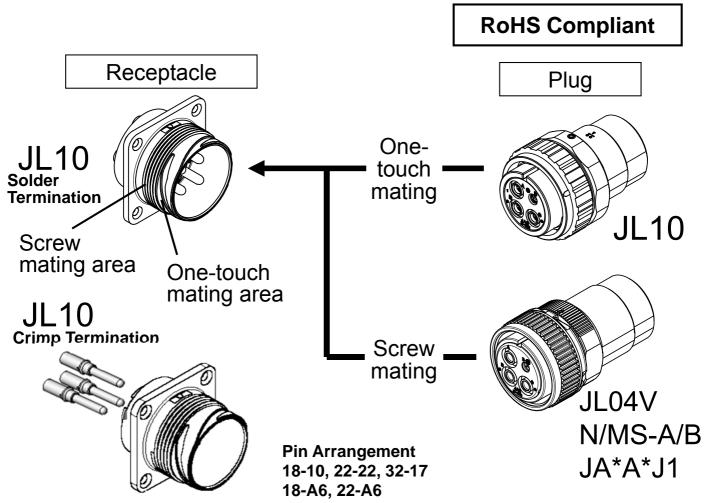


One-touch / Screw Mating Compatible Circular Waterproof Connector

# **JL10 Series**

CONNECTOR
MB-0263-8
March 2021



The JL10 Series are TUV approved and UL recognized, one-touch locking, circular, waterproof connectors for industrial machinery, satisfying European safety standards. The adopted Bayonet-style one-touch lock mechanism has a superior mating and unmating operability and the product contributes to an easy mating function.

The JL10 receptacle offers a hybrid, one-touch and threaded locking, dual function mating. The connector offers mating compatibility with conventional MIL standard, MS connectors and with our screw mating plugs (JL04V, N/MS, JA).

On top of the existing solder termination, a crimp termination option has been added to the 18-10, 22-22, 32-17, 18-A6 and 22-A6 pin arrangement receptacles. (18-A6, 22-A6 are of JAE-original contact arrangements and are not compatible with MIL-compliant products.)

### **Applicable Market**

Industrial machineries, servo motors, robots, semiconductor-fabrication equipment, communication devices, measuring devices, broadcasting and various other equipment.

#### **Features**

Utilizes a one-touch bayonet lock style mating to allow secure mating even in narrow operating spaces or areas with poor visibility.

Superior connector operability improves mating and unmating function (reduced screw-down fastening, and eliminating torque control).

JL10 Receptacle is an one-touch / screw mating hybrid type.

One-touch mating: When mated with JL10 plug

Screw mating: MIL-standard MS connector and our standard N/MS-A/B Series, JL04V Series, JA\*A Series using J1 type plug.

Receptacle's cable connection is available as soldering termination (for all receptacle) and crimp termination (for pin arrangements18-10, 22-22, 32-17, 18-A6 and 22-A6)

Mating assurance confirmation through aligned guide mark (white arrows) of plug and receptacle.

Low-profile compact design, and direction of the cable leader of angled type can be set in arbitrary 8 orientation in 45 degrees increments.

Uses common cable clamp as for JL04V Series.

UL recognized and TÜV approved product.

IP67 waterproof and dustproof

For the receptacles there are individually waterproof (denoted as -2E) and waterproof in mated condition (denoted as -2A).

Superior environmental performance against vibration and oil.

The 18-A6 and 22-A6 contact arrangements are hybrid types with 4 power and 2 signal poles. Please note that these two products are JAE's original arrangements and are not compatible with MIL-DTL-5015 compliant products.

## Arrangements and General Specifications

Arrangement	18-1	0	20-4		20-18	
Contact Arrangement	(B) A D○ (C) B		D <sub>O</sub> ® A C B		G H A F I B B E B D C	
Size x Number of Contact	#12 >	<b>4</b>	#12 x 4	4	#12 x 3	#16 x 6
Rated Current	23A / r	oos.	23A / pos.		23A / pos.	13A / pos.
Rated Voltage	250VAC	500VAC	250VAC	500VAC	250VAC	100VAC
Overvoltage Category	III	II	III II		II	
Pollution Level	3	2	3	2	2	
Dielectric Withstanding Voltage	2000VAC (po	er minute)	2000VAC (per minute)		2000VAC (p	er minute)
Insulation Resistance	1000MΩ (DC500V er		1000MΩ min. (DC500V energized)		1000MΩ min. (DC500V energized)	
Waterproof Performance	IP67		IP67		IP6	7
Termination Method	Receptacle: Solder, crimp Plug: Solder		Solder		Solder	
Durability	500 tir	nes	500 tim	es	500 times	

