

ETS Hardware Reference Manual



16CHANNEL **DIGITAL NPN TYPE OUTPUT MODULE**

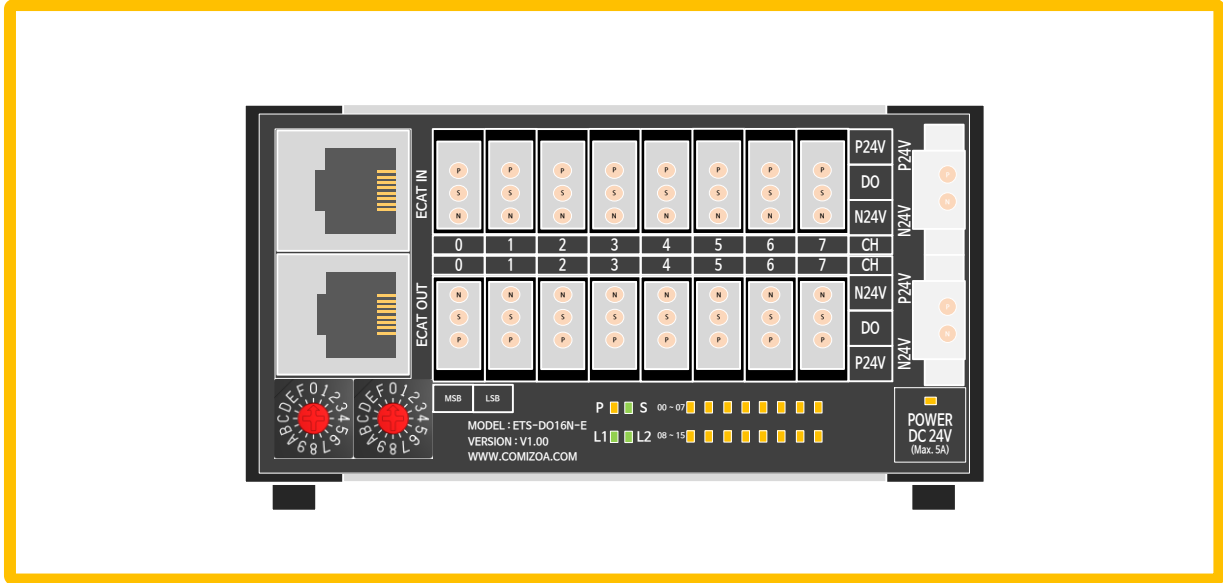
ETS-DO16N-E

MAY 2019
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Table Of Contents

1	개요	1
2	Specification	2
3	Block diagram	3
4	Interface Connect	4
5	Device ID Setting	4
6	Connector	5
7	Status LED	6
8	Circuit diagram	7

개요



ETS - DO16N - E (Digital NPN Output 16ch)

ETS-DO16N-E는 커미조아의 EtherCAT 기반 제어기의 16채널 Digital 출력 모듈입니다.

각 채널의 내부 제어 신호와 외부 입출력 신호는 포토커플러를 사용하여 절연됩니다.

본 매뉴얼은 ETS-DO16N-E의 하드웨어 구성과 기능에 대해 설명하는 하드웨어 매뉴얼입니다.

- ▣ EtherCAT Slave Module
- ▣ CiA Standard 401 and ETG.5001 Modular Device Profile
- ▣ Supports Terminal Device ID
- ▣ Digital I/O Power Over Current Protection
- ▣ Digital Output 16 (NPN)
- ▣ Independent System Power

Specification

Contents	Details
Power Dissipation(System)	Max. 40mA @ 24.0V DC
Power Dissipation(I/O)	Max. 30mA @ 24.0V DC
Rated Input Voltage	24V DC (-15%/+20%, ripple ratio within 5%) EN 61131-2

Power Specification

Contents	Details
Transmission speed for EtherCAT	100 Mbit/s with Full Duplex
MDI/MDI-X	MDI/MDI-X auto-crossover.
ESD Protection	Contact Discharge (Typ.) 4kV
	Air Discharge (Typ.) 8kV

