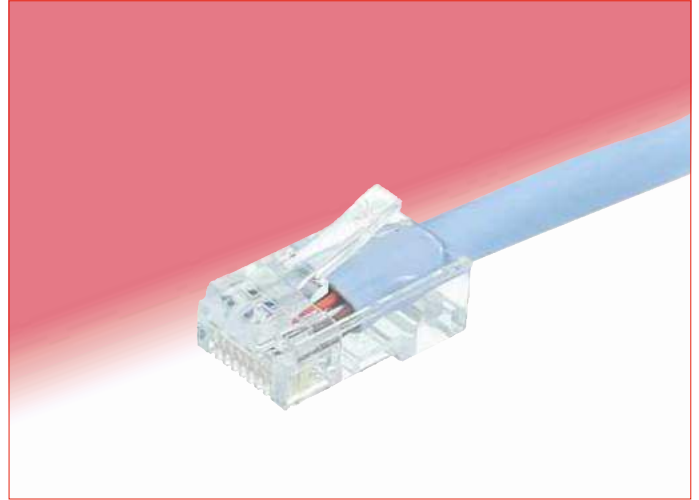


Modular Plug Connectors Compliant to Enhanced Category 5 Standards

TM21P Series (Shielded Type)



TM22P-88P (Non-shielded Type)



■ Features

1. Supports High-Speed LAN Transmission

Conforms to requirements of TIA/EIA-568B data wiring standard, meeting transmission performance of Enhanced Category 5. Supports Gigabit Ethernet (1000BASE-T) and Fast Ethernet (100BASE-TX) high-speed LAN transmission.

2. EMI protection (TM21*P-88P)

360° coverage of the engagement area with a metal shield assures protection against electromagnetic interference. When mated with corresponding connector the shield surfaces are securely connected to provide continuous circuit.

3. Protected latch tab (TM21P-88P)

Flexible case extends over the release tab preventing the possibility of breaking-off during handling of the complete cable assembly.

4. Termination of conductors

Self located 24 AWG conductors (solid or stranded) are terminated against pre-inserted contacts using simple tooling.

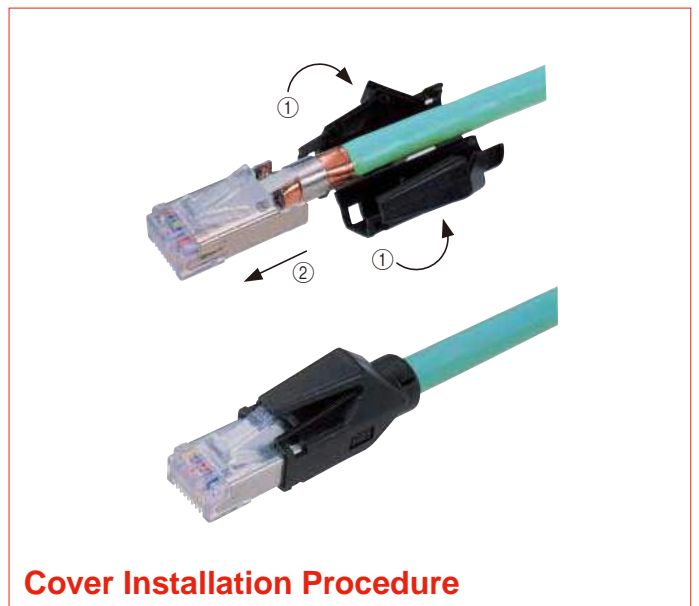
5. Simplified termination (TM21*P-88P)

Removeable one piece cover allows easy access to the termination areas.

6. Conforms to the ISO 8877 Standard (ISDN Interface Connector)

■ Applications

Telecom Hubs, Routers, Bridges and ATM Transmission Equipment, Ethernet Switches and Networking Equipment, Test and Measurement Equipment and other equipment requiring this type of simple and reliable connection.



