SMC

ET-G9-1

TECHNICAL INSTRUCTION MANUAL FOR SI MANIFOLD SOLENOID VALVE

(IN 313-TA1 CORRESPOND TO OMRON TATEISHI)

SMC CORPORATION

CONTENT

1. Outline

SYSBUS remote I/O (wire) system is:

(1) a system which is taken as key station to type C500-RM201 and type C200H-RM201 of the Omron Tateishi's PC SY-SMAC C series,

(2) possible to make variance control of 16-point unit in combination with the remote I/O key station and a transmi-ssition terminal, and to take wiring-saving because of the double wiring system,

(3) Can make input-and-output control of the maximum 512 points through connection of the maximum 32 transmission terminals to the remote I/O key station and

(4) is 16ms/128 points in the transmission lag time.

SI manifold solenoid valve is:

(1) a transmission terminal possible to connect to SYSBUS remote I/O system of SYSMAC C series,

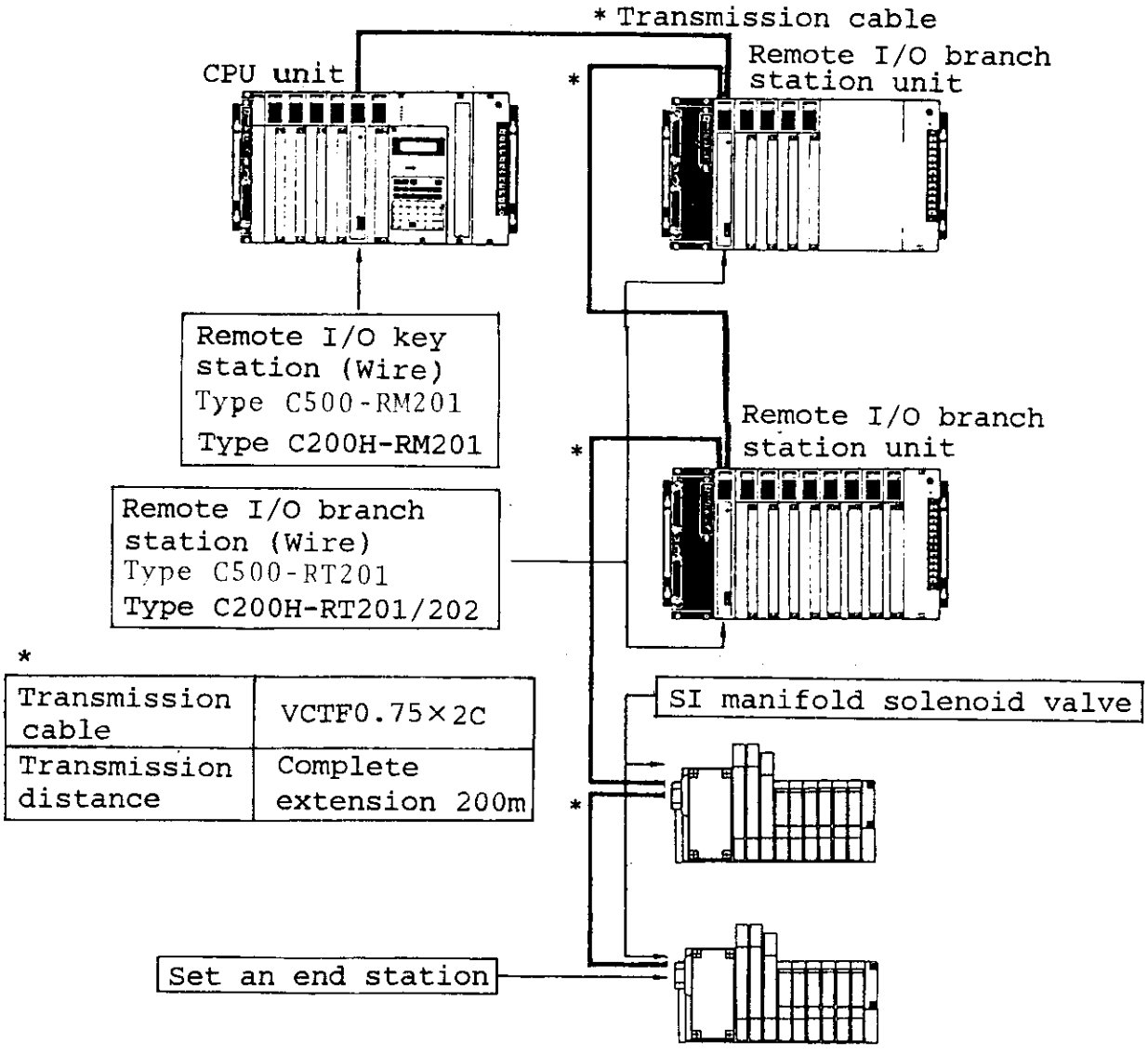
(2) can reduce the wiring manhour because of only double core cable in connection to PLC and

(3) 16 points in the output point number through connection up to the maximum 32 units to one Omron Tateishi's key station.

2. System configuration

2-1. Whole configuration

■System configuration



*

Transmission cable	VCTF0.75×2C
Transmission distance	Complete extension 200m

2-2. Applied PLC

SI manifold solenoid valve can be connected to the remote I/O key station (wire type) Type C500-RM201, type C200H-RM201 of the Omron Tateishi's PC SYSMAC C series.

CPU unit, I/O unit and number of connection (Omron Tateishi) possible to connect remote I/O key station (wire type) type C500-RM201 and type C200H-RM201 are described in the following.

■ Number of connection by type of each unit

<table>
<tr><th>Item \ Type</th><th>C120(F)</th><th>C500(F)</th><th>C2000</th><th>C1000H
C2000H</th><th>C200H</th></tr>
<tr><td>Number of remote I/O key station operation per one PLC</td><td colspan="2">4 units</td><td colspan="2">8 units</td><td>2 units</td></tr>
<tr><td>Number of transmission terminals per remote I/O key station one unit</td><td>16units</td><td colspan="4">32 units</td></tr>
<tr><td>Number of remote I/O branch stations per one remote I/O key station unit</td><td colspan="3">2 units</td><td>8 units</td><td>5 units</td></tr>
<tr><td>Number of total operations of remote I/O branch stations per one PLC</td><td colspan="2">8 units</td><td colspan="2">16 units</td><td>5 units</td></tr>
<tr><td>Number of CH for connection per one remote I/O key station unit</td><td>16CH(256)</td><td colspan="3">32CH(512 points)</td><td>32CH+40CH
Note 1 Note 2</td></tr>
</table>

Note 1) Transmission terminal
Note 2) Branch station

2-3. Applied solenoid valve

Series of solenoid valve applied to SI manifold solenoid valve are as follows:

Designation of solenoid valve series	Seal system	Cv factor
VZS2000	Metal seal	0.35
VZS3000	Metal seal	0.73
VFS2000	Metal seal	0.83
VFS3000	Metal seal	2.0
VFS4000	Metal seal	3.6
VFS5000	Metal seal	5.7
VFR2000	Rubber seal	0.9
VFR3000	Rubber seal	2.3
VFR4000	Rubber seal	3.7

2-4. Product number system

* The product number system of monifold base of SI manifold solenoid valve is described in the following.

And SI unit (IN313-TA1) and solenoid valve body are required.

