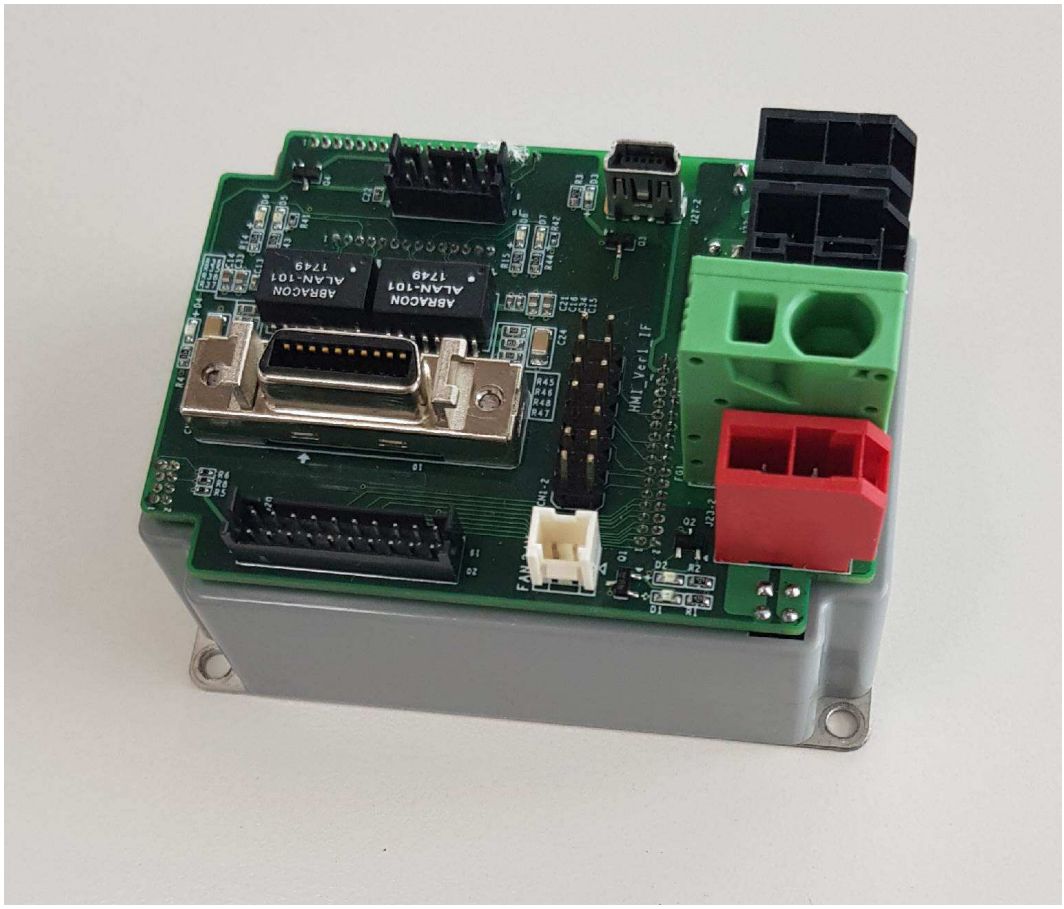
RD3

Installation Guide



September 2019

Contents

1. Technical Information

1.1 Physical Specifications

Feature	Units	All Types
Weight	g	130g
Dimension	mm	57.2 x 77.2 x 52.35
Mounting method		Panel

1.2 Technical Data

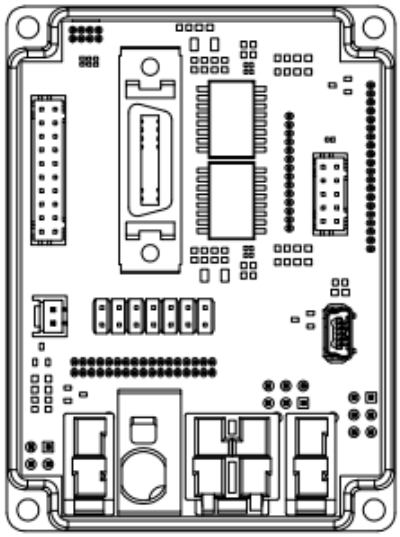
Feature	Units	RD3-016060
Minimum supply voltage	VDC	12
Nominal supply voltage	VDC	48
Maximum supply voltage	VDC	60
maximum continuous power output	kW	380W
Efficiency at rated power(at nominal conditions)	%	-
Control power supply	VDC	18 to 30 VDC
Brake, Fan power output	VDC	24
Continuous current limit	A(peak)	8
Peak current limit	A(peak)	16

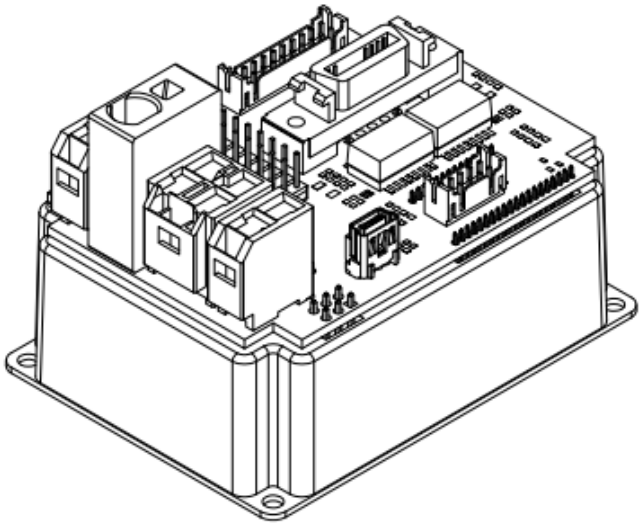
1.3 Environmental Conditions

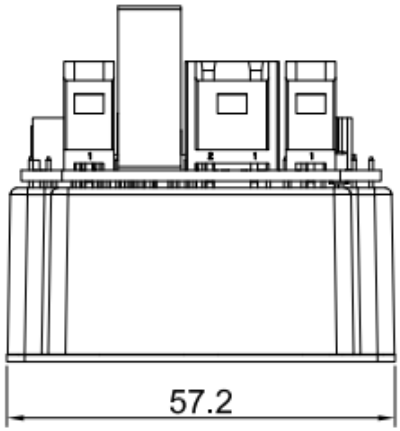
Feature	All Types
Operating ambient temperature	0°C to 40°C
Storage temperature	-20°C to +85°C
Maximum non-condensing humidity	-
Maximum Operating Altitude	-
Mechanical Shock	-
Vibration	-

