CKD

SM-196501-A

INSTRUCTION MANUAL

Serial Transmission type

MN4S0-T6A0

MN4S0-T6A1

- 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.

CKD Corporation

For Safety Use

To use this product safely, 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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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.

Dec.10.1999
Revision : Apr.23.2001

1. PRODUCT

1.1 General outline of System

1) MN4S0-T6A0 and T6A1 Solenoid valves

These are manifold type solenoid valves respectively to which each satellite station (OPP3-0A or OPP3-1A) is built-in.

(1) Wiring man-hour is economized as a single 2-core cabtyre cable only is required to connect send unit and manifold type solenoid valves. (Local electric power type)
It is also able to make use of 4-core cabtyre cable to connect together with electric power. (Centralized power line type)

(2) Up to 128 points are available to connect manifold type solenoid valves. It is also capable to be controlled devided into the group of 8-point or 16-point. (Max. sum of total cable length is 200m)

(3) It is selectable either "Hold" or "Off" of output signals in case of abnormal transmission, owing to the self holding switch of Output signal.

(4) It is affected least to voltage loss on power line because of the adopted output circuit with less effect of voltage drop.

NOTE : Read the technical manual well.
This manual expresses chiefely MN4S0-T6A0 and T6A1 as well as satellite stations OPP3-0A and 1A. Refer to the technical manual under seperate cover concerning the details of Uniwire system.
It is recommended to read both this manual as well as the one mentioned above regarding to this manifold type solenoid valve for its appropriate utilization by understanding its function and characteristic.

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2) What is the Uniwire system ?

It is the system achieved remarkably economical wiring by connecting controller such as PLC and its devided equipment with 2-core signal cable and 2-core power cable. Its characteristic is as follows.

(1) Remarkably economical wiring

With a conventional connection of PLC Input/Output unit to censor, relay and/or motor of respective equipment, the number of wires required corresponds to the number of each Output and Input point, whereas by the uniwire system, those signals are able to be transmitted through only a 2-core cable (4-core cable including power line) .

(2) No preferrence of PLC

Various type of interfaces (Uni-connector) are provided to make any PLC of any manufacturers serviceable to the system.

(3) Max. 128 points connectable (Input and Output mingled)

It is controllable Input and Output within the range from 1 to 2 points per unit up to 128 points. In the event controlled points are to exceed 128 point, only one additional Uni-wiring system enables to build up multinumber connections.

(4) No professional knowledge required

No knowledge of transmission procedures nor programming is required owing to uniwire system using no CPU.

(5) Max. distance of transmission is 200m and up to 20 devided units. Transmission lagtime is in the range of 2 to 11 ms. Input unit or Output unit of uniwire system is capable of being devided and arranged up to 20 groups.

1.2 Structure of System

This system is constructed chiefely with PLC, Input/Out units, Uniconnector, Send unit, End unit, MN4S0-T6A□ Solenoid valve and peripheral equipment.

- Table of PLCs serviceable and model coding

PLC maker	PLC input unit	PLC output unit
MITSUBISHI ELECTRIC CORP.	AX42, AH42(X side) A1SX41 A1SX42 A1SH42(F side)	AY42, AH42(Y side) A1SY41 A1SY42 A1SH42(L side)
OMRON CORP.	C500-ID219 C200H-ID216 C200H-ID217 C200H-ID215 CQM1-ID213	C500-OD213 C200H-OD218 C200H-OD219 C200H-OD215 CQM1-OD213
YASUKAWA ELECTRIC CORP.	B2605 B1061 JEPMC-IO050(R side) JEPMC-IO050(L side)	B2604 B1060 JEPMC-IO050(R side)
FUJI ELECTRIC CO.,LTD.	FTU126A NJ-X32-1D	FTU222A NJ-Y32-T1D
KOYO ELECTRIC CO.,LTD.	G-08N U-08N	G-18T U-18T
HITACHI, LTD.	XDC24D2H	YTR24DH
SHARP CORP.	JW-64NC JW-34NC JW-234N	JW-62SC JW-32SC JW-232S
YOKOGAWA ELECTRIC CORP.	XD64-6N WD64-6N(Input) ST-6(ST-5)	YD64-1A WD64-6N(Output) ST-7(ST-5)
TOSHIBA CORP.	DI-335 DI-6241/6241H B20064DI	DO-335 DO-6242 B20064DON
YAMATAKE-HONEYWELL CO.,LTD	MA-511-5000	MA-511-5600
TOYODA MACHINE WORKS,LTD.	ID32D	OUT38D
MATSUSHITA ELECTRIC WORKS,LTD.	AFP33027 AFP53027	AFP33487 AFP53487

※ For PLCs other than those mentioned above, contact CKD.

- UNI-WIRE INTERFACE

  UNI-WIRE Interface provides communication with personal computers and SBCs (Single Board Computers).

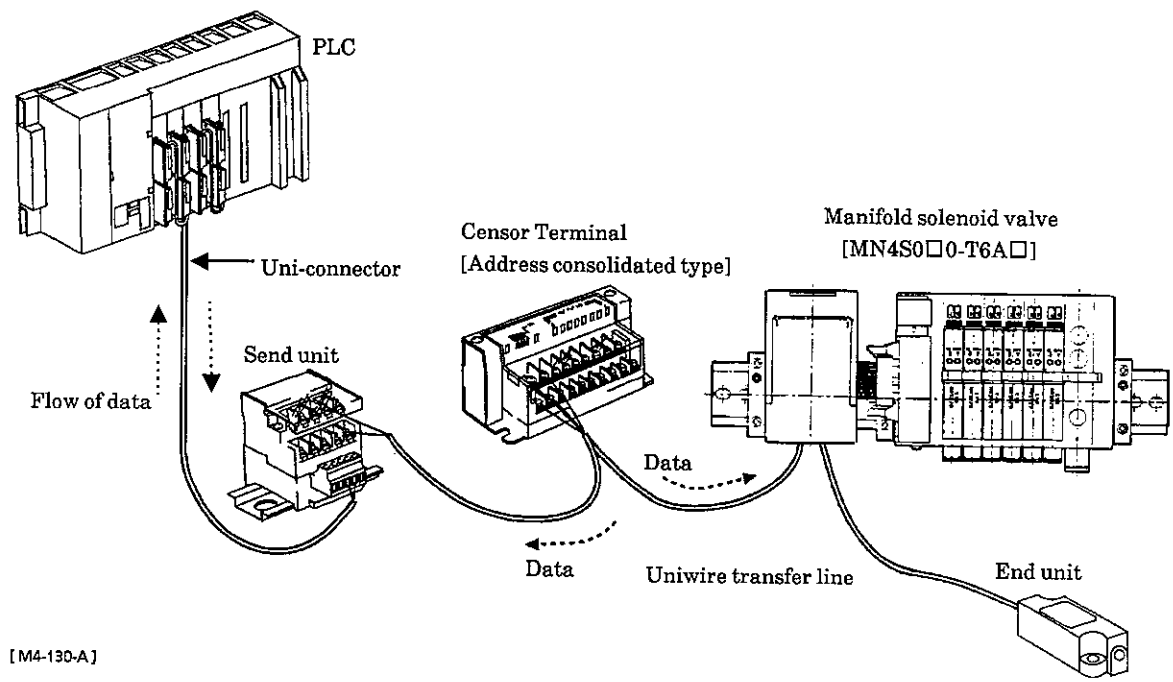
  The interface can omit Send Unit, and therefore can be directly connected to UNI-WIRE transmission lines.