Series	Product number
VZS2000series	VV5ZS2-55S※-※※1-※※ (1) (2) (3)
VZS3000series	VV5ZS3-55S※-※※1-※※
VFS2000series	VV5FS2-01S※-※※1-※※
VFS3000series	VV5FS3-01S※-※※1-※※
VFS4000series	VV5FS4-01S※-※※1-※※
VFS5000series	VV5FS5-01S※-※※1-※※
VFR2000series	VV5FR2-01S※-※※1-※※
VFR3000series	VV5FR3-01S※-※※1-※※
VFR4000series	VV5FR4-01S※-※※1-※※

(1) Mounting direction of branch station

U:U side mounting	D:D side mounting	·Note 1

·Note 1) Only U side for the moment.

(2) Stations

	VZS2000 VZS3000	VFS2000 VFR2000	VFS3000 VFS4000 VFS5000 VFR3000 VFR4000
Min.	04	02	02
Max.	19 Note 2	17 Note 3	11 Note 3

Note 2) Including 3 stations for branch station mounting.

Note 3) Including one station for branch station mounting.

(3) Tube connection bore: According to the specifications for each valve.

* Applied PLC manufacturers: Entered into each slip.

Omron Tateishi IN313-TA1

3. Specifications

3-1. General specification

Item		Specification
Operating ambient temperature		0~+55°C(Max. 8 points at ON) 0~+50°C(app points at ON)
Operating ambient humidity		35 - 85%RH(no dewing)
Vibration resistance	Durability	Smaller value in either of single amplitude 0.75mm in 10Hz - 150Hz acceleration 10G. 4 sweeps in SWEEP TIME 8 min.
	Malfunction	Smaller value in either of single amplitude 0.50mm in 10Hz - 150Hz or acceleration 7G. 4 Sweeps in SWEEP TIME 8 min.
Impact resistance		Peak accelaration 30G 3 directions 3 times.
Noise resistance		1000 Vp-p pulse width 100ns-1μs leading 1ns pulse
Dielectric strength		1000VAC 50/60Hz one min. between external terminal package and case.
Insulation resistance		10MΩ or over (at 500VDC megger) between external terminal package and case.
Operating atmosphere		No corrosive gas

3-2. Perfomance specification

Remote I/O system specification

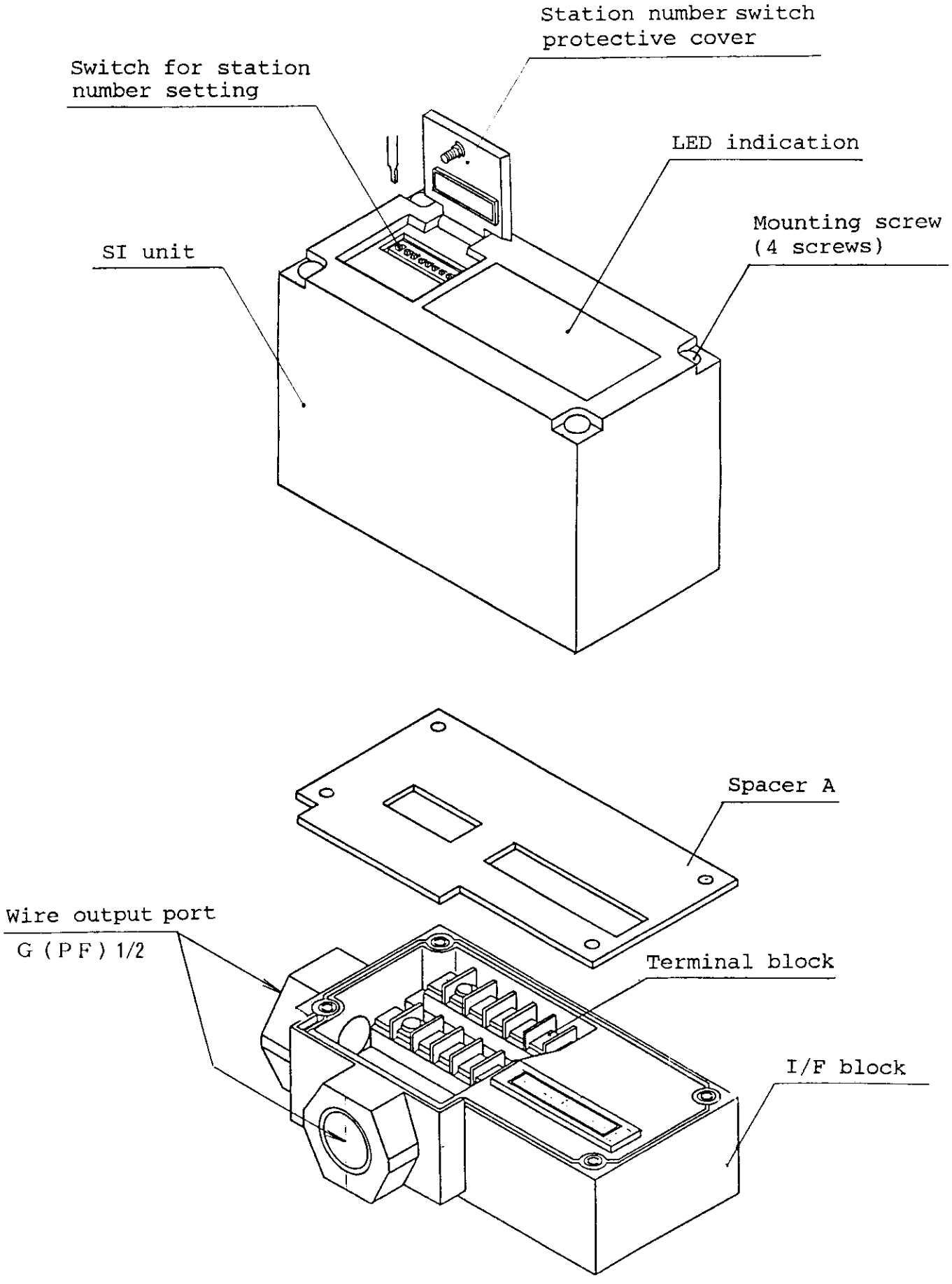
Item	Specification
Applied PLC	Omron Tateishi's SYSMAC C series
Remote I/O key station	Omron Tateishis's type C500-RM201, type C200H-RM201
Number of connection terminals	32 terminals per remote I/O key station
Number of CH for connection	32CH (512 points) per remote I/O key station
Communication speed	187.5KBPS
Transmission lag	16ms/128 points
Transmission distance	200m (complete extension)
Transmission path	2-core cable (VCTF0.75 recommended)

SI manifold solenoid valve specification

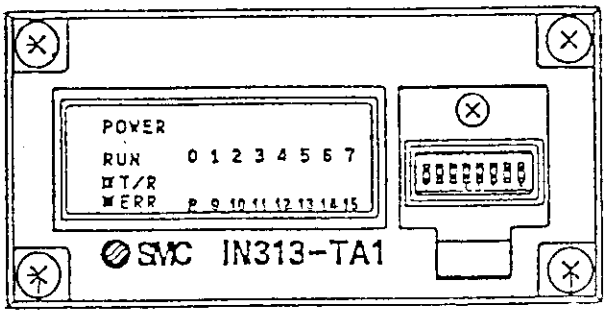
Item	Specification
External connection system	M3 screw terminal
Power voltage	For solenoid valve 24VDC±10%
	For unit internal 24VDC±10%
Current consumption	For solenoid valve MAX. 1.5A
	For unit internal MAX. 0.3A
Weight	0.7 kg or less (Only SI unit)
Overall size	112 × 54 × 72mm (Only SI unit)

