



Integrity Series INT-03 Monitor Relay Installation Sheet



Description

The INT-03-024 or INT-03-120 Safety Monitor Relay is intended for use as a part of a safety circuit in guard interlock applications. It is a safety relay which uses positive guided relays, configured for self-checking, to inhibit machine start-up in the event of an internal component failure.

Both normally-open and normally-closed inputs are required. Multiple NO contacts can be wired in series while multiple NC contacts can be wired in parallel. Upon failure of either the NO or NC contact, the relay will turn off and prevent restart. The INT-03 relay can also monitor contacts on external relays for controlling expansion block relays (Sentrol INT-05 and INT-06).

Notes

- Relay conforms to Pollution Degree II, meets EN1760-1:1998, and must be installed in an IP54-type enclosure.
- The wire insulation of connected devices must be rated for 250 VAC. The relay meets basic insulation requirements only.
- Input devices must meet requirements of EN60947-5-1.
- The relay must be connected to a primary disconnect device that meets the requirements of EN60947-3.
- System total response time must not exceed 200 ms.
- Controller meets IP20 and must be connected to safety category 4 mat or sensing device.
- Test system before operation and after machine maintenance. Controller does not require maintenance.
- The complete system should be tested weekly. If a fault occurs, contact Sentrol Industrial.

Installation

Guardswitch inputs: Wire the GuardSwitches in series and in parallel as shown in the wiring diagram. When first applying power to the GuardSwitch Monitor Relay, with no jumper or button from Terminal 1 to Terminal 2, the relay will not energize.

With a jumper installed from Terminal 1 to Terminal 2, the relay energizes when all guards are in place (autostart).

With a RESET button installed from Terminal 1 to Terminal 2, the relay energizes after all guards are in place and the RESET button is pressed. The monitor contacts must also be closed.

Authorized outputs: The designer must perform a risk analysis and be aware of the applicable safety standards of their machine. The designer has a choice of how to use the output contacts.

The output contacts can be used in combination with an Emergency Stop Relay circuit with a "reset" function. ("The restoring of an interlocked safeguard shall not initiate machine motion or operation where this can result in a hazardous condition." IEC 204-1.)

The reset circuit should not be wired to disconnect power to the GuardSwitch Monitor Relay, or it will be difficult to distinguish between a GuardSwitch failure and a normal reset function.

Input power: The GuardSwitch Monitor Relay is available in either a 24 VDC or 120 VAC model. Make sure the correct model is used before applying power as shown in the wiring diagram.

