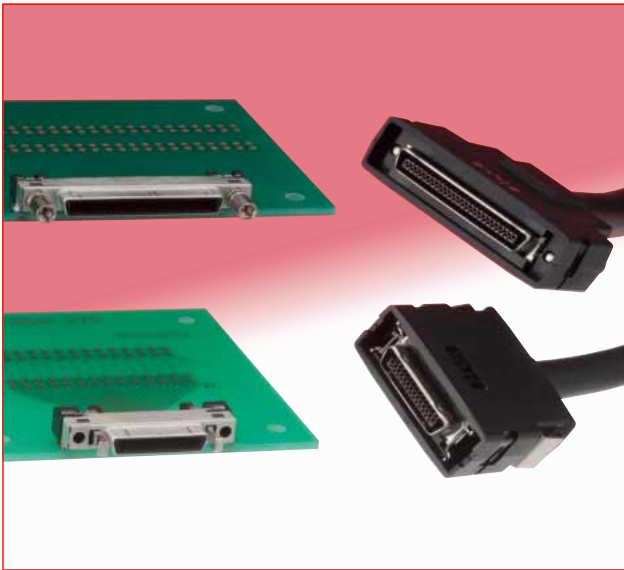


High speed transmission, 1mm pitch Small Interface Connector

DH Series

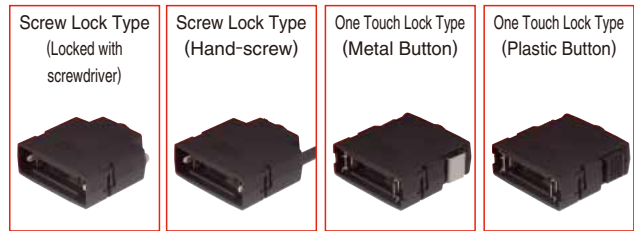


Overview

DH Series is an impedance controlled interface connector for high speed transmission.

1mm contact mating pitch together with a 0.5mm mounting pitch yields a more compact, lower profile, higher density alternate to conventional half pitch interface connectors.

4 different lock styles are available to meet various applications.

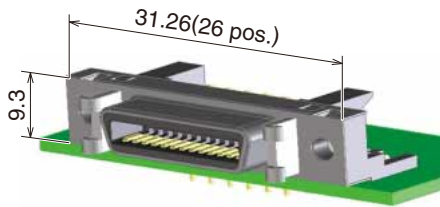


Features

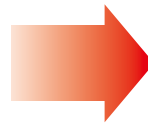
1. Small Design

Mating face area
Approx 50% reduced

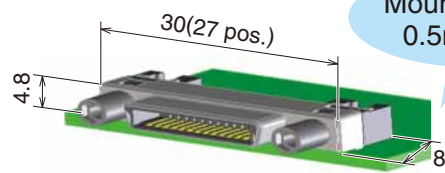
DXM Series
(Conventional-general purpose half pitch type)



Mating pitch: 1.27mm



DH Series



Mating pitch: 1.0mm

2. Robust design

Receptacle

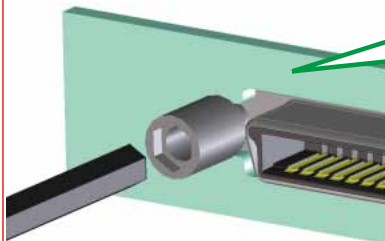


Robust design resists wrenching D-shaped opening.

PCB Retention Force

Through hole mounting for shell and metal fitting increases PCB retention force.

Secure Panel Attachment (optional)
with easy to use hexagon sockets.

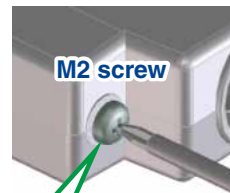


Plug



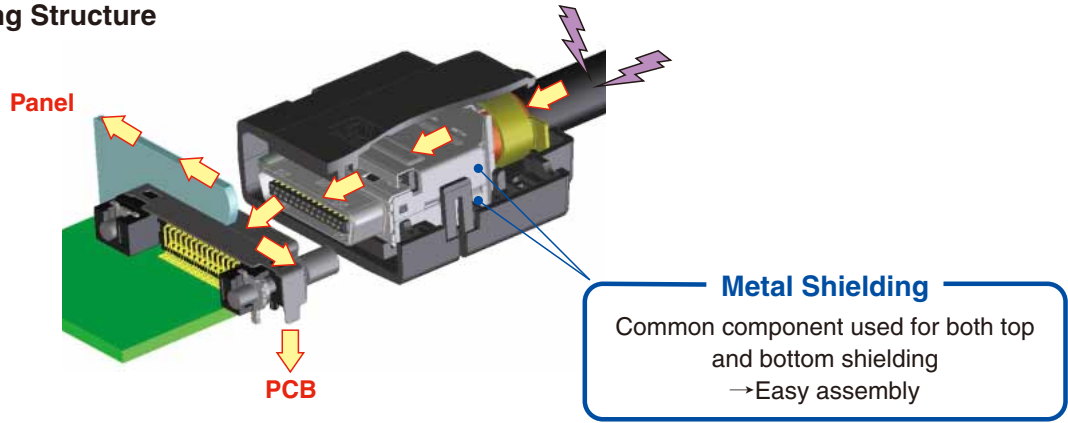
M2 screw

Robust & Secure Screw Lock
Tightening torque: 0.06 to 0.07 N-m max



3. Excellent Shielding for EMI Prevention

◆Grounding Structure



4. Wide variation

There are various variations corresponding to the usage.

●Lock variation

| Lock type | Cover case | receptacle | | | |
|----------------|-----------------------------------------------------------------|------------|--------------------------------|-------------------|-----------|
| Item | Specification /Part number | Item | Part number | | |
| Screw lock | Screwdriver type DH-**-CV1B Hand-screw type DH-**-CV2B | Connector | DH60-**P / DH80-**P | | |
| | | Panel lock | Applicable panel thickness(mm) | Number of washers | Part No. |
| | | | 1.4 to 1.6 | 0 | DH-LNA |
| | | | 0.9 to 1.2 | 1(t=0.4) | DH-LNA-W4 |
| 0.5 to 0.8mm | 1(t=0.6) | | DH-LNA-W8 | | |
| No panel | 1(t=0.8) | DH-LNA-W16 | | | |
| One touch lock | Metal button DH-**-CT1B Plastic button DH-**-CT2B | Connector | DH60A-**P / DH80A-**P | | |

*Screw lock type and One touch lock type does not mate together.

●Common part

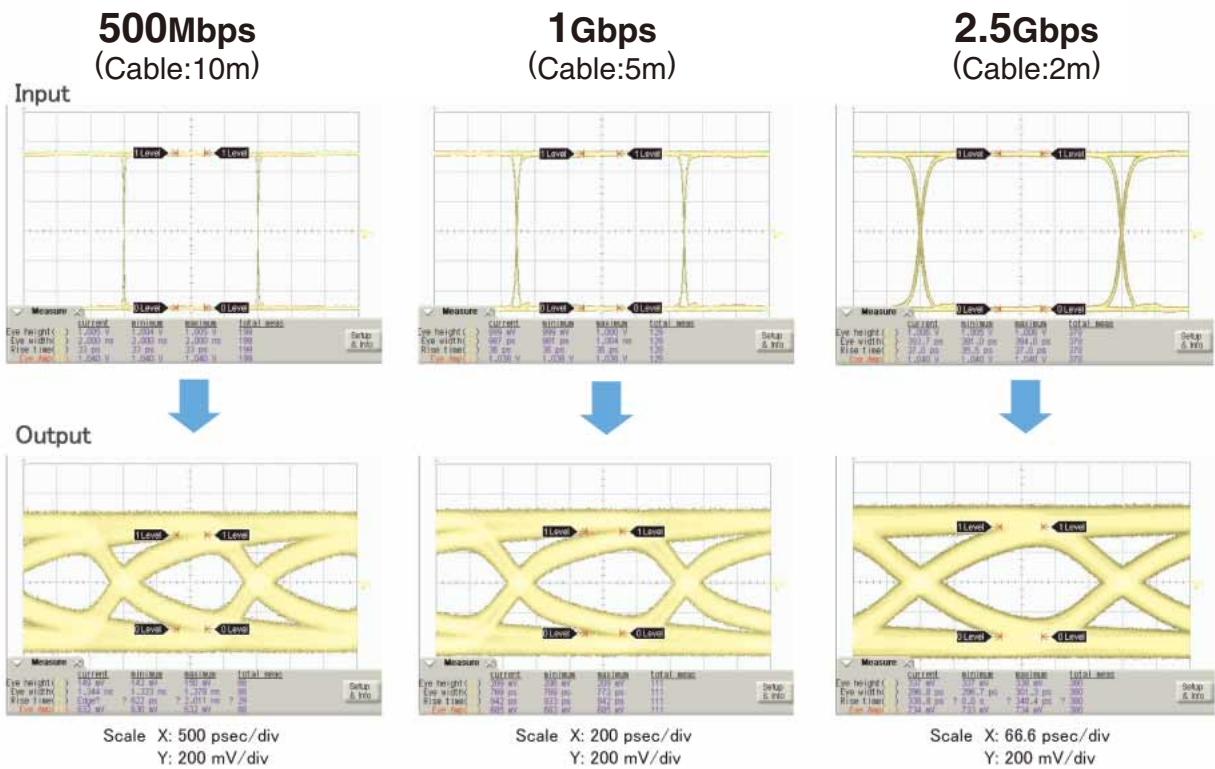
| Lock type | Plug | | | | No. of pos. | Clamp metal Part No. |
|------------|--------------------------------------------------------------------------------------------|----------------------------|--------------|-----------|-------------|-------------------------|
| | Connector | | | | | |
| Item | Specification / Part number | | | | | |
| Screw lock | IDC type | | | | 17 | DH-17-CMB(6.3) |
| | Cable spec. | Outer dia. | Construction | Part No. | 27 | DH-27-CMB(6.9) |
| | Twinax cable | 0.88 to 0.92 | 7/0.127 | DH30B-**S | | |
| | Twisted pair cable | 0.64 to 0.68 | (AWG#28) | DH32B-**S | | |
| Screw lock | solder type DH40-**S (Developing Pin-variation of the above item is under planning.) | | | | 37 | DH-37-CMB(8.8) |
| | One touch lock | Please consult HRS sales.) | | | | 51 |

*The figure in () clamp part number is equal to the cable's outer diameter.