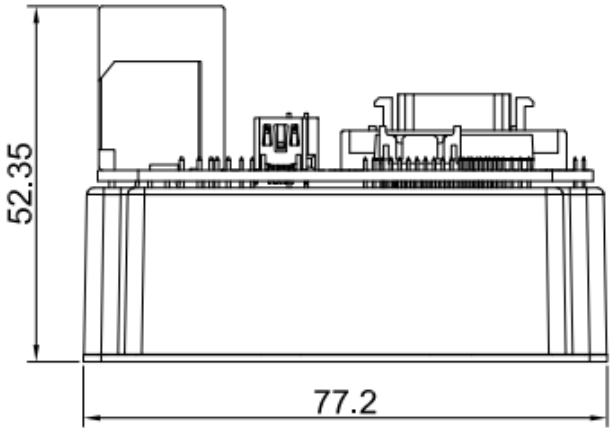
2. Installation

2.1 Drive Dimensions

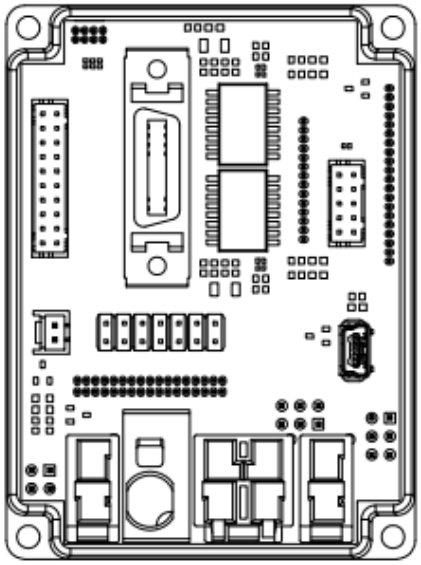


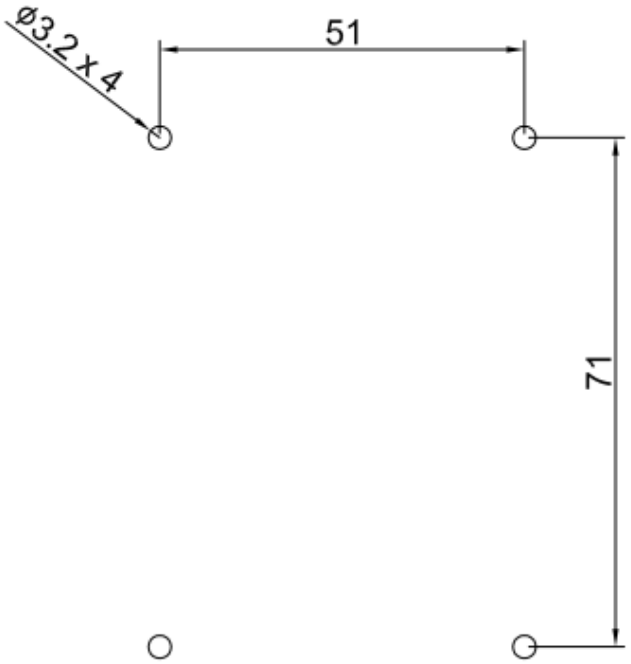


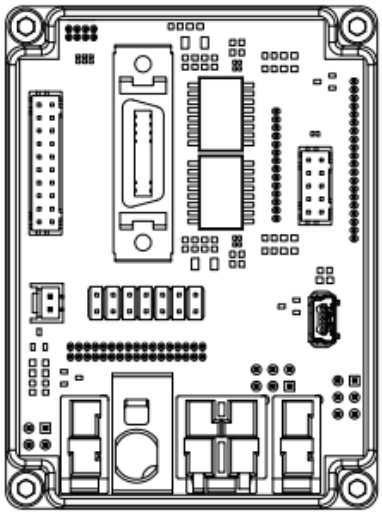


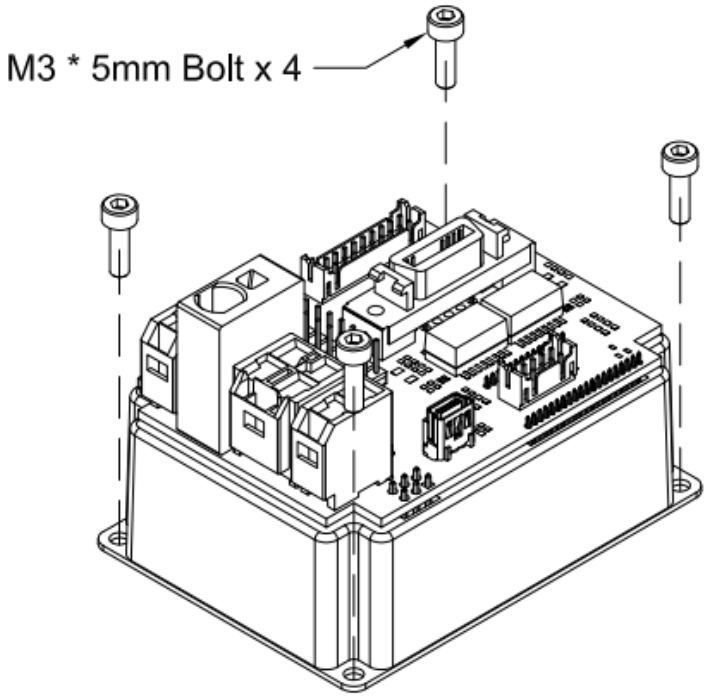


2.2 Mounting Footprint



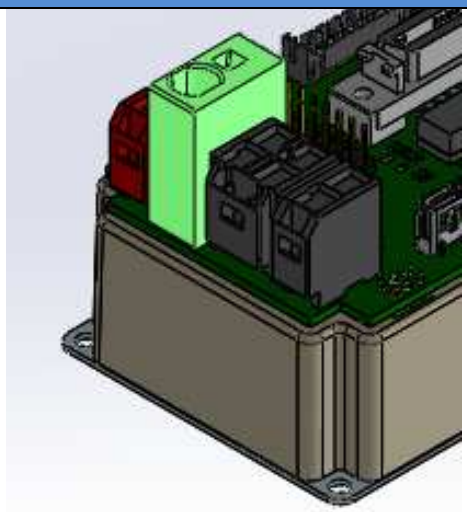


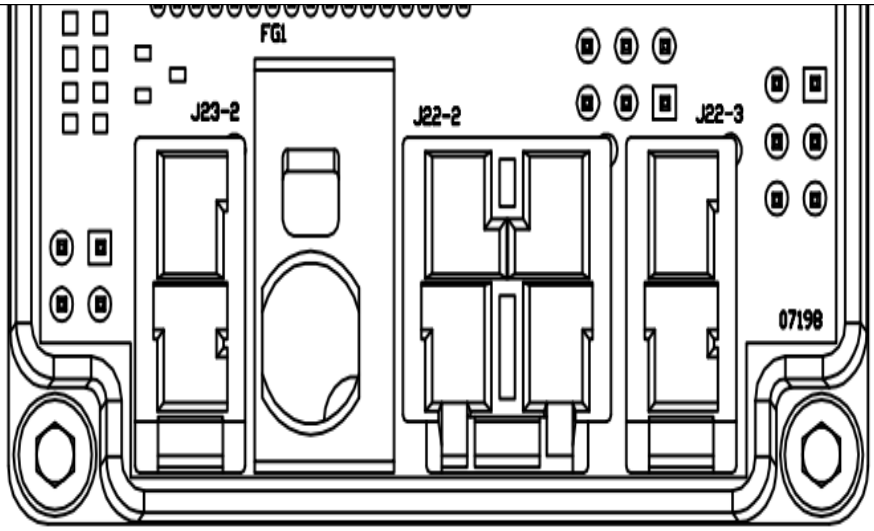




2.3 Connector Type

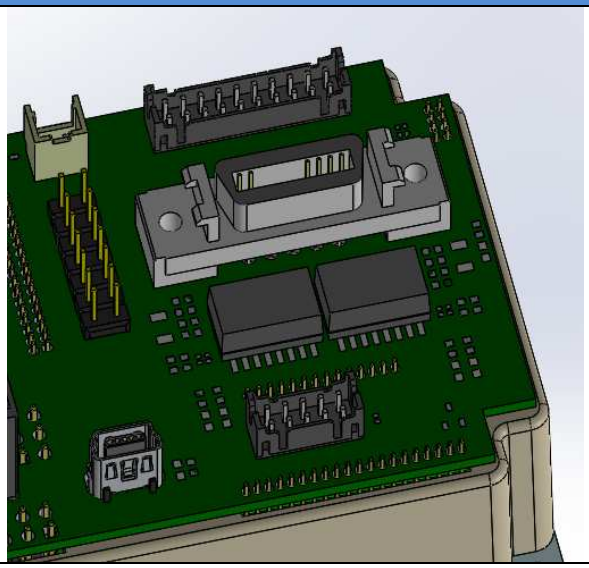
Top View

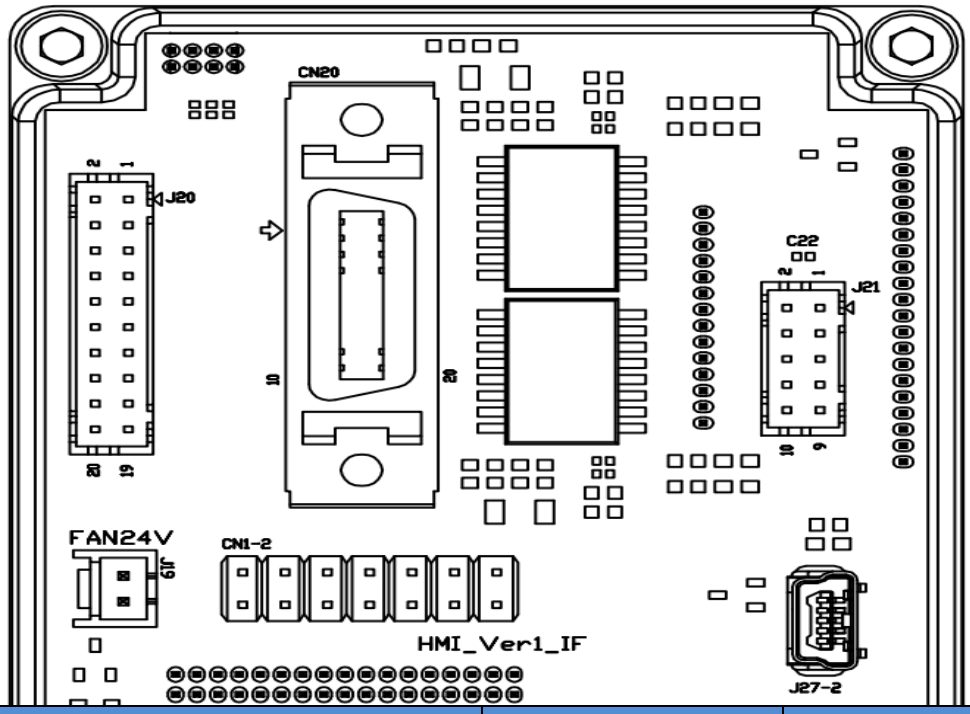




Type		Port	Function
Molex	(Mate with 151049-2209)	J23-2	Control Power
TE	(Mate with Cable)	FG1	Ground
