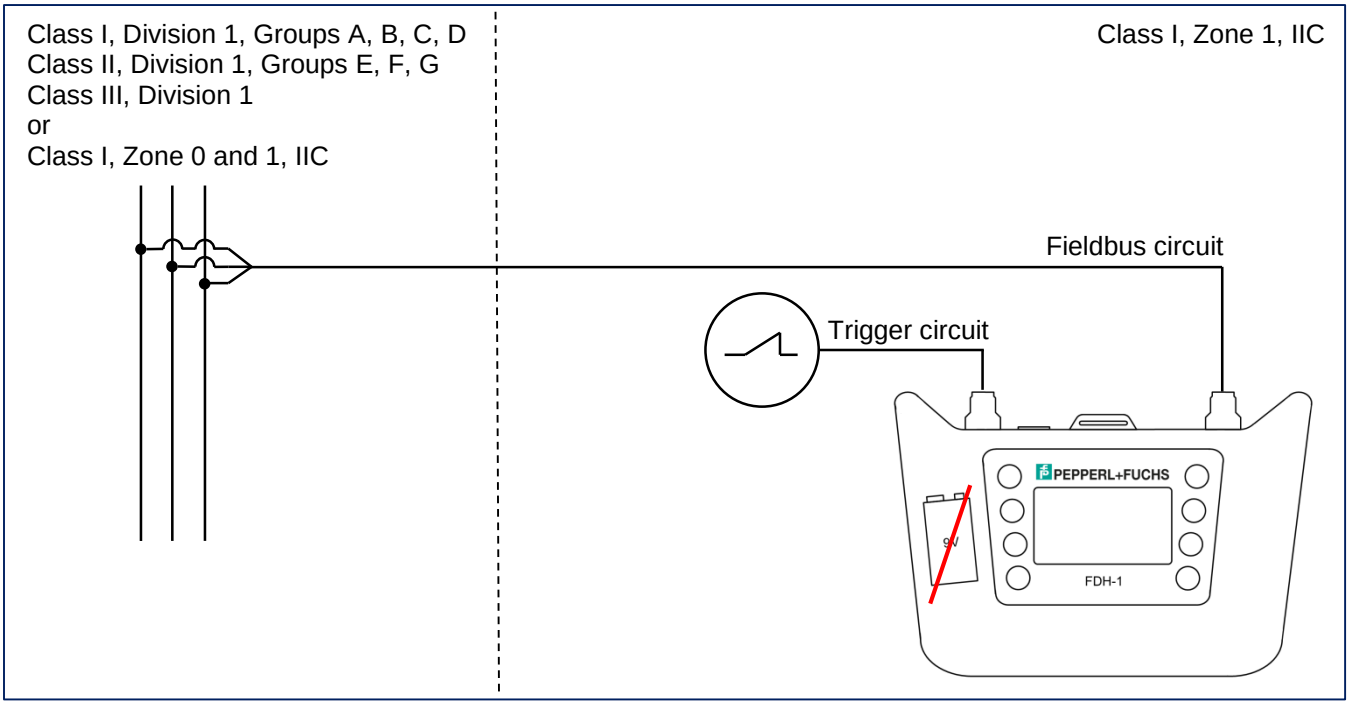
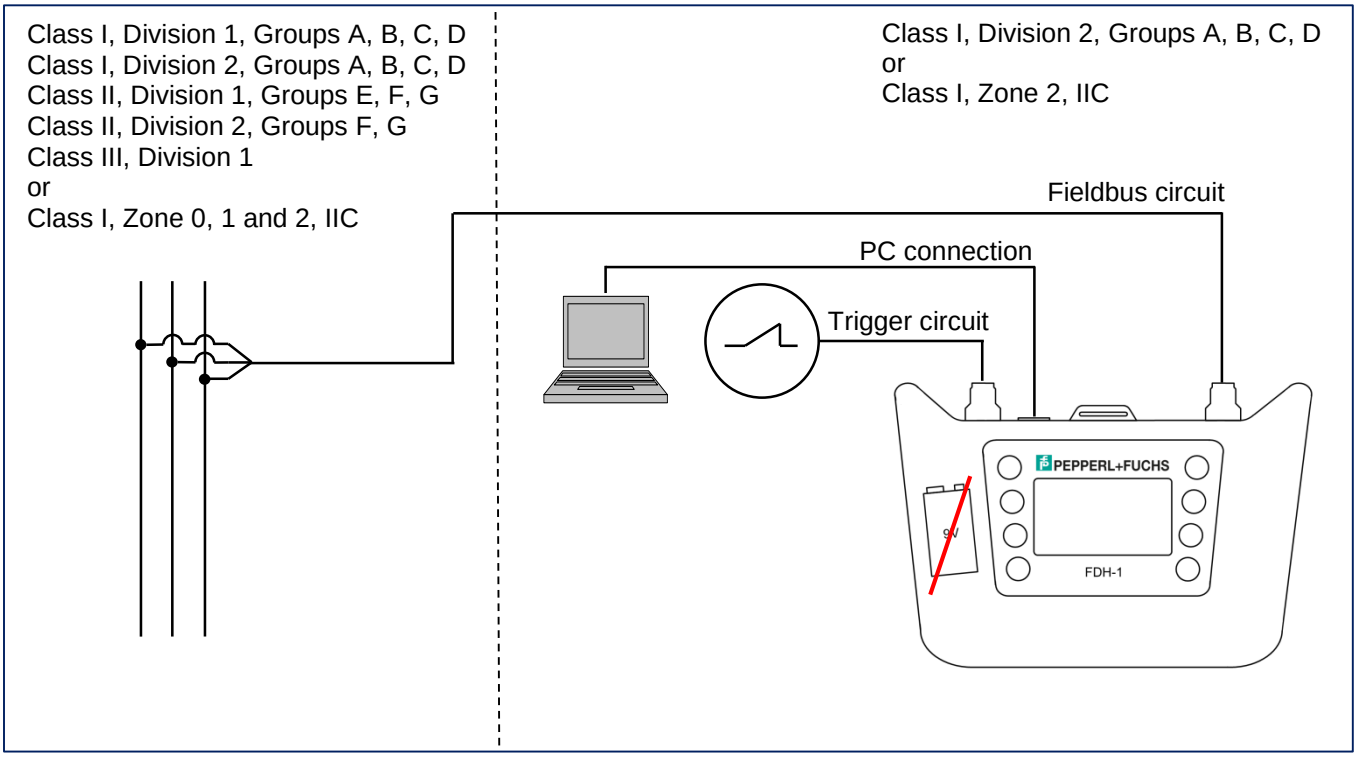
CSA Control Drawing
Fieldbus Diagnostic Handheld – FDH-1