Arrangement	20-29	22-14	22	:-22
Contact Arrangement	B P R F G G	M A B C M N P D G F E G G F E	© C	B P
Size x Number of Contact	#16 x 17	#16 x 19	#8	x 4
Rated Current	13A / pos.	13A / pos.	46A, 57A (Note 1) / pos.	
Rated Voltage	500VAC	500VAC	250VAC	500VAC
Overvoltage Category			III	II
Pollution Level			3	2
Dielectric Withstanding Voltage	1000VAC (per minute)	1000VAC (per minute)	2000VAC	(per minute)
Insulation Resistance	1000MΩ min. (DC500V energized)	1000MΩ min. (DC500V energized)		IΩ min. energized)
Waterproof Performance IP67		IP67	IP67 IP67	
Termination Method	Solder	Solder		Solder, crimp Solder
Durability	500 times	500 times	500	times

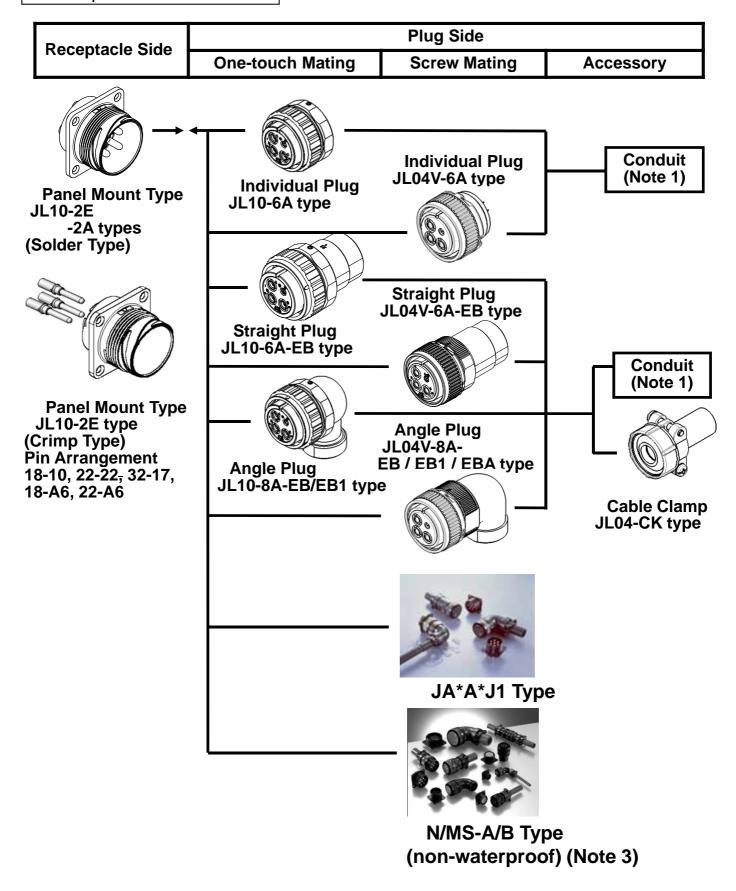
Note 1: Rated current when using 8mm² or 10mm² wire for arrangement 22-22 (Soldering Type).

Arrangement	24-	11	28	3-11	28-21		
Contact Arrangement	A B C D E F G ⊕ H I				N E A B G G H O C		E F G H J K L M N P P R S T U V W X Z S B B C D C C C C C C C C C C C C C C C C
Size x Number of Contact	#8 x 3	#12 x 6	#12 x 4	#16 x 18	#16 x 37		
Rated Current	46A / pos.	23A / pos.	23A / pos.	13A / pos.	13A / pos.		
Rated Voltage	250VAC	500VAC	250VAC	100VAC	500VAC		
Overvoltage Category	III	11	III				
Pollution Level	3	2	2 (Note: ma	ting area is 3)			
Dielectric Withstanding Voltage	2000VAC (p	er minute)	2000VAC	(per minute)	1000VAC (per minute)		
Insulation Resistance	1000MΩ min. (DC500V energized)			/Ω min. energized)	1000MΩ min. (DC500V energized)		
Waterproof Performance	IP6	67	IP67		IP67		
Termination Method	Solde	ering	Soldering		Soldering		
Durability	500 ti	mes	500	times	500 times		

