

DESCRIPTIVE SYSTEM DOCUMENT FOR CERTIFICATE NUMBER:
IECEX ULD 08.0002X

AMBIENT TEMPERATURE RANGE
0°C ≤ Ta ≤ 50°C
[Ex ia Ga] IIA

TLS-XB CONSOLE
CERTIFICATE NO.:
IECEX UL 12.0022X

NON-HAZARDOUS AREA

ASSOCIATED APPARATUS
TLS RF CONSOLE
CERTIFICATE NOS.:
IECEX UL 06.0003X

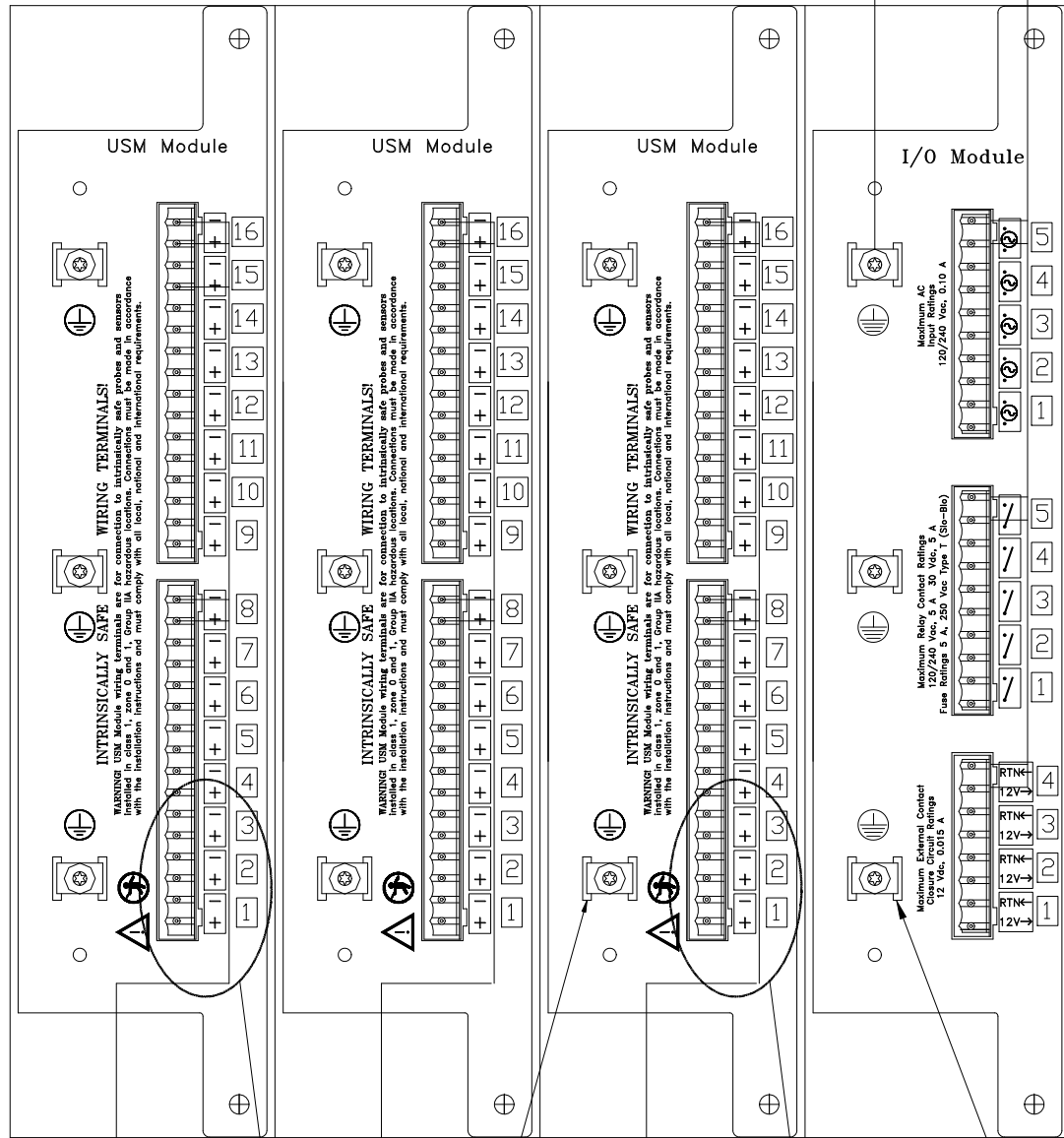
Um=250V
AC NEUTRAL
AC GROUND
AC LINE
EARTH GROUND

