UniStream Remote I/O

User Manual

Revision 1.0
September, 2018

Contents

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

Input Models

Label	Article	Description	Inputs		Operating Voltage	Operating temperature
			Digital	Analog		
DI08	URD-0800	8 Digital inputs (sink or source), 10RTB	8	-	24VDC	-40°C to 70°C (-40°F to 158°F)
AI04O	URA-0400O	4 Analog Current Inputs 12bit, 10RTB	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)
AI08O	URA-0800O	8 Analog Current Inputs 12bit, 10RTB	-	8	24VDC	-40°C to 70°C (-40°F to 158°F)
AI04P	URA-0400P	4 Analog Voltage Inputs 12bit, 10RTB	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)
AI08P	URA-0800P	8 Analog Voltage Inputs 12bit, 10RTB	-	8	24VDC	-40°C to 70°C (-40°F to 158°F)
AI04T	URA-0400T	4 Analog Current Inputs 16bit, 10RTB	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)
AI04U	URA-0400U	4 Analog Voltage Inputs 16bit, 10RTB	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)

Output Models

Label	Article	Description	Outputs			Operating Voltage	Operating temperature
			Transistor	Relay	Analog		
DO04RH	URD-0004RH	4 Relay Outputs, 10RTB	-	4	-	240VAC	-40°C to 70°C (-40°F to 158°F)
DO08NH	URD-0008NH	8 Digital Outputs (Sink), 10RTB	8	-	-	24VDC	-40°C to 70°C (-40°F to 158°F)
DO08CH	URD-0008CH	8 Digital Outputs (Source), 10RTB	8	-	-	24VDC	-40°C to 70°C (-40°F to 158°F)
AO04W	URA-0004W	4 Analog Current Outputs 12bit, 10RTB	-	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)
AO08W	URA-0008W	8 Analog Current Outputs 12bit, 10RTB	-	-	8	24VDC	-40°C to 70°C (-40°F to 158°F)
AO04X	URA-0004X	4 Analog Voltage Outputs 12bit, 10RTB	-	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)
AO08X	URA-0008X	8 Analog Voltage Outputs 12bit, 10RTB	-	-	8	24VDC	-40°C to 70°C (-40°F to 158°F)
AO04Y	URA-0004Y	4 Analog Current Outputs 16bit, 10RTB	-	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)
AO04Z	URA-0004Z	4 Analog Voltage Outputs 16bit, 10RTB	-	-	4	24VDC	-40°C to 70°C (-40°F to 158°F)

Power Models

Label	Article	Description	Operating Voltage	Operating temperature
PS24	URP-PS24V	Input 24VDC, Output system Power 5VDC/1A	24VDC	-40°C to 70°C (-40°F to 158°F)

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.

Installation - Din-Rail Module Mounting

1. Lift the white locking latch on the bottom of the module.

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

3. Close the latch to lock the module in.

How to Remove the Module from the DIN-Rail

1. Pull the white locking latch.

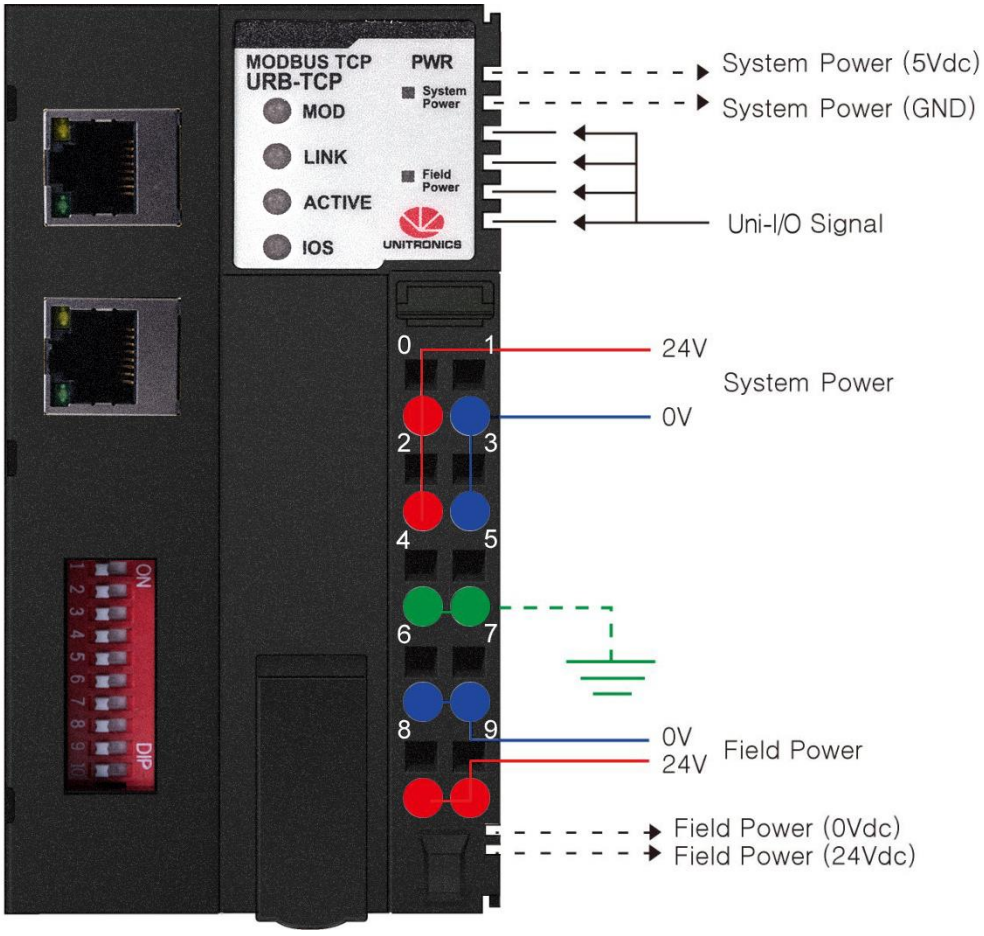
2. Pull the module off the rail.

Specifications

Items	Specification
Max. Expantsion 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 sized 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
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	

DIP Switch

DIP Pole No.	Role	Description
1	IP bit#0	Lowest IP Address octet when Pole#10=ON Example: XXX.XXX.XXX.IP
2	IP bit#1	
3	IP bit#2	
4	IP bit#3	
5	IP bit#4	
6	IP bit#5	
7	IP bit#6	
8	IP bit#7	
9	DHCP / BOOTP	Enable DHCP / BOOTP BOOTP Default, DHCP using special register 0x1045
10	Use DIP IP Value	Use IP Address set by DIP Switches

IP Address Setup using BOOTP Server

The URB adapter IP defaults are:

Default IP: 192.168.0.100

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

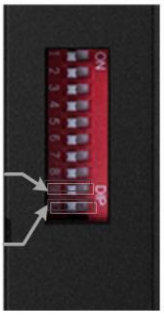
To enable the selected method, you must raise the appropriate DIP switch on the adapter. By factory default, the adapter is supplied with all switches down.

- Raise #9 to set IP via BOOTP Server:
  -Enables the adapter BOOTP/DHCP

-The adapter sends 20 consecutive BOOTP/DHCP request messages every 2 seconds.
-If 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.

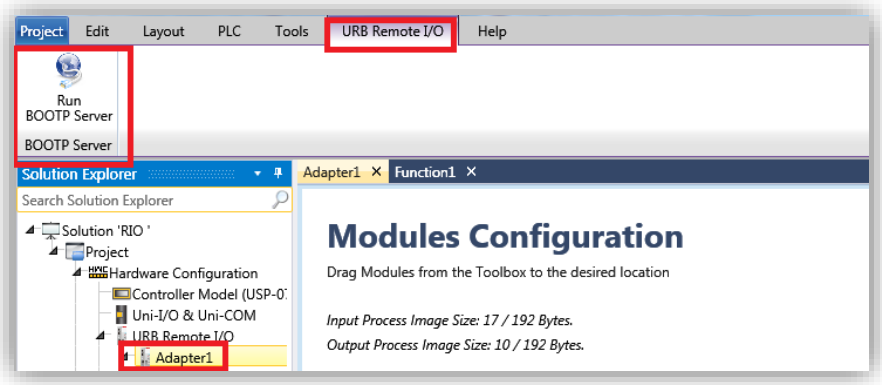
URB Adapter DIP Switches

#	Role	Description	
1	IP bit#0	Lowest IP Address octet when Switch #10=ON (raised) Example: XXX.XXX.XXX.IP	DIP # 9: Enable IP via BOOTP DIP # 10: Enable IP via DIP switches 
2	IP bit#1		
3	IP bit#2		
4	IP bit#3		
5	IP bit#4		
6	IP bit#5		
7	IP bit#6		
8	IP bit#7		
9	DHCP / BOOTP	Enable DHCP / BOOTP	
10	Use DIP IP Value	Enable IP Address set by DIP Switches	

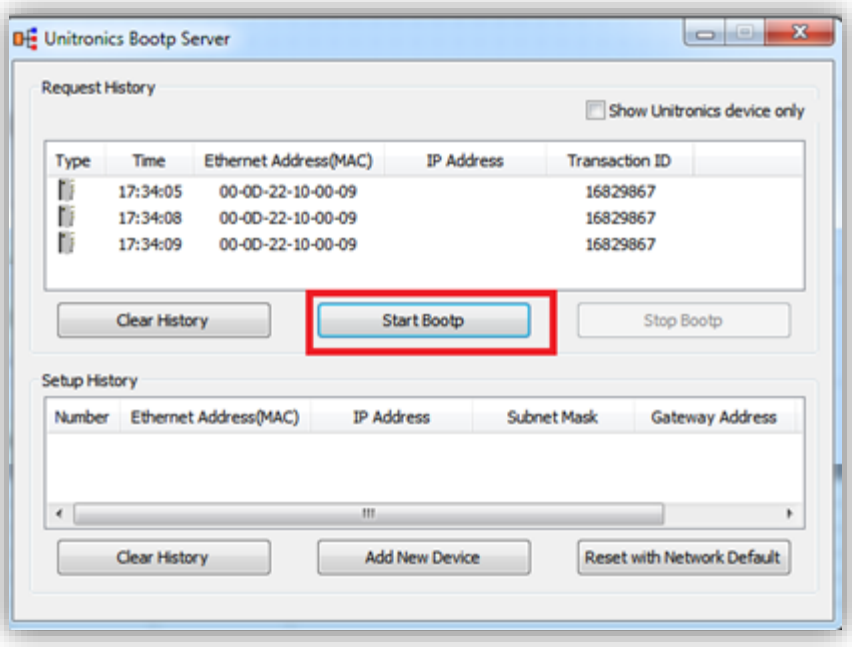
Configuring IP using Unitronics BOOTP Server

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)