  The interface can omit Uni-connector and Send Unit.

  Connectable controller

· YOKOGAWA ELECTRIC CORP.	FA-500 / FA-M3
· TOSHIBA CORP.	EX100 / T2 / T3
· HITACHI, LTD.	H-200
· MATSUSHITA ELECTRIC WORKS,LTD.	FP3 / FP5
· SHARP CORP.	J-Board (Z-300)
· Personal computers	NEC CORP. PC-98 series / ISA Bus
· SBC	VME Bus / I/O CHANNEL Bus

- Structure of a fundamental system



[M4-130-A]

1.3 Specification

1) Specification of solenoid valves

(1) Specification of manifolds

Model / Item		MN4S0
Manifold system		DIN rail mount
Electromagnetic valve		N4S0 series
No. of stations		2 stations (refer to the table, maximum No. of stations, of the following wiring specifications)
Manifold type		Common supply/common exhaust
Ambient temperature °C		5 - 50
Atmosphere		No corroding gas
Fluid temperature °C		5 - 50
Connection port size	Supply port (P) Exhaust port (R)	Push-in joint, ϕ8
	Cylinder port (A, B)	Push-in joint, ϕ4, ϕ6, M5
	External pilot port (PA option)	Push-in joint, ϕ6

Electromagnetic valve specifications

Model / Item	4-port valve					3-port valve	
	2 positions		3 positions			2 positions	
	Single	Double	All port block	ABR connection	PAB connection	Normal close	Normal open
	N4S010	N4S020	N4S030	N4S040	N4S050	N3S010	N3S0110
Operation fluid	Compressed air						
Operation method	Pilot soft spool						
Minimum operation pressure MPa	0.2						
Maximum operation pressure MPa	0.7						
Guaranteed withstanding pressure MPa	1.05						
Effective cross-sectional area mm^2	4.0		3.0	3.6	3.0	4.0	
Response time ※1 ms	20 or less		30 or less			20 or less	
Lubrication	Unnecessary (If lubrication is required, use turbine oil ISO VG32 , 1st grade.)						
Protection construction	Dust-proof						
Manual override	Non-lock type (standard), lock type (option)						

※1 The response time shown in the table is when the power is on with the supply pressure of 0.5 MPa and no lubrication. It changes depending on the supply pressure and the type of oil in the case of lubrication.

Electric specification

Rated voltage V	DC12、DC24
Rate current A	0.050、0.025
Power consumption W	0.6
Power fluctuation range	±10%
Heat-proof class	B
Surge protection circuit	Diode
Indicator	Light-emitting diode

2) Transmission specification

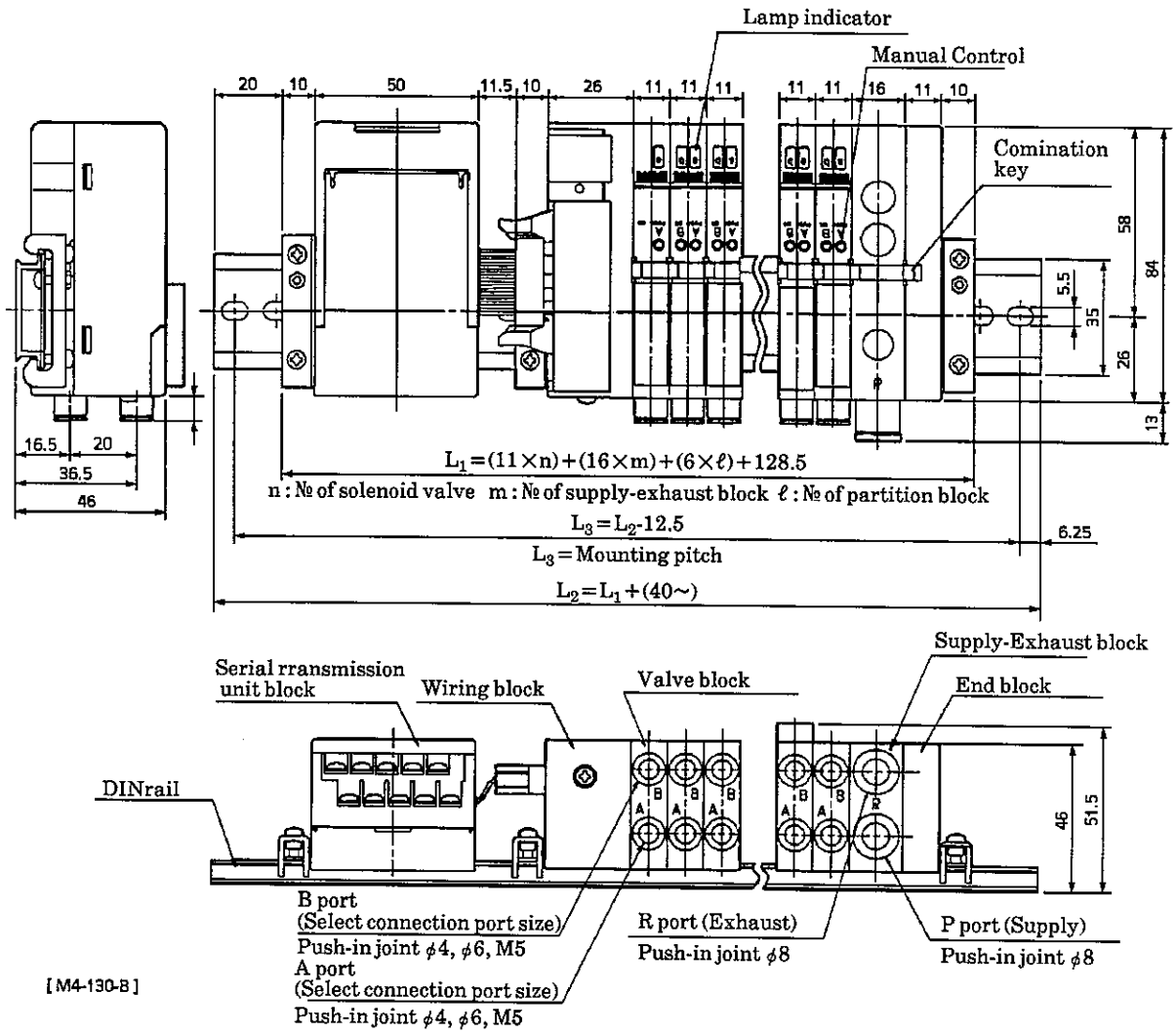
Item	Specification
Method of transmission	Dual directions simultaneous split multiplex communication type
Method of synchronization	Bit synchronizing method
Protocol of transmission	Uniwire protocol
Speed of transmission	28.5kbps
Method of connection	Multi-drop connection
Distance of transmission	Max. 200m

