DYNALCO®

D-100

CANbus J1939 Engine Monitor

Installation and Operation Manual

Rev. D

Barksdale®
CONTROL PRODUCTS
CRANE | Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

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IMPORTANT - PLEASE READ BEFORE PROCEEDING!

The model D-100 engine monitor is designed for reliable and rugged operation on engines that communicate with the CANbus J1939 protocol. This product has been designed and tested to meet the demands required in many industrial locations. The performance is directly related to the quality of the installation and knowledge of the user in operating and maintaining the instrument. To ensure continued operation to the design specifications, personnel should read this manual thoroughly before proceeding with installation, operation and maintenance of this instrument. If this product is used in a manner not specified by Barksdale, the protection provided by it against hazards may be impaired.
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 WARNING

- **The content of this document is subject to change without prior notice.**
- **Failure to follow proper instructions may cause any one of the following situations to occur: Loss of life; personal injury; property damage; damage to this instrument; and warranty invalidation.**

  For clarification of instructions in this manual or assistance with your application, contact Barksdale as below:
  Tech Support: Technical-dynalco-support@barksdale.com or 1-866-227-8528
  Customer Care: Sales-Dynalco@barksdale.com or 1-800-835-1060

  Or by mail:
  Barksdale Inc.
  Barksdale® and Dynalco® Products
  3211 Fruitland Ave
  Los Angeles, CA 90058

- **Additional manuals are available at www.dynalco.com**

- **Follow all warnings, cautions, and instructions marked on and supplied with the product.**

- **Use only qualified personnel to install, operate, program and maintain the product.**

- **Educate your personnel in the proper installation, operation, and maintenance of the product.**

- **Install equipment as specified in the installation section of this manual. Follow appropriate local and national codes. Only connect the product to power sources and end devices specified in this manual.**

- **Tampering or unauthorized repair of this product can affect the performance and cause unsafe operation of your process.**

1. PRODUCT OUTLINE

Model D-100 CANbus Engine Monitor displays J1939-compatible engine/transmission data.
It is highly recommended to read this manual before use.

The software parameters can be configured runs on the D-100 display with five soft keys, providing a flexible and intuitive Human-Machine Interface (HMI). The 5 soft keys give access to a graphical menu layout that uses easily-understood and standard icons to show the key's current function. This feature allows the operator to select the required engine/transmission data and display it in the following formats:

- Digital values
- Analog gauges
- Alarm messages

In addition, various diagnostic screens are offered on the unit, permitting detailed investigation of the engine and transmission data stream. The underlying structure and its interaction with the soft keys are further explained in the succeeding section. Users can customize some of the displayed data by accessing the Configuration menu, for instance, to show metric or imperial units, and several parameters such as the full-scale reading of gauges.

2. HOW TO ORDER

2.1. Part Numbers

Part Number	Description
D-100	CANbus Monitor + Nylon Studs & Thumbnuts
D-100-B	CANbus Monitor + Nylon Studs & Thumbnuts + Mounting Bracket
D-100-C	CANbus Monitor + Nylon Studs & Thumbnuts + Cable Harness Assembly
D-100-B-C	CANbus Monitor + Nylon Studs & Thumbnuts + Mounting Bracket + Cable Harness Assembly

