

# Actisense Toolkit Basic User Guide

### SAFER JOURNEYS THROUGH BETTER DATA

Specialists in marine networking (NMEA) technology, intelligent sensors & gateways. Renowned for quality, features & reliability



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Actisense Toolkit has been developed as a free to download, powerful software solution for configuration and updating of Actisense products. On top of this, the software also has a number of other capabilities;

- View a full list of the NMEA 2000 devices connected to the NMEA 2000 network and their individual properties\*
- Change the device and system instances of NMEA 2000 devices\*
- Source address control of Actisense products to increase / decrease priority of the device on the network\*
- Show all IP Devices connected to the same network
- Logging of all NMEA 2000 data\*

The Toolkit software allows Actisense NGT-1 owners to view NMEA 2000 device information directly from the network, helping users to easily identify potential problems. For viewing live NMEA 2000 or NMEA 0183 data we recommend our free NMEA Reader software, although this functionality will be added to Toolkit in future.

The remote connection to Actisense products, like the EMU-1, across the NMEA 2000 network from Toolkit allows the user to set the parameters for their specific gauges, alarms and RPM information. Product firmware for the EMU-1, PRO-MUX and PRO-BUF can also be updated using Toolkit.

A computer with Windows installed is needed for using Toolkit. If using Mac or Linux, a Windows emulator (like WINE) will need to be installed to use Toolkit.

\* An Actisense NGT-1 is required

### Overview



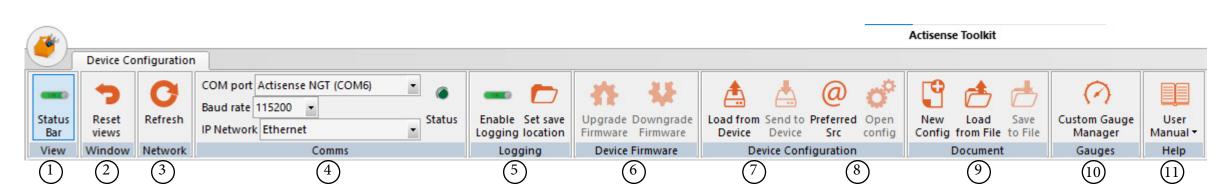
### Click the relevant section on the image below to navigate to the corresponding section

