

Lever Mating Rectangular Connector with EMI Countermeasure  
Panel-to-Wire / Board-to-Wire, Crimp and Solder Connection

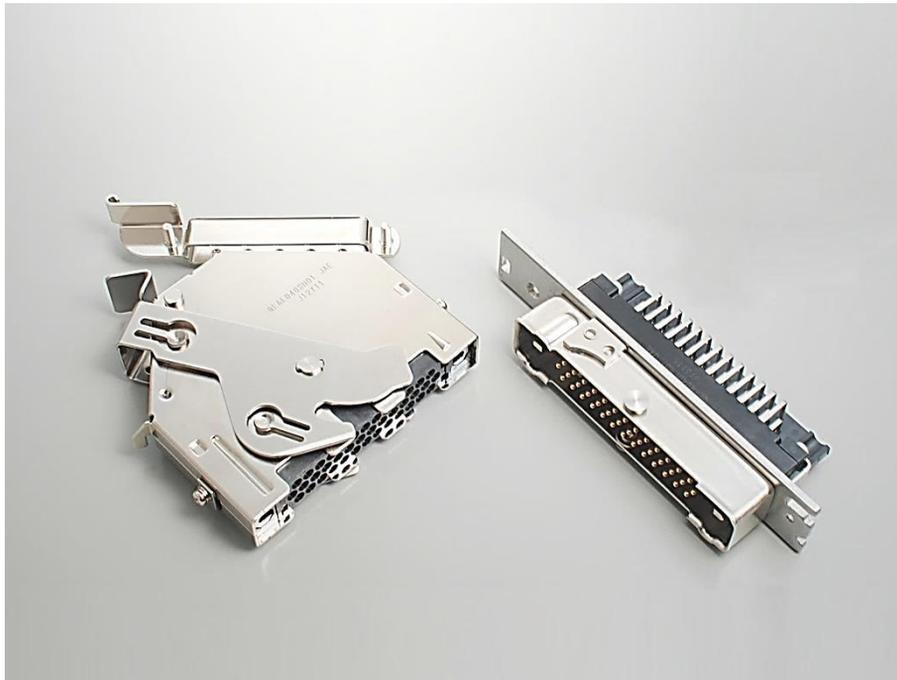
CONNECTOR

MB-0281-5

Jun.2025

# QE6 Series

**RoHS Compliant**



## Overview

The QE6 Series is a lever mating robust metal shell rectangular connector developed for railway vehicles and equipment. The QE6 Series has low profile metal shell applicable 3U4HP compact PCI rack and panel system, and selectable connection, solder to through hole on PCB or crimp to wire. Furthermore, the QE6 series is applicable Ethernet data transmission

The QE6 Series is also suited for use in other industrial equipment applications that require a robust and secure connection.

## Application

Railway vehicles and electrical equipment, industrial equipment

## Features

- Slimmer and smaller  
50% less mounting space (Note 1) compared to the QE Series.  
Note 1: Comparing QE6 Series connector to the QE 50 poles connector
- Compatible with 19-inch sub-rack.  
Dimensions and structure that can be mounted to a 3U4HP size card for 19-inch sub-rack (IEC60297-3-101) used for VME systems.  
Compatible with front access plug-in module for rack.
- 64 Key positions available.  
Multiple key positions allow for the use of several connectors within the same device without mating errors.
- Common contacts with our QE series connector.  
Ensure electrical and mechanical reliability through the use of common contacts with proven results.  
Crimp tool also in common with that used for the QE series.
- EMI controlled  
Emission controlled design structure.  
Forming a path between “electrical wire shield” to “equipment case” with incorporated GND bar.  
(Please refer to the EMI Characteristics section.)
- Optimal for Ethernet transmission  
Satisfies ISO/IEC 11801 category 5 standard (general-purpose telecommunication cabling systems).  
(Please refer to the Ethernet Transmission Characteristics section.)

## General Specifications

Component	Specification and Performance
Number of Contacts	40
Contact Resistance	5 m $\Omega$ max.
Dielectric Withstanding Voltage	A.C. 1500 Vr.m.s. (per minute)
Rated Current	Individual Contacts : 5 A
Maximum Current	40 A
Insulation Resistance	5000 M $\Omega$ min.
Durability	Mating cycles: 500 times
Operating Temperature	-55 deg. C to +85 deg. C
Applicable Wire <sup>(Note)</sup>	Cross-sectional area of conductor: 0.2 mm <sup>2</sup> ~ 2 mm <sup>2</sup> (AWG#24~#14) Wire outer diameter: $\Phi$ 3.1 mm max.

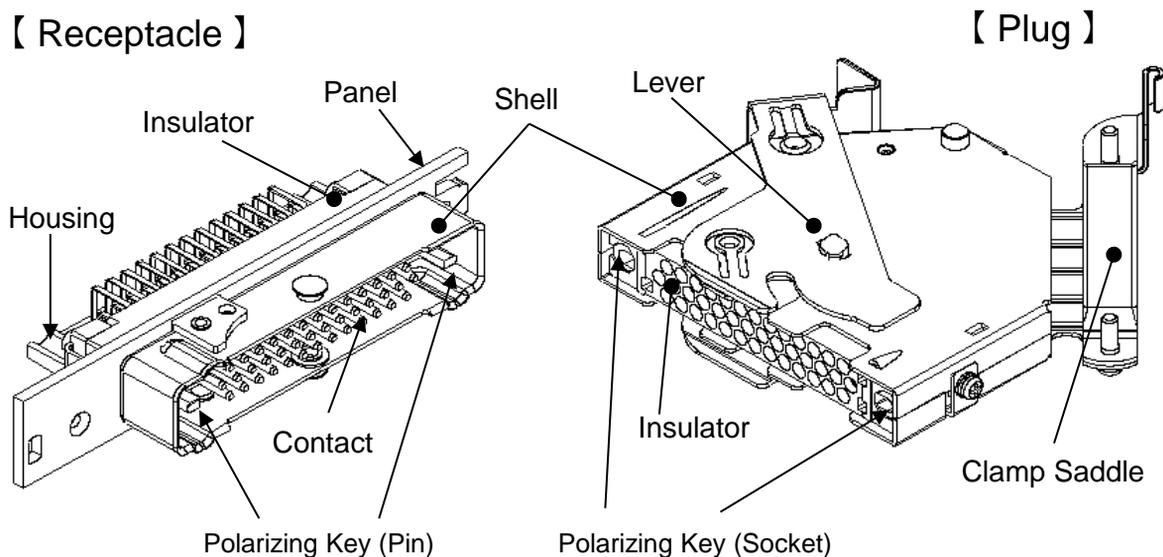
Note: Please refer to the Applicable Contact section on page 10 for more information on applicable wires.

