

For
P
POWER



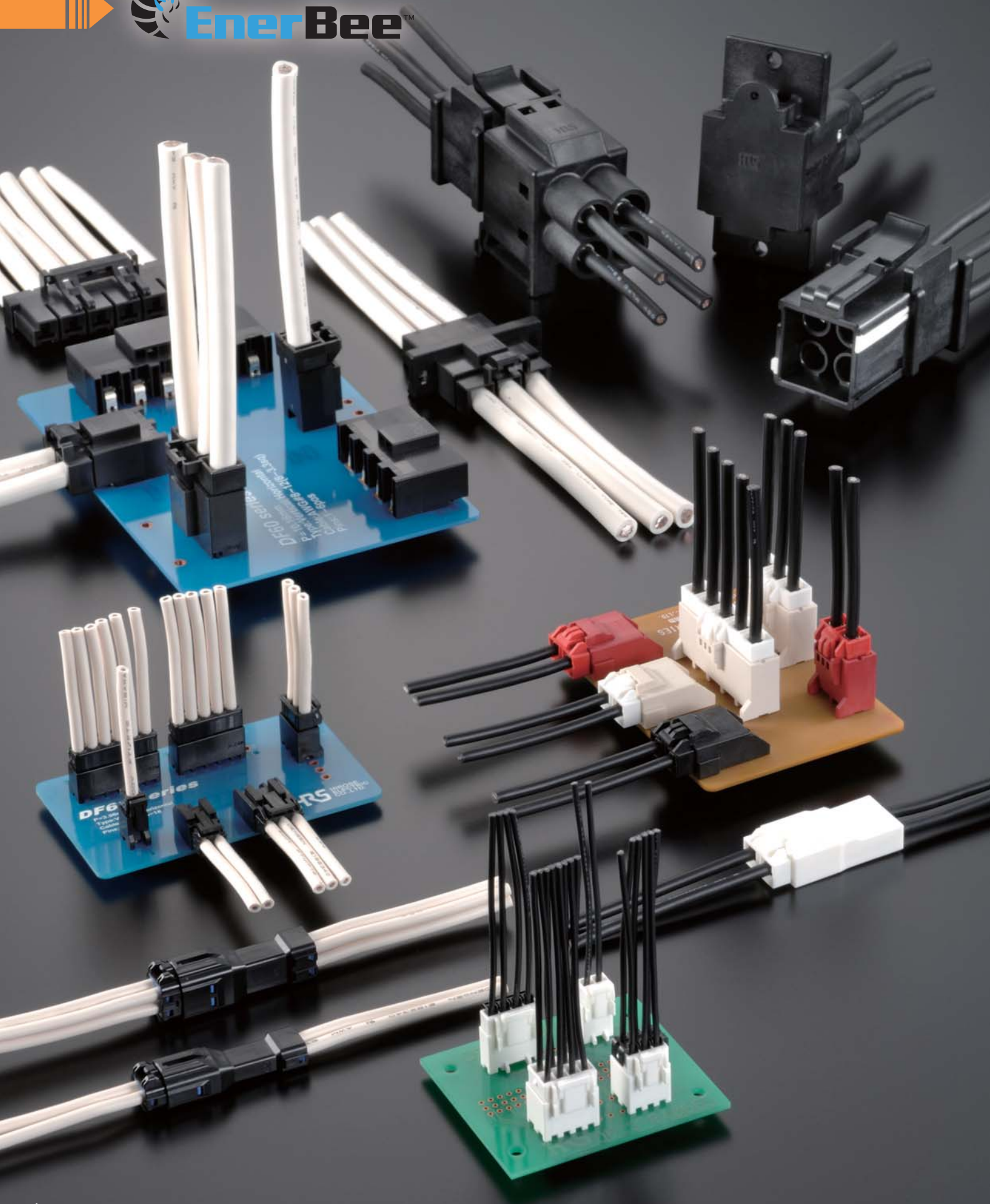
**Wire-to-Board, Wire-to-Wire
Power Connectors**



For
P
POWER

Premium connector solutions for industrial power sources





A legend in compact, high-end devices

EnerBee -Your best choice for power cable connectors.

Named after the tiny, yet energetic insect, the EnerBee name represents the shared concept of this product family - compact size with high-end performance.

In addition to its superior performance, small size and the ability to work with high-current and high-tension devices, EnerBee offers connectors with a positive lock mechanism for use in the demanding areas of industrial power supply and power sources.

Replacing bulky parts in the market with EnerBee connectors allows you to maximize space-saving and achieve superior performance. Additionally, by replacing terminal locks with the EnerBee's built-in lock mechanism, assembly quality and work efficiency are improved.

If you have design problems, the EnerBee is your solution!



Yokohama Center, the heart of technology and marketing

Hirose established the Yokoyama Center as a multi-purpose base in Japan's historic harbor city, often considered Japan's window to the world. The Center incorporates a technical network consisting of a Technical Division, a Production Technology Division, a Quality Management Division, and a sales and market network. This highly sophisticated structure ensures that we will always be able to promptly meet advancing market needs.



