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ATEX intrinsic safe and non-incendive diagrams for PH202S, PH202S-N

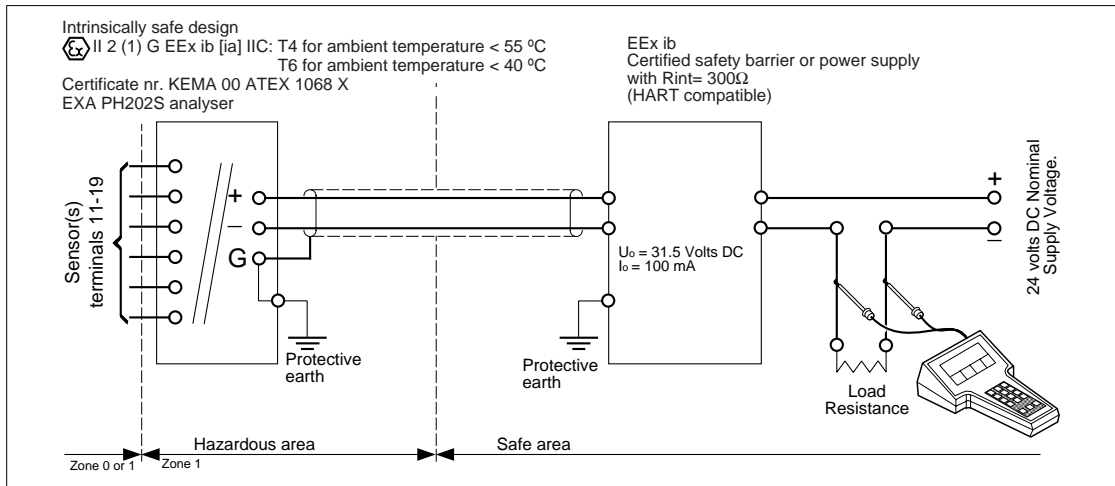


Figure 1

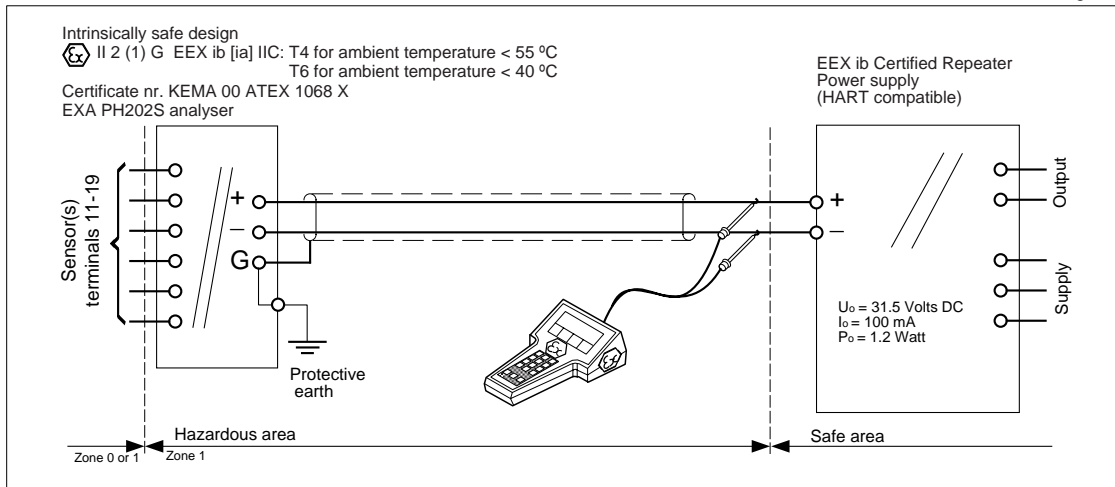


Figure 2

- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which comply with clause 1.3 of the EN 50014.
- Electrical data of the EXAPH202S.
 - Supply and output circuit (terminals + and -):
 - Maximum input voltage $U_i = 31.5$ V.
 - Maximum input current $I_i = 100$ mA.
 - Maximum input power $P_i = 1.2$ W.
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μ H.
 - Sensor input circuit (terminals 11 through 19):
 - Maximum output voltage $U_o = 14.4$ V.
 - Maximum output current $I_o = 32.3$ mA.
 - Maximum allowed external capacitance $C_o = 600$ nF.
 - Maximum allowed external inductance $L_o = 36$ mH.
- Barriers and power supply specification must not exceed the maximum values as shown in the diagram above. These safety descriptions cover most of the commonly used industry standard barriers, isolators and power supplies.
- The Hand Held Communicator must be of a ATEX certified intrinsically safe type in case it is used on the intrinsically safe circuit in the hazardous area or of a ATEX certified non-incendive type in case it is used in the non-incendive circuit in the hazardous area.

CSA intrinsic safe and non-incendive diagrams for PH202S, PH202S-N

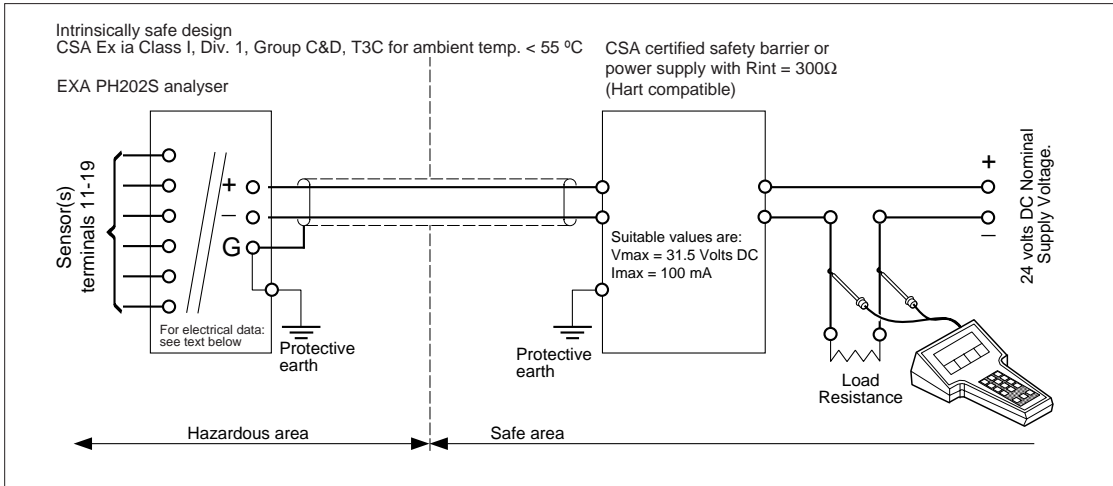


Figure 1

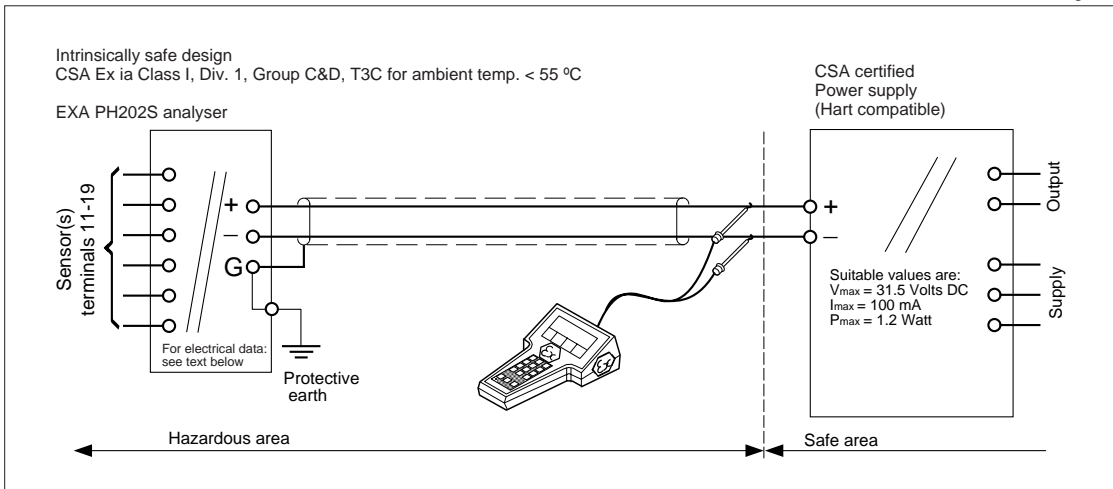


Figure 2

- Sensor(s) are thermocouples, RTD's, passive resistive switch devices, or are CSA entity approved and meet connection requirements.
- Electrical data of the EXA PH202S.
 - Supply and output circuit (terminals + and -):
 - Maximum input voltage $V_{max} = 31.5$ V.
 - Maximum input current $I_{max} = 100$ mA.
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μ H.
 - Sensor input circuit (terminals 11 through 19):
 - Maximum output voltage $V_{oc} = 14.4$ V.
 - Maximum output current $I_{sc} = 32.3$ mA.
 - Maximum allowed external capacitance $C_a = 600$ nF.
 - Maximum allowed external inductance $L_a = 36$ mH.
- Barriers and power supply should be CSA certified. The specifications must not exceed the maximum values as shown in the diagram above. Installation should be in accordance with Canadian Electrical Code, Part I or CEC, Part I. Maximum safe area voltage should not exceed 250 VRMS.
- The Hand Held Communicator must be of a CSA certified intrinsically safe type in case it is used on the intrinsically safe circuit in the hazardous area.

FM intrinsic safe diagrams for PH202S

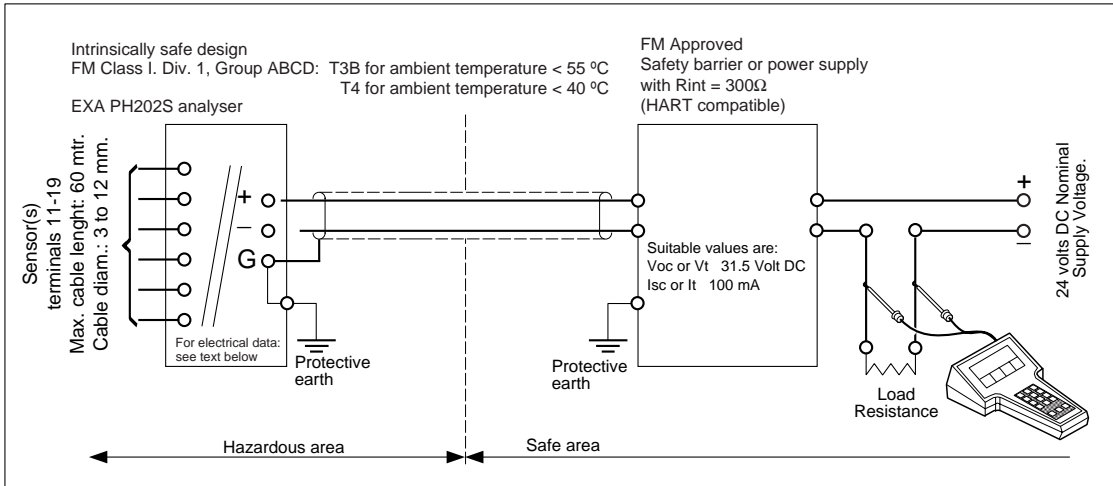


Figure 1

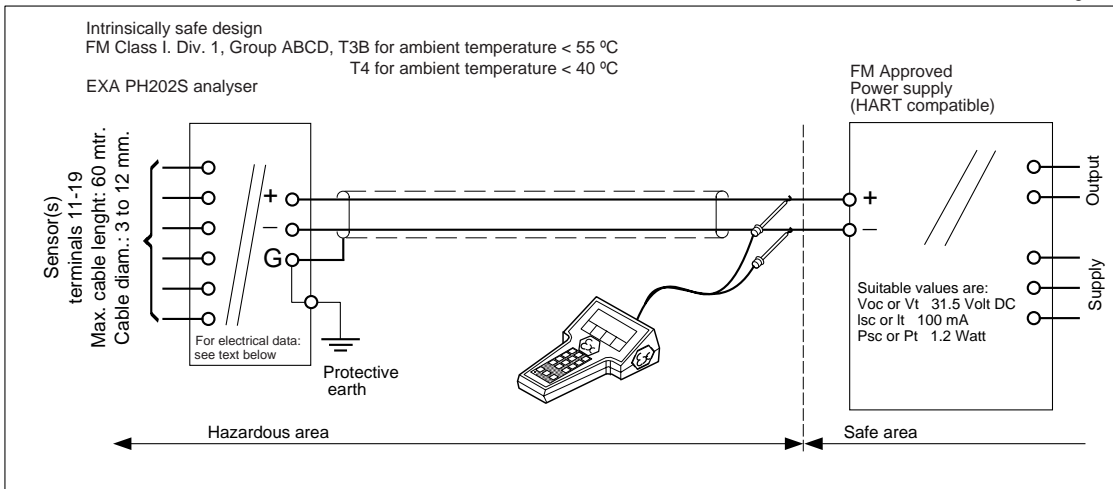


Figure 2

- Electrical data of the EXA PH202S :
 - Supply circuit (terminals + and -):
Maximum input voltage $V_{max} = 31.5$ V.
Maximum input current $I_{max} = 100$ mA.
Maximum input power $P_i = 1.2$ W.
Effective internal capacitance $C_i = 22$ nF.
Effective internal inductance $L_i = 22$ μH.
 - Sensor input circuit (terminals 11 through 19):
Maximum output voltage $V_t = 14.4$ V.
Maximum output current $I_t = 32.3$ mA.
Maximum allowed external capacitance $C_a = 600$ nF.
Maximum allowed external inductance $L_a = 36$ mH.
- If Hand Held Terminal (HHT) is not connected to the power supply lines of the EXA PH202S (see figure 1):
Any FM Approved barrier or power supply may be used that meets the following requirements.
 V_{oc} or $V_t \leq 31.5$ V, I_{sc} or $I_t \leq 100$ mA; $C_a \geq 22$ nF + C_{cable} , $L_a \geq 22$ μH + L_{cable}
- If HHT is connected to the power supply lines of the EXA PH202S (see figure 2):
The Hand Held Terminal must be FM Approved. Refer to the manufacturers control drawing of the HHT and the barrier/power supply to determine the cable parameters.
 $(V_{oc} \text{ or } V_t) + V_{HHT} \leq 31.5$ V, $(I_{sc} \text{ or } I_t) + I_{HHT} \leq 100$ mA, $C_a \geq 22$ nF + C_{cable} + C_{HHT} , $L_a \geq 22$ μH + L_{cable} + L_{HHT}

When installing this equipment, follow the manufacturer's installation drawing.
Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

- Control equipment connected to the barrier/power supply must not use or generate more than 250 Vrms or Vdc.
- Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ω.

