NexSysLink® User Interface Operation Manual
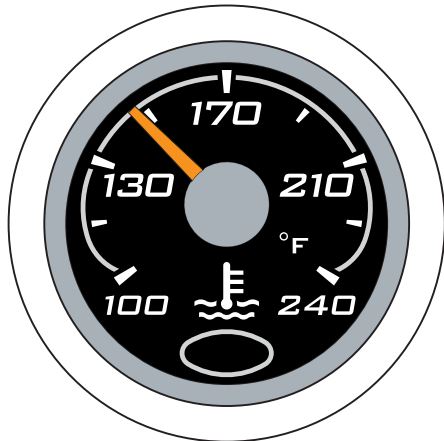
3 Inch Master Node Instrument

NexSysLink®

2 Inch Minor Gauge

• DESCRIPTION

NexSysLink® is the next generation instrumentation system from Beede that combines the best of analog and digital data display technologies. NexSysLink® reads and displays vehicle performance data directly from CAN (Controller Area Network) based protocols such as SAE J1939, NMEA 2000®, SmartCraft® or Indmar and supports a maximum of two analog sender inputs.
The system consists of a Master Node Instrument and optional complimentary minor (slave)
node instruments. This system eliminates the need for a translation "black box" between
the vehicle's ECM and the instruments themselves making wiring and installation simple and fast.

• SCOPE

This manual describes how to navigate the LCD interface and use the features of
Master Node Instrument. Although the interface is intuitive and easy to navigate,
this operation manual provides users with a resource to realize the full potential and capabilities
of NexSysLink® instrumentation. Covered in this manual are display options, menu navigation,
menu function options and menu function usage.
This manual does not cover installation mounting and wiring requirements for NexSysLink®.
Please refer to the NexSysLink® installation instruction sheet for proper installation.

• SWITCH FUNCTIONS

Menu navigation is accomplished through the use of momentary switch inputs to the Master Node.
The switch functions required for proper navigation of the instrument menus are MENU/MODE,
UP and DOWN. These switches are supplied and installed by the vehicle manufacturer and
are not part of the Master Node instrument.

•• MENU/MODE SWITCH

Pressing and releasing the MENU/MODE switch either toggles the display among the various
display screens or acts as an enter input to accept menu selections or user settings.
Pressing and holding the MENU/MODE button for approximately three seconds while any of the
main screens are displayed brings up the Main Menu display. Pressing and holding the
MENU/MODE also resets trip miles and maintenance hour values to zero when either of those
screens are displayed.

•• UP SWITCH

Pressing and releasing the UP switch scrolls up through parameter displays, menu choices or
increases user settable parameter values one item/unit at a time.
Pressing and holding the UP switch continuously scrolls up through parameter displays, menu
choices or increases user settable parameter values until the end of the parameter displays,
menu choices or maximum parameter value is reached.

•• DOWN SWITCH

The DOWN switch functions identical to the UP switch with the exception that its direction for all
displays, menu choices and parameter values is down or decreasing.

• START-UP SCREEN

Upon instrument start-up, the Beede logo and/or one
of several possible CAN based protocol logo(s)
will appear for approximately three seconds.

• MAIN DISPLAY SCREENS

The default and first main screen appears after the start-up screen. For automotive/industrial
applications, the default display is total miles. Marine configured instruments display total hours
as default. The main screens allow users to quickly view important vehicle functions.
The functions and their display order can be chosen and configured by the user.
Total miles or total hours display always appear first among the main screens and their display
may not be disabled.

Or


Total Miles Screen
Automotive/Industrial Default

Total Hours Screen
Marine Default

Press the DOWN switch to scroll through all the other default or previously configured parameters
for main screen display. Press the UP switch to scroll back up through the screens.
From 1 to 10 parameters plus time/date can be configured for main screen display.
The time/date screen, if enabled, always appears last in the main screen display list.

•• SELECTABLE ALTERNATE DISPLAY FORMATS

NexSysLink® will display vehicle operating parameters except total miles and total hours
in two formats. These formats are detailed single function bar graph and three function display.
The default display is detailed single function. To access the three function display, simply press the
MENU/MODE switch. To return back to single function display, press the MENU/MODE switch again.
The detail single function bar graph display provides the most detail for a single parameter while the
the three-line display allows the user to monitor several parameters at the same time.