Advanced technology with global supply

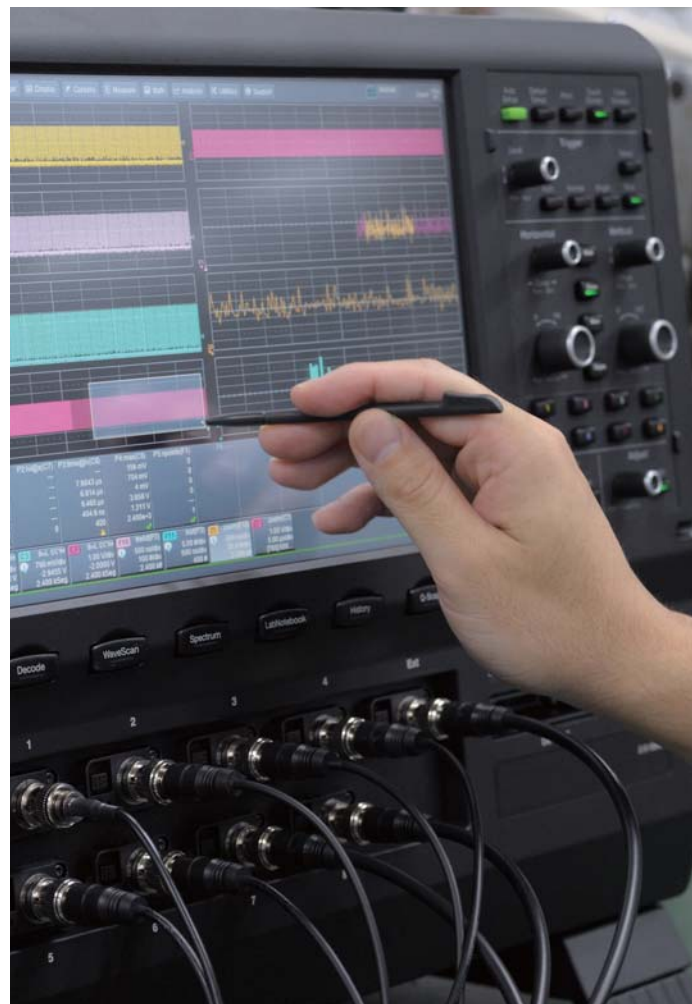
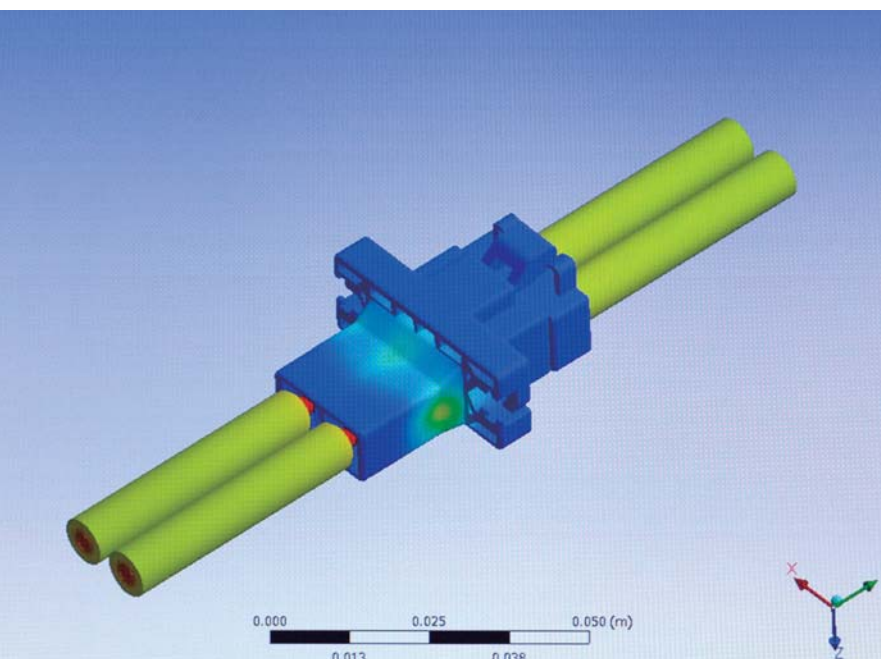
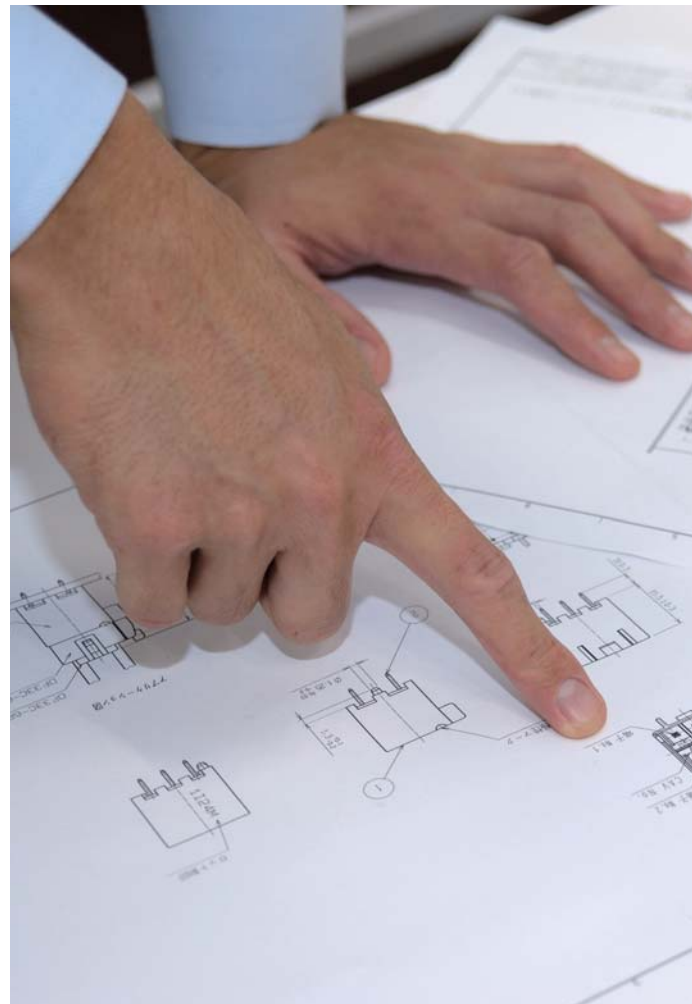
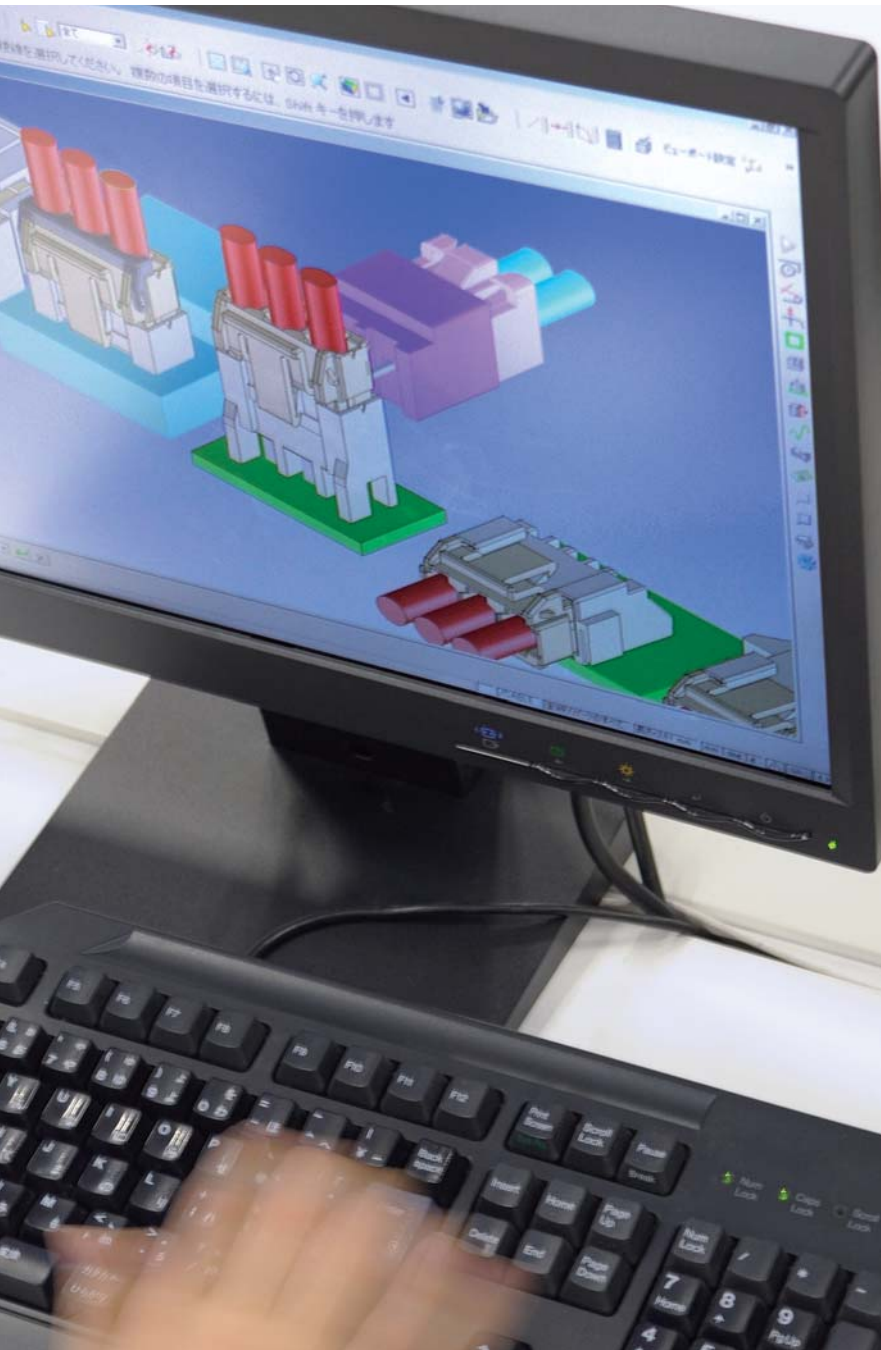
Hirose developed Japan's first original connector in 1959, pioneering an industry of development-oriented and enterprising technology. Hirose specializes in the challenging process of development and manufacture of connectors for industrial applications.