4. Designation of each section

4 − 1 Designation of each section



4-2. LED indication



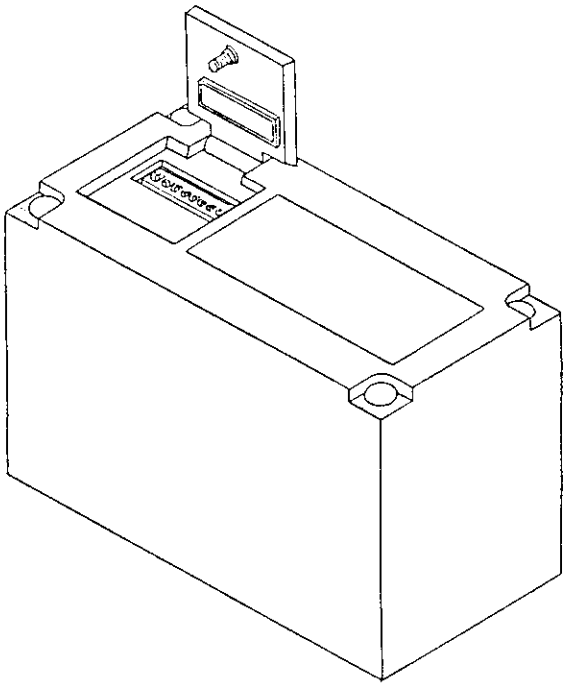
Indication	Description
POWER	Light at ON of power supply
RUN	Light when transmission is in normal state and PLC is place in operation mode.
T/R ERR	Flashing in normal transmission. Light in no normal transmission
OUTPUT 0 - 15	Indicate ON/OFF state of output. Light at ON.

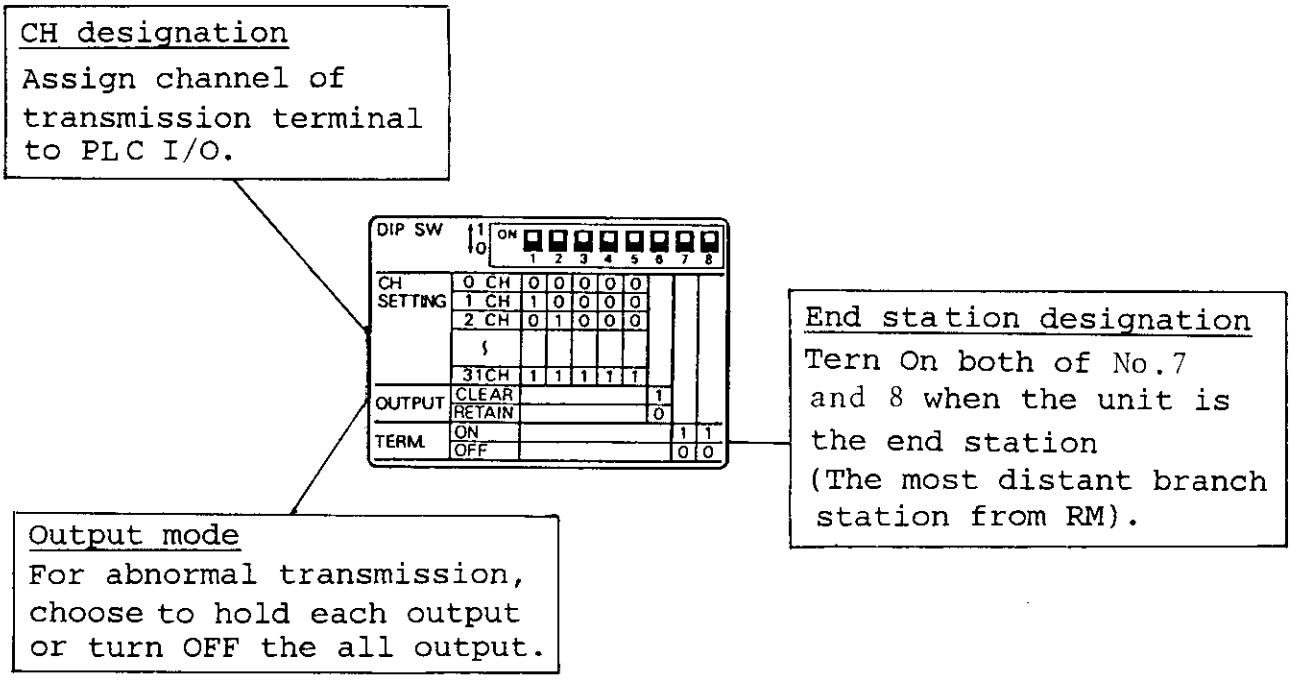
5. Station number setting

Loosen the screw and open the station number switch and set the dip switch by minus screw driver.

Set Channel No (CH SETTING), output mode (OUTPUT) and end station designation (TERM).

The setting should be carried out in OFF state.





5-1. Station number setting

The following items should be taken in consideration for setting.

(1) Channel setting (CH SETTING)

The setting range is binary seting in 0 - 31.

It should be set not to duplicate to other device.

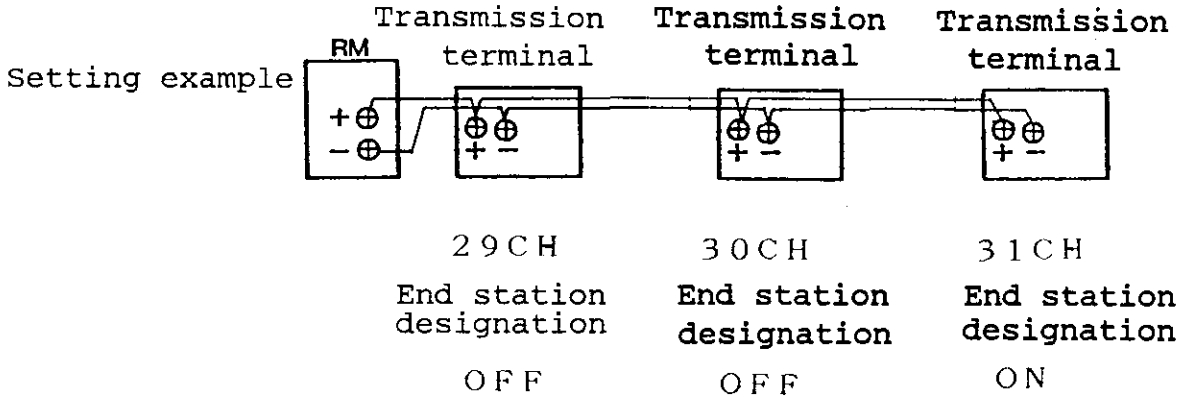
For assignment of channel, refer to the Omron Tateishi's remote I/O unit user's manual.

(2) Output mode setting (OUTPUT)

To abnormal transmission due to unit failure or breaking of the transmission path, set OFF (CLEAR) to all points in each output state or retaintion (RETAIN).

(3) End station setting (TERM)

Set it at the most distant terminal from the key station.