Or
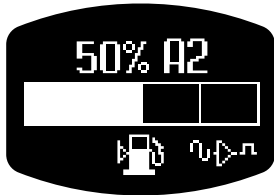
Detailed Single Function Bar Graph Display
Default
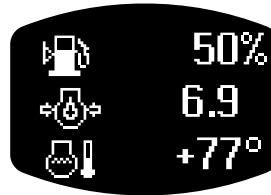
Three Function Display
Press Menu/Mode to Access

•DISPLAYING TRIP MILES OR MAINTENANCE HOURS

NexSysLink® will display three separate trip mile and maintence hour logs. To access the three logs, press the MENU/MODE switch while either the total miles or total hours screen is displayed.
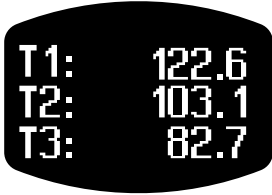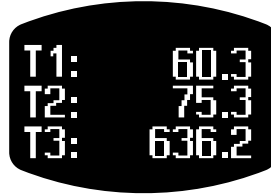These displays are also be accessed by selecting Trips from the Main Menu.

```
T1:    122.6
T2:    103.1
T3:     82.7
```

Or

```
T1:     60.3
T2:     75.3
T3:    636.2
```

Trip Miles Screen   Maintenance Hours Screen

•RESETTING TRIP MILES OR MAINTENANCE HOUR LOGS

To reset any of the three trip miles or maintenance hour logs to zero, select the log to reset by pressing the UP or DOWN switch while in the trip miles or maintenace hour log screen.
The selected trip or hour log is identified by an arrow cursor to the left of the log name.
Once a log is selected, press and hold the MENU/MODE button until the log value resets to zero.

```
⇨T1:    122
T2:    103.1
T3:     82.7
```

Press and Hold
Menu/Mode

```
⇨T1:      0
T2:    103.1
T3:     82.7
```

Selected Log   Reset Log

•MENU/SCREEN NAVIGATION AND ITEM SELECTION

To change the screen parameter displayed, navigate the menus or change a function value, simply use the UP or DOWN switches to scroll up or down respectively.
An arrow cursor appears when scrolling through the menu options to indicate position.
If either the beginning or end of a menu list is reached, use the UP or DOWN switches to navigate back up or down the list.

To accept or expand a menu selection, press the MENU/MODE switch when the arrow cursor is adjacent to the desired menu selection.

To change a menu function value, use the UP or DOWN switches to increase or decrease the value. If either the maximum or minimum function value is reached, use the UP or DOWN switches to increase or decrease the value. Once the appropriate value is reached, press the MENU/MODE switch to accept the value displayed.

Pressing and holding the UP or DOWN switch will continuously scroll through menus or parameter values until the end of the menu or the limit of the value range is reached.

4   Main Menu, Setup Functions

• MAIN MENU

The Main Menu contains all the options for configuring the LCD display, setting alarms or viewing vehicle ECM faults and warnings.
To access the Main Menu, press and hold the MENU/MODE button while any of the main screens are displayed. Only two Main Menu options appear on the first screen. To access the other options, press the DOWN switch to scroll down the menu. Use the UP switch to scroll back up the menu.
The Main Menu and all the function options except View Parameters will display for approximately 30 seconds and then return to the main display if no user activity is detected.
The following items are contained in the Main Menu:

Trips	Warnings
View Parms	Alarms
Setup	Misc
Faults	Main Screen

•• MAIN MENU - TRIPS

The trips function returns the user to the trip miles or maintenance hours display screen.
This is an alternate method from that described in displaying trip miles or maintence hours section.

•• MAIN MENU - VIEW PARMS

View Parms is short for View Parameters. This function displays all vehicle parameters that are broadcasted by the particular CAN protocol to which the system is connected.
Some protocols will only broadcast currently active parameters while others will broadcast both active and inactive parameters.
The parameter display matches the detailed single function screen and will not timeout after 30 seconds unlike other Main Menu functions.

•• MAIN MENU - SETUP

Setup contains functions that permit the user to configure NexSysLink® to suit individual preferences.
The following items are contained within the Setup menu:

Backlight	Alarms	Main Screen
Units	A/D Inputs	
Clock	Display	
Sweep	Speedometer	

•• MAIN MENU - SETUP - BACKLIGHT

The Backlight setup item controls the LED illumination intensity.
The intensity ranges from 0 or off to 100 or maximum.
Backlight intensity can be set for when the vehicle lamp switch is on (Lamp On option) or when the vehicle lamp switch is off (Lamp Off option).
The Lamp Off option allows users to independantly illuminate the instrument from the vehicles running lights or headlight switch.

