

Autonics

DeviceNet sensor connector type digital remote I/O

ARD SERIES

MANUAL



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow;

Warning Serious injury may result if instructions are not followed.

Caution Product may be damaged, or injury may result if instructions are not followed.

※The following is an explanation of the symbols used in the operation manual.

Caution: Injury or danger may occur under special conditions.

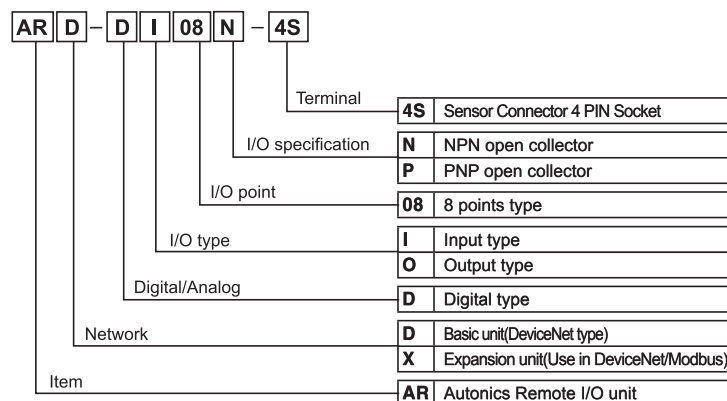
Warning

- In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention, equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.
It may cause a fire, human injury and damage of property.
- Do not connect, inspect or repair this unit when power is ON.
It may cause electric shock or a fire.
- Do not disassemble or modify this unit. Please contact us if it is required.
It may cause electric shock or a fire.
- Do not insert metallic substance into the unit.
It may cause electric shock, a fire, or malfunction.

Caution

- This unit shall not be used outdoors.
It may shorten the life cycle of the product or cause electric shock.
- Do not use this unit in place where there is flammable or explosive gas.
It may cause a fire or explosion.
- Do not use this unit in place where there is severe vibration or impact.
It may cause a breakdown of the product.
- Please connect power terminal and communication cable exactly after checking the connection diagram.
It may cause a fire and malfunction.
- Tighten communication cable connector as tight as possible for stable cable connection.
In case of unstable cable connections, it may cause serious communication or network malfunction.
- In cleaning the unit, do not use water or organic solvent. And use dry cloth.
It may cause electric shock and breakdown of the product.
- Please observe the rated specifications.
It may cause electric shock, human injury and breakdown of the product.
- Please separate as industrial waste when disusing this unit.

Ordering information



※The above specifications are subject to change and some models may be discontinued without notice.

Functions

- Auto communication speed recognition: The unit enables to recognize communication speed automatically when connecting with master unit.
- Network power voltage monitoring: If PV is lower than setting value, the unit enables to receive abnormal flag for network power voltage monitoring as Explicit message.
- Single byte I/O: Reads / Writes on single byte
- Multi-byte I/O: Reads / Writes on several bytes
- Additional expansion units: Available to connect expansion units up to 7. I/O points can be expanded up to max. 64.
- Reading the number of expansion units: Reads the number of connected expansion units
- Reading the unit model name: Reads the model name of connected units
- Reading unit specification: Read the specification of connected units

Model

Model	Expansion unit	Specification
ARD-DI08N-4S	ARX-DI08N-4S	8 points of 10-28VDC NPN input(10mA/point)
ARD-DI08P-4S	ARX-DI08P-4S	8 points of 10-28VDC PNP input(10mA/point)
ARD-DO08N-4S	ARX-DO08N-4S	8 points of 10-28VDC NPN output(0.3A/point)
ARD-DO08P-4S	ARX-DO08P-4S	8 points of 10-28VDC PNP output(0.3A/point)