Arrangement	32-1	17	18- <i>A</i>	۸6	22-A6		
Contact Arrangement	C B		© B		D C	E A B	
Size x No. of Contact	#4 x	4	#12×4	#20×2	#8×4	#16×18	
Rated Current	80A / j	oos.	23A / pos.	1A / pos.	46 A / pos.	13 A / pos.	
Rated Voltage	250VAC	500VAC	250VAC	48VAC	250VAC	48VAC	
Overvoltage Category	III	II	II		II		
Pollution Level	3	2	3		3	3	
Dielectric Withstanding Voltage	2000VAC (p	er minute)	2000VAC	500VAC	2000VAC	500VAC	
Insulation Resistance	1000MΩ (DC500V ei		1000MΩ min. (DC500V energized)		1000MΩ min. (DC500V energized)		
Waterproof Performance	IP67		IP6	7	IP(	67	
Termination Method	Receptacle: Crimping Plug: Soldering		Receptacle: Crimping Plug: Soldering		Receptacle: Crimping Plug: Soldering		
Durability	500 tir	nes	500 tir	nes	500 t	500 times	

	Components	Material / Finish		
	Contact	Copper alloy / silver plating		
	Ground / Earth Pin	Copper alloy / nickel plating		
Receptacle	Front Insulator	Silicone rubber		
(Solder)	Rear Insulator	Synthetic resin		
	Shell	Aluminum alloy / zinc plating		
	Retaining Ring	Copper alloy / zinc plating		
	Contact (Ground / Earth)	Copper alloy / silver plating		
	Ground / Earth Pin	Copper alloy / nickel plating		
Receptacle:	Front Insulator	Synthetic resin		
(Crimp)	Center Insulator	Silicone rubber		
	Rear Insulator	Synthetic resin		
	Shell	Aluminum alloy / zinc plating		
	Retaining Ring	Copper alloy / zinc plating		
Receptacle Crimp Contact	Contact	Copper alloy / silver plating		
	Set Screw	Steel / zinc plating		
	O Ring	Synthetic rubber		
	Retaining Ring	Copper alloy / zinc plating		
	Wave Spring	Stainless Steel		
	C Type Ring	Stainless Steel		
Individual Plug	Contact	Copper alloy / silver plating		
	Front Insulator	Synthetic resin		
	Rear Insulator	Synthetic resin		
	Assembly Nut	Aluminum alloy / zinc plating		
	Coupling Nut	Aluminum alloy / zinc plating		
	Barrel	Aluminum alloy / zinc plating		
	Endbell	Aluminum alloy / zinc plating		
	Set Screw	Steel / zinc plating		
	O Ring	Synthetic rubber		
	Retaining Ring	Copper alloy / zinc plating		
	Wave Spring	Stainless Steel		
Straight Plug	C Type Ring	Stainless Steel		
Angle Plug	Contact	Copper alloy / silver plating		
	Front Insulator	Synthetic resin		
	Rear Insulator	Synthetic resin		
	Assembly Nut	Aluminum alloy / zinc plating		
	Coupling Nut	Aluminum alloy / zinc plating		
	Barrel	Aluminum alloy / zinc plating		

