



FM Hazardous Area Approvals Fisher™ FIELDVUE™ DVC6200 Series Digital Valve Controllers

Hazardous Area Approvals and Special Instructions for “Safe Use” and Installations in Hazardous Locations

Certain nameplates may carry more than one approval, and each approval may have unique installation/wiring requirements and/or conditions of “safe use”. These special instructions for “safe use” are in addition to, and may override, the standard installation procedures. Special instructions are listed by approval type.

Note

This information supplements the nameplate markings affixed to the product and the DVC6200 Series quick start guide ([D103556X012](#)), available from your Emerson sales office or Local Business Partner, or at [Fisher.com](#).

Always refer to the nameplate itself to identify the appropriate certification.

▲ WARNING

Failure to follow these conditions of “safe use” could result in personal injury or property damage from fire or explosion and area re-classification.

Explosion-proof, Dust-Ignition proof, Non-Incendive, Suitable for Use

DVC6200 and DVC6205 Series (HART HW1 & HW2, SIS, FOUNDATION Fieldbus, PROFIBUS)

XP: Class I, Division 1, Groups B,C,D
 DIP: Class II, III, Division 1, Groups E,F,G
 NI: Class I, Division 2, Groups A,B,C,D
 S: Class II, III, Division 2, Groups F,G
 Class I Zone 1 AEx d IIC
 Class I Zone 2 Ex nC IIC
 T5 Ta = 80°C, T6 Ta = 75°C
 Type 4X, IP66

DVC6215 Remote Mount

XP: Class I, Division 1, Groups A,B,C,D
DIP: Class II, III, Division 1, Groups E,F,G
NI: Class I, Division 2, Groups A,B,C,D
S: Class II, III, Division 2, Groups F,G
Class I Zone 1 AEx d IIC
Class I Zone 2 Ex nA IIC
Ta = 125°C, T5 Ta = 90°C, T6 Ta = 75°C
Type 4X, IP66

Intrinsically Safe

IS Class I, II, III, Division 1, Groups A,B,C,D,E,F,G
Class I Zone 0 AEx ia IIC

Type 4X, IP66

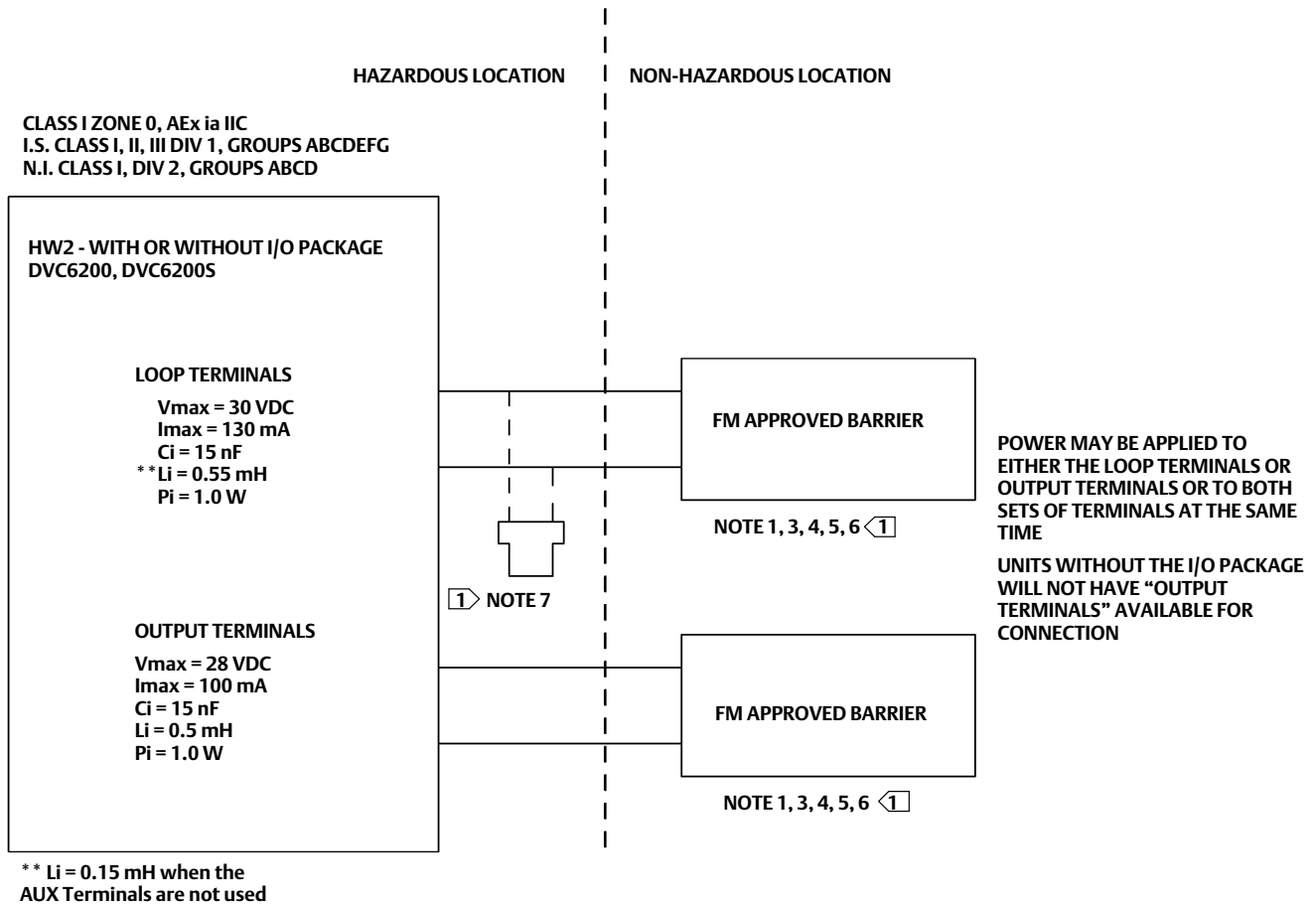
Intrinsically safe when connected per control drawing GE42819, as shown in the following figures

