Paragon Performance & Machine

STR X-ACT Dynamic User Guide v1.0

This guide is intended to serve as a reference for installation and best-known practices. Should any questions arise, reach out to your distributor for assistance.

Introduction

This product is an easy-to-use closed-loop multi-actuator position controller.

The system controls actuator position via closed-loop feedback from an internal digital encoder and utilizes a solid-state, high-efficiency motor controller. The user only needs to set the position and the system will intelligently get to the target.

When optioned out with the touchscreen, capability is expanded to controlling multiple actuators at once with many more features.

Installation Best Practices

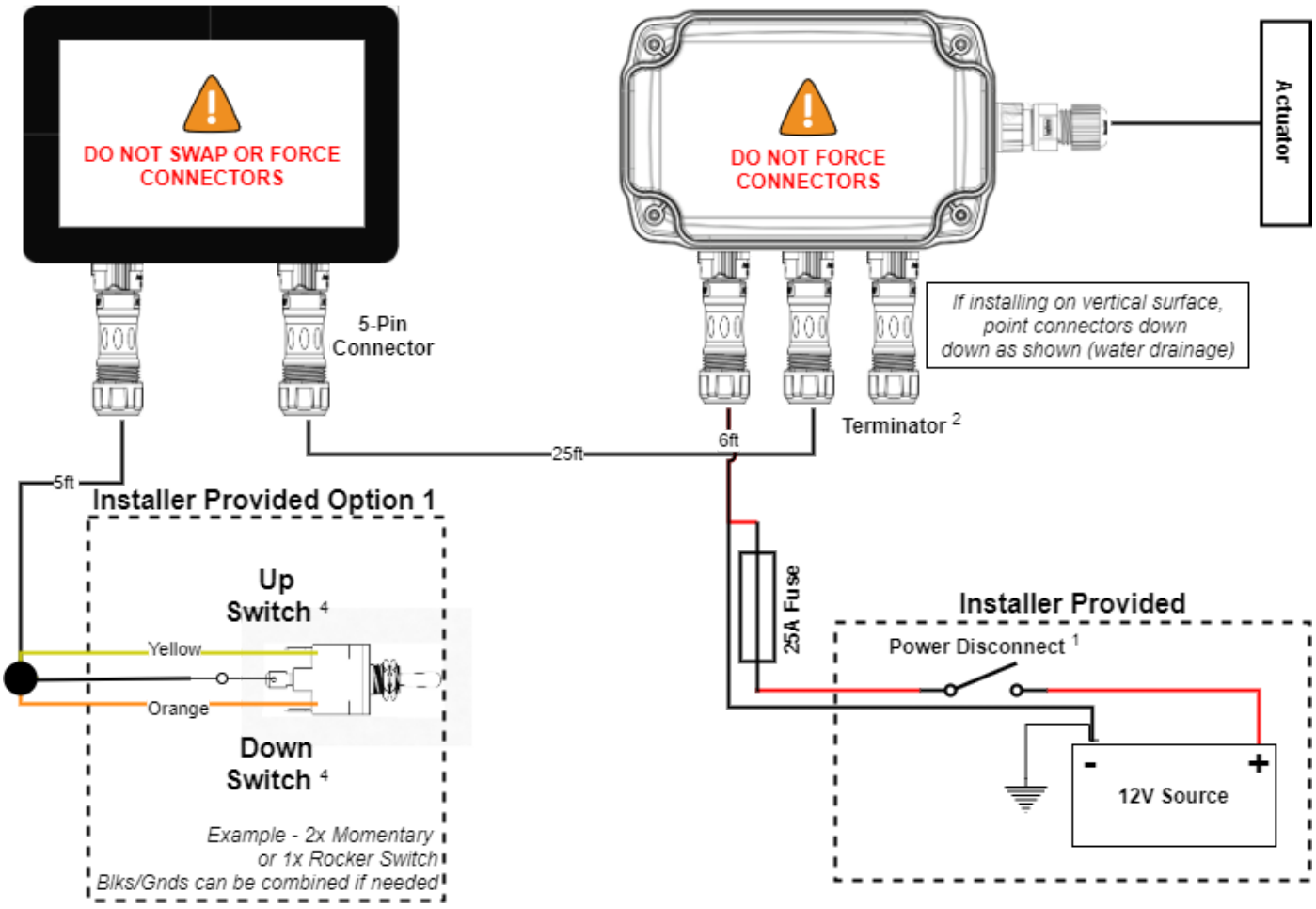
- Power supply to controllers must be easily disconnectable (e.g. via relay(s) or master switch(s)) and fused while in operation
- Consider the voltage drop on the power supply to the actuators and use the sum-total of the actuator loads to keep the supplied voltage above the minimum specified threshold.
    - Running load current varies for each setup due to differences in carried weight, wear over time, lubrication health, etc so real measurements are helpful for proper wire sizing
    - Example: If 4 actuators are used, that means peak in-rush current will be up to 200A (50A*4) momentarily and up to about 56A (14A*4) running.
- Enclosure mounting
    - Install enclosures such that connectors point down to allow moisture to drain easier as shown in wiring diagrams
    - Mount enclosures as high as possible to prevent submersion
    - Avoid fixturing actuator wires in parallel to each other or other high current draw wires to reduce electromagnetic interference
- Do not allow harness connectors or controllers to be submerged if they are disconnected
- Do not forcefully insert connectors.
    - Verify pins are straight and not pushed into the connector housing
    - Verify the correct number of contacts and male/female direction before mating.
    - Some *slight* force may be needed on first install to compress o-rings in connectors - this resistance can be felt after most of the connector has been inserted into its mating pair.

