

EPS Hardware Reference Manual



24CHANNEL DIGITAL NPN TYPE OUTPUT MODULE

EPS-DO24N

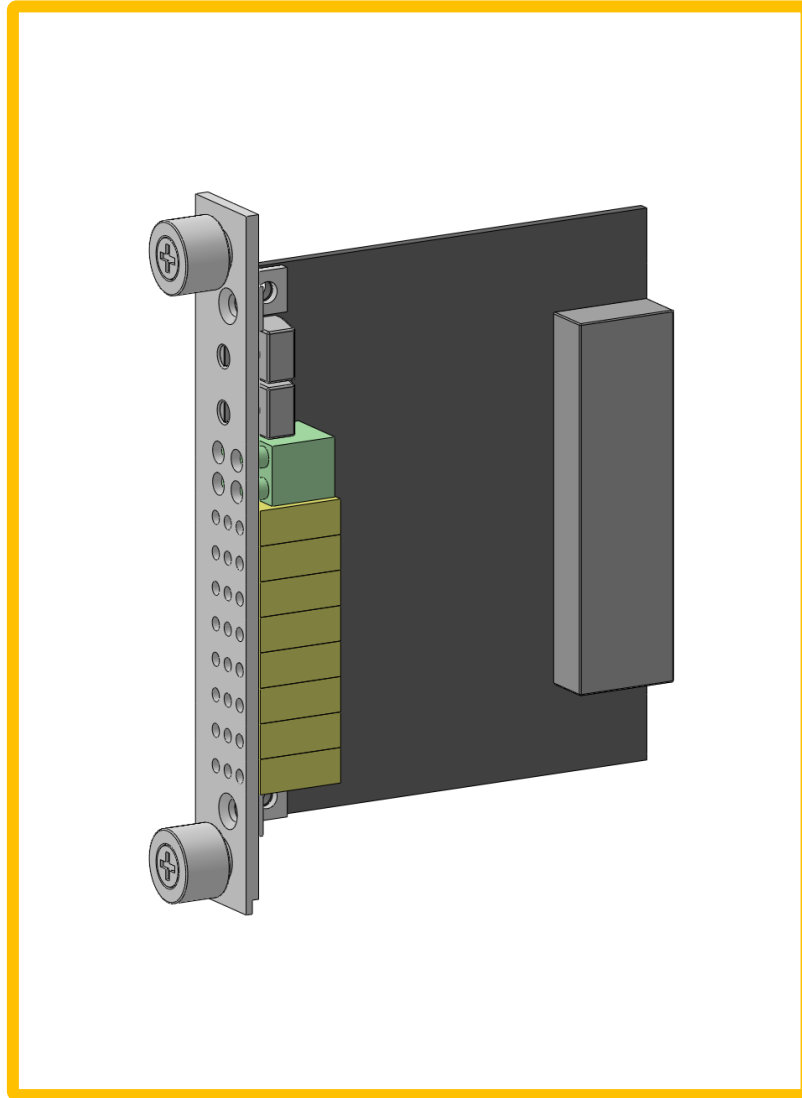
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개요



EPS - DO24N (Digital NPN Output 24ch)

EPS-DO24N은 커미조아의 EtherCAT 기반 제어기의 24채널 Digital 출력 모듈입니다.

각 채널의 내부 제어신호와 외부 입출력 신호는 포토커플러를 사용하여 절연됩니다.

본 매뉴얼은 EPS-DO24N의 하드웨어 구성과 기능에 대해 설명하는 하드웨어 매뉴얼입니다.

