Discontinue

CKD

SM－250258－A

INSTRUCTION MANUAL

SERIAL TRANSMISSION TYPE

M4TB $\frac{3}{4}$ －T6G1

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

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For Safety Use

To use this product safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).
We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.
Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.
This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.
Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ Precautions

- Incorrect address settings of serial transmission slave stations could cause the solenoid valve and the cylinder to malfunction.
  Before using the product, check the set addresses of the slave stations.
- For operation of serial transmission slave stations, read the communication system operation manual carefully.
- Do not touch electric wiring connections (exposed live parts) : this will cause an electric shock. During wiring, keep the power off.
  Also, do not touch these live parts with wet hands.

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Serial Transmisson Type
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NOTE : Letters & figures enclosed within Gothic style bracket (examples such as [C2-4PP07]・[V2-503-B]etc.) are editorial symbols being unrelated with contents of the book.

OCTOBER. 15. 2002:

1. PRODUCT

1.1 General outline of the system

M4TB□-T6G1

1) This solenoid valve system is equipped with a remote I/O station (slave station unit OPP2-1G),the CC-link Open field network system.
   (1) It helps to curtail wiring man-hours as it requires twist pair cables only to connect it with PLC.
   (2) Up to 64 units of the slave station OPP2-1G having 16 output points, are able to be connected to one master unit, made by Mitsubishi Denki Company ltd.
   (3) The source of power for unit and valve can be installed individually and each unit has a monitor LED indicator.
   (4) The charging of power for valve is verified on the side of sequencer by means of communication.
   The location of electric trouble such as abnormal condition of power or burnt out fuse is detected easily.
   (5) HLD/CLR switch helps choosing either holding output signal or All points OFF.

2) CC-link system
   The CC-Link is one of Open field network systems including remote I/O devices and intelligent devices (high speed counters, inverters, etc.) can be configured with reduced wire connections. Moreover, the user can create programs that control these devices installed away from the master station without being aware of the communication protocols. The CC-Link system has the following features:
   (1) To a single master station, the CC-Link system allows the connection of up to 64 remote I/O stations and the control over up to 2048 input and output points.
   (2) The scan time achieved through the links between the master and remote I/O stations is 4 ms when the number of the controlled I/O points is 2048 (at the data transfer rate of 10M bps).
   (3) The CC-Link system allows cyclic transfer not only of bit data but also of word data.

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The CC-Link is maintained and controlled by CC-Link Association (CLPA).
Note : Be sure to read the Users Manual.
This manual mainly describes the M4TB□-T6G1 and the slave station OPP2-1G.
Another units (master, slave station) which allows connection with the CC-Link, refer to the corresponding user's manuals.
In addition, regarding the manifold solenoid valve, please read this manual and the above manuals carefully to fully understand the functions and performance of the product to be able to use it properly.

If the customer has any question about the CC-Link, contact the following home page.

CC-Link Association

Home page address : http://www. cc-link.org

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1.2 Structure of the System

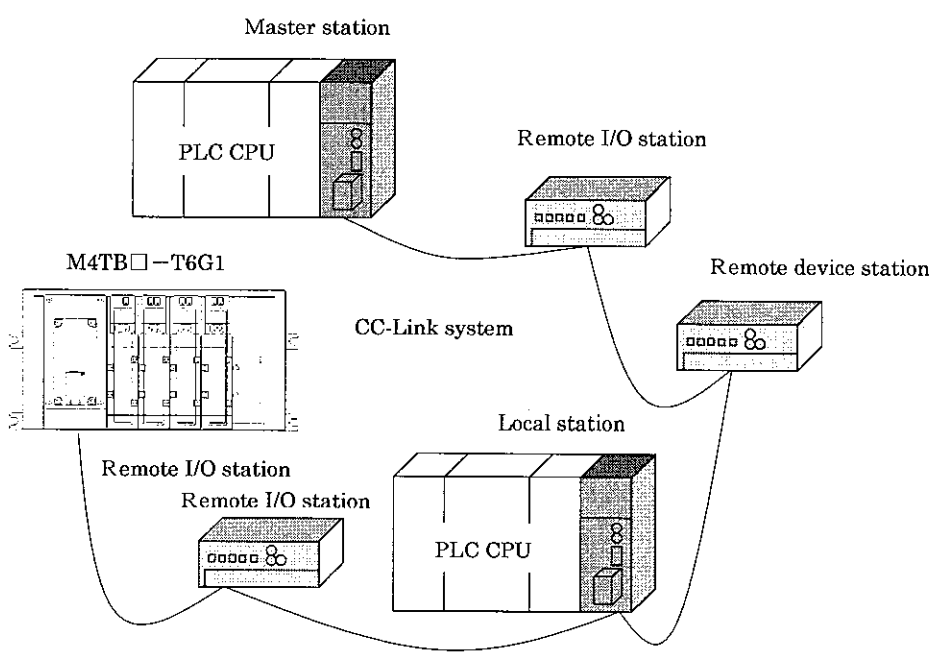
This system chiefly consists of PLC body, Master unit, Solenoid valve M4TB$\frac{3}{4}$-T6G1 and peripheral equipment.

- Combination of PLC and Master unit

Type of PLC	Type of Master unit
AnN/AnA/AnU CPU	AJ61BT11
AnS/A2US CPU	A1SJ61BT11
QnA CPU	AJ61QBT11
Q2AS CPU	A1SJ61QBT11
Qseries	QJ61BT11

※ The above table shows the list of master stations manufactured by Mitsubishi Electric. However, M4TB$\frac{3}{4}$-T6G1 is go designed that it can be connected to a CC-Link master station of each manufacturer.

- Fundamental structure of system



Master station ····· Station controlling remote I/O stations, remote device stations, and local stations.
Remote I/O station ····· Remote station that handles ON/OFF data only.
Remote device station ····· Remote station that handles ON/OFF data and numerical data.
Local station ····· Station that has its own CPU and can communicate with the master station and other local stations.
Intelligent device station ····· Station informed the transient transmission (including the local station)

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1.3 Specifications

1) Specification of solenoid valve

(1) Specification of Manifold

Item	Specifications			
	M4TB3 Series		M4TB4 Series	
Type of manifold	Manifold block type		Manifold block type	
Applicable solenoid valve	4TB3 Series		4TB4 Series	
Number of blocks	2 to 8 blocks (Max.16 when single)		2 to 8 blocks (Max.16 when single)	
Kind of manifold	Common Supply air / Common exhaust		Common Supply air / Common exhaust	
Ambient temperature ℃	5 to 50		5 to 50	
Ambient humidity	35 to 85%RH (No dewing)		35 to 85%RH (No dewing)	
Work ambience	No corrosive gas should exist		No corrosive gas should exist	
Media temperature ℃	5 to 50		5 to 50	
Dia. of connecting port	Pressure port (P) Exhaust port (R)	Cylinder port (A ・ B)	Pressure port (P) Exhaust port (R)	Cylinder port (A ・ B)
	Rc 1/2	Rc 1/4 ・ Rc 3/8	Rc 1/2	Rc 1/4 ・ Rc 3/8
	Pilot exhaust Port (PR)	External pilot port (PA)	Pilot exhaust Port (PR)	External pilot port (PA)
	Rc 1/8	Rc 1/8	Rc 1/8	Rc 1/8

(2) Specification of solenoid valve

Item \ Series Model No. / No. of positions, No. of solenoids	M4TB3 Series				
	4TB310 2-position Single	4TB320 2-position Double	4TB330 3-position All ports blocked	4TB340 3-position ABR ports Connection	4TB350 3-position PAB ports Connection
Media	Compressed air				
Type of actuation	Pilot (soft spool)				
Max. working pressure MPa	1.0				
Min. working pressure MPa	0.15	0.1	0.2		
Guaranteed withstanding pressure MPa	1.5				
Effective sectional area mm^2	40		33		
Responding time ms	Les than 30 (at0.5Mpa)		Less than 50 (at0.5MPa)		
Type of manual operation device	Non-lock type・Lock type (Optional)				
Lubrication	Not required. (Use Turbine oil class 1, ISO,VG32 if required.)				
Protective structure	Dust proof. equivalent to IP64 (Optional)				

Item \ Series Model No. / No. of positions, No. of solenoids	M4TB4 Series				
	4TB410 2-position Single	4TB420 2-position Double	4TB430 3-position All ports blocked	4TB440 3-position ABR ports Connection	4TB450 3-position PAB ports Connection
Media	Compressed air				
Type of actuation	Pilot (soft spool)				
Max. working pressure MPa	1.0				
Min. working pressure MPa	0.15	0.1	0.2		
Guaranteed withstanding pressure MPa	1.5				
Effective sectional area mm^2	70		60		
Responding time ms	Les than 50 (at0.5Mpa)		Less than 70 (at0.5MPa)		
Type of manual operation device	Non-lock type・Lock type (Optional)				
Lubrication	Not required. (Use Turbine oil class 1, ISO,VG32 if required.)				
Protective structure	Dust proof. equivalent to IP64 (Optional)				

