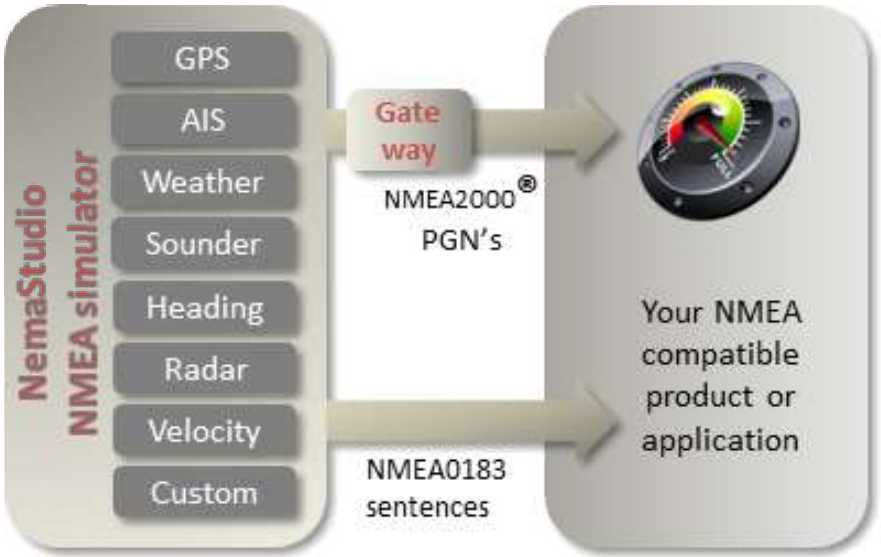
NMEA Software Utilities

Actisense®

Maretron®

SailSoft



Actisense NMEA Reader

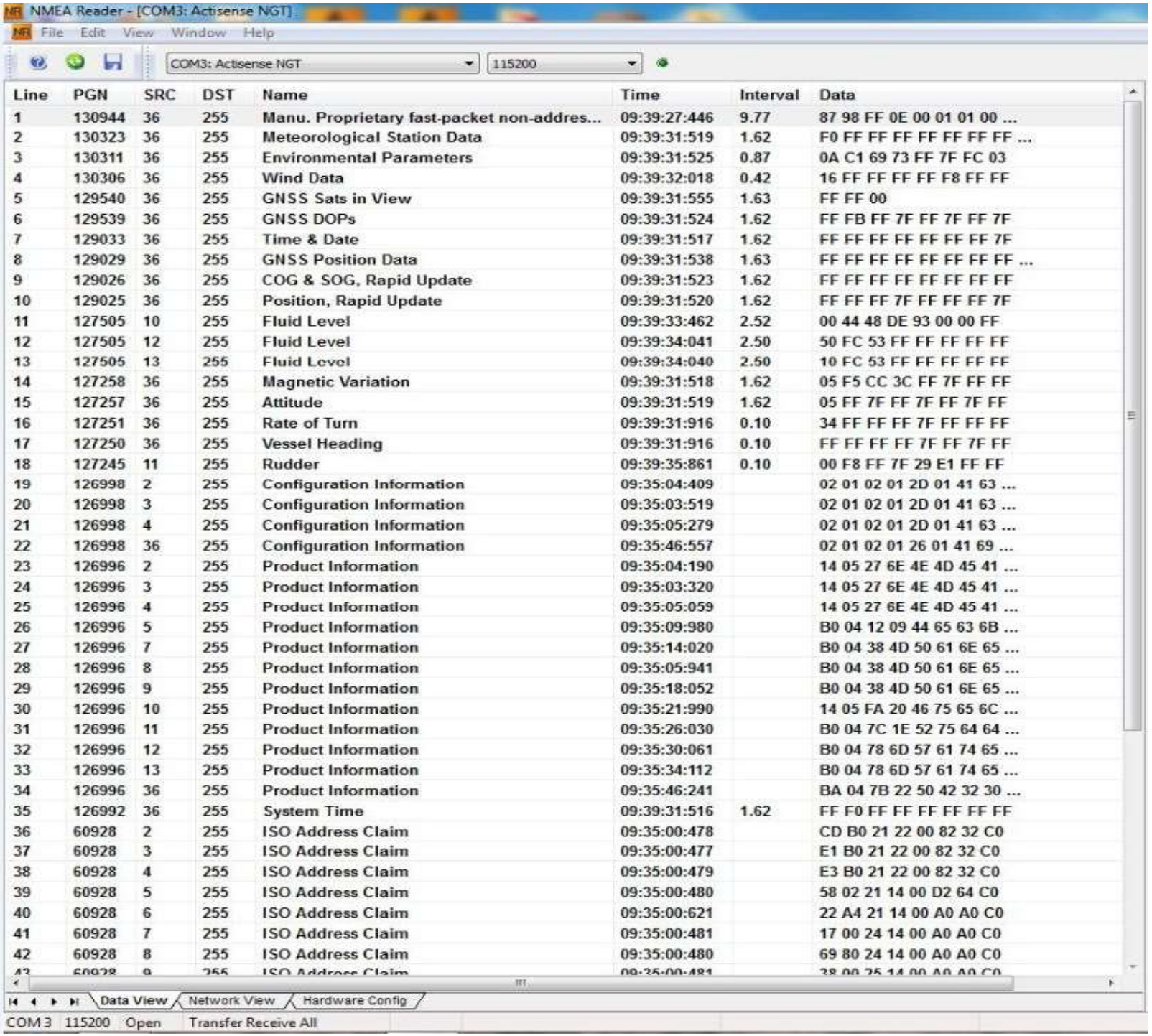
- The Actisense NMEA Reader is a great utility for testing and evaluating a NMEA 0183 or NMEA 2000™ system.
- The program is free to download from the Actisense web site and will work great with a compatible serial or USB adapter.
- This software will allow the user to view real time data flow and buffer 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

- 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.



Line	PGN	SRC	DST	Name	Time	Interval	Data
1	130944	36	255	Manu. Proprietary fast-packet non-addres...	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 ...
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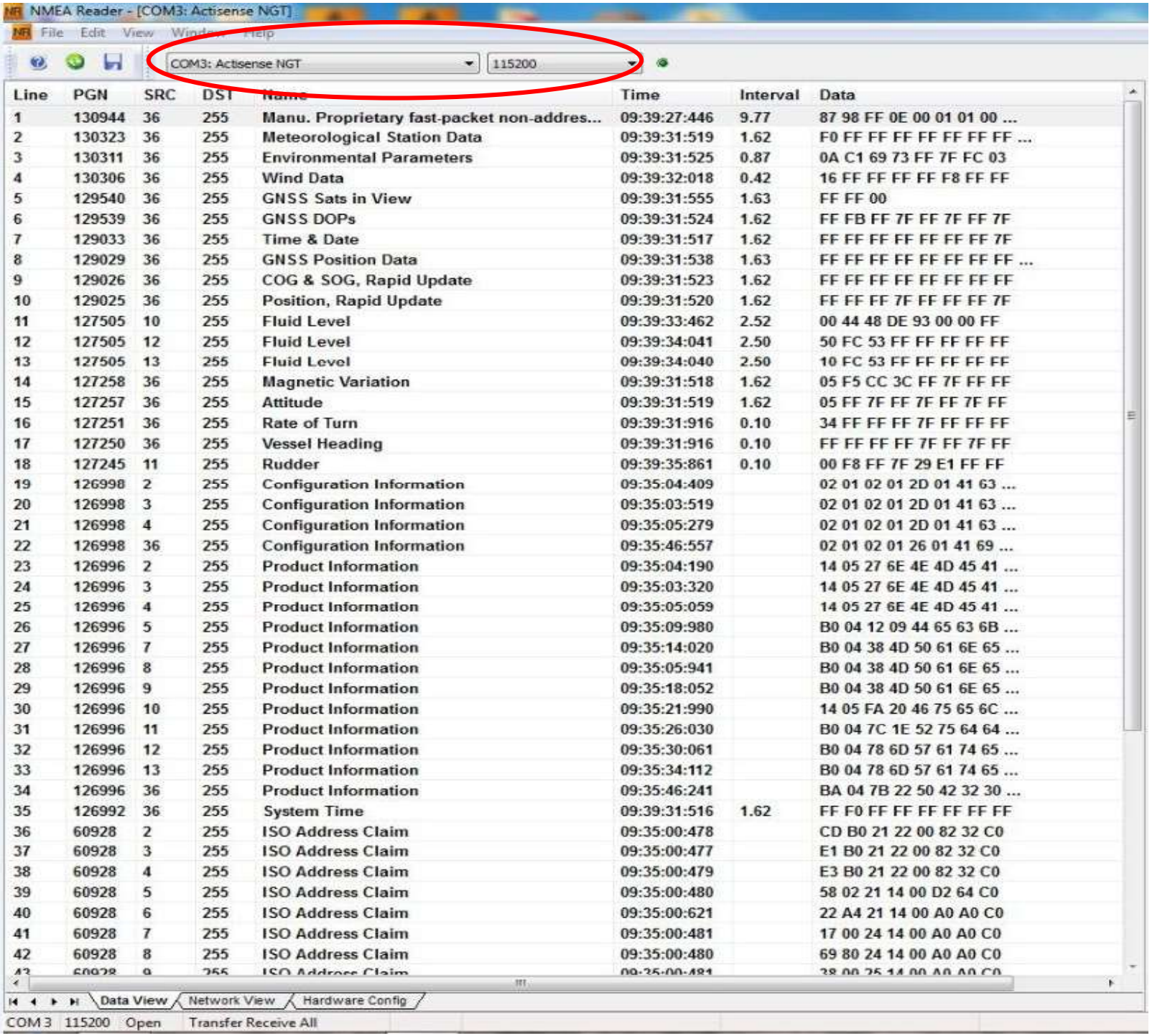
21	126998	4	255	Configuration Information	09:35:05:279		02 01 02 01 2D 01 41 63 ...
22	126998	36	255	Configuration Information	09:35:46:557		02 01 02 01 26 01 41 69 ...
23	126996	2	255	Product Information	09:35:04:190		14 05 27 6E 4E 4D 45 41 ...
24	126996	3	255	Product Information	09:35:03:320		14 05 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