Comm. Specification

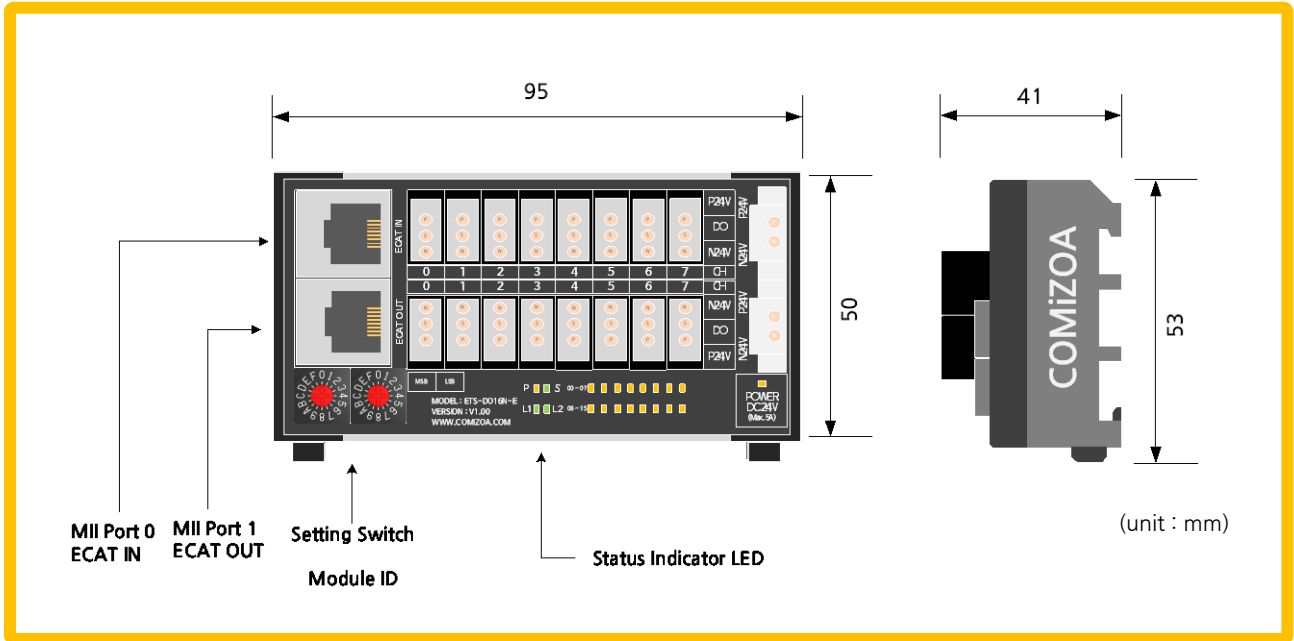
Contents	Details
Number of Outputs	Isolated 16 Output
Output type	MOSFET with common ground (NPN)
Output Voltage	Min. 5V ~ Max. 35V
Sink Current	Max. 500mA / channel
Rds(On state resistance)	Max. 500mOhm
Throughput	10Khz (0.1ms)
Overload Shutdown	1.1A Min ~ 2A Max

Digital Output Specification

Contents	Details
Dimension	95 * 53 * 41 (mm)
Install	Industrial DIN rail
Operating Temperature Range	0°C ~ 50°C
Storage Temperature Range	-20°C ~ 80°C
Operating Humidity Range	5% ~ 90%RH, non-condensing
Storage Humidity Range	5% ~ 90%RH, non-condensing

