

High Speed Communication Connector

高速通信コネクタ

**CONNECTORS
FOR
AUTOMOBILES**

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高速通信コネクタ

Introduction

Automotive high-speed communication connectors are essential components that enable fast and stable transmission of large volumes of data associated with the advancement and electrification of vehicles, supporting both safety and comfort. Sumitomo Wiring Systems aims to be a leader in innovation and technology in this field.

Background

1. Increase in Large Data Transmission

Modern vehicles are equipped with numerous electronic devices such as cameras, radars, LiDAR, sensors, and infotainment systems. These devices require high-speed and stable data transmission to exchange high-resolution images and large amounts of sensor data in real time.

2. Advancement of Autonomous Driving Technologies

Autonomous driving and advanced driver-assistance systems (ADAS) need to process and share environmental information around the vehicle at high speed. High-speed transmission connectors enable rapid exchange of large data volumes between these systems, contributing to improved safety and performance.

3. Complexity of In-Vehicle Networks

The number of electronic control units (ECUs) and communication modules inside vehicles is increasing, expanding the bandwidth of in-vehicle networks. High-speed transmission connectors efficiently connect these complex networks while minimizing signal degradation and delay.

4. Environmental Durability Requirements

Vehicles operate under harsh conditions such as vibration, temperature fluctuations, humidity, and salt damage. High-speed transmission connectors require high durability and reliability, and are specially designed to maintain stable communication under these conditions.

はじめに

車載用高速通信コネクタは、自動車の高度化・電子化に伴う大量データの高速かつ安定した伝送を実現し、安全性や快適性を支える重要な部品です。住友電装はこの分野で、イノベーションと技術のリーダーであることを目指します。

テクノロジー

1. 大量のデータ伝送の増加

近年の自動車は、カメラ、レーダー、LiDAR、センサー、インフォテインメントシステムなど、多数の電子機器を搭載しています。これらの機器は高解像度の映像や大量のセンサーデータをリアルタイムでやり取りするため、高速で安定したデータ伝送が求められます。

2. 自動運転技術の発展

自動運転や先進運転支援システム（ADAS）では、車両周辺の環境情報を高速に処理・共有する必要があります。高速伝送コネクタは、これらのシステム間での大容量データの迅速なやり取りを可能にし、安全性や性能向上に寄与します。

3. 車内ネットワークの複雑化

車内の電子制御ユニット（ECU）や通信モジュールが増加し、車内ネットワークの帯域幅が拡大しています。高速伝送コネクタは、これらの複雑なネットワークを効率的に接続し、信号の劣化や遅延を抑制します。

4. 耐環境性の要求

自動車は振動、温度変化、湿度、塩害など過酷な環境下で使用されるため、高速伝送コネクタには高い耐久性や信頼性が求められます。専用設計により、安定した通信を維持します。

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同軸コネクタ

HFCIV

高周波同軸コネクタ

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HFCV

高周波同軸コネクタ（画像伝送） for Image transmission

P.7

Differential connector

差動コネクタ

HFD-U2

100Mbps Ethernet コネクタ

P.11

HFD-S2

1Gbps Ethernet コネクタ

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HFCIV SERIES

Features

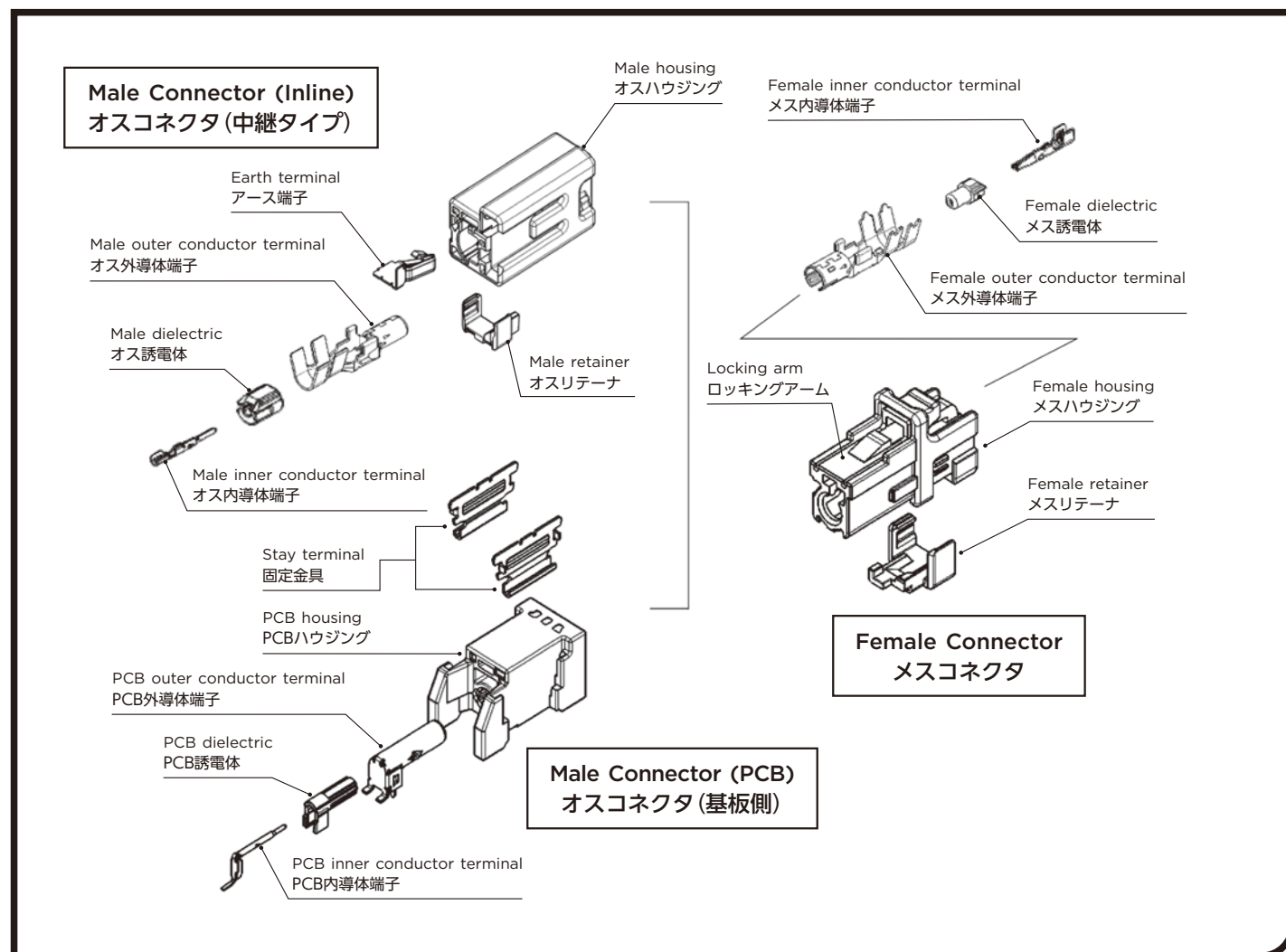
HFCIV (High Frequency Connector) series are suitable for applications such as Antenna, Telematics, Camera, Radio and sensor circuit.

- It reduces reflection/transmission loss and reduces noise radiation. It achieved smaller size with higher performance.
- Hybrid types for high frequency coaxial wire and automobile wire (AV) are established. (It supports diversity receiving system.)
- Retainer for secondary lock is preloaded and the structure allows the high frequency coaxial wire and AV wire to be set by one operation; therefore, assembly is easy.

特長

HFCIV シリーズ (高周波コネクタ) は、アンテナ、テレマティクス、カメラ、ラジオ等の車載アプリケーションに最適な、センサ回路にも適したコネクタです。伝送損失、反射、ノイズ放射を抑制し、小型高性能化を実現しています。高周波同軸線と自動車用電線 (AV) のハイブリッドタイプを設定しています。(ダイバーシティ受信方式に対応。) 二重係止用リテーナは予め組み付けられており、高周波同軸線と AV 線が同一作業でセットできる構造のため、アッセンブリが容易です。

Structure / 構造



Basic specification / 基本仕様

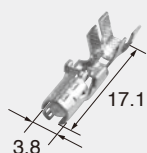
Contents 項目	Performance 性能
Low voltage current resistance 低電圧電流抵抗	Max. 20mΩ (Initial/初期)
Insulation resistance 絶縁抵抗	Min. 100MΩ
Working temperature 使用温度	-40℃ ~ +105℃

Contents 項目	Performance 性能
VSWR 電圧定在波比	75Ω系
	~108MHz
	~770MHz
	50Ω系
	~240MHz(1.5D系) Without cover terminal/ カバー端子無
	~3GHz(1.5D系) With cover terminal/ カバー端子有
	~3GHz(2.5D系)
	3~6GHz

HFCIV SERIES Terminal

(F) Terminal assy 端子ASSY

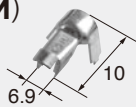
**8240-0765 (SS) 8240-0767 (MS) 8240-0766 (SM)
8240-0796 (LL)**



Material	
Dielectric(Natural color) 誘電体(自然色)	PBT
Outer conductor terminal 外導体端子	Brass(Tin-plated) 黄銅(Snめっき)
Inner conductor terminal 内導体端子	Heat-resistant copper alloy(Tin/Au-plated) 耐熱銅合金(Sn/Auめっき)

(F) Cover terminal assy* カバー端子ASSY (Optional Parts)

8240-0778 (SS) 8410-6479 (LM)

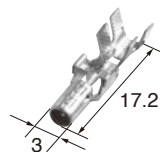


Material	
Dielectric(Light Gray color) 誘電体(淡灰色)	PP
Cover カバー	Brass(Tin-plated) 黄銅(Snめっき)

*(Note) Cover terminal is used under 6GHz frequency band conditions for 1.5D-2V/2.5D foamed wire.
注) 1.5D線以上において周波数帯〜6GHzでご使用ください。

(M) Terminal assy 端子ASSY

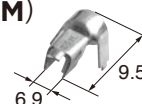
**8230-5984 (SS) 8230-5986 (MS) 8230-5985 (SM)
8230-6011 (LL)**



