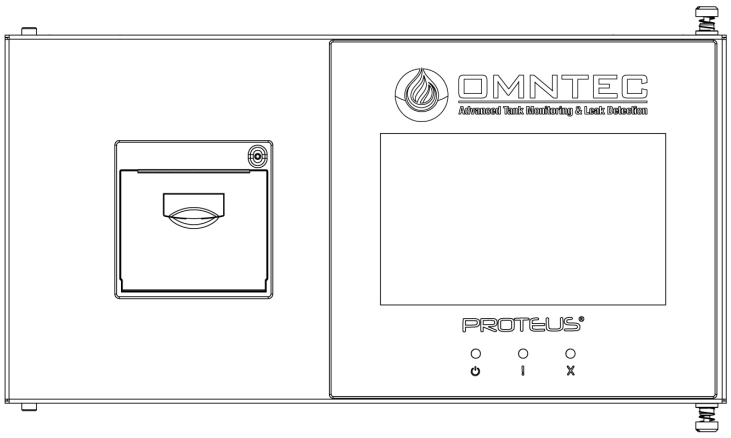
OMNTEC
Advanced Tank Monitoring & Leak Detection

1. Open the camera app
2. Focus the camera on the QR code by gently tapping the code
3. Follow the instructions on the screen to view PDF file

OEL8000III-K | OEL8000III-X

SERIAL INTERFACE MANUAL



PROTEUS® Series
TANK GAUGING SYSTEM
GenIV

Revision 2624

Document No. 301002

OMNTEC® Mfg., Inc. has been certified by DQS Inc. to ISO 9001:2015

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File Name: DE00014 DE00015 DE00020-10 rev2619
Revision Date: 5-04-2026
System: GenIV PROTEUS
Notes:
Added I/i204, 21C, 21D, 612 commands (PROTEUS Gen 4 Only, P1BV+)

File Name: DE00014 DE00015 DE00020-10 rev2426
Revision Date: 6-28-2024
System: GenIV PROTEUS
Notes:
Added 114, 503 commands (PROTEUS Gen 4 Only, P1AX+)
Added 113 command, I101, 102 update (PROTEUS Gen 4 Only, P1AW+)

File Name: DE00014 DE00015 DE00020-10 rev2045
Revision Date: 10-15-2020
System: GenIII/GenIV PROTEUS
Notes:
Added i607,i621 ,i622 , i624 commands (Proteus Gen 3, P2AL+)

1.0 INTRODUCTION

The OEL8000III-K/X Tank Monitoring System has two modes for remote communication, used to connect the system to a controlling computer.

1. Serial RS-232 interface.
3. Ethernet interface.

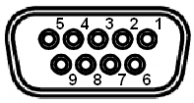
2.0 HARDWARE CONNECTIONS

The RS-232 interface is accessed via a 9-pin D-connector located on the left (K) or bottom-left (X) of the console.

2.1 RS-232

The RS-232 D-connector is a panel mount, 9-pin female type, wired in a Data Terminal Equipment (DTE) configuration.
RS-232 signals are wired to the female D-connector as follows:

Pin #	Function
Pin 2	Transmit Data
Pin 3	Receive Data
Pin 5	Signal Ground



Communications rate is selectable:

Baud: 1200, 2400, 4800, ***9600***, 38400, or 57600 baud.
Data Bits: 7, or ***8*** data bits.
Parity: Odd, Even, or ***None*** parity.
Stop bits: ***1***, or 2.
*Note: Defaults italicized and bolded.

The RS-232 specification is designed for operation up to 75 feet. Direct connect cables greater than 50 feet are not warranted for proper operation.

2.2 EXTERNAL MODEM

The optional external modem operates at up to 9600 Baud. The modem module plugs into the RS232 port.

2.3 ETHERNET INTERFACE

The Ethernet interface is located on the left (K) or bottom-left (X) of the controller beside the RS-232 port.

3.0 CHARACTER FORMAT

The system receives and sends characters via all interfaces in an ASCII format. Characters are not echoed when received, and transmitted characters must not be echoed back to the system.

3.1 COMMAND MESSAGE FORMAT

All command and response messages are configured in a format which includes a control character(s), a function code and a data field. The control characters are described in this section while the function codes and data field messages are described in subsequent sections.

The system responds to a command message that has the following configuration:

SOH | Format Char | Command Code | Data Field

SOH is a control-A character (ASCII 01). Start of string.

The **Format Character** (I, i, S, s) determines the type of command and response. A upper-case format character will return a response in display format. A lower-case format character will return a response in computer format. “I, i” = information response. “S, s” = set command.

The **Command Code** is a three or six character command code which the system interprets to determine the type of action to take. System command codes and response messages are defined in subsequent sections.

The **Data Field** contains information necessary to perform the selected function (such as tank number and setup information).

4.0 RESPONSE MESSAGE FORMAT

There are two types of response message formats: computer (or compressed data format) and display format. Each format uses a different format character.

If the system receives a command message string containing a function code that it does not recognize, it will respond with a <SOH>9999FF1B<ETX>. The "9999" indicates that the system has not understood the command, while the "FF1B" is the appropriate checksum for the preceding <SOH>9999 string.

4.1 COMPUTER FORMAT

The computer format is a stream of numbers without any formatting characters; i.e., carriage return, line feed, spaces, labels, etc. The message format is as follows:

SOH	Format Char	Command Code	Data Field	9	Checksum	ETX	(TLS-250 compatible)
SOH	Format Char	Command Code	Data Field	&&	Checksum	ETX	(TLS-350 compatible)

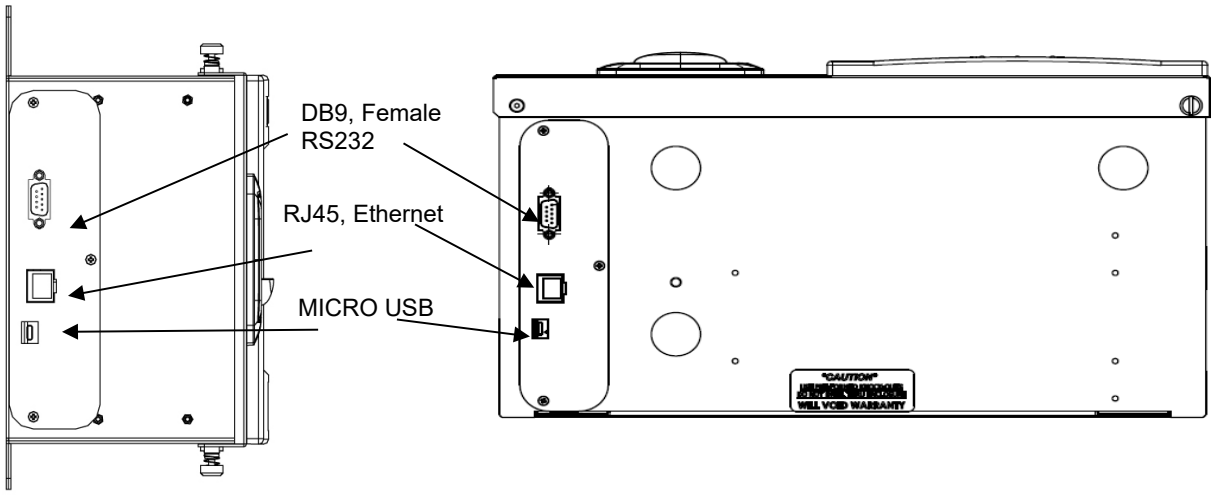
The **SOH** is a Control-A character (ASCII 01). Start of string.
The **Format Character** (I, i, S, s, t) determines the type of command and response. A upper-case format character will return a response in display format. A lower-case format character will return a response in computer format. "I, i, t" = information response. "S, s" = set command.
The **Command Code** is identical to the received command message function code.
The **Data Field** contains the response message which is described in subsequent sections.
The **"&&"** or "**9**" is a fixed tag character which indicates that the checksum immediately follows.
The **Checksum** is a series of four ASCII-hexadecimal characters which provide a check on the integrity of all the characters preceding it, including the control characters. The four characters represent a 16-bit binary count which is the 2's complemented sum of the 8-bit binary representation of the message characters after the parity bit (if enabled) has been cleared.
The data integrity check can be done by converting the four checksum characters to the 16-bit binary number and adding the 8-bit binary representation of the message characters to it. The binary result should be zero. (see section 9.0)

The **ETX** end of string character is programmable. The default ETX character is a Control-C character (ASCII 03). Caution should be taken before changing the ETX character, because it affects the transmitted messages on ALL communications ports of the system, and additional host devices may be connected to other ports which expect the ETX to be a Control-C.

4.2 DISPLAY FORMAT

The display format is intended for display on a CRT. It includes all the necessary formatting characters such as carriage returns, line feeds, nulls, spaces, labels, etc. to view the data

5.0 OEL8000III-K/X COMM Ports



Ethernet

The Ethernet port is used as a remote control port, to retrieve tank / sensor data or to change the settings in the OEL8000III-K/X. The Ethernet port is also used for the embedded web server, and e-mail functionality.

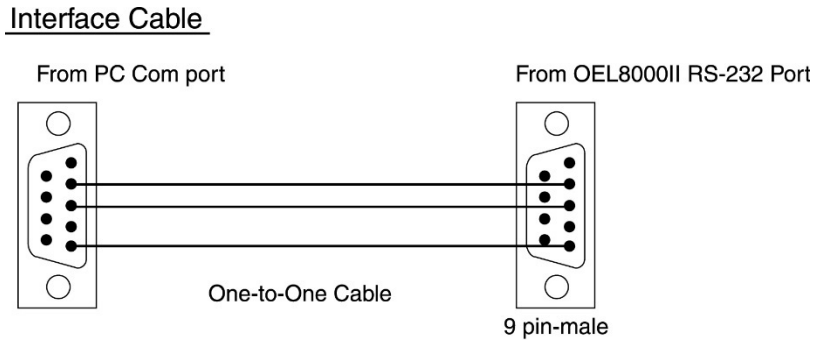
Micro USB

The micro USB is reserved for future use.