By applying our accumulated knowledge of emerging technologies and customer requirements, we have expanded into other markets such as consumer electronic applications.

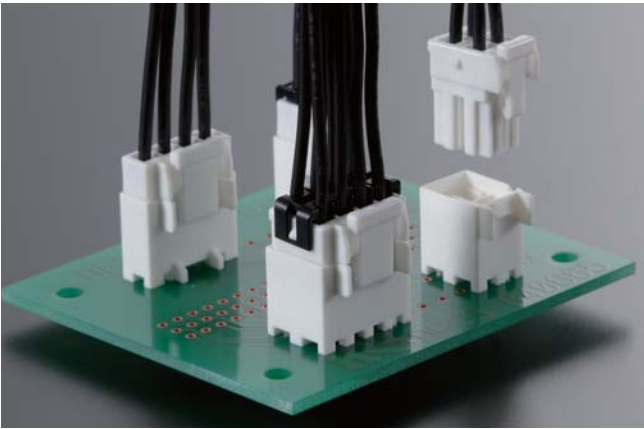
Given such circumstances, the EnerBee family has incorporated not only high contact reliability for industrial applications, but also cutting-edge technologies for consumer electronic applications. Hirose has expanded its global sales and distribution network into four major markets around the world: Japan, Asia, United States and Europe. The company continues to expand its manufacturing bases globally as well, and has successfully established a global supply system. EnerBee products are not only technologically advanced, but possess high reliability and quality. Hirose connectors are readily available from our dependable global supply chain.



