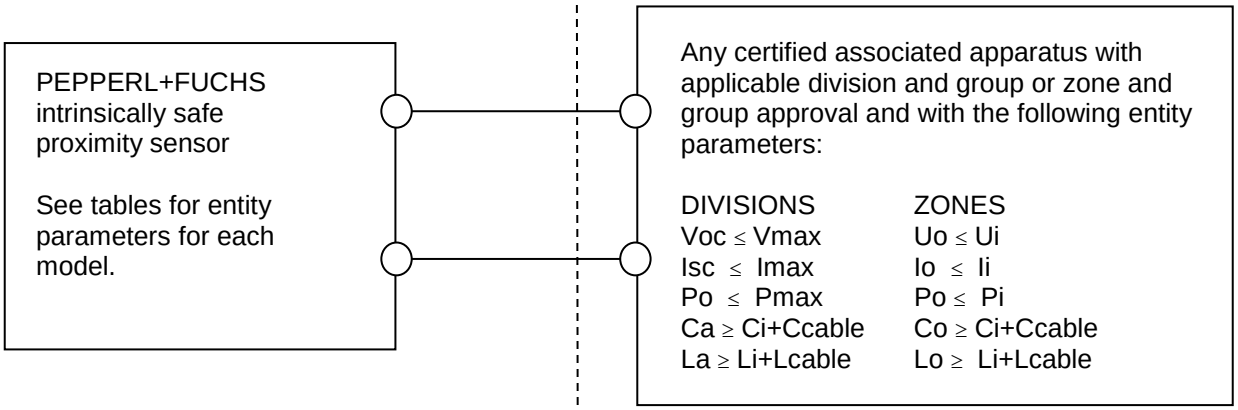
Connections

HAZARDOUS LOCATION
Class I, Division 1, Groups A, B, C, D
Class II, Division 1, Groups E, F, G
Class III, Division 1
or
Class I, Zone 0 IIC
Zone 20 IIIC

NON-HAZARDOUS LOCATION



Notes

1. MARKING

- Listee´s name or Trade Mark
- Model number or designation
- Class-Division marking:
  Class I, Division 1, Group A, B, C, D, T6…T1
  And/Or
  Class II, Division 1, Group E, F, G, T 135 °C
  And/Or
  Class III, Division 1, T 135 °C
  And/Or
- Class-Zone marking for USA:
  Class I, Zone 0, AEx ia IIC T6…T1 Ga
  And/Or,
  Zone 20, AEx ia IIIC T 135 °C Da
  And/Or
- Class-Zone marking for Canada:
  Ex ia IIC T6…T1 Ga X
  And/Or,
  Ex ia IIIC T 135 °C Da X
  The following abbreviations are permitted to be used: Class – Cl, Division – Div, Group – Gp, Zone – Zn
- An indication that the apparatus is intrinsically safe
- A reference to the control drawing number
- A reference to ambient temperature range shown under suitable tables in the Control Drawing
- “WARNING – AVOID ELECTROSTATIC CHARGE – SEE INSTRUCTIONS” and/or “AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES – VOIR INSTRUCTIONS” for apparatus models according to suitable table in the Control Drawing.
- A serial number, date code or equivalent

2. STANDARDS

   Investigation acc. United States Standards: UL 913, UL 60079-0, UL 60079-11 and acc. Canadian National Standards CSA C22.2 NO. 60079-0, CSA C22.2 NO. 60079-11

3. The Entity Concept allows interconnection of an intrinsically safe apparatus with an 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 Pmax (or 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= 60 pF/ft (197 pF/m) if unknown
   - Lcable= 0.20 µH/ft (0.66 µH/m) if unknown

4. The sum of all capacitances and inductances, including tolerance and a 10 m cable result to the given values for Ci and Li for the respective sensor models, shown in Table 1 and Table 2.

5. Wiring methods must be in accordance with all applicable installation requirements of the country in use. For the U.S. see NFPA 70 (NEC) article 504. For Canada see CEC section 18.

