SMC.

Instruction Manual

SI Unit / DI Unit

EX240-SPR1

EX240-IE1

SMC CORPORATION

SAFETY INSTRUCTIONS

(Read carefully before use.)

Thoroughly read this technical instruction manual and related manuals mentioned here to ensure the safety and proper operation of the product.

Level of potential hazard

> ⚠ **Warning**: Operator error could result in serious injury or loss of life.
>
> ⚠ **Caution** : Operator error could result in injury or equipment damage.

⚠ Caution

① **Thoroughly read this manual**

Thoroughly read this manual and operate the product within the specified range following every instruction.

② **Handle with care**

Do not drop the product and/or give excessive impact on the product.

③ **Keep the specified voltage range**

An operation error, breakage, electric shock and fire may occur if the product is operated with voltage out of the specification.

④ **Do not touch terminals and/or internal circuit board while they are energized**

An operation error, breakage or electric shock may occur if you touch energized terminals and/or internal circuit board.

⑤ **Keep the ambient temperature specification**

Use within the specified ambient temperature.   Do not use the product in an atmosphere subject to a sudden temperature change even if the temperature is within the specified range.

⑥ **Avoid foreign matter from getting inside the product**

Make sure that foreign matter such as bits of wire does not enter the product. It may result in a fire, failure or operation error.

⚠ Warning

① The product is designed to use in ordinary full automation equipment. Prevent the use in machinery and/or equipment where human life may be directly injured and malfunction or failure may cause enormous loss.

② Do not disassemble the product for maintenance or modifications.

CONTENTS

1 Outline

PROFIBUS-DP

An open field bus standardized for EN50170.

Serial interface unit (SI unit) for PROFIBUS-DP

As a slave of PROFIBUS-DP, it is possible to control switching (ON/OFF) of solenoid valves up to 32 points. This distributed I/O device also allows sensor signals for the maximum of 32 points to be input (digital input) by connecting discrete input unit. IP65 is satisfied.
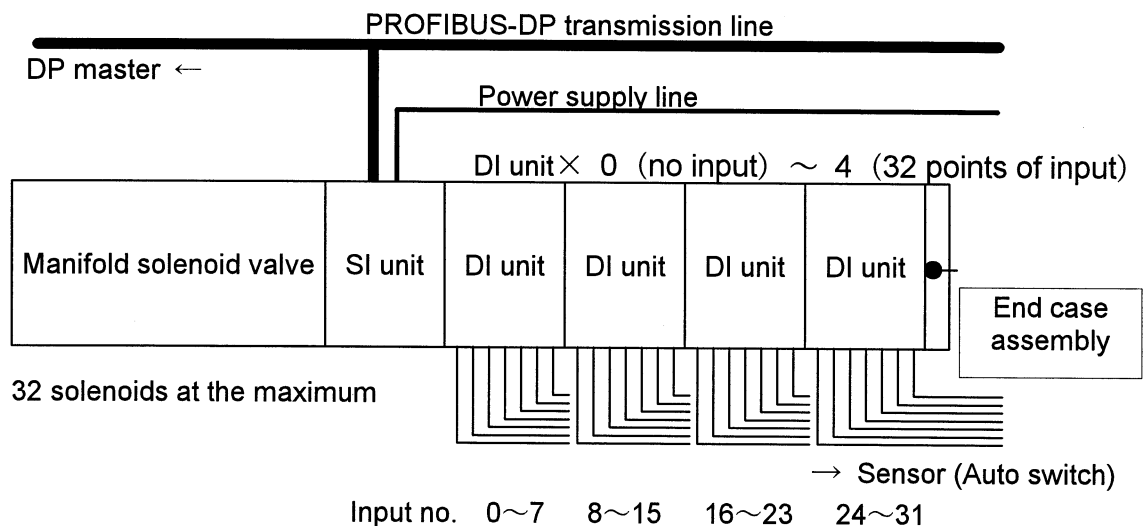
Discrete input unit (DI unit)

An expansion unit to input with sensor such as auto switch by connecting to SI unit.

Each DI unit is able to take sensor input up to 8 points and set it to sensor by using NPN/PNP change-over switch. Up to 4 pieces of DI units can be attached to SI unit for expansion. IP65 is satisfied.

2 Part numbers

EX240 - SPR1	SI unit for PROFIBUS-DP
EX240 - IE1	8 point - input DI unit
EX240 - EA1	End case assembly

3 System components

PROFIBUS-DP transmission line

DP master ←

Power supply line

DI unit × 0 (no input) ～ 4 (32 points of input)

Manifold solenoid valve	SI unit	DI unit	DI unit	DI unit	DI unit	End case assembly

32 solenoids at the maximum

→ Sensor (Auto switch)

Input no.　0～7　　8～15　　16～23　　24～31

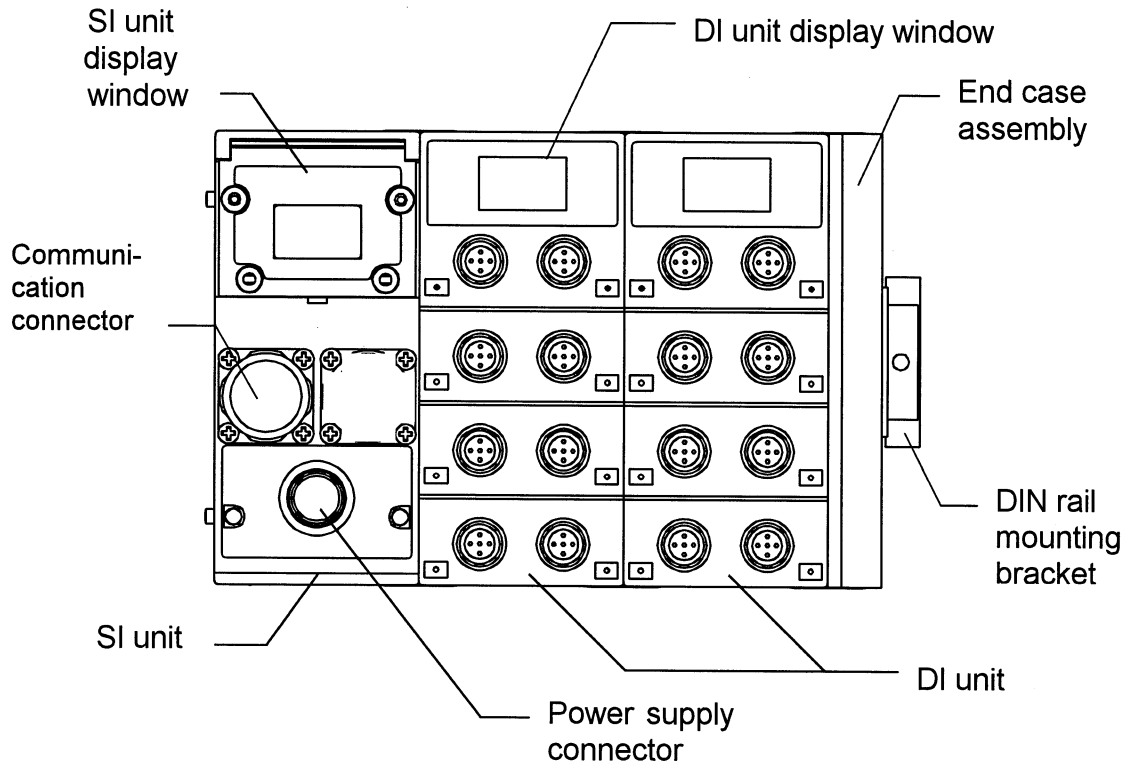Example of DP master :
SIEMENS   S7-300   CP342-5DP
                            CPU315-DP
             S7-400   CPU41x-2DP
             S5-115U/H,
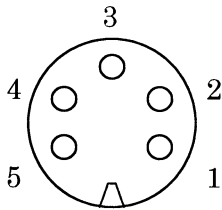   135U, 155U/H   CP5431
PC/AT   CP5412

1

4 Appearance

SI unit display window

DI unit display window

End case assembly

Communi-cation connector

DIN rail mounting bracket

SI unit

DI unit

Power supply connector

5 Connector

5.1 Power supply connector

Franz Binder   Series 723   5 pins (72309-0115-80-05)

Connector example for cable: Franz Binder   72309-0114-70-15
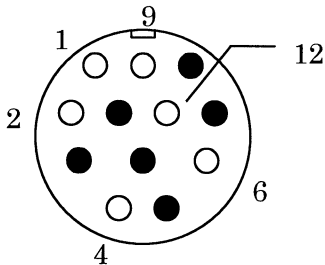
※DIN type 5 pins

No.	Description	Function
1	SV24V	+ 24V for solenoid valve
2	SV0V	0V for solenoid valve
3	PE	Protection earth
4	SI/DI24V	+ 24V for SI / DI units
5	SI/DI0V	0V for SI / DI units

5.2 Communication connector

CONINVERS   RC-2RS1N12   12 pins

Connector example for cable: SIEMENS   6ES5 760-2CB11

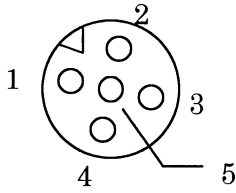| No.	Description	Function
1	M5V	GND for termination
2	A	Signal - N
4	B	Signal - P
6	+5V	+ 5V for termination
9	SHIELD	Earth for shield
12	RTS	For optical fiber (Reserved)

● : No.3, 5, 7, 8, 10, and 11 are free.

