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The MX150™ high-performance Sealed Connector System offers a reduced package size, meets or exceeds USCAR-2 Class 3 requirements and is ideal for SAE and ISO-style wire in single and dual-row configurations up to 22.0A, supporting low-level signal and power applications for on-engine automotive to off-road construction equipment

The MX150™ Connector System consists of matte- and cable-sealed connectors and receptacles. This system is based upon the 1.50mm (.060”) ISO blade-type terminal system, available in tin, gold or silver contact finishes, therefore eliminating the need to purchase, handle and crimp individual wire seals to lower applied cost. This design has a single silicone-based seal with individual wire openings and a seal cap to protect, securely retain and provide strain relief to the seal, and features an allin- one plug and receptacle housings. Integral terminal position assurance (TPA) and optional connector position assurance (CPA) components eliminate time-consuming and costly assembly operations.

MX150 Panel-Mount Connectors ensure simplified and reliable mating and assembly while providing superior sealing and electrical performance in rugged automotive and non-automotive applications. This wire-to-wire connection system requires no curing to seal the blade connector to the case and provides flexibility in printed circuit board location and orientation. It also has integrated screw holes for mounting the connector to the case. MX150 Panel-Mount Connectors are ideal for high-temperature environments and employ gasket-seal technology to meet industry-standard sealing requirements.

MX150 M3 Grip Terminals are designed to support 0.35 and 0.50mm2 wire sizes. The terminals are a temperature Class 3 (-40 to +125°C). Designed for automotive applications, the MX150 M3 Grip Terminals reduced package size is ideal for ISO wires.

MX150™ Twist-Lock Sealed Bulkhead Connectors simplify connector assembly by eliminating the need for additional fasteners. These connectors employ ringseal technology to meet industry-standard sealing requirements.

MX150™ Backshells provide added protection from road debris and other contaminants. Harness wires are exposed to dust, moisture and dirt; the backshells cover the wire harnesses and help prevent electrical issues in a vehicle. The backshells are designed to feature encased wires to address engine beautification trends.

MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Standard MX150 System

33471 Single-Row Receptacles
33472 Dual-Row Receptacles
33481 Single-Row Connectors
33482 Dual-Row Connectors
33476 Hybrid Receptacles
33486 Hybrid Connectors
34345 Cavity Plug
33001 Female Terminals
33012
33000 Male Blade Terminals
33011

Panel-Mount MX150 System

47725 Panel-Mount Connectors

Twist-Lock Sealed Bulkhead Connector

34840 Twist-lock

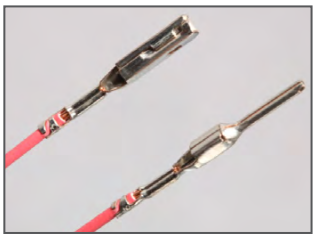
Backshells

34949 Receptacles, 1-by-2
34951 Receptacles, 2-by-3, 2-by-6
34948 Blades, 1-by-2
34950 Blades, 2-by-3, 2-by-6

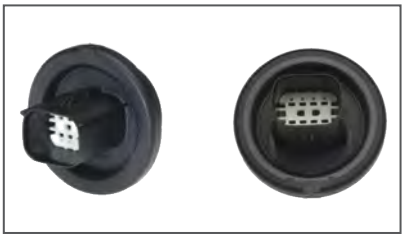
M3 Grip Terminals

33000 Tin, Male
33001 Silver, Female
33011 Silver, Male
33012 Tin, Female

MX150™ Sealed Connector System Product Family



MX150™ M3 Grip Terminals (Series 33000, 33001, 33011, 33012)



MX150™ Twist-Lock Dual-Row Sealed Bulkhead Connectors (Series 34840) Left to right: 2-by-3, 2-by-4

MX150™ Backshells Left: closed; Right: open

MX150™ Panel-Mount Connector (Series 47725)

