

EU RO Mutual Recognition Technical Requirements

ELECTRO-PNEUMATIC LEVEL TRANSMITTERS (EPLT)	Version	0.1
	Adoption Date:	1 February 2023
	Application Date:	1 July 2023
	Tier	5
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1. PRODUCT DESCRIPTION

1.a General description of the product

Electro-pneumatic level transmitters (EPLT), usually consisting of:

- **a pneumatic unit**, supplied by an external source of compressed air (instrument air quality – Class III piping system, $P \leq 16$ bar, $T \leq 200^\circ\text{C}$), incorporating filtering device(s), non-return valve(s), a safety valve, an air pressure regulator, and a connection to a sounding/bubbling pipe (immersed in tank from tank top and terminating with an open end close to the bottom);
- **an air pressure sensing device**;
- **an electric transmitter**.

The pressure sensing device and the electric transmitter, together, can be identified as a “pressure transducer”.

The level measurement is obtained indirectly, through measurement of the air backpressure needed for bubbling of air through the liquid content of the tank: such pressure is in direct proportion with the height and the specific gravity of the liquid above the sounding pipe lower termination, plus (in case of inerted tanks) the pressure of the inert gas itself.

1.b Application limitations

Intended for use in fuel, lube oil, hydraulic oil, water and liquid cargo tanks.

Not to be used in cargo tanks of Liquefied Gas Carriers.

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When installed in hazardous areas (e.g. in cargo area of tankers), the electrical apparatus shall be certified safe for the intended hazardous area, according to IEC 60079 series of standards. Relevant safety certificate shall be issued by a recognised competent body.

1.c Intended use

Indirect measurement of liquid level inside atmospheric or slightly pressurized tanks.

1.d System context

Atmospheric or slightly pressurized fuel, lube oil, hydraulic oil, water and liquid cargo (excluding liquefied gas cargo) tanks.

2. DESIGN EVALUATION

2.a Engineering evaluation requirements

2.a.i. Technical Requirements

- a) The materials of the various EPLT components, likely to get in contact with the fluid whose level they are intended to measure, shall be compatible with the fluid itself;
- b) Minimum degree of protection as applicable, to be in accordance with the requirements set forth by the Recognized Organization in charge of the vessel's classification as a function of the intended location;
- c) Pressure transducers shall comply with a suitable recognized standard for such devices (e.g. ASTM F2070);
- d) For the specific requirements relating to electrical and electronic pressure sensors and transmitters (transducers), refer to the separate EU RO MR Technical Requirements for "Sensors" (Tier 1) paragraph 2.1.1, and "Pressure gauges/transmitters" (Tier 5), paragraph 2.a.i.;
- e) Non return valves, safety valves, stop valves, pressure regulators, fittings, filters and other piping components in air system shall be in compliance with a recognized standard for the appropriate pressure rating;
- f) In case of installation in hazardous areas (e.g. in cargo area of tankers), the electrical apparatus shall be certified safe for the intended hazardous area, according to IEC 60079 series of standards.

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2.a.ii. Technical documents to be submitted

IMPORTANT: The English Language shall be used for all submitted documents;

- a) Technical specifications, data sheets, drawings, installation sheets and type test reports, describing the type and working principles of the electro-pneumatic level transmitter for which approval is requested, and showing compliance with the relevant technical requirements as per above point 2.a.i;
- b) Documents shall be submitted for electrical/electronic pressure sensor and transmitter - for reference purposes see EU MR TR "SENSORS" (Tier 1) par. 2.1.2. and "PRESSURE GAUGES /TRANSMITTERS" (Tier 5) par. 2.a.ii;
- c) For equipment intended for installation in hazardous areas, safety certificates according to IEC 60079 series of standards issued by a competent Body.

2.b Type testing requirements

- a) Type tests shall be carried out as per the selected suitable recognized standard. In particular, testing according to IACS UR E10 (latest revision) should be documented for all electronic/electric parts (e.g. electronic pressure regulators);
- b) For electrical/electronic pressure sensors and transmitters (transducers), type testing shall be carried out as per EU RO MR Technical Requirements for "SENSORS" (Tier 1) par. 2.2 or according to "PRESSURE GAUGES /TRANSMITTERS" (Tier 5) par. 2.b;
- c) Test specimens shall be taken from the production line or from stocks[†];
- d) Tests shall be carried out in the presence of the EU RO Surveyor. In cases where the tests are conducted at a Nationally Accredited Laboratory, the presence of the EU RO's Surveyor may be omitted[†], provided that the scope of accreditation covers the relevant applicable standards.

[†] For further clarification of witnessing of tests and sampling the test specimen(s), refer to paragraphs 6, 7 and 8 of the EU RO "Design Evaluation Scheme" procedure (Appendix V of EU RO Framework Document for the Mutual Recognition of Type Approval found on <http://www.euromr.org/Guidance%20for%20Mutual%20Recognition>)

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2.c Type testing requirement for certificate renewal

The manufacturer is to notify the RO of any modification or changes to the manufacturing specifications that may affect the MR TA to be renewed.

3. PRODUCTION REQUIREMENTS

Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval found on [Technical Requirements \(euromr.org\)](http://www.euromr.org/technical-requirements))

4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment as per referenced standard. In addition, and as a minimum, the following items to be marked at the suitable place:

- a) Manufacturer's name or equivalent;
- b) Type No. or symbol;
- c) Serial No. and date of manufacture;
- d) Particulars or ratings, including IP grade and class of accuracy
- e) Date of Manufacture

5. TYPE APPROVAL CERTIFICATE CONTENT

The EU RO MR Type Approval Certificate shall contain the minimum information as defined in the EU RO Framework Document for the Mutual Recognition of Type Approval - see Appendix I of EU RO MR Type Approval Certificate Information.

The following information is specifically applicable to products relevant to this technical requirement and shall be included on the EU RO MR Type Approval Certificate:

- a) Environmental test items and test levels applied, if any;
- b) Approval conditions including limitations, if any;
- c) Hardware, firmware, software name and revision, if and as applicable

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6. APPROVAL DATE AND REVISION NUMBER

Date	Revision	Comment
2016-07-01	0.0	Approved by EU RO MR Advisory Board
2023-02-01	0.1	Added para 2.c. Added para 9. Copyright (ref 21030_)

7. BACKGROUND INFORMATION / REFERENCES

- EU RO Framework Document for the Mutual Recognition of Type Approval;
- IEC 60079;
- ASTM F2070;
- EU RO MR Technical Requirements for "SENSORS" (Tier 1) par. 2.1.2;
- EU RO MR Technical Requirements for "PRESSURE GAUGES /TRANSMITTERS" (Tier 5) par. 2.a.ii;
- IACS UR E10 Revision 6 "Test specification for Type Approval".

8. MAINTENANCE & CLARIFICATION OF TECHNICAL REQUIREMENTS

Anyone wishing to propose changes to this document or request clarification of technical issues should contact the EU RO MR Group Secretariat in the first instance:
Secretariat@euomr.org.

Review and approval of change requests shall follow the EU RO MR Maintenance Process detailed in the EU RO Framework Document for the Mutual Recognition of Type Approval: [Technical Requirements \(euomr.org\)](http://www.euomr.org/technical-requirements)

9. LEGAL PROVISIONS / COPYRIGHT

- Underlying legal provisions in accordance with EU RO Framework Document for the Mutual Recognition of Type Approval;
- Copyright © 2022. All EU RO MR Group rights reserved.
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