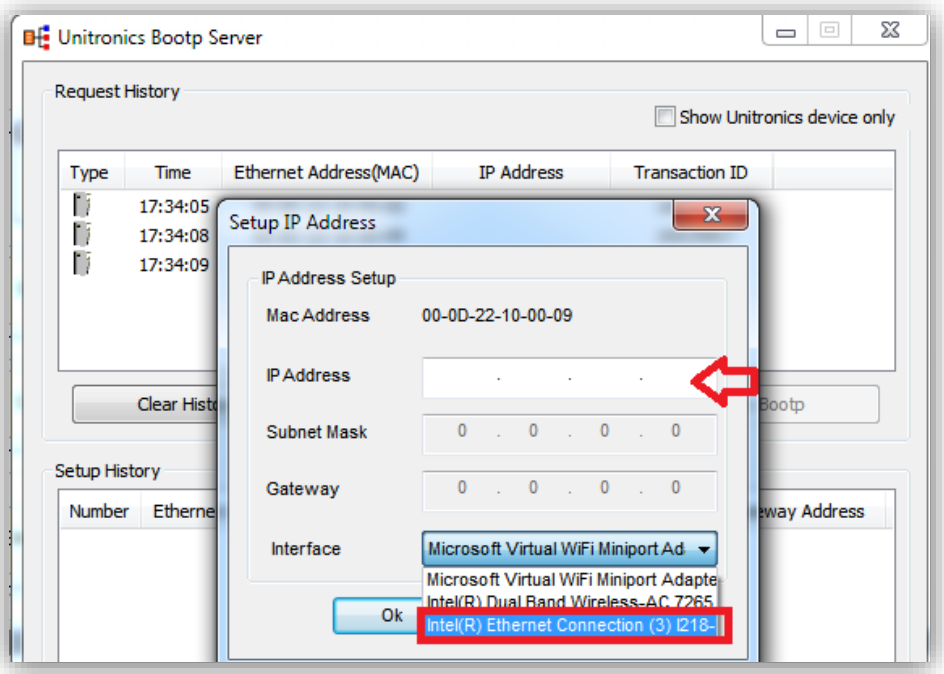
1. Power OFF the URB adapter.
2. Raise DIP switch #9 to enable DHCP / BOOTP.
3. In UniLogic, in the Solution Explorer, select the adapter; the ribbon will open the tab URB Remote I/O.
4. On the ribbon, click on Run BOOTP Server to open the utility.



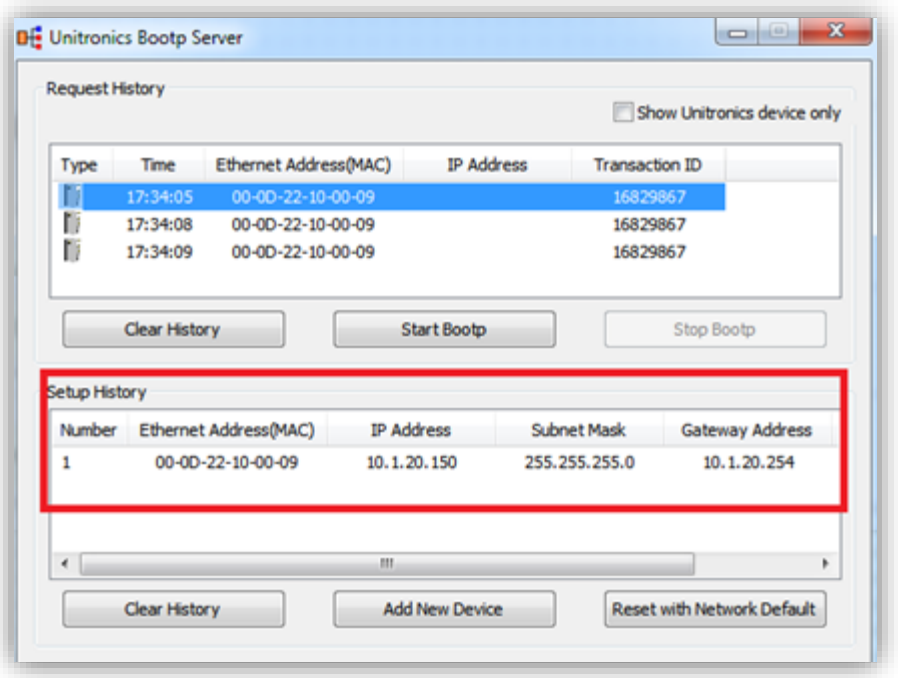
5. Click Start BootP in the **Unitronics** BOOTP Server; the upper section displays Ethernet devices that are in the network.



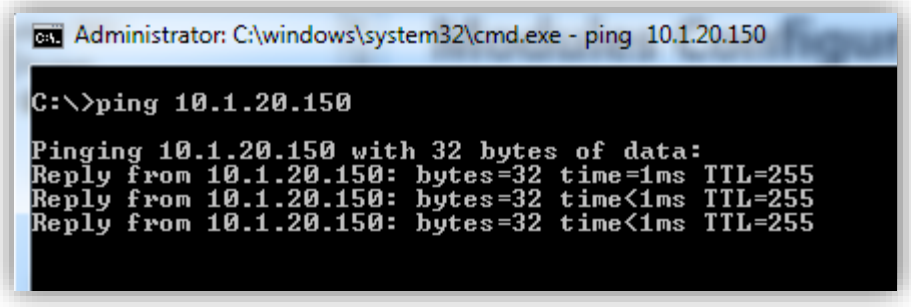
6. Power ON the URB adapter.
7. Locate the adapter's MAC address and double-click on the row.
8. Enter the required IP address and select your PC Network card.



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)

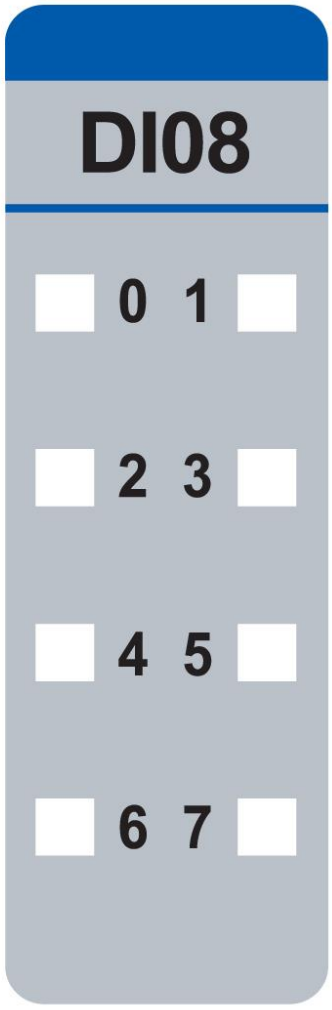
Status	LED	Indication
No field, System power	OFF	Not supplied 24VDC field power, 5VDC system power.
Supplied field, System power	Green	Supplied 24VDC field power, 5VDC system power.

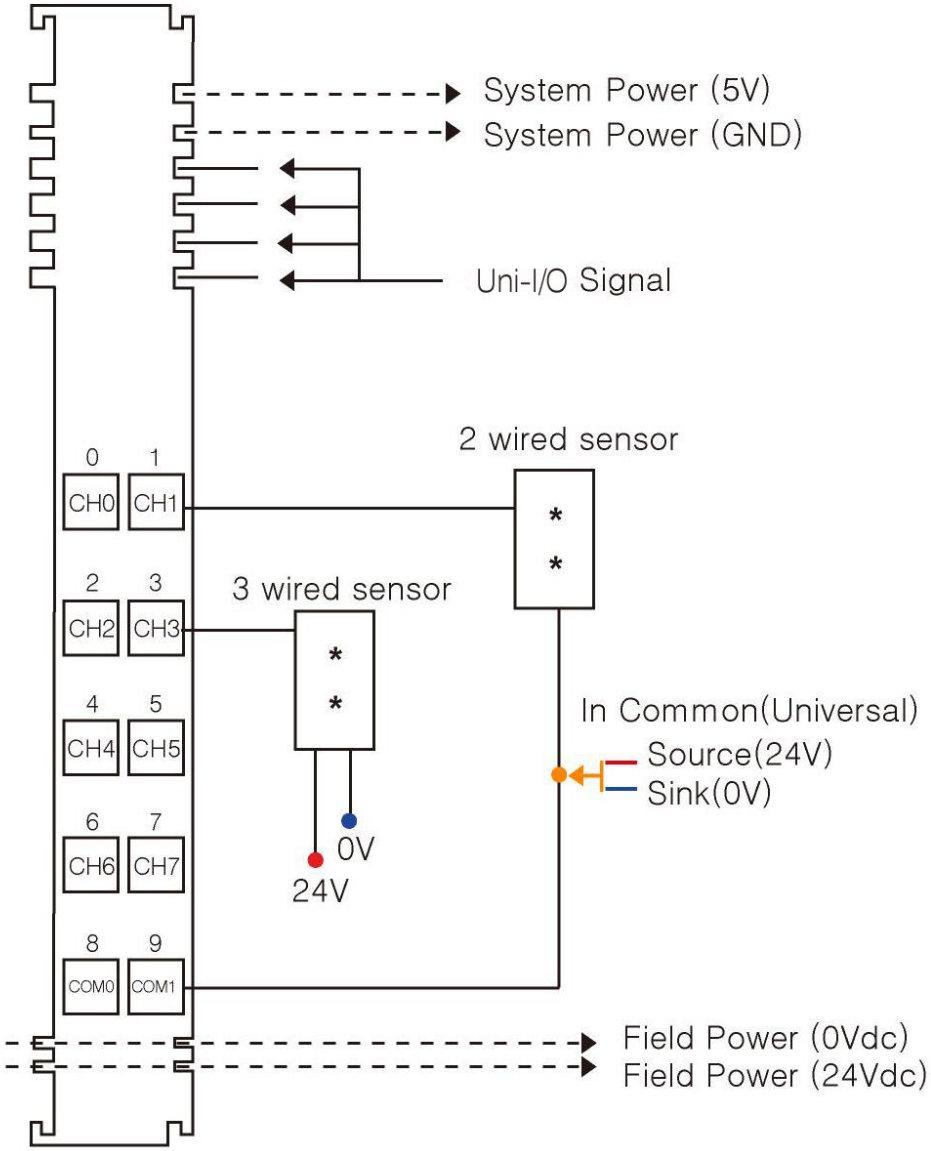
URD-0800 (DI08) - 8 Digital Inputs (sink or source)

1. Specifications

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
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

2. 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)