• Please refer to the documents below for specification and handling instructions.

Specifications : JACS-30290

Instruction manual: JAHL-30290

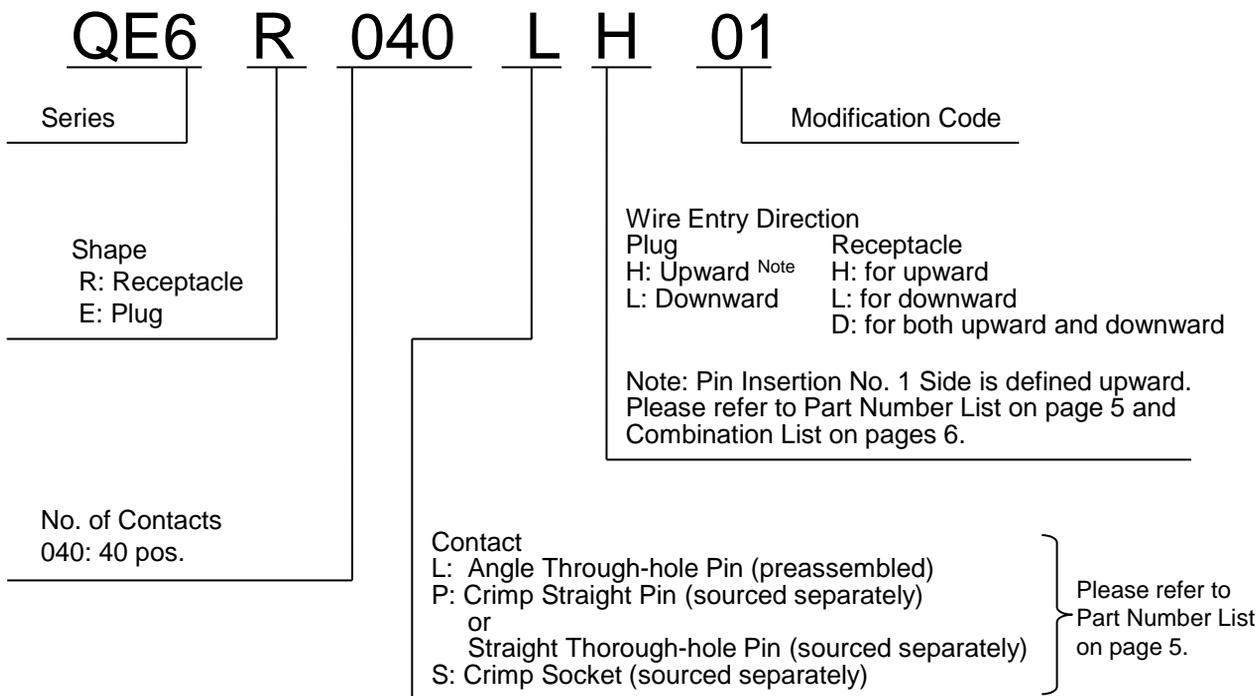
## Components



**Materials and Finishes**

Components	Materials and Finishes
Insulator	Synthetic Resin
Shell, Clamp Saddle	Steel / Ni plating
Polarizing Key	Copper alloy / Ni plating
Lever, Panel	Stainless Steel
Housing	Synthetic Resin
Contact (Angle Through-hole)	Copper alloy / Au plating over Ni (contact area), Sn plating (soldering area)
Contact (Crimp)	Copper alloy / Au plating over Ni

**Ordering Information**



Note: For more information on contact part numbers please refer to Applicable Contacts section on page 10.