Figure 1: Dimensions

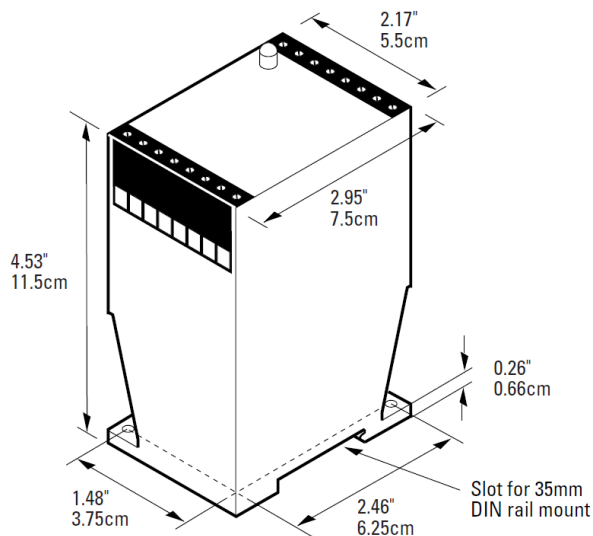


Figure 2: Typical wiring diagram

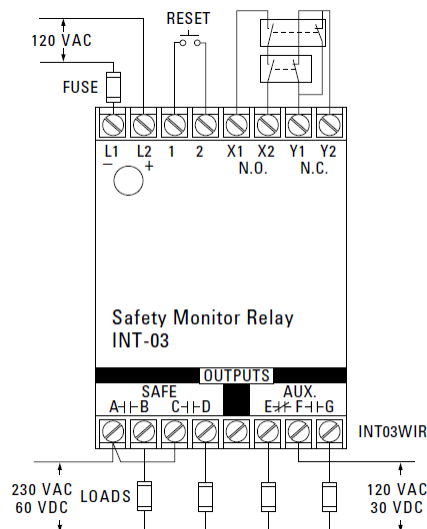
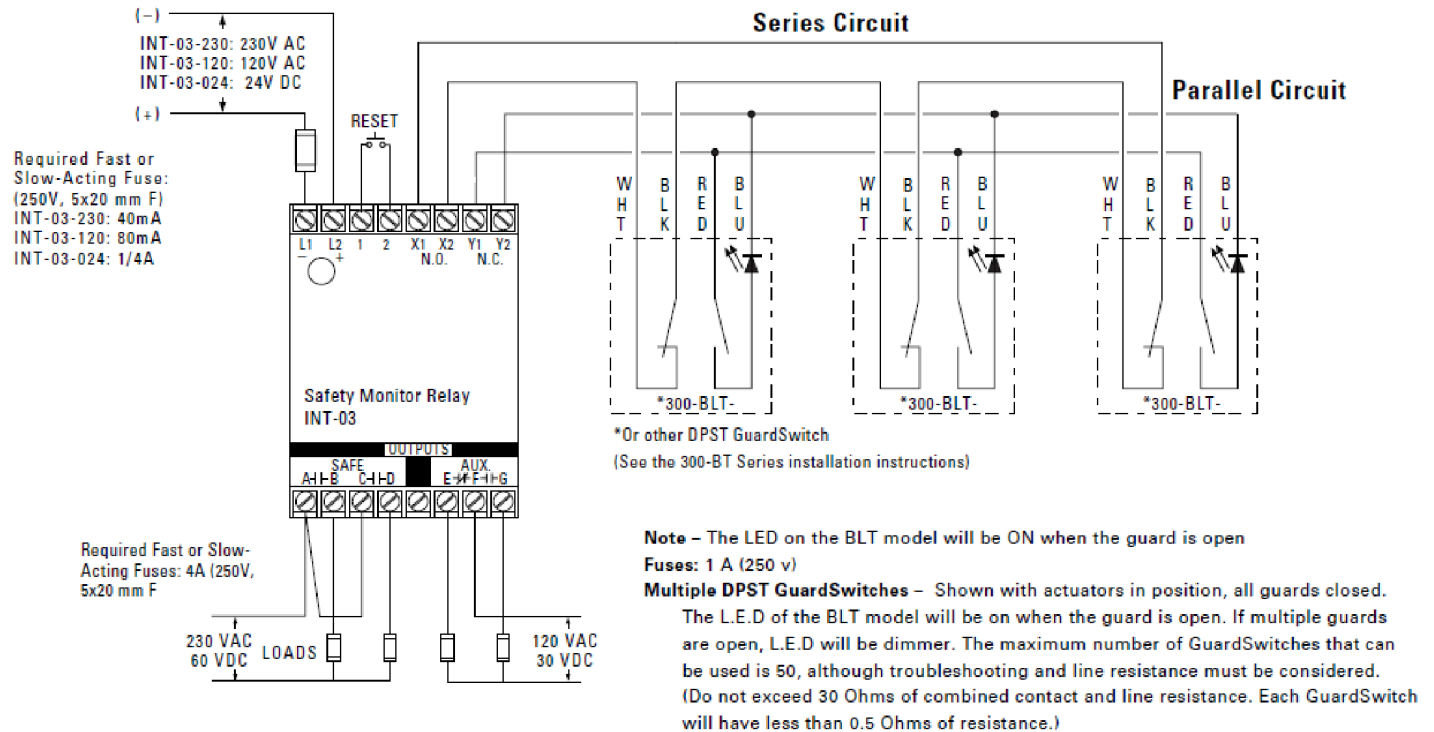


