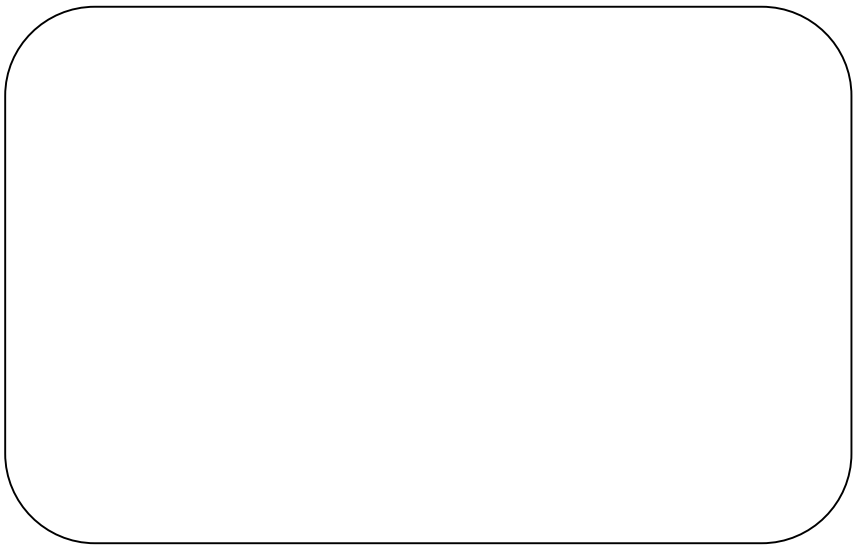
KBC
data delivered

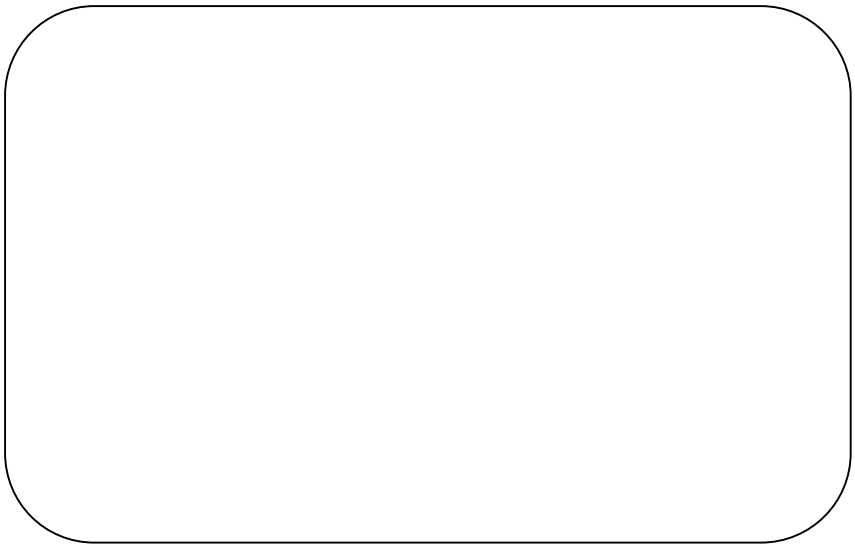
Compact Transceiver



User Manual

Table of Contents

0. Product Type



.

Configuration

Fiber	☐ SM	☐ MM	
	☐ 1310nm	☐ 1310nm/1550nm	
	☐ ST/PC	☐ SC/PC	☐ FC/PC
Video	☐ 8bit	☐ 10bit	
Data	☐ RS422	☐ RS232/RS422/RS485	
	☐ Return directional	☐ Bi-directional	
Contact	☐ Bi-directional	☐ Forward directional	
Power Plug	☐ US Power Plug	☐ UK Power Plug	
	☐ Euro Power Plug	☐ Australian Power Plug	

Dimensions (L×W×H)

☐ 70mm×76mm×24mm/2.76”×2.98”×0.94”

☐ 77mm×70mm×44mm/3.03”×2.76”×1.73”

1. Overview

1.1 Introduction

The compact transceiver is designed using advanced ASIC and high-speed DSP technologies. This series employs multiplexing and de-multiplexing techniques to transmit and receive video, data, and contact closure over a single-mode or multi-mode optical fiber in all digital signaling with no compression; making it ideal for applications where input signal integrity and quality must be maintained and no loss should be induced. Because the series utilizes all-digital, non-compression technology, it is able to transmit signals without distortion; whereas the analog technology inherently noisy, low quality, long term instability and susceptible to electromagnetically and environmental interference. This series accepts a variety of video inputs, such as analog or digital video recorder, DVD/VCD, digital camera, and CCTV. PAL, NTSC and SECAM standards are supported. It supports standard RS232/RS422/2 wires RS485/4 wires RS485 pan-tilt-zoom control signaling. Contact closure can be used to control remote I/O switch such as power supply switch or alarm/alert indicators. Plug-and-Play design ensures ease of installation and no electrical or optical adjustment is required. LED indicators are provided for showing operating status.
The compact transceiver is fully assembled using SMT components for stability and reliability.

1.2 Technical Specification

VIDEO		
Signal Level	1.0V_{PP} typical, 1.5V_{PP} max.,75Ω	
Sampling Resolution	8 bit	10 bit
Differential Gain	< 2%	< 1%
Differential Phase	< 2º	< 0.7º
Signal to Noise Ratio (SNR)	62dB typical	67dB typical
Connector Type	BNC	

DATA	
Interface	RS232/RS422/2 wires RS485 or 4 wires RS485
RS232 Data Rate	DC − 115.2kbps
RS422/485 Data Rate	DC − 250Kbps
RS422/485 Distance	0 ~ 1200m
RS422/485 Signaling	Transparent to all RS422/RS485 signaling; Compatible to 2 wires RS485 or 4 wires RS485.
Connector Type	Terminal

CONTACT CLOSURE	
Contact Max. voltage/current	25V/0.8A(DC), 110V/0.4A(AC)
Connector Type	Terminal

OPTICAL	SM		MM	
Wavelength	1310nm	1550nm	1310nm	1550nm
Optical Out Power	≥ -13 dB	≥ -10 dB	≥ -13 dB	≥ -10 dB
Optical Sensitivity	≤ -30 dB	≤ -25 dB	≤ -26 dB	≤ -22 dB
Fiber power budget	≤ 17 dB	≤ 15 dB	≤13 dB	≤12 dB
Effective Fiber power budget	≤ 15 dB		≤ 12 dB	
Fiber Type	9/125μm(SM)		62.5/125μm(MM)	
Distance	0 ~ 25km		0 ~2km	

GENERAL	
Operating Temperature	-40 ~ 70˚C / -40 ~ +158ºF
Relative Humidity	0 ~ 95% non-condensing
Mean Time Between Failure (MTBF)	> 100,000hrs
Enclosure Color	Silver

2. Package Contents

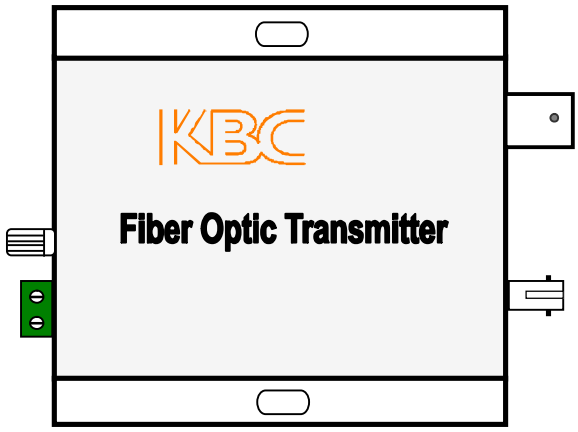
- ☐ One Transmitter
- ☐ One Receiver
- ☐ One power supply adaptor
- ☐ One User Manual

Please contact dealer or distributor if part is missing or damaged.

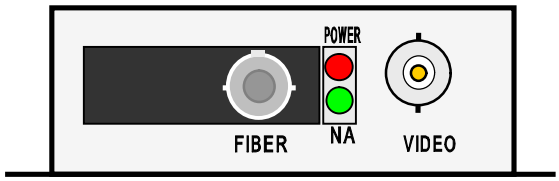
3. Transmitter Enclosure

3.1 Video Transmitter

3.1.1 8 Bit Video Transmitter



Transmitter Top View



Transmitter Right View

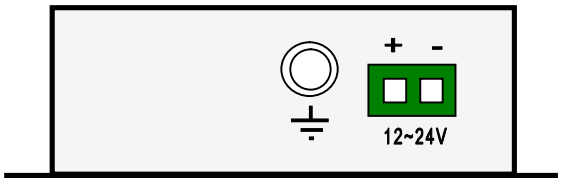
Connectors:

FIBER: Fiber Optic.

VIDEO: Video input, BNC.

