Changing NMEA2000 instances

1. Introduction

Instances are used in an NMEA2000 network to identify multiple similar products connected on the same network. As an example, take a system with two battery monitors, one for the main battery bank, and another for the hydraulic-thruster bank. All the displays in the network need to be able to address both of them separately.

There are two types of instances: device instances and data instances. And depending on the make and model of the displays being used (Garmin, Maretron, Raymarine, etcetera), you need to change one of them or both. This page explains how to change these instances.

Both the device instance and the data instance of a product can easily be changed with both Maretron N2Kview as well as and Actisense PC software. This does require a canbus adapter for your computer.

For more detailed information, see also the FAQ in our Data communication whitepaper.

And the main NMEA2000 integration guide.

2. Changing the device instance with Actisense

- 1. Open Actisense NMEA Reader
- 2. Select the network view (tab selection is at the bottom left)
- 3. Select the product whose device instance you want to change
- 4. Select the properties tab at the bottom right and change the device instance

Last update: 2016-12-15 ve.can:changing_nmea2000_instances https://www.victronenergy.com/live/ve.can:changing_nmea2000_instances?rev=1481781188 06:53

	A Reader - [COM15:			
NB <u>F</u> ile	Edit <u>V</u> iew <u>W</u> in	dow <u>H</u> elp		
0	📀 📙 🖸 сом	15: Actisense NGT	▼ 115200	Ø NMEA 2000 Bus Load (1%)
F	PC Receive Load (0%)			
SRC	Manufacturer	Device Function	Property	Value
35	Victron	Battery (170)	Source Address	35
254	Actisense	Gateway (130)	Industry Group	4
			System Instance	0
			Device Class	Electrical Generation (35)
			Device Function	Battery (170)
			Device Instance	1
			Manufacturer ID	Viction (358)
			Unique ID	0
			N2K Database Version	1.301
			N2K Certification Level	1
			Load Equiv. Number	50 mA (1)
			Manu. Product ID	1963
			Manu. Model ID	BMV
			Manu. Software ID	1.06
			Manu. Hardware ID	1.0
			Manu. Serial ID	0000000
			Installation Details 1	
			Installation Details 2	
			Manu. Information	
·	III	twork View / Hardware Cor	hig H I I I I Details A Proper	tion / los /
			ifig II I I I II Details Proper	
OM 15	115200 Open	Transfer Receive All		

3. Changing a data instance with Actisense

Changing the data instance is possible with Actisense NMEA Reader PC software, version v1.517 and later. Download the latest version from their website. Look for the setup.exe on that page. Besides the PC software you also need the interface to hook the nmea2000 network up to your PC: the Actisense NGT-1: http://www.actisense.com/products/nmea-2000/ngt1.html

Changing a data instance:

- 1. Open Actisense NMEA Reader
- 2. Select data view (tab selection is at the bottom left)
- 3. Right click the PGN:



Ø	3	СС	M15: Acti	sense NGT 🔹 🔳	5200 🔻	MMEA 2000 Bus Load (0%)
	PC Receive	Load (1%	6)			
ine	PGN	SRC	DST	Name	N	MEA 2000 PGN: 127506 (0x1F212)
1	60928	35	255	ISO Address Claim		Name: DC Detailed Status
2	127508	35	255	Battery Status		Source = 35, Destination = 255 Priority = 6, Length = 9
3	127501	35	255	Binary Switch Bank Status		Number Of Fields = 7
1	61184	35	255	Manu. Proprietary single-frame	addressed	Field 1: SID = 73
5	127500	25	<u> </u>	DC D-+-**ad Status		Field 2: DC Instance = 2
6	12	Modify	Data Insta	formation		Field 3: DC Type = 0 (Battery)
7	127508	35	255	Battery Status		Field 4: State of Charge = 100 Percent Field 5: State of Health = Not Available Field 6: Time Remaining = 14400 Minutes Field 7: Ripple Voltage = Not Available

4. And change the value:

NR NM	EA Reader -	[COM15	i: Actisens	se NGT]
NR Fi	e Edit V	iew Wi	ndow H	lelp – a ×
0	3	CO	M15: Actis	ense NGT 🔹 115200 👻 🚳 NMEA 2000 Bus Load (1%)
	PC Receive	Load (0%	,)	
Line 1 2 3 4 5 6 7	PGN 60928 127508 127501 61184 127506 126996 127508	SRC 35 35 35 35 35 35 35 35 35	DST 255 255 255 255 255 255 255 255	Name ISO Address Claim ISO Address Claim NMEA 2000 PGN: 127506 (0x1F212) Battery Status Source = 35, Destination = 255 Binary Switch Bank Status Number Of Fields = 7 Manu. Proprietary single-frame addressed Number Of Fields = 7 DC Detailed Status Field 1: SID = 121 VMEA Reader Field 2: DC Instance = 2 Product Modify Data Instance in PGN: 127506 Add: 35 Field No. Instance 2 2 Modify Cancel
<	Data 5 115200		II Network V	