•• MAIN MENU - SETUP - UNITS

The units setup is used to set the mile measurement method between statute or nautical and choose between English or SI-Metric units.

•• MAIN MENU - SETUP - CLOCK

With the clock setup function, users can view, edit, format or make the time/date appear with the other main display screens.

●●● MAIN MENU - SETUP - CLOCK - VIEW

The view clock function simply displays the current time/date. This is an alternate method of viewing the time/date without adding the time/date display to the main screen displays.
The time/date display will not time-out and disappear like many other setup functions.
To return to the clock menu, press either the MENU/MODE or UP and DOWN switches. To return to the Main Menu press and hold the MENU/MODE switch.

●●● MAIN MENU - SETUP - CLOCK - EDIT

Use the edit function to change the time and date. A blinking cursor appears under the time or date position to set. Use the UP or DOWN switch to change the value at that position. Press the MENU/MODE switch to accept the displayed value and move to the next time or date position. Press the MENU/MODE switch once the last time or date position is reached to return to the Clock menu.

●●● MAIN MENU - SETUP - CLOCK - FORMAT

Users can choose between displaying date and time or time only on the LCD.
Additionally, the time resolution can be one of two formats: hour:minutes:seconds (HH:MM:SS) or hours:minutes (HH:MM).

01:02:00 AM
01/01/07

01:02 AM

Date and Time Display
HH:MM:SS Format

Time Only Display
HH:MM Format

●●● MAIN MENU - SETUP - CLOCK - MAIN CLOCK

The Main Clock menu option adds the time/date display to the list of main screens.
The time/date screen, if enabled, always appears last in the main screen display list.
This same function can be found at MAIN MENU - SETUP - DISPLAY - MAIN CLOCK.

•• MAIN MENU - SETUP - SWEEP

Instrument pointer sweep at vehicle startup can be enabled or disabled with this option.
The sweep function provides visual identification that the Master Node Instrument is communicating with the Minor Node Instruments.

6   Main Menu, Setup Functions

•• MAIN MENU - SETUP - ALARMS

This menu option is identical to the Main Menu - Alarms.
Refer to that section for using alarms.

•• MAIN MENU - SETUP - A/D INPUTS

NexSysLink® can be configured to accept a maximum of two analog sender inputs from discrete senders such as fuel, temperature or pressure or one analog sender input and one NMEA 0183 compatible input. The NMEA 0183 input must always be assigned to Input 2.
Analog and NMEA 0183 inputs are optional features and may not be present in all Master Node Instruments.

••• CHOOSING AN INPUT CHANNEL

To set an analog input, choose which input channel, 1 or 2, the sender is connected.
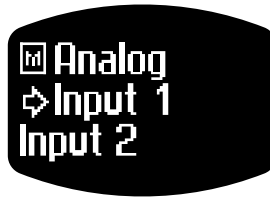
Analog Input Channel Selection Screen

Once the input channel is selected, scroll to choose what type of sender is connected to the input.

INPUT CHANNEL NAME
PARAMETER NAME

BLINKING CURSOR

Analog Input Channel Selection Screen

After the analog input parameter is chosen, a sender range option appears below the parameter. Scroll to select the appropriate range such as resistance for the sender.

SENDER RANGE

BLINKING CURSOR

Selecting Sender Range

After choosing and accepting the sender range, the A/D Input menu appears to configure or edit another input.
If all analog inputs are acceptable, use the main screen option on in the menu list to return to the main screen.

••MAIN MENU - SETUP - DISPLAY

The display setup feature sets which parameters and in what order to display them on the main screens for fast and easy access during vehicle operation.
Up to 10 parameters may be displayed but total miles or total hours always remain on and as the first main screen display.
The display may also be configured to show the total miles, total hours or time functions when the ignition is in the off position provided the 24/7 battery connection is made to the instrument.
To utilize the key off display feature, choose the Key Off option under the display menu and select either Clock to display the time or Odo/Hours to display total miles or total hours.
Choose No Display to disable key off features.

••MAIN MENU - SETUP - SPEEDOMETER

Speedometer setup configures NexSysLink® to read the speed signal input source from a CAN or GPS source.

