

38-RACK SERIES

I/O RELAY CARDS & PERIPHERAL DEVICES USED FOR DCS/PLC DISCRETE I/O

Greatly Simplifies Designing, Installation,
Wiring and Testing of Interposing Relays.

38-RACK SERIES

- Complete packaging for interposing relays
- Plug to plug connection controller
- I/O simulator function



Relay Cards are Indispensable for some DCS/PLCs

In general, a DCS or PLC, handles numerous discrete I/Os. One common I/O module (board) is used to supply 8, 16 or more points. Discrete output circuits from a DCS typically use low power level signals (transistors, micro relays) which cannot be sent directly to the field devices such as electromagnetic valves or motor control circuits. That is why interposing relays are often necessary.

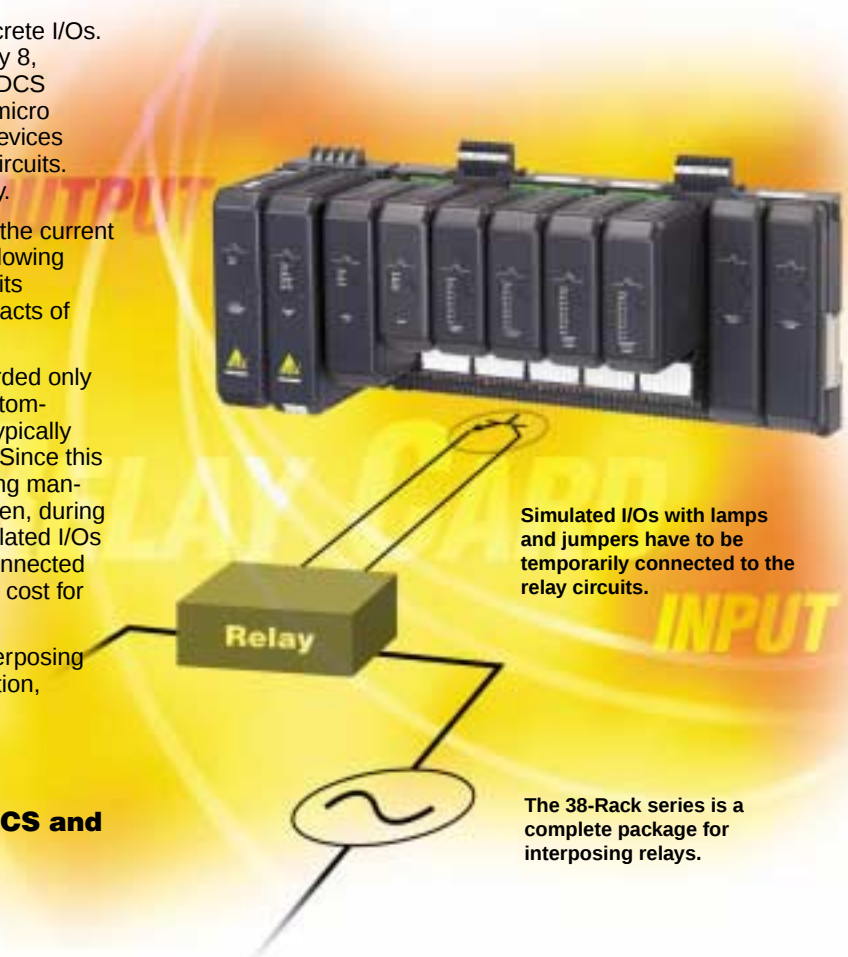
These relays play an important role by amplifying the current capacity of the contact signal of the I/O module allowing larger current flow. In addition, discrete input circuits normally can handle only dry contacts or wet contacts of low voltage, which also require interposing relays.

Traditionally, these interposing relay circuits, regarded only as unimportant auxiliary functions, have been custom-designed and installed to suit each system. This typically requires hand wiring and powering of each relay. Since this involves point to point wiring, additional engineering man-hours are required to produce wiring drawings. Then, during a test run (debugging) of the control system, simulated I/Os with lamps and jumpers have to be temporarily connected to the relay circuits. All of this results in additional cost for the system integrator.

