



## Introduction

### **Purpose**

- To Introduce the DH series connector.

### **Objective**

- To explain features and benefits.

### **Content**

- 17 pages

### **Learning time**

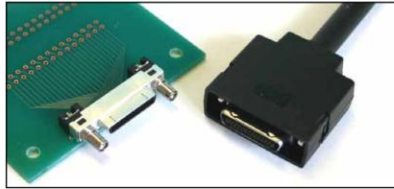
- \*\* minutes

Welcome to Hirose's DH series product training module. This module will introduce Hirose's new generation of Interface connectors for Low Voltage Differential Signals. It will explain the features and benefits of the DH Series.



## DH Series

1mm pitch High Speed,  
Small Interface Connectors



1. Small size
2. Robust design
3. Excellent shielding for EMI protection
4. High Speed transmission capable [up to 2.5 Gbps]
5. Variety of configurations
6. RoHS compliant

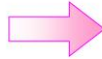
The DH series is a 1mm pitch, interface connector system that is suitable for high speed, LVDS, applications. Bit rates up to 2.5 gigabits per second are achievable, depending on cable length. This series also has a robust design with EMI shielding and it is available in a variety of configurations and is RoHS compliant.



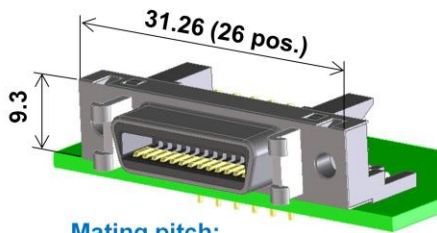
## Small Receptacle Design

Mating face area  
Approx.  
**60% reduced**

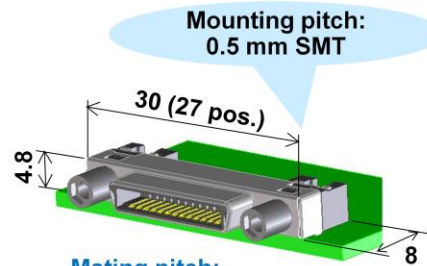
**DXM Series**  
Conventional type



**DH Series**



Mating pitch:  
1.27 mm



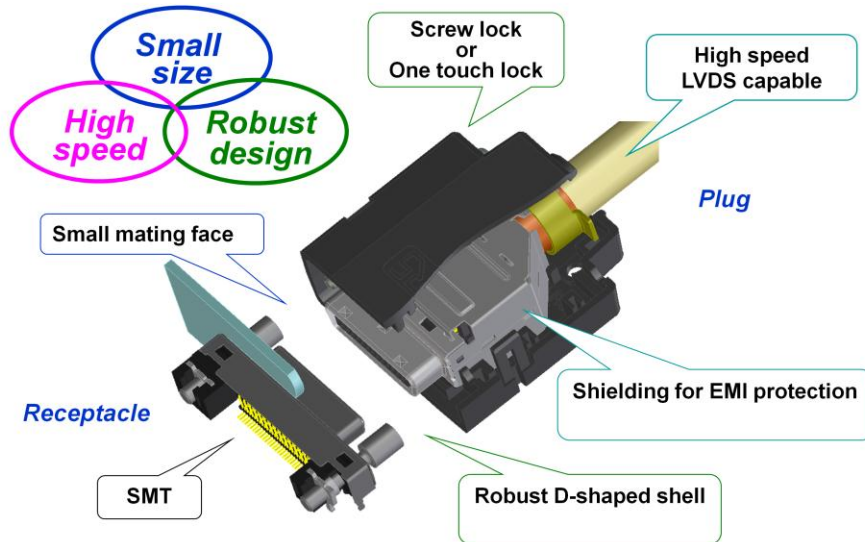
Mating pitch:  
1.00 mm

(All dimensions in millimeters)

The DH series is approximately 60% smaller than the popular Hirose DXM series. The smaller overall size improves design flexibility, and reduces PCB real estate.