2.2. Accessories

Part Number	Description
270A-105560	Cable Harness – 3 ft. length with 2x Deutsch Connectors
240D-13177	Mounting Bracket
D-100-KIT	Hardware Kit: 4x M4 Nylon Studs + 4x Thumbnuts
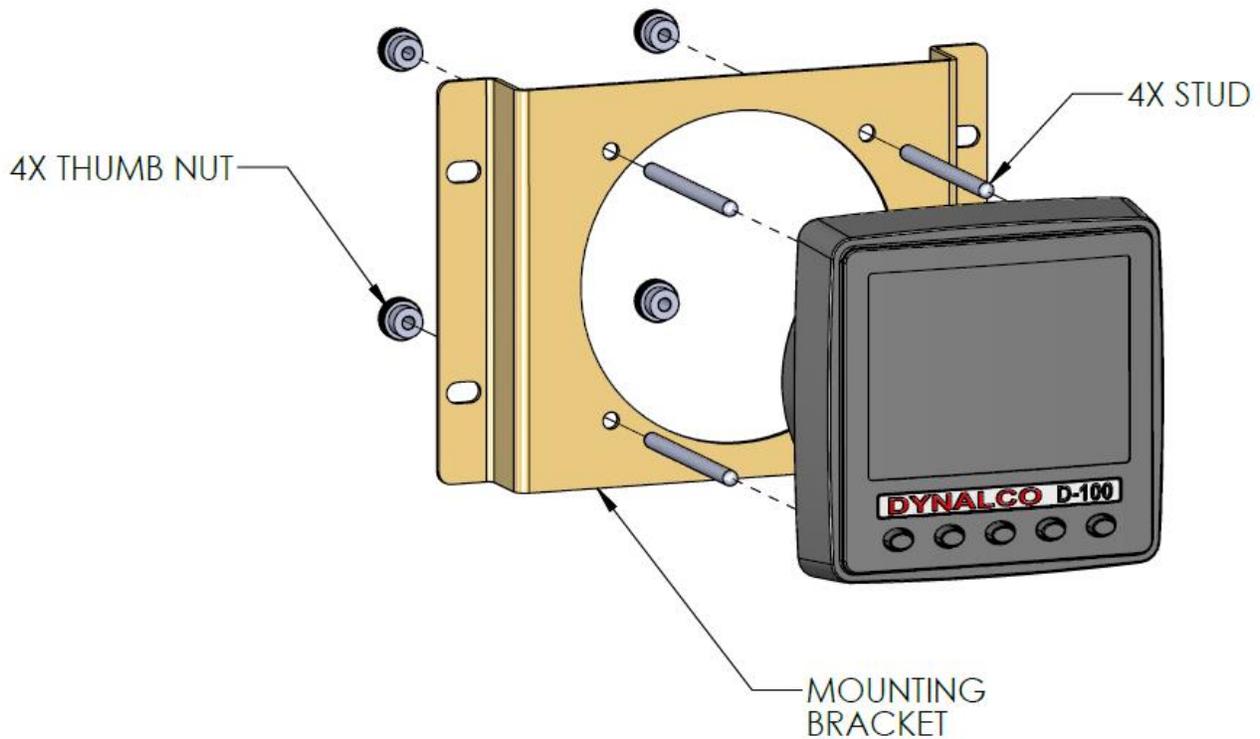
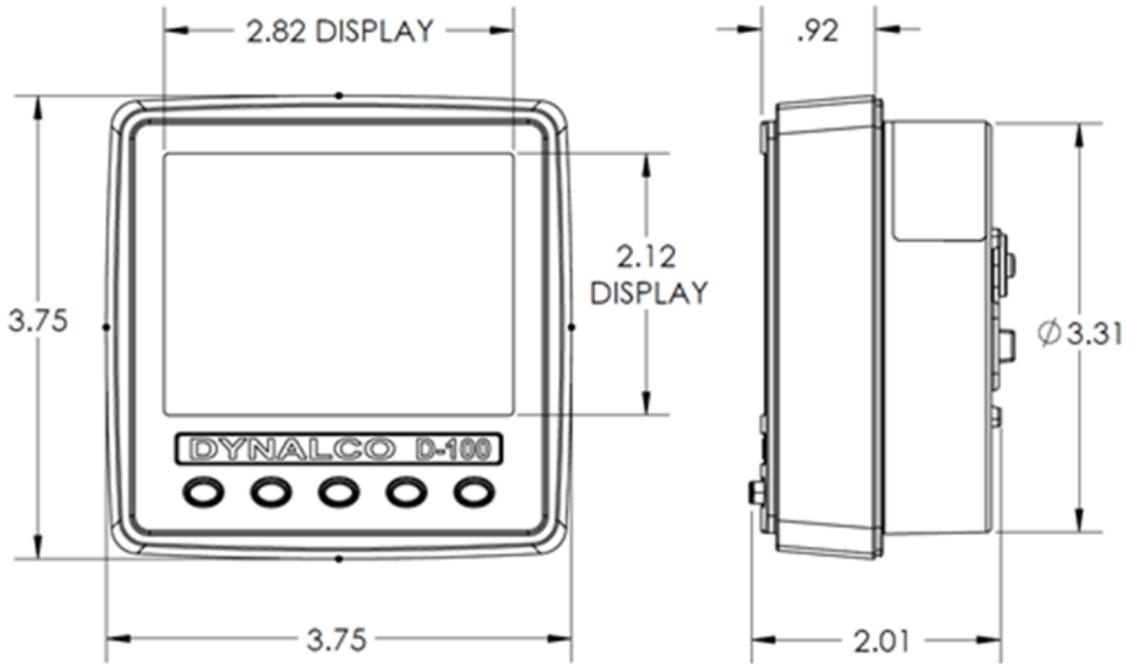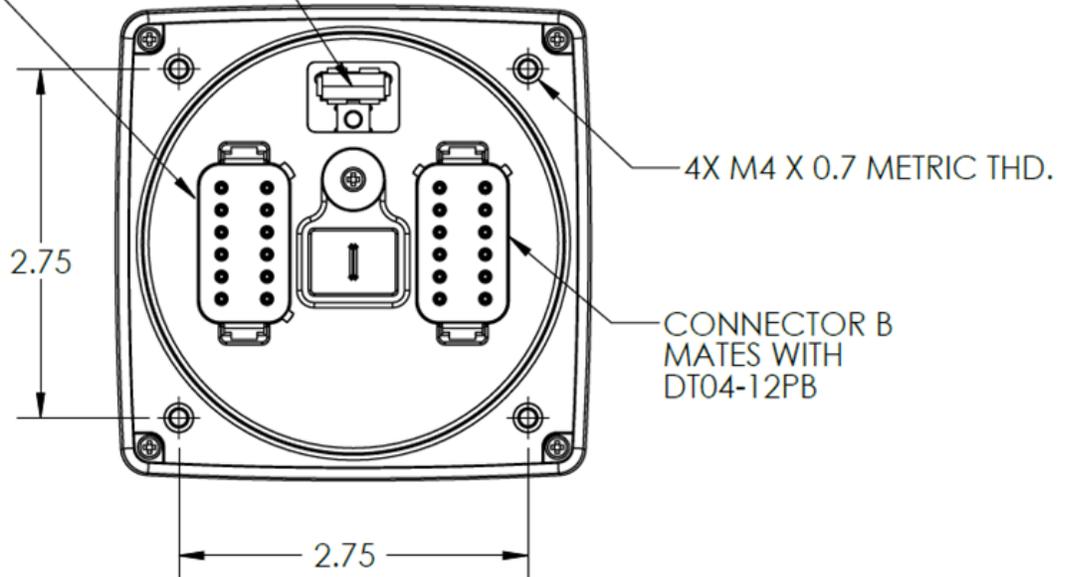| 3. DISPLAYED DATA IF RECEIVED FROM THE ENGINE AND TRANSMISSION		FAULTS "(Suspect Parameter Number) Available With Relevant Message Such As Too High/Low"
ELECTRICAL	**MISCELLANEOUS**	Engine coolant pressure
Electrical Potential	Torque Convertor Lock-Up Engaged	Accelerator Pedal Position
Battery Potential Switched	Current Gear	Engine Load
Net Battery Current	Selected Gear	Fuel pressure
Alternator Potential	CANTX Disable	Fuel level
Alternator Current		Water in fuel
		Engine Oil level
FUEL	**PERCENTAGE**	Engine Oil filter differential pressure
Fuel Rate	Fuel Level (inc. Diesel Exhaust Fluid)	Engine Oil pressure
Instantaneous Fuel Economy	Acceleration Position	Boost Pressure
Trip Fuel Economy	Throttle Position	Intake manifold temperature
Trip Fuel	Engine Oil Level	Air inlet pressure
Trip Fuel Rate	Coolant Level	Barometric pressure
Total Fuel Used	Estimated % Fan Speed	Engine coolant Temperature
Fuel Leakage 1	Actual Engine % Torque	Coolant level
Fuel Leakage 2	Torque Use at RPM	Transmission oil pressure
PRESSURE	**SPEED**	Crankcase pressure
Fuel Delivery Pressure	Input Shaft Speed	Battery voltage - switched
Barometric Pressure	Output Shaft Speed	Battery voltage - actual
Auxiliary Pressure 1	Engine Speed	Exhaust temperature
Boost Pressure	Turbo 1 Speed	Fuel temperature
Air Inlet Pressure	Engine Desired Operating Speed	Engine oil temperature
Air Filter 1 Differential Pressure	Navigation Wheel based Vehicle Speed	Transmission oil temperature
Injector Metering Rail 1 Pressure		Fuel rate
Injector Metering Rail 2 Pressure	**TIME**	Engine speed
Coolant Pressure	Total Engine Hours	Total Engine hours
Engine Oil Pressure	Trip Engine Hours	Total Fuel used
Transmission Oil Pressure	Service Hours	Auxiliary Temperature #1
Clutch Pressure		Navigation Based Vehicle speed
Air Start Pressure		Engine speed sensor
Injection Control Pressure		Timing Sensor
TEMPERATURE		ECU 8V DC Supply
		5 Volt DC Supply
Engine Coolant Temp	Air Inlet Temp	Engine Fuel metering
Engine Intercooler Temp	Exhaust Gas Temp	Diesel Exhaust Fluid
Engine Intercooler Temp	Auxiliary Temp 1	
Engine Oil Temperature 1	Engine ECU Temp	
Transmission Oil Temperature	Exhaust Gas Port 1 Temp	
Turbo Oil Temperature	Exhaust Gas Port 2 Temp	
Fuel Temperature	Turbo 1 Compressor Inlet Temp	
Intake Manifold 1 Temp		