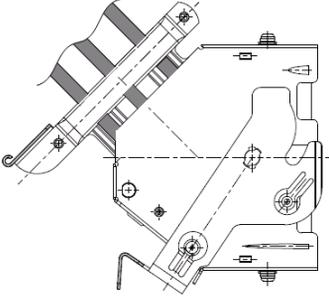
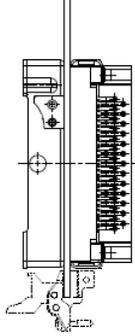
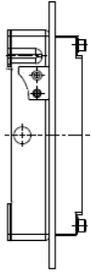
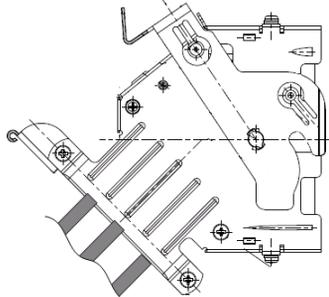
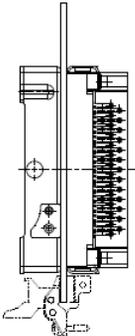
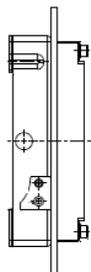
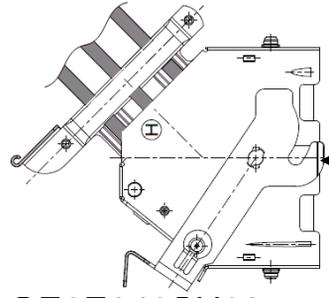
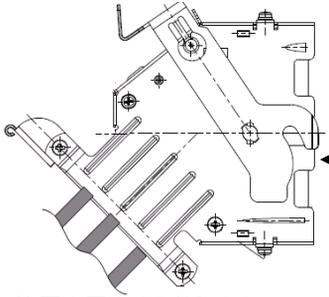
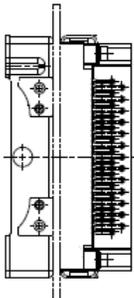
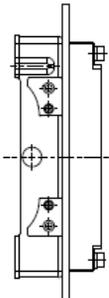
Part Number List

Number of Contacts	Connector	Part Number	Drawing Number	Applicable Contact Type v = applicable Blank = not applicable				Remarks
				Crimp Socket	Crimp Pin	Straight Through-hole Pin	Angle Through-hole Pin	
40	Receptacle	QE6R040LH01	SJ113433				v	
		QE6R040LL01	SJ113462				v	
		QE6R040PH01	SJ113434		v	v		Panel attachment type
		QE6R040PL01	SJ113463		v	v		
		QE6R040LD01	SJ114349				v	
		QE6R040PD01	SJ114987		v	v		Panel attachment type
	Plug	QE6E040SH01	SJ113435	v				EMI countermeasure enhanced type
		QE6E040SL01	SJ113464	v				
		QE6E040SH02	SJ114350	v				
		QE6E040SL02	SJ114351	v				

Note 1 : Angle through-hole pin contacts are preassembled in the connector. Other contacts are sourced separately.

Note 2: Please refer to Combination List on page 6 regarding plug and receptacle mating combinations.

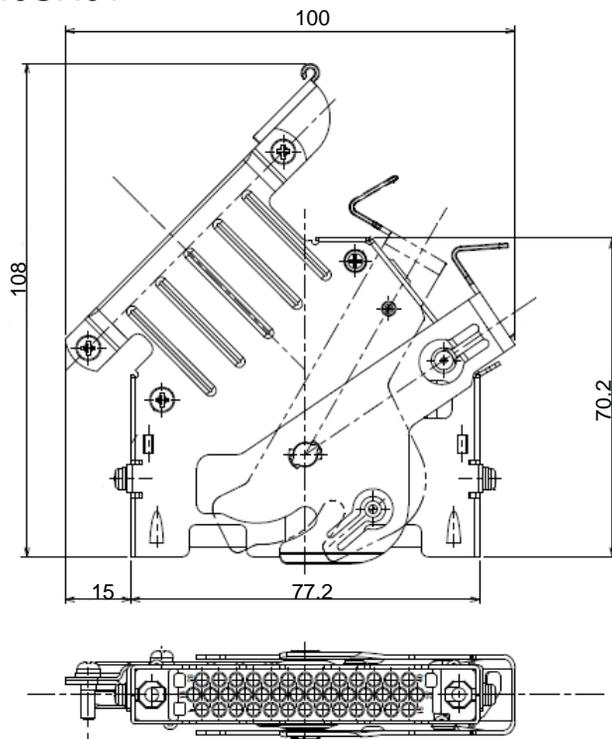
Combination List

Number of Contacts	Plug	Receptacle
<p>40 (EMI Control Type)</p>	 <p>QE6E040SH01 Note 1</p>	 <p>QE6R040LH01 (Angled Through-hole Type)</p> <p>or</p>  <p>QE6R040PH01 (Panel Mount Type)</p> <p>Note 1: Applicable plug is wire entry direction "H".</p>
	 <p>QE6E040SL01 Note 2</p>	 <p>QE6R040LL01 (Angled Through-hole Type)</p> <p>or</p>  <p>QE6R040PL01 (Panel Mount Type)</p> <p>Note 2: Applicable plug is wire entry direction "L".</p>
<p>40</p>	 <p>QE6E040SH02 Note 3</p>  <p>QE6E040SL02 Note 3</p>	 <p>QE6R040LD01 (Angled Through-hole Type)</p> <p>or</p>  <p>QE6R040PD01 (Panel Mount Type)</p> <p>Note 3: Applicable plug is modify code "02".</p>

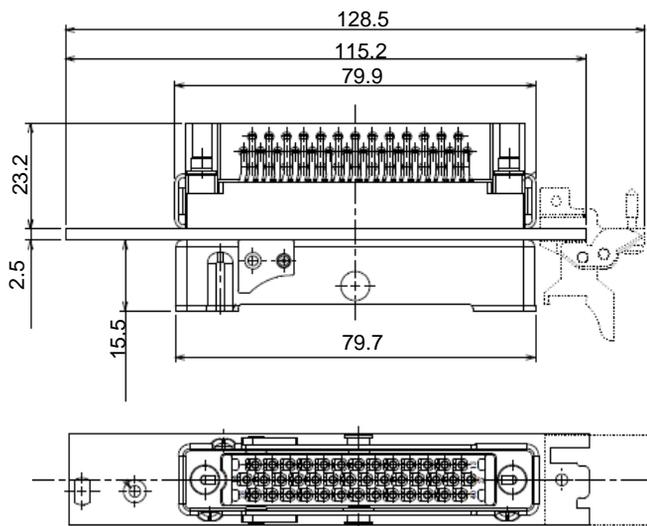
Outer Dimension

Outer shape and dimensions are for reference only, please refer to product drawings for further product information. (Unit: mm)

