KOGANEI

EtherCAT Compliant

Serial Transmission Compatible Manifold

User's Manual

Ver.1.0

Supported solenoid valves

● **F10 Series**

● **F15 Series**

EtherCAT.®

EtherCAT 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 catalogs for information about the 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 F10 and F15 series solenoid valves. Contact us if you are using a different series of solenoid valves.

• For details and precautions regarding EtherCAT, refer to the manuals and other documentation about EtherCAT related equipment.

1. Specifications

■ General specifications

Item Model	**YS7K1**☐ (16 outputs), **YS7K3**☐ (32 outputs)
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]
Operating humidity range	35 to 85% RH (Non-condensation)
Operating atmosphere	No corrosive gases and no excessive dust
Vibration resistance	49.0 m/s^2 [5 G]
Shock resistance	98.1 m/s^2 [10 G]
Dielectric strength	1000 VAC for 1 minute (between all external terminals and the case)
Noise resistance	IEC61000-4-4 compliant to level 3
Insulation resistance	10 MΩ and over (between external terminals and case, using a 500 VDC megohmmeter)

* The ☐ mark indicates either L (left mount) or R (right mount).

* 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 catalogs for information about the specifications of the solenoid valves and other parts.

Remarks

*EtherCAT compliant.

●**Number of outputs for this block**

Number of solenoids for **-K1** is 16 and for **-K3** is 32

●**F10 and F15 series are supported**

EtherCAT® is a registered trademark for patented technology licensed from Beckhoff Automation GmbH of Germany.

■We recommend category 5 (100BASE-TX) or higher twisted paired cables (CAT 5e STP) for the communications cables.
■You can download the ESI (EtherCAT Slave Information) file from our web site.

2. About serial transmission blocks YS7K1☐ and YS7K3☐

2-1. Descriptions and names of the power supply, communication, and FG sections
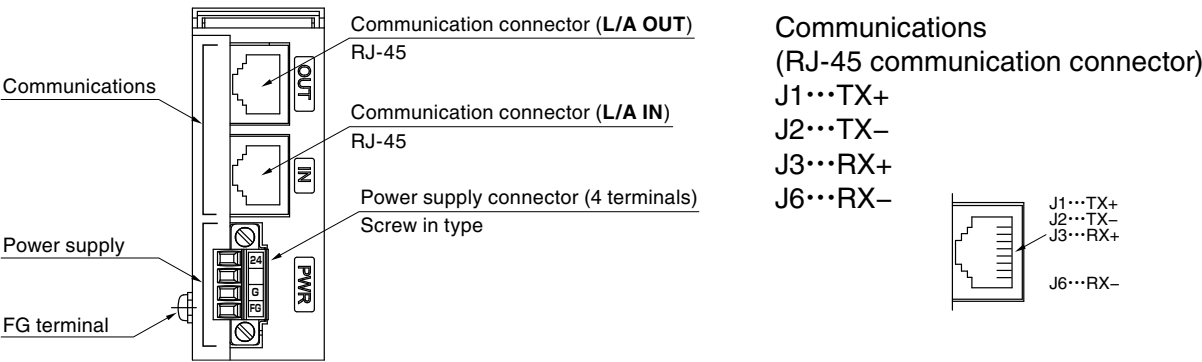
Power supply (applicable wire sizes: AWG 28 to 16, tightening torque: 0.22 to 0.25 N·m [1.95 to 2.21 in·lbf])

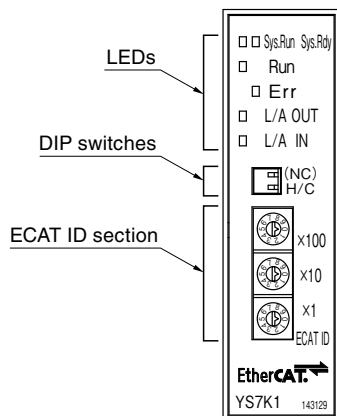   24···24 VDC + terminal

    G···24 VDC – terminal

  FG···Frame ground terminal

FG terminal (tightening torque: 0.49 N·m [4.34 in·lbf])

  Ground terminal connection (connected internally to the FG on the power supply terminal)

## 2-2. Descriptions and names of the display panel

Display panel

LEDs

DIP switches

ECAT ID section

```
Sys.Run  Sys.Rdy
    Run
    Err
    L/A OUT
    L/A IN
    (NC)
    H/C
    X100
    X10
    X1
    ECAT ID
EtherCAT.
YS7K1    143129
```

* The illustration shows the panel for the YS7K1, but the YS7K3 panel is the same.

