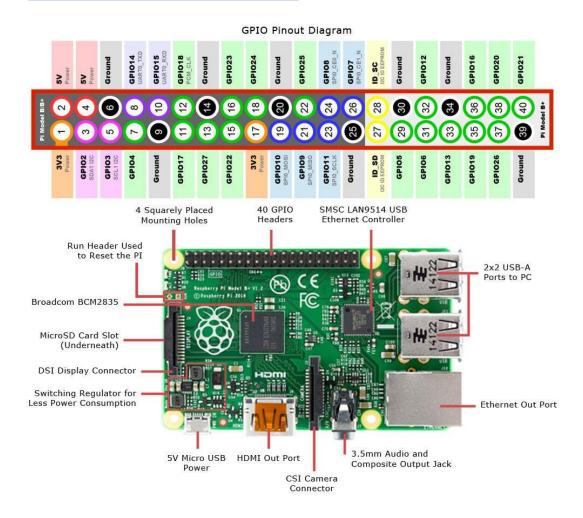
MANUAL OPENPLOTTER

SENSORS AND REPRESENTATIONS NODE-RED

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1. INTRODUCTION OF THE RASPBERRY GPIO's



These GPIO pins are in the 40-pin connector side of Raspberry. In the picture we can see the legend of each pin.

As seen, pin 1 is the output of 3.3V.

Pins 2 and 4 function both as inlet or outlet voltage + 5V. If we feed the Raspberry by micro-USB connector we will have on these pins + 5V. But we could also connect a power supply, well stabilized 5V to one of these pins to work.

Blacks putting pins Ground, is the mass or negative power.

The GPIO pins are authentic green input / output general purpose. They are 17 in total.

There are other GPIOs with other colors. These, although can be used as general purpose, are reserved for specific functions such as serial port (gray GPIO 14 and 15), *I2C interface (*in pink GPIO3 and 5) which it serves to handle Imus *interface SPI* (Serial Parallel Interface clear blue GPIO10, 9, 11, 6 and 7).

The pins 27 and 28 are used to recognize yellow chips by I2C and thus install the appropriate driver automatically.

The purpose is to define the role of a GPIO that by definition and out.

¿ But what and means?

These pins are digital, or have the value 1 (on) or have the value 0 (disabled) and controlled by software. Is a program that can make use either as input or as output.

If you use outlet you have the function of a switch that is or is enabled or disabled. So that we can use to turn on or off devices, activate relays.

If we use it as input we can read the activation or deactivation of a sensor or switch. In this way we can to read sensors bilge open door, triggering an alarm (eg gas), even to read the pulses reel (count meters chain) or pulses of the slide (measuring speed on water). Also it used as GPIO output can activate another GPIO used as input.

I guess you are already imagining the possibilities offered by Raspberry. Not just a plotter but also the possibility of monitoring and control. Ic can turn the Raspberry in a central home automation.

Returning to the I2C and SPI interfaces, said interfaces are each developed by the industry.

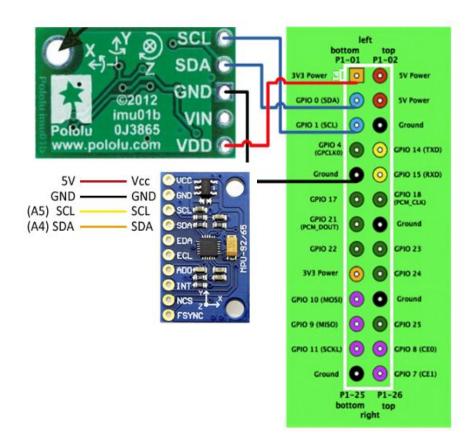
He I2C which it is I²C, English *Inter-Integrated Circuit*, It was developed by Philips in 1982. It is mainly used internally for communication between different parts of a circuit, for example, between a controller and peripheral circuits integrated. In our case Raspberry and IMU. The good thing about this interface is configured as a bus can connect multiple devices with a hierarchy to identify each of them.

At this point I clarify what a IMU. An IMU is a sensor measuring inertia (inertial measurement unit measurement unitunit- inertia). They are sensors that measure accelerations on different axes and are also known as gyros. Besides the gyroscope will usually add magnetic field sensors (use as compass) temperature, pressure and humidity.

He **Bus SPI** (*Serial Peripheral Interface*) is another communications standard, mainly used for transferring data between integrated circuits in electronic equipment. This bus uses more pins than the I2C but has the advantages, among others, to be faster than the I2C and be fully bidirectional (full duplex). This interface is used for example to connect to an analog-digital converter (AD). In this way we can read with the Raspberry analog signals, voltage, amperage, level of deposits, temperature, etc.

In short, the 40-pin connector of the Raspberry, opens the possibilities to connect the Raspberry with different electronic devices via the I2C and SPI bus and thus read data from sensors such as gyroscopes or magnetic field or analog-digital converters. The GPIO pin allows us to monitor and control both reading digital sensors and operating digital devices such as relays.

1.1. IMU connection



four cables are connected:

- 1. The power to pin 1 orange 3,3volt.
- 2. The SDA pin 3 violet.
- 3. The SCL goes to pin 5 violet.
- 4. The ground or negative to any pin GRND as 6 or 9 black.

