2.00mm-Pitch I/O PCB Connector

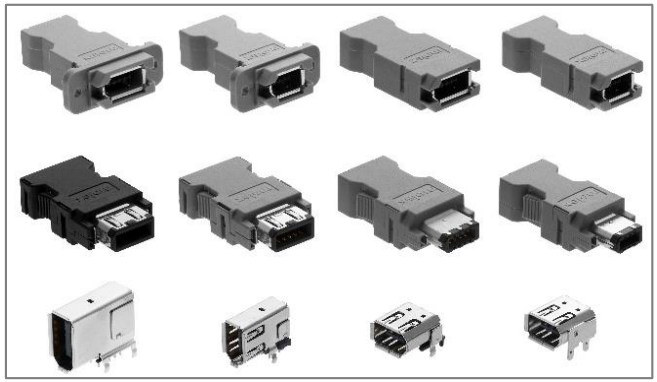
53460-0639	2.00mm-pitch, 6-Circuit PCB Socket, Upright T/H
53984-0681	2.00mm-pitch, 6-Circuit PCB Socket, Right Angle T/H
55445-1029	2.00mm-pitch, 10-Circuit PCB Socket, Upright T/H

Category: I/O Connector
Pitch: 2.00mm
Circuits: 6, 10
Application: Servo Motor Controller and Amplifier

DESCRIPTION

2.00mm-Pitch I/O PCB Connectors are compatible with through-hole and surface mount PCB layout, feature auto-mounting and are ideal for servo motor connectors and amplifiers

http://www.molex.com/link/2mmioconnectors.html



2.00mm-Pitch I/O PCB Connector, All Variants

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RELEASE CONTENT

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2.00mm-Pitch I/O PCB Connector

VITAL PRODUCT INFORMATION

What makes this product different compared to the competition?

2.00mm I/O connectors feature auto-mounting and reflow soldering.

How does this product/solution create value for our customers?

Dual In-line Package (DIP) auto-mounting saves time and improves customer's operational efficiency. Stand-off design for reflow soldering improves the soldering process.

For Whom is it intended (current and future customers)?

Servo motor controller and amplifier maker harness assembly customers of FA industries.

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2.00mm-Pitch I/O PCB Connector

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VITAL PRODUCT INFORMATION

Need	Challenge/Situation/Problem	Solution/Delivery on Needs	Anticipated Results
Assembly Process Improvement	Industrial machine market is moving to auto-mounting due to production efficiency and cost saving.	Improved tray design and updated raw material of the components enable auto-mounting.	Improved production and time saving.
Soldering process improvement	Servo motor customers need reflow-soldering and flow-soldering when they use DIP connectors.	Reflow soldering process is applicable.	Simplified process and improved reliability.
Flexibility	Industrial customers order different circuit size connectors from different sources and mount them manually.	We offer multiple circuit connectors with manual and auto-mounting options which are compatible with through-hole and surface mount PCB layout.	Customers can purchase all connectors from a single source. This will save their time and money.

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2.00mm-Pitch I/O PCB Connector

MARKETS AND APPLICATIONS

Industrial

Servo Motor Controller & Amplifier

Servo Motor Controller for Robot Arm

Servo Motors

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2.00mm-Pitch I/O PCB Connector

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Situation, Problem, Implication, Need Payoff (SPIN)

The SPIN questions on this page are examples and should be used as a possible starting point for a deeper inquiry that pertains to specific customers and their situations/environments. Please use the techniques from the Molex Value Selling training to develop your own SPIN questions to use when meeting with your prospects and customers.

Need	Situation	Problem	Implication	Need Payoff
Auto-mounting	Do you manually mount connectors on PCB?	Do you face manual mounting time consuming and quality issues?	How much time and money are spent for manual mounting in annually?	Are you interested to save your assembly cost and time?
Soldering Process Improvement	DIP connectors need soldering twice, flow and reflow and it takes time and cost	Customers need both reflow and flow-soldering when they use DIP connectors.	Do you think that the simplification of the production process has merit for customers?	Applicable for reflow soldering process contribute customers' cost and time saving?
Flexibility	Customers order different circuit connectors from different sources and mount them manually.	Does coordination with multiple vendors and manual mounting make production complex and increase waiting time during time?	How much the cost will be for the time as waiting, manual mounting and flow soldering process in annually?	How could multiple circuit connectors with manual and auto-mounting options which are compatible with through-hole and surface mount PCB layouts enable you to vendor reduce and simplify operations?

