

ARM Series

INSTRUCTION MANUAL

TCD210183AB



Thank you for choosing our Autonics product.

Read and understand the instruction manual and manual thoroughly before using the product.

For your safety, read and follow the below safety considerations before using.

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

Keep this instruction manual in a place where you can find easily.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Follow Autonics website for the latest information.

Safety Considerations

- Observe all ‘Safety Considerations’ for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning

Failure to follow instructions may result in serious injury or death.

01. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
Failure to follow this instruction may result in personal injury, economic loss or fire.
02. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
03. **Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.
04. **Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
05. **Check ‘Connections’ before wiring.**
Failure to follow this instruction may result in fire.

⚠ Caution

Failure to follow instructions may result in injury or product damage.

01. **Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
02. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire or electric shock.
03. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
Failure to follow this instruction may result in fire or product damage.
04. **Do not cut off power or disconnect connectors while operating the unit.**
Failure to follow this instruction may result in fire or malfunction.

Cautions during Use

- Follow instructions in ‘Cautions during Use’. Otherwise, it may cause unexpected accidents.
- 24 VDC≐ model power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Use only designated connector and do not apply excessive power when connecting or disconnecting the connectors..
- Keep away from high voltage lines or power lines to prevent inductive noise.
In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Do not connect or disconnect the expansion unit when power is being supplied.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in ‘Specifications’)
 - Altitude max. 2,000 m
 - Pollution degree 2
 - Installation category II

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

AR	①	-	②	③	④	⑤	-	⑥
① Network M: Basic unit - Modbus X: Expansion unit - Modbus / DeviceNet compatible		④ I/O points 08: 8-point		⑤ I/O specifications N: NPN open collector P: PNP open collector		⑥ Terminal type 4S: Sensor connector (4-pin socket)		
② Type D: Digital								
③ I/O configuration I: Input O: Outupt								

Product Components		
Model	ARM-D□08□-4S	ARX-D□08□-4S
Product components	Product, instruction manual	
Network connector	× 1	-
Expansion connector	-	× 1
Terminating resistance	× 2	-

Manual

For proper use of the product, refer to the manuals and be sure to follow the safety considerations in the manuals.
Download the manuals from the Autonics website.

Sold Separately

- Sensor connector: CNE Series

Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
- Same dimensions are applied to both basic and expansion unit.

Expansion connector (for expansion unit)

Rail lock status : mounting with bolt

Rail lock status : mounting on the DIN rail

35mm DIN rail

Connections

- For more information, refer to the 'Specifications.'
- When wiring the communication connector, use AWG 20 cable and tighten the connector screw with a tightening torque of 0.5 N·m.
- Connect terminating resistances (recommended: 120 Ω, 1 % of the metallic film, 1/4 W) on both ends of the network cables. Otherwise, impedance fluctuation could cause communication errors.

NPN open collector

Digital input type

NPN open collector

Digital output type

PNP open collector

Digital input type

PNP open collector

Digital output type

Unit Descriptions

Basic unit

- Network connector**
For setting NODE ADDRESS
- Rotary switch**
For setting NODE ADDRESS
- Status indicator**
For unit status (MS) and network status (NS)
- I/O Status indicator**
For I/O status
- Rail lock**
For the DIN rail and panel mount
- Connector output part**
For connecting the expansion unit
- Sensor connector**
For I/O with the external device
- External power connector**
For connecting the external power

Expansion unit

- Connector input part**
For connecting the basic and expansion units
- I/O status indicator**
For I/O status
- Rail lock**
For the DIN rail and panel mount
- Connector output part**
For connecting the expansion unit
- Sensor connector**
For I/O with the external device
- External power connector**
For connecting the external power

Network connector

No.	Function	Pinout
5	24 VDC≐ (+)	• 5: 24 VDC≐
4	GND	• 4: GND
3	N.C	• 3: N-C
2	B	• 2: B
1	A	• 1: A

I/O status indicator

Input	Green LED, ON
Output	Red LED, ON

Set NODE ADDRESS

- Setting method: Rotary switch / internal EEPROM
- The NODE ADDRESS of the connected unit must not be duplicated.
- When changing the NODE ADDRESS during operation, the unit status (MS) LED flashes in red, and the unit communicates as the address before. To apply the changed NODE ADDRESS, be sure to power on again.
- The communication speed is automatically set to that of the Master (PC, PLC, etc.). When changing the communication speed during operation, the network status (NS) LED flashes in red, and communication is not possible.
Power on again to operate in the normal state.

