KOM200

Industrial Serial to Fiber Media Converter

User's Manual

KYLAND Technology Co., Ltd.

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Chapter 1:   Product Overview

KOM200 serial to fiber media convertor allows RS232, RS485 and RS422 devices or networks to communicate over secure, noise immune, optically isolated, fiber optic cabling at extended distances as well convert RS232 to either RS485 or RS422 serial standards. It is industrial hardened and specially designed to operate reliably in electrically harsh and climatically demanding environments. KOM200 meets the requirements of the most strict international EMI and environmental standards for use in electric utility substations and factory floor applications.   Its features are as below:

1. 1 x RS232 / 1 x V.24 / 1 x RS485/ 1x RS422 interface

2. Transparent Communication, plug & play

3. Special protection circuit for serial port, supports hot-swappable function

4. Integrated optical transceiver, reliable optical power output

5. Complete anti-electromagnetic interference, anti-earth loop interference, anti-thunder and lightning damage

6. DIN rail installation, rack bracket for rack mounting installation

7. Single fiber ring

Chapter 2: Specifications

1.	Bit Error Rate	$\leq 10^{-10}$
2.	Asynchronous rate	0 to 115.2Kbps (adaptive)
3.	Electric characteristics	Support RS232, RS422, RS485 standards; RS-485 port can be connected to 32-128 nodes with the transmission distance of 1200 meters
4.	Physical interface	8 core terminal
5.	Fiber transmission distance	Multi-mode 2~5km, single-mode 40/80km
6.	Fiber Connector	FC/SC/ST
7.	Power supply	24VDC (12~36VDC), 48VDC(36~72VDC), 110VDC (72~144VD), 110VAC/220VAC/220VDC (85~265VAC/120~370VDC)
8.	Power consumption	<3W
9.	Relative humidity	0-95% (non-condensing)
10.	Optical power output	>-13dbm (single-mode system) >-20dbm (multi-mode system)
11.	Receiving sensitivity	<-28dbm (single-mode system) <-35dbm (multi-mode system)
12.	Operating temperature	-40℃~+85℃
13.	Storage temperature	-40℃ ~+85℃
14.	Dimensions	36mm x 100mm x 75mm (W x H x D)

Chapter 3: Installation

1. KOM200 series list

Model	Description
KOM200-S-232/422	Single mode RS232/422 media converter (2-channel data, point to point)
KOM200-M-232/422	Multi mode RS232/422 media converter (2-channel data, point to point)
KOM200-S-485/232	Single mode RS485/232 media converter (3-channel data, point to point)
KOM200-M-485/232	Multi mode RS485/232 media converter (3 -channel data, point to point)
KOM200-S-485/232A	Single mode RS485/232 media converter (The 2nd and 3rd channel multiplexing, point to point)
KOM200-M-485/232A	Multi mode RS485/232 media converter (The 2nd and 3rd channel multiplexing, point to point)
KOM200-S-485/232L	Single mode RS485/232 media converter (2-channel data, single fiber ring)
KOM200-M-485/232L	Multi mode RS485/232 media converter (2-channel data, single fiber ring)
KOM200A-S-232	Single mode RS232 media converter (1-channel data, connected to RS232 fiber port)
KOM200A-M-232	Multi mode RS232 media converter (1-channel data, connected to RS232 fiber port)
KOM200-S-V.24	Single mode V.24 media converter
KOM200-M-V.24	Multi mode V.24 media converter