6. WARNING: Substitution of components may impair intrinsic safety and suitability for hazardous (classified) locations.
   AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque et l'adéquation à une utilisation en emplacements dangereux.

7. The correlation between the type of connected circuit and the maximum permissible ambient temperature are indicated at the top of Table 1 and Table 2 below.

   When assigning the actual sensor to the respective table, use the type description, which describes the sensor best. Letters and digits describe the different types according to the type description key.

   The dots in this type description represent free definable parameters. These free definable parameters can be omitted or replaced by letters or digits.

8. Appropriate measures need to be taken to protect the proximity sensors against mechanical damage due to impact, if they are used within an ambient temperature range between - 60 °C and - 20 °C. An ambient temperature below – 60 °C is not permissible.

9. When the following types of proximity sensors are applied acc. to the following classification

   - Class I, Division 1, Class II, Division 1 or Class III Division 1 or
   - Class I, Zone 0 or Zone 20

   as tabulated below, inadmissible electrostatic charge of the plastic housing has to be prevented.

Model	Division Classification			Zone Classification	
	Class I, Division 1 for Groups	Class II, Division 1 for Groups	Class III, Division 1 for Class	Class I, Zone 0 for Groups	Zone 20 for Group
FJ6-110-N...	A, B, C	E, F, G	III	IIB / IIC	III
FJ7-N...	A, B	E, F, G	III	IIC	III
NCB2-F1-N0...	A, B	-	-	IIC	-
NCB2-V3-N0...	A, B	-	-	IIC	-
NCN2-F56-N1...	A, B	-	-	IIC	-
NBN3-F69-N0...	A, B	-	-	IIC	-
NBN4-V3-N0...	A, B	-	-	IIC	-
NBN4-V3-N0-Y189289	A, B	-	-	IIC	-
NBB15-U...K-N0...	A, B	E, F, G	III	IIC	III
NBB20-U...K-N0...	A, B	E, F, G	III	IIC	III
NBN30-U...K-N0...	A, B	E, F, G	III	IIC	III
NBN40-U...K-N0...	A, B	E, F, G	III	IIC	III
NBN40-U...LK-N0...	A, B, C, D	E, F, G	III	IIA / IIB / IIC	III
NCN4-V3-N0...	A, B	-	-	IIC	-
NCB15+U...+N0...	A, B	E, F, G	III	IIC	III
NCN15-M...-N0...	A, B	E, F, G	III	IIC	III
NCB20-L2-N0...	A, B	E, F, G	III	IIC	III
NCB40-FP-N0...	A, B, C, D	E, F, G	III	IIA / IIB / IIC	III
NCN20+U...+N0...	A, B	E, F, G	III	IIC	III
NCN30+U...+N0...	A, B	E, F, G	III	IIC	III
NCN40+U...+N0...	A, B, C	E, F, G	III	IIB / IIC	III
NCN40-L2-N0...	A, B	E, F, G	III	IIC	III
NCN50-FP-N0...	A, B, C, D	E, F, G	III	IIA / IIB / IIC	III
NJ0,8-F-N...	-	-	-	-	-
NJ1,5-F-N...	-	-	-	-	-
NJ2,5-F-N...	A, B	-	-	IIC	-
NJ2-F1-N...	A, B	E, F, G	III	IIC	III
NJ2-V3-N...	A, B	-	-	IIC	-
NJ3-V3-N...	A, B	-	-	IIC	-
NJ4-F-N...	A, B	-	-	IIC	-
NJ6-F-N...	A, B	E, F, G	III	IIC	III
NJ10-F-N...	A, B	E, F, G	III	IIC	III
NJ15+U...+N...	A, B	E, F, G	III	IIC	III
NJ15-M1...-N...	A, B	E, F, G	III	IIC	III
NJ20+U...+N...	A, B	E, F, G	III	IIC	III
NJ30+U...+N...	A, B	E, F, G	III	IIC	III
NJ30P+U...+1N...	A, B, C	E, F, G	III	IIB / IIC	III
NJ40+...+N...	A, B, C	E, F, G	III	IIB / IIC	III
NJ50-FP-N...	A, B, C, D	E, F, G	III	IIA / IIB / IIC	III

WARNING – AVOID ELECTROSTATIC CHARGE – SEE INSTRUCTIONS
AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES – VOIR INSTRUCTIONS

Do not mount the supplied nameplate in dust hazardous areas that can be electrostatically charged.

