

Power Module

ST-7xxx User Manual



Version 1.03

2013 CREVIS Co.,Ltd

DOCUMENT CHANGE SUMMARY				
REV	PAGE	REMARKS	DATE	EDITOR
1.0	New Document		2011/10/07	JE KANG
1.01	6	Add your experience	2012/1/13	JE KANG
1.02		Changed Crevis TEL	2013/4/4	JE KANG
1.03		Environment Spec. 50°C→55°C (UL Temp)	2013/7/3	JE Kang

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1. Important Notes

Solid state equipment has operational characteristics differing from those of electromechanical equipment.

Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls describes some important differences between solid state equipment and hard-wired electromechanical devices.

Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will CREVIS be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, CREVIS cannot assume responsibility or liability for actual use based on the examples and diagrams.

Warning!



- ✓ **If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion**
- Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.
- Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction.
- Keep away from the strange metallic materials not related to the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.

Caution!


- ✓ **If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below Instructions.**
- Check the rated voltage and terminal array before wiring. Avoid the circumstances over 55°C of temperature. Avoid placing it directly in the sunlight.
- Avoid the place under circumstances over 85% of humidity.
- Do not place Modules near by the inflammable material. Else it may cause a fire.
- Do not permit any vibration approaching it directly.
- Go through module specification carefully, ensure inputs, output connections are made with the specifications. Use standard cables for wiring.
- Use Product under pollution degree 2 environment.

1.1. Safety Instruction

1.1.1. Symbols

<p>DANGER</p> 	<p>Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death property damage, or economic loss</p>
<p>IMPORTANT</p>	<p>Identifies information that is critical for successful application and understanding of the product</p>
<p>ATTENTION</p> 	<p>Identifies information about practices or circumstances that can lead to personal injury, property damage, or economic loss. Attentions help you to identify a hazard, avoid a hazard, and recognize the consequences</p>

1.1.2. Safety Notes

<p>DANGER</p> 	<p>The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. FnBUS Pin.</p>
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1.1.3. Certification

c-UL-us UL Listed Industrial Control Equipment, certified for U.S. and Canada

See UL File E235505

DNV CERTIFICATE No. A-10666

CE Certificate

EN 61000-6-2; Industrial Immunity

EN 61000-6-4; Industrial Emissions

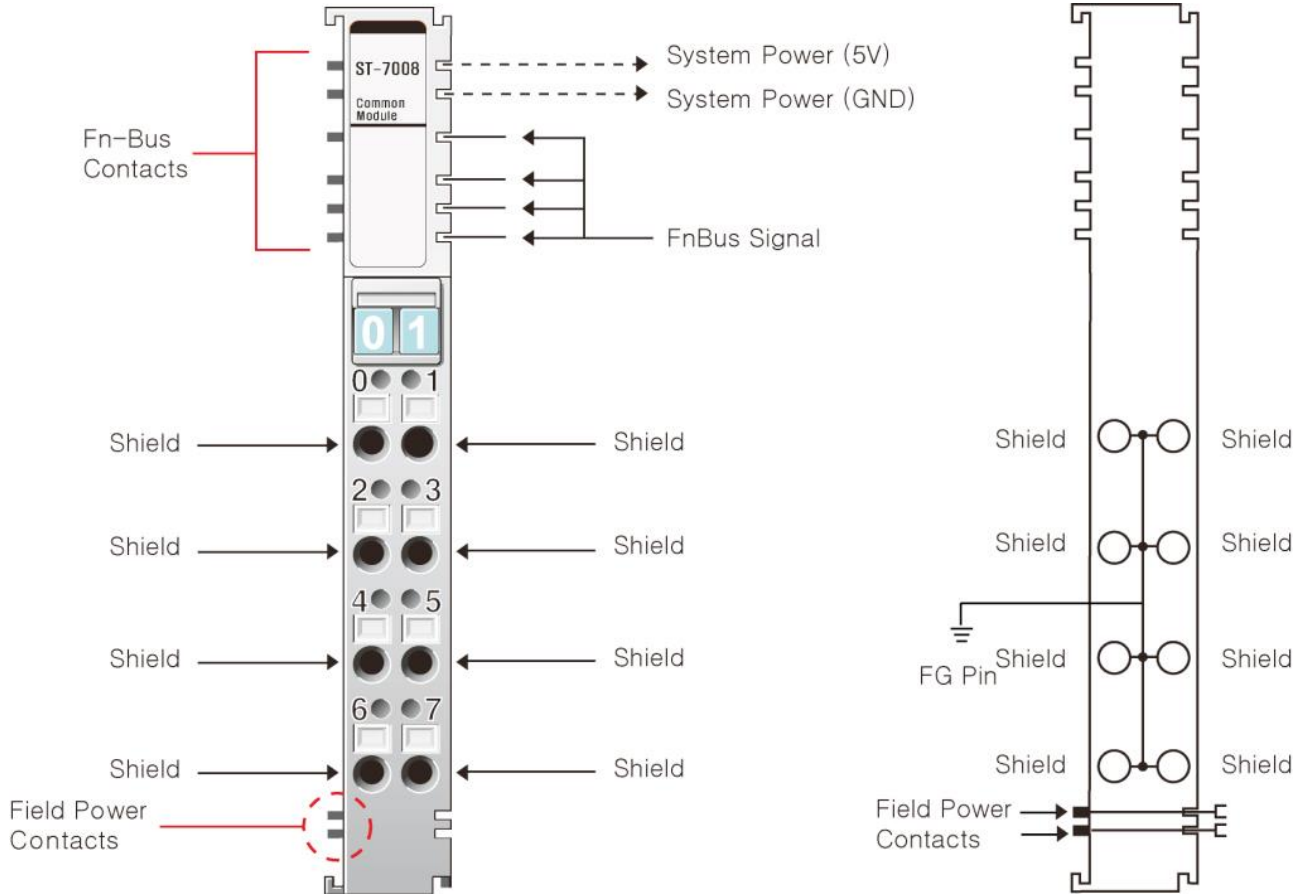
2. POWER MODULE LIST

ST-Number	Description	ID(hex)	Production Status
ST-7008	8 Channels, Shield		Active
ST-7108	8 Channels, Common, 0Vdc		Active
ST-7111	1 Channel, Expansion Power, Input 24Vdc, Output 1.0A/5Vdc		Active
ST-7118	8 Channels, Common, 24Vdc		Active
ST-7188	8 Channels, Common, 0Vdc and 24Vdc		Active
ST-7191	1 Channel, Field Distributor, 24Vdc		Active
ST-7241	1 Channel, Field Distributor, 5Vdc~48Vdc, 110Vac~220Vac		Active
ST-7408	8 Channels, Shield, ID Type	02 00 E4	Active
ST-7508	8 Channels, Common, 0Vdc, ID Type	02 00 E5	Active
ST-7511	1 Channel, Expansion Power, Input 24Vdc, Output 1.0A/5Vdc, ID Type	02 00 E0	Active
ST-7518	8 Channels, Common, 24Vdc, ID Type	02 00 E6	Active
ST-7588	8 Channels, Common, 0Vdc and 24Vdc, ID Type	02 00 E7	Active
ST-7641	1 Channel, Field Distributor, 5Vdc~48Vdc, 110Vac~220Vac, ID Type	02 00 E2	Active

3. Specification

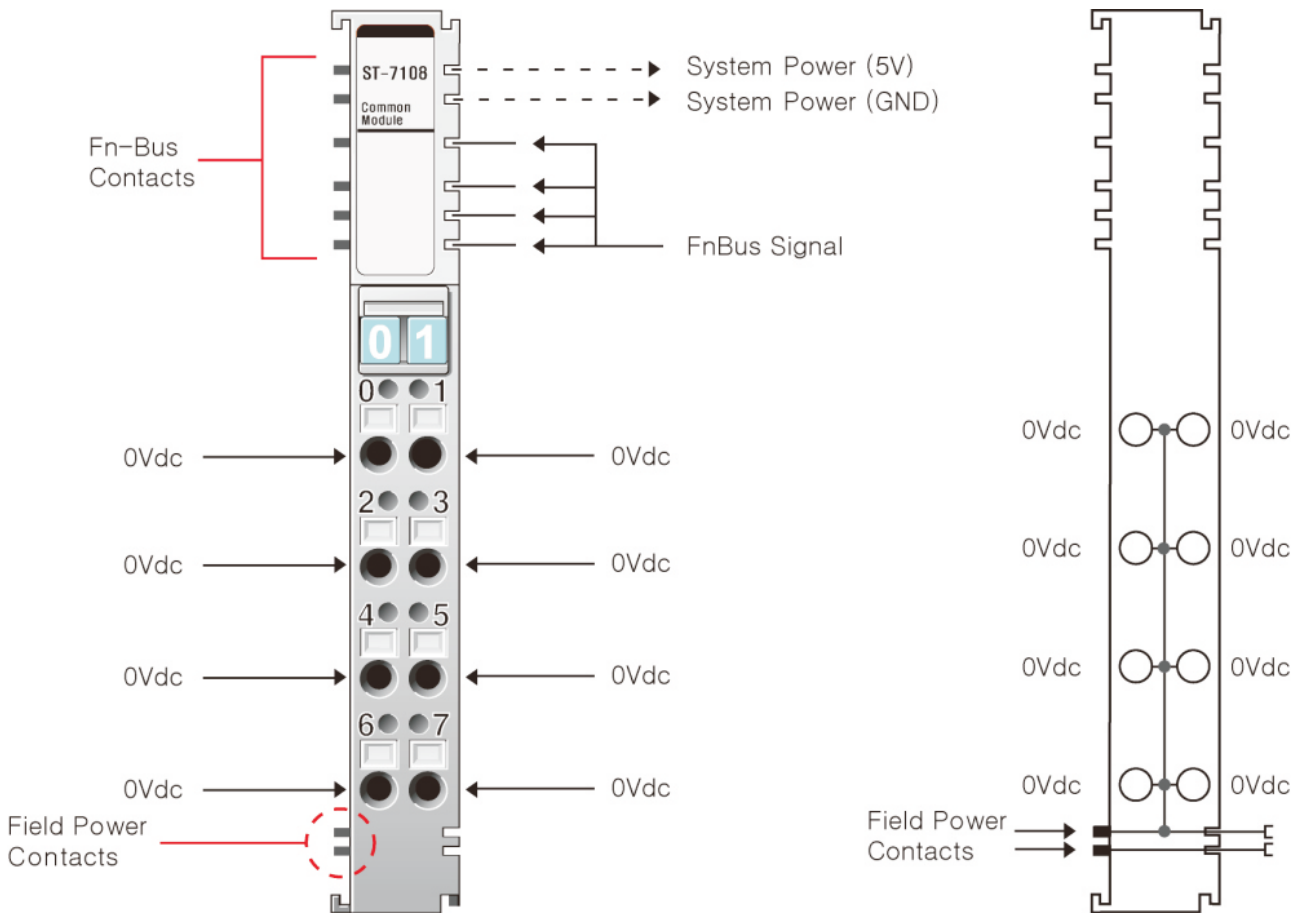
3.1. The Interface and data

3.1.1. ST-7008



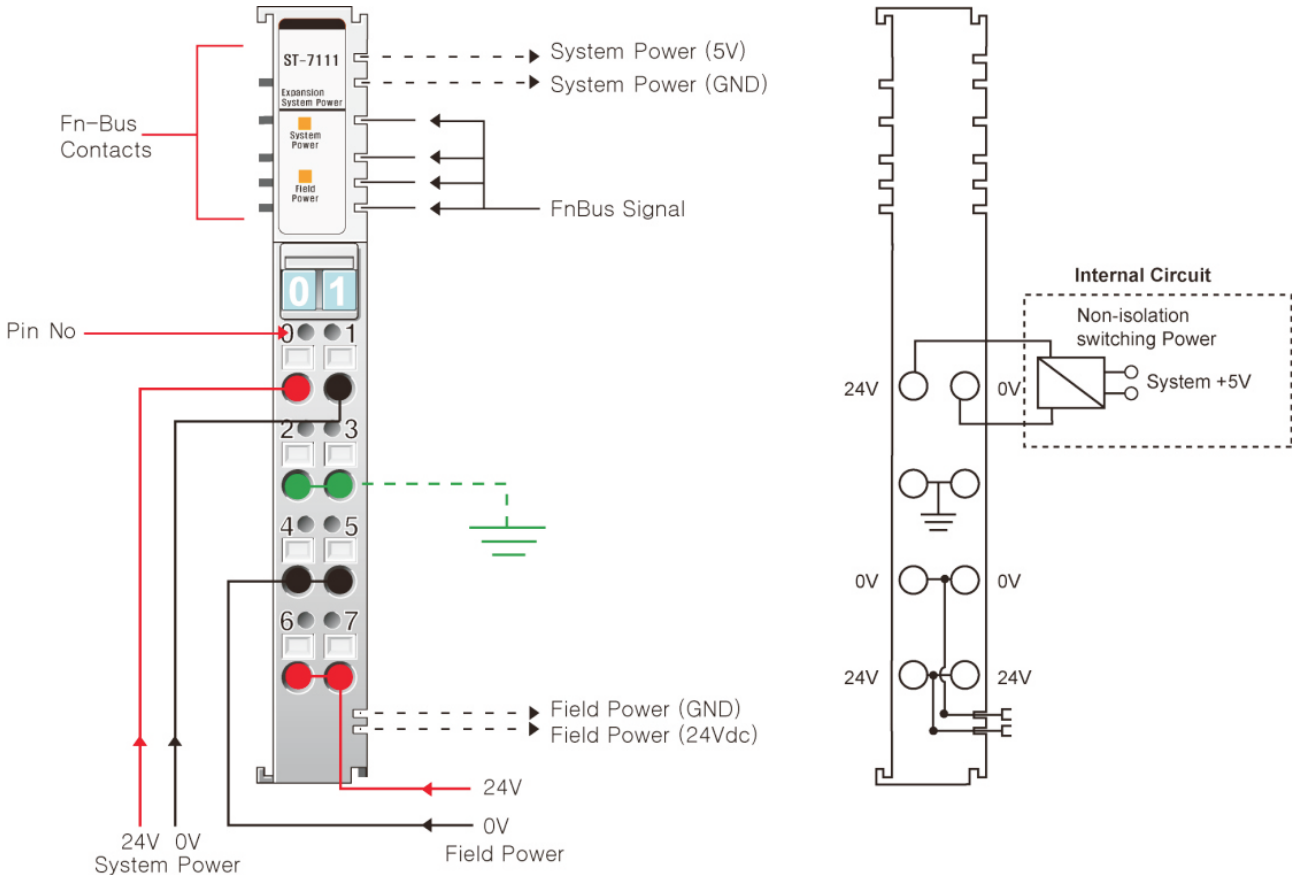
Pin No.	Description	Pin No.	Description
0	Shield	1	Shield
2	Shield	3	Shield
4	Shield	5	Shield
6	Shield	7	Shield

