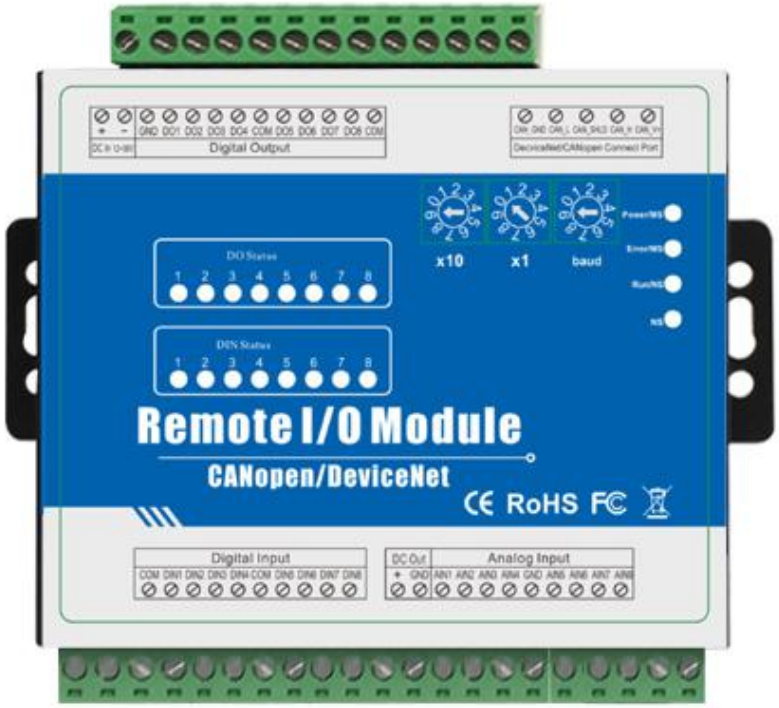


Industrial Class Design

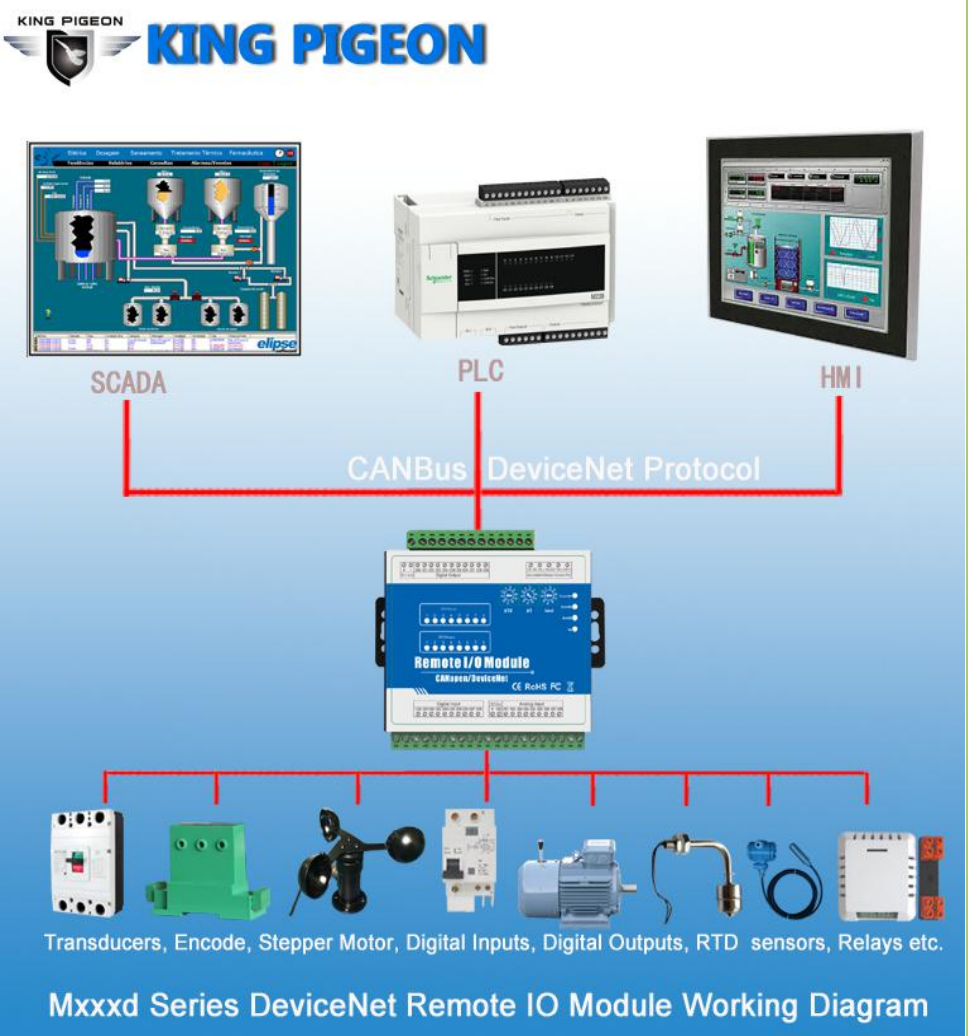
1Mhz High Speed Pulse Counter

Supports PWM Control

DO High Speed Pulse Output

Industrial Remote I/O Module
DeviceNet I/O Module

KING PIGEON



Mxxxd Series Data Sheet

Ver 1.0

Date Issued: 2017-12-17

King Pigeon Hi-Tech. Co., Ltd.

www.GPRS-M2M.com

Mxxxd DeviceNet Series Remote I/O Module Table				
Model	Descriptions	DC Output	DC Input	Typical Power Consumption
M100d	1 CANBus, 2 DI, 2 AI, 2 DO(Sink) or Relay	1 DC	12~36VDC	1.05W-2.05W
M110d	1 CANBus, 4 DI, 4 DO(Sink) or Relay	1 DC		1.05W-2.35W
M120d	1 CANBus, 4 DI, 4 AI, 2AO, 4 DO(Sink) or Relay	1 DC	24~36VDC	1.05W-2.7W
M130d	1 CANBus, 8 DI, 4 DO(Sink) or Relay	1 DC	12~36VDC	1.1W-2.85W
M140d	1 CANBus, 8 DI, 8 DO(Sink) or Relay	1 DC		1.1W-3.65W
M150d	1 CANBus, 8 DI, 4 AI, 4 DO(Sink) or Relay	1 DC		1.1W-3.7W
M160d	1 CANBus, 8 DI, 8 AI, 8 DO(Sink) or Relay	1 DC		1.1W-3.75W
M200d	1 CANBus, 2AO	1 DC	24~36VDC	1.05W-1.4W
M210d	1 CANBus, 4 DI	1 DC	12~36VDC	1.05W-1.5W
M220d	1 CANBus, 4 DO(Sink) or Relay	1 DC		1.05W-1.6W
M230d	1 CANBus, 4 AI	1 DC		1.05W-1.15W
M240d	1 CANBus, 4 RTD, 2/3 wire PT100/pt1000	---		0.7W-0.9W
M310d	1 CANBus, 8 DI	1 DC	12~36VDC	1.1W-2W
M320d	1 CANBus, 8 DO(Sink) or Relay	1 DC		1.1W- 2.75W
M330d	1 CANBus, 8 AI	1 DC		1.1W-1.2 W
M340d	1 CANBus, 8 RTD, 2/3 wire PT100/pt1000	---	12~36VDC	0.7W-1.1W
M410d	1 CANBus, 16 DI	1 DC		1W-2.3W
M420d	1 CANBus, 16 DO(Sink) or Relay	---		1W-3.3W

Special instructions for ordering

1) If the model provides digital input, the DIN default type: wet contact, optional: dry contact. The input type cannot be changed after manufacturer delivered. The DIN1 default is high-speed count mode; it can be changed to low-speed count mode by open the shell and change the internal jumper. If require dry contact input, please note when ordering, if DIN1 require high-speed pulse count mode then must be wet contact.

2) If the model provides digital output, the DO default type: SINK, optional: Relay. The output type cannot be changed after manufacturer delivered. The DO1 supports PWM high-speed pulse output, the output duty cycle from 10-90%; DO2 can be used to control the direction of the stepper motor. If require relay output, please note when ordering, if DO1, DO2 used for high-speed pulse output then must be Sink.

3) The model number: M240d,M340d support thermal resistance temperature transmitter default type: PT100, optional: PT1000, if you need PT1000 type of thermal resistance, please note when ordering.

