



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

Certificate No:  
**MRA0000023**  
Revision No:  
**2**

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  
**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 **2029-01-21**.

Issued at **Høvik** on **2024-01-22**

DNV local unit: **Denmark CMC**

for **DNV**

Approval Engineer: **Martin Skårerverket**

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**Frederik Tore Elter**  
**Head of Section**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## 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

<b>Name</b>	<b>Number</b>	<b>Revision/Date</b>
5300NP 5437 EU-RO Marine Test Report	-	V2R0 / 2019-01-28
Marine type testing of three PR-modules, 4184, TR420 and 6437	118-28352-1	2018-06-22
Vibration of PR 4179, PR 5437, PR 53xx-AL	117-27055-1	2017-06-12
Product manual 5437 2-wire HART 7 temperature transmitter	5437V100-UK	100
Product manual 6437 2-wire HART 7 temperature transmitter	6437V100-UK	100
54xx-64xx-EU-RO-FIRMWARE	-	V2R0 / 2018-09-26
EMC 6 GHz supplementary Test Report	121-23384-1	2021-06-01
EU RO MR TA PQA Scheme periodical assessment checklist	-	2024-01-19

### 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 0.3, dated 2023-01-01, including the Technical Requirements for Sensors version 0.5, dated 2023-02-01.

Environmental test parameters	DNV 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

## Generic Statement for EU RO MR Type Approval Certificate

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.

In accordance with Article 10 of Regulation (EC) No 391/2009 of the European Parliament and of the Council of 23 April 2009 "on common rules and standards for ship inspection and survey organizations", the following organizations, recognized by the EU on this date, have agreed on the technical and procedural conditions under which they will mutually recognize this certificate:

- American Bureau of Shipping (ABS);
- Bureau Veritas (BV);
- China Classification Society (CCS);
- Croatian Register of Shipping (CRS);
- DNV;
- Indian Register of Shipping (IRS);
- Korean Register (KR);
- Lloyd's Register Group Ltd. (LR);
- Nippon Kaiji Kyokai General Incorporated Foundation (ClassNK);
- Polish Register of Shipping (PRS);
- RINA Services S.p.A. (RINA).

The scheme for the mutual recognition of class certificates for materials, equipment and components laid down by Article 10(1) of Regulation (EC) No 391/2009 is only enforceable within the Union in respect of ships flying the flag of a Member State. As far as foreign vessels are concerned, the acceptance of relevant certificates remains at the discretion of relevant non-EU flag States in the exercise of their exclusive jurisdiction, notably under the United Nations Convention on the Law of the Sea (UNCLOS). (In accordance with COMMISSION IMPLEMENTING REGULATION (EU) No 1355/2014 amending Regulation (EC) No 391/2009 - recital (25)).