

### FnIO S-series



### FieldBus Input/Output System

- EtherNet/IP Network Adapter
- PROFIBUS Network Adapter
- Digital Input / Output
- Analog Input / Output

CVS-18-04A-010

Rev 2.02

#### 제품을 사용하기 전에

저희 (주)크래비스 제품을 구입해 주셔서 감사합니다. 제품의 효율적인 사용을 위하여 반드시 본 사용 설명서의 내용을 숙지 하신 후 사용해 주십시오.

**안전상의 주의 사항** \*경고와 주의로 구분되어 있으니, 필히 숙지 하여 주십시오.

#### 지시사항을 위반하였을 때, 심각한 상황을 초래하여 사망 또는 중상을 입을 가능성이 있는 경우

- 전원이 인가된 상태에서 단자대를 만지지 마십시오. 감전사고 및 오동작의 원인이 됩니다.
- 전원이 인가된 상태에서 제품을 조립하지 마십시오. 화재, 감전사고 및 오동작의 원인이 됩니다.
- 제품내부에 금속성 이물질이 유입되지 않도록 하십시오. 화재, 감전사고 및 오동작의 원인이 됩니다.
- 전원이 인가된 상태에서 배선 작업을 하지 마십시오. 감전사고 및 오동작의 원인이 됩니다.
- 배선 작업은 전기공사 전문가가 해 주십시오. 화재, 감전사고 및 오동작의 원인이 됩니다



경고

#### 지시사항을 위반하였을 때, 경미한 상해나 제품손상 및 대물손해가 발생할 가능성이 있는 경우

- 제품의 정격전압 및 단자배열을 확인 후 배선하여 주십시오. 화재,감전사고, 오동작의 원인이 됩니다.
- 주변 온도가 55°C를 넘는 장소는 피해 주십시오. 화재,감전사고, 오동작의 원인이 됩니다.
- 직사 광선이 직접 노출된 장소는 피해 주십시오. 화재,감전사고, 오동작의 원인이 됩니다.
- 주변 습도가 85%를 넘는 장소는 피해 주십시오. 화재,감전사고, 오동작의 원인이 됩니다.
- 가연성 물질이 있는 주변에 설치하지 마십시오. 화재의 원인이 됩니다.
- 제품에 직접 진동이 인가되지 않도록 하십시오. 화재 및 감전의 원인이 됩니다.
- 전원 A/S요원 외에는 제품을 분해,수리,개조하지 마십시오. 화재 및 감전사고의 원인이 됩니다.
- 사용설명서에 명기된 환경조건에서 사용해 주십시오. 감전, 화재, 오동작 또는 제품 열화의 원인이 됩니다.
- 확장 연결되는 모듈의 부하는 규정한 정격 이내로 사용해 주십시오. 화재, 오동작 또는 고장의 원인이 됩니다.



주의

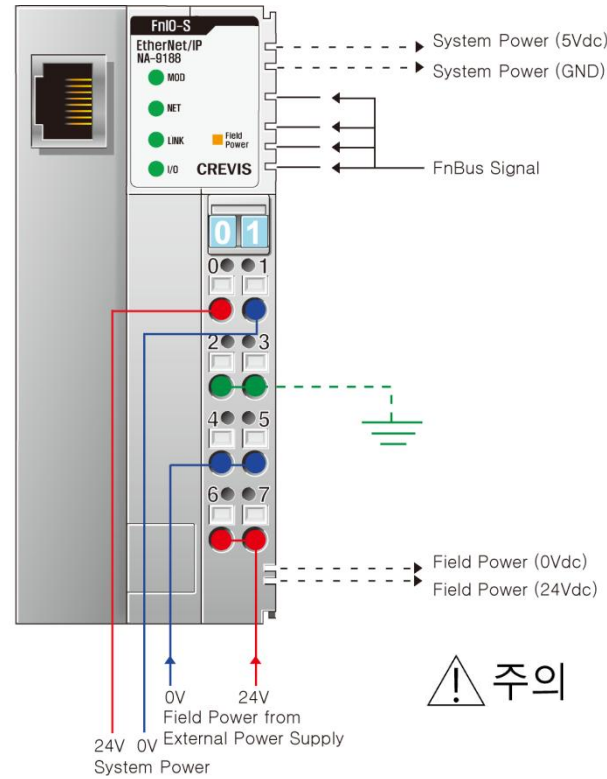
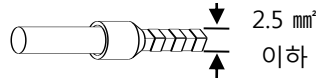
### 1. NA-9188 제품 사양

