



# Modbus Digital Remote I/O

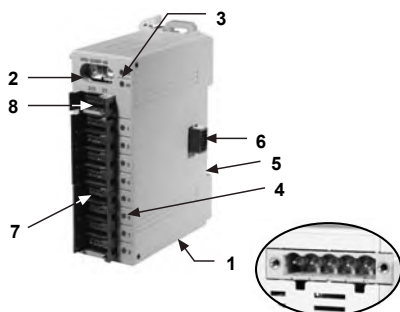
## Specifications

Model	Basic unit	ARM-DI08N-4S	ARM-DI08P-4S	ARM-DO08N-4S	ARM-DO08P-4S
	Expansion unit	ARX-DI08N-4S	ARX-DI08P-4S	ARX-DO08N-4S	ARX-DO08P-4S
Power supply	Rated voltage: 24VDC, Voltage range: 12-28VDC				
Power consumption	Max. 3W				
I/O points	NPN input 8 points		PNP input 8 points		PNP output 8 points
Control I/O	Voltage	10-28VDC			10-28VDC Output(voltage drop: Max. 0.5V)
	Current	10mA/point (sensor current: 150mA/points)		0.3A/point (leakage current: Max. 0.5mA)	
Common	8 points, common				
Communication speed	2400, 4800, 9600, 19200, 38400, 57600, 115200bps(default 9600bps)				
Communication method	2-wire half duplex				
Communication distance	Max. 800m				
Multi-drop	Max. 32 Multi-Drop				
Medium access	POLL				
Application standard	Compliance with EIA RS485				
Protocol	Modbus RTU				
Data bit	8 bits				
Stop bit	1 or 2 bits(default: 2)				
Parity bit	None/Odd/Even(default: None)				
Isolation type	I/O and inner circuit: Photocoupler insulation Modbus to internal bus and inner circuit: Insulation Unit power: Non-insulation				
Insulation resistance	Min. 200MΩ (at 500VDC megger)				
Noise resistance	±240V the square wave noise (pulse width: 1μs) by the noise simulator				
Dielectric strength	1,000VAC 50/60Hz for 1 minute				
Vibration	1.5mm amplitude or 300m/s <sup>2</sup> at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours				
Shock	500m/s <sup>2</sup> (approx. 50G) in each of X, Y, Z directions for 3 times				
Environment	Ambient temperature	-10 to 55°C, storage: -25 to 75°C			
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH			
Protection	IP20(IEC standards)				
Protection circuit	Surge, Short-circuit, Overheating and static protection, Reversed polarity protection circuit				
	Over current protection(Operated at min. 0.17A)			Over current protection(Operated at min. 0.7A)	
Indicator	Network status(NS) LED (Green, Red), Module status(MS) LED (Green, Red) I/O status LED (Input: Green, Output: Red)				
Material	Front case: PC, Body case: PC				
Mounting	DIN Rail or Screw lock type				
Approval	CE				
Unit weight	Basic unit	Approx. 65g	Approx. 65g	Approx. 65g	Approx. 66g
	Expansion unit	Approx. 55g	Approx. 55g	Approx. 55g	Approx. 56g

※ Environment resistance is rated at no freezing or condensation.

## Part description

### Basic unit



### 1. Network connector

No.	For	Organization
5	24VDC(+)	 5 : 24VDC 4 : GND 3 : N-C 2 : B 1 : A
4	GND	
3	N-C	
2	B	
1	A	

### 2. Rotary switch for node address

: Two rotary switches are used for setting address.  
X10 switch represents the 10's multiplier and X1 switch represents the 1's multiplier.

### 3. Status LED

: It is LED for displaying Unit status(MS) and Network status(NS).

