

---

# Veronte Gimbal

**Embention**

**Jun 22, 2021**



# CONTENTS

<b>1</b>	<b>General Description</b>	<b>1</b>
1.1	Dimensions . . . . .	2
<b>2</b>	<b>Assembly</b>	<b>3</b>
<b>3</b>	<b>Connections</b>	<b>5</b>
3.1	Connection Example . . . . .	6
<b>4</b>	<b>Configuration</b>	<b>9</b>
4.1	CAN Messages . . . . .	9
4.2	Configuration Example . . . . .	10



## GENERAL DESCRIPTION

**Veronte Gimbal** is a high quality device designed to be used in unmanned aerial vehicles.

While using a visible and thermal (optional) cameras, this two axis gimbal provides to any aerial platform high quality sensors essential for any professional task that could require the use of drones.

The gimbal has been designed to be effectively used either in big or small platforms, keeping a light weight and compact size without leaving the enclosure which protects the cameras it embeds.

We have developed four different variants of Gimbal:

	Camera	Zoom	HQ Thermal Camera
<b>Veronte Gimbal:</b>	HD	x10	Yes, 320x256 resolution
<b>Veronte Gimbal SC:</b>	HD	x10	
<b>Veronte Gimbal Pro:</b>	Full HD (1080p/60)	x30	Yes, 640x512 resolution
<b>Veronte Gimbal Pro SC:</b>	Full HD (1080p/60)	x30	

**Warning:** Veronte Gimbal takes into account airspeed for refrigeration. When used for indoor operation, it will eventually get warm. Consider using an external source of refrigeration for indoor operations longer than 1h.



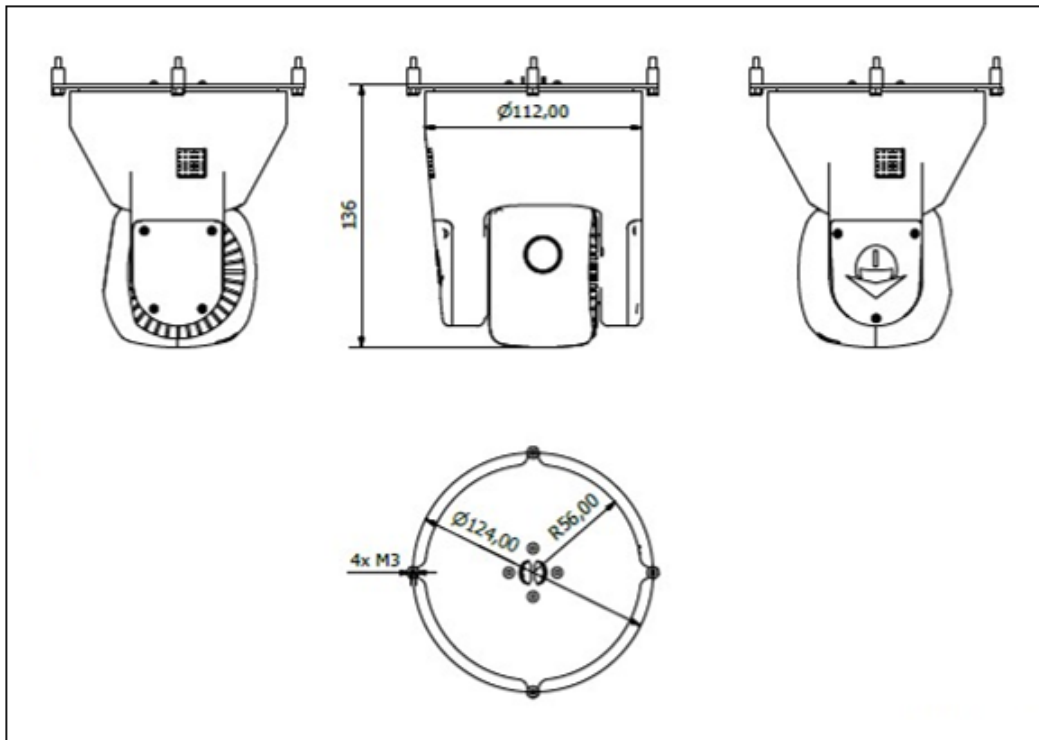
Veronte Gimbalproduct

## 1.1 Dimensions

	Height	Diameter	Weight
<b>Veronte Gimbal:</b>	147mm	122mm	820g
<b>Veronte Gimbal SC:</b>	136mm	112mm	730g
<b>Veronte Gimbal Pro:</b>	209mm	149mm	1575g
<b>Veronte Gimbal Pro SC:</b>	194mm	149mm	1485g

## ASSEMBLY

Veronte Gimbal should be attached to the platform using 4x M3 screws, using the threads located on the upper surface.



