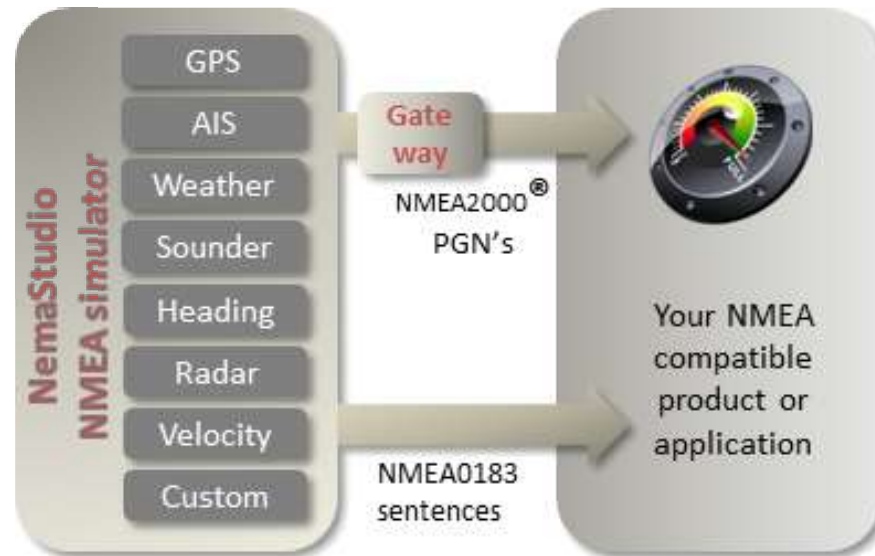


NMEA Software Utilities

Actisense®

Maretron®

SailSafe



Actisense NMEA Reader



- The Actisense NMEA Reader is a great utility for testing and evaluating a NMEA 0183 or NMEA 2000™ system.
- The program is free to download from the Actisense web site and will work great with a compatible serial or USB adapter.
- This software will allow the user to view real time data flow and buffer rates.
- Certain Actisense gateways can be programmed by this software such as the NGW-1 and NGT-1.
- Manufacturer and LEN numbers can be obtained from this software for certain NMEA 2000™ devices.

Actisense NMEA Reader



Actisense NGT-1-USB

- The Actisense NGT-1-USB is a great product to deliver NMEA 2000™ data directly into the PC for use with the NMEA Reader Software.

Actisense NMEA Reader

- The NMEA Reader is a good utility to read what sentences are located on the network.
- The data shown includes the specific PGN, Sentence Name, Transmit Interval and the actual data itself.

The screenshot shows the Actisense NMEA Reader application window. The title bar reads 'NMEA Reader - [COM3: Actisense NGT]'. The menu bar includes 'File', 'Edit', 'View', 'Window', and 'Help'. Below the menu bar, there are two dropdown menus: 'COM3: Actisense NGT' and '115200'. The main area is a table with the following columns: Line, PGN, SRC, DST, Name, Time, Interval, and Data. The table contains 43 rows of data, including various NMEA sentences such as 'Manu. Proprietary fast-packet non-address...', 'Meteorological Station Data', 'Environmental Parameters', 'Wind Data', 'GNSS Sats in View', 'GNSS DOPs', 'Time & Date', 'GNSS Position Data', 'COG & SOG, Rapid Update', 'Position, Rapid Update', 'Fluid Level', 'Magnetic Variation', 'Attitude', 'Rate of Turn', 'Vessel Heading', 'Rudder', 'Configuration Information', 'Product Information', 'System Time', and 'ISO Address Claim'. The status bar at the bottom shows 'COM 3 115200 Open Transfer Receive All'.

Line	PGN	SRC	DST	Name	Time	Interval	Data
1	130944	36	255	Manu. Proprietary fast-packet non-address...	09:39:27:446	9.77	87 98 FF 0E 00 01 01 00 ...
2	130323	36	255	Meteorological Station Data	09:39:31:519	1.62	F0 FF FF FF FF FF FF FF ...
3	130311	36	255	Environmental Parameters	09:39:31:525	0.87	0A C1 69 73 FF 7F FC 03
4	130306	36	255	Wind Data	09:39:32:018	0.42	16 FF FF FF FF F8 FF FF
5	129540	36	255	GNSS Sats in View	09:39:31:555	1.63	FF FF 00
6	129539	36	255	GNSS DOPs	09:39:31:524	1.62	FF FB FF 7F FF 7F FF 7F
7	129033	36	255	Time & Date	09:39:31:517	1.62	FF FF FF FF FF FF FF 7F
8	129029	36	255	GNSS Position Data	09:39:31:538	1.63	FF FF FF FF FF FF FF FF ...
9	129026	36	255	COG & SOG, Rapid Update	09:39:31:523	1.62	FF FF FF FF FF FF FF FF
10	129025	36	255	Position, Rapid Update	09:39:31:520	1.62	FF FF FF 7F FF FF FF 7F
11	127505	10	255	Fluid Level	09:39:33:462	2.52	00 44 48 DE 93 00 00 FF
12	127505	12	255	Fluid Level	09:39:34:041	2.50	50 FC 53 FF FF FF FF FF
13	127505	13	255	Fluid Level	09:39:34:040	2.50	10 FC 53 FF FF FF FF FF
14	127258	36	255	Magnetic Variation	09:39:31:518	1.62	05 F5 CC 3C FF 7F FF FF
15	127257	36	255	Attitude	09:39:31:519	1.62	05 FF 7F FF 7F FF 7F FF
16	127251	36	255	Rate of Turn	09:39:31:916	0.10	34 FF FF FF 7F FF FF FF
17	127250	36	255	Vessel Heading	09:39:31:916	0.10	FF FF FF FF 7F FF 7F FF
18	127245	11	255	Rudder	09:39:35:861	0.10	00 F8 FF 7F 29 E1 FF FF
19	126998	2	255	Configuration Information	09:35:04:409		02 01 02 01 2D 01 41 63 ...
20	126998	3	255	Configuration Information	09:35:03:519		02 01 02 01 2D 01 41 63 ...
21	126998	4	255	Configuration Information	09:35:05:279		02 01 02 01 2D 01 41 63 ...
22	126998	36	255	Configuration Information	09:35:46:557		02 01 02 01 26 01 41 69 ...
23	126996	2	255	Product Information	09:35:04:190		14 05 27 6E 4E 4D 45 41 ...
24	126996	3	255	Product Information	09:35:03:320		14 05 27 6E 4E 4D 45 41 ...
25	126996	4	255	Product Information	09:35:05:059		14 05 27 6E 4E 4D 45 41 ...
26	126996	5	255	Product Information	09:35:09:980		B0 04 12 09 44 65 63 6B ...
27	126996	7	255	Product Information	09:35:14:020		B0 04 38 4D 50 61 6E 65 ...
28	126996	8	255	Product Information	09:35:05:941		B0 04 38 4D 50 61 6E 65 ...
29	126996	9	255	Product Information	09:35:18:052		B0 04 38 4D 50 61 6E 65 ...
30	126996	10	255	Product Information	09:35:21:990		14 05 FA 20 46 75 65 6C ...
31	126996	11	255	Product Information	09:35:26:030		B0 04 7C 1E 52 75 64 64 ...
32	126996	12	255	Product Information	09:35:30:061		B0 04 78 6D 57 61 74 65 ...
33	126996	13	255	Product Information	09:35:34:112		B0 04 78 6D 57 61 74 65 ...
34	126996	36	255	Product Information	09:35:46:241		BA 04 7B 22 50 42 32 30 ...
35	126992	36	255	System Time	09:39:31:516	1.62	FF F0 FF FF FF FF FF FF
36	60928	2	255	ISO Address Claim	09:35:00:478		CD B0 21 22 00 82 32 C0
37	60928	3	255	ISO Address Claim	09:35:00:477		E1 B0 21 22 00 82 32 C0
38	60928	4	255	ISO Address Claim	09:35:00:479		E3 B0 21 22 00 82 32 C0
39	60928	5	255	ISO Address Claim	09:35:00:480		58 02 21 14 00 D2 64 C0
40	60928	6	255	ISO Address Claim	09:35:00:621		22 A4 21 14 00 A0 A0 C0
41	60928	7	255	ISO Address Claim	09:35:00:481		17 00 24 14 00 A0 A0 C0
42	60928	8	255	ISO Address Claim	09:35:00:480		69 80 24 14 00 A0 A0 C0
43	60928	9	255	ISO Address Claim	09:35:00:481		38 00 25 14 00 A0 A0 C0

Actisense NMEA Reader

- The top selected item shows the com port, description and baud rate of the available NMEA 0183 or NMEA 2000™ Device.

