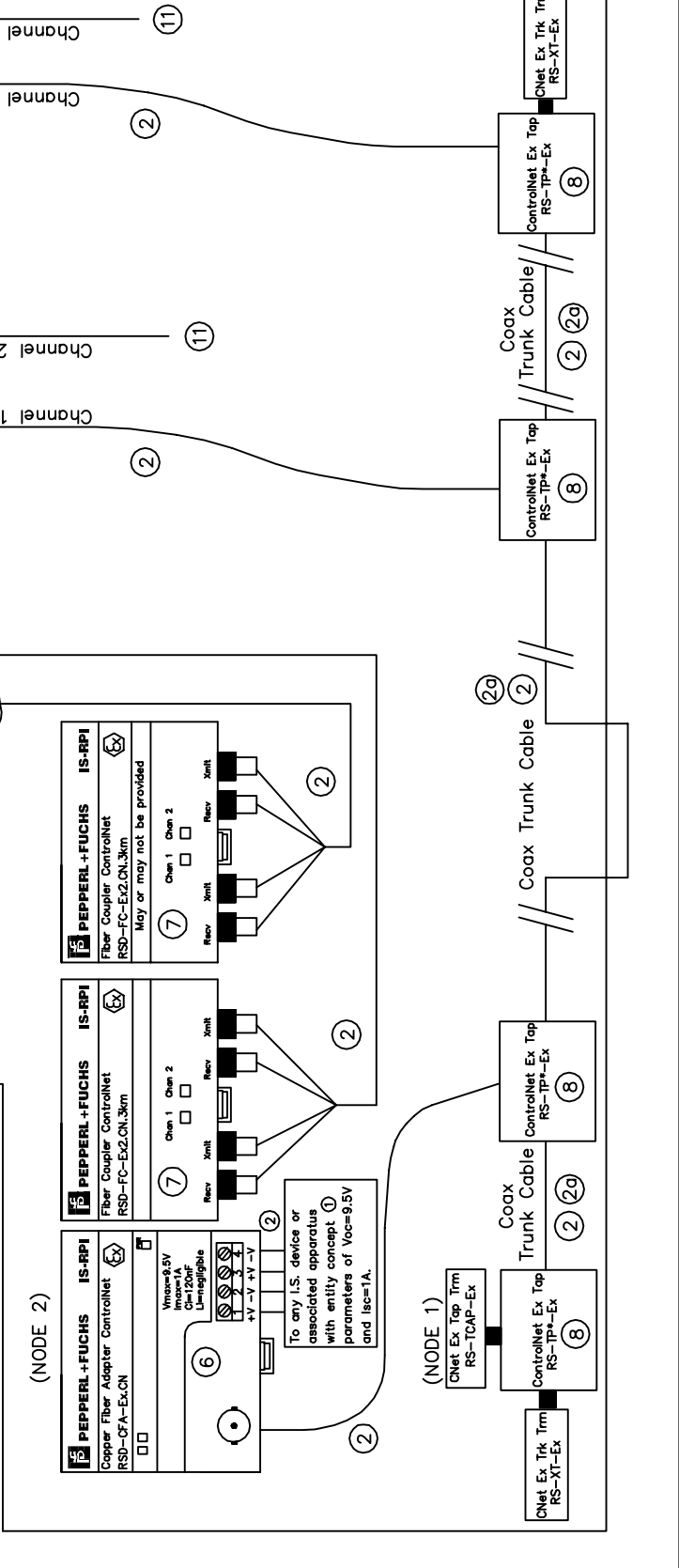
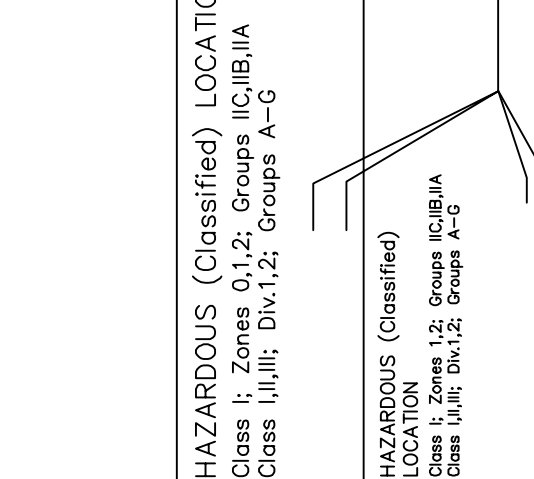
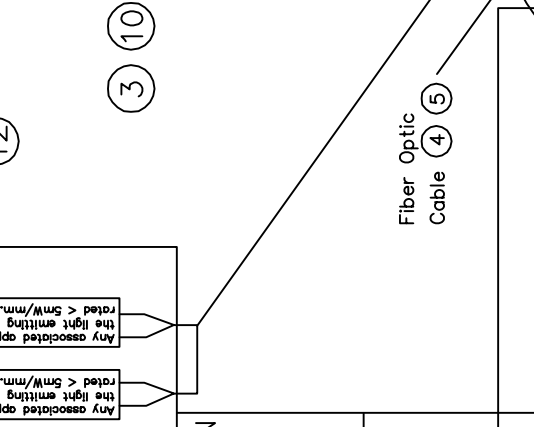
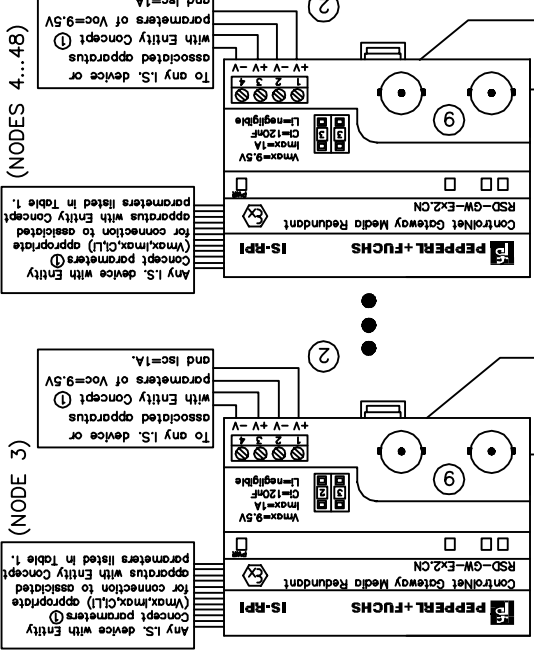


NON-HAZARDOUS LOCATION

HAZARDOUS (Classified) LOCATION  
 Class I, Zone 1, Groups IIC, IIB, IIA  
 Class I, Div.1, Groups A-D  
 Class II, Div.1, Groups E, F, G; Class III  
 (NODE 3)



Any associated apparatus where the light emitting output is rated < 5mW/mm.  
 Any associated apparatus where the light emitting output is rated < 5mW/mm.

HAZARDOUS (Classified) LOCATION  
 Class I; Zones 0,1,2; Groups IIC, IIB, IIA  
 Class I, II, III; Div.1, 2; Groups A-G

HAZARDOUS (Classified) LOCATION  
 Class I; Zones 1,2; Groups IIC, IIB, IIA  
 Class I, II, III; Div.1, 2; Groups A-G

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# ENTITY PARAMETERS for RSD-GW-Ex2.CN

## Table 1

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing * (See Note Below)	5.8	400	A-G IIC, IIB, IIA	3.0	3.0

\* - A maximum of eight I/O modules suitable for the application are allowed to be attached in series to the male connector. One bus extender (RS-CE1, RS-CE3, RS-CE1S or RS-CE3S) is allowed to be connected between any two modules within the system.

