

**DN-20M**  
**User Manual**  
(Version 1.0)



**ICP DAS CO., LTD.**  
泓格科技股份有限公司

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# 1 English version

The DN-20M is the daughter board of PISO-PS600, PISO-VS600 and PMDK (Referred to as the main card after in this text) for Manual Pulse Generator (MPG) and FRnet. It connects with main card through one 20-20 SCSI II via CON1 connector.

## 1.1 Board Layout for DN-20M

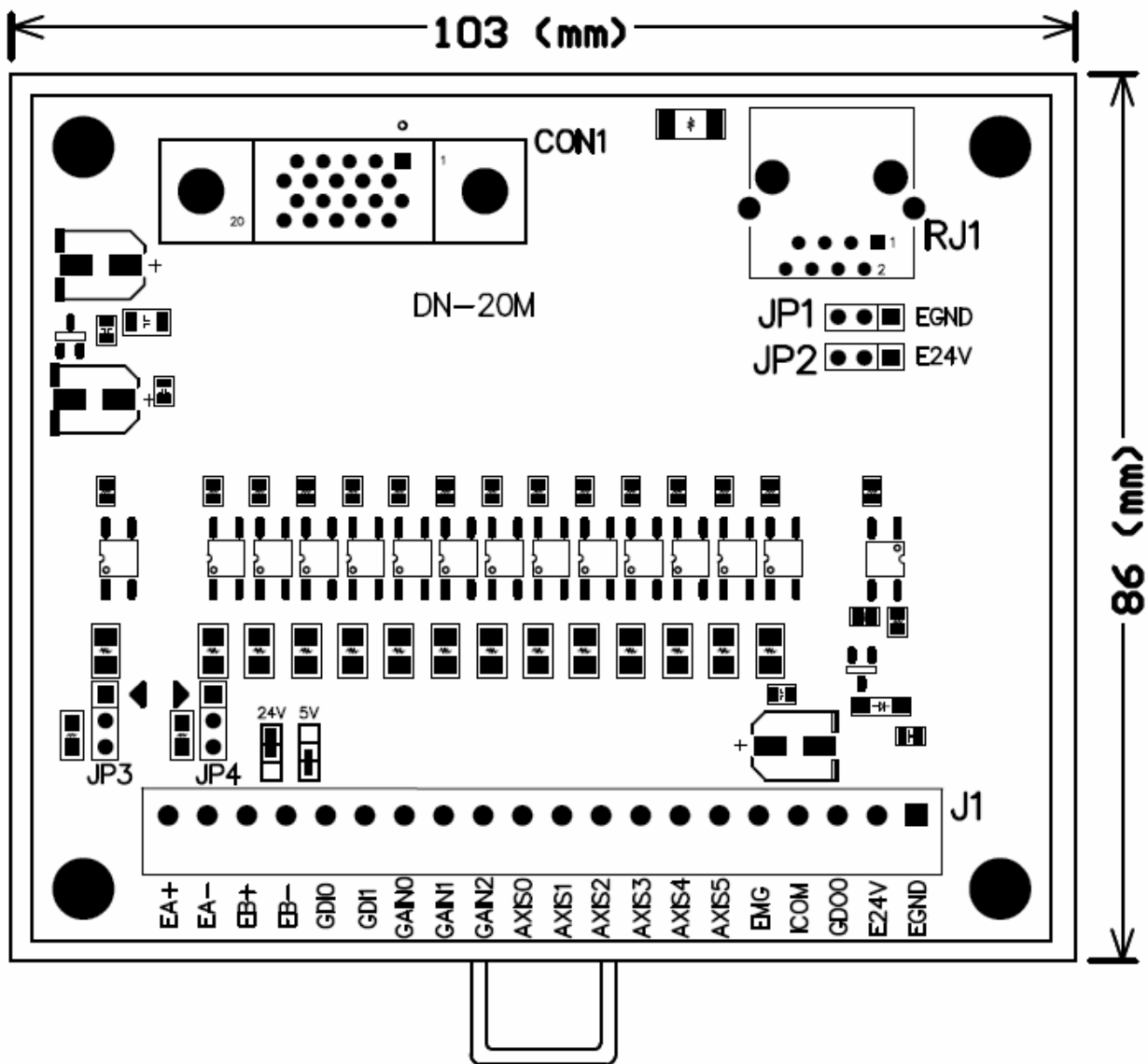


Fig. 1-1 Board layout for the DN-20M

## 1.2 Signal Connections for DN-20M

Assuring reliable connections is one of the most important tasks when sending or receiving data from your application system.