5. High Speed Data Transmission

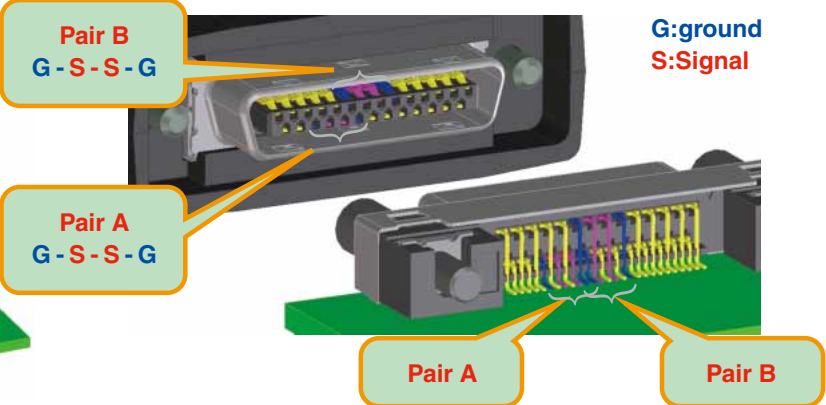
This data is for reference only. The data can differ due to cable or PCB used in evaluation.

Eye Diagram [CH1-CH2]



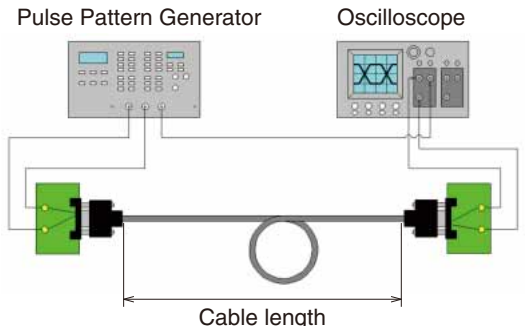
Measurement Condition

◆ Pin Assignment



◆ Measurement Condition

- Measurement Pair: Differential Pair A
- Cable: Twinax cable
- Input signal voltage: 500mV



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Specifications

| Ratings | Current rating | 0.5A | | | | Operating temperature range | -25°C to +85°C |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------|----------|-----------|-----------|---------------------------------------------------------------------------------------------------------------|----------------|
| | Voltage rating | 125 V AC | | | | Storage temperature range | -25°C to +60°C |
| 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. | | | | | 100 V DC | |
| 3.Withstanding voltage | No flashover or insulation breakdown | | | | | 250 V AC/1minute | |
| 4.Insertion and with drawal forces | | 17pos. | 27pos. | 37pos. | 51pos. | Measured by applicable connector. | |
| | Insertion f. | 25N max. | 30N max. | 36N max. | 43N max. | | |
| | with drawal f. | 2.6N min. | 3N min. | 3.3N min. | 3.8N min. | | |
| 5.Durability | ① Contact resistance:70mΩ max.(IDC type) 85mΩ max.(Solder type) ② No damage, cracks or parts dislocation. | | | | | 1000 cycles | |
| 6.Vibration | ① No electrical discontinuity of 10μs or longer. ② No damage, cracks or parts dislocation. | | | | | Frequency: 10 to 50Hz, single amplitude of 0.75mm, 5min/cycle, total 10 cycles. | |
| 7.Shock | | | | | | Acceleration of 490m/s ² , 11ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis. | |
| 8.Temperature cycle | ① Contact resistance:70mΩ max.(IDC type) 85mΩ max.(Solder type) ② No damage, cracks or parts dislocation. | | | | | Temperature: -55°C→+5°C to +35°C→+85°C→+5°C to +35°C Time:30→5→30→5(Minutes) 5cycles | |
| 9.Humidity (Steady state) | ① Insulation resistance:100MΩ min. ② No damage, cracks or parts dislocation. | | | | | 96 hours at 40°C And RH 90% to 95%. | |
| 10.Salt spray test | ① Contact resistance:100mΩ max. | | | | | 5% salt water solution for 48 hours. | |

① Excludes wire conductor resistance.

*Unless otherwise specified, refer to JIS C 5402

Materials

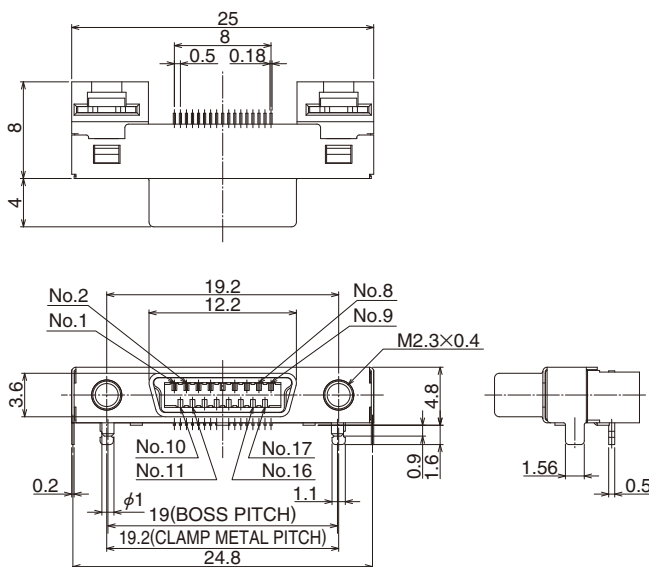
| Products | Components | Material | Finish | Remarks |
|-----------------------------------------------------------------------|----------------------|---------------------|-----------------------|---------|
| Screw lock type receptacle connector (DH60-***P / DH80-***P) | Insulator | Polyamide resin | Black | UL94V-0 |
| | Contacts | Copper alloy | Selective gold plated | — |
| | Shell | Stainless steel | Tin plated | — |
| | Metal fitting | Stainless steel | Selective Tin plated | — |
| One Touch Lock Type Receptacle connector (DH60A-***P / DH80A-***P) | Insulator | Polyamide resin | Black | UL94V-0 |
| | Contacts | Copper alloy | selective gold plated | — |
| | Shell | Stainless steel | Tin plated | — |
| | Metal fitting | Brass | Tin plated | — |
| | Metal grounding post | Steel | Nickel plated | — |
| Plug connector (DH3*B-***S) | Insulator | Polyamide resin | Black | UL94V-0 |
| | Contacts | Copper alloy | Selective gold plated | — |
| | Rear insert | PBT resin | Black,Natural | UL94V-0 |
| | Shell | Stainless steel | Nickel plated | — |
| 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) | — |
| 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 | — |
| | Waher | Steel | Nickel plated | — |
| | Spring washer | Steel | Nickel plated | — |
| Metal clamp(DH-CMB(**)) | Metal clamp | Brass | — | — |

Screw lock type

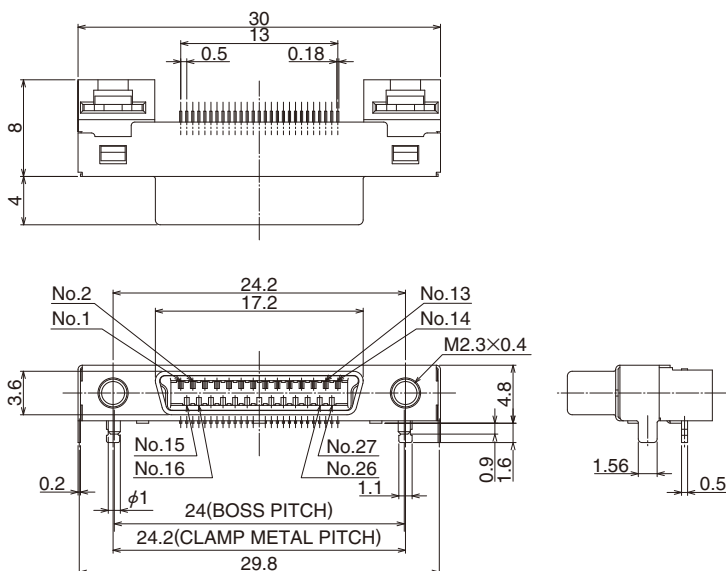
■ Receptacle connector

● Right angle type

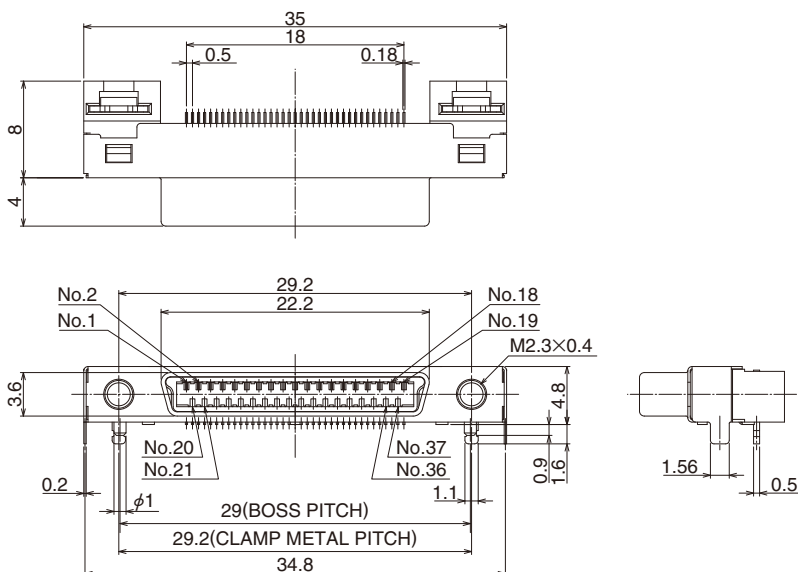
[17pos. DH60-17P]



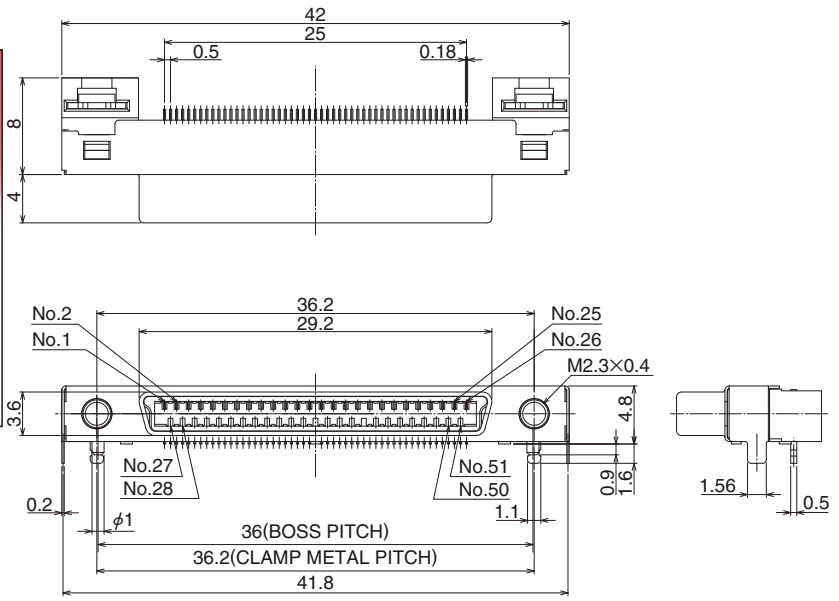
[27pos. DH60-27P]