LEDs Definition:

POWER: Power Supply. **On** if power input is OK.
Off if no power present.



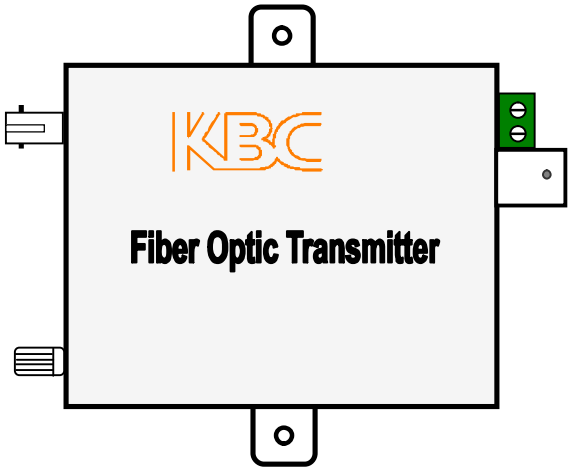
Transmitter Left View

Connectors:

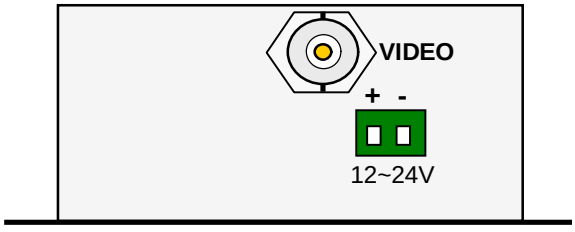
⏚: Ground Pin.

12~24V: Power Supply refers to section 5. Power Input Specifications.

3.1.2 10 Bit Video Transmitter



Transmitter Top View

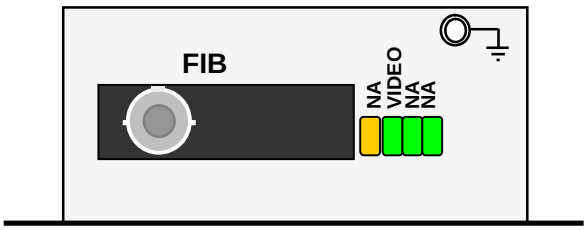


Transmitter Right View

Connectors:

VIDEO: Video input, BNC.

12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

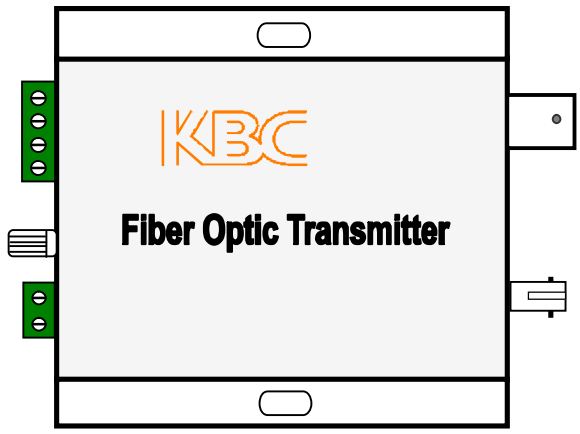
FIB: Fiber Optic.

⏚: Ground Pin.

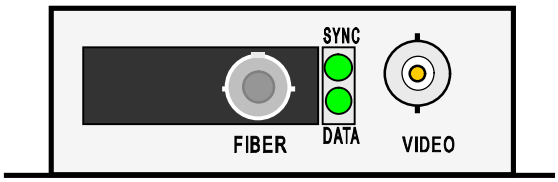
LEDs Definition:

VIDEO: Video. **On** if video input is OK.
Off if no video present.

3.2 Video Transmitter with Return Data



Transmitter Top View



Transmitter Right View

Connectors:

FIBER: Fiber Optic.

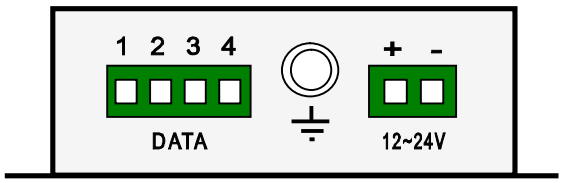
VIDEO: Video input ,BNC.

LEDs Definition:

SYNC: Fiber Link and Video **Flash** if the link is not OK.

Off if the link is OK but the video is not OK.
On if the link and the video are OK.

DATA: Data receive
Flash if data being received.
Off if no data being received.

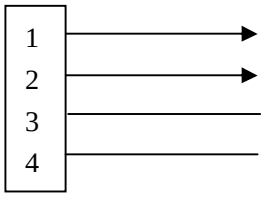


Transmitter Left View

Connectors:

⏚: Ground Pin.

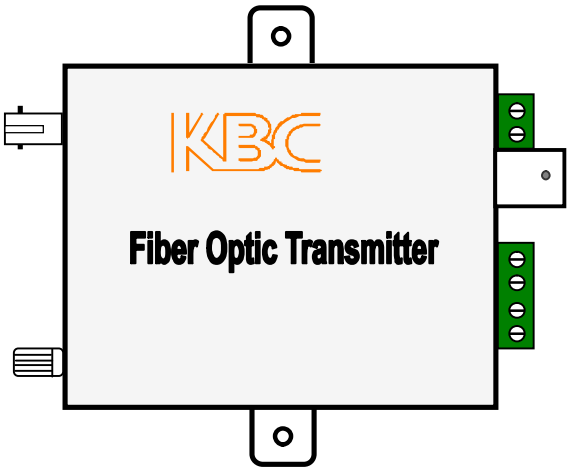
DATA: RS422 Data Terminal, Terminal pins assignment as below.



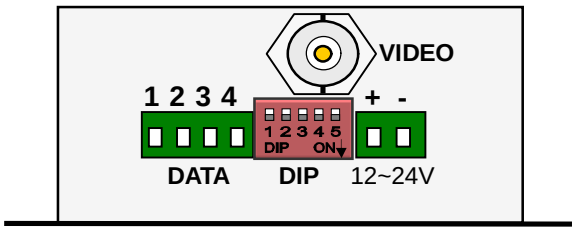
RXD+ RS422 receive signal "+", output
RXD− RS422 receive signal "−", output
NC
NC

12~24V: Power Supply refers to section 5. Power Input Specifications.

3.3 Video Transmitter with Bi-directional Data



Transmitter Top View



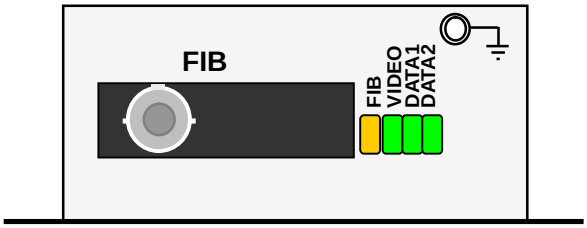
Transmitter Right View

Connectors:

VIDEO : Video input, BNC.

DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible. Terminal pins assignment and DIP Switch setting refer to Table 1 and Table2 in section 6. Data Block Connections and DIP Switch Setting.

12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

FIB: Fiber Optic.

⏚: Ground Pin.

LEDs Definition:

FIB: Fiber Link. **Off** if link continuity is good.
On if no link continuity.

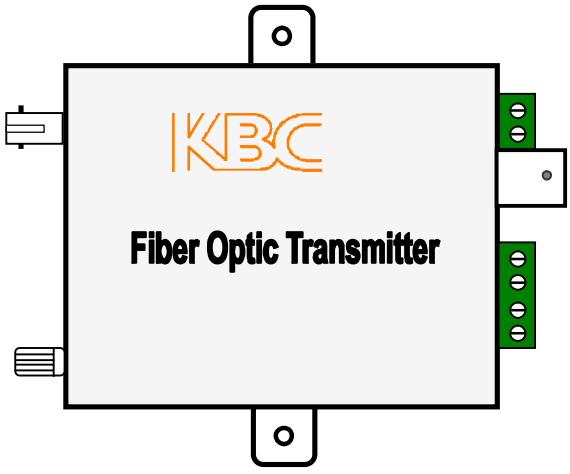
VIDEO: Video. **On** if video input is OK.
Off if no video present.

DATA1: RS232/RS422/ 4 wires RS485 Transmit Data. **Flash** if data being transmitted.
Off if no data being transmitted.

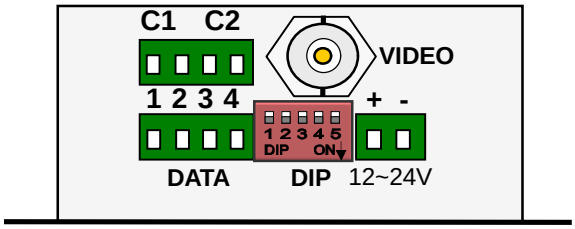
2 wires RS485 Transmit/ Receive Data. **Flash** if there is activity.