Specifications

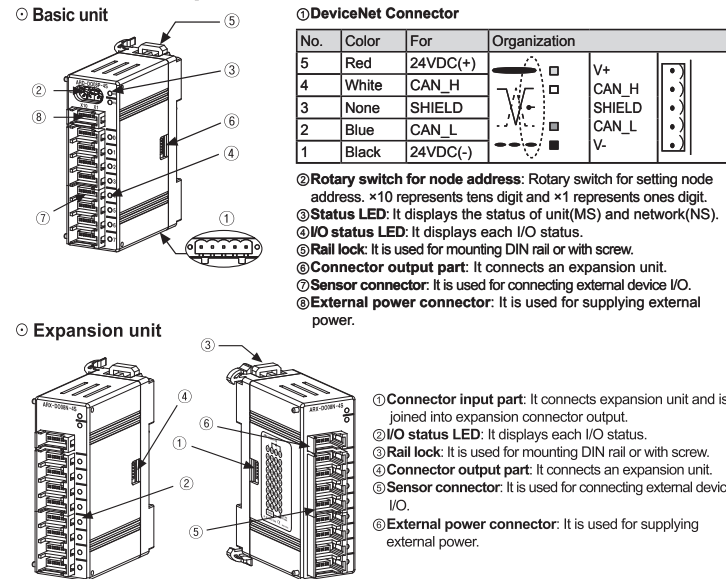
Model	ARD-DI08N-4S	ARD-DI08P-4S	ARD-DO08N-4S	ARD-DO08P-4S
Power supply	Rated voltage: 24VDC, Voltage range: 12-28VDC			
Power consumption	Max. 3W			
Isolation type	Photocoupler isolated			
I/O points	8 points of NPN input	8 points of PNP input	8 points of NPN output	8 points of PNP output
Control I/O	Voltage: 10-28VDC Input		10-28VDC Output(Voltage drop: Max. 0.5VDC)	
Current	10mA/point (Sensor current: 150mA/points)		0.3A/point (Leakage current: Max. 0.5mA)	
COMMON	8 points Common			
Insulation resistance	Min. 200MΩ (at 500VDC megger)			
Noise strength	±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 at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s ² (Approx. 50G) in X, Y, Z directions for 3 times			
Environment	Ambient temperature: -10 to 50°C, Storage: -25 to 75°C			
	Ambient humidity: 35 to 85%RH, Storage: 35 to 85%RH			
Protection	IP20(IEC standard)			
Protection circuit	Surge, Short-circuit, Overheating and ESD protection, Reverse polarity protection circuit		Overcurrent protection circuit (Operated at min. 0.17A)	
Indicator	Network status(NS) LED(Green, Red), Unit status(MS) LED(Green, Red) I/O status LED(Input: Green, output: Red)			
Material	Front Case, Body Case: PC			
Mounting	DIN rail or Screw lock type			
Approval	CE, DeviceNet			
Unit weight	Basic: 64g Expansion: 56g	Basic: 64g Expansion: 57g	Basic: 65g Expansion: 58g	Basic: 67g Expansion: 59g

※ Environment resistance is rated at no freezing or condensation.