Actisense NMEA Reader

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



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5	129540	36	255	GNSS Sats in View	09:39:31:555	1.63	FF FF 00
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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 ...
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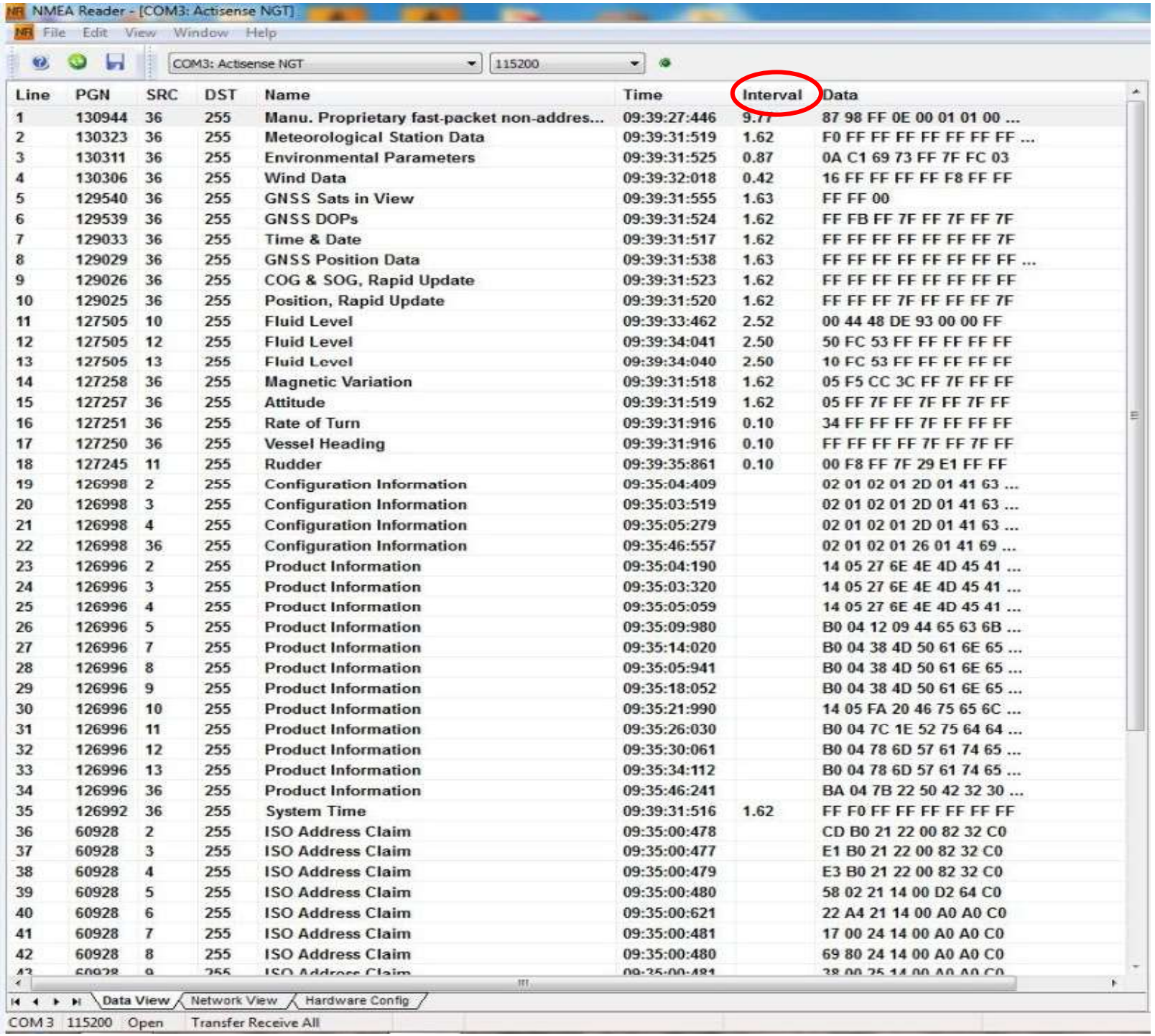
42	60928	8	255	ISO Address Claim	09:35:00:480		69 80 24 14 00 A0 A0 C0
43	60928	9	255	ISO Address Claim	09:35:00:481		38 00 25 14 00 A0 A0 C0

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.



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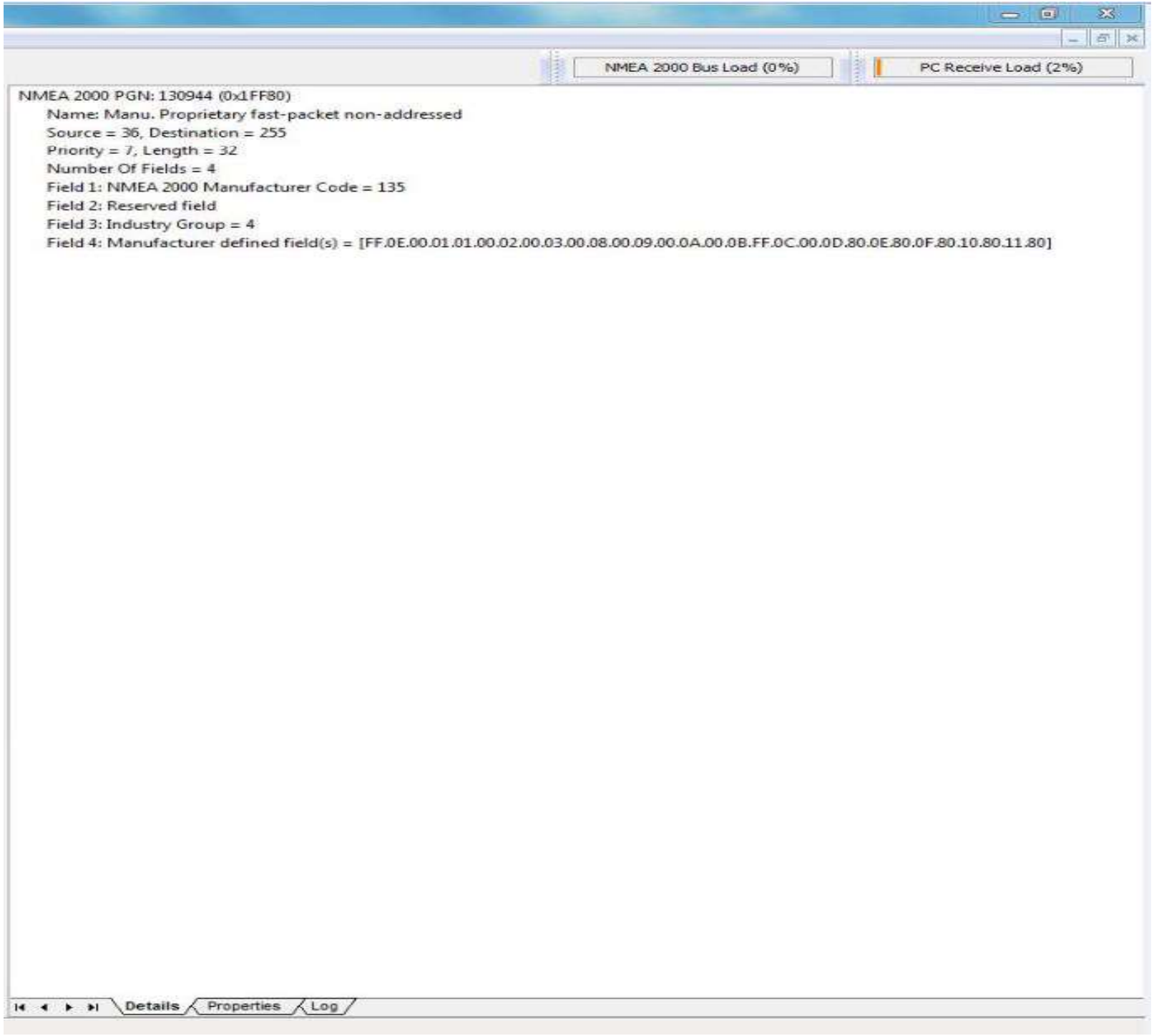
42	60928	8	255	ISO Address Claim	09:35:00:480		69 80 24 14 00 A0 A0 C0

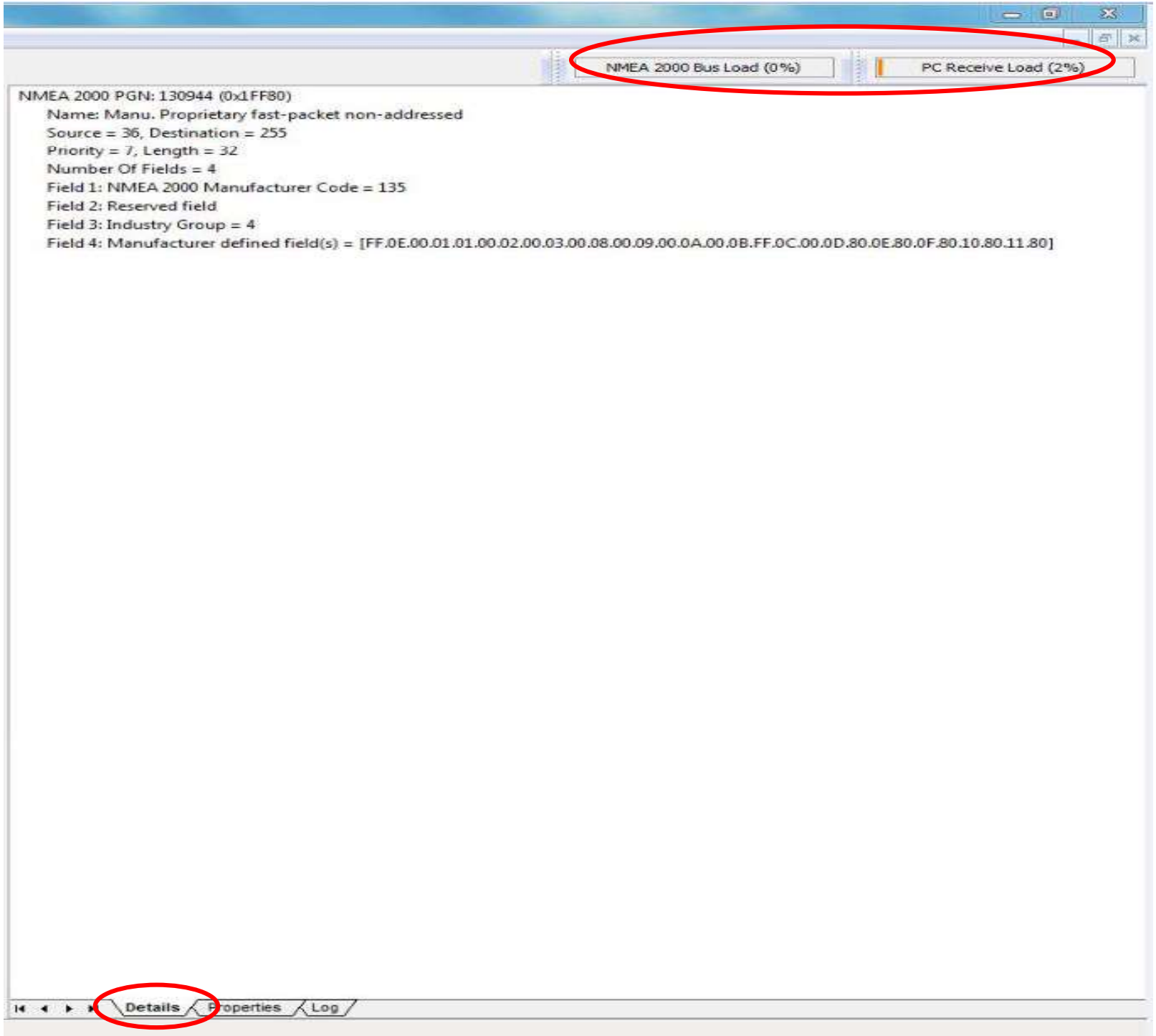
Actisense NMEA Reader

- 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.

