DAM6800
User's Manual

Beijing ART Technology Development Co., Ltd.

Contents

Chapter 1 Overview

DAM6000 series through multi-channel I/O modules for data acquisition and process control, and provides flexible data acquisition and control applications for industrial application. This product consists of two parts: the base (main unit) and I/O modules. The main unit contains two parts: DAM6600—Distributed RS-485/Ethernet data acquisition and control system, DAM6800— visual data acquisition and control system.

DAM6800— visual based data acquisition and control system, support both Ethernet bus, RS-485 bus, and the customers can choose a variety of communication methods, the system built-in WinCE OS, users can use the EVC or VS programming language to develop. The panel with a VGA and USB mouse, keyboard interface, maximum support 800*480 resolution LCD screen, and run fast, modular distribution system provides a flexible system configuration. DAM6800 can be used for a variety of industrial environments, the I/O standard signal including: analog input/output, thermocouple, RTD, digital input/output, relay output, counter/frequency.

1.1 FEATURES

DAM6800— visual based data acquisition and control system including the CPU module, power module, 8-slot chassis and with RS232, RS485 bus, I/O modules. CPU module, power module, 8-slot chassis referred to the base (main unit).

High-performance 32-bit RISC processor (ARM9 processor)

Frequency up to 200MHz (external crystal oscillator to 18.432MHz)

Built-in WinCE operating system, support EVC or VS programming language

160Kbytes internal high-speed SRAM

64Mbytes external high-speed SDRAM

256Mbytes (Nand)+ 4Mbytes dataFlash memory

Accurate low-power real time clock RTC

One VGA port, can support the 1600X1200 resolution display

Two USB2.0 ports, can be used to connect with USB mouse, USB keyboard or other USB devices

One three-wire RS232 serial port

One RS232/RS485 optional serial port (COM4 interface is not used), one RS485 interface

With RJ-45 10/100M base-T Ethernet Interface

With eight 16-channel I/O modules, control local 128 I/O points

Support Modbus RTU and Modbus TCP (Server, Client) protocol

1.2 Product View

Chapter 2 Using Method

2.1 Working Requirements

Environment Temperature:

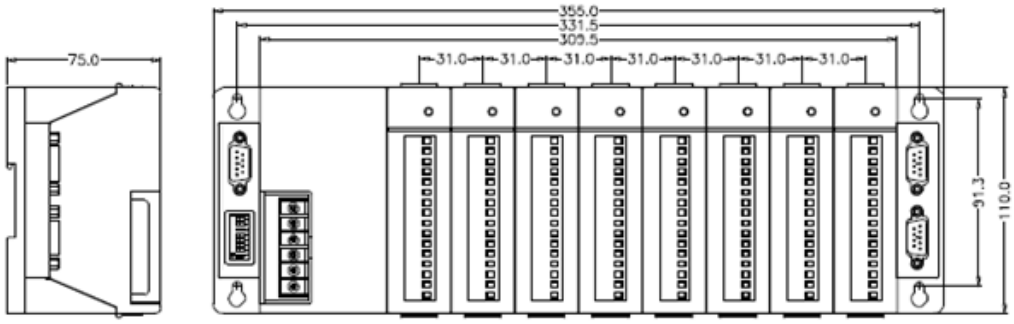
Storage Temperature: -25 ~ +85℃

Operating Temperature: -10 ~ +70℃

Operating Humidity: 5~95%

Operating Voltage: +12V ~ +36Vdc (the whole system voltage)

2.2 Dimension



2.3 Module Installation

DAM6800 system peripheral interface is flexible, customers can choose IO modules according to their needs, the specific optional IO modules reference to Chapter 3. In DAM6800 base, there are eight system slots for plug-IO module board, plug method shown as following. If the customers do not need to configure all eight IO modules, the slot without IO module can be covered with the case.

2.4 Fixed Installation

DAM6800 can be mounted in a vertical wall or DIN rail.

Wall Mounting: the system is installed in the wall by screws, the screw is the # 7 (4mm diameter).

DIN Rail Mounting: DAM6800 system can be installed in the cabinet by DIN-rail mounting. There are three rail

locking clips at the bottom of the system, before installation, first, pull out the locking clips. Second, bulldoze the system and pressed into the rail. Last, push the locking clips to fix the system. If want to remove the system, pull out the locking clip, then lift and remove the system.