3) Specification of satellite station

Item		Specification
Voltage of power		DC24V +10%, −5%
Current consumption		Less than 100mA (when all outputs are ON(DO NOT connect valves))
Insulation resistance		Between case and total output terminals More than 20Ω DC500VΩ
Proof voltage		Between case and total output terminals AC500V for 1 minute
Noise Resistance		1000Vp-p pulse length 100nsec, 1μsec
Vibrtion resistance	Duration	10 - 150 10Hz, 1 octave/min Sweep 15 in each axis of X, Y and Z with half amplitude 0.75mm or 10G whichever smaller,
	Malfunction	10 - 150 10Hz, 1 octave/min Sweep 4 in each axis of X, Y and Z with half amplitude 0.5mm or 7G whichever smaller, 10 150 10Hz, 1 octave/min
Shock resistance		30G, 3 axes, 3 times
Ambient temperature		0 - 50℃
Ambient humidity		30 - 85% RH (No dewfall)
Working environment		No corrosive gas
Protective structure		IP64 (Dust proof and drip water proof)
Object of transmission		Uniwire system
No.of output		OPP3-1A: 16 points OPP3-0A : 8 points
Max.load current		100mA/pont
Leak current		Less than 0.1mA
Residual voltage		Below 0.5V
Form of output		NPN transistor open collecter output
Actuation indicator		LED (Lit when power is ON)
No.of monopolization by satellite station		OPP3-1A : Output 16 points OPP3-0A : Output 8 points

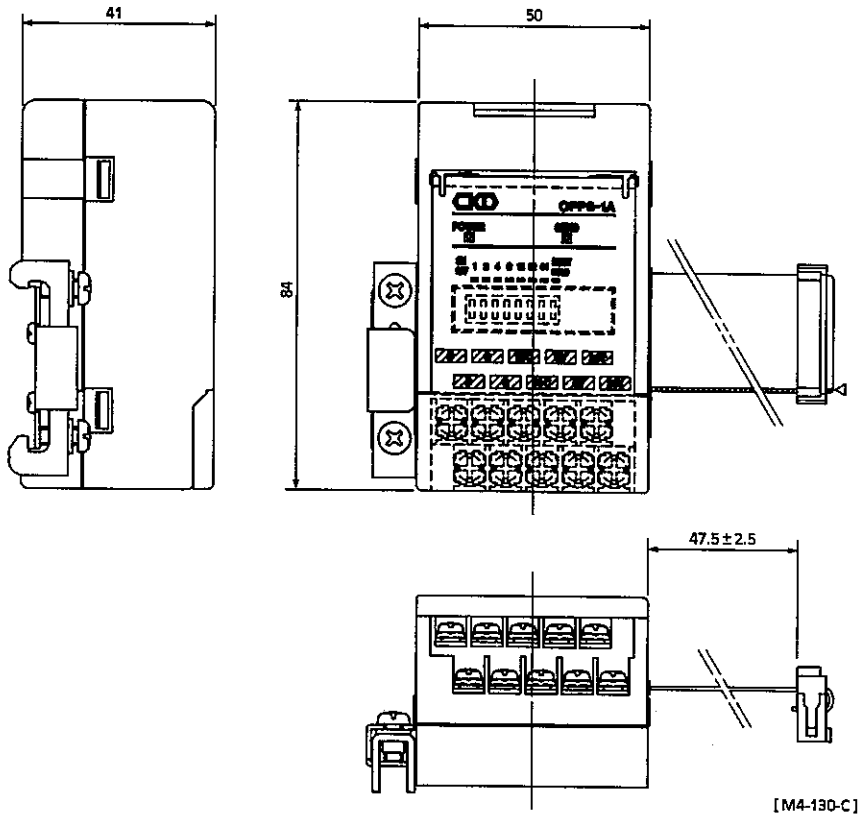
1.4 External dimensions of Solenoid valve

● MN4S0※0-※-※T6A□-※



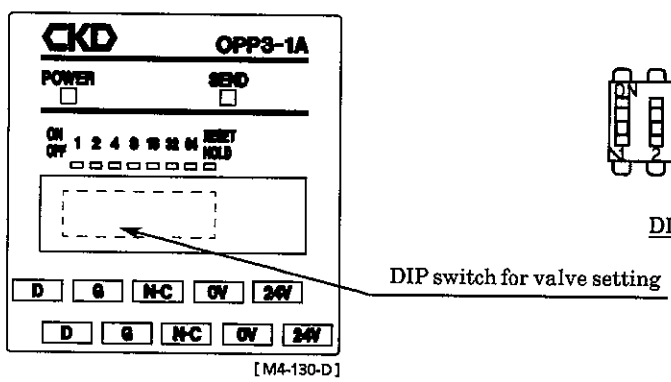
1.5 Satellite station for valve

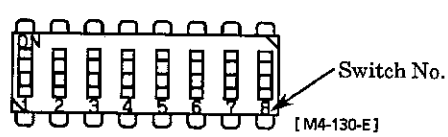
1) Appearance



2) Indicators and switches on Satellite 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.





DIP switch for valve setting

Name of LED	Scope of indication
POWER	It is lit when power is normal. This lamp flickers if the power voltage becomes approximately 19V or less. (The lamp may also flicker due to influence of the noise.)
SEND	Flickers=Normal transmission Either ON or OFF=Abnormal

Name of switch	Scope of setting
Address setting switch (Switch Nos. 1 to 7)	It allocates the address No. of station
Abnormal output selective switch (Switch No. 8)	It selects either "Hold" each output status or "Reset" all outputs when abnormal. Additionally, the settings may not be retained depending on the abnormal status.