### 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 Vt and It of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Ccable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ②a The coax truck cable is permitted to have a maximum length of 1000m (3280ft) with 2 ControlNet Ex Taps. If 48 ControlNet Ex Taps are employed, the maximum total cable length is 250m (820ft). The following formula applies:

$$\text{Maximum Allowable Coax Truck Cable} = 1000\text{m (3280ft)} - \{16.3\text{m (53.4ft)} * [\text{number of ControlNet Ex Taps} - 2]\}$$


The following types of Coax Truck Cable are allowed: Belden Wire Type 1189A, 3092A or 3092A Blue. In addition to these cable types, the following specification can be followed to allow additional types:

Cable Impedance = 75ohm +/- 3ohm	Cable Attenuation (-20°C to +70°C)	0.5MHz ≥ 0.95dB/100m	10MHz ≥ 1.86dB/100m
Cable Capacitance ≤5.94nF per 100m		0.2MHz ≥ 0.93dB/100m	5MHz ≥ 1.39dB/100m
Cable Resistance ≥9.08ohm per 100m		1MHz ≥ 1.07dB/100m	20MHz ≥ 2.73dB/100m
		2MHz ≥ 1.16dB/100m	50MHz ≥ 4.33dB/100m

- ③
- ④ If fiber optic cable is provided with a metal sheild, it must be connected to a dedicated intrinsic safety ground in the nonhazardous location and tied back in the hazardous location or be connected to a ground in the hazardous location and tied back in the nonhazardous location.
- ⑤ The glass fibers must have a minimum diameter of 6um.
- ⑥ Alternate Model Number : Allen-Bradley 1797-RPA
- ⑦ Alternate Model Number : Allen-Bradley 1797-RPFM
- ⑧ Alternate Model Number : Allen-Bradley 1797-TP\*
- ⑨ Alternate Model Number : Allen-Bradley 1797-ACNR15
- ⑩ The ambient operating temperature (Tamb) for this system is -20°C to 70°C.
- ⑪ Channel 2 is intended for a redundant connection and is identical to the Channel 1 configuration.
- ⑫ For CL. II, DIV. 1, GPS E,F,G and CL. III, modules must be installed in a UL Listed Type 4,4X,6,6P,9,12 or 12K enclosure.
- ⑬ **WARNING:** To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
**AVERTISSEMENT -** Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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 PEPPERL+FUCHS	Control drawing	116-0171H
	IS-RPI SYSTEM	
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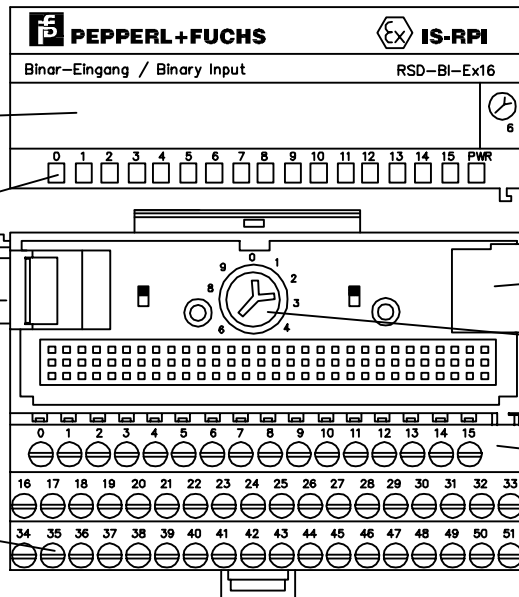
**PEPPERL+FUCHS**  
**RSD-BI-Ex16**

IS-RPI Discrete Input I/O module

LED's

Female bus connection

Field wiring terminals



Key position for terminal base insertion

Male bus connection

Terminal base key

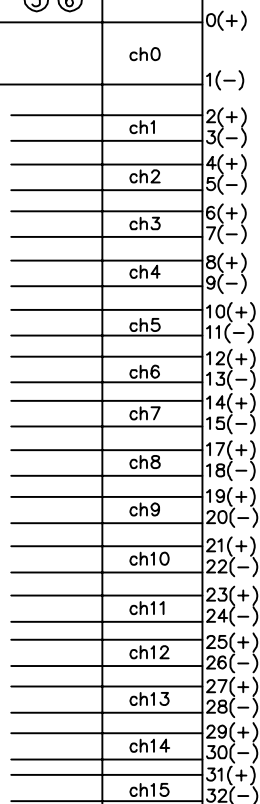
Terminal base

HAZARDOUS (CLASSIFIED) LOCATION  
Class I, Zones 0, Groups IIC,IIB,IIA  
Class I, Div. 1, Groups A,B,C,D  
Class II, Div. 1, Groups E,F,G  
Class III, Div. 1

HAZARDOUS (CLASSIFIED) LOCATION  
Class I, Zone 1, Groups IIC,IIB,IIA ⑧  
Class I, Div. 1, Groups A,B,C,D  
⑨ Class II, Div. 1, Groups E,F,G; Class III

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

③ ⑥



Female Bus Connector  
 $V_{max}=5.8V$   
 $I_{max}=400mA$   
 $C_i=0$   
 $L_i=0$

To any intrinsically safe device or associated apparatus with Entity Concept ① parameters of  $V_{oc} \leq 5.8V$ ;  $I_{sc} \leq 400mA$

$V_{max}=9.5V$   
 $I_{max}=1A$   
 $C_i=0$   
 $L_i=0$

To any intrinsically safe device or associated apparatus with Entity Concept ① parameters of  $V_{oc} \leq 9.5V$ ;  $I_{sc} \leq 1A$

Male Bus Connector

To any IS device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 2

④ ⑤ ⑦

Shield connection only

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# ENTITY PARAMETERS for RSD-BI-Ex16

## Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(-)	14.5	15	-	-	A,B,IIC	0.30	80.0
							C,E,IIB	0.9	320.0
							D,F,G,IIA	2.4	640.0

### WIRING METHODS:

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC or CEC.

## Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.


Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

### 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 and Isc or Vt and It of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Ccable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-BI-Ex16, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 36,37,38,39,46,47,48,49 shall not be connected.

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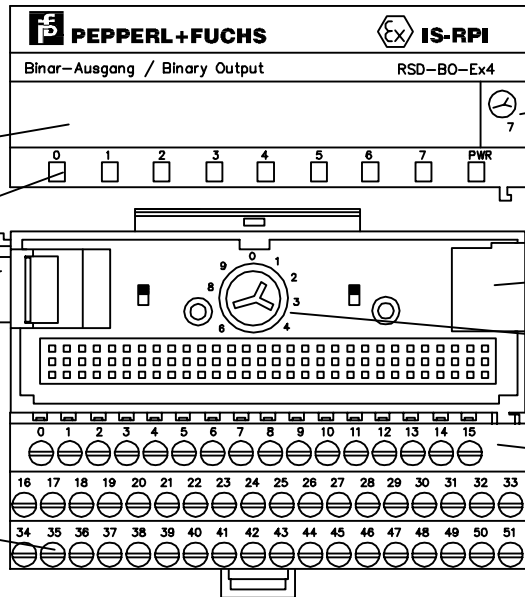
- ⑥ Any combination of up to two channels may be connected in parallel and connected to simple apparatus in a hazardous location. If two channels are connected in parallel, the total cable inductance must be limited to 20mH for Groups A and B, 80mH for Groups C and E and 160mH for Groups D, F and G.
  
- ⑦ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
 AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
  
- ⑧ The ambient operating temperature (Tamb) for this system is –20°C to 70°C.
  
- ⑨ Suitable for CL. II, DIV. 1, GFS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
  
- ⑩ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
 AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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**PEPPERL+FUCHS**  
**RSD-BO-Ex4**



IS-RPI Discrete Output I/O module

LED's

Female bus connection

Field wiring terminals

Key position for terminal base insertion

Male bus connection

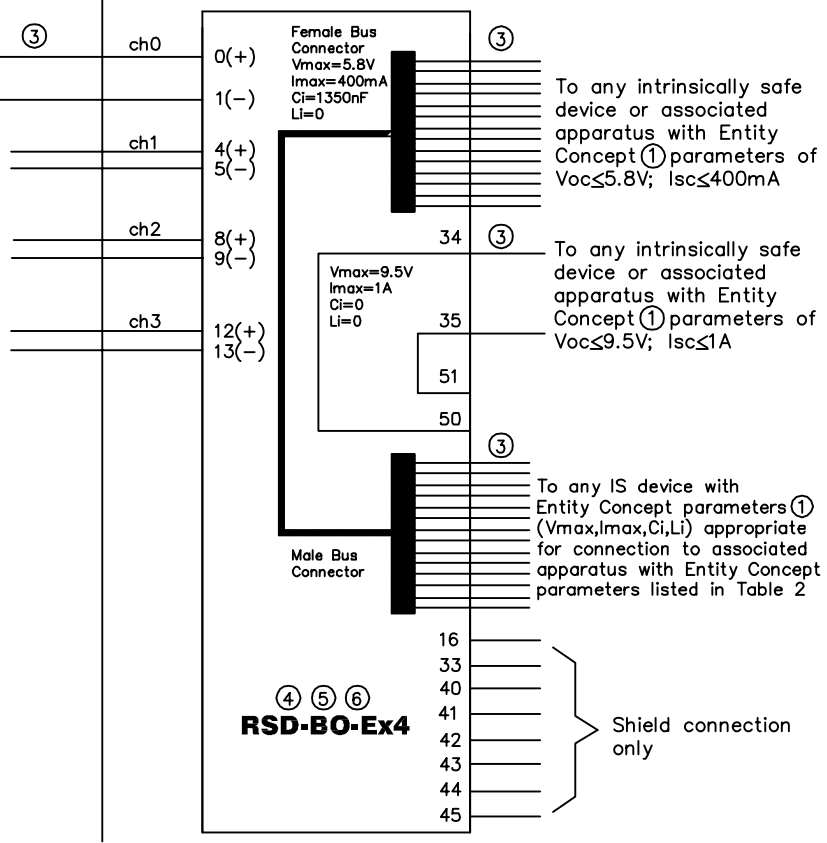
Terminal base key

Terminal base

HAZARDOUS (CLASSIFIED) LOCATION  
Class I, Zones 0, Groups IIC,IIB,IIA  
Class I, Div. 1, Groups A,B,C,D  
Class II, Div. 1, Groups E,F,G  
Class III, Div. 1

HAZARDOUS (CLASSIFIED) LOCATION  
Class I, Zone 1, Groups IIC,IIB,IIA ⑦  
Class I, Div. 1, Groups A,B,C,D  
⑧ Class II, Div. 1, Groups E,F,G; Class III

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.



