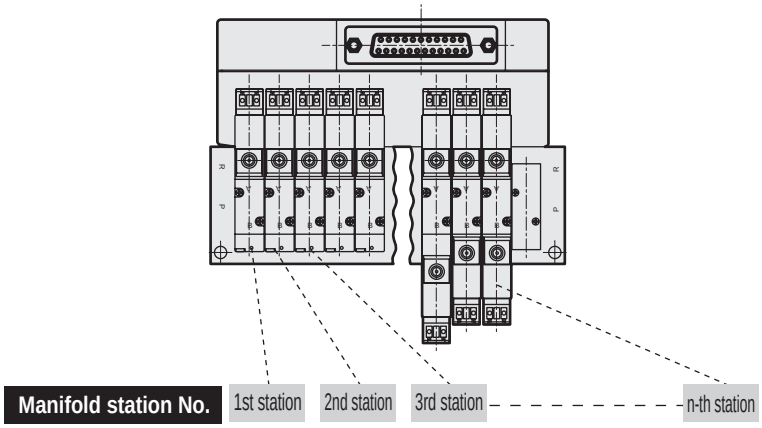
D sub-connector: Wiring method T30/T31

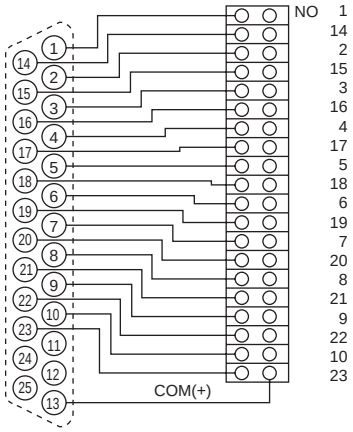
T30/T31 Connectors

The connector used for T30/T31 wiring, called a D sub-connector, is used widely for FA and OA devices. The 25P in particular is also an RS-232-C Standards designated connector, used for personal computer communication. The manifold station numbers are set in order from left with b side solenoid side (cap side for single) facing forward.



Precautions for connector T30/T31

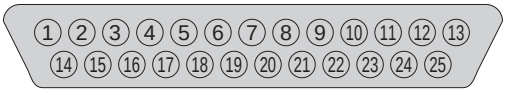
(1) Signal arrays of the PC output unit must match signal arrays of the valve side.
(2) The working power is 12/24 VDC dedicated.
(3) A voltage drop may occur due to simultaneous energizing or cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.
(4) These are +COM specifications.



[Internal circuit]

Connector pin array (example) of wiring method T30/T31

Note: The numerals of valve numbers 1a, 1b, 2a, 2b ... indicate the order of stations first station, second station... and the letters “a” and “b” indicate the “a side” solenoid and “b side” solenoid, respectively.



● For single solenoid valve
(supports max. manifold No. up to 20 points)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	3a	5a	7a	9a	11a	13a	15a	17a	19a			COM(+)
Pin No.	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
Valve No.	2a	4a	6a	8a	10a	12a	14a	16a	18a	20a			

● For double solenoid valve
(supports max. manifold No. up to 10 points)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a			COM(+)
Pin No.	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
Valve No.	1b	2b	3b	4b	5b	6b	7b	8b	9b	10b			

● For mixed use (single/double mixture)
(supports max. solenoid No. up to 20 points)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	3a	4a	5a	7a	8a	10a	11b	12b	14a			COM(+)
Pin No.	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
Valve No.	2a	3b	4b	5a	7b	9a	11a	12a	13a	15a			

How to order cable with D sub-connector

N4T - CABLE - D 0 0 - 1

* Each pneumatic valve model can be used for D sub-connector T30/T31.