For POWER



DF33C Series 3.3mm Pitch, Maximum rated current 5A



Despite being the smallest sized EnerBee connector, the DF33C connectors meet the 1.5-mm* creepage distance as stipulated by the Electrical Appliance and Material Safety Act. Suitable for potting processes (resin filling) up to 6.5-mm in height. Widely used as a compact connector for internal power supplies.
*After potting

Polarization key

Potting

Center lock

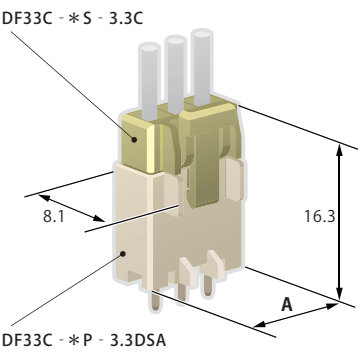
UL
C-UL
pending

Product Specifications

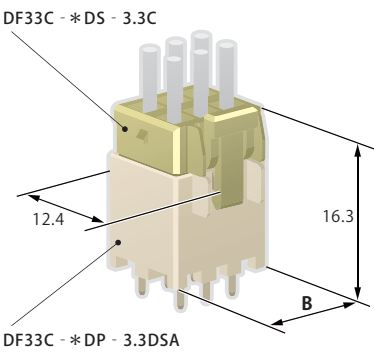
Rating	Rated current	Row	No. of Pos.	20AWG	22AWG	Operating Temperature Range	-35°C to +85°C
		1	2 to 6	5A	5A	Operating Humidity Range	40% to 80%
		2	4 to 12	5A	4A	Storage Temperature Range	-10°C to +60°C
	Rated voltage	500V AC/DC				Storage Humidity Range	40% to 70%
						Glow Wire Compliant	750°C
						UL/C-UL pending	

Note: Specifications shown here are for the standard items. Please consult our sales representatives in case of application requirements outside the standard range.

Single-row

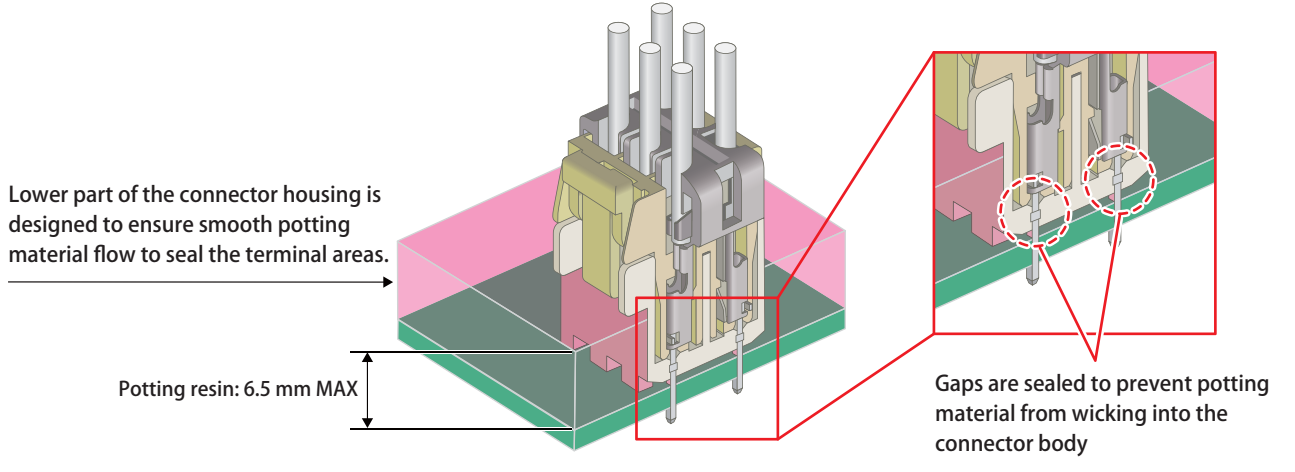


Double-row



	2-Pin	3-Pin	4-Pin	5-Pin	6-Pin
Single-row A	8.4	11.7	15.0	18.3	21.6
	4-Pin	6-Pin	8-Pin	10-Pin	12-Pin
Double-row B	8.4	11.7	15.0	18.3	21.6

Potting > Protects mounted components from moisture and other foreign matter such as dust and dirt.



Potting can be used for DF33C, DF63, and DF22 series.

DF63 Series 3.96mm Pitch, Maximum rated current 15A



In Addition to the EnerBee's core functions of "compact and high-end performance" the DF63 is also very user friendly. The center locking mechanism enables high density mounting and saves valuable PCB space.

- Polarization key
- Potting
- Multiple contact
- Center lock
- Waterproof
In-line type only
- UL
C-UL
- TÜV
pending

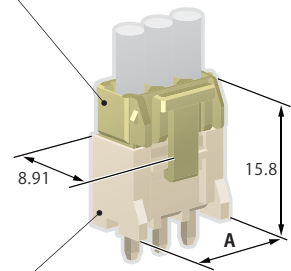
Product Specifications

Rating	Rated current	Row	16AWG	18AWG	Operating Temperature Range	-40°C to +105°C
		1	15A	13A	Operating Humidity Range	20% to 80%
		2	14A	11A	Storage Temperature Range	-10°C to +60°C
		3	12A	10A	Storage Humidity Range	40% to 70%
		4 ~ 6	12A	9A	Glow Wire Compliant	750°C
Rated voltage	Safety Standard	630V AC/DC		UL/C-UL Certified: certificate number UL : E52653 C-UL : E52653 TÜV : pending		
	UL/C-UL	600V AC/DC				

Note: Specifications shown here are for the standard items. Please consult our sales representatives in case of application requirements outside the standard range.

■ Straight

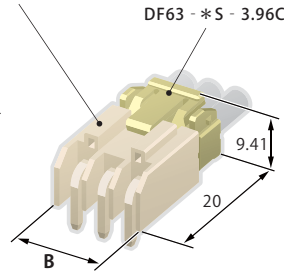
DF63 - *S - 3.96C



DF63 - *P - 3.96DSA

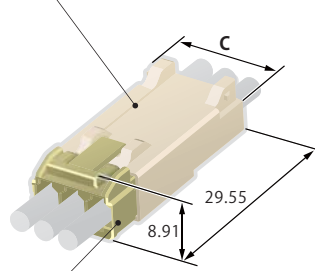
■ Right angle

DF63 - *P - 3.96DS



■ In-line (Waterproof type is available.)

