

**KOGANEI**

OMRON B7A link terminal compliant

# **Serial transmission compatible manifold**

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## **User's Manual**

Ver. 1.0

**Supported solenoid valves**

● **F series**

OMRON B7A link terminal compliant  
**Serial transmission compatible manifold**

**User's Manual**

This user's manual describes the serial transmission block so that the serial transmission compatible manifold and solenoid valves can be used correctly. See the individual catalogs or the valves general catalog for information about the relevant manifolds and the valves.

To use these products correctly, you must first read the documentation.



**CAUTION**

This product does not have the appropriate functions to support applications, such as safety equipment or accident prevention systems, that require high levels of safety.

- Do not put the communication cables near or in bundles with power lines.
- This manual is for the F series solenoid valves. Contact us if you are using a different series of solenoid valves.

# 1. Specifications

## ■ General specifications

Item	Model	YS231 (Standard type) and YS232 (High-speed type)
Power supply voltage		24 VDC ±10%
Power consumption		3 W or less (excluding solenoid valve)
Operating temperature range		5 to 50°C [41 to 122°F]
Storage temperature range		-20 to +70°C [-4 to 158°F]
Operating humidity range		35 to 85% RH (Non-condensation)
Operating atmosphere		No corrosive gases and no electro-conductive dust
Vibration resistance		49.0 m/s <sup>2</sup> [5 G]
Shock resistance		98.1m/s <sup>2</sup> [10 G]
Dielectric strength		1000 VAC for 1 minute (between all external terminals and the case)
Insulation resistance		10 MΩ or more (between all external terminals and the case, using a 500 VDC insulation tester)

★ The above specifications are for the serial transmission block itself. You must consider the specifications for the solenoid valves that are mounted regarding the installation and operation in your operating environment. See the valves general catalog or the catalogs for relevant solenoid valves regarding specifications for the solenoid valves and other parts.

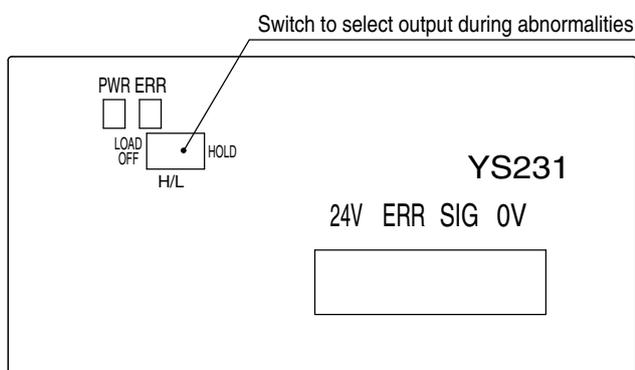
## ■ Error output specifications

Item	Specifications
Output format	NPN open collector
Rated load voltage	24 VDC
Output current	Sink current: Max. 40 mA

# 2. About serial transmission blocks YS231 and YS232

## 2-1. Names of parts of the LED display panel

### LED display panel



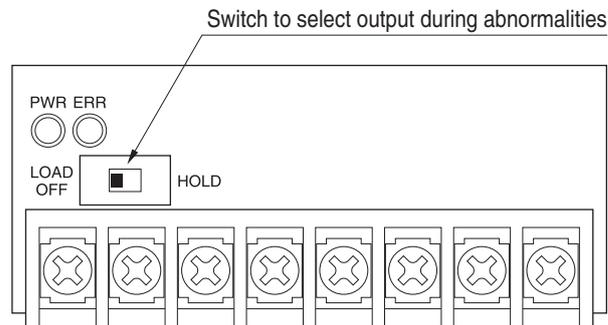
### Description of LED display

Name	Description
PWR	Lit while power is on
ERR	Lights when a transmission error occurs

★ The illustration above shows the panel for the YS231, but it is the same for the YS232.

## 2-2. Selection of output during abnormalities

Set the output for when abnormalities occur. Factory default setting is LOAD OFF.



Settings	Function
HOLD (ON side)	Output is held when a fault occurs during transmission (preserves the state immediately before the fault occurred)
LOAD OFF	All 16 outputs are turned off when a fault occurs during transmissions

★ Always do these settings while the power is off.

