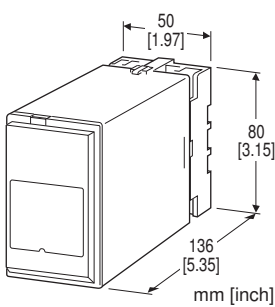## Final Control Elements

VALVE POSITIONER
(for Modbus; built-in SSR)

Functions & Features
• Used for control of valve or damper where capacitor motor and potentiometer are employed
• Valve opening and position readable via Modbus communication
• Control of 24 - 200 V AC system electric actuator use
• Builtin SSR directly drives an AC motor

MODEL: MEXM-110-AD4[1]

ORDERING INFORMATION
• Code number: MEXM-110-AD4[1]
Specify a code from below for [1].
  (e.g. MEXM-110-AD4/Q)
• Specify the specification for option code /Q
  (e.g. /C01/S01)

FEEDBACK RESISTANCE
1: Potentiometer

CONTROL OUTPUT
1: SSRs incorporated

BRAKE
0: None

POWER INPUT
Universal
AD4: 100 – 240 V AC / 100 – 240 V DC (universal)
(Operational voltage range 85 - 264 V AC, 50 - 60 Hz /
  85 - 264 V DC, ripple 10 %p-p max.)

[1] OPTIONS
blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)
COATING (For the detail, refer to M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
TERMINAL SCREW MATERIAL
/S01: Stainless steel

PACKAGE INCLUDES...
• Terminating resistor (110 Ω, 0.25 W)

GENERAL SPECIFICATIONS
Construction: Plug-in
Connection: M3.5 screw terminals
Screw terminal: Chromated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
Full-closed position adjustment range: 0 - 25 % (front)
Full-open position adjustment range: 75 - 100 % (front)
Deadband adjustment: 0.1 – 8.0 % (front adj.; refer to the table below)
  Factory set to 1.5 %
Restarting timer: 2 sec.
Isolation: Modbus to feedback resistance to control output to power
Manual operation switch: Manual full-close or full-open position command

Deadband adjustment

Deadband adj. SW	Deadband (%)
0	0.1
1	0.3
2	0.5
3	0.7
4	1.0
5	1.5
6	2.0
7	3.0
8	5.0
9	8.0

MODBUS COMMUNICATION
Communication: Half-duplex, asynchronous, no procedure
Standard: Conforms to TIA/EIA-485-A
Baud rate: 4800, 9600, 19.2 k, 38.4 k (bps) (with rotary switch) (factory setting: 38.4 kbps)
Protocol: Modbus-RTU
Node address setting: 1 - 99 (with rotary switch) (factory

setting: 00)

Parity: None, even or odd (with DIP switch) (factory setting: odd)

Stop bit: 1 or 2 (with DIP switch) (factory setting: 1)

Segment max. length: 500m

Max. number of nodes: 31 (excluding master)

Modbus LED: Blink in normal communication

INPUT SPECIFICATIONS

■ **Feedback Potentiometer**: 100 Ω – 10 kΩ
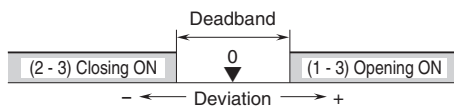
Minimum span: 50 % of total resistance

Excitation: Approx. 3.3 V DC

OUTPUT SPECIFICATIONS

■ **Control Output**: SSR (zero-crossing); 20 - 240 V AC 0.1 - 1 A

Leakage current at OFF: Approx. 10 mA @ 240 V AC

Output operation: Terminal no. in (   ).

INSTALLATION

Power consumption

•**AC**:
  approx. 1.5 VA at 100 V
  approx. 4 VA at 200 V
  approx. 6 VA at 264 V

•**DC**: Approx. 1 W

Operating temperature: -5 to +60°C (23 to 140°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Surface or DIN rail

Weight: 300 g (0.66 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute
(Modbus to feedback resistance to control output to power to ground)

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.