DF63 - *EP - 3.96C



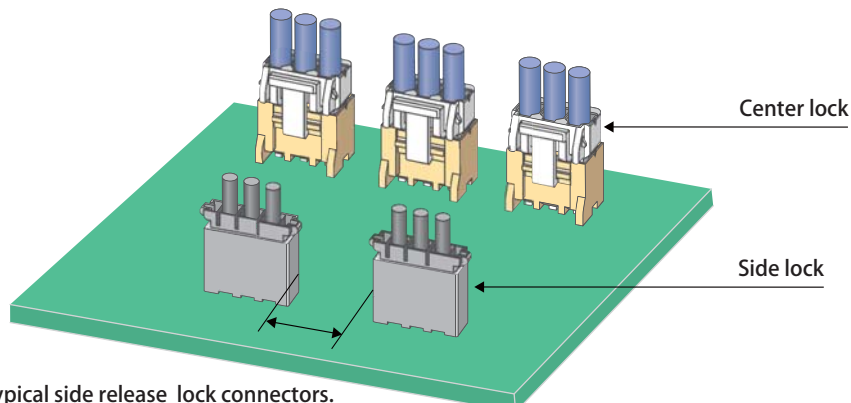
DF63 - *S - 3.96C

	1-Pin	2-Pin	3-Pin	4-Pin	5-Pin	6-Pin
Straight A	6.2	8.66	12.62	16.58	20.54	24.5
Right angle B	6.2*	8.66	12.62	16.58*	20.54*	24.5*
In-line C	6.2*	8.66	12.62	16.58*	20.54*	24.5*

*Right angle (1, 4, 5, 6 pos.) and in-line type are under development.

Center-lock system > Saves on PCB mounting space.

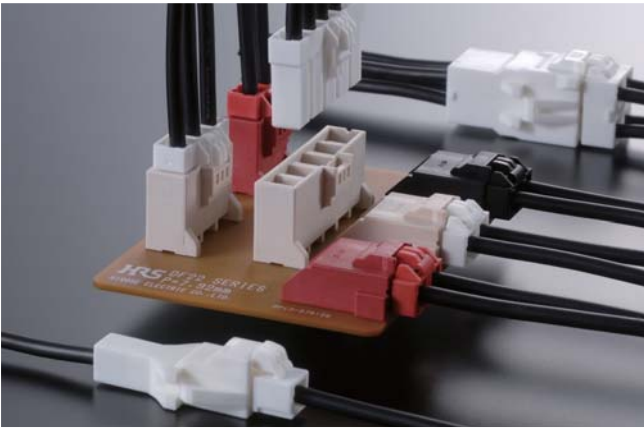
Enables high density mounting by saving extra spaces needed for typical side release lock connectors and saves valuable PCB space.



Extra space needed for typical side release lock connectors.

This structure is commonly used on all product series.

DF22 Series 7.92mm Pitch, Maximum rated current 30A



The DF22 series is compact on size, but big on current capacity.

The most popular EnerBee connector with a long sales history and wide customer appeal. Variations such as keying, pin count and latch styles, are available to allow the connector to be matched to the application at hand.

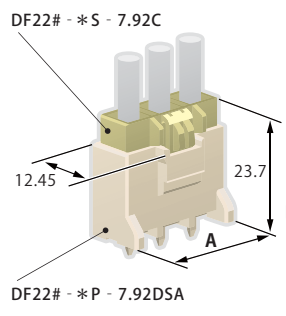
- Polarization key
- Potting
- Multiple contact
- Center lock
- UL
C-UL
TÜV

Product Specifications

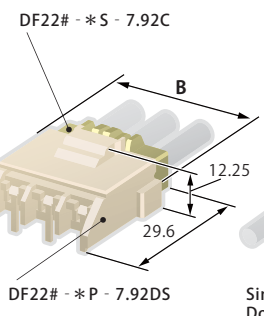
Rating	Rated current	No. of Pos.	10AWG	12AWG	14AWG	16AWG	Operating Temperature Range	-35°C to +85°C
		1	30A	25A	20A	15A	Operating Humidity Range	20% to 80%
		2	25A	20A	18A	15A	Storage Temperature Range	-10°C to +60°C
		3	25A	20A	18A	15A	Storage Humidity Range	40% to 70%
		4	22A	18A	15A	13A	Glow Wire Compliant	750°C
	5	22A	18A	15A	13A	UL/C-UL/TÜV Certified: certificate number UL : E52653 C-UL : E52653 TÜV : R9950703		
	Rated voltage	Safety Standard		1000V AC/DC				
		UL/C-UL		600V AC/DC				
		TÜV		600V AC/DC				

Note: Specifications shown here are for the standard items. Please consult our sales representatives in case of application requirements outside the standard range.

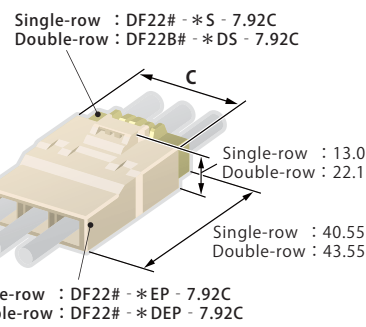
Straight



Right angle



In-line

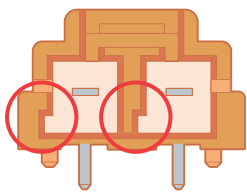


	1-Pin	2-Pin	3-Pin	4-Pin	5-Pin
Straight A	10.8	17.22	25.14	33.06	40.98
Right angle B	—	19.80	27.72	35.64	43.56
In-line Single-row C	9.3	18.0	26.0	—	—
In-line Double-row C	—	—	—	24.22	—

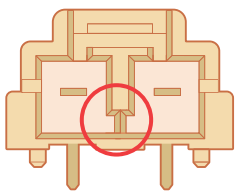
Key functions > Safe design

Three keying and color options are available for the DF22 series. This prevents mis-mating of the connectors when using multiple DF22's with the same pin count on the same design.

