



Bus Control Valve Island Product Manual



- Deeply integrate advanced technologies
- Break through traditional boundaries
- Bring infinite possibilities to industrial automation

TEAOTE Technology

www.teaote.com



TVT Series

Bus Control Valve Island

Our company reserves the right to make improvements in technology, appearance and dimensions. Any changes will be made without further notice.




Product Features

- For Modular Pneumatic Control Systems
- Highly Flexible and Scalable
- Solenoid valves are available in 10mm, 14mm, and 18mm specifications
- Each coil has an independent power management module, reducing power consumption by 70%
- Indicator light is visible from all angles, making it easy and quick to troubleshoot faults
- Up to 24 valve positions per terminal
- Protection level: Ip65
- Internal and external pilot options available

Specifications and Parameters

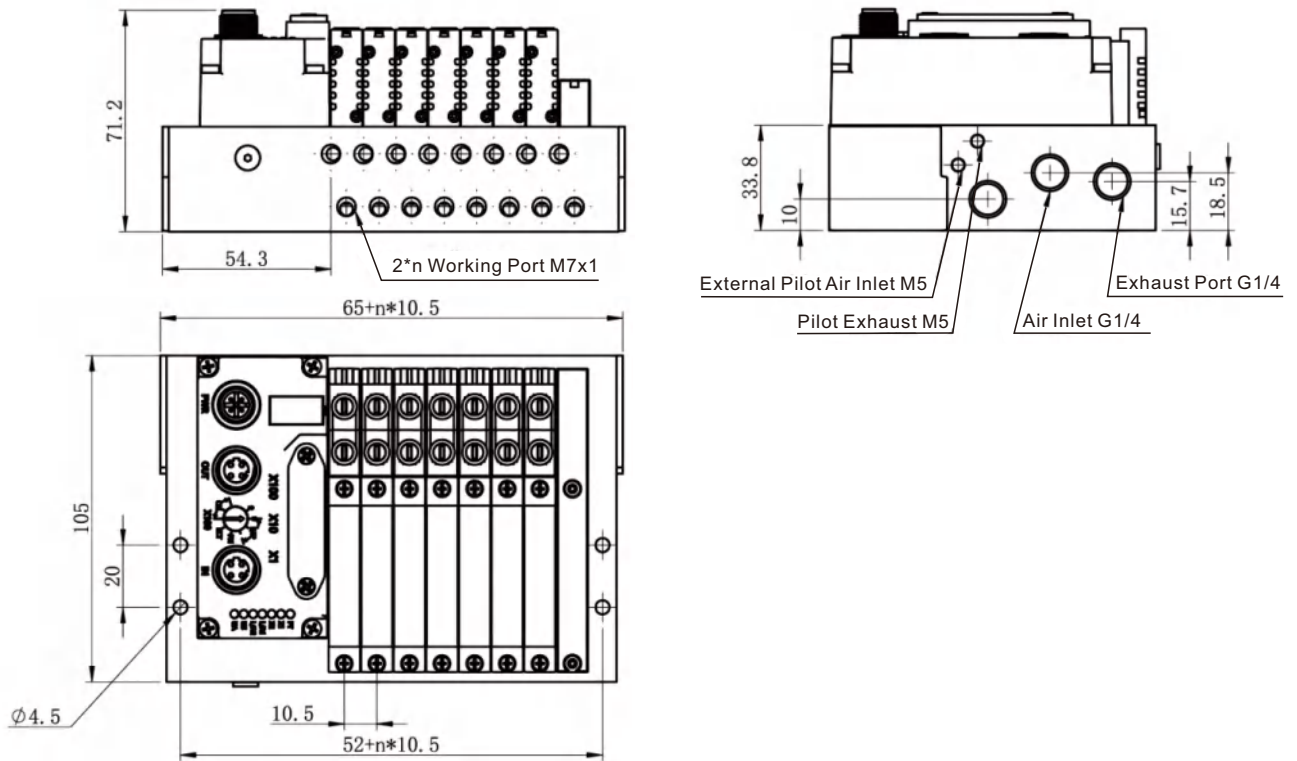
Number of Sites	4,5,6,7,8,9,10,12,16,20,24	
Electrical Connection	D-SUB25 multipin, IO-Link, PROFINET, EtherCAT, EtherNet/IP, CC-Link IE Field Basic	
Voltage	24VDC±10%	
Power Consumption	Single coil instantaneous maximum 1.2W	
Flow Rate	Maximum of 600L/min (depending on the type of valve plate)	
Working Interface	10mm: Inlet = Outlet = G1/4" Working Port = M7*1	14mm: Inlet = Outlet = G1/4" Working Port = G1/8"
Work Pressure	Pilot Pressure	Refer to page P06 for TVT solenoid valve specifications and parameters

