



# *iR* Series

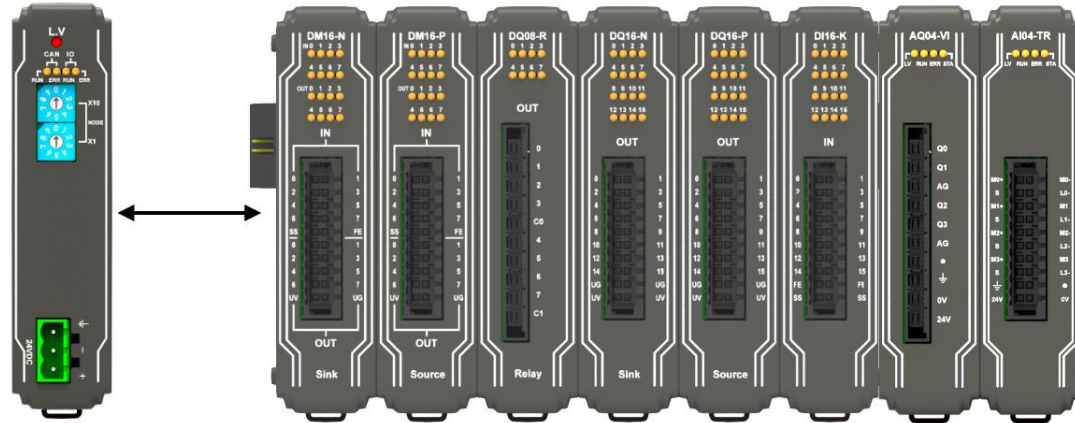
## Remote I/O Product Specification



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# 1. Product Overview



Coupler

Modules

## 1.1 Product List:

### 1.1.1 Coupler List:

Coupler	Fieldbus
iR-COP	CANopen Slave
iR-ETN	Modbus TCP/IP Server
iR-ECAT	EtherCAT® Slave
iR-ETN40R	Modbus TCP Server, EtherNet/IP

(See [iR-ETN40R](#) Datasheet for more info)

### 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
	Type	Sink/Source	Sink/Source	Sink/Source	N/A	N/A
Output Point	Point	0	8	8	16	16
	Type	N/A	Source	Sink	Source	Sink

### 1.1.3 Analog I/O List:

Part Number	iR-AI04-VI	iR-AM06-VI	iR-AQ04-VI	iR-AI04_TR
Type	±10v ±20mA			RTD thermocouple
Input Point	4	4	0	4
Output Point	0	2	4	0

### 1.1.4 Motion List:

Part Number	iR-PU01-P
Differential Output	2 (A/B)
Differential Input	3 (A/B/Z)
Input Point	4
Output Point	4

## 2. Fieldbus Coupler

### 2.1 CANopen Specifications

Communication Interface Specifications							
<b>Model</b>	iR-COP						
<b>Expansion I/O Module</b>	No. of Bus Terminals	Depends on Power Consumption					
	Digital Input Point	Max. 256					
	Digital Output Point	Max. 128					
	Analog Input Channel	Max. 64					
	Analog Output Channel	Max. 64					
<b>Indicators</b>	CAN RUN (Green)	CANopen Status Indicator					
	CAN ERR (Red)	CANopen Error Indicator					
	LV (Red)	Low Voltage Status Indicator					
	IO RUN (Green)	Module Status Indicator					
	IO ERR (Red)	Module Error Indicator					
<b>Data Transfer Rate</b>	1M	800k	500k	250k	125k	100k	50k
<b>Length of the Cable</b>	20m	50m	100m	250m	500m	600m	1,000m
<b>Node ID</b>	1~99						
<b>Number of PDOs (CANopen)</b>	8 Transmit PDOs / 8 Receive PDOs						
<b>Process Data Operating Modes</b>	synchronous, event-driven ,event timer, polling						
<b>Number of SDOs Available</b>	1 Standard SDOs						
<b>Bus Connection</b>	1 x open style connector, 5-pole, plug included						
<b>Additional CANopen Features</b>	life/node guarding, heartbeat, emergency object, variables mapping, store/restore, output error mode.						
General Specification							
<b>Power</b>	Power Supply	24 VDC (-15%/+20%)					
	Power Dissipation	Nominal 100mA@24VDC					
	Current for Internal Bus	Max 2A@5VDC					
	Current Consumption	170mA@5VDC					
	Electrical Isolation	Isolated CANopen : Yes Isolated power : Yes					
	Back-up Fuse	≤ 1.6A Self-recovery					
<b>Specification</b>	PCB Coating	Yes					
	Enclosure	Plastic					
	Dimensions WxHxD	27 x 109 x 81 mm					
	Weight	Approx. 0.15 kg					
	Mount	35mm DIN rail mounting					
<b>Environment</b>	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)					
<b>Connection</b>	Cross-section	0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> , stranded, solid wire, AWG 26-12					
<b>Certification</b>	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		
<b>Model</b>	iR-ETN	
<b>Expansion I/O Module</b>	Number of Bus Terminals	Depends on Power Consumption
	Digital Input Point	Max. 256
	Digital Output Point	Max. 128
	Analog Input Channel	Max. 64
	Analog Output Channel	Max. 64
<b>Indicators</b>	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
<b>Data Transfer Rate</b>	10/100 Mbps	
<b>Data Transfer Medium</b>	4 x 2 twisted pair copper cable; category 3 (10 Mbps), category 5 (100 Mbps)	
<b>Distance Between Stations</b>	100 m between hub/switch and Bus Coupler or between Bus Coupler and Bus Coupler	
<b>Protocol</b>	Modbus TCP/IP Server	
<b>Max. Number of TCP/IP Connections</b>	8 connections	
<b>Topology</b>	line or star wiring	
General Specification		
<b>Power</b>	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
<b>Specification</b>	PCB Coating	Yes
	Enclosure	Plastic
	Dimensions WxHxD	27 x 109 x 81 mm
	Weight	Approx. 0.15 kg
	Mount	35mm DIN rail mounting
<b>Environment</b>	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)
<b>Certification</b>	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

