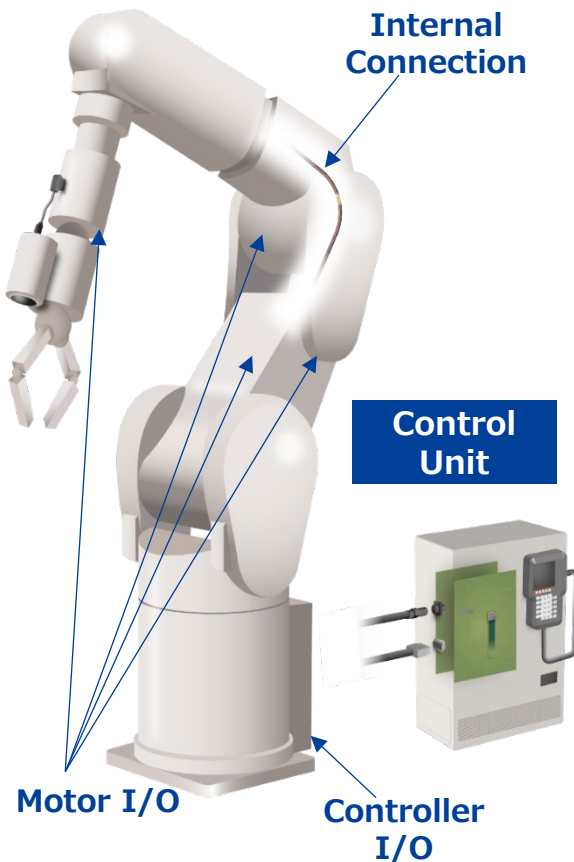


# Industrial Robots and Robot Control Units/ 産業用ロボット、ロボットコントロールユニット

## Connectors for Industrial Robots



### Internal Connection (Non-Waterproof)



**DF60** EnerBee  
Rated Current: 65A\* Max.  
Rated Voltage:  
1,000V AC/DC  
Pitch: 10.16mm  
No. of Pos.: 1-6  
AWG: 8-12  
\*Derating Curve, Ambient  
Temperature of 25℃



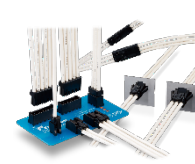
**DF22** EnerBee  
Rated Current: 30A Max.  
Rated Voltage:  
1,000V AC/DC  
Pitch: 7.92mm  
No. of Pos.: 1-5  
AWG: 10-16



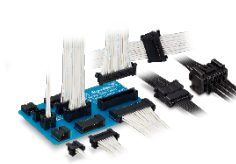
**DF50** SignalBee  
Rated Current: 1A Max.  
Rated Voltage:  
100V AC/DC  
Pitch: 1.0mm  
No. of Pos.:  
20, 30, 40, 50  
AWG: 26-32



**DF62** SignalBee  
Rated Current: 4A Max.  
Rated Voltage:  
250V AC/DC  
Pitch: 2.2mm  
No. of Pos.: 2-24  
AWG: 22-30



**DF63** EnerBee  
Rated Current: 15A Max.  
Rated Voltage:  
630V AC/DC  
Pitch: 3.96mm  
No. of Pos.: 1-6  
AWG: 16-22



**DF51** SignalBee  
Rated Current: 3A Max.  
Rated Voltage:  
250V AC/DC  
Pitch: 2.0mm  
No. of Pos.: 2-30  
AWG: 22-30



**DF62W** SignalBee  
IP67 Waterproof (Mated)  
Rated Current: 5A Max.  
Rated Voltage:  
250V AC/DC  
Pitch: 2.2mm  
No. of Pos.: 2-9  
AWG: 20-26



**DF63W** EnerBee  
IP67 Waterproof (Mated)  
Rated Current: 14A Max.  
Rated Voltage: 630V AC/DC  
Pitch: 3.96mm  
No. of Pos.: 2-6  
AWG: 16-22

### Motor I/O



**HR34B**  
IP67/IP68 Waterproof  
(Mated, 4pos. Receptacle)  
Rated Current: 5A Max.  
No. of Pos.: 4, 10  
AWG: 20-25



**LF**  
IPX7/IPX8 Waterproof (Mated)  
Rated Current: 10A Max.  
No. of Pos.: 3-20  
AWG: 16-26



**MT**  
Power/Signal Hybrid  
IP67 Waterproof (Mated)  
Rated Current: 4A, 7A (Power)  
1A (Signal)  
No. of Pos.: 6, 8, 14  
AWG: 18-26

### Controller I/O



**PQ50**  
Rated Current: 19A Max.  
Rated Voltage: 600V AC/DC  
No. of Pos.: 20  
AWG: 14-22



**PQ50WA**  
IP67 Waterproof (Mated)  
Rated Current: 19A Max.  
Rated Voltage: 600V AC/DC  
No. of Pos.: 25, 44, 46  
AWG: 14-28



**PQ50WT**  
IP67 Waterproof (Mated)  
Rated Current: 30A Max.  
Rated Voltage: 600V AC/DC  
No. of Pos.: 4, 8, 12, 54  
AWG: 10-28

