CKD

SM－308282－A

INSTRUCTION MANUAL

PARECT
Electro-pneumatic Regulator

MEVT Series

SERIAL TRANSMISSION TYPE
MEVT-T9DAR

DeviceNet

- 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.

Ver.4

CKD Corporation

For Safety Use

To use this product safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (ISO 4414 *1 JIS B 8370 *2).

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 operation manual carefully for proper operation.**

Observe the cautions on handling described in this manual, as well as the following instructions:
Additionally, the caution is classified into the following three groups, “CAUTION”, “WARNING”, and “DANGER”, to identify the degree of the danger it presents and possible hazard.

⚠ **DANGER** : Failure to pay attention to DANGER notices may cause a situation that results in a fatality or serious injury and that requires urgent addressing.

⚠ **WARNING** : Failure to pay attention to WARNING notices may result in a fatality or serious injury.

⚠ **CAUTION** : Failure to pay attention to WARNING notices may result in injury or damage to equipment or facilities.

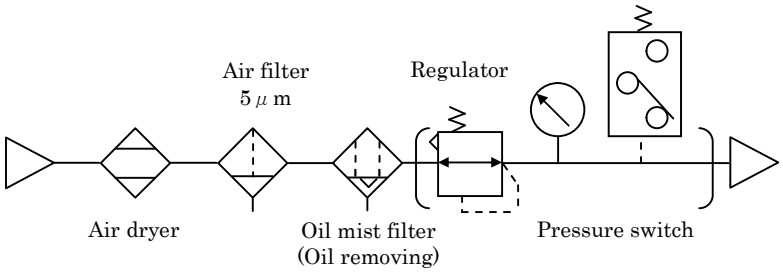
*1) ISO 4414 : Pneumatic fluid power ··· Recommendations for the application of equipment to transmission and control systems.

*2) JIS B 8370 : General rule for pneumatic systems

CAUTION

Points to caution when handling the product

(1) Inferior quality air will deteriorate the product characteristics and affect its durability badly. Use an air dryer, filter and Oil mist filter to eliminate solid material, moisture and tar and thus provide clean air from the pressure source.



When the control pressure decreases, for example, the air runs from the secondary side through the regulator to the exhaust port (R). Dust inside the secondary side piping or the load circuit, therefore, will similarly deteriorate the product's characteristics and greatly affect its durability. Ensure the interior of the piping is always clean.

(2) The products response capability will be affected by the working pressure and load volume. When a stable response is required, regulate the working pressure.

(3) Flush air into the pneumatic pipes employed in the PARECT electro-pneumatic regulator before connection. Be careful not to allow sealant tape to stray into the pipes.

(4) To avoid malfunction caused by electrical noise:

(a) Insert a line filter into the AC power line.

(b) Use a surge suppresser like a CR or diode in the inductive load (solenoid valve, relay and so on) to remove any noise at the source.

(c) Keep the MEVT series cables as far away as possible from power line for motor.

(d) In the case of the influence of noise, each slave station can possibly be supplied the power and wire individually.

(e) Wire the power line as short as possible.

(f) Don't share the power with devices that generate the noise, such as inverter motor.

(g) Don't wire the power line or communication line in parallel with other lines.

(5) Avoid unplanned dismantling of the product. We shall not warrant the product operation in cases where it has been dismantled without authorization.

(6) Avoid operating the product in places where it may be affected by direct sunlight, water or oil.

(7) If the product remains connected to its supply pressure for a long time while leaving the power turned off, the output pressure may increase to the level of the supply pressure. For safety, when there is a problem, use the valve on either the inlet or outlet side. It is recommended to set up the system for safe operation.

(8) If the power is turned off when the unit is up to control pressure, the pressure will be maintained. In this case, if you need to be in an exhaust state, lower the control pressure first and then turn off the power or use the exhaust valve. However, the maintained pressure is not guaranteed to last for very long.

(9) Since the working pressure is supposed to provide the exact control pressure, it is important for the working pressure not to drop below "Control pressure + Maximum control pressure × 0.1".
In particular, if the primary pressure is supplied for a long period of time with the secondary pressure specified in a range that exceeds 0MPa up to 12% F.S., this will shorten the life span of the product and thus the product should not be used in this way.

(10) The MEVT Series regulators may oscillate if a leak occurs to the secondary side piping. When connecting pipes to the regulator, connect them firmly to prevent leaks. Do not use the regulator for blowing or in any other application where the secondary side can be affected by back pressure. If used in such applications, the regulator will not be able to achieve the specified pressure. Moreover, a large oscillation noise will be heard and the product's durability will be greatly reduced.

(11) Don't supply the input signal over maximum control pressure, because an excessive input signal exerts a bad influence on the deterioration of the characteristic and also the durability.

(12) Keep the exhaust port (R) open to the air to allow the release of the exhaust into the air.

(13) When it is maintained the condition where the power is on and the working pressure isn't supplied or the condition where the power is on and the input signal is missing from the control range, the deterioration of the characteristic and also life occur. Therefore, the product should not be used in this way.

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MEVT Series

PARECT Electro-pneumatic Regulator
SERIAL TRANSMISSION TYPE (MEVT-T9DAR)

Manual No. SM-308282-A

Mar. 27. 2003
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1. DESIGN AND SELECTION

⚠ WARNING :

(1) With a thorough understanding of compressed air characteristics, design a pneumatic circuit.

- Where instantaneous stop holding at emergency stop is required, the same function as in the mechanical or hydraulic or electrical units cannot be expected.
- There arise pop-up, jet-out and leaking phenomena caused by compressibility and expansibility, which are air characteristics.

(2) Prior to use, always ensure that the product withstands the operating environment.

- The product cannot be used in corrosive gas, chemical liquid solvent, water, water vapor (steam) and ozone atmosphere. When a product is exposed to water droplets, oil or metallic powder, such as spatters and chips, be sure to protect it.
- No product can be used in the explosive gas atmosphere.

(3) Always give special care to the electric circuit during emergency stop, and cylinder operation, etc. during power failure.

(4) Attach a "residual pressure discharge valve" to the compressed air inlet of the equipment.

- The pressure switch controls operation so that it cannot be carried out where the set pressure is not reached.
  The residual pressure discharge valve discharges compressed air remaining inside the pneumatic circuit, to prevent accidents caused by pneumatic equipment operation due to residual pressure.

⚠ CAUTION :

(1) Note the maintenance conditions clearly in the equipment instruction manual.

- The product functions may significantly lower, depending on the operating condition, operating environment and maintenance situation, thereby safety might not be secured. If this maintenance work is conducted accurately and correctly, it is possible to exhibit the product function and performance sufficiently.

(2) Use be a constant voltage power supply.

(3) Check the leak current to avoid a malfunction caused by such leakage from other control equipment.

- The EVT may malfunction under the influence of leak current when a programmable controller or the like is used.

In case of 24 V DC:	1.8mA or less

(4) To avoid malfunction caused by electrical noise:

- Insert a line filter into the AC power line.
- Use a surge suppresser like a CR or diode in the inductive load (solenoid valve, relay and so on) to remove any noise at the source.
- Keep the MEVT series cables as far away as possible from power line for motor.
- Absolutely use the designated line for the serial transmission type.
- In the case of the influence of noise, each slave station can possibly be supplied the power and wire individually.
- Wire the power line as short as possible.
- Don't share the power with devices that generate the noise, such as inverter motor.
- Don't wire the power line or communication line in parallel with other lines.

(5) Do not use combined with a cylinder having a substantial leakage amount such as, a few friction cylinder or an air bearing cylinder.

- Avoid using a product in blowing or under the operating conditions that the back pressure is applied to the secondary side. No set pressure can be maintained, and its service life may be shortened along with a large beat sound.

(6) EVT100 arises residual pressure of 2kPa max and EVT500, 10kPa max even when the input signal is set to 0%. When 0MPa is required, take adequate measures; for example, attach a 3-way valve to the secondary side for changeover to the atmosphere.

⚠ CAUTION : (7) Use a valve on inlet and outlet as needed.

- If the product is left as it is with the supply pressure when no power is turned ON, the secondary side pressure may increase up to the supply pressure.
  If some trouble is concerned on safety, take proper safety measures in the system; for example, use a valve on inlet or outlet.

(8) Operating Environment
Avoid using a product in the place where it is exposed direct to sunlight, water, oil or the like. Contact us when using a product that falls outside the designated specifications and specifications for special applications.

- Ambient Temperature
  Contact us when the product is used at exceeding 50℃ or a low temperature not exceeding 5℃.
- Vibration & impact
  Avoid using the product at the vibration of 50 m/s^2min. and impact of 300m/s^2min.

(9) The SUB power terminal can be used for transfer wiring to other devices. However, contain the current passing from the MAIN terminal to the SUB terminal, within 1.5A. The unusual rise of temperature by the over current will break the MEVT. Be careful to avoid noise effects of other devices.

2. INSTALLATION

⚠ WARNING :

(1) For MEVT installation, do not use the method of supporting the MEVT with piping.

- Attach and fix the MEVT main body.

(2) Do not wash and coat the MEVT, using water and solvent.

- Some plastics parts may be damaged.
  The coating agent may block the exhaust port, causing malfunctions.

(3) Check the piping port position by the product label or nameplate, etc. for correct connections.

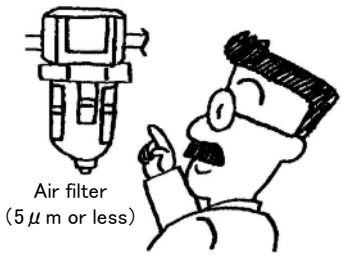
- Wrong piping connection causes abnormal operation of the actuator.

⚠ CAUTION : **When installing:**

(1) Keep a sufficient space for removal & re-installation, wiring and piping work around the EVT.

(2) Provide a pneumatic filter just in the pre-stage of the circuit in which the pneumatic equipment is used.

(3) The response time is affected by operating pressure and load capacity.
When stable reproducibility is required for this responsibility, set up a regulator in the pre-stage.



(4) Attaching position

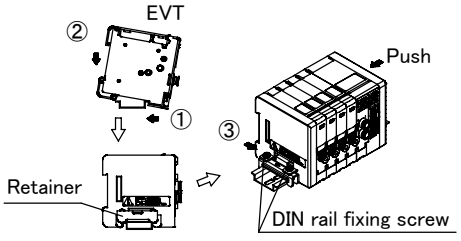
- Since the MEVT is designed for DIN rail mounting, fix the DIN rail to the attaching surface at intervals of 50 to 100mm where the total manifold mass exceeds 1kg or in the environment under vibration and impact, and then ensure that no abnormality is identified in the installation condition before use.
- There is no restriction in the attaching direction and attaching posture. Check the mounting screw doesn't get loose by resonance during operation, to avoid the manifold to fall off.
- Removal & re-installation of MEVT

  To Remove MEVT:
  Loosen the DIN rail fixing screws. (4pcs. in 2 right & left places)

  To Re-install MEVT:

  1. Set the jaw over the DIN rail from ① to ② as shown below.
  2. Press the retainer in the direction to ③ below.
  3. While pressing it so that no clearance is produced between the blocks, tighten the DIN rail fixing screws. (Recommendable tightening torque: 0.6 to 0.8N·m.)

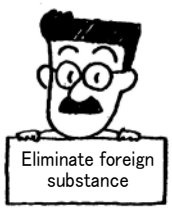
- When the retainer jaw is not hooked firmly, air leakage and product falling-off may result: always check this mounting condition carefully.



