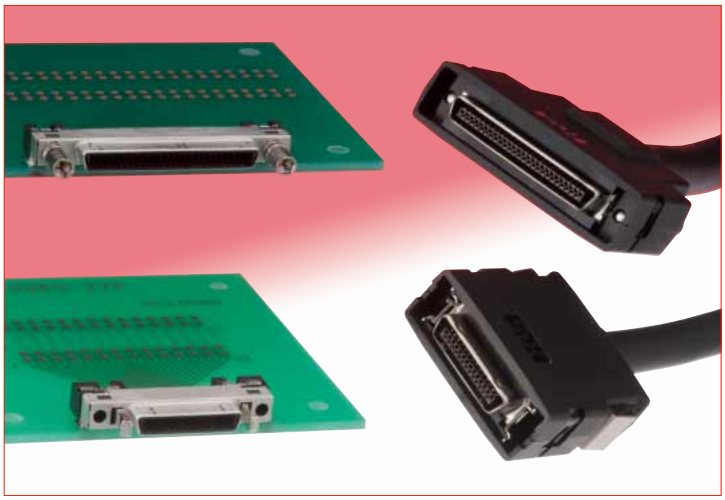
High Speed Transmission, 1mm Pitch Small Interface Connector

DH Series



Mating Face Area
Approximately 50% Reduced

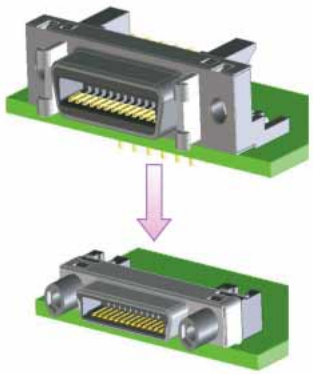


Fig.1

■Overview

DH Series is an impedance controlled interface connector for high speed transmission.
With a contact pitch of 1mm, the DH Series has a compact and thin design, enabling higher density mounting compared to generic half-pitch connectors.
4 different lock styles are available to meet various application needs.

Grounding Structure

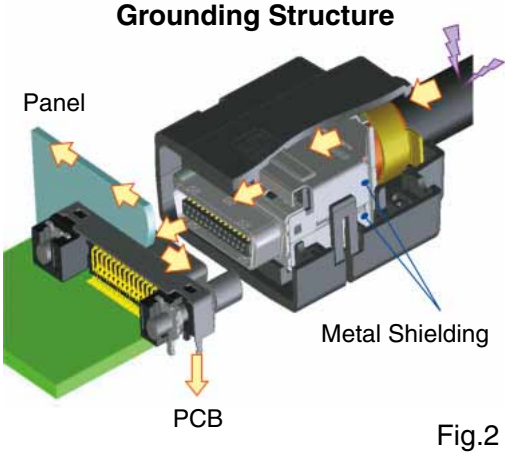


Fig.2

■Features

1. Small Design

With a contact pitch of 1mm and mounted pitch of 0.5mm, the mating face area is reduced by approximately 50% when compared to existing Hirose half-pitch connectors. (Fig.1)

2. Robust Design

The D-shaped shell design enhances prying force.
Through-hole mounting of the shell and retention tabs increases PCB retention force.

3. Unique Contact Arrangement for IDC Termination

The stagerred 2 row IDC contact arrangement reduces plug size. Additionally, the 2 types of press plates, white and black, can be used to prevent mis-wiring.

4. Excellent Shielding for EMI Prevention

The plug is covered with a metal shield and the ground can be dropped to the panel or board. (Fig. 2)

5. Wide Variation

Wide product range available including screw lock types, one touch lock types and variations to accommodate an array of panel thicknesses.

6. Applicable for High Speed Data Transmission

Twinaxial cabling enables high speed transmission. (Varies based on cable length and board)

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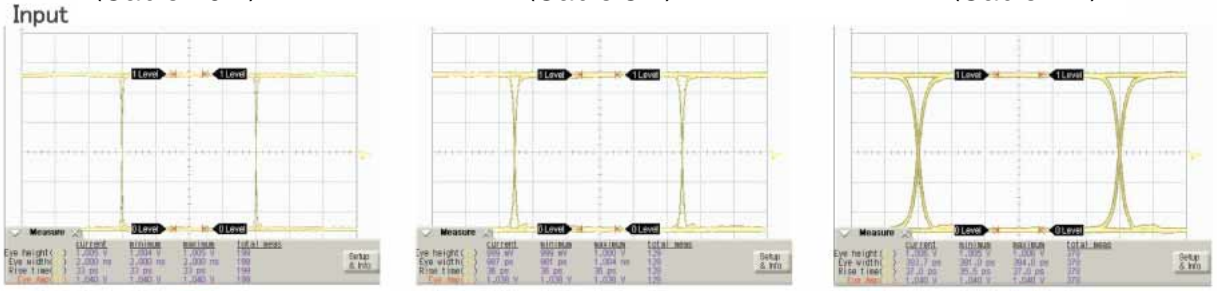
High Speed Data Transmission

This data is for reference only. Data may differ based on the cable or PCB used in evaluation.

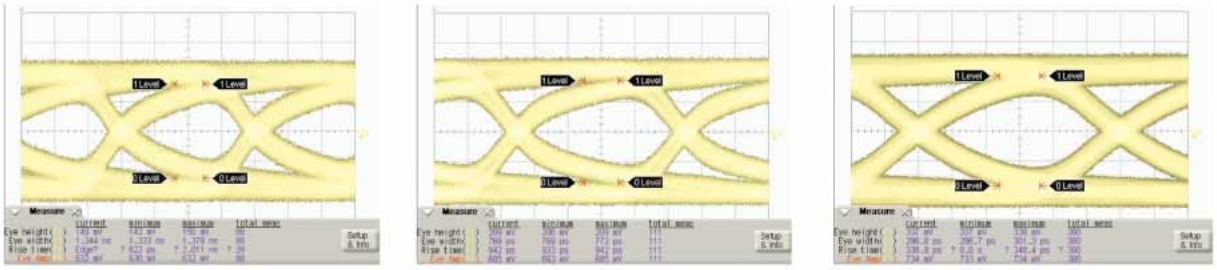
Eye Diagram [CH1-CH2]

500Mbps (Cable:10m) | **1Gbps** (Cable:5m) | **2.5Gbps** (Cable:2m)