(3) Electrical specifications

Item	Specification
	M4TB3, M4TB4, Series
Rated voltage	DC24±10%
Current consumption	80
Power consumption	1.9
Other	Lamp & surge killer, built-in(Standard)

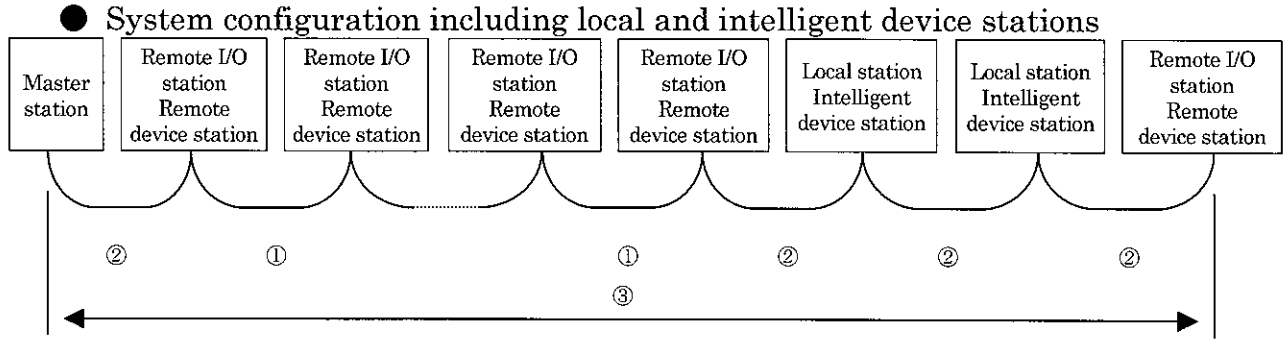
2) Transmission specifications

Item	Specifications
Transfer rate	156k / 625k / 2.5M / 5M / 10M bps (selectable)
Max. transfer distance (overall cable length)	Depends on transfer rate (※1)
Call processing	Polling
Synchronization	Frame synchronization
Encoding	NRZI
Bus	RS485
Data transfer format	HDLC
Error detection	CRC ($X^{16}+X^{12}+X^{5}+1$)
Cable	Shielded twist pair cable (See 4.1 " Wiring ".)

※1. " Max. transfer distance "

The following explains the relationships between the transfer rate and the maximum transfer distance :

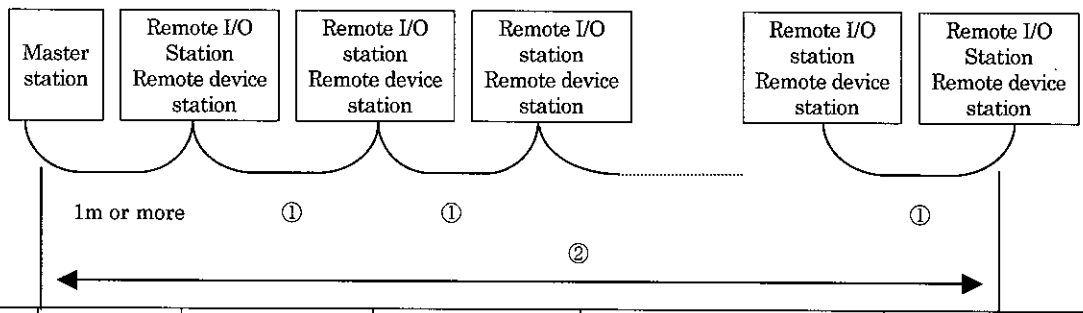
● System configuration including local and intelligent device stations



B RATE	Transfer rate	Cable exclusively for CC-Link (KURAMO DENKO :: FANC-SB, etc.)			High-performance cable exclusively for CC-Link (KURAMO DENKO :: FANC-SB, etc.)		
		①	②	③	①	②	③
4	10Mbps	1.0m or more	2m or more	100m or less	1.0m or more	2m or more	80m or less
		0.6m or more		80m or less	0.7m or more		50m or less
		0.3m or more		50m or less	–	–	–
3	5Mbps	0.6m or more		150m or less	0.6m or more	2m or more	150m or less
		0.3m or more		110m or less	0.3m or more		110m or less
2	2.5Mbps	0.3m or more		200m or less	0.3m or more		200m or less
1	625kbps			600m or less			600m or less
0	156Kbps			1200m or less			1200m or less

※ ① shows the cable length between remote I/O stations or between remote device stations. The conditions ② apply to the cable length if at least one stations is the master station, local station, or intelligent device station.

● System configuration including only remote I/O and remote device stations



B RATE	Transfer rate	Total number of remote stations	①	Cable exclusively For CC-Link (KURAMO DENKO : FANC-SB, etc.) ②	High -performance cable Exclusively for CC-Link (KURAMO DENKO : FANC-SBH, etc.) ②
4	10Mbps	64 units of less	1.0m or more	100m of less	100m of less
			0.7m or more	80m of less	100m of less
			0.6m or more	80m of less	30m of less
			0.4m or more	50m of less	30m of less
			0.3m or more	50m of less	20m of less
		48 units of less	0.4m or more	50m of less	100m of less
			0.3m or more	50m of less	80m of less
		32 units of less	0.3m or more	50m of less	100m of less
3	5Mbps	64 units of less	0.6m or more	150m of less	160m of less
			0.3m or more	110m of less	160m of less
2	2.5Mbps		0.3m or more	200m of less	400m of less
1	625Mbps			600m of less	900m of less
0	156Mbps			1200m of less	1200m of less

Note 1.1 : Since the transfer distance varies, depending on the transfer rate communication cables used or the like, refer to the CC-Link User's Manual issued by MITSUBISHI ELECTRIC EQUIPMENT CO., LTD. or check it through the cable manufacturer, etc.

Note 1.2 : Since the number of stations (remote stations) connected differs, depending on the number of occupied stations and conditions of transfer distance or the like, refer to the CC-Link User's Manual issued by MITUBISHI ELECTRIC EQUIPMENT CO.,LTD. or check it through the cable manufacturer, etc.

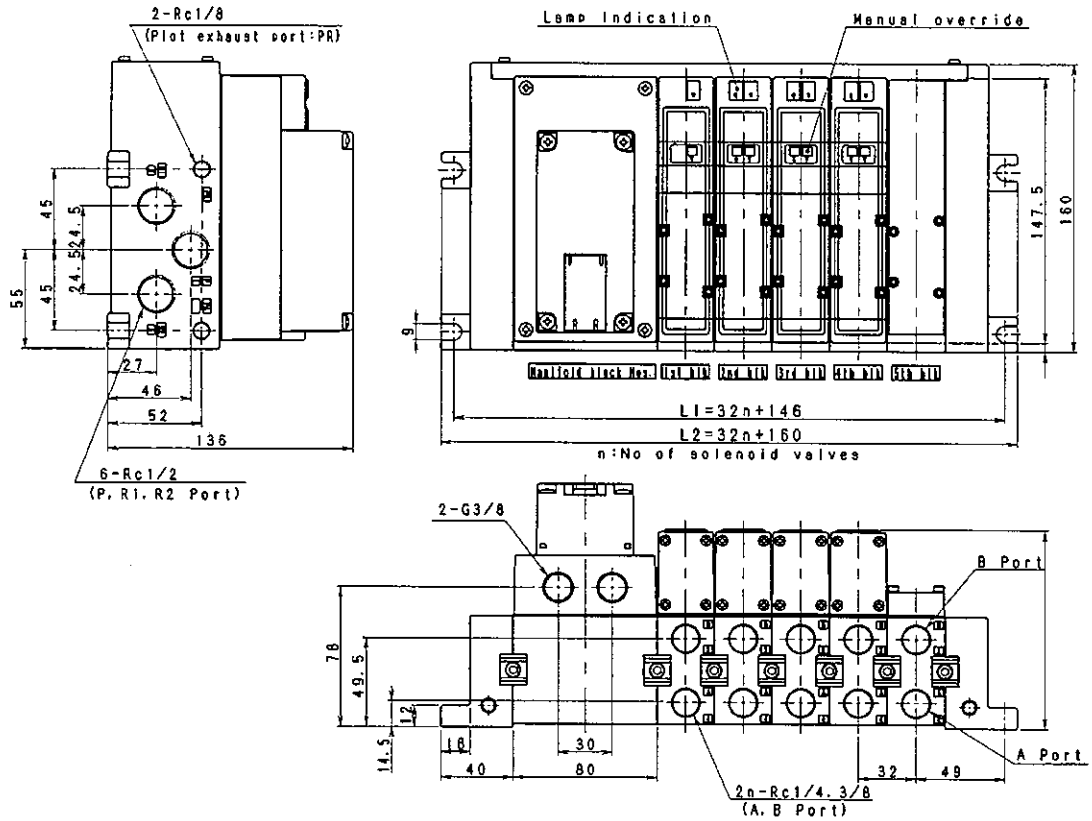
Note 1.3 : The CC-Link exclusive cable and CC-Link exclusive high-performance cable should not be mixed with each other for use.

