

iR Series

Remote I/O Product Specification



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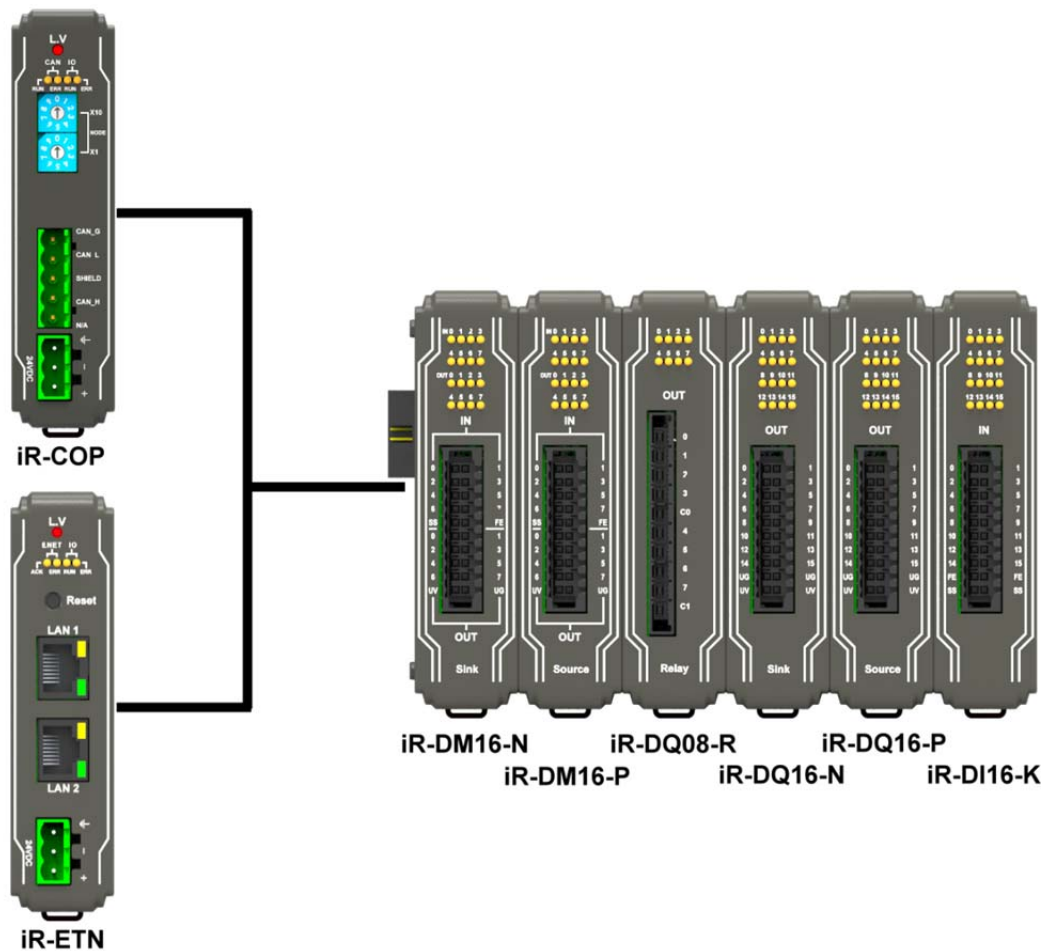
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1. Product Overview



1.1 Product List:

1.1.1 Coupler List:

Coupler	Fieldbus
iR-COP	CANopen Slave
iR-ETN	Modbus TCP/IP Server

1.1.2 Digital I/O List:

Part Number		iR-DI16-K	iR-DM16-P	iR-DM16-N	iR-DQ16-P	iR-DQ16-N	iR-DQ08-R
Input Point	Point	16	8	8	0	0	0
	Type	Sink/source	Sink/source	Sink/source	N/A	N/A	N/A
Output Point	Point	0	8	8	16	16	8
	Type	N/A	source	Sink	source	Sink	Relay