3. 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

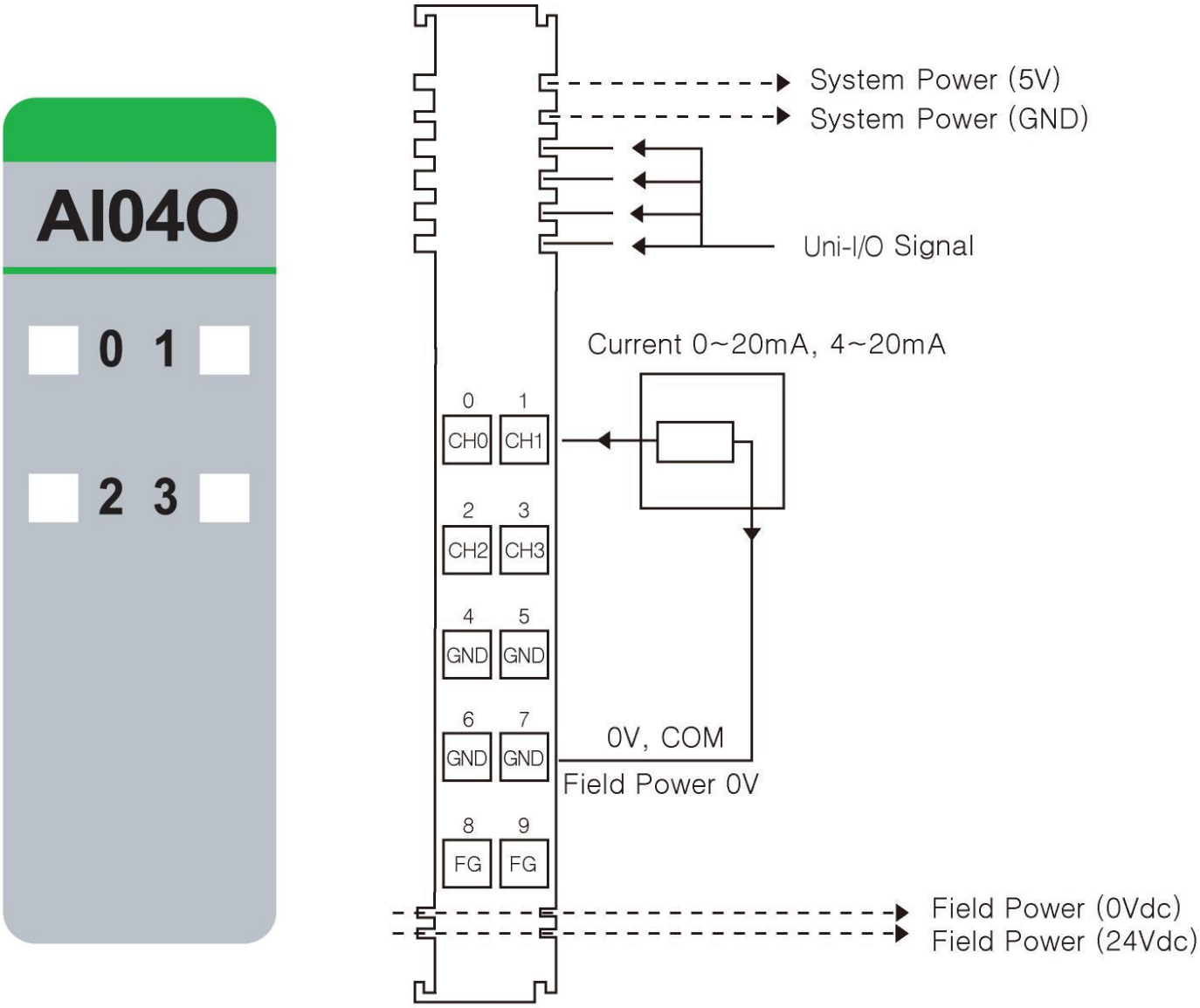
Status	LED	Indication
Not Signal	Off	Normal Operation
On Signal	Green	Normal Operation

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

1. Specifications

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 ambient ±0.3% Full Scale @ -40 ºC, 70 ºC
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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

3. 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

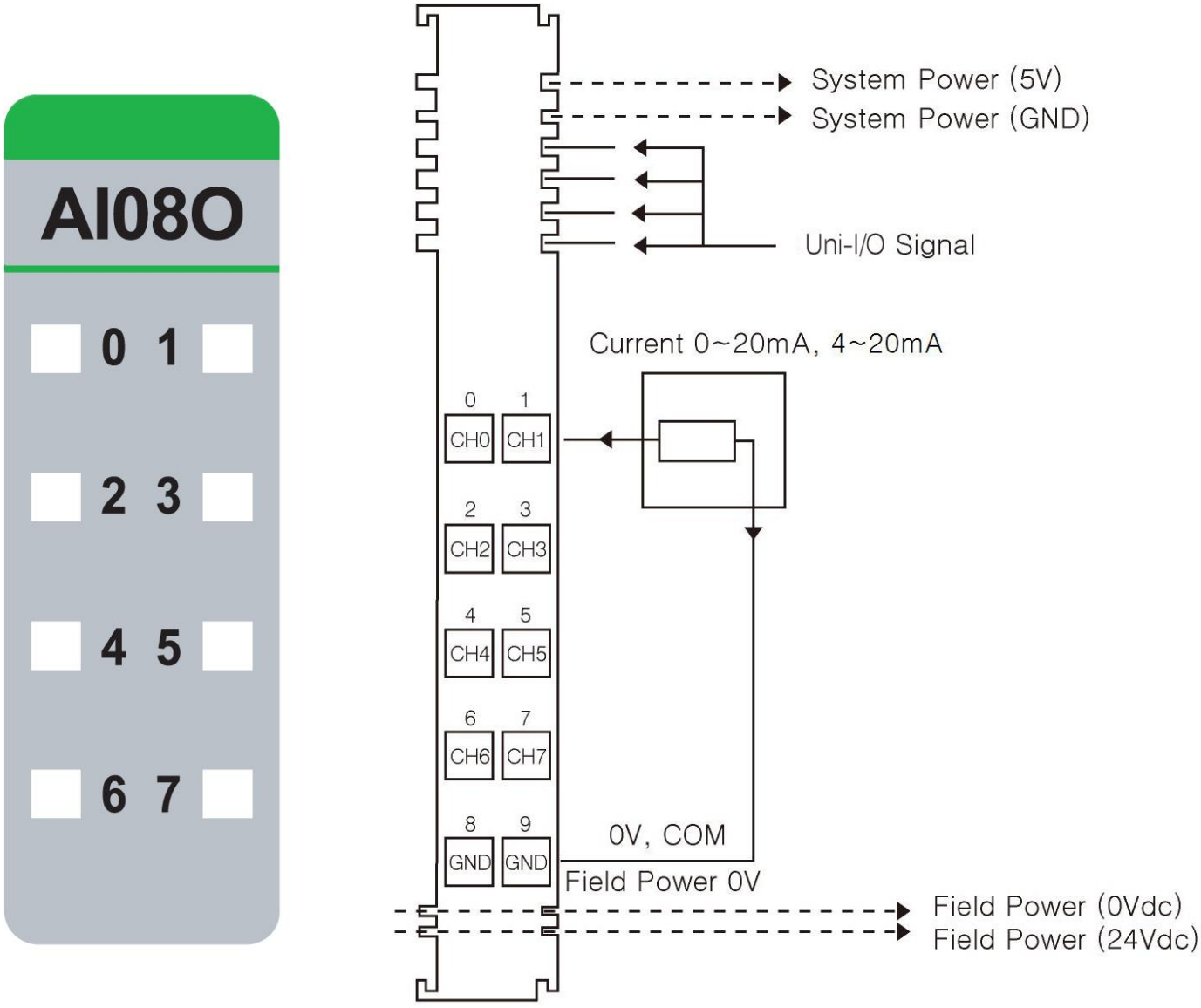
Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off > 21mA (Maximum Range Over] – Input OFF [LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check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

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

1. Specifications

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 ambient ±0.3% Full Scale @ -40 ºC, 70 ºC
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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)

3. 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

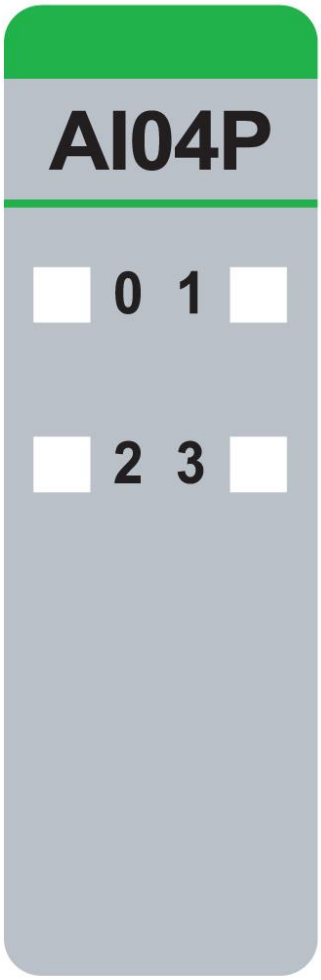
Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off > 21mA (Maximum Range Over] – Input OFF [LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check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

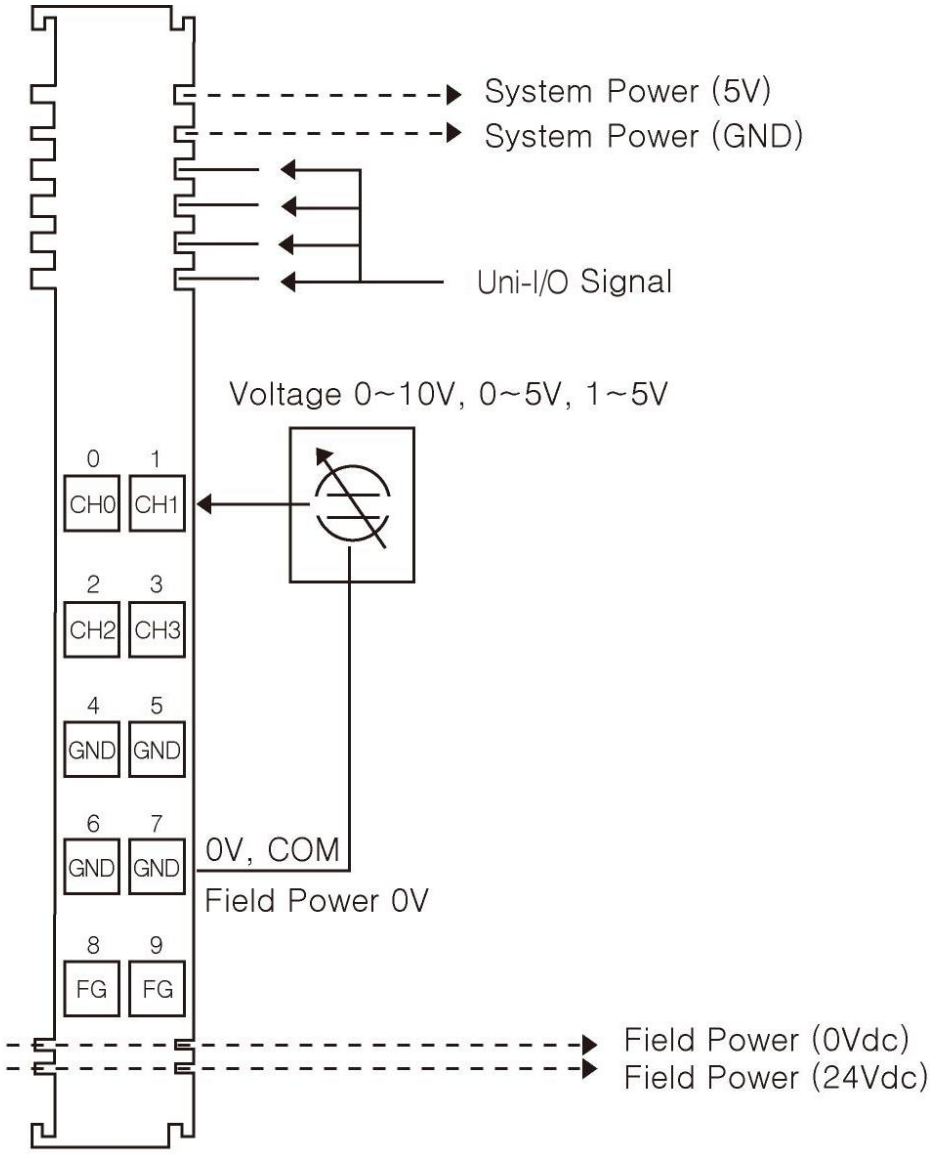
URA-0400P (AI04P) - 4 Analog Voltage Inputs 12bit