WARNING

- Substitution of components may impair Intrinsic Safety
To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM non-incendive diagrams for PH202S-N

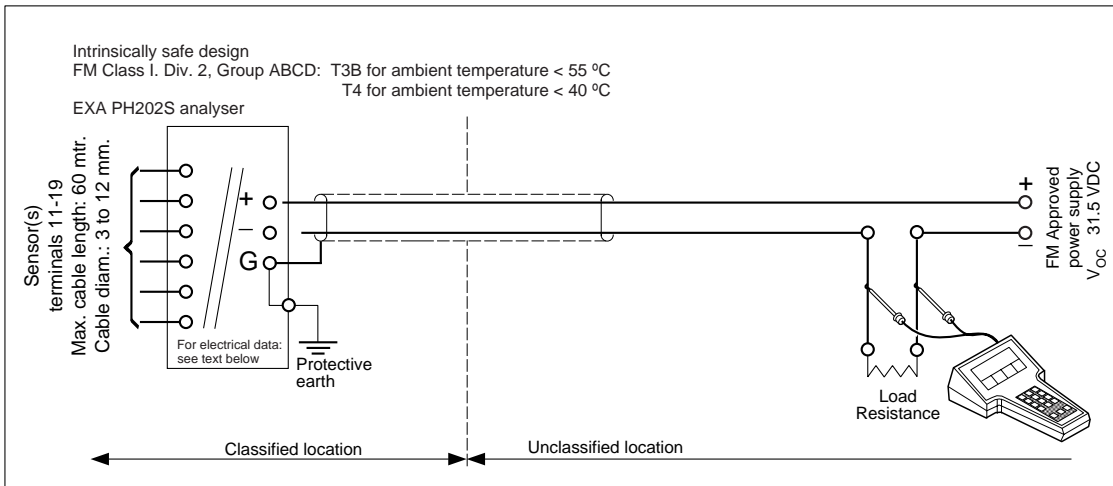


Figure 1

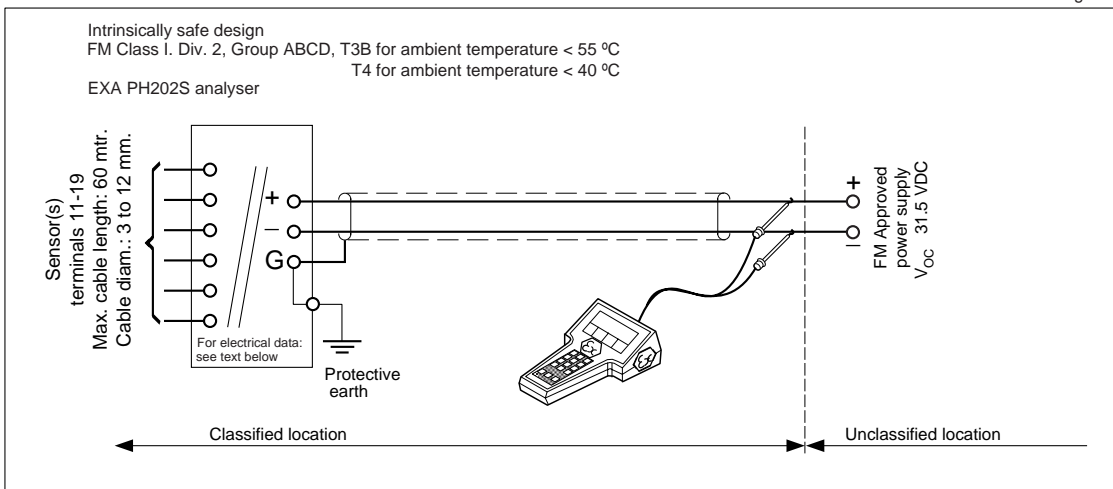


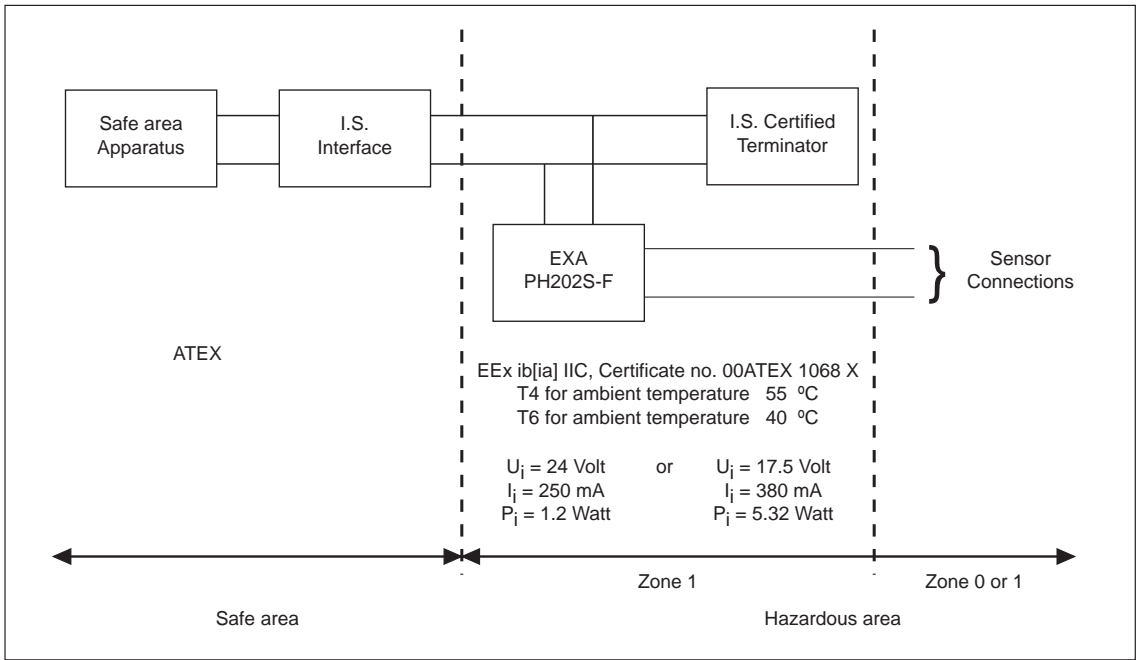
Figure 2

- Electrical data of the EXA PH202S :
 - Supply circuit (terminals + and -):
Maximum input voltage $V_{max} = 31.5 \text{ V}$.
Maximum input power $P_i = 1.2 \text{ W}$
Effective internal capacitance $C_i = 22 \text{ nF}$
Effective internal inductance $L_i = 22 \text{ }\mu\text{H}$
 - Sensor input circuit (terminals 11 through 19):
Maximum output voltage $V_t = 14.4 \text{ V}$.
Maximum output current $I_t = 32.3 \text{ mA}$.
Maximum allowed external capacitance $C_a = 600 \text{ nF}$.
Maximum allowed external inductance $L_a = 36 \text{ mH}$.
- The Hand Held Terminal must be FM Approved in case it is used in the classified location. When installing this equipment, follow the manufacturers installation drawing. Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code

WARNING

- Substitution of components may impair suitability for Division 2
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

ATEX Control drawing for PH202S-F



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which comply with clause 1.3 of the EN 50014.
- Electrical data of the EXA PH202S-F:

- Supply and output circuit:
 Maximum input voltage $U_i=24\text{ V}$ or Maximum input voltage $U_i=17.5\text{ V}$
 Maximum input current $I_i=250\text{ mA}$ Maximum input current $I_i=380\text{ mA}$
 Maximum input power $P_i=1.2\text{ W}$ Maximum input power $P_i=5.32\text{ W}$

Effective internal capacitance $C_i=737\text{ pF}$; Effective internal inductance $L_i=2.6\text{ }\mu\text{H}$.

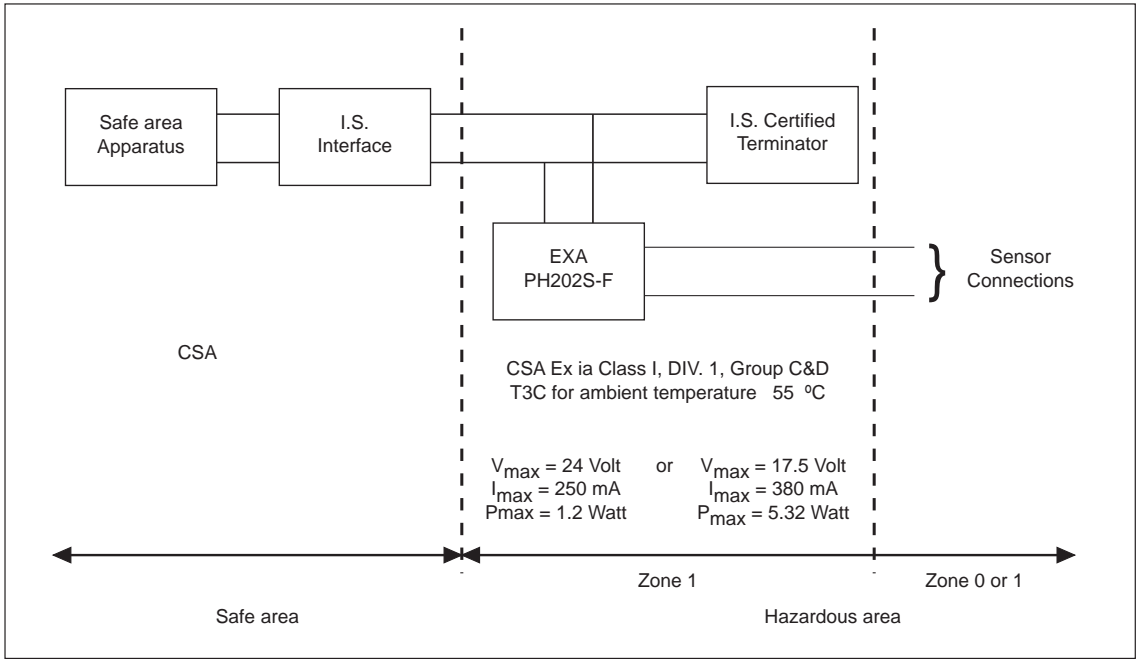
- Sensor input circuit:
 Maximum output voltage $U_o=14.4\text{ V}$; Maximum output current $I_o=32.3\text{ mA}$
 Maximum allowed external capacitance $C_o=600\text{ nF}$
 Maximum allowed external inductance $L_o=36\text{ mH}$

- Any I.S. interface may be used that meets the following requirements:

$U_o \leq 24\text{ V}$ or $U_o \leq 17.5\text{ V}$
 $I_o \leq 250\text{ mA}$ $I_o \leq 380\text{ mA}$
 $P_o \leq 1.2\text{ W}$ $P_o \leq 5.32\text{ W}$

$C_a \geq 737\text{ pF} + C_{\text{cable}}$; $L_a \geq 2.6\text{ }\mu\text{H} + L_{\text{cable}}$

CSA Control drawing for PH202S-F



- Sensor(s) are a thermocouple, RTD's, passive resistive switch devices, or is CSA entity approved and meet connection requirements.
- Electrical data of the EXA PH202S-F:
 - Supply and output circuit:

Maximum input voltage $V_{max}=24 \text{ V}$	or	Maximum input voltage $V_{max}=17.5 \text{ V}$
Maximum input current $I_{max}=250 \text{ mA}$		Maximum input current $I_{max}=380 \text{ mA}$
Maximum input power $P_{max}=1.2 \text{ W}$		Maximum input power $P_{max}=5.32 \text{ W}$

Effective internal capacitance $C_i=737 \text{ pF}$; Effective internal inductance $L_i=2.6 \text{ }\mu\text{H}$.

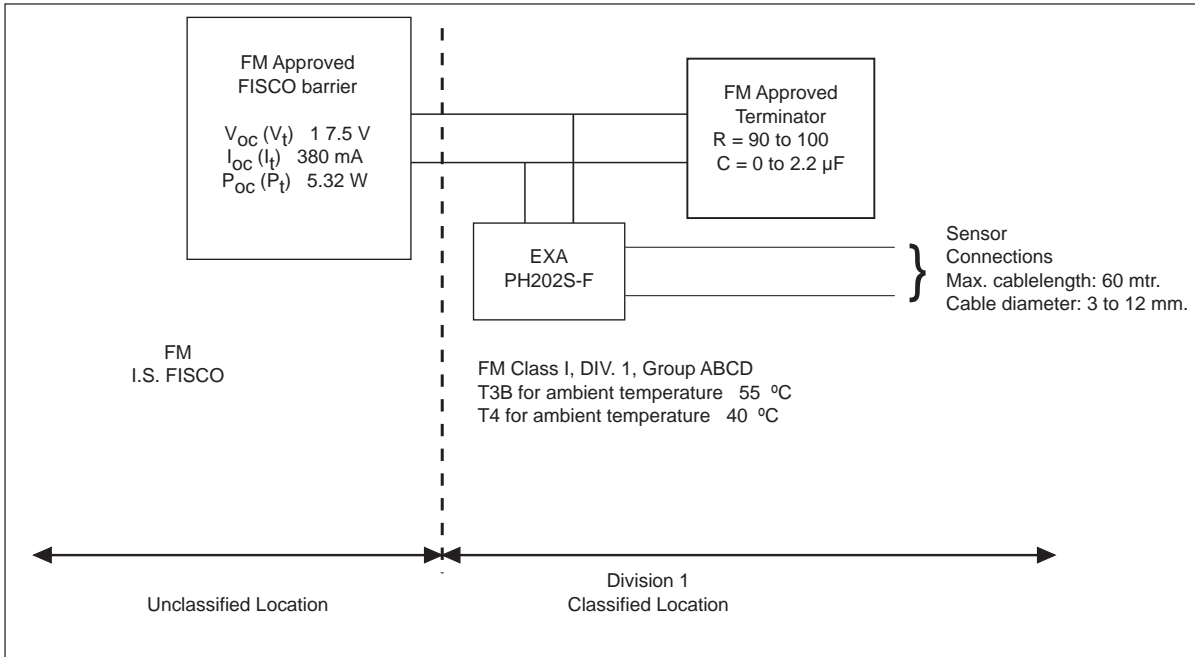
- Sensor input circuit:
 - Maximum output voltage $V_{oc}=14.4\text{V}$; Maximum output current $I_{sc}=32.3 \text{ mA}$
 - Maximum allowed external capacitance $C_a=600 \text{ nF}$
 - Maximum allowed external inductance $L_a=36 \text{ mH}$
- Any CSA approved I.S. interface may be used that meets the following requirements:

$V_{max} \leq 24 \text{ V}$	or	$V_{max} \leq 17.5 \text{ V}$
$I_{max} \leq 250 \text{ mA}$		$I_{max} \leq 380 \text{ mA}$
$P_{max} \leq 1.2 \text{ W}$		$P_{max} \leq 5.32 \text{ W}$

$C_a \geq 737 \text{ pF} + C_{cable}$; $L_a \geq 2.6 \text{ }\mu\text{H} + L_{cable}$

Installation should be in accordance with Canadian Electrical Code, Part I or CEC, Part I. Maximum safe area voltage should not exceed 250 V_{rms} .