2. Fieldbus Coupler

2.1 CANopen Specifications

Communication Interface Specifications							
Model	iR-COP						
Expansion I/O Module	No. of Bus Terminals		Depends on Power Consumption				
	Digital Input Point		Max. 512				
	Digital Output Point		Max. 512				
	Analog Input Channel		Max. 64				
	Analog Output Channel		Max. 64				
Indicators	CAN RUN (Green)		CANopen Status Indicator				
	CAN ERR (Red)		CANopen Error Indicator				
	L.V (Red)		Low Voltage Status Indicator				
	IO RUN (Green)		Module Status Indicator				
	IO ERR (Red)		Module Error Indicator				
Data Transfer Rate	1M	800k	500k	250k	125k	100k	50k
Length of the Cable	20m	50m	100m	250m	500m	600m	1,000m
Node ID	1~99						
Number of PDOs (CANopen)	8 Transmit PDOs / 8 Receive PDOs						
Process Data Operating Modes	synchronous, event-driven ,event timer, polling						
Number of SDOs Available	1 Standard SDOs						
Bus Connection	1 x open style connector, 5-pole, plug included						
Additional CANopen Features	life/node guarding, heartbeat, emergency object, variables mapping, store/restore, output error mode.						
General Specification							
Power	Power Supply		24 VDC (-15%/+20%)				
	Power Dissipation		Nominal 100mA@24VDC				
	Current for Internal Bus		Max 2A@5VDC				
	Current Consumption		170mA@5VDC				
	Electrical Isolation		Network to Logic : Isolation Logic to Field power : Isolation				
	Back-up Fuse		≤ 1.6A Self-recovery				
Specification	PCB Coating		Yes				
	Enclosure		Plastic				
	Dimensions WxHxD		27 x 109 x 81 mm				
	Weight		Approx. 0.15 kg				
	Mount		35mm DIN rail mounting				
Environment	Protection Structure		IP20				
	Storage Temperature		-20° ~ 70°C (-4° ~ 158°F)				
	Operating Temperature		0° ~ 55°C (32° ~ 131°F)				
	Relative Humidity		10% ~ 90% (non-condensing)				
	Vibration Resistance		Conforms to EN 60068-2-6 / EN 60068-2-27				
Connection	Cross-section		0.5 mm² ... 2.5 mm², stranded, solid wire, AWG 26-12				
Certification	EMC Immunity		Conforms to EN 55032: 2012+AC: 2013, Class A EN 61000-6-4: 2007+A1:2011 EN 55024: 2010+A1: 2015 EN 61000-6-2:2005				

2.2 Ethernet TCP/IP Specifications

Communication Interface Specifications		
Model	iR-ETN	
Expansion I/O Module	Number of Bus Terminals	Depends on Power Consumption
	Digital Input Point	Max. 512
	Digital Output Point	Max. 512
	Analog Input Channel	Max. 64
	Analog Output Channel	Max. 64
Indicators	ENET ACK (Green)	Device Status Indicator
	ENET ERR (Red)	Device Error Indicator
	L.V (Red)	Low Voltage Status Indicator
	IO RUN (Green)	Module Status Indicator
	IO ERR (Red)	Module Error Indicator
Data Transfer Rate	10/100 Mbps	
Data Transfer Medium	4 x 2 twisted pair copper cable; category 3 (10 Mbps), category 5 (100 Mbps)	
Distance Between Stations	100 m between hub/switch and Bus Coupler or between Bus Coupler and Bus Coupler	
Protocol	Modbus TCP/IP	
Max. Number of TCP/IP Connections	8 connections	
Topology	line or star wiring	
General Specification		
Power	Power Supply	24 VDC (-15%/+20%)
	Power Dissipation	Nominal 100mA@24VDC
	Current for-Internal Bus	Max 2A@5VDC
	Current Consumption	220mA@5VDC
	Electrical Isolation	Network to Logic : Isolation Logic to Field power : Isolation
	Back-up Fuse	≤ 1.6A Self-recovery
	Specification	PCB Coating
Enclosure		Plastic
Dimensions WxHxD		27 x 109 x 81 mm
Weight		Approx. 0.15 kg
Mount		35mm DIN rail mounting
Environment	Protection Structure	IP20
	Storage Temperature	-20° ~ 70°C (-4° ~ 158°F)
	Operating Temperature	0° ~ 55°C (32° ~ 131°F)
	Relative Humidity	10% ~ 90% (non-condensing)
	Vibration Resistance	conforms to EN 60068-2-6 / EN 60068-2-27
Certification	EMC Immunity	Conforms to EN 55032: 2012+AC: 2013, Class A EN 61000-6-4: 2007+A1:2011 EN 55024: 2010+A1: 2015 EN 61000-6-2:2005