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# ENTITY PARAMETERS for RSD-BO-Ex4

## Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(-)	27.4	110.0	-	-	A,B,IIC	0.030	2.0
							C,E,IIB	0.090	8.0
							D,F,G,IIA	0.24	16.0

### WIRING METHODS:

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC.

## Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

### 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 and Isc or Vt and It of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Ccable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-BO-Ex4, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.

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- ⑤ Terminals 2,3,6,7,10,11,14,15,17–32,36–39,46–49 shall not be connected.
- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ⑦ The ambient operating temperature (Tamb) for this system is –20°C to 70°C.
- ⑧ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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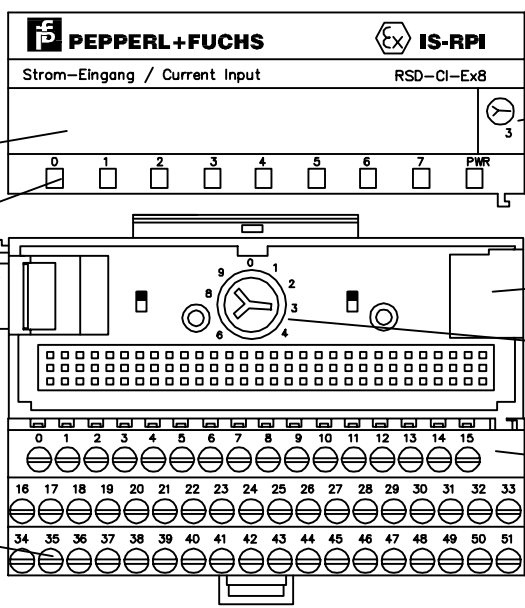
**PEPPERL+FUCHS**  
**RSD-CI-Ex8**  
**RSD-CI2-Ex8**

IS-RPI Current Input I/O module

LED's

Female bus connection

Field wiring terminals



Key position for terminal base insertion

Male bus connection

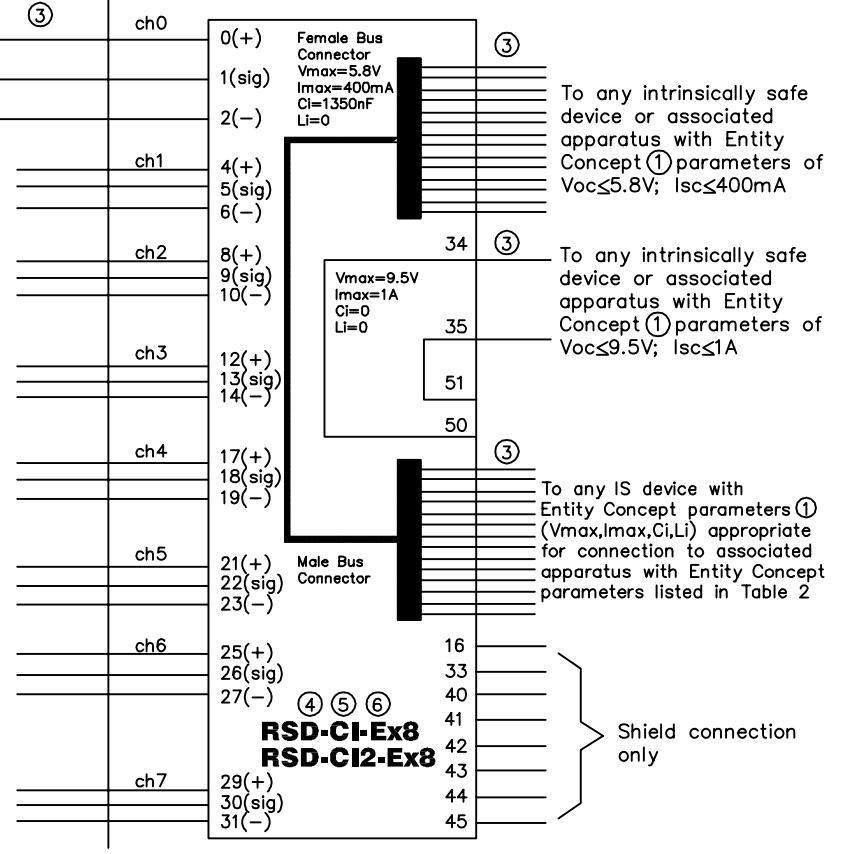
Terminal base key

Terminal base

HAZARDOUS (CLASSIFIED) LOCATION  
 Class I, Zones 0, Groups IIC,IIB,IIA  
 Class I, Div. 1, Groups A,B,C,D  
 Class II, Div. 1, Groups E,F,G  
 Class III, Div. 1

HAZARDOUS (CLASSIFIED) LOCATION  
 Class I, Zone 1, Groups IIC,IIB,IIA ⑦  
 Class I, Div. 1, Groups A,B,C,D  
 ⑧ Class II, Div. 1, Groups E,F,G; Class III

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.



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# ENTITY PARAMETERS for RSD-CI(2)-Ex8

## Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(sig)	23.7	92.5	-	-	A,B,IIC	0.06	2.0
							C,E,IIB	0.18	8.0
							D,F,G,IIA	0.48	16.0
		1(sig),2(-)	5	1.0	-	-	A,B,IIC	100	1000
							C,E,IIB	300	1000
							D,F,G,IIA	800	1000
		0(+),1(sig),2(-)	-	-	23.7	93.5	A,B,IIC	0.06	2.0
							C,E,IIB	0.18	8.0
							D,F,G,IIA	0.48	16.0

### WIRING METHODS:

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC or CEC.

## Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

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NOTES:

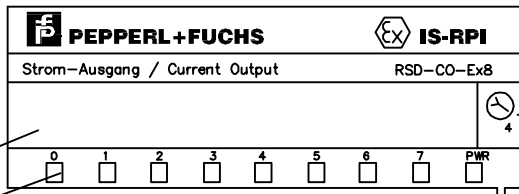
- ① The Entity Concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of  $V_{oc}$  and  $I_{sc}$  or  $V_t$  and  $I_t$  of the associated apparatus are less than or equal to  $V_{max}$  and  $I_{max}$  of the intrinsically safe apparatus and the approved values of  $C_a$  and  $L_a$  of the associated apparatus are greater than  $C_i+C_{cable}$  and  $L_i+L_{cable}$  respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-CI(2)-Ex8, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 3,7,11,15,20,24,28,32,36-39,46-49 must not be connected.
- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ⑦ The ambient operating temperature ( $T_{amb}$ ) for this system is  $-20_{\circ}C$  to  $70_{\circ}C$ .
- ⑧ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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Twinsburg	UL/cUL, PART L	

