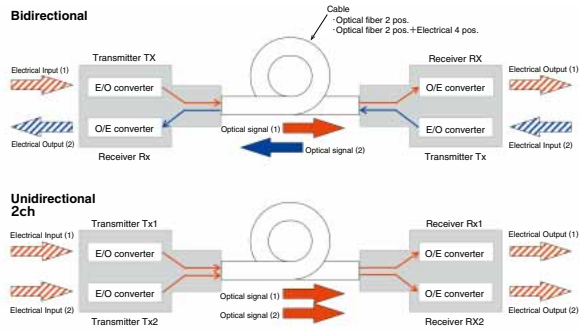
NEW

Active Optical Cable with Built-in E/O・O/E Converters Supporting 0.05-6.25Gbps/ch

BF4-IFC Series

Block diagram



Features

1. Optical transmissions achieved by simplified electrical connections

Optical signal transmission is accomplished with electronic connectors and has eliminated the need for cleaning the mating faces of traditional fiber optic connectors.

2. High-speed, signal transmissions with no EMI noise.

Optical signal transmissions rated up to 6.25Gbps are possible.
Since there is no EMI noise to contend with on the signal lines, system design time is reduced.

3. Supports bidirectional/unidirectional 2-channel transmission.

Can be designed as either a bidirectional or unidirectional 2-channel transmission system according to requirements.

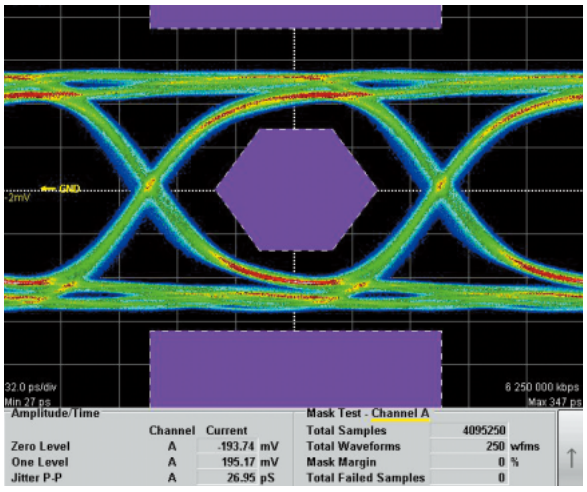
4. Also supports power supply/control signal transmission.

Can transmit power supply/control signals using metal hybrid cable.

5. The push-pull design enables easy removal and installation

Removal and installation are enabled by simplified operation, contributes to enhancing work efficiency.

Eye Diagram (Typical) : Transmission speed 6.25Gbps, Length 1m



Application

Control and transmission among components including Factory Automation equipment, medical devices measuring instruments, etc.

■Electrical properties

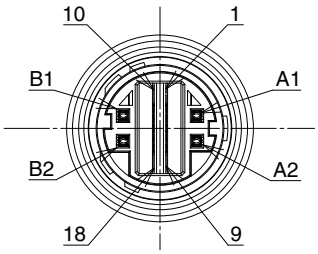
Common electrical properties		Min	Nominal	Max	Unit	Remarks
VDD voltage		3.0	3.3	3.6	V	Supplied to both ends separately
BD	Low	0	—	0.4	V	PCB mating undetected
	High	2.4	—	VDD voltage	V	PCB mating detected

Electrical properties on the transmitter side (Tx)		Min	Nominal	Max	Unit	Remarks
Transmission speed (8B/10B)		0.05	—	6.25	Gbps	—
ACTIVATE	Low	0	—	0.4	V	Sleep mode
	High	1.0	—	VDD voltage	V	Active mode
DIN common voltage		150	—	340	mVp	—
DIN differential voltage		200	—	1400	mVp	—