### 4. I/O status LED: It is LED for displaying I/O status.

### 5. Rail Lock: It is used for mounting DIN Rail or with screws.

### 6. Connector output part: It is used for connecting an expansion unit.

### 7. Sensor connector: It is connector for connecting external device I/O.

### 8. External power connector: It is used for supplying external power.

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/Speed/ Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/Logic panel

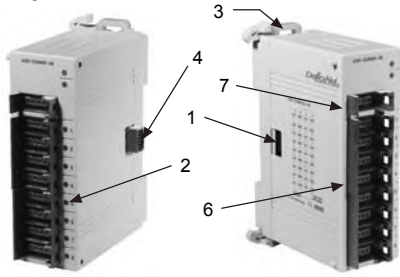
(S) Field network device

(T) Software

(U) Other

# ARM Series

## ◎ Expansion unit



- 1. Connector input part**  
: It connects an Expansion unit and is joined into the connector output part.
- 2. I/O status LED**: It is LED for displaying I/O status.
- 3. Rail Lock**  
: It is used for mounting DIN Rail or with screws.
- 4. Connector output part**: It is used for connecting an expansion unit.
- 5. Sensor connector**: It is connector for connecting external device I/O.
- 6. External power connector**: It is used for supplying external power.

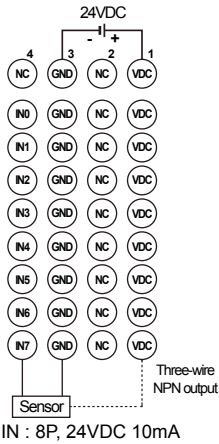
## ■ I/O circuit diagram

Type	Network connector	Inner circuit	Sensor connector
NPN input			
PNP input			
NPN output			
PNP output			

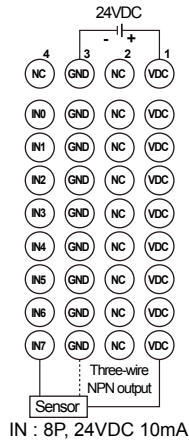
# Modbus Digital Remote I/O

## Connections

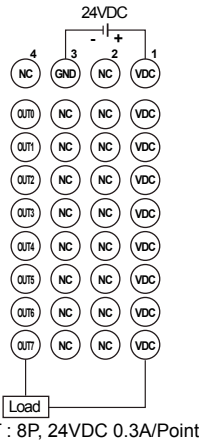
- ARM-DI08N-4S
- ARX-DI08N-4S



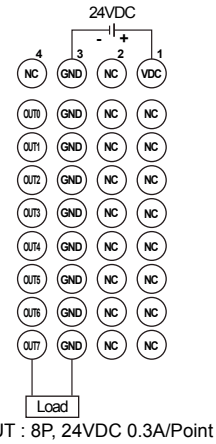
- ARM-DI08P-4S
- ARX-DI08P-4S



- ARM-DO08N-4S
- ARX-DO08N-4S

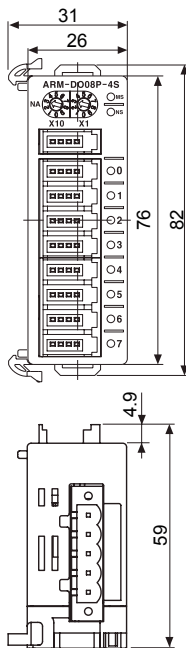


- ARM-DO08P-4S
- ARX-DO08P-4S

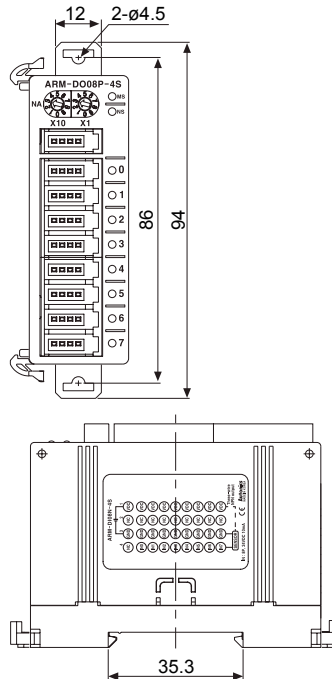


## Dimensions

- Mounting DIN rail



- Mounting with screws



(unit:mm)

※ Same dimensions are applied to both basic and expansion unit.

