



## IFC-FDC

RS-232/422/485 Daisy Chain Fiber Converter

## IFC-Serial

RS-232/422/485 Fiber Converter



These converters are capable of selecting interface modes for connection to RS-232 (3 wire), RS-485 (2 wire, half duplex) or RS-422/485 (4 wire, full duplex) and feature a three-way communication plus a second independent RS-232 communication channel. Additionally, the terminal block offers an alarm relay contact and two redundant DC power inputs. IFC Series converters are also available in two operating temperature ranges, a standard -10° to 60°C commercial temperature range and an extended -40° to 75°C range. With all these specifically designed features, IFC Series are reliable and ideal solutions for keeping your industrial automation applications running smoothly and continuously even in harsh environments. The product is protocol transparent that can be applied to RS485/422/232 networks, such as MODBUS to achieve reliable network (See Figure 2).

### Features

- Supports 2 fiber link (IFC-FDC)
- Supports 1 fiber link (IFC-Serial)
- Supports dual channel communication, including Triple-Way communication, and Two-Way communication
- Extend serial transmission distance up to 2km, 30km, 60km
- Supports several topology, cable redundancy(Figure 3), ring redundancy (Figure 4), daisy chain (Figure 5), point to point (IFC-FDC)
- Supports point to point (Figure 7) (IFC-Serial)
- Redundant dual power inputs (12/24/48VDC)
- Protocol transparent, suitable for all serial (RS485/422/232) transmission protocol, such as Modbus...
- Baudrate up to 1024kpbs for serial port
- Auto baudrate, no need to set baudrate
- 2.5KV isolation for serial port (RS485/422/232)
- UL60950-1, CE, FCC, heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Supports relay output for power or link failure warning
- Hardened housing with IP30 protection
- Fanless and DIN-Rail design for harsh industrial environment
- Adjustable pull high/low resistor and terminator for RS-422/485 transmission

### Specifications

<b>FieldBus Protocol</b>	Protocol transparent	Protocol applicable to all operations available on RS485/422/232, such as Modbus,...	
<b>Data Flow</b>	Dual Channel Communication	Both of Triple-Way and Two-Way Communication Way (Figure 1 or 6)	
<b>Optical Interface</b>	Connector	SC, ST	
	Fiber Port	2 fiber ports (IFC-FDC) 1 fiber port (IFC-Serial)	
	Fiber Type	MM 2km, SM 30km, 60km Bidi 20KM	
	Wavelength	MM 1310nm, SM 1310 Bidi: Mode A : TX1310nm/RX1550nm Mode B : TX1550nm/RX1310nm	
	Point to Point Transmission	Full duplex	
	Ring Transmission	Full duplex, self-healing operation	
<b>Fiber port Topology</b>	Cable redundancy(Figure 3), ring redundancy(Figure 4), daisy chain(Figure 5), point to point (IFC-FDC) Point to point(Figure 7) (IFC-Serial)		
<b>Electrical Interface</b>	Serial Port Connector	RS-232(DB9), RS-422/RS-485(5 pin terminal block) RS-485 : 4, 2 wires, RS-422 : 4 wires	
	RS-485 direction	Automatically detection	
	Serial port Baudrate	50 to 1024kpbs Auto baudrate, no need to set baudrate	
	Serial port isolation	2.5KV isolation for serial signals EMC/noise isolation, to reduce mutual interference between serial port device	
	Pull high resistor	Selected by 10 position rotary switch	
	Pull low resistor	Selected by 10 position rotary switch	
	120 ohm terminator	Built-in 120 ohm terminator (Selected by Dip Switch)	
	<b>Environmental</b>	Operating Temperature	-10 ~ 60°C (IFC-FDC, IFC-Serial) -40 ~ 75°C (IFC-FDC-E, IFC-Serial-E)
		Storage Temperature	-40 ~ 85°C
Humidity		5 ~ 95% RH	