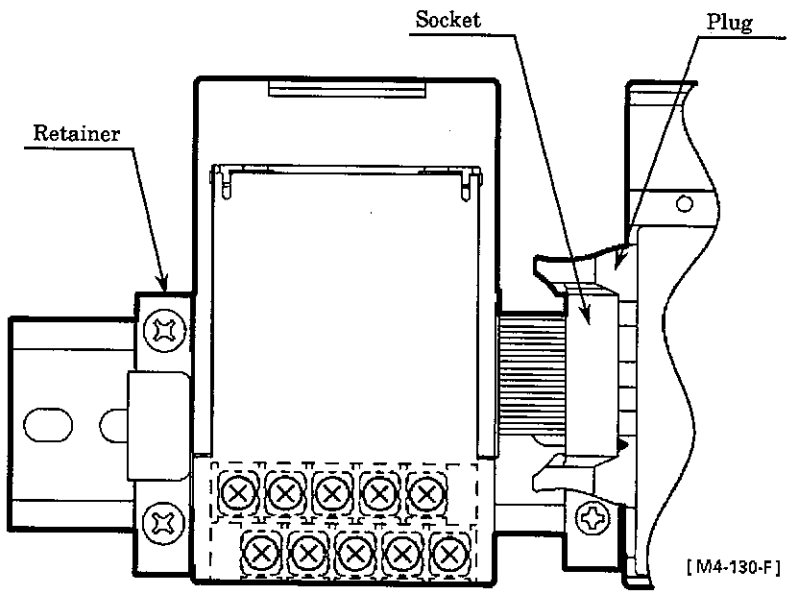
Note 1. To reset the flickering state of the POWER lamp to the normal state, turn OFF the power, and then turn it ON again after 3 sec. or longer.

(2) Set the address of satellite and whether hold or not of output signals by means of setting switches. (Refer to "Chapter 3. Operation in detail)
Be sure to do so prior to turning power to station ON.

- Cover plate for switches on the station for valve snap opens. Keep it closed always except when setting switches. Otherwise, foreign particle may penetrate into internal circuit causing unforeseen trouble. Be careful to keep foreign particle from falling into during setting process.
- Setting switches are very much sensitive. Handle with care to avoid from damages. Also absolutely keep fingers off the internal printed circuit board.

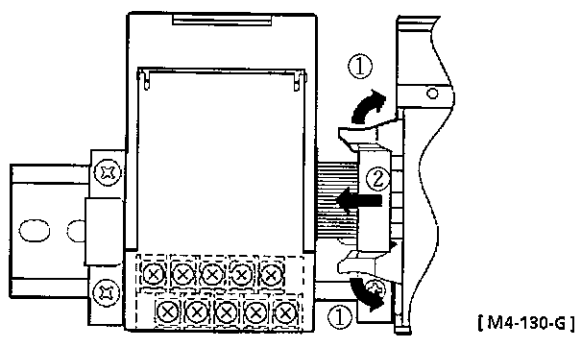
1.6 Mounting of Slave station for valve

The slave station unit OPP3-1G is normally secured by a retainer to the DIN rail (next to the solenoid valve manifold) and connected with the solenoid valve manifold by a connector (plug and socket). If you have to dismount the slave station unit from the DIN rail when you connect signal and power cables, for example, follow the procedure below:

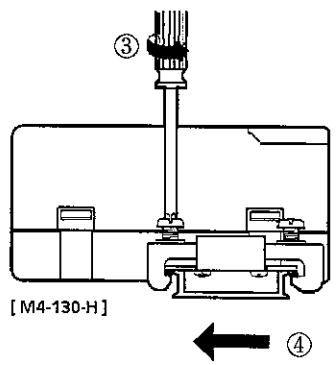


Slave station unit (OPP3-0A and 1A) Solenoid valve manifold

1) Spread the plug ends to remove the socket.
※ Spread the plug ends evenly.



2) Slacken the two mounting screws and then slide the retainer until you can see a perfect hole (dia. 2 mm) in the retainer surface.
※ The retainer is unlocked when you can see the hole (dia. 2 mm); locked when you cannot.



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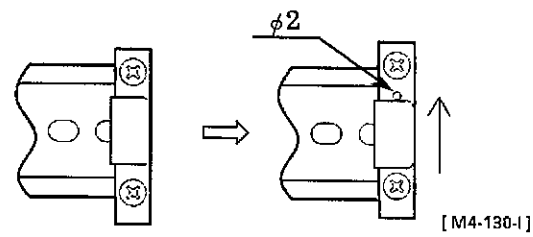
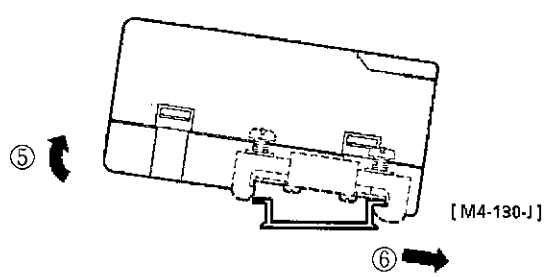


[M4-130-I]

Locked Unlocked

3) To disengage the slave station unit from the DIN rail, lift it at the rear end and pull toward the terminal block.
※ At this time, keep the retainer at the unlocked position by using your finger to hold the retainer at the end closer to you.

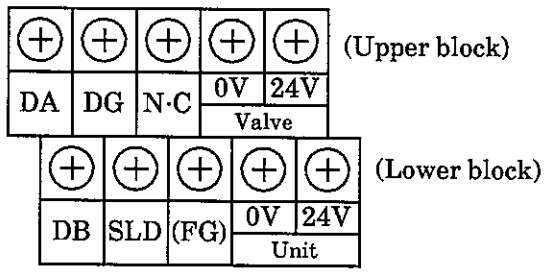


[M4-130-J]

4) To reinstall the slave station unit, reverse the procedure; start with ⑥ and end with ①. Reverse the directions of arrows in the illustrations.
※ The distance between the slave station unit and the solenoid valve manifold depends on whether the connector is oriented vertically or horizontally. Be careful of this when reinstalling the slave station unit.

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 6.6mm wide or less of M3 crimp type terminal metal piece and tighten it with torque of 0.3 - 0.5N · m.