4. OUTLINE DRAWING

5. TERMINAL CONNECTIONS

Connector A: Deutsch DT Series 12-Way Connector (DT06-12SA)
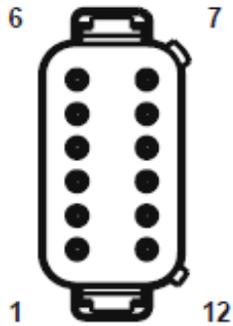
CONNECTOR A		
1	GND	GROUND
2	PWR	10 – 30 VDC
3	RO-1	RELAY/SOLENOID OUTPUT 1
4	RO-2	RELAY/SOLENOID OUTPUT 2
5	CAN2 (-)	ISOLATED CAN SUPPLY (-)
6	CAN2 (+)	ISOLATED CAN SUPPLY (+)
7	CAN2H	ISOLATED CAN DATA H
8	CAN2L	ISOLATED CAN DATA L
9	RO-3	RELAY/SOLENOID OUTPUT 3
10	RO-4	RELAY/SOLENOID OUTPUT 4
11	CAN1L	PRIMARY CAN DATA L
12	CAN1H	PRIMARY CAN DATA H

Connector B: Deutsch DT Series 12-Way Connector (DT06-12SB)
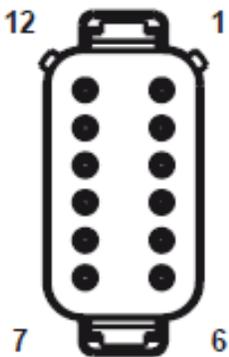
CONNECTOR B		
1	AI-1	ANALOG INPUT 1
2	AI-2	ANALOG INPUT 2
3	AI-3	ANALOG INPUT 3
4	AI-4	ANALOG INPUT 4
5	AI-5	ANALOG INPUT 5
6	AI-6	ANALOG INPUT 6
7	AI-7	ANALOG INPUT 7
8	DI-1	DIGITAL INPUT 1
9	DI-2	DIGITAL INPUT 2
10	SIG	SIGNAL (FREQUENCY) INPUT
11	RS232RX	RS232 RECEIVE
12	RS232TX	RS232 TRANSMIT

6. SOFTWARE

D-100 software can be updated or custom software can be installed using a USB flash drive. The software loading procedure will accompany any software update or custom software that is provided. All software can only be loaded while the unit is powered up. Some USB flash drives may not fit or may not make full contact with the USB connector in the unit. In this case a USB Type A male to female extension should be used, some lower quality USB extensions may not function.