구분	일반사양	구분	상세사양
사용/보존 온도	-20°C~55°C / -40°C~85°C	Network 방식	EtherNet/IP, BOOTP
사용/보존습도	5% ~ 90% 단, 이슬이 맺히지 않을 것	Cable	EtherNet Cable
내진동/내충격	IEC68-2-6(2G) / 10G	Cable 길이(m)	Up to 100m from Ethernet Hub
EMC/ESD	EN50082 / EN50081	통신속도(Kbps)	10/100Mbps
확장 모듈 위치	FnIO-S series의 가장 왼쪽에 장착	확장모듈수	Max. 32 module
사용환경	부식성 가스가 없고, 먼지가 심하지 않을 것	Max. Nodes	Limited by Ethernet Specification
필드 공급전압	Class 2, 24VDC 24VDC (11VDC ~ 28.8VDC)	Operating Mode	Ethernet/IP, BOOTP
필드 공급전류	최대 10A	최대 Digital I/O	Input : 2016점 / Output : 2016점
FnBus공급전류	최대 1.5A@5Vdc	최대 Analog I/O	Input : 126Ch / Output : 126Ch
Isolation	System power to internal logic : Non-isolation System power to I/O driver : Isolation	최대 Byte수	Input : 252Bytes / Output : 252Bytes
외형치수	45mm × 99mm × 70mm	IP address Setting	BOOTP
무게	150g	내부 소비전류	60mA typical @24Vdc
인증	UL / cUL / CE / FCC / RoHS(EU, China)	Class 2, adjacent to voltage rating (30Vmax.)	

## 2. 통신선 배선 및 전원선 배선 방법

### 2-1. EtherNet Communication Line wiring

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



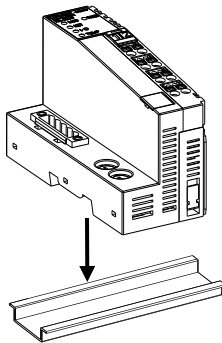
### System 전원 및 Field 전원 배선 시 주의 사항

- 통신 모듈에 통신전원과 Field용 전원으로 구분하여 사용합니다.
  - 통신 전원 : Serial 통신을 위한 전원, System 전원
  - Field 전원 : I/O 연결 시 사용하기 위한 전원
- 통신용 Power Supply 와 Field용 Power Supply를 반드시 구분하여 사용하여 주십시오.
- 선은 케이블끼리 단락 되지 않도록 비닐 Tape등으로 처리하여 주십시오.
- 통신로에 Serial통신 제품이외의 기기(예:변전기)를 삽입하지 말아 주십시오.
  - 신호의 반사 등의 영향에 의해, 정상적으로 통신이 되지 않는 경우가 있습니다.
- System 전원의 소비전류에 의해 I/O의 확장이 제한이 될 수 있습니다.

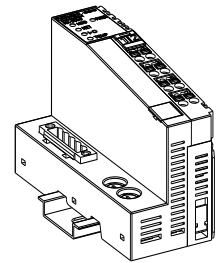
## 3. 모듈 설치 방법

### 3-1. Din-Rail에 모듈 장착 방법

- Din-Rail 위에서 아래 방향으로 살짝 눌러 주십시오.

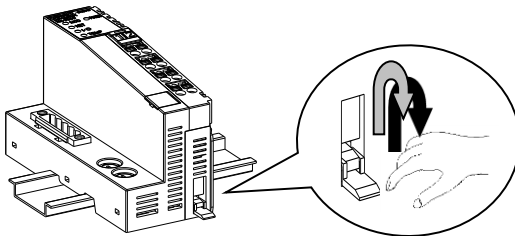


- 딸깍 소리가 날 때 까지 눌러 주시면 장착이 완료됩니다.