Terminal symbols and functions

Symbol	Function	Main object of connection
D	Transfer signal "D"	To be connected to "D" terminal on Send unit or other I/O unit
G	Transfer signal "G"	To be connected to "G" terminal on Send unit or other I/O unit
0V 24V	Source of power for both valve and satellite station	Apply the source of power, DC24V +10% and -5%, with least noise.
N·C	Not used	Do not connect anything.

Note 1 : The terminal stand with same numbers on upper and lower blocks are short circuited internally (with the exception of N. C). Either one can be connected to satellite station on primary side or the other to satellite station on the second.

Note 2 : The maximum current which can pass between 0V and 24V, through the satellite station, is 7A.

2. CAUTION

1) Lag time of transmission

There are some lag time of Input/Output signals due to it being a uniwire system and sereal transmission. The range of lag time is somewhat 1.4ms 10.7ms varying depending on the number of connecting points as posted in the table below.

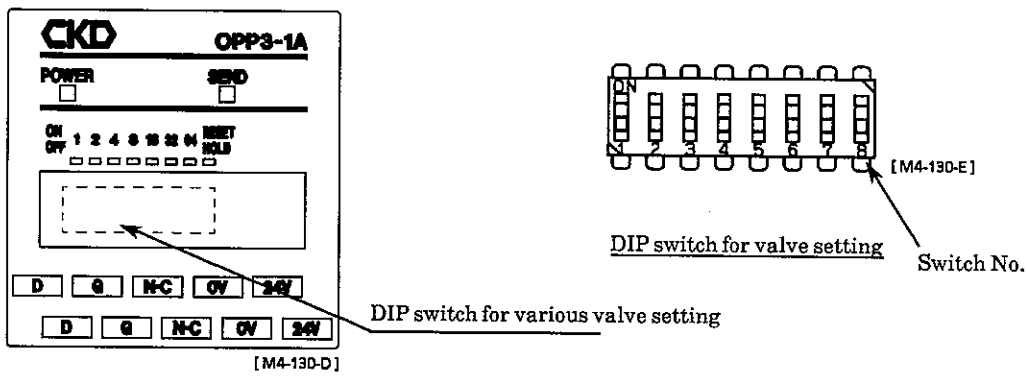
Number of points	Refreshing time	Lag time
32	1.4ms	1.4 to 3.9ms
64	2.6ms	2.6 to 6.3ms
96	3.7ms	3.7 to 8.5ms
128	4.8ms	4.8 to 10.7ms

Varify on the solenoid valve specification as for its responce time because it varies depending upon model. OFF time lag is approximately 20 ms longer in addition to the above because a flywheel diode is used for surge absorbver on satellite station for valve.

3. OPERATION

3.1 Switch setting

Those switches enable to set either "Hold" or "Reset" of all addresses and outputs. Varify the sequence No. of setting switch for respective function because all switches look alike. Enssure that power is OFF prior to setting switches.



	State of Switch								
	Significant coefficient	1	2	4	8	16	32	64	RESET HOLD
	Switch No.	1	2	3	4	5	6	7	8
Address setting	0	○	○	○	○	○	○	○	
	1	●	○	○	○	○	○	○	
	2	○	●	○	○	○	○	○	
	3	●	●	○	○	○	○	○	
	to	to							
	126	○	●	●	●	●	●	●	
	127	●	●	●	●	●	●	●	
Output selection	RESET								●
	HOLD								○

● : Switch ON ○ : Switch OFF

- Address setting switches (Switch No. 1 - 7)
  Significant coefficient is allocated to each setting switch (Printed on a case) and sum of ON switches designates the address set value.
  (Example 1) When anticipate to set value 15: Turn switche Nos. 1 - 4 ON and keep switche Nos. 5 - 7 OFF.
  8+4+2+1=15
  Still more, OPP2-0A possesses 8 points whereas OPP2-1A does 16 points.
  (Example 2) OPP3-0A : Address setting valve 3 → Possessed addresses 3 - 10
  OPP3-1A : Address setting valve 3 → Possessed addresses 3 - 18
- Output selective switch under abnormal (No. 8)
  Immediately upon abnormal output taking place, it sets either "Hold" or "Reset" data signals being output, selectively.
  (There are some data unable to be held depending upon particular condition of abnormality.)

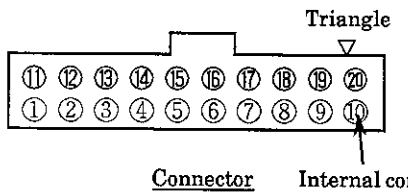
Switch No. 8	
OFF	ON
HOLD	RESET
Output data are held in the previous state to abnormality.	All output data are turned OFF when abnormality takes place.

Note 1. If the transmission line becomes faulty at a position located after this satellite station assuming that the controller (send unit or interface, etc.) is determined as the start point, the output operation of this satellite station continues.

Note 2. When the cause of the trouble is removed, this satellite station immediately starts the output operation.

3.2 Correspondence between Output Nos. and internal connector Nos.

Those Numbers correspond as per table, posted below.

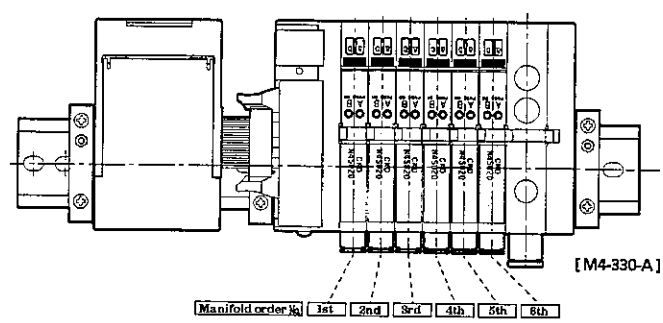


Output point No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal connector pin No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

※ OPP2-0A ranges 0 - 7

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.



Manifold wiring example

◦ For Single solenoid valve

	Connector pin No.															
	0(1)	1(2)	2(3)	3(4)	4(5)	5(6)	6(7)	7(8)	8(11)	9(12)	10(13)	11(14)	12(15)	13(16)	14(17)	15(18)
1st block	○															
2nd blk		○														
3rd blk			○													
4th blk				○												
5th blk					○											
6th blk						○										
7th blk							○									
8th blk								○								
9th blk									○							
10th blk										○						
11th blk											○					
12th blk												○				
13th blk													○			
14th blk														○		
15th blk															○	
16th blk																○
Symbol	○ SOL. (a) side / ● SOL. (b) side															

(Corresponds up to the 16th manifold blocks.) ※ OPP3-0A ranges up to the 8th manifold blocks.