••• NMEA 0183/GPS SPEEDOMETER INPUT SETUP

The GPS speedometer source must be NMEA 0183 compliant and wired to the proper pin of the 12 pin connector on the Master Node Instrument. The Master Node Instrument must also be factory configured to read A/D and NMEA 0183 inputs.
To enable GPS speedometer input, first set A/D Input 2 parameter to NMEA 0183.
Refer to Main Menu - Setup - A/D Inputs for configuring A/D inputs.
After A/D Input 2 is set, select the GPS option from Main Menu - Setup - Speedometer.

••MAIN MENU - SETUP - MAIN SCREEN

The main screen option at the end of the setup menu list returns the user back to the main display screens as its name implies.

•MAIN MENU - FAULTS   **F**

Faults as reported by the CAN bus system are displayed when this option is selected from the Main Menu.
When a fault occurs, a blinking fault icon appears in the main display screens.
A fault may be an indication of a serious vehicle problem. Consult the vehicle owner's manual or consult a service technician to correct the fault condition(s).

SUSPECT
PARAMETER NUMBER ➜

FAILURE MODE INDICATOR ➜   **SPN 110**   ◄ OCCURENCE COUNT
                                    fmi=3 oc=10
PARAMETER NAME ➜   **Coolant Temp**
(If Available)

Typical Fault Screen
for SAE J1939 Only
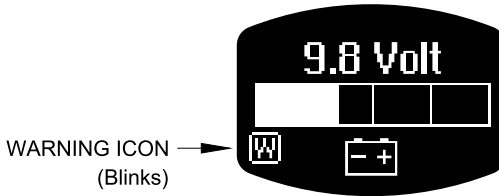
• MAIN MENU - WARNINGS

Warnings are displayed in SmartCraft® configured Master Node Instruments only.
Warnings alert the operator of a potential problem with the engine.

WARNING ICON
(Blinks)

Detailed Single Function Bar Graph Display
Showing Warning Condition
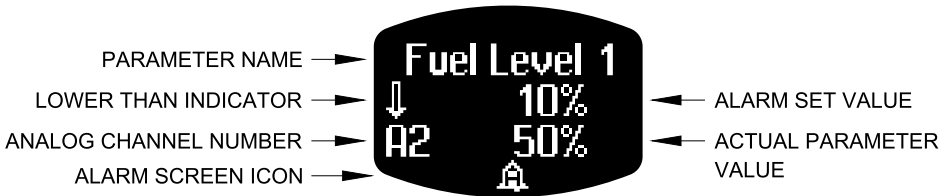
• MAIN MENU - ALARMS

NexSysLink® allows users to enable, view or edit alarms for vehicle parameters that alert operators
when the vehicle is operating outside of set limits. Users may set up to 15 alarms with this system.
Alarms stay set when power is removed then reapplied to the instrument.

•• MAIN MENU - SETUP - ALARMS - ENABLE

Enable allows the user to turn on or off all alarms that are currently set.

•• MAIN MENU - SETUP - ALARMS - VIEW

Select view to display all currently configured parameter alarms. Use the UP or DOWN switch to
scroll through the alarms. Press the MODE/MENU switch to return to the alarm menu.

PARAMETER NAME
LOWER THAN INDICATOR
ANALOG CHANNEL NUMBER
ALARM SCREEN ICON
ALARM SET VALUE
ACTUAL PARAMETER VALUE

Typical Alarm Screen

•• MAIN MENU - SETUP - ALARMS - EDIT

The edit function of the alarms menu allows users to select the parameter(s) and the alarm value
threshold for the parameter(s).
First, select whether to choose from the active parameters or all paramters.
Active parameters are those parameters currenty being transmitted over the vehicle CAN bus.

Choose Parameter Type Screen

●● MAIN MENU - SETUP - ALARMS - EDIT (Continued)

Once the parameter source list is chosen, select the number of alarms to set. The range is 0 to 15.
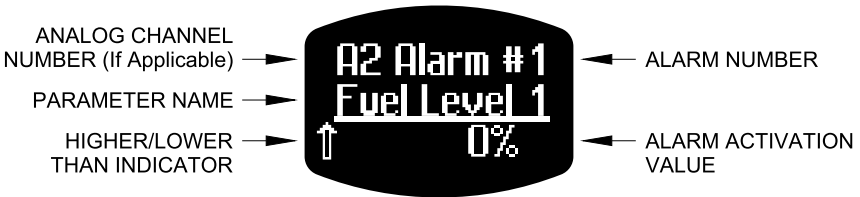
Use the UP and DOWN switches to change the number of alarms.
Press MENU/MODE to accept the alarm quantity.
Pressing and holding MENU/MODE aborts alarm setup and returns the Main Menu.

