

# Bristol® IStran

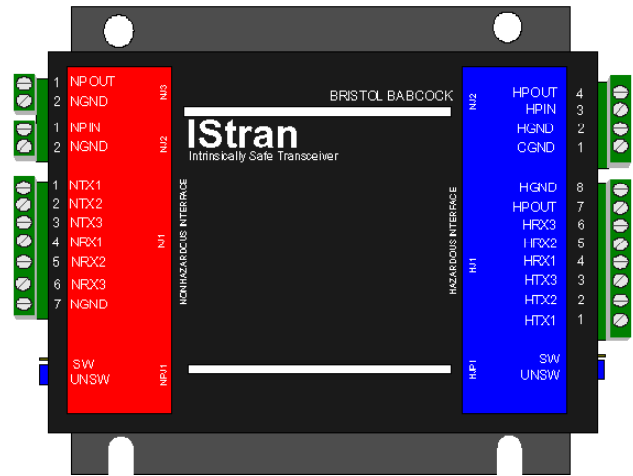
The *Intrinsically Safe transceiver*, from Emerson Process Management, is the answer to your Class I, Div1 Certification needs *and then some*.

## General

The following describes a typical application: You have a Class I, Div 1 area that requires communication for data acquisition and/or control. The communication medium (radio, modem, etc..) and power supply are not certified for hazardous areas. Emerson's Bristol® IStran device becomes your means of transmitting data and power in and out of the hazardous area safely within accordance to industry standards. (See page 4)

The previous function, however, is not the only application that IStran can handle. The IStran box can also serve as a radio/modem/power sharing device. In this application, up to 4 devices can talk through one radio or modem. Power can also be shared to the 4 devices from one supply. (See page 5)

Finally, even if intrinsic safety is not required, IStran serves as an isolation barrier between devices. The IStran box provides up to 500V isolation from hazardous to non-hazardous area. It also has the capability of providing ground isolation.



## Overview

A low profile package, IStran board set utilizes surface mount architecture to allow 6 channels of barriers in one device (3 In , 3 Out). The following list reviews the features available using IStran:

- Provides communication and/or power to a Class I, Div 1 Area
- Designed to meet UL entity approval standard 913
- Allows for radio/modem sharing (up to 4 devices)
- Switched (High Impedance for low power conditions) or Unswitched capability
- Provides 500V isolation between devices
- Provides ground isolation between devices
- Can replace 6 separate barriers with one unit
- Operates at speeds up to 19,200 bps

**Specifications**

(for Hazardous and NonHazardous electronics)

- Data Rate:  
19.2 Kbps max at 500 ft.
- Propagation Delay:  
10m S
- Output Enable Delay:  
TYP: <10 m S  
MAX: 50 m S
- RX Input High Level:  
MIN: 4-5 Vdc  
MAX: 16 Vdc
- RX Input Low Level:  
MIN : -16 Vdc  
MAX: 0.5 Vdc
- RX Input Load Resistance:  
TYP: 3.01 Kohm
- TX Output Load Resistance:  
MIN: 3 Kohm
- Quiescent Supply Current:  
MAX: 800 m A
- Idle Supply Current:  
TYP: 21 mA
- Active Supply Current:  
MAX: 43 mA

**NonHazardous Interface Characteristics**

- NPIN (NonHazardous Power Input)  
{NonHaz pwr output is **not** used}  
MIN: 5.4 Vdc  
MAX: 16 Vdc
- NPIN (NonHazardous Power Input)  
{NonHaz pwr output is used}  
MIN: 8 Vdc  
MAX: 16 Vdc
- NPIN Supply Current  
TYP: <500 m A @12 Vdc,77°F (25°C)
- {Switched mode, TX off}  
MAX: 750 mA
- NPIN Supply Current  
{3Kohm loads, all TX high}  
MAX: 37 mA
- NPOUT Leakage (NonHaz Pwr Output)  
TYP: <1 m A  
MAX: 100 m A
- NPIN to NPOUT On-Resistance  
(NPIN >= 12V)  
TYP: <0.3 Ohms  
MAX: 0.5 Ohms
- NRX3 to NPOUT On  
TYP: <10 m S
- NPOUT Load Current  
MIN: 1.8 A Continuous  
MAX: 3.0 A  
Intermittent (60S,50%duty)
- NTX Output High Level  
TYP: 7.4 Vdc (3Kohm load)  
MIN: 5 Vdc  
MAX: 9.5 Vdc
- NTX Output Low Level  
TYP: -4.9 Vdc (3Kohm load)  
MIN: -9.5 Vdc  
MAX: -3.0 Vdc

