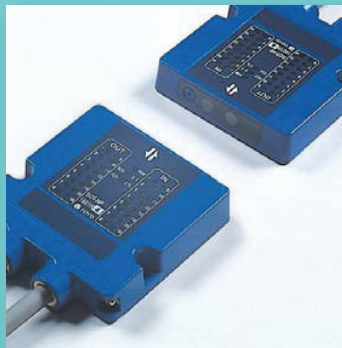


Space Optical Transfer Unit

SOT series

Vol.16



SOT series is the space optical transfer unit that applies Near-infrared rays. The data transmission can be done without constructing the cable between two points away by the use of SOT.

There are a type for the type for Ethernet, the type for CC-Link, the type for serial data and the type for parallel data, etc. by the transmission form.

The data transmission can be done without constructing the cable.

The cable is unnecessary.

Because the cable between equipment is unnecessary, it is possible to transmit to the moving equipment. Moreover, also when it is interrupted in the trunk road, the train route, and the high temperature region, etc. even if shortly stalling in the distance and the construction of the cable is difficult, etc. it is possible to use it.

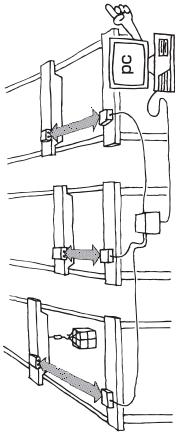
It is strong in the electromagnetic interference.

Because light (Near-infrared rays) is assumed to be a transmission medium, the influence of an electric noise and magnetism is not received. A steady performance is demonstrated. Even if the surrounding etc. of the occurrence of the trouble easily in the factory and the motor. Moreover, the restriction in regulations is not received like the electric wave.

Please choose by the purpose.

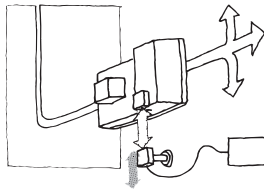
There is an interactive half duplex type alternately sent and received with a full duplex interactive type to be able to send and receive both of the transmission method at the same time. The transmission distance and the transmission capacity, the speed, and the interface, etc. variously arrange it. Please select it by the purpose.

Example of crane control system



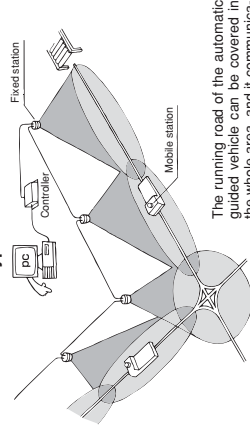
Not only the data transmission for automatic control but also the program data for maintenance can be transmitted from the ground with the system that controls two or more cranes.

Example of Automated Guided Vehicle communication system



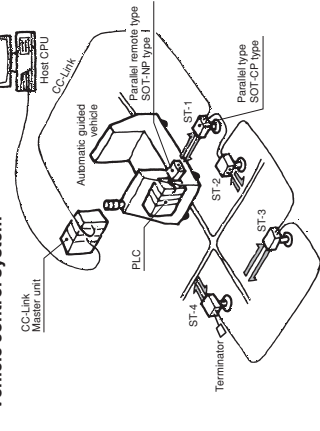
The interlock signal of the process directive and destination directions etc. is communicated between each station and AGVs.

Example of system using wide area communication type



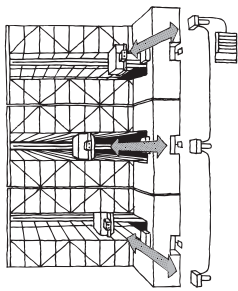
The running road of the automated guided vehicle can be covered in the whole area, and it communication in real time.

Example of Automated Guided Vehicle control system



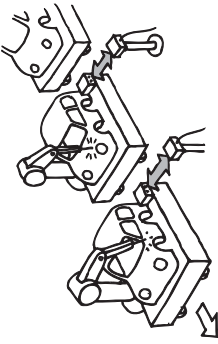
Example of system using parallel remote type SOT for CC-Link

Example of solid automatic warehouse control system



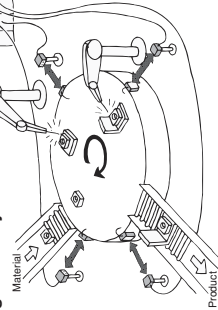
It is a system that controls two or stacker cranes at the same time because of interactive transmission.

Example of body welding line control system



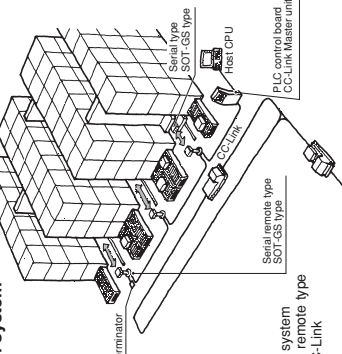
The presence of the material and the confirmation signal, and cylinder control signal of the inclination etc. are transmitted, and the welding assembly line is controlled with PLC.

Example of system only for welding assembly line



The presence of the material and the confirmation signal, and the cylinder control signal of the inclination etc. are transmitted, and the welding robot is moved.

Example of stacker crane control system



Example of system using serial remote type SOT for CC-Link

INDEX

■ Ethernet support type

- (10Mbps)
- SOT-ES100/200 series 2~3
- SOT-ES500 series 4~5
- (2.5Mbps)
- SOT-EG80/160 series 6~7

■ CC-Link support type

- (Space optical repeater unit 10Mbps)
- SOT-MS102/202 series 8~9
- (Space optical repeater unit 2.5Mbps)
- SOT-MQ82/162 series 10~11
- (Serial remote type)
- SOT-GS8014V/15014V series 12~13
- (Parallel remote 8bit type)
- SOT-CP801/803 series 14~15
- (Parallel remote 16bit type)
- SOT-CP1601/1603 series 16~17

■ Serial type

- (RS-232C/RS-422)
- SOT-GS01 series 18~19
- SOT-GS50/80/150 series 20~21
- (RS-485 tri-state)
- SOT-GS508/808/1508 series 22~23

■ Parallel type

- (4bit)
- SOT-NP401/403 series 24~25
- (8bit)
- SOT-NP801/803 series 24~25
- (16bit)
- SOT-NP1601/1603 series 26~27

■ Serial/Parallel mixed type

- (Serial/Parallel converter)
- SPC-IX/SX series 28~31
- (Serial/Parallel simultaneous communication)
- SOT-NP16708/32708 series 32~33

Space optical transfer unit (Ethernet support type)

SOT-ES100

ES200

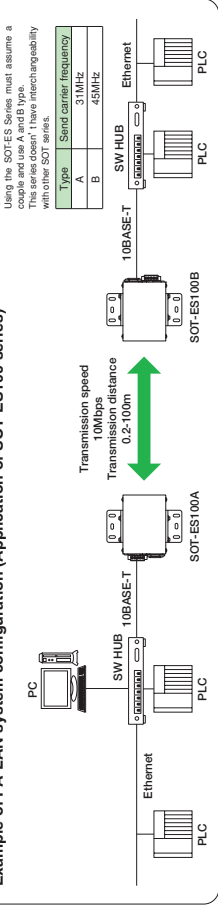
series

10Mbps Ethernet supported

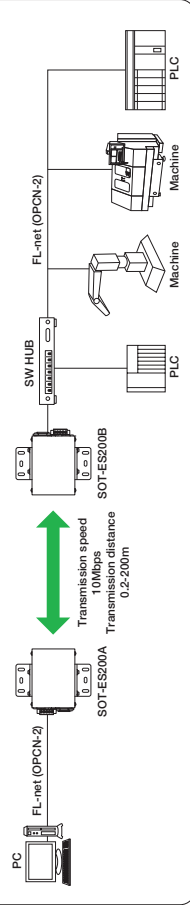
This device is a data transmitting equipment for Ethernet using the space spread of light (Near-infrared rays). The use environment can treat data at the transmission speed of 10Mbps in accordance with IEEE802.3 (Ethernet). Not only a usual data communication but also the personal computer becomes possible the program confirmation and the charge on the movement side and improves maintenance in case of the PLC control system of the same network. The transmission distance is 0.2~100m/0.2~200m. This device is DC power supply specification.

Example of system configuration

Example of FA-LAN system configuration (Application of SOT-ES100 series)



FL-net (OPCN-2) Example of OpenNet system configuration (Application of SOT-ES200 series)



The main specification

Model	SOT-ES100	SOT-ES200
Use environment	IEEE802.3 (Ethernet)	
Transmission Speed	Cable side: 10Mbps	
Power supply voltage	Rated voltage : DC24V Power supply ripple: 10% or less	
Current consumption	Working voltage : DC24V (at input DC24V)	
Interface	Less than 150mA (at input DC24V)	
Transmission method	10BASE-T for auto negotiation and Auto-MDIX	
Communication Control method	Full-duplex, bi-directional	
Connected to:	Network card or Switching HUB	
Transmission distance	0.2~100m	0~200m
Directivity	1.2 degrees	1.0 degree
Modulation Method	FSK	
Lighting element	Near infrared light emitting diode (light emitting wavelength 870 nm)	
Receiving element	Photo diode	
Auxiliary output	DL : "ON" when communication is permitted. ALM : "OFF" when the reception level is low. Output form : Photo coupler isolated NPN open collector outputs. Output rating : DC30V 50mA MAX	

Connection	For signal : RJ-45 modular jack 1 (Up to category 3 or more twist pair cable (10m)) For power/aux. output : 5-points connector (Items B, C, E, F, G)
Check terminal	DC voltage output (V) : 10V (max.) (Items B, C, E, F, G) DC voltage range (V) : 0V to 5V (at 10V) (Use the DC voltage range with a 10kΩ V or higher resistor.)
Operating ambient illumination	Solar beam: 10,000lx or less Fluorescent, incandescent lamps: 3,000lx or less No externally disturbed light shall directly enter the receiver.
Operating ambient temperature	-10~+55°C No freezing allowed
Operating ambient humidity	10~85%RH No condensation allowed
Resistance to vibration	Frequency: 10~55 Hz, complex amplitude: 1.5mm, sweep: 5 min X-Y-Z 20 cycles in each of X, Y and Z directions (JIS C0300 conforming)
Resistance to impact	IP49 (Connected part in the back is excluded)
Protection class	IP49 (Connected part in the back is excluded)
Outside dimensions	80mm(W)X110mm(D)X43mm(H) Only the main body part
Weight	About 350g
Accessory	Attachment tool: 2 pieces Plug for power/aux. output connector: 1 piece

*A of the send carrier frequency type or B enters for □.

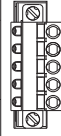
Explanation of monitor lamp

POW (RED) : Power supply.
LINK (GREEN) : Link (GREEN)
SD (GREEN) : Send data (GREEN)
RD (GREEN) : Receive data (GREEN)
FDX (RED) : Full duplex (RED)
This station CD : Carrier detected (RED)
Other station CD : Carrier detected (RED)
Other station LEVEL : Receiving light level (4 points) (GREEN)
This station LEVEL : Receiving light level (4 points) (GREEN)
Other station LEVEL : Receiving light level (4 points) (GREEN)
When becoming an amount of light received to be able to communicate this station, it lights.

Connection and wiring

① Power supply and auxiliary output connector

Signal name	Abbreviation	Terminal number
Power supply	24V	1
Auxiliary output	GND	2
	DL	4
	ALM	5
	COM	3



Cable insertion drawing

② Acceptable connector (bundle)

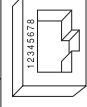
Plug: FKCT 2.5/5-STF-5/98 (1902330)
Made of phoenix contact or equivalent goods

③ Use recommendation cable

Please use the cable of 0.3mm or more for the cable for a power supply and a auxiliary output.
(Please use it within 50 meters in total extension after confirming the voltage descent).

③ Connector for signal (Ethernet)

Signal name	Abbreviation	Terminal number
Transmission output	TD+	1
	TD-	2
Receiving input	RD+	3
	RD-	4
Unconnection		5
		7



The transmission output and the receiving input might change places according to the connecting method of the connector.
The color of the receiving input might change places according to connected signal. (The polarity detecting function)

④ Acceptable connector

Plug : category 3 or more RJ-45 plug or VS-08-09 (made of phoenix contact or equivalent goods)
Shell : VS-08-T-RJ45(P/S) (1688-096) Made of phoenix contact or equivalent goods

⑤ Use recommendation cable

Please use the cable of the twisted-pair cable (STP) with the shield or the twisted-pair cable (UTP) without the shield of 3 or more by the category. (Within 100m in total extension)

It lights according to a receiving light level (4 points) (GREEN)
When becoming an amount of light received to be able to communicate other station, it lights.
It lights according to a receiving light level of other station.

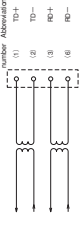
③ Configuration switch

Configuration switch	Effective/Ineffective	Invalidity
Auto negotiation	OFF	ON
Full duplex/Half duplex	OFF	Half duplex
10BASE-T link at shading	OFF	Disconnect
	OFF	ON

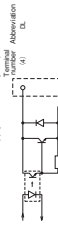
Please change the communicate mode (Full duplex/Half duplex) of the space optical transfer unit to the same setting.
It is necessary to note it especially when connecting with the device that doesn't correspond to an auto negotiation, and setting 'Invalidity'.
In the case of the data frame might occur when it is not the same setting.

④ Details of external output circuit

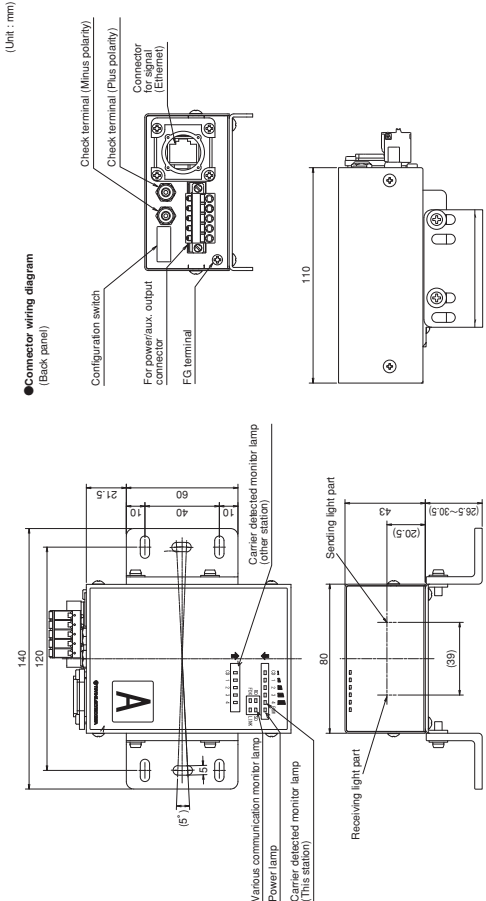
Connector for signal number



Power supply and auxiliary output connector



Outside dimensions



Space optical transfer unit (Ethernet support type)

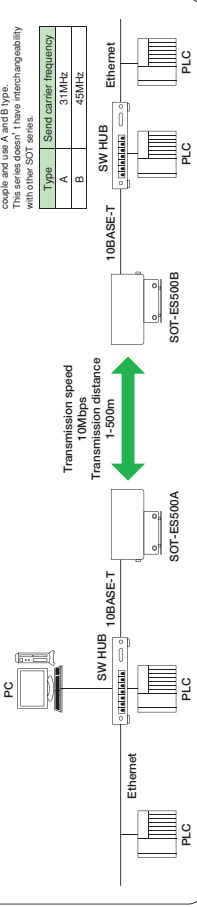
SOT-ES500 series

10Mbps Ethernet supported

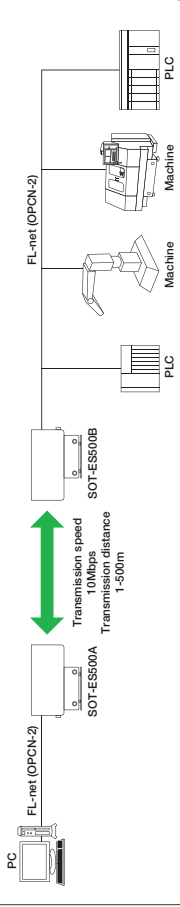
This device is a data transmitting equipment for Ethernet using the space spread of the light (Near-infrared rays). The use environment can treat data at the transmission speed of 10Mbps in accordance with IEEE802.3 (Ethernet). Not only a usual data communication but also the personal computer becomes possible the program confirmation and the change on the movement side and improves maintenance in case of the PLC control system of the same network. The transmission distance is 1.0~500m. Because the receiving quantities of light level of the other party side can be confirmed with both equipment, the optical axis adjustment is easy. This device is AC power supply specification.