※ Compatible with SIEMENS ET200C in connector shape and pin arrangement.

5.3 Input connector

M12 5 pins (compatible with OMRON XS2F) × 8 pcs.

Connector example for cable: OMRON XS2G

No.	Description	Function
1	SW+	Supply power + for sensor
2	N.C	Free※
3	SW-	Supply power - for sensor
4	SIGNAL	Sensor input signal
5	PE	Protection earth for sensor

※ No.2 pins of connectors with input no. 0, 2, 4, and 6 (connectors on the right side of each DI unit) are internally connected to no.4 pins of input no.1, 3, 5 and 7 (sensor input signals) one by one.
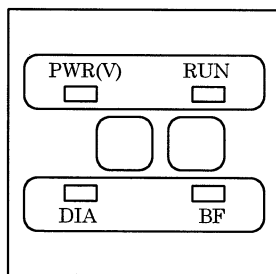This allows direct input for 2 points which are put in one cable with a collective connector.

※ For IP65 protection, Connect protection cap to all unused input connector,(Protection cap example: Hirschmann M12VS)

Connector: Input no. 0, 2, 4, 6   Input no. 1, 3, 5, 7

SW+	1	1
SIGNAL-n+1	2	2
SW-	3	3
SIGNAL-n	4	4
PE	5	5
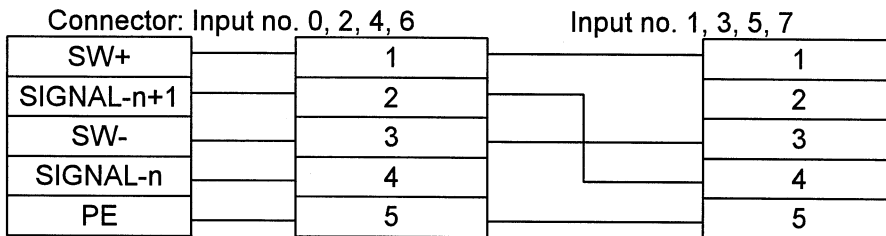
6 Display

SI unit

Descp.	Function
PWR(V)	Lights up when power for solenoid valve is supplied. Lights off at lower than 19V of power supply voltage.
RUN	Lights up during operation (while SI unit is energized).
DIA	Lights up if any problem is detected by diagnosis.
BF	Lights up if bus has any problem.

DI unit
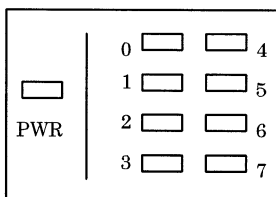
Descp.	Function
PWR	Lights up when power for sensor is supplied. Lights off when short-circuit suppressor works.
0~7	Lights up when each sensor input turns on.

7 Wiring

7.1 Power supply wiring

Power supply line inside the unit includes power supply independently for solenoid valve actuation (SV power supply) and for SI/DI units. Supply DC24V each. Either single or individual power supply is available.

A. Individual power supply   B. Single power supply

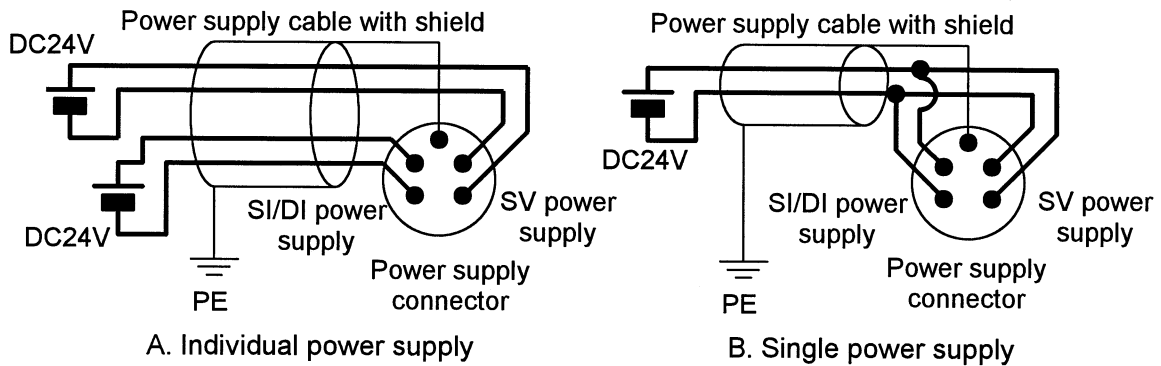Power for SI/DI units is also distributed to sensor connected with DI unit. Select sensor concerning voltage drop inside the unit. It may reach approximately 2V at the maximum. If sensor requires 24V, it is necessary to lower power supply voltage for SI/DI unit slightly or secure power supply for sensor separately without going through SI unit so that sensor input voltage can be 24V with actual loading (allowable voltage of SI/DI unit power supply: 19.2V to 28.8V).
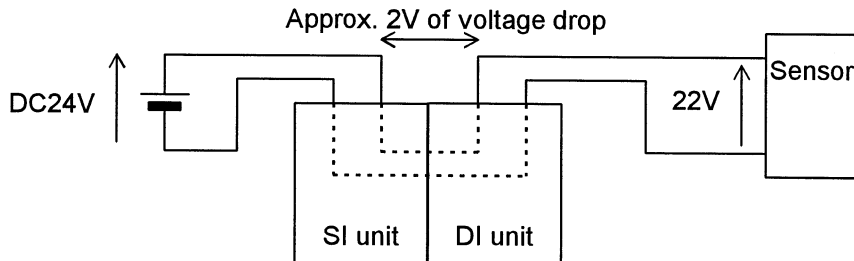
Select power supply cable sufficient for power consumption and number of stations of solenoid valves, and current consumption of SI unit and sensor.

Wire power supply cable to accessory plug properly and then connect it to socket of SI unit.
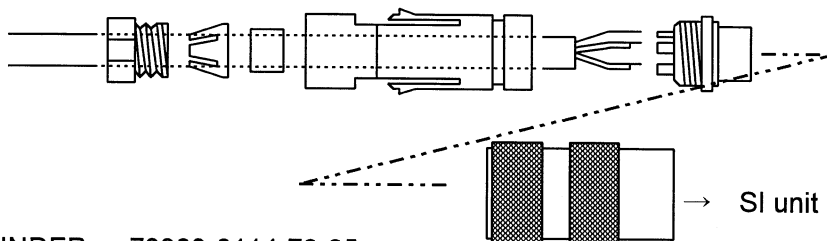
FRANZ BINDER   72309-0114-70-05

7.2 Communication wiring

Communication connector

PROFIBUS-DP bus line

A —— No. 2
B —— No. 4
No. 9

Cable: Twist pair cable with shield

Shield
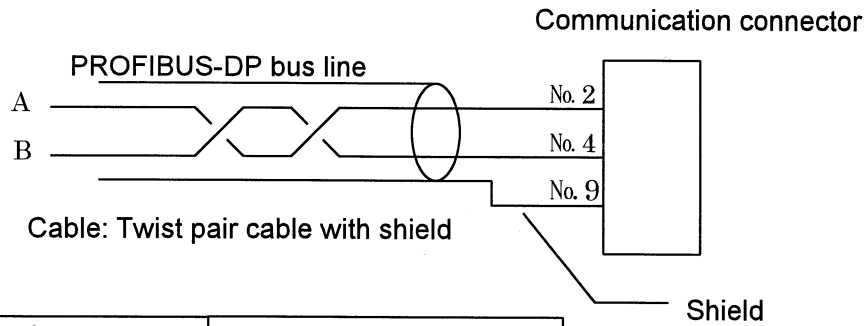
Impedance	135～165 Ω (3～20MHZ)
Capacity between conductors	30pF/m or less
Conductor resistance	110 Ω/km or less
Cable diameter	0.64mm or more
Conductor area	0.34mm^2 or more

· Transmission speed & Longest wiring length

Transmission speed	9.6kBd	19.2kBd	93.75kBd	187.5kBd	500kBd	1.5MBd	12MBd
Wiring length	1200m			1000m	400m	200m	100m

· Termination

It is necessary to attach terminating resistance to the units located at the ends of transmission line.