Select
0
Alarms

Set Alarm Quantity Screen

MAIN MENU - ALARMS (Continued)

After the alarm quantity is set and accepted, the alarm parameter screen appears with a blinking cursor under the parameter name. Use the UP and DOWN switches to scroll through the list of possible parameters to add to the alarm screen list. Press MENU/MODE once the appropriate parameter is chosen.

ANALOG CHANNEL
NUMBER (If Applicable)

PARAMETER NAME

HIGHER/LOWER
THAN INDICATOR

A2 Alarm #1
Fuel Level 1
⇑   0%

ALARM NUMBER

ALARM ACTIVATION
VALUE

Parameter Selection and Setup Screen

Once the parameter is chosen, the blinking cursor will move beneath the lower than or higher than threshold direction indicator. Use the UP and DOWN switches to change the threshold direction. Once the direction is selected, press MENU/MODE to accept.
After accepting the threshold direction, the blinking cursor appears beneath the alarm activation threshold value. Use the UP and DOWN switches to change the threshold value then press MENU/MODE to accept the value. The units for the alarm value vary depending on the type of parameter chosen.
If more than one alarm was desired, the next alarm setup screen will appear.
If only one alarm was chosen, the Alarm menu will appear.

MAIN MENU - MISC

To reset the NexSysLink® Master Node Instrument to the factory defaults, choose Set Defaults from the Misc menu.
The Master Node firmware revision is displayed when Revision is chosen from the Misc menu.

10   Icon Descriptions

ICON DESCRIPTIONS

Menu list Identifier

Menu/Item Position Cursor

SmartCraft® Parameter Warning Indicator (Blinks)

Fault Warning Indicator (Blinks)

Analog to Digital Signal Source Identifier

Higher Than Alarm Value Indicator

Lower Than Alarm Value Indicator

No CAN Data Present

No CAN Data Present

Alarm Indicator (Blinks)

Active Item/Location Underline Cursor (Blinks)

• PROTOCOL NOTE

This CAN protocol information for reference only. Please refer to the actual protocol specifications for complete and current data.
Not all parameters listed may be available on the vehicle CAN Bus for the Master Node Instrument to display.

• SAE J1939

PARAMETER NAME	SOURCE	PARAMETER NAME	SOURCE
Throttle Position	SPN 51	Inside Air Temperature	SPN 170
Intercooler Temperature	SPN 52	Outside Air Temperature	SPN 171
Parking Break Set	SPN 70	Exhaust Gas Temperature	SPN 173
Steering Axle Temperature	SPN 75	Fuel Temperature	SPN 174
Road Surface Temperature	SPN 79	Engine Oil Temperature	SPN 175
Washer Fluid Level	SPN 80	Turbo Oil Temperature	SPN 176
Wheel Based Vehicle Speed	SPN 84	Transmission Oil Temperature	SPN 177
Power Takeoff Oil Temperature	SPN 90	Fuel Rate	SPN 183
Accelerator Pedal Position	SPN 91	Fuel Economy Instantaneous	SPN 184
Percent Load At Current Speed	SPN 92	Fuel Economy Average	SPN 185
Fuel Delivery Pressure	SPN 94	Power Takeoff Speed	SPN 186
Fuel Level	SPN 96	Engine RPM	SPN 190
Water In Fuel Indicator	SPN 97	Tire Pressure	SPN 241
Engine Oil Level	SPN 98	Tire Temperature	SPN 242
Engine Oil Pressure	SPN 100	Total Vehicle Distance	SPN 245
Crankcase Pressure	SPN 101	Total Vehicle Hours	SPN 246
Boost Pressure	SPN 102	Total Engine Hours	SPN 247
Turbocharger 1 Speed	SPN 103	Current Gear	SPN 523
Turbocharger Lube Oil Pressure	SPN 104	Drive Axle Temperature	SPN 578
Intake Manifold Temperature	SPN 105	Altitude	SPN 580
Air Inlet Pressure	SPN 106	Latitude	SPN 584
Barometric Pressure	SPN 108	Longitude	SPN 585
Engine Coolant Pressure	SPN 109	Cruise Control State	SPN 595
Engine Coolant Temperature	SPN 110	Parking Brake Actuator	SPN 619
Engine Coolant Level	SPN 111	Red Stop Lamp	SPN 623
Current Battery Net	SPN 114	Amber Warning Lamp	SPN 624
Current Alternator	SPN 115	High Resolution Total Vehicle Distance	SPN 917
Brake Application Pressure	SPN 116	High Resolution Total Trip Distance	SPN 918
Brake Primary Pressure	SPN 117	Tire Location	SPN 929
Brake Secondary Pressure	SPN 118	Trip Drive Fuel Used	SPN 1001
Hydraulic Retarder Pressure	SPN 119	Trip Drive Fuel Economy	SPN 1006
Hydraulic Retarder Oil Temperature	SPN 120	Trip Average Fuel Rate	SPN 1029
Transmission Oil Level	SPN 124	Wait To Start Lamp	SPN 1081
Transmission Oil Pressure	SPN 127	Hydraulic Temperature	SPN 1638
Compass Bearing	SPN 165	Hydraulic Oil Level	SPN 2602
Battery Voltage	SPN 168		