How to Order

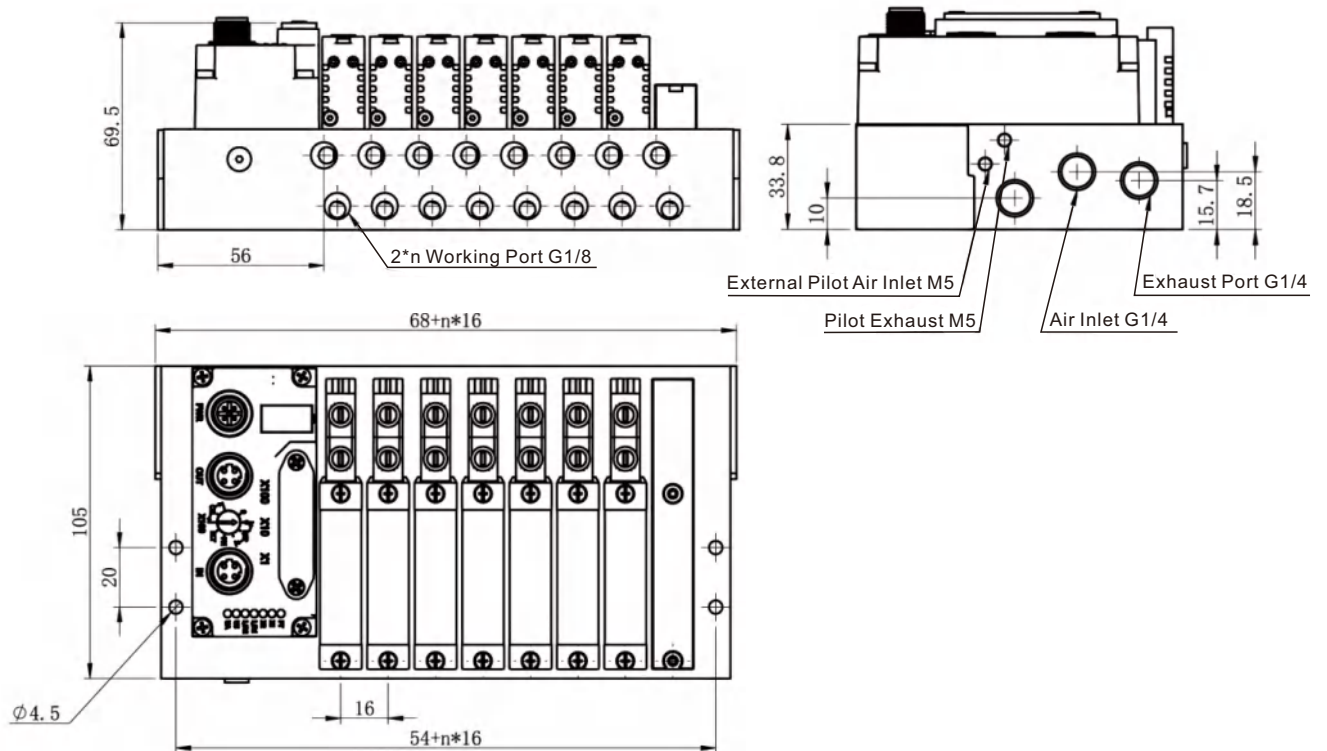
TVT - B 10 - LK - Z - 4 - 4C 5D 2NC 1B - L - C08 - A - Q8														
Valve Types		Valve Width		Valve Communication Module		Pilot Air Source		Valve Function, Position And Quantity		Intake Position		Intake and outlet pipe direction		
B	Plate Type Side Outlet	10	10mm	Nil	Four-in-one	Nil	Internal Pilot	C	Three-position five-way closed center type	Nil	Dual-side Intake	Nil	Straight outlet	
		14	14mm		CC:CC-Link			E	Three-position five-way open center type	L	Left-side Intake	A	90° right-angle pipe connection	
S	Half-Pipe Type Straight Outlet	18	18mm		EN:EtherNet/IP	Z	External Pilot	P	Three-position five-way pressure center type	R	Right-side Intake			
BM				LK	IO-Link	Number Of Holes In The Baseboard		D	Two-position five-way double solenoid type	Intake connector specifications		Working port		
				M	D-SUB25			S	Two-position five-way single solenoid type					
								NC	Double two-position three-way normally closed type	C08		8mm Quick-connect pipe	Nil	No fitting
								NO	Double two-position three-way normally open type	C10		10mm Quick-connect pipe	Q4	4mm Quick-connect pipe
								NOC	Double two-position three-way mixed type	C12		12mm Quick-connect pipe	Q6	6mm Quick-connect pipe
								B	Blind board				Q8	8mm Quick-connect pipe
<p>Note: 4C, 5D, and 2NC represent the quantity of valves with the same function. Position definition: positions are numbered sequentially from the control island side as 1.....24 (arranged sequentially from the island side).</p>														
														

