

EVS Hardware Reference Manual



12CHANNEL RPM CHECK MODULE

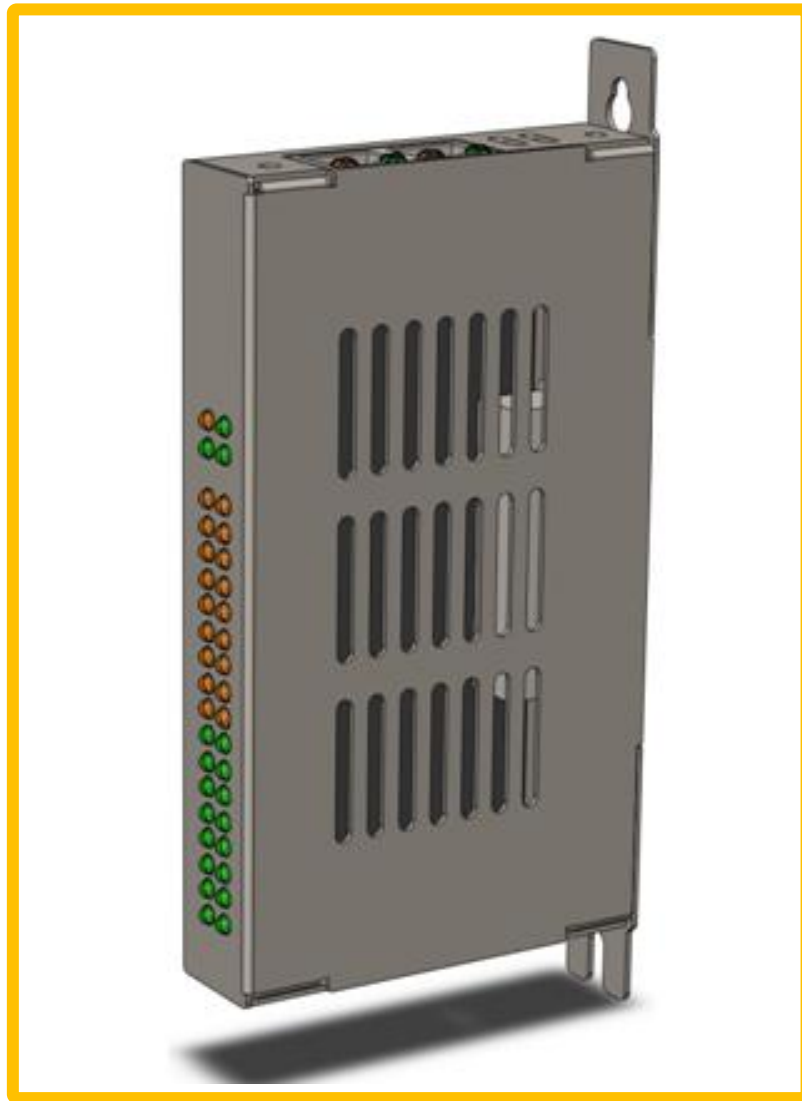
EVS-RPM (v1.00)

AUGUST 2015
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개요


EVS – RPM (RPM CHECK 12ch)

EVS-RPM은 커미조아의 EtherCAT 기반 제어기의 12채널 **RPM CHECK** 모듈입니다.

각 채널의 내부 제어신호와 외부 입출력 신호는 고속 포토커플러를 사용하여 절연됩니다.

본 매뉴얼은 **EVS-RPM**의 하드웨어 구성과 기능에 대해 설명하는 하드웨어 매뉴얼입니다.