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Features and Benefits

Standard Connector System

Reduced 3.50mm (.138”) pitch housing design	Supports single-row configurations for 2, 3, 4, 5 and 6 circuits and dual-row configurations for 4, 6, 8, 12, 16, 20 and 16 circuit hybrid
Pre-assembled housing, seal, TPA components and matte-seal connector shipped as single assembly	For applied labor and cost savings
Protective matte-seal cap	Protects, securely retains and provides strain relief to wire seal interface
Unused circuits can be blocked using plastic seal plugs	Facilitate flexibility of sealing unused circuits without adding complexity to part numbers and customer inventory
Simple crimp, poke and plug design	Ensures no need to crimp individual wire seals
Easy terminal extraction and insertion	For quick, low-cost field repairs using common screw driver, needle nose pliers and terminal extraction tool
High connector and terminal retention forces	Exceed USCAR-2 Rev 4 specifications. Offer high reliability under extreme conditions
Integral Terminal Position Assurance (TPA)	Assures that crimped terminal leads are properly locked into connector (TPA will not seat into final locked position and connector system will not latch if terminal is not locked properly into position)
Integral locking latch with secondary, pre-loaded connector position assurance (CPA) option	Confirms positive mating of connector and proper latching (CPA will not move to final locked position if connector is not latched)
Audible and tactile clicks on insertion, extraction and mating	Feedback facilitates reliable mating and terminal loading and removal
Superior electrical and mechanical performance capabilities	Surpass performance of most mature competitive products in the market
Conforms to USCAR-20 (FCLT) / USCAR-2 Rev 4 / USCAR-21	For use in on-engine, high-vibration, under-hood and under-chassis applications at Class 3 temperatures
Integral, matte and interfacial seals designed and tested to IEC IP6K7and IP6K9K and SAE USCAR-2 Rev 4 standards	Exceed “waterproof” demands as a true sealed connector system tested under submersed conditions in various fluids

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Specifications

Standard Connectors and Receptacles

Reference Information
Packaging:
  Housings – Bulk Pack
  Terminals – Reel and loose piece
Mates With:
  Receptacles Series
    33471, 33472, 33476
  Connectors Series
    33481, 33482, 33486
Use With:
  Terminals:
    Female (Series 33001, 33012)
    Male (Series 33000, 33011)
    Backshells (Series 34948, 34949, 34950, 34951)
Designed in: Millimeters

Electrical
Voltage (max.): 500V
Current (max.): 22.0A
Contact Resistance: 10 milliohms max.
Dielectric Withstanding Voltage:
  1500V AC min.
Isolation Resistance: 20 Megohms min.

Physical
Housing:
  30% Glass Filled Nylon, UL 94-HB
TPA:
  20% Glass Filled SPS/Nylon Alloy
Contact: Copper (Cu) Alloy
Plating:
  Contact Area —
    Tin (Sn), Gold (Au) or Silver (Ag)
  Underplating — Nickel
Wire Gauge:
  2.00 to 0.50mm² (14 to 22 AWG)
Insulation Diameter:
  2.70 to 1.50mm (.106 to .059”)
Operating Temperature:
  -40 to +125°C

Mechanical/Electrical/Sealing
Mating Force:
  Less than 75N (16.86 lb) max.
Unmating Force:
  Less than 75N (16.86 lb) max.
Connector Retention (Primary latch):
  255N (57.33 lb) avg.
  (exceeds 110N (24.73 lb) min.
  USCAR requirement)
Contact Retention to Housing:
  210N (47.21 lb) avg.
  (exceeds 90N (20.23 lb) min.
  USCAR requirement)
Contact Insertion Force Into Housing:
  30N (6.74 lb) max.
Contact Insertion Force:
  4.4N (1.0 lb) max.
Connector Audible Feedback:
  7dB over ambient
Polarization Feature Effectiveness:
  220N (49.46 lb) min.
FCLT (Class 3): 20 milliohms max.
Durability: 10 milliohms max.
  Tin (Sn) Plating – 25 Cycles
  Silver (Ag) Plating – 100 Cycles
  Gold (Au) Plating – 100 Cycles
Thermal Shock (class 3, 100 cycles):
  10 milliohms max.
High Temperature Exposure:
  Pressure/Vacuum Immersion –
    28 kPa (4psi) 30 minutes
  Isolation resistance –
    20 Megohms @ 500V DC min.
Vibration:
  (USCAR-2 Rev 4) 10 milliohms max.
    Random “On-Engine” Profile:
      118.7 mps² rms, 60 to 1,200 Hz
    Mechanical Shock:
      343 mps², half-sine wave,
      10 msec Pulse
Vibration:
  (GMW 3191) 10 milliohms max.
    Random “On-Engine” Profile:
      170 mps² rms,10 to 1,500Hz
    Sine “On-Engine” Profile:
      280 mps² Pk,100-440 Hz
    Mechanical Shock:
      245 mps², half-sine wave,
      10 msec pulse
Sealing: (USCAR-2 Rev 4) (GMW3191)
  Heat Soak Submersion:
    +125°C and submersion depth of
     40.00cm (15.75”) water
  Pressure/Vacuum Immersion:
    48 kPa (7 psi) IEC 529, IP6K7, IP6K9K
Isolation Resistance:
    20 Megohms @ 500V DC min.

