UniStream Remote I/O

User Manual

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About UniStream® Remote I/O

This line of remote Ethernet I/O is compatible with UniStream controllers. The line comprises an Ethernet-based Remote I/O adapter and I/O Remote modules.

You configure Remote I/Os in UniLogic, using the Hardware Configuration editor, and connect them to the controller via Ethernet cable

A single UniStream Remote I/O adapter can support up to 63 12mm wide I/O modules. Each adapter comprises two Ethernet ports; this enables users to link an adapter to a controller, and then daisy-chain adapters to support up to 8 adapters per controller, increasing the total number of I/Os supported by a single UniStream.

UniStream Remote I/O offer a broad range of modules; each module offers a different configuration of analog and digital outputs.

Note that the exact number of I/Os that can be included per adapter is dependent on the specific I/O connected to that specific adapter.

The adapter is limited to process 192 data bytes for inputs and 192 data bytes for outputs.

Each digital input/output point process data is 1 bit (minimum 1 byte per module if module data size is less than 8 points) while each analog input/output is 2 bytes (8 inputs/outputs module will be 16 bytes of process data).

UniStream Remote I/O and Uni-I/O modules

You may use both lines in the same application at the same time.

Since the two lines communicate via different protocols and physical connections:

- They work independently of each other
- You can use both lines with the same controller at the same time.

Note that the adapters and modules of each line are **not** interchangeable.

You may only use:

- Uni-Local Expansion Adapters with Uni-I/O modules
- UniStream Remote I/O Adapters with UniStream Remote I/O modules.

Unitronics Remote I/O Models

Adapter

Label	Article	Description	Ethernet Ports	Support Slots	Operating Voltage	Operating temperature
URB-TCP	URB-TCP	UniStream Remote IO Ethernet Adapter	2	Up to 63	24VDC	-40°C to 70°C (-40°F to 158°F) on **0.8A** load -40°C to 60°C (-40°F to 140°F) on **1.5A** load
URB-TCP2	URB-TCP2	UniStream Remote IO Ethernet Adapter, 6 modules	2	Up to 6	24VDC	-40°C to 60°C (-40°F to 140°F) on **1.0A** load
URB-EC1	URB-EC1	UniStream Remote IO EtherCAT Adapter ,16 Modules	2	Up to 16	24VDC	-20°C to 60°C (-4°F to 140°F) on **1.0A** load
URB-CAN	URB-CAN	UniStream Remote IO CANopen Adapter	-	Up to 63	24VDC	-20°C to 60°C (-4°F to 140°F) on **1.0A** load

Digital Inputs

Label	Article	Description	Number of IO
DI08	URD-0800	8 Digital inputs (sink or source), 10 RTB	8
DI168	URD-1600-8	16 Digital Inputs (Sink / Source),18 RTB	16
DI324	URD-3200-4	32 Digital Inputs (Sink / Source),40 IDC	32
DI04B	URD-0400B	4 Digital Inputs,10RTB	4
DI04C	URD-0400C	4 Digital Inputs,10RTB	4

Encoder / High Speed Counters Inputs

Label	Article	Description	Number of IO
DI02E	URD-0200E	2 High Speed Counters / Encoder Inputs, 10RTB	2
DI02D	URD-0200D	2 High Speed Counters / Encoder Inputs, 10RTB	2

Digital Outputs

Label	Article	Description	Number of IO
DO08CH	URD-0008CH	8 Digital Outputs (Source), 10 RTB	8
DO08CI	URD-0008CI	8 Digital Outputs (Source), 10 RTB	8
DO16C8	URD-0016CG-8	16 Digital Outputs, (Source), 18 RTB	16
DO32C4	URD-0032CG-4	32 Digital Outputs, (Source), 40 IDC	32
DO08NH	URD-0008NH	8 Digital Outputs (Sink), 10 RTB	8
DO08NI	URD-0008NI	8 Digital Outputs, (Sink), 10 RTB	8
DO16N8	URD-0016NG-8	16 Digital Outputs, (Sink), 18 RTB	16
DO32N4	URD-0032NG-4	32 Digital Outputs, (Sink), 40 PIN IDC	32

Relay

Label	Article	Description	Number of IO
DO04RH	URD-0004RH	4 Relay, 10 RTB	4
DO04SK	URD-0004SK	4 Solid State Relay, 10 RTB	4
DO04SM	URD-0004SM	4 Solid State Relay, 10 RTB	4
DO04SN	URD-0004SN	4 Solid State Relay, 10 RTB	4

High Speed Outputs

Label	Article	Description	Number of IO
DO02PU	URD-02PU	2CH Pulse Output	2
DO02PW	URD-02PW	2CH PWM Output	2
DO04PW	URD-04PW	4CH PWM Output	4

Analog Inputs 12 bit

Label	Article	Description	Number of IO
AI04O	URA-0400O	4 Analog Current Inputs, 10 RTB	4
AI08O	URA-0800O	8 Analog Current Inputs, 10 RTB	8
AI16O8	URA-1600O-8	16 Analog Current Inputs, 18 RTB	16
AI04P	URA-0400P	4 Analog Voltage Inputs, 10 RTB	4
AI08P	URA-0800P	8 Analog Voltage Inputs, 10 RTB	8
AI16P8	URA-1600P-8	16 Analog Voltage Inputs, 18 RTB	16

Analog Inputs 16 bit

Label	Article	Description	Number of IO
AI04T	URA-0400T	4 Analog Current Inputs, 10 RTB	4
AI08T	URA-0800T	8 Analog Current Inputs, 10 RTB	8
AI16T8	URA-1600T-8	16 Analog Current Inputs, 18 RTB	16
AI04U	URA-0400U	4 Analog Voltage Inputs, 10 RTB	4
AI08U	URA-0800U	8 Analog Voltage Inputs, 10 RTB	8
AI16U8	URA-1600U-8	16 Analog Voltage Inputs, 18 RTB	16

Analog Outputs 12 bit

Label	Article	Description	Number of IO
AO04W	URA-0004W	4 Analog Current Outputs, 10 RTB	4
AO08W	URA-0008W	8 Analog Current Outputs, 10 RTB	8
AO04X	URA-0004X	4 Analog Voltage Outputs, 10 RTB	4
AO08X	URA-0008X	8 Analog Voltage Outputs, 10 RTB	8
AO16X8	URA-0016X-8	16 Analog Voltage Outputs, 18 RTB	16

Analog Outputs 16 bit

Label	Article	Description	Number of IO
AO04Y	URA-0004Y	4 Analog Current Outputs, 10 RTB	4
AO08Y	URA-0008Y	8 Analog Current Outputs, 10 RTB	8
AO04Z	URA-0004Z	4 Analog Voltage Outputs, 10 RTB	4
AO08Z	URA-0008Z	8 Analog Voltage Outputs, 10 RTB	8
AO16Z8	URA-0016Z-8	16 Analog Voltage Outputs, 18 RTB	16

Temperature

Label	Article	Description	Number of IO
S04RT	URS-04RT	4 RTD / Resistance, 10 RTB	4
S08RT2	URS-08RT-2	8 RTD / Resistance, 20 PIN IDC	8
S04TC	URS-04TC	4 Thermocouple / Mv, 10 RTB	4
S08TC2	URS-08TC-2	8 Thermocouple / mV, 20 PIN IDC	8

Special

Label	Article	Description	Number of IO
S02LC	URS-02LC-8	2ch Load Cell input	2
S01PM	URS-01PM	1ch Power Monitor	1

Power

Label	Article	Description
PS24	URP-PS24V	Adapter Additional System Power Expension, 1A
PC00	URP-C0V0V	8 0VDC Potential Distribution
PC2424	URP-C24V24V	8 24VDC Potential Distribution
PC024	URP-C0V24V	4 24VDC, 4 0VDC Potential Distribution
PPDIST	URP-PDIST	External Universal Power Distribution
PSHLD	URP-SHIELD	External Universal Shield Distribution

Spare Parts

Article	Description
URB-END	Adapter End Module
URO-0105	10 Removable Terminal Block For I/O
URO-0106	18 Removable Terminal Block For I/O
URO-0101	10 Removable Terminal Block For Potential Distribution
URO-0102	10 Removable Terminal Block For External Power
URB-END	Adapter End Module

Wiring Accessories

Article	Description
ADP-BBOARD20	IDC 20 Breakout Board + 1m cable
ADP-BBOARD40	IDC 40 Breakout Board + 1m cable

Environmental

Protection	IP20, NEMA1
UL temperature	-20°C to 60°C (-4°F to 140°F)
Storage temperature	-40°C to 85°C (-40°F to 185°F)
Relative Humidity (RH)	5% to 90% (non-condensing)
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Mounting	DIN Rail
Certifications	CE , UL

URB-TCP (URB-TCP) – UniStream Remote IO Ethernet Adapter

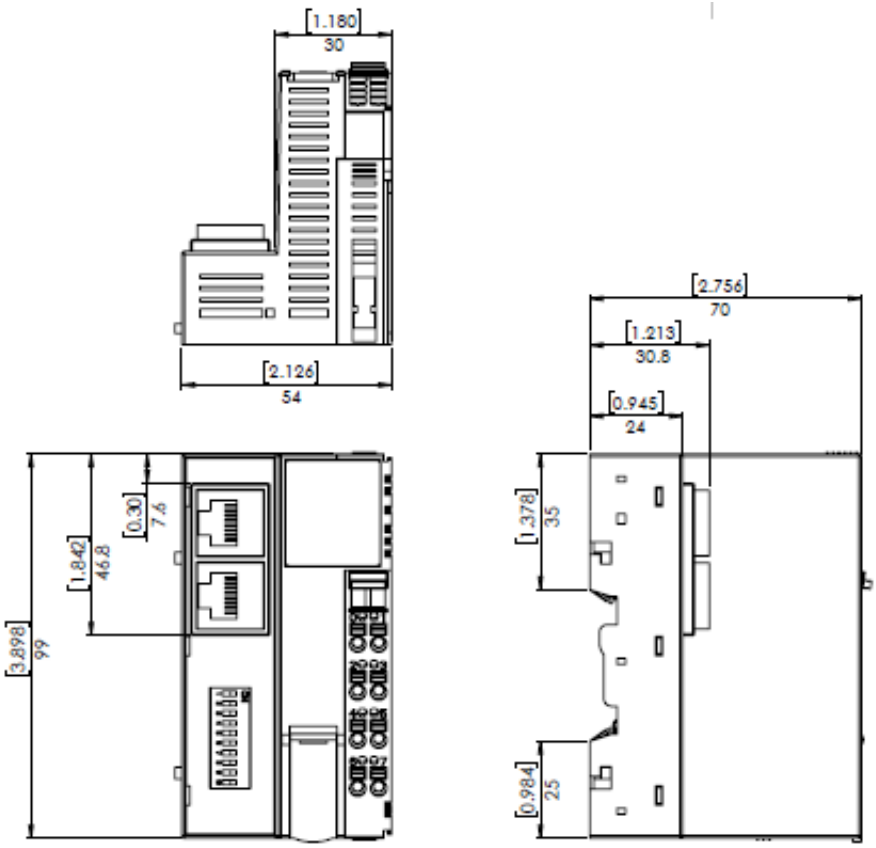
General restrictions

- All examples and diagrams are intended to aid understanding, and do not guarantee operation. Unitronics accepts no responsibility for actual use of this product based on these examples.
- Please dispose of this product according to local and national standards and regulations.
- This product should be installed only by qualified personnel.

Environmental Considerations

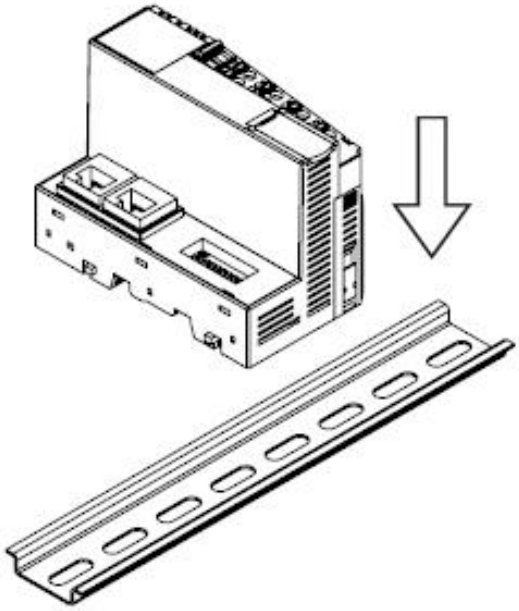
- Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration, in accordance with the standards and limitations given in the product's technical specification sheet.
- Do not place in water or let water leak onto the unit.
- Do not allow debris to fall inside the unit during installation.
- Install at maximum distance from high-voltage cables and power equipment.

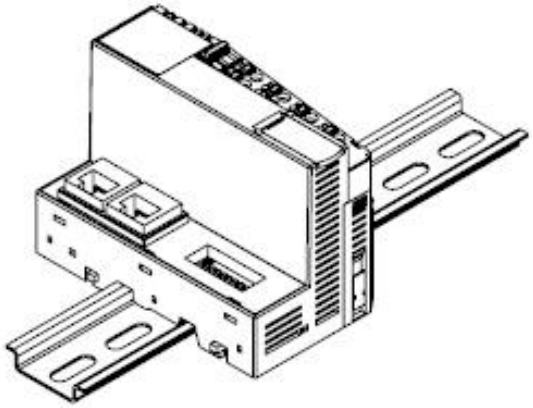
Dimensions



Installation - DIN-Rail Module Mounting

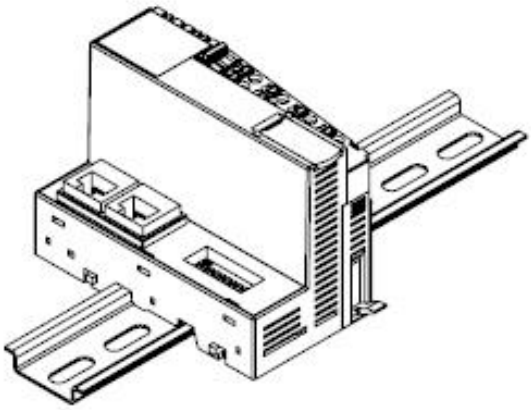
1. Press down the module lightly on the DIN rail until the lower ridge click onto the rail.



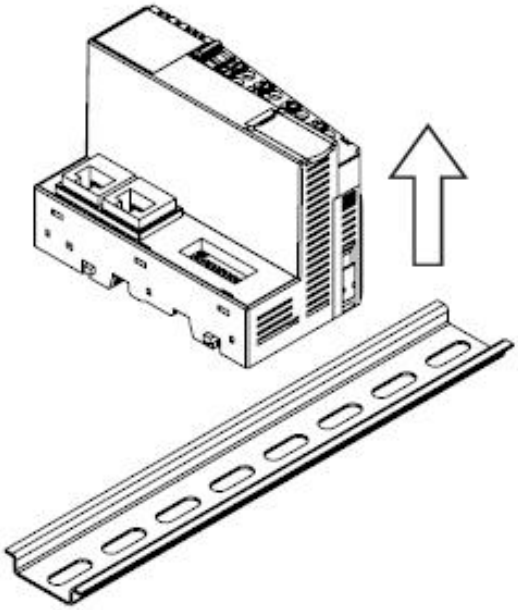


How to Remove the Adapter Module from the DIN-Rail

1. Pull the white locking latch.

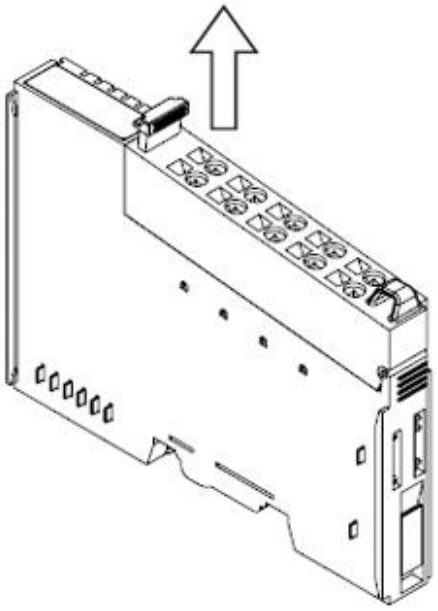


2. Pull the module off the rail.

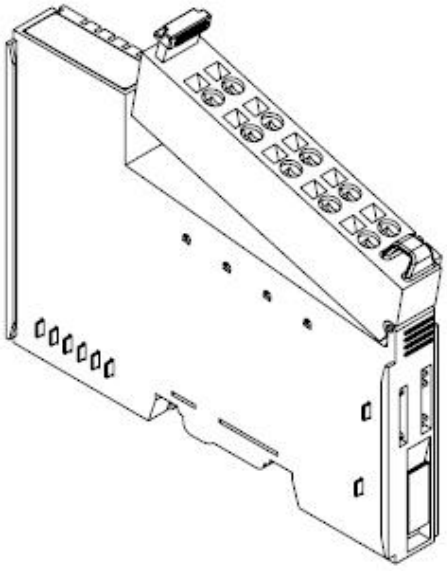


How to remove the RTB (Removable Terminal Block) from the I/O module

1. Pull out the plastic belt from the RTB.

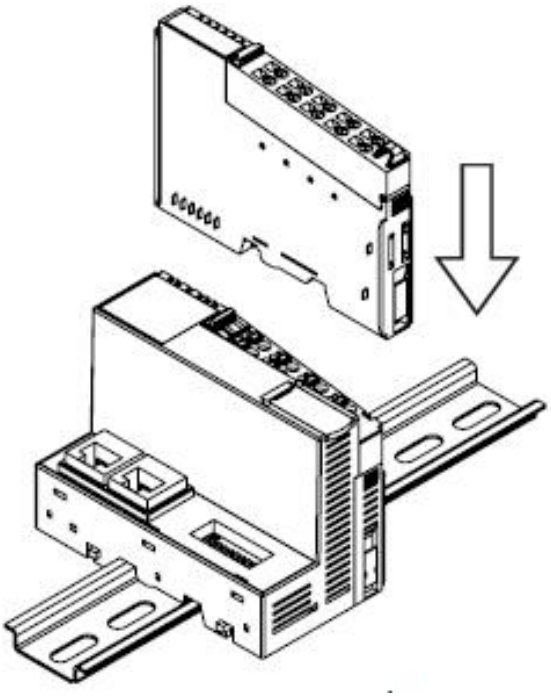


2. Apply more force until the I/O module is pulled away from the I/O module.



How to connect the I/O modules

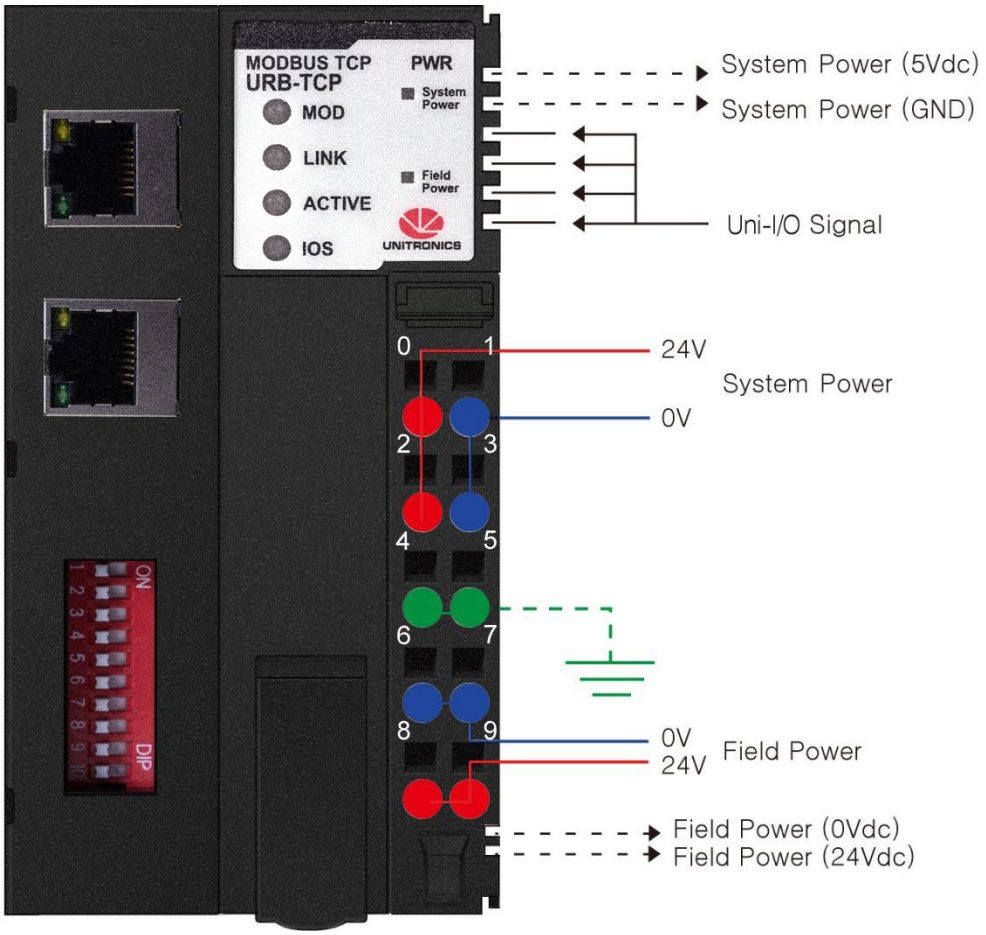
1. Line up the grooves on the module with the grooves on the adapter (if it is the first module) or on the adjacent module, and slide the module into place as shown in the next image.



Specifications

Items	Specification
Max. Expansion Module	Up to 63 slots The adapter is limited to process 192 data bytes for inputs and 192 data bytes for outputs. Each digital input/output point process data is 1 bit (minimum 1 byte per module if module data size is less than 8 points) while each analog input/output is 2 bytes (8 inputs/outputs module will be 16 bytes of process data).
Max Length Bus Line	Up to 100m from Ethernet Hub/Switch with twisted CAT5 UTP/STP
Max. Nodes	Limited by Ethernet Specification.
Baud Rate	10/100Mbps, Auto-negotiation, Full duplex
Interface Connector	2 ports, RJ-45 socket
IP-Address Setup	DIP Switch or DHCP/BOOTP
IP-Address Range	xxx.xxx.xxx.1 ~ 253 (User area) xxx.xxx.xxx.254 ~ 255 (Reserved for IAP Function)
Indicator	6 LEDs 1 Green/Red, Module Status (MOD) 1 Green, Physical Connection (LINK) 1 Green, Exchange Data/Traffic Present (ACTIVE) 1 Green/Red, Expansion I/O Module Statsus (IOS) 1 Green, System Power Status 1 Green, Field Power Status 2 LEDs (each RJ45 Connector) 1 Yellow, Link/Active 1 Green, Not used For detailed indicators description, please follow the "LED indicators" section bellow
System Power	Supply voltage : 24VDC nominal Supply voltage range : 15~32Vdc Protection : • Output current limit (Min. 1.5A) • Reverse polarity protection
Power Dissipation	70mA typical @ 24VDC
Current for I/O Module	1.5A @ 5VDC
Isolation	System power to internal logic : Non-isolation System power I/O driver : Isolation
Field Power	Supply voltage : 24VDC typical (Max. 32VDC) Field Power Range is different depending on URI module series. Refer to URI module`s specification.
Max. Current Field Power Contact	DC 10A Max
Weight	162g
Module Size	54mm x 99mm x 70mm

Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	System Power, 24V	1	System Power, Ground
2	System Power, 24V	3	System Power, Ground
4	F.G	5	F.G
6	Field Power, Ground	7	Field Power, Ground
8	Field Power, 24V	9	Field Power, 24V

RJ45 Socket

RJ-45	Signal Name	Description
1	TD+	Transmit +
2	TD-	Transmit -
3	RD+	Receive +
4	-	
5	-	
6	RD-	Receive -
7	-	
8	-	
Case	Shield	

IP Address Setup using BOOTP Server

The URB adapter IP defaults are:

Default IP: 192.168.100.100

Subnet mask: 255.255.255.0

Note that on the adapter, there is a sticker showing its MAC address.

Editing the IP defaults

There are two methods of changing the IP address:

- Via UniLogic's BOOTP Server
  This is a utility accessible via the UniLogic ribbon
- Via DIP switch
  These are physical switches on the adapter

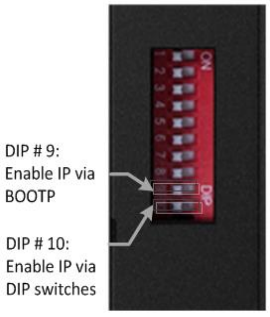
Selecting the IP Configuration Method

To enable the selected method, you must raise the appropriate DIP switch on the adapter. By factory default, the adapter is supplied with all switches down.

- Raise #9 to set IP via BOOTP Server:
  - Enables the adapter BOOTP/DHCP.
  - After power up, the adapter will send up to 20 consecutive BOOTP/DHCP request messages, one for every 2 seconds.
  - In case that the BOOTP/DHCP server does not respond, the Adapter applies the latest saved IP address.
- Raise #10 to set IP via DIP switch:
  You can then set the IP according to the description in the next table.

URB Adapter DIP Switches

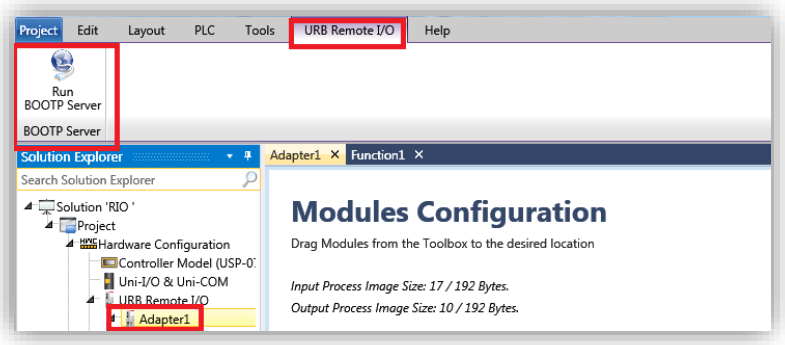
<table>
<tr><th>#</th><th>Role</th><th>Description</th></tr>
<tr><td>1</td><td>IP bit#0</td><td rowspan="8">Lowest IP Address octet when
Switch #10=ON (raised)
Example: XXX.XXX.XXX.IP
[XXX.XXX.XXX represents the last configured network address]
Example for full bitmap: XXX.XXX.XXX.100
<table><tr><td>Bit0</td><td>Bit1</td><td>Bit2</td><td>Bit3</td><td>Bit4</td><td>Bit5</td><td>Bit6</td><td>Bit7</td><td>DHCP</td><td>USE IP</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td></tr></table></td></tr>
<tr><td>2</td><td>IP bit#1</td></tr>
<tr><td>3</td><td>IP bit#2</td></tr>
<tr><td>4</td><td>IP bit#3</td></tr>
<tr><td>5</td><td>IP bit#4</td></tr>
<tr><td>6</td><td>IP bit#5</td></tr>
<tr><td>7</td><td>IP bit#6</td></tr>
<tr><td>8</td><td>IP bit#7</td></tr>
<tr><td>9</td><td>DHCP / BOOTP</td><td>Enable DHCP / BOOTP</td></tr>
<tr><td>10</td><td>Use DIP IP Value</td><td>Enable IP Address set by DIP Switches</td></tr>
</table>



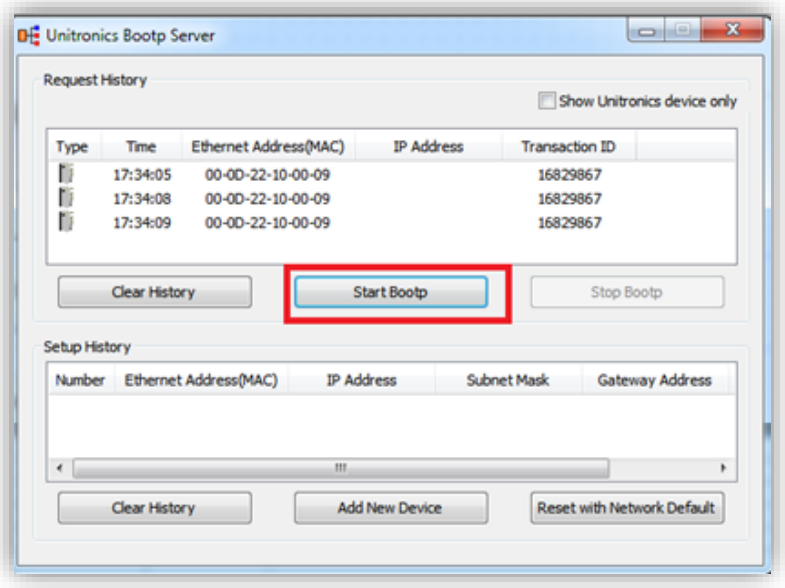
Configuring IP using Unitronics BOOTP Server

Before you can set the IP address of the Remote IO adaptor via Unitronics BOOTP Server, you must raise DIP #9 (check that #10 is down)

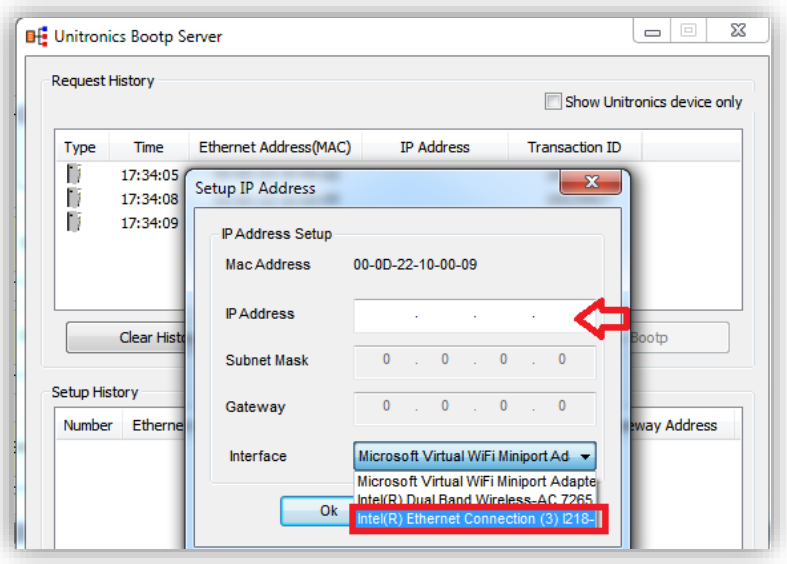
1. Power OFF the URB adapter.
2. Raise DIP switch #9 to enable DHCP / BOOTP.
3. In UniLogic, in the Solution Explorer, select the adapter; the ribbon will open the tab URB Remote I/O.
4. On the ribbon, click on Run BOOTP Server to open the utility.



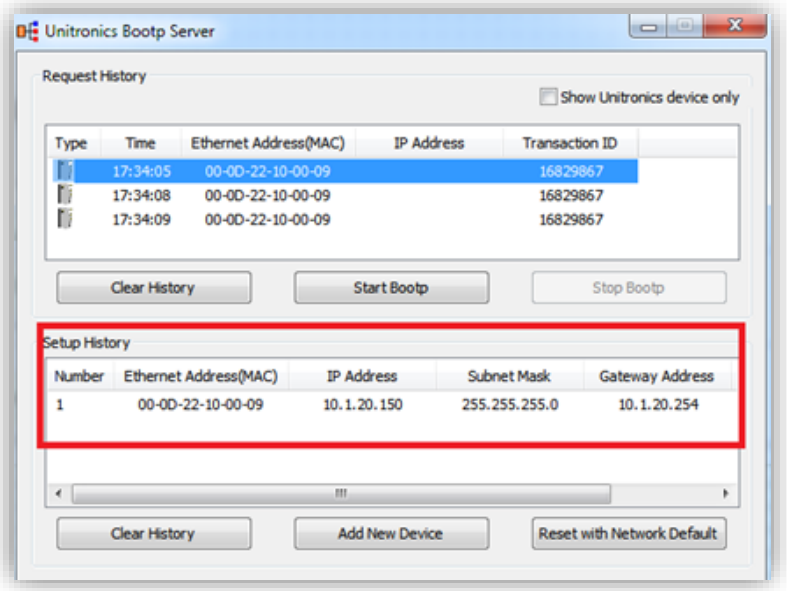
5. Click Start BootP in the **Unitronics** BOOTP Server; the upper section displays Ethernet devices that are in the network.



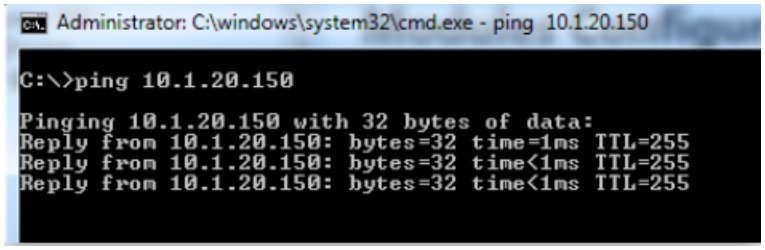
6. Power ON the URB adapter.
7. Locate the adapter's MAC address and double-click on the row.
8. Enter the required IP address and select your PC Network card.



9. Click Ok. Now you should see the device in the bottom window including the IP address.



10. Power cycle the adapter; turn it off and on.
11. Use Ping from command line to check that the IP address is replying.



12. If the adapter replies successfully, then power off the adapter (URB-TCP) and lower DIP switch #9 (set to OFF).
13. Configure the adapter and IO modules in UniLogic and test.

LED Indicators

LED No.	LED Function / Description	LED Color
MOD	Module Status	Green/Red
LINK	Physical Connection	Green
ACTIVE	Exchange Data/Traffic Present	Green
IOS	Extension Module Status	Green/Red
System Power	System Power Enable	Green
Field Power	Field Power Enable	Green

MOD (Module Status LED)

Status	LED	Indication
Not Powered	OFF	Not power is supplied to the unit.
Device Operational	Green	The unit is operating in normal condition.
Devicce in Standby	Flashing Green	The device needs commissioning due to configuration missing, incomplete or incorrect.
Protocol Error	Green/Red Toggle	Protocol error such as watchodg error, etc.
Minor Fault	Flashing Red	Recoverable Fault. - EEPROM checksum fault.
Unrecoverable Fault	Red	The device has an unrecoverable fault. - Memory error or CPU watchdog error.

