V-TORK®

V-TORK USA

VTM Series Electric Actuator

Battery Backup Type

Version 2.0

Instruction Manual



- **Quarter-Turn Electric Actuator**
- **Optional Failsafe Battery Backup**
- **Wide range of sizes and torque outputs**
- **Explosion-proof enclosure**

DNV Ex ATEX 94/9/EC

ABS

VTM Modulating Type

VTM Modulating electric actuators integrate a multi-functional servo amplifier and a position signal transmitter into the standard actuator to provide modulating control. All operations such as calibration, sensitivity setting and automatic/manual switching are controlled by four buttons on the Control Card making it quick and easy to set up and install.

Specifications

- Input Signal: 4-20mA DC, 0-5VDC, 0-10VDC
- Input Impedance: 250Ω（4-20mA)or 500Ω（0-10mA）
- Valve Position Sensor: Single-turn absolute value encoder
- Valve Transmitting Output Signal: 4-20mA DC
- Duty Cycle: 75%
- Motor Blocking Protection Time: 1-25 S (default 6.4S)
- Power Consumption : ≤3VA
- Actuator Operating Sensitivity: 0.1%-12.5%
- Insulation Strength: power frequency 1500V,1min
- Insulation Resistance: above 50MΩ
- Temperature rating: -4°F to 158°F
- Maximum Humidity: 90%
- Power Voltage: 120VAC/220V60Hz±10%; or 12VDC/24VDC
- Signal loss, feedback loss, motor stalling failure protection function.
- Instantaneous Reverse Rotation Protection Function with adjustable time delay.
- Failure code warning function
- Passive feedback output signal for full close position and full open position