<b>LED Indications</b>	PWR1, PWR2, Alarm, Master, TD, RD, Fiber Link, Fiber2 Link (IFC-FDC only), Ring	
<b>Alarm Relay</b>	Alarm exists for power, fiber link or ring protection Relay output with carry capacity 1A @ 24VDC	
<b>Power</b>	Power Input	Redundant Dual Power 12, 24, 48 VDC (9.6 ~ 58VDC)
	Power Consumption	6W (IFC-FDC) 5W (IFC-Serial)
	Power Reversal Protection	Yes
	Over Current Protection : Signal Short Together Protected Terminal Block for Power and Alarm : Terminal Block : V1+, V1-, V2+, V2-, Alarm NC, Alarm COM, Alarm NO	
<b>Mechanical</b>	Water & Dust Proof	IP30 Protection, Fanless
	Dimensions	106 x 38.6 x 142.1mm (D x W x H)
	Mounting	DIN-Rail, or wall mounting (Optional)
	Weight	0.64kg (IFC-FDC) 0.63kg (IFC-Serial)
<b>Certification</b>	Safety	UL60950-1
	EMC	CE
	EMI	FCC Part 15 Subpart B Class A, CE
	Immunity for Heavy Industrial Environment	EN61000-6-2
	Emission for Heavy Industrial Environment	EN61000-6-4
	EMC (Electromagnetic Susceptibility) Protection Level	EN61000-4-2 ESD Level 3
		EN61000-4-3 RS Level 3
		EN61000-4-4 EFT Level 3
		EN61000-4-5 Surge Level 3
		EN61000-4-6 CS Level 3
	Free Fall	IEC 60068-2-32
	Vibration	IEC 60068-2-6
	Shock	IEC 60068-2-27
	Green	RoHS
MTBF	739,886 Hours (IFC-FDC)	
	847,029 Hours (IFC-Serial) (MIL-HDBK-217)	

## Application & Topology (IFC-FDC)

Figure 1 : Dual Channel Data Flow

Channel 1 : Triple Way  
Channel 2 : Two Way

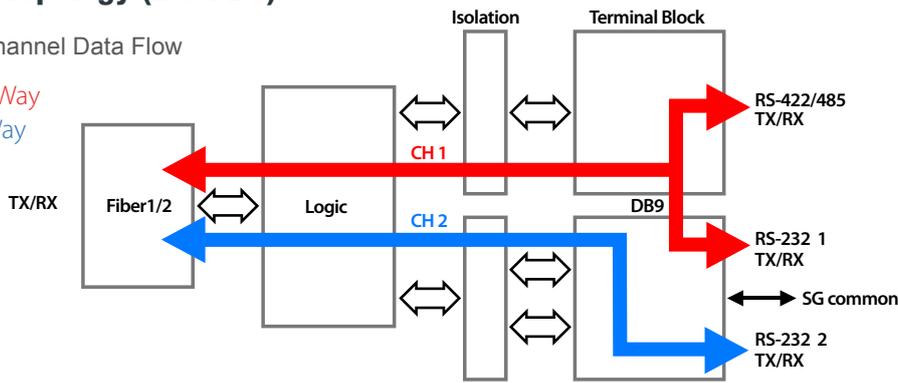
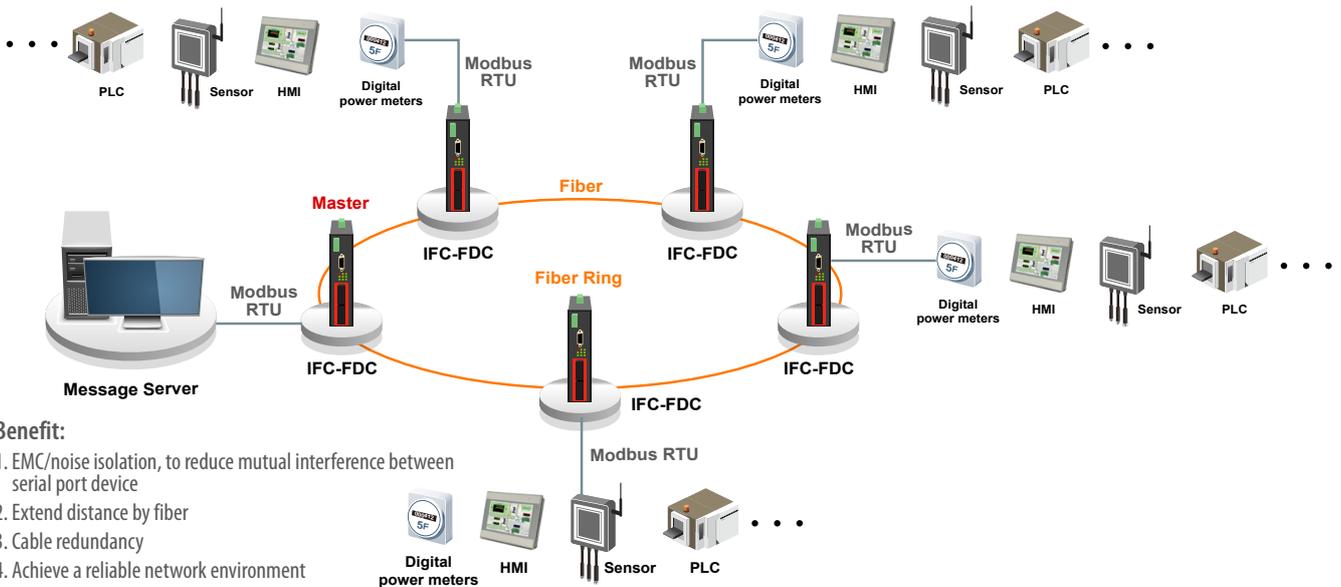


