Certificate of Compliance

Certificate: 70171067 **Master Contract:** 271902

Project: 80208554 **Date Issued:** October 22, 2024

Issued To: **Heinrichs Messtechnik GmbH**
Robert-Perthel-Strasse 9
Cologne, North Rhine-Westphalia, 50739
Germany

Attention: Joseph Burke

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only

Issued by: Oong Lee

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT – Intrinsically Safe, Entity – For Hazardous Locations
CLASS 2258 84 - PROCESS CONTROL EQUIPMENT – Intrinsically Safe, Entity – For Hazardous Locations
Certified to US Standards

Class I, Div. 1 Gr. ABCD T5-T2
Ex ia IIC T5-T2 Ga
Class I, Zone 0, AEx ia IIC T5-T2 Ga

Model TM*/TMU*/ TM-SH* Series Coriolis mass flowmeter sensors with the following entity parameters:

-For Exciter circuit type EC1 (terminals 9-10) or type EC1R (terminals 8-9):
Ui = 30V,
Ii = 90mA,
Pi = 0.4W,
Ci = 0,
Li ≤ 4.38mH (*)

-For Exciter circuit type EC2 (terminals 9-10) or type EC2R (terminals 8-9) (using an intrinsically safe barrier circuit inside of a Junction box):

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Ui = 30V,
Ii= 90mA,
Pi = 1W,
4.38mH ≤ Li ≤ 220mH (*),
Ci = 0

-For Pick up coils (terminals 1-2 and 3-4):
Ui = 30V,
Ii = 50mA,
Pi = 0.3W
Ci = 0,
Li < 14mH (*)

-For Temperature sensor circuit (terminals 5-8 or terminals 5-7 with EC1R and EC2R circuits):
Ui = 30V,
Ii = 100mA,
Pi = 0.1W,
Ci = 0,
Li = 0

(*) the exciter coils inductance within that range.

Intrinsically safe when connected in accordance with Installation Drawing No TM-CSA-1100 or TM-CSA-1103 for the TM and TMU models or No TM-CSA-1101 for the TM-SH models for the Control Wiring.

The applicable ambient temperature is dependent on the type of atmosphere, sensor configuration, process temperature and the applicable temperature class.

The maximum process temperature is dependent on the sensor configuration and used materials.

Neck extensions are used when use at high process temperatures is intended, to reduce the temperature on the components (Junction box or HAN-R23 connector) mounted on the top of the neck.

Further information can be found in the following tables.

-With HAN R23 connector (IP67 protection)

Neck extension (Between the TM, TMU or TM-SH* sensors, and the Harting HAN R23 Connector)	Process temperature -50 ˚C to …(˚C)	Ambient Temperature Range (˚C)	Temperature Class
Without	60	-40 up to +60	T5
60 mm	100	-40 up to +80	T4
160 mm	115	-40 up to +80	T4
160 mm	175	-40 up to +80	T3
160 mm	180	-40 up to +80	T2
260 mm	220	-40 up to +80	T2

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* TM-SH sensors are restricted to Tamb = 60 °C and T process = -40°C to 60°C, see Table coils.

-Remotely mounted (with Junction box)

Neck extension length (Between the TM, or TMU sensor neck, and the J-Box) Sensors have a standard neck > 60mm	Process temperature -50 ˚C to …(˚C)	Ambient Temperature Range (˚C)	Temperature Class
Without	60	-40 up to +60	T5
Without	100	-40 up to +80	T4
100 mm	115	-40 up to +80	T4
100 mm	175	-40 up to +80	T3
100 mm	180	-40 up to +80	T2
200 mm	220	-40 up to +80	T2

Process pressure range: 1 - 1050bar (Depending on the sensor)

Conditions of Acceptability:

- If the sensor is mounted separately, an equipotential bonding between the transmitter and the sensor is essential and must be established.
- For the application of the sensor in an ambient temperature of less than -20˚C and higher than +60˚C, the cables and cable entries shall be suitably rated.
- Some measuring tubes built of corrosion-resistant steel have a thickness of < 1mm. When installed with Ex ib Gb transmitters the risk of mechanical damage should be excluded.
- For models with junction box enclosure made from Aluminum alloy, ignition sources due to impact and friction sparks could occur. This shall be considered during installation.
- Field wiring using multi-conductor cable shall either have each conductor pair enclosed in a grounded metal shield, or each conductor shall have a minimum of 0.25mm (0.01”) insulation thickness.
- For ordinary locations installations to be supplied by a Limited Energy Source in accordance with CSA 61010-1-12/UL 61010-1.
- Combination of the external barriers from the transmitter has not been assessed so each input wiring circuit to the sensors should be kept segregated from the others inputs as per requirements of the standards.
- For exciter coils type EC2 and EC2R the supply signal from the transmitter shall be pulsed with low duty cycle or non-repetitive.