⚠ CAUTION : **When piping work**

(1) Do not detach the MEVT packing bag until piping work is started.
- If the packing bag is removed before piping work, foreign substance may intrude into the interior EVT from the piping port, thus causing trouble and malfunctions, etc.

(2) In piping work, flushing is required just before connecting to the pneumatic equipment.
- Foreign substance intruding inside during piping work must not incorporate into the EVT.



(3) Make piping arrangements so that the coupling section in the piping connection part is not detached due to equipment motion, vibration and tension or the like.

(4) Release the exhaust port (R) to air for satisfactory exhaust.

(5) Do not reduce the EVT exhaust port (R) to less than the bore diameter of the piping connecting port.
The EVT exhaust port (R) will breathe due to valving element motion; therefore, foreign substance near or around the exhaust port (R) may be sucked, and where the exhaust port (R) faces upward, foreign substance may intrude thereinto.
Attach a silencer or make piping connection with the exhaust port (R) looking down.
- If no smooth exhaust is insured, the actuator will not be actuated normally. When a manifold is used, exhaust may interfere with normal operation of other EVT's.

(6) When piping connection has been completed and compressed air is supplied, take care so that no high pressure is applied suddenly.
- The piping is disconnected and the piping tube springs out, causing accidents.
- <CAUTION>: If compressed air is supplied too slowly, there may arise air leak phenomena since no sealing pressure is generated in some EVT internal sealing mechanism.

(7) When the piping connection has been completed and compressed air is supplied, be sure to check that no air is leaking from all piping connection sections.
- Apply leakage detecting solution to the piping connection part with a brush to check for air leaking.

(8) Where a nylon tube or polyurethane tube is used for piping material, exercise the following care:
- Always use a flame retardant tube in the atmosphere such that spatters scatter about.

(9) Do not throttle the input port.
- Supply pressure lowers during equipment operation, resulting in malfunctions.

⚠ CAUTION :

(10) Piping Connection

- Applicable Tube:
  Use our CKD designated tube.
  Soft nylon (F-1500 Series)
  Polyurethane (U-9500 Series)
  When a commercially available tube is used, give care to outside diameter accuracy, wall thickness and hardness. The hardness of the polyurethane tube used should be 93 deg. min. (Rubber hardness tester)
  If a tube that does not satisfy outside diameter accuracy and hardness as specified is used, the chucking force may lower, thereby causing the tube to come off and making it hard to insert the tube.

Tube Size

Outside diameter (mm)	Inside diameter (mm)	
	Nylon	Urethane
φ4	φ2.5	φ2
φ6	φ4	φ4

Outside Diameter Tolerance

Soft & hard nylon φ4, φ6	±0.1mm
Urethane φ4, φ6	+0.1mm
	−0.15mm

- Tube Bending Radius
  The tube bending radius should exceed the minimum bending radius. (Otherwise, tube detachment and air leakage may result.)

Tube bore	Minimum bending radius (mm)	
	Nylon	Urethane
φ4	10	10
φ6	20	20

- Minimum Tube Length
  The standard length of output port (A) side tube used should correspond to the tube internal volume of 1mℓ or more. (Otherwise, oscillation may result.)

Tube bore	Minimum Length (mm)	
	Nylon	Urethane
φ4	200	320
φ6	80	80

- Tube Cutting
  Using the tube cutter (AZ-1200), cut a tube vertically in the axial direction. Insertion of the tube cut aslant causes air leakage.
- Tube Connection State
  Provide the linear part as long as the outside diameter of the tube used from the joint edge part to avoid sharply bending piping at the joint insertion port. Take care so that the tube tensile force in the lateral direction does not exceed 40N.
- Applicable Blank Plug
  Always use the blank plug designated by CKD.
  Blank plug GWP□-B Series

3. OPERATION

Operating Conditions:

The pressure supplied to the electro-pneumatic regulator should be used in the pressure range from the minimum operating pressure to maximum operating pressure that is specified in "5.3 Specifications".

For supply power, use a stabilized power supply with the ripple rate 1% max. at supply voltage 24 V DC+/-10%.

The input signal used and other working conditions should be based on "5.3 Specifications".

Zero (Point) & Span Adjustment:

This product is factory adjusted for the specified control pressure output in relation to each input signal before shipment.

As a rule, no zero & span adjustment change is allowed.

If zero & span adjustments are required at customer's end, contact our nearest sales office or agent.

However, it should be understood that the zero and span adjusted product is out of warranty.

⚠ WARNING : **Air Quality:**

(1) Supply only "compressed air".

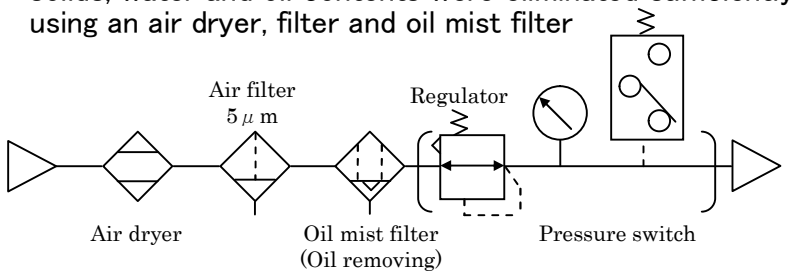
(2) For compressed air, always use clean air that does not contain corrosive gas.

(3) Be sure to use oil-free filtrated dry air "ISO Grade 1.3.2".

⚠ CAUTION : **Air Quality:**

(1) Bad quality air makes its characteristics and durability worse.

- For the pneumatic source, use cleaned air from which the solids, water and oil contents were eliminated sufficiently, using an air dryer, filter and oil mist filter



- Also, where control pressure is reduced, for example, secondary air is discharged from the exhaust port (R) via the EVT interior. If the secondary piping and load side interior are stained, the equipment will be adversely affected; for example, the characteristics are downgraded; it is, therefore, necessary to make efforts for making the interior piping cleaner.

⚠ CAUTION :

- The pneumatic equipment should be disassembled and re-assembled by the worker who got technical knowledge thereon: this work requires the level of pneumatic skill qualification class 2 or higher.
- When the pneumatic equipment is disassembled and re-assembled, read the instruction manual for the corresponding product carefully and have a thorough understanding of the contents, then start this operations work.

Miscellaneous:

(1) Avoid disassembly; otherwise, accidents may result. It should be understood that the operation after disassembly falls outside the warranty range.

(2) If the power is turned off when the unit is up to control pressure, the pressure will be maintained. In this case, if you need to be in an exhaust state, lower the control pressure first and then turn off the power or use the exhaust valve. However, the maintained pressure is not guaranteed to last for very long.

(3) Since the working pressure is supposed to provide the exact control pressure, it is important for the working pressure not to drop below "Control pressure + Maximum control pressure × 0.1".
In particular, if the primary pressure is supplied for a long period of time with the secondary pressure specified in a range that exceeds 0MPa up to 12% F.S., this will shorten the life span of the product and thus the product should not be used in this way.

(4) The MEVT Series regulators may oscillate if a leak occurs to the secondary side piping. When connecting pipes to the regulator, connect them firmly to prevent leaks. Do not use the regulator for blowing or in any other application where the secondary side can be affected by back pressure. If used in such applications, the regulator will not be able to achieve the specified pressure. Moreover, a large oscillation noise will be heard and the product's durability will be greatly reduced.

4. MAINTENANCE

⚠ WARNING :

(1) Prior to maintenance work, be sure to turn the power OFF and stop supply compressed air to ensure that no residual pressure is present.

- These operations are the conditions required for securing operational safety.

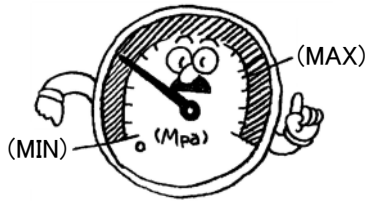
⚠ CAUTION :

(1) Carry out routine and periodic checking as planned so that maintenance control is implemented correctly.

- Unless this maintenance control is satisfactory, the product functions remarkably lower, leading to equipment malfunction and accidents, such as short service life, damage and malfunctioning.

1. Pressure control to supply compressed air

- Check to see if the set pressure is supplied.
  Check to see if the pressure gauge during equipment operation is pointing to the set pressure.



2. Pneumatic filter control

- Check to see if the bowl and element fouling condition is normal.

3. Control for compressed air leak in the piping connection part

- Check to see if the condition of the connection section especially in the movable part is normal.

4. EVT operating condition control

- Check for operation delay and check to see if the exhaust status is normal.

5. Control for pneumatic actuator operating condition

- Check to see if the pneumatic actuator is working smoothly.
  Check to see if the stopped condition at the stroke end is normal.
  Check to see if the section coupled with the load is normal.

5. PRODUCTS

5.1 General outline of the system

MEVT※-※-T9DAR-※-※-3

1) The MEVT※-※-T9DAR-※-※-3 is a PARECT Electro-pneumatic regulator mounted with a slave station to the EVT-T9DAR which can be connected to the open field network DeviceNet and to the CompoBus/D, made by OMRON Corporation, to the DLNK, made by TOYODA MACHINE WORKS Ltd. which works with the DeviceNet. There are some following characteristics.
   (1) It helps to curtail wiring man-hours since only the DeviceNet cable is required to connect it to a PLC.
   (2) Installation can choose which the under or back fixation.
   (3) The HOLD/CLEAR switch can be used to hold or clear the output signal during a communication fault.
   (4) The communication speed can be set to : 125k, 250k, 500k bps.

2) What are DeviceNet and CompoBus/D and DLNK?
   The DeviceNet and CompoBus/D and DLNK configure a multi-vendor network of a multiple bit system where the control and information of the Machine/Line control level exist together. The DeviceNet is maintained and controlled by ODVA (Open DeviceNet Vendor Association) and the CompoBus/D and DLNK is used as a network to work with the DeviceNet.

NOTE) Be sure to read the User's Manual.
This manual mainly describes the MEVT※-※-T9DAR-※-※-3 and the slave station EVT-T9DAR. Also, read the User's Manual for the master station and other slave stations to be connected to this system.
In addition, regarding the PARECT Electro-pneumatic Regulator, please read this manual and the above manuals carefully to fully understand the functions and performance of the product to be able to use it properly.

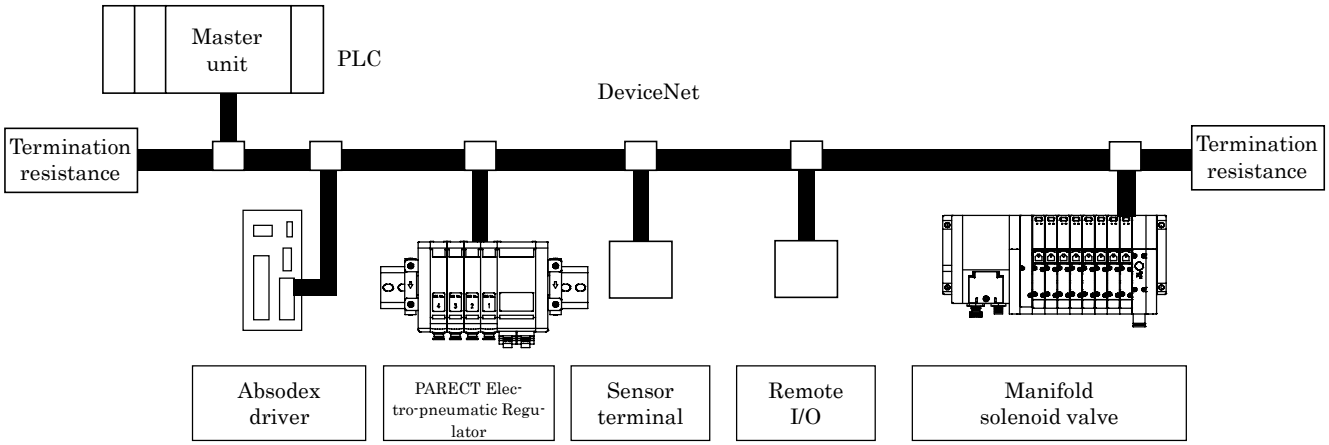
5.2 Structure of the System

This system chiefly consists of PLC body, Master unit, the PARECT Electro-pneumatic regulator MEVT※-※-T9DAR-※-※-3 and peripheral equipment.

