

**PLUG:** MM-212-031-161-41WQ  
**RECEPTACLE:** MM-2C2-031-261-26WA-EMI  
**PLUG:** MN-211-031-161-41WQ  
**RECEPTACLE:** MM-2C2-031-261-26WA-EMI  
 XX-XXX-XXX-XXX-XXXX-XXX

**PLUG**

**RECEPTACLE**

**SERIES**

|  |   |
|--|---|
| MM .050" Rugged Metal I/O Connector<br>MN .050" Rugged Plastic I/O Connector<br>(MM & MN mate with MK, ML, MM, MN receptacles) | MM .050" Rugged Metal I/O Connector<br>(MM mates with MK, ML, MM, MN plugs) |
|--|---|

**BODY**

|  |  |
|--|--|
| 2 2-Row (Sizes 9 thru 37)<br>3 3-Row (Size 51 or 69)<br>4 4-Row (Size 100) | 2 2-Row (Sizes 9 thru 37)<br>3 3-Row (Size 51 or 69)<br>4 4-Row (Size 100) |
|--|--|

|   |   |
|---|---|
| <b>BODY STYLE:</b><br>1 Plug, straight, with ears | <b>BODY STYLE:</b><br>C Receptacle, straight, rear panel mount, with fluorosilicone o-ring and interfacial seal |
|---|---|

|  |   |
|--|---|
| <b>BODY MATERIAL:</b><br>1 Polyphenylene Sulfide (MN only)<br>2 Polyphenylene Sulfide with electroless nickel shell<br>3 Polyphenylene Sulfide with electrodeposited cadmium shell <input checked="" type="checkbox"/><br>4 Polyphenylene Sulfide with hard anodized black shell | <b>BODY MATERIAL:</b><br>2 Polyphenylene Sulfide with electroless nickel shell<br>3 Polyphenylene Sulfide with electrodeposited cadmium shell <input checked="" type="checkbox"/><br>4 Polyphenylene Sulfide with hard anodized black shell |
|--|---|

**SIZE**

|   |   |
|---|---|
| XXX 009, 015, 021, 025, 031, 037, 051, 069, 100 | XXX 009, 015, 021, 025, 031, 037, 051, 069, 100 |
|---|---|

**CONTACTS**

|   |  |
|---|--|
| <b>TYPE CONTACTS/TERMINATIONS:</b><br>11 Pin, straight, 26 awg solder cup<br>1A Pin, straight, 24 awg solder cup<br>14 Pin, straight, .500" pigtails (.018 dia)<br>15 Pin, straight, 1.000" pigtails (.018 dia)<br>16 Pin, straight, crimped wire | <b>TYPE CONTACTS/TERMINATIONS:</b><br>21 Socket, straight, 26 awg solder cup<br>2A Socket, straight, 24 awg solder cup<br>24 Socket, straight, .500" pigtails (.018 dia)<br>25 Socket, straight, 1.000" pigtails (.018 dia)<br>26 Socket, straight, crimped wire |
|---|--|

|  |  |
|--|--|
| <b>PLATING OPTIONS:</b><br>1 50 μ" Au contacts (crimp wire)<br>3 50 μ" Au contacts: 10 μ" Au terminations (solder cup, pigtail)<br>5 50 μ" Au contacts; Sn/Pb alloy terminations (pigtail) <input checked="" type="checkbox"/><br>7 50 μ" Au contacts; SAC305 terminations (pigtail) | <b>PLATING OPTIONS:</b><br>1 50 μ" Au contacts (crimp wire)<br>3 50 μ" Au contacts: 10 μ" Au terminations (solder cup, pigtail)<br>5 50 μ" Au contacts; Sn/Pb alloy terminations (pigtail) <input checked="" type="checkbox"/><br>7 50 μ" Au contacts; SAC305 terminations (pigtail) |
|--|--|

**HARDWARE**

|   |  |
|---|--|
| <b>STYLE OF HARDWARE:</b><br>00 None<br>41 Two turning jackscrews, allen head, retaining ring (81*)<br>42 Two long turning jackscrews, allen head, retaining ring (82*)<br>43 Two turning jackscrews, slot head, retaining ring (83*)<br>44 Two long turning jackscrews, slot head, retaining ring (84*)<br>45 Two turning jackscrews, allen head, captivated** (85*) | <b>STYLE OF HARDWARE:</b><br>00 None<br>24 Two fixed jacknuts, rear panel mount, .040" panel thickness (64*)<br>26 Two fixed jacknuts, rear panel mount, .060" panel thickness (66*)<br>28 Two fixed jacknuts, rear panel mount, .070" panel thickness (68*)<br>29 Two fixed jacknuts, rear panel mount, .080" panel thickness (69*) |
|---|--|

|   |  |
|---|--|
| <b>POLARIZATION / WIRING:</b><br>00 None<br>XX For wiring codes, see page MA-3 & MA-4 | <b>POLARIZATION / WIRING</b><br>00 None<br>XX For wiring codes, see page MA-3 & MA-4 |
|---|--|

