

# Multiple Channels Analog/Digital/Serial RS232/485/422 to Fiber Optic Converter

## Manual

### Summary

This series converter is a type of multi-channel analog signal, the digital signal, and serial ports RS232/485/422 fiber conversion multiplexing equipment. It adopts the latest ARM chip, which is quite stable, reliable and low power, supports 1 ~ 4 channels the contact closure signal, 1 ~ 4 channel analog (voltage/current), 1 ~ 2 channel RS232/485 or a channel RS422 signal in the fiber alone or multiplexing transmission. It requires no change of the user communication protocol and solves the problem of electromagnetic interference, ground ring interference and thunder destroys, which greatly improve the signal reliability, safety and confidentiality, at the same time solve the problem of traditional mode of short distant transmission. Protection grade is IP30, strengthen cabinet, 35mmDIN guide installation, industrial standard DC24V power supply, possess the protection function of power polarity reverse connect.

### Specification

#### Analog signal interface:

- Voltage/Current analog signal (0-5)V/(0-10)V/(4-20)mA optional.
- Support 1 ~ 4 channel voltage/current analog signal.
- Reference accuracy 0.5% @ 25°C
- Update rates (1000-2000)Hz
- Signal resolution 10bit
- Time delay <10ms
- Voltage signal interface parameters: Voltage transmission rang (0-5) VDC or (0-10) VDC ;Input impendency 100KΩ
- (4-20 mA) electrical flow interface) parameters: Maximum load capacity 500Ω ,Input resistance 51Ω

#### Contact closure signal/TTL digital signal interface:

- Independent 1 ~ 4 channel input, 1~4 channel output.
- Dry contacts input: short circuit or open.
- Relay output form: FORM C(SPDT): Relay-operating time 6ms ;Relay release time 3ms ;Total switch time 10ms;Relay contacts capacity 1A/24VDC
- Transmission delay time: 2 ms
- The maximum working switch frequency: 50Hz

#### RS232、RS485 and RS422 interface:

- Four configuration mode: double channel RS232 / double channel RS485/One channel RS232 + One channel RS485/ One channel RS422
- Work rate set (by mfg only): 0~115.2Kbps at any rate

#### Optical Interface

- Wave length: multi-mode 850nm、1310 nm; single mode 1310 nm、1550nm
- Fiber type: multi-mode 50/125um、62.5/125um、100/140um;single mode 8.3/125 um、9/125um、10/125um
- Transmission distance: multi-mode 2km, single mode 20km.
- Fiber interface type: ST/SC/FC (optional); ST (standard configuration).

#### Power and protection

- Power: Industrial standard24V (+/-5%) power supply, With power polarity and reverse connect protection
- 5-pin Industrial Pluggable Screw Terminal