[37pos. DH60-37P]

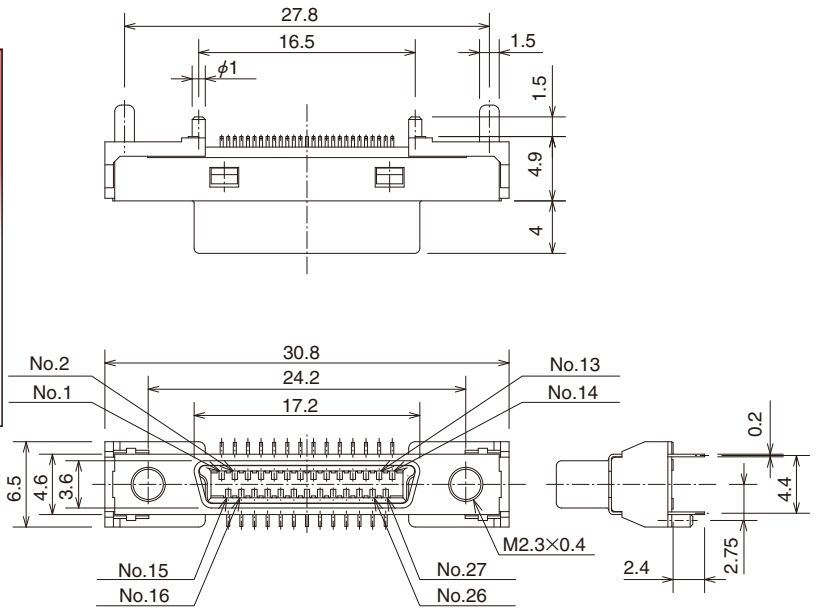
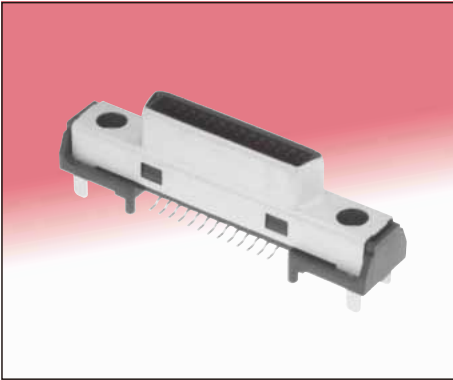


[51pos. DH60-51P]



● Straight type

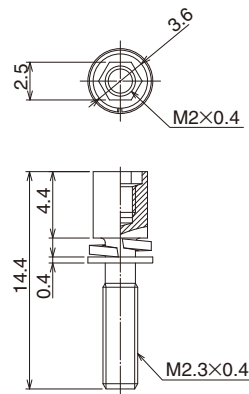
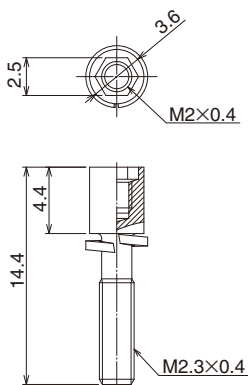
[27pos. DH80-27P]



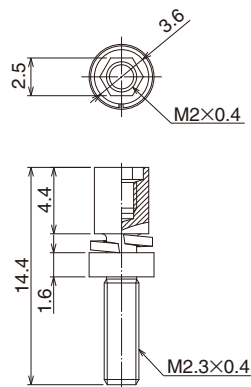
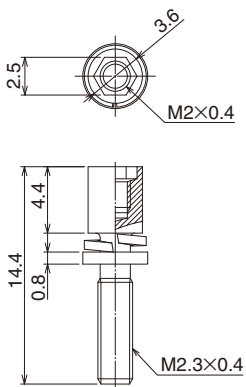
Lock screw

[Applicable panel thickness 1.4 to 1.6mm:DH-LNA]

[Applicable panel thickness 0.9 to 1.2mm:DH-LNA-W4]



[Applicable panel thickness 0.5 to 0.8mm:DH-LNA-W8] [No panel:DH-LNA-W16]



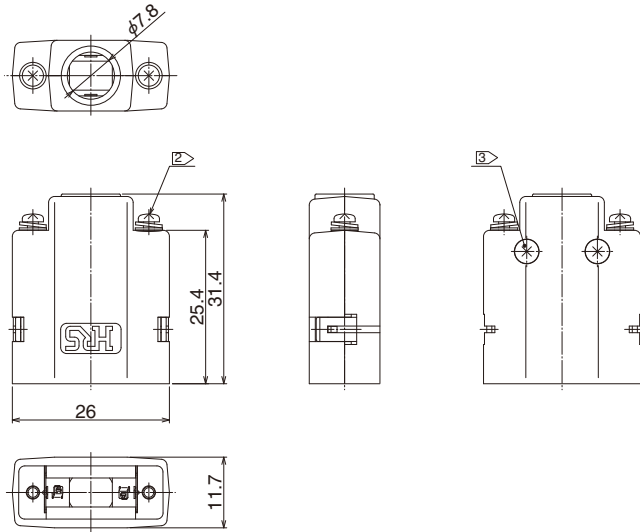
■ Cover case

● Screw lock

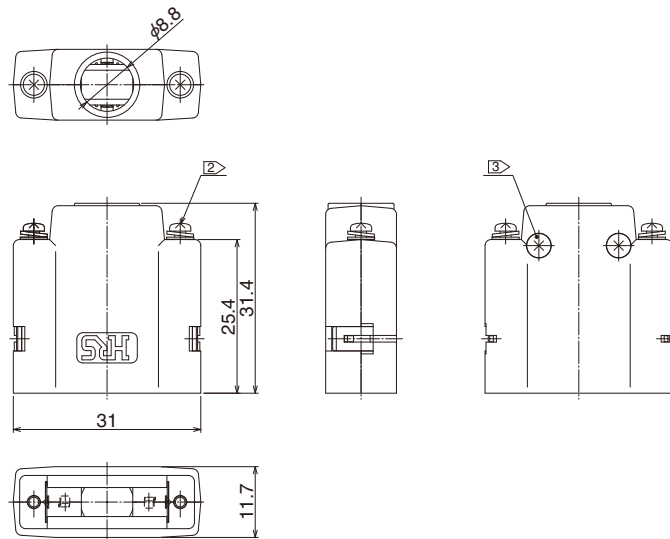
[17pos. DH-17-CV1B]



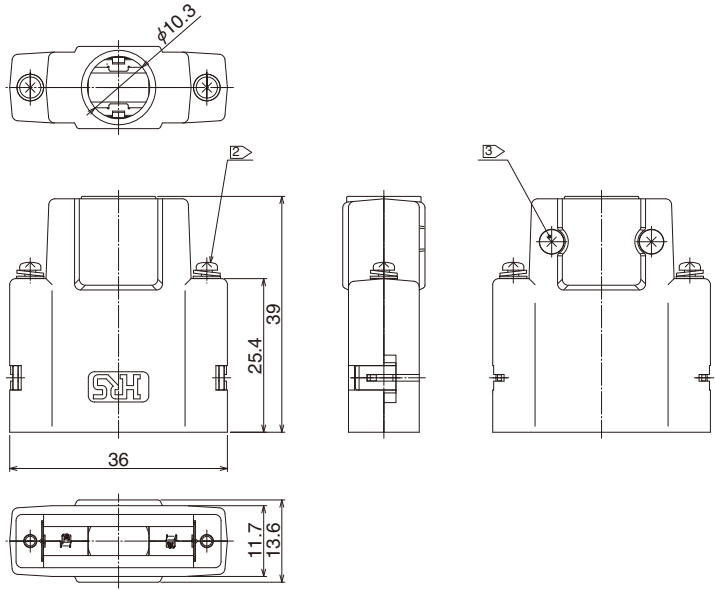
Note 1. This product is delivered separately.
 ② A recommended screw tightening torque to lock screw(DH-LNA***) should be from 0.06 to 0.07N·m.
 ③ A recommended screw tightening torque for covers to be from 0.1 to 0.15N·m.



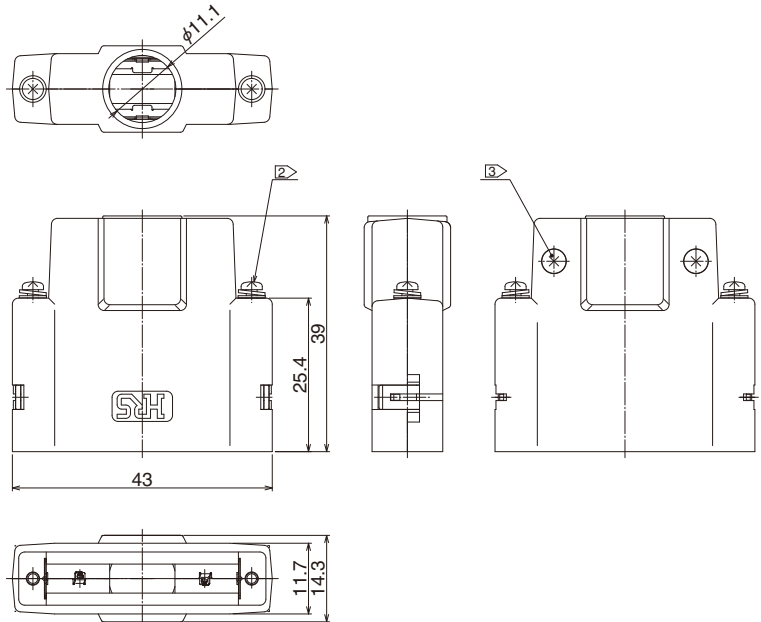
[27pos. DH-27-CV1B]



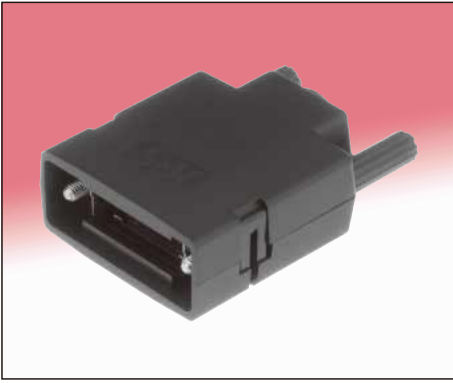
[37pos. DH-37-CV1B]



