

# Tinley Electronics "Sailtron Furuno RRU" Installation Diagram

Software Version 1.00

## Calibration

There are four modes of calibration depending on the type of operation intended. The mode required is selected by simply switching power to the unit off to terminate further calibration procedure once the necessary information has been stored. The four modes are:

1. Amidships calibration, which can be performed either at the dock, or later during a sea trial without affecting the previously stored end stops or factory default calibration range.
2. Amidships and 'Hand' calibration but keeping factory default range, i.e.. 1.6V to 3.4 V = -55 to 55 degrees. 'Hand' corrects for clockwise or anticlockwise RRU movement.
3. Amidships and end stop calibration so that output gives any required scale by calibrating the position of RRU that requires a display of 40 (degrees).
4. Reset. The unit may be reset to factory default calibration by setting the amidships and port calibration to the same rudder position.

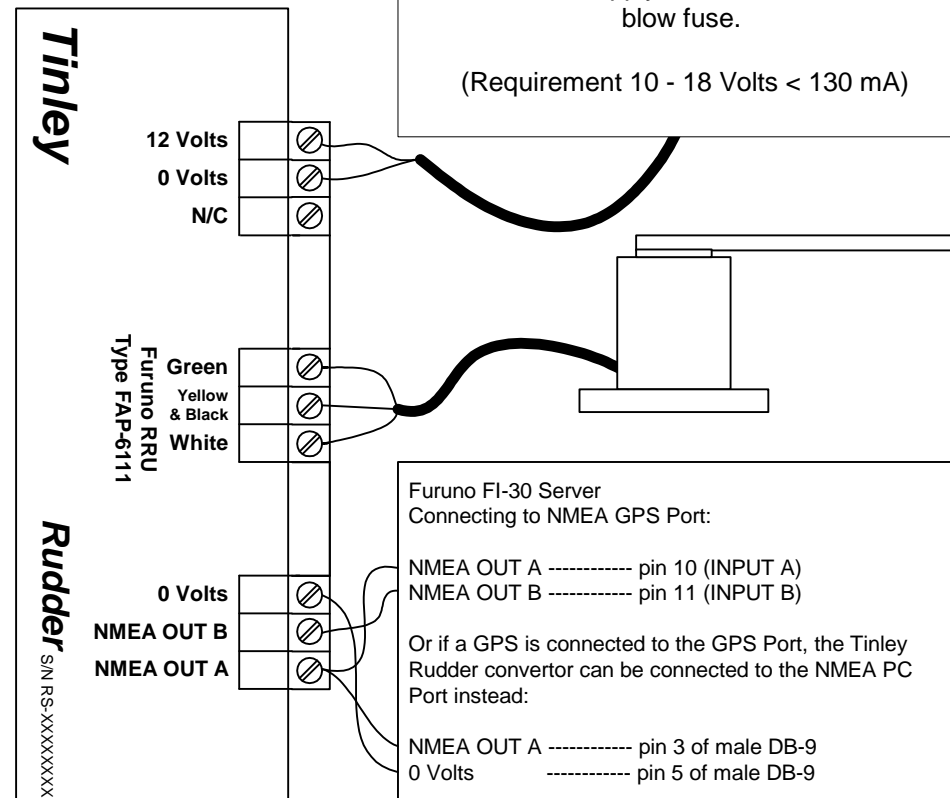
## Procedure

1. Set helm to mid position.
2. Whilst holding in calibrate button, switch on power to Rudder unit, then release push button. Wait for output to rotate from 40 degrees Port to 40 degrees Starboard, (to signify calibration mode and allow electronics to settle), and then output amidships. Either switch off and back on to complete amidships calibration or continue to next procedure.
3. Turn Helm to Port 40 degrees or anywhere to port if only calibrating 'hand'. (Or for reset, just press button without moving helm to complete reset procedure. No power off is required but restart will take about 10 seconds). Press and release push button. Wait for an output of Port 40 degrees. Note that the range remains at the factory default or end stops remain at last user setting until the Starboard calibration is recorded. However, the 'Hand' has now been stored. Either switch off to complete hand calibration or continue to next procedure.
4. Turn helm to Starboard 40 degrees. Press and release push button. Wait for an output of Starboard 40 degrees. No power off is required but restart will take about 10 seconds.

Note that NMEA sentences are output as 'Valid' data to enable NMEA displaying devices to be used during calibration. These sentences are only output once during each calibration mode and some NMEA receiving devices may 'time out' if a long time is taken to perform the calibration procedure. This will not effect the performance of the Tinley Rudder Interface.

## Operation

After power up, (or reset, or calibration mode), the Furuno proprietary sentence '\$PSILBPS,19200,R,<CR><LF>' is output 5 times at 2 second intervals at 4800 baud. The unit then switches to 19200 baud and outputs the RSA sentence at approximately 50 Hz. All sentences transmitted during calibration are at 4800 baud.



RS-422 Output @ 4800 & 19200 baud. \$YXRSA,xx.x,A,\*hh<CR><LF> where xx.x is rudder angle as calibrated "-" = Bow turns to port. Output drive capability 60mA Max. Output in accordance with the EIA-422 specification.

Note: Some interfaces that are not compliant with NMEA 0183 or EIA-422, (PC's for example), can cause a conflict with this output. This results in excessive current drawn and corruption of data. If this happens connect 'Output A' as the output signal and use 'Meter 0Volts' as signal ground. Do not connect NMEA Output B to 0V or ships ground.

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