3) Slave station specification

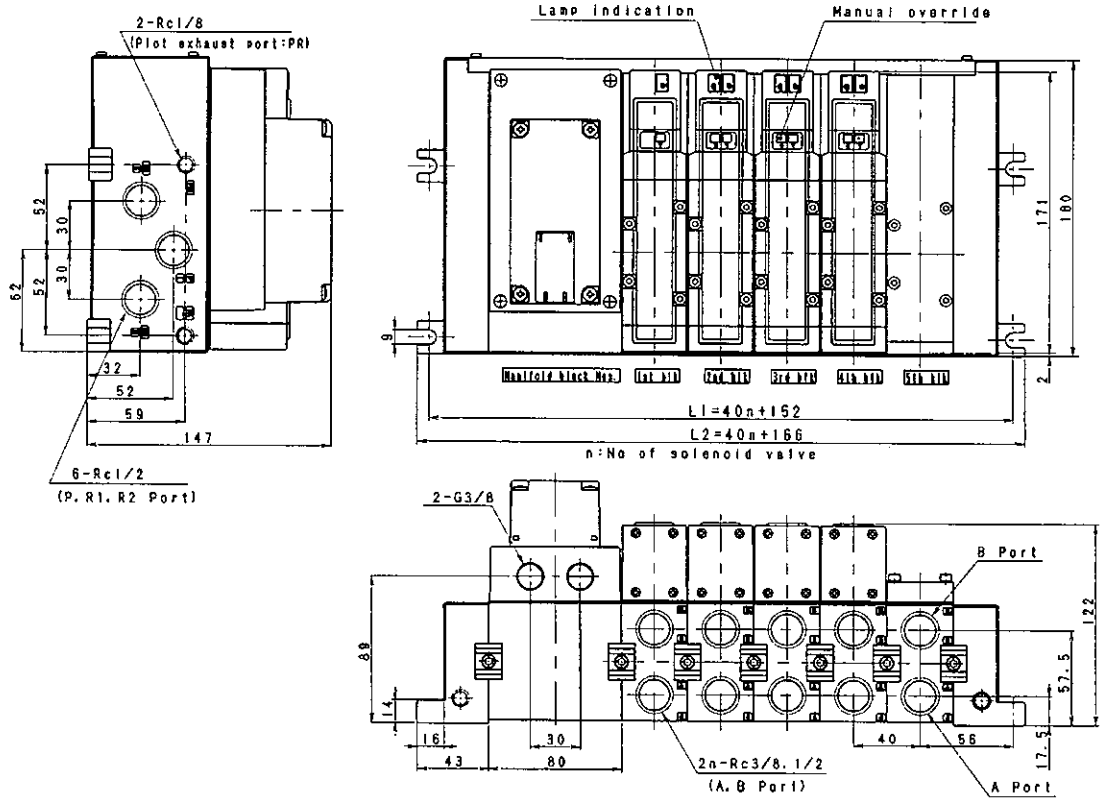
Item		Specifications
Power voltage (Unit side)		DC21.6V –26.4V (DC24V ±10%)
Electric consumption (Unit side)		100mA or lower (While 16 output points are ON.)
Power voltage (Valve side)		DC22.8V –26.4V (DC24V +10%, -5%)
Electric consumption (Valve side)		15mA or lower (While all points are OFF.)
Insulation consumption		Between all external terminals in a lump and Case 20MΩ or more DC500VM
Withstanding voltage		Between all external terminals in a lump and Case AC500V for 1 minute
Noise proof		500Vp-p Pulse width 100nsec, 1μsec
Vibration proof	Durability	10-150-10 Hz 1 octave/min. 15 sweeps in the 3 each axis of X, Y and Z while the half amplitude is 0.75mm or 10G whichever smaller.
	Wrong operation	10-150-10 Hz 1 octave/min. 4 sweeps in the 3 each axis of X, Y and Z while the half amplitude is 0.5mm or 7G whichever smaller.
Shock proof		30G 3 directions 3 times
Ambient temperature		0 ~ 50℃
Ambient humidity		30~85%RH (No dew fall)
Working environment		No corrosive gas
Protective structure		IP64 (Dust proof and drip water proof)
Communication object		CC-Link system
No. of output points		16 points
Output insulation type		Photo coupler insulation
Max. load current		100mA/point
Leak current		0.1mA or lower
Residual voltage		0.5V or lower
Type of output		NPN Transistor, Open collector output
Fuse		48V, 2A (LM20 Daito Communication Apparatus Co. LTD.)
Action indicator		LED (power lamp and communication status indicator only)
No. of monopolized stations		1 station

1.4 External dimensions of solenoid valve

● M4TB3※0-※-※T6G1-※

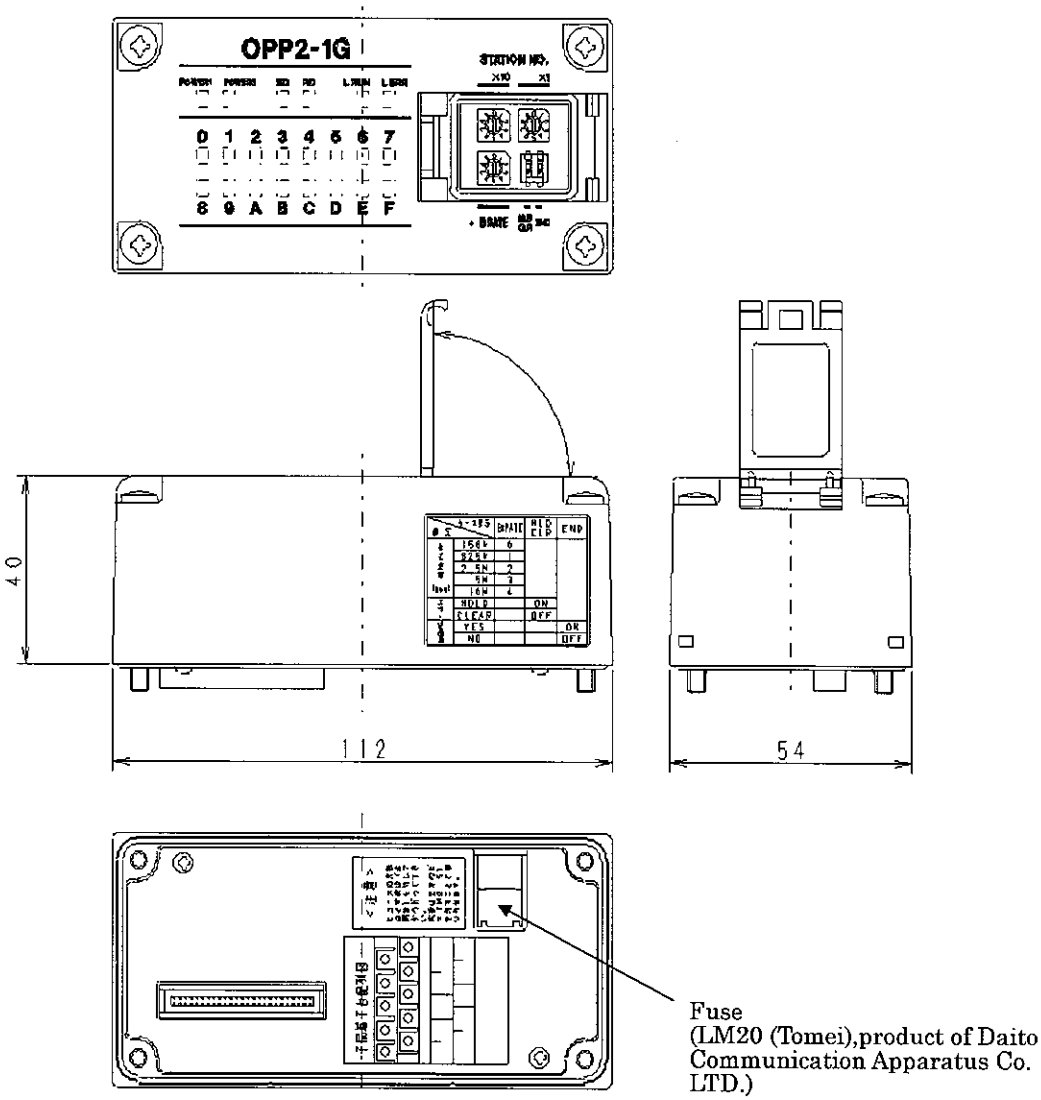


● M4TB4※0-※-※T6G1-※



1.5 Slave station for valve

1) Appearance



2) Fuse

Burt out fuse is visualized at lower part of station. It is accessible through the bottom of station to replace a fuse. Remove the bottom plate (metal piece) of station and the residual fuse to replace it with the recommended fuse such as follows.