Others are ignored. Some IMU support Power 3.3 and 5 volt. It is recommended to use 3.3V but if we use the 5 volt OJO not connect to

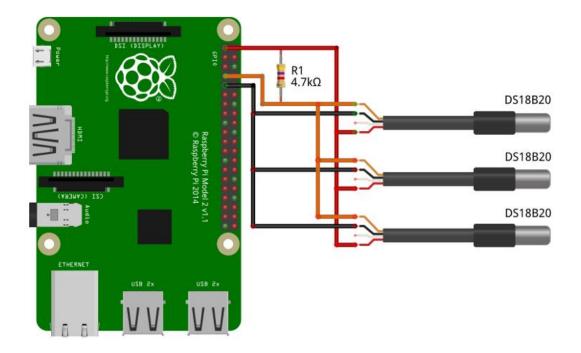
+ 3.3 but yours, to + 5V.

If they get more IMU's, they are placed in parallel. All together SDA and SCL all together. The raspi assigned an address on the bus to activate in OpenPlotter.

And this is the answer

0	1	2	3	Four	. Five	6	Ju	uly 8	9	to	b	с	d	and	F
00:		-	-						 			-	-		
10:									 						
twenty:									 						
30:									 						
40:									 						
fifty:									 						
60: 60) -								 						
70:															

The position is occupied 60/1 with the device 60.



These sensors are used to measure temperature and can be used to monitor ambient temperature, refrigerator, carter, exhaust, batteries, heater, etc.

They are water resistant so they can get wet without problems.

It is connected by three wires, and several sensors can be connected in series, as shown above.

- 1. Cable v 3.3
- 2. ground or negative to any pin GRND as 6 or 9 black.
- 3. amarrillo cable that connects to GPIO 4

For correct operation must connect a resistor of 4.7 KQ between 3.3 vy cable connected to the GPIO 4 amarrillo cable.

2. CONFIGURATION SENSORS IN OPENPLOTTER

Once we connected the 1w sensors (which are temperature probes) and IMU (Gyro), must be configured in openplotter, for it opened openplotter with the anchor icon.



and opens openplotter

					OpenPlotter								×
Tools Idioma	Upda	tes Ayud	а										
NMEA 0183	N2K	Signal K	PA WiFi	Compass	Acciones	GPIO	I2C	1W	SPI	MQTT	Cuentas	SMS	>
IMU Detected IMU Rate (secons) ✓ Magnetic h ✓ Heel (navig ✓ Pitch (navig Calibración	(b.25 eading gation.ad gation.a	 (navigation ttitude.roll) ttitude.pitcl 		lagnetic)									

2.1. IMU configuration

If you have connected an IMU sensor, the tab **compass** we can see that the IMU has been detected, in this case the sensor is detected **STM LSM9050**. The system automatically detects / sensors, if they are connected.

We see that you can activate the magnetic heading, heeling and pitch. The sensor, which is performed by the icon calibration must be calibrated.

These three pieces of information, and are automatically set in Signal K, so you do not have to do it.

We no IMU, like this, they also give temperature and pressure data, and that in Openplotter we go to the tab I2C

Administrar USB	NMEA 0183	N2K	Signal K	PA WiFi	Compass	Acci	ones	GPIO	I2C	1W	SPI	MQTT	Cuentas	SMS	;
ensors															
Nombre	Direcc Ma	agnitud	Clave S	Signal K		Tasa	Desfa	s						añadir	
BMP180	0x77 pre	essure	environ	ment.outs	ide.pressure	60.0	-130								
BMP180	0x77 ter	nperatu	ire environ	ment.insid	e.mainCa	60.0	-1.0							borrar	

We need to add data, which will be the two corresponding to the temperature and pressure sensor BMP180 name.

2.2. 1W configuration

Inside there is another tab called Openplotter **1W**, We entered it, and from there we will set the temperature sensors DSB180, we've connected in series.

	NMEA 0183	N2K	Signal K		PA WIFI	Compass	Acciones	GPIO	I2C	1W	SPI	MQTT	Cuenta	s SMS	-
Te	emperature si	10.3202	algital k	2011	PA WIL	Compass	Acciones	GHIO	126	1.11	SPI	PARTI	Cuenta	19 21415	9
-	Nombre	ID		De	sfas Cla	we Signal K		R	uente				- 10	añadir	
51	alamaquinas	800000	26fale	0.0	env	ironment.ins	ide.engineRa	00 1	W.salar	naquir	as				
e	scape	800000	26a6a8	0.0	env	ironment.ins	ide.heating.	te l\	V.esca	pe				borrar	
C P	arter	800000	26ca86	0.0	env	ironment.ins	iide.refrigera	to 1\	N.carte	r					
.,	alentador	800000)26ea1h	0.0	env	ironment.wa	ter.liveWell.te	e 1\	N.caler	tador.					
ŝ	alentador	800000	26ealb	0.0	env	ironment.wa	ter.liveWell.te	e 1\	W.caler	tador					
10	alentador	800000)26ealb	0.0	env	ironment.wa	ter.liveWell.to	e 1\	W.caler	ntador					
1	alentador	80000()26ealb	0.0	env	ironment.wa	ter.liveWell.to	e 1\	W.caler	tador					
	alentador	80000()26ealb	0.0	env	ironment.wa	iter.liveWell.tr	e 1\	W.caler	itador					
	alentador	80000()26ealb	0.0	env	ironment.wa	ter.liveWell.to	e 1V	W.caler	itador					
0.4	alentador	800000)26ealb	0.0	env	ironment.wa	ter.liveWell.to	e 1V	W.caler	ntador					
24	alentador	800000)26ealb	0.0	env	ironment.wa	ter.liveWell.t	e 1\	V.caler	itador					
	alentador	800000	026ealb	0.0	env	ironment.wa	ter.liveWell.t	e 1V	V.caler	itador					