Molex	(Mate with 151049-2406)	J22-2	Motor 3 Phase
Molex	(Mate with 151049-2206)	J22-3	DC Link

Top View

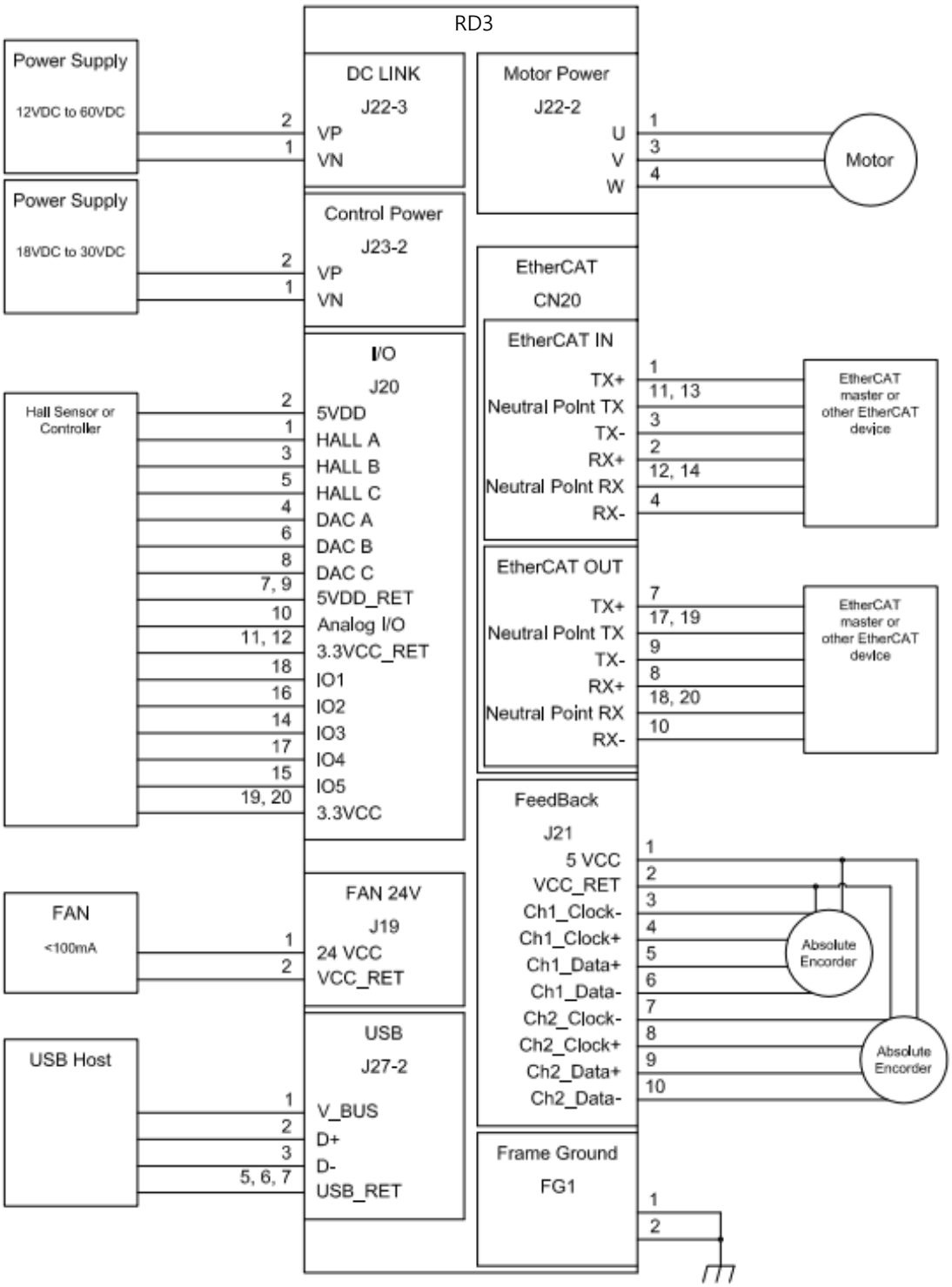




Type		Port	Function
Yeonho	(Mate with YDH200-20)	J20	I/O
3M	(Mate with 10120-3000PE)	CN20	EtherCAT
Yeonho	(Mate with YDH200-10)	J21	Feedback
Yeonho	(Mate with SMH200-02)	J19	FAN 24V
USB Mini B Type Plug		J27-2	USB

2.4 Connection Diagram

The following describes the connection diagrams for the RD3.



3. Wiring

3.1 Motor Power Connector Pinouts

-Mate With 151049-2406 (Molex).

-Use a 15 AWG twisted triple shielded cable.