Status Bar	Reset Refresh	COM port Actisense N Baud rate 115200 💌 P Network Ethernet		Logging	Set save Upg location Firm	ware Firmware * Device Devic	o Preferred Oper src configuration		e to File	ustom Gauge Manager Gauges	User Manual <del>•</del> Help				
	evice List					▼ ‡ X	newAIS (SI	0 177493) ×						Properties	<b>▼</b> .4
c	Manufacturer			Device Instance		Hardware ID	This configuratio	n is attached to device	e 'Actisense NM	IEA 0183 Gate	way (SID 17749	3)'			
	Actisense	PC Gateway	177174	0 (0x00)	"1.100, 2.700"	"NGT-1-USB [5]"	Configuration an	d Device synchronized						Property	Value
	Actisense	NMEA 0183 G		0 (0x00)	"1.100, 2.660"	"NGW-1-USB hv1.03"	Comguradorran	a Device synchionized	• 0					Name	
	Actisense	NMEA 0183 G	177047	0 (0x00)	"1.100, 2.660"	"NGW-1-ISO hv1.05"		[	Choose	e a new base c	onfiguration			Name (64-bit)	C03287002222B555
	Simrad	Display	000065#	0 (0x00)	"1.0.50.2.104"				Choose	a new base c	orniguration			Industry Group	Marine (4)
	Actisense	Engine Gateway		0 (0x00)	"1.060, 1.037"	"EMU-1 [0]"								System Instance	0 (0x00)
	Actisense	NMEA 2000 W	256650	72 (0x48)	"x.xxx, 1.218"	"W2K-1 [7]"	Estimated NME	A 0183 Transmit Load			37%			Device Class	Internetwork Device (25)
							Corial Raud Da	ta		Tedas .				Device Function	NMEA 0183 Gateway (135)
							Serial Baud Ra	te 38400 ~	ARL P-C	Loues	Permanent	y enabled	~	Device Instance	0 (0x00)
							4 + H /N	IMEA 0183 Rx and To		NMEA 2000	Py and Ty DCM	7		Manufacturer ID	Actisense (273)
									A Sentences (	NIVICA 2000 I			T. D. J. K. A	Unique ID	177493 (0x2B555)
							Formatter	Name				Rx Tx	Tx Period(ms)	NMEA Product Info	2400
							AAM	Waypoint Arrival A					1000	Database Version	2100
put			-			<b>→</b> ‡ X	ABM	AIS Addressed bina					Non-Periodic	Product ID	11369 (No Decode)
	-	D 11					APB	Heading/Track Cor		pilot) Sentend			1000	Manu Model ID	"NMEA 2000<->0183 Gateway (NGW-1)"
2	Time	Result				Error	BBM	AIS Broadcast Bina	-				Non-Periodic	Manu Software Version	"1.100, 2.660"
	10:35:00		-	tisense\Shared\actp\		No Error detected	BWC	Bearing & Distance	1000				1000	Manu Hardware Version	"NGW-1-USB hv1.03"
	10:35:00			hared\actp\RF-00003	3.actp'	No Error detected	BWR	Bearing & Distance		(Rhumb Line			1000	Manu Model Serial	"177493"
	10:35:00	Hex CRC 0xCF32				No Error detected	DBT	Depth Below Trans	ducer				1000	Certification Level	2 (Mandatory)
	10:35:00			tisense\Shared\actp\		No Error detected	DPT	Depth	11° 1.7				1000	Load Equivalency Number	1 (50 mA)
	10:35:00			Shared\actp\RF-00009	actp'	No Error detected	DSC	Digital Selective Ca			2		Non-Periodic	Model ID	NGW-1
	10:35:00	Hex CRC 0x282D				No Error detected	DSE	Expanded Digital S Datum Reference		ng			Non-Periodic	Sub Model ID	USB
	10:35:00			tisense\Shared\actp\		No Error detected	DTM GGA	Global Positioning		<b>a</b> ta			1000	NMEA Config Info     Installation Detail 1	055
	10:35:00			hared\actp\RF-00012	actp	No Error detected	GLL	Geographic Positio	-				1000		
	10:35:00	Hex CRC 0x1E61			DE 00012t'	No Error detected	GNS	GNSS Fix Data		Ingitude			1000	Installation Detail 2	
	10:35:00			tisense\Shared\actp\		No Error detected	GRS	GNSS Range Resid	ualc				1000	Manu Information	Actisense +44-1202-746682 www.actisense.com The NMEA
	10:35:00	Hex CRC 0x0779		hared\actp\RF-00013	sactp	No Error detected No Error detected	GSA	GNSS DOP and Act					4000	Total	Activelise ( 44 1202 140002 WWW.activelise.com The HWEA
	10:55:00	HEX CKC 0X0779	EA04 : IVIELA CRC	0X0779EA04		No Error detected	GST	GNSS Pseudorange					Non-Periodic	Total Network LEN	250 mA Max. (from 5 devices)
						2	GSV	GNSS Satellites in \					4000	Device Parameters	
evice Lis						▼ ‡ X	HDG	Heading, Deviation					1000		
dress	Manufacturer	Model ID	Serial ID	Device Instance	Software ID	Hardware ID	HDM	Heading, Magnetic					1000		
.168.0.10		"W2K-1 [7]"	256648	0 (0x00)	"x.xxx, 1.254"	"NMEA 2000 Wi-Fi Gate	HDT	Heading, True	10				1000		
168.0.10		"NMEA 2000	229286	72 (0x48)	"x.xxx, 1.251"	"W2K-1 [7]"	HSC	Heading Steering (	Command				1000		
.168.0.12		"Professional		0 (0x00)	"1.060, 2.005"	"PRO-MUX-1 [2]"	MDA	Meteorological Co					1000		
.168.0.12		"W2K-1 [7]"	254617	72 (0x48)	"x.xxx, 1.254"	"NMEA 2000 Wi-Fi Gate	MTW	Water Temperature					1000		
.168.0.56		"NMEA 2000	247792	0 (0x00)	"x.xxx, 1.250"	"W2K-1 [7]"	MWD	Wind Direction &					1000		
.168.0.95		"NMEA 2000	228193	0 (0x00)	"x.xxx, 1.246"	"W2K-1 [7]"	MWV	Wind Speed and A	ngle (Relative	/Theoretical)	~		1000		
.168.0.96		"Professional	250953	0 (0x00)	"1.060, 1.005"	"PRO-BUF-1 [1]"	RMA	Recommended Mi			ata 🗌		2000		
.168.0.99	Actisense	"W2K-1 [7]"	227075	0 (0x00)	"x.xxx, 1.254"	"NMEA 2000 Wi-Fi Gate	RMB	Recommended Mi	inimum Navig	gation Inform			1000		
							RMC	Recommended Mi	inimum Speci	fic GNSS Data			1000		
							ROT	Rate Of Turn					1000 🗸		