Material	
Dielectric(Natural color) 誘電体(自然色)	PBT
Outer conductor terminal 外導体端子	Brass(Tin-plated) 黄銅(Snめっき)
Inner conductor terminal 内導体端子	Brass(Tin/Au-plated) 黄銅(Sn/Auめっき)

(M) Cover terminal assy* カバー端子ASSY (Optional Parts)

8410-6378 (SS) 8410-6480 (LM)



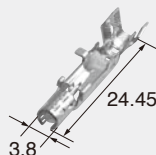
Material	
Dielectric(Light Gray color) 誘電体(淡灰色)	PP
Cover カバー	Brass(Tin-plated) 黄銅(Snめっき)

*(Note) Cover terminal is used under 6GHz frequency band conditions for 1.5D-2V/2.5D foamed wire.
注) 1.5D線以上において周波数帯〜6GHzでご使用ください。

(F) Terminal assy* 端子ASSY

for RADIO

8240-0768 (SM) 8240-0769 (MM)



Material	
Dielectric(Natural color) 誘電体(自然色)	PBT
Outer conductor terminal 外導体端子	Brass(Tin-plated) 黄銅(Snめっき)
Inner conductor terminal 内導体端子	Heat-resistant copper alloy(Tin/Au-plated) 耐熱銅合金(Sn/Auめっき)

*(Note) The terminal for radio can be connected internally with a condenser.
Please use a common crimping terminal (8240-0777) for this purpose.
注) ラジオ用端子は、内部にコンデンサを接続することが可能です。
その際、共圧着端子(8240-0777)をご使用ください。

(M) Terminal for AV wire 電源回路用端子

S Size	8230-4878	(Cable size:0.13mm ²)
M Size	8100-3622	(Cable size:0.22〜0.35mm ²)
L Size	8100-3623	(Cable size:0.3〜0.5mm ²)

Material:Heat-resistant copper alloy 耐熱銅合金(Snめっき)
Surface treatment:Tin-plated

(F) Terminal for AV wire 電源回路用端子

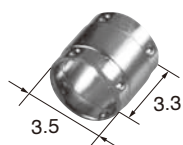
S Size	8240-0182	(Cable size:0.13mm ²)
M Size	8100-3624	(Cable size:0.22〜0.35mm ²)
L Size	8100-3625	(Cable size:0.3〜0.5mm ²)

Material:Heat-resistant copper alloy 耐熱銅合金(Snめっき)
Surface treatment:Tin-plated

Please refer to the our website for details. 電源回路用端子の詳細は総合カタログ或いはHPをご覧ください。

Sleeve* スリーブ (M)/(F) Shared 共通部品 (Optional Parts)

8410-6472



Material	
	SUS ステンレス

*(Note) Sleeve is used with foaming coaxial cable.
注) 発泡絶縁体の同軸電線でご使用ください。

Applicable coaxial wire for Terminal assy／適用同軸電線

(M)	Applicable cable		Frequency band	Parts No.	Size	Sleeve	Cover terminal assy
	75Ω	1.5C-2V	～770MHz	8230-5984	(SS)	-	-
		1.5C-2W	～770MHz	8230-5986	(MS)	-	-
	50Ω	1.5D-2V	～6GHz	8230-5985	(SM)	-	8410-6378
		2.5D発泡(Foamed)	～6GHz	8230-6011	(LL)	8410-6472	8410-6480

(F)	Applicable cable		Frequency band	Parts No.	Size	Sleeve	Cover terminal assy
	75Ω	1.5C-2V	～770MHz	8240-0765	(SS)	-	-
		1.5C-2W	～770MHz	8240-0767	(MS)	-	-
	50Ω	1.5D-2V	～6GHz	8240-0766	(SM)	-	8240-0778
		2.5D発泡(Foamed)	～6GHz	8240-0796	(LL)	8410-6472	8410-6479

HFCIV SERIES
Housing
for STANDARD

Material : PBT

1 pole coaxial

(Key B)

ColorBlack

12.6
24.8
12.1

M (6098-9704)

F (6098-9506)

12.45
20.4
7.3

PCB Connector part No.6098-9526

ColorBlack

2 poles coaxial

(Key A)

F (6098-9510)

12.45
20.4
12.1

PCB Connector part No.6098-9528

ColorNatural

2 poles coaxial

(Key B)

F (6098-9513)

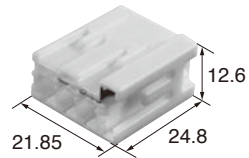
12.45
20.4
12.1

PCB Connector part No.6098-9530

ColorBlack

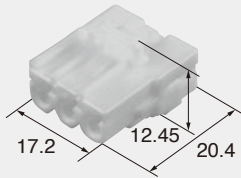
3 poles coaxial

Color Natural



M (6098-9713)

F (6098-9695)

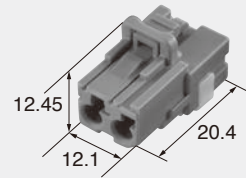


Color Natural

2 poles coaxial

(Key C)

F (6098-9515)

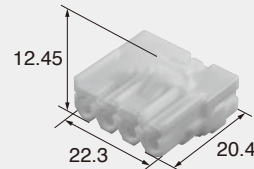


PCB Connector part No. 6098-9532

Color Gray

4 poles coaxial

F (6098-9520)



PCB Connector part No. 6098-9536

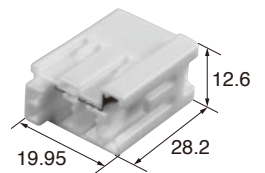
Color Natural

HFCIV SERIES Housing for HYBRID

Material : PBT

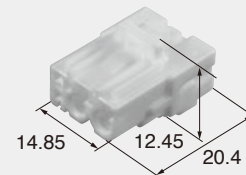
2 poles coaxial + 2-way AV wire (0.64ll) (Key A)

Color Natural



M (6098-9706)

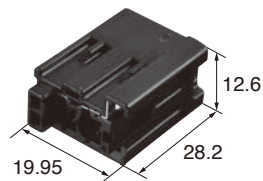
F (6098-9688)



Color Natural

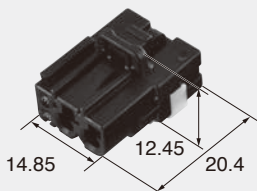
2 poles coaxial + 2-way AV wire (0.64ll) (Key B)

Color Black



M (6098-9709)

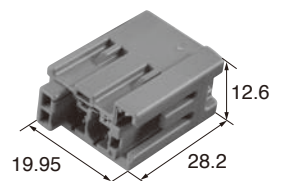
F (6098-9691)



Color Black

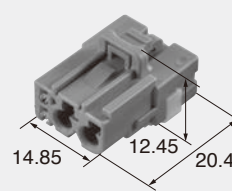
2 poles coaxial + 2-way AV wire (0.64ll) (Key C)

Color Gray



M (6098-9711)

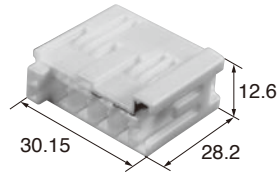
F (6098-9693)



Color Gray

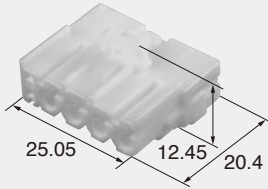
4 poles coaxial + 2-way AV wire (0.64ll)

Color Natural



M (6098-9716)

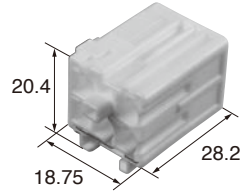
F (6098-9698)



Color Natural

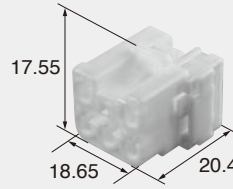
5 poles coaxial + 1-way AV wire (0.64ll)

Color Natural



M (6098-9603)

F (6098-9600)



Color Natural

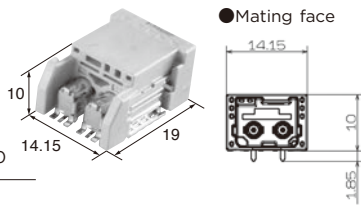
HFCIV SERIES for PCB

Material : LCP(Housing body)

2 poles coaxial Horizontal 水平タイプ (Key A)

M (6098-9528)

●Mating face



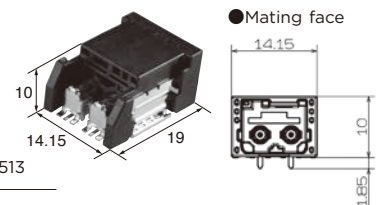
(F) Connector part No. 6098-9510

Color Natural

2 poles coaxial Horizontal 水平タイプ (Key B)

M (6098-9530)

●Mating face



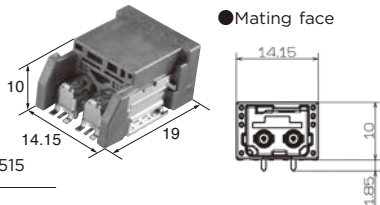
(F) Connector part No. 6098-9513

Color Black

2 poles coaxial Horizontal 水平タイプ (Key C)

M (6098-9532)

●Mating face



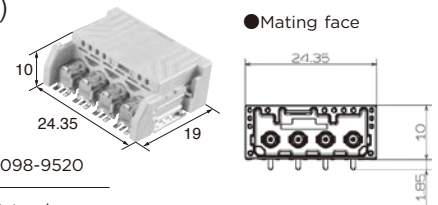
(F) Connector part No. 6098-9515

Color Gray

4 poles coaxial Horizontal 水平タイプ

M (6098-9536)

●Mating face



(F) Connector part No. 6098-9520

Color Natural

HFCIV SERIES

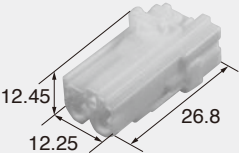
Housing

for RADIO

STANDARD

2 poles coaxial + 1-way AV wire (0.64ll)

F (6098-9517)



PCB Connector part No.	6098-9534
Material	PBT
Color	Natural

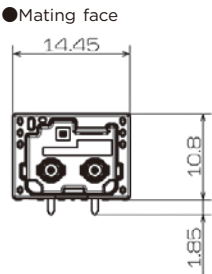
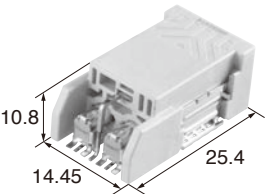
PCB

2 poles coaxial + 1-way AV wire (0.64ll)

Horizontal 水平タイプ

M (6098-9534)

(F) Connector part No.	6098-9517
Material	LCP(Housing body)
Color	Natural



HFCV SERIES

Features

The HFCV Series (High-frequency coaxial connectors) are optimized for in-vehicle image transmission, featuring excellent impedance matching and low-loss design.

