DN-8237MB Data Sheet

(Version 2.1)

For Mitsubishi J2 series Amplifier

1 DN-8237-MB Daughter Board (For PCB V2.0)

The DN-8237MB is the daughter board for Mitsubishi J2 Series Ampilifier.   It has 2-axis I/O signals.
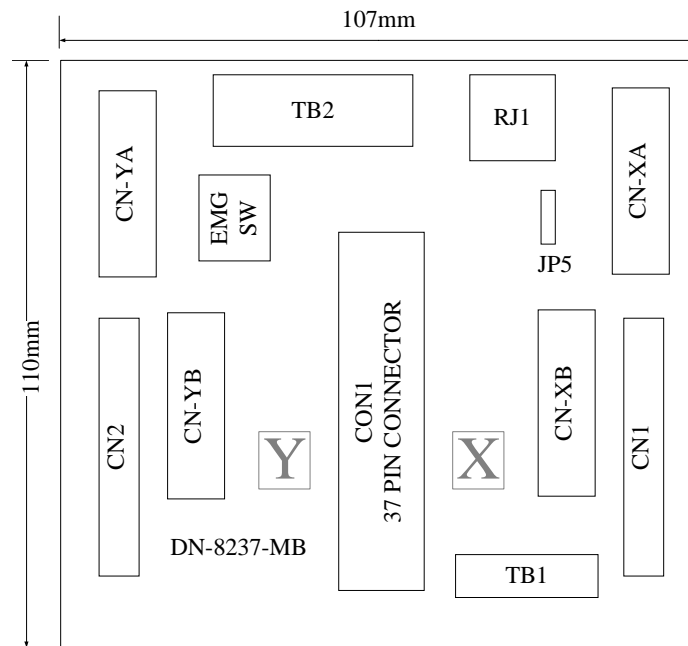
1.1 Board Layout for DN-8237-MB

Fig. 1-1   Board layout for the DN-8237-MB

1.2 Signal Connections for DN-8237-MB

Maintaining signal connections is one of the most important factors in ensuring that your application system is sending and receiving data correctly.

■ Pin Assignment for CON1

The I/O connector on the DN-8237-MB is a 37-pin connector that enables you to connect to the PISO-PS200(or I-8092F) motion card. Fig. 1-2 shows the pin assignment for the 37-pin I/O connector on the DN-8237-MB (or on the motion card), and refer to Table 1-2 for description of each motion I/O signal.
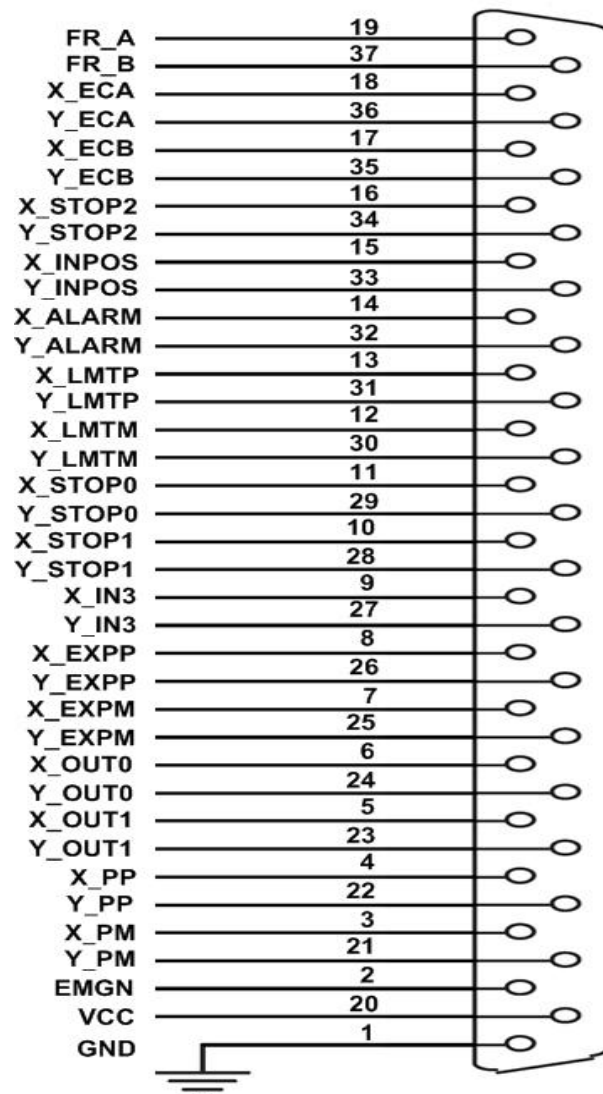
Signal	Pin
FR_A	19
FR_B	37
X_ECA	18
Y_ECA	36
X_ECB	17
Y_ECB	35
X_STOP2	16
Y_STOP2	34
X_INPOS	15
Y_INPOS	33
X_ALARM	14
Y_ALARM	32
X_LMTP	13
Y_LMTP	31
X_LMTM	12
Y_LMTM	30
X_STOP0	11
Y_STOP0	29
X_STOP1	10
Y_STOP1	28
X_IN3	9
Y_IN3	27
X_EXPP	8
Y_EXPP	26
X_EXPM	7
Y_EXPM	25
X_OUT0	6
Y_OUT0	24
X_OUT1	5
Y_OUT1	23
X_PP	4
Y_PP	22
X_PM	3
Y_PM	21
EMGN	2
VCC	20
GND	1