EU conformity:

EMC Directive
  EMI EN 61000-6-4
  EMS EN 61000-6-2

Low Voltage Directive
  EN 61010-1

Installation Category II (power)

Measurement Category II (control output)

Pollution degree 2

 Modbus or control output or feedback resistance to power: Reinforced insulation (300 V)

 Modbus or feedback resistance to control output: Reinforced insulation (250 V)

RoHS Directive

EXTERNAL VIEW

Modbus LED
Modbus transfer rate
Modbus node address × 1
Modbus node address × 10
Deadband
Full-open position adj.
Full-close position adj.
Modbus setting SW2
Modbus setting SW1
Manual open switch
Manual close switch

MODBUS WIRING CONNECTION

■ **HOST PC WIRING**

Terminator	HOST PC		MEXM		MEXM	Terminator
	Tx+/Rx−		DA		DA	
	Tx−/Rx+		DB		DB	
	SG		SLD		SLD	
	Rx+					
	Rx−					

Connect terminating resistor between DA and DB of both ends of the unit.
Connect the attached terminating resistor to the MEXM.
Master unit is connectable also at both ends or other points.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS   unit: mm [inch]

CLAMP
(top & bottom)

20 [.79]

DIN RAIL
35mm wide

80 [3.15]

50 [1.97]

107 [4.21]

136 [5.35]

(3.3 [.13])

7.8 [.31]

2–4.5 [.18] dia.
MTG HOLE
25 [.98] deep

11–M3.5
SCREW

80 [3.15]

40 [1.57]

50 [1.97]

Terminal numbers: 8 7 6 5 4 9 10 11 1 2 3

• When mounting, no extra space is needed between units.

MODEL: MEXM

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM
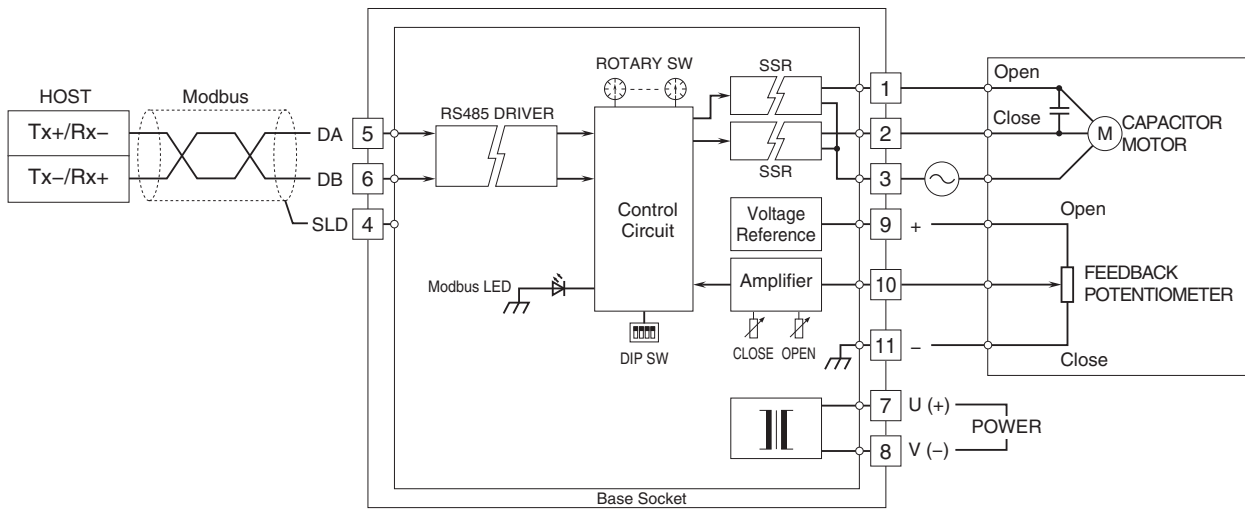
Note: Notice that making motor wiring with limit switch, every time the switch operates, can be causing stress on SSR.

EXPLANATIONS OF TERMS

• **SSR (Solid State Relay)**

Composed only of semiconductor parts, SSR is free from arc discharge or chattering which is typical with electromagnetic relays. It features excellent characteristics against vibration, physical impact or other environmental conditions.

• **Zero-Cross Function**

SSR with zero-cross function turns on when AC power voltage is near zero, creating delay of switching when input is provided in the middle of an wave cycle, thus limiting transient switching noise voltage and rush current.

⚠ Specifications are subject to change without notice.