

EPS Hardware Reference Manual



EPS-Series SLAVE CONNECTION MODULE

EPS-INTERFACE

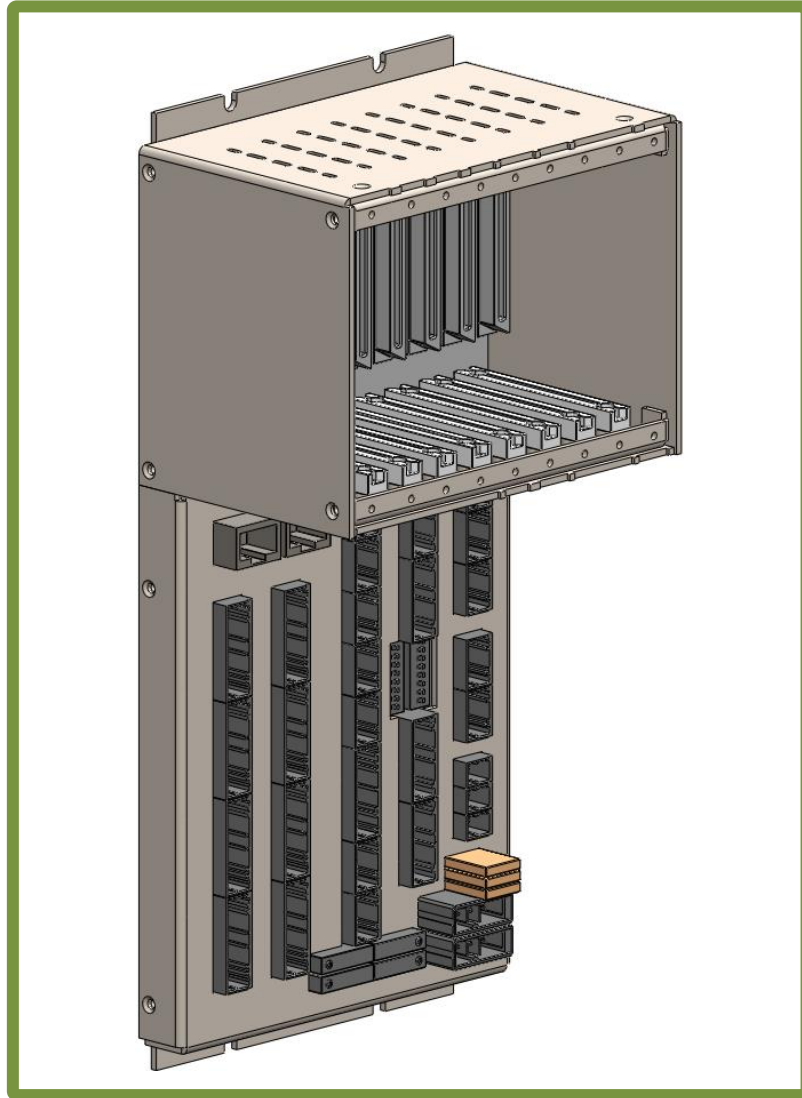
FEB 2016
©2016 COMIZOA, All rights reserved

Hardware Manual Revision : 1.0.1
Revision Data 2016. 02. 26

Table Of Contents

1	개요	1
2	제품사양	2
3	Interface Connect	3
4	Connector(PWR, LAN)	3
5	Connector(DI)	4
6	Connector(DO)	6
7	Connector(AI)	7
8	Connector(AO, R&T)	8
9	Trouble Shooting	9

개요



EPS - INTERFACE (EPS Series Interface)

EPS-INTERFACE는 커미조아 EtherCAT 기반 제어기인 EPS의 INTERFACE 모듈입니다.

EtherCAT 통신, Slave 모듈 기능 및 Power 커넥터를 제공합니다.