## 2.3 EtherCAT Specifications

Communication Interface Specifications		
<b>Model</b>	iR-ECAT	
<b>Expansion I/O Module</b>	Number of Bus Terminals	Depends on Power Consumption
	Digital Input Point	Max. 256
	Digital Output Point	Max. 128
	Analog Input Channel	Max. 64
	Analog Output Channel	Max. 64
<b>Indicators</b>	ECAT Run (Green)	Device Status Indicator
	ECAT ERR (Red)	Device Error Indicator
	L.V (Red )	Low Voltage Status Indicator
	IO RUN (Green)	Module Status Indicator
	IO ERR (Red)	Module Error Indicator
<b>Data Transfer Rate</b>	100 Mbps	
<b>Data Transfer Medium</b>	4 x 2 twisted pair copper cable; category 5 (100 Mbps)	
<b>Distance Between Stations</b>	100 m between hub/switch and Bus Coupler or between Bus Coupler and Bus Coupler	
<b>Protocol</b>	EtherCat Slave	
<b>MailBox</b>	COE -SDO requests, SDO responses.	
<b>ETG Standards</b>	ETG 5001	
General Specification		
<b>Power</b>	Power Supply	24 VDC (-15%/+20%)
	Power Dissipation	Nominal 100mA@24VDC
	Current for-Internal Bus	Max 2A@5VDC
	Current Consumption	270mA@5VDC
	Electrical Isolation	Network to Logic : Isolation Logic to Field power : Isolation
	Back-up Fuse	≤ 1.6A Self-recovery
	<b>Specification</b>	PCB Coating
Enclosure		Plastic
Dimensions WxHxD		27 x 109 x 81 mm
Weight		Approx. 0.15 kg
Mount		35mm DIN rail mounting
<b>Environment</b>	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)
<b>Certification</b>	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



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### 3. Digital Input/Output

#### 3.1 Digital Input / Output Modules

Module Name		iR-DI16-K	iR-DM16-P	iR-DM16-N	iR-DQ16-P	iR-DQ16-N	iR-DQ08-R
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)					
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					

#### 3.2 Digital Input Specifications

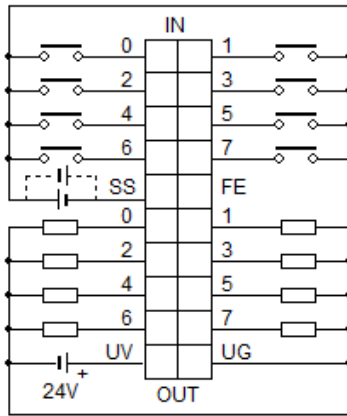
Module Name		iR-DI16-K	iR-DM16-P	iR-DM16-N
Number of Inputs		16	8	8
Input Logic		Sink or Source		
Current Consumption		83mA@5VDC	130mA@5VDC	130mA@5VDC
HIGH Level Input Voltage		15~28 VDC		
LOW Level Input Voltage		0~5 VDC		
Response Time	OFF->ON	5 ms		
	ON->OFF	1 ms		
Input Impedance		5.6 KΩ		
System Indicators		Red LED Input State		

#### 3.3 Digital Output Specifications

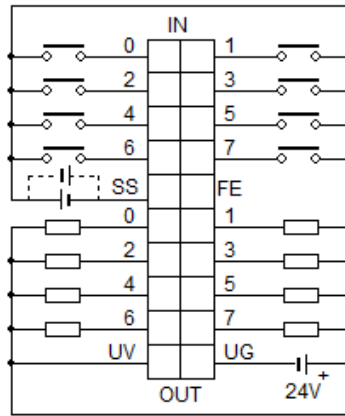
Module Name		iR-DM16-P	iR-DQ16-P	iR-DM16-N	iR-DQ16-N	iR-DQ08-R
Number of Outputs		8	16	8	16	8
Output Logic		Source		Sink		Relay
Current Consumption		130mA@5VDC	196mA@5VDC	130mA@5VDC	205mA@5VDC	220mA@5VDC
Output Voltage		11~28VDC		11~28VDC		250VAC/ 30VDC
Output Current		0.5A per channel Max 4A)		0.5A per channel (Max 4A)		2A per channel (Max 8A)
Response Time	OFF→ON	300μs		300μs		10ms
	ON→OFF					