**Hazardous Interface Characteristics**

- NPOUT Voltage
  - TYP: 6.3 Vdc (No load)
  - MIN: 5.9 Vdc (Max load)
  - MAX: 6.4 Vdc (No load)
- HPOUT Operating Current
  - MAX: 120 mA
- HPOUT Current Limiting Threshold
  - MIN: 130 mA @ 8Vdc
  - MAX: 300 mA @ 16Vdc
- HPOUT Load Capacitance
  - MAX: 100 mF
- HPIN Quiescent Supply Current {Switched mode TX off}
  - MAX: 100 mA
- NPIN Supply Current {All TX high, 3Kohm load}
  - MAX: 6 mA
- HTX Output High Level
  - MIN: 4.5 Vdc
  - MAX: 5 Vdc
- NTX Output Low Level
  - MIN: 0 Vdc
  - MAX: 0.1 Vdc

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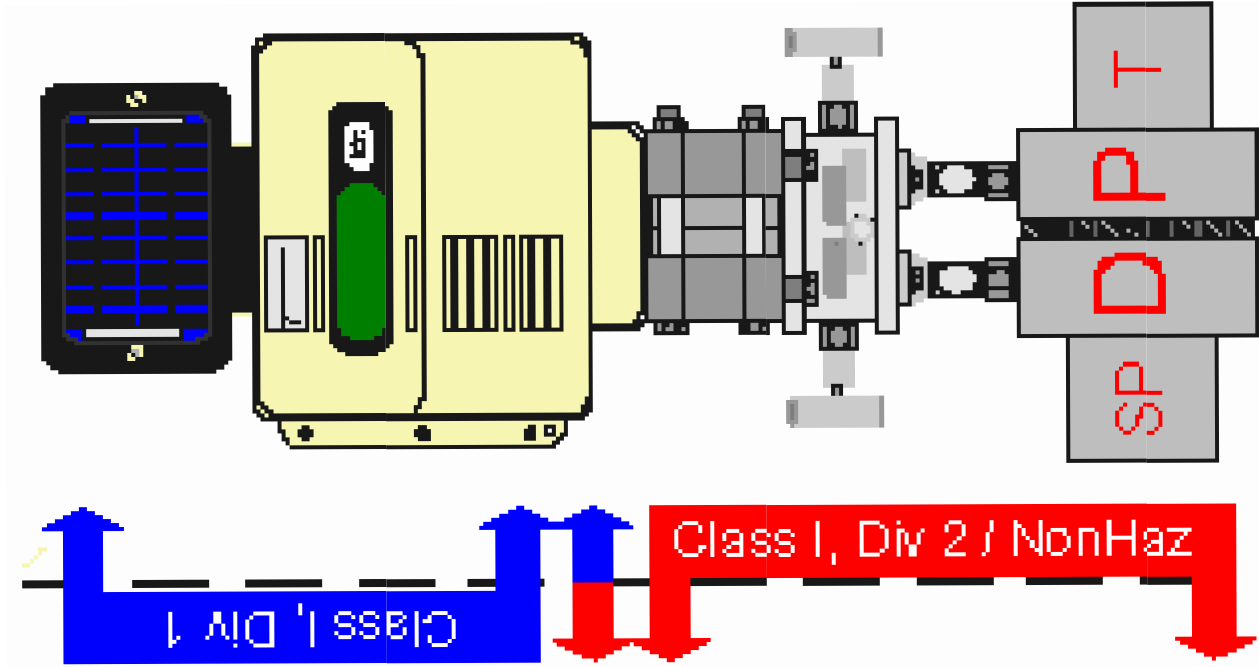
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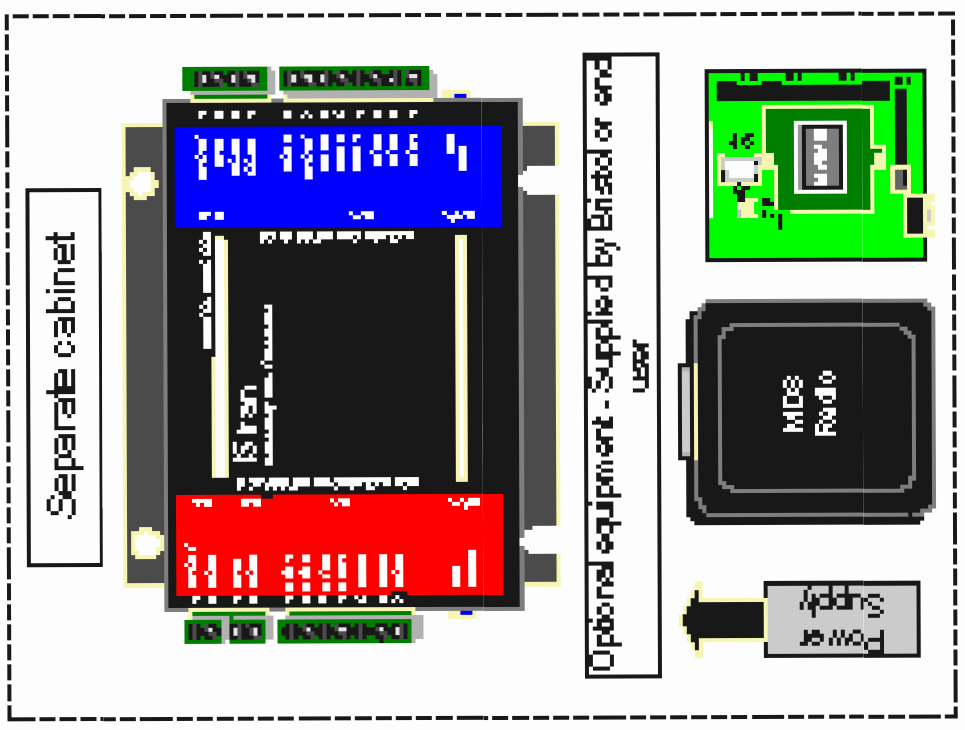