2.   The front panel of KOM200 media converter:
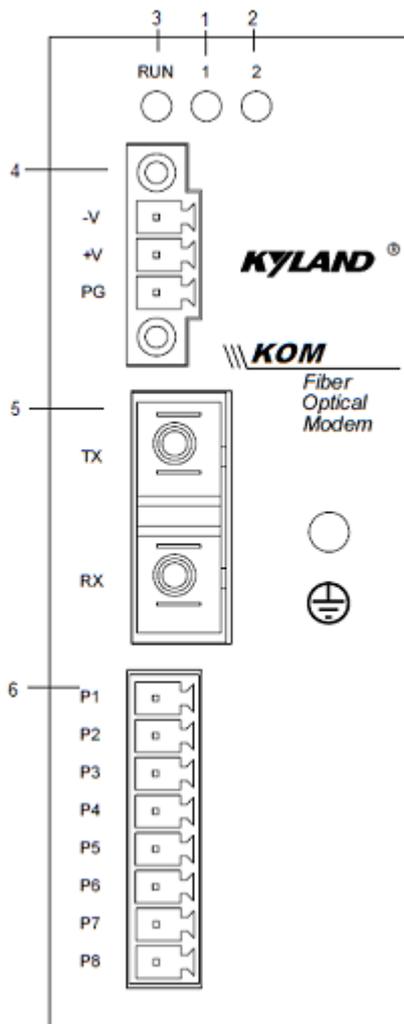
1. Data Send LED:
   Off-No data transmitting
   Blinking-Data transmitting

2. Data Receive LED:
   Off-No data transmitting
   Blinking-Data transmitting

3. Run LED:
   ON-Master
   Blinking once a second-Slave
   Quick Blinking-Error Occurs

4. Power Input Terminal:
   V-Negative Power Connection (L)
   +V-Positive Power Connection (N)
   PG-Power Ground

5. Fiber Ports:
   TX-Transfering
   RX-Receiving

6. P1-P8:
   Data Ports

Figure 1: Panel Diagram

3.   Fiber Port

Optical part employs integrated optical transceiver supporting FC/SC/ST connector. In point-to-point communication, 3-wire of RS232 and 7-wire of RS232/RS485/RS422 are supported to transmit serial data. While using the devices, connect the TX port of local device through multi mode/single mode fiber cable to RX port of the remote device. Please refer to chapter four for detail network connection methods.

4.   Data Ports

(1) KOM200-485/232L signals definition

KOM200 Data Ports

P1	GND P2	RS485- P3	RS485+ P4	RXD1 P5	TXD1 P6	RXD0 P7	TXD0 P8
Control Signal	GND	User RS485-	User RS485+			User TXD0	User RXD0
		The Third Channel RS485 Data				The First Channel RS232 Data	

P1,P2 connected: Master;   P1,P2 are not connected: Slave
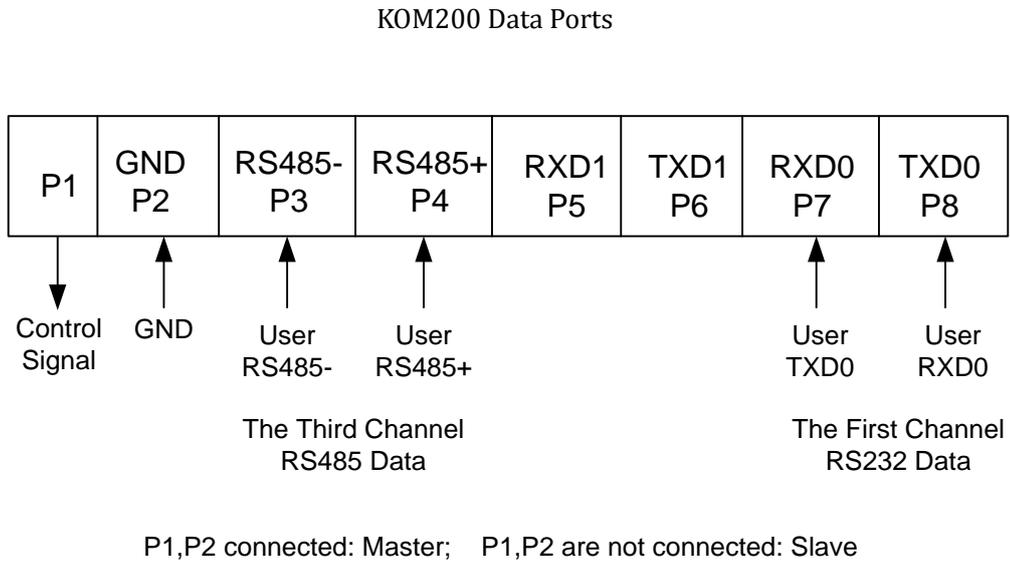
Figure 2: KOM200-485/232L Interface Diagram

Note: KOM200-485/232L is an upgraded model for the application requiring single fiber ring. Users can connect these units into a single fiber ring, and the data interface includes one channel of RS232 and one channel of RS485 without configuration. When composing a single fiber ring, the unit with its P1 and P2 being connected will be the Master, while others with their P1 and P2 not being connected will be the Slaves.