Fig. 1-2 I/O connector pin assignment for the CON1

Table 1-2 DN-8237-MB CON1 I/O connector signal description

Pin name	Pin number	Description
FR_A	19	FRnet A-phase signal
FR_B	37	FRnet B-phase signal
X_ECA	18	Encoder A-phase signal for the X axis
Y_ECA	36	Encoder A-phase signal for the Y axis
X_ECB	17	Encoder B-Phase signal for the X axis
Y_ECB	35	Encoder B-Phase signal for the Y axis
X_STOP2	16	Stop 2 signal for the X axis
Y_STOP2	34	Stop 2 signal for the Y axis
X_INPOS	15	In-position signal for the X axis
Y_INPOS	33	In-position signal for the Y axis
X_ALARM	14	Alarm signal for the X axis
Y_ALARM	32	Alarm signal for the Y axis
X_LMTP	13	Limit switch input signal (+) for the X axis
Y_LMTP	31	Limit switch input signal (+) for the Y axis
X_LMTM	12	Limit switch input signal (-) for the X axis
Y_LMTM	30	Limit switch input signal (-) for the Y axis
X_STOP0	11	Stop 0 signal for the X axis
Y_STOP0	29	Stop 0 signal for the Y axis
X_STOP1	10	Stop 1 signal for the X axis
Y_STOP1	28	Stop 1 signal for the Y axis
X_IN3	9	Input 3 signal for the X axis
Y_IN3	27	Input 3 signal for the Y axis
X_EXPP	8	EXT pulsar input signal (+) for the X axis
Y_EXPP	26	EXT pulsar input signal (+) for the Y axis
X_EXPM	7	EXT pulsar input signal (-) for the X axis
Y_EXPM	25	EXT pulsar input signal (-) for the Y axis
X_OUT0	6	Output 0 signal for the X axis
Y_OUT0	24	Output 0 signal for the Y axis
X_OUT1	5	Output 1 signal for the X axis
Y_OUT1	23	Output 1 signal for the Y axis
XPP	4	Driving pulsar signal (+) for the X axis
YPP	22	Driving pulsar signal (+) for the Y axis
XPM	3	Driving pulsar signal (+) for the X axis
YPM	21	Driving pulsar signal (+) for the Y axis
EMGN	2	Emergency stop input signal
VCC	20	Module power (+5V)
GND	1	Ground

■ **TB2**

The connector TB2 is 7-pin connector that enables you to connect to the signals of your motor drivers. Fig.1-3 shows the pin assignment for the 7-pin connector on the DN-8237-MB, and the Table 1-3 shows its I/O connector signal description.
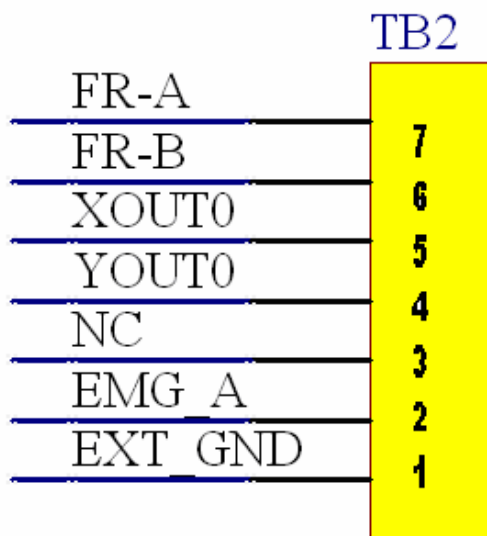
Table 1-3 TB2 Signal Connection

Name	Number	Description
FR-A	7	FRnet port A
FR-B	6	FRnet port B
XOUT0	5	General output 0 for X axis
YOUT0	4	General output 0 for X axis
NC	3	No connection
EMG-A	2	EMG input signal for all axis
EXT_GND	1	EXT POWER Ground

Fig 1-3 Pin definition for TB2

■ TB1

The connector TB1 is 5-pin connector that enables you to connect to the signals of your motor drivers. Fig.1-4 shows the pin assignment for the 5-pin connector on the DN-8237-MB, and the Table 1-4 shows its I/O connector signal description.

Table 1-4 TB1 Signal Connection
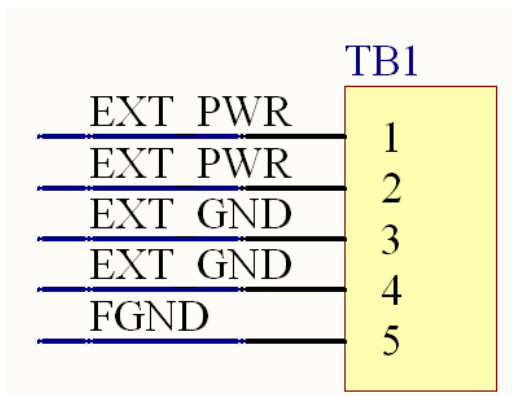
Name	Number	Description
EXT_PWR	1	EXT POWER 24V
EXT_PWR	2	EXT POWER 24V
EXT_GND	3	EXT POWER Ground
EXT_GND	4	EXT POWER Ground
FGND	5	Frame Ground

Fig 1-4 Pin definition for TB1

► **Note:** Don't reverse connect signals with E_PWR and E_GND. Serious damage to your motion card and motion controller might be happened.

