

WELCON

Servo Drive

Hardware Manual



WER-D048/10-FS00FD-E

welcon
SYSTEMS



Precautions

- Please read this manual carefully before installing and commissioning.
- WELCON SYSTEMS assumes no responsibility whatsoever for any loss or damage arising out of use for any purpose.

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Product Code for welcon Drive

WER-D024/05-FSxxxx-E

Product Type

- WE** WELCON Standard
- **** User Code (only for customized order)

Drive Shape

- R** Rectangle Type Board
- C** Circle Type Board
- M** Miniature Board

Power

- D** DC
- A** AC

Voltage

- 024** 24V(DC)
- 048** 48V(DC)
- 220** 220V(AC)

Current

- 01** 1Arms (Constant, Peak 3Arms)
- 03** 3Arms (Constant, Peak 6Arms)
- 05** 5Arms (Constant, Peak 10Arms)
- 10** 10Arms (Constant, Peak 20Arms)

Feedback Sensor (bit operation)

Bit0	Incremental Encoder	Bit4	Sin/Cos Encoder	Bit8	Potentiometer
Bit1	Dual Incremental Encoder	Bit5	BISS/SSI Interface Encoder	Bit9 ~ Bit15	Reserved
Bit2	Separated Digital Hall Sensor	Bit6	Analog Hall Sensor		
Bit3	Shared Digital Hall Sensor	Bit7	Tamagawa Serial Encoder		

Ex) Incremental Encoder + Shared Digital Hall Sensor + Analog Hall Sensor = 0000 0000 0100 1001 = 0049

Communication

- E** EtherCAT
- C** CAN

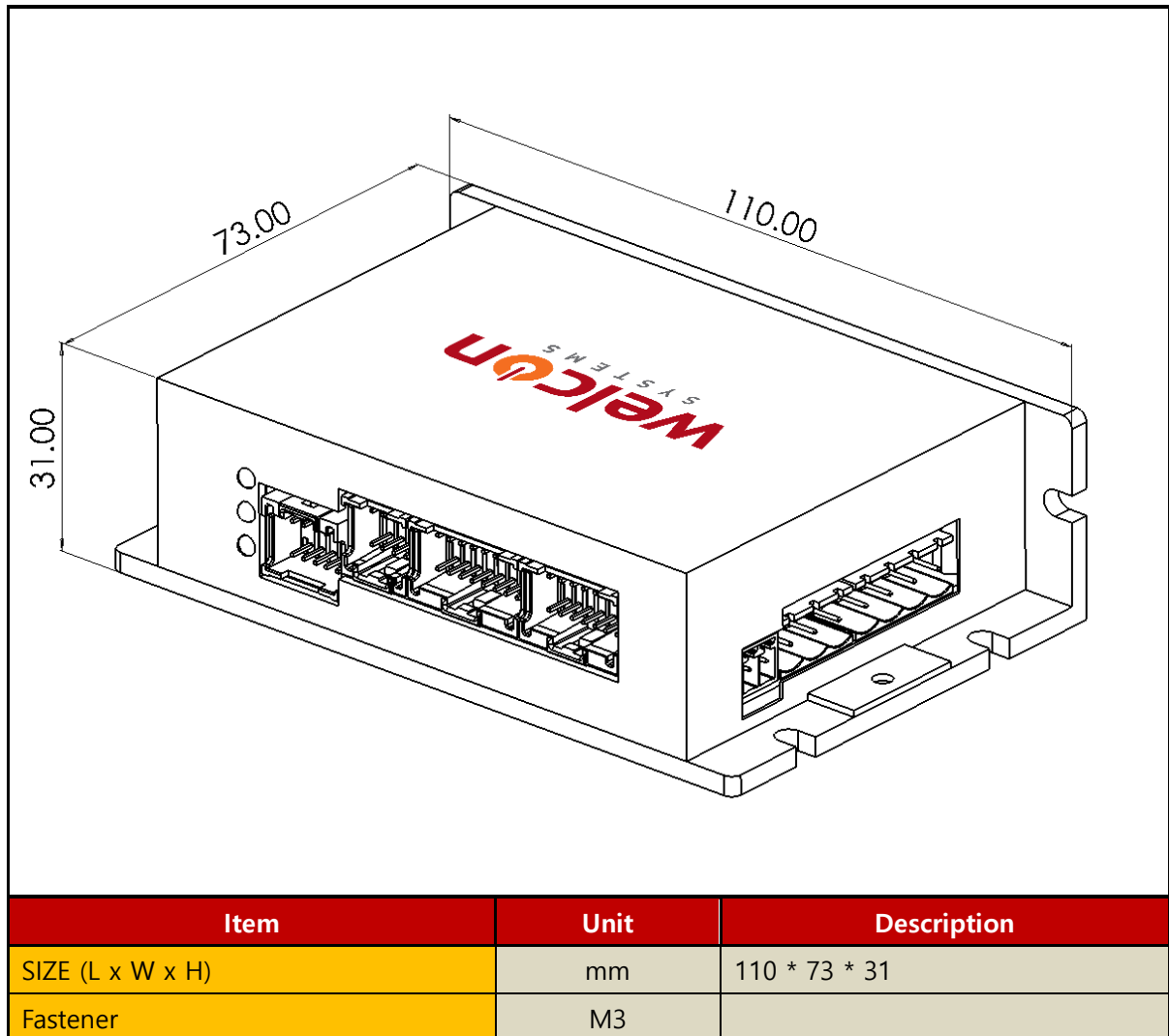
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1. Technical Information