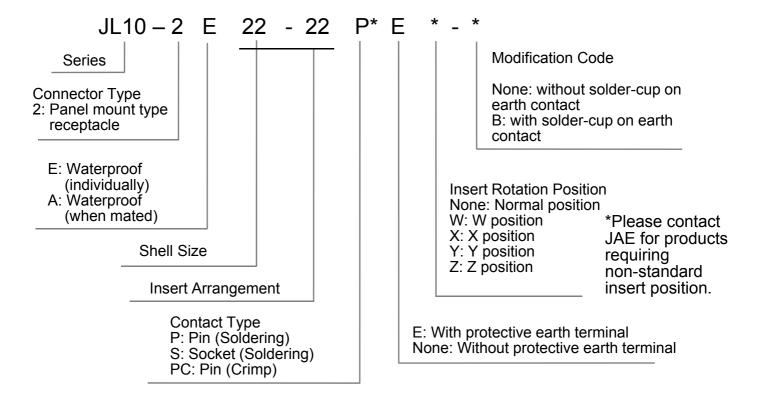
### Line-up and Combinations



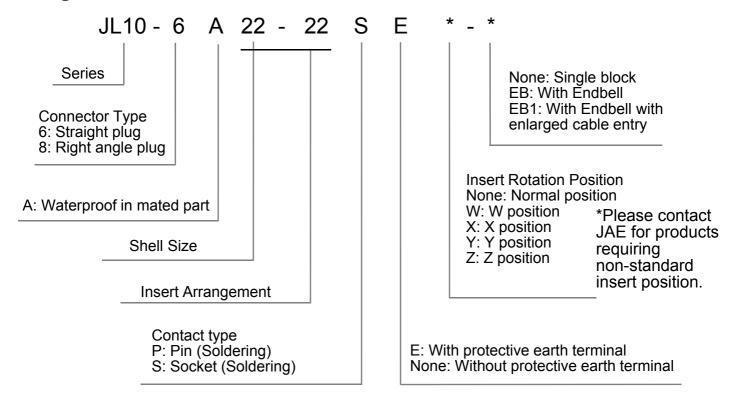
- Note 1) Please contact us or conduit manufacturer for detailed use of a conduit.
- Note 2) Please refer to individual catalogs for consideration of JL04V Series, N/MS-A/B Series, and J1 type JA\*A Series.
- Note 3) Becomes non-waterproof when mated with N/MS-A/B type plug.

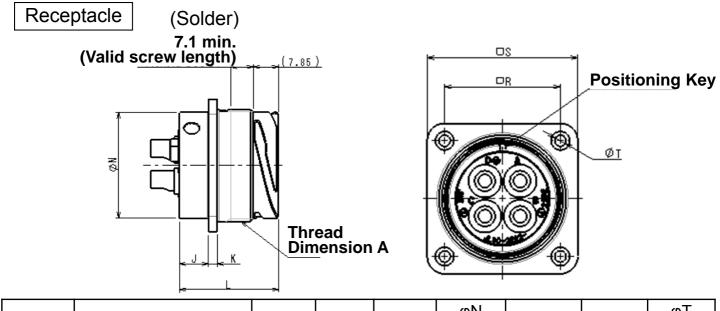
### **Ordering Information**

### **Receptacle**



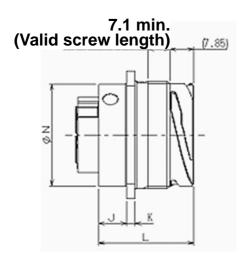
### **Plug**

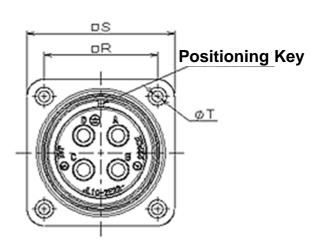




Shell Size	Thread Dimension A	K ±0.3	J ±0.3	L ±0.3	φN +0 -0.4	R ±0.13	S ±0.79	φT +0.2 -0.1
18	1 1/8-18UNEF-2A	2.7	8.25	30	27	26.97	34.9	3.1
20	1 1/4-18UNEF-2A	2.7	7.05	28.8	26.9	29.36	38.1	3.1
22	1 3/8-18UNEF-2A	2.7	9.1	30.85	33	31.75	41.3	3.1
24	1 1/2 -18UNEF-2A	2.7	9.1	32.45	36	34.92	44.4	3.73
28	1 3/4 -18UNES-2A	2.7	9.38	32.7	41.5	39.67	50.8	3.73

Receptacle (Crimp)

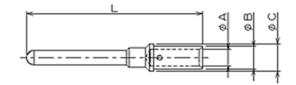




Shell Size	Thread Dimension A	K ± 0.3	J ± 0.3	L ± 0.3	φN 0 -0.4	R ± 0.13	S ± 0.79	φT +0.2 -0.1
18	1 1/8-18UNEF-2A	2.7	8.25	30	27	26.97	34.9	3.1
22	1 3/8-18UNEF-2A	2.7	9.1	30.85	33	31.75	41.3	3.1

Shell Size	Thread Dimension A	K ± 0.3	J ± 0.6 -1	L ± 0.4	φN -0.4	R ± 0.13	S ± 0.79	φT +0.2 -0.1
32	2-18UNS-2A	4	6.45	32.7	47.85	44.45	57.2	4.4

