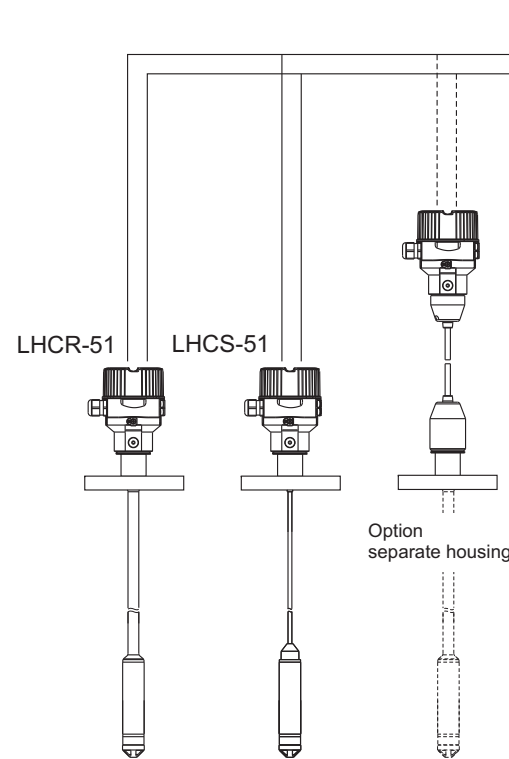


HAZARDOUS (CLASSIFIED) LOCATION

Class I, Zone 0, IIC
 Class I, Division 1, 2, Groups A,B,C,D
 Class II, Division 1, 2, Groups E,F,G
 Class III

NONHAZARDOUS LOCATION

Any
 CSA Approved
 Associated
 Apparatus
 Suitable for
 Entity-concept
 or
 FISCO-concept



LHCR-51, LHCS-51 with electronic insert for Profibus PA (Entity-Concept)

$U_i (V_{max}) = 24 V$
 $I_i (I_{max}) = 250 mA$
 $P_i (P_{max}) = 1.2 W$
 $C_i \leq 5 nF$ $L_i \leq 10 \mu H$
 Leakage current $\leq 50 \mu A$

| | | |
|----------------------------|----------------|----------------|
| Temperature classification | T6 | T4 |
| Max. ambient temperature | 40°C 104 °F | 70°C 158 °F |

Min. ambient temp: -40°C (optional -50°C)

LHCR-51, LHCS-51 with electronic insert for Profibus PA (FISCO-Concept)

$U_i (V_{max}) = 17.5 V$
 $I_i (I_{max}) = 500 mA$
 $P_i (P_{max}) = 5.5 W$
 $C_i \leq 5 nF$ $L_i \leq 10 \mu H$
 Leakage current $\leq 50 \mu A$

| | | |
|----------------------------|----------------|----------------|
| Temperature classification | T6 | T4 |
| Max. ambient temperature | 40°C 104 °F | 70°C 158 °F |

Min. ambient temp: -40°C (optional -50°C)

Any CSA approved Termination with
 $R = 90 \dots 100 \Omega$
 $C = 0 \dots 2.2 \mu F$

Any
 CSA approved
 Intrinsically
 Safe Apparatus
 suitable for
 Entity-concept
 or
 FISCO concept

LHCR-51, LHCS-51 is suitable for the connection to a Profibus PA system according to the Entity- or FISCO-concept (as described below).

FISCO-Concept

The FISCO Concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criteria for interconnection is that the voltage (U_i or V_{max}), the current (I_i or I_{max}) and the power (P_i or P_{max}) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U_o or V_{oc} or V_t), the current (I_o or I_{sc} or I_t) and the power (P_o or P_{max}) 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 μH 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 14V to 24V d.c. 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 to a leakage current of 50 μA for each connected device. Separately powered equipment needs a galvanic isolation to assure that the intrinsically safe fieldbus circuit remains passive.

The cable used to interconnect the devices needs to have the parameters in the following range:

loop resistance R' : 15 ... 150 Ohm /km inductance per unit length L' : 0.4 ... 1 mH/km
 capacitance per unit length C' : 80 ... 200 nF/km
 $C' = C' \text{ line/line} + 0,5 C' \text{ line/screen}$, 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 spur cable: 30 m length of trunk cable: 1 km length of splice: 1 m

At each end of the trunk cable an approved infallible line termination with the following parameters is suitable:

$R = 90 \dots 100 \text{ Ohm}$ $C = 0 \dots 2.2 \mu F$.

One of the allowed terminations might already be integrated in the associated apparatus.

INTRINSICALLY SAFE

CLASS I, DIV.1, GROUPS A,B,C,D CLASS II Div.1 GROUPS E,F,G CLASS III; Ex ia IIC T6

1. CSA certified apparatus must be installed in accordance with manufacturer instructions
2. CSA certified associated apparatus must meet the following requirements:
 U_o or V_{oc} or $V_t \leq U_i (V_{max})$ and I_o or I_{sc} or $I_t \leq I_i (I_{max})$ and P_o or $P_{max} \leq P_i (P_{max})$
3. The maximum non-hazardous area voltage must not exceed 250 V.
4. The installation must be in accordance with the Canadian Electrical Code or National Electrical Code (ANSI/NFPA70) and ISA RP 12.06.01
5. Be aware of multiple earthing of screen. The screen must be connected in accordance with Canadian Electrical code or National Electrical Code (ANSI/NFPA70) and ISA RP 12.06.01
6. Caution: Use only supply wires suitable for 5 °C above surrounding temperature
7. Warning: Substitution of components may impair intrinsic safety.
8. The polarity for connecting is of no importance due to an internal rectifier.

Suitable for, CLASS I, DIV.2, GROUP A,B,C,D CLASS II, DIV.1, GROUP E,F,G

HAZARDOUS LOCATION INSTALLATION

1. Install per Canadian Electrical Code (CEC) or National Electrical Code (ANSI/NFPA70) and ISA RP 12.06.01
 Intrinsic safety barrier not required. Max. supply voltage 32V. For T-code see table.
2. WARNING: Explosion Hazard - do not disconnect equipment unless power has been switched off or the area is known to be Non-Hazardous. AVERTISSEMENT: Risque d'explosion - Ne pas débrancher tant que le circuit est sous tension, à moins qu'il s'agisse d'un emplacement non dangereux.
 WARNING: Explosion HAZARD- Substitution of components may impair suitability for CLASS I, Division 2.
 AVERTISSEMENT: Risque d'explosion- La substitution de composant peut rendre ce material inacceptable pour les emplacements de Class I, Div.2.

Control Drawing no. 116-0399

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|--|---|---------------------|
| Dieses Dokument enthält sicherheitsrelevante Angaben. Es darf nicht ohne Absprache mit dem Normenfachmann (NE Ex) geändert werden! | | |
| This document contains safety-relevant information. It must not be altered without the authorization of the norm expert (NE Ex)! | | |
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| P+F Global | Control Drawing - CSA | 16-990CS-12A |
| | LHCR-51, LHCS-51 Profibus PA | sheet 4 of 4 |