Dimensions

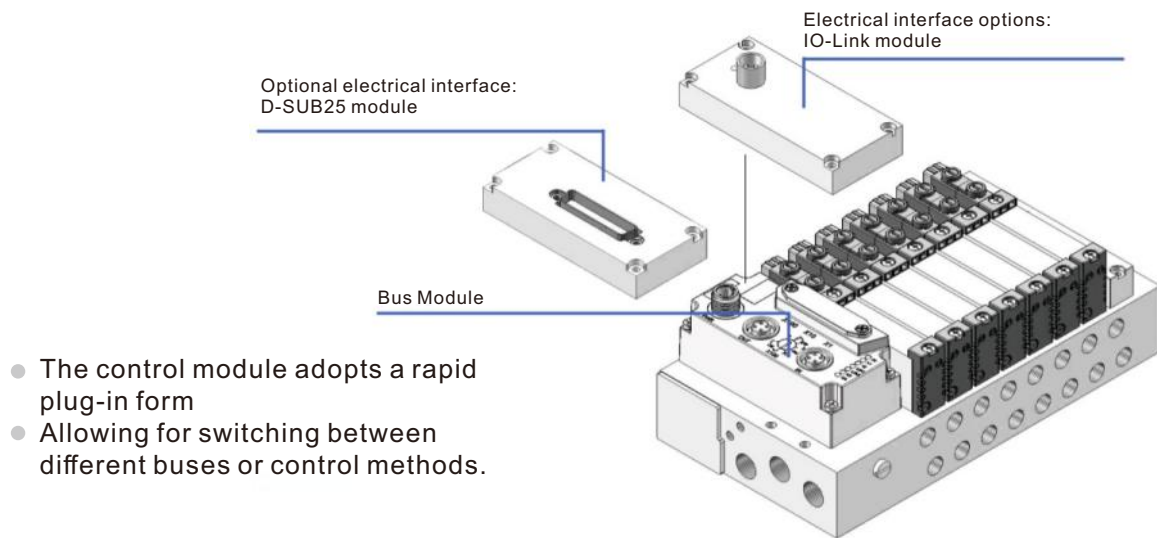
• 10mm



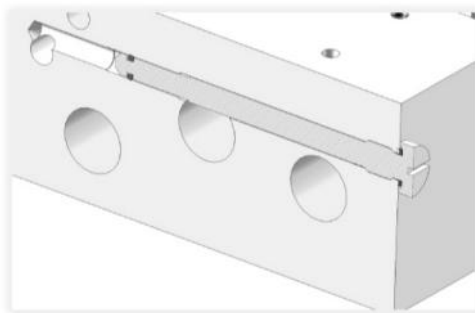
• 14mm



Structural Diagram

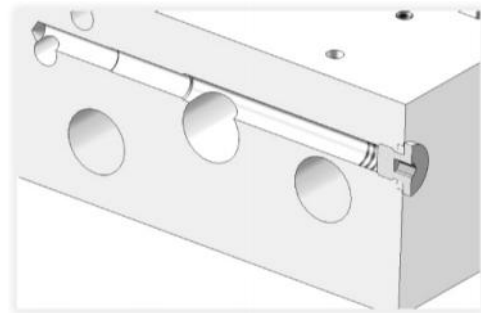


Internal and external guide switching function



External Leader

Install the pilot switch screw at the pilot switch hole to achieve external pilot functionality. The pilot air source is supplied through the external pilot air inlet M5 threaded hole on the end face of the base plate.



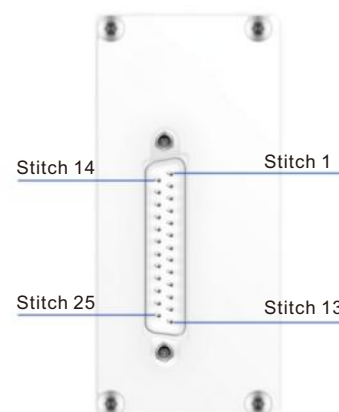
Internal Guide

Install an M5 plug at the pilot switch hole to enable internal pilot functionality, with the pilot air source directly using the inlet of the base plate.

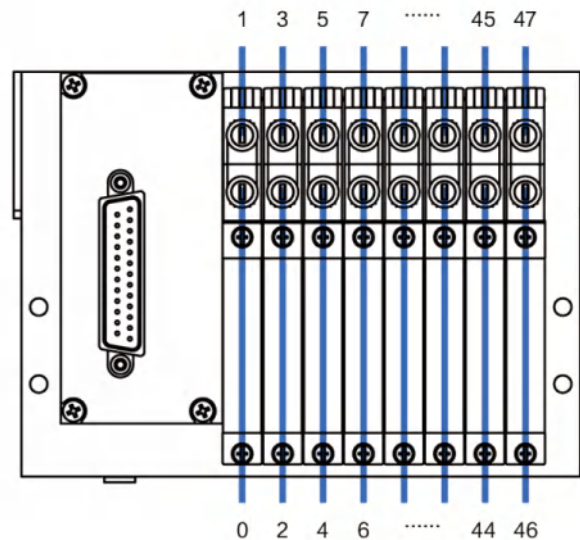
Introduction to Multi-Needle

Name	Model
Multi-needle module	M1-25-SUB

According to the different connection methods, the valve island can control up to 24 valve coils. Each valve coil of the valve island corresponds to a certain pin on the multi-pin plug.