DATA2: RS232/RS422/ 4 wires RS485 Receive Data. **Flash** if data being received.
Off if no data being received.

3.4 Video Transmitter with Bi-directional Data and Contact Closure



Transmitter Top View



Transmitter Right View

Connectors:

VIDEO : Video input, BNC.

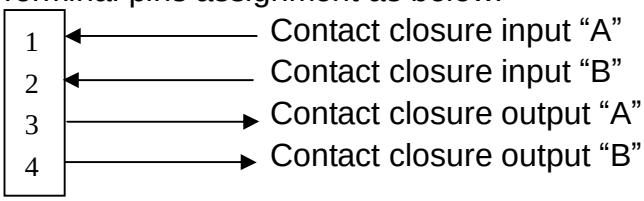
DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible. Terminal pins assignment and DIP Switch setting refer to Table 1 and Table2 in section 6. Data Block Connections and DIP Switch Setting.

C1: Contact Closure input.

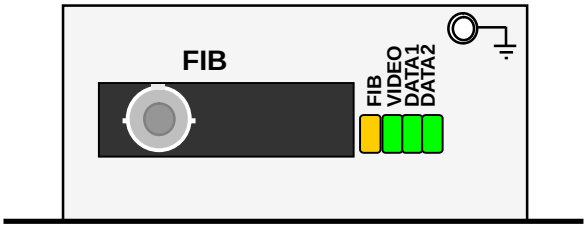
C2: Contact Closure output.

The Contact Closure state, Open or Close, of the contact closure on the transmitter end follows the state of the contact closure on the receiver end. I.e. if the contact on the receiver end is Close, the contact on the transmitter end is made to be Close. If the contact on the receiver end is Open, the contacts on the transmitter end is made to be Open.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

FIB: Fiber Optic.

⏚: Ground Pin.

LEDs Definition:

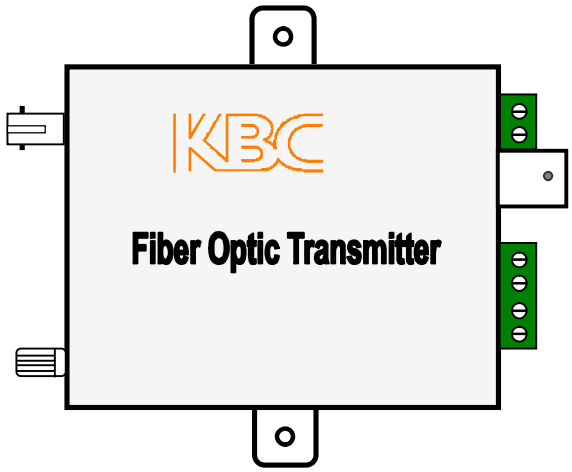
FIB: Fiber Link. **Off** if link continuity is good.
On if no link continuity.

VIDEO: Video. **On** if video input is OK.
Off if no video present.

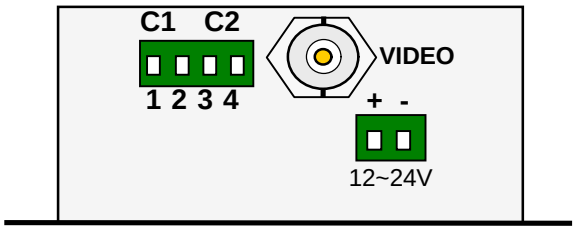
DATA1: RS232/RS422/ 4 wires RS485 Transmit Data. **Flash** if data being transmitted.
Off if no data being transmitted.

2 wires RS485 Transmit/ Receive Data. **Flash** if there is activity.
DATA2: RS232/RS422/ 4 wires RS485 Receive Data. **Flash** if data being received.
Off if no data being received.

3.5 Video Transmitter with Contact Closure



Transmitter Top View



Transmitter Right View

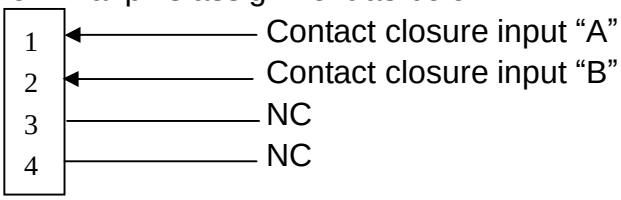
Connectors:

VIDEO: Video input, BNC.

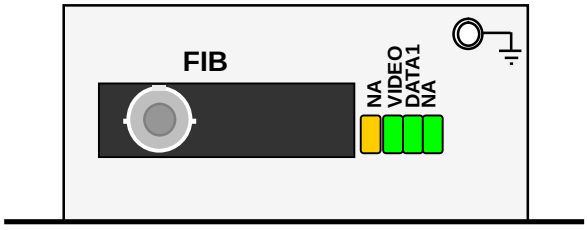
C1: Contact Closure input.

C2: Reserved.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

FIB: Fiber Optic.

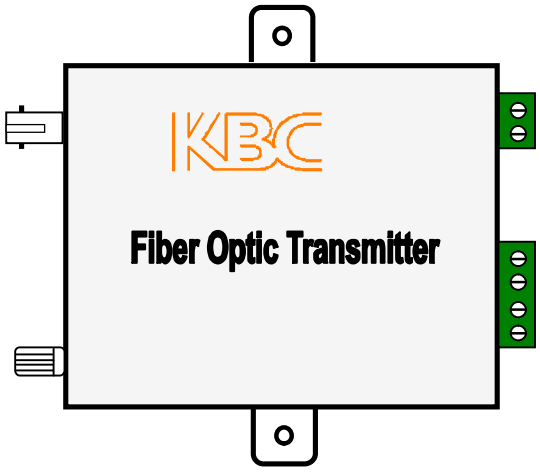
⏚: Ground Pin.

LEDs Definition:

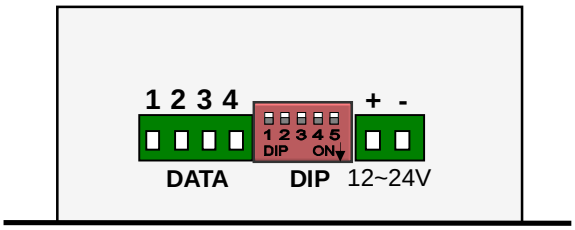
VIDEO: Video. **On** if video input is OK.
Off if no video present.

DATA1: Contact Closure. **On** if the contact closure is Close.
Off if the contact closure is Open.

3.6 Data Transmitter



Transmitter Top View

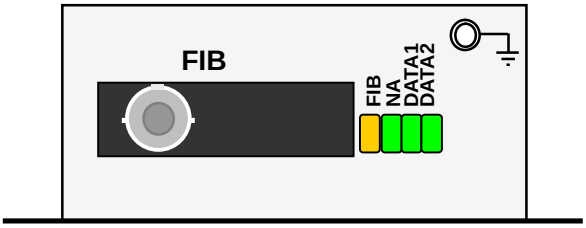


Transmitter Right View

Connectors:

DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible. Terminal pins assignment and DIP Switch setting refer to Table 1 and Table2 in section 6. Data Block Connections and DIP Switch Setting.

12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

FIB: Fiber Optic.

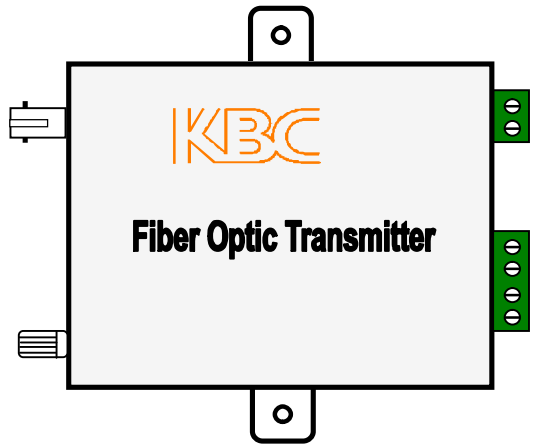
⏚: Ground.

LEDs Definition:

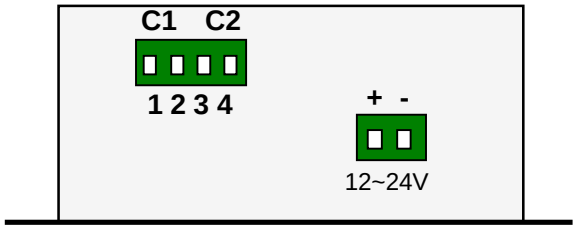
FIB:	Fiber Link.	**Off** if link continuity is good. **On** if no link continuity.
DATA1:	RS232/RS422/ 4 wires RS485 Transmit Data.	**Flash** if data being transmitted. **Off** if no data being transmitted.
	2 wires RS485 Transmit/ Receive Data.	**Flash** if there is activity.
DATA2:	RS232/RS422/ 4 wires RS485 Receive Data.	**Flash** if data being received. **Off** if no data being received.