- Keep controllers and display out of direct, long-term sunlight. Cover with a light colored material when not in use.
- If more than 1 actuator is installed, port actuator is position 1
- Termination cap must be placed on the actuator furthest from the display
- All wiring splices should be completely sealed to avoid water/salt wicking up the wire strands (e.g. adhesive lined heatshrink)

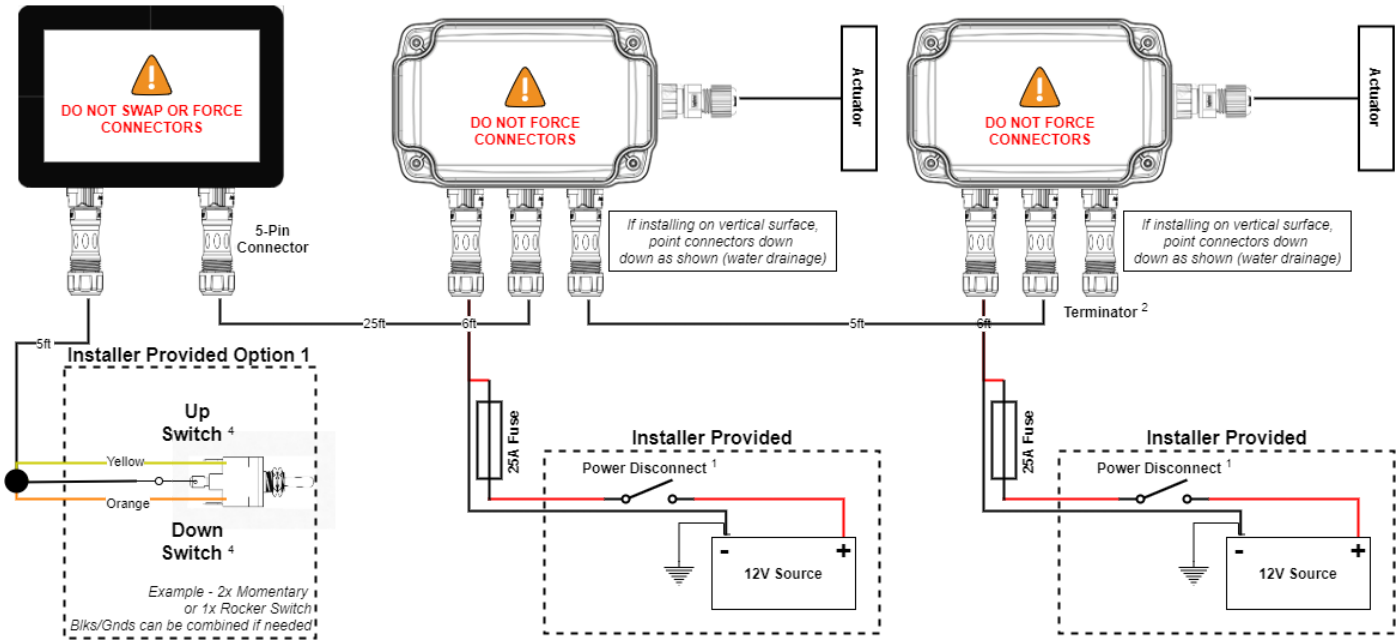
Technical Specifications

	Min	Max	Typical
Supply Voltage	10v	16v	13.5v
Supply Current	2A	50A (momentary)	6 to 14A (load dependent)
Fuse Size	25A Recommended		
Communication	CAN bus		
Protections	Inline Fuse Motor Current Monitoring Motor Over Voltage Motor Under Voltage Reverse Polarity Driver Overtemperature Encoder Monitoring		