4) The valid number of I / O ports corresponding to the model number is described in the Model List, the not included I/O port in the model is invalid, although in the hardware reserved them.

1. Brief introduction

The Mxxxd DeviceNet Series Remote I/O Module are industrial class, high reliability, high stability and high precision data acquisition module, embedded 32-Bit High Performance Microprocessor MCU, it provides 1 isolated CAN Bus interface and multi I/O, supports standard DeviceNet Protocol, based on the CAN bus and mainly used for the embedded network of the machine control, such as industrial machine control , aircraft engines monitoring, factory automation, medical equipments control, remote data acquisition, environmental monitoring, and packaging machines control.

It can be intergraded into SCADA, OPC server, HMI and other automation systems. It is design for working in the harsh industrial application environment, widely used in a variety of industrial automation.

2.Standard Packing List

Remote I/O Module X 1; User Manual X 1.

Note: The package does not include AC/DC Adaptor.

Optional: 35mm Standard DIN rail fixed Bracket

3. Mainly Features

- Wide range power supply with anti-reverse protection design;
- Embedded 32-Bit High Performance Microprocessor MCU, inbuilt watchdog;
- 1 CANBUS Interface, comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5;
- Group 2 Only Server (non UCMM-capable) ;
- Support Polling I/O operation mode;
- Support standard MS, NS LED and other I/O status indicator;
- Support setting Address ID and Baud Rate via rotary switch;
- Support programmed disconnection faulty handling;
- Optical isolated digital input(Compatible Dry or Wet type), supports max 1MHz high speed pulse counter;
- Digital output(Sink) or relay output, supports 10Hz~300KHz high speed pulse output, support PWM;
- Isolated analog input, 12-bit resolution, supports 0~20mA,4~20mA,0-5VDC, 0-10VDC;
- RTD input, supports PT100 and PT1000 resistance sensor;
- High sampling frequency and special filtering strategy to ensure reliability;
- Provides 1 channel VDC power source output for external device, saving wiring cost;
- LED instructions work status, with reset button to reset, easy on-site installation and commissioning;
- Using metal shell, protection class IP30. Metal shell and system security isolation, especially suitable for industrial applications in the field;
- Small size, L105 * W88 * H30mm, compatible wall installation and DIN35mm industrial rail installation

