

Schneider Series Service Manual

170AMM09000

1. Description

The 170AMM09000 module from Schneider Electric is an advanced I/O base unit designed for versatile control applications. It incorporates 4 analog differential inputs alongside 4 discrete inputs, facilitating extensive data acquisition capabilities.

2. Specifications

Specification	Value
Manufacturer	Schneider Electric
Product	Type Analog and Discrete Input/Output Base Module
Product	Line Modicon Momentum
Part	Number 170AMM09000
EAN	3595861000292
Weight	1.00 lbs (0.45 kg)
Number	of Inputs 4 analog differential inputs and 4 discrete inputs
Number	of Outputs 2 analog outputs and 2 discrete outputs
Rated	Supply Voltage 24 Volts DC
Discrete	Output Type Transistor output
Current	Consumption 200 to 350 milliamperes at 24 Volts DC
Analog	Input Type Differential input
Analog	Input Range ± 10 Volts, ± 5 Volts, 1 to 5 Volts, ± 20 milliamperes, and 4 to 20 milliamperes
Analog	Output Range ± 20 Volts at 12 bits and 0 to 20 milliamperes at 12 bits
Discrete	Input Voltage 24 Volts DC
Ambient	Operating Temperature 0 to 60°C (in a non-condensing environment)
Power	Dissipation 6 Watts (maximum)
Discrete	Output Voltage Less than 30 Volts
Conversion	Time 10 milliseconds for the analog input circuit and 1 millisecond for analog output
Safety	Features Overload and short-circuit protections for

3. Product Information

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Technical specifications for 170AMM09000

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Weight 1.00 lbs (0.45 kg)

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Rated Supply Voltage 24 Volts DC

Discrete Output Type Transistor output

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Analog Input Type Differential input

Analog Input Range ± 10 Volts, ± 5 Volts, 1 to 5 Volts, ± 20 milliamperes, and 4 to 20 milliamperes

Analog Output Range ± 20 Volts at 12 bits and 0 to 20 milliamperes at 12 bits

Discrete Input Voltage 24 Volts DC

Ambient Operating Temperature 0 to 60°C (in a non-condensing environment)

Power Dissipation 6 Watts (maximum)

Discrete Output Voltage Less than 30 Volts

Conversion Time 10 milliseconds for the analog input circuit and 1 millisecond for analog output

Safety Features Overload and short-circuit protections for the discrete outputs

Description

The Schneider Electric 170AMM09000 is an analog and discrete input/output base module that delivers high functionality in various automation processes. It comprises 4 differential analog inputs and 4 discrete inputs, enabling it to handle a wide array of measurement tasks efficiently. Additionally, it features 2 analog outputs and 2 discrete outputs, facilitating seamless interfacing with other devices.

This module operates on a rated supply voltage of 24 Volts DC while consuming between 200 and 350 milliamperes of current, making it suitable for low-voltage applications. The analog inputs are specifically designed to cover several ranges, including ± 10 Volts and ± 5 Volts, plus current options such as ± 20 milliamperes and 4 to 20 milliamperes, ensuring adaptability. The analog output supports output ranges of ± 20 Volts with 12-bit resolution and 0 to 20 milliamperes also with 12-bit resolution.

Discrete inputs are set for 24 Volts DC, and the module boasts a maximum power dissipation of 6 Watts. With an ambient operating temperature range of 0 to 60°C in non-condensing environments, this device is built to operate reliably under typical conditions. The conversion time for processes is efficiently managed, requiring only 10 milliseconds for the analog input circuit and just 1 millisecond for the output.

Safety is paramount with the 170AMM09000 as it includes overload and short-circuit protection for all discrete outputs. This feature significantly enhances reliability and operational safety across various industrial settings.

