INSTALLATION AND OPERATIONS MANUAL

FOR VZTORQUE FAILSAFE ACTUATORS GEN2

VanZandt Controls

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1.1 24VDC WIRING TERMINATION DIAGRAM

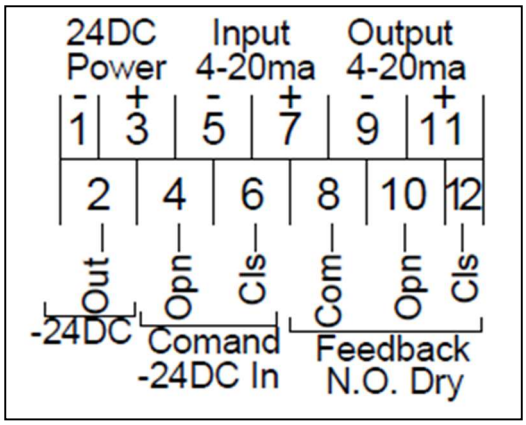
Remove the end cover to access the terminals. There are 2 x ½" NPT Conduit Entries.

1.2 CONNECTING 24VDC POWER

Connect 24VDC Power to terminals 1 and 3

1.3 CONNECTING 24VDC COMMAND INPUTS

This actuator can be used for on/off service or modulating. If you want to modulate the actuator with an analogue signal, then connect your 4-20ma signal to terminals 5 and 7. To operate it via a digital on/off type signal, then connect -24DC to terminal 4 to open and connect -24DC to terminal 6 to close.

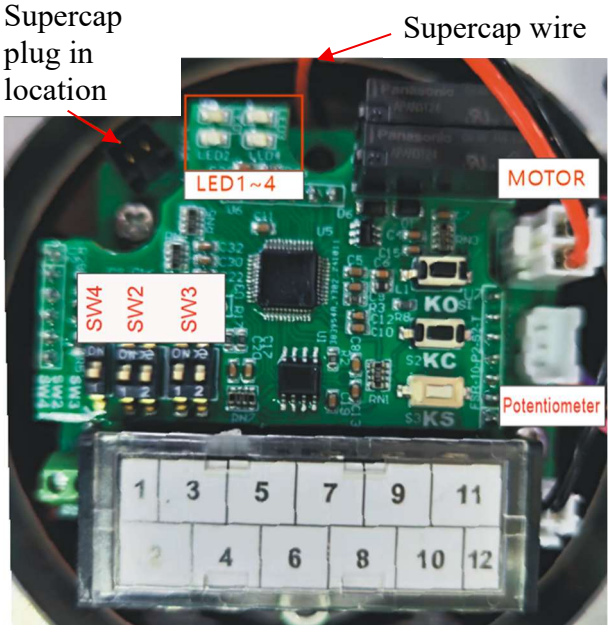


1.4 CONNECTING FEEDBACK FOR 24VDC POWER APPLICATIONS

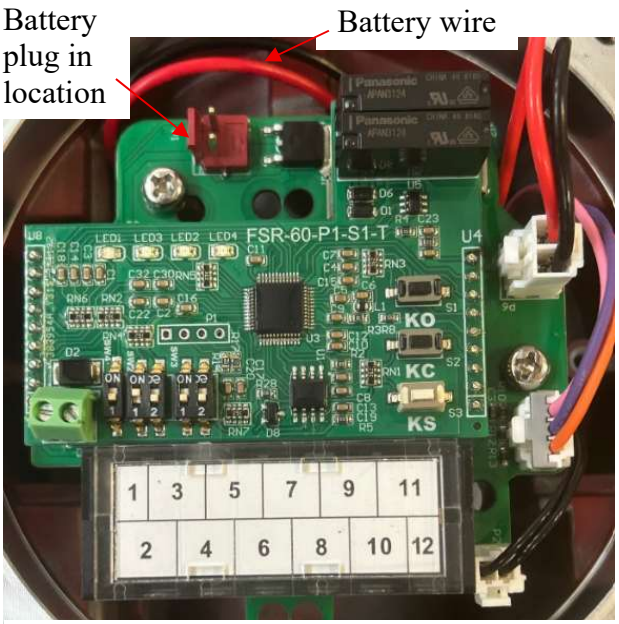
Digital and/or Analogue feedback are available. Connect to terminals 9 and 11 for analogue feedback. The digital on/off feedback is a dry contact between terminals 8 and 10 for open and terminals 8 and 12 for close. Terminal 8 is your common and the contact will make with terminal 10 when the actiatpr is in the opened position or with terminal 12 when the actuator is in the closed position. Calibration is needed for each actuator. See Calibration Procedure below for more details.