Line	PGN	SRC	DST	Name	Time	Interval	Data
1	130944	36	255	Manu. Proprietary fast-packet non-address...	09:39:27:446	9.77	87 98 FF 0E 00 01 01 00 ...
2	130323	36	255	Meteorological Station Data	09:39:31:519	1.62	F0 FF FF FF FF FF FF FF ...
3	130311	36	255	Environmental Parameters	09:39:31:525	0.87	0A C1 69 73 FF 7F FC 03
4	130306	36	255	Wind Data	09:39:32:018	0.42	16 FF FF FF FF F8 FF FF
5	129540	36	255	GNSS Sats in View	09:39:31:555	1.63	FF FF 00
6	129539	36	255	GNSS DOPs	09:39:31:524	1.62	FF FB FF 7F FF 7F FF 7F
7	129033	36	255	Time & Date	09:39:31:517	1.62	FF FF FF FF FF FF FF 7F
8	129029	36	255	GNSS Position Data	09:39:31:538	1.63	FF FF FF FF FF FF FF FF ...
9	129026	36	255	COG & SOG, Rapid Update	09:39:31:523	1.62	FF FF FF FF FF FF FF FF
10	129025	36	255	Position, Rapid Update	09:39:31:520	1.62	FF FF FF 7F FF FF FF 7F
11	127505	10	255	Fluid Level	09:39:33:462	2.52	00 44 48 DE 93 00 00 FF
12	127505	12	255	Fluid Level	09:39:34:041	2.50	50 FC 53 FF FF FF FF FF
13	127505	13	255	Fluid Level	09:39:34:040	2.50	10 FC 53 FF FF FF FF FF
14	127258	36	255	Magnetic Variation	09:39:31:518	1.62	05 F5 CC 3C FF 7F FF FF
15	127257	36	255	Attitude	09:39:31:519	1.62	05 FF 7F FF 7F FF 7F FF
16	127251	36	255	Rate of Turn	09:39:31:916	0.10	34 FF FF FF 7F FF FF FF
17	127250	36	255	Vessel Heading	09:39:31:916	0.10	FF FF FF FF 7F FF 7F FF
18	127245	11	255	Rudder	09:39:35:861	0.10	00 F8 FF 7F 29 E1 FF FF
19	126998	2	255	Configuration Information	09:35:04:409		02 01 02 01 2D 01 41 63 ...
20	126998	3	255	Configuration Information	09:35:03:519		02 01 02 01 2D 01 41 63 ...
21	126998	4	255	Configuration Information	09:35:05:279		02 01 02 01 2D 01 41 63 ...
22	126998	36	255	Configuration Information	09:35:46:557		02 01 02 01 26 01 41 69 ...
23	126996	2	255	Product Information	09:35:04:190		14 05 27 6E 4E 4D 45 41 ...
24	126996	3	255	Product Information	09:35:03:320		14 05 27 6E 4E 4D 45 41 ...
25	126996	4	255	Product Information	09:35:05:059		14 05 27 6E 4E 4D 45 41 ...
26	126996	5	255	Product Information	09:35:09:980		B0 04 12 09 44 65 63 6B ...
27	126996	7	255	Product Information	09:35:14:020		B0 04 38 4D 50 61 6E 65 ...
28	126996	8	255	Product Information	09:35:05:941		B0 04 38 4D 50 61 6E 65 ...
29	126996	9	255	Product Information	09:35:18:052		B0 04 38 4D 50 61 6E 65 ...
30	126996	10	255	Product Information	09:35:21:990		14 05 FA 20 46 75 65 6C ...
31	126996	11	255	Product Information	09:35:26:030		B0 04 7C 1E 52 75 64 64 ...
32	126996	12	255	Product Information	09:35:30:061		B0 04 78 6D 57 61 74 65 ...
33	126996	13	255	Product Information	09:35:34:112		B0 04 78 6D 57 61 74 65 ...
34	126996	36	255	Product Information	09:35:46:241		BA 04 7B 22 50 42 32 30 ...
35	126992	36	255	System Time	09:39:31:516	1.62	FF F0 FF FF FF FF FF FF
36	60928	2	255	ISO Address Claim	09:35:00:478		CD B0 21 22 00 82 32 C0
37	60928	3	255	ISO Address Claim	09:35:00:477		E1 B0 21 22 00 82 32 C0
38	60928	4	255	ISO Address Claim	09:35:00:479		E3 B0 21 22 00 82 32 C0
39	60928	5	255	ISO Address Claim	09:35:00:480		58 02 21 14 00 D2 64 C0
40	60928	6	255	ISO Address Claim	09:35:00:621		22 A4 21 14 00 A0 A0 C0
41	60928	7	255	ISO Address Claim	09:35:00:481		17 00 24 14 00 A0 A0 C0
42	60928	8	255	ISO Address Claim	09:35:00:480		69 80 24 14 00 A0 A0 C0
43	60928	9	255	ISO Address Claim	09:35:00:481		38 00 25 14 00 A0 A0 C0

Actisense NMEA Reader

- The interval shows how often the data is being sent from the device. This allows the user to know how fast a sender is transmitting.

The screenshot shows the Actisense NMEA Reader application window. The title bar reads "NMEA Reader - [COM3: Actisense NGT]". The menu bar includes "File", "Edit", "View", "Window", and "Help". Below the menu bar, there are two dropdown menus: "COM3: Actisense NGT" and "115200". The main area contains a table with the following columns: "Line", "PGN", "SRC", "DST", "Name", "Time", "Interval", and "Data". The "Interval" column is circled in red. The table lists various NMEA messages such as "Manu. Proprietary fast-packet non-address...", "Meteorological Station Data", "Environmental Parameters", "Wind Data", "GNSS Sats in View", "GNSS DOPs", "Time & Date", "GNSS Position Data", "COG & SOG, Rapid Update", "Position, Rapid Update", "Fluid Level", "Magnetic Variation", "Attitude", "Rate of Turn", "Vessel Heading", "Rudder", "Configuration Information", "Product Information", and "System Time". The status bar at the bottom shows "COM 3 115200 Open Transfer Receive All".

Line	PGN	SRC	DST	Name	Time	Interval	Data
1	130944	36	255	Manu. Proprietary fast-packet non-address...	09:39:27:446	9.77	87 98 FF 0E 00 01 01 00 ...
2	130323	36	255	Meteorological Station Data	09:39:31:519	1.62	F0 FF FF FF FF FF FF FF ...
3	130311	36	255	Environmental Parameters	09:39:31:525	0.87	0A C1 69 73 FF 7F FC 03
4	130306	36	255	Wind Data	09:39:32:018	0.42	16 FF FF FF FF F8 FF FF
5	129540	36	255	GNSS Sats in View	09:39:31:555	1.63	FF FF 00
6	129539	36	255	GNSS DOPs	09:39:31:524	1.62	FF FB FF 7F FF 7F FF 7F
7	129033	36	255	Time & Date	09:39:31:517	1.62	FF FF FF FF FF FF FF 7F
8	129029	36	255	GNSS Position Data	09:39:31:538	1.63	FF FF FF FF FF FF FF FF ...
9	129026	36	255	COG & SOG, Rapid Update	09:39:31:523	1.62	FF FF FF FF FF FF FF FF
10	129025	36	255	Position, Rapid Update	09:39:31:520	1.62	FF FF FF 7F FF FF FF 7F
11	127505	10	255	Fluid Level	09:39:33:462	2.52	00 44 48 DE 93 00 00 FF
12	127505	12	255	Fluid Level	09:39:34:041	2.50	50 FC 53 FF FF FF FF FF
13	127505	13	255	Fluid Level	09:39:34:040	2.50	10 FC 53 FF FF FF FF FF
14	127258	36	255	Magnetic Variation	09:39:31:518	1.62	05 F5 CC 3C FF 7F FF FF
15	127257	36	255	Attitude	09:39:31:519	1.62	05 FF 7F FF 7F FF 7F FF
16	127251	36	255	Rate of Turn	09:39:31:916	0.10	34 FF FF FF 7F FF FF FF
17	127250	36	255	Vessel Heading	09:39:31:916	0.10	FF FF FF FF 7F FF 7F FF
18	127245	11	255	Rudder	09:39:35:861	0.10	00 F8 FF 7F 29 E1 FF FF
19	126998	2	255	Configuration Information	09:35:04:409		02 01 02 01 2D 01 41 63 ...
20	126998	3	255	Configuration Information	09:35:03:519		02 01 02 01 2D 01 41 63 ...
21	126998	4	255	Configuration Information	09:35:05:279		02 01 02 01 2D 01 41 63 ...
22	126998	36	255	Configuration Information	09:35:46:557		02 01 02 01 26 01 41 69 ...
23	126996	2	255	Product Information	09:35:04:190		14 05 27 6E 4E 4D 45 41 ...
24	126996	3	255	Product Information	09:35:03:320		14 05 27 6E 4E 4D 45 41 ...
25	126996	4	255	Product Information	09:35:05:059		14 05 27 6E 4E 4D 45 41 ...
26	126996	5	255	Product Information	09:35:09:980		B0 04 12 09 44 65 63 6B ...
27	126996	7	255	Product Information	09:35:14:020		B0 04 38 4D 50 61 6E 65 ...
28	126996	8	255	Product Information	09:35:05:941		B0 04 38 4D 50 61 6E 65 ...
29	126996	9	255	Product Information	09:35:18:052		B0 04 38 4D 50 61 6E 65 ...
30	126996	10	255	Product Information	09:35:21:990		14 05 FA 20 46 75 65 6C ...
31	126996	11	255	Product Information	09:35:26:030		B0 04 7C 1E 52 75 64 64 ...
32	126996	12	255	Product Information	09:35:30:061		B0 04 78 6D 57 61 74 65 ...
33	126996	13	255	Product Information	09:35:34:112		B0 04 78 6D 57 61 74 65 ...
34	126996	36	255	Product Information	09:35:46:241		BA 04 7B 22 50 42 32 30 ...
35	126992	36	255	System Time	09:39:31:516	1.62	FF F0 FF FF FF FF FF FF
36	60928	2	255	ISO Address Claim	09:35:00:478		CD B0 21 22 00 82 32 C0
37	60928	3	255	ISO Address Claim	09:35:00:477		E1 B0 21 22 00 82 32 C0
38	60928	4	255	ISO Address Claim	09:35:00:479		E3 B0 21 22 00 82 32 C0
39	60928	5	255	ISO Address Claim	09:35:00:480		58 02 21 14 00 D2 64 C0
40	60928	6	255	ISO Address Claim	09:35:00:621		22 A4 21 14 00 A0 A0 C0
41	60928	7	255	ISO Address Claim	09:35:00:481		17 00 24 14 00 A0 A0 C0
42	60928	8	255	ISO Address Claim	09:35:00:480		69 80 24 14 00 A0 A0 C0
43	60928	9	255	ISO Address Claim	09:35:00:481		38 00 25 14 00 A0 A0 C0

Actisense NMEA Reader

- Pictured here are the details of each individual data PGN.
- This will list what data is present on the specific device as well as what makes up the sentence structure.
- Also located on this page is the NMEA 2000™ Bus Load as well as the PC Load through the Gateway.