- Combination of PLC and Master unit

PLC maker	Compatible PLC	Type of Master unit
OMRON Corporation	SYSMAC CS series SYSMAC CJ series SYSMAC CV series SYSMAC α series SYSMAC C200HS series Others	Model CS1W-DRM21 Model CJ1W-DRM21 Model CVM1-DRM21-V1 Model C200HW-DRM21-V1 Model ITNC-EI□01-DRM (PLC with master) Model 3G8B3-DRM21 (VME board)
TOYODA MACHINE WORKS Ltd.	PC3J / 2J series PC3JD PC2F / PC2FS	THK-5398 TIC-5642 (PLC with master) TFU-5359
Others DeviceNet devices		

- Fundamental structure of system



5.3 Specifications

1) PARECT Electro-pneumatic Regulator (Individual) ※1

Model / Item		EVT100	EVT500
Media		Cleaned air (equivalent to ISO 1. 3. 2)	
Max. working pressure		200kPa	0.7MPa
Min. working pressure		Control pressure ＋ Max. control pressure × 0.1	
Proof pressure	Inlet side	300kPa	1.05 MPa
	Outlet side	150kPa	0.75MPa
Pressure control range		0 to 100kPa	0 to 0.5MPa
Power supply voltage		DC24V±10% (Stabilized power supply with a ripple rate of 1% or less)	
Consumption current		0.1A or lower	
Insulation resistance		100MΩ (DC500V megger) or more	
Withstand voltage		AC 1500V 1 minute	
Hysteresis ※2, 3		0.4% F.S. or less	
Linearity ※2, 3		±0.5% F.S. or less	
Resolution ※2, 3		0.1% F.S. or less	
Repeatability ※2, 3		0.3% F.S. or less	
Temperature characteristic	Zero point fluctuation	0.15% F.S. / or less	
	Span fluctuation	0.07% F.S. / or less	
Max. flow rate (ANR) ※4		2L / min	6L / min
Step response ※5, 6	No load	0.1s or less	
	15cm³ load	0.5s or less	
Ambient temperature		5 to 50℃	
Fluid temperature		5 to 50℃	
Lubrication		Nil	
Indicator ※7		Green/Red LED	
Installation position		Free	
Working environment		No corrosive gas	
Dimensions		W14×D75×H75	
Mass (body)		80g	

※1： The above specifications are valid when the product is powered by 24±0.15VDC at normal temperature.

※2： Accuracy of serial transmission department is not included.

※3： These specifications are valid at a working pressure which is "1.1 times the maximum control pressure" (EVT100：110kPa, EVT500：0.55MPa) and control pressure is from 10 to 100%. It is also assumed that the secondary side circuit constitutes a closed circuit. If the product is used for such purposes as blowing, for example, a pressure fluctuation may occur.

※4： Working pressure：Maximum operating pressure, Control pressure：Maximum control pressure

※5： Working pressure：Maximum working pressure, Step rate：
- 50% F.S. → 100% F.S.
- 50% F.S. → 60% F.S.
- 50% F.S. → 40% F.S.

※6： Serial transmission delay is not included.

※7： Indicator is for a rough standard. Accuracy is not guaranteed.

2) PARECT Electro-pneumatic Regulator (Manifold specifications)

Item		Specifications
Manifold type		Block manifold
Installation type		DIN rail mount type
Air supply and exhaust		Concentrated supply and exhaust
Max. manifold number		12 ※8, 9
Port size	Output port (A)	φ4、φ6 Push-in joint
	Input port (P) Exhaust port (R)	φ4、φ6 Push-in joint

※8： Slave station is possible installation to maximum 3 units to one manifold.

※9： PARECT Electro-pneumatic regulator maximum 4 units to one slave station.

3) Slave station specification

Item		Specifications
Power supply voltage (Slave side)		DC24V±10% (Stabilized power supply with a ripple rate of 1% or less)
Consumption current (Slave side)		60mA or lower (Except for load current)
Power supply voltage (Communication side)		DC11.0 to 25.0V
Consumption current (Communication side)		50mA or lower
Ambient temperature		5 to 50℃
Ambient humidity		30 to 85%RH (No dew fall)
Working environment		No corrosive gas
Object of communication		DeviceNet conformance
Transmission speed		125k/250k/500k bps (Selectable by switch)
Max. number of Input / Output (AD/DA)		4 / 4
DA output	Pressure set ting data	12 bit
	Accuracy	±1%F.S. or less (Accuracy of EVT is not included.)
AD input	Pressure monitoring data	12 bit
	Accuracy	±6%F.S. or less (Accuracy of EVT's monitoring voltage is included.)
Fuse		Slave power supply：24V 2A (No exchange) Communication power supply：24V 1A (No exchange)

⚠ CAUTION：

- Incorrect address settings of serial transmission slave stations could cause the EVT and the actuator to malfunction. Before using the product, check the set addresses of the slave stations.
- 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.
- For operation of serial transmission slave stations, read the communication system operation manual carefully.
- This product works only on DC. Use this product as per the specified supply voltage.
- The output data (pressure setting) is placed in the cleared state until I/O communication is started after power-ON.

4) DeviceNet sending and receiving data

This product transmits and receives (pressure setting and pressure monitoring) data of the EVT according to the Poll message.

Also, where no configurator is used in OMRON's PLC, PLC CH is occupied by the number of EVT stations from the set address.

Transmit data volume (Pressure set data)

= Number of EVT × 2 bytes ※

Receive data volume (Pressure monitor data)

= Number of EVT × 2 bytes ※ (1 byte = 8 bits)

※ Number of EVT … Number of EVT being connected when the power was supplied to EVT-T9D.

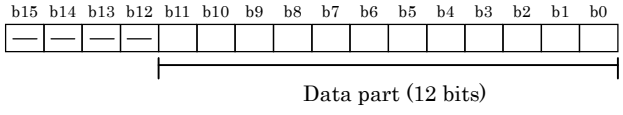
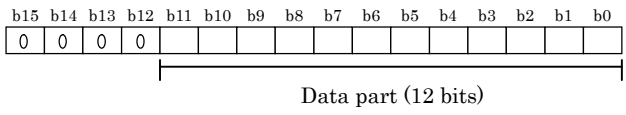
In normal operation, make connections from REG No. 1 (right side). Where this product is not used from the right side, the final REG No. to which EVT is connected corresponds to the number of EVT.

Example: Where one EVT was connected to REG No. 4, the number of EVT stations is recognized as "4".

(The data area of REG Nos. 1 to 3 becomes "vacant".)

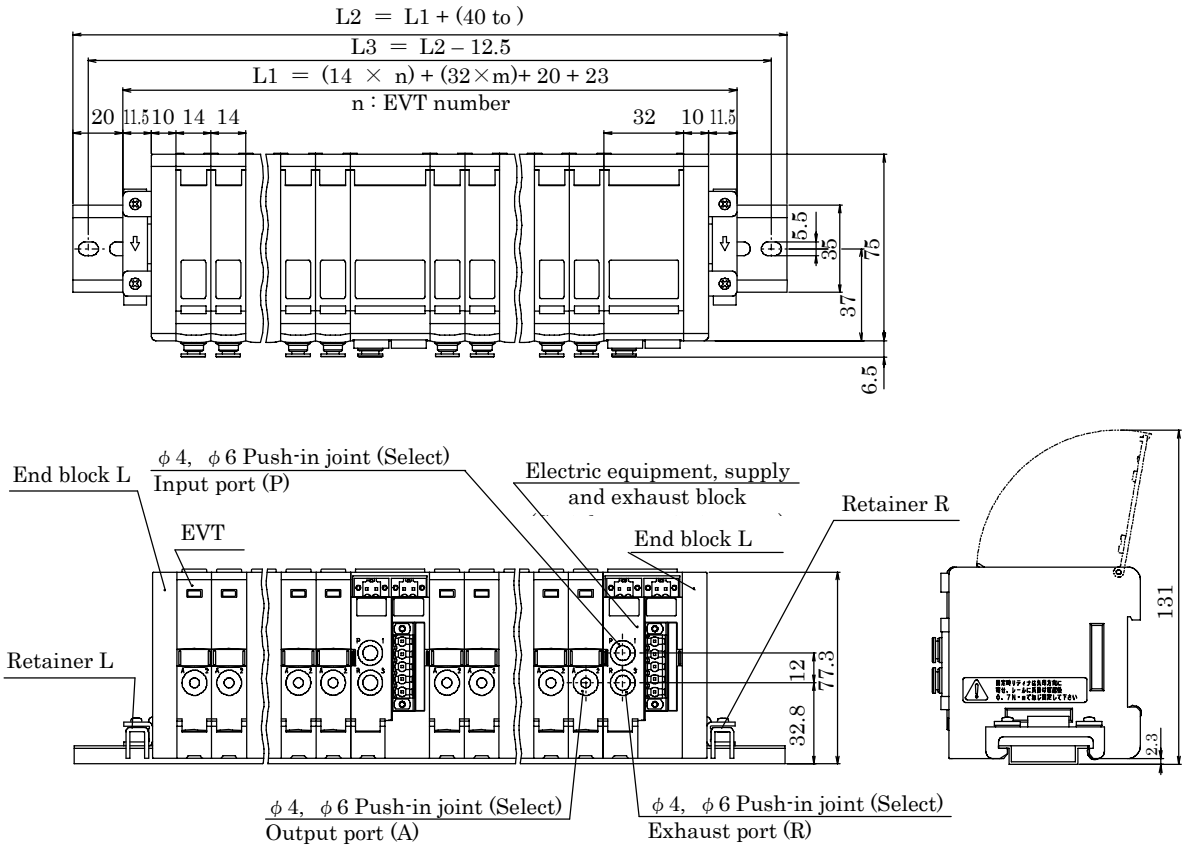
Transmit data volume = 4 EVTs × 2 bytes = 8 bytes

