
MANUAL

enGage™ IV
DIGITAL INSTRUMENTATION

1.0 Technical Specifications

1.1 Electrical

Power Requirements

Auto-ranging - 12V to 80V DC \pm 25% (9V to 100V DC).

Operating Current

Total system current entering the V+ pin is a function of system voltage, LED alert/warning icons, backlight, LCD heater and sender loads. The table below illustrates the typical and maximum operating current for a panel with a V+ voltage of 12V with the sender inputs left as open circuit. The LCD heater circuit typically consumes 310mA when active. The backlight circuit typically consumes 30mA. For higher V+ voltages the operating current is reduced accordingly.

enGage™IV Operating Current (mA)

V+	Without Backlight		With Backlight		With LCD Heater on	
	Typ.	Max	Typ.	Max	Typ.	Max
12.0	30	40	60	70	370	380

Operating currents for V+ of 24, 36, 48, 60, 72 and 80 VDC are lower than this listing.

1.2 Mechanical

Size and Weight

Item	Enclosed Unit (T)	PCB & LCD Module Only (P)
Bezel H x W	120 x 180 mm	N / A
Case H x W	91.8 mm x 137.8 mm	82.6 mm x 128.5 mm
Depth	53.5 mm	38.8 mm
Weight	400 g max	200 g max

Display

Dot Matrix LCD (128 X 240 pixels), Backlit

Hour Meter Range & Resolution

Hour Meter: 99,999.9 Total Hours, 0.1 hours resolution.

Maintenance Monitor: 999 Total Hours (countdown), 1 hour resolution

Panel Cutout

92 (+ 0.8/-0.0) mm x 138 (+1.0/-0.0) mm

1.3 Environmental

Operating Temperature Range: -40°C to +70°C

Storage Temperature Range: -50°C to +90°C as per SAE J1455, section 4.1.1.5.

**Thermal Cycling
(Applicable To Enclosed Units Only):** As per SAE J1455 section 4.1.3.1. to +80°C

**Thermal Shock
(Applicable To Enclosed Units Only):** As per SAE J1455 section 4.1.3.2. to +80°C

**Humidity
(Applicable To Enclosed Units Only):** 95% RH (non-condensing) at +38°C as per SAE J1455, section 4.2.3.

**Shock
(Applicable To Enclosed Units Only):** SAE J 1378 March 83. Amplitude 44 - 55g, half sine, 9-13 ms duration.

**Vibration
(Applicable To Enclosed Units Only):** SAE J 1378 March 83. Double amplitude of 1.53 mm with frequency sweep from 10-80-10 Hz (20 g max.) at intervals of 1 minute.

**IP Ratings
(Applicable To Enclosed Units Only):** Face sealed to IP65.
Rear seal Sealed to IP40.

2.0 Installation

2.1 Terminal Assignments – Main connector (J1)

Pin#	Function
1	Battery V +
2	Common
3	Sender1 input (R, V, I)
4	Sender2 input (R, V, I)
5	Sender3 input (R, V, I, Frequency*)
6	Sender4 input (R, V, I, Frequency**)
7	Switched Input 1
8	Switched Input 2
9	Switched Input 3
10	Switched Input 4
11	Switched Input 5
12	Switched Input 6
13	Keyswitch Input
14	MOSFET output 1
15	MOSFET output 2
16	MOSFET output 3
17	Range Select V + (BDI see table in Section 3.0)
18	n/c
19	LCD Heater V +
20	Dimming Control

*Speedometer, Odometer

**Tachometer

Note: Sender 1, 2, 3 and 4 inputs are limited to 60V max. Voltages beyond that, will damage the instrument.

2.1 Terminal Assignments – Communications Connector (J2)

Pin#	Function
1	CAN H
2	CAN L
3	GND
4	n/c
5	CAN Terminator 1
6	CAN Terminator 2
7	n/c
8	n/c
9	SCI Rx
10	GND
11	SCI Tx
12	+7V Out (<10mA – unregulated)

2.2 Mounting

Enclosed unit snaps into panel cutout using molded-in fingers. An optional mounting bracket (Curtis P/N 17644307) can be used for additional support. Module units are attached via screw holes in the four corners of the PCB.

2.3 Main Connector

20-pin AMP Mini Universal Mate-N-Lok. (Mating connector: AMP part number 770585-1).

2.4 Communications Connector

12-pin AMP Mini Universal Mate-N-Lok. (Mating connector: AMP part number 770581-1).

2.5 User Interface


Curtis enGage™ IV series instruments include 3 front panel buttons for navigating through a menu system and programming the following specific functions:

- Time Of Day Clock
- Battery Discharge Indicator
- Maintenance Intervals
- Settable Hour Meters
- Units - Metric / English Conversion



2.6 Configuring Your Panel

In order to configure an enGage™ IV panel, main power must be applied (12 – 80VDC) to V+ and V- and the keyswitch must be active. Following a power up sequence, the OEM logo (if applicable) will be displayed. Once the start-up process is complete, the specified default (normal) monitoring screen will appear.

2.6.1 enGage™ IV Menu System

The menu system is activated by pressing and holding the select  button for 3 seconds and then releasing when main menu appears.