1. Specifications

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℃ ambient ±0.3% Full Scale @ -40℃, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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

3. 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

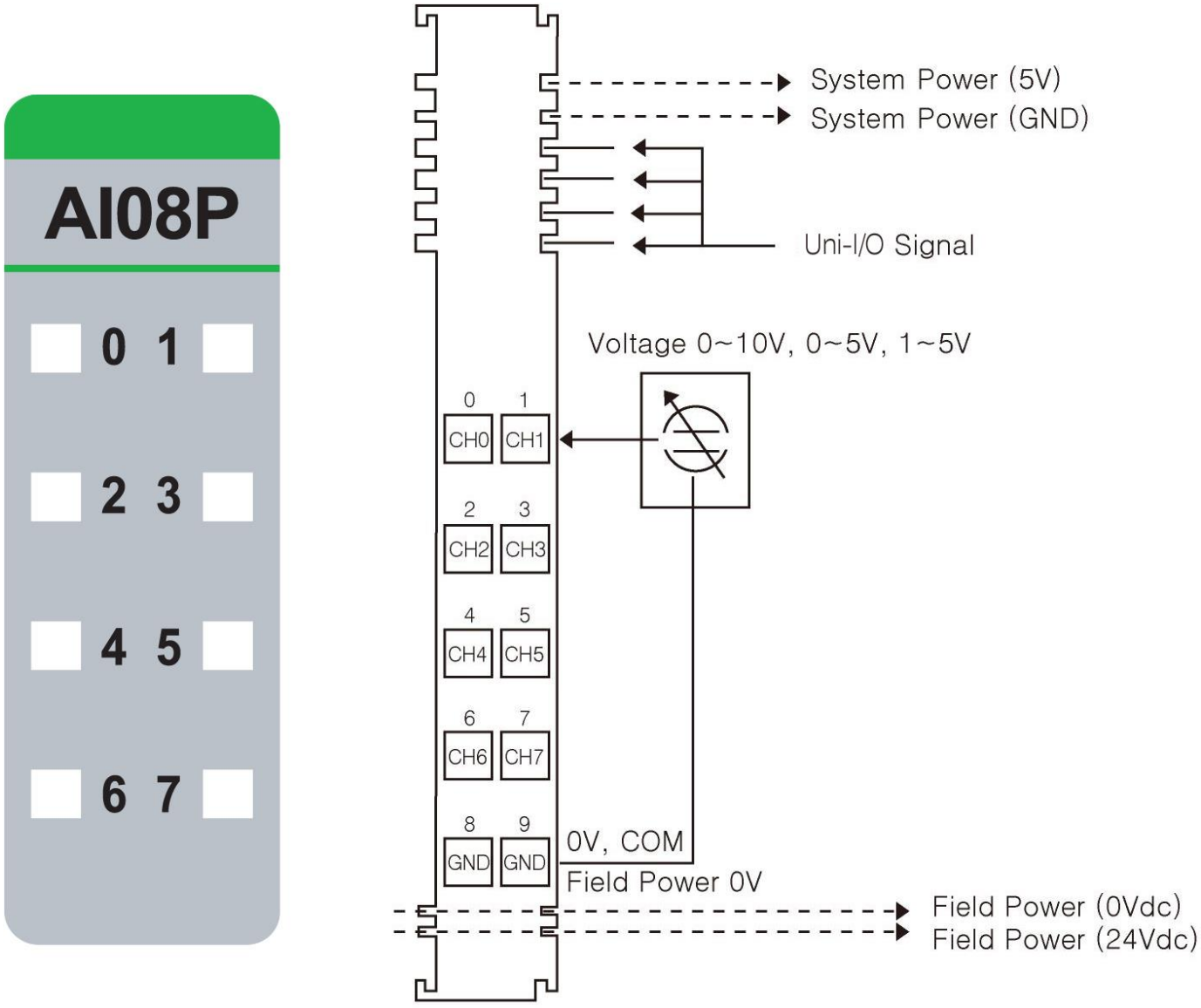
Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

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

1. Specifications

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℃ ambient ±0.3% Full Scale @ -40℃, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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)

3. 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

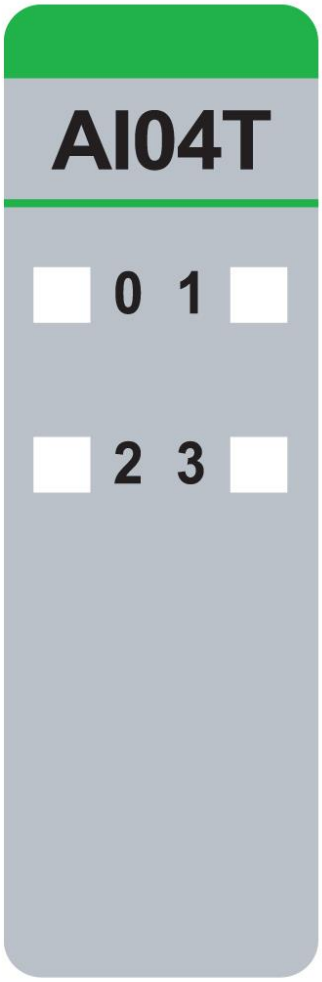
Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Input Repeat the Green and OFF	Field Power is unconnected

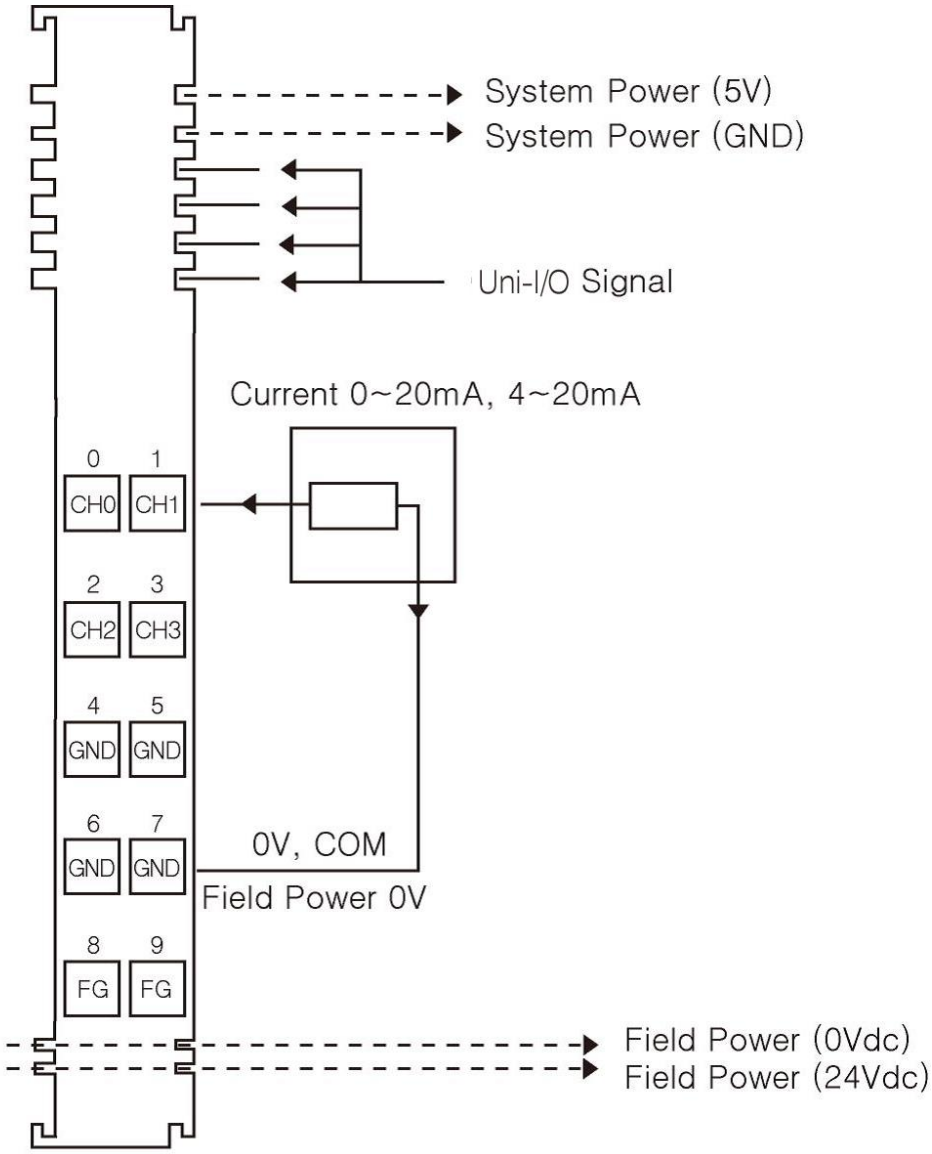
URA-0400T (AI04T) - 4 Analog Current Inputs 16bit

1. Specifications

Items	Specification
Inputs per module	4 Input s single ended, non-isolated between Inputs
Indicators(Logic side)	4 Green Input status
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℃ ambient ±0.3% Full Scale @ -40℃, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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

3. 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

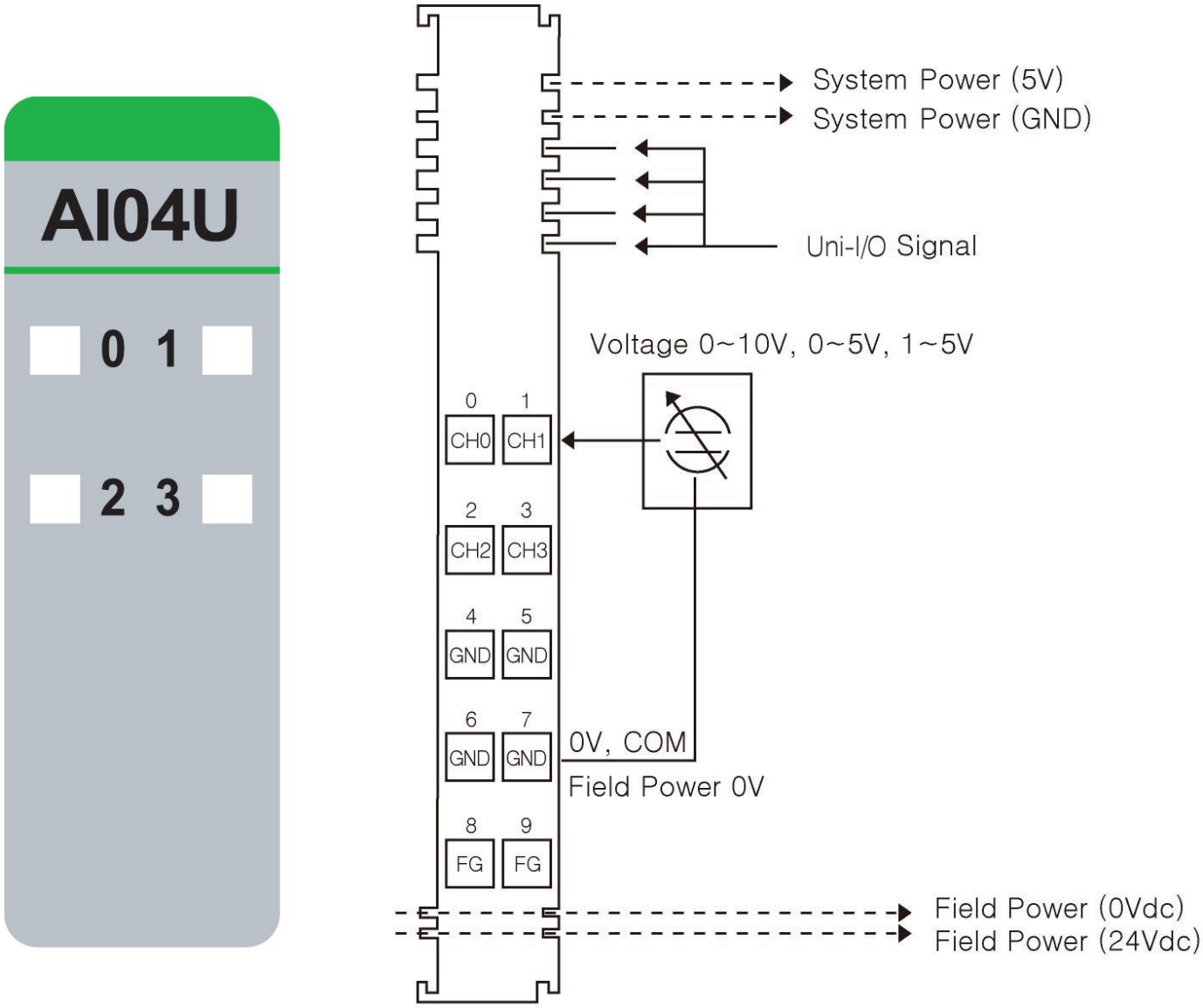
Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Overrun/Underrun	[LED Off < 3mA (Minimum Range Over , 4 ~ 20mA)] – Input OFF	Over range Check
Field Power Error	All Input Repeat the Green and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