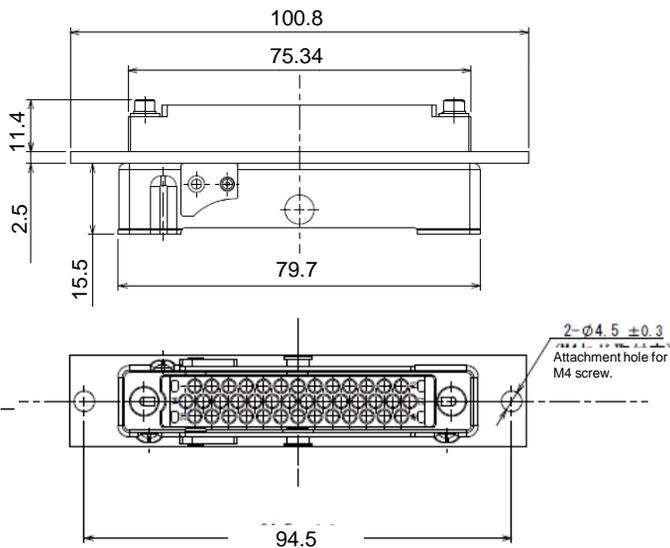
■ Plug (EMI Controlled Type)  
QE6E040SH01



■ Receptacle (QE6E040SH01 Mating Connector)  
Angled Through-hole Type  
QE6R040LH01



Panel Mount Type  
QE6R040PH01

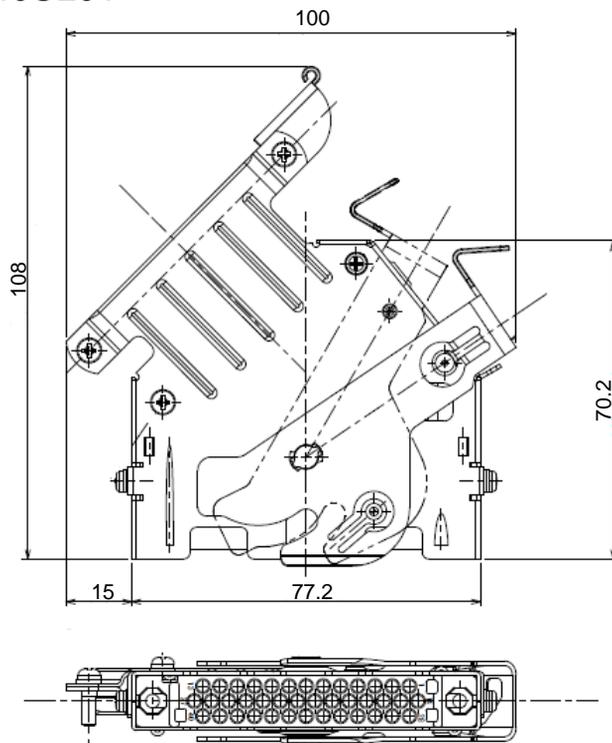


Outer Dimension

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■ Plug (EMI Controlled Type)

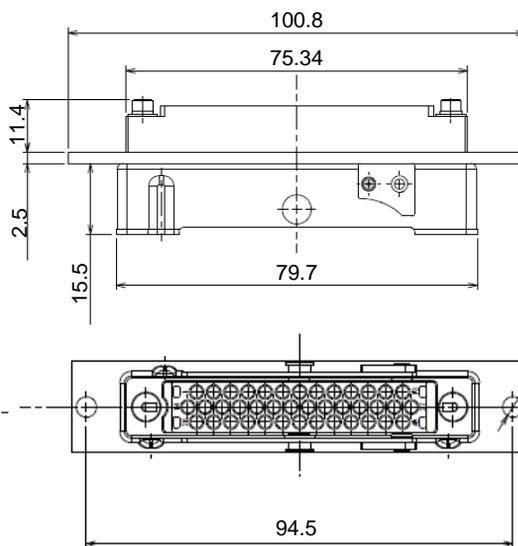
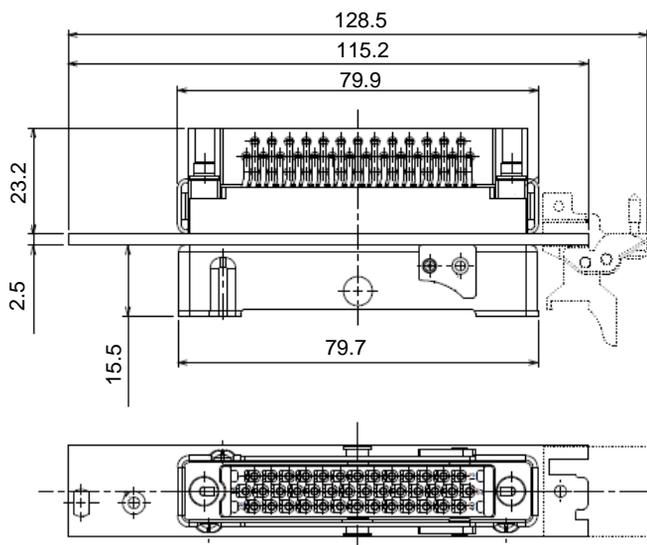
QE6E040SL01



■ Receptacle (QE6E040SL01 Mating Connector)