## Full Screen

## Top Ribbon Menu options / Bottom Ribbon

#### Top Ribbon Menu



1. Status Bar: Enables / Disables the Bottom Ribbon Menu (Status Bar)

2. Reset Views: Resets windows to default size and position

3. Refresh: Refreshes the network device list. Used when a device is connected and doesn't show up straight away

4. Comms: COM Port, Baud Rate and IP Network are selected here. COM Port and Baud Rate are individually explained on this page.

5. Logging + Save Location: Logging will record data, and the save location is where the user can define the directory that the log files are saved to

6. Device Firmware: Upgrade your device to the latest firmware / Rollback your firmware to a previous version (not always possible)

7. Device Configuration: Pull a configuration from a device, or send a custom made configuration to the device.

8. Device Configuration cont.: Preferred source allows you to change the source address of a device via the NGT-1 (Not possible for all devices).

9. Document: New config creates a new configuration file taken from a default one. Load and Save to file allow the config files to be saved locally, ideal for duplicating configs.

10. Gauges: Custom Gauge Manager is used to create gauges and parameters on the EMU-1 where your sender/gauge pairing is not contained within the large default library.

11. Help: User Manuals for various products can be found here

#### Bottom Ribbon / Status Bar

	Actisense NGT (COM6)	115200	Open		PC Receive Load (0%)	300ms   600ms	Logging	NMEA 2000 Bus Load
1. Sh	ows the $COM$ Port	2 you are o	3 connected to	4				Ĵ
2. Cı	rrent baud rate of t	he select	ed COM Po	rt				

3. Details if the COM Port is currently Open or Closed

4. PC Receive Load is the amount of bandwidth being used (as a %), by the data load going to the PC.

5. NMEA 2000 Bus Load is the amount of bandwidth being used (as a %) by the data on the network.

#### Baud rate setting

COM port		Actisense NGT	•	
Bau	id rate	115200 -		
IP Network		4800	^	▼ Status
		9600		
		19200		
r	Devi	38400		Device
	PC C	57600		0 (0x00
	NM	115200		0 (0x00
	NM		~	0 (0x00

Baud rate is the rate at which data is transferred. e.g. 4800 baud = 4800 bits per second.

NMEA 0183 devices are typically 4800 or 38400 baud, whilst NMEA 2000 devices are usually 115200.

Baud rate on some devices can be changed. Ensure that the connected device or application is capable of operating at the defined baud rate.

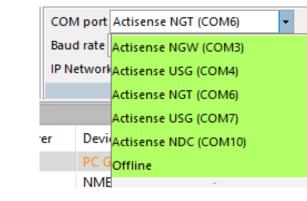
#### IP Networks

Some devices like our PRO Products connect via an Ethernet connection. This means that they are accessed using the IP Network selection.

Choosing the appropriate network that the devices sit on will populate the 'IP Device List' box with all NMEA devices connected.

co	M port	Actisense NGT (COM6)	
Bai	ud rate	115200 -	-
IP I	Network	Ethernet -	Status
		Ethernet	
	- 575	Local Area Connection* 9	
er	Devie	Local Area Connection* 10	
	PC G	a WiFi	
	NME	None	
	NME		

#### **COM Port Selection**



COM Port (Short for communication port) is the 'serial port' interface on computers. The COM Port is used to connect to devices plugged in (or virtual) via serial communication.

Most PCs and Laptops do not have serial ports anymore, and instead have been replaced with USB Ports. The same idea applies here where the USB is plugged in and assigned a Port No.