Connector	J22-2	
Pin	Name	Function
1	U	Motor U Phase
2	N.C.	
3	V	Motor V Phase
4	W	Motor W Phase
Connector Pin Position		

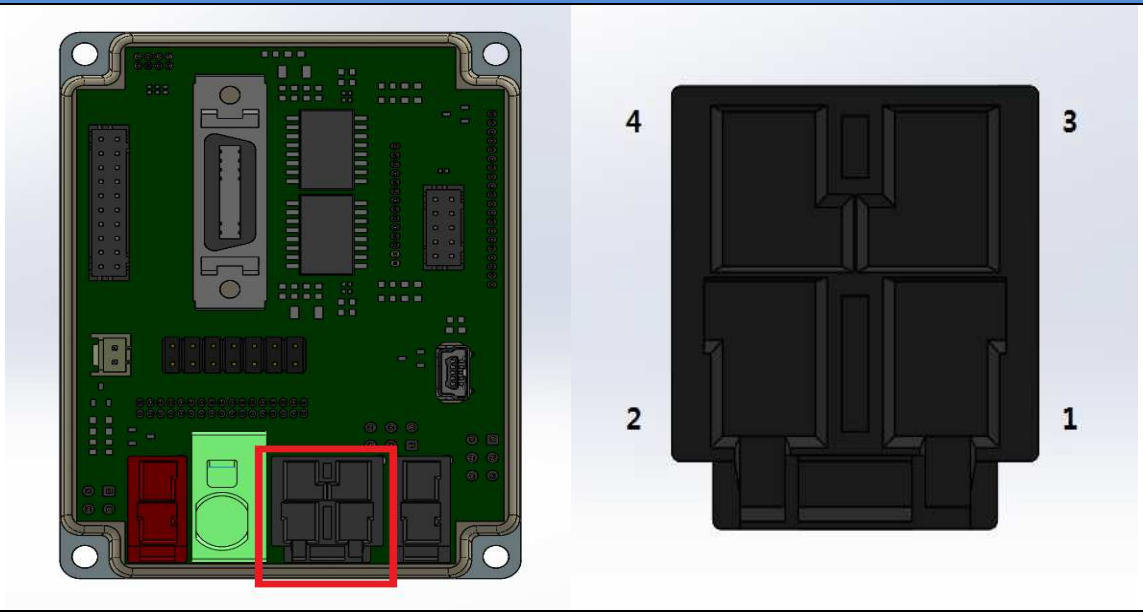
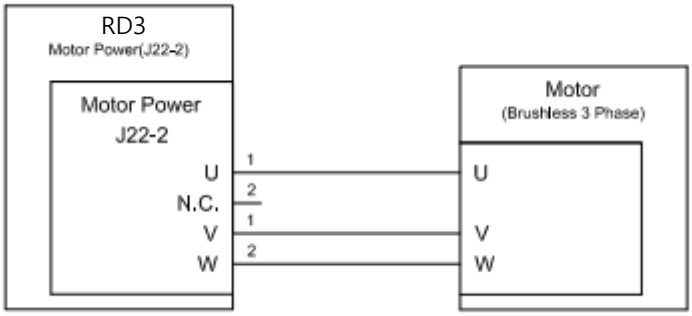


Figure 3.1-1 describes the wiring diagram for the Motor power connections.



<Figure 3.1-1>

3.2 Main Power

-Mate With 151049-2206 (Molex).

-Main Power Input range = 12V ≤ V_{main} ≤ 60V.

-Use a - AWG twisted pair shielded cable.

Connector	J22-3	
Pin	Name	Function
1	VN	DC Negative Power input
2	VP	DC Positive Power Input
Connector Pin Position		

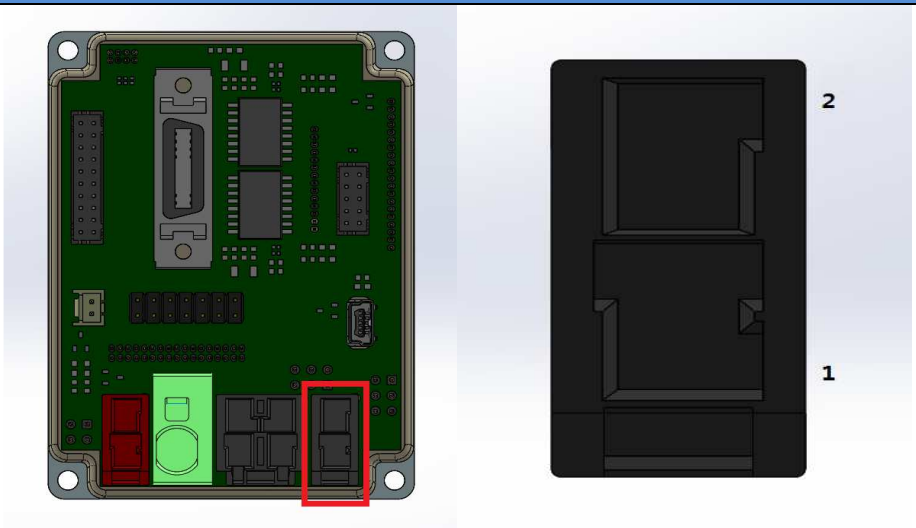
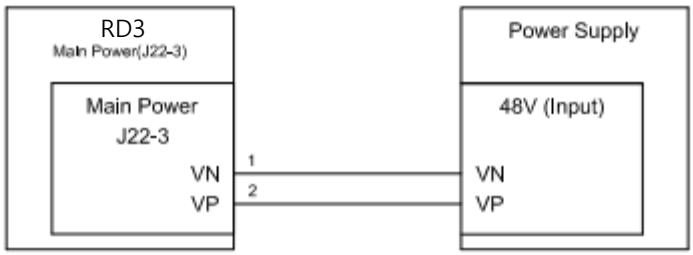


Figure 3.2-1 describes the wiring diagram for the Main power connections.



<Figure 3.2-1>

*Main Power Input range = 12V ≤ V_{main} ≤ 60V

*Normal Input = 48V

*Main Power Current Consumption = $I_{main(peak\ to\ peak)}$ ≤ -A(Peak Current)

3.3 Control Power

-Mate With 151049-2209 (Molex).

-Control Power Input range = 18V ≤ $V_{control}$ ≤ 30V.

-Use a 24 AWG twisted pair shielded cable.

Connector	J22-3	
Pin	Name	Function
1	VN	DC Negative Power input
2	VP	DC Positive Power Input
Connector Pin Position		

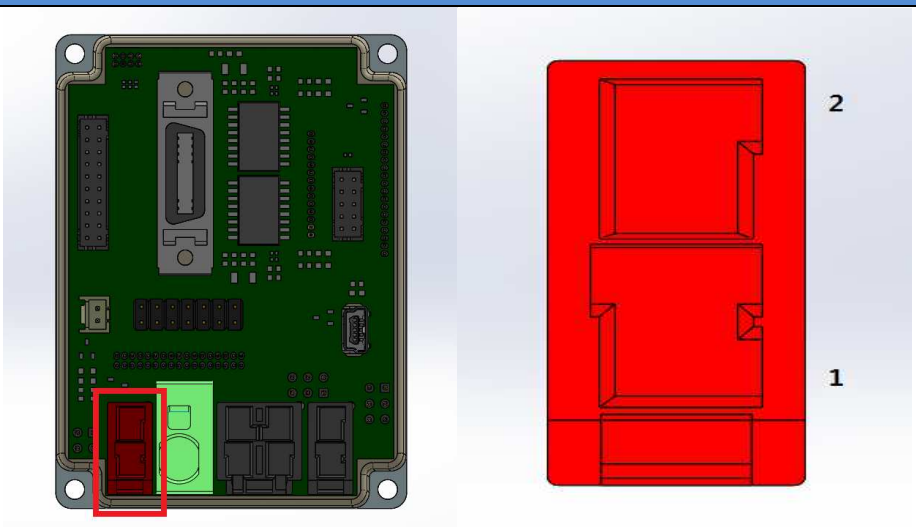
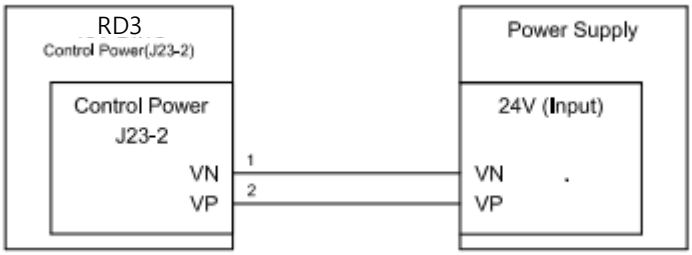


Figure 3.3-1 describes the wiring diagram for the Control power connections



<Figure 3.3-1>

*Control Power Input range = 18V ≤ $V_{control}$ ≤ 30V

*Control Power Current Consumption = 170mA ≤ $I_{control}$ ≤ 400mA(EtherCAT Operating)

3.4 Fan

-Mate With SMH200-02 (Yeonho)

-DC Power output voltage = 24V

-Use a 22 AWG twisted pair shielded cable.