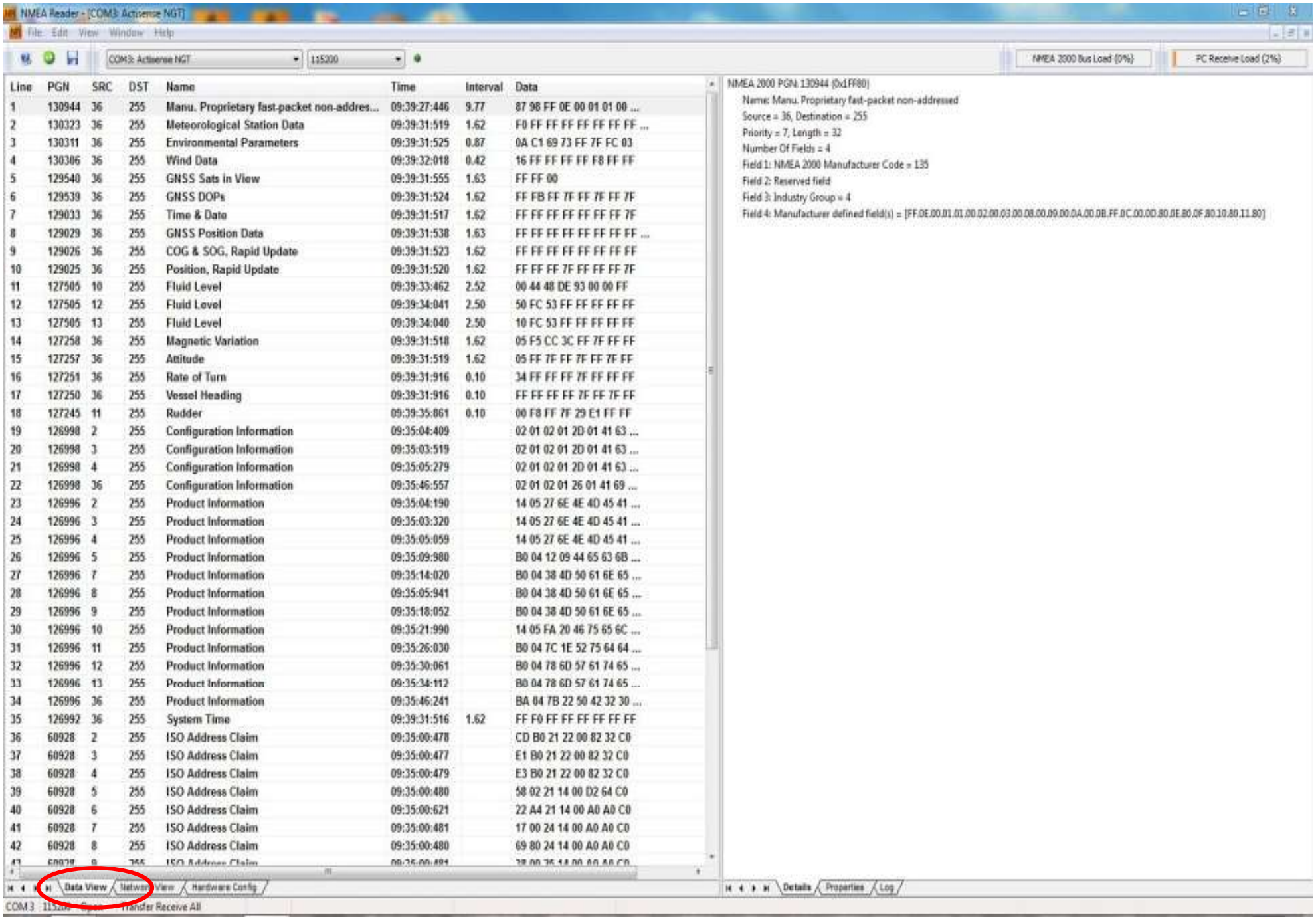


Actisense NMEA Reader

- 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.