## **Crimp Contact Dimensions**

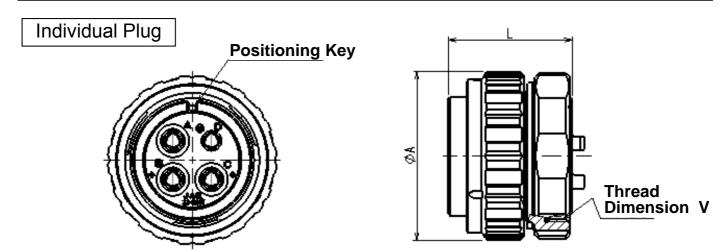


Contact	Ampliaghla Crimon Contact	L	Α	В	С
Size	Applicable Crimp Contact	±0.5	±0.2	±0.2	±0.2
#20	CONT-JL10-20P-C1-PKG100	20.7	φ1.13	φ1.84	φ2.5
	CONT-JL10-12P-C1-PKG100	28.65	φ2.77	φ3.77	φ4.57
#12	CONT-JL10-12P-C2-PKG100	28.65	φ2.1	φ2.9	φ4.57
	CONT-JL10-12P-C2-1-PKG100	28.65	φ2.1	φ2.9	φ3.77
	CONT-JL10-08P-C1-PKG100	32.85	φ4.3	φ5.6	φ6.5
#8	CONT-JL10-08P-C2-PKG100	32.85	φ3.5	φ4.5	φ6.5
	CONT-JL10-08P-C3-PKG100	32.85	φ2.77	φ3.77	φ6.5
44	CONT-JL10-04P-C1-PKG100	42.9	φ7.18	φ9.53	φ10.9
#4	CONT-JL10-04P-C2-PKG100	42.9	φ4.61	φ6.76	φ10.9

## **Crimp Contact and Cable Sizes**

Inset Arrangement	Contact Size	Applicable Crimp Contact	Applicable Cable Size
10.10	#10	CONT-JL10-12P-C1-PKG100	#12~#14 AWG
18-10	#12	CONT-JL10-12P-C2-PKG100	#14 ~ #18 AWG
		CONT-JL10-08P-C1-PKG100	#8 ~ #10 AWG
22-22	#8	CONT-JL10-08P-C2-PKG100	#10 ~ #12 AWG
		CONT-JL10-08P-C3-PKG100	#12 ~ #14 AWG
32-17	#4	CONT-JL10-04P-C1-PKG100	#4 AWG
32-17	#4	CONT-JL10-04P-C2-PKG100	#8 ~ #10 AWG
18-A6	#12	CONT-JL10-12P-C1-PKG100	#14 AWG
10-A0	#20	CONT-JL10-20P-C1-PKG100	#20 ~ #22 AWG
		CONT-JL10-08P-C1-PKG100	#8 ~ #10 AWG
22.40	#8	CONT-JL10-08P-C2-PKG100	#10 ~ #12 AWG
22-A6		CONT-JL10-08P-C3-PKG100	#12 ~ #14 AWG
	#20	CONT-JL10-20P-C1-PKG100	#20 ~ #22 AWG

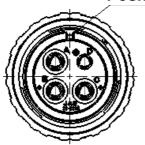
<sup>\*</sup>Please refer to Crimp Tool Handling Instructions for details of applicable cables.

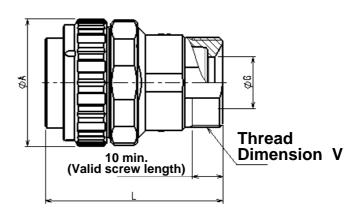


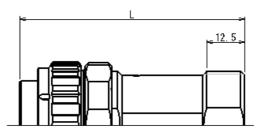
Shell Size	φA ±0.8	L	Thread Dimension V
18	35.85	30	1 3/16-18UNEF-2B
20	40.5	31	1 3/8-18UNEF-2B
22	42.2	31	1 7/16-18UNEF-2B
24	45.5	31	1 9/16-18UNEF-2B
28	51.5	26.3	1 13/16-18UNS-2B
32	58.6	31.2	2 1/8-16UN-2B