-It is always high level when the control power is entered.

Connector	J19	
Pin	Name	Function
1	24 VCC	DC 24V Positive Power output
2	VCC_RET	DC Power Return
Connector Pin Position		

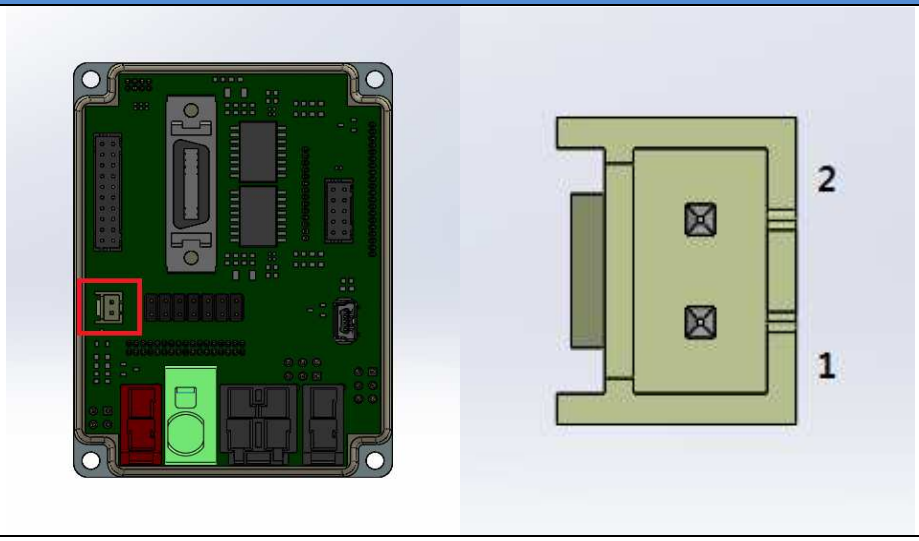
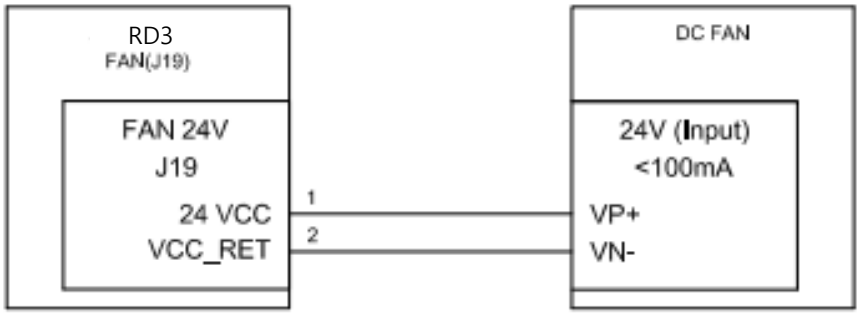
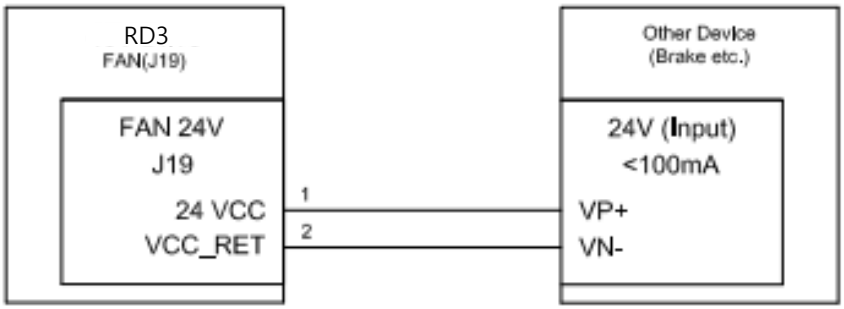


Figure 3.4-1 describes the wiring diagram for the Fan connections.



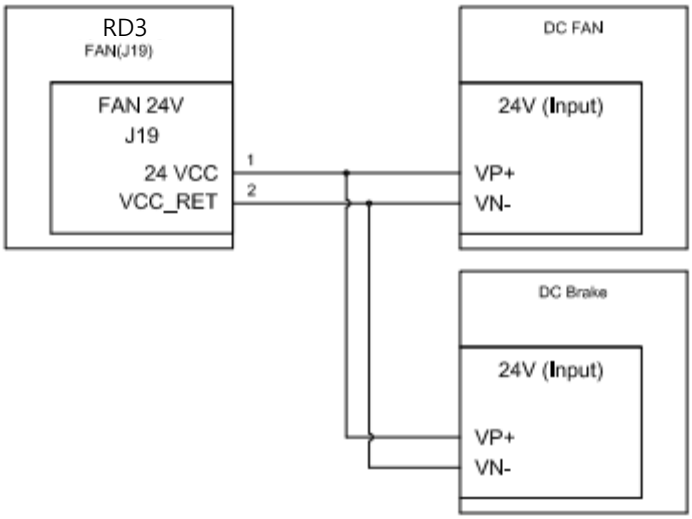
<Figure 3.4-1>

Figure3.4-2 describes the wiring diagram for the other device connections.



<Figure 3.4-2>

-If motor brake and fan power are used together, follow Figure 3.4-3.



<Figure 3.4-3>

*Active current = I_{fan} + I_{brake} ≤ 100mA

3.5 Port A

-Mate With YDH200-10 (Yeonho).

-Port A supports Absolute and incremental encoder communications.

-Use a 26 AWG twisted pair shielded cable.

Connector	J21			
Type	Absolute		Incremental	
Pin	Name	Function	Name	Function
1	5 VCC	5VCC Output	5 VCC	5VCC Output
2	VCC_RET	VCC Return	VCC_RET	VCC Return
3	Ch1_Clock-	Abs encoder Clock-	Index-	Incremental Index-
4	Ch1_Clock+	Abs encoder Clock+	Index+	Incremental Index+
5	Ch1_Data+	Abs encoder Data+	Channel A+	Incremental Channel A+
6	Ch1_Data-	Abs encoder Data-	Channel A-	Incremental Channel A-
7	Ch2_Clock-	Abs encoder Clock-	NC	NC
8	Ch2_Clock+	Abs encoder Clock+	NC	NC
9	Ch2_Data+	Abs encoder Data+	Channel B+	Incremental Channel B+
10	Ch2_Data-	Abs encoder Data-	Channel B-	Incremental Channel B-
Connector Pin Position				