제품사양

Contents	EVS-RPM
Dimension	20.5 * 76.2 * 161.0 (mm)
Operating Temperature	0°C ~ 50°C
Storage Temperature	-20°C ~ 80°C
Humidity	5% ~ 90%, non-condensing
Power consumption	Power supply input +24V DC \pm 5%, 300mA max
EtherCAT	2 Port (RJ-45 Connector)
	100 Mbps, Full-Duplex (Enable Auto-negotiation)

Environmental Specification

Contents	EVS-RPM
Number of Inputs	12 inputs
Input type	Current Sinking type (NPN)
Isolation	Photo-coupler ($V_{iso} = 3,750V_{rms}$)
OFF State Voltage (logic ' 1')	Min. 11V DC ~ Max. 28.8 V DC (EN 61131-2, type 1/3)
On State Voltage (logic ' 0')	Min. 0V DC ~ Max. 5V DC (EN 61131-2, type 1/3)
On state Current	Max. 25mA per @ 28.8V DC
Input Impedance	Approx. 1.2K Ω (\pm 5%)
RPM SPEED	10 RPM ~ 6000 RPM

RPM Input Specification

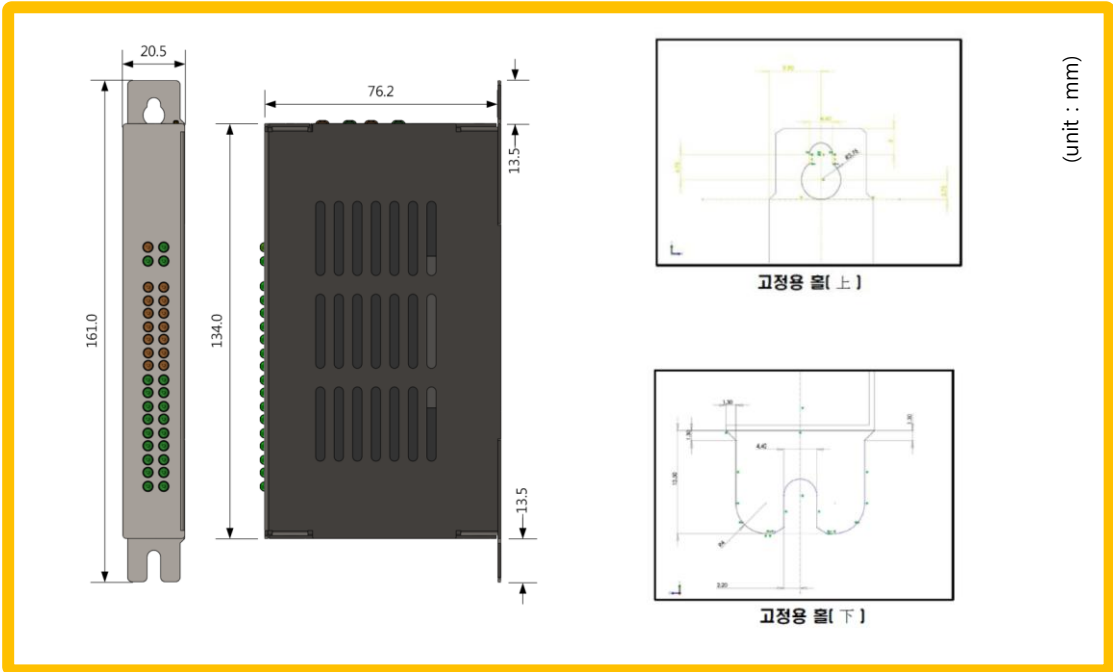
ITEM	EVS-RPM
Number of Inputs	12 output
Output type	MOSFET with Common Ground (NPN)
Isolation	Photo-coupler($V_{iso}=3,000V_{rms}$)
OFF State Current	Max. 100uA / Point
On State Max Sink Current	Max. 500mA / Point
Rds(On state resistance)	Max. 1.4 Ω (\pm 5%)
Over-Temperature Shutdown	160°C
Over-Current Shutdown	0.7A (Min.) ~ 2A (Max.)

