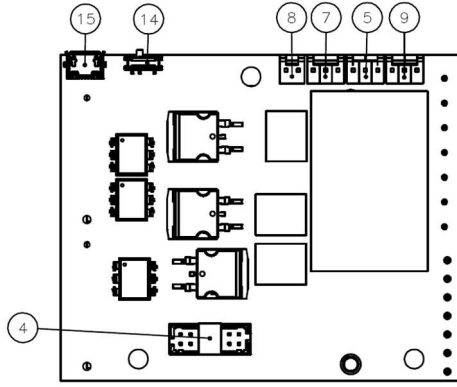
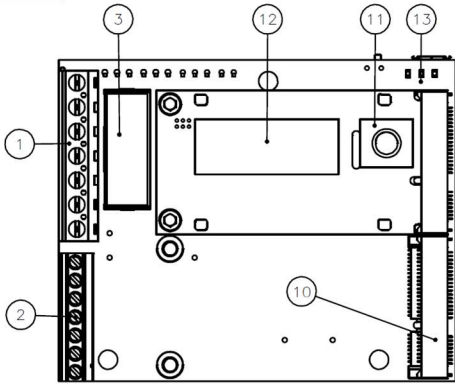


LAYOUT



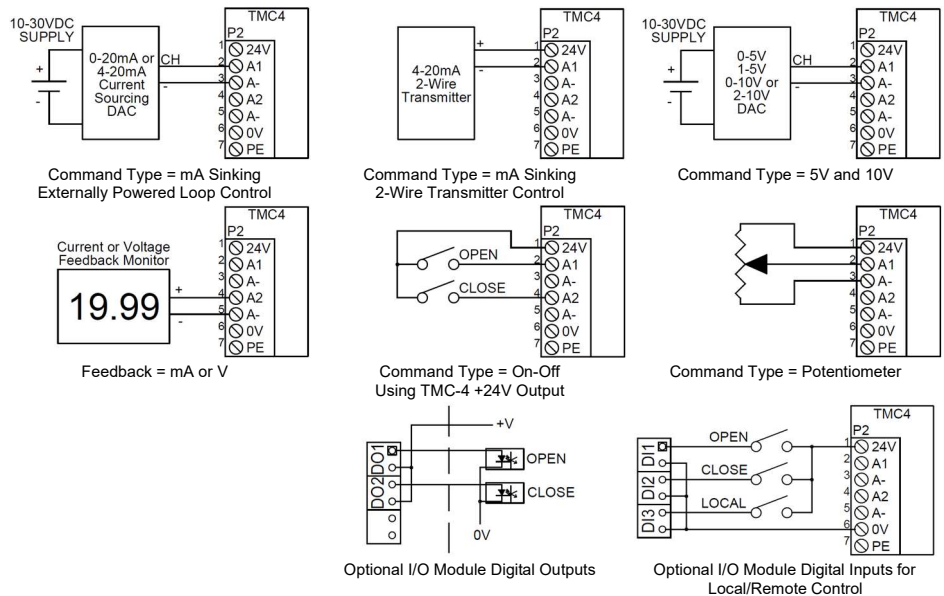
1. Power / Motor Terminals (P1)
2. Signal Terminal (P2)
3. Fuse
4. Expansion Header (P4) (option)
5. Position Switches Header (P5)
7. Feedback Potentiometer Header (P7)
8. Thermistor Header (P8) (option)
9. Stop (Torque) Switches Header (P9)
10. Operation Module Slot
11. Joystick
12. Display
13. LEDs
14. Run/Program Switch
15. USB Connector

TERMINAL WIRING

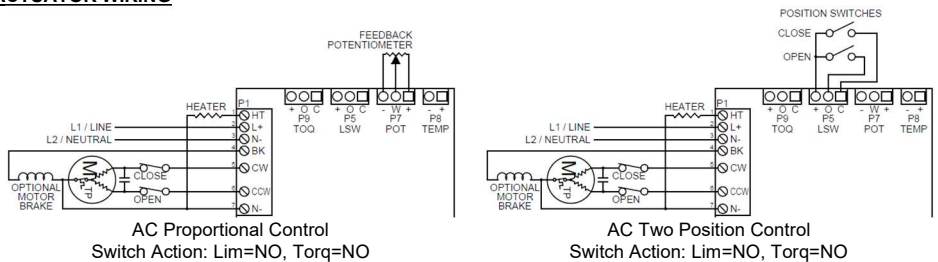
(P1) Power/Motor Terminals	Function
1 Heater (HT)	Supply power output for heater. Internally connected to Supply L+ terminal.
2 Supply L+ (L+)	Supply Power AC Line or DC +
3 Supply N/-(N-)	Supply Power AC Neutral or DC -
4 External Brake (BK)	Output for spring return electric actuator brakes. Switches supply power when motor outputs are energized. AC version: Switch off when motor on. DC version: Switch on when motor on.
5 Motor CW (CW)	AC version: Energize clockwise motor winding. DC version: Switch (+) supply voltage for clockwise operation.
6 Motor CCW (CCW)	AC version: Energize counterclockwise motor winding. DC version: Switch (+) supply voltage for counterclockwise operation.
7 Motor N (N-)	Internally connected to Supply N/- terminal. Can be used for second heater connection. AC version: Motor neutral. DC version: No motor functionality

