

## **CAN 2000 Engine Gateway**



### **User Manual**

HB-EG-V1.01

Tinley Electronics Ltd., 235 Bentley Way,  
LYMINGTON, SO41 8JW  
Tel: 01590 610071 Fax: 01590 610072  
email: [electronics@tinley.net](mailto:electronics@tinley.net)  
[www.tinleyelectronics.com](http://www.tinleyelectronics.com)

## Introduction

Congratulations on your purchase of the CAN2000 Engine Gateway from Tinley Electronics.

## Disclaimer

Tinley Electronics Ltd accept no responsibility for the use of this equipment. This equipment is not designed to replace conventional navigation procedures. Information in this document is subject to change without notice. Tinley Electronics reserve the right to change its products and documentation without obligation to notify any person or organisation of such changes.

## Calibration

Note that the adjustment potentiometers have about 30 turns end to end. A faint clicking can be heard while turning past the end stops.

### Rudder Calibration

The rudder output is switched off if the 'Rudder Gain' adjustment is turned fully counter clockwise.

1. Turn 'Rudder Gain' fully clockwise. (Maximum gain, turning helm to starboard increases input voltage).
2. With helm held amidships, adjust 'Rudder Zero' for zero output.
3. Turn helm to starboard to a known angle close to, or on an end stop and adjust 'Rudder Gain' counter clockwise until the output agrees with the rudder position. Note that if the output is showing to port, continuing to turn 'Rudder Gain' adjustment counter clockwise will turn through amidships until the correct starboard output is achieved.

### Oil Pressure Calibration

The Oil Pressure analogue input overrides Oil Pressure received on CAN Bus 2 (PGN 065300 from Yanmar i8130/40/50). The Oil Pressure analogue input is switched off if the 'Oil Pressure' adjustment is turned fully counter clockwise.

For default calibration, turn the 'Oil Pressure' adjustment fully clockwise.

To calibrate the Oil Pressure to a value other than default, turn the 'Oil Pressure' adjustment until the output gauge agrees with the known input.

### Trim/Tilt Calibration

The Trim/Tilt analogue input overrides Trim/Tilt received on CAN Bus 2 (PGN 065300 from Yanmar i8130/40/50). The Trim/Tilt analogue input is switched off if the 'Trim Up' adjustment is turned fully counter clockwise.

The Trim/Tilt can be calibrated for low resistance or voltage with leg down or low resistance or voltage with leg up. The procedure is

different in each case:

### **Low resistance or voltage with leg down**

Before calibrating, turn adjustments to the following positions:

‘Trim Down’ fully counter clockwise

‘Trim Up’ fully clockwise

‘Tilt Out’ fully clockwise

Now set leg to fully trimmed down

Adjust ‘Trim Down’ clockwise until the output gauge just reads zero

Set leg to the maximum trimmed out running position, but not tilted out. This is the maximum position before the ‘trailer’ or ‘tilt override’ function fitted on some systems

Adjust ‘Trim Up’ counter clockwise until the gauge just reads 75%

Set leg to the fully tilted out ‘trailer’ or ‘parked’ position

Adjust ‘Tilt Out’ counter clockwise until the gauge just reads 100%

The gauge should now be fully working, but fine adjustments can still be made if errors are noticeable.

### **High resistance or voltage with leg down**

Before calibrating, turn adjustments to the following positions:

‘Trim Down’ fully clockwise

‘Trim Up’ fully clockwise

‘Tilt Out’ fully counter clockwise

Now set leg to the fully tilted out ‘trailer’ or ‘parked’ position

Adjust ‘Tilt Out’ clockwise until the output gauge just reads 100%

Set leg to the maximum trimmed out running position, but not tilted out. This is the maximum position before the ‘trailer’ or ‘tilt override’ function fitted on some systems