Alarm Output Specification

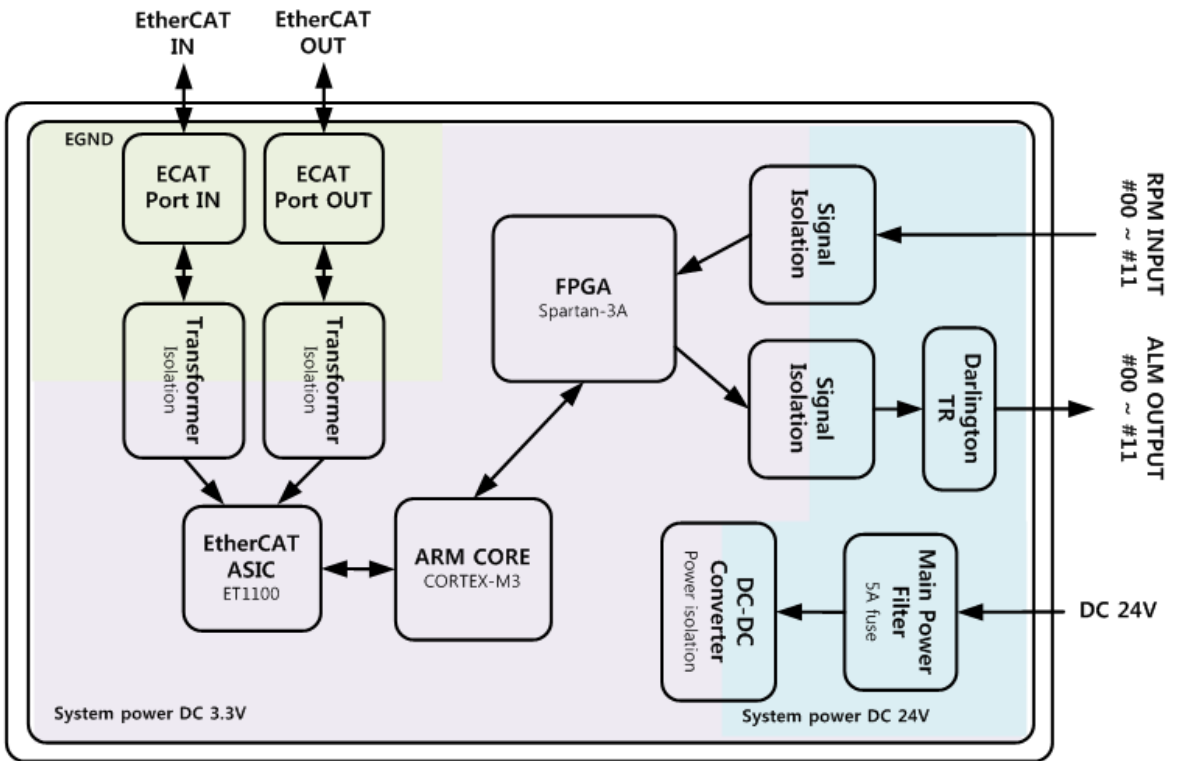
Contents	EVS-RPM
Number of Inputs	2 inputs
Input type	Current Sinking type (NPN)
Isolation	Photo-coupler ($V_{iso} = 3,750V_{rms}$)
OFF State Voltage (logic ' 1')	Min. 11V DC ~ Max. 28.8 V DC (EN 61131-2, type 1/3)
On State Voltage (logic ' 0')	Min. 0V DC ~ Max. 5V DC (EN 61131-2, type 1/3)
On state Current	MAX 3.6mA per @ 28.8V DC
Input Impedance	Approx. 6.6K Ω (\pm 5%)