B (Pin no. 4)
+5V (Pin no.6)
390 Ω
A (Pin no.2)
220 Ω
Communication connector
390 Ω
SI unit
SI unit
M5V (Pin no.1)
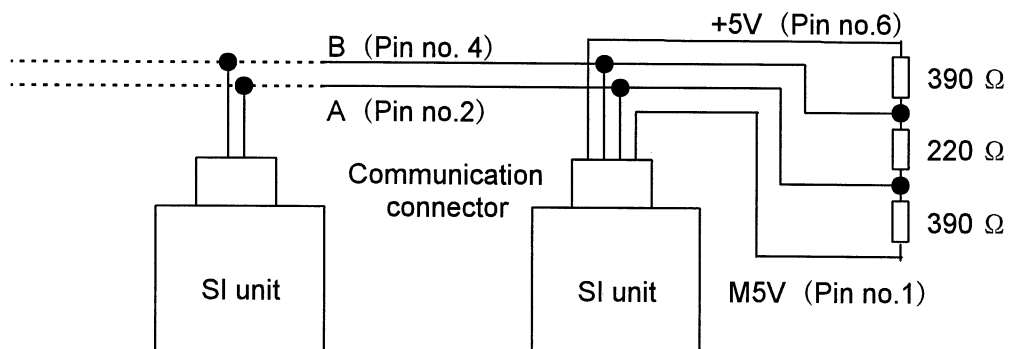
・Connectors

Example of connectors and cables required for bus line installation is shown below with SIEMENS products.

```
┌──────────────────────────────────────────┬──────────┐
│                                          │  Cable   │
├──────────────────────────────────────────┴──────────┤
│ Example:                                             │
│ SIEMENS   6XV1 830-0BH10  (2 cores)                  │
│ SIEMENS   6ES5 717-1xxx1  (5 cores. w/ round connector)│
└──────────────────────────────────────────────────────┘
```

```
┌───────────────────────┬───────────┐
│ Round connector       │           │
├───────────────────────┴───────────┤
│ Example:                           │
│ SIEMENS   6ES5 760-2CB11           │
└────────────────────────────────────┘
```

SI unit

SI unit

```
┌───────────────────────┐
│ T connector           │
├───────────────────────┤
│ Example:              │
│ SIEMENS   6ES5 762-2CT11 │
└───────────────────────┘
```
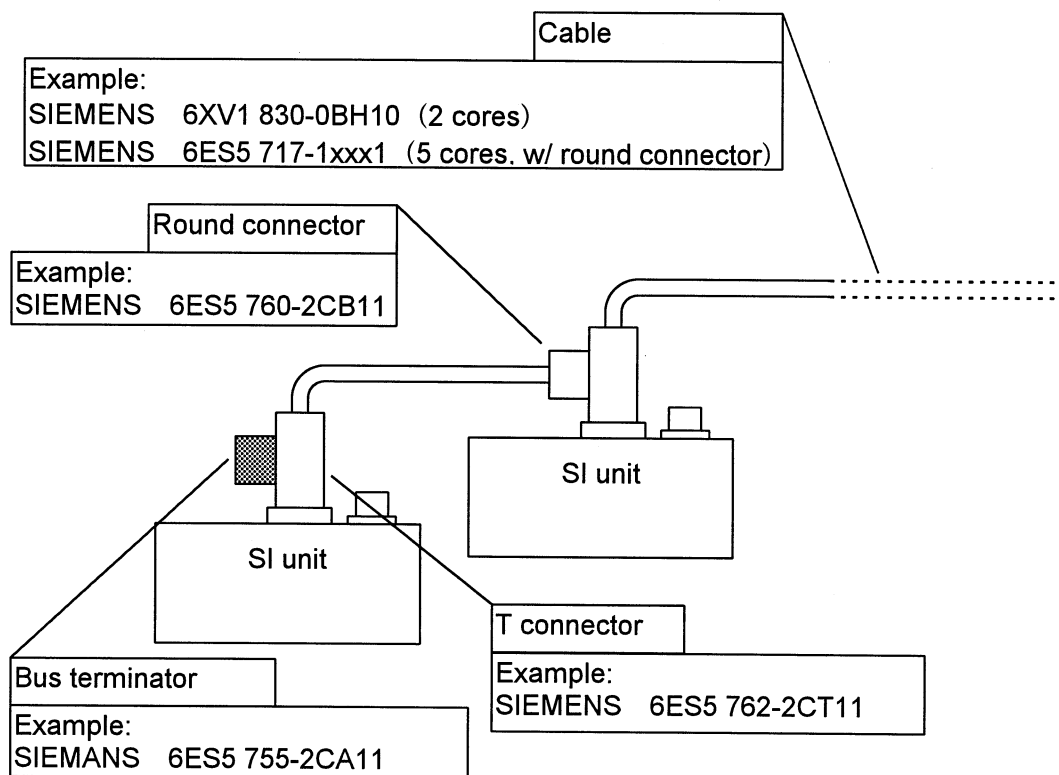
```
┌───────────────────────┐
│ Bus terminator        │
├───────────────────────┤
│ Example:              │
│ SIEMANS   6ES5 755-2CA11 │
└───────────────────────┘
```

※ In order to get other PROFIBUS connectors and cables than SIEMENS's, it would be convenient for you to see "PROFIBUS Products and Catalogs" issued by Japanese PROFIBUS Organization (JPO). Contact JPO in any of the following ways of communication.

Japanese PROFIBUS Organization (JPO)
Takanawa Park Tower 18F
3-20-14 Higashi-Gotanda
J - #141 Shinagawa-ku, Tokyo

Tel.:   ++ 81 / 3 / 54 23 85 90
Fax.:   ++ 81 / 3 / 54 23 87 34
e-mail: masahiko.imoto@skk.tyo1.siemens.net
internet: http://www.profibus.com

7.3 Input wiring

Input connector allows connection with plug for M12 sensor of the following specifications.

No. of pins	4 or 5 pins
AC / DC	DC

Input circuit diagrams

DI unit — 3 - wire sensor (NPN)

DI unit — 3 - wire sensor (PNP)