CN-XA & CN-YA   (Fig 1-5 connector for each AXIS)

The connectors CN-XA and CN-YA are 20-pin connectors that enable you to connect to the CNA connector of Mitsubishi motor drivers. Fig.1-5 shows the pin assignment for the 20-pin connector on the DN-8237-MB, and the Table 1-5 shows its I/O connector signal description.
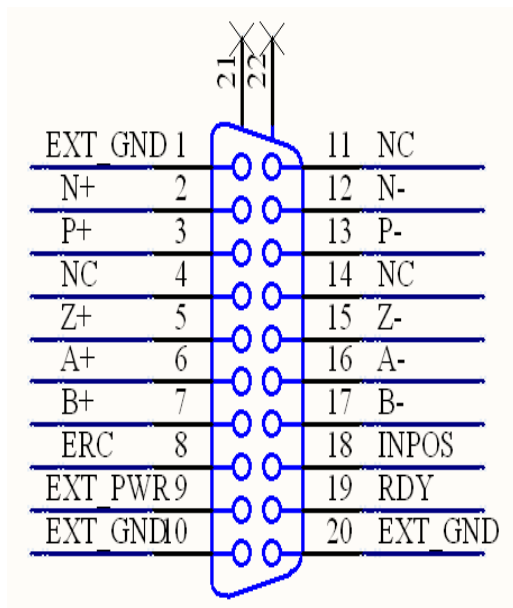
Table 1-5 CN-X A,CN-YA

Name	Number	Description
EXT_GND	1	EXT POWER Ground
N+	2	Negative Direction Pulse(+)
P+	3	Positive Direction Pulse(+)
NC	4	No connection
Z+	5	Encoder Z-phase(+)
A+	6	Encoder A-phase(+)
B+	7	Encoder B-phase(+)
ERC	8	Error Count Clear
EXT_PWR	9	EXT POWER 24V
EXT_GND	10	EXT POWER Ground
NC	11	No connection
N-	12	Negative Direction Pulse(-)
P-	13	Positive Direction Pulse (-)
NC	14	No connection
Z-	15	Encoder Z-phase(-)
A-	16	Encoder A-phase (-)
B-	17	Encoder B-phase (-)
INPOS	18	Servo In Position
RDY	19	Servo Ready
EXT_GND	20	EXT POWER Ground

Fig 1-5 Pin definition for CN-XA, CN-YA

▶ **Note 1:** Don't connect NC (not connected) signals.   Connecting these signals could cause permanent damage to your motion controller.

■ CN-XB & CN-YB (Fig1-6 connector for each AXIS)

The connectors CN-XB and CN-YB are 20-pin connectors that enable you to connect to the CNB connector of your motor drivers. Fig.1-6 shows the pin assignment for the 20-pin connector on the DN-8237-MB, and the Table 1-6 shows its I/O connector signal description.
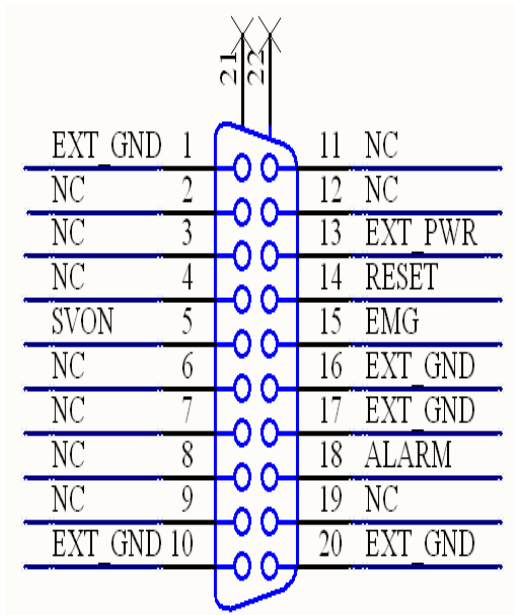
Table 1-6 CN-XB ,CN-YB

Fig1-6 Pin definition for CN-XB, CN-YB

Name	Number	Description
EXT_GND	1	EXT POWER Ground
NC	2	No connection
NC	3	No connection
NC	4	No connection
SVON	5	Servo On
NC	6	No connection
NC	7	No connection
NC	8	No connection
NC	9	No connection
EXT_GND	10	EXT POWER Ground
NC	11	No connection
NC	12	No connection
EXT_PWR	13	EXT POWER 24V
RESET	14	Servo Reset
EMG	15	Emergent Stop
EXT_GND	16	EXT POWER Ground
EXT_GND	17	EXT POWER Ground
ALARM	18	Servo Alarm
NC	19	No connection
EXT_GND	20	EXT POWER Ground

► **Note 1:** Don't connect NC (not connected) signals. Connecting these signals could cause permanent damage to your motion controller.

■ CN1 & CN2   (The I/O signals of the X and Y AXIS)

The connectors CN1 and CN2 are 11-pin connectors that enable you to connect to the signals of your motor drivers. Fig.1-7 shows the pin assignment for the 20-pin connector on the DN-8237-MB, and the Table 1-7 shows its I/O connector signal description.
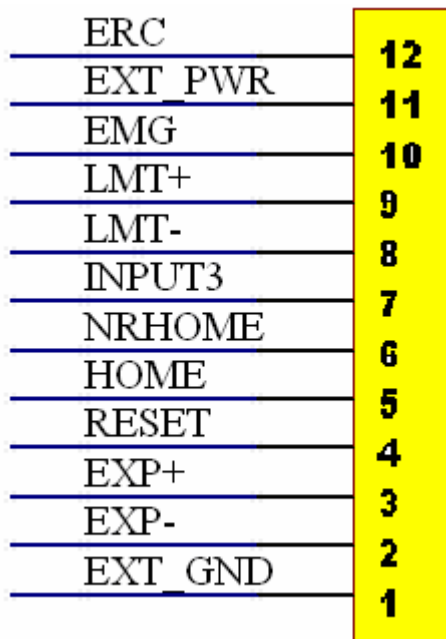