LINK (Physical Connection LED)

Status	LED	Indication
Not Powered or Not Linked	OFF	Device may not be powered
Adapter physical connected	Green	Adapter Ethernet Controller physically connected

ACTIVE (Exchange Data/Traffic Present LED)

Status	LED	Indication
Not Powered	OFF	Device is idle or may not be powered.
Adapter exchange data	Flashing Green	Adapter(slave) exchange data/Traffic present. About 10msec flashing.

IOS LED (Extension Module Status LED)

Status	LED	Indication
Not Powered	OFF	Device may not be powered.
No Expansion Module	Flashing Red	Adapter has no expansion module
Internal Bus Connection, Run Exchanging I/O	Green	Exchanging I/O data.
Expansion Configuration Failed	Red	One or more expansion module occurred in fault state. - Detected invalid expansion module ID. - Overflowed Input/Output Size - Too many expansion module - Initialization failure - Communication failure. - Changed expansion module configuration. - Mismatch vendor code between adapter and expansion module.

Field Power, System Power LED (Field Power, System Power Status LED)

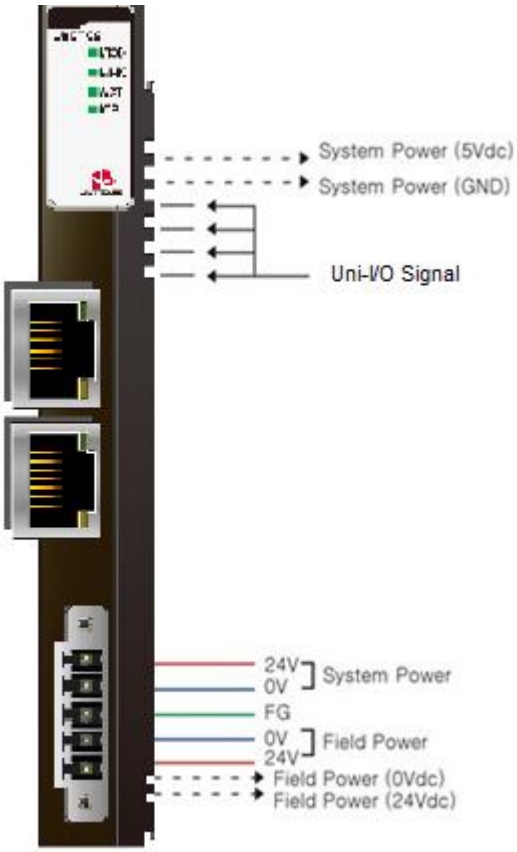
Status	LED	Indication
No field, System power	OFF	Not supplied 24VDC field power, 5VDC system power.
Supplied field, System power	Green	Supplied 24VDC field power, 5VDC system power.

URB-TCP2 (URBTC2) – UniStream Remote IO Ethernet Adapter, 6 modules

Specifications

Items	Specification
Adapter Type	Slave node (MODBUS/TCP,MODBUS/UDP Server)
Protocol	MODBUS/TCP,MODBUS/UDP,HTTP,DHCP,10 TCP Connections
Sub-Protocol	*Ethernet/IP
Max. Expantsion Module	6 slots
Max. Input / Output Data Size	Max. Input 256 bytes / Output 256 bytes
Max Length Bus Line	Up to 100m from Ethernet Hub/Switch with twisted CAT5 UTP/STP
Max. Nodes	Limited by Ethernet Specification.
Baud Rate	10/100Mbps, Auto-negotiation, Full duplex
Interface Connector	RJ-45 socket * 2pcs
IP-Address Setup	Via DHCP/BOOTP
IP-Address Range	xxx.xxx.xxx.1 ~ 253 (User area) xxx.xxx.xxx.254 ~ 255 (Reserved for IAP Function)
IAP Mode	When DIP Switch 1 to 8 setting is 254 or 255 (Using only Internet Explorer / recommended version 11)
Indicator	4 LEDs 1 Green/Red, Module Status (MOD) 1 Green, Physical Connection (LINK) 1 Green, Exchange Data/Traffic Present (ACTIVE) 1 Green/Red, Expansion I/O Module Statsus (IOS) 2 LEDs (each RJ45 Connector) 1 Yellow, Link/Active 1 Green, Not used
Module Location	Starter module left side of URB system
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 15~28.8Vdc Reverse polarity protection
Power Dissipation	75mA typical @ 24Vdc
Current for I/O Module	1.0A @ 5Vdc
Isolation	System power to internal logic : Non-isolation System power I/O driver : Isolation
Field Power	Supply voltage : 24Vdc typical (Max. 32Vdc) * Field Power Range is different depending on IO Module series. Refer to IO Module`s Specification.
Max. Current Field Power Contact	DC 8A Max
Weight	76g
Module size	22mm x 109mm x 70mm

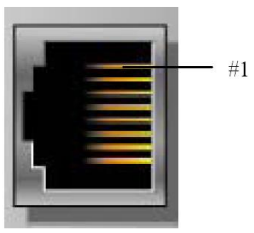
Wiring Diagram



Pin No.	Signal Description
1	System Power, 24V
2	System Power, Ground
3	F.G
4	Field Power, Ground
5	Field Power, 24V

RJ45 Socket

RJ-45	Signal Name	Description
1	TD+	Transmit +
2	TD-	Transmit -
3	RD+	Receive +
4	-	
5	-	
6	RD-	Receive -
7	-	
8	-	
Case	Shield	



IP Address Setup using BOOTP Server

The URB adapter IP defaults are:

Default IP: 192.168.100.100

Subnet mask: 255.255.255.0

Note that on the adapter, there is a sticker showing its MAC address.

Editing the IP defaults

There are two methods of changing the IP address:

- Via UniLogic's BOOTP Server
  This is a utility accessible via the UniLogic ribbon
- Via DIP switch
  These are physical switches on the adapter

Selecting the IP Configuration Method

To enable the selected method, you must raise the appropriate DIP switch on the adapter. By factory default, the adapter is supplied with all switches down.

- Raise #9 to set IP via BOOTP Server:
  - Enables the adapter BOOTP/DHCP.
  - After power up, the adapter will send up to 20 consecutive BOOTP/DHCP request messages, one for every 2 seconds.
  - In case that the BOOTP/DHCP server does not respond, the Adapter applies the latest saved IP address.
- Raise #10 to set IP via DIP switch:
  You can then set the IP according to the description in the next table.

URB Adapter DIP Switches

<table>
<tr><th>#</th><th>Role</th><th>Description</th></tr>
<tr><td>1</td><td>IP bit#0</td><td rowspan="8">Lowest IP Address octet when
Switch #10=ON (raised)
Example: XXX.XXX.XXX.IP
[XXX.XXX.XXX represents the last configured network address]
Example for full bitmap: XXX.XXX.XXX.100
<table><tr><td>Bit0</td><td>Bit1</td><td>Bit2</td><td>Bit3</td><td>Bit4</td><td>Bit5</td><td>Bit6</td><td>Bit7</td><td>DHCP</td><td>USE IP</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td></tr></table></td></tr>
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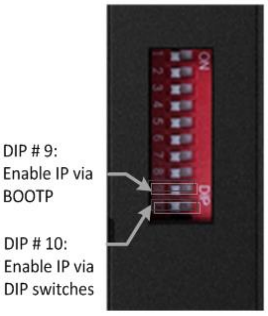
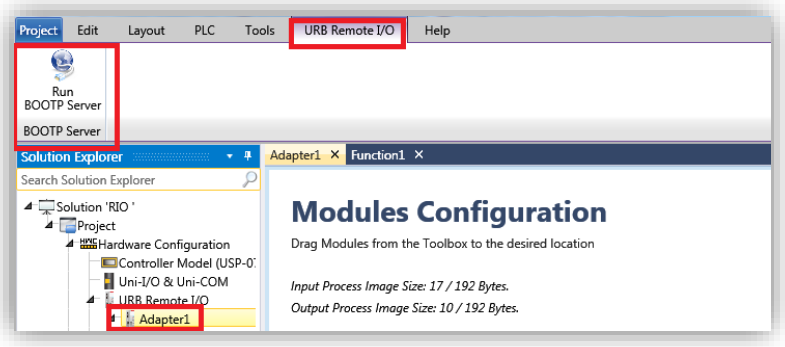
<tr><td>8</td><td>IP bit#7</td></tr>
<tr><td>9</td><td>DHCP / BOOTP</td><td>Enable DHCP / BOOTP</td></tr>
<tr><td>10</td><td>Use DIP IP Value</td><td>Enable IP Address set by DIP Switches</td></tr>
</table>



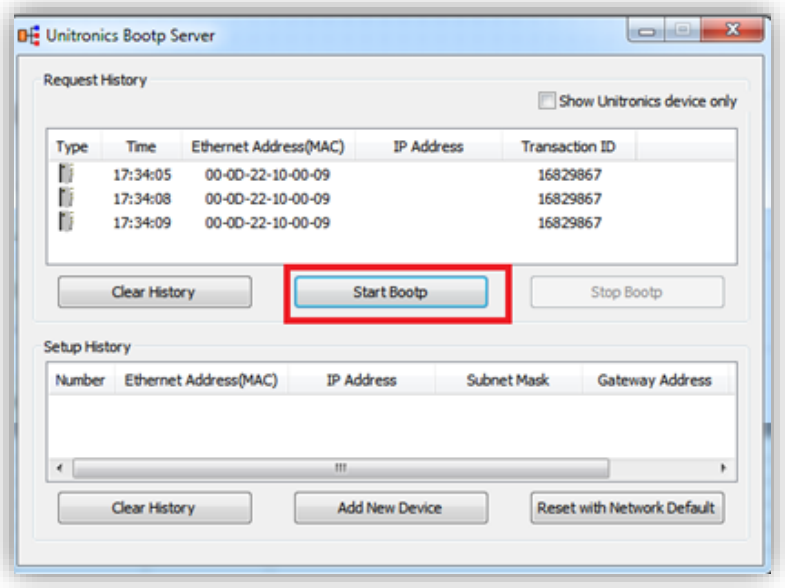
Configuring IP using Unitronics BOOTP Server

Before you can set the IP address of the Remote IO adaptor via Unitronics BOOTP Server, you must raise DIP #9 (check that #10 is down)

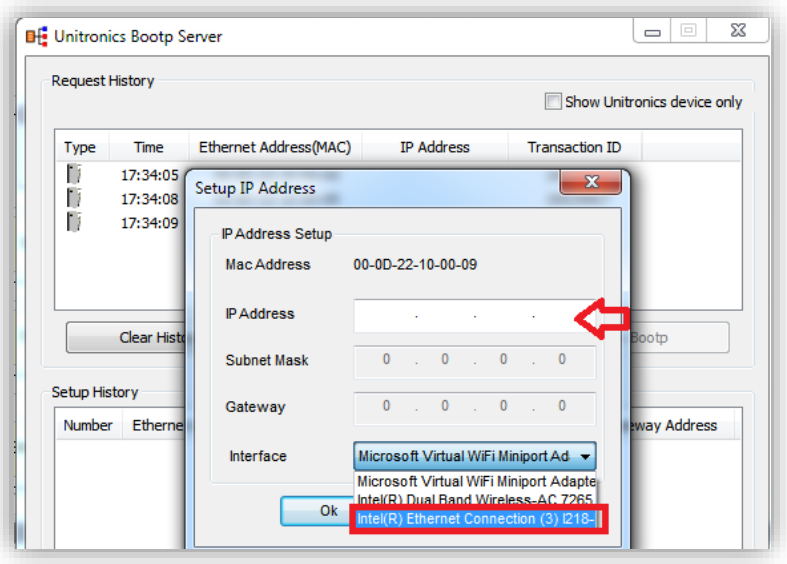
1. Power OFF the URB adapter.
2. Raise DIP switch #9 to enable DHCP / BOOTP.
3. In UniLogic, in the Solution Explorer, select the adapter; the ribbon will open the tab URB Remote I/O.
4. On the ribbon, click on Run BOOTP Server to open the utility.



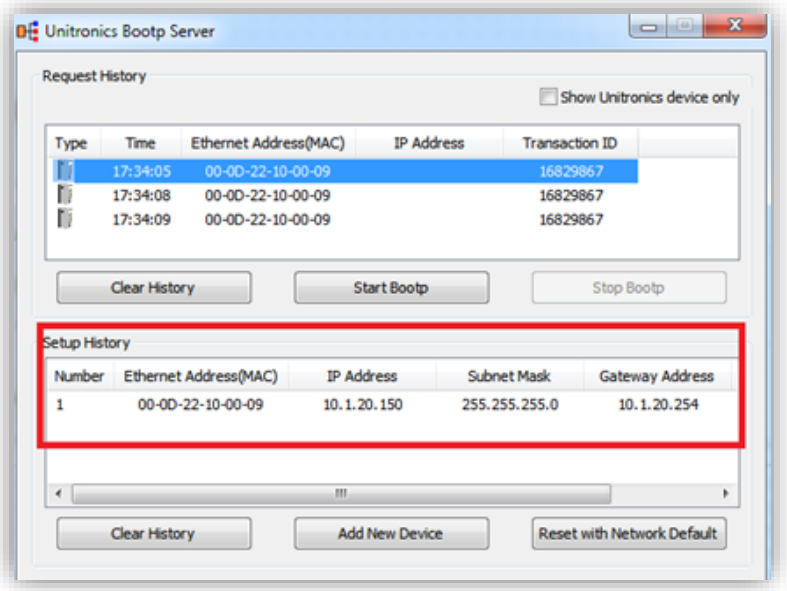
5. Click Start BootP in the **Unitronics** BOOTP Server; the upper section displays Ethernet devices that are in the network.



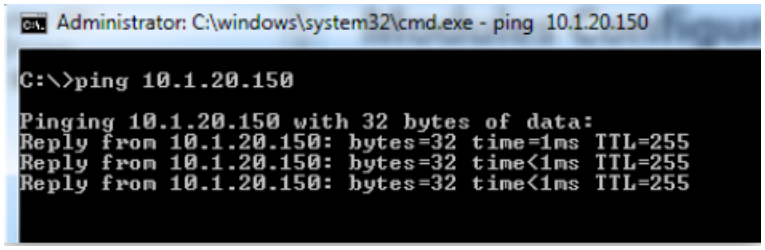
6. Power ON the URB adapter.
7. Locate the adapter's MAC address and double-click on the row.
8. Enter the required IP address and select your PC Network card.



9. Click Ok. Now you should see the device in the bottom window including the IP address.



10. Power cycle the adapter; turn it off and on.
11. Use Ping from command line to check that the IP address is replying.



12. If the adapter replies successfully, then power off the adapter (URB-TCP) and lower DIP switch #9 (set to OFF).
13. Configure the adapter and IO modules in UniLogic and test.

LED Indicators

LED No.	LED Function / Description	LED Color
MOD	Module Status	Green/Red
LINK	Physical Connection	Green
ACTIVE	Exchange Data/Traffic Present	Green
IOS	Extension Module Status	Green/Red

MOD (Module Status LED)

Status	LED	Indication
Not Powered	OFF	Not power is supplied to the unit.
Device Operational	Green	The unit is operating in normal condition.
Device in Standby	Flashing Green	The device needs commissioning due to configuration missing, incomplete or incorrect.
Protocol Error	Green/Red Toggle	Protocol error such as watchodg error, etc.
Minor Fault	Flashing Red	Recoverable Fault. - EEPROM checksum fault.
Unrecoverable Fault	Red	The device has an unrecoverable fault. - Memory error or CPU watchdog error.

LINK (Physical Connection LED)

Status	LED	Indication
Not Powered or Not Linked	OFF	Device may not be powered
Adapter physical connected	Green	Adapter Ethernet Controller physically connected

ACTIVE (Exchange Data/Traffic Present LED)

Status	LED	Indication
Not Powered	OFF	Device is idle or may not be powered.
Adapter exchange data	Flashing Green	Adapter(slave) exchange data/Traffic present. About 10msec flashing.

IOS LED (Extension Module Status LED)

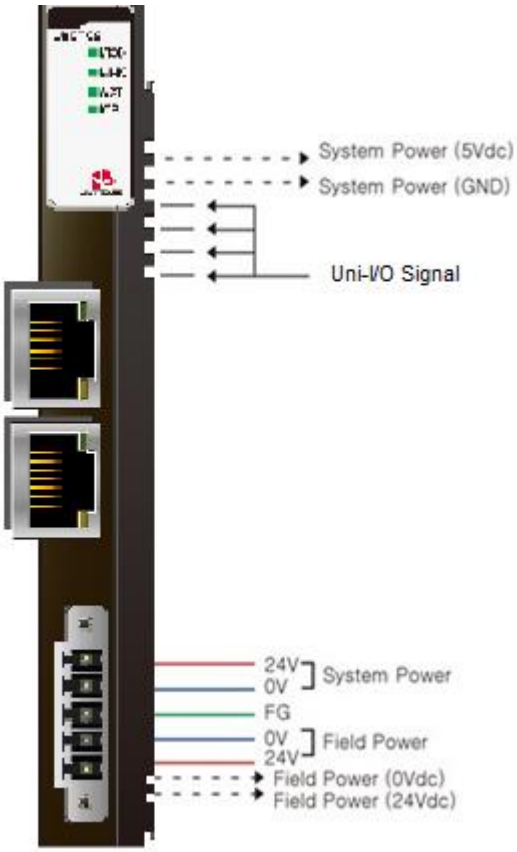
Status	LED	Indication
Not Powered	OFF	Device may not be powered.
No Expansion Module	Flashing Red	Adapter has no expansion module
Internal Bus Connection, Run Exchanging I/O	Green	Exchanging I/O data.
Expansion Configuration Failed	Red	One or more expansion module occurred in fault state. - Detected invalid expansion module ID. - Overflowed Input/Output Size - Too many expansion module - Initialization failure - Communication failure. - Changed expansion module configuration. - Mismatch vendor code between adapter and expansion module.

URB-EC1 (URBEC1) – UniStream Remote IO EtherCAT Adapter ,16 Modules

Specifications

Items	Specification
Adapter Type	Slave Node (EtherCAT ID)
Max. Expansion Slot	16 slots
I/O Data Size	Max. Input 256 bytes / Output 256 bytes
Max Length Bus Line	Up to 100m from Ethernet Hub/Switch with twisted CAT5 UTP/STP
Max. Network Node	65,535
Baud Rate	10/100Mbps
Bus Connection	2 x RJ-45
Mac Address / IP Address	Not needed
Indicator	4 Status LEDs 1 Green/Red, Module Status (MOD) 1 Green, Current Communication Status (RUN) 1 Red, Error Status (ERR) 1 Green/Red, Expansion I/O Module Status (IOS)
Module Location	Starter module left side of URB system
UL System Power	Supply voltage : 24Vdc nominal, Class 2
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 15~28.8Vdc Protection : Reverse polarity protection
Power Dissipation	40mA typical @ 24Vdc
Current for I/O Module	1.0A @ 5Vdc
Isolation	System power to internal logic : Non-Isolation System power I/O driver : Isolation
UL Field Power	Supply voltage : 24Vdc nominal, Class 2
Field Power	Supply voltage : 24Vdc typical (Max. 28.8Vdc) * Field Power Range is different depending on IO Module series. Refer to IO Module`s Specification.
Max. Current Field Power Contact	DC 8A Max
Wiring	I/O Cable Max. 2.0mm2 (AWG 14)
Torque	0.8Nm (7 lb-in)
Weight	76g
Module Size	22mm x 109mm x 70mm
Environment Condition	Refer to ‘2. Environment Specification’

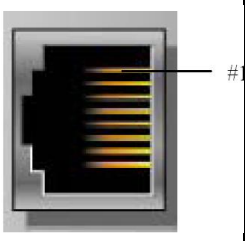
Wiring Diagram



Pin No.	Signal Description
1	System Power, 24V
2	System Power, Ground
3	F.G
4	Field Power, Ground
5	Field Power, 24V

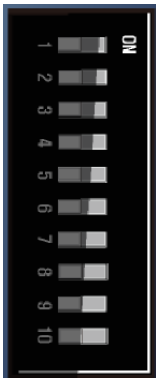
RJ45 Socket

RJ-45	Signal Name	Description
1	TD+	Transmit +
2	TD-	Transmit -
3	RD+	Receive +
4	-	
5	-	
6	RD-	Receive -
7	-	
8	-	
Case	Shield	



DIP Switch

RJ-45	Description
1	IdentificationValue DIP bit#0
2	IdentificationValue DIP bit#1
3	IdentificationValue DIP bit#2
4	IdentificationValue DIP bit#3
5	IdentificationValue DIP bit#4
6	IdentificationValue DIP bit#5
7	IdentificationValue DIP bit#6
8	IdentificationValue DIP bit#7
9	Not Used
10	Not Used



LED Indicators

LED No.	LED Function / Description	LED Color
MOD	Module Status	Green/Red
RUN	Current Communication Status	Green
ERR	Error Status	Red
IOS	Expansion I/O Module Status	Green/Red

MOD (Module Status LED)

Status	LED	Indication
Not Powered	OFF	power is not supplied to the unit.
Normal, Operational	Green	The unit is operating in normal condition.
Device in Standby	Flashing Green	The EEPROM parameter is not initialized yet. Serial Number is zero value (0x00000000)
Minor Fault	Flashing Red	The unit has occurred recoverable fault in self-testing. - EEPROM checksum fault.
Unrecoverable Fault	Red	The unit has occurred unrecoverable fault in self-testing. - Firmware fault

RUN (Current Running Status LED)

Status	LED	Indication
Init	OFF	State of the EtherCAT State Machine: INIT = Initialization.
Pre-Operation	Blinking	State of the EtherCAT State Machine: PREOP = Pre-Operation.
Safe-Operation	Single Flash	State of the EtherCAT State Machine: SAFEOP = Safe-Operation.
Initialization or Bootstrap	Flashes	State of the EtherCAT State Machine: BOOT = Bootstrap (Update of the coupler firmware)
Operational	ON	State of the EtherCAT State Machine: Operational.

ERR (Error Status LED)

Status	LED	Indication
No Error	OFF	No Error.
Invalid Configuration	Blinking	Invalid Configuration.

IOS LED (Extension Module Status LED)

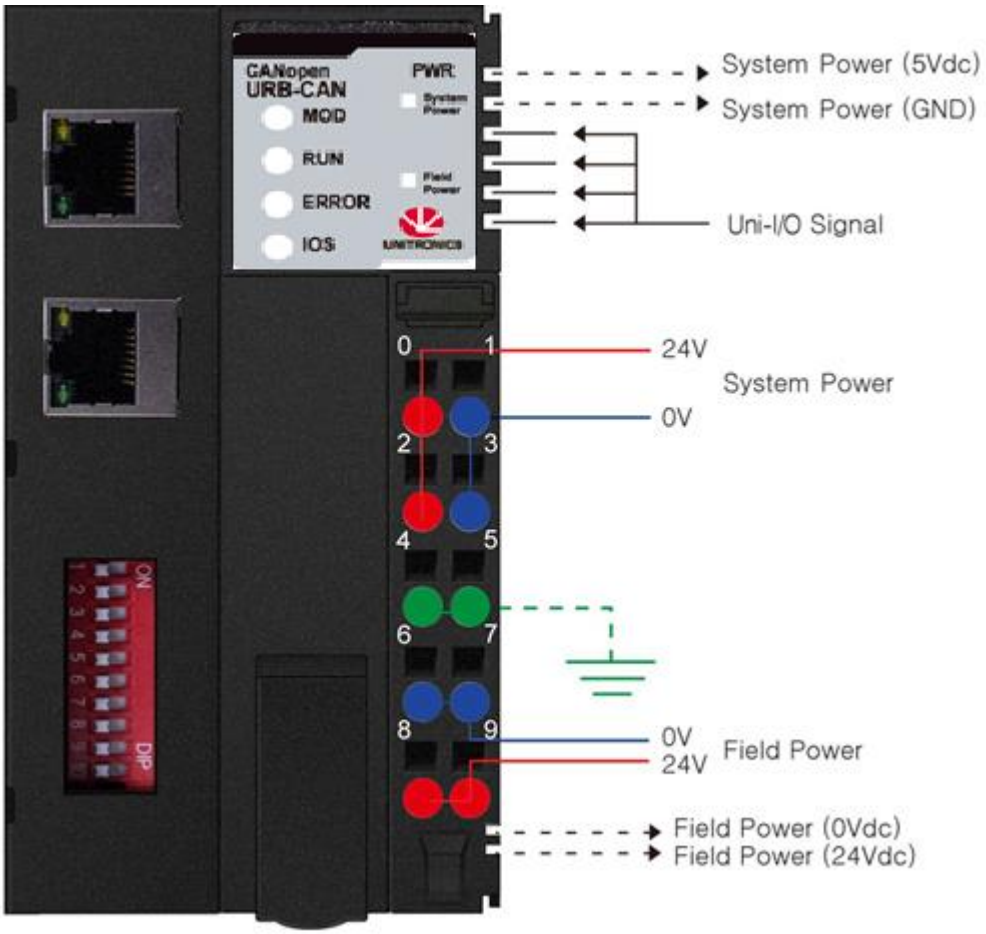
Status	LED	Indication
Not Powered	OFF	Device may not be powered.
No Expansion Module	Flashing Red	Adapter has no expansion module.
Internal Bus Connection, Run Exchanging I/O	Green	Exchanging I/O data.
Expansion Configuration Failed	Red	One or more expansion module occurred in fault state. - Detected invalid expansion module ID. - Overflowed In/Output Size - Too many expansion module - Initialization failure - Communication failure. - Changed expansion module configuration. - Mismatch vendor code between adapter and expansion module.

URB-CAN (URBCAN) – CANOpen NETWORK ADAPTER

Specifications

Items	Specification
Adapter Type	CANopen, CiA 301
Max. PDO Number	32 TPDO / 32 RPDO
Max. SDO Number	1 Standard SDOs
PDO Mapping Method	Auto Mapping : CiA 301 (default), Sequential Manual Mapping (Reference to Index : 0x20F0, Sub Index : 6)
Max. Expansion Module	63 slots
Max. Input size	252 bytes
Max. Output size	252 bytes
Nodes	1~99
Baudrate	10, 20, 50, 100, 125, 250, 500, 800, 1000 Kbps (default 1000Kbps)
Interface Connector	5pin Open Connector
Other Serial Port	RS232 for MODBUS/RTU(Touch Pannel, IOGuide ...)
Serial Configuration (RS232)	Node : 1 (Fixed) Baud Rate : 115200 (Fixed) Data bit : 8 (Fixed) Parity bit : No parity (Fixed) Stop bit : 1 (Fixed)
Indicator	6 LEDs 1 Green/Red, Module Status (MOD) 1 Green, Network Status(RUN) 1 Red, Error Status (ERROR) 1 Green/Red, Expansion I/O Module Status (IOS) 1 Green, System Power Status 1 Green, Field Power Status
Module Location	Starter module left side of G-Series system
Field Power Detection	About 14Vdc
System Power	Supply voltage: 24Vdc nominal Supply voltage range : 15~32Vdc Protection : Output current limit (Min. 1.5A) Reverse polarity protection
Power Dissipation	70mA typical @ 24Vdc
Current for I/O Module	1.5A @ 5Vdc
Isolation	System power to internal logic : Non-isolation System power I/O driver : Isolation
Field Power	Supply voltage : 24Vdc typical(Max. 32Vdc) * Field Power Range is different depending on IO Module series. Refer to IO Module`s Specification.
Max. Current Field Power Contact	DC 10A Max
Weight	162g
Module Size	54mm x 99mm x 70mm
Environment Condition	Refer to ‘2. Environment Specification’

Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	System Power, 24V	1	System Power, Ground
2	System Power, 24V	3	System Power, Ground
4	F.G	5	F.G
6	Field Power, Ground	7	Field Power, Ground
8	Field Power, 24V	9	Field Power, 24V

CANOpen Connector

	Signal Name	Description
1	-	
2	CAN H	CAN High
3	Shield	F.G
4	CAN L	CAN Low
5	CAN G	CAN GND

LED Indicators

LED No.	LED Function / Description	LED Color
MOD	Module Status	Green/Red
RUN	CANopen Status	Green/Red
ERROR	CANopen Error Status	Red
I.O	Extension Module Status	Green/Red
Field Power	Field Power Enable	Green

MOD (Module Status LED)

Status	LED	Indication
Not Powered	OFF	Not power is supplied to the unit.
Normal Operational	Green	The unit is operating in normal condition.
Unrecoverable Fault	Red	The device has an unrecoverable fault.

RUN (CANopen State Status LED)

Status	LED	Indication
Not Powered	OFF	Module is either not getting power, or it is NOT_ACTIVE status. Module is initializing.
Stopped	Single flash Green	Module is stopped
PreOperational	Blinking Green	Module is in PRE_OPERATIONAL
Operational	Green	Module is in OPENRATIONAL

ERR (CANopen Error Status LED)

Status	LED	Indication
Not Powered	OFF	Module is not getting powered or No error.

Warning limit reached	Single flash	At least one of the error counters of the CAN controller has reached or exceeded the warning limit.
Error control Event	Double flash	A guard event (NMT-Slave or NMT-Master) or a Heartbeat event has occurred.
Sync. Error	Triple flash	The SYNC message has not been received within then configured communication cycle period time out (see index 0x1006)
Event-timer Error	Quadruple flash	An expected PDO has not been received before the event-timer elapsed.
Bus Off	ON	The CAN controller is bus off.

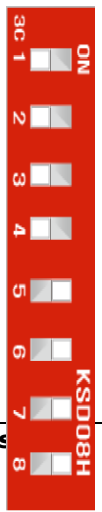
IOS (Extension Module Status LED)

Status	LED	Indication
Not Powered	OFF	Device may not be powered.
No Expansion Module	Flashing Red	Adapter has no expansion module
Internal Bus Connection, Run Exchanging I/O	Green	Exchanging I/O data.
Expansion Configuration Failed	Red	One or more expansion module occurred in fault state. - Detected invalid expansion module ID. - Overflowed Input/Output Size - Too many expansion module - Initialization failure - Communication failure. - Changed expansion module configuration. - Mismatch vendor code between adapter and expansion module.

Field Power, System Power (Power Status LED)

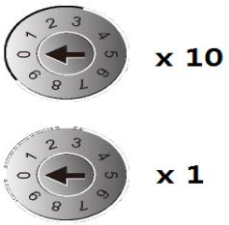
Status	LED	Indication
No field, System power	OFF	Not supplied 24Vdc field power, 5Vdc system power
Supplied field, System power	Green	Supplied 24Vdc field power, 5Vdc system power

DIP Switch



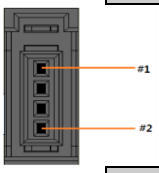
DIP Pole#	Description	
1	Terminal Resister	On : Terminal Resister On
2	Reserved	
3		
4		
5	Baudrate #4	Default : 0 (1000kbps) **5 6 7 8 (ex.)** 0 0 0 1 : 10Kbps 0 0 1 0 : 20Kbps 0 0 1 1 : 50Kbps 0 1 0 0 : 100Kbps 0 1 0 1 : 125Kbps 0 1 1 0 : 250Kbps 0 1 1 1 : 500Kbps 1 0 0 0 : 800Kbps 1 0 0 1 : 1000Kbps
6	Baudrate #3	
7	Baudrate #2	
8	Baudrate #1	

CAN Address



Each Adapter must have an unique address (from 1 to 99) so that it can be addressed independently from other nodes. The address 0 is reserved.

RS232 Port



	Signal Name	Description
1	Reserved	----
2	TXD	RS232 TXD
3	RXD	RS232 RXD
4	GND	RS232 GND
1	Reserved	----

COMMUNICATION

Device model

Structure of the device model

Communication. This functional unit makes the communication data objects and the associated functionality for data exchange over the CANopen network available. The network status machine is part of this.
Object directory. This contains all the data objects (application data + parameters) that are accessible from outside and that affect the behavior of communication, application and status machines. The object directory is organized as a two-dimensional table in which the data are addressed by their index and sub-index.
The data exchange with CANopen devices takes place by means of data objects. In the CANopen communication profile, two types of standard object (PDO and SDO) and special objects (for network management etc.) are defined. The GN-9261 supports the following objects:

- 32 transmit PDOs
- 32 receive PDOs
- 1 standard SDO (server)
- Node guarding
- NMT objects

Every CANopen device possesses a CANopen object directory in which
The parameters for all the CANopen objects are entered.

PDO (Process Data)

Introduction

In many fieldbus systems the entire process image is continuously transferred - usually in a more or less cyclic manner. CANopen is not limited to this communication principle, since the multi-master bus access protocol allows CAN to offer other methods.
The process data in CANopen is divided into segments with a maximum of 8 bytes. These segments are known as process data objects (PDOs). The PDOs each corresponds to a CAN telegram, whose specific CAN identifier is used to allocate them and to determine their priority.
The PDOs are named from the point of view of the Network Adapter: receive PDOs (RxPDOs) are received by the coupler and contain output data, while transmit PDOs (TxPDOs) are sent by the coupler and contain input data.