■ Product Specification

| | | |
|--------|------------------------|---|
| Rating | Current rating 1A | Operating temperature range : -25 to +60°C (Note) |
| | Voltage rating 125V AC | Storage temperature range : -25 to +60°C |

| Item | Specification | Conditions |
|--|--|--|
| 1. Insulation resistance | 100MΩ min. | 100V DC |
| 2. Withstanding voltage (between adjacent contacts) | No flashover or insulation breakdown | 500V AC / 1minute |
| 3. Withstanding voltage (between contact and shield) | No flashover or insulation breakdown | 1500V AC / 1minute |
| 4. Contact resistance | 230mΩ max. | 100mA DC |
| 5. Vibration | No electrical discontinuity of 5 μsec min. Contact resistance : 250mΩ max. | Frequency : 10 to 55Hz, single amplitude of 0.75mm, 5 min/cycle, 10 times for 3 directions |
| 6. Shock | No electrical discontinuity of 5 μsec min. Contact resistance : 250mΩ max. | Acceleration of 490 m/s ² , 11 ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis |
| 7. Durability (mating/un-mating) | Contact resistance : 250mΩ max. | 200 |
| 8. Temperature cycle | Contact resistance : 250mΩ max. Insulation resistance : 100MΩ min. | Temperature : -55°C→+5°C to +35°C→+85°C→+5°C to +35°C Duration : 30→5→30→5(Minutes) 5 cycles |
| 9. Humidity | Contact resistance : 250mΩ max. Insulation resistance : 1MΩ min. (High humidity) Insulation resistance : 10MΩ min. (Dry state) | 500 hours at temperature of 40°C and humidity of 90% to 95% |
| 10. Salt Spray | Contact resistance : 250mΩ max. | Exposed to density 5% salt water for 48 hours |

Note : Includes temperature rise caused by current flow.

■ Materials / Finish

| Part | Material | Finish | Remarks |
|------------------------|---------------|------------------------------------|---------|
| Insulator | Polycarbonate | Color : Clear | UL94V-2 |
| Contacts | Copper alloy | Contact area : Gold plating 1.27μm | — |
| Shield | Copper alloy | Tin plating | — |
| Conductor holding tray | Polycarbonate | Color : Clear | UL94V-2 |
| Cover | Polyamide | Color : Light beige (Note) | UL94V-2 |

Note : Cover available in various colors. Refer to page 3.

■ 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.

●Plugs- Shielded

TM21 C P - 8 8P

① ② ③ ④

| | |
|---------------------|---|
| ① Series name | TM21P : Shielded |
| ② Cover Type | Blank : Protective latch cover C : Short cover |
| ③ Size | 8 : For 8 contacts |
| ④ Inserted contacts | 8P : 8 |