7. DEFAULT SCREEN STORE

D-100 saves the current screen automatically as the user's preferred screen, after approximately 15 seconds idle running (if no buttons are pushed). The splash screen is displayed on the next power-up, and then screen changes to the last stored screen.

Note: To set screen 1 as the default display, select "Restore Defaults" on the "Systems" sub-menu of Configuration.

8. INPUTS / OUTPUTS

(7) Analog Inputs –
  Each input can be selected as 0-1K ohms, 0-2.5V DC, or 0-10V DC.

(2) Switch Inputs –
  Open collector type sensor, or switch contact to ground.
  Max frequency 50 Hz.

(1) Signal Input -
  Magnetic Pickup or Hall-Effect (and similar speed sensors) with push-pull output.
  Max frequency 5 KHz.

Note: the return must be the ground connection of Pin 1, because the above inputs are single pin inputs.

(4) Relay Outputs –
  Open collector output, suitable for 0.5A continuous load.

9. GENERAL SCREEN ADJUSTMENTS

The keys are numbered from left to right as following: 1, 2, 3, 4, 5

9.1. Keys 1 to 4 Operation

There are 4 main user screens accessed via the first four keys. The keys have icons to represent the screen view types, as follows. Key 1 is a quad gauge view, Key 2 is a quad digital data view and key 3 is a single analog gauge view. Key 4 is used to access the alarm screen.

9.2. Adjusting Lighting and Contrast

Pressing Key 5 (the right-hand key) when the menu icons are not being displayed brings up the lighting menu. The LCD has a number of backlighting levels that allow the display brightness and keypad brightness to be adjusted. The appropriate level is selected by pressing keys 1 or 2 to decrease or increase the illumination level of the LCD. The keypad brightness is adjusted in the same manner.

10. SPLASH SCREEN

11. SCREEN ADJUSTMENTS

11.1. Quad Analog View (Screen 1)

This screen is a configurable quad analog gauge view. There is an option to have up to 4 quad analog views (so a total of 16 gauges can be selected). The number of quad views is adjustable between 1 and 4 (default). The data that can be chosen is also configurable (an option in the DBViewer screen).

Note. If a parameter is not available from the engine/transmission, it will not be possible to select it. If the parameter becomes unavailable while in view, '---' is displayed.

To adjust the contents of the quad screens - first press any of the first four keys to raise the button bar and then press key 5 to enable the cycling through of all the display parameters.

Data Available for Quad Screens (both analog and digital views)

db_0190_ENGINE_RPM,	db_0084_0517_NAV_WHEEL_BASED_VEHICLE_SPEED,
db_0110_ENGINE_COOLANT_TEMP,	db_0168_0158_ELEC_BAT_POTENTIAL,
db_0167_ALTERNATOR_POTENTIAL,	db_0115_ALTERNATOR_CURRENT,
db_0114_NET_BATTERY_CURRENT,	db_0102_BOOST_PRESSURE,
db_0109_COOLANT_PRESSURE,	db_0094_FUEL_DELIVERY_PRESSURE,
db_0100_ENGINE_OIL_PRESSURE,	db_0247_TOTAL_ENGINE_HOURS,
db_0127_TRANS_OIL_PRESSURE,	db_0177_TRANS_OIL_TEMP,
db_0173_EXHAUST_GAS_TEMP,	db_0175_ENG_OIL_TEMP_1,
db_0105_INTAKE_MANIFOLD_1_TEMP,	db_0092_TORQUE_USE_AT_RPM,
db_0091_ACCELERATOR_POSITION,	db_0524_SELECTED_GEAR,
db_0523_CURRENT_GEAR,	db_0441_AUXILIARY_TEMP_1,
db_1387_AUXILIARY_PRESSURE_1,	db_0975_EST_PERCENT_FAN_SPEED,
db_0174_FUEL_TEMP	db_0176_TURBO_OIL_TEMP,
db_0052_ENGINE_INTERCOOLER_TEMP,	db_0098_ENGINE_OIL_LEVEL,
db_0111_COOLANT_LEVEL,	db_0108_BARO_PRESSURE,
db_0172_AIR_INLET_TEMP,	db_0106_AIR_INLET_PRESSURE,
db_0107_AIR_FILTER_1_DIFF_PRESS,	db_0183_FUEL_RATE,
db_0513_ACTUAL_ENGINE_PERCENT_TORQUE,	db_1029_TRIP_AVERAGE_FUEL_RATE,
db_1036_TRIP_ENGINE_RUNNING_TIME	db_0096_FUEL_LEVEL

11.2. Quad Digital View (Screen 2)

This screen is a configurable quad analog gauge view. There is an option to have up to 4 quad analog views (so a total of 16 gauges can be selected). The number of quad views is adjustable between 1 and 4 (default). The data that can be chosen is also configurable (an option in the DBViewer screen).

Note. If a parameter is not available from the engine/transmission, it will not be possible to select it. If the parameter becomes unavailable while in view, '---' is displayed.

To adjust the contents of the quad screens - first press any of the first four keys to raise the button bar and then press key 5 to enable the cycling through of all the display parameters.

11.3. Single Analog View (Screen 3)

This screen is a single analog gauge view. The data selected is also configurable (an option in the DBViewer screen).