1.1. Mechanical Data



[*For details, please refer to the 3D Modelling on the homepage.](#)

1.2. Electrical Data

WER-D048/10-FS00FD-E			
Basic	Motors	DC/BLDC/PMSM/VCM	
	Communication	USB+CANopen or EtherCAT(CoE, FoE)	
	GUI	WELSS, Setting, Drive, Motor, Feedback, I/O, Motion	
	Position Sensor	Incremental Encoder Shared/Separated Hall Sensor Analog Hall Sensor Sin/Cos Encoder SSI/Biss-C/Tamagawa Serial Encoder	
Inputs & Outputs	Analog Input	Quantity	1
		Voltage Range	Analog ± 10 VDC differential
		Input Resolution	14 bit
	Digital Input	Quantity	6 (with STO)
		Signal	Configurable. Opto-isolated
		Voltage	24V
	Digital Output	Quantity	2
		Signal	Configurable. Opto-isolated. Open collector
		Voltage	24V
		Max. Output Current	50mA
Motor Feedback	General	Supply Voltage	5VDC
	Incremental Encoder	Signal	A-quad-B with or without index, shared digital hall sensor, RS422, Differential
		A-quad-B Max Input Frequency	10MHz (before quadrature)
	Digital Hall Sensor	Signal	Differential-ended
		Type	Separated and shared hall sensor
	Analog Hall Sensor	Signal	0~5V, Single-ended
		Sampling Frequency	24KHz
	Sin/Cos Encoder	Signal	-0.7~+0.7V at 2.5V
		Sampling Frequency	24KHz
	Serial Encoder	Type	SSI, Biss-C, Tamagawa
Bite rate		0.5Mbps, 1Mbps, 2Mbps, 2.5Mbps, 5Mbps	

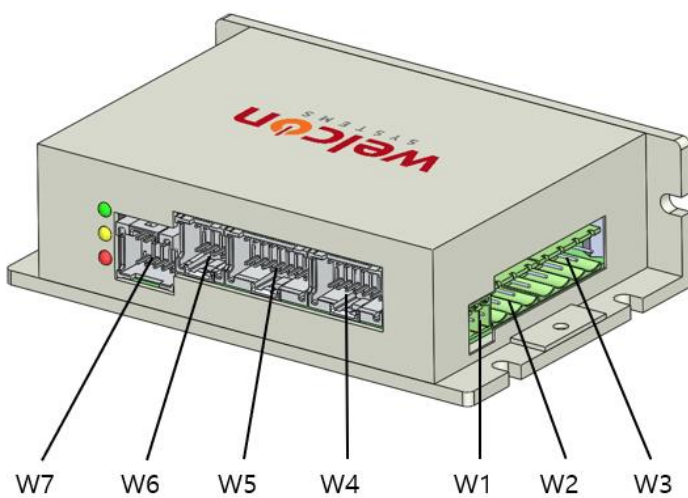
[*For details, please refer to the specification on the homepage.](#)