4. Technical Specifications

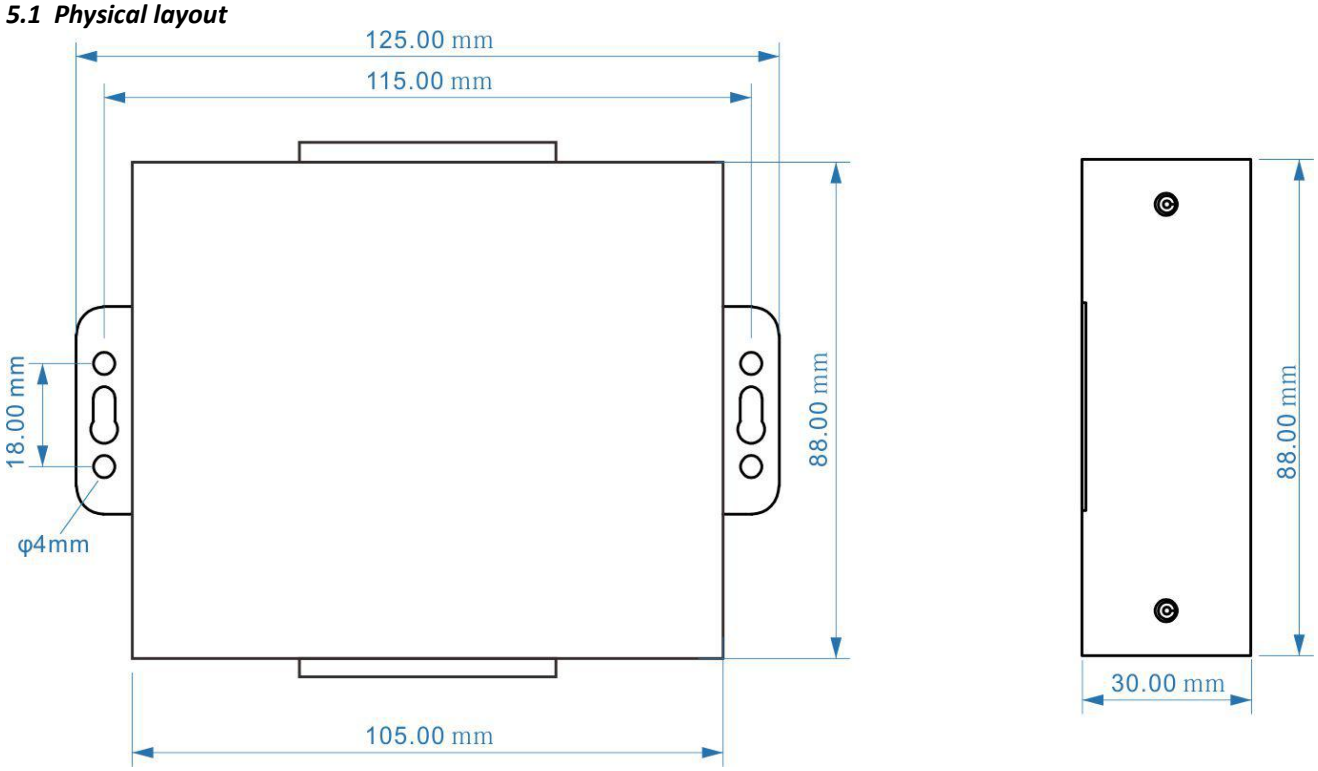
• Digital Input	
Sensor Type	Wet Contact (NPN or PNP), Dry Contact
I/O Mode	DI or Event Counter
Dry Contact	• On: short to GND, logic=1 • Off: open, logic=0
Wet Contact (DI to COM)	• On: 10 to 30 VDC, logic=1 • Off: 0 to 3 VDC, logic=0
Counter Frequency	Only the 1st Channel can be used as pulse counter, Compatibles DI and counter simultaneously. Counter value will save after power off. High Speed Mode: Max. 1Mhz(Default); Low Speed Mode: Max. 10KHz (Optional, can open the cover to choose low speed mode.)
Digital sampling frequency	500Hz
Digital filtering strategy	Continues 3 times
Isolation	Optical Isolated,3k VDC or 2k Vrms
• Digital Output	
Type	Sink or Relay(DC 5A/30V,5A/250VAC)
I/O Mode	DO or Relay or Pulse Output
Pulse Output Frequency	10Hz~300KHz(Only the 1st Channel is Sink type can be used as high speed pulse output, DO1 supports PWM high-speed pulse output.)
Over-Voltage Protection	50 VDC
Over-Temperature Shutdown	175°C (typical), 150°C (min.)
Load Current	Max.500 mA per channel
Digital sampling frequency	500Hz
Isolation	If DO is Sink type, then no isolation. If it is Relay, then is electrical isolation.
• Analog Input	
Type	Differential input
Resolution	12 bits
I/O Mode	Voltage / Current (backside switch selectable)
Input Range	0~5VDC , 0~10VDC, 0~20 mA, 4~20mA,
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -10 and 60°C ±0.5% FSR @ -40 and 75°C
Sampling frequency	20Hz
Isolation	Electrical isolation
• RTD Input	
Sensor Type	PT100 or PT1000

Measurement Range	-120~+420℃
Resolution	0.1°C or 0.1 ohm
Input Connection	2- or 3-wire
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 and 75°C
Sampling frequency	20Hz
Isolation	No
• Analog Output	
Type	Differential input
Resolution	12 bits
Output Range	0 to 10 VDC
Drive Current	1A (max.)
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -10 and 60°C ±0.5% FSR @ -40 and 75°C
Isolation	No
• Working Power Requirements	
Input Voltage	12~36VDC for no-AO output model, 24`36VDC for AO output model; Peak Voltage:+40VDC, Power consumption: Less than 1.7W, If equipped relay output, then each Relay action: 0.15W.
Input Current	139 mA @ 24 VDC
• Power Output	
Output Voltage	12~36VDC, equal to the input voltage.
Output Current	139 mA @ 24 VDC
• CANBUS	
CANBUS Interface	5.08mm Terminal
Protection	ESD 500VDC
Wires Connection	Shield Twisted wires, CAN V+, CAN_H, CAN_L, CAN_Shield, GND
DeviceNet Protocol	Volume I, Release 2.0 &Volume II, Release 2.0, Errata 5
MAC ID	Range:0 ~ 63.
Baud Rate Setting	Range:125, 250, 500kbps
Predefined Master/Slave Connection Set Rate	Group 2 Only Server
I/O Operation Mode	Polling
• Physical Characteristics	
Wiring	I/O cable max. 14 AWG