3.1.2. ST-7108



Pin No.	Description	Pin No.	Description
0	0Vdc	1	0Vdc
2	0Vdc	3	0Vdc
4	0Vdc	5	0Vdc
6	0Vdc	7	0Vdc

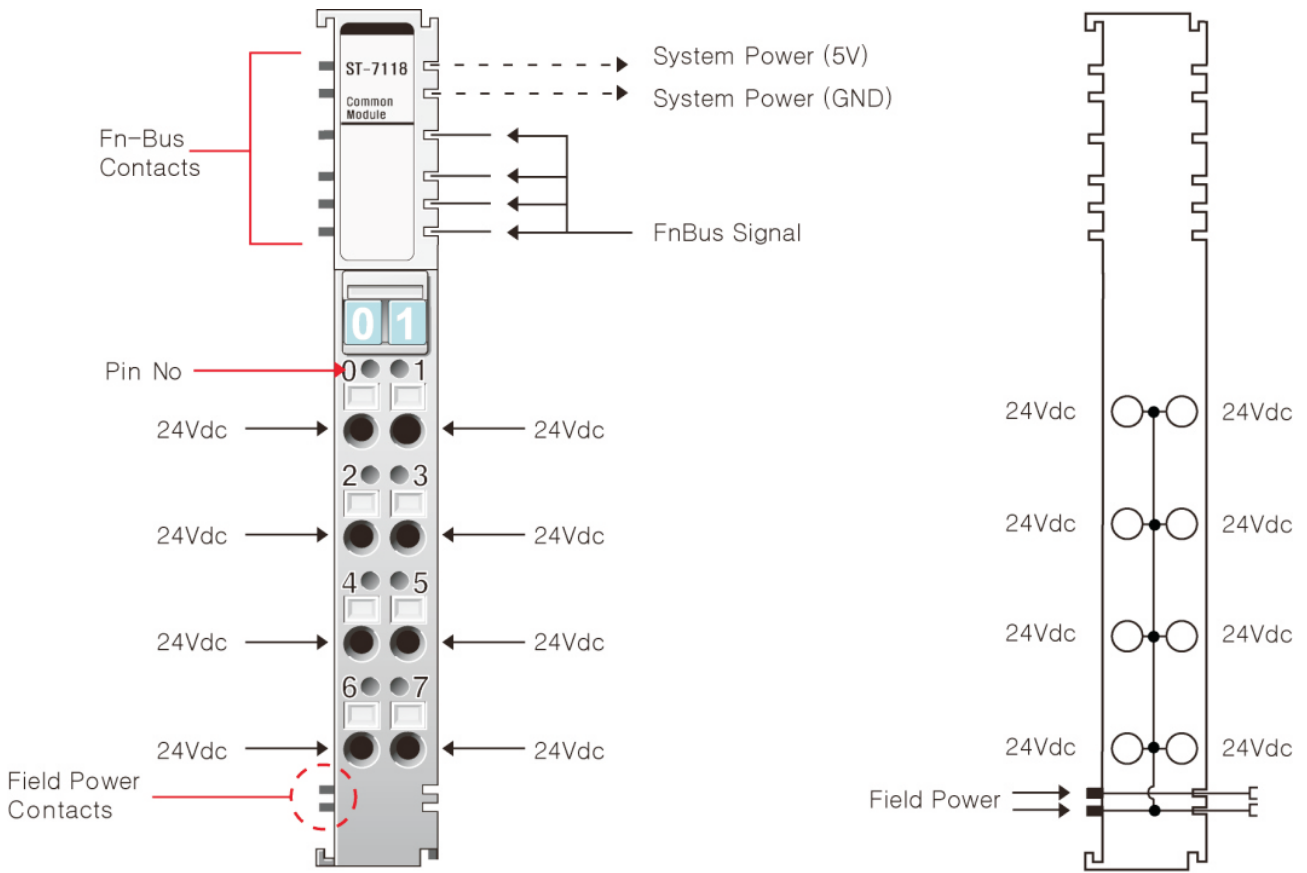
3.1.3. ST-7111



Pin No.	Description	Pin No.	Description
0	System Power (+24Vdc)	1	System Power (0V)
2	Field Ground	3	Field Ground
4	Field Power (0V)	5	Field Power (0V)
6	Field Power (+24V)	7	Field Power (+24V)

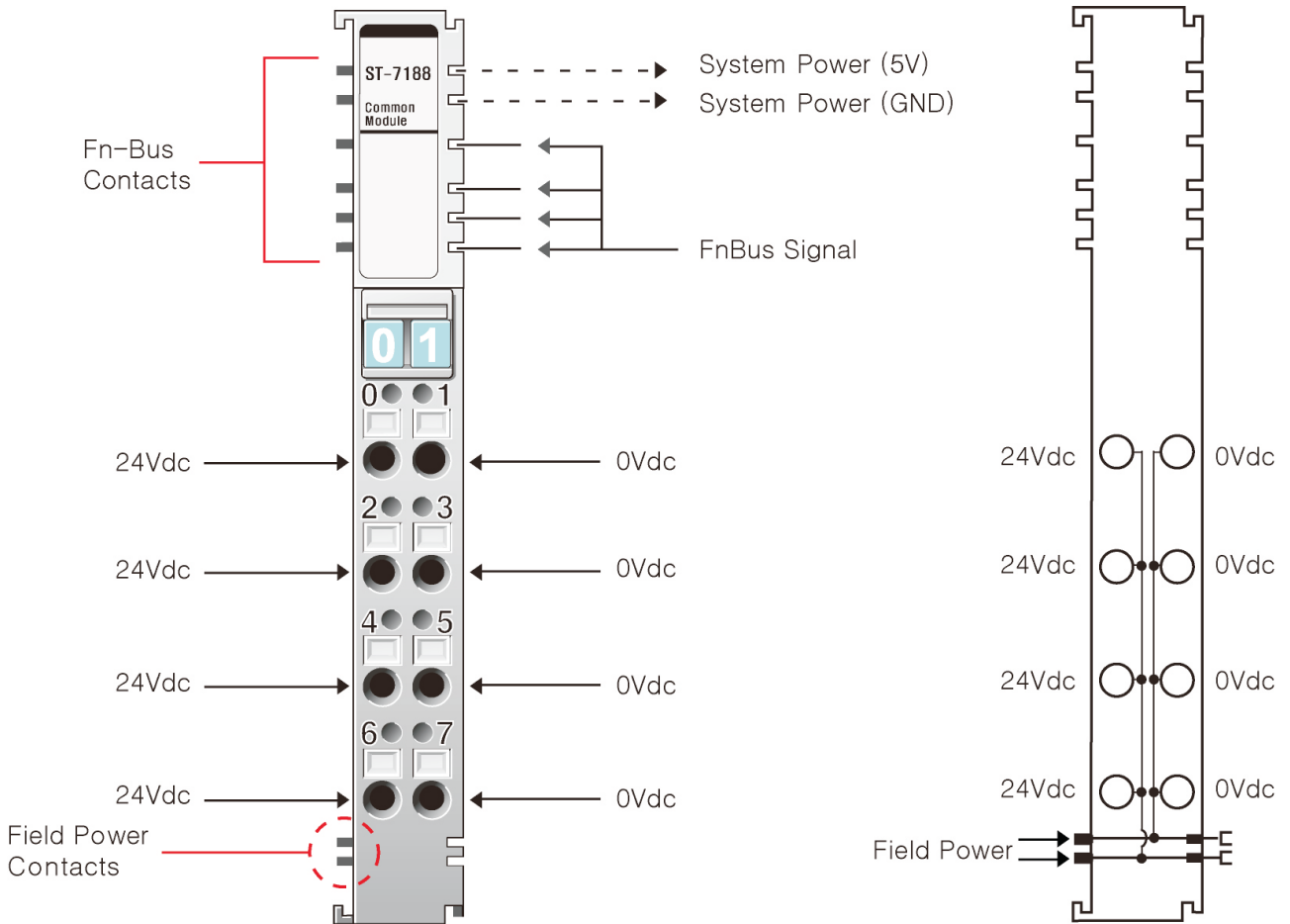
Power	LED Status	Indicates
OFF	OFF	Inactive (Normal)
ON	GREEN	Active (Normal)

3.1.4. ST-7118



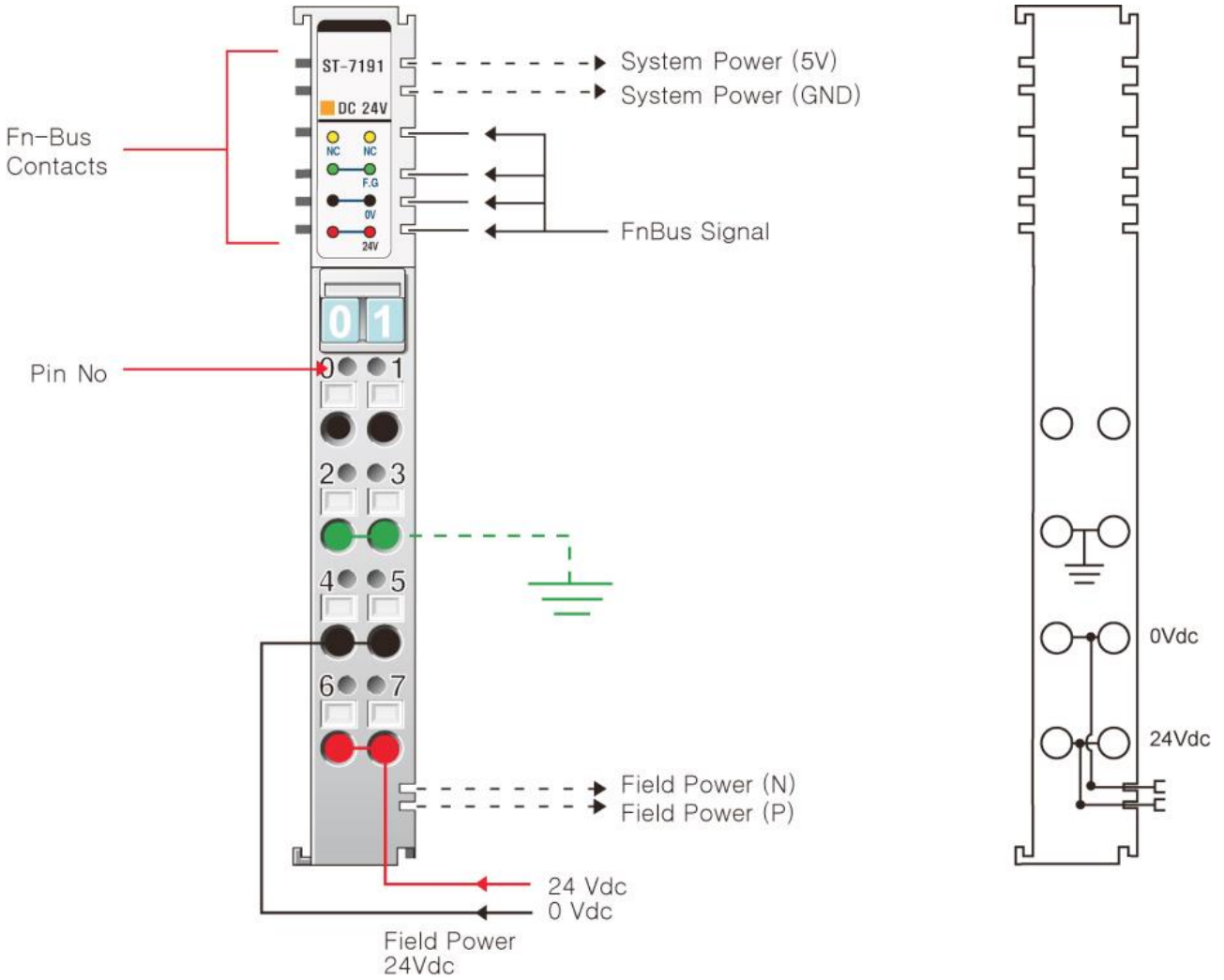
Pin No.	Description	Pin No.	Description
0	24Vdc	1	24Vdc
2	24Vdc	3	24Vdc
4	24Vdc	5	24Vdc
6	24Vdc	7	24Vdc