Here on this screen and appear set four sensors.

To add sensors have to click on the Add button and the following screen will appear.

ł	Añadir sensor de temperatura de	e1W 🗕 🗆 🗙
	Clave Signal K	
		Editar
	Nombre ID del sensor	Desfase
	caracteres permitidos: 0-9, a-z, A-z	
	Cancel OK	

To check if we properly connected sensors, we click where it says **ID** sensor, and we have connected sensors, appointed with a personal identifier each have to appear.

NMEA 0183	N2K Sig	nal K PA WiFi	Compass	Acciones GPI	0 120	1W SPI	MQTT	Cuentas SM
emperature s	ensors							
Nombre alamaquinas	ID 80000026f	Aña	dir sensor o	de temperatura	de 1W	_ = ×		añadir
scape arter	80000026a 80000026a	Clave Signal K				ditar		borrar
alentador	80000026(
		Nombre		ID del sensor	-	Desfase		
		caracteres per	mitidos: 0-9	80000026a6a	в			
			Cancel	80000026ea1	b			
			ouncer	80000026fa1e				
				80000026ca8	6			

Select one of them, previously we have to know what it is, to then give it a name. To do this, how to do, it is select any, and to begin configuration.

We named it as we wish, in this case escape, and then we will edit where we're going to put a name to it has identified SignalK. This name is the one that later will use to generate 0183, NMEA200, judgments or set Node-network to display sensor data.

The name we use must be as close to reality, easily identify it later.

Pressing edit the following screen appears.

Seleccionar clave Signal K 🛛 🗕	□ ×
Grupos	
no agrupados 🔹	
Claves Signal K sin agrupar.	
Claves	
flag	-
The country of ship registration, or flag state of the vessel	
* caracteres permitidos: 0-9, a-z, A-z	
Cancel OK	

Here is the list of all keys SignalK, and we have to choose from the different groups that best suits us. For my case, I chose

Se	eleccionar cla	ive Signal K	_ = ×
Grupos			
environment		*	
Environmental data Temp, etc.	measured loo	ally including Dep	oth, Wind,
Claves			
environment.inside	.heating.temp	erature	-
Temperature			
*	caracteres	permitidos: 0-9, a	-z, A-z
	Cancel	ОК	

We give Ok

Clave Signal K		
environment.insi	de.heating.temperature	Editar
Nombre	ID del sensor	Desfase
escape	80000026a6a8	•
caracteres permit	idos: 0-9, a-z, A-z	

We can vary the measured sensor by **Gap**, if we found that the sensor measures more or less, here you can adjust the output value.

And as we accept the sensor appears set

				(OpenPlotter							_ = ×
	Tools Idioma	Updates A	yuda									
	NMEA 0183	N2K Signa	K PA Wif	i Compass	Acciones	GPI	0 12C	1W	SPI	MQTT	Cuentas	SMS >
ľ	Temperature s	ensors										
4	Nombre	ID	Desfas (lave Signal K			Fuente					añadir
	salamaquinas	80000026fale	0.0 e	nvironment.ins	ide.engineR		1W.salan	naquin	as			
	escape	80000026a6a8	30.0 e	nvironment.ins	ide.heating.	te	1W.escap	pe				borrar
2	carter	80000026ca86	0.0 e	nvironment.ins	ide.refrigera	to	1W.carte	r				
	calentador	80000026eal	0.0 e	nvironment.wa	ter.liveWell.te	B	1W.calen	tador				
J												

Now let's check whether it is properly set in **Signal K**, To do this click on the icon at the bottom left putting **SK** diagnosis

Here we see that the sensor is giving value in $^\circ$ C.

