

# ETS Hardware Reference Manual



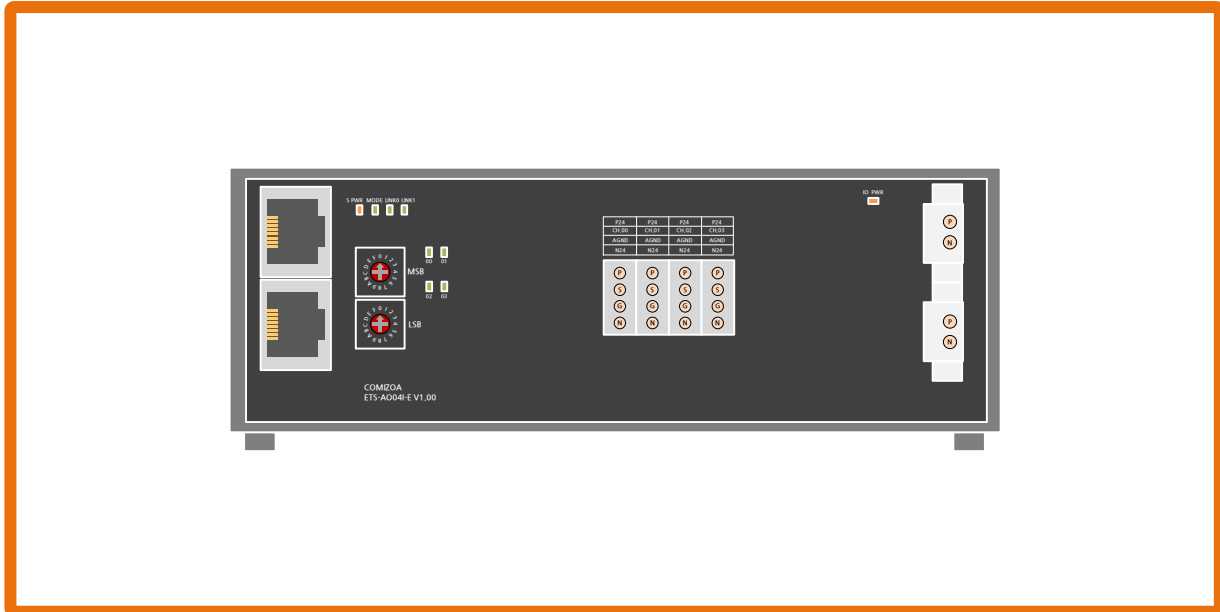
4CHANNEL ANALOG CURRENT OUTPUT MODULE

ETS-AO04I-E

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**개요**

**ETS - AO04I - E (Analog Current Output 4ch)**

ETS-AO04I-E는 커미조아의 EtherCAT 기반 제어기의 4채널 Analog 전류 출력 모듈입니다.

각 채널은 4~20mA, 0~20mA, 0~24mA의 전류 출력 범위를 선택 가능합니다.

본 매뉴얼은 ETS-AO04I-E의 하드웨어 구성과 기능에 대해 설명하는 하드웨어 매뉴얼입니다.

- EtherCAT Slave Module
- CiA Standard 401 and ETG.5001 Modular Device Profile
- Supports Terminal Device ID
- 16bit(2's Compliment) Resolution
- Analog Output 4(Current)
- Independent System Power

