# Revision History

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Section 1

Product Introduction
Section 1: 
MX 64™ Connectors

This reference manual contains information pertaining to the Molex 0.64mm connection system. The connectors mate to various sensors among General Motors, Ford and Daimler Chrysler products.

There are multiple color coded keying options as defined by USCAR. In addition there are 3 different terminal options for individual OEM terminal preferences. These preferences are defined by Series Numbers below.

Molex Series 31402 = Tyco / Molex “GET”
Molex Series 31403 = Molex MX64
Molex Series 31404 = Yazaki Kaisan

For product ordering information, please contact your Molex Inside Sales Representative at (800)786-6539.
Section 2

Product Summary
Section 2: MX 64™ Connectors

Single Row Sealed

Connector features
- Available in circuit sizes
- 1x2, 1x3, 1x4, 1x5, 1x6, 1x8
  - Adopted as the new USCAR single row footprint
  - Will accommodate various terminal systems
    - MX64
    - Molex or Tyco GET
    - Yazaki Kaisan
  - 18-22 AWG and .36-.83 mm² Metric Wire
  - CPA option
  - 4 polarization options
  - Matte seal design

Common connector housing
- Can accept any terminal housing design
- Molded circuit pegs can be left in during the Molex assembly process to seal voided circuits
  - Eliminates separate rear seal cover
Section 2: *MX 64™ Connectors*

*Single Row Sealed*

- Common USCAR Connector Housing
- Terminal Specific Housing
- Common CPA
- Common Matte Seal
- Common Peripheral Seal
- Terminal Specific TPA
Section 2: **MX 64™ Connectors**

*Single Row Sealed*

- Common connector housing
  - Eliminates separate rear seal cover
  - Can accept any terminal housing design
  - Molded circuit pegs can be left in during the Molex assembly process to seal voided circuits.

♫ Allows for customer specific sealing patterns
Section 2: MX 64™ Connectors

Product Identification

- MOLEX PART NUMBER
- DATE CODE
- DAY of the year 001 to 365
- YEAR (last 2 digits)

Product Identification
Section 2:
MX 64™ Connectors
Part # legend single row sealed Female

3140X-X X X X
Seal Cover Configurations 0,1,2,3,4,5,6,7,8,9

CPA OPTION (0,1)
0 = Without CPA
1 = With CPA

Polarization Options (1,2,3,4)
1 = USCAR Option A (BLACK)
2 = USCAR Option B (GRAY)
3 = USCAR Option C (BROWN)
4 = USCAR Option D (GREEN)
5 = USCAR OPTION B, COLOR: BLACK
6 = USCAR OPTION C, COLOR: BLACK
7 = USCAR OPTION D, COLOR: BLACK

Circuit SIZE 2,3,4,5,6,8

Terminal System 2,3,4
2 = Tyco/Molex "GET"
3 = MOLEX 0.64mm
4 = Yazaki Kaisan

molex®

0.64mm Connector Reference Manual - REV 1- September 27, 2004
Section 2:
MX 64™ Connectors

Molex MX64 0.64mm

Tyco/Molex “GET” 0.064mm

Yazaki Kaisan 0.64mm
## Section 2: MX 64™ Connectors

**Tyco/Molex GET 0.64mm Female Terminal**

### Series 31402 Terminal Part Numbers

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Section 2:

MX 64™ Connectors

Tyco/Molex GET 0.64mm Female
Terminal Series 31402

Orientation Tab

Correct Orientation
90 Misorientation Lock-out
180 Misorientation Lock-out

Terminal Insertion Orientation to Grommet Seal Cover
Section 2:
MX 64™ Connectors
Molex 0.64mm Female
Terminal Series 31403

Series 31403 Terminal Part Numbers

MOLEX Part Number
18 & 20 AWG
TIN # 33468-0003
GOLD # 33467-0005
22 AWG
TIN # 33468-0001
GOLD # 33467-0003