DVC6200 HW2 and DVC6200 SIS	figure 1 and 6
DVC6205, DVC6205 SIS, and DVC6215 Remote Mount	figure 2 and 6
DVC6200f and DVC6200p	figure 3 and 6
DVC6205f, DVC6205p, and DVC6215 Remote Mount	figure 4 and 6
DVC6200 HW1	figure 5 and 6

Special Conditions of Safe Use

- When product is used with natural gas as the pneumatic medium, the maximum working pressure of the natural gas supply shall be limited to 10 bar (145 psi).
- When product is used with natural gas as the pneumatic medium the product shall not be permitted in a Class I, Division 2, Group A, B, C, D location without the proper venting installation per the manufacturer's instruction manual.
- The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.
- Part of the enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned with a damp cloth.

Figure 1. FM Loop Schematics—FIELDVUE DVC6200 HW2 and DVC6200 SIS

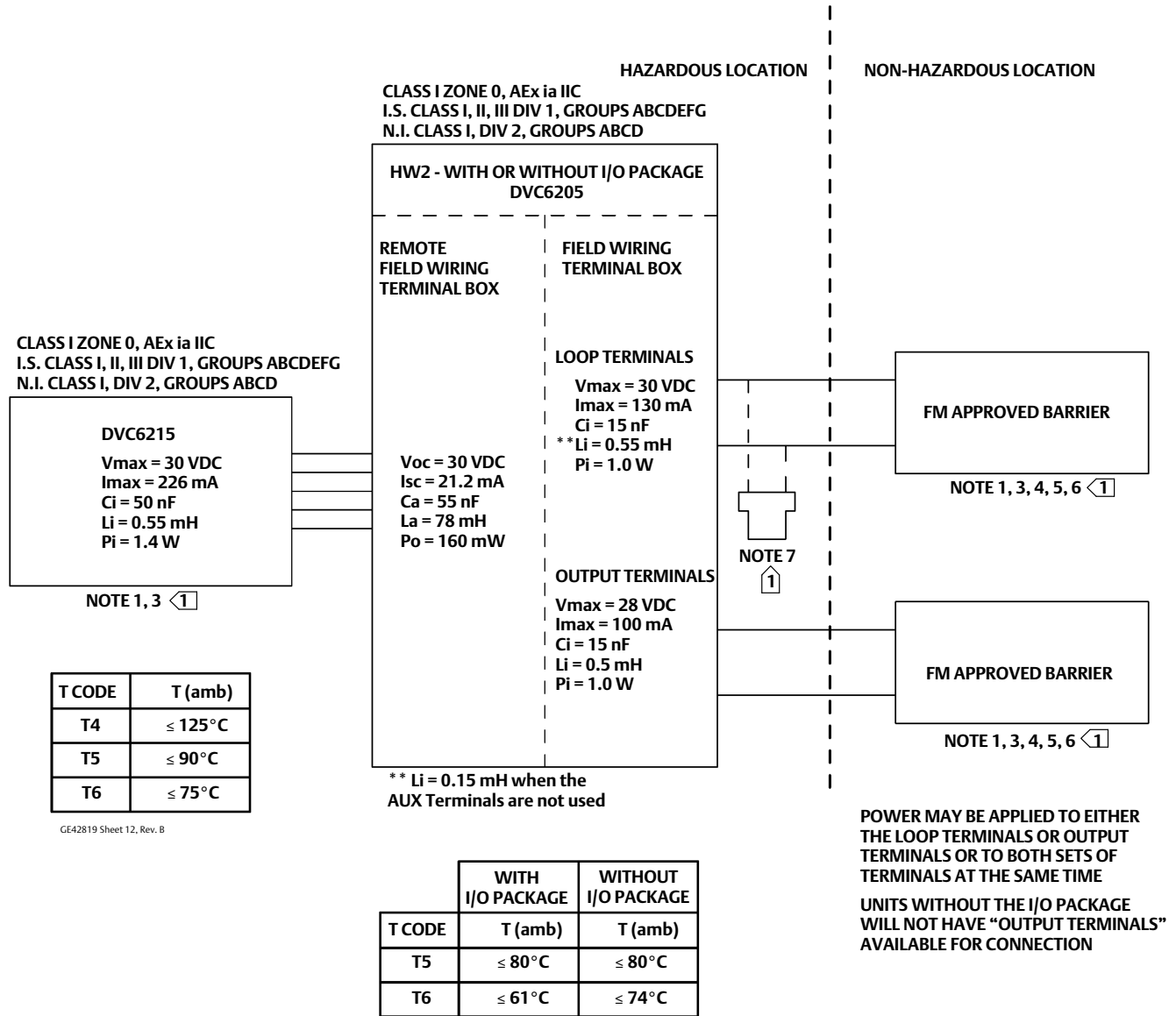


T CODE	WITH I/O PACKAGE	WITHOUT I/O PACKAGE
	T (amb)	T (amb)
T5	≤ 80°C	≤ 80°C
T6	≤ 61°C	≤ 74°C

GE42819 Sheet 11, Rev. B