• INDMAR

PARAMETER NAME	SOURCE
Engine Rotational Speed	PGN-65500.4A/B.F0+3
Engine Coolant Temperature	PGN-65500.4A/B.F0+5
Ignition Voltage	PGN-65500.4A/B.F0+6
Engine Oil Pressure	PGN-65500.4A/B.F0+7
Vessel Speed	PGN-65500.4A/B.F1+1
Engine Fuel Consumption	PGN-65500.4A.F1+2/4B.F1+3
Hour Meter	PGN-65500.4A.F1+4/4B.F2+3
Engine Over Temp Warning	PGN-65500.4A.F1+6.0
Low Oil Pressure	PGN-65500.4A.F1+6.1
Low System Voltage	PGN-65500.4A.F1+6.2
Low Oil Level	PGN-65500.4A.F1+6.3
General Warning 1	PGN-65500.4A.F1+6.4
General Warning 2	PGN-65500.4A.F1+6.5
Low Fuel Pressure	PGN-65500.4A.F1+6.6
Check Engine Lamp Active	PGN-65500.4A.F1+7.2/4B.F1+5.2
CAN Bus System Malfunction	PGN-65500.4A.F2+7.4
Oil Pressure Malfunction	PGN-65500.4A.F2+7.5

•NMEA 2000®

PARAMETER NAME	SOURCE
Engine RPM	PGN 127488.F2(+1)
Engine Boost Pressure	PGN 127488.F3(+3)
Engine Tilt/Trim	PGN 127488.F4(+5)
Engine Oil Pressure	PGN 127489.F2(+1)
Engine Oil Temperature	PGN 127489.F3(+3)
Engine Temperature	PGN 127489.F4(+5)
Engine Alternator Voltage	PGN 127489.F5(+7)
Engine Fuel Rate	PGN 127489.F6(+9)
Engine Coolant Pressure	PGN 127489.F8(+15)
Engine Fuel Pressure	PGN 127489.F9(+17)
Engine Status Check Engine	PGN 127489.F11.0
Engine Status Over Temperature	PGN 127489.F11.1
Engine Status Low Oil Pressure	PGN 127489.F11.2
Engine Status Low Oil Level	PGN 127489.F11.3
Engine Status Low Fuel Pressure	PGN 127489.F11.4
Engine Status Low System Voltage	PGN 127489.F11.5
Engine Status Coolant Level	PGN 127489.F11.6
Engine Status Water Flow	PGN 127489.F11.7
Engine Status Water in Fuel	PGN 127489.F11.8
Engine Status Charge Indicator	PGN 127489.F11.9
Engine Status Preheat Indicator	PGN 127489.F11.10
Engine Status High Boost Pressure	PGN 127489.F11.11
Engine Status Rev Limit Exceeded	PGN 127489.F11.12
Engine Status EGR System	PGN 127489.F11.13
Engine Status Throttle Position Sensor	PGN 127489.F11.13
Engine Status Engine Emergency Stop Mode	PGN 127489.F11.15
Engine Status Warning Level 1	PGN 127489.F12.0
Engine Status Warning Level 2	PGN 127489.F12.1
Engine Status Power Reduction	PGN 127489.F12.2
Engine Status Maintenance Needed	PGN 127489.F12.3
Engine Status Engine Comm Error	PGN 127489.F12.4
Engine Status Sub or Secondary Throttle	PGN 127489.F12.5
Engine Status Neutral Start Protect	PGN 127489.F12.6
Engine Status Engine Shutting Down	PGN 127489.F12.7
Engine Percent Load	PGN 127489.F13(+24)
Engine Total Hours	PGN 127489.F7(+11)
Engine Percent Torque	PGN 127489.F14(+25)
Transmission Oil Pressure	PGN 127493.F4(+2)
Transmission Oil Temperature	PGN 127493.F5(+4)
Transmission Status - Check Transmission	PGN 127493.F6.0
Transmission Status - Over Temperature	PGN 127493.F6.1
Transmission Status - Low Oil Pressure	PGN 127493.F6.2
Transmission Status - Low Oil Level	PGN 127493.F6.3
Transmission Status - Sail Drive	PGN 127493.F6.4
Transmission Gear	PGN 127493.F4(+2)