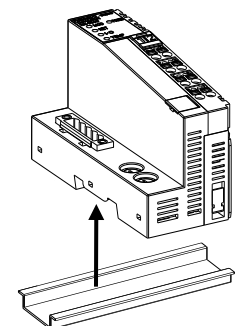


### 3-2. Din-Rail에서 모듈 탈착 방법

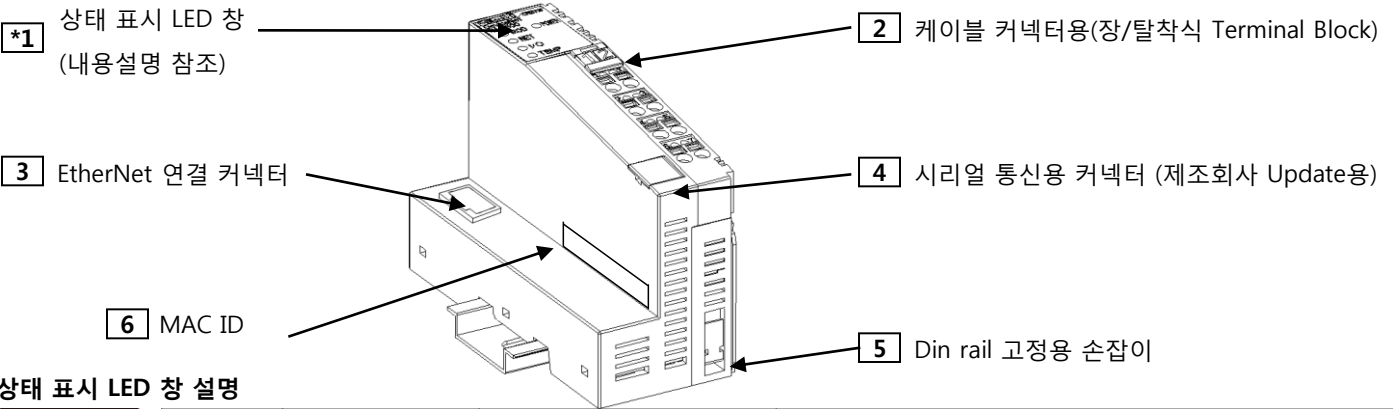
- Din rail 고정용 고리를 - 자 드라이버를 이용하여 아래로 내려주십시오.



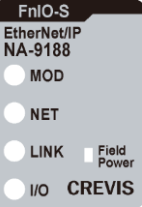
- 모듈의 양쪽 끝을 잡고 위 방향으로 들어 주시면 탈착됩니다.