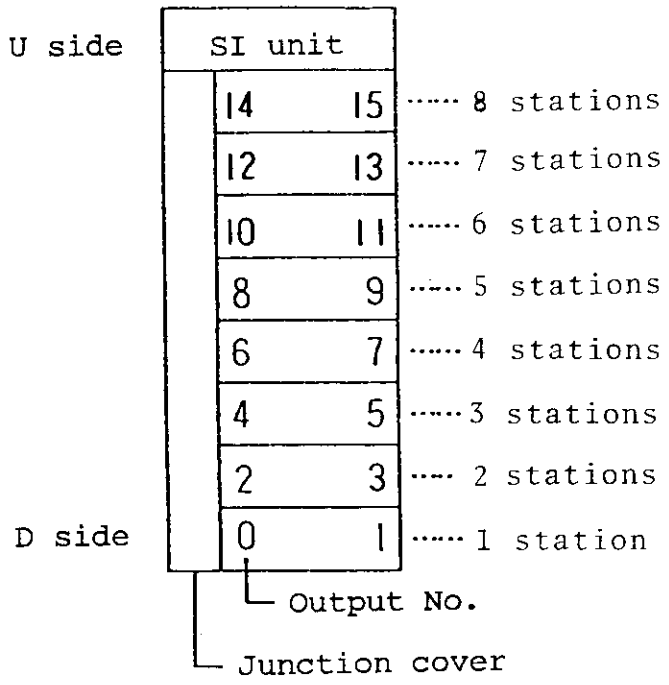
5-2. Correspondence of output number and solenoid of solenoid valve.

The SI manifold solenoid valve has 16 points of output 0 - 15. The correspondence of this outputs and the solenoid of the equipped solenoid valve is described below.

(1) Case of 8 stations or less of solenoid valves (Standard)

Assign in turn as output 0 to the solenoid A side of the 1st solenoid valve, output 1 to the B side and so on.

In case of 6 stations, the output result in 0 - 11 without the 7 stations and 8 stations.

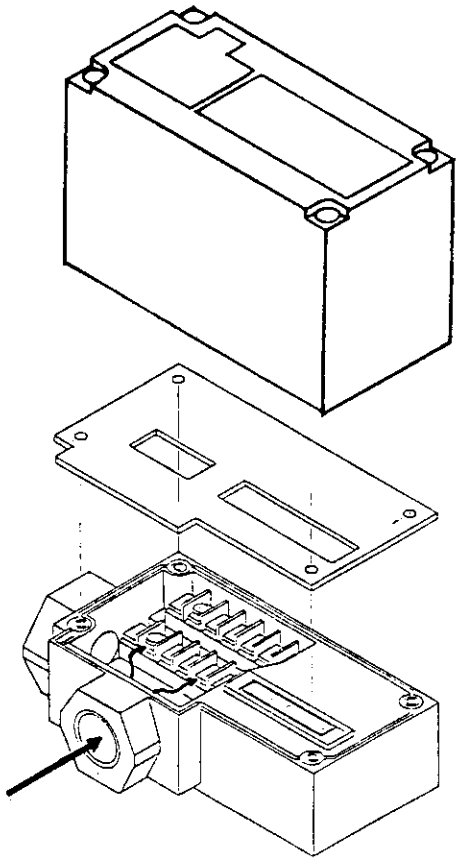


(2) Case of 9 - 16 stations of solenoid valves

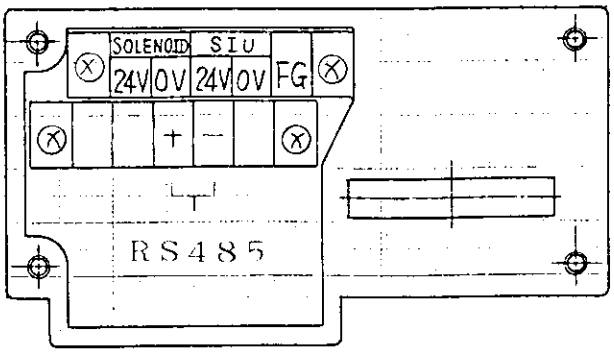
When the number of solenoids is 16 or more, a SI unit of 9 stations or more can be manufactured. Output number should be designated by the specification.

6. Wiring

Loosen 4 mounting screws, remove SI unit and spacer A and then wire through wiring output port to terminal block. The terminal screw of terminal block is M3 screw. A sloderless terminal suitable to the terminal screw should be used.

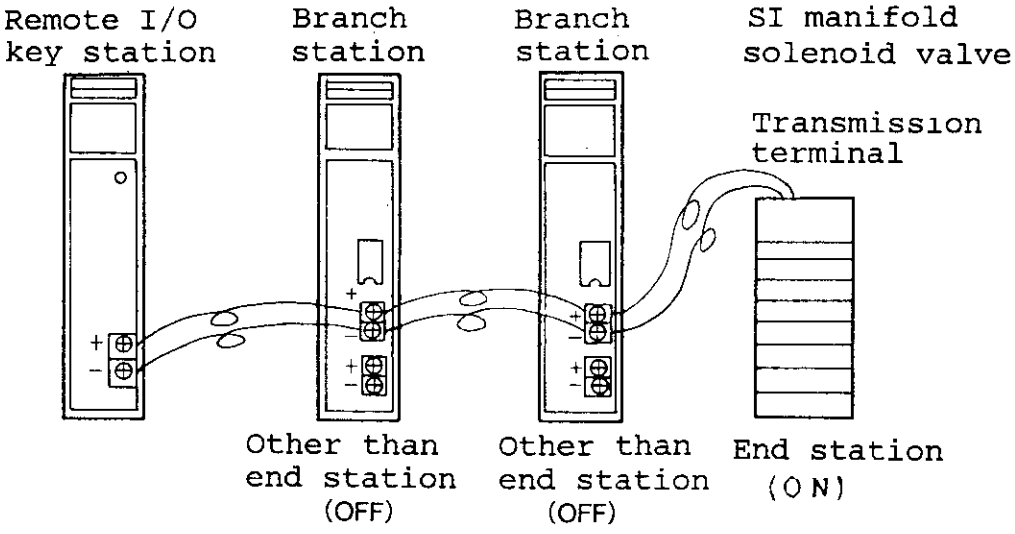


6-1. Designation of terminal block



6-2. Wiring of 2-core cable

● The transmission terminals of remote I/O key station and branch stations are connected to 2-core cable. The connection method is shown in the following.



● Connection cable

Two-core cable should be used.

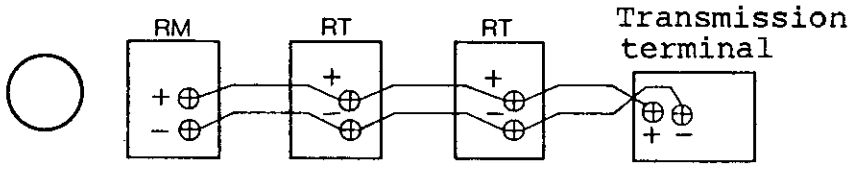
Recommended cable ..... VCTF 0.75 × 2C(JIS)

(1) + Side should be connected to + side and - side connected to - side.

(2) Wiring should be carried out from the key station in tern and the switch designated to the end station of the last unit should be taken as an end station (ON).

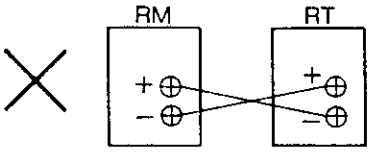
● Connection example of remote I/O unit

1. Correct connection example



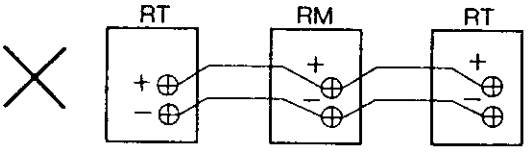
Connect from remote I/O key station in tern.

2. Wrong connection example 1



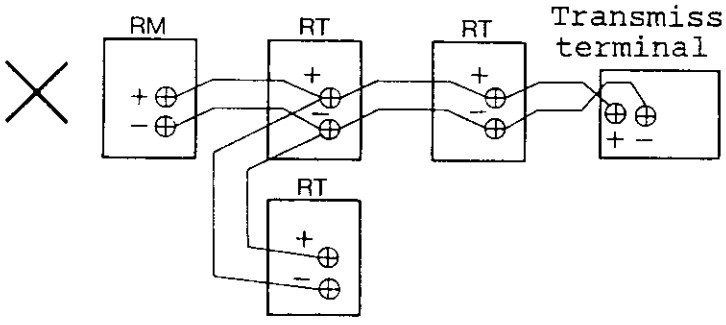
(+) and (-) are connected reversely.

