

## IRB INTRINSICALLY SAFE RELAY

### IECEX TSA 07.0023X Ex ia I

#### Product Description

Ampcontrol's IRB Intrinsically Safe Relay is designed to switch non-intrinsically safe circuits from an approved intrinsically safe system. It can also be used to switch between two intrinsically safe systems.

The IRB Intrinsically Safe Relay is DIN rail mounted with the enclosure being fully encapsulated.

1.1 kV Isolation is provided between the I.S. and Non-I.S. circuits by a reed relay.

A non-replaceable fuse and three gas tubes provide protection to the relay in the event of a fault occurring external to the relay such as trailing cable damage.

A schematic and terminal connections diagram is shown on page 2 and 3.

The IRB Relay is typically powered from a 12 VDC I.S. Power Supply.



#### Features

- DIN Rail or foot mount
- 1.1 kV Isolation
- Encapsulated components
- Designed and tested to AS/NZS 60079.11:2000

#### Applications

A typical application for the relay would be the isolation of power from a mining machine where gas monitoring systems currently supplied by Ampcontrol and other manufacturers have been installed.

When gas levels exceed a preset value the IRB Relay would open circuit the pilot in the supply cable from the substation or distribution box, which in turn would de-energise an Earth Continuity Relay, and the control circuit of the supply.

The IRB Relay is to be located within a safe area whilst the intrinsically safe gas monitoring system is normally located in the hazardous area. In this arrangement the safe area is usually the flameproof enclosure mounted on the machine.

The relay is designed to suit applications up to 1.1 kV systems; therefore, the relay is suitable for many and varied applications.

Depending on the application, non-ideal cable parameters may contribute significantly to the current peaks during switching.

Switching capacitive loads will have the most drastic impact on an IRB's functionality.

When switching capacitive loads the current spikes observed can exceed the switching capacity of the IRB. This can result in damage to the switching contacts. For any installations where this may be evident it is recommended that an Ampcontrol Pilot Resistance Module (PN: 300014) be installed at the IRB terminals in series with the pilot circuit. The additional resistance from the Pilot Resistance Module reduces current peaks from capacitive loads while maintaining functionality of the pilot line.

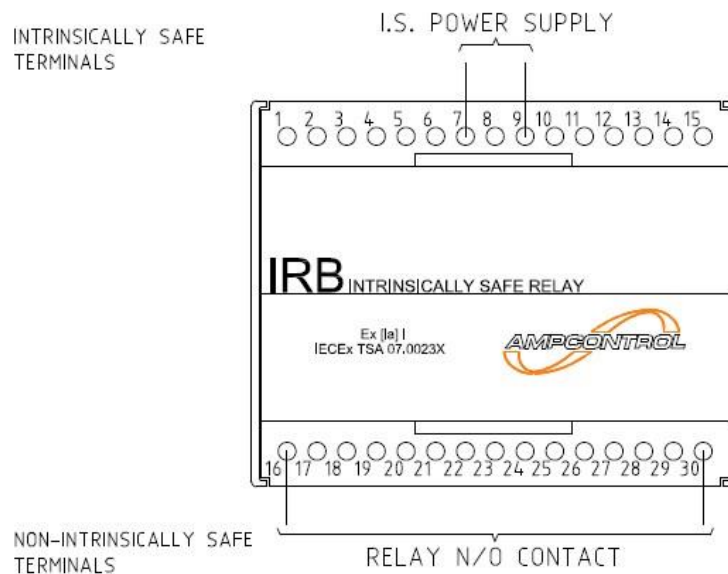
Typical distributed cable capacitance is unlikely to cause current spikes that exceed the switching limits of the IRB due to the balance from the distributed resistance. Installations with VSDs or with the potential for transient voltages or coupled noise are likely to be higher risk. For these applications it is highly recommended that the Ampcontrol pilot resistance module be installed to reduce the risk of relay contact damage.

Testing of the IRB functionality is recommended to be undertaken on a routine basis with verification of the contact opening operation. It should be noted that testing be performed at a time when transients can be avoided to reduce risk of damage to the relay contacts. If there is evidence that the contacts are failing, the IRB should be removed from service and returned for inspection.