### 3.4 Wiring

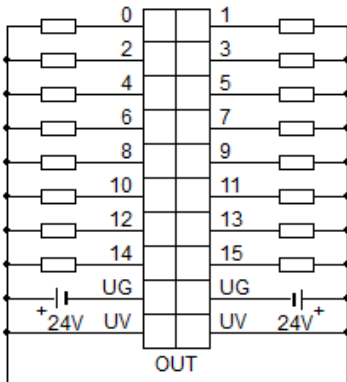
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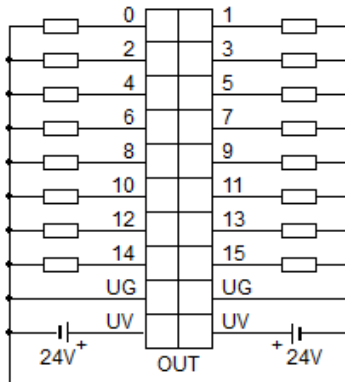
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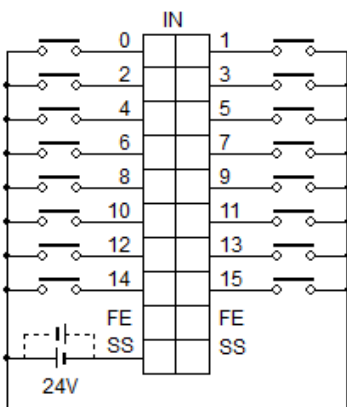
iR-DQ16-N



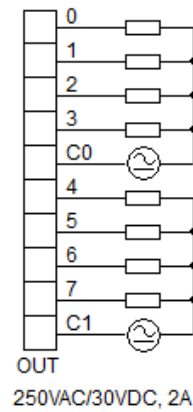
iR-DQ16-P



iR-DI16-K



iR-DQ08-R





## 4. Analog Input/Output

### 4.1 Analog Input / Output Modules

Module Name		iR-AI04-VI	iR-AM06-VI	iR-AQ04-VI
Number of Analog Inputs		4 ( $\pm 10V / \pm 20mA$ )	4 ( $\pm 10V / \pm 20mA$ )	0
Number of Analog outputs		0	2 ( $\pm 10V / \pm 20mA$ )	4 ( $\pm 10V / \pm 20mA$ )
Current Consumption		70mA@5VDC	70mA@5VDC	65mA@5VDC
Analog Power Supply		24 VDC ( 20.4 VDC~28.8 VDC ) ( -15%~+20% )		
Specification	PCB Coating	Yes		
	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	$-20^{\circ} \sim 70^{\circ}C$ ( $-4^{\circ} \sim 158^{\circ}F$ )		
	Operating Temperature	$0^{\circ} \sim 55^{\circ}C$ ( $32^{\circ} \sim 131^{\circ}F$ )		
	Relative Humidity	10% ~ 90% (non-condensing)		
Connection	Cross-section	AWG 28-16		AWG 24-16
	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		