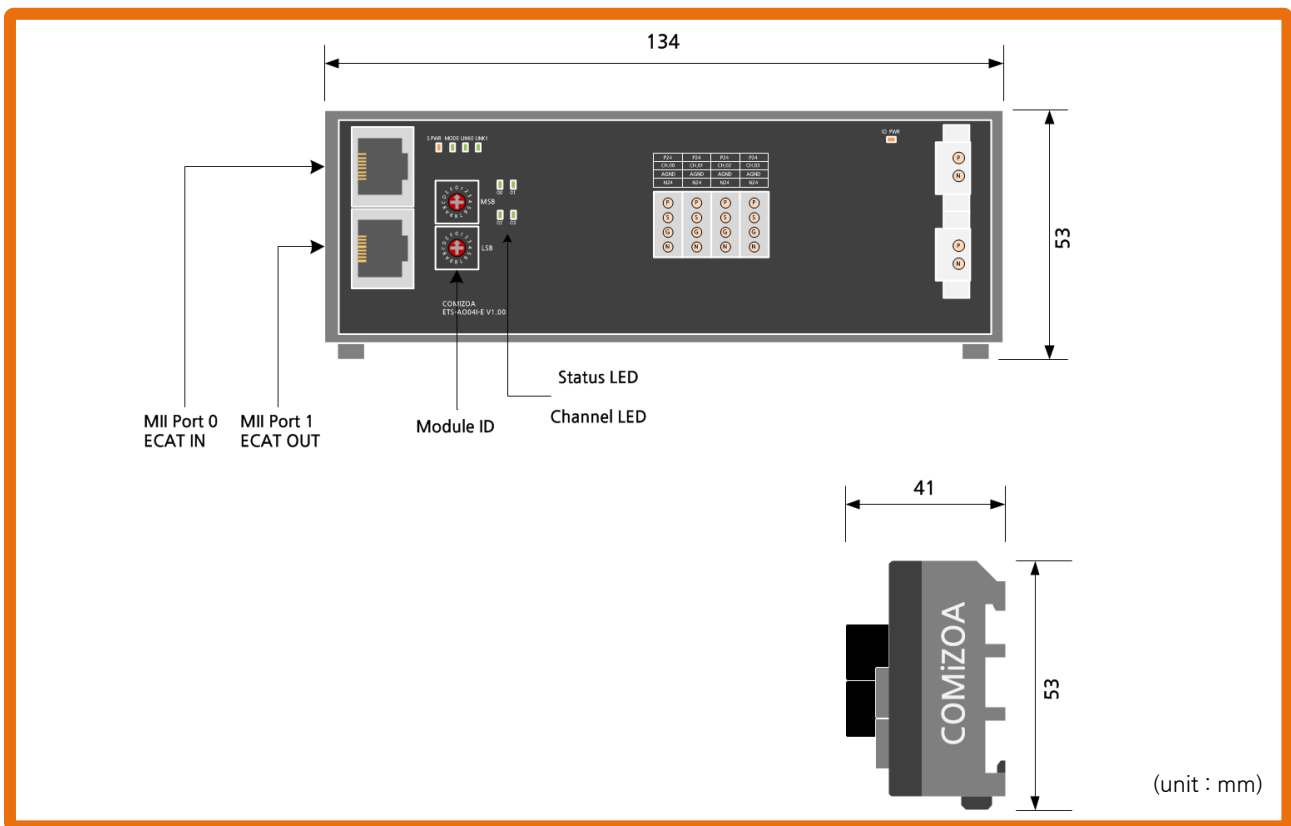
제품사양

Contents	Details
Dimension	134 * 53 * 41 (mm)
Operating Temperature	0°C ~ 50°C
Storage Temperature	-20°C ~ 80°C
Humidity	5% ~ 90%, non-condensing
Power consumption	System Power : 62 mA @ DC 24V ± 5% Analog Power : 47 mA @ DC 24V ± 5%