●Plugs - Non-shielded

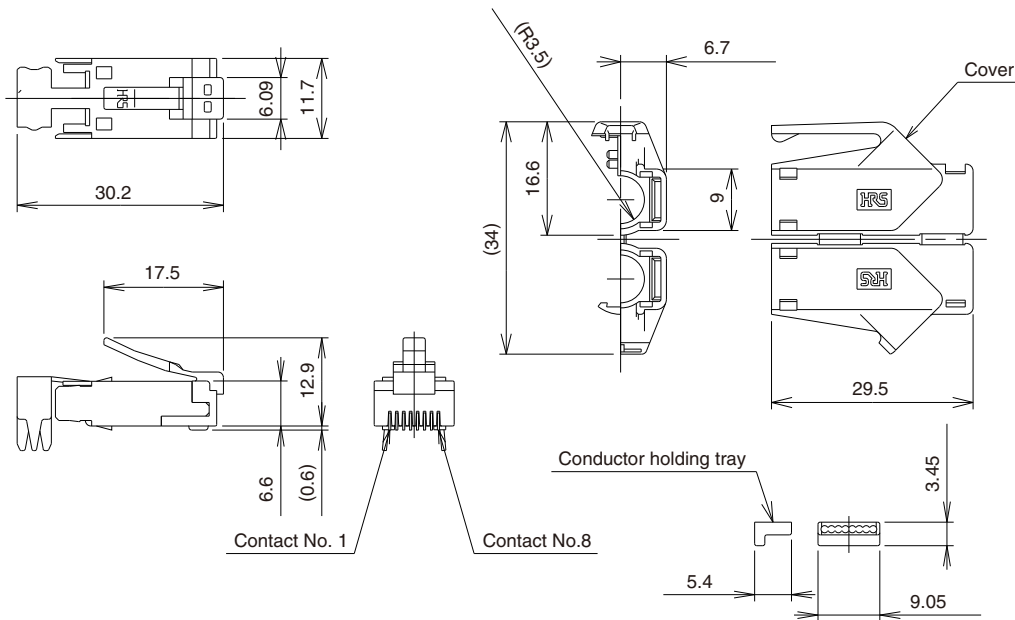
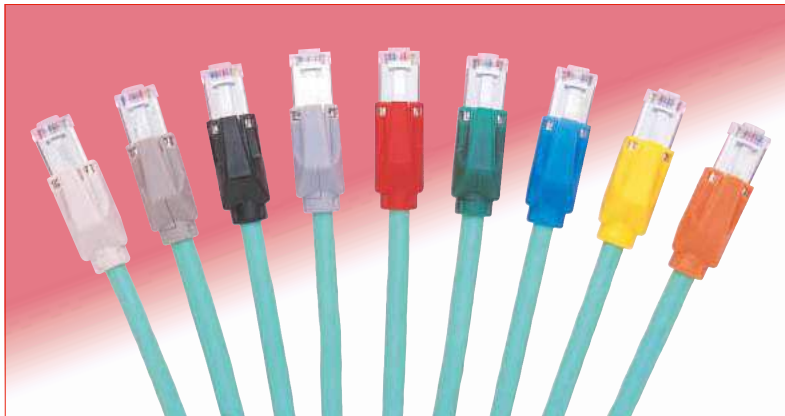
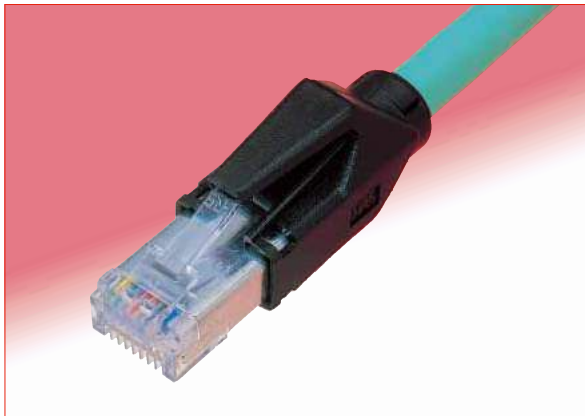
TM22P - 8 8P

① ② ③

| | |
|---------------------|----------------------|
| ① Series name | TM22P : Non-shielded |
| ② Size | 8 : For 8 contacts |
| ③ Inserted contacts | 8P : 8 |

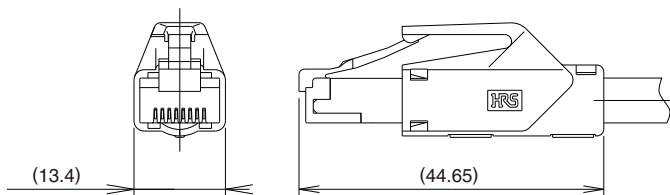
■ Plug Connectors

● Shielded

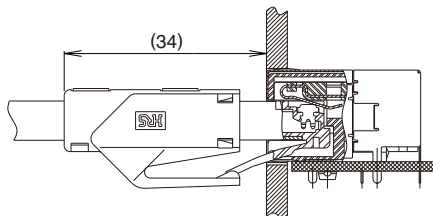


| Part No. | HRS No. | Cover Color | Remarks | RoHS |
|---------------|---------------|--------------------|---------------------|------|
| TM21P-88P | 222-2862-9 00 | Light beige | Plug unit and Cover | YES |
| TM21P-88P(11) | 222-2862-9 11 | Light beige | Cover | |
| TM21P-88P(12) | 222-2862-9 12 | Medium gray | Cover | |
| TM21P-88P(13) | 222-2862-9 13 | Black | Cover | |
| TM21P-88P(14) | 222-2862-9 14 | Natural light gray | Cover | |
| TM21P-88P(15) | 222-2862-9 15 | Red | Cover | |
| TM21P-88P(16) | 222-2862-9 16 | Green | Cover | |
| TM21P-88P(17) | 222-2862-9 17 | Blue | Cover | |
| TM21P-88P(18) | 222-2862-9 18 | Yellow | Cover | |
| TM21P-88P(19) | 222-2862-9 19 | Orange | Cover | |

