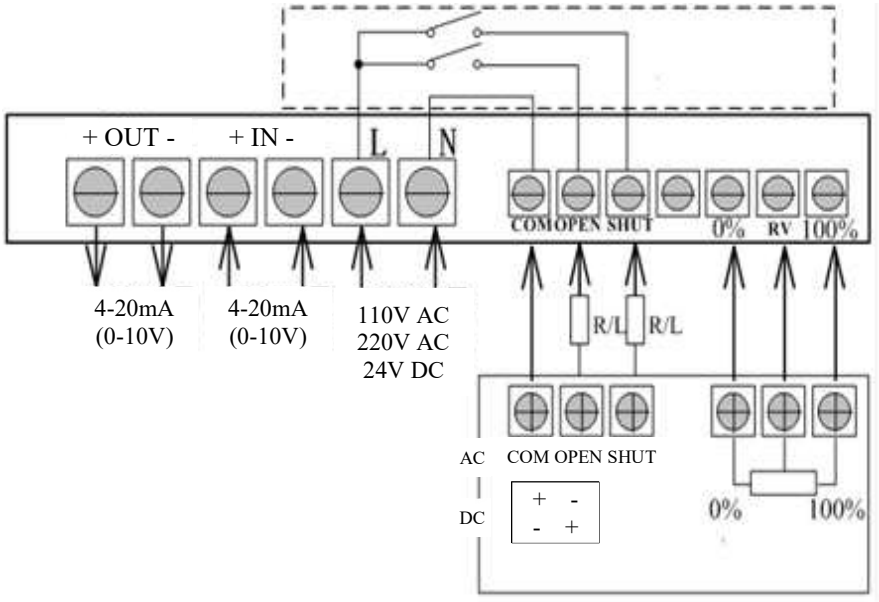
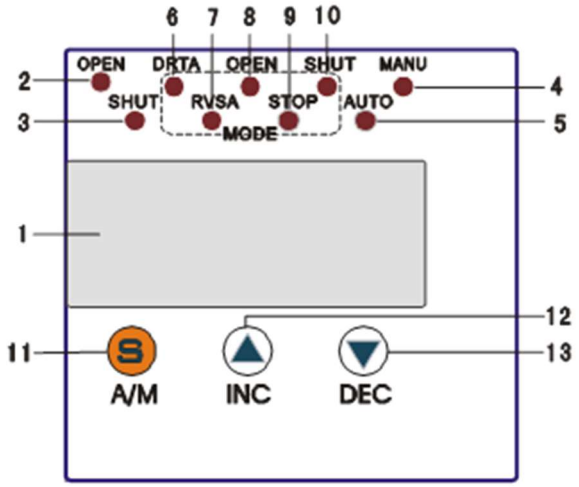
The KEM Series actuators have been calibrated at the factory for a 90 deg operation with 4mA set at the CW position and 20mA set at the CCW position. No configuration or calibration is required for the KEM Series electric actuator. The Servo Controller can be configured to accept a 4-20mA or 0-10VDC input signal (please see instructions below). Please make sure all conduit connections are properly sealed to eliminate water & moisture from entering the housing. **Please verify motor voltage prior to connecting power to the servo controller.**

Connections



Controller Panel



Parameter display	**1**	**LED**	Display actual position value, setup value of valve position and enclosure temperature of controller. Use to set show parameter value when setting. Press [▲] key to show the actual open degree set for valve. Press [▼] key to show the internal temperature of positioner housing.
Status indication	**2**	**OPEN**	Indication actuator moving to OPEN position. Lamp on: Actuator is opening
	3	**SHUT**	Indication of actuator moving to SHUT position. Lamp on: Actuator is closing
	4	**MANU**	Manual state. Can move actuator towards OPEN or SHUT position using [▲] and [▼] keys. Lamp on: In Manual State
	5	**AUTO**	Automatic state. Actuator can receive external control signal (4-20mA or 0-10VDC) Lamp on: In Automatic State
Mode indication(MODE)	**6**	**DRTA**	DRTA action mode, corresponding relations as follows: • Control signal = 4mA (0V). Moves to 100% actuator position. Valve fully OPEN. Feedback output = 4mA (0V) • Control signal = 20mA (10V). Moves to 0% actuator position. Valve fully SHUT. Feedback output = 20mA (10V
	7	**RVSA**	RVSA action mode, corresponding relations as follows: • Control signal = 4mA (0V). Moves to 0% actuator position. Valve fully SHUT. Feedback output = 4mA (0V) • Control signal = 20mA (10V). Moves to 100% actuator position. Valve fully OPEN. Feedback output = 20mA (10V)
	8	**OPEN**	Actuator moves to 100% position on loss of signal.
	9	**STOP**	Actuator stays in current position on loss of signal.
	10	**SHUT**	Actuator moves to 0% position on loss of signal.
Key	**11**	**[A/M]**	Press to switch from automatic AUTO to manual MANU Press to confirm parameter selection. Hold for 4 seconds to enter into parameter modification state.
	12	**[▲]**	Value (+) key. In AUTO mode, press to display setup value of valve position in degrees. In MANU mode, press to move actuator OPEN
	13	**[▼]**	Value (-) key. In AUTO mode, press to display of controller enclosure temperature. In MANU mode, press to move actuator SHUT.