1.5 BATTERY/SUPERCAP CONNECTION

Connect the battery/supercap to the control board. The battery/supercap wire will be tucked down by the board. Find it and plug it into the location show here:



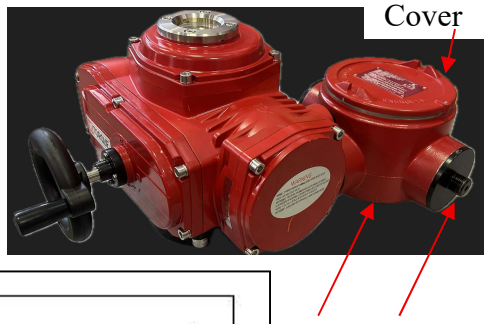
Board Diagram Picture for VZT-442 thru VZT-1770 Standard Speed Actuators. (High Speed actuators are 10 sec or less)

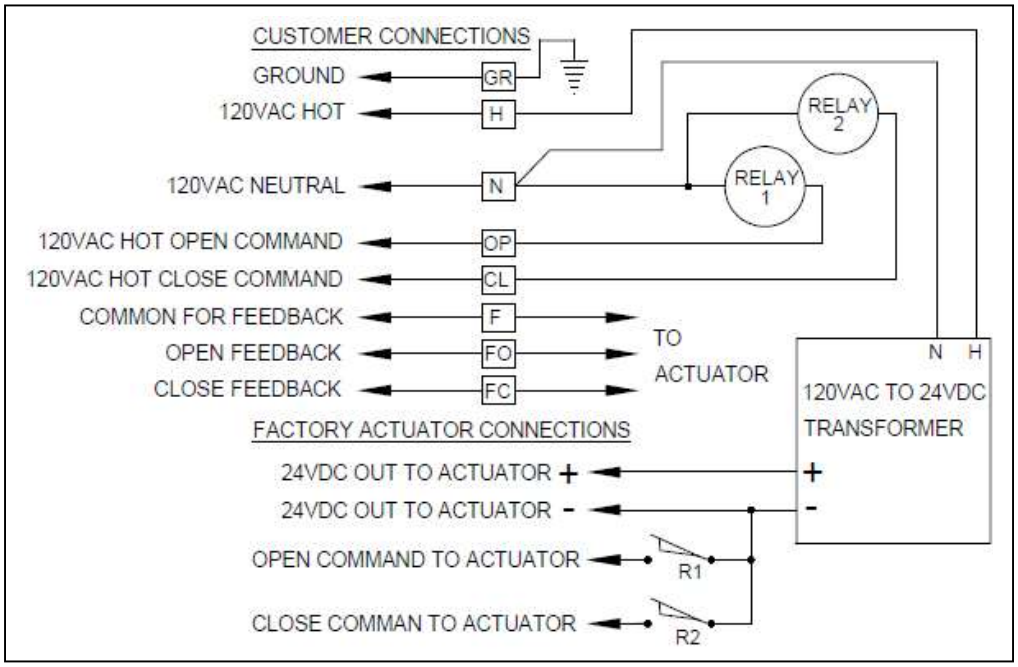


Board Diagram Picture for VZT-2655 thru VZT-26,550 and High speed actutators (High Speed actuators are 10 sec or less)

1.6 120VAC Wiring Termination Diagram

Remove the cover from the auxiliary XP junction box to access the terminals. There are 2 x ½" NPT Conduit Entries.