2.5 Panel Description

2.5.1 DC Power Wiring

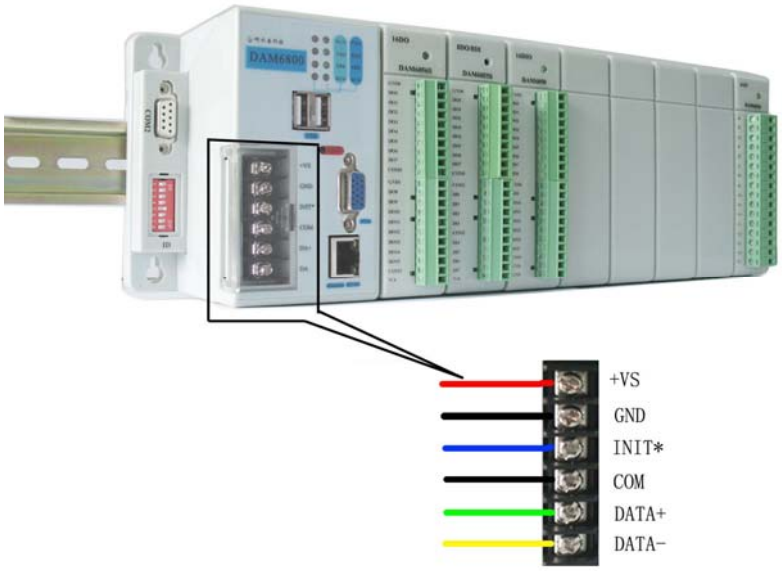
shown as the following, the system power supply is +12~+36 Vdc, wiring between +Vs and GND. Recommended to use the red wire and black wire, red for positive power supply (+Vs), the black wire for negative (GND), diameter is at least ϕ2mm.

In addition to the power terminal wiring, there are four interfaces, INIT*, COM, DATA + and DATA-.

(1) INIT* is used to restore the system state, when the INIT* is in logic low level, the system all user setting values failure.

(2) COM provides the reference ground plane for RS485 bus.

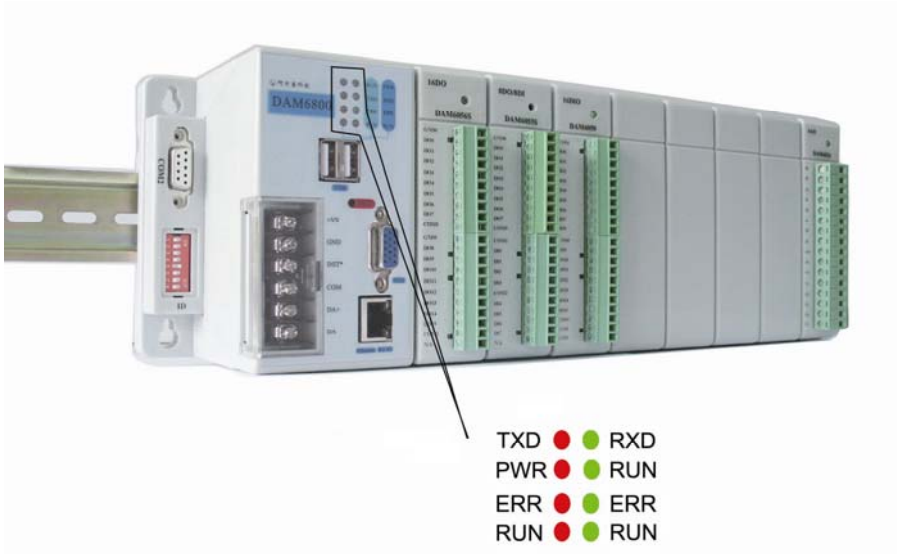
(3) DATA + and DATA- provide RS485 differential bus terminal. RS485 bus interface is COM1 (software setting), RS485 bus transfer rate up to 115200bps, it can connect with 32 devices.



2.5.2 LED Indicators

There are eight LED indicators, shown as the following.

TXD (Red)	Customers can customize
RX（Green）	Customers can customize
PWR（Red）	CPU power indicator
RUN（Green）	CPU running indicator
ERR（Left Red）	Error indicator 1, customers can customize
ERR（Right Green）	Error indicator 2, customers can customize
RUN（Left Red）	Running indicator 1, customers can customize
RUN（Right Green）	Running indicator 2, customers can customize



In addition, each IO module with a green LED indicator, indicate IO module is running normally, some digital input/ output modules with port status indicator, such as DAM6051D, DAM6056D and so on.