LED displays and descriptions

Name	State	Color	Description
Sys.Run/Sys.Rdy	Lit/Not lit	Green/yellow	• Transmission block operation normal
	Flashing/flashing	Green/yellow	• Transmission block initialization
	Not lit/lit or flashing	Green/yellow	• Transmission block error
	Not lit/Not lit	Green/yellow	• Transmission block power off
Run	Off	Green	• INIT
	Flashing (blinking)	Green	• PRE-OPERATIONAL
	Flashing (single flash)	Green	• SAFE-OPERATIONAL
	Lighted	Green	• OPERATIONAL
Err	Off	Red	• No error
	Flashing (blinking)	Red	• Invalid setting
	Flashing (single flash)	Red	• Unrequested change in status
	Flashing (double flash)	Red	• Communication disconnect
L/A OUT L/A IN	Lighted	Green	• Normal communication
	Flashing	Green	• EtherCAT frame sending/receiving
	Off	Green	• Not connected

Description of DIP switches

Off

SW1 →
SW2 →
(NC)
H/C
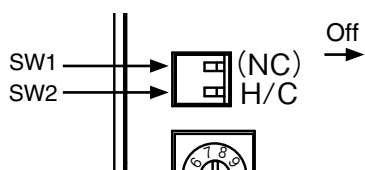
SW1···(NC): Not used

SW2···On (H: Hold output), Off (C: Clear output)

Description of ECAT ID section

X100
X10
X1
ECAT ID
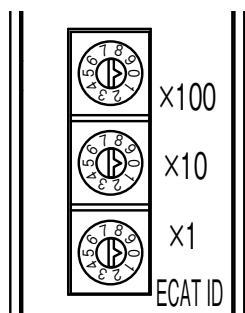
Range of ECAT ID settings (0 to 999)

0···Writes slave node address

1 to 999···Possible range of settings

* Open the cover and use a flat screwdriver to set hold or clear (H/C) and to set the address on the rotary switches.

* Always turn off the power supply before doing settings.

3. Relationship between output numbers and solenoid valves

The serial transmission block has either 16 outputs or 32 outputs. The relationship between the output numbers in the program and the actually mounted solenoid valves is as shown below.

The relationship between all the solenoids on the manifold and output 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 as 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 the mounted valve specifications.

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 single solenoid valve to double solenoid valve.

Single solenoid specifications (F10□T1, F15□T1)
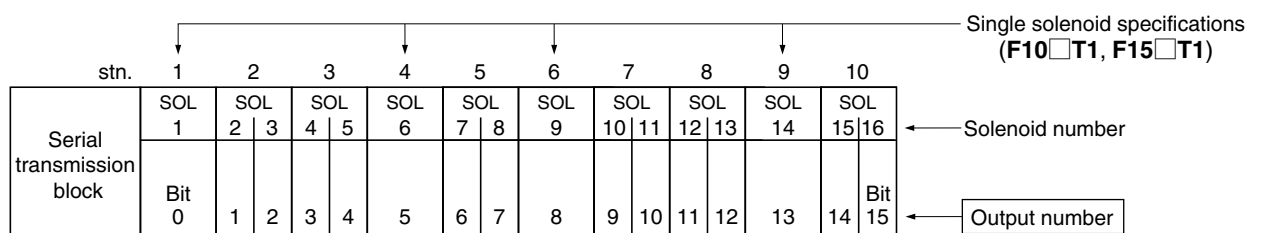
For 16 outputs
WORD (16bit)　　15・・・・・・・・・0
　　　　　　　　　MSB　　　　　LSB

For 32 outputs
DWORD (32bit)　31・・・・・・・・・0

Output number relationship chart (example)

Output number	Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Solenoid number	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

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

All wiring is for double solenoids.
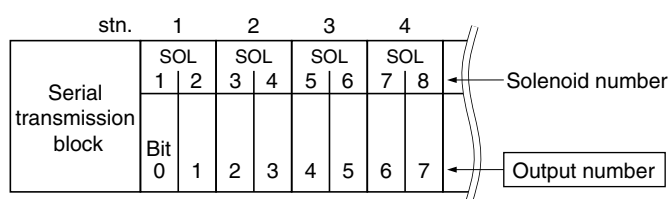
● For other information, detailed specifications, and precautions, see the product catalog.
● For inquiries about the product, contact your nearest Koganei sales office or the Overseas Department noted below.

KOGANEI CORPORATION

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