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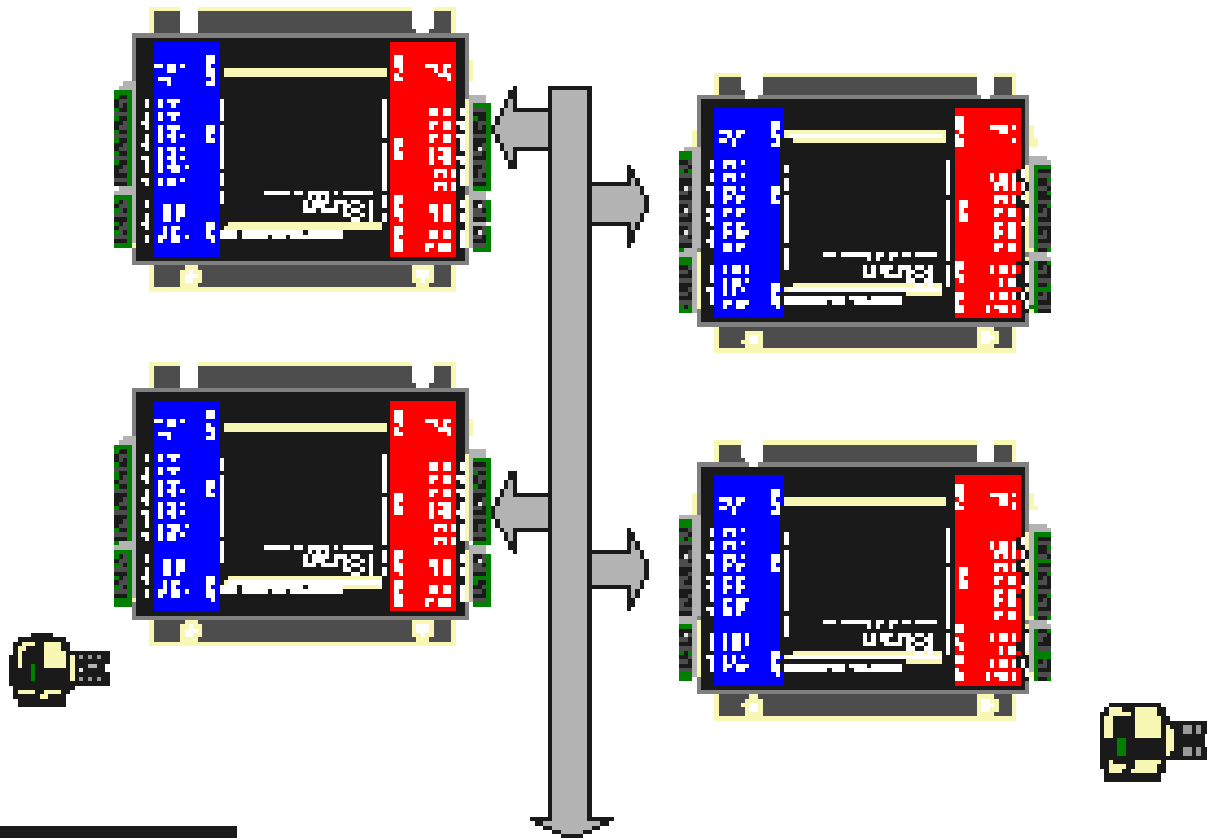
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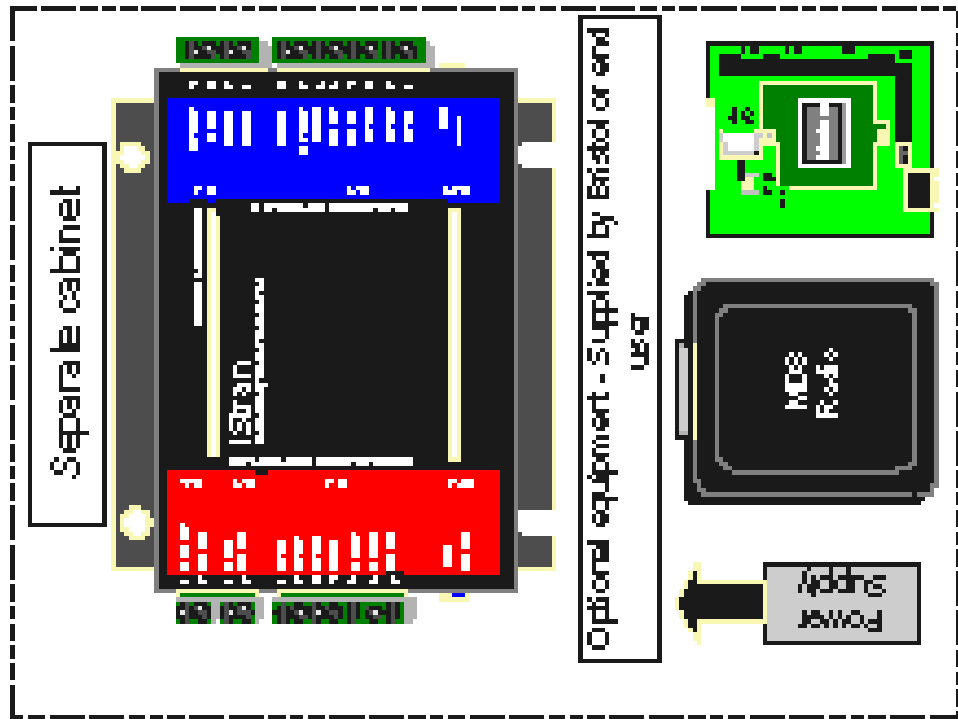


The IStran Class 1, Div 1 application





The IStran  
Communication sharing  
application



**Product Data Document**

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Bristol® IStran