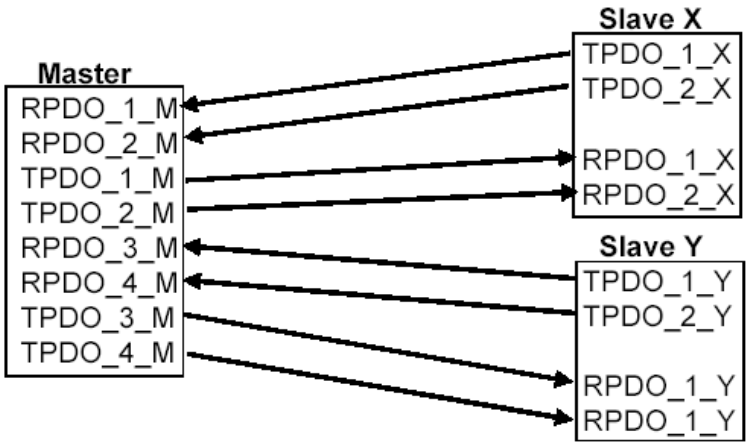
PDO Mapping

CANopen specifies the data assignment for the first two PDOs in the device profile for input/output groups (DS401) (“default mapping”). The first PDO is provided for digital inputs (TxPDO1) or outputs (RxPDO1). The first 4 anlaog inputs or outputs are located in the second PDO. These PDOs are accordingly occupied by the Network Adapters - if, for instance, no digital output terminals are plugged in, RxPDO1 remains empty.
Once the first PDOs have been occupied, the next PDOs are filled with process data in the following sequence:
1. Digital I/O (1-byte)
2. Digital I/O (2-byte)
3. Analog I/O

PDO Identifier

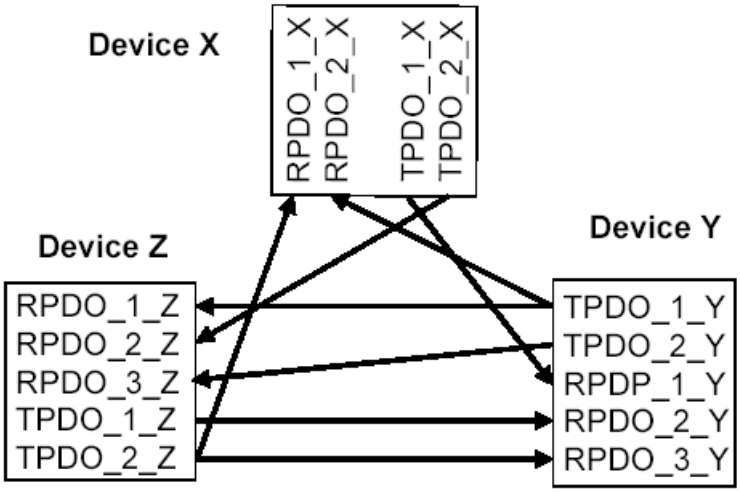
For the first two PDOs (PDO1 + PDO2) CANopen provides default identifiers depending on the node address, but all other PDOs must have identifiers assigned to them. The principle of the default identifiers is explained in the section on “Network Management”, and there is a list of all the CANopen default identifiers in the appendix.

Pre-Define Connection Set
In the system of default identifiers, all the nodes (here: slaves) communicate with one central station (the master), since slave nodes do not listen by default to the send identifier of other slave nodes:



PDO Linking

If the consumer-producer model of CANopen PDOs is to be used for direct data exchange between nodes (without a master), the distribution of identifiers must be appropriately adapted, so that the TxPDO identifier of the producer agrees with the RxPDO identifier of the consumer:



This procedure is known as PDO linking. It permits, for example, easy construction of electronic drives in which several slave axes simultaneously listen to the actual value in the master axis TxPDO.

PDO Communication Type

Event driven

The “event” is the alteration of an input value, the data being transmitted immediately after this change. The event-driven flow can make optimal use of the bus bandwidth, since instead of the whole process image it is only the changes in it that are transmitted. A short reaction time is achieved at the same time, since when an input value changes it is not necessary to wait for the next interrogation from a master.

Polling

The PDOs can also be polled by data request telegrams (remote frames). In this way it is possible to get the input process image of event-driven inputs onto the bus, even when the inputs have not changed, for instance by a monitoring or diagnostic device brought into the network while it is running.

The Crevis CANopen bus Adapter supports the interrogation of PDOs by means of remote frames.

Synchronized

It is not only for drive applications that it is worthwhile to synchronize the determination of the input information and the setting the outputs. For this purpose CANopen provides the SYNC object, a CAN telegram of high priority but containing no user data, whose reception is used by the synchronized nodes as a trigger for reading the inputs or for setting the outputs:

PDO transmission type

The "PDO transmission type" parameter specifies how the transmission of the PDO is triggered, or how received PDOs are handled:

Transmission type	**PDO transmission**				
	cyclic	acyclic	synchronous	asynchronous	RTR only
0		X	X		
1-240	X		X		
241-251	reserved				
252			X		X
253				X	X
254				X	
255				X	

Synchronous

Transmission type 0 is only useful for RxPDOs: the PDO is only used when the next SYNC telegram is received. In transmission types 1-240 the PDO is cyclically transmitted or expected: after every "nth" SYNC (n = 1...240).

Since transmission types can be combined on a coupler as well as in the network, it is possible, for example, for a fast cycle to be agreed for digital inputs (n = 1), whereas the data for anlaog inputs is transmitted in a slower cycle (e.g. n = 10). The cycle time (SYNC rate) can be monitored (object 0x1006), so that if the SYNC fails the Adapter switches its outputs into the fault state.

Asynchronous

The transmission types 254 + 255 are asynchronous, but may also be event-driven. In transmission type 254, the event is specific to the manufacturer, whereas for type 255 it is defined in the device profile. Since the Beckhoff CANopen Network Adapters support device profile DS401 no distinction is made here between the two transmission types.

Inhibit Time

The "inhibit time" parameter can be used to implement a "transmit filter" that does not increase the reaction time for relatively new input alterations, but is active for changes that follow immediately afterwards. The inhibit time (transmit delay time) specifies the minimum length of time that must be allowed to elapse between the transmission of two of the same telegrams. If the inhibit time is used, the maximum bus loading can be determined, so that the worst case latency can then be found.

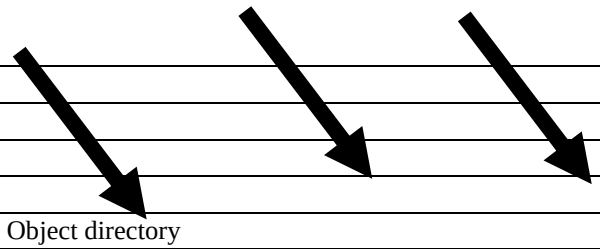
SDO (Service Data)

Introduction

The parameters listed in the object directory are read and written by means of service data objects. These SDOs are multiplexed domains, i.e. structures of any size that have a multiplexer (address). The multiplexer consists of a 16-bit index and an 8-bit sub-index that address the corresponding entries in the object directory.

Byte 0 Byte 1-3 : data addressing Byte 4-7 : 1-4 byte of data

Command Specified	Index Low Byte	Index High Byte	Sub index	Data 0	Data 1	Data 2	Data 3	
-Upload								
-Download								
-Number of data byte								
-Request								
-Response								



Object directory

	Index	Sub-index	Data

The CANopen Network Adapters are servers for the SDO, which means that at the request of a client they make data available (upload), or they receive data from the client (download).
This involves a handshake between the client and the server. When the size of the parameter to be transferred is not more than 4 bytes, a single handshake is sufficient (one telegram pair).
For a download, the client sends the data together with its index and sub-index, and the server confirms reception. For an upload, the client requests the data by transmitting the index and sub-index of the desired parameter and the server sends the parameter (including index and sub-index) in its answer telegram. The same pair of identifiers is used for both upload and download. The telegrams, which are always 8 bytes long, encode the various services in the first data byte.
All parameters with the exception of objects 1008h, 1009h and 100Ah (device name, hardware and software versions) are only at most 4 bytes long, so this description is restricted to transmission in expedited transfer.

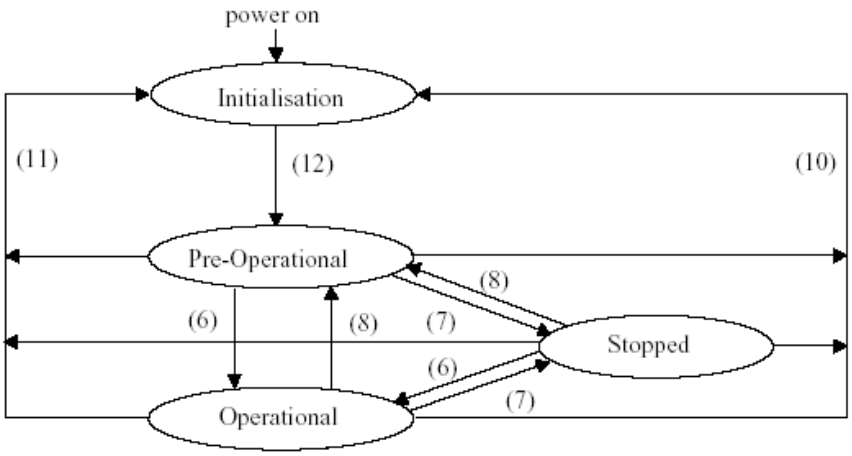
Emergency (Error Message)

Emergency messages are always sent in the event of a critical error situation having occurred/overcome in the device, or if important information has to be communicated to other devices.
Structure and meaning of the entries in the emergency object are explained in the table .EMCY-CODE., they are coded in the bus message in a 'Low byte' / 'High byte' order.
An emergency object is also sent, after an error is remedied (Error Code = 0x0000, the Error Register and the Additional Code behave as described in the table .EMCY-CODE.).
Following Power On an emergency object is sent if the loaded settings are the default settings. This occurs for two reasons:
• No settings have yet been saved (Index 0x1010).
• The saved setting was discarded by the Network Adapter, because modules were connected or disconnected.

NMT (Network Management)

Network Start-up

CANopen defines a state machine that controls the functionality of a device. Transition between the individual states is initiated by internal events or services from the NMT master. These devices states can be connected to application processes.



In ***Initialization*** state, the CANopen data structures of a node are initialized by the application. The CiA DS-301 standard defines various mandatory OD entries for this task as well as specific communication objects required for that. In the minimum device configuration, the identifier for these communication objects must correspond to the so-called **Pre-Defined Connection-Set.** The device profiles define further settings for the applicable device class. The pre-defined settings for identifier for emergency, PDOs and SDOs are calculated based on the node address (Node ID) that can be in the range from 1 to 99, added to a base identifier that determines the function of the individual object.
After ***Initialization*** is completed the node automatically switches into **PRE-OPERATIONAL** (12) state. The NMT master will be informed about this state change with the BOOT-UP message sent by the corresponding node. In this state it is not possible to communicate with the node using PDOs. However, the node can be configured over the CAN bus using SDOs in **PRE-OPERATIONAL** state. NMT services and Life Guarding are also available in this state.

The application as well as the available resources of the CANopen device determine to what extend configuration over the CAN bus with the help of SDOs must take place. For example, if the CANopen device does not provide a non-volatile memory to store mapping and communication parameters for PDOs and these parameters differ from the default values, then these parameters must be transmitted to the node over the network after initialization is completed.
After the configuration of these parameters by the application or the NMT master is completed, the NMT service *Start_Remote_Node* (6) can be used to render the node from **PRE-OPERATIONAL** state into **OPERATIONAL** state. This state change also causes the initial transmission of all TPDOs independently of whether an event for it is present. Each subsequent transmission of PDOs then always takes place as a function of an event.
All CANopen devices also support the Stop_Remote_Node (7), Enter_PRE-OPERATIONAL_State (8), Reset_Node (10), *Reset_Communication* (11) services. *Reset_Node* is used to reset the application-specific data and the communication parameter of the node. The CANopen data structures are loaded with their initial values. Data stored in a non-volatile memory are rejected. This state change is comparable with an initial operation of the node.
If the NMT service *Reset_Communication* is used to change the state of a node, then loading initial values exclusive for the communication parameters in the CANopen stack takes place.
No communication via PDO and SDO is possible if the device is in **STOPPED** state. Only NMT services, Node Guarding, Life Guarding as well as Heartbeat are possible in this state.

Boot-up Message

After the initialization phase and the self-test, the Network Adapter sends the boot-up message, a CAN message with no data bytes and with the identifier of the emergency message: CAN-ID = 0x80 + node ID.

Node Guarding

Node Guarding represents a means of node supervision that is initiated by the NMT master. This service is used to request the node's operational state and to determine whether the node is functioning correctly. The NMT master transmits a single Node Guard message to the slave in the form of a remote frame with the CAN identifier 0x700 plus the node address of the NMT slave. As a response to this remote frame, the NMT slave sends a CAN message back containing its current NMT state and a one bit that toggles between two subsequent messages.
Response from the NMT Slave to a Node Guard Remote Frame:

Identifier	DLC	Data
		0
0x700 + Node Address	1	Status Byte

Node State of a CANopen Device

Status Byte	Node State
0x00	BOOT-UP
0x04	STOPED
0x05	OPERATIONAL
0x7F	PRE-OPERATIONAL

Bit 7 of the status byte always starts with a 0 and changes its value after each transmission. The application is responsible for actively toggling this bit. This ensures that the Node Guard response message from a slave is not just stored in one of the Full-CAN channels. Thus the NMT master will get the confirmation from the NMT slave node that the application is still running.

Life Guarding

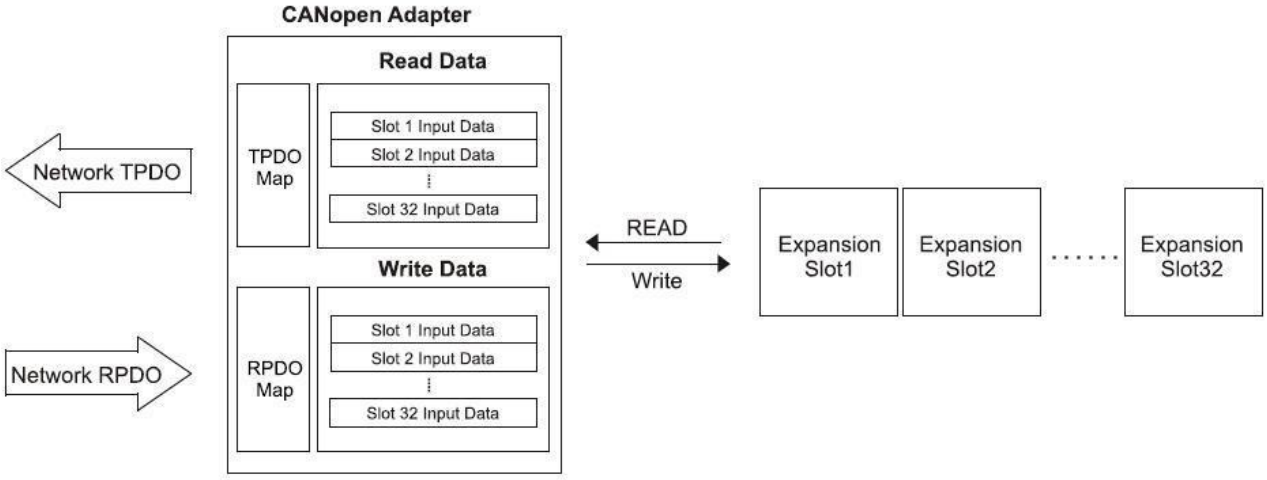
As an alternative to Node Guarding node supervision can also be performed by Life Guarding services. In contrast to the Node Guarding the NMT master cyclically sends a Life Guard message to the slave in the form of a remote frame with the CAN identifier 0x700 plus the node address of the NMT slave. As a response to this remote frame, the NMT slave sends a CAN message back containing its current NMT state and a one bit that toggles between two subsequent messages. With being missing the answer or unexpected status of the slave the NMT masters application is informed. Further the slave can detect the loss of the masters. The Life Guarding is started with the transmission of the first Life Guard message of the masters.
Response from the NMT Slave to a Life Guard Remote Frame

Identifier	DLC	Data
		0
0x700 + Node Address	1	Status Byte

Meaning of the status byte corresponds to that of the Node Guarding message The Life Guarding supervision on the NMT slave node is deactivated, if the Life Guard time (object entry 0x100C in the object dictionary) or the Life time factor (object entry 0x100D in the object dictionary) are equal to zero.

I/O Process Image Map

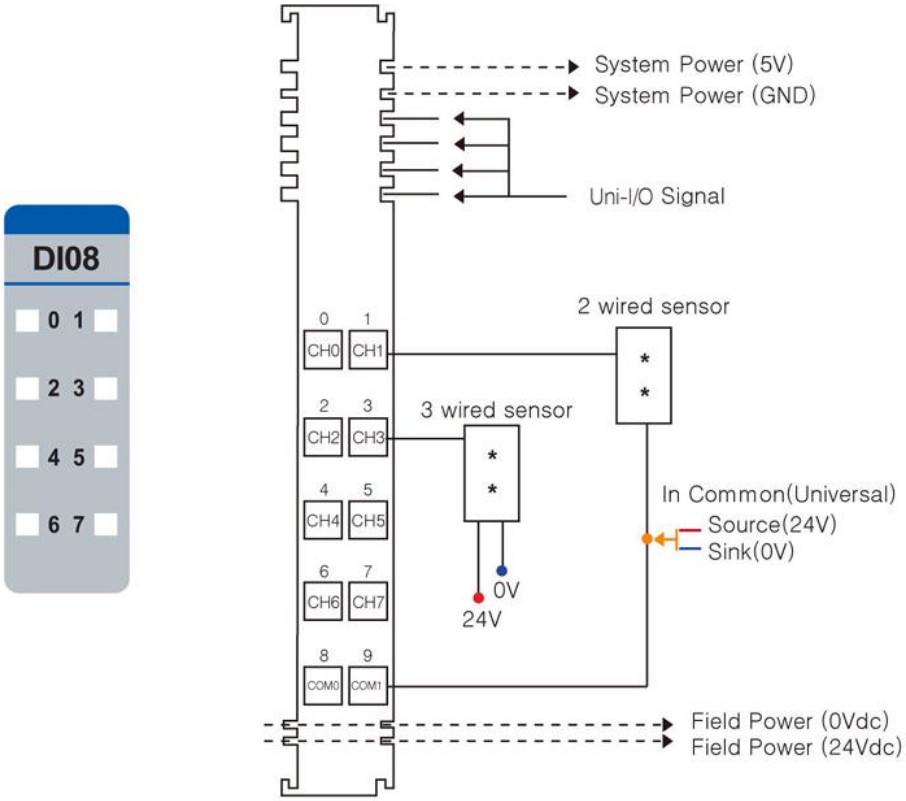
An expansion module may have 3 types of data as I/O data, configuration parameter and memory register.
The data exchange between network adapter and expansion modules is done via an I/O process image data by FnBus protocol. The following figure shows the data flow of process image between network adapter and expansion modules.



URD-0800 (DI08) - 8 Digital Inputs (sink or source)

Items	Specification
Inputs per module	8 Points Universal type
Indicators	8 Green Input state
ON–state Voltage	24VDC nominal Min. 15VDC to Max. 32VDC
OFF-state voltage	8.3VDC @ 25 ºC (77°F)
ON-state current	3.03mA maximum/input @32VDC
Input Signal Delay	OFF to ON : 0.3ms Max ON to OFF : 0.3ms Max
Input filter	Adjustable, up to 10ms
Nominal Input Impedance	10.2K ohm typical
COMMON Type	8 points / External 2COM (Universal)
Power dissipation	35mA maximum @ 5.0VDC
Isolation	I/O to Logic : Optocoupler Isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation : 0mA @ 24VDC
Wiring	I/O Cable Max. $2.0mm^2$ (AWG 14)
Weight	39g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input 4	5	Input 5
6	Input 6	7	Input 7
8	Common(Sink Oper.0V / Source Oper.24V)	9	Common(Sink Oper.0V / Source Oper.24V)

2. LED Indicators

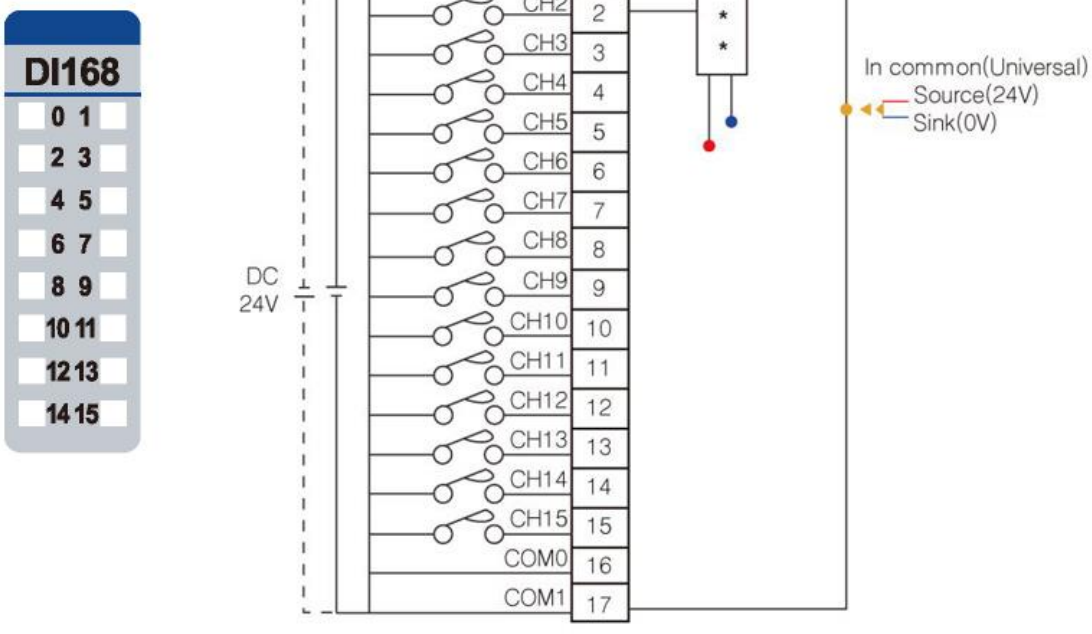
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-1600-8 (DI168) - 16 Digital Inputs (Sink / Source)

Items	Specification
Inputs per module	16 Points Universal Digital Type
Indicators	16 Green input state
ON–state Voltage	24VDC nominal 70°C (158°F) - Min. 15 VDC to Max. 28.8 VDC 60°C (140°F) - Min. 15 VDC to Max. 32 VDC
ON-state current	3.05mA maximum/input @32VDC
Input Signal Delay	OFF to ON : 0.3ms Max ON to OFF : 0.3ms Max
Nominal Input Impedance	14.9K ohm typical
COMMON Type	16 points / 2 COM
Power dissipation	50mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation : 0mA @ 32VDC
Wiring	I/O Cable Max. $0.75mm^2$(AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input 4	5	Input 5
6	Input 6	7	Input 7
8	Input 8	9	Input 9
10	Input 10	11	Input 11
12	Input 12	13	Input 13
14	Input 14	15	Input 15
16	Common(Sink Oper.0V / Source Oper.24V)	17	Common(Sink Oper.0V / Source Oper.24V)

2. LED Indicators

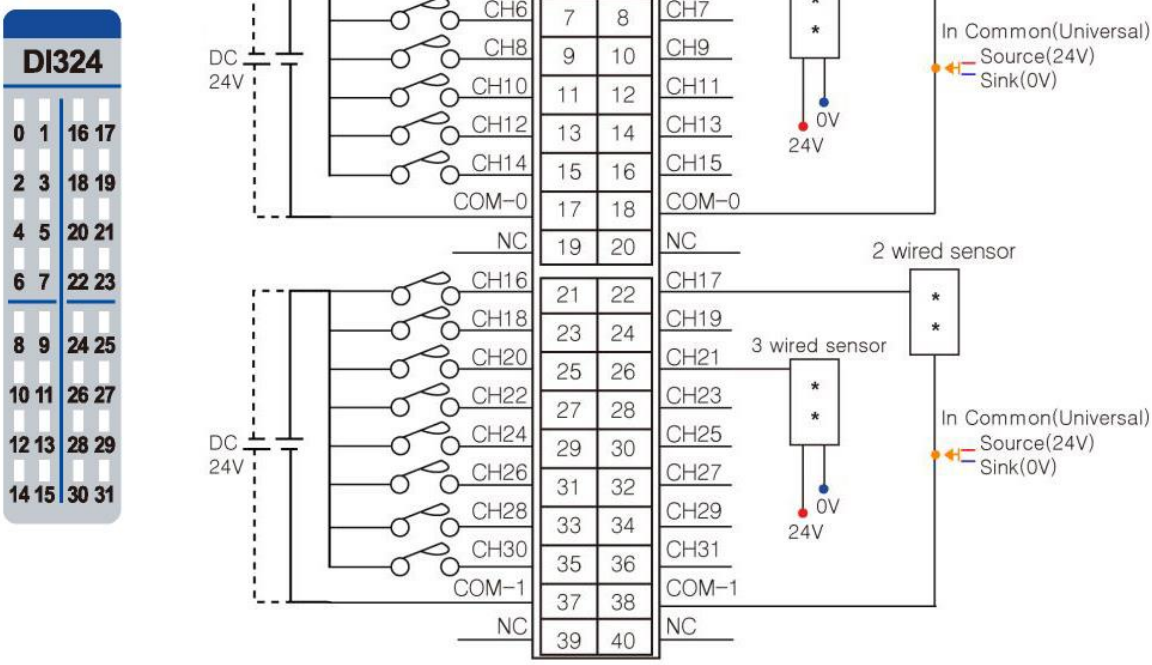
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green
8	Input 8	Green
9	Input 9	Green
10	Input 10	Green
11	Input 11	Green
12	Input 12	Green
13	Input 13	Green
14	Input 14	Green
15	Input 15	Green

Status	LED	Indication
Not Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-3200-4 (DI324) - 32 Digital Inputs (Sink / Source)

Items	Specification
Inputs per module	32 Points Universal Digital Type
Indicators	32 Green Input Status LEDs
ON–state Voltage	24VDC nominal Min. 15VDC ~ Max. 32VDC
ON-state current	3mA maximum/input @32VDC
Input Signal Delay	OFF to ON : 0.2ms Max ON to OFF : 0.2ms Max
Nominal Input Impedance	10.2K ohm typical
COMMON Type	32 Point / External 8COM(Universal)
Power dissipation	55mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation : 0mA @ 24VDC
Wiring	Module connector : ADP-BBOARD40
Weight	59g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



in No.	Signal Description	Pin No.	Signal Description
1	Input 0	2	Input 1
3	Input 2	4	Input 3
5	Input 4	6	Input 5
7	Input 6	8	Input 7
9	Input 8	10	Input 9
11	Input 10	12	Input 11
13	Input 12	14	Input 13
15	Input 14	16	Input 15
17	Common(Sink Oper.0V / Source Oper.24V)	18	Common(Sink Oper.0V Source Oper.24V)
19	NC	20	NC
21	Input 16	22	Input 17
23	Input 18	24	Input 19
25	Input 20	26	Input 21
27	Input 22	28	Input 23
29	Input 24	30	Input 25
31	Input 26	32	Input 27
33	Input 28	34	Input 29
35	Input 30	36	Input 31
37	Common(Sink Oper.0V / Source Oper.24V)	38	Common(Sink Oper.0V / Source Oper.24V)
39	NC	40	NC

2. LED Indicators

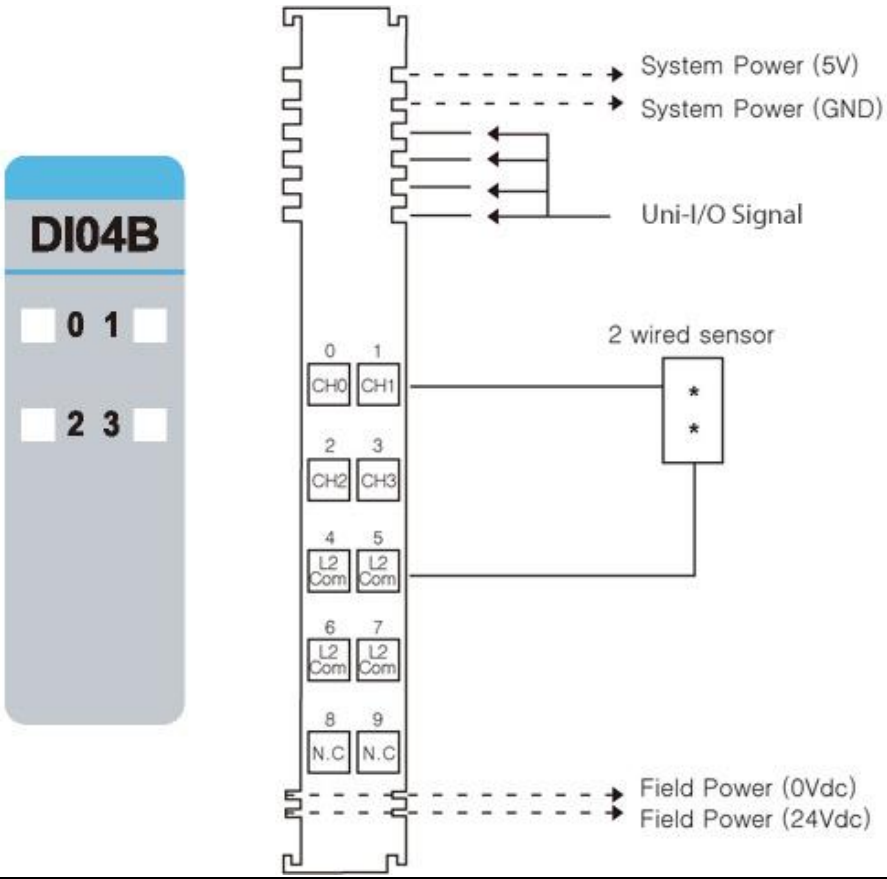
LED No.	LED Function / Description	LED Color
0	INPUT 0	Green
1	INPUT 1	Green
2	INPUT 2	Green
...	...	Green
31	INPUT 31	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0400B (DI04B) - 4 Digital Inputs

Items	Specification
Inputs per module	4 Points type
Indicators	4 Green input state
ON–state Voltage	120VAC nominal Min. 85VAC to Max. 132VAC
ON-state current	7.5mA maximum/point @120Vac
Input Signal Delay	OFF to ON : 30ms @ 120VAC ON to OFF : 130ms @ 120VAC
Nominal Input Impedance	17.5K ohm typical
COMMON Type	4 Points / 4 Common (L2/N)
Power dissipation	30mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC (AC Power Not used)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	57g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input Common (L2/N)	5	Input Common (L2/N)
6	Input Common (L2/N)	7	Input Common (L2/N)
8	N.C	9	N.C

2. LED Indicators

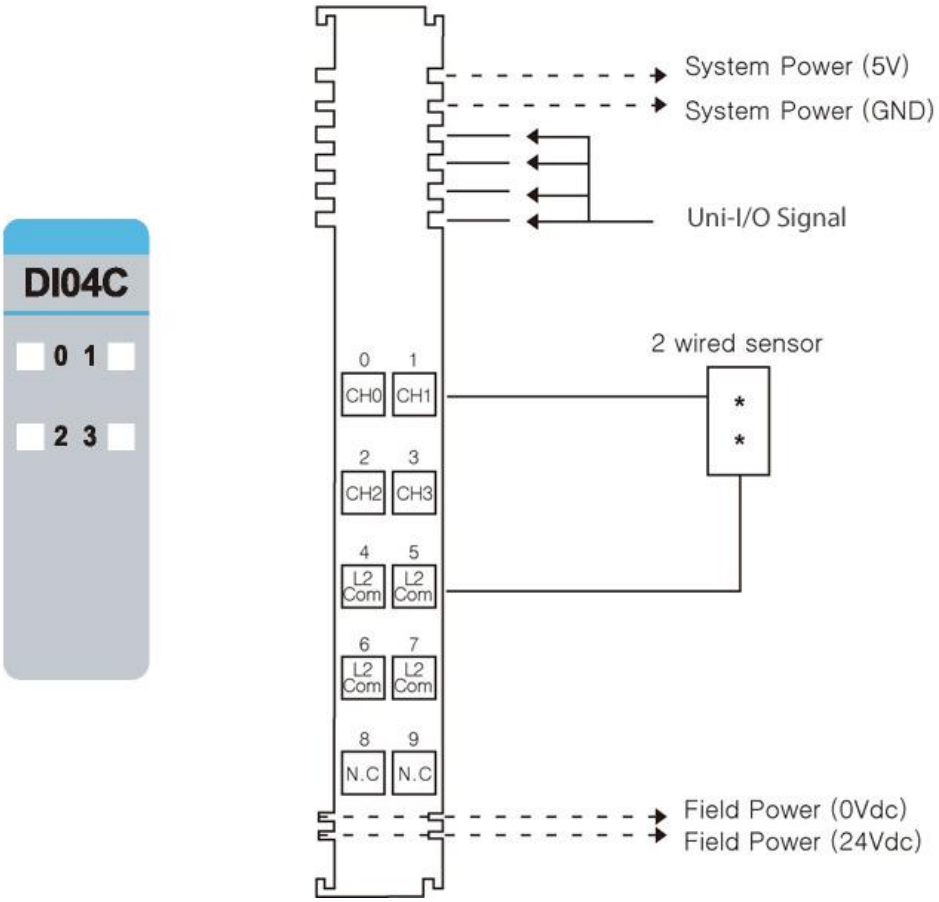
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
No Signal	Off	No Input Signal
On Signal	Green	Normal Operation

URD-0400C (DI04C) - 4 Digital Inputs

Items	Specification
Inputs per module	4 Points Sink type
Indicators	4 Green input state
ON–state Voltage	240VAC nominal Min. 170VAC to Max. 264VAC
ON-state current	7.5mA maximum/point @120VAC
Input Signal Delay	OFF to ON : 30ms @ 240VAC ON to OFF : 140ms @ 240VAC
Nominal Input Impedance	26.5K ohm typical
COMMON Type	4 Points / 4 Common (L2/N)
Power dissipation	30mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation
Field Power	Supply voltage : 24VDC Voltage range : 15 to 32VDC (AC Power Not used)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	57g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input Common (L2/N)	5	Input Common (L2/N)
6	Input Common (L2/N)	7	Input Common (L2/N)
8	N.C	9	N.C

2. LED Indicators

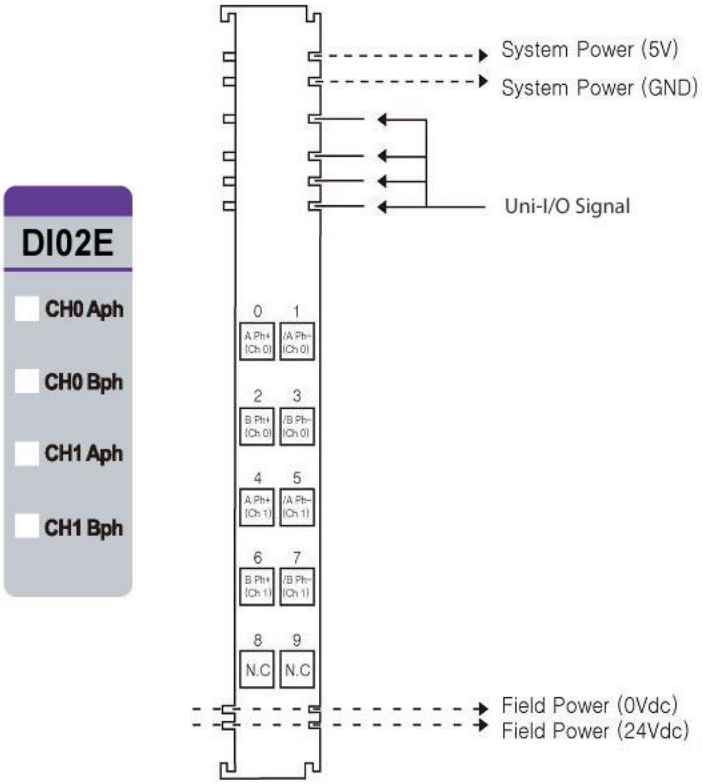
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
No Signal	Off	No Input Signal
On Signal	Green	Normal Operation