The screenshot shows the Actisense NMEA Reader software interface. At the top, there are two status bars: "NMEA 2000 Bus Load (0%)" and "PC Receive Load (2%)". The main display area shows the following details for NMEA 2000 PGN: 130944 (0x1FF80):

- Name: Manu. Proprietary fast-packet non-addressed
- Source = 36, Destination = 255
- Priority = 7, Length = 32
- Number Of Fields = 4
- Field 1: NMEA 2000 Manufacturer Code = 135
- Field 2: Reserved field
- Field 3: Industry Group = 4
- Field 4: Manufacturer defined field(s) = [FF.0E.00.01.01.00.02.00.03.00.08.00.09.00.0A.00.0B.FF.0C.00.0D.80.0E.80.0F.80.10.80.11.80]

At the bottom of the window, there are navigation buttons: "Details", "Properties", and "Log".

Actisense NMEA Reader

- The bus load can be used to check how many devices on the network.
- If the NMEA 2000™ network is not functioning correctly it could be due to excess load or a defective sender.
- The NMEA 0183 version allows for the same reading.

The screenshot displays the Actisense NMEA Reader software interface. At the top, there are two progress bars: "NMEA 2000 Bus Load (0%)" and "PC Receive Load (2%)", both of which are circled in red. Below these, the main display area shows the following information:

```
NMEA 2000 PGN: 130944 (0x1FF80)
Name: Manu. Proprietary fast-packet non-addressed
Source = 36, Destination = 255
Priority = 7, Length = 32
Number Of Fields = 4
Field 1: NMEA 2000 Manufacturer Code = 135
Field 2: Reserved field
Field 3: Industry Group = 4
Field 4: Manufacturer defined field(s) = [FF.0E.00.01.01.00.02.00.03.00.08.00.09.00.0A.00.0B.FF.0C.00.0D.80.0E.80.0F.80.10.80.11.80]
```

At the bottom of the window, there is a navigation bar with three buttons: "Details", "Properties", and "Log". The "Details" button is circled in red.

Actisense NMEA Reader

The screenshot displays the Actisense NMEA Reader application window. The main area contains a table of received NMEA messages. The table has columns for Line, PGN, SRC, DST, Name, Time, Interval, and Data. The messages include various types such as Meteorological Station Data, Environmental Parameters, Wind Data, GNSS Sats in View, GNSS DOPs, Time & Date, GNSS Position Data, COG & SOG, Rapid Update, Position, Rapid Update, Fluid Level, Magnetic Variation, Attitude, Rate of Turn, Vessel Heading, Rudder, Configuration Information, Product Information, System Time, and ISO Address Claim.

At the bottom of the window, there are tabs for 'Data View', 'Network View', and 'Hardware Config'. The 'Data View' tab is currently selected and circled in red. The status bar at the bottom left shows 'COM3 115200' and 'Transfer Receive All'.

On the right side of the window, there is a detailed view of the selected message (NMEA 2000 PGN 130944). The details include:

- Name: Manu. Proprietary fast-packet non-addressed
- Source = 36, Destination = 255
- Priority = 7, Length = 32
- Number Of Fields = 4
- Field 1: NMEA 2000 Manufacturer Code = 135
- Field 2: Reserved field
- Field 3: Industry Group = 4
- Field 4: Manufacturer defined field(s) = [FF:0E:00:01:01:00:02:00:03:00:08:00:09:00:0A:00:0B:FF:0C:00:0D:80:DE:80:0F:80:10:80:11:80]

At the top right of the window, there are two status indicators: 'NMEA 2000 Bus Load (0%)' and 'PC Receive Load (2%)'.

Actisense NMEA Reader

SRC	Manufacturer	Device Function	Serial Num	D. Instance	Firmware
0	Airmar	Gateway (130)	101094	0	1.090, 2.190
2	Actisense	Gateway (130)	ID: 110797	0	1.100, 2.180
3	Actisense	Gateway (130)	ID: 110817	0	1.100, 2.176
4	Actisense	Gateway (130)	ID: 110819	0	1.100, 2.176
5	Offshore Systems UK	Gauge Small (210)	0066136 ...	0	V1.01 ...
6	Offshore Systems UK	General Purpose Displays (...)		0	
7	Offshore Systems UK	General Purpose Displays (...)	0262167 ...	0	V1.01 ...
8	Offshore Systems UK	General Purpose Displays (...)	0295017 ...	0	V1.01 ...
9	Offshore Systems UK	General Purpose Displays (...)	0327736 ...	0	V1.01 ...
10	Offshore Systems UK	Transducer/general (190)	0001704 ...	0	V4.14 ...
11	Offshore Systems UK	Transducer/general (190)	0109536 ...	0	V1.00 ...
12	Offshore Systems UK	Transducer/general (190)	0131800 ...	0	V4.12 ...
13	Offshore Systems UK	Transducer/general (190)	0131801 ...	0	V4.12 ...
36	Airmar	Weather Instruments (180)	1641966	0	1.009,1.611,...

- This item shows which instance is assigned to the device allowing for the user to match it on the display.

- Also pictured are the serial number and function which can be helpful for identification of the device.

Actisense NMEA Reader

The screenshot displays the Actisense NMEA Reader software interface. The window title is "NMEA Reader - [COM3: Actisense NGT]". The interface is divided into several sections:

- Device Configuration:** Shows "COM3: Actisense NGT" selected with a baud rate of "115200".
- TX PGN Enable List:** A list of PGNs with checkboxes. "Enabled: 4/30" is shown at the bottom.
- RX PGN Enable List:** A list of PGNs with checkboxes. "Enabled: 31/35" is shown at the bottom.
- Port Config:** Shows "Serial Baud Rate" set to "115200" and "ARL P-Codes" set to "ARL P-codes permanently disabled". An "Apply" button is present.
- Log:** A table on the right side showing a sequence of actions and their results.

Line	Time	Action	Result	Error
0	09:34:59	Update Operating Mode	Passed	
1	09:34:59	Change Operating Mode	Passed	
2	09:34:59	Get Lists Params	Passed	
3	09:36:00	Download Rx PGN Enable List	Passed	
4	09:35:00	Download Tx PGN Enable List	Passed	
5	09:35:00	Get Port P Code	Passed	
6	09:35:00	Get Port Baudrate	Passed	
7	09:35:00	Get Hardware Baudrate	Passed	
8	09:35:01	Update CAN Name	Passed	
9	09:35:01	Requesting Address Claim Info	Passed	
10	09:35:01	Get Lists Params	Passed	
11	09:35:01	Download Rx PGN Enable List	Passed	
12	09:36:01	Download Tx PGN Enable List	Passed	
13	09:35:02	Get Port P Code	Passed	
14	09:35:02	Get Port Baudrate	Passed	
15	09:35:02	Get Hardware Baudrate	Passed	
16	09:35:02	Update Product Information	Passed	
17	09:35:03	Update Configuration Information	Passed	
18	09:35:03	Update Configuration Information	Passed	
19	09:35:03	Update Configuration Information	Passed	
20	09:35:04	Update Product Information (remote device)	Passed	
21	09:35:04	Update Configuration Information (remote device)	Passed	
22	09:35:05	Update Product Information (remote device)	Passed	
23	09:35:05	Update Configuration Information (remote device)	Passed	
24	09:35:05	Update Product Information (remote device)	Passed	
25	09:35:06	Update Configuration Information (remote device)	Passed	
26	09:35:06	Update Product Information (remote device)	Passed	
27	09:35:07	Update Configuration Information (remote device)	Timeout	
28	09:35:08	Update Configuration Information (remote device)	Timeout	
29	09:35:10	Update Product Information (remote device)	Passed	
30	09:35:11	Update Configuration Information (remote device)	Timeout	
31	09:35:12	Update Configuration Information (remote device)	Timeout	
32	09:35:14	Update Product Information (remote device)	Passed	
33	09:35:15	Update Configuration Information (remote device)	Timeout	
34	09:35:16	Update Configuration Information (remote device)	Timeout	
35	09:35:18	Update Product Information (remote device)	Passed	
36	09:35:19	Update Configuration Information (remote device)	Timeout	
37	09:35:20	Update Configuration Information (remote device)	Timeout	
38	09:35:22	Update Product Information (remote device)	Passed	
39	09:35:23	Update Configuration Information (remote device)	Timeout	
40	09:35:24	Update Configuration Information (remote device)	Timeout	
41	09:35:26	Update Product Information (remote device)	Passed	
42	09:35:27	Update Configuration Information (remote device)	Timeout	

At the bottom of the window, the "Hardware Config" tab is selected and circled in red. The "Log" button in the bottom right corner is also circled in red.

Sail Soft NEMA Studio



- The Sail Soft program will allow data to be sent from a PC via NMEA 0183 on a user selected Com Port.
- This will allow for testing of displays or networks by sending out select amounts of data which is controlled through the software.
- The data that is being transmitted via NMEA 0183 can then be converted to NMEA 2000™ using either an NGW-1, AT-10 or any other NMEA approved device.

Sail Soft NEMA Studio



- The Actisense NGW-1 is a great way to convert the data sent from the Sail Soft program into a NMEA 2000™ Format. It can also send AIS information into a Bus with the proper Firmware update provided from the Actisense website.