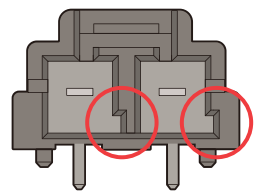
Ex. 2 position, right-angle pin header



- L-type**
- Guide key : left side
 - Plastic : red

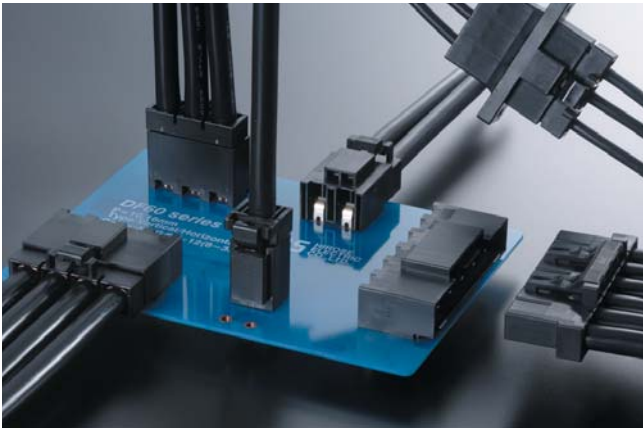


- Standard type**
- Guide key : center part
 - Plastic : earth tone (beige)



- R-type**
- Guide key : right side
 - Plastic : black

DF60 Series 10.16mm Pitch, Maximum rated current 45A



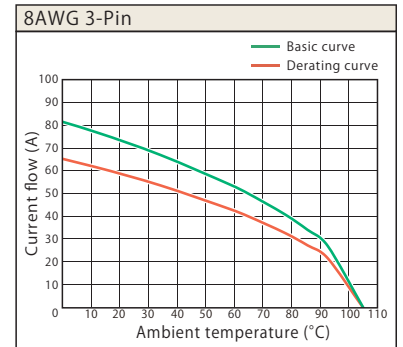
With its high power and large current capability, the DF60 Series is the most compact connector we offer for this level of current.

It features a multi-point contact structure with a center lock mechanism and offers increased operability with high reliability when connecting to main power sources.



Product Specifications

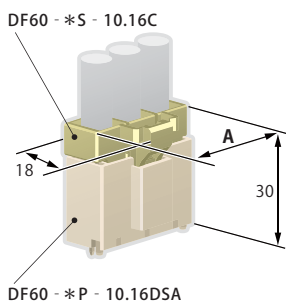
Rating	Rated current	No. of Pos.	8AWG	10AWG	12AWG	Operating Temperature Range	-55°C to +105°C
		1	45A	38A	30A	Operating Humidity Range	20% to 80%
		2	40A	31A	26A	Storage Temperature Range	-10°C to +60°C
		3	40A	31A	26A	Storage Humidity Range	40% to 70%
		4	38A	30A	25A	UL/C-UL/TÜV Certified: certificate number UL : E52653 C-UL : E52653 TÜV : R50244085	
		5	38A	30A	25A		
	6	38A	30A	25A			
	Rated voltage	Safety Standard	1000V AC/DC				
		UL/C-UL	600V AC/DC				
		TÜV	600V AC/DC				



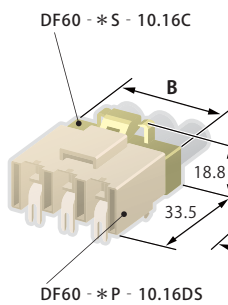
Note: Specifications shown here are for the standard items. Please consult our sales representatives in case of application requirements outside the standard range.

*Derating curve is calculated with multiplying the average of the basic curve by derating factor 0.8.

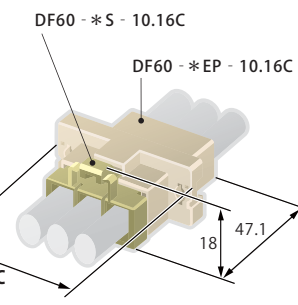
Straight



Right angle



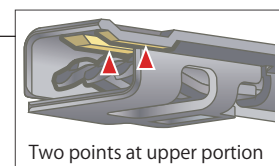
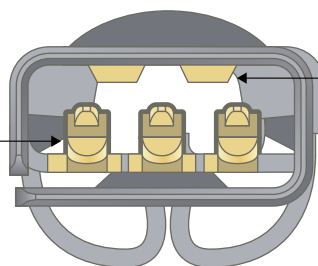
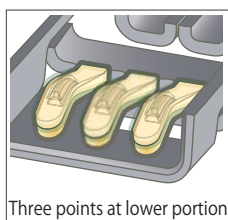
In-line



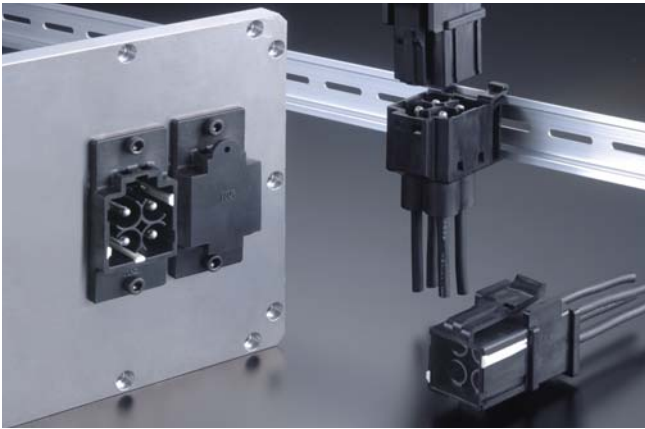
	1-Pin	2-Pin	3-Pin	4-Pin	5-Pin	6-Pin
Straight A	15.8	22.36	32.52	42.68	52.84	63.0
Right angle B	15.8	22.36	32.52	42.68	52.84	63.0
In-line C	32.2	39.36	49.52	59.68	69.84	—

Multi-point contact structure > Secure contact and superior vibration resistance

Three contact points in the lower portion have an independent spring action and allow for each contact point to position itself when mating.