3. Digital Input/Output

3.1 Digital Input Specifications

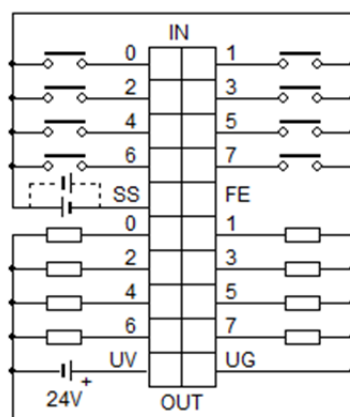
Module Name		iR-DI16-K	iR-DM16-P	iR-DM16-N
Number of Inputs		16	8	8
Input Logic		Sink or Source		
Current Consumption		83mA@5VDC	130mA@5VDC	130mA@5VDC
HIGH Level Input Voltage		15~28V VDC		
LOW Level Input Voltage		0~5 VDC		
Response Time	OFF→ON	5 ms		
	ON→OFF	1 ms		
Input Impedance		5.6 KΩ		
System Indicators		Red Led Input State		
Specification	PCB Coating	No		
	Enclosure	Plastic		
	Dimensions WxHxD	27 x 109 x 81 mm		
	Weight	Approx. 0.12 kg		
	Mount	35mm DIN rail mounting		
Environment	Protection Structure	IP20		
	Storage Temperature	-20° ~ 70°C (-4° ~ 158°F)		
	Operating Temperature	0° ~ 55°C (32° ~ 131°F)		
	Relative Humidity	10% ~ 90% (non-condensing)		
	Vibration Resistance	Conforms to EN 60068-2-6 / EN 60068-2-27		
Connection	Cross-section	AWG 28-16		
Certification	EMC Immunity	Conforms to EN 55032: 2012+AC: 2013, Class A EN 61000-6-4: 2007+A1:2011 EN 55024: 2010+A1: 2015 EN 61000-6-2:2005		

3.2 Digital Output Specifications

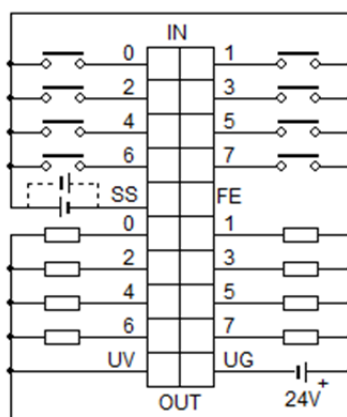
Module Name		iR-DM16-P	iR-DQ16-P	iR-DM16-N	iR-DQ16-N	iR-DQ08-R
Number of Outputs		8	16	8	16	8
Output Logic		Source		Sink		Relay
Current Consumption		130mA@5VDC	196mA@5VDC	130mA@5VDC	205mA@5VDC	220mA@5VDC
Output Voltage		11~28VDC		11~28VDC		250VAC/ 30VDC
Output Current		0.5A per channel Max 4A)		0.5A per channel (Max 4A)		2A per channel (Max 8A)
Response Time	OFF→ON	300μs		300μs		10ms
	ON→OFF					
Specification	PCB Coating	No				
	Enclosure	Plastic				
	Dimensions WxHxD	27 x 109 x 81 mm				
	Weight	Approx. 0.12 kg				Approx. 0.13 kg
	Mount	35mm DIN rail mounting				
Environment	Protection Structure	IP20				
	Storage Temperature	-20° ~ 70°C (-4° ~ 158°F)				
	Operating Temperature	0° ~ 55°C (32° ~ 131°F)				
	Relative Humidity	10% ~ 90% (non-condensing)				
	Vibration Resistance	Conforms to EN 60068-2-6 / EN 60068-2-27				
Connection	Cross-section	AWG 28-16				AWG 24-16
Certification	EMC Immunity	Conforms to EN 55032: 2012+AC: 2013, Class A EN 61000-6-4: 2007+A1:2011 EN 55024: 2010+A1: 2015 EN 61000-6-2:2005				

