

INSTRUCTION MANUAL

ENGINE MONITOR VOTT MODEL: 023-4400-0 3 YEAR WARRANTY



INTRODUCTION

The VOTT meter is an ideal engine monitor, which displays data via the J1939 CAN Bus. The meter utilizes a large LCD screen to simultaneously display DC volts, oil pressure, temperature and tachometer. It provides accurate digital metering and user programmable alarms. When alarm thresholds are exceeded, the built-in 85 dB alarm will sound and the affected display reading will change to RED for the out-of-limit condition. Additionally, a new feature always for user selectable baud-rate, 50k – 1000k bits/sec.

The meter is waterproof and rugged with a large color LCD display screen. The screen read-out is divided into 4 display sections allowing the operator quick, and accurate assessment of engine conditions.

DC volts are displayed from 9.5 – 33.0 VDC. Oil pressure is displayed from 0 – 99 PSI. Additionally engine temp and RPM are displayed, 100 – 250 F and 0000 – 9999 RPM, respectively.

The meter is powered by 12-24 VDC. Four levels of backlighting can be selected for optimal performance. All set-up, calibration and alarm values are saved to non-volatile memory. The system is complete with all necessary mounting hardware. The large LCD display draws only 0.08 amps at full brightness and only 0.02 in sleep mode. The meter comes with a 3 year warranty.

I. WIRING

The VOTT comes with a 33 inch length six conductor cable with a Deutsch Connector #DT04_6P attached.

The VOTT will operate from 9.5 to 33.0 VDC input. It displays data via J1939 CAN Bus.

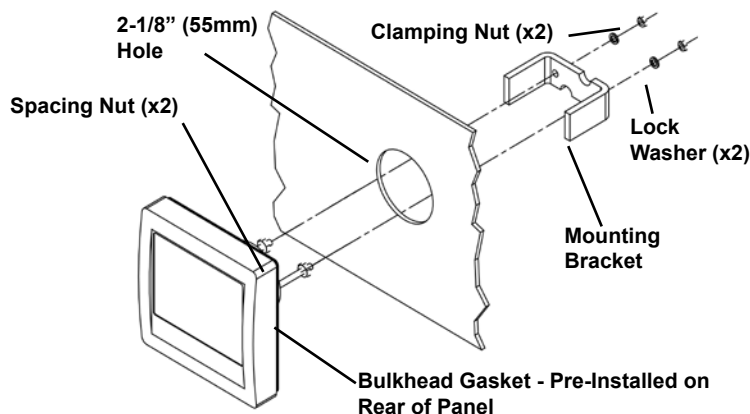
Meter Deutsch connector pin ID is

Pin	Signal	Wire Color
1	+9.5- 33.0 VDC	Red
2	Power/Signal Ground	Black
3	J1939+	Yellow
4	J1939 -	Green
5	External buzzer 12 VDC alarm output +	White
6	External buzzer 12 VDC alarm output -	Blue

II. MOUNTING

The VOTT requires a 2-1/8" diameter round hole for mounting. The meter comes with a aluminum U shaped mounting bracket and #8-32 nuts and lock washers to secure bracket.

See Figure 1. (FINGER TIGHTEN ONLY, DO NOT USE TOOLS)



III. MENU NAVIGATION

1. Main Page

When the instrument is powered up it displays the "Main" page. The "Main" page displays: ENGINE RPM, OIL PSI, ENGINE TEMP F (OR C) and BATT VOLTS. Values are displayed in GREEN if within acceptable alarm set limits or RED if out of limits condition exists.

ENGINE RPM 2971	OIL PSI 53
ENGINE TEMP F 125	BATT VOLTS 13.8

From MAIN PAGE display:

- Pressing the ▲ key for ½ second (longer than a quick press but shorter than 2 seconds) will cause a white ALARM bell symbol to be displayed and enable the alarms.
- Pressing the ▼ key for ½ second (longer than a quick press but shorter than 2 seconds) will disable the alarms and remove the white alarm bell symbol.

ENGINE RPM 2971	OIL PSI 53
ENGINE TEMP F 125	BATT VOLTS 13.8

ENGINE RPM 2971	OIL PSI 53
ENGINE TEMP F 125	BATT VOLTS 13.8

- Press the "+" key momentarily while an alarm condition exists will silence the audible and external alarm as indicating by Red "X"
- Pressing the + key for ½ second (longer than a quick press but shorter than 2 seconds) will increment the backlight level through four different intensities.

2. Menu Tree:

Press *

A) Secured Access Pages

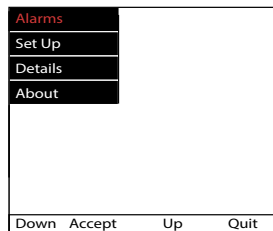
While in the Main page or Generator Hours page, a Quick press of the * key brings up the Security Access page and a default number 5000 is displayed in the ACCESS CODE box.