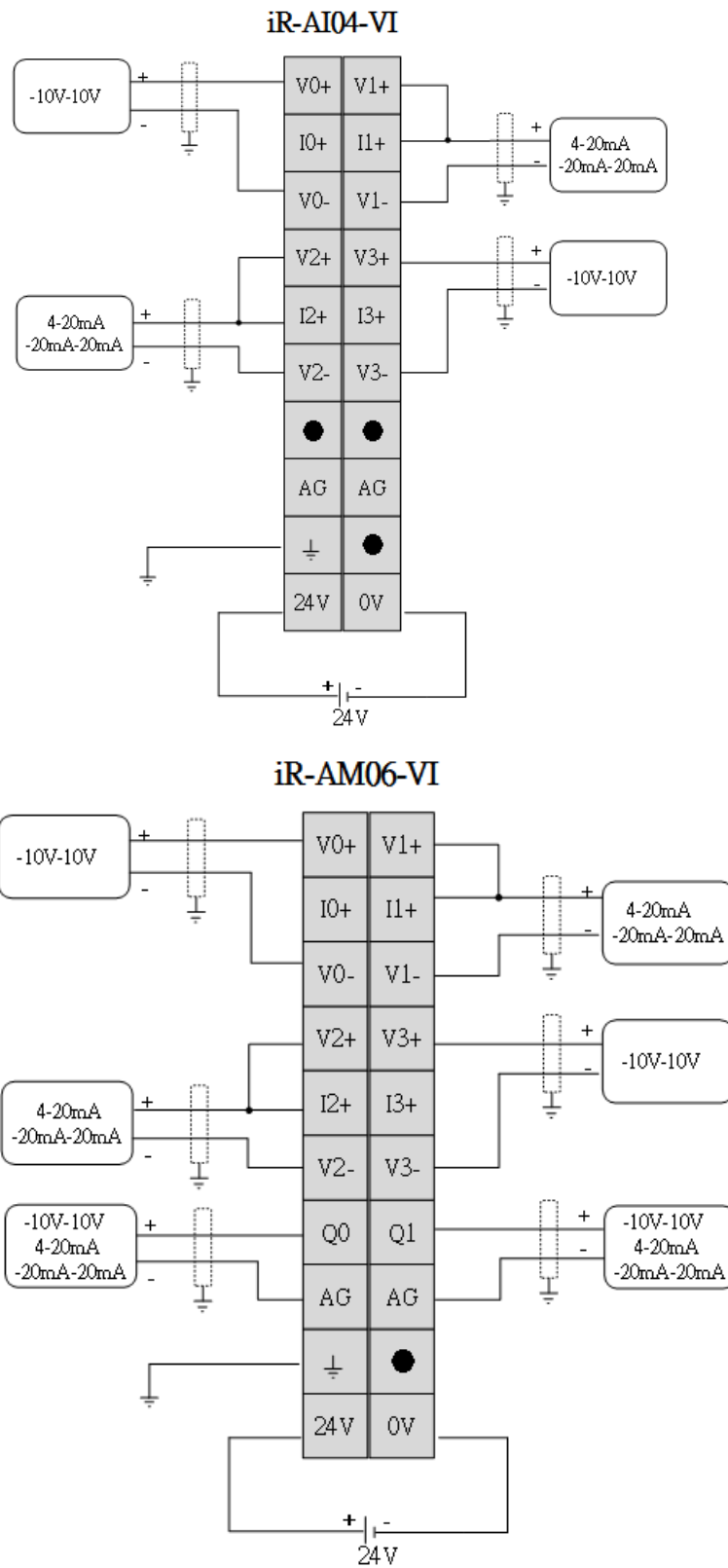
### 4.2 Analog Input Specification

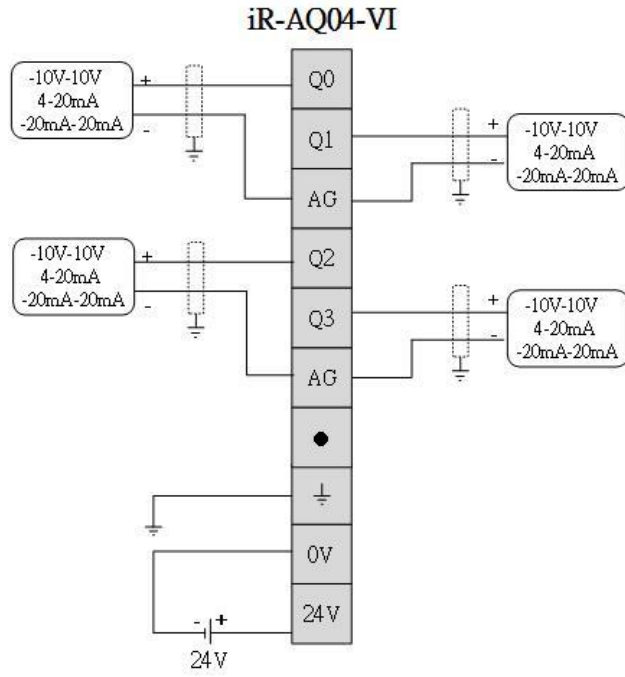
Input Range	$-10V \sim 10V$ 、 $-20mA \sim 20mA$				
Conversion Time	2ms/Channel				
Isolation	500 VDC : (Analog / Digital)				
Data Format	$-10 \sim 10V$	$-5V \sim 5V$	1~5V	$-20 \sim 20mA$	4~20mA
	$\pm 32000$	$\pm 32000$	0~32000	$\pm 32000$	0~32000
Resolution	0.312mV	0.156mV	0.156mV	0.625uA	0.625uA
	16 bit	16 bit	15 bit	16 bit	15 bit
Input Impedance	1M $\Omega$			250 $\Omega$	
Diagnose	Supply Voltage Wire break (1~5V & 4~20mA) Overflow/underflow				
Accuracy	$\pm 0.2\%$ Full Scale@25 $^{\circ}C$ $\pm 0.3\%$ Full Scale@0 $^{\circ} \sim 55^{\circ}C$				

### 4.3 Analog Output Specification

Output Range	$-10V \sim 10V$ 、 $-20mA \sim 20mA$				
Conversion Time	1.6ms/4 channels				
	1.3ms/3 channels				
	1ms/2 channels				
	700us/1 channel				
Isolation	500 VDC : (Analog / Digital)				
Data Format	$-10 \sim 10V$	$-5V \sim 5V$	1~5V	$-20 \sim 20mA$	4~20mA
	$\pm 32000$	$\pm 32000$	0~32000	$\pm 32000$	0~32000
Resolution	5mV	5mV	5mV	10uA	10uA
	12bit	11bit	10bit	12bit	11bit
Output Impedance	$\geq 1k\Omega$			$\leq 500\Omega$	
Diagnose	Supply Voltage Wire break				
Accuracy	$\pm 0.2\%$ Full Scale@25 $^{\circ}C$ $\pm 0.3\%$ Full Scale@0 $^{\circ} \sim 55^{\circ}C$				

