PMAC System Quick Start Guide

The PMAC drive system was designed for installation by qualified professional installers. If you do not posses such skills, please secure the assistance of someone who does.

- **After installation is completed, have the system thoroughly inspected by experienced qualified personnel.**
- **Improper installation or operation of this system can result in catastrophic failure leading to death, bodily injury or property damage.**

This PMAC system has been tested and is known to perform as designed. Nevertheless, it is strongly advised to first try the complete system on a sturdy workbench with the motor firmly supported. A pre-installation bench test helps familiarizing oneself with the system, and prevents errors due to complex or non-visible wiring. If a pre-installation bench test proves impractical to perform, at least lift the vehicle so the traction wheels are off the ground. If the system is being installed on a boat, remove the shaft coupling or the propeller to prevent sudden uncontrolled motion. **Electric drive systems differ from internal combustion engines in many ways, particularly in regards to sudden motion. There is no idle state, electric motors can go from a complete stand still to full speed very rapidly, developing full torque as soon as they start moving.** The proper interlocks have been fitted and programmed to reduce accidents, do not circumvent these safety protocols. Each motor and controller is tuned to work together. In cases where dual or multiple drive systems will be used, please verify that the serial numbers on motor and controller coincide. Do not mix motors and controllers with different SYSTEM serial numbers, or unintended operation may ensue.

Mount controller to a paint free metal surface on vehicle, coating surface with thermal transfer grease will help heat dissipation.
Torque battery and motor wire lug screws to 7 Nm (5.5 ft-lb) on Size 2 controllers or 11 Nm (9 ft-lb) on Size 4 and 6 controllers and on motor lug nuts.

Before closing the key switch verify the following start up conditions are met:

- Nominal battery voltage measured between B- and contactor+ is within the PMAC system's voltage range. Check the labels to verify systems voltage (i.e. 48V System ~ 42V min - 58V max or 72V System ~ 63V min - 89V max or 96V System ~ 84V min – 114V max
- FS1 open (on motorcycles, make sure kill switch is in open position)
- Directional switch in neutral.
- Accelerator in resting position

To Start

- Close the key switch
- Wait a couple of seconds while controller performs its conditions checking routine and closes contactor with an audible click
- Close directional switch to either forward or reverse (skip this step if directional switch is omitted – i.e. motorcycle)
- Close FS1. On vehicles fitted with a throttle box, FS1 Closes at the same time accelerator arm moves. On motorcycles, FS1 replaces the handle bar kill switch
- Make sure there are no people, pets or obstacles in front or behind the vehicle. Gently press accelerator to initiate motion

To Stop

- Simply release throttle to resting position. On road vehicles press brake pedal. On boats, wait for propeller to stop or engage reverse if needed

To Shut Down

- Reverse start procedure

Emergency Stop

- For motorcycles or other road vehicles, open FS1
- Turn the keyswitch to off
- In case of extreme emergency where there is no time for the methods described above, disconnect Anderson power connector from battery power or push emergency disconnect button if fitted

Hibernation

- Disconnect Anderson connector from battery power
- Give battery a full charge
- Plug battery charger through an AC timer switch to run every week for 20 minutes
- In high moisture or salty environments, spray a light coating of dielectric silicon spray on top of every metallic surface, including motor

Maintenance

- Inspect monthly. Check for; loose, overheated, corroded or otherwise damaged connections, cracked or peeling insulation on wires and cables, standing water or moisture

PMAC SYSTEM WIRING SCHEMATIC