	diagnostic SignalK ir	iput			- 0
SRC	SignalK	Valor	Unida Interva	Estad	Descripción
OPcalculations	navigation.rateOfTurn	0.091 n	ad/s 2.01	1	Rate of turn (+ve is char
OPsensors.1W.calentador	environment.water.liveWell.temperature	25.687 0	0.90	1	Temperature
OPsensors.1W.carter	environment.inside.refrigerator.tempera	23.187 0	0.93	1	Temperature
OPsensors.1W.escape	environment.inside.heating.temperature	23.250 0	0.95	1	Temperature
OPsensors.1W.salamaquinas	environment.inside.engineRoom.tempe	23.562 0	0.87	1	Temperature
OPsensors.I2C.LSM9DS0	navigation.headingMagnetic	212.930 d	leg 0.30	1	Current magnetic headir
OPsensors.I2C.LSM9DS0	navigation.attitude.roll	-0.001 n	ad 0.30	1	Vessel roll, +ve is list to
OPsensors.I2C.LSM9DS0	navigation.attitude.pitch	0.095 n	ad 0.30	1	Pitch, +ve is bow up
kplexOutput.GP.GGA	navigation.position.latitude	39.459 d	leg 0.00	1	Latitude
kplexOutput.GP.GGA	navigation.position.longitude	-0.315 d	leg 0.00	1	Longitude
kplexOutput.GP.GGA	navigation.gnss.differentialReference	0.000	0.00	1	
kplexOutput.GP.GGA	navigation.gnss.antennaAltitude	6.000 n	n 0.00	1	Altitude of antenna
kplexOutput.GP.GGA	navigation.gnss.horizontalDilution	0.000	0.00	1	
kplexOutput.GP.GGA	navigation.gnss.geoidalSeparation	50.000	0.00	1	
kplexOutput.GP.GGA	navigation.gnss.satellites	9.000	0.00	1	
	novigation and differential (as	0.000	0.00	1	And of DODO data

Since SignalK we can see all the signs. Since we can see the signs of the IMU sensors, as can be seen

	diagnostic SignalK	input			_ c
SRC	SignalK	Valor	Unida Interv	a Estad	Descripción
OPsensors.1W.escape	environment.inside.heating.temperature	23.312	C 1.29	1	Temperature
OPsensors.1W.salamaquinas	environment.inside.engineRoom.tempe	23.562	C 1.31	1	Temperature
OPsensors.I2C.BMP180	environment.outside.pressure	1013.130	hPa 0.06	5 1	Current outside air amb
OPsensors.I2C.BMP180	environment.inside.mainCabin.tempera	24.900	C 0.06	5 1	Temperature
OPsensors.I2C.LSM9DS0	navigation.headingMagnetic	213.217	deg 0.30) 1	Current magnetic head
OPsensors.I2C.LSM9DS0					
OPsensors.I2C.LSM9DS0	navigation.attitude.pitch				
kplexOutput.GP.GGA	navigation.position.latitude	39.459	deg 0.00) 1	Latitude
kplexOutput.GP.GGA	navigation.position.longitude	-0.315	deg 0.00) 1	Longitude
kplexOutput.GP.GGA	navigation.gnss.differentialReference	0.000	0.00) 1	
kplexOutput.GP.GGA	navigation.gnss.antennaAltitude	4.000	m 0.00	1	Altitude of antenna
kplexOutput.GP.GGA	navigation.gnss.horizontalDilution	0.000	0.00) 1	
kplexOutput.GP.GGA	navigation.gnss.geoidalSeparation	50.000	0.00) 1	
kplexOutput.GP.GGA	navigation.gnss.satellites	9.000	0.00) 1	
kplexOutput.GP.GGA	navigation.gnss.differentialAge	0.000	s 0.00) 1	Age of DGPS data
	novigation and quality	2 000	0.00		
Ordenar SRC Ordenar SK			⊠ u	nidad pr	rivada Ajuste de la uni

3. NODE DATA REPRESENTING-RED

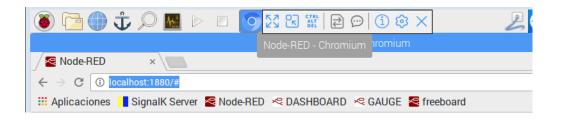
The representation of data obtained from the sensors (temperature, pressure, humidity), GPS antenna, data electronics boat as wind, depth, can be used to represent them, send them by e-mail, generate alarms, send them to an external server, or many more shares.

All this is done with the Node-network program, which Openplotter has been installed.

To enter the program we have to go to internet explorer.



Opening the browser



Node-RED And that leads us

In the bar **Markers** If we click on the icon to the address can be observed **localhost: 1880 / #**

This opens the node-network program, and the following screen is observed.

Node-RED	×			
$\epsilon \rightarrow \mathbf{C}$ (i) localhos	t:1880/#			
📰 Aplicaciones 📘 Sig	nalK Server 🛛 🛛	Node-RED 🛛 🕾 DASH	iboard 🛛 \land 🕾 Gauge	🚭 freeboard
Node-RED				
Q filter nodes	Flow 1	Flow 4	Flow 2	+ ۲
~ input	[ws] /ws:/focalhost:3000/ Convected	signak/v1/stream	a values	3
⇒ inject	msg payload	FECHA IN		a mag page
catch	f navigation speedOver		VELOCIDAD SOBRE SUELO	streeth VELOCIDAD
status	f navigation courseO		RUMBO SOBRE SUELO	
🗦 link 🔶	navigation heading			
) mqtt	f navigation.position.			P ATMOS
📀 http 🔶	environment outside	pressure	f ambar	P ATMOS
websocket				PATMOS
🕴 tcp	environment.inside.me	inCabin temperature		T SALA MÁQUIN
🕴 udp 🖓		environment.inside.engine	Room.temperature	T SALA MÁQUIN
🚖 gpio 🖡			TESCAPE	TESCAPE
< output		environment.Inside.heating	temperature	TESCAPE (

Simply put, the program works by giving inputs, which in our case will be through the data provided to us through SignalK Openplotter, but can be other shapes.