Figure 2 : Application for Modbus Network



**Benefit:**

1. EMC/noise isolation, to reduce mutual interference between serial port device
2. Extend distance by fiber
3. Cable redundancy
4. Achieve a reliable network environment

Figure 3 : Fiber Cable Redundancy topology & application

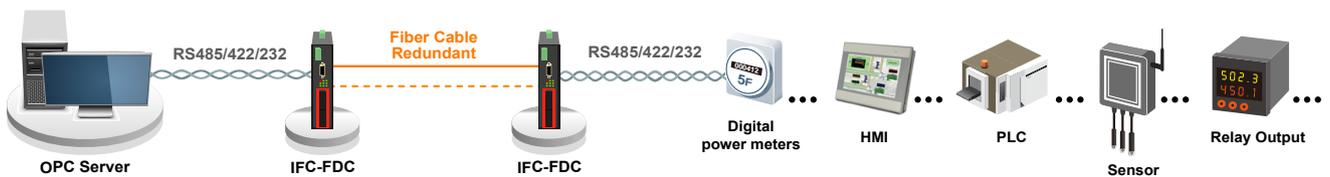
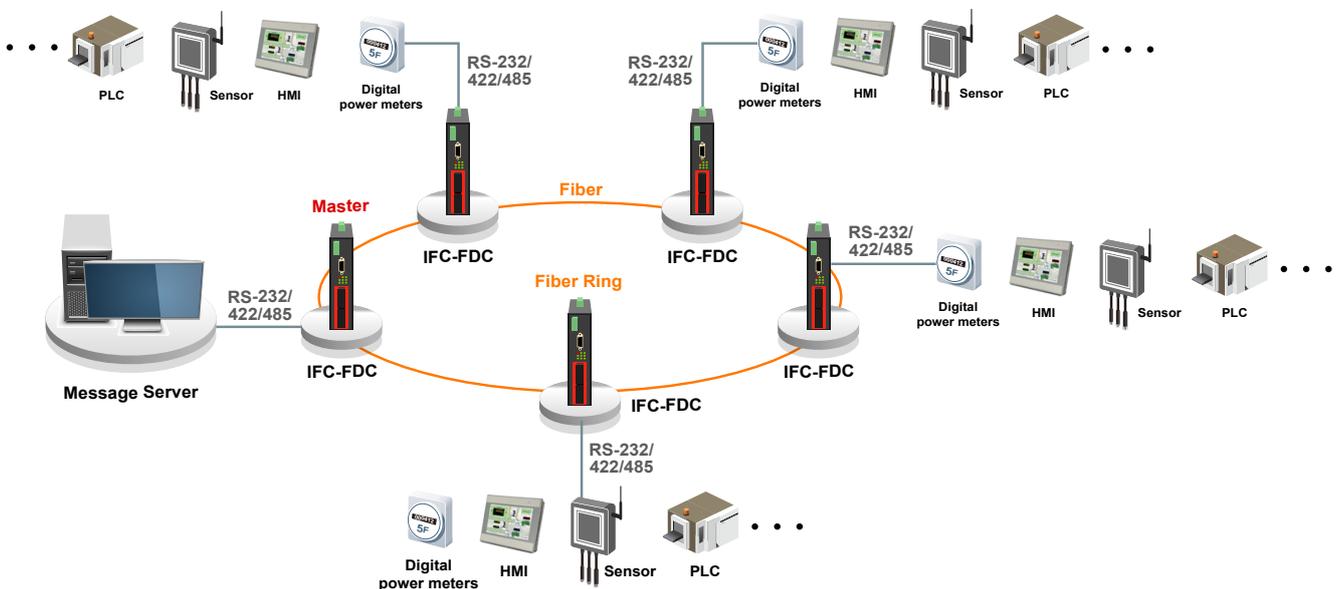
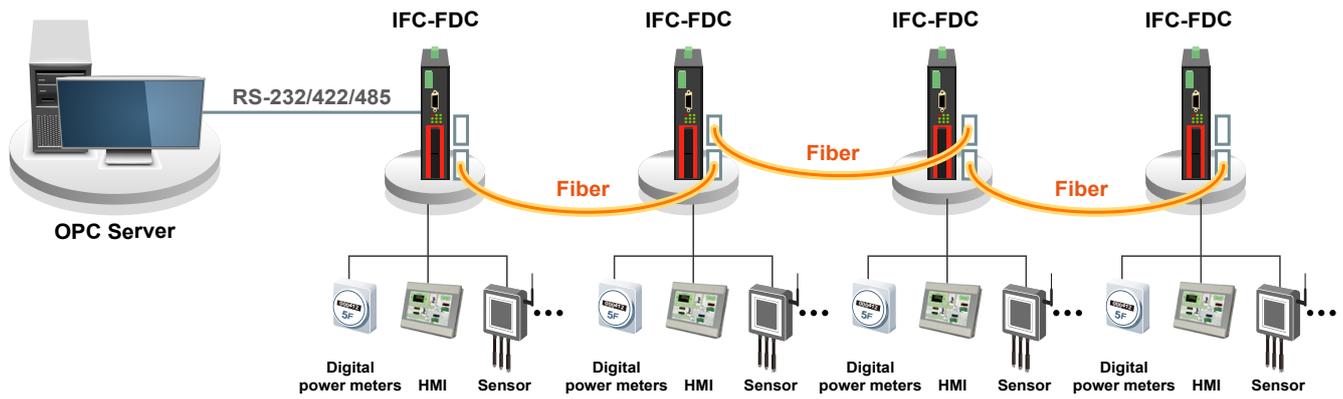