3.7 Contact Closure Transmitter

3.7.1 Forward directional Contact Closure Transmitter



Transmitter Top View



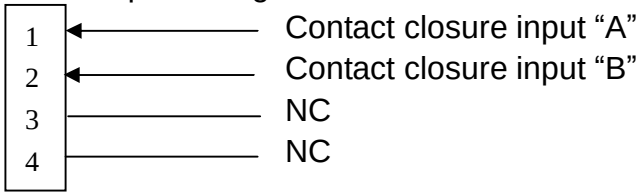
Transmitter Right View

Connectors:

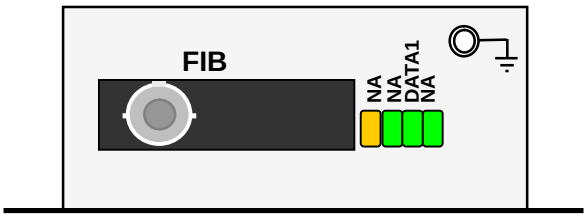
C1: Contact Closure input.

C2: Reserved.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

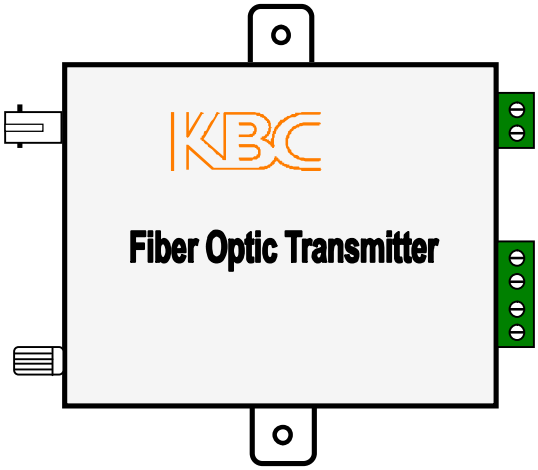
FIB: Fiber Optic.

⏚: Ground Pin.

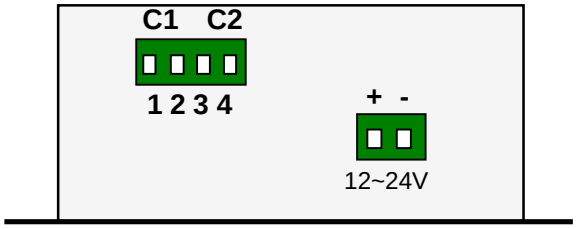
LEDs Definition:

DATA1: Contact Closure. **On** if the contact closure is Close.
Off if the contact closure is Open.

3.7.2 Bi-directional Contact Closure Transmitter



Transmitter Top View



Transmitter Right View

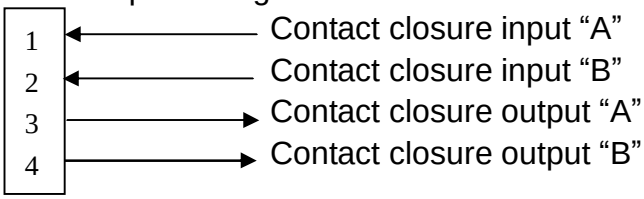
Connectors:

C1: Positive Contact Closure input.

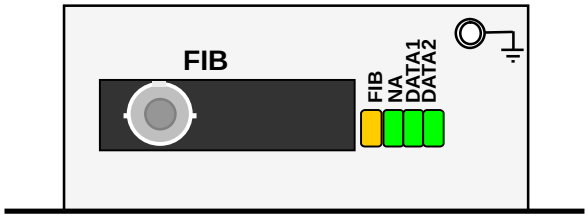
C2: Opposite Contact Closure output.

The Contact Closure state, Open or Close, of the contact closure on the transmitter end follows the state of the contact closure on the receiver end. I.e. if the contact on the receiver end is Close, the contact on the transmitter end is made to be Close. If the contact on the receiver end is Open, the contacts on the transmitter end is made to be Open.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Transmitter Left View

Connectors:

FIB: Fiber Optic.

⏚ : Ground Pin.

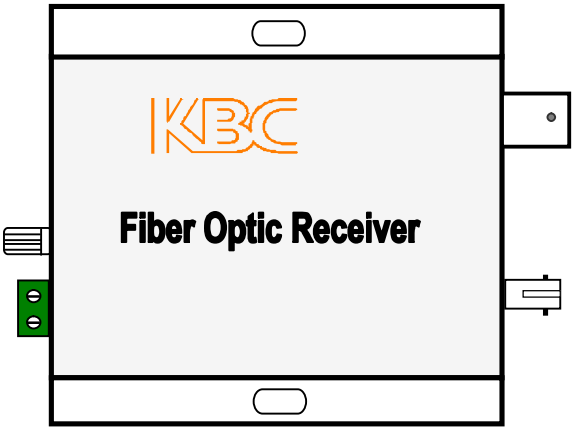
LEDs Definition:

FIB:	Fiber Link.	**Off** if link continuity is good. **On** if no link continuity.
DATA1:	Positive Contact Closure.	**On** if the contact node is closed.
DATA2:	Opposite Contact Closure.	**On** if the contact node is closed.

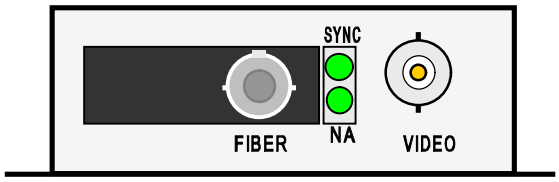
4. Receiver Enclosure

4.1 Video Receiver

4.1.1 8 Bit Video Receiver



Receiver Top View



Receiver Right View

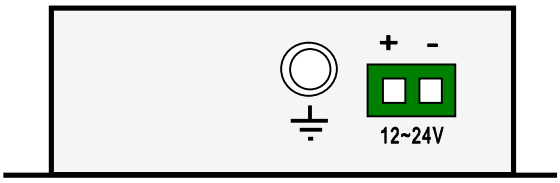
Connectors:

FIBER: Fiber Optic.

VIDEO: Video output, BNC.

LEDs Definition:

SYNC: Fiber Link and Video **Flash** if the link is not OK.
Off if the link is OK but the video is not OK.
On if the link and the video are OK.



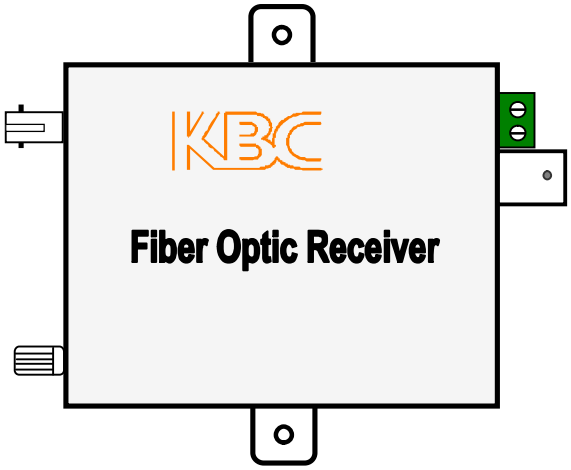
Receiver Left View

Connectors:

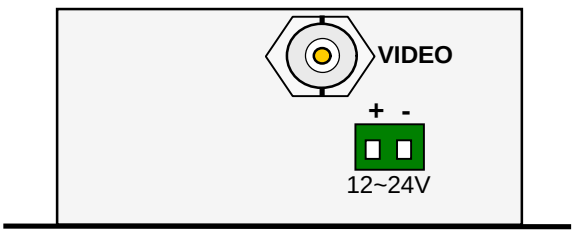
⏚: Ground Pin.

12~24V: Power Supply refers to section 5. Power Input Specifications.

4.1.2 10 Bit Video Receiver



Receiver Top View

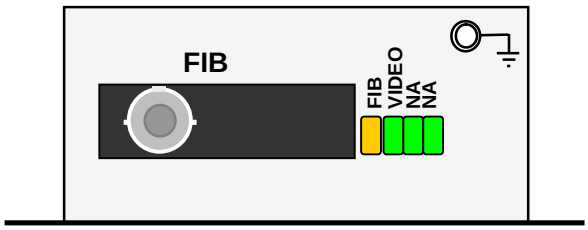


Receiver Right View

Connectors:

VIDEO: Video output, BNC.