FM Control drawing for PH202S-F (Intrinsic safe FISCO concept)

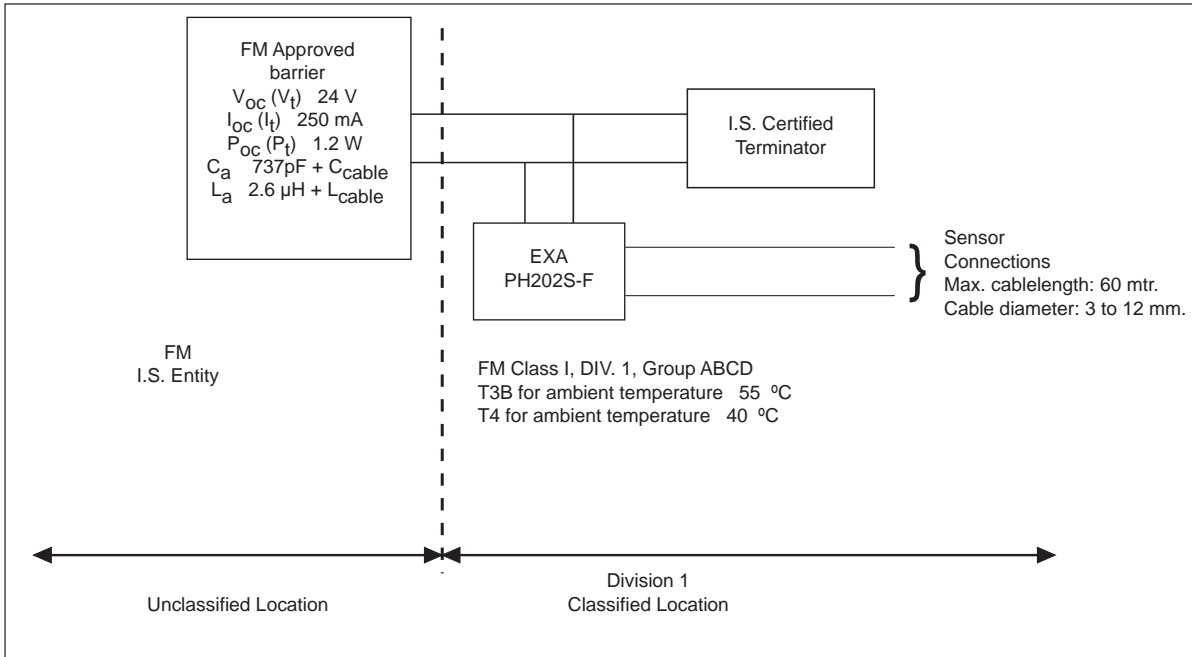


- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μJ , or are FM Approvals entity approved and meet connection requirements.
- Electrical data of the EXA PH202S-F:
 - Supply circuit: $V_{max}=17,5 \text{ V}$; $I_{max}=380 \text{ mA}$; $P_i=5,32 \text{ W}$; $C_i=737 \text{ pF}$; $L_i=2.6 \mu\text{H}$.
 - Sensor input circuit: $V_t=14.4 \text{ V}$; $I_t=32.3 \text{ mA}$; $C_a=600 \text{ nF}$; $L_a=36 \text{ mH}$
- Any FM Approved FISCO barrier may be used that meets the following requirements:
 - V_{oc} or $V_t \leq 17,5 \text{ V}$; I_{oc} or $I_t \leq 380 \text{ mA}$; P_{oc} or $P_t \leq 5,32 \text{ W}$
 When installing this equipment, follow the manufacturer's installation drawing.
 Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).
 Associated apparatus connected to the FISCO barrier must not use or generate more than 250 Vrms or Vdc.
- Resistance between FISCO Intrinsically Safe Ground and earth ground must be less than 1.0 Ω .
- The FISCO concept allows the interconnection of several I.S. apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (V_{max}), the current (I_{max}) and the power (P_i) which I.S. apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater that the voltage (V_{oc} , V_t), the current (I_{oc} , I_t) and the power (P_{oc} , P_t) which can be provided by the FM approved FISCO barrier. In addition, the maximum unprotected residual capacitance (C_i) and inductance (L_i) of each apparatus (other than the terminator) connected to the Fieldbus must be less than or equal to 5nF and 10 μH respectively.
- In each I.S. Fieldbus segment only one active source, normally the FM Approved FISCO barrier, is allowed to provide the necessary power for the Fieldbus system. All other equipment connected to the bus cable has to be passive (not providing energy to the system), except to a leakage current of 50 μA for each connected device. Separately powered equipment needs a galvanic isolation to insure that the I.S. Fieldbus circuit remains passive.
- The cable used to interconnect the devices needs to comply with the following parameters:
 - Loop resistance R' : 15 to 150 Ω/km ; Inductance per unit length L' : 0.4 to 1 mH/km
 - Capacitance per unit length C' : 80 to 200 nF/km
 - ($C' = C' \text{ line/line} + 0.5 C' \text{ line/screen}$ if both line are floating)
 - ($C' = C' \text{ line/line} + C' \text{ line/screen}$ if the screen is connected to one line)
 - Length of spur cable: max. 30 mtr.
 - Length of trunk cable: max. 1 km
 - Length of splice : max. 1 mtr.

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM Control drawing for PH202S-F (Intrinsic safe Entity concept)



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μ J, or are FM Approvals entity approved and meet connection requirements.
- Electrical data of the EXA PH202S-F:
 - Supply circuit:
 - Maximum input voltage $V_{max}=24$ V
 - Maximum input current $I_{max}=250$ mA
 - Maximum input power $P_i=1.2$ W
 - Effective internal capacitance $C_i=737$ pF; Effective internal inductance $L_i=2.6$ μ H.
 - Sensor input circuit:
 - Maximum output voltage $V_t=14.4$ V; Maximum output current $I_t=32.3$ mA
 - Maximum allowed external capacitance $C_a=600$ nF
 - Maximum allowed external inductance $L_a=36$ mH
- Any FM Approved barrier may be used that meets the following requirements:
 - V_{oc} or $V_t \leq 24$ V
 - I_{oc} or $I_t \leq 250$ mA
 - P_{oc} or $P_t \leq 1.2$ W
 - $C_a \geq 737$ pF + C_{cable} ; $L_a \geq 2.6$ μ H + L_{cable}

When installing this equipment, follow the manufacturer's installation drawing.

Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

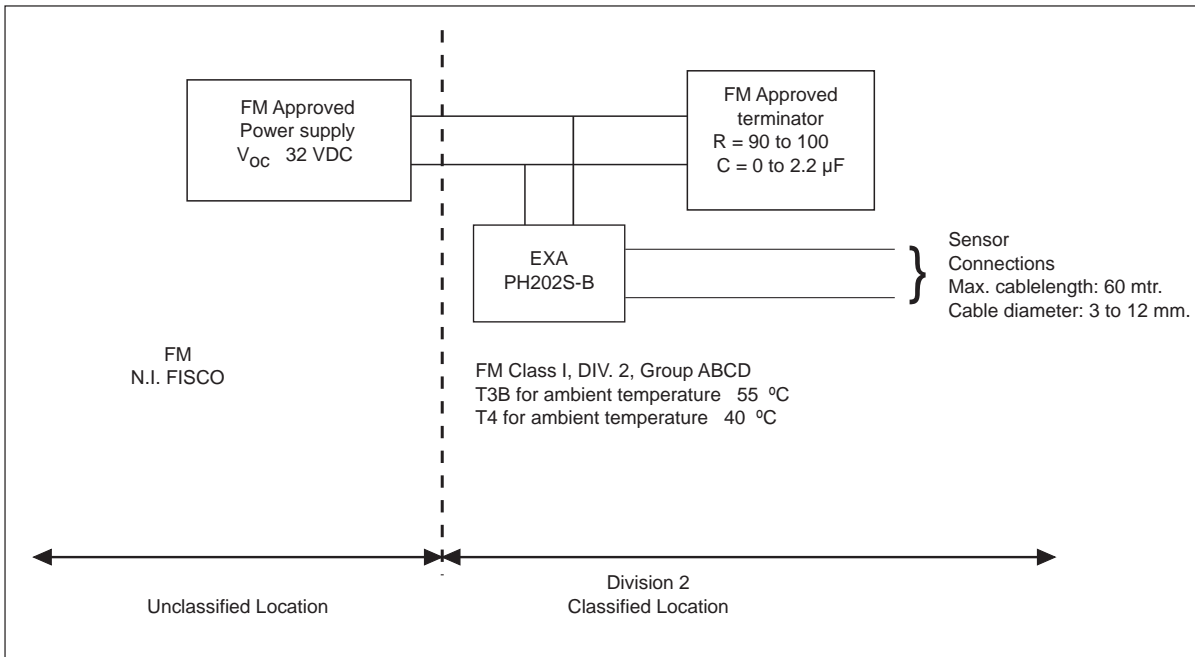
Associated apparatus connected to the barrier must not use or generate more than 250 Vrms or Vdc.

- Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ω .

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM control drawing for PH202S-B (Non-incendive FISCO concept)

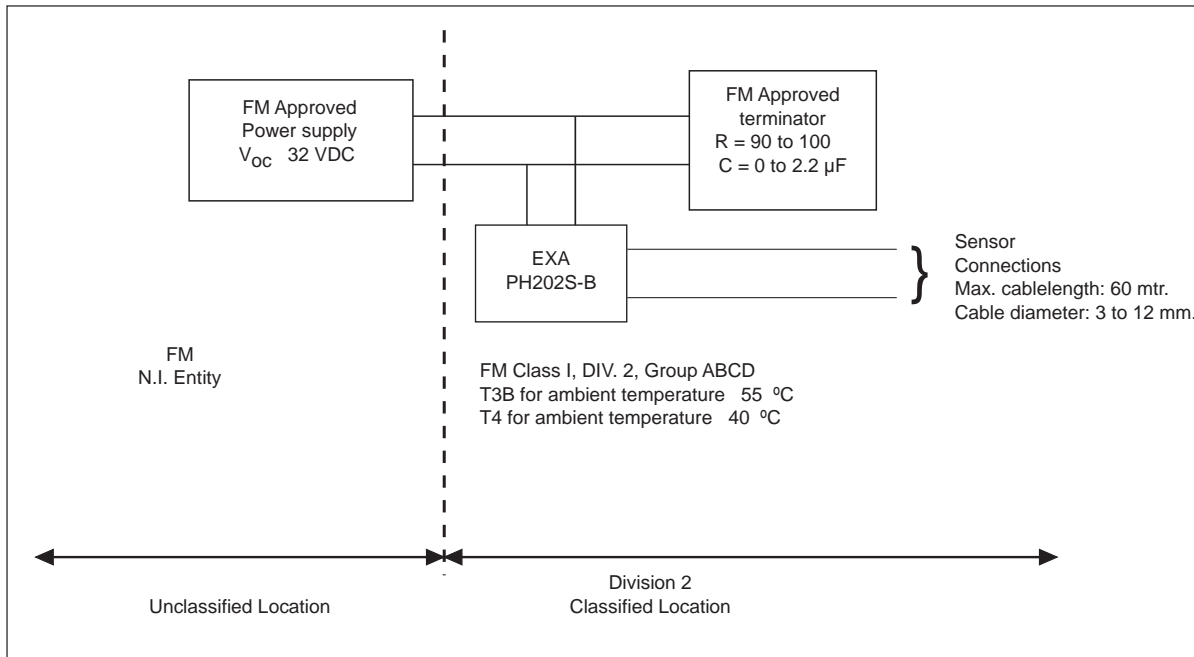


- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 µJ, or are FM Approvals entity approved and meet connection requirements.
 - Electrical data of the EXA PH202S-B:
 - Supply circuit: V_{max}=32 V; P_i=5.32 W; C_i= 737 pF; L_i= 2.6 µH
 - Sensor input circuit: V_t=14.4 V; I_t=32.3 mA; C_a=600 nF; L_a=36 mH
- When installing this equipment, follow the manufacturers installation drawing.
Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code.

WARNING

- Substitution of components may impair suitability for Division 2.
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

FM control drawing for PH202S-B (Non-incendive Entity concept)



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 µJ, or are FM Approvals entity approved and meet connection requirements.
 - Electrical data of the EXA PH202S-B:
 - Supply circuit: V_{max}=32 V; P_i=1.2 W; C_i= 737 pF; L_i= 2.6 µH
 - Sensor input circuit: V_t=14.4 V; I_t=32.3 mA; C_a=600 nF; L_a=36 mH
- When installing this equipment, follow the manufacturers installation drawing.
Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code.

WARNING

- Substitution of components may impair suitability for Division 2.
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

ATEX intrinsic safe and non-incendive diagrams for SC202S-A

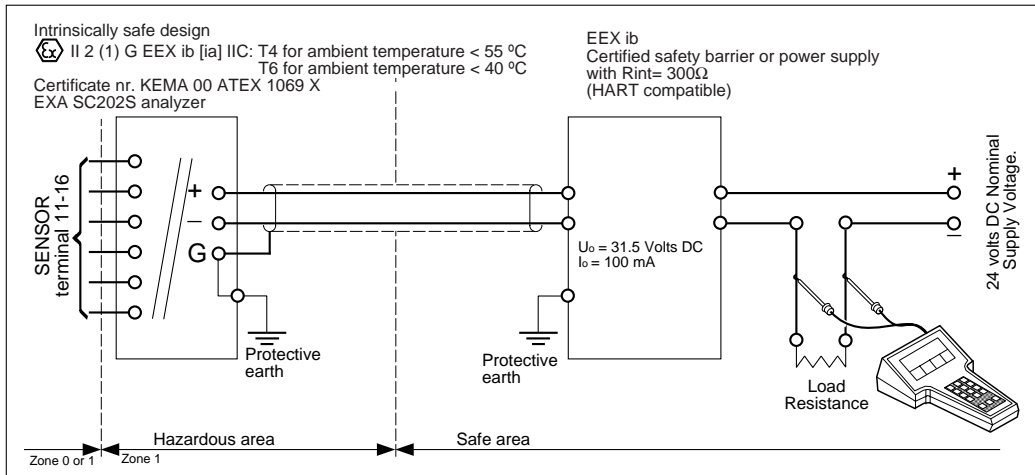


Figure 1

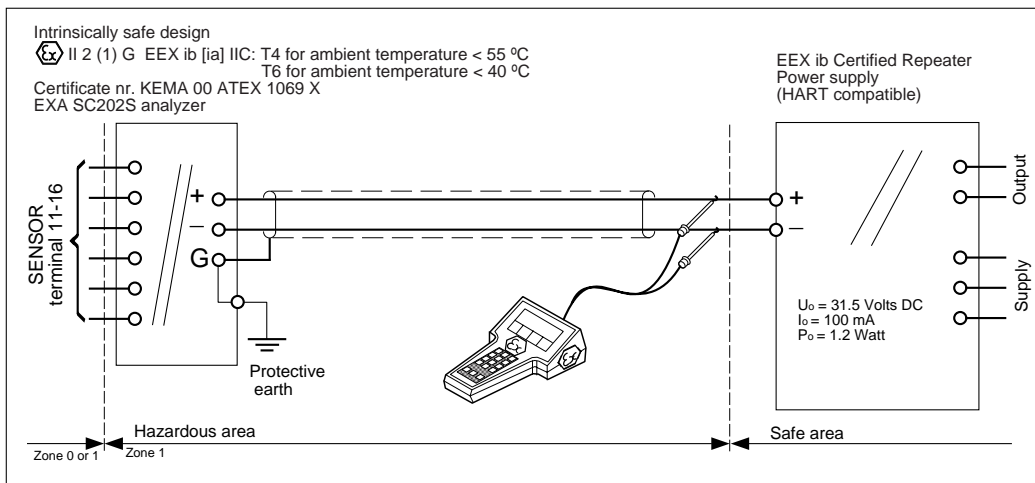


Figure 2

- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which comply with clause 1.3 of the EN 50014.
- Electrical data of the EXASC202S.
 - Supply and output circuit (terminals + and -):
 - Maximum input voltage $U_i = 31.5$ V.
 - Maximum input current $I_i = 100$ mA.
 - Maximum input power $P_i = 1.2$ W
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μH.
 - Sensor input circuit (terminals 11 through 16):
 - Maximum output voltage $U_o = 14.4$ V.
 - Maximum output current $I_o = 12.8$ mA.
 - Maximum allowed external capacitance $C_o = 103$ nF.
 - Maximum allowed external inductance $L_o = 200$ mH.
- Barriers and power supply specification must not exceed the maximum values as shown in the diagram above. These safety descriptions cover most of the commonly used industry standard barriers, isolators and power supplies.
- The Hand Held Communicator must be of a ATEX certified intrinsically safe type in case it is used on the intrinsically safe circuit in the hazardous area or of a ATEX certified non-incendive type in case it is used in the non-incendive circuit in the hazardous area.

