

# ARD SERIES

## W105 × H52mm Small size, Digital Remote I/O

NEW

### Features

- **DeviceNet digital remote I/O**
- Automatic communication speed recognition  
: Able to recognize communication speed automatically when connecting with master
- Monitoring of network voltage  
: Max. value-Read, Min. value-Read, Setting value-Read/Write, Process value-Read, It enables to receive an abnormality flag of network power by explicit message.
- Single byte I/O : Read/write on single byte
- Multi-byte I/O : Read/write on several bytes
- Reading the number of expansion module  
: Read the number of connected expansion module
- Reading of module specification  
: Read the specification of standard or expansion module
- Lengthen the expansion module  
: Able to lengthen expansion model up to 3 modules



**!** Please read "Caution for your safety" in operation manual before using.



### Ordering information

<b>AR</b>	<b>D</b>	-										
								Structural division				
								Input • Output type				
								I/O contacts				
								I/O type				
								Module type				
								Network type				
								Product type				
									Standard module			
									E	Expansion module		
									Input		DC voltage input	
										A	AC voltage input	
										Output	N	NPN open collector output
											P	PNP open collector output
											R	Relay output
									S	SSR output		
									08	8 Points type		
									16	16 Points type		
									I	Input type		
									O	Output type		
									X	I/O integrated type		
									D	Digital type		
									D	DeviceNet type		
									AR	Autonics Remote module		

### Model

Model		Specification
Standard module	Expansion module	
ARD-DI08A	ARD-DI08AE	8 Contacts of 75-250VAC input(13mA/Contact)
ARD-DI16N	ARD-DI16NE	16 Contacts of 10-28VDC NPN input(10mA/Contact)
ARD-DI16P	ARD-DI16PE	16 Contacts of 10-28VDC PNP input(10mA/Contact)
ARD-DO08R	ARD-DO08RE	8 Contacts of Relay output(2A/Contact), Life cycle of contact:100,000 times
ARD-DO08S	ARD-DO08SE	8 Contacts of SSR output(1A/Contact)
ARD-DO16N	ARD-DO16NE	16 Contacts of NPN output(0.5A/Contact)
ARD-DO16P	ARD-DO16PE	16 Contacts of PNP output(0.5A/Contact)
ARD-DX16N	ARD-DX16NE	8 Contacts of 10-28VDC NPN input(10mA/Contact), 8 Contacts of NPN output(0.5A/Contact)
ARD-DX16P	ARD-DX16PE	8Contacts of 10-28VDC PNP input(10mA/Contact), 8Contacts of PNP output(0.5A/Contact)

## Specifications

Model	ARD-DI08A	ARD-DI16N	ARD-DI16P	ARD-DO08R	ARD-DO08S	ARD-DO16N	ARD-DO16P	ARD-DX16N	ARD-DX16P
	ARD-DI08AE	ARD-DI16NE	ARD-DI16PE	ARD-DO08RE	ARD-DO08SE	ARD-DO16NE	ARD-DO16PE	ARD-DX16NE	ARD-DX16PE
Power supply	Rated voltage : 24VDC, Voltage range : 12~28VDC								
Power consumption	3W(MAX.)								
Isolation type	Photocoupler isolated								
I/O contacts	8 contacts of input (AC)	16 contacts of input (DC)	8 contacts of output (RELAY)	8 contacts of output (SSR)	16 contacts of output (DC)	8 contacts of output (DC), 8 contacts of input (DC)			
Control I/O	Voltage	75~250 VAC	10~28VDC	Normal open(NO) 250VAC 2A 1a	30~250 VAC	10~28VDC (Voltage drop : Max. 0.5V)			
	Current	13mA/Contact	10mA/Contact		1A/Contact	Output : 0.5A/Contact (Leakage current: Max. 0.5mA)	Input : 10mA, Output : 0.5A/Contact (Leakage current: Max. 0.5mA)		
Common	8 contacts, Common			1 contact, 1 COM	8 contacts, Common				
Insulation resistance	Min. 200MΩ (at 500VDC mega)								
Noise strength	±240V the square wave noise (pulse width:1μs) by the noise simulator								
Dielectric strength	1000VAC 50/60Hz for 1 minute								
Vibration	1.5mm amplitude at frequency of 10~55Hz in each of X, Y, Z directions for 2 hours								
Shock	500m/s <sup>2</sup> (Approx. 50G) in X, Y, Z directions for 3 times								
Ambient temperature	-10 ~ +50℃ (at non-freezing status), Storage:-25 ~ +75℃								
Ambient humidity	35 ~ 85%RH, Storage:35~85%RH								
Protection	IP20(IEC standard)								
Protection circuit	Surge, Reverse polarity protection circuit (Common)			<ul style="list-style-type: none"> <li>• TR output type ☞</li> <li>• Overcurrent protection circuit (NPN type : Operated from 1.9A→ Power is reapplied in overcurrent status, PNP type : Operated at min. 0.7A), Overheating protection (165℃ Typical), Short-circuit protection</li> </ul>					
Indicator	Network status LED (Green, Red), Module status LED (Green, Red), I/O status LED								
Material	Front case:PC, Body Case:PC, Rubber cap:NBR								
Mounting	DIN rail or screw lock type								
Unit weight	Approx. 150g	Approx. 140g	Approx. 160g	Approx. 170g	Approx. 140g				
Approval	—		CE	—		CE			