Environmental Specification

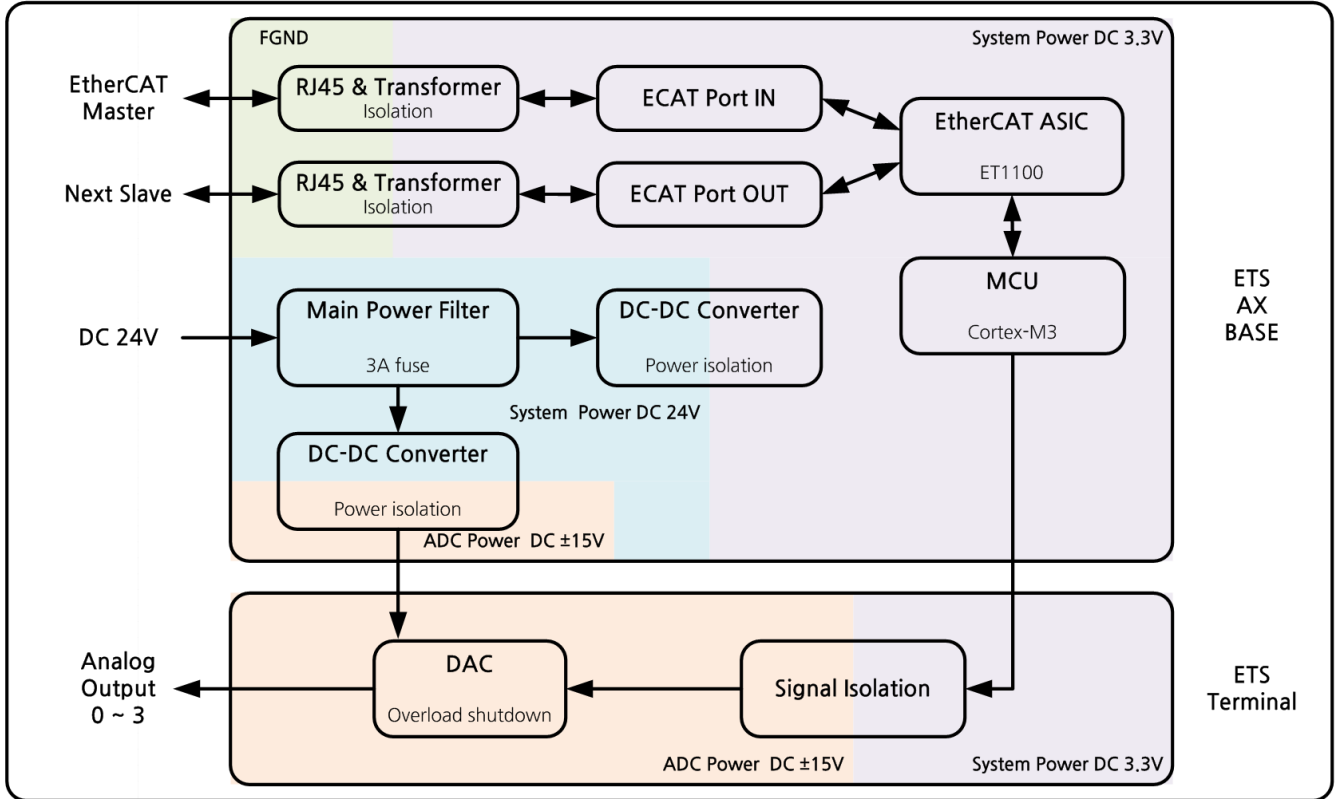
Contents	Details
Number of Outputs	4 Output
Output type	Single-ended
Isolation	I/O to Logic : Isolator ( $V_{iso} = 2,500V_{rms}$ )
Resolution	16bit(2's Compliment)
Current Output Range	4~20mA, 0~20mA, 0~24mA Selectable
Error	Offset Error : ± 0.25% Gain Error : ± 0.25%
Conversion Time	Min. 100us / All Channels
Wiring Contact	I/O : 4-Pin E-CON / Power : USL-3FBS-2P