◆ Cover installed

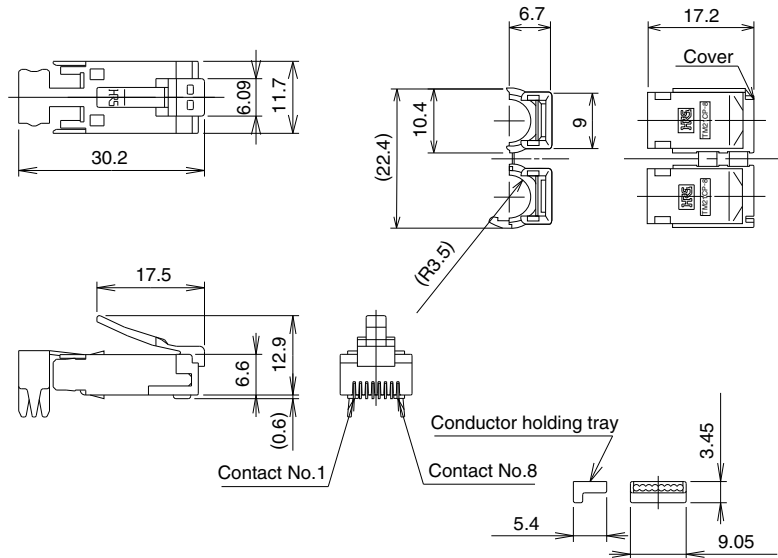


◆ Mated with corresponding receptacle (shown for reference only)



■ Plug Connectors

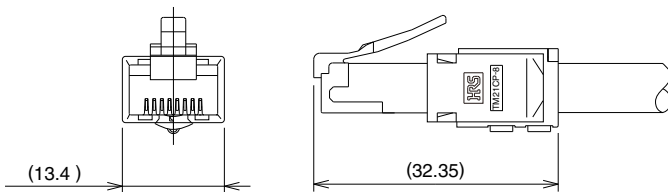
● Shielded-Short Cover



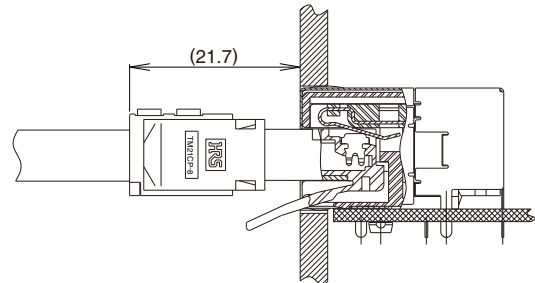
| Part No. | HRS No. | Cover color | RoHS |
|----------------|---------------|-------------|------|
| TM21CP-88P(03) | 222-2884-1 03 | Black | YES |

Note : For other colors contact Hirose sales representative.

◆ Cover installed



◆ Mated with corresponding receptacle (shown for reference only)



◆ Applicable Shielded Cable Specifications

| Specifications | | |
|----------------|--------------------------------------|--|
| | Conductor | Solid copper conductor : 0.5mm dia. Stranded copper conductor : 24 AWG (Dia. 0.2mm x 7 pcs) |
| | Individual conductor insulation dia. | (0.9mm to 1.0mm) |
| | Drain wire | 26 AWG (tin coated) |
| | Overall jacket dia. | (dia. 6.6mm) |

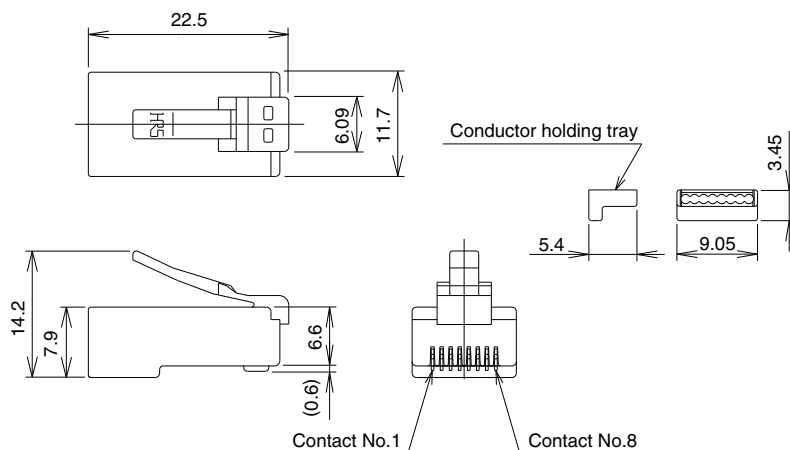
Note : For cable termination procedures refer to:

[TM21P-88P Cable Termination Procedure Manual] (ETA-E2349) and [TM21CP-88P Cable termination Procedure Manual] (ETA-E2353).