Veronte Gimbal dimensions





## CONNECTIONS

System connections will be established through a connector *LEMO FGG.2B.310.CLAD72Z* with 10 pins.



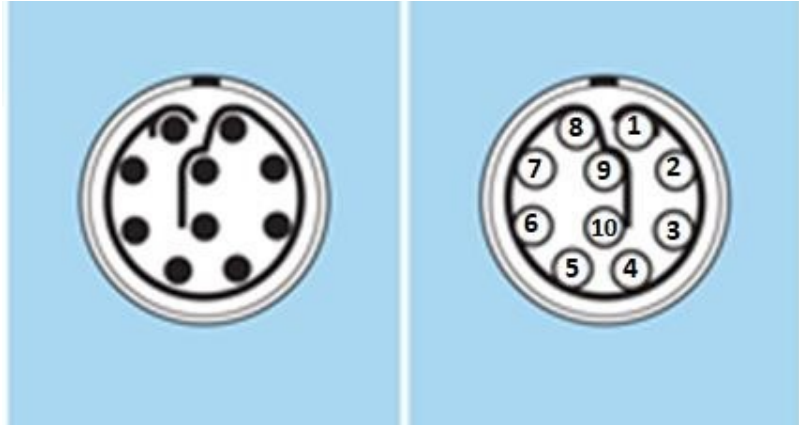
LEMO FGG.2B.310.CLAD72Z connector

Outputs received from the system connector are:

- **Power 24VDC:** Used for video system powering and gimbal electronic controllers. Nominal values are 24V and 0.416 A (10 W).
- **CAN Bus:** It is used to command gimbal's position, stabilization of the system and for changing different parameters from Veronte Gimbal.
- **Ethernet:** Its utility is based on allowing the user to receive video streaming in real time from both cameras.
- **Analogic Video:** A composite video output which carries camera(s) available signal to the system.

Besides connector Lemo, it will be provided the same connector version but with its panel model connector, with which the different platforms integration may be ease.

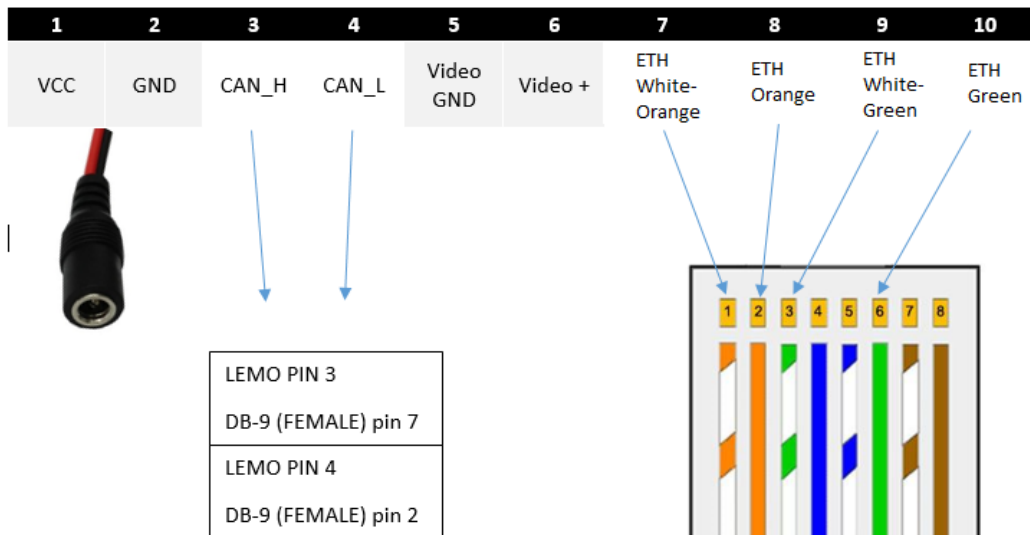
The pin-out for the connector is as follows:



Veronte Gimbal pinout

PIN N°	I/O
1	24V
2	GND
3	CANH
4	CANL
5	GND
6	N.C.
7	TD+
8	TD-
9	RD+
10	RD-

### 3.1 Connection Example



Pinout setup example

**Warning:** When supplied voltage, Veronte Gimbal will perform an initial check. Please make sure that Gimbal movement path is clear before powering it up.