### 4.4 Wiring





## 5. Temperature

### 5.1 Temperature Module

<b>Module Name</b>		<b>iR-AI04-TR</b>
<b>Number of Input Channels</b>		4 (RTD/Thermocouple)
<b>Current Consumption</b>		65mA@5VDC
<b>Analog Power Supply</b>		24 VDC ( 20.4 VDC~28.8 VDC ) ( -15%~+20% )
<b>Specification</b>	<b>PCB Coating</b>	Yes
	<b>Enclosure</b>	Plastic
	<b>Dimensions WxHxD</b>	27 x 109 x 81 mm
	<b>Weight</b>	Approx. 0.12 kg
	<b>Mount</b>	35mm DIN rail mounting
<b>Environment</b>	<b>Protection Structure</b>	IP20
	<b>Storage Temperature</b>	-20° ~ 70°C (-4° ~ 158°F)
	<b>Operating Temperature</b>	0° ~ 55°C (32° ~ 131°F)
	<b>Relative Humidity</b>	10% ~ 90% (non-condensing)
<b>Connection</b>	<b>Cross-section</b>	AWG 28-16
<b>Certification</b>	<b>EMC Immunity</b>	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

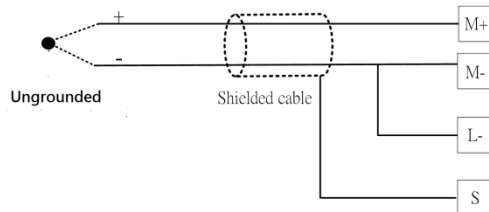
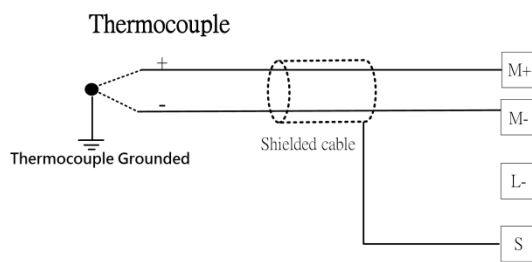
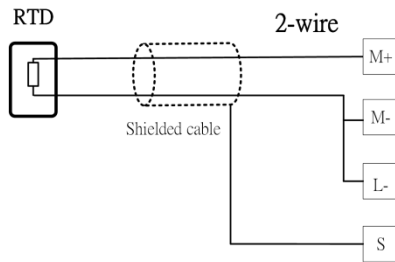
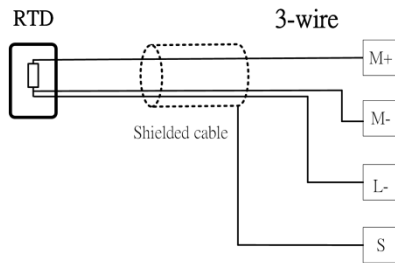
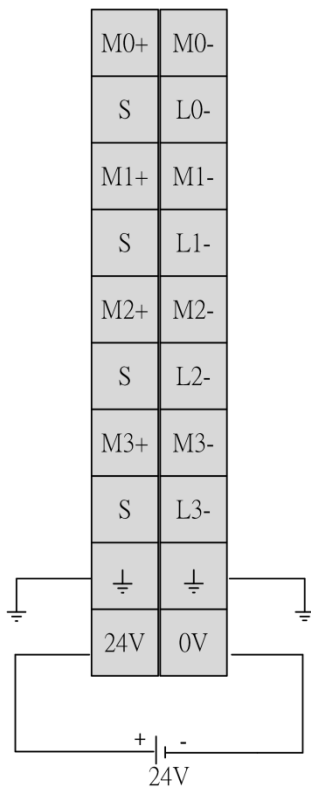
### 5.2 Temperature Specification

	Type	Standard	Material	Temperature Range	
	<b>Thermocouple</b>	J	IEC 60584	Fe-CuNi	-210 °C - 1200 °C
K		NiCr-Ni		-270 °C - 1370 °C	
R		PtRh-Pt (Pt 13%)		-50 °C - 1760 °C	
S		PtRh-Pt (Pt 10%)		-50 °C - 1760 °C	
T		Cu-CuNi		-270 °C - 400 °C	
E		NiCr-CuNi		-200 °C - 1000 °C	
N		NiCrSi-NiSi		-270 °C - 1300 °C	
B		PtRh-PtRh		200 °C - 1820 °C	
C		W-Re(IEC 584)		0 °C - 2320 °C	
L		DIN 43714	Fe-CuNi	0 °C - 900 °C	
U			Cu-CuNi	-200 °C - 600 °C	
TXK/XK(L)		P8.585-2001	Ni-9.5%Cr/Cu-44%Ni-13% Rh	-200 °C - -800 °C	
TBP / BP(A)-1			W-5%Re/W-20%Re	0-2500	
TBP / BP(A)-2			W-5%Re/W-20%Re	0-1800	
TBP / BP(A)-3			W-5%Re/W-20%Re	0-1800	
M			Cu-CuNi	-200-100	
		<b>Conversion Time</b>	100ms/channel		
	<b>Resolution</b>	0.1°C/0.1°F			
	<b>Accuracy</b>	± [0.4 % + 3°C] Full Scale @ 25°C ± [0.6 % + 3°C] Full Scale @ 0° ~ 55°C			
<b>RTD</b>	Type	Temperature Coefficient	Temperature Range		
	Pt100	α: 0.00385	-200°C ~850°C		
		α: 0.00392	-200°C ~660°C		
	Pt1000	α: 0.00385	-200°C ~850°C		
		α: 0.00392	-200°C ~660°C		
	LG-Ni1000	--	- 60~250		
	Ni100	0.00617	-100~180		
	Ni1000	0.00617	-100~180		
	CU50	0.00428	-50°C ~150°C		
	CU100	0.00428	-50°C ~150°C		
		<b>Conversion Time</b>	200ms/channel		
		<b>Resolution</b>	0.1°C/0.1°F		
	<b>Accuracy</b>	± 0.2 % Full Scale @ 25°C			