Fig 1-7 Pin definition for CN1~ CN2

Table 1-7   CN1~CN2

Name	Number	Description
ERC	12	Error Count Clear
EXT_PWR	11	EXT POWER 24V
EMG	10	Emergent Stop
LMT+	9	Limit switch Input Signal(+)
LMT-	8	Limit switch Input Signal(-)
INPUT3	7	Input Signal (IN3)
NRHOME	6	Near HOME Sensor Input Signal
HOME	5	HOME Sensor Input Signal
RESET	4	RESET Input Signal
EXP+	3	EXT Positive Direction Pulse(+)
EXP-	2	EXT Positive Direction Pulse(-)
EXT_GND	1	EXT POWER Ground

■ RJ1 (The I/O signals of the FRnet)

The connectors RJ1 is an 8-pin RJ45 connector that enable you to connect to the signals of FRnet.   Fig.3-8 shows the pin assignment for the 8-pin connector on the DN-8237-MB, and the Table 3-8 shows its I/O connector signal description.
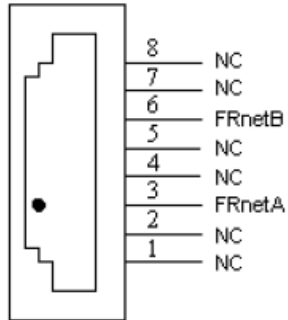

Fig. 3-8 Pin definition for RJ1

Table 3-8 RJ1

Pin name	Description
FRnetA	FRnet port A
FRnetB	FRnet port B
NC	No connection

▶ **Note:** Don't connect NC (not connected) signals. Connecting these signals could cause permanent damage to your motion controller.

1.3 Jumper and Switch Settings

■ **JP5**

Jumper 5 controls the EMG-A signal of the TB1 connector. The following diagram is shown the selection condition of the jumper 5.
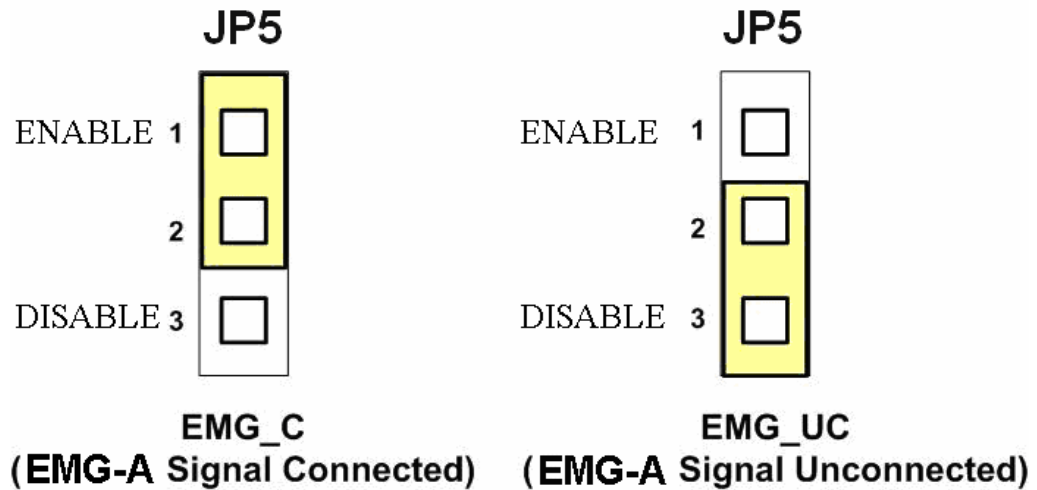

Fig. 3-9 Jumper 5 setting

■ **SW 1**

The emergency stop signal for each servo ampilfier can be selected from SW1.　The number 1 and 2 on SW1 are denoted as axis X and Y, respectively.　The number 3 and 4 on SW1 are reserved for future work.　Fig. 3-10 is the default setting to connect the EMG singals to GND. The EMG signals from CN1 and CN2 will not take effect.　If the switch is disconnected as shown in Fig. 3-11, the emergency stop signals can be controlled from EMG signals in CN1 and CN2.
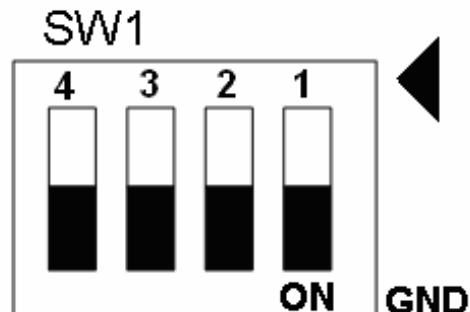

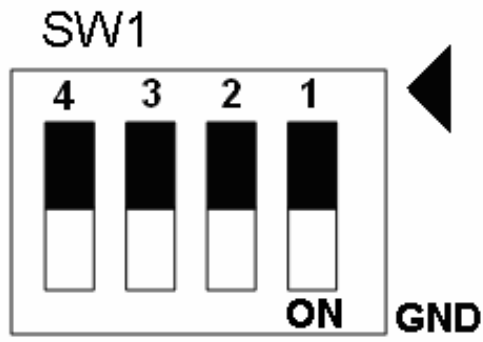Fig. 3-10　SW1 setting for normally GND　(Default setting)

Fig. 3-11   SW1 setting for user controlled signals.