#### 4. 모듈의 부분별 명칭과 기능



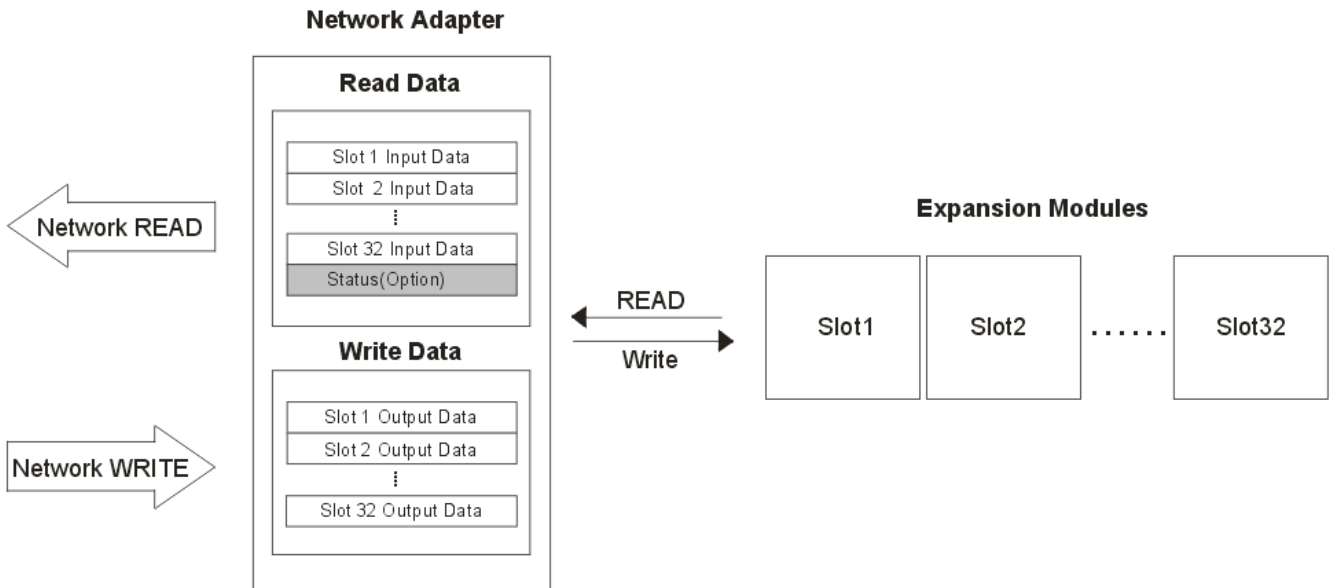
#### 상태 표시 LED 창 설명



Item	LED is:	State	To indicate:
MOD : Module Status LED	Off	No Power	No power is supplied to the unit.
	Green	Device Operational	The unit is operating in normal condition.
	Flashing Green	Device in Standby	The device needs commissioning due to configuration missing, incomplete or incorrect.
	Flashing Red	Minor Fault	Recoverable Fault - EEPROM sum check error.
	Red	Unrecoverable Fault	The device has an unrecoverable fault. - Memory error or CPU watchdog error.
NET : Network Status LED	Off	Not Powered No IP Address	Module is not powered. Does not have an IP address
	Flashing Green	No Connections	Module has obtained an IP address, but has no Established connections.
	Green	CIP Connections	Module has an IP address and at least one established connections.
	Flashing Red	Connection Time-out	One or more of the connections in which the module is The target has time out.
	Red	Duplicate IP Address	Module has detected that its IP address is already in use. Configure the module with a unique IP address.
LINK : Link/Active Status LED	Off	Not Powered Physical network not ready	May not be powered
	Green	Link Operational	Physical Network communication ready
	Flashing Green	Act Operational	some data communication on the base Ethernet 802.3
I/O : Expansion Module Status LED	Off	Not Powered No Expansion Module	Device has no expansion module or may not be powered
	Flashing Green	FnBus On-line, Do not Exchanging I/O	FnBus is normal but does not exchanging I/O data (Passed the expansion module configuration).
	Green	FnBus Connection, Run Exchanging IO	Exchanging I/O data
	Flashing Red	FnBus connection fault during exchanging IO	One or more expansion module occurred in fault state. - Changed expansion module configuration. - FnBus communication failure.
	Red	Expansion Configuration Failed	Failed to initialize expansion module - Detected invalid expansion module ID. - Overflowed Input/Output Size - Too many expansion module - Initial protocol failure - Mismatch vendor code between adapter and expansion module.
Field Power Status LED	Off	Not Supplied Field Power	Not supplied 24Vdc field power
	Green	Supplied Field Power	Supplied 24Vdc field power

## 5. I/O Image Mapping 방법

\* 확장 모듈은 I/O Data, Configuration Data, 그리고 Memory Resister등 3가지 형식의 Data를 처리합니다.  
Network Adapter는 입.출력 Data에 대해 별개의 메모리 영역을 가지고 있습니다.



## 6. 설치 방법



### ※ 주의

- EIP의 속도등을 보증하기 위해서는 전용 HUB를 사용을 권장합니다.
- 통신케이블은 노이즈에 대책이 된 케이블 사용을 권장합니다.

### (주) 크래비스

경기도 용인시 기흥구 기곡로 29-4  
대표전화 031-899-4599 FAX 031-899-4509  
홈페이지 [www.crevis.co.kr](http://www.crevis.co.kr)



사양 및 디자인은 사전 예고없이 변경될 수 있습니다.

## FnIO S-series



## FieldBus Input/Output System

### ■ EtherNet/IP Network Adapter

### ■ PROFIBUS Network Adapter

### ■ Digital Input / Output

### ■ Analog Input / Output

### ■ Special Module

### Before using the unit

\*We appreciate you for purchasing CREVIS Products. To use the units more effectively, please read this quick guide and refer to the respective user manual for further details.

