

EMA-8308/ EMA-8308A
EMA-8308D/ EMA-8308DA
Ethernet Analog I/O module
User's Manual (V1.0)

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Correction record

Version	Record
1.0	firmware version 1.0 up

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Notes on hardware installation

Please register as user's club member to download the
“Step_by_step_installation_of_Ethernet_module” document from <http://automation.com.tw>

1. **Forward**

Thank you for your selection of Ethernet module EMA8308 analog input output interface.

Thanks to the booming of network, Ethernet become a reliable and low cost solution for data communication. To utilize the Ethernet as data communication highway of industrial control devices is more attractive than ever. EMA8308 module is a simple web based analog I/O control module. Standard type EMA8308 and EMA8308D are 12 bit version and EMA8308A and EMA8308DA is 16 bit version. While EMA8308D and EMA8308DA are 8 channels differential input, EMA8308 and EMA8308A are single or differential type. You can choose the suitable type for their application to achieve maximum resolution/cost. We have provide the dll's of Window's or Linux system, enabling you coding the flexible application as you need. Stable, high reliability and remote addressable module give you a new approach of application.

In the same series:

EMA-8308 24bit uni-polar 8 differential /16 single end analog input, 2 12bit analog output
EMA-8308A 24bit uni-polar 8 differential /16 single end analog input, 2 16bit analog output
EMA-8308D 24bit bi-polar 8 differential analog input, 2 12bit analog output
EMA-8308DA 24bit bi-polar 8 differential analog input, 2 16bit analog output

Any comment is welcome,
please visit our website

<http://www.automation.com.tw/>

<http://www.automation-js.com/> for the up to date information.

2. **Features**

Analog input section

- Over-voltage protection on analog input
- High common mode voltage up to 10V (EMA-8308D,EMA-8308DA)
- 24 bit accuracy
- 10 samples per second
- Differential or single end analog input (EMA-8308,EMA-8308A)
- Multiple analog input range: 0~5V, 0~10V, 4~20mA, 0~20mA (EMA-8308,EMA-8308A)
-5~+5V, -10~+10V, 4~20mA, 0~20mA (EMA-8308D,EMA-8308DA)

Analog output section

- Over-load protection on analog output
- -10V ~ +10V output

Ethernet section

- Direct web page control
- IP re-assignment
- 10/100M auto detection
- Software key function

3. Specifications

3.1 Analog input

3.1.1 Input points:

EMA-8308, EMA-8308A : 16 channels unipolar single end or differential

EMA-8308D : 8 channels bipolar

EMA-8308DA : 8 channels differential

3.1.2 Resolution: 24-bit

3.1.3 Offset error: 2.5uV(typ), 5uV(max)

3.1.4 Offset error drift: 20nV/°C

3.1.5 Input common mode rejection: 120dB

3.1.6 Sample rate: 10 samples/second

3.1.7 Input type: differential or single end (port programmable)

3.1.8 Input range:

EMA-8308, EMA-8308A :

0~5V(23bit), 0~10V(24bit), 0~20mA(23bit), 4~20mA(22bit)

EMA-8308D, EMA-8308DA :

-5V~ +5V(23bit), -10V~ +10V(24bit), 0~20mA(23bit), 4~20mA(22bit)

3.1.9 Input filter: 7.03K, 3.52K, 1.76K, 879Hz

3.1.10 Over-voltage protection: 20Vdc(max)

3.2 Analog output

3.2.1 Output points: 2 channels

3.2.2 Resolution: 12-bit (EMA-8308, EMA-8308D)

16-bit (EMA-8308A, EMA-8308DA)