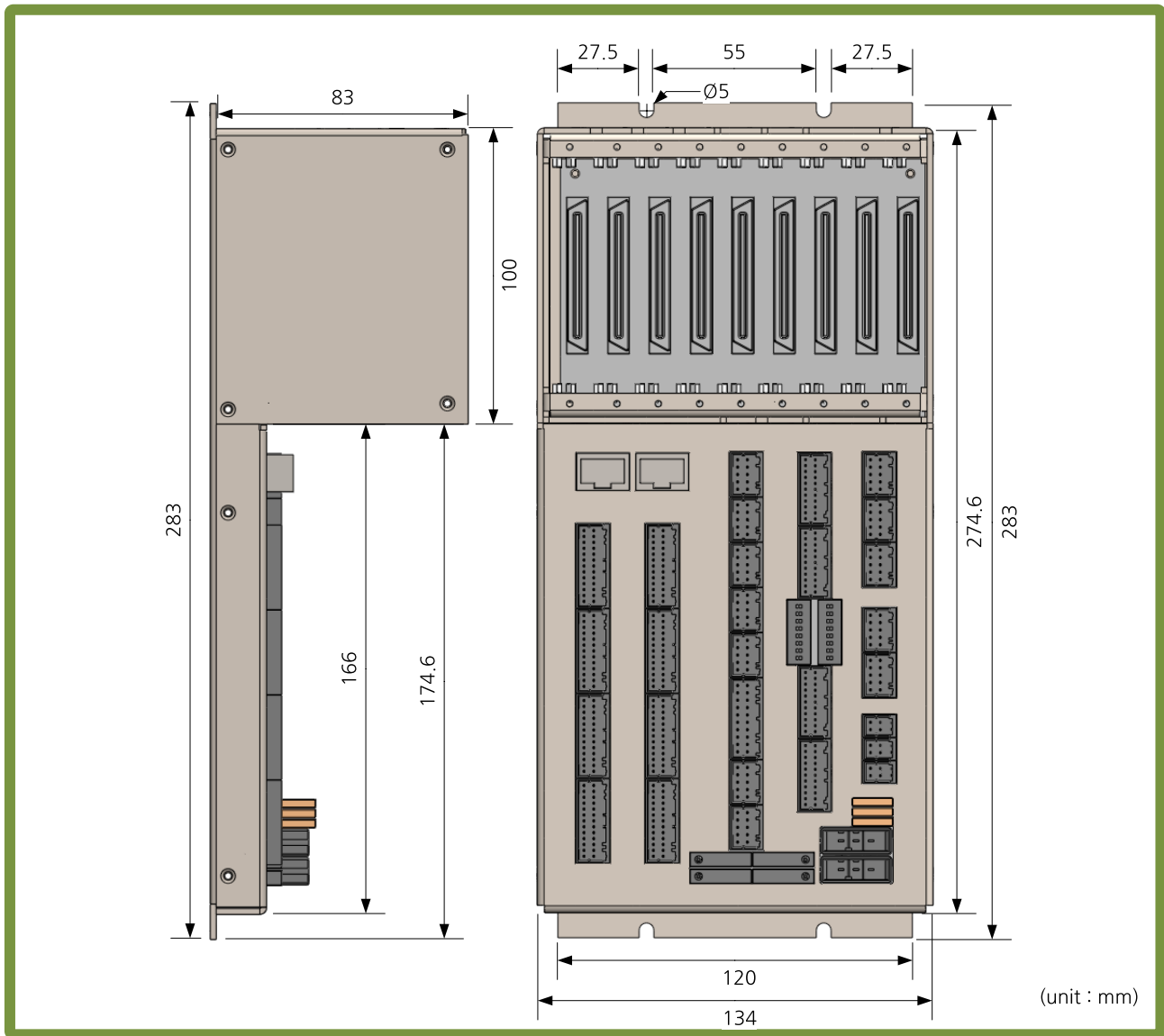
본 매뉴얼은 EPS-INTERFACE의 하드웨어 구성과 기능에 대해 설명하는 하드웨어 매뉴얼입니다.

- EtherCAT Slave Interface Module
- CiA Standard 401 and ETG.5001 Modular Device Profile
- DIO Power, AIO Power Separation
- Independent System Power

제품사양

Contents	Details
Dimension	134 * 283 * 85 (mm)
Operating Temperature	0°C ~ 50°C
Storage Temperature	-20°C ~ 80°C
Humidity	5% ~ 90%, non-condensing
Vin (V)	DC 24V (- 15% / + 20%, ripple ratio within 5%)
Main Power Fuse	5A
EtherCAT	2 Port (RJ-45 Connector)
	100 Mbps, Full-Duplex (Enable Auto-negotiation)
Wiring contact (TE Connectivity)	INTERFACE : 1-178136-2 CABLE : 1-178128-3