3. Wrong connection example 2



Not connected from the remote I/O key station in tern.
It can not branch away from RM.

4. Wrong connection example 3



Not connected in tern.
It can not branch away on the way.

6-3. Power wiring

DC power source supplied from external has 2 systems.

(1) 24VDC for solenoid valve (MAX. 1.5A)

This is power source for driving of solenoid valve.

(2) 24VDC for SI unit (MAX. 0.3A)

This is used in internal circuit with conversion to 5V.

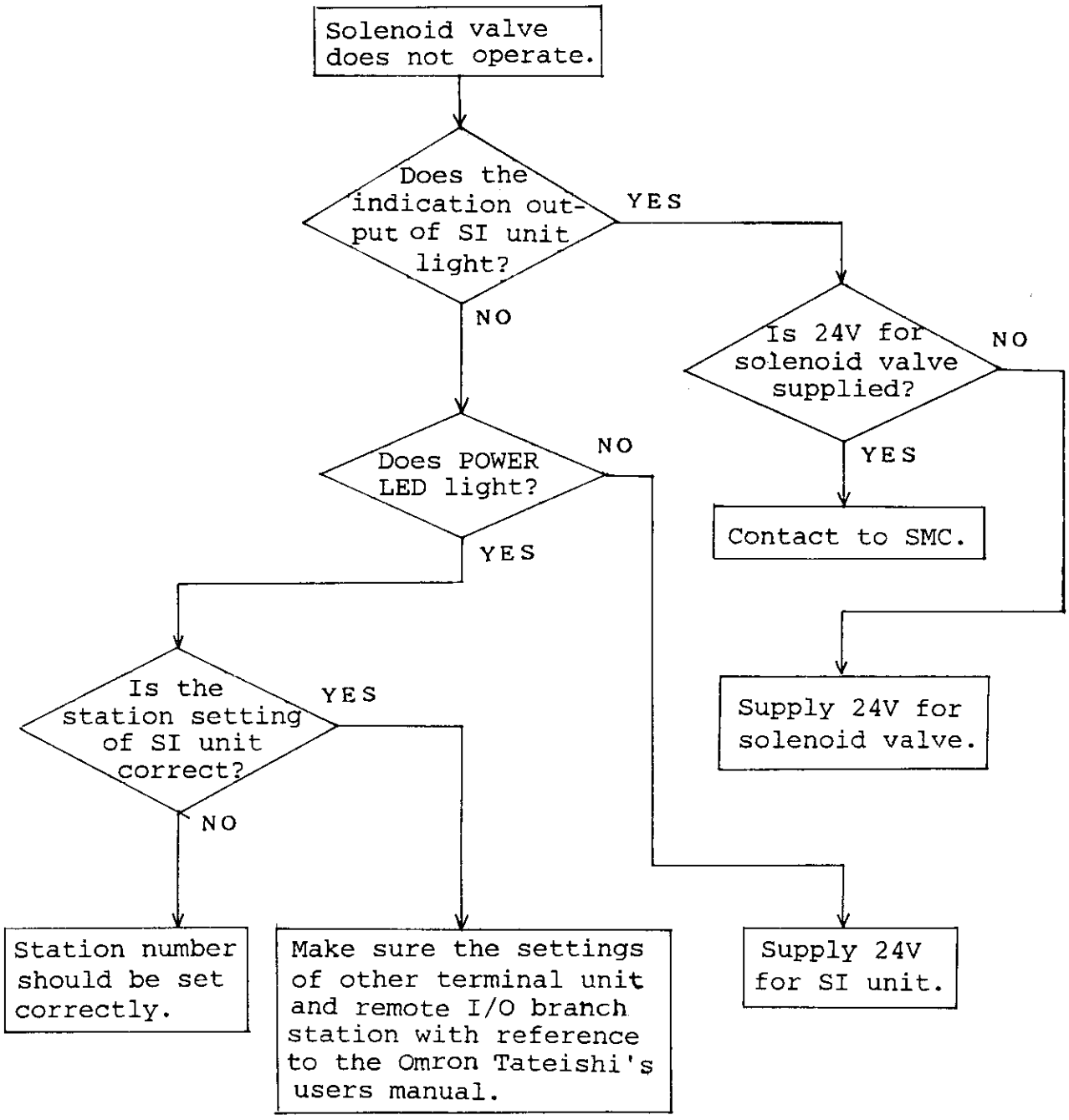
Both of (1) and (2) should be connected to a power source of 24VDC ± 10%.

Since (1) is insulated with (2) in the internal, these can be usde with another power source or the same power source.

7. Troubleshooting

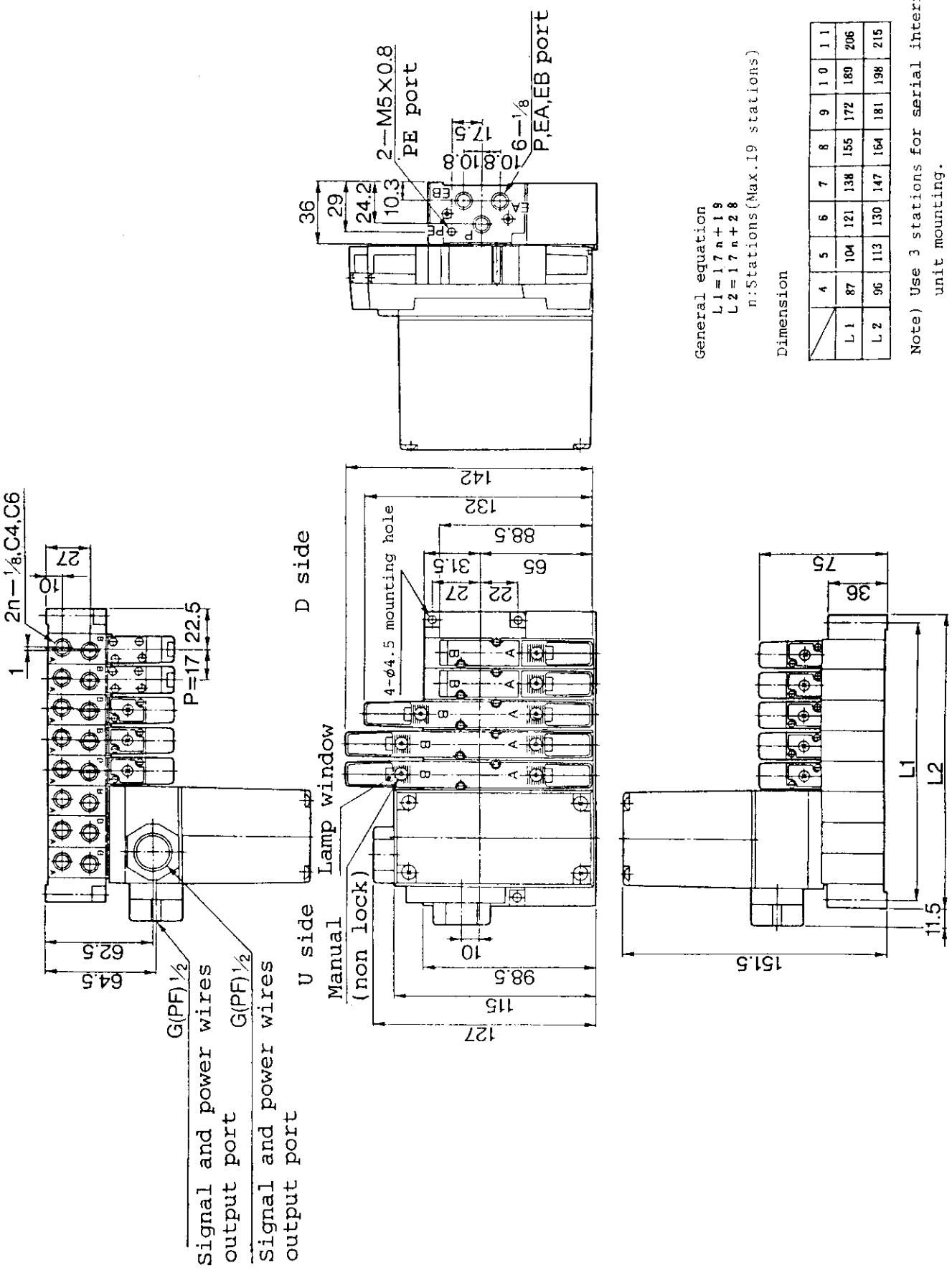
The flow of some abnormal operation of SI manifold solenoid valve is shown below.

