

Tehničke Karakteristike

|  |  |
| --- | --- |
| Specification | EM135, 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) | 70 mA |
| From L+ | 48 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 |
| Voltage(bipolar) | ±10V, ±5V, ±2.5V, ±1V |
| Current | 0～20 mA |
| Data Range |  |
| Unipolar,full-scale range | 0～32000 |
| Bipolar, 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 | 100ms |
| 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 | 15BIT |
| 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 |

Ulazna Kalibracija

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

Konfiguracija

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

Table 1 shows how to configure the EM 135 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

Table 1    EM 135 Configuration Switch Table to select Analog Input Range and Resolution

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ﻿Unipolar | | | | | | Full-Scale Input | Resolution |
| SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |
| OFF | ON | OFF | OFF | ON | ON | 0 to 1 V | 250 uV |
| ON | OFF | OFF | OFF | OFF | ON | 0 to 5 V | 1.25 mV |
| ON | OFF | OFF | OFF | OFF | ON | 0 to 20 mA | 5 uA |
| OFF | ON | OFF | OFF | OFF | ON | 0 to 10 V | 2.5 mV |
| Bipolar | | | | | | Full-Scale Input | Resolution |
| SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |
| OFF | OFF | ON | OFF | ON | OFF | +1 V | 500 uV |
| 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 135 Configuration Switch Table to select Unipolar/Bipolar, Gain, and Attenuation

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EM 135 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

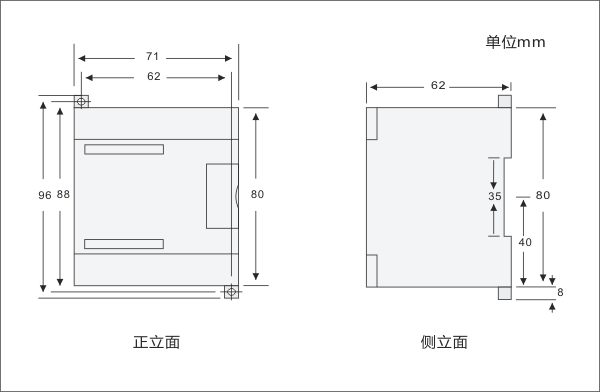
Note

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

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

