DESCRIPTION

This control drawing describes the intrinsically safe equipment and associated apparatus that together form an intrinsically safe system.

TLS-XB consoles are identified by form numbers 8603. A TLS-XB console cannot be connected in parallel with another TLS-XB or any other associated apparatus. TLS-XB consoles must be installed in indoor non-hazardous areas.

SYSTEM DIAGRAM

TLS-XB:
- 4 slots per box
- Maximum of 3 expansion boxes per TLS-450 system

CABLE (A.B):
- V8 bus, power, ground, and reset
- Cable length 100 feet maximum for all 3 boxes together
- Maximum DC output ratings: 50VDC, 1.0A, Class 2 circuits

TLS-XB:
- 4 slots per box
- Maximum of 2 expansion boxes per 8601/TLS4 system

CABLE (A.B):
- V8 bus, power, ground, and reset
- Cable length 150 feet maximum for all 2 boxes together
- Maximum DC output ratings: 50VDC, 0.5A, Class 2 circuits

SEE NOTE 8

Earth ground

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CONTROL DRAWING UL/cUL
TLS-XB CONSOLE

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**Warnings**

Substitution of components may impair intrinsic safety. It is intended that the TLS-XB is continuously powered.

**Wiring Notes**

Intrinsically Safe (I.S.) wiring must be installed in accordance with Article 504-20 of the NEC (National Electrical Code), ANSI/NFPA 70 or other applicable local codes. All other wiring must be installed according to local codes.

The maximum cable length allowed, used to connect any intrinsically safe device to the TLS-XB console, is limited to a total of 24,000 feet per US (Universal Sensor Module).

Each cable (or I.S. wiring), used to connect intrinsically safe devices to the TLS-XB console, must be rated 1,000 feet of cable length per foot (or less), for use as a power supply per foot and must be rated 0.2 μA per foot (or less) for use as an integrity monitoring device per foot.

I.S. grounding points must be connected to a suitable ground electrode through less than one ohm of resistance to the earth ground bus at the distribution panel in accordance with the NEC/CGI or other local codes.

Cables (or I.S. wiring) used to connect separate I.S. devices to the associated apparatus must have suitable insulation as required by Article 504.30(b) of the NEC.

Associated apparatus must be installed in accordance to this control drawing and Article 504 of the NEC or Section 18 of the CGI.

The maximum safe area voltage (U_m) of this equipment is 250V RMS or DC. Peripheral equipment connected to the TLS-XB console must not use or generate more than 250V RMS or DC with respect to earth ground.

Inside the module area of both the TLS-XB console, any combination of up to four modules may be installed. One, two, and three I/O modules provide wiring terminals for the connection of equipment installed in non-hazardous locations. The USM (Universal Sensor Module) provides wiring terminals for the connection of intrinsically safe apparatus.

The electronics located in the barrier circuit of the USM module forms an intrinsically safe energy limited system. Probes and sensors connected to the output terminals of the USM module are considered intrinsically safe apparatus and are approved for use in Class I Group D or Class I Zone 0 hazardous (Classified) locations.

**Limitations**

A maximum of 2 TLS-XB consoles and up to 16 intrinsically safe devices may be connected to the USM module located in a TLS-XB console.

- **Maximum Temperature Probe - Enclosure:** All alarms must be taken to avoid malfunctions due to impact of friction.
- **Vapor Flow Meters:** Part numbers 331847-001 and 332371-001 are only suitable for use in the case of a flammable liquid defined when factory-installed by the respective original equipment manufacturer.
- **Vapor Flow Meters:** Part numbers 331847-002 and 332371-002 are suitable for use in the case of a flammable liquid defined when installed by the respective original equipment manufacturer.
- **Vapor Pressure Sensors:** Part numbers 861190-001, 861190-002, and 861190-003 are suitable for use in the case of a flammable liquid defined when installed by the respective original equipment manufacturer.
- **Vapor Pressure Sensors:** Part numbers 861190-001, 861190-002, and 861190-003 are also suitable for use when mounted to the vapor tight tank that is used for nontoxic flammable vapors.
- **Vapor Pressure Sensors:** Part number 861190-001, 861190-002, and 861190-003 are suitable for in-the-field installation, when mounted inside flammable liquid dispensers that are evaluated as a part of a listed kit.

**Surge Protection**

Surge protection components must be gas tight type UL recognized Category Code 20, model 1444, and with an impact rating of at least 10 kA/8/20ms or greater when installed at the tank entry.

Connect the surge protector in accordance with NFPA 70, Clause 4.18.3.2.

Consult the local authorities having jurisdiction prior to installing any surge protection devices. Some installations may require a 5-foot ground distance between surge protector and any tank access point or vent termination in accordance with NFPA 30.

The surge protection device must be a single apparatus only (NFPA 70, Clause 504.2) suitable to the authority having jurisdiction.

**Wiring Disconnect**

All power before making any connections to prevent shock. Sensor inputs, explosion, or electrical shock. The console must never be opened unless the front cover is closed over the damage terminals in the intrinsically safe area.
STANDARDS APPLIED

EX II GROUP D T4

UL 60798-1: ELECTRICAL APPARATUS FOR EXPOSED USE

EX III D, INHIBIT EXHAUST - TEST 0

UL 60798-11: ELECTRIC APPARATUS - PART 11: CONDITION

UL 60895-4-2: METHOD OF INTEGRATED SAFETY

CLASS I, DIVISION 2, GROUP B

UL 913: INTEGRAL INTRINSIC SAFETY

CSA C22.2 NO. 10: CANADIAN ELECTRICAL CODE, PART II

CSA C22.2 NO. 600: CANADIAN ELECTRICAL CODE, PART 9

CSA C22.2 NO. 601: CANADIAN INTEGRATED ELECTRICAL COMPONENT

CSA C22.2 NO. 603: CANADIAN INTEGRATED ELECTRICAL COMPONENT

CSA C22.2 NO. 607: INTEGRAL INTRINSIC SAFETY FOR USE IN

INOXIDABLE ELECTRICAL COMPONENT FOR COMBUSTIBLE HAZARD

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