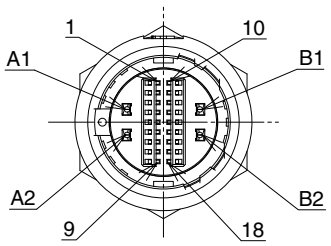
Electrical properties on the receiver side (Rx)		Min	Nominal	Max	Unit	Remarks
Transmission speed (8B/10B)		0.05	—	6.25	Gbps	—
VDD voltage		2.25	3.3	3.6	V	—
DOUT common voltage		160	—	330	mVp	—
DOUT differential voltage		160	—	330	mVp	—
SD	Low	0	—	0.4	V	Signal detected
	High	2.4	—	VDD voltage	V	Signal undetected
Imon		20.0	—	—	uA	For internal inspection

<Pin assignment diagram>

Plug side



Receptacle side



<Pin Function>

Pin No.	Symbol		
	TX/RX	TX/TX	RX/RX
1	BD	BD	BD
2	GND	GND	GND
3	DIN+	DIN1+	DOUT1−
4	DIN−	DIN1−	DOUT1+
5	GND	GND	GND
6	ACT	ACT1	SD1
7	NC	NC	Imon1
8	VDD	VDD	VDD
9	VDD	VDD	VDD
10	GND	GND	GND
11	GND	GND	GND
12	DOUT+	DIN2−	DOUT2+
13	DOUT−	DIN2+	DOUT2−
14	GND	GND	GND
15	SD2	ACT2	SD2
16	Imon	NC	Imon2
17	GND	GND	GND
18	GND	GND	GND
A1,A2, B1,B2	User I/O	User I/O	User I/O

<Discriptions of symbol>

Symbol	Type	Details
VDD	Power	Power supply for internal BF4MC (DC+3.3V)
GND	Ground	—
DIN (n) +	Input	Differential data input for TX (n) (Recommend 8B10B encoding)
DIN (n) −	Input	
ACT (n)	Input	TX (n) mode contorol High voltage : Active mode Low voltage : Sleep mode
DOUT (n) +	Output	Differential data output from RX (n) (Output level : SLVS-200)
DOUT (n) −	Output	
SD (n)	Output	Status of RX (n) signal detected High voltage : Signal undetected Low voltage : Signal detected
Imon (n)	Output	Not connected (inspection pin)
BD	Output	Status of PCB mating detected High voltage : Mating detected Low voltage : Mating undetected
NC	—	Not connected
User I/O	Input/Output	12V Max, 1A Max/pin (Note 2)

Note 1 : For details, see hirose's technical specification ETAD-K0745
Note 2 : Please use A1-A2 and B1-B2 in combination at +/−.
Note 3 : "(n)" is a symbol indicating the ch in case of 2-ch type.
E.g "RX2" is the receiver of the ch2.

■Materials / Finish

●Plug harness

Component	Materials	Finish	Remarks
Main body	Zinc alloy	Nickel plated	—
	Brass	Nickel plated	—
Contact	Phosphor bronze	Gold plated	—
Insulator	LCP	—	UL94V-0
Internal board	FR4	Gold plated (card edge terminal section)	—
O/E･E/O conversion parts	—	—	Our BF4MC Series
Cable tightening parts	PA, PPS	—	UL94V-0
Optical/electric composite cable	Quartz glass, tinned copper wire, fluorine resin, PVC etc.	—	Outer diameter (ϕ7.5) ; Allowable bending radius 150mm
Others	Silicon rubber etc.	—	—

●Receptacle

Component	Materials	Finish	Remarks
Main body	Zinc alloy	Nickel plated	—
Contact	Copper alloy	Gold plated	—
Insulator	PBT	—	UL94V-0
Washer	Phosphor bronze	Nickel plated	—
Nut	Brass	Nickel plated	—
Others	Stainless steel	—	—

■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.

