Certificate of Compliance

Certificate:	70212175	**Master Contract:**	246454
Project:	80257229	**Date Issued:**	2025-11-19
Issued to:	**KEM Flow Measurement GmbH** **Wettzeller Straße 22** **Bad Kötzting, Bavaria 93444** **Germany** **Attention:** Reinhold Hirmer	**Issued by:**	*John Kusi Amoateng* John Kusi Amoateng

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.

C US

PRODUCTS

Class 2258 02 PROCESS CONTROL EQUIPMENT - For Hazardous Locations
Class 2258 03 PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations
Class 2258 82 PROCESS CONTROL EQUIPMENT - For Hazardous Locations - Certified to US Standards
Class 2258 83 PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations - Certified to US Standards

CLASS 2258 02 – Process Control Equipment - For Hazardous Locations

Ex db ia IIC T4 Gb
Class I, Div. 1, Groups A, B, C and D, T4

Certificate: 70212175 **Master Contract**: 246454

Project: 80257229 **Date Issued**: 2025-11-19

(Compact Version) Tricor TCE 80xx Series Transmitter with Tricor TCM *0325, *0650, *1550, *3100, *5500 or *7900; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -40°C ≤ Ta ≤ +50°C (AC unit); Ambient Temperature -40°C ≤ Ta ≤ +70°C (DC unit); process fluid temperature range -40°C ≤ Tprocess ≤ +50°C (AC unit); -40°C ≤ Tprocess ≤ +70°C (DC unit).

Ex db ia IIB T4 Gb
Class I, Div. 1, Groups C and D, T4

(Compact Version) Tricor TCE 80xx Series Transmitter with Tricor TCM *028K or *065K; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -40°C ≤ Ta ≤ +50°C (AC unit); Ambient Temperature -40°C ≤ Ta ≤ +70°C (DC unit); process fluid temperature range -40°C ≤ Tprocess ≤ +50°C (AC unit); -40°C ≤ Tprocess ≤ +70°C (DC unit).

TCE - Tricor Coriolis Electronics (Transmitter - Remote)

Ex db [ia Ga] IIC T4 Gb
Class I, Div. 1, Groups A, B, C and D, T4 associated device for IS Class I, Division 1

(Remote Version) Tricor Transmitter TCE 80xx; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -40°C ≤ Ta ≤ +50°C (AC unit); Ambient Temperature -40°C ≤ Ta ≤ +70°C (DC unit)

Class I, Div. 1, Groups B, C and D, T4 associated device for IS Class I, Division 1

(Remote Version with Adalet XYB Explosion-proof Seal) Tricor Transmitter TCE 80xx; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -25°C ≤ Ta ≤ +40°C.

CLASS 2258 82 – Process Control Equipment - For Hazardous Locations – Certified to US Standards

TCE - Tricor Coriolis Electronics (Transmitter - Compact)

Class I, Zone 1, AEx db ia IIC T4 Gb
Class I, Div. 1, Groups A, B, C and D, T4

(Compact Version) Tricor TCM *0325, *0650, *1550, *3100, *5500 or *7900 with Tricor TCE 80xx Series Transmitter; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -40°C ≤ Ta ≤ +50°C (AC unit); Ambient Temperature -40°C ≤ Ta ≤ +70°C (DC unit); process fluid temperature range -40°C ≤ +50°C (AC unit); -40°C ≤ Tprocess ≤ +70°C (DC unit).

Class I, Zone 1, AEx db ia IIB T4 Gb
Class I, Div. 1, Groups C and D, T4

(Compact Version) Tricor TCM *028K, *065K with Tricor TCE 80xx Series Transmitter; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -40°C ≤ Ta ≤ +50°C (AC unit); Ambient Temperature -40°C ≤ Ta ≤ +70°C (DC unit); process fluid temperature range -40°C ≤ Tprocess ≤ +50°C (AC unit); -40°C ≤ Tprocess ≤ +70°C (DC unit).

TCE - Tricor Coriolis Electronics (Transmitter - Remote)

Class I, Zone 1, AEx db [ia Ga] IIC T4 Gb
Class I, Div. 1, Groups A, B, C and D, T4 associated device for IS Class I, Division 1

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(Remote Version) Tricor Transmitter TCE 80xx; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -40°C ≤ Ta ≤ +50°C (AC unit); Ambient Temperature -40°C ≤ Ta ≤ +70°C (DC unit)

Class I, Div. 1, Groups B, C and D, T4 associated device for IS Class I, Division 1

(Remote Version with Adalet XYB Explosion-proof Seal) Tricor Transmitter TCE 80xx; rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature -25°C ≤ Ta ≤ +40°C.

