MODBUS-RS232

- NA-9171는 MODBUS Network Adapter이며, 9 Pin Dsub Connector를 통하여 ModBus에 연결합니다.
- NA-9171는 Master/Slave 환경에서 Slave 역할을 합니다.
- NA-9171는 최대 2016 digital input/2016 digital output 또는 126 analog input/126 analog output channels들을 처리할 수 있습니다.
- NA-9171는 diagnostic기능(Module 상태, Network 상태, Expansion unit 상태, Field power 상태)을 위한 Indicator들이 있습니다.
- 통신속도는 1.2Kbps ~ 115.2Kbps까지의 통신 속도를 지원하며, 통신속도, Bit size, Parity, Stop bit등은 Dip S/W를 사용하여 설정합니다.
- Rotary switch를 사용하여 노드 Address를 지정합니다.
- NA-9171는 RTU와 ASCII 두가지 protocol을 지원합니다.

MODBUS - Network Adapter

Items	NA-9171
Communication Interface Specifications	
Adapter Type	Slave node (MODBUS Serial RTU/ASCII Server)
Max. Expansion Module	32 slots
Max. Input Size	126words (252bytes)
Max. Output Size	126words (252bytes)
Max. Length Bus Line	15m(NA-9171, RS232)
Max. Nodes	1 node(NA-9171, RS232)
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps
Protocol	RTU and ASCII
Interface Connector	Dsub 9pin (Female)
Settable Node Address	1~99 with two rotary switches
Indicator	5 LEDs 1 Green/Red, Module Status (MOD) 1 Green, Received Data (RXD) 1 Green, Transmit Data (TXD) 1 Green/Red Expansion Module Status (I/O) 1 Green, Field Power Status
Module Location	Starter module left side of FnIO system
Field Power Detection	About 11Vdc
General Specification	
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc 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 to I/O driver : Isolation
Field Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Max. Current Field Power Contact	DC 10A Max.
Weight	150g
Module Size	45mm x 99mm x 70mm
Environment Condition	Refer to " Environment Specification "(page : 1-257)

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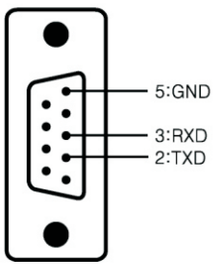
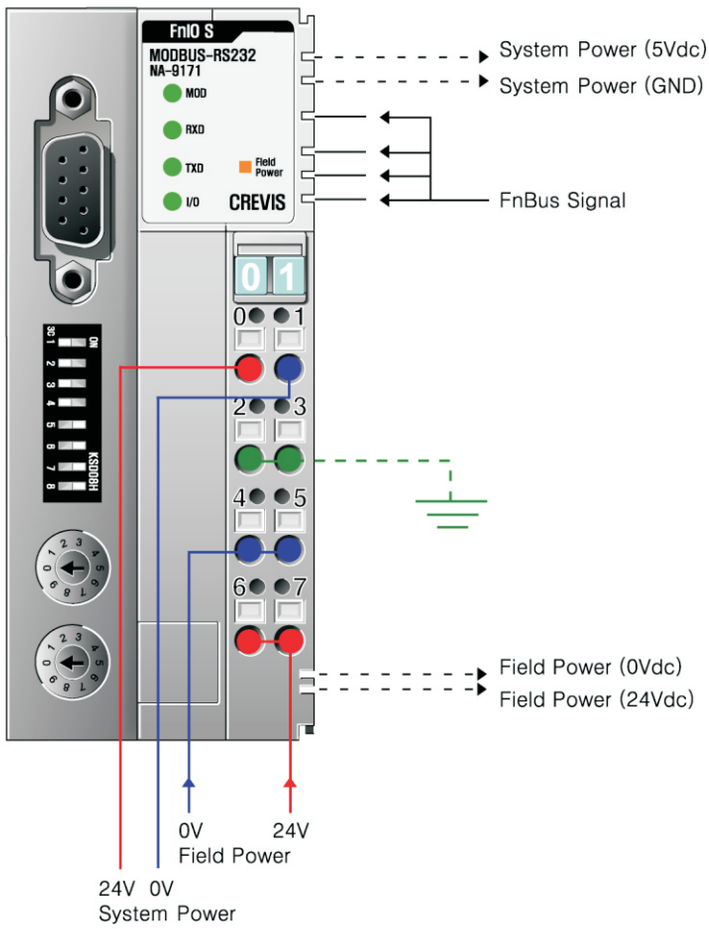
MODBUS Electrical Interface



Dsub 9-Pin (Female)	SignalName	Description
1		
2	TXD	Output, Transmitted Data
3	RXD	Input, Received Data
4		
5	GND	Signal Common
6		
7		
8		
9		



Status Indicator LED

▶ MOD : Module Status LED

Status	LED is	Description
No Power	Off	No 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.
MODBUS Error	Flashing Red/Toggle	MODBUS error such as watchdog error, CRC/LRC error, Setup dip switch, error, etc.
Minor Fault	Flashing Red	Recoverable Fault - EEPROM sum check error.
Unrecoverable Fault	Red	The device has an unrecoverable fault. - Memory error or CPU watchdog error.