RPM SET Input Specification

DIMENSION



Block diagram



Connector

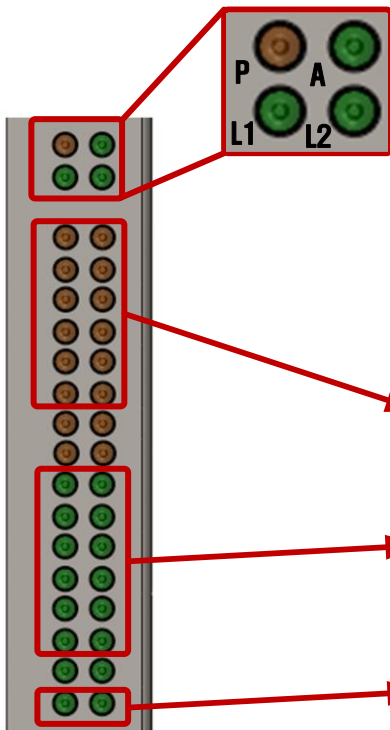

Pin #	IN	OUT
1	TX+	TX+
2	TX-	TX-
3	RX+	RX+
4	NC	NC
5	NC	NC
6	RX-	RX-
7	NC	NC
8	NC	NC

**ETHERCAT CONNECTOR
(CAT.5E ↑)**

Pin #		Pin #		Pin #		Pin #	
1	VCC(+24V)	21	RPM IN #00	40	ALMOUT #00	60	GROUND
2	VCC(+24V)	22	RPM IN #01	41	ALMOUT #01	61	GROUND
3	VCC(+24V)	23	RPM IN #02	42	ALMOUT #02	62	GROUND
4	VCC(+24V)	24	RPM IN #03	43	ALMOUT #03	63	GROUND
5	VCC(+24V)	25	RPM IN #04	44	ALMOUT #04	64	GROUND
6	VCC(+24V)	26	RPM IN #05	45	ALMOUT #05	65	GROUND
7	VCC(+24V)	27	RPM IN #06	46	ALMOUT #06	66	GROUND
8	VCC(+24V)	28	RPM IN #07	47	ALMOUT #07	67	GROUND
9	VCC(+24V)	29	RPM IN #08	48	ALMOUT #08	68	GROUND
10	VCC(+24V)	30	RPM IN #09	49	ALMOUT #09	69	GROUND
11	VCC(+24V)	31	RPM IN #10	50	ALMOUT #10	70	GROUND
12	VCC(+24V)	32	RPM IN #11	51	ALMOUT #11	71	GROUND
13	VCC(+24V)	33	-	52	-	72	GROUND
14	VCC(+24V)	34	-	53	-	73	GROUND
15	VCC(+24V)	35	-	54	-	74	GROUND
16	VCC(+24V)	36	-	55	-	75	GROUND
17	VCC(+24V)	37	-	56	-	76	GROUND
18	VCC(+24V)	38	RPM SET #00	57	-	77	GROUND
19	VCC(+24V)	39	RPM SET #01	58	-	78	GROUND
20	VCC(+24V)			59	-		

I/O CONNECTOR (D-SUB 78PIN)

Status LED



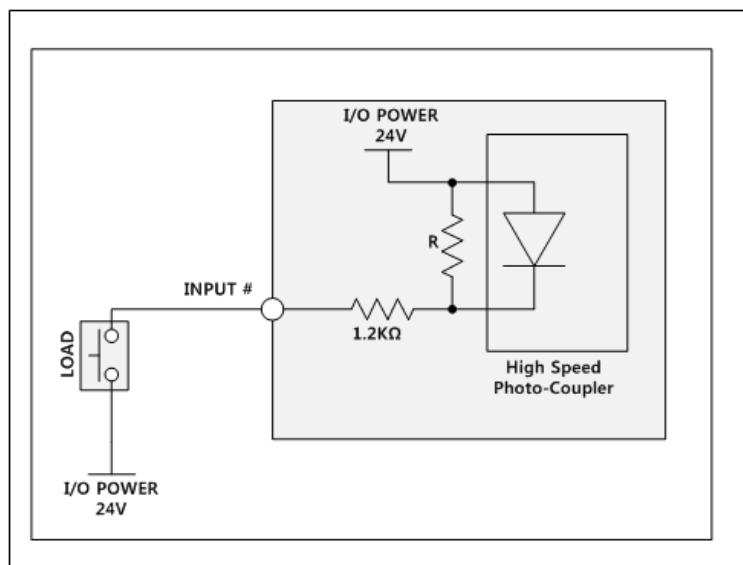
P	BOX POWER LED	ON	BOX POWER(3.3V DC) ON
		OFF	BOX POWER(3.3V DC) OFF
A	EtherCAT AL STATE LED	OFF	INIT
		Blinking(slow)	PRE-OP
		Single Flash	SAFE-OP
		ON	OP
		Flickering(fast)	BOOTSTRAP
L1	LINK 0 STATE LED	Blinking(slow)	MII Port IN OPEN
		OFF	MII Port IN Closed
L2	LINK 1 STATE LED	Blinking(slow)	MII Port OUT OPEN
		OFF	MII Port OUT Closed

