

# CP10A INTERFACE MODULE INSTRUCTIONS

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VER 1.02

## Theory of operation

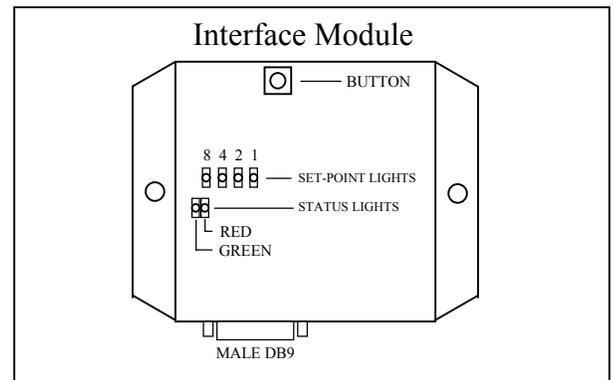
The interface module reads the frequency from an EI or Vision capacitive fuel level probe and converts this to a (0-5) volt output. Set-points are used to calibrate the output of the probe to read linearly from empty to full. The readings are averaged over a period of 30 seconds to eliminate the effects of fuel slosh. The Chelton EAU uses the **11S** mode and will not require the fuel level to be calibrated twice as was needed with the older model adaptors.

## General Calibration Information

- ❑ The converter can be recalibrated an unlimited number of times.
- ❑ The standard calibration is **11 set-points (11S)** with a calibration sequence of **empty to full**.
- ❑ **1 set-point (1S)** and **2 set-point (2S)** modes are also supported.
- ❑ Optional **full to empty** calibration for **11S** and **2S**.
- ❑ For the **1 set-point** mode only the **empty** is calibrated.
- ❑ Calibration can be entered or restarted at any time.
- ❑ Converters are shipped in **11S** mode and **empty** calibration activated. When power is applied the right light will be flashing.
- ❑ To re-start calibration mode, hold the button down while turning on the power.
- ❑ Power can be removed during the calibration process after any set-point. When power is returned the probe will continue at the same set-point, unless it is the first set-point and a previous calibration had been completed.
- ❑ While at the **empty set-point** holding the button down until all 4 set-point lights are flashing, changes to the **full to empty** calibration mode.
- ❑ Each set-point takes about 10 seconds to calibrate. The set-point lights stop flashing during the calibration.
- ❑ During the calibration sequence the status light is RED when there isn't any frequency at the input, and GREEN if there is. At the start of a set-point the green light will be solid, as the fuel level changes the green light will start to flash, the more it changes the quicker it will flash.
- ❑ The 0-5V output will be zero volts at the start of a new set-point and increase as the level changes. The output is .001V/HZ. 1V=1000HZ.
- ❑ There is a frequency meter mode with scaling for trouble shooting.
- ❑ While in normal operation all set-point lights are off and the green status light will flash once every 2 seconds.
- ❑ The EI probes require the blister pack to function. RED wire needs +5V, WHITE is the frequency out, and the BLACK is ground.
- ❑ Chelton EAU uses the **11S** mode and 10% of the total fuel for each set-point.

## Calibration

- ❑ **Empty to Full** calibration: Start with the tank empty.
- ❑ **Full to Empty** calibration: Start with the tank full.
- ❑ Hold down the button while turning the power on. Observe that all the lights are on. The lights have a code that indicates the last completed calibration mode. See POWER-ON-STATUS. The status lights should be flashing red and green. While the button is held the 0-5v output will be 5 volts (useful for trouble shooting).
- ❑ Release the button. The right set-point light will be flashing. Indicating **Empty** set-point. The set-point mode is **11S**, use the Mode Select function to select **2S** and **1S**.
- ❑ If the lights start sequencing from the left to the right you have held the button for more than 5 seconds then the Mode Select function has been entered. Release the button and turn power off to re-start.
- ❑ At this point if the fuel tank is full, and a **full to empty** calibration is desired: hold down the button until all 4 set-point lights start flashing. Release the button and the lights for set-point 11 (**Full**) will be flashing.
- ❑ The status light should be solid green indicating that the fuel level is being read, and the level has not changed. The 0-5V output will be 0V. RED status light indicates no reading.
- ❑ There is always some fuel that can not be read at **empty** and **full**. The status light and 0-5V are used during calibration to detect when the fuel level as measured has changed. It is useful to know the amount of fuel it takes before it can be detected by the fuel sensor. This is also used for trouble shooting. 2 set-points should not be at the same fuel level reading. The green status light should always be flashing before a set-point is entered unless it is the start of a calibration at **empty** or **full**.
- ❑ The 0-5V output during calibration is .001V/HZ of change from previous set-point. The green status light will start flashing when .5 percent frequency change is detected. The light will flash quicker the greater the change with the maximum flash rate is reached at 5% total change. A typical change over the **empty to full** range is 70 - 100%.
- ❑ Press the button. The current set-point lights will stop flashing and stay on until the calibration is taken and stored. Continue with the next set-point. For the Chelton EAU add 10% of the fuel total for each set-point using the **11S** mode (default).



### SET-POINTS

#### 8421

0001 = 1 (EMPTY)  
0010 = 2  
0011 = 3  
0100 = 4  
0101 = 5  
0110 = 6  
0111 = 7  
1000 = 8  
1001 = 9  
1010 = 10  
1011 = 11 (FULL)

1 = FLASHING 0 = OFF

### ERROR CODES

1000/0001 unsupported mode  
1001/0110 eeprom error  
1100/0001 illegal state  
1110/0001 unknown option

1 = ON 0 = OFF

### POWER-ON STATUS

1111 = 11 Set-point  
111F = 1 set-point  
11F1 = 2 set-point

1 = ON F = FLASHING

### MODE SELECT

#### 8421

0001 = 1S, single set-point  
0010 = 2S, 2 set-points  
0100 = 11S, 11 set-points  
1000 = Frequency meter

### FREQUENCY METER

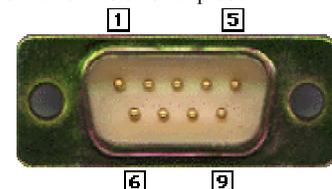
#### 8421

1000 = 1V/10KHZ  
0100 = 1V/5KHZ  
0010 = 1V/2KHZ  
0001 = 1V/1KHZ  
Press the button to change the scale.

To enter mode select: With power to the module off hold the button down and turn power on. After 5 seconds the mode select options will be displayed. Release the button when the mode to be selected is displayed. The probe is shipped in the **11S** mode.

### DB9 PINOUT

- 1 - +5 Volt supply output to fuel probe. (RED/BLU)
- 2 - Frequency input from fuel probe. (BLU)
- 3 - Signal output to EIS. (0-5V, 5 ma max) (YEL)
- 4 - Ground (BLK)
- 5 - +12V to +28V IN, 10 ma. Use 1A Fuse. (RED)
- 6 - Not used
- 7 - Not used
- 8 - Not used
- 9 - Ground for Vision or EI probe. (BLK)



## Disclaimer

This fuel probe is for reference only, the operator is responsible to visually inspect fuel quantities prior to use. Relying solely on a fuel gage could result in unexpected engine stoppage. Because Princeton Electronics, Inc. does not install the fuel monitoring system; we rely solely on the installer to insure proper installation.