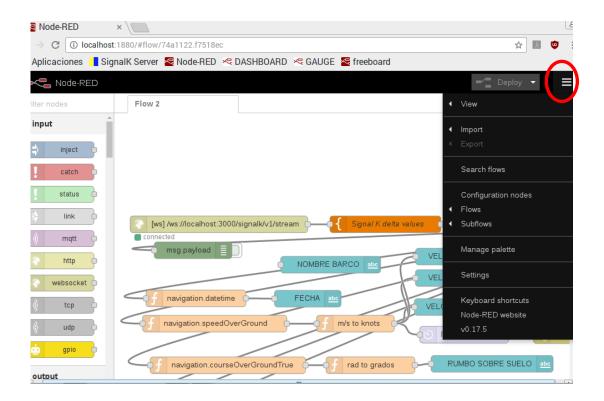
Once you have the data must be used in a function and then give an output, which can be a graphical, numerical data, a clock, sending by e-mail, etc. All this can be done without knowing programming, since programming can be copied and copied, and thus have represented data.

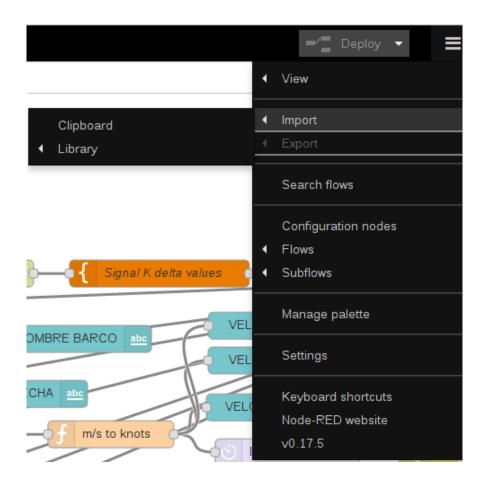
It can be seen as scheduled (by boxes, which have left) an example and copy the same to any other data that comes from SignalK and represent.

3.1. EXAMPLE FOR COPYING DATA RERESENTAR.

How to copy an example it is simple, to do what we have to do is copy the following code with Ctrl-C to copy it then go to network node.

Once copied the code, we headed to node-network and in the upper right corner on the menu





We headed to Import / Clipboard

We will open the next screen where you will have to copy the code that is in the following pages. Once copied select **IMPORT**

Import nodes	
{"id":"3d837045.fabed","type":"ui_ up":"72b69fa9.3c7ed","order":1,"w CIDAD","label":"VELOCIDAD","forr Knots","layout":"row- right","x":613.2500190734863,"y": Import to current flow new flow	vidth":0,"height":0,"name":"VELO mat":"{{msg.payload number:1}}
	Cancel

[{ "Id": "74a1122.f7518ec", "type", "tab", "label": "Flow 2"}, { "id":

"bf7d28f7.f45188", "type": "websocket-

listener "," z "," "," path ":" ws: // localhost: 3000 / signalk / v1 / stream "," wholemsg ":" false "}, {" id ":" 9964cc9.930fa3 " "type": "ui_group", "z": "", "name": "AUXILIARY", "tab": "74eebf13.f060e"

,"Order" 3, "disp" true, "width", "6"}, { "id": "247e3051.29c16", "type": "ui_group", "z", "", "name" "P

ATMOSPHERIC "," tab "," "," order "2," disp "false," width "," 15 "}, {" id ":" 821f2b6e.fc7458 "," typ e "" ui_base ", "theme": { "name": "theme-

custom "," lightTheme ": {" default "" # 0094CE "" baseColor "" # 0094CE "" BASEFONT "" Helveti ca

Neue "," edited ": true," reset "false}," darkTheme ": {" default "" # 097479 "," baseColor "" # 0974 79 "," BASEFONT "" Helvetica

Neue "," edited ": true," reset "false}," customTheme ": {" name "," Black / white "," default "," # 4 B7930 "," baseColor "" # 353079 ", "BASEFONT" "- apple-system, BlinkMacSystemFont, Segoe UI, Roboto, Oxygen-Sans, Ubuntu Cantarell Helvetica Neue, sans

serif "," reset "false}," themeState ": {" base-

color ": {" default "" # 097479 "," value "," # 097479 "," edited ": false}," page-titlebarbackgroundColor ": {" value "" # 097479 "," edited ": true }, "pagebackgroundColor": { "value" "# 111111", "edited": true}, "page-sidebarbackgroundColor": { "value": "# 000000", "edited": false}, "grouptextColor": { "value": "# 10cfd8", "edited": true}, "groupborderColor": { "value" "# 555555", "edited": true}, "groupbackgroundColor": { "value": "# 333333 "" edited ": false}," widgettextColor ": {" value ":" # eeeeee "," edited ": true}," widgetbackgroundColor ": {" value ":" # 353079 "," edited ": false}," widgetborderColor ": {" value "" # 333333 "," edited ": false}," base-font ": {" value ":" - applesystem, BlinkMacSystemFont, Segoe