#### Mechanical

- Dimensions: 136mm×54mm×106mm (H×W×D)
- Casing: IP30 protection, Metal case

- Installation: 35mmDIN-Rail, Wall Mounting.
- Weight:800g

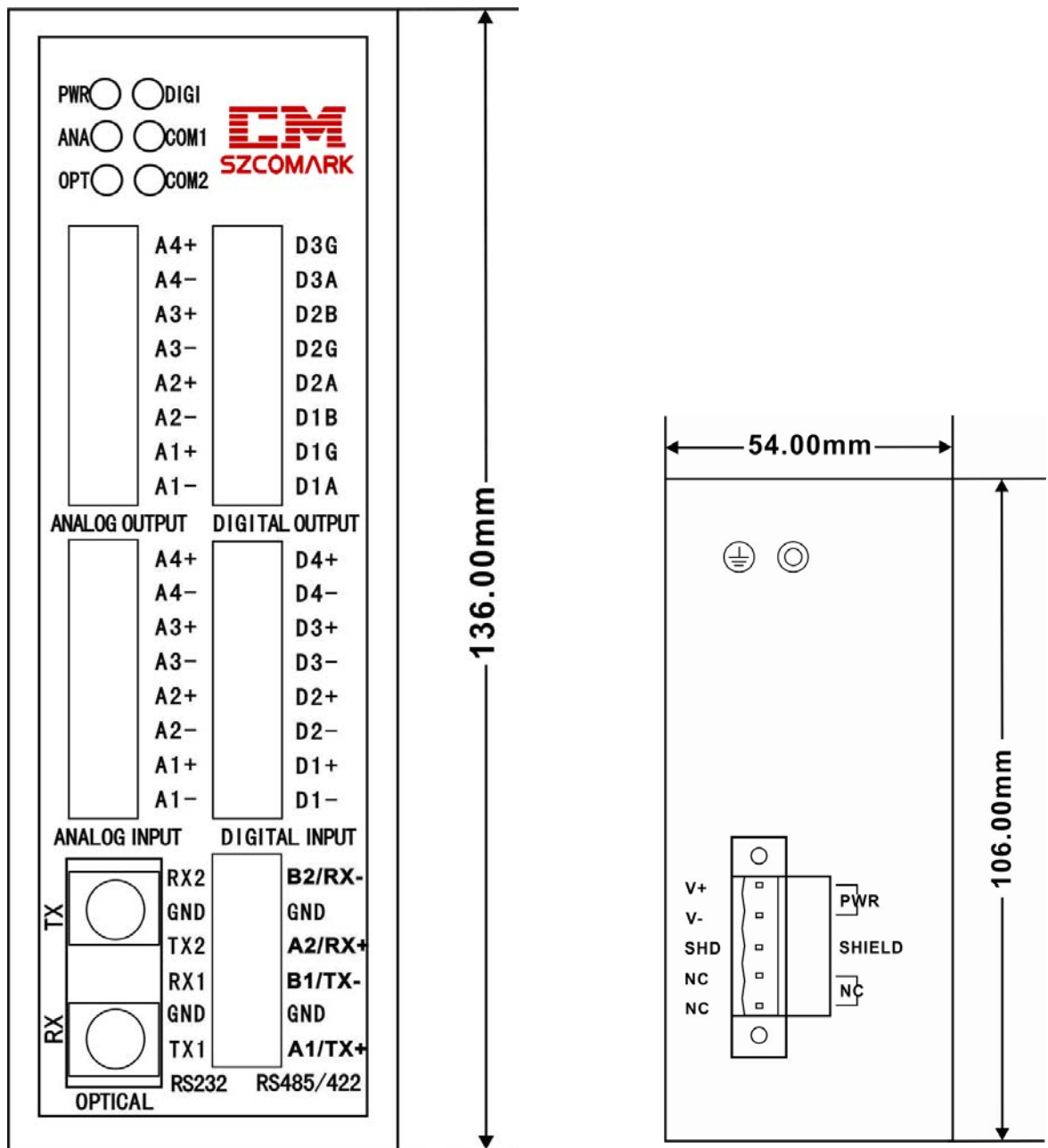
**Environmental**

- Operating Temperature:-40℃ to 75℃
- Storage Temperature: -40℃ to 85℃
- Ambient Relative Humidity: ≤90% (non-condensing)