Rotary switch

01. **Turn the two rotary switches to set the NODE ADDRESS.**
(NODE ADDRESS range: 01 to 99)

- [e.g.]

Rotary switch	X10 (tens digit)	X1 (ones digit)	NODE ADDRESS
	3	3	33

Internal EEPROM

- Turn the two rotary switches to "00."
- During communication status with the Master (PLC or PC), set the desired NODE ADDRESS on the 41029 EEPROM MAC ID parameter.

Installation

Mounting on the DIN rail

- Pull two Rail locks on the rear part of a unit.
- Place the unit on the DIN rail to be mounted.
- Press the Rail locks to fix the unit tightly.

Mounting on the panel

- Pull two rail locks on the rear part of a unit, and there is a fixing bolt hole.
- Place the unit on a panel to be mounted.
- Make a hole on a fixing bolt hole position.
- Fasten the bolt to fix the unit tightly.
(tightening torque: ≤ 0.5 N·m or 1.8 to 2.5 N·m)

Connect Expansion Unit

- Turn OFF the power of a basic unit.
- Remove the cover of the expansion connector (accessory of the expansion unit) with nippers.
- Mount the expansion connector and connector input part of the expansion unit.
- Connect the expansion unit to the connector output part of the basic unit.
- Power on the basic unit, recognizing the expansion unit.

Specifications		
Model	AR□-DI08□-4S	AR□-DO08□-4S
Power supply	Rated voltage: 24 VDC≐, voltage range: 12-28 VDC≐	
Power consumption	≤ 3 W	
I/O points	NPN or PNP input 8-point	
Control I/O	Voltage	10-28 VDC≐ input
	Current	10 mA/point (sensor current: 150 mA/point)
	COMMON method	8-point, common
Number of connected expansion unit	≤ 7 units	
I/O points	≤ 64-point	
Counter function ⁰¹⁾	16 bits low-speed counter (30 CPS)	-
Insulation method	I/O and internal circuit: photocoupler insulation, Modbus to internal bus and internal circuit: insulation, unit power: non-insulation	
Insulation resistance	≥ 200 MΩ (500 VDC≐ megger)	
Noise immunity	±240 VDC≐ the square wave noise (pulse width: 1 μs) by the noise simulator	
Dielectric strength	Between the charging part and the case: 1,000 VAC~ at 50 / 60 Hz for 1 min	
Vibration	1.5 mm amplitude at frequency 10 to 55 Hz in each X, Y, Z direction for 2 hours	
Shock	500 m/s ² (≈ 50 G) in each X, Y, Z direction for 3 times	
Ambient temperature	-10 to 55 °C, storage: -25 to 75 °C (no freezing or condensation)	
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)	
Protection rating	IP20 (IEC standard)	
Protection circuit	Surge, short-circuit, overheat and ESD protection, reverse power protection circuit	
	Overcurrent protection circuit (operation: ≥ 0.17 A)	Overcurrent protection circuit (operation: ≥ 0.7 A)
Indicator	Network status (NS) and unit status (MS) indicator (green, red LED), I/O status indicator (input: green LED, output: red LED)	
Material	Front and body case: PC	
Mounting method	DIN rail or panel mounting	
Certification	CE 标志	
Unit weight (packaged)	Basic unit	≈ 61.8 g (≈ 123.3 g)
	Expansion unit	NPN type: ≈ 56 g (≈ 117.5 g) PNP type: ≈ 57 g (≈ 118.5 g)
		NPN type: ≈ 58 g (≈ 119.5 g) PNP type: ≈ 59 g (≈ 120.5 g)

01) CPS (counter per second): Specification of accepting external signals per second
The digital output type is available to use the counter when using with digital input type.

Communication Interface	
RS485	
Comm. protocol	Modbus RTU
Application standard	Compliance with EIA RS485
Max. connection	32-unit
Medium access	POLL
Comm. method	2-wire half duplex
Comm. distance	≤ 800 m
Comm. speed	2,400 / 4,800 / 9,600 (default) / 19,200 / 38,400 / 57,600 / 115,200 bps
Data bit	8-bit (fixed)
Parity bit	None (default), Even, Odd
Stop bit	1-bit, 2-bit (default)