Input	Um = 250 Vac	
Output	Entity parameters	
Oscillator/Driver coil (Linear)	TCE 800n (low power)	Uo = 8.27 V, Io = 0.2 A, Po = 0.4135 W, Co = 7.2 µF, Lo = 0.84 mH
	TCE 801n (high power)	Uo = 15.34 V, Io = 0.37 A, Po = 1.42 W, Co = 0.521 µF, Lo = 0.21 mH
Signal pick-up coil (Linear)	Uo = 2 V, Io = 0.02 A, Po = 0.01 W, Co = 100 µF, Lo = 88.84 mH	
Temperature sensor (Trapezoidal)	Uo = 5 V, Io = 0.045 A, Po = 0.4132 W, Co = 100 µF, Lo = 17.51 mH	

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non - Incendive Systems - For Hazardous Locations

TCM – Tricor Coriolis Meter (Transducer)

Ex ia IIC T4…T2 Ga
IS Class I, Div. 1, Groups A, B, C and D, T4…T2
(Remote Version) Tricor Transducer TCM *0050, *0100, *0325, *0450, *0650, *1550, *3100, *5500 or *7900; Ambient Temperature -40°C ≤ Ta ≤ +70°C; process fluid temperature range -40°C ≤ Tprocess ≤ +70°C (for T4); process fluid temperature range -40°C ≤ Tprocess ≤ +135°C (for T3); process fluid temperature range -60°C ≤ Tprocess ≤ +200°C (for T2)

Ex ia IIB T4…T2 Ga
IS Class I, Div. 1, Groups C and D, T4…T2
(Remote Version) Tricor Transducer TCM *028K, *065K, *230K or *430K; Ambient Temperature -40°C ≤ Ta ≤ +70°C; process fluid temperature range -40°C ≤ Tprocess ≤ +70°C (for T4); process fluid temperature range -40°C ≤ Tprocess ≤ +135°C (for T3); process fluid temperature range -60°C ≤ Tprocess ≤ +200°C (for T2)

Type	Flow rate	Entity parameters			Gas Group
		Oscillator/Driver coil (Linear)	Signal pick-up coil (Linear)	Temperature sensor (Trapezoidal)	
TCM*0050	≤ 50 kg/h	Ui = 8.27 V, Ii = 0.2 A, Pi = 0.4135 W, Ci = 0 F, Li = 5.25 mH	Ui = 2 V, Ii = 0.02 A, Pi = 0.01 W, Ci = 0 µF, Li = 5.25 mH	Ui = 5 V, Ii = 0.045 A, Pi = 0.4132 W, Ci = 0 F, Li = 0 H	A/IIC
TCM*0100	≤ 100 kg/h				
TCM*0325	≤ 325 kg/h	Ui = 8.27 V, Ii = 0.2 A, Pi = 0.4135 W, Ci = 0 F, Li = 1.94 mH	Ui = 2 V, Ii = 0.02 A, Pi = 0.01 W, Ci = 0 F, Li = 1.94 mH		A/IIC
TCM*0450	≤ 450 kg/h				A/IIC
TCM*0650	≤ 650 kg/h				A/IIC
TCM*1550	≤ 1,550 kg/h				A/IIC
TCM*3100	≤ 3,100 kg/h				A/IIC

TCM*5500	≤ 5,500 kg/h				A/IIC
TCM*7900	≤ 7,900 kg/h				A/IIC
TCM*028K	≤ 28,000 kg/h	Ui = 15.34 V, Ii = 0.37 A, Pi = 1.42 W, Ci = 0 F, Li = 7.875 mH			C/IIB
TCM*065K	≤ 65,000 kg/h				C/IIB
TCM*230K	≤ 230,000 kg/h	Ui = 15.34 V, Ii = 0.37 A, Pi = 1.42 W, Ci = 0 F, Li = 13.65 mH			C/IIB
TCM*430K	≤ 430,000 kg/h				C/IIB
The type name is further classified by letters or numbers not affecting Ex-relevant parameters					

TCM – Tricor Coriolis Meter (Transducer); models *0050, *0100, *0450, *230K and *430K are available in remote configuration only.

Class 2258 83 - PROCESS CONTROL EQUIPMENT-Intrinsically Safe and Non-Incendive - Systems-For Hazardous Locations-Certified to U.S. Standards

TCM – Tricor Coriolis Meter (Transducer)

Class I, Zone 0, AEx ia IIC T4…T2 Ga
IS Class I, Div. 1, Groups A, B, C and D, T4…T2
(Remote Version) Tricor Transducer TCM *0050, *0100, *0325, *0450, *0650, *1550, *3100, *5500 or *7900; Ambient Temperature -40°C ≤ Ta ≤ +70°C; process fluid temperature range -40°C ≤ Tprocess ≤ +70°C (for T4); process fluid temperature range -40°C ≤ Tprocess ≤ +135°C (for T3); process fluid temperature range -60°C ≤ Tprocess ≤ +200°C (for T2)

