Hirose's QR/P Product Family

Small Rectangular Multi-electrode Solderless Connectors for Rack and Panel Applications

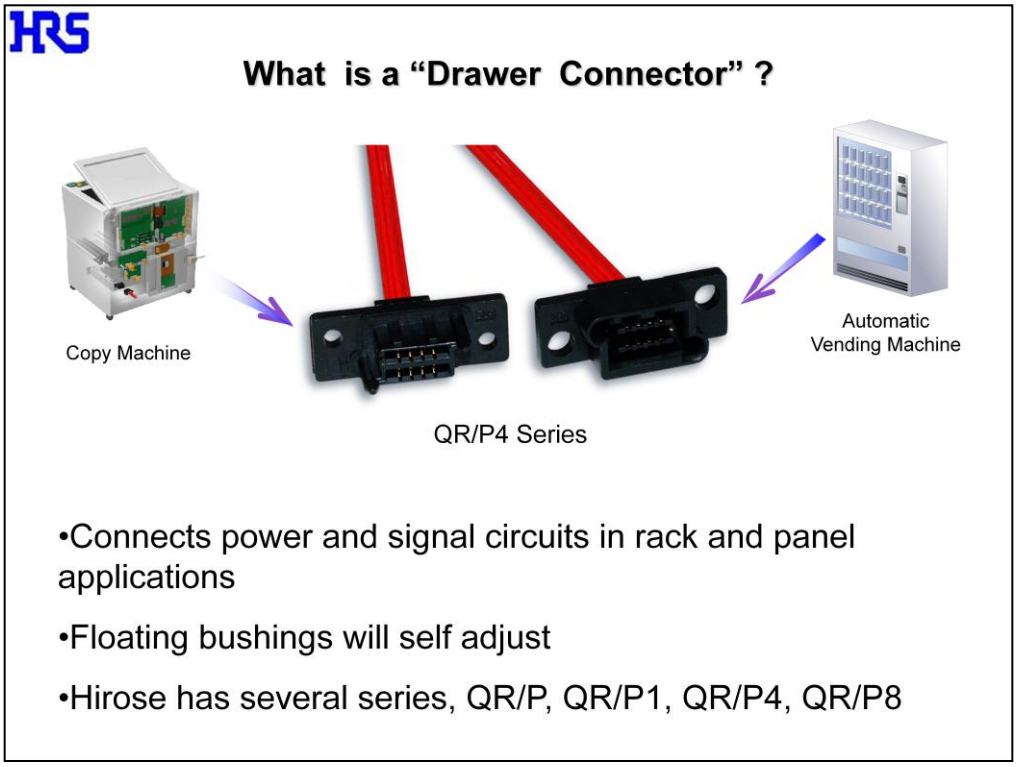
Purpose
- To Introduce the QR/P, QR/P1,QR/P4 & QR/P8 series.

Objective
- To explain features and benefits.

Content
- ** pages

Learning time
- * Minutes

Welcome to the Hirose's QR/P Product Family Product Training Module (PTM) of Drawer connectors. This module is intended to introduce the various drawer connectors manufacture by Hirose and to discuss some of their features and construction.



A drawer connector is used for connecting power and signal circuits in rack and panel applications such as copiers, printers, gaming machines and other equipment requiring repeated insertions and extractions for maintenance purposes. Connector mounting is accomplished through floating bushings, which self-adjust to provide a smooth mating function.

Hirose offers a wide variety of products for rack & panel applications, including the QR/P, QR/P1,QR/P4 and QR/P8 series.

