MX920 MX Digital Loop Line Isolator Module Installation Guide

29011140R002

Safety Note

Note: Read the safety information before you install the equipment. This equipment must be installed by a skilled person only. A skilled person is an installer with appropriate technical training. The installer must be aware of potential hazards during installation and measures available to minimize risks to the installer and other people.

Introduction

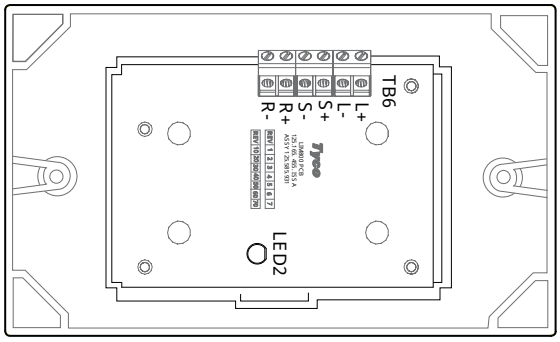
The MX920 Line Isolator Module is designed to be used on MX addressable controller loop circuits. The module monitors the line condition. If it detects a short circuit, it will isolate the affected section while allowing the rest of the addressing circuit to function normally. The module ensures that on a looped addressable system, no short circuit fault can disable more detection devices than would be lost on a conventional non-addressable fire/burg circuit.

Mechanical Specification

Table 1: MX920 overall dimensions:

Height:: 87mm	Width: 148mm	Depth: 14mm	Weight: 100g

Figure 1: MX920 Fitted to Cover



Environmental Specifications

- Operating temperature: 32°F to 120°F (0°C to 49°C)
- Humidity: up to 93% relative humidity at 90°F (32°C)

Electrical Characteristics

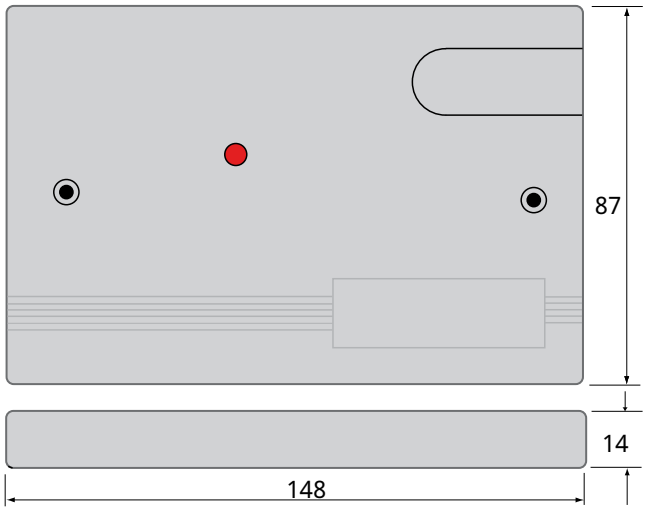
- Addressable circuit voltage: 40VDC max with addressable waveform (polarity conscious)
- Max series resistance (isolator normal): 0.25 ohm
- Equivalent Capacitance: 0.5nF (0.25 ac units)
- Maximum wiring resistance monitored circuit: 10 ohm.
- Use a 10K resistance for ground fault testing.
- Current loading: Input current 90µA max (normal)
- Isolator Tripped: 6mA into zone (10mA into isolator), 16mA total

- All wiring is supervised and power-limited

Mechanical Construction

The MX920 is contained in a double sided Printed Circuit Board (PCB) which is fitted into a custom-built fascia plate designed to be mounted onto a standard dual-gang MK box (refer to Figure 2). The MX920 can be ordered already fitted onto the fascia plate. The MK box is surface mounted. Suitable holes must be drilled into the box for the electrical connection. A cable gland is required for MICC cable and conduit use. The PCB is mounted on the back of the fascia plate with a protective plastic cover being fitted over the PCB leaving only the connection terminals exposed. The PCB is fitted with a yellow LED which extends through the front of the fascia plate and provides indication of unit operation.

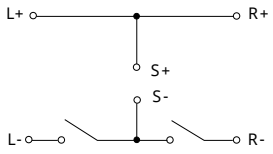
Figure 2: Fascia Plate and Dimensions



Operation

The switches on the MX920 are normally closed. If a short circuit is detected on the spur circuit, both switches open. If a short circuit is detected on the left hand side, the left hand side switch opens. And if a short circuit is detected on the right hand side, the right hand side switch opens.