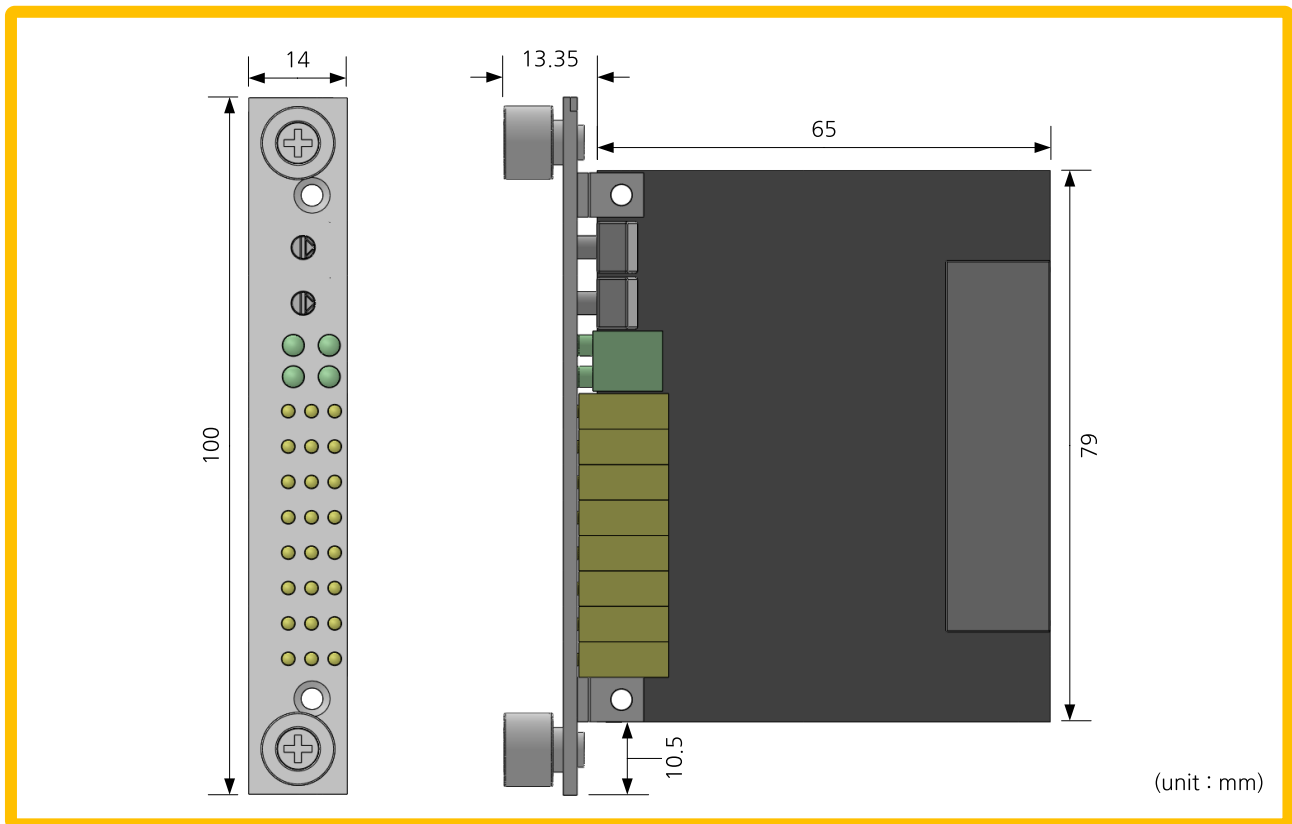
- EtherCAT Slave Module
- CiA Standard 401 and ETG.5001 Modular Device Profile
- Supports Terminal Device ID
- Digital I/O Power Over Current Protection
- Digital Output 24(NPN)
- Relay Output 4(SPST-NO, Using the Interface)
- Independent System Power

제품사양

Contents	Details
Dimension	78.35 * 100 * 14 (mm)
Operating Temperature	0°C ~ 50°C
Storage Temperature	-20°C ~ 80°C
Humidity	5% ~ 90%, non-condensing
Power consumption	Power supply input +3.3V DC ± 5%, 100mA max

Environmental Specification

ITEM	Details
Number of Outputs	24 output
Output type	MOSFET with common ground (NPN)
Isolation	Photo-coupler ($V_{iso} = 3,000V_{rms}$)
OFF State Current	Max. 100uA / Point
ON State Max Sink Current	Max. 500mA / Point
Rds (On state resistance)	Max. 1.4Ω (±5%)
Over-Temperature Shutdown	160°C
Over-Current Shutdown	Min. 0.7A ~ Max. 2A
Wiring contact (TE Connectivity)	INTERFACE : 1-1827875-5, 1-1827872-3, 1-1827875-0 CABLE : 1-1827864-5, 1-1827863-3, 1-1827864-0