### (2) KOM200-485/232 and KOM200-485/232A signals definition

KOM200 Data Ports

P1	GND P2	RS485- P3	RS485+ P4	RXD1 P5	TXD1 P6	RXD0 P7	TXD0 P8
	GND	User RS485-	User RS485+	User TXD1	User RXD1	User TXD0	User RXD0
		The third data RS485		The second data RS232		The first data RS232	
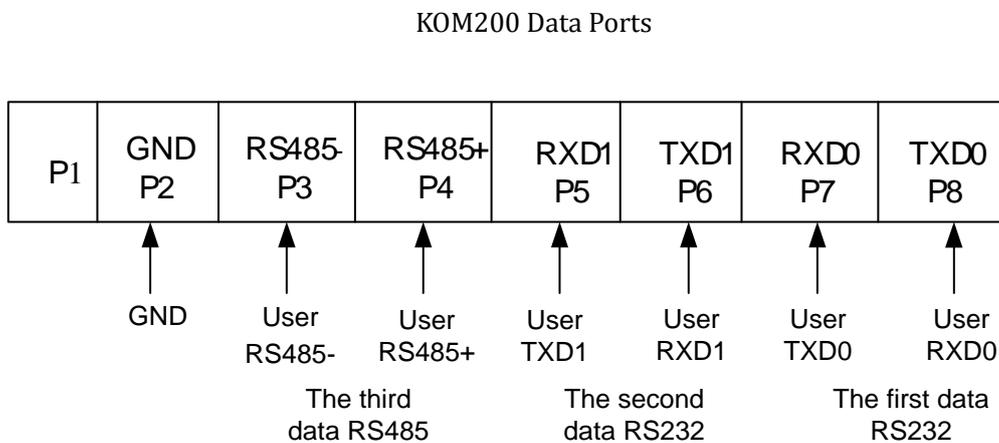
Figure 3: KOM200-485/232 KOM200-485/232A Interface Diagram

Notes: Differences between KOM200-485/232 and KOM200-485/232A：

In KOM200-485/232, the 1st channel of RS232, the 2nd channel of RS232 and the 3rd channel of RS485 are independent to each other;

In KOM200-485/232A, the 1st channel of RS232 is independent, the 2nd channel of RS232 and the 3rd channel of RS485 are multiplexing, which means the 2nd channel of RS232 can communicate with the 2nd channel of RS232 and 3rd channel of RS485 in another device, and the 3rd channel of RS485 can communicate with the 2nd channel of RS232 and the 3rd channel of RS485 in another device without configuration.