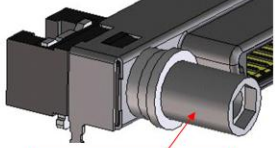
## Connector Design Concept



This page shows the many features of the DH series, including the options of screw lock or one touch lock. The DH series was specifically designed for use with LVDS cable for high speed transmission and is fully shielded for excellent EMI protection.



## Screw Lock Variations

	Panel thickness	Part No.
	1.4 to 1.6	DH-LNA
	0.9 to 1.2	DH-LNA-W4
	0.5 to 0.8	DH-LNA-W8
	No panel	DH-LNA-W16

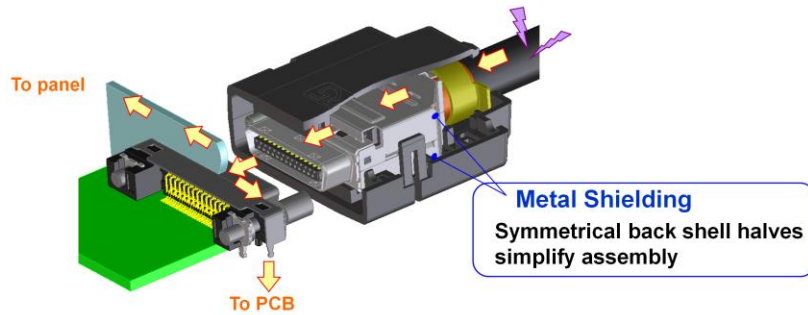
**Female Screw Locks ordered separately.**

Four screw lock sizes are available depending on the thickness of the panel. Please note that the female screw locks are sold separately.



## Excellent Shielding for EMI Prevention

### ◆ Grounding Structure



The structure of the DH series provides excellent shielding for EMI protection. The symmetrical back shell design allows for simplified assembly.



## 4 Different Lock Styles Available

Four Different Lock Styles Available

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 0.8	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 do not mate together.

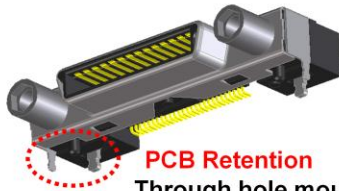
The series offers 4 different lock styles. Two screw lock types in the previously mentioned panel thickness options, and either a metal button or plastic button for the One touch lock.



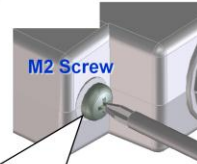
## Connector Design Concept (Screw Lock)

Receptacle

Plug



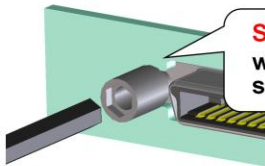
**PCB Retention**  
Through hole mounting  
for shell & metal fitting



M2 Screw

**Robust & Secure  
Screw Lock  
or hand screw type**

Tightening torque:  
0.06 to 0.07 N·m max.



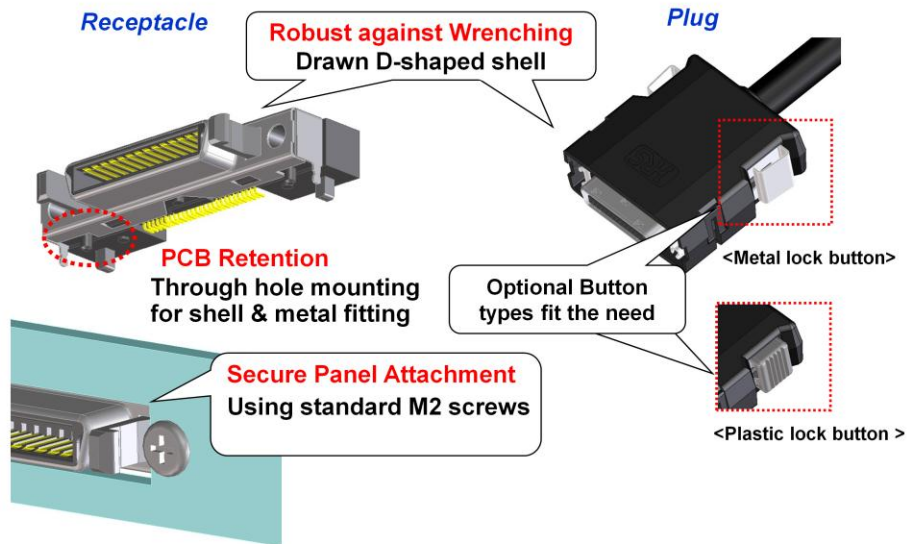
**Secure Panel Fixing** (Optional)  
with easy to use hexagon  
socket head bolts