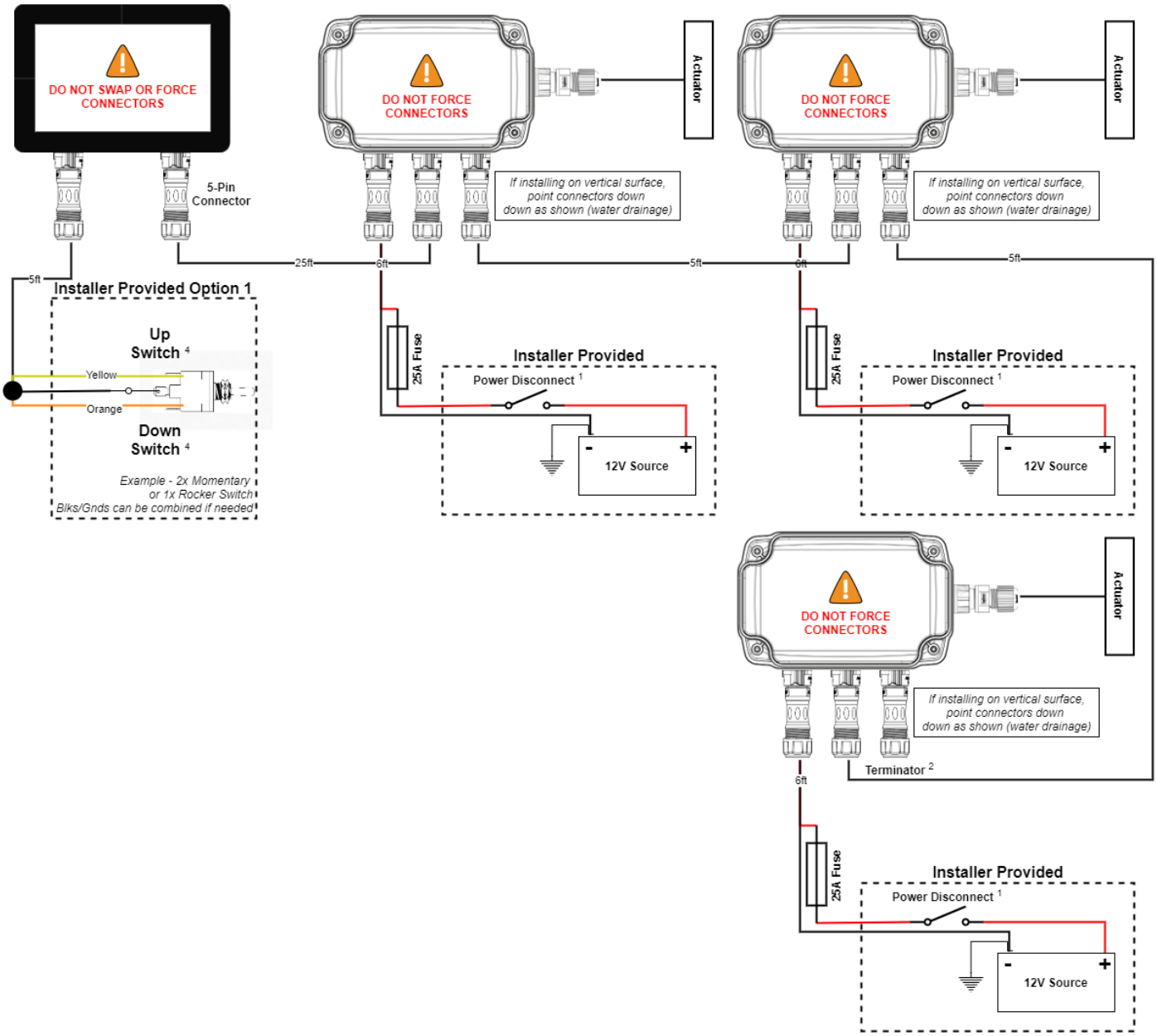
Motor X1 Wiring



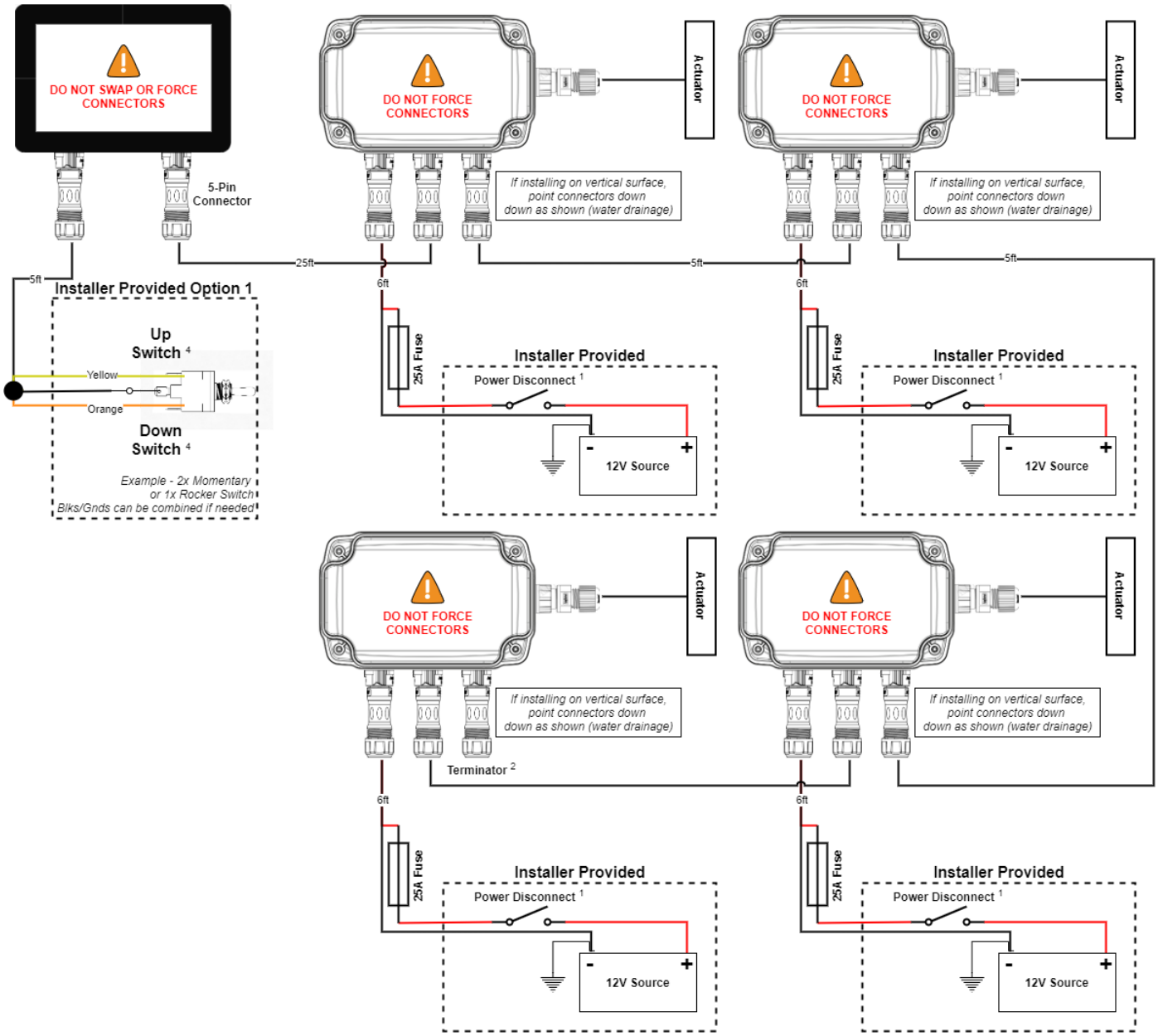
Motor X2 Wiring



Motor X3 Wiring



Motor X4 Wiring



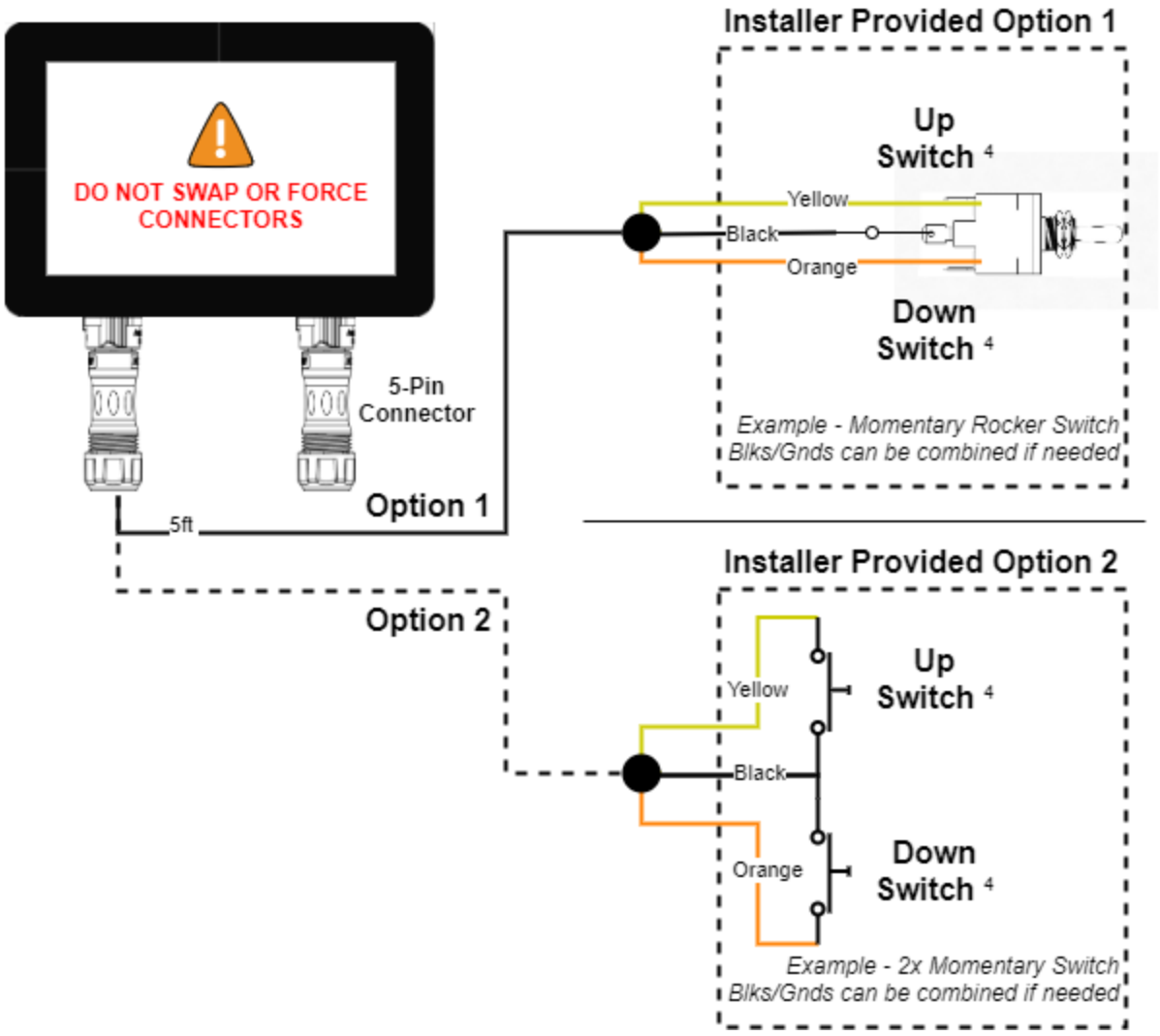
Switch Wiring Options

It's most common to use a momentary rocker switch and the provided black wire is wired to the center pin of a momentary rocker switch (Option 1 below), but can also be spliced into two momentary switches (Option 2 below).