(3) KOM200-232/422 signals definition
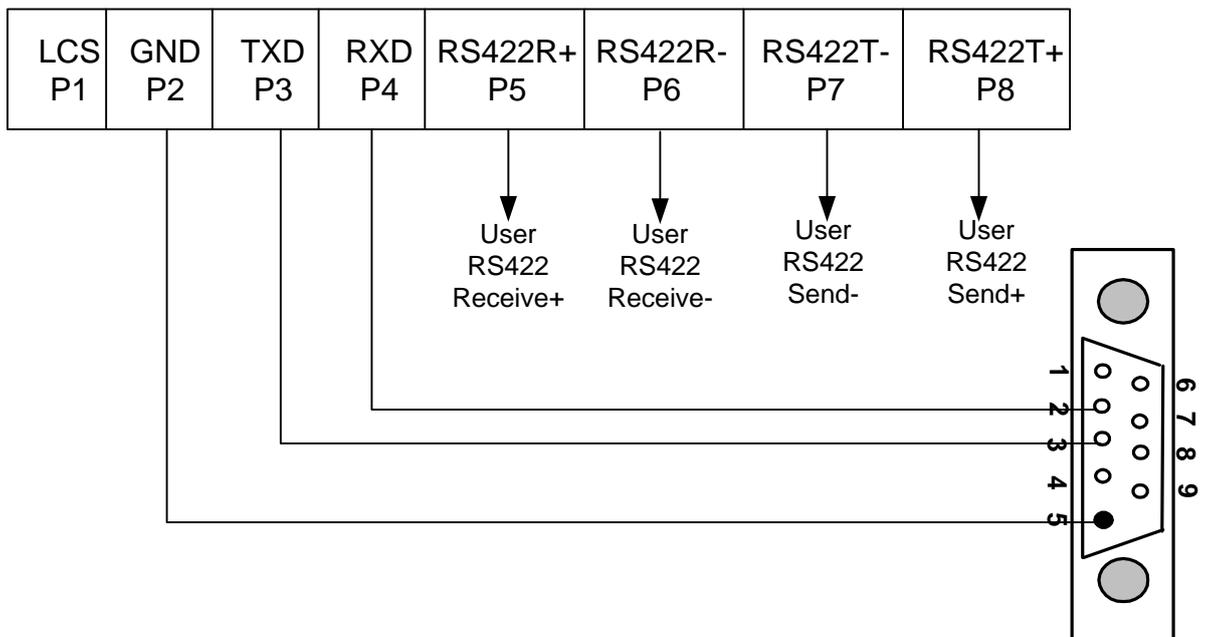
KOM200 Data Ports

Figure 4: KOM200-RS232/422 Interface Diagram

(3) KOM200A signals definition

KOM200 Data Ports

P1	GND P2	P3	P4	P5	P6	RXD0 P7	TXD0 P8

GND

User TXD0

User RXD0

The first channel of RS232 Data
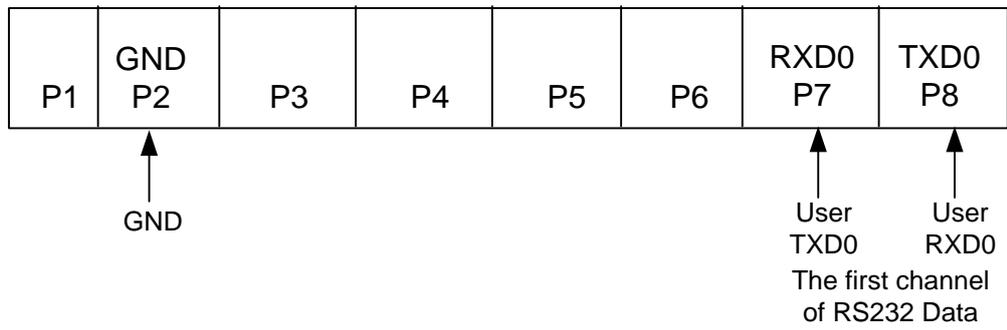
Figure 5: KOM200A Interface Diagram