EM35M Series Maximum rated current 50A, Plastic Connector for Power Supplies.



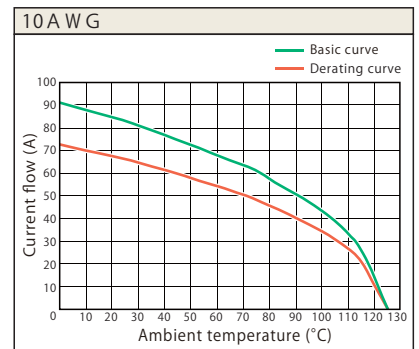
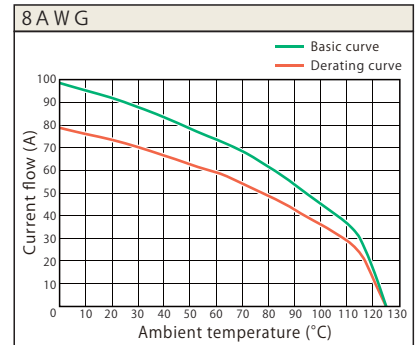
A relay type connector with the largest current capacity in the EnerBee family, the EM35M series is commonly used for wiring on larger devices. The EM35M series are good choices when replacing terminal blocks, since they can eliminate hand wiring and drastically improve assembly efficiency. They are also capable of being mounted on both DIN rails and panels.

- Polarization key
- Center lock
- Sequential mating
- UL TÜV

製品規格

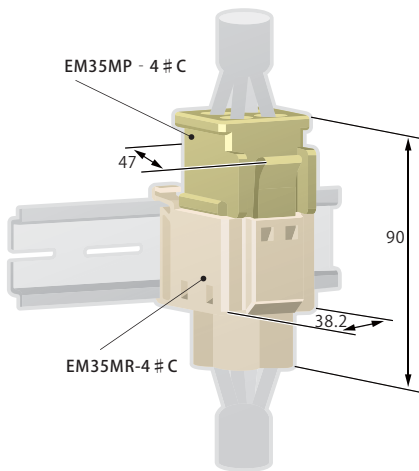
Rating	Rated current	8 A WG 50A	10 A WG 30A	Operating Temperature Range Storage Temperature Range	-40°C to +125°C -10°C to +60°C
	Rated voltage	500V AC/DC		UL/TÜV Certified: certificate number UL : E52653 TÜV : R50204909	

Note: Specifications shown here are for the standard items. Please consult our sales representatives in case of application requirements outside the standard range.



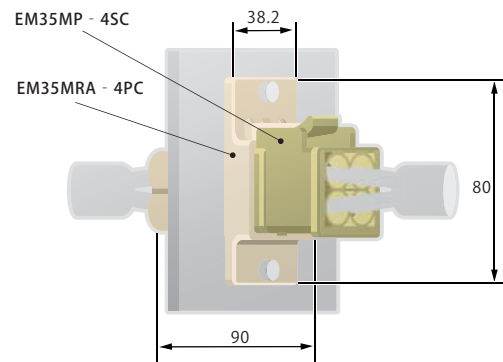
※Derating curve is calculated with multiplying the amplitude of the basic curve by derating factor 0.8.

■DIN rail mount type



■Panel mount type

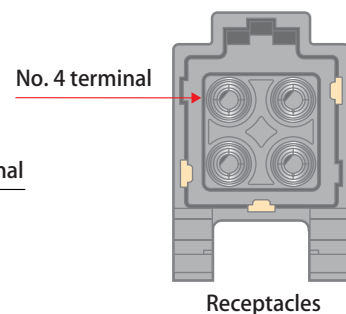
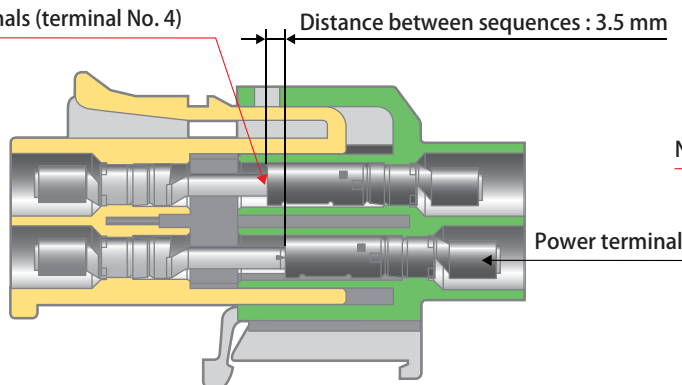
(Receptacle can be mounted on either side (front/rear) of a panel.)



Sequential mating structure ▶ Ground contact touches first when mating

In a sequential structure, terminal no. 4 is designed to act as a ground terminal and makes contact before the other three terminals when mating.

