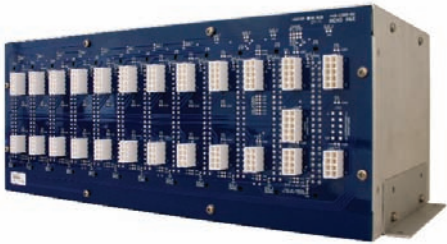


M-12C

DETECTOR CARD RACK



- Card rack designed to hold a power supply and ten (10) two or four channel, single width (1.12" wide) detectors or twelve (12) two or four channel, single width detectors



- Reno A&E Model MH wiring harnesses simplify installation



Reno A&E **M-12C** Detector Card Rack with a **Q-4** Power Supply and Ten **C-1200** Two Channel Detectors



Reno A&E **M-12C** Detector Card Rack with Twelve **C-1200** Two Channel Detectors

Overview

The M-12C detector card rack has been designed for NEMA TS 1 applications where a shelf mounted detector rack is needed. This rack is capable of housing a power supply and ten single width (1.12 inch), two or four channel detectors. The M-12C may be configured to accept, in place of the power supply, two additional single width detectors.



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M-12C SPECIFICATIONS

This is a Performance Specification. It is not intended to be used as Operating Instructions.

General Description The Model M-12C detector card rack is designed to hold a Reno A&E Model Q-4 power supply and ten (10) Reno A&E single width, two or four channel detectors or twelve (12) Reno A&E single width, two or four channel detectors. Reno A&E MH series wiring harnesses are available to simplify connections between the M-12C and other components in the cabinet.

Card Rack Connectors (Power Supply and Detectors) PC board mounted 2 x 22 contact edge card connectors with 0.156 inch (0.396 cm.) contact centers. Connector pin assignments are per NEMA TS1.

Back Plane Connector (Power Supply Input) 10 pin, dual row, female header, 0.165 inch (0.420 cm.) pitch with gold plated contacts. (Molex p/n 39-31-0108 / 39-31-0088 or equivalent). Mates with Molex p/n 39-01-2105 or equivalent. (See **Pin Assignments - Power Supply Inputs** table.)

Back Plane Connectors (Detector Inputs and Outputs) 10 pin / 8 pin, dual row, female header, 0.165 inch (0.420 cm.) pitch with gold plated contacts (Molex p/n 39-31-0108 / 39-31-0088 or equivalent). Mates with Molex p/n 39-01-2105 / 39-01-2085 or equivalent. (See **Pin Assignments - Detector Inputs and Outputs** tables.)

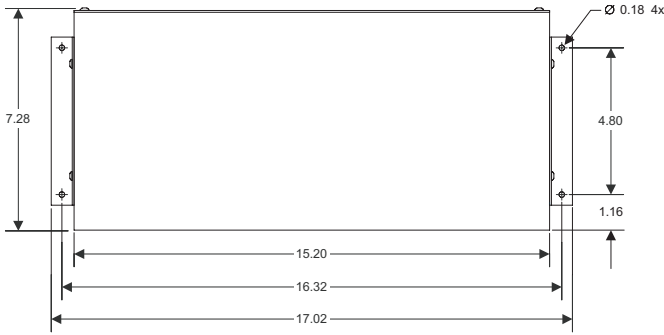
Back Plane Connector (Communications) 10 pin, dual row, female header, 0.165 inch (0.420 cm.) pitch with gold plated contacts (Molex p/n 39-31-0108 or equivalent). Mates with Molex p/n 39-01-2105 or equivalent. (See **Pin Assignments - Communications** table.)

Ruggedized Construction The M-12C housing is fabricated from 0.062 inch thick aluminum. The printed circuit board is 0.062 inch thick FR4 material with 2 oz. copper on both sides and plated through holes. Circuit board components are conformal coated with polyurethane.

Operating Temperature -40° F to +180° F (-40° C to +82° C).

Weight 4.38 lb (1.987 kg).

Size 6.27 inches (15.93 cm) high x 15.20 inches (38.61 cm) wide x 7.58 inches (19.25 cm) deep (excluding mounting flanges). Mounting flanges add 1.50 inches (3.81 cm.) to the width measurement.



TOP VIEW - CARD RACK HEIGHT IS 6.27 INCH

Pin Assignments - Power Supply Inputs



Slot 2 - J25

Pin	Function	Edge Card Connector Termination
1	Earth Ground	Pin L - Slots 1 - 12
2	Bussed Reset	Pin C - Slots 1-12 (optionally configured on a per slot basis using jumpers J92 - J103)
3	DC + 3	Pins 17 & U - Slot 2 (optionally configured for internal power supply) and Pin B - Slot 7, 8, 12
4	DC + 4	Pins 18 & V - Slot 2 (optionally configured for internal power supply) and Pin B - Slot 9, 10, 11
5	DC Common	Pin A - Slots 1-12 (optionally connected on a per slot basis using jumpers J67-J78)
6	AC Neutral	Pin M - Slots 1 - 12
7	AC Line	Pin N - Slots 1 - 12
8	DC + 1	Pins 2 & B - Slot 2 (optionally configured for internal power supply) and Pin B - Slot 2, 3, 4
9	DC + 2	Pins 3 & C - Slot 2 (optionally configured for internal power supply) and Pin B - Slot 1, 5, 6
10	DC +	DC + 1, DC + 2, DC + 3, DC + 4 tied together (optionally configured using jumpers J140 - J143)

Pin Assignments - Detector Inputs and Outputs (Channels 1 and 2)