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

10. Inadmissible electrostatic charge of parts of the metal housing has to be avoided for the following types of proximity sensors. Dangerous electrostatic charge of parts of the metal housing can be avoided by grounding of these parts whereas very small parts of the metal housing (e.g. screws) do not need to be grounded:

FJ6-110-N...	NBN40-U4K-N0…	NCN30+U4+N0...	NJ20+U4+N...
FJ7-N...	NBN40-U4LK-N0…	NCN40-L2-N0…	NJ30+U3+N...
NBB15-U3K-N0…	NCB15+U3+N0...	NCN40+U3+N0...	NJ30+U4+N...
NBB15-U4K-N0…	NCB15+U4+N0...	NCN40+U4+N0...	NJ30P+U3+1N...
NBB20-U3K-N0…	NCB20-L2-N0…	NCN50-FP-N0-P3...	NJ30P+U4+1N...
NBB20-U4K-N0…	NCB40-FP-N0-P3...	NCN50-FP-N0-P4...	NJ40+U3+N...
NBN30-U3K-N0…	NCB40-FP-N0-P4...	NJ15+U3+N...	NJ40+U4+N...
NBN30-U4K-N0…	NCN20+U3+N0...	NJ15+U4+N...	NJ50-FP-N-P3...
NBN40-U3K-N0…	NCN20+U4+N0...	NJ15-M1-N-V…	NJ50-FP-N-P4...
NBN40-U3LK-N0…	NCN30+U3+N0...	NJ20+U3+N...	

11. For the application of the following types of proximity sensors in hazardous locations appropriate measures need to be taken to protect the free resin surface against mechanical damage, if the free resin surface is accessible after installation:

FJ7-N...	NBN4-V3-N0...	NCN2-F56-N1...	NJ1,5-F-N...
FJ6-110-N...	NBN4-V3-N0-Y189289	NCN4-V3-N0...	NJ2-V3-N...
NBN3-F69-N0...	NCB2-V3-N0...	NJ0,8-F-N...	NJ3-V3-N...

12. When the following types of proximity sensors are applied acc. to the following classification
    - Class I, Division 1 or
    - Class I, Zone 0

    the maximum permissible mass fractions of metallic materials are exceeded for the following types of proximity sensors.
    In hazardous areas requiring the application of Class I, Division 1 equipment, resp. Class I, Zone 0 equipment, it shall be ensured by appropriate measures that an ignition hazard due to impact or friction effects cannot occur.

NBB15-U3K-N0…	NBN40-U4LK-N0…	NCN40+U3+N0...	NJ30+U4+N...
NBB15-U4K-N0…	NCB15+U3+N0...	NCN40+U4+N0...	NJ30P+U3+1N...
NBB20-U3K-N0…	NCB15+U4+N0...	NCN50-FP-N0-P3...	NJ30P+U4+1N...
NBB20-U4K-N0…	NCB40-FP-N0-P3...	NCN50-FP-N0-P4...	NJ40+U3+N...
NBN30-U3K-N0…	NCB40-FP-N0-P4...	NJ15+U3+N...	NJ40+U4+N...
NBN30-U4K-N0…	NCN20+U3+N0...	NJ15+U4+N...	NJ50-FP-N-P3...
NBN40-U3K-N0…	NCN20+U4+N0...	NJ20+U3+N...	NJ50-FP-N-P4...
NBN40-U3LK-N0…	NCN30+U3+N0...	NJ20+U4+N...	
NBN40-U4K-N0…	NCN30+U4+N0...	NJ30+U3+N...	