Example of system configuration

Example of FA-LAN system configuration



FL-net (OPCN-2) Example of OpenNet system configuration



The main specification

Model	SOT-ES500□
Use environment	IEEE802.3 (Ethernet)
Transmission speed	Cable side: 10Mbps
Power supply voltage	AC 100V 50/60Hz (Range of use voltage AC 85~125V)
Power consumption	Less than 10VA
Interface	10BASE-T (for auto negotiation)
Transmission method	Full-duplex, bi-directional
Communication control method	Bit forward
Connected to	Network card or Switching HUB
Transmission distance	1~500m
Directivity	1.0 degree or more the horizontal and vertical both.
Modulation method	FSK
Lighting element	Near infrared light emitting diode (light emitting wavelength 820nm)
Receiving element	Photo diode
Auxiliary output	CUO "ON", when communication is permitted. CUO "OFF", when communication is not permitted. Output form : Photo coupler isolated NPN open collector output. Output rating : DC30V 50mA MAX

Connection	For signal : RJ-45 modular jack (Up to category 3 or more twisted pair cable 100m) For power : 3-pins connector terminal block For aux. output : 3-pins D-sub connector (Socket terminal)
Check terminal	DC voltage range (Use the DC voltage range with a 10kΩ/V or higher resistor.)
Operating ambient illumination	Solar beam: 10,000lx or less Fluorescent, incandescent lamps: 3,000lx or less No externally disturbed light shall directly enter the receiver.
Operating ambient temperature	-10~+50°C No freezing allowed
Operating ambient humidity	10~85%RH No condensation allowed
Resistance to vibration	Frequency: 10~15Hz, complex amplitude: 1.5mm, sweep: 5min X - Y - Z 20 cycles in each of X - Y and Z directions (JIS C0040 conforming)
Resistance to input	500ms*10 times in each of 3 directions (JIS C0041 conforming)
Protection class	IP40 (Connected part in the back is excluded).
Outside dimensions	220mm (W) X 280mm (D) X 200mm (H) (Contained attachment tool)
Weight	About 7kg
Accessory	Plug for power/aux. output: 1 piece for each. Cover for aux. output: 1 piece Connector and cover for signal: 1 piece for each Hexagon head bolt for installation (M6: 4-pieces)

*A of the send carrier frequency type or B enters for □.

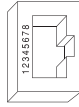
Explanation of monitor lamp

POW (RED) : Power (RED)
LINK (GREEN) : Link (GREEN)
SD (RED) : Send data (RED)
RD (GREEN) : Receive data (GREEN)
FDX (RED) : Full duplex (RED)
This station CD : Carrier detected (RED)
Other station CD : Carrier detected (RED)
Other station LEVEL : Receiving light level (4 points) (GREEN)
This station LEVEL : Receiving light level (4 points) (GREEN)
When becoming an amount of light received of this station.
When becoming an amount of light received to be able to communicate other station, it lights.
It lights according to a receiving light level of other station.

Connection and wiring

① Connector for signal (Ethernet)

Signal name	Abbreviation	Terminal number
Transmission	TD+	1
Transmission	TD-	2
Receiving input	RD+	3
Receiving input	RD-	6
Unconnection	—	4
Unconnection	—	5
Unconnection	—	7
Unconnection	—	8



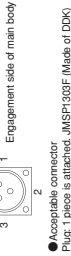
● Acceptable connector

Plug : 1 piece is attached, VS-08-ST-RJ45 (Made of copper or more).
Hood : 1 piece is attached, VS-08-T-RJ45/IP67 (Made of phenolic contact).
Use the plug (VS-08-ST-RJ45) when you use hood.

Power supply connector

Signal name	Abbreviation	Terminal number
Power supply	AC	1
Power supply	AC	3
Power supply	FG	2

● Arrangement drawing of connector



● Acceptable connector

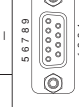
Plug : 1 piece is attached, JMSF1303F (Made of DDK)

Auxiliary output connector

Signal name	Abbreviation	Terminal number
Auxiliary output	CDM	4
Auxiliary output	ALM	5
Auxiliary output	COM	3
This station LEVEL	RCV+	6
This station LEVEL	RCV-	7
Unconnection	—	2
Unconnection	—	8

Configuration switch

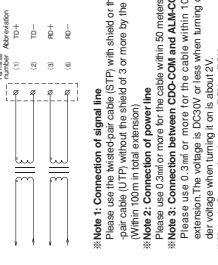
DIP Switch No.	Function	ON	OFF
1	Auto negotiation	Effective	Factory setting
2	Half duplex/Half duplex	Effective	Factory setting
3	Half duplex/Half duplex	Disconnect	Connected
4	Unconnection	Use a factory setting	(OFF)



● Acceptable connector

Plug : 1 piece is attached, XMSA-0901 (Made of OMRON) or equivalent goods.
Hood : 1 piece is attached, XMS-0911 (Made of OMRON) or equivalent goods.
Use the DC range for the check output with the tester of 10kΩ/V or more. About 3V is the maximum.

Signal interface



● Note 1: Connection of signal line

Please use the twisted-pair cable (STP) with shield or the twisted pair cable (UTP) without the shield of 3 or more by the category.

● Note 2: Connection of power line

Please use 0.3mm or more for the cable within 50 meters in total extension.

● Note 3: Connection between CDC-COM and ALM-COM

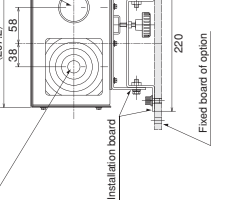
Please use 0.3mm or more for the cable within 100 meters in total extension.

● Note 4: Connection between RCV+ and RCV-

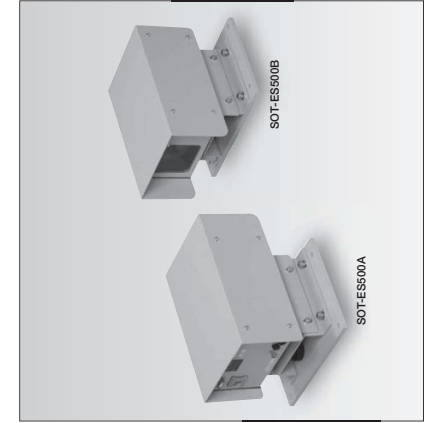
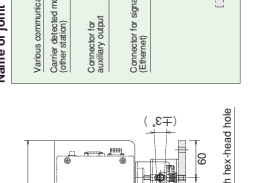
Please use 0.3mm or more for the cable within 100 meters in total extension.

Outside dimensions

Installation detailed size when fixed board of option is installed



Name of joint



Space optical transfer unit (Ethernet support type)

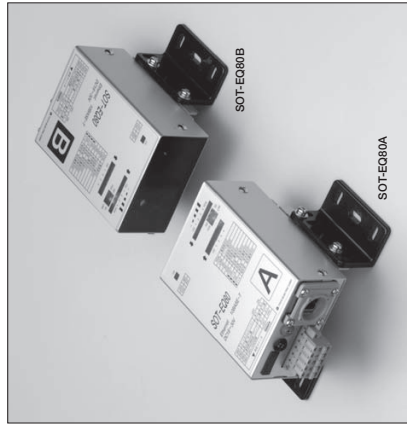
SOT-EQ80

SOT-EQ160

series

10Mbps Ethernet supported

This device is a data transmitting equipment for Ethernet using the space spread of light (Near-infrared rays). The use environment can treat data at the transmission speed of 2.5Mbps in accordance with IEEE802.3 (Ethernet). Not only a usual data communication but also the personal computer becomes possible the program confirmation and the change on the movement side and improves maintenance in case of the PLC control system of the same network. Moreover, the transmission transportation wave frequency can be switched with the dip switch, and it is possible to communicate up to two opposing stations at a pair (2.0/0.2-160m). This device is DC power supply specification.



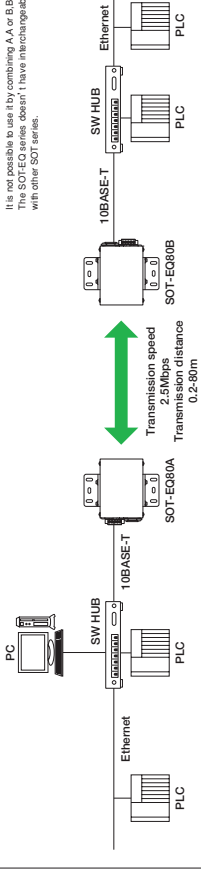
Example of system configuration

Example of FA-LAN system configuration (Application of SOT-EQ80 series)

● **Combination**
Using the SOT-EO Series must assume the following a couple.
CH1: A14.5MHz (B18.0MHz)
CH2: A21.5MHz (B25.0MHz)

Channel	Send carrier frequency	A	B
1	14.5MHz	18.0MHz	25.0MHz
2	21.5MHz	25.0MHz	

It is not possible to use it by combining A A or B B.
The SOT-EO series doesn't have interchangeability with other SOT series.



The main specification

Model	SOT-EO80	SOT-EO160
Use environment	IEEE802.3 (Ethernet)	
Transmission Speed	Cable side 10Mbps (Effect throughput 2.0Mbps Max)	
Power supply voltage	Rated voltage : DC24V Power supply ripple 10% or less Working voltage : DC18V~30V with 30V in peak voltage including ripple	
Current consumption	Less than 150mA (at input DC24V)	
Interface	10BASE-T for auto negotiation and Auto-MDIX	
Transmission method	Full duplex, bi-directional	
Control method	Store & forward and flow control (IEEE802.3X)	
Connected to:	Network card or Switching HUB	
Transmission distance	0.2~80m	0.2~160m
Directivity	1.0 degree	
Modulation Method	FSK	
Lighting element	Near infrared light emitting diode (light emitting wavelength 870nm)	
Receiving element	Photo diode	
Auxiliary output	DL : "ON" when communication is permitted. ALM : "OFF" when the reception level is low. Output form : 10-pin and 10-pin open collector outputs. Comparing : DC30V 50mA MAX	

*A of the send carrier frequency type or B enters for □.

Connection	For signal : RJ-45 modular jack For power/aux. output : 5-pins connector terminal block (Phoenix contact: MS1BZ-5/GF-5, 08)
Check terminal	DC voltage corresponding to the reception level is provided. (Use the DC voltage range with a 10kΩ/V or higher tester.)
Operating ambient illumination	Solar beam: 10,000lx or less Fluorescent, incandescent lamps: 3,000lx or less No externally distributed light shall directly enter the receiver.
Operating ambient temperature	-10~+55°C No freezing allowed
Operating ambient vibration	10~85%RH No condensation allowed
Resistance to impact	Frequency: 10~55 Hz, complex amplitude: 1.5mm (average), 5 mm X, Y, Z 20.5G/dk in each of X, Y and Z directions (JIS C2040 conforming)
Resistance to shock	500mg/10 ms in each of 3 directions X-Y-Z (JIS C2041 conforming)
Protection class	IP40 (Covered part in the back is excluded)
Outside dimensions	80(W)X110(D)X43(H)mm(Only the main body part)
Weight	About 350g
Accessory	Attachment tool: 2 pieces Plug for power/aux. output connector: 1 piece

Connection and wiring

① Power supply and auxiliary output connector

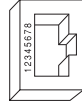
Signal	Abbreviation	Terminal number
Power supply	24V	1
	GND	2
Auxiliary output	D L	4
	ALM	5
	COM	3



- **Acceptable connector (bundle)**
Plug : FKCT 2.5/5-STF-5.08 (1922330)
Made of phoenix contact or equivalent goods
- **Use recommendation cable**
Please use the cable 0.15m or more for the cable for a power supply and a auxiliary output.
(Please use it within 50 meters in total extension after confirming the voltage descent.)

Connector for signal (Ethernet)

Signal	Abbreviation	Terminal number
Transmission output	TD+	1
	TD-	2
Receiving input	RD+	3
	RD-	6
		4
		5
Unconnection		7
		8



The transmission output and the receiving input might change place according to the connecting cable. (AutoMDIX function)
The polarity of the receiving input might change according to the connecting signal. (The polarity detecting function)

- **Acceptable connector**
Plug : Category 3 or more is RJ-45 plug or VS-08-STF-UAS (1688573). Made of phoenix contact or equivalent goods (1688895). Made of phoenix contact or equivalent goods
- **Use recommendation cable**
Please use the twisted-pair cable (STP) with the shield or the twisted-pair cable (UTP) without the shield of 3 or more by the category. (Within 100m in total extension)

Configuration switch

● Ethernet setting

Auto negotiation	Effective Factory setting	Invalidity
SW1	OFF	ON
Full duplex/Half duplex	Full duplex Factory setting	Half duplex
SW2	OFF	ON
10BASE-T Link at shading	Connected continuation	Disconnect
SW3	OFF	ON

Please set a setting both A type B types to half duplex when it is connected with the device that doesn't correspond to the flow control. The equipment on the other side is set to half duplex corresponding to the flow control.
The loss of the data frame might occur at momentary transmission capacity over time.
Please use the twisted-pair cable Full duplex that supports the space optical transfer unit to the same setting.
It is necessary to set it especially when connecting with the device that doesn't correspond to an auto negotiation, and setting it invalidly.
The loss of the data frame might occur when it is not the setting and invalidly.
Please turn off power once when you change the setting and turn it on again.

Channel setting

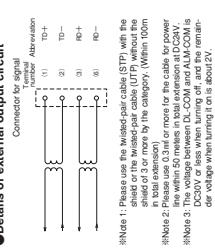
Channel number	1	2
Factory setting	OFF	ON
SW4	Blank	RED
Channel lamp		
A type Send carrier frequency	14.5MHz	21.5MHz
B type Send carrier frequency	18.0MHz	25.0MHz

Please set the same channel number to the transmission device of the set that communicate.
Please set the transfer unit and set a different channel number to each set when you set up more than two sets.

Explanation of monitor lamp

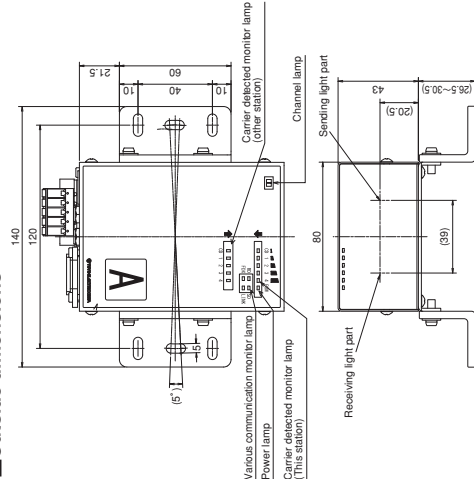
- POW (RED) : Lights by the power supply.
- LINK (GREEN) : Link (GREEN) lights when normally connected with Ethernet.
- SD (RED) : Send data (RED) lights when the transmission data is output.
- RD (GREEN) : Receive data (GREEN) lights when the receive data is output.
- FDX (RED) : Full duplex (RED) lights when is full duplex connected.
- This station CD (RED) : Carrier detected (RED) When becoming an amount of light received of this station.
- Receiving light level (4 points) (GREEN) : Lights according to a receiving light level of this station.
- Other station CD (RED) : Carrier detected (RED) When becoming an amount of light received to be able to communicate other station, it lights.
- Other station LEVEL (4 points) (GREEN) : Lights according to a receiving light level of other station.
- Channel (RED) : Channel lamp (RED) When setting it to channel 2, 4 lights.