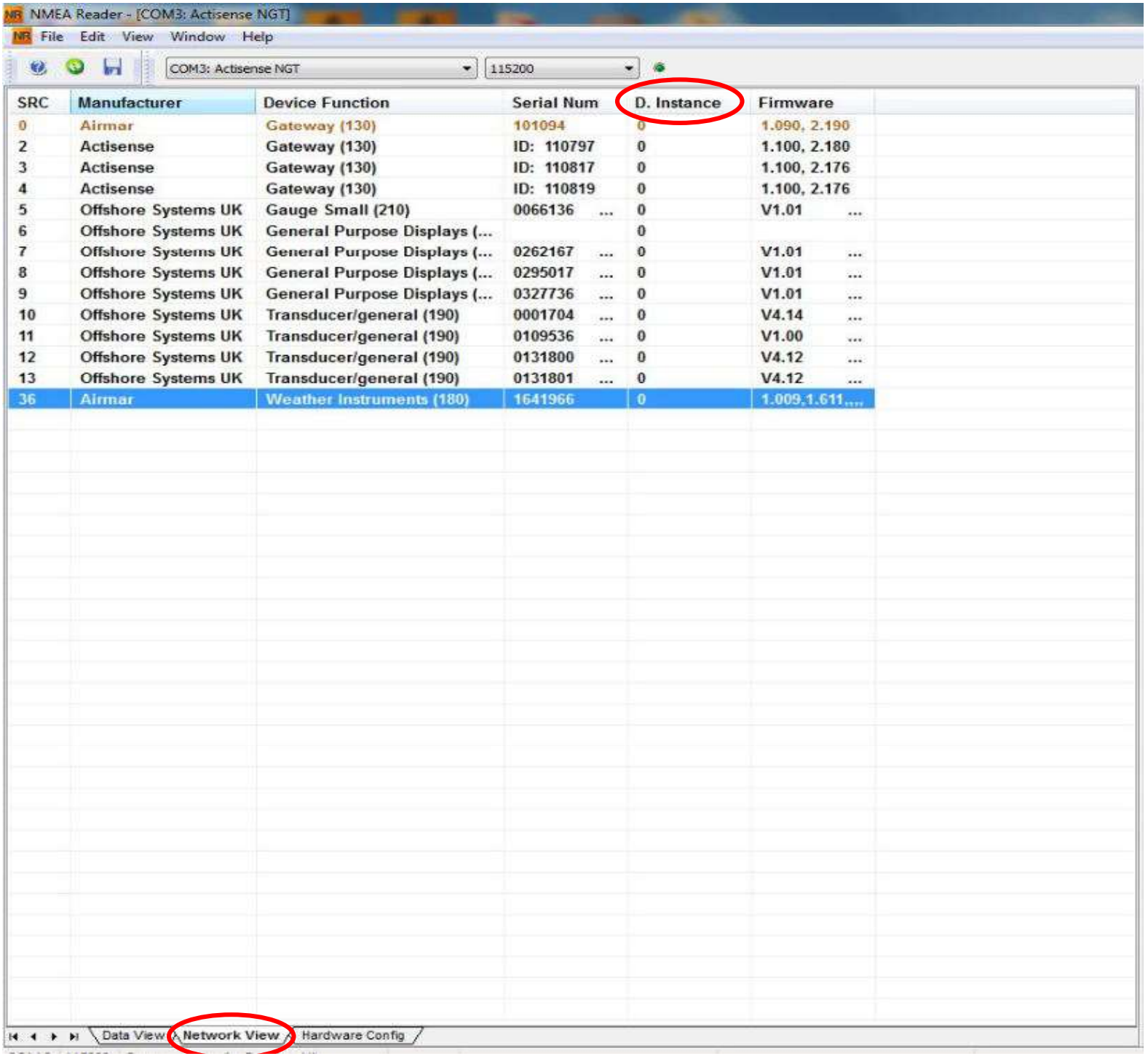


Actisense NMEA Reader

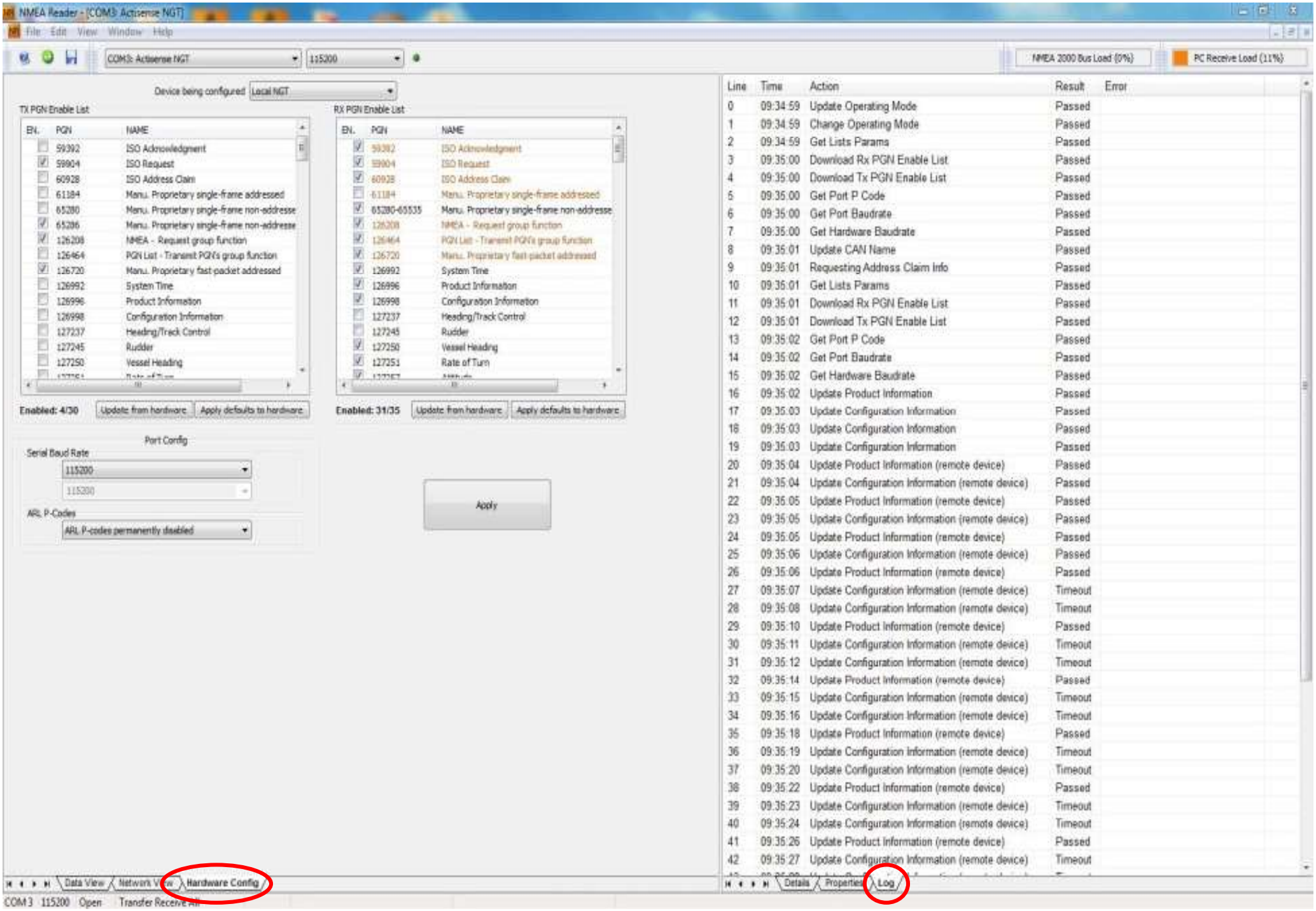


Actisense NMEA Reader

- 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



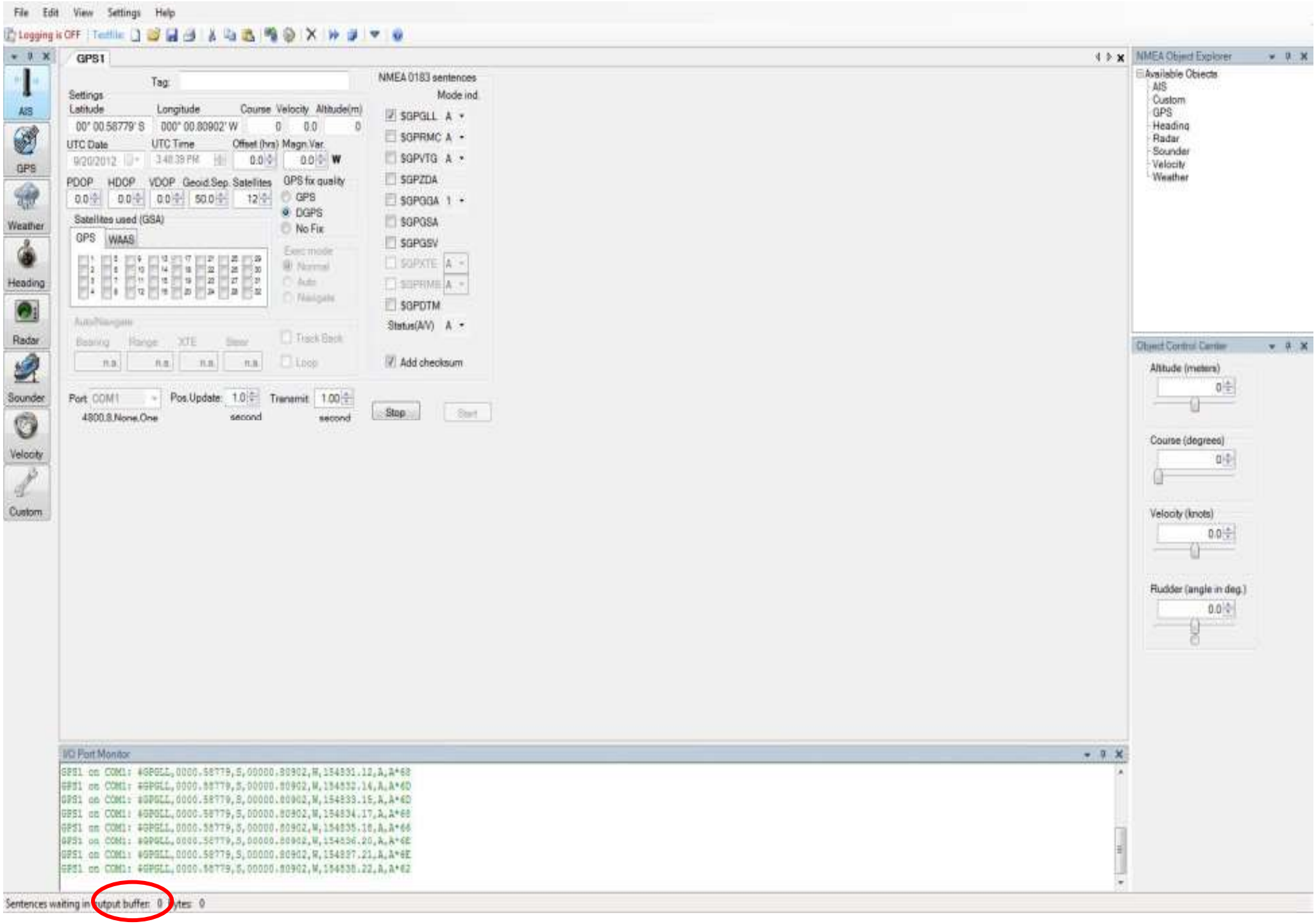
Sail Soft NEMA Studio

- 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



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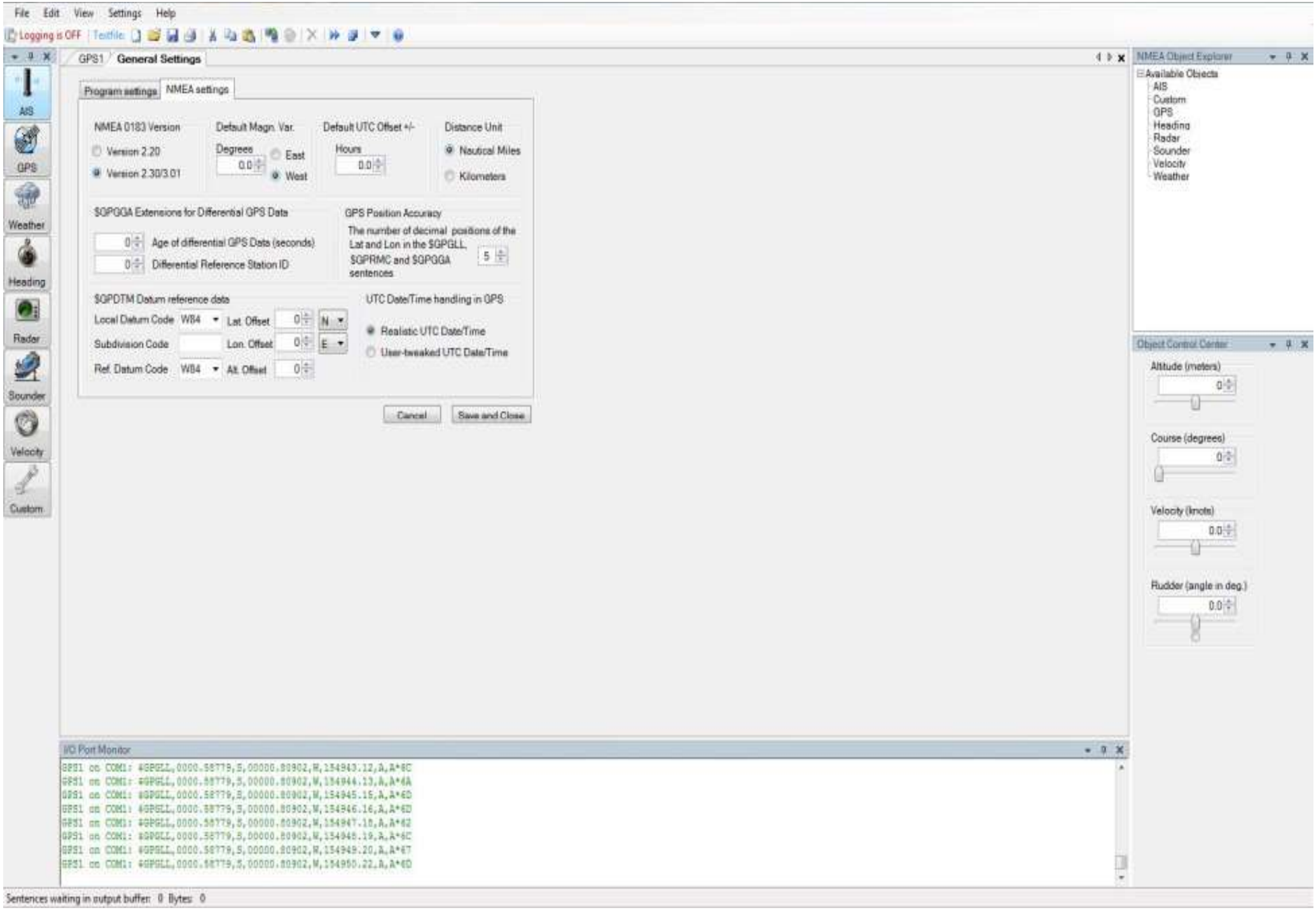