Angle Through-hole Type  
QE6R040LL01

Panel Mount Type  
QE6R040PL01

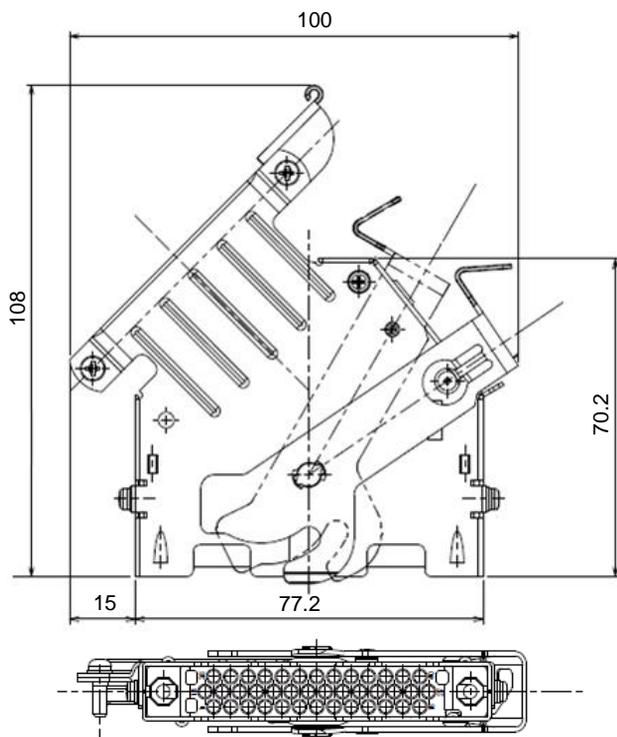


Outer Dimension

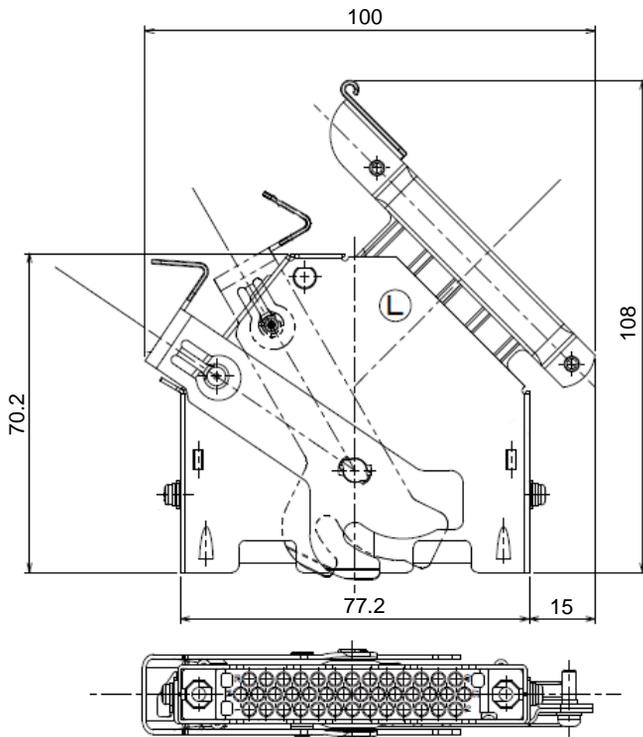
Outer shape and dimensions are for reference only, please refer to product drawings for further product information. (Unit: mm)

■ Plug

QE6E040SH02

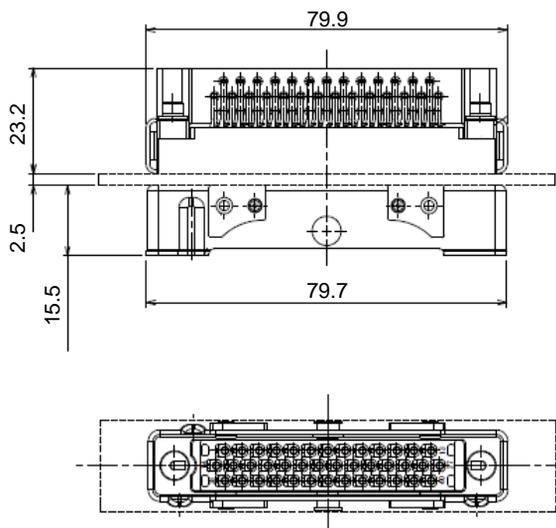


QE6E040SL02

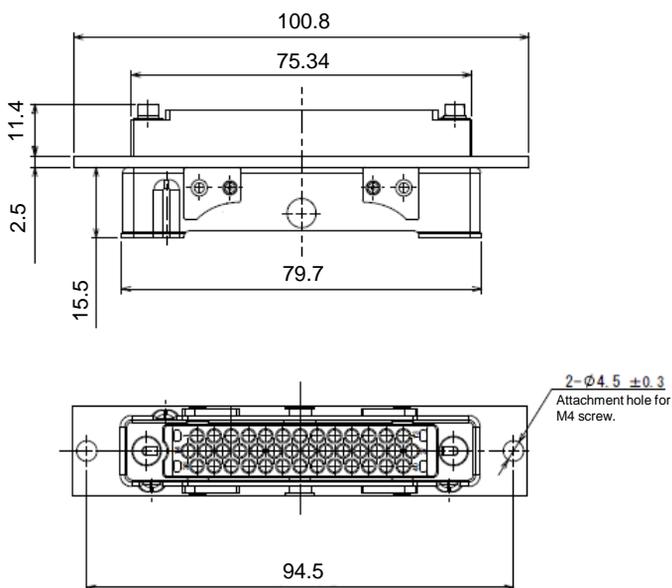


■ Receptacle (QE6E040S\*02 Mating Connector)

Angle Through-hole Type  
QE6R040LD01



Panel Mount Type  
QE6R040PD01



Applicable Contacts

Outer shape and dimensions are for reference only, please refer to product drawings for further product information. (Unit: mm)

