Pass
6.5.6.5	Separations distances protected by coating	Not used.	N/A
6.5.7	Composite separations	Not used.	N/A
6.5.8	Printed circuit board assemblies	The printed circuit board layout adheres to required creepage and clearance distances to prevent unintended conduction paths between different circuits or components. Although the circuit voltages here are low (max 30 V), maintaining proper spacing is crucial, especially if there are parts of the board that might see transients or if there are separate circuits that must remain isolated. any trace that could potentially carry a significant fault current (for example, the path from the input resistors and zeners) is made at least 2 mm wide on the PCB.	Pass
6.5.9	Separation by metal parts		
6.5.9.1	General	Not applicable, metal parts are not used.	N/A
6.5.9.2	Levels of Protection "ia" and "ib"	Not applicable.	N/A
6.5.9.3	Level of Protection "ic"	Level protection is "ia"	N/A
6.5.10	Separation by non-metallic insulating partitions	Not applicable.	N/A
6.5.11	Insulation of internal wiring		
6.5.11.1	General		
6.5.11.2	Insulation between intrinsically safe and non-intrinsically safe circuits	Non-intrinsically safe circuits don't exist.	N/A
6.5.11.3	Insulation between separate intrinsically safe circuits	Only a single intrinsically safe circuit is present. there are no multiple distinct circuits.	N/A
6.6	Encapsulation		
6.6.1	General	Not used.	N/A
6.6.2	Encapsulation used for the exclusion of explosive atmospheres		

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IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
6.6.2.1	Protection against spark ignition	Not applicable.	N/A
6.6.2.2	Additional requirements for protection against thermal ignition	Not applicable.	N/A
6.6.3	Mechanical protection to avoid access to parts	Not applicable.	N/A
6.6.4	Encapsulation used for protection of a fuse	Not applicable.	N/A
6.6.5	Encapsulation used to provide separation	Not applicable	N/A
6.6.6	Encapsulation used to enhance the rating of protective components	Not applicable.	N/A
6.6.7	Free space within the encapsulation		
6.6.7.1	General	No Free space within the encapsulation.	N/A
6.6.7.2	Volume of free space	Refer to 6.6.7.1	N/A
6.6.7.3	Protection of free space	Refer to 6.6.7.1	N/A
6.7	Specification of coating, encapsulation materials	Not used.	N/A
6.8	Protection against polarity reversal	D1 (for reverse polarity protection) prevent reverse voltage damage in power supply board.	Pass.
6.9	Dielectric strength requirement	Voltage test with 500V AC 50Hz was performed between the circuits and the frame. No breakdown occurred	Pass
7	Characteristics and failure of components and assemblies		
7.1	Rating of components on which intrinsic safety depends	The safety components are rated with at least a safety factor of 1,5. The safety components and the rating is described in the Appendix A The safety component is reverse polarity protection diodes.	Pass

IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
7.2	Failure of components	See Appendix A.	Pass
7.3	Manufacturing variation	Not applicable, Not applicable, there are no components on which intrinsic safety depends.	N/A
7.4	Resistors		
7.4.1	General	See Appendix	Pass
7.4.2	Resistors on which intrinsic safety depends	Not used.	N/A
7.5	Capacitors		
7.5.1	General	Refer to Appendix A	Pass
7.5.2	Capacitors on which intrinsic safety depends	Not used.	N/A
7.5.3	Blocking capacitors	Not used.	N/A
7.5.4	Infallible filter capacitors	Not used.	N/A
7.6	Inductors and windings		
7.6.1	General	Refer to Appendix A.	Pass
7.6.2	Inductors on which intrinsic safety depends	Not used.	N/A
7.6.3	Infallibly insulated inductors	Not used.	N/A
7.6.4	Damping windings	Not used.	N/A
7.6.5	Common mode choke coils (EMI suppression filters)		
7.6.5.1	General	Not used.	N/A
7.6.5.2	Infallible common mode chokes	Not used.	N/A
7.7	Semiconductors		
7.7.1	Failure of semiconductors	See Appendix.	Pass
7.7.2	Semiconductors on which intrinsic safety depends	See Appendix.	Pass

IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
7.7.3	Transient effects on semiconductors on which intrinsic safety depends	Not applicable.	N/A
7.7.4	Semiconductors in shunt voltage limiters	See Appendix.	Pass
7.7.5	Shunt assembly on which intrinsic safety depends	Not used.	N/A
7.7.6	Safety assemblies infallible against failure to limit voltage	Not used.	N/A
7.7.7	Semiconductor current limiters	Not used.	N/A
7.7.8	Use of programmable components	Not used.	N/A

7.8	Transformers		
7.8.1	General	RM6 Flyback Transformer for Power Boards in Coriolis Mass Flowmeters	Pass
7.8.2	Transformers on which intrinsic safety depends	RM6 Ferrite Core with 0.1mm air gap All wire diameters are 0.25mm. RM 6 Bobbin with 8 pins and Metal Clamp	Pass
7.8.3	Construction of transformers on which intrinsic safety depends	Winding Construction: 1. Isolated Windings 3 Layer Tape Secondary 2 Winding 2 Layer Tape Secondary 1 Winding Between Isolated Windings and Non-isolated Windings is 5 Layer Tape 2. Non-isolated Windings Auxiliary 2 Winding 2 Layer Tape Auxiliary 1 Winding 5 Layer Tape Primary Winding	Pass
7.8.4	Protective measures for transformers on which intrinsic safety depends for Levels of Protection "ia" and "ib"		

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IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
7.8.4.1	Mains transformers	Not applicable.	N/A
7.8.4.2	Transformers galvanically isolated from the mains supply	Refer to 7.8.1	Pass
7.8.5	Requirements for transformers for Level of Protection "ic"	Not applicable.	N/A

7.9	Relays		
7.9.1	General	Not used.	N/A
7.9.2	Relays on which intrinsic safety depends	Refer to 7.9	N/A

7.10	Signal isolators		
7.10.1	General	PS2801-1, PS2801-4 HIGH ISOLATION VOLTAGE SSOP PHOTOCOUPLER	Pass
7.10.2	Signal isolators on which intrinsic safety depends	Refer to 7.10.1	Pass
7.10.3	Signal isolators between intrinsically safe and non-intrinsically safe circuits	Refer to 7.10.1	Pass
7.10.4	Signal isolators between separate intrinsically safe circuits	Not applicable.	N/A

7.11	Fuses	Not used.	N/A
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7.12	Primary and secondary cells and batteries		
7.12.1	General	Not used.	N/A
7.12.2	Construction of cells and batteries used in intrinsically safe apparatus	Refer to 7.12.1	N/A
7.12.3	Electrolyte leakage	Refer to 7.12.1	N/A
7.12.4	Ventilation	Refer to 7.12.1	N/A
7.12.5	Cell voltages	Refer to 7.12.1	N/A
7.12.6	Batteries in equipment protected by different Types of Protection	Refer to 7.12.1	N/A

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Clause	Requirement – Test	Result – Remark	Verdict
7.12.7	Batteries used and replaced in explosive atmospheres	Refer to 7.12.1	N/A
7.12.8	Replaceable batteries used but not replaced in explosive atmospheres	Refer to 7.12.1	N/A
7.12.9	External contacts for charging batteries	Refer to 7.12.1	N/A
7.13	Piezoelectric devices	Not used.	N/A
7.14	Cells for the detection of gases		
7.14.1	Electrochemical	Not used.	N/A
7.14.2	Catalytic	Not used.	N/A
7.15	Supercapacitors	Not used.	N/A
7.16	Thermal devices		
7.16.1	General	Not used.	N/A
7.16.2	Thermal devices used to limit temperature		
7.16.2.1	General	Not used.	N/A
7.16.2.2	Temperature sensors	Not used.	N/A
7.16.2.3	Switching thermal devices	Not used.	N/A
7.16.2.4	PTC devices used to limit temperature	Not used.	N/A
7.16.3	PPTC devices used to limit current	Not used.	N/A
7.17	Mechanical switches	Not used.	N/A
8	Supplementary requirements for specific apparatus		
8.1	Diode safety barriers		
8.1.1	General	Not used.	N/A

IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
8.1.2	Construction		
8.1.2.1	Mounting	Refer to 8.1.1	N/A
8.1.2.2	Facilities for connection to earth	Refer to 8.1.1	
8.1.2.3	Protection of components	Refer to 8.1.1	N/A
8.2	FISCO apparatus	Not used.	N/A
9	Type verifications and type tests		
9.1	Spark ignition test		
9.1.1	General	Normal and fault conditions shall be simulated during the tests. The spark test apparatus shall be inserted in the circuit under test at each point where it is considered that an interruption, short circuit, or earth fault may occur.	Pass
9.1.2	Spark test apparatus and its use		
9.1.3	Test gas mixtures and spark test apparatus calibration current		
9.1.3.1	Explosive test mixtures and calibration currents for safety factor 1,0	Refer to 9.1.3.2	N/A
9.1.3.2	Explosive test mixtures and calibration currents for safety factor 1,5	Compositions of explosive test mixtures adequate for 1,5 safety factors: Oxygen-hydrogen mixture for IIC gas group: 60 ± 0,5 (Hydrogen) and 40 ± 0,5 (Oxygen)	Pass
9.2	Spark ignition assessment using reference curves and tables		
9.2.1	General	Refer to Appendix	Pass
9.2.2	Assessment of simple resistive circuit		
9.2.2.1	General	Refer to Appendix A.	Pass
9.2.2.2	Example simple resistive circuit assessment	Refer to Appendix A.	Pass
9.2.3	Assessment of simple capacitive circuits		
9.2.3.1	General	Refer to Appendix A.	Pass

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Clause	Requirement – Test	Result – Remark	Verdict
9.2.3.2	Example of simple capacitive circuit assessment	Refer to Appendix A.	Pass
9.2.3.3	Permitted reduction of effective capacitance when protected by a series resistance	Not used.	N/A
9.2.4	Assessment of simple inductive circuits		
9.2.4.1	General	Refer to Appendix A.	Pass
9.2.4.2	Example of simple inductive circuit assessment	Refer to Appendix A.	Pass
9.2.5	Determination of Lo/Ro for resistance limited power source	Not applicable.	N/A
9.2.6	Circuits with both inductance and capacitance	Not applicable.	N/A

9.3	Temperature tests	The temperature tests were done considering ۷۰°C as maximum ambient temperature. The maximum service temperature is +۶۲.۹°C The maximum surface temperature is +۶۴.۲°C for with display version	Pass
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9.4	Mechanical tests		
9.4.1	Casting compound	Not used.	N/A
9.4.2	Acceptability of encapsulated or coated fuses	Not used.	N/A
9.4.3	Partitions	Not used.	N/A
9.4.4	Cable pull test	Not used.	N/A

IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
9.5	Current carrying capacity of infallible printed circuit board connections	The current carrying capacity of the connection was tested in accordance with the requirements for Levels of Protection "ia" and "ib". The test was performed for a duration of 1 hour at the maximum service temperature, applying a test current equal to 1.5 times the maximum continuous current that can flow in the connection under the conditions specified in Clause 5.2. During and after the test, no open-circuit failure occurred, and no separation of the connection from its substrate was observed at any point. The connection remained mechanically and electrically intact.	Pass
9.6	Dielectric strength tests	Voltage test with 500V AC 50Hz was performed between the circuits and the frame.	Pass
9.7	Qualification of solid insulation and distance through casting compound for application of reduced separations		
9.7.1	General	Distances are based on Table 7.	N/A
9.7.2	Preconditioning		
9.7.2.1	Dry heat preconditioning	Refer to 9.7.1	N/A
9.7.2.2	Dry heat cycle preconditioning	Refer to 9.7.1	N/A
9.7.2.3	Rapid change of temperature preconditioning	Refer to 9.7.1	N/A
9.7.2.4	Humidity preconditioning	Refer to 9.7.1	N/A
9.7.3	AC power frequency voltage test	Refer to 9.7.1	N/A
9.7.4	Partial discharge test	Refer to 9.7.1	N/A
9.8	Type tests for PCB coatings	Distances are based on Table 7.	N/A
9.9	Differential Leakage current tests for signal isolators	Signal isolators are tested.	Pass
9.10	Isolator tests		