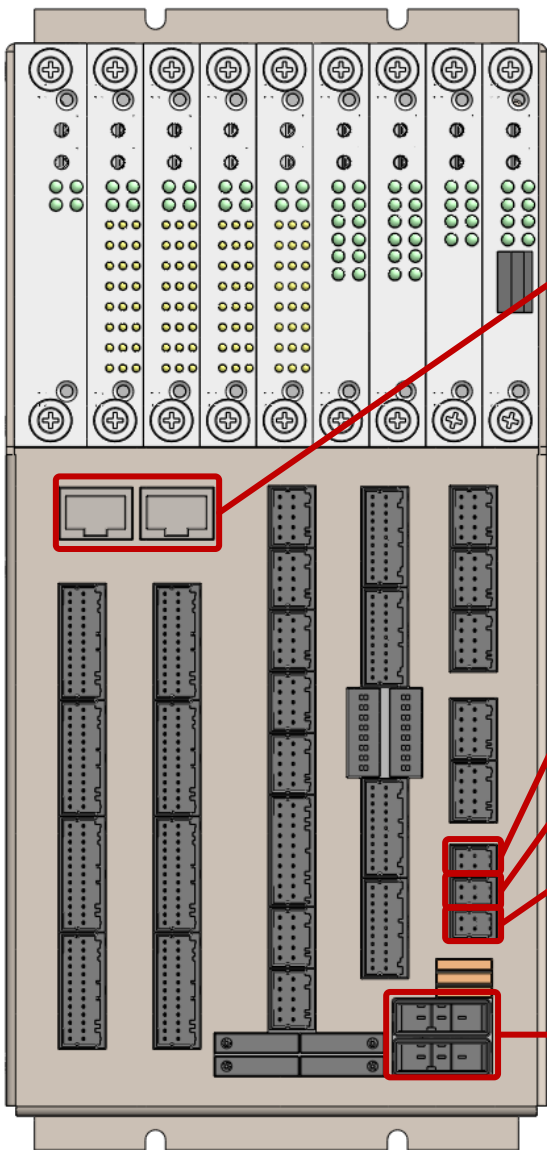
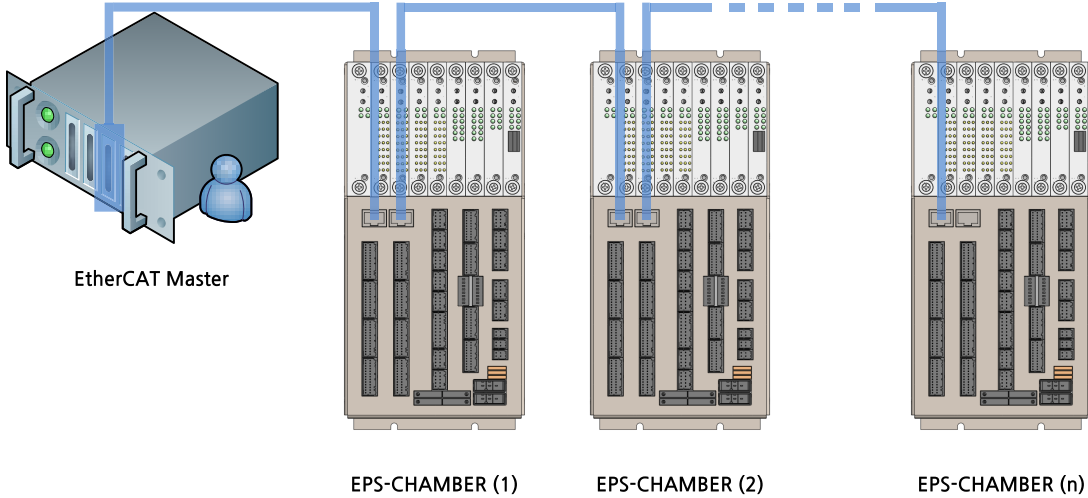
Specification



Dimension

Interface

Slave Connect



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

Pin #	A	B
1	P24V	P24V
2	P24V	P24V

1-1827875-2(SIB-TRIP)

Pin #	A	B
1	P24V	N24V
2	P24V	N24V

1-1827875-2(S/B1)

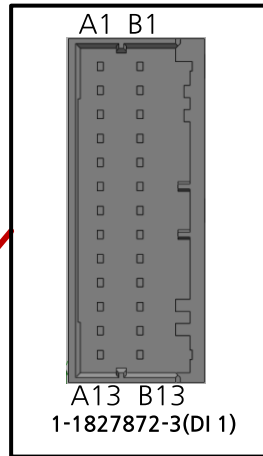
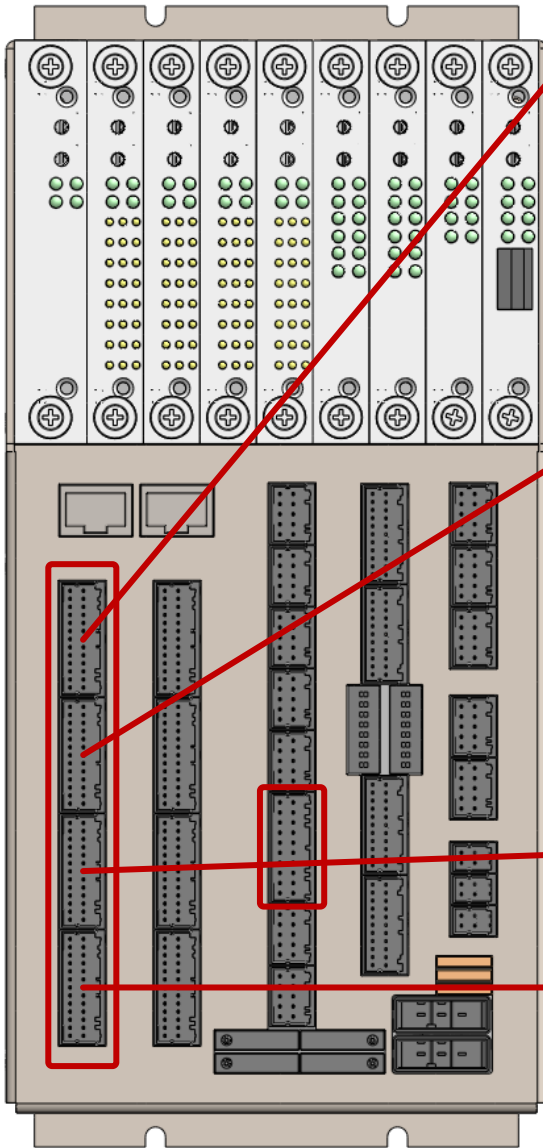
Pin #	A	B
1	P24V	N24V
2	P24V	N24V