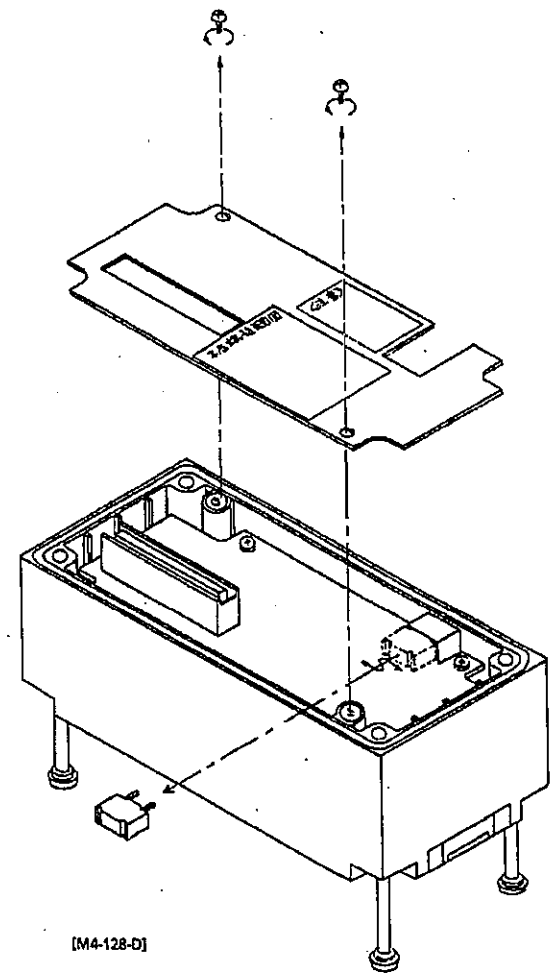
Recommended:LM20 (Tomei),product of Daito Communication Apparatus Co. LTD.
CKD model No.:4T9-LM20

Push it into fuse socket properly straight. Discard replaced fuse immediately because it is hard to distinguish with new one. There are various causes of fuse burning such as short circuited or somethingelse. Be sure to give the remedy of the cause before turning power ON, again.

(Secular change, sometimes, may be the cause although it is rare.)

Procedure for replacing fuse

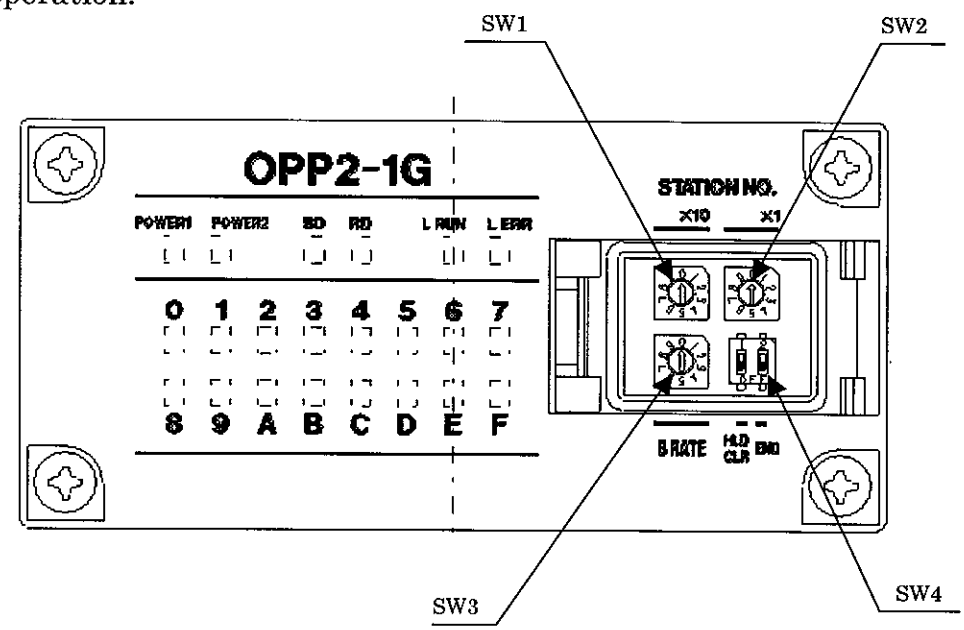
If a blown fuse is discovered, follow the procedure below to replace it.



(1) Remove the two M2.5 screws with an appropriate screwdriver.
(2) Remove the base plate.
(3) Grasp the blown fuse with your fingers and pull it out.(Do not use a tool to avoid damaging the wireing pattern on the printed board.) The fuse will come out easily if you wiggle it sideways as you pull on it.
(4) Insert a new fuse straight and fully into the fuse socket.
(5) Make sure that there are no particles or other foreign matter on the print board. Remove them if there are any.

3) Indicators and switches on Slave station

(1) Various LED lamps are installed in front of station to aid visual varification of operational conditions. Each function is printed on the cover made of resin. The content of each function is posted in the table below. Make use of them during maintenance works or for varification of operation.



Name of LED	Content of indication
POWER1	Lit when unit power is ON.
POEWR2	Lit when valve power is ON and the fuse is normal.
SD	Blinks while Data being output.
RD	Blinks while Data being input.
L RUN	Used for checking the normality of data transfer between the slave and master stations: lit when data is received normally from the master station and goes off when data is absent for a preset period of time. (Lit again when data is received normally.)
L ERR	Lit when a transmission error (CRC error) is detected Goes off after a preset period of time. (The RUN indicator goes off at the same time.) Lit when the user specifies a value out of range when setting the station number or transfer rate. (Lit again when the user corrects the setting and reboots the system.) Blinks when the station number or transfer rate setting is modified during operation. (The RUN indicator remains lit; the slave station operates with the station number and transfer rate set upon startup.)

Name of Switch	Content of Setting
Station number setting switch (SW1･SW2)	Sets the slave station numbers within the bounds of 1-64. SW1 takes care of the second digit (10) while SW2 takes care of the first digit (1)
Transfer rate setting switch (SW3)	Sets the transfer rate between the master and slave stations. A value ranging from 0 to 4 is set.
Switch used for specifying the state of output after error (SW4:HLD/CLR)	Specify whether to hold (HDL) or clear (CLR) the output when an error occurs.
End station setting switch (SW4:END)	Turn ON this switch if this slave station is connected to the farthest end from the master station ※ Turn OFF this switch if the CC-Link special high-performance cable is used and connect relevant resistor. (For details, see section 3.1.)

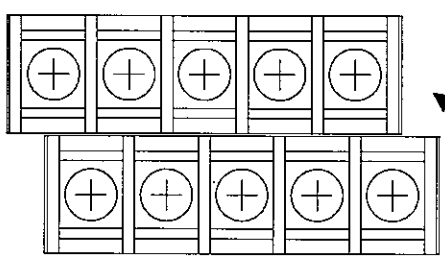
(2) Setting Switch set the valve slave station number and transmission speed. (Refer to "Chapter 3. Operation".) Be sure to set it before turning power to valve slave station ON.

- The cover of the slave station unit for the solenoid valve system can easily be opened and closed. Keep the cover closed except when you have to change switch positions or reconnect wires. If you keep the cover open unnecessarily, foreign matter may enter the circuit board causing an unexpected failure, or the cover may be broken by accidental contact .
  While the cover is open as you change switch positions or reconnect wires, be careful not to cause the entry of foreign matter.
- Setting switch has been precisely built. Disorderly handling may cause damage of switch. To set station number, never touch internal circuit printed board.

1.6 Mounting portion of Slave station for valve

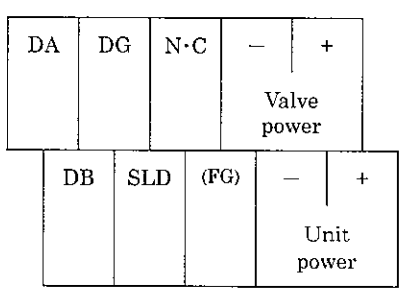
Station for valve can be pulled away upward after removing 4 mounting screws (M4). Tighten 4 screws with the torque of 0.5 to 0.7N·m to install station while ascertaining that the connectors on the bottom face of station is inserted properly and also no cable is pinched in between station bottom and mounting device. Avoid leaving station without placing screws, wrenching body or applying excessive jerking force, as it may cause station to fall out of device or damage to connecter. Also, avoid leaving manifold blocks alone after pulling station away as it may allow foreign particles or dusts fall into connecter slits or contacting part causing short circuit or insufficient contact. Likewise avoid touching connecter or printed circuit board while keeping them away form dusts or foreign particls.
Structure of mounting device is illustrated below.

