



DET NORSKE VERITAS

EC-TYPE EXAMINATION CERTIFICATE

- [2] **EQUIPMENT OR PROTECTIVE SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 94/9/EC**
- [3] EC-Type Examination Certificate Number: **DNV-2008-OSL-ATEX-40059U** Rev. 1
- [4] Equipment or Protective System: **Stator Winding Temperature Detectors**
- [5] Applicant – Manufacturer or Authorized representative: **Techno Controls**
- [6] Address: **54/1, Meladi Estate, Near Gota Railway Crossing, Gota, Ahmedabad - 382481, Gujarat, India**
- [7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to. 2014-9135
- [8] DNV, notified body number 0575 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential reports listed in section 14.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0: 2012 and EN 60079-7:2007
- [10] The sign 'U' placed after the certificate number indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as a basis for certification of an equipment or protective system.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified component. If applicable, further requirements of this Directive apply to the manufacturer and supply of this component.
- [12] The marking of the equipment or protective system shall include the following:

 **II 2 G Ex e IIC Gb** $-50^{\circ}\text{C} \leq \text{Ta} \leq +180^{\circ}\text{C}$

Høvik, 2014-04-15
for Det Norske Veritas AS

Asle Kaastad
Certification Manager



Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.

The digitally signed and electronically distributed document is the original and valid certificate. Ref.: www.dnv.com/digitalsignatures

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 300,000. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



[13]

Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE No.:** DNV-2008-OSL-ATEX-40059U

Rev. 1

Certificate History

Revision	Description	Report no.	Issue date
-	Original certificate	2008- 3507	2008-11-12
1	Scope Extension- Addition of new series TSRC	2014-9135	2014-02-14

[15] Description of Equipment or Protective System

TSRA,TSRB, TSRC, TSRD& TSRK series Stator Winding Temperature Detectors/ Resistance Temperature detectors- are used to measure winding temperature of motors/generators. Basically, these sensors are sandwiched between the windings of motors/generators. Unlike on-off device, it allows continues measurement of temperature. Sensing Portion extends throughout the body and average temperature is measured. Thermal and high dielectric strength is basic requirement of this product. This component is a passive device and do not generate any heat out due to the very low energy levels. These RTD's are categorised as a component, hence only required clauses has been addressed The above equipment satisfies the relevant tests and constructional requirements of IEC 60079-0: 2012and EN 60079-7:2007 standards with method 'e'. The operating temperature range is $50^{\circ}\text{C} \leq T_a \leq +180^{\circ}\text{C}$.

Type Identification

Resistance Temperature Detector (RTD) – Slot type

TSRA-Series (TSRA-ACC-L-T-W-NW-CL-WG-CC), TSRB-series(TSRB-ACC-L-T-W-NW-CL-WG-CC)

TSRC-Series(TSRC-ACC-L-T-W-NW-CL-WG-CC), TSRD-Series(TSRD-ACC-L-T-W-NW-CL-WG-CC)

TSR*	ACC	L	T	W	NW	CL	WG	CC	
									Cable Construction
									Wire Gauge (AWG 22 – 28)
									Lead length in mm
									No. Of wires
									Width in mm
									Thickness in mm
									Length in mm
									Accuracy of RTD element (A/B/2B)
									Type designation (A/B/C/D)

TSRK-Series (TSRK-E-T-ACC-L-D-NW-CL-WG-CC)

TSR*	E	T	ACC	L	D	NW	CL	WG	CC	
										Cable Construction
										Wire Gauge (AWG 22 – 28)
										Lead length in mm
										No. Of wires
										Diameter in mm
										Length in mm
										Accuracy of RTD element
										Type of RTD (S/D)
										Type of element (P1/P2)
										Type designation (K)

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Electrical Data

Power (under fault conditions): $\leq 1.5W$
Measuring current: $\leq 10 \text{ mA(AC/DC)}$
Voltage Input $\leq 10 \text{ V(AC/DC)}$

Routine Tests

Each RTD shall be tested with the following:
Test voltage dielectric strength test: 3 KV/50Hz, 1–5 seconds, for TSRA series, 3 KV/50Hz, 1 minute, TSRB and TSRD series, 5 KV /50Hz, 1minute, TSRC and TSRK series.

[16] **Report No.:**
Project No.: PRJC-56702-2008-PRC-IND

Descriptive Documents

Number	Title	Rev.	Date
Ex-110620078/R	Stator winding temperature Detector, Model ; TSRA	03	29/08/2013
Ex-110620078/S	Stator winding temperature Detector, Model ; TSRA	03	29/08/2013
Ex-110620079/S	Stator winding temperature Detector, Model ; TSRB	03	29/08/2013
Ex-110620079/R	Stator winding temperature Detector, Model ; TSRB	03	29/08/2013
Ex-110620080/R	Stator winding temperature Detector, Model ; TSRC	03	29/08/2013
Ex-110620080/S	Stator winding temperature Detector, Model ; TSRC	03	29/08/2013
Ex-110620081/S	Stator winding temperature Detector, Model ; TSRD	03	29/08/2013
Ex-110620081/R	Stator winding temperature Detector, Model ; TSRD	03	29/08/2013
Ex-110620086/R	Stator winding temperature Detector, Model ; TSRK	01	29/08/2013
Ex-110620086/S	Stator winding temperature Detector, Model ; TSRK	01	29/08/2013
Ex-2010201301	Marking-I details	00	24/10/2013
EX-2410201301	Name plate	00	24/10/2013
EX-2410201302	Annexure II RML	00	24/10/2013

[17] **Schedule of Limitations**
The terminations are needed to be protected by suitable protection method according EN 60079-0:2012.

The electrical connection should be connected to approved unit according to application or to terminal box according to requirements at the connecting site. The sensors can only be connected to measuring equipment prepared for PT100/PT1000 sensors.

Temperature measuring range: -50°C to 180°C .

The high voltage test need to be performed when completely assembled inside the motor.

[18] **Essential Health and Safety Requirements**
See part 9 of this certificate

END OF CERTIFICATE

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