(P2) Signal/Comm Terminals	Function
1 +24V Out (24)	Auxiliary 24VDC output.
2 Signal In I/O (A1)	Analog command signal input. Open input when set for On/Off Command Type.
3 Signal GND (-)	Command signal reference.
4 Signal Out I/O (A2)	Analog feedback signal output. Close input when set for On/Off Command Type.
5 Signal GND (-)	Feedback signal reference.
6 0V Out (0V)	0V reference for +24V output.
7 Earth (E)	Connected to enclosure through TMC4 mounting bracket.

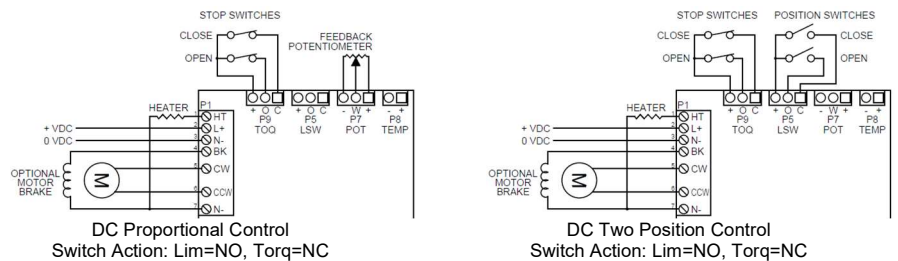
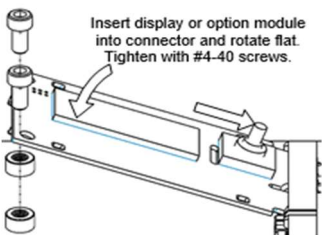
SIGNAL AND OPTIONAL I/O MODULE WIRING CONFIGURATIONS



ACTUATOR WIRING



MODULE INSTALLATION

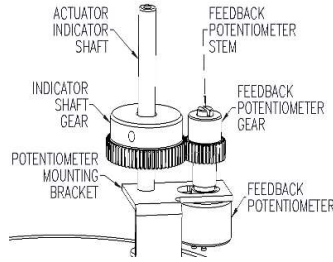


WARNING!
The TMC4 must not be powered when installing display or optional modules. Failure to install display or module with TMC4 unpowered may result in damage to the display or module board.

CALIBRATION

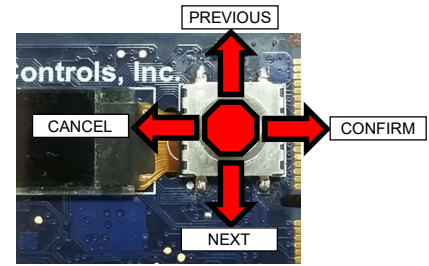
Center Potentiometer and Set Positions

1. Enter "Position Config" submenu.
2. "Position Type" is set to "Potent".
3. Enter "Calibrate Close Pos".
4. Manually operate actuator to 50% position using joystick or actuator manual override.
5. Adjust feedback potentiometer until value is between 1900-2200. STAT LED will flash. Then tighten potentiometer gears.
6. Operate actuator to CW position and press [CONFIRM] to save position.
7. Enter "Calibrate Open Pos".
8. Operate actuator to CCW position and press [CONFIRM] to save position.
9. Ensure "Switch Action" setting is correct per ACTUATOR WIRING above.



NAVIGATION

- Press [CONFIRM] to enter setting and save changes. Setting value will flash when setting is entered.
- Press [CANCEL] to escape menu or exit setting without saving.
- Press [PREVIOUS] or [NEXT] to step through menus or settings, or manually operate actuator CCW or CW in appropriate menu.



Target position range count values (potentiometer centered exactly to 2048 at 50% position). Specific values are not as critical as ensuring value does not jump between 0 and 4095 inside of operation range.

Gear Ratio / Actuator Rotation	Minimum	Maximum	Range
1:1 / 90°	1506	2590	1084
1:1 / 180° or 2:1 / 90°	964	3132	2168
1:1 / 270° or 3:1 / 90°	422	3674	3252

Set Command Signal

1. Enter "Command Config" submenu.
2. Verify "Command Type" is set to desired command signal type.
3. Enter "Command Zero" then send 0% command signal. Press [CONFIRM] to save.
4. Enter "Command Span" then send 100% command signal. Press [CONFIRM] to save.

Set Feedback Signal

1. Enter "Feedback Config" submenu.
2. Verify "Feedback Type" is set to desired command signal type.
3. Enter "Feedback Zero" then use [PREVIOUS] or [NEXT] to step feedback signal to desired 0% signal and press [CONFIRM] to save.
4. Enter "Feedback Span" then use [PREVIOUS] or [NEXT] to step feedback signal to desired 100% signal and press [CONFIRM] to save.