Range of Product

Modicon Momentum automation platform

Product or Component Type

Analogue,discrete I/O base

Group of channels

1 group of 2 discrete outputs

1 group of 4 discrete inputs

1 group of 4 analog differential inputs

1 group of 2 analog outputs

Analogue input range

+/- 10 V

+/- 20 mA

+/- 5 V

1...5 V

4...20 mA

Analogue Input Type

Differential

Analogue input resolution

12 bits 1...5 V

12 bits 4...20 mA

13 bits +/- 20 mA

13 bits +/- 5 V

14 bits +/- 10 V

Discrete input voltage

24 V DC

Analogue output range

+/- 10 V 12 bits

0...20 mA 12 bits

Discrete output voltage

<= 30 V

Output short-circuit protection

With discrete output

Output overload protection

With discrete output

Complementary

Discrete input number

4 IEC 1131-2 Type 1

[Us] rated supply voltage

24 VDC

Conversion consistency

+/- 0.02 % +/- 10 V analogue input circuit

+/- 0.04 % +/- 20 mA analogue input circuit

+/- 0.04 % +/- 5 V analogue input circuit

+/- 0.04 % 1...5 V analogue input circuit

+/- 0.04 % 4...20 mA analogue input circuit

Common mode rejection

> 54 dB analogue input circuit

Input voltage limits

< 30 V

Discrete input logic

Positive

Voltage state 0 guaranteed

-3...5 V discrete input

Voltage state 1 guaranteed

11...30 V discrete input

Current state 0 guaranteed

<= 1.2 mA discrete input)

Current state 1 guaranteed

>= 2.5 mA discrete input)

Input overvoltage protection

-50...50 V <= 100 s analogue input circuit

-30...30 V 24 V analogue input circuit

Input resistance

1 MOhm analogue input circuit

4 kOhm discrete input

Output load

<= 600 Ohm 0...20 mA analogue output

>= 3 kOhm +/- 10 V analogue output

Conversion time

1 ms analogue output

10 ms analogue input circuit

Conversion error

+/- 0.35 % +/- 10 V 77 °F (25 °C) analogue output

+/- 0.35 % 0...20 mA 77 °F (25 °C) analogue output

+/- 0.70 % +/- 10 V 140 °F (60 °C) analogue output

+/- 0.70 % 0...20 mA 140 °F (60 °C) analogue output

0,0008 +/- 10 V 77 °F (25 °C) analogue input circuit

0,0015 +/- 10 V 140 °F (60 °C) analogue input circuit

0,0016 +/- 20 mA 77 °F (25 °C) analogue input circuit

0,0016 +/- 5 V 77 °F (25 °C) analogue input circuit

0,0016 1...5 V 77 °F (25 °C) analogue input circuit

0,0016 4...20 mA 77 °F (25 °C) analogue input circuit

0,003 +/- 20 mA 140 °F (60 °C) analogue input circuit

0,003 +/- 5 V 140 °F (60 °C) analogue input circuit
0,003 1...5 V 140 °F (60 °C) analogue input circuit
0,003 4...20 mA 140 °F (60 °C) analogue input circuit
Fail state
Analogue input circuit hold
Analogue input circuit reset to zero
Discrete output type
Transistor
Discrete output logic
Positive
Discrete output current
1 A per point
2 A per group
2 A per module
Maximum leakage current
1 mA DC 24 V discrete output
Maximum voltage drop
<0.5 V 1 A at state on discrete output
Operating rate
100 cyc/s resistive 1 A discrete output
1000 cyc/h inductive 1 A discrete output
8 cyc/s tungsten <2.4 W discrete output
Response time
< 0.1 ms from state 0 to state 1 discrete output
< 0.1 ms from state 1 to state 0 discrete output
2.2 ms from state 0 to state 1 discrete input
3.3 ms from state 1 to state 0 discrete input
Isolation voltage
500 V 1 min) between analogue I/O and operating voltage
500 V 1 min) between operating voltage and I/O from ground
Maximum power dissipation in W
6 W
Marking
CE
Local signalling
8 LEDs for channel status
Electrical connection
2 connectors for removable terminal blocks
Current consumption
<= 350 mA 24 V DC
200 mA 24 V DC
Depth
1.9 in (47.5 mm)
Height
4.9 in (125 mm)
Width
5.6 in (141.5 mm)
Net Weight
0.53 lb(US) (0.24 kg)