For Model TM*/TMU*/TM-SH* the following Model Code breakdown applies:

*can be the following numbers:

TM -ABC-DEFGHIJK-LMNO-P-Q-R-STUV

Where:

A- Wetted Material
BC- Flow-rate Range
DEFG- Process Connection

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HIJK-	Installation length
L-	Enclosure options:
M-	Heating / Cooling
N-	Flow direction
O-	Sensor Configuration:
	1: Mounted transmitter -4°F to 212°F (-20°C to 100°C)
	2: Mounted transmitter -4°F to 302°F (-20°C to 150°C)
	3: Remote transmitter (M20x1.5) -58°F to 212°F (-50°C to 100°C)
	4: Remote transmitter (M20x1.5) -58°F to 356°F (-50°C to 180°C)
	5: Remote transmitter (AL / M20x1.5) -58°F to 428°F (-50°C to 220°C)
	6: Remote transmitter (AL / 1/2" NPT) -58°F to 212°F (-50°C to 100°C)
	7: Remote transmitter (AL / 1/2" NPT) -58°F to 356°F (-50°C to 180°C)
	8: Remote transmitter (AL / 1/2" NPT) -58°F to 428°F (-50°C to 220°C)
	S: Remote transmitter (PE / M20x1.5) -58°F to 212°F (-50°C to 100°C)
	T: Remote transmitter (PE / M20x1.5) -58°F to 356°F (-50°C to 180°C)
	U: Remote transmitter (PE /M20x1.5) -58°F to 428°F (-50°C to 220°C)
P-	Approvals:
	0: Without approval
	D: CSA (C+US) - Class I Zone 0 Ex ia IIC T5-T2 Ga
	E: CSA (C+US) - Class I Div. 1 Group A, B, C, D
	9: All Approvals
Q:	Certification
R:	Supplementary equipment
STUV:	Additional options (e.g. calibrations, quality certificates, design etc.)

TMU-ABCD-EFGH-IJK-LM-NO-P-Q-xxxxxx

Where:

A-	Wetted Material
BCD-	Model Size
EFGH-	Process Connection
I-	Enclosure options:
J-	Heating / Cooling
K-	Heating / Cooling Connection
L-	Sensor Configuration:
	A: Mounted transmitter -4°F to 212°F (-20°C to 100°C)
	B: Mounted transmitter -4°F to 302°F (-20°C to 150°C)
	C: Remote transmitter (AL / M20x1.5) -40°F to 212°F (-40°C to 100°C)
	D: Remote transmitter (AL / M20x1.5) -40°F to 356°F (-40°C to 180°C)
	E: Remote transmitter (AL / M20x1.5) -58°F to 428°F (-50°C to 220°C)
	F: Remote transmitter (AL / 1/2" NPT) -40°F to 212°F (-40°C to 100°C)
	G: Remote transmitter (AL / 1/2" NPT) -40°F to 356°F (-40°C to 180°C)
	H: Remote transmitter (AL / 1/2" NPT) -58°F to 428°F (-50°C to 220°C)
	K: Remote transmitter (HAN R23 Plug) -58°F to 212°F (-50°C to 100°C)

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	L: Remote transmitter (HAN R23 Plug) -58°F to 356°F (-50°C to 180°C)
	M: Remote transmitter (HAN R23 Plug) -58°F to 428°F (-50°C to 220°C)
	S: Remote transmitter (PE / M20x1.5) -58°F to 212°F (-50°C to 100°C)
	T: Remote transmitter (PE / M20x1.5) -58°F to 356°F (-50°C to 180°C)
	U: Remote transmitter (PE / M20x1.5) -58°F to 428°F (-50°C to 220°C)
M-	Approvals:
	0: Without approval
	D: CSA (C+US) - Class I Zone 0 Ex ia IIC T5-T2 Ga
	E: CSA (C+US) - Class I Div. 1 Group A, B, C, D
	9: All Approvals
N-	Calibration Flow
O-	Calibration Density
P-	Supplementary equipment
Q-	Design
xxxxxx-	Up to 6 further non-HAZLOC relevant positions

TM-SH-ABCD-EFGH-IJK-LM-NO-P-Q

Where:

AB-	Model/Range
CD-	Wetted Material
EFGH-	Process Connection
I-	Enclosure options:
J-	Enclosure filling
K-	Heating / Cooling
L-	Sensor Configuration:
	K: Remote transmitter (HAN R23) -40°F to 140°F (-40°C to 60°C)
	X: Agency approved customer specified
M-	Approvals:
	0: Without approval
	D: CSA (C+US) - Class I Zone 0 Ex ia IIC T5-T2 Ga
	E: CSA (C+US) - Class I Div. 1 Group A, B, C, D
N-	Calibration Flow
O-	Calibration Density
P-	Supplementary equipment
Q-	Design

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APPLICABLE REQUIREMENTS

CSA C22.2 No. 60079-0:19	Explosive Atmospheres--Part 0: Equipment - General Requirements
CAN/CSA C22.2 No. 60079-11-14	Explosive Atmospheres - Part 11: Equipment protection by Intrinsic Safety "i"
ANSI/UL 60079-0-2020	Explosive Atmospheres - Part 0: Equipment - General Requirements
UL 60079-11:2014	Explosive Atmospheres - Part 11: Equipment protection by Intrinsic Safety "i"
CAN/CSA C22.2 No. 61010-1-12	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use--Part 1: General Requirements
UL 61010-1 – 3rd Edition	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

The following markings are shown on a CSA accepted adhesive label:

- CSA Monogram with C-US indicator
- Company name, trade name and/or CSA Master Contract No. 271902
- Model name / number
- Serial number or Date of manufacturing
- Entity Parameters *(Are stated in the control drawing)*
-Type of the Exciter circuit (EC1, EC1R, EC2 or EC2R)
- Hazardous Location Designations with Temperature Code
- CSA certificate number (CSA18CA70171067X)
- Reference to installation drawing
- Ambient temperature range
- Maximum Process temperature

The following warnings or equivalent, in both English and French, appear either on the marking label or are stated in the control drawing:

Warning: “Substitution of components may impair intrinsic safety”

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Warning: “Do not opened when energized or when an explosive atmosphere is present”
WARNING: “Potential impact ignition hazard” – See instructions

Notes:

Products certified under Class C225804, C225884 have been certified under CSA’s ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca

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