Do not connect the switch pigtail to external voltage or ground sources.

Only use passive switches directly wired to the switch pigtail and nothing else.

Switches (Blk: Gnd, Yel: Up, Org: Dwn)	20	Black	GND
	20	Orange	SW_DWN
	20	Yellow	SW_UP
	20	Black	GND



First Time Setup

To be updated when setup mode is released

User Interface

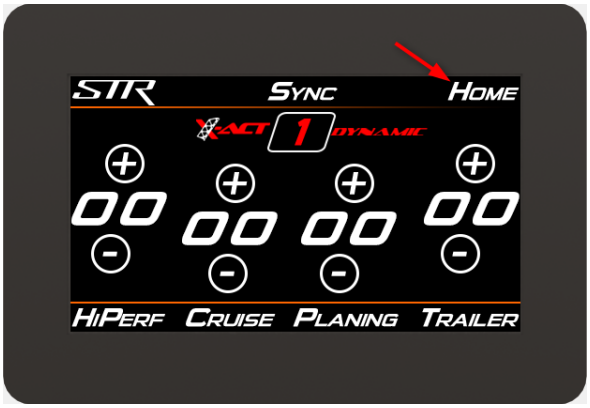
Default Mode

This mode is what the display boots into by default. This mode is what the display boots into by default. This mode is what the display boots into by default.

Homing

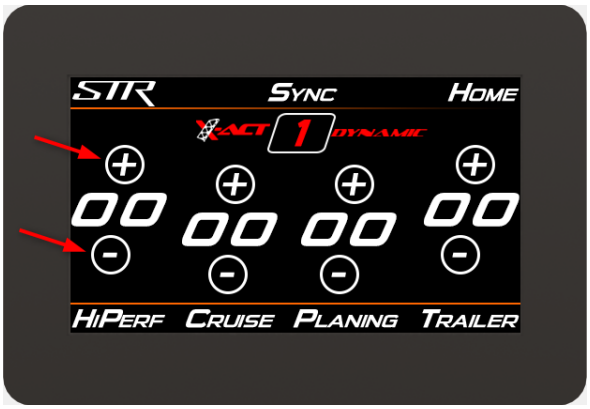
Tap “Home” to start the homing sequence. User controls will be disabled as all of the actuators move to their end-stop and reset their target positions. The “Homing” icon and targets will change color while the sequence is active.

Homing should be done every power cycle to ensure the highest accuracy.



Adjusting Position

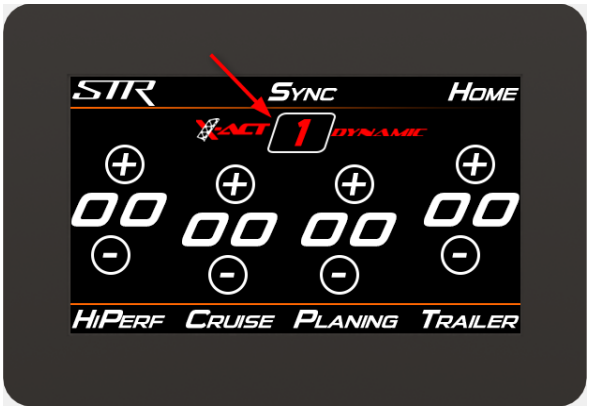
Position can be adjusted by tapping the + / - buttons on the touchscreen. If external buttons are pressed, all actuators increment/decrement together as if sync was enabled.