Notes for BMVs, Lynx Shunt and the Lynx Ion + Shunt:

- The Battery Instance and the DC Detailed instance are the same value. Changing one of them, will also change the other one.
- Since the BMV sends out two voltages, the main voltage and the aux- or starter-voltage, it comes preconfigured with two battery instances: 0 and 1. When you want to change that to 1 and 2, change the 1 into 2 first, and then the 0 into 1, as they cannot be the same.

4. Changing Instance Using Maretron N2KAnalyzer

Maretron understands that it is sometimes difficult to know whether a particular product uses device instance or if it uses data instance to uniquely identify itself on an NMEA 2000 network. For this reason, Maretron uses a term called "Unique Instance" where the N2KAnalyzer software tool automatically determines if a particular device uses device or data instances.

Open N2KAnalyzer and make sure that the "Unique Instance" column is turned on (i.e. checked) using the Setup>Columns menu item.

		Jpdate Director	onfigure Web V		Unique Instance Column											
xp.	Units	Configure Gateway Units			10	Mfg Model Version		Unique Instance	Label	Current Software	Available Software	Installation Description #1	Device Instance	NMEA 2000 Version	NMEA 2000 Certification Level	LEI
-	Download	Software Upda	tes on Startup				-					-		Contraction of the second	LEVE	1
	Listen Onl	у				44-162-1-02,	. 11002103	2.		4.000,4.001		Charles and a stranger	2	1,300	8	1
	Recover D	evice				Rev D	327681	64		1.11	•	AC Panel Load Sh	64	1.200	B	2
	1.5	on Startup				Rev F	131120	32		1.5	•	DC breakers 16x30	32	1.200	8	1
×	Save Devic	e Config in Bo	utiles	-				1		V01.0.1	•		1	1.200	A	7
C	Columns	Columns +							1.	2.40	•		3	1.210	В	3
-	-08"	CONTRACTO	fermentes	10100	4	Node Addres	s			1.0.0 SO3653	4		5	0.001	В	1
	29	Maretron		VDR1	-	Manufacture	r		ondary Data Recor	2.0.0.4	3.0.3.1	Connected Aft Bus	1	2.000	A	4
	CA	Maretron		DSM.	~	Mfg Model II	>		k Display	1.4.17.5	1.6.6.3		1	2.000	A	13
	BF	Maretron ACM		4	Mfg Model Version			Bus	1.0.8.2	1.0.9.2	Main A/C Bus A	0	1.301	A	1	
	A0	Maretron	J2K10 🖌			Mfg Serial Number			Maker	1.0.13.2	1.2.1.1		0	1.301	A	3
	9C	Maretron		SSC2	-	Gourse	12550.2	_	hary Heading Sens	5.0.3	5.0.4.1	Midship	0	1.210	A	3
	30	Maretron		GP	4	Unique Instar	sce.			1.6.13ù	2.3.0.1	Backup 1	2	1,210	A	3
	7C	Maretron		TLM		Laber			toard Water	1.1.6	1.1.8.3		0	1.301	в	2
	74	Maretron		TLM		Current Softw	vare		oline Tank	1.1.6	1.1.8.3	Tender Gasoline T	0	1.301	в	2
	86	Maretron		wso	4	Available Soft	tware		d Sensor	2.0.13	2.0.13		0	1.210	A	3
	72	Maretron DST1		4	Installation Description #1				1.003,1.022	•	Port Sounder	0	1.300	в	4	
	71	Maretron	aretron GPS2 aretron DCM			Installation Description #2 Mfg Information Device Class Device Function			ine Room	1.0.6	1.0.6	Engine Room	6	1,301	A	2
	2D	Maretron							nary	3.5	3.7.1.1	Primary GPS Ante	0	1.301	A	3
	CF	Maretron							(power	1.0.4	1.0.5.2	System Power	2	1.210	A	1
	73	Maretron							Tank	1,1,6	1.1.8.3		0	1.301	8	2
	0A	Maretron		USB1	4	Device Instan	ce			1.8,561	1.8.6.2	Connected to Hel	1	1.210	Α.	3
	cc	Maretron		TMP		System Instar	ice.		in Temperatures	1.1.1	1.1.2.7	Ship's Inside Tem	0	1.210	A	1
		re Channel	Sourc		~	NMEA 2000 Version						and some second second		10002000	ili vi	chi
	0			Inside Temperature		NMEA 2000 Certification Level										
-	1		Inside Temperat			Mfg Product										
	2		Inside Temperat	0.000	4	LEN										
	1		Inside Temperat	and the second second		3	Electronic	es Room	_							
			Inside Temperat			4	Mess	2211020111								
			User Defined #1		8 Unused				-							
			User Desined #1			•	Unused									
	CE	Maretron	-	TMP1	00	1.0	1489901		Engine Room	1.1.1	1.1.2.7	Engine room Rear	0	1,210	A	-Ta
	14	Maretron		ALMI		1.0	1460041	0	Deck Alarm	1.0.6	1.0.6	Located Above Po		1.301	A	2
	- na	Maretron		CILATO		10	14299072		Smoke Detectors	111	1777		0	1 210	Δ	-