•NMEA 2000® (Continued)

PARAMETER NAME	SOURCE
Rudder Angle	PGN 127245.F5(+4)
Fuel Rate Average	PGN 127497.F3(+3)
Fuel Rate Economy	PGN 127497.F4(+5)
Instantaneous Fuel Economy	PGN 127497.F5(+7)
Level - Fuel	PGN 127505.F2/3
Level - Fresh Water	PGN 127505.F2/3
Level - Waste Water	PGN 127505.F2/3
Level - Live Well	PGN 127505.F2/3
Level - Oil	PGN 127505.F2/3
Level - Black Water (Sewage)	PGN 127505.F2/3
Battery Voltage	PGN 127508.F2(+1)
Battery Current	PGN 127508.F3(+3)
Speed (Water Reference)	PGN 127508.F2(+1)
Speed (Ground Reference)	PGN 127508.F3(+3)
Water Depth Transducer	PGN 127508.F2(+1)
Water Depth Transducer Offset	PGN 127508.F3(+5)
Latitude	PGN 129025.F1(+1)
Longitude	PGN 129025.F2(+5)
Water Temperature	PGN 130310.F2(+1)
Outside Ambient Air Temperature	PGN 130310.F3(+3)
Atmospheric Pressure	PGN 130310.F4(+5)

•SMARTCRAFT®

PARAMETER NAME	SOURCE
Diesel LS Gear Pressure	$1Ax.01+2
Diesel LS Gear Temperature	$1Ax.01+4
Diesel LS Intake Manifold Temperature	$1Ax.01+6
Gas/Diesel LS Fuel Level 1	$1Ax.04+1
Gas/Diesel LS Fuel Level 2	$1Ax.04+3
Gas/Diesel LS Oil Level	$1Ax.05+1
Gas/Diesel LS Oil Pressure	$1Ax.05+3
Gas/Diesel LS Oil Temperature	$1Ax.05+5
Gas/Diesel LS Coolant Temperature	$1Ax.07+1
Gas/Diesel LS Battery Voltage	$1Ax.09+4
Gas/Diesel LS Boat Speed (Airmar Data)	$1Ax.0B+5
Gas/Diesel LS Block/Water Pressure	$1Ax.07+5
Gas/Diesel LS Run Time	$1Ax.02+1
Gas/Diesel LS Break-in Time Required	$1Ax.03+1
Gas/Diesel LS Accumulated Break-in Time	$1Ax.03+3
Gas/Diesel LS Sea Water Temperature	$1Ax.09+3
Gas/Diesel LS Engine Type	$1Ax.0A+7
Gas/Diesel LS Airmar Depth	$1Ax.0B+1
Gas/Diesel LS Airmar Sea Water Temperature	$1Ax.0B+3
Gas/Diesel LS Airmar Data Status	$1Ax.0B+7
Gas/Diesel LS Airmar Otional Temperature	$1Ax.0C+1
Gas/Diesel MS Engine RPM	$17x.0+1
Diesel MS Boost Pressure	$17x.0+4
Gas/Diesel MS Fuel Pressure	$17x.1+3
Gas/MS Boat Speed (Low/High Press Pitot)	$17x.2+1
Gas/Diesel MS Boat Speed (Paddle Wheel)	$17x.2+3
Gas MS Trim Position	$17x.3+1
Gas/Diesel MS Steering Angle	$17x.5+1
Gas/Diesel MS Throttle Position	$17x.5+3
Gas/Diesel MS Warn: Over Speed	$17x.6+1.5
Gas/Diesel MS Warn: High Voltage	$17x.6+1.4
Gas/Diesel MS Warn: Low Voltage	$17x.6+1.3
Gas/Diesel MS Warn: Low Oil Pressure	$17x.6+1.2
Gas MS Warn: Low Block Pressure	$17x.6+1.1
Gas/Diesel MS Warn: Over-Heat	$17x.6+1.0
Gas/Diesel MS Warn: Check Engine	$17x.6+2.2
Gas MS Warn: Guardian Active	$17x.6+2.1
Gas/Diesel MS Warn: Water in Fuel	$17x.6+2.0
Gas/Diesel MS Fault: Coolant Temperature	$17x.6+5.7
Gas/Diesel MS Fault: Voltage	$17x.6+5.5
Gas MS Fault: Water Pressure	$17x.6+5.6
Gas/Diesel MS Fault: Water in Fuel	$17x.6+5.4
Gas/Diesel MS Fault: CAN	$17x.6+5.3
Gas/Diesel MS Fault: Check Engine/Guardian	$17x.6+5.2
Gas/Diesel MS Fault: Oil	$17x.6+5.0

