Tehničke specifikacije

Specification	EM235, 4 AI/1AQ×12BIT
Physical Features	
Dimensions(W×H×D)	71.2×80×62mm
Power Loss(dissipation)	2W
Power Consumption	
From +5V(from I/O bus)	34 mA
From L+	60 mA
L+ voltage range,class 2 or DC sensor supply	20.4～28.8V DC
LED indicator	24 VDC Power Supply Good ON = no fault, OFF = no 24 VDC power
Analog Input Feature	
Number of analog input points	4 points
Isolation(field side to logic circuit)	Optical isolated: 500VAC, 1 minute
input type	Differential
Input Range	
Voltage(unipolar)	0-10V, 0-5V, 0-1V, 0-500mV, 0-100mV, 0-50mV
Voltage(bipolar)	±10V, ±5V, ±2.5V, ±1V, ±500mV, ±250mV, ±100mV,±50mV
Current	0～20 mA
Data Range	15～30V
Bipolar,full-scale range	0～32000
Unipolar, full-scale range	-32000~32000
Input Resolution	
Voltage(unipolar)	2.5 mV (0～10V) 1.25 mV (0~5V)
Voltage(bipolar)	2.5 mV (±5V)

	1.25 mV (±2.5V)
Current	5μA (0～20mA)
Analog to digital conversion time	<300μs
Analog input step response	1.5ms
Common mode rejection	40dB，DC to 60Hz
Common mode voltage	Signal voltage + Common mode voltage < 12V
Input Impedance	≥10MΩ
Input filter attenuation	-3db @ 3.1kHz
Maximum input voltage	30V
Maximum input current	30mA
ADC resolution	12BIT
Analog Output Features	
Number of analog output points	1
Signal range	
Voltage output Current output	±10V 0～20mA
Resolution, full-scale	
Voltage output Current output	12BIT 11BIT
Data word format	
Voltage output Current output	-32000~+32000 0~32000
Accuracy	typical: ±0.5% of full scale; Worse: ±2% of full scale
Setting time	
Voltage output Current output	100μs 2ms
Maximum drive@24VDC power	
Voltage output Current output	5000 ohm, minimum 500 ohm, maximum

Calibration and Configuration

- Location of the calibration and configuration switch

  - Input Calibration

The calibration adjustment will affect the instrumentation amplifier stage which follows the analog multiplexer. so the calibration affects all user input channels. Variations exist in the component parameters of each input circuit before the analog multiplexer will cause slight differences in the reading values between different channels connected to the same input signal even after calibration.

If need to acquire the specifications contained in this data sheet, may be you need to enable analog input filters for all inputs of the module. Please select 64 or more samples to calculate the average value.

To calibrate the input, please use the following steps.

1. Turn off the power to the module, select the desired input range.
2. Turn on the power to the CPU and module. Allow the module to stabilize for at least 15 minutes.
3. Using a transmitter, a voltage source, or a current source, connect a zero value signal to one of the input channels.
4. Read the value reported to the CPU from the input channel. Adjust the OFFSET potentiometer until the reading value is zero, or the desired digital data value.
5. Connect a full-scale value signal to one of the input channels, read the value reported to the CPU. Adjust the GAIN potentiometer until the reading is 32000, or the desired digita data value.
6. Repeat the OFFSET and GAIN calibration once more if required

- Configuration

  Table 1 shows how to configure the EM 235 module using the configuration DIP switches. Switches 1 through 6 select the analog input range and resolution. All inputs are set to the same analog input range and format. Table 2 shows how to select for unipolar/bipolar (switch 6), gain (switches 4 and 5), and attenuation (switches 1, 2, and 3). In these tables, ON is closed, and OFF is open.

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Table 1 EM 235 Configuration Switch Table to select Analog Input Range and Resolution

Unipolar						Full-Scale Input	Resolution
SW1	SW2	SW3	SW4	SW5	SW6		
ON	OFF	OFF	ON	OFF	ON	0 to 50 mV	12.5 mV
OFF	ON	OFF	ON	OFF	ON	0 to 100 mV	25 mV
ON	OFF	OFF	OFF	ON	ON	0 to 500 mV	125 mV
OFF	ON	OFF	OFF	ON	ON	0 to 1 V	250 mV
ON	OFF	OFF	OFF	OFF	ON	0 to 5 V	1.25 mV

ON	OFF	OFF	OFF	OFF	ON	0 to 20 mA	5 mA
OFF	ON	OFF	OFF	OFF	ON	0 to 10 V	2.5 mV
Bipolar						Full-Scale Input	Resolution
SW1	SW2	SW3	SW4	SW5	SW6		
ON	OFF	OFF	ON	OFF	OFF	+25 mV	12.5 mV
OFF	ON	OFF	ON	OFF	OFF	+50 mV	25 mV
OFF	OFF	ON	ON	OFF	OFF	+100 mV	50 mV
ON	OFF	OFF	OFF	ON	OFF	+250 mV	125 mV
OFF	ON	OFF	OFF	ON	OFF	+500 mV	250 mV
OFF	OFF	ON	OFF	ON	OFF	+1 V	500 mV
ON	OFF	OFF	OFF	OFF	OFF	+2.5 V	1.25 mV
OFF	ON	OFF	OFF	OFF	OFF	+5 V	2.5 mV
OFF	OFF	ON	OFF	OFF	OFF	+10 V	5 mV