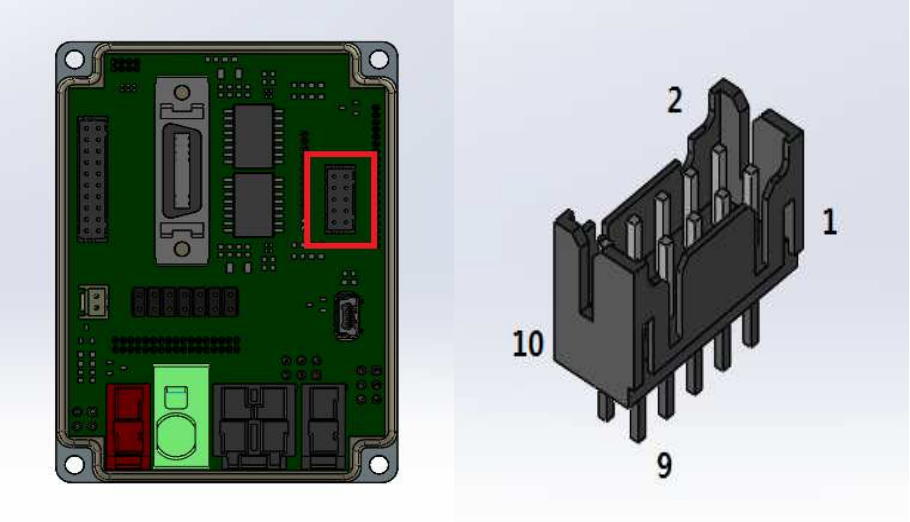
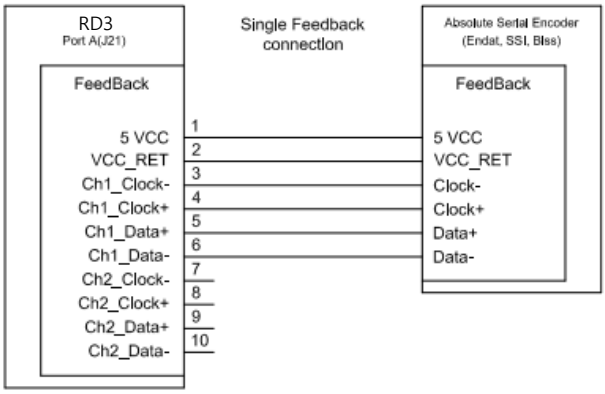
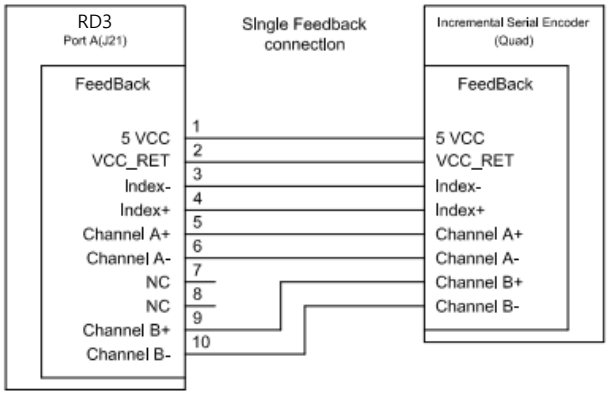


Figure 3.5-1 describes the wiring diagram for the Single Feedback connections (Absolute).



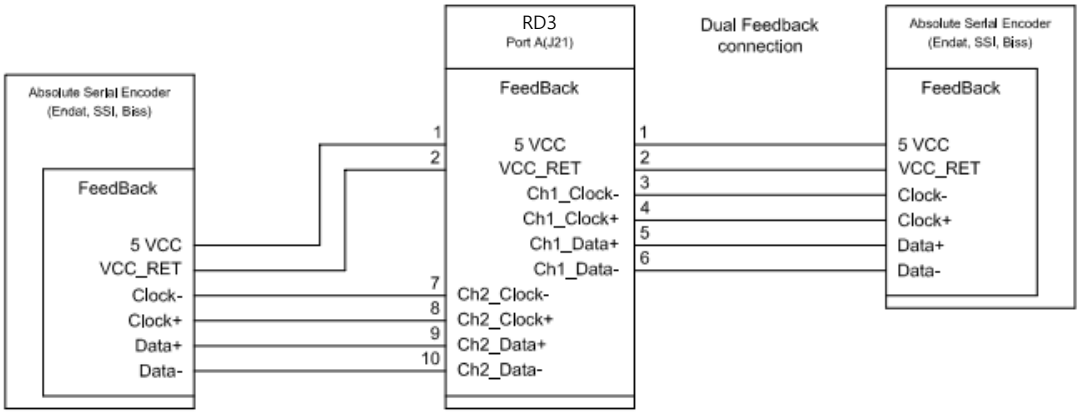
<Figure 3.5-1>

Figure 3.5-2 describes the wiring diagram for the Single Feedback connections (Absolute).



<Figure 3.5-2>

Figure 3.5-3 describes the wiring diagram for the Dual Feedback connections.



<Figure 3.5-2>

3.6 Port C

-The Hall Sensor are available with pins 1, 3 and 5.

-Mate With YDH200-20 (Yeonho).

-Use a 26 AWG twisted pair shielded cable.

Connector	J20	
Pin	Name	Function
1	HALL A	Hall Sensor A Signal
2	5 VDD	5VDC Power output
3	HALL B	Hall Sensor B Signal
4	DAC A	Digital to Analog converter
5	HALL C	Hall Sensor C Signal
6	DAC B	Digital to Analog converter
7	5 VDD_RET	5VDC Power Return
8	DAC C	Digital to Analog converter
9	5 VDD_RET	5VDC Power Return
10	Analog I/O	Analog Input / Output
11	3.3 VCC_RET	3.3VDC Power Return
12	3.3 VCC_RET	3.3VDC Power Return
13	N.C.	No Connected
14	I/O 3	Input / Output
15	I/O 5	Input / Output
16	I/O 2	Input / Output
17	I/O 4	Input / Output
18	I/O 1	Input / Output
19	3.3 VCC	3.3 VDC Power output
20	3.3 VCC	3.3 VDC Power output

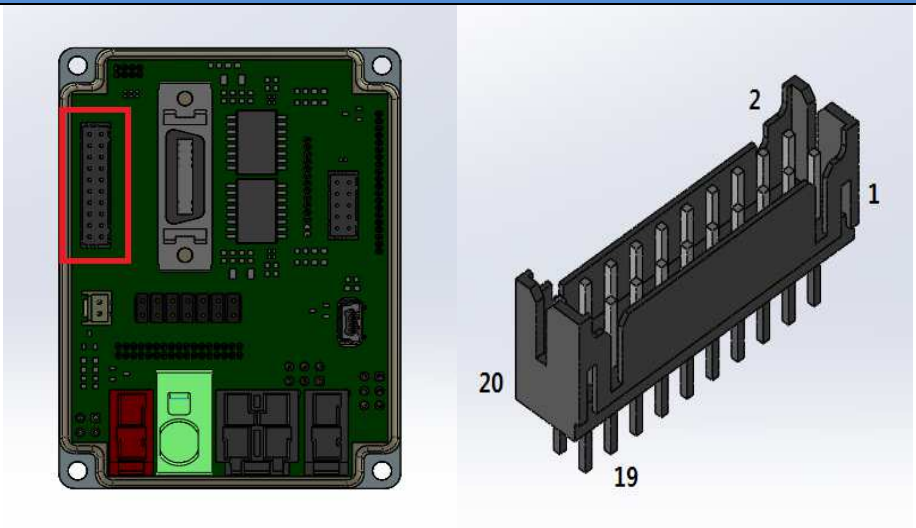
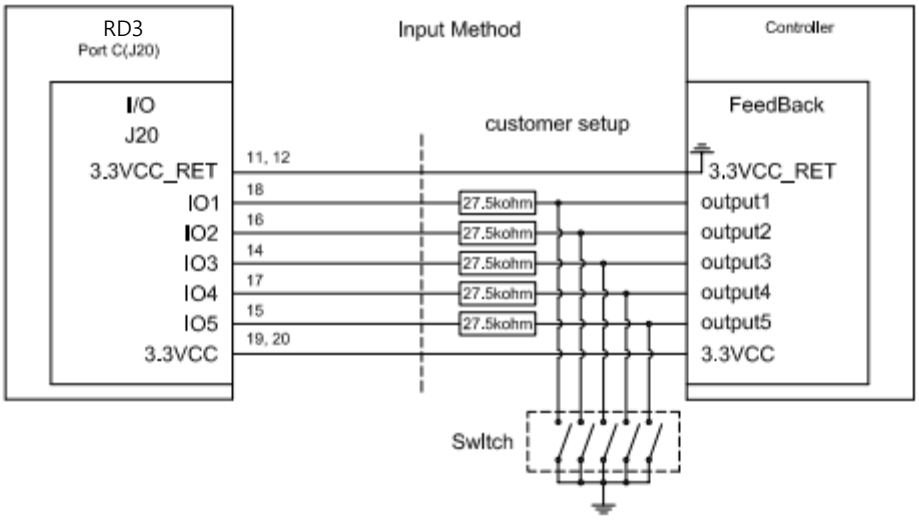
Connector Pin Position


Figure 3.6-1 describes wiring diagram for IO connection. (Input, pull-down).