3.3 Wire

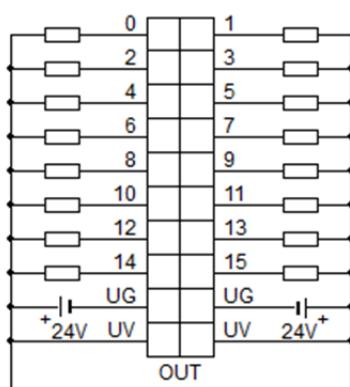
iR-DM16-P



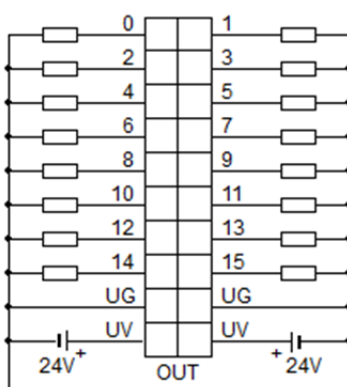
iR-DM16-N



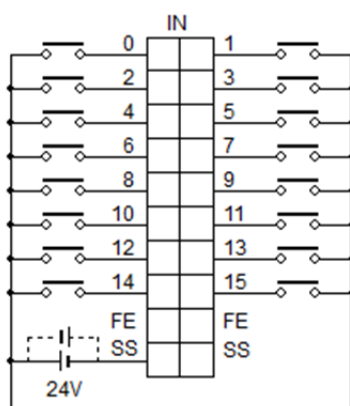
iR-DQ16-N



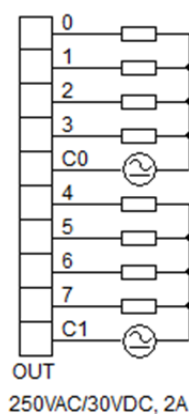
iR-DQ16-P



iR-DI16-K

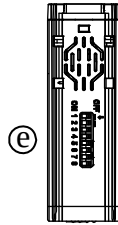


iR-DQ08-R

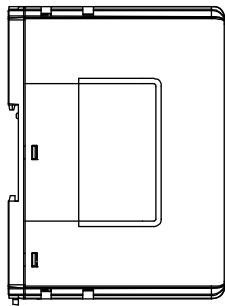


4. Dimensions

4.1 iR-COP

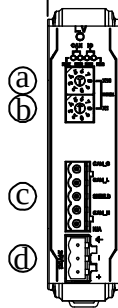


Top View

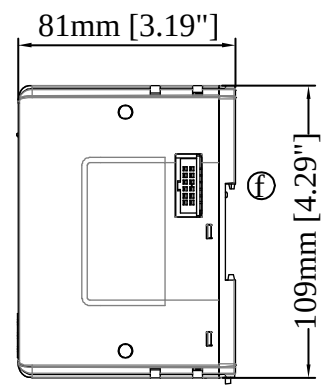


Side View

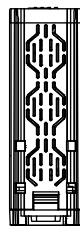
27mm [1.06"]



Front View



Side View



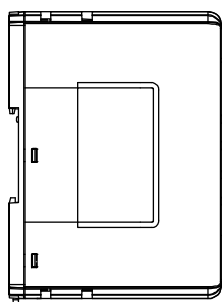
Bottom View

<i>a</i>	Node ID Rotary Switch x10	<i>e</i>	Baud Rate DIP Switch
<i>b</i>	Node ID Rotary Switch x1	<i>f</i>	Expansion Connector
<i>c</i>	CAN Bus Connector		
<i>d</i>	Power Connector		

4.2 iR-ETN

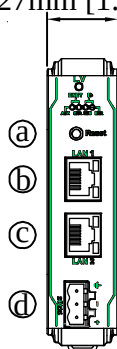


Top View

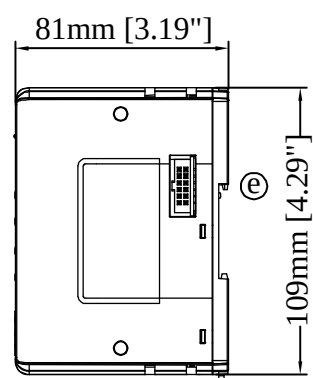


Side View

27mm [1.06"]