### ■ CON1

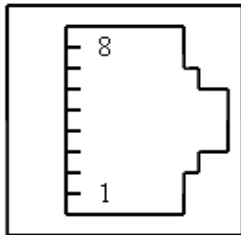
The connector CON1 is a 20-pin connector that enables you to connect sensors and motor drivers to the motion card of your Manual-Pulse-Generator and FRnet. The signal definitions are listed in Table 1-1. (For your reference only, this connector is connected with the control board directly; the user may not need to know the signal definition.)

Table 1-1

No.	Name	I/O	Function	No.	Name	I/O	Function
1	FR_A	O	FRnet A Phase	11	DGND	-	Digital Ground
2	FR_B	O	FRnet B Phase	12	MPG_EMG	I	MPG Emergency Stop
3	FR_GND	-	GND of FRnet Signal	13	GDI10 / MPG_Axis5	I	Generic Digital Input or MPG Axis Selection
4	GDI9 / MPG_Axis4	I	Generic Digital Input or MPG Axis Selection	14	GDI8 / MPG_Axis3	I	Generic Digital Input or MPG Axis Selection
5	GDI7 / MPG_Axis2	I	Generic Digital Input or MPG Axis Selection	15	GDI6 / MPG_Axis1	I	Generic Digital Input or MPG Axis Selection
6	GDI5 / MPG_Axis0	I	Generic Digital Input or MPG Axis Selection	16	GDI4 / MPG_Gain2	I	Generic Digital Input or MPG Magnification Selection
7	GDI3 / MPG_Gain1	I	Generic Digital Input or MPG Magnification Selection	17	GDI2 / MPG_Gain0	I	Generic Digital Input or MPG Magnification Selection
8	GDI1	I	Generic Digital Input	18	GDI0	I	Generic Digital Input
9	MPG_B	I	Manual Pulse Generator B Phase	19	MPG_A	I	Manual Pulse Generator A Phase
10	GDO0	O	Generic Digital Output	20	VCC	-	5V Digital Power from Bus

## ■ RJ1 (The I/O signals of the FRnet)

The connector RJ1 is an 8-pin RJ45 connector that enables you to connect to the signals of FRnet. Fig.1-2 Pin definition for RJ1 shows the pin assignment for the 8-pin connector on the DN-20M, and the table shows its I/O connector signal description.



Pin No.	Pin Name	Description
8	E24V or NC	External Power +24V or No connection, selected by JP2
7	E24V or NC	External Power +24V or No connection, selected by JP2
6	FR_B	FRnet port B
5	NC	No connection
4	NC	No connection
3	FR_A	FRnet port A
2	EGND or NC	External Power Ground or No connection, selected by JP1
1	EGND or NC	External Power Ground or No connection, selected by JP1

**Fig. 1-2 Pin definition of RJ1**

■ J1

This Connector is mainly used for connecting the manual-pulse-generator. The Table 1-2 shows its I/O connector signal description for the 20-pin connector of J1:

Table 1-2

Pin NO	Pin Define	Function description
1	EA+	Encoder A-phase(+) signal from the Manual-Pulse-Generator
2	EA -	Encoder A-phase(-) signal from the Manual-Pulse-Generator
3	EB+	Encoder B-phase(+) signal from the Manual-Pulse-Generator
4	EB -	Encoder B-phase(-) signal from the Manual-Pulse-Generator
5	GDI0	General purpose input signal
6	GDI1	General purpose input signal
7	GAIN0	Gain signal from the Manual-Pulse-Generator
8	GAIN1	Gain signal from the Manual-Pulse-Generator
9	GAIN2	Gain signal from the Manual-Pulse-Generator
10	AXIS0	Axis selection signal from the Manual-Pulse-Generator
11	AXIS1	Axis selection signal from the Manual-Pulse-Generator
12	AXIS2	Axis selection signal from the Manual-Pulse-Generator
13	AXIS3	Axis selection signal from the Manual-Pulse-Generator
14	AXIS4	Axis selection signal from the Manual-Pulse-Generator
15	AXIS5	Axis selection signal from the Manual-Pulse-Generator
16	EMG	Emergency Stop signal from the Manual-Pulse-Generator
17	ICOM	Common of all input signals
18	GDO0	General purpose output signal
19	E24V	External Power +24V input
20	EGND	External Power Ground