Class I, Zone 0, AEx ia IIB T4…T2 Ga
IS Class I, Div. 1, Groups C and D, T4…T2
(Remote Version) Tricor Transducer TCM *028K, *065K, *230K or *430K; Ambient Temperature -40°C ≤ Ta ≤ +70°C; process fluid temperature range -40°C ≤ Tprocess ≤ +70°C (for T4); process fluid temperature range -40°C ≤ Tprocess ≤ +135°C (for T3); process fluid temperature range -60°C ≤ Tprocess ≤ +200°C (for T2)

Type	Flow rate	Entity parameters			Gas Group
		Oscillator/Driver coil (Linear)	Signal pick-up coil (Linear)	Temperature sensor (Trapezoidal)	
TCM*0050	≤ 50 kg/h	Ui = 8.27 V, Ii = 0.2 A, Pi = 0.4135 W, Ci = 0 F, Li = 5.25 mH	Ui = 2 V, Ii = 0.02 A, Pi = 0.01 W, Ci = 0 µF, Li = 5.25 mH	Ui = 5 V, Ii = 0.045 A, Pi = 0.4132 W, Ci = 0 F, Li = 0 H	A/IIC
TCM*0100	≤ 100 kg/h				
TCM*0325	≤ 325 kg/h	Ui = 8.27 V, Ii = 0.2 A, Pi = 0.4135 W, Ci = 0 F, Li = 1.94 mH	Ui = 2 V, Ii = 0.02 A, Pi = 0.01 W, Ci = 0 F, Li = 1.94 mH		A/IIC
TCM*0450	≤ 450 kg/h				A/IIC
TCM*0650	≤ 650 kg/h				A/IIC
TCM*1550	≤ 1,550 kg/h				A/IIC
TCM*3100	≤ 3,100 kg/h				A/IIC
TCM*5500	≤ 5,500 kg/h				A/IIC
TCM*7900	≤ 7,900 kg/h				A/IIC
TCM*028K	≤ 28,000 kg/h	Ui = 15.34 V, Ii = 0.37 A,			C/IIB

TCM*065K	≤ 65,000 kg/h	Pi = 1.42 W, Ci = 0 F, Li = 7.875 mH			C/IIB
TCM*230K	≤ 230,000 kg/h	Ui = 15.34 V, Ii = 0.37 A, Pi = 1.42 W, Ci = 0 F, Li = 13.65 mH			C/IIB
TCM*430K	≤ 430,000 kg/h				C/IIB
The type name is further classified by letters or numbers not affecting Ex-relevant parameters					

TCM – Tricor Coriolis Meter (Transducer); models *0050, *0100, *0450, *230K and *430K are available in remote configuration only.

Notes:

1. The above model is Pollution Degree 2, Overvoltage Category II
2. Mode of operation: Continuous

Environmental Conditions: See the ambient temperature table above, 2000 m max, 80% to temperatures up to 31 ºC decreasing linearly to 50% R.H. at 40 ºC

Conditions of Acceptability:

1. Connection to mains shall be made in accordance with ANSI/NFPA 70, NEC, with CSA C22.1, CEC, Part 1, or both as appropriate.
1. The temperature of the equipment can reach 82^{o}C at the cable entry and the branching point in a 70^{o}C ambient. This must be considered when selecting field wiring and cable entry devices.
3. Suitable equipment certified blanking elements shall be fitted to all unused conduit entries to maintain the explosionproof and environmental characteristics of the equipment.
4. The process fluid of meter mounted (compact) versions of the TCM must be within the range of -40°C ≤ +50°C for AC models and -40°C ≤ +70°C for DC models.
5. The equipment contains a shunt zener diode interface, which requires connection to a suitable earth in accordance with the applicable code of practice.
2. Remote terminal boxes of the equipment may be manufactured from aluminium; in the event of rare incidents, ignition sources due to impact and friction sparks could occur. This shall be considered when the remote version of the TRICOR flow meters are being installed in locations that specifically require group II Zone 0 applications.
7. For remote versions of the TRICOR flow meters, the temperature class of the equipment is dictated by the process temperature in the end application:
   T4: -40 °C ≤ Tp ≤ +70 °C
   T3: -40 °C ≤ Tp ≤ +135 °C
   T2: -60 °C ≤ Tp ≤ +200 °C
8. DC powered units shall be supplied with a Limited Energy Circuit (LEC), Class 2 as defined in article 725.121 of NFPA70, or Limited Power Source (LPS) as defined in CAN/CSA C22.2 No. 60950-1.
9. Current Loop I1, I2 and Ctl in for all models are passive, and shall be supplied with Limited Energy Circuit (LEC), Class 2 as defined in article 725.121 of NFPA70, or Limited Power Source (LPS) as defined in CAN/CSA C22.2 No. 60950-1.