ADDITIONAL SPIN QUESTIONS TO ASK CUSTOMERS

- Are you looking for PCB connectors with Auto-mounting feature?
- Are you looking for PCB connectors which are compatible with through-hole and surface mount PCB layout?
- Are you looking for a one-stop solution for all your I/O PCB connector requirements?

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2.00mm-Pitch I/O PCB Connector

Product Features and Advantages

Auto-mounting option
Saves time and improves operation efficiency

Stand-off design for reflow soldering
Improved soldering process

Change raw material for reflow-soldering

53984-0681

53460-0639

53460 53984	Existing product	New product Reflow type
Housing	PA46	**LCP**
Shell	Phosphor Bronze	Phosphor Bronze
Terminal	Brass	Brass
Packing	Soft tray	**Semi hard tray**

55445	Existing product	New product Reflow type
Housing	LCP	LCP
Shell	SPCC	**Phosphor Bronze**
Terminal	Phosphor Bronze	Phosphor Bronze
Packing	Soft tray	**Semi hard tray**

55445-1029

ADDITIONAL PRODUCT FEATURES

For series 53984 the shell plating process has been changed. Previously, plating was done before stamping; now plating is done after stamping. This process change ensures the cutting edge of the shell is plated with no exposure of the shell material.

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2.00mm-Pitch I/O PCB Connector

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*COMPETITIVE PRODUCT AND CROSS-REFERENCE INFORMATION with UNIQUE AND USEFUL MOLEX ADVANTAGES VS. COMPETING PRODUCT

		Product and Technical Differences		
Attribute		Molex	Competitor "A" (IEEE1394 2mmConnector)	Competitor "B" (IEEE1394 Connector)
Auto-mounting		✓		
Product Line-Up	PCB Socket 6 Circuit	Upright/RA/RA(SMT)	Upright/RA	Upright/RA/RA(SMT)/ST
	PCB Socket 10 Circuit	Upright	Upright	N/A
	W-to-W Socket 6 Circuit	Solder/Crimp/Panel-mount	Solder	N/A
	W-to-W Socket 8 Circuit	Solder/Crimp/Panel-mount	Solder	N/A
	Cable Plug 6 Circuit	Solder/Crimp	Solder	Solder
	Cable Plug 8 Circuit	Solder/Crimp	N/A	N/A
	Cable Plug 10 Circuit	Solder/Crimp	Solder	N/A

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2.00mm-Pitch I/O PCB Connector