## 1.3 Jumper Settings

### ■ JP1 and JP2

Jumper 1 and 2 controls the power usage of RJ1. The following diagram shows the selection condition of the JP1 and JP2.

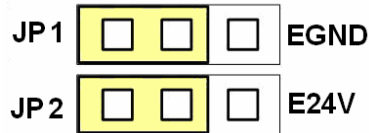


Fig. 1-3 JP1 and JP2 setting (without power on RJ1, Default setting)

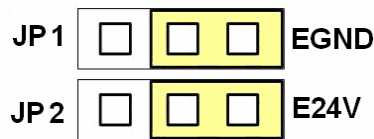


Fig. 1-4 JP1 and JP2 setting (With power on RJ1)

### ■ JP3, JP4

Jumper 3 and Jumper 4 control the power input signal of Manual-Pulse-generator (MPG) for 24V or 5V, please choose suitable setting according to the MPG that you used. The following diagram shows the selection condition of the JP3 and JP4.

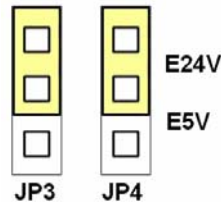


Fig. 1-5 EA and EB signals setting with 24V (Default setting is 24V)

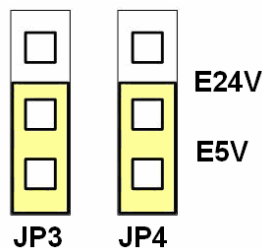


Fig. 1-6 EA and EB signals setting with 5 V



## 2 繁體中文版

DN-20M是泓格科技公司專為PISO-PS600、PISO-VS600及PMDK【本文之後統稱為主卡】等系列產品特別設計的端子板，它與主卡間是經由 CON1 連接器透過一條 SCSI II 20-20 公頭連接線串接；而此端子板的主要用途為提供使用者可以配接市面上各種類型的手動脈波產生器(又稱：手搖輪)及泓格科技本身特有的FRnet的通訊接口！