**OPTIONS**

|   |
|---|
| EMI EMI o-ring (in lieu of fluorosilicone o-ring) |
|---|

\* = Use number in parenthesis when ordering size 100.  
 \*\* = Captive hardware is factory installed and non-removable.  
 = Option not RoHS compliant



# Cable to Cable (Rear Panel Mount)

.050"

9 thru 100 Contacts

Rugged Metal

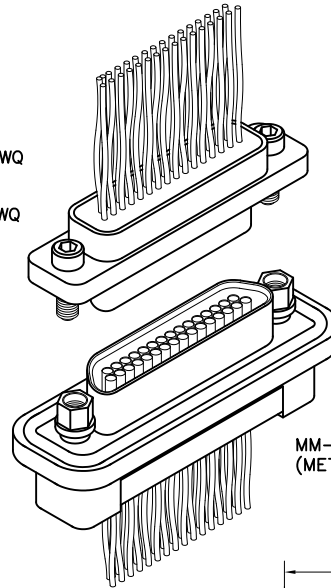
**MM**

Rugged Plastic

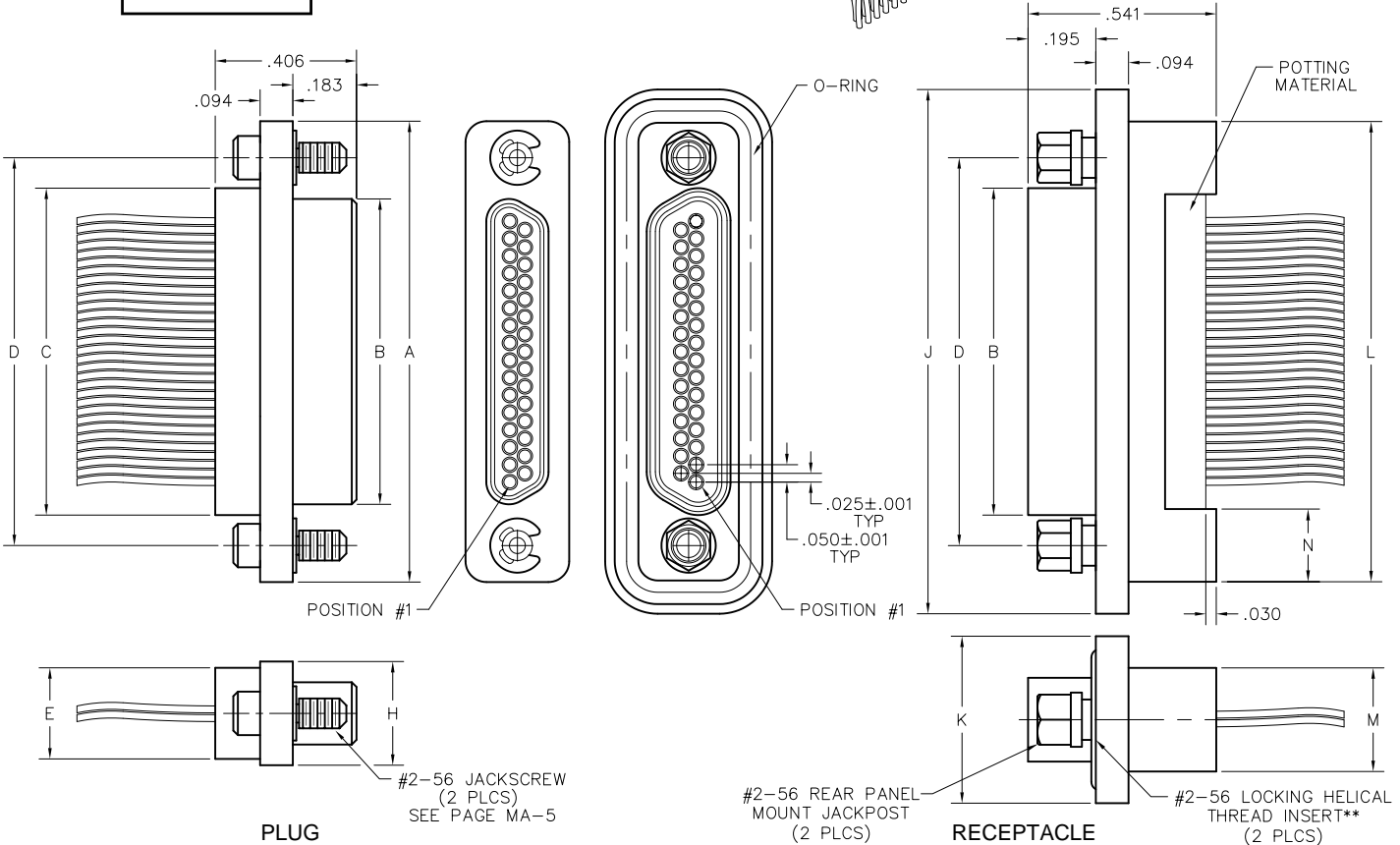
**MN**

MM-212-031-161-41WQ  
(METAL)

MN-211-031-161-41WQ  
(PLASTIC)



MM-2C2-031-261-26WA-EMI  
(METAL)



| SIZE | CONTACT ROWS | DIMENSIONS |          |       |       |       |      |          |               |       |       |      |      |                  |
|------|--------------|------------|----------|-------|-------|-------|------|----------|---------------|-------|-------|------|------|------------------|
|      |              | B          |          | C     | D     | E     | H    | HARDWARE | J             | K     | L     | M    | N    |                  |
|      |              | PLUG MAX   | RCPT MAX |       |       |       |      |          |               |       |       |      |      | POTTING WELL MAX |
| 9    | 2            | .775       | .334     | .400  | .390  | .565  | .270 | .298     | #2-56 UNC THD | .480  | .773  | .298 | .210 |                  |
| 15   |              | .925       | .484     | .550  | .540  | .715  |      |          |               |       | .923  |      |      |                  |
| 21   |              | 1.075      | .634     | .700  | .690  | .865  |      |          |               |       | 1.073 |      |      |                  |
| 25   |              | 1.175      | .734     | .800  | .790  | .965  |      |          |               |       | 1.173 |      |      |                  |