With superior noise immunity, they minimize signal degradation in demanding automotive environments.

These connectors support high-speed serial data transmission standards like GVIF (Gigabit Video Interface) and GMSL (Gigabit Multimedia Serial Link), enabling stable and high-speed transmission of high-resolution camera video.

Furthermore, while offering the vibration and heat resistance required for automotive applications, the HFCV Series achieves a more compact size compared to conventional coaxial connectors.

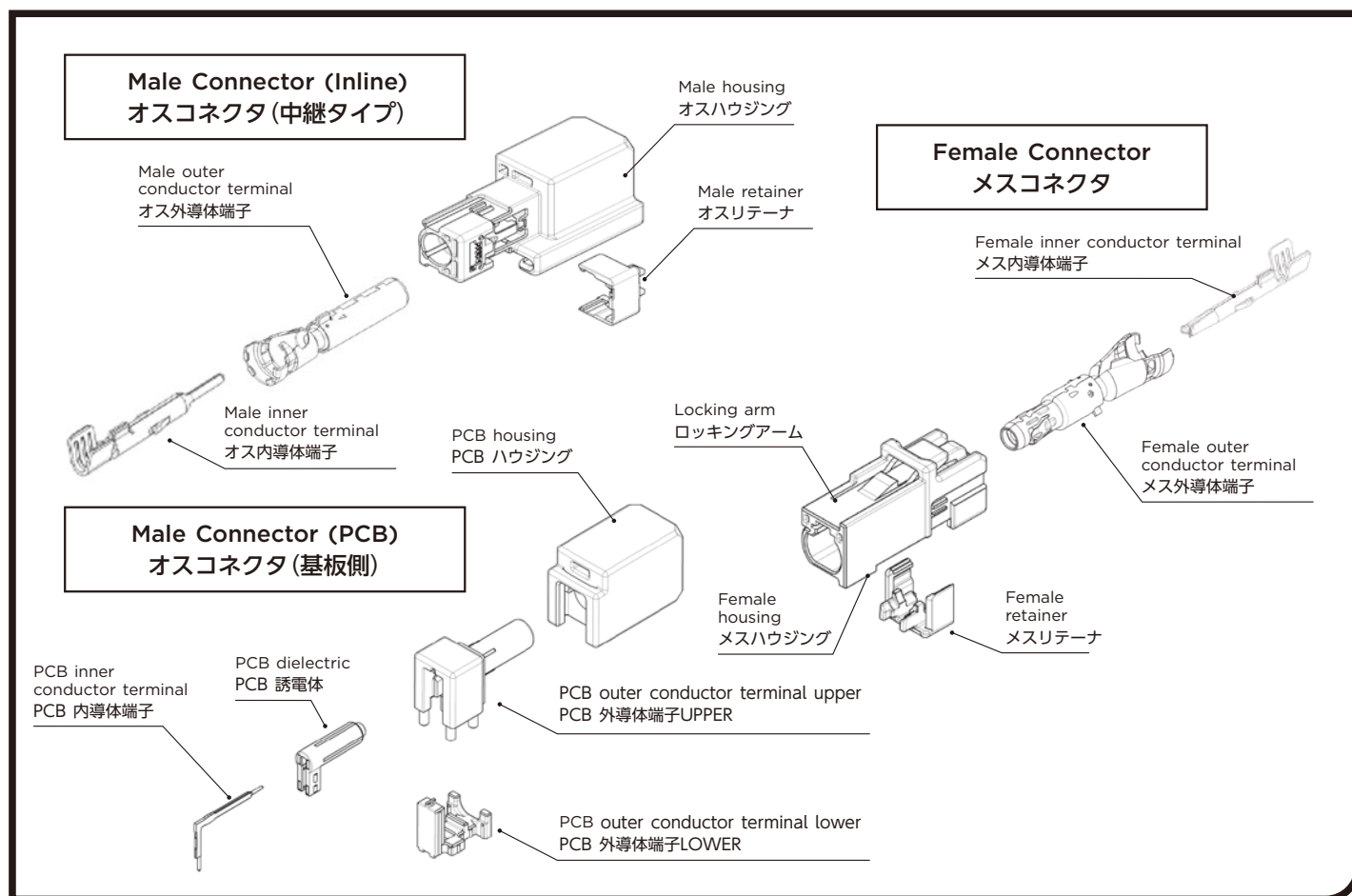
This allows for installation in tight spaces, contributing to vehicle weight reduction and space saving.

特長

HFCV シリーズ（高周波コネクタ）は、車載画像伝送に最適化された同軸コネクタで、優れたインピーダンス整合性と低損失設計を採用しています。ノイズ耐性に優れ、車載環境における信号劣化を最小限に抑制します。GVIF (Gigabit Video Interface) や GMSL (Gigabit Multimedia Serial Link) などの高速シリアルデータ伝送規格に対応しており、高解像度カメラ映像の安定かつ高速な伝送を実現します。

また、車載用途に求められる耐振動・耐熱性能を備えつつ、従来の同軸コネクタに比べて小型化を実現。狭小スペースへの搭載が可能で、車両の軽量化および省スペース化に貢献します。

Structure／構造



Basic specification／基本仕様

Contents 項目	Performance 性能
Low voltage current resistance 低電圧電流抵抗	Max 10mΩ (Initial／初期)
Insulation resistance 絶縁抵抗	between terminals/poles Min 100MΩ
Working temperature 使用温度	-40℃～+105℃

Communication performance／通信性能

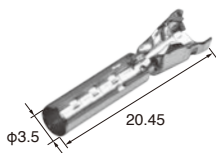
Contents 項目	Test Specification 試験規格	Maximum Parameters リミット/最大パラメータ
RL	USCAR-49	$\leq -17.5\text{dB}$ @ $0.01 \leq f \leq 2\text{GHz}$ $\leq -14\text{dB}$ @ $2\text{GHz} \leq f \leq 6\text{GHz}$ $\leq -12\text{dB}$ @ $6\text{GHz} \leq f \leq 7\text{GHz}$ $\leq -10\text{dB}$ @ $7\text{GHz} \leq f \leq 9\text{GHz}$
Shield シールド		$\leq -62\text{dB}$ @ $0.1\text{GHz} \leq f \leq 2\text{GHz}$ $\leq -55\text{dB}$ @ $2\text{GHz} \leq f \leq 5\text{GHz}$ $\leq -50\text{dB}$ @ $5\text{GHz} \leq f \leq 9\text{GHz}$

HFCV SERIES Terminal

Conductor Terminal

(M) Outer conductor terminal assy 外導体端子ASSY

8230-6209



Material

Dielectric(Natural color)
誘電体(自然色)

PBT

Outer conductor terminal
外導体端子

Heat-resistant
copper alloy(Tin-plated)
耐熱銅合金(Snめっき)

(M) Inner conductor terminal 内導体端子

8230-6210



Material

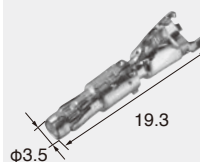
Brass(Tin/Au-plated)
黄銅(Sn/Auめっき)

Applicable coaxial wire for Terminal assy
適用同軸電線

1.5D-2V

(F) Outer conductor terminal assy 外導体端子ASSY

8240-0916



Material

Dielectric(Natural color)
誘電体(自然色)

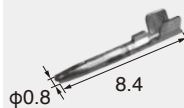
PBT

Outer conductor terminal
外導体端子

Heat-resistant
copper alloy(Tin-plated)
耐熱銅合金(Snめっき)

(F) Inner conductor terminal 内導体端子

8240-0917



Material

Heat-resistant
copper alloy(Tin-plated)
耐熱銅合金(Sn/Auめっき)

Applicable coaxial wire for Terminal assy
適用同軸電線

1.5D-2V

(M) Terminal for AV wire 電源回路用端子

S Size 8230-4878 (Cable size:0.13mm²)

M Size 8100-3622 (Cable size:0.22~0.35mm²)

L Size 8100-3623 (Cable size:0.3~0.5mm²)

Material:Heat-resistant copper alloy 耐熱銅合金(Snめっき)
Surface treatment:Tin-plated

(F) Terminal for AV wire 電源回路用端子

S Size 8240-0182 (Cable size:0.13mm²)

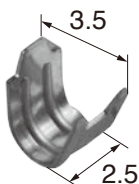
M Size 8100-3624 (Cable size:0.22~0.35mm²)

L Size 8100-3625 (Cable size:0.3~0.5mm²)

Material:Heat-resistant copper alloy 耐熱銅合金(Snめっき)
Surface treatment:Tin-plated

Please refer to the our website for details. 電源回路用端子の詳細は総合カタログ或いはHPをご覧ください。

Sleeve*スリーブ (M)/(F) Shared 共通部品



8110-5655

Material

SUS
ステンレス

HFCV SERIES Housing

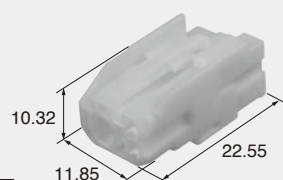
Material : PBT

1 pole coaxial + 2-way AV wire (0.64ll)

F (6099-1564)

