HAZARDOUS (Classified) LOCATION

Class I, Zones 0,1,2; Groups IIC,IIlB,IIIA
Class II, III; Div.1,2; Groups A-G

HAZARDOUS (Classified) LOCATION

Class I, Zones 0,1,2; Groups IIC,IIlB,IIIA
Class II, III; Div.1,2; Groups A-G

Fiber Optic Cable

(Node 2)

(Node 1)
### ENTITY PARAMETERS for RSD–GW–Ex2.CN

#### Table 1

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>C0(uF)</th>
<th>L0(uH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing * (See Note Below)</td>
<td>5.8</td>
<td>400</td>
<td>A–G</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* – 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 C0 and L0 of the associated apparatus are greater than CH+Cable and LH+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. The coax truck cable is permitted to have a maximum length of 1000m (3280ft) with 2 ContralNet Ex Taps. If 48 ContralNet Ex Taps are employed, the maximum total cable length is 250m (820ft). The following formula applies:

   Maximum Allowable Coax Truck Cable = 1000m (3280ft) – [16.3m (53.4ft) * [number of ContralNet 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 Capacitance ≤5.94nF per 100m
   - Cable Resistance ≥9.08ohm per 100m
   - Cable Attenuation ≤<br>0.5MHz ≥ 0.95dB/100m $\leq$ 0.2MHz $\leq$ 0.93dB/100m $\leq$ 1kHz $\leq$ 1.07dB/100m $\leq$ 2MHz $\leq$ 1.16dB/100m $\leq$ 5MHz $\leq$ 1.39dB/100m $\leq$ 10MHz $\leq$ 1.86dB/100m $\leq$ 20MHz $\leq$ 2.73dB/100m $\leq$ 50MHz $\leq$ 4.33dB/100m

4. If fiber optic cable is provided with a metal shield, 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 inflamables ou combustibles, coupez le courant avant l’entretien.

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<thead>
<tr>
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<th>date: 2014-FEB-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control drawing</td>
<td>IS-RPI SYSTEM</td>
<td>116-0171H</td>
</tr>
<tr>
<td>Twinsburg</td>
<td>UL/cUL, PART L</td>
<td>sheet 2 of 32</td>
</tr>
</tbody>
</table>
HAZARDOUS (CLASSIFIED) LOCATION
Class I, Zones 0, Groups IIC,IIIA
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,IIIB,IIIA
Class I, Div. 1, Groups A,B,C,D
Class II, Div. 1, Groups E,F,G; Class III

Any Simple Apparatus or I.S. device with Entity Concept parameters (Vmax, Imax,CU) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

To any intrinsically safe device or associated apparatus with Entity Concept parameters of Vocs<5.8V; Iscc<400mA

To any intrinsically safe device or associated apparatus with Entity Concept parameters of Vocs<9.5V; Iscc<1A

To any IS device with Entity Concept parameters (Vmax,Imax,CU) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 2.

Shield connection only

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Twinsburg

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sheet 3 of 32
ENTITY PARAMETERS for RSD-BI-Ex16

Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(mA)</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Cc(uF)</th>
<th>Lo(mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel i.e. ch0</td>
<td>0(+),1(−)</td>
<td>14.5</td>
<td>15</td>
<td>−</td>
<td>−</td>
<td>A,B,IIC</td>
<td>0.30</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIB</td>
<td>0.9</td>
<td>320.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIA</td>
<td>2.4</td>
<td>640.0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Cc(uF)</th>
<th>Lo(uH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing</td>
<td>5.8</td>
<td>400</td>
<td>A-G IIC,IIB,IIA</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The values of L₀ and C₀ listed in the table above are allowed if one of the following conditions is met:
- the total L₁ of the external circuit (excluding the cable) is < 1% of the L₀ value and
- the total C₁ of the external circuit (excluding the cable) is < 1% of the C₀ value.

The values of L₀ and C₀ listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total L₁ of the external circuit (excluding the cable) is ≥ 1% of the L₀ value and
- the total C₁ of the external circuit (excluding the cable) is ≥ 1% of the C₀ 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.

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, 20µJ 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.
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 — Le 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, GPS 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.
ENTITY PARAMETERS for RSD–BO–Ex4

Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(mA)</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Co(uF)</th>
<th>Lo(µH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel i.e. ch0</td>
<td>0(+),1(–)</td>
<td>27.4</td>
<td></td>
<td>110.0</td>
<td></td>
<td></td>
<td>A,B,IIIC</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIIB</td>
<td>0.090</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIIA</td>
<td>0.24</td>
</tr>
</tbody>
</table>

WRITING 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

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Co(uF)</th>
<th>Lo(µH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing</td>
<td>5.8</td>
<td>400</td>
<td>A–G</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The values of \( L_e \) and \( C_e \) listed in the table above are allowed if one of the following conditions is met:
- the total \( L_2 \) of the external circuit (excluding the cable) is < 1% of the \( L_e \) value and
- the total \( C_1 \) of the external circuit (excluding the cable) is < 1% of the \( C_e \) value.