URD-0200E (DI02E) - 2 High Speed Counters / Encoder Inputs

Items	Specification
Number of Channel	2 Channels - Encoder, High Speed Counter, Frequency measurement Pulse width & Period measurement
Indicators	4 Green Terminal Input LEDs
Input Voltage	24VDC nominal (Max 28.8Vdc)
Input Current	3.0mA @ 24VDC
Min On-State Volt/Current	≥16.5VDC (25°C) / 2.0mA
Input Frequency	0~600KHz Encoder Mode 0~600kHz Counting Mode
Counting Mode	1-Input Mode : Up,Down 2-Input Mode : Encoder 4x, Encoder 2x, Up/Inhibit, Up/Reset, Down/Inhibit, Down/Reset, UP/Down, Clock/Direction, Frequency Measurement, Pulse Width & Period measurement
Counter Size	32bit-wide/Channel
Power Dissipation	65mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation I/O to Field Power : Non-Isolation
Field Power (Bypass)	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	60g
Module Size	12mm x 90.5mm x 65mm
Operating temperature	-20°C to 70°C (-4°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Aph Input+ Ch# 0	1	Aph Input - Ch# 0
2	Bph Input+ Ch# 0	3	Bph Input - Ch# 0
4	Aph Input+ Ch# 1	5	Aph Input - Ch# 1
6	Bph Input+ Ch# 1	7	Bph Input - Ch# 1
8	Shield	9	Shield

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Aph Input 0	Green
1	Bph Input 0	Green
2	Aph Input 1	Green
3	Bph Input 1	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

Value	Count Mode	Description
B' 0000 (0x0)	Encoder 4x	Encoder 4x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input
B' 0001 (0x1)	Encoder 2x	Encoder 2x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input
B' 0010 (0x2)	Up	Up Counter - Aph Input acts as Up Clock - Bph Input is not used
B' 0011 (0x3)	Down	Down Counter - Aph Input acts as Down Clock - Bph Input is not used
B' 0100 (0x4)	Up Clock & Inhibit	Up Counter with Inhibit - Aph Input acts as Up Clock Input - Bph Input acts as Inhibit function for Up Clock Input
B' 0101 (0x5)	Up Clock & Reset	Up Counter with Reset - Aph Input acts as Up Clock Input - Bph Input acts as Reset function to Counter
B' 0110 (0x6)	Down Clock & Inhibit	Down Counter with Inhibit - Aph Input acts as Down Clock Input - Bph Input acts as Inhibit function for Down Clock Input
B' 0111 (0x7)	Down Clock & Reset	Down Counter with Reset - Aph Input acts as Down Clock Input - Bph Input acts as Reset function to Counter
B' 1000 (0x8)	Up Clock & Down Clock	Up & Down Counter

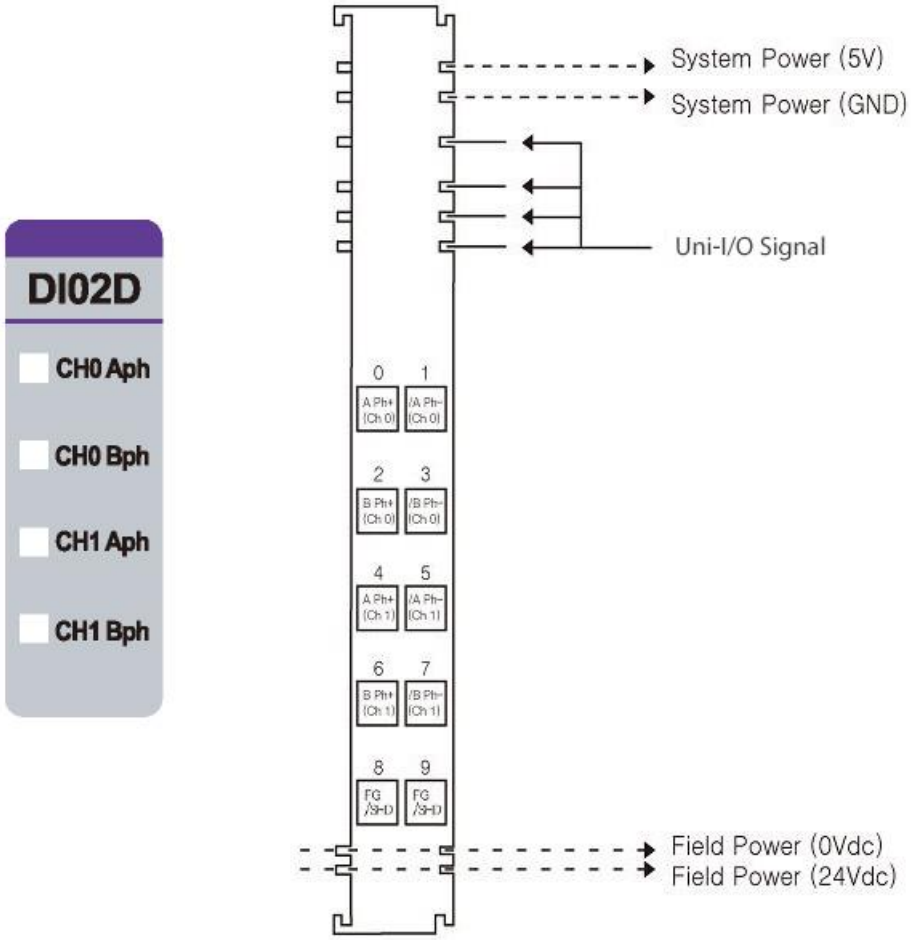
		- Aph Input acts as Up Clock Input - Bph Input acts as Down Clock Input
B' 1001 (0x9)	Clock & Direction	Up & Down with Direction - Aph Input acts as Clock Input - Bph Input acts as Direction Input (Low = Up Count, High = Down Count)
B' 1010 (0xA)	Encoder 4x (*1)	Encoder 4x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input
B' 1011 (0xB)	Encoder 2x (*1)	Encoder 2x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input
B' 1100 (0xC)	Frequency Measurement (*2) 1 sec Update	Simple Frequency Measurement, updated by 1sec, Hz Unit - Aph Input acts as Frequency Input - Bph Input is not used
B' 1101 (0xD)	Frequency Measurement 100 msec (0.1sec) Update	Simple Frequency Measurement, updated by 100msec, Hz Unit - Available in case of Pulse Input >= 10Hz - Aph Input acts as Frequency Input - Bph Input is not used
B' 1110 (0xE)	Pulse Width Measurement	Simple Pulse Width Measurement, 0.1usec Unit - Pulse Width(32bit), if 1234, then Pulse High(On) width is 123.4usec (*3) - Aph Input acts as Pulse Input - Bph Input is not used
B' 1111 (0xF)	Pulse Width & Period Measurement	Simple Pulse Width & Period Measurement, 0.1usec Unit, - Available in case of Pulse Input >= 200Hz(<= 2.5msec, Pulse On Width) - Pulse Width(16bit, Low Word) + Pulse Period(16bit, High Word) (*4) - Aph Input acts as Pulse Input - Bph Input is not used

- This encoder mode is perfectly same with mode B'0000, B'0001. This is for using Encoder module easily.
- Frequency, B'1100(0xC) and B'1101(0xD) can't be used with other channel's Count Mode = 0x2 ~ 0x9
- Pulse Width, B'1110(0xE) measures Aph Input's High(On) Pulse Width(32bit) in 0.1usec unit.
- Pulse Width & Period, B'1111(0xF) measures Aph's Pulse High(On) Width(16bit) & Period(16bit) in 0.1usec unit.

URD-0200D (DI02D) - 2 High Speed Counters / Encoder Inputs

Items	Specification
Number of Channel	2 Channels - Encoder, High Speed Counter, Frequency measurement Pulse width & Period measurement
Indicators	4 Green Terminal Input LEDs
Input Voltage	5VDC(Max)
Input Current	13mA@5.2VDC
Min On-State Volt	≥2.1VDC
Max Off-State Volt	≤2.0VDC
Input Frequency	0~600KHz Encoder Mode 0~1MHz Counting Mode
Counting Mode	1-Input Mode : Up,Down 2-Input Mode : Encoder 4x, Up/Inhibit, Up/Reset, Down/Inhibit down/Reset, UP/Down, Clock/Direction, Frequency Measurement, Pulse Width & Period measurement
Counter Size	32bit-wide/Channel
Power Dissipation	70mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation I/O to Field Power : Non-Isolation
Field Power (Bypass)	Supply voltage : 24VDC nominal Voltage range : 18~32VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	60g
Module Size	12mm x 90.5mm x 65mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Aph Input+ Ch# 0	1	Aph Input - Ch# 0
2	Bph Input+ Ch# 0	3	Bph Input - Ch# 0
4	Aph Input+ Ch# 1	5	Aph Input - Ch# 1
6	Bph Input+ Ch# 1	7	Bph Input - Ch# 1
8	Shield	9	Shield

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Aph Input 0	Green
1	Bph Input 0	Green
2	Aph Input 1	Green
3	Bph Input 1	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

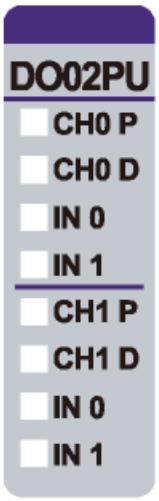
Value	Count Mode	Description
B' 0000 (0x0)	Encoder 4x	Encoder 4x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input
B' 0001 (0x1)	Encoder 2x	Encoder 2x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input
B' 0010 (0x2)	Up	Up Counter - Aph Input acts as Up Clock - Bph Input is not used
B' 0011 (0x3)	Down	Down Counter - Aph Input acts as Down Clock - Bph Input is not used
B' 0100 (0x4)	Up Clock & Inhibit	Up Counter with Inhibit - Aph Input acts as Up Clock Input - Bph Input acts as Inhibit function for Up Clock Input
B' 0101 (0x5)	Up Clock & Reset	Up Counter with Reset - Aph Input acts as Up Clock Input - Bph Input acts as Reset function to Counter
B' 0110 (0x6)	Down Clock & Inhibit	Down Counter with Inhibit - Aph Input acts as Down Clock Input - Bph Input acts as Inhibit function for Down Clock Input
B' 0111 (0x7)	Down Clock & Reset	Down Counter with Reset - Aph Input acts as Down Clock Input - Bph Input acts as Reset function to Counter
B' 1000 (0x8)	Up Clock & Down Clock	Up & Down Counter - Aph Input acts as Up Clock Input - Bph Input acts as Down Clock Input
B' 1001 (0x9)	Clock & Direction	Up & Down with Direction - Aph Input acts as Clock Input - Bph Input acts as Direction Input (Low = Up Count, High = Down Count)
B' 1010 (0xA)	Encoder 4x (*1)	Encoder 4x - Aph Input acts as Encoder's A phase Input - Bph Input acts as Encoder's B phase Input

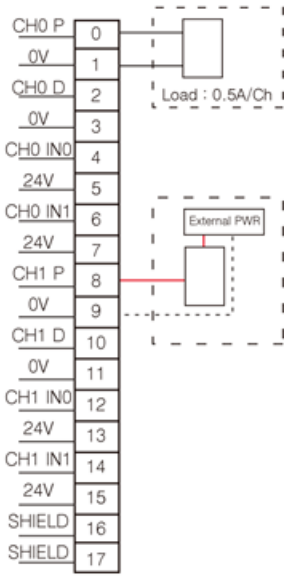
- This encoder mode is perfectly same with mode B'0000, B'0001. This is for using Encoder module easily.
- Frequency, B'1100(0xC) and B'1101(0xD) can't be used with other channel's Count Mode = 0x2 ~ 0x9
- Pulse Width, B'1110(0xE) measures Aph Input's High(On) Pulse Width(32bit) in 0.1usec unit.
- Pulse Width & Period, B'1111(0xF) measures Aph's Pulse High(On) Width(16bit) & Period(16bit) in 0.1usec unit.

URD-02PU (DO02PU) – 2 CH Pulse Output

Items	Specification
Number of channel	2 Channels
Number of output	2 Output, Push-pull Type
Indicators	4 Green LEDs - 2 Green Pulse LEDs - 2 Green Direction LEDs
Output Voltage	24Vdc
Output Current	0.5A per channel, 2.0A per Module Operating Temperature -40℃~45℃ : Max. 0.5A per channel 45℃~60℃ : Max. 0.3A per channel
Pulse output frequency	1-300kHz
Pulse output duty	About 50%
Pulse Output Quantity with One Command	Continuous Pulse Output, Max.+1~+2147483647: Pulse Direction Output OFF. Max.-1~-2147483647 : Pulse Direction Output ON.
Pulse Output Counter	Signed 32bit-wide
Function	Trapezoidal Acceleration
Protection	Short Protection
Common Type	4 Common, Field Power 0V is Common
Input Per Module	4 Point Sink Type
Indicators	4 Green Terminal Input LEDs
Input On-state Voltage	24Vdc nominal Min. 15Vdc to Max. 32Vdc
OFF-state Voltage	8.3Vdc @25℃
On-State Current	Max. 3.10mA/ point @ 32Vdc
Input Signal Delay	OFF to ON : Max. 0.3ms @24Vdc ON to OFF : Max. 0.3ms @24Vdc
Nominal Input Impedance	10.72KΩ
Power dissipation	Max. 75mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 15~32Vdc Power Dissipation : Max. 45mA @ 24Vdc Except Load
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram





Pin No.	Signal Description	Pin No.	Signal Description
0	Pulse Output Channel #0	9	Field Power 0V, Common
1	Field Power 0V, Common	10	Direction Output Channel #1
2	Direction Output Channel #0	11	Field Power 0V, Common
3	Field Power 0V, Common	12	Emergency Stop Input Channel #1
4	Emergency Stop Input Channel #0	13	Field Power 24V, Common
5	Field Power 24V, Common	14	Digital Input Channel #1
6	Digital Input Channel #0	15	Field Power 24V, Common
7	Field Power 24V, Common	16	Shield
8	Pulse Output Channel #1	17	Shield

2. LED Indicators

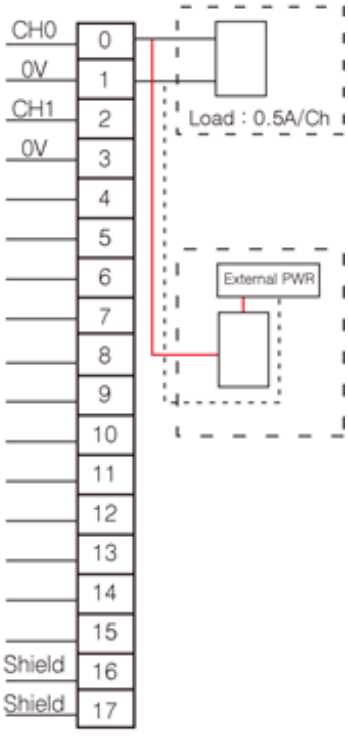
LED No.	LED Function / Description	LED Color
0	Pulse Output Channel #0	Green
1	Direction Output Channel #0	Green
2	Emergency Stop Input #0	Green
3	Digital Input Channel #0	Green
4	Pulse Output Channel #1	Green
5	Direction Output Channel #1	Green
6	Emergency Stop Input #1	Green
7	Digital Input Channel #1	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-02PW (DO02PW) – 2 CH PWM Output

Items	Specification
Number of channel	2 Channels
Number of output	2 Output, Push-pull Type
Indicators	2 Green Pulse Output LED
Output Voltage	24Vdc
Output current	0.5A per channel, 1.0A per Module Operating Temperature -40℃~45℃ : Max. 0.5A per channel 45℃~60℃ : Max. 0.3A per channel
Pulse output frequency	1-5kHz±0.5%
Pulse output duty	0.0-100.0% ±1.0% (0.1%/1LSB), Ton>1us, Toff>1us
Protection	Short Protection
Common Type	2 Common, Field Power 0V is Common
Power dissipation	Max. 75mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 15~32Vdc Power Dissipation : Max. 10mA @ 24Vdc Except Load
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	PWM Output Channel #0	9	N.C.
1	Field Power 0V, Common	10	N.C.
2	PWM Output Channel #1	11	N.C.
3	Field Power 0V, Common	12	N.C.
4	N.C.	13	N.C.
5	N.C.	14	N.C.
6	N.C.	15	N.C.
7	N.C.	16	Shield
8	N.C.	17	Shield

*N.C : Not Connected.

2. LED Indicators

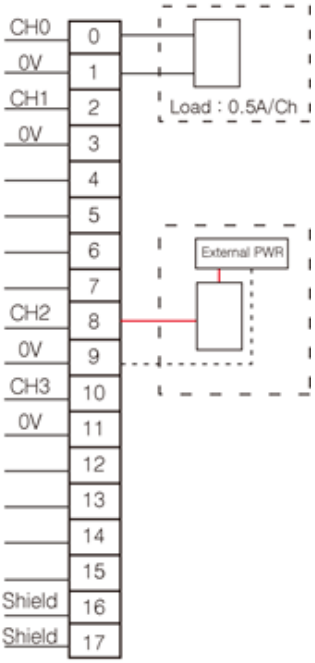
LED No.	LED Function / Description	LED Color
0	PWM Output Channel #0	Green
1	PWM Output Channel #1	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-04PW (DO04PW) – 4 CH PWM Output

Items	Specification
Number of channel	4 Channels
Number of output	4 Output, Push-pull Type
Indicators	4 Green Pulse Output LED
Output Voltage	24Vdc
Output current	0.5A per channel, 2.0A per Module Operating Temperature -40℃~45℃ : Max. 0.5A per channel 45℃~60℃ : Max. 0.3A per channel
Pulse output frequency	1-5kHz±0.5%
Pulse output duty	0.0-100.0% ±1.0% (0.1%/1LSB), Ton>1us, Toff>1us
Protection	Short Protection
Common Type	4 Common, Field Power 0V is Common
Power dissipation	Max. 75mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 15~32Vdc Power Dissipation : Max. 15mA @ 24Vdc Except Load
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	PWM Output Channel #0	9	Field Power 0V, Common
1	Field Power 0V, Common	10	PWM Output Channel #3
2	PWM Output Channel #1	11	Field Power 0V, Common
3	Field Power 0V, Common	12	N.C.
4	N.C.	13	N.C.
5	N.C.	14	N.C.
6	N.C.	15	N.C.
7	N.C.	16	Shield
8	PWM Output Channel #2	17	Shield

*N.C : Not Connected.

2. LED Indicators

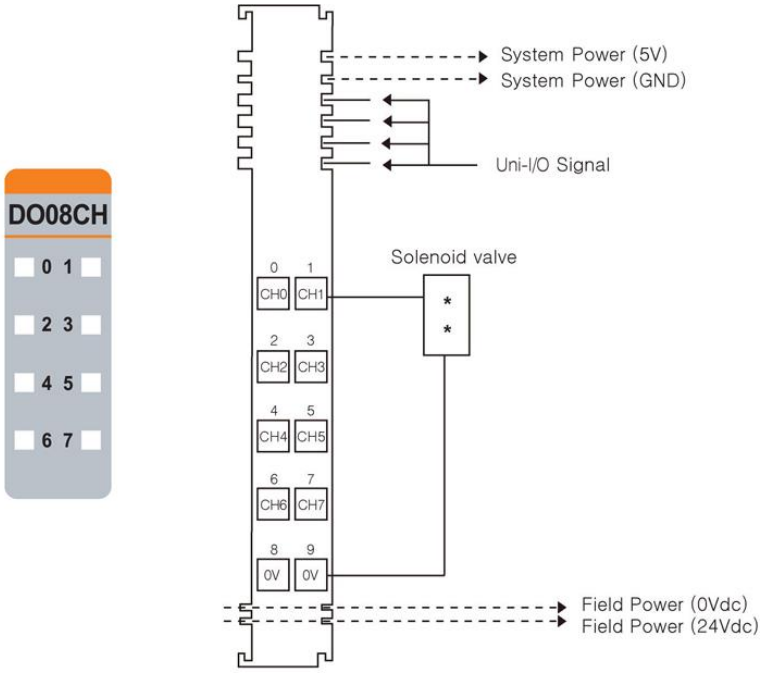
LED No.	LED Function / Description	LED Color
0	PWM Output Channel #0	Green
1	PWM Output Channel #1	Green
2	PWM Output Channel #2	Green
3	PWM Output Channel #3	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0008CH (DO08CH) - 8 Digital Outputs (Source)

Items	Specification
Outputs per module	8 Points, Source type
Indicators(Logic side)	8 Green Output status
Output Voltage Range	Nominal 24VDC Min. 15VDC to Max. 32VDC
ON-state voltage drop	Max. 0.5VDC @ 25 ºC, 70 ºC (158°F), -40 ºC (-40°F)
Field Power OFF-state voltage	4.6Vdc @ 25 ºC (77°F)
ON-State Min. Current	1mA per output
OFF-State Leakage current	Max. 25uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 0.5A per channel / Max. 4A per unit
Protection	Over Current limit : Min 6.5A@ 25 ºC (77°F) per each outputs Thermal Shutdown : Min 4A@ 25 ºC (77°F) per each outputs Short circuit protection
COMMON Type	8 points / Internal 2Com
Power dissipation	40mA maximum @ 5.0VDC
Isolation	I/O to Logic : Isolation Field Power : Non-isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 10mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	40g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	Output 1
2	Output 2	3	Output 3
4	Output 4	5	Output 5
6	Output 6	7	Output 7
8	Common (Field Power 0V)	9	Common (Field Power 0V)

2. LED Indicators

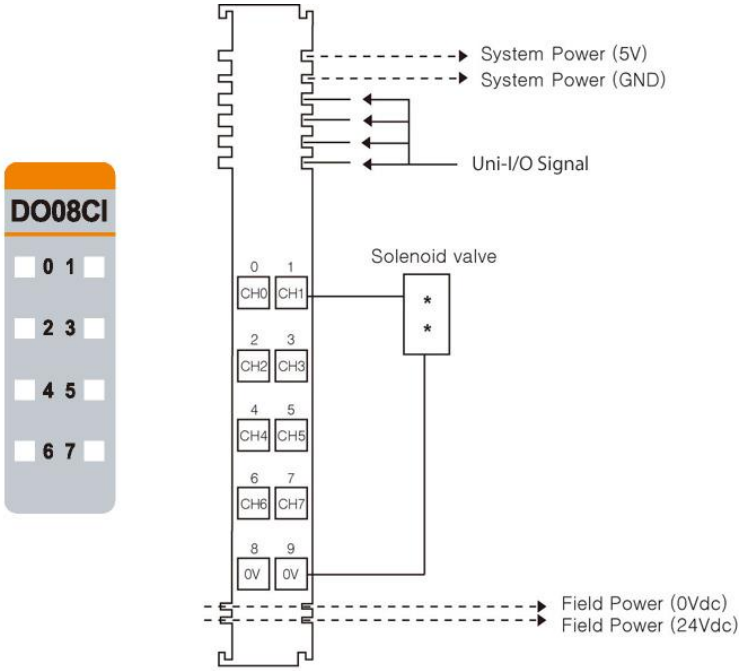
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0008CI (DO08CI) - 8 Digital Outputs, (Source)

Items	Specification
Outputs per module	8 Points, Source type
Indicators(Logic side)	8 Green Output status
Output Voltage Range	Nominal 24VDC Min. 15VDC to Max. 28.8VDC
ON-state voltage drop	Max. 1VDC @ 25 ºC (77°F)
ON-State Min. Current	1mA per output
OFF-State Leakage current	Max. 150uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 2A per channel Operating Temperature -40°C to 50°C (-40°F to 122°F) : Max. 10A per unit 50°C to 60°C (122°F to 140°F) : Max. 7A per unit 60°C to 70°C (140°F to 158°F) : Max. 4.8A per unit
COMMON Type	8 points / Internal 2Com
Power dissipation	45mA maximum @ 5.0VDC
Isolation	I/O to Logic : Isolation Field Power : Non-isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 30mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	Output 1
2	Output 2	3	Output 3
4	Output 4	5	Output 5
6	Output 6	7	Output 7
8	Common (Field Power 0V)	9	Common (Field Power 0V)

2. LED Indicators

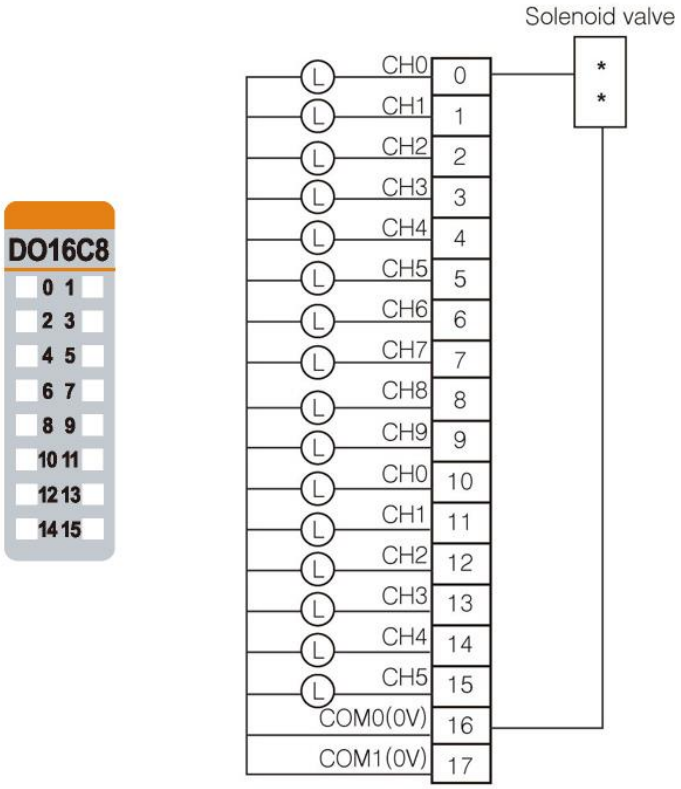
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0016CG-8 (DO16C8) - 16 Digital Outputs, (Source)

Items	Specification
Outputs per module	16 Points Source type
Indicators(Logic side)	8 Green Output status
Output Voltage Range	Nominal 24VDC Min. 15VDC to Max. 32VDC
ON-state voltage drop	Max. 0.3Vdc @ 25 ºC (77°F) / 0.5Vdc@ 70 ºC (158°F)
ON-State Min. Current	1mA per output
OFF-State Leakage current	Max. 5uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 0.3A per channel / Max. 4.8A per unit
COMMON Type	16 points / 2COM (Single Common)
Power dissipation	50mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 40mA @ 32VDC
Wiring	I/O Cable Max. 0.32mm^2 (AWG 22)
Weight	52g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	Output 1
2	Output 2	3	Output 3
4	Output 4	5	Output 5
6	Output 6	7	Output 7
8	Output 8	9	Output 9
10	Output 10	11	Output 11
12	Output 12	13	Output 13
14	Output 14	15	Output 15
16	Common (Field Power 0V)	17	Common (Field Power 0V)

2. LED Indicators

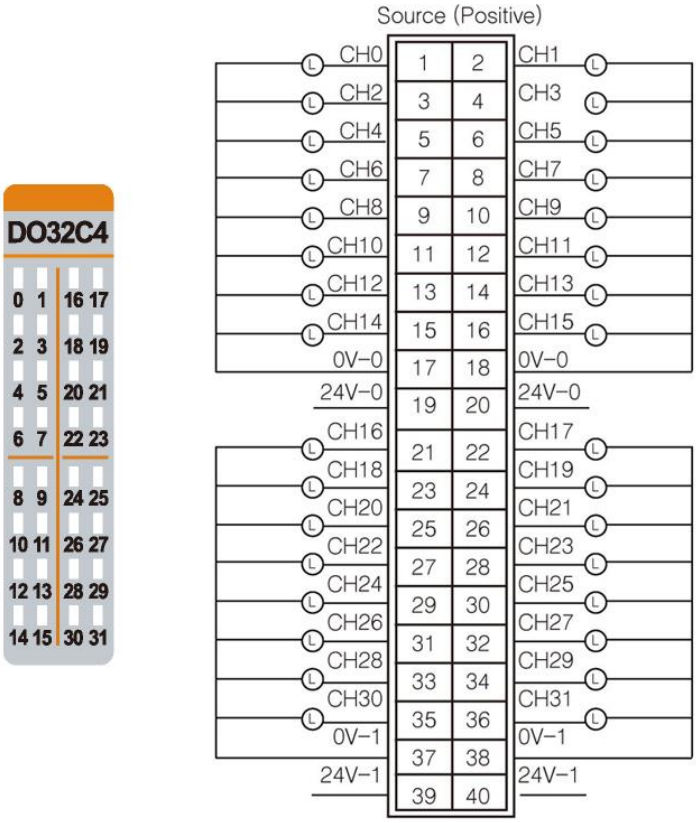
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green
8	Output 8	Green
9	Output 9	Green
10	Output 10	Green
11	Output 11	Green
12	Output 12	Green
13	Output 13	Green
14	Output 14	Green
15	Output 15	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0032CG-4 (DO32C4) - 32 Digital Outputs, (Source)

Items	Specification
Outputs per module	32 Points Source type
Indicators(Logic side)	32 Green Output status
Output Voltage Range	Nominal 24VDC Min. 15VDC to Max. 32VDC
ON-state voltage drop	Max. 0.3Vdc @ 25 ºC (77°F) / 0.5Vdc@ 60 ºC (140°F)
ON-State Min. Current	Min. 1mA / Channel
OFF-State Leakage current	Max. 5uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 0.3A per channel /Max. 6.0A per unit
COMMON Type	32 points / 4 Common
Power dissipation	65mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 30mA @ 32VDC
Wiring	Module connector : ADP-BBOARD40
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
1	Output 0	2	Output 1
3	Output 2	4	Output 3
5	Output 4	6	Output 5
7	Output 6	8	Output 7
9	Output 8	10	Output 9
11	Output 10	12	Output 11
13	Output 12	14	Output 13
15	Output 14	16	Output 15
17	Common (Field Power 0V)	18	Common (Field Power 0V)
19	Common (Field Power 24V)	20	Common (Field Power 24V)
21	Output 16	22	Output 17
23	Output 18	24	Output 19
25	Output 20	26	Output 21
27	Output 22	28	Output 23
29	Output 24	30	Output 25
31	Output 26	32	Output 27
33	Output 28	34	Output 29
35	Output 30	36	Output 31
37	Common (Field Power 0V)	38	Common (Field Power 0V)
39	Common (Field Power 24V)	40	Common (Field Power 24V)

2. LED Indicators

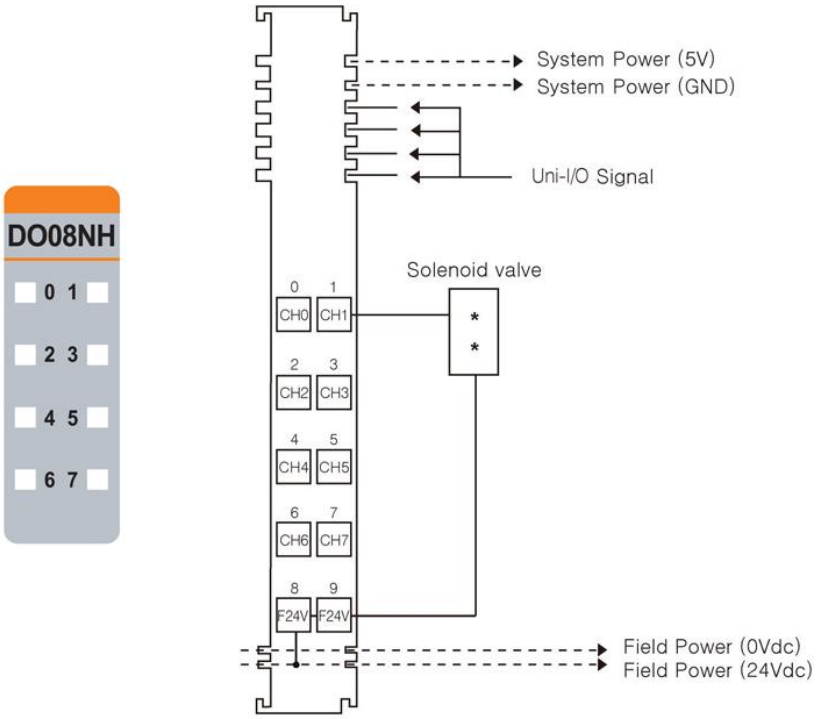
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green
8	Output 8	Green
9	Output 9	Green
10	Output 10	Green
11	Output 11	Green
12	Output 12	Green
13	Output 13	Green
...	...	...
31	Output 31	Green

Status	LED	Indication
No Signal	Off	No Output Signal
On Signal	Green	Normal Operation

URD-0008NH (DO08NH) - 8 Digital Outputs, (Sink)

Items	Specification
Outputs per module	8 Points, Sink type
Indicators(Logic side)	8 Green Output status
Output Voltage Range	Nominal 24VDC Min. 15VDC to Max. 32VDC
ON-state voltage drop	Max. 0.5VDC @ 25 ºC (77°F)
ON-State Min. Current	1mA per output
OFF-State Leakage current	Max. 25uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 0.5A per output / Max. 4A per unit
Protection	Over Current limit: Min. 3.5A@ 25 ºC (77°F) per each outputs Thermal Shutdown : Min 3A@ 25 ºC (77°F) per each outputs Short circuit protection
COMMON Type	8 points / Internal 2Com
Power dissipation	45mA maximum @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 5mA @32.0VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	39g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	Output 1
2	Output 2	3	Output 3
4	Output 4	5	Output 5
6	Output 6	7	Output 7
8	Common (Field Power 24V)	9	Common (Field Power 24V)