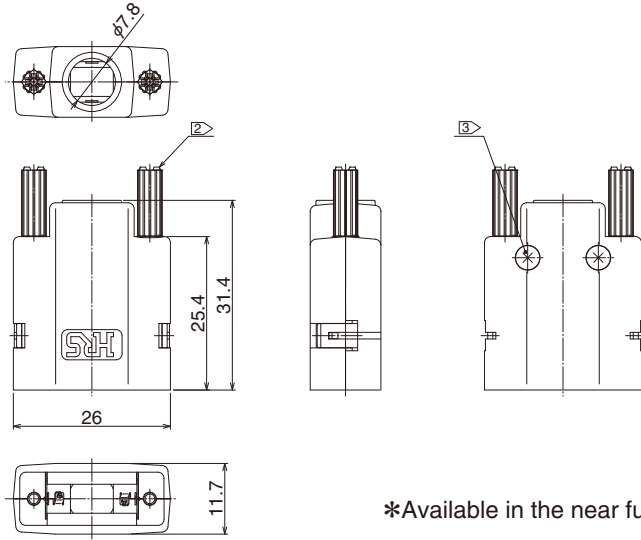
[51pos. DH-51-CV2B]



● Hand screw
[17pos. DH-17-CV2B]

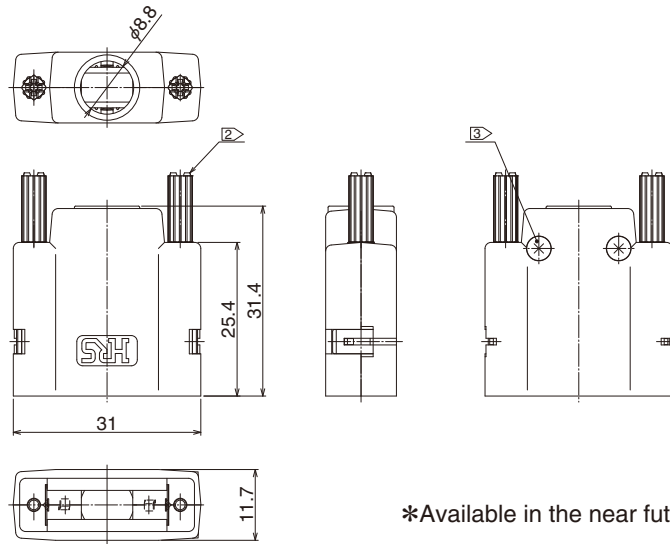
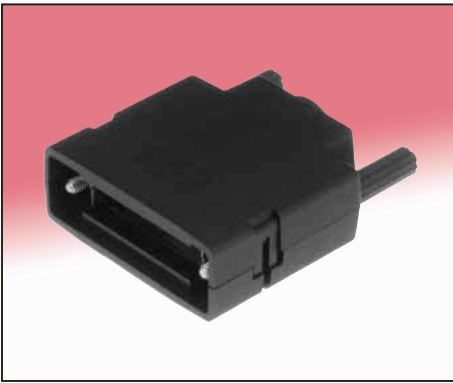


Note 1. This product is delivered separately.
 ② A recommended screw tightening torque to the lock screws to be from 0.06 to 0.07N·m.
 ③ A recommended screw tightening torque for covers to be from 0.1 to 0.15N·m.



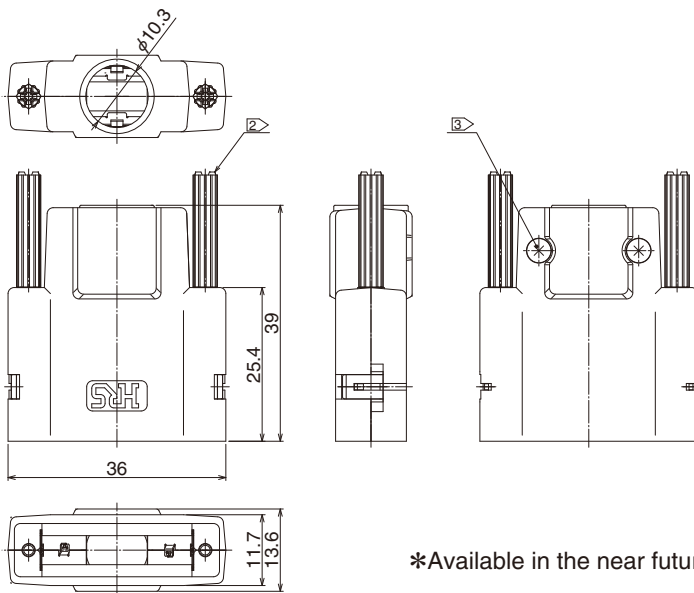
*Available in the near future

[27pos. DH-27-CV2B]



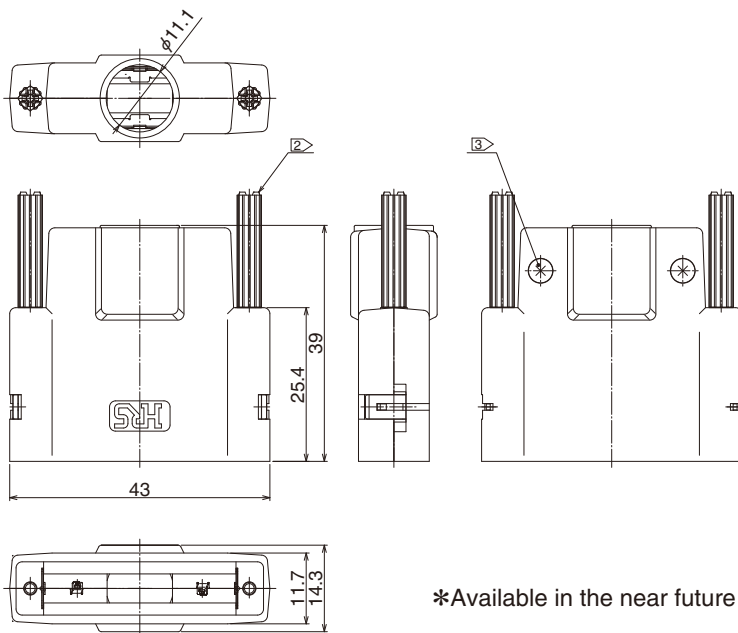
*Available in the near future

[37pos. DH-37-CV2B]



*Available in the near future

[51pos. DH-51-CV2B]



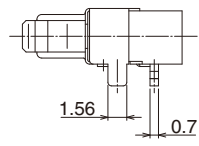
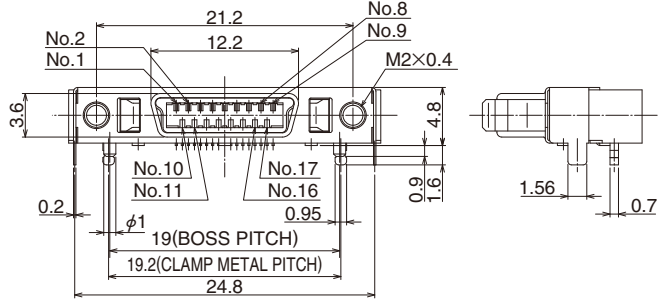
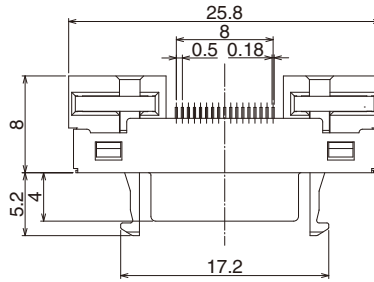
*Available in the near future

One Touch Lock Type

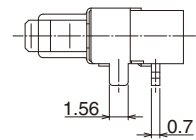
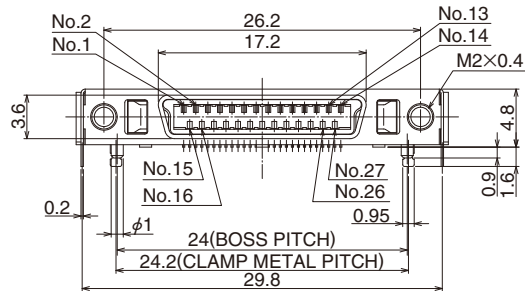
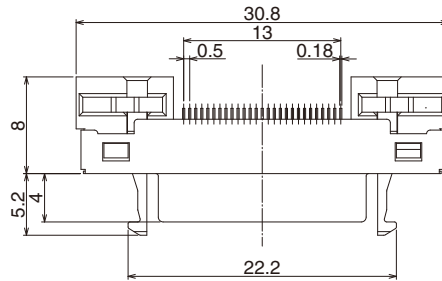
■ Receptacle connector

● Right angle type

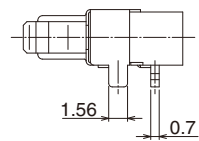
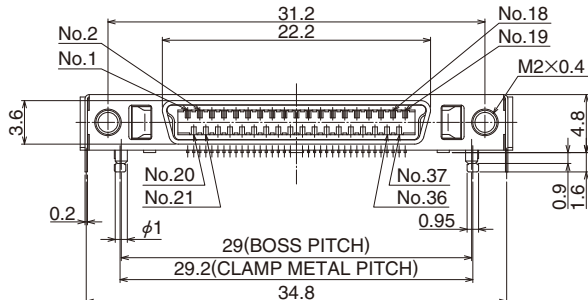
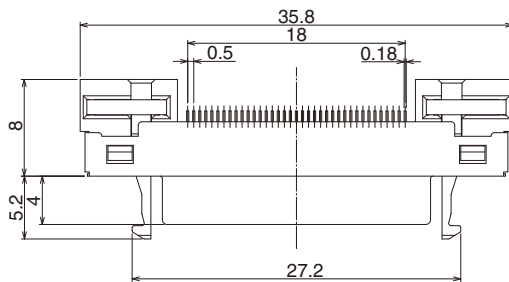
[17pos. DH60A-17P]



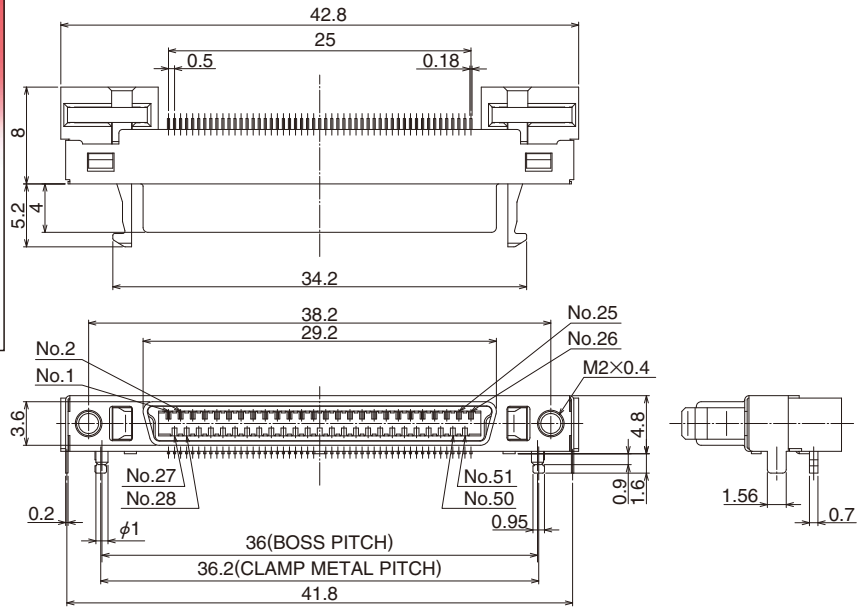
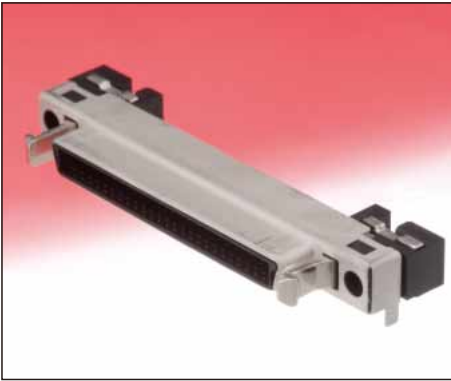
[27pos. DH60A-27P]