The values of \( L_e \) and \( C_e \) listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total \( L_2 \) of the external circuit (excluding the cable) is > 1% of the \( L_e \) value and
- the total \( C_1 \) of the external circuit (excluding the cable) is > 1% of the \( C_e \) value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIIB and IIIA 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 \( V_{max} \) 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 \( C_{L}+C_{cable} \) and \( L_{cable} \) 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, 20µJ 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.
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.
### ENTITY PARAMETERS for RSD–Cl(2)–Ex8

#### Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(mA)</th>
<th>VI(V)</th>
<th>II(mA)</th>
<th>Groups</th>
<th>C0(uF)</th>
<th>L0(mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel i.e. ch0</td>
<td>0(+),1(sig)</td>
<td>23.7</td>
<td>92.5</td>
<td>-</td>
<td>-</td>
<td>A,B,IIC</td>
<td>0.06</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIB</td>
<td>0.18</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIA</td>
<td>0.48</td>
<td>16.0</td>
</tr>
<tr>
<td></td>
<td>1(sig),2(‐)</td>
<td>5</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>A,B,IIC</td>
<td>100</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIB</td>
<td>300</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIA</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>0(+),1(sig),2(‐)</td>
<td>-</td>
<td>-</td>
<td>23.7</td>
<td>93.5</td>
<td>-</td>
<td>A,B,IIC</td>
<td>0.06</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIB</td>
<td>0.18</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIA</td>
<td>0.48</td>
<td>16.0</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Terminals</th>
<th>VI(V)</th>
<th>II(mA)</th>
<th>Groups</th>
<th>C0(uF)</th>
<th>L0(uH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing</td>
<td>5.8</td>
<td>400</td>
<td>A–G IIC,IIB,IIA</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The values of $L_0$ and $C_0$ listed in the table above are allowed if one of the following conditions is met:
- the total $L_1$ of the external circuit (excluding the cable) is < 1% of the $L_0$ value and
- the total $C_1$ of the external circuit (excluding the cable) is < 1% of the $C_0$ value.

The values of $L_0$ and $C_0$ listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total $L_1$ of the external circuit (excluding the cable) is ≥ 1% of the $L_0$ value and
- the total $C_1$ of the external circuit (excluding the cable) is ≥ 1% of the $C_0$ 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 Co and Lo 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, 20μJ 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 RP12.8.

4. This module, RSD-Cl(2)-ExB, 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.

   AVERTISSEMENT – RISQUE D’EXPLOSION – La substitution de componant 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.
HAZARDOUS (CLASSIFIED) LOCATION
Class I, Zones 0, Groups IIIC,IIIB,IIA
Class I, Div. 1, Groups A,B,C,D
Class II, Div. 1, Groups E,F,G
Class III, Div. 1

Any Simple Apparatus(3) or I.S. device with Entity Concept parameters(1)(Vmax, Imax,C(LL)) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 1.

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

To any intrinsically safe device or associated apparatus with Entity Concept parameters(1) parameters of Voc(5.8V; Iisc≤400mA

To any intrinsically safe device or associated apparatus with Entity Concept parameters(1) parameters of Voc≤5.3V; Iisc≤1A

To any I.S device with Entity Concept parameters(1) (Vmax,Imax,C(LL)) appropriate for connection to associated apparatus with Entity Concept parameters listed in Table 2

Shield connection only

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Control drawing
IS-RPI SYSTEM
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date: 2014-FEB-20

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## ENTITY PARAMETERS for RSD—*O—Ex8

### Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>$V_{oc}$(V)</th>
<th>$I_{sc}$(mA)</th>
<th>$V_{f}$(V)</th>
<th>$I_l$(mA)</th>
<th>Groups</th>
<th>$C_a$(μF)</th>
<th>$L_a$(mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel i.e. ch0</td>
<td>0(+),1(−)</td>
<td>21.0</td>
<td>100.0</td>
<td>−</td>
<td>−</td>
<td>A,B,IIC</td>
<td>0.08</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIB</td>
<td>0.24</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIA</td>
<td>0.64</td>
<td>16.0</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Terminals</th>
<th>$V_{f}$(V)</th>
<th>$I_l$(mA)</th>
<th>Groups</th>
<th>$C_a$(μF)</th>
<th>$L_a$(μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing</td>
<td>5.8</td>
<td>400</td>
<td>A−G</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The values of $L_a$ and $C_a$ listed in the table above are allowed if one of the following conditions is met:
- the total $L_1$ of the external circuit (excluding the cable) is $< 1$% of the $L_a$ value and
- the total $C_1$ of the external circuit (excluding the cable) is $< 1$% of the $C_a$ value.