PCB Connector part No. 6099-1562

Color Natural



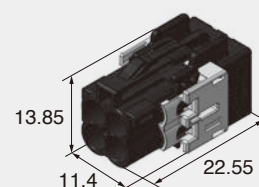
4 poles coaxial

(Key A)

F (6099-1552)

PCB Connector part No. 6099-1548

Color Black



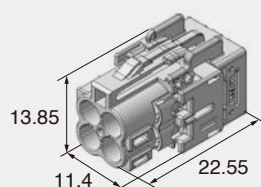
4 poles coaxial

(Key B)

F (6099-1553)

PCB Connector part No. 6099-1549

Color Natural



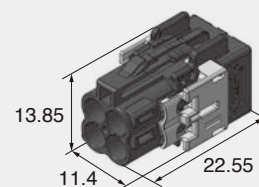
4 poles coaxial

(Key C)

F (6099-1554)

PCB Connector part No. 6099-1550

Color Blue



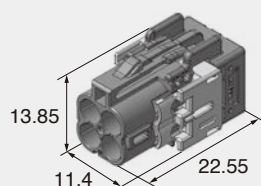
4 poles coaxial

(Key G)

F (6099-1555)

PCB Connector part No. 6099-1551

Color Gray



HFCV SERIES for PCB

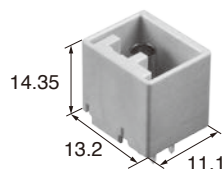
Material : LCP(Housing body)

1 pole coaxial + 2-way AV wire (0.64)

M (6099-1562)

(F) Connector part No. 6099-1564

Color Natural



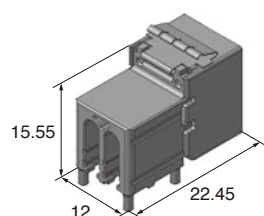
4 poles coaxial

M (6099-1548)

(Key A)

(F) Connector part No. 6099-1552

Color Black



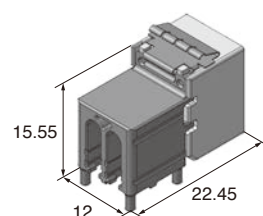
4 poles coaxial

M (6099-1549)

(Key B)

(F) Connector part No. 6099-1553

Color Natural



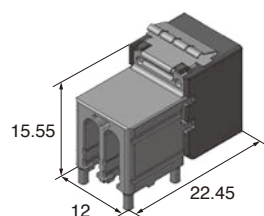
4 poles coaxial

M (6099-1550)

(Key C)

(F) Connector part No. 6099-1554

Color Blue



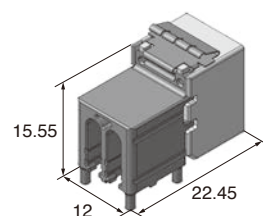
4 poles coaxial

M (6099-1551)

(Key G)

(F) Connector part No. 6099-1555

Color Gray



HFD-U2 SERIES (100Mbps Ethernet)

Feature

The Automotive Ethernet Connector from Sumitomo Wiring Systems is designed specifically for automotive environments, offering a robust alternative to conventional(consumer's/industrial) Ethernet standards such as 100BASE-TX.

This connector is optimized to meet the demanding requirements of in-vehicle networks, including:

- Superior EMC noise resistance.
- Lightweight construction.
- Cost reduction.
- High reliability under harsh conditions.

Sumitomo Wiring Systems' HFD-U2 series complies with the IEEE 802.3bw 100BASE-T1 standard, a vehicle network communication protocol.

The use of UTP cables ensures a lightweight structure, superior ease of installation, and exceptional cost efficiency.

Our products combining automotive-grade performance and efficiency, strongly support the evolution of next-generation in-vehicle networks.

特長

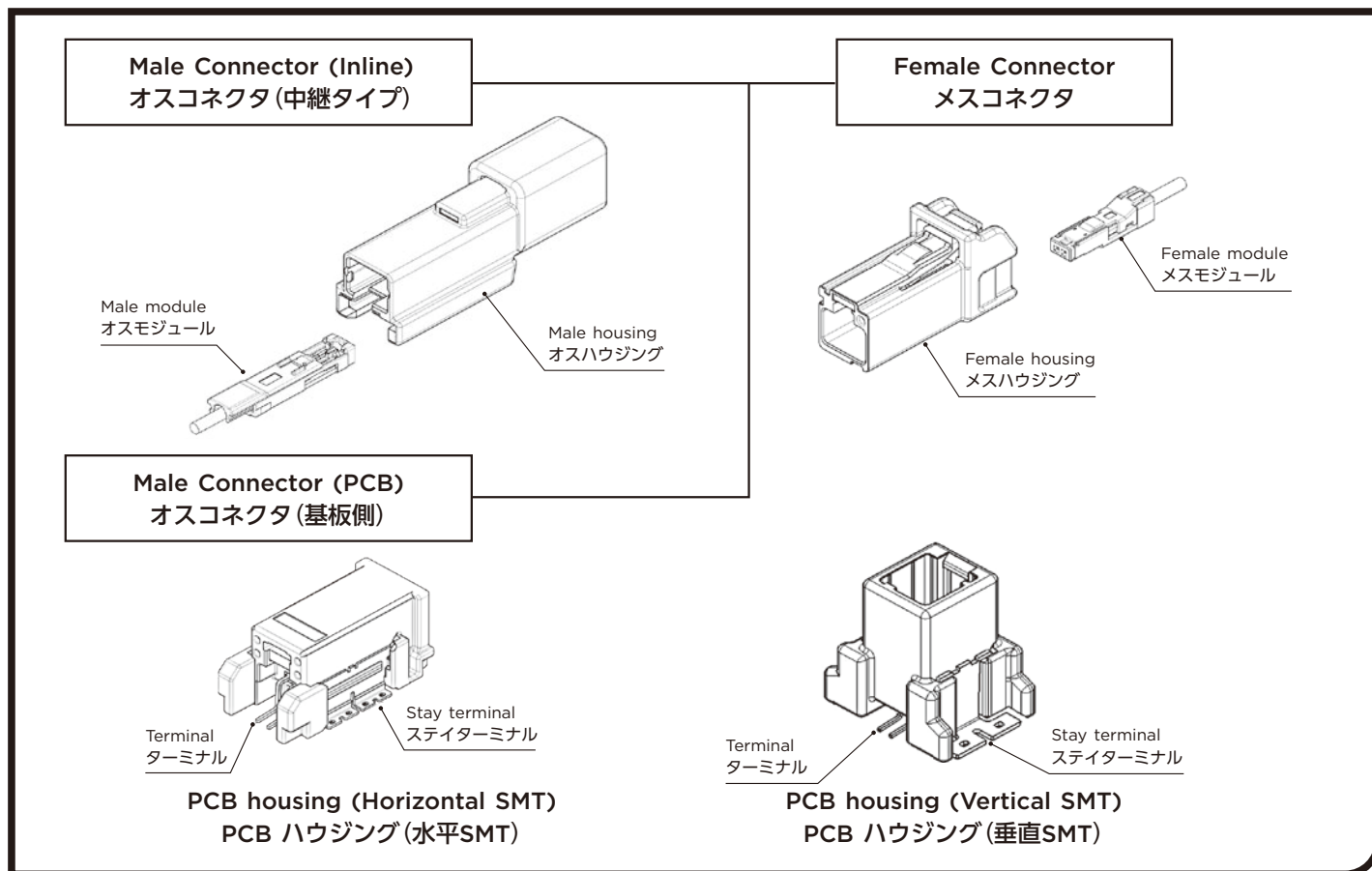
住友電装の車載用イーサネットコネクタは、自動車環境に特化して設計された高性能ネットワークソリューションであり、従来の民生/産業用 Ethernet 規格（例：100BASE-TX）に代わる堅牢な選択肢を提供します。車載ネットワークの厳しい要件を満たすために最適化されており、以下の特長を備えています：

- 優れた EMC ノイズ耐性
- 軽量構造による車両全体の軽量化に貢献
- コスト削減を実現
- 過酷な環境下でも高い信頼性を維持

住友電装の HFD-U2 シリーズは、車載のネットワーク規格 IEEE 802.3bw 100BASE-T1 に準拠しております。UTP 電線を使用する為、軽量で加工性に優れ、経済的です。

自動車向けの性能と効率性を兼ね備えた住友電装の製品は、次世代の車載ネットワークの進化を力強く支えます。

Non-Sealed Housing Structure／非防水コネクタ 構造図



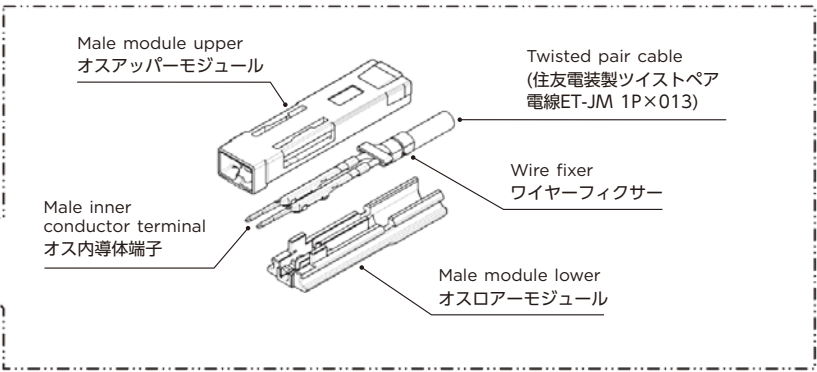
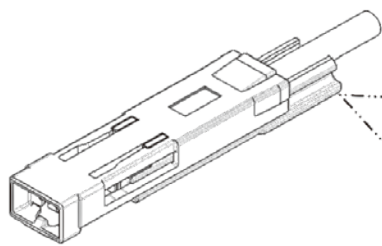
Basic specification／基本仕様

Contents 項目	Specifications 仕様
Low voltage current resistance 低電圧電流抵抗	Max 10mΩ (Initial/初期)
Insulation resistance 絶縁抵抗	Min 100MΩ
Working temperature 使用温度	-40℃～+85℃
Transmission characteristics 通信特性	・IEEE 100BASE-T1 communication channel requirements specified in sections 5.1.2 and 5.2.2 are satisfied. ・IEEE 100BASE-T1の通信チャンネル要件(5.1.2項および5.2.2項)を満たしています。