2 DN-8237-MB Daughter Board (for PCB V 1.0)

The DN-8237MB is the daughter board for Mitsubishi J2 Series Ampilifier.   It has 2-axis I/O signals.
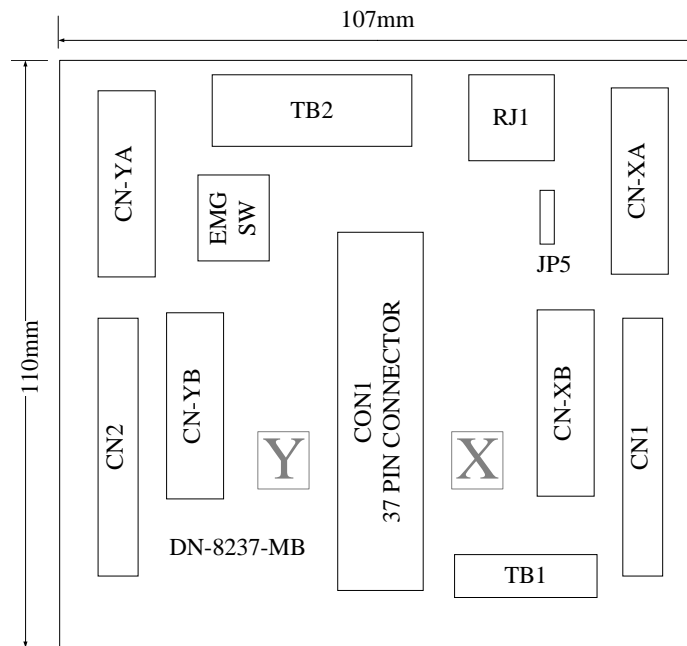
2.1 Board Layout for DN-8237-MB

Fig. 1-1   Board layout for the DN-8237-MB

2.2 Signal Connections for DN-8237-MB

Maintaining signal connections is one of the most important factors in ensuring that your application system is sending and receiving data correctly.

■ Pin Assignment for CON1

The I/O connector on the DN-8237-MB is a 37-pin connector that enables you to connect to the PISO-PS200(or I-8092F) motion card. Fig. 1-2 shows the pin assignment for the 37-pin I/O connector on the DN-8237-MB (or on the motion card), and refer to Table 1-2 for description of each motion I/O signal.
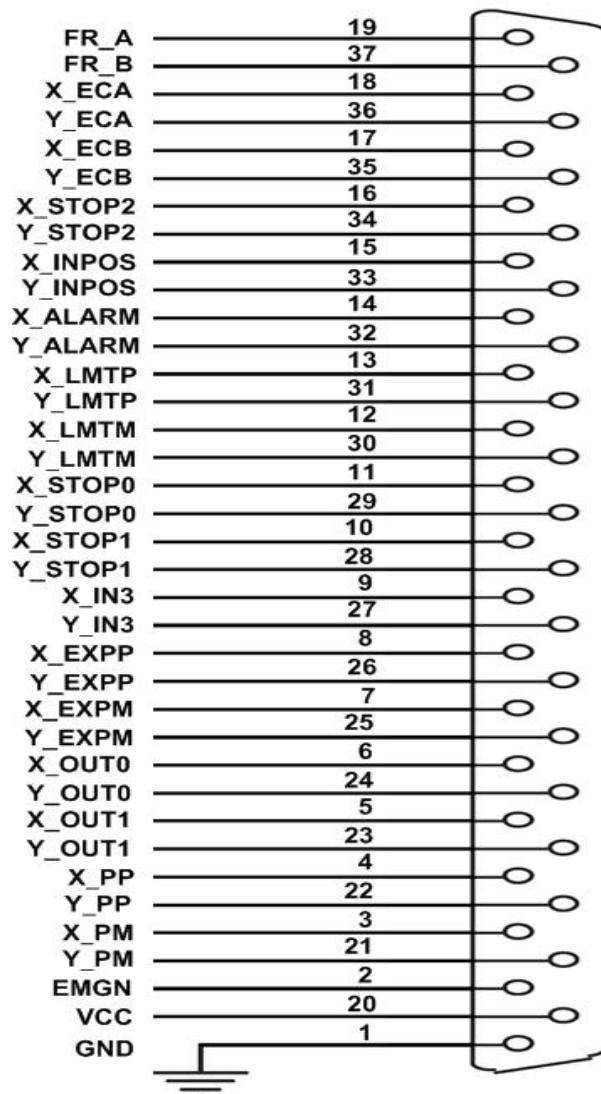
Signal	Pin
FR_A	19
FR_B	37
X_ECA	18
Y_ECA	36
X_ECB	17
Y_ECB	35
X_STOP2	16
Y_STOP2	34
X_INPOS	15
Y_INPOS	33
X_ALARM	14
Y_ALARM	32
X_LMTP	13
Y_LMTP	31
X_LMTM	12
Y_LMTM	30
X_STOP0	11
Y_STOP0	29
X_STOP1	10
Y_STOP1	28
X_IN3	9
Y_IN3	27
X_EXPP	8
Y_EXPP	26
X_EXPM	7
Y_EXPM	25
X_OUT0	6
Y_OUT0	24
X_OUT1	5
Y_OUT1	23
X_PP	4
Y_PP	22
X_PM	3
Y_PM	21
EMGN	2
VCC	20
GND	1