### 2.1 端子板配置及尺寸

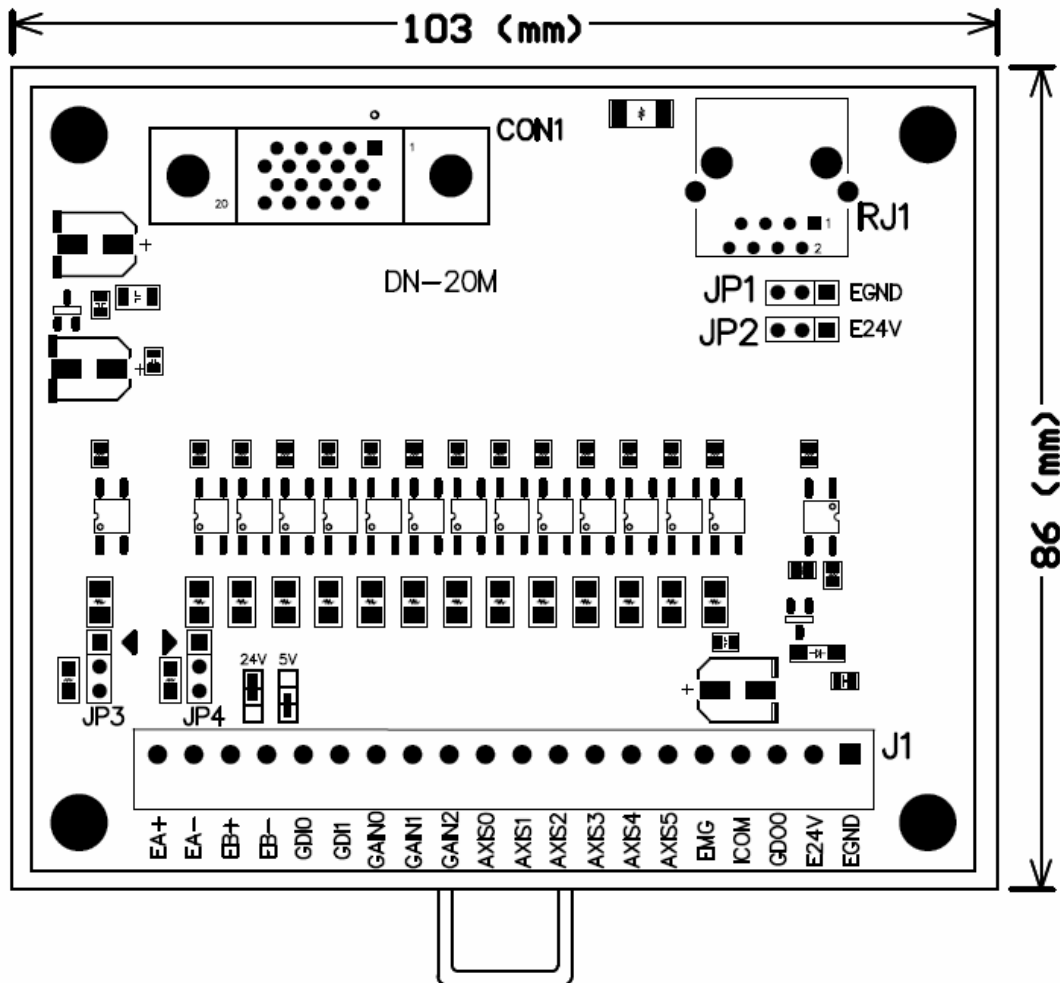


Fig. 2-1 配置及尺寸

## 2.2 訊號連接器說明

正確的信號連接可以讓應用系統能正確地收發送，在配接訊號線時請詳細參考本章節描述本端子板的各種連接器內容。

### ■ CON1

CON1 是一個 20 腳位的連接器，其主要做用為建立端子板與主卡之間的連結，由於此連接器是直接與控制卡連結，使用者可以忽略訊號定義內容，僅供參考：表 2-1 為此連接器腳位的詳細定義及功能描述

表 2-1

No.	Name	I/O	Function	No.	Name	I/O	Function
1	FR_A	O	FRnet A Phase	11	DGND	-	Digital Ground
2	FR_B	O	FRnet B Phase	12	MPG_EMG	I	MPG Emergency Stop
3	FR_GND	-	GND of FRnet Signal	13	GDI10 / MPG_Axis5	I	Generic Digital Input or MPG Axis Selection
4	GDI9 / MPG_Axis4	I	Generic Digital Input or MPG Axis Selection	14	GDI8 / MPG_Axis3	I	Generic Digital Input or MPG Axis Selection
5	GDI7 / MPG_Axis2	I	Generic Digital Input or MPG Axis Selection	15	GDI6 / MPG_Axis1	I	Generic Digital Input or MPG Axis Selection
6	GDI5 / MPG_Axis0	I	Generic Digital Input or MPG Axis Selection	16	GDI4 / MPG_Gain2	I	Generic Digital Input or MPG Magnification Selection
7	GDI3 / MPG_Gain1	I	Generic Digital Input or MPG Magnification Selection	17	GDI2 / MPG_Gain0	I	Generic Digital Input or MPG Magnification Selection
8	GDI1	I	Generic Digital Input	18	GDI0	I	Generic Digital Input
9	MPG_B	I	Manual Pulse Generator B Phase	19	MPG_A	I	Manual Pulse Generator A Phase
10	GDO0	O	Generic Digital Output	20	VCC	-	5V Digital Power from Bus

■ RJ1 (FRnet專用串接口)