MX150™ Standard Connectors and Receptacles

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Features and Benefits
Panel-Mount Connectors

Gasket seal	Meets IP6K7 and IP6K9K sealing requirements
High-temperature thermoplastic housing	Withstands Class 3 (-40 to +125°C) operating environments
Terminal insertion, extraction and connector mating provides audible and tactile feedback	Facilitates reliable mating and terminal loading upon assembly
Easy terminal extraction and insertion	Provides simple serviceability
Terminal Positioning Assurance (TPA)	Preassembled for applied cost savings
Mounts from the inside-out of the module	Allows the operator quicker installation
Conforms to USCAR-2 color pallet (black and three shades of gray)	Maintains visual polarization effects
Housing can be molded into plastic or die-cast materials	For design flexibility
Mates to existing MX150 connectors	No need for additional components

Specifications
Panel-Mount Connectors

Reference Information
Packaging:
Housings – Packed in trays
Terminals – Reel
Mates With:
Receptacles Series 33472
Use With:
- Terminals:
Female Series 33001, 33012
Male Series 33000, 33011
- MX150 Sealed Plug
(for unused cavity) Series 34345
Designed in: Millimeters

Electrical
Voltage (max.): 500V DC
Current (max.): 22.0A
Contact Resistance: 8 milliohms max.
Dielectric Withstanding Voltage:
1000V AC min.
Isolation Resistance:
100 Megohms min.

Physical
Housing:
20% Glass Filled SPS/ Nylon, UL 94-HB
TPA: 20% Glass Filled SPS/Nylon
Contact: Copper (Cu) Alloy
Plating:
Contact Area —
Tin (Sn), Gold (Au) or Silver (Ag)
Underplating — Nickel (Ni)
Wire Gauge:
ISO Wire: 2.00 to 0.35mm^2
SAE Wire:14 to 22 AWG
Insulation Diameter:
2.69 to 1.20mm (.106 to .047”)
Operating Temperature: -40 to +125°C

Mechanical / Electrical / Sealing
Mating Force:
Less than 75N (16.86 lb) max.
Unmating Force:
Less than 75N (16.86 lb) max.
Connector Retention
(Primary latch locked):
218N (49.01 lb) avg.(exceeds 120N (26.98 lb) min. GMW requirement)
Contact Retention to Housing:
TPA in open position:
145N (32.60 lb) min.
(exceeds 50N (11.24 lb) min. GMW3191 requirement)
TPA in fully seated position:
172N (38.67 lb) min.
(exceeds 80N (17.98 lb) min. GMW3191 requirement)
TPA in fully seated position (moisture conditioning):
161.5N (36.31 lb) min.
(exceeds 80N (17.98 lb) min. GMW3191 requirement)
TPA in fully seated position (thermal aging):
161N (36.19 lb) min.
(exceeds 70N (15.74 lb) min. GMW3191 requirement)
TPA in fully seated position (temp/humidity cycle):
163N (36.64 lb) min.
exceeds 70N (15.74 lb) min. GMW3191 requirement)
Contact Insertion Force Into Housing:
TPA in open position:
15N (3.37 lb) max.


MX150™ Panel-mount Connectors (available in four polarization colors)

TPA in fully seated position:
30N (6.74 lb) min.
Contact Insertion Force:
4.4N (.99 lb) max.
Durability:
8 milliohms max. at 10 cycles
Thermal Shock (class 3,300 cycles):
connection resistance 8 milliohms max.
High-Temperature Exposure:
connection resistance
8 milliohms max.
Vibration:
(USCAR-2 Rev 5.4.6)
10 milliohms max.
Random “On-Engine” Profile:
118.7 mps^2 rms, 60 to 1,200 Hz
Mechanical Shock:
343 mps^2, half-sine wave, 10 ms Pulse
Sealing: (GMW3191)
Heat Soak Submersion:
heat sample at +125°C and submersion into +23°C depth of 100.00mm (3.94”) water
Pressure Immersion: 48 kPa (7 psi)
Vacuum Immersion: 28 kPa
IP6K7 and IP6K9K Isolation Resistance:
100 Megohms @ 500V DC min.