Input



Output



Scale X: 500 psec/div, Y: 200 mV/div

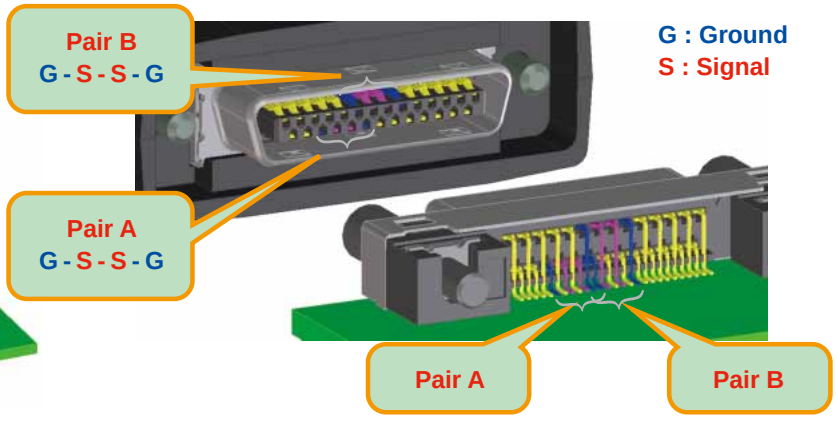
Scale X: 200 psec/div, Y: 200 mV/div

Scale X: 66.6 psec/div, Y: 200 mV/div

Measurement Method

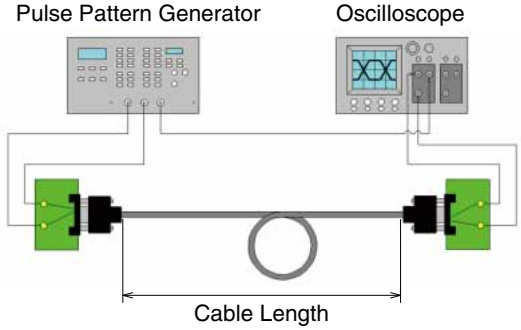
◆Pin Assignment





◆Measurement Method

·Measurement Pair : Deferential Pair A
·Cable : Twinax Cable
·Input Signal Voltage : 500mV



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■Specifications

Ratings	Rated Current	0.5A	Operating Temperature	−25℃ to +85℃
	Rated Voltage	125V AC	Storage Temperature	−25℃ to +60℃

Item	Specification					Conditions
1.Contact Resistance	1 50mΩ max. (IDC type) 65mΩ max. (Solder type)					100mA (DC or 1,000Hz)
2.Insulation Resistance	1000MΩ Min.					100V DC
3.Withstanding Voltage	No flashover or insulation breakdown					250V AC per min.
4.Insertion and Withdrawal Force		17pos.	27pos.	37pos.	51pos.	Measured with applicable connector.
	Insertion f.	25N Max.	30N Max.	36N Max.	43N Max.	
	Withdrawal f.	2.6N Min.	3N Min.	3.3N Min.	3.8N Min.	
5.Mating Durability	1 ①Contact resistance : 70mΩ Max. (IDC type) 85mΩ Max. (Solder type) ②No damage, cracks or parts dislocation.					1000 cycles
6.Vibration	①No electrical discontinuity of 10μs or longer. ②No damage, cracks or parts dislocation.					Frequency : 10 to 50Hz, single amplitude of 0.75mm, 5min/cycle, total 10 cycles.
7.Shock						Acceleration of 490m/s², 11ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis.
8.Temperature Cycles	1 ①Contact resistance : 70mΩ Max. (IDC type) 85mΩ Max. (Solder type) ②No damage, cracks or parts dislocation.					Temperature : -55℃→+5℃ to +35℃→+85℃→5℃ to+35℃ Time : 30→5→30→5(Minutes) 5cycles
9.Humidity (Steady State)	①Insulation resistance : 100MΩ Min. ②No damage, cracks or parts dislocation.					96 hours at 40℃ And RH 90% to 95%.
10.Salt Spray Test	No heavy corrosion resulting in a loss of function.					5% salt water solution for 48 hours.

1 Excludes wire conductor resistance. ＊Unless otherwise specified, refer to JIS C 5402

■Materials

Products	Components	Material	Finish	Remarks
Screw Lock Type Receptacle Connector (DH60-＊＊P / DH80-＊＊P)	Insulator	Polyamide Resin	Black	UL94V-0
	Contacts	Copper Alloy	Partially Gold Plated	—
	Shell	Stainless Steel	Tin Plated	—
	Retention Tab	Stainless Steel	Partially Tin Plated	—
One Touch Lock Type Receptacle Connector (DH60A-＊＊P / DH80A-＊＊P)	Insulator	Polyamide Resin	Black	UL94V-0
	Contacts	Copper Alloy	Partially Gold Plated	—
	Shell	Stainless Steel	Tin Plated	—
	Retention Tab	Brass	Tin Plated	—
	Metal Grounding Post	Steel	Nickel Plated	—
Plug Connector (DH3＊B-＊＊S)	Insulator	Polyamide Resin	Black	UL94V-0
	Contacts	Copper Alloy	Partially Gold Plated	—
	Rear Insert	PBT Resin	Black, Natural	UL94V-0
	Shell	Stainless Steel	Nickel Plated	—
Plug Connector (DH40-＊＊S)	Insulator : Polyamide Resin	Rear Insert : Polyamide Resin		
	Contact : Copper Alloy	Shell : Stainless Steel		
Screw Lock Type Cover Case (DH-＊＊-CV1B)	Cover	Polycarbonate Resin	Black	UL94V-0
	Shield	Stainless Steel	Nickel Plated	—
	Screw Lock	Steel	Nickel Plated	—
	Tapping Screw	Steel	Black Chromate(Cr+3)	—
Hand-screw Lock Type Cover Case (DH-＊＊-CV2B)	Cover	Polycarbonate Resin	Black	UL94V-0
	Shield	Stainless Steel	Nickel Plated	—
	Screw Lock	Steel	Nickel Plated	—
	Screw Insulator	Polyamide Resin	Black	UL94V-0
	Tapping Screw	Steel	Black Chromate(Cr+3)	—
One Touch Lock Type Metal Button Cover Case (DH-＊＊-CT1B)	Cover	Polycarbonate Resin	Black	UL94V-0
	Shield	Stainless Steel	Nickel Plated	—
	Lock Spring	Stainless Steel	—	—
	Tapping Screw	Steel	Black Chromate(Cr+3)	—
One Touch Lock Type Plastic Button Cover Case (DH-＊＊-CT2B)	Cover	Polycarbonate Resin	Black	UL94V-0
	Shield	Stainless Steel	Nickel Plated	—
	Lock Spring	Stainless Steel	—	—
	Button	Polycarbonate Resin	Black	UL94V-0
	Tapping Screw	Steel	Black Chromate(Cr+3)	—
Lock Screw (DH-LNA＊＊＊)	Screw Lock	Steel	Nickel Plated	—
	Washer	Steel	Nickel Plated	—
	Spring Washer	Steel	Nickel Plated	—
Metal Clamp (DH-CMB(＊＊))	Metal Clamp	Brass	—	—

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■Product Number Structure

Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.

