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**BULLETIN**  
**BUL-035**

## **Pronto4 Steering Motor Module (No Steering Ring) Installation and Usage Notes**

The Pronto4 Steering Motor Module (No Steering Ring) is designed to be used in custom Pronto4 installations along with a customer-provided steering mechanism.

The Module's mounting bracket and external gear are the only customer-serviceable sub-components.

The mounting bracket may be removed and reattached for mounting purposes. U-Bolts or screws (10-24, 10-32, 1/4-20, 1/4-28, or 8-32) should be used to secure the mounting bracket to the desired location. The main mounting points are four (4) 0.25" through-holes and two (2) 0.20" through-holes running through the plate's main face. There are also eight (8) 8-32 tapped holes along the sides of the mounting bracket that may be used. Any screws attached directly to the mounting plate may be removed and re-secured for mounting purposes.

### **CAUTION**

Only screws directly attached to the mounting plate should ever be removed by non-Kairos Autonomi personnel. Removal of any other screws may result in damage to the unit and require factory repairs.

The provided gear can be removed, via the setscrew, with a 3/32" hex wrench. This gear may be replaced by the customer as appropriate.

Once the unit is physically installed, the software must be calibrated, *as follows*:

### **WARNING**

**Do NOT attempt to calibrate steering with power to the Pronto4 Steering Motor Module. Doing so will cause erratic motor movement, will likely cause erratic vehicle movement, may injure the safety driver and other humans in the vicinity, and may cause damage to other structures in the vicinity.**

1. Center the vehicle's manual steering mechanism (e.g., vehicle wheels and steering wheel facing front and centered).
2. Ensure the safety operator is in the driver's seat, with seat belt secured, clear of all controls, including the steering wheel, and in a position to activate controls.
3. Connect the Steering Ring Signal Cable (CBL-006-1) to either the Steering Ring Signal Extension Cable (CBL-006-2) or to P202.

4. Ensure the Steering Ring Power Cable (CBL-006-3) is NOT connected to anything.
5. Start up the Pronto4 and Operator Control Unit (OCU) as documented (e.g., for standard Pronto4 use the standard Operations Manual; for client developed systems use internal documentation).
6. Toggle the VIM “Auto”/“Man” switch to the “Auto” position.
7. In the OCU software calibrate the steering (e.g., in Shepherd, log-in to the vehicle, turn Teleop On, click the “Calibrate Steering” button).
8. Wait at least five (5) seconds. If using a client developed system, a longer wait may be required.
9. Connect the Steering Ring Power Cable (CBL-006-3) to either the Steering Ring Power Extension Cable (CBL-006-4) or to P205.