1.7 Connecting 120VAC POWER

Connect 120VAC Power to terminals H and N and Ground to terminal GR.

1.8 Connecting 120VAC ON/OFF TYPE DIGITAL COMMAND INPUTS OR 4-20MA INPUT

This actuator can be used for on/off service or modulating. If you want to operate it via a digital on/off type signal then connect 120VAC Hot wire to terminal OP to open and connect 120VAC Hot wire to terminal CL to close. To connect 4-20ma command you must remove the end cover on the main body of the actuator. Then refer to Step 1.1 - 24VDC Terminal wiring diagram and connect your 4-20ma signal to terminals 5 and 7 on the main.

1.9 Connecting Feedback for 120VAC Power applications

Digital and/or Analogue feedback are available. The digital on/off feedback is a dry contact between terminals F and FO for open and terminals F and FC for close. Terminal F is your common and the contact will make with terminal FO when the actuator is in the opened position or with terminal FC when the actuator is in the closed position. To connect 4-20ma command, you must remove the end cover on the main body of the actuator. Then refer to 24VDC Terminal wiring diagram in Step 1.1 and connect your 4-20ma signal to terminals 9 and 11 for analogue feedback.

1.10 Modbus

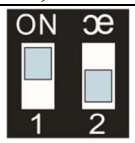
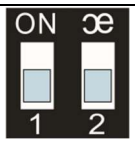
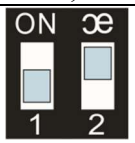
This actuator is compatible with Modbus. Please refer to the Modbus Installation and Operations Manual for more details.

2. CALIBRATION PROCEDURE AND DIP SWITCH SETTINGS

2.1 SW2 SETUP

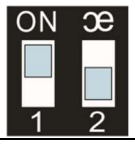
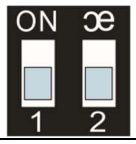
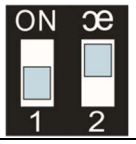
Refer to BOARD DIAGRAM ON PAGE 4 to help locate the below switches. Move SW2 to Calibration & Manual Mode to begin Calibration Procedure.

AFTER CALIBRATION, YOU MUST MOVE SW2 TO AN AUTO MODE TO ENABLE FAILSAFE ACTION

	Auto Mode with Standard rotation. 4ma=CW, 20ma=CCW	Calibration & Manual Mode	Auto Mode with Reverse Rotation 4ma=CCW, 20ma=CW
SW2 Setup			

2.2 SW3 SETUP

The Diagram below shows the correct dip switch positions for each fail position when power or 4-20ma signal is lost.

	Fail Counter-clockwise	Fail in Place	Fail clockwise
SW3 – Doesn't work if in calibration &manual mode			

2.3 CALIBRATION AND PUSHBUTTON OPERATION

There are 2 small black pushbuttons labeled KO and KC. KS is a small white pushbutton.
To enable Pushbuttons, put SW2 in the Calibration & manual mode as shown in step 2.1

- KO: Press this button to operate in CCW direction (standard rotation = Open). Travel will stop when the button is released. When the actuator is in the Full-open position, Press buttons KS and KO at the same time to calibrate.
- KC: Press this button to operate in CW direction (standard rotation = Close). Travel will stop when the button is released. When the actuator is in the Full-close position, Press buttons KS and KC at the same time to calibrate.
- KS: Used in conjunction, with the KC or KO to calibrate the open and close positions.

2.4 SW4 SETUP

For ON-OFF (Digital type) control move SW4 to the "ON" position.

For Modulating (4-20ma) control move SW4 to the "1" position.

3. LED FUNCTIONALITY AND OTHER TECHNICAL FEATURES

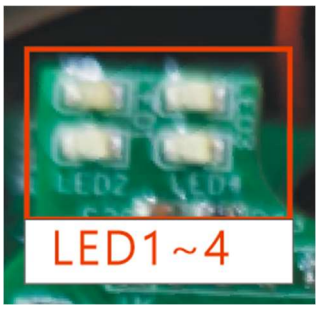
3.1 LED DETAILS

●LED1 : Green indicator LED shows power is connected. The power indicator LED lights up when connecting terminals DC24- and DC24V+ of control board with power.