DI unit — 2 - wire sensor
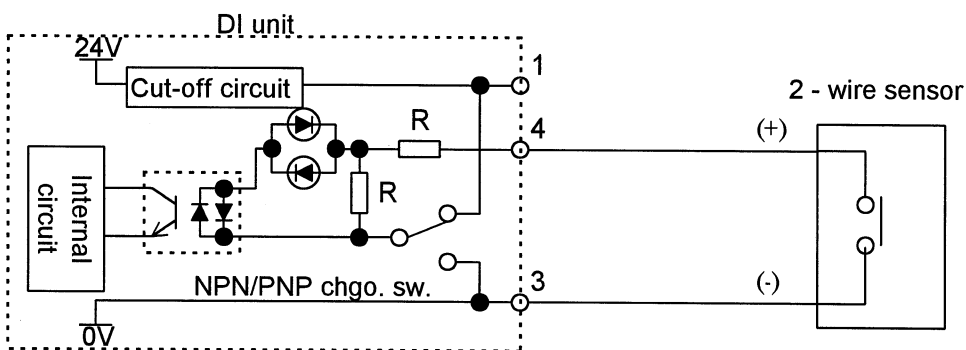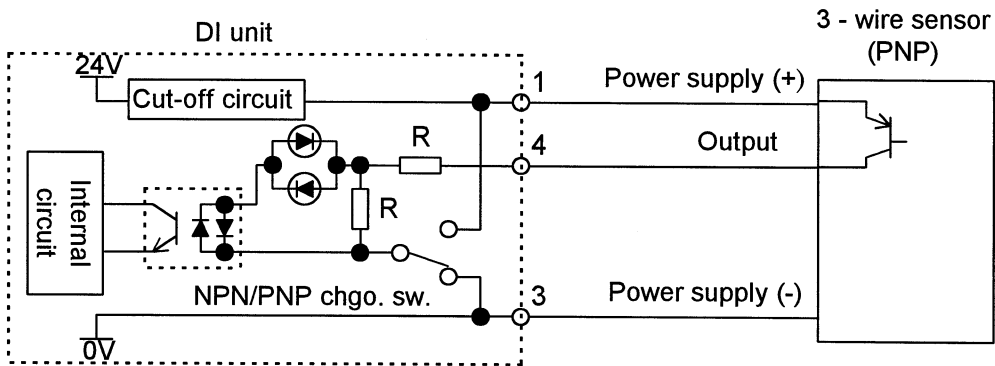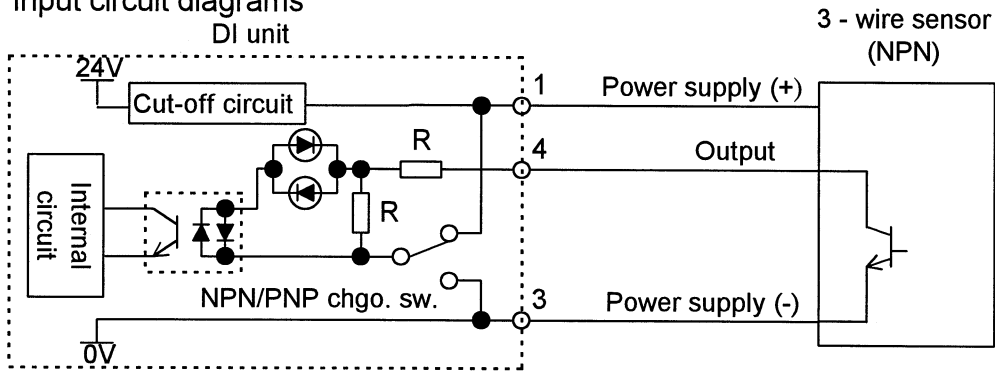
※ Allowable supply current for sensor is 500mA per DI unit at the maximum. For DI unit to which 8 pieces of sensors are connected, approximately 60mA can be supplied per point.

※ If excessive current flows into sensor power supply due to short circuit, power supply is stopped by cut-off circuit. In such a case, solve the problem, cut power once and then supply it again for return.

8

· Example of sensor connection
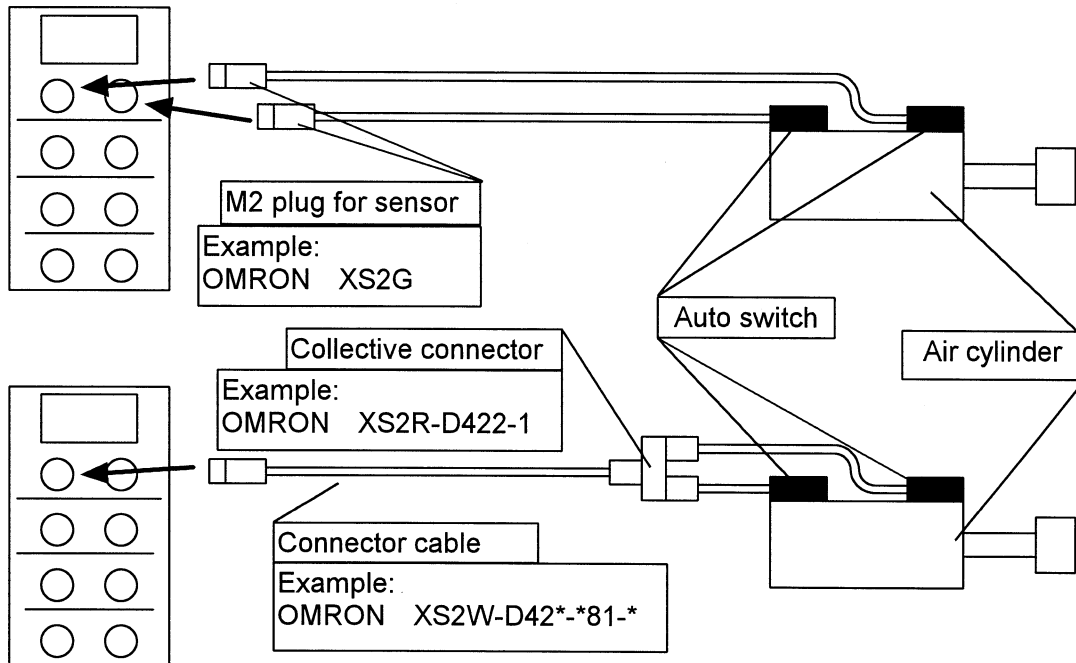
8 Solenoid valve

Part numbers of manifold solenoid valves which can be connected to SI unit are shown below.

Series
SX3000
SY5000
VQ2000
VQ4000

How to order

· Series SX/SY

S S 5 Y 3 − W 4 6 N S N W 4 ※ U − 0 8 − C

- IP65
- Minus common
- For PROFIBUS-DP
- SI unit mounting position
- Input unit specification
- No. of input units

· Series VQ

V V 5 Q 2 1 − 0 8 C 6 S D N W N 4 ※ − W

- For D side mounting
- For PROFIBUS-DP
- Minus common
- IP65
- Input unit specification
- No. of input units

For details, such as manifold specifications, refer to catalogues and materials of each manifold solenoid valve.

9 Setting

<u>Address setting</u>

Loosen four screws and open display window of SI unit to set addresses.
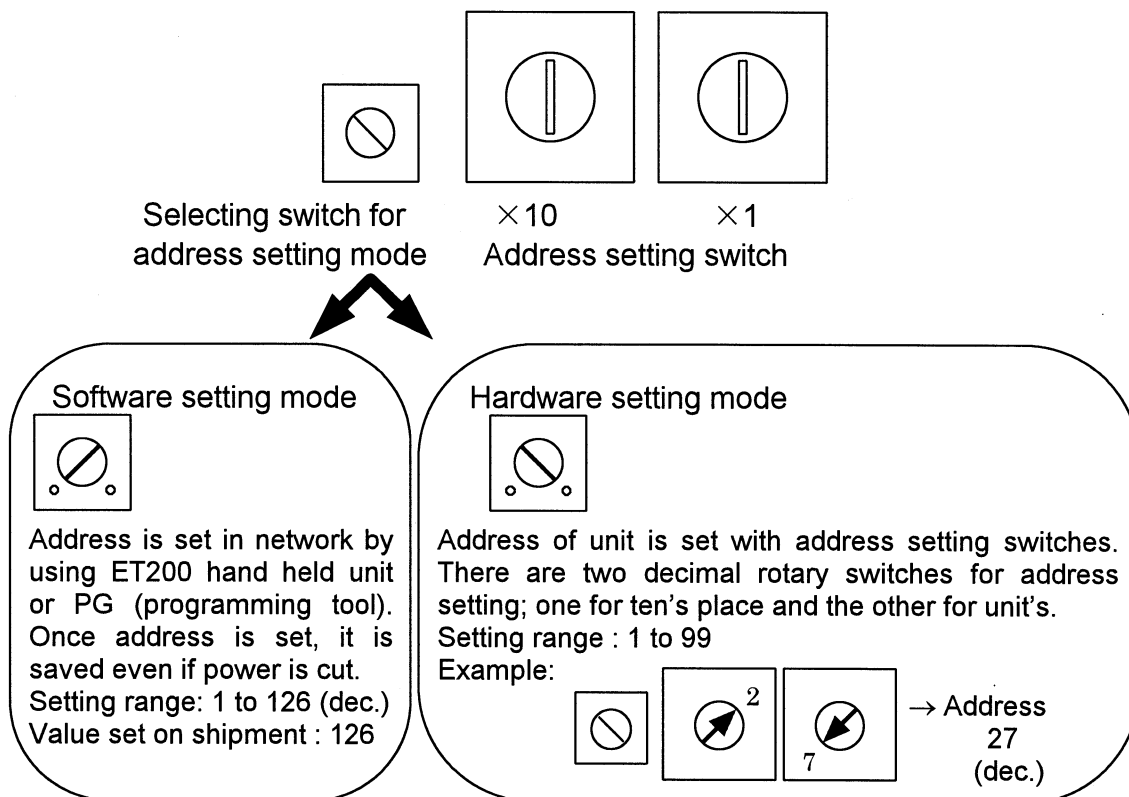
Do not supply power to SI unit while setting.