The way that the device identification works with our products, means the friendly name is displayed

### Serial / CAN Device List, Output Log and IP Device List

Serial/CAN D	evice List					
Src	Manufacturer	Device Function	Serial ID	Device Instance	Software ID	Hardware ID
1	Actisense	PC Gateway	177174	0 (0x00)	"1.100, 2.700"	"NGT-1-USB [5]"
2	Actisense	NMEA 0183 G	177493	0 (0x00)	"1.100, 2.660"	"NGW-1-USB hv1.03"
4	Actisense	NMEA 0183 G	177047	0 (0x00)	"1.100, 2.660"	"NGW-1-ISO hv1.05"
5	Simrad	Display	000065#	0 (0x00)	"1.0.50.2.104"	
13	Actisense	Engine Gateway	181260	0 (0x00)	"1.060, 1.037"	"EMU-1 [0]"
65	Actisense	NMEA 2000 W	256650	72 (0x48)	"x.xxx, 1.218"	"W2K-1 [7]"

The Serial / CAN Device list populates with devices connected to a network / PC Directly. If using a direct serial connection to something like an NGW-1, then this will be the only device that shows. However, if using an NGT-1 NMEA 2000 to PC Gateway, the NGT-1 will transfer the data of all connected NMEA 2000 certified devices. This window populates the various data fields using the info provided by each connected device.

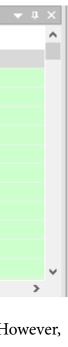
Address	Manufacturer	Model ID	Serial ID	Device Instance	Software ID	Hardware ID	
192.168.0.100	Actisense	"W2K-1 [7]"	256648	0 (0x00)	"x.xxx, 1.254"	"NMEA 2000 Wi-Fi Gate	
192.168.0.103	Actisense	"NMEA 2000	229286	72 (0x48)	"x.xxx, 1.251"	"W2K-1 [7]"	
192.168.0.127	Actisense	"Professional	653	0 (0x00)	"1.060, 2.005"	"PRO-MUX-1 [2]"	
192.168.0.56	Actisense	"NMEA 2000	247792	0 (0x00)	"x.xxx, 1.250"	"W2K-1 [7]"	
192.168.0.96	Actisense	"Professional	250953	0 (0x00)	"1.060, 1.005"	"PRO-BUF-1 [1]"	

The IP Device List populates will all devices connected to the defined IP Network. Toolkit uses all the device info again, to populate the individual fields in the window.

Please note that the PC has to be on the same network or directly tethered with a device to populate these fields. The PC can't see IP Devices connected to a network without being on said network.

Output			
Line	Time	Result	Error
0	10:35:00	Opening file 'C:\ProgramData\Actisense\Shared\actp\RF-00003.actp'	No Error detected
1	10:35:00	File 'C:\ProgramData\Actisense\Shared\actp\RF-00003.actp'	No Error detected
2	10:35:00	Hex CRC 0xCF328FC2 : Meta CRC 0xCF328FC2	No Error detected
3	10:35:00	Opening file 'C:\ProgramData\Actisense\Shared\actp\RF-00009.actp'	No Error detected
4	10:35:00	File 'C:\ProgramData\Actisense\Shared\actp\RF-00009.actp'	No Error detected
5	10:35:00	Hex CRC 0x282D5635 : Meta CRC 0x282D5635	No Error detected
6	10:35:00	Opening file 'C:\ProgramData\Actisense\Shared\actp\RF-00012.actp'	No Error detected
7	10:35:00	File 'C:\ProgramData\Actisense\Shared\actp\RF-00012.actp'	No Error detected
8	10:35:00	Hex CRC 0x1E61FB72 : Meta CRC 0x1E61FB72	No Error detected
9	10:35:00	Opening file 'C:\ProgramData\Actisense\Shared\actp\RF-00013.actp'	No Error detected
10	10:35:00	File 'C:\ProgramData\Actisense\Shared\actp\RF-00013.actp'	No Error detected
11	10:35:00	Hex CRC 0x0779EA04 : Meta CRC 0x0779EA04	No Error detected
<			

The Output window is essentially a running 'action' log within Toolkit. For the majority of users, this holds no benefit. However, it can be exported as a file and then sent to Actisense Tech Support which can be used to diagnose any potential issues you may have.