### Cautions for your Safety

**If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion**

**Warning!**

- 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.

**If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below Instructions.**

**Caution!**

- Check the rated voltage and terminal array before wiring. Avoid the circumstances over 55℃ 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. NA-9188 Specification

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Ambient Temp.	-20℃~55℃ / -40℃~85℃	Network Type	EtherNet/IP, BOOTP
Relative Humidity	5% ~ 90% without condensation	Cable	EtherNet Cable
Durable-vib./impact	IEC68-2-6(2G) / 10G	Cable Length(m)	Up to 100m from Ethernet Hub
EMC/ESD	EN50082 / EN50081	Comm. Sp(Kbps)	10/100Mbps
Mount Position	On the left of FnIO-S series	Expansion No.	Max. 32 module
Atmosphere	Not so dusty without corrosive gas	Max. node	Limited by Ethernet Specification
Field Supp.Volt.	Class 2, 24VDC 24VDC (11VDC ~ 28.8VDC)	Max. Digital I/O	Input : 2016points/Output : 2016points
Field Supp. Cur.	Max. 10A	Max. Analog I/O	Input : 126Ch / Output : 126Ch
FnBus Sup. Cur	Max. 1.5A@5Vdc	Max. Byte size	Input : 252Bytes / Output : 252Bytes
Isolation	System power to internal logic : Non-isolation System power to I/O driver : Isolation	Operating Mode	Ethernet/IP, BOOTP
Size	45mm × 99mm × 70mm	IP Address Setting	BOOTP
Weight	150g	Power Dissipation	60mA typical @24Vdc
Certification	UL / cUL / CE / FCC / RoHS(EU, China)		Class 2, adjacent to voltage rating (30Vmax.)

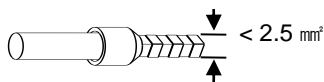
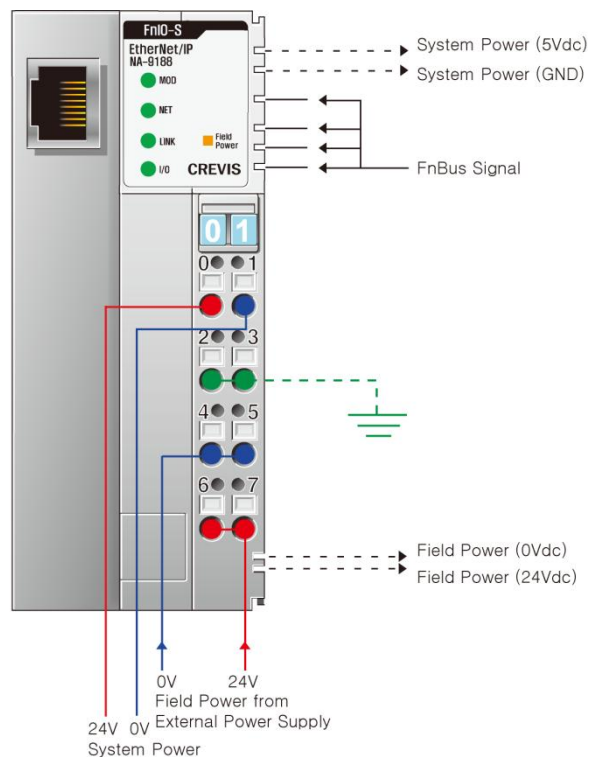
\* Specifications and designs could be changed without advance Notice.

\* Power Isolators must be used according to the usage of 5VDC/24VDC/48VDC or AC Voltage modules

## 2. Communication & Power Line Wiring

### 2-1. EtherNet Communication Line wiring

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



#### Notice for Wiring of communication and Field power

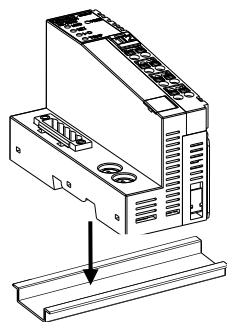
- The communication power and Field power respectively are supplied to each network adapter.
  - Communication Power : Power for Serial communication and System power.
  - Field Power : Power for I/O Connection
- The Power Supply have to be used for Communication and Field separately.
- To avoid a short circuit, tape the un-shield wire.
- Do not insert any other devices such as converter into the connector besides Serial communication products.