Analog Output Specification



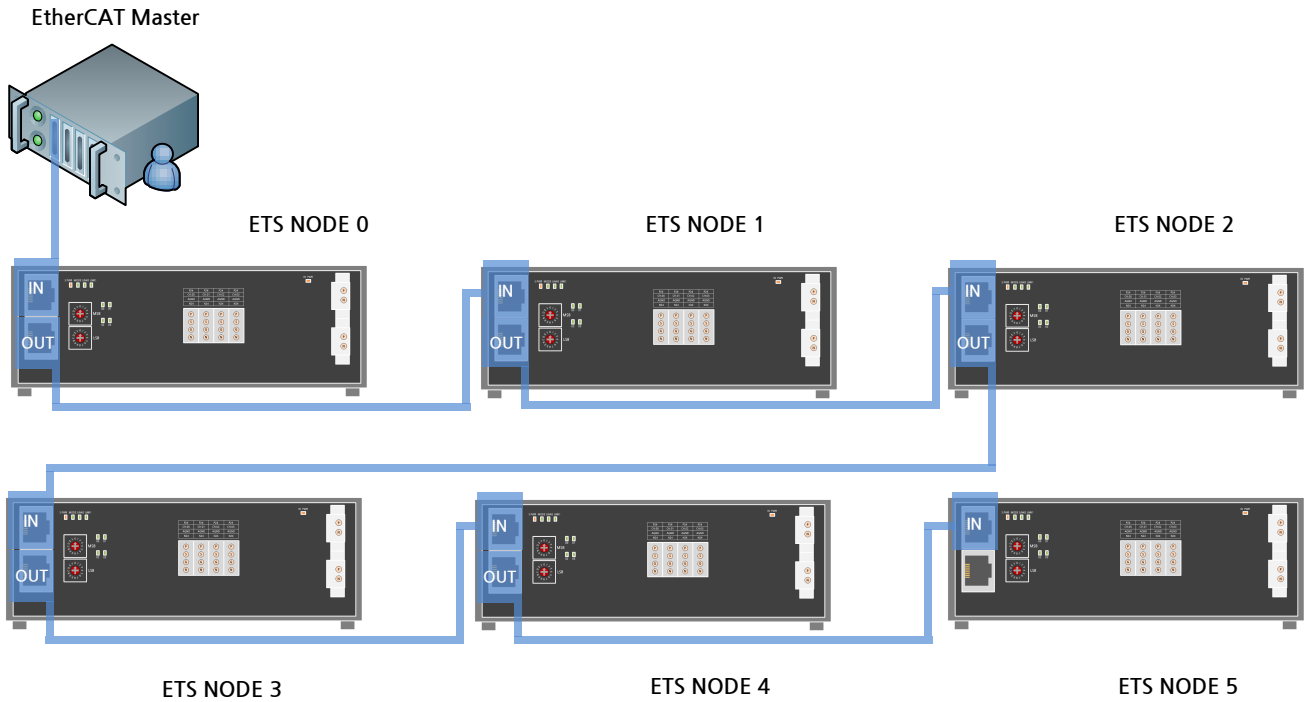
Dimension

Block diagram



ETS-AO04I-E Block diagram

Interface Connect



Device ID Setting

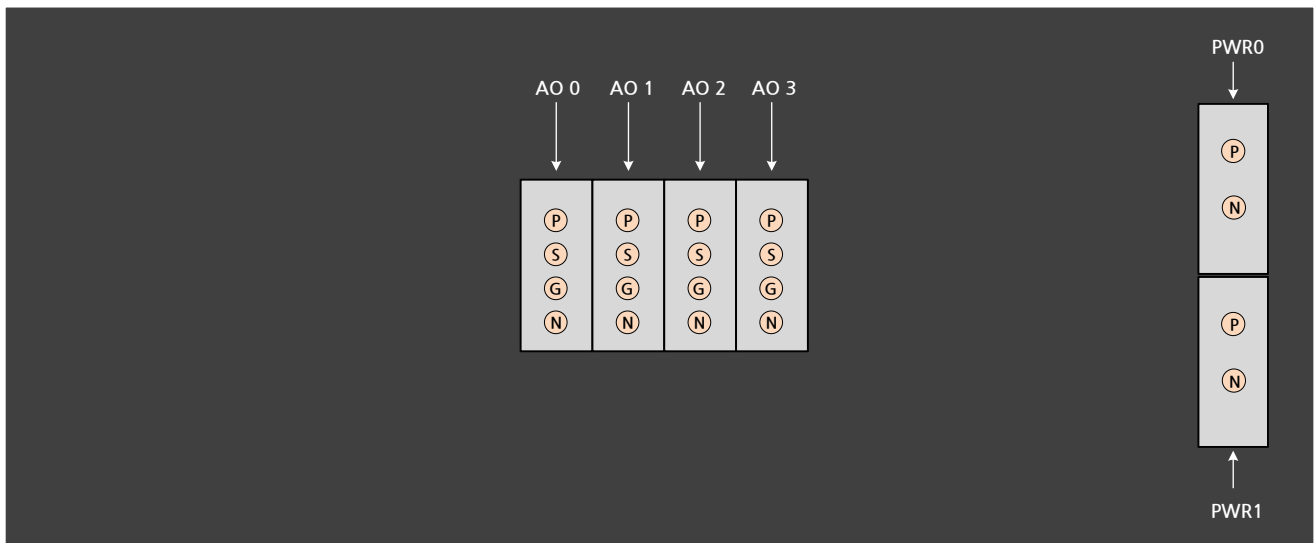
	NODE ID setting	$I.P = MSB * 16 + LSB$
	NODE ID range	1 ~ 256

Connector

▣ RJ45 Connector

		RJ45 IN		RJ45 OUT	
	IN	1	TX+	1	TX+
		2	TX-	2	TX-
		3	RX+	3	RX+
		4	NC	4	NC
	OUT	5	NC	5	NC
		6	RX-	6	RX-
		7	NC	7	NC
		8	NC	8	NC