Receive data volume = 4 EVTs × 2 bytes = 8 bytes

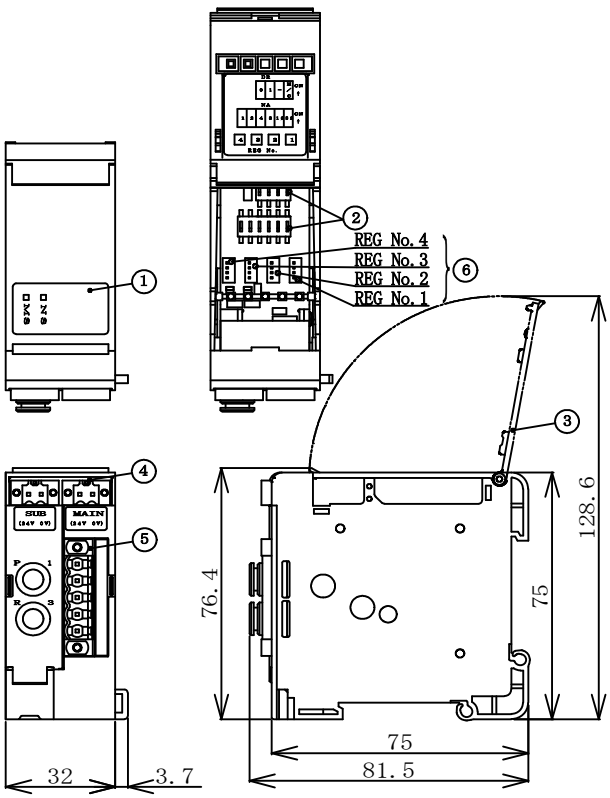
Name	Description
Transmit data (Pressure setting data)	• Write the digital value for EVT pressure control from PLC. Calculation expression: (EVT500) Digital value = EVT setting pressure (MPa) × 4095 / 0.5 (EVT100) Digital value = EVT setting pressure (MPa) × 4095 / 0.1 Example: When it is desired to set the EVT pressure to 0.3MPa (EVT500): Digital value (decimal) = 0.3 × 4095/0.5 = 2457 Digital value (hexadecimal) = 0999Hex 
Receive data (Pressure monitoring data)	• Convert the EVT monitor output to the digital value and store it. Calculation expression: (EVT500) EVT pressure (MPa) = Monitor output (decimal) × 0.5 / 4095 (EVT100) EVT pressure (MPa) = Monitor output (decimal) × 0.1 / 4095 Example: When the monitor output value is 0.555Hex (EVT500): Monitor output value (hexadecimal) = 0555Hex Monitor output value (decimal) = 1365 EVT pressure = 1365 × 0.5/4095 ≒ 0.1667MPa 

5.4 Dimensions

1) Serial transmission type DeviceNet (T9DAR) (unit: mm)



2) Slave station appearance



① Monitor lamps
MS･NS LED indicate the slave station status and the Network status.

② Setting switches
Dip switches set the node address and transmission speed and the output data status in the event of communication error.

③ Cover
Cover protects monitor lamps and setting switches.

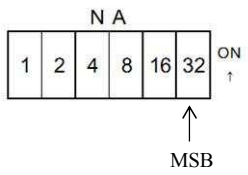
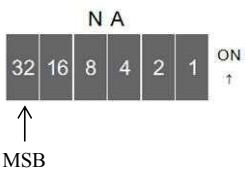
④ Power supply connector
Power (DC24V) for slave station is connected.

⑤ Communication connector
Communication cable for the Network is connected.

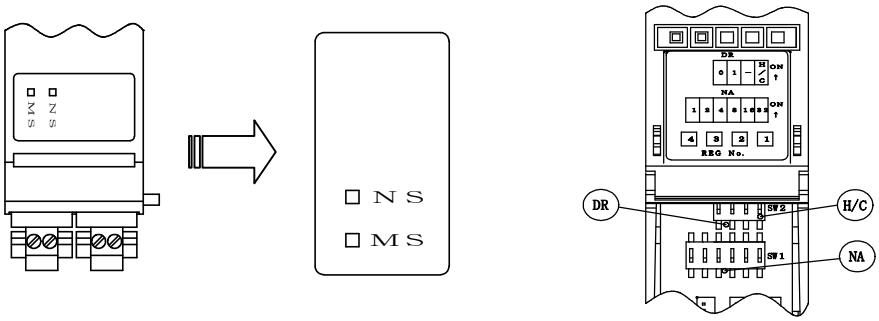
⑥ Valve connector
EVT cable is connected.

5.5 Switch and LED display

・Please open the cover and confirm decal.

Item	Current Product	After Modification
Decal in the NA Switch part		
The cover opened (in the case)		

In the case of Modification, see the instruction manual “SM-A02930-A”.



1) Switches

Dip switches set the node address and transmission speed and the output data status in the event of communication error.

No.	Switch name	Content of Setting
SW1 : No.1 to 6	NA Switch	Set the slave station address in the 0 to 63 range.
SW2 : No.1, 2	DR Switch	Set the transmission speed for the master unit.
SW2 : No.4	H/C Switch	Selects whether to hold (H) or clear (C) the output data status when a communication error occurs.

⚠ CAUTION :

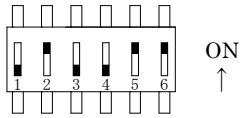
- The setting contents are not recognized when switches are set with the power on. Before changing the switch positions, be sure to cut the power (including the communication power).
- The cover of the slave station unit can easily be opened and closed. Keep the cover closed except when you have to change switch positions or reconnect wires. If you keep the cover open unneces-

sarily, foreign matter may enter the circuit board causing an unexpected failure, or the cover may be broken by accidental contact. While the cover is open as you change switch positions or reconnect wires, be careful not to cause the entry of foreign matter.

- Setting switch has been precisely built. Disorderly handling may cause damage of switch. To set station number, never touch internal circuit printed board.

2) Setting the node address
Set the node address of the slave station in the 0 to 63 range.
(It is not possible to set duplicated node addresses.)

Node address	SW1 Switch No.					
	1 (1)	2 (2)	3 (4)	4 (8)	5 (16)	6 (32)
0	0	0	0	0	0	0
1	1	0	0	0	0	0
2	0	1	0	0	0	0
3	1	1	0	0	0	0
〉	〉					
60	0	0	1	1	1	1
61	1	0	1	1	1	1
62	0	1	1	1	1	1
63	1	1	1	1	1	1



Example Address : 50

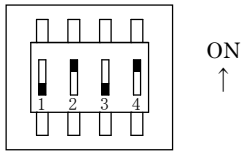
0 : OFF
1 : ON
( ) is indicated on the sheet.

Example To set the node address to "50" :
50 = 1･(0) + 2･(1) + 4･(0) + 8･(0) + 16･(1) + 32･(1)
According to the above formula, turn ON the switch Nos. 6, 5, and 2, and turn OFF other switches (Nos.4, 3, and 1).

3) Setting the Transmission Speeds
Set the transmission speed for the master unit

Transmission speed	SW2 Switch No.	
	1 (DR0)	2 (DR1)
125 kbps	0	0
250 kbps	1	0
500 kbps	0	1
Cannot be set.	1	1

0 : OFF
1 : ON
( ) is indicated on the sheet.



Example) Transmission Speed : 500kbps
Output mode : HOLD

⚠ CAUTION :

- Set the same transmission speed as that set for all nodes (master and slave stations) on the network. If the transmission speed is set incorrectly, slave

stations with a transmission speed different from that of the master station cannot only be communicated, but also cause the communication error to occur in the communication between nodes with the correct transmission speed set.

4) Setting the Output Mode

The output data status if the communication error occurs in this product is set as shown below.

	SW2 Switch No.4	Content of Setting
CLEAR (C)	0 (OFF)	Used to clear to "0" all the output data from the master station in case of a communication error.
HOLD (H)	1 (ON)	Used to hold the output data in the status immediately before the data is output from the master station in case of a communication error.

5) LED indicator

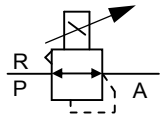
LED indicate this product and the network status. These contents refer to the following table.

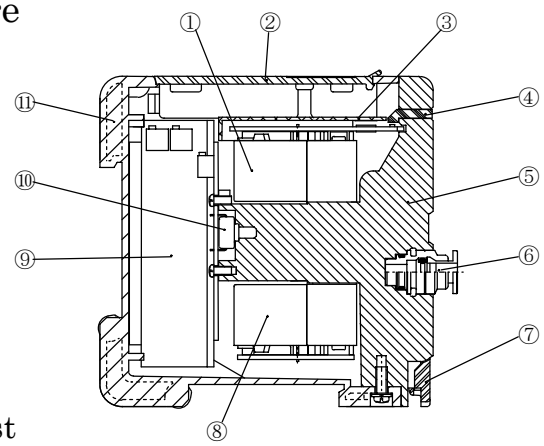
MS LED	NS LED	Description		Note
Green ☼	Green ☼	I/O being communicated.	I/O data being communicated between the master station and the slave station.	This is the normal status.
Green ☼	●	Node address duplication being checked.	Waiting for completion of the node address overlap check by the master station.	In case only a specific slave station is in this state, check that the transmission speed is the same, and re-start the slave station.
Green ☼	Green ◐	Waiting for connection.	State of waiting for established connection from the master station.	
Red ☼	●	Watch dog timer fault	Watch dog timer fault occurred in the slave station.	Replace the slave station.
Red ◐	●	Incorrect switch setting	Setting of switch, such as dip switch, is incorrect.	Check for proper switch setting, and re-start the slave station.
Green ☼	Red ☼	Node address duplication	Master unit and node address overlap.	Re-set the master station while preventing the node address from overlapping, and re-start the slave station.
Green ☼	Red ☼	Busoff detected.	Busoff status (communication stopped due to frequent data error)	Check the following items and re-start the slave station. ・ Check that the transmission speed of the master/slave stations is the same. ・ Check for proper cable length (main line/branch line). ・ Check for broken or loose cables. ・ Check that termination resistance exists only on both ends of the main line. ・ Check for frequent noise.
Green ☼	Red ◐	Communication time out		
●	●	Power off		Check the address and the transmission speed of the master/slave stations, then turn the power on.

※ ☼ : ON ◐ : Flashing ● : OFF

5.6 Inside structure

- EVT



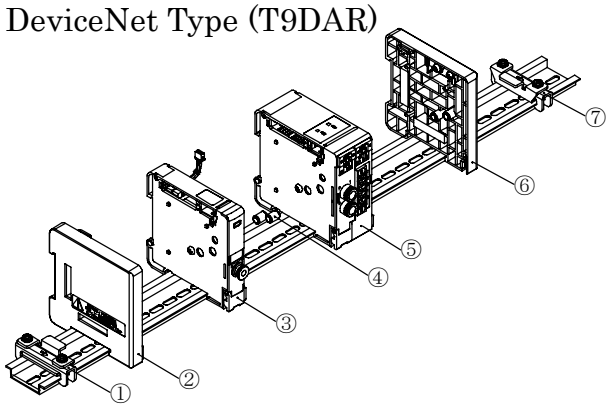


Main component list

No.	Name of parts	Material	No.	Name of parts	Material
1	Valve for supply	—	7	Connecting hook plate	Polyamid
2	Wiring cover	Acryloni-trile-butadiene-styr ene	8	Valve for exhaust	—
3	Valve cover	Acryloni-trile-butadiene-styr ene	9	Controller	—
4	Indicator lens	Polycarbonate	10	Pressure sensor	—
5	Body	Polyamid	11	Case	Acryloni-trile-butadiene-styr ene
6	Push-in joint	—			

5.7 Component

Serial Transmission DeviceNet Type (T9DAR)