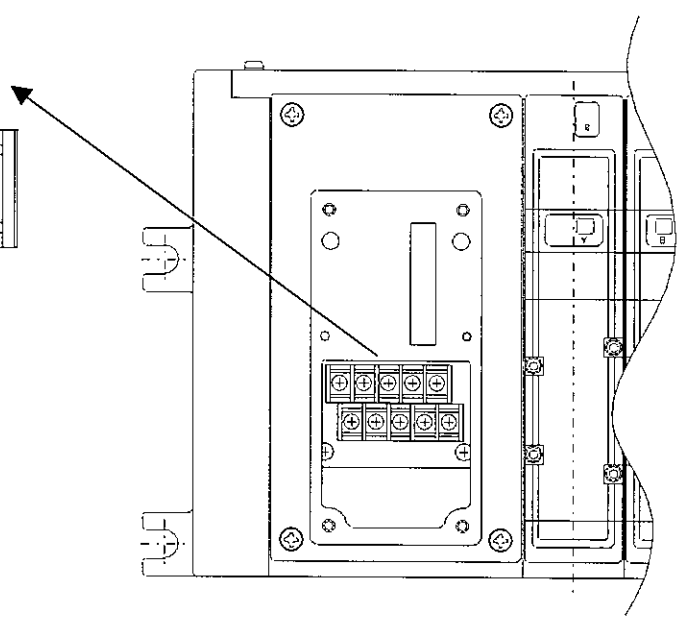
Layout of terminal blocks on device



Wiring lead out opening

Printed function of each terminal





There are terminal blocks provided on the mounting device. Wiring connection to station is accomplished through these terminal blocks.
Function of each terminal is printed on the face of station mounting device.

- Choose 6mm wide or less of M3 crimp type terminal metal piece and tighten it with torque of 0.3 to 0.5N·m.
- Be ware that this mounting device is of vitally important. Carefully avoid water drop, dusts or foreing particle form falling into this device.

Function and connection destination of each terminal are shown in the table below.

Symbol		Function	Major objects to be connected
DA DB DG		Data terminal	Connect them with the data terminals (DA, AB, and DG) of the master station or of a remote I/O or remote device station.
SLD		Shield terminal	Connect with the shielding in the shielded twist pair cable. (*1)
N·C		Not used	Do not use this terminal.
(FG)		Ground terminal	Ground this terminal without fail (independent grounding for the PLC system only ; grounding resistance 100 ohms or less). (*1)
Power for units	0V	Power for Units	Apply source of power with less noise, such as DC24 V ±10%
	24V		
Power for valves	0V	Power for valves	Apply source of power with less noise, such as DC24 V ±10%
	24V		

*1 : SLD and FG terminals are connected inside the slave station unit

2. CAUTIONS

1) Output transmission delay time

For the delay time, refer to the User's Manual for the master station.

The delay in transmission time of the system depends on the scanning time of the PLC body and other equipment which will be connected to the same network.

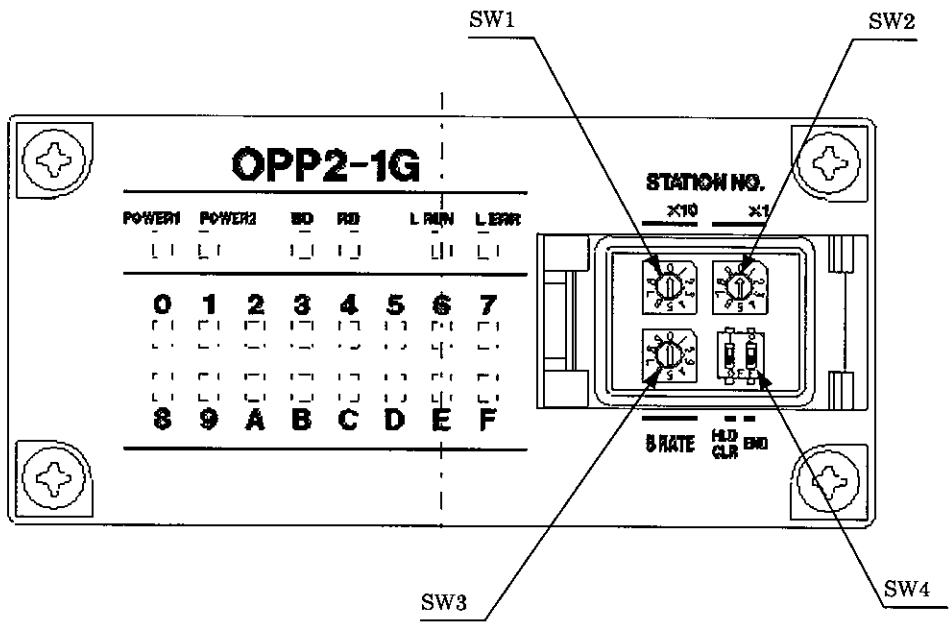
Solenoid valve responding time, of course, varies depending on model. It is advisable of referring to valve specification.

As for OFF time, there is another delay factor of approx. 20ms due to flywheel diode being used for surge absorbing circuit to valve slave station.

3. OPERATION

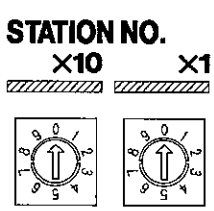
3.1 Switch setting

The switches are used for four different kinds of setup: setting the station number, setting the transfer rate, specifying whether to hold or clear the output during an error, and specifying the end station. Since different switches are used for different kinds of setup, you must correctly identify the switch to be used. Before changing the switch positions, be sure to cut the power.



1) Station number setting (SW1 and SW2)

Assign a station number to the slave station using a number between 01 and 64.

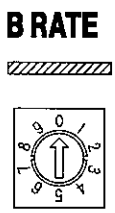


- Use the "× 10" switch to specify the 10 column digit in the station number.
- Use the "× 1" switch to specify the 1 column digit in the station number.

(Can't use the same station No.)

2) Transfer rate setting (SW3)

Set the transfer rate for communication between the master and slave stations.

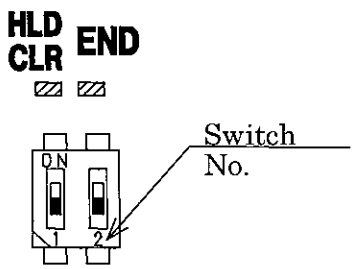


Position	Transfer rate
0	156kbps
1	625kbps
2	2.5Mbps
3	5Mbps
4	10Mbps

Be sure to the switch to position between 0 and 4.

3) Other setups (SW4)

Using this switch, specify whether to hold or clear the output when an error occurs and whether this slave station is the end station (station furthermost from the master station) or not.



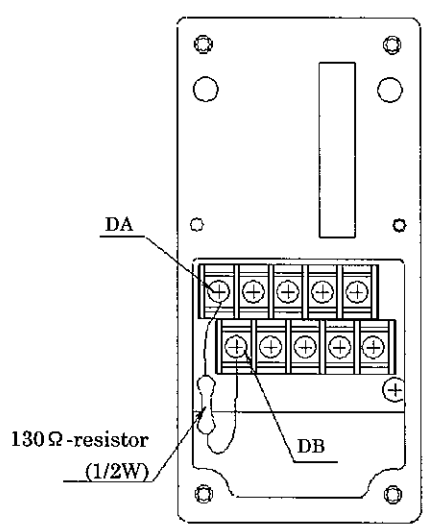
Switch No.	Function	Position	
		OFF	ON
No, 1	Specifies whether to hold or clear the output when an error (bus lien error, Time over, etc.) occurs.	Clear	Hold
No. 2	Sets the end station. (110Ω-terminating resistor is built-in.) ※ Turn OFF this switch if the CC-Link special high-performance cable is used. (See also the Fig. below.)	OFF is this slave station is the intermediate station.	ON if this slave station is the end station.

＊1. If a terminal resistor is connected externally (on a terminal block), be sure to set this switch to OFF.

※ End station settings when using the CC-Link special high-performance cable

If the CC-Link special high-performance cable (FANC-SBH made by Kuramo Denko, etc.) is used for communication cable and this slave station is the end station, always turn OFF the end station setting (SW4 No. 2). Additionally, 130Ω-terminating resistor (1/2W), which is purchased on the general market or supplied with the master station, is connected to a position between the terminal blocks DA and DB of this slave station to set the station to the end station.

※ When connecting a resistor purchased on the general market, perform the insulation process so that the lead wires of the resistor are not in contact with each other (short-circuit).