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

1. Specifications

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℃ ambient ±0.3% Full Scale @ -40℃, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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

3. 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

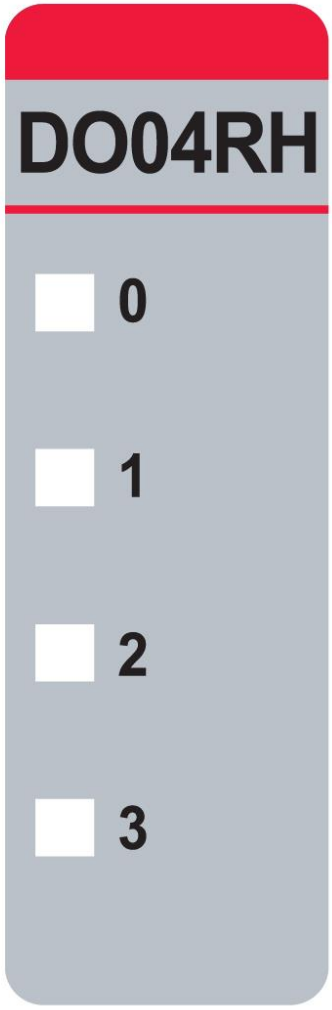
Status	LED	Indication
Normal Operation	[LED Off < 0.5% (Maximum Input Value)] - Input OFF [LED On > 0.5% (Maximum Input Value)] - Input Green	Normal Operation
Field Power Error	All Channel Repeat the Green and OFF	Field Power is unconnected

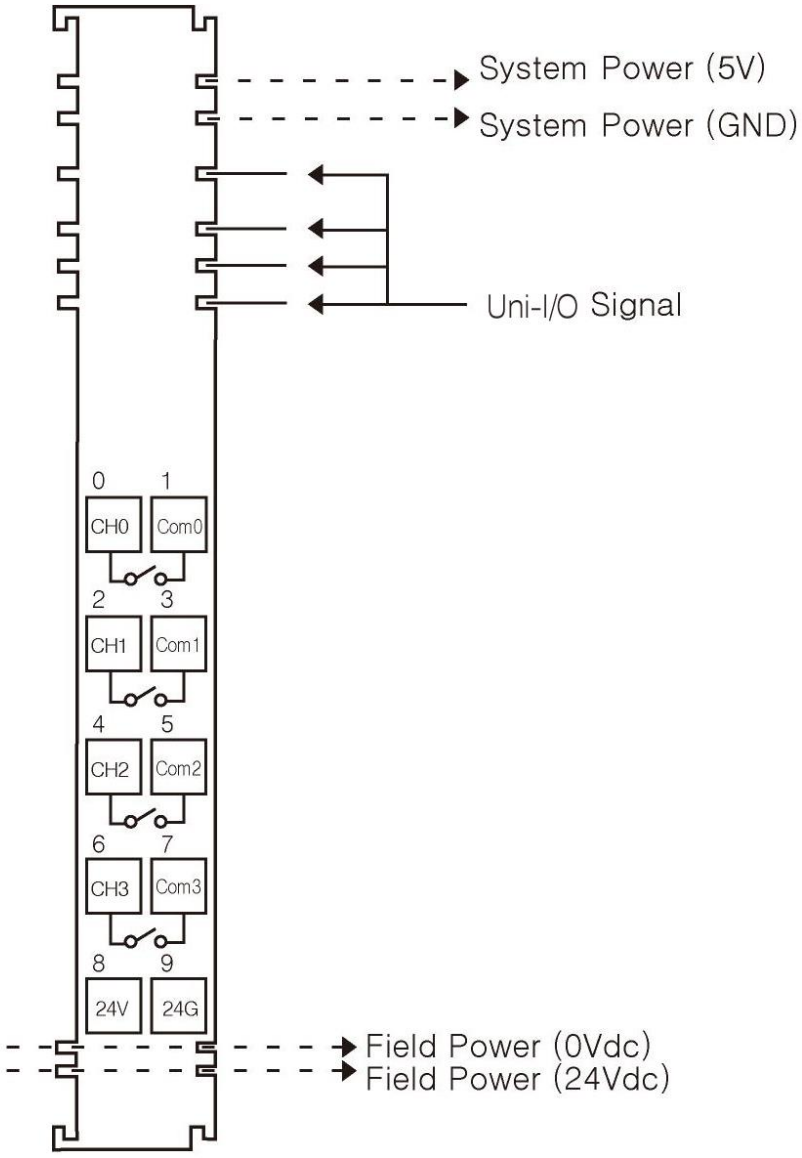
URD-0004RH (DO04RH) - 4 Relay Outputs

1. Specifications

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℃~70℃ (2A Load 2ch) -40℃~60℃ (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

2. 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

3. 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

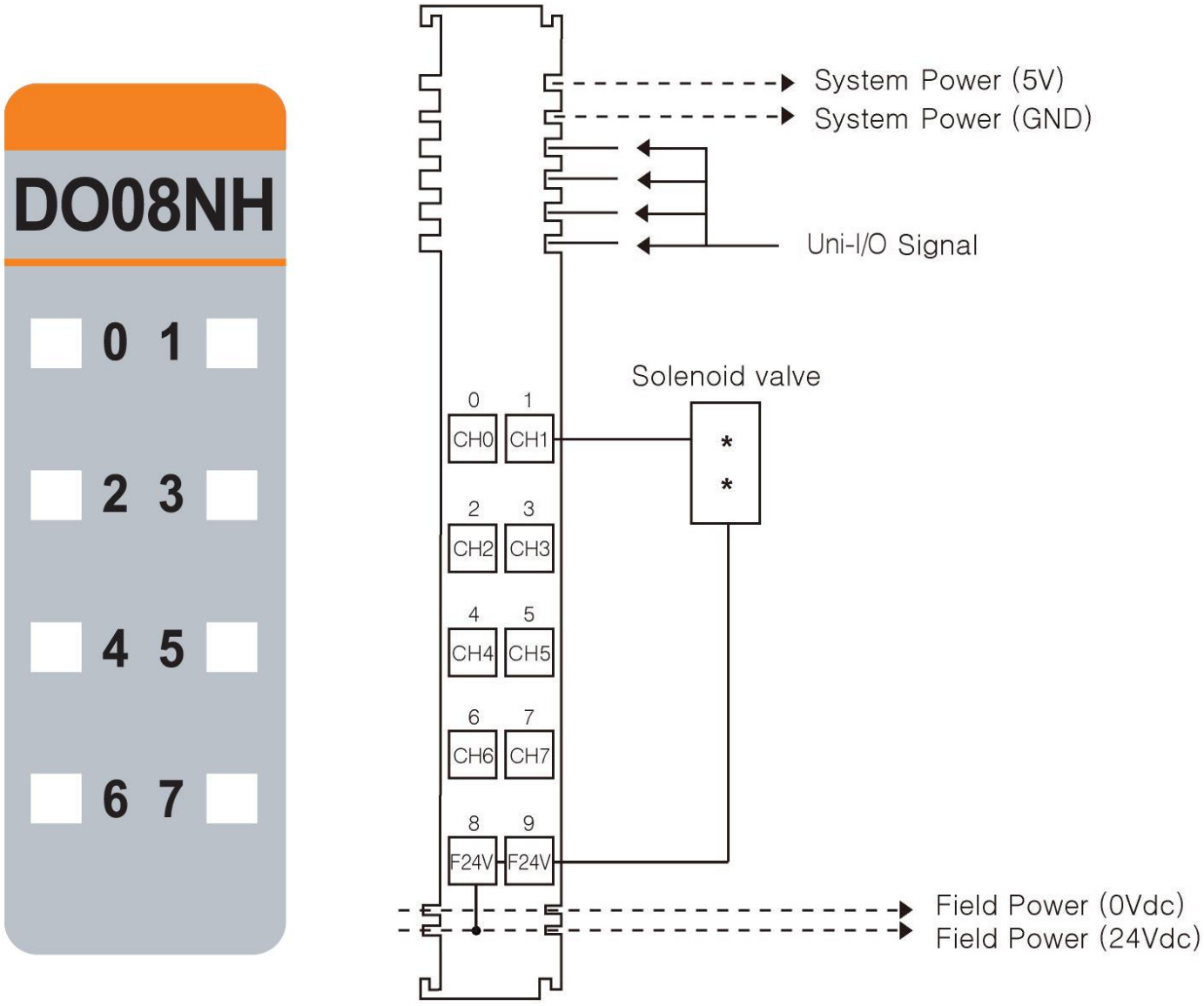
Status	LED	Indication
Not Signal	Off	Normal Operation
On Signal	Green	Normal Operation

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

1. Specifications

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, 70 ºC, -40 ºC
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 per each outputs Thermal Shutdown : Min 3A@ 25 ºC 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. 2.0mm2(AWG 14)
Weight	39g
Module Size	12mm x 99mm x 70mm

2. 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)