Fig. 1-2 I/O connector pin assignment for the CON1

Table 1-2 DN-8237-MB CON1 I/O connector signal description

Pin name	Pin number	Description
FR_A	19	FRnet A-phase signal
FR_B	37	FRnet B-phase signal
X_ECA	18	Encoder A-phase signal for the X axis
Y_ECA	36	Encoder A-phase signal for the Y axis
X_ECB	17	Encoder B-Phase signal for the X axis
Y_ECB	35	Encoder B-Phase signal for the Y axis
X_STOP2	16	Stop 2 signal for the X axis
Y_STOP2	34	Stop 2 signal for the Y axis
X_INPOS	15	In-position signal for the X axis
Y_INPOS	33	In-position signal for the Y axis
X_ALARM	14	Alarm signal for the X axis
Y_ALARM	32	Alarm signal for the Y axis
X_LMTP	13	Limit switch input signal (+) for the X axis
Y_LMTP	31	Limit switch input signal (+) for the Y axis
X_LMTM	12	Limit switch input signal (-) for the X axis
Y_LMTM	30	Limit switch input signal (-) for the Y axis
X_STOP0	11	Stop 0 signal for the X axis
Y_STOP0	29	Stop 0 signal for the Y axis
X_STOP1	10	Stop 1 signal for the X axis
Y_STOP1	28	Stop 1 signal for the Y axis
X_IN3	9	Input 3 signal for the X axis
Y_IN3	27	Input 3 signal for the Y axis
X_EXPP	8	EXT pulsar input signal (+) for the X axis
Y_EXPP	26	EXT pulsar input signal (+) for the Y axis
X_EXPM	7	EXT pulsar input signal (-) for the X axis
Y_EXPM	25	EXT pulsar input signal (-) for the Y axis
X_OUT0	6	Output 0 signal for the X axis
Y_OUT0	24	Output 0 signal for the Y axis
X_OUT1	5	Output 1 signal for the X axis
Y_OUT1	23	Output 1 signal for the Y axis
XPP	4	Driving pulsar signal (+) for the X axis
YPP	22	Driving pulsar signal (+) for the Y axis
XPM	3	Driving pulsar signal (+) for the X axis
YPM	21	Driving pulsar signal (+) for the Y axis
EMGN	2	Emergency stop input signal
VCC	20	Module power (+5V)
GND	1	Ground

■ TB2

The connector TB2 is 7-pin connector that enables you to connect to the signals of your motor drivers. Fig.1-3 shows the pin assignment for the 7-pin connector on the DN-8237-MB, and the Table 1-3 shows its I/O connector signal description.
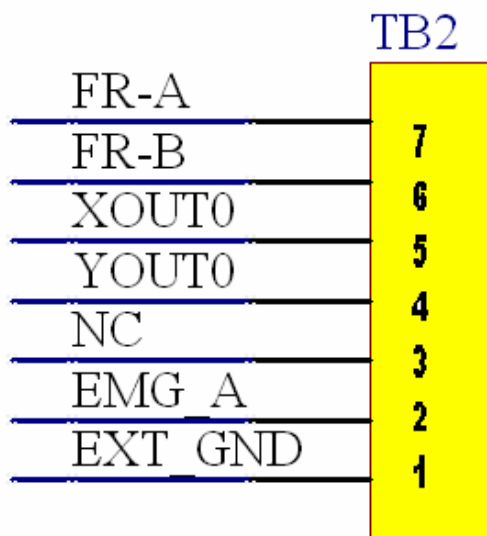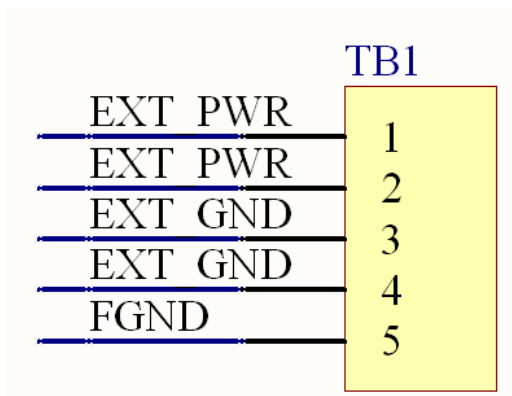
Table 1-3 TB2 Signal Connection

Fig 1-3 Pin definition for TB2

Name	Number	Description
FR-A	7	FRnet port A
FR-B	6	FRnet port B
XOUT0	5	General output 0 for X axis
YOUT0	4	General output 0 for X axis
NC	3	No connection
EMG-A	2	EMG input signal for all axis
EXT_GND	1	EXT POWER Ground

■ TB1

The connector TB1 is 5-pin connector that enables you to connect to the signals of your motor drivers. Fig.1-4 shows the pin assignment for the 5-pin connector on the DN-8237-MB, and the Table 1-4 shows its I/O connector signal description.

Table 1-4 TB1 Signal Connection

Fig 1-4 Pin definition for TB1

Name	Number	Description
EXT_PWR	1	EXT POWER 24V
EXT_PWR	2	EXT POWER 24V
EXT_GND	3	EXT POWER Ground
EXT_GND	4	EXT POWER Ground
FGND	5	Frame Ground

▶ **Note:** Don't reverse connect signals with E_PWR and E_GND. Serious damage to your motion card and motion controller might be happened.