1-1827875-2(S/B2)

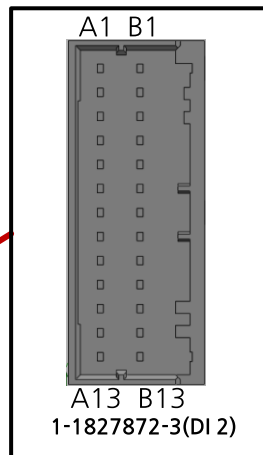
Pin #	
1	P24V
2	-
3	N24V

1-178136-2 (DC_OUT)
(DC_IN)

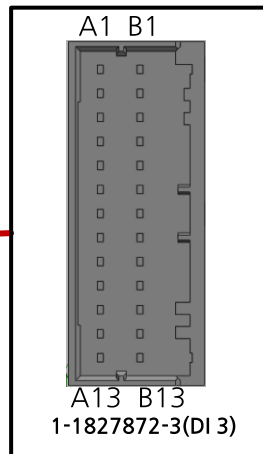
Connector



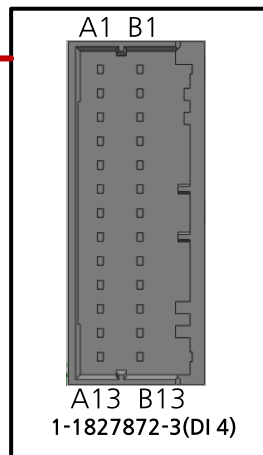
Pin #	A	B
1	P24V	P24V
2	DI 0	DI 4
3	N24V	N24V
4	P24V	P24V
5	DI 1	DI 5
6	N24V	N24V
7	P24V	P24V
8	DI 2	DI 6
9	N24V	N24V
10	P24V	P24V
11	DI 3	DI 7
12	N24V	N24V
13	-	-



Pin #	A	B
1	P24V	P24V
2	DI 8	DI 12
3	N24V	N24V
4	P24V	P24V
5	DI 9	DI 13
6	N24V	N24V
7	P24V	P24V
8	DI 10	DI 14
9	N24V	N24V
10	P24V	P24V
11	DI 11	DI 15
12	N24V	N24V
13	-	-



Pin #	A	B
1	P24V	P24V
2	DI 16	DI 20
3	N24V	N24V
4	P24V	P24V
5	DI 17	DI 21
6	N24V	N24V
7	P24V	P24V
8	DI 18	DI 22
9	N24V	N24V
10	P24V	P24V
11	DI 19	DI 23
12	N24V	N24V
13	-	-