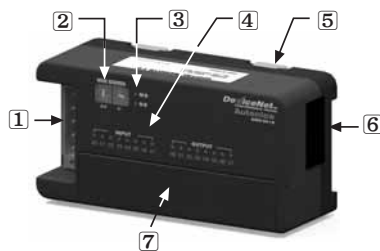
- (A) Counter
- (B) Timer
- (C) Temp. controller
- (D) Power controller
- (E) Panel meter
- (F) Tacho/Speed/Pulse meter
- (G) Display unit
- (H) Sensor controller
- (I) Switching power supply
- (J) Proximity sensor
- (K) Photo electric sensor
- (L) Pressure sensor
- (M) Rotary encoder
- (N) Stepping motor & Driver & Controller
- (O) Graphic panel
- (P) Field network device
- (Q) Production stoppage models & replacement

## DeviceNet communication

Item	Specification
Communication	I/O Slave messaging (Group 2 Only slave) <ul style="list-style-type: none"> <li>• Poll command : Y</li> <li>• Bit_strobe command : Y</li> <li>• Cyclic command : Y</li> <li>• COS command : Y</li> </ul>
Communication distance	Max. 500m(125kbps), Max. 250m(250kbps), Max. 100m(500kbps)
Node	Max. 64node (Set by front panel rotary switch)
Communication speed	It is set automatically when connecting with master • 125kbps • 250kbps • 500kbps
Insulation	I/O and inner circuit : Photocoupler is insulated, DeviceNet and inner circuit : Non-insulated, Power of DeviceNet : Non-insulated
Power supply	• Power supply:24VDC • Power range : 12~28VDC • Power consumption:Max. 3W
Approval	ODVA Conformance test

## Part description

### Standard module



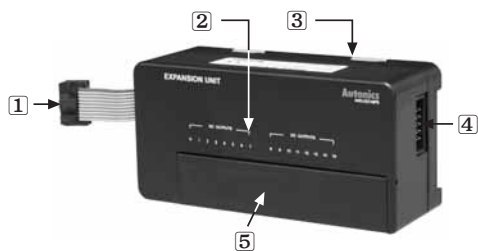
### 1 DeviceNet Connector

No.	Color	For	Organization
5	Red	DC24(+)	
4	White	CAN_H	
3	None	Shield	
2	Blue	CAN_L	
1	Black	DC24(-)	

- ② Rotary switch for address : It is address setting switches displaying the tens digit by 1st one and the units digit by 2nd one.
- ③ Status LED : It displays the status of module and network.
- ④ I/O Status LED : It displays each I/O status.
- ⑤ Locking : It is used for holding DIN rail and fixing screw hole.
- ⑥ Connector output part : It connects expansion module.
- ⑦ I/O terminal block : It connects I/O with external device.