Front View



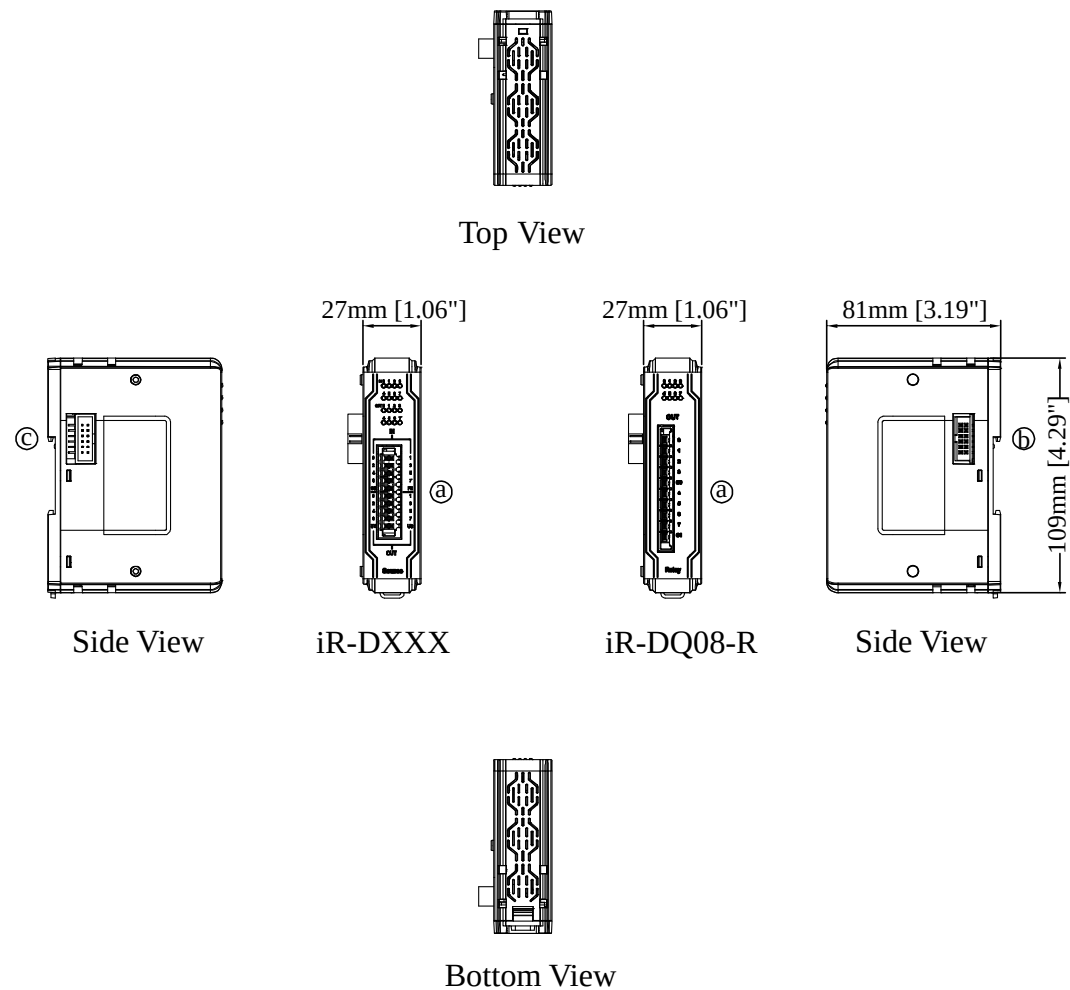
Side View



Bottom View

<i>a</i>	Reset Button	<i>e</i>	Expansion Connector
<i>b</i>	LAN 1		
<i>c</i>	LAN 2		
<i>d</i>	Power Connector		

4.3 iR-DM16-N & P, iR-DQ16-N&P, iR-DI16-K, iR-DQ08-R



<i>a</i>	Terminal	<i>b.c</i>	Expansion Connector
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5. Power Consumption

Type	Device	Consumption(5V)	Power Supply(5V)
Coupler	iR-ETN	220mA/1.1w	2A/10w
	iR-COP	170mA/0.85w	2A/10w
Digital I/O	iR-DM16-P	130mA/0.65w	--
	iR-DM16-N	130mA/0.65w	--
	iR-DQ08-R	220mA/1.1w	--
	iR-DQ16-N	205mA/1.02w	
	iR-DQ16-P	196mA/0.984w	
	iR-DI16-K	83mA/0.418w	

Note:

The coupler is the only power supply for the modules in this system. Please consider power requirements when connecting multiple modules.

ex.1

Device	Name	Consumption	Power Supply
Coupler	iR-COP	170mA/0.85w	2A/10w
Module	iR-DQ08-R *8	220mA*8=1.76A	X
System	Power consumption : 170mA + 1.76A = 1.93 A Power supply: 2A > 1.93A		

ex.2

Device	Name	Consumption	Power Supply
Coupler	iR-ETN	220mA/1.1w	2A/10w
Module	iR-DM16-P *13	130mA*13=1.69A	X
System	Power consumption : 220mA + 1.69A = 1.91 A Power supply: 2A > 1.91A		