**PEPPERL+FUCHS**  
**RSD-CO-Ex8**  
**RSD-BO-Ex8**  
**RSD-UO-Ex8**



Key position for terminal base insertion

IS-RPI Universal Output I/O module

LED's

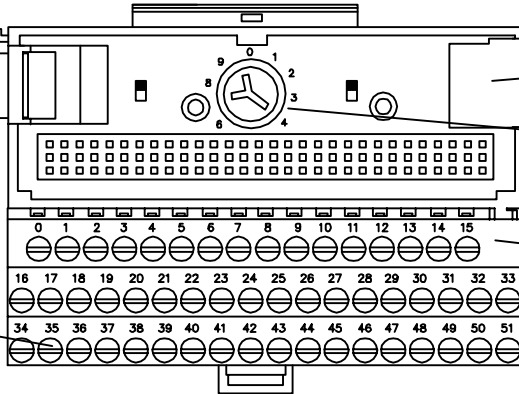
Female bus connection

Field wiring terminals

Male bus connection

Terminal base key

Terminal base



**HAZARDOUS (CLASSIFIED) LOCATION**

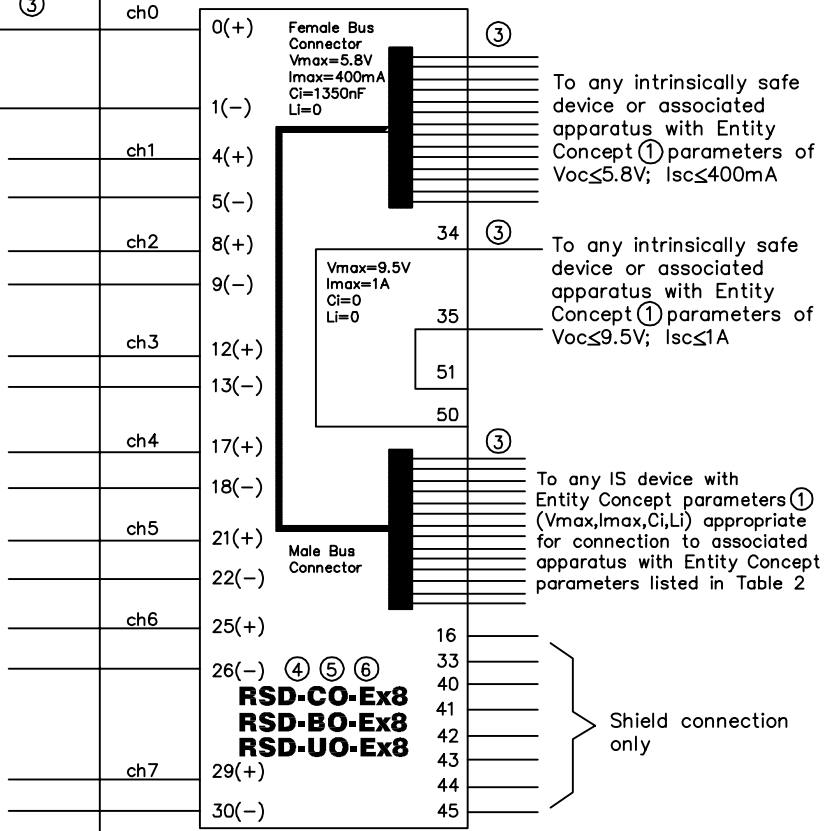
Class I, Zones 0, Groups IIC,IIB,IIA  
 Class I, Div. 1, Groups A,B,C,D  
 Class II, Div. 1, Groups E,F,G  
 Class III, Div. 1

**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, Zone 1, Groups IIC,IIB,IIA ⑦  
 Class I, Div. 1, Groups A,B,C,D  
 ⑧ Class II, Div. 1, Groups E,F,G; Class III

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

③



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**PEPPERL+FUCHS**

Control drawing  
 IS-RPI SYSTEM  
 UL/cUL, PART L

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# ENTITY PARAMETERS for RSD-\*O-Ex8

## Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(-)	21.0	100.0	-	-	A,B,IIC	0.08	2.0
							C,E,IIB	0.24	8.0
							D,F,G,IIA	0.64	16.0

### WIRING METHODS:

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC.

## Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

### 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 and Isc or Vt and It of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Ccable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-\*O-Ex8, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 2,3,6,7,10,11,14,15,19,20,23,24,27,28,31,32,36-39,46-49 shall not be connected.

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Control drawing  
IS-RPI SYSTEM  
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- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
  
- ⑦ The ambient operating temperature (Tamb) for this system is –20°C to 70°C.
  
- ⑧ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
  
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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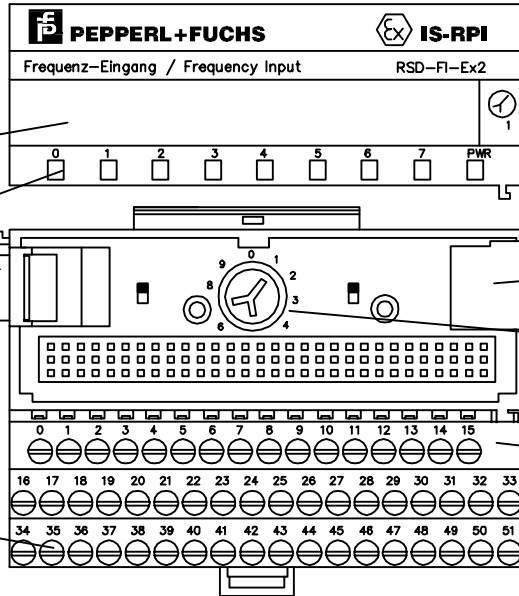
Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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**PEPPERL+FUCHS**  
**RSD-FI-Ex2**  
**RSD-CTI-Ex2**



IS-RPI Counter/Frequency I/O module

LED's

Female bus connection

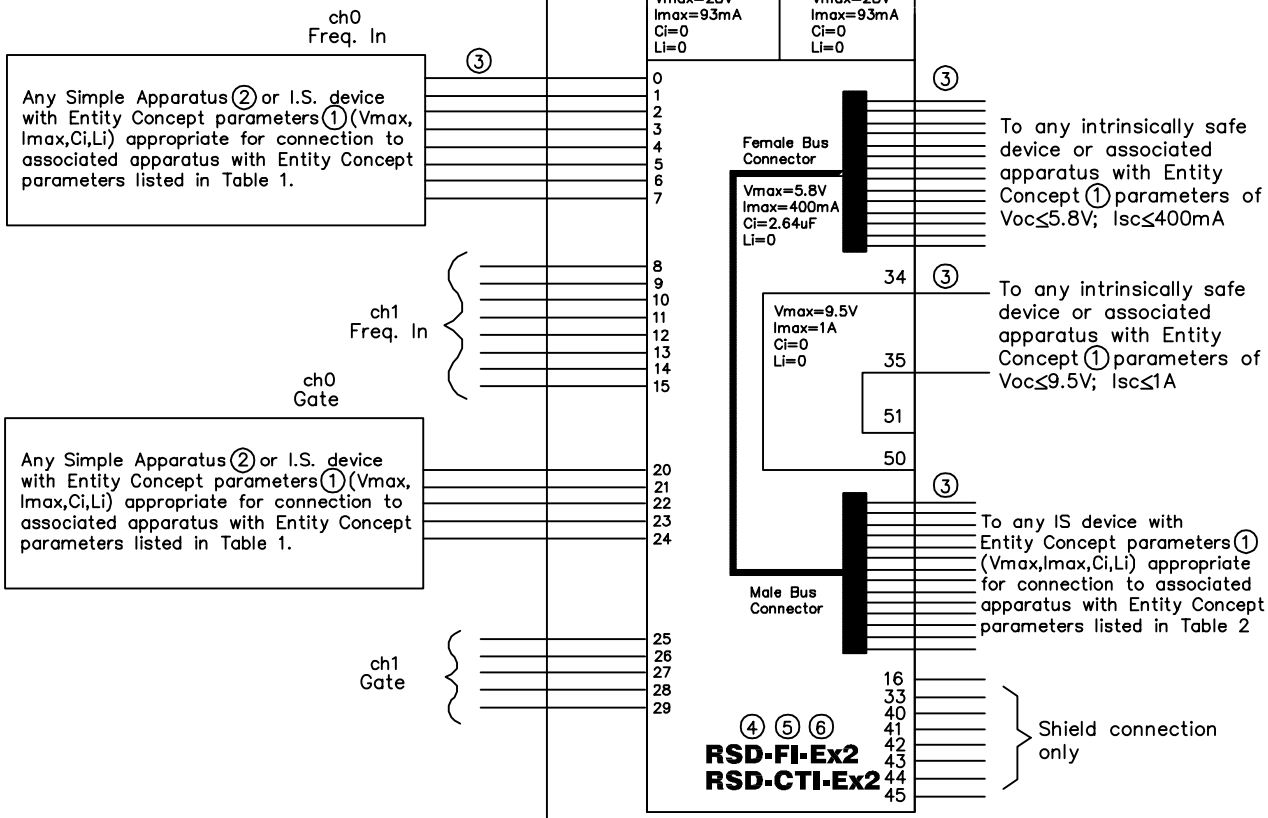
Field wiring terminals

**HAZARDOUS (CLASSIFIED) LOCATION**  
 Class I, Zones 0, Groups IIC,IIB,IIA  
 Class I, Div. 1, Groups A,B,C,D  
 Class II, Div. 1, Groups E,F,G  
 Class III, Div. 1

To any intrinsically safe device or associated apparatus with Entity Concept ① parameters of  $V_{oc} \leq 28V$ ;  $I_{sc} \leq 93mA$

To any intrinsically safe device or associated apparatus with Entity Concept ① parameters of  $V_{oc} \leq 28V$ ;  $I_{sc} \leq 93mA$

**HAZARDOUS (CLASSIFIED) LOCATION**  
 ⑦  
 CI I, Zn 1, Grps IIC,IIB,IIA  
 CI I, Div 1, Grps A,B,C,D  
 ⑧ CI II, Div 1, GPS E,F,G; CL III



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**PEPPERL+FUCHS**

Control drawing  
 IS-RPI SYSTEM  
 UL/cUL, PART L

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# ENTITY PARAMETERS for RSD-FI(CTI)-Ex2

## Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel	6,7; 9,8; 23,24; 26,25	14.7	15.0	-	-	A,B,IIC	0.62	80.0
							C,E,IIB	1.82	320.0
							D,F,G,IIA	4.96	640.0
1 and 2	Any one channel	5,3; 10,12; 22,20; 27,29	14.7	10.0	-	-	A,B,IIC	0.62	150.0
							C,E,IIB	1.82	600.0
							D,F,G,IIA	4.96	1200
1 and 2	Any one channel	5,3,6,4; 10,12,9,11; 22,20,21,23; 27,29,26,28	14.7	10.0	-	-	A,B,IIC	0.62	150.0
							C,E,IIB	1.82	600.0
							D,F,G,IIA	4.96	1200
1 and 2	Any one channel	0,2,3; 1,2,3; 14,12,13; 15,12,13	26.5	82.0	-	-	A,B,IIC	0.095	2.0
							C,E,IIB	0.285	8.0
							D,F,G,IIA	0.76	16.0

### WIRING METHODS:

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC.

## Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

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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  $V_{oc}$  and  $I_{sc}$  or  $V_t$  and  $I_t$  of the associated apparatus are less than or equal to  $V_{max}$  and  $I_{max}$  of the intrinsically safe apparatus and the approved values of  $C_a$  and  $L_a$  of the associated apparatus are greater than  $C_i+C_{cable}$  and  $L_i+L_{cable}$  respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-FI(CTI)-Ex2, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 19,30,36,38,39,47,48,49 must not be connected.
- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ⑦ The ambient operating temperature ( $T_{amb}$ ) for this system is  $-20^{\circ}C$  to  $70^{\circ}C$ .
- ⑧ Suitable for CL. II, DIV. 1, GFS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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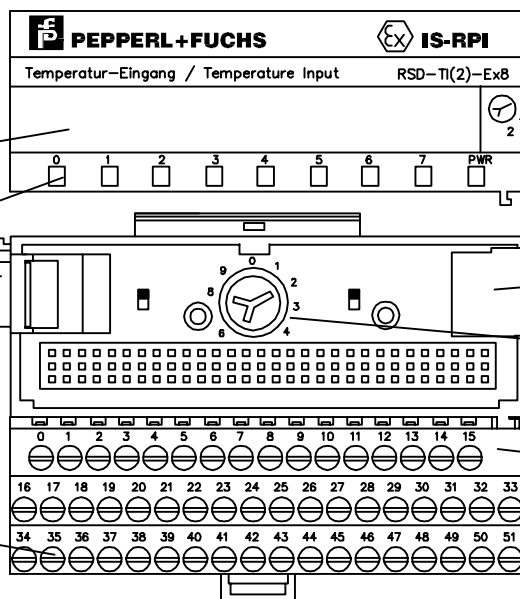
**PEPPERL+FUCHS**  
**RSD-TI-Ex8**  
**RSD-TI2-Ex8**

IS-RPI Temperature Input I/O module

LED's

Female bus connection

Field wiring terminals



Key position for terminal base insertion

Male bus connection

Terminal base key

Terminal base

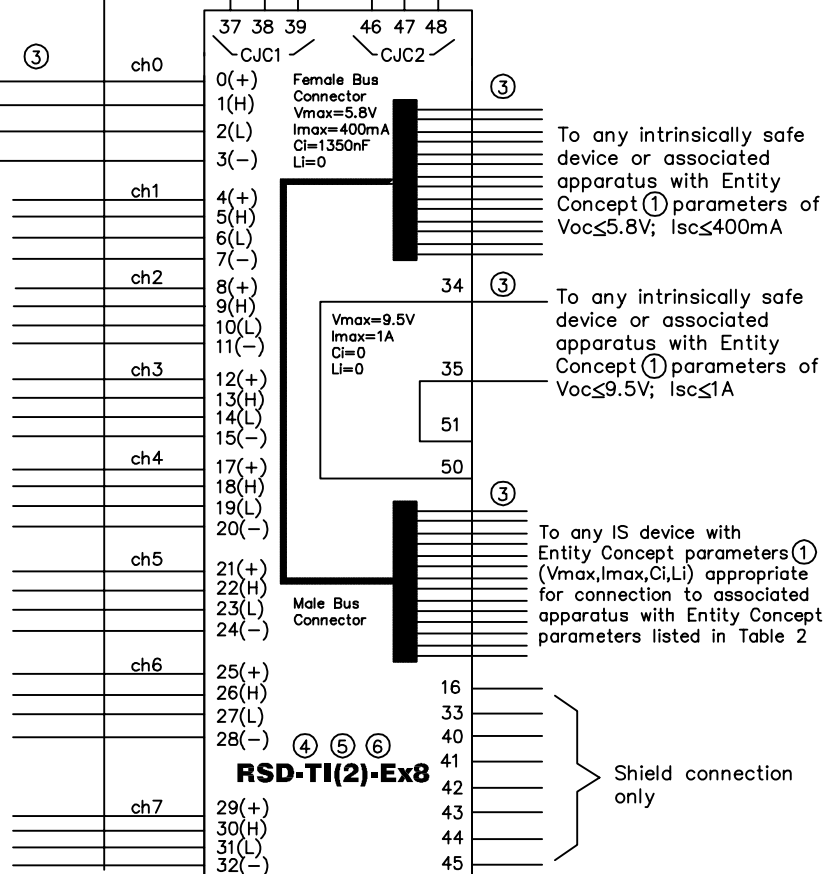
**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, Zones 0, Groups IIC,IIB,IIA  
 Class I, Div. 1, Groups A,B,C,D  
 Class II, Div. 1, Groups E,F,G  
 Class III, Div. 1

**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, Zone 1, Groups IIC,IIB,IIA ⑦  
 Class I, Div. 1, Groups A,B,C,D  
 ⑧ Class II, Div. 1, Groups E,F,G; Class III

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.



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Control drawing  
 IS-RPI SYSTEM  
 UL/cUL, PART L

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# ENTITY PARAMETERS for RSD-TI(2)-Ex8

## Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(H),2(L),3(-)	9.0	37	-	-	A,B,IIC	4.9	20.0
							C,E,IIB	14.7	80.0
							D,F,G,IIA	39.2	160.0
		37,38,39 (CJC1) or 46,47,48 (CJC2)	9.0	1	-	-	A,B,IIC	4.9	1000
							C,E,IIB	14.7	1000
							D,F,G,IIA	39.2	1000
		0(+),1(H),2(L),3(-), 37,38,39 (CJC1) or 46,47,48 (CJC2)	-	-	9.0	38	A,B,IIC	4.9	20.0
							C,E,IIB	14.7	80.0
							D,F,G,IIA	39.2	160.0

### WIRING METHODS:

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC.

## Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

### 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 and Isc or Vt and It of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Ccable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.

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IS-RPI SYSTEM  
UL/cUL, PART L

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- ④ This module, RSD-TI-Ex8, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, the I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 36,49 must not be connected.
- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ⑦ The ambient operating temperature (Tamb) for the system is -20 C to 70 C.
- ⑧ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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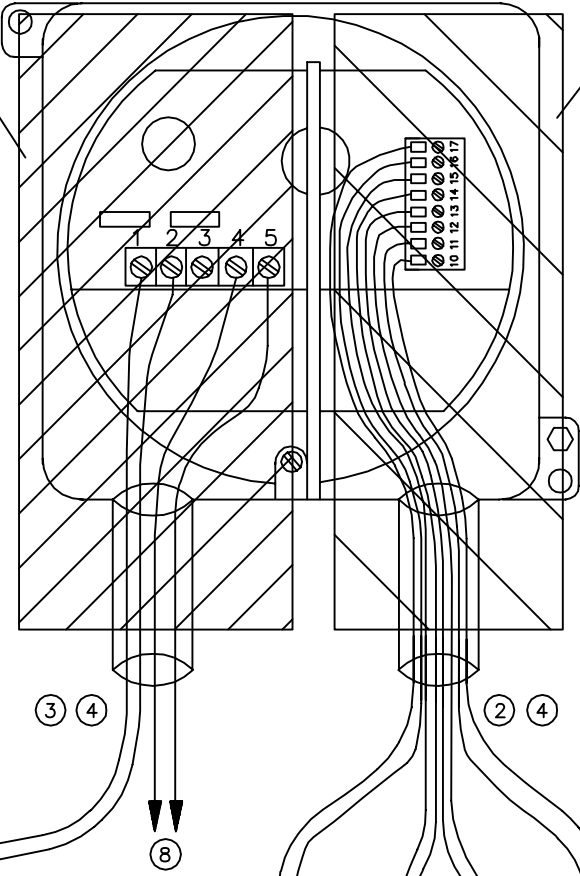
**PEPPERL+FUCHS**  
**RSD2-PSD2-Ex4.34.CON,**  
**RSA6-PSD-Ex4.34.CON**