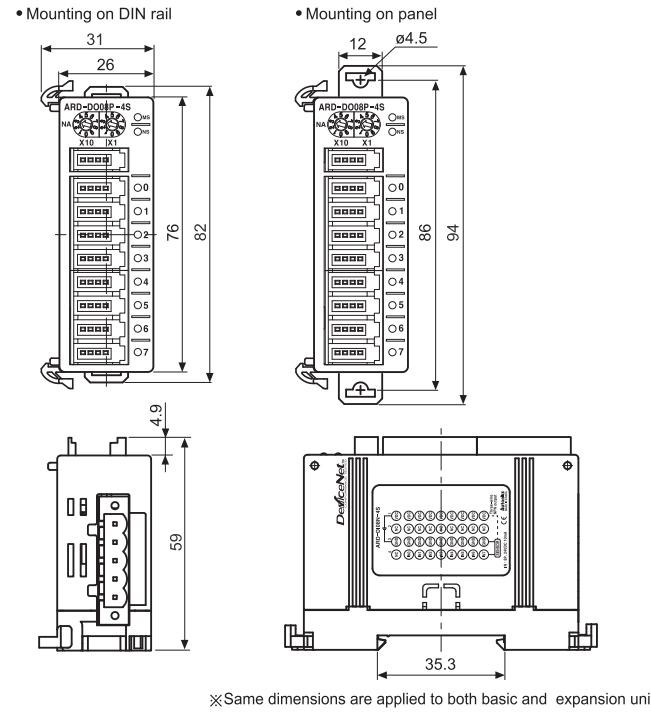
DeviceNet communication

Item	Specification
Communication	I/O Slave messaging(Group 2 Only slave) Poll command: Yes Bit strobe command: Yes Cyclic command: Yes COS command: Yes
Communication distance	Max. 500m(125kbps), Max. 250m(250kbps), Max. 100m(500kbps)
Node address setting	Max. 64node(Set by front rotary switch)
Communication speed	125, 250, 500kbps (Automatic setting when connecting with Master)
Insulation	I/O and inner circuit: Photocoupler insulation, DeviceNet and inner circuit: Non-insulated, Power of DeviceNet: Non-insulated
Power supply	Rated voltage: 24VDC Voltage range: 12-28VDC Power consumption: Max. 3W
Approval	ODVA Conformance tested

Part description

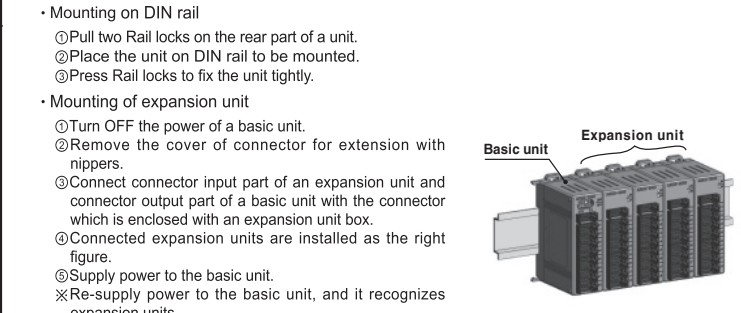


Dimensions

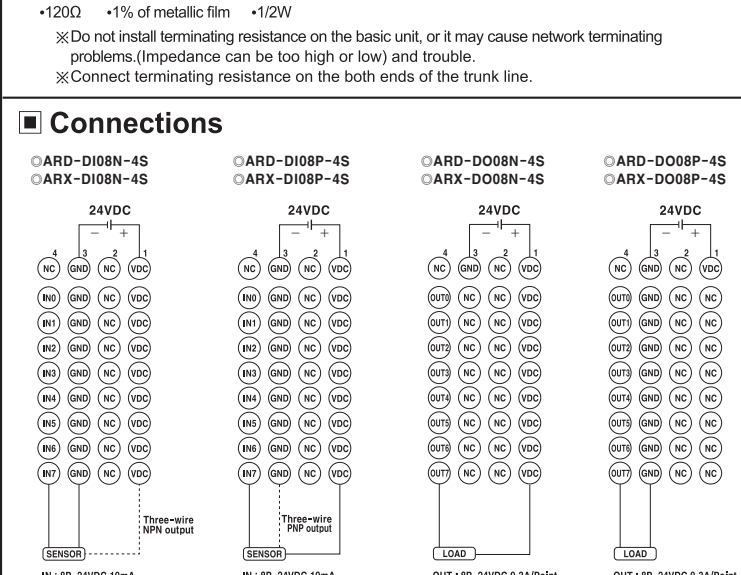


Installation and setup

- Setting node address
 - Two rotary switches are used for setting node address. ×10 switch represents tens digit and ×1 switch represents ones digit. The node address can be set 00 to 63.
 - Ex) The X10 and X1 switches point both at "3" so the node address is "33"
- After setting the desired node address, re-supply the unit power for applying the changed node address.
- Unit Installation
 - Mounting on panel
 - Pull two Rail locks on the rear part of a unit, there is a fixing screw hole.
 - Place the unit on a panel to be mounted.
 - Make a hole on a fixing screw hole position.
 - Fasten the screw to fix the unit tightly. Please set the tightening torque under 0.5N·m.
 - Mounting on DIN rail
 - Pull two Rail locks on the rear part of a unit.
 - Place the unit on DIN rail to be mounted.
 - Press Rail locks to fix the unit tightly.
 - Mounting of expansion unit
 - Turn OFF the power of a basic unit.
 - Remove the cover of connector for extension with nippers.
 - 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.
 - Connected expansion units are installed as the right figure.
 - Supply power to the basic unit.
 - Re-supply power to the basic unit, and it recognizes expansion units.