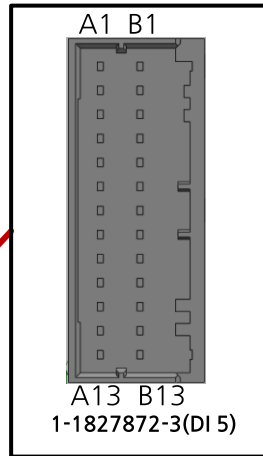
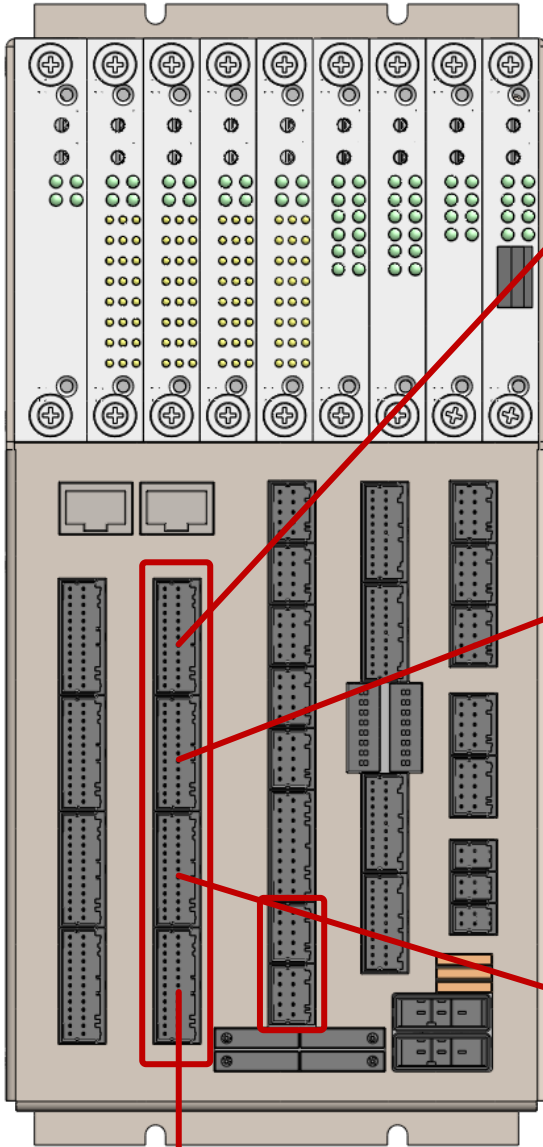


Pin #	A	B
1	P24V	P24V
2	DI 24	DI 28
3	N24V	N24V
4	P24V	P24V
5	DI 25	DI 29
6	N24V	N24V
7	P24V	P24V
8	DI 26	DI 30
9	N24V	N24V
10	P24V	P24V
11	DI 27	DI 31
12	N24V	N24V
13	-	-

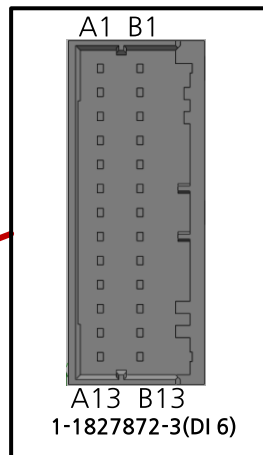
Pin #	A	B
1	N24V	DI 63
2	OUT 02-1	OUT02-2
3	N24V	DI 64
4	OUT 03-1	OUT 03-2
5	N24V	DI 65
6	N24V	DI 66
7	P24V	DO 00
8	P24V	P24V_TRIP
9	-	-
10	-	-

A10 B10
1-1827875-0
(PMC_BOX_IO)

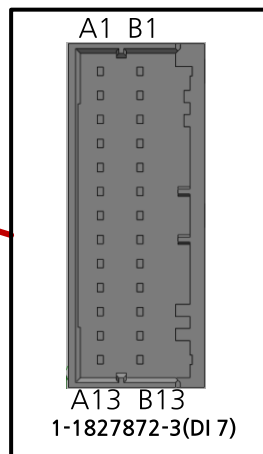
Connector



Pin #	A	B
1	P24V	P24V
2	DI 32	DI 36
3	N24V	N24V
4	P24V	P24V
5	DI 33	DI 37
6	N24V	N24V
7	P24V	P24V
8	DI 34	DI 38
9	N24V	N24V
10	P24V	P24V
11	DI 35	DI 39
12	N24V	N24V
13	-	-



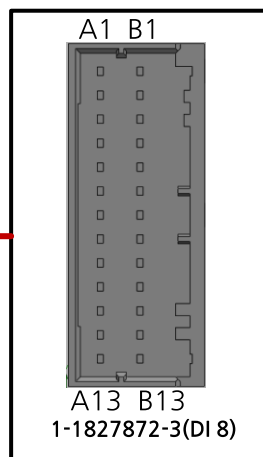
Pin #	A	B
1	P24V	P24V
2	DI 40	DI 44
3	N24V	N24V
4	P24V	P24V
5	DI 41	DI 45
6	N24V	N24V
7	P24V	P24V
8	DI 42	DI 46
9	N24V	N24V
10	P24V	P24V
11	DI 43	DI 47
12	N24V	N24V
13	-	-



Pin #	A	B
1	P24V	P24V
2	DI 48	DI 52
3	N24V	N24V
4	P24V	P24V
5	DI 49	DI 53
6	N24V	N24V
7	P24V	P24V
8	DI 50	DI 54
9	N24V	N24V
10	P24V	P24V
11	DI 51	DI 55
12	N24V	N24V
13	-	-