●Receptacle

DH ❶ 60 ❷ – 27 ❹ P ❺

●Lock Screw

DH ❶ – LNA ❽ – W16 ❾

●Plug

DH ❶ 30 ❷ B ❻ – 27 ❹ S ❺

●Metal Clamp

DH ❶ – 27 ❹ – CM ❿ B ❻ (7.3) ⓫

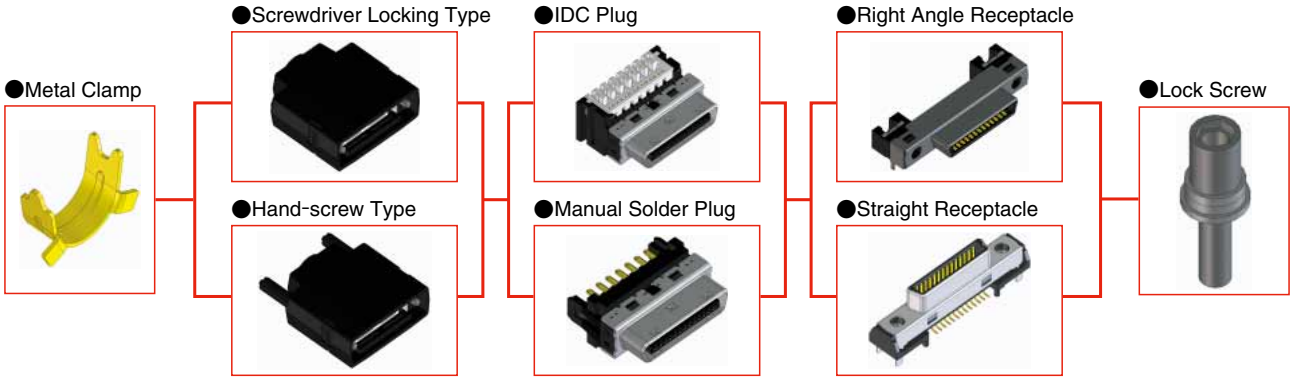
●Cover Case

DH ❶ – 27 ❹ – CV1 ❼ – B ❻

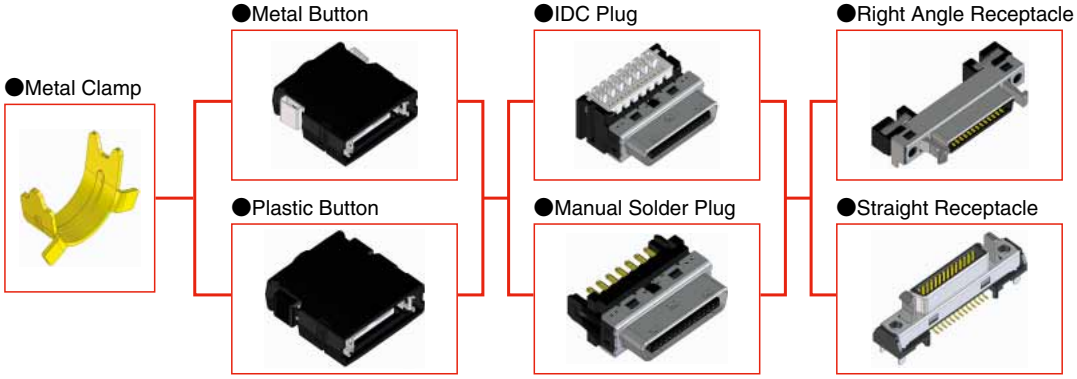
❶Series Name		DH
❷Termination Style	3※ 40 60 80	IDC Type Solder Type Right Angle SMT Straight SMT
❸Lock Style	Blank A	Screw Lock Type One Touch Lock Type
❹No. of Pos.		17, 27, 37, 51
❺Contact Gender	P S	Female Type Male Type
❻Serial No.		
❼Cover Type	CV1 CV2 CT1 CT2	Screw Lock Type (Locked with screwdriver) Screw Lock Type (Hand-screw) One Touch Lock Type One Touch Lock Type (Plastic Button)
❽Lock Screw		LNA
❾Panel Thickness	Blank W4 W8 W16	1.4 to 1.6 0.9 to 1.2 0.5 to 0.8 No Panel
❿Metal Clamp		CM
⓫Cable Outer Diameter		(5.6), (6.3), (6.6), (6.9), (7.3), (7.8), (8.8), (9.0), (9.6)

■Functionality Diagram

DH Screw Lock Type



DH One Touch Lock Type



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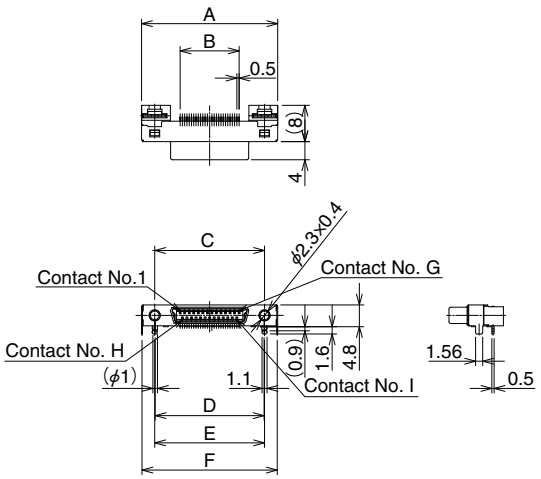
Screw Lock Type

■Receptacle Connector

●Right Angle Type

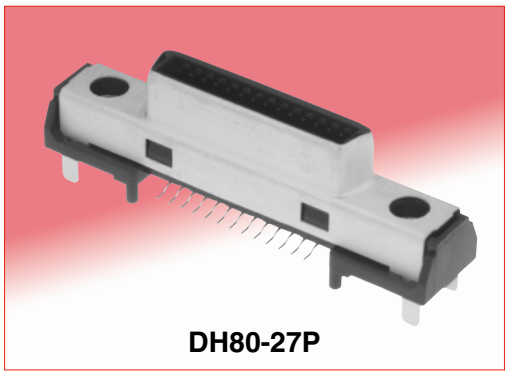


DH60-27P

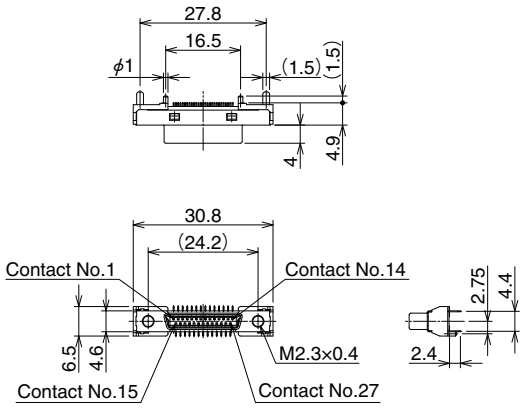


Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	G	H	I	Remarks
DH60-17P	244-0006-8 00	17	25	8	(19.2)	19	19.2	24.8	9	10	17	–
DH60-27P	244-0001-4 00	27	30	13	(24.2)	24	24.2	29.8	14	15	27	–
DH60-37P	244-0007-0 00	37	35	18	(29.2)	29	29.2	34.8	19	20	37	–
DH60-51P	244-0008-3 00	51	42	25	(36.2)	36	36.2	41.8	26	27	51	–