3.1.5. ST-7188



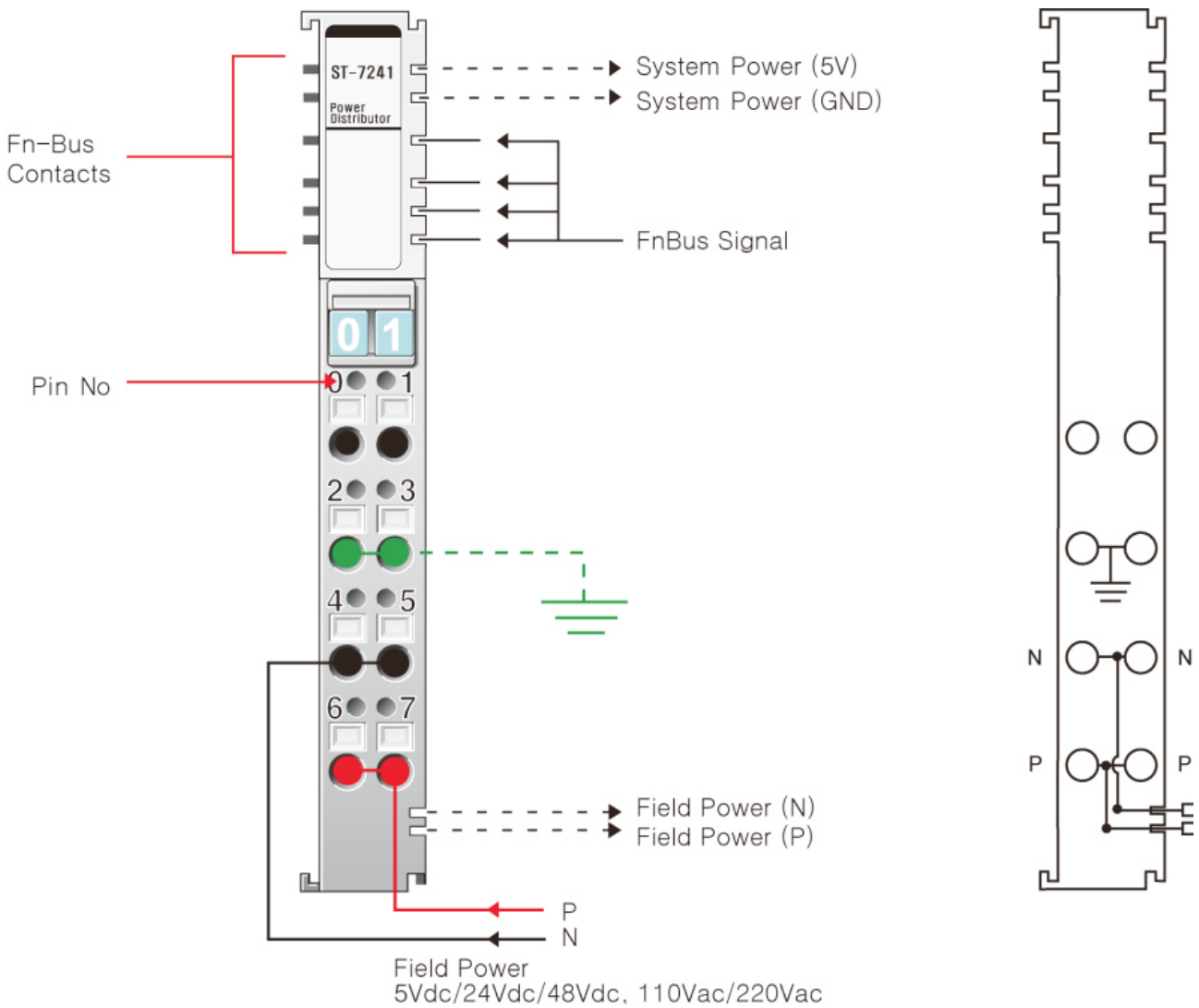
Pin No.	Description	Pin No.	Description
0	24Vdc	1	0Vdc
2	24Vdc	3	0Vdc
4	24Vdc	5	0Vdc
6	24Vdc	7	0Vdc

3.1.6. ST-7191



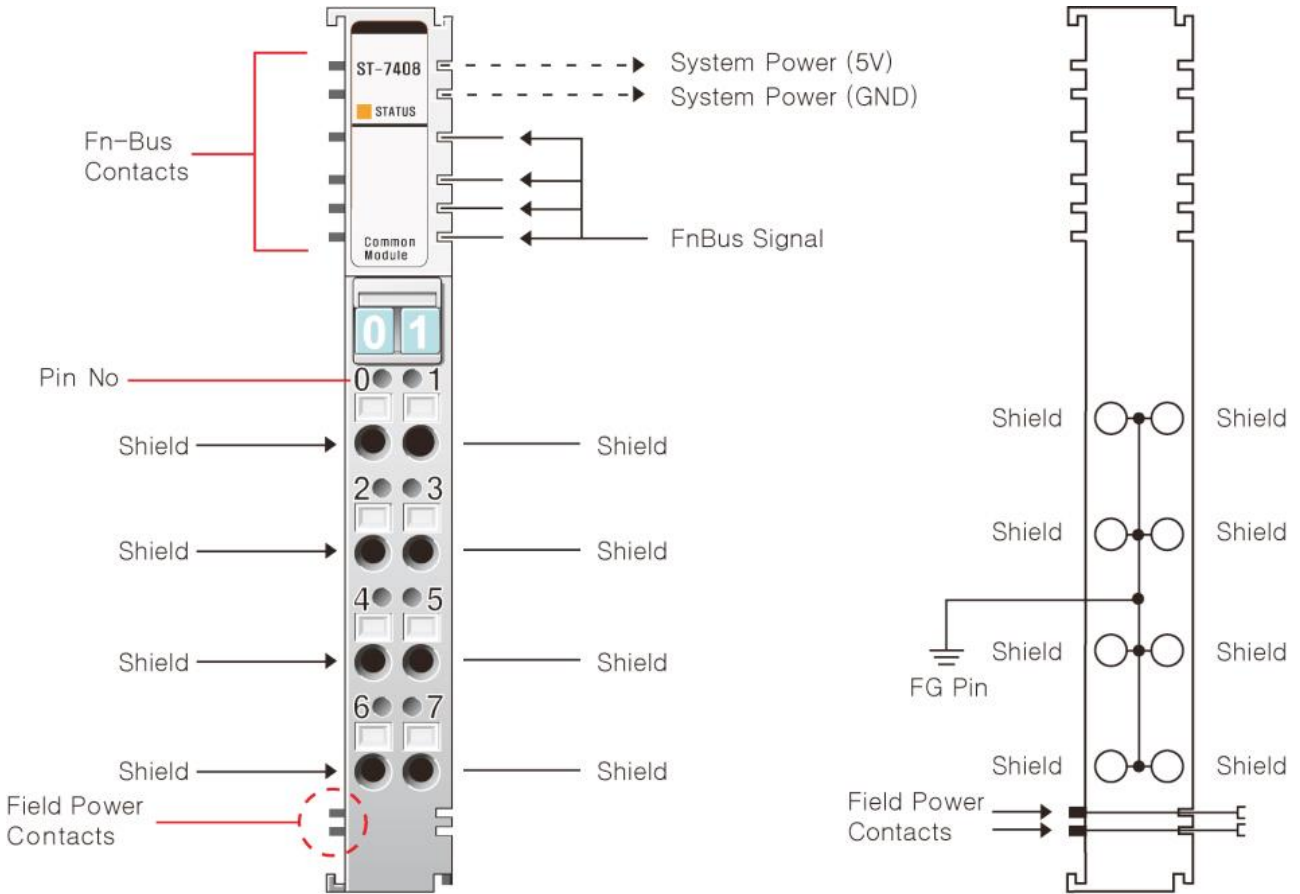
Pin No.	Description	Pin No.	Description
0	No Connection	1	No Connection
2	Field Ground	3	Field Ground
4	Field Power (N)	5	Field Power (N)
6	Field Power (P)	7	Field Power (P)

3.1.7. ST-7241



Pin No.	Description	Pin No.	Description
0	No Connection	1	No Connection
2	Field Ground	3	Field Ground
4	Field Power Arbitrary (N)	5	Field Power Arbitrary (N)
6	Field Power Arbitrary (P)	7	Field Power Arbitrary (P)

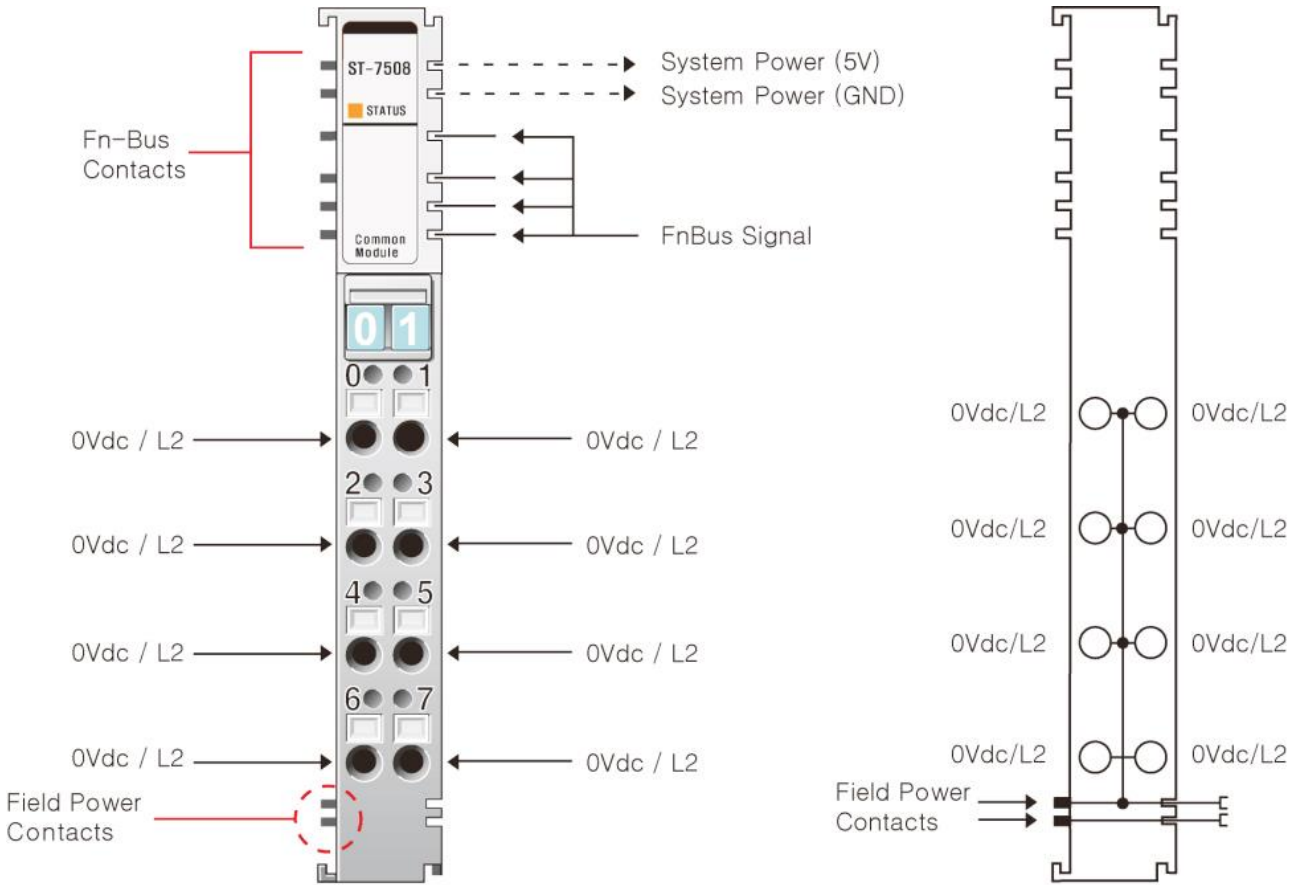
3.1.8. ST-7408



Pin No.	Description	Pin No.	Description
0	Shield	1	Shield
2	Shield	3	Shield
4	Shield	5	Shield
6	Shield	7	Shield

Status	STATUS LED is	Indicates
Not Power No Initialized	OFF	Device has no expansion Module or May Not is power. The Parameter is not initialized yet
FnBus Connection	Green	FnBus Normal Operation
FnBus Ready	Flashing Green	FnBus Ready
FnBus Fault	Flashing Red	FnBus Failed Communication
Device Fault	Red	Device Fault