13. The proximity sensors may be provided with a permanently connected cable having the following characteristics:
    - Type: flexible jacketed power supply cord
    - Rated Voltage: 500 V
    - Rated Current: min. 76 mA

Entity Parameters

Table 1, Proximity sensors for use in Class I, Division 1 Class I, Zone 0

			Type 1 Ui = 16 V Ii = 25 mA Pi = 34 mW			Type 2 Ui = 16 V Ii = 25 mA Pi = 64 mW			Type 3 Ui = 16 V Ii = 52 mA Pi = 169 mW			Type 4 Ui = 16 V Ii = 76 mA Pi = 242 mW		
			Maximum permissible ambient temperature in °C for application in temperature class											
Model	**Ci / nF**	**Li / µH**	**T6**	**T5**	**T4-T1**	**T6**	**T5**	**T4-T1**	**T6**	**T5**	**T4-T1**	**T6**	**T5**	**T4-T1**
FJ6-110-N...	150	110	73	88	100	73	88	100	62	77	81	54	63	63
FJ7-N...	65	220	73	88	100	73	88	100	62	77	81	54	63	63
NCB2-F1-N0...	90	100	73	88	100	66	81	100	45	60	89	30	45	74
NCB2-V3-N0...	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NCN2-F56-N1...	100	100	75	90	100	70	85	100	55	70	87	-	-	-
NBN3-F69-N0...	100	100	72	87	100	65	80	100	41	56	63	24	37	37
NBN4-V3-N0...	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NBN4-V3-N0-Y189289	120	100	72	87	100	65	80	100	41	56	63	24	37	37
NBB15-U...K-N0...	110	200	73	88	100	66	81	100	45	60	89	30	45	74
NBB20-U...K-N0...	110	200	73	88	100	66	81	100	45	60	89	30	45	74
NBN30-U...K-N0...	105	300	73	88	100	66	81	100	45	60	89	30	45	74
NBN40-U...K-N0...	105	300	73	88	100	66	81	100	45	60	89	30	45	74
NBN40-U...LK-N0...	165	130	73	88	100	66	81	100	45	60	89	30	45	74
NCN4-V3-N0...	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NCB15+U...+N0...	110	160	73	88	100	66	81	100	45	60	89	30	45	74
NCN15-M...-N0...	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NCB20-L2-N0...	110	200	73	88	100	66	81	100	45	60	89	30	45	74
NCN20+U...+N0...	110	160	73	88	100	66	81	100	45	60	89	30	45	74
NCN30+U...+N0...	110	160	73	88	100	66	81	100	45	60	89	30	45	74
NCB40-FP-N0...	220	360	73	88	100	66	81	100	45	60	89	30	45	74
NCN40+U...+N0...	120	130	73	88	100	66	81	100	45	60	89	30	45	74
NCN40-L2-N0...	105	300	73	88	100	66	81	100	45	60	89	30	45	74
NCN50-FP-N0...	220	360	73	88	100	66	81	100	45	60	89	30	45	74
NJ0,8-F-N...	30	50	73	88	100	67	82	100	45	60	78	30	45	57
NJ1,5-F-N...	30	50	73	88	100	67	82	100	45	60	78	30	45	57
NJ2,5-F-N...	40	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ2-F1-N...	30	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ2-V3-N...	40	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ3-V3-N...	40	50	73	88	100	66	81	100	45	60	89	30	45	74