0-11	RPM INPUT STATE LED	ON	OUTPUT ON STATE (LOGIC '1')
		OFF	OUTPUT OFF STATE (LOGIC '0')

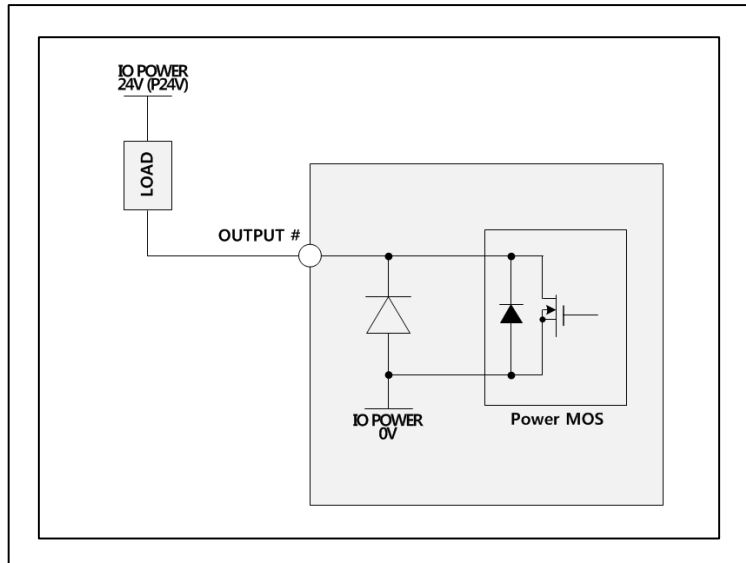
16-27	ALM OUTPUT STATE LED	ON	OUTPUT ON STATE (LOGIC '1')
		OFF	OUTPUT OFF STATE (LOGIC '0')

30-31	RPM SET STATE LED	ON	OUTPUT ON STATE (LOGIC '1')
		OFF	OUTPUT OFF STATE (LOGIC '0')

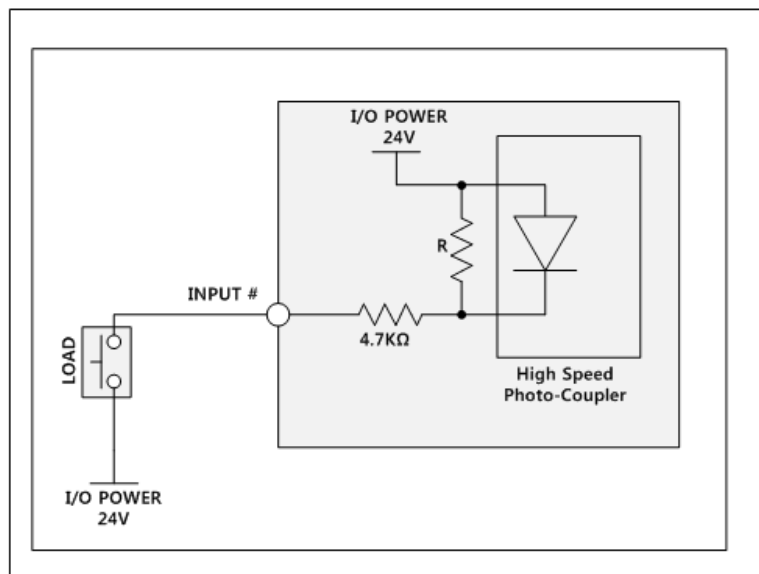
RPM INPUT CIRCUIT



ALARM OUTPUT CIRCUIT



RPM SET INPUT CIRCUIT



RPM SETTING

RPM SET INPUT	"00"	RPM INPUT >> 3000 RPM
	"01"	RPM INPUT >> 2400 RPM
	"10"	RPM INPUT >> 1800 RPM
	"11"	RPM INPUT >> 1200 RPM

Hardware Reference Manual Update List

No.	Version	Date	Changes in
1	1.00	2015.08.11	First Edition

EVS Reference Manual

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