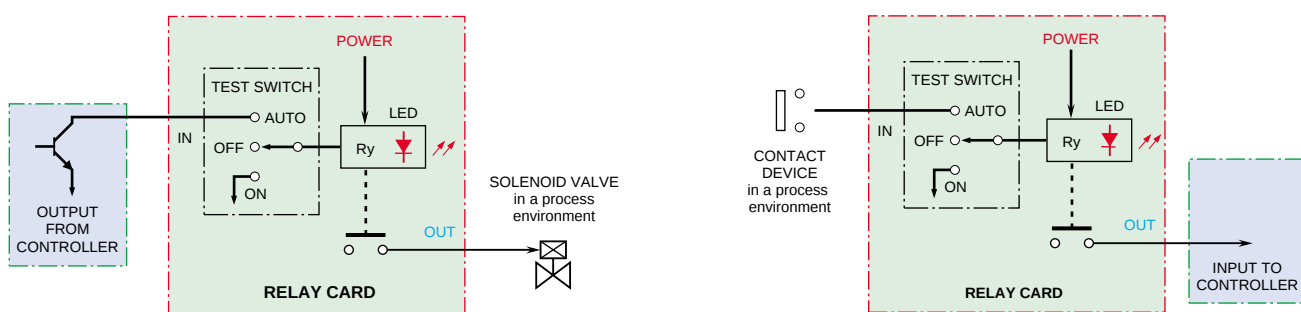
The 38-Rack series is a complete package for interposing relays. It greatly simplifies their designing, installation, wiring, and testing.

Typical 38 Rack I/O relay racks feature:

- **All-in-one rack**
- **Plug-to-plug connection between DCS and 38-Rack with a standard cable**
- **I/O simulation functions**



We Design Your Interposing Relay Package



Typical 38-Rack configurations for the 38B series, the most common 38-Rack module, are shown in Figures 1 and 2. In Figure 1 (output relay card), when the test switch is in the "Auto" position, the output relay (Ry) is excited by receiving a contact signal from the controller. By setting the test switch in the "ON/OFF" position, the output relay (Ry) can be manually turned on and off without any signal from the controller. In Figure 2 (input relay card), when the test switch is in the "Auto" position, the relay (Ry) is excited by receiving a contact signal from the field. In a direct

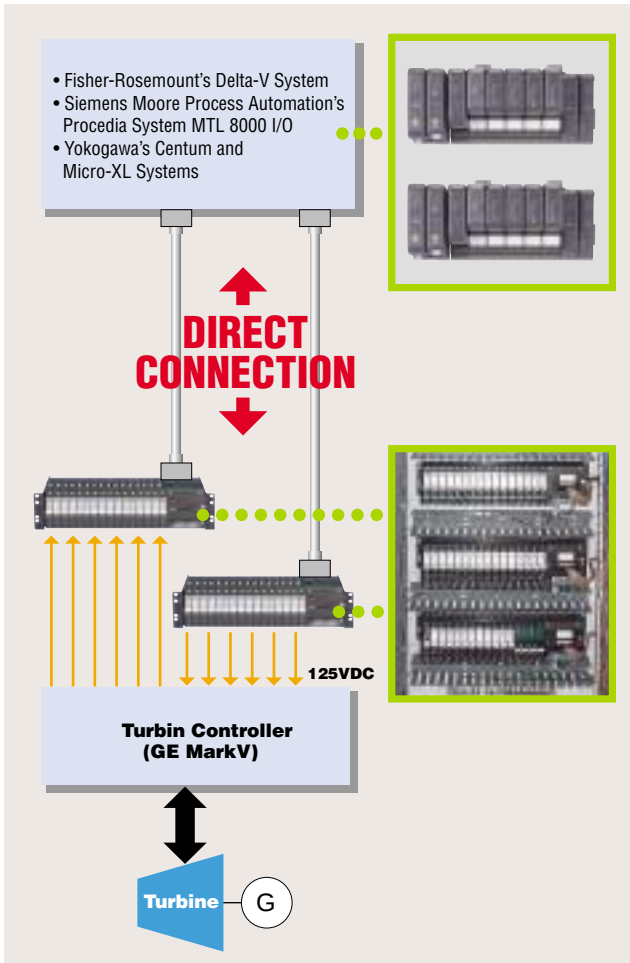
response to this, an output signal is sent to the controller. By setting the test switch to the "ON/OFF" position, the relay (Ry) can manually be turned on and off, which then turns the output signal to the controller on and off. An on-board LED confirms relay operation. By utilizing these basic circuits, a variety of relay card functions as shown below have been developed to fulfil users requests:

- (a) **38D series: high current capability**
- (b) **38N series: enables software debugging by using a loop- back function**

Other card types can be easily designed and supplied to meet any of your requests.