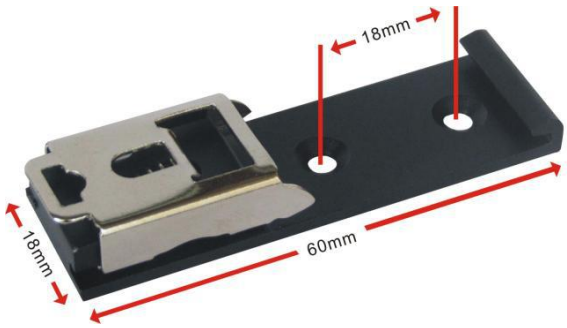
Dimensions	105 x 88 x 30 mm
Weight	Under 205 g
Mounting	DIN rail or wall
• **Environmental Limits**	
Operating Temperature	Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	Up to 3000 m

5. Physical Layout and Installation Diagram

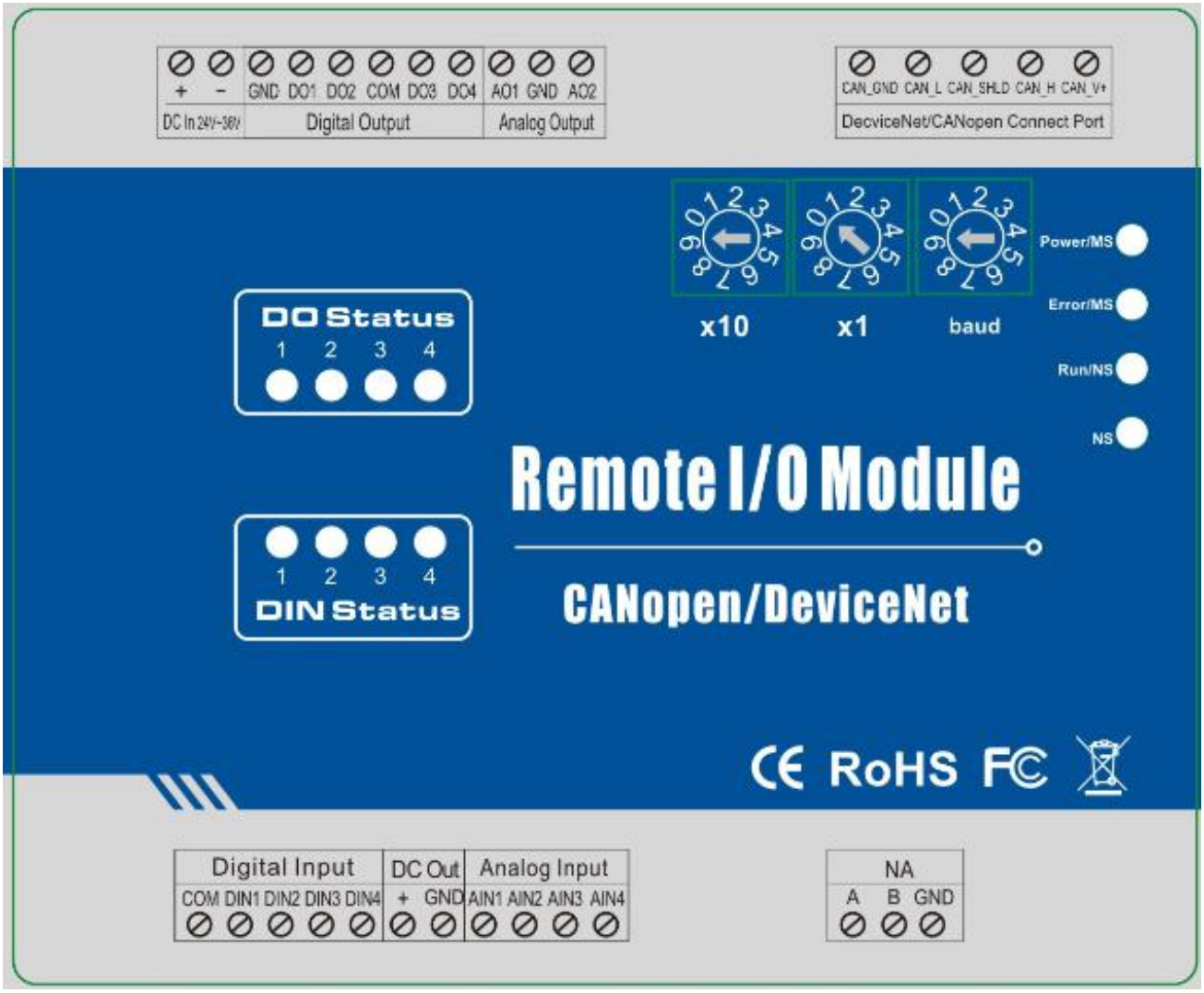
5.1 Physical layout



35mm Standard DIN rail fixed Bracket(Optional Bracket)



5.2 Led Instruction



LED Indicator Instruction	
	Module Status (MS) Indicator Green
	Module Status (MS) Indicator Red
	Network Status (NS) Indicator Green
	Network Status (NS) Indicator Red
	DeviceNet Address Setting Switch, x10 is high number, x1is low number, Address=High number x10 + Low number. Example: x10 set to 2. x1 set to 8, then address is 28=2x10+8
	DeviceNet Communication Rate Set Switch, When =0 stands for communication rate is 125KPS; =1 stands for communication rate is 250KPS; =2 stands for communication rate is 500KPS; =Not 0/1/2, invalid.

	Digital input status indicator, turn on while status change.
	Digital Output status indicator, turn on while relay close or Sink output high level.

MS Indicator Instruction:

Indicator Status	Description	Handling
LED Off	No power	Check Module power supply
Green LED Flash	Waiting I/O data	1) Check if master is running or not.
Green LED On	Running	
Red LED Flash	Fault configuration	Configure Module again in the Master
Red LED On	Fault Hardware	1) Reconnect power supply for Module 2) No response for many times, factory repairing.

NS Indicator Instruction:

Indicator Status	Description	Handling
LED Off	No power or repeat checking ID not finished	1) Checking Module power supply; 2) Ensure one more devices are communication in the networks; 3) Ensure communication rate is same with other devices in the networks.