Figure 4 : Fiber Ring Redundancy topology & application



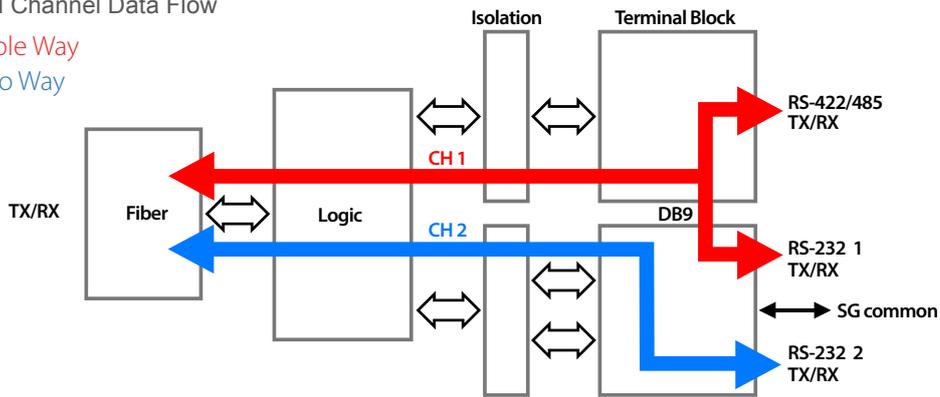
**Figure 5 : Fiber Daisy Chain topology & application**