UI, Roboto, Oxygen-

 Sans, Ubuntu, Cantarell, Helvetica
 Neue, sans-serif "}}," site ": {" name ":" Node-RED

 Dashboard "," hideToolbar ":" false "," allowSwipe ":" false "," dateFormat "" DD / MM / YYYY "," si zes ": {" sx ": 48," s ": 48," s

 gx "6," g "6," cx "6," c "6," px "0," p ": 0}}, {" id ":" 8bebf753.eb9e78 "," type ":" ui_tab "," z "," "," name ":" GAUGE "," icon ":"

 dashboard "," order ": 3}, {" id ":" c168102c.ba 45c "," type ":" ui_group "," z "," "," name "," S

MACHINES "," tab "," "," order "1," disp "false," width "," 15 "}, {" id ":" a8fc798d.da22c8 "," type ":" ui_tab " z": "", "name", "SPEED", "icon": "dashboard", "order" 7}, { "id": "72b69fa9.3c7e d", "type": "ui_group" z": "", "name", "SPEED", "tab", "a8fc798d.da22c8", "disp" false, "width", "15"}, { "id": "74eebf13.f060e", "type": "ui_tab", "z", "", "name", "GENERAL", "icon": "das hboard", "order": 1}, { "id": "6aabf213.b6880c", "type": "ui_group "," z "," "," name ":" T EXHAUST "," tab "," "," order "1," disp "false," width "," 15 "}, { "id "" dcebd1d.9fff33 "," type ":" ui_group "," z "," "," name "," SPEED "," tab "," 8bebf753.eb9e78 "," order "1," disp "false," width "," 8 "}, { "id ":" 3023e014.44b19 "," type ":" ui_group "," z "," "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "Name", "SPEED", "tab", "8bebf753.eb9e78", "order" 1, "disp" false, "width", "8"}, { "id": "3023e014.44b19 "," type ":" ui_group "," z ":" "," name ":" T"", "name ":" T

CARTER "," tab "," "," order "1," disp "false," width "," 15 "}, {" id ":" 137084f7.28976b "," type ":" ui_group ", "z", "", "name": "Navigation", "tab", "74eebf13.f060e", "order" 2, "disp" true, "wid th", "6"}, { " id ":" 1c3b3a6e.ec5616 "," type ":" ui_group "," z "," "," name ":" T HEATER "," tab "," "," order "1," disp ": false, "width", "15"}, { "id": "1ce28a56.52d286" "ty pe" "ui_group", "z", "", "name", "DATE", "tab": "74eebf13.f060e", "order": 1, "disp "false," wid th "," 13 "}, { " id ":" aa9e8706.028388 "," type ":" ui_group "," z "," "," name ":" SEA WATER " "tab", ""," order" 1, "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "76ab3eec.2d1c", "type": "ui_group", "z", "", "name", "HUMIDITY", "tab", "", "disp" false, "width", "15"}, { " id": "f6243168.e1421",

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signalk_key = \ "navigation.position \"; \ n \ nif (msg.payload.hasOwnProperty (signalk_key)) {\ n msg.payload = msg.payload [signalk_key] [\ "longitude \"] \ n

return

msg; \ n} "," outputs "1," noerr "0," x ": 184.85714721679688," and "574.1428527832031," wires "[[" 34e13042.221d7 "]]}, {" id " "530adc5e.b244b4", "type": "function", "z", "74a1122.f7518ec", "name": "navigation.courseOverGroundTrue", "func" "var

signalk_key = \ "navigation.courseOverGroundTrue \"; \ n \ nif (msg.payload.hasOwnProperty (signalk_key)) {\ n msg.payload = msg.payload [signalk_key]; \ n return

msg; \ n} "," outputs "1," noerr "0," x ": 204.85714721679688," and "454.1428527832031," wires "[[" 3daced9b.52c2b2 "]]}, {" id " "49a17d71.a46414", "type": "delay", "z": "74a1122.f7518ec", "name", "", "pauseType", "rate", "timeout", "15", "timeoutUnits ":" seconds "," rate "," 2 "," nbRate Units "," 20 "," rateUnits ":" second "," randomFirst "," 1 "," randomLast "," 5 "," randomUnits " "sec onds", "drop" true, "x": 630.8571472167969, "and" 399.1428527832031, "wires" [["26332618. b1fb4a "]]}, {" id ":" d5957144.0a85 "