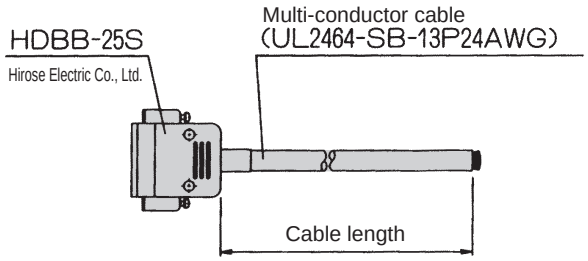
Ⓐ User interface

Ⓑ Cable length

Code	Model N4T
Ⓐ User interface	
0	Cut only
1	With round terminal for M3.5 screw
Ⓑ Cable length	
1	1 m
3	3 m
5	5 m

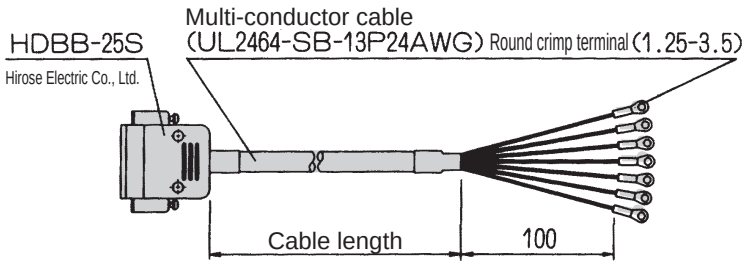
D sub-connector terminal No. and conductor

● N4T-CABLE-D00-Ⓑ



D sub-connector terminal No.		1	2	3	4	5	6	7	8	9	10	11	12	13
Core identification	Insulator color	Orange	Orange	Yellow	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow
	Mark	1 point	1 point	1 point	1 point	1 point	1 point	1 point	1 point	1 point	1 point	2 points	2 points	2 points
	Mark color	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black
D sub-connector terminal No.		**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
Core identification	Insulator color	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green	
	Mark	2 points	2 points	2 points	2 points	2 points	2 points	2 points	3 points	3 points	3 points	3 points	3 points	
	Mark color	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	

● N4T-CABLE-D01-Ⓑ



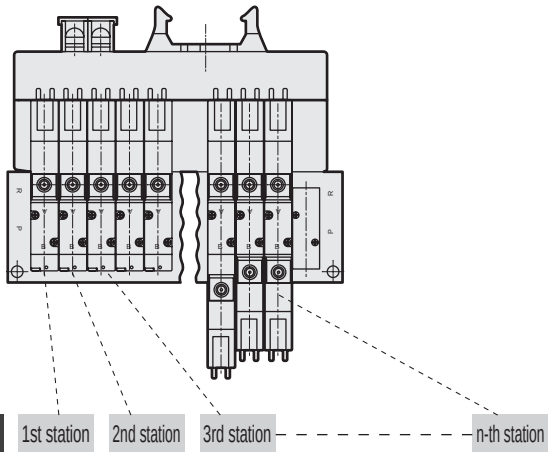
D sub-connector terminal No.		1	2	3	4	5	6	7	8	9	10	11	12	13
Core identification	Insulator color	Orange	Orange	Yellow	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow
	Mark	1 point	1 point	1 point	1 point	1 point	1 point	1 point	1 point	1 point	1 point	2 points	2 points	2 points
	Mark color	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black
Mark tube No.		1	2	3	4	5	6	7	8	9	10	11	12	13
D sub-connector terminal No.		**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
Core identification	Insulator color	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green	
	Mark	2 points	2 points	2 points	2 points	2 points	2 points	2 points	3 points	3 points	3 points	3 points	3 points	
	Mark color	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	
Mark tube No.		14	15	16	17	18	19	20	21	22	23	24	25	

* Up to 24 points can be used. Cut the wires for surplus points before use.

Flat cable connector: wiring method T50

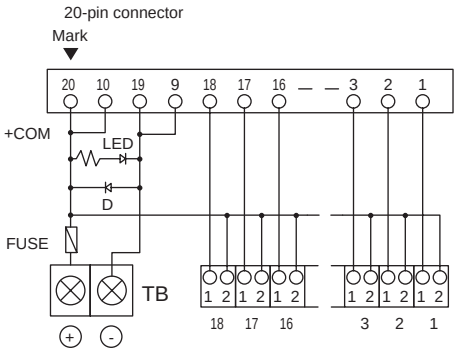
T50 Connectors

The connector used for T50 wiring method complies with MIL Standards (MIL-C-83503). Wiring work is simplified with the pressure welded flat cable. Pin numbers are assigned differently based on the PLC manufacturer, but the function assignment is the same. Layout using connectors and the triangular mark (▼) shown below as a reference. The ▼ mark is the reference for both plug and socket. The manifold station numbers are set in order from left with b side solenoid side (cap side for single) facing forward.



