DNV·GL

Certificate No:
TAA00000MS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Temperature Transmitter

with type designation(s)
System BR, System BI, System KWT, System WK

Issued to
J.P. Sauer & Sohn Maschinenbau GmbH
Kiel, Germany

is found to comply with
DNV GL rules for classification – Ships

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Type	Temperature	Humidity	Vibration	EMC	Enclosure
System BR	**B**	**B**	**B**	**A**	**B**
System BI	**B**	**B**	**B**	**A**	**B**
System KWT	**B**	**B**	**B**	**A**	**B**
System WK	**B**	**B**	**B**	**A**	**B**

This Certificate is valid until **2019-11-09**.

Issued at **Hamburg** on **2016-10-07**

for **DNV GL**

DNV GL local station: **Hamburg**

Approval Engineer: **Marco Rinkel**

Duy Nam Le
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.

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Product description

System BR

Ex 1. 1a. 2x 3. 4. 5- 6. 7. 8. 9

1) Type Ex2... (RTD)
Type Ex3... (TC)

1a) options: F = protection tube isolated with FEP
K = Kynar isolated
U = cap nut

2) diameter: 6 up to 15 mm ; stainless steel

3) length: up to 1000 mm (tested: 85 mm)

4) sensor quantity: 1 = 1x...
2 = 2x...
thermocouple: 1 = 1x...

5) sensor type: Pt = Pt100
PtM = Pt1000
Ni = Ni100
NiM= Ni1000
NiMTk = Ni1000 Tk5000
NTC = NTC
PTC = PTC
thermocouple type: J, K, L, N, S, E, R, B, T

6) wiring: RTD 2 = 2-phase
3 = 3-phase
4 = 4-phase

7) accuracy: RTD 0 = Standard
1 = 1/2 DIN IEC 60751
2 = 1/3 DIN IEC 60751
TC 2 = Standard
1 = 1/2 DIN IEC 584

8) process connection: All kind of threats

9) connection cable: *)

*) Cable length is to be below 6 m and flame redardant

System BI

Ex 1. 1a. 2x 3. 4. 5- 6. 7. 8

1)	Type	Ex2... (RTD)	
	Type	Ex3... (TC)	
1a)	options:	F = protection tube isolated with FEP	
		K = Kynar isolated	
2)	diameter:	6 up to 10 mm ; stainless steel	
3)	length:	up to 1000 mm (tested: 100 mm)	
4)	sensor quantity:	1 = 1x...	
		2 = 2x...	
		thermocouple: 1 = 1x...	
5)	sensor type:	Pt = Pt100	
		PtM = Pt1000	
		Ni = Ni100	
		NiM= Ni1000	
		NiMTk = Ni1000 Tk5000	
		NTC = NTC	
		PTC = PTC	
		thermocouple type: J, K, L, N, S, E, R, B, T	
6)	wiring:	RTD	2 = 2-phase
			3 = 3-phase
			4 = 4-phase
7)	accuracy:	RTD	0 = Standard
			1 = 1/2 DIN IEC 60751
			2 = 1/3 DIN IEC 60751
		TC	2 = Standard
			1 = 1/2 DIN IEC 584
8)	process connection:	All kind of threats	

Accessory: connection cable with capnut M12x1 inclusive connected cable on request *)

*) Cable length is to be below 6 m and flame redardant

System KF

Ex 1. 1a. 2x 3. 4. 5- 6. 7. 8

1) Type Ex2... (RTD)
Type Ex3... (TC)

1a) options: F = protection tube isolated with FEP
K = Kynar isolated
U = cap nut

2) diameter: 4 up to 15 mm ; VA + BN-ceramiv

3) length: up to 1000 mm (tested: 80 mm)

4) sensor quantity: 1 = 1x...
2 = 2x...
thermocouple: 1 = 1x...

5) sensor type: Pt = Pt100
PtM = Pt1000
Ni = Ni100
NiM= Ni1000
NiMTk = Ni1000 Tk5000
NTC = NTC
PTC = PTC
thermocouple type: J, K, L, N, S, E, R, B, T

6) wiring: RTD 2 = 2-phase
3 = 3-phase
4 = 4-phase

7) accuracy: RTD 0 = Standard
1 = 1/2 DIN IEC 60751
2 = 1/3 DIN IEC 60751
TC 2 = Standard
1 = 1/2 DIN IEC 584

8) connection cable: *)

*) Cable length is to be below 6 m and flame redardant

System WI

Ex 1. 1a. 2x 3. 4. 5- 6. 7. 8

1) Type Ex2... (RTD)
Type Ex3... (TC)

1a) options: K = FEP isolated

2) diameter: 4 up to 12 mm ; stainless steel

3) length: up to 800 mm (tested: 105 mm)

4) sensor quantity: 1 = 1x...
2 = 2x...
thermocouple: 1 = 1x...

5) sensor type: Pt = Pt100
PtM = Pt1000
Ni = Ni100
NiM= Ni1000
NiMTk = Ni1000 Tk5000
NTC = NTC
PTC = PTC
thermocouple type: J, K, L, N, S, E, R, B, T

6) wiring: RTD 2 = 2-phase
3 = 3-phase
4 = 4-phase

7) accuracy: RTD 0 = Standard
1 = 1/2 DIN IEC 60751
2 = 1/3 DIN IEC 60751
3 = GOST R 8.625-2006
TC 2 = Standard
1 = 1/2 DIN IEC 584

8) connection cable: *)

*) Cable length is to be below 6 m and flame redardant

Application/Limitation

Ex II 2G Ex ia IIC T6 - T2 according to IBExU 09 ATEX 1090 X. The Ex-Certification is not part of this certificate.

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2015.

Marking of product

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

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, components and/or materials. The main elements of the assessment are:

- Ensure thatbasis certificate (Paul Rüster GmbH) is valid
- Inspection of samples
- Review of inspection routines, including test records from product sample tests and control routines
- 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 product type marking and the type approval certificate

Periodical assessment is to be performed at least once in the period of validity and at renewal of this certificate.