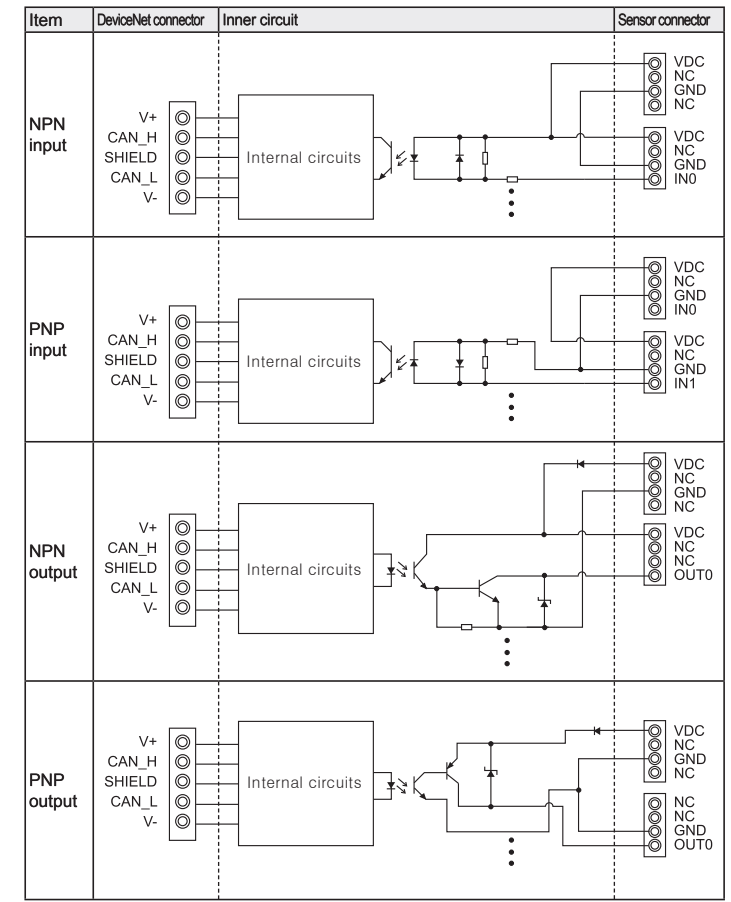
Connections



Communication distance

Baud Rate	Max. network length	Max. branch line length	Max. extended branch line length
125kbps	500m	6m	156m
250kbps	250m	6m	78m
500kbps	100m	6m	39m

I/O circuit diagram



Status LED

Item	LED status		Description
	RED	GREEN	
Unit status (MS) LED	ON	OFF	Unrecoverable error
	Flash	ON	Recoverable error & communication error of expansion unit
	OFF	ON	Normal operation
Network Status(NS) LED	ON	OFF	Power is not supplied
	Flash	ON	Normal standby
	OFF	ON	Network On-Line

Caution for using

- Turn OFF the power before connecting or disconnecting expansion units.
 - Node addresses of connected units on network should not be duplicated. If you change a node address 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 master 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 DeviceNet standards communication cables, and taps.
It may cause communication error if non-standards products 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.
 - Pollution Degree 2.
 - Altitude Max. 2,000m.
 - Installation Category II
- ※It may cause malfunction if above instructions are not followed.

Major products

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connectors/Sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, CO₂, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- Tachometer/Pulse(Rate)meters
- SSR/Power controllers
- Sensor controllers
- Display units
- Panel meters
- Counters
- Timers

Autonics Corporation
http://www.autonics.com

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