【Plug harness】

BF4-IFC - 001 - 01 - 1M
❶ ❷ ❸ ❹

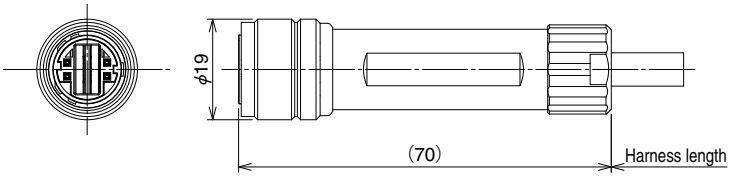
❶Series name
❷Indicates the type of OE conversion. 001 : Bidirectional, 002 : Unidirectional 2ch
❸Symbol indicating the cable type used 01 : Optical 2 pos./electric 4 pos. hybrid cable
❹Cable length (m)

【Receptacle】

BF4-IFC - R - 1 - DSA
❶ ❷ ❸ ❹

❶Series name
❷Indicates receptacle
❸Indicates the type of OE conversion. 1 : Bidirectional 2 : Unidirectional 2ch type transmitter side 3 : Unidirectional 2ch type receiver side
❹ Indicates PCB attachment outline. DSA : Straight type

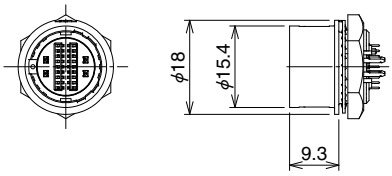
■Dual-end plug harness



Part No.	HRS No.	Length	Cable type	Remarks
BF4-IFC-001-01-1M	831-1110-0	1m	Optical 2 pos./ electric 4 pos.	Optical signal : Bidirectional type
BF4-IFC-001-01-5M	831-1110-0 05	5m		
BF4-IFC-001-01-10M	831-1110-0 10	10m		
BF4-IFC-001-01-20M	831-1110-0 20	20m		
BF4-IFC-002-01-1M	831-1147-0	1m		Optical signal : 2ch unidirectional type
BF4-IFC-002-01-5M	831-1147-0 05	5m		
BF4-IFC-002-01-10M	831-1147-0 10	10m		
BF4-IFC-002-01-20M	831-1147-0 20	20m		

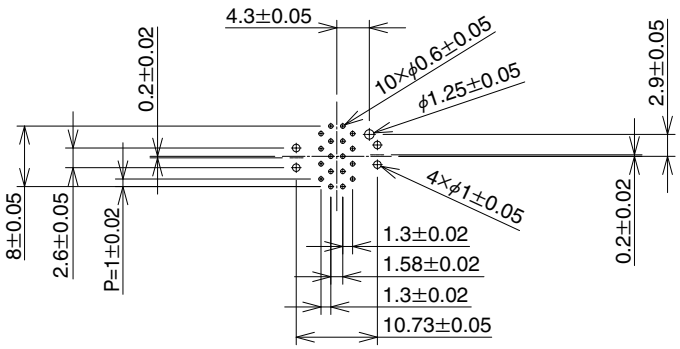
✻Please contact Hirose for lengths other than shown in the Table.

■Receptacle

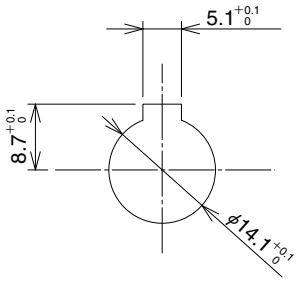


Part No.	HRS No.	Remarks
BF4-IFC-R-1-DSA	831-1004-0	Optical signal : Complies with bidirectional type plugs
BF4-IFC-R-2-DSA	831-1005-0	Complies with unidirectional 2ch type transmitter side plugs
BF4-IFC-R-3-DSA	831-1006-0	Complies with unidirectional 2ch type receiver side plugs

Recommended PCB attachment dimension
Recommended PCB thickness : 1.0 mm



Recommended panel cut-out dimension
Recommended panel thickness : 0.8 - 1.5mm



The panel needs to be installed by tightening hexagonal nuts from the back side.

◆Evaluation board

Evaluation boards are available to check the operating characteristic of the plug harness.
Please contact Hirose for details.

◆Notes on use of the connector

1. Do not remove or insert the connector in energized state.

Please insert or remove the plug while the power supply is turned off.
Insertion/withdrawal of live wire may cause damage.