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msg; \ n} "," outputs "1," noerr "0," x ": 147.28570556640625," and "333.7142639160156," wires "[[" cbcda48b.a470b8 "]]}, {" id " cbcda48b.a470b8", "type": "UI_TEXT", "z": "74a1122.f7518ec", "group", "1ce28a56.52d286", "order" 2, "width", "12", " height "," 2 "," name "," DATE "," label "," DATE "," format ":" {{}} msg.payload "," layout "," col-

center "," x ": 348.8571472167969," and "334.1428527832031," wires "[]}, {" id ":" 26332618.b1f B4A "," type ":" smooth "," z ":" 74a1122. f7518ec "," name "," "," action "," mean "," count "," 15 "," rou nd ":" 1 "," mult ":" single "," x ": 815.6905364990234," and "399.67062759399414," wires ": [[" d59 57144.0a85 "" 829b5feb.b4e86 "]]], {" id ":" 3daced9b.52c2b2 "," type "," function "," z ":" 74a112 2.f7518ec "," name ":" rad degrees "," func ":" msg.payload to = Number (msg.payload) * 57.29 \ Nreturn msg; "" outputs "1," noerr "0," x ": 461.94043731689453," and "454.0039415359497," wires "[[" 42480453.7ed1bc "]]}, {" id ":" 770a2f3d. 3f786 "," type "," inject "," z ":" 74a1122.f7518ec "" nam e "," "," topic "," "," payload ":" "," payloadType ":" date ", "repeat", "10", "crontab": "", "once": true, "x": 152.8570556640625, "and" 779.142822265625, "wires" [["d2bb92e9.c11e"]]], { "id": "d2bb92e9.c11e", "type": "exec", "z", "74a1122.f7518ec", "command": "vcgencmd", "addpay": false, "append": "measure_temp", "UseSpawn": "", "timer", "", "oldrc" false, "name": "getCPUtemp", "x": 279.8570556640625, "and" 838.642822265625, "wires" [["292fb032.a2446 "], [], []]), {" id ":" efe408d0.314968 "," type ":" debug "," z ":" 74a1122.f7518ec "," name ":" debug showSK "," active "false," console "," false "," complete "," payload "," x ": 528.8570556640625," and "839.642822265625," wires "[]}, {" id ":" 292fb032.a2446 "," type ":" function "," z "," 74a1122.8570556640625 "and" 838.642822265625, "wires" [["292fb032.a2446"], [], []]}, { "id": "efe408d0.314968", "type": "debug", "z "" 74a1122.f7518ec "," name ":" Debug showSK "," active ": false," console ":" false "," complete "," payload "," x ": 528.8570556640625," and "839.642822265625 , "wires": []}, { "id": "292fb032.a2446", "type", "function", "z": "74a1122.8570556640625 "and" 838.642822265625, "wires" [["292fb032.a2446"], [], []]], { "id": "efe408d0.314968", "type": "debug", "z "" 74a1122.f7518ec "," name ":" Del

f7518ec "," name ":" msg.payload "," func	":" cpu_temp		=
parseFloat (msg.payload.replace (\ "temp =	= \" \ "\") replace (\ " 'C \\ n \" \ "	\").) \ ncpu_temp	=
cpu_temp \ nmsg.payload =	= '{\\\ "updates \\\":	[{\\\ "source \\\":	{\\\ "type \\\":
\\\ "ARMTEMP \\\" \\\ "\\\ src"	: \\\\ "RPI	IMCU \\\\"}, \\\ "values \\\\": [{\	\\\ "path \\\":
\\\ "environment.inside.freezer.temperature	e \\\" \\\ "value \\\" '+ cpu_temp	+'}]}]} \\ n '; \ Nreturn msg;	"" outputs ": 1,
"noerr" 0, "x": 382.8570556640625, "and"	780.142822265625, "wires" [["ef e408d0.314968" "6599)324d.86aadc"]]}, {
"id": "6599324d. 86aadc "," type ":" udp ou	ıt "," z "," 74a1122.f7518ec ","	name ":" sendSK "," addr "	:" localhost "," iface
":" "," port "," 55559 "			
,"IPV" "udp4" "outport": "", "base64" false,	"multicast": "false", "x": 556.8	570556640625, "and" 7	
78.142822265625, "wires" []}, { "id": "544	4484f.daeed8", "type", "funct	ion", "z": "74a1122.f75 18	Bec", "name":
"environment.inside.freezer .temperature	e "" func ":" var signalk_key =	\ "environment.inside.free	ezer.temperature \"; \
n \ nif (msg.payload.hasOwnPro perty (s	ignalk_key)) {\ n		
	msg.payload = msg.payload	[signalk_key]; \ n	return
msg; \ n} \ n "," outputs "1," noerr "0," x ": 2	19.99603271484375," and "62	3.0317459106445," wir is "	'[[" a8e95994.5bbec8
"," dd095b1d.8f8658 "]]}, {" id ":" a8e95994	.5bbec8 "," type ":" UI_TEXT "		
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"format": "{{msg.payload	r	number: 1}} & Deg;	"" layout ":" row-
spread "," x ": 464.4405288696289," and "6	600.5317449569702," wires "[]	}, {" id ":" dd095b1d.8f8 658	8 "," type ":" ui_gauge
"," z ":" 74a1122. f7518ec "," name ":" CPU	"," group ":" d3f6900.2b56a7 '	1	
,"Order" 2, "width", "8", "height", "8", "GTyp	pe" "gage", "title": "CPU", "labe	l", "C", "format": "{{valu e	
			number: 0}}
trC "," min "," 30 "," max ":" 75 "," colors ": [" # 00b500 "," # e6e600 "," # c	a3838 "]," seg1 ":" 60 "," se	ec2 ":" 67 "," x ":
462.9127197265625," and "651.42065429	6875," wires "[]}, {" id ":" 829b5	ofeb.b4e86 "," type ":" debu	ıg "," z ":"
74a1122.f7518ec "," name "," "," active "fa	lse," console "," false "," compl	et e "," false "," x ": 992.00	00043596538," and
"308.4285670689174," wires " []}, { "id": "8	29cae42.a 7edc", "type": "ui_g	auge", "z": "74a1122.f7518	8ec", "name", "",
"group", "dcebd1d.9fff33 "" ord er ":1, "widt "format": "{{value	:h", "8", "height", "8", "GType" '	gage", "title": "SPEED", "la	abel", "Knots",
			number: 0}}
"" Min "0," max ":" 15 "," colors ": [" # 00b50	0 "," # e6e600 "," # ca3838 "],"	seg1 "," 7 "," seg2 ":" 12 ",'	" x ":
613.0000076293945," and "296.999995231	16284," wires "[]}, {" id ":" a227c	ldb.91dc52 "," type ":" UI_T	EXT "," z ":"
74a1122.f7518ec "" group "" 1ce28a56.52d	286 "," order "1," width "," 12 ",	" hei ght "," 1 "," name ":" N	IAME
		BARCO "," lat	oel ":" NAME
BOAT "," format ":" {{}} msg.payload "," la	iyout "," row-		
center "," x ": 390.00000762939453," and "2	272.9999952316284," wires "[]}	, {" id ":" 3d837045.fa bed "	," type ":" UI_TEXT ","
z ":" 74a1122. f7518ec "," group ":" 72b69fa	9.3c7ed "," order ": 1," width ":		
0, "height" 0, "name", "SPEED", "label	", "SPEED", "format": "{{ms	g.payload	
number: 1}}		Knots	"," layout ":" row-