Note. If a parameter is not available from the engine/transmission, it will not be possible to select it. If the parameter becomes unavailable while in view, '- - -' is displayed

Data Available for Single Screen

db_0190_ENGINE_RPM,	db_0110_ENGINE_COOLANT_TEMP,
db_0100_ENGINE_OIL_PRESSURE,	db_0183_FUEL_RATE,
db_0102_BOOST_PRESSURE,	db_0168_0158_ELEC_BAT_POTENTIAL,
db_0167_ALTERNATOR_POTENTIAL,	db_0115_ALTERNATOR_CURRENT,
db_0114_NET_BATTERY_CURRENT,	db_0109_COOLANT_PRESSURE,
db_0094_FUEL_DELIVERY_PRESSURE,	db_0127_TRANS_OIL_PRESSURE,
db_0177_TRANS_OIL_TEMP,	db_0173_EXHAUST_GAS_TEMP
db_0175_ENG_OIL_TEMP_1,	db_0105_INTAKE_MANIFOLD_1_TEMP

12. ALARM FUNCTION (Screen 4)

The D-100 supports active faults received from DM1 messages. When an active/current alarm is received, a flashing pop-up window appears overlaid on the active screen, showing details of the current alarm. When an active alarm is received, the D-100 activates its internal sounder.

The alarm list is accessed by pressing any key while an alarm pop-up is displayed, or by pressing any of the first 4 keys to show the button bar, and then key 4. This screen displays all current active alarms. Alarms not yet acknowledged are shown in black text on a red background. Alarms already acknowledged are shown in white text on black. If the data for engine hours is available, the list indicates when the alarm was initiated.

When first entering the alarm screen, the list automatically displays the most recent alarm. The list can be scrolled using keys 1 and 2. This screen cannot be exited until all alarms have been acknowledged by pressing key 3. Alarm messages are automatically cleared from the list when no longer received by the D-100.

Alarm Screen before Acknowledge

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12.1. Engine Service Warning

In the Configuration menu, users can set the engine service interval in hours. When the D-100 determines an engine service is due, it will display SERVICE REQUIRED on the splash screen that appears at power-up.

12.2. Failure of Data Communication

If the D-100 cannot detect engine/transmission data broadcasts, a pop-up window with a data communications failure warning icon will appear and flash. Once engine/transmission data is detected the

Warning disappears and normal data display resumes.

Typical Alarm Screen after Alarm Acknowledge

13. MENU SCREENS

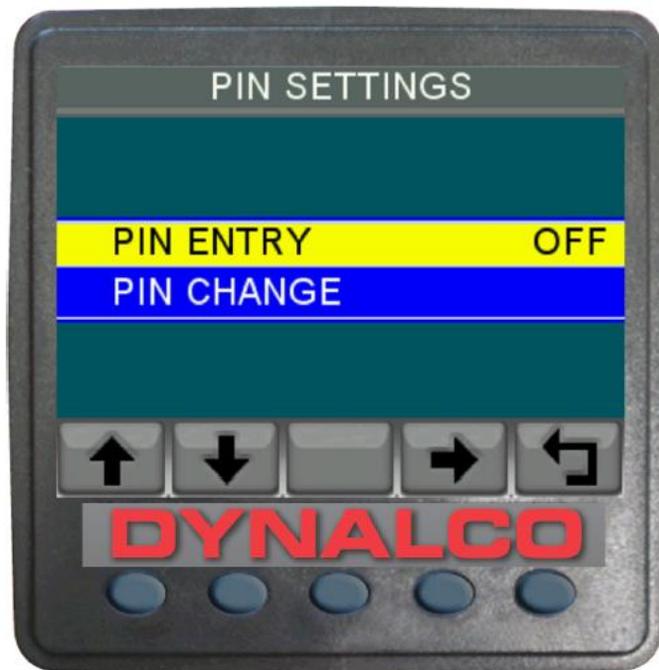Press key #5 for approximately 5 seconds to get to the menu screen.

13.1. Top Level Menu

13.2. Settings Menu and Sub-menus

13.3. System Menu and Sub-menus

13.4. Display Mapping / Data Base Viewer

LEFT: This screen can be adapted to allow the data mapping / filter for each of the three data views. The operator can check boxes for each item they want to appear on each of the standard views (Quad and Single). Key 1 and Key 2 are page up/down respectively. Key 3 moves down the list one item and Key 4 is to edit the settings of the view filters. The red box indicates that the option is not available.

RIGHT: This shows the screen in "edit" mode where the highlighted item (in RED) can be chosen to be viewed in the quad or the single view or in both or in neither.

14. I/O (Input/Output) SETTINGS

LEFT: Access this screen through the settings in the Configuration Menu.

CENTER: This screen is used to access inputs, outputs, alarms and engine presets. Engine presets option is used to reset the unit to factory settings.

RIGHT: This screen allows for function selection for analog inputs, digital inputs, voltage and internal engine hours. Pressing Key 4 will access the selected pin. Please see section 4 for pin location.

14.1. Analog Inputs

This screen is designed for configuration of analog pins. Use Key 1 and Key 2 to navigate up/down. Use Key 3 and Key 4 for back/forward.

Signal Type - Select type of signal the sender is sending. Most analog senders are resistance senders.

Parameter - Used to select the function of the sender.

Table - Select the resistance table of the sender used.

Example: This is an example of a 0-80 PSI oil pressure sender using the 240-33 ohm resistance range. The prefix:

L - Level

P - Pressure

TF - Temperature (F)

TC - Temperature (C)

NOTE: The input and output windows will show readings when sender is connected.

14.2. Digital Inputs (8-10)

This screen is designed for configuration of digital input signals.

NOTE: Only pin 10 can be used as a tachometer signal.

Signal Type - Select from a digital count, frequency, period or level.

Parameter - Used to select the function.

Table - Not selectable.