## Application & Topology (IFC-Serial)

**Figure 6 : Dual Channel Data Flow**

Channel 1 : Triple Way  
Channel 2 : Two Way



**Figure 7 : Fiber Point to Point topology & application**

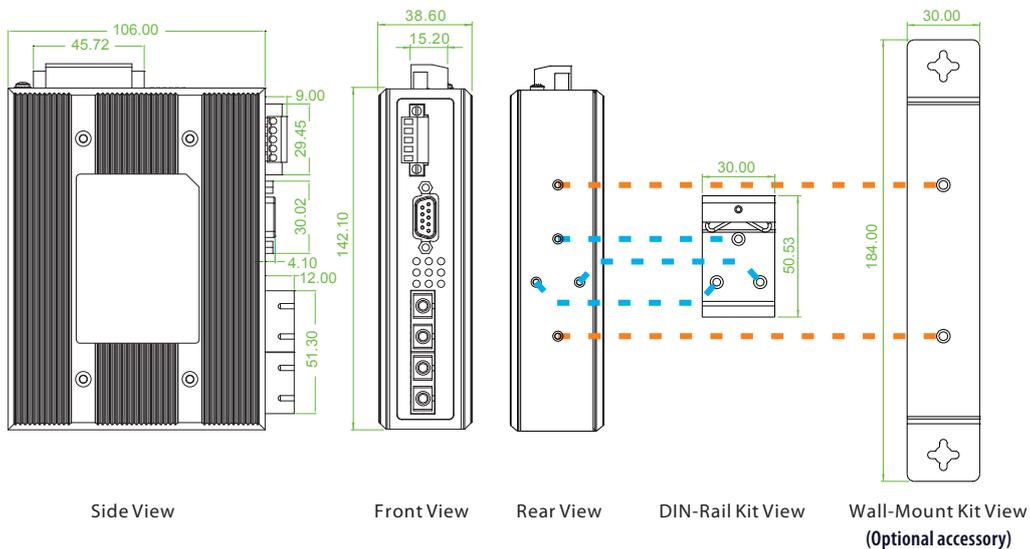


**Benefit:**

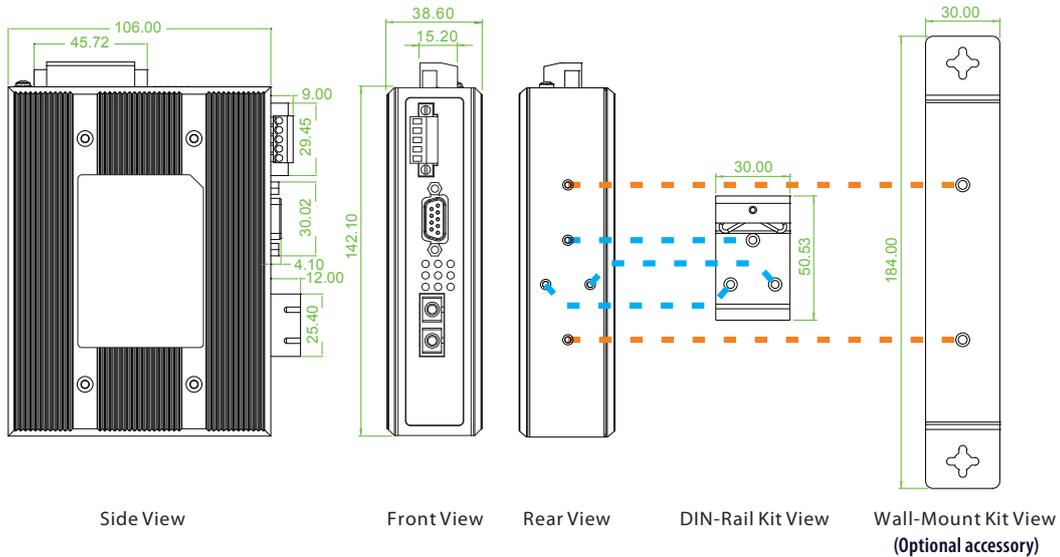
1. Reduce mutual interference between serial port device
2. Extend distance by fiber
3. Achieve a reliable network environment

## Dimensions

► IFC-FDC



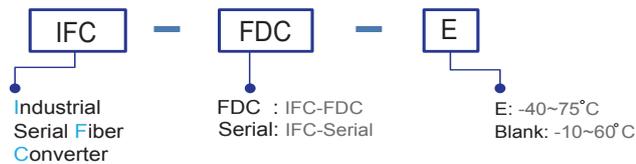
► IFC-Serial



Ordering Information

Model Name	Dual Channel	Serial (ModBus or others)			Fiber		Power Input	Certification				Operating Temperature
		RS232	RS422/485	Isolation 2.5KV	SC/ST	Daisy Chain		Redundant	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE	
IFC-FDC	V	2	1	V	2	V	12/24/48VDC	V	V	V	V	-10~60°C
IFC-FDC-E	V	2	1	V	2	V	12/24/48VDC	V	V	V	V	-40~75°C
IFC-Serial	V	2	1	V	1		12/24/48VDC	V	V	V	V	-10~60°C
IFC-Serial-E	V	2	1	V	1		12/24/48VDC	V	V	V	V	-40~75°C

Model Naming Rule



Connector Type	Connectivity Distance
SC,ST	002: M/M 2km 030: S/M 30km 060: S/M 60km 020AB: 20KM Bidi (20KM 1x mode A + 1x Mode B) (for IFC-FDC ) 020A: 20KM Bidi mode A (for IFC-Serial ) 020B: 20KM Bidi mode B (for IFC-Serial ) Mode A: TX 1310nm/RX1550nm Mode B: TX 1550nm/RX1310nm



Optional Accessories

■ Wall Mount kit Accessories

IND-WMK01	Wall Mount kit for Industrial product, 184 x 30mm
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Package List

- One device of the series
- Quickly installation guide
- Din Rail with screws
- Terminal block