Adjust ‘Trim Up’ counter clockwise until the gauge just reads 75%

Set leg to fully trimmed down

Adjust ‘Trim Down’ counter clockwise until the gauge just reads zero

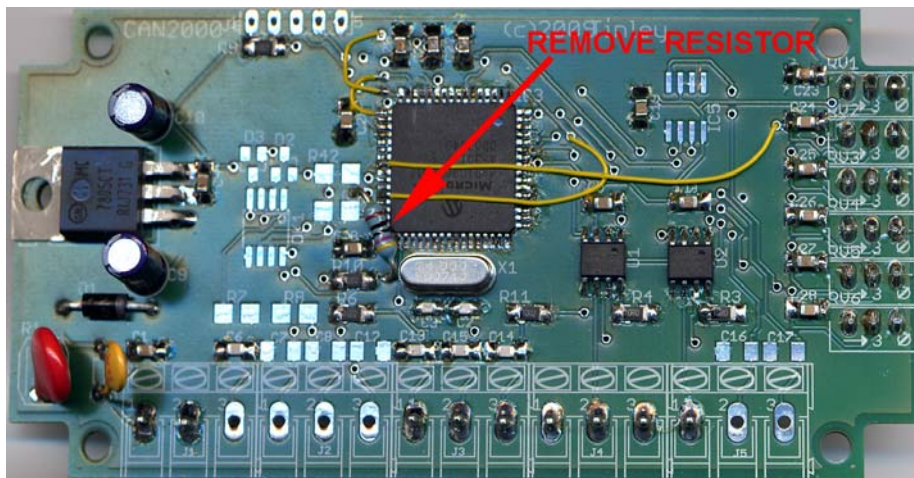
The gauge should now be fully working, but fine adjustments can still be made if errors are noticeable.

## Converting Trim/Tilt input to Voltage

The following procedure should only be carried out by a competent engineer.

The standard analogue input as supplied is for direct use with a Potentiometer. To convert the unit to 0-5 volts input, please remove the four PCB fixing screws and cut out the 470 ohm resistor, as shown in photograph below.

Please be very careful retightening screws as more than 'finger tight' may snap off pillars.





# Tinley CAN2000 Engine Gateway

## CAN Bus 1

Main bus for all devices except 'Engine' devices. All existing engine information, plus Rudder, Trim/Tilt and Oil Pressure will appear on this bus

## CAN Bus 2

Engine sub bus for engine (and interface if fitted) only. Added functions will not appear on this bus

**\*IMPORTANT\*** CAN Bus Termination  
Note that BOTH CAN Buses are separate and both require 2 x 120 ohm terminators

## Rudder Input

0-5V wrt 0V  
Take rudder sensor supply current into account when powering from ME2000 bus

## Power Supply

9-32V 90mA@12V  
ME2000 bus LEN=2

## PGN's

065300 Yanmar proprietary Engine Data  
127245 Rudder  
127488 Engine Parameters, Rapid Update  
127489 Engine Parameters, Dynamic  
126996 Product Information  
059392 ISO Acknowledge  
059904 ISO Request  
060928 ISO Address Claim

ME2000 Level B

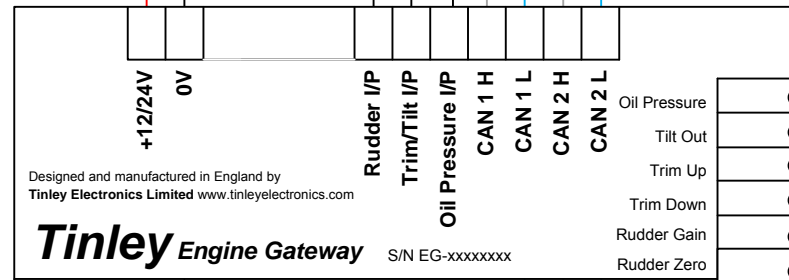
## Trim/Tilt Input

Potentiometer input 0-2kΩ (to 0V)  
(or remove pull up resistor for 0-5V)

## Oil Pressure Input

0-5V wrt 0V

Adjustments have about 30 turns end to end. A faint clicking can be heard while turning past the end stops  
Please see Calibration Instructions for adjustment details



## Software version 1.01 Description:

All PGN's are passed to/from CAN Bus 1 and CAN Bus 2 to allow transparent network management between buses. Devices connected to CAN Bus 1 will assume a direct connection to CAN Bus 2. Trim/Tilt and Oil Pressure are either extracted from PGN 065300 on CAN Bus 2 or measured on analogue inputs and added to PGN 127488 & 127489 received on CAN Bus 2 and subsequently transmitted on CAN Bus 1 using the main engines claimed address. 'Address Claim' as separate device 'Tinley Custom' on CAN Bus 1 with the Rudder PGN 127245 being added using this claimed address

## Tinley Electronics Limited

235 Bentley Way  
Lymington SO41 8JW  
UK

© Tinley Electronics Ltd. 2010

This drawing may not be copied or reproduced in any form or by any means without the prior written consent of Tinley Electronics Ltd.

Tel: +44 (0) 1590 610071

Fax: +44 (0) 1590 610072

e-mail: [electronics@tinley.net](mailto:electronics@tinley.net)

Website: [www.tinleyelectronics.com](http://www.tinleyelectronics.com)