System Configuration Example

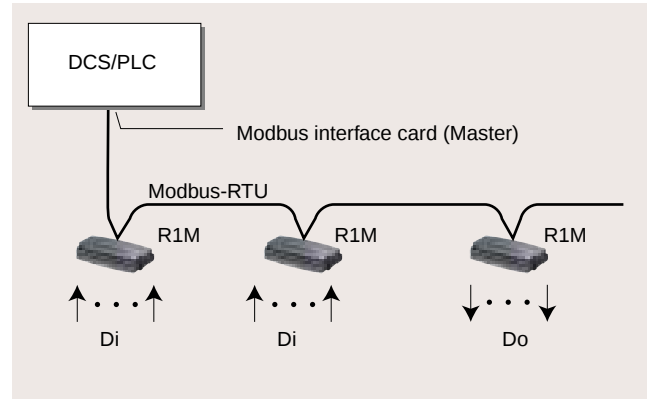
38-Rack connected directly to Fisher-Rosemount's Delta-V System, Siemens Moore Process Automation's Procedia System MTL 8000 I/O, and Yokogawa's Centum and Micro-XL Systems.



Network Capable Discrete I/O Devices

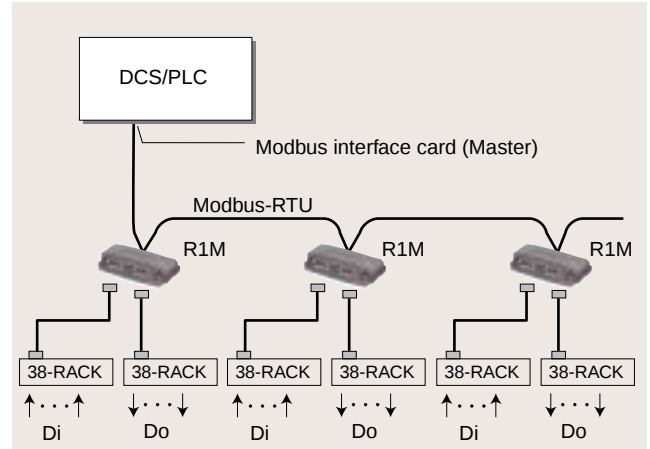
In recent years, DCSs and PLCs have been equipped with I/O interface systems via Modbus, DeviceNet, etc. M-System offers a plug-to-plug connection between discrete I/O modules and such network devices.

R1M series: Modbus

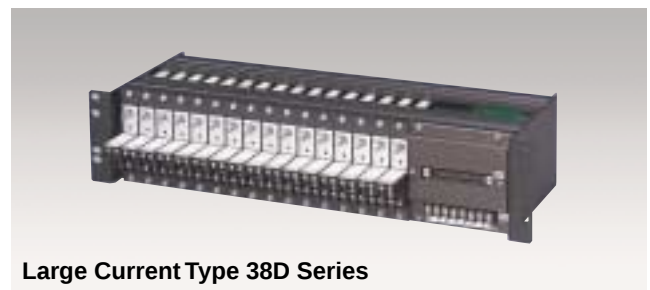
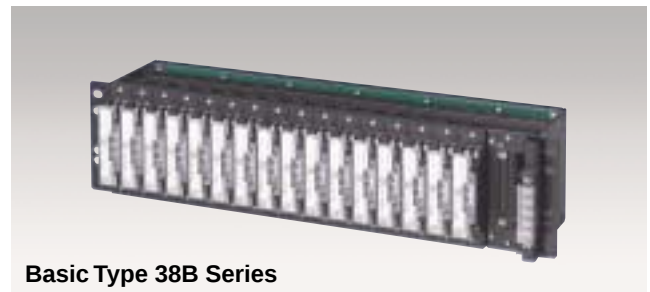


R1M + 38-Rack series:

Enables a direct connection of interposing relays to the R1M



Series Lineup



Basic Type

38B SERIES



Model 38BXS
Standard Rack,
vertical mounting



Model 38BXCS
Standard Rack,
horizontal mounting

- 2 channels standard on each input or output card
- Test switch provided for checking controller operation
- Plug-to-plug connection to the controller with special connectors
- Input relay card is standard with two sets of a relay contact input and a re-transmitted output.
- Output relay card is standard with two sets of two relay contact outputs.