3. 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

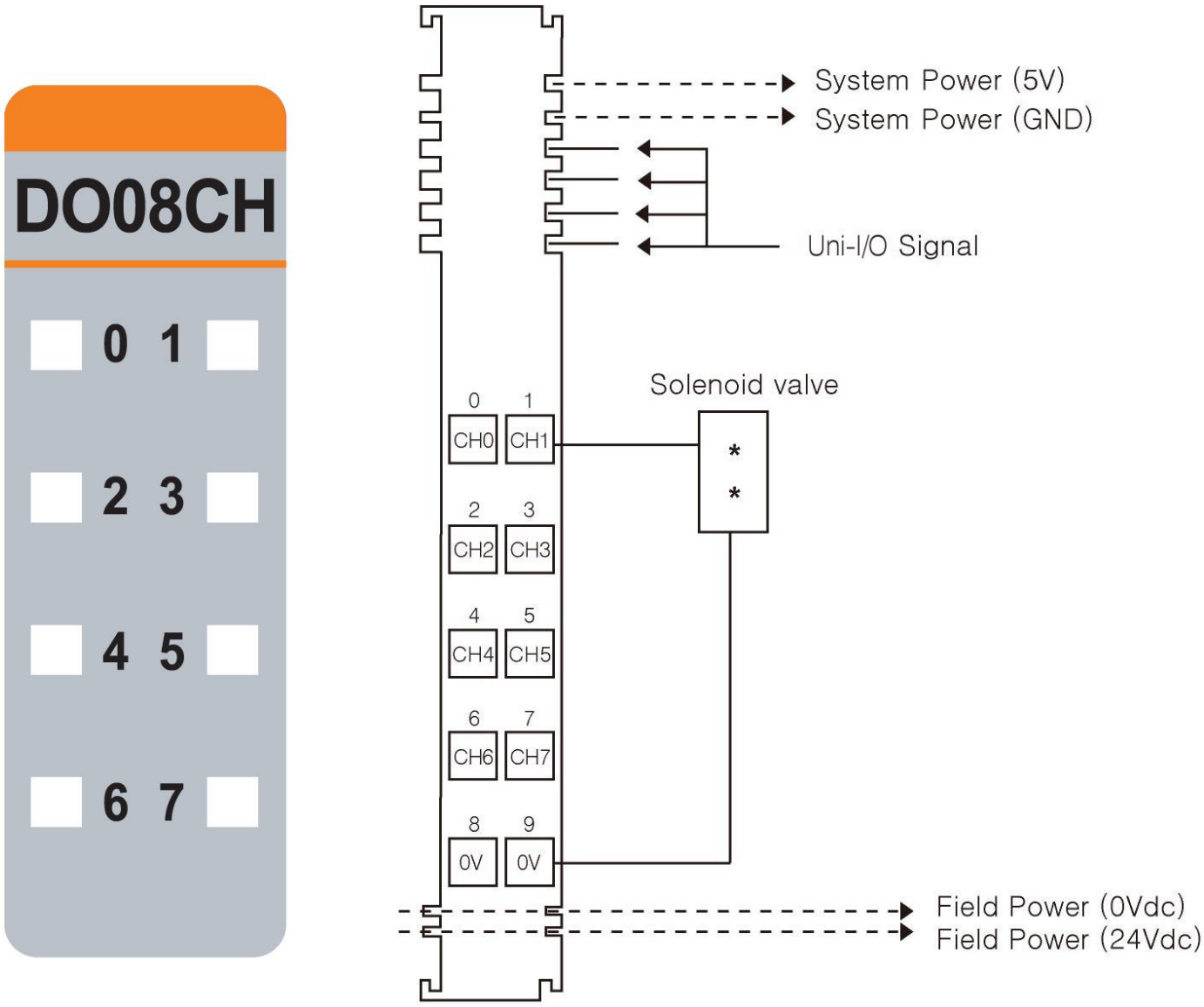
Status	LED	Indication
Not Signal	Off	Normal Operation
On Signal	Green	Normal Operation

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

1. Specifications

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, 70 ºC, -40 ºC
Field Power OFF-state voltage	4.6Vdc @ 25 ºC
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 per each outputs Thermal Shutdown : Min 4A@ 25 ºC 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. 2.0mm2(AWG 14)
Weight	40g
Module Size	12mm x 99mm x 70mm

2. 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)

3. 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
Not Signal	Off	Normal Operation
On Signal	Green	Normal Operation

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

1. Specifications

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℃ ±0.3% Full Scale @ -40℃, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

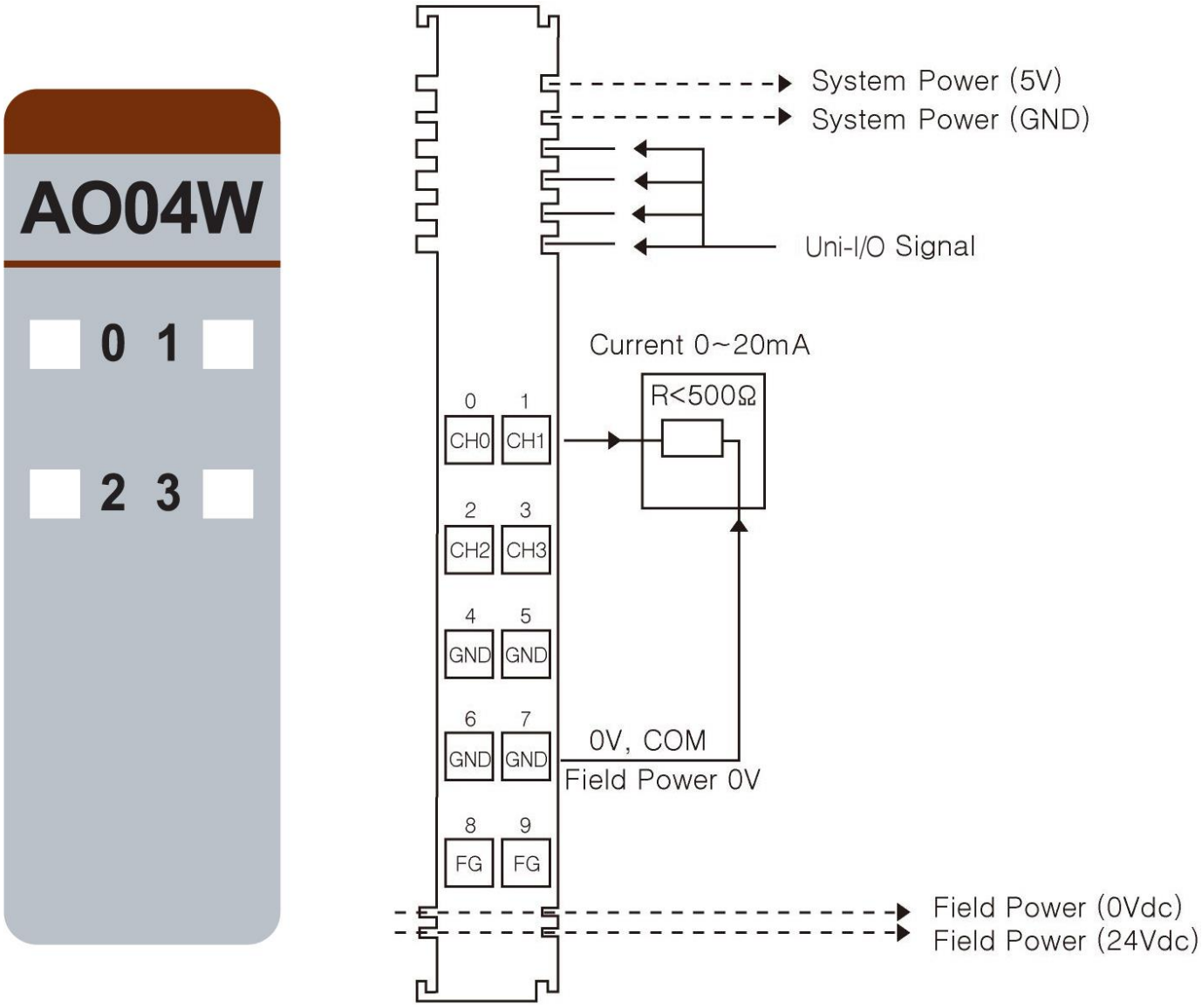
* Operating temperature

-40 ~ 70℃temperature range specification can be guaranteed under the following conditions.

- Load Resistance : Min 100Ω, Max 250Ω

- Otherwise, temperature specification can be guranteed with -40 ~ 60℃.

2. 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

3. 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

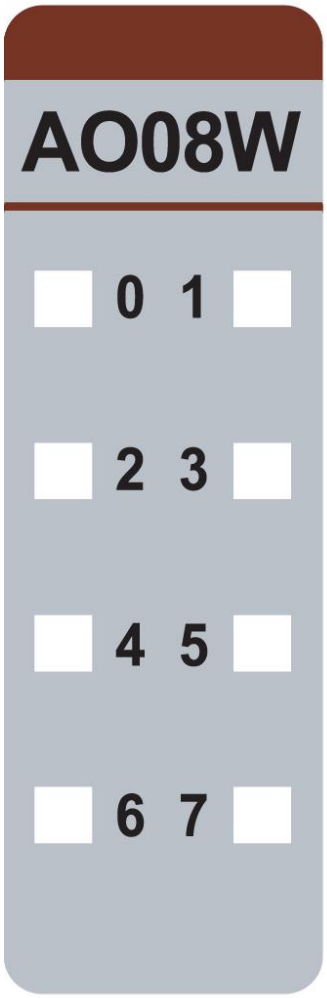
Status	LED	Indication
Normal Operation	Off	No Output Value
	Green	Normal Operation
Field Power Error	All Channel Repeat Green and Off	Field Power is unconnected.

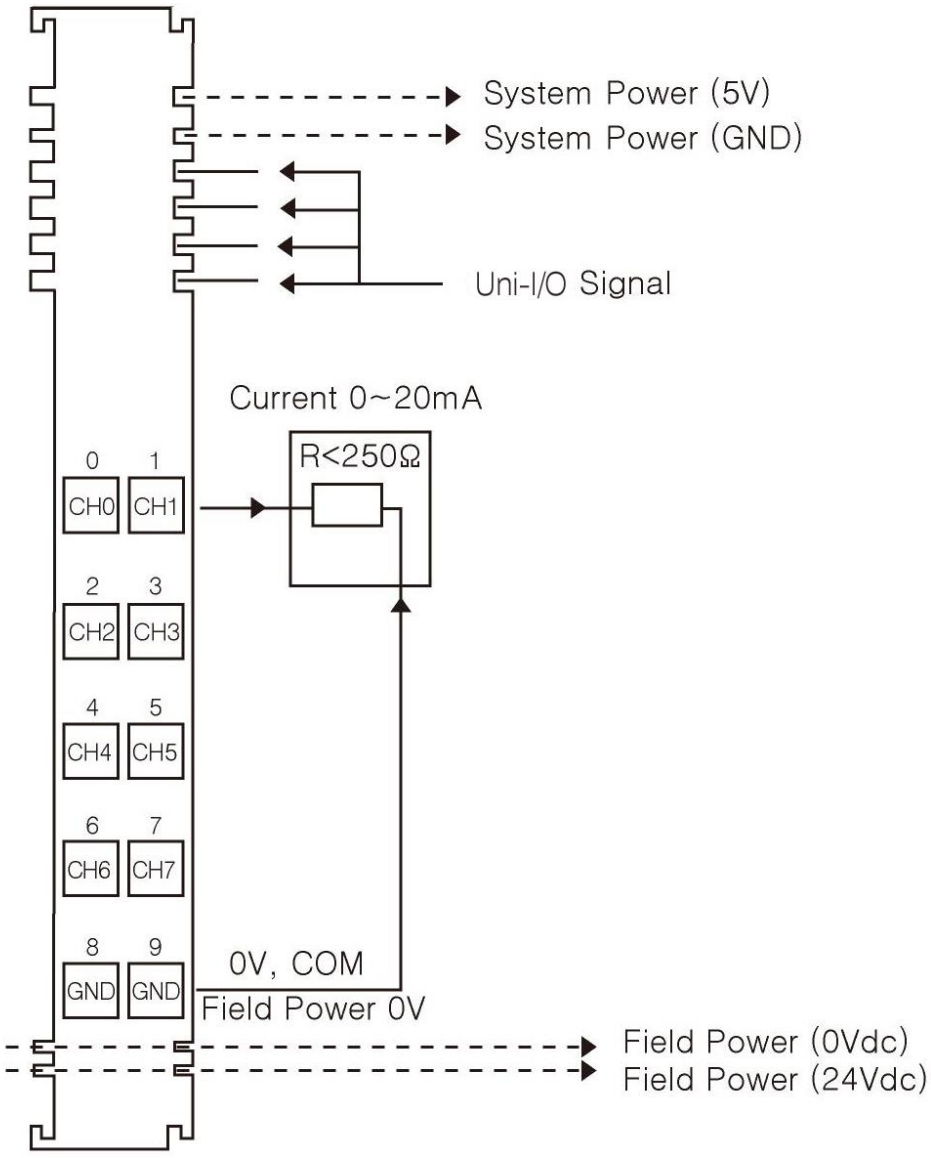
URA-0008W (AO08W) - 8 Analog Current Outputs 12bit