2. LED Indicators

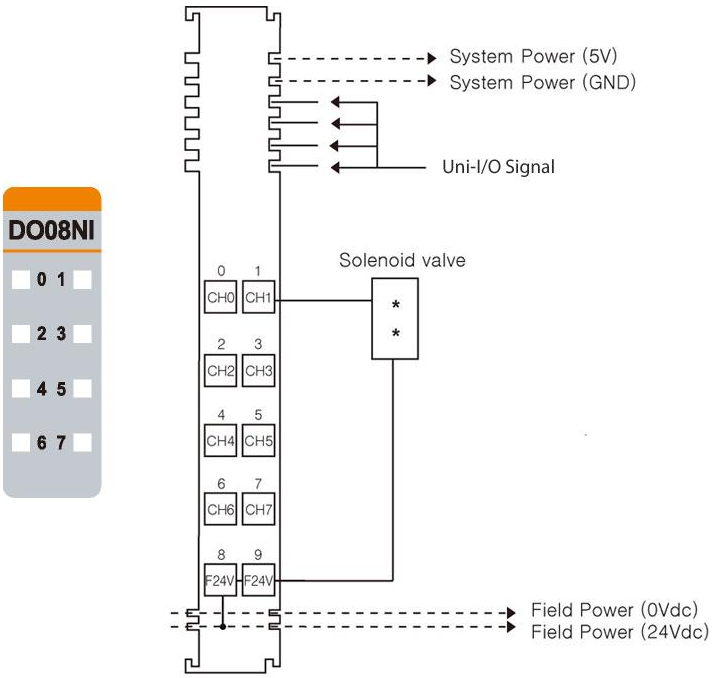
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0008NI (DO08NI) - 8 Digital Outputs, (Sink)

Items	Specification
Outputs per module	8 Points, Sink type
Indicators(Logic side)	8 Green Output status
Output Voltage Range	Nominal 24VDC Min. 11VDC to Max. 28.8VDC
ON-state voltage drop	Max. 1Vdc @ 25 ºC (77°F)
ON-State Min. Current	1mA per channel
OFF-State Leakage current	Max. 150uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 2A per channel Operating Temperature -40°C to 50°C (-40°F to 122°F): Max. 10A per unit 50°C to 60°C (122°F to 140°F): Max. 7A per unit 60°C to 70°C (140°F to 158°F): Max. 4.8A per unit
COMMON Type	8 points / Internal 2Com
Power dissipation	50mA maximum @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 30mA @32.0VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	Output 1
2	Output 2	3	Output 3
4	Output 4	5	Output 5
6	Output 6	7	Output 7
8	Common (Field Power 24V)	9	Common (Field Power 24V)

2. LED Indicators

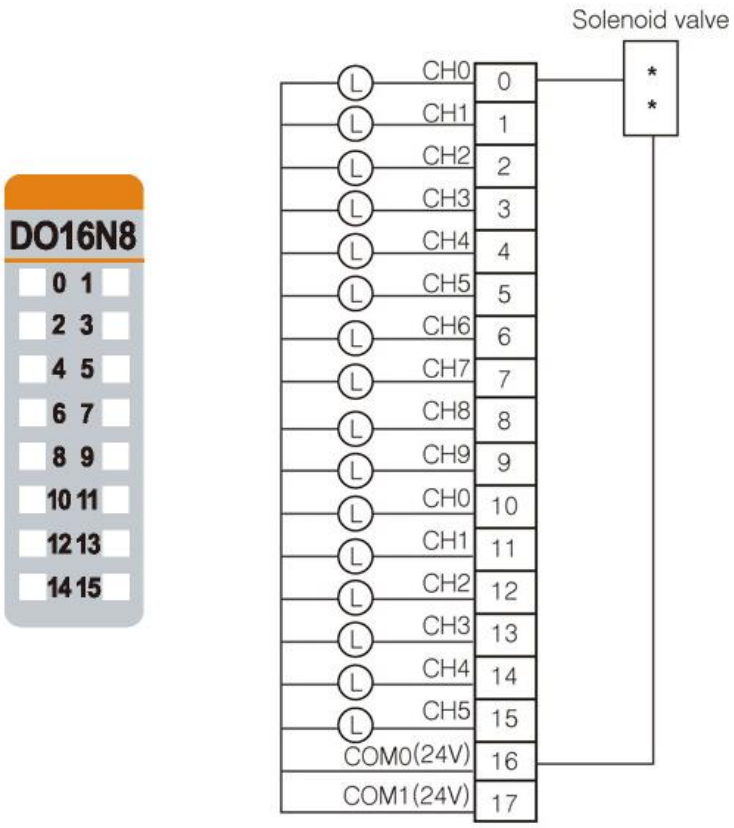
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0016NG-8 (DO16N8) - 16 Digital Outputs, (Sink)

Items	Specification
Outputs per module	16 Points Sink type
Indicators	16 Green output state
Output Voltage Range	Nominal 24VDC Min. 15VDC to Max. 32VDC
ON-state voltage drop	Max. 0.3Vdc @ 25 ºC (77°F) / 0.5Vdc@ 70 ºC (158°F)
ON-State Min. Current	1mA per channel
OFF-State Leakage current	Max. 20uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum
Output Current Rating	Max. 0.3A per channel / Max. 4.8A per unit
COMMON Type	16 points / 2COM
Power dissipation	50mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 30mA @32.0VDC
Wiring	I/O Cable Max. 0.75mm^2 (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	Output 1
2	Output 2	3	Output 3
4	Output 4	5	Output 5
6	Output 6	7	Output 7
8	Output 8	9	Output 9
10	Output 10	11	Output 11
12	Output 12	13	Output 13
14	Output 14	15	Output 15
16	Common (Field Power 24V)	17	Common (Field Power 24V)

2. LED Indicators

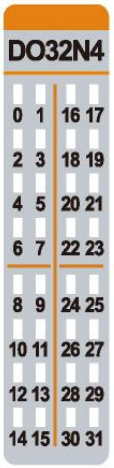
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green
8	Output 8	Green
9	Output 9	Green
10	Output 10	Green
11	Output 11	Green
12	Output 12	Green
13	Output 13	Green
14	Output 14	Green
15	Output 15	Green

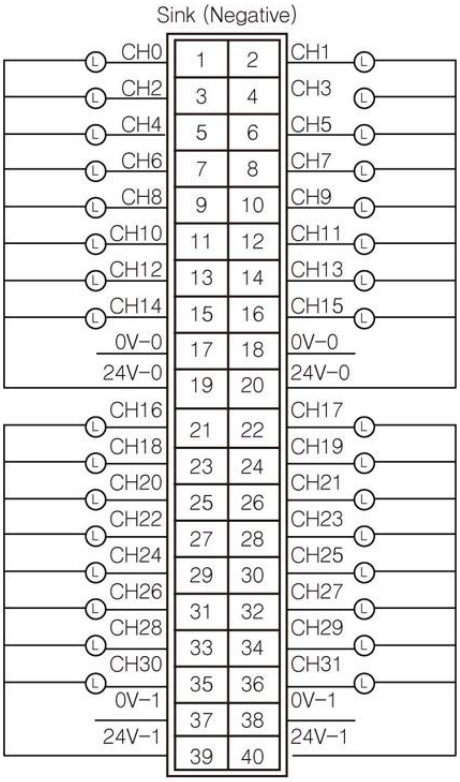
Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0032NG-4 (DO32N4) - 32 Digital Outputs, (Sink)

Items	Specification
Outputs per module	32 Points Sink Type
Indicators	32 Green Output Status LEDs
Output Voltage Range	24VDC Min. 15VDC to Max. 32VDC
ON-state voltage drop	Max. 0.3Vdc @ 25 ºC (77°F) / 0.5Vdc @ 60 ºC (140°F)
ON-State Min. Current	Min. 1mA / Channel
OFF-State Leakage current	Max. 25uA
Output Signal Delay	OFF to ON : 0.3ms maximum ON to OFF : 0.3ms maximum 0ch~15ch < 16ch~31ch : max. 20us
Output Current Rating	Max. 0.3A per channel / Max. 6.0A per unit
COMMON Type	32 points / 4 Common
Power dissipation	65mA maximum @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 15 to 32VDC Power dissipation: 10mA @32.0VDC
Wiring	Module connector : ADP-BBOARD40
Weight	59g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram





Pin No.	Signal Description	Pin No.	Signal Description
1	Output 0	2	Output 1
3	Output 2	4	Output 3
5	Output 4	6	Output 5
7	Output 6	8	Output 7
9	Output 8	10	Output 9
11	Output 10	12	Output 11
13	Output 12	14	Output 13
15	Output 14	16	Output 15
17	Common (Field Power 0V)	18	Common (Field Power 0V)
19	Common (Field Power 24V)	20	Common (Field Power 24V)
21	Output 16	22	Output 17
23	Output 18	24	Output 19
25	Output 20	26	Output 21
27	Output 22	28	Output 23
29	Output 24	30	Output 25
31	Output 26	32	Output 27
33	Output 28	34	Output 29
35	Output 30	36	Output 31
37	Common (Field Power 0V)	38	Common (Field Power 0V)
39	Common (Field Power 24V)	40	Common (Field Power 24V)

2. LED Indicators

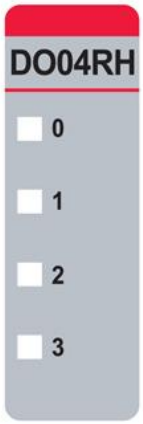
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green
8	Output 8	Green
9	Output 9	Green
10	Output 10	Green
11	Output 11	Green
12	Output 12	Green
13	Output 13	Green

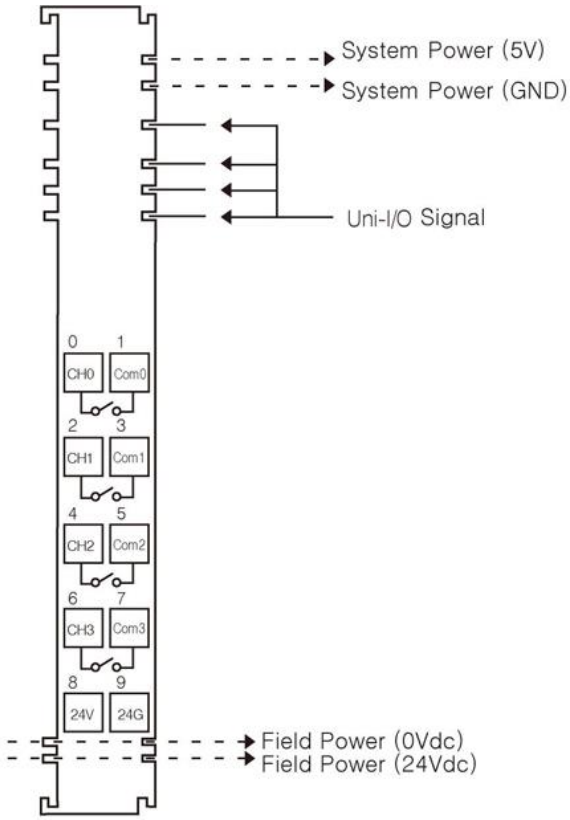
Status	LED	Indication
No Signal	Off	No Output Signal
On Signal	Green	Normal Operation

URD-0004RH (DO04RH) - 4 Relay Outputs

Items	Specification
Output per module	4 Points, Bi-directional
Indicators (Logic side)	4 Green Output state
Relay Type	Form A, Single Pole Single Throw (SPST)
Output Voltage Range (Load Dependent)	0~32VDC @ 2.0A resistive 48VDC @ 0.8A resistive 110VDC @ 0.5A resistive Max. 240VAC @ 2.0A resistive
Output Current Rating (At rated power)	2.0A @ 0~32VDC 0.8A @ 48VDC 0.5A @ 110VDC 2.0A @ 240VAC -40 ºC to 70 ºC (-40°F to 158°F) (2A Load 2ch) -40 ºC to 60 ºC (-40°F to 140°F) (2A Load 4ch)
Output Delay Time (resistive load)	OFF to ON: Max. 5ms @ 24VDC ON to OFF: Max. 8ms @ 24VDC OFF to ON: Max. 5ms @ 220VAC ON to OFF: Max. 15ms @ 220VAC
Expected Contact Life	20M Cycles (Resistive)
Frequency Range (VAC)	47Hz ~ 63Hz
Max. On-State Voltage Drop*	0.5V @ 2.0A, Resistive Load, 24VDC
Commons Type	4Points / 2COM (Single Common)
Power dissipation	35mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field Power : Non-isolation
Field Power	Supply voltage : 24VDC nominal Voltage range : 22 to 26VDC Power dissipation: 30mA @ 24VDC (AC Power Not used)
Wiring	I/O Cable Max. $2.0mm^2$ (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram





Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	COM 0
2	Output 1	3	COM 1
4	Output 2	5	COM 2
6	Output 3	7	COM 3
8	Field Power 24V	9	Field Power 0V

2. LED Indicators

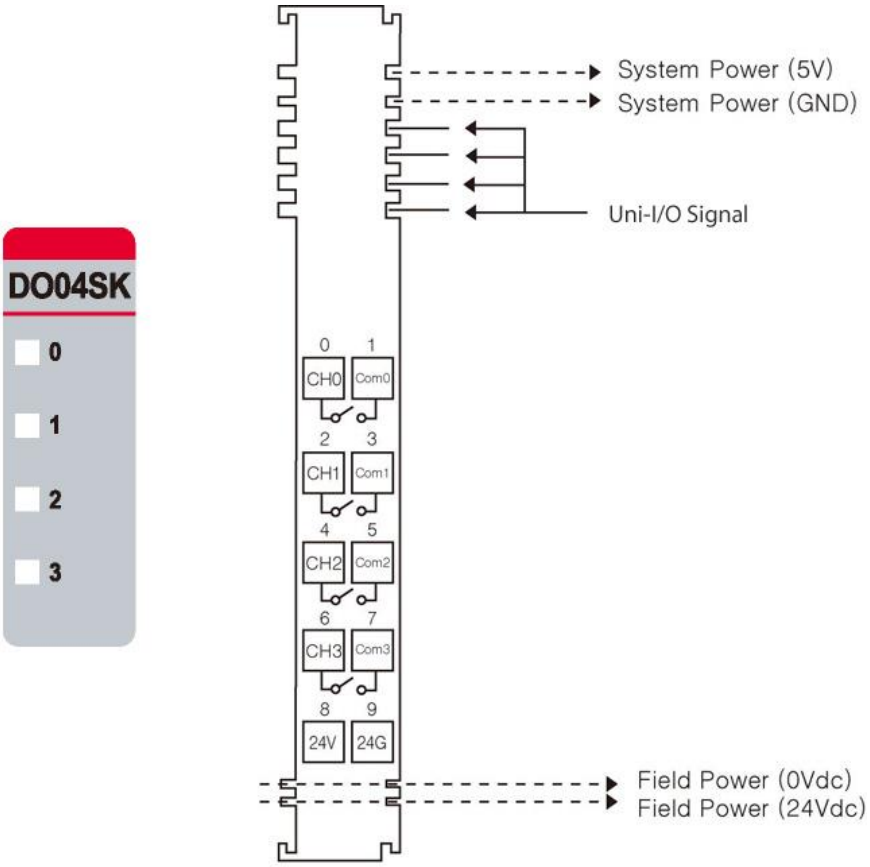
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

URD-0004SK (DO04SK) - 4 Solid State Relay

Items	Specification
Output per module	4 Points, Bi-directional
Indicators (Logic side)	4 Green Output state
Relay Type	MOS Relay (Solid State Relay)
Output Voltage Range (Load Dependent)	Max. 240VAC @ 0.5A resistive Max. 240VDC @ 0.5A resistive
Output Delay Time (resistive load)	Max. AC/DC : 240V OFF to ON : Max. 0.6ms ON to OFF : Max. 3ms
Output Current Rating	Max. 0.5A per channel
Frequency Range (VAC)	47Hz ~ 63Hz
Commons Type	4Points / 2COM (Single Common)
Power dissipation	80mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field Power : Non-isolation
Field Power	Supply Voltage : 24VDC Voltage Range : 15 ~ 32VDC (AC Power Not Used)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	COM 0
2	Output 1	3	COM 1
4	Output 2	5	COM 2
6	Output 3	7	COM 3
8	Field Power 24V	9	Field Power 0V

2. LED Indicators

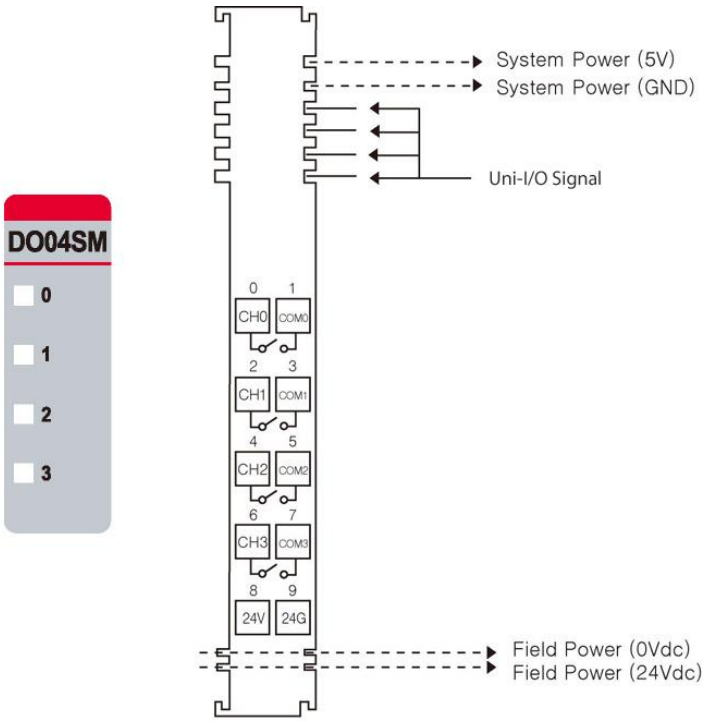
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
No Signal	Off	No Output Signal
On Signal	Green	Normal Operation

URD-0004SM (DO04SM) - 4 Solid State Relay

Items	Specification
Output per module	4 Points, Bi-directional
Indicators (Logic side)	4 Green Output state
Relay Type	MOS Relay (Solid State Relay)
Output Voltage Range (Load Dependent)	Max. 110VAC @ 1A resistive Max. 110VDC @ 1A resistive
Output Delay Time (resistive load)	AC: OFF to ON : Max. 1ms ON to OFF : Max. 3ms DC: OFF to ON : Max. 1.5ms ON to OFF : Max. 3ms
Output Current Rating	Max. 1A per channel 60 ºC (140°F) : 0.8A per channel 50 ºC (122°F) : 1A per channel
Frequency Range (VAC)	47Hz ~ 63Hz
Commons Type	4Points / 2COM (Single Common)
Power dissipation	80mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field Power : Non-isolation
Field Power	Supply Voltage : 24VDC Voltage Range : 15 ~ 32VDC (AC Power Not Used)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	COM 0
2	Output 1	3	COM 1
4	Output 2	5	COM 2
6	Output 3	7	COM 3
8	Field Power 24V	9	Field Power 0V

2. LED Indicators

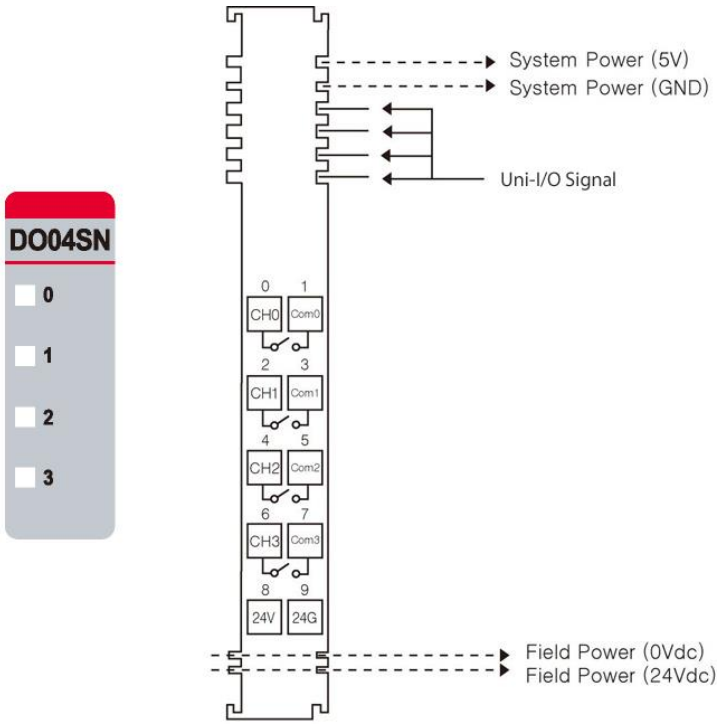
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
Not Signal	Off	No Output Signal
On Signal	Green	Normal Operation

URD-0004SN (DO04SN) - 4 Solid State Relay

Items	Specification
Output per module	4 Points, Bi-directional
Indicators (Logic side)	4 Green Output state
Relay Type	MOS Relay (Solid State Relay)
Output Voltage Range (Load Dependent)	Max. 24VAC @ 2A resistive Max. 24VDC @ 2A resistive
Output Delay Time (resistive load)	AC: OFF to ON : Max. 1ms ON to OFF : Max. 3ms DC: OFF to ON : Max. 1 ms ON to OFF : Max. 3.5ms
Output Current Rating	Max. 2A per channel -40°C to 70°C (-40°F to 158°F) : Max. 7A per unit -40°C to 50°C (-40°F to 122°F) : Max. 8A per unit
Frequency Range (VAC)	47Hz ~ 63Hz
Commons Type	4Points / 2COM (Single Common)
Power dissipation	80mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field Power : Non-isolation
Field Power	Supply Voltage : 24VDC Voltage Range : 15 ~ 32VDC (AC Power Not Used)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Output 0	1	COM 0
2	Output 1	3	COM 1
4	Output 2	5	COM 2
6	Output 3	7	COM 3
8	Field Power 24V	9	Field Power 0V

2. LED Indicators

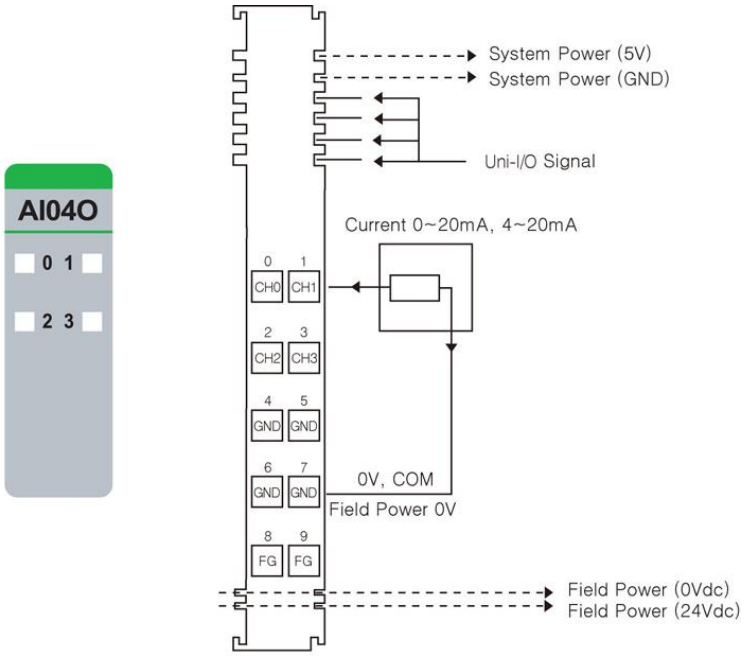
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
No Signal	Off	No Output Signal
On Signal	Green	Normal Operation

URA-0400O (AI04O) - 4 Current Inputs 12bit

Items	Specification
Inputs per module	4 inputs single ended, non-isolated between inputs
Indicators(Logic side)	4 Green Input status
Resolution in Ranges	12 bits : 4.88uA/Bit(0~20mA), 3.91uA/Bit(4~20mA)
Input Range	0~20mA, 4~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25 ºC (77°F) ambient ±0.3% Full Scale @ -40 ºC, 70 ºC (-40°F to 158°F)
Input Impedance	121.5Ω
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value) Maximum Range Over : LED Off > 21mA Minimum Range Over : LED Off < 3mA (4 ~ 20mA)
Conversion Time	800usec / All input
Field calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 25mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 25mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input Common(AGND)	5	Input Common(AGND)
6	Input Common(AGND)	7	Input Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

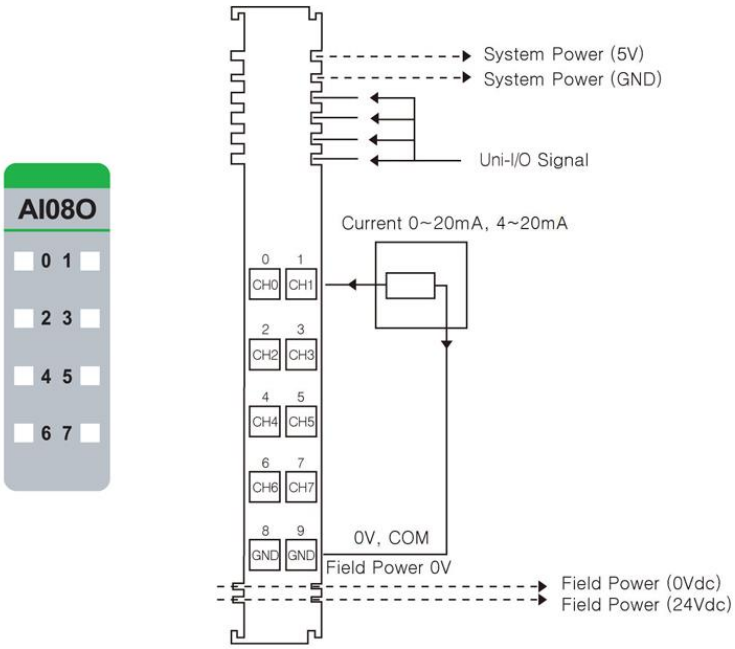
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off > 21mA (Maximum Range Over] – Input OFF [LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-0800O (AI08O) - 8 Current Inputs 12bit

Items	Specification
Inputs per module	8 Inputs single ended, non-isolated between inputs
Indicators(Logic side)	8 Green Input status
Resolution in Ranges	12 bits : 4.88uA/Bit(0~20mA), 3.91uA/Bit(4~20mA)
Input Range	0~20mA, 4~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25 ºC (77°F) ambient ±0.3% Full Scale @ -40 ºC, 70 ºC (-40°F, 158°F)
Input Impedance	121.5Ω
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value) Maximum Range Over : LED Off > 21mA Minimum Range Over : LED Off < 3mA (4 ~ 20mA)
Conversion Time	≤ 1msec / All channel (≤ 0.125ms per channel)
Field calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 30mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input 4	5	Input 5
6	Input 6	7	Input 7
8	Input Common(AGND)	9	Input Common(AGND)

2. LED Indicators

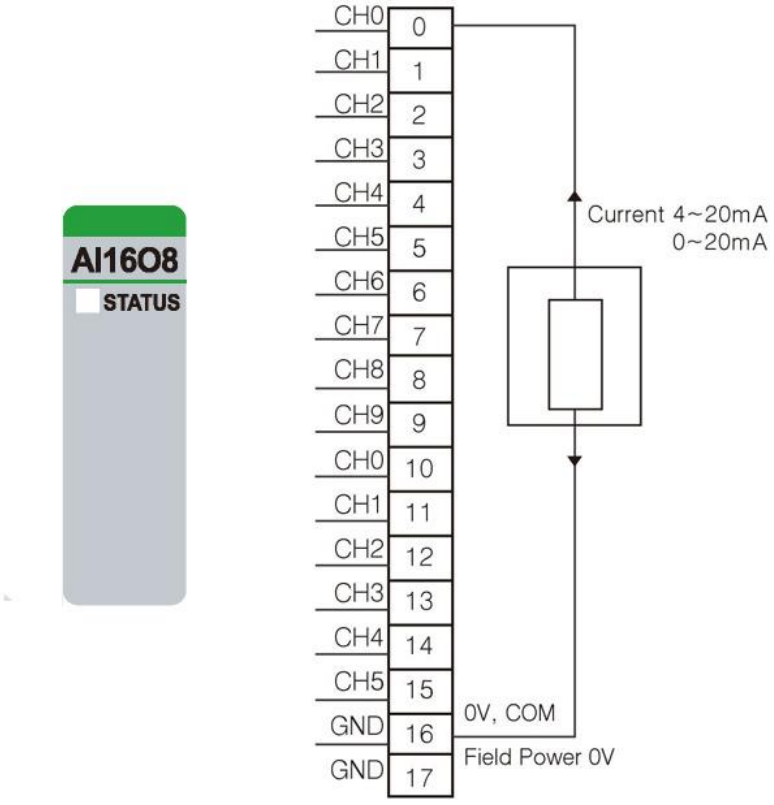
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off > 21mA (Maximum Range Over] – Input OFF [LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-1600O-8 (AI16O8) - 16 Analog Current Inputs 12bit

Items	Specification
Inputs per module	16 Channels single ended, non-isolated between channels
Indicators(Logic side)	1 Green status LED
Resolution in Ranges	12 bits : 4.88uA/Bit(0~20mA), 3.91uA/Bit(4~20mA)
Input Range	0~20mA, 4~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25 ºC (77°F) ambient ±0.3% Full Scale @ -40 ºC, 60 ºC (-40°F , 140°F)
Input Impedance	121.5Ω
Conversion Time	Max. 3.2msec (All channel)
Field calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 200mA @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 1.0mm^2 (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description
0	Input 0
1	Input 1
2	Input 2
3	Input 3
4	Input 4
5	Input 5
6	Input 6
7	Input 7
8	Input 8
9	Input 9
10	Input 10
11	Input 11
12	Input 12
13	Input 13
14	Input 14
15	Input 15
16	Input Common(AGND)
17	Input Common(AGND)

2. LED Indicators

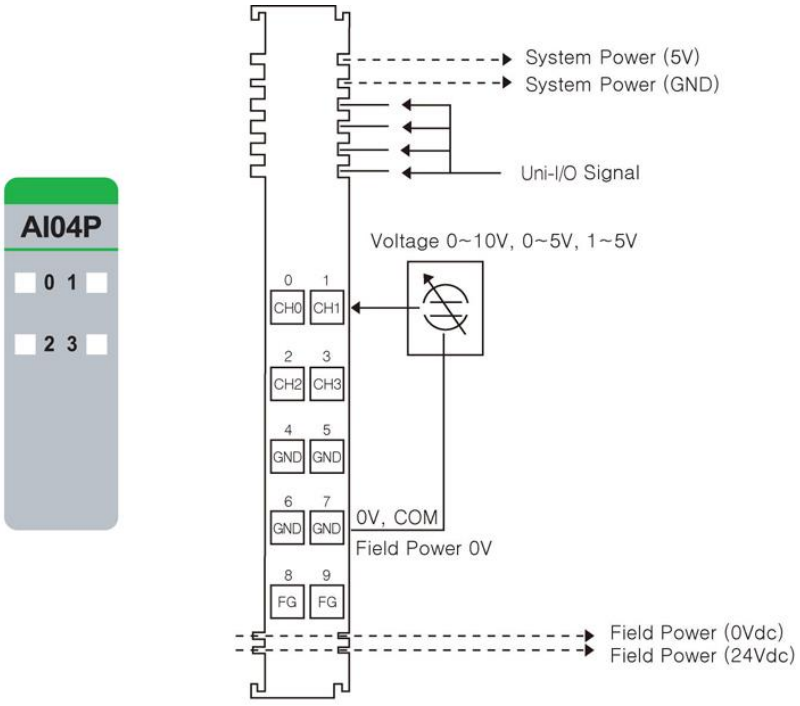
LED No.	LED Function / Description	LED Color
0	Input 0	Green

Status	LED	Indication
Uni-I/O Status	Off	Disconnection
	Green	Connection

URA-0400P (AI04P) - 4 Analog Voltage Inputs 12bit

Items	Specification
Inputs per module	4 Inputs single ended, non-isolated between inputs
Indicators(Logic side)	4 Green Input status
Resolution in Ranges	12 bits : 2.44mV/Bit(0~10V) , 1.22mV/Bit(0~5V), 0.977mV/Bit(1~5V)
Input Current Range	0~10VDC, 0~5VDC, 1~5VDC
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25 ºC (77°F) ambient ±0.3% Full Scale @ -40°C, 70°C (-40°F , 158°F)
Input Impedance	500kΩ
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value)
Conversion Time	≤350usec / All input
Calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 25mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 25mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input Common(AGND)	5	Input Common(AGND)
6	Input Common(AGND)	7	Input Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

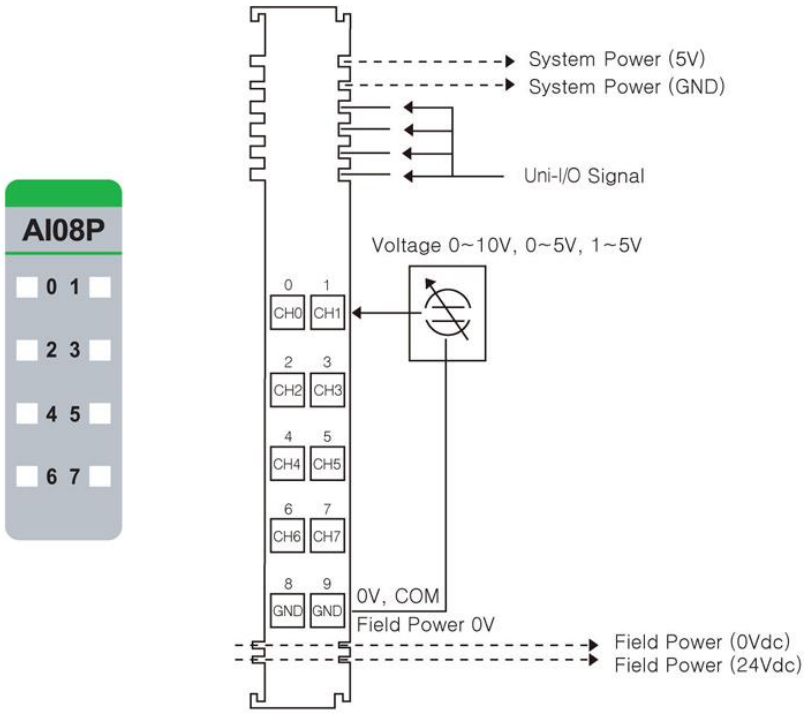
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-0800P (AI08P) - 8 Analog Voltage Inputs 12bit