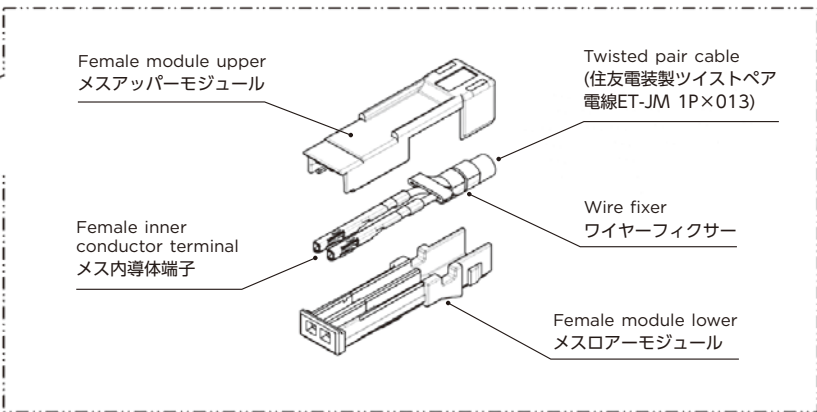
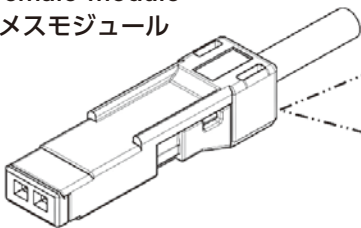
*IEEE (Institute of Electrical and Electronics Engineers) is a U.S.-based organization that develops technical standards in electrical and information engineering.

*IEEEは米国に本部を置く電気・情報工学分野の団体、技術標準化機関です。

Male module
オスモジュール



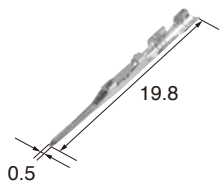
Female module
メスモジュール



HFD-U2 SERIES
Inner Conductor
Terminal

(Shared with) HFD-S2 series 共通部品

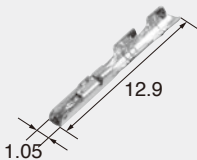
(M)



Parts No. 8230-5939

Material Heat-resistant copper alloy(Tin-plated)
耐熱銅合金(Snめっき)

(F)



Parts No. 8240-0697

Material Heat-resistant copper alloy(Tin-plated)
耐熱銅合金(Snめっき)

(M) 0.5mm type terminal for HYBRID

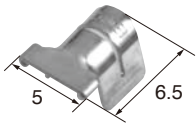
Parts No.	8230-6107
Cable	CIVUS 0.22~0.35mm ²
Material	Heat-resistant copper alloy 耐熱銅合金
Surface treatment	Tin-plated Snめっき

Please refer to the our website for details. 詳細は総合カタログをご覧ください。

(F) 0.5mm type terminal for HYBRID

Parts No.	8240-0695
Cable	CIVUS 0.22~0.35mm ²
Material	Heat-resistant copper alloy 耐熱銅合金
Surface treatment	Tin-plated Snめっき

Wire fixer ワイヤーフイクサー (M)/(F) Shared 共通部品

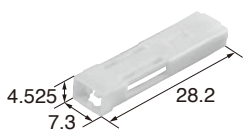


Parts No. **8410-5733**

Material Brass(Tin-plated)
黄銅 (Snめっき)

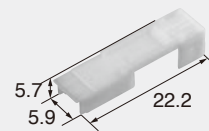
HFD-U2 SERIES Module

(M) Upper



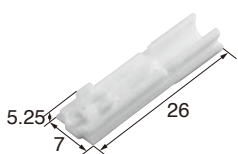
Parts No.	Color
6910-8307	Natural
6910-8310	Black
6910-8313	Blue
6910-8315	Gray
Material	PBT

(F) Upper



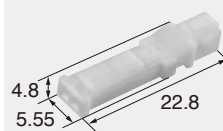
Parts No.	Color
6910-8251	Natural
6910-8255	Black
6910-8257	Blue
6910-8256	Gray
Material	PBT

(M) Lower



Parts No.	Color
6910-8308	Natural
6910-8311	Black
6910-8314	Blue
6910-8316	Gray
Material	PBT

(F) Lower



Parts No.	Color
6910-8252	Natural
6910-8258	Black
6910-8260	Blue
6910-8259	Gray
Material	PBT

HFD-U2 SERIES Housing for STANDARD

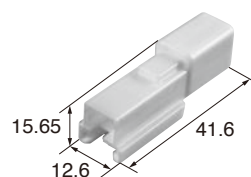
Material : PBT

1-pair

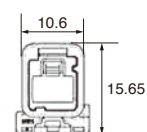
(Key A)

Color Natural

(Note) Bracket size 9mm



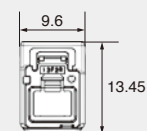
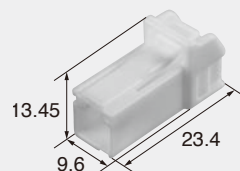
●Mating face



M (6910-8306)

F (6910-8250)

●Mating face



PCB Connector part No. 6910-8268
6910-9021

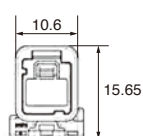
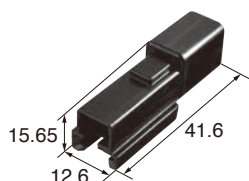
Color Natural

1-pair (Shared with) HFD-S2 series 共通部品 (Key B)

Color Black

(Note) Bracket size 9mm

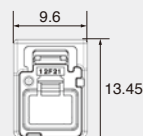
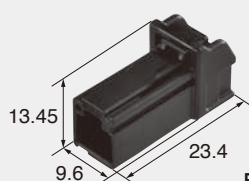
●Mating face



M (6910-8309)

F (6910-8253)

●Mating face



PCB Connector part No. 6910-8269

Color Black

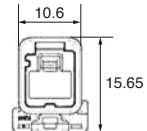
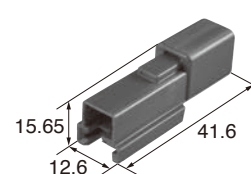
1-pair

(Key C)

Color Blue

(Note) Bracket size 9mm

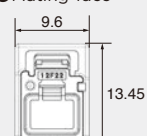
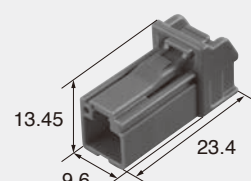
●Mating face



M (6910-8312)

F (6910-8254)

●Mating face



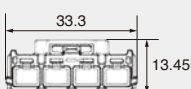
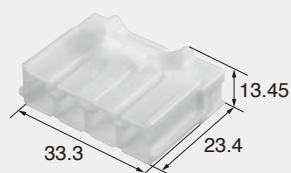
PCB Connector part No. 6910-8270

Color Blue

4-pair (Shared with) HFD-S2 series 共通部品 (Key A)

F (6910-8298)

●Mating face



PCB Connector part No. 6910-8300

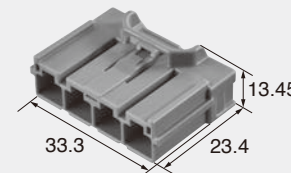
Color Natural

4-pair

(Key B)

F (6910-8301)

●Mating face



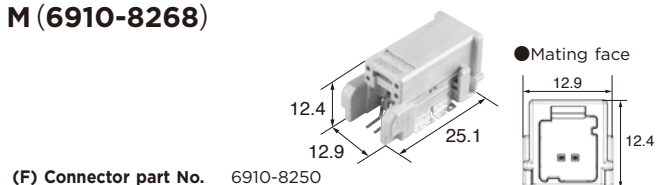
PCB Connector part No. 6910-8302

Color Gray

HFD-U2 SERIES Housing for STANDARD PCB

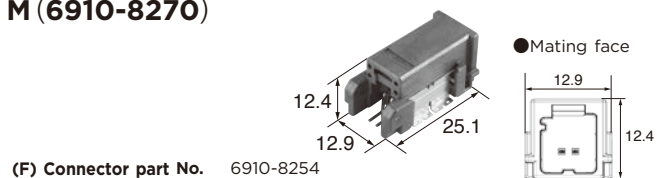
Material : LCP (Housing body)

1-pair Horizontal SMT 水平タイプ (Key A) M (6910-8268)



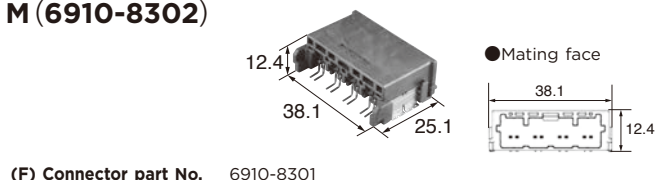
Color Natural

1-pair Horizontal SMT 水平タイプ (Key C) M (6910-8270)



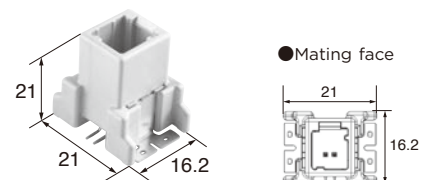
Color Blue

4-pair Horizontal SMT 水平タイプ (Key B) M (6910-8302)



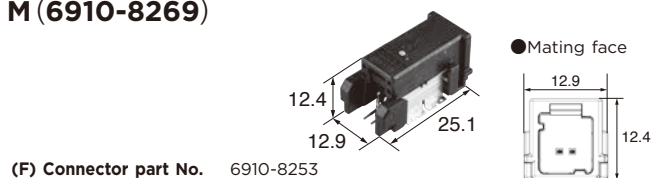
Color Gray

1-pair Vertical SMT 垂直タイプ (Key A) M (6910-9021)