After power is supplied, valve position is displayed, and the positioner is in automatic state. Press [**A/M**] key to switch to manual state. Pressing [▲] and [▼] keys, will drive the actuator "opening" and "closing". Under automatic state, press [▲] key to view the setting value of the open degree of valve position, at this moment, variation trend and stability of input signal can be checked. Press [▼] key to view the internal temperature of the actuator housing, when temperature is more than 80℃, the Servo controller will stop driving the actuator.

Automatic calibration (resets all values)
(❋This calibration method requires that the actuator has the limit switches set for full open and close position)

Under the automatic state, hold the [**A/M**] key and then press [▼] key. Release them at the same time. The automatic calibration is started. **Upon finishing the calibration it returns to automatic state. The result of calibration will be saved automatically**.

Manual calibration

1. Under automatic state hold [**A/M**] 4 seconds to enter into U5.
2. Use the [▲] and [▼] keys to change the value to U5 = 003.1 then press [**A/M**] key.
3. The first parameter is U6 for setting the CW close position. When U6 is showing, press [▲] and [▼] keys to adjust the 0% position and then press the [**A/M**] key to save the setting and move to U7.
4. When U7 is showing, press [▲] and [▼] keys to adjust the 100% position and then press the [**A/M**] key to save the setting. Adjust the U5 to equal 000.5 and press the [**A/M**] key to return to automatic state.
5.

Input/Output Signal Type (switching input/output between 4-20mA and 0-10VDC)

1. Hold [**A/M**] key while applying power to the controller to display LD00.
2. While still holding [**A/M**] key, press and release [▼] key to display LD01 or LD02.
   a. LD01 = 4-20mA
   b. LD02 = 0-10V
3. Release [**A/M**] key to enter automatic state.

NOTE: KEM controllers prior to 2017 may operate per below instructions. If above instruction do not work, try the following.

1. Under automatic state hold [**A/M**] 4 seconds to enter into U5.
1. Use the [▲] and [▼] keys to change the value to U5 = 022.2 then press and hold [**A/M**] key to display LD00.
2. While holding [**A/M**] key, press and release [▼] key to display LD01 or LD02.
   a. LD01 = 4-20mA
   b. LD02 = 0-10V
3. Release [**A/M**] key to enter automatic state.

Parameter Menu

Under automatic state, hold [**A/M**] key 4 seconds to enter into U5.

1. Use the [▲] and [▼] keys to change the value to U5 = 002.1 then press [**A/M**] key.
2. The first parameter is the U0 for dynamic braking as shown in the below table. Pressing the [**A/M**] key will save your changes and go to the next parameter until it returns to the automatic state.

Parameter List:

Parameter	Display value	Content	Factory default
U0	00x.0	x = 1: Electronic braking allowed x = 0: electronic braking NOT allowed	1.0
	000.x	x = 0: Changing positioning precision NOT allowed. Changing readjusting time is allowed. x = 1, 2, 3: Changing positioning precision is allowed. Changing readjusting time NOT allowed.	
U1	00x.0	Setting input direction. x = 0 is DRTA: 4mA (0V) CCW x = 1 is RVSA: 4mA (0V) CW	1.2
	000.x	Loss of input. x = 1 (OPEN), x = 2 (STOP), x = 3 (SHUT)	
U2	xxx.x	Output signal lower limit value 0 ≤ U2 < 100.0 Manual status or zero/full position setting is unaffected by this parameter.	0.0
U3	xxx.x	Output signal upper limit value 0 < U2 < U3 ≤ 100.0 Manual status or zero/full position setting is unaffected by this parameter.	100.0
U4	00x.x	Adjustable precision: equal to x.x/100	0.4
U5	xxx.x	Operation password, (U5 = 003.1: Enter to U6 and U7 parameter.	000.5
U6	xxx.x	Set 0% position of actuator. Press [▲] and [▼] keys to move to desired 0% position. Press [**A/M**] key to confirm and move to U7.	**Display value does not represent the valve position**
U7	xxx.x	Set 100% position of actuator. Press [▲] and [▼] keys to move to desired 100% position. Press [**A/M**] key to confirm.	

Error Code List and Troubleshooting Method

Error code	Meaning
E-01	Input signal ≤ 3.0mA. Actuator will move to 0% position if loss of signal mode is set to SHUT.
E-03	Reverse connection of signal feedback cable or OPEN and SHUT cables between the positioner and the actuator.
E-05	Actuator is oscillating or hunting. Possibly due to unsteady input signal, unsteady feedback signal, or precision is too high.
E-06	Locked-rotor occurs when the actuator moves toward the SHUT direction
E-07	Locked-rotor occurs when the actuator moves toward the OPEN direction
E-08	Internal temperature of the positioner housing is more than 80°C.

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