●Straight Type

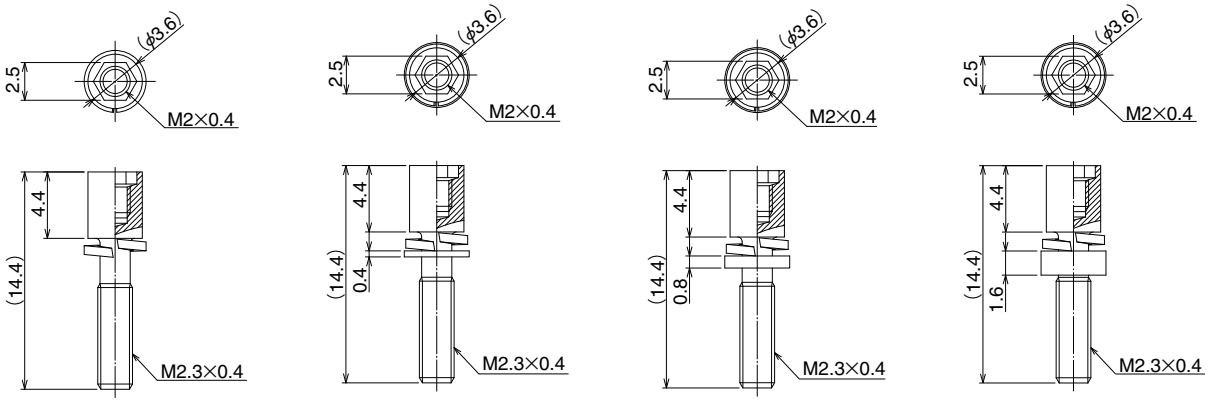


DH80-27P



Part No.	HRS No.	No. of Pos.	Remarks
DH80-27P	244-0051-2 00	27	–

■Lock Screw



DH-LNA　DH-LNA-W4　DH-LNA-W8　DH-LNA-W16

Part No.	HRS No.	Applicable Panel Thickness (mm)	Remarks
DH-LNA	244-0045-0 00	1.4 to 1.6	–
DH-LNA-W4	244-0046-2 00	0.9 to 1.2	–
DH-LNA-W8	244-0004-2 00	0.5 to 0.8	–
DH-LNA-W16	244-0005-5 00	–	No Panel

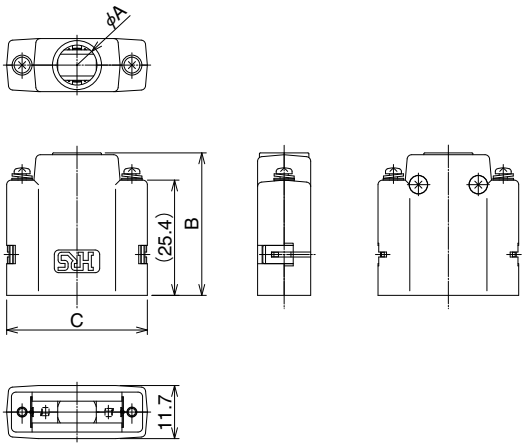
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■Cover Case

●Screw Lock (Used with Screwdriver)



DH-27-CV1B

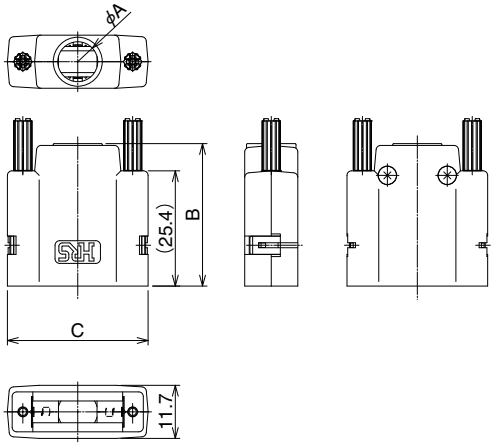


Part No.	HRS No.	No. of Pos.	A	B	C	Remarks
DH-17-CV1B	244-0009-6 00	17	(7.8)	31.4	26	Cable Outer Diameter 5.1 to 7.1mm
DH-27-CV1B	244-0010-5 00	27	(8.8)	31.4	31	Cable Outer Diameter 6.6 to 7.8mm
DH-37-CV1B	244-0011-8 00	37	(10.3)	39	36	Cable Outer Diameter 7.3 to 9.3mm
DH-51-CV1B	244-0012-0 00	51	(11.1)	39	43	Cable Outer Diameter 8.5 to 10.1mm

●Screw Lock (Hand-screw)



DH-27-CV2B



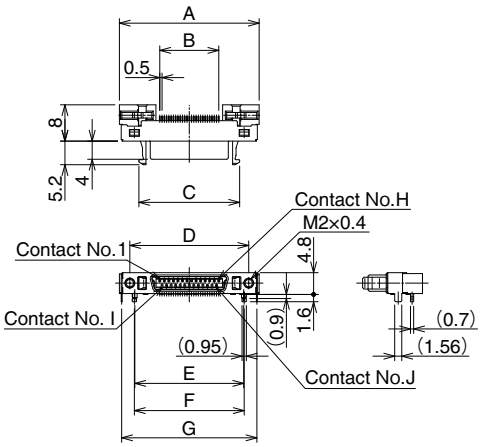
Part No.	HRS No.	No. of Pos.	A	B	C	Remarks
DH-17-CV2B	244-0013-3 00	17	(7.8)	31.4	26	Cable Outer Diameter 5.1 to 7.1mm
DH-27-CV2B	244-0014-6 00	27	(8.8)	31.4	31	Cable Outer Diameter 6.6 to 7.8mm
DH-37-CV2B	244-0015-9 00	37	(10.3)	39	36	Cable Outer Diameter 7.3 to 9.3mm
DH-51-CV2B	244-0016-1 00	51	(11.1)	39	43	Cable Outer Diameter 8.5 to 10.1mm

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One Touch Lock Type
■Receptacle Connector
●Right Angle Type