Definition of Multi-Needle



PIN	Address	Maximum number of valve positions			
		4~12	16	20	24
		Valve Position Number / Coil Name			
1	0	0/14	0/14	0/14	0/14
2	1	0/12	0/12	0/12	23/14
3	2	1/14	1/14	1/14	1/14
4	3	1/12	1/12	1/12	22/14
5	4	2/14	2/14	2/14	2/14
6	5	2/12	2/12	2/12	21/14
7	6	3/14	3/14	3/14	3/14
8	7	3/12	3/12	3/12	20/14
9	8	4/14	4/14	4/14	4/14
10	9	4/12	4/12	19/14	19/14
11	10	5/14	5/14	5/14	5/14
12	11	5/12	5/12	18/14	18/14
13	12	6/14	6/14	6/14	6/14
14	13	6/12	6/12	17/14	17/14
15	14	7/14	7/14	7/14	7/14
16	15	7/12	7/12	16/14	16/14
17	16	8/14	8/14	8/14	8/14
18	17	8/12	15/14	15/14	15/14
19	18	9/14	9/14	9/14	9/14
20	19	9/12	14/14	14/14	14/14
21	20	10/14	10/14	10/14	10/14
22	21	10/12	13/14	13/14	13/14
23	22	11/14	11/14	11/14	11/14
24	23	11/12	12/14	12/14	12/14
25	COM				

- The valve position corresponding to the gray area can be equipped with a dual coil valve.