Details of external output circuit



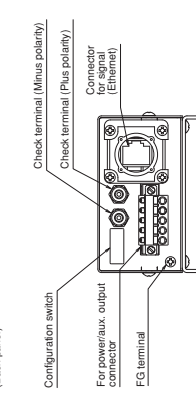
Power supply and auxiliary output connector
Terminal abbreviation
1: 24V
2: GND
3: COM
4: D L
5: ALM
6: RD+
7: RD-
8: TD+9: TD-
10: FD+
11: FD-
12: CD+
13: CD-
14: CD+
15: CD-
16: CD+
17: CD-
18: COM
19: 24V
20: GND
21: ONO
22: FDX

Outside dimensions



Connector wiring diagram

(Back panel)



SOT-EQ80/160 series

Space optical repeater unit for CC-Link

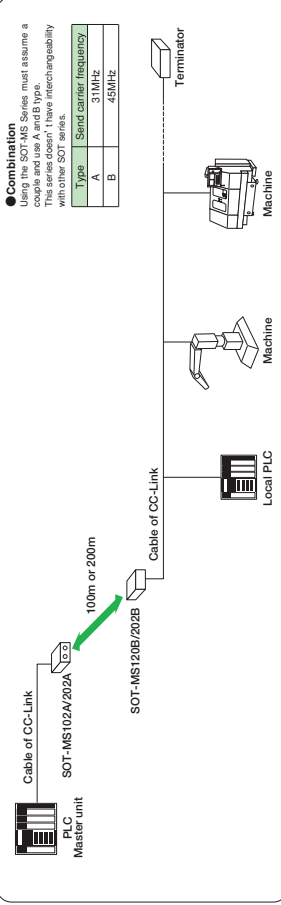
SOT-MS102 series



Correspond to CC-Link ver. 1.10/ver. 2.00.

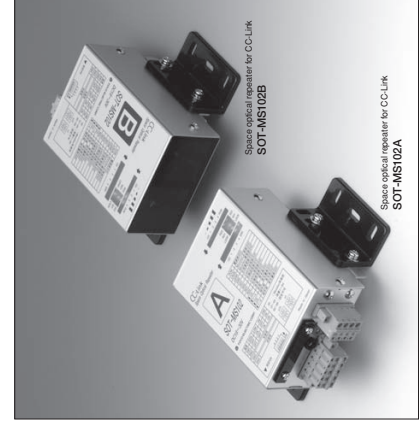
It is possible to use it as a space optical of CC-Link. The data of CC-Link is transmitted because of light (Near-infrared rays). The cable of CC-Link can be replaced with an optical, wireless communication. Because an optical receiving level can be transmitted to the master of CC-Link, the optical axis adjustment can be easily done. The transmission rate corresponds to 10M, 5M, 2.5M, and 625Kbps.

Example of system configuration



● **Combination**
Using the SOT-MS Series, must assume a couple and use A and B types. This series doesn't have interchangeability with other SOT series.

Type	Stand carrier frequency
A	31MHz
B	45MHz



Explanation of monitor lamp

POW : Power (RED)
LUN : Monitor normally lamp (GREEN)
LEER : Monitor abnormally lamp (RED)
ERR : Communication abnormally lamp (RED)
SDI : Cable side transmission lamp (RED)
ROD : Cable side receiving lamp (GREEN)

RO2 : Optical side receiving lamp (GREEN)
LCD : Receiving lamp for this station (RED)
LLEV : This station LEVEL
LLEV : Receiving light level (GREEN)
1CD : Receiving lamp for other station (RED)
1LEV : Other station LEVEL
1LEV : Receiving light level (GREEN)

Setting of switch

① Content of setting

SW1	SW2	SW3	SW4
4	2	1	3
Transmission speed setting	Unused	Unused	Unused
Speed setting	Unused	Unused	Unused
(Use it by turning off)	Unused	Unused	Unused
(Use it by turning off)	Unused	Unused	Unused

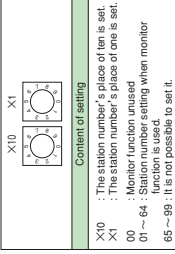
② Transmission speed setting (SW1,2)

SW1	SW2	Transmission speed
OFF	OFF	625Kbps
ON	OFF	2.5Mbps
OFF	ON	5Mbps
ON	ON	10Mbps

Factory setting is "625Kbps".

Station number configuration switch

① Content of setting



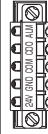
X10 : The station number's place of ten is set.
X11 : The station number's place of one is set.
00 : Monitor function unused
01 ~ 64 : Station number setting when monitor function is used.
65 ~ 99 : It is not possible to set it.
The factory setting is "00".
If the previous station doesn't exist, the setting of the station number is "00".
If the previous station exists, it makes it to "01" in the previous station exists. It makes it to "Number of occupation station of units + previous station number".
For example, when the previous station number is a unit that occupies two stations by "01", the station number becomes "03".

It lights to the optical side by the data receive. When becoming an amount of light received to be able to communicate this station, it lights.
It lights according to a receiving light level of this station. When becoming an amount of light received to be able to communicate other station, it lights.
It lights according to a receiving light level of other station.

Connection

Power supply and auxiliary output connector

Signal name	Abbreviation	Terminal number
Power supply	24V	1
Auxiliary output	COM	3
	GND	2
	CDO	4
	ALM	5



Cable insertion drawing

● Acceptable connector (bundle)

Plug : FKCT 2.5x5-STF-5.08 (1902330)
Made of phoenix contact or equivalent goods

● Use recommendation cable

Please use the cable of 0.3m or more for the cable for a power supply and a auxiliary output.
(Please use it within 50 meters in total extension after confirming the voltage descent.)

Connector for signal (CC-Link)

Signal	Abbreviation	Terminal number
Signal A <td>DA</td> <td>1</td>	DA	1
Signal B <td>DB</td> <td>2</td>	DB	2
Signal ground <td>DG</td> <td>3</td>	DG	3
Shield <td>SLD</td> <td>4</td>	SLD	4



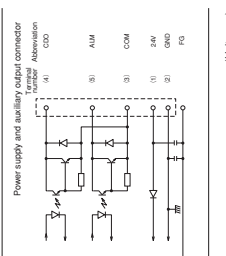
Cable insertion drawing

● Acceptable connector (bundle)

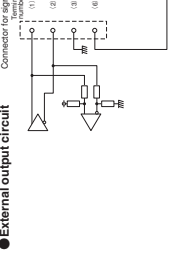
Plug : FKCT 2.5x4-STF-5.08 (1902330)
Made of phoenix contact or equivalent goods

● Use recommendation cable

Please use the cable only for CC-Link. It is not to be installed at the performance of the CC-Link when using at the light only for CC-Link. Please refer to the following for the specification and inquiry of the cable only for CC-Link.
CLPA Homepage : <http://www.cc-link.org/>



External output circuit



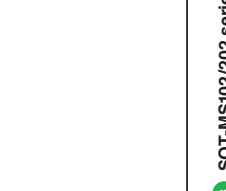
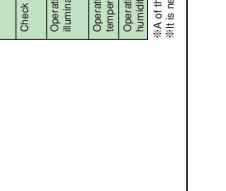
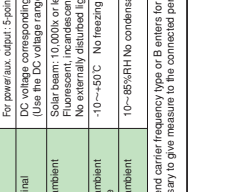
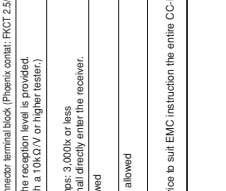
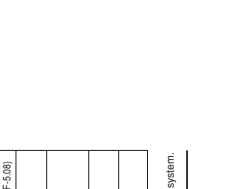
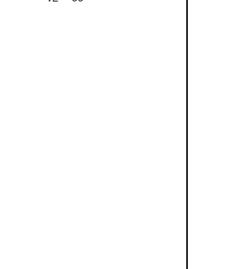
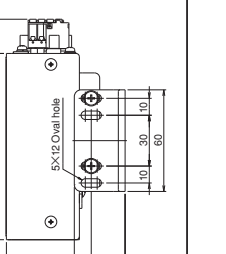
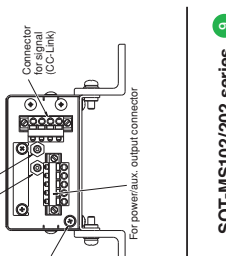
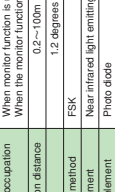
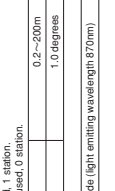
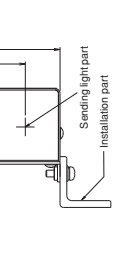
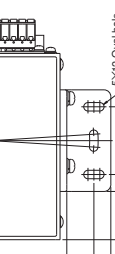
The main specification of CC-Link

Application PLC	Made of Mitsubishi Electric A series/QuA series/C series etc.
Application Master unit	AJ61BT11, A1S10BT11, A1R10BT11, A1S10BT11, C061BT11 etc.
Communication method	Control & Communication Link (CC-Link)
Transmission route	Bus
Transmission format	HDL
Connection	Connector terminal block
Transmission speed	10M, 5M, 2.5M, 625Kbps Either is selected

The main specification of space optical transfer unit

Model	SOT-MS102□ SOT-MS202□
Use environment	CC-Link Ver.1.10/Ver.2.00
Transmission speed	10M, 5M, 2.5M, 625Kbps
Power supply voltage	Rated voltage : DC24V Power supply ripple: 10% or less Working voltage : DC 18V ~ 30V within 30V in peak voltage including ripple
Current consumption	Less than 150mA
Interface	RS-485 conforming
Transmission method	Half-duplex, bi-directional
Communication method	Bit forward
Number of occupation station	When receiver function is used, 1 station When the monitor function unused, 0 station
Transmission distance	0.2 ~ 100m
Directivity	1.2 degrees
Modulation method	FSK
Lighting element	Near infrared light emitting diode (light emitting wavelength 870nm)
Receiving element	Photo diode
Auxiliary output	CDO : "ON" when communication is permitted. ALM : "OFF" when the reception level is low. When the receiver function is used, 5-point connector outputs. Output rating : DC30V 50mA MAX
Connection	For CC-Link, 4-points connector terminal block (Phoenix contact: FKCT 2.5x4-STF-5.08) For power/aux. output: 5-points connector terminal block (Phoenix contact: FKCT 2.5x5-STF-5.08)
Check terminal	DC voltage corresponding to the reception level is provided. (Use the DC voltage range with a 10kΩV or higher resistor.)
Operating ambient illumination	Solar beam: 10,000lx or less. Fluorescent, incandescent lamps: 3,000lx or less. No externally disturbed light shall directly enter the receiver.
Operating ambient temperature	-10 ~ +50 °C No freezing allowed
Operating ambient humidity	10 ~ 85%RH No condensation allowed

□ : The type of the send carrier frequency type or B refers for □. It is necessary to give measure to the connector pin device to suit EMC (restraining the entire CC-Link system).



Space optical repeater unit for CC-Link

SOT-MQ82

SOT-MQ162

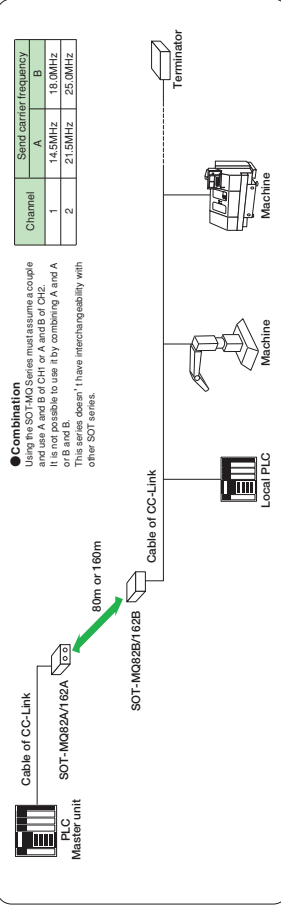
series



Correspond to CC-Link ver 1.10/ver 2.00.

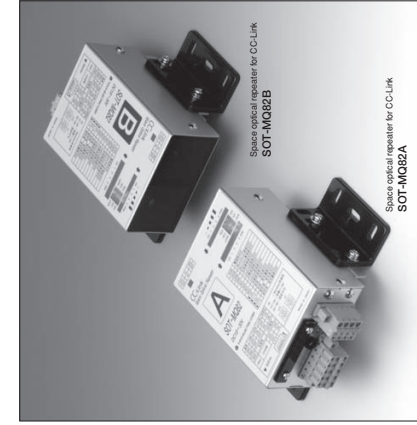
- It is possible to use it as a space optical of CC-Link.
- The data of CC-Link is transmitted because of light (Near-infrared rays).
- The data of CC-Link can be replaced with an optical, wireless communication.
- Because an optical receiving level can be transmitted to the master of CC-Link, the optical axis adjustment can be easily done.
- The transmission rate corresponds to 2.5M, 625K, and 156Kbps.
- The transmission transportation wave frequency can be switched with the dip switch, and it is possible to communication up to two opposing arranged in parallel on the same orbit without interference.

Example of system configuration



- **Combination**
The combination of the optical axis A and B of CH1 or A side of CH2. It is not possible to use it by combining A and A or B and B.
This series doesn't have interchangeability with other SOT series.

Channel	A	B
1	14.5MHz	18.0MHz
2	21.5MHz	25.0MHz



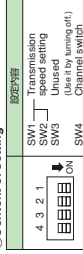
Explanation of monitor lamp

- POW : Power (RED)
- LRUN : Monitor normally lamp (GREEN)
- LEER : Monitor abnormally lamp (RED)
- ERR : Communication abnormally lamp (RED)
- SDI : Cable side transmission lamp (RED)
- SDR : Cable side receiving lamp (RED)
- RO1 : Cable side receiving lamp (GREEN)
- RO2 : Optical side receiving lamp (GREEN)
- RO3 : Optical side receiving lamp (GREEN)
- RO4 : Receiving lamp for this station (RED)
- RO5 : Receiving lamp for other station (RED)
- RO6 : Receiving lamp for other station (RED)
- RO7 : Receiving lamp for other station (RED)
- CH : Channel lamp (RED)

Setting of switch

Configuration switch

① Content of setting



② Transmission speed setting (SW1,2)

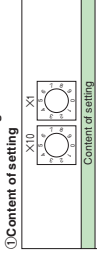
SW1	SW2	Transmission speed
OFF	OFF	156Kbps
OFF	ON	625Kbps
ON	OFF	2.5Mbps
ON	ON	It is not possible to set L.

③ Channel switch (SW4)

SW4	Send carrier frequency
OFF	CH1
ON	CH2

Station number configuration switch

① Content of setting



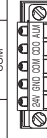
- X10 : This is the station number of this station.
 - X11 : The station number's place of one is set.
 - 00 : Monitor function unused
 - 01 ~ 64 : Station number setting when monitor
 - 65 ~ 99 : It is not possible to set it.
- The factory setting is "00".
 2 If the previous station doesn't exist, the setting of the station number when the monitor function is used is made by the station number of the previous station. Number of occupation station of units "previous station".
 For example, when the previous station number is a unit becomes "00", stations by "01", the station number becomes "00".