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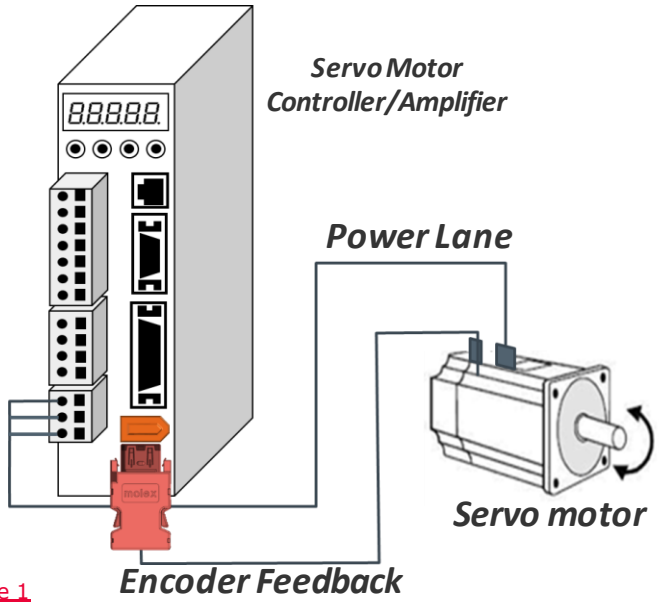
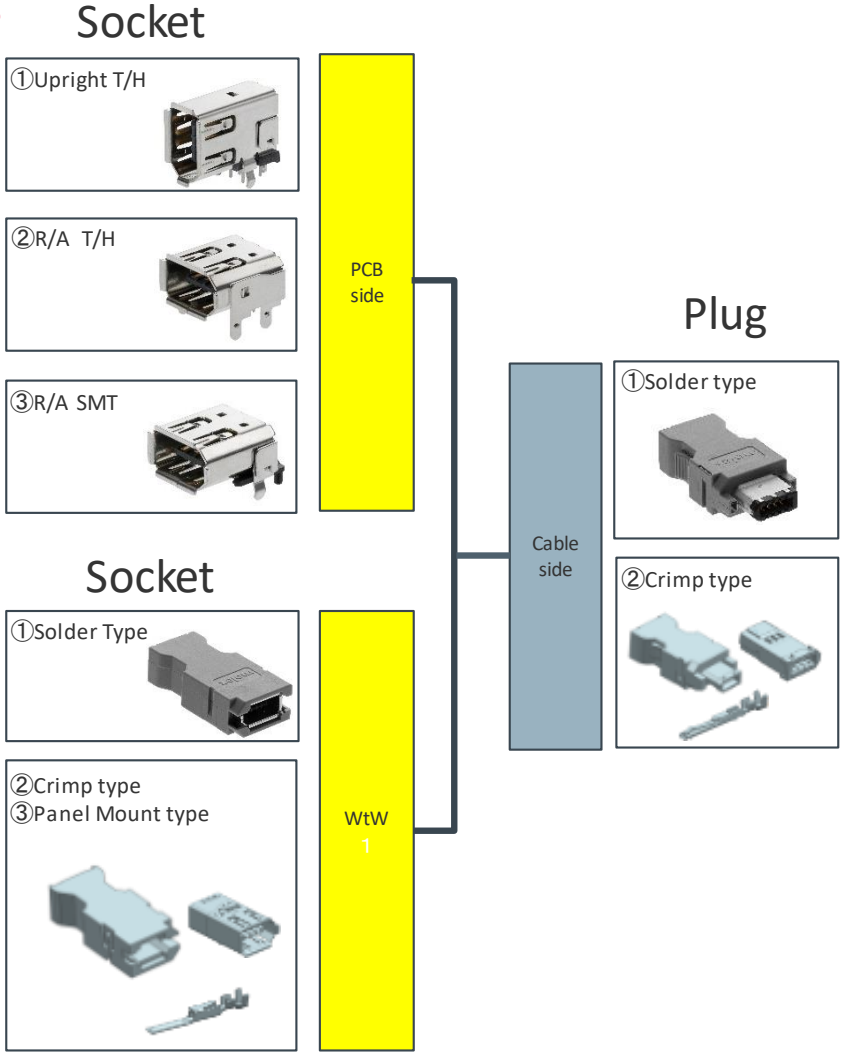
CROSS-SELLING AND UP-SELLING OPPORTUNITIES

		6 circuit	8 circuit	10 circuit
PCB Socket	①Upright	●		●
	②RA	●		
	③RA SMT	●		
Wire-to-Wire Socket	①Solder type	●	●	
	②Crimp type	●	●	
	③Panel Mount type	●	●	
Cable Plug	①Solder type	●	●	●
	②Crimp type	●	●	●





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2.00mm-Pitch I/O PCB Connector

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SPECIFICATIONS

Circuit	Socket		Mated with Plug	
	P/N (Description)	Packing	P/N (Description)	Packing
6	53460-0639 (UpRight)	Semi Hard Tray	55100-0670 (Soldering Kit) 55100-0680 (Soldering Kit) 500654-0609(Crimping HSG Kit) 500654-0619(Crimping HSG Kit) 50639-8x28(Crimping Contact) *	Bag Tray & Box Bag Tray & Box Reel or Bag
	53984-0681 (R/A)	Semi Hard Tray		
	53462-0629 (R/A SMT) 53462-0001 (R/A SMT)	Soft Tray Tape & Reel		
	54280-0609 (Wire-to-Wire Soldering Kit)	Bag		
	500654-0609 (Wire-to-Wire Crimping Housing Kit)	Bag		
	500145-012x (Crimping contact) *	Reel or Bag		
8	54280-0809 (Wire-to-Wire Soldering Kit)	Bag	55100-0870(Soldering Kit) 500654-0809(Crimping HSG Kit) 50639-8x28(Crimping Contact) *	Bag Bag Reel or Bag
	500654-0809 (Wire-to-Wire Crimping Housing Kit)	Bag		
	500145-012x (Crimping contact) *	Reel or Bag		
10	55445-1029 (UpRight)	Semi Hard Tray	54599-101x(Soldering Kit) 54599-1026(Crimping HSG Kit) 59351-8028(Crimping Contact) *	Bag Bag Reel or Bag

Remark * : Crimping Contact is not included in Kit Part No.