The values of $L_a$ and $C_a$ listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total $L_1$ of the external circuit (excluding the cable) is $\geq 1$% of the $L_a$ value and
- the total $C_1$ of the external circuit (excluding the cable) is $\geq 1$% of the $C_a$ value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1μF for IIB and IIA and 600μF 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 $V_{oc}$ and $I_{sc}$ or $V_f$ and $I_l$ 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 $C_{a,cable}$ and $L_{a,cable}$ 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, 20μJ 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.
WARNING — Explosion Hazard — Substitution of Components may impair intrinsic safety.

AVERTISSEMENT — RISQUE D'EXPLOSION — La substitution de composant peut compromettre la sécurité intrinsèque.

The ambient operating temperature (Tamb) for this system is −20°C to 70°C.

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.

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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date: 2014-FEB-20

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

116-0171H

Twinsburg

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**Table 1**

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(mA)</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Co(uF)</th>
<th>Lo(mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel</td>
<td>6.7; 9.8; 23,24; 26.25</td>
<td>14.7</td>
<td>15.0</td>
<td></td>
<td></td>
<td>A,B,IIIC</td>
<td>0.62</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>C,E,IIIB</td>
<td>1.82</td>
<td>320.0</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>D,F,G,IIIA</td>
<td>4.96</td>
<td>640.0</td>
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<tr>
<td>1 and 2</td>
<td>Any one channel</td>
<td>5.3; 10,12; 22,20; 27,29</td>
<td>14.7</td>
<td>10.0</td>
<td></td>
<td></td>
<td>A,B,IIIC</td>
<td>0.62</td>
<td>150.0</td>
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<tr>
<td></td>
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<td></td>
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<td>C,E,IIIB</td>
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<td>600.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIIA</td>
<td>4.96</td>
<td>1200.0</td>
</tr>
<tr>
<td>1 and 2</td>
<td>Any one channel</td>
<td>5.3,6.4; 10,12,9,11; 22,20,21,23; 27,29,26,28</td>
<td>14.7</td>
<td>10.0</td>
<td></td>
<td></td>
<td>A,B,IIIC</td>
<td>0.62</td>
<td>150.0</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>C,E,IIIB</td>
<td>1.82</td>
<td>600.0</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIIA</td>
<td>4.96</td>
<td>1200.0</td>
</tr>
<tr>
<td>1 and 2</td>
<td>Any one channel</td>
<td>0.2,3; 1,2,3; 14,12,13; 15,12,13</td>
<td>26.5</td>
<td>82.0</td>
<td></td>
<td></td>
<td>A,B,IIIC</td>
<td>0.095</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E,IIIB</td>
<td>0.285</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G,IIIA</td>
<td>0.76</td>
<td>16.0</td>
</tr>
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</table>

**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**

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Co(uF)</th>
<th>Lo(µH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector</td>
<td>5.8</td>
<td>400</td>
<td>A-G IIC,IIIB,IIIA</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>on side of housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The values of $L_e$ and $C_e$ listed in the table above are allowed if one of the following conditions is met:
- the total $L_1$ of the external circuit (excluding the cable) is < 1% of the $L_e$ value and
- the total $C_1$ of the external circuit (excluding the cable) is < 1% of the $C_e$ value.

The values of $L_e$ and $C_e$ listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total $L_1$ of the external circuit (excluding the cable) is ≥ 1% of the $L_e$ value and
- the total $C_1$ of the external circuit (excluding the cable) is ≥ 1% of the $C_e$ value.

Note: The reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIIB 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 Ii 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 Ea of the associated apparatus are greater than Ci+C cable and Li+C 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(CT1)-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 (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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<td>IS-RPI SYSTEM</td>
<td>116-0171H</td>
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<tr>
<td>UL/cUL, PART L</td>
<td></td>
<td>sheet 17 of 32</td>
</tr>
</tbody>
</table>