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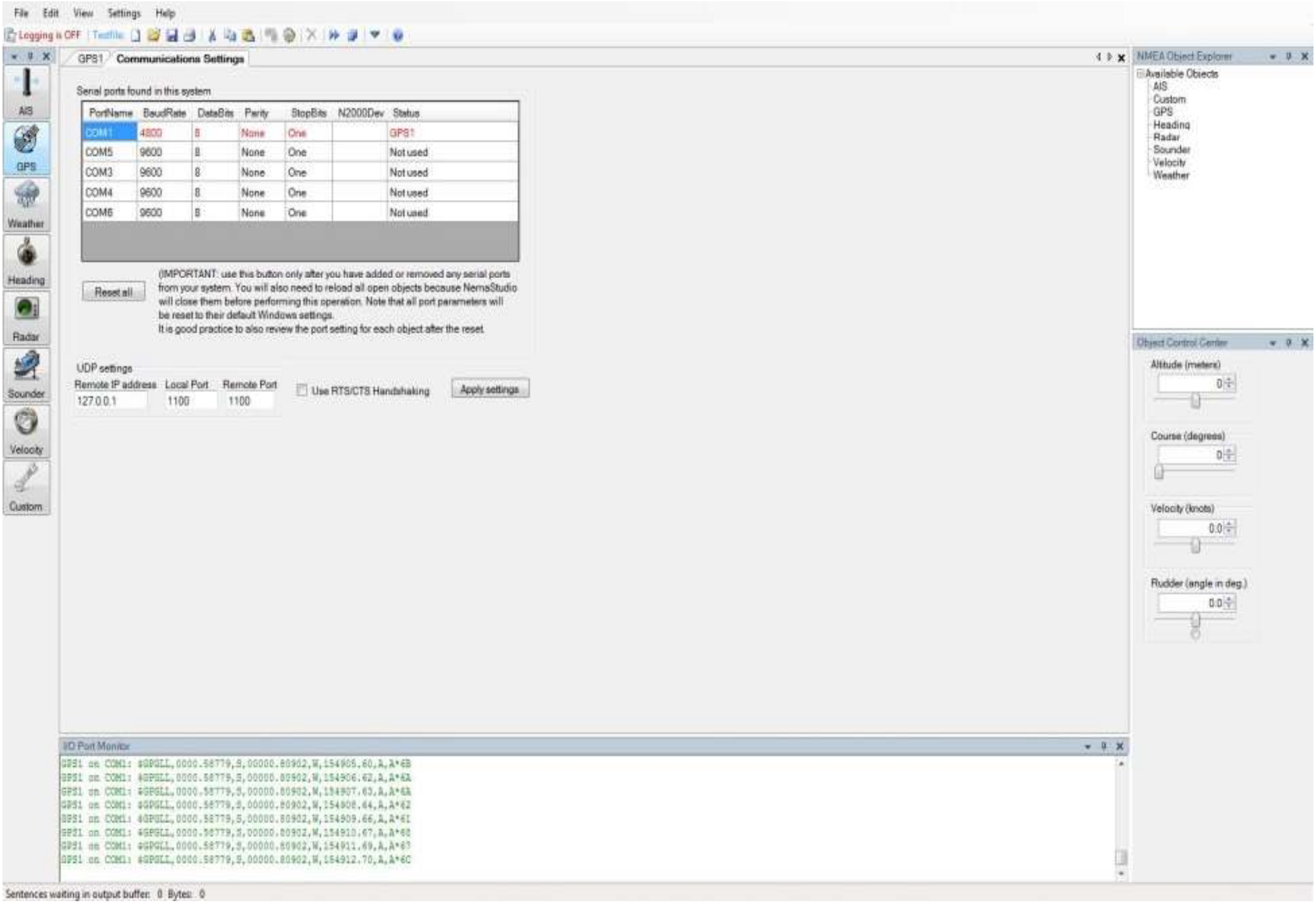


Maretron N2KAnalyzer

- 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

File Setup Analyze Update Configure Web Help

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	-		
	B0	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

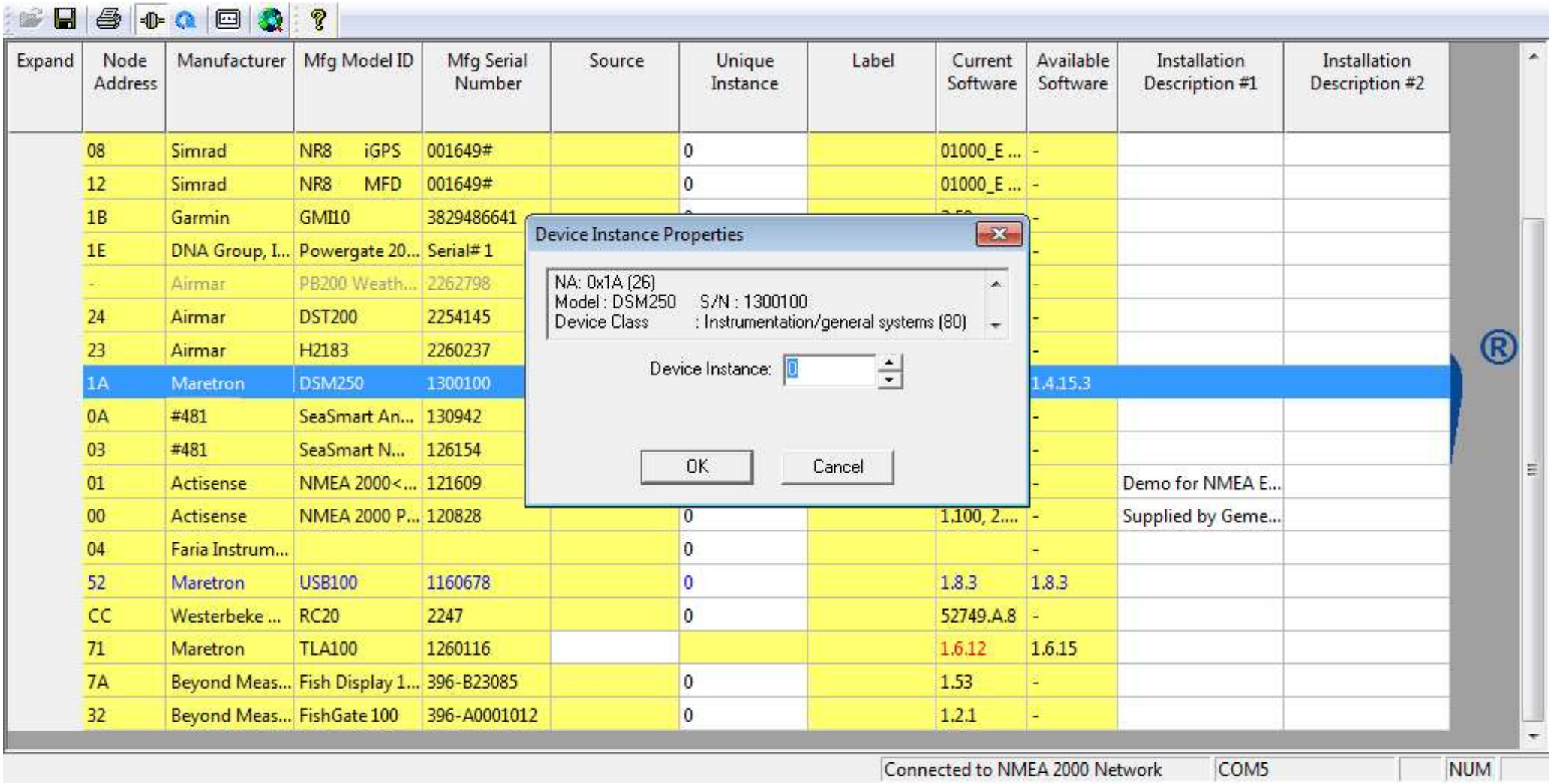
N2KAnalyzer Software Device Page

File Setup Analyze Update Configure Web Help

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	-		
	B0	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 Instancing tool is as simple as setting the number for any applicable device.

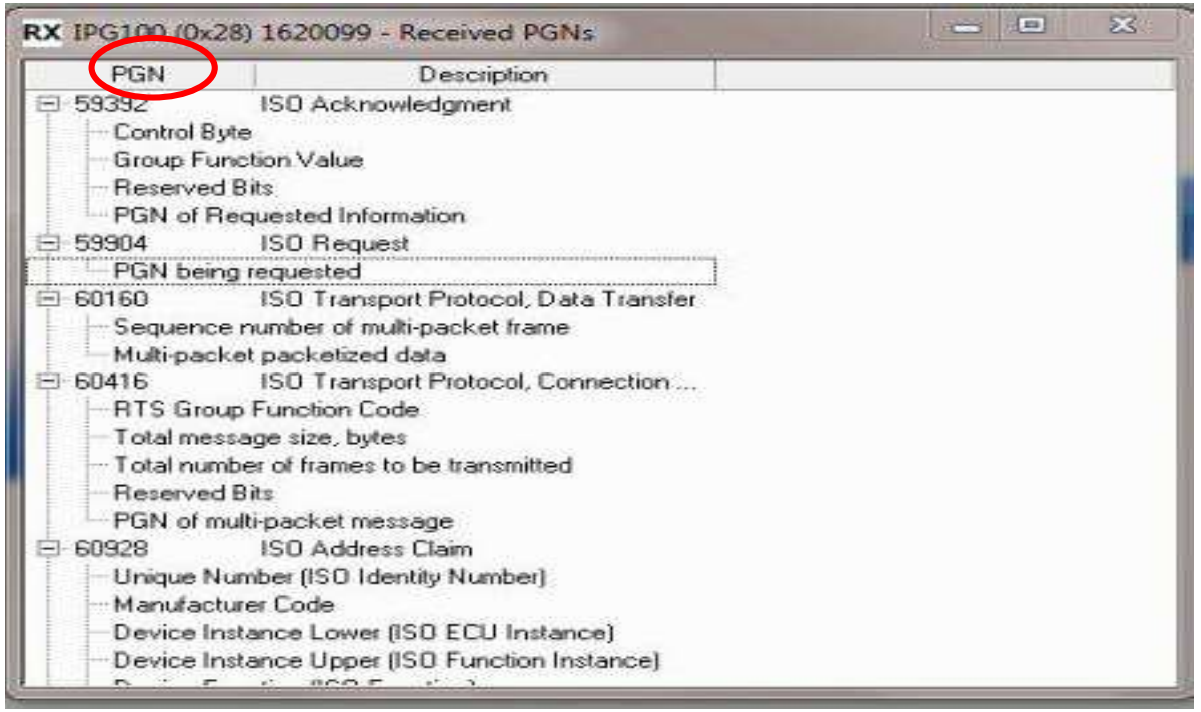
Maretron N2KAnalyzer

N2KAnalyzer Software Properties Page

File Setup Analyze Update Configure Web Help

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	Sanchin Indu...	TELEFLEX	YG2790900023		0		SW0208Rev1	-	Engine Gateway	0	1.111	B	4
	B0	Maretron	DCM100	1400531		0	Pilot House Batteries	1.0.4	-	General Sensor Box	0	1.210	A	1
	28	Maretron	IPG100	1620099		0		3.4.6	-	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.