2. Use the connector in the completely locked state only.

3. Handling precautions of the fiber optic cable.

This products contain the optical fiber.
Care should be taken when handling the optical fiber to avoid breaking of the cable made from glass.
Loose glass particles may cause in juries.
When routing the fiber optic cable :
a. DO NOT pull the cable with a force exceeding the recommended tensile force of 100N max.
b. DO NOT twist the cable.
c. DO NOT apply excessive tensile forces when routing around the corners.
d. DO NOT bend the cable at less than the recommended bend radius 150mm.

◆Notes on handling of the product

(Notes on change of information)
・The content of this document including the information regarding the connector (hereafter, the Product) is subject to change without prior notice.

(Prohibition of reproduction)
・No part of this document may be copied or reproduced without prior written consent of Hirose Electric Co., Ltd. (hereafter, Hirose). Even if written consent of Hirose is obtained, it is prohibited to amend any part of this document and copy or reproduce it. Hirose shall assume no obligation or liability in connection with such amended information or reproduction.

(Responsibilities for design safety)
・Hirose shall assume no responsibilities for the support for the application of the Product or the product design of the customer. The customer shall be responsible for the product and application of the customer in which the Product is used. The customer shall take appropriate design and operational safety measures in order to minimize the potential risks predicted for the product and application of the customer in which the Product is used.

(Responsibilities for determination of the suitability)
・When using the Product, the customer shall ensure safe design at his/her own responsibility so that malfunction or failure of the Product would never cause an infringement on the life, body or property. For design or use of the Product, make sure to refer to the materials (including the catalog, specifications, and design note) and follow the same. When using information including the product data provided in the document, technical data or circuit examples shown in the figures and tables, the customer shall evaluate the information on the customer's product and determine the suitability at the customer's own responsibility.

(Responsibilities for specific applications)
・Make sure to consult with our sales representative in advance when considering of use for specific applications that require extremely high quality and reliability (e.g. nuclear equipment, aerospace systems, transportation equipment and various safety related equipment).

(Prohibition of replication)
・Do not disassemble reverse-engineer, modify, analyze or replicate the Product.

(Prohibition of application to prohibited products)
・The Product must not be used for any product that manufacture, use and sale of which is prohibited by the domestic or international laws, regulations and ordinances.

(Notes on the guarantee and license)
・The technical data provided in the materials of the Product is intended to describe the representative behaviors and application of the Product. It is not to guarantee the intellectual property rights or any other rights of Hirose nor a third party and not to grant the license.

(Notes on the warranties for the contract)
・Unless otherwise provided in a written contract or other documents (specifications) agreed between the customer and Hirose, Hirose makes no warranties of any kind (including, but not limited to, warranties of the function and operation, warranties of merchantability, warranties of suitability for a specific application or purpose and warranties of correctness of the information).

(Prohibition of weapons of mass destruction and military purposes)
・It is prohibited to use the Product or the technical information contained in this document for any military purposes, including but not limited to, development of weapons of mass destruction.

(Notes on export)
・To export the Product to other countries, the exporter shall conduct the applicability determination based on Foreign Exchange and Foreign Trade Act of Japan. If you wish to have the applicability determination sheet issued by Hirose, contact our sales representative. Note that in the export arrangement, the customer shall be an exporter and responsible for compliance with all the applicable laws and regulations and terms and conditions of the agreement with Hirose.

◆Notes on use of the product

(Notes on the specification range)
・Using the Product under conditions beyond the specification range (for voltage, current and temperature) provided in this document may result in an accident (including ignition, heat generation, and smoking). Confirm the document thoroughly and make sure to use the Product within the specification range.

(Notes on the laser)
・The laser beam is emitted from the end-face of the optical fiber in operation. It may cause eye injury or loss of sight if it enters the eyes. Do not stare directly into the end-face of the optical fiber.The laser beam is emitted from the VCSEL in operation. It may not be visible depending on its wavelength, but nonetheless it may cause eye injury or loss of sight if the laser beam or its reflected beam enters the eyes. Do not stare (look into) the laser beam directly.

