

DESCRIPTION:

The linear servo actuator is designed to move between min and max positions in response to the inputs. The inputs can be ON/OFF (switched to power) or analog within a range of 0.5V to 4.5V. Default is analog, joystick mode.

ON/OFF Mode:

1. Apply power to the actuator.
2. If power (10-30VDC) applied to input 1 (Green wire), the clutch will engage and the shaft will move towards MIN by one step. Removing power from the input will stop the movement and the clutch will remain on to maintain the desired position. If input 1 is powered continuously, the shaft moves every 0.5 seconds until MIN is reached or input 1 is released.
3. If power applied to input 2 (White wire), the

clutch will engage and the shaft will move towards MAX by one step. Removing power from the input will stop the movement and the clutch will remain on to maintain the desired position. If input 2 is powered continuously, the shaft moves every 0.5 seconds until MAX is reached or input 2 is released.

4. If both inputs go high, the shaft will move to the center position. To move again, both inputs must go low.

Analog Modes:

Joystick Mode:

1. Connect input 1 (Green wire) to a joystick with output range of 0.5V to 4.5 V with center at 2.5V.
2. Power on the actuator.

3. The clutch will engage and the shaft will move towards the center position between the min and max. The clutch will turn off at the center position +/- .10".
4. When the joystick is moved away from either side of the center position, the shaft will move toward the desired min or max position following the joystick position.

Potentiometer Mode:

1. Connect input 1 (Green wire) to a potentiometer or an analog output with output range of 0.5V to 4.5V.
2. Power on the actuator.
3. The clutch will engage at 0.5V and the shaft will move to min. The shaft will move towards max as the input voltage increases.

See the next page for on board Wi-Fi description. When connected to Wi-Fi, the actuator can be calibrated, diagnostics can be done, and more.

SPECIFICATIONS:

ELECTRICAL:

SUPPLY VOLTAGE: 10 TO 30VDC
 CANBUS PROTOCOL: SAE-J1939
 CURRENT DRAW:
 STANDBY: 30mA
 NO LOAD: 1.5A
 70LB: 3.8A
 MAX LOAD: 5.8A

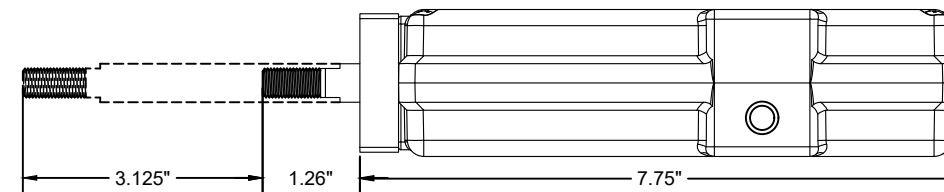
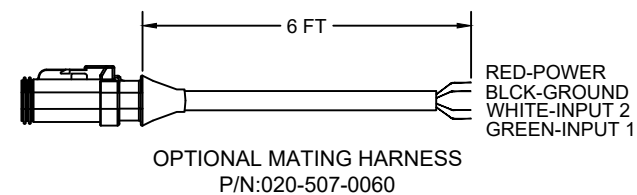
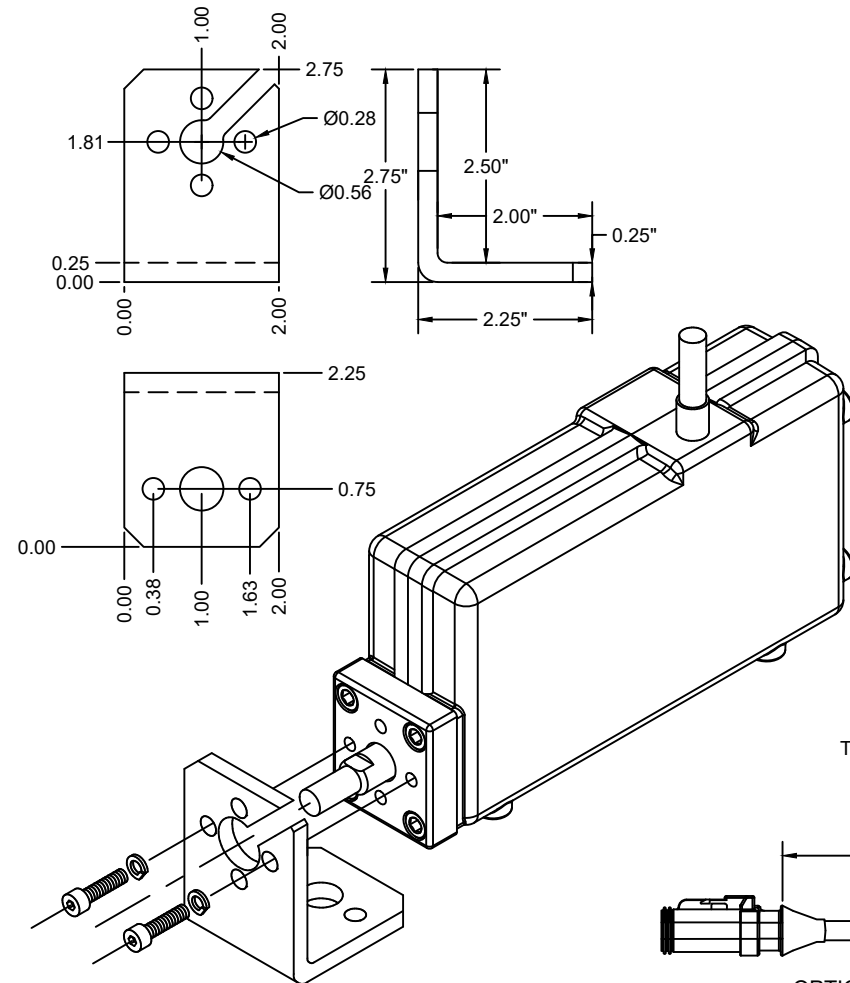
MECHANICAL:

MAXIMUM STROKE: 3.125 INCHES
 NO LOAD SPEED: 3 INCH/SECOND
 OUTPUT FORCE:
 HOLDING: 90LB
 DYNAMIC: 200LB

ENVIRONMENTAL:

OPERATING TEMPERATURE:-40°C TO +85°C

SUGGESTED MOUNTING BRACKET



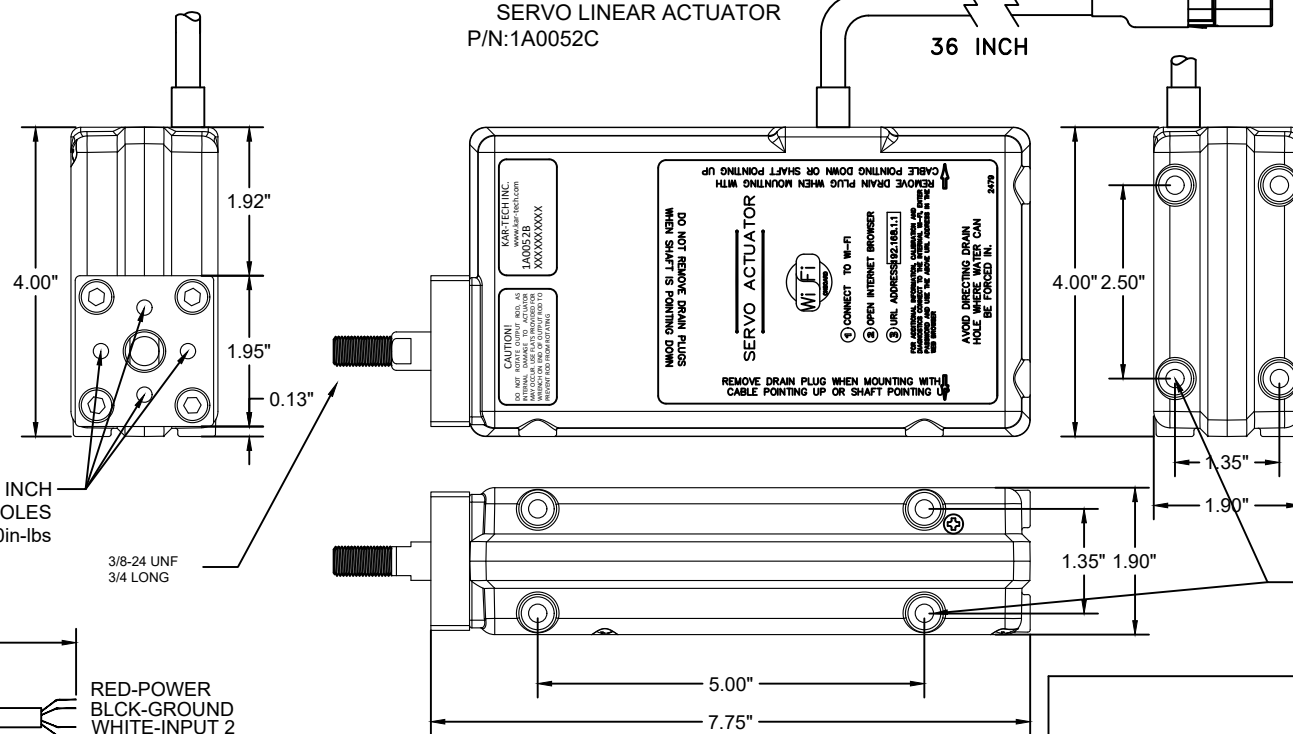
SERVO LINEAR ACTUATOR
 P/N:1A0052C

CONNECTOR: DEUTSCH DT04-4P-E008

- 1 POWER RED
- 2 GROUND BLACK
- 3 INPUT 2 WHITE
- 4 INPUT 1 GREEN



Front view



		IMPLIED TOLERANCE	
	X.X	±	.1
	X.XX	±	.06
	X.XXX	±	.015
	FRACTIONAL	±	1/8
	ANGULAR	±	0.5 deg.

CAD DRAWING DO NOT REVISE MANUALLY					
SCALE	DRAWN	DATE	CHECKED	APPROVED	DRAWING NO.
FULL	JH	08-29-23			1A-005-1-C-3

USING ON BOARD GATE

The GATE creates a Wi-Fi access point which allows you to connect to any device with Wi-Fi and web browser such as smart phones, pads or personal computers. It supports Google Chrome, Internet Explorer, Firefox and IOS Safari and allows user to configure, diagnose and troubleshoot the system.

ACCESSING THE CONTROL PANEL

1. Turn on the power to the actuator.
2. Use your device and look for the available WiFi networks. A network under the name of "ACTUATOR1A005" should be available at this point. Connect to the network, password is 1A0052X1. If the Gate is not used for 5 Minutes, the network will automatically turn off. Recycle power to the actuator to turn it back on.
3. Once the connection is established, open a web browser on your device. Kar-Tech recommends using the Chrome browser.
4. Enter the address http://192.168.4.1 in the address bar.

The following options are available from the main screen.

DIAGNOSTICS

Tap the Diagnostic button to see the diagnostic screens, which shows the present state of remote communications, and system I/O.

When the round circle next to a label is dark, the corresponding digital input is sensed to be active.

The analog input will always read as 0V while in digital mode.

The Motor Direction will show EXTEND when moving out, or REVERSE when moving in. Otherwise it will show BRAKE when the clutch is engaged, and NEUTRAL when the clutch is disengaged and the shaft can move freely.

Note: the GATE is not a precision measurement instrument. There may be some delays.

CALIBRATION

To change the configuration of the unit, tap the Calibration icon.