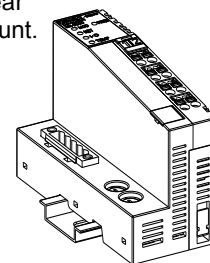
## 3. Module Mounting

### 3-1. How to mount on Din-Rail

- Press down the module lightly on the Din-Rail until it clicks.

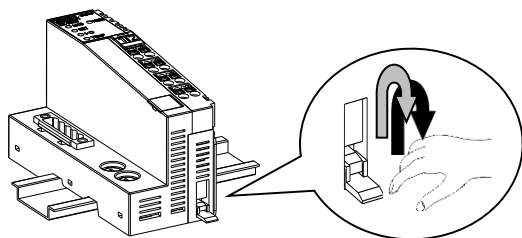


- Press down till you can hear "click" for complicated mount.

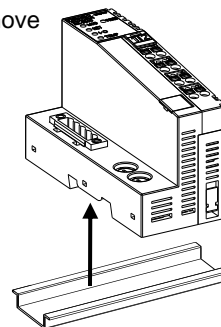


### 3-2 How to dismount from Din-Rail

- Pull down the locking mechanism by using (-) screw driver as the following pictures;

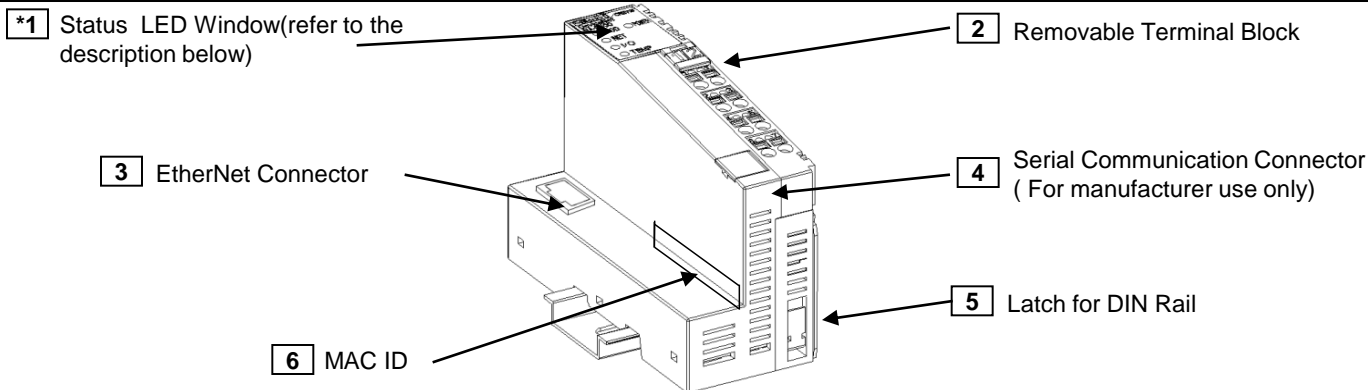


- Pull up the module to remove from the din rail.