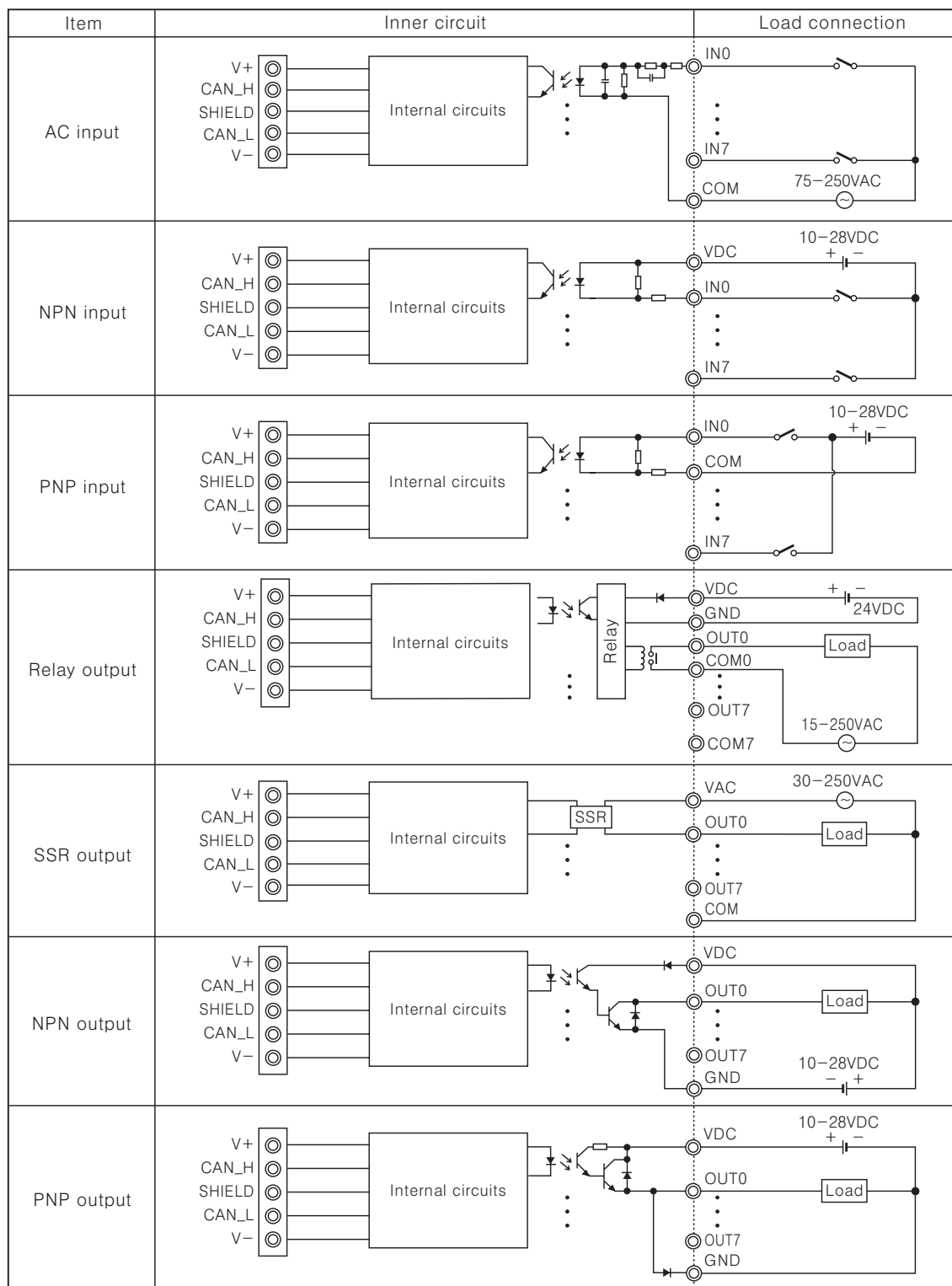
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## ◎ Expansion module



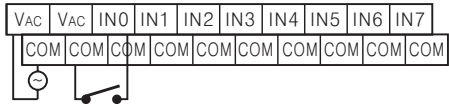
- ① Connector input part : It connects expansion module and is joined into expansion connector output.
- ② I/O Status LED : It displays each I/O status.
- ③ Locking : It is used for holding DIN rail and fixing screw hole.
- ④ Connector output part : It connects expansion module.
- ⑤ I/O terminal block : It connects I/O with external device.

## ■ I/O circuit diagram

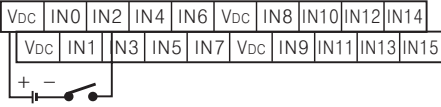


## ■ Connections

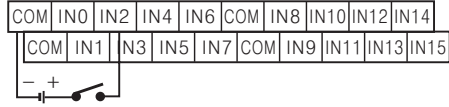
◎ **ARD-DI08A(E)** [AC input]



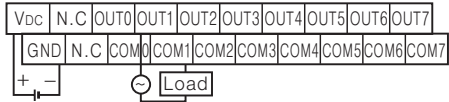
◎ **ARD-DI16N(E)** [DC NPN input]



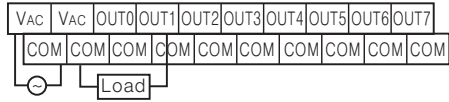
◎ **ARD-DI16P(E)** [DC PNP input]



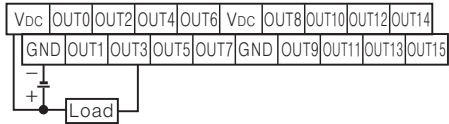
◎ **ARD-DO08R(E)** [Relay output]



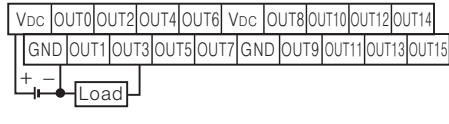
◎ **ARD-DO08S(E)** [SSR output]



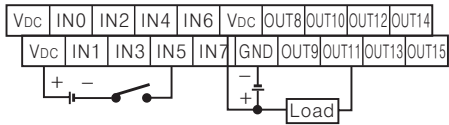
◎ **ARD-DO16N(E)** [NPN output]