1. Specifications

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℃ ±0.3% Full Scale @ -40°C, 60℃
Load Resistance	Min 100Ω, Max. 250Ω
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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)

3. 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

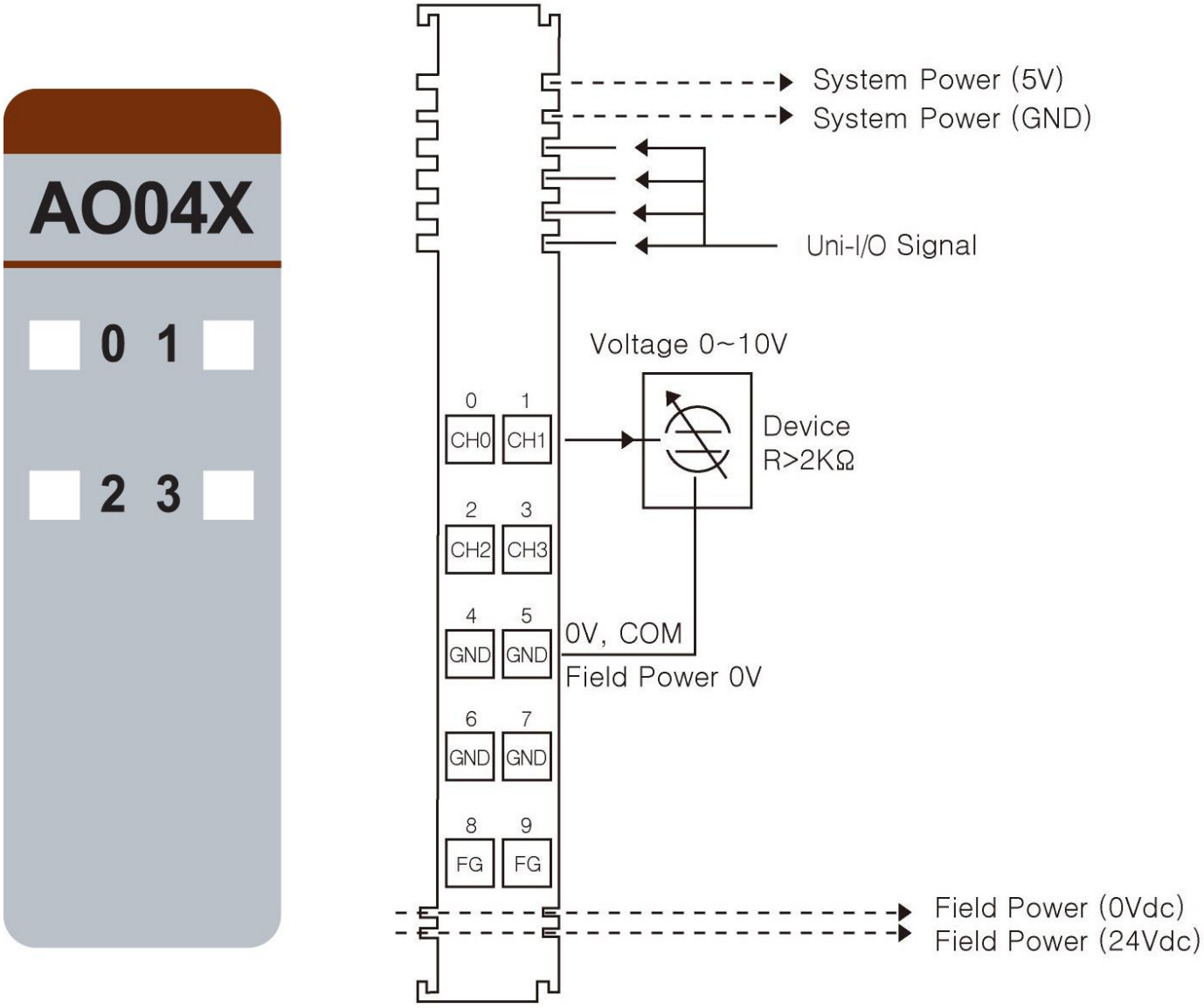
tatus	LED	Indication
Normal Operation	No Output Channel Off Output Channel Green	No Output Output
Field Power Error	All Channel Repeat the Green and Off	Field power is unconnected.

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

1. Specifications

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℃ ±0.3% Full Scale @ -40°C, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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

3. 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

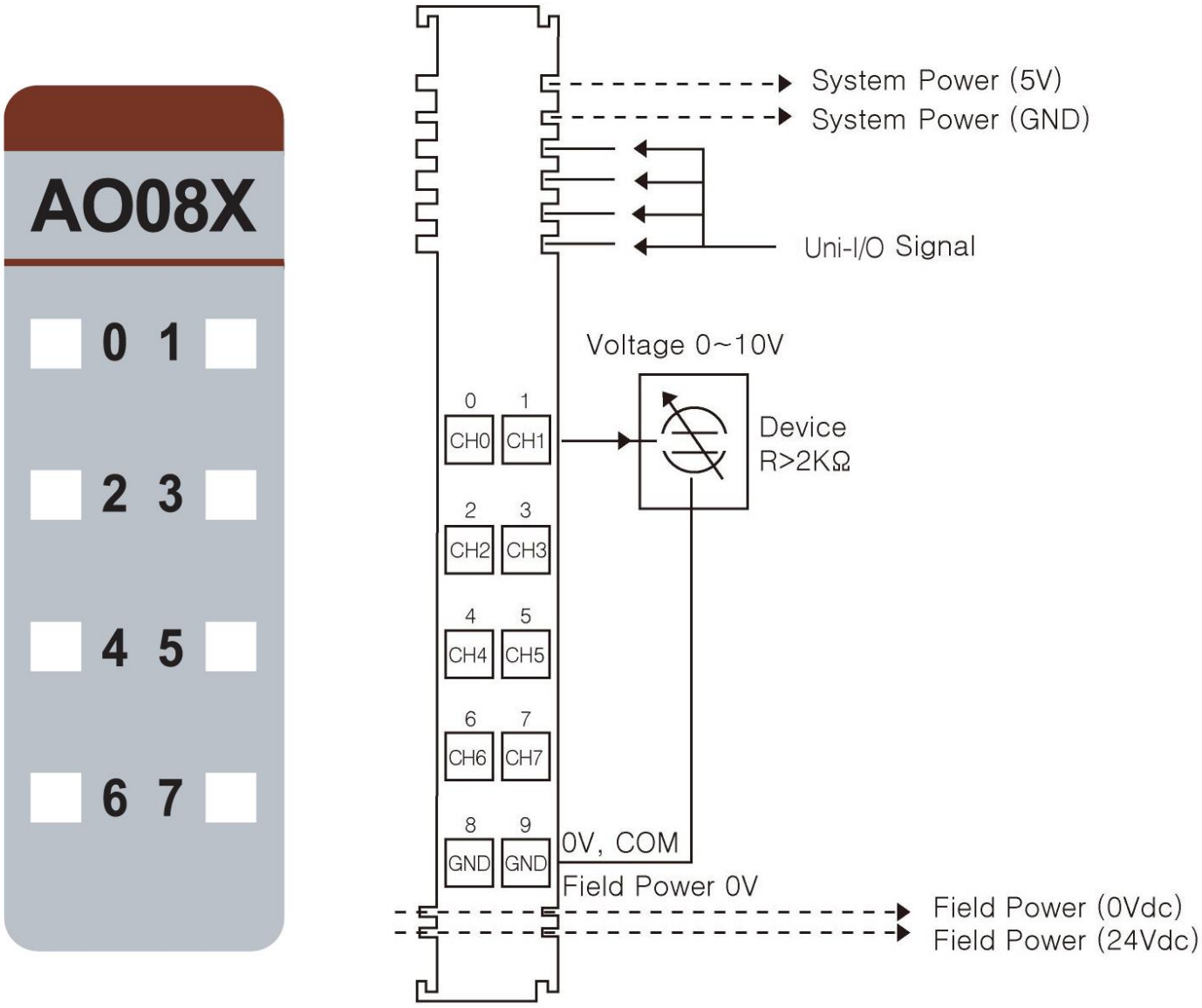
Status	LED	Indication
Normal Operation	No Output Off Output Green	No Output Output
Field Power Error	All Channel Repeat the Green and Off	Field power is unconnected.