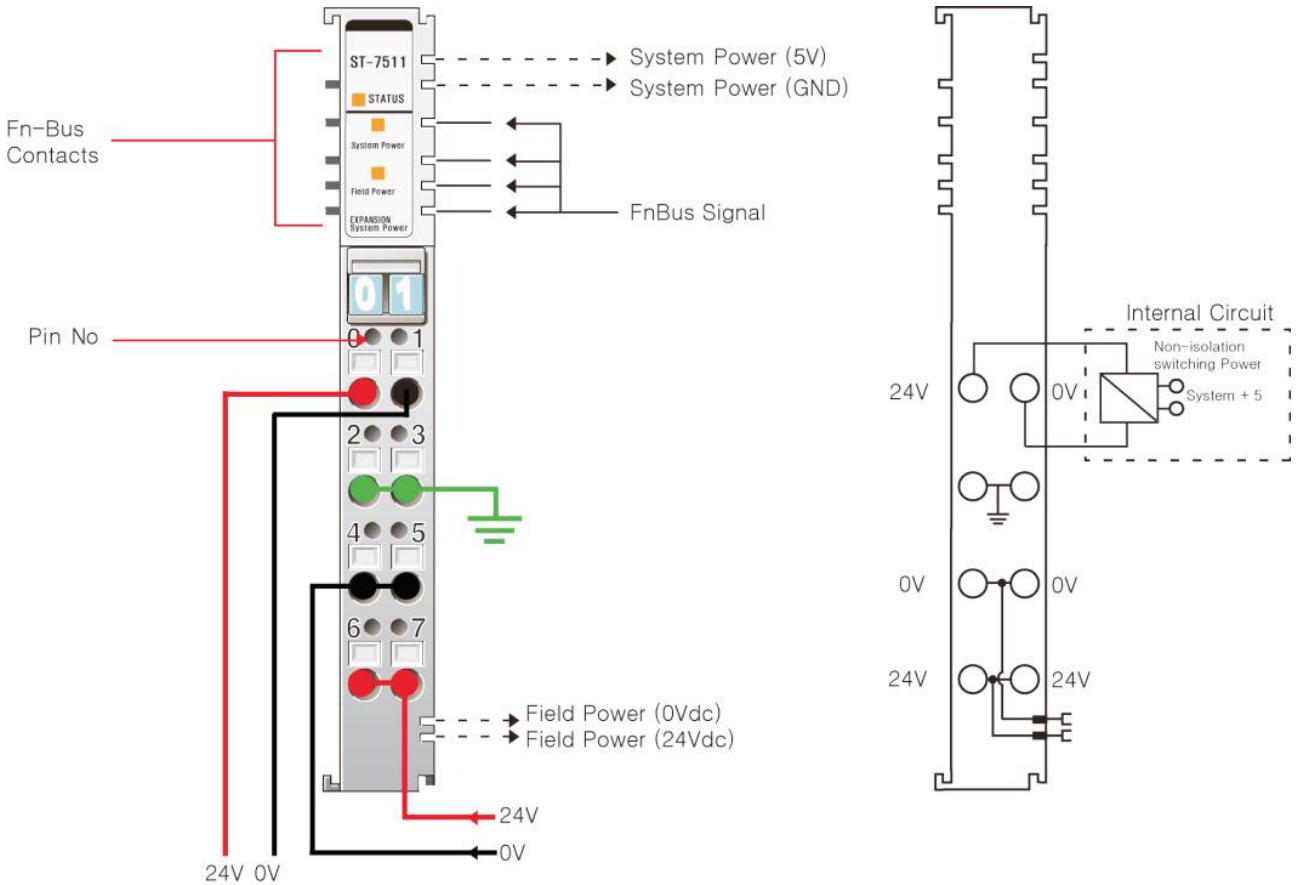
3.1.9. ST-7508



Pin No.	Description	Pin No.	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

Status	STATUS LED is	Indicates
Not Power No Initialized	OFF	Device has no expansion Module or May Not is power. The Parameter is not initialized yet
FnBus Connection	Green	FnBus Normal Operation
FnBus Ready	Flashing Green	FnBus Ready
FnBus Fault	Flashing Red	FnBus Failed Communication
Device Fault	Red	Device Fault

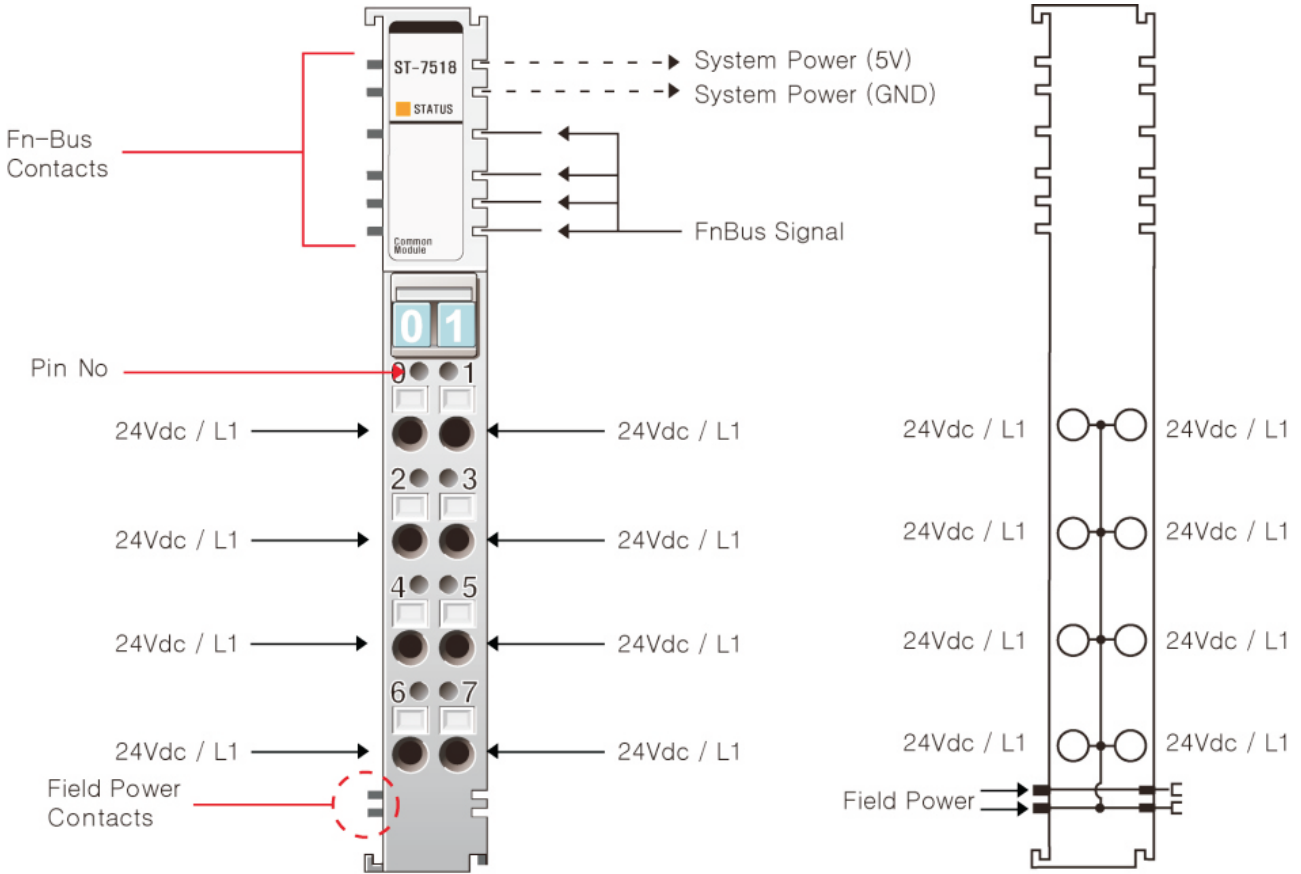
3.1.10. ST-7511



Pin No.	Description	Pin No.	Description
0	System Power (+24Vdc)	1	System Power (0V)
2	Field Ground	3	Field Ground
4	Field Ground (0V)	5	Field Ground (0V)
6	Field Ground (+24Vdc)	7	Field Ground (+24Vdc)

Status	STATUS LED is	Indicates
Not Power No Initialized	OFF	Device has no expansion Module or May Not is power. The Parameter is not initialized yet
FnBus Connection	Green	FnBus Normal Operation
FnBus Ready	Flashing Green	FnBus Ready
FnBus Fault	Flashing Red	FnBus Failed Communication
Device Fault	Red	Device Fault

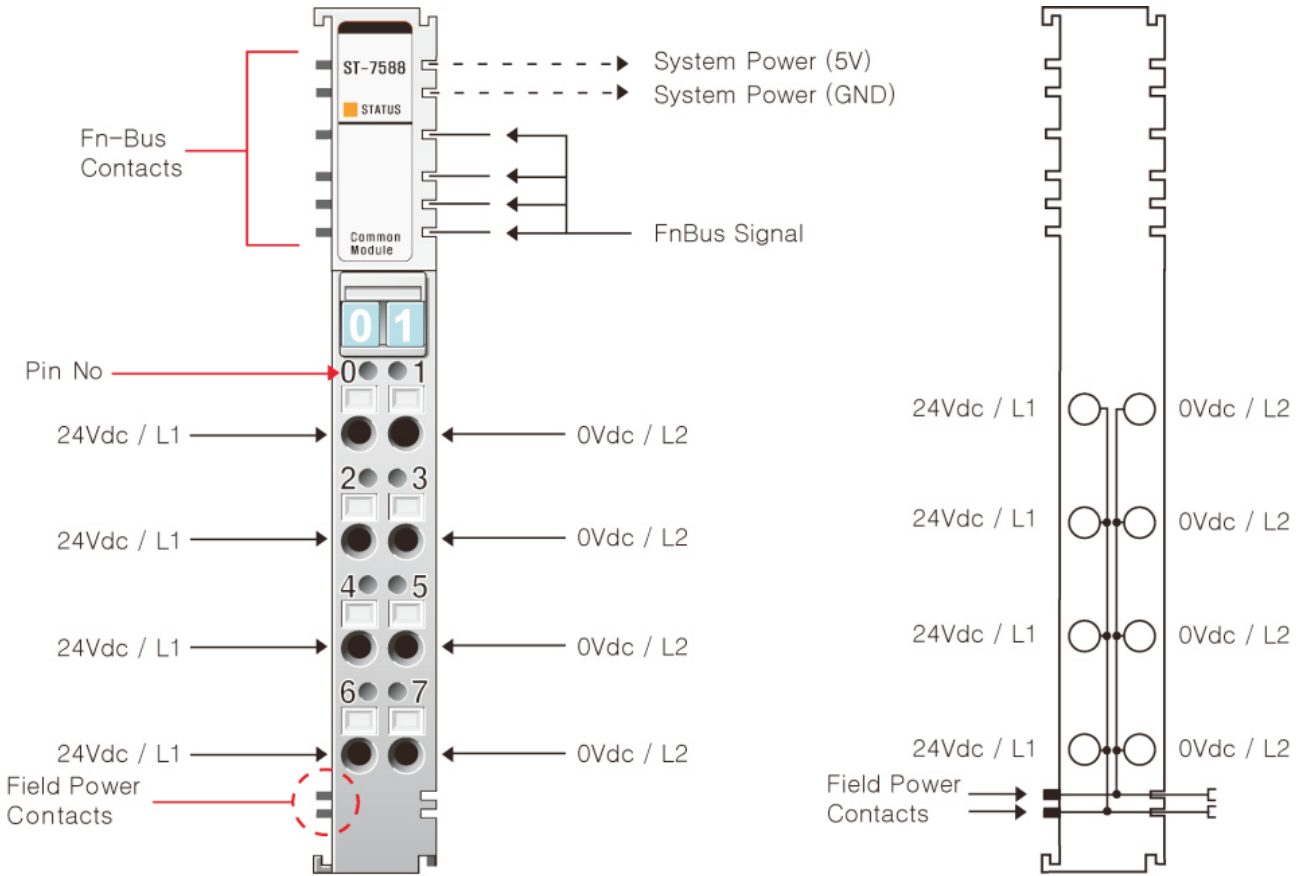
3.1.11. ST-7518



Pin No.	Description	Pin No.	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

Status	STATUS LED is	Indicates
Not Power No Initialized	OFF	Device has no expansion Module or May Not is power. The Parameter is not initialized yet
FnBus Connection	Green	FnBus Normal Operation
FnBus Ready	Flashing Green	FnBus Ready
FnBus Fault	Flashing Red	FnBus Failed Communication
Device Fault	Red	Device Fault

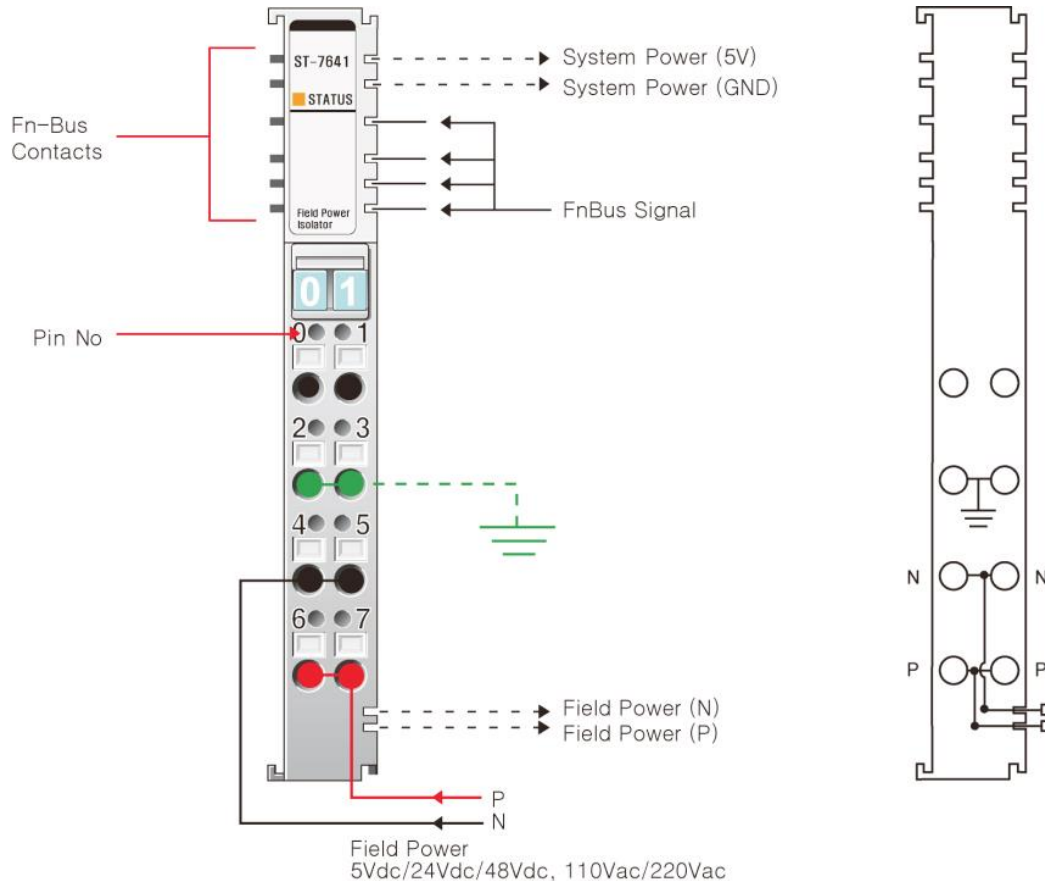
3.1.12. ST-7588



Pin No.	Description	Pin No.	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