Within the N2KAnalyzer main window, any cell with a white background can be edited by clicking in the cell and typing in the desired value. You can see from the following screen shot that a few parameters have a white background including Label and Installation Description #1. To change a devices instance, click in the Unique Instance cell for the device you want to change and type the new number followed by a carriage return. If the particular products accepts the instance change, you will see the new instance number reflected in the cell. You can also use a tool within N2KAnalyzer to check that all products on the network are uniquely instanced. Use the Analyze>Instancing menu to verify correct overall system instancing.

						Maretro	n N2KAnalyzer, Ver	sion 2.4.4.1 - Mar	retron				- 0	×
e Setu	ip An	alyze Update Configure Web	Help											
	8	Received PGNs												
pand	Ne	Transmitted PGNs	Mfg	Mfg Model	Mfg Serial	Unique	Label	Current Software	Available Software	Installation	Device	NMEA 2000	NMEA 2000	LEI
	-	Device Properties	Model ID	Version	Number	Instance				Description #1	Instance	Version	Certification Level	
_	23	DSM250 Viewing	HT200	44-162-1-02,	11002103	2		4.000,4.001		Sea water temp	2	1.300	8	1
	2F	EEPROM Contents	AC08	Rev D	327681	64		1.11	 1 	AC Panel Load Sh	64	1.200	В	2
	10	Carling Technologies	DC16	Rev F	131120	32		1.5		DC breakers 16x30	32	1.200	8	1
	11	Floscan instrument Co., I.,				1		V01.0.1	•		1	1.200	A	7
	BA	Garmin	GP517x	1.00	3431140	3		2.40	4)		3	1.210	8	3
	08	Lowrance Electronics	EP-DDS	1.0.0	316	5		1.0.0 \$03653			5	0.001	8	1
	29	Maretron	VDR100	1.0	1760015	1	Secondary Data Recor	2.0.0.4	3.0.3.1	Connected Aft Bus	1	2.000	A	4
	CA	Maretron	DSM250	1.0	1300176	1	Deck Display	1.4.17.5	1.6.6.3		1	2.000	A	13
	BF	Maretron	ACM100	1.0	1389904	0	A/C Bus	1.0.8.2	1.0.9.2	Main A/C Bus A	0	1.301	A	1
	AD	Maretron	J2K100	1.0	1241404	0	ICE Maker	1.0.13.2	1.2.1.1		0	1.301	A	3
	9C	Maretron	SSC200	2.0	1120707	0	Primary Heading Sens	5.0.3	5.0.4.1	Midship	0	1.210	A	3
	30	Maretron	GPS100	1.1	1140232	2		1.6.130	2.3.0.1	Backup 1	2	1.210	A	3
	7C	Maretron	TLM100	1.0	1500082	0	Starboard Water	1.1.6	1.1.8,3		0	1.301	8	2
	74	Maretron	TLM150	1.0	1529901	0	Gasoline Tank	1.1.6	1.1.8.3	Tender Gasoline T	0	1.301	8	2
	86	Maretron	WSO100	2.0	1201734		Wind Sensor	2.0.13	2.0.13		0	1.210	A	3
	72	Maretron	DST110	D235-S1-TS		0		1.003, 1.022	e 1	Port Sounder	0	1.300	В	4
	71	Maretron	ALM100	1.0	1469902	5	Engine Room	1.0.6	1.0.6	Engine Room	6	1.301	A	2
	2D	Maretron	GPS200	2.0	15266	0	Primary	3.5	3.7.1.1	Primary GPS Ante	0	1.301	A	3
	CF	Maretron	DCM100	1.0	1400046	1	N2Kpower	1.0,4	1.0.5.2	System Power	2	1,210	A	1
	73	Maretron	TLM200	1.0	1540111	2	Day Tank	1.1.5	1.1.8.3		0	1.301	B	2
	0A	Maretron	US8100	1.0	1160258	1		1.8.5b1	1.8.6.2	Connected to Hel	1	1.210	A	3
	cc	Maretron	TMP100	1.0	1480009		Cabin Temperatures	1.1.1	1.1.2.7	Ship's Inside Tem	0	1.210	A	1
	CE	Maretron	TMP100	1.0	1489901		Engine Room	1.1.1	1.1.2.7	Engine room Rear	0	1.210	A	1
	1A.	Maretron	ALM100	1.0	1460041	0	Deck Alarm	1.0.6	1.0.6	Located Above Po	0	1.301	A	2
	D4	Maretron	SIM100	1.0	1429902	2	Smoke Detectors	1.1.1	1.2.2.2		0	1.210	A	2
	08	Maretron	IPG100	1.0	1620002	1	Secondary	3.6.0	4.0.7.6	Secondary Ship's	1	1.301	A	3

