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MODEL M-12C

NEMA TS 1 DETECTOR CARD RACK INSTALLATION AND OPERATING INSTRUCTIONS

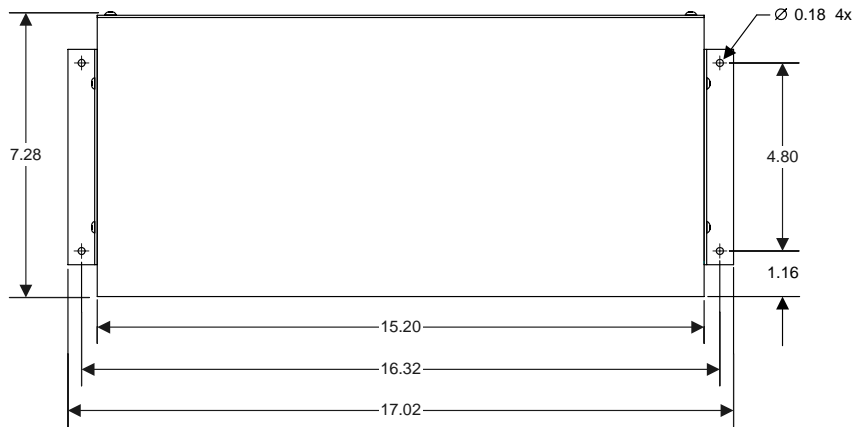
I General

The Model M-12C Detector Card Rack has been designed for NEMA TS 1 applications. This card rack is capable of housing an integral power supply and ten (10), single width, two channel or four channel detectors.

The Model M-12C may also be configured to accept, in place of the integral power supply, two (2) additional single width detectors.

II Installation Instructions

The drawing below should be used as a reference for mounting dimensions. All dimensions shown are without components installed in the card rack. Fasten the card rack to a solid surface using four (4) #6 screws.



TOP VIEW - CARD RACK HEIGHT IS 6.27 INCH

III Connector Pin Assignments

The Model M-12C has a set of backplane connectors that are used in conjunction with Reno A&E MH series wiring harnesses to provide a simple and effective way to connect the Model M-12C to other devices. MH series wiring harnesses are configured to order with customer specified wire lengths and colors.

NOTE: Connector diagrams on the following pages are as viewed from the back side of the rack. Some harnesses may have unwired pins.

i Detector (Channels 1 & 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.

ii Detector (Channels 3 & 4) Slot 1 - J26 (Optional), Slot 2 - J27 (Optional), Slot 3 - J28, Slot 4 - J29, 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	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	Pins 13 & P
7	Loop Input - Channel 4	Pins 17 & U
8	Call Output - Channel 3	Pin S

iii Power Supply 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)

NOTES: When using an internal power supply, jumpers J38-J43 are installed. When using an external power supply, Slots 1 and 2 may be used for a detector or other device. Jumper J91 may be removed to isolate the Output Common bus from the DC Common bus of J25 Pin 5.

iv Communications

Slots 1-12 - J66 (Jumper configured)

6	1	Pin	Function	Edge Card Connector Termination
7	2	1	Rx	Pin 21 - Slots 10-12
8	3	2	Rx	Pin 21 - Slots 7-9
9	4	3	Rx	Pin 21 - Slots 4-6
10	5	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-J65 are used to bus the communications lines. When all jumpers are installed, Rx and Tx functions may be accessed at any of the four pairs of pins.

IV 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	Communications Tx - Pin 19 Slot 1 to Pin 19 Slot 2
J45	Communications Rx - Pin 21 Slot 1 to Pin 21 Slot 2
J46	Communications Tx - Pin 19 Slot 2 to Pin 19 Slot 3
J47	Communications Rx - Pin 21 Slot 2 to Pin 21 Slot 3
J48	Communications Tx - Pin 19 Slot 3 to Pin 19 Slot 4
J49	Communications Rx - Pin 21 Slot 3 to Pin 21 Slot 4
J50	Communications Tx - Pin 19 Slot 4 to Pin 19 Slot 5
J51	Communications Rx - Pin 21 Slot 4 to Pin 21 Slot 5
J52	Communications Tx - Pin 19 Slot 5 to Pin 19 Slot 6
J53	Communications Rx - Pin 21 Slot 5 to Pin 21 Slot 6
J54	Communications Tx - Pin 19 Slot 6 to Pin 19 Slot 7
J55	Communications Rx - Pin 21 Slot 6 to Pin 21 Slot 7
J56	Communications Tx - Pin 19 Slot 7 to Pin 19 Slot 8
J57	Communications Rx - Pin 21 Slot 7 to Pin 21 Slot 8
J58	Communications Tx - Pin 19 Slot 8 to Pin 19 Slot 9
J59	Communications Rx - Pin 21 Slot 8 to Pin 21 Slot 9
J60	Communications Tx - Pin 19 Slot 9 to Pin 19 Slot 10
J61	Communications Rx - Pin 21 Slot 9 to Pin 21 Slot 10
J62	Communications Tx - Pin 19 Slot 10 to Pin 19 Slot 11
J63	Communications Rx - Pin 21 Slot 10 to Pin 21 Slot 11
J64	Communications Tx - Pin 19 Slot 11 to Pin 19 Slot 12
J65	Communications Rx - Pin 21 Slot 11 to Pin 21 Slot 12
J67	Slot 1 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J68	Slot 2 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J69	Slot 3 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J70	Slot 4 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J71	Slot 5 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J72	Slot 6 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J73	Slot 7 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J74	Slot 8 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J75	Slot 9 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J76	Slot 10 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J77	Slot 11 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J78	Slot 12 DC Common (Pin A) to DC Common Bus (J25 Pin 5)
J79	Slot 1 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J80	Slot 2 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J81	Slot 3 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *

Jumper	Function
J82	Slot 4 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J83	Slot 5 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J84	Slot 6 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J85	Slot 7 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J86	Slot 8 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J87	Slot 9 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J88	Slot 10 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J89	Slot 11 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J90	Slot 12 Output Commons (Pins H, T, X, & Z) to Output Commons Bus *
J91	DC Common Bus (J25 Pin 5) to Output Commons Bus *
J92	Slot 1 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J93	Slot 2 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J94	Slot 3 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J95	Slot 4 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J96	Slot 5 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J97	Slot 6 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J98	Slot 7 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J99	Slot 8 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J100	Slot 9 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J101	Slot 10 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J102	Slot 11 Reset (Pin C) to External Reset Bus (J25 Pin 2)
J103	Slot 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.