2. Wiring

2.1. Tools

Tool	Manufacturer	Part Number
Hand crimp Tool	MOLEX	63811-6300

2.2. Connections



W1 → Regenerative resistance

W2 → Main Power

W3 → Motor Power

W4 → Analog Encoder

W5 → Digital Encoder

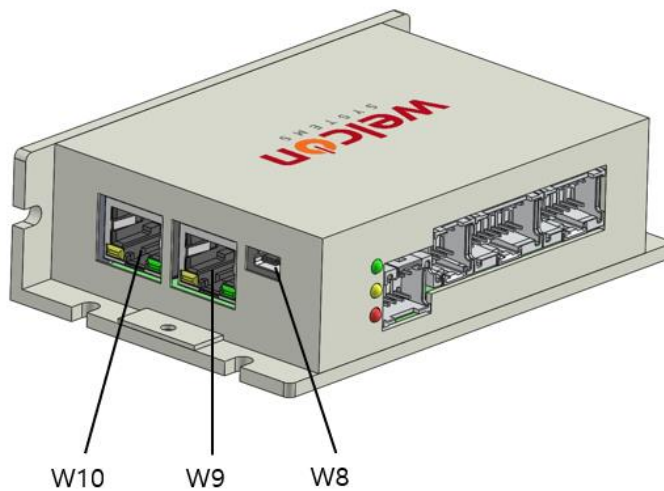
W6 → Serial Encoder

W7 → GPIO

W8 → USB

W9 → EtherCAT Output

W10 → EtherCAT Input

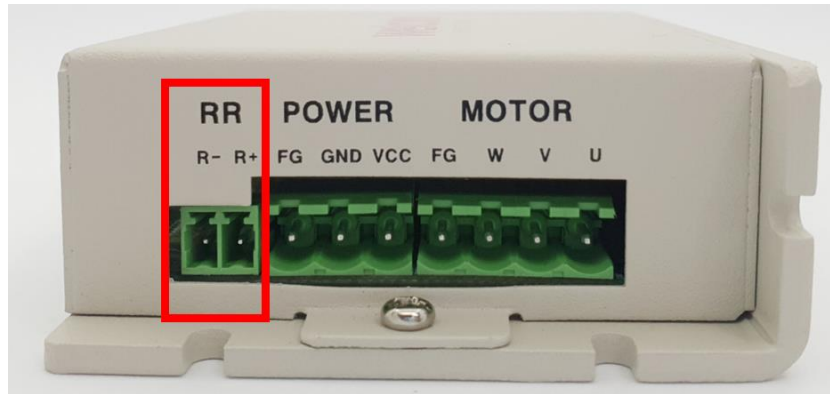


W10

W9

W8

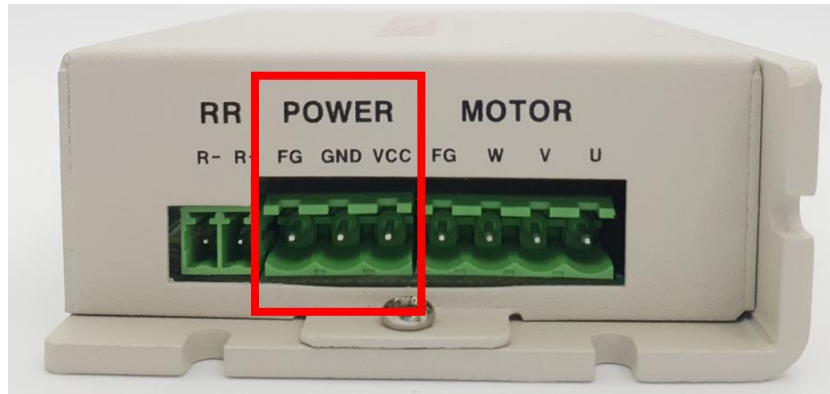
2.3. Regenerative resistance



EC350V-2P

ECH350R-02P		J904
Pin	Input Power	
1	R+	