Connection

- RO2 : Optical side receiving lamp (GREEN)
- RO3 : Receiving lamp for this station (RED)
- RO4 : Receiving lamp for other station (RED)
- RO5 : Receiving lamp for other station (RED)
- RO6 : Receiving lamp for other station (RED)
- RO7 : Receiving lamp for other station (RED)
- CH : Channel lamp (RED)

Power supply and auxiliary output connector

Signal name	Abbreviation	Terminal number
Power supply	24V	1
Ground	GND	2
Auxiliary output	COM	3



Acceptable connector (bundle)

Plug : FKC2.5-5-STF-5.08 (1902330)

Made of phenolic contact or equivalent goods

Use recommendation cable

Please use the cable of 0.3mm or more for the cable for a power supply and a auxiliary output.
 (Please use it within 50 meters in total extension after confirming the voltage descent.)

Connector for signal (CC-Link)

Signal	Abbreviation	Terminal number
Signal A <td>DA</td> <td>1</td>	DA	1
Signal B <td>DB</td> <td>2</td>	DB	2
Signal ground <td>DG</td> <td>3</td>	DG	3
Shield <td>SLD</td> <td>4</td>	SLD	4



Acceptable connector (bundle)

Plug : FKC2.5-4-STF-5.08 (1902330)

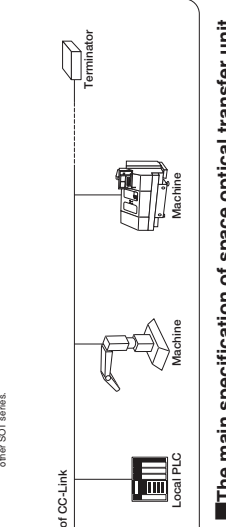
Made of phenolic contact or equivalent goods

Use recommendation cable

Please use the cable only for CC-Link.
 It is not to be used in the performance of the CC-Link even though the cable only for CC-Link.
 Please refer to the following for the specification and inquiry of the cable only for CC-Link.
 CLPA Homepage : <http://www.cc-link.org/>

The main specification of CC-Link

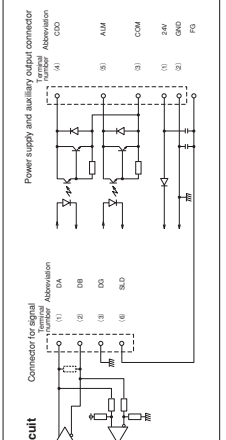
Application PLC	Made of Mitsubishi Electric A series/Qua series/D series etc.
Application Master unit	AJ61BT11, A1SJB1T11, AJ610BT11, A1SJB10BT11, QJ61BT11 etc.
Communication method	Control & Communication Link (CC-Link)
Transmission route	Bus
Transmission format	HDL
Connection	Connector terminal block
Transmission speed	2.5M, 625Kbps, 156Kbps Either is selected



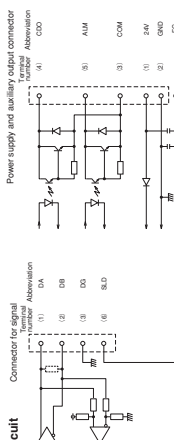
The main specification of space optical transfer unit

Model	SOT-MQ82□ SOT-MQ162□
Use environment	CC-Link Ver.1.10/Ver.2.00
Transmission speed	2.5M, 625K, 156Kbps
Power supply voltage	Rated voltage : DC24V Power supply ripple 10% or less Working voltage : DC18V~30V within 30V in peak voltage including ripple
Current consumption	Less than 150mA
Interface	RS-485 conforming
Transmission method	Half-duplex, bi-directional
Communication method	Bit forward
Number of occupation station	When receiver function is used, 1 station When the monitor function unused, 0 station
Transmission distance	0.2~60m
Directivity	1.0 degrees
Modulation method	FSK
Lighting element	Near infrared light emitting diode (light emitting wavelength 870nm)
Receiving element	Photo diode
Auxiliary output	CCO : "ON" when communication is permitted. ALM : "OFF" when the reception level is low. Output rating: DC30W 50mA MAX
Connection	For CC-Link, 4-points connector terminal block (Phoenix contact: FKC 2.5-4-STF-5.08) For power/aux. output: 5-points connector terminal block (Phoenix contact: FKC 2.5-5-STF-5.08)
Check terminal	DC voltage corresponding to the reception level is provided. (Use the DC voltage range with a 10kΩV or higher resistor.)
Operating ambient illumination	Solar beam: 10,000lx or less. Fluorescent, incandescent lamps: 3,000lx or less
Operating ambient temperature	-10~+50°C No freezing allowed
Operating ambient humidity	10~85%RH No condensation allowed

※A of the send carrier frequency type or B enters for □.
 ※It is necessary to give measure to the connected peripheral device to suit EMC restriction the entire CC-Link system.

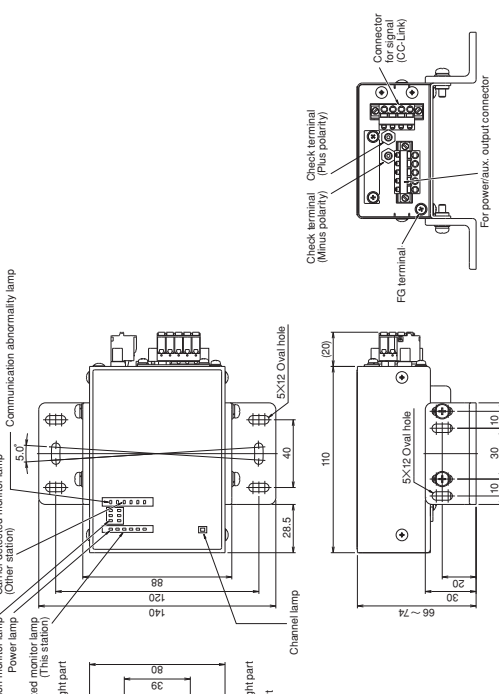


External output circuit



(Unit : mm)

Outside dimensions



Space optical transfer unit for CC-Link (Serial remote type)

SOT-GS8014V

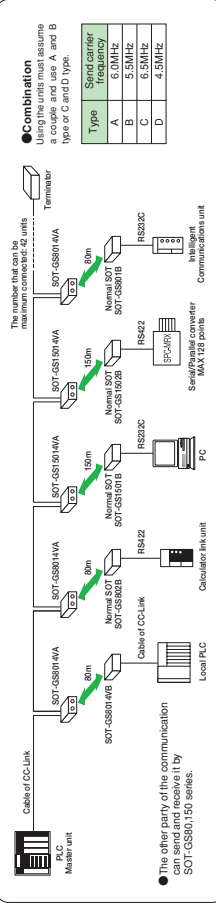
GS15014V

series

Correspond to CC-Link ver 1.10.

The CC-Link network is used easily, and the construction is less and less. As for "Space Optical Transfer Unit" of the CC-Link partner product, a lot of input-output devices can measure the decrease of the cost by conserve wiring with the system that decentralized arrangement is done. Especially, it excises one's power over the communication with the movement device in the automatic material handling system. There is no I/F unit needing to connect it with CC-Link directly. This unit can be connected to the communication device. Moreover, data up to 1000 words or less can be sent and received by using the enhancing mode. It connects it with the connector terminal block. It is possible to send and receive it to the other party side by space optical transfer unit made of our company SOT-GS80 series (80m) or SOT-GS150 series (150m).

Example of system configuration



The main specification of CC-Link

Application PLC	Made of Mitsubishi Electric
Application Master unit	A series-COM-Access-C series etc. A1S1GB11, A1S1GB11L, A1S1GB11T, A1S1GB11T1
Communication method	Command & Communication Link (CC-Link)
Number of occupation	Either of 1, 2, 3 or 4 stations is selected.
Transmission route	Bus
Transmission format	HDL
Connection	Connector terminal block
Maximum transmission distance	120m~100m (It depends on the transmission speed.)
Transmission speed	10M, 5M, 2.5M, 0.52K, 15Kbps Either is selected.

The main specification of space optical transfer unit

Model	SOT-GS8014V □ SOT-GS15014V □
Power supply voltage	DC24V±10%. Power supply ripple: 50mVp-p or less
Current consumption	150mA MAX. (at DC voltage)
Transmission distance	0~150m
Modulation	2-degrees
Modulation method	FSK
Synchronous method	Full duplex, bi-directional (No protocol)
Asynchronous method	18200, 9600, 4800, 2400bps. Either is selected.
Transmission speed	Normal mode
Transmission condition	Enhancing mode
Start bit	1
Data bit	8
Parity bit	Even
Stop bit	1
POW (RED)	It lights by the power supply. When becoming an amount of light received to be able to communicate the unit, it lights.
SD (RED) (B)	When the receive data is input and it lights in green when the receive data is output.
LD (GREEN)	Receiving light level lamp. Two stages.
LR (RED)	When the receive data of CC-Link makes an error, it lights.
RD (GREEN)	When the data of CC-Link is received, it lights.
RD (RED)	When the data of CC-Link is received, it lights.
Transmission speed	Rotary switch: 1 piece
Station number setting	Rotary switch: 2 pieces
Transmission condition	For setting of remote station number
Configuration switch	For setting of transmission condition of optical
Auxiliary output	CD output (Carrier detect-out) [1]: At the non-receiving light [0]: At the receiving light ALM [0]: When the reception level is high [1]: When the reception level is low Output to the bus (When the error or a bus error occurs on the receiving part at the connector terminal block [XWAB-05C1-H1] [XWAB-05C1-H1]) DC voltage corresponding to the reception level is provided. (Use the DC-voltage range with a 10kΩV or higher resistor.) 40~100%RH (No condensation allowed)
Connection	Connector terminal block [XWAB-05C1-H1] [XWAB-05C1-H1]
Check terminal	DC voltage corresponding to the reception level is provided. (Use the DC-voltage range with a 10kΩV or higher resistor.)
Operating voltage	40~100%RH (No condensation allowed)
Operating ambient humidity	40~100%RH (No condensation allowed)
Protection class	IP30
Resistance to vibration	Frequency: 10~55Hz, complex amplitude: 1.5mm, in each of 3 directions
Resistance to impact	38 m/s ² Z-axis in each direction on 0. direction X, Y, Z

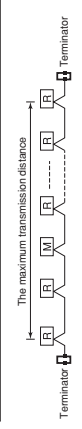
● Please use this device by combining A type, B type, C type, and D type so that it should not interrupt the frequency of the transmission and the reception to do a bi-directional communication at full-duplex. The direction characteristic is different in the SOT-GS80 series and the SOT-GS150 series, and combine series of the same distance priority, compatible with the SOT-VS series.
● Detailed material of this series is prepared. Please inquire.

Connection

● **Interconnection of link data cable**
The distance and the total extension distance between stations are provided for by the composition of the setting of the transmission speed and the equipment used.

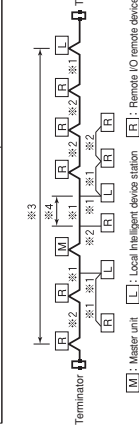
① The maximum transmission distance

Transmission speed	156Kbps	625Kbps	2.5Mbps	5Mbps	10Mbps
Length of station side cable	20m or more	2m or more	20m or more	20m or more	20m or more
The maximum transmission distance	1200m	900m	400m	160m	100m

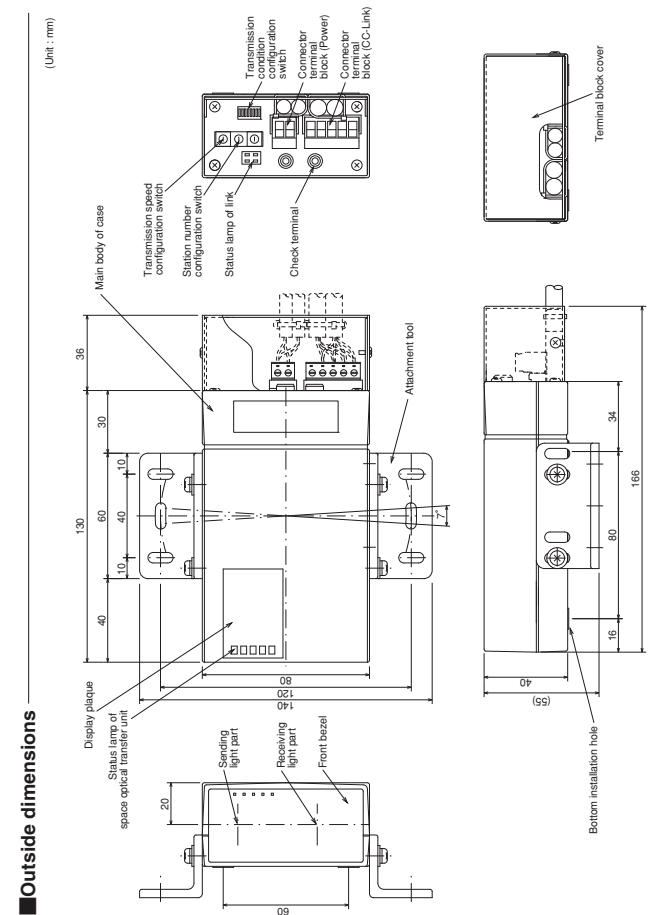


② **AT divergence connection**
Between master, Local station, intelligent device station and station before and after it.
Between remote IO station and station in remote device station side.
The maximum, connected number of branch line: 6
The maximum trunk line length: 100m
There is no limitation
Length of the maximum branch line: 20m
Length of total branch line: 50m
Termination: 1100, 12Mx2
Termination block: Connector for FA device

Transmission speed	156Kbps	625Kbps	2.5Mbps	5Mbps	10Mbps
Length of station side cable	20m or more	2m or more	20m or more	20m or more	20m or more
The maximum transmission distance	1200m	900m	400m	160m	100m
The maximum, connected number of branch line	6				
The maximum trunk line length	100m				
T divergence interval	There is no limitation				
Length of the maximum branch line	20m				
Length of total branch line	50m				
Termination	1100, 12Mx2				
T divergence terminal block/connector	Termination block: Connector for FA device				



● **Outside dimensions**
(Unit: mm)



Space optical transfer unit for CC-Link (Parallel remote type)

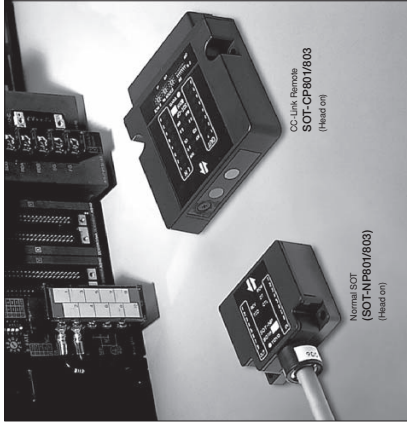
SOT-CP801

SOT-CP803

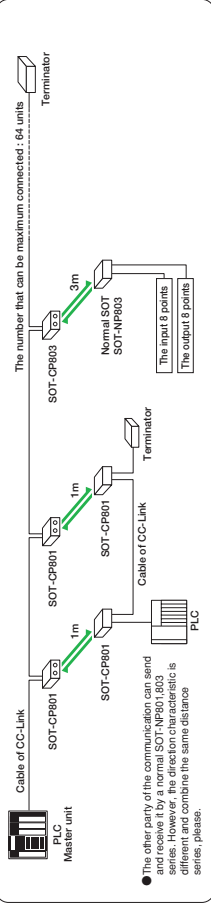
series

Correspond to CC-Link ver 1.10.

The CC-Link network is used easily, and the line construction is free and flexible. As for "Space Optical Transfer Unit" of the CC-Link partner product, a lot of input-output devices can measure the decrease of the cost by conserve wiring with the system that decentralized arrangement is done. Especially, it is possible to be constructed in the area that the material handling system. The transmission capacity is the input 8 points, and the output 8 points. It is possible to send and receive it to the other party side by space made of our company transmission device SOT-NP801 or the NP803 series. The connector terminal block that can be detached is adopted.



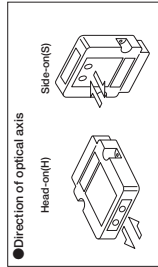
Example of system configuration



- The other party of the communication can send and receive it by a normal SOT-NP801/803. If the line construction is different and combine the same distance series, please.