Main component list

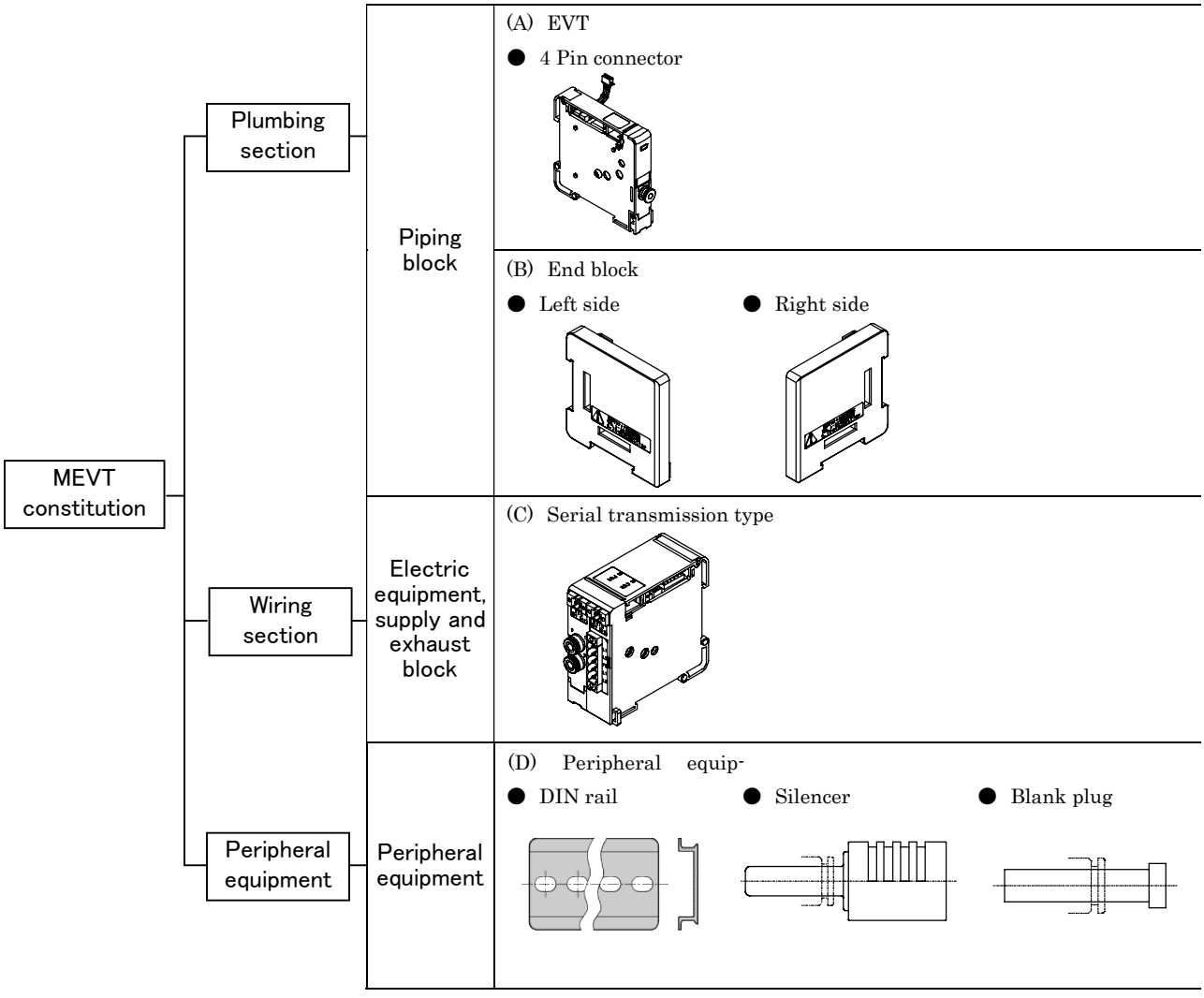
No.	Name of parts	Model no.	No.	Name of parts	Model no.
1	Retainer L	EVT-HL	6	End block R	EVT-ER
2	End block L	EVT-EL	7	Retainer R	EVT-HR
3	EVT	EVT※00			
4	Pipe joint	EVT-P			
5	Electric equipment, supply and exhaust block	EVT-T※			

Mass (g)

Name of parts		Mass	Name of parts		Mass
EVT	EVT※00	80	Electric equipment, supply and exhaust block	T9DAR	145
End block	EVT-EL	30	Retainer	EVT-H※	25
	EVT-ER	30	Pipe joint	EVT-P	—

5.8 Block constitution

- EVT:
  ① The EVT can be installed on the DIN rails by the required number of stations. However, the number of stations is determined, depending on the kind of the slave station.
  (Refer to "PARECT Electropneumatic Regulator (Manifold) Specifications" given in Section 5.3 - (2).)
  ② The EVT is called "1st, 2nd, 3rd …" from the right side with the joint in front.
  ③ REG. No. marked on the EVT wiring cover is assigned as 1, 2, 3 … from the nearer side for each connected electric equipment, supply and exhaust block.
- Electric equipment, supply and exhaust block:
  ① The EVT can be installed in the connecting part of each block freely as required.
- End block:
  ① Set up the EVT on both sides for the serial transmission type.



5.9 Device Profile

About the number of CH (memory) occupied in PLC, refer to section 5.3 (4) “DeviceNet sending and receiving data”.
When connecting to a master station other than that made by OMRON Corporation, ensure you understand the following device profile before use.

Device Profiled

General Device Data	Conforms to DeviceNet Specification	Volume I - Release 2.0 Volume II - Release 2.0	Errata4
	Vendor Name	CKD Corporation	Vendor ID = 201
	Device Profile Name	Slave : Generic	Profile No. = 0
	Product Catalog No.	Manual Number (SM-308282)	
	Product Revision	10.5	
Physical Conformance Data	Network Power Consumption	DC24V 50mA or lower	
	Connector Style	Open-Plug	
	Isolated Physical Layer	YES	
	LED Supported	Module, Network	
	MAC ID Setting	DIP Switch	
	Default MAC ID	1	
	Communication Rate Setting	DIP Switch	
	Communication Rates Supported	125kbit/s, 250kbit/s, 500kbit/s	
Communication Data	Predefined Master/Slave Connection Set	Server for group 2 only	
	Dynamic Connections Supported (UCMM)	NO	
	Fragmented Explicit Messaging Implemented	YES	
		Time out : 2000ms	
		Normal object class : 0x01	
		Instance : 1	
		Attributes : 7	

DeviceNet Required Object Implementation

- Identity Object (0x01)

Object Class	Attributes	None Supported
	Services	None Supported

		ID Description	Get	Set	Value Limit
Object Instance	Attributes	1 Vendor	○	×	201
		2 Device type	○	×	0
		3 Product code	○	×	90
		4 Revision	○	×	10.5
		5 Status(bits supported)	○	×	Bit 0 only
		6 Serial number	○	×	Every unit
		7 Product name	○	×	EVT-T9DA
		8 State	×	×	
		9 Config. Consistency Value	×	×	
		10 Heartbeat Interval	×	×	
	Services	DeviceNet Services	Parameter Options		
		05H Reset	NO		
		0EH Get_Attribute_Single	NO		

- Message Router Object (0x02)

Object Class	Attributes	None Supported
	Services	None Supported
Object Instance	Attributes	None Supported
	Services	None Supported
Vendor Specific Additions		NO

- DeviceNet Object (0x03)

		ID Description	Get	Set	Value Limit
Object Class	Attributes	1 Revision	○	×	
		2 Max instance	×	×	
		3 Number of instances	×	×	
		4 Optional attribute list	×	×	
		5 Optional service list	×	×	
		6 Max ID class attributes	×	×	
		7 Max ID of instance attributes	×	×	
	Services	DeviceNet Services	Parameter Options		
		0EH Get_Attribute_Single	NO		

		ID Description	Get	Set	Value Limit
Object Instance	Attributes	1 MAC ID	○	×	
		2 Baud rate	○	×	
		3 BOI	○	×	00H
		4 Bus-off counter	×	×	
		5 Allocation information	○	×	
		6 MAC ID switch changed	×	×	
		7 Baud rate switch changed	×	×	
		8 MAC ID switch value	×	×	
		9 Baud rate switch value	×	×	
	Services	DeviceNet Services	Parameter Options		
		0EH Get_Attribute_Single	NO		
		10H Set_Attribute_Single	NO		
		4BH Allocate M/S connection set	NO		
		4CH Release M/S connection set	NO		

- Assembly Object (0x04)

Object Class	Attributes	None Supported
	Services	None Supported

Object Instance		Instance type	Instance Id (s)		
		Static Input	×		
		Static Output	×		
		Static I/O	○		100
		Static Configuration	×		
		Dynamic	×		
	Attributes	ID Description	Get	Set	Value Limit
		1 Number of members in list	×	×	
		2 Member list	×	×	
		3 Data	○	×	
	Services	DeviceNet Services	Parameter Options		
		0EH Get_Attribute_Single	NO		

- Connection Object (0x05)

Object Class	Attributes	None Supported
	Services	None Supported
	Total Active Connections Possible	1

Object Instance 1	Section	Information	Max Instance		
	Instance Type	Explicit Message	1		
	Production Trigger	Cyclic			
	Transport Type	Server			
	Transport Class	3			
	Attributes	ID Description	Get	Set	Value Limit
	Attributes	1 State	○	×	
		2 Instance type	○	×	00H
		3 Transport class trigger	○	×	83H
		4 Produced connection ID	○	×	
		5 Consumed connection ID	○	×	
		6 Initial comm. Characteristics	○	×	21H
		7 Produced connection size	○	×	1200H
		8 Consumed connection size	○	×	1200H
		9 Expected packet rate	○	○	
		12 Watchdog time-out action	○	×	01
		13 Produced connection path length	○	×	00
		14 Produced connection path	○	×	
		15 Consumed connection path length	○	×	00
		16 Consumed connection path	○	×	
		17 Production inhibit time	○	×	00
	Services	DeviceNet Services	Parameter Options		
		05H Reset	NO		
		0EH Get_Attribute_Single	NO		
		10H Set_Attribute_Single	NO		

	Section	Information	Max Instance		
Object Instance 2	Instance Type	Polled I/O	1		
	Production Trigger	Cyclic			
	Transport Type	Server			
	Transport Class	2			
	Attributes	ID Description	Get	Set	Value Limit
		1 State	○	×	
		2 Instance type	○	×	01H
		3 Transport class trigger	○	×	82H
		4 Produced connection ID	○	×	
		5 Consumed connection ID	○	×	
		6 Initial comm. Characteristics	○	×	01H
		7 Produced connection size	○	×	※1
		8 Consumed connection size	○	×	※1
		9 Expected packed rate	○	×	
		12 Watchdog time-out action	○	×	
		13 Produced connection path length	○	×	06
		14 Produced connection path	○	×	20_04_24_64_ 30_03
		15 Consumed connection path length	○	×	06
		16 Consumed connection path	○	×	20_04_24_64_ 30_03
		17 Production inhibit time	○	×	00
	Services	DeviceNet Services	Parameter Options		
		05H Reset	NO		
		0EH Get_Attribute_Single	NO		
		10H Set_Attribute_Single	NO		

※1 The value varies with the number of connected EVT.
(Refer to 5.3 (4) DeviceNet sending and receiving data)
Number = 1 0200H
Number = 2 0400H
Number = 3 0600H
Number = 4 0800H

	Section	Information	Max Instance		
Object Instance 3	Instance Type	Bit Strobed I/O	1		
	Production Trigger	Cyclic			
	Transport Type	Server			
	Transport Class	2			
	Attributes	ID Description	Get	Set	Value Limit
		1 State	○	×	
		2 Instance type	○	×	01H
		3 Transport class trigger	○	×	82H
		4 Produced connection ID	○	×	
		5 Consumed connection ID	○	×	
		6 Initial comm. Characteristics	○	×	01H
		7 Produced connection size	○	×	※1
		8 Consumed connection size	○	×	0100H
		9 Expected packed rate	○	×	
		12 Watchdog time-out action	○	×	
		13 Produced connection path length	○	×	06
		14 Produced connection path	○	×	20_04_24_64_ 30_03
		15 Consumed connection path length	○	×	06
		16 Consumed connection path	○	×	20_04_24_64_ 30_03
		17 Production inhibit time	○	×	00
	Services	DeviceNet Services	Parameter Options		
		05H Reset	NO		
		0EH Get_Attribute_Single	NO		
		10H Set_Attribute_Single	NO		

※1 The value varies with the number of connected EVT.
(Refer to 5.3 (4) DeviceNet sending and receiving data)
Number = 1 0200H
Number = 2 0400H
Number = 3 0600H
Number = 4 0800H

5.10 Abnormality and Corrective Action of the Slave Station

The troubleshooting of this slave station is required as a system, not as a unit. For this slave station, all malfunctions are displayed with LED according to the DeviceNet specifications. When an abnormal condition occurred, proper and prompt countermeasures are to be taken by judging the abnormal contents, based on the slave station LED display and master unit display.