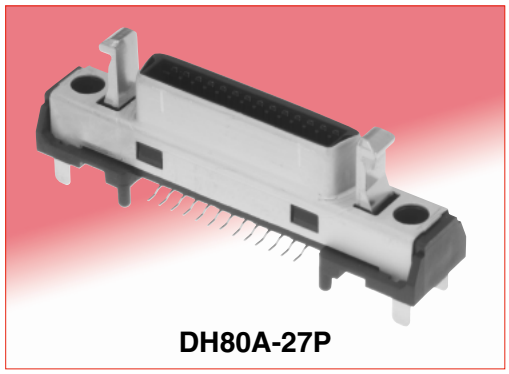


DH60A-27P

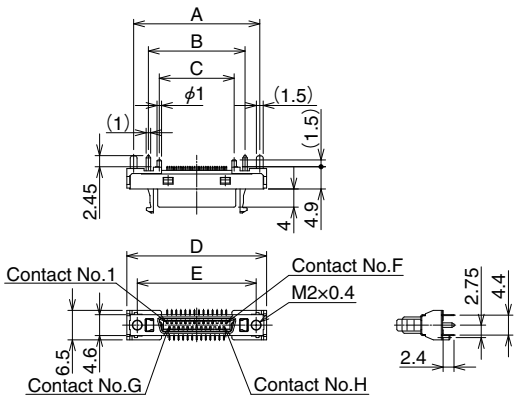


Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	G	H	I	J	Remarks
DH60A-17P	244-0038-4 00	17	25.8	8	17.2	(21.2)	19	19.2	24.8	9	10	17	–
DH60A-27P	244-0029-3 00	27	30.8	13	22.2	(26.2)	24	24.2	29.8	14	15	27	–
DH60A-37P	244-0040-6 00	37	35.8	18	27.2	(31.2)	29	29.2	34.8	19	20	37	–
DH60A-51P	244-0043-4 00	51	42.8	25	34.2	(38.2)	36	36.2	41.8	26	27	51	–

●Straight Type



DH80A-27P



Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	G	H	Remarks
DH80A-27P	244-0052-5 00	27	27.8	21.3	16.5	30.8	(26.2)	14	15	27	–
DH80A-37P	244-0068-5 00	37	32.8	26.3	21.5	35.8	(31.2)	19	20	37	–

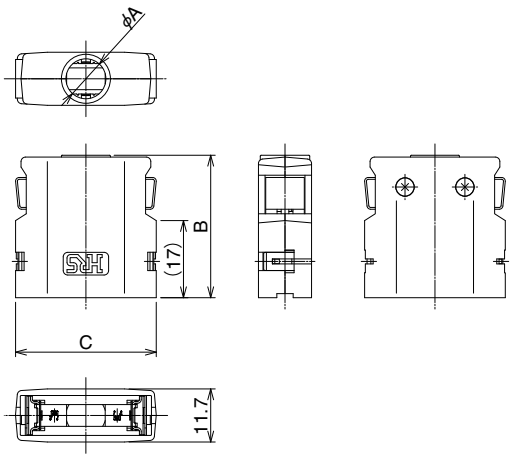
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■Cover Case

●Metal Button Type



DH-27-CT1B

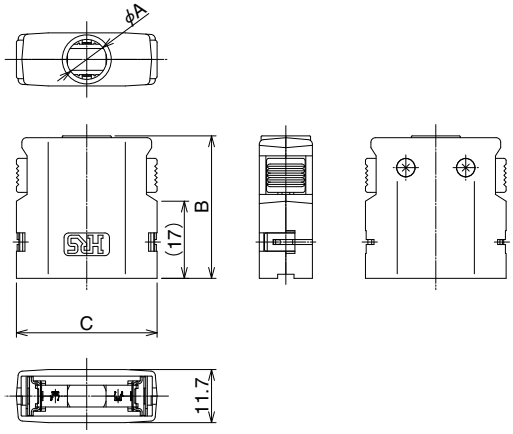


Part No.	HRS No.	No. of Pos.	A	B	C	Remarks
DH-17-CT1B	244-0039-7 00	17	(7.8)	31.4	26	Cable Outer Diameter 5.1 to 7.1mm
DH-27-CT1B	244-0030-2 00	27	(8.8)	31.4	31	Cable Outer Diameter 6.6 to 7.8mm
DH-37-CT1B	244-0041-9 00	37	(10.3)	39	36	Cable Outer Diameter 7.3 to 9.3mm
DH-51-CT1B	244-0044-7 00	51	(11.1)	39	43	Cable Outer Diameter 8.5 to 10.1mm

●Plastic Button Type



DH-27-CT2B



Part No.	HRS No.	No. of Pos.	A	B	C	Remarks
DH-17-CT2B	244-0047-5 00	17	(7.8)	31.4	26	Cable Outer Diameter 5.1 to 7.1mm
DH-27-CT2B	244-0048-8 00	27	(8.8)	31.4	31	Cable Outer Diameter 6.6 to 7.8mm
DH-37-CT2B	244-0049-0 00	37	(10.3)	39	36	Cable Outer Diameter 7.3 to 9.3mm
DH-51-CT2B	244-0050-0 00	51	(11.1)	39	43	Cable Outer Diameter 8.5 to 10.1mm

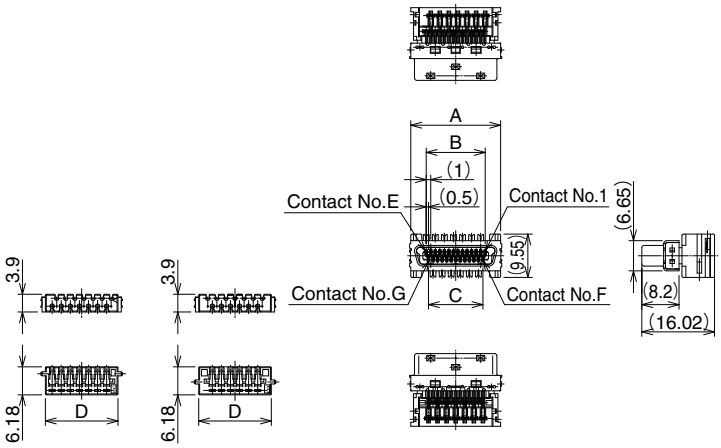
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■Plug Unit