Refer to the Omron Tateishi's user's manual for the whole troubleshooting.



8. Dimensional outline drawing

(VZS2000 series)



General equation

L1=17n+19

L2=17n+28

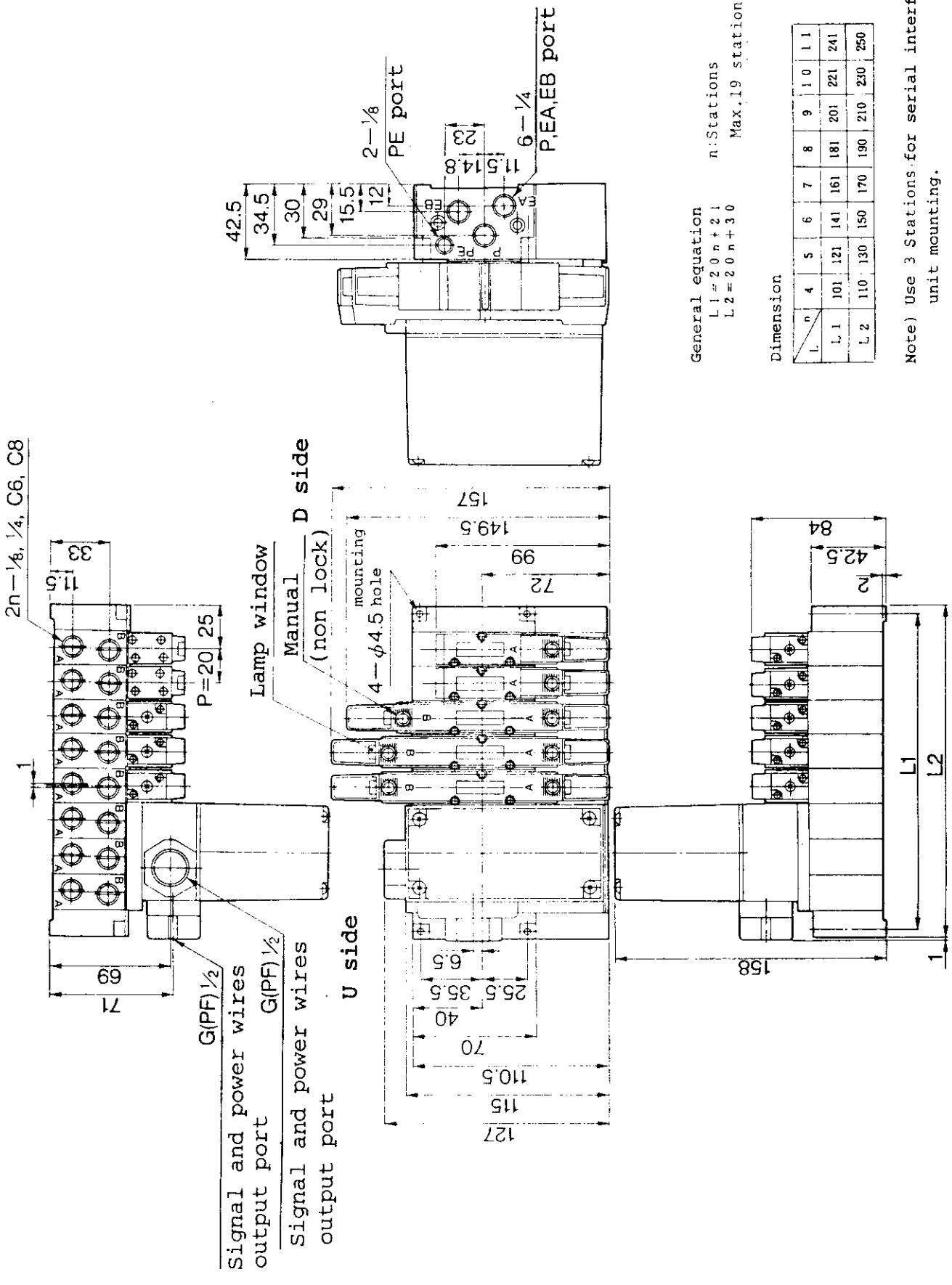
n:Stations(Max.19 stations)

Dimension

	4	5	6	7	8	9	10	11
L1	87	104	121	138	155	172	189	206
L2	96	113	130	147	164	181	198	215

Note) Use 3 stations for serial interface unit mounting.

Dimensional outline drawing
(VZS3000 series)