The main specification of CC-Link

Application PLC	Made of Mitsubishi Electric A series/Outa series/Q series etc.
Application Master unit	A1S1BT11, A1S1B1T11, A1S1QB11, A1S1QBT11, A1S1QBT11, Omron BT11, etc.
Communication method	Control & Communication Link (CC-Link)
Number of occupation station	1 station
Transmission route	Bus
Transmission format	HDL
Connection	Connector terminal block
Maximum transmission distance (It depends on the transmission speed.)	1,200m~100m
Transmission speed	10M, 5M, 2.5M, 1.25M, 625K, 156Kbps
	Either is selected.



The main specification of space optical transfer unit

Model	SOT-CP801H DC24V	SOT-CP801S DC24V	SOT-CP803H Head-on	SOT-CP803S Side-on
Direction of optical axis	Head-on	Side-on	Head-on	Side-on
Rated power supply voltage	DC18~30V	DC18~30V	DC18~30V	DC18~30V
Current consumption	100mA MAX	100mA MAX	100mA MAX	100mA MAX
Transmission distance	0~1m (The volume for the quantities of light adjustment is the maximum)	0~1m (The volume for the quantities of light adjustment is the maximum)	0~3m (The volume for the quantities of light adjustment is the maximum)	0~3m (The volume for the quantities of light adjustment is the maximum)
Directivity	30° or more (Set distance is 1m)	30° or more (Set distance is 1m)	5° or more (Set distance is 3m)	5° or more (Set distance is 3m)
Transmission method	Half-duplex, bi-directional or one way	Half-duplex, bi-directional or one way	Half-duplex, bi-directional or one way	Half-duplex, bi-directional or one way
Authorization method	BT reversing continuous basis comparison	BT reversing continuous basis comparison	BT reversing continuous basis comparison	BT reversing continuous basis comparison
Lighting element	15ms MAX (MS mode), 20ms MAX (X mode)	15ms MAX (MS mode), 20ms MAX (X mode)	15ms MAX (MS mode), 20ms MAX (X mode)	15ms MAX (MS mode), 20ms MAX (X mode)
Receiving element	Photomixer light emitting diode	Photomixer light emitting diode	Photomixer light emitting diode	Photomixer light emitting diode
Transmission point	Input 8 points, Output 8 points	Input 8 points, Output 8 points	Input 8 points, Output 8 points	Input 8 points, Output 8 points
Control (rear point)	1 point (CTL) (DSW is OFF)	1 point (CTL) (DSW is OFF)	1 point (CTL) (DSW is OFF)	1 point (CTL) (DSW is OFF)
Control output point	1 point (RCV) (DSW is OFF)	1 point (RCV) (DSW is OFF)	1 point (RCV) (DSW is OFF)	1 point (RCV) (DSW is OFF)

Lamp	POW (RED) : When power supply, 4 lights by "RED". CTL (RED)/TO (GREEN) : When CTL is "ON", 4 lights by "Red". When TCD is "ON", 4 lights by "Green". RUN (RED) : When optical sensor output data is "ON", it lights by "Red". RUN (GREEN) : When optical sensor output data is "ON", it lights by "Green". SO (RED) : It lights by "Red" because of an abnormal communication of CC-Link. SO (GREEN) : It lights by "Green" because of an abnormal communication of CC-Link. Transmission speed	Relay switch: 1 piece For setting of transmission speed of CC-Link
Station number setting	Relay switch / 2 pieces DIP switch / 1 piece Operation mode	For changing of operation mode
Operating ambient temperature	40~85°C (RH No condensation allowed)	
Operating ambient humidity	4,000 lx or less (No externally distributed light shall directly enter the receiver)	
Resistance to vibration	10~50Hz, complex amplitude: 1.5mm, in each of 3 directions X - Y - Z direction at 2 hours	
Resistance to impact	150m/s ² (about 50G), 20 times in each of 3 directions X - Y - Z	
Protection class	IP40	
Power consumption	Connect terminal block: XW46-50C1-HT1 (XW46-50C1-HT1)	
Outer dimensions	30mm (W) × 30mm (D) × 20mm (H)	

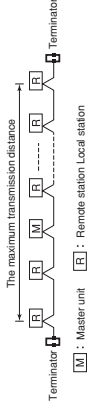
● Detailed material of this series is prepared. Please inquire.

Interconnection link data cable

The distance and the total extension distance between stations are provided for by the composition of the setting of the transmission speed and the equipment used.

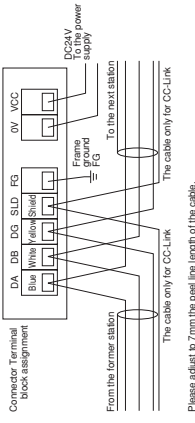
The maximum transmission distance

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
Length of station side cable	20m or more				
The maximum transmission distance	1200m	900m	400m	160m	100m



Connection of CC-Link SOT

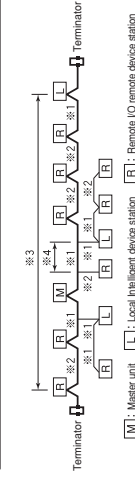
(Please construct it with CC-Link Ver.1.10.)



Please adjust to 7mm the peel the length of the cable.

AT T divergence connection

Transmission speed	625Kbps	156Kbps	2.5Mbps	5Mbps	10Mbps
System only of remote IO station and remote device station	1m or more	2m or more	20m or more	30m or more	30m or more
Local station and system including intelligent device	1m or more	2m or more	20m or more	30m or more	30m or more
Length of station side cable	20m or more				
Between remote IO station and station in remote device station	30m or more				
The maximum, connected number of branch line	6				
The maximum trunk line length	500m				
T divergence interval	There is no limitation				
Length of the maximum branch line	20m				
Length of total branch line	50m				
Terminator	110Ω 1/2W X2				
T divergence terminal block/connector	Terminal block: Coverless connector: Connector: 6P 1.25mm				



● The length of five cable, the branch line between terminators is not included.

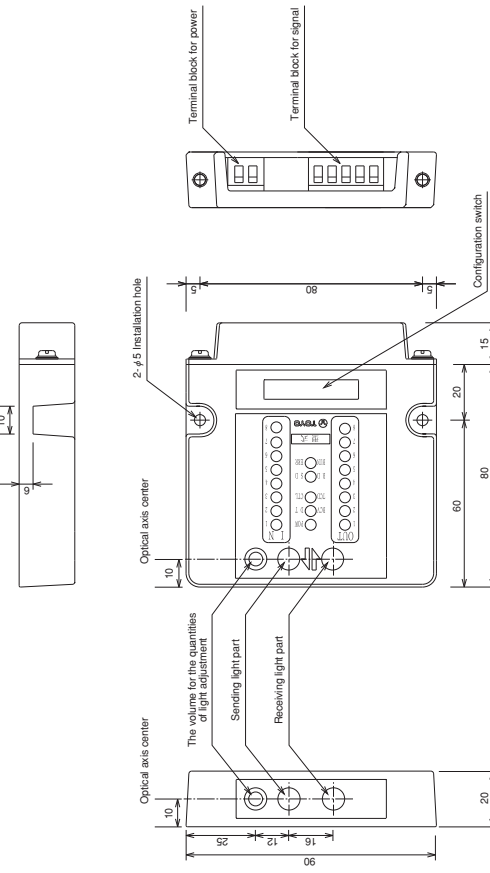
● The length of cable a divergence

● Total of length of branch line

● Connect between DA-DB at both ends of the trunk line.
The cable on the trunk line also stop the coating and the stoppage part is standard.

Outside dimensions

(Unit : mm)



● The position is different in the window of the light part of sending and receiving in a Head-on type and a Side-on type.
● It is possible to send and receive it even by the combination with a different Head-on and Side-on type.

Space optical transfer unit for CC-Link (Parallel remote type)

SOT-CP1601

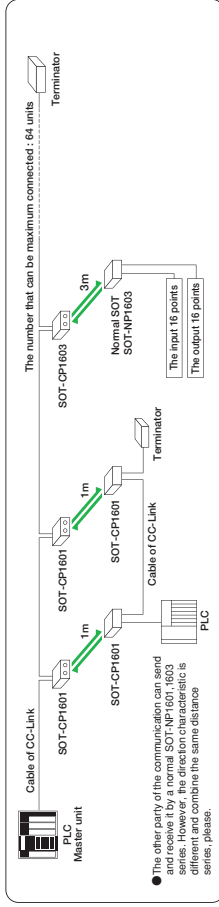
SOT-CP1603

series

Correspond to CC-Link ver 1.10.

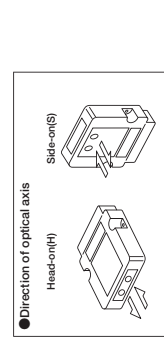
The CC-Link network is used easily, and the line construction is free and easy. As for "Space Optical Transfer Unit" of the CC-Link partner product, a lot of input-output devices can measure the decrease of the cost by conserve wiring with the system that decentralized arrangement is done. Especially, it can be used for the automatic material handling system. The transmission capacity is the input, 16 points, and the output, 16 points. It is possible to send and receive it to the other party side by space made of our company transmission device SOT-NP1601 or the NP1603 series. The connector terminal block that can be detached is adopted.

Example of system configuration



The main specification of CC-Link

Application PLC	Make of Mitsubishi Electric A series/Q series/Q series etc.
Application Master unit	A1S/B1T11, A1S/B1T11, A1S/B1T11, A1S/B1T11, A1S/B1T11 etc.
Communication method	Control & Communication Link (CC-Link)
Number of occupation station	1 station
Transmission route	Bus
Transmission format	HDLC
Connection	Connector terminal block
Maximum transmission distance	120m ~ 100m (It depends on the transmission speed.)
Transmission speed	10M, 5M, 2.5M, 625k, 156kpbs Either is selected.



Model	SOT-CP1601H Head-on	SOT-CP1601S Side-on	SOT-CP1603H Head-on	SOT-CP1603S Side-on
Direction of optical axis	Head-on	Side-on	Head-on	Side-on
Rated power supply voltage	DC24V			
Current consumption	100mA MAX			
Transmission distance	0~100m (The values for the quantities of light adjustment is the maximum)	0~30m (The values for the quantities of light adjustment is the maximum)	5' or more (Star distance is 3m)	5' or more (Star distance is 3m)
Directivity	Half duplex, bi-directional or one way			
Authorization method	Bit reversing continuous basis comparison			
Transmission time	20ms MAX. (MS mode), 30ms MAX. (X mode)			
Lighting element	Near infrared light emitting diode			
Receiving element	Photo transistor			
Transmission point	Input 15 (16) points, Output 15 (16) points (The 16th point can be changed with the control I/O)			
Control input point	1 point (CTL/TCO) (DSW3 is OFF)			
Control output point	1 point (RCV) (DSW3 is OFF)			
Lamp	POW (RED) OUT(RED) (RED/GREEN) IN(RED) OUT(GREEN) ERR(RED) SO(RED) SOT(RED)			
Switch	Transmission speed Station number setting Operation mode			
Operating ambient temperature	-10~50°C (Not freeze)			
Operating ambient humidity	40~85% RH (No condensation allowed)			
Resistance to vibration	10~55Hz, complex amplitude: 1.5mm, in each of 3 directions X, Y, Z direction at 2hours			
Resistance to impact	150m/s ² (about 50G) 20 times in each of 3 directions X, Y, Z			
Protection class	IP40			
Power connection	Connector terminal block (XWB4-09C1-H) (XWB4-09C1-H)			
Outside dimensions	50mm (W) × 80mm (D) × 20mm (H)			

● Detailed material of this series is prepared. Please inquire.

Connection

● **Interconnection of link data cable**
The distance and the total extension distance between stations are provided by the composition of the setting of the transmission speed and the equipment used.

① **The maximum transmission distance**

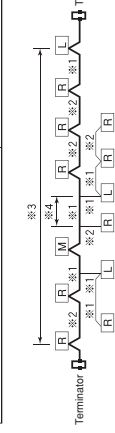
Transmission speed	156kpbs	625kpbs	2.5Mbps	5Mbps	10Mbps
Length of station side cable	20m or more				
The maximum transmission distance	1200m	900m	400m	160m	100m



Terminator [M] : Master unit [R] : Remote station Local station

② **At T divergence connection**

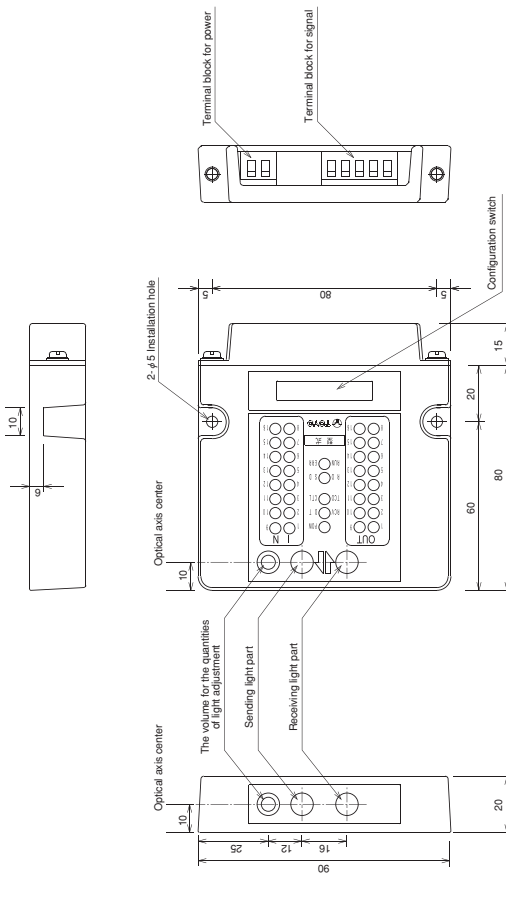
Transmission speed	156kpbs	625kpbs
Between master, Local station, intelligent device station and station before and after it	1m or more	
Length of station side cable	2m or more	
Between remote IO station and station in remote device station	30m or more	
The maximum, connected number of branch line	6	
The maximum trunk line length	500m	100m
T divergence interval	There is no limitation	
Length of the maximum branch line	4m	
Length of total branch line	200m	50m
Terminator	1100-12AWX2	
T divergence terminal block/connector	Terminal block: Cover for station Connector: Connector for FA device	



Terminator [M] : Master unit [L] : Local intelligent device station [R] : Remote IO remote device station

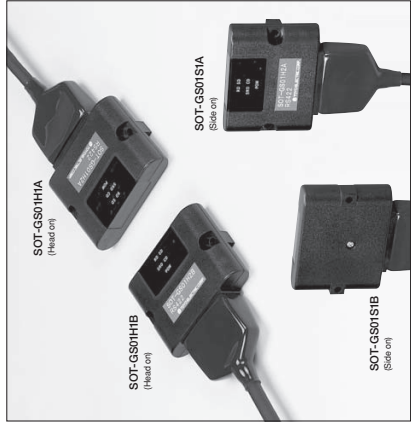
Outside dimensions

(Unit : mm)



※ The position is different in the window of the light part of sending and receiving in a Head-on type and a Side-on type.
※ It is possible to send and receive it even by the combination with a different Head-on and Side-on type.

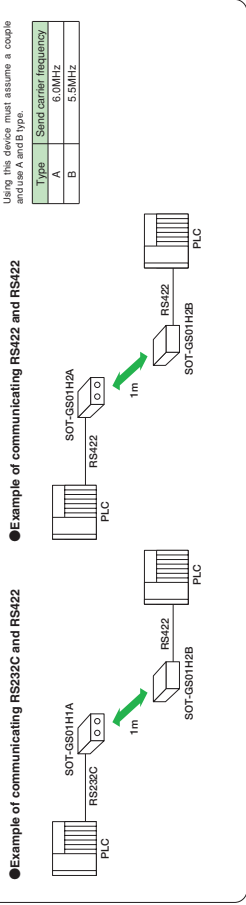
SOT-GS01 series



※The harness is an optical.