Input Relay Card

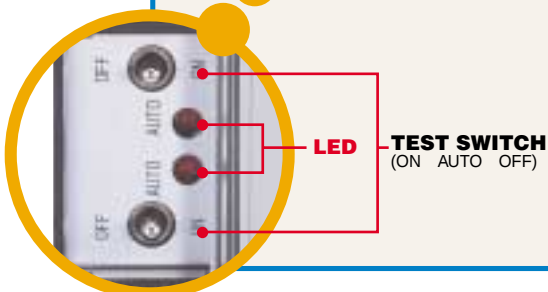
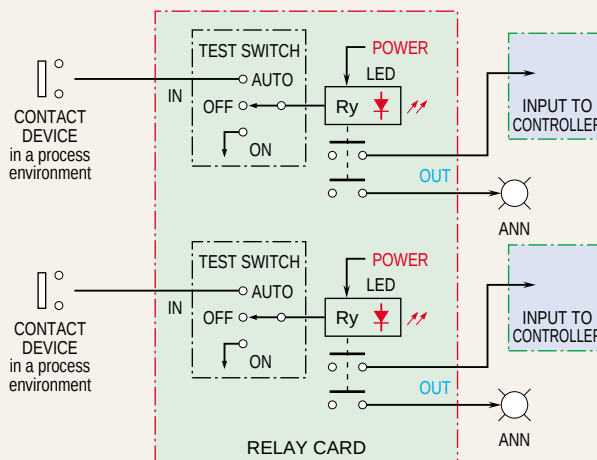
Model 38BIS2



This relay card has the same configuration and size as the M-System 18-Rack series controller signal conditioners, just like the Model 38BOS3. This allows for a combination of 38-Rack and 18-Rack units within the same rack mounting frame.

This relay card provides a re-transmitted output which is effectively used in an alarm circuit with an annunciator or similar.

FUNCTION DIAGRAM

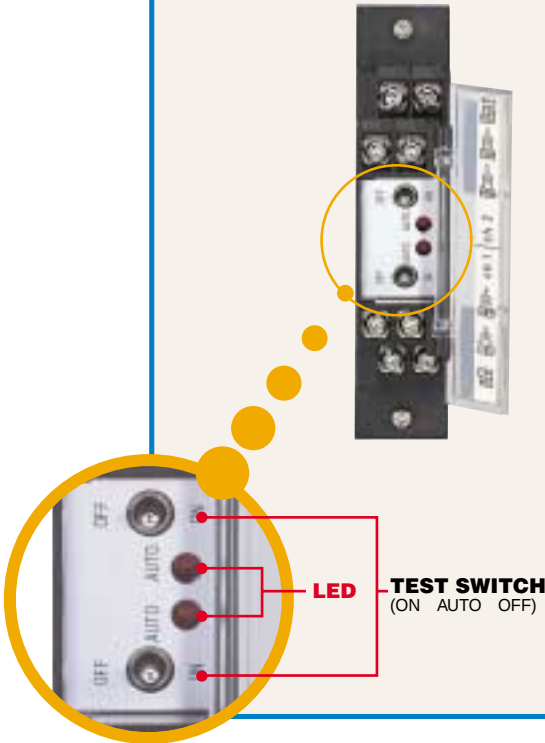
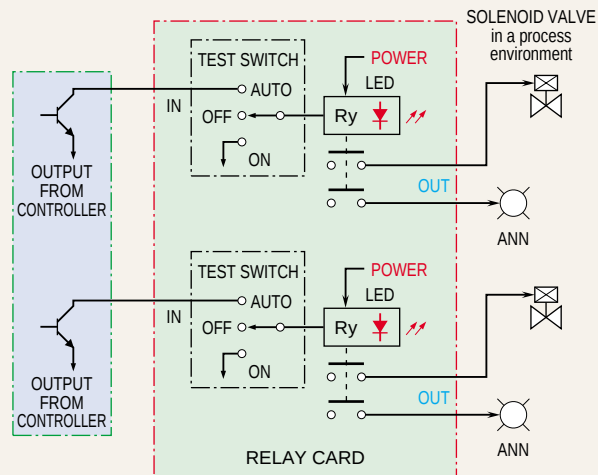


Output Relay Card

Model 38BOS3

This relay card has the same configuration and size as the M-System 18-Rack Series controller signal conditioners. This means that this relay card can be installed with other 18-Rack modules within the same rack mounting frame. This relay card has two standard output channels. As a result, a hardware interlock can easily be made by combining these two outputs.