[37pos. DH60A-37P]

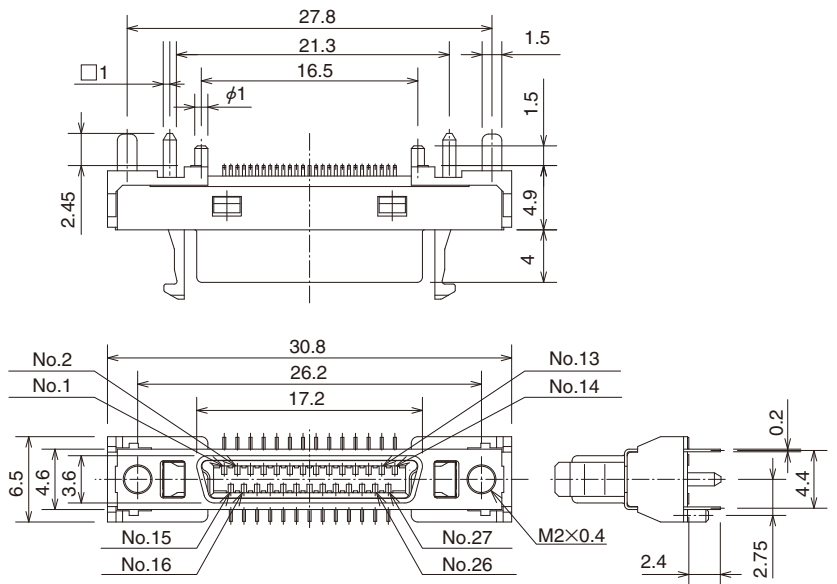
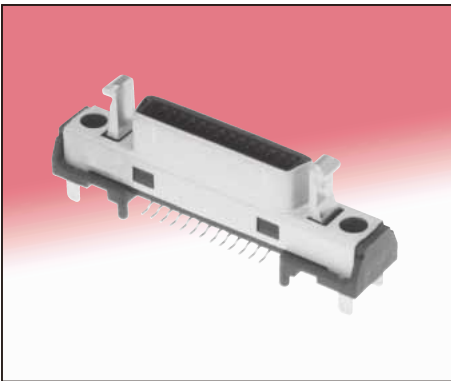


[51pos. DH60A-51P]



● Straight type

[27pos. DH80A-27P]



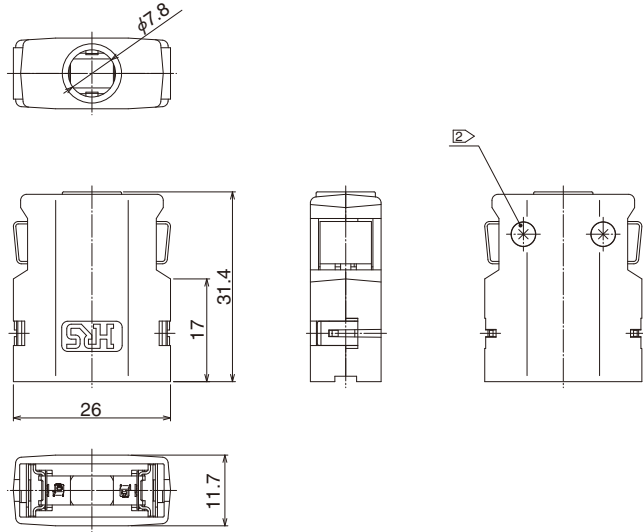
■ Cover case

● Metal button type

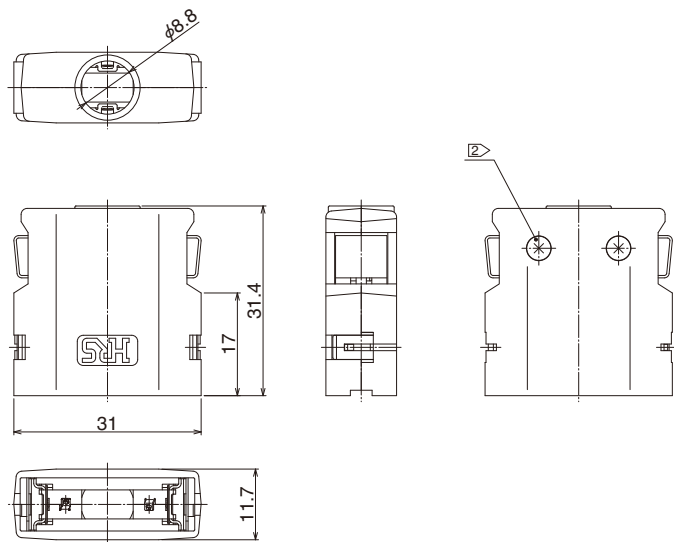
[17pos. DH-17-CT1B]



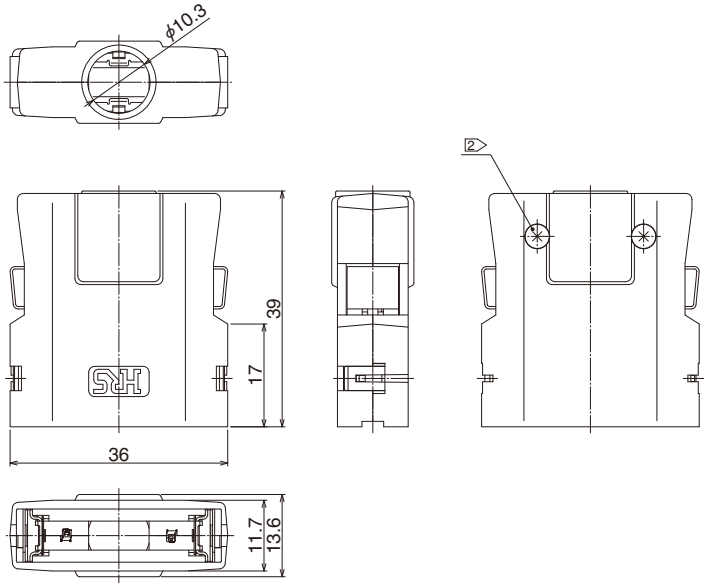
Note 1. This product is delivered separately.
 ② A recommended screw tightening torque for covers to be from 0.1 to 0.15N·m.



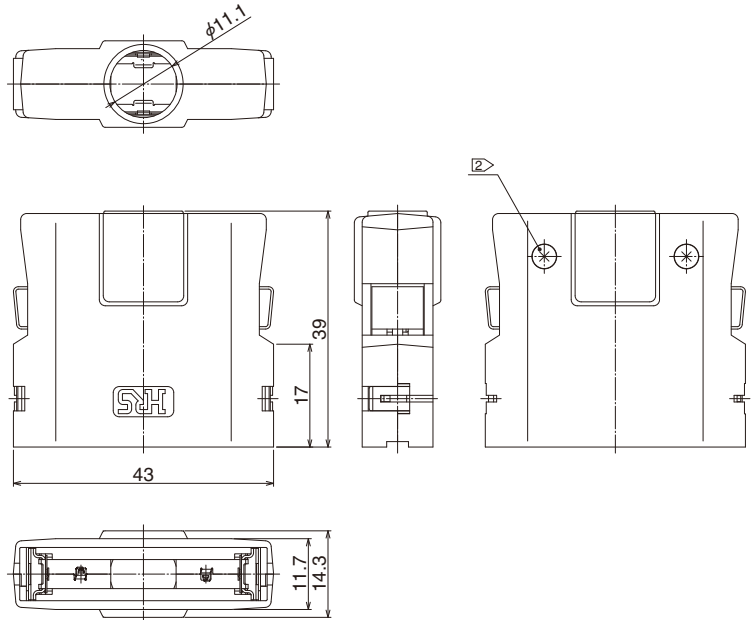
[27pos. DH-27-CT1B]



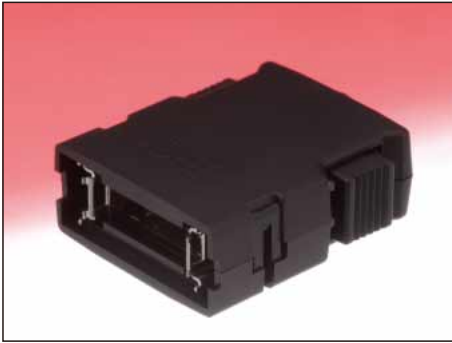
[37pos. DH-37-CT1B]



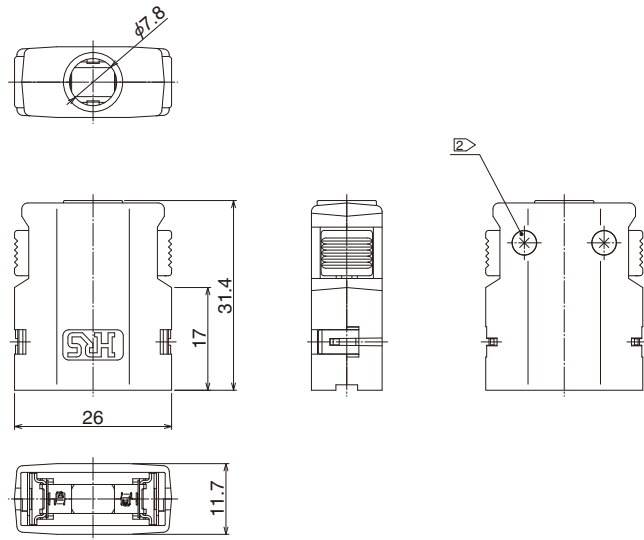
[51pos. DH-51-CT1B]