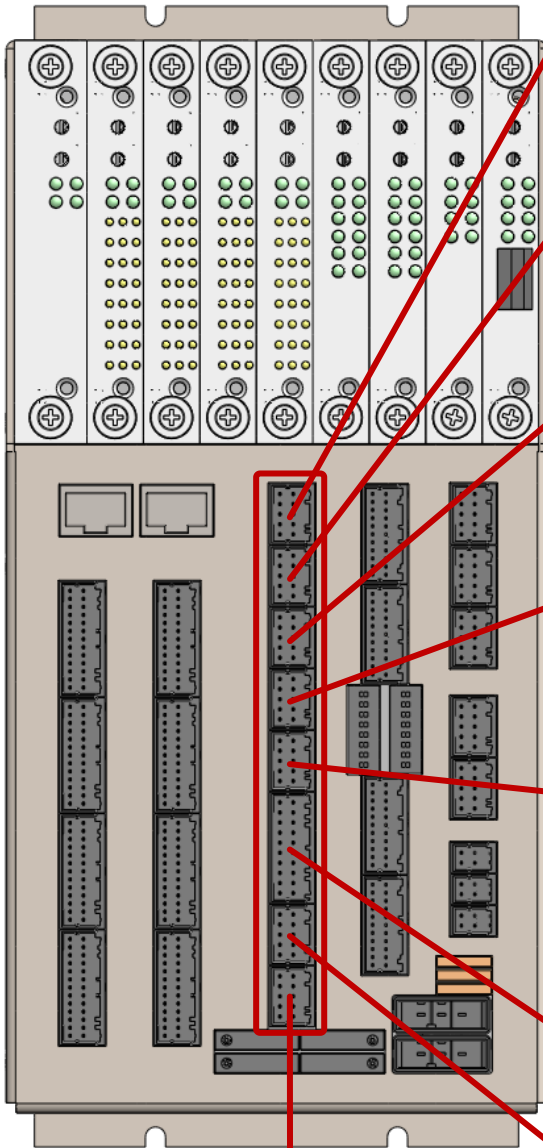
Pin #	A	B
1	DI 67	N24V
2	DI 68	N24V
3	DI 69	N24V
4	P24V	DO 1
5	-	-

Pin #	A	B
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



Pin #	A	B
1	P24V	P24V
2	DI 56	DI 60
3	N24V	N24V
4	P24V	P24V
5	DI 57	DI 61
6	N24V	N24V
7	P24V	P24V
8	DI 58	DI 62
9	N24V	N24V
10	P24V	P24V
11	DI 59	-
12	N24V	N24V
13	-	-

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	-	-

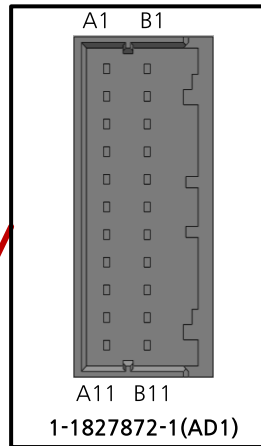
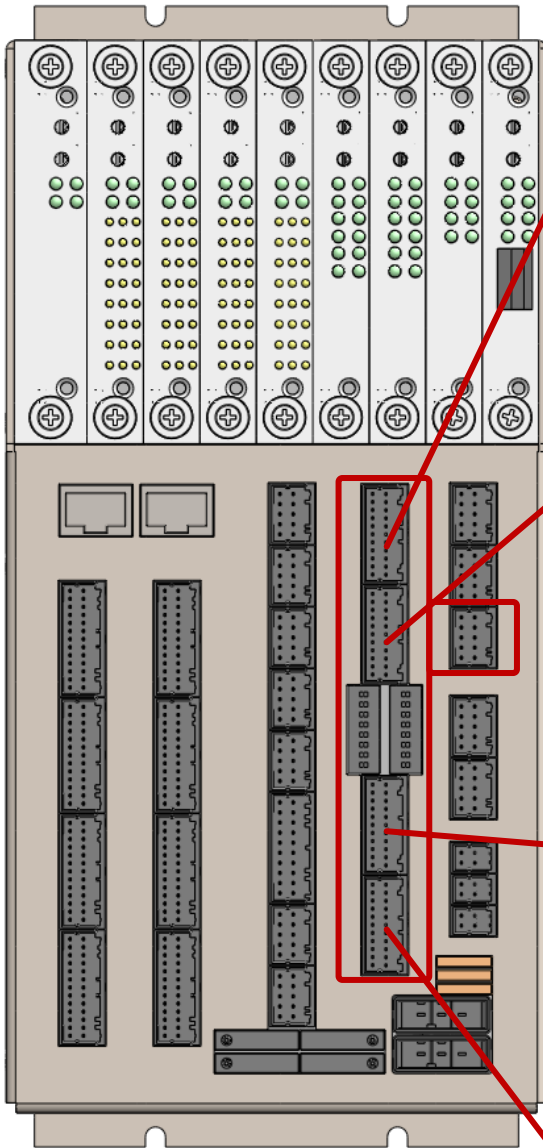
A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(DO 5)		1	P24V	DO 22
		2	P24V	DO 23
		3	P24V	-
		4	P24V	-
		5	-	-