#### NGW-1 Configuration

configuratio	n is attached to device 'Actisense NMEA 0183 Gateway (SI	D 177493)	8	
	2012 02 2019 22 2011 10 10 10 10 10 10 10 10 10 10 10 10	0 177 493)		
iguration an	d Device synchronized 🛛 🔃			
	Choose a new base configura	ation		
	choose a new base conligue			
Course of MINAT				
umated NME	A 0183 Transmit Load	37%		
rial Baud Ra	te 38400 V ARL P-Codes Per	manently e	nabled	~
Г <b>т н</b> ∕ <b>№</b>	MEA 0183 Rx and Tx Sentences NMEA 2000 Rx and	Tx PGNs \	<u>.</u>	
Formatter	Name	Rx	Tx	Tx Period(ms)
AAM	Waypoint Arrival Alarm	$\checkmark$	$\checkmark$	1000
ABM	AIS Addressed binary and safety related message	$\checkmark$	$\checkmark$	Non-Periodic
APB	Heading/Track Controller (Autopilot) Sentence 'B'	$\checkmark$	$\checkmark$	1000
BBM	AIS Broadcast Binary Message	$\checkmark$	$\checkmark$	Non-Periodic
BWC	Bearing & Distance to Waypoint (Great Circle)	$\checkmark$	$\checkmark$	1000
BWR	Bearing & Distance to Waypoint (Rhumb Line)	$\checkmark$	$\checkmark$	1000
DBT	Depth Below Transducer	$\checkmark$	$\checkmark$	1000
DPT	Depth	$\checkmark$	$\checkmark$	1000
DSC	Digital Selective Calling Information	$\checkmark$	$\checkmark$	Non-Periodic
DSE	Expanded Digital Selective Calling	$\checkmark$	$\checkmark$	Non-Periodic
DTM	Datum Reference		$\checkmark$	1000
GGA	Global Positioning System Fix Data	$\checkmark$	$\checkmark$	1000
GLL	Geographic Position Latitude/Longitude	$\checkmark$	$\checkmark$	1000
GNS	GNSS Fix Data	$\checkmark$	$\checkmark$	1000
GRS	GNSS Range Residuals	$\checkmark$	$\checkmark$	1000
GSA	GNSS DOP and Active Satellites	$\checkmark$	$\checkmark$	4000
GST	GNSS Pseudorange Error Statistics	$\checkmark$	$\checkmark$	Non-Periodic
GSV	GNSS Satellites in View	$\checkmark$	$\checkmark$	4000
HDG	Heading, Deviation & Variation	$\checkmark$	$\checkmark$	1000
HDM	Heading, Magnetic	$\checkmark$	$\checkmark$	1000
HDT	Heading, True	$\checkmark$	$\checkmark$	1000
HSC	Heading Steering Command	$\checkmark$		1000
MDA	Meteorological Composite	$\checkmark$	$\checkmark$	1000
MTW	Water Temperature	$\checkmark$	$\checkmark$	1000
MWD	Wind Direction & Speed	$\checkmark$	$\checkmark$	1000
MWV	Wind Speed and Angle (Relative/Theoretical)	$\checkmark$	$\checkmark$	1000
RMA	Recommended Minimum Specific Loran C Data			2000
RMB	Recommended Minimum Navigation Information	$\checkmark$	$\checkmark$	1000
RMC	Recommended Minimum Specific GNSS Data	$\checkmark$	$\checkmark$	1000
ROT	Rate Of Turn		$\checkmark$	1000

This is the NGW-1 configuration window. An existing configuration loaded from the device, or a new configuration will look similar to this.

Within this window, the baud rate, P-Code Enabling, NMEA 0183 sentences Recieved and Transmitted, and NMEA 2000 PGNs Recieved and Transmitted can all be defined.

The 'estimated' NMEA 0183 Transmit Load is also given. This highlights if the bandwidth of the NGW-1 is going to be full with the current configuration. Adjusting the baud rate to that of a higher one (i.e going from 4800 to 38400) helps with this, but it does require the recieving instrument / PC to also be at 38400 baud. This estimation is a 'worst case scenario' estimation, but it is worth taking note of.

The infinite symbol at the top indicates whether the configuration is linked to a device or not. If the icon is red then it is not loaded and synced to the NGW-1, if it is green then it is on the device. Anytime the configuration is adjusted this icon will go red as this configuration does not match the one currently on the device, meaning it has to be sent to the device again.