## CONFIGURATION

### 4.1 CAN Messages

Veronte Gimbal is controlled by commanding an angular position by means of a set of CAN messages. Veronte Gimbal also continuously broadcasts information about its state that can be read by any device connected to the CAN bus. The format of the CAN Data messages to communicate with Veronte Gimbal is the following:

- CAN Baudrate: 1000000 Bd
- Extended ID: No
- Endiannes: Little Endian

#### 4.1.1 Command Messages

Messages sent by the controlling device in order to send commands to Veronte Gimbal.

##### Angle command messages

Format for the messages that the controlling device must send in order to control the position of the Veronte Gimbal:

- ID: 1 (Pitch) and 2 (Yaw).
- Period: 0.05 s (recommended)
- Message:

N° of Bits	Value	Info
1	0-1	Motor off (0) or Motor on (1)
1	1	Matcher with value 1
32	0-360	Angular position between 0° and 360°

**Warning:** Veronte Gimbal has a physical limit when moving upwards, which corresponds to 0° Pitch. Correct neutral position for Veronte Gimbal is 0° Yaw - 90° Pitch.

##### Feedback Messages

Messages sent by Veronte Gimbal through the CAN bus. These messages can be read by Veronte AP and stored into variables:

##### Encoder feedback

Messages containing the position of the servos read by the encoders.

- ID: 34 (Pitch) and 35 (Yaw)
- Message:

N° of Bits	Value	Info
32	0-360	Current encoder position between 0° and 360°
32	0-360	Current commanded position between 0° and 360°

For more information about how to configure CAN messages using Veronte Autopilot please visit: [CAN messages](#)

## 4.2 Configuration Example

Below is a step-by-step process on how to configure Veronte Gimbal using Veronte PIPE. This configuration is designed to control Veronte Gimbal using a Virtual Stick on the Veronte Pipe Workspace.

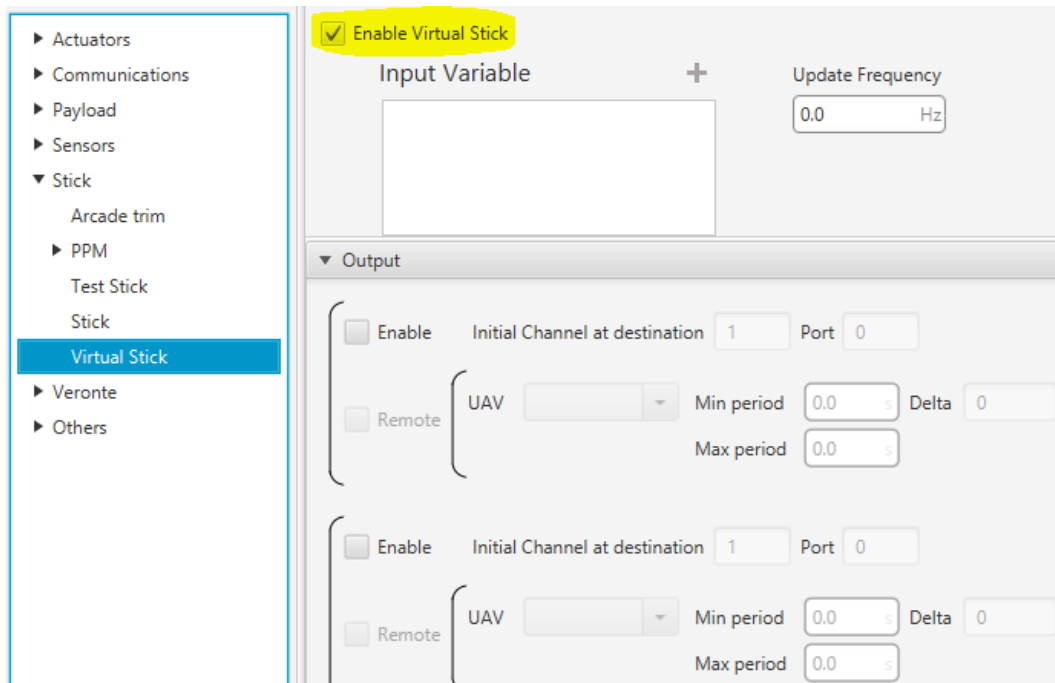
### User Variables

We will first rename a set of user variables to use them for storing control values. For information about how to configure user variables visit: [User Variables Configuration](#)