RS-232

The RS-232 port is used as the main remote control port, to retrieve tank / sensor data or to change the settings in the OEL8000III-KX.

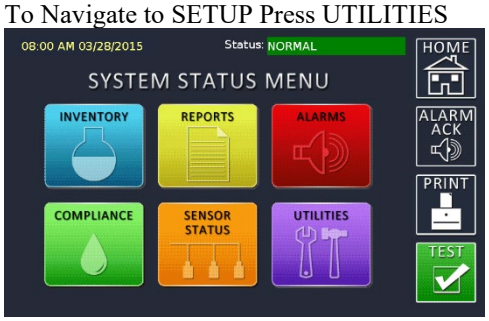
CABLING for RS-232:



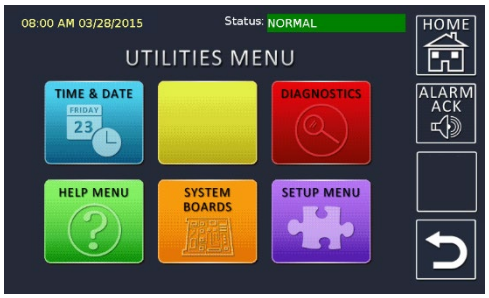
Wiring - Pins 2 to 2, 3 to 3, and 5 to 5
Any standard RS232 cable will work. Do not use a null modem cable.

6.0 OEL8000III-K/X SERIAL COMMUNICATIONS SETUP

To Navigate to SETUP Press UTILITIES

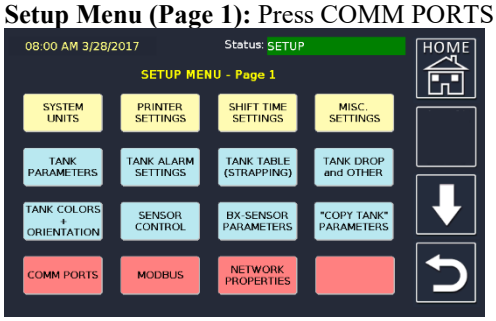


Utilities Screen: To Enter Setup Press SETUP MENU

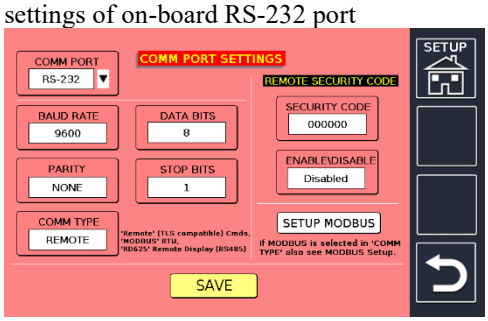


Enter Password: You will be prompted for a password to enter setup, the default is 000000

Setup Menu (Page 1): Press COMM PORTS



Comm Port Settings: Used to program settings of on-board RS-232 port



Baud Rate: Selections available are 1200, 2400, 4800, 9600, 38400, or 57600 baud

Data Bits: Selections available are 8, or 7.

Parity: Selections available are None, Odd, or Even.

Stop Bits: Selections available 1, or 2.

Comm Type: Selections available Remote, or Modbus.

SETUP MODBUS button will navigate to Modbus Settings Page

7.0 FUNCTION CODES AND RESPONSE MESSAGES

The remote commands fall into the following major groupings:

Five Character Commands

Function Codes	Response Types
003 to 051	Control Functions
101 to 111	Operational Reports (System)
201 to 208	Operational Reports (In-tank)
301 to 302	Operational Reports (Sensor)
501	Setup Functions & Reports (System)
601 to 624	Setup Functions & Reports (In-tank)
701 to 702	Setup Functions & Reports (Sensor)
902	Setup Functions & Reports (System Diagnostics)

Three Character Commands

Function Codes	Response Types
100 to 160	Operational Reports (In-tank)
500 to 599	Setup Functions & Reports (In-tank)

8.0 REMOTE TROUBLESHOOTING TECHNIQUES

8.1 SERIAL SETUP

a) Make sure that a one to one serial cable (pins 2,3 and 5 used) is used from the computer to the OEL8000III-K/X. Make sure that the RS232 connector is firmly connected into RS-232 port on the bottom-left of the controller.

b) Check the OEL8000III-K/X's setup menu for the proper serial protocol. See section 6 for details.

8.2 LOOP BACK TEST 1 – Test cabling from **computer to OEL8000III-K/X** for continuity and functionality.

Connect a serial cable from a computer to a loop-back connector or jumper pins 2 and 3 on the serial cable.
From a terminal program on your computer (most computers have Hyper-terminal installed) select the proper baud rate settings and select connect.

Next, type in any character from the keyboard. The character typed should appear on the computers screen (two times if echo is enabled in the terminal programs setup).
If the character appears correctly on the screen that means that the communication is reaching the OEL8000III-K/X properly.

What is happening is that the command is being sent through the serial port from Hyper-terminal, through the cable and jumper (in the OEL8000III-K/X), then back to computer's serial port and into hyper-terminal. This procedure will test the continuity of the wiring and computers serial port's functionality.

If the above test does not work, use a continuity checker and check the connections from the computer to the three pin connector in the OEL8000III-K/X.

9.0 ASCII HEX FLOATING POINT FORMAT

Some remote commands use an ASCII Hex format when transmitting or receiving numbers. This procedure will explain how to convert a number from decimal to ASCII Hex and from ASCII Hex to decimal.

Floating Point Numbers

There are two problems with integers; they cannot express fractions, and the range of the number is limited to the number of bits used. An efficient way of storing fractions is called the floating point method, which involves splitting the fraction into two parts, an exponent and a mantissa.
The exponent represents a value raised to the power of 2.
The mantissa represents a fractional value between 0 and 1.
Consider the number

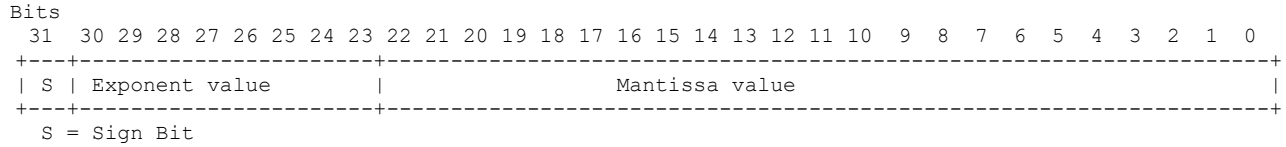
12.50

The number is first converted into the format

2n * 0.xxxxxx

where **n** represents the exponent and 0.xxxxx is the mantissa.

The computer industry agreed upon a standard for the storage of floating point numbers. It is called the IEEE 754 standard, and uses 32 bits of memory (for single precision), or 64 bits (for double precision accuracy). The single precision format looks like,



The sign bit is 1 for a negative mantissa, and 0 for a positive mantissa.
The exponent uses a bias of 127.
The mantissa is stored as a binary value using an encoding technique.

Working out the FP bit patterns

The number we have is

12.5

which expressed as fraction to the power of 2 is,

12.5 / 2 = 6.25
6.25 / 2 = 3.125
3.125 / 2 = 1.5625
1.5625 / 2 = 0.78125

NOTE: Keep dividing by 2 till a fraction between 0 and 1 results. The fraction is the mantissa value, the number of

divisions is the exponent value.
thus our values now are,

0.78125 * (2*2*2*2) (comment: this is 2 to the power of 4) = 12.5

The exponent bit pattern is stored using an excess of 127. This means that this value is added to the exponent when storing (and subtracted when removing).
The exponent bit pattern to store is,

4 + 127 = 131 decimal = '10000011 Hex'

As the mantissa is a positive value, the sign bit is 0.
The mantissa is a little more complicated to work out. Each bit represents 2 to the power of a negative number. It looks like,

1st bit of mantissa = 0.5
2nd = 0.25
3rd = 0.125
4th = 0.0625
5th = 0.03125
etc

The mantissa number value we have is 0.78125, which in binary is

11001000000000000000 (0.5 + 0.25 + 0.03125) = 0.78125

However, to make matters even more complicated, the mantissa is normalized, by moving the bit patterns to the left (each shift subtracts one from the exponent value) till the first 1 drops off.
The resulting pattern is then stored.
The mantissa now becomes

10010000000000000000

and the exponent is adjusted to become

131 - 1 = 130 = '10000010'

The final assembled format is,

```
Bits
31  30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10  9  8  7  6  5  4  3  2  1  0
+--+-----------------------+-----------------------------------------------------------------+
| 0| 1  0  0  0  0  0  1  0| 1  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 |
+--+-----------------------+-----------------------------------------------------------------+
  S   Exponent              Mantissa
```

which equals = 0100 0001 0100 1000 0000 0000 0000 0000 Hex = 41480000 Hexadecimal (= FFFFFFFF used in command)

Now let's convert the following ASCII Hex format back into a decimal number.

```
Bits
31  30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10  9  8  7  6  5  4  3  2  1  0
+--+-----------------------+-----------------------------------------------------------------+
| 0| 1  0  0  0  0  0  1  0| 1  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 |
+--+-----------------------+-----------------------------------------------------------------+
  S   Exponent              Mantissa
```

Sign bit is 0 = positive number.