Signal Gain and Signal Offset - used to adjust accuracy of the readings.

14.3. Internal Voltage

There is no pin for voltage; the voltage reading is extracted from the supply voltage of the D-100 unit.

14.4. Internal Engine Hours

This screen is used to set up the internal engine hour meter.

14.5. Outputs
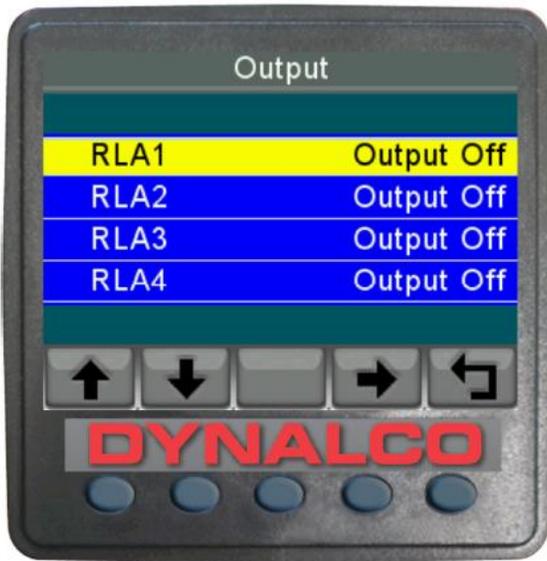
LEFT: This screen is used to turn ON and OFF relay alarms, if wired into the associated pins of the D-100 unit. These are open connector outputs, suitable for 0.5A continuous loads.

RIGHT: Use KEY 1 and KEY 2 to navigation up/down, use KEY 4 to select between "Alarm" and "Output Off".

14.6. Alarms

LEFT: This screen is used to access all alarms. That can be set for the analog pins, digital pins, internal voltage and internal engine hours.

RIGHT: All inputs can have a LOW and HIGH alarm function. Use threshold function to set the alarm values.

15. J1939 PGNs (Parameter Group numbers) SUPPORTED

// PGN 56832 (0xDE00) (R) Reset

// PGN 61442 (0xF002) Electronic Transmission Controler 1

// PGN 61443 (0xF003) Electronic Engine Controller 2

// PGN 61444 (0xF004) Electronic Engine Controller 1

// PGN 61445 (0xF005) Electronic Transmission Controller 2

// PGN 61448 (0xF008) Hydraulic Pressure Governor Info

// PGN 64891 (0xFD7B) (R) Aftertreatment 1 Service

// PGN 64892 (0xFD7C) (R) Particulate Trap Control 1

// PGN 64947 (0xFDB3) Aftertreatment 1 Outlet Gas 2

// PGN 64948 (0xFDB4) Aftertreatment 1 Intake Gas 2

// PGN 65110 (0xFE56) Tank Information 1

// PGN 65164 (0xFE8C) (R) Auxiliary Analog Information

// PGN 65169 (0xFE91) Fuel Leakage

// PGN 65178 (0xFE9A) Turbocharger Information 2

// PGN 65187 (0xFEA3) Exhaust Port Temperature 1

// PGN 65188 (0xFEA4) Engine Temperature 2

// PGN 65198 (0xFEAE) Air Supply Pressure

// PGN 65200 (0xFEB0) Trip Time Information 2

// PGN 65201 (0xFEB1) ECU History

// PGN 65203 (0xFEB3) Fuel Information (Liquid)

// PGN 65213 (0xFEBD) Fan Drive

// PGN 65243 (0xFEDB) Engine Fluid Level/Pressure 2

// PGN 65245 (0xFEDD) Turbocharger

// PGN 65246 (0xFEDE) Air Start Pressure

// PGN 65247 (0xFEDF) Electronic Engine Controller 3

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// PGN 65248 (0xFEE0) Vehicle Distance

// PGN 65252 (0xFEE4) (R) Shutdown

// PGN 65253 (0xFEE5) Engine Hours, Revolutions

// PGN 65255 (0xFEE7) Vehicle Hours

// PGN 65257 (0xFEE9) Fuel Consumption (Liquid)

// PGN 65262 (0xFEEE) Engine Temperature 1

// PGN 65263 (0xFEEF) Engine Fluid Level/Pressure 1

// PGN 65265 (0xFEF1) (R) Cruise Control/Vehicle Speed

// PGN 65266 (0xFEF2) (R) Fuel Economy (Liquid)