The abnormality and its remedy for this slave station are described below.

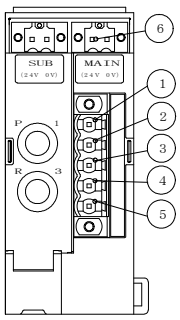
MS LED	NS LED	Description		Note
Green ☼	Green ☼	I/O being communicated.	I/O data being communicated between the master station and the slave station.	This is the normal status.
Green ☼	●	Node address duplication being checked.	Waiting for completion of the node address overlap check by the master station.	In case only a specific slave station is in this state, check that the transmission speed is the same, and re-start the slave station.
Green ☼	Green ◐	Waiting for connection.	State of waiting for established connection from the master station.	
Red ☼	●	Watch dog timer fault	Watch dog timer fault occurred in the slave station.	Replace the slave station.
Red ◐	●	Incorrect switch setting	Setting of switch, such as dip switch, is incorrect.	Check for proper switch setting, and re-start the slave station.
Green ☼	Red ☼	Node address duplication	Master unit and node address overlap.	Re-set the master station while preventing the node address from overlapping, and re-start the slave station.
Green ☼	Red ☼	Busoff detected.	Busoff status (communication stopped due to frequent data error)	Check the following items and re-start the slave station. ・ Check that the transmission speed of the master/slave stations is the same. ・ Check for proper cable length (main line/branch line). ・ Check for broken or loose cables. ・ Check that termination resistance exists only on both ends of the main line. ・ Check for frequent noise.
Green ☼	Red ◐	Communication time out		
●	●	Power off		Check the address and the transmission speed of the master/slave stations, then turn the power on.

※ ☼ : ON ◐ : Flashing ● : OFF

6. WIRING

The Slave station has a network connector. The network cable is connected to this network connector.
(Refer to Tightening torque "6.5 Screw and tightening torque".)

	Symbol	Function	Objects be connected	Indicated Cable Color
1	V−	Communication power (−)	Apply source of power with less noise, such as DC11V to 25V.	Black
2	CAN_L	Communication terminal (L)	Connect this terminal to the master or other slave communication line "CAN_L"	Blue
3	Drain	Drain terminal	Drain cable	Bare
4	CAN_H	Communication terminal (H)	Connect this terminal to the master or other slave communication line "CAN_H"	White
5	V+	Communication power (+)	Apply source of power with less noise, such as DC11V to 25V.	Red
6	MAIN	Slave station power supply (Included load power supply)	DC24V±10% (Stabilized power supply with a ripple rate of 1% or less)	24V
	SUB※			0V



※ MAIN is connected to SUB inside the slave station.

⚠ CAUTION :

- Do not touch electric wiring connections (exposed live pats) : this will cause an electric shock. During wiring, keep the power off. Also, do not touch these live parts with wet hands.
- Take care so that the tensile force and impact force are not applied to the power line and signal line. In the case of a long wiring, unexpected force may be generated due to its dead weight and shock, thereby causing damage to the connector and equipment. In this case, proper action should be taken therefor; for example, fix the wiring to the equipment halfway.
- When a cable is inserted into the connector, it may intrude into not the connector tightening side, but the other side; it is, therefore, necessary to keep the cable fixing screw loose enough.
- When inserting the power connector and communication connector, do not forget to tighten the connector fixing screw firmly. Both connectors, if only inserted, are detached, causing malfunctions. When no connector fixing screw is provided, ensure that the connector jaw is hooked securely.

6.1 Communication line

This system uses a private device net cable as the communication line.
The following are the recommended cables.

Model	Specification	Makers
Model DCA2-5C10	THICK cable	OMRON Corporation
Model DCA1-5C10	THIN cable	OMRON Corporation
KND-SB (THICK)	THICK cable	KURAMO ELECTRIC Co., LTD.
KND-SB (THIN)	THIN cable	KURAMO ELECTRIC Co., LTD.
TDN18U	THICK cable	Showa Electric Wire and Cable
TDN24U	THIN cable	Showa Electric Wire and Cable
TDN18UF	THICK cable、bend resist type	Showa Electric Wire and Cable
TDN24UF	THIN cable)、bend resist type	Showa Electric Wire and Cable
DN-THICK	THICK cable	Sumitomo Wiring Systems, Ltd.
DN-THIN	THIN cable	Sumitomo Wiring Systems, Ltd.
DSEFV-ESLAB (THICK)	THICK cable	Daiden Co., Ltd.
DSEFV-ESLAB (THIN)	THIN cable	Daiden Co., Ltd.
DVN18	THICK cable	Nihon Electric Wire & cable Co., Ltd.
DVN24	THIN cable	Nihon Electric Wire & cable Co., Ltd.
1485C-P1-A50	THICK cable	Allen-Bradly
1485C-P1-C150	THIN cable	Allen-Bradly

6.2 Transmission distance

In DeviceNet system, the communication distance is as shown in the table below, depending on the communication speed.

Communication speed	Trunk Distance	Drop Length	Cumulative Drop Length
500k bps	100m or less ※	6m or less	39m or less
250k bps	250m or less ※	6m or less	78m or less
125k bps	500m or less ※	6m or less	156m or less

※ In the case of thick cable. In the case of thin cable, 100m or less.

⚠ CAUTION : • Since the communication distance changes, depending on the communication speed and cable thickness, check the communication system operation manual carefully.

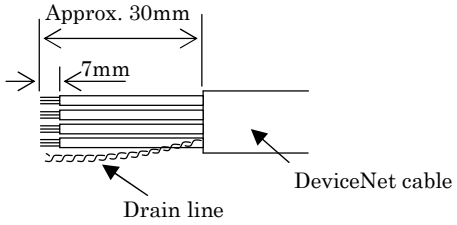
6.3 Communication line wiring

When connecting the DeviceNet cable to the slave station, follow the description below:

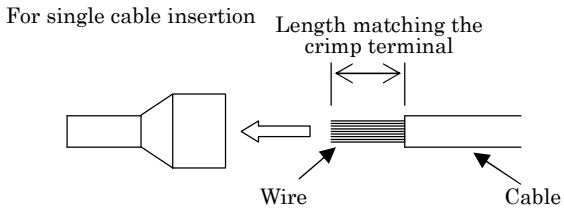
① After checking for safety, turn the slave station power "OFF".

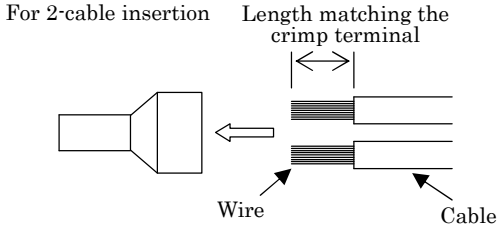
② Peel the wire covering without cutting it halfway. (Wire covering peeling length: 7mm) Since contact failure may be caused if the wire thus peeled off is finished by solder, connect the wire after complete stranding conductors without finishing by solder.
Also, the following is recommendable as a crimp terminal. Select a crimp terminal with the size matching the cable used. It should be noted that the peeling size for wire covering differs, depending on the type of crimp terminal.

- Where no crimp terminal is used:



- Where a crimp terminal is used:





● Crimp terminal:
Description:
Bar terminal with plastics insulation collar
Type No.:
AI Series
Manufacturer:
Phoenix Contact

● Dedicated crimp terminal tool:
Description:
Crimp tool
Type No.:
AZ3
Manufacturer:
Phoenix Contact

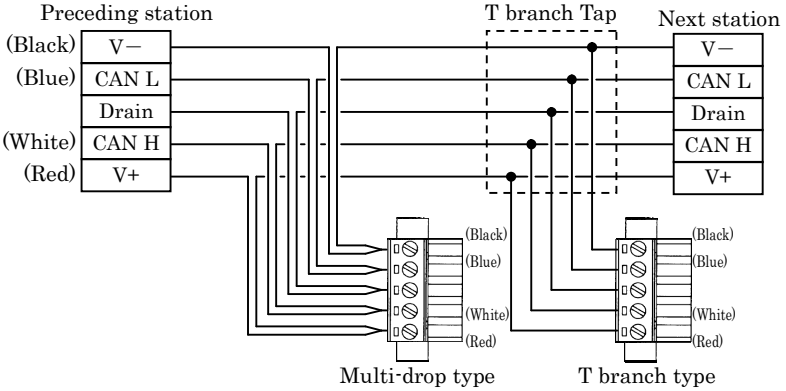
● Crimp terminal:
Description:
Twin-bar terminal with plastics insulation collar
Type No.:
AI-TWIN Series
Manufacturer:
Phoenix Contact

● Dedicated crimp terminal tool:
Description:
Crimp tool
Type No.:
AZ3
Manufacturer:
Phoenix Contact

③ Insert the CAN H (white), CAN L (blue), V+ (red), V- (black) and Drain (bare) wires of DeviceNet cable into each hole (CAN H, CAN L, V+, V- & Drain) while taking care of the direction of the supplied connecting connector (MSTB2.5/5-STF5.08 Au). (Refer to the figure below.)

④ Firmly tighten each wire with the cable fixing screw of connecting connector. (Adequate tightening torque: 0.5N・m)

⑤ Ensuring that the cable color corresponds to the marking color on this product each other, insert the connecting connector into the slave station and tighten the connector fixing screw firmly. (Adequate tightening torque: 0.3N・m)

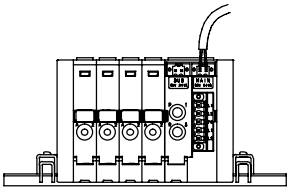


⚠ CAUTION :

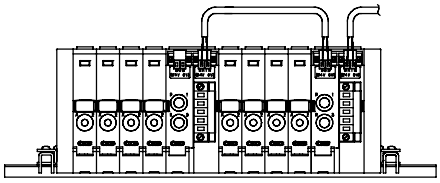
- For the communication line, be sure to use the cable conforming to the DeviceNet specification.
- Maintain a sufficient bending radius for the communication line: avoid bending the communication line unnecessarily.
- With the communication line at least 30cm apart from other wirings, lay the line. If this line is laid in the same duct with the wiring having many high-frequency components, such as the high-frequency line, power line and inverter, malfunctions may result.

6.4 Power line wiring

In the case of a single electric equipment, supply and exhaust block (4 MEVT's max.):
Input the power line to the MAIN power terminal.



In the case of one or more electric equipment, supply and exhaust blocks (5 MEVT's min.):
Input the power line into the first MAIN power terminal and input it into the another MAIN power terminal via SUB power terminal as shown below.