12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

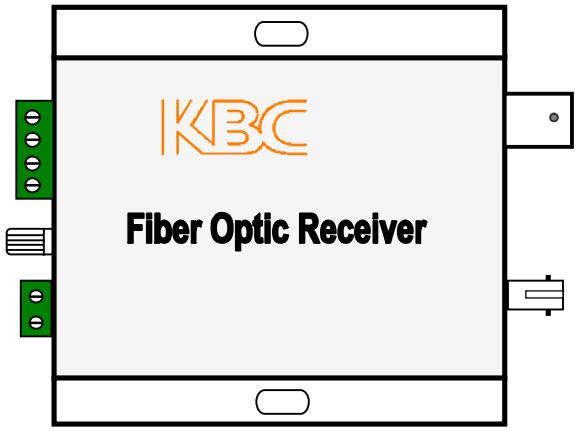
FIB: Fiber Optic.

⏚ : Ground Pin.

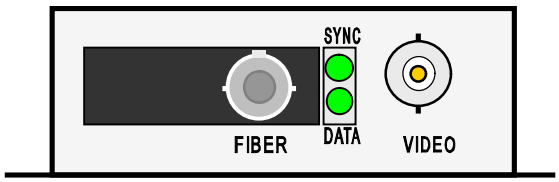
LEDs Definition:

FIB:	Fiber Link.	**Off** if link continuity is good.
		On if no link continuity.
VIDEO:	Video.	**On** if video output is OK.
		Off if no video present.

4.2 Video Receiver with Return Data



Receiver Top View



Receiver Right View

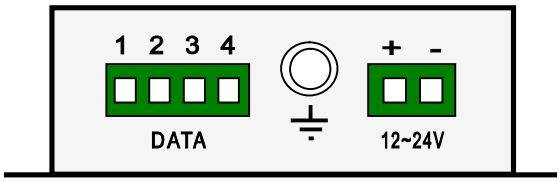
Connectors:

FIBER: Fiber Optic.

VIDEO: Video output, BNC.

LEDs Definition:

SYNC:	Fiber Link and Video	**Flash** if the link is not OK. **Off** if the link is OK but the video is not OK. **On** if the link and the video are OK.
DATA:	Data Transmit.	**Flash** if data being transmitted. **Off** if no data being transmitted.

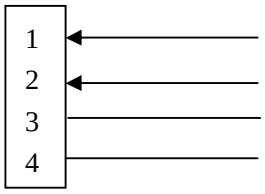


Receiver Left View

Connectors:

⏚: Ground Pin.

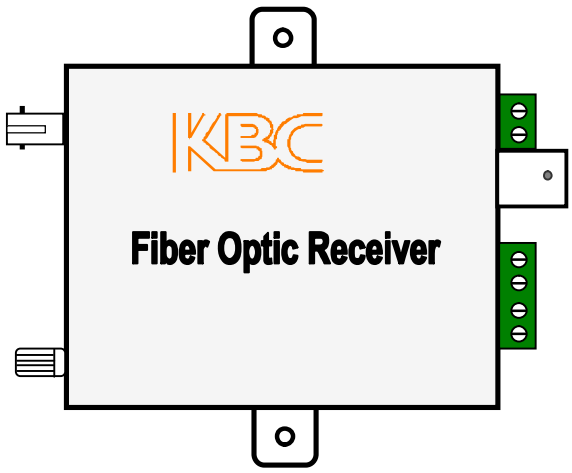
DATA: RS422 Data Terminal, Terminal pins assignment as below:



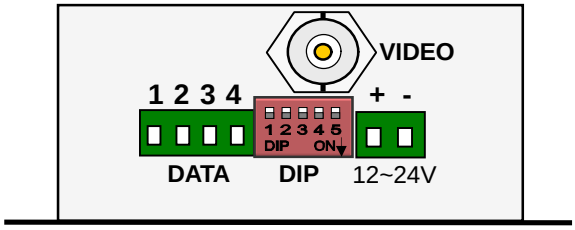
TXD+	RS422	transmit signal “+”, input
TXD−	RS422	transmit signal “−”, input
NC		
NC		

12~24V: Power Supply refers to section 5. Power Input Specifications.

4.3 Video Receiver with Bi-directional Data



Receiver Top View



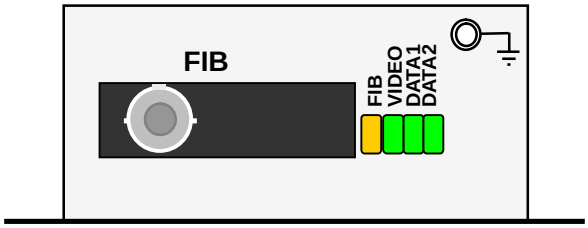
Receiver Right View

Connectors:

VIDEO: Video output, BNC.

DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible. Terminal pins assignment and DIP Switch setting refer to Table 1 and Table2 in section 6. Data Block Connections and DIP Switch Setting.

12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

FIB: Fiber Optic.

⏚: Ground Pin.

LEDs Definition:

FIB: Fiber Link. **Off** if link continuity is good.
On if no link continuity.

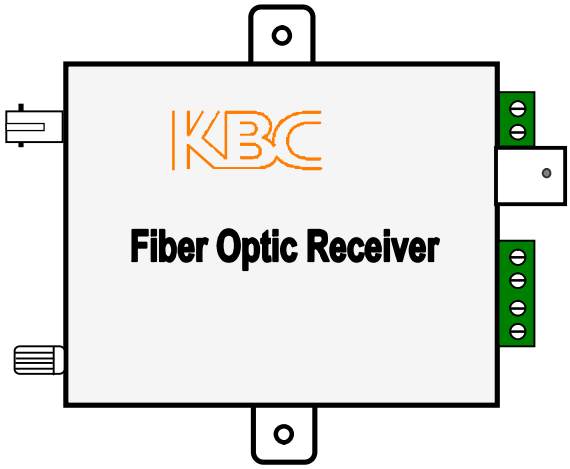
VIDEO: Video. **On** if video output is OK.
Off if no video present.

DATA1: RS232/RS422/ 4 wires RS485 Transmit Data. **Flash** if data being transmitted.
Off if no data being transmitted.

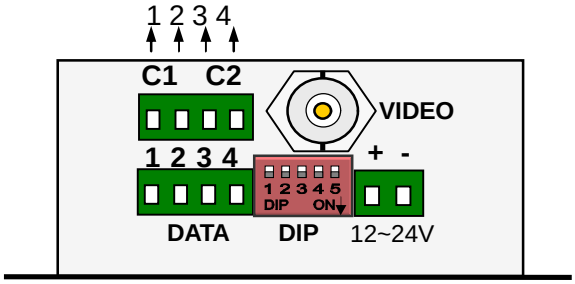
2 wires RS485 Transmit/ Receive Data. **Flash** if there is activity.

DATA2: RS232/RS422/ 4 wires RS485 Receive Data . **Flash** if data being received.
Off if no data being received.

4.4 Video Receiver with Bi-directional Data and Contact Closure



Receiver Top View



Receiver Right View

Connectors:

VIDEO : Video output, BNC.

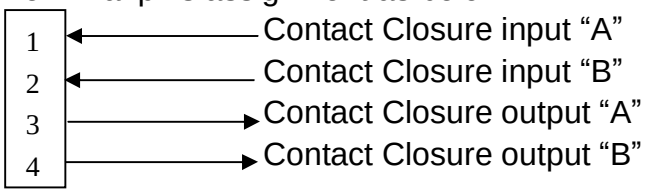
DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible. Terminal pins assignment and DIP Switch setting refer to Table 1 and Table2 in section 6. Data Block Connections and DIP Switch Setting.

C1: Contact Closure input

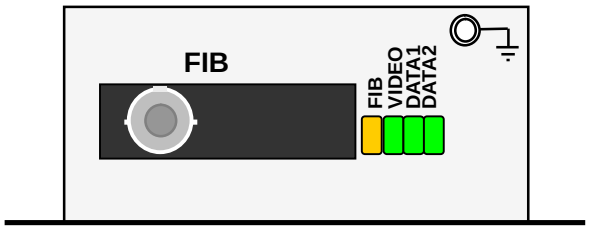
C2: Contact Closure output.

The Contact Closure state, Open or Close, of the contact closure on the receiver end follows the state of the contact closure on the transmitter end. I.e. if the contact on the transmitter end is Close, the contact on the receiver end is made to be Close. If the contact on the transmitter end is Open, the contact on the receiver end is made to be Open.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

FIB: Fiber Optic.

⏚ : Ground Pin.

LEDs Definition:

FIB: Fiber Link. **Off** if link continuity is good.
On if no link continuity.

VIDEO: Video. **On** if video output is OK.
Off if no video present.

DATA1: RS232/RS422/ 4 wires RS485 Transmit Data. **Flash** if data being transmitted.