To set inputs and outputs to match valves and joysticks, tap the CALIBRATION button. A password is required to gain access to this section. The password is 1262.

Control Mode

There are three control modes available for the actuator:

1. Digital Mode is where the inputs are switched to power (ON/OFF)

Check Digital mode then press save for the actuator to operate as below:

1. Apply power to the actuator.
2. If power applied to input 1 (Green wire), the clutch will engage and the shaft will move towards Min. by one step. Removing power from the input will stop the movement and the clutch will remain on to maintain the desired position. If input 1 is powered continuously, the shaft moves every 0.5 seconds until Min reached or input 1 is released.
3. If power applied to input 2 (White wire), the clutch will engage and the shaft will move towards Max. by one step. If input 2 is powered continuously, the shaft moves every 0.5 seconds until Max is reached or input 2 is released.
4. If both inputs go high, the shaft will move to the center position. To move again, both inputs must go low.

Parameters available for calibration in digital mode:

1. Number of steps - select this parameter from the drop down box to change the number of steps from Min to Max. Place new value in number of steps box. Press save when complete.
2. Time Min-Max (sec) - select this parameter from the drop down box to change the time in seconds it takes to go from Min to Max. Place new value in Time Min-Max (sec) box. Press save when complete.

2. Analog Mode is where the input has range of 0.5-4.5V. This is default mode with three point input.

Check Analog Mode and press save for the actuator to operate as below:

1. Connect input 1 (Green wire) to an analog input with voltage range of 0.5V to 4.5 V.
2. Power on the actuator.
3. The clutch will engage and the shaft will move towards the position of the analog input. If the input is at 2.5V, the shaft will move toward the center position between Min and Max. The clutch will turn off at the center position +/- .10".
4. When the joystick is moved away from either side of the center position, the shaft will move toward the desired Min or Max position following the joystick position.