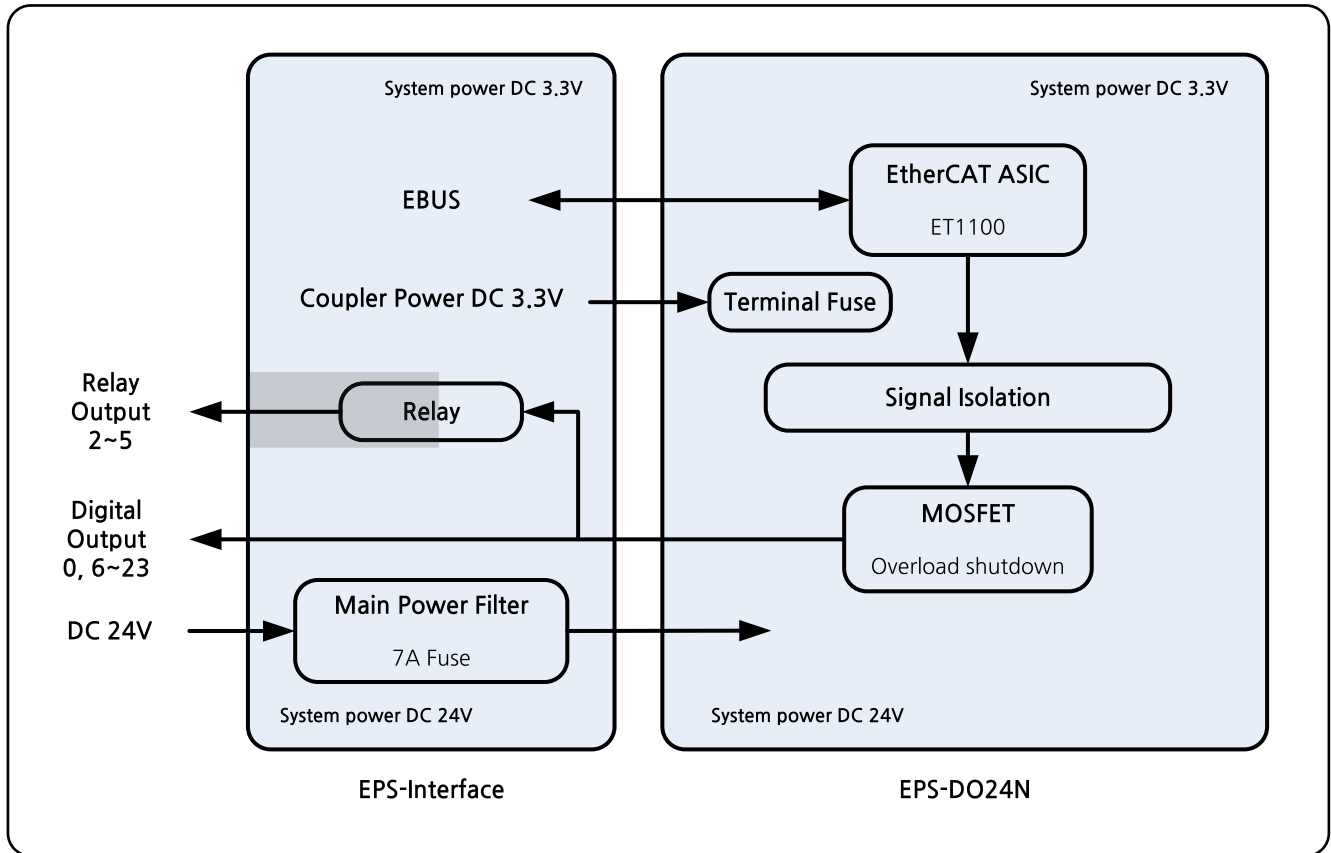
Digital Output Specification

Dimension

제품사양

Contents	Details
Number of Outputs	Relay 4 Output
Contact Configuration	SPST-NO
Contact Voltage	Max. 250V AC, Max30V DC
Contact Current Max	Max. 5A
Operate time [Set time]	Max. 10 ms
Release time [Reset time]	Max. 5 ms
Wiring contact (TE Connectivity)	PCB : 1-1827875-5, 1-1827875-0 CABLE : 1-1827864-5, 1-1827864-0

Relay Output Specification

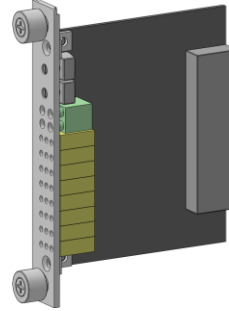
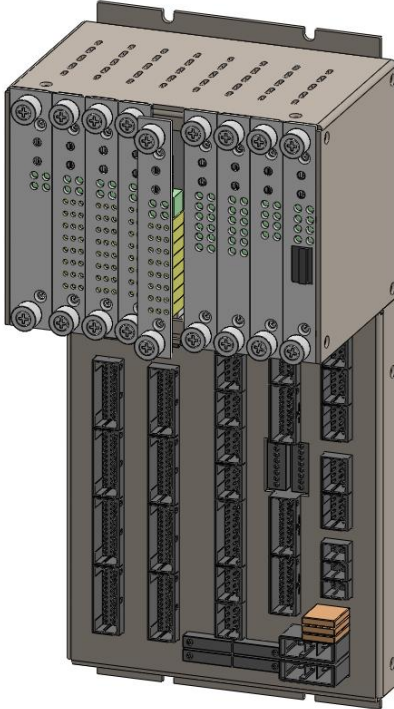
Block diagram