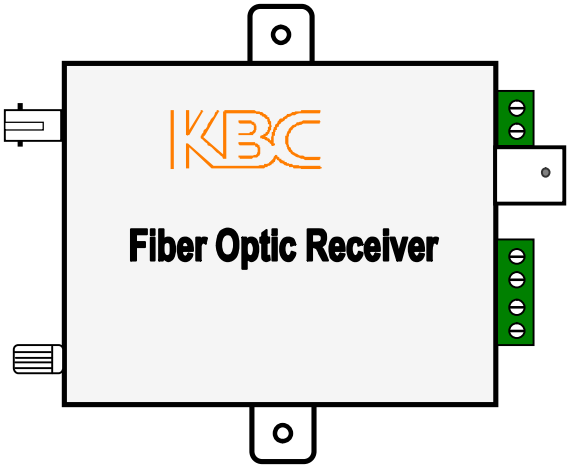
Off if no data being transmitted.

2 wires RS485 Transmit/ Receive Data. **Flash** if there is activity.

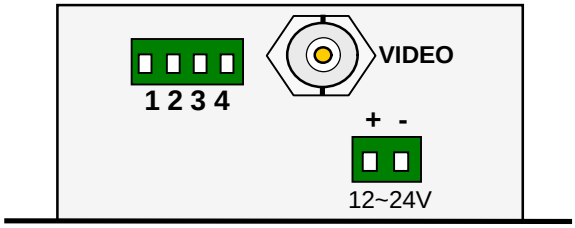
DATA2: RS232/RS422/ 4 wires RS485 Receive Data. **Flash** if data being received.

Off if no data being received.

4.5 Video Receiver with Contact Closure



Receiver Top View



Receiver Right View

Connectors:

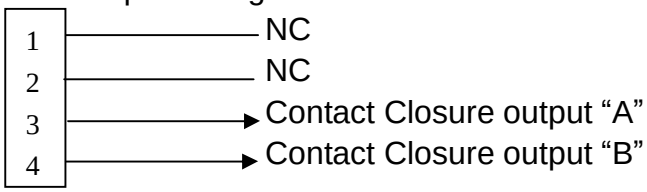
VIDEO: Video output, BNC.

C1: Reserved.

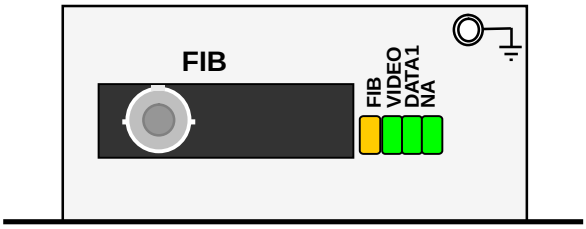
C2: Contact Closure output.

The Contact Closure state, Open or Close, of the contact closure on the receiver end follows the state of the contact closure on the transmitter end. I.e. if the contact on the transmitter end is Close, the contact on the receiver end is made to be Close. If the contact on the transmitter end is Open, the contact on the receiver end is made to be Open.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

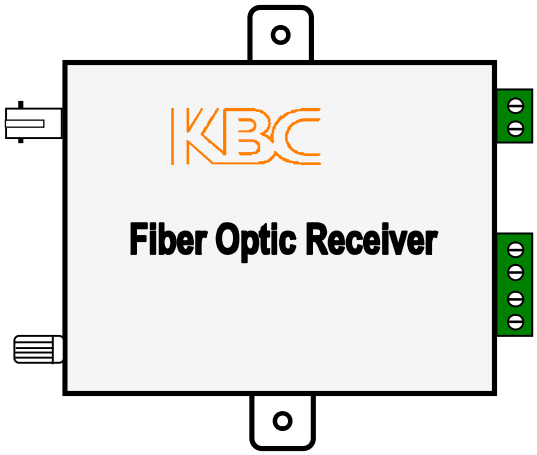
FIB: Fiber Optic.

⏚ : Ground Pin.

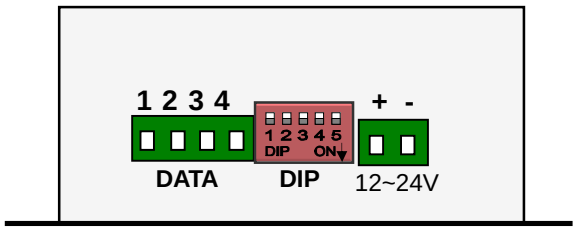
LEDs Definition:

FIB:	Fiber Link.	**Off** if link continuity is good. **On** if no link continuity.
VIDEO:	Video.	**On** if video output is OK. **Off** if no video present.
DATA1:	Contact Closure.	**On** if the Contact Closure is Close. **Off** if the Contact Closure is Open.

4.6 Data Receiver



Receiver Top View

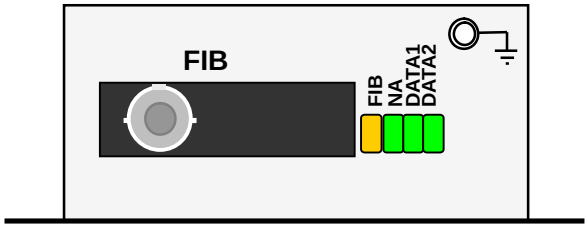


Receiver Right View

Connectors:

DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible. Terminal pins assignment and DIP Switch setting refer to Table 1 and Table2 in section 6. Data Block Connections and DIP Switch Setting.

12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

FIB: Fiber Optic.

⏚ : Ground Pin.

LEDs Definition:

FIB: Fiber Link. **Off** if link continuity is good.
On if no link continuity.

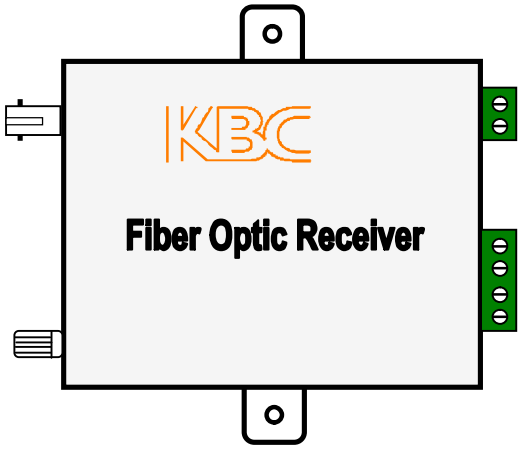
DATA1: RS232/RS422/ 4 wires RS485 Transmit Data. **Flash** if data being transmitted.
Off if no data being transmitted.

2 wires RS485 Transmit/ Receive Data. **Flash** if there is activity.

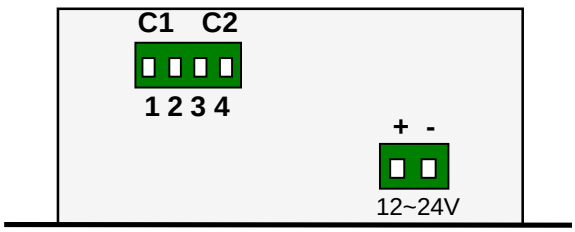
DATA2: RS232/RS422/ 4 wires RS485 Receive Data. **Flash** if data being received.
Off if no data being received.

4.7 Contact Closure Receiver

4.7.1 Forward directional Contact Closure Receiver



Receiver Top View



Receiver Right View

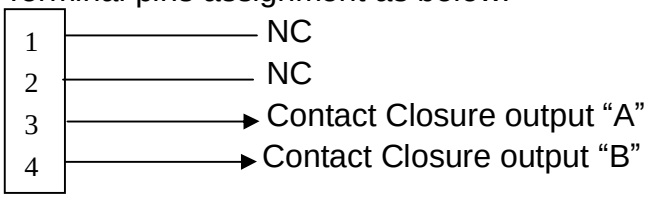
Connectors:

C1: Reserved.

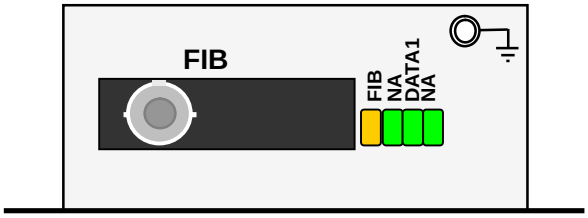
C2: Contact Closure output.
The Contact Closure state, Open or Close, of the contact closure on the receiver end follows the state of the contact closure on the transmitter end.

I.e. if the contact on the transmitter end is Close, the contact on the receiver end is made to be Close. If the contact on the transmitter end is Open, the contact on the receiver end is made to be Open.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

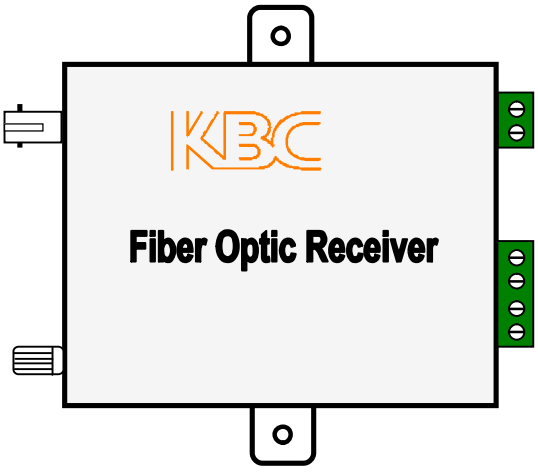
FIB: Fiber Optic.