right "," x ": 613.2500190734863," and "258.2499990463257," wires "[]}]

Once we have imported the code we have is to burn it, and this is done by selecting **Deploy**

пеероаго				
	-⁄=	Deploy	•	
Flow 2				+
ou are now recorded code, and what we have pla	anned what we ca	n see from		

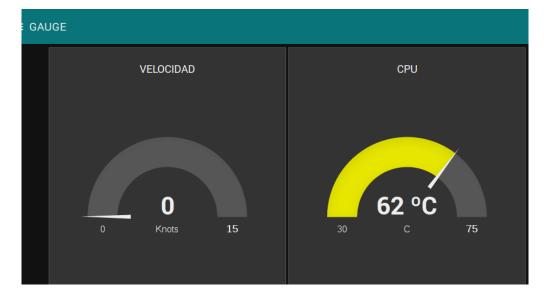
caciones	Sig	nalK Server	🕾 Node-RED	ke d	ASHBOARD	SAUGE	🕿 freeboard	
Node-R	ED							
nodes		Flow 2			Flow 1		Flow 2	
	*							

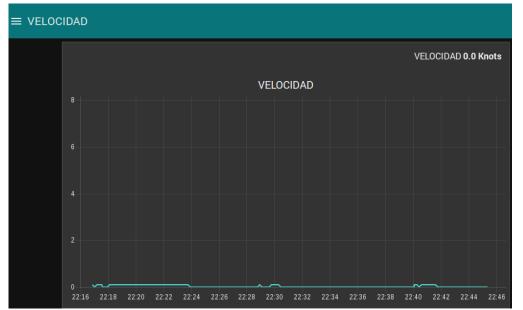
With what we will open,

🧟 Node-RED Dash	bo ×				
\div \rightarrow C (i) localh	ost:1880/ui/#/0				Se 1
🗄 Aplicaciones 📘 S	SignalK Server 🗧 Node-RED 🤞	R DASHBOAR) 🧏 GAUGE 🧧 freeboard		
≡ GENERAL					
		NOMBRE	BARCO		
		FEC 2018-03-25			
	NAVEGACION		AUXILIARES		
	LONGITUD	-0.32 °	CPU	61.2°	
	LATITUD	39.46 °			
	VELOCIDAD SOBRE SUELO	0.1 Knots			
	RUMBO SOBRE SUELO	0.0			

If you select the menu at the top left deploy the pages.







twenty-one

Here they are represented only data longitude, latitude, speed and temperature of the CPU, which are what have openplotter with a base configuration. If temperature sensors, pressure, humidity, battery voltage, etc. are added can represent the same way

As	an	example
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≡ GENERAL					
	2011	FECHA 8-03-25T21:15:48Z			
NAVEGACION		AUXILIARES		MOTOR	
LONGITUD	-0.31 °	P ATMOSFERICA	1,003.0 mbar	T CARTER	15.2 °C
LATITUD	39.46 °	HUMEDAD	2.0 e+ 33 %	T ESCAPE	15.7 °C
VELOCIDAD SOBRE SUELO	0.1 Knots	TEMP EXT	12.2 C	AGUA MAR	14.3 C
RUMBO SOBRE SUELO	0.0	T CABINA	24.5 °C	EFI INTERCAM	95.2 %
RUMBO MAGNETICO		T CALENTADOR	27.8 °C	T SALA MÁQUINAS	16.1 ℃
		CPU	70.9 °		