General equation
L1=20n+21
L2=20n+30
n:Stations
Max.19 stations

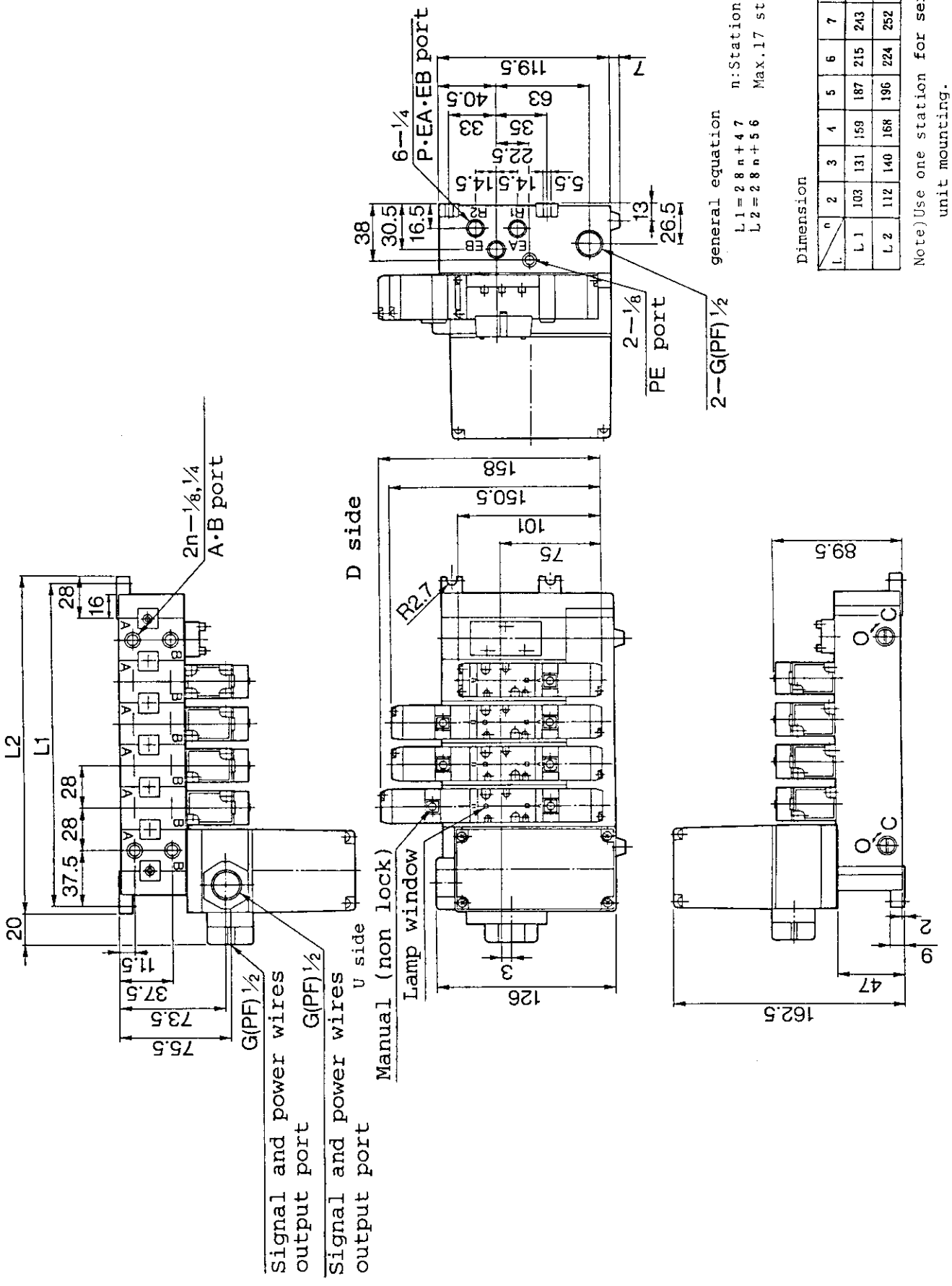
Dimension

n / L	4	5	6	7	8	9	10	11
L1	101	121	141	161	181	201	221	241
L2	110	130	150	170	190	210	230	250

Note) Use 3 Stations for serial interface unit mounting.

Dimensional outline drawing

(VFS2000, VFR2000 series)



general equation n:Stations

L1=28n+47 Max.17 stations

L2=28n+56

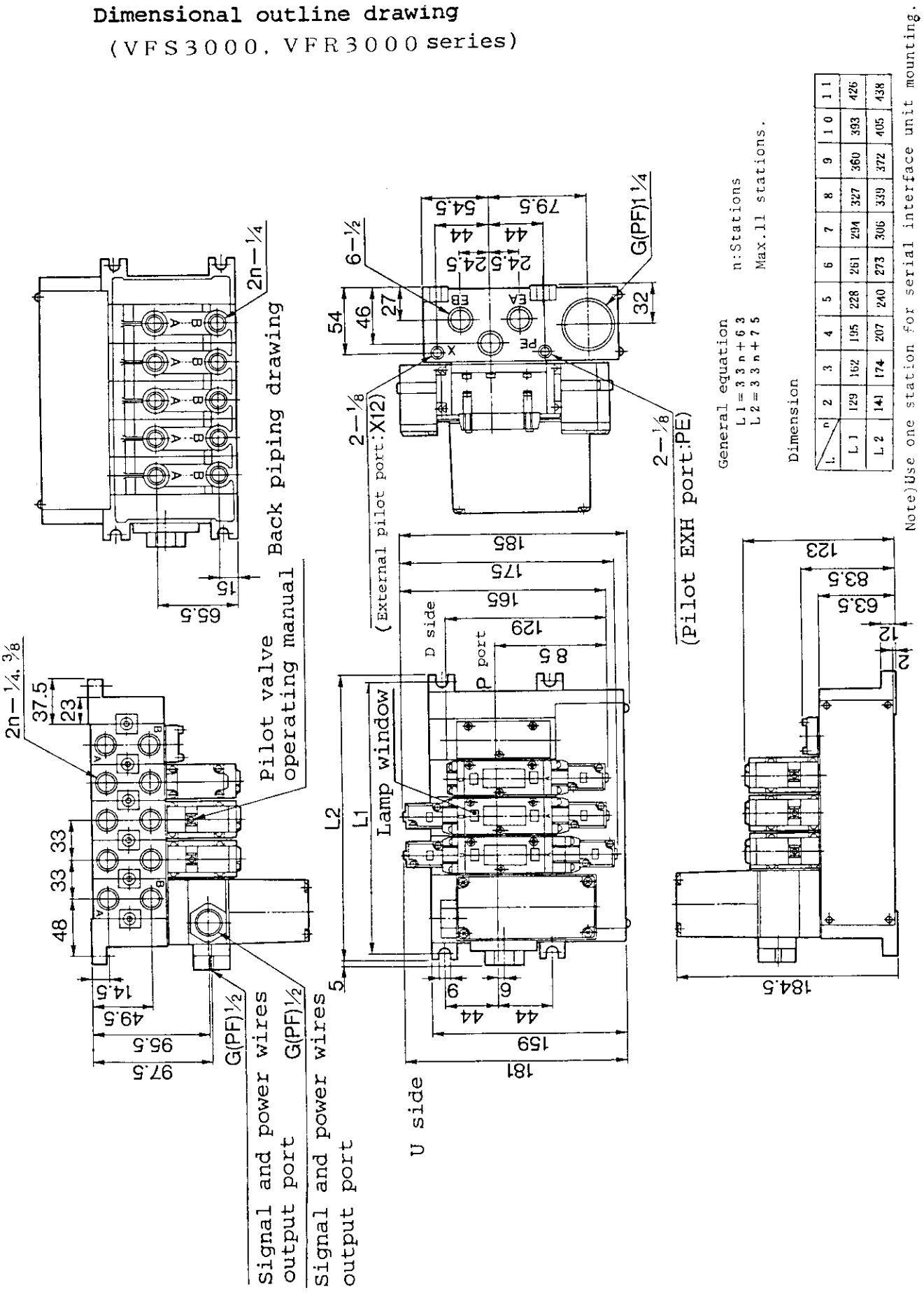
Dimension

n / L	2	3	4	5	6	7	8	9	10
L1	103	131	159	187	215	243	271	299	327
L2	112	140	168	196	224	252	280	308	336

Note) Use one station for serial interface unit mounting.