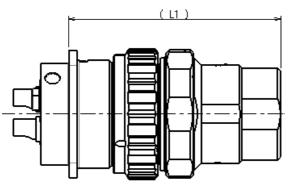
## Straight Plug











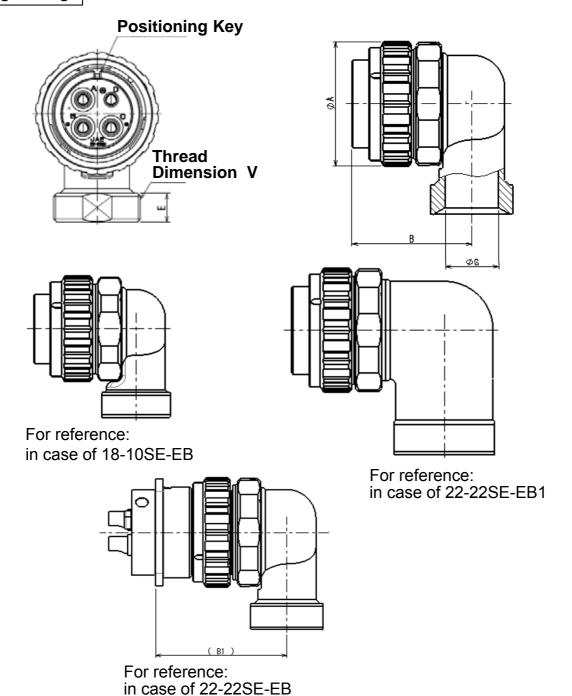
For reference: in case of 22-22SE-EB1

For reference: in case of 22-22SE-EB

Shell Size	φA ± 0.8	φG ± 0.5	L ± 0.8	(L1)	Thread Dimension V
18	35.85	15	51.05	60.6	1-20UNEF-2A
20	40.5	17	52.1	61.9	1 3/16-18UNEF-2A
22	42.2	17	58.65	68.5	1 3/16-18UNEF-2A
24	45.5	20	65.81	76.2	1 7/16-18UNEF-2A
28	51.5	20	70.0	75.5	1 7/16-18UNEF-2A
32	58.6	30	99.6	114.2	1 3/4-18UNS-2A

22SE-EB1	42.2	22	74.35	84.15	1 7/16-18UNEF-2A
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## Angle Plug



Shell Size	φA ± 0.8	B ± 0.8	(B1)	E ± 0.5	φG ± 0.5	Thread Dimension V
18	35.85	34.55	44.4	8.5	16	1-20UNEF-2A
20	40.5	54.3	64.1	10	17	1 3/16-18UNEF-2A
22	42.2	40.65	50.45	10	18	1 3/16-18UNEF-2A
24	45.5	59.76	70.2	10	20	1 7/16-18UNEF-2A
28	51.5	64.0	69.4	10	20	1 7/16-18UNEF-2A
32	58.6	66.9	81.2	10	30	1 3/4-18UNS-2A

22SE-EB1 42.2	51.6	61.4	10	22	1 7/16-18UNEF-2A
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### Accessory: Cable Clamp (Sold separately)

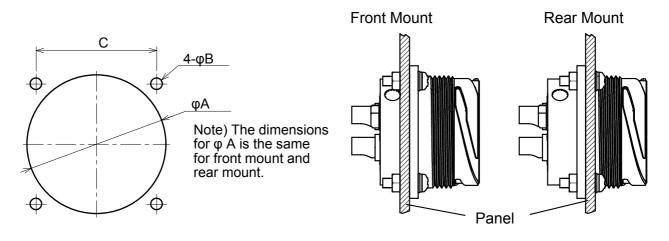
Cable clamp is the same as used with our JL04V Series.

Shell Size	Product Name	Applicable Cable O.D.
18	JL04-18CK(07)-*-RK	φ5 to φ8
18	JL04-18CK(13)-*-R	φ11 to φ14.1
20, 22	JL04-2022CK(09)-*-R	φ6.5 to φ9.5
20, 22	JL04-2022CK(12)-*-R	φ9.5 to φ13
20, 22	JL04-2022CK(14)-*-R	φ12.9 to φ16
24, 28, 22-22EB1	JL04-2428CK(11)-*-RK	φ9 to φ12
24, 28, 22-22EB1	JL04-2428CK(14)-*-RK	φ12 to φ15
24, 28, 22-22EB1	JL04-2428CK(17)-*-R	φ15 to φ18
24, 28, 22-22EB1	JL04-2428CK(20)-*-RK	φ18 to φ20
32	JL04-32CK(24)-*-RK	φ22 to φ25

#### For Reference: Panel Mount Dimensions

- (1) Front mount: Receptacle is attached to the front side of the panel and enclosure. Cable termination side will be inside when attached.
- (2) Rear mount: Receptacle is attached to the back side of the panel and enclosure.

  Please be aware of the panel thickness when concerning this product.
  - \* Mounting dimensions are the same as our JL04V Series.



Shell				Mounting Scre	w (for reference)	Max. Panel
Size	φA ±0.5	φВ	C±0.13	Metric screw thread	Unified screw thread	Thickness for Rear Mount
18	30.2	3.3	26.97	M 3	#4-40	3mm max.
20	33.4	3.3	29.36	M 3	#4-40	3mm max.
22	36.6	3.3	31.75	M 3	#4-40	3mm max.
24	39.7	3.8	34.92	M 3.5	#6-32	4mm max.
28	46.1	3.8	39.67	M 3.5	#6-32	4mm max.
32	52.4	4.4	44.45	M 4	#8-32	6mm max.