It corresponds to RS232C or RS422 interface.
This device is a data transmitting equipment using the space spread of light (Near-infrared rays). The serial data of RS232C or RS422 of full-duplex, bi-directional can be used. The connection with an external equipment is easy and maintenance is easy because of the connector type. The transmission distance is 1m. This device is DC power supply specification.

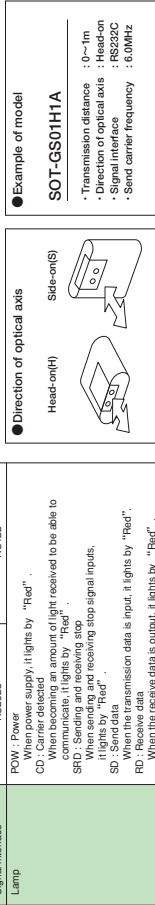
Example of system configuration



Specifications

Model	SOT-GS01H1□	SOT-GS01S□	SOT-GS01H2□	SOT-GS01S2□
Rated power supply voltage	DC12.5A V Power supply ripple 100mV/p-p or less		-10~55°C Not freezing allowed	
Power supply voltage	DC0~30V (Includes power supply ripple)		40~85%RH No condensation allowed	
Power consumption	3W MAX		Fluorescent, incandescent lamps, 4,000 lx or less	
Transmission distance	0.1~1m		No externally disturbed light shall directly enter the receiver.	
Direction of optical axis	Head-on / Side-on	Side-on	Frequency 10~55kHz, complex amplitude: 1.5mm	
Directivity	30° or more, Horizontal 25° or more. (0.6 of a set distance)		2 hours in each of 3 directions X, Y, Z	
Transmission form	Serial/Serial		500 mV $\sqrt{2}$ in each of 3 directions X, Y, Z	
Transmission method	Full-duplex, bi-directional		IP40 (Connected part in the back is excluded).	
Transmission speed	DC~19.2Kbps		80mm(W) \times 68mm(D) \times 26mm(H) Only the main body part	
Modulation method	FSK		Weight About 20g (Only main body)	
Lighting element	Near infrared light emitting diode		Accessory Connector cover	
Light emitting wavelength	860nm			
Receiving element	Photo diode			
Signal interface	RS232C			
Lamp	POW: Near power supply, H lights by "Red", CD: Carrier detected			
	When becoming an amount of light received to be able to communicate, H lights by "Red", SPS: Stop signal			
	When sending and receiving stop signal inputs, H lights by "Red",			
	SD: Send data			
	RD: Receive data			
	When the receive data is input, H lights by "Red",			
	When the receive data is output, H lights by "Red".			

※A of the send carrier frequency type or B enters for □
● The SOT-GS01 series has an interchangeable communication with the SOT-VS01 series.

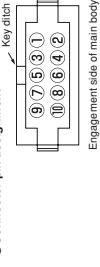


Connection

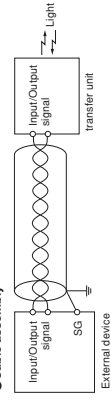
Power supply/Signal connector (Socket type)

Model	SOT-GS01□□□	SOT-GS01□□2
Signal name	RS232C	RS422
Abbreviation	SG	SG
Terminal number	3	4
Transmission data input	+SD	-SD
Transfer stop input	SFD	+SRD
Receive data output	RD	+RD
Carrier detected output	CD	-RD
Power	Vcc	+CD
	GND	-CD
		Vcc
		GND

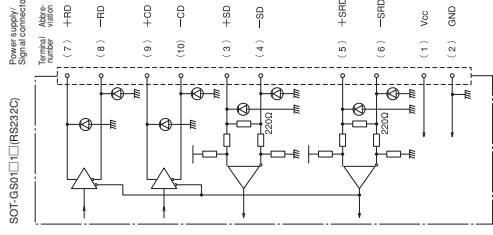
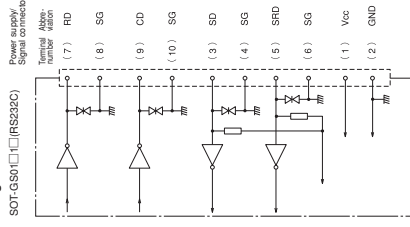
Connector pin assignment



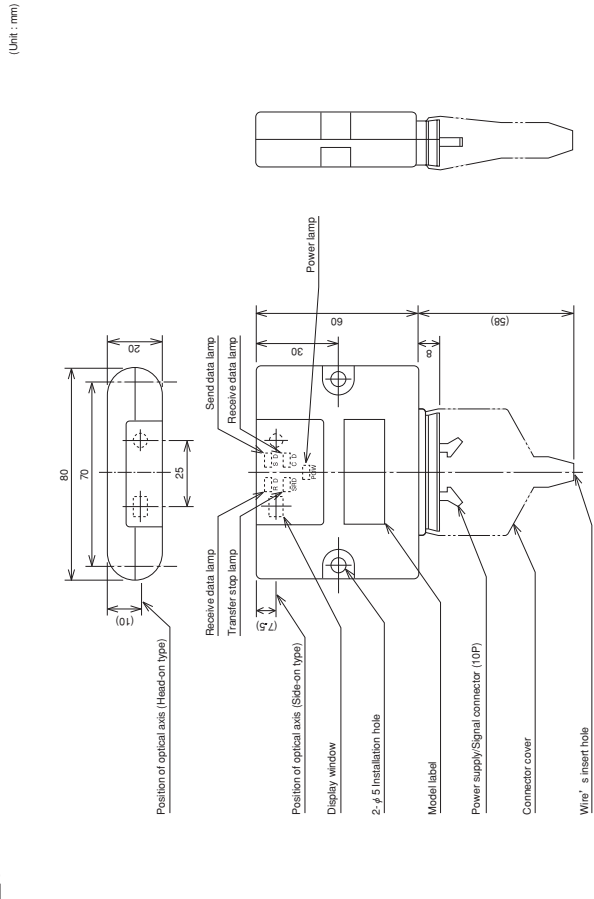
Cable assembly



Signal interface



Outside dimensions



※We will prepare the optional special harness (SOT-VSD).
※The position of the sending and receiving part is different in a Head-on type and a Side-on type.
※It is possible to send and receive it even by the combination with a different Head-on and Side-on type.

Space optical transfer unit (Serial type)

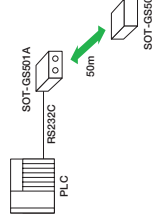
SOT-GS50 GS80 GS150 series

It corresponds to RS232C or RS422 interface.

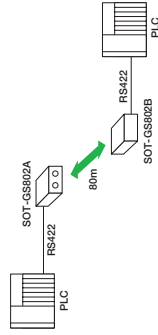
This device is a data transmitting equipment using the space spread of light (Near-infrared rays). The serial data of RS232C or RS422 of Full-duplex, bi-directional can be used. The connection with an external equipment is easy and maintenance is easy because of the connector type. The transmission distance is there in types of 50m, 80m and 150m. This device is DC power supply specification.

Example of system configuration

● The transmission distance 50m type
(Example of communicating RS232C and RS422)



● The transmission distance 80m type
(Example of communicating RS232C and RS422)



● Combination
Using this device must assume a couple and use A and B type or C and D type.

Type	Send carrier frequency
A	6.0MHz
B	5.5MHz
C	6.5MHz
D	4.5MHz

Connection

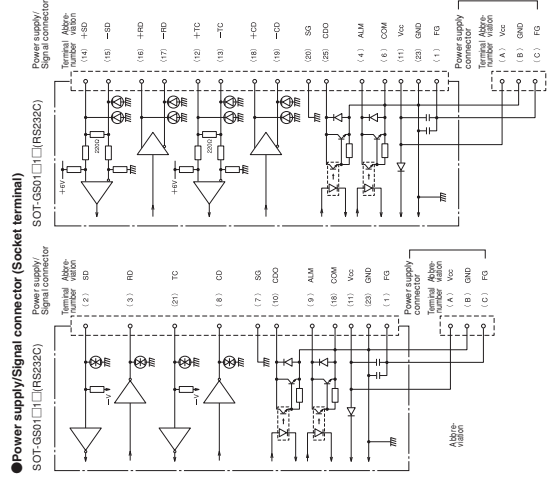
● Power supply/Signal connector (Socket terminal)

Model	SOT-GS50□□80□□50□□	SOT-GS502□80□□150□□
Signal interface	RS232C	RS422
Signal name	Abbreviation	Terminal number
Transmission data input	SD	2
Transmission data output	TD	3
Receive data input	RD	4
Receive data output	RD	5
Carrier detected output	CD	6
Signal ground	SG	7
Auxiliary output	COO	10
Power	ALM	9
Frame ground	COM	18
	VCC	11
	GND	23
	FG	1

● Power supply connector pin assignment

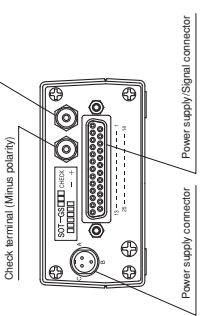
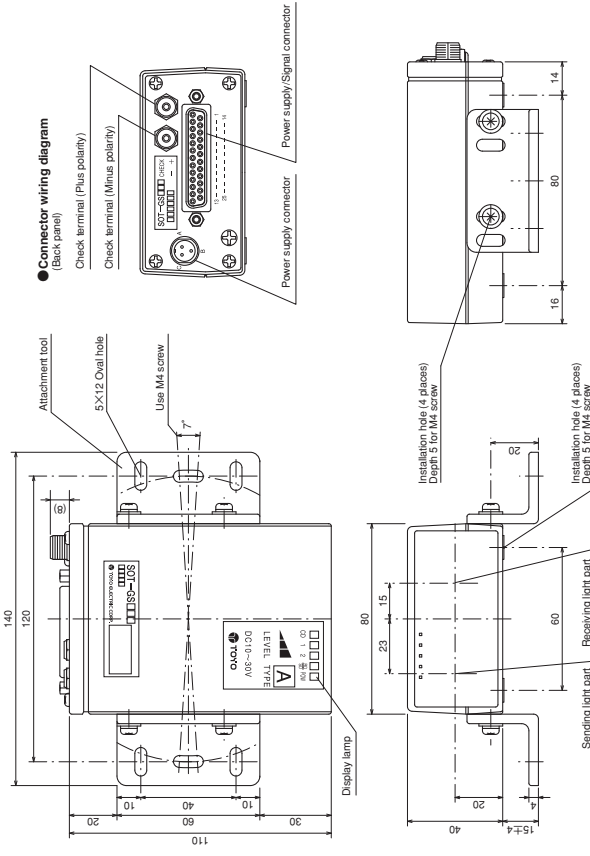
Signal name	Abbreviation	Terminal number
Power	Vcc	A
Frame ground	GND	B
	FG	C

● Connector wiring diagram (reference)



Outside dimensions

(Unit: mm)



Specifications

Model	SOT-GS50□□	SOT-GS80□□	SOT-GS150□□	SOT-GS502□□	SOT-GS802□□	SOT-GS1502□□
Rated power supply voltage	DC12~24V	Power supply ripple: 10% or less				
Power supply voltage range	DC10~30V (include power supply ripple)					
Power consumption	3W MAX					
Transmission distance	0~50m	0~80m	0~150m	0~50m	0~80m	0~150m
Directivity	2' (50m and 80m type)	1.5' (150m type)				
Transmission form	Serial/Serial					
Transmission method	Full-duplex, bi-directional					
Transmission speed	DC~38.4Kbps					
Modulation method	FSK					
Lighting element	Near infrared light emitting diode					
Light emitting wavelength	870nm					
Receiving element	Photo diode					
Signal interface	RS232C					
Auxiliary output	COO	"OK" when communication is permitted				
Power supply / Signal connector	25-pins D-sub connector (Socket terminal)					
Power supply connector	3-pins metal connector (Pin terminal)					
Lamp	POW	When power supply, it lights by "Red".				
	CD	Carrier detected				
	LEVEL	When the amount of light received is able to communicate, it lights by "Red".				
	SD	It lights according to a receiving light level by "Green".				
	RD	When the transmission data is input, it lights by "Red".				
		When the receive data is output, it lights by "Green".				

※A of the send carrier frequency type or B, C, D differs for □.

● The SOT-GS50/80/150 series doesn't have an interchangeable communication with the SOT-VS35/70/150 series.

※We will prepare the optical special harness (SOT-S, SOT-V)

Space optical transfer unit (Three-state type)

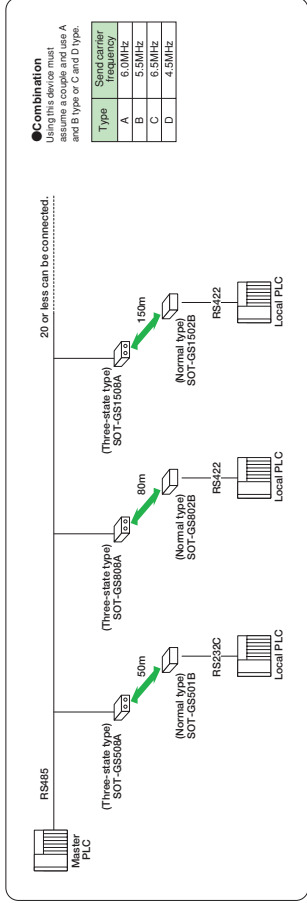
SOT-GS508 GS808 GS1508 series

It corresponds to RS485 three-state interface.

This device is a data transmitting equipment using the space spread of light (Near-infrared rays). The serial data of RS485 of Full-duplex, bi-directional can be used. The connection with an external equipment is easy and maintenance is simple. The communication distance is long and the communication is selected because of the mutual interference prevention. Two or more couples can be communicated by connecting it by the multiplex. The transmission distance is three types of 50m, 80m and 150m. This device is DC power supply specification.



Example of system configuration



Specifications

Model	SOT-GS508□	SOT-GS808□	SOT-GS1508□
Rated power supply voltage	DC12/24V	Power supply ripple 10% or less	
Power supply voltage range	DC10~30V (Includes power supply ripple)		
Power consumption	3W MAX		
Directivity	0~50m	0~80m	0~150m
Transmission distance	2'		1.5'
	(It is a value in the early the maximum transmission distance.)		(It is a value in the early the maximum transmission distance.)
Transmission form	Serial/Serial		
Transmission method	Full-duplex, bi-directional		
Transmission speed	2400, 4800, 9600, 19200bps	Switch type	
Modulation method	FSK		
Lighting element	Near infrared light emitting diode		
Lighting wavelength	970nm		
Receiving element	Photo diode		
Signal interface	RS485 Three-state		
Transmission delay time	[1] (Transmission speed [bps]) × 25 (8) sec		
Multiplex connection number	20 or less		
Auxiliary output	COM : "ON" when communication is permitted. ALM : "OFF" when the reception level is low. Output form : Photo-coupler isolated NPN open collector outputs. Output rating : DC30V 50mA MAX		
Power supply / Signal connector	25 pins D-sub connector (Socket terminal)		
Power supply connector	3 pins metal connector (Pin terminal)		

※ A of the send carrier frequency type or B, C, D enters by □.
 ● The SOT-GS508/808/1508 series doesn't have an interchangeable communication with the SOT-GS358/708/1508 series.