(4) KOM200-V.24 signals definition

KOM200 Data Ports

LCS P1	GND P2	DTR P3	DSR P4	RTS P5	CTS P6	TXD P7	RXD P8
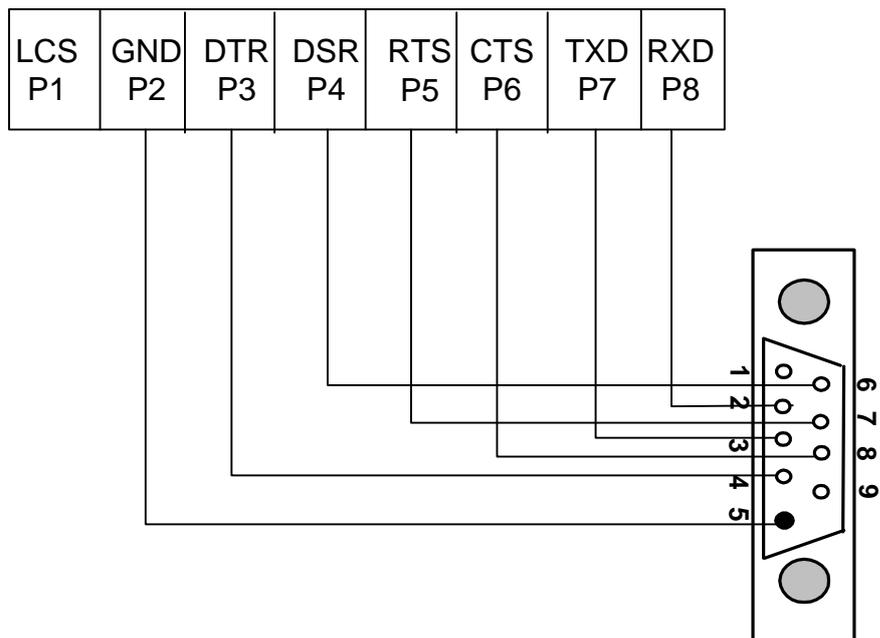
Figure 6: KOM200-V.24 Interface Diagram

5.   KOM200 Grounding

The device grounding: please ground the Power grounding terminal (PG) and the Casing grounding terminal, showing as Figure 7.

Grounding wires: The section should not be less than 2.5mm^2, grounding resistance <5Ω, copper core.
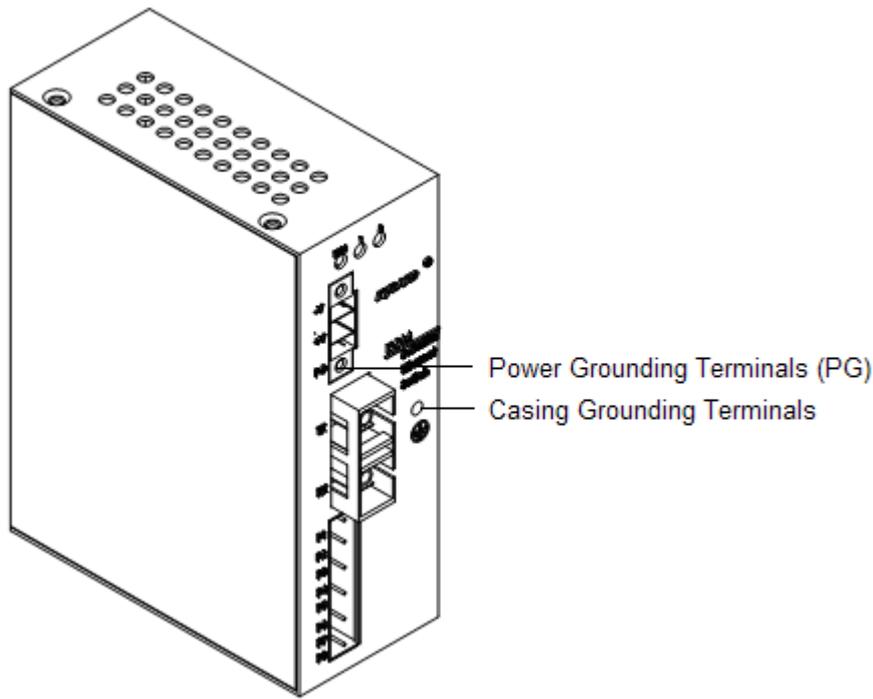
Figure 7: Device grounding

Grounding method:

1. Casing grounding steps are as follows, as Figure 8-a:

   a. Connect one terminal of grounding wire with the cold-pressing terminal

   b. Use a grounding screw to fix the cold-pressing terminal to the casing grounding hole

   c. Ground the other terminal of grounding wire

2. Power grounding steps are as follows, as Figure 8-b:

   a. Strip 5mm-long sheath from grounding wires and twist the bare copper wires together into a bundle;

   b. Use a 2.5mm one-slot screwdriver to unscrew the "grounding wires locking screw", insert the grounding wires into the hole at the terminal tail, and screw down the "grounding wires locking screw".