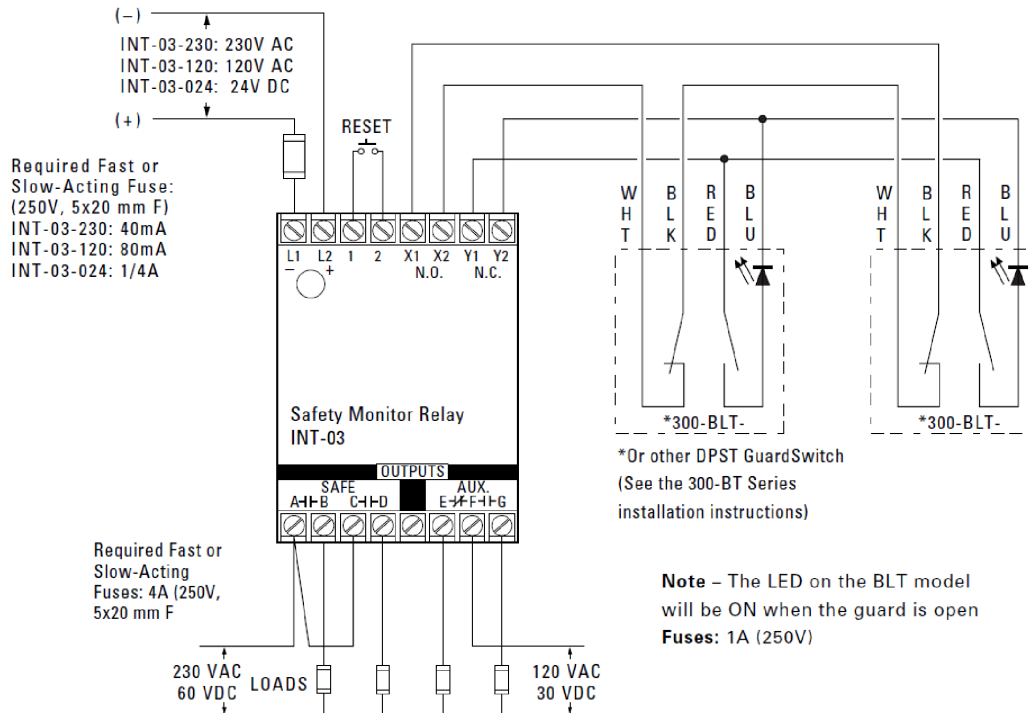
Figure 3: Wiring for multiple switches



Notes

- GuardSwitches are shown with the actuators in position — guard is closed. One 300-BT Series GuardSwitch is required for each safety gate. Up to 50 switches can be used with INT-03. When using the BLT switch models, the voltage drop (30 Ω) must be taken into consideration.
- Only outputs AB and CD are safety outputs. Auxiliary form C output E, F, G may fail in an unsafe condition and should only be used for signaling.
- The circuit wiring in Figure 3 can be as follows: WHT (White) wire can be WHT or YLW (yellow), BLU (Blue) wire can be BLU or GRN (Green)

Figure 4: Wiring for category 4



Notes

- GuardSwitches are shown with the actuators in position — guard is closed. Inputs are shown with safety/guard in closed position. Two 300-B Series Guardswitch and one INT relay are required for each safety gate.
- Only outputs AB and CD are safety outputs. Auxiliary form C output E, F, G may fail in an unsafe condition and should only be used for signaling.
- The circuit wiring in Figure 4 can be as follows: WHT (White) wire can be WHT or YLW (yellow), BLU (Blue) wire can be BLU or GRN (Green)

Specifications

AUX contacts

Power	Guards	E, G	F, G
Off	Open or closed	Closed	Open
On	Closed	Closed	Open
On	Open	Open	Closed

General specifications

Weight:	
INT-03-24	9 oz.
INT-03-120/230	15 oz.

Field wiring size	12 gauge max.
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Temperature range	32°F to 149°F (–0°C to 65°C)
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Relative humidity	30 to 95% noncondensing
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Power supply (+, – or L1, L2)

INT-03-024	24 VDC ±15% 100 m
Required fuse	1/4 A (250 V, 5 × 20 mm, F/T)
INT-03-120	120 VAC +10% –20%, 5 VA, 50/60 Hz
Required fuse	80 mA (250 V, 5 × 20 mm, F/T)

Control inputs (X1, X2 & Y1, Y2 terminals)

Open circuit voltage	24 VDC
Closed circuit current	24 mA
Contact resistance	30 Ω max.
Simultaneity	500 ms typical

Safe outputs (A, B / C, D terminals)

Voltage	230 VAC / 60 VDC
Current	4 A (resistive) each output
Response time	< 100 ms
Fuse	4 A, 250 V, 5 × 20 mm

AUX. signaling outputs (E, F, G terminals)

Voltage	120 VAC / 30 VDC
Current	1 A (resistive)

Note: Transient protection is required across the load when switching an inductive load.

Ordering/electrical specifications

Part number	Power input (L1, L2)	Input fuse required
INT-03-024	24 VDC ±20%	Fast acting 1/4 A (250 V, 5 x 20 mm, F/T)
INT-03-120	120 VAC +10%, –20%, 50/60 Hz, 5 VA	Fast acting 80 mA (250 V, 5 x 20 mm, F/T)

Regulatory information

cULus file number E57361 (all models)