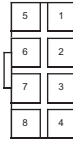


Slot 1 - J13 (Optional)
Slot 2 - J14 (Optional)
Slot 3 - J15
Slot 4 - J16
Slot 5 - J17
Slot 6 - J18
Slot 7 - J19
Slot 8 - J20
Slot 9 - J21
Slot 10 - J22
Slot 11 - J23
Slot 12 - J24

Pin	Function	Edge Card Connector Termination
1	Phase Green Input - Channel 2	Pin 2
2	Loop Input - Channel 1	Pins 5 & E
3	Loop Input - Channel 2	Pins 9 & K
4	Call Output - Channel 2	Pin W
5	DC Common	Pin A
6	Phase Green Input - Channel 1	Pin 1
7	Loop Input - Channel 1	Pins 4 & D
8	Loop Input - Channel 2	Pins 8 & J
9	Call Output - Channel 1	Pin F
10	Output Emitter Commons	Pins H, T, X, & Z

NOTES: The Model M-12C card rack is NOT cross-wired. A four channel unit will not replace two, two channel units. Jumpers can be added to tie all Phase Green Input pins together on a per slot basis. For example, jumpers J104-J106 tie the Slot 1 connections of pins 1, 2, 3, and 10 together. Pin 5 can be isolated from the DC Common bus of J25 Pin 5 by removing jumper J67 for Slot 1, jumper J68 for Slot 2, etc. Pin 10 can be isolated from the Output Common bus by removing jumper J79 for Slot 1, jumper J80 for Slot 2, etc.

Pin Assignments - Detector Inputs and Outputs (Channels 3 and 4)



Slot 1 - J26 (Optional)
Slot 2 - J27 (Optional)
Slot 3 - J28
Slot 4 - J29

Pin	Function	Edge Card Connector Termination
1	Phase Green Input - Channel 4	Pin 10
2	Loop Input - Channel 3	Pins 14 & R
3	Loop Input - Channel 4	Pins 18 & V
4	Call Output - Channel 4	Pin Y
5	Phase Green Input - Channel 3	Pin 3
6	Loop Input - Channel 3	Pin 13 & P
7	Loop Input - Channel 4	Pins 17 & U
8	Call Output - Channel 3	Pin S

Slot 5 - J30 Slot 6 - J31 Slot 7 - J32 Slot 8 - J33 Slot 9 - J34 Slot 10 - J35 Slot 11 - J36 Slot 12 - J37

Pin Assignments - Communications



Slots 1 - 12 - J66 (Jumper Configured)

Pin	Function	Edge Card Connector Termination
1	Rx	Pin 21 - Slots 10 - 12
2	Rx	Pin 21 - Slots 7 - 9
3	Rx	Pin 21 - Slots 4 - 6
4	Rx	Pin 21 - Slots 1 - 3
5	DC Common	Pin A - Slots 1 - 12
6	Tx	Pin 19 - Slots 10 - 12
7	Tx	Pin 19 - Slots 7 - 9
8	Tx	Pin 19 - Slots 4 - 6
9	Tx	Pin 19 - Slots 1 - 3
10	DC Common	Pin A - Slots 1 - 12

NOTE: Jumpers J44 through J65 are used to bus the communication lines. When all jumpers are installed, Rx and Tx functions may be accessed at any of the four pairs of pins.

Jumpers

Jumper	Function
J38	Installed with Power Supply in Slot 2 - Pin 1 to Pin A
J39	Installed with Power Supply in Slot 2 - Pin 2 to Pin B
J40	Installed with Power Supply in Slot 2 - Pin C as DC + 2
J41	Installed with Power Supply in Slot 2 - Pin 3 to Pin C
J42	Installed with Power Supply in Slot 2 - Pins 17&U as DC + 3
J43	Installed with Power Supply in Slot 2 - Pins 18&V as DC + 4
J44 - J65	Jumpers J44 through J65 are used to bus the communication lines. Even numbered jumpers bus the Tx functions on Pin 19 of each slot to the next slot. Odd numbered jumpers bus the Rx functions on Pin 21 of each slot to the next slot.
J67 - J78	Slots 1 through 12 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J79 - J90	Slots 1 through 12 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J91	DC Common Bus (J25 Pin 5) to Output Commons Bus *
J92 - J103	Slots 1 through 12 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J104	Slot 1 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J105	Slot 1 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J106	Slot 1 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J107	Slot 2 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J108	Slot 2 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J109	Slot 2 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J110	Slot 3 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J111	Slot 3 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J112	Slot 3 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J113	Slot 4 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J114	Slot 4 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J115	Slot 4 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J116	Slot 5 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J117	Slot 5 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J118	Slot 5 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J119	Slot 6 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J120	Slot 6 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J121	Slot 6 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J122	Slot 7 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J123	Slot 7 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J124	Slot 7 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J125	Slot 8 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J126	Slot 8 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J127	Slot 8 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J128	Slot 9 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J129	Slot 9 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J130	Slot 9 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J131	Slot 10 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J132	Slot 10 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J133	Slot 10 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J134	Slot 11 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J135	Slot 11 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J136	Slot 11 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J137	Slot 12 - Channel 1 Phase Green Input (Pin 1) to Channel 2 Phase Green Input (Pin 2)
J138	Slot 12 - Channel 3 Phase Green Input (Pin 3) to Channel 4 Phase Green Input (Pin 10)
J139	Slot 12 - Channel 2 Phase Green Input (Pin 2) to Channel 3 Phase Green Input (Pin 3)
J140	Connect DC + 1 to J25 Pin 10
J141	Connect DC + 2 to J25 Pin 10
J142	Connect DC + 3 to J25 Pin 10
J143	Connect DC + 4 to J25 Pin 10

NOTE: The Output Commons bus is accessible on Pin 10 of one or more of the connectors at J13 through J24 when the jumpers for those slots are installed.