CIRCUIT BREAKER PANEL

UNSPECIFIED EQUIPMENT

SEE NOTE 8

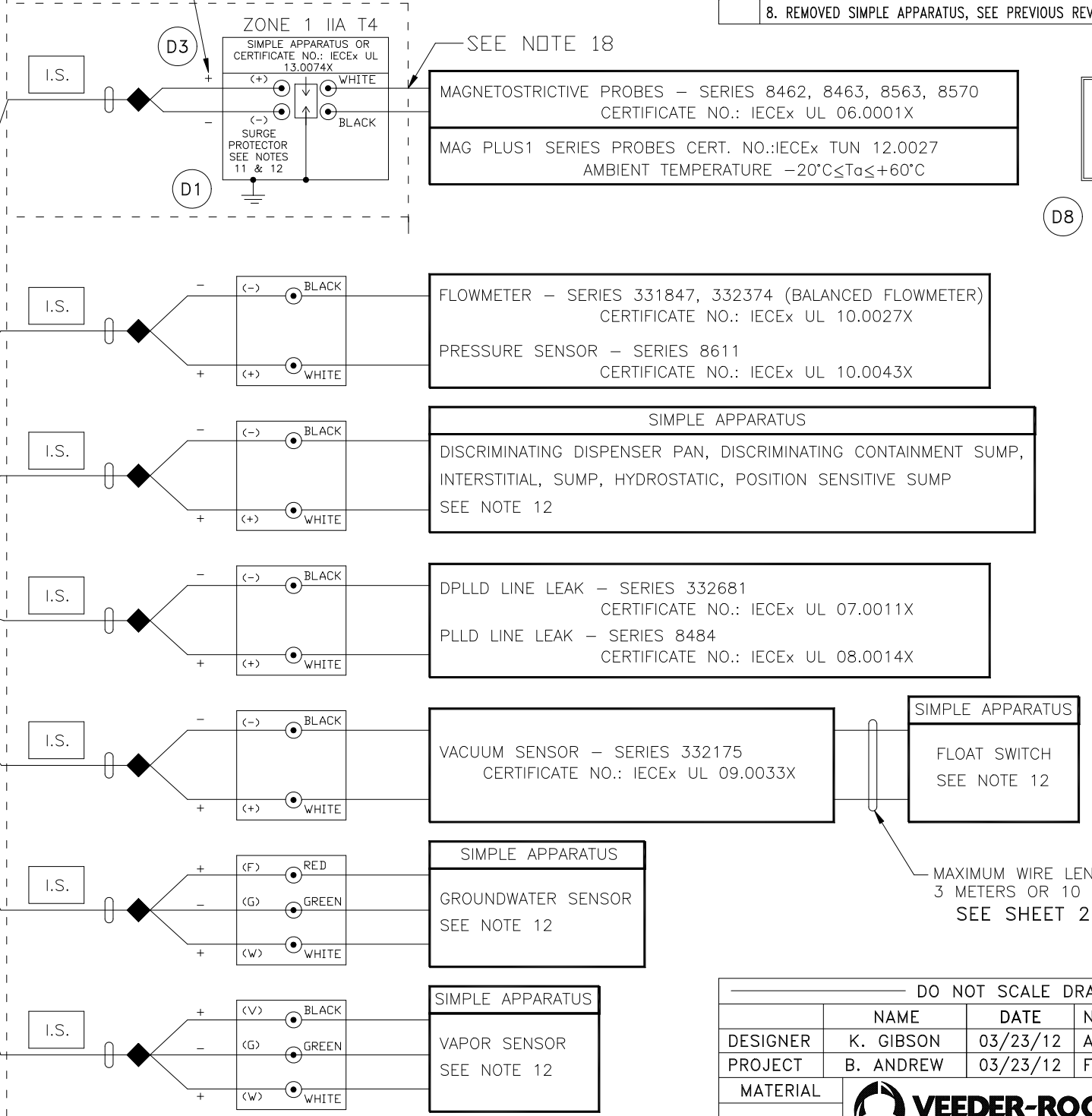
TLS-XB CONSOLE
Um=250 VOLTS



TERMINATION POINTS FOR SHIELDED CABLE

UNSPECIFIED RECEIVER
TLS RF CONSOLE
OPTICALLY ISOLATED INTRINSICALLY SAFE CIRCUITS

HAZARDOUS AREA
INTRINSICALLY SAFE (I.S.) APPARATUS
AMBIENT TEMPERATURE RANGE
(UNLESS NOTED)
-40°C ≤ Ta ≤ 60°C
Ex ia IIA T4 Ga
Ex ia IIA T4 Gb
Ex ia IIA T4 Ga/Gb
ZONE 0 IIA T4