<Figure 3.6-1>

*VDDIO = Min 3.14V ~ Max 3.47V(normal 3.3V)

*VSS = 0V(supply ground)

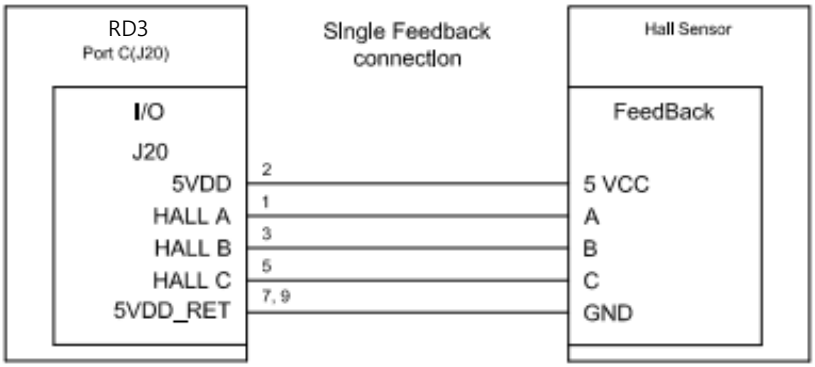
*High-level input voltage = 2.0V ≤ V ≤ VDDIO + 0.3V

*low-level Input voltage = VSS – 0.3V ≤ V ≤0.8V

*Input current = 150uA (pull-up)

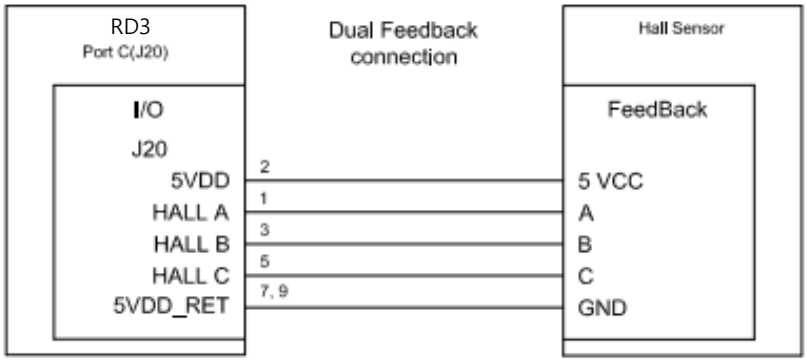
*input current = 120uA (pull-down)

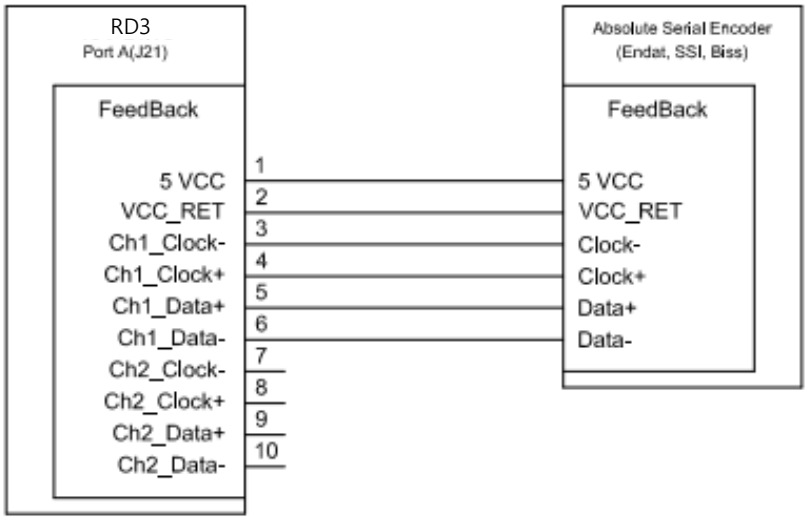
Figure 3.6-2 describes wiring diagram for Single Feedback connections.



<Figure 3.6-2>

Follow Figure 3.6-3 to use the hall sensor and absolute encoder together.





<Figure 3.6-3>

3.7 EtherCAT Communications

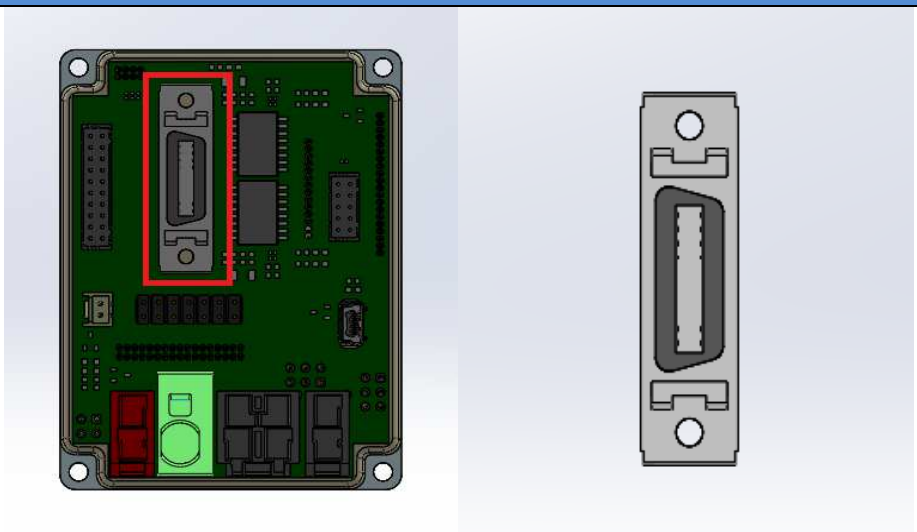
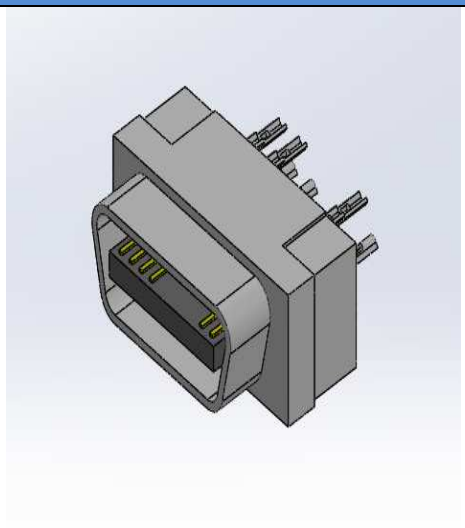
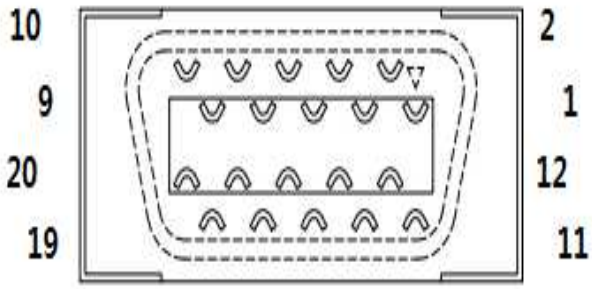
3.7.1 EtherCAT Pinouts

-Mate With 10120-3000PE (3M).

-EtherCAT communication supprt.