Connection

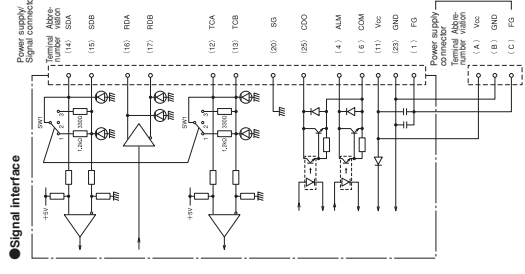
Power supply/Signal connector (Socket terminal)

Model	SOT-GS508 □ / 808 □	1508 □
Signal interface	RS485 Three-state	
Transmission data input	SDA	14
Transmission stop input	TCA	12
Receive data output	RDA	16
Signal ground	SG	20
Auxiliary output	COM	25
Power	VCC	6
	GND	11
Frame ground	FG	23

Power supply connector pin assignment

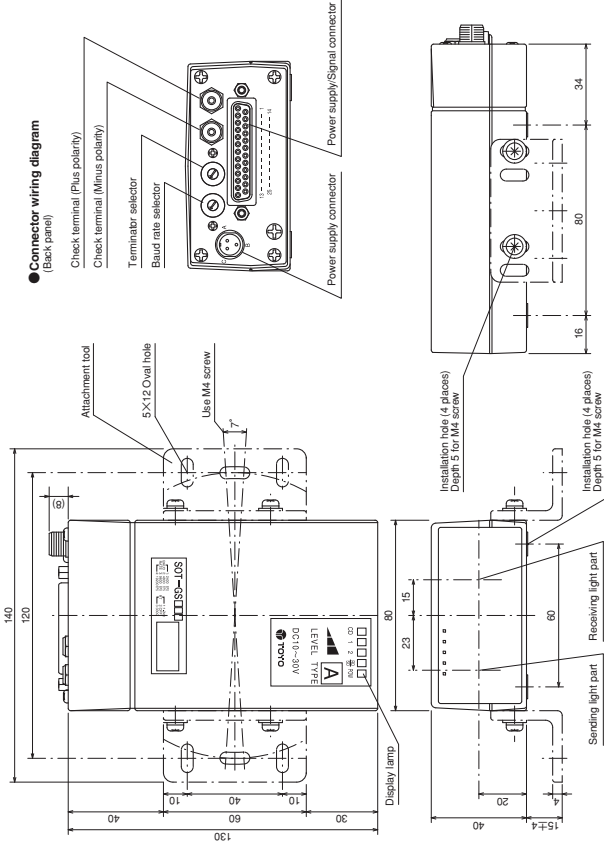
Signal name	Abbreviation	Terminal number
Power	VCC	A
	GND	B
Frame ground	FG	C

Connector wiring diagram (reference)



Outside dimensions

(Unit: mm)



※ We will prepare the optical special harness (SOT-S, SOT-V)

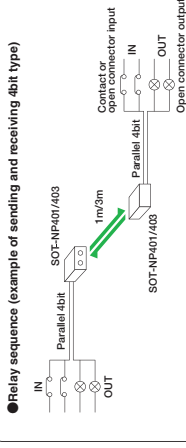
Space optical transfer unit (Parallel type)

SOT-NP401 SOT-NP403 SOT-NP801 SOT-NP803 series

It corresponds to transmission point 4bit/8bit

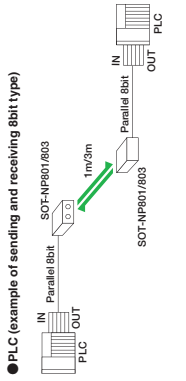
The transmission method is a half-duplex, bi-directional method alternately sent and received, 4bit and 8bit. Each parallel data transmission can be done. The LED display light was made red (IN) and green (OUT) in the installation industrial method, and to measure the miniaturization. The protective construction is a waterproof type of the IP66 class. There are two types of transmission distances (0.1m and 0.1~3m). The length of the cable adheres by 1m and 4m. Please select it.

Example of system configuration

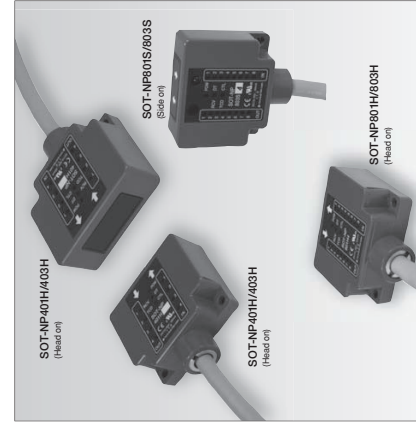


● Relay sequence (example of sending and receiving 4bit type)

Example of sending and receiving 8bit type



● PLC (example of sending and receiving 8bit type)



Connection

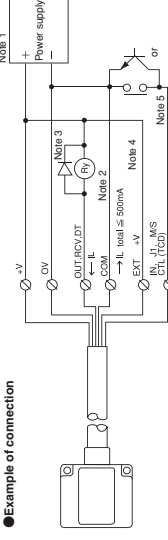
● Cable assignment

Signal name	Function	Wire Mark Color	Mark Color	Wire Number
+V	Power supply (V) DC10~30V	Red	—	—
0V	Power supply (V)	Black	—	—
EXT-V	Input common (V)	Orange	—	—
CT(CTCD)	Sending and receiving stop signal	Yellow	—	—
M/S	Master/slave selecting signal	Gray	—	—
IN1	Input data No.1	Pink	—	—
IN2	Input data No.2	Purple	—	—
IN3	Input data No.3	White	—	—
IN4	Input data No.4	Blue	Red	1
IN5	Input data No.5	Red	White	2
IN6	Input data No.6	Black	White	1
IN7	Input data No.7	Yellow	Black	1
IN8	Input data No.8	Pink	Black	1

Signal name	Function	Wire Color	Mark Color	Wire Number
COM	Output common (V)	Green	—	—
RCV	Steady carrier	Brown	—	—
DT	Data receiving signal	Blue	—	—
OUT1	Output data No.1	Orange	White	1
OUT2	Output data No.2	Green	White	1
OUT3	Output data No.3	Brown	White	1
OUT4	Output data No.4	Gray	White	1
OUT5	Output data No.5	Purple	White	1
OUT6	Output data No.6	White	Blue	1
OUT7	Output data No.7	Blue	Red	2
OUT8	Output data No.8	Orange	White	2
J1	Operation mode selecting signal	Green	White	2
—	Disconnection	Brown	White	2

※ The above table shows the wiring for SOT-NP801 and the SOT-NP803 series. There are neither IN5~8 for OUT5~8 for SOT-NP401 and the SOT-NP403 series.

● Example of connection

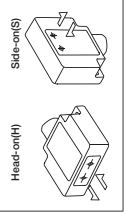


Note 1: Please use the power supply suitable for this specification of this unit.
Note 2: Please adjust the load current of the output to 100mA or less per point. In the output circuit of this unit, the overcurrent protection function is not provided. Please execute measures for safety on the external equipment side.
Note 3: Please connect the protection diode (100V or more in a reverse-voltage and 1A or more in order current) when you connect the inductively load of a supplementary relay etc. with the output.
Note 4: Please adjust the total of the load current to 500mA or less.
Note 5: Please connect contact or no-voltage contact that suits the input rating of this unit with the input. Please use neither 2-wire system adjustable switch nor at 2-wire system protoblastic switch.
Note 6: It is not recommended to make a mistake in the connection of the power supply and the I/O signal line. An internal circuit might break down.

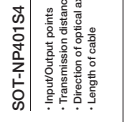
Specifications

Model	SOT-NP401	SOT-NP403	SOT-NP801	SOT-NP803
Rated power supply voltage	DC12~24V	Power supply / ripple 10% or less		
Power supply voltage range	DC10~30V			
Power consumption	60mA MAX			
Directivity	30° or more (Set distance is 1m)	0.1~3m 5° or more (Set distance is 3m)	0~1m 30° or more (Set distance is 1m)	0.1~3m 5° or more (Set distance is 3m)
Transmission point	Input 4 points, Output 4 points	Input 4 points, Output 4 points	Input 8 points, Output 8 points	Input 8 points, Output 8 points
Transmission method	Half-duplex, bi-directional or one-way			
Authorization method	Bit reversing continuous basis comparison			
Transmission time	15ms MAX(M/S mode), 20ms MAX(X mode)			
Lighting element	Near infrared light emitting diode			
Light emitting wavelength	870nm			
Receiving element	Photo transistor			
Modulation method	Pulse modulation 40kHz			
Transmission input point	4 points			8 points
Transmission output point	4 points			8 points
Input form	Photo coupler isolated (Sink current)			
Input signal	Contact or open collector			
Input voltage	DC10~30V			
Input current	(However the input voltage is a voltage between EXT-V and IN.) 100.5mA (at DC24V) current at "OFF" is 0.5mA or less and the remainder voltage at "ON" is 2V or less.			
Receiving input	4 points			8 points
Receiving output	Non-isolated NPN open collector outputs. (Sink current)			
Load voltage	DC4.5~30V			
Load current	Output max. point The load voltage is 1.5V or less when turning it on. Please adjust the total of the load current to 500mA or less.			

● Direction of optical axis

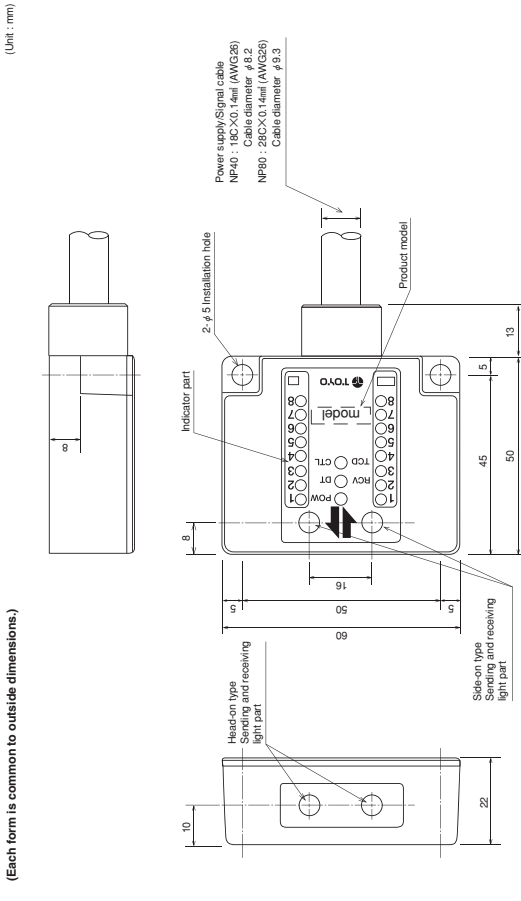


● Example of model



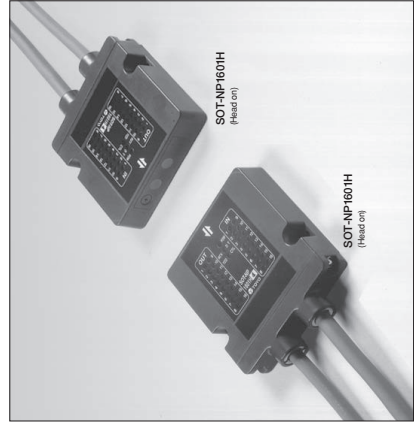
Outside dimensions

(Each form is common to outside dimensions)



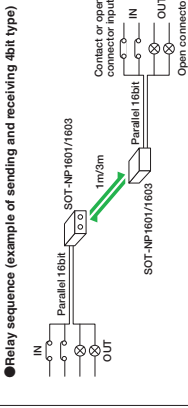
※ The above figure becomes an example for 8bit.
※ The position is different in the sending and receiving part in a Head-on type and a Side-on type.

SOT-NP1601 series

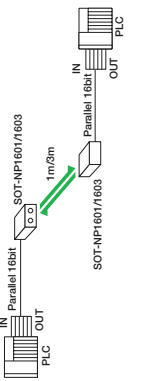


It corresponds to transmission point 16bit.
There are two types of transmission distance (0~1m and 0.1~3m). Please select it according to the usage. The transmission method change a half-duplex, bi-directional method or a one way by the operation mode selecting signal.

Example of system configuration



Example of sending and receiving 8bit type

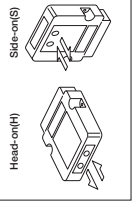


Specifications

Model	SOT-NP1601H	SOT-NP1601S	SOT-NP1603H	SOT-NP1603S
Direction of optical axis	Head-on	Side-on	Head-on	Side-on
Rated power supply voltage	DC12~24V	Power supply (ripple 10% or less)		
Power supply voltage range	DC18~30V			
Current consumption	100mA MAX			
Transmission distance	0~1m (With the volume for the quantities of light adjustment)	30" or more (Set distance is 1m)	0~3m (With the volume for the quantities of light adjustment)	5" or more (Set distance is 3m)
Directivity	Input 16 points, Output 16 points			
Transmission point	Input 16 points, Output 16 points			
Transmission method	Half-duplex, bi-directional or one-way			
Authorization method	Bit reversing continuous basis comparison			
Authorization time	20ms MAX(MS mode), 30ms MAX(X mode)			
Lighting element	Near infrared light emitting diode			
Receiving element	Photo transistor			
Modulation method	Pulse modulation 40kHz			
Data input point	16 points			
Input form	Photo coupler isolated (Sink current)			
Input voltage	DC10~30V			
Input current	10~30mA (at 0.5mA or less and the remainder voltage at "ON" is 0.5mA or less and the remainder voltage at "OFF" is 0.2V or less.)			
Output point	16 points			
Output form	Non-relayed NPN open collector outputs. (Sink current)			
Load voltage	DC4.5~30V			
Load current	Output max. point The load voltage is 1.5V or less when turning it on. Please adjust the total of the load current to 500mA or less.			

Model	SOT-NP400	SOT-NP403	SOT-NP900	SOT-NP903
Lamp	POW	When power supply, it lights by "Red". CTL/CTCD : When CTL is "ON", it lights by "Red". DTRCV : When data normally is received, it lights by "Red". At steady receiving lights, it lights by "Green". IN : When the input data is "ON", it lights by "Red". OUT : When the output data is "ON", it lights by "Red".		
Connect	The cable is connected directly from the case. Standard length is 1m 18C X 0.14mm(AWG26), 28C X 0.14mm(AWG26)			
Operating ambient temperature	-20~+50°C Not freezing allowed			
Operating ambient humidity	40~85%RH No condensation allowed			
Operating ambient illumination	4,000 lx or less. No extremely disturbed light shall directly enter the receiver.			
Resistance to vibration	Frequency: 10~55Hz, complex amplitude: 1.5mm, 2 hours in each of 3 direction X, Y, Z			
Resistance to impact	500 m/s (about 50G) in each of 3 directions X, Y, Z, 20 times			
Protection class	IP64			
Outside dimensions	90mm(W) X 90mm(D) X 20mm(H)			
	* The sign of the external connecting cable enters for □ of the end. (Note: It adheres by 1m and 4.4m.)			

