DESCRIPTION

THIS CONTROL DRAWING DESCRIBES THE INTRINSICALLY SAFE EQUIPMENT AND ASSOCIATED APPARATUS THAT TOGETHER FORM AN INTRINSICALLY SAFE SYSTEM.

TLS-450/450 PLUS CONSOLES ARE IDENTIFIED BY FORM NUMBERS 8600. A TLS-450/450 PLUS CONSOLE CANNOT BE CONNECTED IN PARALLEL WITH ANOTHER TLS-450/450 PLUS OR ANY OTHER ASSOCIATED APPARATUS. TLS-450/450 PLUS CONSOLES AND OPTIONAL EXPANSION BOXES MUST BE INSTALLED IN INDOOR NON-HAZARDOUS AREAS.

CIRCUIT BREAKER PANEL

AC POWER INPUT CONNECTOR
120/240 Vac, 50/60 Hz, 2A maximum

OVERFLOW ALARM RELAY CONNECTOR
120/240 Vac, 2A maximum

TLS-450 CONSOLE

<table>
<thead>
<tr>
<th>COMM MODULES</th>
<th>PERMISSIBLE SLOT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITEFAX MODEM MODULE</td>
<td>1, 2 OR 3</td>
</tr>
<tr>
<td>USB MODULE</td>
<td>5 ONLY</td>
</tr>
<tr>
<td>USB/Ethernet Module</td>
<td>5 ONLY</td>
</tr>
<tr>
<td>Ethernet Module</td>
<td>4 OR 5</td>
</tr>
<tr>
<td>Single Serial Port Module</td>
<td>1, 2 OR 3</td>
</tr>
<tr>
<td>Dual Serial Port Module</td>
<td>1, 2 OR 3</td>
</tr>
<tr>
<td>Electronic Dispenser Interface Module (EDIM)</td>
<td>1, 2 OR 3</td>
</tr>
<tr>
<td>Current Loop Dispenser Interface Module (CDIM)</td>
<td>1, 2 OR 4</td>
</tr>
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NOTE: Limited single port capability in slot 3.

TLS-450 PLUS CONSOLE

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<tr>
<td>SITEFAX MODEM MODULE</td>
<td>1, 2 OR 3</td>
</tr>
<tr>
<td>USB/Wireless Module</td>
<td>5 ONLY</td>
</tr>
<tr>
<td>Ethernet Interface Module</td>
<td>4 ONLY</td>
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NOTE: Limited single port capability in slot 3.
WARNINGS

SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

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-450/450 PLUS CONSOLE IS LIMITED TO A TOTAL OF 24,000 FEET PER USM (UNIVERSAL SENSOR MODULE).

EACH CABLE (OR I.S. WIRING) USED TO CONNECT INTRINSICALLY SAFE DEVICES TO THE TLS-450/450 PLUS CONSOLE, MUST BE RATED 100 PF/FOOT (OR LESS CAPACITANCE PER FOOT) AND MUST BE RATED 0.2 µH/FOOT (OR LESS INDUCTANCE PER FOOT).

I.S. GROUNDING POINTS MUST BE CONNECTED TO A SUITABLE GROUND ELECTRODE THROUGH LESS THAN ONE OHM DC RESISTANCE TO THE EARTH GROUND BUS AT THE DISTRIBUTION PANEL IN ACCORDANCE WITH THE NEC/CEC 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 CEC.

THE MAXIMUM SAFE AREA VOLTAGE (Um) OF THIS EQUIPMENT IS 250V RMS OR DC.

PERIPHERAL EQUIPMENT CONNECTED TO THE TLS-450/450 PLUS 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-450/450 PLUS CONSOLE, ANY COMBINATION OF UP TO FOUR MODULES MAY BE INSTALLED. MIDM, LVSM AND 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. PROBE 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 GROUP IIA HAZARDOUS (CLASSIFIED) LOCATIONS.

LIMITATIONS

A MAXIMUM OF 2 TLS RF CONSOLES AND UP TO 16 INTRINSICALLY SAFE DEVICES MAY BE CONNECTED TO THE USM MODULE LOCATED IN A TLS-450/450 PLUS CONSOLE.

MAGNETOSTRICTIVE PROBE – ENCLOSURE CONTAINS ALUMINUM. CARE MUST BE TAKEN TO AVOID IGNITION HAZARD DUE TO IMPACT OR FRICTION.

VAPOR FLOW METERS, PART NUMBERS 331847-001 AND 332374-003 ARE ONLY SUITABLE FOR USE INSIDE THE BASE OF A FLAMMABLE LIQUID DISPENSER WHEN FACTORY INSTALLED BY THE RESPECTIVE ORIGINAL EQUIPMENT MANUFACTURER.

VAPOR FLOW METERS, PART NUMBERS 331847-002 AND 332374-002 ARE SUITABLE FOR IN-THE-FIELD INSTALLATIONS, WHEN MOUNTED INSIDE FLAMMABLE LIQUID DISPENSERS THAT ARE EVALUATED AS A PART OF A LISTED BY REPORT RETROFIT KIT.

LISTED VAPOR PRESSURE SENSORS, PART NUMBERS 861190-001, 861190-002 AND 861190-003 ARE SUITABLE FOR USE INSIDE THE BASE OF A FLAMMABLE LIQUID DISPENSER 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 VENT STACK THAT IS USED FOR VENTING FLAMMABLE VAPORS.

VAPOR PRESSURE SENSORS, PART NUMBER 861190-001, 861190-002 AND 861190-003 ARE SUITABLE FOR IN-THE-FIELD INSTALLATIONS, WHEN MOUNTED INSIDE FLAMMABLE LIQUID DISPENSERS THAT ARE EVALUATED AS A PART OF A LISTED BY REPORT RETROFIT KIT.

IN SLOT 4 ONLY, ONE AND ONLY ONE 10 AMP CONTROLLER MODULE MAY BE INSTALLED IN A TLS-450/450 PLUS CONSOLE. TLS-450/450 PLUS CONSOLES WITHOUT A 10 AMP CONTROLLER MODULE, MAY USE ANY OTHER MODULE TYPE IN SLOT 4.

I.S. CIRCUIT PROTECTION

CONSULT THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO INSTALLING ANY SURGE PROTECTION DEVICES. SOME INSTALLATIONS MAY REQUIRE A 5 FOOT SPACING DISTANCE BETWEEN SURGE PROTECTOR AND ANY TAKE ACCESS POINT OR VENT. REFERENCE NFPA 30.

THE INTRINSICALLY SAFE (I.S.) CIRCUIT PROTECTOR MUST BE A SIMPLE APPARATUS ONLY (NFPA 70, CLAUSE 504.2) SUITABLE TO THE AUTHORITY HAVING JURISDICTION.
EVALUATED IN CONJUNCTION WITH AN APPROVED AND COMPATIBLE ASSOCIATED APPARATUS

M. ASSOCIATED APPARATUS BORES THE UL/UL CANADA MARK AND THE SYSTEM IS INSTALLED IN ACCORDANCE WITH APPROVED INSTALLATION INSTRUCTIONS.

CLASS I, DIVISION 1, GROUP D
UL 1235 CONTROL EQUIPMENT FOR USE WITH FLAMMABLE LIQUID DISPENSING DEVICES.
UL 913 INTRINSICALLY SAFE EQUIPMENT

CSA C22.2 No.0 CANADIAN ELECTRICAL CODE, PART II
CSA C22.2 No.0.4M BONDING AND GROUNDING OF ELECTRICAL EQUIPMENT
(PROTECTIVE GROUNDING)
CSA C22.2 No.142-M PROCESS CONTROL EQUIPMENT