Shown here are the variations for the screw lock including the hexagon socket type and the hand screw type. The recommended tightening torque is 0.06 to 0.07 N.m.






## Connector Design Concept (One Touch Lock)



The variations for the One touch lock which is available in a metal lock button style or a plastic lock button style are shown on this page.



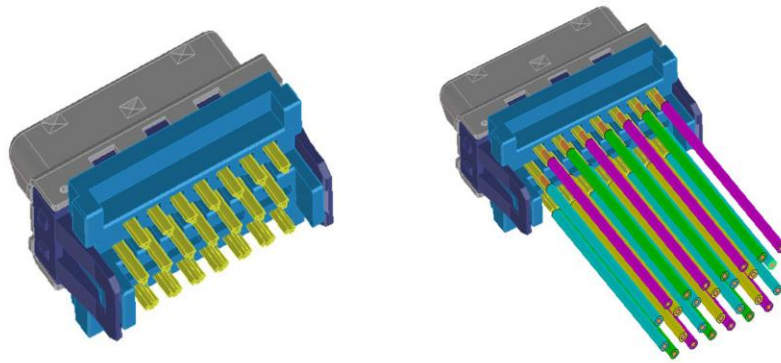
## Plug Unit Type

	Number of positions	Part No.
<b>Soldering Termination Type</b> 	17 pos.	DH40-17S
	27 pos.	DH40-27S
	37 pos.	DH40-37S
	51 pos.	DH40-51S

The connector plug unit for solder termination is available in 17, 27, 37, and 51 positions.



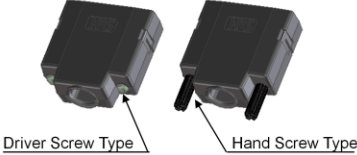
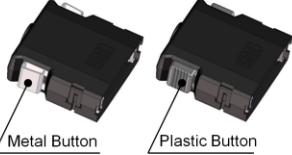
## Solder Termination



Wire solder cups are arranged in a 4 tier design easing the soldering process for the assembly worker. Careful consideration should be given when assigning signals to each pin to maintain signal integrity.




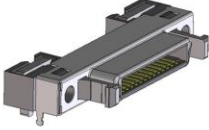
## Plug Cover Variations

	Number of positions	Part No.
<b>Plastic Button</b>  Driver Screw Type      Hand Screw Type	17 pos.	DH-17-CV1B(Driver Screw Type) DH-17-CV2B(Hand Screw Type)
	27 pos.	DH-27-CV1B(Driver Screw Type) DH-27-CV2B(Hand Screw Type)
	37 pos.	DH-37-CV1B(Driver Screw Type) DH-37-CV2B(Hand Screw Type)
	51 pos.	DH-51-CV1B(Driver Screw Type) DH-51-CV2B(Hand Screw Type)
<b>One Touch Lock Type</b>  Metal Button      Plastic Button	17 pos.	DH-17-CT1B (Metal button) DH-17-CT2B (Plastic button)
	27 pos.	DH-27-CT1B (Metal button) DH-27-CT2B (Plastic button)
	37 pos.	DH-37-CT1B (Metal button) DH-37-CT2B (Plastic button)
	51 pos.	DH-51-CT1B (Metal button) DH-51-CT2B (Plastic button)

This page describes the part number variations for the plug cover configurations.