⏚ : Ground Pin.

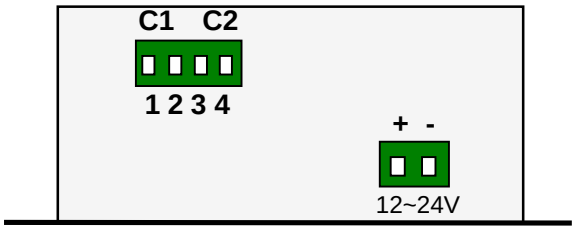
LEDs Definition:

FIB:	Fiber Link.	**Off** if link continuity is good.
		On if no link continuity.
DATA1:	Contact Closure.	**On** if the contact closure is Close.
		Off if the contact closure is Open.

4.7.2 Bi-directional Contact Closure Receiver



Receiver Top View



Receiver Right View

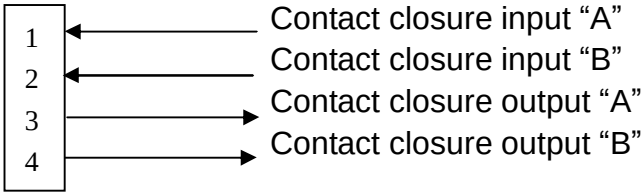
Connectors:

C1: Opposite Contact Closure input.

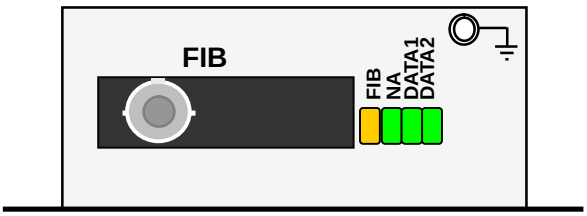
C2: Positive Contact Closure output.

The Contact Closure state, Open or Close, of the contact closure on the transmitter end follows the state of the contact closure on the receiver end. I.e. if the contact on the receiver end is Close, the contact on the transmitter end is made to be Close. If the contact on the receiver end is Open, the contacts on the transmitter end is made to be Open.

Terminal pins assignment as below:



12~24V: Power Supply refers to section 5. Power Input Specifications.



Receiver Left View

Connectors:

FIB: Fiber Optic.

⏚ : Ground Pin.

LEDs Definition:

FIB:	Fiber Link.	**Off** if link continuity is good. **On** if no link continuity.
DATA1:	Opposite Contact Closure.	**On** if the contact node is closed.
DATA2:	Positive Contact Closure.	**On** if the contact node is closed.

5. Power Input Specifications

DC or AC Power Supply between 12V and 24V can be used on this product .

- DC:
  ＋: +12VDC~+24VDC
  －: Power Supply Ground
- AC:
  There is no difference between ＋/－, the power supply can be connected into the device directly.

6. Data Block Connection and DIP Switch Setting

Table 1

Pin Name / Data	1	2	3	4
RS232	**TXD** Data transmit signal; input	**RXD** Data receive signal; output	**GND** GND of RS232 data	**NC（not connected）**
RS422	**TXD+** Data transmit signal “+”, input	**TXD-** Data transmit signal “–”, input	**RXD+** Data receive signal “+”, output	**RXD-** Data receive signal “–”, output
4 wires RS485	**485 TX+** Data transmit signal “+”, input	**485TX-** Data transmit signal “–”, input	**485RX+** Data receive signal “+”, output	**485RX-** Data receive signal “–”, output
2 wires RS485	**NC（not connected）**	**NC（not connected）**	**485+** Data signal “+”	**485-** Data signal “–”

Table 2

DIP Switch pin name	RS-232	RS-422	4wire RS-485	2wire RS-485
D1(RS422/4 wires RS485 input terminator 120Ω)	OFF	ON/OFF ②	ON/OFF ②	OFF
D2(2 wires RS485, RS422/4 wires RS485 output terminator 120Ω)	OFF	ON/OFF ②	ON/OFF ②	ON/OFF ②
D3(2 wires RS485/4 wires RS485 output Pull-up/Pull-down resistance	OFF	OFF	ON/OFF ①	ON/OFF ①
D4(RS232/RS422/2 wires RS485/4 wires RS485 select	OFF	OFF	ON	ON
D5(RS232/RS422/2 wires RS485/4 wires RS485 select	ON	OFF	OFF	ON

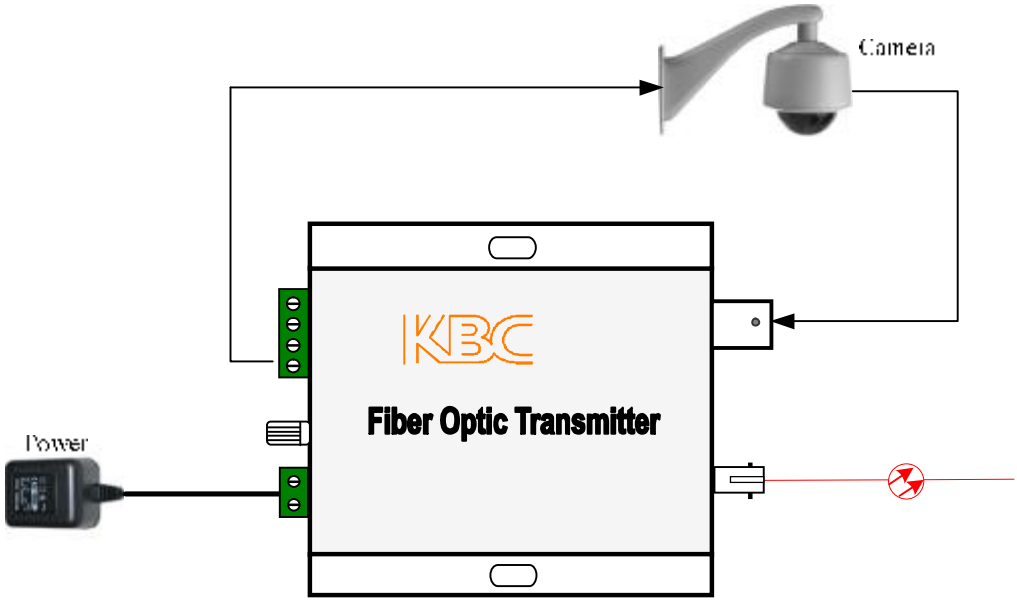
① The 2 wires RS485/4 wires RS485 output bus pull-up and pull-down resistance usually should be switched on. But if there are several fiber transmitters or receivers, 2 wires RS485/4 wires RS485 output interfaces are connected together, only one of the 2 wires RS485/4 wires RS485 output Pull-up and Pull-down resistance should be switched on, the others should be switched off.

② The terminators can be switched on or off according to the RS485 bus connection. When the fiber transmitter or receiver is placed at the end point of bus, the terminators are usually switched on, but not be must, so the same as RS422.

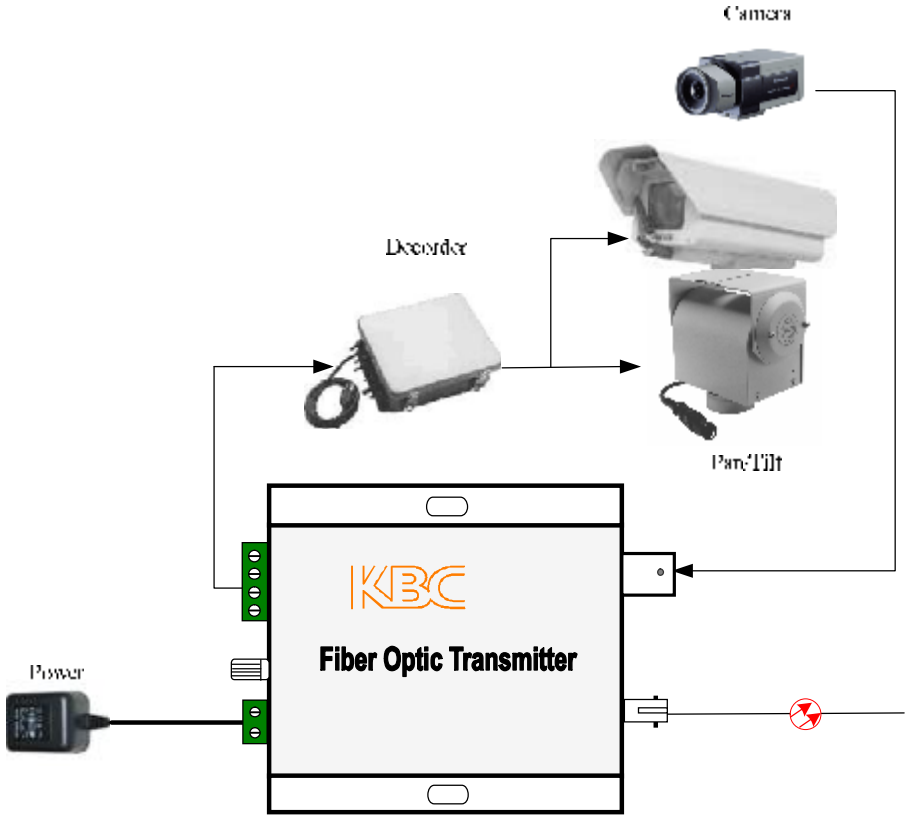
7. Caution

- Switch off all power supply before installation.
- Ensure fiber is properly aligned to the Fiber connector.
- Do NOT stare at the fiber core.