Table 2 EM 235 Configuration Switch Table to select Unipolar/Bipolar, Gain, and Attenuation

EM 235 Switches						Unipolar/Bipolar Select	Gain Select	Attenuation Select
SW1	SW2	SW3	SW4	SW5	SW6			
					ON	Unipolar		
					OFF	Bipolar		
			OFF	OFF			x1	
			OFF	ON			x10	
			ON	OFF			x100	
			ON	ON			invalid	
ON	OFF	OFF						0.8
OFF	ON	OFF						0.4
OFF	OFF	ON						0.2

Input Data Word Format

Note

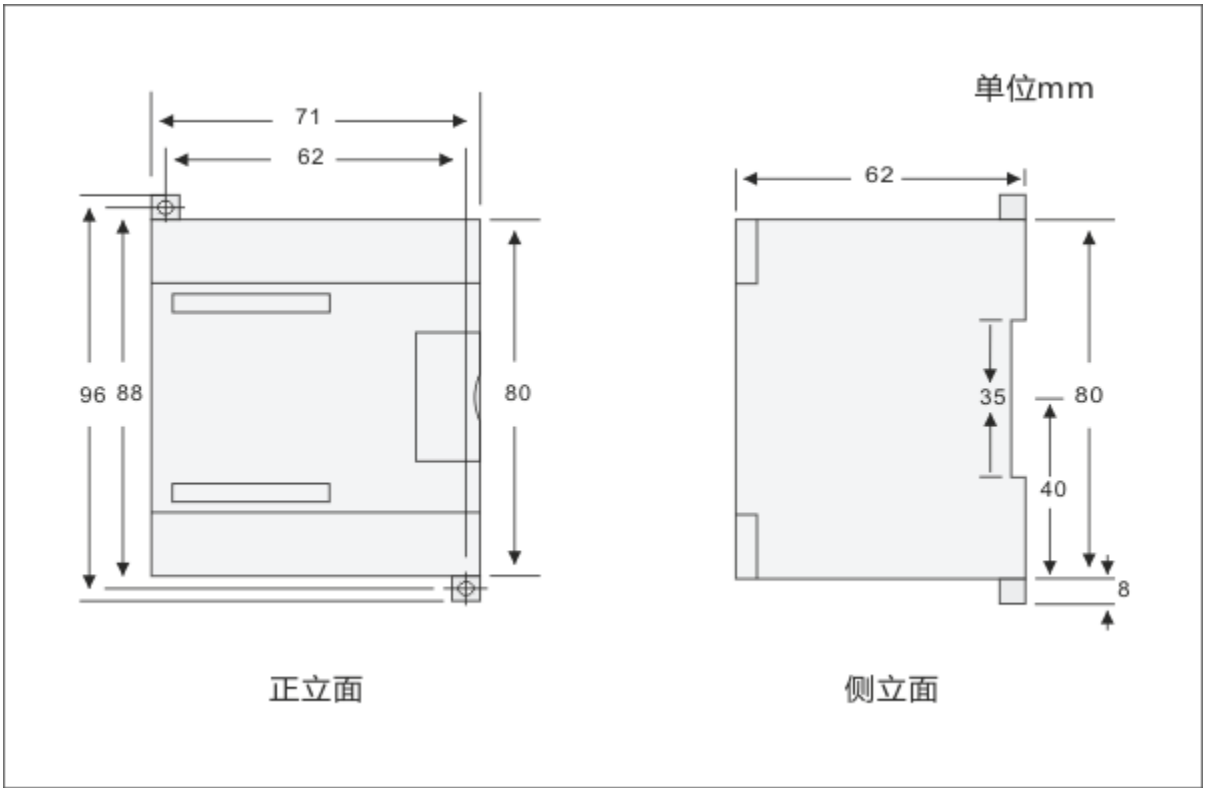
The 12 bits readings of the analog-to-digital converter (ADC) are left-justified in the input data word format. The MSB is the sign bit: zero indicates a positive data word value. In unipolar format, the three trailing zeros cause the data word to be changed by a count of eight for each one-count change in the ADC value. In bipolar format, the four trailing zeros cause the data word to be changed by a count of sixteen for each one count change in the ADC value.

Output Data Word Format

Note

The 12 bits readings of the digital-to-analog converter (DAC) are left-justified in the output data word format. The MSB is the sign bit: zero indicates a positive data word value. The four trailing zeros are truncated before being loaded into the DAC registers. These bits have no effect on the output signal value.

Dimenzije



Šema spajanja