◦ For Double solenoid valve

	Connector pin No.															
	0(1)	1(2)	2(3)	3(4)	4(5)	5(6)	6(7)	7(8)	8(11)	9(12)	10(13)	11(14)	12(15)	13(16)	14(17)	15(18)
1st block	○	●														
2nd blk			○	●												
3rd blk					○	●										
4th blk							○	●								
5th blk									○	●						
6th blk											○	●				
7th blk													○	●		
8th blk															○	●
9th blk																
10th blk																
11th blk																
12th blk																
13th blk																
14th blk																
15th blk																
16th blk																
Symbol	○ SOL. (a) side / ● SOL. (b) side															

(Corresponds with up to the 8th manifold block.) ※ OPP3-0A ranges up to the 4th manifold block.

◦ For Mixed (Single and Double) solenoid valve

	Connector pin No.															
	0(1)	1(2)	2(3)	3(4)	4(5)	5(6)	6(7)	7(8)	8(11)	9(12)	10(13)	11(14)	12(15)	13(16)	14(17)	15(18)
1st block	○															
2nd blk		○														
3rd blk			○	●												
4th blk					○	●										
5th blk							○									
6th blk								○								
7th blk									○	●						
8th blk											○					
9th blk												○				
10th blk													○	●		
11th blk															○	●
12th blk																
13th blk																
14th blk																
15th blk																
16th blk																
Symbol	○ SOL. (a) side / ● SOL. (b) side															

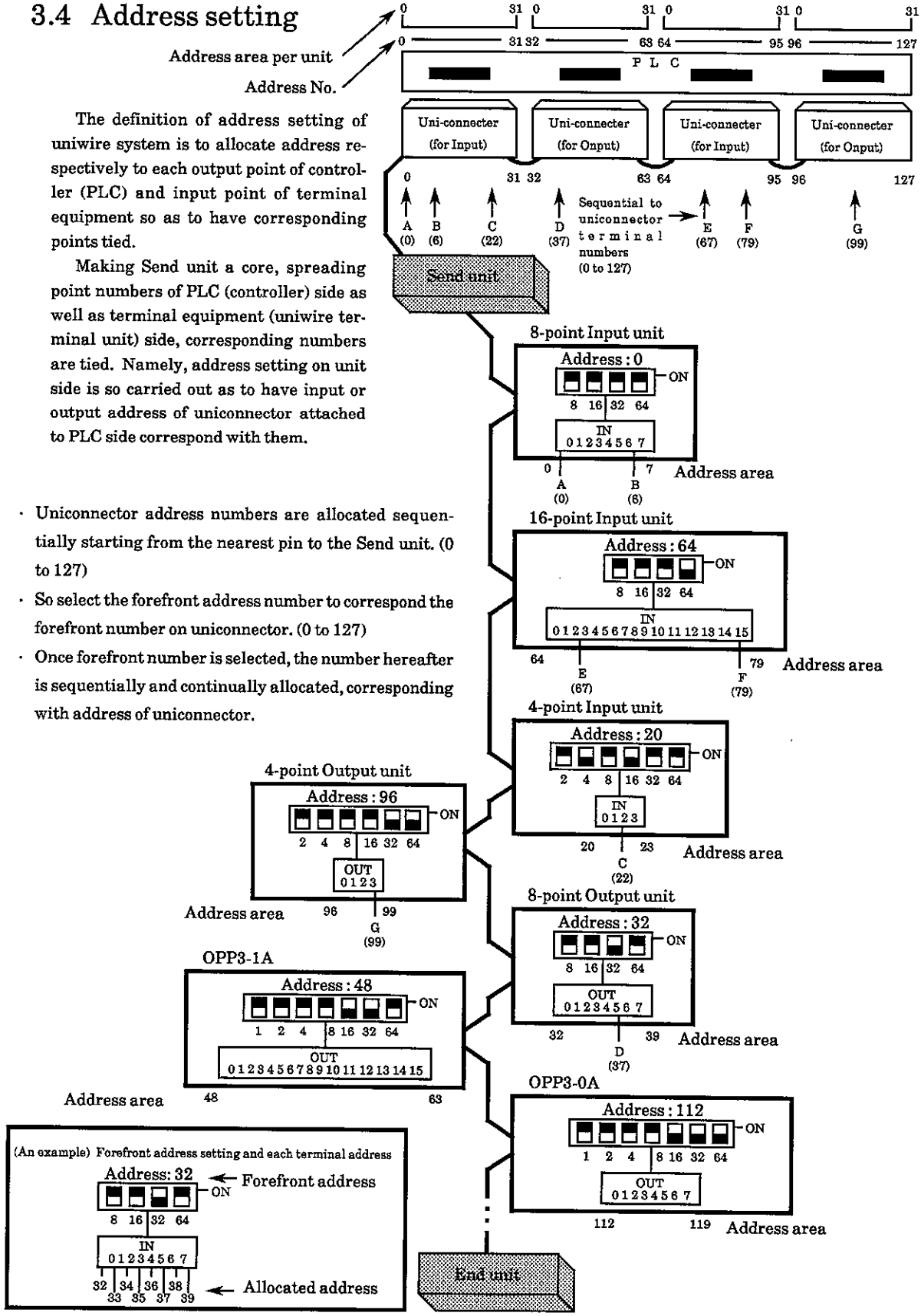
(Corresponds woth up to the 16th manifold block.) ※ OPP3-0A ranges up to the 8th manifold block.

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 Address setting

The definition of address setting of uniwire system is to allocate address respectively to each output point of controller (PLC) and input point of terminal equipment so as to have corresponding points tied.

Making Send unit a core, spreading point numbers of PLC (controller) side as well as terminal equipment (uniwire terminal unit) side, corresponding numbers are tied. Namely, address setting on unit side is so carried out as to have input or output address of uniconnector attached to PLC side correspond with them.



- Uniconnector address numbers are allocated sequentially starting from the nearest pin to the Send unit. (0 to 127)
- So select the forefront address number to correspond the forefront number on uniconnector. (0 to 127)
- Once forefront number is selected, the number hereafter is sequentially and continually allocated, corresponding with address of uniconnector.