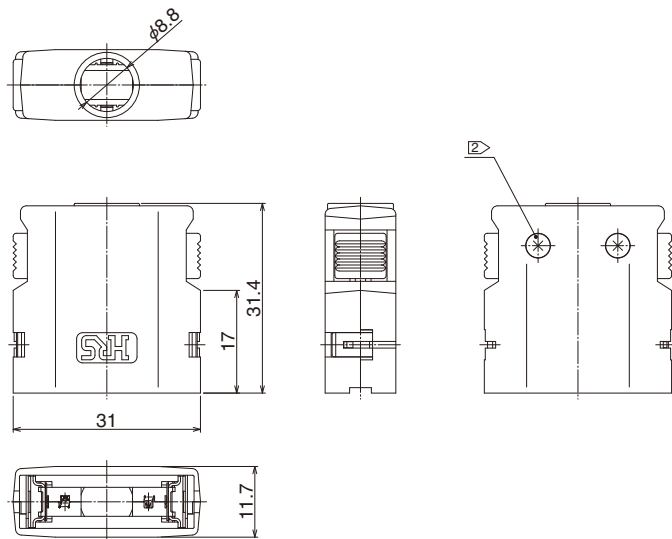
● Plastic button type
[17pos. DH-17-CT2B]



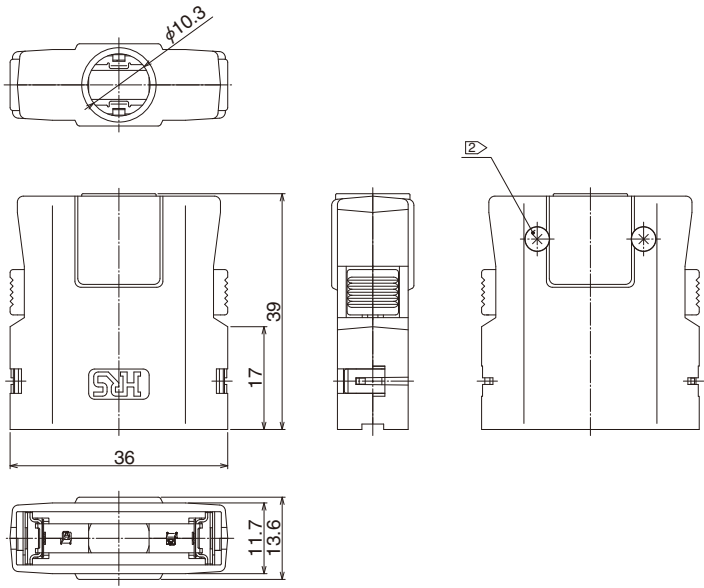
Note 1. This product is delivered separately.
② A recommended screw tightening torque for covers to be from 0.1 to 0.15N·m.



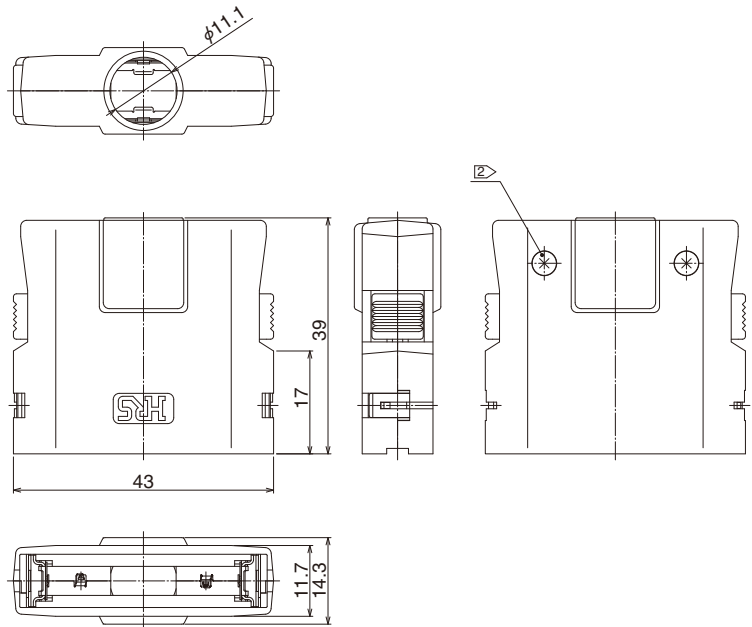
[27pos. DH-27-CT2B]



[37pos. DH-37-CT2B]



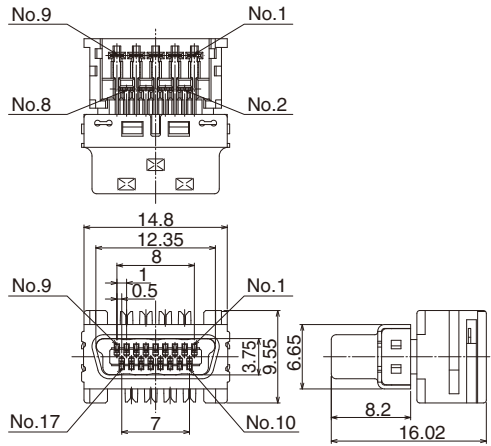
[51pos. DH-51-CT2B]



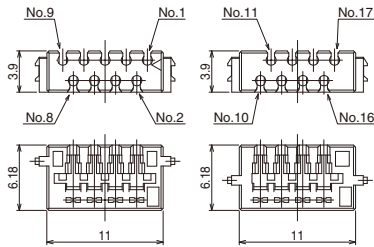
Plug unit

●IDC type

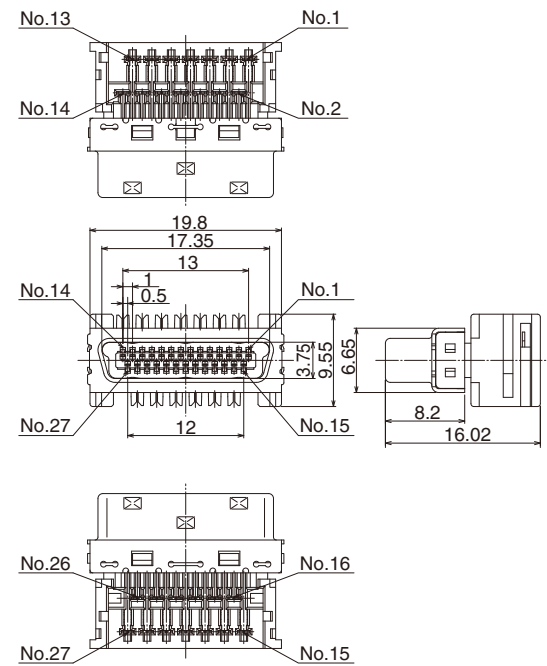
[17pos. DH30B-17S]



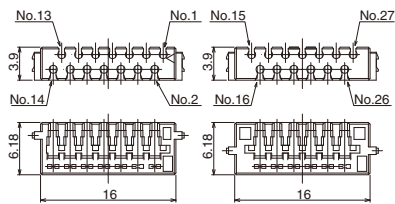
Bundled parts



[27pos. DH30B-27S, DH32B-27S]

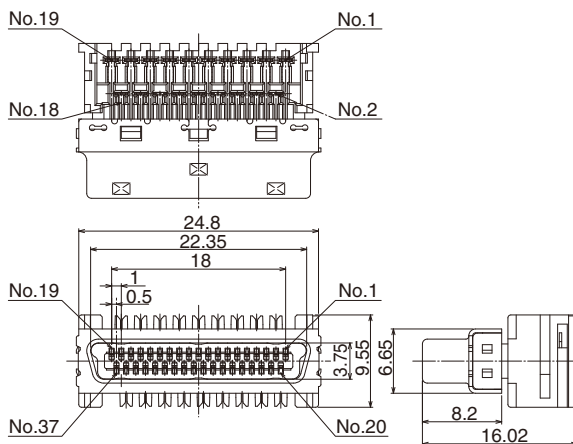


Bundled parts

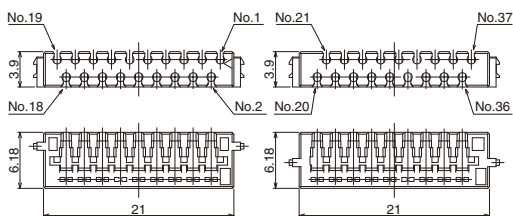


*Hole diameter in the holder for DH30B-27S and DH32B-27S are different.

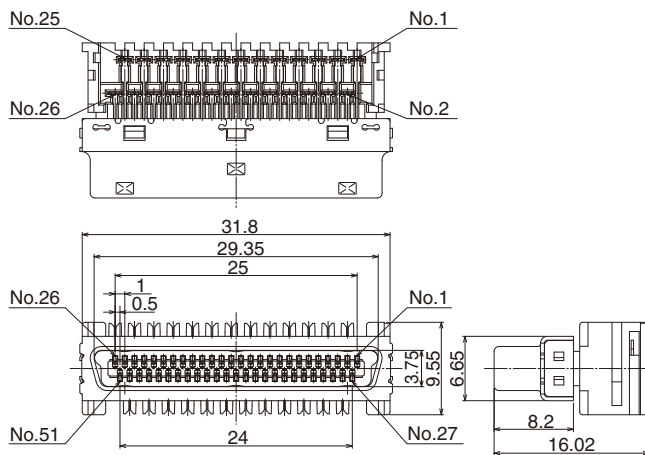
[37pos. DH30B-37S]



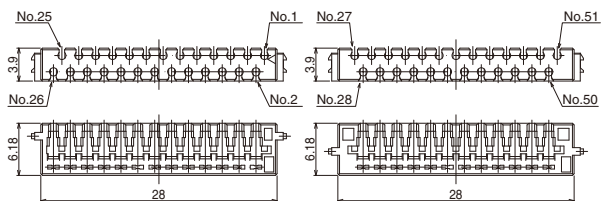
Bundled parts



[51pos. DH30B-51S]

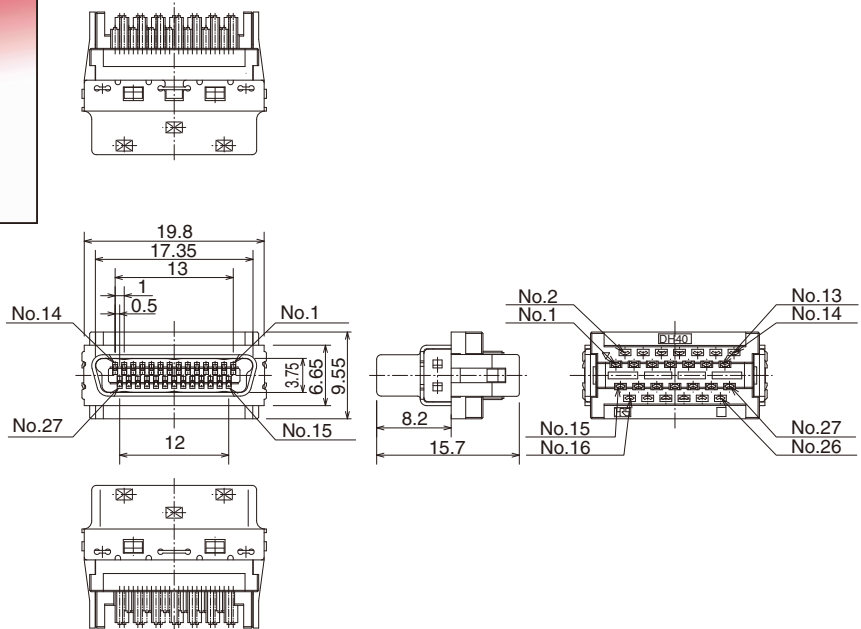
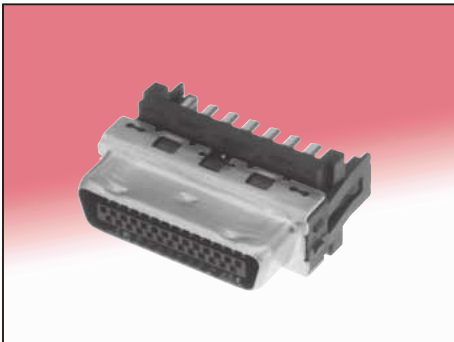