The exponent value of, 10000010 Hex = 2^1 + 2^7 = 130 decimal

130 - 127 = 3

And a mantissa value of, 10010000000000000000 Hex = 2^22 + 2^19 = 4718592 decimal

1 + (4718592 / 8388608) = 1.5625 OR bit 22 = 0.5, bit 21 = 0.25, etc 1 + (0.5 + 0.0625) = 1.5625

thus the number is,

1.5625 * 2^3 = 12.5

VISUAL BASIC CHECKSUM PROGRAMMING EXAMPLE

Check the checksum on OMNTEC Five Character/TLS350 protocol

```
'"Instring" contains current response string.
'The addition of all of the characters(except checksum) converted back to
'a four character hex string should equal the checksum string.

Private Sub check_checksum()

   'Read four characters after the '&&' termination.
   stpt = (InStr(1, InString, "&&"))           'Find the '&&' termination characters.
   If (Len(InString) < stpt + 4) Then Exit Sub 'Are CHECKSUM characters in the response.
   chsum = Mid(InString, stpt + 2, 4)          'Store the four checksum characters.

   i = 1
   'Add the all characters in the string together except the four checksum characters.
   Do While (i < stpt + 2)
      chk_sum = chk_sum + Asc(Mid(InString, i, 1))
      i = i + 1
   Loop

   chk_sum = chk_sum Mod 65536         'AND with 0xFFFF (round off).
   chk_sum = Hex(&H10000 - chk_sum)    'Perform 2's complement(Invert plus one), save as
                                       'a hex string.

   'Put zeros to format string to 4 places if needed.
   If Len(chk_sum) < 4 Then      cksm_lgh = 4 - Len(chk_sum)
     For X = 1 To cksm_lgh
        chk_sum = "0" & chk_sum
     Next X
   End If

   'Compare strings, checksum with calculated value.
   If (chsum = chk_sum) Then
      checksum_0k = 1 'If checksum is OK.
   Else
      checksum_0k = 0 'Else checksum is bad.
   End If

End Sub
```

Check the checksum on OMNTEC three Character/TLS250 protocol

The three character command checksum is calculated the same as in the above example accept that the termination character(s) '&&' is a '9' before the checksum characters. Check that the fifth character from the end of the string is a '9' then store the last four characters as the checksum.

Three Character Commands

Command: 10T Inventory Report

Command Format: <S0H>10T

Typical Response Message:

```
<S0H>100MMDDHHmmsssTPssssIIIhhGGGGGGSFFFtGGGGGGWW(W)t....          (W) - see Note 10
                  TPssssIIIhhGGGGGGSFFFtGGGGGGWW(W)t9CCCC<ETX>
```

Notes:

1. MMDDHHmm - Current Date and Time(month, day, hours, minutes)
2. sss - Three system status characters:
   a. The first "s" is always '0'
   b. The second "s" is always '0'
   c. The third "s" is always '0'
3. T - Tank Number (Decimal, 0 = all)
4. P - Product code character (set by function 55T)
5. ssss - Four tank status characters:
   a. The first "s" is "1" if the tank is "enabled"
   b. The second "s" is "1" if the tank is "enabled"
   c. The third "s" is unused (always 0)
   d. The fourth "s" is "1" if there is a delivery-in-progress
6. IIIhh - Fuel level in inches and hundredths
7. GGGGGG - Fuel volume in gallons
8. SFFFt - Fuel temperature in degrees Fahrenheit and tenths with a preceding sign character (0 or -)
9. GGGGGG - Tank ullage in gallons
10. WWt - Water level in inches and tenths (Inches)
10. WWWt - Water level in inches and tenths (Millimeters)
11. 9 - Data Termination Flag
12. CCCC - Message Checksum

Command: 15T Delivery Report

Command Format: <S0H>15T

Typical Response Message:

<S0H>150TPrrMMDDHHmmGGGGGGSFFFtMMDDHHmmGGGGGGSFFFt....
TPrrMMDDHHmmGGGGGGSFFFtMMDDHHmmGGGGGGSFFFt....9CCCC<ETX>

Notes:

1. T - Tank Number (Decimal, 0 = all)
2. P - Product code character (set by function 55T)
3. rr - Number of delivery reports to follow for the tank. If it is 00, no reports are included in the response for this tank
1. MMDDHHmm – Starting Current Date and Time(month, day, hours, minutes).
2. GGGGGG – Starting Fuel volume in gallons
3. SFFFt – Starting Fuel temperature in degrees Fahrenheit and tenths with a preceding sign character (0 or -)
7. MMDDHHmm – Ending Current Date and Time(month, day, hours, minutes).
8. GGGGGG – Ending Fuel volume in gallons
9. SFFFt – Ending Fuel temperature in degrees Fahrenheit and tenths with a preceding sign character (0 or -)
10. 9 - Data Termination Flag
11. CCCC - Message Checksum

Command: 160 Clear Delivery Reports

Command Format: <S0H>160

Typical Response Message: <S0H>1609FF2F<ETX>

Notes:
1. The latest Delivery report for each tank is retained

Command: 1AT Probe Alarm Status Report

Command Format: <S0H>1AT

Typical Response Message:

<S0H>1A0aTPssssss....
TPssssss9CCCC<ETX>

Notes:

1. a - External input status, Always 0
2. T - Tank Number (Decimal, 0 = all)
3. P - Product code character (set by function 55T)
4. sssss – Current alarm status (0=No Alarm, 1=Alarm)

for the following alarm conditions:
1st Leak Alarm
2nd High Water Alarm
3rd High Product Alarm
4th Low Product Alarm
5th Theft Alarm

5. 9 - Data Termination Flag
6. CCCC - Message Checksum

Command: 500 Set Calendar Clock

Command Format: <S0H>500YYMMDDHHmm

Typical Response Message:

<S0H>500YYMMDDHHmm9CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time (year, month, day, hours, minutes) 24-hour time format)
2. 9 - Data Termination Flag
3. CCCC - Message Checksum

Command: 599 Set Calendar Clock with seconds

Command Format: <S0H>599YYMMDDHHmmss

Typical Response Message:

<S0H>599YYMMDDHHmmss9CCCC<ETX>

Notes:
1. YYMMDDHHmmss - Current Date and Time(year, month, day, hours, minutes, seconds) 24-hour time format
2. 9 - Data Termination Flag
3. CCCC - Message Checksum

Command: A80 ID Revision Level Request

Command Format: <S0H>A80

Typical Response Message:

<SOH>A80OEL3uuRmmmno9CCCC<ETX>

Example <S0H>A80OEL3K4E001AA9FC36<ETX>

Notes:

1. uu – Unit type (B4,B8,K4,K8,X0)
2. R – Release type (P=Production, E=Engineering)
3. mmm – Major Version number (001 to 255)
4. n - Minor 1 Version number (A-Z)
5. o - Minor 2 Version number (0, A-Z)
6. 9 - Data Termination Flag
7. CCCC - Message Checksum

Five Character Commands

Command: 003 Remote Alarm Reset

Command Format:

Display: <SOH>S00300
Computer: <SOH>s00300

Typical Response Message, Display Format:

<SOH>
S00300
JUN 25, 2004 02:34 PM
<ETX>

Typical Response Message, Computer Format:

<SOH>s00300YYMMDDHHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

Command: 051 Clear In-Tank Delivery Reports

Command Format:

Computer: <SOH>s051TT

Typical Response Message, Computer Format:

<SOH>s051TTYYMMDDHHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Command: 101 System Status Report

Command Format:

```
      Display:   <SOH>I10100
      Computer:  <SOH>i10100
```

Typical Response Message, Display Format:

```
<SOH>
I10100
JUL 29, 2024  05:24 AM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

SYSTEM STATUS REPORT

ID    STATUS
T1    Normal
T3    Normal
T4    Normal
T5    Normal
T6    Normal
T7    Normal
T9    Normal
T10   Normal
T11   Normal
T12   Normal
S1    Normal
S2    Normal
S3    Normal
S17   Normal
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i10100YYMMDDHHmmAANNTT....
                     AANNTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
   - 00 - All Functions Normal
   - 01 - System Alarm
   - 02 - Tank Alarm
   - 03 - Liquid Sensor Alarm
   - 21 – PLLD Alarm
   - 60 – Volumetric Leak Test **(OMNTEC only responses)**

3. NN - Alarm Type Number:

- If AA is 01 and NN is:
  - 01 = Printer out of Paper
  - 60 = System (Sensor)Bus Alarm **(OMNTEC only responses)**

- If AA is 02 and NN is:
  - 03 = Tank High Water Alarm
  - 04 = Tank Overfill Alarm
  - 05 = Tank Low Product Alarm
  - 06 = Tank Sudden Loss Alarm
  - 07 = Tank High Product Alarm
  - 09 = Tank Probe Out Alarm
  - 11 = Tank Delivery needed warning
  - 12 = Tank Maximum Level Alarm
  - 14 = Tank Periodic Leak Test Fail Alarm
  - 15 = Tank Annual Leak Test Fail Alarm
  - 20 = Tank Leak Test Active
  - 27 = Low Temperature **(OMNTEC only, Gen 3, Gen4)**
  - 60 = High Product Point **(OMNTEC only, Not supported in Gen 4)**
  - 61 = Low Product Point **(OMNTEC only, Not supported in Gen 4)**
  - 63 = High Level Warning **(OMNTEC only responses)**
  - 64 = 1 L/Hr 2 Hour Test Fail **(OMNTEC 'B' unit only responses)**
  - 64 = Tank 1LPH Leak Test Fail Alarm **(Gen 4 Units Only 03/2024)**
  - 65 = High Temperature **(OMNTEC only, Gen4)**
  - 66 = High Oil Alarm **(OMNTEC only, Oil Water Separator)**
  - 67 = High High Oil Alarm **(OMNTEC only, Oil Water Separator)**
  - 68 = Low Water Alarm **(OMNTEC only, Oil Water Separator)**
  - 69 = Mast Disconnect **(OMNTEC only, Wireless Probe)**
  - 70 = Low Battery **(OMNTEC only, Wireless Probe)**

- If AA is 03 and NN is:
  - 02 = Sensor Setup Data Warning
  - 03 = Sensor Fuel Alarm
  - 04 = Sensor Out Alarm
  - 05 = Sensor Short Alarm
  - 06 = Sensor Water Alarm
  - 07 = Sensor Water Out Alarm
  - 08 = Sensor High Liquid Alarm
  - 09 = Sensor Low Liquid Alarm
  - 10 = Sensor Liquid Warning
  - 16 = Alarm **(OMNTEC only responses)**
  - 17 = Liquid Alarm **(OMNTEC only responses)**
  - 18 = Vapors Detected **(OMNTEC only responses)**
  - 19 = Level Alarm **(OMNTEC only responses)**
  - 20 = No Reply **(OMNTEC only responses)**
  - 21 = Bus No Reply **(OMNTEC only responses)**
  - 22 = Low Temp Alarm **(OMNTEC only responses)**
  - 23 = High Temp Alarm **(OMNTEC only responses)**
  - 24 thru 45 = Special Alarms (Contact OMNTEC) **(OMNTEC only responses)**

- If AA is 21 and NN is:

01 = PLLD Setup Data Warning	**(OEL8000II, Gen 4)**
02 = PLLD Gross Test Fail Alarm	**(OEL8000II, Gen 4)**
03 = PLLD Annual Test Fail Alarm	**(OEL8000II, Gen 4)**
05 = PLLD Periodic Test Needed Alarm	**(OEL8000II)**
06 = PLLD Sensor Open Alarm	**(OEL8000II, Gen 4)**
08 = PLLD Shutdown Alarm	**(Gen 4)**
11 = PLLD Periodic Test Fail Alarm	**(OEL8000II, Gen 4)**
13 = PLLD Annual Test Needed Alarm	**(OEL8000II)**
14 = PLLD Low pressure Alarm	**(OEL8000II, Gen 4)**
15 = PLLD Sensor Short Alarm	**(, Gen 4)**
16 = PLLD Continuous Handle On Alarm	**(, Gen 4)**
18 = PLLD Line Equipment Alarm	**(OEL8000II)**

- If AA = 60 and NN is:

60 VLD .1 Failed, .2 Failed	**(OMNTEC only responses)**
61 VLD .1 Failed, .2 Passed	**(OMNTEC only responses)**
62 VLD .1 Passed, .2 Passed	**(OMNTEC only responses)**

4. TT - Tank/Sensor Number
5. && - Data Termination Flag
6. CCCC - Message Checksum

Command: 102 System Configuration Report

Command Format:

Display: <SOH>I10200
Computer: <SOH>i10200

Typical Response Message, Display Format:

```
<SOH>
I10200
JUL 28, 2013  11:16 PM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

SYSTEM CONFIGURATION

SLOT      BOARD TYPE            POWER ON TIME     CURRENT
          (0.0) MCU             2406271508        2406281503
   1      (0.1) XB-416          2406271508        2406281503
   2      (1.2) XB-416          2406271508        2406281503
   3      UNUSED
   4      (1.4) XB-4IO          2406271508        2406281503
   5      (2.5) XB-416          2406271508        2406281503
   6      UNUSED
   7      (0.7) XB-HVB          2406271508        2406281503

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i10200YYMMDDHHmmNNSSTTFFFFFFFFCCCCCCCC...
                      SSTTFFFFFFFFCCCCCCCC&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Modules to Follow (Hex)
3. SS - Slot Number (Hex)
4. TT - Type of Module (Hex):
   - 30 - MCU
   - 31 - DISPLAY **(OEL8000II, Gen 3/3.5)**
   - 32 - XB-416
   - 33 - XB-800
   - 34 - XB-RB8
   - 35 - XB-4IO
   - 36 - XB-HVB
4. FFFFFFFF - Power On Reset, Always '0' (ASCII Hex IEEE float)
   (Gen4 POS + CUR = YYMMDDHHMM)
6. CCCCCCCC - Current I/O Reading, Always '0' (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Command: 111 Alarm History Report

Command Format:

Display: <SOH>I11100
Computer: <SOH>i11100

Typical Response Message, Display Format:

```
<SOH>
I11100I111001307282336&&FC74
I11100
JUL 28, 2013  11:36 PM

PRIORITY ALARM HISTORY
ID  CATEGORY  DESCRIPTION          ALARM-TYPE               STATE  DATE
 TIME
T5  TANK      RED-DYED             Low Low Product Alarm    CLEAR  JUL 26, 2013
 04:39 PM
T6  TANK      REGULAR,GAS          Low Low Product Alarm    CLEAR  JUL 26, 2013
 04:39 PM
T5  TANK      RED-DYED             Delivery Needed Alarm    CLEAR  JUL 26, 2013
 04:39 PM
T6  TANK      REGULAR,GAS          Delivery Needed Alarm    CLEAR  JUL 26, 2013
 04:39 PM
T6  TANK      REGULAR,GAS          Time Out Alarm           CLEAR  JUL 26, 2013
 04:39 PM
T6  TANK      REGULAR,GAS          Delivery Needed Alarm    ALARM  JUL 26, 2013
 04:39 PM
T6  TANK      REGULAR,GAS          Low Low Product Alarm    ALARM  JUL 26, 2013
 04:39 PM
T5  TANK      RED-DYED             Time Out Alarm           CLEAR  JUL 26, 2013
 04:39 PM
T5  TANK      RED-DYED             Delivery Needed Alarm    ALARM  JUL 26, 2013
 04:39 PM
T5  TANK      RED-DYED             Low Low Product Alarm    ALARM  JUL 26, 2013
 04:39 PM
T5  TANK      RED-DYED             Time Out Alarm           ALARM  JUL 26, 2013<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11100YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
                    AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
   - 00 - All Functions Normal
   - 02 - Tank Alarm
   - 03 – Liquid Sensor Alarm
3. cc - Sensor Category
   - 00 = Other
4. NN - Alarm Type Number:
   - If AA is 02 and NN is:
     - 02 = Tank Leak Alarm
     - 03 = Tank High Water Alarm

04 = Tank Overfill Alarm
05 = Tank Low Product Alarm
06 = Tank Sudden Loss\Theft Alarm
07 = Tank High Product Alarm
09 = Tank Probe Out Alarm
11 = Tank Delivery Needed Warning
12 = Tank Maximum Level Alarm

- If AA is 03 and NN is:
00 = Sensor Normal
02 = Sensor Setup Data Warning
03 = Sensor Fuel Alarm
04 = Sensor Out Alarm
05 = Sensor Short Alarm
06 = Sensor Water Alarm
07 = Sensor Water Out Alarm
08 = Sensor High Liquid Alarm
09 = Sensor Low Liquid Alarm
10 = Sensor Liquid Warning
16 = Alarm
17 = Liquid Alarm
18 = Vapors Detected
19 = Level Alarm
20 = No Reply
21 = Bus No Reply
22 = Low Temp Alarm
23 = High Temp Alarm
24 thru 44 = Special Alarms (Contact OMNTEC)

5. TT - Tank/Sensor Number
6. SS - Alarm State
01 = Alarm cleared
02 = Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Command: 112 Non-Priority Alarm History Report

Command Format:
Display: <SOH>I11200
Computer: <SOH>i11200

Typical Response Message, Display Format:

```
<SOH>
I11200
JUL 28, 2013 11:39 PM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

NON-PRIORITY ALARM HISTORY
ID    CATEGORY    DESCRIPTION ALARM TYPE        STATE       DATE        TIME
      SYSTEM                  PAPER OUT         CLEAR       6-20-13     12:01PM
      SYSTEM                  PAPER OUT         ALARM       6-20-13     12:00PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11200YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
                      AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
   See explanation for "AA" in Function i11100
3. cc - Sensor Category
   See explanation for "cc" in Function i11100
4. NN - Alarm Type Number:
   See explanation for "NN" in Function i11100
5. TT - Tank/Sensor Number
6. SS - Alarm State
   01 = Alarm cleared
   02 = Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag9. CCCC - Message Checksum
9. CCCC - Message Checksum

Command: 113 Active alarm Report **(Proteus Gen 4 Only, P1AW+)**

Command Format:
Display: <SOH>I11300
Computer: <SOH>i11300

Typical Response Message, Display Format:

<SOH>
I11300
JUL 29, 2013 05:24 AM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

ACTIVE ALARMS REPORT

ID	CATEGRORY	DESCRIPTION	ALARM TYPE	DATE	TIME
T1	TANK	DIESEL SS	High Product Alarm	Mar 04, 2024	09:36:53
	SYSTEM		System Bus Alarm	Feb 29, 2024	15:14:12

<ETX>

Typical Response Message, Computer Format:
<SOH>i11300YYMMDDHHmma..ab..bc..cd..dAAccNNTTYYMMDDHHmm...
AAccNNTTYYMMDDHHmm&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. AA - Alarm/Warning Category:
   See explanation for "AA" in Function i10100
7. cc - Sensor Category
   00=Other
8. NN - Alarm Type Number:
   See explanation for "NN" in Function i10100
9. TT - Tank/Sensor Number
10. YYMMDDHHmm - Alarm Date and Time
11. && - Data Termination Flag
12. CCCC - Message Checksum

Command: 114 Cleared alarm Report **(Proteus Gen 4 Only, P1AX+)**

Command Format:

```
Display:    <SOH>I11400
Computer:   <SOH>i11400
```

Typical Response Message, Display Format:

```
<SOH>
I11400
Apr 24, 2024 16:32:37

Header Line 1
Header Line 2
Header Line 3
Header Line 4

CLEARED ALARM REPORT
ID  CATEGRORY DESCRIPTION          ALARM TYPE           STATE DATE     TIME
T1  TANK      Diesel Fuel #2       Time Out Alarm       CLEAR Apr 08, 2024 10:33:07
T1  TANK      Diesel Fuel #2       Low Product Alarm    CLEAR Feb 22, 2024 15:10:08
S1  SENSOR    TANK 1, Sump#:1      No Reply             CLEAR Mar 04, 2024 15:02:08

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11400YYMMDDHHmma..ab..bc..cd..dAAccNNTTSSYYMMDDHHmm...
                                    AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. AA - Alarm/Warning Category:
   See explanation for "AA" in Function i10100
7. cc - Sensor Category
   00=Other
8. NN - Alarm Type Number:
   See explanation for "NN" in Function i10100
9. TT - Tank/Sensor Number
10. SS - Alarm State
    01=Alarm Cleared
    02=Alarm Occurred
11. YYMMDDHHmm - Alarm Date and Time
12. && - Data Termination Flag
13. CCCC - Message Checksum

Command: 201 In-Tank Inventory Report

Command Format:

Display: <SOH>I20100
Computer: <SOH>i20100

Typical Response Message, Display Format:

<SOH>
I20100
JUL 28, 2013 11:41 PM
info
info
info
info

TANK	PRODUCT	VOLUME	TC-VOLUME	ULLAGE	HEIGHT	WATER	TEMP
5	RED-DYED	2700.1	2676.0	7299.8	19.441	1.122	81.2
6	REGULAR,GAS	2700.1	2676.0	7299.8	19.441	1.122	81.2

<ETX>

Typical Response Message, Computer Format:

<SOH>**i**201TTYYMMDDHHmmTTpssssNNFFFFFFFF...
TTpssssNNFFFFFFFF...&&CCCC<ETX>

<SOH>**t**201TTYYMMDDHHmm**ss**TTpssssNNFFFFFFFF...
TTpssssNNFFFFFFFF...&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
1a. YYMMDDHHmmss - Current Date and Time with seconds
2. TT - Tank Number (Decimal, 00 = all)
3. p - Product Code (single ASCII character, from 20 Hex - 7E Hex)
4. ssss - Tank Status Bits:
   - Bit 1 - (LSB) Delivery in Progress (Bit high 0001=In progress)
   - Bit 2 - Leak Test in Progress (Bit high 0002=In progress)
   - Bit 3 - Unused
   - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE float:
   1. Volume
   2. TC Volume
   3. Ullage
   4. Height
   5. Water
   6. Temperature
   7. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

Command: 202 In-Tank Delivery Report

Command Format:

Display: <SOH>I20200
Computer: <SOH>i20200

Typical Response Message, Display Format:

```
<SOH>
I20200
JUL 28, 2013  11:44 PM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

DELIVERY REPORT

T 5: RED-DYED
INCREASE      DATE      TIME      VOLUME   TC-VOLUME     WATER     TEMP     HEIGHT

END:    07/16/2013 13:09:20      2828.7     2811.7     1.348     74.2     20.367
START:  07/16/2013 13:09:19      2707.5     2691.4     1.415     74.3     19.494
AMOUNT:                           121.1      120.3

END:    07/16/2013 11:48:21      3030.6     3011.7     1.450     74.9     21.821
START:  07/16/2013 11:48:12      2711.3     2694.6     1.451     74.9     19.522
AMOUNT:                           319.2      317.1

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i202TTYYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
                    TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>

<SOH>t202TTYYMMDDHHmmssTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
                      TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

Notes:
1. YYMMDDHHmm - Current Date and Time
1a. YYMMDDHHmmss - Current Date and Time with seconds
2. TT - Tank Number (Decimal, 00 = all)
3. p - Product Code (single ASCII character, from 20 Hex - 7E Hex)
4. dd - Number of Deliveries to follow (Decimal, 00 if no data for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time

7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
    1. Starting Volume
    2. Starting TC Volume
    3. Starting Water
    4. Starting Temp
    5. Ending Volume
    6. Ending TC Volume
    7. Ending Water
    8. Ending Temp
    9. Starting Height
    10. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

Command: 203 In-Tank Leak Detect Report

Command Format:

Display: <SOH>I203TT
Computer: <SOH>i203TT

Typical Response Message, Display Format:

```
<SOH>
I20300
Mar 17, 2026 09:54:20

Header Line 1
Header Line 2
Header Line 3
Header Line 4

TANK LEAK TEST REPORT

TANK  1  Diesel
      TEST STATUS: OFF                    .2 G/Hr TEST: PASS
  TEST START TIME: Mar 12, 2026 00:34:59     DURATION: 4 HOUR
       START TEMP: 80.0 (F)              START VOLUME: 303.2 (Gal)
      ENDING TEMP: 79.0 (F)                 LEAK RATE: -0.04 (Gal/hr)

TANK  2  GAS 87
      TEST STATUS: OFF                    .2 G/Hr TEST: PASS
  TEST START TIME: Mar 17, 2026 00:35:00     DURATION: 4 HOUR
       START TEMP: 67.2 (F)              START VOLUME: 263.0 (Gal)
      ENDING TEMP: 66.0 (F)                 LEAK RATE: -0.04 (Gal/hr)
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i203TTYYMMDDHHmmTTpYYMMDDHHmmHHNNFFFFFFFF...
                    TTpYYMMDDHHmmHHNNFFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. p - Product Code (single ASCII character, from 20 Hex - 7E Hex)
4. YYMMDDHHmm - Starting Date/Time
5. HH - Test Duration (hours)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE float:
   1. Starting Temp
   2. Ending Temp
   3. Starting Volume
   4. Ending Rate
8. && - Data Termination Flag
9. CCCC - Message Checksum

Command: 204 In-Tank Shift Inventory Report (Proteus Gen 4 Only, P1BV+)

Command Format:

Display: <SOH>I204TT
Computer: <SOH>i204TT

Typical Response Message, Display Format:

```
<SOH>
I20400
Mar 17, 2026 09:54:20

Header Line 1
Header Line 2
Header Line 3
Header Line 4

SHIFT INVENTORY

T01 Diesel                      VOLUME   TC-VOLUME      ULLAGE  HEIGHT   WATER  TEMP

SHIFT 01  [May 04, 2026 16:30:00  -  May 04, 2026 14:40:00]
          STARTING VALUES       1866.83     1848.90     1918.58  175.37    0.00  27.4
          ENDING VALUES         1666.68     1849.17     1918.73  175.35    0.00  27.1
          DELIVERY VALUE           0.00
          TOTALS                 200.15

SHIFT 02  [May 04, 2026 14:40:00  -  May 03, 2026 16:30:01]
          STARTING VALUES       1866.68     1849.17     1918.73  175.35    0.00  27.1
          ENDING VALUES         1396.84     1385.34     2388.57  131.22    0.00  25.7
          DELIVERY VALUE           0.00
          TOTALS                 469.84
```

Typical Response Message, Computer Format:

```
<SOH>i204TTYYMMDDHHmmTTpssNNFFFFFFFF...
                    TTpssNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. p - Product Code (single ASCII character, from 20 Hex - 7E Hex)
4. ss - Shift Number 01 - 04
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE float:
    1. Starting Volume
    2. Starting Ullage
    3. Starting TC Volume
    4. Starting Height
    5. Starting Water
    6. Starting Temp
    7. Ending Volume
    8. Ending Ullage
    9. Ending TC Volume
    A. Ending Height
    B. Ending Water
    C. Ending Temp
    D. Total volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

Command: **205 In-Tank Status Report**

Command Format:

Display: <SOH>I205TT
Computer: <SOH>i205TT

Typical Response Message, Display Format:

```
<SOH>
I20500
Mar 17, 2026 09:55:07

Header Line 1
Header Line 2
Header Line 3
Header Line 4

TANK  PRODUCT                  STATUS
  1   Diesel                   NORMAL
  2   GAS 87                   NORMAL
  3   PLUS 96                  NORMAL
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i205TTYYMMDDHHmmTTnnAA...
                    TTnnAA...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. nn - Number of alarms (Hex, == = none)
4. AA – active Tank Alarm Type:
   See explanation for 'AA' in function i101.
5. && - Data Termination Flag
6. CCCC - Message ChecksumCommand:

Command: 206 In-Tank Alarm History Report

Command Format:

```
      Display: <SOH>I206TT
      Computer: <SOH>i20600
```

Typical Response Message, Display Format:

```
<SOH>
I20600
Mar 17, 2026 09:55:33

Header Line 1
Header Line 2
Header Line 3
Header Line 4

TANK ALARM HISTORY

TANK 1 Diesel
     Time Out Alarm                    Feb 17, 2026 13:19:08
     Time Out Alarm                    Feb 17, 2026 11:28:16
     Time Out Alarm                    Feb 17, 2026 11:11:09
     Low Product Alarm                 Feb 17, 2026 09:39:36

TANK 2 GAS 87
     Low Product Alarm                 Mar 03, 2026 13:56:03
     Low Product Alarm                 Mar 03, 2026 13:35:57
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i206TTYYMMDDHHmmTTnnYYMMDDHHmmaaaa...
                    TTnnYYMMDDHHmmaaaa...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. nn - Number of alarms in history for tank (Decimal, 00 = none)
4. YYMMDDHHmm - Date and time alarm occurred
5. aaaa - Type of alarm: (Hex)
   - 0003 = Tank High Water Alarm
   - 0004 = Tank Overfill Alarm
   - 0005 = Tank Low Low Product Alarm
   - 0006 = Tank Sudden Loss Alarm
   - 0007 = Tank High High Product Alarm
   - 0009 = Tank Probe Out Alarm
   - 000B = Tank Delivery Needed Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