This First Mate (Contact No.4) than the other terminals (terminal No. 4)





EnerBee™ Applicable Cable Assembly Tools

Series	Type	Jig and Part No.	Applicable terminal		Applicable cable			
			Terminal No.	Plating	UL	AWG NO.	Core Configuration [pcs. / mm]	Jacket O/D [mm]
DF33C	Applicator	AP105-DF33-2022S	DF33A-2022SCF(40)	Tin plated	1007	20 – 22	17/0.16 21/0.18	φ 1.5 – 1.9
	Hand tool	HT304 / DF33-2022S	DF33A-2022SC	Tin plated	1007	22	17/0.16	φ 1.7
						20	21/0.18	φ 1.8
DF63	Applicator	AP105-DF63-1618-3	DF63-1618SCF DF63-1618PCF DF63W-1618SCF	Tin plated	1007	16 – 18	34/0.18 26/0.254	φ 2.1 – 2.5
		AP105-DF63-1618-4	DF63-1618SCF DF63-1618PCF DF63W-1618SCF		1015	16 – 18	34/0.18 26/0.254	φ 2.9 – 3.2
	Hand tool	HT802 / DF63-1618S-1	DF63-1618SC	Tin plated	1007	18	34/0.18	φ 2.1
						16	26/0.254	φ 2.5
		HT802 / DF63-1618S-2	DF63-1618SC		1015	18	34/0.18	φ 2.9
						16	26/0.254	φ 3.2
DF22	Applicator	AP105-DF22-1416	DF22-1416SCF DF22-1416PCF	Tin plated	1430	14 – 16	26/0.254 41/0.26	φ 2.4 – 3.0
		AP105-DF22A-1416	DF22A-1416SCF DF22A-1416PCF		1015	14 – 16	26/0.254 41/0.26	φ 3.0 – 3.8
	Applicator for other supplier's auto crimping machine (*1)	AP109A-DF22-1416	DF22-1416SCF DF22-1416PCF	Tin plated	1430	14 – 16	26/0.254 41/0.26	φ 2.4 – 3.0
		AP109A-DF22A-1416	DF22A-1416SCF DF22A-1416PCF		1015	14 – 16	26/0.254 41/0.26	φ 3.0 – 3.8
		AP109A-DF22A-1012	DF22A-1012SCF		1015	10 – 12	65/0.26 104/0.26	φ 3.6 – 4.9
	Hand tool	HT104 / DF22-1416 HT104 / DF22A-1416 HT103 / DF22A-1012	DF22-1416SC DF22-1416PC DF22A-1416SC DF22A-1416PC DF22A-1012SC	Tin plated	1430 1015 1015	16	26/0.254	φ 2.6
						16	54/0.18	φ 3.2
						14	41/0.26	φ 3.7
						12	65/0.26	φ 4.04
					10	104/0.26	φ 4.69	
DF60	Applicator	AP105-DF60-1012	DF60-1012SCFA DF60-1012PCFA	Gold plated	1015	10 – 12	65/0.26 104/0.26	φ 4.0 – 5.2
		AP105-DF60-8	DF60-8SCFA DF60-8PCFA		1283	8	7/24/0.26	φ 4.9 – 7.8
	Hand tool	HT306 / DF60-1012 HT306 / DF60-8	DF60-1012SCA DF60-1012PCA DF60-8SCA DF60-8PCA	Gold plated	1015 1283	12	65/0.26	φ 4.04
						10	104/0.26	φ 4.69
EM35M	Hand tool	JIS C 9711 — Recommended tools — Hozan: P-75 LOBTEX: AK15A NICHIFU Terminal Industries: HN1	EM-SC-113(01) EM-PC-113(01)	Tin plated	—	Conductor cross : 5.26mm ² to 5.57mm ² section (AWG#10 equivalent) Conductor O/D : φ 3.1 or below	φ 8.7 or below	
			EM-SC-133 EM-PC-133		—	Conductor cross : 8mm ² section Conductor O/D : φ 3.7 or below	φ 8.7 or below	
			EM-SC-143(01) EM-PC-143(01)		—	Conductor cross : 8.44mm ² to 8.92mm ² section (AWG # 8 equivalent) Conductor O/D : φ 4.4 or below	φ 11.5 or below	

*1 AP109A type applicators cannot be used on CM-105 press units

Creative Links to World Electronics



Hirose's connector distribution network location span across the globe, from Japan and Asia to the US and Europe.

■HIROSE ELECTRIC CO., LTD. (Headquarters)
Phone : 03-3491-5300
<http://www.hirose.co.jp/>

■HIROSE ELECTRIC CO., LTD.
Yokohama Center (Sales & Marketing Div. office)
Phone : 045-620-3526
<http://www.hirose.co.jp/>

■HIROSE ELECTRIC (SHANGHAI) CO., LTD.
Phone : 86-21-6391-3355
<http://www.hirose.com/cn/>

■HIROSE ELECTRIC (SHANGHAI) CO., LTD.
BEIJING BRANCH
Phone : 86-10-5165-9332
<http://www.hirose.com/cn/>

■HIROSE ELECTRIC TECHNOLOGIES
(SHENZHEN) CO., LTD.
Phone : 86-755-8207-0851
<http://www.hirose.com/cn/>

■HIROSE ELECTRIC HONGKONG TRADING CO., LTD.
Phone : 852-2803-5338
<http://www.hirose.com/hk/>

■HIROSE ELECTRIC TAIWAN CO., LTD.
Phone : 886-2-2555-7377
<http://www.hirose.com/tw/>

■HIROSE KOREA CO., LTD.
Phone : 82-31-496-7000 or 7124
<http://www.hirose.co.kr/>

■HIROSE ELECTRIC SINGAPORE PTE. LTD.
Phone : 65-6324-6113
<http://www.hirose.com/sg/>

■HIROSE ELECTRIC SINGAPORE PTE. LTD.
DELHI LIAISON OFFICE
Phone : 91-12-660-8018
<http://www.hirose.com/sg/>

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■HIROSE ELECTRIC SINGAPORE PTE. LTD.
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Phone : 604-619-2564
<http://www.hirose.com/sg/>

■HIROSE ELECTRIC SINGAPORE PTE. LTD.
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