		± 0.3 % Full Scale @ 0° ~ 55°C	
<b>Voltage</b>	<b>Type</b>	<b>Conversion Time</b>	<b>Resolution</b>
	±2V	100ms/channel	16bit
	±1V		
	±500mV		
	±250mV		
	±125mV		
	±62.5mV		
±31.25mV			
<b>Resistance</b>	<b>Type</b>	<b>Conversion Time</b>	<b>Resolution</b>
	0-5000Ω (0-30000)	200ms /channel	0.167Ω
0-500Ω (0-30000)	0.0167Ω		
<b>Isolation</b>	500 VDC : (Analog / Digital)		
<b>Diagnose</b>	Supply Voltage Wire break Overflow/underflow		

### 5.3 Wiring

#### iR-AI04-TR



## 6. Motion Control

### 6.1 Modules Specifications

<b>Module Name</b>		<b>iR-PU01-P</b>
<b>Number of Axis</b>		<b>1- Axis</b>
<b>Specification</b>	<b>PCB Coating</b>	Yes
	<b>Enclosure</b>	Plastic
	<b>Dimensions WxHxD</b>	27 x 109 x 81 mm
	<b>Weight</b>	Approx. 0.12 kg
	<b>Mount</b>	35mm DIN rail mounting
<b>Environment</b>	<b>Protection Structure</b>	IP20
	<b>Storage Temperature</b>	-20° ~ 70°C (-4° ~ 158°F)
	<b>Operating Temperature</b>	0° ~ 55°C (32° ~ 131°F)
	<b>Relative Humidity</b>	10% ~ 90% (non-condensing)
<b>Connection</b>	<b>Cross-section</b>	AWG 28-16
<b>Certification</b>	<b>EMC Immunity</b>	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

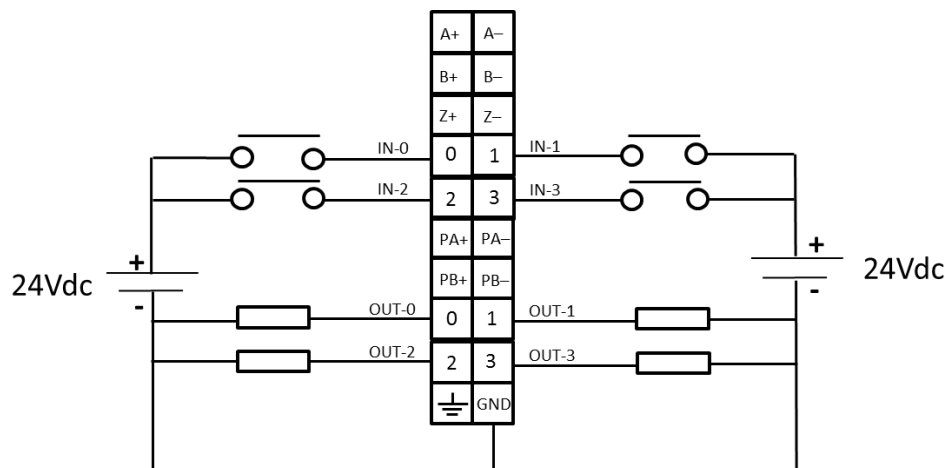
### 6.2 Digital Input Specifications

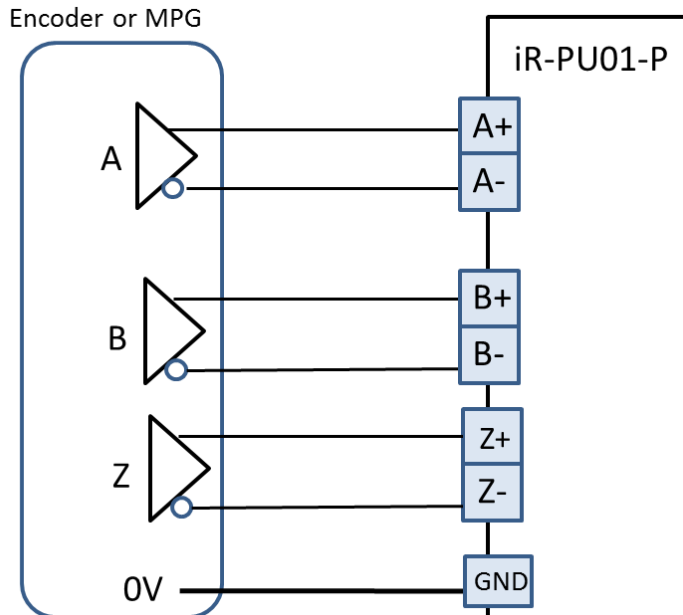
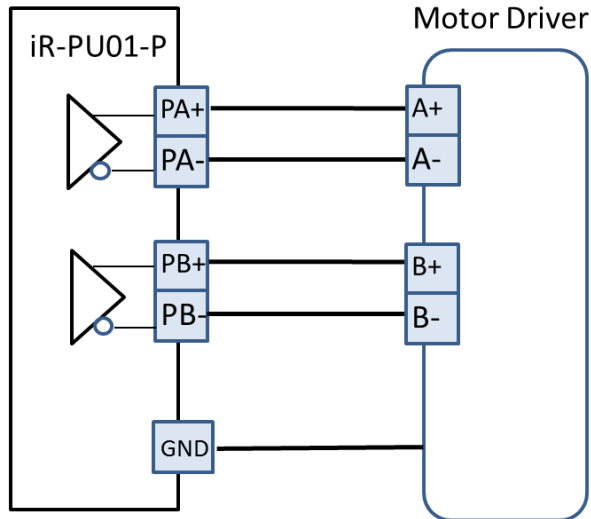
Item	Sink Input	Differential Input
<b>Number of Inputs</b>	4	3 (A/B/Z phase )
<b>Input current</b>	24 VDC, 5 mA	Meets the Requirements of ANSI Standards TIA/EIA-485-A
<b>HIGH Level Input Voltage</b>	15~28 VDC	-
<b>LOW Level Input Voltage</b>	0~5 VDC	-
<b>Maximum input frequency</b>	200KHz	2MHz
<b>Input Impedance</b>	3 KΩ	-
<b>Indicators</b>	Red LED Input State	