Selecting switch for
address setting mode

×10   ×1
Address setting switch

Software setting mode

Address is set in network by using ET200 hand held unit or PG (programming tool). Once address is set, it is saved even if power is cut.
Setting range: 1 to 126 (dec.)
Value set on shipment : 126

Hardware setting mode

Address of unit is set with address setting switches. There are two decimal rotary switches for address setting; one for ten's place and the other for unit's.
Setting range : 1 to 99
Example:

$\rightarrow$ Address 27 (dec.)

※ When software setting mode is selected, address setting switches are not effectual. Moreover, software setting mode and hardware setting mode differ in ID numbers of units. (See "12. Configuration" for details.)

<u>Input circuit setting</u>

It is possible to change input circuit setting (NPN / PNP sensor input) for every DI unit. Disconnect DI units each other and set them individually. See "14. Installation & Maintenance" for disconnection and connection of units.

PNP input ← → NPN input

NPN/PNP change-over switch
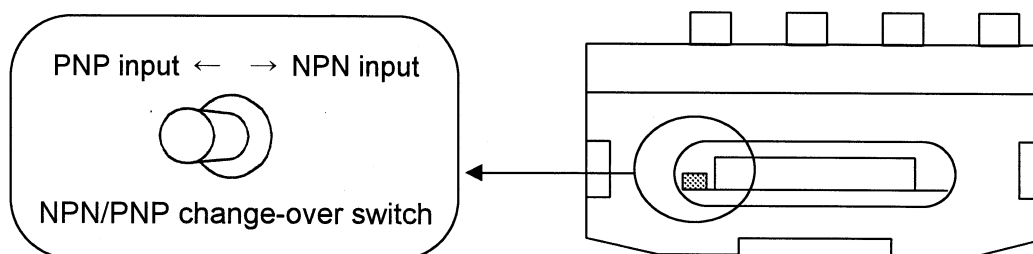
10 Specifications

Communication specifications

Protocol	PROFIBUS-DP （EN50170 Volume 2）
Bus interface	EIA RS-485
Baudrate	9.6/19.2/93.75/187.5/500kBd 1.5/3/6/12MBd
Freeze function	Available
Synchronous function	Available
Input	32 points （not depend on number of DI units）
Output	32 points （not depend on points of solenoid valves）
ID number	1402hex （in software setting mode） 1403hex （in hardware setting mode）

General specifications

	EX240-SPR1	EX240-IE1
Dimension (W×H×D)	54×98.35×120 *1	54×72.4×120 *1
Weight	400g *1	370g *1
Ambient temperature	0～50°C	
Ambient humidity	30～95%RH （without condensation）	
Applicable altitude	Less than 1000m above sea	
Vibration proof	10～57Hz 0.35mm （constant amplitude）	
	57～150Hz 5G （constant speed）	
Shock resistance	Peak value : 15G / 11ms 3 times each in directions of ± X,Y and Z	
Enclosure	IP65	

*1) Accessory connector plug and other attachments excluded.

Electrical specifications

Rated voltage	DC24V
Power supply voltage	For solenoid valve : 21.6～26.4V (warning of voltage drop given lower than approx. 19V)
	For SI/DI units : 19.2～28.8V
Current consumption	Power supply for solenoid valve : depends on solenoid valve specifications and no. of stations.
	Power supply for SI/DI units : 200mA (at rated voltage)＋sensor supply current
Withstand voltage	AC1500V　1min. (between PE－external terminal package)
Insulation resistance	10MΩ or more (DC500V meg.　between PE－external terminal package)
Momentary power failure	1ms　(power supply for SI/DI units)
Applicable load	solenoid valve with 2.1W or less of light and surge voltage suppressor
Driving current / Residual voltage	100mA / 0.3V Max.　(at ON)
Driving circuit	P-ch MOS-FET open drain

Input specifications

Standard	IEC1131-2
Corresponding sensor	Current source type　(PNP output) Current sink type　(NPN output)　*1
Rated voltage　Ue	DC24V　*2
Logical "1" input voltage　UH	11～30V
Logical "0" input voltage　UL	-3～5V
Logical "1" input current　IH	8mA Typ.
Connection of 2-wire type sensor	Possible
Logical "0" allowable current　IL	2.5mA Max.
Input delay	3ms Typ.
Sensor supply current	500mA / DI unit　　(60mA Max. / sensor)
Short circuit suppressor	600mA Typ. for each SI unit　(supply power cut) Cut power once and then supply it again for return.

*1) Changed over by switch (for every DI unit)
*2) Approx. 2V of voltage drop for power supply voltage (power supply for SI/DI units)

EMC Directive (89/336/ECC, 92/31/ECC, 93/68/ECC)

Immunity (EN50082-2 : 1995)

ESD	EN61000-4-2	±4kV : contact ±8kV : air	B
RS	EN61000-4-3 (ENV50140)	80-1000MHz, 10V/m (1kHz AM 80%)	A
	(ENV50294)	900±5MHZ, 10V/m (200Hz Pulse Mod, Duty 50%)	A
CS	EN61000-6 (ENV50141)	0.15-80MHz, 10V (1kHz AM 80%)	A
Burst	EN61000-4-4	±2kV (5/50nS, 5kHz)	B
Power Frequency Magnetic Field	EN61000-4-8	50Hz, 30A/m	A

Emission (EN55011 : 1995)

Radiated Electric Field Strength	EN55011	Group1, ClassA	30MHz～1GHz
Conducted Emission *1	EN55011	Group1, ClassA	150kHz～30MHz

*1) Measured at AC terminal of DC power supply for SI unit.

11 Diagnosis

PROFIBUS-DP has diagnosis function which allows to monitor condition of slave between master - slaves. When it gets out of standard, SI unit sends diagnosis information showing error to master and, at the same time, turns on DIA indication.

The following diagnosis functions are available.

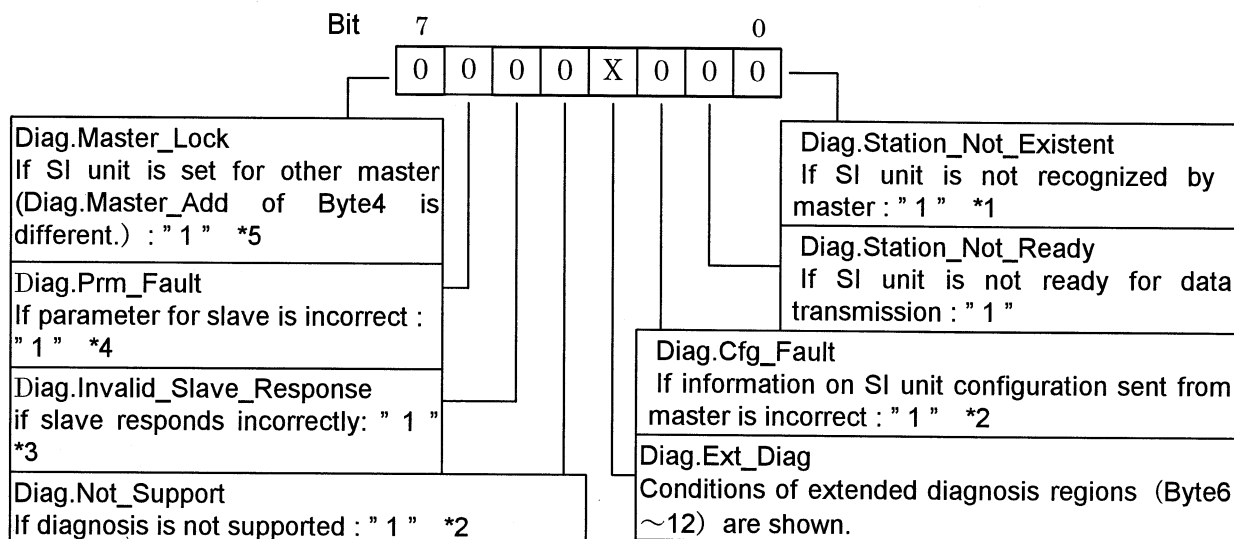| Function	Contents
Solenoid valve power supply voltage monitoring	Detects that solenoid valve voltage has decreased to approx. 19V or less.
DI unit condition monitoring	Detects that sensor supply power has been turned off by short circuit cut-off.

Diagnosis information consists of 12 bytes. The first 6 bytes shows information specified by PROFIBUS and the rest, 7 bytes , is peculiar to unit.

To see diagnosis information with master, refer to PROFIBUS specifications and manual for master.