Some cables may not meet the required service ratings. Contact Hirose sales representative for specific cable applications recommendations.

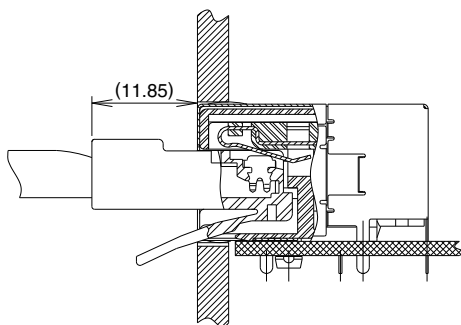
■ Plug Connectors

● Non-shielded



| Part No. | HRS No. | RoHS |
|-----------|------------|------|
| TM22P-88P | 222-2899-9 | YES |

◆ Mated with corresponding receptacle (shown for reference only)



◆ Applicable Non-shielded Cable Specifications

| Specifications | | |
|----------------|--------------------------------------|--|
| | Conductor | Solid copper conductor : 0.5mm dia. Stranded copper conductor : 24 AWG (Dia. 0.2mm x 7 pcs) |
| | Individual conductor insulation dia. | (0.9mm to 1.0mm) |
| | Overall jacket dia. | (dia. 5.4mm to 5.7mm) |

Note : For cable termination procedures refer to :

[TM22P-88P Cable Termination Procedure Manual] (ETA-E2381).

Some cables may not meet the required service ratings. Contact Hirose sales representative for specific cable applications recommendations.

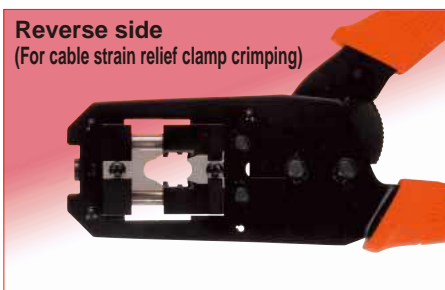
◆ Hand termination tools

● For contact/conductor termination (For cable and shield crimping)



| Part No. | HRS No. | Applicable connector |
|-----------------|------------|-------------------------|
| HT603/TM21P-88P | 902-2532-0 | TM21P-88P TM21CP-88P |

● For contact/conductor termination (Non-shielded connectors)



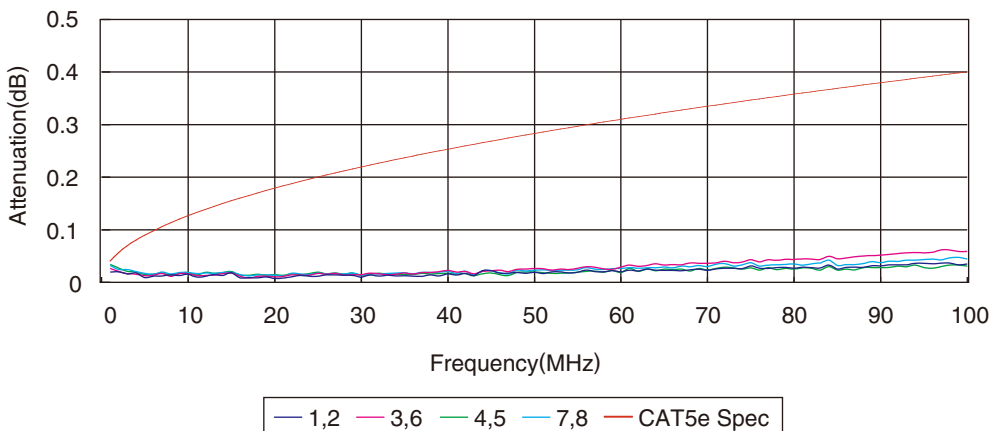
| Part No. | HRS No. | Applicable connector |
|--------------------|------------|----------------------|
| HT601-TM23/22P-88P | 902-2128-1 | TM22P-88P |
| | | TM23P-88P |