Use the ▲ and ▼ keys to scroll to the correct access code and press “ACCEPT” to enter that number (default ACCESS CODE is 1234). The longer you hold down the p or q key, the faster the scrolling of numbers. False entry results in Main Page being displayed. Entry of correct access code unlocks the instrument and brings up the following menu:

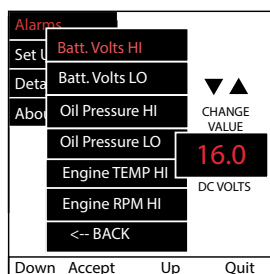
B) Category:

- I.ALARMS
- II.SETUP
- III.DETAILS
- IV.ABOUT



I. ALARMS Menu:

- BATT VOLTS HI
- BATT VOLTS LO
- OIL PRESSURE HI
- OIL PRESSURE LO
- ENGINE TEMP. HI
- ENGINE RPM HI
- <-- BACK



Alarm Ranges:

Engine RPM: 0000 - 9999 is set to 1300 (whole numbers only)

Oil Pressure: Low/High settable to 00 - 99 (whole numbers only)

Engine Temp: High settable to 100 - 250

Battery Volts: Low/High settable to 9.0 - 33.0

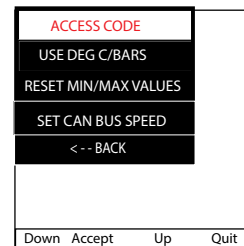
II. SET UP:

ACCESS CODE

USE DEG C/BARS (or use DEG F/PSI)

RESET MIN/MAX VALUES (see Details page)

<-- BACK



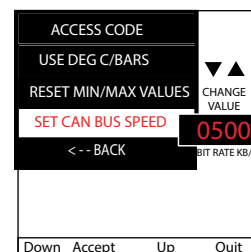
-ACCESS CODE SETTING

If no key has been pressed for 60 seconds from any of the menus or submenus, the instrument will revert to displaying the Main Page.

The ACCESS CODE is required to access alarm settings, and instrument setup menus. Set the ACCESS CODE to a number from 0000 to 9999 by using the ▲ and ▼ keys then press the + key to accept. The factory default is set to 1234. For S/W: 2.1 or higher default is set to 4321.

If the ACCESS CODE is ever forgotten, the instrument can be reset back to factory default. Reset to “Factory Defaults” by pressing and holding the ▲ and ▼ keys while applying DC power. Answer “Yes” by pressing key labeled “Yes”. This will reset password to 1234. Caution: Resetting to factory default will reset all alarm settings as well.

-SET CAN BUS SPEED



Serial #'s starting with the letter 'B' can be adjusted to various Can Bus Bit Rates: 50,125,250,500,1000 K Bits. Units are factory set to 500K.

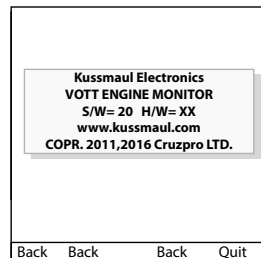
-PRESS ACCEPT

The Bit Rate can be changed by accessing the SET UP category and selecting "SET CAN BUS SPEED" use Up/Down arrows to set changes in VALUES.

III. DETAILS: Displays details page. SN, Min/Max, Alarm Values, etc.

DETAILS	
SERIAL NUMBER: 111003008	UNITS
ACCESS CODE: 4999	DEG F
INSTRUMENT HOURS: 1.1	PSI
DC VOLTS ALARM HI: 16.0 LO: 11.3	
OIL PRESS ALARM HI: 75 LO: 9	
ENG. TEMP. ALARM HI: 884	
RPM ALARM HI: 3500	
OIL PRESSURE MAX: 99 MIN: 2	
BATT. VOLTS MAX: 99.9 MIN: 12.0	
MAX RPM: 9831 MAX TEMP: 119	
BACK BACK BACK QUIT	

IV. ABOUT: Displays splash screen, SW version, HW version and copyright information.



Additional Information:

- Low Oil Pressure only updated if Rpm>100 (ie: engine running)
- Battery Voltage limited to 99.9 (only 3 digits for display)
- Oil Pressure limited to 99 PSI (only 2 digits for display)
- Engine Temperature 32 deg F (0 deg C) minimum (avoid negative numbers when in Deg C)
- MaxRpm only updated if Rpm > MaxRpm+10 (help prevent exceeding max number of Flash writes)
- "LOST COMM" message displayed if no J1939 data received for 10 or more seconds. Restore display on valid data or any key
- A press of any button activates/restarts 5 minute alarm "silence" timer
- Don't allow INSTRUMENT hours to increment in Sleep mode

SPECIFICATIONS

Power Supply: 9.50 to 33.00 VDC, @ 80mA

Operating Temperature: 32° to 122° F (0° to 50° C)

Size: 4.3" x 4.3" x 3.5" deep (110 x 110 x 89 mm)

Display Data:

Engine RPM: 0000-9999 (or as provided by J1939)
On screen title "ENGINE RPM"

Oil Pressure: 0199 PSI (or as provided by J1939).
On screen title "OIL LSI" (factory default). User selectable for Millibars or European standard. On Screen "MBRS".

Engine Temp: 100-250° F (or as provided by J1939)
On screen title " ENGINE TEMP F" (factory default).
User selectable for Centigrade, on screen title "ENGINE TEMP C"

Battery Volts: 9.5 - 33.0 On screen title "BATT VOLTS". Displays "COMM LOSS" & red dashes with loss of J1939 DATA. No alarm on COMM LOSS.

Accuracy:

Battery Volts: As provided by J1939

Engine RPM : As provided by J1939

Engine Temperature: As provided by J1939

Oil Pressure: As provided by J1939

Alarms: Engine RPM, Low/High Oil Pressure, High Engine Temp. and Low/High Battery Volts

Alarm Output: 12 VDC, 50 mA max.

INSTALLATION RECORD

DATE INSTALLED _____

INSTALLED BY _____

VEHICLE IDENTIFICATION _____

VEHICLE OWNER _____

WARRANTY POLICY

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