Twinsburg
### Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(mA)</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Cα(μF)</th>
<th>Lα(μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel i.e. ch0</td>
<td>0(+),1(H),2(L),3(−)</td>
<td>9.0</td>
<td>37</td>
<td>−</td>
<td>−</td>
<td>A,B,IIC</td>
<td>4.9</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37,38,39 (CJC1) or 46,47,48 (CJC2)</td>
<td>9.0</td>
<td>1</td>
<td>−</td>
<td>−</td>
<td>C,E,IIB</td>
<td>14.7</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0(+),1(H),2(L),3(−), 37,38,39 (CJC1) or 46,47,48 (CJC2)</td>
<td>−</td>
<td>−</td>
<td>9.0</td>
<td>38</td>
<td>D,F,G,IIA</td>
<td>39.2</td>
<td>160.0</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Terminals on side of housing</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Cα(μF)</th>
<th>Lα(μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector</td>
<td>5.8</td>
<td>400</td>
<td>A–G IIC,IIB,IIA</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The values of Lα and Cα listed in the table above are allowed if one of the following conditions is met:
- the total Lα of the external circuit (excluding the cable) is < 1% of the Lα value and
- the total Cα of the external circuit (excluding the cable) is < 1% of the Cα value.

The values of Lα and Cα listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total Lα of the external circuit (excluding the cable) is ≥ 1% of the Lα value and
- the total Cα of the external circuit (excluding the cable) is ≥ 1% of the Cα 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.

**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 Vo and Lo 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, 20μJ 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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<td>IS–RPI SYSTEM</td>
<td></td>
<td>116–0171H</td>
</tr>
<tr>
<td>UL/cUL, PART L</td>
<td></td>
<td>sheet 19 of 32</td>
</tr>
</tbody>
</table>
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.**
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

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

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Control drawing
Date: 2016-FEB-20
116-0171H
Sheet 21 of 32
### Table 1: Entity Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(A)</th>
<th>Groups</th>
<th>Ca(μF)</th>
<th>La(μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSD2–PSD2–EX4.34.CON</td>
<td>1 and 2</td>
<td>Any one channel i.e. ch1</td>
<td>11(+),10(-)</td>
<td>9.5</td>
<td>1.0</td>
<td>A,B</td>
<td>0.5</td>
<td>8</td>
</tr>
<tr>
<td>RSA6–PSD–EX4.34.CON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E</td>
<td>1.5</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G</td>
<td>4.0</td>
<td>64</td>
</tr>
</tbody>
</table>

**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+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 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.

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.
ENTITTY PARAMETERS for RSD–GW–Ex1.PA & RSD–GW–Ex1.MOD

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Csa(uF)</th>
<th>La(uH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing * (See Note Below)</td>
<td>5.8</td>
<td>400</td>
<td>A–G IIC,IIIB,IIA</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* 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>
<thead>
<tr>
<th>Terminals</th>
<th>Vmax (V)</th>
<th>Imax (mA)</th>
<th>Ci (pf)</th>
<th>Li (mH)</th>
<th>Pmax (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–,+</td>
<td>15</td>
<td>208</td>
<td>120</td>
<td>–</td>
<td>1.93</td>
</tr>
</tbody>
</table>

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Control drawing IS-RPI SYSTEM

UL/cUL, PART L

date: 2014-FEB-20

116-0171H

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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 VI and II 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.

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 (Tamb) for this system is -20°C to 70°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 or Vmax), (Ii or Imax) and (Pi or Pmax) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U0 or Voc or VI), the current (I0 or Isc or II) and the power (Po or Pmax) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition the maximum unprotected capacitance (Ci) and inductance (Li) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5nF and 10μH respectively.

7. In each segment only one active device, normally the associated apparatus, is allowed to provide the necessary energy for the fieldbus system. The voltage (U0 or Voc or VI) 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 50μA 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 line + line + 0.5 line/screen, if both lines are floating or

C = C line + line + C 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 in特别是 terminal with the following parameters is suitable:

R = 90 ... 100 ohms and C = 0 ... 2.2 μF

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.
## ENTITY PARAMETERS for RSD-GW-Ex2.CN

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt (V)</th>
<th>I(t) (mA)</th>
<th>Groups</th>
<th>Ca (μF)</th>
<th>La (μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side of housing * (See Note Below)</td>
<td>5.8</td>
<td>400</td>
<td>A−C IIC,II B,II A</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* - 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 I 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+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. 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:

\[
\text{Maximum Allowable Coax Truck Cable} = 1000m \times \left(\frac{1}{3280ft}\right) - \left(\frac{16.3m \times (53.4ft)}{[\text{number of ControlNet Ex Taps} - 2]}\right)
\]

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

4. **WARNING — Explosion Hazard — Substitution of Components may impair intrinsic safety.**

4. **AVERTISSEMENT — RISQUE D'EXPLOSION — La substitution de composant peut compromettre la sécurité intrinsèque.**