APPLICABLE REQUIREMENTS

CAN/CSA C22.2 No. 61010-1-12, UPD1:2015, UPD2:2016 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

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UL 61010-1, 3rd Edition (Rev. Apr 29, 2016) - UL Standard for Safety Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements - Third Edition; Including Revisions through April 29, 2016

CSA C22.2 NO. 30-M1986 - Explosion-Proof Enclosures for Class I Hazardous Locations - Third Edition

CSA C22.2 No. 60079-0:15 - Third Edition - Including Update No. 1 - April 2018 - Explosive atmospheres - Part 0: Equipment - General requirements

CSA C22.2 No. 60079-1:16 - Third Edition - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

CAN/CSA-C22.2 No. 60079-11:14 - Second Edition - Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

FM 3600:2018 - Electrical Equipment for Use in Hazardous (Classified) Locations - General Requirements

FM 3615 : 2018 - Explosionproof Electrical Equipment – General Requirements

ANSI/UL 60079-0:2013 - Sixth Edition - Including revisions through October 20, 2017 - UL Standard for Safety Explosive atmospheres – Part 0: Equipment – General requirements

UL 60079-1:2015 - Seventh Edition - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures 'd'

ANSI/UL 60079-11 (Sixth Edition; Reprint with Revisions Through and Including September 14, 2018) - UL Standard for Safety Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety "i"

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.

Nameplate adhesive label material approval information:

Adhesive labels are used; however, all markings as detailed below appear on a minimum 0.04” (1mm) thick stainless steel 316 plate, secured to the body with a 3mm thick stainless steel cable.

- CSA Monogram with c us Indicator (The products listed 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), as shown on the Certificate of Compliance.
- Manufacturers name “KEM Flow Measurement GmbH”, or CSA Master Contract number “246454” adjacent the CSA Mark, in lieu of manufacturers name.
- Model designation, as specified in the PRODUCTS section, above.
- Complete electrical rating, as specified in the PRODUCTS section, above.

- Maximum ambient temperature rating, as specified in the PRODUCTS section, above.
- Date code / Serial number traceable to month and year of manufacture.
- Hazardous locations designation, as specified in the PRODUCTS section, above or equivalent
- Temperature code, as specified in the PRODUCTS section, above.
- The warning words: - “DO NOT OPEN IN AN EXPLOSIVE ATMOSPHERE” and “NE PAS OUVRIR EN ATMOSPHERE EXPLOSIVE” or equivalent.
- The warning words: - “SEAL REQUIRED WITHIN 50mm” and “SCELLEMENT REQUIS A MOINS DE 50mm” or equivalent.
- When a Quintex type LB line bushing is fitted to a TCE 80XX transmitter, the equipment shall be marked ‘Not suitable for installation in Ketone atmospheres’ in both English and French.
- As per NFPA 70, NEC, 2017, Article 505.9(C)(1) and C22.1-18, the CEC, Table 18; remote versions of the TCE featuring an Adalet XYB explosionproof seal may be marked “Equipment suitable for Class I, Zone 1 IIB T4”.
- Certificate Number Reference “19CA70212175” next to the CSA logo or preceded by “CSA” agency name.
- Process temperature range, as specified in the PRODUCTS section, above.
- For remote version only, the words: - “Refer to Instruction Manual for Entity Parameters”
- Install per drawing “TCE EX Control drawing”
- Protective earthing TERMINAL is identified by the IEC 60417 No 5019 symbol  , adjacent to the TERMINAL;
- Identification of Terminals for connection to the main supply near the terminal block;
- Symbol  to indicate of the use of the wires that have a higher rating than 60°C in the instruction manual.
- Field-wiring terminal markings “Use copper conductors only”

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Notes:

Products certified under Class(es) C225802, C225803, C225882, C225883 have been certified under CSA's ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca

Supplement to Certificate of Compliance

Certificate: 70212175 **Master Contract:** 246454

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
80257229	2025-11-19	Update to Report 70212175: a) to address FIR findings (FC# 248160) FIR dated September 2, 2025, to cover the deletion of obsolete connectors from list of critical components b) to revise the descriptive drawings to include the new KEM company name.
80225393	2024-12-05	Update to Report 70212175 for explosionproof, flameproof "db" and intrinsically safe "ia" protected Tricor Coriolis Electronics and Tricor Coriolis Meter for change of "Hazardous Location Rating" in Model Code Structure" table from "Ex1" and "Ex3" to "Ex".
80060583	2020-11-26	Update to Report 70212175 to update drawing
70212175	2019-09-16	Original Certification of TCE - Tricor Coriolis Electronics and TCM – Tricor Coriolis Meter.