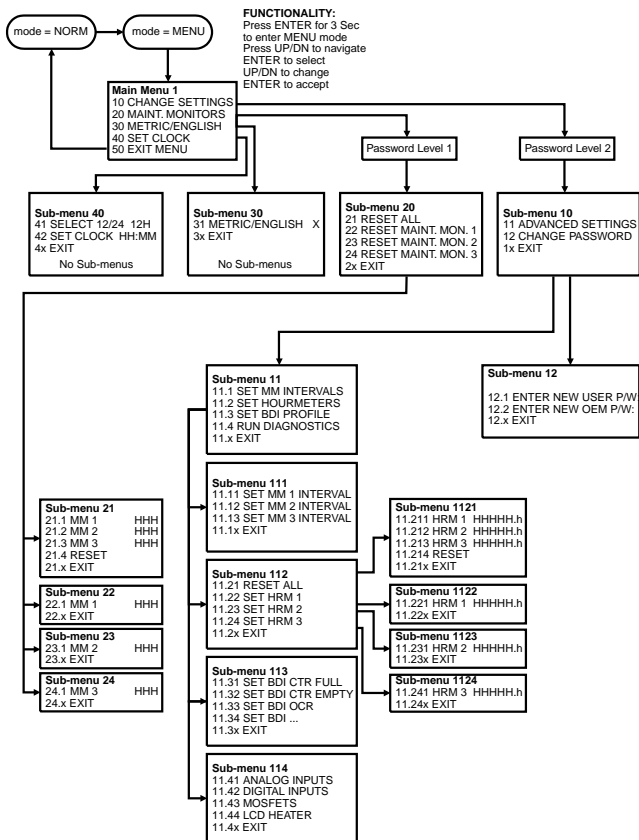
2.6.2 Choosing Items Within Menu System

Items are selected within each menu utilizing the up / down   arrows on right side of panel. Once the desired item is chosen / outlined, press the select button once and release. You will then see a new set of choices for the previously selected item.

2.6.3 enGage™ IV Menu System Navigation

The diagram below illustrates the navigation through the menu system.

enGage IV Menu System



- NOTES: 1. ALL MENU EXIT TO THEIR PARENT MENU
 2. SOME ENTRIES NOT AVAILABLE IF FUNCTION IS NOT AVAILABLE
 3. KEYSWITCH OFF/ON EXITS THE MENU

2.6.4 Changing Parameters Within Menu System

2.6.4.1 Maintenance Monitor

Starting from the main menu, choose "**Maint Monitors**" then "**Reset All**".

Return to the main menu by utilizing the up / down arrows on panel and select "**Exit**".

2.6.4.2 Metric / English

Starting from the main menu, choose "**Metric / English**" then "**Metric / English**" again. Once the left button is pressed to select this choice, a box will appear around the E / M portion of the item. Utilizing the up / down arrows on the right side of panel, enter E or M. Once the desired choice is made, press the select button on the left side of the panel to accept the selection.

Return to the main menu by utilizing the up / down arrows on panel and select "**Exit**".

2.6.4.3 Set Clock

Starting from the main menu, choose "**Set Clock**" then "**Set Clock**" again. Once the left button is pressed to select this choice, a set of "up arrows" will appear under the hour digits on left portion of the item. Utilizing the up / down arrows on the right side of panel, enter the desired time in hours. Then press left button on front panel to accept the data. The "up arrows" will then move to the minutes portion of the time. Utilizing the up / down arrows on the right side of panel, enter the desired time in minutes. Once the desired choice is made, press the select button on the left side of the panel to accept the data.

Return to the main menu by utilizing the up / down arrows on panel and selecting "**Exit**".

2.6.4.4 Advanced Settings / Set Hour Meter

Starting from the main menu, choose "Advanced Settings" then, choose "Set Hour Meters". From the next menu listing choose "Reset All".

Return to the main menu by utilizing the up / down arrows on panel and select "Exit".

2.6.4.5 Exiting Menu Mode

This can be accomplished by selecting the "Exit" menu choice.

3.0 Operation

Buttons are utilized for menu navigation as described earlier.

3.1 Auto-range (BDI)

Curtis enGage™ IV has an operating voltage range for V+ from 12 to 80 VDC +/- 25%. The source to which pin J1-17 is connected will configure the instrument for the correct Battery Discharge Indicator system voltage. Refer to table below for J1-17 connection depending on voltage range desired.

Pin J1-17 Connection Guide

System Voltage	J1-17 Connection
12	No Connection
24	V+
36	V-
48	No Connection
60	V+
72	V-
80	No Connection

When configured to display other instruments (not BDI), terminal J1-17 is unused. Note that for all analog sender inputs (J1-3, J1-4, J1-5, J1-6), the sender range is factory configured.

4.0 Trouble-shooting

General

Problem

Possible Cause

No Display

V+ (keyswitch) voltage not present at J1-13.
Battery voltage too low. Battery terminals not connected.

BDI Function

Problem

Possible Cause

No Display

Terminals Not Connected.
Improper Voltage – Check Pin J1-17

Stays At FULL

Instrument voltage range selected does not match battery voltage.
Range Select V+ connected to wrong terminal.

Will Not Reset

Instrument voltage does not match battery voltage.
Battery not fully charged.
Battery may be defective.

Resets Without Charging Battery

Not connected directly to battery terminals.

Empty Too Soon

Range Select V+ connected to wrong terminal.
Instrument voltage does not match battery voltage.
Terminals not connected directly to battery.

Sender Function

Problem

Possible Cause

No Display

Terminals not connected.
Improper voltage.

Stays At
Maximum/Minimum

Sender or Sender Connection Problems.
Sender connected to wrong terminal.
Incorrect sender used.

Maintenance Function

Problem

Possible Cause

Will Not Reset

Procedure as described in Section 2.6 not being followed.

5.0 Maintenance

The enGage™ IV 3210 series is not serviceable.



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