DNV·GL

EUROPEAN UNION RECOGNISED ORGANISATION (EU RO) MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

Certificate No:
MRA0000023

In accordance with Article 10.1 of EU Regulation 391/2009

This Certificate is issued to

PR electronics A/S

Rønde, Midtjylland, Denmark

for
Temperature Gauges/Sensors/Transmitters

with type designation(s)
5431, 5434, 5435, 5437, 6431, 6437

The product is found to comply with
EU RO Mutual Recognition Technical Requirements for Temperature Gauges and Transmitters
EU RO Mutual Recognition Technical Requirements for Sensors

Intended service
Applicable for a ship as defined in Mutual Recognition provisions Article 10 Regulation on Common Rules and Standards For Ship Inspection and Survey Organizations. Temperature transmitters intended for a wide range of TC and RTD type temperature sensors. See product description on page 2.

Temperature [°C]:	**-25°C to 70°C**
Vibration:	**±1.6 mm / 4.0 g**
EMC:	**All locations including bridge and open deck**
IP Code:	**54xx: IP00, 64xx: IP20**

This is to certify:

that the Product referred to herein has been inspected for the Manufacturer, pursuant to the relevant requirements of the European Union Recognised Organisation Mutual Recognition procedure, required by Article 10.1 of EU Regulation 391/2009, and has been found in accordance with those requirements.

This Certificate is valid until **2024-02-19**.

Issued at **Høvik** on **2019-02-20**
DNV GL local station: **Aalborg** for **DNV GL**

Approval Engineer: **Ståle Sneen**

Marta Alonso Pontes
Head of Section

When a product is presented with this EU RO MR Type Approval Certificate for given application, its acceptability with regards to the limitations stated in the certificate conditions defined in 1b, 1c and 1d of the applied Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.
This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

Temperature transmitter models 5431, 5434, 5435, 5437, 6431, 6437.

Model 5431 is a 2-wire temperature transmitter with 4-20 mA analogue communication
Model 5434 is a 2-wire TC temperature transmitter with 4-20 mA analogue communication
Model 5435 is a 2-wire temperature transmitter with HART 5 communication
Model 5437 is a 2-wire temperature transmitter with HART 7 communication
Models 54xx are made for DIN form B sensor head mounting.

Model 6431 is a 2-wire temperature transmitter 4-20 mA analogue communication
Model 6437 is a 2-wire temperature transmitter with HART 7 communication
Models 64xx are made for DIN-rail mounting.

Model number is followed by a four-character code:

Character 1:	A: General purpose version,
	D: Hazardous area version.
Character 2:	1: Single input (4 terminals),
	2: Dual input (7 terminals for 54xx, 8 terminals for 64xx),
	3: 2 channels (2x4 terminals) (available for 6437).
Character 3:	S: SIL,
	-: No SIL.
Character 4:	M: Marine approval,
	-: No marine approval.

Maker's specifications:

- Input for RTD, TC, potentiometer, linear resistance and bipolar mV
- Single or true dual sensor inputs with sensor redundancy and drift detection
- High accuracy across a wide ambient operating temperature of -50°C to +85°C
- 2.5 kVAC galvanic isolation
- Full assessment to IEC 61508:2010 for use in SIL 2/3 applications
- 2-wire supply 7.5…48 VDC. Marine tested for supply voltage 6.75…48 VDC.

Firmware revision numbers are listed in document named 54xx-64xx-EU-RO-Firmware version V2R0 dated 2018-09-26.

Manufactured by

PR electronics A/S
Rønde, Denmark

Application/Limitation

The Type Approval covers hardware listed under type designation.

Applicable for a ship as defined in Mutual Recognition provisions Article 10 Regulation on Common Rules and Standards for Ship Inspection and Survey Organizations.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to class requirements and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Type Approval documentation

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Other conditions

The temperature transmitters have been verified for compliance with EU Mutual Recognition Technical Requirements for Temperature Gauges and Transmitters version, dated 2016-04-01, including the Technical Requirements for Sensors version 0.4, dated 2018-07-01.

Environmental test parameters		DNV GL location classes
Temperature:	-25°C ~ +70°C	D
Vibration:	±1.6 mm / 4.0 g	B
Humidity:	95%RH @ 55°C	B
EMC:	All locations including bridge and open deck	B
Enclosure 54xx:	IP00. IP-rating according to relevant rules is to be provided by the sensor head.	-
Enclosure 64xx:	IP20 (according to IEC 60529)	A

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed annually and at renewal of this certificate.

END OF CERTIFICATE