Installsions of IDEC Intrinsically Safe System

Type EB3C-N Relay Barrier

AIS / I/II,III, / 1 / A,B,C,D,E,F,G / Ta = 60°C
[1/0] / AEx [a]/ IIC / Ta = 60°C

When installing an IDEC Relay Barrier, make sure it conforms to the following drawings and descriptions as well as all applicable requirements.

The Relay Barrier must have “EB3C-N” in the part number.

The Relay Barrier must be located in a safe area (unclassified location).

Intrinsically safe apparatuses such as switches approved or considered to be “simple apparatuses” may be located in a hazardous (classified) area.

**Warning** !  Substitution of components may impair intrinsic safety

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### Wiring Example

**Channel separate wiring (any one channel)**

**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, II and III, Division I, Groups A, B, C, D, E, F and G

Class I, Zones 0 and 1, Groups IIC, IIB and IIA

**HAZARDOUS (CLASSIFIED) LOCATION**

Class I, II and III, Division I, Groups A, B, C, D, E, F and G

Class I, Zones 0 and 1, Groups IIC, IIB and IIA

**Notes**

1. Use intrinsically safe equipment that is FM Approved or simple apparatus (a device which will neither generate nor store more than 1.5V, 0.1A, 25mW such as switches, thermocouples, LED’s and RTD’s).
2. Install the EB3C-N relay barrier in compliance with the enclosure, mounting, spacing, and segregation requirements of the ultimate application.
3. Make sure that the control equipment connected to the EB3C-N relay barrier does not use or generate more than 250 Vrms or Vdc (Um = 250V).
4. Install the EB3C-N relay barrier in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and National Electrical Code (ANSI/NFPA 70).
5. Make sure that all bolts, nuts, screws, and other means of fastening, including the unused wiring screws, are fastened in place, properly tightened and secured. Mount the EB3C-N on a 35mm track or directly on a panel surface using screws.
6. Make the layout and wiring so as to prevent the electromagnetic or electrostatic inductions to the intrinsically safe circuit. For example, separate the intrinsically safe circuit from the non-intrinsically safe circuit by a minimum space of 50 mm or using a full height metal separator.

If color-coding is required for the intrinsic safe components and terminals, use only cables and terminals with light blue markings.

* No revision to this drawing without prior FM approval.

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### Table of Ratings and Parameters of I.S

<table>
<thead>
<tr>
<th>Li(mA)</th>
<th>14.2</th>
<th>28.4</th>
<th>42.6</th>
<th>56.8</th>
<th>71.0</th>
<th>85.2</th>
<th>99.4</th>
<th>113.6</th>
<th>127.8</th>
<th>142.0</th>
<th>156.2</th>
<th>170.4</th>
<th>184.6</th>
<th>198.8</th>
<th>213.0</th>
<th>227.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Po(mW)</td>
<td>46.9</td>
<td>93.8</td>
<td>140.6</td>
<td>187.5</td>
<td>234.3</td>
<td>281.2</td>
<td>328.1</td>
<td>375.9</td>
<td>421.8</td>
<td>467.8</td>
<td>515.5</td>
<td>562.4</td>
<td>609.2</td>
<td>656.1</td>
<td>702.9</td>
<td>750</td>
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<tr>
<td>Co(μF)</td>
<td>0.67</td>
<td>0.65</td>
<td>0.63</td>
<td>0.61</td>
<td>0.59</td>
<td>0.57</td>
<td>0.55</td>
<td>0.53</td>
<td>0.51</td>
<td>0.49</td>
<td>0.47</td>
<td>0.44</td>
<td>0.42</td>
<td>0.39</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Io(mA)</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.93</td>
<td>0.92</td>
<td>0.91</td>
<td>0.90</td>
<td>0.88</td>
<td>0.87</td>
<td>0.86</td>
<td>0.85</td>
<td>0.84</td>
</tr>
<tr>
<td>Ta=60°C</td>
<td>Um=250V, Uo=13.2V, Io=14.2mA, Po=46.9mW</td>
<td></td>
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</tbody>
</table>

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### Table of Note 2 The intrinsically safe apparatus and wirings shall be accordance to the following formulas; for examples,

<table>
<thead>
<tr>
<th>Uo</th>
<th>Ui</th>
<th>Po</th>
<th>Pi</th>
</tr>
</thead>
<tbody>
<tr>
<td>24Vdc</td>
<td>227.2</td>
<td>187.5</td>
<td>142.0</td>
</tr>
<tr>
<td>100~240Vac</td>
<td>227.2</td>
<td>187.5</td>
<td>142.0</td>
</tr>
</tbody>
</table>

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### Table of Note 1 Added to above table, the next values combined Lo and Co are allowable;  

<table>
<thead>
<tr>
<th>Lo(mH)</th>
<th>175×</th>
<th>87.5</th>
<th>30.0</th>
<th>2.5</th>
<th>0.55</th>
<th>0.25</th>
<th>45.5</th>
<th>21.5</th>
<th>20.0</th>
<th>3.5</th>
<th>0.43</th>
<th>0.25</th>
<th>68.8</th>
<th>34.0</th>
<th>68.6</th>
<th>0.6</th>
<th>0.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co(μF)</td>
<td>0.94×</td>
<td>0.47</td>
<td>0.33</td>
<td>0.54</td>
<td>0.77</td>
<td>0.90</td>
<td>0.94×</td>
<td>0.47</td>
<td>0.30</td>
<td>0.48</td>
<td>0.80</td>
<td>0.90</td>
<td>0.94×</td>
<td>0.47</td>
<td>0.45</td>
<td>0.49</td>
<td>0.80</td>
</tr>
</tbody>
</table>

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* Therefore, the values are allowable only at Li<1%Lo and Ci<1%Co of the intrinsic safe apparatus.