2.5.3 Reset Button

"RESET" button is used to reset the system, when the host and this system is disconnected and reconnect or replace the input and output modules, just as the machine is still in the last work mode, this time we can click the reset button to reset the control.

2.5.4 ID Setting

When multiple DAM6800 work simultaneously, the serial communication to distinguish each system, it needs to

set 8-bit DIP switch to different values. DIP switch to "ON", this bit is logic 0, the DIP switch to "OFF", this bit is logic 1.

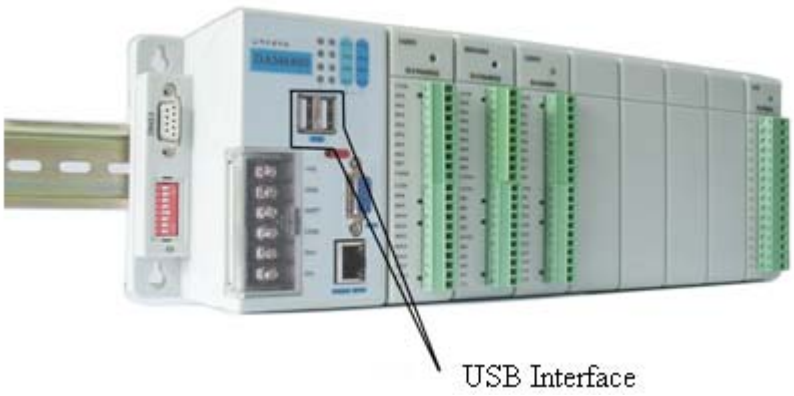
Note: ID numbers available range is from 1 to 255 (01h to FFh). The default setting is 00h.

2.5.5 VGA Interface

DAM6800 provides a VGA port, can be connected with the VGA LCD screen, the maximum resolution is 1600*1200.

2.5.6 USB Interface

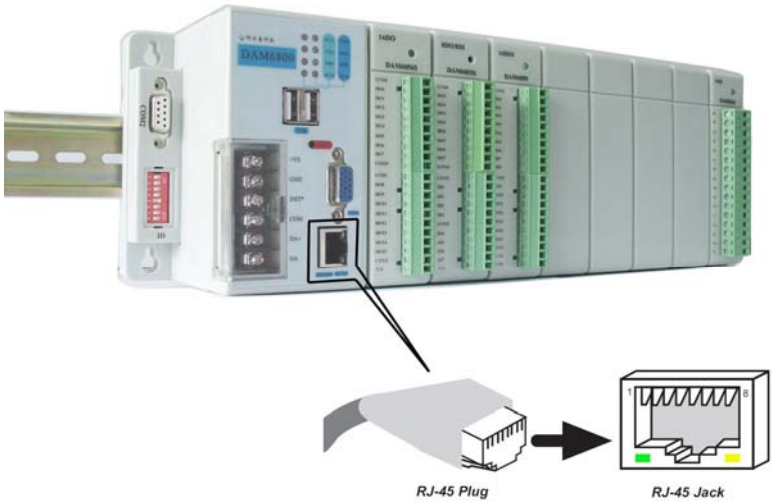
DAM6800 provides two USB interfaces, can be used to connect with USB mouse, USB keyboard or other USB devices.



2.5.7 Ethernet Interface

DAM6800 provides 10/100MBase_T Ethernet communication interface, can connect with computer, router by

CAT5 twisted-pair, both straight cable and crossover can be used, transmission distance up to 100m. Shown as below.



The default setting: IP address: 192.168.2.80

Port number: 502

Default Gateway: 192.168.2.1

IP address can be modified by the software DAM6000.exe.

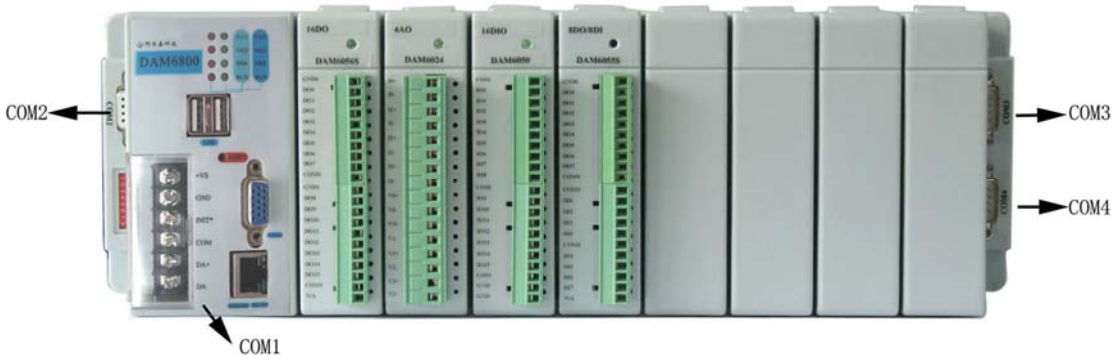
Connect with the LCD screen, and they can be seen in the system.