// PGN 65269 (0xFEF5) Ambient Conditions

// PGN 65270 (0xFEF6) (R) Inlet/Exhaust Conditions 1

// PGN 65271 (0xFEF7) (R) Vehicle Electrical Power 1

// PGN 65272 (0xFEF8) Transmission Fluids 1

// PGN 65276 (0xFEFC) Dash Display
```

16. DATABASE LIST AND PGNs

DATABASE NAME	Description J1939 PGN	J1939 PGN
db_46_PNEUMATIC_SUPPLY_PRESSURE	Pneumatic Supply Pressure	FEAE
db_0051_THROTTLE_POSITION	Throttle Position	FEF2
db_0052_ENGINE_INTERCOOLER_TEMP	Engine Intercooler Temperature	FEEE
db_0082_AIR_START_PRESSURE	Air Start Pressure	FEDE
db_0084_0517_NAV_WHEEL_BASED_VEHICLE_SPEED	Vehicle Speed	FEF1
db_0091_ACCELERATOR_POSITION	Acceleration Position	F003
db_0092_TORQUE_USE_AT_RPM	Torque at RPM	F003
db_0094_FUEL_DELIVERY_PRESSURE	Fuel Delivery Pressure	FEEF
db_0096_FUEL_LEVEL	Fuel Level	FEFC
db_0098_ENGINE_OIL_LEVEL	Engine Oil Level	FEEF
db_0100_ENGINE_OIL_PRESSURE	Oil Pressure	FEEF
db_0102_BOOST_PRESSURE	Turbo Pressure	FEF6
db_0103_TURBO_1_SPEED	Turbo 1 Speed	FEDD
db_0105_INTAKE_MANIFOLD_1_TEMP	Intake Manifold Temperature	FEF6
db_0106_AIR_INLET_PRESSURE	Air Inlet Pressure	FEF6
db_0107_AIR_FILTER_1_DIFF_PRESS	Air Filter Pressure	FEF6
db_0108_BARO_PRESSURE	Baro Pressure	FEF5
db_0109_COOLANT_PRESSURE	Ext Coolant Pressure	FEEF
db_0110_ENGINE_COOLANT_TEMP	Coolant Temp	FEEE
db_0111_COOLANT_LEVEL	Coolant Level	FEEF
db_0114_NET_BATTERY_CURRENT	Battery Current	FEF7
db_0115_ALTERNATOR_CURRENT	Alternator Current	FEF7
db_0123_CLUTCH_PRESSURE	Clutch Pressure	FEE8
db_0127_TRANS_OIL_PRESSURE	Trans Oil Pressure	FEF8
db_0157_INJ_METERING_RAIL_1_PRESSURE	Inj Met Rail 1 Pressure	FEDB
db_0161_INPUT_SHAFT_SPEED	Input Shaft Speed	F002
db_0164_INJECTION_CONTROL_PRESSURE	Injection Control Pressure	FEDB
db_0167_ALTERNATOR_POTENTIAL,	Alternator Voltage	FEF7
db_0168_0158_ELEC_BAT_POTENTIAL	Voltage	FEF7
db_0172_AIR_INLET_TEMP	Air Inlet Temperature	FEF5
db_0173_EXHAUST_GAS_TEMP	Exhaust Temperature	FEF6
db_0174_FUEL_TEMP	Fuel Temperature	FEEE

db_0175_ENG_OIL_TEMP_1	Engine Oil Temperature	FEEE
db_0176_TURBO_OIL_TEMP	Turbo Oil Temperature	FEEE
db_0177_TRANS_OIL_TEMP	Trans Oil Temperature	FEF8
db_0182_TRIP_FUEL	Trip Fuel	FEE9
db_0183_FUEL_RATE	Fuel Rate	FEF2
db_0184_INSTANT_FUEL_ECON	Instant Fuel Economy	FEF2
db_0185_AVG_FUEL_ECON	Trip Fuel Economy	FEF2
db_0190_ENGINE_RPM	Engine RPM	F004
db_0191_OUTPUT_SHAFT_SPEED	Output Shaft Speed	F002
db_0244_TRIP_DISTANCE	Trip Distance	FEE0
db_0245_TOTAL_VEHICLE_DISTANCE	Total Distance	FEE0
db_246_TOTAL_VEHICLE_HOURS	Total Vehicle Hours	FEE7
db_0247_TOTAL_ENGINE_HOURS	Engine Hours	FEE5
db_0250_TOTAL_FUEL_USED	Total Fuel	FEE9
db_0441_AUXILIARY_TEMP_1	Auxiliary Temp 1	FE8C
db_0512_DRIVERS_DEMAND_PERCENT_TORQUE	Requested Torque	F004
db_0513_ACTUAL_ENGINE_PERCENT_TORQUE	Actual Torque	F004
db_0515_ENGINES_DESIRED_OPERATING_SPEED	Eng Desired Operating Speed	FEDF