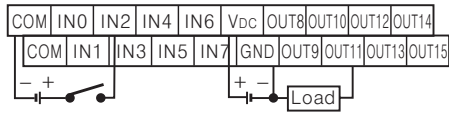
◎ **ARD-DO16P(E)** [PNP output]



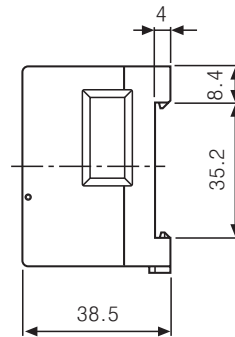
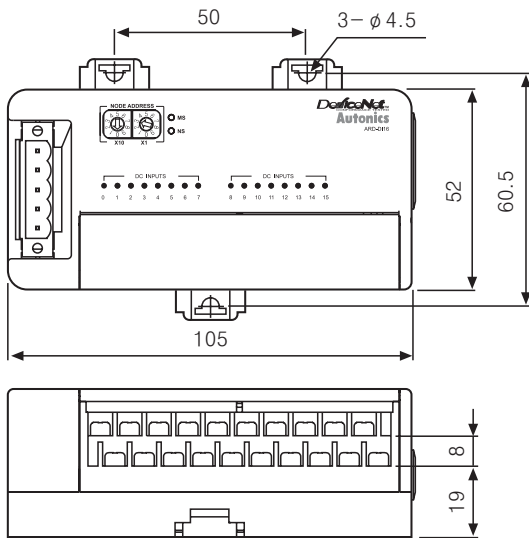
◎ **ARD-DX16N(E)** [DC NPN input/DC NPN output]



◎ **ARD-DX16P(E)** [DC PNP input/DC PNP output]



## ■ Dimensions



(Unit:mm)

※ It is applied to Standard, Expansion type.  
 ※ Connecting connectors are included for expansion modules.

## ■ Module/Network Status LED

Item	LED	
	LED Status	Description
Module status LED (MS)	Red LED is ON	Unrecoverable error & Expansion module communication error
	Red LED flickers	Recoverable error
	Green LED is ON	Normal operation
	LED is OFF	Power is not applied
Network status LED (NS)	Green LED flickers	Normal standby
	Green LED is ON	Network On-Line
	Red LED is ON	Dupl MAC ID / Bus-off
	Red LED flickers	Time out
	LED is OFF	Network Off-Line



(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

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(O) Graphic panel

(P) Field network device

(Q) Production stoppage models & replacement

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## ■ Installation and setup

### ○ Setting of address

- Adjust it by rotary switch on front of module.
- There are two switches, ×10 represents tens digit and ×1 is ones digit and it is able to set 0~63 of address.
- Rotary switch is enable to use when power is applied and restart power to change address.

(Ex)



### ○ Installation on panel

- ① Pull 3 DIN Rail lockings under the lower part of module, there is a fixing screw hole.
- ② Place module on a panel to be mounted.
- ③ Make a hole on a fixing screw position.
- ④ Place screws on 3 holes and tighten them firmly.



### ○ Installation on DIN rail

- ① Pull 3 DIN Rail lockings on the rear part of module
- ② Place module on DIN Rail to be mounted.
- ③ Fix DIN Rail lockings firmly.



### ○ Connection of Standard and Expansion module

- ① Separate standard module power.
- ② Place the expansion module to be installed next to the standard module.
- ③ Connect the cable of expansion module to expanding connector of standard module.
- ④ Mount connected expansion modules as right figure.
- ⑤ Apply power into standard module.



## ■ Communication distance

Baud Rate	Allowable network length	Allowable length of branch line	Allowable expansion length of branch line
125Kbps	500m max.	6m max.	156m max.
250Kbps	250m max.	6m max.	78m max.
500Kbps	100m max.	6m max.	39m max.

## ■ Terminating resistance

- 120Ω ● 1% of metallic film ● 1/2W

※ Do not install terminal resistance on a module or, it may cause network problem.

(Impedance can be too high or low.)

If remove node with terminal resistance, it may cause a network problem.

※ Connect terminating resistance on the both ends of the main line.

## ■ Caution for using

1. Each address of modules should be different and apply power after setting address without applying power to master or, it may cause communicational error.
2. Do not connect the expansion module after applying power or, it cannot recognize the expansion module.
3. Communication speed is set in master and OFF the power and apply power again after changing communication speed in master to change the speed during the operation.
4. Use the rated cable, tap and terminating resistance in module or, it may cause a communicational error.
5. Use the rated communication cable and examine the disconnection or short circuit before the installation.
6. Use terminating resistance on both ends of the main line.
7. Do not use this unit in place with too much dust or serious corrosion problem.