### 6.3 Digital Output Specifications

Item	Source Output	Differential Output
<b>Number of Outputs</b>	4	2(A/B phase )
<b>Output Voltage</b>	24VDC , 50 mA	Meets the Requirements of ANSI Standards TIA/EIA-485-A
<b>Maximum Output frequency</b>	40KHz	2MHz
<b>Indicators</b>	Red LED Input State	

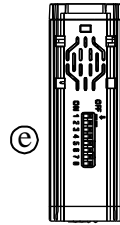
### 6.4 Wiring



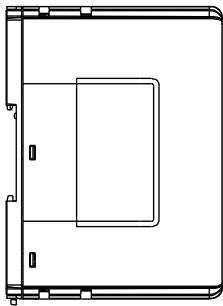


## 7. Dimensions

### 7.1 iR-COP

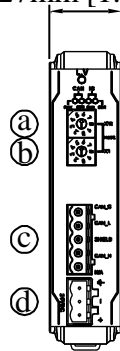


Top View



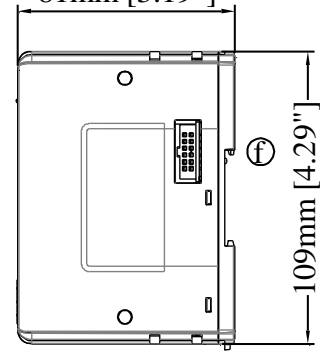
Side View

27mm [1.06"]

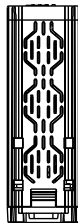


Front View

81mm [3.19"]



Side View



Bottom View

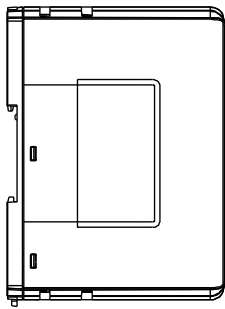
<i>a</i>	Node ID Rotary Switch x10	<i>e</i>	Baud Rate DIP Switch
<i>b</i>	Node ID Rotary Switch x1	<i>f</i>	Expansion Connector
<i>c</i>	CAN Bus Connector		
<i>d</i>	Power Connector		



7.2 iR-ETN

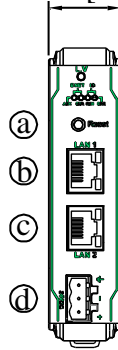


Top View



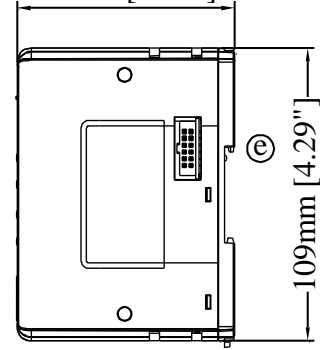
Side View

27mm [1.06"]

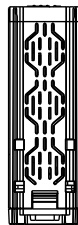


Front View

81mm [3.19"]



Side View



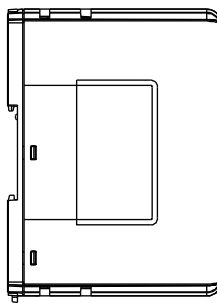
Bottom View

<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		

### 7.3 iR-ECAT

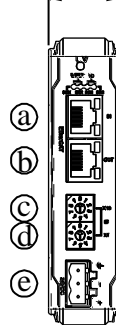


Top View



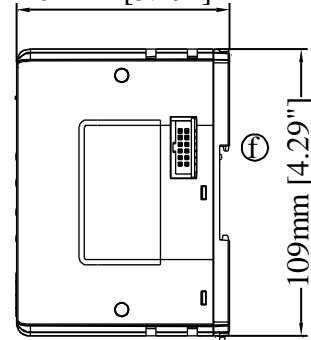
Side View

27mm [1.06"]



Front View

81mm [3.19"]