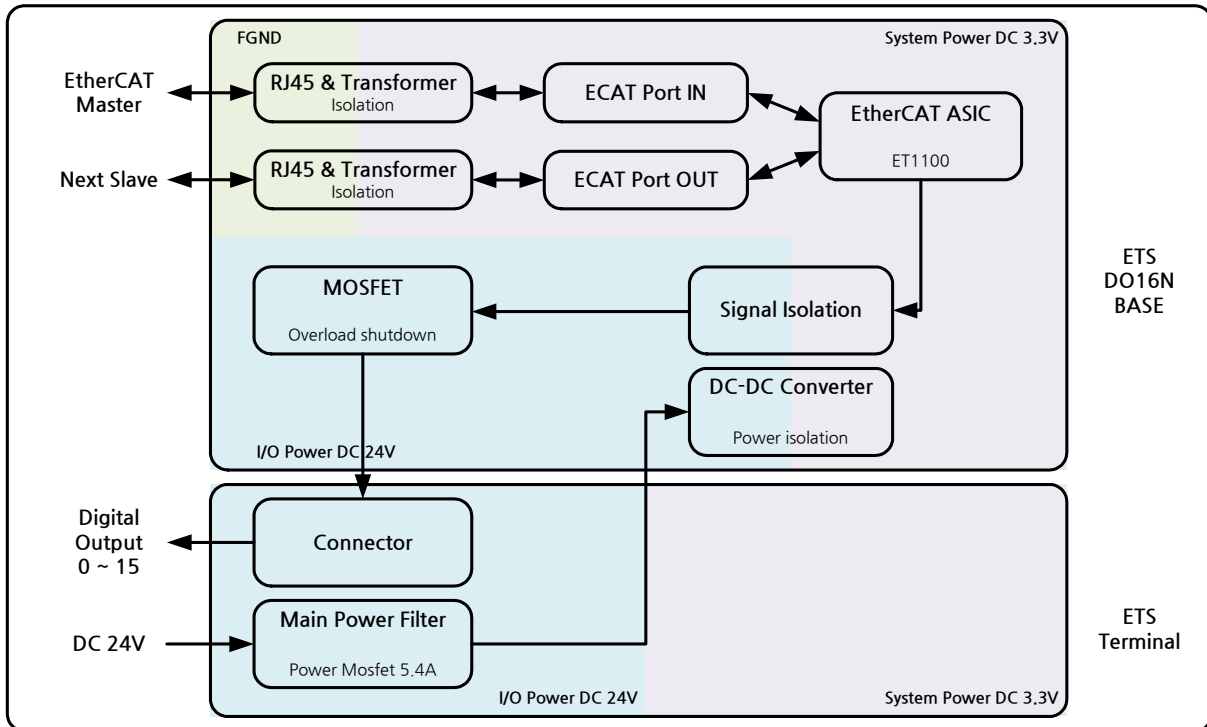
Environmental Specification

Specification



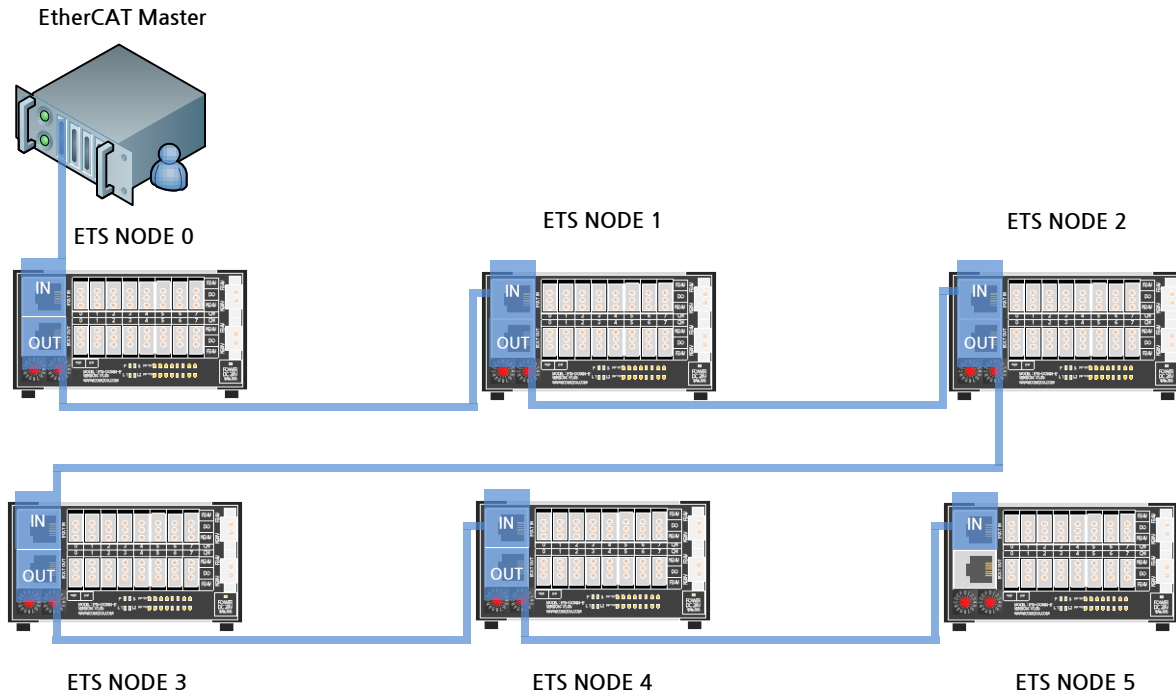
Dimension

Block diagram



ETS-DO16N-E Block diagram