Direction of optical axis



Example of model

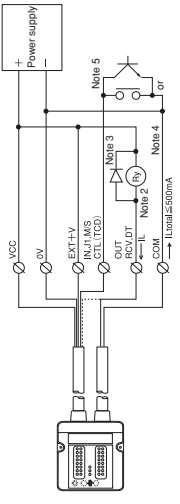
- SOT-NP1601H4**
- Input/Output points : 16bit
 - Transmission distance : 1m
 - Direction of optical axis : Head-on
 - Length of cable : 4m

Connection

Cable assignment and the I/O signal cable

Signal name	Function	Wire	Mark	Number	Wire identification
		Color	Color	define	Wire Color / Mark Color/Number of the
Vcc	Power supply	Red	Red	1	Red
0V	Power supply 0V	Black	Black	2	Black
IN1	Input data No.1	Pink	Brown	1	Pink
IN2	Input data No.2	Purple	White	1	Purple
IN3	Input data No.3	White	Orange	1	White
IN4	Input data No.4	Blue	Red	1	Blue
IN5	Input data No.5	Yellow	Black	1	Yellow
IN6	Input data No.6	Orange	Yellow	1	Orange
IN7	Input data No.7	Gray	Purple	1	Gray
IN8	Input data No.8	Green	Blue	1	Green
IN9	Input data No.9	Blue	White	1	Blue
IN10	Input data No.10	Brown	Red	2	Brown
IN11	Input data No.11	Green	White	1	Green
IN12	Input data No.12	Brown	White	2	Brown

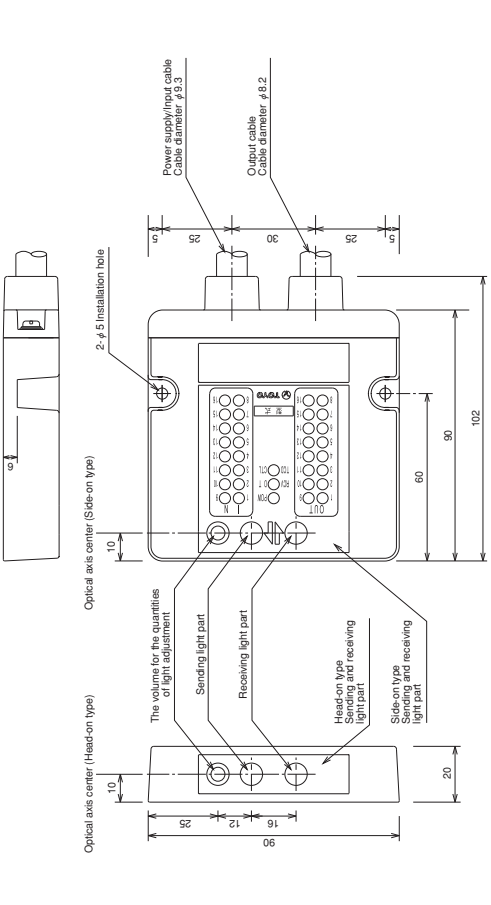
Example of connection



- Note 1: Please use the power supply suitable for the specification of this unit.
Note 2: Please adjust the load current of the output to 100mA or less per point. In the output circuit of this unit, the overcurrent protection function is not provided. Please execute measures for safety on the external equipment side.
Note 3: When the protection diode (100V or more in a reverse voltage and 1A or more in order current) is used, please connect the inductively load of a supplementary relay ac. with the output.
Note 4: Please adjust the total of the load current to 500mA or less.
Note 5: Please connect contact or no-voltage contact that suits the input rating of this unit with the input. Please use neither 2-wire system adjacent switch nor a 2-wire system photoelectric switch.
Note 6: It is not necessary to make a mistake in the connection of the power supply and the I/O signal line. An internal circuit might break down.

Outside dimensions

(Each form is common to outside dimensions.)



* The position is different in the sending and receiving part in a Head-on type and a Side-on type.

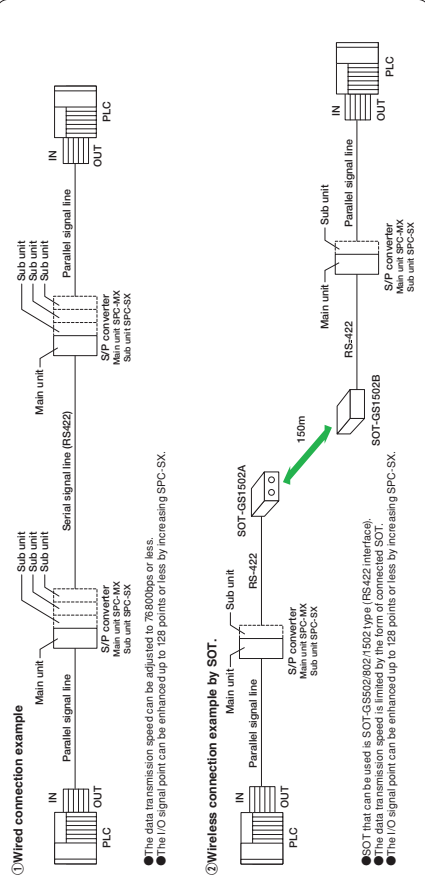
SPC-MX series

series

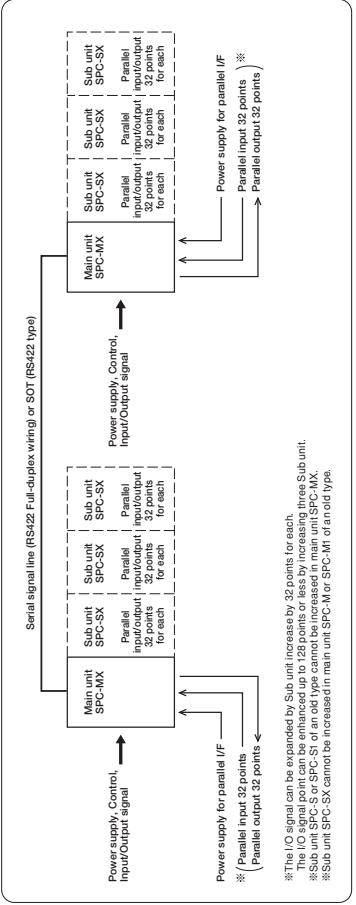
This device is a signal transmission machine that can transmit a lot of I/O signals at a high speed. The signal rate is 100 Mbps. The number of points can be increased up to 32 points in three points and can be enhanced up to maximum 128 points for each in each of the I/O point 32 points. The signal of wireless can transmit with our space optical transfer unit. The signal can transmit directly as the equipment that has serial I/F such as personal computers.

It corresponds to RS422 interface.

Example of system configuration



Basic system example



Specifications

Main unit SPC-MX Specifications

Power supply voltage	DC24±10%, Power supply ripple 10% or less		
Power consumption	100mA MAX at DC24V		
Serial I/F form	RS422 conforming		
Serial I/F signal	RD: Receive data input, CD: Carrier detected input, SD: Send data output, TC: Sending stop output		
Transmission method	Full duplex/Half duplex, bi-direction, Configuration SW of function selected.		
Serial data form	Synchronous method: Asynchronous method Start bit: 1bit, Parity bit: Even Data length: 8bit, Stop bit: 1bit, Authorization method: Parity check and SUM check		
Data transmission speed	0.0012020400019000192003840076800bps		
Parallel I/F	0.0012020400019000192003840076800bps		
Input signal points	32 points When three subunits are increased, it is possible to enhance it up to 128 points or less.		
Input circuit	Isolated form: Photo coupler isolated input (Sink current) Ratings input current: about 35mA Simultaneous ON current: 100mA MAX (at 125 points) Response delay time: OFF—ON 1ms MAX, ON—OFF 1ms MAX		
Output signal points	32 points When three subunits are increased, it is possible to enhance it up to 128 points or less.		
Output circuit	Isolated form: Photo coupler isolated input (Sink current) Emitter common (32 points common) Load current: 0.1A MAX/Point Simultaneous ON current: 100mA MAX (at 128 points) Response delay time: OFF—ON 1ms MAX, ON—OFF 1ms MAX		
Response time (ms)	When communicating response delay time of parallel I/F is excluded.	Transmission method	Signal points
Control Input	CTL (Transmission stop)	Half duplex	32 points 64 points 96 points 128 points
Control I/F	TCD (Send stop)	Full duplex	38.5 54 69.5 85
	M/S (Master/Slave select)	Half duplex	28 37.5 47 56.5
		Full duplex	25 33.5 42 50.5
		Full duplex	17.5 23 28.5 34

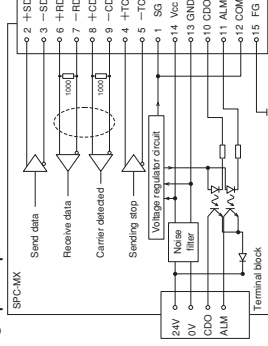
Sub unit SPC-SX Specifications

Power supply voltage	The main unit supplies it through the increase connector. DC24±10%, Power supply ripple 10% or less
Current consumption	50mA MAX at DC24V
Parallel I/F	Input signal/32 points Input circuit: The same to main unit SPC-MX specification Output circuit: The same to main unit SPC-MX specification
External connecting	Parallel I/F: Flat type cable connector 40pins Sub unit increase: Flat type cable connector 14pins Input supply for external I/F: Terminal block 2p Both same to main unit SPC-MX specifications
Transmission condition configuration	Address configuration SW (Rotary switch)
Monitor Lamp (LED)	Power supply lamp POW 1 point (Red, Green) Parallel input lamp IN 32 points Input 1~16: Red LED 17~32: Green LED Carrier detecting lamp CD 1 point (Red, Green) Parallel output lamp OUT 32 points Send stop lamp SOT 1 point (Red, Green LED) ※ The IO display becomes 0-9 and A-F for IO number 1-16(17-32).
Weight	About 440g (Only main body)
Accessory	Red and blue of the extending line for the power are each one.

Common Specifications

Operating ambient temperature	-10~+55°C
Operating ambient humidity	40~85%RH (No condensation allowed)
Resistance to variation	Frequency: 10~55kHz 2 hours in each of 3 directions X · Y · Z (JIS C0040 conforming)
Resistance to impact	500 m/s ² 10 times in each of 3 directions X · Y · Z, (JIS C0041 conforming)

Input/Output circuit



Connector pin assignment

Signal name	Abbreviation	Input/Output	Pin No.
Send data	+SD	Output	2
Receive data	-SD	Output	3
Carrier detected	+RD	Input	6
Carrier detected	-RD	Input	7
Carrier detected	+CD	Input	8
Carrier detected	-CD	Input	9
Sending stop	+TC	Output	4
Sending stop	-TC	Output	5
Signal ground	SG	—	1
Carrier detected	COM	Output	10
Alarm output	ALM	Output	11
Output common	COM	Output	12
Power supply for external circuit	Voc	Output	13
Case earth	FG	Output	14
Case earth	FG	Output	15

Figure viewed from front of main body

151413121109

Parallel input/output circuit

Parallel input connector (SPC-MX/SX)

Connector No.	Signal name	Connector No.	Signal name	Connector No.	Signal name		
B20	INT	B10	INT1	A20	INT7	A10	INT27
B19	IN2	B9	IN12	A19	IN18	A9	IN28
B18	IN3	B8	IN13	A18	IN19	A8	IN29
B17	IN4	B7	IN14	A17	IN20	A7	IN30
B16	IN5	B6	IN15	A16	IN21	A6	IN31
B15	IN6	B5	IN16	A15	IN22	A5	IN32
B14	IN7	B4	—	A14	IN23	A4	—
B13	IN8	B3	—	A13	IN24	A3	—
B12	IN9	B2	※+V	A12	IN25	A2	※COM
B11	IN10	B1	※+V	A11	IN26	A1	※COM

※Output to external interface equipment

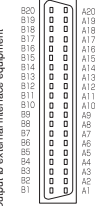
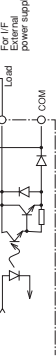


Figure seen from engagement side of main body

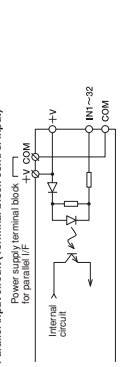
Parallel output connector (SPC-MX/SX)

Connector No.	Signal name	Connector No.	Signal name	Connector No.	Signal name		
B20	OUT1	B10	OUT11	A10	OUT27		
B19	OUT2	B9	OUT12	A19	OUT18	A9	OUT28
B18	OUT3	B8	OUT13	A18	OUT19	A8	OUT29
B17	OUT4	B7	OUT14	A17	OUT20	A7	OUT30
B16	OUT5	B6	OUT15	A16	OUT21	A6	OUT31
B15	OUT6	B5	OUT16	A15	OUT22	A5	OUT32
B14	OUT7	B4	—	A14	OUT23	A4	—
B13	OUT8	B3	—	A13	OUT24	A3	—
B12	OUT9	B2	※+V	A12	OUT25	A2	※COM
B11	OUT10	B1	※+V	A11	OUT26	A1	※COM

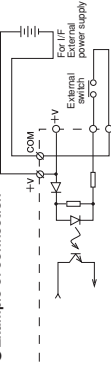
※Output to external interface equipment



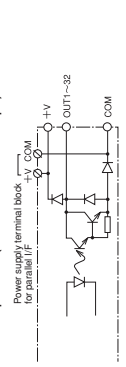
Parallel input circuit (Terminal block control input) for parallel I/F



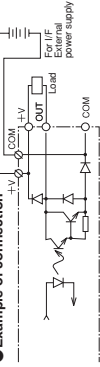
Example of connection



Parallel output circuit (Terminal block control output) for parallel I/F



Example of connection

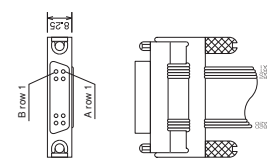


Parallel input/output harness (SOT-FB harness Cable length 3m)

Harness finished goods wiring table (SOT-MX/SPC-SX)

Connector No.	Wire Color	Signal name	Connector No.	Wire Color	Signal name
A1	Brown	COM	B1	Red	+V
A2	Orange	COM	B2	Yellow	+V
A3	Green	—	B3	Blue	—
A4	Purple	—	B4	Gray	—
A5	White	OUT32	B5	Black	IN16
A6	Brown	OUT31	B6	Brown	IN15
A7	Orange	OUT30	B7	Yellow	IN14
A8	Green	OUT29	B8	Blue	IN13
A9	Purple	OUT28	B9	Gray	IN12
A10	White	OUT27	B10	Black	IN11
A11	Brown	OUT26	B11	Brown	IN10
A12	Orange	OUT25	B12	Yellow	IN9
A13	Green	OUT24	B13	Blue	IN8
A14	Purple	OUT23	B14	Gray	IN7
A15	White	OUT22	B15	Black	IN6
A16	Brown	OUT21	B16	Brown	IN5
A17	Orange	OUT20	B17	Yellow	IN4
A18	Green	OUT19	B18	Blue	IN3
A19	Purple	OUT18	B19	Gray	IN2
A20	White	OUT17	B20	Black	IN1

Parallel input connector

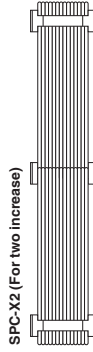


Sub unit increase cable for SPC-SX (SPC-X Harness)

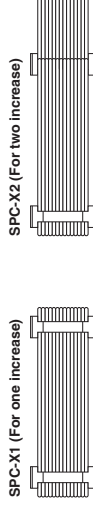
SPC-X1 (For one increase)



SPC-X2 (For two increase)

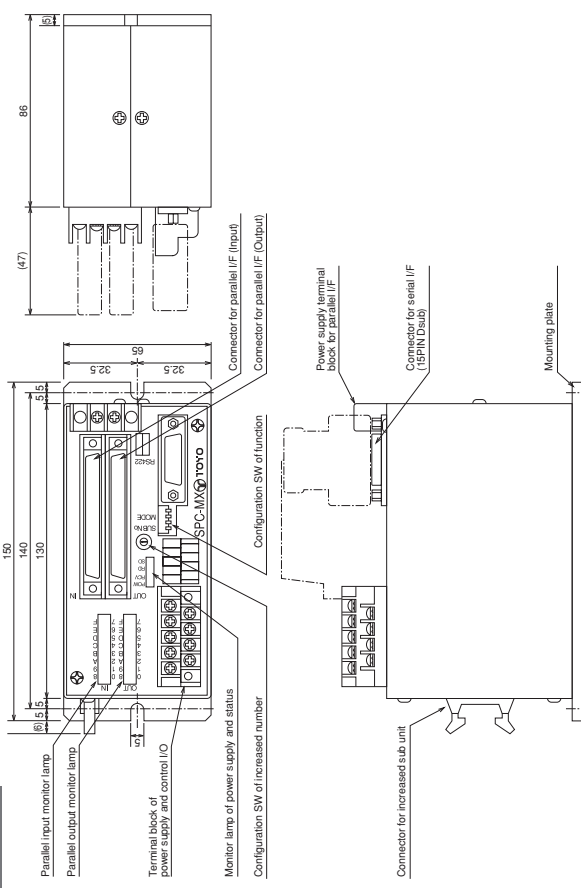


SPC-X3 (For three increase)



Outside dimensions

SPC-MX



SPC-SX