●IDC Type

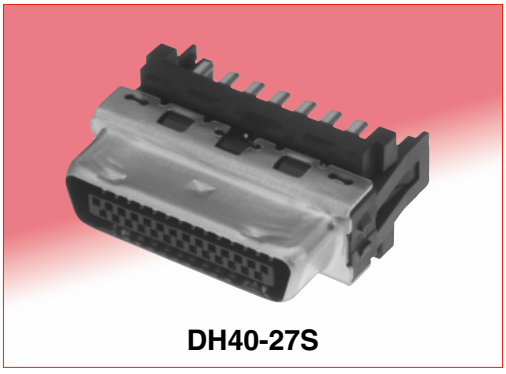


DH30B-27S

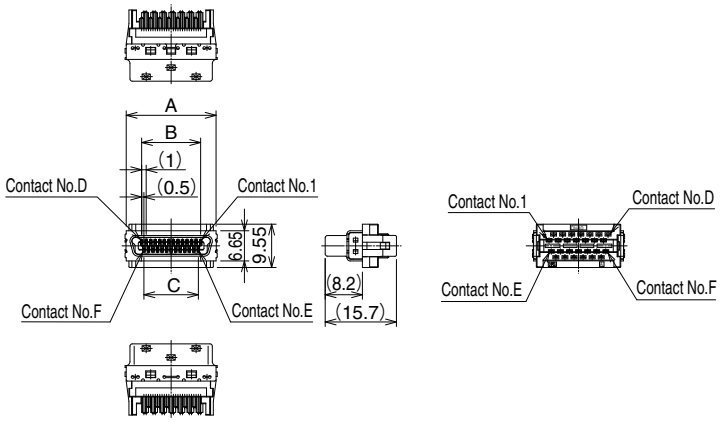


Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	G	Remarks
DH30B-17S	244-0017-4 00	17	(14.8)	(8)	(7)	(11)	9	10	17	Conductor Size : 28 AWG Insulator Outer Diameter : φ0.9±0.04
DH30B-27S	244-0018-7 00	27	(19.8)	(13)	(12)	(16)	14	15	27	
DH30B-37S	244-0019-0 00	37	(24.8)	(18)	(17)	(21)	19	20	37	
DH30B-51S	244-0020-9 00	51	(31.8)	(25)	(24)	(28)	26	27	51	
DH32B-17S	244-0021-1 00	17	(14.8)	(8)	(7)	(11)	9	10	17	Conductor Size : 28 AWG Insulator Outer Diameter : φ0.66±0.04
DH32B-27S	244-0022-4 00	27	(19.8)	(13)	(12)	(16)	14	15	27	
DH32B-37S	244-0023-7 00	37	(24.8)	(18)	(17)	(21)	19	20	37	
DH32B-51S	244-0024-0 00	51	(31.8)	(25)	(24)	(28)	26	27	51	

●Solder Contact Type



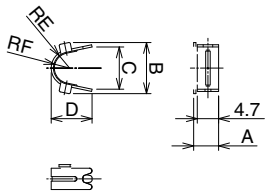
DH40-27S



Part No.	HRS No.	No. of Pos.	A	B	C	D	E	F	Remarks
DH40-17S	244 0054-0 00	17	(14.8)	(8)	(7)	9	10	17	–
DH40-27S	244 0053-8 00	27	(19.8)	(13)	(12)	14	15	27	–
DH40-37S	244 0055-3 00	37	(24.8)	(18)	(17)	19	20	37	–
DH40-51S	244 0056-6 00	51	(31.8)	(25)	(24)	26	27	51	–

■Metal Clamp

[27pos. : DH-27-CMB (6.9)]
(Cable Outer Diameter 6.9mm)

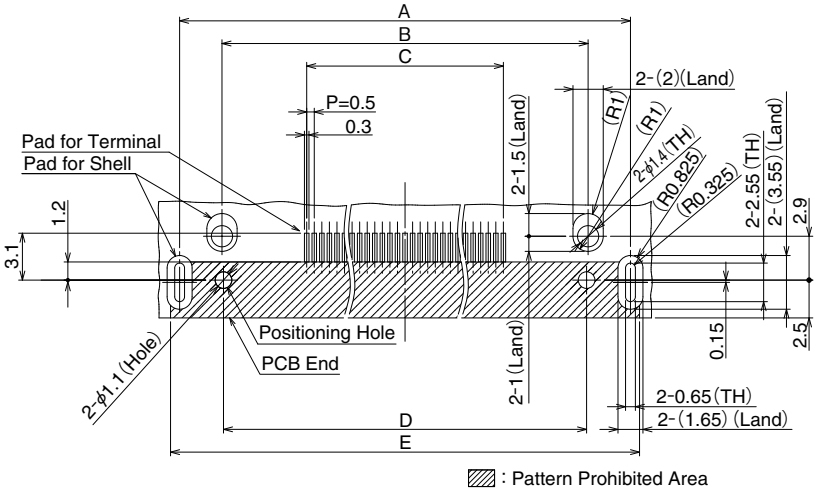


Part No.	HRS No.	A	B	C	D	E	F	Remarks
DH-17-CMB(5.6)	244-0064-4 00	(5.5)	(11.9)	(7.4)	8.7	(3.35)	(3.15)	Cable Outer Diameter 5.6±0.5mm
DH-17-CMB(6.3)	244-0031-5 00	(5.5)	(11.3)	(9.3)	9	(3.55)	(3.35)	Cable Outer Diameter 6.3±0.5mm
DH-17-CMB(6.6)	244-0063-1 00	(5.5)	(12)	(8.8)	9.8	(3.9)	(3.7)	Cable Outer Diameter 6.6±0.5mm
DH-27-CMB(6.9)	244-0036-9 00	(5.5)	(13.5)	(10.1)	10.6	(4.2)	(4)	Cable Outer Diameter 6.9±0.3mm
DH-27-CMB(7.3)	244-0032-8 00	(5.5)	(14.4)	(10.2)	9.5	(4.5)	(4.3)	Cable Outer Diameter 7.3±0.5mm
DH-37-CMB(7.8)	244-0065-7 00	(6.1)	(15.7)	(9.6)	11.7	(4.3)	(4.1)	Cable Outer Diameter 7.8±0.5mm
DH-37-CMB(8.8)	244-0033-0 00	(6.1)	(17.6)	(12.1)	12.4	(4.8)	(4.6)	Cable Outer Diameter 8.8±0.5mm
DH-51-CMB(9.0)	244-0066-0 00	(6.1)	(16.9)	(10.8)	13.1	(4.9)	(4.7)	Cable Outer Diameter 9.0±0.5mm
DH-51-CMB(9.6)	244-0034-3 00	(6.1)	(18.4)	(13.1)	13	(5.2)	(5)	Cable Outer Diameter 9.6±0.5mm