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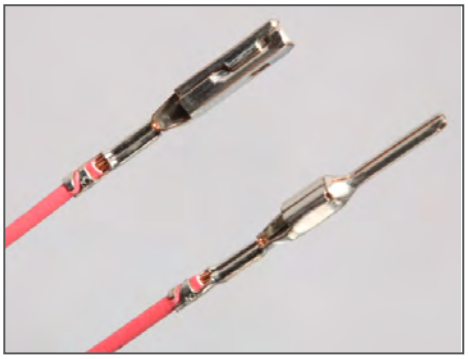
MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Features and Benefits

M3 Grip Terminals

High-temperature thermoplastic housing	Withstands Class 3 (-40 to +125°C) operating environments
ISO-wire sizes available, 0.35 and 0.50mm²	Small wire sizes provide optimum sealing performance and contribute less weight in the vehicle
Plating available in silver or tin	Provides high-performance connection options and the tin terminals provide a lower cost option
Use with existing MX150 female and male connectors	Eliminate the need for additional components



MX150™ M3 Grip Terminals
(Series 33000, 33001, 33011, 33012)

Specifications

M3 Grip Terminals

Reference Information
Packaging:
Reel and loose piece (terminals are not packaged with connectors)
Mates With:
Receptacles Series
33471, 33472, 33476
Connectors Series
33481, 33482, 33486
Use With:
MX150 Connectors and Receptacles
Designed in: Millimeters

Electrical
Voltage (max.): 500V
Current (max.): 12.5A

Physical
Contact: Copper (Cu) Alloy
Plating:
Contact Area — Tin (Sn) or Silver (Ag)
Underplating — Nickel
Wire Gauge:
0.35 to 0.50mm² per ISO 6722
Operating Temperature:
-40 to +125°C – Tin (Sn)
Operating Temperature:
-40 to +155°C – Silver (Ag)

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Features and Benefits

Twist-Lock Sealed Bulkhead Connectors

Twist-lock latching design with audible, tactile and visual feedback	Ensures reliable mating and locking upon assembly. Eliminates the need for additional fasteners
Integral ring seal	Meets industry-standard sealing requirements, using proven interfacial seal technology to facilitate reliable sealing
Outside-in mounting design with a 42.00mm pass-through hole	Eliminates the potential to push the bulkhead connector back into the module. Improves high-pressure spray capability. Allows for easy access inside and outside of the module
High-temperature thermoplastic housing	Withstands Class 3 (-40 to +125°C) operating environments
Sealing geometry	Incorporates a spray shield necessary to meet IP6K7 and IP6K9K sealing performance requirements
Terminal Positioning Assurance (TPA)	Ensures terminals are fully seated and will not back out during mating
Terminal Positioning Assurance (TPA) probe hole	Allows for simple terminal serviceability
Four polarization options	Four discrete mechanical and visual options that meet the new, USCAR-approved color pallet (black and three shades of gray)

Backshells

Single-piece hinge design	Protects the connector from dust, moisture and other contaminants. Easy-to-use and close backshell at harness makers plants. Secure sealing class IP6K7, IP6K9K
Encased wires and connector	Addresses the new OEM trend for engine beautification

MX150™ Twist-Lock Sealed Bulkhead Connector

MX150™ Backshells

Specifications

Twist-Lock Sealed Bulkhead Connectors

Reference Information
Packaging:
  Housings – Packed in trays
  Terminals – Reel
Mates With:
  Receptacles Series 33472
Use With: Terminals (Series 33000)
Designed in: Millimeters

Electrical
Voltage (max.): 14V DC
Current (max.): 22.0A
Contact Resistance (max.): 8 milliohms
Dielectric Withstanding Voltage: 1000V
Isolation Resistance (min.):
  100 Megohms min.

Mechanical / Electrical / Sealing
Durability:
  8 milliohms max. at 10 cycles
Sealing: (GMW3191) and IP67K

Physical
Wire Gauge:
  ISO Wire: 0.35 to 1.50mm2
  SAE Wire: 14 to 22 AWG
Operating Temperature: -40 to +105°C

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Applications

Automotive and non-automotive
- Commercial vehicles
- Recreational vehicles
- Industrial vehicles and equipment
- Construction equipment
- Marine equipment

Panel-Mount Connectors only
- Headlamp Modules
- Hybrid, Electric Battery Cases
- Firewall Harnesses
- Tail Lamps
- Power Control Modules
- Bulkhead Applications
- Speedometers