(Notes on fracture of the optical fiber)
・In case of fracture of the optical fiber used in the Product, turn off the power immediately.
In addition, Use care when handling it to avoid injury from fractured parts or fragments.

(Notes on use of GaAs)
・The Product is equipped with a semiconductor within the connector and contains gallium arsenide (GaAs).

(Notes on the environment including gases)
・Avoid the use of the Product in gas environments with chlorides or sulfides. The Product may deteriorate and features may be affected.

(Notes on storage)
・Store the Product out of corrosive substances, corrosive gases, high temperature and humidity or direct sunlight. Do not apply excessive pressure or vibration to the Product. It may cause deterioration, deformation, damage or failure of the Product.

(Notes on resin molded part)
・The resin molded part of the Product may contain black spots or its color may be slightly different, but that has no effect on the product performance.

USA:
HIROSE ELECTRIC (U.S.A.), INC. HEADQUARTERS CHICAGO OFFICE
2300 Warrenville Road, Suite 150,
Downers Grove, IL 60515
Phone : +1-630-282-6700
http://www.hirose.com/us/

USA:
HIROSE ELECTRIC (U.S.A.), INC. SAN JOSE OFFICE
2841 Junction Ave, Suite 200
San Jose, CA. 95134
Phone : +1-408-253-9640
Fax : +1-408-253-9641
http://www.hirose.com/us/

USA:
HIROSE ELECTRIC (U.S.A.), INC. DETROIT OFFICE (AUTOMOTIVE)
17197 N. Laurel Park Drive, Suite 253,
Livonia, MI 48152
Phone : +1-734-542-9963
Fax : +1-734-542-9964
http://www.hirose.com/us/

THE NETHERLANDS:
HIROSE ELECTRIC EUROPE B.V.
Hogehillweg #8 1101 CC Amsterdam Z-O
Phone : +31-20-6557460
Fax : +31-20-6557469
http://www.hirose.com/eu/

GERMANY:
HIROSE ELECTRIC EUROPE B.V. GERMAN BRANCH
Schoenbergstr. 20, 73760 ostfildern
Phone : +49-711-456002-1
Fax : +49-711-456002-299
http://www.hirose.com/eu/

GERMANY:
HIROSE ELECTRIC EUROPE B.V. NUREMBERG OFFICE
Neumeyerstrasse 22-26, 90411 Nurnberg
Phone : +49-911 32 68 89 63
Fax : +49-911 32 68 89 69
http://www.hirose.com/eu/

GERMANY:
HIROSE ELECTRIC EUROPE B.V. HANOVER OFFICE
Bayernstr. 3, Haus C 30855 Langenhagen, Germany
Phone : +49-511 97 82 61 30
Fax : +49-511 97 82 61 35
http://www.hirose.com/eu/

FRANCE:
HIROSE ELECTRIC EUROPE B.V. PARIS OFFICE
Regus La Garenne Colombes,Place de La Belgique,
71 Boulevard National La Garenne Colombes, 92250, France
Phone : +33 (0) 1 7082 3170
Fax : +33 (1) 7082 3101
http://www.hirose.com/eu/

UNITED KINGDOM:
HIROSE ELECTRIC EUROPE BV (UK BRANCH)
4 Newton Court, Kelvin Drive, Knowlhill,
Milton Keynes, MK5 8NH
Phone : +44-1908 202050
Fax : +44-1908 202058
http://www.hirose.com/eu/

CHINA:
HIROSE ELECTRIC (SHANGHAI) CO., LTD.
1601, Henderson Metropolitan, NO.300, East Nanjing Road, Huangpu District, Shanghai, China 200001
Phone : +86-21-6391-3355
Fax : +86-21-6391-3335
http://www.hirose.com/cn/

CHINA:
HIROSE ELECTRIC (SHANGHAI) CO.,LTD. BEIJING BRANCH
A1001, Ocean International Center, Building 56# East 4th Ring Middle Road, ChaoYang District, Beijing, 100025
Phone : +86-10-5165-9332
Fax : +86-10-5908-1381
http://www.hirose.com/cn/