3.2 Correspondence between Output Nos. and internal connector Nos.

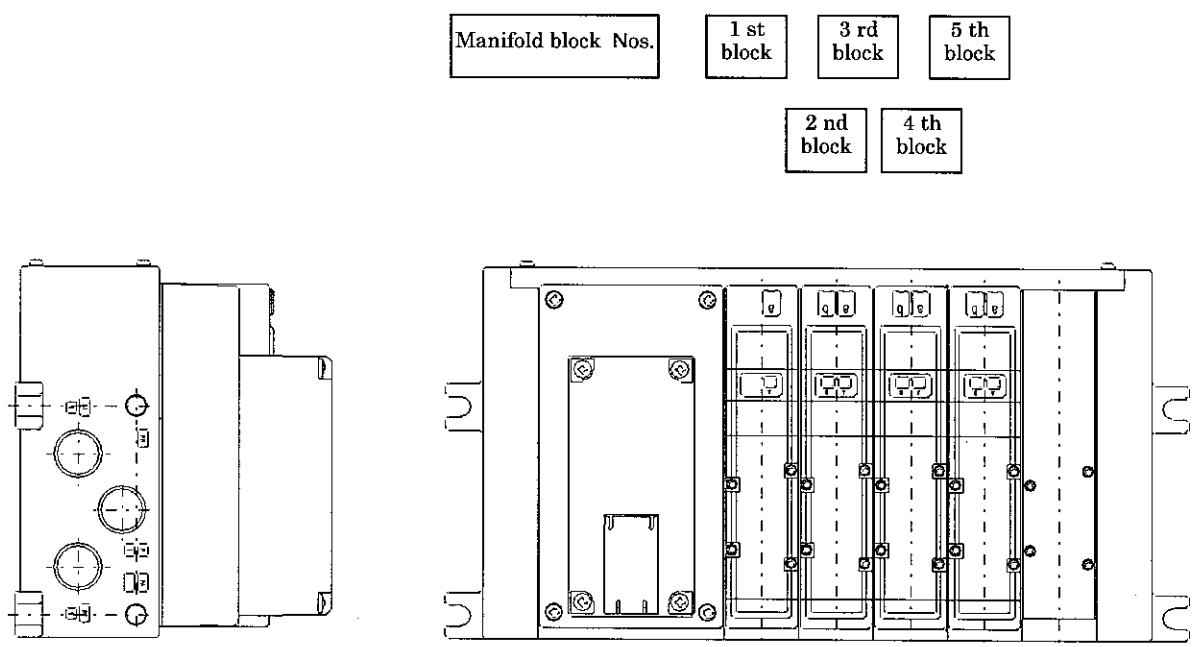
Those Numbers correspond as per table, posted below.

Output point No,	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Internal connector pin No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

3.3 Correspondence between Output Nos. and valve solenoid

(1) Connector pin Nos. and manifold solenoid correspond with each other as per tables posted below.

(2) Manifold block number is allocated from leftmost block toward right while holding piping port facing to you, regardless the location of wiring block.



Discontinue

Manifold wiring example

For Single solenoid valve

	Connector pin No.															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1st block	○															
2nd block		○														
3rd block			○													
4th block				○												
5th block					○											
6th block						○										
7th block							○									
8th block								○								
9th block									○							
10th block										○						
11th block											○					
12th block												○				
13th block													○			
14th block														○		
15th block															○	
16th block																○
Symbol	○ SOL. (a) side / ● SOL.(b) side															

(Corresponds up to the 16th manifold blocks.)

For Double solenoid valve

	Connector pin No.															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1st block	○	●														
2nd block			○	●												
3rd block					○	●										
4th block							○	●								
5th block									○	●						
6th block											○	●				
7th block													○	●		
8th block															○	●
9th block																
10th block																
11th block																
12th block																
13th block																
14th block																
15th block																
16th block																
Symbol	○ SOL. (a) side / ● SOL.(b) side															

(Corresponds up to the 16th manifold blocks.)

For Mixed (Singles and Double) solenoid valve

	Connector pin No															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1st block	○															
2nd block		○														
3rd block			○	●												
4th block					○	●										
5th block							○									
6th block								○								
7th block									○	●						
8th block											○					
9th block												○				
10th block													○	●		
11th block															○	●
12th block																
13th block																
14th block																
15th block																
16th block																
Symbol	○ SOL. (a) side / ● SOL.(b) side															

(Corresponds up to the 16th manifold blocks.)

3) Output pin No. sometimes become vacant depending upon manifold valve block number due to the sequential wiring. Such vacant pin is not available to be used for driving any other equipment.

3.4 Programming

This slave station unit is seen as a 16-point output unit constituting a remote I/O station. (The unit monopolizes the position of a single station.)
When creating programs, refer to the Mitsubishi User's Manual (CC-Link system master/local units.).

Functions particular to this slave station unit are the specification of the state of output during an error and the declaration of the end station. These functions, however, need not be taken into consideration when you create a program. This slave station unit has a function for informing the master station of the breaking of fuse in the power source for the solenoid valve system. The program can detect a breaking of the fuse or the availability (ON/OFF) of the power source for the solenoid valve system by referring to the state of a bit in the registers listed below. (The position of the bit to be referred to depends on the station number.)

<table>
<tr><th>Special link register</th><th>Name</th><th>Function</th></tr>
<tr><td>SW0088
(688H)
·
SW0089
(689H)
·
SW008A
(68AH)
·
SW008B
(68BH)</td><td>Remote station fuse breaking registers</td><td>The registers store information about state of fuses in different stations.
0: Normal
1: Burnt
<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>~</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0088</td><td>16</td><td>15</td><td>14</td><td>13</td><td>~</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0089</td><td>32</td><td>31</td><td>30</td><td>29</td><td>~</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW008A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>~</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW008B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>~</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
</table>
The numbers 1 through 64 in the table indicate station numbers</td></tr>
</table>

※ With the master station unit AJ61BT11 or A1SJ61BT11 only

4. INSTALLATION

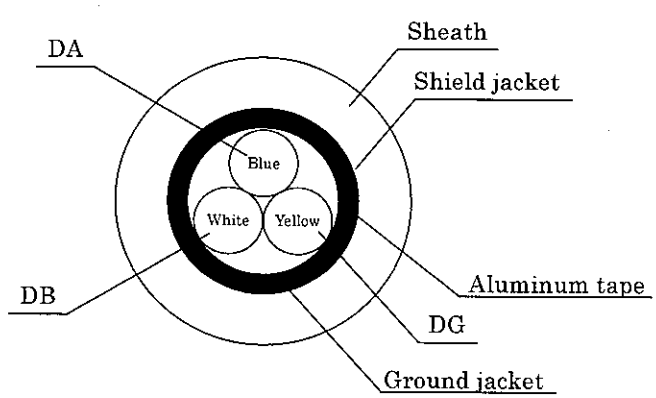
4.1 Wiring

It is required to connect signal circuit with power line to make this model M4T□-T6G1 function. Erroneous connection causes not only malfunction but in some cases, vital transmission damage to this station including other related devices. Read and understand the content of each User's manual for Sequencer and CC-Link system, product of Mitsubishi Denki Co., Ltd., as well as reading this manual to accomplish correct wiring.

① Specifications of twist pair cable (communication line)

The table below illustrates the twist pair cable recommended for use in the CC-Link system.

The quality of data transfer in the CC-Link system is guaranteed only if you use the recommended cable. Note the name and specifications of the recommended cable in the table below.

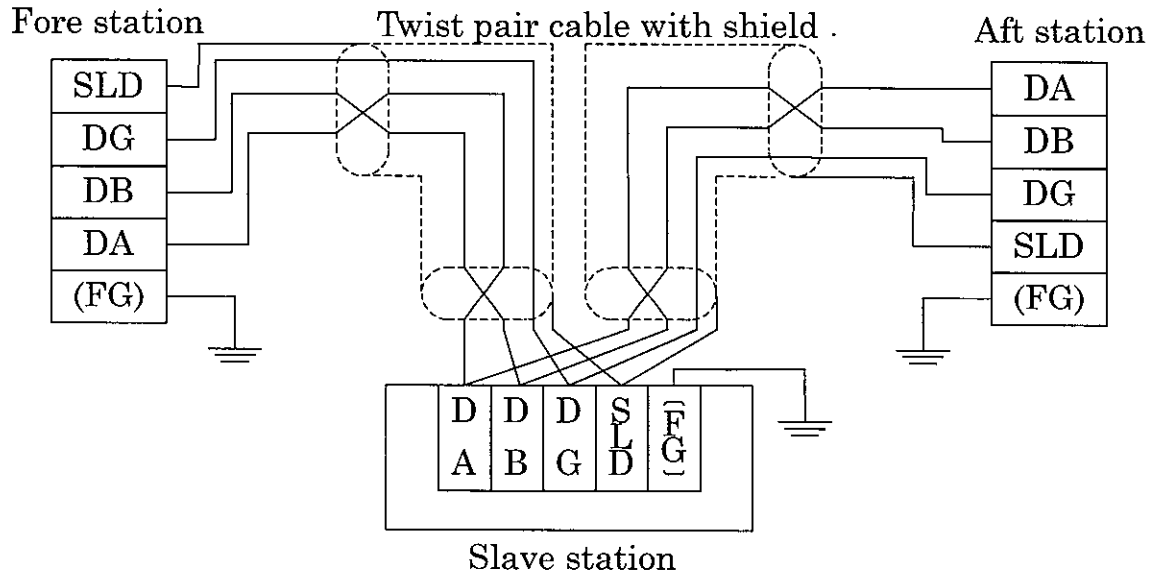
Item	Specifications	
	Cable exclusively for CC-Link	High-performance cable exclusively for CC-Link
Name	FANC-SB	FANC-SBH
Manufacturer	Kuramo Denko Co., Ltd	
Kind of cable	Twist pair cable with shield	
Conduit sectional area	0.5mm^2	
Conduit resistance (20℃)	37.8Ω/km or less	
Insulation resistance	10000MΩ-km or more	
Withstanding voltage	DC500V 1minute	
Capacity of a Static electricity (1kHz)	60nF/km or less	40nF/km or less
Impedance characteristic (1kHz)	100±15Ω	130±15Ω
Sectional view		
External dimension	7mm	8mm
Approximate weight	65kg/km	60kg/km

Note: A CC-Link special cable other than that described in the above table can also be used. However, the transfer distance may vary depending on the type of cable. To use such cable, refer to the User's Manual for CC-Link or contact the cable manufacturer.