   c. Ground the other terminal of grounding wires
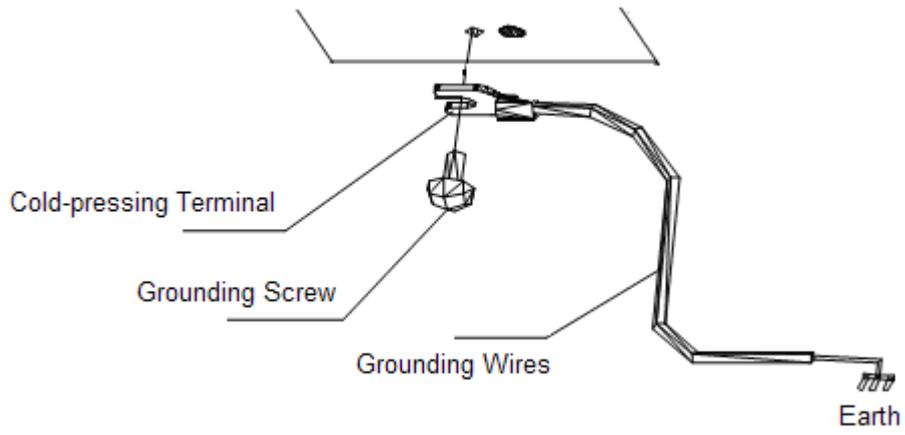
Figure 8-a Casing Grounding
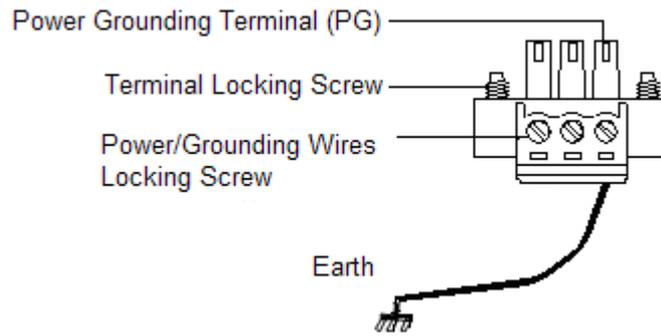
Figure 8-b Power Grounding

6. Hardware installation

For most industrial applications, 35mm standard DIN-Rail installation is very convenient. The DIN-Rail connector has been fixed in the rear panel of KOM200. Figure 9 shows the dimension of DIN-rail installation.
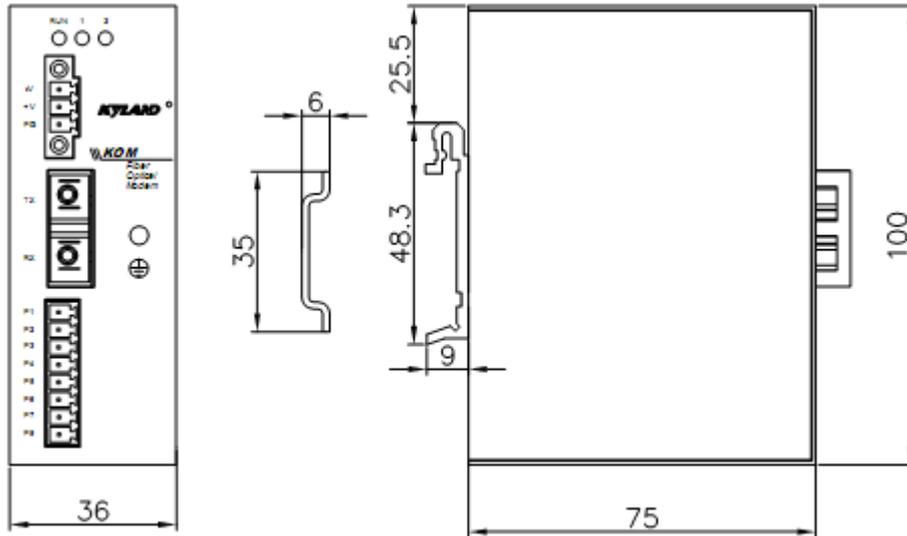