MAXIMUM WIRE LENGTHS:
3 METERS OR 10 FEET.
SEE SHEET 2 FOR NOTES

| REV | DESCRIPTION | BY | DATE | ECO |
|-----|--|-----|------------|----------|
| A | INITIAL RELEASE | KG | 03-23-12 | CN-04845 |
| B | CHANGED REFERENCES FROM NOTE 11 | KG | 07/25/12 | CN-05286 |
| C | ADDED MAG PLUS1 CERTIFICATION NO.: IECEX TUN 12.0027. | TB | 2012/07/26 | CN-05345 |
| D | 1. UPDATE GROUNDING SYMBOL. 2. ADD PROTECTIVE STRINGS 3. ADD CERT No.: IECEX UL 13.0074X 4. REVISED NOTE 10. 5. REVISED NOTE 16. 6. ADD NOTE 19. 7. UPDATE DASHED LINES 8. REMOVED SIMPLE APPARATUS, SEE PREVIOUS REV. | TKR | 2013/10/17 | CN-06776 |

Certified Product
No changes permitted without reference to the "Notified Body (NB)"

| DO NOT SCALE DRAWING | | | | |
|---|--|----------|-----------|--|
| DESIGNER | NAME | DATE | NEXT GRP. | |
| | K. GIBSON | 03/23/12 | ASSEMBLY | |
| PROJECT | B. ANDREW | 03/23/12 | FORM NO | |
| MATERIAL | SIMSBURY, CONNECTICUT 06070 U.S.A. | | | |
| REFERENCE MFG. SPEC. VRS 81005 WHERE IT IS APPLICABLE | NOTICE - THIS DOCUMENT IS THE PROPERTY OF THE VEEDER-ROOT COMPANY AND IS NOT TO BE DISCLOSED, REPRODUCED IN WHOLE OR IN PART, OR USED FOR MANUFACTURE BY ANYONE WITHOUT VEEDER-ROOT'S WRITTEN CONSENT. | | | |
| UNSPECIFIED TOLERANCES +/- N/A | DESCRIPTIVE SYS DOCUMENT IECEX TLS-XB CONSOLE | | | |
| SIZE | DRAWING NUMBER | REV. | STATUS | |
| D | 331940-120 | D | REL | |
| SCALE | NONE | SHEET | 1 OF 3 | |

NOTES:


1. THE TOTAL ALLOWABLE CABLE LENGTH USED TO CONNECT UP TO 16 I.S. DEVICES TO EACH USM MODULE IS 7,315 METERS OR 24,000 FEET.
2. EACH CABLE (OR WIRING) USED TO CONNECT I.S. DEVICES TO THE CONSOLE MUST NOT EXCEED A CAPACITANCE OF 328 pf/METER OR 100 pf/FOOT.
3. THE TOTAL CABLE CAPACITANCE, COMBINING ALL OF THE CABLE USED TO CONNECT THE INTRINSICALLY SAFE DEVICES TO EACH USM MODULE, MUST NOT EXCEED 5,0μF.
4. EACH CABLE MUST NOT EXCEED AN INDUCTANCE OF 0,656 μH/METER OR 0,2 μH/FOOT.
5. THE L/R RATIO OF THE CABLE MUST NOT EXCEED 200 μH/OHM.
6. FOR EACH TLS-XB CONSOLE INSTALLED THE MAXIMUM NUMBER OF I.S. DEVICES CONNECTED TO THE ASSOCIATED APPARATUS IS 64. A MAXIMUM OF TWO TLS RF CONSOLES CAN BE CONNECTED TO A UNIVERSAL SENSOR MODULE (USM), WHERE EACH CONNECTED TLS-RF CHANNEL EQUALS ONE I.S. DEVICE.
7. A MAXIMUM OF TWO TLS-XB BOXES MAY BE CONNECTED TO AN 8601 CONSOLE AND A MAXIMUM OF THREE TLS-XB BOXES MAY BE CONNECTED TO AN 8600 / TLS-450 CONSOLE.
8. NON-HAZARDOUS ASSOCIATED APPARATUS IS AS SHOWN AND MUST NOT BE SUPPLIED FROM OR CONTAIN, UNDER NORMAL OR ABNORMAL CONDITIONS, A SOURCE OF POTENTIAL WITH RESPECT TO EARTH IN EXCESS OF 250V RMS OR 250V dc, Um = 250V.
9. CONNECT THE BARRIER GROUND TO THE EARTH GROUND BUS AT THE POWER DISTRIBUTION PANEL WITH A 4 sq. mm (10 AWG) (OR LARGER) CONDUCTOR. GROUNDING MUST COMPLY WITH IEC 60079-14, CLAUSE TITLED "EARTHING OF INTRINSICALLY SAFE CIRCUITS".
- D4** 10. THIS SYMBOL, ⊙, DENOTES A FIELD WIRING CONNECTION INSIDE A WEATHERPROOF JUNCTION BOX. EACH INTRINSICALLY SAFE DEVICE MAY USE AN OPTIONAL SURGE PROTECTOR IN PLACE OF THE WEATHERPROOF JUNCTION BOX LOCATED IN ZONE 1. SURGE PROTECTORS CONSIST OF EITHER A CERTIFIED IN-LINE DEVICE, OR ARE SIMPLE APPARATUS.
11. A RISK ANALYSIS MUST BE PERFORMED TO DETERMINE IF THE INSTALLATION LOCATION IS SUSCEPTIBLE TO LIGHTNING OR OTHER SURGES. IF NECESSARY, ADD PROTECTION AGAINST LIGHTNING AND OTHER ELECTRICAL SURGES IN ACCORDANCE WITH IEC 60079-25, SECTION TITLED "PROTECTION AGAINST LIGHTNING AND OTHER ELECTRICAL SURGES". IF REQUIRED INSTALL A SURGE PROTECTOR IN ZONE 1 AS CLOSE AS POSSIBLE TO THE BOUNDARY WITH ZONE 0. THE SITE PREPARATION GUIDE, MANUAL NO. 577013-578, PROVIDES ADDITIONAL DETAILS ABOUT RISK ASSESSMENT.
12. IT IS THE RESPONSIBILITY OF THE INSTALLER TO DETERMINE COMPLIANCE OF SIMPLE APPARATUS. SIMPLE APPARATUS USED WITH THIS SYSTEM MUST CONFORM TO THE FOLLOWING REQUIREMENTS:
 - A) CONSTRUCTED OF PASSIVE COMPONENTS ONLY, FOR EXAMPLE, SWITCHES, JUNCTION BOXES AND RESISTORS.
 - B) CONSTRUCTED WITHOUT ANY SOURCES OF STORED ENERGY SUCH AS BATTERIES, CAPACITORS AND INDUCTORS.
 - C) CONSTRUCTED WITHOUT SOURCES OF GENERATED ENERGY THAT PRODUCE MORE THAN 1.5V, AND 25mW OR SOURCES THAT CONTAIN A MEANS OF INCREASING THE VOLTAGE.
 - D) IF CONSTRUCTED WITH A METALLIC HOUSING THE SIMPLE APPARATUS SHALL BE CAPABLE OF WITHSTANDING THE TEST VOLTAGE TO EARTH IN ACCORDANCE WITH IEC 60079-11, CLAUSE TITLED "DIELECTRIC STRENGTH REQUIREMENT" AND ITS TERMINALS MUST CONFORM TO IEC 60079-11, CLAUSE 6.3.1.
 - E) NONMETALIC ENCLOSURES AND ENCLOSURES OF LIGHT METALS MUST COMPLY WITH IEC 60079-0 SECTIONS 7 & 8 AND IEC 60079-26 CLAUSE 4.3.3.
 - F) BASED ON THE AVAILABLE POWER WITHIN THE SYSTEM, SIMPLE APPARATUS THAT HAVE ELECTRICAL COMPONENTS THAT EXCEED 20 sq. mm IN TOTAL SURFACE AREA, MAY BE ASSESSED AS HAVING A T4 TEMPERATURE CODE, AT THE SPECIFIED AMBIENT TEMPERATURE RANGE OF -40°C ≤ Ta ≤ +60°C. OTHER TYPES OF SIMPLE APPARATUS MUST BE ASSESSED IN ACCORDANCE WITH IEC 60079-11, CLAUSE TITLED "SIMPLE APPARATUS."
 - G) SIMPLE APPARATUS SHALL NOT CONTAIN ANY MEANS OF INCREASING THE AVAILABLE VOLTAGE OR CURRENT, FOR EXAMPLE DC TO DC CONVERTERS.
13. SPECIAL CONDITIONS FOR SAFE USE, IF REQUIRED, ARE DEFINED ON THE CERTIFICATE OF CONFORMITY AND THE SITE PREPARATION GUIDE, MANUAL NO. 577013-578, MUST BE TAKEN INTO ACCOUNT.
14. ANY COMBINATION OF UP TO FOUR MODULES MAY BE INSTALLED IN ANY SINGLE CONSOLE.