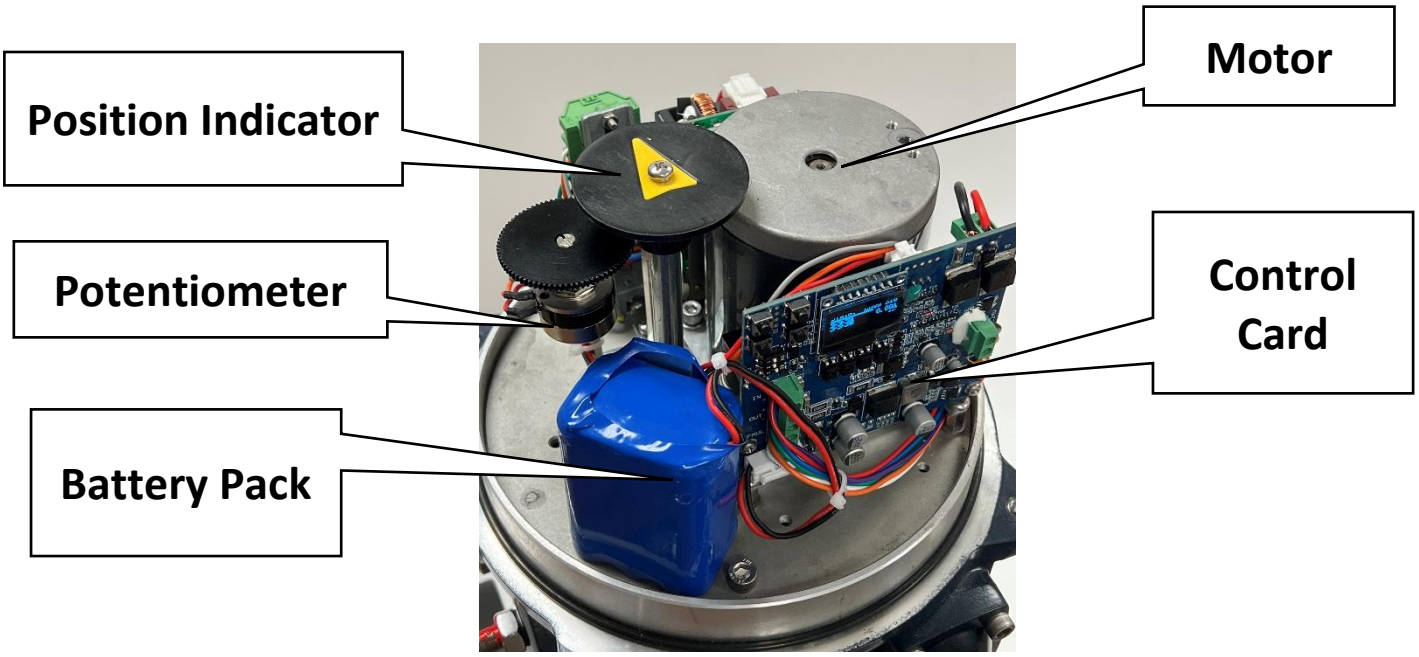


TABLE OF CONTENTS

PAGE

VTM Configuration Introduction……..4

Configuring Stop Limits……..5

Setting Limit Switch Setpoints……7

Selecting Control Mode……8

Configuring Input Signal Loss Failure Position……..9

Configuring Power Loss Fail Position……10

VTM Configuration Introduction

There are three key parameters that can be configured in the VTM Series Electric Actuator:

1. The open and close stop limits can be configured between 0° and 360° rotation.
2. The fail position for 4-20ma input signal loss can be configured as OPEN, CLOSE, CUSTOM or KEEP (LAST).
3. The fail position for power loss can be configured as OPEN, CLOSE, KEEP (LAST) or a specific position between 0 and 100% rotation.

All configuration functions are performed using the four buttons in the upper left corner of the Control Card. Also, there is a Local/Monitor (L/M) Switch in the upper left corner of the Control Card that is used to put the actuator in Local or Monitor.

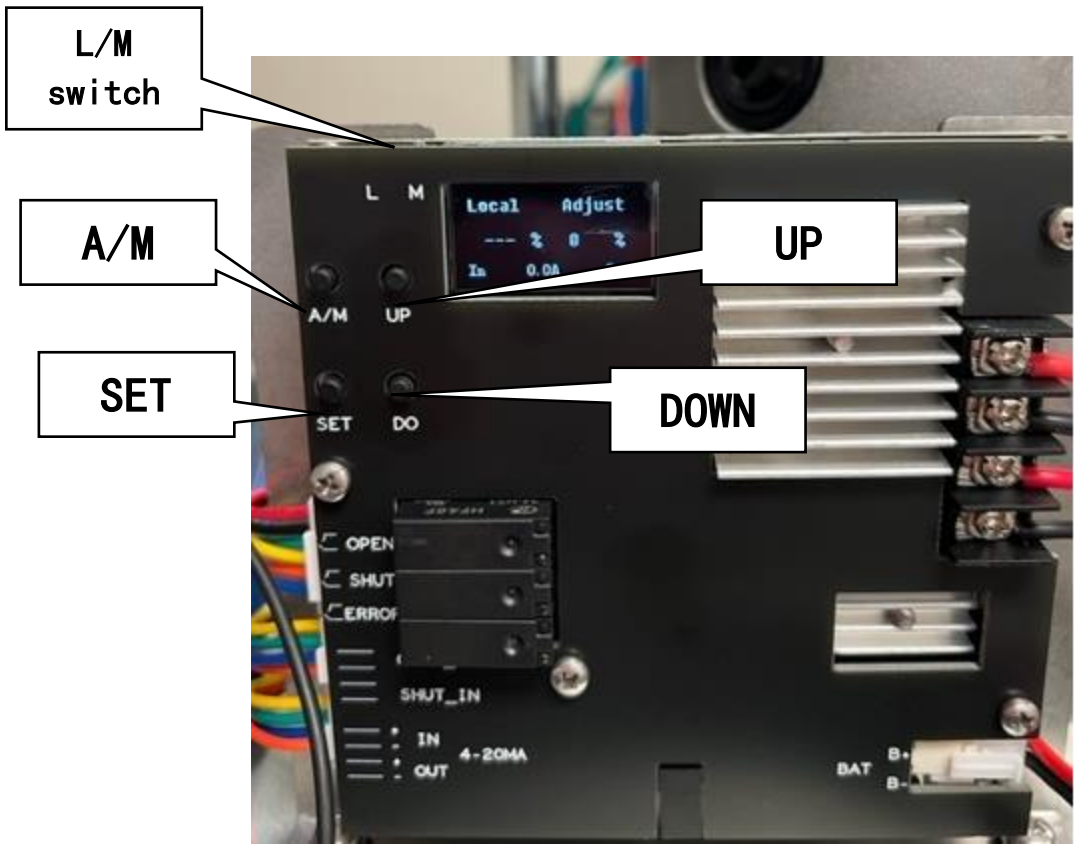
L/M Switch – Select L to configure the Control Card or manually operate the actuator. Select M to operate the actuator remotely.