## Receptacle Connector Variations

	Number of positions	Part No.
<b>Screw Lock Type</b> 	17 pos.	DH60-17P*
	27 pos.	DH60-27P* (DH80-27P*)
	37 pos.	DH60-37P*
	51 pos.	DH60-51P*
<b>One Touch Lock Type</b> 	17 pos.	DH60A-17P
	27 pos.	DH60A-27P (DH80A-27P)
	37 pos.	DH60A-37P
	51 pos.	DH60A-51P

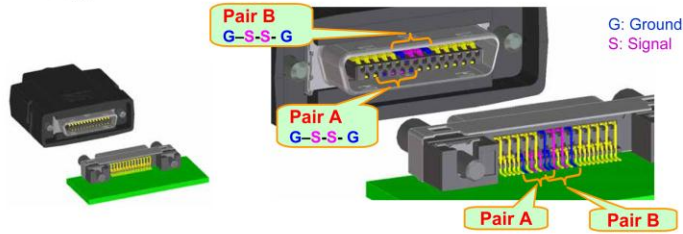
Vertical receptacle available in parenthesis.  
\*Lock screw is separately available.

This page describes the part number variations for the receptacle units.



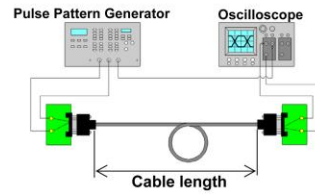
# High Speed Data Transmission

## ◆ Pin Assignment



## ◆ Measurement Condition

- Measurement Pair: Deferential Pair A
- Cable: Shielded Twisted Pair cable
- Input signal voltage: 500 mV



For high speed, LVDS, applications, it is critical to make proper pin assignments for ground and signal pins. This page shows the pin assignments used during our signal integrity testing.



## Application Examples

Industrial  
Controller Unit

PPC (Plain Paper Copier)  
MFP (Multi-Function Peripheral)



The DH series has a wide range of applications that include industrial controllers, printers, medical devices, and many others.



## Specifications and Remarks

- Material and Finish

Connector type	Component	Material	Finish & Remarks
Receptacle DH60-**P	Housing	Polyamide resin	UL94V-0, Black
	Contact	Copper alloy	Gold plated
	Metal fitting	Stainless steel	Tin plated
	Shell	Stainless steel	Tin plated
Lock screw	Steel	Nickel plated	Nickel plated
Plug DH40-**S	Housing	Polyamide resin	UL94V-0, Black
	Contact	Copper alloy	Gold plated
	Shell	Stainless steel	Nickel plated
	Rear insert	PBT resin	UL94V-0, Black/White
Cover case DH-**-CV1B	Cover case	Polycarbonate resin	UL94V-0, Black
	Shield case	Stainless steel	Nickel plated
	Screw lock	Steel	Black chromate treatment
	Tapping screw	Steel	Nickel plated
Clamp metal	Clamp metal	Brass	-

- Performance characteristics

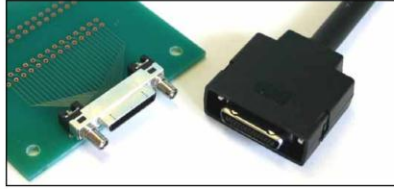
Contact resistance	50 m $\Omega$ max. (100 mA)
Withstanding voltage	AC 250 V for 1 minute
Insulation resistance	1000 M $\Omega$ min. (DC 100 V)
Rated current	0.5 Amp
Rated voltage	AC 125 V
Durability (Mating / Unmating)	1000 times

The current rating is 0.5 Amp and the connectors can be mated and unmated 1000 times. Other performance characteristics and the materials and finishes are shown here.





## Module Summary



1. Small size
2. Robust design
3. Excellent shielding for EMI protection
4. High Speed transmission capable [up to 2.5 Gbps]
5. Variety of configurations
6. RoHS compliant

In summary, the DH series is small in size and has a robust design. It has excellent shielding for EMI protection and is capable of transmission speeds up to 2.5 Gbps.