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	-	-

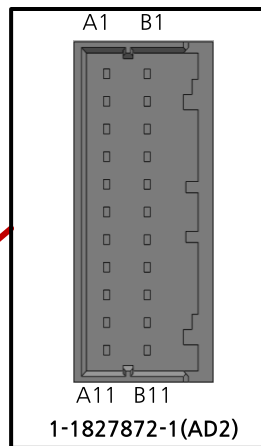
A1 B1		Pin #	A	B
 A5 B5 1-1827875-5(LFCIO)		1	N24V	DI 70
		2	N24V	DI 71
		3	OUT 04-1	OUT 04-2
		4	OUT 05-1	OUT 05-2
		5	P24V	P24V

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	-	-

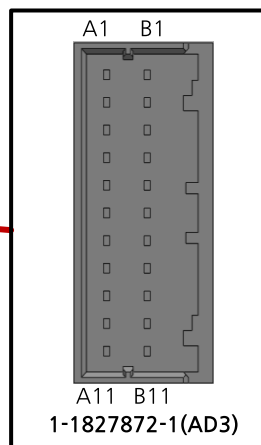
Connector



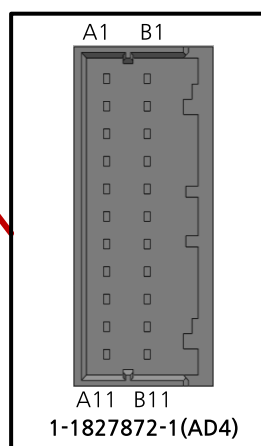
Pin #	A	B
1	P24V	P24V
2	A_IN 1	A_IN 3
3	AGND_G	AGND_G
4	N24V	N24V
5	P24V	P24V
6	A_IN 2	A_IN 4
7	AGND_G	AGND_G
8	N24V	N24V
9	-	-
10	-	-
11	-	-



Pin #	A	B
1	P24V	P24V
2	A_IN 5	A_IN 7
3	AGND_G	AGND_G
4	N24V	N24V
5	P24V	P24V
6	A_IN 6	A_IN 8
7	AGND_G	AGND_G
8	N24V	N24V
9	-	-
10	-	-
11	-	-



Pin #	A	B
1	P24V	P24V
2	A_IN 9	A_IN 11
3	AGND_G1	AGND_G1
4	N24V	N24V
5	P24V	P24V
6	A_IN 10	A_IN 12
7	AGND_G1	AGND_G1
8	N24V	N24V
9	-	-
10	-	-
11	-	-

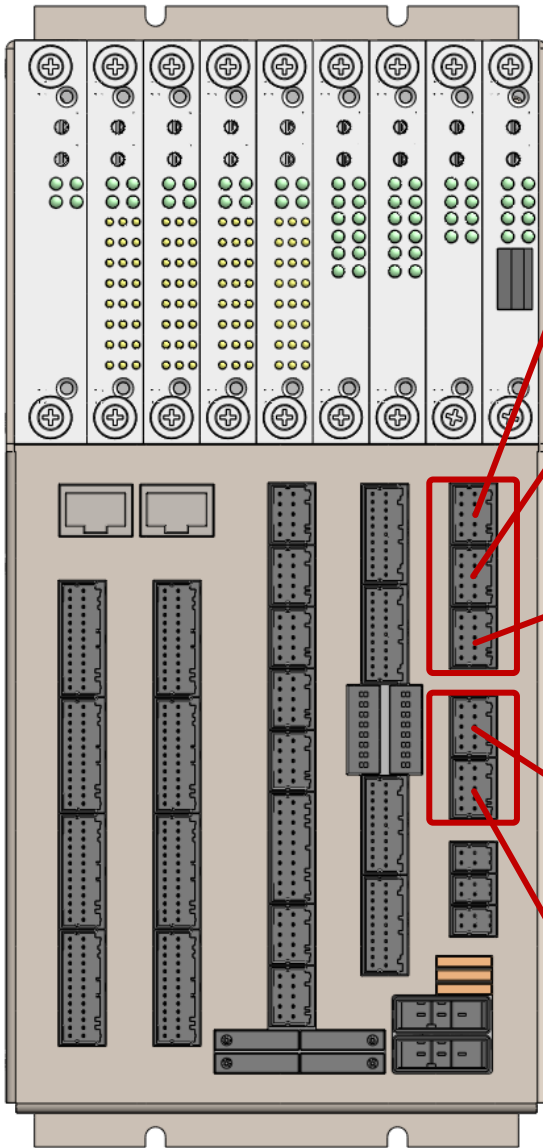


Pin #	A	B
1	P24V	P24V
2	A_IN 13	-
3	AGND_G1	AGND_G1
4	N24V	N24V
5	P24V	P24V
6	A_IN 14	-
7	AGND_G1	AGND_G1
8	N24V	N24V
9	-	-
10	-	-
11	-	-