**Warranty**

- Warranty period : 5 years

**Overall Dimension**



Front view

Top view

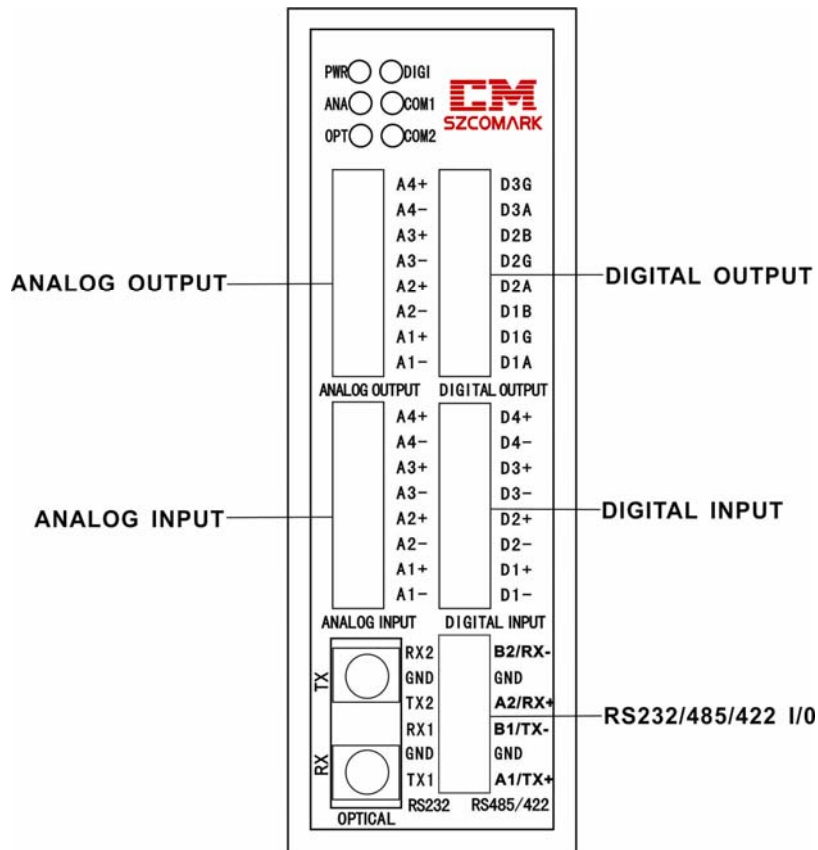
**LED Indicators**

LED	Description	Function
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PWR	Power indicator	Power on when work normally.
ANA	Analog channels (current, voltage) state indicator	<ol style="list-style-type: none"> <li>1. Off--no analog signal (I/V) input or output.</li> <li>2. Blinks--when there are input/output channels and its values are in the normal range between (4-20 mA / 0 – 5V/ 0-10V).</li> <li>3. On--when there are input/output channels and its values are over the normal range.</li> </ol>
OPT	No optical and data receiving indicator	<ol style="list-style-type: none"> <li>1. On—optical module no receiving channel or abnormal.</li> <li>2. Blinks—optical module receiving channel normal and has data receiving.</li> <li>3. Off—optical module receiving channel normal, but no data receiving.</li> </ol>
DIGI	Digital channel receiving indicator (dry contact or TTL signal)	<ol style="list-style-type: none"> <li>1. Off—the device has no digital signal input function.</li> <li>2. On—the device has digital signal input function.</li> </ol>
COM1-2	Serial port state indicator	<ol style="list-style-type: none"> <li>1. Off—no data receiving on corresponding serial port.</li> <li>2. On—receiving date on corresponding serial port.</li> </ol>

### Analog/digital/serial

This series product can choose 1 ~ 4 chs analog signal, 1 ~ 4 chs digital signal, 1 ~ 2 chs serial signals independently using or division multiplexing, which realize one-way or two-way optical fiber transmission. To describe the direction of signal transfer for convenience, it makes artificial distinction between optical transmitter and optical receiver. The equipment should match with each other and every port must connect with the right one correspondingly when using. The factory should arrange the production according to the goods requirement and the right channel order named 1, 2, 3, and 4.

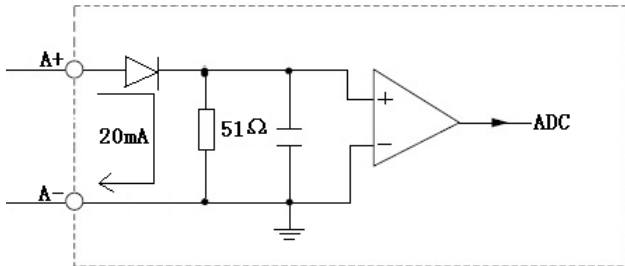


### Analog signal (Voltage or current) interface

**Note: analog interface is composed of precision electronic components, wiring errors or continuous overload input, which will cause permanent damage to device.**

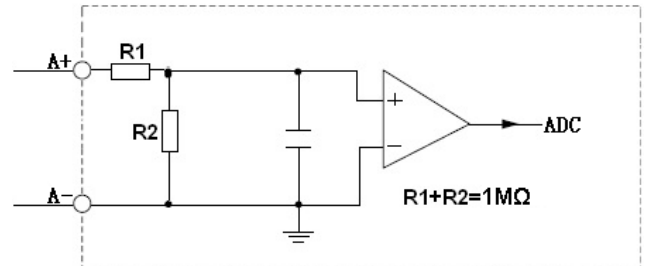
The input signals in this analog transmission channel through the optical fiber transmission, will be reductive out in the channel corresponded to the analog output interface.

- Each channel for the analog inputs can select three signal modes, including (4-20) mA, (0-5) VDC, and (0-10) VDC input. Ai - is the reference earth wire for each input signal, while Ai + is the positive signal wire for each input signal.



(4~20) mA

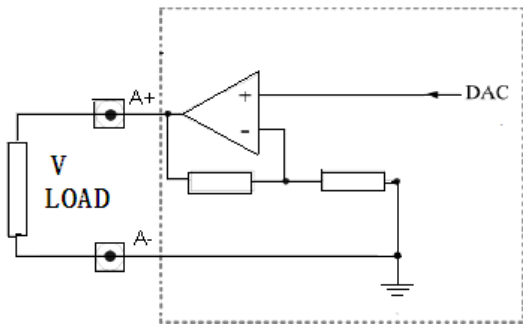
Current output channel equivalent circuit diagram



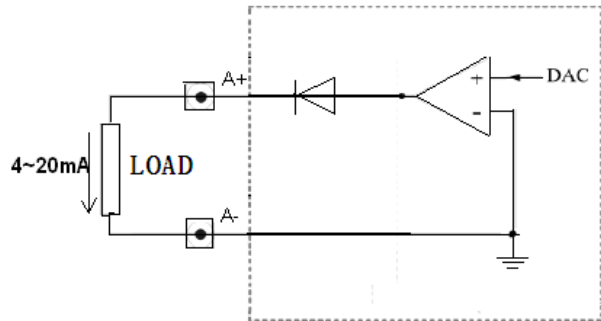
Voltage output channel equivalent circuit diagram

- Each channel for the analog outputs can also choose corresponding three signal mode, including (4-20) mA (Please choose four-wire input method when connecting to PLC), (0-5)VDC and (0-10)VDC output. Ai - is the reference earth wire for each output signal, while Ai + is the positive signal wire for each output signal.