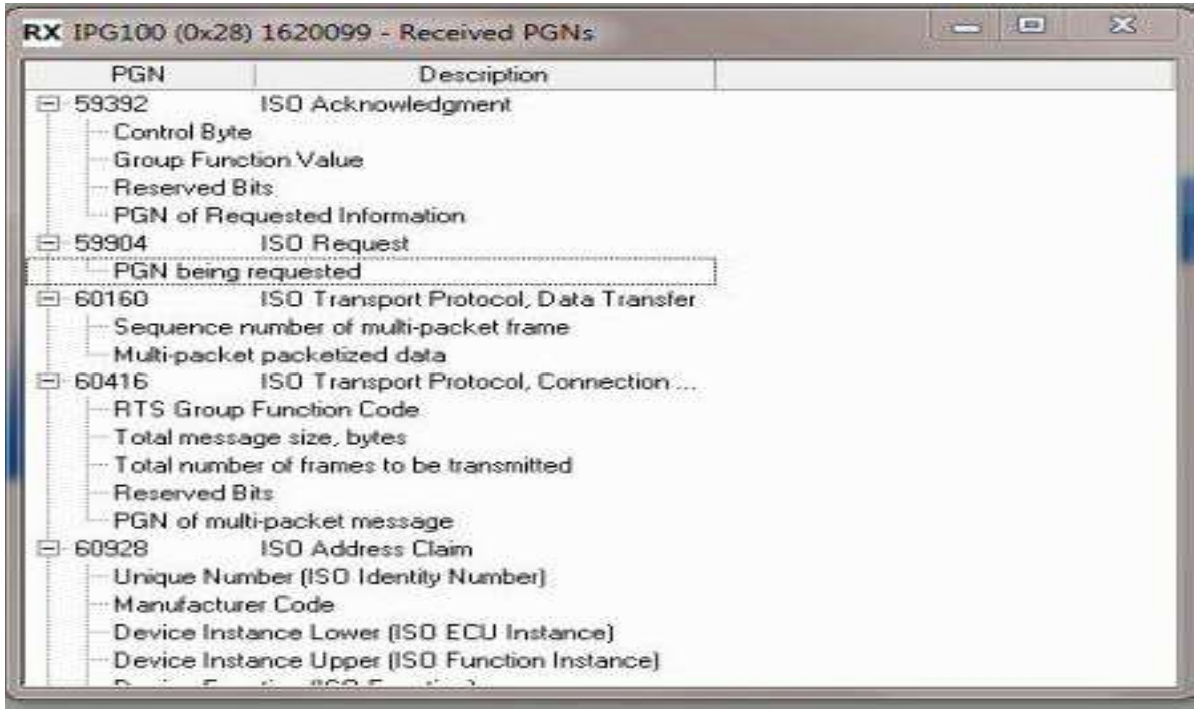
Maretron N2KAnalyzer

N2KAnalyzer Software Properties Page

File Setup Analyze Update Configure Web Help

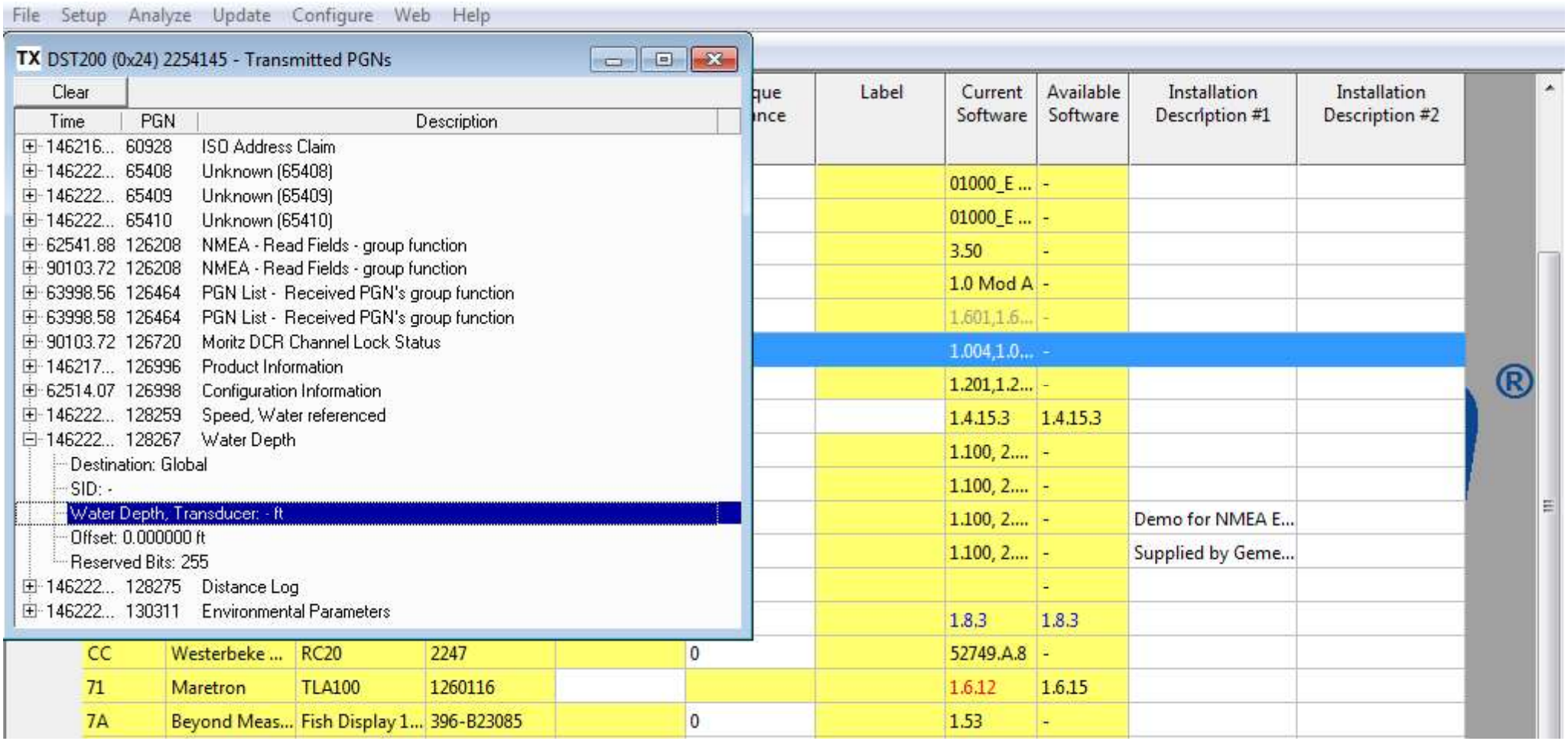
Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Serial Number	Source	Unique Instance	Label	Current Software	Available Software	Device Function	System Instance	NMEA 2000 Version	NMEA 2000 Certification Level	LEN
	99	Sanshin Indu...				1			-	Engine Controller	0	65.535	-	255
	98	Sanshin Indu...	6AW8591A00			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
	B0	Maretron	DCM100	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	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 Received PGN Page shows the specifics of what data is being sent and specifics of that data.



Maretron N2KAnalyzer

N2KAnalyzer Software Properties Page

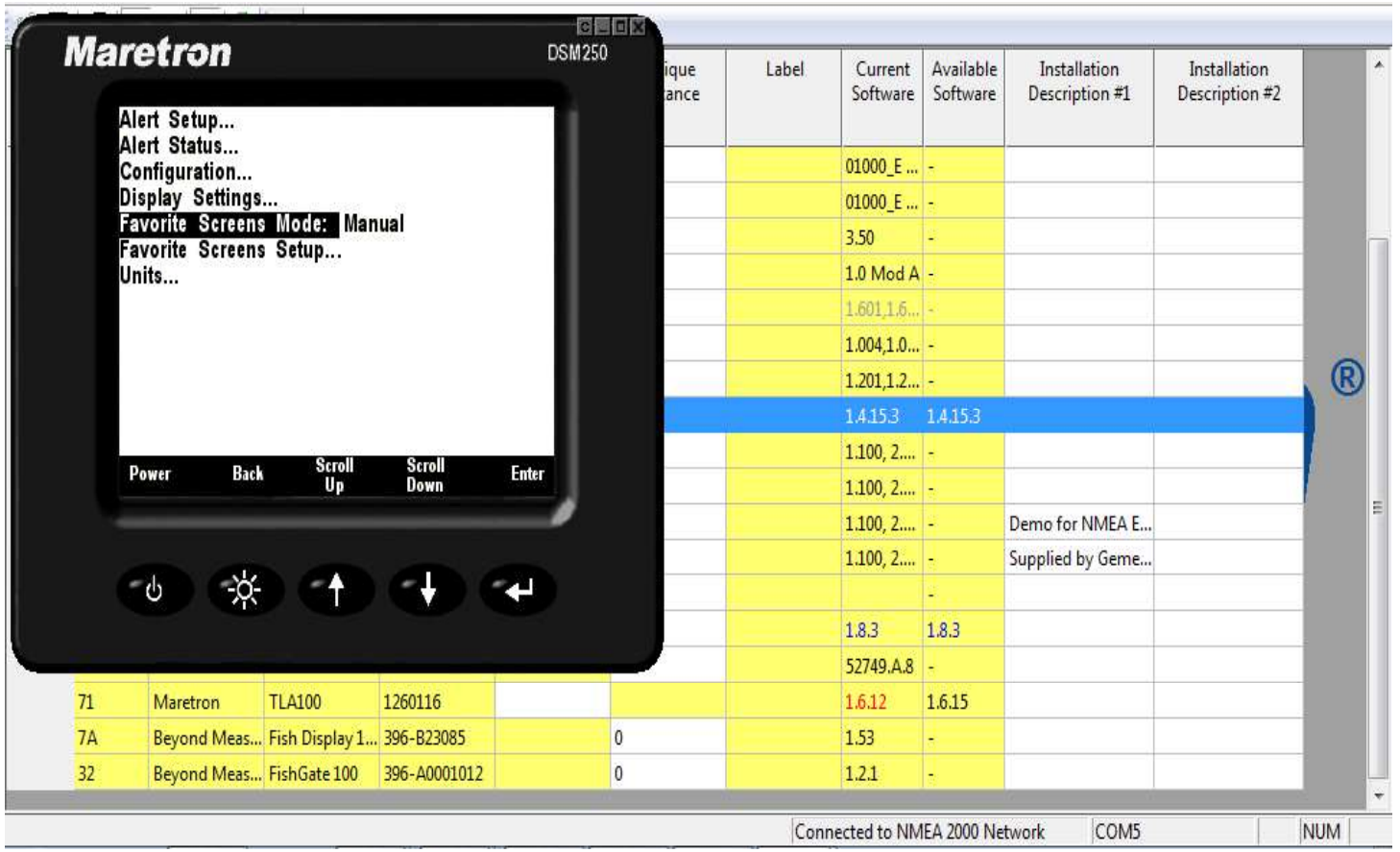


The transmitted PGN Page will allow for the user to view the live data coming from a sensor which will show if it is actually transmitting and if the data is correct.

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.