2	R-	

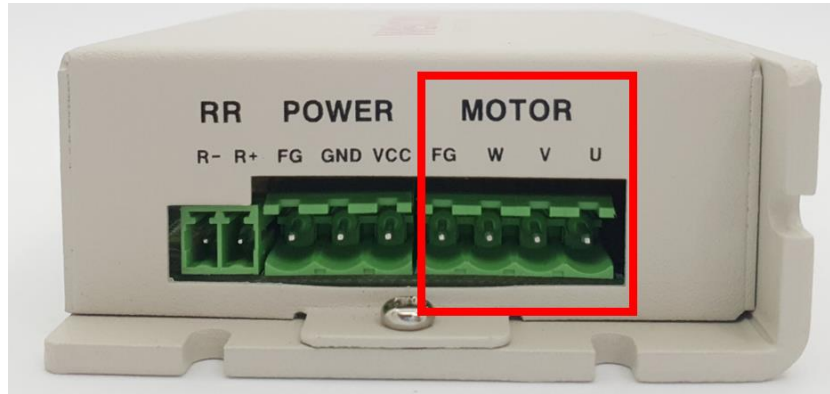
2.4. Main Power



5ESDV 03P

5EHDR-03P		J1
Pin	Signal	Input Power
1	VCC	12V~ 48V DC
2	GND	GND
3	FG	FG

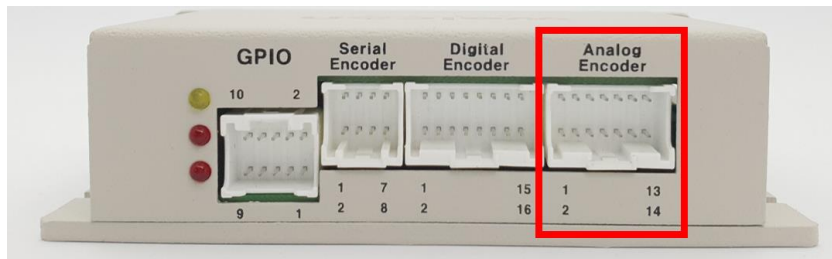
2.5. UVW



5ESDV 04P

5EHDR-04P		J101
Pin	Signal	
1	U	
2	V	
3	W	
4	FG	

2.6. Analog Encoder



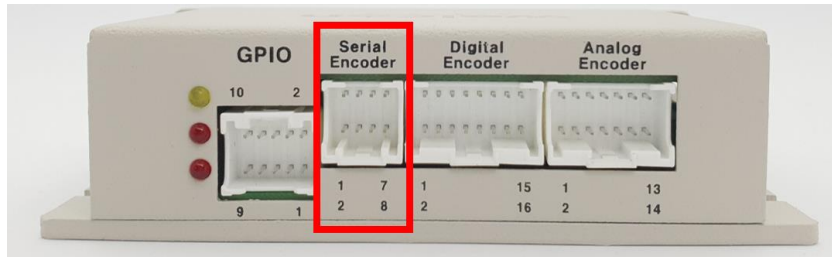
Molex_51353-1400

Molex 561349000



Molex 55959-1430		J901
Pin	Signal	
1	SIN+	
2	SIN-	
3	COS+	
4	COS-	
5	REF+	
6	REF-	
7	5V	
8	GND	
9	FG	
10	AHALL_U	
11	AHALL_V	
12	AHALL_W	
13	AIN+	
14	AIN-	