RJ45 Ethernet port has two LED lights, the following are functions:

	Status	功能
Green LED	ON	100Mbps
	OFF	10Mbps
Orange LED	Flashing	Data communication
	OFF	No data

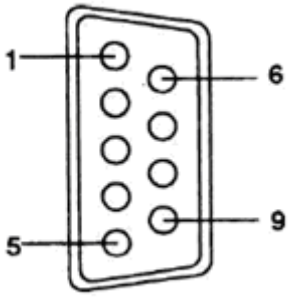
2.5.8 COM Port

This machine has three COM ports, COM1 is the RS-485 bus, COM2 is the 3-wire RS232, DB9 female connector, and COM3 is RS232 (9-wire)/RS485 optional port, DB9 male connector (**Note: the COM4 can not be used**). The unit provides a serial port communication rate up to 115200bps, the default baud rate is 9600bps.



(1) COM1 interface is RS485 interface.

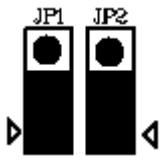
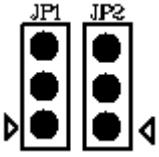
(2) COM2 Interface is the 3-wire RS232, use DB9 female socket, from the system output, it needs cross-DB9 serial cable to connect with computer.

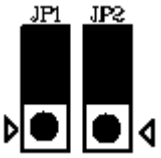


DB9 Female Connector

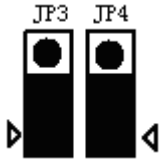
Pin NO.	Name	Description
2	TXD	Data Send
3	RXD	Data Receive
5	GND	Ground
1, 4, 6, 7, 8, 9	NC	NC

(3) COM3 interface is RS232, RS485 optional interface, the interface functions can be select by the JP1 (JP2 is not used), as follows:

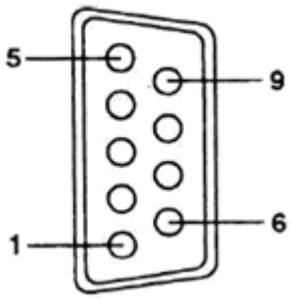
	Jumper
RS232（9-wire）	
RS232（9-wire）	

	No jumper
RS485	

JP3 (JP4 is not used) is used to select the RS485 termination resistor:

	Jumper
termination resistor 300R	
termination resistor 120R	

COM3, COM4 pin definition are the same, 9-wire RS232 interface is DB9 male connector, from the system output, it needs cross-DB9 serial cable to connect with computer.

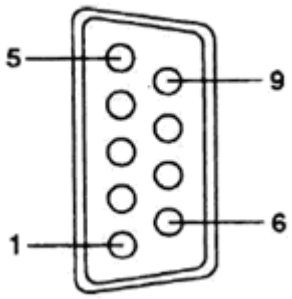


DB9 Male Interface

Pin NO.	Name	Description
1	DCD	Carrier Detect
2	RXD	Data Receive
3	TXD	Data Send
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request to Send

8	CTS	Clear to Send
9	RI	Ring Indicator

RS485 Interface



DB9 Male Interface

Pin NO.	Name	Description
1	DATA-	RS485 Data-
4	DATA+	RS485 Data+
5	GND	Signal Ground
2, 3, 6, 7, 8, 9	NC	NC