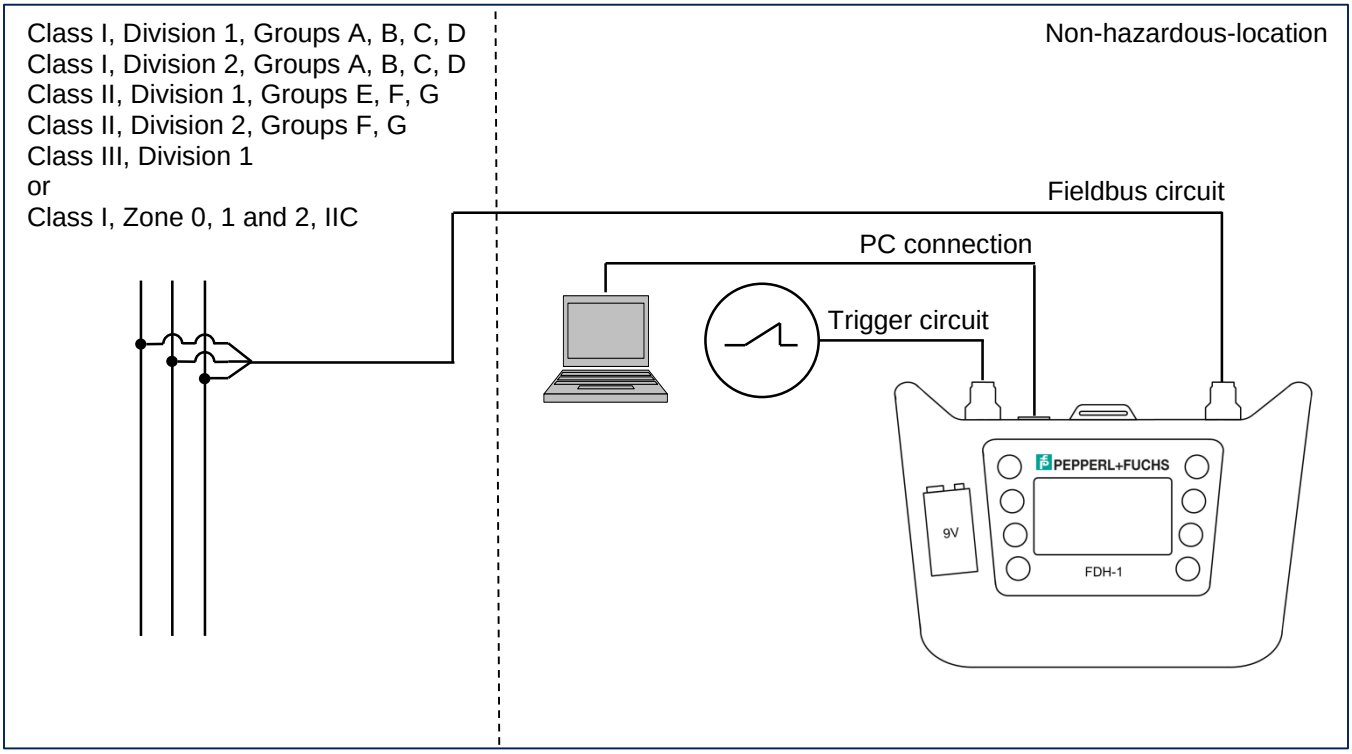
Connections – Device located in Zone 1 location