Example : SIEMENS   S7-300,400
System function SFC13 "DPNORM_DG" is used. As error is detected by diagnosis, OB82 (diagnostic interrupt organization block) is automatically called out and error can be solved by programming error processing logic for OB82. CPU turns "STOP" if program is not loaded in OB82

Configurations of diagnosis information are as follows. (Normal values are shown. "X" is variable.)

Byte0: Station status 1

Bit 7   0

| 0 | 0 | 0 | 0 | X | 0 | 0 | 0 |

Diag.Master_Lock
If SI unit is set for other master (Diag.Master_Add of Byte4 is different.) : " 1 " *5

Diag.Prm_Fault
If parameter for slave is incorrect : " 1 " *4

Diag.Invalid_Slave_Response
if slave responds incorrectly: " 1 " *3

Diag.Not_Support
If diagnosis is not supported : " 1 " *2

Diag.Station_Not_Existent
If SI unit is not recognized by master : " 1 " *1

Diag.Station_Not_Ready
If SI unit is not ready for data transmission : " 1 "

Diag.Cfg_Fault
If information on SI unit configuration sent from master is incorrect : " 1 " *2

Diag.Ext_Diag
Conditions of extended diagnosis regions (Byte6 ～12) are shown.
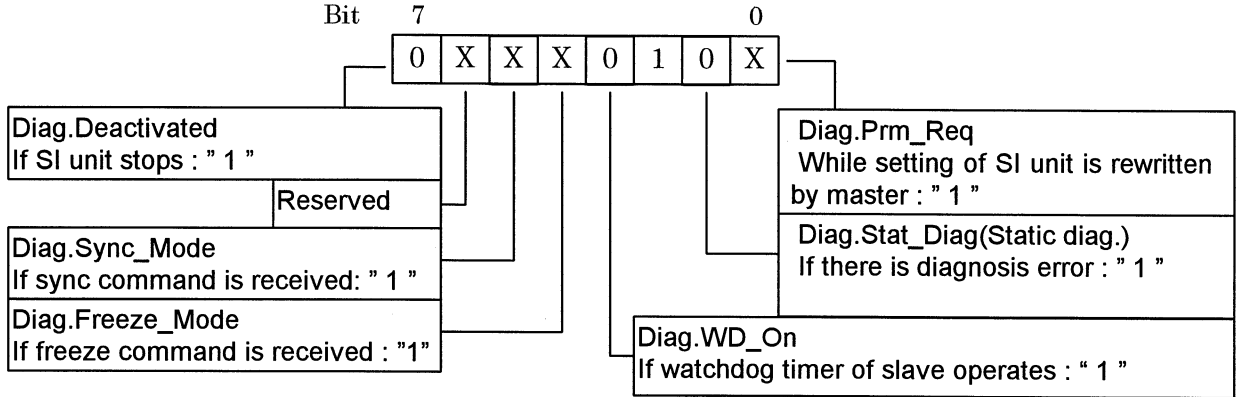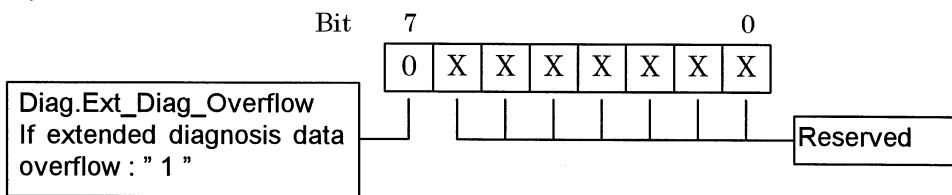
If other values than normal are shown, it may be due to the following factors.
*1) Communication line is not connected properly. / Unit is not turned on.
*2) SI unit is not correctly set by master (PLC) .
*3) Bus is in bad condition. (effect of noise, unmatched impedance, etc.)
*4) Descriptions of SI unit parameter file are incorrect. (parameter length, ID number, etc.)
*5) Multiple masters on one bus set the same SI unit as a slave.
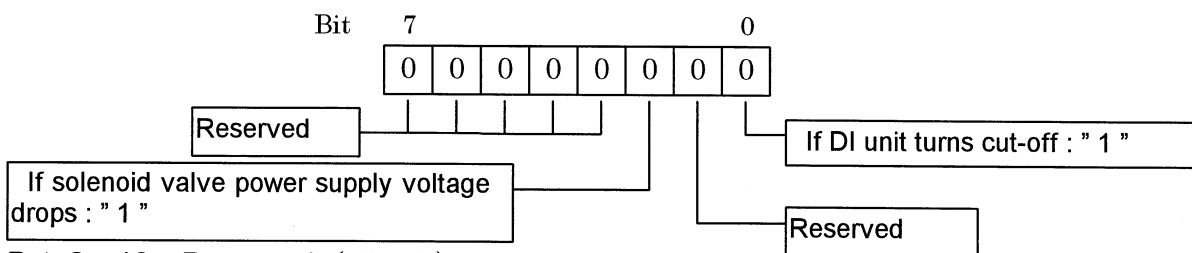
Byte1: Station status 2

Bit 7   0

| 0 | X | X | X | 0 | 1 | 0 | X |

Diag.Deactivated
If SI unit stops : " 1 "

Reserved

Diag.Sync_Mode
If sync command is received: " 1 "

Diag.Freeze_Mode
If freeze command is received : "1"

Diag.Prm_Req
While setting of SI unit is rewritten by master : " 1 "

Diag.Stat_Diag(Static diag.)
If there is diagnosis error : " 1 "

Diag.WD_On
If watchdog timer of slave operates : " 1 "

Byte2: Station Status 3

Bit 7   0

| 0 | X | X | X | X | X | X | X |

Diag.Ext_Diag_Overflow
If extended diagnosis data overflow : " 1 "

Reserved

Byte3: Diag.Master_Add

   Master address is shown.

Byte6: Diag_Headder | 07h |

   Size of extended diagnosis data is shown in byte. (Fixed value)

Byte4,5: Ident_Number

   SI unit ID numbers are shown.

Byte4	Byte5

SW setting mode : | 14h | 02h |

HW setting mode : | 14h | 03h |

Byte7: SI unit diagnosis information

Bit 7   0

| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Reserved

If solenoid valve power supply voltage drops : " 1 "

If DI unit turns cut-off : " 1 "

Reserved

Byte8～12 : Reserved (all 00h)

12 Configuration

For PROFIBUS-DP, configuration information peculiar to each device (ID number, data format, corresponding Baud rate, etc.) is supplied in the form of device data base file (GSD File).

For SIEMENS master, system is configured by "Type File" which is equivalent to GSD File.

Prepare GSD File or Type File for SI unit referring to "15. GSD File/ Type File".

GSD File and Type File of SI unit differ depending on address setting mode (which is changed over by address setting mode selecting switch).
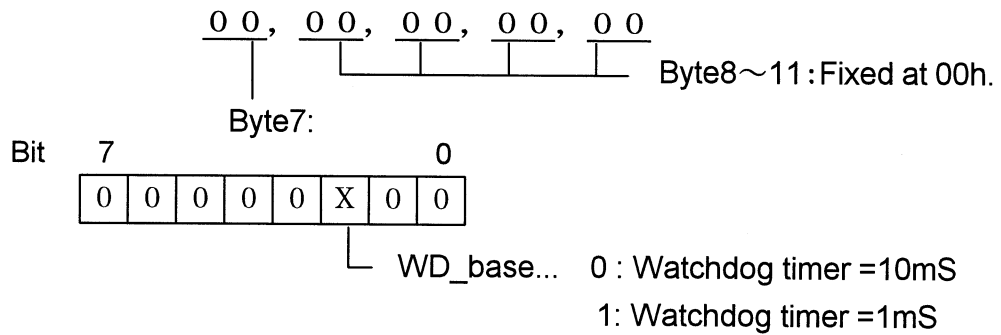
GSD File :	Smc_1402.gsd	(in software setting mode)
	Smc_1403.gsd	(in hardware setting mode)
Type File :	Sm1402ax.200	(in software setting mode)
	Sm1403ax.200	(in hardware setting mode)

How to set master for SI unit application is shown with SIEMENS STEP7 for example.

① Copy SI unit Type File (Sm140?ax.200) below the directory:

˜ /Step7/S7data/Gsd/

(˜ is a directory where STEP7 is installed.)

② Set up STEP7 and execute "Options" − "Update DDB" with HW Configuration tool.

③ Open Hardware Catalog to find out additional "SI UNIT" icon under the PROFIBUS DP - Additional FieldDevices. Drag and drop "SMC EX240-SPR1 SW" (file for software setting mode) or "SMC EX240-SPR1 HW " (file for hardware setting mode) shown below the icon so as to add them to PROFIBUS-DP line.