A/M – Auto/Manual or Remote/Local; also functions as escape button to return to prior menu.

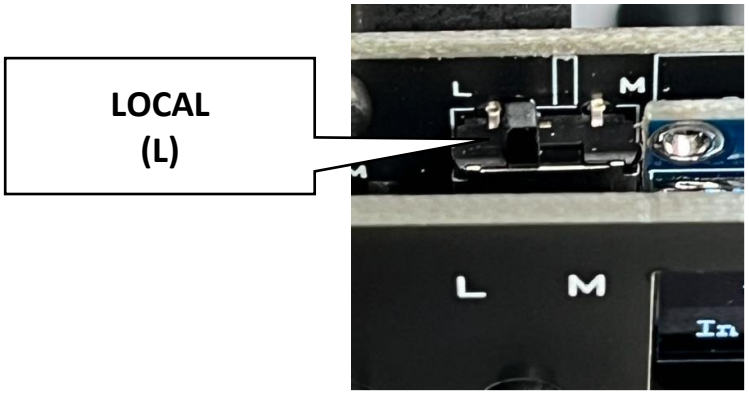
UP – Up button; increases values or moves up a row in the menu.

SET – functions as the enter button.

DO – Down button; decreases values or moves down a row in the menu.



NOTE: The L/M switch must be set to Local (L) to start the configuration process.



CONFIGURING STOP LIMITS

1. The stop limits are configured on the control card by selecting corresponding resistance value (ohms) of the potentiometer that corresponds to the actuator rotation for the desired Closed and Open positions. The stop limits can be set anywhere between 0° and 360°.
2. To set the closed position, the actuator should be mounted on valve with the valve in the CLOSED position.
3. **With the L/M Switch in (L) position, push the SET button to enter the menu.**

SETTING THE CLOSE STOP LIMIT

1. The first screen will appear as shown below. Select POS CALI by selecting the SET button.
2. The next screen will display Open Cali and Shut Cali. Select Shut Cali by selecting the SET button.
3. Using the UP or DOWN buttons adjust the actuator until the valve is closed, then select the SET button to enter. The Succeed message will appear confirming that the Close Stop Limit has been set.

Select POS CALI by selecting the SET button.



Select Shut Cali by selecting the SET button.



Using the UP or DOWN buttons adjust the actuator until the valve is closed, then select the SET button. The Succeed message will appear confirming that the Close Stop Limit has been set.





SETTING THE OPEN STOP LIMIT

1. The first screen will appear as shown below. Select POS CALI by selecting the SET button.
2. The next screen will display Open Cali and Shut Cali. Select Open Cali by selecting the SET button.
3. Using the UP or DOWN buttons adjust the actuator until the valve is fully open, then select the SET button to enter. The Succeed message will appear confirming that the Open Stop Limit has been set.

Select POS CALI by selecting the SET button.



Select Open Cali by selecting the SET button.



Using the UP or DOWN buttons adjust the actuator until the valve is fully open, then select the SET button to enter. The Succeed message will appear confirming that the Open Stop Limit has been set.





SETTING LIMIT SWITCH VALUES

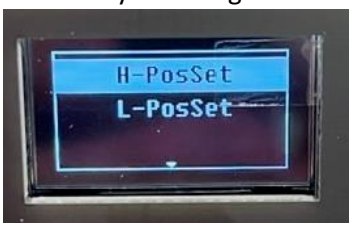
This allows the user to set the value switch setpoints for open and close switch outputs. The default is 0% for the CLOSE Switch and 100% for the OPEN Switch**. You only need to configure this parameter if you prefer output switch setpoints different than the default.**

1. Scroll down the menu and select LimitSet by selecting the SET button.
2. The next screen will display H-PosSet and L-PosSet. Select H-PosSet and select the SET button.

Select LimitSet by selecting the SET button.



Select H-PosSet by selecting the SET button.



3. To change the setpoint for the High Position switch use the UP and DOWN buttons. Once the desired setpoint is reached, select the SET button to enter. The Succeed message will appear confirming that the High Position Switch has been set.

   Use the UP and DOWN buttons to adjust the setpoint, then select the SET button. The Succeed message will appear confirming that the setpoint for the High Position Switch has been set.