Side View



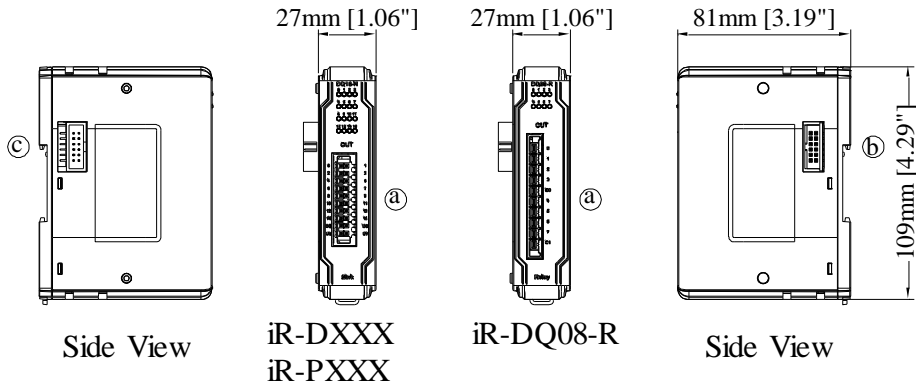
Bottom View

<i>a</i>	X1-EtherCAT IN	<i>e</i>	Power Connector
<i>b</i>	X2-EtherCAT Out	<i>f</i>	Expansion Connector
<i>c</i>	Node ID Rotary Switch x10		
<i>d</i>	Node ID Rotary Switch x1		

7.4 iR-DM16-N & P, iR-DQ16-N&P, iR-DI16-K, iR-DQ08-R, iR-PU01-P



Top View



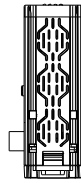
Side View

iR-DXXX  
iR-PXXX

iR-DQ08-R

Side View

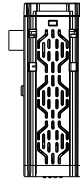
Front View



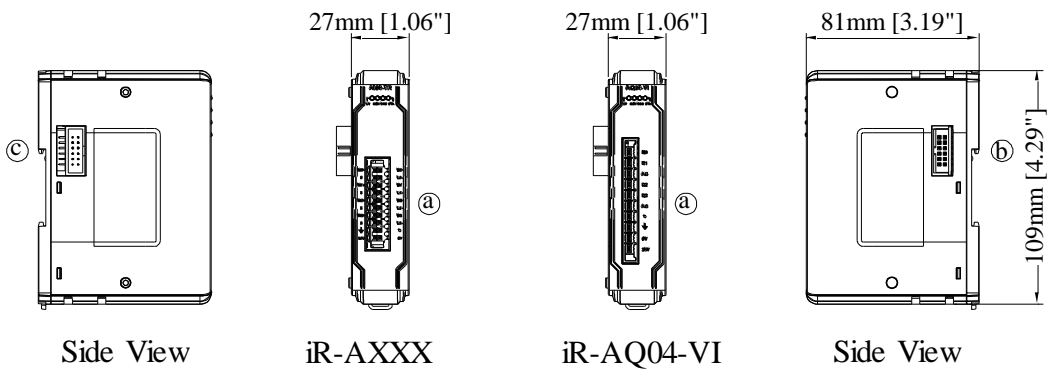
Bottom View

<i>a</i>	Terminal	<i>b.c</i>	Expansion Connector
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7.5 iR-AI04-VI, iR-AM06-VI, iR-AQ04-VI, iR-AI04-TR



Top View

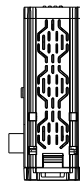


Side View

iR-AXXX

iR-AQ04-VI

Side View



Bottom View

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

Type	Device	Consumption(5V)	Power Supply(5V)	Power Consumption(24V)
Coupler	iR-ETN	220mA/1.1 W	2A/10w	100mA/2.40W
	iR-COP	170mA/0.85 W	2A/10w	100mA/2.40W
	iR-ECAT	270mA/1.35 W	2A/10w	100mA/2.40W
Digital I/O	iR-DM16-P	130mA/0.65 W	--	53mA/1.27W
	iR-DM16-N	130mA/0.65 W	--	56mA/1.34W
	iR-DQ08-R	220mA/1.1 W	--	84mA/2.02W
	iR-DQ16-N	205mA/1.02 W	--	78mA/1.87W
	iR-DQ16-P	196mA/0.984 W	--	75mA/1.80W
	iR-DI16-K	83mA/0.418 W	--	31mA/0.74W
Analog I/O	iR-AQ04-VI	65mA/0.325 W	--	25mA/0.60W
	iR-AI04-VI	70mA/0.35 W	--	27mA/0.65W
	iR-AM06-VI	70mA/0.35 W	--	27mA/0.65W
	iR-AI04-TR	65mA/0.325 W	--	25mA/0.60W
Motion	iR-PU01-P	108mA/0.54 W	--	85mA/2.04W

### 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		

Device	Name	Power Consumption
Coupler	iR-COP	100mA
Module	iR-DQ08-R *8	84mA*8=672mA
System	Power consumption : 100mA + 672mA = 772mA 24V Power supply should be greater than: 772mA/18.5W	

### 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		

Device	Name	Power Consumption
Coupler	iR-ETN	100mA
Module	iR-DM16-P *13	53mA*13=689mA
System	Power consumption : 100mA + 689mA = 789mA 24V Power supply should be greater than: 789mA/18.9W	