Items	Specification
Inputs per module	8 Inputs single ended, non-isolated between inputs
Indicators(Logic side)	8 Green Input status
Resolution in Ranges	12 bits : 2.44mV/Bit(0~10V) , 1.22mV/Bit(0~5V)
Input Current Range	0~10VDC, 0~5 VDC, 1~5 VDC
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25 ºC (77°F) ambient ±0.3% Full Scale @ -40°C, 70°C (-40°F to 158°F)
Input Impedance	500kΩ
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value)
Conversion Time	≤1msec / All Input (≤ 0.125ms per input)
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 30mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input 4	5	Input 5
6	Input 6	7	Input 7
8	Input Common(AGND)	9	Input Common(AGND)

2. LED Indicators

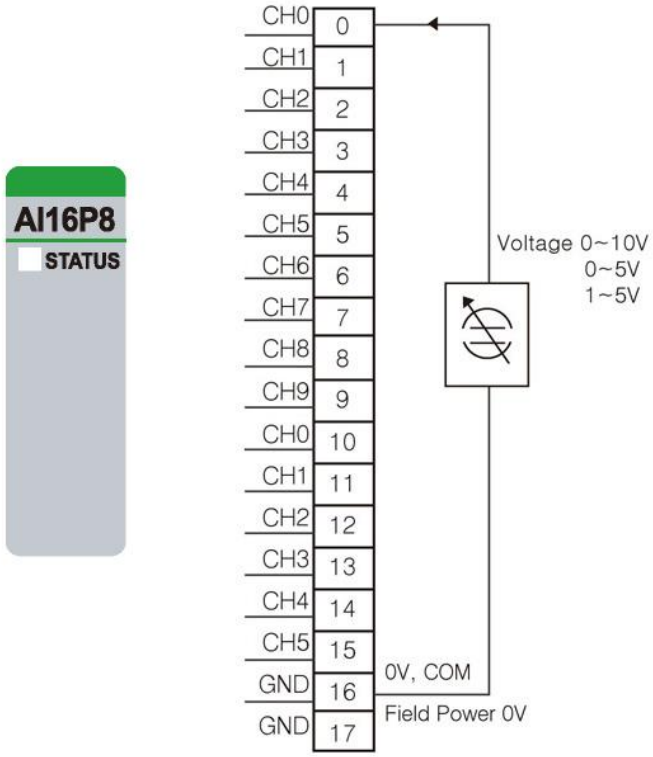
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-1600P-8 (AI16P8) - 16 Analog Voltage Inputs 12bit

Items	Specification
Inputs per module	16 Channels single ended, non-isolated between channels
Indicators(Logic side)	1 Green status LED
Resolution in Ranges	12 bits : 2.44mV/Bit(0~10V) , 1.22mV/Bit(0~5V), 0.98mV/Bit(1~5V)
Input Current Range	0~10VDC, 0~5VDC, 1~5VDC
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 60°C (-40°F to 140°F)
Input Impedance	500kΩ
Conversion Time	All Channel<1.3ms
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 210mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 1.0mm^2 (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description
0	Input 0
1	Input 1
2	Input 2
3	Input 3
4	Input 4
5	Input 5
6	Input 6
7	Input 7
8	Input 8
9	Input 9
10	Input 10
11	Input 11
12	Input 12
13	Input 13
14	Input 14
15	Input 15
16	Input Common(AGND)
17	Input Common(AGND)

2. LED Indicators

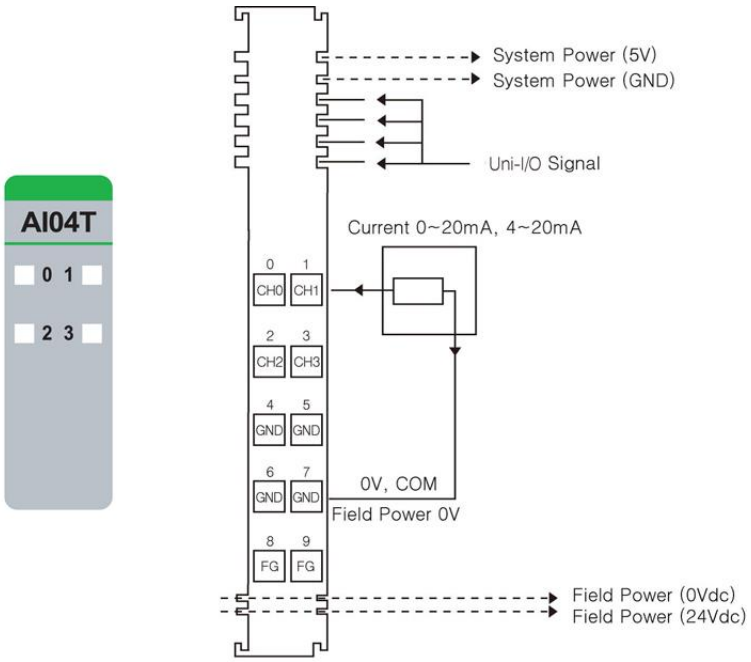
LED No.	LED Function / Description	LED Color
0	Input 0	Green

Status	LED	Indication
Uni-I/O Status	Off	Disconnection
	Green	Connection

URA-0400T (AI04T) - 4 Analog Current Inputs 16bit

Items	Specification
Inputs per module	4 Input s single ended, non-isolated between Inputs
Indicators(Logic side)	4 Green Input status
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.61uA/Bit(0~20mA), 0.49uA/Bit(4~20mA)
Input Range	0~20mA, 4~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Input Impedance	121.5Ω
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value) Minimum Range Over : LED Off < 3mA (4 ~ 20mA)
Conversion Time	650usec / All Input
Field calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 25mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32Vdc Power Dissipation : Max. 20mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input Common(AGND)	5	Input Common(AGND)
6	Input Common(AGND)	7	Input Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

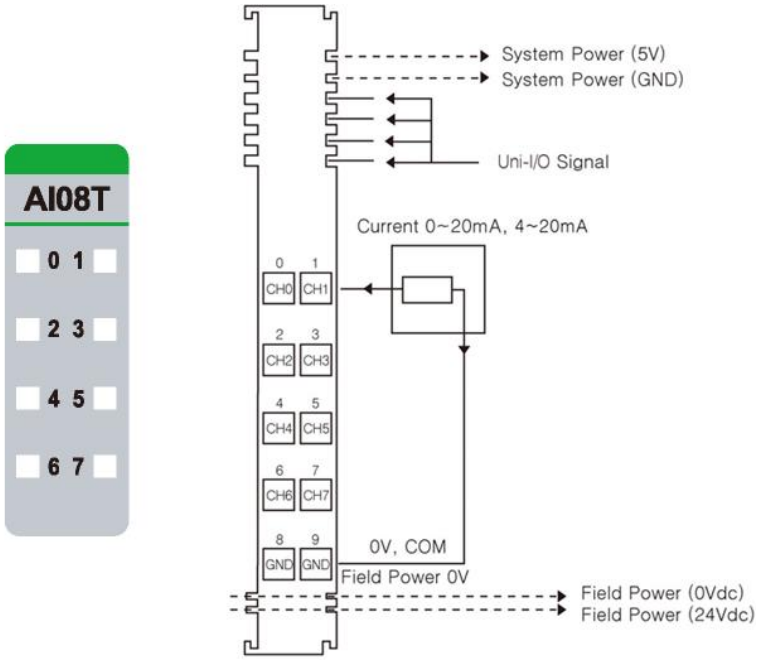
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-0800T (AI08T) - 8 Analog Current Inputs 16bit

Items	Specification
Inputs per module	8 Input s single ended, non-isolated between Inputs
Indicators(Logic side)	8 Green Input status
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.61uA/Bit(0~20mA), 0.49uA/Bit(4~20mA)
Input Range	0~20mA, 4~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Input Impedance	121.5Ω
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value) Minimum Range Over : LED Off < 3mA (4 ~ 20mA)
Conversion Time	≤ 1msec / All channel (≤ 0.125ms per channel)
Field calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32Vdc Power Dissipation : Max. 30mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input 4	5	Input 5
6	Input 6	7	Input 7
8	Input Common(AGND)	9	Input Common(AGND)

2. LED Indicators

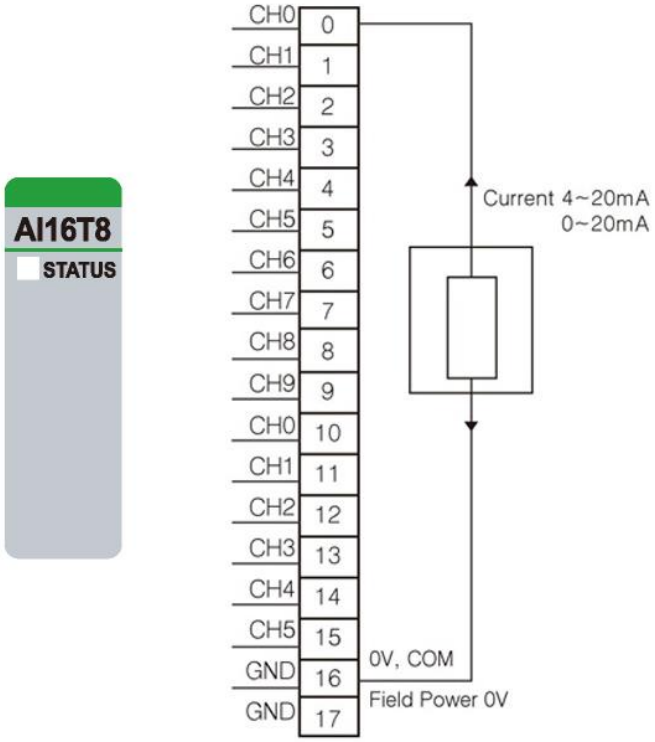
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off > 21mA (Maximum Range Over] – Input OFF [LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-1600T-8 (AI16U8) - 16 Analog Current Inputs 16bit

Items	Specification
Inputs per module	16 Channels single ended, non-isolated between channels
Indicators(Logic side)	1 Green Uni-I/O status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit(0~10V) , 0.15mV/bit(0~5V), 0.12mV/bit(1~5VDC)
Input Range	0~10Vdc, 0~5Vdc, 1~5Vdc
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 60°C (-40°F to 140°F)
Input Impedance	500kΩ
Conversion Time	All Channel<1.3ms
Field calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 210mA @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 0.75mm^2 (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description
0	Input 0
1	Input 1
2	Input 2
3	Input 3
4	Input 4
5	Input 5
6	Input 6
7	Input 7
8	Input 8
9	Input 9
10	Input 10
11	Input 11
12	Input 12
13	Input 13
14	Input 14
15	Input 15
16	Input Common(AGND)
17	Input Common(AGND)

2. LED Indicators

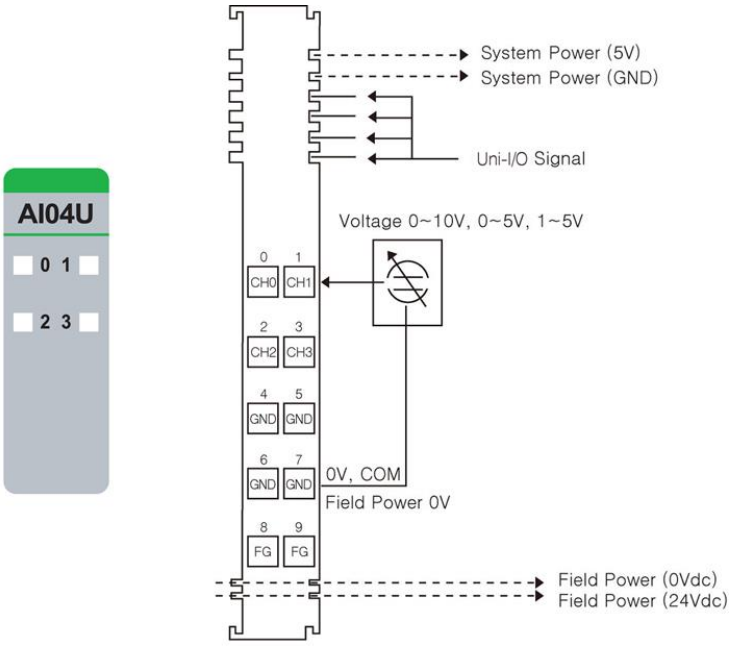
LED No.	LED Function / Description	LED Color
0	Input 0	Green

Status	LED	Indication
Uni-I/O Status	Off	Disconnection
	Green	Connection

URA-0400U (AI04U) - 4 Analog Voltage Inputs 16bit

Items	Specification
Inputs per module	4 Inputs single ended, non-isolated between Inputs
Indicators(Logic side)	4 Green Input status
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit(0~10V) , 0.15mV/bit(0~5V), 0.12mV/bit(1~5Vdc)
Input Current Range	0~10VDC, 0~5VDC, 1~5VDC
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Input Impedance	500kΩ
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value)
Conversion Time	≥350usec / All Input
Calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 25mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 25mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input Common(AGND)	5	Input Common(AGND)
6	Input Common(AGND)	7	Input Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

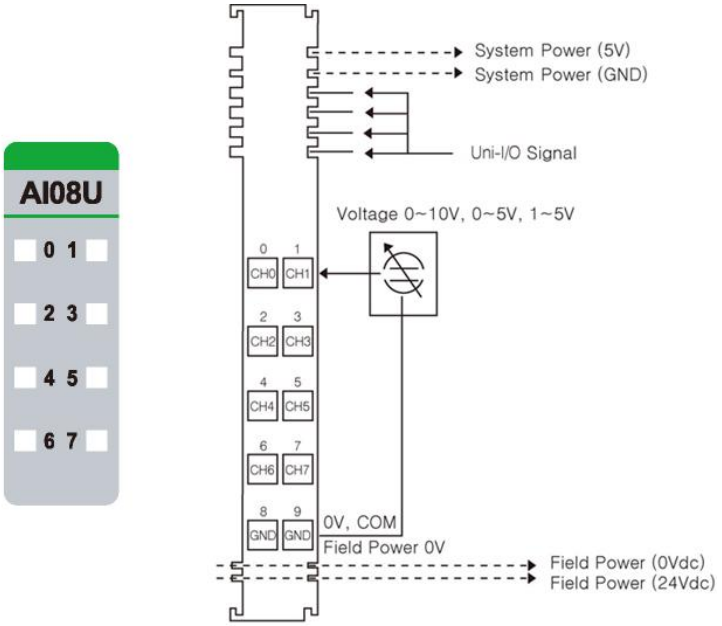
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Channel Repeat the Green and OFF	Field Power is unconnected

URA-0800U (AI08U) - 8 Analog Voltage Inputs 16bit

Items	Specification
Inputs per module	8 Channels single ended, non-isolated between channels
Indicators(Logic side)	1 Green Uni-I/O status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit(0~10V) , 0.15mV/bit(0~5V), 0.12mV/bit(1~5Vdc)
Input Current Range	0~10Vdc, 0~5VDC, 1~5VDC
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 70°C (-40°F to 158°F)
Input Impedance	500kΩ
Diagnostic	Diagnostic Field Power Off : LED Blinking Field Power On : LED Off < 0.5% (Maximum Input Value) Field Power On : LED On > 0.5% (Maximum Input Value) Maximum Range Over : LED Off > 21mA Minimum Range Over : LED Off < 3mA (4 ~ 20mA)
Conversion Time	≤1msec / All channel (≤ 0.125ms per channel)
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 30mA@24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Input 0	1	Input 1
2	Input 2	3	Input 3
4	Input 4	5	Input 5
6	Input 6	7	Input 7
8	Input Common(AGND)	9	Input Common(AGND)

2. LED Indicators

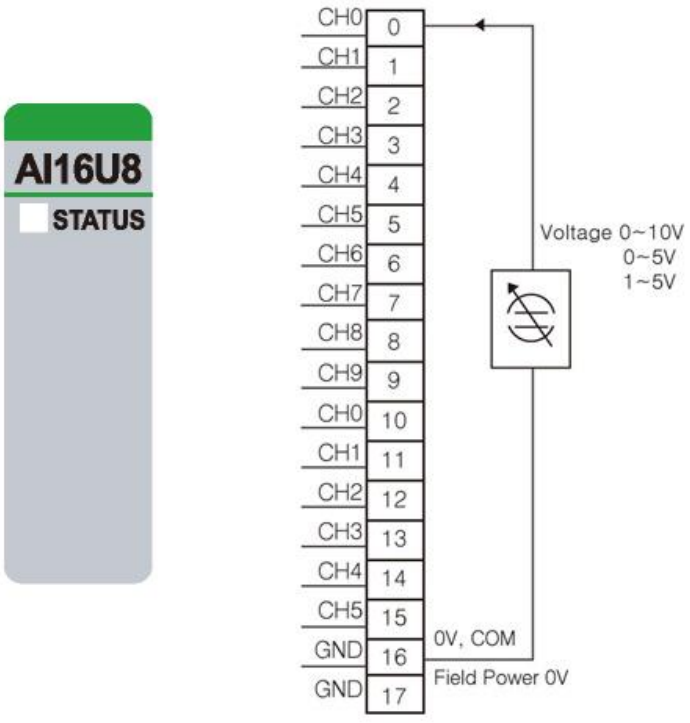
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

URA-1600U-8 (AI16U8) - 16 Analog Voltage Inputs 16bit

Items	Specification
Inputs per module	16 Channels single ended, non-isolated between channels
Indicators(Logic side)	1 Green Uni-I/O status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit(0~10V) , 0.15mV/bit(0~5V), 0.12mV/bit(1~5Vdc)
Input Current Range	0~10Vdc, 0~5VDC, 1~5VDC
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 60°C (-40°F to 140°F)
Input Impedance	500kΩ
Conversion Time	All Channel<1.3ms
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 210mA @ 5.0VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 0.75mm^2 (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description
0	Input 0
1	Input 1
2	Input 2
3	Input 3
4	Input 4
5	Input 5
6	Input 6
7	Input 7
8	Input 8
9	Input 9
10	Input 10
11	Input 11
12	Input 12
13	Input 13
14	Input 14
15	Input 15
16	Input Common(AGND)
17	Input Common(AGND)

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Input 0	Green

Status	LED	Indication
Uni-I/O Status	Off	Disconnection
	Green	Connection

URA-0004W (AO04W) - 4 Analog Current Outputs 12bit

Items	Specification
Outputs per module	4 Outputs single ended
Indicators(Logic side)	4 Green Output Status LEDs
Resolution in Ranges	12 bits : 4.88uA/bit
Output Range	0~20mA
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Load Resistance	Max. 250Ω *
Dignostic	Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON
Conversion Time	Max. 150usec / All Output
Calibration	Not Required
Common Type	4 Channels / 4 Common
Power Dissipation	Max. 30mA @ 5VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDCnominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 80mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

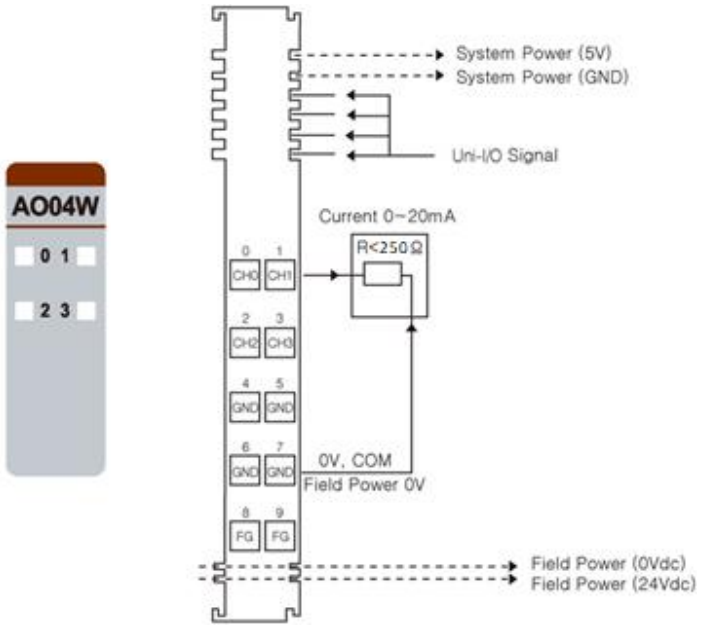
* Operating temperature

-40°C to 70°C (-40°F to 158°F) temperature range specification can be guaranteed under the following conditions.

Load Resistance : Min 100Ω, Max 250Ω

Otherwise, temperature specification can be guranteed with -40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Output Common(AGND)	5	Output Common(AGND)
6	Output Common(AGND)	7	Output Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

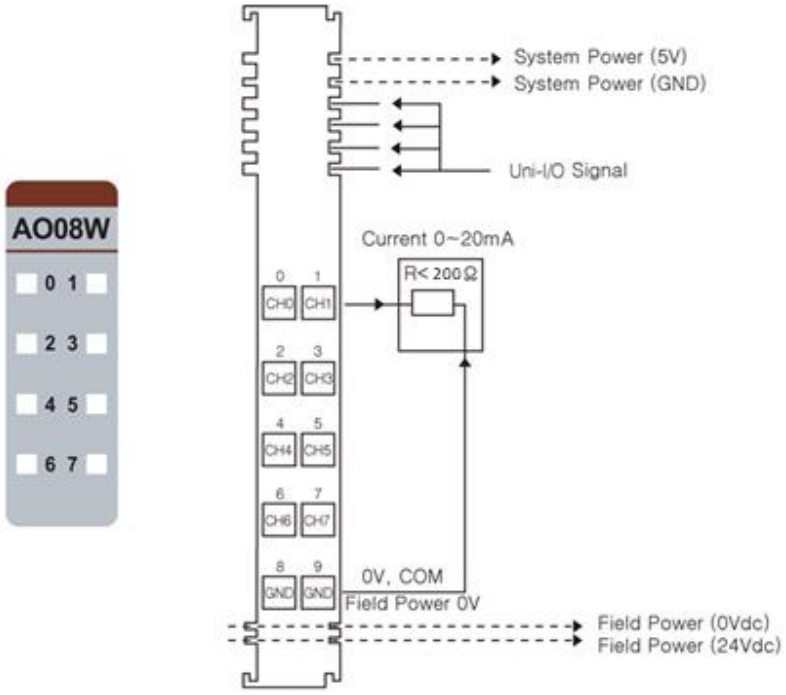
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
Normal Operation	Off	No Output Value
	Green	Normal Operation
Field Power Error	All Channel Repeat Green and Off	Field Power is unconnected.

URA-0008W (AO08W) - 8 Analog Current Outputs 12bit

Items	Specification
Outputs per module	8 Outputs single ended
Indicators(Logic side)	8 Green Output status
Resolution in Ranges	12 bits : 4.88uA/Bit
Output Range	0~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 60°C (-40°F to 140°F)
Load Resistance	Max. 200Ω
Dignostic	Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON
Conversion Time	Max. 250usec / All Output
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Photocoupler isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 130mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Analog Output 4	5	Analog Output 5
6	Analog Output 6	7	Analog Output 7
8	Output Common(AGND)	9	Output Common(AGND)

2. LED Indicators

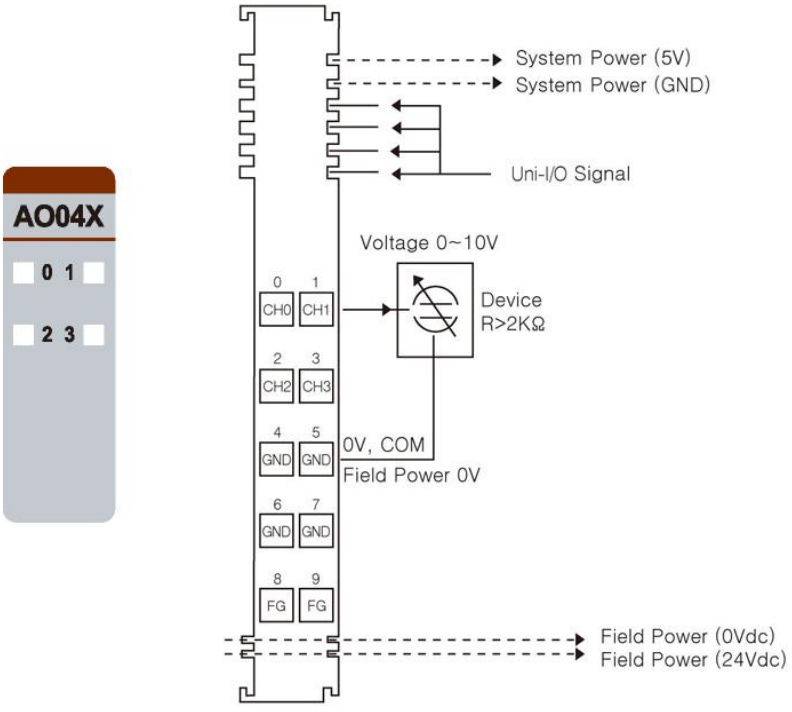
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green

tatus	LED	Indication
Normal Operation	No Output Channel Off Output Channel Green	No Output Output
Field Power Error	All Channel Repeat the Green and Off	Field power is unconnected.

URA-0004X (AO04X) - 4 Analog Voltage Outputs 12bit

Items	Specification
Outputs per module	4 Outputs single ended
Indicators(Logic side)	4 Green Output status
Resolution in Ranges	12 bits : 2.44mV/Bit
Output Range	0 ~ 10Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Load Resistance	Min. 2KΩ
Conversion Time	Max. 150usec / All Output
Diagnostic	Field Power Off: LED Blinking Field Power On: No Output LED Off Field Power On: Output LED On
Calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 35mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Output Common(AGND)	5	Output Common(AGND)
6	Output Common(AGND)	7	Output Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

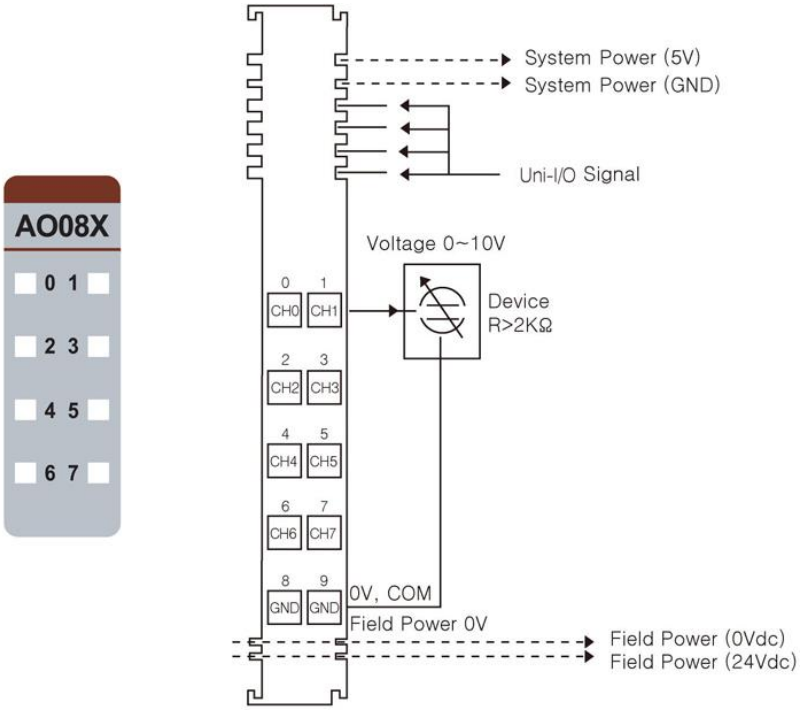
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
Normal Operation	No Output Off Output Green	No Output Output
Field Power Error	All Channel Repeat the Green and Off	Field power is unconnected.

URA-0008X (AO08X) - 8 Analog Voltage Outputs 12bit

Items	Specification
Outputs per module	8 outputs single ended
Indicators(Logic side)	8 Green Output status
Resolution in Ranges	12 bits : 2.44mV/Bit
Output Range	0 ~ 10VDC
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ 40°C to 70°C (-40°F to 158°F)
Load Resistance	Min. 2KΩ
Conversion Time	Max. 250usec / All Output
Diagnostic	Field Power Off: LED Blinking Field Power On: No Output LED Off Field Power On: Output LED On
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 70mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Analog Output 4	5	Analog Output 5
6	Analog Output 6	7	Analog Output 7
8	Output Common(AGND)	9	Output Common(AGND)

2. LED Indicators

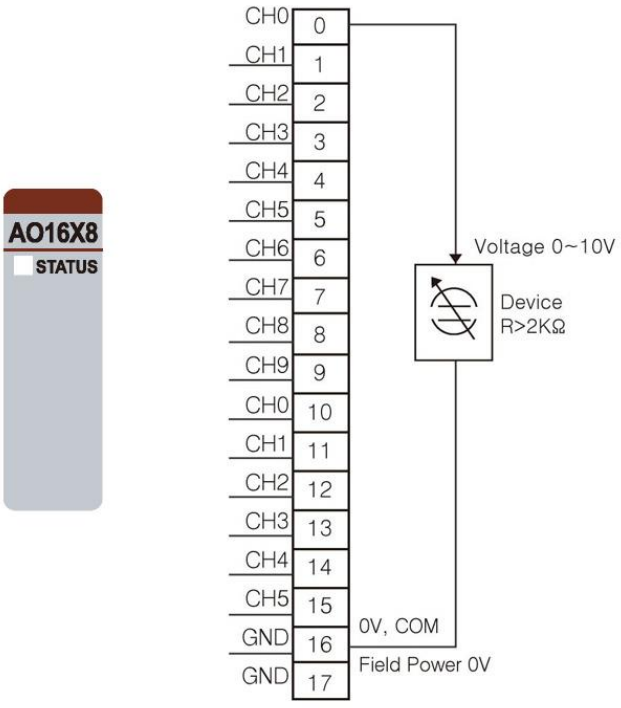
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green

Status	LED	Indication
Normal Operation	No Output Off Output Green	No Output Output
Field Power Error	All output Repeat the Green and Off	Field power is unconnected.

URA-0016X-8 (AO16X8) - 16 Analog Voltage Outputs 12bit

Items	Specification
Outputs per module	16 Channels single ended
Indicators(Logic side)	1 Green Uni-I/O status LED
Resolution in Ranges	12 bits : 2.44mV/Bit
Output Range	0 ~ 10VDC
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 60°C (-40°F to 140°F)
Load Resistance	Min. 2KΩ
Conversion Time	Max. 450usec (All channel)
Diagnostic	Field Power Off : LED Blinking
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0VDC
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 150mA @ 24VDC, Load(2K)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description
0	Output 0
1	Output 1
2	Output 2
3	Output 3
4	Output 4
5	Output 5
6	Output 6
7	Output 7
8	Output 8
9	Output 9
10	Output 10
11	Output 11
12	Output 12
13	Output 13
14	Output 14
15	Output 15
16	Output 16
17	Output Common(AGND)

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Output 0	Green

Status	LED	Indication
Uni-I/O Status	Off Green	Disconnection Connection
Field Power Error	Status Channel Repeat the Green and Off	Field power is unconnected.

URA-0004Y (AO04Y) - 4 Analog Current Outputs 16bit

Items	Specification
Outputs per module	4 Outputs single ended
Indicators(Logic side)	4 Green Output Status LEDs
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.61uA/bit
Output Range	0~20mA
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Load Resistance	Max. 250Ω *
Dignostic	Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON
Conversion Time	Max. 150usec / All Output
Calibration	Not Required
Common Type	4 Channels / 4 Common
Power Dissipation	Max. 30mA @ 5VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 80mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

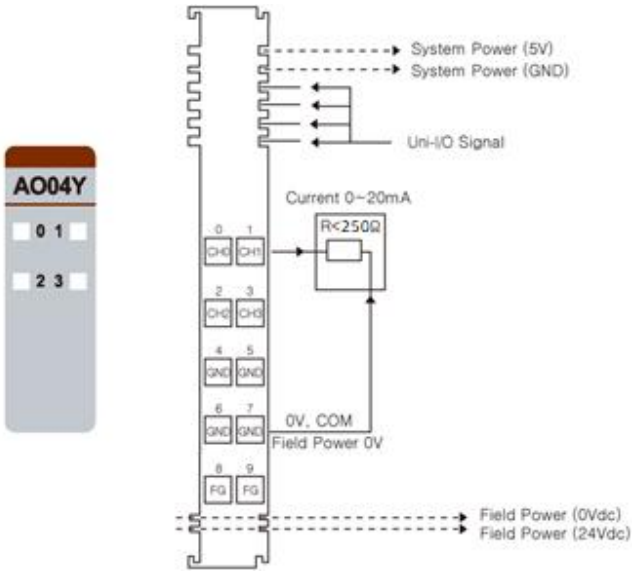
* Operating temperature

-40°C to 70°C (-40°F to 158°F) temperature range specification can be guaranteed under the following conditions.

Load Resistance : Min 100Ω, Max 250Ω

Otherwise, temperature specification can be guranteed with -40°C, 60°C (-40°F to 140°F).

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Output Common(AGND)	5	Output Common(AGND)
6	Output Common(AGND)	7	Output Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

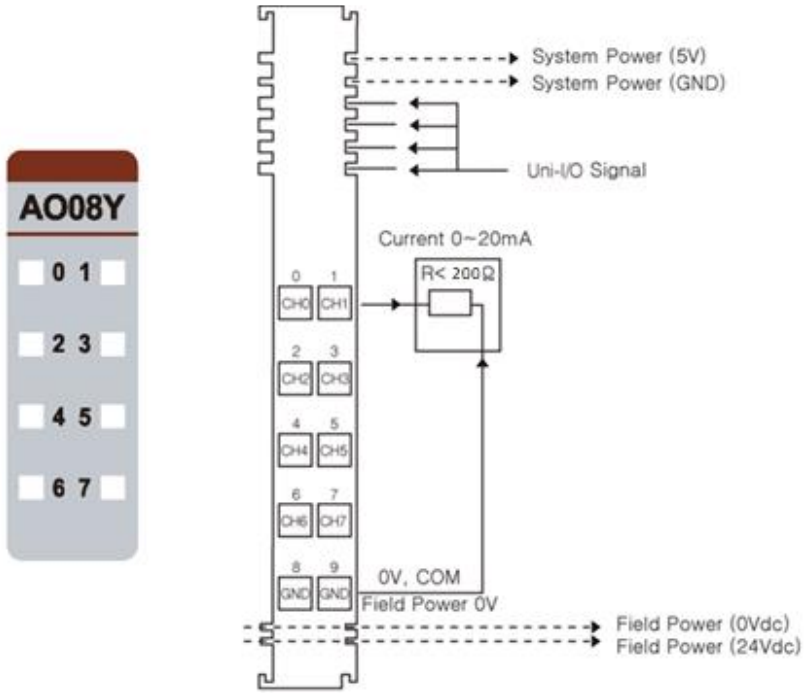
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
Normal Operation	Off	No Output Value
	Green	Normal Operation
Field Power Error	All Output Repeat Green and Off	Field Power is unconnected.