FUNCTION DIAGRAM

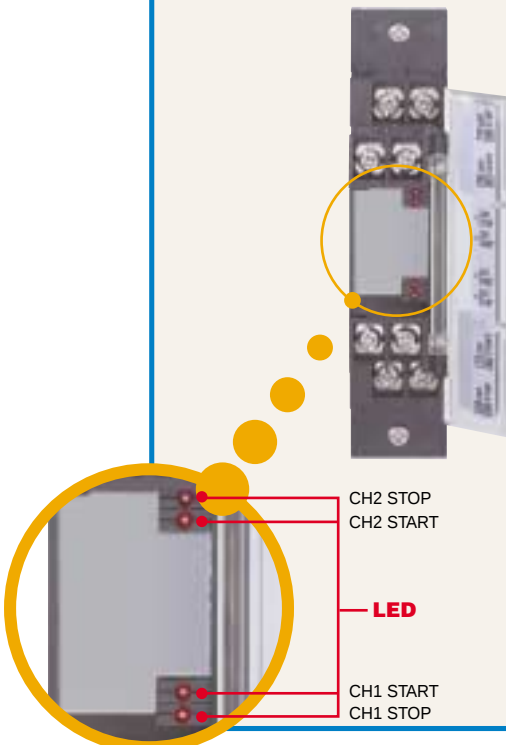
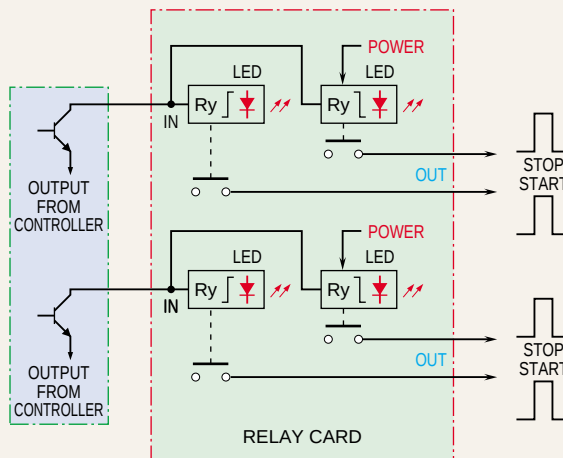


One-Shot Output Relay Card

Model 38BSH

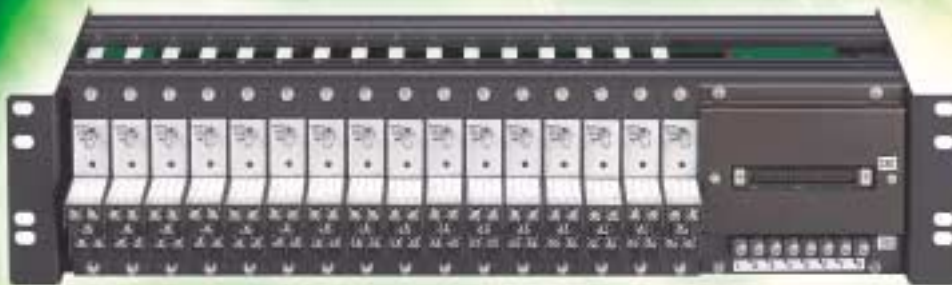
This relay card converts a controller status signal to a one-shot signal. This function is helpful to lighten the load of the controller. Internal jumpers are used to select whether a leading edge or a lagging edge pulse is generated. This relay card provides two output channels that correspond to one input status signal from the controller. This results in a significant cost savings.