Precautions for connector T50

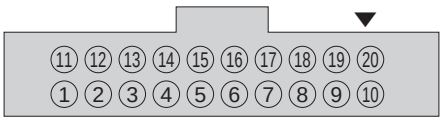
(1) Signal arrays of the PLC output unit must match signal arrays on the valve side. Direct connections with the PLC are limited. Use the dedicated cable for each PLC manufacturer.
(2) The working power is 12/24 VDC dedicated.
(3) When connecting the T50 to a general output unit, use the + terminal (20, 10) of the 20P connector as the plus side common, and use the NPN transistor output open collector for the drive circuit.
(4) Never connect this manifold to the input unit, as major failures could occur in this device and in the peripherals. Be sure to connect the manifold to the output unit.
(5) A voltage drop may occur due to simultaneous energizing or cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.



[Internal circuit]

Connector pin array (example) of wiring method T50

Note: The numerals of valve numbers 1a, 1b, 2a, 2b ... indicate the order of stations first station, second station... and the letters “a” and “b” indicate the “a side” solenoid and “b side” solenoid, respectively.



● For single solenoid valve
(Supports up to manifold max. station number of 16 stations)

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	9a	10a	11a	12a	13a	14a	15a	16a	- Power supply	+ Power supply
Pin No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	- Power supply	+ Power supply

● For double solenoid valve
(Supports up to manifold max. station number of 8 stations)

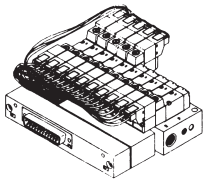
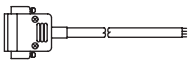
Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	5a	5b	6a	6b	7a	7b	8a	8b	- Power supply	+ Power supply
Pin No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	- Power supply	+ Power supply

● For mixed use (single/double mixture)
(Supports max. No. of solenoid valves up to 16 points)

Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	7a	7b	8a	9a	10a	10b	11a	11b	- Power supply	+ Power supply
Pin No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	- Power supply	+ Power supply

Example of wiring connection (recommended combination)

● Use with the combination below.

Wiring method	Example of connection cable	PC and PC-related products		
		Manufacturer	PC	Connection cable
D sub-connector upward facing (**T30**) **D** sub-connector lateral facing (**T31**) 				Cable with D sub-connector (Refer to page 1253 for cable model No. and details.)
				

*: Set the power supply voltage for valve activation with attention to voltage drop of the PLC and the flat cable.

How to order manifold base/masking plate

● Manifold base

B4SA0 – **M3** – **Station No.**

(Body piping)

B4SB0 – **M5** – **Station No.**

(Sub-base piping)

Code	Description
2 to 20	2 stations to 20 stations

Note: Precautions when mounting valve on manifold base
The mounting screws attached to the valve are tapping screws equivalent to M1.7. Accordingly, the manifold base has not been threaded for attachment of the valve. During the initial installation, mounting will be completed while tapping the base. Furthermore, smoother mounting is possible by applying a small amount of oil (CRC/turbine oil, etc.) to the tip of the screws.