Figure 3: MX920 Operation



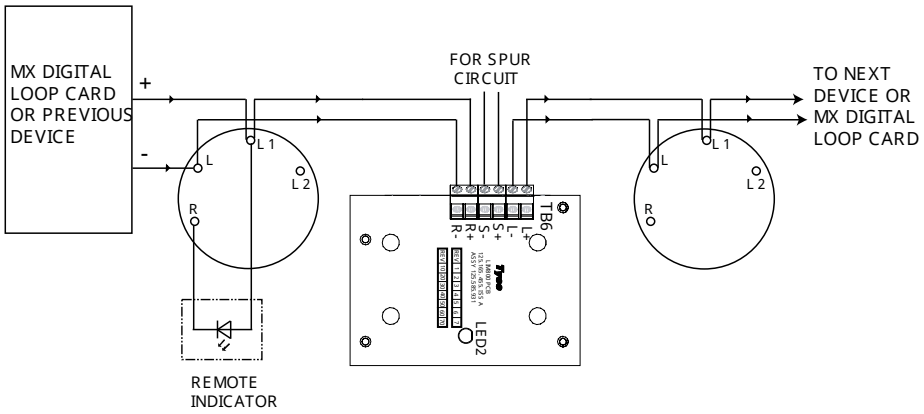
Cabling and Wiring

One pair of terminals is used to provide a spur circuit (S+/S-) and two pairs of connection terminals (R+/R- and L+/L-) are provided on the terminal block. These terminals are used for connecting the

module to the HSM3105 MX Loop Card. Refer to the HSM3105 MX Loop Card Manual for loop circuit ratings. Only one cable (max 2.5mm^2) can be connected at any one terminal.

1. There are no user-required settings (such as switches or headers) on the MX920.
2. All conductors to be free of contacts to earth.
3. Connect loop wiring. For MX920 typical wiring configurations refer to Figure 4.
4. Verify the correct polarity of the wiring before connecting the MX920 to the addressable loop circuit.

Figure 4: MX920 Wiring



Loop Wiring Verification

Note: Do not merger loop wiring when the isolator lines modules are connected.

The MX920 is not designed to work with line voltages above the specified maximum 40VDC, which means that continuity testing of the loop wiring when MX920s isolators are connected must be done using a voltage between 20-40VDC. The resistance measurement range on conventional voltmeters use low voltage only. Therefore, to confirm wiring you must connect a power supply capable of providing 30 - 40VDC with a 300 to 600mA current limit to one end of the loop (in correct polarity) and connect a voltmeter to the other end of the loop or any base along the loop. If there is no voltage out at any measured point, this may be due to:

1. Loop open circuit - wiring incomplete in part of the loop.
2. Incorrect polarity - MX920 will appear as a short circuit.
3. Loop short circuit - If this occurs between two MX920, it will isolate that section of the line, which will then appear as an open circuit. If this occurs between the supply and the first MX920, the supply output will go low due to the internal current limit.

The MX920 serves as a protection device against short circuits. It operates by isolating the section of line containing the short circuit from devices on the line and from the rest of the line (refer to Figure 3). Optimum operation requires the line to be wired as a loop so that a section of the line with a short circuit can be isolated between a pair of isolator modules. A short circuit on the spur connections will also cause the MX920 to open circuit the loop at that point. The current can pass in both directions in order to enable the isolator's use in a looped circuit (Line IN to Line OUT or Line

OUT to Line IN). The operation of the MX loop driver means that there are effectively 2 operational modes for the MX920.

1. When the loop is first powered, if a section of the line appears as a low impedance (with an equivalent resistance of less than 2k), the line isolator will restrict the power to that section of line until the fault is cleared.
2. If a short circuit is introduced onto the line when the loop is powered up, in most instances the controller's internal protection will switch in before the line isolator. The voltage is then removed from the line by the controller, on restoration, the line isolator will isolate the low impedance section of the line. In addition, the MX920 also isolates if the loop voltage is degraded by a partial short circuit.

Note: When a short circuit is detected, the LED lights up.

Ordering Information

Table 2: Ordering Information

Components	Number
Line Isolator Module	MX920

FCC and ISED Canada Information

This information applies to the MX920 MX Digital Loop Line Isolator Module.

Modification statement

Tyco Safety Products Canada Ltd. has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Interference statement

This device complies with Part 15 of the FCC rules. Operations are subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be deter-mined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The user may find the following booklet prepared by the FCC useful: "How to Identify and Resolve Radio/Television Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402, Stock # 004-000-00345-4.

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