2.7. Biss Encoder



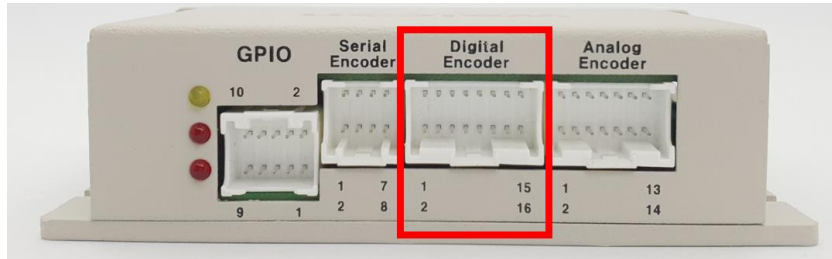
Molex_51353-0800

Molex 561349000



Molex 55959-0830		J801
Pin	Signal	
1	BISS_DATA+ (SLO+)	
2	BISS_DATA- (SLO-)	
3	BISS_CLK+ (MA+)	
4	BISS_CLK- (MA-)	
5	RS485_RTX+	
6	RS485_RTX-	
7	5V	
8	GND	

2.8. Digital Encoder



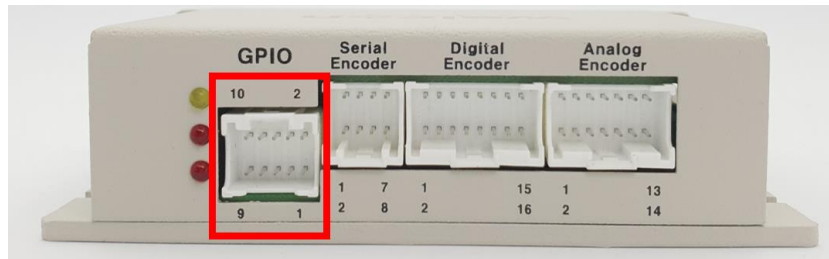
Molex_51353-1600

Molex 561349000



Molex 55959-1630		J701
Pin	Signal	
1	5V	
2	GND	
3	Encoder A+	
4	Encoder A-	
5	Encoder B+	
6	Encoder B-	
7	Encoder I+	
8	Encoder I-	
9	HALL U+	
10	HALL U-	
11	HALL V+	
12	HALL V-	
13	HALL W+	
14	HALL W-	
15	FG	
16	GND	