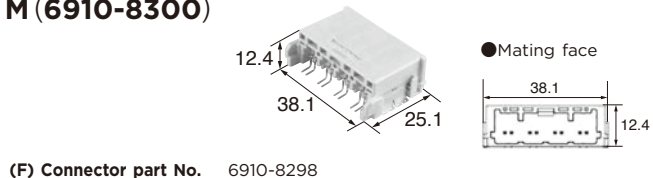
Color Natural

1-pair Horizontal SMT 水平タイプ (Key B) M (6910-8269)



Color Black

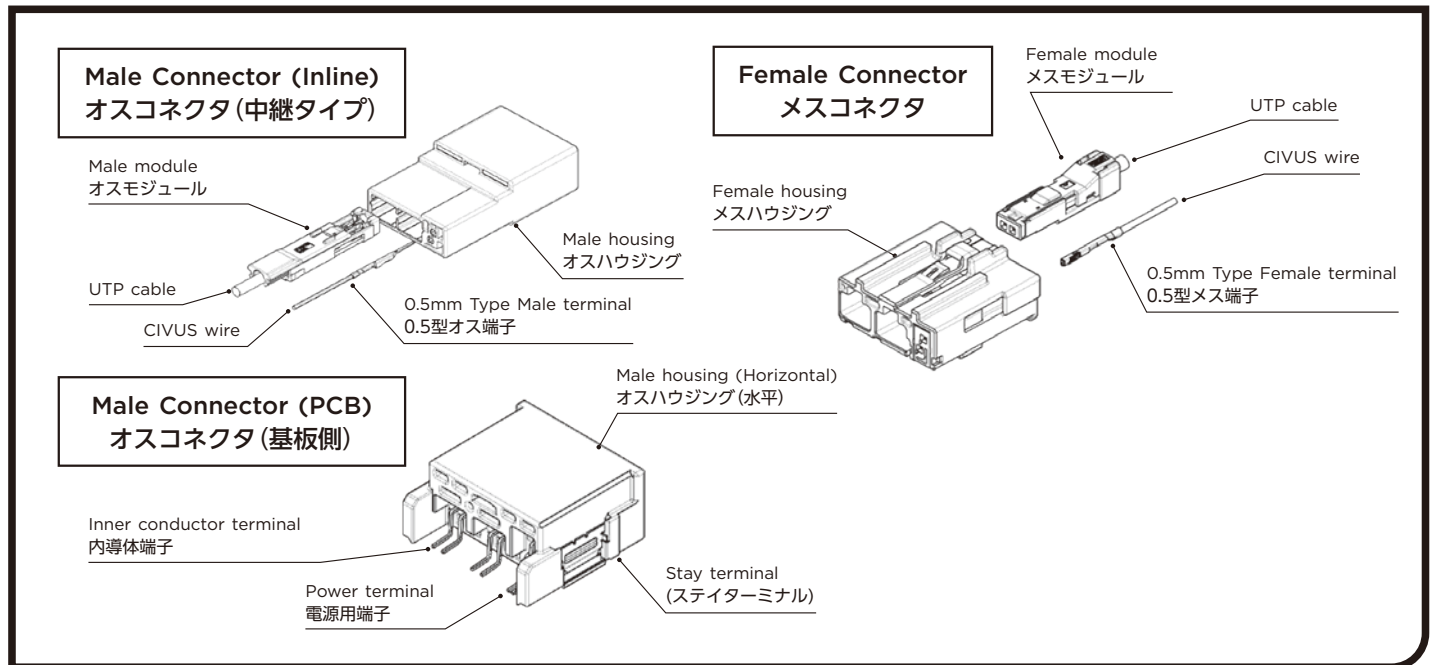
4-pair Horizontal SMT 水平タイプ (Key A) M (6910-8300)



Color Natural

HFD-U2 SERIES HYBRID

Hybrid Housing Structure / コネクタ構造図



HFD-U2 SERIES Housing for HYBRID

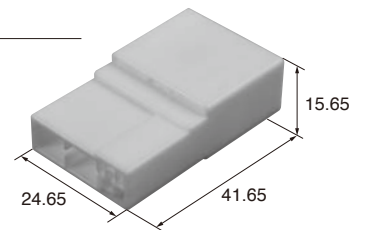
Material : PBT

2-pair +2-way (0.5mm)

(Key A)

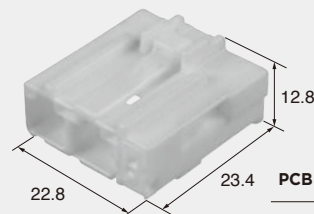
Color Natural

(Note) Bracket size 9mm



M(6099-0510)

F(6099-0496)



PCB Connector part No. 6910-9029

Color Natural

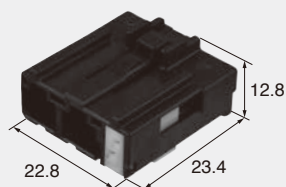
2-pair +2-way (0.5mm)

(Key B)

F(6099-0497)

PCB Connector part No. 6910-9030

Color Black



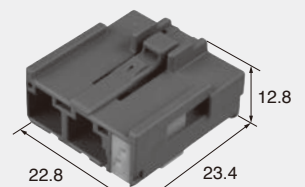
2-pair +2-way (0.5mm)

(Key C)

F(6099-0498)

PCB Connector part No. 6910-9031

Color Gray



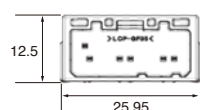
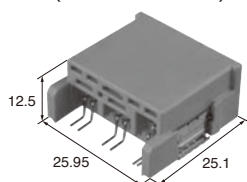
HFD-U2 SERIES Housing for HYBRID PCB

Material : LCP (Housing body)

2-pair +2-way (0.5mm) Horizontal SMT 水平タイプ (Key A)

M (6910-9029)

●Mating face



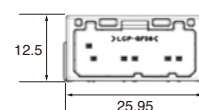
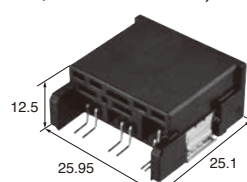
(F) Connector part No. 6099-0496

Color Natural

2-pair +2-way (0.5mm) Horizontal SMT 水平タイプ (Key B)

M (6910-9030)

●Mating face



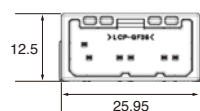
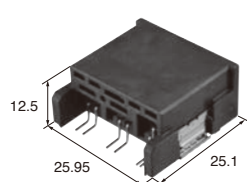
(F) Connector part No. 6099-0497

Color Black

2-pair +2-way (0.5mm) Horizontal SMT 水平タイプ (Key C)

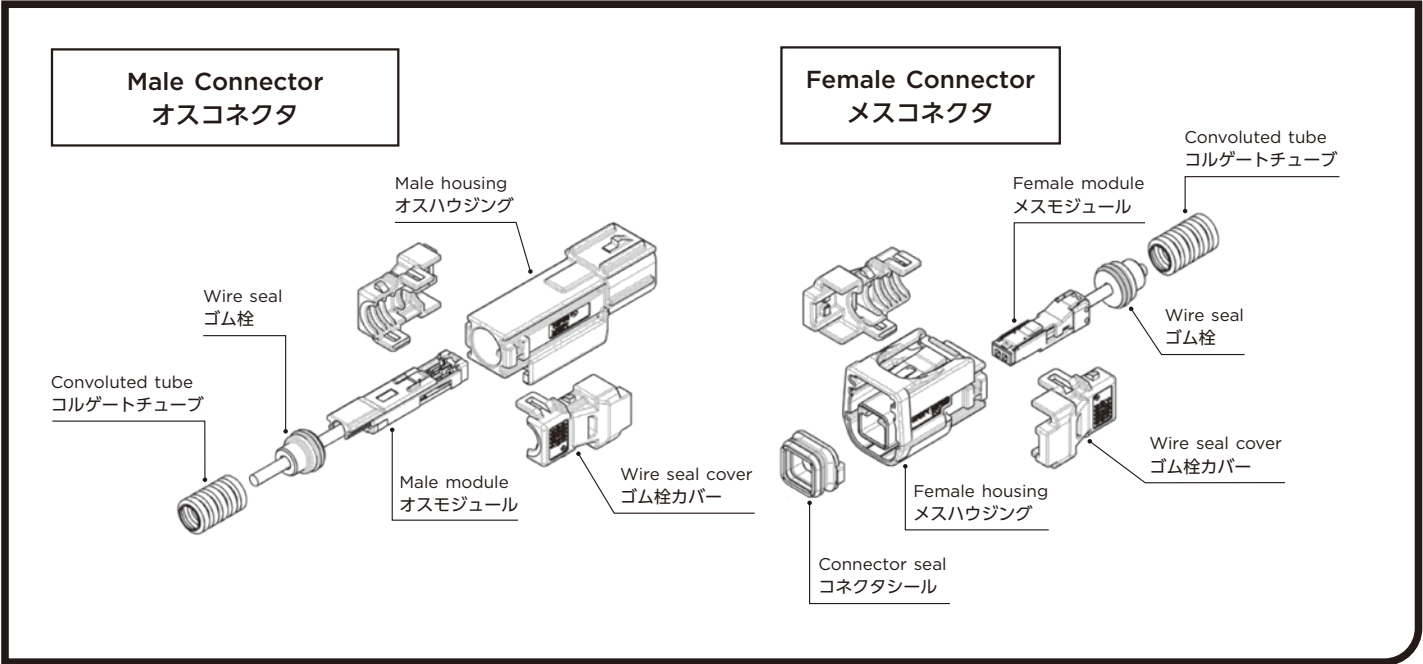
M (6910-9031)

●Mating face



(F) Connector part No. 6099-0498

Color Gray



HFD-U2 SERIES Housing for Sealed

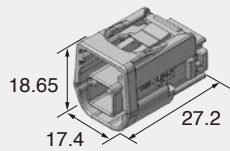
1-pair

Material	PBT
Color	Black

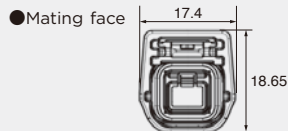
(Note) Bracket size 9mm



M (6098-9257)



F (6910-8292)