◆ **Technical Documentation**

● **CAT5e Transmission Characteristics Data**

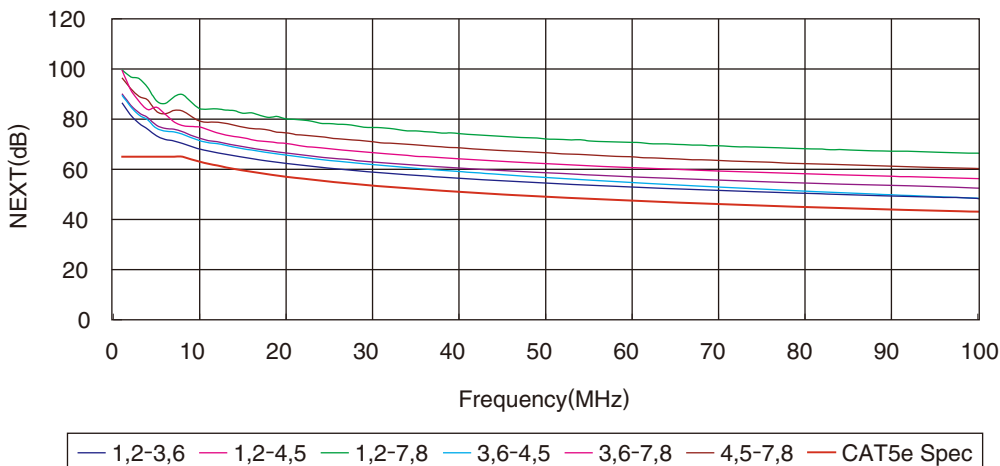
These are the representative values of the various transmission characteristics data for connector assemblies TM21P-88P and TM21R-5C-88-LP when fully mated.

• **Signal Attenuation**

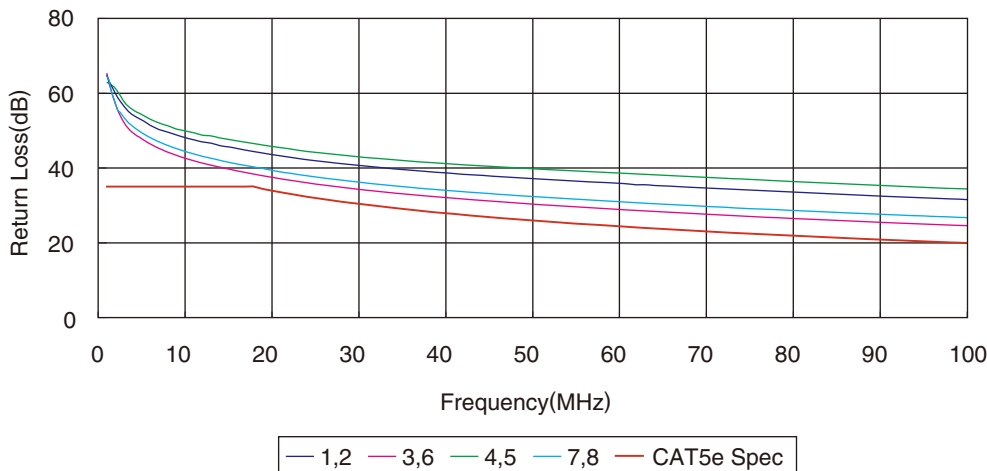


(Each two numbers are for the pair of individual contact position.)