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

1. Specifications

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℃ ±0.3% Full Scale @ -40°C, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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)

3. 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-0004Y (AO04Y) - 4 Analog Current Outputs 16bit

1. Specifications

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℃ ±0.3% Full Scale @ -40℃, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

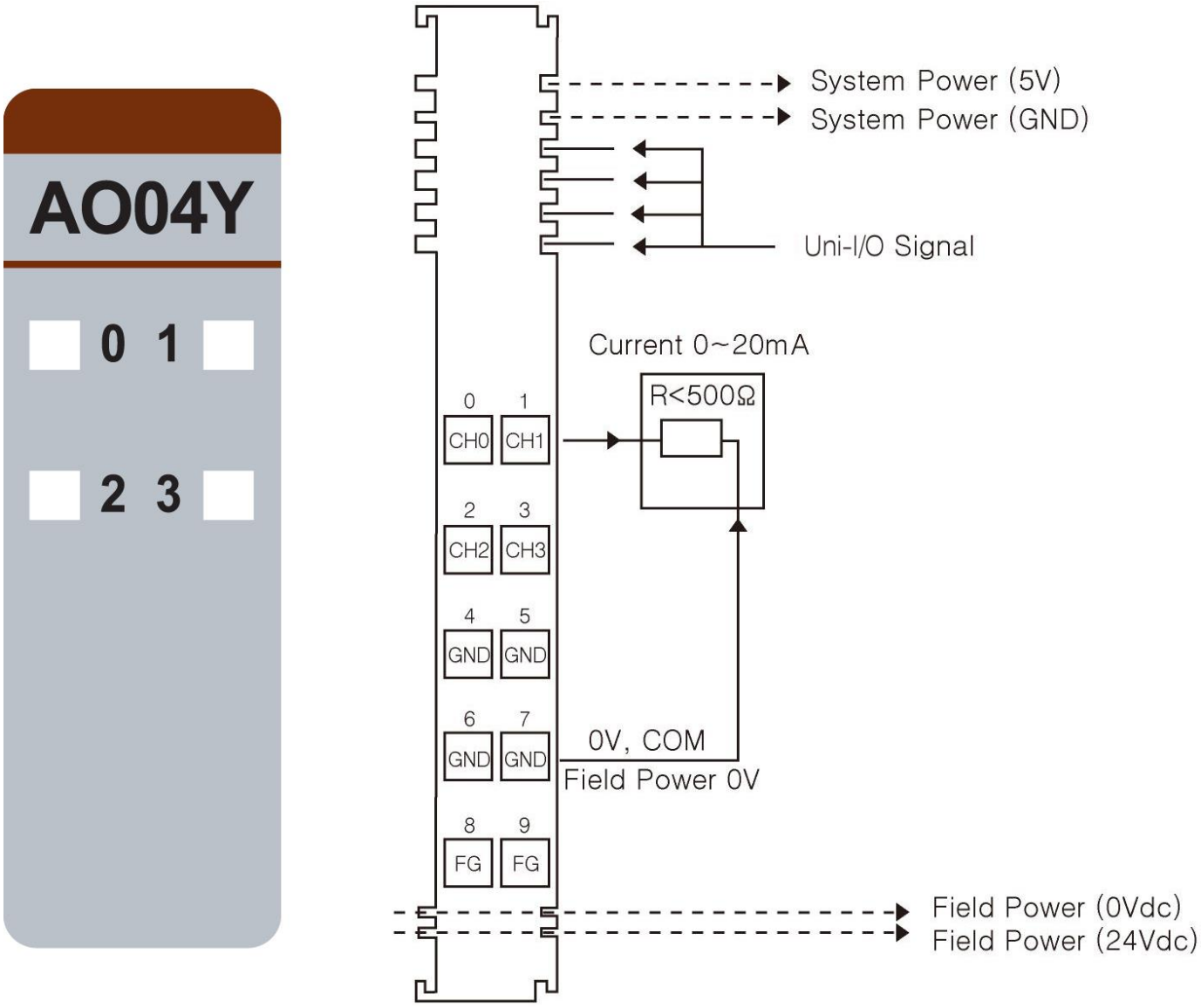
* Operating temperature

-40 ~ 70℃ temperature range specification can be guaranteed under the following conditions.

- Load Resistance : Min 100Ω, Max 250Ω

- Otherwise, temperature specification can be guranteed with -40 ~ 60℃.

2. 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

3. 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

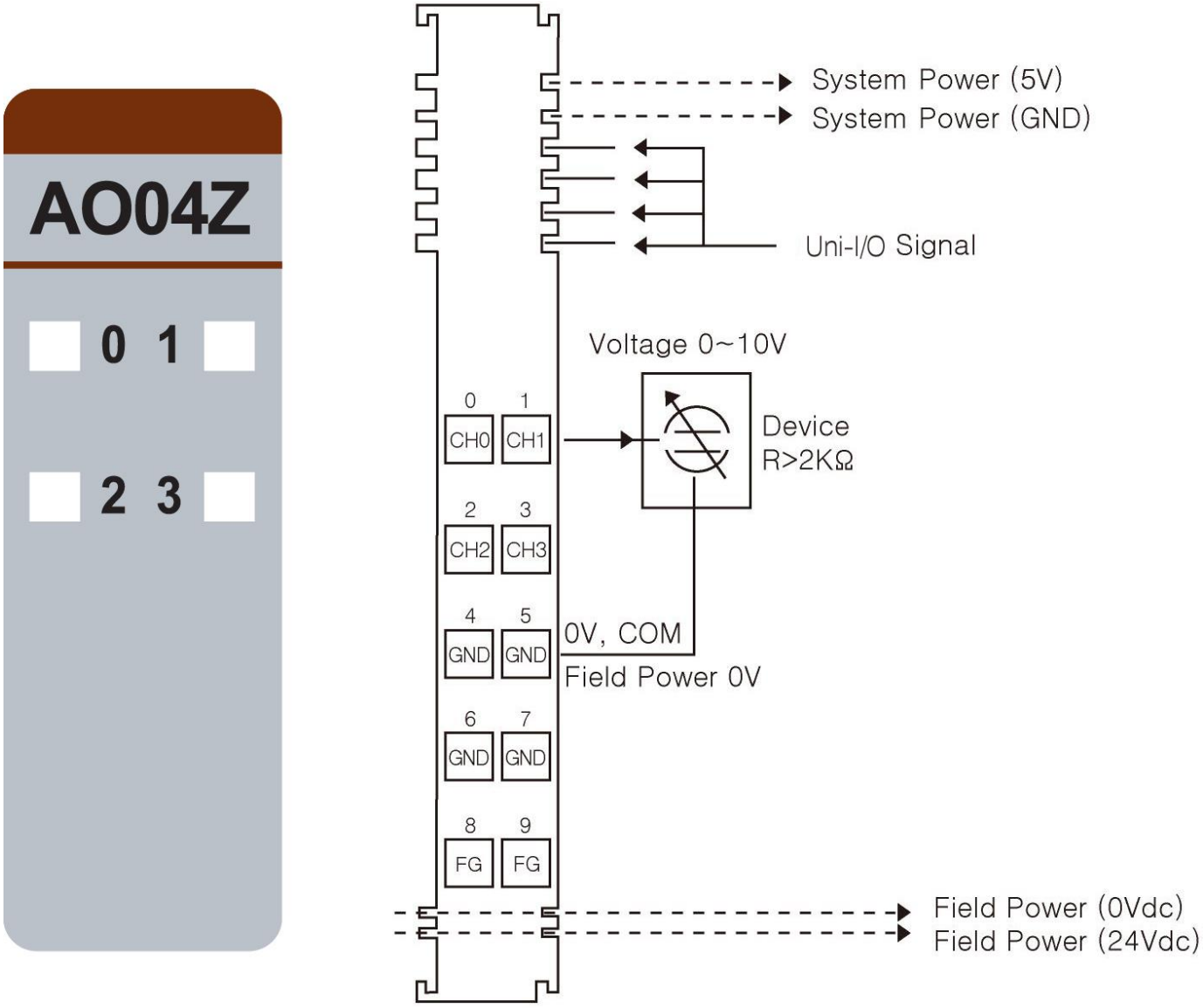
Status	LED	Indication
Normal Operation	Off	No Output Value
	Green	Normal Operation
Field Power Error	All Output Repeat Green and Off	Field Power is unconnected.

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

1. Specifications

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℃ ±0.3% Full Scale @ -40°C, 70℃
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. 2.0mm2(AWG 14)
Weight	58g
Module Size	12mm x 99mm x 70mm

2. 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

3. 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.

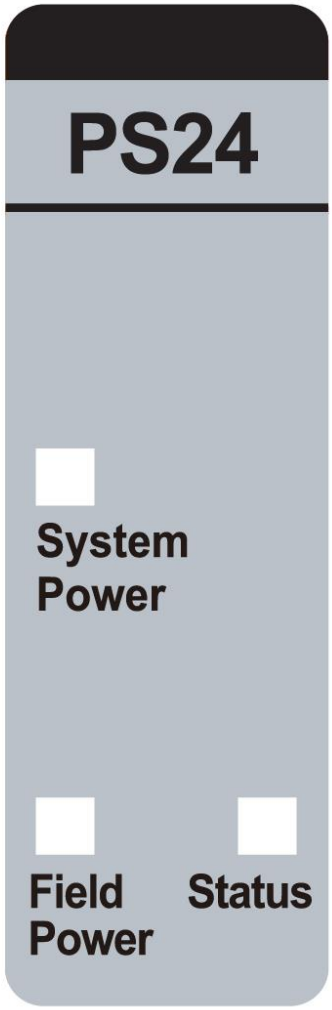
URP-PS24V (PS24) - Input 24VDC, Output system Power 5VDC/1A

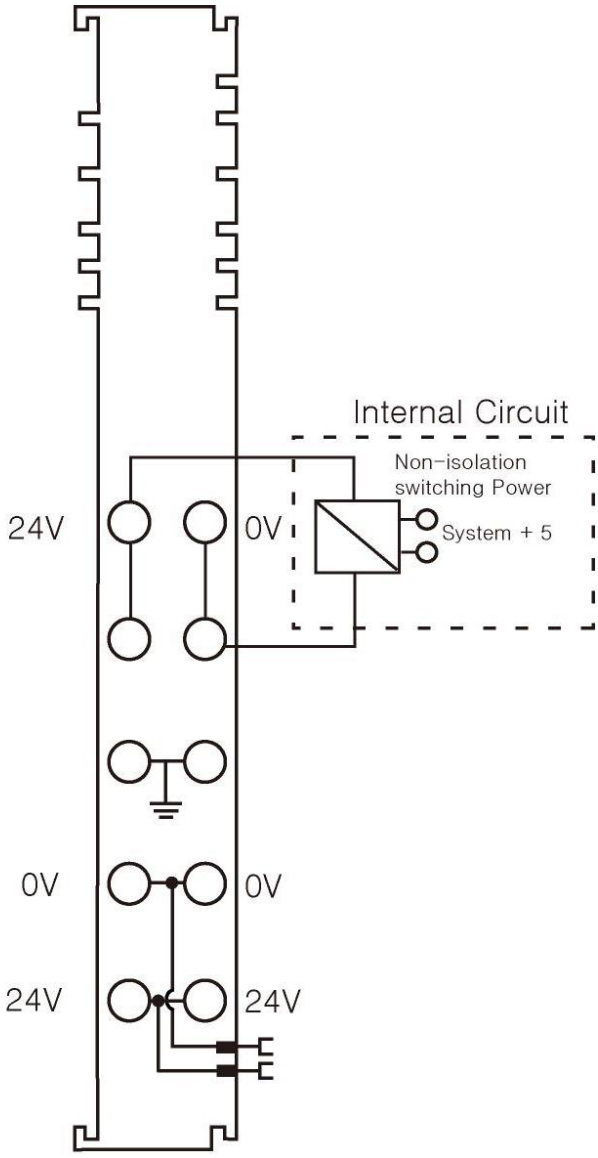
1. Specifications

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 G-Bus state
Field Power Input Voltage	Normal 24VDC (±20%)
Field Power Contacts Current	Max. 10A Operating Temperature -40℃~50℃ : Max. 10A 50℃~70℃ : Max. 7A
G-Bus Output Voltage	Max. 5VDC, 1A *
System power Dissipation	Max. 20mA @ 24VDC
Wring	I/O Cable Max. 2.0mm2(AWG 14)
Weight	59g
Module size	12mm x 99mm x 70mm

* Operating temperature
-40 ~ 70℃ temperature range specification can be guaranteed under the following conditions.
- Current for I/O Modules : 0.4 A below.
- Otherwise, temperature specification can be guranteed with -40 ~ 60℃.

2. 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

3. LED Indicators

LED No.	LED Function / Description	LED Color
System Power	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.