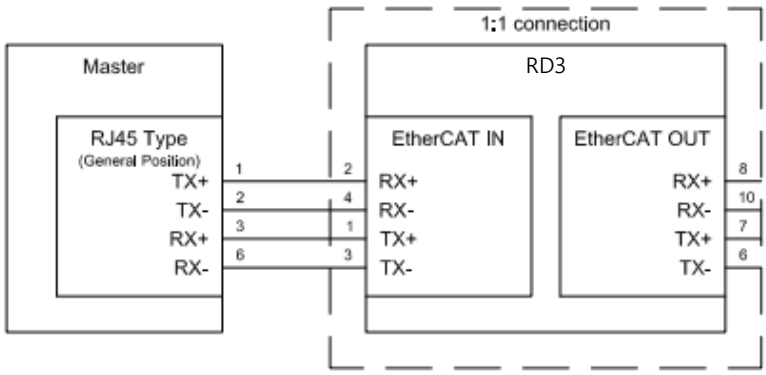
-Use a CAT5E SFTP cable.

Connector	CN20	
Pin	Name	Fuction
1	ECAT_IN_TX+	EtherCAT in transmit+
2	ECAT_IN_RX+	EtherCAT in receive+
3	ECAT_IN_TX-	EtherCAT in transmit-
4	ECAT_IN_RX-	EtherCAT in receive-
5	N.C.	No Connected
6	N.C.	No Connected
7	ECAT_OUT_TX+	EtherCAT out transmit+
8	ECAT_OUT_RX+	EtherCAT out receive+
9	ECAT_OUT_TX-	EtherCAT out transmit-
10	ECAT_OUT_RX-	EtherCAT out receive-
11	ECAT_IN_TX_NP	EtherCAT in transmit neutral point
12	ECAT_IN_RX_NP	EtherCAT in receive neutral point
13	ECAT_IN_TX_NP	EtherCAT in transmit neutral point
14	ECAT_IN_RX_NP	EtherCAT in receive neutral point
15	N.C.	No Connected
16	N.C.	No Connected
17	ECAT_OUT_TX_NP	EtherCAT out transmit neutral point
18	ECAT_OUT_RX_NP	EtherCAT out receive neutral point
19	ECAT_OUT_TX_NP	EtherCAT out transmit neutral point
20	ECAT_OUT_RX_NP	EtherCAT out receive neutral point

Connector Pin Position

Mate With 10120-3000PE
 

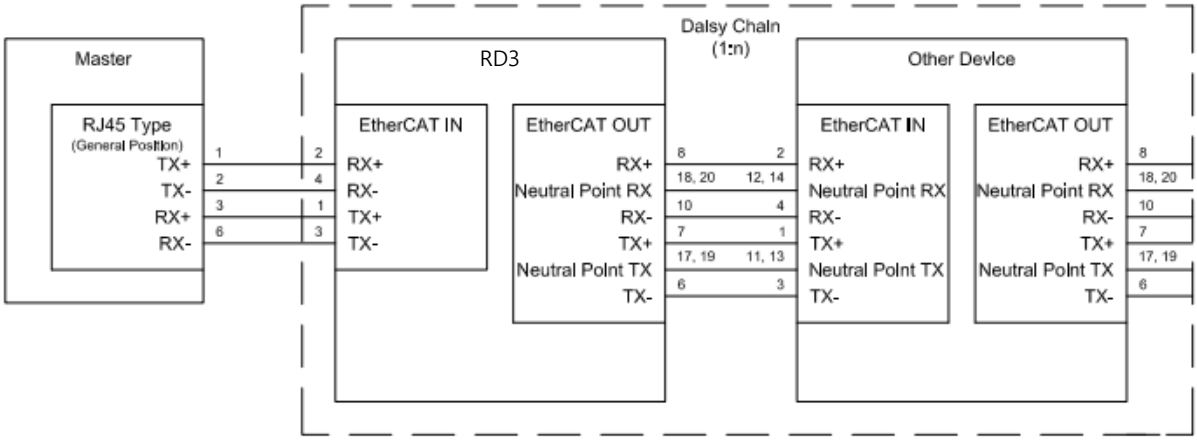
3.7.2 EtherCAT Wiring

Figure 3.7.2-1 describes the 1:1 wiring diagram for the EtherCAT connections.



<Figure 3.7.2-1>

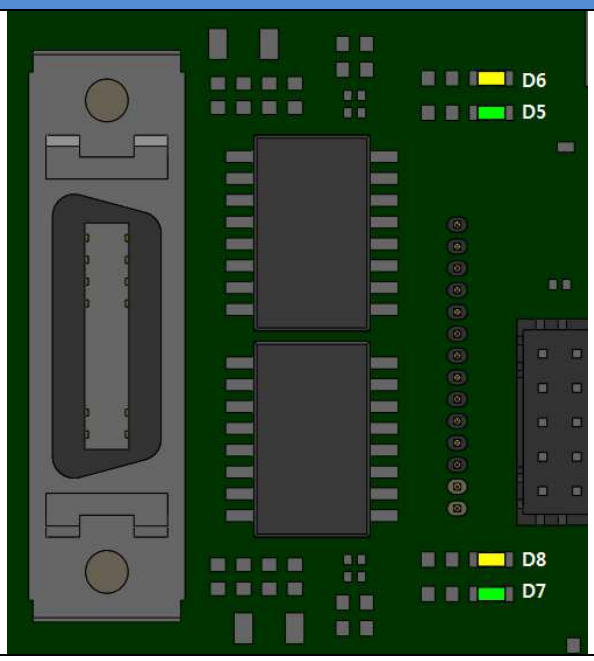
Figure 3.7.2-2 describes the 1:n wiring diagram for the EtherCAT connections.



<Figure 3.7.2-2>

3.8.3 EtherCAT Status Indicator LEDs

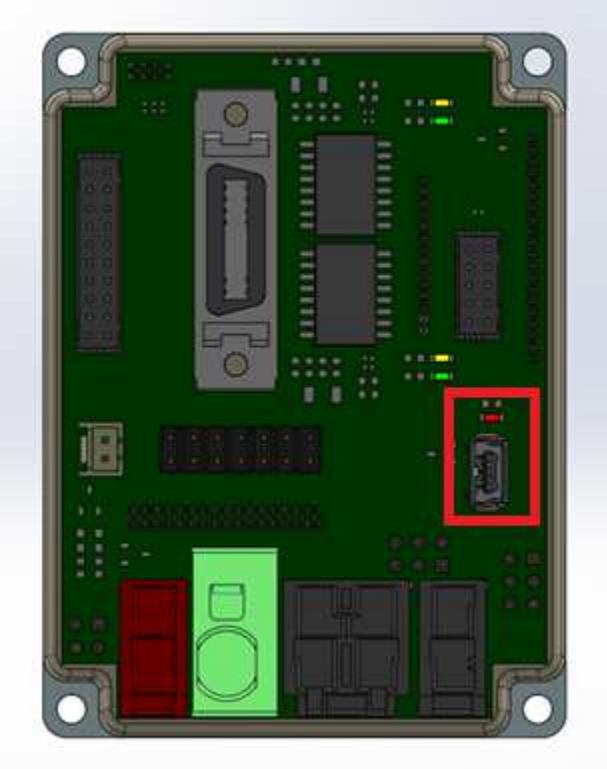
Part Number	Function
D6	EtherCAT IN Active LED(Yellow)
D5	EtherCAT IN Link LED(Green)
D8	EtherCAT OUT Active LED(Yellow)
D7	EtherCAT OUT Link LED(Green)
EtherCAT LED Position	



3.9 USB 2.0

- Connect a mini USB cable.
- D+ and D- are a twisted pair in the cable.
- The maximum cable length is 5m.
- Turn on the red LED in D3(Part number) when connecting USB.

Connector	J27-2	
Pin	Name	Function
1	V_BUS	USB VBUS 5V
2	D+	USB_P line
3	D-	USB_N line
4	N.C.	No Connected
5	USB_RET	USB VBUS Return
Connector Pin Position		



4. Catalog Number and Configurations