Pin #	A	B
1	A_IN 15	A_IN 16
2	AGND_G1	AGND_G1
3	A_OUT 1	A_OUT 2
4	AGND_H	AGND_H
5	-	-

A5 B5
1-1827875-5(MFC 1)

Connector



<p>A1 B1 A5 B5 1-1827875-5(DA 1)</p>	Pin #	A	B
	1	P24V	N24V
	2	N24V	A_OUT 3
	3	P24V	AGND_H
	4	N24V	-
5	P24V	-	

<p>A1 B1 A5 B5 1-1827875-5(DA 2)</p>	Pin #	A	B
	1	P24V	N24V
	2	N24V	A_OUT 4
	3	P24V	AGND_H
	4	N24V	-
5	P24V	-	

<p>A1 B1 A5 B5 1-1827875-5(MFC 1)</p>	Pin #	A	B
	1	A_IN 15	A_IN 16
	2	AGND_G1	AGND_G1
	3	A_OUT 1	A_OUT 2
	4	AGND_H	AGND_H
5	-	-	

<p>A1 B1 A5 B5 1-1827875-5(TC)</p>	Pin #	A	B
	1	AGND	-
	2	TC 0-	TC 0+
	3	AGND	-
	4	TC 1-	TC 1+
5	-	-	

<p>A1 B1 A5 B5 1-1827875-5(RTD)</p>	Pin #	A	B
	1	AGND	EX 0(B-)
	2	RTD 0-(A)	RTD 0+(B)
	3	AGND	EX 1(B-)
	4	RTD 0-(A)	RTD 1+(B)
5	-	-	

Trouble Shooting

□ Device 인식 불가

■ 전원 확인

- DC24V LED 점등 되지 않을 경우
Power 커넥터와 Cable의 상태를 확인.
상단과 중단 Layer 간 커넥터 연결 상태 확인.
Main Fuse (F7)의 연결 상태를 확인.
- 각 Terminal의 P LED(Power) 가 점등되지 않을 경우
각 Terminal의 전원 Fuse상태를 확인한다.

■ LINK 상태 확인

- Master에서 Node Scan 수행 이후 Terminal의 EtherCAT AL STATE LED가 점등되지 않을 경우
LAN Cable의 상태를 확인한다.
- 각 Terminal의 LINK LED가 소등되어 있는 경우
LAN Cable의 상태를 확인한다.
- SES1_DI(2)와 SES1_AI(0) Terminal의 LINK LED가 소등되어 있는 경우
중단과 하단 Layer 간 커넥터 연결 상태 확인.
- AIO Terminal의 LINK LED가 소등되어 있는 경우
상단과 하단 Layer 간 커넥터 연결 상태 확인.

□ Digital I/O 동작 불량

■ 전 채널 동작 불량

- 각 Terminal I/O 전원을 점검하여 정상 전압(DC 24V)이 출력되지 않을 경우
Terminal I/O에 연결된 Cable을 제거한 후 동작확인 한다.

■ 일부 채널 동작 불량

- I/O 접점 LED가 정상 동작하는 경우
해당 채널에 연결된 배선을 확인한다.
- Digital Output은 구동 부하가 큰 경우
출력이 차단될 수 있으므로, 구동 부하가 적은 채널을 연결하여 확인한다.

□ Analog I/O 동작 불량

■ 전 채널 동작 불량

- 하단 Layer에 위치한 LED(5V) 3 point가 점등되지 않을 경우
중단과 하단 Layer 간 커넥터 연결 상태 확인.

■ 일부 채널 동작 불량

- 하단 Layer에 위치한 LED(5V) 3 point가 점등되지 않을 경우
해당 채널에 연결된 배선을 확인한다.

Hardware Reference Manual Update List

No.	Version	Date	Changes in
1	1.00	2015.05.29	First Edition
2	1.00	2015.06.30	p3. SIB-TRIP 커넥터 추가
3	1.01	2016.02.26	글꼴변경 (나눔고딕, 굴림)

EPS Reference Manual

Copyright holder : COMIZOA CO.,LTD
Copyright (c) by COMIZOA CO.,LTD. All right reserved.
2016. 02. 26.



COMIZOA CO.,LTD
<http://www.comizoa.com>
Tel) +82 - 42 - 936 - 6500
Fax) +82 - 42 - 936 - 6507

All the details including figures and programs included in this manual is protected by Korean Copyright.
Any parts of this manual can be copied or distributed without COMIZOA's permission.