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◆Recommended PCB Layout

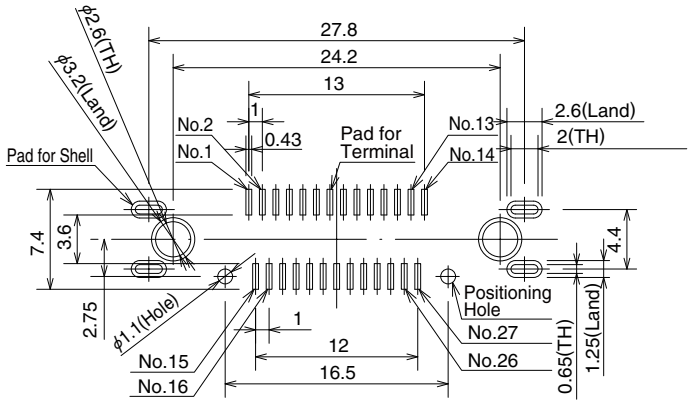
●DH60-＊＊P、DH60A-＊＊P



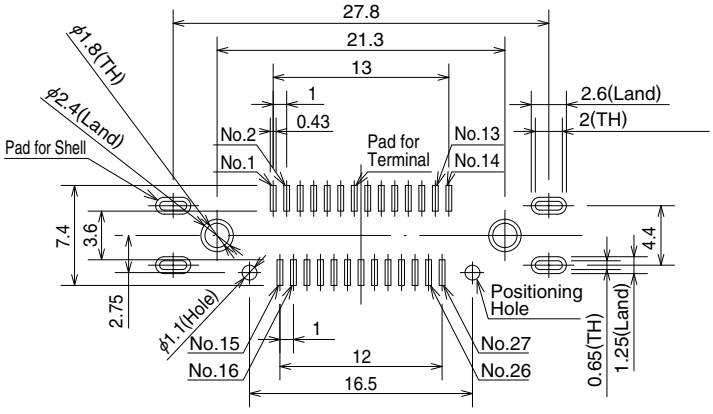
Unit : mm

Part No.	A	B	C	D	E
DH60-17P DH60A-17P	24.8	19.2	8	19	26
DH60-27P DH60A-27P	29.8	24.2	13	24	31
DH60-37P DH60A-37P	34.8	29.2	18	29	36
DH60-51P DH60A-51P	41.8	36.2	25	36	43

●DH80-27P

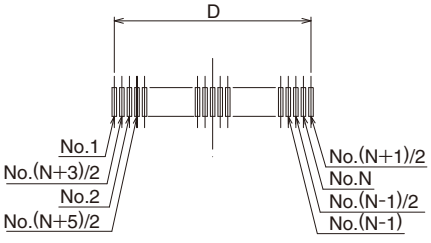


●DH80A-27P



◆Board Pattern Contact No.

●DH60-＊＊P、DH60A-＊＊P



＊N:Number of positions

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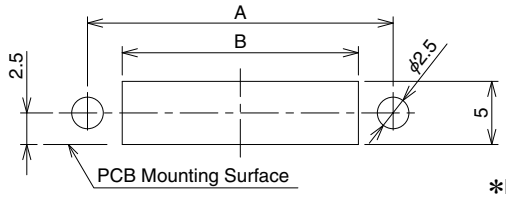
■Panel Cutout

●Screw Lock Type

Reference Panel Cutout (Right Angle Type, Straight Type)

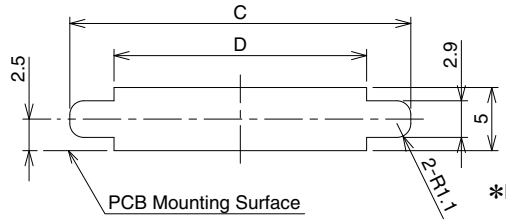
(The dimensions are specified based on the center of the connector interface)

DH-LNA(CL244-0045-0-00)



∗Please set piercing R as less than R1.

DH-LNA-W4(CL244-0046-2-00)
DH-LNA-W8(CL244-0004-2-00)
DH-LNA-W16(CL244-0005-5-00)



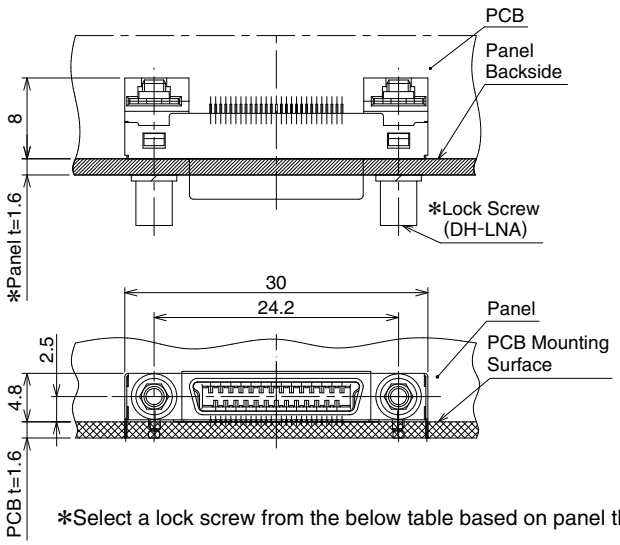
∗Please set piercing R as less than R1.

A·B·C·D Dimension Table Unit : mm

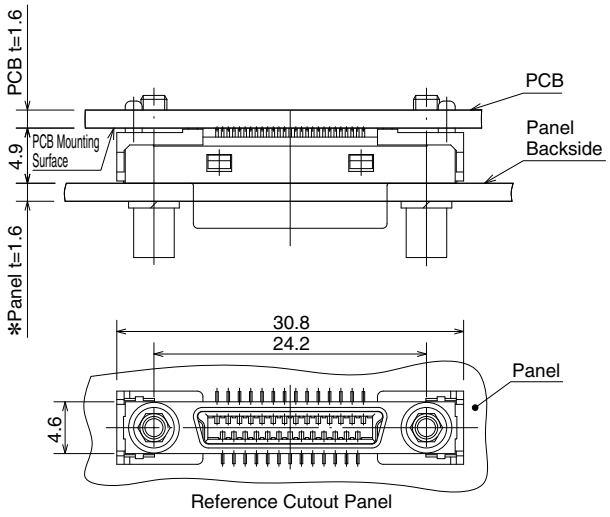
No. of Pos.	A	B	C	D
17	19.2	13.7	22	15
27	24.2	18.7	27	20
37	29.2	23.7	32	25
51	36.2	30.7	39	32

Connector Mounted on PCB

(For example, panel thickness is 1.6mm)
∗The drawing features DH60-27P as the example.



∗DH80-27P



∗Select a lock screw from the below table based on panel thickness.