CSA intrinsic safe and non-incendive diagrams for SC202S-A

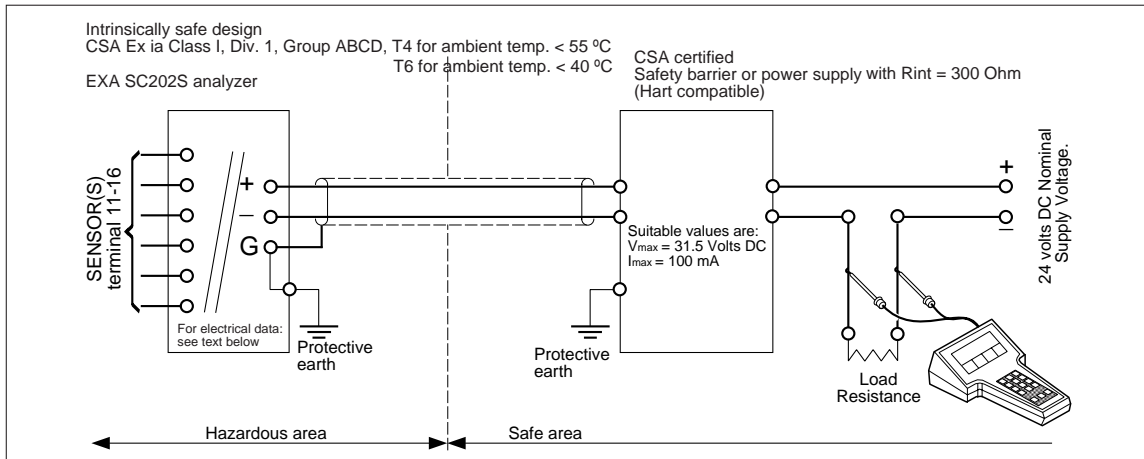


Figure 1

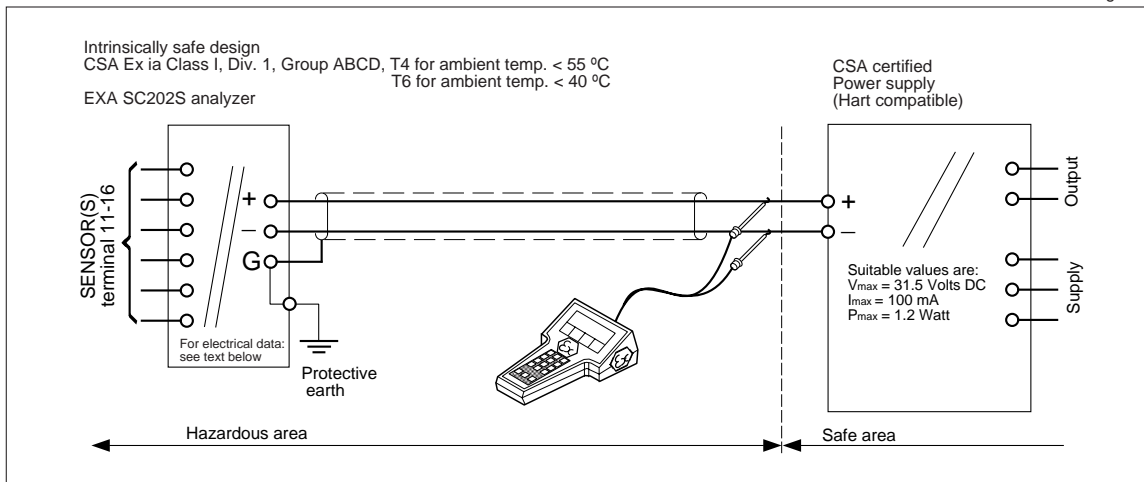


Figure 2

- Sensor is a thermocouples, RTD's, passive resistive switch devices, or is CSA entity approved and meet connection requirements.
- Electrical data of the EXA SC202S :
 - Supply and output circuit (terminals + and -)
 - Maximum input voltage $V_{max} = 31.5$ V.
 - Maximum input current $I_{max} = 100$ mA.
 - Maximum input power $P_{max} = 1.2$ W.
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μH.
 - Sensor input circuit (terminals 11 through 16):
 - Maximum output voltage $V_{oc} = 14.4$ V.
 - Maximum output current $I_{sc} = 12.8$ mA.
 - Maximum allowed external capacitance $C_a = 103$ nF.
 - Maximum allowed external inductance $L_a = 200$ mH.
- Barriers and power supply should be CSA certified. The specifications must not exceed the maximum values as shown in the diagram above. Installation should be in accordance with Canadian Electrical Code, Part I or CEC, Part I.
 - Maximum safe area voltage should not exceed 250 VRMS.
 - For Class I, Div. 2, Group ABCD the CSA certified barrier is not required, and the Sensor input circuit (terminals 11 through 16) is non-incendive having the parameters:
 - Maximum output voltage $V_{oc} = 14.4$ V.
 - Maximum output current $I_{sc} = 12.8$ mA.
 - Maximum allowed external capacitance $C_a = 1.4$ μF.
 - Maximum allowed external inductance $L_a = 900$ mH.
- The Hand Held Communicator must be of a CSA certified intrinsically safe type in case it is used on the intrinsically safe circuit in the hazardous area, or of a CSA certified non-incendive type in case it is used on the non-incendive circuit in the hazardous area.

FM intrinsic safe diagrams for SC202S-A

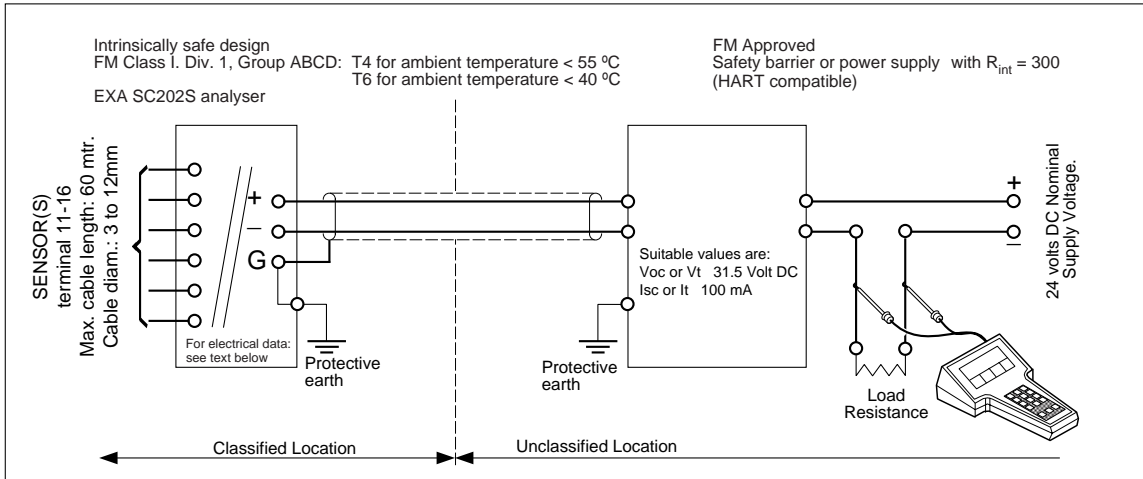


Figure 1

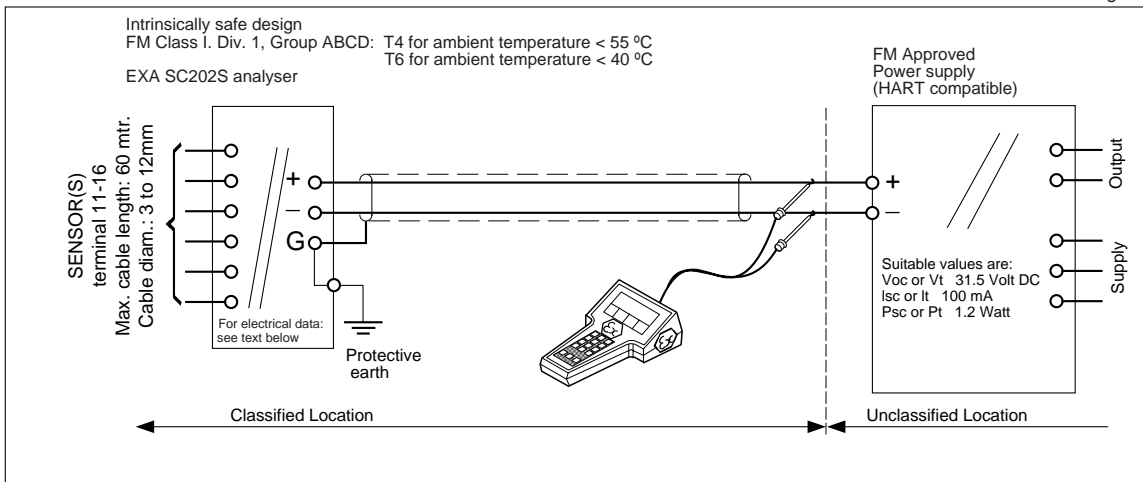


Figure 2

- Electrical data of the EXA SC202S:
 - Supply circuit (terminals + and -):
 - Maximum input voltage $V_{max} = 31.5$ V.
 - Maximum input current $I_{max} = 100$ mA.
 - Maximum input power $P_i = 1.2$ W.
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μ H.
 - Sensor input circuit (terminals 11 through 16):
 - Maximum output voltage $V_t = 14.4$ V.
 - Maximum output current $I_t = 12.8$ mA.
 - Maximum allowed external capacitance $C_a = 103$ nF.
 - Maximum allowed external inductance $L_a = 200$ mH.
- If Hand Held Terminal (HHT) is not connected to the power supply lines of the EXA SC202S (see figure 1):

Any FM Approved barrier or power supply may be used that meets the following requirements.

$$V_{oc} \text{ or } V_t \leq 31.5 \text{ V}; I_{sc} \text{ or } I_t \leq 100 \text{ mA}; C_a \geq 22 \text{ nF} + C_{cable}; L_a \geq 22 \mu\text{H} + L_{cable}$$
- If HHT is connected to the power supply lines of the EXA SC202S (see figure 2):

The Hand Held Terminal must be FM Approved. Refer to the manufacturers control drawing of the HHT and the barrier/power supply to determine the cable parameters.

$$(V_{oc} \text{ or } V_t) + V_{HHT} \leq 31.5 \text{ V}; (I_{sc} \text{ or } I_t) + I_{HHT} \leq 100 \text{ mA}; C_a \geq 22 \text{ nF} + C_{cable} + C_{HHT}; L_a \geq 22 \text{ mH} + L_{cable} + L_{HHT}$$

When installing this equipment, follow the manufacturer's installation drawing.

Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

Control equipment connected to the barrier/power supply must not use or generate more than 250 Vrms or Vdc.

- Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ω

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM non-incendive diagrams for SC202S-N

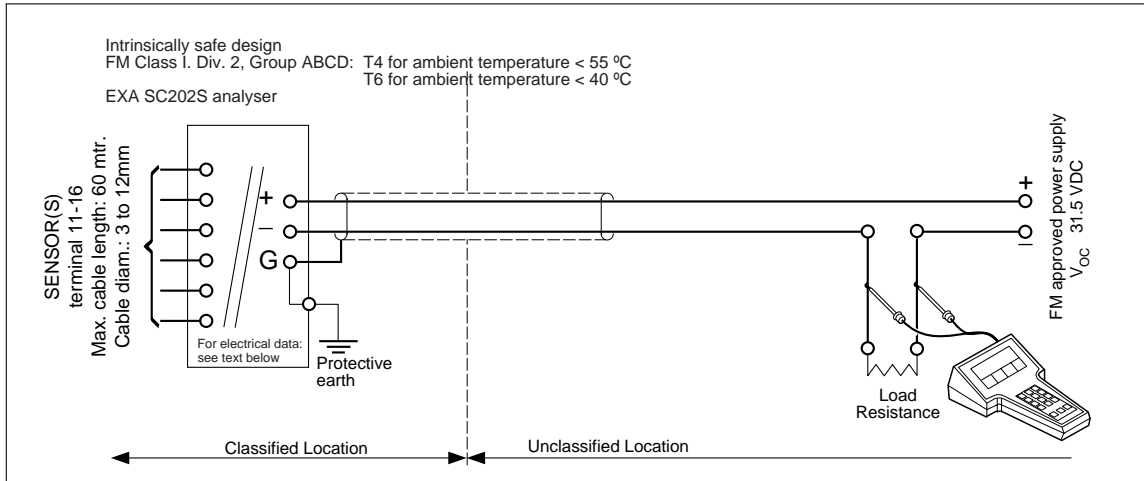


Figure 1

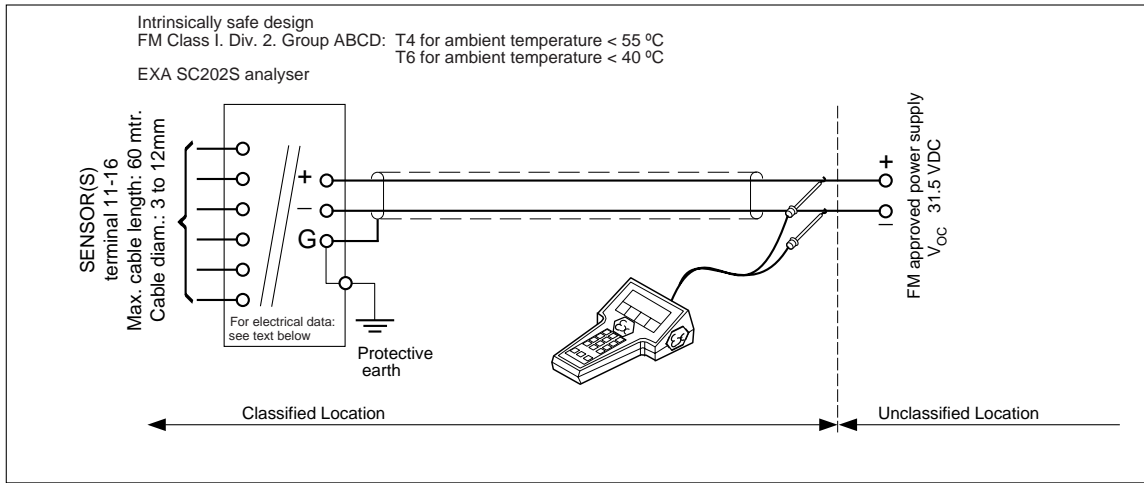


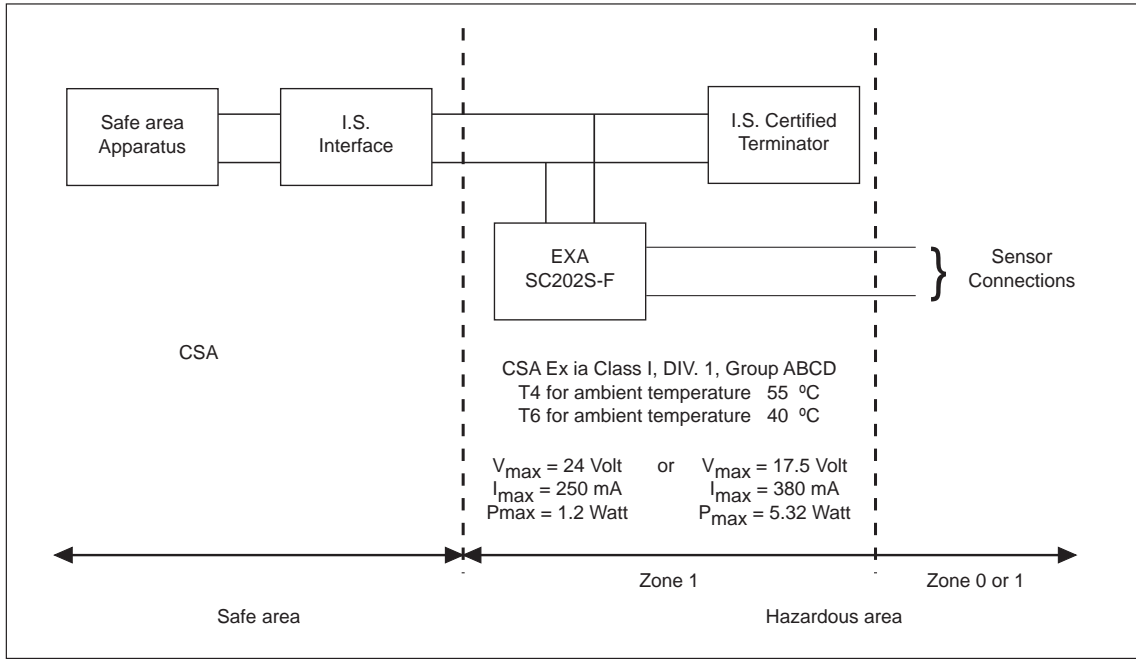
Figure 2

- Electrical data of the EXA SC202S:
 - Supply circuit (terminals + and -):
 - Maximum input voltage $V_{max} = 31.5 \text{ V}$.
 - Maximum input power $P_i = 1.2 \text{ W}$
 - Effective internal capacitance $C_i = 22 \text{ nF}$
 - Effective internal inductance $L_i = 22 \text{ } \mu\text{H}$
 - Sensor input circuit (terminals 11 through 16):
 - Maximum output voltage $V_t = 14.4 \text{ V}$.
 - Maximum output current $I_t = 12.8 \text{ mA}$.
 - Maximum allowed external capacitance $C_a = 1.4 \text{ } \mu\text{F}$.
 - Maximum allowed external inductance $L_a = 900 \text{ mH}$.
- The Hand Held Terminal must be FM Approved in case it is used in the classified location. When installing this equipment, follow the manufacturers installation drawing. Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code

WARNING

- Substitution of components may impair suitability for Division 2
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

CSA Control drawing for SC202S-F



- Sensor(s) are a thermocouple, RTD's, passive resistive switch devices, or is CSA entity approved and meet connection requirements.
- Electrical data of the EXA SC202S-F:
 - Supply and output circuit:

Maximum input voltage $V_{max}=24$ V	or	Maximum input voltage $V_{max}=17.5$ V
Maximum input current $I_{max}=250$ mA		Maximum input current $I_{max}=380$ mA
Maximum input power $P_{max}=1.2$ W		Maximum input power $P_{max}=5.32$ W

Effective internal capacitance $C_i=737$ pF; Effective internal inductance $L_i=2.6$ μ H.