**Note:** output current at the receiving end A- can not be "0", current load and receiving end need to be powered independently when necessary and add current signal isolator between the two devices.

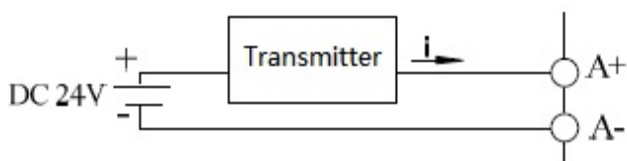


Voltage output channel equivalent circuit diagram

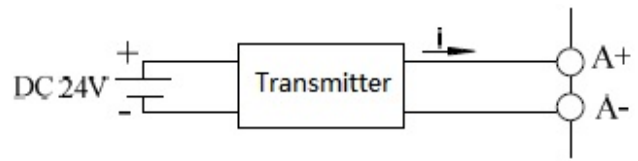


4~20mA current output channel equivalent circuit diagram

- The (4-20)mA analog fiber optic converter support four-wire system standard, please note the wire connection method while connecting with two-wire system transducer, no support connect power to fiber optic converter terminal Ai+, Ai-, or will damage the machine. Please refer below two-wire and four-wire transmitter wiring.



2 wire current transmitter wiring diagram



4 wire current transmitter wiring diagram

**The CC signal interface:**

Corresponding channel of the digital output interface through the optical fiber transmission.

**RS232、RS485,RS422 Serial interface**

- 1) TX1, GND1 and RX1 are connected correspondingly to the RS232 launch, ground and receiving signal line in the first channel.
- 2) TX1, GND1 and RX1 are connected correspondingly to the RS232 launch, ground and receiving signal line in the second channel.

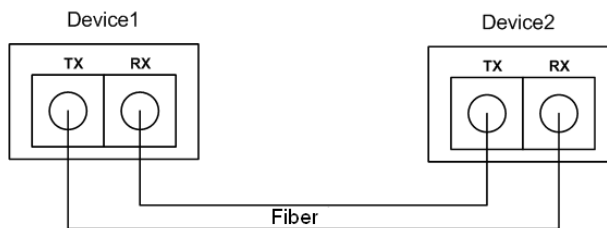
Different functions in specific cases, the port function as follows

Function	Connection ports definition					
	Current input channel equivalent circuit diagram			Voltage input channel equivalent circuit diagram		
Dual RS232model	TX1	GND(data ground)	RX1	TX2	GND(data ground)	RX2
Dual RS485 model	A2	SHIELD(shield ground)	B2	A1	SHIELD(shield ground)	B1
RS232+RS485model	TX1	GND(data ground)	RX1	A1	SHIELD(shield ground)	B1
RS422 model	TX+	SHIELD(shield ground)	TX-	RX+	SHIELD(shield ground)	RX-

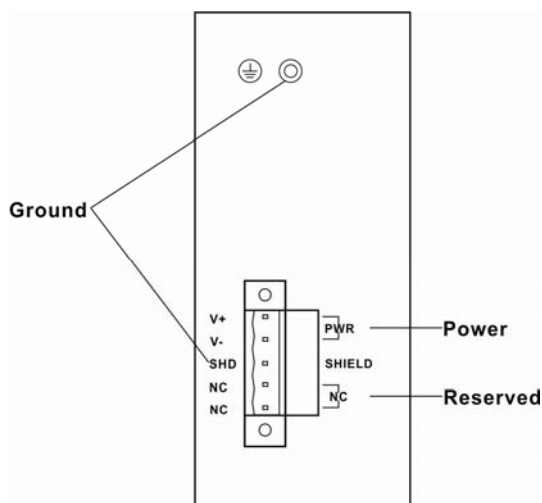
Remark: RS232+RS485 model, Channel 1 RS232, Channel 2 is RS485.

**Wiring Connection**

1. Fiber connection methods: Cj-MF series belongs to single optical port device, suitable for point to point connection. As shown in the figure below, the optical fiber must cross connection, namely the RX connect other side TX, and TX to RX accordingly.