Interface Connect

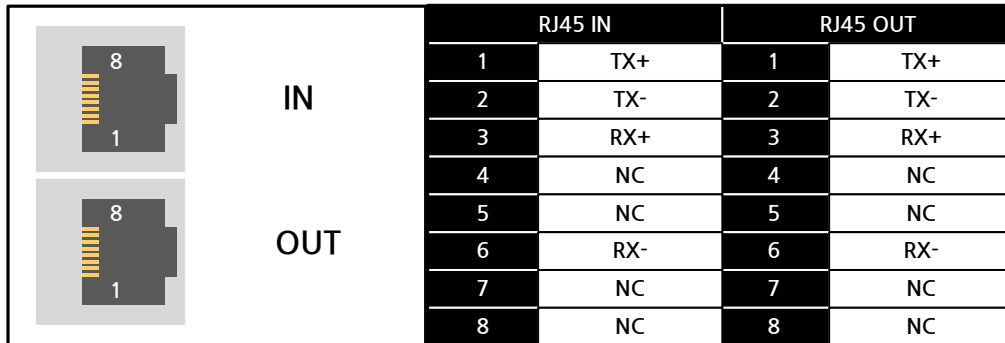


Device ID Setting

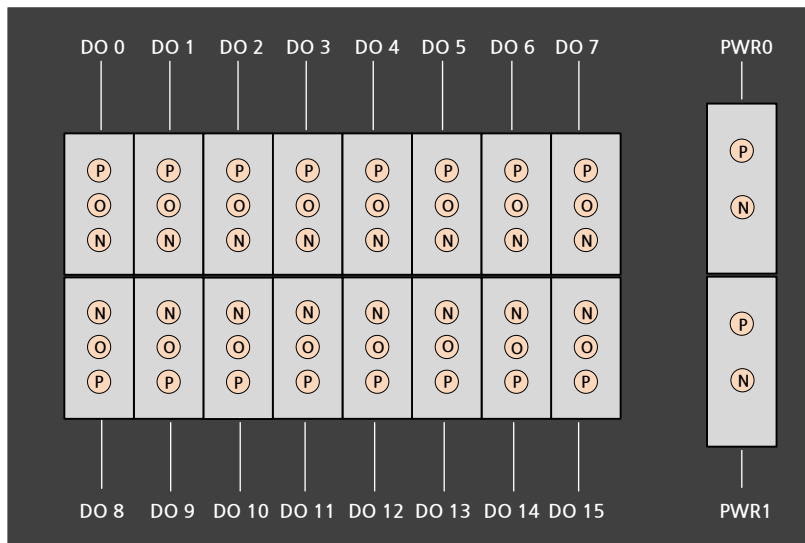
<p>MSB LSB</p>	NODE ID setting	$I.P = MSB * 16 + LSB$
	NODE ID range	1 ~ 256

