**CONTROL DRAWING**

**INTRINSICALLY SAFE SYSTEM**

-40°C ≤ T0 ≤ +60°C

**DESCRIPTION**

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

The current limitation located in the TLS-RF battery pack forms an intrinsically safe energy limited system when connected to the XL transmitter.

XL transmitters are identified by part numbers 332442-XXX. A TLS-RF transmitter cannot be connected in parallel with another XL transmitter or any other apparatus.

The electronics located in the barrier circuit of the XL transmitter forms an intrinsically safe energy limited system. Only the probe or the sensor indicated on this drawing can be connected to the output terminals of the XL transmitter in order for it to be considered an intrinsically safe apparatus and approved for use in Class I, Group B hazardous (classified) locations.

**WARNINGS**

Substitution of components may impair intrinsic safety.

**STATIONARY AIR-COOLED UNIT**

**NOTES**

1. The maximum cable length connecting the battery pack to the XL transmitter shall not exceed 572 meters or 150 feet.

2. Calculation and installation of the field wiring from the probe to the XL transmitter shall be calculated and must be included in the system. Calculation as shown in Table 1. Cable capacitance, along with inherently safe equipment capacitance, must be less than the entire capacitance of the equipment and apparatus used. The calculations for the intrinsically safe system are as follows:

<table>
<thead>
<tr>
<th>Wire</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 mm²</td>
<td>100 meters</td>
</tr>
<tr>
<td>2.5 mm²</td>
<td>150 meters</td>
</tr>
<tr>
<td>3.0 mm²</td>
<td>200 meters</td>
</tr>
<tr>
<td>4.0 mm²</td>
<td>250 meters</td>
</tr>
<tr>
<td>5.0 mm²</td>
<td>300 meters</td>
</tr>
</tbody>
</table>

   The following cable shall be used: copper = 60 μH/m, length = 572 meters.

   Length = 0.8 μH/m.

3. Each cable (or wires) used to connect probe or sensor to the XL transmitter shall not exceed a capacitance of 378 μF/meter or 100 μF foot.

4. The total cable capacitance, including all of the cable used to connect the intrinsically safe device to the XL transmitter, must not exceed 0.8 μF.

5. Each cable must not exceed an inductance of 6.85 μH/meter or 0.2 μH foot.

6. The loop area of the cable must not exceed 200 μH/cm².

7. Entry parameters are collected at both the power (4) and data terminals with respect to ground (4).

8. The selected facility shall be third party certified with intrinsically safe circuitry for the hazardous location group and zone as appropriate for the installation and installed in accordance with the manufacturer's installation instructions.

**FOR WIRING NOTES AND LIMITATIONS, SEE SHEET 2.**
LIMITATIONS:

THE MAXIMUM NUMBER OF A SPECIFIC DEVICE TYPE IS LIMITED TO ONE DEVICE.

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. CABLES (OR I.S. WIRING) USED TO CONNECT SEPARATE I.S. DEVICES TO OTHER ASSOCIATED APPARATUS MUST HAVE SUITABLE INSULATION AS REQUIRED BY ARTICLE 504.30(B) OF THE NEC.

THE MAG-XL SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THIS CONTROL DRAWING AND ARTICLE 504 OF THE NEC OR SECTION 18 OF THE CEC.

EVALUATED IN CONJUNCTION WITH AN APPROVED AND COMPATIBLE ASSOCIATED APPARATUS.

ASSOCIATED APPARATUS HEATS THE DE/AL equipment and the system is installed in accordance with approved installation instructions.

CLASS I, DIVISION 1, GROUP D

UL 1238 CONTROL EQUIPMENT FOR USE WITH FLAMMABLE LIQUID INFLAMMABLE DEVICES

UL 913 INTRINSICALLY SAFE APPARATUS

CSA C22.2 N.50 CANADIAN ELECTRICAL CODE. PART III

CSA C22.2 N.0.411-04: BONDING AND GROUNDING OF ELECTRICAL EQUIPMENT (PROTECTIVE GROUNDING)

CSA C22.2 N.149.1-99 PROCESS CONTROL EQUIPMENT

CSA C22.2 N.157 INTRINSICALLY SAFE AND NON-INTRINSIC SAFE EQUIPMENT FOR USE IN HAZARDOUS LOCATIONS; CONSUMER AND COMMERCIAL PRODUCTS.