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2.00mm-Pitch I/O PCB Connector

SPECIFICATIONS

Reference Information

Terminal Used:
R/A Plug: Brass(Series 53460,53984,53462)
Phosphor Bronze (Series 55445)
Plug Crimp Terminal: Phosphor Bronze
Receptacle: Phosphor Bronze
Designed In: mm
RoHS: Yes
Halogen Free: Yes
Glow Wire Compliant: No

Physical

Housing : PCB Plug: LCP
Junction Cable Plug: PBT
Receptacle: PBT
Contact : Phosphor Bronze
53460 Series: Brass
Shell : Phosphor Bronze
Contact Area :
6 and 8 Circuit (min.): Gold 0.76micrometer
10 Circuit (min.): Gold 0.3micrometer
Solder Tail Area (min.): Tin 1.0micrometer
Underplating (min.): Nickel 2.0mictometer
Finish (min.): Tin 1.0micrometer
Underplating (min.): Nickel 1.27mictometer

Mechanical

Mating Force (max.): 39.2N
Un-mating Force:
6 and 8 Circuit (min.):9.8N
10 Circuit (min.):2.45N
Repeated Mating/Un-mating :
6 and 8 Circuit: 1,500 Cycles
10 Circuit: 50 Cycles
Durability (min.): 6 and 8 Circuit :750 Cycles

Cable Axial Pull Test (1 min.):
6 and 8 Circuit : 98N
Latch Strength 6 and 8 Circuit : 98N

Electrical

Voltage (max.): 6 Circuit : 40V
8 and 10 Circuit : 125V
Current (max.):
6 Circuit : 1.5A@22 AWG
8 and 10 Circuit : 2.0A@22 AWG
Contact Resistance: 30 milliohms max.
Dielectric Withstanding Voltage (1 min.):
6 Circuit : DC500V
8 Circuit : AC350V
10 Circuit : AC500V
Insulation Resistance:
6 and 10 Circuit (min.): 100 Megohms
8 Circuit (min.): 1000 Megohms

PCB Thickness: 1.60mm
Operating Temperature:
6 Circuit : -25 to +85℃
8 and 10 Circuit : -40 to +85°C

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2.00mm-Pitch I/O PCB Connector

SPECIFICATIONS

Item		6 Circuit	8 Circuit	10 Circuit
PS		PCB : 534600000 Rev.B Cable : 54280-005 Rev.D	Cable : 54280-005 Rev.D	PCB : 554450000 Rev.C Cable : 55445-002 Rev.B
Rating	Voltage	125V AC/DC	125V AC/DC	125V AC/DC
	Current max.	2.0A / 16~22 AWG	2.0A / 16 to 22 AWG	2.0A / 18 to 22 AWG
	Ambient Temp. Range	-25 to +85 ℃	-40 to +85 ℃	-40 to +85 ℃
Contact Resistance max.		20 milliohms	20 milliohms	30 milliohms
Insulation Resistance min.		100 Megohms	1000 Megohms	100 Megohms
Dielectric Strength		AC500V 1 min.	AC350V 1 min.	AC500V 1 min.
Mating Force max. / Un-mating Force min. & max.		39.2N / 9.8N & 39.2N	39.2N / 9.8N & 39.2N	39.2N / 2.45N & 39.2N
Repeated Mate/Un-mate		1500 cycles	1500 cycles	50 cycles
Durability		5 cycles at Manual 750 cycles at Auto. Equip.	5 cycles at Manual 750 cycles at Auto. Equip.	N/A
Terminal Housing Retention Force min.		4.9N	9.8N	9.8N
Temperature Rise		20℃ MAX	N/A	30℃ MAX
Vibration		10 to 2000 to 10 Hz at 20 min, 12 cycles in each (EIA-364-28)	10 to 2000 to 10 Hz at 20 min, 12 cycles in each (EIA-364-28)	10 to 55 to 10 Hz at 2h in each (MIL-STD-202-201)
Shock		490m/S^2(50G) (EIA364-28)	980m/S^2(100G) (EIA364-27)	490m/S^2(50G) (MIL-STD-202-213)
Other items		Please see each PS		

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2.00mm-Pitch I/O PCB Connecto

ORDERING INFORMATION (format for standard parts)