## 2-3. Wiring

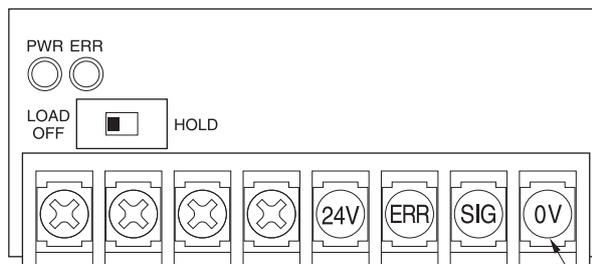
Open the wiring cover and connect the transmission cable and power cable (24 VDC) to the wiring terminal.

With a knife, cut the center of the rubber grommet on the side of the transmission block, and put the wires into the transmission block case.

(Grommet model and manufacturer: rubber grommet, model SG-22A manufactured by Kyowa Rubber Industry CO., LTD.)

The screws on the wiring terminal are M3 screws. Use crimped terminals (JIS 2805 R-type 1.25-3 equivalent) suitable for the terminal screws. Furthermore, do the wiring according to the labels.

### ■ Names of parts of wiring terminal



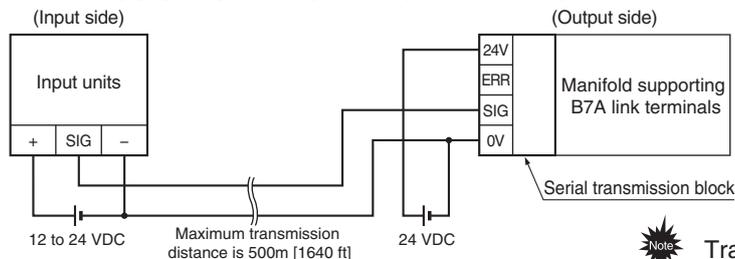
Tightening torque for terminal screws (M3 x 0.5) is 0.5 N·m [4.4 in·lbf] maximum.

## ■ Wiring method

The recommended transmission cables and transmission distances vary depending on the transmission speed.

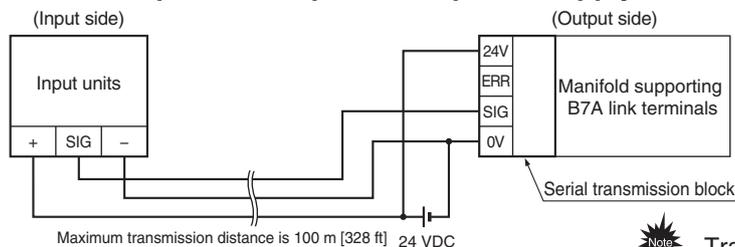
### ● Transmission speed: Standard type (YS231)

#### To install power supply separately for input and output



Transmission cable must be VCTF and 0.75 mm<sup>2</sup> [0.00116 in<sup>2</sup>] or larger

#### To install power for input and output with 1 power supply



Transmission cable must be VCTF and 0.75 mm<sup>2</sup> [0.00116 in<sup>2</sup>] or larger

### ● Transmission speed: High-speed type (YS232)

#### To install power supply separately for input and output

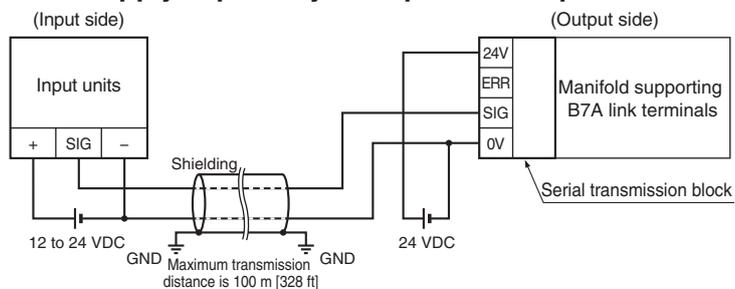


Diagram shows shielded cables (0.75 mm<sup>2</sup> [0.00116 in<sup>2</sup>] or greater wire cross section) used for transmission cable. We recommend grounding shielded lines to the earth. (Do not connect them to the "-" or to "0 V" terminals.) If shielded cables are not used, the maximum distance is 10 m [33 ft]. (When using 0.75 mm<sup>2</sup> [0.00116 in<sup>2</sup>] VCTF cable)