Status	STATUS LED is	Indicates
Not Power No Initialized	OFF	Device has no expansion Module or May Not is power. The Parameter is not initialized yet
FnBus Connection	Green	FnBus Normal Operation
FnBus Ready	Flashing Green	FnBus Ready
FnBus Fault	Flashing Red	FnBus Failed Communication
Device Fault	Red	Device Fault

3.1.13. ST-7641



Pin No.	Description	Pin No.	Description
0	No Connector	1	No Connector
2	Field Ground	3	Field Ground
4	Field Power Arbitrary (N)	5	Field Power Arbitrary (N)
6	Field Power Arbitrary (P)	7	Field Power Arbitrary (P)

Status	STATUS LED is	Indicates
Not Power No Initialized	OFF	Device has no expansion Module or May Not is power. The Parameter is not initialized yet
FnBus Connection	Green	FnBus Normal Operation
FnBus Ready	Flashing Green	FnBus Ready
FnBus Fault	Flashing Red	FnBus Failed Communication
Device Fault	Red	Device Fault

3.2. Environment Specification

Environmental Specifications	
Operating Temperature	-20 to 55 °C
Non-Operating Temperature	-40 °C to 85 °C
Relative Humidity	5%~90% non-condensing
Operating Altitude	2000m
Mounting	DIN rail
General Specifications	
Shock Operating	10g
Shock Non-Operating	30g
Vibration/Shock resistance	Displacement : 0.012Inch p-p from 10~57Hz Acceleration : 2G's from 57~500Hz Sweep Rate : 1 octave Per Minute Axes to test : x, y, z Frequency Sweeps Per Axis : 10
EMC resistance burst/ESD	Confirms to EN-61000-6-2
EMI	Confirms to EN-61000-6-4
Installation Pos. /Protect. Class	Variable / IP20
Product Certification	UL / cUL, CE
Network Conformance	NA-9111 : ODVA Conformance Test Completion NA-9122 : PTO Conformance Test Completion NA-9131 : CLPA Conformance Test Completion
Isolation	DC Module (Included Analog Module) : Terminal Block to F.G 500Vac/1min AC Module : Terminal Block to F.G 1500Vac/1min Relay Module : Terminal Block to F.G 2500Vac/1min

3.3. Specification

3.3.1. ST-7008

Items	Specification
Input Specification	
Field Power Voltage	Shield signal
Contacts Current	Max.10A
Indicators	Non Indicate
Fn-Bus Power Contactor	Yes
Operating Temperature	-20 to +60 °C
Storage Temperature	-45 to +85 °C
Output Specification	
Power Dissipation	Expansion Power Distributor
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	65g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.2. ST-7108

Items	Specification
Input Specification	
Field Power Voltage	0V
Contacts Current	Max.10A
Indicators	Non Indicate
Operating Temperature	-20 to +60 °C
Storage Temperature	-45 to +85 °C
Output Specification	
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	65g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.3. ST-7111

Items	Specification
Input Specification	
System Input Voltage range	11Vdc to 28.8Vdc
System Power Input Voltage	Normal 24Vdc
Field Power Input Voltage	Normal 24Vdc ($\pm 20\%$)
Fn-Bus Output Voltage	Max. 5Vdc, 1A
Field Power Contacts Current	Max. 10A
Indicators	2 Green Input state
Operating Temperature	-20 to +60 $^{\circ}$ C
Storage Temperature	-45 to +85 $^{\circ}$ C
Output Specification	
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.4. ST-7118

Items	Specification
Input Specification	
Field Power Voltage	24Vdc
Contacts Current	Max.10A
Indicators	non Indicate
Operating Temperature	-20 to +60 $^{\circ}$ C
Storage Temperature	-45 to +85 $^{\circ}$ C
Output Specification	
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	65g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.5. ST-7188

Items	Specification
Input Specification	
Field Power Voltage	24Vdc, 0Vdc
Contacts Current	Max.10A
Indicators	non Indicate
Fn-Bus Power Contactor	Yes
Operating Temperature	-20 to +60℃
Storage Temperature	-45 to +85℃
Output Specification	
Power Dissipation	Expansion Power Distributor
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	65g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.6. ST-7191

Items	Specification
Input Specification	
Field Power Voltage	24Vdc
Contacts Current	Max.10A
Indicators	1 Green Power State
Led Indicator Threshold Voltage	16 ~ 20V
Protection	Reverse Voltage
Operating Temperature	-20 to +60℃
Storage Temperature	-45 to +85℃
Output Specification	
Isolation	Field Power to System Power : Photocoupler Isolation
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	70g
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.7. ST-7241

Items	Specification
Input Specification	
Field Power Voltage	Arbitrary
Field Power Contacts Current	Max.10A
Indicators	Non Indicate
Operating Temperature	-20 to +60℃
Storage Temperature	-45 to +85℃
Output Specification	
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.8. ST-7408

Items	Specification
Input Specification	
Field Power Voltage	Shield
Indicators	1 Green/Red LED, Module Status
Field power Contacts Current	Max. 10A
Fn-Bus Power Contactor	Yes
General Specification	
System Power Dissipation	Max. 18mA @5Vdc
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.9. ST-7508

Items	Specification
Input Specification	
Field Power Voltage	0Vdc
Indicators	1 Green/Red LED, Module Status
Field power Contacts Current	Max. 10A
Fn-Bus Power Contactor	Yes
General Specification	
System Power Dissipation	Max. 18mA @5Vdc
Wiring	I/O Cable Max. 2.0 mm ² (AWG 14)
Weight	65g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.10. ST-7511

Items	Specification
Input Specification	
System Input Voltage range	11 Vdc to 28.8Vdc
System Power Input Voltage	Normal 24Vdc
Indicators	1 Green/Red LED, Module Status / 2Green LED, Input Status
Field Power Input Voltage	Normal 24Vdc (±20%)
Field Power Contacts Current	Max. 10A
Fn-Bus Output Voltage	Max. 5Vdc, 1A
General Specification	
System Power Dissipation	Max. 14mA @ 24Vdc
Wiring	I/O Cable Max. 2.0 mm ² (AWG14)
Weight	70g MAX.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.11. ST-7518

Items	Specification
Input Specification	
Field Power Voltage	24Vdc
Indicators	1 Green/Red LED, Module Status
Field Power Contacts Current	Max. 10A
General Specification	
System Power Dissipation	Max. 18mA @ 5Vdc
Wiring	I/O Cable Max. 2.0 mm ² (AWG14)
Weight	64g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.12. ST-7588

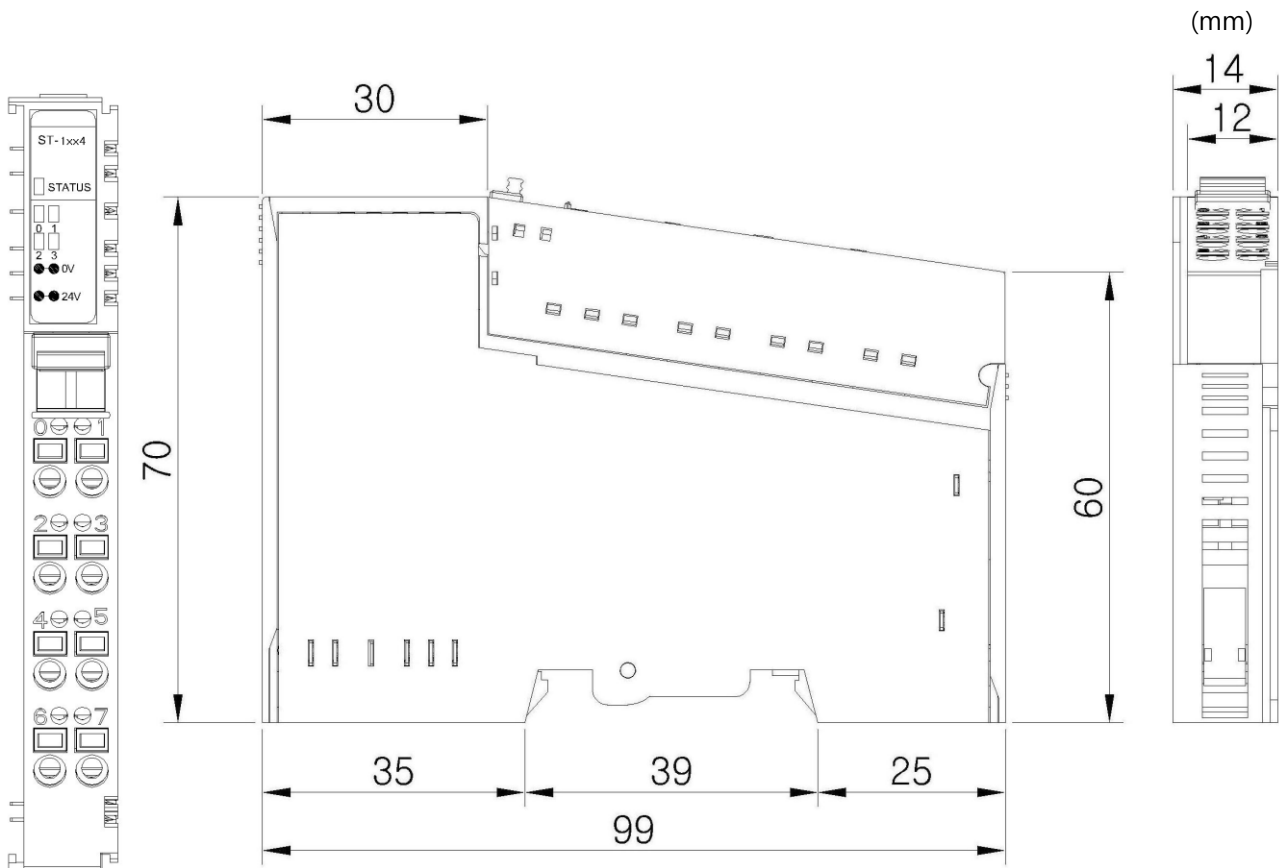
Items	Specification
Input Specification	
Field Power Voltage	24Vdc, 0Vdc
Indicators	1 Green/Red LED, Module Status
Field Power Contacts Current	Max. 10A
General Specification	
System Power Dissipation	Max. 18mA @ 5Vdc
Wiring	I/O Cable Max. 2.0 mm ² (AWG14)
Weight	65g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

3.3.13. ST-7641

Items	Specification
Input Specification	
Field Power Voltage	Arbitrary
Indicators	1 Green/Red LED, Module Status
Field Power Contacts Current	Max. 10A
General Specification	
System Power Dissipation	Max. 18mA @ 5Vdc
Wiring	I/O to Field Power: Non-Isolation
Weight	70g Max.
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification"(page : 22)