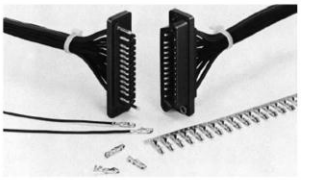
QR/P Series Product Lineup

	QR/P Series	QR/P1 Series	QR/P4 Series	QR/P8 Series
				
	Downsized →			
Number of Positions	4,8,12,16,24	8,12,16, 24,32	8,12,16, 24,32,40	8,12,20
Contact Pitch (mm)	4.5 and 7.05	2.8	2.54	2
Panel Cutout Area (mm^2) (12 pos. socket housing)	1464 (24 x 61)	943.5 (18.5 x 51)	597 (15 x 39.8)	434 (14 x 31)
Rated Current (A)	7·10·13	3·7·10·13	1·3	2·3
Applicable Wire Size (AWG)	AWG#14~16 AWG#18~24	■Power contact AWG#14~16 AWG#18~24 ■Signal contact AWG#20~24 AWG#24~28	■Thick wire AWG#20~24 ■ Thin wire AWG#24~28	■ Thick wire AWG#20~24 ■ Thin wire AWG#24~28
Contact Plating (Mating Area) ／Type of Termination	Gold over Nickel ／Crimp Contacts			
Safety Standard	UL, CSA, TÜV	UL, CSA, TÜV	UL, CSA, TÜV	UL, CSA, TÜV

Hirose offers a wide range of contact positions, pitch and current ratings. The above diagram shows the attributes of each of the available series.

HRS

QR/P Series



❖ Features

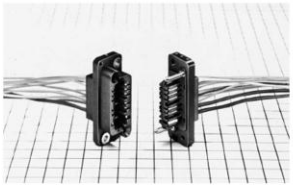
1. A plug-in hybrid of power and signal connections
2. Larger spacing of contacts at each end of the connector so they can be used for power
3. Guide pins are made of steel to be robust
4. Receptacle housings are mounted to the board by self-adjusting floating bushings
5 The crimp contacts are sexless and can be used in both plug and receptacle housings
6 UL, CSA, TÜV Approved

The QR/P series offers a plug-in hybrid of both power and signal connections. The contacts at each end of the connector are spaced further apart to withstand a higher voltage, allowing for these positions to be used for power. The guide pins are made of steel to be robust enough to withstand accidental coupling shock. The receptacle housings are mounted to the board by self-adjusting floating bushings, providing a smoother coupling of the connectors. The crimp contacts are sexless and can be used in both plug and receptacle housings, allowing for higher utilizations and easier inventory control.

HRS

QR/P1 Series

❖ Features



1. 2.8mm pitch for high-density packaging
2. Guide pins are made of steel to be robust
3. The receptacle housings are mounted to the board by self-adjusting, floating bushings
4. Compact design is achieved by separate power and signal contacts
5. Larger spacing of contacts at each end of the connector so they can be used for power
6. UL, CSA, TÜV Approved

The QR/P1 series is a smaller version of the QR/P series and can be used for higher density packaging. This series still has many of the same attributes such as steel guide pins, self adjusting floating bushings and has contacts at each end spaced further apart so they can withstand higher voltage.

HRS

QR/P4 Series

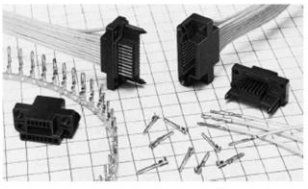
❖ Features

1. 2.54mm pitch for higher density packaging
2. Guide pins and housing body are molded as one piece to achieve smaller-size.
3. Stepped screws enable easy connection/disconnection when mounted on racks or panels.
4. Compact design is achieved by separate power and signal contacts.
5. Larger spacing of contacts at each end of the connector so they can be used for power
6. UL, CSA, TÜV Approved

The Hirose QR/P4 series has a pitch of 2.54mm and allows for higher density packaging. The guide pins and housing body are molded as one piece so as to achieve a smaller package size. Stepped screws allow for easy connection and disconnection when mounted on racks or panels.