Command: 207 In-Tank Leak Test History Report

Command Format:
Display: <SOH>I207TT
Computer: <SOH>i207TT

Typical Response Message, Display Format:

```
<SOH>
I207TT
JUL 28, 2013 11:33 AM
TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED

LAST ANNUAL TEST PASSED:

(VLD .1)NO TEST DATA

FULLEST ANNUAL TEST PASS

(VLD .1)NO TEST DATA

LAST PERIODIC TEST PASS:
TEST START TIME         HOURS       VOLUME      % VOLUME    TEST TYPE
JUL 18, 2013 00:01 AM     4          2780          49.8         VLD

FULLEST PERIODIC TEST

PASSED EACH MONTH:

TEST START TIME         HOURS       VOLUME      % VOLUME    TEST TYPE
JUL 23, 2013 00:01 AM    63          2916          50.5        CITLD
JUN 30, 2013 00:01 AM    75          3016          51.1        CITLD
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i207TTYYMMDDHHmmTTNNRRnnttYYMMDDHHmmhhhhhhhhhVVVVVVVVVpppppppppp...
                    TTNNRRnnttYYMMDDHHmmhhhhhhhhhVVVVVVVVVpppppppppp...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. RR - Leak Report Type:
   - 00 = Last Test Passed
   - 01 = Fullest Test Passed
   - 02 = Fullest Periodic Monthly Test Passed
5. nn - Leak History Number (1 - 12) for first Monthly Tests Passed
6. tt - In-Tank Leak Test Type:
   - 00 = 0.2 gal/hr test
   - 01 = 0.1 gal/hr test
   - 02 = Gross (3 gal/hr)test
7. YYMMDDHHmm - In-Tank Leak Test Start Time
8. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Command: 208 In-Tank Leak Test Results Report

Command Format:

Computer: <SOH>i208TT
Display: <SOH>I20800

Typical Response Message, Computer Format:

<SOH>i208TTYYMMDDHHmmTTNNttmmYYMMDDHHmmRRrrrrrrrrhhhhhhhhVVVVVVVV...
TTNNttmmYYMMDDHHmmRRrrrrrrrrhhhhhhhhVVVVVVVV...&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. NN - Number of Results to Follow (Hex)
4. tt - In-Tank Leak Test Result Type:
   00 = 0.2 gal/hr Test
   01 = 0.1 gal/hr Test
   02 = Gross (3 gal/hr) Test
5. mm - In-Tank Leak Manifold Status:
   00 = Tank Not Manifolded During Leak Test
   01 = Tank Manifolded During Leak Test
6. YYMMDDHHmm - Previous In-Tank Leak Test Start Time
7. RR - Previous In-Tank Leak Test Result:
   00 = Test Invalid
   01 = Test Passed
   02 = Test Failed
8. rrrrrrrr - Test Rate (ASCII Hex IEEE float)
9. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
10. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Typical Response Message, Display Format:

<SOH>
I20800
JUL 28, 2013 10:31 PM
PREVIOUS IN TANK LEAK TEST RESULTS

TANK 1 DIESEL 1

TEST-TYPE	START-TIME	RESULT	RATE	HOURS	VOLUME(L)
PERIODIC	MO 07/23/13 01:01:33	FAIL	0.77	4.0	30708.27
ANNUAL	MO 07/02/13 01:01:33	PASS	-0.07	4.0	16804.78

TANK 2 Regular 1

TEST-TYPE	START-TIME	RESULT	RATE	HOURS	VOLUME(L)
PERIODIC	FR 07/27/13 01:05:33	PASS	0.00	4.0	0.08
PERIODIC	FR 07/20/13 01:05:33	PASS	0.06	4.0	27164.91
ANNUAL	FR 07/06/13 01:05:33	PASS	-0.18	4.0	28785.69

<ETX>

Command: 20C In-Tank Most Recent Delivery Report

Command Format:

Display: <SOH>I20C00
Computer: <SOH>i20C00

Typical Response Message, Display Format:

<SOH>
I20C00
May 12, 2026 12:34:31

Header Line 1
Header Line 2
Header Line 3
Header Line 4

DELIVERY REPORT

T 1: Diesel

INCREASE	DATE / TIME	VOLUME	TC-VOLUME	WATER	TEMP	HEIGHT
END:	May 01, 2026 16:25:08	1397.45	1383.23	0.00	28.1	131.27
START:	May 01, 2026 16:24:38	904.39	896.99	0.00	25.6	84.96
AMOUNT:		493.06	486.25			

T 2: GAS 87

INCREASE	DATE / TIME	VOLUME	TC-VOLUME	WATER	TEMP	HEIGHT
END:	May 04, 2026 15:08:41	1991.39	1982.20	0.00	21.2	187.07
START:	May 04, 2026 15:08:13	1404.59	1399.15	0.00	20.3	131.95
AMOUNT:		586.80	583.05			

<ETX>

Typical Response Message, Computer Format:

<SOH>**i**20CTTYYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. p - Product Code (single ASCII character, from 20 Hex - 7E Hex)
4. dd - Number of Deliveries to follow (Decimal, 00 if no data for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time

7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
    1. Starting Volume
    2. Starting TC Volume
    3. Starting Water
    4. Starting Temp
    5. Ending Volume
    6. Ending TC Volume
    7. Ending Water
    8. Ending Temp
    9. Starting Height
    10. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

Command: 21C In-Tank Most Recent Delivery Report with Manifolded Results
(PROTEUS Gen 4 Only, P2BV+)

Command Format:
Display: <SOH>I21C00
Computer: NA

Typical Response Message, Display Format:

```
<SOH>
I21C00
JAN 22, 2026  4:46 PM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

LAST DELIVERY REPORT

T 1: Diesel
INCREASE    DATE / TIME             VOLUME   TC-VOLUME      WATER    TEMP    HEIGHT
      END:  Feb 17, 2026 08:29:00   326.22      323.41       0.00    79.1      4.57
    START:  Feb 17, 2026 08:28:16   195.48      194.47       0.00    71.5      2.74
   AMOUNT:                          130.74      128.95


T 2: GAS 87
INCREASE    DATE / TIME             VOLUME   TC-VOLUME      WATER    TEMP    HEIGHT
      END:  Feb 17, 2026 08:29:00   296.47      295.39       0.00    68.1      4.15
    START:  Feb 17, 2026 08:28:16   213.52      212.65       0.00    69.1      2.99
   AMOUNT:                          82.95       82.74

------------------------
MANIFOLD TANKS DELIVERY:
TANK 01: Diesel
TANK 02: GAS 87
START:  Feb 17, 2026 08:28:16
END:    Feb 17, 2026 08:29:00

MANIFOLD DELIVERY TOTALS:
Volume:                 213.69
TC Volume:              211.68
------------------------

<ETX>
```

Command: 21D In-Tank Current Siphon Manifolded Total Volumes
(PROTEUS Gen 4 Only, P2BV+)

Command Format:
Display: <SOH>I21DTT
Computer: <SOH>i21DTT

Typical Response Message, Display Format:

```
<SOH>
I21D00
JAN 22, 2026  4:46 PM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

SIPHON MANIFOLDED TANKS INVENTORY TOTALS
Volume unit                 (G)
MANIFOLD 1

TANK  PRODUCT
T01:  Diesel
T02:  GAS 87
VOLUME:                 408.04
TC VOLUME:              405.41

MANIFOLD 2

TANK  PRODUCT
T03:  PLUS 96
T04:  SUPREUM 98
VOLUME:                 920.02
TC VOLUME:              917.32

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i21DTTYYMMDDHHmmNNaabbccvvvvvvvvVVVVVVVV...
                    NNaabbccvvvvvvvvVVVVVVVV&&CCCC<ETX>
```

Notes:
1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of tanks in sphon group (Hex)
4. aabbcc - Tank ID numbers(hex))
5. vvvvvvvv - Total manifolded Volume (IEEE ASCII hex)
6. VVVVVVVV - Total manifolded TC Volume (IEEE ASCII hex)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Command: 251 (VLD) Test Report

Command Format:

Display: <SOH>I25100
Computer: <SOH>i25100

Typical Response Message, Computer Format:

<SOH>i251TTYYMMDDHHmmTTrr...
TTrr&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. rr - Tank CSLD Results:
   01=PASS
   02=FAIL
   03=NO RESULTS AVAILABLE
   04=INVALID
4. && - Data Termination Flag
5. CCCC - Message Checksum

Typical Response Message, Display Format:

<SOH>
I25100
JUL 28, 2013 10:25 PM
VLD TEST RESULTS

TANK	PRODUCT	RESULT	
1	DIESEL 1	PERIOD: JUL 23, 2013	FAIL
2	Regular 1	PERIOD: JUL 27, 2013	PASS
3	Plus 1	PERIOD: JUL 28, 2013	PASS
4	Supreme 1	PERIOD: JUL 28, 2013	PASS

<ETX>

Command: 301 Liquid Sensor Status Report

Command Format:

Display: <SOH>I301SS
Computer: <SOH>i301SS

Typical Response Message, Display Format:

```
<SOH>
I10200
JUL 29, 2013  12:00 AM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

LIQUID SENSOR STATUS REPORT

SENSOR LOCATION                        STATUS
  1    Tank 0, TANK SUMP12345          Normal
  2    Tank 1, HiHi_LoLo: 1            Normal
  3    Tank 1, EmHi_EmLo: 1            Normal
  4    Tank 1, Low_LoLo: 1             Normal
  5    Tank 1, Low_EmLo: 1             Normal
  6    Tank 1, Caut_Low: 1             Normal

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i301SSYYMMDDHHmmSSssss...
                     SSssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00 = all)
3. ssss - Sensor Status Value:
   - 0000 = Sensor Normal
   - 0002 = Sensor Fuel Alarm
   - 0005 = Sensor Water Alarm
   - 0006 = Sensor Water Out Alarm
   - 0007 = Sensor High Liquid Alarm
   - 0008 = Sensor Low Liquid Alarm
   - 0016 = LIQUID ALARM
   - 0017 = VAPORS DETECTED
   - 0018 = LEVEL ALARM
   - 0019 = NO REPLY
   - 0020 = BUS NO REPLY
   - 0021 = LOW TEMP ALARM
   - 0022 = HIGH TEMP ALARM
   - 0023 = High Level Alarm
   - 0024 = High/High Level Alarm
   - 0025 = Em_High Level Alarm
   - 0026 = High Level Alarm
   - 0027 = High/High Level Alarm
   - 0028 = Em_High Level Alarm
   - 0029 = Low Level Alarm
   - 0030 = Low Level Alarm
   - 0031 = Caution Level Alarm
   - 0032 = Caution Level Alarm
   - 0033 = High Level Alarm
   - 0034 = High Level Alarm
   - 0035 = Low Level Alarm
   - 0036 = Low/Low Level Alarm
   - 0037 = Em_Low Level Alarm
   - 0038 = Low/Low Level Alarm
   - 0039 = Em_Low Level Alarm
   - 0040 = Low Level Alarm
   - 0041 = Caut_F/Hi Level Alarm
   - 0042 = Hi_F/HiHi Level Alarm
   - 0043 = Hi_F/EmHi Level Alarm
   - 0044 = Low Reservoir Alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 302 Sensor Alarm History Report

Command Format:

Display: <SOH>I302SS
Computer: <SOH>i302SS

Typical Response Message, Display Format:

```
<SOH>
I30200
JUL 29, 2013  12:03 AM

Header Line 1
Header Line 2
Header Line 3
Header Line 4

LIQUID ALARM HISTORY REPORT

SENSOR LOCATION
 13    Tank 1, Well: 1        JUL 25, 2013  04:12 PM  Alarm
 13    Tank 1, Well: 1        JUL 25, 2013  02:38 PM  Alarm
 14    Tank 1, LowLevel: 1    JUL 24, 2013  04:12 PM  NO Reply
  6    Tank 1, Caut_Low: 1    JUL 23, 2013  03:42 PM  NO Reply

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i302SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
                      SSNNYYMMDDHHmmaaaa...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00 = all)
3. NN - Number of Alarms to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
   - 0002 = Sensor Fuel Alarm
   - 0005 = Sensor Water Alarm
   - 0006 = Sensor Water Out Alarm
   - 0007 = Sensor High Liquid Alarm
   - 0008 = Sensor Low Liquid Alarm
   - 0016 = LIQUID ALARM
   - 0017 = VAPORS DETECTED
   - 0018 = LEVEL ALARM
   - 0019 = NO REPLY
   - 0020 = BUS NO REPLY
   - 0021 = LOW TEMP ALARM
   - 0022 = HIGH TEMP ALARM
   - 0023 = High Level Alarm
   - 0024 = High/High Level Alarm
   - 0025 = Em_High Level Alarm
   - 0026 = High Level Alarm
   - 0027 = High/High Level Alarm
   - 0028 = Em_High Level Alarm
   - 0029 = Low Level Alarm
   - 0030 = Low Level Alarm
   - 0032 = Caution Level Alarm
   - 0032 = Caution Level Alarm
   - 0033 = High Level Alarm
   - 0034 = High Level Alarm
   - 0035 = Low Level Alarm
   - 0036 = Low/Low Level Alarm
   - 0037 = Em_Low Level Alarm
   - 0038 = Low/Low Level Alarm
   - 0039 = Em_Low Level Alarm
   - 0040 = Low Level Alarm
   - 0041 = Caut_F/Hi Level Alarm
   - 0042 = Hi_F/HiHi Level Alarm
   - 0043 = Hi_F/EmHi Level Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Command: 501 Set Time and Date

Command Format:

Computer: <SOH>s50100YYMMDDHHmm

Typical Response Message, Computer Format:

<SOH>i50100YYMMDDHHmmYYMMDDHHmm &&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. YYMMDDHHmm – New Year, Month, Day, Hour, and Minute.
3. && - Data Termination Flag
4. CCCC - Message Checksum

Command: 503 Set Print Header Line 1,2,3,4 **(Proteus Gen 4 Only)**

Command Format:
Computer: <SOH>i503LL

Typical Response Message, Computer Format:

<SOH>i503LLYYMMDDHHmma..a&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. LL - Header Line Number 1,2,3,4
3. a..a - Station Header 1: 20 ASCII characters.
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 505 / 517 Inquire system units & language

Command Format:

A) Computer: <SOH>i50500
B) Computer: <SOH>i51700

Typical Response Message, Computer Format:

A) <SOH>i50500YYMMDDHHmm**UL**&&CCCC<ETX>
B) <SOH>i51700YYMMDDHHmm**ULL**&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. U – System Units (1=U.S. , 2=Metric).
3A. **L** - System Language (1=English) for i505 command only.
3B. **LL** - System Language (01=English) for i517 command only.
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: OMNTEC 517 Inquire Individual System Units (Proteus Gen 4 Only)

Command Format:

Computer: <SOH>o51700

Typical Response Message, Computer Format:

<SOH>o51700YYMMDDHHmmVHT &&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. V – System Units: Volume (0=Gallons, 1=Liters, 2=Barrels)
3. H - System Units: Height (0=inches, 1= millimeters, 2=Feet)
4. T - System Units: Temperature (0=Fahrenheit, 1=Celsius)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Command: 601 Inquire Tank Enable

Command Format:
Computer:

Inquire:
<SOH>i601TT

Typical Response Message, Computer Format:

<SOH>i601TTYYMMDDHHmmTTf
TTf&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. f - Tank Configuration Flag:
   0 = Off
   1 = On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 602 Set Tank Product Label

Command Format:

		Inquire:
Display:	N/A	<SOH>I602TT
Computer:	<SOH>s602TTaaaaaaaaaaaaaaaaaaa	<SOH>i602TT

Typical Response Message, Display Format:

```
<SOH>
I60200
JUN 16, 2004  04:09 PM

TANK PRODUCT LABEL

TANK  PRODUCT LABEL
  1   REGULAR
  2   UNLEADED
  3   PREMIUM
  4   REGULAR
  5   UNLEADED
  6   PREMIUM
  7   DIESEL
  8   KEROSENE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i602TTYYMMDDHHmmTTaaaaaaaaaaaaaaaaaaa
                      TTaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. a - Product Label (20 ASCII characters from 20 Hex - 7E Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 603 Set Product Code

Command Format:

	Inquire:
Display: N/A	<SOH>I603TT
Computer: <SOH>s603TTa	<SOH>i603TT

Typical Response Message, Display Format:

```
<SOH>I60300
JUL 28, 2017 03:32PM

PRODUCT CODE

TANK PRODUCT LABEL            CODE
  1  DIESEL 1234567              1
  2  REGULAR 2                   3
  3  OWS 1                       3
  4  OWS 2                       4
  5  DIESEL 9 8CH1               5
  6  REGULAR 10 8CH2             1
  7  PLUS 11 8CH3                1
 13  Diesel Fuel #2              1
 14  Regular 96B                 1
 15  Plus 97B                    1
 16  Supreme 98B                 1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i603TTYYMMDDHHmmTTa....
                     TTa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. a – Product Code (ASCII character from 20H to 7EH)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 604 Tank Full Height Volume

Command Format:

Display: <SOH>I604TT
Computer: <SOH>i604TT

Typical Response Message, Display Format:

```
JUL 28, 2013 11:24AM

TANK FULL VOLUME

TANK PRODUCT LABEL              FULL VOLUME(gal)
  1  DIESEL                          8000
  2  Regular 96                      8000
  3  Plus 97                         10000
  4  Supreme 98                      10000
```

Typical Response Message, Computer Format:

```
<SOH>i604TTYYMMDDHHmmTTFFFFFFFF....
                    TTFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. FFFFFFFF – Full Height Volume, Gal/Lit (ASCII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 607 Tank Diameter

Command Format:

Computer: <SOH>i607TT

Typical Response Message, Computer Format:

<SOH>i607TTYYMMDDHHmmTTFFFFFFFF....
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. FFFFFFFF – Tank Diameter, in./mm(ASCII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 612 Set Tank SIPHON Manifolded Partners (PROTEUS Gen 4 Only, P2BV+)

Note: Can only manifold tanks that are on the same XB-416 or XB-800 board.

Command Format:

		Inquire:
Display:	NA	<SOH>I612TT
Computer:	<SOH>s612TTtt...<CR>	<SOH>i612TT

Typical Response Message, Display Format:

```
<SOH>
I61200
NOV 17, 2025  09:15 AM
TANK MANIFOLDED PARTNERS

TANK   PRODUCT LABEL         MANIFOLDED
  1    Diesel Fuel #2         2
  2    Regular 96             1
  3    Plus 97                NONE
  4    Supreme 98             NONE
<ETX>
```

Typical Command Message, Computer Format:

<SOH>s6120102	Manifold tanks 1 and 2 together.
<SOH>s612010203 or <SOH>s61201020103	Manifold tanks 1, 2 and 3 together.
<SOH>s6120100	Clear tank 1 from any Manifolds.
<SOH>s6120000	Clear all Manifolded tanks.

Typical Response Message, Computer Format:

```
<SOH>i612TTYYMMDDHHmmTTNNtt...
                    TTNNtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Number of the first tank to be manifolded. 00=clear all manifolds.
3. NN - Number of tanks that are manifolded together. 00=clear manifold.
4. tt - Tank numbers of other tanks to be manifolded to first tank
5. && - Data Termination Flag
6. CCCC - Message Checksum

Command: 621 Tank Low Level Limit

Command Format:

Computer: <SOH>i621TT

Typical Response Message, Computer Format:

<SOH>i621TTYYMMDDHHmmTTFFFFFFFF....
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. FFFFFFFF – Low Level Limit, Gal/Lit (ASCII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 622 Tank High Level Limit

Command Format:

Computer: <SOH>i622TT

Typical Response Message, Computer Format:

<SOH>i622TTYYMMDDHHmmTTFFFFFFFF....
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. FFFFFFFF – High Level Limit, Gal/Lit (ASCII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 624 Tank High Water Level Limit

Command Format:

Computer: <SOH>i624TT

Typical Response Message, Computer Format:

<SOH>i624TTYYMMDDHHmmTTFFFFFFFF....
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00 = all)
3. FFFFFFFF – High Water Level Limit, in./mm (ASCII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 701 Inquire Sensor Configuration

Command Format:

```
Display: <SOH>I701SS
Computer:<SOH>i701SS
```

Typical Response Message, Display Format:

```
<SOH>
I70100
Mar 17, 2026 09:48:33

SENSOR CONFIGURATION

SENSOR  LABEL                CONFIGURED
   1    T 1, Sensor          ENABLE
   2    Sensor               ENABLE
   3    T 3, Sensor          ENABLE
   4    T 4, Sensor          ENABLE
   5    Sensor               DISABLE
   6    T 3, Sensor          ENABLE
<ETX>
```

Typical Response Message, Computer Format:

```
      <SOH>i701SSYYMMDDHHmmSSf
                           SSf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00 = all)
3. f - Configuration Flag
   0 = Off
   1 = On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 702 Set Liquid Sensor Location Label

Command Format:
Computer: <SOH>s702SSaaaaaaaaaaaaaaaaaaa

Inquire:
<SOH>i702SS

Typical Response Message, Computer Format:

<SOH>i702SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaa
SSaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00 = all)
3. a - Location Label (20 ASCII characters from 20 Hex - 7E Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Command: 902 Inquire System Version

Command Format:

Display: <SOH>I90200
Computer: <SOH>i90200

Typical Response Message, Display Format:

<SOH>
I90200
Mar 17, 2026 09:53:39

SOFTWARE REVISION LEVEL
VERSION E001BL
SOFTWARE OEL4KX
CREATED 25.05.15.18.30

SYSTEM FEATURES:
CITLD ENABLED
MODBUS ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i90200YYMMDDHHmmSOFTWARE# nnnnnn-vvv-rrrCREATED - YY.MM.DD.HH.mm&&CCCC<ETX>

Notes:
1. YYMMDDHHmm - Current Date and Time
2. nnnnnn – Unit Type (ASCII text string)
3. vvv-rrr - Software revision level (ASCII text string)
4. YY.MM.DD.HH.mm - Date and time of software creation
5. && - Data Termination
6. CCCC - Message Checksum

OEL8000III-X Diagnostic Commands

Command: TEST 1 (Inventory Readings)

Command Format:

Display: TEST 1 <enter>

Entering the TEST 1 command will return the string of data as shown below. The data in each column is as follows:

Tank#	Time	Water Height	Product Height	Water Volume	Gross Volume	Avg. Temp	T.C. Volume	100% Ullage

Typical Response Message, Display Format:

```
TEST 1

01 16:26:52 1.134 19.449 157.491 2701.233 75.974 2683.079 7298.767
02 16:26:52 1.134 19.448 157.491 2701.155 75.973 2683.001 7298.845
```

Command: TEST 2 (Probe Communications)

Command Format:

Display: TEST 2 <enter>

The TEST 2 command will return a string of 2's for a properly working tank probe, anything other than all 2's indicates an error.