### Peripheral Device Connection (Non-Waterproof)



**HR10**  
Rated Current: 2A Max.  
No. of Pos.: 4-20  
AWG: 26-30



**HR25A**  
Compact Push-pull Lock Connector  
Rated Current: 1A Max.  
No. of Pos.: 4-20  
AWG: 30



**IX**  
IEC Standard  
Small, Robust I/O Connector  
Cat.6A Ethernet  
IP65/IP67 Waterproof (Mated)

### Peripheral Device Connection (Waterproof)



**HR30**  
IPX7/IPX8 Waterproof (Mated)  
Rated Current: 5A Max.  
(6, 10, 12pos.: 2A Max.)  
No. of Pos.: 3, 6, 10, 12  
AWG: 26-30 (3pos.: 20)



**LF**  
IPX7/IPX8 Waterproof (Mated)  
Rated Current: 10A Max.  
No. of Pos.: 3-20  
AWG: 16-26

## Connectors for Robot Control Units

## Control Unit

Control Signal

Power

Teaching Pendant

Control Board  
Internal Connection

## Control Signal

**LF**

IPX7/IPX8 Waterproof  
(Mated)  
Rated Current: 10A Max.  
No. of Pos.: 3-20  
AWG: 16-26

**TM11R**

RJ45  
Cat.3, Cat.5  
Rated Current: 0.5A

**DH**

Pitch: 1mm  
Rated Current: 0.5A Max.  
No. of Pos.: 17, 27, 37, 51

**IX**

IEC Standard  
Small, Robust I/O Connector  
Cat.6A Ethernet  
IP65/IP67 Waterproof (Mated)

**GT17H/HN**

1Gbps High Speed Connector  
Meeting Automotive Specs.  
No. of Pos.: 4 (GT17H)  
4, 16 (GT17HN)

## Power

**PQ50**

Rated Current: 19A Max.  
Rated Voltage: 600V AC/DC  
No. of Pos.: 20  
AWG: 14-22

**PQ50S**

Rated Current: 12.5A Max.  
Rated Voltage: 300V AC/DC  
No. of Pos.: 36, 48  
AWG: 16-28

## Teaching Pendant

**HR22K**

IPX7 Waterproof (Mated)  
Rated Current: 2A Max.  
Rated Voltage: 100V AC, 140V DC  
No. of Pos.: 20  
AWG: 24-28

**DH**

Pitch: 1mm  
Rated Current: 0.5A Max.  
No. of Pos.: 17, 27, 37, 51

**LF**

IPX7/IPX8 Waterproof  
(Mated)  
Rated Current: 10A Max.  
No. of Pos.: 3-20  
AWG: 16-26

## Control Board Internal Connection

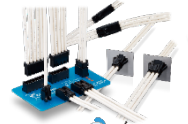
## Wire-to-Board

**DF60**

Rated Current: 65A\* Max.  
Rated Voltage:  
1,000V AC/DC  
Pitch: 10.16mm  
No. of Pos.: 1-6  
AWG: 8-12  
\*Derating Curve, Ambient  
Temperature of 25°C

**DF22**

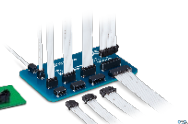
Rated Current: 30A Max.  
Rated Voltage:  
1,000V AC/DC  
Pitch: 7.92mm  
No. of Pos.: 1-5  
AWG: 10-16

**DF63**

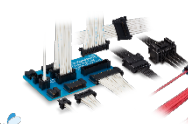
Rated Current: 15A Max.  
Rated Voltage:  
630V AC/DC  
Pitch: 3.96mm  
No. of Pos.: 1-6  
AWG: 16-22

**DF50/DF50A**

Rated Current: 2A Max.  
Rated Voltage:  
100V AC/DC  
Pitch: 1.0mm  
No. of Pos.:  
20, 30, 40, 50 (DF50)  
2-16 (DF50A)  
AWG: 26-32

**KW30**

Rated Current: 3A Max.  
Rated Voltage:  
100V AC/DC  
Pitch: 1.0mm  
No. of Pos.: 2-15  
AWG: 28-32

**DF51/DF51K**

Rated Current: 3A Max.  
Rated Voltage:  
250V AC/DC  
Pitch: 2.0mm  
No. of Pos.: 2-30  
AWG: 22-30

**HIF3M\*W**

Rated Current: 1A Max.  
Rated Voltage:  
200V AC  
Pitch: 2.54mm  
No. of Pos.: 10-64  
AWG: 28

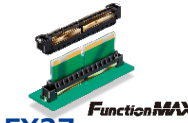
## Board-to-Board

**FX18**

16Gbps High Speed  
Stacking Height:  
2 Piece: 10-30mm/3 Piece: 25-45mm  
Pitch: 0.8mm  
No. of Pos.: 40-180\*  
(\*160, 180pos.: Coplanar Connection)

**FX23/FX23L**

16Gbps High Speed  
Floating Design  
Stacking Height: 8-30mm  
Pitch: 0.5mm  
No. of Pos.: Signal: 20-120  
Power: 4

**FX27**

PCIe Gen.1 Transmission  
Floating Design  
Stacking Height: 22mm Min.  
Pitch: 0.8mm  
No. of Pos.: 40-120

**FX30B**

Misalignment Absorption  
Stacking Height: 20-30mm  
Pitch: 3.81, 7.62mm  
No. of Pos.: 2, 3, 4, 5

**FH63S**

FPC/FFC/Shield FFC Connector  
Height: 2.8mm  
Pitch: 0.5mm  
No. of Pos.: 10-50

**FH28K**

125°C Heat  
Resistance  
FPC/FFC Connector  
Height: 2.55mm  
Pitch: 0.5mm  
No. of Pos.: 10-80

## FPC/FFC