1 SEE NOTES IN FIGURE 6

Figure 2. FM Loop Schematics—FIELDVUE DVC6205, DVC6205 SIS, and DVC6215



1 SEE NOTES IN FIGURE 6

Figure 3. FM Loop Schematics—FIELDVUE DVC6200f and DVC6200p

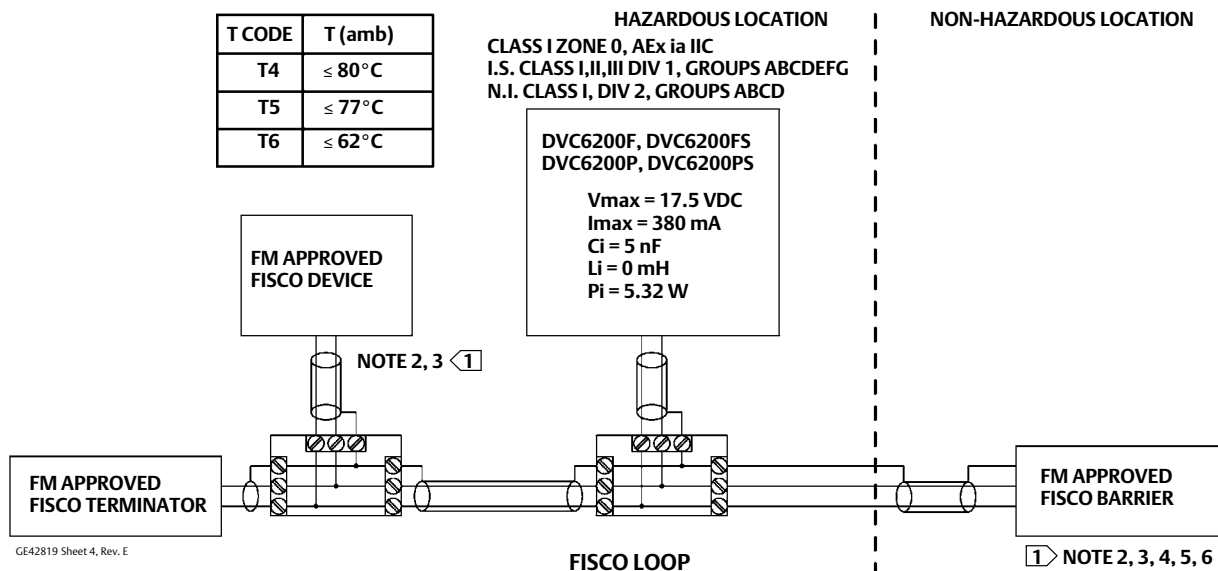
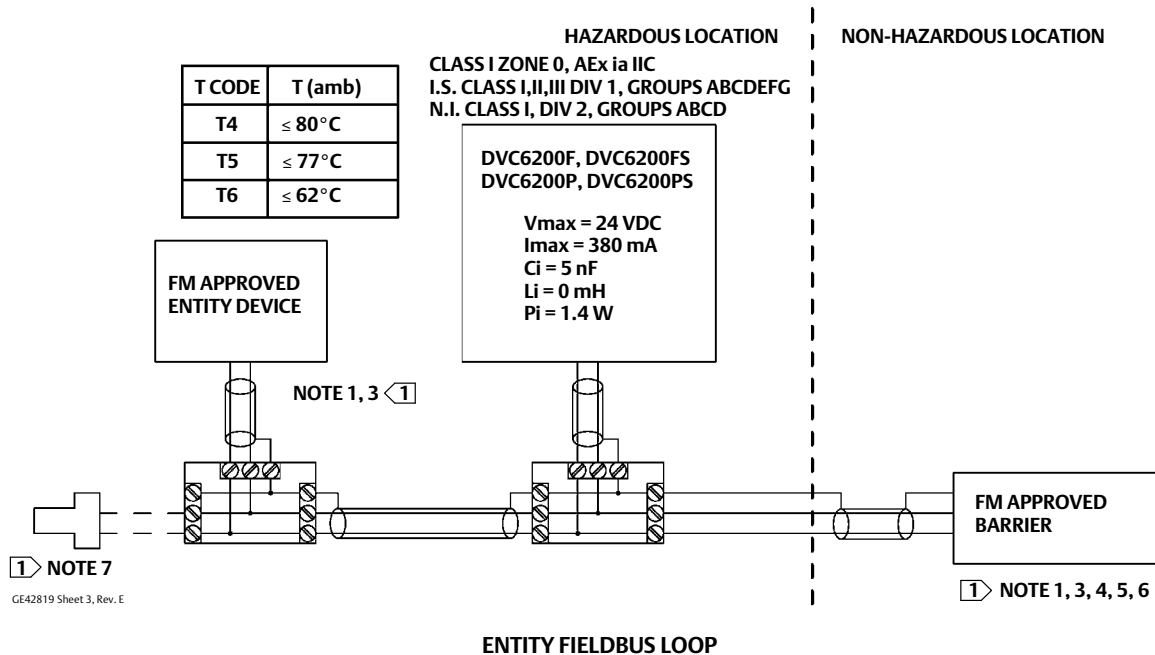
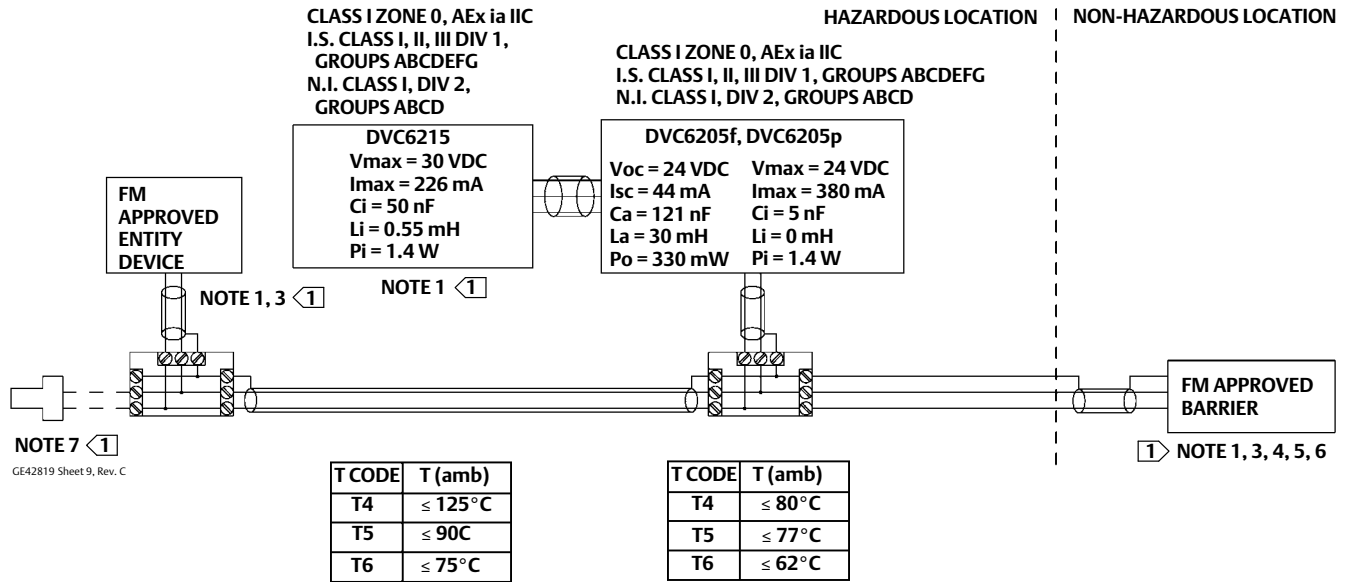
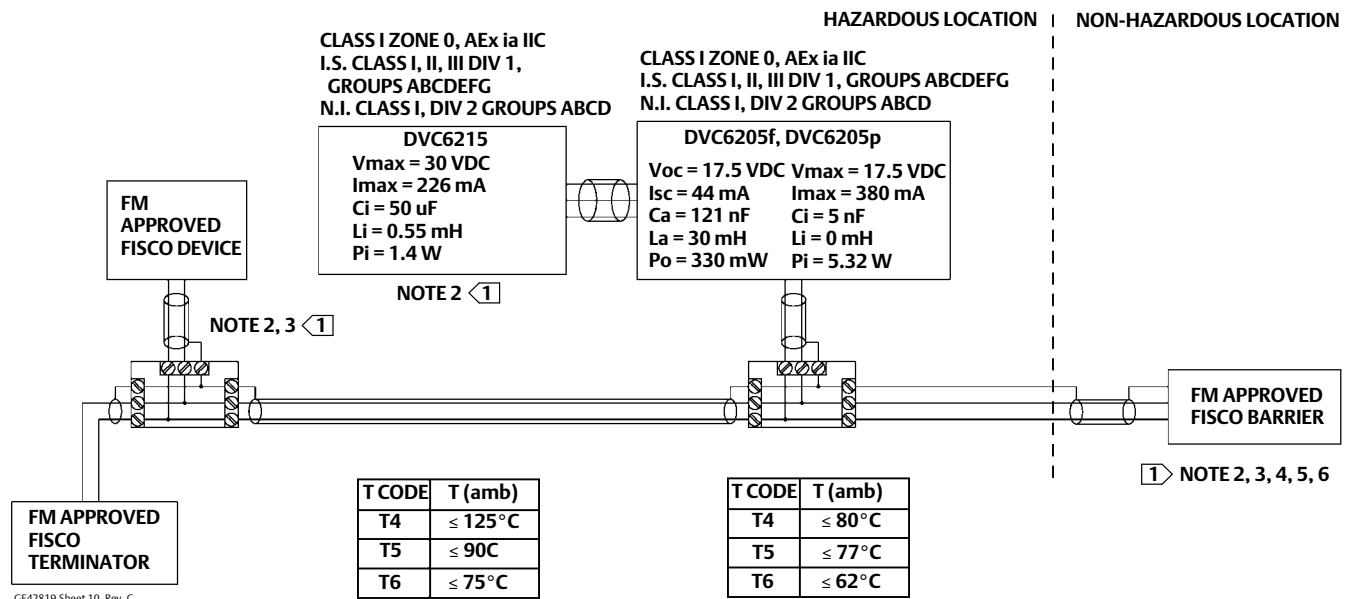