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5. Changing the DeviceInstance from the CCGX command line

Main Ships HVAC

Engine Main

Engine Room

Fly_Bridge

Main Engine

Linhting Cost

Crew Ouarters

Primary Data Recorder

Fwd Ship's NMEA200...

Captain's Quarters

Fire Suppression Syst...

Aft Ship's NMEA2000 ..

Bow Holding Tank

2.0.0.4

1.4.2.4

14.17.5

1.0.1.1

1.4.14.4

1.4.16.5

4.17.5

1.1.6

12.1.1

3.0.3.1

1862

1.4.3.1

1.1.0.1

1.6.6.3

1.6.6.3

1.6.6.3

1.2.2.2

1.1.0.1

1.6.6.3

1.1.8.3

1.2.2.1

Dometic Converter 0

Connected Fwd Bus 0

15

Connected to Nav.

Main Engine Fuel ...

Disconnected from NMEA 2000 Network

12AY-W 1659HP

1.301

2.000

1.210

1,210

1,301

2.000

1.301

1,301

2,000

1.301

1.301

2.000

1.301

1.301

nnr

13

13

13

NUM

Instead of using Actisense or Maretron software, it is also possible to change the device instance from the Color Control shell. To get root access, follow these instructions: Venus OS: Root Access

Once logged into the shell, follow below instructions. Note that the example shown changes the device instance of a Skylla-i. The device instance of a VE.Can connected MultiPlus or Quattro can be changed as well. It will show as com.victronenergy.vebus.socketcan_can0_di0_xxxx.

Step 1. List the devices:

A

28

04

0.4

BD

88

78

15

14

DI

G

BO

70

64

Maretron

Maret

J2K100 1.0

VDR100 1.0

USB100 1.0

EMS100

NBE100 1.0

SMS100 1.0

RIM100

NBE100 1.0

DSM250 1.0

TLM100 1.0

FFM100 1.0

0.08100

DSM150 1.0

DSM250 2.0

DSM250 3.0

2.0

1.0

1241755 0

1760014 0

1160253 2

1220251

1240263 0

1900001

1739904

1340328

1329901 4

1459902

1240360 0

1309906

1501234 0

1679904

170077

0

Ð

0

```
root@ccgx:~# dbus -y
com.victronenergy.bms.socketcan_can0_di0_uc10
com.victronenergy.charger.socketcan_can0_di1_uc12983
```

It shows a Skylla-i (the charger). dil in the name means that it is currently on DeviceInstance 1.

Step 2. Change it, for example, to 4:

```
root@ccgx:~# dbus -y com.victronenergy.charger.socketcan_can0_di0_uc12983
/DeviceInstance SetValue %4
retval = 0
```

Step 3. Wait a few seconds, and double check:

```
root@ccgx:~# dbus -y
com.victronenergy.bms.socketcan_can0_di0_uc10
com.victronenergy.charger.socketcan_can0_di4_uc12983
```

Device instance changed successful!

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~~DISQUS~~

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