Tank# Time # # # # # # # # # # # # # # # #

Typical Response Message, Display Format:

```
TEST 2

01 16:18:00 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
02 16:18:00 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
```

Command: TEST 3 (Average Temp and Five Thermistors)

Command Format:

Display: TEST 3 <enter>

The TEST 3 command will return the average temperature for a tank probe followed by individual readings for all five thermistors.

Typical Response Message, Display Format:

```
TEST 3
TANK TIME PROD_T T1 T2 T3 T4 T5
01 12:47:04 77.56 77.6 77.6 77.6 77.6 77.6
02 12:47:04 77.83 77.6 77.8 78.0 78.0 78.1
```

OEL8000III-X View Log Data Commands

Command: PSL (Print Shift Log)

Command Format:

Display: PSL <enter>

Entering the PSL command will return the current shift log data stored for each tank up to the maximum amount of recorded shifts (150).

Tank#	Date	Time	Product Height	Product Volume	Water Height	Water Volume	Temp	Delivery

Typical Response Message, Display Format:

```
PSL

---STOCK DATA (SLOT 1)
TANK, DATE, TIME, PRODUCT HEIGHT, PRODUCT VOLUME, WATER HEIGHT, WATER VOLUME,
TEMPERATURE, DELIVERY,
1, 2017-07-28, 10:00:01, 24.84, 5519.6, 0.86, 190.3, 76.3, 0.0,
2, 2017-07-28, 10:00:01, 28.65, 6365.7, 0.02, 5.2, 76.5, 0.0,
3, 2017-07-28, 10:00:01, 28.65, 7957.1, 0.02, 6.6, 76.5, 0.0,
4, 2017-07-28, 10:00:01, 28.65, 7957.1, 0.02, 6.6, 76.5, 0.0,

1, 2017-07-28, 08:20:40, 24.84, 5519.6, 0.86, 190.3, 76.0, 0.0,
2, 2017-07-28, 08:20:40, 28.65, 6365.7, 0.02, 5.2, 76.3, 0.0,
3, 2017-07-28, 08:20:40, 28.65, 7957.0, 0.02, 6.5, 76.3, 0.0,
4, 2017-07-28, 08:20:40, 28.65, 7957.1, 0.02, 6.5, 76.3, 0.0,

1, 2017-07-28, 08:00:01, 24.84, 5519.6, 0.86, 190.4, 77.7, 0.0,
2, 2017-07-28, 08:00:01, 28.65, 6365.7, 0.02, 5.3, 78.0, 0.0,
3, 2017-07-28, 08:00:01, 28.65, 7957.1, 0.02, 6.6, 78.0, 0.0,
4, 2017-07-28, 08:00:01, 28.65, 7957.1, 0.02, 6.6, 78.0, 0.0,

1, 2017-07-28, 00:00:01, 24.84, 5519.6, 0.86, 190.3, 79.2, 0.0,
2, 2017-07-28, 00:00:01, 28.65, 6365.7, 0.02, 5.2, 79.5, 0.0,
3, 2017-07-28, 00:00:01, 28.65, 7957.1, 0.02, 6.5, 79.5, 0.0,
4, 2017-07-28, 00:00:01, 28.65, 7957.1, 0.02, 6.5, 79.5, 0.0,

---Total of shift 149
```

Command: PDL (Print Delivery Log)

Command Format: PDL **<enter>**

Typical Response Message:

```
PDL

---OMNTEC Mfg., Inc.
TEL: 1(631)-981-2001
FAX: 1(631)-981-2007
OEL3 ID: EL000001
OMNTEC MFG. INC.
1993 POND ROAD
RONKONKOMA NY
631-981-2001
TIME: 2015-09-21 11:31:27
--DELIVERY LOG
TANK 1 Diesel Fuel #2
Start Time 2015-03-31 10:10:39
Start Product 16.09(in)
Start Product 6190.70(Gal)
Start Water 0.00(in)
Start Water 0.00(Gal)
Start Temp. 69.9(F)
Start T.C. 6163.23(Gal)
End time 2015-03-31 10:11:26
End Product 18.35(in)
End Product 7058.67(Gal)
End Water 0.00(in)
End Water 0.00(Gal)
End Temp. 71.6(F)
End T.C. 7021.72(Gal)
Delivery 867.97(Gal)
```

Command: PVLD (Print VLD Log)

Command Format: PVLD <enter>

Typical Response Message:

```
---OMNTEC Mfg., Inc.
TEL: 1(631)-981-2001
FAX: 1(631)-981-2007
OEL3 ID: EL000001
OMNTEC MFG. INC.
1993 POND ROAD
RONKONKOMA NY
631-981-2001
TIME: 2015-09-21 11:36:36
--VLD REPORT
TANK 1 Diesel Fuel #2
Start Time 2015-09-21 01:00:30
Start Product 17.66(in)
Start Water 0.00(Gal)
Start Temp. 77.0(F)
Start TC Volume 6739.73(Gal)
End time 2015-09-21 05:00:30
End Product 17.66(in)
End Water 0.00(Gal)
End Temp. 76.6(F)
End TC Volume 6740.92(Gal)
End Delta -1.41(Gal)
Duration 4.0(hr)
VLD .1(Gal/hr) Failed
```

Command: PVL (Print VLD Log) – Table Format

Command Format: PVL <enter>

Typical Response Message:

```
---VLD LOG (SLOT 1)
TANK, DATE, TIME, START HEIGHT, WATER VOL, TEMP, TC VOL, DURATION, END HEIGHT, WATER VOL, TEMP, TC VOL,
DELTA, TYPE, RESULT
1, 2015-09-21, 01:00:30, 17.66, 0.00, 77.0, 6739.73, 4, 17.66, 0.00, 76.6, 6740.92, -1.41, .1 G/Hr, Failed
1, 2015-09-20, 01:00:30, 17.66, 0.00, 77.7, 6737.99, 4, 17.66, 0.00, 77.7, 6737.88, 0.11, .1 G/Hr, Passed
1, 2015-09-19, 01:00:31, 17.66, 0.00, 77.7, 6738.06, 4, 17.66, 0.00, 77.8, 6737.76, 0.30, .1 G/Hr, Failed
1, 2015-09-18, 01:00:30, 17.66, 0.00, 76.5, 6741.65, 4, 17.66, 0.00, 76.3, 6742.21, -0.65, .1 G/Hr, Failed
```

Command: PAL (Print Alarm Log)

Command Format: PAL <enter>

Typical Response Message:

```
---OMNTEC Mfg., Inc.
TEL: 1(631)-981-2001
FAX: 1(631)-981-2007
OEL3 ID: EL000001
OMNTEC MFG. INC.
1993 POND ROAD
RONKONKOMA NY
631-981-2001
TIME: 2015-09-21 11:35:11
--ALARM LOG
S#: 4, BX-TC1, S/N: 610054603
Freezer: 1
High Temp Alarm
2015-08-10 10:53:56
S#: 3, BX-PDWS, S/N: 220064842
TANK: 3, Interstice: 1
Product Alarm
2015-08-10 10:53:55
TANK 6 Regular 96
High Product Alarm
High Alarm Point 9000.0
```

Command: PCL (Print CITLD Log)

Command Format: PCL <enter>

Typical Response Message:

```
--CITLD REPORT 2.00
TANK 1 Diesel Fuel #2
Month: JUL, 2015
Pass Hours: 120.0
Test Height: 67.9%
Test Volume: 6741.78(Gal)
Slope: -0.009(Gal/hr)
.2(Gal/hr), Thresh .1 PASSED
TANK 1 Diesel Fuel #2
Month: AUG, 2015
Pass Hours: 105.0
Test Height: 67.9%
Test Volume: 6734.98(Gal)
Slope: -0.002(Gal/hr)
.2(Gal/hr), Thresh .1 PASSED
```

Command: PCC (Print Current CITLD Log)

Command Format: PCC <enter>

Current Monthly CITLD Test readings. Final test results will be logged at the end of the month and shown with the PCL command above.

Typical Response Message:

```
---SLOT: 1
XB-416 ID: 0
CANBUS START: 0X03DE
FIRMWARE: 416_E2AL
RELEASE: 2015-07-15
--CITLD REPORT 2.00
TANK 1 Diesel Fuel #2
Month: SEP, 2015
Pass Hours: 96.0
Test Height: 67.9%
Test Volume: 6737.66
Slope: 0.006(Gal/hr)
.2(Gal/hr), Thresh .1 PASSED
43 5.0 20 3.0
TANK 2 Plus 97
Month: SEP, 2015
Pass Hours: 87.0
Test Height: 74.9%
Test Volume: 7428.19
Slope: 0.003(Gal/hr)
.2(Gal/hr), Thresh .1 PASSED
83 5.0 20 3.0
```

If the CITLD function is not enabled in the system, the PCC or PCL commands will return the following.

```
---CITLD FUNCTION IS DISABLED,
CALL OMNTEC FOR ENABLE CODE
```