



# Certificate of Compliance

**Certificate:** 70212175 **Master Contract:** 246454  
**Project:** 80225393 **Date Issued:** 2024-12-05  
**Issued to:** **KEM Kueppers Elektromechanik GmbH**  
**Liebigstraße 5**  
**Karlsfeld, Bavaria 85757**  
**Germany**  
**Attention:** Reinhold Hirmer

*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:** Sorin Tat  
Sorin Tat

## 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 U.S. Standards

CLASS 2258 02 – Process Control Equipment - For Hazardous Locations

### **TCE - Tricor Coriolis Electronics**

Model(s)

(Compact Version) Tricor TCE 80xx Series Transmitter with Tricor TCM \*0325, \*0650, \*1550, \*3100, \*5500 or \*7900, (Compact Version) Tricor TCE 80xx Series Transmitter with Tricor TCM \*028K or \*065K, (Remote Version) Tricor Transmitter TCE 80xx, (Remote Version with Adalet XYB Explosion-proof Seal) Tricor Transmitter TCE 80xx



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**TCE - Tricor Coriolis Electronics (Transmitter - Compact)**

**Ex db ia IIC T4 Gb**

**Class I, Div. 1, Groups A, B, C and D, T4**

**(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  $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$  (AC unit); Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$  (DC unit); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +50^{\circ}\text{C}$  (AC unit);  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (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  $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$  (AC unit); Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$  (DC unit); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +50^{\circ}\text{C}$  (AC unit);  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (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  $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$  (AC unit); Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$  (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  $-25^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$ .

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

Model(s)
(Compact Version) Tricor TCM *0325, *0650, *1550, *3100, *5500 or *7900 with Tricor TCE 80xx Series Transmitter, (Compact Version) Tricor TCM *028K, *065K with Tricor TCE 80xx Series Transmitter, (Remote Version) Tricor Transmitter TCE 80xx, (Remote Version with Adalet XYB Explosion-proof Seal) Tricor Transmitter TCE 80xx

**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  $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$  (AC unit); Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$  (DC unit); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +50^{\circ}\text{C}$  (AC unit);  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (DC unit).



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**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  $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$  (AC unit); Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$  (DC unit); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +50^{\circ}\text{C}$  (AC unit);  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (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**

**(Remote Version) Tricor Transmitter TCE 80xx;** rated 100 to 240 Vac, 50/60 Hz, 13W or 24 Vdc, 4W; T4 @ Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$  (AC unit); Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$  (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  $-25^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$ .

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)**

Model(s)
(Remote Version) Tricor Transducer TCM *0050, *0100, *0325, *0450, *0650, *1550, *3100, *5500 or *7900, (Remote Version) Tricor Transducer TCM *028K, *065K, *230K or *430K

**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  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ ; process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (for T4); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +135^{\circ}\text{C}$  (for T3); process fluid temperature range  $-60^{\circ}\text{C} \leq T_{\text{process}} \leq +200^{\circ}\text{C}$  (for T2)

**Ex ia IIB T4...T2 Ga**

**IS Class I, Div. 1, Groups C and D, T4...T2**



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**(Remote Version) Tricor Transducer TCM \*028K, \*065K, \*230K or \*430K;** Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ ; process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (for T4); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +135^{\circ}\text{C}$  (for T3); process fluid temperature range  $-60^{\circ}\text{C} \leq T_{\text{process}} \leq +200^{\circ}\text{C}$  (for T2)

Type	Flow rate	Entity parameters			Gas Group
		Oscillator/Driver coil (Linear)	Signal pick-up coil (Linear)	Temperature sensor (Trapezoidal)	
TCM*0050	$\leq 50$ kg/h	U <sub>i</sub> = 8.27 V, I <sub>i</sub> = 0.2 A, P <sub>i</sub> = 0.4135 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 5.25 mH	U <sub>i</sub> = 2 V, I <sub>i</sub> = 0.02 A, P <sub>i</sub> = 0.01 W, C <sub>i</sub> = 0 $\mu$ F, L <sub>i</sub> = 5.25 mH	U <sub>i</sub> = 5 V, I <sub>i</sub> = 0.045 A, P <sub>i</sub> = 0.4132 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 0 H	A/IIC
TCM*0100	$\leq 100$ kg/h				
TCM*0325	$\leq 325$ kg/h	U <sub>i</sub> = 8.27 V, I <sub>i</sub> = 0.2 A, P <sub>i</sub> = 0.4135 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 1.94 mH	U <sub>i</sub> = 2 V, I <sub>i</sub> = 0.02 A, P <sub>i</sub> = 0.01 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 1.94 mH		A/IIC
TCM*0450	$\leq 450$ kg/h				A/IIC
TCM*0650	$\leq 650$ kg/h				A/IIC
TCM*1550	$\leq 1,550$ kg/h				A/IIC
TCM*3100	$\leq 3,100$ kg/h				A/IIC
TCM*5500	$\leq 5,500$ kg/h				A/IIC
TCM*7900	$\leq 7,900$ kg/h				A/IIC
TCM*028K	$\leq 28,000$ kg/h	U <sub>i</sub> = 15.34 V, I <sub>i</sub> = 0.37 A, P <sub>i</sub> = 1.42 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 7.875 mH			C/IIB
TCM*065K	$\leq 65,000$ kg/h				C/IIB
TCM*230K	$\leq 230,000$ kg/h	U <sub>i</sub> = 15.34 V, I <sub>i</sub> = 0.37 A, P <sub>i</sub> = 1.42 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 13.65 mH			C/IIB
TCM*430K	$\leq 430,000$ 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