Figure 4. FM Loop Schematics—FIELDVUE DVC6205f, DVC6205p, and DVC6215



SEE NOTES IN FIGURE 6

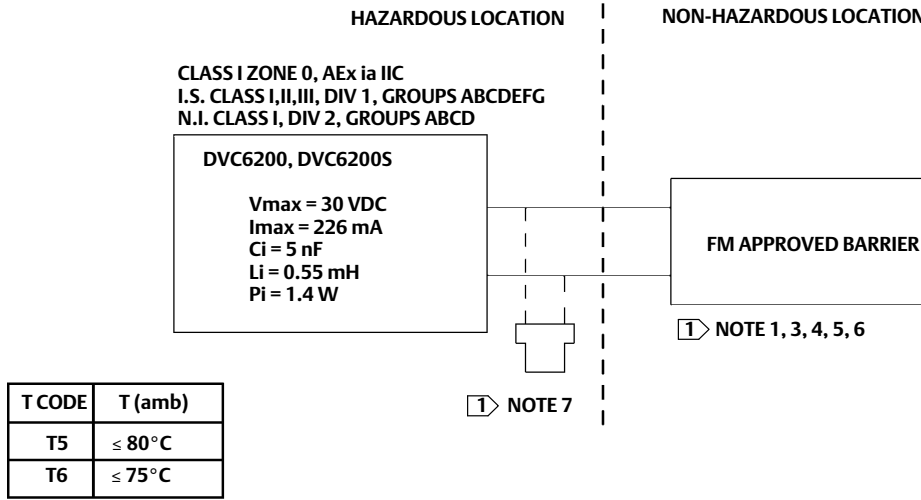
ENTITY FIELDBUS LOOP



SEE NOTES IN FIGURE 6

FISCO LOOP

Figure 5. FM Loop Schematic—FIELDVUE DVC6200 HW1



GE42819 sheet 2, Rev. E

SEE NOTES IN FIGURE 6

Figure 6. Notes for FM Loop Schematics

1 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE (V_{max} OR U_i), THE CURRENT (I_{max} OR I_i), AND THE POWER (P_{max} OR P_i) OF THE INTRINSICALLY SAFE APPARATUS MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V_{oc} OR U_o), AND THE CURRENT (I_{sc} OR I_o), AND THE POWER (P_o) DEFINED BY THE ASSOCIATED APPARATUS. IN ADDITION, THE SUM OF THE MAX UNPROTECTED CAPACITANCE (C_i) AND MAX UNPROTECTED INDUCTANCE (L_i), INCLUDING THE INTERCONNECTING CABLING CAPACITANCE (C_{cable}) AND CABLING INDUCTANCE (L_{cable}) MUST BE LESS THAN THE ALLOWABLE CAPACITANCE (C_a) AND INDUCTANCE (L_a) DEFINED BY THE ASSOCIATED APPARATUS. IF THE ABOVE CRITERIA IS MET, THEN THE COMBINATION MAY BE CONNECTED.

$$V_{max} \text{ or } U_i \geq V_{oc} \text{ or } U_o \quad I_{max} \text{ or } I_i \geq I_{sc} \text{ or } I_o \quad P_{max} \text{ or } P_i \geq P_o \quad C_i + C_{cable} \leq C_a \quad L_i + L_{cable} \leq L_a$$

2 THE FISCO CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR THE INTERCONNECTION IS THAT THE VOLTAGE (V_{max} OR U_i), CURRENT (I_{max} OR I_i), AND POWER (P_{max} OR P_i), WHICH AN INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (V_{oc} OR U_o), CURRENT (I_{sc} OR I_o), AND POWER (P_o) LEVELS WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION THE MAXIMUM UNPROTECTED CAPACITANCE (C_i) AND INDUCTANCE (L_i) OF EACH APPARATUS (OTHER THAN THE TERMINATION) CONNECTED TO THE FIELDBUS MUST BE LESS THAN OR EQUAL TO 5 nF AND 10 uH RESPECTIVELY.