② Wiring of twist pair cable

When connecting a twist pair cable to this slave station unit, connect the DA (blue),DB (white),and DG (yellow) wires in the cable to the DA,DB, and DG terminals respectively, and connect the shield jacket to the SLD terminal. Ground the FG terminal without fail (grounding resistance 100 ohms or less).

An example of cable connections is given below.

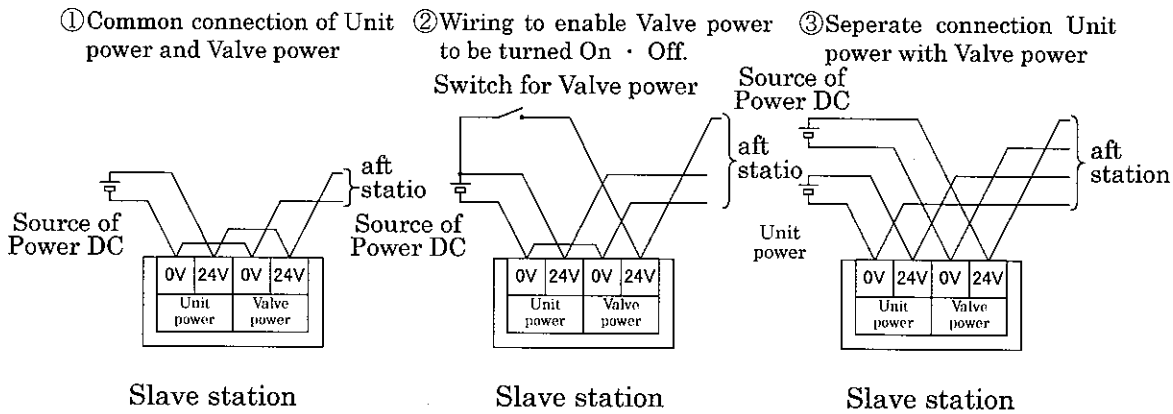


Note : This slave station unit (OPP2-1G) does not use two-piece type terminal blocks. The data links, therefore, have to be shut down when you replace the slave station unit.

If you wish to replace a slave station unit that constitutes the end station and a terminal resistor is connected with it, you will have to connect the terminal resistor to the station positioned before the end station before you disconnect the end station for replacement.

3) Wiring the source of power

The power circuit for the slave station unit (OPP2-1G) can be isolate from the power circuit for the solenoid valve system. Moreover, two separate power sources can be used to supply power independently to the slave station unit and the solenoid valve system. The illustrations below are examples of power supply to two or more slave stations (remote I/O units) from power source(s) at a single location. You may try other variations as required.



NOTE : When designing the system to supply power to duplex number of slave stations and remote I/O stations, choose and wire the source of power cord with a consideration of voltage drop. Secure ample voltage within rating by providing dual wiring, if necessary, to keep as small voltage loss of single system as possible or in stalling source of power near-by solenoid.

4) Cautions for wiring

To avoid any troubles caused by noise, strictly observe the following cautions when performing the wiring.

(1) If the noise may affect adversely, prepare the power supply for each manifold solenoid valve where possible and perform the wiring individually.
(2) Do not use a long power cable if it is not necessary. Make the wiring distance as short as possible.
(3) Do not connect devices producing noise, such as inverter or motor to the same power supply for the manifold solenoid valve.
(4) Do not connect the power supply and signal cables in parallel to other power cables.

