TRANSLATION

(1) # Certificate

(2) Number of Certificate: **ZP/C018/20**

(3) Product: **Magnetostrictive linear positions sensor Temposonics® T-Series TH Model**

(4) Manufacturer: **MTS Sensor Technologie GmbH & Co. KG**

(5) Address: **Auf dem Schüffel 9**
58513 Lüdenscheid

(6) The design and construction of this products and any acceptable variation thereto are specified in the schedule to this certificate.

(7) The certification body of DEKRA Testing and Certification GmbH certifies that these products have been found to comply with the essential requirements pursuant to the standard(s) referred in section 8. The examination and test results are recorded in the test and assessment report 20160575.

(8) The essential requirements are assured by compliance with the following standard(s):

IEC 61508 part 1-7:2010 **DIN EN 62061:2016** **DIN EN 13849-1: 2016**

DIN EN 13849-2: 2013

(9) This certificate only relates to the design, examination und tests of the specified products in accordance with the mentioned standard(s). Further requirements apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(10) This certificate is valid until 2025-10-06.

DEKRA Testing and Certification GmbH
Bochum, 2020-010-07

Signed: Kilisch
Managing Director

We confirm the correctness of the translation from the German original. In the case of arbitration only the German wording shall be valid and binding.

Managing Director

DEKRA Testing and Certification GmbH, Handwerkstraße 15, 70565 Stuttgart
Zertifizierungsstelle: Dinnendahlstraße 9, 44809 Bochum
Telefon +49.234.3696-400, Fax +49.234.3696-401, DTC-Certification-body@dekra.com

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(11) Annex to the

(12) **Certificate**
ZP/C018/20

(13) 13.1 Subject and Type:

Magnetostrictive linear position sensor Temposonics® T-Series TH Model
Software Revisions:
- Application Board: V1.02
- Supervisor Board: V1.02

13.2 Description

The position sensors are used to measure and convert variable(position)-length in the fields of automation technology and mechanical engineering.
The sensors of the T-series are designed for installation in a hydraulic cylinder with high or flat flange, for use as position sensor outdoors or as level sensor with additional float.

13.3 Parameters

The safety function of the sensor is to measure the magnet position with an accuracy of ±1% and to provide a position proportional an output current of 4mA ... 20mA
(20 mA .. 4mA).

Parameter	Erreichter Wert
Hardware Safety Integrity Level	SIL 2, SIL 2_{CL}
Systematic Capability	SC 2
Performance Level	PL d
CCF-Wert	> 65
Safe Failure Fraction (SFF) each HFT = 0 Subelements	> 90%
Mean Time to dangerous Failure (MTTFD)	100 years @ 60°C; 44 years @ 80°C
Proof test interval (PTI)	1 year (8760 h)
PFD_{avg}	3.49E-04 @ 60°C; 9.85E-04 @ 80°C
Diagnostic response time (Fail Detection Time)	25 ms (max) 1 sec. for CRC Error detection
% of SIL 2 range for PFD	3.5% @ 60°C; 9.9% @ 80°C
Hardware fault tolerance (HFT)	0

(14) Test and Assessment Report(s)
20160575 dd. 2020-08-26

(15) Special Conditions for Safe Use
The proper use of the user manual and installation instructions shall taking into consideration.

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