### **Accessory: Gasket (Sold separately)**

There is a gasket to prevent water ingress from the panel hole (main body) of the enclosure when receptacle is mounted to the panel / enclosure. The gaskets are the same as ones used for our JL04V Series.

Note 1) Beside the use of a gasket, there is a need for countermeasure to prevent water immersion from the screw holes. Each user to prepare countermeasure.

Shell Size	Gasket No.	SJ Drawing
18	075-50157	SJ009289
20	075-50158	SJ009289
22	075-50159	SJ009289
24	075-50160	SJ009289
28	075-50161	SJ009289
32	075-50162	SJ009289

## Part Number and Product Drawing List

Contact Arrangement	Receptacle Part Number	Receptacle Product Drawing Number	Plug Part Number	Plug Product Drawing Number
	JL10-2E18-10PE-B	SJ116011	JL10-6A18-10SE	SJ112323
18-10	JL10-2E18-10PE	SJ112315	JL10-6A18-10SE-EB	SJ112322
	JL10-2E18-10PCE-B (Crimp) JL10-2E18-10PCE (Crimp)	SJ116012 SJ114710	JL10-8A18-10SE-EB	SJ112321
	( 17		JL10-6A20-18SE	SJ115407
20-18	JL10-2E20-18PE-B	SJ115406	JL10-6A20-18SE-EB	SJ115408
			JL10-8A20-18SE-EB	SJ115409
			JL10-6A20-4SE	SJ115403
20-4	JL10-2E20-4PE-B	SJ115402	JL10-6A20-4SE-EB	SJ115404
			JL10-8A20-4SE-EB	SJ115405
			JL10-6A20-29S	SJ115411
	JL10-2A20-29P	SJ115410	JL10-6A20-29S-EB	SJ115412
00.00	20.20		JL10-8A20-29S-EB	SJ115413
20-29			JL10-6A20-29P	SJ117466
	JL10-2A20-29S	SJ117463	JL10-6A20-29P-EB	SJ117467
			JL10-8A20-29P-EB	SJ117470
	II 40 0400 44D	01445444	JL10-6A22-14S-EB	SJ115415
00.44		SJ115414 SJ115417	JL10-8A22-14S-EB	SJ115416
22-14			JL10-6A22-14P-EB	SJ115418
	JL10-2A22-14S		JL10-8A22-14P-EB	SJ115419
			JL10-6A22-22SE	SJ112320
	JL10-2E22-22PE-B	SJ115881	JL10-6A22-22SE-EB	SJ112317
	JL10-2E22-22PE JL10-2E22-22PCE-B (Crimp)	SJ112313 SJ116010	JL10-6A22-22SE-EB1	SJ112319
22-22	JL10-2E22-22PCE (Crimp)	SJ114709	JL10-8A22-22SE-EB	SJ112316
			JL10-8A22-22SE-EB1	SJ112318
	II 40 2422 22CE	C 1444070	JL10-6A22-22PE-EB	SJ117517
	JL10-2A22-22SE	SJ114872	JL10-8A22-22PE-EB	SJ114873
			JL10-6A24-11SE	SJ115421
24-11	JL10-2E24-11PE-B	SJ115420	JL10-6A24-11SE-EB	SJ115422
			JL10-8A24-11SE-EB	SJ115423
			JL10-6A28-11PE	SJ117436
28-11	JL10-2A28-11SE-B	SJ117434	JL10-6A28-11PE-EB	SJ117438
			JL10-8A28-11PE-EB	SJ117441
			JL10-6A28-21P	SJ117444
28-21	JL10-2A28-21S	SJ117443	JL10-6A28-21P-EB	SJ117445
			JL10-8A28-21P-EB	SJ117446
			JL10-6A32-17SE	SJ115425
32-17	JL10-2E32-17PCE-B (Crimp)	SJ115424	JL10-6A32-17SE-EB	SJ115426
	(Online)		JL10-8A32-17SE-EB	SJ115427