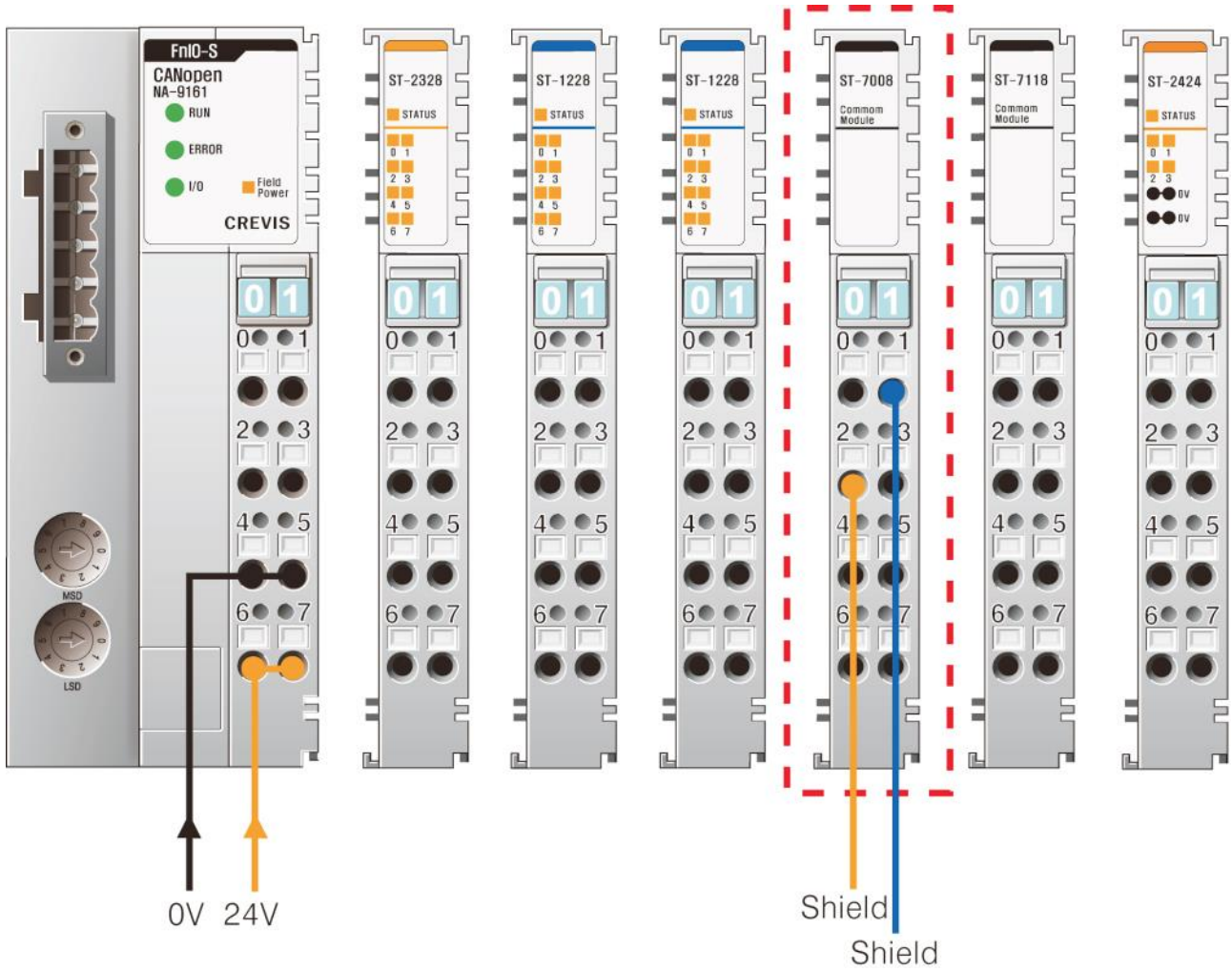
4. Dimension

4.1. ST-7xxx

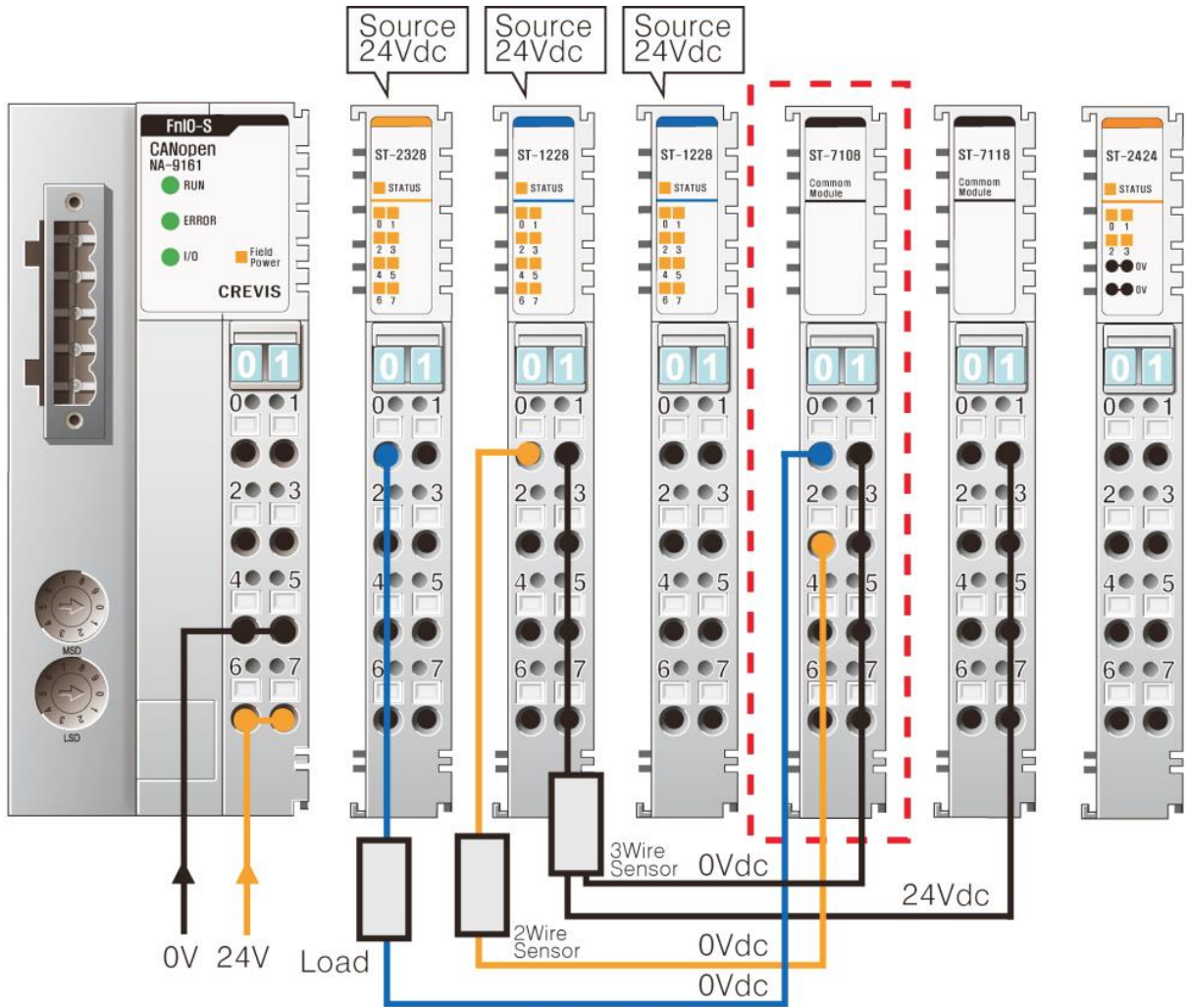


5. Example

5.1. ST-7008 provides Shield

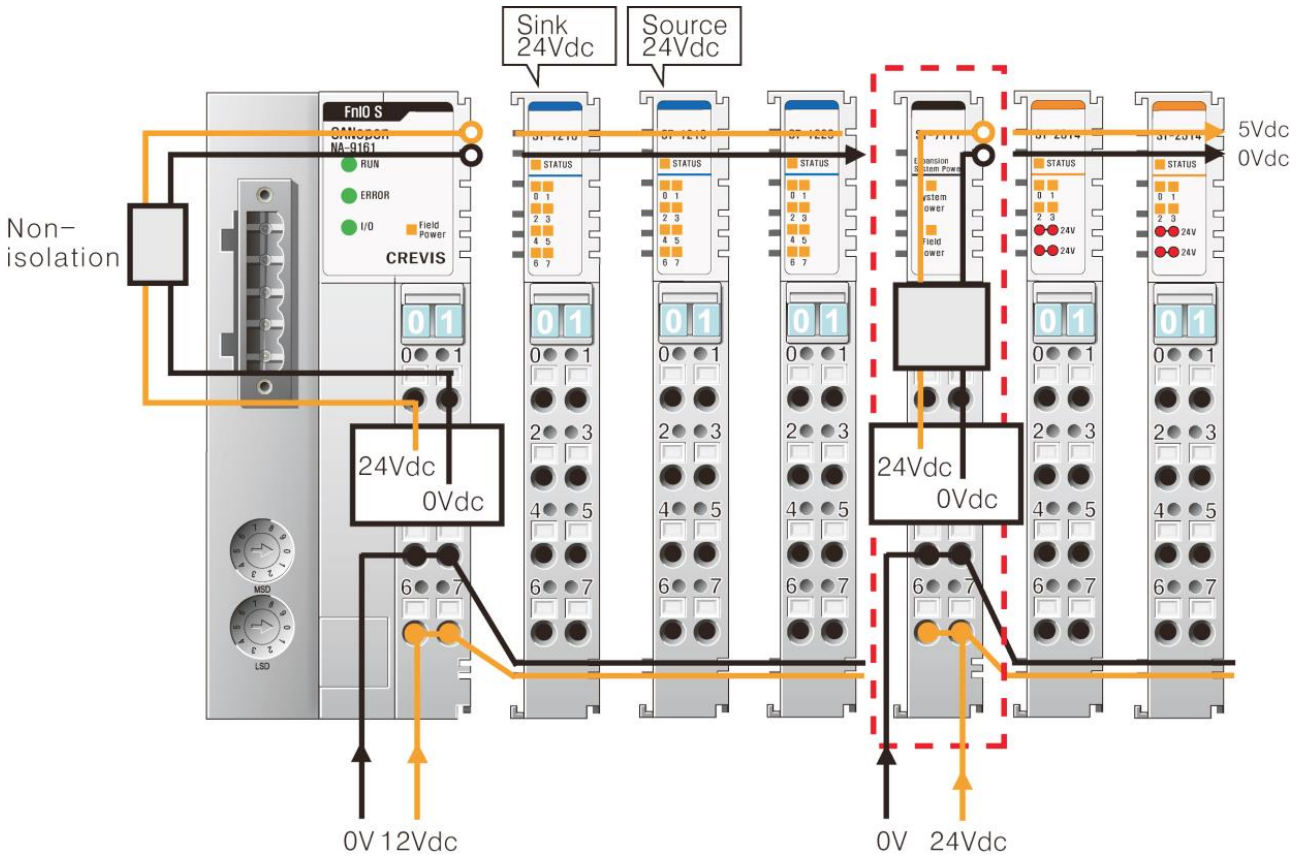


5.2. ST-7108 provides 0V



5.3. ST-7111

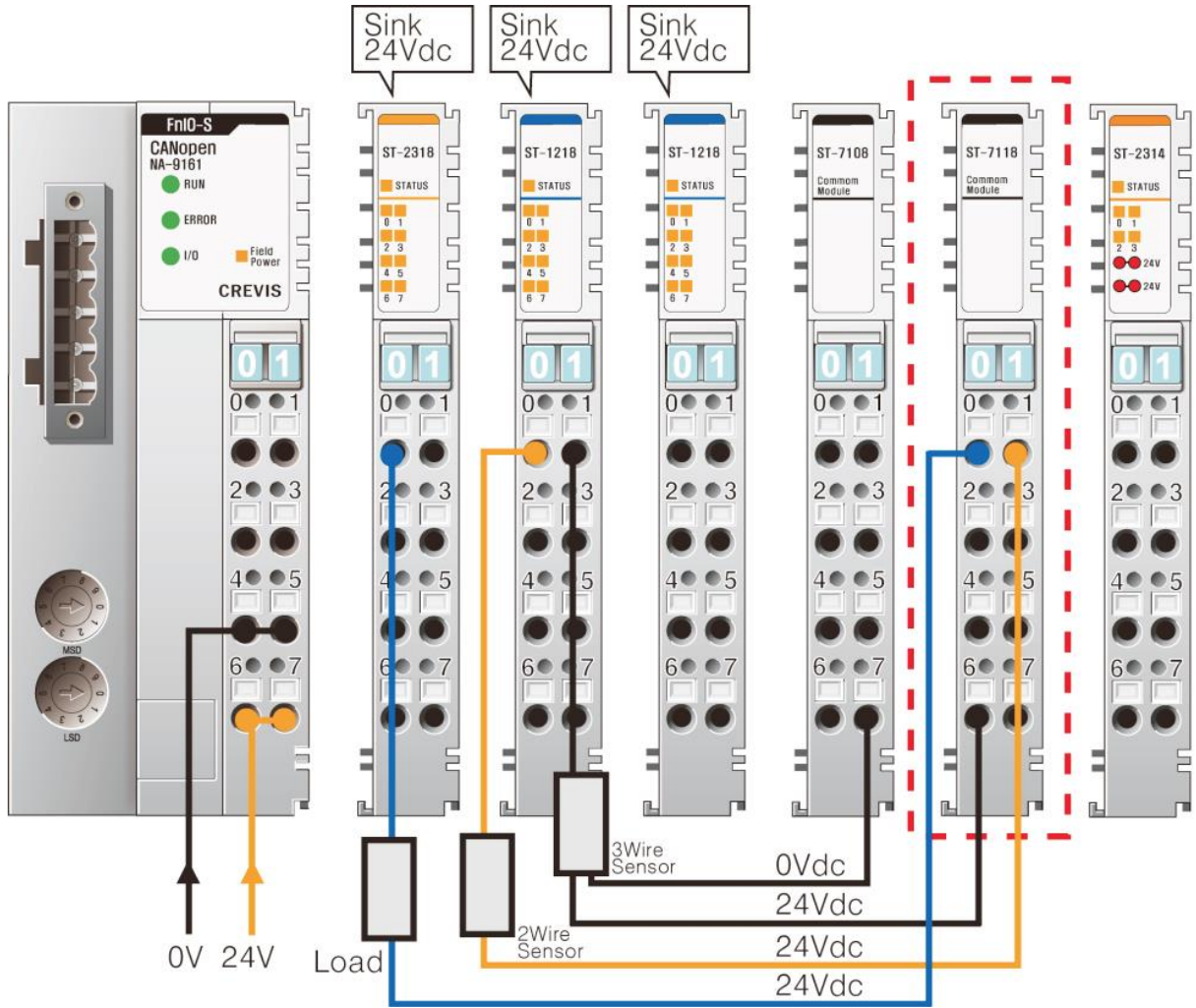
When you are using a FnIO setup that requires more than 1.5A for system power (+5v) or 10A of field power, you will need to add a ST-7111 expansion power module to ensure that enough power will be available to all the ST Modules.