| 31   |              | 1.325      | .884     | .950  | .940  | 1.115 |      |          |               |       | 1.323 |      |      |                  |
| 37   |              | 1.475      | 1.034    | 1.100 | 1.090 | 1.265 |      |          |               |       | 1.473 |      |      |                  |
| 51   | 3            | 1.425      | .984     | 1.050 | 1.040 | 1.215 | .310 | .341     | .523          | 1.477 | .440  | .239 |      |                  |
| 69*  |              | 1.725      | 1.284    | 1.350 | 1.340 | 1.515 |      |          |               | 1.777 |       |      |      |                  |
| 100  |              | 4          | 2.160    | 1.384 | 1.508 | 1.432 |      |          |               | 1.800 |       |      | .360 | .384             |

\* = 69 POSITION CONNECTORS ARE AVAILABLE IN METAL ONLY.

\*\* = SHELL ACCEPTS .200 MAX #2-56 SCREW LENGTH (.295 MAX #4-40 SCREW LENGTH).



## Wire Codes

### NEMA HP3-EXBEB (Formerly M16878/4-24 TFE 7 strand)

|              | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| MIL-STD-681* | WA | WB  | WC  | UD  | UE  | WD  | UG  | UH  | UJ  | UK  | UL  | UM  | UN  | UP  | UQ   | UR   |
| WHITE        | WE | WF  | WG  | VD  | VE  | WH  | VG  | VH  | VJ  | VK  | VL  | VM  | VN  | VP  | VQ   | VR   |
| YELLOW       | WJ | WK  | WL  |     |     | WM  |     |     |     |     |     |     |     |     |      |      |

### NEMA HP3-EXBDB (Formerly M16878/4-26 TFE 7 strand)

|              | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| MIL-STD-681* | WN | WP  | WQ  | YD  | YE  | WR  | YG  | YH  | YJ  | YK  | YL  | YM  | YN  | YP  | YQ   | YR   |
| WHITE        | WS | WT  | WU  | ZD  | ZE  | WV  | ZG  | ZH  | ZJ  | ZK  | ZL  | ZM  | ZN  | ZP  | ZQ   | ZR   |
| YELLOW       | WW | WX  | WY  |     |     | WZ  |     |     |     |     |     |     |     |     |      |      |