Sail Soft NEMA Studio

The screenshot displays the Sail Soft NEMA Studio software interface. The main window is titled "GPS1" and contains several sections:

- Settings:** Latitude (00° 00.58779' S), Longitude (000° 00.80902' W), Course (0), Velocity (0.0), Altitude (m) (0).
- UTC Date:** 9/20/2012, UTC Time: 1:48:39 PM, Offset (hrs): 0.0, Magn. Var.: 0.0 W.
- POOP:** HDOP (0.0), VDOP (0.0), Geoid.Sep. (50.0), Satellites (12).
- Satellites used (GGA):** A table showing satellite status for GPS and WAAS.
- NMEA 0183 sentences:** A list of sentences with checkboxes and dropdown menus, including SGPGLL, SQPRMC, SQPVTG, SQPZDA, SQPGGA, SQPGSA, SQPGSV, SQPXTE, SQPRM0, and SQPDTM.
- GPS fix quality:** Radio buttons for GPS, DGPS, and No Fix.
- Elect mode:** Radio buttons for Normal, Auto, and Navigate.
- Autonav:** Settings for Bearing, Range, XTE, and Speed, with checkboxes for Track Back and Loop.
- Port:** COM1, 4800.8.None.One, Pos.Update: 1.0 second, Transmit: 1.00 second.
- Buttons:** Stop and Start.

On the right side, there are two panels:

- NMEA Object Explorer:** A list of available objects: AIS, Custom, GPS, Heading, Radar, Sounder, Velocity, and Weather.
- Object Control Center:** Sliders for Altitude (meters), Course (degrees), Velocity (knots), and Rudder (angle in deg.), each set to 0.0.

At the bottom, the **IO Port Monitor** window shows a stream of NMEA sentences:

```
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154831.12,A,A*68
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154832.14,A,A*6D
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154833.15,A,A*6D
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154834.17,A,A*68
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154835.18,A,A*6E
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154836.20,A,A*6E
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154837.21,A,A*6E
GPST 00 COM1: #GPGLL,0000.58779,S,000000.80902,W,154838.22,A,A*62
```

At the bottom left, a status bar indicates "Sentences waiting in output buffer: 0 bytes: 0".

Sail Soft NEMA Studio

The screenshot displays the Sail Soft NEMA Studio software interface. The main window is titled "GPS1 - General Settings" and is divided into several sections:

- Program settings:** Includes "NMEA 0183 Version" (Version 2.30/3.01), "Default Magn. Var." (Degrees, East/West), "Default UTC Offset +/-" (Hours), and "Distance Unit" (Nautical Miles/Kilometers).
- NMEA settings:** Includes "\$GPGGA Extensions for Differential GPS Data" (Age of differential GPS Data, Differential Reference Station ID) and "GPS Position Accuracy" (The number of decimal positions of the Lat and Lon in the \$GPGLL, \$GPRMC and \$GPGGA sentences).
- Local Datum Code:** Includes "Local Datum Code" (WB4), "Subdivision Code", "Ref. Datum Code" (WB4), "Lat. Offset", "Lon. Offset", and "Alt. Offset".
- UTC Date/Time handling in GPS:** Includes "Realistic UTC Date/Time" and "User-tweaked UTC Date/Time".

On the right side, there are two panels:

- NMEA Object Explorer:** Lists available objects: AIS, Custom, GPS, Heading, Radar, Sounder, Velocity, and Weather.
- Object Control Center:** Provides sliders for "Altitude (meters)", "Course (degrees)", "Velocity (knots)", and "Rudder (angle in deg.)".

At the bottom, the **I/O Port Monitor** displays a stream of NMEA sentences:

```
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54943,1.2,A,A*4C
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54944,1.3,A,A*4A
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54945,1.5,A,A*4D
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54946,1.6,A,A*4D
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54947,1.8,A,A*42
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54948,1.9,A,A*4C
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54949,2.0,A,A*47
GPS1 >> COM1: $GPGLL,0.00,5.8779,S,0.0000,8.0902,W,1.54950,2.2,A,A*4D
```

At the bottom left, it shows "Sentences waiting in output buffer: 0 Bytes: 0".

Sail Soft NEMA Studio

File Edit View Settings Help

Logging is OFF Testfile

GPS1 Communications Settings

Serial ports found in this system

PortName	BaudRate	DataBits	Parity	StopBits	N2000Dev	Status
COM1	4800	8	None	One		GPS1
COM5	9600	8	None	One		Not used
COM3	9600	8	None	One		Not used
COM4	9600	8	None	One		Not used
COM6	9600	8	None	One		Not used

(IMPORTANT: use this button only after you have added or removed any serial ports from your system. You will also need to reload all open objects because NemaStudio will close them before performing this operation. Note that all port parameters will be reset to their default Windows settings. It is good practice to also review the port setting for each object after the reset.

Reset all

UDP settings

Remote IP address: 127.0.0.1 Local Port: 1100 Remote Port: 1100 Use RTS/CTS Handshaking Apply settings

NMEA Object Explorer

- Available Objects
 - AIS
 - Custom
 - GPS
 - Heading
 - Radar
 - Sounder
 - Velocity
 - Weather

Object Control Center

Altitude (meters) 0.0

Course (degrees) 0.0

Velocity (knots) 0.0

Rudder (angle in deg) 0.0

I/O Port Monitor

```
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154905.60,A,A*6B
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154906.62,A,A*6A
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154907.63,A,A*6A
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154908.64,A,A*62
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154909.66,A,A*61
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154910.67,A,A*68
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154911.69,A,A*63
GPS1 on COM1: #DPGLL,0000.58779,S,00000.80902,W,154912.70,A,A*6C
```

Sentences waiting in output buffer: 0 Bytes: 0

Maretron N2KAnalyzer

Maretron[®]

- The Maretron N2KAnalyzer Software is free to download from the Maretron Web site and offers many valuable options for network evaluation and testing.
- The N2KAnalyzer requires the use of a Maretron USB100 Gateway to properly connect to a NMEA 2000™ system.
- Maretron's software will allow a user to assign device instances to components directly.
- The software also shows software version, manufacturer, serial numbers and much more data specific to a sensor.

Maretron N2KAnalyzer

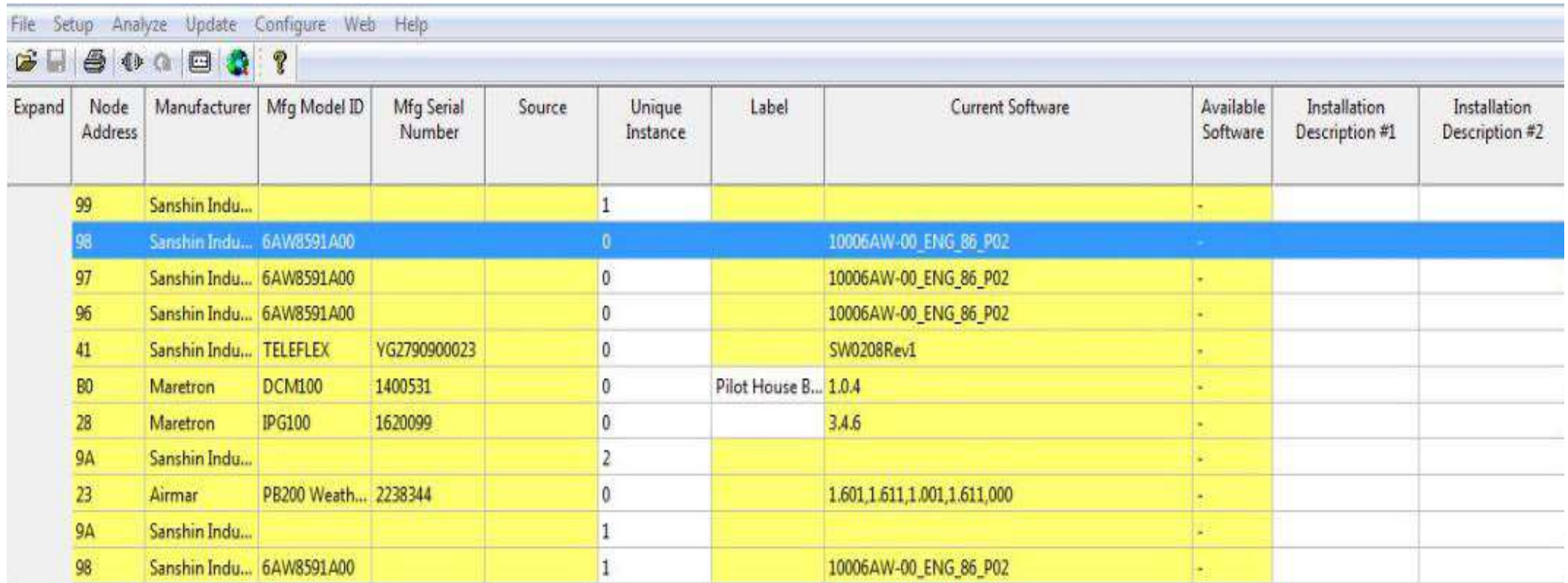
USB100 Gateway



- The Maretron USB100 Gateway will allow the NMEA 2000™ network to be accessed by the N2KAnalyzer to show what devices are attached. The Gateway will also allow devices to be programmed for instances and queried for transmitted and received PGN's.