Name	Initial Value	Purpose
Gimbal Yaw Output	0	Stores the desired position for the Veronte Gimbal Yaw
Gimbal Pitch Output	0	Stores the desired position for the Veronte Gimbal Pitch

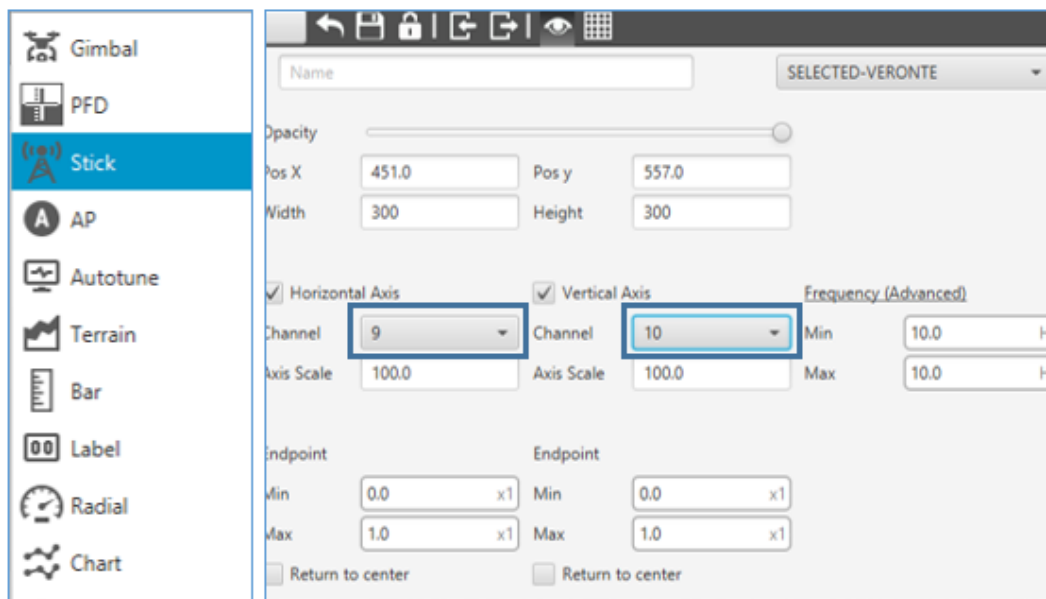
### 4.2.1 Stick Configuration

We will be using a *Virtual Stick* located on the *Veronte PIPE Workspace* to control the position of Veronte Gimbal. First we will need to check that control through Virtual Sticks is enabled for our configuration. Go to **Setup/Devices/Stick/Virtual Stick** and check the following values are correct:



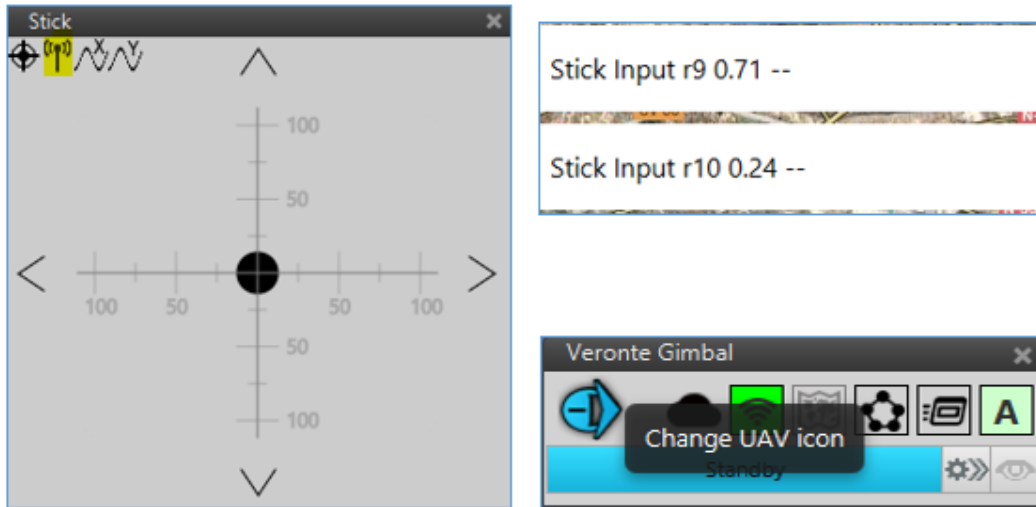
Virtual Stick configuration

Then we will create a *Virtual Stick Widget* on the *Workspace* and assign the channels we want to control. In this case we will use stick channels 9 and 10:



Virtual Stick channel selection

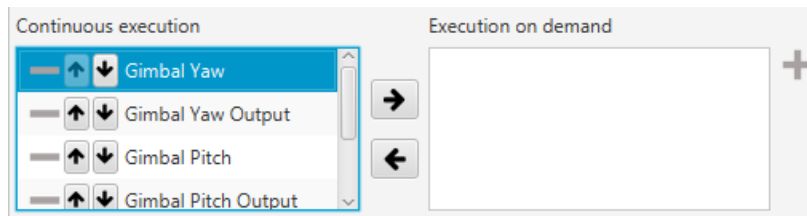
Finally we need to check that our *Virtual Stick* is on. In order to do that click on the antenna icon on the top left of the *Virtual Stick widget*. When the stick is correctly recognized, the Mode indicator on the Veronte panel will turn green. Value of stick channels can be monitored displaying variables 'Stick Input' r9 and r10. Remember to save the Workspace for the new variables to be loaded correctly:



Virtual Stick connection checking

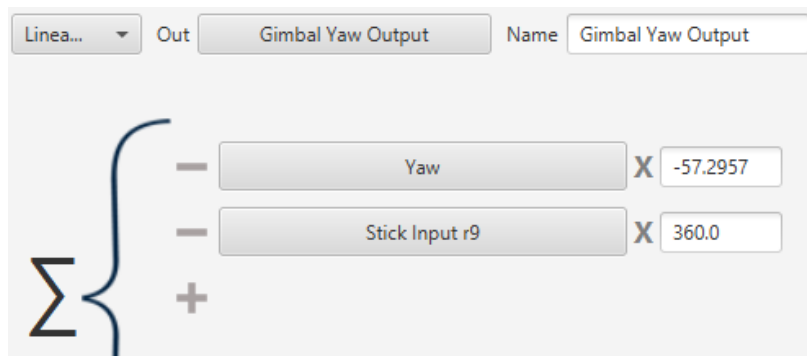
### 4.2.2 Operations

Now we will create a set of operations that will use the chosen user variables to control the position of Veronte Gimbal. The following operations have to be located on the 'Continuous execution' list (Right side). Operations are executed in order from first to last so maintaining the order established below may be important:



Operation creation

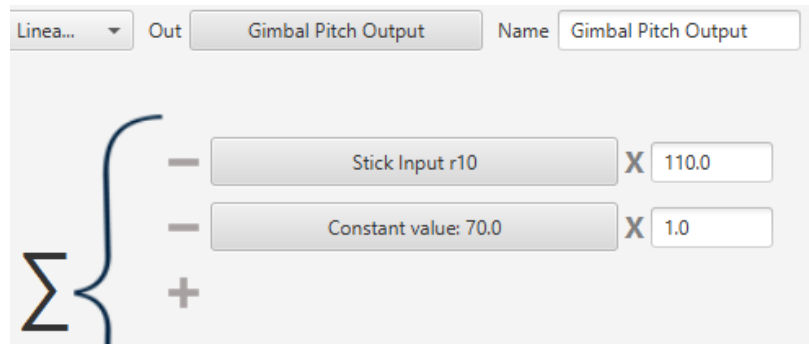
First operation will be the one controlling the commanded position for the yaw angle. This will be simply a value provided by the stick. Since the stick range goes from 0 to 1, this value will be multiplied by 360 to get a full 0°-360° range. We will also add a Yaw correction, using the attitude of the platform, to keep the current gimbal yaw even if the aircraft changes its yaw angle. We will use a Linear Expression type operation:



Yaw configuration

The operation for controlling Pitch will be similar, but this time range will be from 70 ° (slightly tilted up) to 180° (looking down):