IN EACH SEGMENT ONLY ONE ACTIVE DEVICE, NORMALLY THE ASSOCIATED APPARATUS, IS ALLOWED TO PROVIDE THE NECESSARY ENERGY FOR THE FIELDBUS SYSTEM. THE VOLTAGE (U_o OR V_{oc} OR V_t) OF THE ASSOCIATED APPARATUS HAS TO BE LIMITED TO THE RANGE OF 9 V TO 17.5 VDC. ALL OTHER EQUIPMENT CONNECTED TO THE BUS CABLE HAS TO BE PASSIVE, MEANING THAT THEY ARE NOT ALLOWED TO PROVIDE ENERGY TO THE SYSTEM, EXCEPT FOR A LEAKAGE CURRENT OF 50 uA FOR EACH CONNECTED DEVICE. SEPARATELY POWERED EQUIPMENT NEEDS A GALVANIC ISOLATION TO ASSURE THAT THE INTRINSICALLY SAFE FIELDBUS CIRCUIT REMAINS PASSIVE.

CONTINUED ON NEXT PAGE...

Figure 6. Notes for FM Loop Schematics

2 CONTINUED

THE CABLE USED TO CONNECT THE DEVICES NEEDS TO HAVE THE PARAMETERS IN THE FOLLOWING RANGE:

LOOP RESISTANCE R: 15 TO 150 ohms/km

INDUCTANCE PER UNIT LENGTH L: 0.4 TO 1 mH/km

CAPACITANCE PER UNIT LENGTH C': 80 TO 200 nF/km

$C = C' \text{ LINE/LINE} + 0.5' \text{ LINE/SCREEN}$, IF BOTH LINES ARE FLOATING OR

$C = C' \text{ LINE/LINE} + C' \text{ LINE/SCREEN}$, IF THE SCREEN IS CONNECTED TO ONE LINE.

LENGTH OF SPLICE: < 1 m (T-BOX MUST ONLY CONTAIN TERMINAL CONNECTIONS WITH NO ENERGY STORAGE CAPABILITY)

LENGTH OF SPUR CABLE: < 30 M

LENGTH OF TRUNK CABLE: < 1 km

AT EACH END OF THE TRUNK CABLE AN APPROVED INFALLIBLE TERMINATION WITH THE FOLLOWING PARAMETERS IS SUITABLE:

$R = 90 \text{ TO } 100 \text{ ohms}$ AND $C = 0 \text{ TO } 2.2 \text{ uF}$

NOTE, A BUILT-IN TERMINATOR IS INCLUDED IN THE FIELD SIDE AND A SELECTABLE TERMINATOR IS AVAILABLE ON THE HOST SIDE.

THE NUMBER OF PASSIVE DEVICES CONNECTED TO THE BUS SEGMENT IS NOT LIMITED IN THE FISCO CONCEPT FOR INTRINSICALLY SAFE REASONS. IF THE ABOVE RULES ARE RESPECTED, UP TO A TOTAL LENGTH OF 1000 m (SUM OF THE LENGTH OF THE TRUNK CABLE AND ALL SPUR CABLES), THE INDUCTANCE AND CAPACITANCE OF THE CABLE WILL NOT IMPAIR THE INTRINSIC SAFETY OF THE INSTALLATION.

3 INSTALLATION MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ANSI/ISA RP12.6.01.

4 MAXIMUM SAFE AREA VOLTAGE SHOULD NOT EXCEED 250 V_{rms}.

5 RESISTANCE BETWEEN INTRINSICALLY SAFE GROUND AND EARTH GROUND MUST BE LESS THAN ONE OHM

6 LOOPS MUST BE CONNECTED ACCORDING TO THE BARRIER MANUFACTURER'S INSTRUCTIONS.

7 IF HAND-HELD COMMUNICATOR OR MULTIPLEXER IS USED, IT MUST BE FM APPROVED WITH ENTITY PARAMETERS AND INSTALLED PER THE MANUFACTURER'S CONTROL DRAWINGS.

▲ WARNING

THE APPARATUS ENCLOSURE CONTAINS ALUMINUM AND IS CONSIDERED TO CONSTITUTE A POTENTIAL RISK OF IGNITION BY IMPACT AND FRICTION. AVOID IMPACT AND FRICTION DURING INSTALLATION AND USE TO PREVENT RISK OF IGNITION.

GE42819, Sheet 8, Rev. F

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