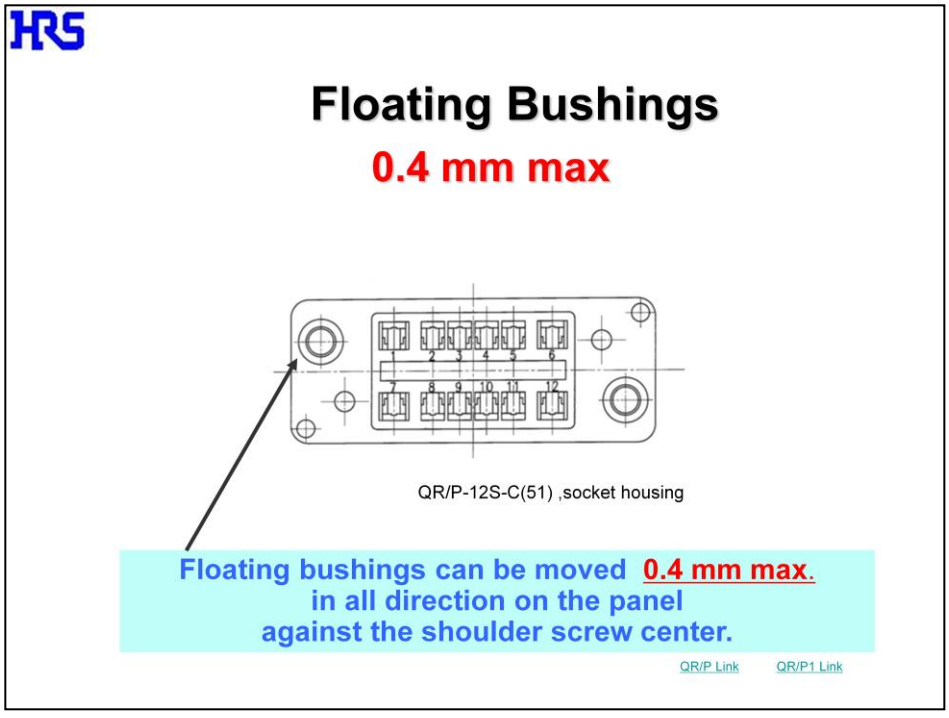
QR/P8 Series

❖Features



1. Ultra small version of the QR/P4 Series for higher-density packaging
   20% smaller in length than QR/P4
2. Compact design is achieved by separate power and signal contacts.
3. Guide pins and housing body are molded as one piece to achieve smaller connector size.
4. Stepped screws enable easy connection/disconnection when mounted on racks or panels.
5. Larger spacing of contacts at each end of the connector so they can be used for power
6. UL, CSA, TÜV Approved

The Hirose QR/P8 series is the ultra small version of the QR/P4 with a contact pitch of 2mm which is a 20% reduction in length when compared to the QR/P4.



The floating bushings can be moved 0.4mm max in all directions on the panel against the shoulder screw center.

Specifications

※UL94V-0

Series	QR/P	QR/P1	QR/P4	QR/P8
Contact Resistance	10mΩor less at DC 1A	■ Power Unit: 10mΩor less at DC 1A ■ Signal Unit: 15mΩor less at DC 1A	15mΩor less at DC 1A	30mΩor less at DC 1A
Insulation Resistance	5000MΩ or less at DC 500V			1000MΩ or less at DC 500V
Rated Current (Max.)	7・10・13A	3・7・10・13A	1・3A	2・3A
Rated Voltage ■ Power Unit	AC600V	AC250V	AC300V	AC300～380V
■ Signal Unit	AC250V	AC125V	AC250V	AC30V
Withstand Voltage (for 1 min.) ■ Power Unit	AC3000V	AC1000V	AC2000V	
■ Signal Unit	AC1000V	AC500V	AC500V	
Mechanical Operation (Times)	1.000	1,000	1,000	1,000
Insulator	PBT※ (Blue)	PBT※ (Black)	PBT※ (Black)	Polycarbonate resin※(Black)
Contact	Phosphor bronze (Selective Gold over Nickel Plating)			

For UL, CSA, TÜV approved specification, please refer to Hirose brochures.

This slide shows the specifications for the various QR/P series

Part Numbering

■QR/P Series

▲Connector Unit QR/P – 8 P – C (01)
(1) (2) (3) (4) (9)

▲Contact QR/P – X C – 1 1 1
(1) (5) (4) (6)(7)(8)

(1) Series Name

(2) No. of Pin (4,8,12,16,24)

(3) Type of Housing
P: Plug Housing
S: Receptacle Housing

(4) Type of Termination
C: Crimping

(5) Sexless Contact

(6) Contact Type
1: Loose Contact
2: Chain Contact

(7) Applicable Wire
1: AWG#14 - #16
2: AWG#18 - #24

(8) Finish
1: Selective Gold over Nickel plating

(9) UL, CSA, TÜV Approved Spec.