4. INSTALLATION

4.1 Wiring peocedures

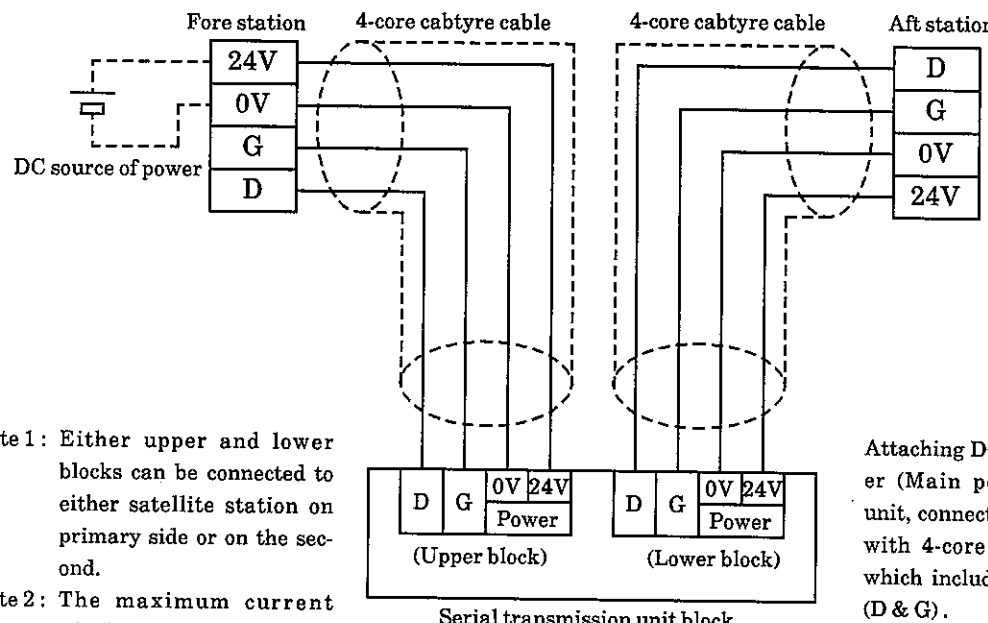
Signal cord and power line cord have to be connected to make this unit MN4S0-T6A□ function. Improper wiring not only hinder its function but, in some case, it may lead to vital troubles of this unit as well as peripheral equipment. Please read both this manual and technical manual as well so as to maximize the proper connection.

1) Recommendable signal cable

Select cable within the range of 0.5mm2 1.25mm2. No trouble is foreseen with 2-core and over 0.5mm2 cable for transmission signals (D & G). (Local source of power type)

2) Wiring of concentrated power type

Select this type of wiring when voltage loss of cable is considered not remarkable in comparrison with power consumption of each unit due to length of transmission line (cable), core diameter etc.

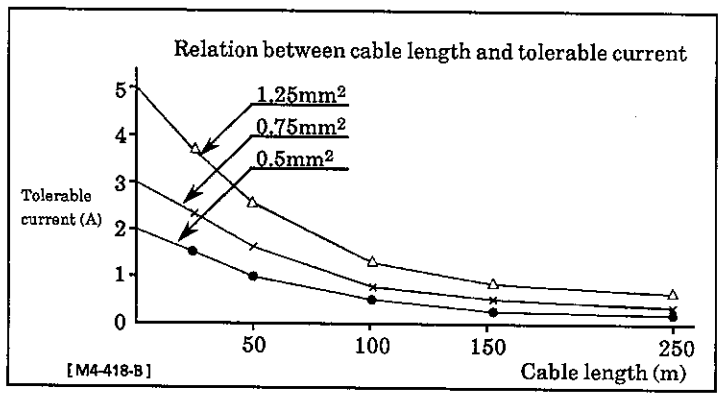


Note 1: Either upper and lower blocks can be connected to either satellite station on primary side or on the second.

Note 2: The maximum current which can pass between 0V and 24V, through the satellite station, is 7A.

Attaching DC source of power (Main power) to Send unit, connect it to each unit with 4-core cabtyre cable which includs signal cables (D & G).

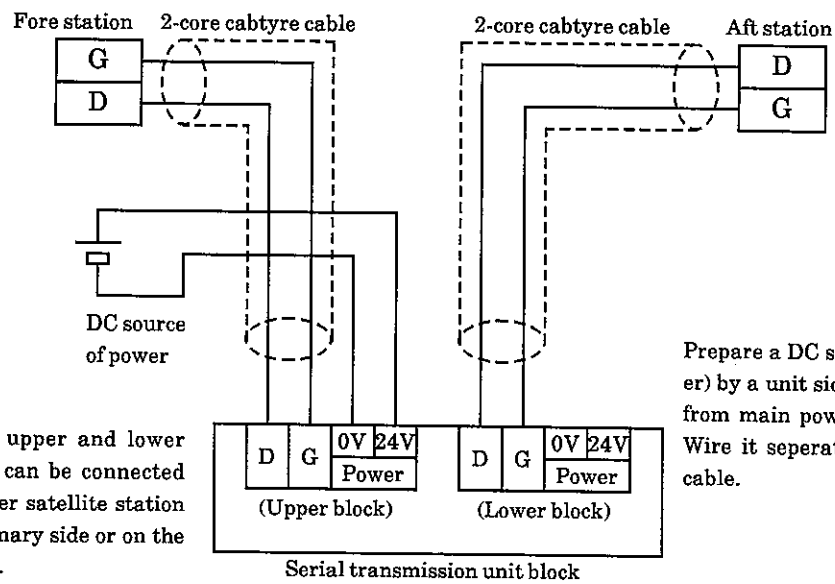
≪Note≫
It is mandatory to select an appropriate cable with enough consideration to load variation and voltage drop of cable in case of planning to supply 24V DC to each terminal equipment through 4-core cable as a form of consolidated power system. The chart posted to the right shows the relation between cable length and tolerable current with consideration of tolerable voltage (lowest limit) of uniwire.



3) Local source of power type

Make it local source type (independently devided) with short distance supply, in case it is the following circumstances.

1. Transmission distance is long.
2. Voltage drop is significant.
3. DC 24V, more than 7A is required for Send unit.



Note 1 : Either upper and lower blocks can be connected to either satellite station on primary side or on the second.

Prepare a DC source (local power) by a unit side independently from main power to Send unit. Wire it seperately with signal cable.

4) Caution when Wiring

To avoid any problems due to noise, observe the following when wiring:

① In cases where noise influence is a consideration, provide a power source for every manifold solenoid valve wherever possible, and provide wiring individually.

② Minimize the wiring distance whenever possible.

③ Do not share a common power source with equipment such as an inverter or motor, etc. which can be a possible source of noise.

④ Do not wire the power line and signal line in parallel with another power line.

5. MAINTENANCE

5.1 Trouble shooting

1) Diagnoses function

There are trouble diagnoses function provided in Send unit and End unit of uniwire system.