Maretron N2KAnalyzer

N2KAnalyzer Software Device Page



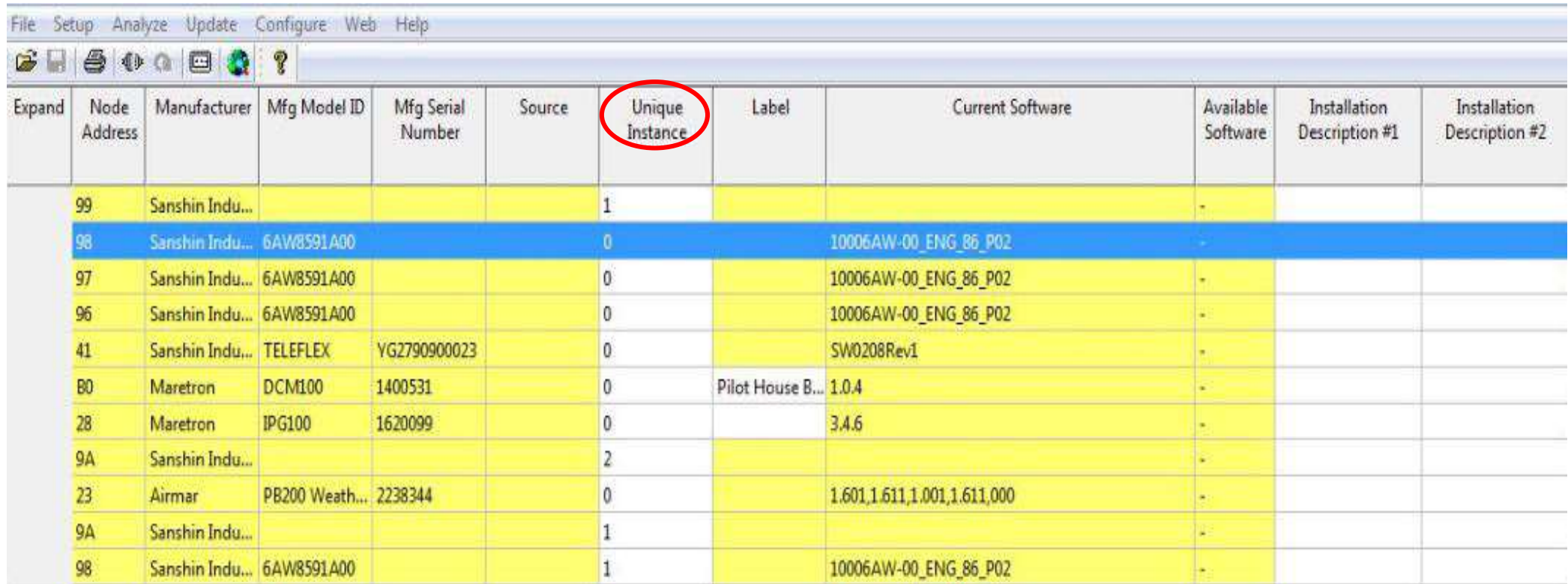
The screenshot shows the N2KAnalyzer software interface. At the top is a menu bar with 'File', 'Setup', 'Analyze', 'Update', 'Configure', 'Web', and 'Help'. Below the menu is a toolbar with icons for file operations and help. The main area is a table with the following columns: Expand, Node Address, Manufacturer, Mfg Model ID, Mfg Serial Number, Source, Unique Instance, Label, Current Software, Available Software, Installation Description #1, and Installation Description #2. The table contains 12 rows of device data.

Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Serial Number	Source	Unique Instance	Label	Current Software	Available Software	Installation Description #1	Installation Description #2
	99	Sanshin Indu...				1			-		
	98	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-		
	97	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-		
	96	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-		
	41	Sanshin Indu...	TELEFLEX	YG2790900023		0		SW0208Rev1	-		
	80	Maretron	DCM100	1400531		0	Pilot House B...	1.0.4	-		
	28	Maretron	IPG100	1620099		0		3.4.6	-		
	9A	Sanshin Indu...				2			-		
	23	Airmar	PB200 Weath...	2238344		0		1.601,1.611,1.001,1.611,000	-		
	9A	Sanshin Indu...				1			-		
	98	Sanshin Indu...	6AW8591A00			1		10006AW-00_ENG_86_P02	-		

- The Main Device page will show what devices are connected to the Network and the specific information of that device.

Maretron N2KAnalyzer

N2KAnalyzer Software Device Page



The screenshot shows the N2KAnalyzer Software Device Page interface. The menu bar includes File, Setup, Analyze, Update, Configure, Web, and Help. Below the menu bar is a toolbar with various icons. The main content is a table with the following columns: Expand, Node Address, Manufacturer, Mfg Model ID, Mfg Serial Number, Source, Unique Instance (circled in red), Label, Current Software, Available Software, Installation Description #1, and Installation Description #2. The table contains 12 rows of data, with the 'Unique Instance' column highlighted in yellow for most rows.

Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Serial Number	Source	Unique Instance	Label	Current Software	Available Software	Installation Description #1	Installation Description #2
	99	Sanshin Indu...				1			-		
	98	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-		
	97	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-		
	96	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-		
	41	Sanshin Indu...	TELEFLEX	YG2790900023		0		SW0208Rev1	-		
	80	Maretron	DCM100	1400531		0	Pilot House B...	1.0.4	-		
	28	Maretron	IPG100	1620099		0		3.4.6	-		
	9A	Sanshin Indu...				2			-		
	23	Airmar	PB200 Weath...	2238344		0		1.601,1.611,1.001,1.611,000	-		
	9A	Sanshin Indu...				1			-		
	98	Sanshin Indu...	6AW8591A00			1		10006AW-00_ENG_86_P02	-		

- The unique instance tab allows for the user to view and assign specific instances to a sender if there are multiple versions of the same unit on the network.

Maretron N2KAnalyzer

The screenshot displays the Maretron N2KAnalyzer interface. A table lists various device instances with columns for Expand, Node Address, Manufacturer, Mfg Model ID, Mfg Serial Number, Source, Unique Instance, Label, Current Software, Available Software, Installation Description #1, and Installation Description #2. A dialog box titled 'Device Instance Properties' is open, showing details for a selected device: NA: 0x1A (26), Model: DSM250, S/N: 1300100, and Device Class: Instrumentation/general systems (80). The 'Device Instance' field is set to 0. The background table has a blue highlight on the row for Node Address 1A, Manufacturer Maretron, Mfg Model ID DSM250, and Mfg Serial Number 1300100. The status bar at the bottom indicates 'Connected to NMEA 2000 Network', 'COM5', and 'NUM'.

Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Serial Number	Source	Unique Instance	Label	Current Software	Available Software	Installation Description #1	Installation Description #2
	08	Simrad	NR8 iGPS	001649#		0		01000_E ...	-		
	12	Simrad	NR8 MFD	001649#		0		01000_E ...	-		
	1B	Garmin	GMI10	3829486641		0		2.58	-		
	1E	DNA Group, I...	Powergate 20...	Serial# 1		0			-		
	-	Airmar	PB200 Weath...	2262798		0			-		
	24	Airmar	DST200	2254145		0			-		
	23	Airmar	H2183	2260237		0			-		
	1A	Maretron	DSM250	1300100		0		1.4.15.3	-		
	0A	#481	SeaSmart An...	130942		0			-		
	03	#481	SeaSmart N...	126154		0			-		
	01	Actisense	NMEA 2000<...	121609		0			-	Demo for NMEA E...	
	00	Actisense	NMEA 2000 P...	120828		0		1.100, 2....	-	Supplied by Geme...	
	04	Faria Instrum...				0			-		
	52	Maretron	USB100	1160678		0		1.8.3	1.8.3		
	CC	Westerbeke ...	RC20	2247		0		52749.A.8	-		
	71	Maretron	TLA100	1260116		0		1.6.12	1.6.15		
	7A	Beyond Meas...	Fish Display 1...	396-B23085		0		1.53	-		
	32	Beyond Meas...	FishGate 100	396-A0001012		0		1.2.1	-		

- The Instancing tool is as simple as setting the number for any applicable device.

Maretron N2KAnalyzer

N2KAnalyzer Software Properties Page

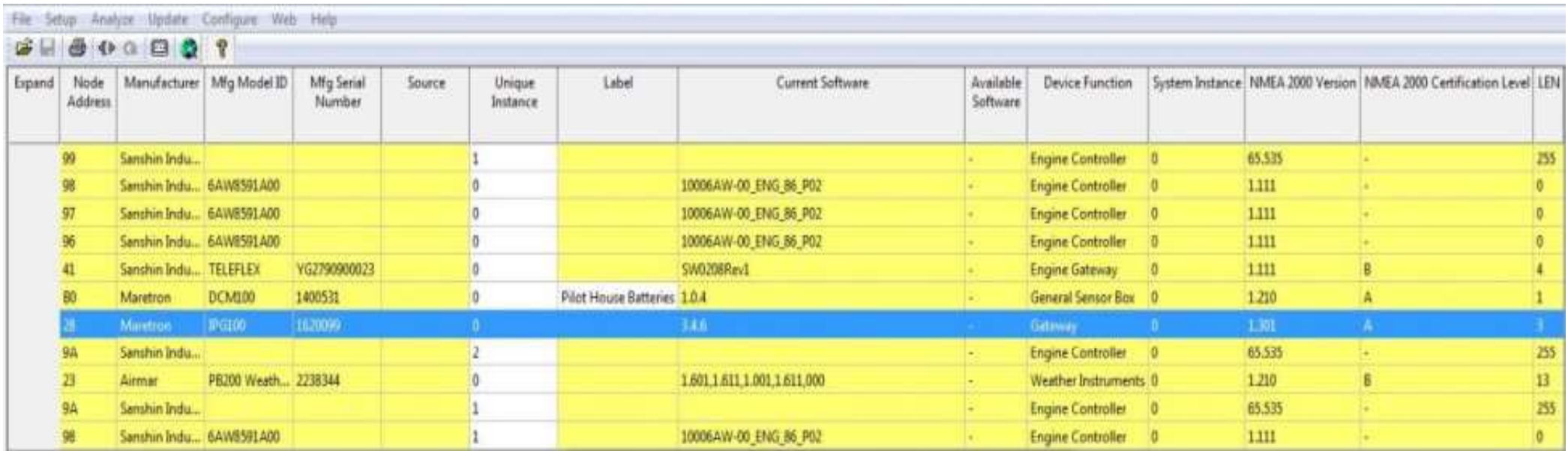
Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Serial Number	Source	Unique Instance	Label	Current Software	Available Software	Device Function	System Instance	NMEA 2000 Version	NMEA 2000 Certification Level	LEN
	99	Sanshin Indu...				1			-	Engine Controller	0	65.535	-	255
	98	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0
	97	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0
	96	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0
	41	Sanshin Indu...	TELEFLEX	YG2790900023		0		SW0208Rev1	-	Engine Gateway	0	1.111	B	4
	80	Maretron	DCM000	1400531		0	Pilot House Batteries	1.0.4	-	General Sensor Box	0	1.210	A	1
	28	Maretron	IPGE00	1620099		0		1.4.6	-	Gateway	0	1.301	A	3
	9A	Sanshin Indu...				2			-	Engine Controller	0	65.535	-	255
	23	Airmar	PB200 Weath...	2238344		0		1.601.1.611.1.001.1.611.000	-	Weather Instruments	0	1.210	B	13
	9A	Sanshin Indu...				1			-	Engine Controller	0	65.535	-	255
	98	Sanshin Indu...	6AW8591A00			1		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0