HAZARDOUS (Classified)  
 LOCATION  
 Class I, Div. 1, Groups A,B,C,D  
 Class II, Div. 1, Groups E,F,G  
 Class III

NONHAZARDOUS  
 LOCATION

POWER  
 SUPPLY

Non Intrinsic Safety Wiring ⑤      ⑤ Intrinsic Safety Wiring



HAZARDOUS (Classified)  
 LOCATION  
 Class I, Div. 1, Groups A,B,C,D  
 Class II, Div. 1, Groups E,F,G  
 Class III, Div. 1

Any I.S. device with Entity Concept parameters ① ( $V_{max}, I_{max}, C_i, L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

Any I.S. device with Entity Concept parameters ① ( $V_{max}, I_{max}, C_i, L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

Any I.S. device with Entity Concept parameters ① ( $V_{max}, I_{max}, C_i, L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

Any I.S. device with Entity Concept parameters ① ( $V_{max}, I_{max}, C_i, L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

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<b>PEPPERL+FUCHS</b> Twinsburg	Control drawing IS-RPI SYSTEM UL/cUL, PART L	116-0171H
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# Table 1: Entity Parameters

Model	Wiring Method	Channel	Terminals	Voc(V)	Isc(A)	Groups	Ca(uF)	La(uH)
RSD2-PSD2-EX4.34.CON RSA6-PSD-EX4.34.CON	1 and 2	Any one channel i.e. ch1	11(+),10(-)	9.5	1.0	A,B	0.5	8
						C,E	1.5	32
						D,F,G	4.0	64

**WIRING METHODS:**

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC or CEC.

**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 and Isc of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Ccable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 501 or the Canadian Electrical Code CSA C22.1, Part 1, Section 18.
- ④ For Div. 1 mounting of the power supply, conduit runs must have sealing fittings connected within 6 inches of enclosure.
- ⑤ The wiring contained within the nonintrinsically safe wiring compartment and the intrinsically safe wiring compartment shall be separated from each other. Care must be taken to guarantee the separation of nonintrinsically safe and intrinsically safe wiring. The partitions within the power supply provide the necessary isolation for the electronics and the wiring, however, extreme care must be taken to guarantee wires are contained within their appropriate compartment and cannot contact any of the electronics.
- ⑥ **WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.**  
**AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.**
- ⑦ The ambient operating temperature (Tamb) for this system is -20°C to 70°C.
- ⑧ Redundant power supply connection for model RSD-PSD2-Ex4.34.CON.  
Feed through power connection for model RSA6-PSD-Ex4.34.CON.
- ⑨ **WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.**  
**AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.**

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Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

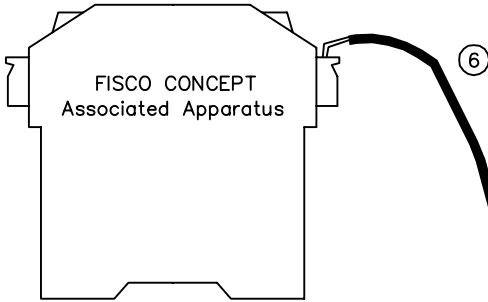
116-0171H

Twinsburg

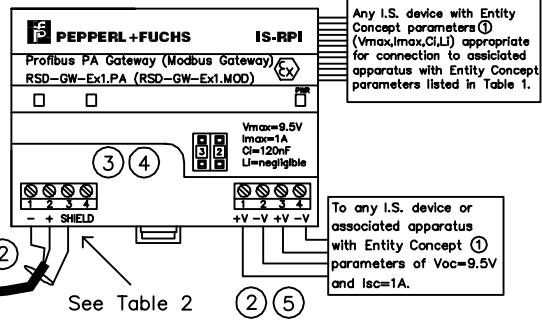
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NONHAZARDOUS LOCATION



HAZARDOUS (Classified)  
LOCATION  
Class I; Zones 1; Groups IIC,IIB,IIA  
Class I, Division 1; Groups A,B,C,D  
⑦ Class II; Division 1; Groups E,F,G  
Class III



ENTITY PARAMETERS for RSD-GW-Ex1.PA & RSD-GW-Ex1.MOD  
Table 1

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing * (See Note Below)	5.8	400	A-G IIC,IIB,IIA	3.0	3.0

\* - A maximum of eight I/O modules suitable for the application are allowed to be attached in series to the male connector.

FISCO PARAMETERS for RSD-GW-Ex1.PA & RSD-GW-Ex1.MOD  
Table 2

Terminals	Vmax (V)	Imax (mA)	Ci (pF)	Li (mH)	Pmax (W)
-,+	15	208	120	-	1.93

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IS-RPI SYSTEM  
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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  $V_t$  and  $I_t$  of the associated apparatus are less than or equal to  $V_{max}$  and  $I_{max}$  of the intrinsically safe apparatus and the approved values of  $C_a$  and  $L_a$  of the associated apparatus are greater than  $C_i + C_{cable}$  and  $L_i + L_{cable}$  respectively for the intrinsically safe apparatus.
- ② Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ③ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ④ The ambient operating temperature ( $T_{amb}$ ) for this system is  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .
- ⑤  $+V/+V$  and  $-V/-V$  are redundant connections.
- ⑥ 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 ( $U_i$  or  $V_{max}$ ), ( $I_i$  or  $I_{max}$ ) and ( $P_i$  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 5nF and 10uH 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 for a leakage current of 50uA 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 connect the devices needs to have the parameters in the following range:

Loop resistance $R'$ :	15 ... 150 ohms/km
Inductance per unit length $L'$ :	0.4 ... 1mH/km
Capacitance per unit length $C'$ :	80 ... 200nF/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:	< 1m (T-box must only contain terminal connections with no energy storage capability)
Length of spur cable:	< 30m
Length of trunk cable:	< 1km


At each end of the trunk cable an approved infallible termination with the following parameters is suitable:  
 $R = 90 \dots 100$  ohms and  $C = 0 \dots 2.2$  uF

The number of passive devices connected to the bus segment is not limited in the FISCO concept for I.S. reasons. If the above rules are respected, up to a total length of 1000m (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.

- ⑦ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑧ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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	Control drawing	116-0171H
	IS-RPI SYSTEM	
Twinsburg	UL/cUL, PART L	sheet 24 of 32



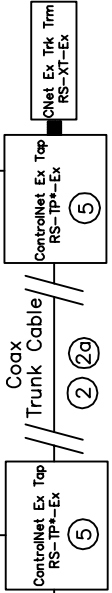
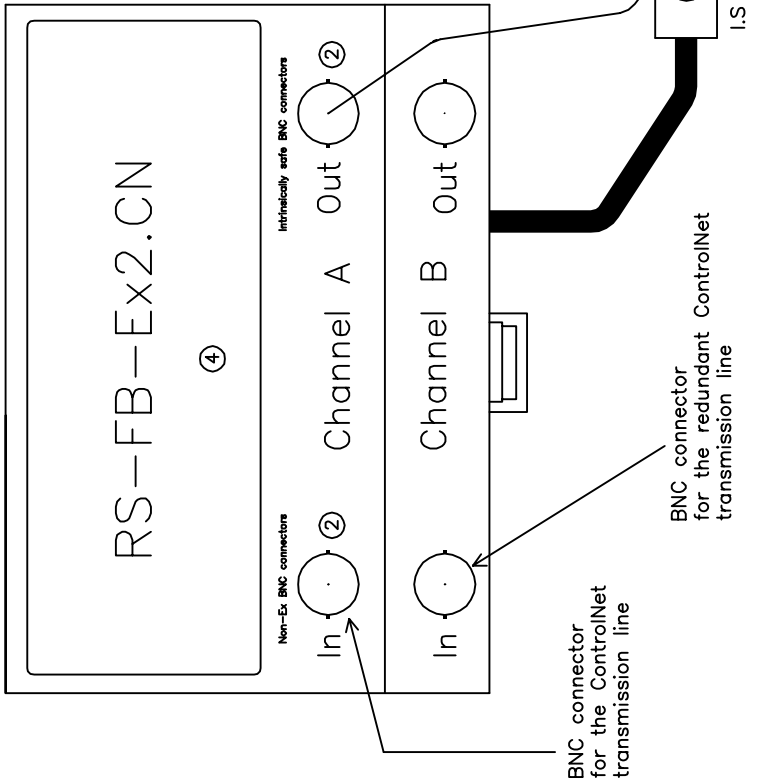
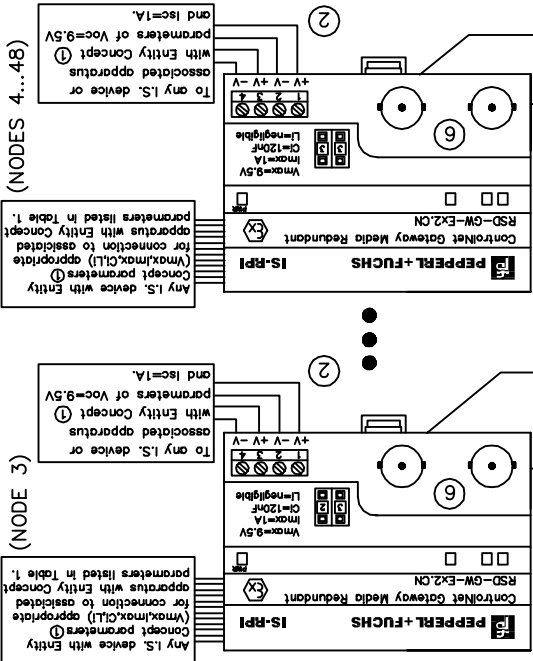
NON-HAZARDOUS LOCATION