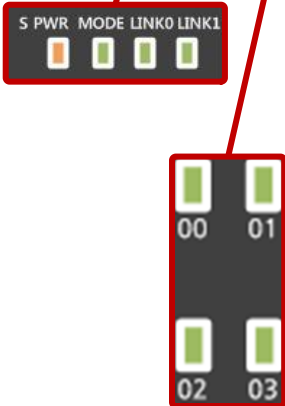
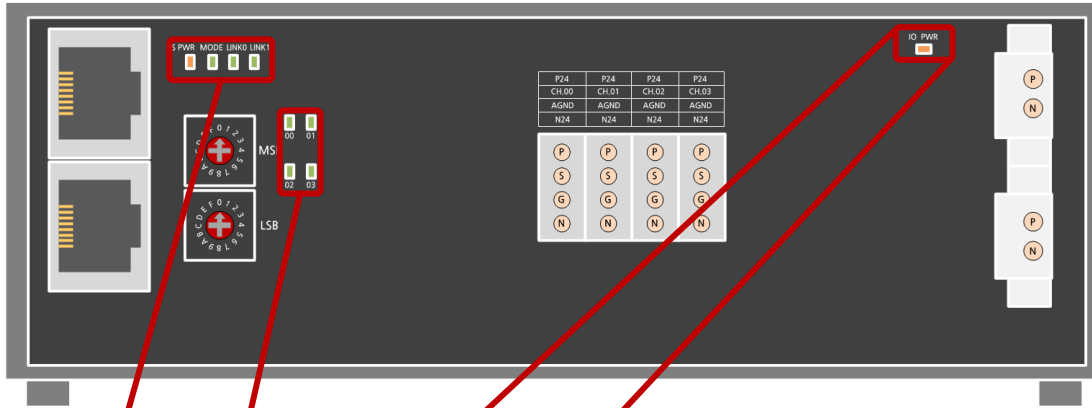
▣ Contact Number



▣ PIN MAP

PWR 0, 1	
P	PWR DC P24V
N	PWR DC N24V
AO 0 ~ 3	
P	P24V
S	Analog Output
G	AGND
N	N24V

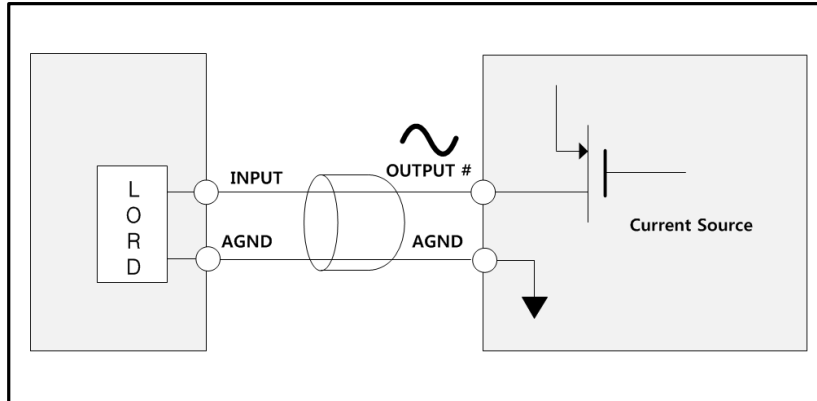
Status LED



IO PWR	I/O POWER LED	ON	DC 24V SYSTEM POWER ON
		OFF	DC 24V SYSTEM POWER OFF
S PWR	SYSTEM POWER LED	ON	SYSTEM POWER(3.3V DC) ON
		OFF	SYSTEM POWER(3.3V DC) OFF
MODE	EtherCAT AL STATE LED	OFF	INIT
		Blinking(slow)	PRE-OP
		Single Flash	SAFE-OP
		ON	OP
		Flickering(fast)	BOOTSTRAP
LINK 0(1)	LINK 0(1) STATE LED	Blinking(slow)	MII Port 0(1) OPEN
		OFF	MII Port 0(1) Closed
AO 0-3	OUTPUT STATE LED	ON	Activated
		OFF	Inactivated



Circuit Diagram (Analog Output)



## Hardware Reference Manual Update List

No.	Version	Date	Changes in
1	1.00	2016.04.25	First Edition
2	1.01	2017.10.24	RJ-45 Connector Update

# ETS Reference Manual

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