■Crimp Contacts

Contact Size	Part Number		Plating Finishes	Applicable Wire Size (conductor cross-sectional area)	Clip Color	ΦC	Applicable Wire Outer Diameter (Max.)
	Pin Contact	Socket Contact					
16-20	031-50567	031-50677	A	AWG#24 to #20 (0.2 mm <sup>2</sup> to 0.5 mm <sup>2</sup> )	Red	1.8	Φ1.6
	031-50567-002	031-50677-002	B		Purple		
16-20A	031-50566	031-50676	A	AWG#24 to #20 (0.2 mm <sup>2</sup> to 0.5 mm <sup>2</sup> )	Green	1.8	Φ2.6
	031-50566-002	031-50676-002	B		Yellow		
16-16	031-50565	031-50675	A	AWG#16 to #20 (0.5 mm <sup>2</sup> to 1.3 mm <sup>2</sup> )	Blue	2.8	Φ2.4
	031-50565-002	031-50675-002	B		Orange		
16-14	031-50793	031-50794	A	AWG#14 to #16 (1.25 mm <sup>2</sup> to 2 mm <sup>2</sup> )	Silver	2.9	Φ2.4
	031-50793-002	031-50794-002	B		Black		

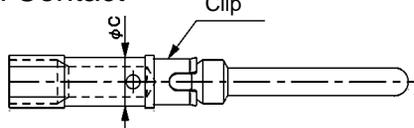
Note 1: Plating Finishes configuration is below

A...Au Plating Thickness: 0.75 μm

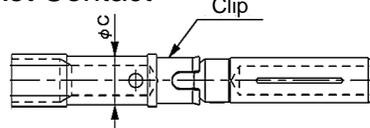
B...Au Plating Thickness: 0.3 μm

Note 2: Please refer to individual product drawings for further information.

Pin Contact



Socket Contact



■Through-hole Pin Contacts

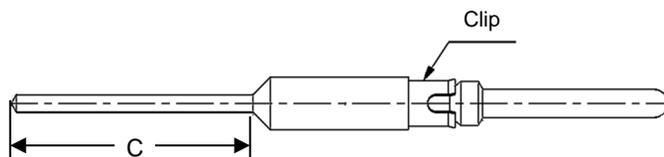
Contact Size	Part Number	Plating Finishes	Soldering Lead Area Length C
16	031-55414	A	14
	031-55415	B	14
	031-55417	A	24
	031-57822	A	9.5

Note 1: Plating Finishes configuration is below

A...Au Plating Thickness: 0.75 μm

B...Au Plating Thickness: 0.3 μm

Note 2: Please refer to individual product drawings for further information.



Accessories

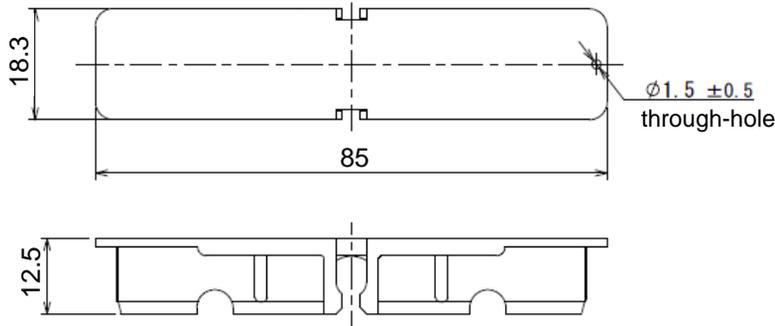
Outer shape and dimensions are for reference only, please refer to product drawings for further product information. (Unit: mm)

■Dust Cap for Receptacle

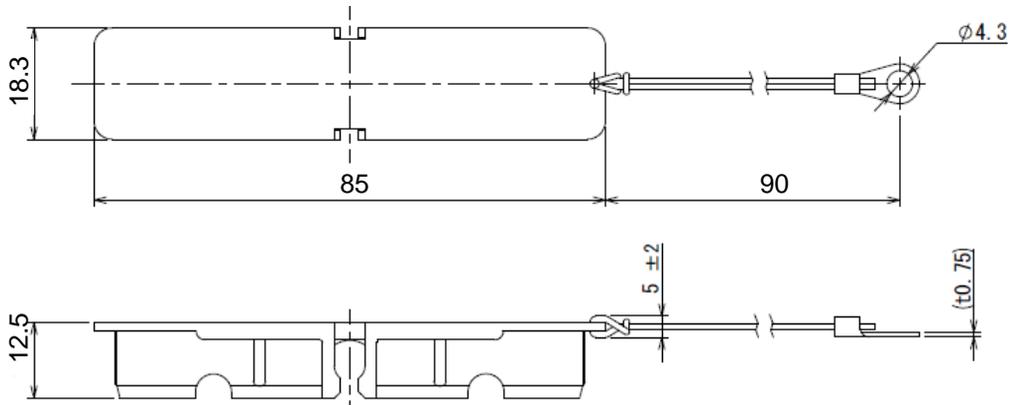
Synthetic resin dust cap for receptacle (QE6R040\*\*\*\*).

Protects mating area and blocks dust and foreign materials.

QE6-40-DC (without tether, Product Drawing No. SJ114596)



QE6-40-DC-J1 (with tether, Product Drawing No. SJ114597)



Tools

Air Pressure Crimp Machine		Manual Crimp Tool		Contact Insertion Tool	Contact Insertion Confirmation Tool	Contact Extraction Tool
Manual Valve	With Foot Valve (Check Valve)	Main Body	Locator			
CBT-520	CBT-530	M22520/1-01	JP-QE-16-16	JIT-Q*-16	JG-QE-2	JET-16

Note: Please contact us concerning RoHS compliance information for tools and other.