#### 4. Name of each Part

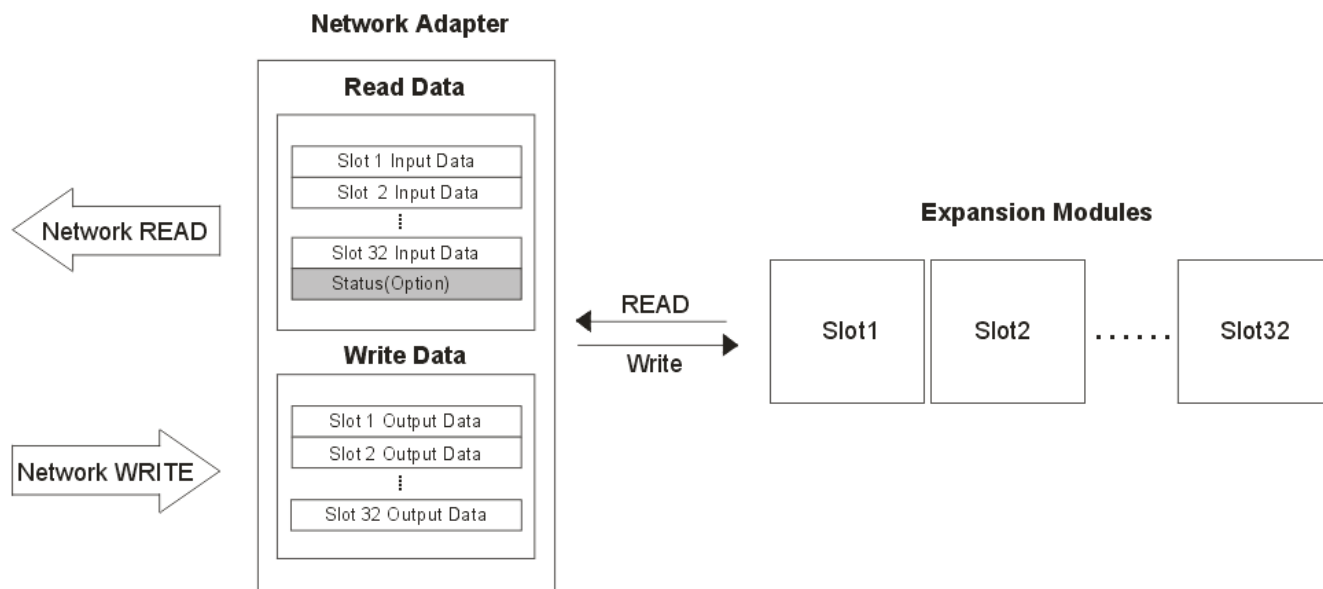


#### Description for LED status

FnIO-S EtherNet/IP NA-9188 ● MOD ● NET ● LINK ● I/O Field Power CREVIS	Item	LED is:	State	To indicate:
	MOD : Module Status LED	Off	No Power	No power is supplied to the unit.
		Green	Device Operational	The unit is operating in normal condition.
		Flashing Green	Device in Standby	The device needs commissioning due to configuration missing, incomplete or incorrect.
		Flashing Red	Minor Fault	Recoverable Fault - EEPROM sum check error.
		Red	Unrecoverable Fault	The device has an unrecoverable fault. - Memory error or CPU watchdog error.
NET : Network Status LED		Off	Not Powered No IP Address	Module is not powered. Does not have an IP address
		Flashing Green	No Connections	Module has obtained an IP address, but has no Established connections.
		Green	CIP Connections	Module has an IP address and at least one established connections.
		Flashing Red	Connection Time-out	One or more of the connections in which the module is The target has time out.
		Red	Duplicate IP Address	Module has detected that its IP address is already in use. Configure the module with a unique IP address.
LINK : Link/Active Status LED		Off	Not Powered Physical network not ready	May not be powered
		Green	Link Operational	Physical Network communication ready
		Flashing Green	Act Operational	some data communication on the base Ethernet 802.3
I/O : IO Module Status LED		Off	Not Powered No IO Module	Device has no IO module or may not be powered
		Flashing Green	FnBus On-line, Do not Exchanging I/O	FnBus is normal but does not exchanging I/O data (Passed the IO module configuration).
		Green	FnBus Connection, Run Exchanging IO	Exchanging I/O data
		Flashing Red	FnBus connection fault during exchanging IO	One or more IO module occurred in fault state. - Changed IO module configuration. - FnBus communication failure.
		Red	Expansion Configuration Failed	Failed to initialize IO module - Detected invalid IO module ID. - Overflowed Input / Output Size - Too many IO module - Initial protocol failure
Field Power Status LED		Off	Not Supplied Field Power	Not supplied 24Vdc field power
		Green	Supplied Field Power	Supplied 24Vdc field power

## 5. I/O Image Mapping

\*The Expansion module control 3 types of data such as I/O Data, Configuration Data and Memory Resister.  
Network Adapter has memory field for In/Output data respectively.



## 6. Setting



### ※ Caution

- Industrial HUB for EIP recommended
- Cable, the noise cable recommended

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Homepage : [www.crevis.co.kr](http://www.crevis.co.kr)



\* Specifications and designs may be changed without advance Notice.