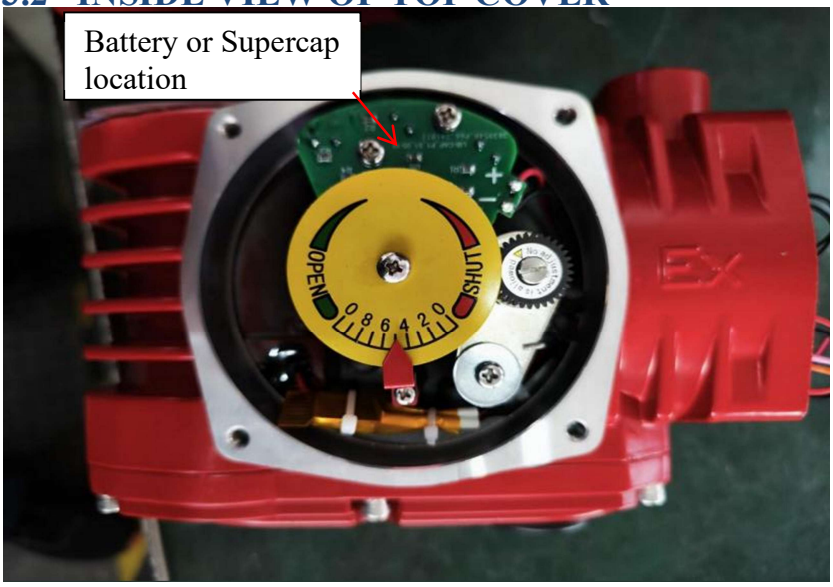
●LED2: Red indicator LED shows malfunction of input 4-20ma signal failure this lamp lights up when 4-20ma input signal is lost.

●LED3: Red indicator LED shows malfunction of 4-20ma feedback. This LED lights up when potentiometer loop is open or is damaged.

●LED4: Red indicator LED shows travel failure or overtorque. This LED lights up when actuator is given an travel command and it does not move to that position. The overtorque is tripped when the actuor exceeds the full load amps.



3.2 INSIDE VIEW OF TOP COVER



3.3 OVER TORQUE SWITCH

There is an overtorque switch that will disconnect power going to the motor when the actuator exceeds the full load amps. This diables actuator travel in that direction. Once it is tripped, it will reset when a command is given to go the opposite way then the direction it tripped. LED4 will light up if tripped.

3.4 OVER TEMPERATURE SWITCH

If the motor temperature rises above the temperature switch setpoint, then the switch will open and disconnect power to the motor. This diables actuator travel until the motor cools off. Once it cools down then it will automatically reset.

3.5 MECHANICAL STOP

There are 2 mechanical stops mounted on the actuator output shaft to protect the valve. The mechanical stops should not take effect in normal operation because the electric limit switch is set ahead of the mechanical stop and will be stop the actuator before the stops are reached.

●Locate the mechanical stops shown in this actuator picture:

●After calibration is completed in Step 2.3, give the actuator an input command to move it closed. Once closed, loosen the locknut and turn the the CW stop setscrew clockwise until you feel resistance. The resistance means that the stop is at the closed position. Then back the stop off by turning the setscrew CCW a ½ turn.

●Repeat the above process for the open stop.

CCW (Open) Stop

CW (Close) Stop

3.6 MANUAL OVERIDE

Only operate the manual override when power is off and the supercap is disconnected. The supercap may take around 2 min after power is disconnected to discharge. Refer to section 1.5 to disconnect the supercap.

●Most actuators have a handwheel. If it has a handwheel and the power is Disconnected then push in and turn to Move the actuator. If it doesn't have handwheel, then use the allen wrench located on the rear of the actuator. Remove the rubber dust cover that is Located where the handwheel is Pictured here.