#### To install power for input and output with 1 power supply

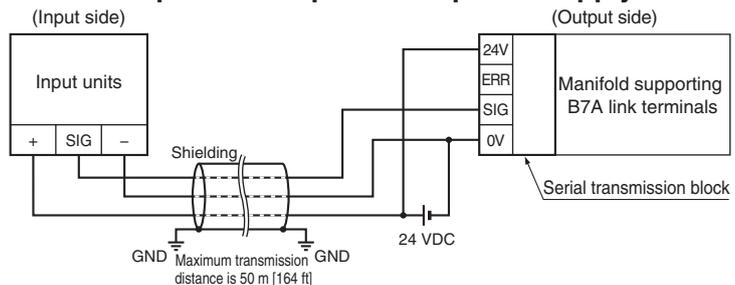


Diagram shows shielded cables (0.75 mm<sup>2</sup> [0.00116 in<sup>2</sup>] or greater wire cross section) used for transmission cable. We recommend grounding shielded lines to the earth. (Do not connect them to the "-" or to "0 V" terminals.) If shielded cables are not used, the maximum distance is 10 m [33 ft]. (When using 0.75 mm<sup>2</sup> [0.00116 in<sup>2</sup>] VCTF cable)

## ■ Precautions for wiring

1. The transmission block is a 16 output type (for receiving).  
The transmission signal from a 10 output type is not compatible, so it cannot be connected.
2. Avoid placing transmission lines near or parallel to high-voltage lines or high-current lines. If you wire the lines near a source of noise, confirm in advance that there will be no problems or malfunctions.
3. Doing wiring work while the power is on may result in short circuits, such as by the cables contacting the terminals, and damage internal components. Do not energize the circuit while doing wiring work.
4. Connecting (shorting) the power to a SIG terminal while transmitting will cause a malfunction. Confirm that there are no short circuits in the wiring or other places before turning on the power.
5. If you need to measure the insulation resistance of the transmission cable, disconnect the cable to be measured first and then check the cable insulation resistance without connecting other devices.
6. To use the error output
  - i) Immediately after turning on the power, an error occurs. (Less than 300 ms after connection.)  
Be careful when using the error output.
  - ii) A short circuit (in an unloaded state) between the error output terminal (ERR) and the power supply terminal (24 V terminal) causes a malfunction.  
Connect a suitable load that remains below the rated voltage (40 mA).

★ For detailed specifications and precautions for the B7A Link Terminal, see the product catalogs and other documentation from OMRON.

### 3. Output relay and solenoid valve connections

The serial transmission block has 16 outputs, 0 to 15. The relationship between the output relay numbers in the program and the actual mounted solenoid valves is shown below.

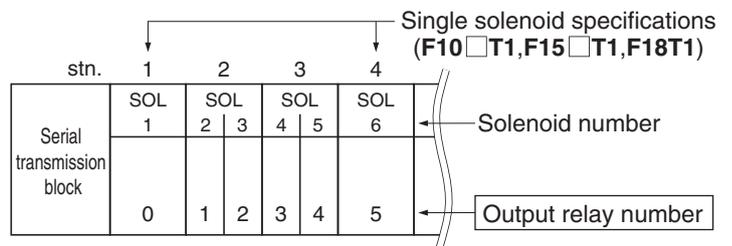
The relationship between all the solenoids on the manifold and output relay numbers is different depending on what is specified for "Wiring specifications" in the manifold ordering codes.

- Wiring specifications    **Blank** (packed wiring): Wired according to specifications of mounted valves.  
    **-W** (double wiring): All wiring is for double solenoids, regardless of the specifications of the mounted valves.

① **If wiring specifications are "blank" (packed wiring)**

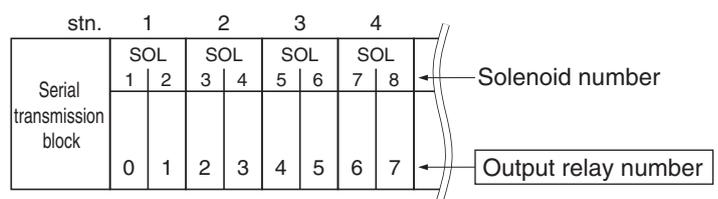
The valves specified in the single solenoid specifications (F□T1) when ordering are wired to solenoid A only and are not wired to solenoid B because wiring is done according to specifications for the mounted valves.

This means that it cannot function as a double solenoid valve after it is delivered because no current flows to solenoid B, even if it is switched from a single solenoid valve to a double solenoid valve.



② **When wiring specifications are "-W" (double wiring)**

All wiring is for double solenoids.



- For other information, detailed specifications, and precautions, see the product catalog.
- For inquiries about the product, contact our Overseas Department noted below.



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- The specifications or the appearance of this product are subject to change any time without prior notice.

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