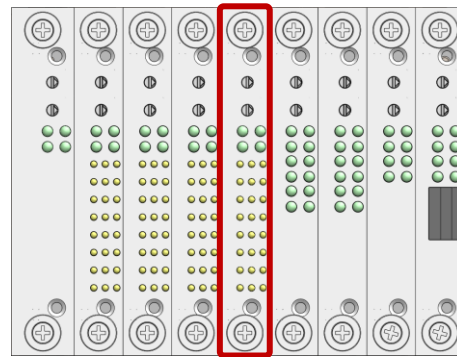
EPS-DO24N Block diagram

Interface

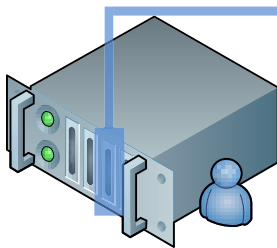
■ EPS-CHAMBER Connect



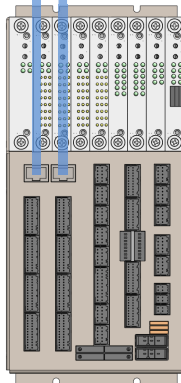
EPS-DO24N



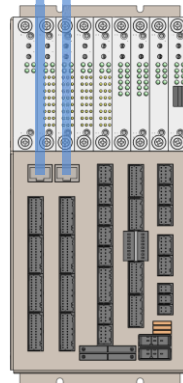
■ Slave Connect



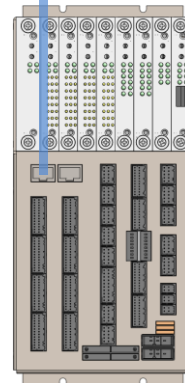
EtherCAT Master



EPS-CHAMBER (1)

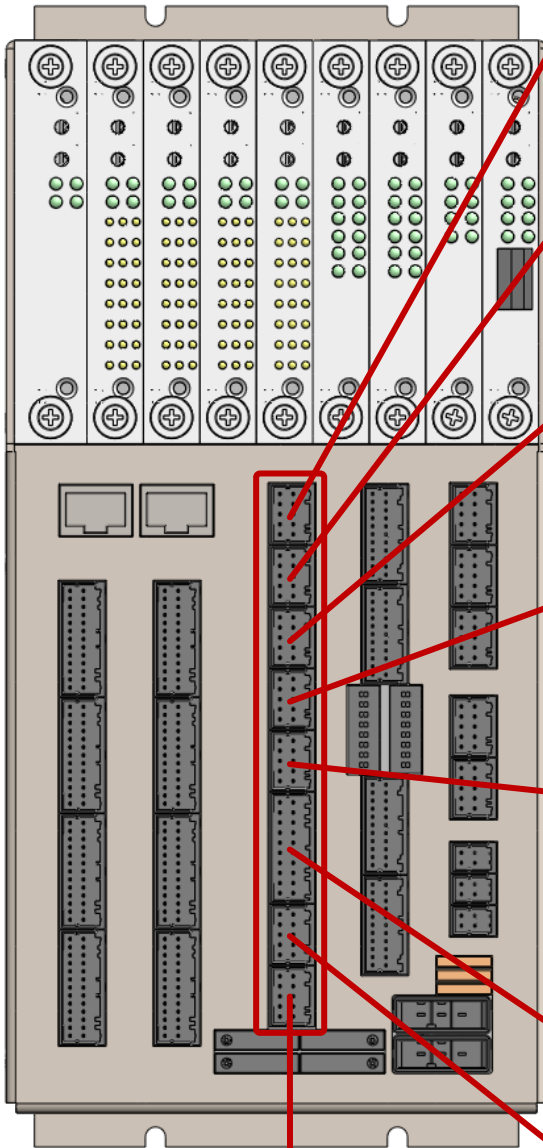


EPS-CHAMBER (2)



EPS-CHAMBER (n)

Connector



A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DO 1)		1	P24V	DO 6
		2	P24V	DO 7
		3	P24V	DO 8
		4	P24V	DO 9
		5	-	-