Connector

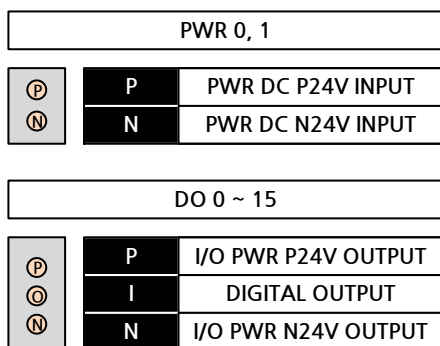
▣ RJ45 Connector



▣ Contact Number



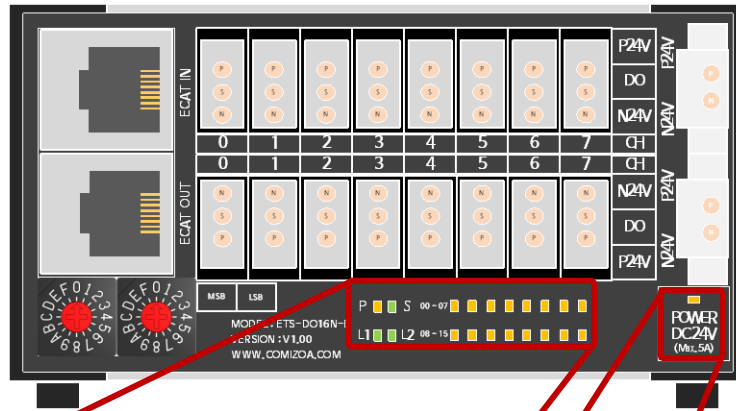
▣ PIN MAP



* PWR1 커넥터는 PWR0 커넥터로 들어온 전원을 다음 제품으로 전달해주는 Bridge 역할의 커넥터입니다. Bridge를 통해 공급할 수 있는 전류의 크기는 8A 입니다. 전원 배선시 유의 바랍니다.

** PWR0과 PWR1의 전원 커넥터는 나사가 체결된 상태에서 강제로 케이블을 분리하려고 할 경우, 전원 커넥터 몸체가 분리 또는 파손될 수 있습니다. 반드시 나사 체결을 해제 확인 후 커넥터를 분리해주시기 바랍니다.

Status LED



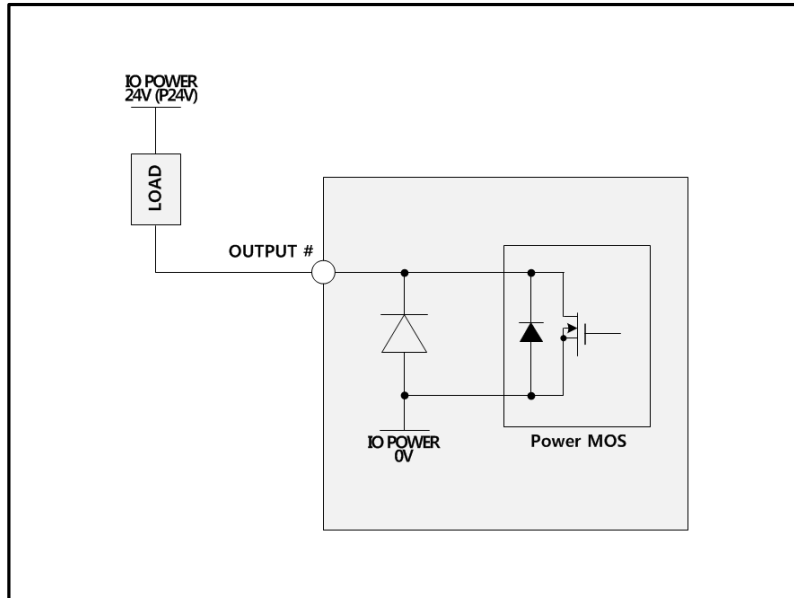
POWER DC24V	I/O POWER LED	ON	DIGITAL I/O POWER(24V DC) ON
		OFF	DIGITAL I/O POWER(24V DC) OFF
P	SYSTEM POWER LED	ON	SYSTEM POWER(3.3V DC) ON
		OFF	SYSTEM POWER(3.3V DC) OFF
S	EtherCAT AL STATE LED	OFF	INIT
		Blinking(slow)	PRE-OP
		Single Flash	SAFE-OP
		ON	OP
		Flickering(fast)	BOOTSTRAP
L1(2)	LINK 1(2) STATE LED	Blinking(slow)	MII Port 0(1) OPEN
		OFF	MII Port 0(1) Closed
DO 0-15	OUTPUT STATE LED	ON	OUTPUT ON STATE (LOGIC '1')
		OFF	OUTPUT OFF STATE (LOGIC '0')

* 전원을 인가하였으나 모든 LED가 OFF 상태라면

과전류 또는 전원 short 상태이므로 해당 제품에 연결된 IO 관련 배선을 우선 확인 바랍니다.

** 이 제품은 과전류 또는 전원 short 상태에서 벗어나 정상 상태 복귀시 바로 재시작되는 점 유의 바랍니다.

Circuit Diagram (Digital Output)



Hardware Reference Manual Update List

No.	Version	Date	Changes in
1	1.00	2019.05.13	First Edition

ETS Reference Manual

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