• **Near-End Crosstalk Attenuation (NEXT)**

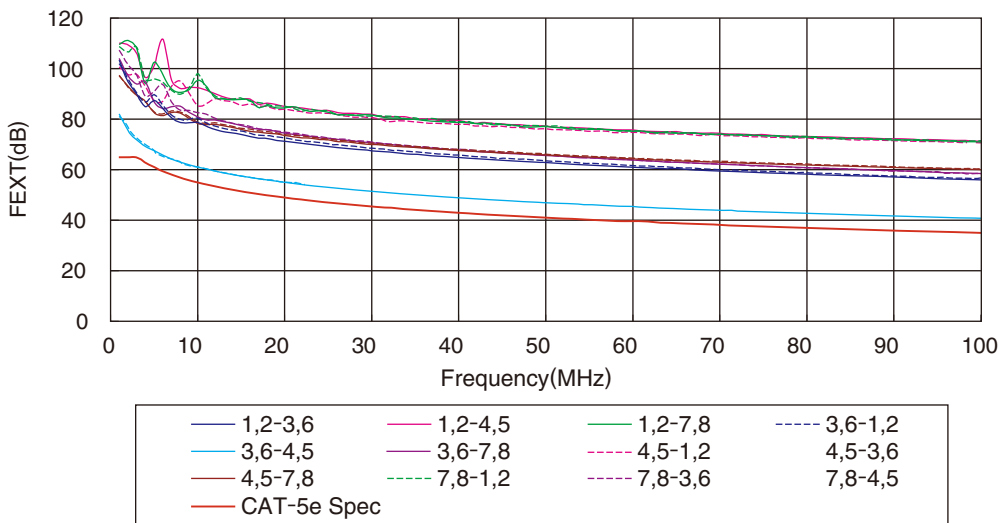


• **Return Loss**



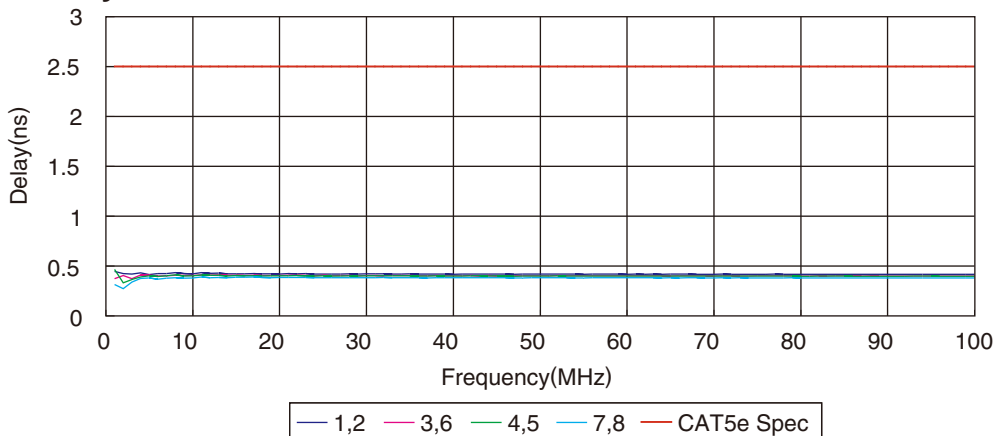
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• Far-End Crosstalk Attenuation (FEXT)

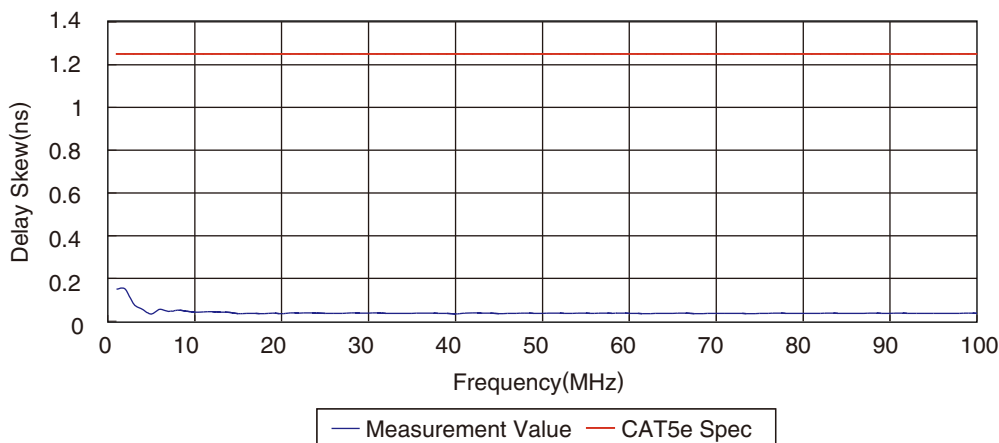


(Each two numbers are for pair of individual contact position.)

• Propagation Delay



• Propagation Delay skew



HIROSE ELECTRIC CO.,LTD.

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

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