The PGN Page shows all transmitted and received sentences to ensure proper operation.

PGN	Description
59332	ISO Acknowledgment
59904	ISO Request
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection ...
60928	ISO Address Claim

Maretron N2KAnalyzer

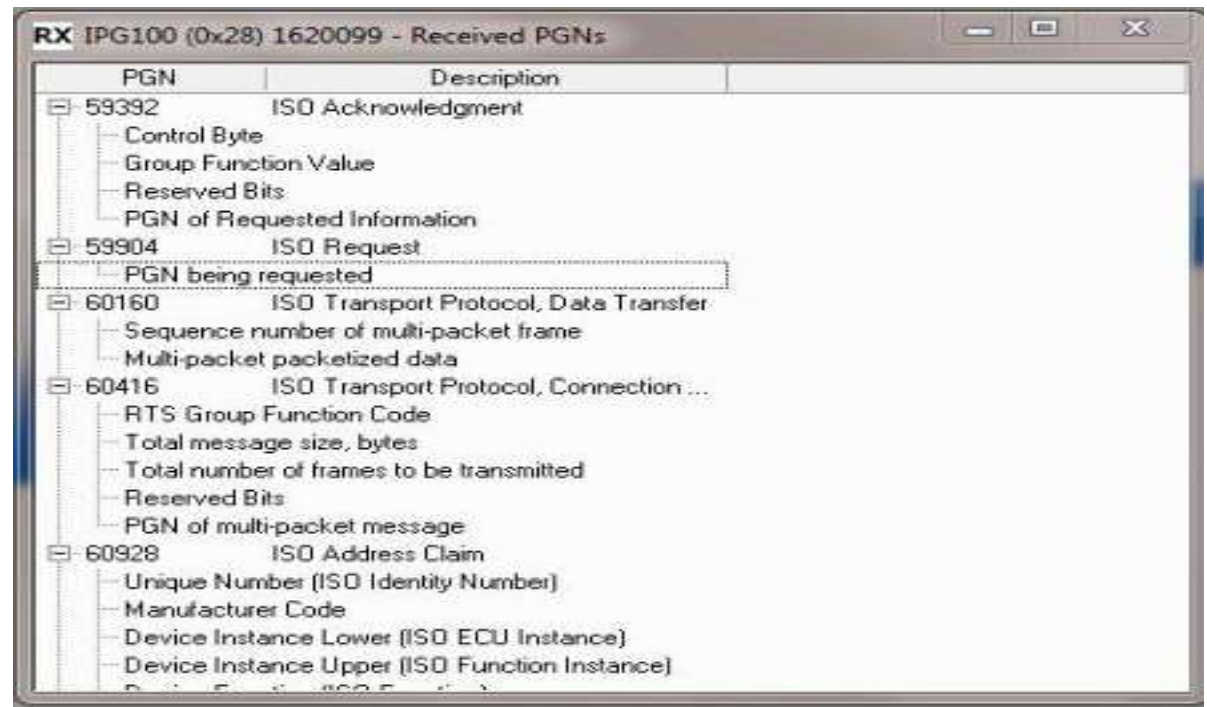
N2KAnalyzer Software Properties Page



The screenshot shows the N2KAnalyzer Software Properties Page with a table of device information. The table has 14 columns: Expand, Node Address, Manufacturer, Mfg Model ID, Mfg Serial Number, Source, Unique Instance, Label, Current Software, Available Software, Device Function, System Instance, NMEA 2000 Version, NMEA 2000 Certification Level, and LEN. The table contains 14 rows of data, with the row for Node 28 (Maretron IPG100) highlighted in blue.

Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Serial Number	Source	Unique Instance	Label	Current Software	Available Software	Device Function	System Instance	NMEA 2000 Version	NMEA 2000 Certification Level	LEN
	99	Sanshin Indu...				1			-	Engine Controller	0	65.535	-	255
	98	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0
	97	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0
	96	Sanshin Indu...	6AW8591A00			0		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0
	41	Sanshin Indu...	TELEFLEX	YG2790900023		0		SW0208Rev1	-	Engine Gateway	0	1.111	B	4
	80	Maretron	DCM000	1400531		0	Pilot House Batteries	1.0.4	-	General Sensor Box	0	1.210	A	1
	28	Maretron	IPG100	1620099		0		1.4.6	-	Gateway	0	1.301	A	1
	9A	Sanshin Indu...				2			-	Engine Controller	0	65.535	-	255
	23	Airmar	PB200 Weath...	2238344		0		1.601.1.611.1.001.1.611.000	-	Weather Instruments	0	1.210	B	13
	9A	Sanshin Indu...				1			-	Engine Controller	0	65.535	-	255
	98	Sanshin Indu...	6AW8591A00			1		10006AW-00_ENG_86_P02	-	Engine Controller	0	1.111	-	0

The Received PGN Page shows the specifics of what data is being sent and specifics of that data.



The screenshot shows the Received PGNs window for node 28 (IPG100). The window title is "RX IPG100 (0x28) 1620099 - Received PGNs". The table shows a tree view of received PGNs with their descriptions and sub-fields.

PGN	Description
59392	ISO Acknowledgment
59904	ISO Request
60160	ISO Transport Protocol, Data Transfer
60416	ISO Transport Protocol, Connection ...
60928	ISO Address Claim

Sub-fields for PGN 60416 (ISO Transport Protocol, Connection ...):

- RTS Group Function Code
- Total message size, bytes
- Total number of frames to be transmitted
- Reserved Bits
- PGN of multi-packet message

Maretron N2KAnalyzer

N2KAnalyzer Software Properties Page

The screenshot displays the N2KAnalyzer software interface. A window titled "TX DST200 (0x24) 2254145 - Transmitted PGNs" is open, showing a list of transmitted PGNs with columns for Time, PGN, and Description. The selected PGN is "Water Depth, Transducer: - ft".

The main window shows a table of software properties with the following columns: Label, Current Software, Available Software, Installation Description #1, and Installation Description #2.

Label	Current Software	Available Software	Installation Description #1	Installation Description #2
	01000_E ...	-		
	01000_E ...	-		
	3.50	-		
	1.0 Mod A	-		
	1.601,1.6...	-		
	1.004,1.0...	-		
	1.201,1.2...	-		
	1.4.15.3	1.4.15.3		
	1.100, 2...	-		
	1.100, 2...	-		
	1.100, 2...	-	Demo for NMEA E...	
	1.100, 2...	-	Supplied by Geme...	
		-		
	1.8.3	1.8.3		
CC	Westerbeke ...	RC20	2247	0
71	Maretron	TLA100	1260116	
7A	Beyond Meas...	Fish Display 1...	396-B23085	0

The transmitted PGN Page will allow for the user to view the live data coming from a sensor which will show if it is actually transmitting and if the data is correct.

Maretron N2KAnalyzer

N2KAnalyzer Software Properties Page

N2KAnalyzer also offers the ability to simulate a DSM250 display through the software to view live data as well as change settings just as if a live display were onboard.

The screenshot displays the Maretron N2KAnalyzer interface. On the left, a simulated DSM250 display is shown with a menu of options: Alert Setup..., Alert Status..., Configuration..., Display Settings..., Favorite Screens Mode: Manual, Favorite Screens Setup..., and Units... The display also features a control bar with buttons for Power, Back, Scroll Up, Scroll Down, and Enter, and a set of physical buttons below it: Power, Brightness, Up, Down, and Left.

On the right, a table lists software properties. The table has columns for Label, Current Software, Available Software, Installation Description #1, and Installation Description #2. A blue arrow points from the 'Favorite Screens Mode: Manual' option on the display to the '1.4.15.3' entry in the 'Current Software' column of the table.

Label	Current Software	Available Software	Installation Description #1	Installation Description #2
	01000_E ...	-		
	01000_E ...	-		
	3.50	-		
	1.0 Mod A	-		
	1.601,1.6...	-		
	1.004,1.0...	-		
	1.201,1.2...	-		
	1.4.15.3	1.4.15.3		
	1.100, 2....	-		
	1.100, 2....	-		
	1.100, 2....	-	Demo for NMEA E...	
	1.100, 2....	-	Supplied by Geme...	
	-	-		
	1.8.3	1.8.3		
	52749.A.8	-		
71	Maretron TLA100	1260116		
7A	Beyond Meas... Fish Display 1...	396-B23085	0	
32	Beyond Meas... FishGate 100	396-A0001012	0	

At the bottom of the software window, it indicates 'Connected to NMEA 2000 Network' via 'COM5' and shows 'NUM' in the status bar.