### **Configuration Window**

### EMU-1 Configuration

		ration is attached to device 'Actiser n and Device synchronized		saleway (SID 101200)		
	Instan	ce Parameter		Reference	Gauge	Current Feed
BAT	0 ·	- Battery Voltage	~			
G1	0	Engine Temperature	~		VDO, 12V, EU, 40 to 120°C	Auto 🗸
G2	0	<ul> <li>Engine Oil Pressure</li> </ul>	~		VDO, 12V, EU, 0 to 5 Bar	Auto 🗸
G3	0	<ul> <li>Fluid Level</li> </ul>	~	Fuel V	VDO, 12V, EU, 3 to 180 R ~	Auto 🗸
G4	0	<ul> <li>Channel Off</li> </ul>	~			Auto 🗸
G5	0 .	<ul> <li>Channel Off</li> </ul>	~			Auto 🗸
G6	0 .	✓ Channel Off	~			Auto 🗸
	Instan	ce Parameter		Trigger Level (Volts)		
A1	0 .	<ul> <li>Channel Off</li> </ul>	~	Below V 5.0		
A2	0	Channel Off	~	Below V 5.0		
A3	0	<ul> <li>Channel Off</li> </ul>	~	Below V 5.0		
A4	0	Channel Off	~	Below V 5.0		
	Instan	ce Parameter Ra	tio (PPR)			
T1	0	<ul> <li>Engine Speed, RPM</li> <li>4.</li> </ul>	00			
т2	1 .	✓ Channel Off ✓ 4.	00			

The EMU-1 configuration window can be look complicated, but it is in fact very easy.

Each of the Gauge, Alarm and Tach Inputs are individually identified within the configuration file. This makes configuration of each input much easier (provided you know what analogue input it has connected). The Instance, Parameter and defined Gauge are all selected from the drop down menus.

The same applies with the Alarms and Tachos except they don't have gauges, instead the Alarms have definable trigger points as a reference voltage.

For any installations which are using a gauge from the pre-defined menu, then the current feed should be left to 'Auto', which allows the EMU-1 to determine how much (if any) Current injection is required.

The infinite symbol at the top indicates whether the configuration is linked to a device or not. If the icon is red then it is not loaded and synced to the EMU-1, if it is green then it is on the device. Anytime the configuration is adjusted this icon will go red as this configuration does not match the one currently on the device, meaning it has to be sent to the device again.

Further details such as how to calculate the PPR if it's not been provided can be found in the user manual.

#### \_\_\_\_ Property Name Name (64-bit) Industry Group System Instance Device Class **Device Function** Device Instance Manufacturer ID Unique ID NMEA Product Info Database Version Product ID Manu Model ID Manu Software Versi Manu Hardware Vers Manu Model Serial Certification Level Load Equivalency No Hardware Info Model ID Sub Model ID □ NMEA Config Info Installation Detail 1 Installation Detail 2 Manu Information Total Total Network LEN Device Parameters

roperties

The properties window contains all of the device information given by each connected device. Some devices will give more than others, and some manufacturers do limit what their device reports.

You will notice the orange bordered boxes, these are the fields which are editable with Actisense products. Other manufacturers products should also support System and Device Instance changes, but we cannot guarantee this.

Again, a lot of the information here is of no use to the average user, however to an experienced technical installer or engineer trying to diagnose problems, some info in here may be very useful.

### Properties

	<del>→</del> ‡ ×
	Value
	C03282002222B416
	Marine (4)
	0 (0x00)
	Internetwork Device (25)
	PC Gateway (130)
	0 (0x00)
	Actisense (273)
	177174 (0x2B416)
D	
	2100
	28199 (No Decode)
	"NMEA 2000 PC Interface (NGT-1)"
ion	"1.100, 2.700"
sion	"NGT-1-USB [5]"
	"177174"
	2 (Mandatory)
umber	1 (50 mA)
	NGT-1
	USB
	Tech's NGT-1-USB (on COM 1)
	A .: 44 1000 746600 .:
	Actisense +44-1202-746682 www.actisen
	250 m A Mary (farms 5 daylars)
_	250 mA Max. (from 5 devices)
5	