Model(s)
(Remote Version) Tricor Transducer TCM *0050, *0100, *0325, *0450, *0650, *1550, *3100, *5500 or *7900, (Remote Version) Tricor Transducer TCM *028K, *065K, *230K or *430K

**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  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ ; process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (for T4); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +135^{\circ}\text{C}$  (for T3); process fluid temperature range  $-60^{\circ}\text{C} \leq T_{\text{process}} \leq +200^{\circ}\text{C}$  (for T2)

**Class I, Zone 0, AEx ia IIB T4...T2 Ga**

**IS Class I, Div. 1, Groups C and D, T4...T2**



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**(Remote Version) Tricor Transducer TCM \*028K, \*065K, \*230K or \*430K;** Ambient Temperature  $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ ; process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +70^{\circ}\text{C}$  (for T4); process fluid temperature range  $-40^{\circ}\text{C} \leq T_{\text{process}} \leq +135^{\circ}\text{C}$  (for T3); process fluid temperature range  $-60^{\circ}\text{C} \leq T_{\text{process}} \leq +200^{\circ}\text{C}$  (for T2)

Type	Flow rate	Entity parameters			Gas Group
		Oscillator/Driver coil (Linear)	Signal pick-up coil (Linear)	Temperature sensor (Trapezoidal)	
TCM*0050	$\leq 50$ kg/h	U <sub>i</sub> = 8.27 V, I <sub>i</sub> = 0.2 A, P <sub>i</sub> = 0.4135 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 5.25 mH	U <sub>i</sub> = 2 V, I <sub>i</sub> = 0.02 A, P <sub>i</sub> = 0.01 W, C <sub>i</sub> = 0 $\mu$ F, L <sub>i</sub> = 5.25 mH	U <sub>i</sub> = 5 V, I <sub>i</sub> = 0.045 A, P <sub>i</sub> = 0.4132 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 0 H	A/IIC
TCM*0100	$\leq 100$ kg/h				
TCM*0325	$\leq 325$ kg/h	U <sub>i</sub> = 8.27 V, I <sub>i</sub> = 0.2 A, P <sub>i</sub> = 0.4135 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 1.94 mH	U <sub>i</sub> = 2 V, I <sub>i</sub> = 0.02 A, P <sub>i</sub> = 0.01 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 1.94 mH		A/IIC
TCM*0450	$\leq 450$ kg/h				A/IIC
TCM*0650	$\leq 650$ kg/h				A/IIC
TCM*1550	$\leq 1,550$ kg/h				A/IIC
TCM*3100	$\leq 3,100$ kg/h				A/IIC
TCM*5500	$\leq 5,500$ kg/h				A/IIC
TCM*7900	$\leq 7,900$ kg/h				A/IIC
TCM*028K	$\leq 28,000$ kg/h	U <sub>i</sub> = 15.34 V, I <sub>i</sub> = 0.37 A, P <sub>i</sub> = 1.42 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 7.875 mH			C/IIB
TCM*065K	$\leq 65,000$ kg/h				C/IIB
TCM*230K	$\leq 230,000$ kg/h	U <sub>i</sub> = 15.34 V, I <sub>i</sub> = 0.37 A, P <sub>i</sub> = 1.42 W, C <sub>i</sub> = 0 F, L <sub>i</sub> = 13.65 mH			C/IIB
TCM*430K	$\leq 430,000$ 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 °C decreasing linearly to 50% R.H. at 40 °C

**APPLICABLE REQUIREMENTS**

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. 61010-1-12, UPD1:2015, UPD2:2016 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

CSA C22.2 No. 30-M1986 - Third Edition - Explosion-proof enclosures for use in class I hazardous locations - General Instruction No. 1: November 1986; General Instruction No. 2: November 1988



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CAN/CSA C22.2 No. 60079-0:15 - Electrical apparatus for explosive gas atmospheres - Part 0: General requirements

CAN/CSA C22.2 No. 60079-1:16 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosure "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

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"

### **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°C at the cable entry and the branching point in a 70°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  $-40^{\circ}\text{C} \leq +50^{\circ}\text{C}$  for AC models and  $-40^{\circ}\text{C} \leq +70^{\circ}\text{C}$  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:  $-40^{\circ}\text{C} \leq T_p \leq +70^{\circ}\text{C}$   
T3:  $-40^{\circ}\text{C} \leq T_p \leq +135^{\circ}\text{C}$   
T2:  $-60^{\circ}\text{C} \leq T_p \leq +200^{\circ}\text{C}$
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.



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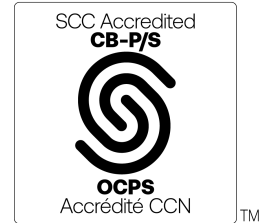
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Notes:

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](http://www.scc.ca)





## Supplement to Certificate of Compliance

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

### Product Certification History

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Project	Date	Description
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	2019-09-09	16/09/2019 - Continuation of Prime CSA Certification of Coriolis Flow Meter Tricor TCE 8*** / TCM ***** TRANSMITTER ONLY Transmitter Marking: Standards marking: Ex db [ia Ga] IIC T4 Gb (CAN) Standards marking: AEx db [ia Ga] IIC T4 Gb (US) Standards marking: Class I, Division 1 , Groups A, B, C, D, T4 (CAN and US) Ambient Temperature: <-40°C> <+70°C> Transducer Marking: Standards marking: Ex ia IIC or IIB T4...T2 Ga, (CAN) Standards Marking: AEx ia IIC or IIB T4...T2 Ga, (US) Standards Marking: Class I, Division 1, Group A,B,C,D or C,D T4...T2 (CAN and US) PLEASE REFER TO PROJECT SPECIFIC INFORMATION FOR DETAILS OF SAMPLE REQUIREMENTS AND ASSUMPTIONS.