- Indicators on Send unit

Error indicator	Diagnoses function	Possible cause
ER1	<Transmission line voltage check> Send unit continually surveys voltage level of transmission signal line D. ER1 is lit when abnormally long 0V level is detected.	Short circuit between transfer cables D and G. Or reverse wiring.
ER2	<Uniconnector transmission check> It surveys the returning signal from last step unit making use of check bit position in transmission frame and ER2 is lit when abnormality in uniconnector is detected.	Short circuit of cables within the side of Uniconnector. Reverse wiring. Or Address setting error within terminals.
ER3	<D signal OFF check> It surveys the data condition in check bit of transmission line and verifies the voltage kept OFF (+12v level). ER3 is lit when abnormality is detected.	Short circuit between transfer cables D and G. Or reverse wiring.
ER4	<D signal ON check> It surveys the data condition in check bit of transmission line and verifies the voltage kept ON (0v level). ER4 is lit when abnormality is detected. This data ON condition is caused by End unit. Occasional lamp ON is suspected due to an influence of external noise.	Broken transfer cable. End unit is left unconnected. Electric noise from facility nearby.
ER5	Spare lamp (Not in service, currently)	—
RUN	<Operational condition check> It lights while normal. Run lamp is put out when either one of ER1 4 is lit. Indicates output of operation relay and also system motion (ON when closes and OFF when open)	—

- End unit indicator

Indicator lamp	Error indication	Possible cause
Green light ON	<Transfer line transmission and reception check> Receiving signal from Send unit, checks signal level from transfer line D. It is lit when normal and put out when abnormal.	Either short circuit between tranfer cables D & G or reverse wiring.

2) Cause of abnormality and error indication

Cause of error	Lamp of Send unit						SEND
	ER1	ER2	ER3	ER4	RUN	SEND	
(When normal)	●	●	●	●	○	◎	◎
Reverse wiring of D/G cables or short circuit	○	○	○	●	●	◎	○/●
Short circuit between V & D	●	○	●	○	●	◎	○/●
Without End connector *	●	○	●	●	●	◎	◎
Without End unit *	●	●	●	○	●	◎	◎
Abnormal of either D line or G line *	●	●	●	○	●	◎	○/●
Abnormal of ON data itself	●	●	●	○	●	◎	※
Abnormal of OFF data itself	●	●	○	●	●	◎	※
Power voltage dropped below 19V	●	●	●	○	●	◎	○/●

Note : 1. ○ shows ON. ● shows OFF. ◎ shows flicker
2. Normal condition of Send lamp is flicker.
3. ※ varies its indication. Flicker when normal.
4. Maximum connecting points indicator is put out when any Error lamp is lit.
5. In circumstance with * marked abnormality, system keeps its operation but speed drops.

3) Indications on satellite station

Item	Indicators on satellite station		Contents of abnormality	Remedy
	POWER	SEND		
Normal state	○	◎	—	—
Power is OFF.	●	●	Power is turned OFF.	Turn ON the power.
Power to the controller (send unit, interface, etc.) is turned OFF.	○	○	Power to the controller is turned OFF.	Turn ON the power to the controller.
Abnormal communication	○	×	Transmission line or controller is abnormal.	Check the indication on the controller and remove the cause of the abnormality.
Power voltage drop	◎	×	Power voltage may drop to approximately 19V or less. Note) The lamp may flicker due to influence of the noise.	Check the power capacity with the maximum load applied.

○ shows ON.、● shows OFF.、◎ shows flickering.、× shows unknown.

Note 1. To reset the flickering state of the POWER lamp to the normal state, turn OFF the power, and then turn it ON again after 3 sec. or longer.

4) Varification

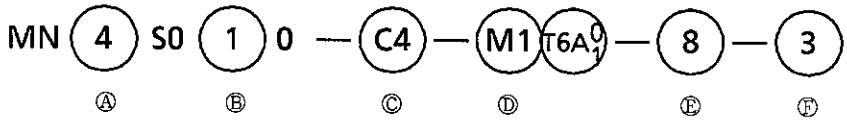
Varify the following items first, in any event that any trouble takes place in uniwire system.

Items :

① All "Power" lamps on every equipment are ON.
② All "Send" lamps on every equipment are flickering.
③ Error is indicated on Send unit.
④ End unit is connected and its lamp is lit.
⑤ The voltage of source of power to every equipment is DC 24V.
⑥ Wiring and connection is ensured.
⑦ Address setting is correct and no duplications.

6. HOW TO ORDER

1) Block manifold



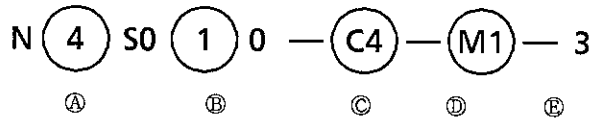
Ⓐ Valve type	
Mark	Description
3	3-port valve
4	4-port valve 3/4-port mixed valve

Ⓑ Switching position classificattion		
	Mark	Description
4-port valve	1	2-position single
	2	2-position double
	3	3-position all port block
	4	3-position ABR connection
	5	3-position PAB connection
3-port valve	1	2-position normal close single
	11	2-position normal open single
	8	Mixed manifold

Ⓒ Port size (cylinder port)	
Mark	Model
C4	Push-in joint, sideways ϕ4
C6	Push-in joint, sideways ϕ6
CL4	Push-in joint, upwards ϕ4
CL6	Push-in joint, upwards ϕ6
CX	Mixed Push-in joint, upwards
M5	M5 internal thread

Ⓓ Manual override			Ⓔ № of manihold electromagnetic valve stations		Ⓕ Voltage	
Mark	Description		Mark	Description	Mark	Description
No mark	Non -locking manual override	Standard	2	2 stations	3	DC24V
			⟆	⟆	4	DC12V
M1	Lock type manuao ocerride (tool	Option	n	Maximum number of stations for each wiring		

2) Valve block unit



Ⓐ Valve type	
Mark	Description
3	3-port valve
4	4-port valve

Ⓑ Switching position classification		
	Mark	Description
4-port valve	1	2-position single
	2	2-position double
	3	3-position all port block
	4	3-position ABR connection
	5	3-position PAB connection
3-port valve	1	2-position normal close single
	11	2-position normal open single

Ⓒ Port size	
Mark	Description
C4	Push-in joint, sideways, ϕ4
C6	Push-in joint, sideways, ϕ6
CL4	Push-in joint, upwards, ϕ4
CL6	Push-in joint, upwards, ϕ6
M5	M5 internal thread

Ⓓ Manual override	
Mark	Description
No mark	Non-locking manual override
M1	Lock-type manual override (tool required)