Maretron N2KBuilder

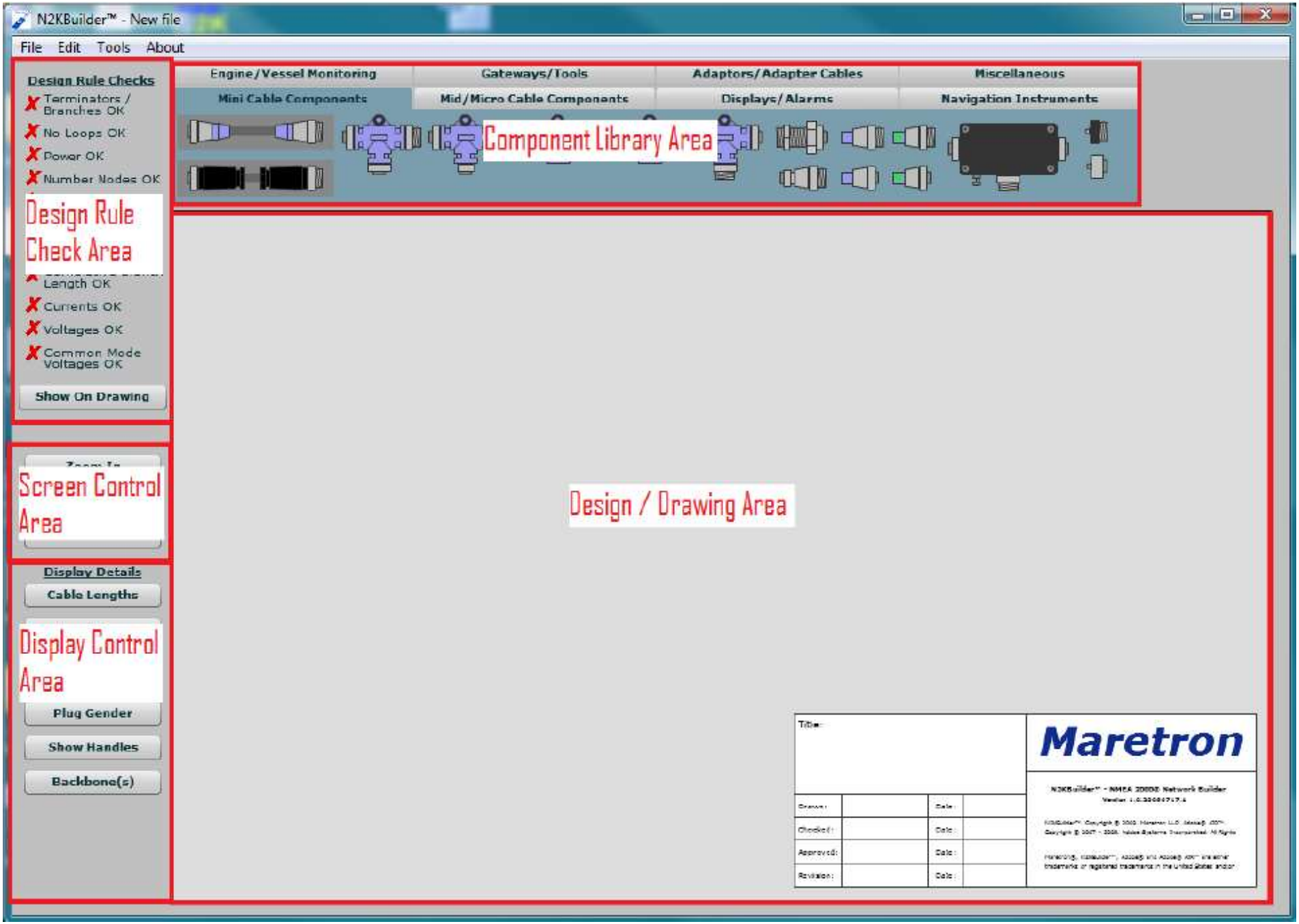
N2KBUILDER NMEA 2000™ NETWORK DESIGN SOFTWARE

- Maretron's unique N2KBuilder program allows dealers and installers to design and test networks before any cable is pulled through the vessel.

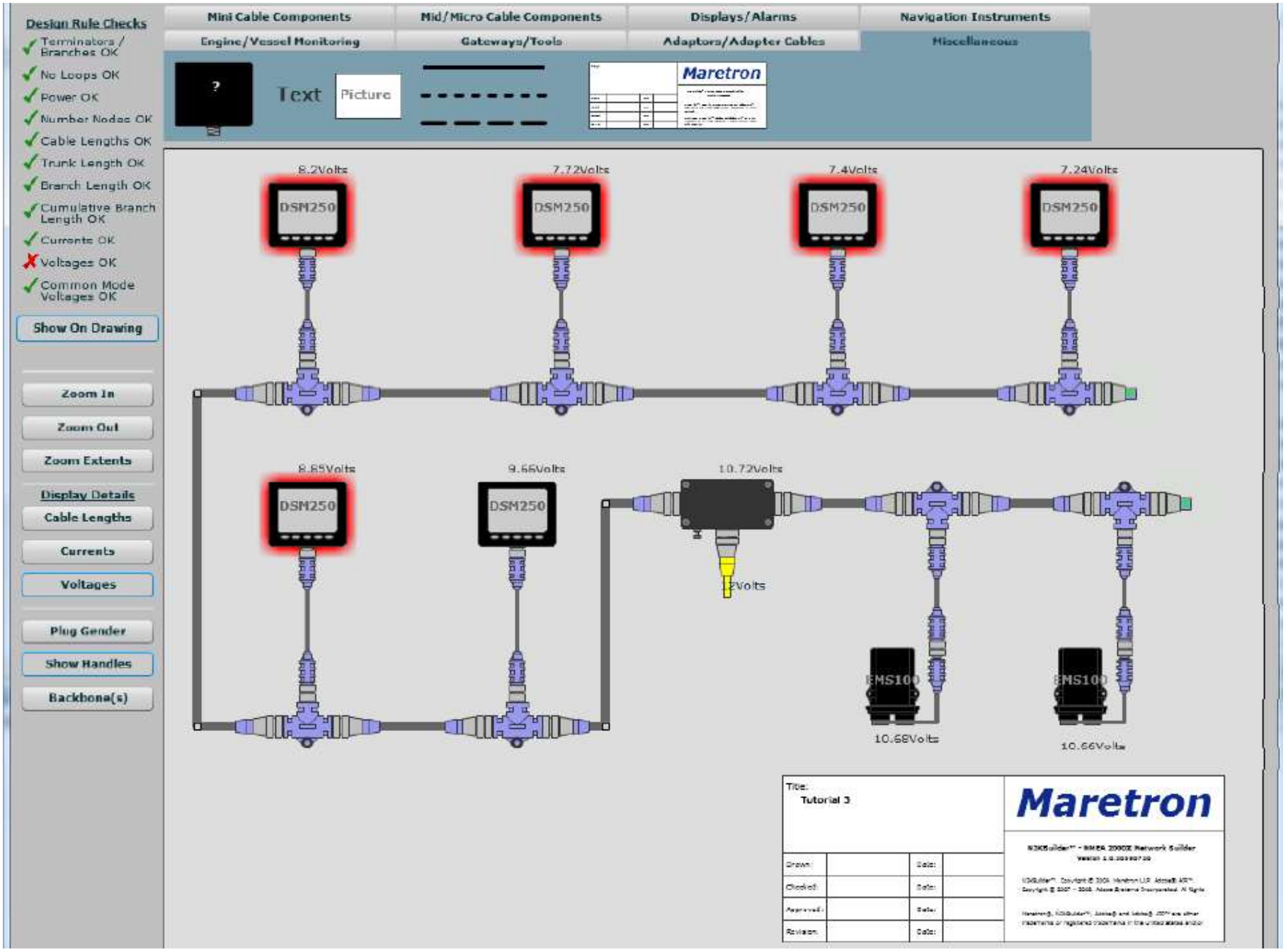
- The software will calculate voltage drop, connector gender, and cable lengths as well as allow the use of custom parameters to meet most design needs.

- 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.