Figure 9 Dimension diagram of DIN-rail installation

1. Before installation, make sure that the DIN-Rail is fixed well;

2. Insert the bottom of KOM200 into the DIN-Rail slot, and turn the equipment as figure 10-a

3. As Figure 10-b, put the DIN-Rail into slot, and make sure the device is completely fixed on the DIN-Rail.
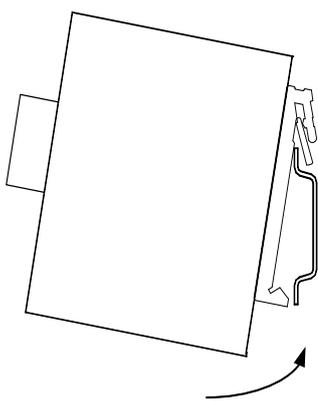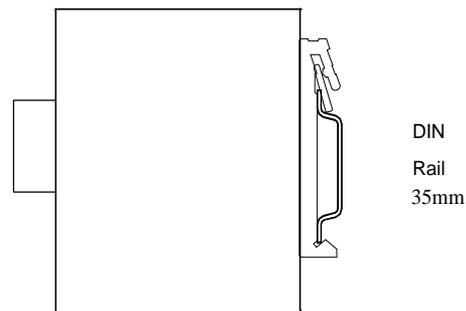

Figure 10-a   **Figure 10-b**

Figure 10 Install KOM300 into Rail

Chapter 4:   Network Connection

KOM200 support two types of networking, point to point and single fiber ring. The figures are as follows：

    1．Point to Point
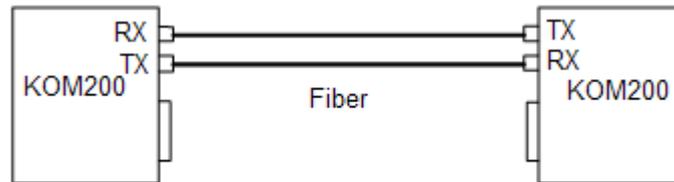
Figure 11 Point to Point Diagram

    2．Single Fiber Ring

When composing a single fiber ring using KOM200, the device needs to be set as Master or Slave. If P1 and P2 are connected, the device is Master; If P1 and P2 are not connected, the device becomes Slave.
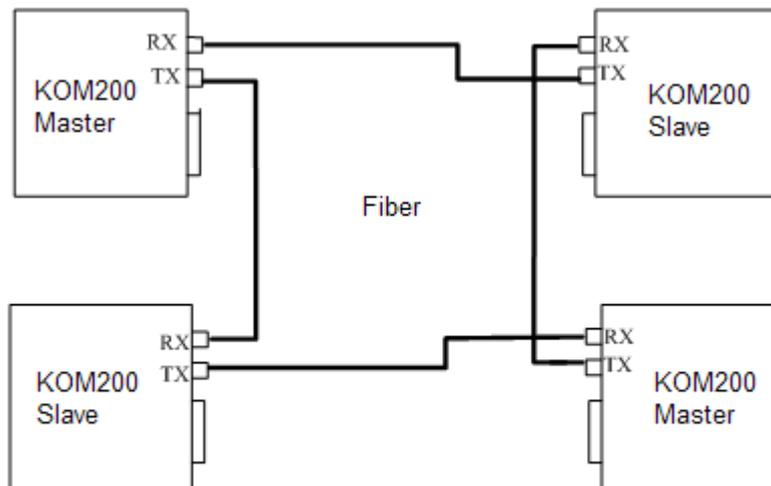
Figure 12 KOM200 Single Fiber Ring Diagram

Attention:

1) Do not place the equipments close to water sources or damp places；

2) Please keep optical fiber plugs and sockets clean. Please cover the interface when it's not use.

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