Dimensional outline drawing

(VFS3000, VFR3000 series)



General equation

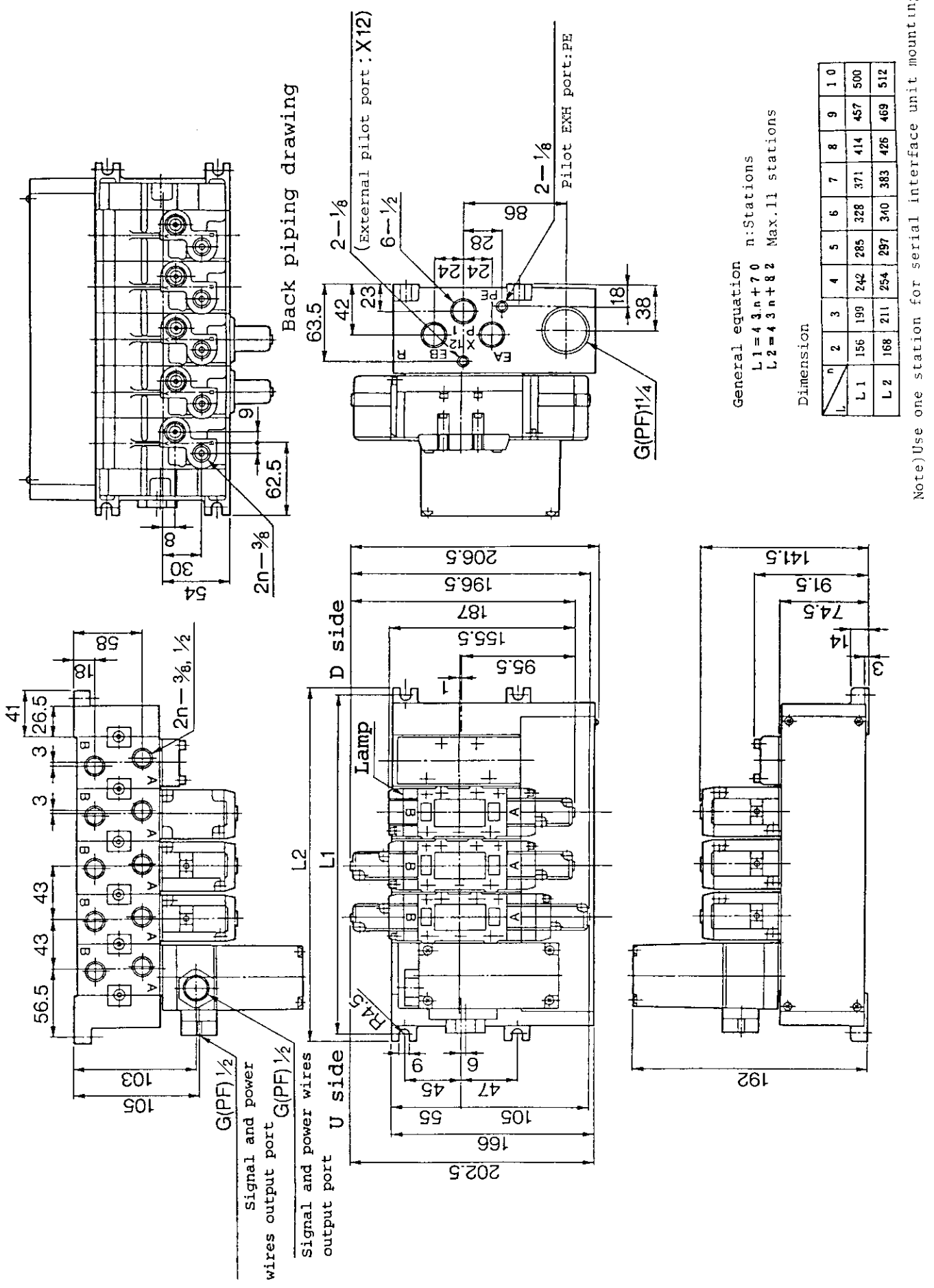
$L1 = 33n + 63$

$L2 = 33n + 75$

n / L	2	3	4	5	6	7	8	9	10	11
L1	129	162	195	228	261	294	327	360	393	426
L2	141	174	207	240	273	306	339	372	405	438

Dimensional outline drawing

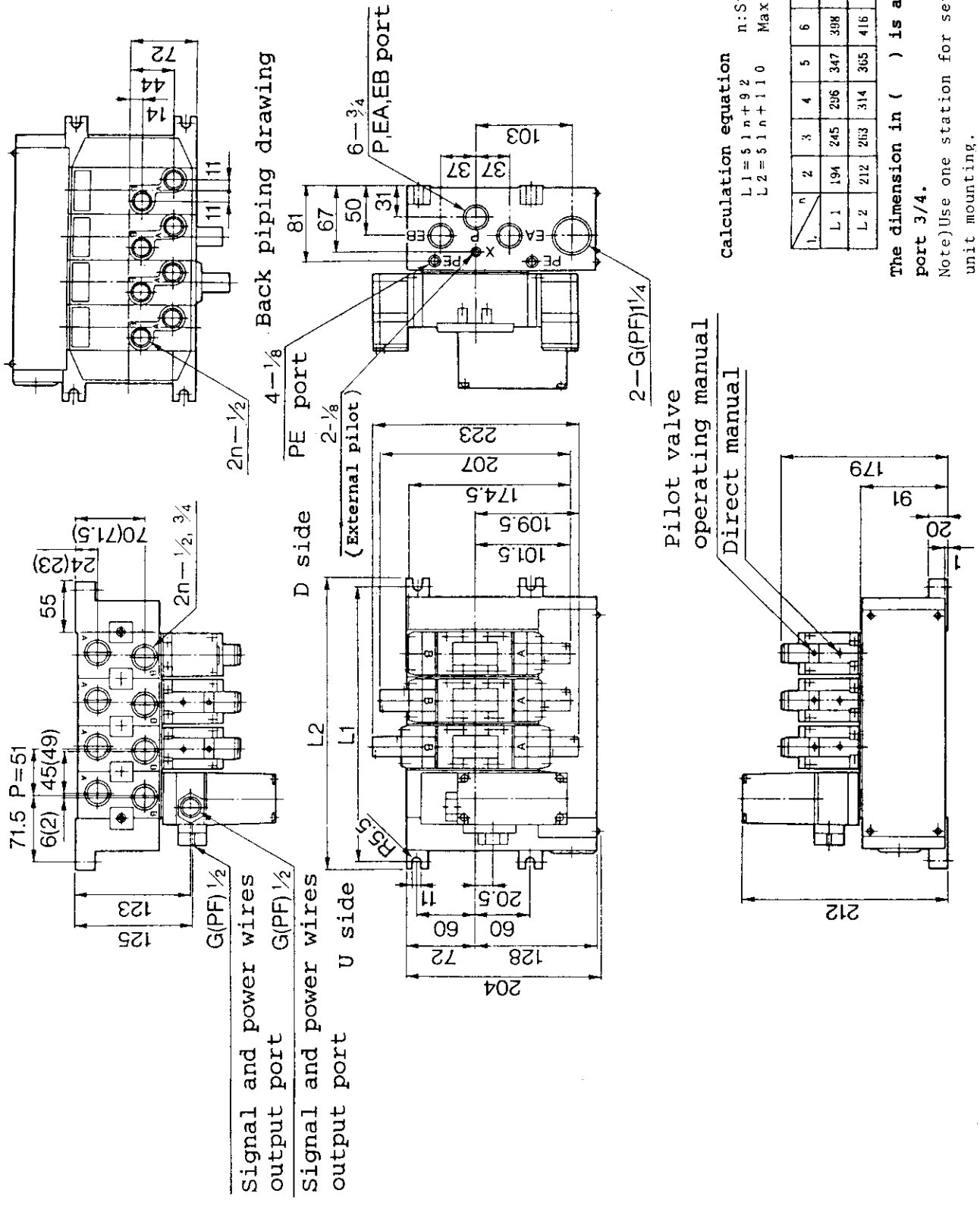
(VFS4000、VFR4000 series)



n / L	2	3	4	5	6	7	8	9	10
L1	156	199	242	285	328	371	414	457	500
L2	168	211	254	297	340	383	426	469	512

Dimensional outline drawing

(VFS5000 series)



n /	2	3	4	5	6	7	8	9	10
L1	194	245	296	347	398	449	500	551	602
L2	212	263	314	365	416	467	518	569	620