Bundled parts

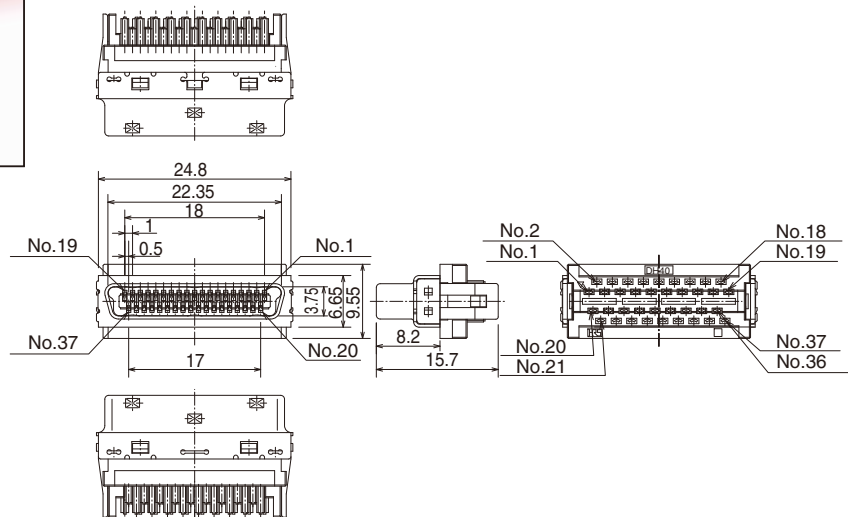
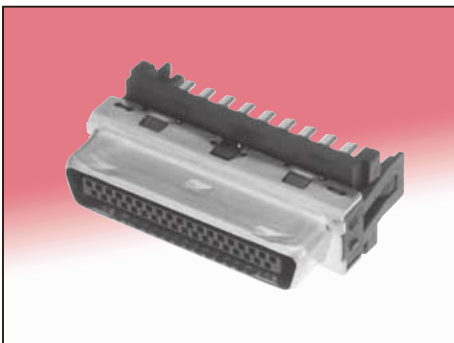


● Solder contact type

[27pos. DH40-27S]

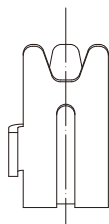
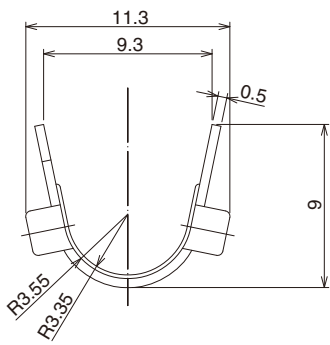
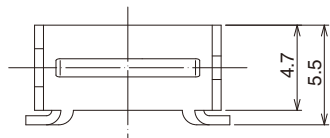


[37pos. DH40-37S]

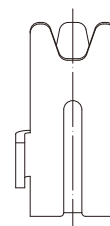
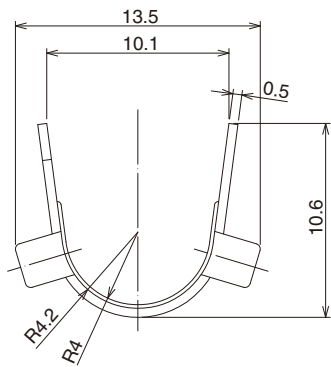
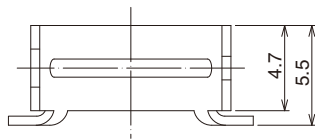


■Metal clamp

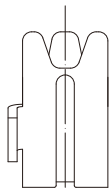
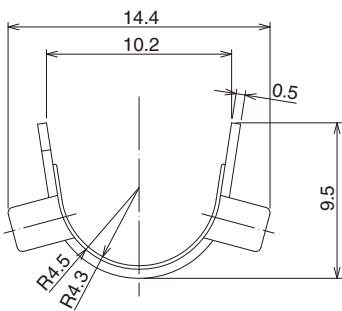
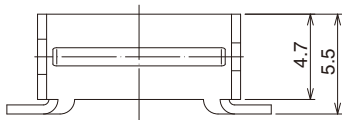
[17pos. DH-17-CMB(6.3)]
(Cable outer diameter 6.3mm)



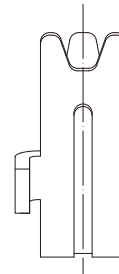
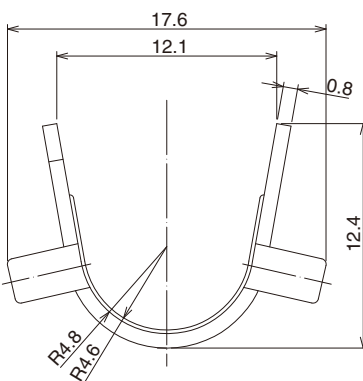
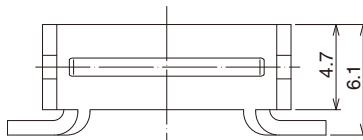
[27pos. DH-27-CMB(6.9)]
(Cable outer diameter 6.9mm)



[27pos. DH-27-CMB(7.3)]
(Cable outer diameter 7.3mm)

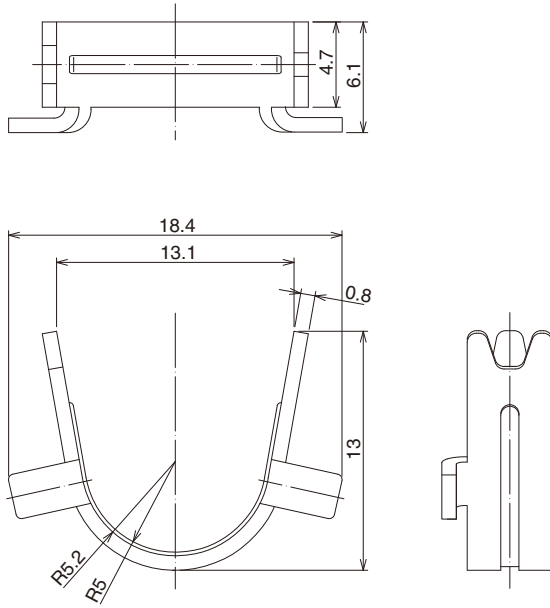


[37pos. DH-37-CMB(8.8)]
(Cable outer diameter 8.8mm)



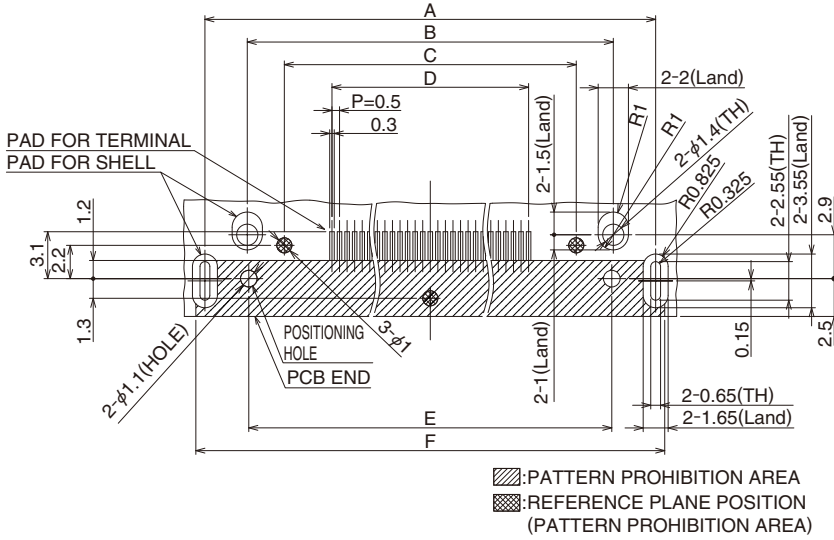
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[51pos. DH-51-CMB(9.6)]
(Cable outer diameter 9.6mm)



Recommended PCB Mounting pattern

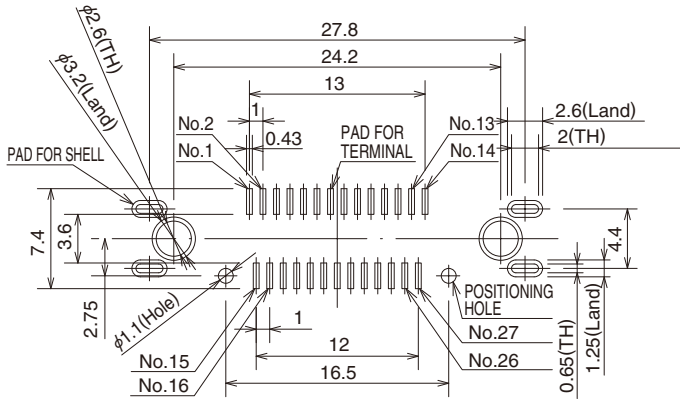
● DH60-***P, DH60A-***P



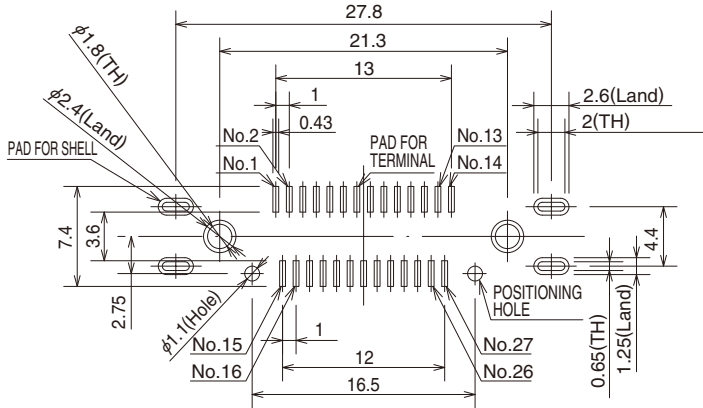
Unit:mm

| | A | B | C | D | E | F |
|-----------|------|------|------|----|----|----|
| DH60-17P | 24.8 | 19.2 | 14.3 | 8 | 19 | 26 |
| DH60A-17P | | | | | | |
| DH60-27P | 29.8 | 24.2 | 19.3 | 13 | 24 | 31 |
| DH60A-27P | | | | | | |
| DH60-37P | 34.8 | 29.2 | 24.3 | 18 | 29 | 36 |
| DH60A-37P | | | | | | |
| DH60-51P | 41.8 | 36.2 | 31.3 | 25 | 36 | 43 |
| DH60A-51P | | | | | | |