5.4. ST-7118

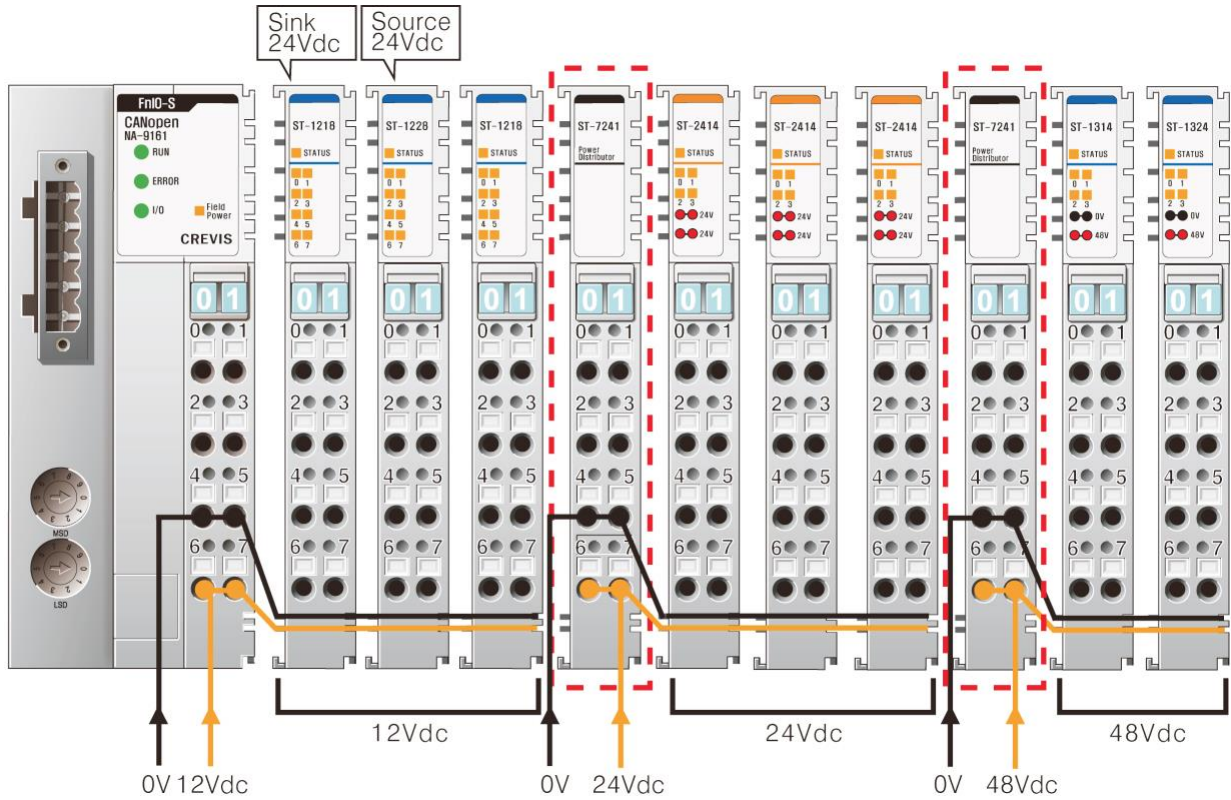
If you have a setup where an external device near the FnIO module needs 24Vdc of power, you can simply use the ST-7118 as a common module.

The ST-7118 provides 24Vdc of power



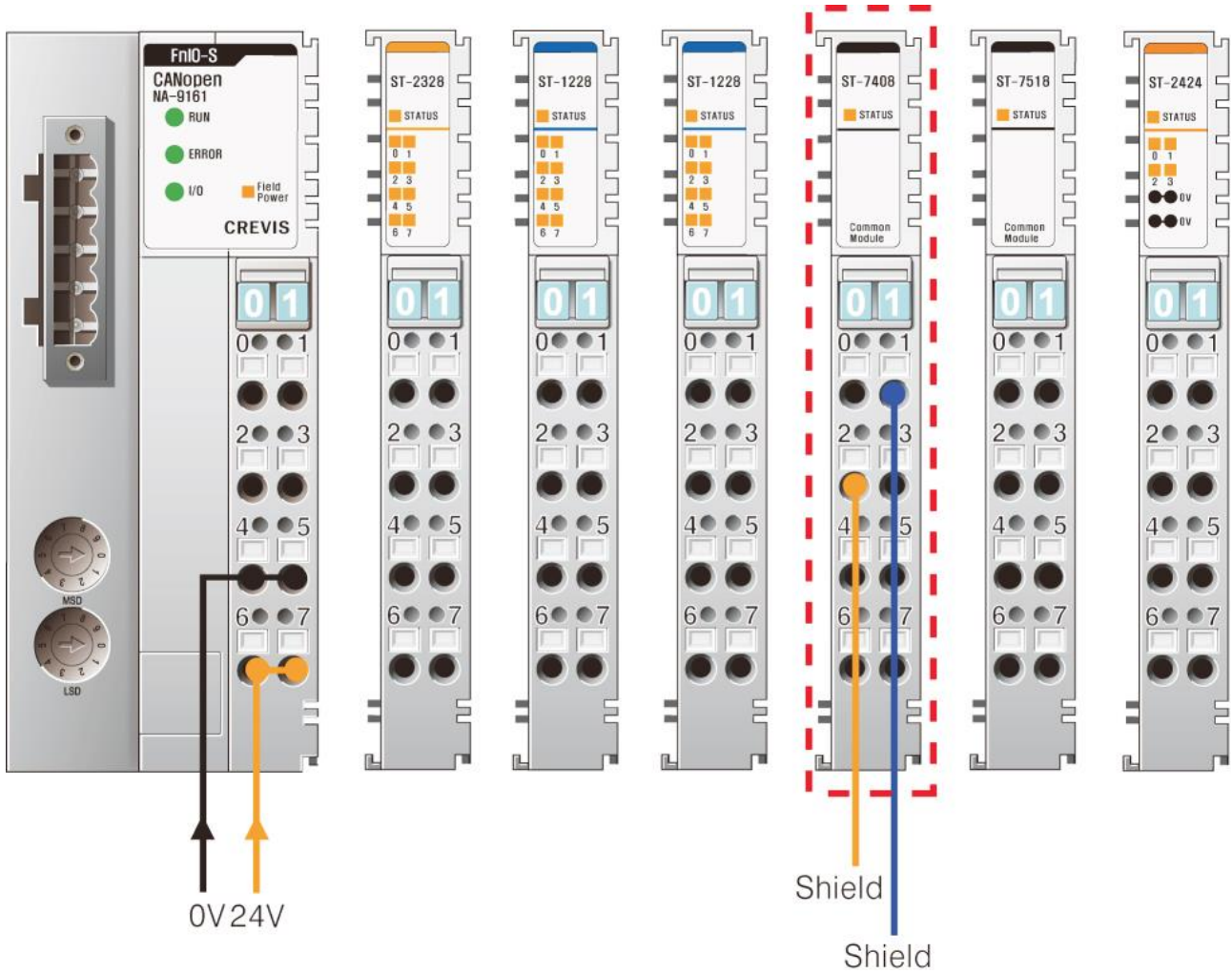
5.5. ST-7241

When you have an FnIO setup and need to use with different Field Power Voltage, you can use the ST-7241 to change the distributed Voltage from 5Vdc/12Vdc/24Vdc /48Vdc, or from 110Vac/220Vac as below;



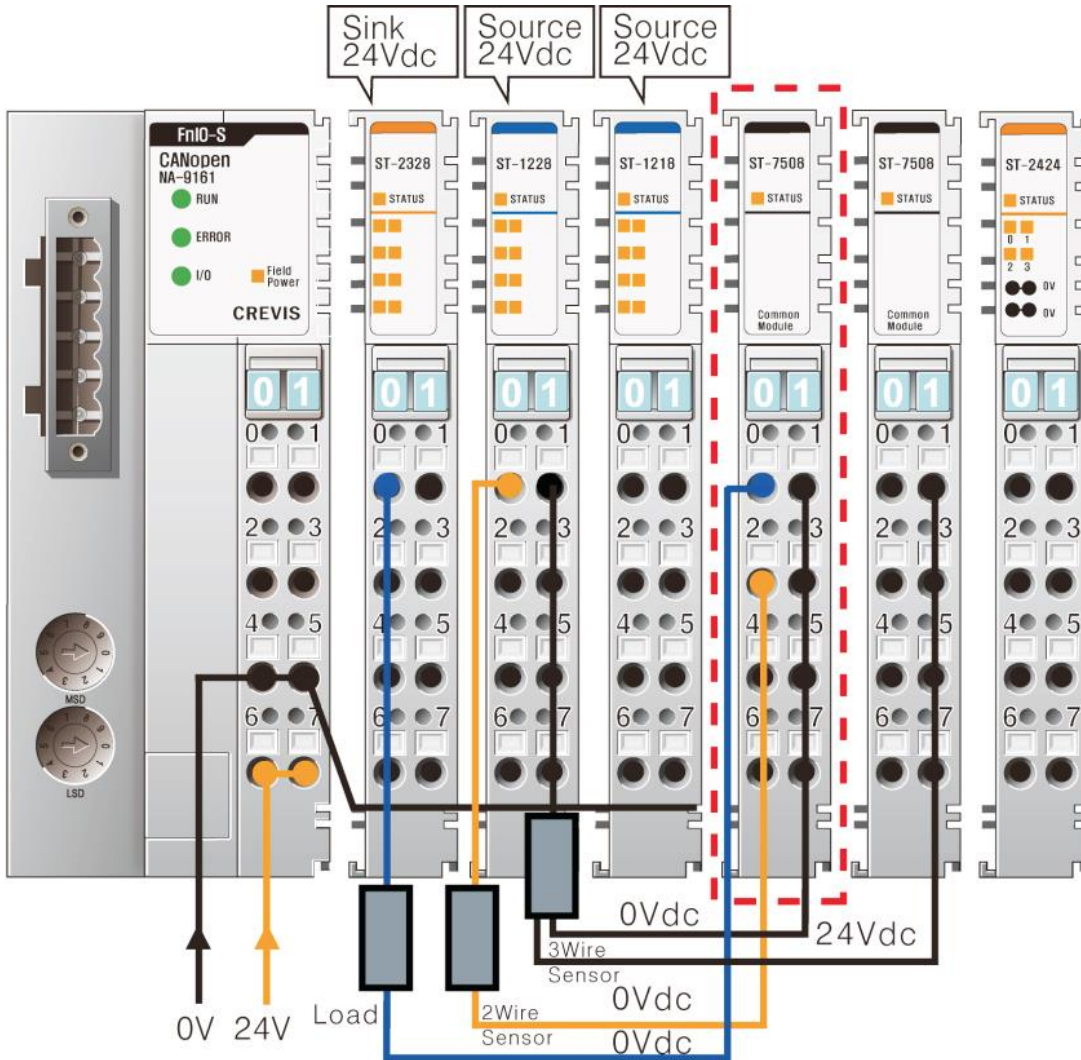
5.6. ST-7408

The ST-7408 Provides Shield



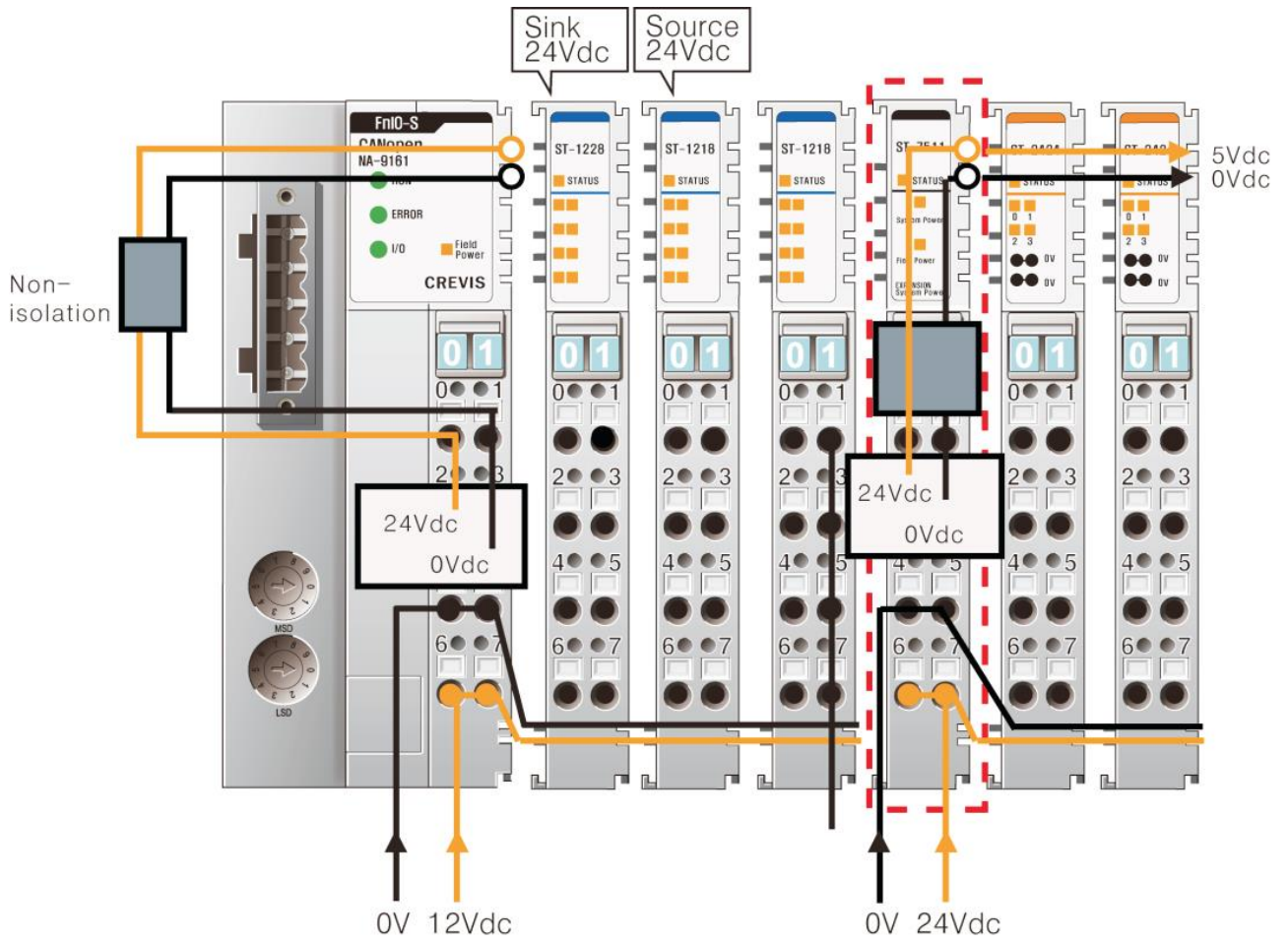
5.7. ST-7508

If you have a setup where an external device near the FnIO/O module needs a ground(0V), you can simply use the ST-7508 as a common module