			Type 1 Ui = 16 V Ii = 25 mA Pi = 34 mW			Type 2 Ui = 16 V Ii = 25 mA Pi = 64 mW			Type 3 Ui = 16 V Ii = 52 mA Pi = 169 mW			Type 4 Ui = 16 V Ii = 76 mA Pi = 242 mW		
			Maximum permissible ambient temperature in °C for application in temperature class											
Model	**Ci / nF**	**Li / µH**	**T6**	**T5**	**T4-T1**	**T6**	**T5**	**T4-T1**	**T6**	**T5**	**T4-T1**	**T6**	**T5**	**T4-T1**
NJ4-F-N...	150	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ6-F-N...	70	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ10-F-N...	85	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ15+U...+N...	140	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ15-M1...-N...	140	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ20+U...+N...	150	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ30+U...+N...	160	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ30P+U...+1N...	150	170	73	88	100	66	81	100	45	60	89	30	45	74
NJ40+...+N...	180	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ50-FP-N...	320	360	73	88	100	66	81	100	45	60	89	30	45	74

Table 2, Proximity sensors for use in Class II, Division 1, Class III, Division 1 or Zone 20

			Type 1 Ui = 16 V Ii = 25 mA Pi = 34 mW	Type 2 Ui = 16 V Ii = 25 mA Pi = 64 mW	Type 3 Ui = 16 V Ii = 52 mA Pi = 169 mW	Type 4 Ui = 16 V Ii = 76 mA Pi = 242 mW
Model	**Ci / nF**	**Li / µH**	**maximum permissible ambient temperature in °C**			
FJ6-110-N...	150	110	100	100	81	63
FJ7-N...	65	220	100	100	81	63
NCB2-F1-N0...	90	100	100	100	89	74
NCB2-V3-N0...	100	100	100	100	89	74
NCN2-F56-N1...	100	100	100	100	87	-
NBN3-F69-N0...	100	100	100	100	63	37
NBN4-V3-N0...	100	100	100	100	89	74
NBN4-V3-N0-Y189289	120	100	100	100	63	37
NBB15-U...K-N0...	110	200	100	100	89	74
NBB20-U...K-N0...	110	200	100	100	89	74
NBN30-U...K-N0...	105	300	100	100	89	74
NBN40-U...K-N0...	105	300	100	100	89	74
NBN40-U...LK-N0...	165	130	100	100	89	74

			Type 1 Ui = 16 V Ii = 25 mA Pi = 34 mW	Type 2 Ui = 16 V Ii = 25 mA Pi = 64 mW	Type 3 Ui = 16 V Ii = 52 mA Pi = 169 mW	Type 4 Ui = 16 V Ii = 76 mA Pi = 242 mW
Model	**Ci / nF**	**Li / µH**	**maximum permissible ambient temperature in °C**			
NCN4-V3-N0...	100	100	100	100	89	74
NCB15+U...+N0...	110	160	100	100	89	74
NCN15-M...-N0...	100	100	100	100	89	74
NCB20-L2-N0...	110	200	100	100	89	74
NCN20+U...+N0...	110	160	100	100	89	74
NCN30+U...+N0...	110	160	100	100	89	74
NCB40-FP-N0...	220	360	100	100	89	74
NCN40+U...+N0...	120	130	100	100	89	74
NCN40-L2-N0...	105	300	100	100	89	74
NCN50-FP-N0...	220	360	100	100	89	74
NJ0,8-F-N...	30	50	100	100	78	57
NJ1,5-F-N...	30	50	100	100	78	57
NJ2,5-F-N...	40	50	100	100	89	74
NJ2-F1-N...	30	50	100	100	89	74
NJ2-V3-N...	40	50	100	100	89	74
NJ3-V3-N...	40	50	100	100	89	74
NJ4-F-N...	150	100	100	100	89	74
NJ6-F-N...	70	100	100	100	89	74
NJ10-F-N...	85	100	100	100	89	74
NJ15+U...+N...	140	130	100	100	89	74
NJ15-M1...-N...	140	100	100	100	89	74
NJ20+U...+N...	150	130	100	100	89	74
NJ30+U...+N...	160	130	100	100	89	74
NJ30P+U...+1N...	150	170	100	100	89	74
NJ40+...+N...	180	130	100	100	89	74
NJ50-FP-N...	320	360	100	100	89	74