● DH80-27P

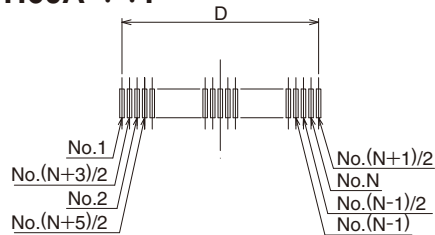


● DH80A-27P



Terminal No.chart

● DH60-***P, DH60A-***P



*N: Number of positions

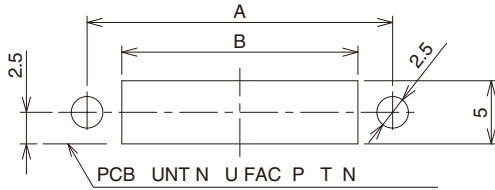
■ Panel cutout

● Screw lock type

Panel cutout for reference (Right angle type, Straight type)

(The dimension is specified based on the center of the connector interface)

DH- NA(C 244-0045-0-00)

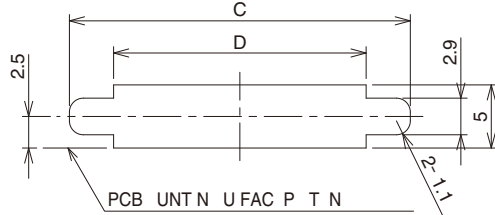


*Please set piercing R as less than R1.

DH- NA- 4(C 244-0046-2-00)

DH- NA- 8(C 244-0004-2-00)

DH- NA- 16(C 244-0005-5-00)



*Please set piercing R as less than R1.

A·B·C·D dimension table

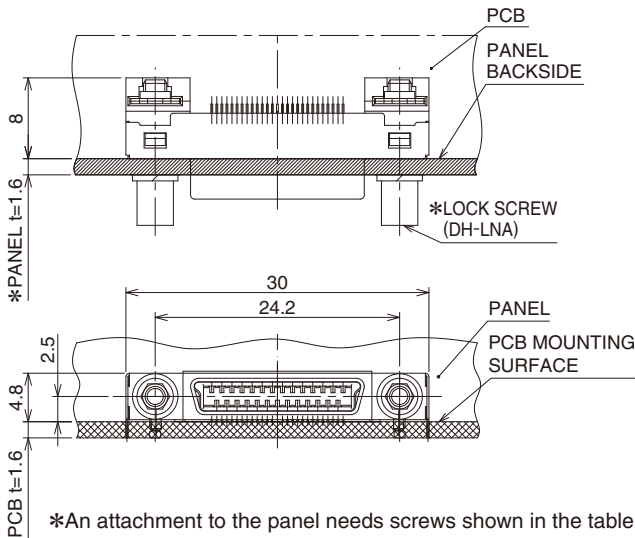
Unit:mm

| Number of contacts | 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 is shown sample of DH60-27P.

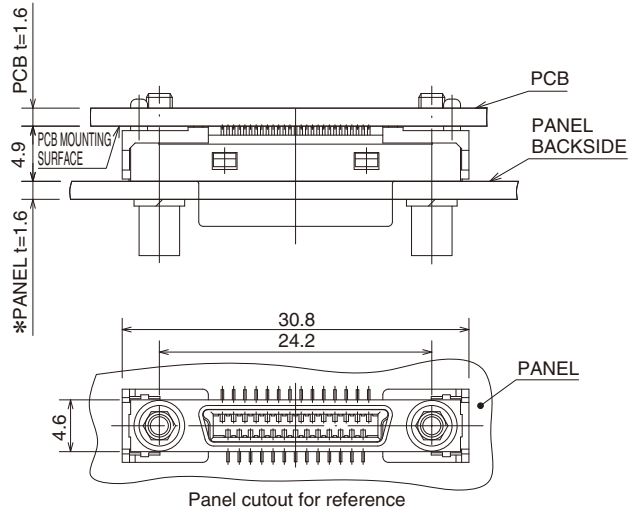


*An attachment to the panel needs screws shown in the table below.

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

*The recommended screw tightening torque to be from 0.12 to 0.3 N·m

*DH80-27P

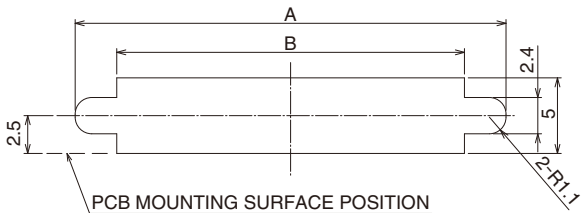


Panel cutout for reference

● One Touch Lock Type

Panel cutout for reference (Right angle type, Straight type)

(The dimension is specified based on the center of the connector interface)



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

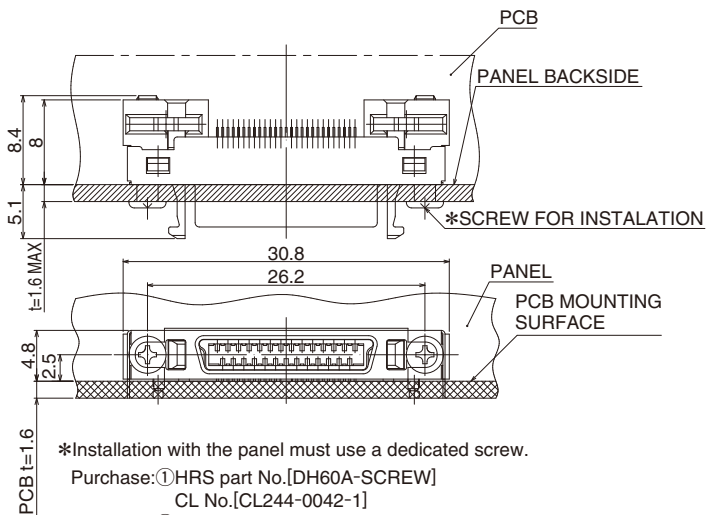
A·B dimension table

Unit:mm

| Number of contacts | A | B |
|--------------------|------|----|
| 17 | 23.5 | 18 |
| 27 | 28.5 | 23 |
| 37 | 33.5 | 28 |
| 51 | 40.5 | 35 |

Connector mounted on PCB

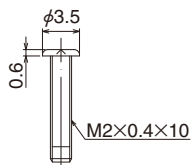
*DH60A-27P is representative examples.



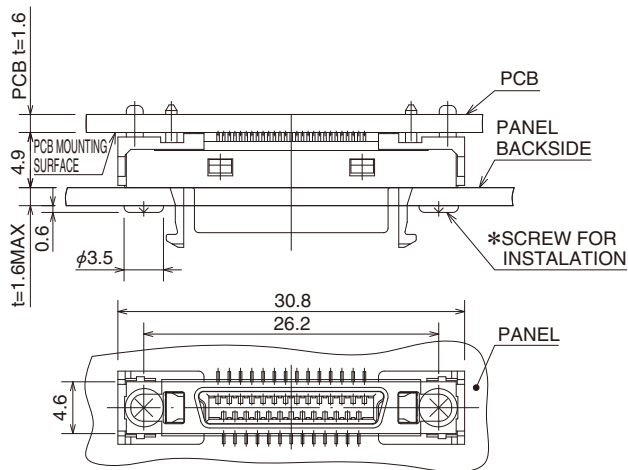
*Installation with the panel must use a dedicated screw.

Purchase: ①HRS part No.[DH60A-SCREW]
 CL No.[CL244-0042-1]
 ②NITTOSEIKO Co., Ltd.
 [FINE PAN HEAD MACHINE SCREW 2 TYPES]

*SCREW FOR INSTALLATION



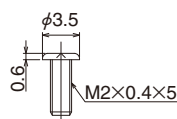
*DH80A-27P



*Installation with the panel must use a dedicated screw.

Purchase: ①HRS part No.[DH80A-SCREW]
 CL No.[CL244-0059-4]
 ②NITTOSEIKO Co., Ltd.
 [FINE PAN HEAD MACHINE SCREW 2 TYPES]

*SCREW FOR INSTALLATION



■Applicable tools

| | Process | Part No. | CL No. |
|---|----------------------------|------------------------------------------------------------------------------------------|--------------|
| 1 | Cable end processing | manual work | |
| 2 | Upper level wire arranging | wire arranging tool : DH/CA-MO | CL902-2183-0 |
| 3 | Upper level press fitting | | |
| 4 | Lower level wire arranging | | |
| 5 | Lower level press fitting | | |
| 6 | Cable cutting | manual work(nipper etc.) | |
| 7 | IDC | ① IDC-clamping tool:DH/IDCK-MP | CL902-2185-5 |
| | | ② attachment for 17pos:DH-17UNIT | CL902-2186-8 |
| | | attachment for 27pos:DH-27UNIT | CL902-2187-0 |
| | | attachment for 37pos:DH-37UNIT | CL902-2188-3 |
| | | attachment for 51pos:DH-51UNIT | CL902-2189-6 |
| | | ③ HI-FLEX termination press (Select appropriate attachment of each pin count from ②.) | CL550-0082-2 |
| 8 | Cable clamping | ① IDC-clamping tool:DH/IDCK-MP | CL902-2185-5 |
| | | ② attachment for DH-17-CMB(6.3):DH-17-CMB(6.3)UNIT | CL902-2190-5 |
| | | attachment for DH-27-CMB(6.9):DH-27-CMB(6.9)UNIT | CL902-2194-6 |
| | | attachment for DH-27-CMB(7.3):DH-27-CMB(7.3)UNIT | CL902-2191-8 |
| | | attachment for DH-37-CMB(8.8):DH-37-CMB(8.8)UNIT | CL902-2192-0 |
| | | attachment for DH-51-CMB(9.6):DH-51-CMB(9.6)UNIT | CL902-2193-3 |
| | | ③ HI-FLEX termination press (Select appropriate attachment of each pin count from ②.) | CL550-0082-2 |
| 9 | Cover attaching | manual work(torque driver etc.) | |

*Customers already having HI-FLEX termination press can apply it to this product assembly.

*Each ① and ③ of 7. IDC and 8. Clamping are the same tools. All the parts ①, ② and ③ are required for each 7. IDC and 8. Clamping processes for mass-production.

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