MODULE TYPES:

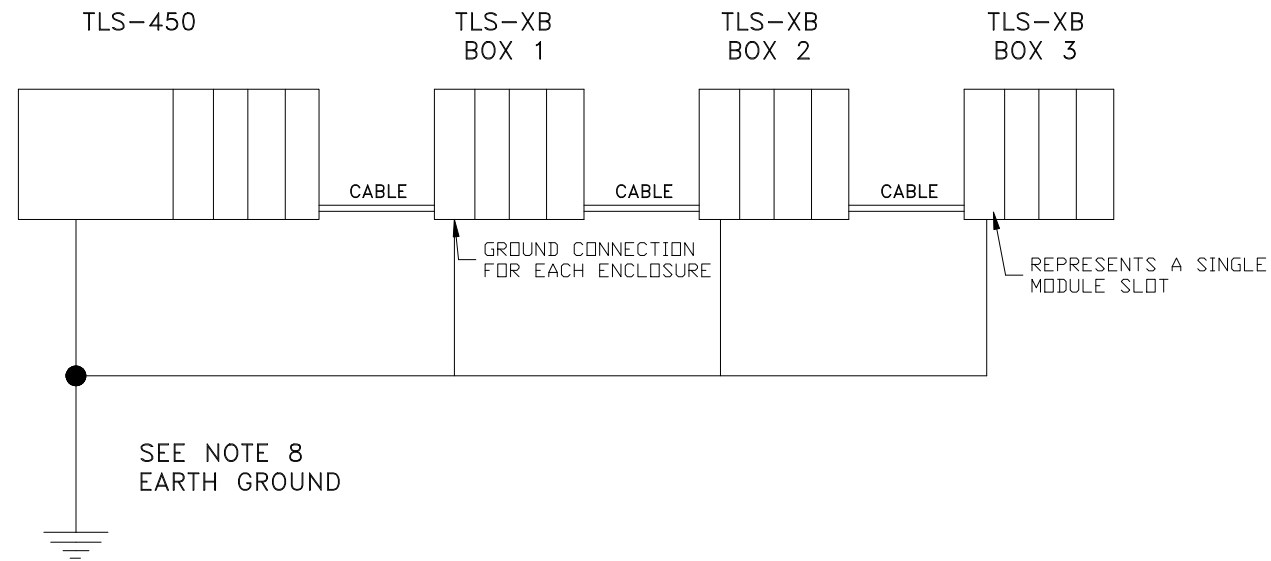
 - A) I/O MODULES PROVIDE WIRING TERMINALS FOR THE CONNECTION OF EQUIPMENT IN NON-HAZARDOUS LOCATIONS.
 - B) SENSOR (USM) MODULES PROVIDE WIRING TERMINALS FOR THE CONNECTION OF INTRINSICALLY SAFE EQUIPMENT.
15. THIS SYSTEM DESCRIPTIVE DOCUMENT DESCRIBES THE INTRINSICALLY SAFE EQUIPMENT AND ASSOCIATED APPARATUS THAT TOGETHER FORM AN INTRINSICALLY SAFE SYSTEM.
- D5** 16. TLS-XB CONSOLES MUST BE INSTALLED IN AN INDOOR, NON-HAZARDOUS AREA IN ACCORDANCE WITH THE DESCRIPTIVE SYSTEM DOCUMENT AND THE INSTALLATION INSTRUCTIONS. ONLY ONE TLS-XB CONSOLE CAN BE CONNECTED TO ANY SINGLE INTRINSICALLY SAFE APPARATUS AS DESCRIBED ON SHEET ONE OF THIS DOCUMENT. MULTIPLE SOURCES OF POWER, ADDITIONAL TLS CONSOLES OR OTHER ASSOCIATED APPARATUS, CANNOT BE CONNECTED TO THE SAME INTRINSICALLY SAFE APPARATUS.
17. REFERENCE THE DEVICE CERTIFICATION FOR APPLICABLE STANDARD EDITIONS.
- D6** 18. CABLE GLAND MUST BE A SUITABLE PROCESS CONNECTION IN ACCORDANCE WITH IEC 60079-26.
19. THE MAG PLUS1 SERIES PROBES MARKED Ex ia IIB T4 OR Ex ia IIC T4, WHEN USED WITHIN THIS SYSTEM THE DEVICE IS LIMITED TO GROUP IIA.