Orientation Tab
Section 2:

**MX 64™ Connectors**

*Molex 0.64mm Female Terminal Series 31403*

Correct Orientation

90° Misorientation Lock-out

180° Misorientation Lock-out

Orientation Tab

Terminal Insertion Orientation to Grommet Seal Cover
Section 2: MX 64™ Connectors

Yazaki Kaisan 0.64mm Female
Terminal Series 31404

Series 31404 Terminal Part Numbers

Yazaki Kaisan 0.64mm
18 AWG
TIN # 7116-4619-02
AU # 7116-4619-08
20 & 22 AWG
TIN # 7116-4618-02
AU # 7116-4618-08

Orientation Tab
Section 2:  
**MX 64™ Connectors**  
Yazaki Kaisan 0.64mm Female  
Terminal Series 31404

Orientation Tab

Correct orientation

90 Misorientation
Lock-out

180 Misorientation
Lock-out

Terminal Insertion Orientation to Grommet Seal Cover
Section 3

Harness Assembly Instructions
Section 3: Harness Assembly Instructions

A. TPA shown in “As-Shipped” position (FIG. 3-1)

- TPA shown “LOCKED” position (FIG. 3-2)

- TPA to remain in pre-lock position (as shipped) until all circuits are loaded (Fig. 3-1)
Section 3: Harness Assembly Instructions

TPA must be in prelock position to install terminals!

AS SHIPPED
TPA in prelock

TPA locked
Section 3: Harness Assembly Instructions
2-3 way connectors

- TPA must be in pre-lock position to install terminals!
- If TPA is locked you must move it to the pre-lock position by carefully lifting up on the upper side of the TPA using a 3.5 mm flat blade screwdriver. This must be done as shown in FIG. 3-6
- DO NOT PRY ON THE LATCH SIDE OF THE CONNECTOR This will damage the TPA and connector!

FIG. 3-6

FIG. 3-7
Section 3: Harness Assembly Instructions
4-8 way connectors

- TPA must be in prelock position to install terminals!
- If TPA is locked you must move it to the pre-lock position by carefully lifting up on the upper side of the TPA by inserting a 3.5 mm flat blade screw driver into the TPA access window as shown.
- DO NOT PRY ON THE LATCH SIDE OF THE CONNECTOR. This will damage the TPA and connector!
Section 3: Harness Assembly Instructions

B. 0.64mm Terminal Installation (continued)

With TPA still in pre-lock position, orient terminal to rear of connector.

Grip the wire, (Fig. 3-10) and insert through appropriate circuit opening (Fig. 3-11). If resistance is encountered, retract the terminal and adjust the angle of insertion. Continue inserting the terminal until it stops and locks on the lock finger with an audible click.

Fig. 3-10

Fig. 3-11
Section 3: Harness Assembly Instructions

D. Seating TPA with the 0.64mm Terminal

With the terminals fully installed, the TPA can be seated into its final lock position by applying an even force (Fig. 3-12) until it comes to a stop and you hear an audible click from the locking finger locking in place. If the TPA resists it may be detecting a partially installed terminal. Pull the TPA back into its pre-lock position and make sure all terminals are fully installed. Upon completion, the TPA can be seated.

Fig. 3-12 A&B
Section 3: Harness Assembly Instructions

Completed Product
Section 4

Connector Mating Instructions
Section 4: Connector Mating Instructions

A. Connector polarization options & color identification

USCAR Option A (BLACK)
USCAR Option B (GRAY)
USCAR Option C (BROWN)
USCAR Option D (GREEN)
Special request Option B, C & D (BLACK)

For updated polarization options consult:
HTTP://WWW.USCARTEAMS.ORG
Section 4: Connector Mating Instructions

B. Connector mating

Correctly orient the connector (align keying features) onto the mating connector (Fig. 4-1). Then evenly push the connector onto the mating connector until it locks with an audible click. (Fig. 4-2).