Parameters available for calibration in analog mode:

1. Min (V) - select this parameter from the drop down box to change the Minimum voltage needed at input corresponding to the actuator's Minimum position. Place new value in Min (V) box. Press save when complete.
2. Center Low (V) - select this parameter from the drop down box to change the Center Low voltage at input. It is recommended that this be center Minus 0.25V. For example if center is 2.5V then Center Low should be set at 2.25V. Place new value in Center Low (V) box. Press save when complete.
3. Center High (V) - select this parameter from the drop down box to change the Center High voltage at input. It is recommended that this be center plus 0.25V. For example if center is 2.5V then Center High should be set at 2.75V. Place new value in Center High (V) box. Press save when complete. When voltage is between Center Low and high at input the actuator will be at it's center position between Center Low and Center High positions.
4. Max (V) - select this parameter from the drop down box to change Maximum voltage at input corresponding to the actuator's Maximum position. Place new value in Max (V) box. Press save when complete.

NOTE: If using with an input with no center, such as a potentiometer, it is recommended to set Center Low and Center High to 2.50V and 2.51V, respectively.

3. CAN control mode is where actuator is controlled by messages over CAN bus.

Check CAN Mode and press save for the actuator to be in CAN control mode.

Parameters available for calibration in CAN mode:

1. Baud Rate - select the desired baud rate then press save when complete.
2. Command ID - select this from the drop down box to change the packet ID used to send commands to the actuator
 - 2.1. Priority - the importance for the packet. Place new value in Priority box. Press save when complete.
 - 2.2. PGN - the address number of the device to communicate with on the bus. Place new value in PGN box. Press save when complete.
 - 2.3. Source Address - the address of the actuator. Place new value in Source Address box. Press save when complete.
3. Report ID - select this from the drop down box to change the packet ID used to send reports from the actuator
 - 3.1. Priority - the importance for the packet. Place new value in Priority box. Press save when complete.
 - 3.2. PGN - the address number of the device to communicate with on the bus. Place new value in PGN box. Press save when complete.
 - 3.3. Source Address - the address of the actuator. Place new value in Source Address box. Press save when complete.

Position Control parameters:

1. Auto Center enable - checking this box will enable the actuator to return to center
2. Min (inch) - Minimum position in inches the actuator will move to
3. Center Low (inch) - Minimum position in inches the actuator will move to for center
4. Center High (inch) - Maximum position in inches the actuator will move to for center. The actuator will move to position between Center Low and Center High when going to center
5. Max (inch) - Maximum position in inches the actuator will move to for center
6. Motor Speed Min/Max - Minimum/Maximum speeds of the motor, as percentages of highest possible speed

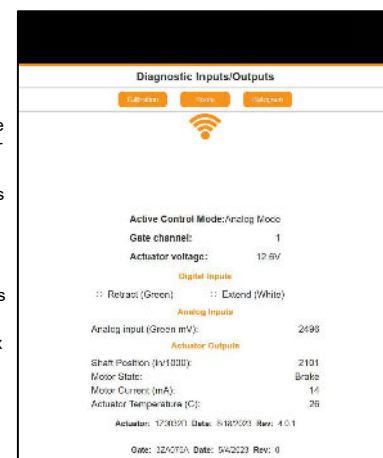
Press save when complete to save any parameters

Auto Zero Calibration button:

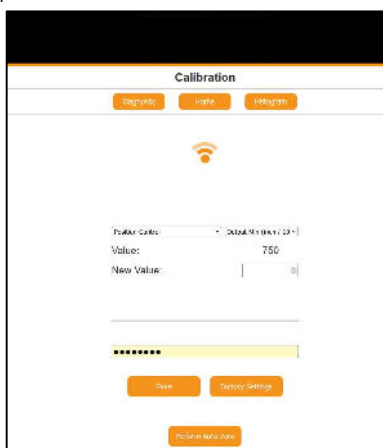
This button is used to reset and calibrate the internal position sensor. With the actuator shaft disconnected mechanically from load, press this button. The actuator will fully extend and then retract itself and automatically zero its sensor. **NOTE: THIS HAS BEEN DONE IN THE FACTORY AND SHOULD NOT NEED TO BE REPEATED IN THE FIELD. ALSO, NOT DISCONNECTING THE SHAFT MAY NEGATIVELY AFFECT THE CALIBRATION AND SUBSEQUENT MEASUREMENTS.**



MAIN SCREEN PAGE



DIAGNOSTIC PAGE



CALIBRATION PAGE

HISTOGRAM

Tap the Histogram icon to see a set of screens that show which error codes are active and how many times a specific error code has been active.