FUNCTION DIAGRAM



Large Current Type

38D SERIES



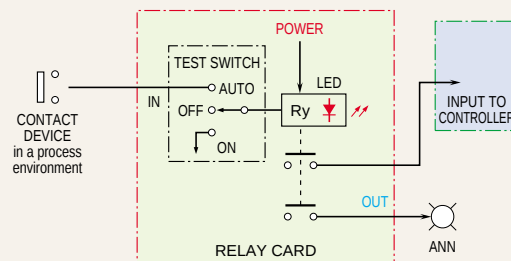
Model 38D-B
Standard Rack

- Large current capacity
- Test switch provided for checking controller operation
- Plug-to-plug connection to the controller with special connectors
- Input relay card handles up to 5 Amps.
- Output relay card is standard with both a voltage output for driving electromagnetic valves and a relay contact (5 Amps).

Input Relay Card

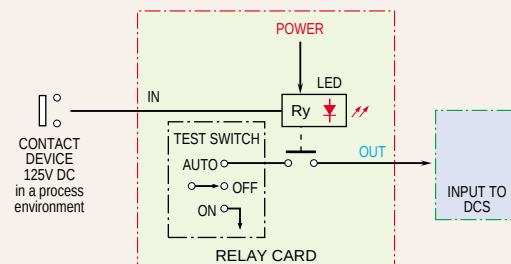
Model 38D-1

This relay card receives a contact signal from a limit switch or similar in the process field and supplies a dry contact signal to the controller. When this relay card is used, field contact signals can be handled without a contact failure problem, which in turn develops a highly reliable instrument system. The card also provides a dry contact signal which can be used for an annunciator or some other related device. This relay card handles one channel output to a controller.



Model 38F-1

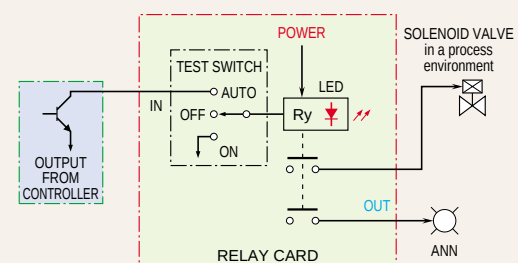
This relay card receives a wet contact signal (125V) in the process field and supplies an electrically isolated dry contact signal to the controller. This relay card handles one channel output to a controller.



Output Relay Card

Model 38D-5/38F-5

This relay card receives a controller transistor contact output, isolates it from the controller and increases its current capacity. It then generates a wet contact signal (2 FORM "A" Double throw normally open contacts) and a dry contact signal (FORM "C" Change over contact).



Loop-back Type

38N SERIES



Model 38N-B
Standard Rack

- Input and output on one card
- Output ON/OFF switch and LED indicating relay status
- Test switch provided for checking controller operation
- Fuse provided to each channel for electromagnetic valves
- Plug-to-plug connection to the controller with special connectors
- Output current capacity 3 Amps
- Output can be jumper selectable:
voltage output for electromagnetic valve or dry contact output.

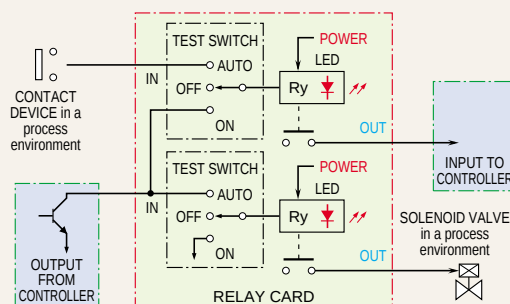
Input / Output Relay Card

Model 38N-2

This relay card has a loop-back function. It functions as an interposing relay in its standard usage. Its output signals can manually be turned on and off. Its performance can be confirmed by a front panel LED.

This relay card is able to output a 120V AC rated wet contact signal which can drive a solenoid valve or similar type device. Also, a dry contact output is available by changing the positions of internal jumpers.