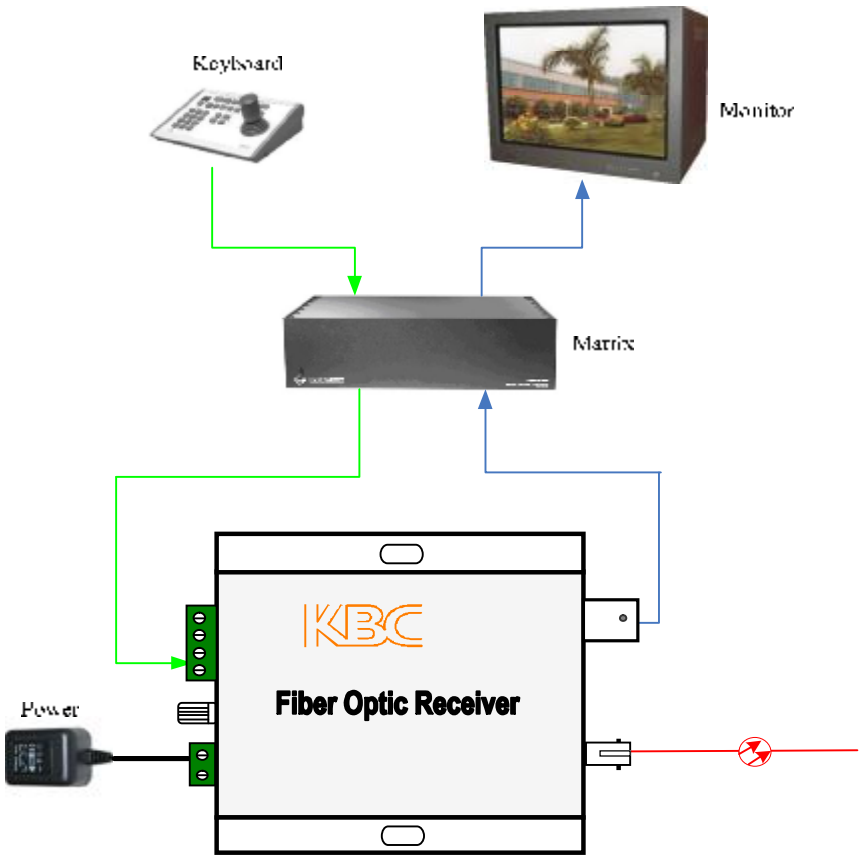
8. Typical Application



Typical Application 1



Typical Application 2



Typical Application 3

9. Dimensions (mm)

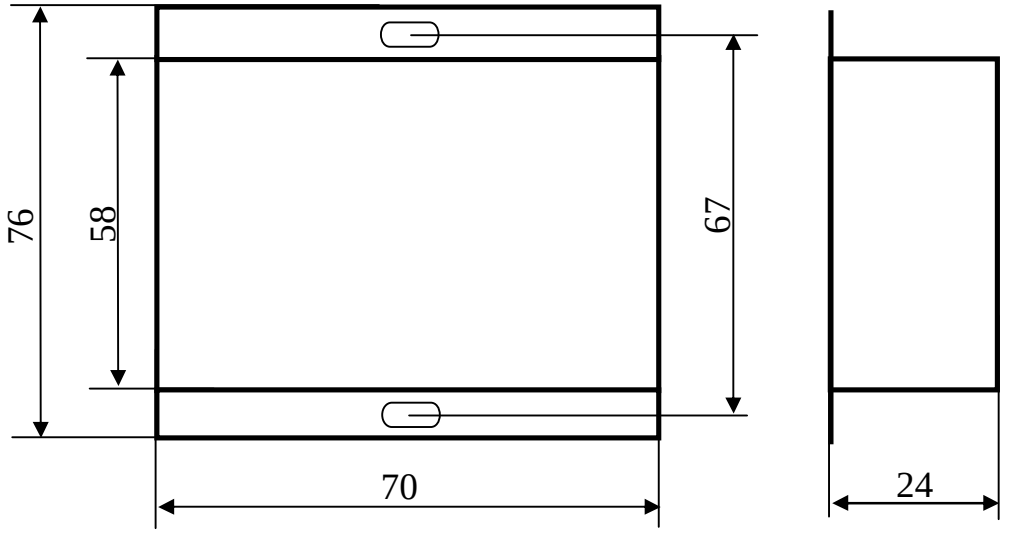


Figure 1

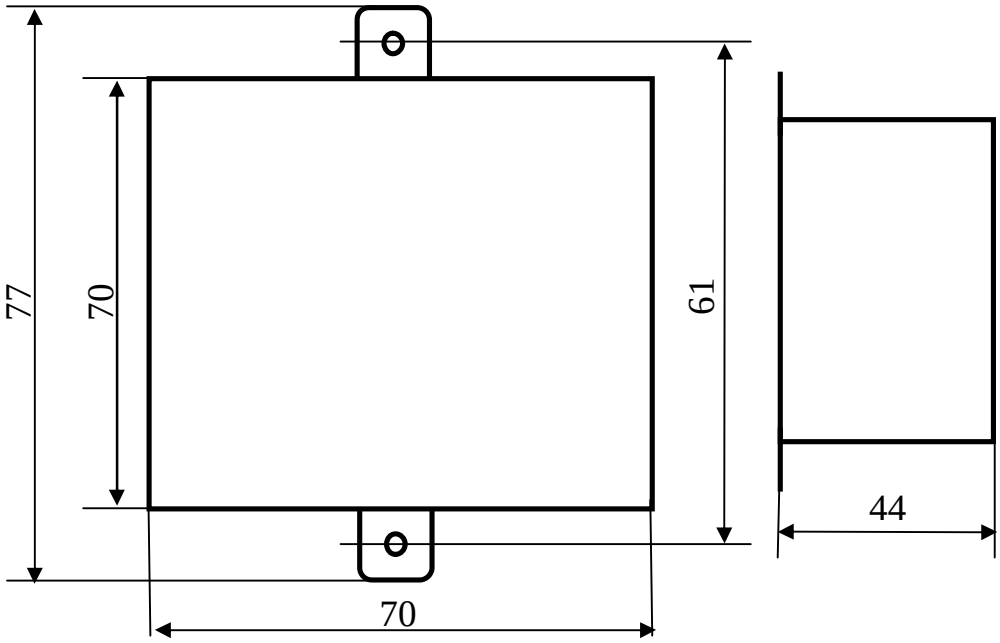


Figure 2

10. Warranty

- 5 years warranty for product only.
- Repair
  - Please contact your local distributors when product is defective. Please apply RA in advance and prepay shipping cost when returning the defective product to us. We will pay the cost for sending it back to you.
  - Please attach a statement clearly describing the problem.
- We will repair defective product under warranty free of charge to our customer.
- Any unauthorized modification of hardware and software voids the warranty.
- Warranty does not cover mishandling and/or abuse of the product.

Products comply with the following Safety Label for International Fiber Communication Equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful Interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

Warning
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

11. Instruction of Disassembly

Instruction of Disassembly of KBC Product
(For EU Directive 2002/95/EEC—WEEE)

Tools Required:

1) 5 mm flat tip screwdriver
2) Φ3 cross tip screwdriver
3) Φ5 cross tip screwdriver
4) Size small snip nose pliers
5) 15 mm spanner

Steps for Disassembly:

1) Remove tightening screws of box cover (1 or 4-8 screws in general);
2) Remove lock nut for BNC with spanner;
3) Remove cover plate;
4) Remove tightening screws for printed circuit board (PCB);
5) In case the assembly has more than one PCB then continue removing the remain tightening screws until none left;
6) Use snip nose pliers to loose the nut of flange and then remove optic cable connector (jump wire);
7) Snip off power conducting cable and remove power switch /jack/etc.;
8) Take out all PCBs;
9) Disassembly of product completed.

Notice：When a product reaches the end of it's life—return to KBC

Version 4.0

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