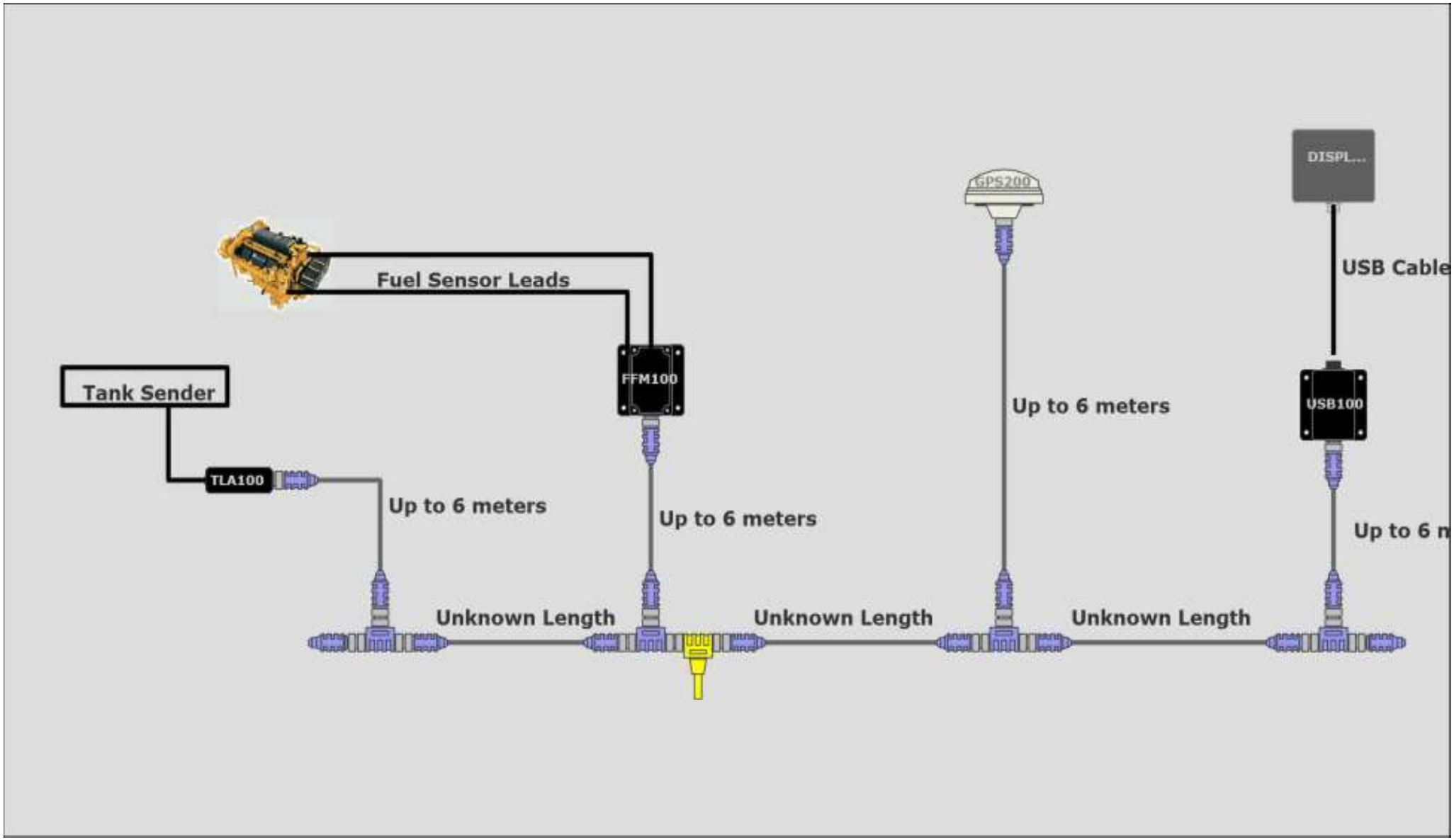
Maretron N2KBuilder



Maretron N2KBuilder

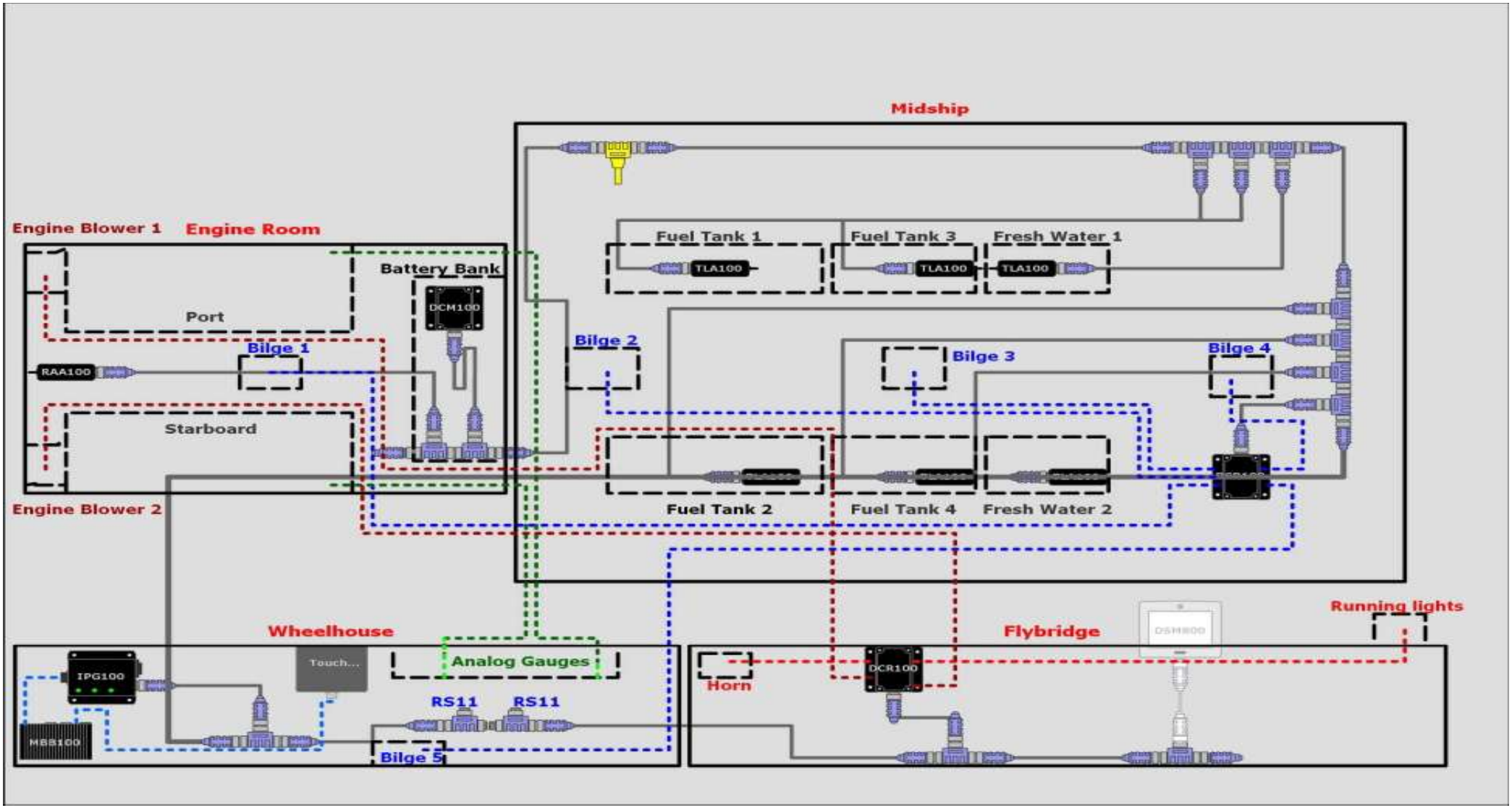


Maretron N2KBuilder



- 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.

Maretron N2KBuilder



- 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\zfloyd\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

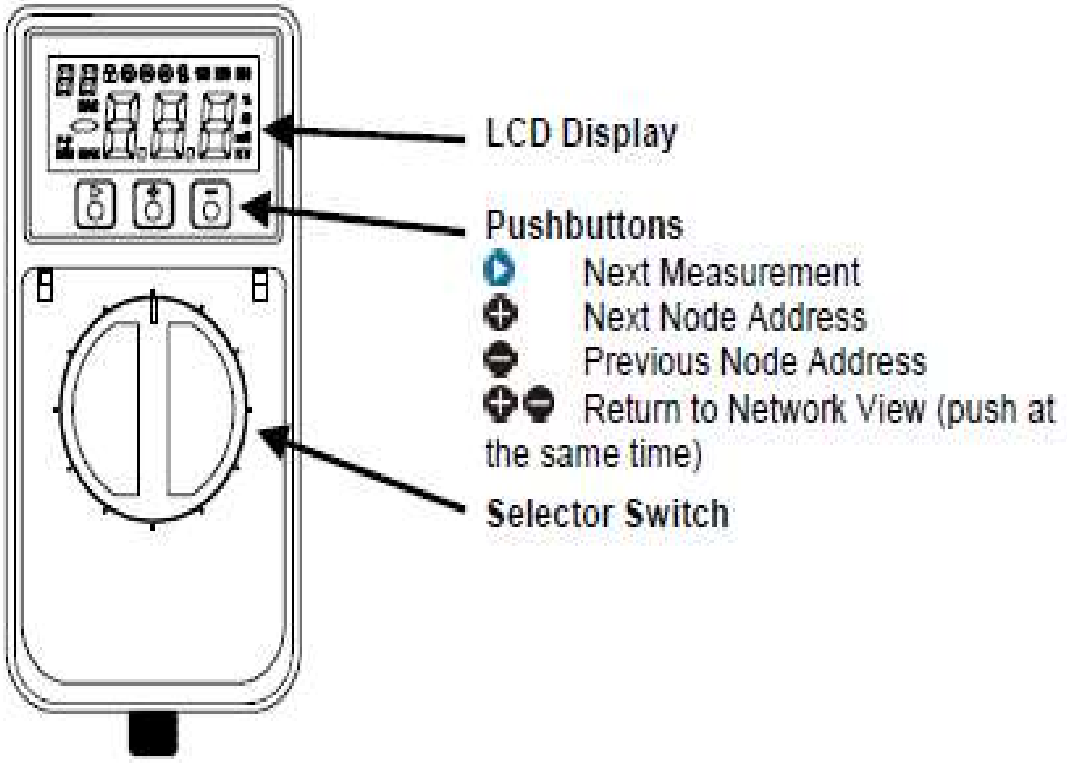
- The Bill of Materials that is generated from the Builder file is an excellent way to control cost of the build as well as to generate equipment costs for a job.

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

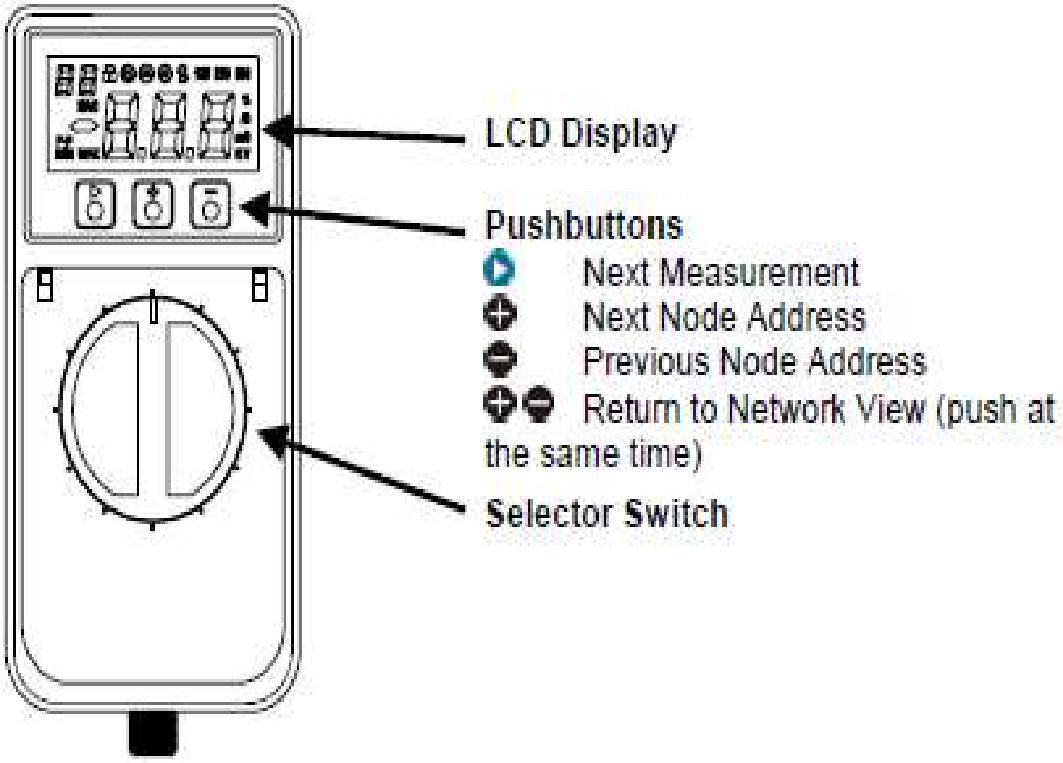
Maretron N2KMeter

- 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.