- Sensor input circuit:
 - Maximum output voltage $V_{oc}=14.4$ V; Maximum output current $I_{sc}=12.8$ mA
 - Maximum allowed external capacitance $C_a=103$ nF
 - Maximum allowed external inductance $L_a=200$ mH

- Any CSA approved I.S. interface may be used that meets the following requirements:

$V_{max} \leq 24$ V	or	$V_{max} \leq 17.5$ V
$I_{max} \leq 250$ mA		$I_{max} \leq 380$ mA
$P_{max} \leq 1.2$ W		$P_{max} \leq 5.32$ W

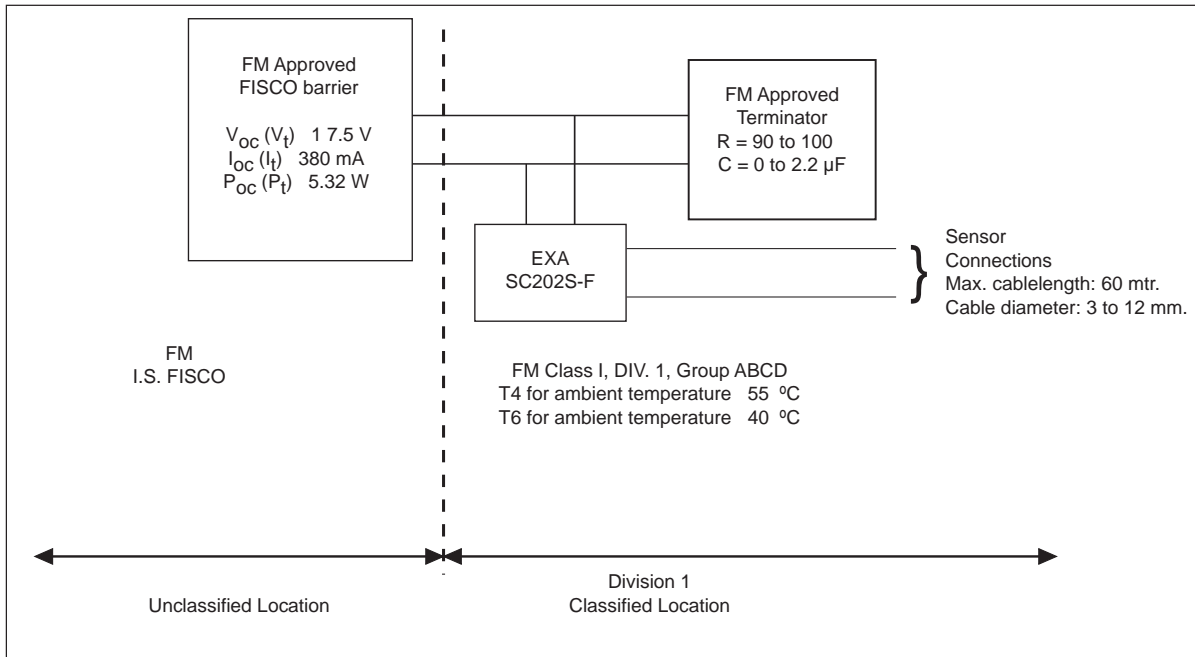
$C_a \geq 737$ pF + C_{cable} ; $L_a \geq 2.6$ μ H + L_{cable}

Installation should be in accordance with Canadian Electrical Code, Part I or CEC, Part I. Maximum safe area voltage should not exceed 250 Vrms.

For Class I, Div. 2, Group ABCD the CSA approved I.S. interface is not required, and the sensor input circuit is non-incendive having the parameters:

- Maximum output voltage $V_{oc}=14.4$ V; Maximum output current $I_{sc}=12.8$ mA
- Maximum allowed external capacitance $C_a=1.4$ μ F
- Maximum allowed external inductance $L_a=900$ mH

FM Control drawing for SC202S-F (Intrinsic safe FISCO concept)

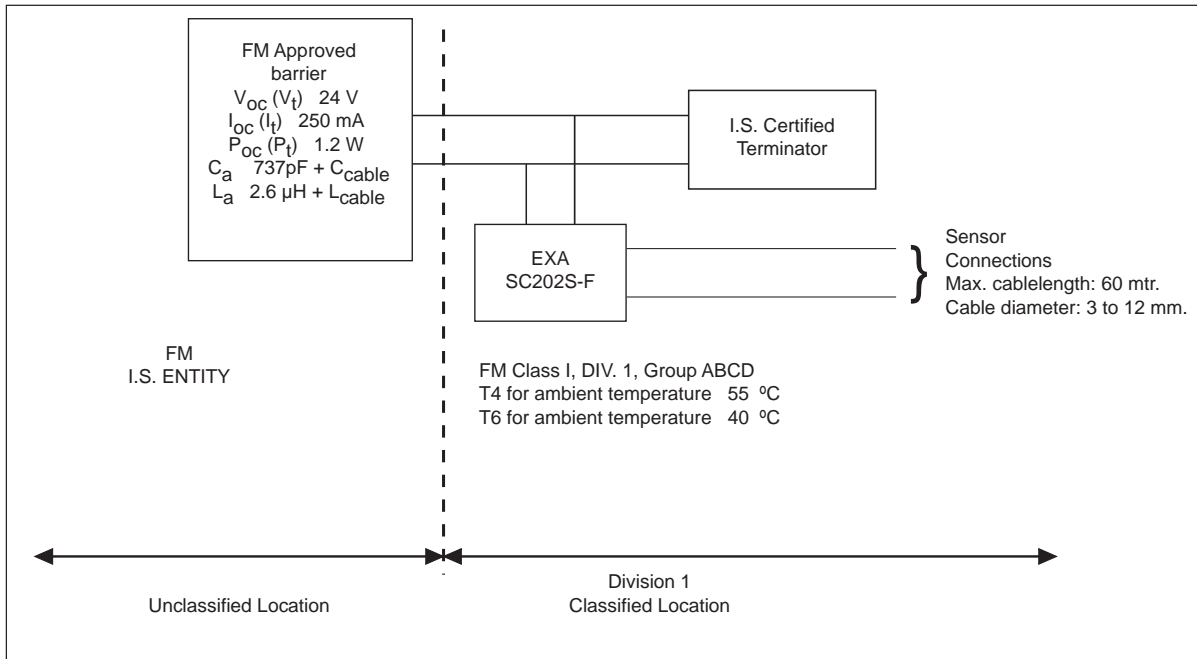


- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μJ , or are FM Approvals entity approved and meet connection requirements.
- Electrical data of the EXA SC202S-F:
 - Supply circuit: $V_{max}=17,5$ V; $I_{max}=380$ mA; $P_i=5,32$ W; $C_i=737$ pF; $L_i=2.6$ μH .
 - Sensor input circuit: $V_t=14.4$ V; $I_t=12.8$ mA; $C_a=103$ nF; $L_a=200$ mH
- Any FM Approved FISCO barrier may be used that meets the following requirements:
 - V_{oc} or $V_t \leq 17,5$ V; I_{oc} or $I_t \leq 380$ mA; P_{oc} or $P_t \leq 5,32$ W
 When installing this equipment, follow the manufacturer's installation drawing.
 Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).
 Associated apparatus connected to the FISCO barrier must not use or generate more than 250 Vrms or Vdc.
- Resistance between FISCO Intrinsically Safe Ground and earth ground must be less than 1.0 Ω .
- The FISCO concept allows the interconnection of several I.S. apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (V_{max}), the current (I_{max}) and the power (P_i) which I.S. apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater that the voltage (V_{oc} , V_t), the current (I_{oc} , I_t) and the power (P_{oc} , P_t) which can be provided by the FM approved FISCO barrier. In addition, the maximum unprotected residual capacitance (C_i) and inductance (L_i) of each apparatus (other than the terminator) connected to the Fieldbus must be less than or equal to 5nF and 10 μH respectively.
- In each I.S. Fieldbus segment only one active source, normally the FM Approved FISCO barrier, is allowed to provide the necessary power for the Fieldbus system. All other equipment connected to the bus cable has to be passive (not providing energy to the system), except to a leakage current of 50 μA for each connected device. Separately powered equipment needs a galvanic isolation to insure that the I.S. Fieldbus circuit remains passive.
- The cable used to interconnect the devices needs to comply with the following parameters:
 - Loop resistance R' : 15 to 150 Ω/km ; Inductance per unit length L' : 0,4 to 1 mH/km
 - Capacitance per unit length C' : 80 to 200 nF/km
 - ($C' = C' \text{ line/line} + 0,5 C' \text{ line/screen}$ if both line are floating)
 - ($C' = C' \text{ line/line} + C' \text{ line/screen}$ if the screen is connected to one line)
 - Length of spur cable: max. 30 mtr.
 - Length of trunk cable: max. 1 km
 - Length of splice : max. 1 mtr.

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM Control drawing for SC202S-F (Intrinsic safe Entity concept)



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μ J, or are FM Approvals entity approved and meet connection requirements.
- Electrical data of the EXA SC202S-F:
 - Supply circuit:
 Maximum input voltage $V_{max}=24$ V
 Maximum input current $I_{max}=250$ mA
 Maximum input power $P_i=1.2$ W
 Effective internal capacitance $C_i=737$ pF; Effective internal inductance $L_i=2.6$ μ H.
 - Sensor input circuit:
 Maximum output voltage $V_t=14.4$ V; Maximum output current $I_t=12.8$ mA
 Maximum allowed external capacitance $C_a=103$ nF
 Maximum allowed external inductance $L_a=200$ mH
- Any FM Approved barrier may be used that meets the following requirements:
 V_{oc} or $V_t \leq 24$ V
 I_{oc} or $I_t \leq 250$ mA
 P_{oc} or $P_t \leq 1.2$ W
 $C_a \geq 737$ pF + C_{cable} ; $L_a \geq 2.6$ μ H + L_{cable}

When installing this equipment, follow the manufacturer's installation drawing.

Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

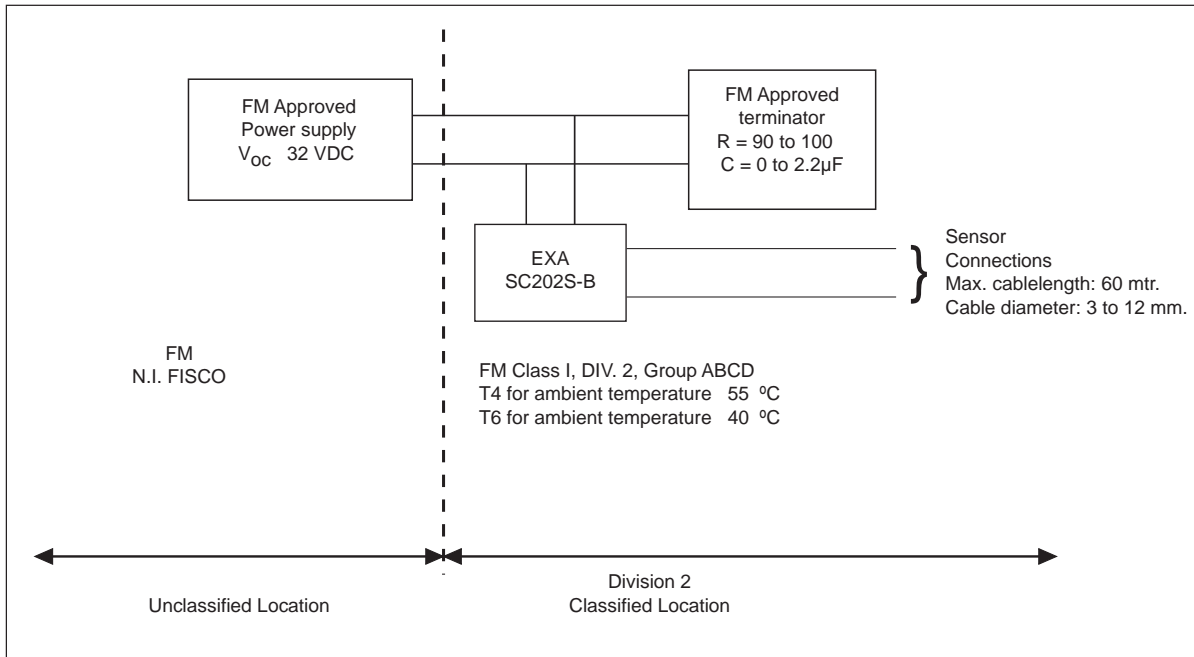
Associated apparatus connected to the barrier must not use or generate more than 250 Vrms or Vdc.

- Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ω .