### NEMA HP3-EXBCB (Formerly M16878/4-28 TFE 7 strand)

|              | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| MIL-STD-681* | XA | XB  | XC  | 1D  | 1E  | XD  | 1G  | 1H  | 1J  | 1K  | 1L  | 1M  | 1N  | 1P  | 1Q   | 1R   |
| WHITE        | XE | XF  | XG  | 2D  | 2E  | XH  | 2G  | 2H  | 2J  | 2K  | 2L  | 2M  | 2N  | 2P  | 2Q   | 2R   |
| YELLOW       | XJ | XK  | XL  |     |     | XM  |     |     |     |     |     |     |     |     |      |      |

### TWISTED PAIR per NEMA WC27500-XXRC2U00 (SAE AS22759/11)

|        | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 24 AWG | AA | AB  | AC  | AD  | AE  | AF  | AG  | AH  | AJ  | AK  | AL  | AM  | AN  | AP  | AQ   | AR   |
| 26 AWG | BA | BB  | BC  | BD  | BE  | BF  | BG  | BH  | BJ  | BK  | BL  | BM  | BN  | BP  | BQ   | BR   |

### TWISTED PAIR per NEMA WC27500-XXSC2U00 (SAE AS22759/33)\*\*\* ☒

|        | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 24 AWG | JA | JB  | JC  | JD  | JE  | JF  | JG  | JH  | JJ  | JK  | JL  | JM  | JN  | JP  | JQ   | JR   |
| 26 AWG | KA | KB  | KC  | KD  | KE  | KF  | KG  | KH  | KJ  | KK  | KL  | KM  | KN  | KP  | KQ   | KR   |

For twisted pair wire connect charts, see page MA-9  
 Twisted pair wire not available on MA, MC or Hybrid connectors

\* = Connectors with more than 100 contacts will repeat color code after 100 colors.

\*\*\* = Per M83513, corrosion has been experienced on connectors that are pre-wired with 22759/33 and stored in sealed environments.  
 Caution should be exercised when using this wire.

☒ = Option not RoHS compliant

## Wire Codes

### SAE AS22759/11-24

|              | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| M83513**     | 5A | 5B  | 5C  | 5D  | 5E  | 5F  | 5G  | 5H  | 5J  | 5K  | 5L  | 5M  | 5N  | 5P  | 5Q   | 5R   |
| MIL-STD-681* | CA | CB  | CC  | CD  | CE  | CF  | CG  | CH  | CJ  | CK  | CL  | CM  | CN  | CP  | CQ   | CR   |
| WHITE        | DA | DB  | DC  | DD  | DE  | DF  | DG  | DH  | DJ  | DK  | DL  | DM  | DN  | DP  | DQ   | DR   |

### SAE AS22759/11-26

|              | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|--------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| M83513**     | 6A | 6B  | V1  | 6D  | 6E  | V2  | 6G  | 6H  | 6J  | 6K  | 6L  | Y6  | 6N  | 6P  | 6Q   | 6R   |
| MIL-STD-681* | X3 | X4  | W3  | ED  | EE  | W4  | EG  | EH  | EJ  | EK  | EL  | EM  | EN  | EP  | EQ   | ER   |
| WHITE        | X1 | X2  | W1  | FD  | FE  | W2  | FG  | FH  | FJ  | FK  | FL  | Y5  | FN  | FP  | FQ   | FR   |

### SAE AS22759/33-24\*\*\* ☒

|          | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| M83513** | LA | LB  | LC  | LD  | LE  | LF  | LG  | LH  | LJ  | LK  | LL  | LM  | LN  | LP  | LQ   | LR   |
| WHITE    | MA | MB  | MC  | MD  | ME  | MF  | MG  | MH  | MJ  | MK  | ML  | MM  | MN  | MP  | MQ   | MR   |

### SAE AS22759/33-26\*\*\* ☒

|          | 6" | 12" | 18" | 24" | 30" | 36" | 42" | 48" | 54" | 60" | 66" | 72" | 84" | 96" | 108" | 120" |
|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| M83513** | NA | NB  | Y3  | ND  | NE  | Y4  | NG  | NH  | NJ  | NK  | NL  | Y8  | NN  | NP  | NQ   | NR   |
| WHITE    | PA | PB  | Y1  | PD  | PE  | Y2  | PG  | PH  | PJ  | PK  | PL  | Y7  | PN  | PP  | PQ   | PR   |

\* = Connectors with more than 100 contacts will repeat color code after 100 colors.

\*\* = Wire colors per M83513 are ten solid colors repeating.

\*\*\* = Per M83513, corrosion has been experienced on connectors that are pre-wired with 22759/33 and stored in sealed environments.

Caution should be exercised when using this wire.

☒ = Option not RoHS compliant

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