2.9. GPIO

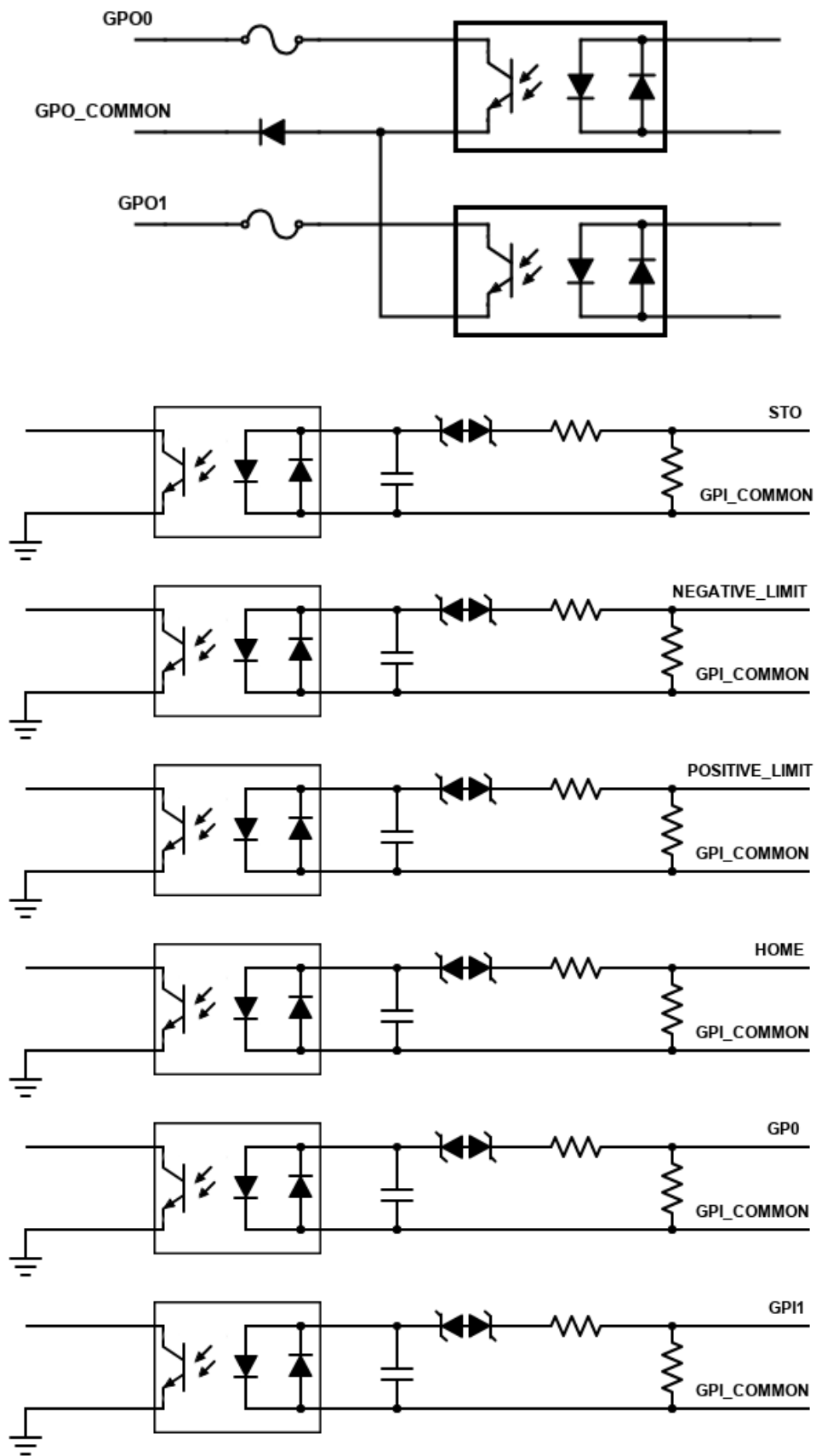


Molex_51353-1000

Molex 561349000

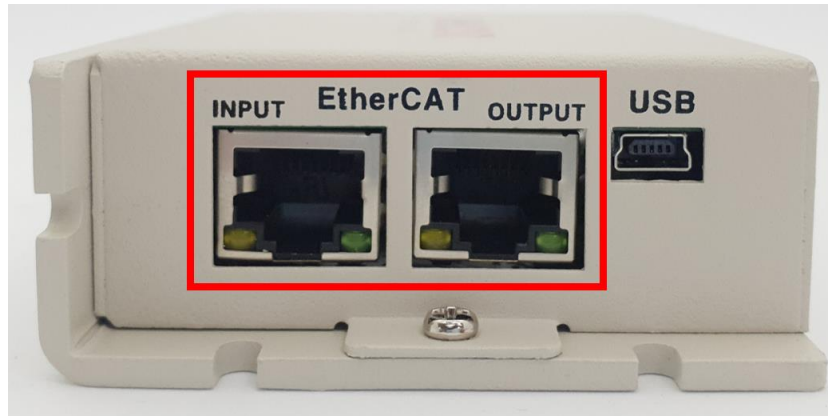


Molex 55959-1030		J301
Pin	Signal	
1	STO	
2	NEGATIVE_LIMIT	
3	POSITIVE_LIMIT	
4	HOME	
5	GPI 0	
6	GPI 1	
7	GPI_COMMON	
8	GPO 0	
9	GPO 1	
10	GPO_COMMON	