Hybrid Electric Battery Case

Jet Ski

Boat

Automotive and commercial vehicle markets

Ordering Information

Standard Receptacles

Order No.	Rows	Circuit Size	Clip Slot
33471-0201	1-by-2	2	Not Available
33471-030†	1-by-3	3	Not Available
33471-040†	1-by-4	4	Not Available
33471-0501	1-by-5	5	Not Available
33471-060†	1-by-6	6	Not Available
33472-040†	2-by-2	4	Not Available
33472-060†	2-by-3	6	Not Available
33472-070†	2-by-3	6	Standard
33472-080†	2-by-4	8	Not Available
33472-090†	2-by-4	8	Standard
33472-120†	2-by-6	12	Not Available
33472-130†	2-by-6	12	Standard
33472-160†	2-by-8	16	Not Available
33472-200†	2-by-10	20	Not Available
33476-160†	2-by-8 Hybrid	16	Not Available

† Denotes polarization, housing color and CPA information:
1 = A, Black, no CPA; 2 = B, Light Gray, no CPA; 3 = C, Brown, no CPA; 4 = D, Green, no CPA; 6 = A, Black, CPA; 7 = B, Light Gray, CPA; 8 = C, Brown, CPA; 9= D, Green, CPA

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Ordering Information

Standard Connectors

Order No.	Rows	Circuit Size	Clip Slot
33481-030*	1-by-3	3	Standard
33481-040*	1-by-4	4	
33481-0501	1-by-5	5	
33481-060*	1-by-6	6	
33482-040*	2-by-2	4	
33482-060*	2-by-3	6	
33482-080*	2-by-4	8	
33482-120*	2-by-6	12	
33482-160*	2-by-8	16	
33482-200*	2-by-10	20	
33486-160*	2-by-8 Hybrid	16	

* Denotes polarization and housing color: 1 = A, Black; 2 = B, Light Gray; 3 = C, Brown; 4= D, Green

Panel Mount Connectors

Order No.	Rows	Circuit Size	Polarization	Color
47725-1310	2-by-6	12	A	Black
47725-1330			C	Dark Gray
47725-1340			D	Stone Gray

Twist-Lock Sealed Bulkhead Connectors

Order No.	Configuration	Circuit Size	Clip Slot	Polarization	Color	Mating Connector Order No. without CPA	Mating Connector Order No. with CPA
34840-6010	2-by-6	12	Not Available	A	Black	33472-1201	33472-1206
34840-6020				B	Light Gray	33472-1202	33472-1207
34840-6030				C	Dark Gray	33472-1253	33472-1259
34840-6040				D	Stone Gray	33472-1254	33472-1260
34840-8010	2-by-8	16	Available*	A	Black	33472-1601	33472-1606
34840-8020				B	Light Gray	33472-1602	33472-1607
34840-8030				C	Dark Gray	33472-1767	33472-1769
34840-8040				D	Stone Gray	33472-1768	33472-1770
34840-3010	2-by-3	6		A	Black	33472-0601	33472-0606
34840-3020				B	Light Gray	33472-0602	33472-0607
34840-3030				C	Dark Gray	33472-0668	33472-0670
34840-3040				D	Stone Gray	33472-0669	33472-0671
34840-4010	2-by-4	8		A	Black	33472-0801	33472-0806
34840-4020				B	Light Gray	33472-0802	33472-0807
34840-4030				C	Dark Gray	33472-0879	33472-0881
34840-4040				D	Stone Gray	33472-0880	33472-0882

*Note: Additional clip slot connectors available; search Series 34840 on molex.com to view entire offering

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MX150™ Sealed Connector System 3.50mm (0.138”) Pitch

Ordering Information

Backshells

Order No. With Ribs	Order No. Without Ribs	Use with Connector Order No.	Component	Configuration
34949-0210	34949-0220	33471-0206	Receptacle	1-by-2
34951-0610	34951-0620	33472-0606		2-by-3
34951-1210	34951-1220	33472-1206		2-by-6
34948-0210	34948-0220	33481-0201	Blade	1-by-2
34950-0610	34950-0620	33482-0601		2-by-3
34950-1210	34950-1220	33482-1201		2-by-6

M3 Grip Female Terminals

Order No.	Plating	Wound Direction / Payoff Direction
33012-2004	Tin	B / Right
33012-3004		D / Left
33001-4005	Silver	B / Right
33001-5005		D / Left

M3 Grip Male Blade Terminals

Order No.	Plating	Wound Direction / Payoff Direction	Wire Gauge (ISO)
33000-0004	Tin	B / Right	0.35 and 0.50mm²
33000-1004		D / Left	
33011-2004	Silver	B / Right	
33011-3004		D / Left	

Cavity Plug - Sealed

Order No.	Plating
34345-0001	Male / Female (interchangeable)

www.molex.com/ind/mx150.html

Printed in USA/KC/2013.10