- 6 Circuit Cable Plug & Wire-to-Wire Socket

Product	Cable Plug Connector		Wire to Wire Socket Connector		
	Soldering type	Crimp type	Soldering type	Crimp type	Crimp type Panel mount
Picture					
Kit Part No.	55100-0670 (Bag) 55100-0680 (Tray & Box)	500654-0609(Bag) 500654-0619(Tray & Box)	54280-0609	500655-0609	500655-0619
Housing	54180-0619	51145-0601	53988-0619	53988-0619	53988-0619
Shell Cover	58299-0626	58299-0626	58302-0628	58302-0628	58302-0628
Shell Body	58300-0626	58300-0626	N/A	N/A	N/A
Mold Cover A (w/L)	54181-0615	54181-0615	N/A	N/A	N/A
Mold Cover B	54182-0605	54182-0605	N/A	N/A	N/A
Wire-to-Wire Mold Cover A	N/A	N/A	53989-0605	53989-0605	53989-0615
Wire-to-Wire Mold Cover B	N/A	N/A	53990-0605	53990-0605	53990-0615
Cable Cramp	58303-0000	58303-0000	58303-0000	58303-0000	58303-0000
Cramp Screw (M2×2)	59832-0009	59832-0009	59832-0009	59832-0009	59832-0009
Plug Crimping Term *	N/A	50639-8028	N/A	N/A	N/A
Wire-to-Wire Socket Crimping Term *	N/A	N/A	N/A	500145-0128	500145-0128

- 6 Circuit PCB Socket

Product	Upright T/H	Right Angle T/H	Right Angle SMT
	53460-0639 (Semi-Hard Tray)	53984-0681 (Semi-Hard Tray)	53462-0629 (Soft Tray) 53462-0001 (Tape & Reel)
Picture			

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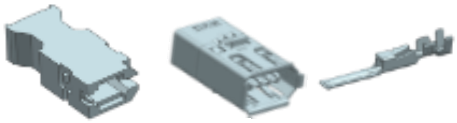
Remark * : Crimping Contact is not included in Kit Part No.

2.00mm-Pitch I/O PCB Connector

ORDERING INFORMATION (format for standard parts)

- 8 Circuit Cable Plug & Wire-to-Wire Socket

Product	Cable Plug Connector		Wire to Wire Socket Connector		
	Soldering type	Crimp type	Soldering type	Crimp type	Crimp type Panel mount
Picture					
Kit Part No.	55100-0870	500654-0809	54280-0809	500655-0809	500655-0819
HSG	54180-0819	51145-0801	53988-0819	500653-0819	500653-0819
Shell Cover	58299-0826	58299-0826	58302-0828	58302-0828	58302-0828
Shell Body	58300-0826	58300-0826	N/A	N/A	N/A
Mold Cover A (w/L)	54181-0815	54181-0815	N/A	N/A	N/A
Mold Cover B	54182-0805	54182-0805	N/A	N/A	N/A
W-to-W Mold Cover A	N/A	N/A	53989-0805	53989-0805	53989-0805
W-to-W Mold Cover B	N/A	N/A	53990-0805	53990-0805	53990-0805
Cable Cramp	58303-0000	58303-0000	58303-0000	58303-0000	58303-0000
Cramp Screw(M2×2)	59832-0009	59832-0009	59832-0009	59832-0009	59832-0009
Plug Crimping Term *	N/A	50639-8028	N/A	N/A	N/A
Wire-to-Wire Socket Crimping Term *	N/A	N/A	N/A	500145-0128	500145-0128

Remark * : Crimping Terminal is not included in Kit Part No.

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2.00mm-Pitch I/O PCB Connector

ORDERING INFORMATION (format for standard parts)

- 10 Circuit PCB Socket

Product	Upright T/H
	55445-1029
Picture	

automounting

- 10 Circuit Cable Plug

Product	Cable Plug Connector	
	Soldering type	Crimping type
Picture		
Kit Part No.	54599-1016 (Black) 54599-1019 (Gray)	54599-1026 (Black)
Housing	54593-1016	51209-1001
Shell Cover	58935-1028	58935-1028
Shell Body	58934-1028	58934-1028
Mold Cover A (w/L)	54594-1016 (Black) 54594-1015 (Gray)	54594-1016 (Black)
Mold Cover B	54595-1006 (Black) 54595-1005 (Gray)	54595-1006 (Black)
Cable Cramp	58937-0000	58937-0000
Cramp Screw(M2×2)	58203-0010	58203-0010
Plug Crimping Term *	N/A	59351-8028

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Remark * : Crimping terminal is not included in Kit Part No.

2.00mm-Pitch I/O PCB Connector

ORDERING INFORMATION (format for standard parts)

- Application Tooling

Description	Contact		
	50639-8x28 (Plug Crimping Terminal)	**59351-8x28 (Plug Crimping Terminal)**	**500145-012x (Socket Crimping Terminal)**
Applicable Crimp Tool (Hand)	57353-5000	57401-5300	578003-5300
Applicable Crimp Tool (Semi-Automatic)	57353-3000	57401-3000	578003-3000
Extraction Tool	57353-6000	57401-6000	578003-6100

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