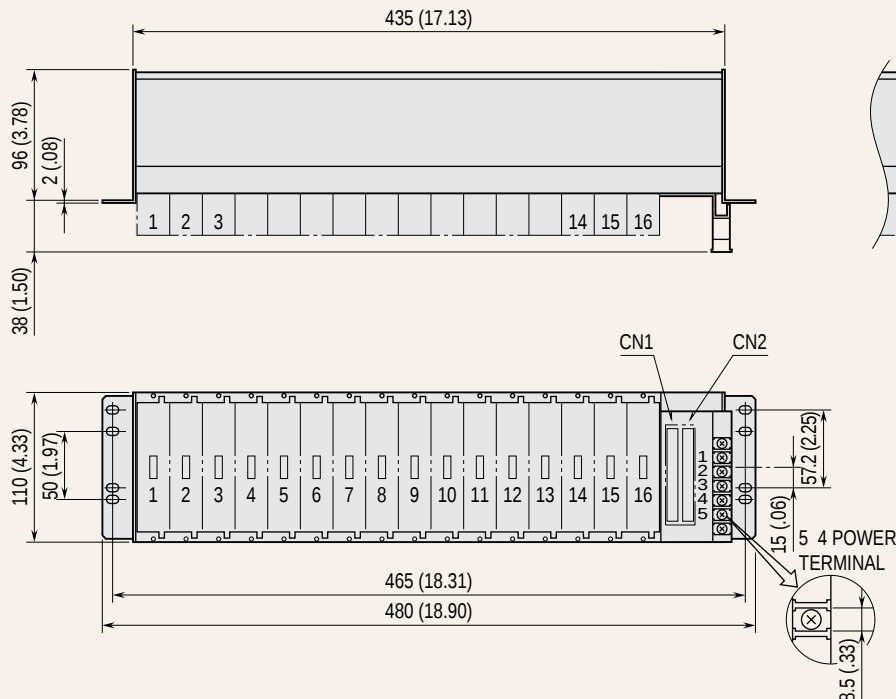
This relay card can handle one channel output to a controller and also one channel input from a controller.



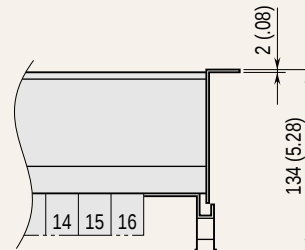
DIMENSIONS mm (inch)

38BXCS

■RACK (standard)



■SURFACE (option /W)



M-SYSTEM WARRANTY

1. What is covered.

M-System Co., Ltd. ("M-System") warrants, to the original purchaser only of new M-System products purchased directly from M-System, or from M-System's authorized distributors or resellers, for its own use not for resale, that the M-System products shall be free from defects in materials and workmanship and shall conform to the specifications set forth in the product catalogue applicable to the M-System products for the Warranty Period (see Paragraph 5 below for the Warranty Period of each product).

THE ABOVE WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE M-SYSTEM PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

2. What is not covered.

This warranty does not cover any M-System product which has been: (1) modified, altered or subjected to abuse, misuse, negligence or accident; (2) improperly installed or installed in conjunction with any equipment for which it was not designed; or (3) damaged or destroyed by disasters such as fire, flood, lightning or earthquake.

In no event shall M-System be liable for any special, incidental, consequential or other damages, costs or expenses (including, but not limited to, loss of time, loss of profits, inconvenience or loss of use of any equipment).

3. Remedies.

If a defective product is returned to M-System in accordance with the procedures described below, M-System will, at its sole option and expense, either: (1) repair the defective product; (2) replace the defective product; or (3) refund the purchase price for the defective product paid by the purchaser. Except as otherwise provided by applicable state law, these remedies constitute the purchaser's sole and exclusive remedies and M-System's sole and exclusive obligation under this warranty.

4. Warranty Procedure.

If the purchaser discovers a failure of the M-System products to conform to the terms of this warranty within the Warranty Period, the purchaser must promptly (and, in any event not more than 30 days after the discovery of such failure) notify the relevant party as described below either by telephone or in writing at the below address to obtain an Authorized Return (AR) number and return the defective product to the relevant party. The designated AR number should be marked on the outside of the return package and on all correspondence related to the defective product. The purchaser shall return, at purchaser's expense, defective products only upon receiving an AR number. In order to avoid processing delays, please be sure to include: copies of the original purchase order and sales invoice; the purchaser's name, address and phone number; the model and serial numbers of the returned product; and a detailed description of the alleged defect.

5. Warranty Period.

Signal Conditioner:	36 months from the date of purchase.
M-Rester:	12 months from the date of purchase.
Valve Actuator:	18 months from the date of shipment from M-System or 12 months from the date of its installation, whichever comes first.
Other Products:	12 months from the date of purchase.

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• Specifications subject to change without notice.

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