HAZARDOUS (Classified) LOCATION

Class I, Zone 1, Groups IIC, IIB, IIA  
 Class I, Div.1, Groups A-D  
 Class II, Div.1, Groups E, F, G; Class III

(NODE 3)

(NODES 4...48)



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 UL/cUL, PART L

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# ENTITY PARAMETERS for RSD-GW-Ex2.CN

## Table 1

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing * (See Note Below)	5.8	400	A-G IIC, IIB, IIA	3.0	3.0

\* - A maximum of eight I/O modules suitable for the application are allowed to be attached in series to the male connector. One bus extender (RS-CE1,RS-CE3,RS-CE1S or RS-CE3S) is allowed to be connected between any two modules within the system.

### 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 Vt and It of the associated apparatus are less than or equal to Vmax and Imax of the intrinsically safe apparatus and the approved values of Ca and La of the associated apparatus are greater than Ci+Cable and Li+Lcable respectively for the intrinsically safe apparatus.
- ② Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ②a The coax truck cable is permitted to have a maximum length of 1000m (3280ft) with 2 ControlNet Ex Taps. If 48 ControlNet Ex Taps are employed, the maximum total cable length is 250m (820ft). The following formula applies:  
  

$$\text{Maximum Allowable Coax Truck Cable} = 1000\text{m (3280ft)} - \{16.3\text{m (53.4ft)} * [\text{number of ControlNet Ex Taps} - 2]\}$$

The following types of Coax Truck Cable are allowed: Belden Wire Type 1189A, 3092A or 3092A Blue. In addition to these cable types, the following specification can be followed to allow additional types:

Cable Impedance = 75ohm +/- 3ohm	Cable Attenuation (-20°C to +70°C)	0.5MHz ≥ 0.95dB/100m	10MHz ≥ 1.86dB/100m
Cable Capacitance ≤5.94nF per 100m		0.2MHz ≥ 0.93dB/100m	5MHz ≥ 1.39dB/100m
Cable Resistance ≥9.08ohm per 100m		1MHz ≥ 1.07dB/100m	20MHz ≥ 2.73dB/100m
		2MHz ≥ 1.16dB/100m	50MHz ≥ 4.33dB/100m
- ③ **WARNING** - Explosion Hazard - Substitution of Components may impair intrinsic safety.  
**AVERTISSEMENT** - RISQUE D'EXPLOSION - La substitution de composant peut compromettre la sécurité intrinsèque.
- ④ Alternate Model Number : Allen-Bradley 1797-BCNR
- ⑤ Alternate Model Number : Allen-Bradley 1797-TP\*
- ⑥ Alternate Model Number : Allen-Bradley 1797-ACNR15
- ⑦ The ambient operating temperature (Tamb) for this system is -20° C to 70° C.
- ⑧ Channel 2 is intended for a redundant connection and is identical to the Channel 1 configuration.
- ⑨ For CL. II, DIV. 1, GPS E,F,G and CL. III, modules must be installed in a UL Listed Type 4,4X,6,6P,9,12 or 12K enclosure.
- ⑩ **WARNING:** To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
**AVERTISSEMENT** - Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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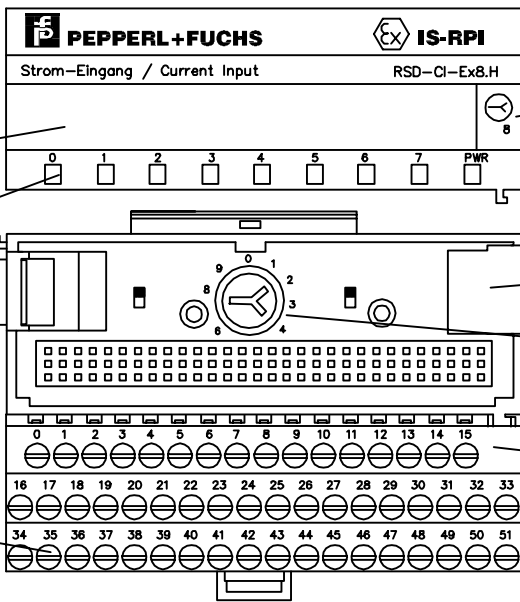
Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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**PEPPERL+FUCHS**  
**RSD-CI-Ex8.H**



IS-RPI Current Input I/O module

LED's

Female bus connection

Field wiring terminals

Key position for terminal base insertion

Male bus connection

Terminal base key

Terminal base

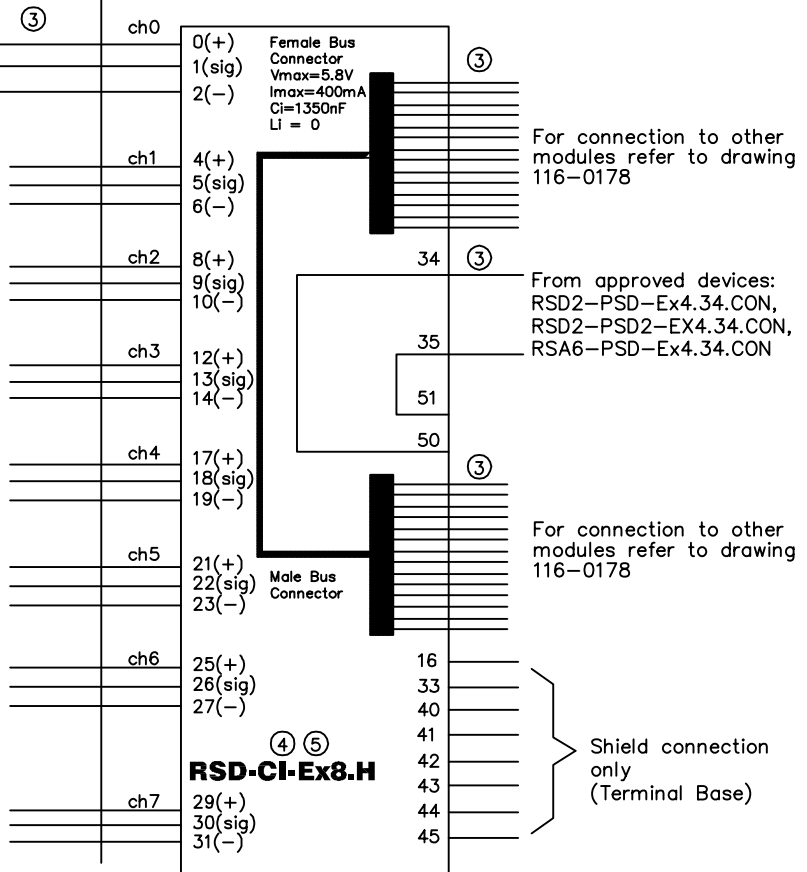
**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, Zones 0, Groups IIC,IIB,IIA  
Class I, Division 1, Groups A,B,C,D  
Class II, Division 1, Groups E,F,G  
Class III, Division 1

**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, Zone 1, Group IIC  
Class I, Division 1, Groups A,B,C,D

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.



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Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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# ENTITY PARAMETERS for RSD-CI-Ex8.H

Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vmax(V)	I <sub>max</sub> (mA)	Groups	Ca(μF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(sig), 2(-)	24.4	92.5	-	-	A,B	0.12	4.0
							C,E	0.35	12.0
							D,F,G	0.95	32.0
		1(sig), 2(-)	24.4	92.5	28	110	A,B	0.12	4.0
							C,E	0.35	12.0
							D,F,G	0.95	32.0

**WIRING METHODS:**

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC.

Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(μF)	La(μH)
Male connector on side of housing	5.8	400	A-G	3.0	3.0

Table 3

Terminals	Vmax	I <sub>max</sub>	C <sub>i</sub> (μF)	L <sub>i</sub> (μH)
Female bus connector	5.8	400	1.35	0

The values of L<sub>o</sub> and C<sub>o</sub> listed in the table above are allowed if one of the following conditions is met:

- the total L<sub>i</sub> of the external circuit (excluding the cable) is < 1% of the L<sub>o</sub> value and
- the total C<sub>i</sub> of the external circuit (excluding the cable) is < 1% of the C<sub>o</sub> value.

The values of L<sub>o</sub> and C<sub>o</sub> listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total L<sub>i</sub> of the external circuit (excluding the cable) is ≥ 1% of the L<sub>o</sub> value and
- the total C<sub>i</sub> of the external circuit (excluding the cable) is ≥ 1% of the C<sub>o</sub> value.

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

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IS-RPI SYSTEM  
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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  $V_{oc}$  and  $I_{sc}$  or  $V_t$  and  $I_t$  of the associated apparatus are less than or equal to  $V_{max}$  and  $I_{max}$  of the intrinsically safe apparatus and the approved values of  $C_a$  and  $L_a$  of the associated apparatus are greater than  $C_i+C_{cable}$  and  $L_i+L_{cable}$  respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-CI(2)-Ex8, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 3,7,11,15,20,24,28,32,36-39,46-49 must not be connected.
- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ⑦ The ambient operating temperature ( $T_{amb}$ ) for this system is  $-20^{\circ}C$  to  $70^{\circ}C$ .
- ⑧ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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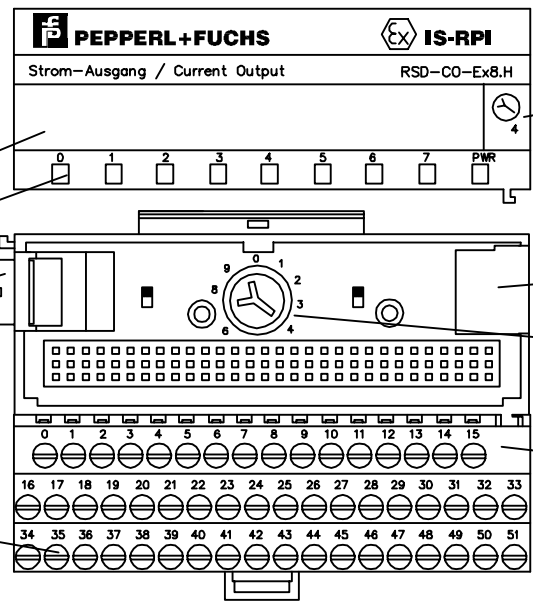
Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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**PEPPERL+FUCHS**  
**RSD-CO-Ex8.H**  
**RSD-BO-Ex8.H**  
**RSD-UO-Ex8.H**



IS-RPI Universal Output I/O module

LED's

Female bus connection

Field wiring terminals

Key position for terminal base insertion

Male bus connection

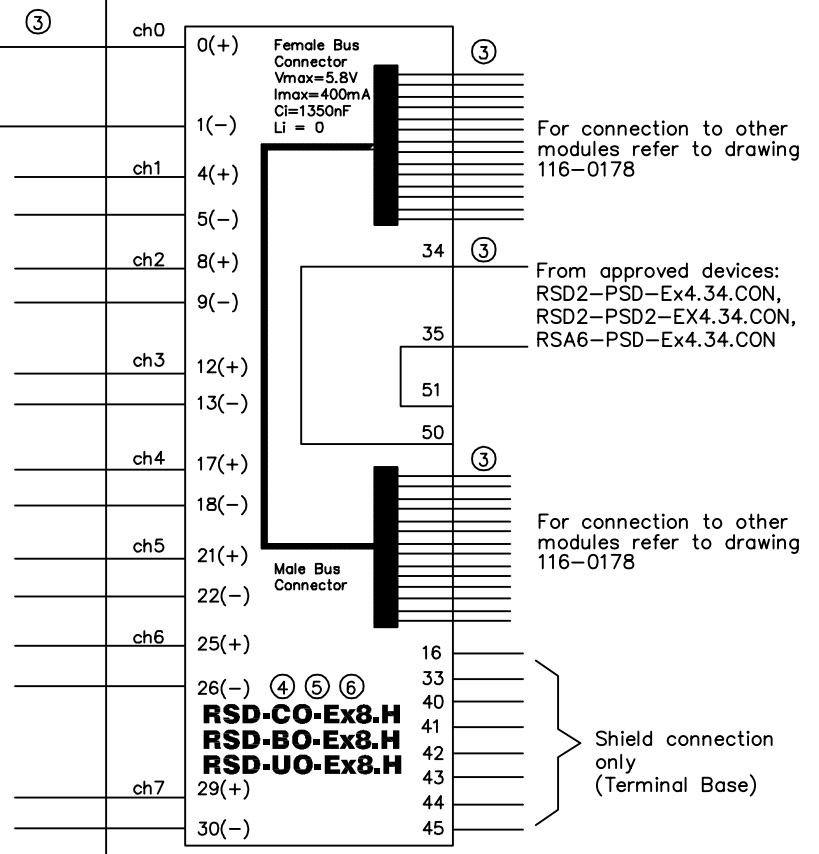
Terminal base key

Terminal base

HAZARDOUS (CLASSIFIED) LOCATION  
 Class I, Zone 0, Groups IIC, IIB, IIA  
 Class I, Division 1, Groups A, B, C, D  
 Class II, Division 1, Groups E, F, G  
 Class III, Division 1

HAZARDOUS (CLASSIFIED) LOCATION  
 Class I, Zone 1, Group IIC  
 Class I, Division 1, Groups A, B, C, D

Any Simple Apparatus ② or I.S. device with Entity Concept parameters ① ( $V_{max}$ ,  $I_{max}$ ,  $C_i$ ,  $L_i$ ) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.



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## ENTITY PARAMETERS for RSD-\*O-Ex8.H

Table 1

Wiring Method	Channel	Terminals	Voc(V)	Isc(mA)	Vt(V)	It(mA)	Groups	Ca(uF)	La(mH)
1 and 2	Any one channel i.e. ch0	0(+),1(-)	21.6	92	-	-	A,B	0.164	3.5
							C,E	0.49	10.5
							D,F,G	1.31	28.0

**WIRING METHODS:**

Wiring Method 1: Each channel is wired separately

Wiring Method 2: Multiple channels in one cable, providing each channel is separated in accordance with the NEC.

Table 2

Terminals	Vt(V)	It(mA)	Groups	Ca(uF)	La(uH)
Male connector on side of housing	5.8	400	A-G	3.0	3.0

Table 3

Terminals	Vmax (V)	Imax (mA)	Ci(uF)	Li(uH)
Female bus connector	5.8	400	1.35	0

The values of  $L_o$  and  $C_o$  listed in the table above are allowed if one of the following conditions is met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  listed in the table above shall be reduced to 50% when both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and IIA and 600nF for IIC.

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Control drawing  
IS-RPI SYSTEM  
UL/cUL, PART L

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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  $V_{oc}$  and  $I_{sc}$  or  $V_t$  and  $I_t$  of the associated apparatus are less than or equal to  $V_{max}$  and  $I_{max}$  of the intrinsically safe apparatus and the approved values of  $C_a$  and  $L_a$  of the associated apparatus are greater than  $C_i+C_{cable}$  and  $L_i+L_{cable}$  respectively for the intrinsically safe apparatus.
- ② Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20uJ or 25mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 or 505 or the Canadian Electrical Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.
- ④ This module, RSD-\*O-Ex8, must be used with terminal base RS-TB-Ex.SC or RS-TB-Ex.SP. Note, I/O module may or may not be installed on the terminal base.
- ⑤ Terminals 2,3,6,7,10,11,14,15,19,20,23,24,27,28,31,32,36-39,46-49 shall not be connected.
- ⑥ WARNING – Explosion Hazard – Substitution of Components may impair intrinsic safety.  
AVERTISSEMENT – RISQUE D'EXPLOSION – La substitution de composant peut compromettre la sécurité intrinsèque.
- ⑦ The ambient operating temperature ( $T_{amb}$ ) for this system is  $-20^{\circ}C$  to  $70^{\circ}C$ .
- ⑧ Suitable for CL. II, DIV. 1, GPS E,F,G and CL. III when mounted in a UL Listed TYPE 4, 4X, 6, 6P, 9, 12 or 12K enclosure.
- ⑨ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.  
AVERTISSEMENT – Pour éviter l'allumage des atmosphères inflammables ou combustibles, coupez le courant avant l'entretien.

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 **PEPPERL+FUCHS**

Control drawing  
IS-RPI SYSTEM

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