Maretron N2KBuilder

N2KBUILDER NMEA 2000™ NETWORK DESIGN SOFTWARE

- Maretron's unique N2KBuilder program allows dealers and installers to design and test networks before any cable is pulled through the vessel.
- The software will calculate voltage drop, connector gender, and cable lengths as well as allow the use of custom parameters to meet most design needs.
- When used properly, a configuration file can be generated to create a bill of material that will include all Maretron parts used in the build that makes ordering parts much more efficient.

Maretron N2KBuilder

The screenshot displays the Maretron N2KBuilder software interface. The window title is "N2KBuilder™ - New file". The menu bar includes "File", "Edit", "Tools", and "About".

Design Rule Checks:

- Terminators / Branches OK
- No Loops OK
- Power OK
- Number Nodes OK

Design Rule Check Area:

- Length OK
- Currents OK
- Voltages OK
- Common Mode Voltages OK

Show On Drawing

Component Library Area:

- Engine/Vessel Monitoring:** Mini Cable Components
- Gateways/Tools:** Mid/Micro Cable Components
- Adaptors/Adapter Cables:** Displays/Alarms
- Miscellaneous:** Navigation Instruments

Design / Drawing Area:

Screen Control Area:

- Zoom To

Display Details:

- Cable Lengths

Display Control Area:

- Plug Gender
- Show Handles
- Backbone(s)

Title:

Drawn:		Date:	
Checked:		Date:	
Approved:		Date:	
Revised:		Date:	

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N2KBuilder™ - NMEA 2000 Network Builder
Version: 1.0.20081117.1

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Design Rule Checks

- ✓ Terminators / Branches OK
- ✓ No Loops OK
- ✓ Power OK
- ✓ Number Nodes OK
- ✓ Cable Lengths OK
- ✓ Trunk Length OK
- ✓ Branch Length OK
- ✓ Cumulative Branch Length OK
- ✓ Currents OK
- ✗ Voltages OK
- ✓ Common Mode Voltages OK

Show On Drawing

Zoom In

Zoom Out

Zoom Extents

Display Details

Cable Lengths

Currents

Voltages

Plug Gender

Show Handles

Backbone(s)

Mini Cable Components	Mid/Micro Cable Components	Displays/Alarms	Navigation Instruments
Engine / Vessel Monitoring	Gateways/Tools	Adaptors/Adapter Cables	Miscellaneous

?

Text

Picture

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The diagram illustrates a network topology with the following voltage values:

- Top row displays: 8.2Volts, 7.72Volts, 7.4Volts, 7.24Volts
- Bottom row displays: 8.85Volts, 9.66Volts
- Central module: 10.72Volts
- Bottom right modules: 10.68Volts, 10.66Volts

Title: Tutorial 3

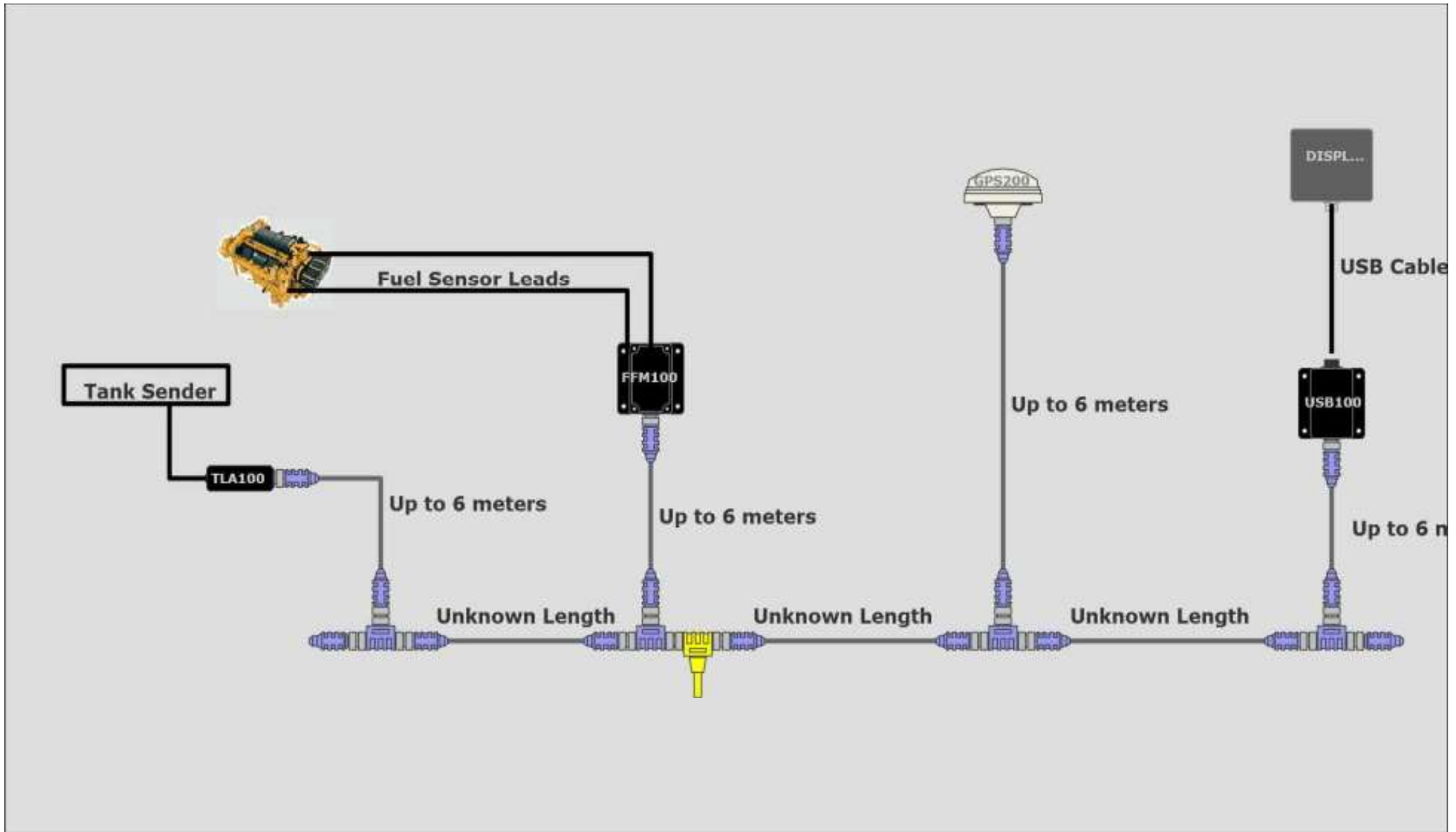
Drawn:		Date:	
Checked:		Date:	
Approved:		Date:	
Revision:		Date:	

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N2KBuilder™ - NMEA 2002 Network Builder
Version 4.0.000007.00

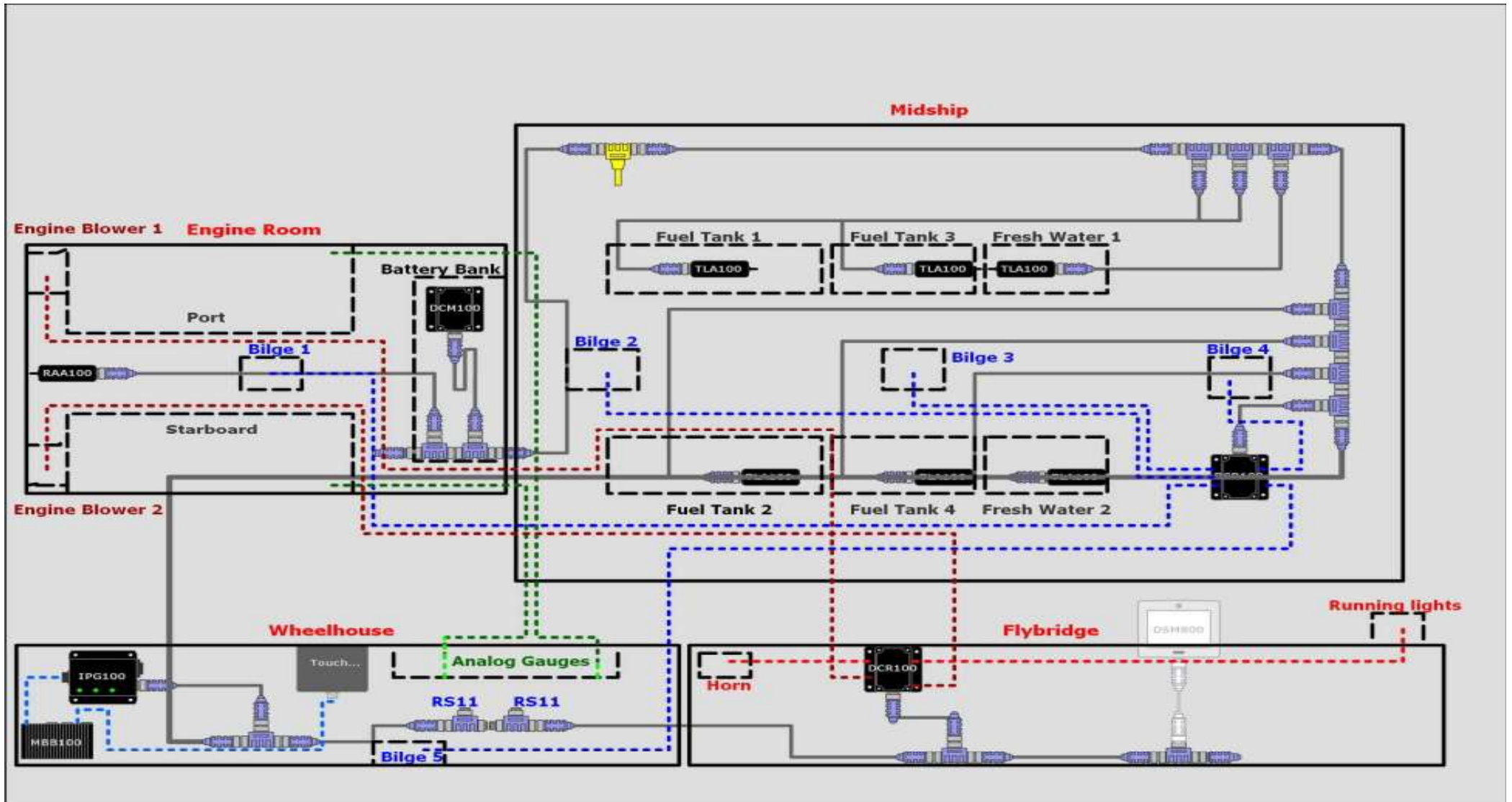
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- This build file shows a system where the end user supplies specifics to be used to generate a complete network. It is a useful program to start a system and explain to customers not familiar with NMEA 2000™ how the parts are utilized.