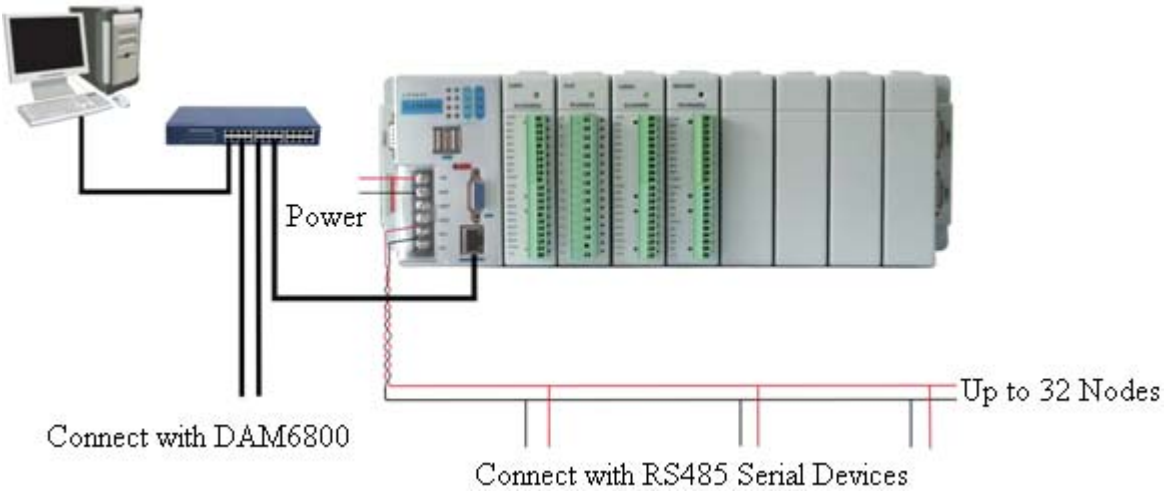
2.5.9 The Module Port

Port connection of each module references the module wiring.

2.5.10 RTC

The module Built in RTC battery. When it powers down, the RTC can also run. If the RTC power off and does not save, that is the battery is out of power, we should use a new battery.

2.6 System Connection



2.7 Accessories

Standard: one RS232 serial cable (crossover)

one Disk

Chapter 3 IO Module Description

Customers can choose the IO module, IO module is including digital input/output, analog input/output, counter and other functions.

DAM6000 Series I/O Module Selection Table

Analog Input Table:

Module	DAM6013	DAM6017	DAM6018
Resolution	16-bit	16-bit	16-bit
Input Channel	3	8	7
Sample Rate	10	100	10
Input Voltage	——	±150mV ±500mV ± 1 V ± 5 V ±10V	±15mV ±50mV ±100mV ±500mV ±1V ±2.5 V
Input Current	——	± 20 mA	±20 mA
Sensor Input	Pt100 or Cu50, Cu100 RTD	——	J, K, T, E, R, S, B, N, C, WRe5-WRe26
Isolation Voltage	3000Vdc	3000Vdc	3000Vdc

Analog Output Table:

Module	DAM6024
Resolution	12-bit
Output Channel	8
Output Voltage	0-10V

Output Current	0-20mA 4-20mA
Isolation Voltage	3000Vdc

Digital Input/Output Table:

Module	DAM 6050	DAM 6051D	DAM 6051S	DAM 6052	DAM 6055S	DAM 6056D	DAM 6056S	DAM 6060	DAM 6068	DAM 6069
Input Channel	16 DIO selection	16 (LED)	16 (LED)	8	8 (LED)					
Output Channel					8 (LED)	16 (LED)	16 (LED)	6 (relay)	8 (relay)	8 (power relay)
Isolation Voltage			2500V dc	5000V rms	2500V dc		2500V dc			

Counter Table

Module	DAM6080	DAM6081
Resolution	32-bit	32-bit (with 4 open-collector outputs)
Counter Channel	4	4
Input Frequency	Up to 5000Hz	Up to 1MHz
Counter Mode	Frequency up/down counter, bidirectional relay	Frequency up/down counter, bidirectional relay
Isolation Voltage	2500Vrms	2500Vrms

Chapter 4 Warranty Policy

Thank you for choosing ART. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ART's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: www.art-control.com.

2. All ART products come with a limited two-year warranty:

- The warranty period starts on the day the product is shipped from ART's factory
- For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ART is not responsible for any loss of data.
- Please ensure the use of properly licensed software with our systems. ART does not condone the use of pirated software and will not service systems using such software. ART will not be held legally responsible for products shipped with unlicensed software installed by the user.

3. Our repair service is not covered by ART's guarantee in the following situations:

- Damage caused by not following instructions in the User's Manual.
- Damage caused by carelessness on the user's part during product transportation.
- Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals).
- Damage from improper repair by unauthorized ART technicians.
- Products with altered and/or damaged serial numbers are not entitled to our service.

4. Customers are responsible for shipping costs to transport damaged products to our company or sales office.

5. To ensure the speed and quality of product repair, please download an RMA application form from our company website.