④ For the rest, follow the setting procedure for Distributed I/O device (address parameter).

<u>Parameter setting</u>

The following 5 bytes out of 12 bytes are user parameter. The rest of 7 bytes are parameter common to PROFIBUS-DP devices. (Refer to specifications of PROFIBUS-DP.)   Generally, users are allowed to set user parameter only.

$$0\ 0,\ \ 0\ 0,\ \ 0\ 0,\ \ 0\ 0,\ \ 0\ 0$$

Byte8～11：Fixed at 00h.

Byte7:

Bit	7							0
	0	0	0	0	0	X	0	0

WD_base...   0 : Watchdog timer =10mS
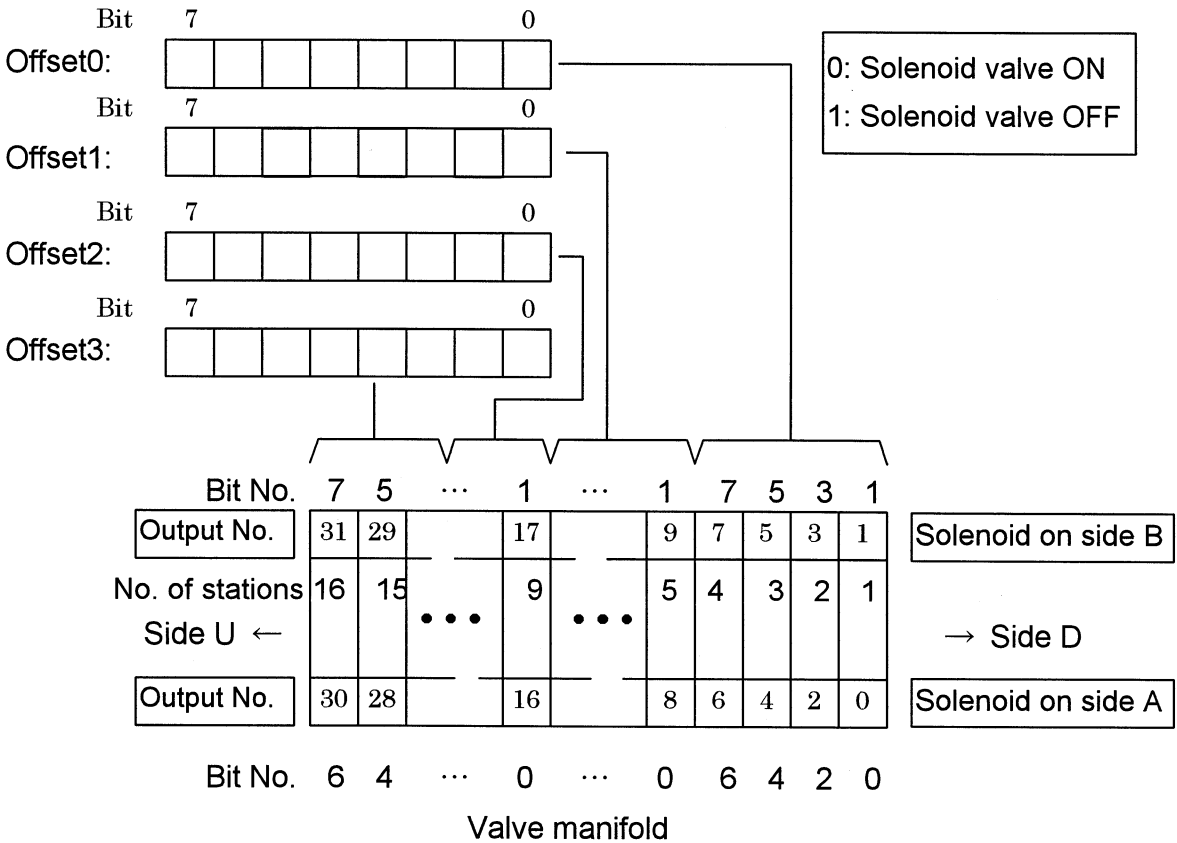1: Watchdog timer =1mS

<u>I/O Configuration</u>

I/O configuration of SI unit is shown below. (Refer to manuals or other information of master for details such as definition of numbers.)

Byte(Slot)	No.	Type	Length	Unit
0	163(A3H)	Output	4	Byte
1	147(93H)	Input	4	Byte

13 I/O number allocation

Correspondence between output data and solenoid valve

Output data

	Bit 7 ... 0	
Offset0:	☐☐☐☐☐☐☐☐	0: Solenoid valve ON
Offset1:	☐☐☐☐☐☐☐☐	1: Solenoid valve OFF
Offset2:	☐☐☐☐☐☐☐☐	
Offset3:	☐☐☐☐☐☐☐☐	

Bit No.	7	5	···	1	···	1	7	5	3	1	
Output No.	31	29		17		9	7	5	3	1	Solenoid on side B
No. of stations Side U ←	16	15	•••	9	•••	5	4	3	2	1	→ Side D
Output No.	30	28		16		8	6	4	2	0	Solenoid on side A
Bit No.	6	4	···	0	···	0	6	4	2	0	

Valve manifold

※ Output numbers are assigned to stations from side D to U of manifold in order (See manual of each manifold solenoid valve for the directions of side D and U.)

※ Standard manifold is wired in double. Output numbers are assigned to side A and B alternatively. In case of single solenoid valve, output on side B is free.

No.	Station no.	No.	
Double	4	3	5
Single	2	2	3	Free
Double	0	1	1

※ Mixed (single and double) wiring is available as long as wiring specifications designate it. This allows output numbers to be specified without having free output.

No.	Station no.	No.
Double	3	3	4
Single	2	2	-
Double	0	1	1

※ Each bit of data sent from master (4 bytes) shows ON/OFF (0: OFF, 1: ON) of solenoid valve. Starting from LSB of the first byte (Offset0), output numbers are assigned to all the bits in numeric order.
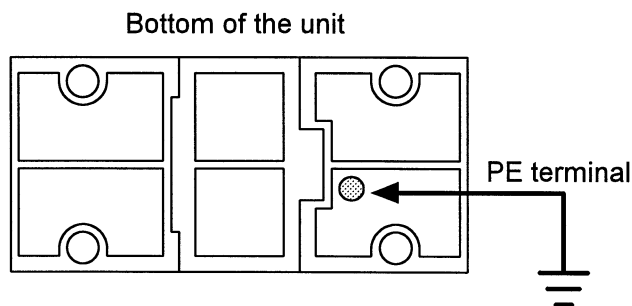
18

14 Installation & Maintenance

Installation

① Fix DIN rail for mounting SI/DI unit to the position where the unit is installed.
② Set SI/DI units on DIN rail and fix them with mounting brackets.
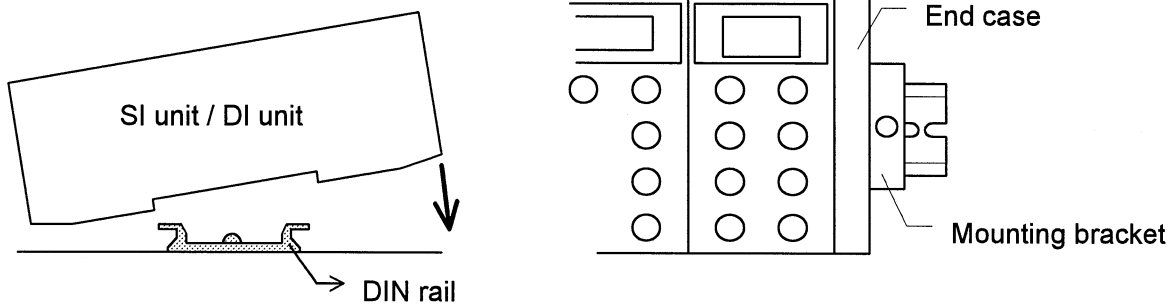
③ Fix manifold solenoid valve with mounting screws.
④ Ground PE (protective earth) terminal (Type 2 installation).