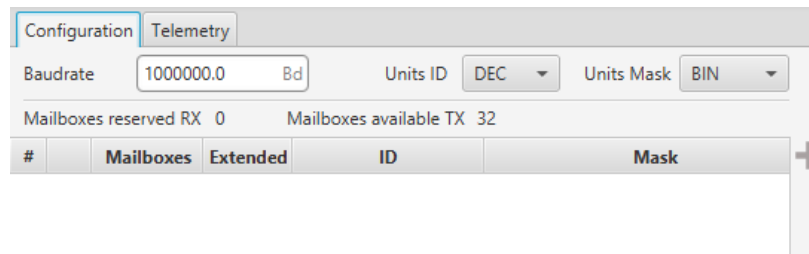




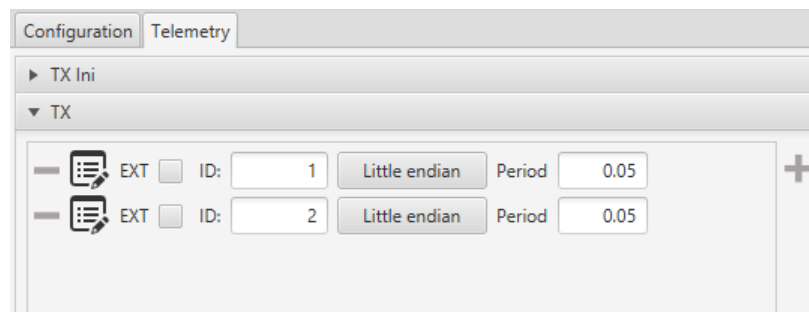
Pitch operation configuration

### 4.2.3 CAN Messages

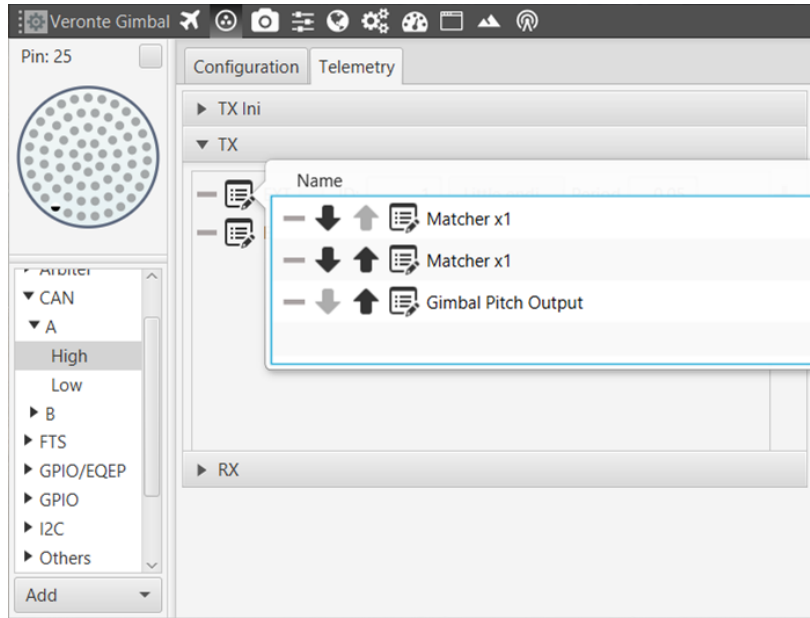
Last step is configuration of CAN messages according to 4.1. Below you can find a set of screenshots showing how build the correct messages in Veronte PIPE:



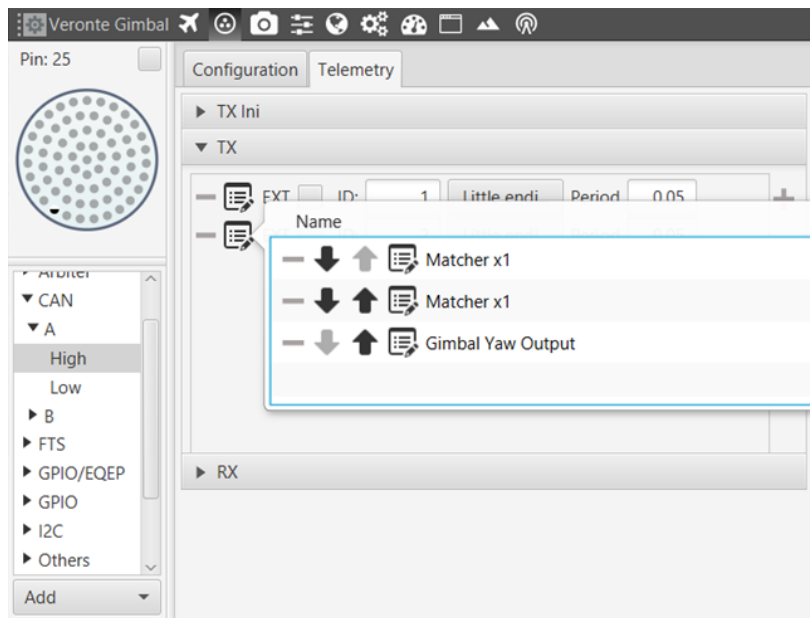
Gimbal configuration menu



Gimbal telemetry menu



CAN message configuration



CAN message configuration - 2