Connections – Device located in Zone 2 or Division 2 locations



Connections – Device located in safe area



Notes

1. The Entity Concept allows interconnection of intrinsically safe apparatus with associated apparatus, not specifically examined in combination as a system, when the approved values of Voc (or Uo), Isc (or Io) and Po for the associated apparatus are less than or equal to Vmax (or Ui), Imax (or Ii) and Pi for the intrinsically safe apparatus and the approved values of Ca (or Co) and La (or Lo) for the associated apparatus are greater than Ci + Ccable and Li + Lcable, respectively, for the intrinsically safe apparatus.
   Where Ccable= 60pF/ft if unknown
   Where Lcable= 0.20uH/ft if unknown

   The parameters for Lo and Co apply when one of the two conditions below is met:
   - the total Li of the external circuit (excluding the cable) is ≤ 1 % of the Lo value or
   - the total Ci of the external circuit (excluding the cable) is ≤ 1 % of the Co value.

   The parameters for Lo and Co are reduced to 50 % when both of the two conditions below are met:
   - the total Li of the external circuit (excluding the cable) is > 1 % of the Lo value and
   - the total Ci of the external circuit (excluding the cable) is > 1 % of the Co value.

   Note: The reduced capacitance of the external circuit (including cable) shall not be greater than 1 µF for C, D (IIA, IIB) and 600 nF for A, B (IIC).

2. Wiring methods must be in accordance with all applicable installation requirements of the county in use. For US, this is NFPA 70 (NEC) article 504 with additional information in ANSI-ISA –RP12.06.01. For Canada this is CSA 22.1-12 (CEC) section 18 and appendix F.

3. **Warning:** Substitution of components may impair intrinsic safety and suitability for hazardous (classified) locations.

   ADVERTISEMENT: le remplacement des composants peut altérer la sécurité intrinsèque et l'adéquation à une utilisation dans des zones dangereuses (classées).

4. The equipment shall only be brought into and operated inside the hazardous area without an inserted battery. Before entering the hazardous area the battery shall be removed. Only if the device is used as an associated apparatus outside the hazardous area, a battery may be used for the supply of the equipment.

5. The trigger circuit may be used in Zone 1 areas. The USB circuit may not be used in Zone 1 areas.

   The USB and trigger circuits may be used together in Division 2 and Zone 2 applications as per the entity parameters.

   When using the device as an associated apparatus outside the hazardous area, the trigger and the USB circuit may be connected to non-intrinsically safe circuits. The maximum r.m.s. a.c. or d.c. voltage (Um) of the particular circuit shall be adhered to.

6. After the device has been used with an intrinsically safe circuit in type of protection “ic”, it shall only be used with an intrinsically safe circuit in type of protection “ia” or “ib”, if the maximum applied voltage at the intrinsically safe circuit in type of protection “ic” has not exceeded the maximum permissible voltage for the intrinsically safe circuit in type of protection “ia” or “ib”.

7. All connections into the Fieldbus Diagnostic Handheld FDH-1 shall be sourced from Class 2 circuits.

8. The electrical ratings of the device are 8.5 … 35 V, 10 mA for the Fieldbus connection and 9 V for the trigger circuit. The USB connection is designed for connecting with a standard USB port. The given values may be restricted by the Entity parameters for intrinsic safety given in the tables on the next page.

Entity Parameters Fieldbus interface (4-pole round plug)

	Zone 0/Div 1, Zone 1 applications Groups A, B, C, D, E, F, G Gas group IIC	Zone 2/Div 2 applications Groups A, B, C, D, F, G Gas group IIC
Ui	30 V	35 V
Ii	Any[1]	Any[1]
Pi	Any[1]	Any[1]
Ci	1.8 nF	1.8 nF
Li	1.5 µH	1.5 µH

Entity Parameters trigger circuit (5-pole round plug)

	Zone 0/Div 1, Zone 1 applications Zone 2/Div 2 applications Groups A, B, C, D, E, F, G Gas group IIC
Uo/Vmax	9 V
Io/Isc	44 µA
Po	100 µW
Co/Ca	4.8 µF
Lo/La	100 mH

Um	140 V

Entity Parameters USB circuit (USB port)

	Zone 2/Div 2 applications Groups A, B, C, D, F, G Gas group IIC
Ui	6 V
Ii	Any[1]
Pi	Any[1]
Ci	25 µF
Li	0 µH

Um	253 V

Entity Parameters battery circuit (battery compartment)

	Only for use in safe areas.
Um	15 V

[1] These values are irrelevant as the device provides internal current limitation.