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Clause	Requirement – Test	Result – Remark	Verdict
9.10.1	General	PS2801-1, PS2801-4 HIGH ISOLATION VOLTAGE SSOP PHOTOCOUPLER	Pass
9.10.2	Thermal conditioning and dielectric test		
9.10.2.1	General	Refer to 9.10.1	Pass
9.10.2.2	Overload test at the receiver side	Refer to 9.10.1	Pass
9.10.2.3	Overload test at the transmitter side	Refer to 9.10.1	Pass
9.10.2.4	Thermal conditioning and dielectric strength test	Refer to 9.10.1	Pass
9.10.3	Dielectric and short circuit test		
9.10.3.1	General	Refer to 9.10.1	Pass
9.10.3.2	Pre-test dielectric	Refer to 9.10.1	Pass
9.10.3.3	Short circuit current test	Refer to 9.10.1	Pass
9.10.3.4	Dielectric strength test	Refer to 9.10.1	Pass
9.11	Tests for intrinsically safe apparatus containing piezoelectric devices	Not used.	N/A
9.12	Tests for PTC devices	Not used.	N/A
9.13	Determination of parameters of loosely specified components	Not used.	N/A
9.14	Tests for cells, batteries and supercapacitors		
9.14.1	Conditions for testing		
9.14.1.1	General	Not used.	N/A
9.14.1.2	Tests without dust layers	Refer to 9.14.1.1	N/A
9.14.1.3	Tests with dust layers	Refer to 9.14.1.1	N/A
9.14.1.4	Additional tests	Refer to 9.14.1.1	N/A
9.14.2	Electrolyte leakage test for cells, batteries and supercapacitors	Refer to 9.14.1.1	N/A
9.14.3	Spark ignition and surface temperature of cells, batteries or supercapacitors		

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هرگونه تکثیر این گزارش به صورت جزئی یا کلی بدون تایید کتبی اپیل ممنوع می باشد.
 نتایج آزمون‌ها تنها در رابطه با نمونه آزمون شده معتبر است. این گزارش بدون مهر فاقد اعتبار است.
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 کد پستی: ۱۴۱۶۸۵۴۵۲۳ - تلفن: ۶۱۹۷۱ - (+۹۸۲۱) فکس: ۶۶۱۷۴۲۸۳ - (+۹۸۲۱)
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Clause	Requirement – Test	Result – Remark	Verdict
9.14.3.1	General	Refer to 9.14.1.1	N/A
9.14.3.2	Spark ignition assessment	Refer to 9.14.1.1	N/A
9.14.3.3	Thermal ignition assessment	Refer to 9.14.1.1	N/A
9.14.4	Battery container pressure tests	Refer to 9.14.1.1	N/A
9.14.5	Battery resistance	Refer to 9.14.1.1	N/A
9.15	Determination of storable energy in common mode chokes	Not used.	N/A
9.16	Type tests for components protected by time dependent current limitation	Not used.	N/A
9.17	Transformer tests		
9.17.1	General	Test is performed.	Pass
9.17.2	Mains transformers for Level of Protection "ia" and "ib"		
9.17.2.1	Mains transformers operated at mains frequency	Refer to 9.17.1	N/A
9.17.2.2	Mains transformers operated at non-mains frequency	Test is performed.	Pass
9.17.2.3	Acceptance criteria	Meet the standard requirements.	Pass
9.17.3	Transformers galvanically isolated from the mains supply for Levels of Protection "ia" and "ib"	Test is performed.	Pass
9.17.4	Transformers for Level of Protection "ic"	9.17.1	N/A
10	Routine verifications and tests		
10.1	Alternative reduced spacings	Not applicable.	N/A
10.2	Routine tests for diode safety barriers		
10.2.1	Completed barriers	Not applicable.	N/A

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Clause	Requirement – Test	Result – Remark	Verdict
10.2.2	Diodes for 2-diode "ia" barriers	Not applicable.	N/A

10.3	Routine tests for transformers		
10.3.1	Levels of Protection "ia" and "ib"	applicable.	Pass
10.3.2	Level of Protection "ic"	Not applicable.	N/A

10.4	Routine verification of conformal coating and encapsulation	Not applicable.	N/A
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11	Marking		
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11.1	Intrinsically safe apparatus and associated apparatus		
11.1.1	General	It complies with the requirements. This Intrinsically safe apparatus is marked according to requirements specified in IEC 60079-0: 2017 Ex db [ia Ga] IIC T6 Gb	Pass
11.1.2	Intrinsic safety parameters	See Appendix	Pass
11.1.3	FISCO	Not applicable.	N/A
11.1.4	Marking of connection facilities	Not applicable.	N/A
11.1.5	Non-hazardous area accessory	Not applicable.	N/A