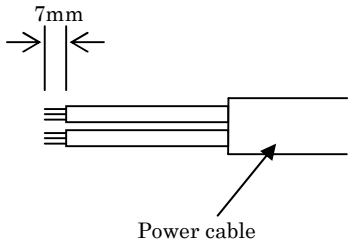


Power line (Wire size: 0.5 to 1.5mm^2):

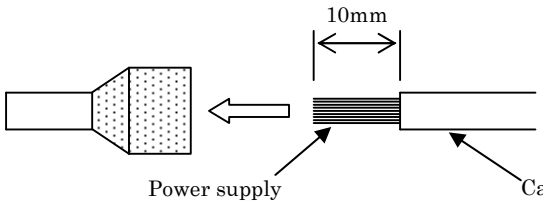
Connect the power cable to this product according to the following procedure.

1. After checking for safety, turn the slave station power "OFF".
2. Remove the cable covering without cutting the cable halfway. (Wire peeling length: 7mm)
   Since there is a possibility of poor contact in the exposed wire if finished by solder, the wire must be connected with its covering separated without finishing by solder.
   Also, the following is recommended as a crimp terminal. (The wire peeling length required when a crimp terminal is mounted is 10mm.)

◇ When no crimp terminal is used:



◇ When a crimp terminal is used:



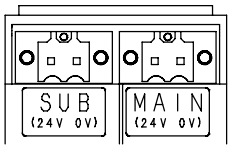
Recommendable crimp terminal:
Description: Sleeve with insulation cover
Type No. : H□/14 (with insulation cover)
(□ = 0.5, 0.75, 1 & 1.5)
Manufacturer: Weidmuller Japan

Dedicated crimp terminal tool:
Description: Crimper
Type No.: PZ1.5 or PZ4
Manufacturer: Weidmuller Japan

3. Fix the power cable to the power terminal by the adequate tightening torque of 0.5N・m while matching the polarity: 24V line to 24V terminal and 0V line to 0V terminal.
   Supplied connector : BL3.5/2F (with connector fixing screw) Weidmuller Japan
   In this product (T9DAR), the slave station (unit) power supply and load (EVT) power supply cannot be separated from each other, which are common.

⚠ CAUTION :

- Do not touch electric wiring connections (exposed live pats) : this will cause an electric shock. During wiring, keep the power off. Also, do not touch these live parts with wet hands.
- After checking the slave station terminal polarity and cable terminal polarity, connect the power supply. (Left side: 24V – right side: 0V as illustrated below)

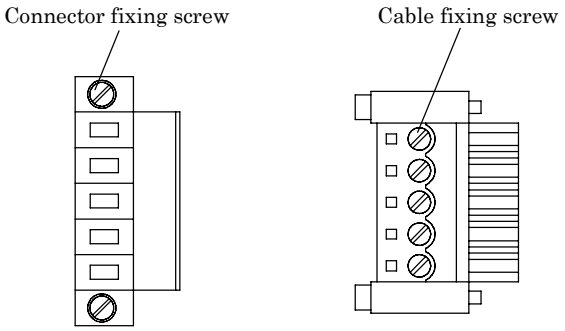


- Select a power cable after calculating the current consumption.
- Where the power is supplied to several slave stations from one power supply, select a cable and make wiring connections in consideration of voltage drop caused by electric wires.
- When voltage drop is unavoidable, always take adequate action; for example, divide the power line into plural systems or provide another power supply in order to maintain the specified supply voltage.
- To avoid malfunction caused by electrical noise:
  - Insert a line filter into the AC power line.
  - Use a surge suppresser like a CR or diode in the inductive load (solenoid valve, relay and so on) to remove any noise at the source.
  - Keep the MEVT series cables as far away as possible from power line for motor.
  - In the case of the influence of noise, each slave station can possibly be supplied the power and wire individually.
  - Wire the power line as short as possible.
  - Don't share the power with devices that generate the noise, such as an inverter motor.
  - Don't wire the power line or communication line in parallel with other lines.
- Since the SUB power terminal is only for crossover wiring, use only the MAIN power terminal in individual wiring. Since application of power supply to the SUB power terminal and MAIN power terminal together may cause malfunctions, avoid such wiring.
- The MAIN and SUB power terminals are interconnected inside.
  When the SUB power terminal is not used, always keep the supplied connector connected to avoid shorts.
- The SUB power terminal can be used for transfer wiring to other devices. However, contain the current passing from the MAIN terminal to the SUB terminal, within 1.5A. The unusual rise of temperature by the over current will break the MEVT. Be careful to avoid noise effects of other devices.

6.5 Screw and tightening torque

The adequate torque to tighten screws used in this product are shown below.

	Cable fixing screw	Connector fixing screw
Adequate tightening torque	0.5N·m	0.3N·m



6.6 Maintenance

1) How to attach the connector

1. Turn the slave station power “OFF”.
2. Set the slave station address and the output in the event of communication error.
3. Fix the power connector and the communication connector tightly.
4. After checking for safety, turn the slave station power “ON”.

⚠ CAUTION :
- In turning the slave station “ON”, check the slave station address and the output or the like in the event of communication error.

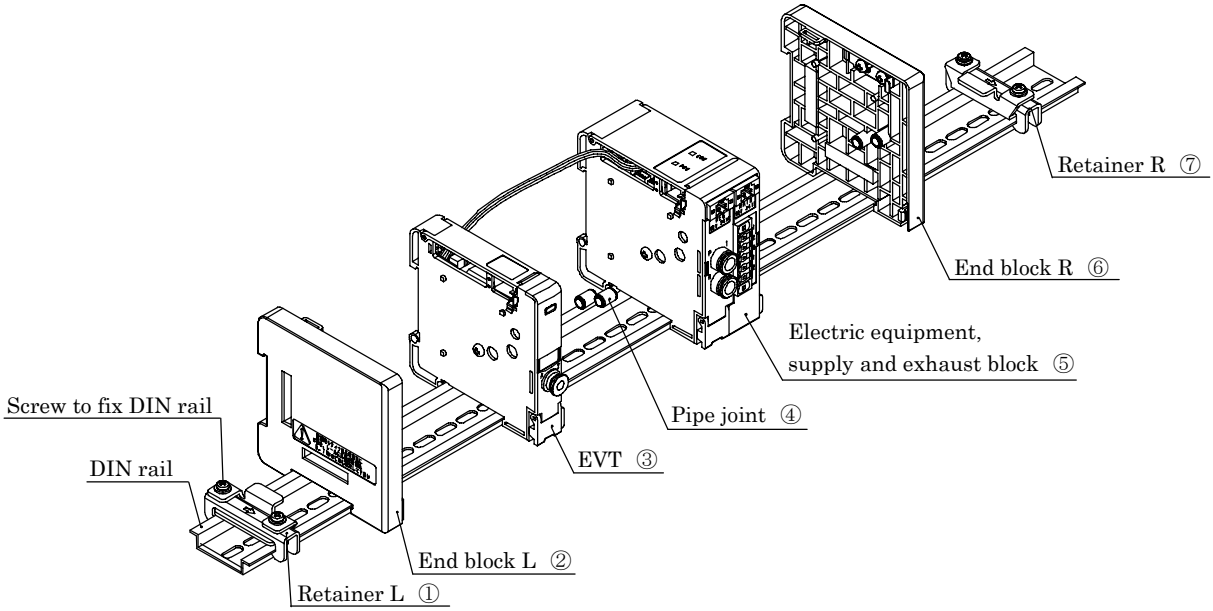
2) How to remove the connector

1. After checking for safety, turn the slave station power “OFF”.
2. After it is confirmed that the power of the slave station is off, remove the power connector and the communication connector.

⚠ CAUTION :
- Avoid pulling the cable or connector unnecessarily; otherwise, wire disconnection and damage may result.
- The touch to the electrical wiring connection part (bare live part) may give rise to electric shocks.

7. HOW TO EXTEND EVT

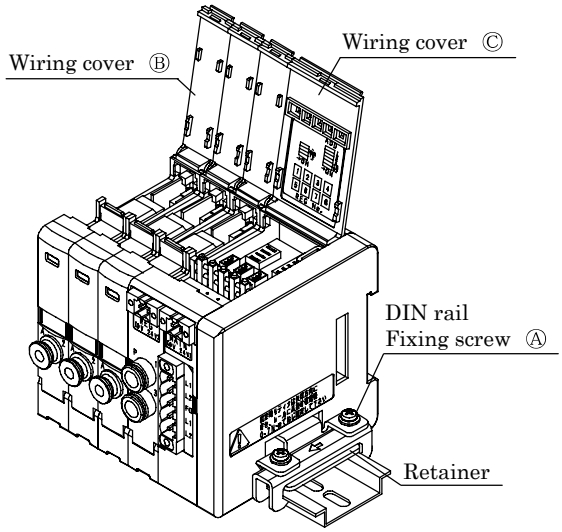
Disassembled MEVT



How To Extend EVT

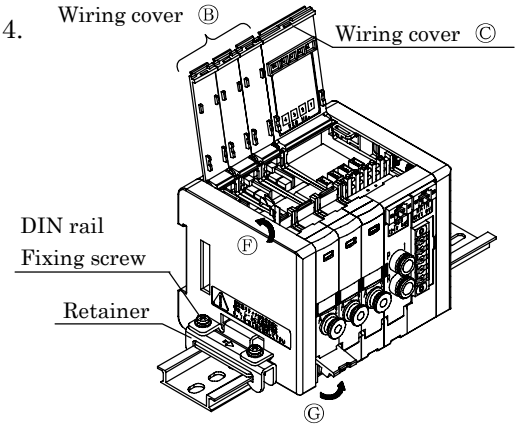
1. Loosen screws to fix DIN railⒶ.
2. Open the wiring coverⒷ.
3. Open the wiring coverⒸ.

Serial transmission type (T9DAR)

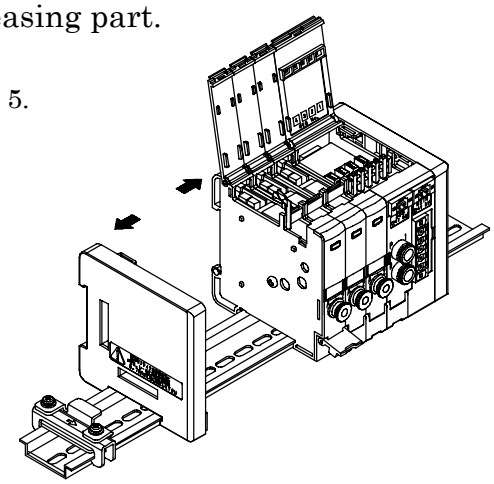


4. Unhook the connecting hook spring Ⓕ and connecting hook plate Ⓖ in the place where it is desired to increase the station to separate the blocks each other.
5. Separate the blocks in the station increasing part.

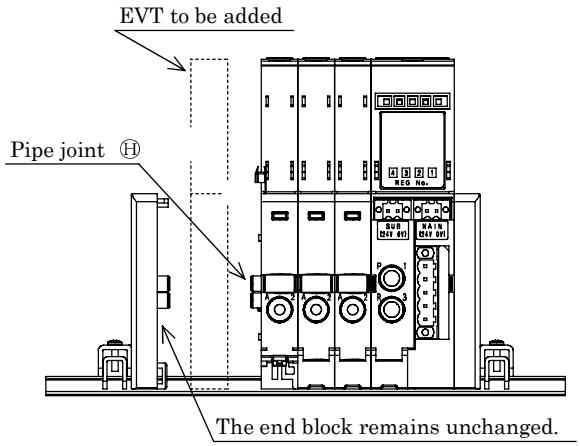
4.