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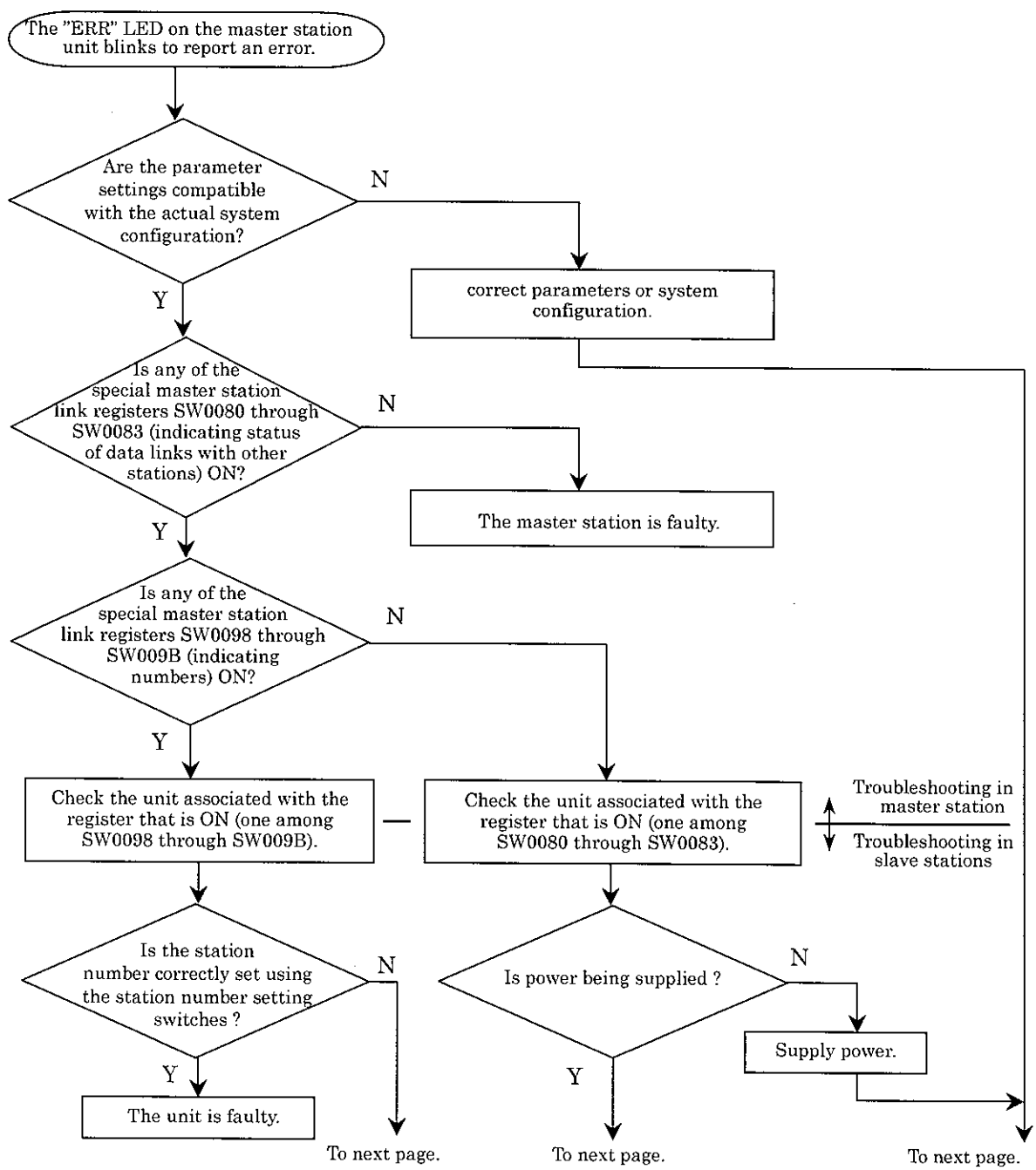
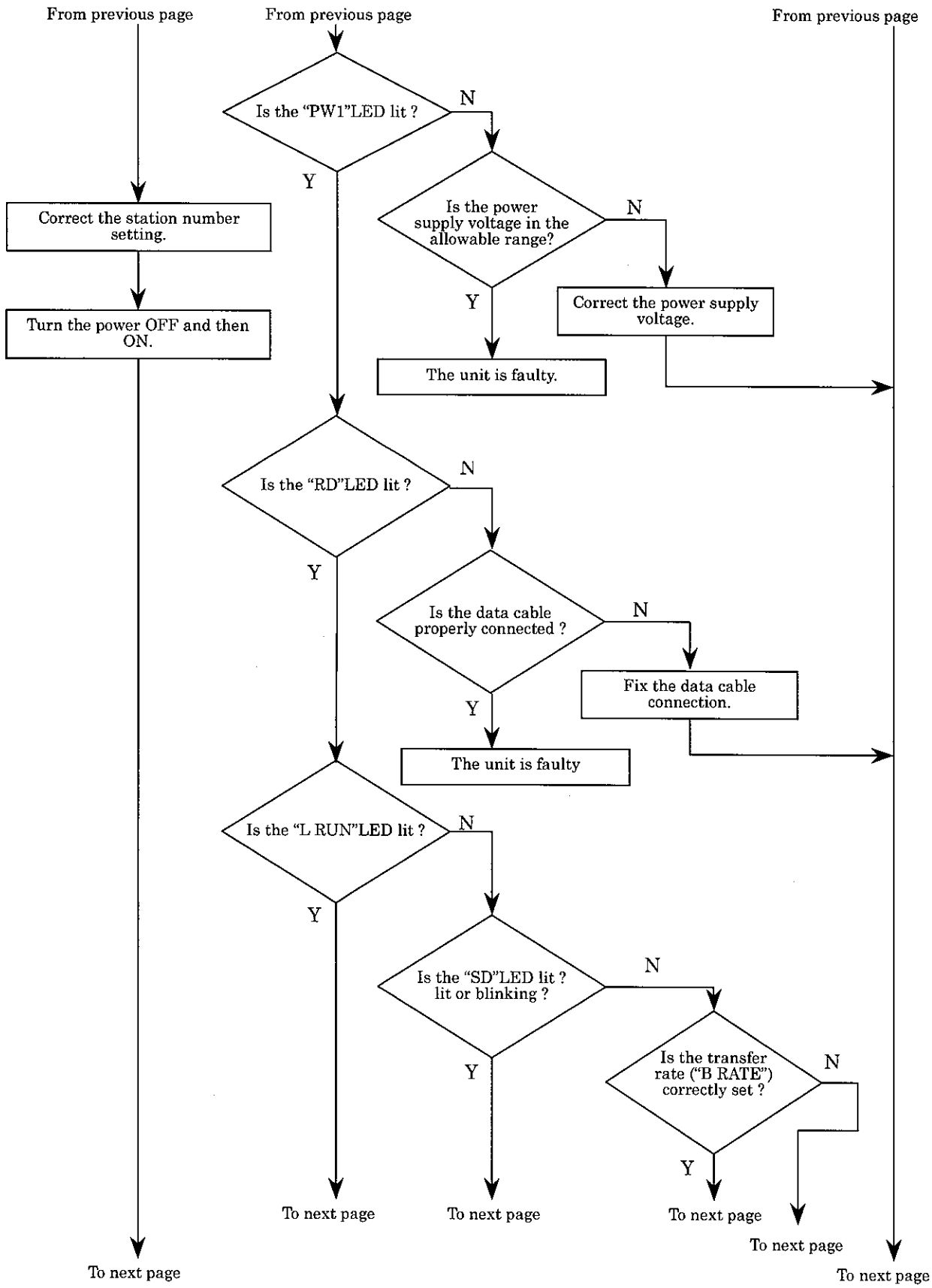
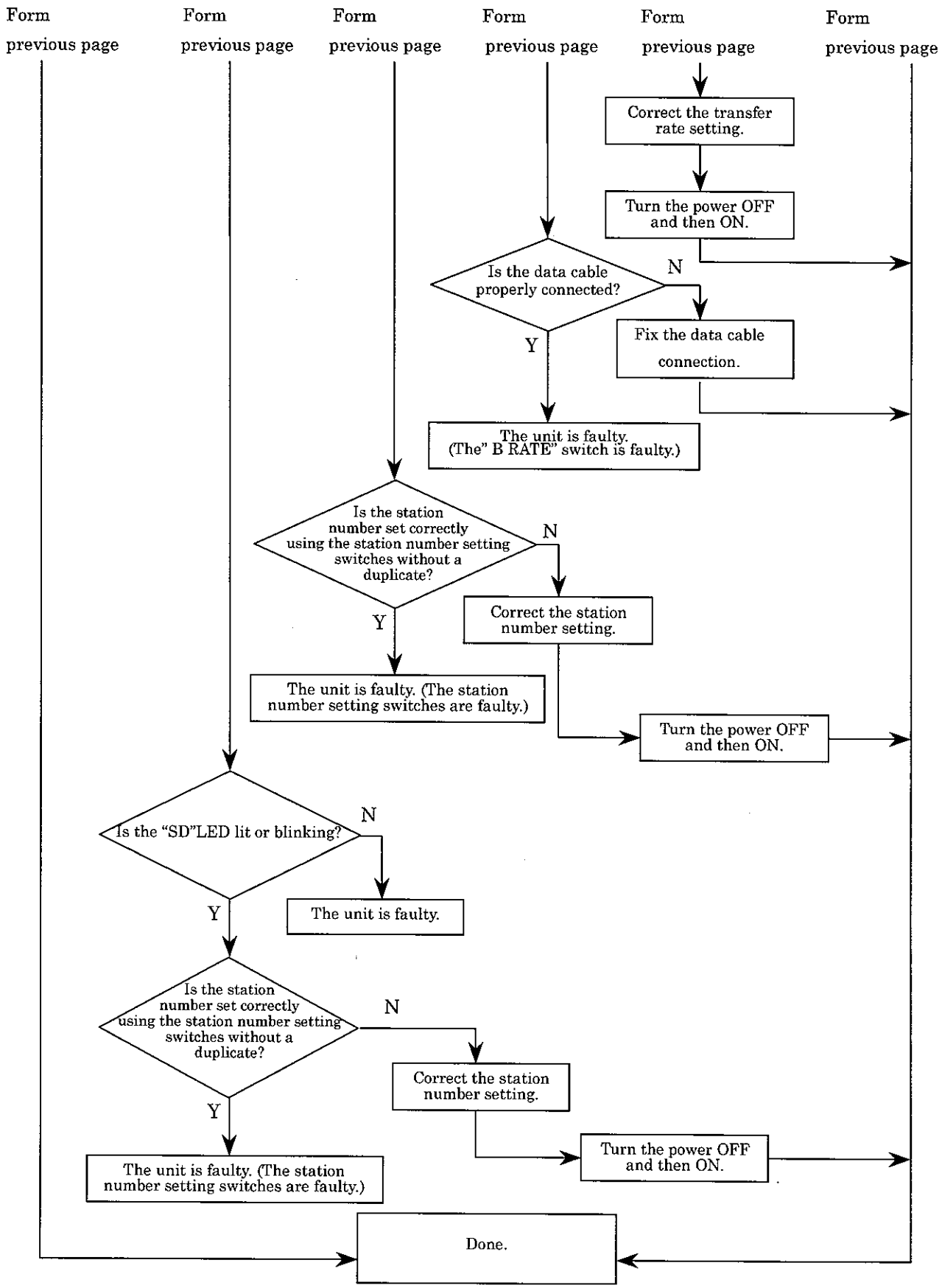
5. MAINTENANCE

5.1 Troubleshooting

Troubleshooting should address the entire system rather than a particular slave station. This slave station unit has its LED indicators similar to those provided on a Mitsubishi remote I/O station. Looking at these indicators and the indicators on the master station unit, you can determine the cause and take corrective action. During such troubleshooting operations, refer to Chapter 13 "Troubleshooting" of the Mitsubishi User's Manual (CC-Link system master/local units). the "PW2" LED is particular to this slave station unit. If only this LED has gone off, check the voltage of the power supplied to the solenoid valve system and note if the fuse has blown.







Discontinue

6. HOW +TO ORDER

・ Solenoid valve body only for manifold control

4TB3 (1) 9 – 00 – ( ) (L) ( ) ——— 3

・ Block manifold

M4TB3 (1) 0 – (08) – ( ) (L) (T6G1) ( ) – (2) – 3

(a) (b) (c) (d) (e) (f)

Operating Type of Solenoid

(a) Position and Status		(b) Connecting Port diam(Cylinder port)		(c) Manually Operation Devices	
Marking	Description	Marking	Description	Marking	Description
1	2-position, Single	08	Rc1/4	No marking	Non-locking type Man.OP.device
2	2-position, Double	10	Rc3/8		
3	3-position, All port block	08Y	Rc1/4 (Plumbing on reverse side)	M1	Lock Type man. OP decice (Option)
4	3-position, ABR connection				
5	3-position, PAB connection				
8	Mixed Manifold				

(d) Indicator, Protective Structure		(e) Other options		(f) Number of blocks	
Marking	Description	Marking	Description	Marking	Description
L	With Lamp & surge killer	No marking	None	2 To	2 blocks To
No Marking	Without Lamp & surge killer	K	External pilot		
		P	Drip proof		

・ Solenoid valve body only for manifold control

4TB4 (1) 9 – 00 – ( ) (L) ( ) ——— 3

・ Block manifold

M4TB4 (1) 0 – (10) – ( ) (L) (T6G1) ( ) – (2) – 3

(a) (b) (c) (d) (e) (f)

Operating Type of Solenoid

(a) Position and Status		(b) Connecting Port diam(Cylinder port)		(c) Manually Operation Devices	
Marking	Description	Marking	Description	Marking	Description
1	2-position, Single	10	Rc1/4	No marking	Non-locking type Man.OP.device
2	2-position, Double	15	Rc3/8		
3	3-position, All port block	10Y	Rc1/4 (Plumbing on reverse side)	M1	Lock Type man. OP decice (Option)
4	3-position, ABR connection				
5	3-position, PAB connection				
8	Mixed Manifold				

(d) Indicator, Protective Structure		(e) Other options		(f) Number of blocks	
Marking	Description	Marking	Description	Marking	Description
L	With Lamp & surge killer	No marking	None	2 To	2 blocks To
No Marking	Without Lamp & surge killer	K	External pilot		
		P	Drip proof		

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