Introduction to IO-Link Module



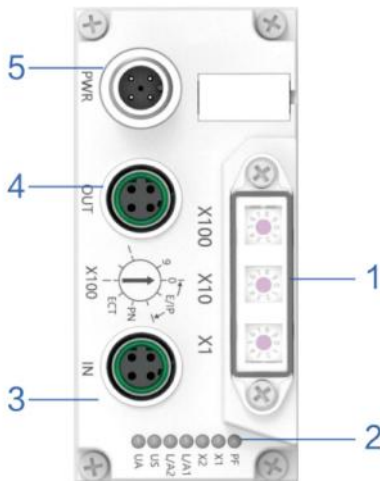
Name	Order Code	Description
IO-Link Module - 8 Valve Positions	TVT-LK-8-PT	Support for baseplates with less than 8 valve positions
IO-Link Module - 16 Valve Positions	TVT-LK-16-PT	Support for baseplates with less than 16 valve positions
IO-Link Module - 24 Valve Positions	TVT-LK-24-PT	Support for baseplates with less than 24 valve positions

Pin Assignment Of IO-link Wire Connectors

Interface	Pin	Allocation	Function
	1	24V EL/SEN(PS)	Work Power Supply
	2	24V BAL/OUT(PL)	Load Power Supply
	3	OV EL/SEN(PS)	Work Power Supply
	4	C/Q	Communication Power Supply
	5	0V VAL/OUT(PL)	Load Power Supply

IO-Link LED Indicator		IO-Link property of the driver file			
Green light flashing	Normal operating status	Specification	V1.1	Output Data	2 bytes
Red light on	24V load power supply fault or no IO-Link signal	Data Transmission Rate	COM2 (38.4KBit)		4 bytes
Blue light on	Communication open circuit or overload				6 bytes

Introduction to Bus Module



Name	Order Code	Instruction
Bus Module-PNT	CTEU-PN	PROFINET protocol
Bus Module-ECT	CTEU-EC	EtherCAT protocol
Bus Module-EIT	CTEU-EN	EtherNet/IP protocol
Bus Module-CIEBS	CTEU-CC	CC-Link IE Field Basic protocol
Bus Module-Multi-Protocol	CTEU-MCP	Support for the above four protocols

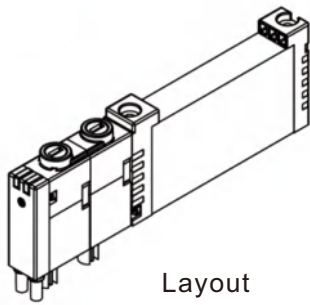
Serial number	Name	Description
1	DIP Switch	Protocol switching, IP address and coil settings
2	LED Status Indicator	Indicate operating status
3	Bus Communication Interface (IN)	M12 female connector D-type 4-pin
4	Bus Communication Interface (OUT)	M12 female connector D-type 4-pin
5	Power Interface	M12 male connector A-type 4-pin, communication module and solenoid valve power supply

Power interface		
	M12,4-pin,A-coded,male (PWR)	
	Stitch	Function
	1	UA Load Power Supplies
	2	GND Load Power Supplies
	3	US Modular Power Supplies
	4	GND Modular Power Supplies