CN-XA & CN-YA   (Fig 1-5 connector for each AXIS)

The connectors CN-XA and CN-YA are 20-pin connectors that enable you to connect to the CNA connector of Mitsubishi motor drivers.   Fig.1-5 shows the pin assignment for the 20-pin connector on the DN-8237-MB, and the Table 1-5 shows its I/O connector signal description.
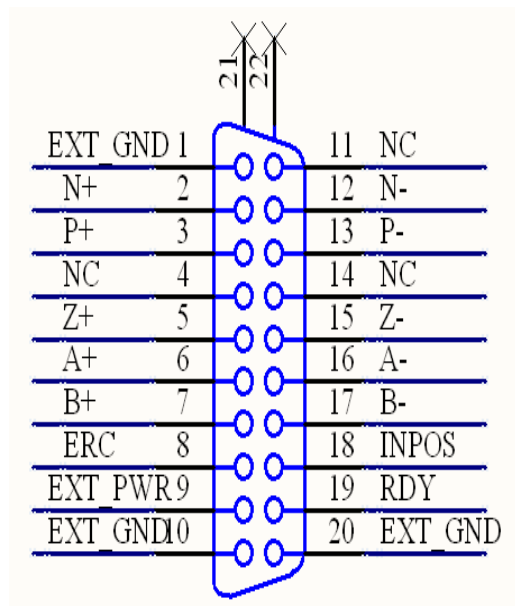
Table 1-5 CN-X A,CN-YA

Name	Number	Description
EXT_GND	1	EXT POWER Ground
N+	2	Negative Direction Pulse(+)
P+	3	Positive Direction Pulse(+)
NC	4	No connection
Z+	5	Encoder Z-phase(+)
A+	6	Encoder A-phase(+)
B+	7	Encoder B-phase(+)
ERC	8	Error Count Clear
EXT_PWR	9	EXT POWER 24V
EXT_GND	10	EXT POWER Ground
NC	11	No connection
N-	12	Negative Direction Pulse(-)
P-	13	Positive Direction Pulse (-)
NC	14	No connection
Z-	15	Encoder Z-phase(-)
A-	16	Encoder A-phase (-)
B-	17	Encoder B-phase (-)
INPOS	18	Servo In Position
RDY	19	Servo Ready
EXT_GND	20	EXT POWER Ground

Fig 1-5 Pin definition for CN-XA, CN-YA

▶ **Note 1:** Don't connect NC (not connected) signals.   Connecting these signals could cause permanent damage to your motion controller.

■ CN-XB & CN-YB   (Fig1-6 connector for each AXIS)

The connectors CN-XB and CN-YB are 20-pin connectors that enable you to connect to the CNB connector of your motor drivers. Fig.1-6 shows the pin assignment for the 20-pin connector on the DN-8237-MB, and the Table 1-6 shows its I/O connector signal description.
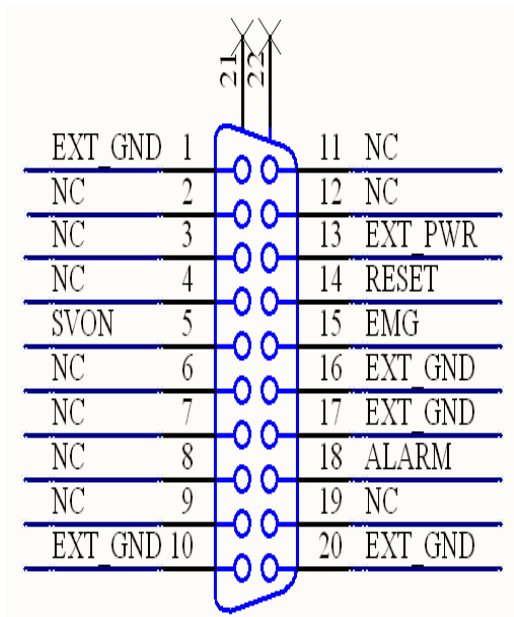
Table 1-6 CN-XB ,CN-YB

Fig1-6 Pin definition for CN-XB, CN-YB

Name	Number	Description
EXT_GND	1	EXT POWER Ground
NC	2	No connection
NC	3	No connection
NC	4	No connection
SVON	5	Servo On
NC	6	No connection
NC	7	No connection
NC	8	No connection
NC	9	No connection
EXT_GND	10	EXT POWER Ground
NC	11	No connection
NC	12	No connection
EXT_PWR	13	EXT POWER 24V
RESET	14	Servo Reset
EMG	15	Emergent Stop
EXT_GND	16	EXT POWER Ground
EXT_GND	17	EXT POWER Ground
ALARM	18	Servo Alarm
NC	19	No connection
EXT_GND	20	EXT POWER Ground

▶ **Note 1:** Don't connect NC (not connected) signals.   Connecting these signals could cause permanent damage to your motion controller.

■ CN1 & CN2　　　(The I/O signals of the X and Y AXIS)

The connectors CN1 and CN2 are 11-pin connectors that enable you to connect to the signals of your motor drivers. Fig.1-7 shows the pin assignment for the 20-pin connector on the DN-8237-MB, and the Table 1-7 shows its I/O connector signal description.
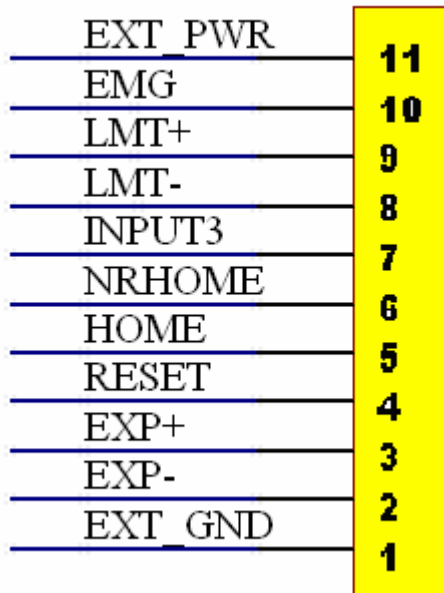
Table 1-7　CN1~CN2

