33 Boulder Blvd. Stony Plain, AB, T7Z 1V6, Canada
www.cainstruments.com
Ph: 780-963-8930

PROCON$_{TB}$ Protocol Converter

INSTALLATION INSTRUCTIONS:

Note: The Procon$_{TB}$ has been updated and the wiring pinout has changed. These instructions are applicable to devices with serial numbers 5000 and higher *only*.

1. The terminal strip connections are numbered from 1 to 12, from the leftmost terminal to the rightmost terminal (while viewing the terminals from the front, with the LEDs facing up). See Figure 1.

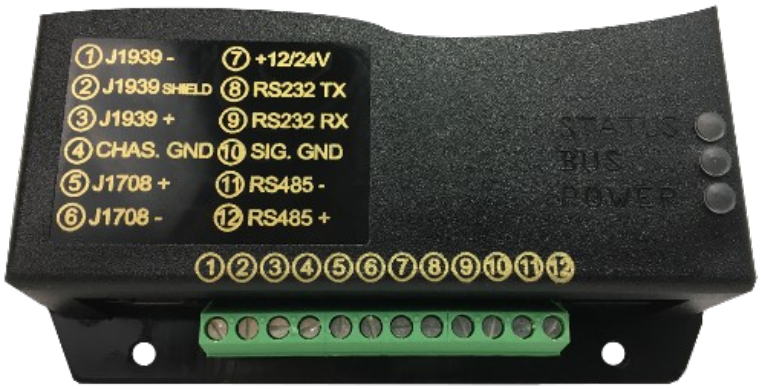

Figure 1: Procon$_{TB}$ Connector Pinout

2. Connect +12/24 volt power to terminal 7 and ground to terminal 4, as indicated on the product label. The red LED (bottom) on the Procon$_{TB}$ should be illuminated to indicate proper power and ground connections.

3. Connect the plus and minus bus wires of the engine bus to the appropriate terminals of the Procon$_{TB}$ connector. If the unit is for J1939 use, connect to +J1939 (terminal 3) and -J1939 (terminal 1) terminals. If the unit is for J1587/1708 use, connect to +J1708 (terminal 5) and -J1708 (terminal 6) terminals. The cable should be a twisted pair with shield grounded at the engine end only.

4. When data is detected on the J1587/J1708 or J1939 databus, the green LED (middle), labeled “BUS,” will illuminate. If the green LED is not on, try reversing the wires. The voltages of the bus wires can be measured to confirm the bus is operational. *All wire voltages must be measured relative to ground.* On a

J1587/J1708 unit, the J1708+ wire should read between 3.5V and 4.5V and the J1708- wire should read between 0.5V and 1.5V. On a J1939 unit the J1939+ wire should read between 2.5V and 3.5V and the J1939- wire should read between 1.3V and 2.3V.

5. If the unit is for J1939 use, the J1939 bus must have proper terminating resistors (supplied) in place. The Procon$_{TB}$ does not include built-in terminating resistors due to the fact that it can be connected at any point on the bus, not necessarily at either end points.
    a) The terminating resistors are comprised of two 120 ohm resistors connected at both physical ends of the bus, connected between J1939+ (terminal 3) and J1939- (terminal 1).
    b) A properly terminated J1939 bus should see a total of approximately 60 ohms between J1939+ and J1939-.
    c) If the Procon$_{TB}$ is being added to an existing J1939 bus, these resistors may already be in place.
    d) If the bus is relatively short (less than 10 feet), it is possible to use only a single 60 ohm resistor at one end of the bus, however, this does not comply with J1939 (CAN 2.0B) standards.

6. Connect the ModBus wires to the appropriate terminals of the Procon$_{TB}$ connector. For RS232, connect the master's TX wire to the Procon$_{TB}$'s RX wire (terminal 9) and the master's RX wire to the Procon$_{TB}$'s TX wire (terminal 8). For RS485, connect RS485+ to terminal 12 and RS485- to terminal 11. The Procon$_{TB}$ should now be ready for ModBus requests.

7. An additional status LED (top) is provided for diagnostic purposes:
    a) If the LED is green, then valid Modbus requests are being received
    b) If the LED is off, then no Modbus requests are being received
    c) If the LED is flashing yellow, then Modbus requests are being received, but they are invalid or not addressed to the Procon$_{TB}$