● Masking plate (gasket, mounting screws attached)

4SA0 – **MP**

(Body piping)

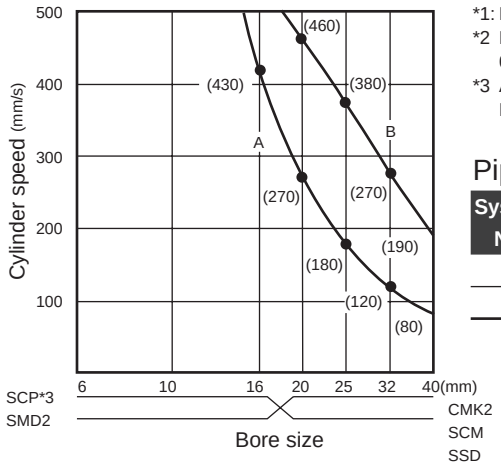
4SB0 – **MP**

(Sub-base piping)

Pneumatic system equipment selection guide

Pneumatic system selection guide

The cylinder average speed is obtained from the combination of 4SA0/4SB0 series and piping system.
It is expressed by the average speed obtained by dividing the stroke by the time the piston rod moved after starting, when the cylinder piston rod is installed facing upward. When the load factor is 50%, the average speed should be the approximate cylinder speed multiplied by 0.5.



Clean air system components

Part name	Model No.	Port size (*1)	Max. flow rate (ℓ/min (ANR)) (*2)
F.R.L kit	K60570-1C-GB	Rc1/8(6A)	200
	C1000-6-W	Rc1/8(6A)	450
F.R. unit	W1000-6-W	Rc1/8(6A)	830
Air filter (F)	F1000-6-W	Rc1/8(6A)	460
Regulator (R)	B2019-1C	Rc1/8(6A)	500
	R1000-6-W	Rc1/8(6A)	770
Lubricator (L)	A3019-1C	Rc1/8(6A)	100
	L1000-6-W	Rc1/8(6A)	550

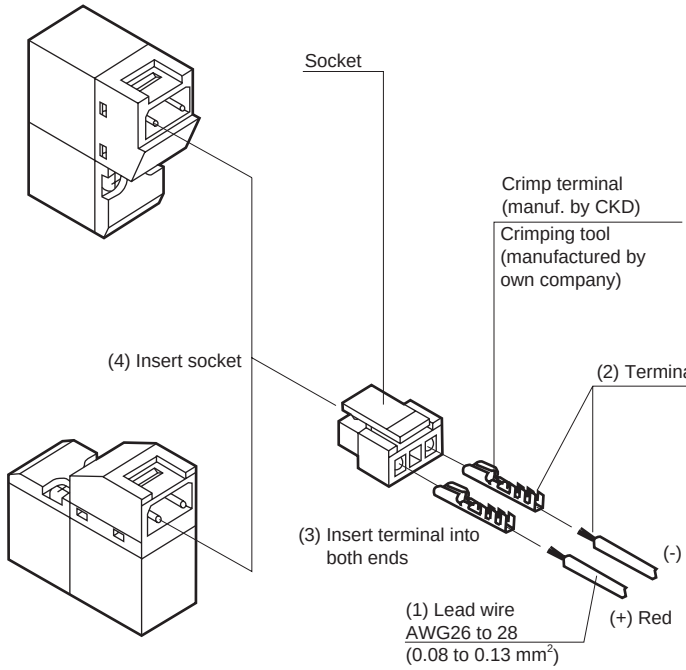
*1: Rc is the same as PT.
*2 F.R.L kit, F. R. unit, regulator
0.7 MPa primary pressure, 0.5 MPa set pressure, 0.1 MPa pressure drop
*3 Air filter, lubricator
Primary pressure 0.7 MPa, pressure drop 0.02 MPa

Piping system

System No.	Speed controller	Silencer	Piping Piping length between valve and cylinder within ( )	Composite effective sectional area by system	Max. flow rate when (ℓ/min. (ANR)) P = 0.5 MPa
A	SC-M5	—	ø4 x ø2.5 nylon tube (1 m)	0.5 mm^2	34
B	SC1-6	SL-M5	ø6 x ø4 nylon tube (1 m)	1.3 mm^2	84

C type / D-connector wiring method

(Referring to the figure below, wire the connectors with (1) to (4))



[Procedure]

(1) Peel the sheath at the end of the lead wire by 2 to 3 mm.
(2) Crimp the lead wire with a special tool.
(3) Insert the terminal into the holes at both ends of the socket.
(Note) Check the orientation for insertion.
(4) Insert the socket into the solenoid valve connector section.