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM control drawing for SC202S-B (Non-incendive FISCO concept)

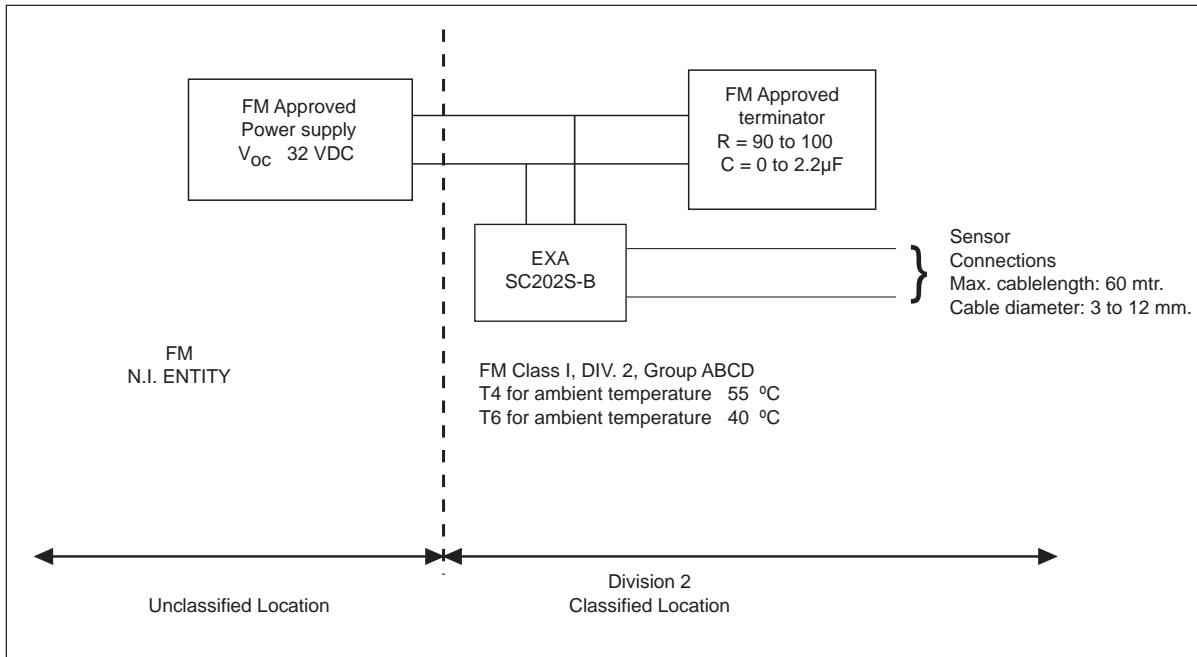


- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 µJ, or are FM Approvals entity approved and meet connection requirements.
 - Electrical data of the EXA SC202S-B:
 - Supply circuit: $V_{max}=32\text{ V}$; $P_i=5.32\text{ W}$; $C_i=737\text{ pF}$; $L_i=2.6\text{ }\mu\text{H}$
 - Sensor input circuit: $V_t=14.4\text{ V}$; $I_t=12.8\text{ mA}$; $C_a=1,4\text{ }\mu\text{F}$; $L_a=900\text{ mH}$
- When installing this equipment, follow the manufacturers installation drawing.
 Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code.

WARNING

- Substitution of components may impair suitability for Division 2.
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

FM control drawing for SC202S-B (Non-incendive Entity concept)



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μJ , or are FM Approvals entity approved and meet connection requirements.
 - Electrical data of the EXA SC202S-B:
 - Supply circuit: $V_{max}=32 \text{ V}$; $P_i=1.2 \text{ W}$; $C_i= 737 \text{ pF}$; $L_i= 2.6 \mu\text{H}$
 - Sensor input circuit: $V_t=14.4 \text{ V}$; $I_t=12.8 \text{ mA}$; $C_a=1.4 \mu\text{F}$; $L_a=900 \text{ mH}$
- When installing this equipment, follow the manufacturers installation drawing.
 Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code.

WARNING

- Substitution of components may impair suitability for Division 2.
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

ATEX intrinsic safe and non-incendive diagrams for ISC202S-A

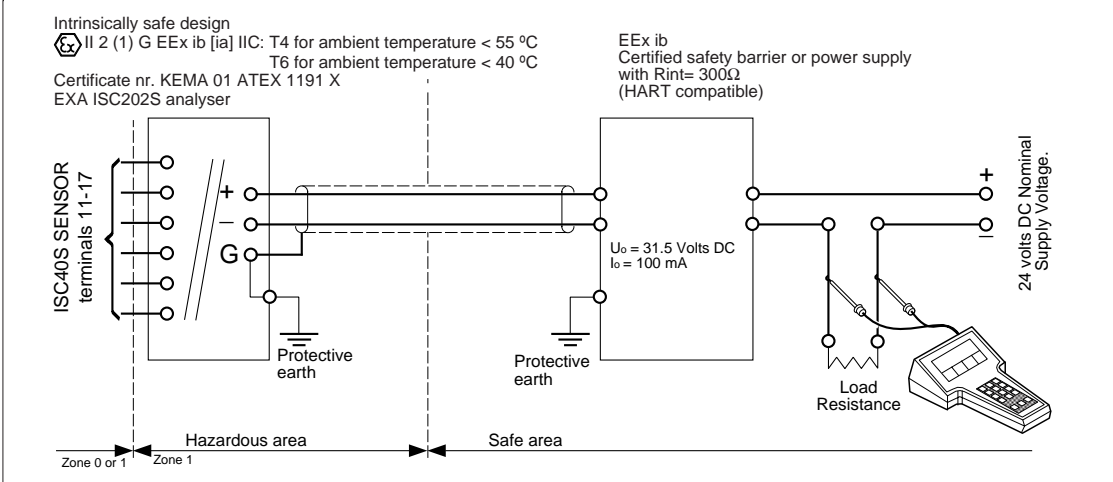


Figure 1

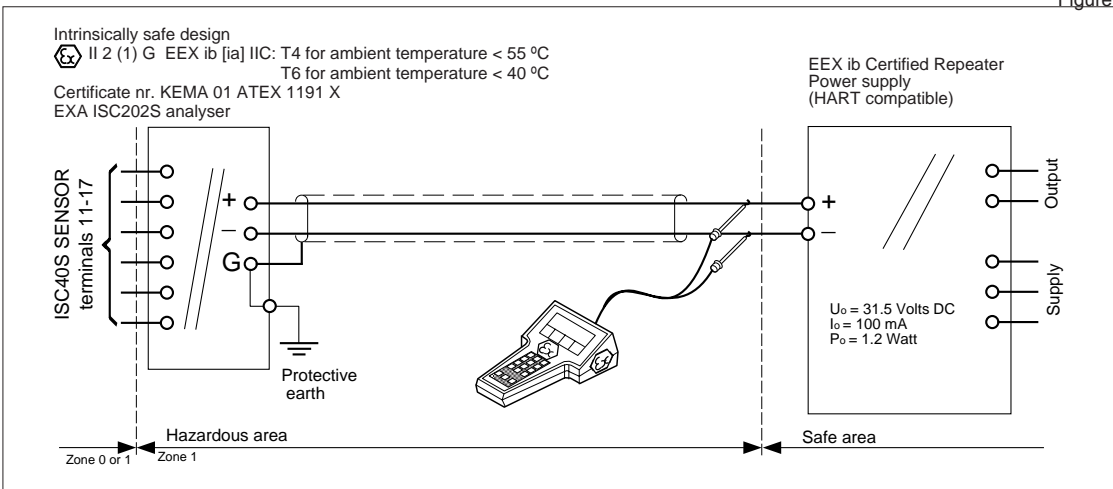


Figure 2

CENELEC

- Electrical data of the EXA ISC202S.

- Supply and output circuit (terminals + and -):

Maximum input voltage $U_i = 31.5$ V.

Maximum input current $I_i = 100$ mA.

Maximum input power $P_i = 1.2$ W

Effective internal capacitance $C_i = 22$ nF.

Effective internal inductance $L_i = 22$ μ H.

- Sensor input circuit (terminals 11 through 17):

Maximum output voltage $U_o = 14.4$ V.

Maximum output current $I_o = 88$ mA.

Maximum allowed external capacitance

$C_o = 600$ nF (for EXA ISC202S-A),

$C_o = 3.5$ μ F (for EXA ISC202S-N).

Maximum allowed external inductance

$L_o = 4.5$ mH (for EXA ISC202S-A),

$L_o = 10$ mH (for EXA ISC202S-N),

- Barriers and power supply specification must not exceed the maximum values as shown in the diagram above. These safety descriptions cover most of the commonly used industry standard barriers, isolators and power supplies.
- The Hand Held Communicator must be of a ATEX certified intrinsically safe type in case it is used on the intrinsically safe circuit in the hazardous area or of a ATEX certified non-incendive type in case it is used in the non-incendive circuit in the hazardous area.

CSA intrinsic safe and non-incendive diagrams for ISC202S-A

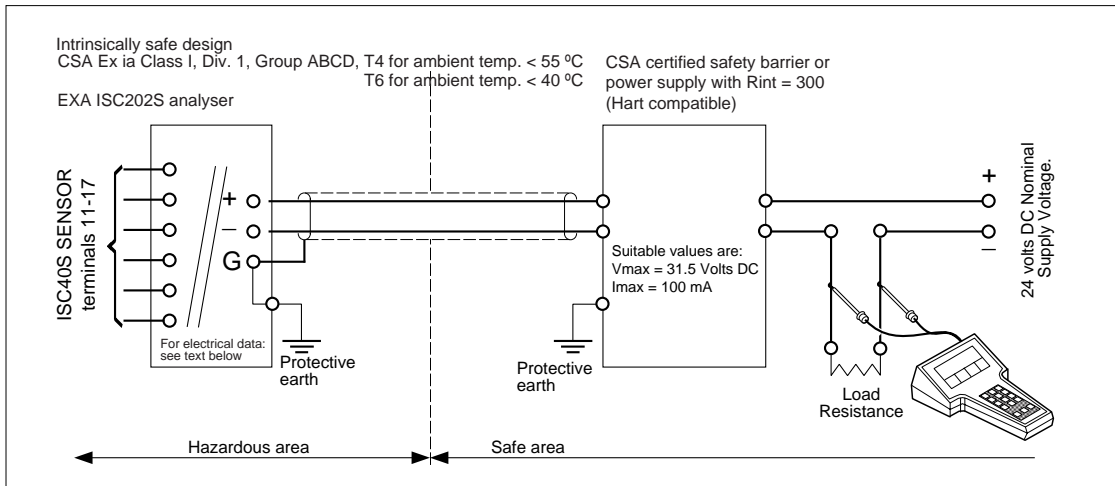


Figure 1

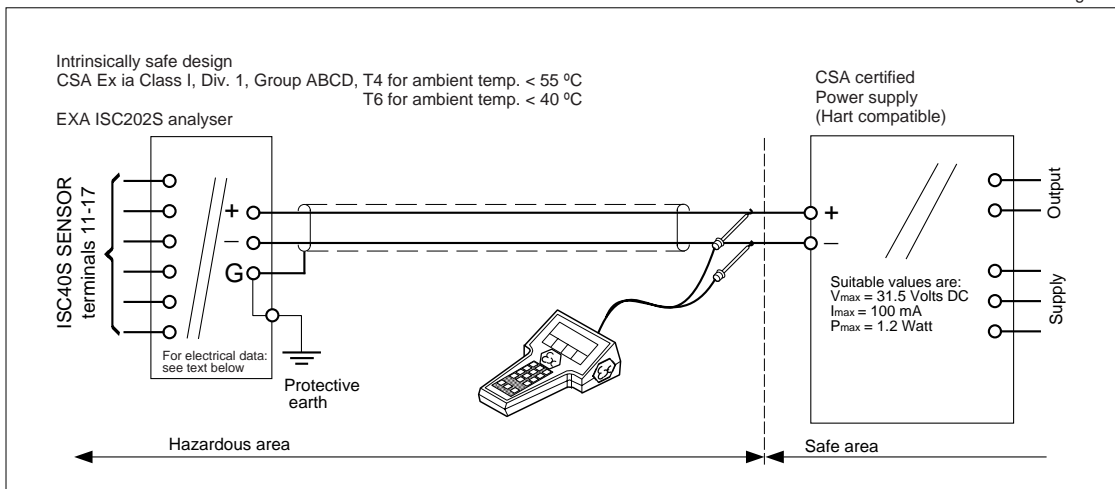


Figure 2

- Electrical data of the EXA ISC202S :
 - Supply and output circuit (terminals + and -)
 - Maximum input voltage $V_{max} = 31.5$ V.
 - Maximum input current $I_{max} = 100$ mA.
 - Maximum input power $P_{max} = 1.2$ W.
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μ H.
 - Sensor input circuit (terminals 11 through 17):
 - Maximum output voltage $V_{oc} = 14.4$ V.
 - Maximum output current $I_{sc} = 88$ mA.
 - Maximum allowed external capacitance $C_a = 600$ nF.
 - Maximum allowed external inductance $L_a = 4.5$ mH.
- Barriers and power supply should be CSA certified. The specifications must not exceed the maximum values as shown in the diagram above. Installation should be in accordance with Canadian Electrical Code, Part I or CEC, Part I. Maximum safe area voltage should not exceed $250 V_{RMS}$.
- For Class I, Div. 2, Group ABCD the CSA certified barrier is not required, and the Sensor input circuit (terminals 11 through 17) is non-incendive having the parameters :
 - Maximum output voltage $V_{oc} = 14.4$ V.
 - Maximum output current $I_{sc} = 88$ mA.
 - Maximum allowed external capacitance $C_a = 3.5$ μ F.
 - Maximum allowed external inductance $L_a = 10$ mH.
- The Hand Held Communicator must be of a CSA certified intrinsically safe type in case it is used on the intrinsically safe circuit in the hazardous area, or of a CSA certified non-incendive type in case it is used on the non-incendive circuit in the hazardous area.

FM intrinsic safe diagrams for ISC202S-A

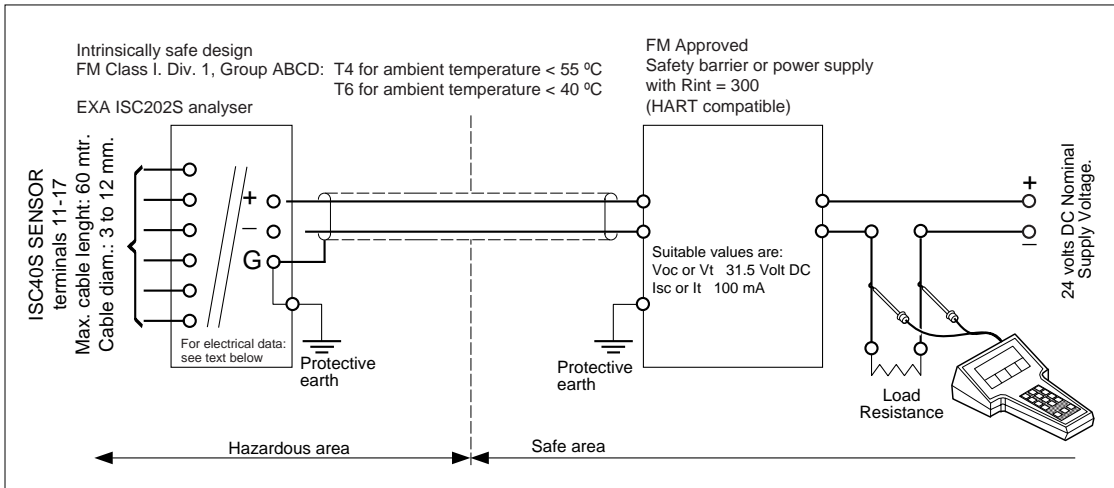
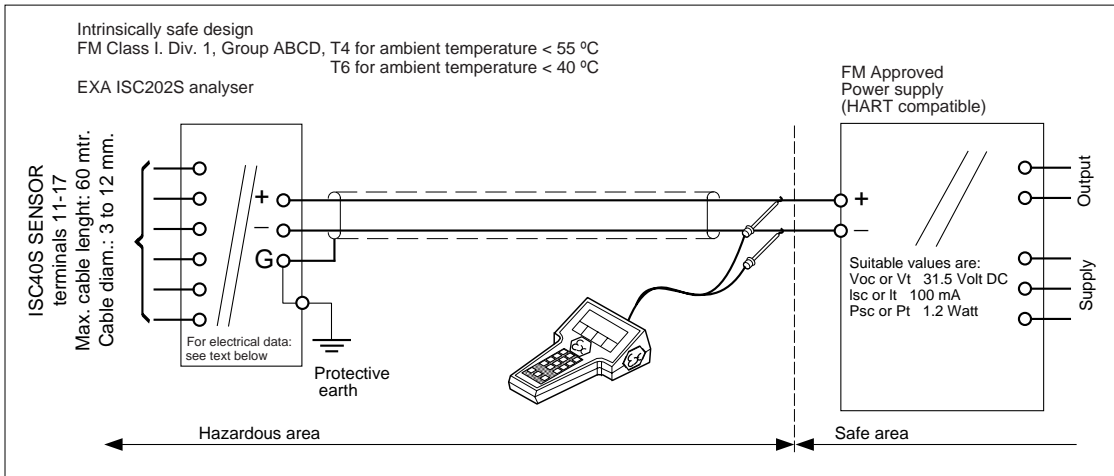


Figure 1



- Electrical data of the EXA ISC202S :
 - Supply and output circuit (terminals + and -)
 - Maximum input voltage $V_{max} = 31.5$ V.
 - Maximum input current $I_{max} = 100$ mA.
 - Maximum input power $P_{max} = 1.2$ W.
 - Effective internal capacitance $C_i = 22$ nF.
 - Effective internal inductance $L_i = 22$ μ H.
 - Sensor input circuit (terminals 11 through 17):
 - Maximum output voltage $V_t = 14.4$ V.
 - Maximum output current $I_t = 88$ mA.
 - Maximum allowed external capacitance $C_a = 600$ nF
 - Maximum allowed external inductance $L_a = 4.5$ mH.