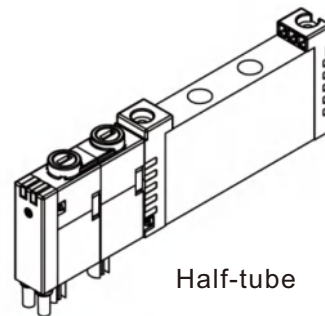
Bus communication interface (OUT)		
	M12, 4-pin, D-coded, socket	
	Stitch	Function
	1	Tx+ Send data+
	2	Rx+ Receive data+
	3	Tx- Send data-
	4	Rx- Receive data-

Bus communication interface (IN)		
	M12, 4-pin, D-coded, socket	
	Stitch	Function
	1	Tx+ Send data+
	2	Rx+ Receive data+
	3	Tx- Send data-
	4	Rx- Receive data-

TVT Electromagnetic Valve Specifications



Layout

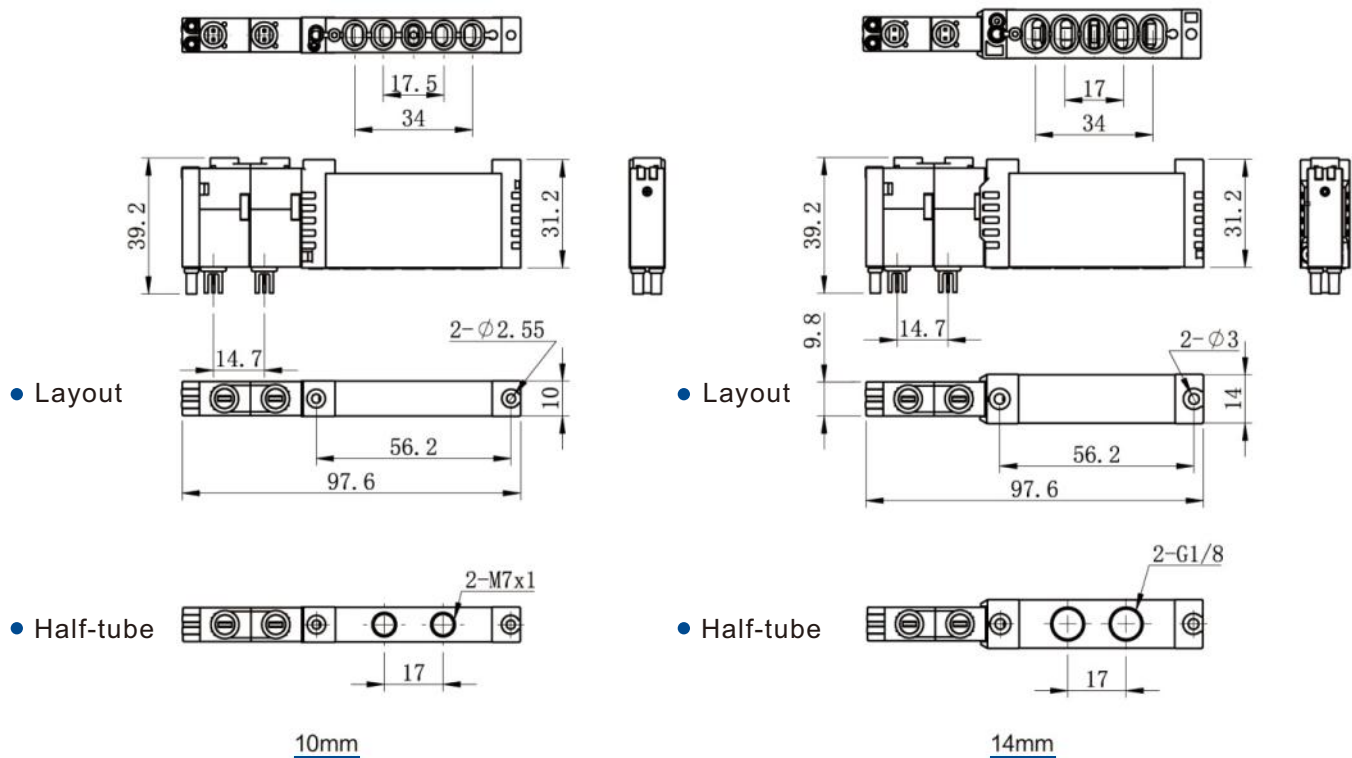


Half-tube

- The panel-mounted TVT valve has five gas ports at the bottom, while the semi-tube TVT valve has the intake and exhaust ports at the bottom, with two working ports at the top.
- All solenoid valves are externally piloted. If internal piloting is needed, it can be switched through the screws on the valve base.