•SMARTCRAFT® (Continued)

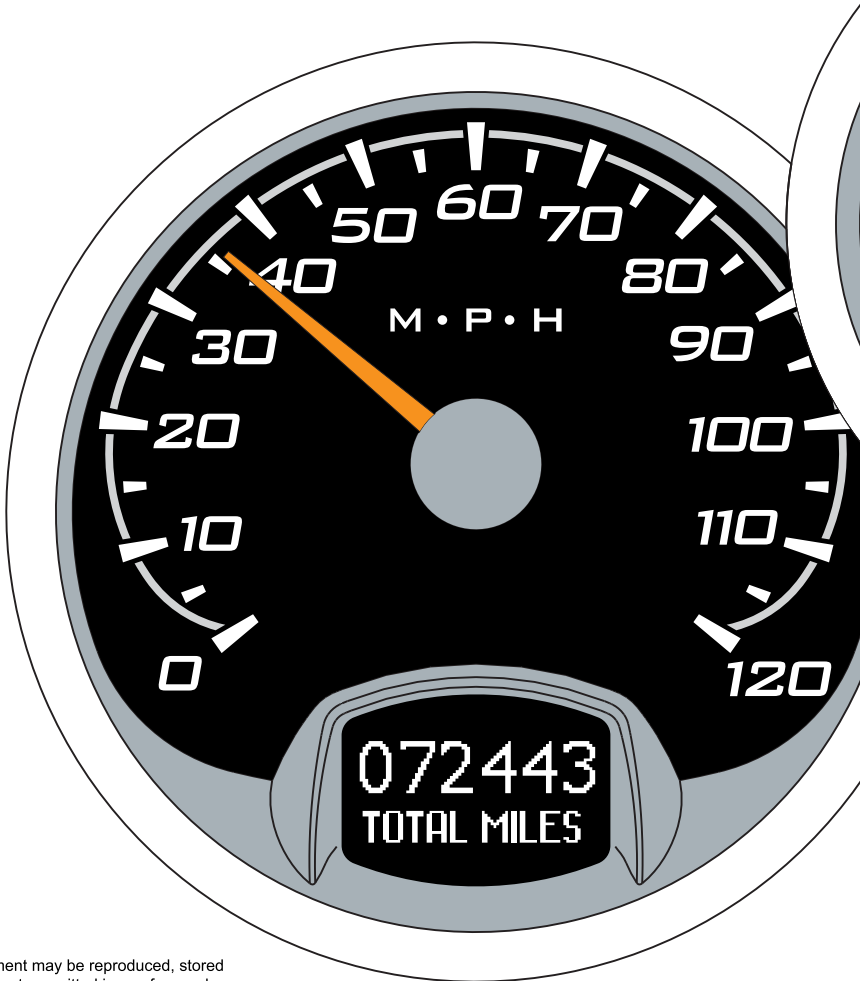| PARAMETER NAME	SOURCE
Diesel MS Load Percent	$17x.5+4
Gas MS Actual Gear	$17x.0+3
Gas/Diesel MS Fuel Flow Total	$17x.1+1
Gas MS Manifold Pressure	$17x.0+4

AGRICULTURAL ●
AUTOMOTIVE ●
INDUSTRIAL ●
MARINE ●
TRUCK ●
BUS ●

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