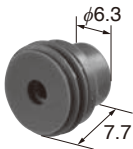


Material	PBT
Color	Black

Wire seal ゴム栓

(M)/(F) Shared 共通部品

(7165-1874)

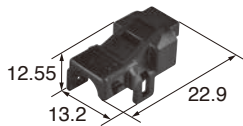


Material	Silicone
Color	Reddish Brown ベンガラ

Wire seal cover ゴム栓カバー

(M)/(F) Shared 共通部品

(6910-8293)



Material	PBT
Color	Black

(Note) for Convolute tube φD5
D5サイズ コルゲートチューブ対応

HFD-S2 SERIES (1Gbps Ethernet)

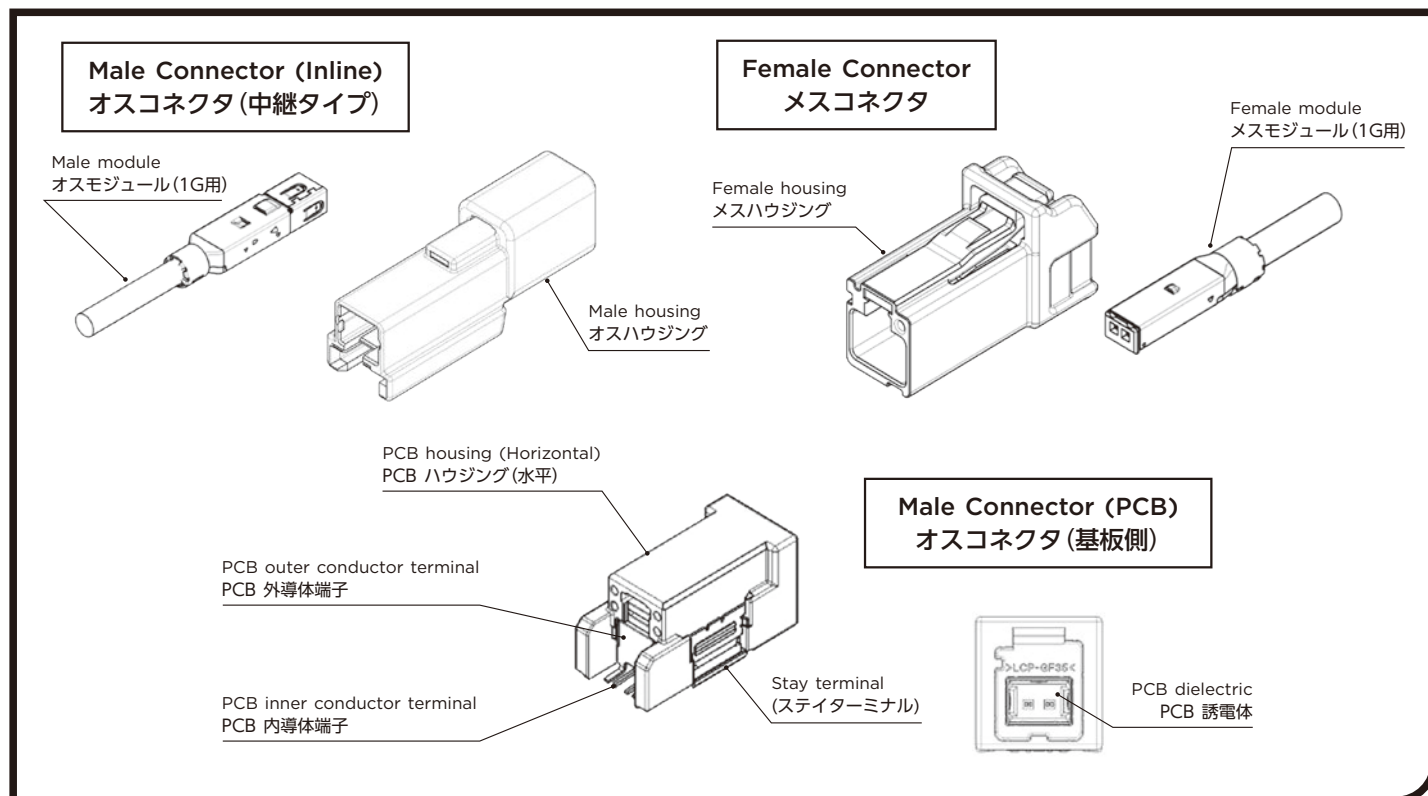
Feature

The HFD-S2 series achieves compatibility with in-vehicle Gigabit Ethernet communication and cost reduction by sharing components with the HFD-U2 series and supporting STP (Shielded Twisted Pair) wires. It conforms to the Open Alliance Channel and Component Requirements for 1000BASE-T1 Link Segment Type A (STP) class 1, which is an in-vehicle Ethernet communication standard.

特 長

HFD-S2シリーズは、HFD-U2シリーズと部品共用化し、かつSTP (Shielded Twisted Pair) 電線に対応することで、車載ギガビット Ethernet 通信への適合とコスト削減を両立させています。車載 Ethernet の通信規格である*Open Alliance Channel and Component Requirements for 1000BASE-T1 Link Segment Type A (STP) class1に準拠しております。

Structure / 構造

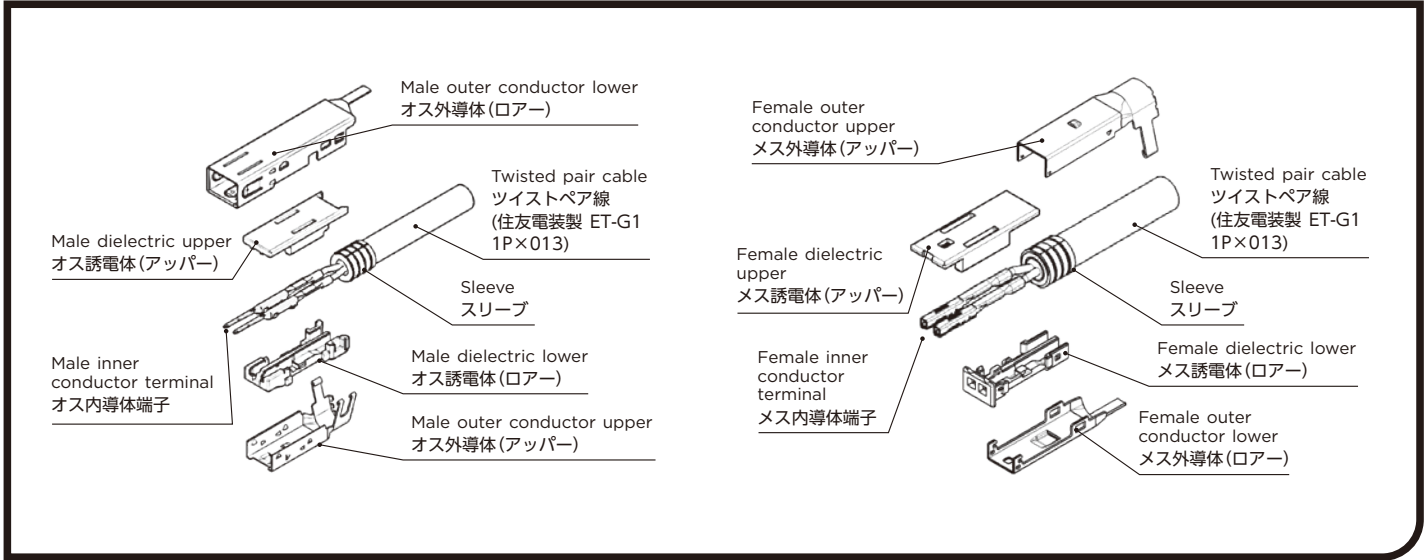


Basic specification / 基本仕様

Contents 項目	Specifications 仕様
Low voltage current resistance 低電圧電流抵抗	Max 10mΩ (Initial / 初期)
Insulation resistance 絶縁抵抗	Min 100MΩ
Working temperature 使用温度	-40°C ~ +85°C

Contents 項目	Specifications 仕様
Transmission characteristics 通信特性	・OPEN Alliance Channel and Component Requirements for 1000BASE-T1 Link Segment Type A (STP) section 6.1.1 and 6.2.1 (class1) shall be satisfied. ・STPケーブルを用いたチャネルの性能要件である16.1.1項および1000BASE-T (コンポーネントの性能要件である)6.2.1項【class1】を満たします。

・OPEN Alliance is an industry consortium promoting the adoption of Automotive Ethernet.
 ・OPEN Alliancelは、車載Ethernetを普及するための業界団体です。車載Ethernetの採用促進、相互接続性の確保のためのガイドラインや要件の整備、テスト仕様の策定や評価方法の整備に携わっています。



HFD-S2 SERIES Module Components, Terminal (Sleeve)

Ref : P12 HFD-U2 Inner Conductor Terminal detail.
(M)8230-5939 (F)8240-0697

Module / モジュール

(M) Dielectric upper 誘電体アッパー

Parts No.	6910-9331
Material	PBT
Color	Natural

(M) Dielectric lower 誘電体ロアー

Parts No.	6910-9330
Material	PBT
Color	Natural

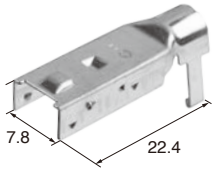
(F) Dielectric upper 誘電体アッパー

Parts No.	6910-8971
Material	PBT
Color	Natural

(F) Dielectric lower 誘電体ロアー

Parts No.	6910-8970
Material	PBT
Color	Natural

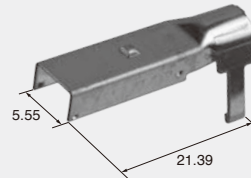
(M) Outer conductor terminal upper 外導体端子アップパー



Parts No. **8230-6306**

Material Brass(Tin-plated)
黄銅 (Snめっき)

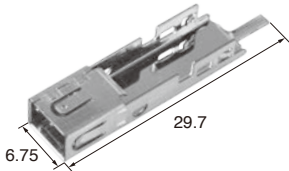
(F) Outer conductor terminal upper 外導体端子アップパー