Order code	Takeover type	Valve width	Function	Graphic symbol
TVT-B14-5120	Layout	14	Two-position five-way single electric control	
TVT-S14-5120	Half-tube	14		
TVT-B10-5120	Layout	10	Two-position five-way double electric control	
TVT-S10-5120	Half-tube	10		
TVT-B14-5220	Layout	14	Two-position five-way double electric control	
TVT-S14-5220	Half-tube	14		
TVT-B10-5220	Layout	10	Three-position five-way center seal	
TVT-S10-5220	Half-tube	10		
TVT-B14-5320	Layout	14	Three-position five-way center seal	
TVT-S14-5320	Half-tube	14		
TVT-B10-5320	Layout	10	Three-position five-way center exhaust	
TVT-S10-5320	Half-tube	10		
TVT-B14-5420	Layout	14	Three-position five-way center exhaust	
TVT-S14-5420	Half-tube	14		
TVT-B10-5420	Layout	10	Three-way five-port medium pressure	
TVT-S10-5420	Half-tube	10		
TVT-B14-5520	Layout	14	Three-way five-port medium pressure	
TVT-S14-5520	Half-tube	14		
TVT-B10-5520	Layout	10	Double two-way three-port NC	
TVT-S10-5520	Half-tube	10		
TVT-B14-513A	Layout	14	Double two-way three-port NC	
TVT-S14-513A	Half-tube	14		
TVT-B10-513A	Layout	10	Double two-way three-port NO	
TVT-S10-513A	Half-tube	10		
TVT-B14-513B	Layout	14	Double two-way three-port NO	
TVT-S14-513B	Half-tube	14		
TVT-B10-513B	Layout	10	Double two-way three-port NC/NO	
TVT-S10-513B	Half-tube	10		
TVT-B14-513AB	Layout	14	Double two-way three-port NC/NO	
TVT-S14-513AB	Half-tube	14		
TVT-B10-513AB	Layout	10	Double two-way three-port NC/NO	
TVT-S10-513AB	Half-tube	10		

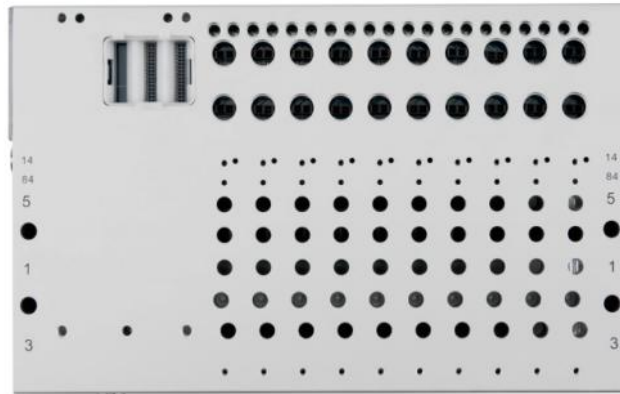
Electromagnetic valve dimensions



Introduction to Solenoid Valve Performance

Specifications		Specifications Internal Pilot	External Pilot		Flow Rate (L/min)
		Working Pressure (bar)	Pilot Pressure (bar)	Working Pressure (bar)	
10mm	TVT-5120	2~8	2~8	0~8	300
	TVT-5220	2~8	2~8	0~8	300
	TVT-5320	3~8	3~8	0~8	260
	TVT-5420	3~8	3~8	0~8	260
	TVT-5520	3~8	3~8	0~8	260
	TVT-513A	2.5~8	2.5~8	2~8	280
	TVT-513B	2.5~8	2.5~8	2~8	280
	TVT-513AB	2.5~8	2.5~8	2~8	280
14mm	TVT-5120	2~8	2~8	0~8	560
	TVT-5220	2~8	2~8	0~8	560
	TVT-5320	3~8	3~8	0~8	500
	TVT-5420	3~8	3~8	0~8	500
	TVT-5520	3~8	3~8	0~8	600
	TVT-513A	2.5~8	2.5~8	2~8	600
	TVT-513B	2.5~8	2.5~8	2~8	500
	TVT-513AB	2.5~8	2.5~8	2~8	500