2. V+, V-, SHIELD respectively connect with anode, cathode of DC power supply and shielding ground.

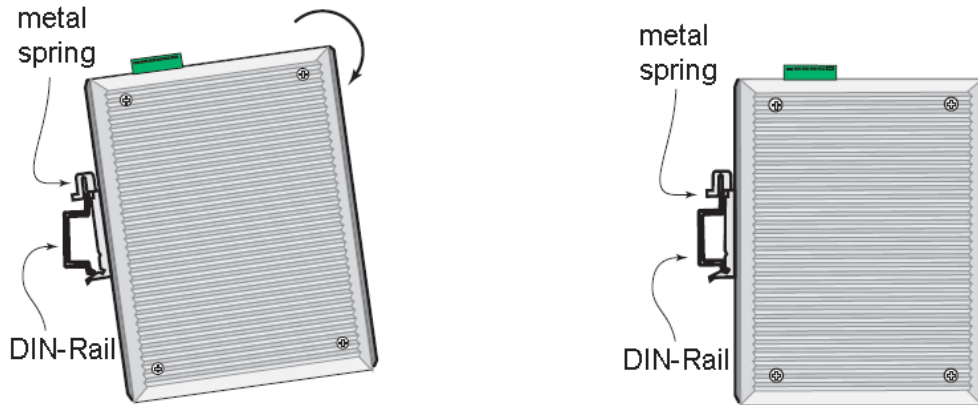


**DIN-Rail Installation**

In order to use in industrial environments expediently, the device adopt 35mm DIN-Rail installation, the installation steps as

follows:

- Step 1: Examine the DIN-Rail attachment
- Step 2: Examine DIN Rail whether be firm and the position is suitability or not.
- Step 3: Insert the top of the DIN-Rail into the slot just below the stiff metal spring.
- Step 4: The DIN-Rail attachment unit will insert into place as shown below.



### Troubleshooting

Fault Symptoms	What to Do
PWR off	Check and ensure the power supply meets the requirement, and terminal wiring is correct or not.
OPT off	Check the fiber port connection, the length and type is correct or not.
ANA on	Received analog signal value over normal range.

### Package Checklist

Please check accessories completely when open the box.

Packing list is as follows:

- Multi-channel fiber optic converter (with industrial terminal block for power equipment)
- Product specification
- Product warranty card

### Cautions

- The Voltage of power supply should be within 24VDC, or it may damage the product.
- When the fiber port is not in use, please cover and protect it.
- To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.
- When use the relay, please conform to rating power requirement.
- Keep low impedance with protective grounding by DIN rail or grounding cable for the product.

### Application

Electric power system, transportation, energy monitor and industrial control field

### Order Information

Model	Specifications and introduce
Cj-KFx1	1~4 channel unidirectional CC signal fiber optic converters, dry contact closure input SPDT Form C relay output, SM fiber 0 ~ 20Km,ST/SC/FC (optional).
Cj-KFx2	1~4 channel bidirectional CC signal fiber optic converters, dry contact closure input SPDT Form C relay

	output, SM fiber 0 ~ 20Km,ST/SC/FC (optional).
Cj-AFx1	1~4 channel unidirectional analog signal fiber optic converters, 4-20mA, SM fiber 0 ~ 20Km, ST/SC/FC (optional).
Cj-AFx2	1~4 channel bidirectional analog signal fiber optic converters, 4-20mA, SM fiber 0 ~ 20Km, ST/SC/FC (optional).
Cj-VFx1	1~4 channel unidirectional analog signal fiber optic converters, 0-10VDC, SM fiber 0 ~ 20Km, ST/SC/FC (optional).
Cj-VFx2	1~4 channel bidirectional analog signal fiber optic converters, 0-10VDC, SM fiber 0 ~ 20Km, ST/SC/FC (optional).
Cj-SFx1	1~2 chs serial signal fiber optic converters, RS232/.RS485/RS422, SM fiber 0 ~ 20Km, ST/SC/FC (optional).
Cj-MF42	Analog signal digital signal fiber multiplexer, 2 chs analog signal, 2 chs digital signal, single and dual multiplexing transmission optional, used for SM fiber 0 ~ 20Km,ST/SC/FC (optional).
Cj-MF62	Analog signal digital signal fiber multiplexer, 1 ~ 4 chs analog signal, 1 ~ 4 chs digital signal, 1 ~ 2 chs RS232/485/422 multiplexing, single and dual multiplexing transmission optional, used for SM fiber 0 ~ 20Km,ST/SC/FC (optional).