Part No.	HRS No.	Applicable Panel Thickness (mm)
DH-LNA	244-0045-0 00	1.4 to 1.6
DH-LNA-W4	244-0046-2 00	0.9 to 1.2
DH-LNA-W8	244-0004-2 00	0.5 to 0.8
DH-LNA-W16	244-0005-5 00	No panel

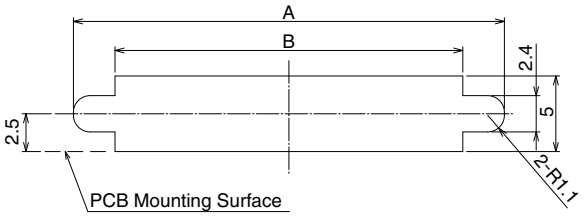
∗The recommended screw tightening torque is from 0.12 to 0.3 N·m.

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●One Touch Lock Type

Reference Panel Cutout (Right Angle Type, Straight Type)

(The dimensions are specified based on the center of the connector interface)



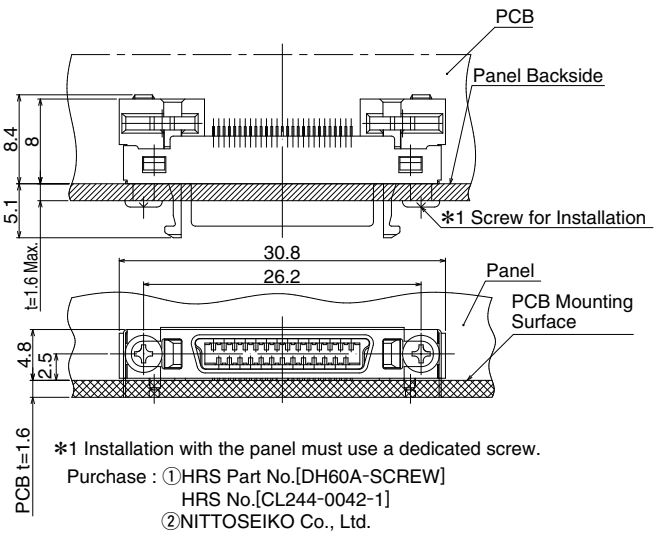
∗Please set the draft R for process as max R1.

A·B Dimension Table Unit : mm

No. of Pos.	A	B
17	23.5	18
27	28.5	23
37	33.5	28
51	40.5	35

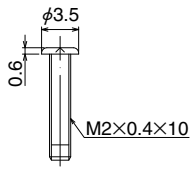
Connector mounted on PCB

∗The drawing features DH60A-27P as the example.

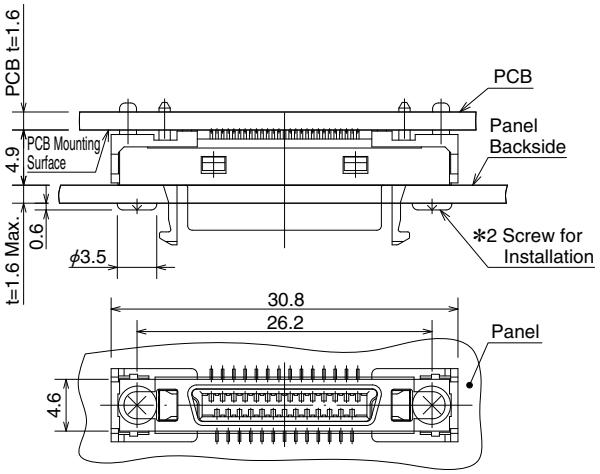


∗1 Installation with the panel must use a dedicated screw.
Purchase : ①HRS Part No.[DH60A-SCREW]
HRS No.[CL244-0042-1]
②NITTOSEIKO Co., Ltd.
[FINE PAN HEAD MACHINE SCREW 2 TYPES]

∗Screw for Installation

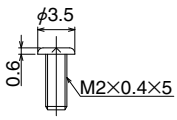


∗DH80A-27P



∗2 Installation with the panel must use a dedicated screw.
Purchase : ①HRS Part No.[DH80A-SCREW]
HRS No.[CL244-0059-4]
②NITTOSEIKO Co., Ltd.
[FINE PAN HEAD MACHINE SCREW 2 TYPES]

∗Screw for Installation



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■Applicable Tools

	Process	Part No.	HRS No.
1	Cable End Processing	Manual Work	
2	Upper Level Wire Arranging	Tool for Wire Arrangement : DH/CA-MO	902-2183-0
3	Upper Level Press Fitting		
4	Lower Level Wire Arranging		
5	Lower Level Press Fitting		
6	Cable Cutting	Manual Work (Using nippers, etc.)	
7	IDC	① IDC/Clamping Tool : DH/IDCK-MP	902-2185-5
		② Attachment for 17pos : DH-17UNIT	902-2186-8
		Attachment for 27pos : DH-27UNIT	902-2187-0
		Attachment for 37pos : DH-37UNIT	902-2188-3
		Attachment for 51pos : DH-51UNIT	902-2189-6
		③ HI-FLEX Termination Press (Select appropriate attachment of each pin count from ②.)	550-0082-2
8	Cable Clamping	① IDC/Clamping Tool : DH/IDCK-MP	902-2185-5
		② Attachment for DH-17-CMB(5.6) : DH-17-CMB(5.6)UNIT	902-2197-4
		Attachment for DH-17-CMB(6.3) : DH-17-CMB(6.3)UNIT	902-2190-5
		Attachment for DH-17-CMB(6.6) : DH-17-CMB(6.6)UNIT	902-2196-1
		Attachment for DH-27-CMB(6.9) : DH-27-CMB(6.9)UNIT	902-2194-6
		attachment for DH-27-CMB(7.3) : DH-27-CMB(7.3)UNIT	902-2191-8
		Attachment for DH-37-CMB(7.8) : DH-37-CMB(7.8)UNIT	902-2198-7
		Attachment for DH-37-CMB(8.8) : DH-37-CMB(8.8)UNIT	902-2192-0
		Attachment for DH-51-CMB(9.0) : DH-51-CMB(9.0)UNIT	902-2199-0
		Attachment for DH-51-CMB(9.6) : DH-51-CMB(9.6)UNIT	902-2193-3
		③ HI-FLEX Termination Press (Select appropriate attachment of each pin count from ②.)	550-0082-2
9	Cover Attaching	Manual Work (Using torque drivers, etc.)	

✻For 7. IDC and 8. Cable clamping, one of the tools listed in each ①, ②, and ③ are required (select one).
✻Customers that already have the HI-Flex termination press may use it for product assembly.
✻DH/IDCK-MP listed in 7. IDC and 8. Cable clamping is the same tool. If there is at least one, then both IDC and cable clamping can be completed by switching out the IDC attachment with the caulking attachment. Accordingly, two of both DH/IDCK-MP and the HIFLEX termination press are required for mass production.

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2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN
https://www.hirose.com/

The characteristics and the specifications contained herein are for reference purpose. Please refer to the latest customer drawings prior to use.
The contents of this catalog are current as of date of 04/2021. Contents are subject to change without notice for the purpose of improvements.