Command, Feedback and Position settings for Direct or Reverse Action.

Direct Action	Signal	Command	Feedback	Position
	0%	Zero	Zero	Zero
100%	Span	Span	Span	Open/CCW

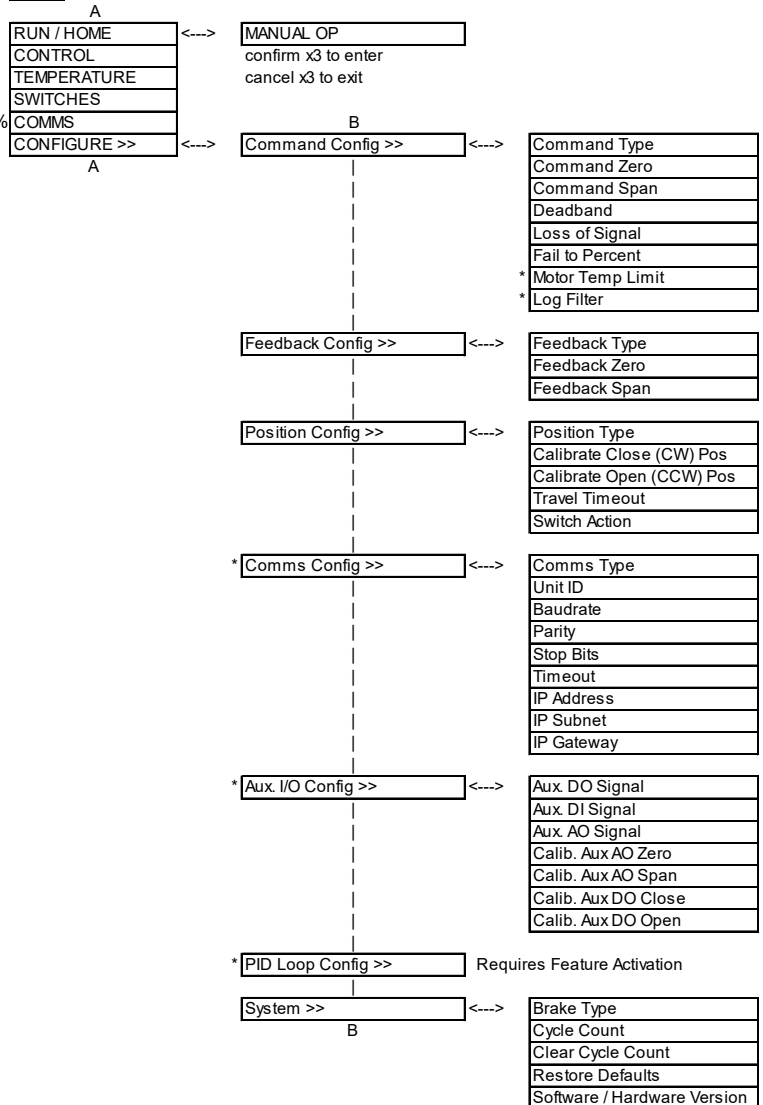
Reverse Action	Signal	Command	Feedback	Position
	0%	Span	Span	Span
100%	Zero	Zero	Zero	Close/CW

Approximate command and feedback signal count values.

Signal	Command	Feedback
0mA	(2)*	280
4mA	747	928
20mA	3732	3550
0V	(2)*	205
1V	380	570
2V	760	935
5V	1900	2028
10V	3800	3855

* With no command wiring connected, count value will typically read some small value. If count = 0, signal input wiring +/- may be reversed.

MENU



TROUBLESHOOTING

Problem	Resolution
No Display	<ul style="list-style-type: none"> • In Sleep Mode. Press joystick in any direction to wake. • Ensure Run/Program switch is away from USB connector. • Ensure supply power present or fuse is not blown.
Not Moving to Setpoint Positions Correctly	<ul style="list-style-type: none"> • Check mechanical stops are not adjusted in too far. • Check limit and torque switches and Switch Action setting. • Ensure potentiometer gears are not loose.
Movement in wrong direction	<ul style="list-style-type: none"> • Open and Close positions set incorrectly, or Zero and Span reversed. • Motor CW / CCW wiring reversed. • Open/Close position calibrated incorrectly.

Problem	Resolution
Not responding to command signal	<ul style="list-style-type: none"> • Check command signal and position calibration. • Ensure feedback potentiometer is centered and gears are not loose. • Check limit and torque switches and Switch Action setting. • Incorrect wiring.
No or incorrect feedback	<ul style="list-style-type: none"> • Check Feedback type and calibration. Check Position type. • Ensure no external loop power is provided. • Customer supplied loop power.
Hunting	<ul style="list-style-type: none"> • Noisy input signal, or Deadband setting too low.