URA-0008Y (AO08Y) - 8 Analog Current Outputs 16bit

Items	Specification
Outputs per module	8 Outputs single ended
Indicators(Logic side)	8 Green Output Status LEDs
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.61uA/bit
Output Range	0~20mA
Data Format	16bits Integer (2's complement)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 60°C (-40°F to 140°F)
Load Resistance	Max. 200Ω *
Dignostic	Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON
Conversion Time	Max. 250usec / All Output
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power Dissipation	Max. 30mA @ 5VDC
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 130mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Analog Output 4	5	Analog Output 5
6	Analog Output 6	7	Analog Output 7
8	Output Common(AGND)	9	Output Common(AGND)

2. LED Indicators

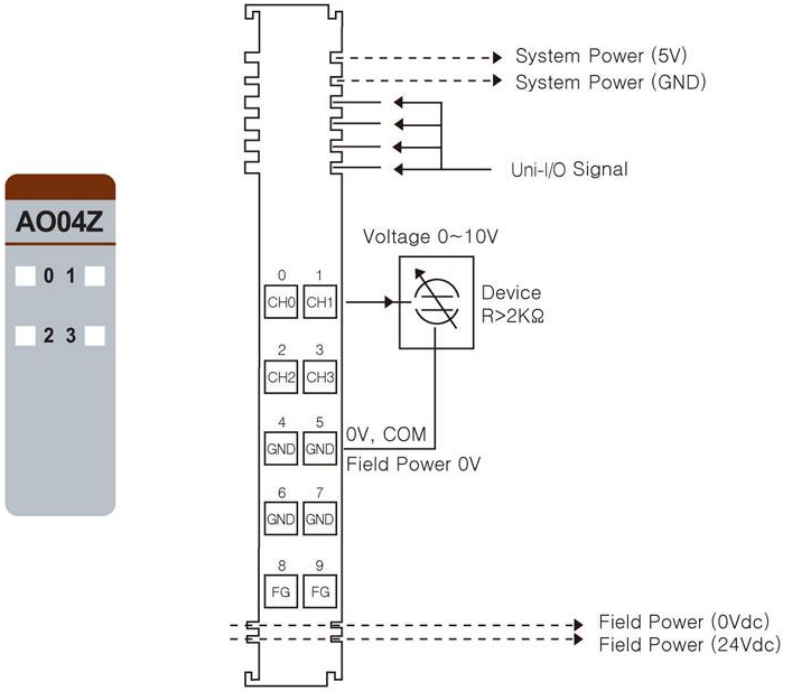
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green

tatus	LED	Indication
Normal Operation	No Output Channel Off Output Channel Green	No Output Output
Field Power Error	All Channel Repeat the Green and Off	Field power is unconnected.

URA-0004Z (AO04Z) - 4 Analog Voltage Outputs 16bit

Items	Specification
Outputs per module	4 Outputs single ended
Indicators(Logic side)	4 Green Output status
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit
Output Range	0 ~ 10VDC
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Load Resistance	Min. 2KΩ
Conversion Time	Max. 150usec / All output
Diagnostic	Field Power Off: LED Blinking Field Power On: No Output LED Off Field Power On: Output LED On
Calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0Vdc
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 35mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Output Common(AGND)	5	Output Common(AGND)
6	Output Common(AGND)	7	Output Common(AGND)
8	Field Ground	9	Field Ground

2. LED Indicators

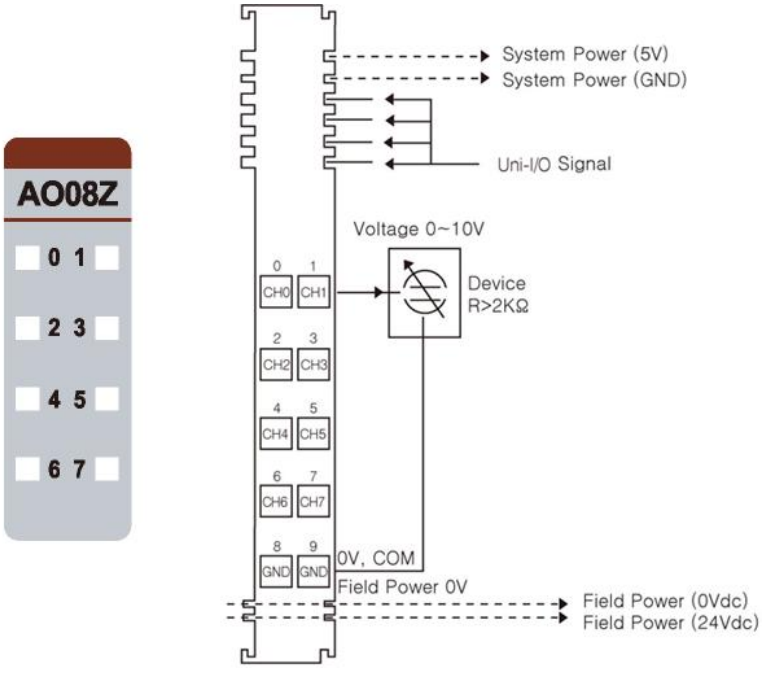
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green

Status	LED	Indication
Normal Operation	No Output Off Output Green	No Output Output
Field Power Error	All Channel Repeat the Green and Off	Field power is unconnected.

URA-0008Z (AO08Z) - 8 Analog Voltage Outputs 16bit

Items	Specification
Outputs per module	8 Outputs single ended
Indicators(Logic side)	8 Green Output status
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit
Output Range	0 ~ 10VDC
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C to 70°C (-40°F to 158°F)
Load Resistance	Min. 2KΩ
Conversion Time	Max. 250usec / All output
Diagnostic	Field Power Off: LED Blinking Field Power On: No Output LED Off Field Power On: Output LED On
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0Vdc
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 70mA @ 24VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Analog Output 0	1	Analog Output 1
2	Analog Output 2	3	Analog Output 3
4	Analog Output 4	5	Analog Output 5
6	Analog Output 6	7	Analog Output 7
8	Output Common(AGND)	9	Output Common(AGND)

2. LED Indicators

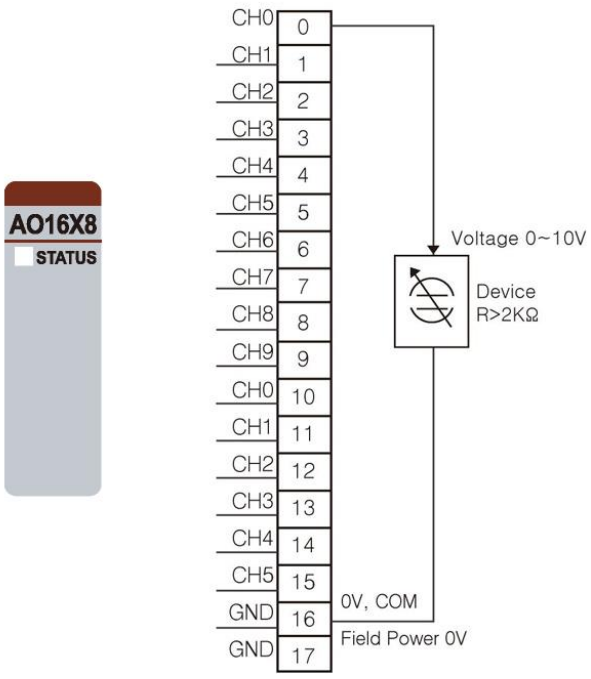
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green

Status	LED	Indication
Normal Operation	No Output Off Output Green	No Output Output
Field Power Error	All output Repeat the Green and Off	Field power is unconnected.

URA-0016Z-8 (AO16Z8) - 16 Analog Voltage Outputs 16bit

Items	Specification
Outputs per module	16 Channels single ended
Indicators(Logic side)	1 Green Uni-I/O status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/Bit
Output Range	0 ~ 10Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C (77°F) ambient ±0.3% Full Scale @ -40°C, 60°C (-40°F to 140°F)
Load Resistance	Min. 2KΩ
Conversion Time	Max. 450usec (All channel)
Diagnostic	Field Power Off : LED Blinking
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
Power dissipation	Max. 30mA @ 5.0Vdc
Isolation	I/O to Logic : Isolation Field power : Non-Isolation
Field Power	Supply Voltage : 24VDC nominal Voltage Range : 18 to 32VDC Power Dissipation : Max. 150mA @ 24VDC, Load(2K)
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C, 60°C (-40°F to 140°F)

3. Wiring Diagram



Pin No.	Signal Description
0	Output 0
1	Output 1
2	Output 2
3	Output 3
4	Output 4
5	Output 5
6	Output 6
7	Output 7
8	Output 8
9	Output 9
10	Output 10
11	Output 11
12	Output 12
13	Output 13
14	Output 14
15	Output 15
16	Output 16
17	Output Common(AGND)

4. LED Indicators

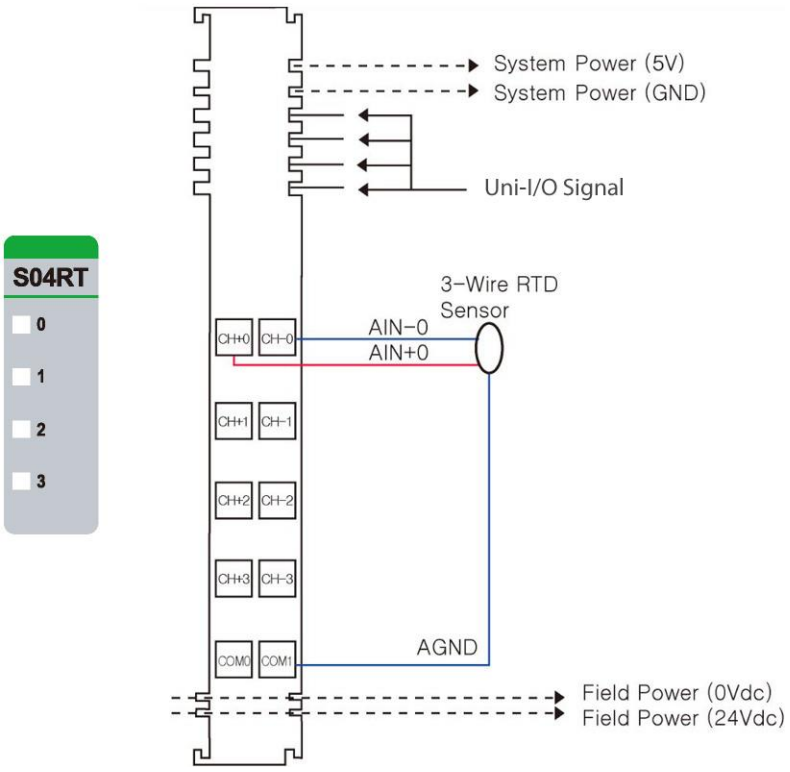
LED No.	LED Function / Description	LED Color
0	Output 0	Green
1	Output 1	Green
2	Output 2	Green
3	Output 3	Green
4	Output 4	Green
5	Output 5	Green
6	Output 6	Green
7	Output 7	Green
8	Output 8	Green
9	Output 9	Green
10	Output 10	Green
11	Output 11	Green
12	Output 12	Green
13	Output 13	Green
14	Output 14	Green
15	Output 15	Green

Status	LED	Indication
Uni-I/O Status	Off Green	Disconnection Connection
Field Power Error	Status Channel Repeat the Green and Off	Field power is Unconnected.

URS-04RT (S04RT) - 4 RTD / Resistance

<table>
<tr><th>Items</th><th>Specification</th></tr>
<tr><td>Inputs per module</td><td>4 Channels</td></tr>
<tr><td>Indicators(Logic side)</td><td>4 Green Input status</td></tr>
<tr><td>Sensor Types</td><td>RTD Input Range
<table>
<tr><td>RTD Input</td><td>Input Range</td></tr>
<tr><td>PT100, PT200, PT500, PT50</td><td>-200~850°c (-328°F, 1562°F)</td></tr>
<tr><td>PT1000</td><td>-200~350°c (-328°F, 662°F)</td></tr>
<tr><td>JPT100, JPT200, JPT500, JPT50</td><td>-200~640°c (-328°F, 1184°F)</td></tr>
<tr><td>JPT1000</td><td>-200~350°c (-328°F, 662°F)</td></tr>
<tr><td>NI100, NI200, NI500</td><td>-60~250°c (-76°F, 418°F)</td></tr>
<tr><td>NI1000</td><td>-60~180°c (-76°F, 356°F)</td></tr>
<tr><td>NI120</td><td>-80~260°c (-112°F, 500°F)</td></tr>
<tr><td>NI1000LG</td><td>-50~120°c (-58°F, 248°F)</td></tr>
<tr><td>Resistance Input</td><td>Input Range</td></tr>
<tr><td>100mΩ/bit</td><td>0~2000Ω</td></tr>
<tr><td>10mΩ/bit</td><td>0~327Ω</td></tr>
<tr><td>20mΩ/bit</td><td>0~620Ω</td></tr>
<tr><td>50mΩ/bit</td><td>0~1200Ω</td></tr>
</table></td></tr>
<tr><td>Excitation Current</td><td>About 1mA</td></tr>
<tr><td>Connection Method</td><td>3-Wire</td></tr>
<tr><td>Conversion Time</td><td>< 150ms, All Channel</td></tr>
<tr><td>Data Format</td><td>16bits singed Integer (2' complement)</td></tr>
<tr><td>Module Accuracy</td><td>PT100, PT1000 : ±0.5°C (32.9°F) Full Scale @ 25°C (77°F) ambient
±0.1% Full Scale @ 25°C (77°F) ambient
±0.3% Full Scale @ -40°C,70°C (-40°F, 158°F)</td></tr>
<tr><td>Resolution of Data</td><td>RTD Type : ±0.1°C / F , Resitance Type : 100mΩ, 10mΩ, 20mΩ, 50mΩ</td></tr>
<tr><td>Calibration</td><td>Not Required</td></tr>
<tr><td>Diagnostic</td><td>Sensor open or range over, then conversion data = 0x8000(-32768)</td></tr>
<tr><td>Power dissipation</td><td>Max. 130mA @ 5.0VDC</td></tr>
<tr><td>Isolation</td><td>I/O to Logic : Isolation
Field power : Not Connected</td></tr>
<tr><td>Field Power</td><td>Not used, Field power bypass to next expansion module</td></tr>
<tr><td>Wiring</td><td>I/O Cable Max. 2.0mm^2 (AWG 14)</td></tr>
<tr><td>Weight</td><td>60g</td></tr>
<tr><td>Module Size</td><td>12mm x 99mm x 70mm</td></tr>
<tr><td>Operating temperature</td><td>-40°C to 60°C (-40°F to 140°F)</td></tr>
</table>

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	RTD 0+	1	RTD 0-
2	RTD 1+	3	RTD 1-
4	RTD 2+	5	RTD 2-
6	RTD 3+	7	RTD 3-
8	AGND	9	AGND

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green

Status	LED	Indication
Not Signal, Normal Operation	Off	Input Sensor Open or Input Range Over Normal Operation
On Signal Normal Operation	Green	Sensor Connected and Input Range Valid Normal Operation

URS-08RT-2 (S08RT2) - 8 RTD / Resistance

<table>
<tr><th>Items</th><th>Specification</th></tr>
<tr><td>Inputs per module</td><td>8 Channels</td></tr>
<tr><td>Indicators(Logic side)</td><td>8 Green Input status</td></tr>
<tr><td>Sensor Types</td><td>RTD Input Range
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<tr><td>RTD Input</td><td>Input Range</td></tr>
<tr><td>PT100, PT200, PT500, PT50</td><td>-200~850°c (-328°F, 1562°F)</td></tr>
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<tr><td>JPT100, JPT200, JPT500, JPT50</td><td>-200~640°c (-328°F, 1184°F)</td></tr>
<tr><td>JPT1000</td><td>-200~350°c (-328°F, 662°F)</td></tr>
<tr><td>NI100, NI200, NI500</td><td>-60~250°c (-76°F, 418°F)</td></tr>
<tr><td>NI1000</td><td>-60~180°c (-76°F, 356°F)</td></tr>
<tr><td>NI120</td><td>-80~260°c (-112°F, 500°F)</td></tr>
<tr><td>NI1000LG</td><td>-50~120°c (-58°F, 248°F)</td></tr>
<tr><td>Resistance Input</td><td>Input Range</td></tr>
<tr><td>100mΩ/bit</td><td>0~2000Ω</td></tr>
<tr><td>10mΩ/bit</td><td>0~327Ω</td></tr>
<tr><td>20mΩ/bit</td><td>0~620Ω</td></tr>
<tr><td>50mΩ/bit</td><td>0~1200Ω</td></tr>
</table></td></tr>
<tr><td>Excitation Current</td><td>About 1mA</td></tr>
<tr><td>Connection Method</td><td>3-Wire</td></tr>
<tr><td>Conversion Time</td><td>< 280ms, All Channel</td></tr>
<tr><td>Data Format</td><td>16bits signed Integer (2' complement)</td></tr>
<tr><td>Module Accuracy</td><td>PT100, PT1000 type Range
±0.5°C(32.9°F) @ 25°C (77°F)
All type Input Range
±0.1% Full Scale @ 25°C (77°F) ambient
±0.3% Full Scale @ 40°C to 70°C (-40°F to 158°F)</td></tr>
<tr><td>Resolution of Data</td><td>RTD Type : ±0.1°C / F , Resitance Type : 100mΩ, 10mΩ, 20mΩ, 50mΩ</td></tr>
<tr><td>Calibration</td><td>Not Required</td></tr>
<tr><td>Diagnostic</td><td>Sensor open or range over, then conversion data = 0x8000(-32768)</td></tr>
<tr><td>Power dissipation</td><td>Max. 120mA @ 5.0VDC</td></tr>
<tr><td>Isolation</td><td>I/O to Logic : Isolation
Field power : Not Connected</td></tr>
<tr><td>Field Power</td><td>Not used, Field power bypass to next expansion module</td></tr>
<tr><td>Wiring</td><td>I/O Cable Max. 2.0mm^2 (AWG 14)</td></tr>
<tr><td>Weight</td><td>60g</td></tr>
<tr><td>Module Size</td><td>12mm x 99mm x 70mm</td></tr>
<tr><td>Operating temperature</td><td>-40°C to 70°C (-40°F to 158°F)</td></tr>
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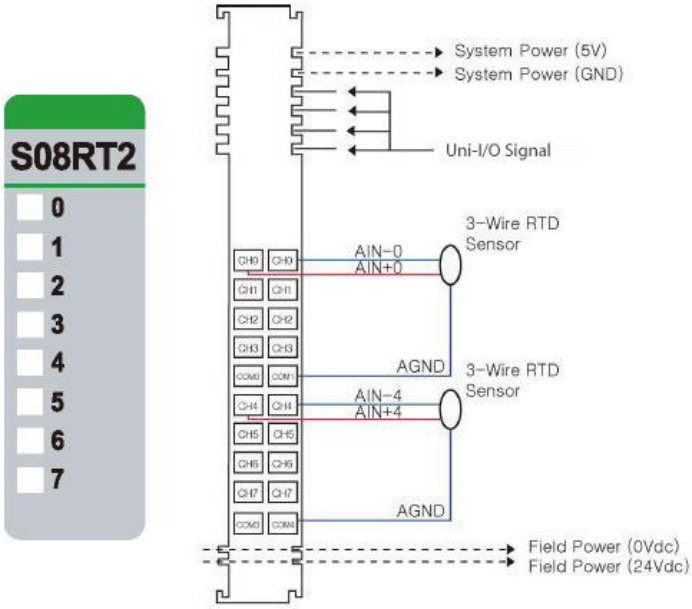
1. Wiring Diagram



Pin No.	Signal Description	Signal Description	Pin No.
0	RTD 0+	RTD 0-	1
2	RTD 1+	RTD 1-	3
4	RTD 2+	RTD 2-	5
6	RTD 3+	RTD 3-	7
8	AGND	AGND	9
10	RTD 4+	RTD 4-	11
12	RTD 5+	RTD 5-	13
14	RTD 6+	RTD 6-	15
16	RTD 7+	RTD 7-	17
18	AGND	AGND	19

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

Status	LED	Indication
No Signal, Normal Operation	Off	Input Sensor Open or Input Range Over Normal Operation
On Signal Normal Operation	Green	Sensor Connected and Input Range Valid Normal Operation

URS-04TC (S04TC) - 4 Thermocouple / mV

<table>
<tr><th>Items</th><th>Specification</th></tr>
<tr><td>Inputs per module</td><td>4 Channels</td></tr>
<tr><td>Indicators(Logic side)</td><td>4 Green Input status , 1 Green Input CJ status</td></tr>
<tr><td>Sensor Types</td><td>Thermal Couple Input Range
<table>
<tr><td>Type</td><td>Maximum Input Range</td><td>Recommended Input Range</td></tr>
<tr><td>K</td><td>-270 ~ 1372°c (-454°F, 2420.6°F)</td><td>-200 ~1200°c (-328°F, 2192°F)</td></tr>
<tr><td>J</td><td>-210 ~ 1200°c (-346°F, 2192°F)</td><td>-40 ~ 1100°c (-40°F, 2012°F)</td></tr>
<tr><td>T</td><td>-270 ~ 400°c (-454°F, 752°F)</td><td>-200 ~ 350°c (-328°F, 662°F)</td></tr>
<tr><td>B</td><td>30 ~ 1820°c (86°F, 3308°F)</td><td>600 ~ 1700°c (-1112°F, 3092°F)</td></tr>
<tr><td>R</td><td>-50~1768°c (-58°F, 3214.4°F)</td><td>0 ~ 1600°c (-32°F, 2912°F)</td></tr>
<tr><td>S</td><td>-50 ~ 1768°c (-58°F, 3214.4°F)</td><td>0 ~ 1600°c (-32°F, 2912°F)</td></tr>
<tr><td>E</td><td>-270 ~ 1000°c (-454°F, 1832°F)</td><td>-200 ~ 800°c (-328°F, 1472°F)</td></tr>
<tr><td>N</td><td>-270 ~ 1300°c (-454°F, 2372°F)</td><td>-200 ~ 1250°c (-328°F, 2282°F)</td></tr>
<tr><td>L</td><td>-200 ~ 900°c (-328°F, 1652°F)</td><td>-100 ~ 850°c (-148°F, 1562°F)</td></tr>
<tr><td>U</td><td>-200 ~ 600°c (-328°F, 1112°F)</td><td>-100 ~ 550°c (-148°F, 1022°F)</td></tr>
<tr><td>C</td><td>0 ~ 2310°c (-32°F, 4190°F)</td><td>100 ~ 2100°c (212°F, 3812°F)</td></tr>
<tr><td>D</td><td>0 ~ 2490°c (-32°F, 4514°F)</td><td>100 ~ 2200°c (212°F, 3992°F)</td></tr>
<tr><td>10uV Input</td><td colspan="2">-81.0 ~ 81.0mV, 10uV/ 1 Count</td></tr>
<tr><td>1uV Input</td><td colspan="2">-32.7 ~ 32.7mV, 1uV/ 1 Count</td></tr>
<tr><td>2uV Input</td><td colspan="2">-65.5 ~ 65.5mV, 2uV/ 1 Count</td></tr>
</table></td></tr>
<tr><td>Module Accuracy
(Need 20 minute preheating
to get enhanced accuracy.)</td><td>Recommend Input Range
±0.1% Recommended Scale @ 25°C(77°F) ambient
±0.3% Recommended Scale @ 40°C to 70°C (-40°F to 158°F)

C/D type Recommend Input Range
±0.3% Recommended Scale @ 40°C to 70°C (-40°F to 158°F)
External Cold Jucntion(PT100)
±2% Recommended Scale @ 40°C to 70°C (-40°F to 158°F)</td></tr>
<tr><td>Connection Method</td><td>2-Wire</td></tr>
<tr><td>Conversion Time</td><td>Average Conversion time < 200ms</td></tr>
<tr><td>Data Format</td><td>16bits Integer (2' complement)</td></tr>
<tr><td>Cold junction temperature</td><td>Internal
- TMP275AIDGKR : -40°C to 125°C (-40°F to 257°F)
External
- PT100 : -45°C to 95°C (-40°F to 203°F)</td></tr>
<tr><td>Calibration</td><td>Not Required</td></tr>
<tr><td>Diagnostic</td><td>Sensor open or range over, then conversion data = 0x8000(-32768)
* Connected External CJ : CJ LED On.
Not Connected External CJ : CJ LED Off.</td></tr>
<tr><td>Power dissipation</td><td>Max. 130mA @ 5.0VDC</td></tr>
<tr><td>Isolation</td><td>I/O to Logic : Isolation
Field power : Not Connected</td></tr>
<tr><td>Field Power</td><td>Not used, Field power bypass to next expansion module</td></tr>
<tr><td>Wiring</td><td>I/O Cable Max. 2.0mm^2 (AWG 14)</td></tr>
<tr><td>Weight</td><td>60g</td></tr>
<tr><td>Module Size</td><td>12mm x 99mm x 70mm</td></tr>
<tr><td>Operating temperature</td><td>-40°C to 70°C (-40°F to 158°F)</td></tr>
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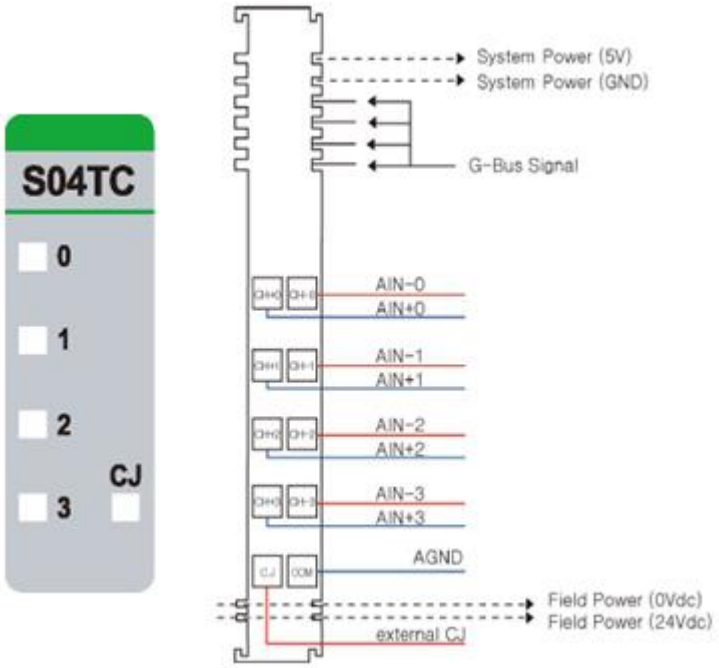

Pin No.	Signal Description	Signal Description	Pin No.
0	TC 0+	TC 0-	1
2	TC 1+	TC 1-	3
4	TC 2+	TC 2-	5
6	TC 3+	TC 3-	7
8	CJ	AGND	9

2. LED Indicators

LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
CJ	Input CJ	Green

Status	LED	Indication
Not Signal, Normal Operation	Channel LED Off, CJ LED Off	Input Sensor Open or Input Range Over Normal Operation
On Signal Normal Operation	Channel LED Off, CJ LED Off	Sensor Connected and Input Range Valid Normal Operation
On Signal Normal Operation Connected External CJC	Channel LED Off, CJ LED Off	Sensor Connected and Input Range Valid Normal Operation, External CJ enable

URS-08TC-2 (S08TC2) - 8 Thermocouple / mV

<table>
<tr><th>Items</th><th>Specification</th></tr>
<tr><td>Inputs per module</td><td>8 Channels</td></tr>
<tr><td>Indicators(Logic side)</td><td>8 Green Input status , 1 Green Input CJ status</td></tr>
<tr><td>Sensor Types</td><td>Thermal Couple Input Range
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<tr><td>Type</td><td>Maximum Input Range</td><td>Recommended Input Range</td></tr>
<tr><td>K</td><td>-270 ~ 1372°c (-454°F, 2420.6°F)</td><td>-200 ~1200°c (-328°F, 2192°F)</td></tr>
<tr><td>J</td><td>-210 ~ 1200°c (-346°F, 2192°F)</td><td>-40 ~ 1100°c (-40°F, 2012°F)</td></tr>
<tr><td>T</td><td>-270 ~ 400°c (-454°F, 752°F)</td><td>-200 ~ 350°c (-328°F, 662°F)</td></tr>
<tr><td>B</td><td>30 ~ 1820°c (86°F, 3308°F)</td><td>600 ~ 1700°c (-1112°F, 3092°F)</td></tr>
<tr><td>R</td><td>-50~1768°c (-58°F, 3214.4°F)</td><td>0 ~ 1600°c (-32°F, 2912°F)</td></tr>
<tr><td>S</td><td>-50 ~ 1768°c (-58°F, 3214.4°F)</td><td>0 ~ 1600°c (-32°F, 2912°F)</td></tr>
<tr><td>E</td><td>-270 ~ 1000°c (-454°F, 1832°F)</td><td>-200 ~ 800°c (-328°F, 1472°F)</td></tr>
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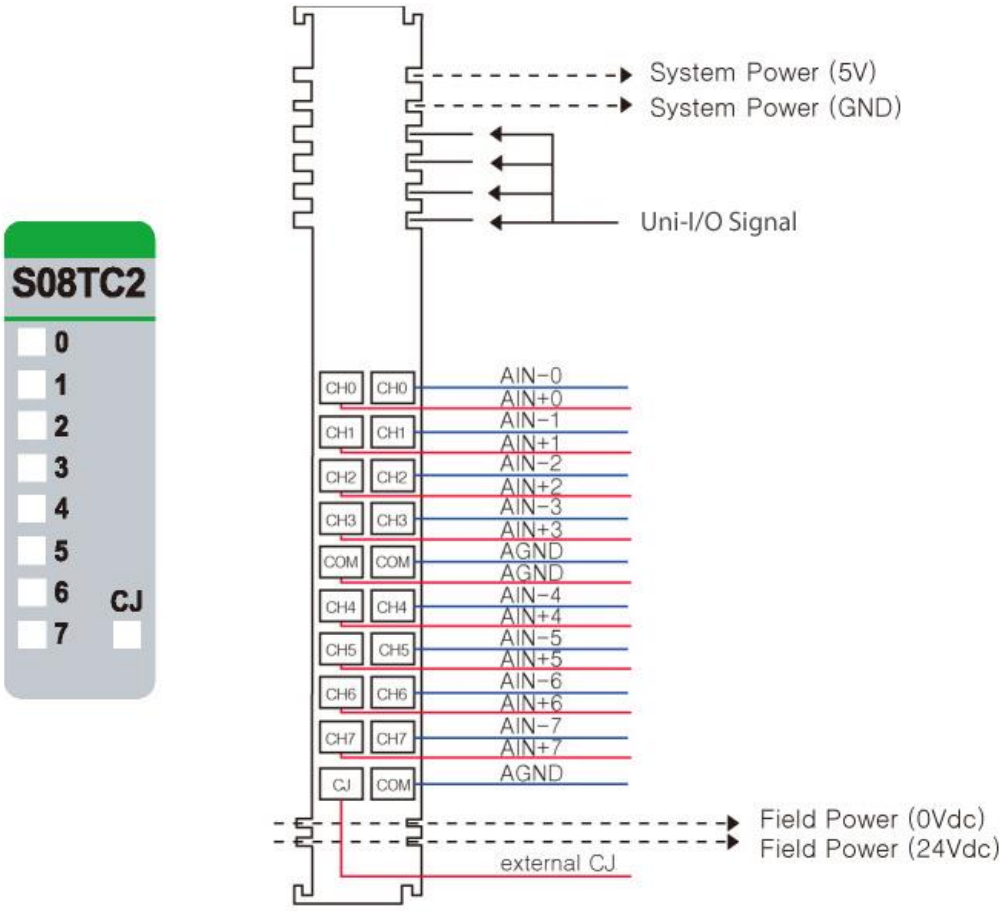
<tr><td>2uV Input</td><td colspan="2">-65.5 ~ 65.5mV, 2uV/ 1 Count</td></tr>
</table></td></tr>
<tr><td>Module Accuracy
(Need 20 minute preheating
to get enhanced accuracy.)</td><td>Recommend Input Range
±0.1% Recommended Scale @ 25°C (77°F) ambient
±0.3% Recommended Scale @ 40°C to 70°C (-40°F to 158°F)

T,B,R,S,C,D type Recommend Input Range
±0.3% Recommended Scale @ 40°C to 70°C (-40°F to 158°F)
External Cold Junction(PT100)
±2%Recommended Scale @ 40°C to 70°C (-40°F to 158°F)</td></tr>
<tr><td>Connection Method</td><td>2-Wire</td></tr>
<tr><td>Conversion Time</td><td>Average Conversion time < 330 ms</td></tr>
<tr><td>Cold junction temperature</td><td>Internal
- TMP275AIDGKR : -40°C to 125°C (-40°F to 257°F)
External
- PT100 : -45°C to 95°C (-40°F to 203°F)</td></tr>
<tr><td>Data Format</td><td>16bits Integer (2' complement)</td></tr>
<tr><td>Calibration</td><td>Not Required</td></tr>
<tr><td>Power dissipation</td><td>Max. 150mA @ 5.0Vdc</td></tr>
<tr><td>Isolation</td><td>I/O to Logic : Isolation
Field power : Not Connected</td></tr>
<tr><td>Field Power</td><td>Not used, Field power bypass to next expansion module</td></tr>
<tr><td>Wiring</td><td>Module connector : ADP-BBOARD20</td></tr>
<tr><td>Weight</td><td>60g</td></tr>
<tr><td>Module Size</td><td>12mm x 99mm x 70mm</td></tr>
<tr><td>Operating temperature</td><td>-40°C to 70°C (-40°F to 158°F)</td></tr>
</table>

1. Wiring Diagram



Pin No.	Signal Description	Signal Description	Pin No.
0	TC 0+	TC 0-	1
2	TC 1+	TC 1-	3
4	TC 2+	TC 2-	5
6	TC 3+	TC 3-	7
8	AGND	AGND	9
10	TC 4+	TC 4-	11
12	TC 5+	TC 5-	13
14	TC 6+	TC 6-	15
16	TC 7+	TC 7-	17
18	Cold Junction Sensor	AGND	19