▶ RXD : Received Data LED

Status	LED is:	To indicate:
Not Powered	Off	Device is not on-line or may not be powered
Adapter received correct message frame	Flashing Green	Adapter(Slave) received correct frame which address to the slave or broadcast. About 20msec flashing.

▶ TXD : Transmit Data LED

Status	LED is:	To indicate:
Not Powered	Off	Device is idle or may not be powered
Adapter transmit frame	Flashing Green	Adapter(Slave) transmit frame. About 20msec flashing.

▶ I/O : Expansion Module Status LED

Status	LED is:	To indicate:
Not Powered No Expansion Module	Off	Device has no expansion module or may not be powered
FnBus On-line, Do not Exchanging I/O	Flashing Green	FnBus is normal but does not exchanging I/O data (Passed the expansion module configuration).
FnBus Connection, Run Exchanging IO	Green	Exchanging I/O data
FnBus connection fault during exchanging IO	Flashing Red	One or more expansion module occurred in fault state. - Changed expansion module configuration. - FnBus communication failure.
Expansion Configuration Failed	Red	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

Status	LED is:	To indicate:
Not Supplied Field Power	Off	Not supplied 24Vdc field power
Supplied Field Power	Green	Supplied 24Vdc field power

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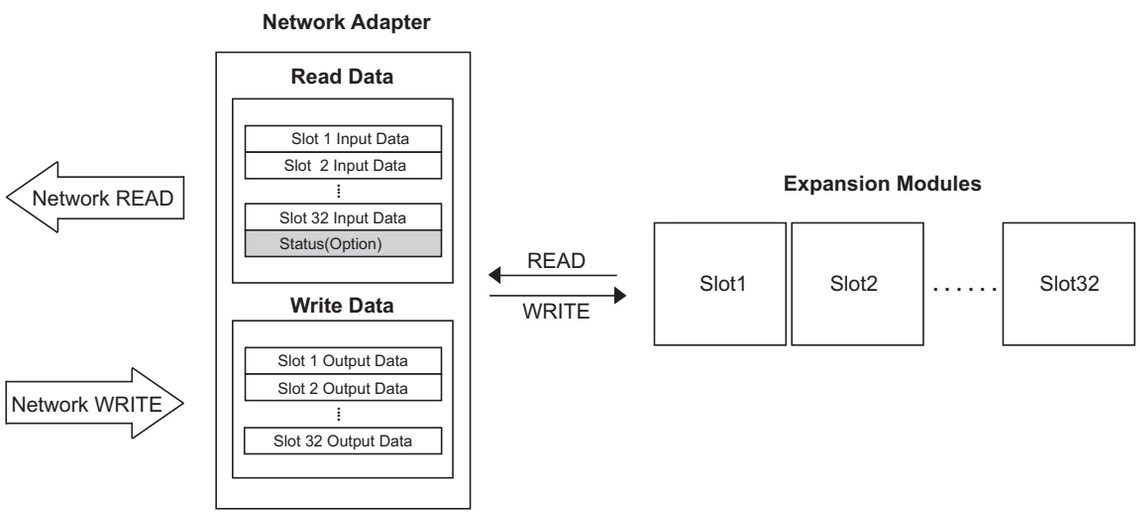
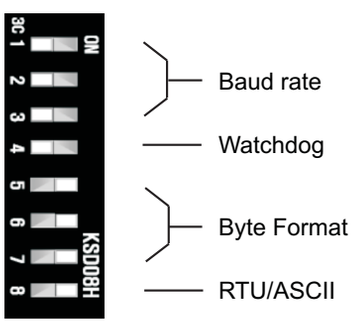
▶ Mapping Data into the Image Table



▶ MODBUS DIP Switch Setup



Item	Item setup	DIP Switch #1	#2	#3	#4	#5	#6	#7	#8
Baud rate	1200bps	OFF	OFF	OFF					
	2400bps	ON	OFF	OFF					
	4800bps	OFF	ON	OFF					
	9600bps	ON	ON	OFF					
	19200bps	OFF	OFF	ON					
	38400bps	ON	OFF	ON					
	57600bps	OFF	ON	ON					
	115200bps	ON	ON	ON					
Watchdog	Disable Watchdog				OFF				
	Enable Watchdog				ON				
Byte Format	8bit, No Parity, 1Stop					OFF	OFF	OFF	
	8bit, Even Parity, 1Stop					ON	OFF	OFF	
	8bit, Odd Parity, 1Stop					OFF	ON	OFF	
	8bit, No Parity, 2Stop					ON	ON	OFF	
	7bit, No Parity, 2Stop 참조 #1)					OFF	OFF	ON	
	7bit, Even Parity, 1Stop 참조 #1)					ON	OFF	ON	
	7bit, Odd Parity, 1Stop 참조 #1)					OFF	ON	ON	
	8bit, No Parity, 1Stop					ON	ON	ON	
RTU/ASCII Mode	RTU Mode								OFF
	ASCII Mode								ON

참조 #1) ASCII Mode is only available