- If the Hand Held Terminal (HHT) is not connected to the power supply lines of the EXA ISC202S (see figure 1): Any FMRC approved barrier or power supply may be used that meets the following requirements.

$$V_{oc} \text{ or } V_t \leq 31.5 \text{ V} ; I_{sc} \text{ or } I_t \leq 100 \text{ mA}, C_a \geq 22 \text{ nF} + C_{cable} ; L_a \geq 22 \mu\text{H} + L_{cable}.$$

- If the HHT is connected to the power supply lines of the EXA ISC202S (see figure 2): The Hand Held Terminal must be FM Approved. Refer to the manufacturers control drawing of the HHT and the barrier/power supply to determine the cable parameters.

$$(V_{oc} \text{ or } V_t) + V_{HHT} \leq 31.5 \text{ V} ; (I_{sc} \text{ or } I_t) + I_{HHT} \leq 100 \text{ mA} ; C_a \geq 22 \text{ nF} + C_{cable} + C_{HHT} ; L_a \geq 22 \mu\text{H} + L_{cable} + L_{HHT}$$

When installing this equipment, follow the manufacturer's installation drawing.

Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

Control equipment connected to the barrier/power supply must not use or generate more than 250 Vrms or Vdc.

- Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ohm.

WARNING

- Substitution of components may impair Intrinsic Safety

To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM non-incendive diagrams for ISC202S-A

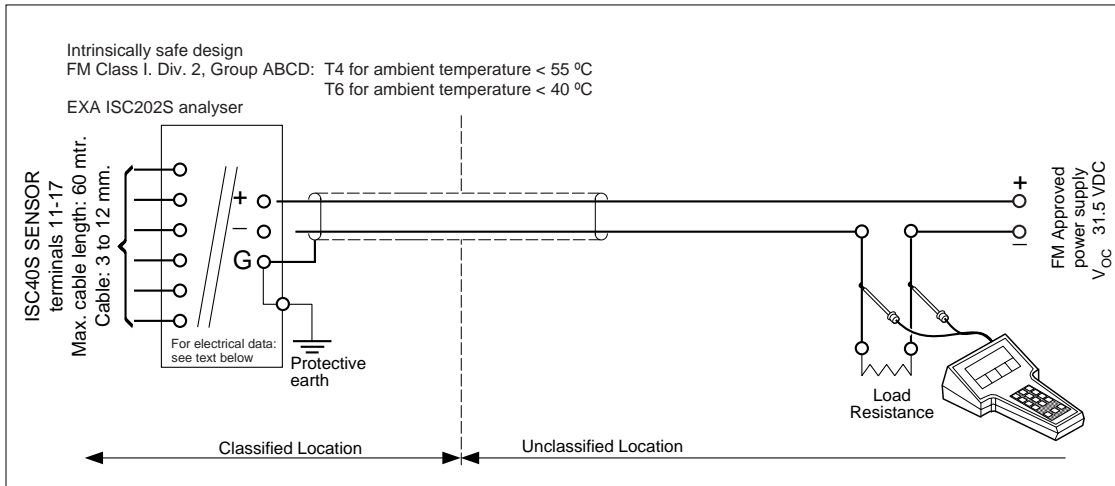


Figure 1

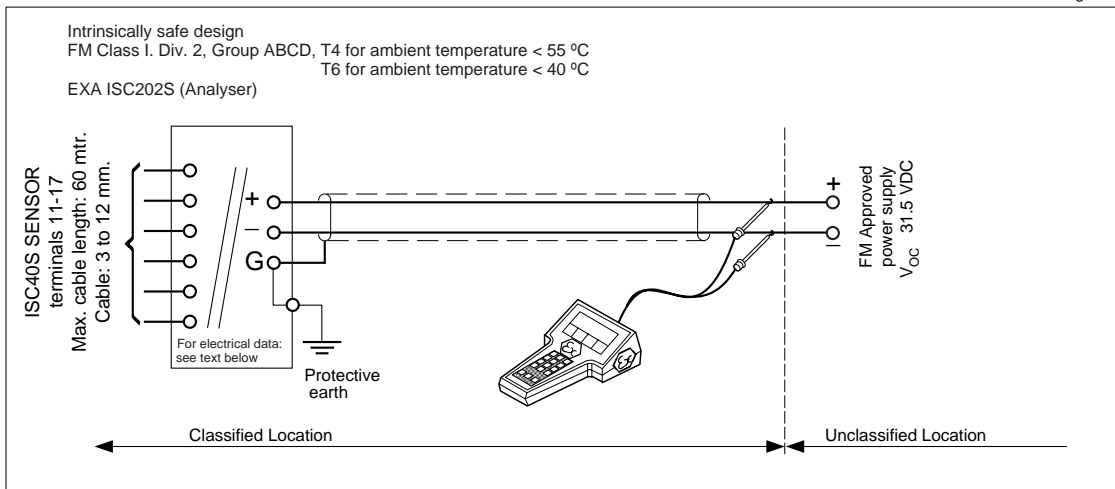


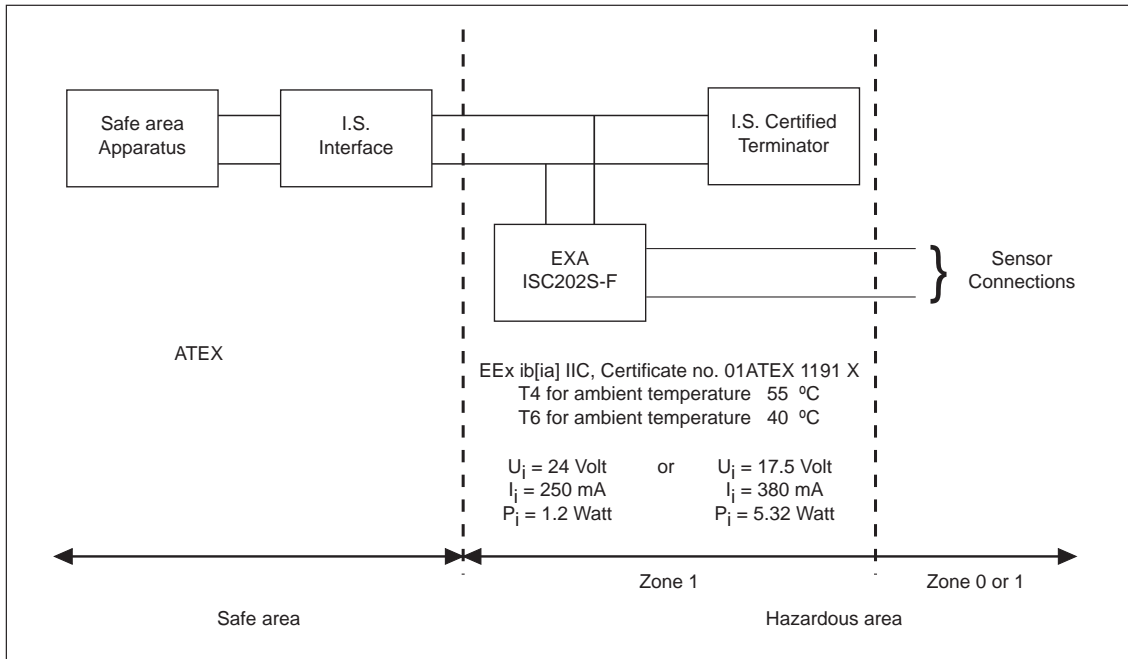
Figure 2

- Electrical data of the EXA ISC202S :
 - Supply circuit (terminals + and -):
 - Maximum input voltage $V_{max} = 31.5 \text{ V}$.
 - Maximum input power $P_i = 1.2 \text{ W}$
 - Effective internal capacitance $C_i = 22 \text{ nF}$
 - Effective internal inductance $L_i = 22 \text{ } \mu\text{H}$
 - Sensor input circuit (terminals 11 through 17):
 - Maximum output voltage $V_t = 14.4 \text{ V}$.
 - Maximum output current $I_t = 88 \text{ mA}$.
 - Maximum allowed external capacitance $C_a = 3,5 \text{ } \mu\text{F}$.
 - Maximum allowed external inductance $L_a = 10 \text{ mH}$.
- The Hand Held Terminal must be FM Approved in case it is used in the classified location.
 - When installing this equipment, follow the manufacturers installation drawing. Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79).
 - Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code

WARNING

- Substitution of components may impair suitability for Division 2
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

ATEX Control drawing for ISC202S-F



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which comply with clause 1.3 of the EN 50014.
- Electrical data of the EXA ISC202S-F:
 - Supply and output circuit:

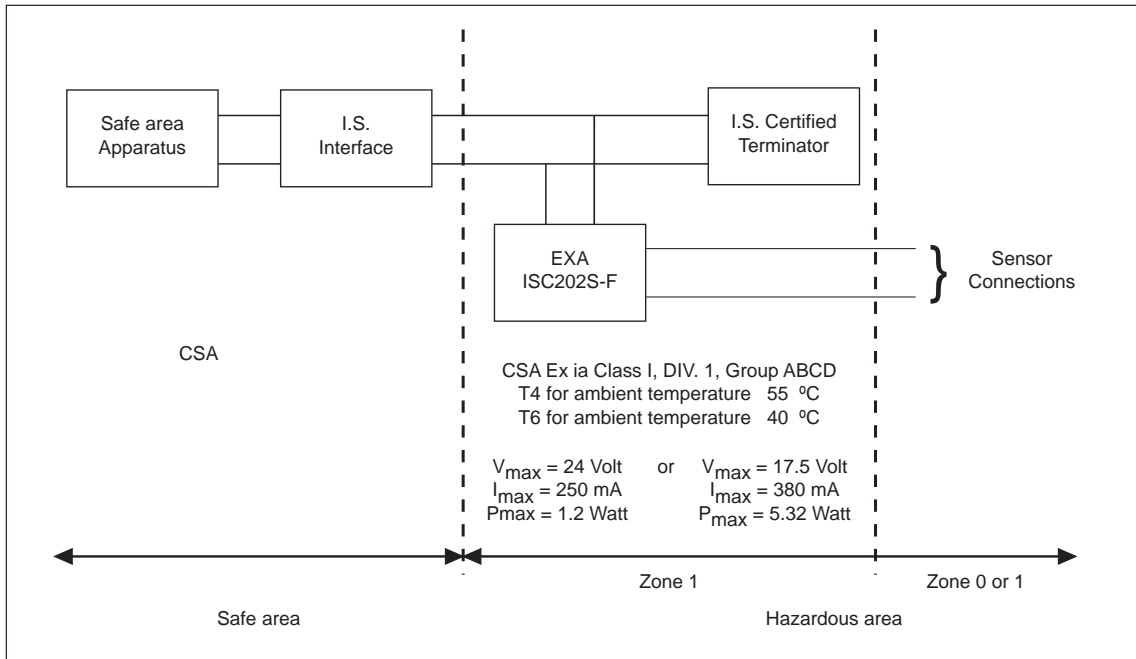
Maximum input voltage $U_i=24 \text{ V}$	or	Maximum input voltage $U_i=17.5 \text{ V}$
Maximum input current $I_i=250 \text{ mA}$		Maximum input current $I_i=380 \text{ mA}$
Maximum input power $P_i=1.2 \text{ W}$		Maximum input power $P_i=5.32 \text{ W}$
 - Effective internal capacitance $C_i=737 \text{ pF}$; Effective internal inductance $L_i=2.6 \text{ }\mu\text{H}$.
 - Sensor input circuit:

Maximum output voltage $U_o=14.4 \text{ V}$; Maximum output current $I_o=88 \text{ mA}$
Maximum allowed external capacitance:
$C_o=600 \text{ nF}$ (for EXA ISC202S-F), $C_o=3,5 \text{ }\mu\text{F}$ (for EXA ISC202S-B),
Maximum allowed external inductance:
$L_o=4,5 \text{ mH}$ (for EXA ISC202S-F), $L_o=10 \text{ mH}$ (for EXA ISC202S-F).
- Any I.S. interface may be used that meets the following requirements:

$U_o \leq 24 \text{ V}$	or	$U_o \leq 17.5 \text{ V}$
$I_o \leq 250 \text{ mA}$		$I_o \leq 380 \text{ mA}$
$P_o \leq 1.2 \text{ W}$		$P_o \leq 5.32 \text{ W}$

$C_a \geq 737 \text{ pF} + C_{\text{cable}}$; $L_a \geq 2.6 \text{ }\mu\text{H} + L_{\text{cable}}$

CSA Control drawing for ISC202S-F



- Sensor(s) are a thermocouple, RTD's, passive resistive switch devices, or is CSA entity approved and meet connection requirements.
- Electrical data of the EXA ISC202S-F:
 - Supply and output circuit:

Maximum input voltage $V_{max}=24$ V	or	Maximum input voltage $V_{max}=17.5$ V
Maximum input current $I_{max}=250$ mA		Maximum input current $I_{max}=380$ mA
Maximum input power $P_{max}=1.2$ W		Maximum input power $P_{max}=5.32$ W

Effective internal capacitance $C_i=737$ pF; Effective internal inductance $L_i=2.6$ μ H.