## Part Number and Product Drawing List

Contact Arrangement	Receptacle Part Number	Receptacle Product Drawing Number	Plug Part Number	Plug Product Drawing Number
18-A6	JL10-2E18-A6PCE (Crimp)	S.I119064	JL10-6A18-A6SE-EB	SJ121790
107.0			JL10-8A18-A6SE-EB	SJ119065
22.46	II 10 2E22 AGDCE (Crimp)	C 1110066	JL10-6A22-A6SE-EB	SJ121791
22-A0	22-A6 JL10-2E22-A6PCE (Crimp)		JL10-8A22-A6SE-EB	SJ119067

### Crimp Contact Part Number / Drawing Number List

Contact Size	Contact Part Number	Drawing Number
#20	CONT-JL10-20P-C1-PKG100	SJ119110
	CONT-JL10-12P-C1-PKG100	SJ114746
#12	CONT-JL10-12P-C2-PKG100	SJ114747
	CONT-JL10-12P-C2-1-PKG100	SJ119109
	CONT-JL10-08P-C1-PKG100	SJ114743
#8	CONT-JL10-08P-C2-PKG100	SJ114744
	CONT-JL10-08P-C3-PKG100	SJ114745
#4	CONT-JL10-04P-C1-PKG100	SJ116737
#4	CONT-JL10-04P-C2-PKG100	SJ116738

<sup>\*</sup>For crimp type, receptacle and contacts are sold separately.

### Tool

#### (1) Crimp Tool

			_		
Contact Size	Tool Type	Applicable Crimp Tool	Tool Handling Instructions		
#20	Manual Tool	M22520/2-01	T72-17-M		
#20	Mariual 1001	JP-JL10-20P	_		
		M22520/1-01 JP2-JL10-1	T700161 T706199		
#12	Manual Tool	Manual Tool	Manual Tool		T700355
		CT160-16-UNI	T700355-01		
#8	Manual Tool	CT160-16-UNI	T700355		
•	mandar root		T700355-01		
#4	Manual Tool	CT299-*-JL10-4	T702140-01		
" '	Manaan 1001	(Note 1)	T702140-02		

Note 1) Please Refer to Tool Handling Instructions for details of all Applicable Crimp Tools (Including crimp tools with an asterisks within the part number.)

#### (2) Contact Extraction Tool

Contact Size	Extraction Tool	Tool Handling Instructions	Applicable Cable Diameter
#20	ET-JL10-20-1	T711211	φ1.94max.
#12	ET-JL10-12-1	T711196	φ3.85max.
#12	ET-JL10-12-2	T711241	φ2.9max.
#8	ET-JL10-8-1	T711197	φ5.65max.
#4	ET-JL10-4-1	T711239	φ9.4max.

Specifications:

JACS-50101: Solder and crimp terminations

Handling Instructions:

JAHL-50101: Solder termination, JAHL-50101-2: Crimp termination

## Cautions

#### JL10 Caution 1



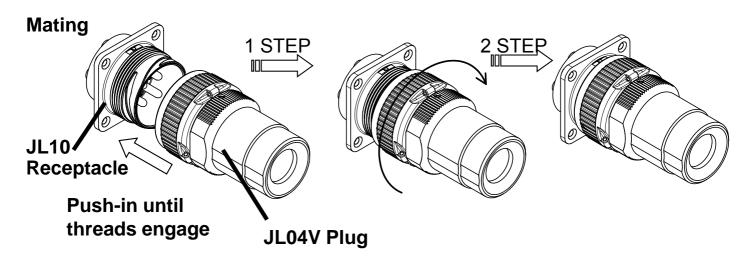
Please note that JL10 plug will not mate with JL04V receptacle.

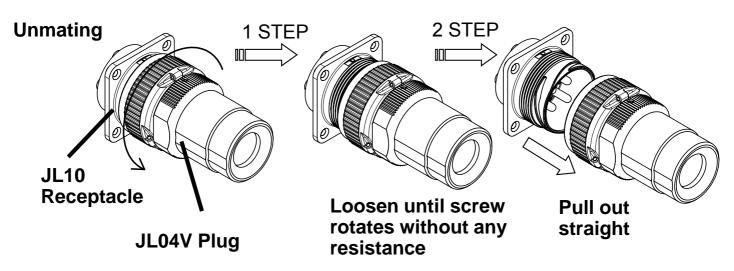
	Receptacle	Plug	Mating
	JL04V	JL10	Will not mate
Combinations	JL04V	JL04V	Mateable
Combinations	JL10	JL04V	Mateable
	JL10	JL10	Mateable

#### JL10 Caution 2



When using JL10 receptacle and JL04 plug mating and unmating operation will be in steps shown below.





#### **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

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