4. Return to the LimitSet menu by selecting the A/M buton
5. The screen will display H-PosSet and L-PosSet. Select L-PosSet and select the SET button.
6. To change the setpoint for the Low Position switch use the UP and DOWN buttons. Once the desired setpoint is reached, select the SET button to enter. The Succeed message will appear confirming that the setpoint for the Low Position Switch has been set.

Select L-PosSet and select the SET button.



Use the UP and DOWN buttons to adjust the setpoint, then select the SET button. The Succeed message will appear confirming that the setpoint for the Low Position Switch has been set.





SELECTING THE CONTROL MODE

1. The user can select the control mode of the actuator by scrolling down the menu and selecting SysSet by selecting the SET button.
2. In the next screen, select CtrlMode by selecting the SET button.
3. **There are three Control Mode options:**
    a. 4-20mA Modulating
    b. Keep – this is the most common On-Off control mode. A single contact closure input will drive the actuator open or close. This mode is similar to a latching relay mode.
    c. Pulse – this is a less common On-Off control mode. The contact closure input must be maintained to energize the actuator open or close. It can be used to "pulse" the actuator open or closed manually.
4. Select the desired Control Mode by selecting the SET button. The Succeed message will appear confirming that the setpoint for the Control Mode has been set.

Scroll down the menu and select SysSet by selecting the SET button. Select CtrlMode by selecting the SET button





Select the desired Control Mode by selecting the SET button.







The Succeed message will appear confirming that the setpoint for the Control Mode has been set.



CONFIGURING INPUT SIGNAL LOSS FAILURE POSITION –

This only applies if using the 4-20ma Modulating Control Mode

1. This configuration will allow the user to select the fail position of the actuator if the 4-20ma input signal is lost.
2. **There are four options for the fail position if the 4-20ma signal is lost:**
    a. ShutPos – the actuator will fail to the CLOSED position.
    b. OpenPos – the actuator will fail to the OPEN position.
    c. Keep – the actuator will fail in the last position.
    d. Custom – the actuator will fail to a custom position configured by the user to any position between 0% and 100% of the stop limits.
3. Scroll down the menu and selecting SysSet by selecting the SET button.
4. In the next screen, select SigLosOp by selecting the SET button.
5. Select the desired Signal Loss Fail Position by selecting the SET button. The Succeed message will appear confirming that the setpoint for the Signal Loss Fail Position has been set.
6. For the Custom Signal Loss Fail Position, select the SET button and then use the UP and DOWN keys to set the custom position (0 to 100%). Then select the SET button to enter.
7. The Succeed message will appear confirming that the Signal Loss Fail Position has been set.

Select SysSet by selecting the SET button.



Select SigLosOp by selecting the SET button.



Select the desired Signal Loss Fail Position by selecting the SET button.







For the Custom Signal Loss Fail Position, select the SET button and then use the UP and DOWN keys to set the custom position (0 to 100%). Then select the SET button to enter. The Succeed message will appear confirming that the Signal Loss Fail Position has been set.







CONFIGURING THE POWER LOSS FAIL POSITION

This configuration will allow the user to select the position the actuator will rotate to when the power supply is lost.

1. **There are four options for the Power Loss Fail Position**
    a. ShutPOS – the actuator will move to the Closed or 0% position when the power supply is lost.
    b. OpenPOS – the actuator will move to the Open or 100% position when the power supply is lost.
    c. Custom - the actuator will move to a custom position between 0% and 100% when the power supply is lost.
    d. Keep - the actuator will remain in the Last position when the power supply is lost.
2. Scroll down the menu and selecting SysSet by selecting the SET button.
3. In the next screen, select PwrLosOp by selecting the SET button.
4. Select the desired Power Loss Fail Position by selecting the SET button. The Succeed message will appear confirming that the setpoint for the Signal Loss Fail Position has been set.
5. For the Custom Signal Loss Fail Position, select the SET button and then use the UP and DOWN keys to set the desired custom fail position (0 to 100%). Then select the SET button to enter. The Succeed message will appear confirming that the setpoint for the Signal Loss Fail Position has been set.

Select SysSet by selecting the SET button.



Select SigLosOp by selecting the SET button.



Select ShutPOS for Fail Close



Select OpenPOS for Fail Open



Select Keep for Fail Last



Select Custom for any position 0% to 100%



The Succeed message will appear confirming that the Signal Loss Fail Position has been set.