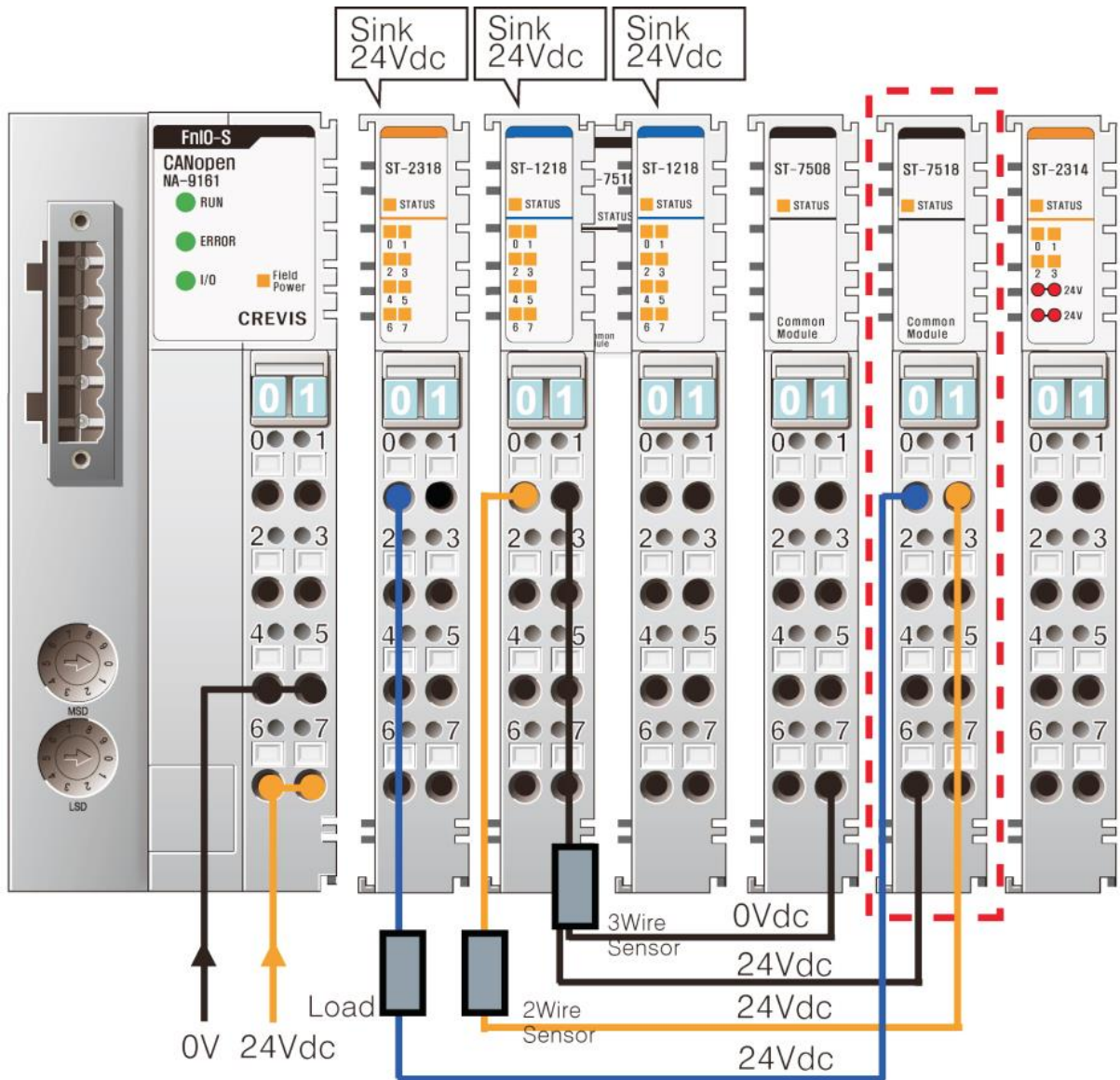
5.8. ST-7511

When you are using a FnIO setup that requires more than 1.5A for system power (+5v) or 10A of field power, you will need to add a ST-7511 expansion power module to ensure that enough power will be available to all the ST Modules.



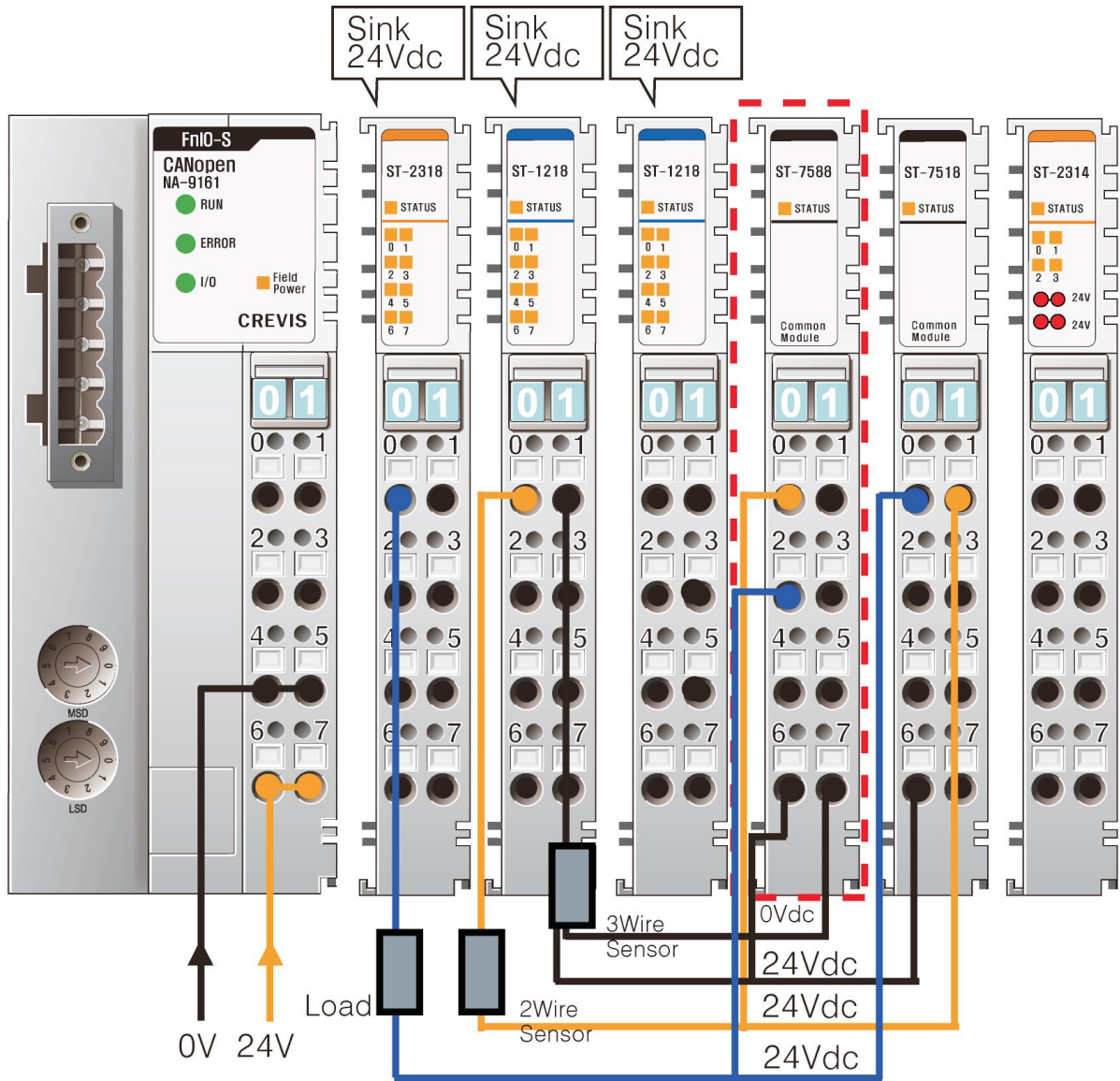
5.9. ST-7518

If you have a setup where an external device near the FnIO/O module needs 24Vdc of power, you can simply use the ST-7518 as a common module



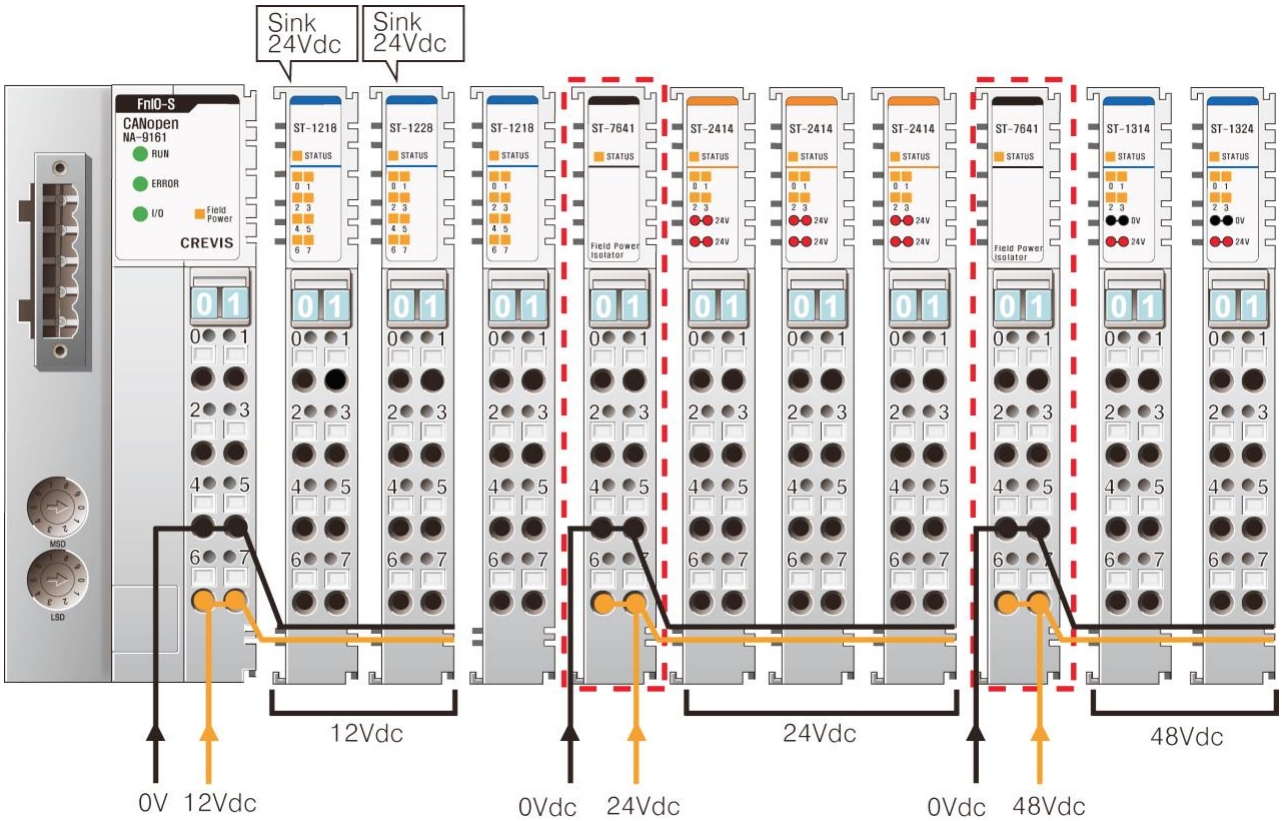
5.10.ST-7588

If you have a setup where an external device near the FnIO/O module needs 24Vdc of power, you can simply use the ST-7588 as a common module



5.11. ST-7641

When you have a FnIO/O setup and need to use with different Field Power Voltage, you can use the ST-7641 to change the isolated Voltage form 5Vdc, 12Vdc to 24Vdc to 48Vdc, or from 110Vac, 220Vac as below;



6. Trouble Shooting

ATTENTION

In this manual, it couldn't be described all variety case with Network Adapter of several protocols. So if you couldn't find any fault after investigating all below cases, refer to NA user manual.