Adjusting Step Size

Tap the “X-Act Dynamic” icon to change the step size for increment / decrements of position changes.

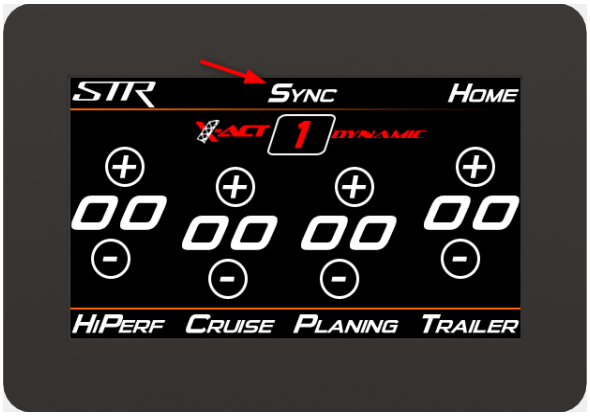
When changed, the number will reflect the current step-size.



Sync Enable

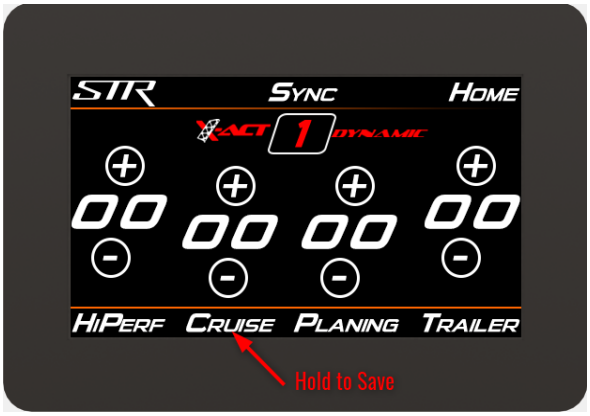
Tap “Sync” to enable or disable. It will change color when enabled.

When enabled, Sync moves all actuators together when any position increment/decrement button is pressed.



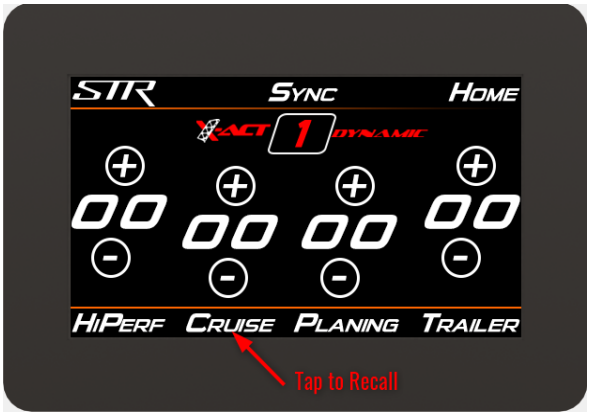
Savings Presets

Tap and hold a preset icon for >3 seconds to save all of the target positions. The icons will blink when the preset is saved.



Recalling Presets

Tap a preset to recall its saved values. It will change colors when activated.



Faults

If a fault occurs, a screen will popup that shows the fault name, description, and code. Action buttons will be presented if available (e.g. to reset fault or bypass actuator).

Configuration Mode

To be updated when configuration mode is released

Liability & Warranty

While every effort has been made to reduce risk with use and installation, there is always risk with the use of high performance parts due to their intended use. Where reasonably possible, protection mechanisms are described and they must be utilized in the final installation.

Paragon Performance & Machine and its suppliers assume no responsibility for damages from the use of these products.

Paragon Performance & Machine LLC, its employees, affiliates, and suppliers makes no warranty that the use of its products or parts guarantees personal safety or freedom from physical injury or operates as a life saving device

No warranty is implied and parts are provided “as-is” unless expressly stated terms are outlined in your sale agreement.

Document Revisions

Version 1.0 - 3/16/2021 - Initial release