TVT Base Assembly



Base Assembly

- Base plate assembly includes specifications of 10mm and 14mm.
- Both the plate-type and half-tube type valve islands use the same base.
- The base plate assembly has integrated the installation circuit board.

Order code

Order Code	Valve Width	Connection Number
TVT-B10-4F	10	4
TVT-B10-5F	10	5
TVT-B10-6F	10	6
TVT-B10-7F	10	7
TVT-B10-8F	10	8
TVT-B10-9F	10	9
TVT-B10-10F	10	10
TVT-B10-12F	10	12
TVT-B10-16F	10	16
TVT-B10-20F	10	20
TVT-B10-24F	10	24

● 10mm




Order Code	Valve Width	Connection Number
TVT-B14-4F	14	4
TVT-B14-5F	14	5
TVT-B14-6F	14	6
TVT-B14-7F	14	7
TVT-B14-8F	14	8
TVT-B14-9F	14	9
TVT-B14-10F	14	10
TVT-B14-12F	14	12
TVT-B14-16F	14	16
TVT-B14-20F	14	20
TVT-B14-24F	14	24





● 14mm

Other Accessories of Valve Island

Multi-needle module cable	Name	Order Code
	Communication Cable (DB25 Female - Bare Wires) 2.5M	S1WA25-K-2.5
	Communication Cable (DB25 Female - Bare Wires) 5M	S1WA25-K-5
Multi-needle module cable	Name	Order Code
	Communication cable (M12 female - bare wires) straight 2M	M12-5FS-2115-2M
	Communication cable (M12 female - bare wires) straight 4M	M12-5FS-2115-4M
Bus module cable	Name	Order Code
	Power cable 2M	M12-4FS-2104-2M
	Power cable 4M	M12-4FS-2104-4M
	Communication cable (M12 male - bare wire) 2M	M12D-4MS.P-5544-2M
	Communication cable (M12 male - bare wire) 4M	M12D-4MS.P-5544-4M
	Communication cable (M12 male - M12 male) 2M	M12D-4MS/M12D-4MS.P-5544-2M
	Communication cable (M12 male - M12 male) 4M	M12D-4MS/M12D-4MS.P-5544-4M
	Communication cable (M12 male - RJ45) 2M	M12D-4MS/RJ45Y.P-5544-2M
	Communication cable (M12 male - RJ45) 4M	M12D-4MS/RJ45Y.P-5544-4M

- If you need cables of different lengths, please inquire before placing the order.

Joint	Name	Order Code
	G1/8-4 pipe joint	POC4-G01
	G1/8-6 pipe joint	POC6-G01
	G1/8-8 pipe joint	POC8-G01
	G1/4-8 pipe joint	POC8-G02
Plug	Name	Order Code
	M5 Plug	PLUG-M5
	M7 Plug	PLUG-M7
	G1/8 Plug	PLUG-1/8
	G1/4 Plug	PLUG-1/4
Pilot switch screw	Name	Order Code
	Pilot switch screw	TVT-QHLD

Joint	Name	Order Code
	M5-4 joint	POC4-M5C
	M5-6 joint	POC6-M5C
	M7-4 joint	POC4-M7C
	M7-6 joint	POC6-M7C
Silencer and others	Name	Order Code
	Silencer	AN200-02G
	Partition plug	TVT-FQDT
Joint	Name	Order Code
	Blind Plate 10MM	TVT-B10-B
	Blind Plate 14MM	TVT-B14-B

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Dedicated to perseverance



China

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The company reserves the right to improve the technical and physical dimensions.
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