



# Single Channel - Intrinsically Safe Controller

## Model # FSIS-35P-4 Installation Instructions

The Turck Isolating Switching Amplifier provides a safe means to read a safety edge's condition in a hazardous atmosphere (a NAMUR sensor, in an IP20 environment).

The input sensing circuit is limited to a maximum open-circuit voltage of 8.2 Volts, and a maximum short-circuit current of 8.2 milliamperes.

It may (optionally) operate in a fail-safe mode or a non-fail mode, depending upon the switch settings on the front panel.

Both output relays are activated and de-activated together. This permits switching two completely different circuits without any interaction between them.

### IMPORTANT:

**READ AND UNDERSTAND ALL INSTRUCTIONS BEFORE BEGINNING INSTALLATION.**

Fail-Safe operations REQUIRE the relay output type to be set to Normally Closed.

Wire Break monitoring requires the WB switch to be ON and the monitored safety edge circuit to be terminated in a resistance of 10K to 20K Ohms.

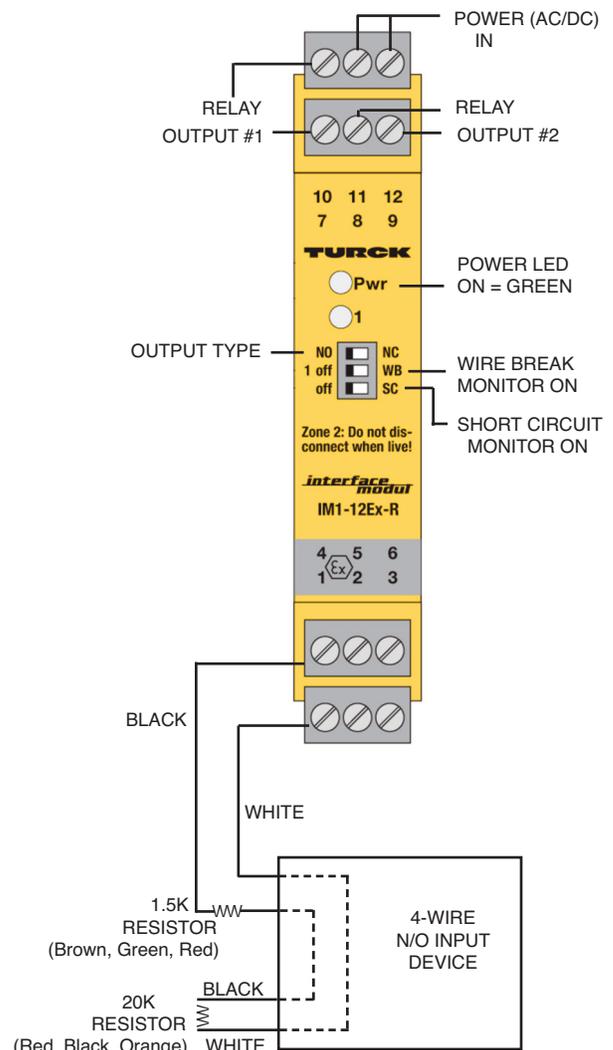
IF the wiring between the Intrinsically Safe controller is to be checked for short circuits, the 1.5K Ohm series resistor must be installed BEFORE the safety edge, AT the safety edge's location, AND the SC switch must be ON.

The relay outputs – under NO FAULT conditions – will be CLOSED (European style) and will be OPEN when ANY fault is encountered. This output CANNOT be Normally Open (terminated or not) and still be fail-safe.

A Power Failure will also cause the output relays to be open circuit.

Simple (Non-Fail-Safe) operations, with an input that is Intrinsically Safe, may have a Normally Open relay output.

The Output Type switch must be set to NO. In this mode, the Wire-Break sensing and the Short-Circuit sensing will ONLY turn on the RED light at indicator 1. These faults will have NO EFFECT on the output relays. A power failure will not make the output relays active, either.



## LED OPERATION STATUS / DIAGNOSTICS

### 1- Power ON in Intrinsically-Safe, FAIL-SAFE mode

ALL 3 switches are ON (NC, WB, SC) & Resistors installed

	<b>PWR LED</b>	<b>LED #1</b>	<b>RELAY OUTPUTS</b>
Power ON, No Faults	GREEN	YELLOW	CLOSED
Safety Edge Wiring Shorted	GREEN	RED	OPEN
Safety Edge Wiring Open	GREEN	RED	OPEN
Safety Edge Active	GREEN	OFF	OPEN
Power OFF	OFF	OFF	OPEN

### 2- Power ON in Intrinsically-Safe, FAIL-SAFE mode

Wire Break Detection is OFF (NC, WB=off, SC) & Resistors installed

	<b>PWR LED</b>	<b>LED #1</b>	<b>RELAY OUTPUTS</b>
Power ON, No Faults	GREEN	YELLOW	CLOSED
Safety Edge Wiring Shorted	GREEN	RED	OPEN
Safety Edge Wiring Open	GREEN	YELLOW	CLOSED
Safety Edge Active	GREEN	OFF	OPEN
Power OFF	OFF	OFF	OPEN

### 3- Power ON in Intrinsically-Safe, FAIL-SAFE mode

Wiring Short Circuit Detection is OFF (NC, WB, SC=off) & Resistors installed

	<b>PWR LED</b>	<b>LED #1</b>	<b>RELAY OUTPUTS</b>
Power ON, No Faults	GREEN	YELLOW	CLOSED
Safety Edge Wiring Shorted	GREEN	OFF	OPEN
Safety Edge Wiring Open	GREEN	RED	OPEN
Safety Edge Active	GREEN	OFF	OPEN
Power OFF	OFF	OFF	OPEN

### 4- Power ON in Intrinsically-Safe, NON-Fail-Safe mode

Simple operation; ALL 3 switches are OFF (NO, WB=off, SC=off) Without any resistors

	<b>PWR LED</b>	<b>LED #1</b>	<b>RELAY OUTPUTS</b>
Power ON, No Faults	GREEN	OFF	OPEN
Safety Edge Wiring Shorted	GREEN	YELLOW	CLOSED
Safety Edge Wiring Open	GREEN	OFF	OPEN
Safety Edge Active	GREEN	YELLOW	CLOSED
Power OFF	OFF	OFF	OPEN

### 5- Power ON in Intrinsically-Safe, NON-Fail-Safe mode

Wiring Break Detection is ON: Option switches are: (NO, WB=ON, SC=off) & Resistors installed

	<b>PWR LED</b>	<b>LED #1</b>	<b>RELAY OUTPUTS</b>
Power ON, No Faults	GREEN	OFF	OPEN
Safety Edge Wiring Shorted	GREEN	YELLOW	CLOSED
Safety Edge Wiring Open	GREEN	RED	OPEN
Safety Edge Active	GREEN	YELLOW	CLOSED
Power OFF	OFF	OFF	OPEN

### 6- Power ON in Intrinsically-Safe, NON-Fail-Safe mode

Wiring Short Circuit is ON; Option switches are: (NO, WB=off, SC=ON) & Resistors installed

	<b>PWR LED</b>	<b>LED #1</b>	<b>RELAY OUTPUTS</b>
Power ON, No Faults	GREEN	OFF	OPEN
Safety Edge Wiring Shorted	GREEN	RED	OPEN
Safety Edge Wiring Open	GREEN	OFF	OPEN
Safety Edge Active	GREEN	YELLOW	CLOSED
Power OFF	OFF	OFF	OPEN