5. **Alternate Model Number: Allen–Bradley 1797–BCNR**

6. **Alternate Model Number: Allen–Bradley 1797–TP**

7. **Alternate Model Number: Allen–Bradley 1797–ACNR15**

8. **The ambient operating temperature (Tamb) for this system is −20°C to 70°C.**

9. **Channel 2 is intended for a redundant connection and is identical to the Channel 1 configuration.**

10. **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.**

11. **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.**
ENTITY PARAMETERS for RSD–Cl–Ex8.H

Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Vac(V)</th>
<th>Isc(mA)</th>
<th>Vmax(V)</th>
<th>Imax(mA)</th>
<th>Groups</th>
<th>Ca(μF)</th>
<th>La(mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel i.e. ch0</td>
<td>0(+), 1(sig), 2(−)</td>
<td>24.4</td>
<td>92.5</td>
<td>−</td>
<td>−</td>
<td>A, B</td>
<td>0.12</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C, E</td>
<td>0.35</td>
<td>12.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D, F, G</td>
<td>0.95</td>
<td>32.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1(sig), 2(−)</td>
<td>24.4</td>
<td>92.5</td>
<td>28</td>
<td>110</td>
<td>A, B</td>
<td>0.12</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C, E</td>
<td>0.35</td>
<td>12.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D, F, G</td>
<td>0.95</td>
<td>32.0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Terminals on side of housing</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Ca(μF)</th>
<th>La(μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector</td>
<td>5.8</td>
<td>400</td>
<td>A–G</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Table 3

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vmax</th>
<th>Imax</th>
<th>C(μF)</th>
<th>L(μH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female bus connector</td>
<td>5.8</td>
<td>400</td>
<td>1.35</td>
<td>0</td>
</tr>
</tbody>
</table>

The values of Lₐ and Cₐ listed in the table above are allowed if one of the following conditions is met:
- the total L₁ of the external circuit (excluding the cable) is < 1% of the Lₐ value and
- the total C₁ of the external circuit (excluding the cable) is < 1% of the Cₐ value.

The values of Lₐ and Cₐ listed in the table above shall be reduced to 50% when both of the following conditions are met:
- the total L₁ of the external circuit (excluding the cable) is ≥ 1% of the Lₐ value and
- the total C₁ of the external circuit (excluding the cable) is ≥ 1% of the Cₐ 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.
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+Cable 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-Cl(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.

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

#### Table 1

<table>
<thead>
<tr>
<th>Wiring Method</th>
<th>Channel</th>
<th>Terminals</th>
<th>Voc(V)</th>
<th>Isc(mA)</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Cc(uF)</th>
<th>La(mH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Any one channel</td>
<td>0(+) ,1(−)</td>
<td>21.6</td>
<td>92</td>
<td>−</td>
<td>−</td>
<td>A,B</td>
<td>0.164</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>i.e. ch0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C,E</td>
<td>0.49</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D,F,G</td>
<td>1.31</td>
<td>28.0</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vt(V)</th>
<th>It(mA)</th>
<th>Groups</th>
<th>Cc(uF)</th>
<th>La(uH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector on side</td>
<td>5.8</td>
<td>400</td>
<td>A−G</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>of housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Table 3

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Vmax (V)</th>
<th>Imax (mA)</th>
<th>Cc(uF)</th>
<th>Li(uH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female bus</td>
<td>5.8</td>
<td>400</td>
<td>1.35</td>
<td>0</td>
</tr>
<tr>
<td>connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 $L_1$ of the external circuit (excluding the cable) is < 1% of the $L_o$ value and
- the total $C_1$ 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 $L_1$ of the external circuit (excluding the cable) is ≥ 1% of the $L_o$ value and
- the total $C_1$ of the external circuit (excluding the cable) is ≥ 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.
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 Lo of the associated apparatus are greater than C1+Cable and LI+Cable respectively for the intrinsically safe apparatus.

Simple Apparatus is defined as a device which neither generates nor stores more than 1.2V, 0.1A, 20μJ or 25mW.

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.

This module, RSD—*O—Ex8, must be used with terminal base RS—TB—Ex.SP or RS—TB—Ex.SP. Note, I/O module may or may not be installed on the terminal base.

Terminals 2,3,6,7,10,14,15,19,20,23,24,27,28,31,32,36—39,46—49 shall not be connected.

WARNING — Explosion Hazard — Substitution of Components may impair intrinsic safety.
AVERTISSEMENT — RISQUE D'EXPLOSION — La substitution de composant peut compromettre la sécurité intrinsèque.

The ambient operating temperature (Tamb) for this system is −20°C to 70°C.

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.

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.