## Status LED

(☀ : On, ✨ : Flash, ● : Off)

Item	LED status		Description
	Red	Green	
Module Status(MS) LED	☀	●	Error of expansion units
	✨	●	Error of MAC ID
	●	☀	Normal operation
	●	●	Power is not supplied
Network Status(NS) LED	☀	●	Not supported communication speed (At auto baud rate)
	✨	●	Error of packet
	●	☀	Normal communication
	●	✨	Communication standby

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/ Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/ Speed/ Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching mode power supply
(Q)	Stepper motor& Driver&Controller
(R)	Graphic/ Logic panel
(S)	Field network device
(T)	Software
(U)	Other

# ARM Series

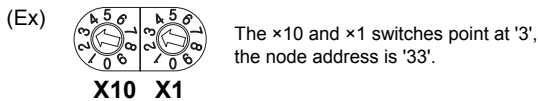
## ■ Installation and setup

### Ⓞ Setting node address

- Setup address is by rotary switches or by inner EEPROM.
- If the rotary switches are "00", the address is set by inner EEPROM. The others, the desired number of rotary switches is that address.

#### ● By rotary switch for address

- ① Two rotary switches are used for setting address.  
X10 switch represents the 10's multiplier and X10 switch represents the 1's multiplier.  
Address is settable from 0 to 99.



- ② After setting the desired node address, re-supply the unit power for applying the changed address.

#### ● By in the EEPROM for address

- ① During communicate status with master system (PLC or PL), set the desired address on the 41029 EEPROM MAC ID parameter.
- ② The set address is changed after unit power is supplied. Re-supply the unit power for applying the changed address.

### Ⓞ Unit Installation

#### ● Mounting on panel

- ① Pull two Rail locks on the rear part of a unit, there is a fixing screw hole.
- ② Place unit on a panel to be mounted.
- ③ Make a hole on a fixing screw hole position.
- ④ Fasten the screw to fix the unit tightly. Please set the tightening torque under 0.5N·m.

#### ● Mounting on DIN rail

- ① Pull two Rail locks on the rear part of a unit.
- ② Place the unit on DIN rail to be mounted.
- ③ Press Rail locks to fix the unit tightly.

#### ● Connection of basic and expansion unit

- ① Turn OFF the power of a basic unit.
- ② Remove the cover of connector for extension with nippers.
- ③ Connect connector input part of an expansion unit and connector output part of a basic unit with the connector which is enclosed with an expansion unit box.
- ④ Connected expansion units are installed as the right figure.
- ⑤ Supply power to the basic unit.  
(re-supply power to the basic unit, and it recognizes expansion units.)



## ■ Terminating resistance

- 120Ω ● 1% of metallic film ● 1/2W

※ Connect terminating resistances on the both ends of the network cables. If not connecting terminating resistances, impedance can be too high or low. It may cause network problems.

## ■ Caution for using

- Turn OFF the power before connecting or disconnecting expansion units.
- Addresses of connected units on network should not be duplicated. If you change an address with rotary switch or EEPROM during operation, unit status (MS) red LED flashes and it communicates with a previous node address.  
Re-supply power and the changed node address is applied.
- Communication speed which is set on upper system (PC, PLC, etc) is set automatically.  
If you change the communication speed during operation, network status (NS) red LED turns ON and it does not communicate.  
Re-supply power and it operates normally.
- Make sure to use standards communication cables.  
It may cause communication error if non-standards cables are used.
- Make sure to examine disconnection or short-circuit before connecting cables.
- Avoid installing the units where severe dust exists or where corrosion may occur.
- Installation environment
  - It shall be used indoor
  - Altitude Max. 2,000m
  - Pollution Degree 2
  - Installation Category II