Fig. 4-1

Fig. 4-2

Mated connector
Section 4: Connector Mating Instructions

C. Optional Connector Position Assurance (CPA)

With the connector mated the CPA can now be engaged. Push the CPA toward the mating surface until it clicks into its locked position (Fig. 4-3).
Section 5

Service Instructions
Section 5: Service Instructions

A. Connector removal from sensor

To un-mate the connector from the sensor, push the CPA (if equipped) away from mating surface (Fig. 5-1) Then depress the latch on the top of the connector so the lock releases.

Grip the connector and evenly pull straight away from the sensor. (Fig. 5-2)
Section 5: Service Instructions

B. TPA Servicing

Step 1: To add additional circuits move the TPA from locked to pre-lock as shown in section 3. Stop pulling when pre-lock is reached.

Step 2: To remove circuits that have been populated you must remove the TPA from the connector by raising it into pre-lock and then continue raising until the TPA has been removed.

Fig. 5-3

Step 1: Pry Up TPA

Fig. 5-4
Section 5: Service Instructions

B. TPA Servicing (continued)

Views of TPA in “Pre-Lock” Position
Section 5: Service Instructions

E. 0.64mm Terminal Removal

After removing the TPA, Push up on the wire and carefully displace the locking finger using 1mm blade screwdriver. Once the locking finger has been displaced gently pull on the wire to remove the terminal.

- Do not use excessive force. Excessive force can damage the lock finger.

Once the required terminals have been removed, Replace the TPA and lock if terminal population is complete.
Section 5: Service Instructions

G. 0.64mm Terminal Removal (continued)

Do not use excessive force. Excessive force can damage the lock finger.

Deflect the top of locking finger to unlock it from the terminal. Apply light pressure on lock finger while lightly pulling terminal wire.

Fig. 5-9

Screw driver

See page 36 for cross section view

Lock Finger

Female Terminal
Section 5: Service Instructions

F. 0.64mm Terminal Removal (continued)

Carefully displace the locking finger by prying the lock finger up to unlock it from the terminal. Use care not to over deflect the lock finger to avoid damage.
Section 5: Service Instructions

F. 0.64mm Terminal Removal (continued)

Once the terminal lock finger is disengaged, pull on the wire (Fig. 5-12) to release the terminal.
Section 5: Service Instructions

G. MX0.64 Terminal Crimping

If the 0.64mm terminal needs to be replaced, a new one can be hand crimped using the Molex Crimp Tool Number 63811-4200. Contact Molex for terminal drawings, hand crimp instructions and crimp height requirements.

H. Tyco/Molex “GET” Terminal Crimping

If the Tyco/Molex “GET” terminal needs to be replaced, a new one can be hand crimped using the Molex crimp tool number 63811-4500 for the wire range: 0.22-0.35 mm² & 22 awg. And 63811-4600 for the wire range: 0.50-0.75 mm² & 20-18 awg. Contact Molex for terminal drawings, hand crimp instructions and crimp height requirements.

I. Yazaki Kaisan terminal crimping

If the Yazaki Kaisan terminal needs to be replaced please consult Yazaki for crimp tool information.
Section 6: Testing of terminals

When testing the connector for continuity it is imperative that you do not damage the terminals.

Pogo pins should be checked for damage or sticking several times a shift to assure Containment if an issue is found.

First a visual inspection of all the pins for damage should be performed.

Next a testing block should depress all the pogo pins up into the barrel. If there is a bent or sticking pin it should get stuck up in the barrel and must be replaced.

Probing Damage can occur:

If a sharp ended probe is inserted into the contact of the connector it may damage the plating and increase contact resistance.

If an oversize diameter probe is inserted into the terminal this will over deflect the beam in the terminal and create an environment for intermittent connections and increased contact resistance.

If a probe is inserted into the connector on an angle or off center it may damage the terminal and/or connector.