The next series of slides will illustrate our part numbering system. This one is for the QR/P series

Part Numbering

■QR/P1 Series

▲Connector Unit QR/P1 – 12 P – C (51)
(1) (2) (3) (4) (11)

▲Contact QR/P1 – PC 1 A – 1 1 1
(1) (5) (6)(7) (8) (9) (10)

(1) Series Name

(2) No. of Pin (8,12,16,24,32)

(3) Shape of insulator mating part
P: Insulator male case
S: Insulator female case

(4) Type of Termination
C: Crimping

(5) Male/Female
PC: Male crimp terminal
SC: Female crimp terminal

(6) Type
1: Power terminal
2: Signal terminal

(7) Crimp barrel size
A: For thin wires
B: For thick wires

(8) Shape
1: Loose piece terminal
2: Strip terminal

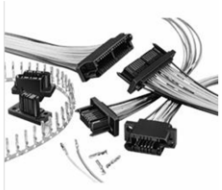
(9) Applicable Wire
1: Power terminal AWG#18 - #24
Signal terminal AWG#24 - #28
2: Power terminal AWG#14 - #16
Signal terminal AWG#20 - #24

(10) Surface terminal
1: Selective Gold over Nickel plating

(11) UL, CSA, TÜV Approved Spec.

This is the explanation of the QR/P1 part numbering system.

Part Numbering



■QR/P4 Series

▲Connector Unit QR/P4 – 12 P – C (01)
(1) (2) (3) (4) (10)

▲Contact QR/P1 – PC 2A – 1 1 1
(1) (5) (6) (7)(8) (9)

(1) Series Name

(2) No. of Pin (8,12,16,24,32,40)

(3) Type of housing
P: Plug Housing
S: Socket Housing

(4) Type of Termination
C: Crimping

(5) Type of Contact
PC: Pin Contact
SC: Socket Contact

(6)Size of barrel
2A: Thin Wires (UL1007 Type)
2B: Thick Wires (UL1007 Type)*
*For 4 contact holes at both ends

(7) Contact Type
1: Loose Contact
2: Chain Contact

(8)Applicable Wire
1: Thin Wire AWG#24 - #28
2: Thick Wire AWG#20 - #24

(9) Finish
1: Selective Gold over Nickel plating

(10) UL, CSA, TÜV Approved Spec.

This slide shows the QR/P4 part numbering system.

Part Numbering

■QR/P8 Series

▲Connector Unit QR/P8 – 12 P – C (01)
(1) (2) (3) (4) (5)

▲Contact QR/P8 – PC – 1 1 1
(1) (6) (7)(8) (9)

(1) Series Name

(2) No. of Pin (8,12,20)

(3) Type of housing
P: Plug Housing
S: Socket Housing

(4) Type of Termination
C: Crimping

(5) UL, CSA, TÜV Approved Spec.

(6) Type of Contact
PC: Pin Contact
SC: Socket Contact

(7) Contact Type
1: Loose Contact
2: Chain Contact

(8)Applicable Wire
1: Thick Wire AWG#20 - #24*
2: Thin Wire AWG#24 - #28
*For 2 holes at both ends

(9) Finish
1: Selective Gold over Nickel plating

And this slide shows the QR/P8 part numbering system.

Applications

Copy Machine

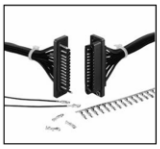
Automatic Vending Machine

Slot Machine

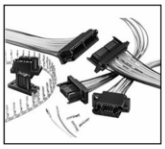
Measuring Instrument

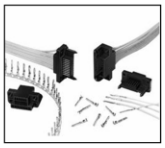
Hirose's QR/P connector family works in a variety of applications such as copying machines, automatic vending machines, measuring instruments, and game machines.

Summary


QR/P Series


QR/P1 Series


QR/P4 Series


QR/P8 Series

- Wide variety of product offerings
- Meets industry safety standards of UL, CSA and TÜV
- Extremely reliable and technically advanced product

In summary, Hirose's QR/P connector family are drawer connector which are used for connecting power and signal circuits in rack and panel applications requiring repeated insertions and extractions for maintenance purposes. Connector mounting is accomplished through floating bushings, which self-adjust to provide a smooth mating function. These connectors are available in a wide variety of configurations an options and meet industry safety standards of UL, CSA, and TUV.