3.2.3 Output range: -10V~ +10Vdc

3.2.4 Over load protection: 50mA(peak)

3.3 Ethernet

3.3.1 10/100M auto switch x 2 port

3.4 General

3.4.1 Power requirement: 12Vdc ~24Vdc

3.4.2 Operation Temperature: 0~ +70 degree C

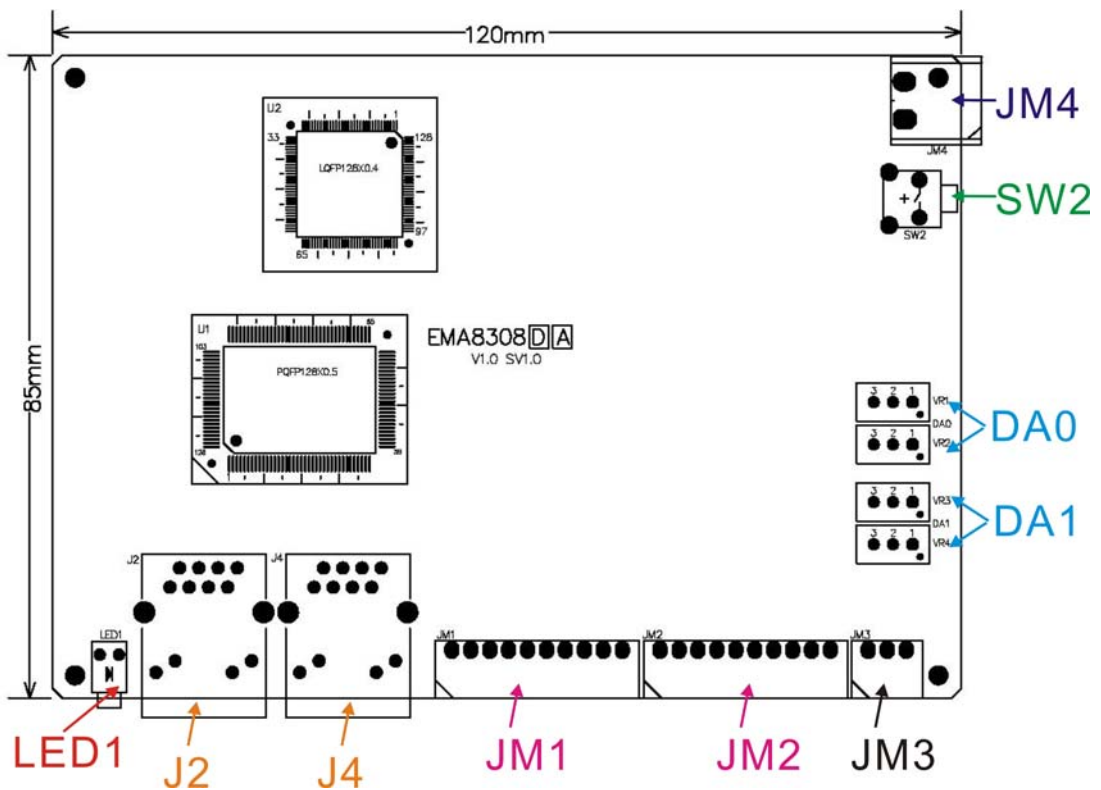
3.4.3 Storage Temperature: -20 ~ +80 degree C