A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DO 2)		1	P24V	DO 10
		2	P24V	DO 11
		3	P24V	DO 12
		4	P24V	DO 13
		5	-	-

A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DO 3)		1	P24V	DO 14
		2	P24V	DO 15
		3	P24V	DO 16
		4	P24V	DO 17
		5	-	-

A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DO 4)		1	P24V	DO 18
		2	P24V	DO 19
		3	P24V	DO 20
		4	P24V	DO 21
		5	-	-

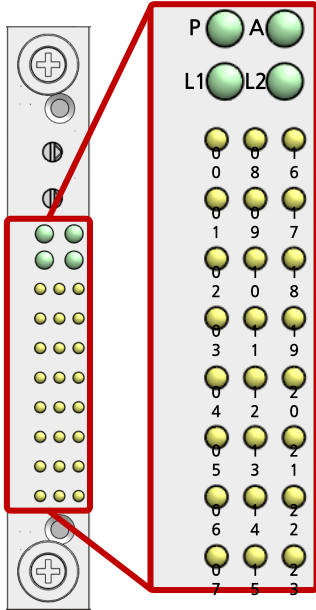
A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DO 5)		1	P24V	DO 22
		2	P24V	DO 23
		3	P24V	-
		4	P24V	-
		5	-	-

A1 B1		Pin #	A	B
 A10 B10 1-1827875-0 (PMC_BOX_IO)		1	N24V	DI 63
		2	OUT 02-1	OUT02-2
		3	N24V	DI 64
		4	OUT 03-1	OUT 03-2
		5	N24V	DI 65
		6	N24V	DI 66
		7	P24V	DO 00
		8	P24V	P24V_TRIP
		9	-	-
		10	-	-

A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(LFCIO)		1	N24V	DI 70
		2	N24V	DI 71
		3	OUT 04-1	OUT 04-2
		4	OUT 05-1	OUT 05-2
		5	P24V	P24V

A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DOOR)		1	DI 67	N24V
		2	DI 68	N24V
		3	DI 69	N24V
		4	P24V	DO 1
		5	-	-

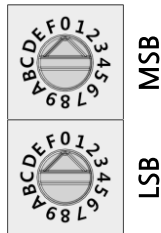
Status LED



P	BOX POWER LED	ON	BOX POWER(3.3V DC) ON
		OFF	BOX POWER(3.3V DC) OFF
A	EtherCAT AL STATE LED	OFF	INIT
		Blinking(slow)	PRE-OP
		Single Flash	SAFE-OP
		ON	OP
		Flickering(fast)	BOOTSTRAP
L1	E-BUS 0 STATE LED	Blinking(slow)	E-BUS Port 0 OPEN
		OFF	E-BUS Port 0 Closed
L2	E-BUS 1 STATE LED	Blinking(slow)	E-BUS Port 1 OPEN
		OFF	E-BUS Port 1 Closed
Digital Output	OUTPUT STATE LED 0, 1, 6 ~ 23	ON	OUTPUT ON STATE (Logic '1')
		OFF	OUTPUT OFF STATE (Logic '0')
	RELAY STATE LED 2 ~ 5	ON	OUTPUT ON STATE (Logic '1')
		OFF	OUTPUT OFF STATE (Logic '0')

※ DO 2 ~ 5는 Relay K1 ~ K4의 스위치로 사용되어 커넥터와 연결되지 않습니다.

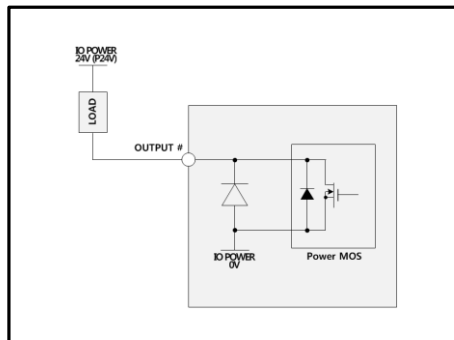
Device ID Setting



ID. Setting	$ID = MSB * 16 + LSB$
ID. Range	1 ~ 254

※ 각 Terminal의 ID는 Digital Input PDO로 입력됨.

Circuit Diagram (Digital Output)



Hardware Reference Manual Update List

No.	Version	Date	Changes in
1	1.00	2015.05.28	First Edition
2	1.01	2016.02.26	글꼴변경 (나눔고딕, 굴림)

EPS Reference Manual

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