2. LED Indicators

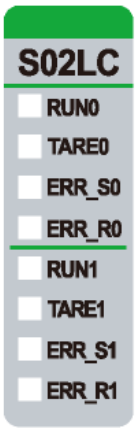
LED No.	LED Function / Description	LED Color
0	Input 0	Green
1	Input 1	Green
2	Input 2	Green
3	Input 3	Green
4	Input 4	Green
5	Input 5	Green
6	Input 6	Green
7	Input 7	Green

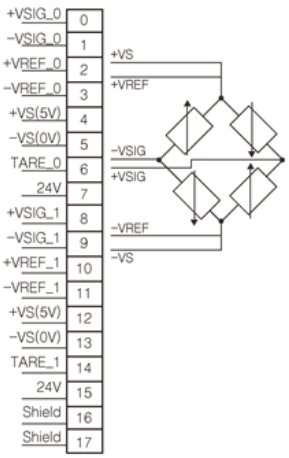
Status	LED	Indication
Not Signal, Normal Operation	Channel LED Off, CJ LED Off	Input Sensor Open or Input Range Over Normal Operation
On Signal Normal Operation	Channel LED Off, CJ LED Off	Sensor Connected and Input Range Valid Normal Operation
On Signal Normal Operation Connected External CJC	Channel LED Off, CJ LED Off	Sensor Connected and Input Range Valid Normal Operation, External CJ enable

URS-02LC-8 (S02LC) - 2 CH Load Cell input

Items	Specification
Number of channels	2 channels, Strain gauge input
Input type	Resistor bridge, Strain gauge
Indicators	Run 0,1 / Tare 0,1 Error_Sig.voltage 0,1 / Error_Ref.voltage 0,1 8 Green LED
Input range VSEN	-150mV ~ +150mV
Input range VREF	0 ~10V
Interanl resistance	> 1 MΩ (VSEN, VREF)
Measuring error	< ±0.1% Full Scale @ 25℃ ambient < ±0.3% Full Scale @ -40 ~ 60℃ ambient
Resolution	24bit, 32bit presentation
Conversion time	Max. 500us
Filter	Max. 64 samples filtering, parameterisable
Special features	Open load check, Tare, 5VDC bridge supply
Voltage source	5V dc nominal **
Current rate	Max. 30mA
On-state voltage	24V dc nominal
Internal resistance	11.4k ohm
Power dissipation	Max. 25mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Non-Isolation
Field Power	Supply Voltage: 24Vdc nominal Voltage Range: 18~32Vdc Power Dissipation: Max. 25mA @ 24Vdc
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	63g
Module Size	12mm x 109mm x 70mm
Operating temperature	-40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram





Pin No.	Signal Description	Pin No.	Signal Description
0	Bridge signal input voltage + #0	9	Bridge signal input voltage - #1
1	Bridge signal input voltage - #0	10	Bridge reference input voltage + #1

2	Bridge reference input voltage + #0	11	Bridge reference input voltage + #1
3	Bridge reference input voltage + #0	12	+5V(bridge supply)
4	+5V(bridge supply)	13	0V(bridge supply)
5	0V(bridge supply)	14	Tare input(24V) #1
6	Tare input(24V) #0	15	Field power(24V)
7	Field power(24V)	16	Shield
8	Bridge signal input voltage + #1	17	Shield

2. LED Indicators

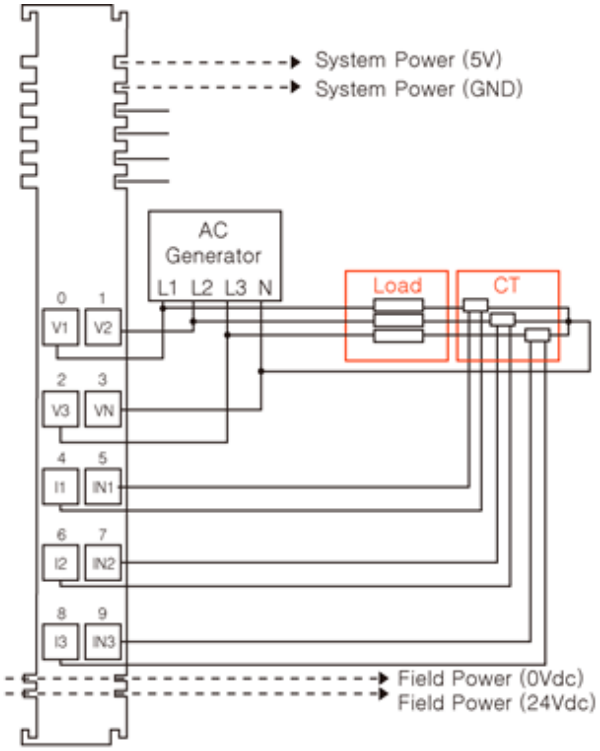
LED No.	LED Function / Description	LED Color
0	Run #0	Green
1	Tare #0	Green
2	Error signal voltage #0	Green
3	Error reference voltage #0	Green
4	Run #1	Green
5	Tare #1	Green
6	Error signal voltage #1	Green
7	Error reference voltage #1	Green

Status	LED	Indication
Run	Off	G-bus fault / Not power supply
	On	Normal operation
Tare	Off	Taring calibration off (H/W or S/W)
	On	Taring calibration on (H/W or S/W)
Error signal voltage	Off	Normal operation
	On	Bridge signal input voltage range over / Open load
Error reference voltage	Off	Normal operation
	On	Bridge reference input voltage range over

URS-01PM (S01PM) – 1CH 3Phase Power Measurement

Items	Specification
Number of Channel	3Ch Voltage Input, 3Ch Current Input via CT
Indicators	1 Green Status LEDs 3 LEDs: VL1, VL2, VL3 Over Voltage or Under Voltage 3 LEDs: IL1, IL2, IL3 Over Current or Under Current
Input Voltage Range	VLN = 288VAC, VLL = 500VAC
Input resistance voltage path	1200KΩ
Measuring Current	1A(MAX)
Input resistance current path	60mΩ
Resolution	24bits
Input Frequency range	45Hz~65Hz
Measured values	Angle, Voltage, Current, Power, Energy, Frequency, Power Factors
Measuring error	Voltage = 0.5% Current = 0.5% Frequency = ±0.01Hz Phase angle = ±0.3º
Power Dissipation	Max. TBD mA @ 5Vdc
Isolation	I/O to Logic: Photocoupler Isolation Field Power: No-Isolation
Field Power	Supply Voltage: 24Vdc nominal Voltage Range: 15~32Vdc Power dissipation: 0mA @32Vdc
Wiring	I/O Cable Max. 2.0mm2 (AWG#14)
Weight	63g
Module Size	12mm x 109mm x 70mm

1. Wiring Diagram



Pin No.	Signal Description	Signal Description	Pin No.
0	Voltage Input 0 (L1)	Voltage Input 1 (L2)	1
2	Voltage Input 2 (L3)	Voltage Input Common(Neutral)	3
4	Current Input +0(L1)	Current Input -0(Neutral)	5
6	Current Input +1(L2)	Current Input -1(Neutral)	7
8	Current Input +2(L3)	Current Input -2(Neutral)	9

2. LED Indicators

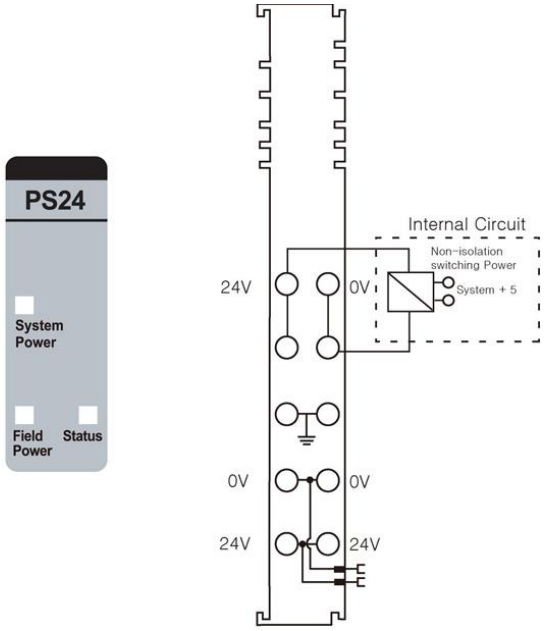
LED No.	LED Function / Description	LED Color
0	Status	Green
1	Voltage Input Channel 1	Green
2	Current Input Channel 1	Green
3	Voltage Input Channel 2	Green
4	Current Input Channel 2	Green
5	Voltage Input Channel 3	Green
6	Current Input Channel 3	Green
7	Status	Green

Status	LED	Indication
Error Status	Repeat Green and Off	Error Occurred
Input Status	Off	Over/Under Voltage or Over Current
	Green	Nomal Operation

URP-PS24V (PS24) - Input 24VDC, Output system Power 5VDC/1A

Items	Specification
System Input Voltage range	15VDC to 32VDC
System Power Input Voltage	Normal 24VDC
Indicators	1 Green System Power state , 1 Green Field Power state, 1 Green Uni-I/O state
Field Power Input Voltage	Normal 24VDC (±20%)
Field Power Contacts Current	Max. 10A Operating Temperature -40°C to 50°C (-40°F to 122°F) : Max. 10A 50°C to 70°C (122F to 158°F) : Max. 7A
Uni-I/O Output Voltage	Max. 5VDC, 1A
System power Dissipation	Max. 20mA @ 24VDC
Wring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	59g
Module size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F) temperature range specification can be guaranteed under the following conditions: Current for I/O Modules : Under 0.4A. Otherwise, temperature specification can be guaranteed with -40°C to 60°C (-40°F to 140°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	System Power, 24V	1	System Power, Ground
2	System Power, 24V	3	System Power, Ground
4	F.G	5	F.G
6	Field Power, Ground	7	Field Power, Ground
8	Field Power, 24V	9	Field Power, 24V

2. LED Indicators

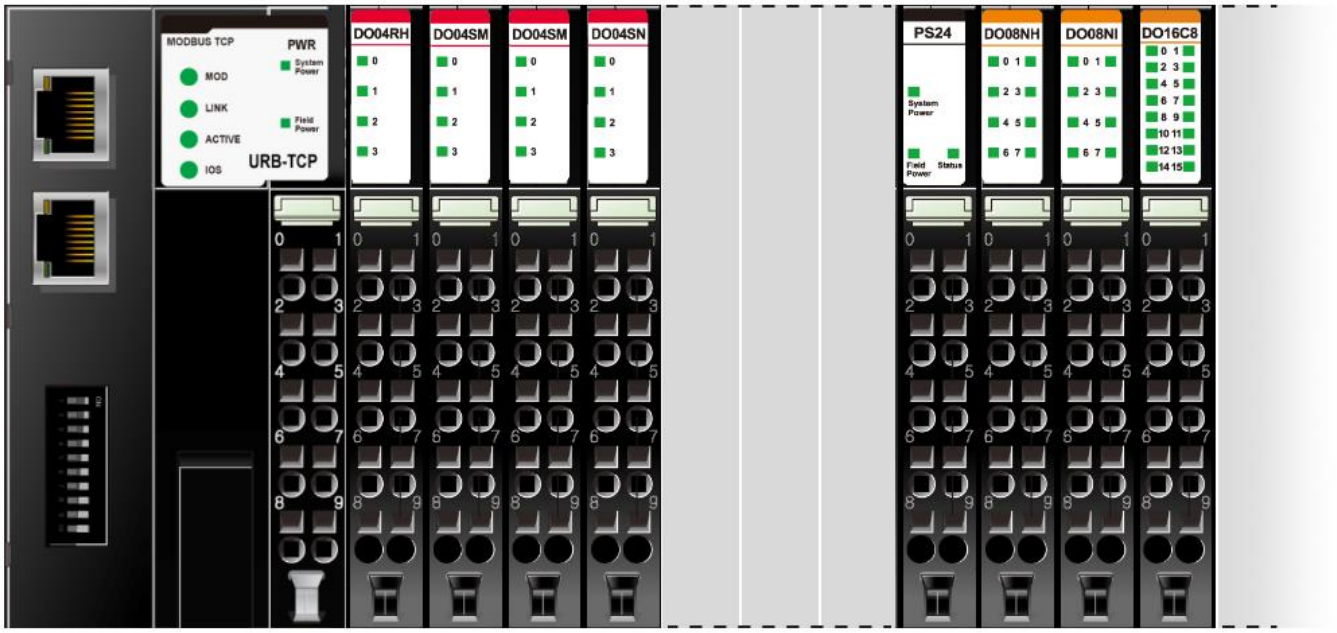
LED No.	LED Function / Description	LED Color
System Powe	System Power	Green
Field Power	Field Power	Green
Status	Internal Bus Status	Green

Status	LED	Indication
On Signal	Green	Normal Operation
Not Signal	Off	Normal Operation

Status	LED	To indicate
Normal signal.	Green	The unit is operating in normal condition. (After normal initialization of RBUS communication, this LED maintains ON status.)
Absence of data size.	Flashing green	Although this module is connected normally, there are not input/output data for communication.
Absence of network adapter	Off	Network adapter is not connected to this module.

3. Use Scenario

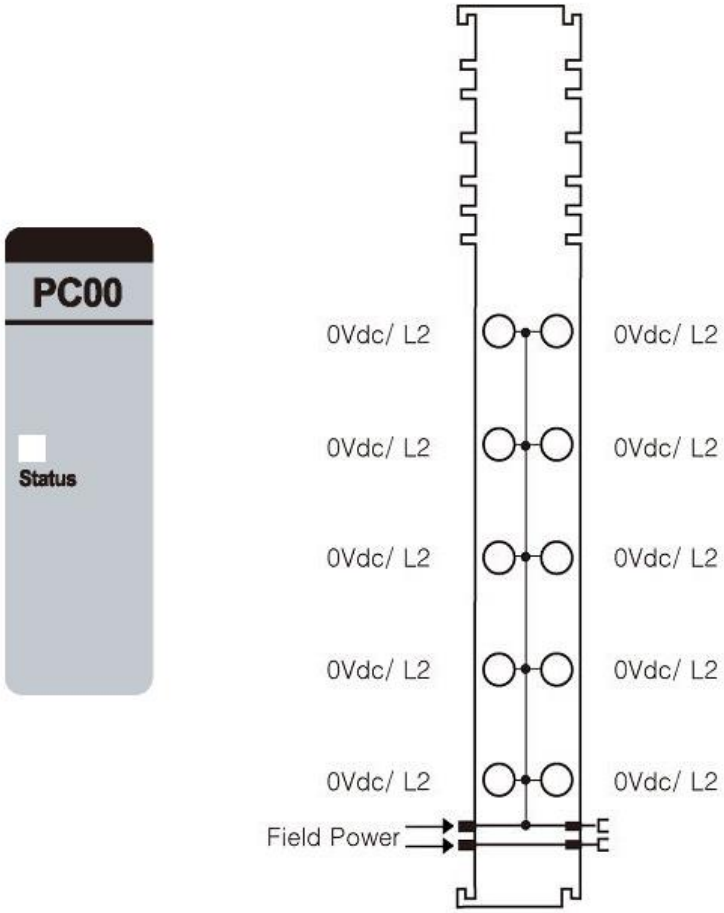
- URP-PS24V is system internal power expansion module.
- The URB-TCP network adapter system supplies a current of 1.5A If your system current requirements exceed 1.5A, add a power supply such as the URP-PS24V.
- Position the power supply directly before the first module that will cause the requirement to exceed 1.5A, as shown in the example below.



URP-C0V0V (PC00) - 8 0VDC Potential Distribution

Items	Specification
Field Power Voltage	Norminal 24VDC
Field Power Contacts Current	Max. 10A Operating Temperature -40°C to 50°C (-40°F to 122°F): Max. 10A 50°C to 70°C (122F to 158°F) : Max. 7A
Indicator	1 Green LEDs 1 Green Internal Bus State
System Power Dissipation	Max. 30mA @ 5VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	0VDC/L2	1	0VDC/L2
2	0VDC/L2	3	0VDC/L2
4	0VDC/L2	5	0VDC/L2
6	0VDC/L2	7	0VDC/L2
8	0VDC/L2	9	0VDC/L2

2. LED Indicators

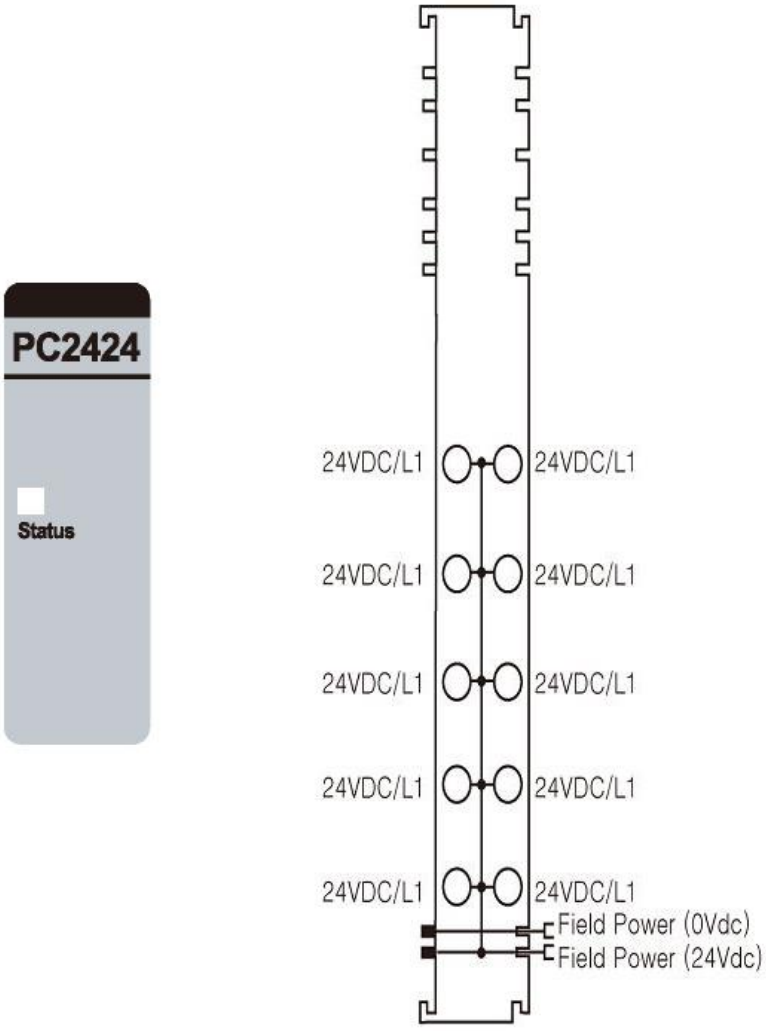
LED No.	LED Function / Description	LED Color
Status	Internal Bus Status	Green

Status	LED	To indicate
Normal signal.	Green	The unit is operating in normal condition. (After normal initialization of internal communication, this LED maintains ON status.)
Absence of network adapter	Off	Network adapter is not connected to this module.

URP-C24V24V (PC2424) - 8 24VDC Potential Distribution

Items	Specification
Field Power Voltage	Norminal 24VDC
Field Power Contacts Current	Max. 10A Operating Temperature -40°C to 50°C (-40°F to 122°F): Max. 10A 50°C to 70°C (122F to 158°F) : Max. 7A
Indicator	1 Green LEDs 1 Green Internal Bus State
System Power Dissipation	Max. 30mA @ 5VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	24VDC/L1	1	24VDC/L1
2	24VDC/L1	3	24VDC/L1
4	24VDC/L1	5	24VDC/L1
6	24VDC/L1	7	24VDC/L1
8	24VDC/L1	9	24VDC/L1

2. LED Indicators

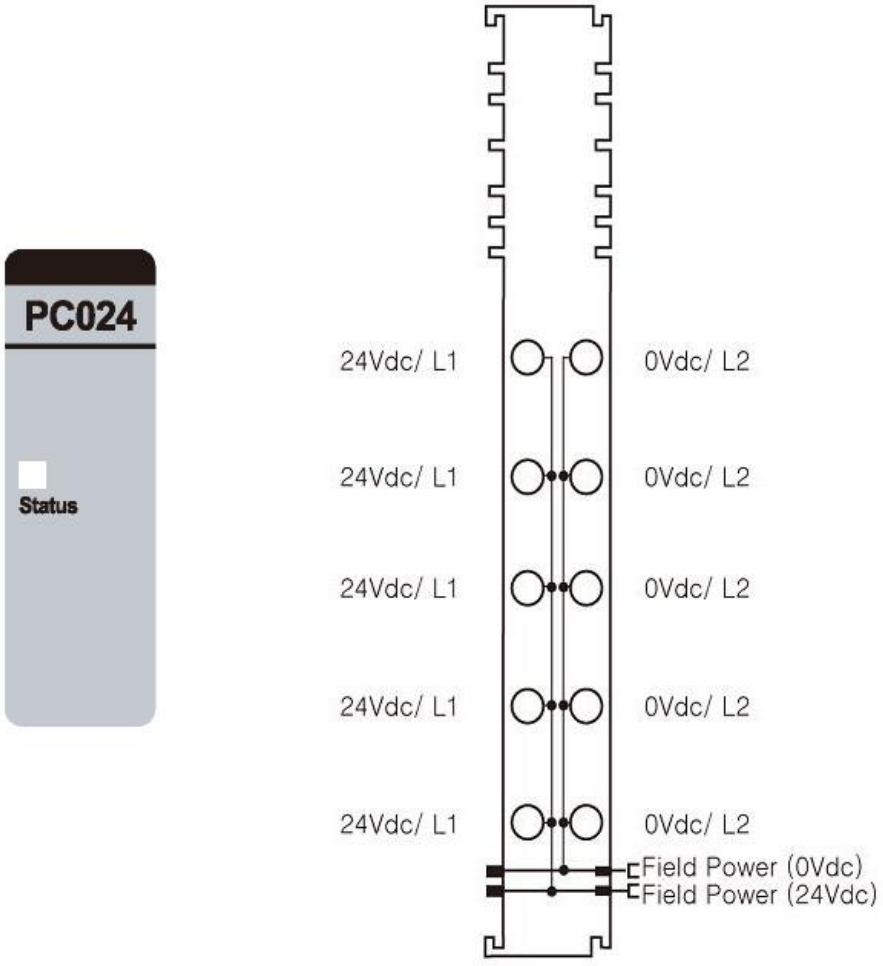
LED No.	LED Function / Description	LED Color
Status	Internal Bus Status	Green

Status	LED	To indicate
Normal signal.	Green	The unit is operating in normal condition. (After normal initialization of internal communication, this LED maintains ON status.)
Absence of network adapter	Off	Network adapter is not connected to this module.

URP-C0V24V (PC024) - 4 24VDC, 4 0VDC Potential Distribution

Items	Specification
Field Power Voltage	Norminal 24VDC
Field Power Contacts Current	Max. 10A Operating Temperature -40°C to 50°C (-40°F to 122°F): Max. 10A 50°C to 70°C (122F to 158°F) : Max. 7A
Indicator	1 Green LEDs 1 Green Internal Bus State
System Power Dissipation	Max. 30mA @ 5VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	24VDC/L1	1	0VDC/L2
2	24VDC/L1	3	0VDC/L2
4	24VDC/L1	5	0VDC/L2
6	24VDC/L1	7	0VDC/L2
8	24VDC/L1	9	0VDC/L2

2. LED Indicators

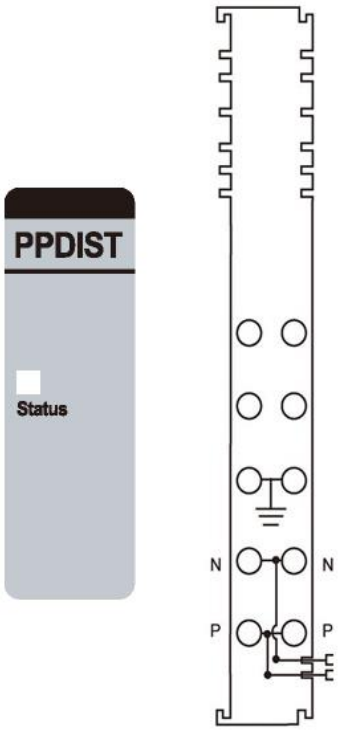
LED No.	LED Function / Description	LED Color
Status	Internal Bus Status	Green

Status	LED	To indicate
Normal signal.	Green	The unit is operating in normal condition. (After normal initialization of internal communication, this LED maintains ON status.)
Absence of network adapter	Off	Network adapter is not connected to this module.

URP-PDIST (PPDIST) - External Universal Power Distribution

Items	Specification
Field Power Voltage	Nominal 24VDC
Field Power Contacts Current	Max. 10A Operating Temperature -40°C to 50°C (-40°F to 122°F): Max. 10A 50°C to 70°C (122F to 158°F) : Max. 7A
Indicator	1 Green LEDs 1 Green Internal Bus State
System Power Dissipation	Max. 30mA @ 5VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	NC	1	NC
2	NC	3	NC
4	F.G	5	F.G
6	Field Power, Arbitrary (N)	7	Field Power, Arbitrary (N)
8	Field Power, Arbitrary (P)	9	Field Power, Arbitrary (P)

2. LED Indicators

LED No.	LED Function / Description	LED Color
Status	Internal Bus Status	Green

Status	LED	To indicate
Normal signal.	Green	The unit is operating in normal condition. (After normal initialization of internal communication, this LED maintains ON status.)
Absence of network adapter	Off	Network adapter is not connected to this module.

3. Use Scenario

Field Power	
URB-TCP	10A max.
URB-TCP2	8A max.
URP-PDIST	10A max.

a. Each URB series output unit can provide specified amount of current to connected end devices like: contactors, solenoids, sensors and etc.

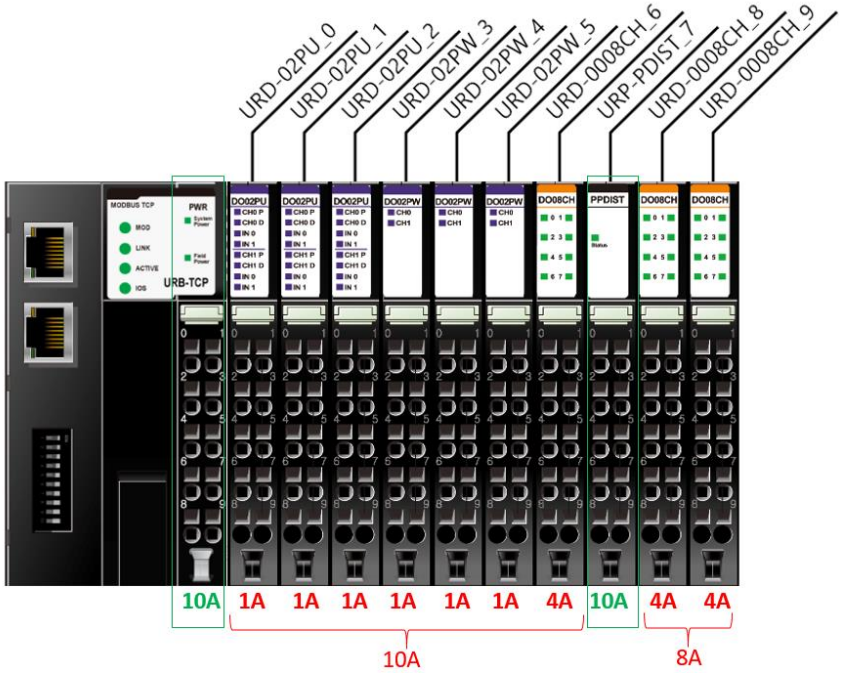
b. In case that the calculated required field power consumption exceeds the maximal provided current by the network adapter, URP-PDIST module must be added.

For example:

URD-0008CH can provide 0.5A per channel, total of 4A per module.

URD-04PW can provide 0.5A per channel, total of 2A per module.

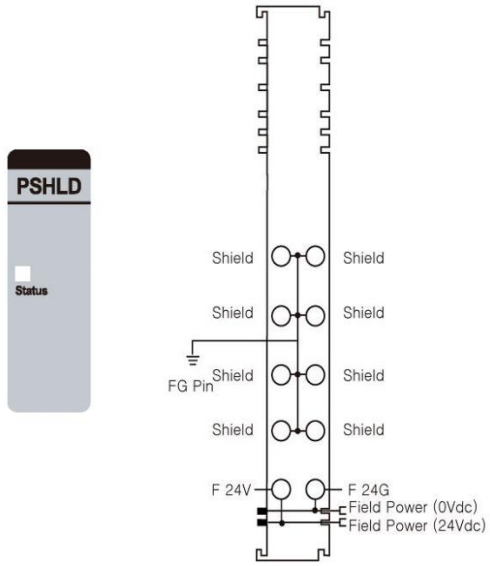
So if the system have 2 X URD-0008CH and 1 X URD-04PW attached directly to the network adapter and all channels current usage it the maximal allowed, we need to add URP-PDIST is additional output modules attached.



URP-SHIELD (PSHLD) - External Universal Shield Distribution

Items	Specification
Field Power Voltage	Norminal 24VDC
Field Power Contacts Current	-40°C to 50°C (-40°F to 122°F): Max. 10A 50°C to 70°C (122F to 158°F) : Max. 7A
Indicator	1 Green LEDs 1 Green Internal Bus State
System Power Dissipation	Max. 30mA @ 5VDC
Wiring	I/O Cable Max. 2.0mm^2 (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Operating temperature	-40°C to 70°C (-40°F to 158°F)

1. Wiring Diagram



Pin No.	Signal Description	Pin No.	Signal Description
0	Shield	1	Shield
2	Shield	3	Shield
4	Shield	5	Shield
6	Shield	7	Shield
8	F 24V	9	F 24G

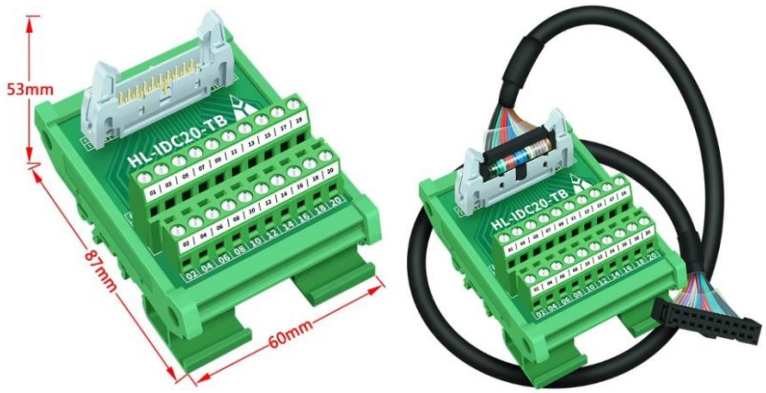
2. LED Indicators

LED No.	LED Function / Description	LED Color
Status	Internal Bus Status	Green

Status	LED	To indicate
Normal signal.	Green	The unit is operating in normal condition. (After normal initialization of internal communication, this LED maintains ON status.)
Absence of network adapter	Off	Network adapter is not connected to this module.

Wiring Accessories

1. ADP-BBOARD20



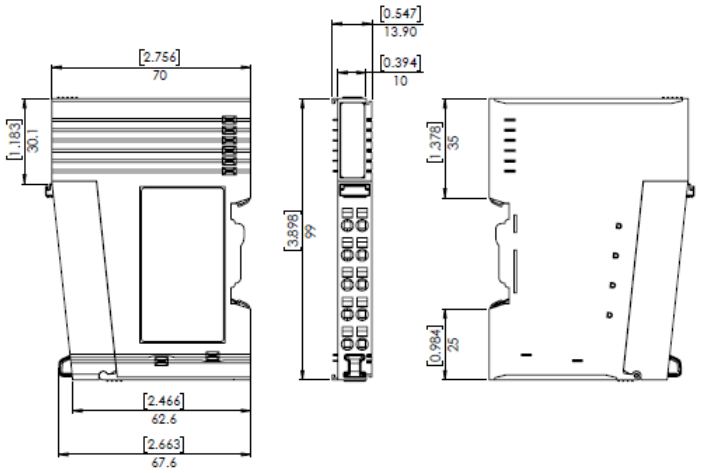
Specifications	
IDC-20 DIN Rail Mounted Interface Module	
IDC pin pitch:	2.54mm/0.1" male header connector
Pitch:	5.08mm screw terminal block
Din rail mount:	Supported width 35 / 32 / 15mm rails
Rated voltage:	60V
Rated current:	1A / per pin
Operating Temperature:	-20ºC to 50ºC
Wire range:	26-16 AWG
Screws:	M2, steel, Cr3+ Zn plated
Torque:	0.2Nm (1.7Lb-In.)
Dimensions (L X H X D):	60mm X 87mm X 53mm

2. ADP-BBOARD40

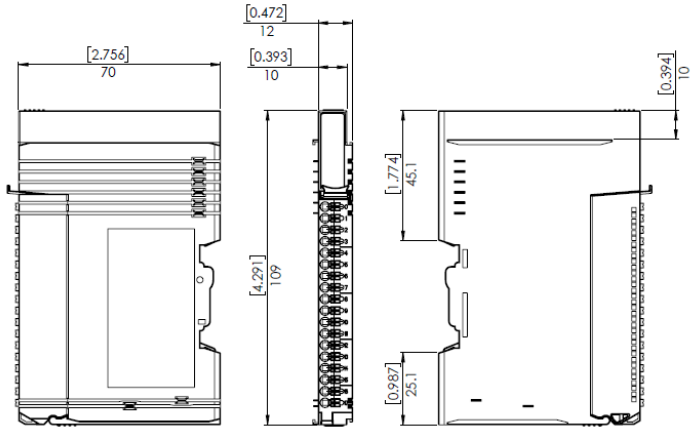
Specifications	
IDC-40 DIN Rail Mounted Interface Module	
IDC pin pitch:	2.54mm/0.1" male header connector
Pitch:	5.08mm screw terminal block
Din rail mount:	Supported width 35 / 32 / 15mm rails
Rated voltage:	60V
Rated current:	1A / per pin
Operating Temperature:	-20ºC to 50ºC
Wire range:	26-16 AWG
Screws:	M2, steel, Cr3+ Zn plated
Torque:	0.2Nm (1.7Lb-In.)
Dimensions (L X H X D):	122mm X 87mm X 52mm

I/O Module Dimensions

1. I/O Module (10RTB)



2. I/O Module (18RTB)



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