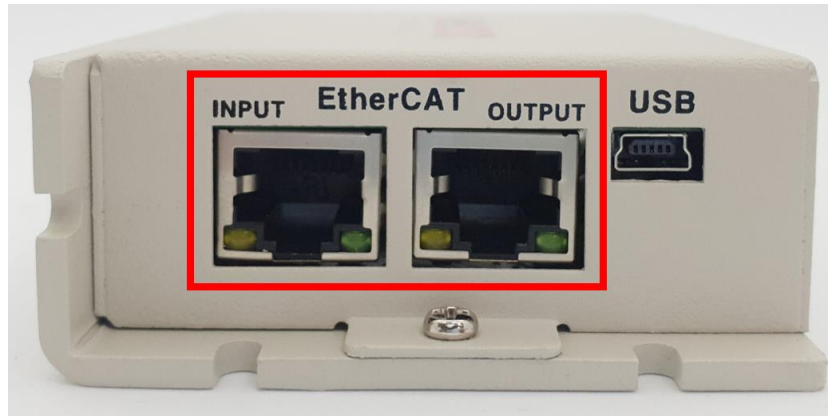
[GPIO Circuit]

2.10. EtherCAT



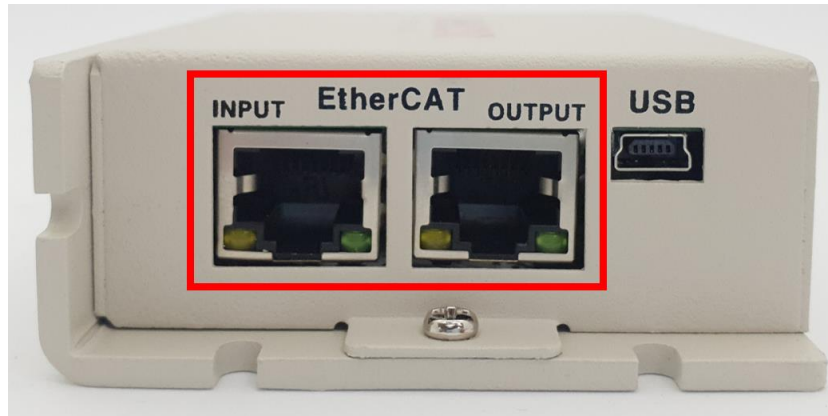
8pin RJ45	
Pin	Signal
1	EtherCAT Tx+
2	EtherCAT Tx-
3	EtherCAT Rx+
4	NC
5	NCs
6	EtherCAT RX-
7	NC
8	NC

2.11. CAN



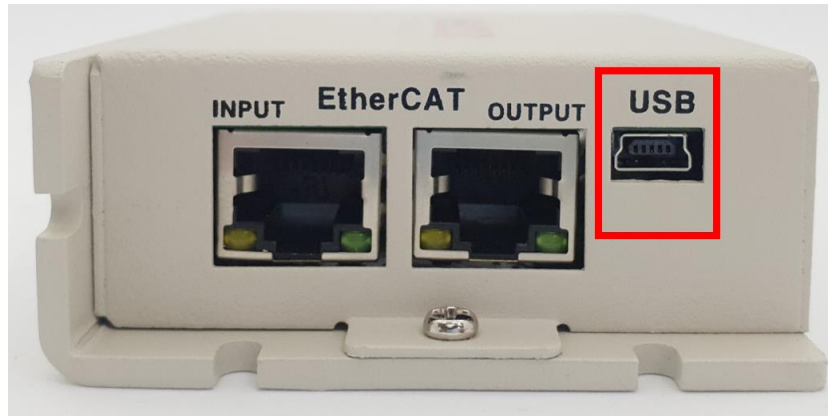
8pin RJ45	
Pin	Signal
1	HIGH
2	LOW
3	GND
4	NC
5	NC
6	NC
7	GND
8	NC

2.12. RS-485



8pin RJ45	
Pin	Signal
1	RTD+
2	NC
3	GND
4	RTD-
5	NC
6	NC
7	NC
8	NC

2.13. USB



USB-Mini Type B (Keystone Model:937)	
Pin	Signal
1	VBUS
2	DM
3	DP
4	ID
5	GND
6	SHIELD



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