This feature can be used to troubleshoot wiring issues and other problems. Tapping the Reset button resets the error code counts. The password to reset error codes is 1262. Tap the Home button to return to the main menu.

Note: the GATE is not a precision measurement instrument. There may be delays.

SOFTWARE UPDATE

The password to gain access to the gate update page is 1262.

This page was designed to upload software to the actuator's onboard GATE.

Once the UPDATE button is pressed the application on the actuator will be **deleted**.

1. Using Choose File select proper .bin file
2. Press Submit
3. File will upload and say uploading done rebooting when complete
4. Disconnect then reconnect to "ACTUATOR1A005" network
5. Press HOME button
6. Update complete

WI-FI CONFIGURATION

The password to gain access to the gate configuration page is 1262.

This page allows you to change the name (SSID) of the Wi-Fi network you are connecting to. Factory settings will rename the Wi-Fi to its original name.

By default, the Wi-Fi name (SSID) is public and it will be visible to any other Wi-Fi devices. Otherwise, when the Hide Network option is selected, the Wi-Fi name (SSID) is hidden and it would require manual connection to the network.

If Enable Multiple Connections is selected, multiple connections up to 4 devices could be connected to the GATE. However, only one of the connected devices can use the GATE. If Single connection is enabled, only one device can be connected to the GATE.

NOTE: A reconnect to the new Wi-Fi connection is needed after each change. It is advised to keep a note of the Wi-Fi name in case if Hide Network option is selected. Forgetting the Wi-Fi name after selecting this option will require the GATE to be sent to KAR-TECH for RESET.

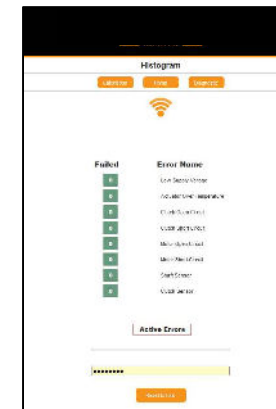
WI-FI REMOTE

Warning! Use with caution. It is recommended that the Wi-Fi name and password both be changed to something unique before operation of this page. It is also recommended that "Enable Multiple Connections" be unchecked before operation, otherwise intermittent operation can occur.

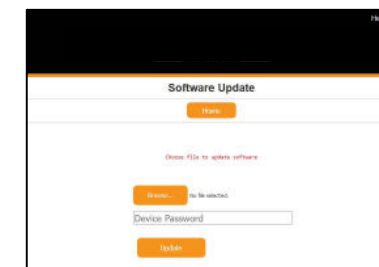
These items can be changed under Wi-Fi configuration.

NOTE: The actuator must be in digital mode to use the Wi-Fi Remote.

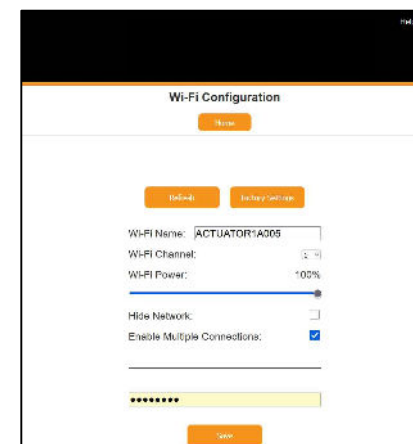
Pressing "Retract" will move the actuator shaft in. Pressing "Extend" will move it out.



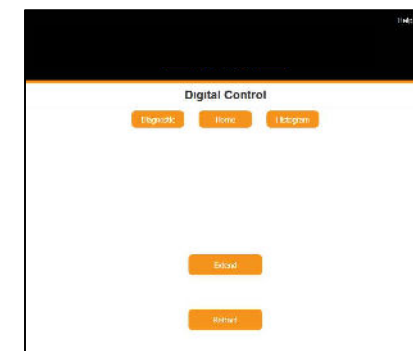
HISTOGRAM PAGE



GATE SOFTWARE UPDATE PAGE



WI-FI CONFIGURATION PAGE



WI-FI REMOTE PAGE

		IMPLIED TOLERANCE	
		X.X	+ .1
		X.XX	+ .06
		X.XXX	+ .015
		FRACTIONAL	+ 1/8
		ANGULAR	+ 0.5 deg.
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