CHINA:
HIROSE ELECTRIC TECHNOLOGIES (SHENZHEN) CO., LTD.
Room 09-13, 19/F, Office Tower Shun Hing Square, Di Wang Commercial Centre, 5002 Shen Nan Dong Road, Shenzhen City, Guangdong Province, 518008
Phone : +86-755-8207-0851
Fax : +86-755-8207-0873
http://www.hirose.com/cn/

HONG KONG:
HIROSE ELECTRIC HONGKONG TRADING CO., LTD.
Room 1001, West Wing, Tsim Sha Tsui Centre, 66 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong
Phone : +852-2803-5338
Fax : +852-2591-6560
http://www.hirose.com/hk/

TAIWAN:
HIROSE ELECTRIC TAIWAN CO., LTD.
103 8F, No.87, Zhengzhou Rd., Taipei
Phone : +886-2-2555-7377
Fax : +886-2-2555-7350
http://www.hirose.com/tw/

KOREA:
HIROSE KOREA CO.,LTD.
250, Huimanggongwon-ro, Siheung-si,
Gyeonggi-do, Korea, 15083
Phone : +82-31-496-7000 or 7124
Fax : +82-31-496-7100
http://www.hirose.co.kr/

SINGAPORE:
HIROSE ELECTRIC SINGAPORE PTE. LTD.
10 Anson Road #26-16, International Plaza 079903, Singapore
Phone : +65-6324-6113
Fax : +65-6324-6123
http://www.hirose.com/sg/

INDIA:
HIROSE ELECTRIC SINGAPORE PTE. LTD. DELHI LIAISON OFFICE
Office NO.552, Regus-Green Boulevard, Level5, Tower C, Sec62, Plot B-9A, Block B, Noida, 201301, Uttar Pradesh, India
Phone : +91-12-660-8018
Fax : +91-120-4804949
http://www.hirose.com/sg/

INDIA:
HIROSE ELECTRIC SINGAPORE PTE. LTD. BANGALORE LIAISON OFFICE
Unit No-403, 4th Floor, No-84, Barton Centre, Mahatma Gandhi (MG) Road, Bangalore 560 001, Karnataka, India
Phone : +91-80-4120 1907
Fax : +91-80-4120 9908
http://www.hirose.com/sg/

MALAYSIA:
PENANG REPRESENTATIVE OFFICE
1-21-01, Suntech @ Penang Cybercity (1164), Lintang Mayang Pasir 3,11950, Bayan Baru, Penang, Malaysia.
Phone : +604-619-2564
Fax : +604-619-2574
http://www.hirose.com/sg/

THAILAND:
BANGKOK OFFICE (REPRESENTATIVE OFFICE)
Unit 4703, 47th FL., 1 Empire Tower, South Sathorn Road, Yannawa, Sathorn, Bangkok 10120 Thailand
Phone : +66-2-686-1255
Fax : +66-2-686-3433
http://www.hirose.com/sg/

Creative Links to World Electronics ®

HRS

HIROSE ELECTRIC CO.,LTD.
2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN
TEL: +81-45-620-3526 Fax: +81-45-591-3726
http://www.hirose.com
http://www.hirose-connectors.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Fibre Optic Connectors ***category:***

Click to view products by Hirose ***manufacturer:***

Other Similar products are found below :

0004700001 6100-R 6313 F709722200 F709730000 F718183204 F727403500 F727752800 8119 9440F20-27S-190 944-120-6001 9441F10SL-3S 9444W28-21S 9444W36-10S 9446F10SL-4S 9446W20-16S 953-101-5310-P 954-101-57202B A0270169 12-9122 12-5702 AX101713 AX102420 AX103923 AX104024 AX104193 AX104230 AX104562 AX105203-B25 AX105205-S1 EHSC2M 17-300800 181-011-126 181-011-S 181-057-126 HRFC-R2(40) NKSOPBUY 20500002116 2064996-1 20800001065 2170 9132 2612 2620 9291 9440F16-10S 9440F20-18S 9446F16-10S-190 953-106-50231 953-120-5003