Green LED Flash	Already on-line, but not connect with Master	1) Check the networks connection is well or not; 2) Ensure Module already configured to Master scan list.
Green LED On	Data is communicating	
Red LED Flash	Time out and disconnect with Master during data communication	1) Check the networks connection is well or not; 2) Check Master working well or not.
Red LED On	Repeat checking ID failure or enter into BUS-OFF off-line status	1) Ensure communication rate is same with other devices in the networks; 2) Check if networks or wiring are suitable; 3) Check if the device ID is within correct range or 4) Reconnect the power supply.

5.3 Interface Instructions for installation

See below interface definition, please connect the correct wires.

Interface Definition Instruction		
DC in 12~36V	+	DC12~36V positive input, 1A, for power on the Unit. If need to use the AO port, then please power on it by DC24~36v.
	–	DC12~36V negative input, 1A.
DC Out	+	DC Power output positive for external device, output voltage= input voltage.
	GND	DC Power output negative port.
CANopen /DeviceNet Connect port	CAN_V+	CAN Bus positive
	CAN_H	CAN Bus signal. High
	CAN_SHLD	Shield cable
	CAN_L	CAN Bus signal. Low
	CAN_GND	CAN Bud GND

NA	A	reserved
	B	reserved
	GND	reserved
Digital Input	DINx+	The x channel digital input positive
	GND	Digital input negative
Digital Output	DOx+	The x channel Digital Output High Level or Relay NO port.
	GND	Sink output: GND (For output type is SINK.)
	COM	Relay output: COM.(For output type is Relay)
Analog Input	AINx+	The x channel Analog input positive.
	GND	Analog input negative.
Analog Output	AOx+	The x channel Analog output positive.
	GND	Analog output negative.
RTD Input	RTDx+	The x channel Resistance Thermal input positive.
	RTDx -	Resistance Thermal input negative.
	COM	Resistance Thermal input COM port.

The End!
Any questions please help to contact us feel free.
Http://www.GPRS-M2M.com