# EMI Characteristics

The QE6 Series connector satisfies the electromagnetic radiation standard, IEC 62236-3-2. (electromagnetic compatibility for railway applications).

Evaluation Conditions:

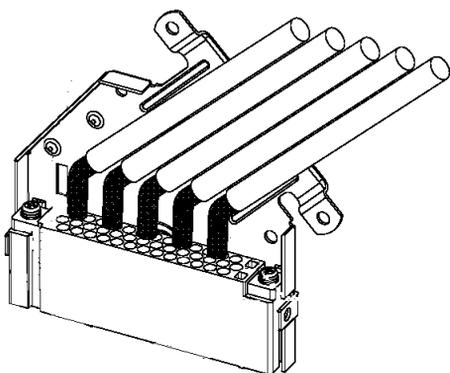
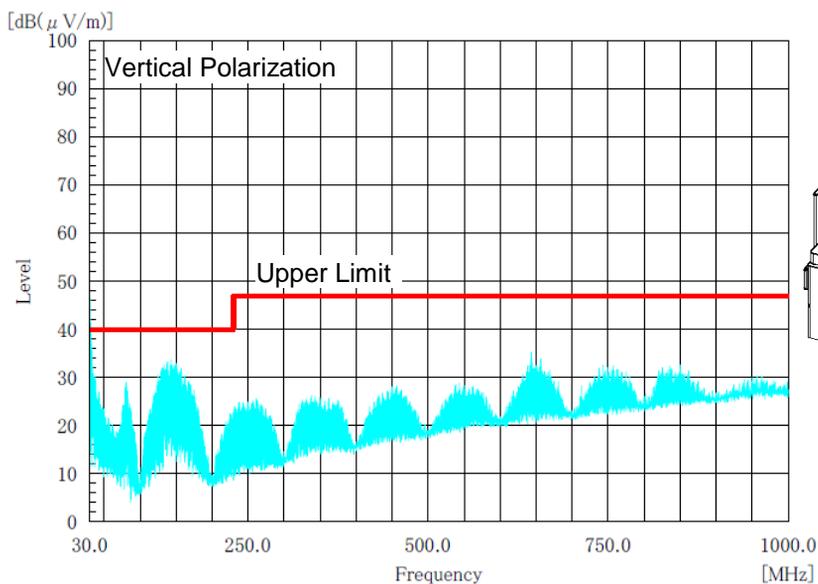
IEC 62236-3-2: Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock Apparatus Table 6 Enclosure Port

Samples:

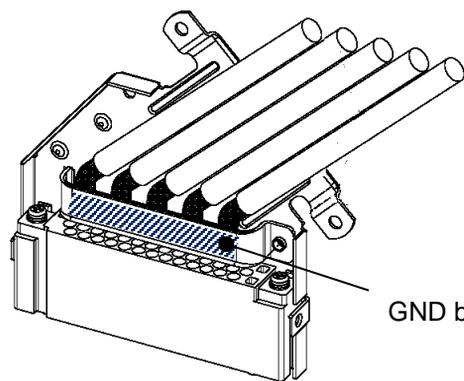
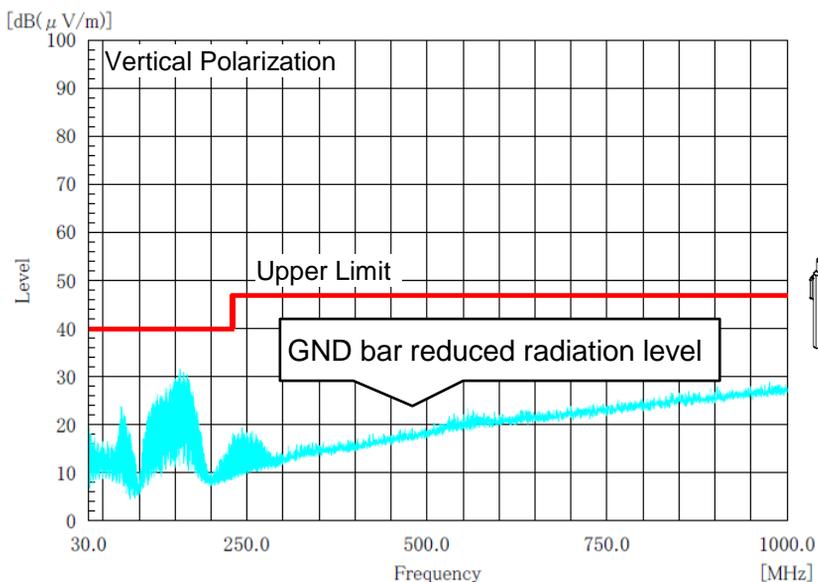
Receptacle	QE6R040LH01
Plug	QE6E040SH01

Applied Signal:

Data Rate	100 Mbps
Data Series	PRBS 2 <sup>7</sup> -1 (pseudo random bit sequence 7)



without GND bar



with GND bar

# Ethernet Transmission Characteristics

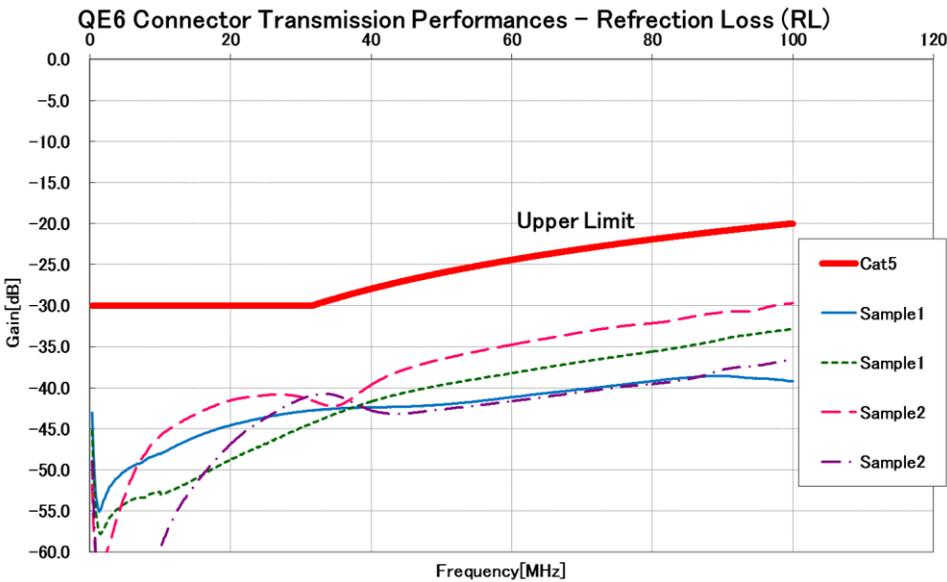
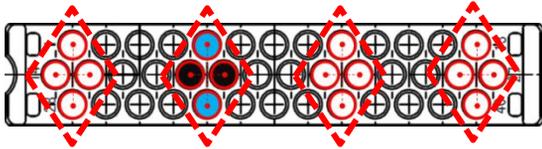
The QE6 Series connector is complied with ISO/IEC 11801 standard category 5 to support 100BASE-TX Ethernet data transmission, using appropriate cables and mounting methods.

## Evaluation Condition

ISO/IEC 11801 (2002): Information Technology -- Generic Cabling for Customer Premises  
 10.2.4.3 Connecting hardware for use in distributors and consolidation Cat.5

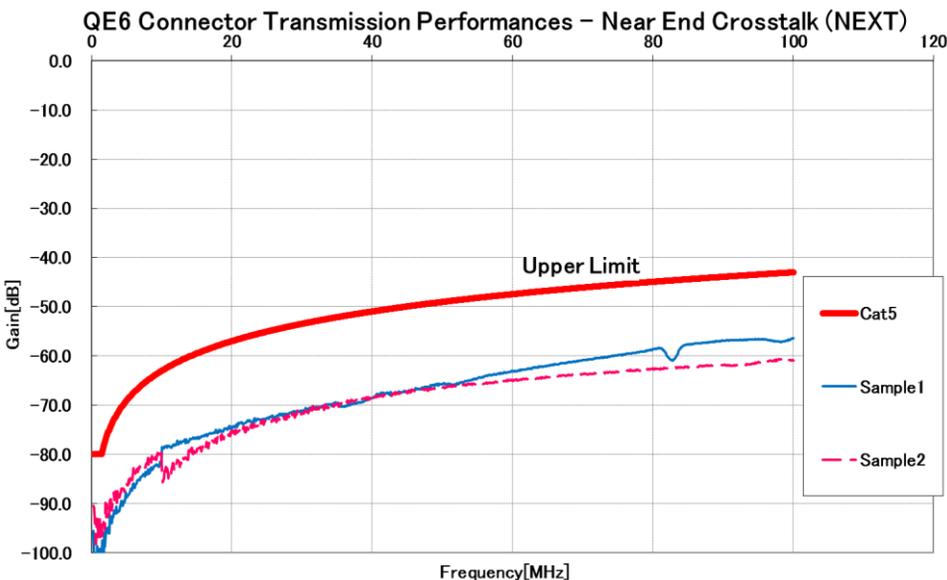
(JISX5150: 2004 Information technology - Generic cabling for customer premises  
 ---10.2.4.3 distributing board and connection device used at bifurcation point)

## Pin Assignment Evaluation



Graph legend sample

Sample 1:	Receptacle	QE6R040PH01
	Plug	QE6E040SH01
Sample 2:	Receptacle	QE6R040LH01
	Plug	QE6E040SH01



Graph legend sample

Sample 1:	Receptacle	QE6R040PH01
	Plug	QE6E040SH01
Sample 2:	Receptacle	QE6R040LH01
	Plug	QE6E040SH01

Note: Transmission Characteristics vary by wire specifications and connection types. Please contact us for details.

**Notice:**

1. The values specified in this brochure are only for reference. The products and their specifications are subject to change without notice. Contact our sales staff for further information before considering or ordering any of our products. For purchase, a product specification must be agreed upon.

2. Users are requested to provide protection circuits and redundancy circuits to ensure safety of the equipment, and sufficiently review the suitability of JAE's products to the equipment.

3. The products presented in this brochure are designed for the uses recommended below. We strongly suggest you contact our sales staff when considering use of any of the products in any other way than the recommended applications or for a specific use that requires an extremely high reliability.

(1) Applications that require consultation:

(i) Please contact us if you are considering use involving a quality assurance program that you specify or that is peculiar to the industry, such as:

Automotive electrical components, train control, telecommunications devices (mainline), traffic light control, electric power, combustion control, fire prevention or security systems, disaster prevention equipment, etc.

(ii) We may separately give you our support with a quality assurance program that you specify, when you think of a use such as :

Aviation or space equipment, submarine repeaters, nuclear power control systems, medical equipment for life support, etc.

(2) Recommended applications include:

Computers, office appliances, telecommunications devices (terminals, mobile units), measuring equipment, audiovisual equipment, home electric appliances, factory automation equipment, etc.

**Japan Aviation Electronics Industry, Limited**

\* The specifications in this brochure are subject to change without notice. Please contact JAE for information.