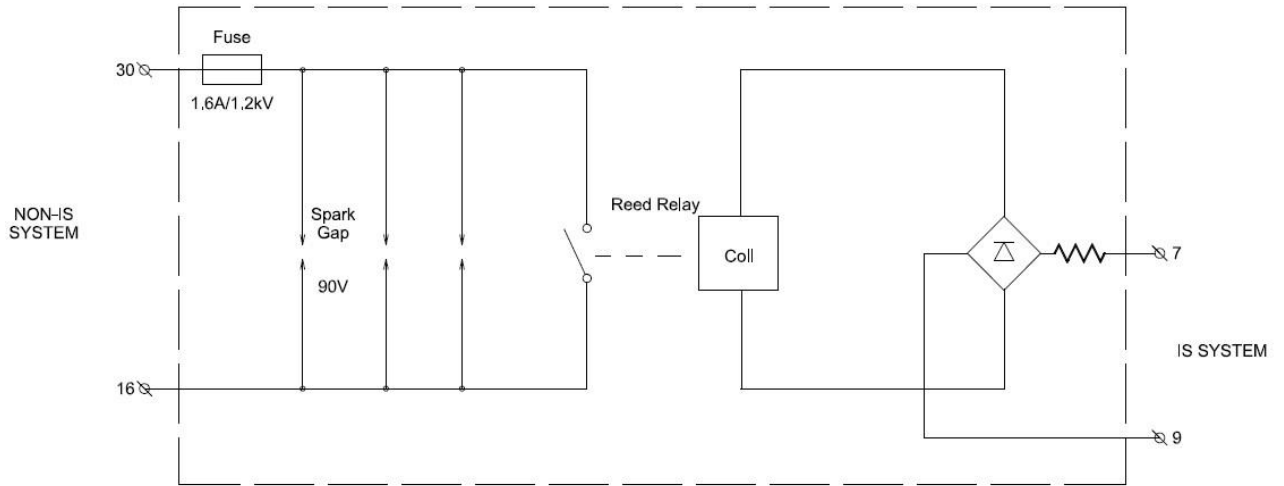
For installations where the pilot monitoring relay deploys intelligent termination modules (like the RTX used with IPE installations or the RTU-D3 when used with an IPD installation), failed IRB contacts can be detected through additional contact monitoring, identifying the failure mode and further reducing risk. This can be achieved through an additional contact (Ampcontrol’s ISRA) being switched into the RTX / RTU-D3. Control logic monitoring these inputs can identify a failed IRB by detecting a state change rather than pilot circuit disconnection.

SPECIFICATIONS	
<b>Supply Voltage</b>	
<i>Voltage</i>	16.5 VDC Maximum
<i>Operating Temperature</i>	0 °C to 60 °C
<b>Compliance</b>	
IECEX TSA 07.0023X Ex ia I	
<b>Relay</b>	
<i>Contacts</i>	1 x N/O
<i>Ratings</i>	0.5 A, 60 V Peak, 30 W Switching capacity
<i>Relay energises</i>	at > = 10 V @25 deg C
<i>Relay de-energises</i>	at < 3 V @25 deg C
<b>Mechanical</b>	
<b>IRB</b> <i>Dimensions (H x W x D)</i>	75 mm x 100 mm x 111 mm
<b>PRM</b> <i>Dimensions (H x W x D)</i>	58 mm x 17 mm x 89 mm (See diagram)
<b>Part Numbers</b>	<b>Description</b>
101573	RELAY IRB INTRINSICALLY SAFE 12VDC
300014	MODULE PILOT RESISTOR 3R4 DIN MOUNT

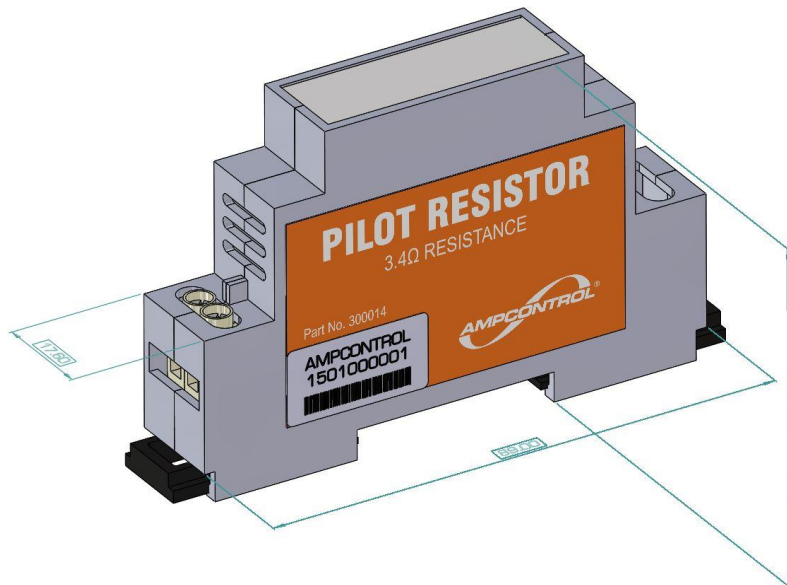
**IRB Connections Diagram**



**IRB Schematic Diagram**



**PRM Dimension Diagram**



**PRM Installation Diagram**