- Sensor input circuit:
 - Maximum output voltage $V_{oc}=14.4$ V; Maximum output current $I_{sc}=88$ mA
 - Maximum allowed external capacitance $C_a=600$ nF
 - Maximum allowed external inductance $L_a=4.5$ mH
- Any CSA approved I.S. interface may be used that meets the following requirements:

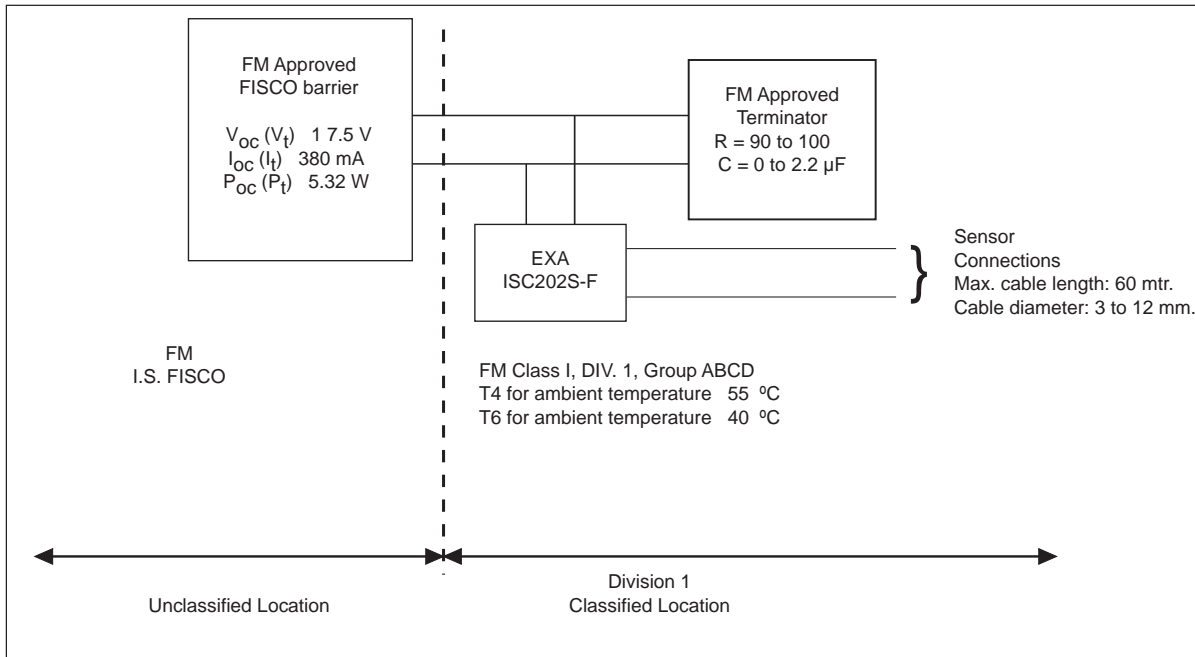
$V_{max} \leq 24$ V	or	$V_{max} \leq 17.5$ V
$I_{max} \leq 250$ mA		$I_{max} \leq 380$ mA
$P_{max} \leq 1.2$ W		$P_{max} \leq 5.32$ W

$C_a \geq 737$ pF + C_{cable} ; $L_a \geq 2.6$ μ H + L_{cable}

Installation should be in accordance with Canadian Electrical Code, Part I or CEC, Part I. Maximum safe area voltage should not exceed 250 Vrms.

For Class I, Div. 2, Group ABCD the CSA approved I.S. interface is not required, and the sensor input circuit is non-incendive having the parameters:
 Maximum output voltage $V_{oc}=14.4$ V; Maximum output current $I_{sc}=88$ mA
 Maximum allowed external capacitance $C_a=3.5$ μ F
 Maximum allowed external inductance $L_a=10$ mH

FM Control drawing for ISC202S-F (Intrinsic safe FISCO concept)

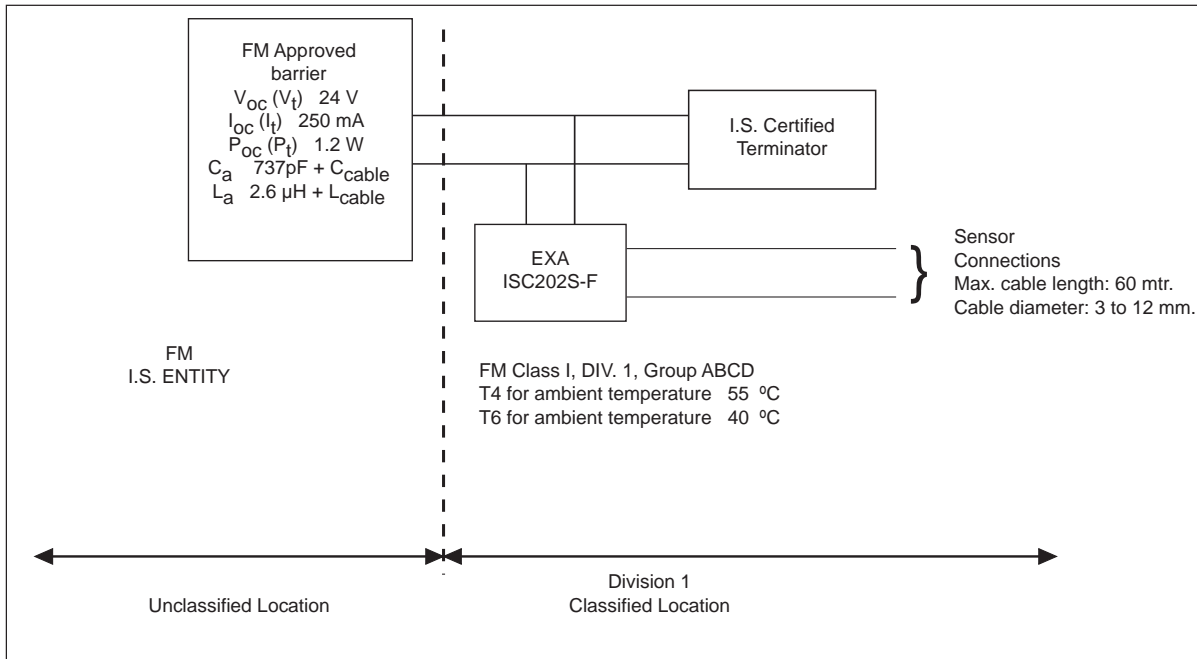


- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μJ , or are FM Approvals entity approved and meet connection requirements.
- Electrical data of the EXA ISC202S-F:
 - Supply circuit: $V_{max}=17,5$ V; $I_{max}=380$ mA; $P_i=5,32$ W; $C_i=737$ pF; $L_i=2.6$ μH .
 - Sensor input circuit: $V_t=14.4$ V; $I_t=88$ mA; $C_a=600$ nF; $L_a=4.5$ mH
- Any FM Approved FISCO barrier may be used that meets the following requirements:
 - V_{oc} or $V_t \leq 17,5$ V; I_{oc} or $I_t \leq 380$ mA; P_{oc} or $P_t \leq 5,32$ W
 When installing this equipment, follow the manufacturer's installation drawing.
 Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).
 Associated apparatus connected to the FISCO barrier must not use or generate more than 250 Vrms or Vdc.
- Resistance between FISCO Intrinsically Safe Ground and earth ground must be less than 1.0 Ω .
- The FISCO concept allows the interconnection of several I.S. apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (V_{max}), the current (I_{max}) and the power (P_i) which I.S. apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater that the voltage (V_{oc} , V_t), the current (I_{oc} , I_t) and the power (P_{oc} , P_t) which can be provided by the FM approved FISCO barrier. In addition, the maximum unprotected residual capacitance (C_i) and inductance (L_i) of each apparatus (other than the terminator) connected to the Fieldbus must be less than or equal to 5 nF and 10 μH respectively.
- In each I.S. Fieldbus segment only one active source, normally the FM Approved FISCO barrier, is allowed to provide the necessary power for the Fieldbus system. All other equipment connected to the bus cable has to be passive (not providing energy to the system), except to a leakage current of 50 μA for each connected device. Separately powered equipment needs a galvanic isolation to insure that the I.S. Fieldbus circuit remains passive.
- The cable used to interconnect the devices needs to comply with the following parameters:
 - Loop resistance R' : 15 to 150 Ω/km ; Inductance per unit length L' : 0,4 to 1 mH/km
 - Capacitance per unit length C' : 80 to 200 nF/km
 - ($C' = C' \text{ line/line} + 0,5 C' \text{ line/screen}$ if both line are floating)
 - ($C' = C' \text{ line/line} + C' \text{ line/screen}$ if the screen is connected to one line)
 - Length of spur cable: max. 30 mtr.
 - Length of trunk cable: max. 1 km
 - Length of splice : max. 1 mtr.

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM Control drawing for ISC202S-F (Intrinsic safe Entity concept)



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μ J, or are FM Approvals entity approved and meet connection requirements.
- Electrical data of the EXA ISC202S-F:
 - Supply circuit:
 Maximum input voltage $V_{max}=24$ V
 Maximum input current $I_{max}=250$ mA
 Maximum input power $P_i=1.2$ W
 Effective internal capacitance $C_i=737$ pF; Effective internal inductance $L_i=2.6$ μ H.
 - Sensor input circuit:
 Maximum output voltage $V_t=14.4$ V; Maximum output current $I_t=88$ mA
 Maximum allowed external capacitance $C_a=600$ nF
 Maximum allowed external inductance $L_a=4.5$ mH
- Any FM Approved barrier may be used that meets the following requirements:
 V_{oc} or $V_t \leq 24$ V
 I_{oc} or $I_t \leq 250$ mA
 P_{oc} or $P_t \leq 1.2$ W
 $C_a \geq 737$ pF + C_{cable} ; $L_a \geq 2.6$ μ H + L_{cable}

When installing this equipment, follow the manufacturer's installation drawing.

Installation should be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

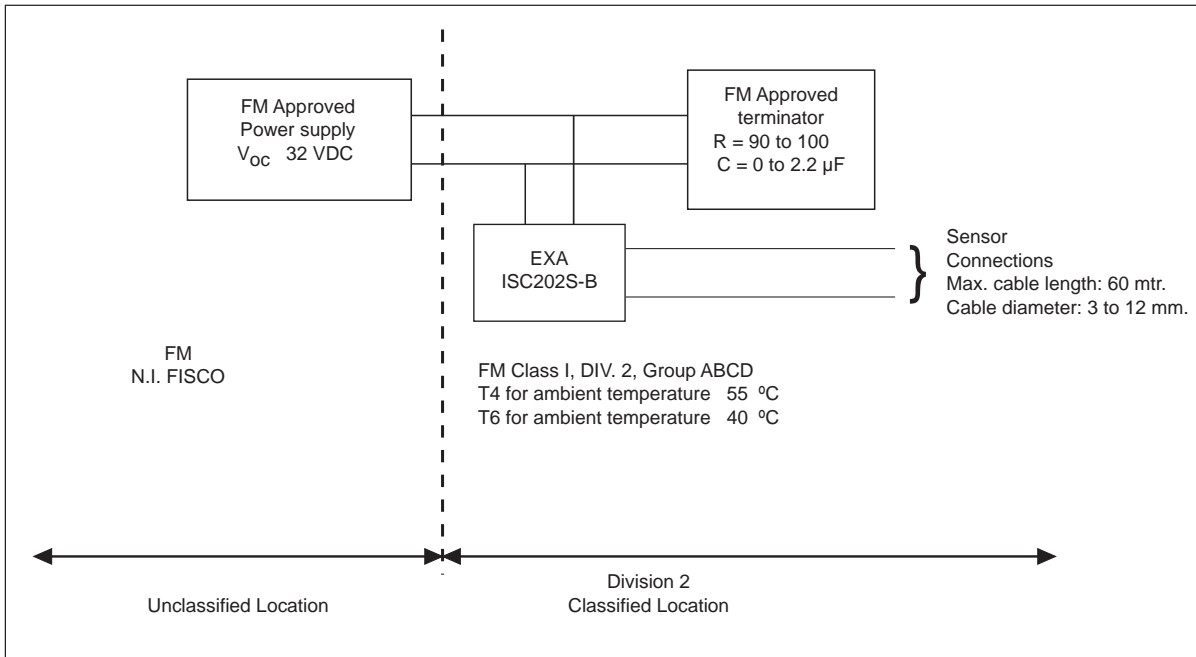
Associated apparatus connected to the barrier must not use or generate more than 250 Vrms or Vdc.

- Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ω .

WARNING

- Substitution of components may impair Intrinsic Safety
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or read, understand and adhere to the manufacturer's live maintenance procedures.

FM control drawing for ISC202S-B (Non-incendive FISCO concept)

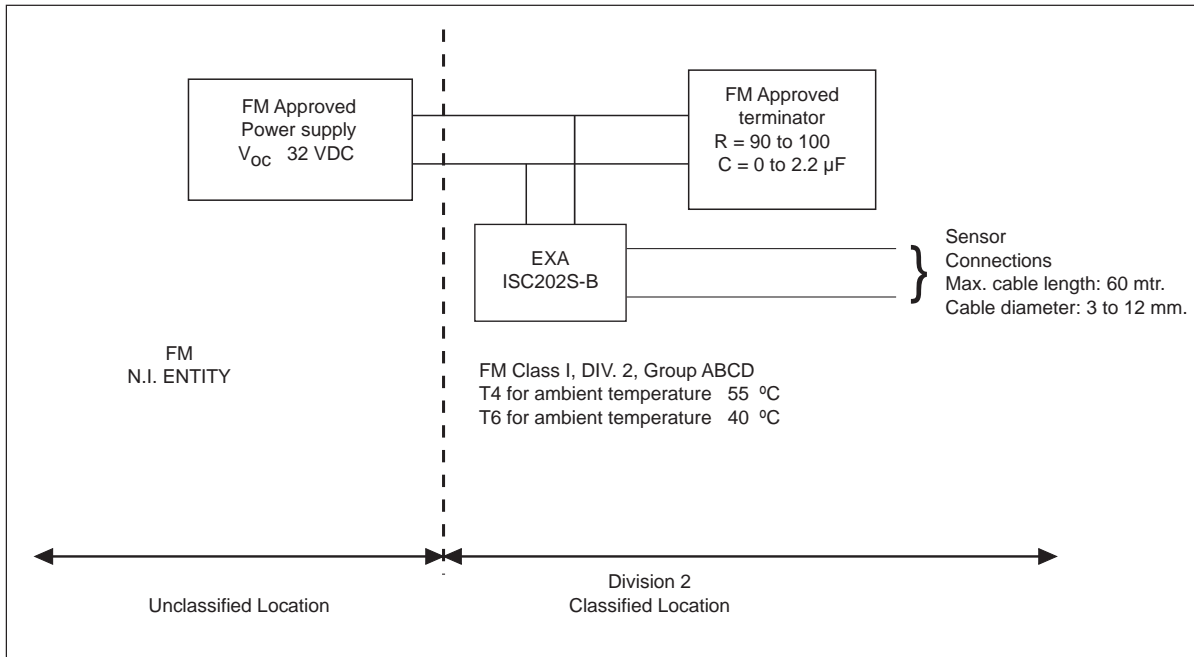


- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 µJ, or are FM Approvals entity approved and meet connection requirements.
 - Electrical data of the EXA ISC202S-B:
 - Supply circuit: $V_{max}=32\text{ V}$; $P_i=5.32\text{ W}$; $C_i=737\text{ pF}$; $L_i=2.6\text{ µH}$
 - Sensor input circuit: $V_t=14.4\text{ V}$; $I_t=88\text{ mA}$; $C_a=3,5\text{ µF}$; $L_a=10\text{ mH}$
- When installing this equipment, follow the manufacturers installation drawing.
 Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code.

WARNING

- Substitution of components may impair suitability for Division 2.
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous


FM control drawing for ISC202S-B (Non-incendive Entity concept)



- Sensor(s) are of a passive type to be regarded as 'simple apparatus', devices which neither store nor generate voltages over 1.5 V, currents over 0.1 A, power over 25 mW or energy over 20 μJ , or are FM Approvals entity approved and meet connection requirements.
 - Electrical data of the EXA ISC202S-B:
 - Supply circuit: $V_{max}=32 \text{ V}$; $P_i=1.2 \text{ W}$; $C_i= 737 \text{ pF}$; $L_i= 2.6 \mu\text{H}$
 - Sensor input circuit: $V_t=14.4 \text{ V}$; $I_t=88 \text{ mA}$; $C_a=3,5 \mu\text{F}$; $L_a=10 \text{ mH}$
- When installing this equipment, follow the manufacturers installation drawing.
 Installation shall be in accordance with Article 501.4(B) of the National Electrical Code (ANSI/NFPA 79). Nonincendive field wiring may be installed in accordance with Article 501.4(B)(3)
- Grounding shall be in accordance with Article 250 of the National Electrical code.

WARNING

- Substitution of components may impair suitability for Division 2.
- Do not remove or replace while circuit is live unless area is know to be non-hazardous
- Explosion Hazard – Do not disconnect equipment unless area is know to be non-hazardous
- Do not reset circuit breaker unless power has been removed from the equipment or the area is know to be non-hazardous

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