3.4.4 Operation Humidity: 5~95% RH, non-condensing

3.4.5 Dimension: 107.6(D)*135.8(W)*34(H) mm
4.3(D)*5.4(W)*1.4(H) in

4. Layout and dimensions

4.1 EMA-8308



LED1: system active LED

J2,J4: Ethernet RJ45 socket

JM1, JM2: analog input connector

JM3: analog output connector

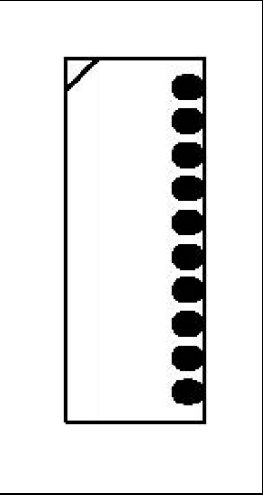
JM4: external power 24V connector

SW2: system reset switch

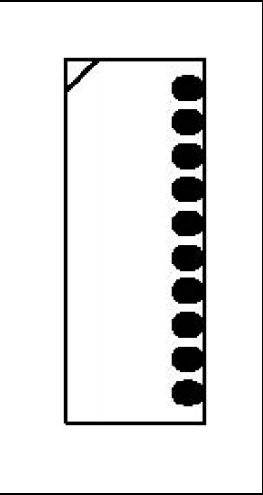
DA0,DA1: factory preset voltage trimmer

5. Pin definitions

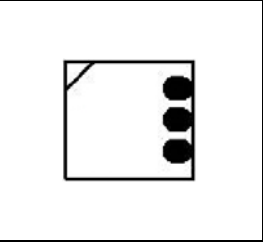
5.1 JM1 pin definitions

AI00	1	
AI01	2	
AI02	3	
AI03	4	
GND	5	
AI04	6	
AI05	7	
AI06	8	
AI07	9	
GND	10	

5.2 JM2 pin definitions

AI10	1	
AI11	2	
AI12	3	
AI13	4	
GND	5	
AI14	6	
AI15	7	
AI16	8	
AI17	9	
GND	10	

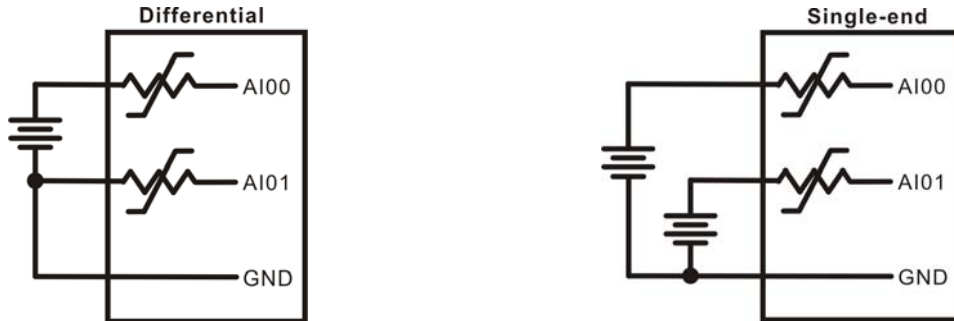
5.3 JM3 pin definitions

DA0	1	
DA1	2	
GND	3	

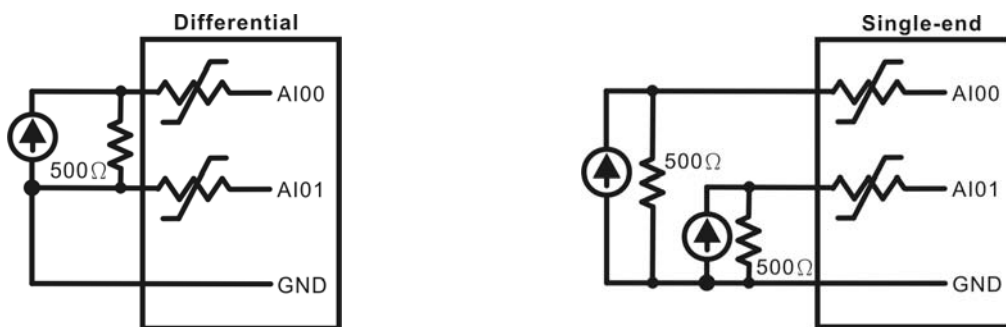
6. I/O Interface diagram

6.1 Analog input diagram

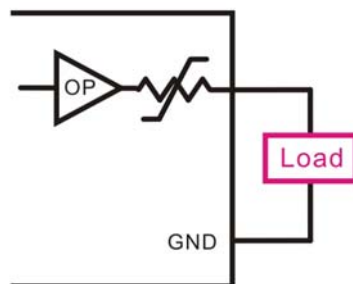
Voltage data acquisition



Current data acquisition



6.2 Analog output diagram



7. Applications

- For remote analog voltage sensing
 - sensor signal sensing
 - analog voltage monitoring
- For remote voltage output
 - remote voltage control

8. **Ordering information**

PRODUCT	DESCRIPTIONS
EMA-8308	Ethernet module, 24bit uni-polar 8 differential/16 single end analog input, 2 12bit analog output
EMA-8308A	Ethernet module, 24bit uni-polar 8 differential /16 single end analog input, 2 16bit analog output
EMA-8308D	Ethernet module, 24bit bi-polar 8 differential analog input, 2 12bit analog output
EMA-8308DA	Ethernet module, 24bit bi-polar 8 differential analog input, 2 16bit analog output
JD52000	110/220Vac to 24Vdc @1.5A power supply
JS52026	110/220Vac to 24Vdc @0.75A power adapter