RJ1是讓使用者能夠連接FRnet信號的一個8腳位的RJ45 連接器。RJ1的圖【圖 2-2】及腳位定義詳如：Fig 2-2及Table 2-2所示：

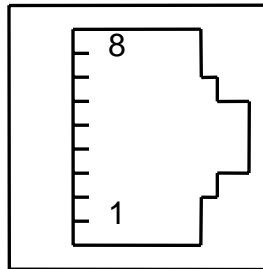


Fig.2-2

Pin No.	Pin Name	Description
8	E24V or NC	External Power +24V or No connection, selected by JP2
7	E24V or NC	External Power +24V or No connection, selected by JP2
6	FR_B	FRnet port B
5	NC	No connection
4	NC	No connection
3	FR_A	FRnet port A
2	EGND or NC	External Power Ground or No connection, selected by JP1
1	EGND or NC	External Power Ground or No connection, selected by JP1

Table 2-2

■ J1

此配接端子主要是用來提供使用者配接市面上各種類型的手動脈波訊號產生器【又稱：手搖輪，MPG】，由於市面上這類型的產品樣式甚多，故泓格特別將市面上的功能做一較全面性的支援，因此客戶可以依自己使用的類型產品選擇性的配接使用。其中EA及EB【MPG輸入訊號】的部份可以依實際訊號內容搭配JP3和JP4做24（V）或5（V）調整使用，下表2-3為詳細的腳位定義及功能描述：

Pin NO	Pin Define	Function description
1	EA+	Encoder A-phase(+) signal from the Manual-Pulse-Generator
2	EA -	Encoder A-phase(-) signal from the Manual-Pulse-Generator
3	EB+	Encoder B-phase(+) signal from the Manual-Pulse-Generator
4	EB -	Encoder B-phase(-) signal from the Manual-Pulse-Generator
5	GDI0	General purpose input signal
6	GDI1	General purpose input signal
7	GAIN0	Gain signal from the Manual-Pulse-Generator
8	GAIN1	Gain signal from the Manual-Pulse-Generator
9	GAIN2	Gain signal from the Manual-Pulse-Generator
10	AXIS0	Axis selection signal from the Manual-Pulse-Generator
11	AXIS1	Axis selection signal from the Manual-Pulse-Generator
12	AXIS2	Axis selection signal from the Manual-Pulse-Generator
13	AXIS3	Axis selection signal from the Manual-Pulse-Generator
14	AXIS4	Axis selection signal from the Manual-Pulse-Generator
15	AXIS5	Axis selection signal from the Manual-Pulse-Generator
16	EMG	Emergency Stop signal from the Manual-Pulse-Generator
17	ICOM	Common of all input signals
18	GDO0	General purpose output signal
19	E24V	External Power +24V input
20	EGND	External Power Ground

表2-3

## 2.3 Jumper 設定

### ■ JP1 和 JP2

JP 1 和 JP 2 控制 RJ1 是否提供電源能力。下列圖解顯示 JP1 和 JP2 的選擇條件。

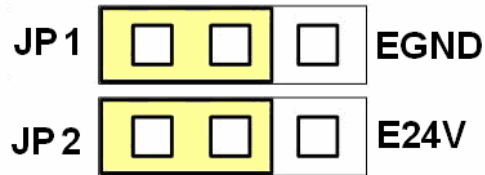


Fig. 2-3 JP1和JP2 設定(RJ1不帶電源, 出廠預設值)

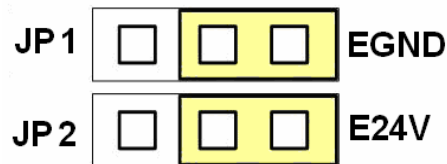


Fig. 2-4 JP1和JP2設定 ( RJ1帶有電源)

### ■ JP3 和 JP4

JP3 和 JP4 是用來選擇MPG的訊號是24V或5V, 請依據您使用的MPG選擇適合的設定

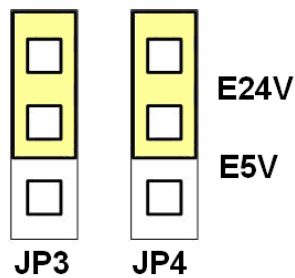


Fig. 2-5 EA和EB 訊號設定為24V電壓值(此為出廠預設值)

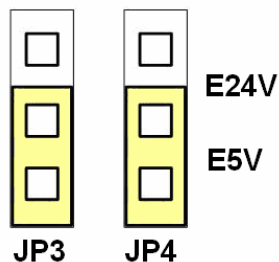


Fig. 2-6 EA和EB 訊號設定為5 V電壓值