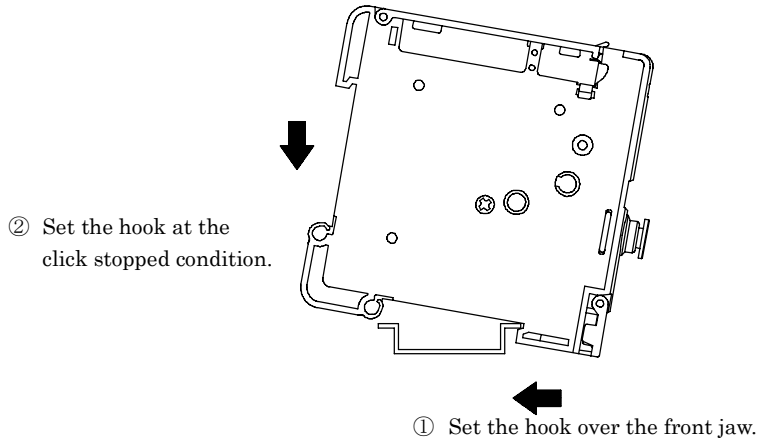
5.



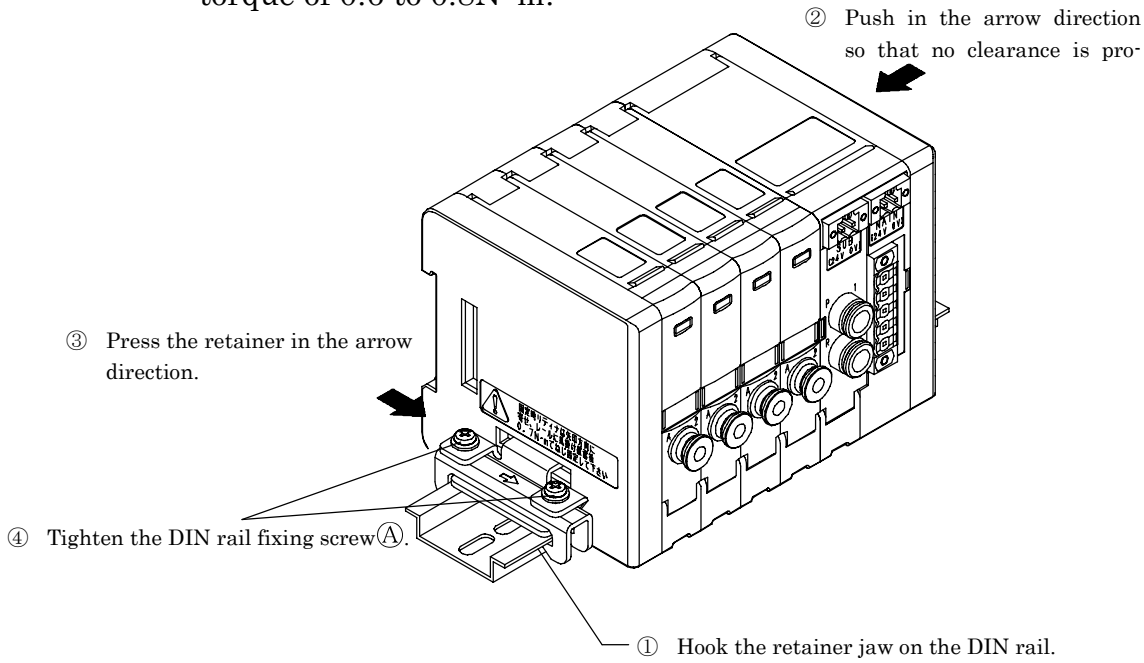
6. Insert the pipe joint Ⓗ (2pcs.) into the input (P) and exhaust (R) ports in the separated block.
   NOTE: The separation part, as shown below, is in the condition such that 4pipe joints Ⓗ (2pcs. each from both sides) are protruded.



7. Attach the added EVT to the DIN rails.



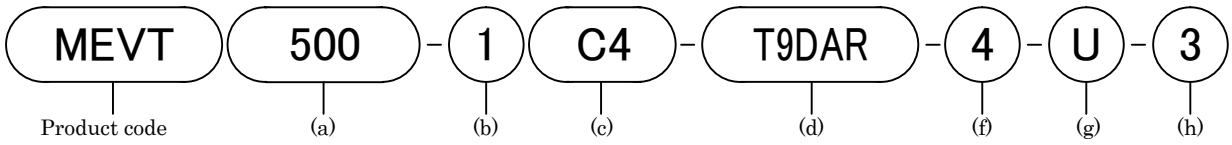
8. Press the end block so that no clearance is produced between the blocks, and hook the connecting hook springⒻ and connecting hook plateⒼ for coupling.
9. Insert the extended EVT signal line into the internal connector in the electric equipment, supply & exhaust block.
10. Close the wiring coverⒸ.
11. Close the wiring coverⒷ while giving care to signal line entangling.
12. ① Hook the retainer jaw on the DIN rail.
    ② While pressing the end block so that no clearance is produced between the blocks,
    ③ Press the retainer in the arrow direction, then
    ④ Tighten the DIN rail fixing screwⒶ by the recommendable tightening torque of 0.6 to 0.8N･m.



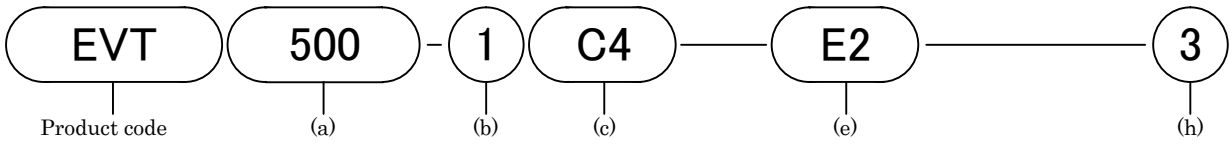
8. PRODUCT CODE

8.1 How to order

Manifold



Individual



Symbol	Description
(a) Control pressure range	
100	0 to 100kPa
500	0 to 0.5MPa
(b) Input signal	
1	0 to 5VDC
(c) Port size (Output port (A))	
C4	ϕ 4 Push-in joint
C6	ϕ 6 Push-in joint
(d) Electric equipment, supply and exhaust block	
T9DAR	Serial transmission type (DeviceNet In / Out = 4 / 4)
(e) Lead wire	
E2	4 Pin connector
(f) Manifold number	
1	1
to	
12	12
(g) DIN rail installation	
U	Under
B	Back
(h) Voltage	
3	DC24V

Precautions in Selecting Model

Note 1: The control input signal of serial transmission DeviceNet type is only 0 to 5V DC.

Note 2: The input (P) & exhaust (R) port size should be designated in the electric equipment, supply & exhaust block.

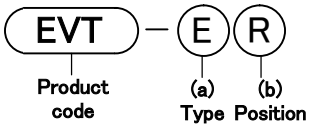
Note 3: The input (P) & output (A) port has a built-in filter.

8.2 Component code

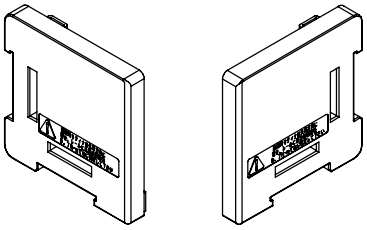
The following are component codes.
Plumbing section

A. EVT
Select codes for individual from the optional table.

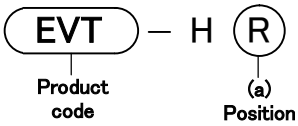
B. End block
In the case of the serial transmission type (T9DAR), install End blocks to both sides of manifold.



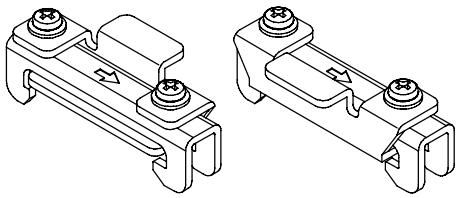
(a) Type		(b) Position	
E	Concentrated exhaust	L	Left
		R	Right



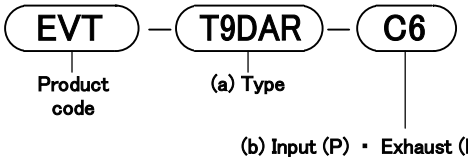
＜Retainer＞
Fix retainers to both sides of manifold.

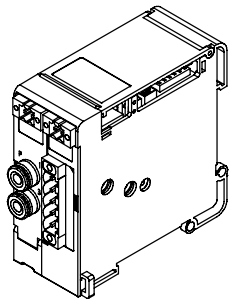


(a) Position	
L	Left
R	Right



C. Electric equipment, supply and exhaust block (Wiring section)



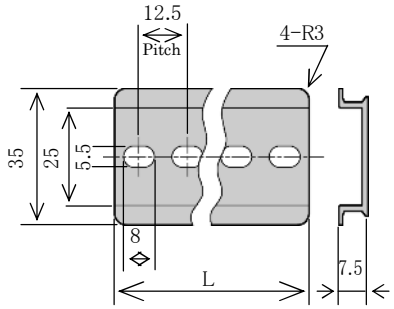


(a) Type		(b) Input (P) ・ Exhaust (R) port size	
T9DAR	DeviceNet Input / output = 4 / 4	C4	ϕ 4 Push-in joint
		C6	ϕ 6 Push-in joint

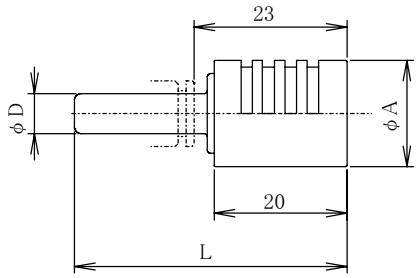
Peripheral equipment　DIN rail, Silencer, Blank plug

● DIN rail

EVT-BAA ＜Length＞

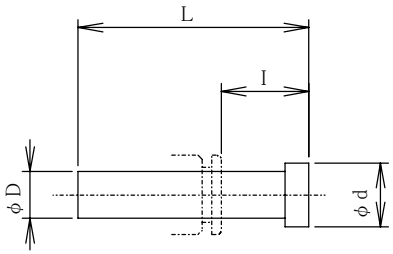


● Silencer



Product code	D	L	A
SLW-H6	6	41	16

● Blank plug



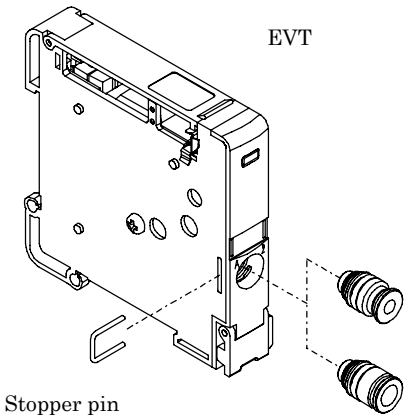
Product code	D	L	I	d
GWP4-B	4	27	9	6
GWP6-B	6	29	11	8

● Push-in joint

Model	Name of parts	Push-in joint Product code
EVT	φ 4 Straight type	4G1- JOINT -C4
	φ 6 Straight type	4G1- JOINT -C6

How to replace push-in joints.

⚠ CAUTION : In changing the push-in joint size, check the procedure and replace the joint.
It should be noted that incorrect mounting causes air leakage or the like.



① Pull out the stopper pin with a screwdriver or the like.
② Pull out the Push-in joint.
※ Take care so that the filter is not detached during this replacement.
③ Insert the joint for replacement vertically until it comes to the end.
④ Insert the stopper pin. Just pull the joint to check for mounting.