db_0523_CURRENT_GEAR	Current Gear	F005
db_0524_SELECTED_GEAR	Selected Gear	F005
db_0573_TORQUE_CONVERTER_LOCKUP_ENGAGED	Torque Lockup Engaged	F002
db_0975_EST_PERCENT_FAN_SPEED	Fan Speed	FEBD
db_0988_TRIP_GROUP_1	Trip Group 1	DE00
db_1029_TRIP_AVERAGE_FUEL_RATE	Trip Avg Fuel Rate	FEB3
db_1032_TOTAL_ECU_DISTANCE	Total ECU Distance	FEB1
db_1036_TRIP_ENGINE_RUNNING_TIME	Trip Eng Run Time	FEB0
db_WTS_STATUS_SPN1081	WTS Status	FEE4
db_1136_ENGINE_ECU_TEMP	Engine ECU Temp	FEA4
db_1137_EXHAUST_GAS_PORT_1_TEMP	Exhaust Gas Port 1 Temp	FEA3
db_1138_EXHAUST_GAS_PORT_2_TEMP	Exhaust Gas Port 2 Temp	FEA3
db_1172_TURBO_1_COMPRESSOR_INLET_TEMP	Turbo Comp Inlet Temperature	FE9A
db_1239_FUEL_LEAKAGE_1	Fuel Leakage 1	FE91
db_1240_FUEL_LEAKAGE_2	Fuel Leakage 2	FE91
db_1349_INJ_METERING_RAIL_2_PRESSURE	Inj Met Rail 2 Pressure	FEDB

| db_1387_AUXILIARY_PRESSURE_1	Auxiliary Pressure 1	FE8C
db_1761_CATALYST_TANK_LEVEL	Catalyst Tank Level	FE56
db_1762_HYDRAULIC_PRESSURE	Hydraulic Pressure	F008
db_3031_CATALYST_TANK_TEMPERATURE	Catalyst Tank Temperature	FE56
db_3241_AFTERTREATMENT_1_EXHAUST_GAS_TEMP_1	After Treatment 1 Exhaust Gas Temp 1	FDB4
db_3245_AFTERTREATMENT_1_EXHAUST_GAS_TEMP_3	After Treatment 1 Exhaust Gas Temp 3	FDB3
db_DPF_LAMPCOMMAND_SPN3697	DPF Lamp Command	FD7C
db_ESHT_LAMPCOMMAND_SPN3698	ESHT Lamp Command	FD7C
db_DPF_ACTIVEREGENSTATUS_SPN3700	DPF Active Regen Status	FD7C
db_DPF_STATUS_SPN3701	DPF Status	FD7C
db_3703_PART_TRAP_ACTIVE_REGEN_INHI_DUE_SWITCH	Particul Trap Active Regen Inhibit Due to Switch	FD7C
db_DPF_ACTIVEREGENINHIBITEDSWITCH_SPN3703	DPF Active Regen Inhibited Switch	FD7C
db_3719_PARTICULATE_FILTER_1_SOOT_LOAD	Particulate Filter 1 Soot Load %	FD7B
db_3720_PARTICULATE_FILTER_1_ASH_LOAD	Particulate Filter 1 Ash Load %	FD7B
db_SERVICE_HOURS	Service Hours	-
db_CANTX_DISABLE	CANTX Disable	-
db_DOMESTIC_BAT	Domestic Battery	-
db_DEF_LEVEL	DEF Level	-
db_DPF_LEVEL	DPF Level	-

17. MOUNTING AND INSTALLATION INSTRUCTIONS

Mounting: Other than bulkhead and dashboard, D-100 units are mounted into panel.
The components required (4 x M4 studs and thumb nuts) are supplied with every D-100.

Instructions:

1. Make sure the cables are not unduly stressed and for ventilation purposes allow adequate clearance behind the display. Leave sufficient cable so that the unit may be removed for servicing.
2. Cut out the mounting hole using the template supplied with the display as a guide, and drill four ø3/16" (4.7mm) holes for M4 Nylon studs.
3. Screw the studs into the rear case
4. Place the D-100 in position, secure by screwing thumb nuts into the studs.

The M4 studs and thumb nuts are supplied with the D-100, which allows the display to be mounted onto a panel or dashboard.
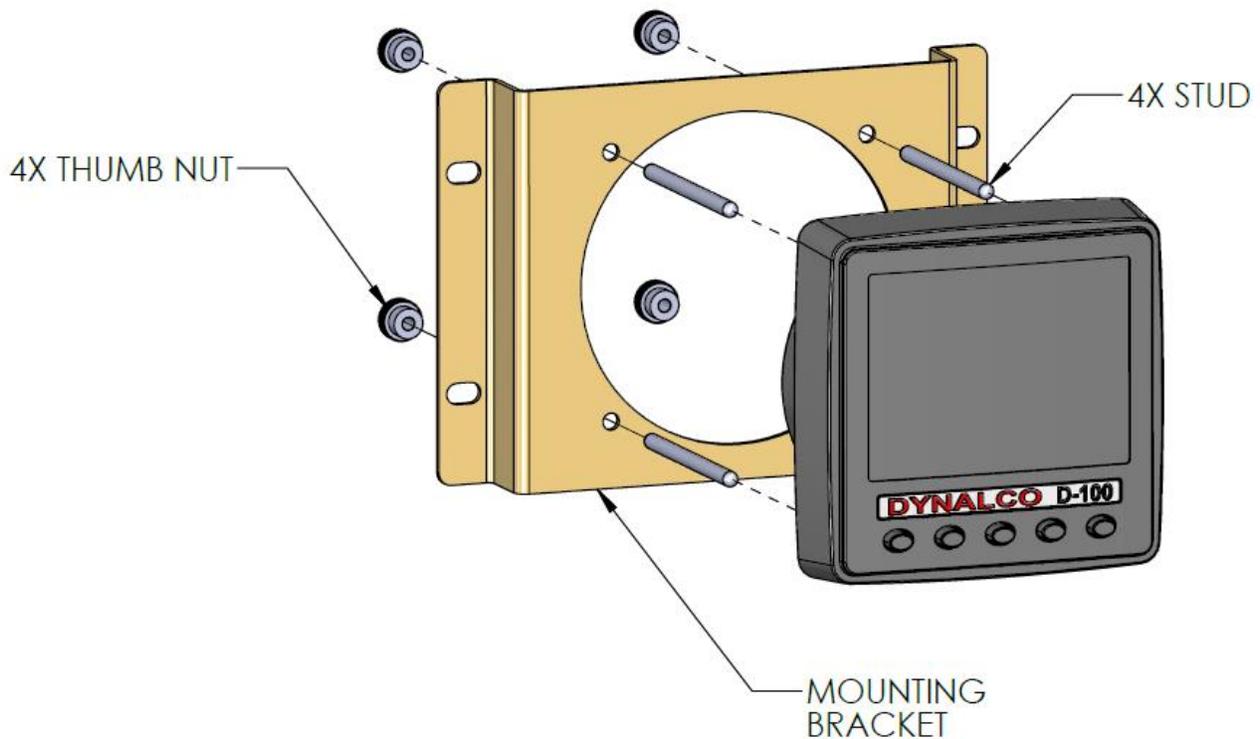
18. COMMUNICATIONS

The product supports J1939 receive only.