11.2	Warning markings	DO NOT OPEN WHEN ENERGIZED.	Pass
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12	Instructions		
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12.1	General	The Flow meter transmitter are used for direct determination and display of the mass flow rate of flammable and non-flammable liquids and gases. The equipment comprises a sensor unit and measuring converter which are mounted to each other to form a compact device. All electrical connections between the sensor unit and converter are internal intrinsically safe circuits.	Pass
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IEC 60079-11:2023			
Clause	Requirement – Test	Result – Remark	Verdict
12.2	Specific Conditions of Use	The following relate to the installation and/or safe use of the equipment: 1. The equipment shall be included in the equipotential bonding system of the hazardous area. 2. Opening the enclosure inside the hazardous area is only permissible in a de-energized state and after waiting time of: 35 minutes for temperature class T6 3. The connecting cables shall be installed as fixed wiring and in such a way that they are sufficiently protected against damage. 4. Potential Electrostatic Charging Hazard – A charge from high-voltage fields can under certain circumstances cause an ignitable electrostatic charge on the non-metallic coating. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the enclosure shall only be cleaned with a damp cloth. 5. This equipment contains flameproof joints which shall not be repaired.	Pass

APPENDIX A: Description of product

A.1 General overview

The Flow meter transmitter are used for direct determination and display of the mass flow rate of flammable and non-flammable liquids and gases. The equipment comprises a sensor unit and measuring converter which are mounted to each other to form a compact device. All electrical connections between the sensor unit and converter are internal intrinsically safe circuits.

A.2 Spark ignition considerations

Circuit of Flow meter is included of these blocks :

1. Excitation Coil Barrie:

This circuit prevents excessive energy from being injected into the excitation coil of a Coriolis mass flowmeter. The bidirectional Zener diodes clamp the input voltage to approximately $\pm 4.5V$, protecting the coil from voltage spikes. The series resistor limits the current flowing through the coil, ensuring safe operation. Additionally, the fuse provides overcurrent protection by safeguarding the Zener diodes against excessive current that could otherwise damage them.

2. Pickup1 Coil Barrier and Pickup2 Coil Barrier

This circuit prevents excessive energy from being injected into the first pickup coil of a Coriolis mass flowmeter. The bidirectional Zener diodes clamp the input voltage to approximately $\pm 4.5V$, protecting the coil from voltage spikes. The series resistor limits the current flowing through the coil, ensuring safe operation. Additionally, the fuse provides overcurrent protection by safeguarding the Zener diodes against excessive current that could otherwise damage them.

3. 3.3V Power Supply Barrier

This circuit prevents excessive energy from being injected into the RTD temperature sensors through analog multiplexer power supply. The unidirectional Zener diodes clamp the input voltage to approximately 3.3V, protecting the RTDs from voltage spikes. The series resistor limits the current flowing through the RTD resistors, ensuring safe operation. Additionally, the fuse provides overcurrent protection by safeguarding the Zener diodes against excessive current that could otherwise damage them.

4. RTD 4-wire barrier

This circuit prevents excessive energy from being injected into the RTD temperature sensors, located at Zone 0, through 4-wire connection of the RTDs to the RTD signal conditioner IC (MAX31865). The unidirectional Zener diodes clamp the input voltage to approximately 3.3V, protecting the RTDs from voltage spikes. The series resistor limits the current flowing through the RTD resistors, ensuring safe

operation. Additionally, the fuse provides overcurrent protection by safeguarding the Zener diodes against excessive current that could otherwise damage them.

Intrinsically Safe Input Connections

Connection	Parameter
Power	Um = 60V
Passive current output plus HART Pulse/status output	Ui = 30V Ii = 100mA Pi = 1.0W Ci = 10 nF Li = not significant
RS485 output	Ui = 7V Ii = 100mA Pi = 0.5W Ci = 10 nF Li = not significant

Intrinsically Safe Output Connections

Connection	Parameter
Drive Coil	Uo = 4.731V Io = 58mA Po = 0.07W Co = 100 µF Lo = 10 mH
Pickup Coils	Uo = 4.731V Io = 18mA Po = 0.02W Co = 136 µF Lo = 50 mH
RTD Temperature Sensors	Uo = 3.531V Io = 43mA Po = 0.04W Co = 100 µF Lo = 20 mH