Parts No. **8240-0859**

Material Brass(Tin-plated)
黄銅 (Snめっき)

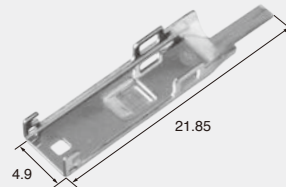
(M) Outer conductor terminal lower 外導体端子ロアー



Parts No. **8230-6307**

Material Heat-resistant copper alloy
(Tin-plated)
耐熱銅合金 (Snめっき)

(F) Outer conductor terminal lower 外導体端子ロアー

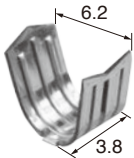


Parts No. **8240-0860**

Material Brass(Tin-plated)
黄銅 (Snめっき)

Sleeve スリーブ

(M)/(F) Shared 共通部品



Parts No. **8110-5606**

Material Brass(Tin-plated)
黄銅 (Snめっき)

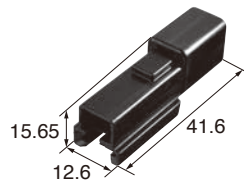
HFD-S2 SERIES Housing for STANDARD

Material : PBT

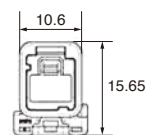
1-pair (Shared with) HFD U2 series 共通部品 (Key B)

Color Black

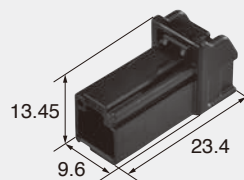
(Note) Bracket size 9mm



●Mating face

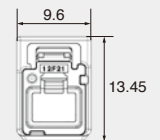


M (6910-8309)



F (6910-8253)

●Mating face



PCB Connector part No. 6910-8975

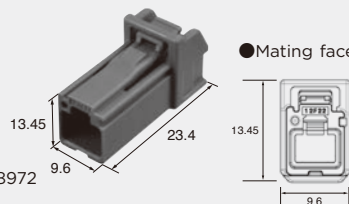
Color Black

1-pair

(Key C)

F(6099-0578)

●Mating face



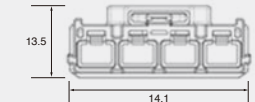
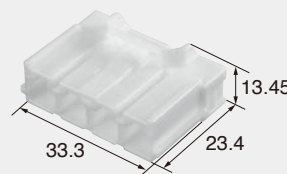
PCB Connector part No. 6910-8972

Color Gray

4-pair (Shared with) HFD U2 series 共通部品 (Key A)

F (6910-8298)

●Mating face



PCB Connector part No. 6910-9333

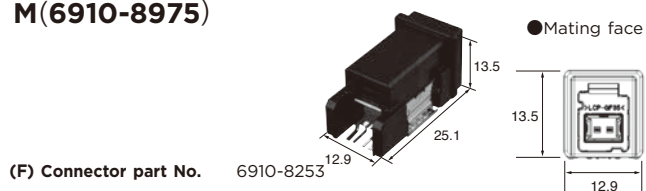
Color Natural

HFD-S2 SERIES for PCB

Material : LCP(Housing body)

1-pair Horizontal SMT 水平タイプ (Key B)

M(6910-8975)

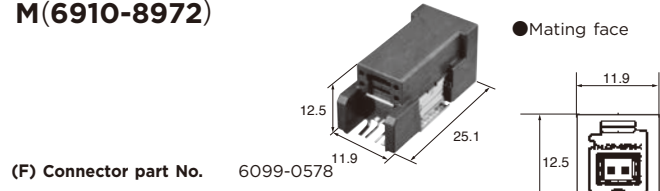


(F) Connector part No. 6910-8253

Color Black

1-pair Horizontal SMT 水平タイプ (Key C)

M(6910-8972)

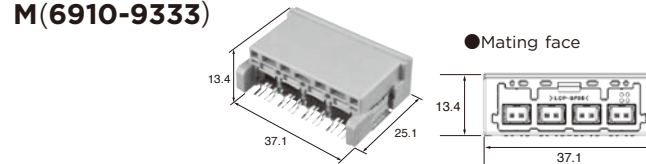


(F) Connector part No. 6099-0578

Color Gray

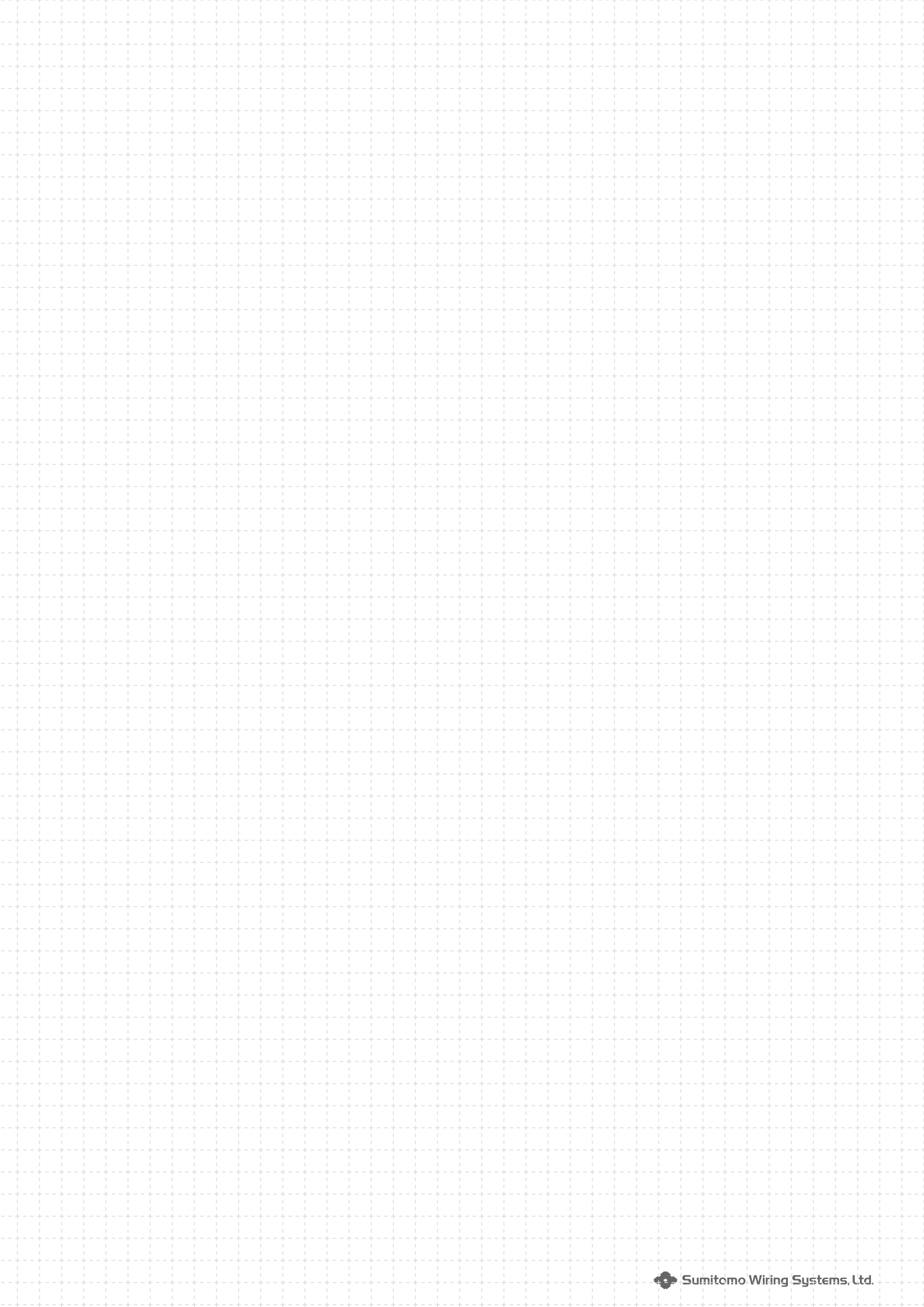
4-pair Horizontal SMT 水平タイプ (Key A)

M(6910-9333)



(F) Connector part No. 6910-8298

Color Natural





CAUTION

WARNING

- Do not exceed prescribed current to the connectors.
- Do not use a broken or cracked housing.
- Do not use a deformed or rusty terminal.

- 規定の電流値を超えて使用しないでください。
- 割れたりヒビが入ったハウジングは使用しないでください。
- 変形したり、錆びたターミナルは使用しないでください。



Which may result in overheating or fire.

発熱・発火の恐れがあります！

Precautions concerning the selection and use of connectors

- To select a suitable connector, please consult with our sales staff about operating environment, mounting conditions, and other information (e.g. unsealed type for indoor compartment use, sealed type for engine compartment use).
- The specifications, and performance of a connector may significantly vary depending on changes in variable elements in the operating environment, such as the number of ways, wire size, ambient temperature, etc.
- The specifications stated in this catalog applies to a single terminal, and is not guaranteed when the terminal is inserted into a housing. For detailed electrical characteristics of each product, see the “Specifications” of the relevant series.
- We have “Specifications” for connector performance and “Instruction Manuals” for connector usage, handling, and precautions, which are available for each connector series. Please be sure to read these in advance to select the appropriate connector and to use it correctly.
- For instruction on how to remove the terminal or details please refer to the instruction manual. Please consult with our sales staff when requesting applicable tools and jigs (terminal removal jigs, crimping dies, crimping machines, etc.).
- Some connector series require special attention during circuit checks, etc.
*For example, dedicated circuit check jigs must be used for “SL series” and “SL sealed series.”
- Although some connector specifications include drawings showing mating support, these drawings are provided only for reference. The manufacture of mating parts is not possible without consideration to dimensional tolerances, etc.
- This catalogue includes the parts that were designed and developed jointly with a customer and require prior approval before sales. Please contact our sales staff for details.
- Before using the product, please obtain a “customer drawing” “Specifications” “Instruction Manuals” from our sales staff. Please contact our sales staff for details.
- Product designs or specifications on this site may be subject to change without notice. Please understand that products on this site may be discontinued without notice.

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