Fig 1-7 Pin definition for CN1~ CN2

Name	Number	Description
EXT_PWR	11	EXT POWER 24V
EMG	10	Emergent Stop
LMT+	9	Limit switch Input Signal(+)
LMT-	8	Limit switch Input Signal(-)
INPUT3	7	Input Signal (IN3)
NRHOME	6	Near HOME Sensor Input Signal
HOME	5	HOME Sensor Input Signal
RESET	4	RESET Input Signal
EXP+	3	EXT Positive Direction Pulse(+)
EXP-	2	EXT Positive Direction Pulse(-)
EXT_GND	1	EXT POWER Ground

■ RJ1 (The I/O signals of the FRnet)

The connectors RJ1 is an 8-pin RJ45 connector that enable you to connect to the signals of FRnet. Fig.3-8 shows the pin assignment for the 8-pin connector on the DN-8237-MB, and the Table 3-8 shows its I/O connector signal description.
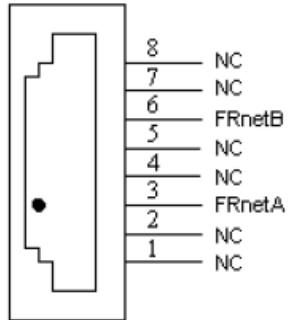

Fig. 3-8 Pin definition for RJ1

Table 3-8 RJ1

Pin name	Description
FRnetA	FRnet port A
FRnetB	FRnet port B
NC	No connection

▶ **Note:** Don't connect NC (not connected) signals. Connecting these signals could cause permanent damage to your motion controller.

2.3 Jumper and Switch Settings

■ JP5

Jumper 5 controls the EMG-A signal of the TB1 connector. The following diagram is shown the selection condition of the jumper 5.
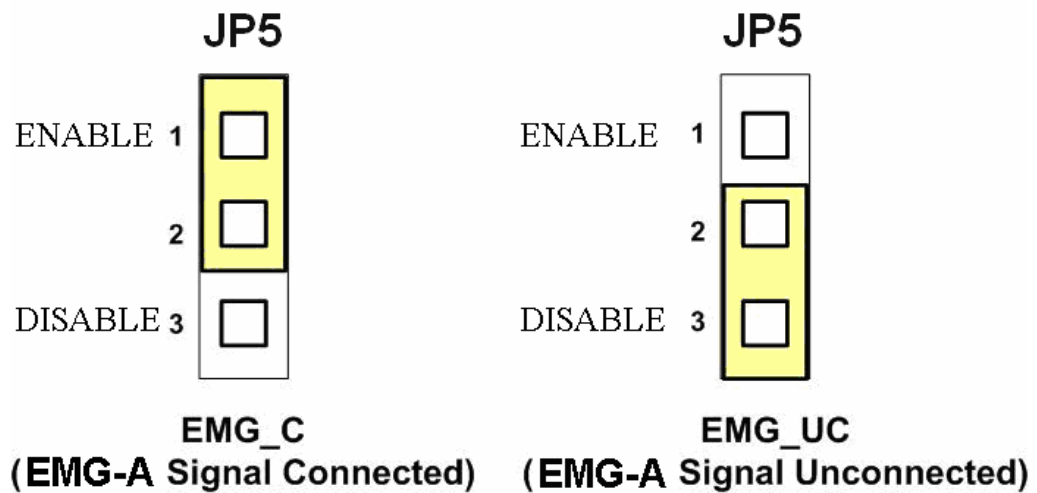

Fig. 3-9 Jumper 5 setting

■ SW 1

The emergency stop signal for each servo ampilfier can be selected from SW1. The number 1 and 2 on SW1 are denoted as axis X and Y, respectively. The number 3 and 4 on SW1 are reserved for future work. Fig. 3-10 is the default setting to connect the EMG singals to GND. The EMG signals from CN1 and CN2 will not take effect. If the switch is disconnected as shown in Fig. 3-11, the emergency stop signals can be controlled from EMG signals in CN1 and CN2.
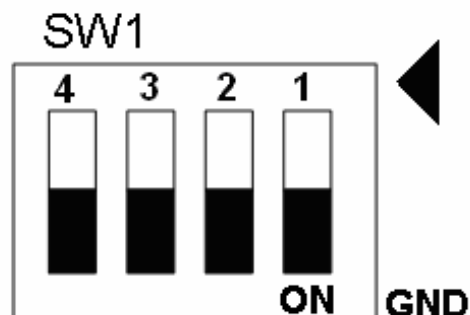

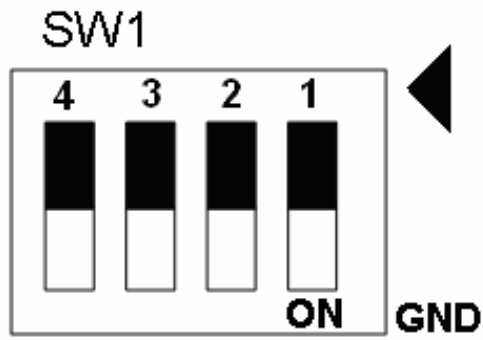Fig. 3-10   SW1 setting for normally GND   (Default setting)

Fig. 3-11   SW1 setting for user controlled signals.