STANDARDS:

| | |
|-------------------------|---|
| Ex ia, GROUP IIA, T4 Gα | |
| IEC 60079-0 | ELECTRICAL APPARATUS FOR POTENTIALLY EXPLOSIVE ATMOSPHERES-PART 0: GENERAL REQUIREMENTS |
| IEC 60079-11 | ELECTRICAL APPARATUS FOR POTENTIALLY EXPLOSIVE ATMOSPHERES-PART 11: INTRINSIC SAFETY "I" |
| IEC 60079-25 | ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES-PART 25: INTRINSICALLY SAFE SYSTEMS |
| IEC 60079-26 | ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES - PART 26: EQUIPMENT WITH EQUIPMENT PROTECTION LEVEL (EPL) Gα. |

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|--|----------------|--|--------|
|  | | SIMSBURY, CONNECTICUT 06070 U.S.A. | |
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| DESCRIPTIVE SYS DOCUMENT IECE_x TLS-XB | | | |
| SIZE | DRAWING NUMBER | REV. | STATUS |
| D | 331940-120 | D | REL |
| SCALE | NONE | SHEET | 2 OF 3 |

SYSTEM DIAGRAM

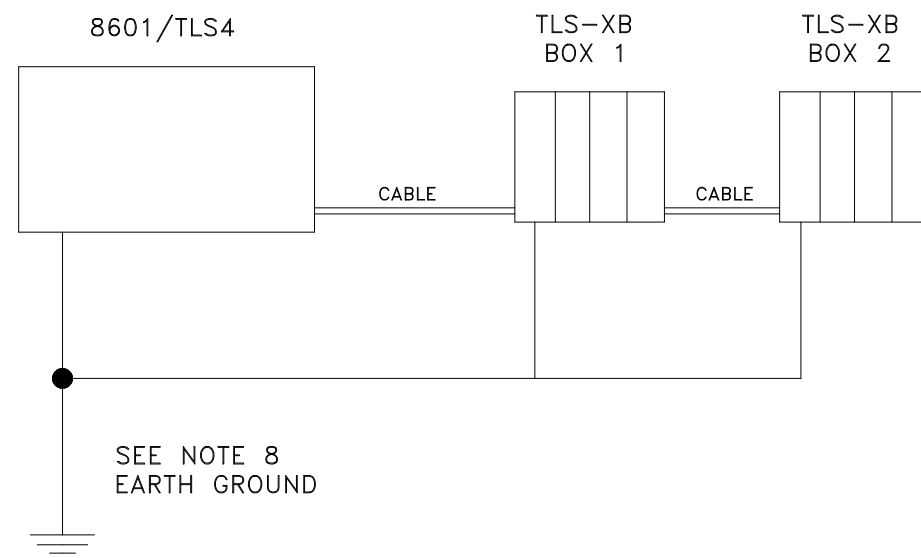


TLS-XB:

- 4 SLOTS PER BOX
- MAXIMUM OF 3 EXPANSION BOXES PER TLS-450 SYSTEM

CABLE (A,B):

- VR BUS, POWER, GROUND, AND RESET
- CABLE LENGTH 45 METERS OR 150 FEET MAXIMUM FOR ALL 3 BOXES TOGETHER



TLS-XB:

- 4 SLOTS PER BOX
- MAXIMUM OF 2 EXPANSION BOXES PER 8601/TLS4 SYSTEM

CABLE (A,B):

- VR BUS, POWER, GROUND, AND RESET
- CABLE LENGTH 45 METERS OR 150 FEET MAXIMUM FOR ALL 2 BOXES TOGETHER



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DESCRIPTIVE SYS DOCUMENT
IECE_x TLS-XB

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|-------|----------------|-------|--------|
| D | 331940-120 | D | REL |
| SCALE | NONE | SHEET | 3 OF 3 |