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- Attached is a detailed view of how the system can be used to partition specific sections of a vessel and show possible connection and integration points. The more detailed a customer's requirements are, the more data can be added to the builder file. This also helps generate a very specific BOM to give an accurate estimate of what parts will be required as well as total component cost.

Maretron N2KBuilder

Bill of Materials Report for C:\Documents and Settings\zfyoyd\Desktop\N2K Builder Files\Marine tech 2.n2b

Manufacturer	PartNumber	Description	Quantity
Maretron		Micro Double Ended Cordset - M to F - ?m Gray	18
Maretron	CF-SPWR05-CF	Micro/Mid 5m Power Tap Tee	1
Maretron	CM-CF-CF	Micro Tee	14
Maretron	DCM100-01	Direct Current Monitor	1
Maretron	DCR100-01	DC Relay	2
Maretron	IPG100-01	Internet Protocol Gateway	1
Maretron	MBB100	Black Box Vessel Monitoring and Control	1
Maretron	RAA100-01	Rudder Angle Adapter	1
Maretron	TLA100-01	Tank Level Adapter	6
Maretron	TR-CM	Micro Termination Resistor Male	2

- The Bill of Materials that is generated from the Builder file is an excellent way to control cost of the build as well as to generate equipment costs for a job.

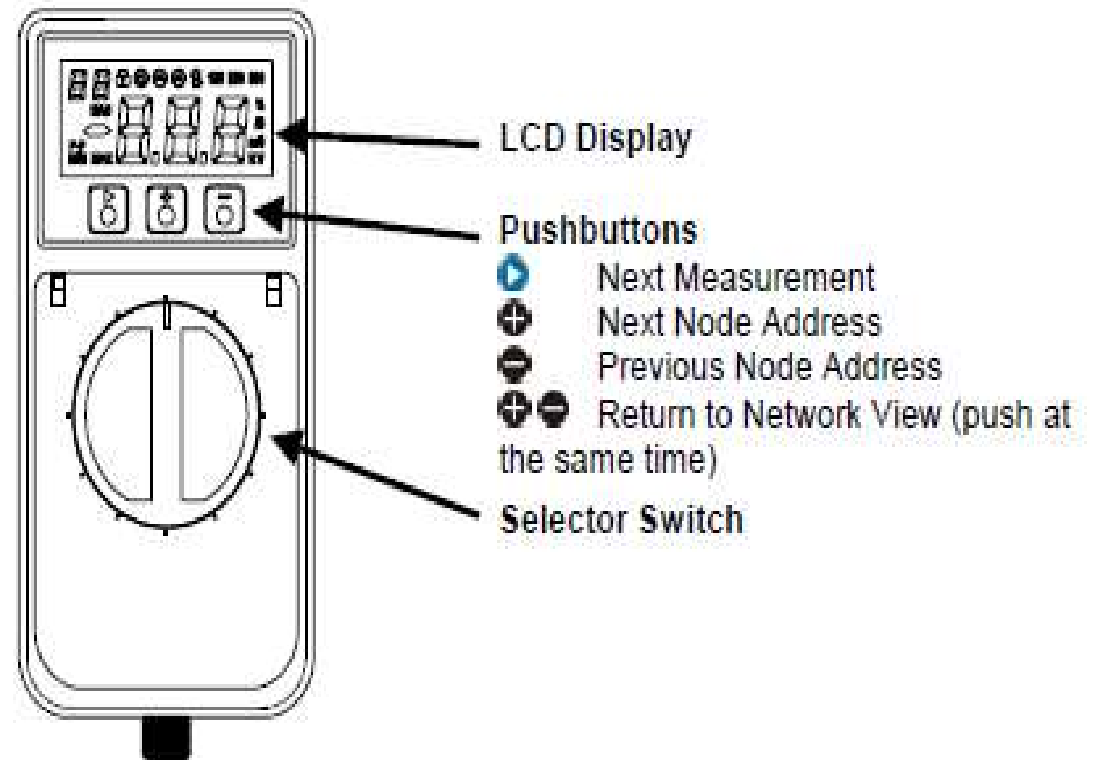
Maretron N2KMeter



- The N2KMeter has the capability to test the physical aspects of a network.
- Faults that can be detected by the N2KMeter include:
 - Opens and Shorts
 - Incorrect Topology
 - Bad Nodes
 - Bad Termination
 - Improper Shield Connection
 - Intermittent Problems
 - Excessive Scan Rate
 - Common Mode Voltage

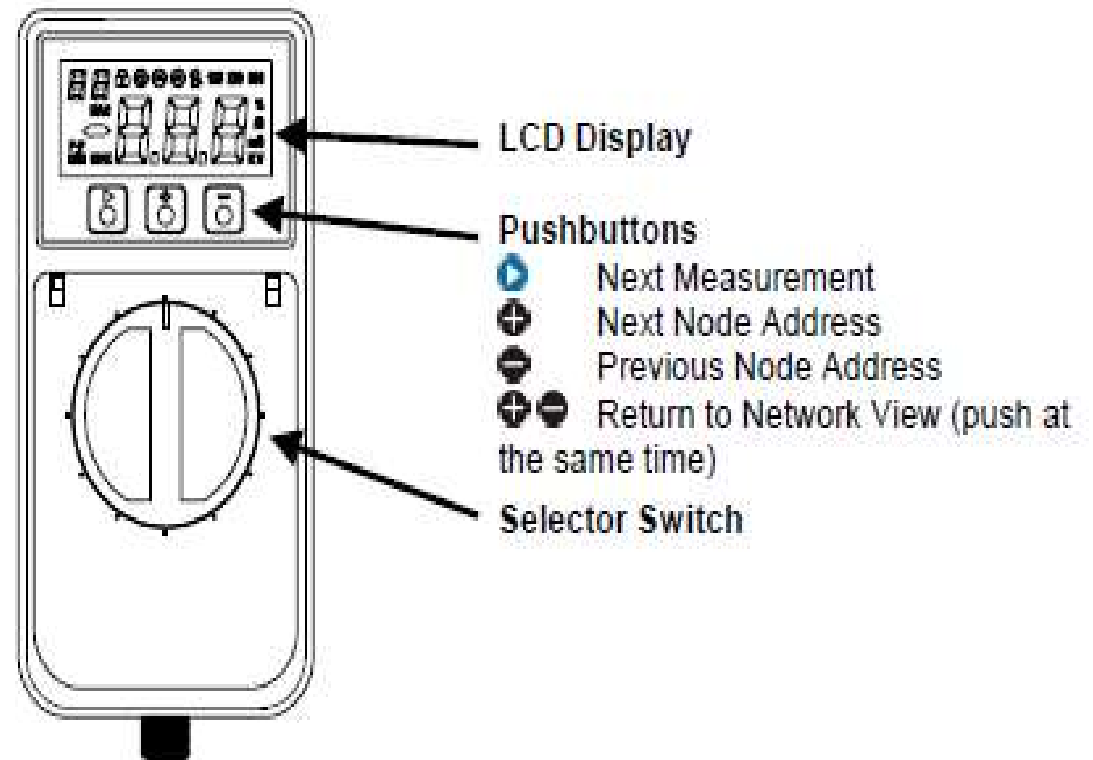
Maretron N2KMeter

- The meter offers the ability to use an Auto-Search tool that will allow the dealer to locate faults.
- It works by examining all measurements and then pinpointing any that exceed or are close to specified limits.
- The N2KMeter tracks network data transmission errors in real-time and lets you know if the error rate is acceptable, marginal or unacceptable with the use of a simple signal interface.







Maretron N2KMeter

- The automated error detection of the N2KMeter allows the user to view issues on the backbone live.
- The technician will be able to determine if the error was an isolated event or if it is recurring which would indicate a problem on the NMEA 2000™ network.
- The error detection will scroll numerically as issues arise from the time it is connected to a node.



Maretron N2KMeter

- Any error rate greater than zero is undesirable (although your network may still function since CAN automatically retransmits after errors).
- An error rate greater than 10/s indicates a problem that should be investigated.
- The N2KMeter uses unique technology to accurately determine which node was attempting to transmit when a bus error occurs.

Display	What it means
	Real-time error rate of 14 errors/second
	Minimum bus error rate on whole network since N2KMeter was connected to the network or reset.
	Maximum bus error rate on the whole network since N2KMeter was connected or reset.
	Incremental error count on the entire network since the N2KMeter was connected or reset.