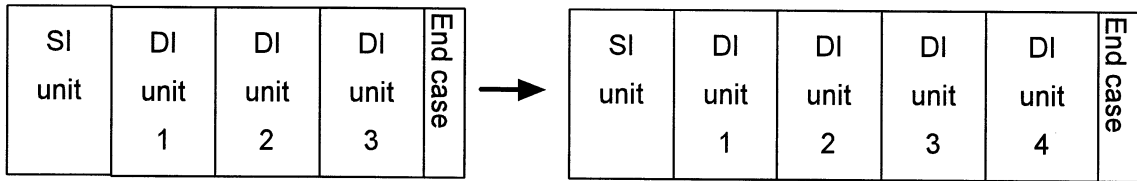⑤ Arrange wires (for power supply, communication and input) and pipes.

Unit expansion and disassembly

- Disconnect units each other by loosing screws of modular adapter.
- Slide unit in lateral direction for disassembly in condition that modular adapter is unscrewed.
- Follow the same procedure to separate manifold - SI unit and SI/DI units - end case.

· For connection by the unit, follow the procedure backwards. Make sure that joint is properly set. If not, liquid and particles may enter the inside of unit. Check the following points to confirm proper joint setting.

   ① No missing joint.

   ② No breakage, falling and twist in joint packing.

   ③ No foreign matter adhered.

   ④ No inclined mounting.

· Keep tightening torque specification for modular adapter. If tightening torque is insufficient or modular adapter is inclined, liquid and particles may enter the inside of unit.

Modular adapter

Joint

Sliding direction

Square nut

Tightening torque : 14Kgf·cm
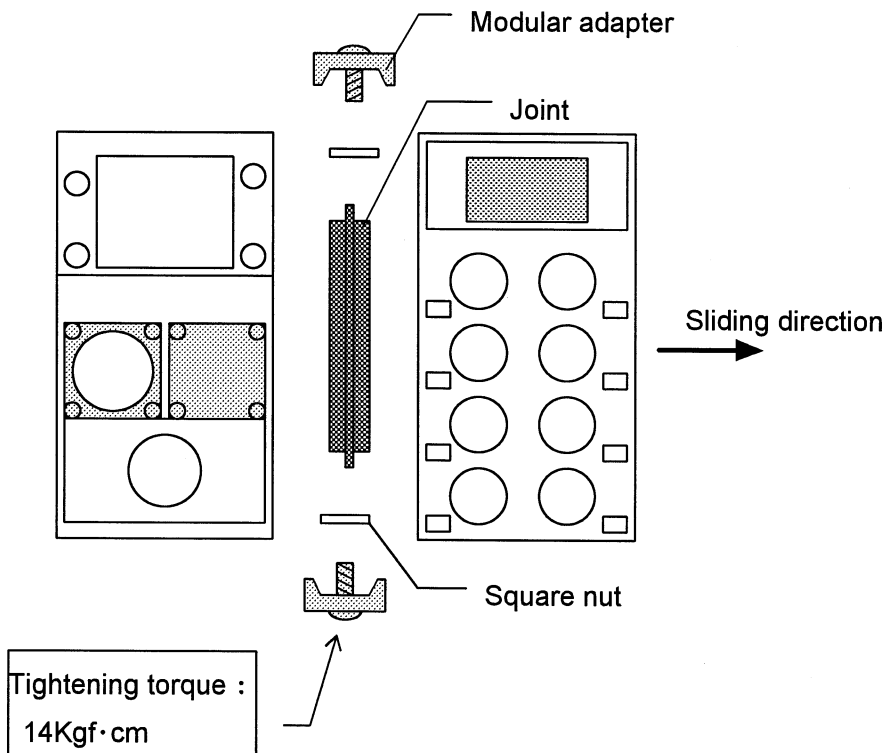
· To add DI units, remove end plate following the procedure above. Put it back when additional DI units are attached.

SI unit	DI unit 1	DI unit 2	DI unit 3	End case

→

SI unit	DI unit 1	DI unit 2	DI unit 3	DI unit 4	End case

15.1.2 EX240-SPR1・HW setting mode（SMC_1403.GSD）

```
;SMC SI-Unit(SI Valve Manifold) EX240-SPR1 HW 32O/32I
;Name: SMC_1403.GSD
;Version:    1.1
;
;Date:       29.03.99
;
#Profibus_DP
Vendor_Name = "SMC Pneumatic"
Model_Name = "EX240-SPR1(HW)"
Revision = "V1.1"
Ident_Number = 0x1403
Protocol_Ident = 0
Station_Type = 0
FMS_supp = 0
Hardware_Release = "1"
Software_Release = "1"
9.6_supp = 1
19.2_supp = 1
93.75_supp = 1
187.5_supp = 1
500_supp = 1
1.5M_supp = 1
3M_supp = 1
6M_supp = 1
12M_supp = 1
MaxTsdr_9.6 = 60
MaxTsdr_19.2 = 60
MaxTsdr_93.75 = 60
MaxTsdr_187.5 = 60
MaxTsdr_500 = 100
MaxTsdr_1.5M = 150
MaxTsdr_3M = 250
MaxTsdr_6M = 450
MaxTsdr_12M = 800
Redundancy = 0
Repeater_Ctrl_Sig = 2
24V_Pins = 0
Freeze_Mode_supp = 1
Sync_Mode_supp = 1
Auto_Baud_supp = 1
Set_Slave_Add_supp = 0
User_Prm_Data_len = 5
User_Prm_Data = 0x00,0x00,0x00,0x00,0x00
Min_Slave_Intervall = 1
Modular_Station = 0
Module = "DP-Kompaktgeraet 32A/32E" 0xa3,0x93
EndModule
```

15 GSD File / Type File

Refer to the following files if GSD File / Type File is required.

15.1 GSD File

15.1.1 EX240-SPR1・SW setting mode（SMC_1402.GSD）

```
;SMC SI-Unit(SI Valve Manifold) EX240-SPR1 SW 32O/32I
;Name: SMC_1402.GSD
;Version:    1.1
;
;Date:       29.03.99
;
#Profibus_DP
Vendor_Name = "SMC Pneumatic"
Model_Name = "EX240-SPR1(SW)"
Revision = "V1.1"
Ident_Number = 0x1402
Protocol_Ident = 0
Station_Type = 0
FMS_supp = 0
Hardware_Release = "1"
Software_Release = "1"
9.6_supp = 1
19.2_supp = 1
93.75_supp = 1
187.5_supp = 1
500_supp = 1
1.5M_supp = 1
3M_supp = 1
6M_supp = 1
12M_supp = 1
MaxTsdr_9.6 = 60
MaxTsdr_19.2 = 60
MaxTsdr_93.75 = 60
MaxTsdr_187.5 = 60
MaxTsdr_500 = 100
MaxTsdr_1.5M = 150
MaxTsdr_3M = 250
MaxTsdr_6M = 450
MaxTsdr_12M = 800
Redundancy = 0
Repeater_Ctrl_Sig = 2
24V_Pins = 0
Freeze_Mode_supp = 1
Sync_Mode_supp = 1
Auto_Baud_supp = 1
Set_Slave_Add_supp = 1
User_Prm_Data_len = 5
User_Prm_Data = 0x00,0x00,0x00,0x00,0x00
Min_Slave_Intervall = 1
Modular_Station = 0
Module = "DP-Kompaktgeraet 32A/32E" 0xa3,0x93
EndModule
```

15.2 Type File

EX240-SPR1   SW mode

```
SMC SI-UNIT EX240-SPR1 (SW)<EX240-SPR1>
V5.x;
SMC EX240-SPR1 SW;
SMC          ;
SI-UNIT    ;
EX240       ;
DPS/CLASS1        ;
05122;
N;
J;
J;
J;
J;
N;
N;
N;
N;
J;
0;
N;
N;
N;
00001;
1111011111;
004;
004;
002;
013;
012;
PV005;
00;
00;
00;
00;
00;
PSL000;
KX002;
163;
147;
SY;
DKM000;
DKK000;
DP_NORM;
ISNONAME;
SO000;
008;
MLFB000;
LSK000;
000;
SPT000;
HTT000;
```

EX240-SPR1   HW mode

```
SMC SI-UNIT EX240-SPR1 (HW)<EX240-SPR1>
V5.x;
SMC EX240-SPR1 HW;
SMC          ;
SI-UNIT    ;
EX240       ;
DPS/CLASS1        ;
05123;
N;
J;
N;
J;
J;
N;
N;
N;
N;
J;
0;
N;
N;
N;
00001;
1111011111;
004;
004;
002;
013;
012;
PV005;
00;
00;
00;
00;
00;
PSL000;
KX002;
163;
147;
SY;
DKM000;
DKK000;
DP_NORM;
ISNONAME;
SO000;
008;
MLFB000;
LSK000;
000;
SPT000;
HTT000;
```