

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP000013X
Revision No:
4

This is to certify:

That the **Thermometer**

with type designation(s)
TSCh, TSChG, TSChg, TSChgG, TAS, TFCh, TFChG, TFChgG, TAF

Issued to

ARMANO Messtechnik GmbH
Grünhain-Beierfeld, Sachsen, Germany

is found to comply with

EN 13190:2001 Dial thermometers
DNV class guideline DNV-CG-0339 – Environmental test specification for electrical, electronic and programmable equipment and systems

Application :

Thermometer types according to DIN EN 13190

Type: Temperature range:

TSCh
TSChG see
TSChg Certificate
TSChgG
TAS
TFCh
TFChG
TFChgG
TAF

Issued at **Hamburg** on **2022-06-03**

for **DNV**

This Certificate is valid until **2027-06-02** .

DNV local unit: **Magdeburg**

Approval Engineer: **Frank Poetsch**

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Sven Klinger
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

Gas actuated thermometer with nitrogen filled measuring system.
 Technical conformity according to EN 13190.

Types and additional technical data, range of application and test standard, based on DNV Class Guideline, DNV-CG-0339 "Environmental test specification for electrical, electronic and programmable equipment and systems".

Data Sheets	Type [T..NG]		Case Configuration		Amb. Temperature		Vibration Test	Stem
	Base Type	NG case Ø			DNV CG-0339 Class	Dry heat/cold test range	DNV CG-0339 Class	Connection and types
8201 01/22	TSCh	63	Bayonet ring case	without damping	D	-40°C / +60°C	A	rigid mount stem with neck tube TSCh-Stem types A1 A3 A4 A4.1 A5 A6
		100						
		160						
	TSChG	63		with dampening fluid	B	-20°C / +60°C	B	
		100						
		160						
8202 08/20	TSChg	63	Crimped-on ring case	without damping	D	-40°C / +60°C	A	
		80						
		100						
		160						
	TSChgG	63		with dampening fluid	B	-20°C / +60°C	B	
		80						
8291 10/21	TAS	63			B	-20°C / +60°C	B.2 increased	
		80						
		100						
8221 01/22	TFCh	63	Bayonet ring case	without damping	D	-40°C / +60°C	A	with capillary line mount stem TFCh-Stem types A1 A2 A3 A4 A5 A6 A7
		100						
		160						
	TFChG	63		with dampening fluid	B	-20°C / +60°C	B	
		100						
		160						
8222 01/22	TFChg	63	Crimped-on ring case	without damping	D	-40°C / +60°C	A	
		80						
		100						
		160						
	TFChgG	63		with dampening fluid	B	-20°C / +60°C	B	
		80						
8292 01/22	TAF	63			B	-20°C / +60°C	B.2 increased	
		80						
		100						

Application/Limitation

Technical Data	Conformities / Test-Standards
Measuring ranges	Ranges from 80 K to 600 K / Temperatures in °C; °F
Accuracy class	Double scale and others 1 / DIN EN 13190
Protection class	IP 65 / IEC 60529
Humidity class	DNV-CG-0339, Section 3, Class B, Item 8.3
Salt mist resistance	Proved, based on DNV-CG-0339, Section 3, Item 10
Fluids	Fluids and media that will not damage the wetted parts and obstruct the measuring system
Wetted parts	Temperature stem, process connection
Part in contact with the environment	Case, neck tube or capillary line (depending on type)

Remark:

The selection of the thermometers for the corresponding service conditions (temperature, type of flowing media) as well as the proper assembly and installation is to be carried out in accordance with the instructions of the manufacturer.

Limitation:

The types TFCh, TFChg, TSCh and TSChg may not be used for adverse conditions where high pulsation or vibration exists.

Type Approval documentation

- Data sheet nos.: 8222-01/22; 8291-10/21; 8292-01/22; 8201-01/22; 8202-08/20; 8221-01/22

Tests carried out

- Vibration test (according to DNV-CG-0339)
- Salt mist test (according to DNV-CG-0339)
- Humidity test (according to DNV-CG-0339)
- Ambient temperature: Dry heat and cold test (according to DNV-CG-0339)
- Temperature measurement in accordance with DIN EN 13190

Marking of product

Each thermometer is to be marked in accordance with EN 13190
 The identification marking will include the following:

- Manufacturers name or trade mark
- Individual serial number
- Temperature range
- Unit of temperature
- Accuracy class

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to DNV CP-0338, Sec.4.

- The certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE