

ANYSENSE^{PRO}

Manual

Disposing of old devices

The symbol below indicates that that product must be disposed of separately, not with your regular waste. Please take this product to an official collection point. By separating and recycling this product, you help protect resources and help to make sure that all the regulations on health and the environment are adhered to.

Declaration of conformity

xeniC GmbH hereby declares that the product meets the basic requirements and other relevant regulations of the CE guidelines.



xeniC GmbH
Hallenstraße 8
D-33609 Bielefeld, Germany
TELEPHONE: +49 (521) 96 30 777 0
WEEE registration number DE 390587'
<http://www.anysense.de>



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Introduction

Thank you for buying this product. Please read the following instructions carefully to make sure that you correctly install and connect the device. Please also regularly check our website at <http://www.anysense.de>. This is where you can find product information, news, technical updates, and revisions of instruction manuals. Should you have any questions about our product, please contact your authorized seller or AnySense customer service.

Description

Using AnySense Pro, you can easily transfer your telemetry data with plug & play. You can transfer data from A2, Pixhawk, Tarot ZXY-M, Align APS-M, Naza, Phantom 1 & 2, as well as Wookong in real time to your remote. This means that additional telemetry sensors, the GPS live tracker, or your black box can be activated using a single, tiny 42x22mm module. Not only does this save you money, it also reduces the time spent on installation and helps to lower take-off weight. Thus, reducing the flight duration.

Flugsteuerung	Flight control
USB	USB
OSD (MAVLink)	OSD (MAVLink)
Externe Sensoren	External sensors
Micro SD Karte	Micro SD card
LED	LED
Telemetrie	Telemetry

1 Ports



2. Data overview

In the two tables, we show you which data you have access to on your flight control and which telemetry data can be transferred to remote control.

2.1 Flight control







Description	Naza	Phantom 2	A2	Pixhawk	Tarot	Align
Flight control	X	X	X	X	X	X
GPS fix (none, 2D, 3D, DGPS)	X	X	X	X	X	X
Number of GPS satellites	X	X	X	X	X	X
Horizontal GPS accuracy	X	X		X		
Vertical GPS accuracy	X	X				
Actual GPS location	X	X	X	X	X	X
Home GPS location	X	X	X	X	X	X
Speed in m/s	X	X	X	X	X	X
Distance above ground level	X	X	X	X		
GPS date and time	X	X	X	X	X	
Barometric altitude	X	X	X	X	X	X
Barometric home altitude	X	X	X	X	X	X
Barometric climb rate	X	X	X	X	X	X
Orientation in degrees (compensated)	X	X	X	X	X	
Inclination in degrees	X	X	X	X	X	X
Roll in degrees	X	X	X	X	X	X
Flight mode	X	X	X	X	X	X
Motor started	X	X	X	X	X	X
RC channels	X	X	X	X	X	
Throttle stick in percent	X	X	X	X	~	
Battery voltage in mV	X	X	X	X	X	X
Motor exits	X	X	X	X		
Number of Lipo cells	+	+	+	+	+	+
Voltage of single cells	+	+	+	+	+	+
Current Ampere level	~	X	~	X	~	~
Capacity used in mAh	~	X	~	~	~	~
Battery charge in percent	X	X	X	X	X	X
Flight duration in hours	X	X	X	X	X	X
Distance in m	X	X	X	X	X	X
Home direction in degrees	X	X	X	X	X	X
Lipo temperature / T1 RPM sensor	~	X	~	~	~	~
T2 RPM sensor	~	~	~	~	~	~
RPM	~	~	~	~	~	~

~ With external sensors + Calculated differently with external sensors

2.2 Remote controls

Description	MAVLink	FrSky	Graupner	Futaba	Jeti	Spektrum	Multiplex
Flight control	x						
GPS fix (none, 2D, 3D, DGPS)	x	x	x	x	x	x	x
Number of GPS satellites	x	x	x		x	x	x
Horizontal GPS accuracy	x						
Vertical GPS accuracy	x						
Actual GPS location	x	x	x	x	x	x	
Home GPS location							
Speed in m/s	x	x	x	x	x	x	x
Distance above ground level	x				x		x
GPS date and time	x	x	x	x		x	
Barometric altitude	x	x	x	x	x	x	x
Barometric home altitude							
Barometric climb rate	x	x	x	x	x	x	x
Orientation in degrees (compensated)	x	x	x	x	x	x	x
Inclination in degrees	x	x					
Roll in degrees	x	x					
Flight mode	x	x	x		x	x	x
Motor started	x	x					
RC channels	x						
Throttle stick in percent	x						
Battery voltage in mV	x	x	x	x	x	x	x
Motor exits	x						
Number of Lipo cells	x	x	x				
Voltage of single cells	x	x	x	x	x	x	x
Current Ampere level	x	x	x	x	x	x	x
Capacity used in mAh	x		x	x	x	x	x
Battery charge in percent	x		x	x	x	x	x
Flight duration in hours			x				
Distance in m	x	x	x	x	x	x	x
Home direction in degrees	x	x	x		x	x	x
Lipo temperature / T1 RPM sensor	x	x	x	x	x	x	x
T2 RPM sensor		x	x	x	x		x
RPM		x	x	x	x		x

3. What is included

Image	Description	Number
	AnySense Pro	1
	Telemetry cable	1
	Spectrum cable	1
	USB cable	1
	USB micro SD card reader	1
	Micro SD card	1

Manual

2 AnySense Studio

2.1 Installation

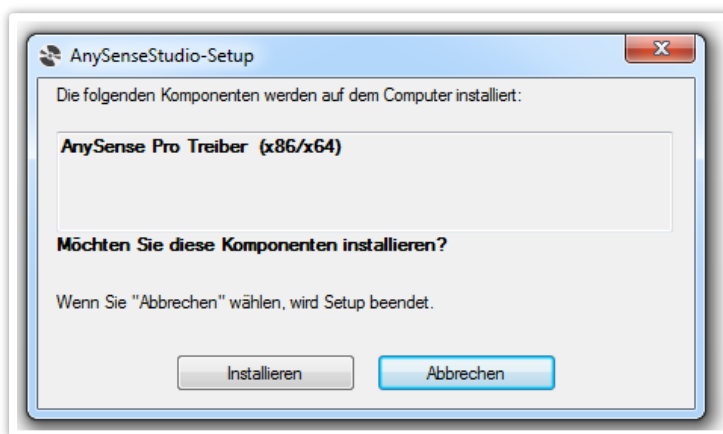
In order to set up AnySense Pro for the telemetry protocol desired, the first thing you will need to do is to download AnySense Studio.

You can find the most up-to-date version here:

<http://anysense.de/studio/setup.exe>

Installing AnySense Studio:

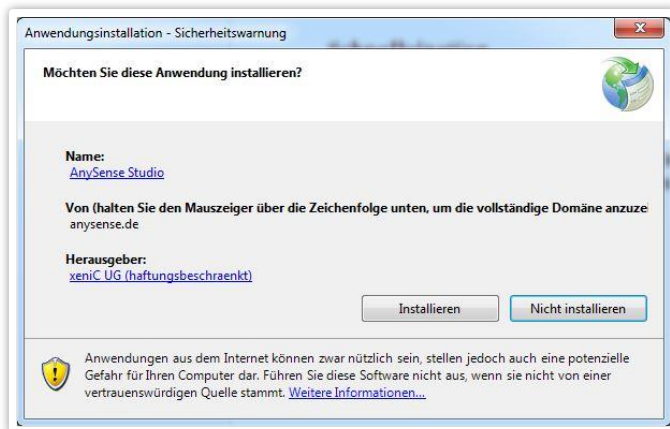
1. Start Setup.exe
2. Click on “Install” to install the AnySense Pro driver.



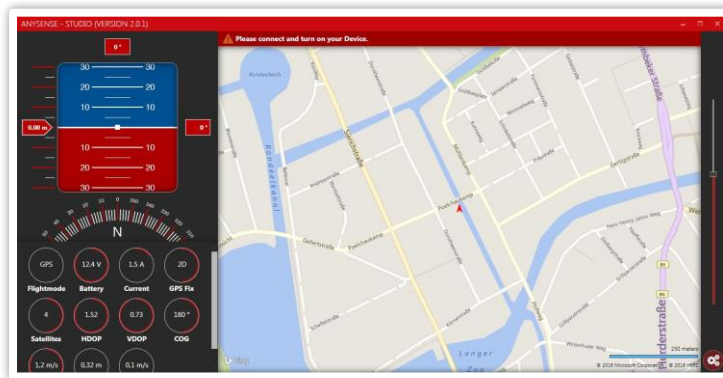
3. Confirm the Windows security enquiry by clicking on “Install”.



4. Confirm the installation of the application by clicking on “Install”.



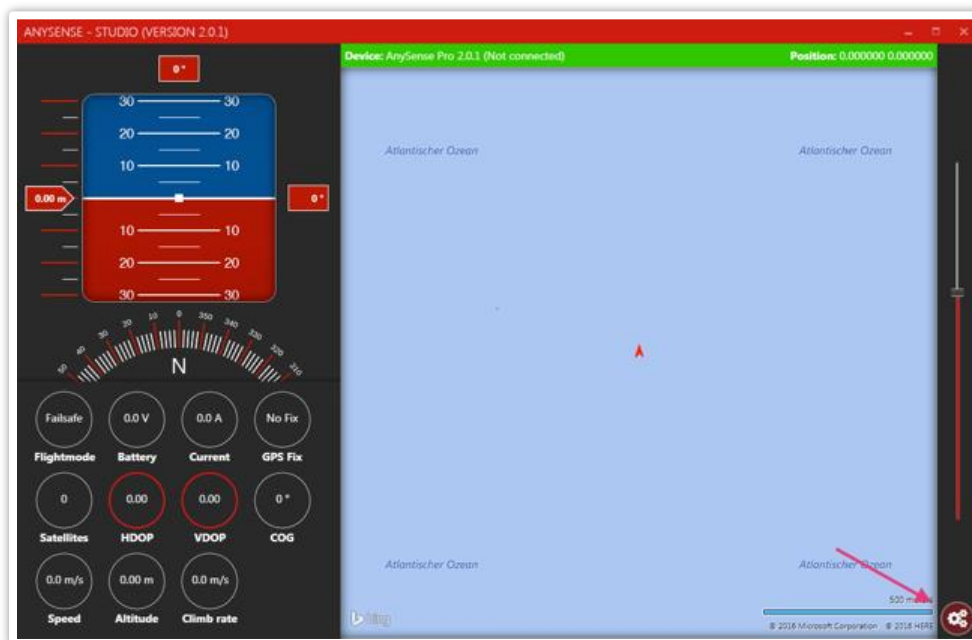
5. Once the installation process has been completed successfully, AnySense Studio will be started automatically.



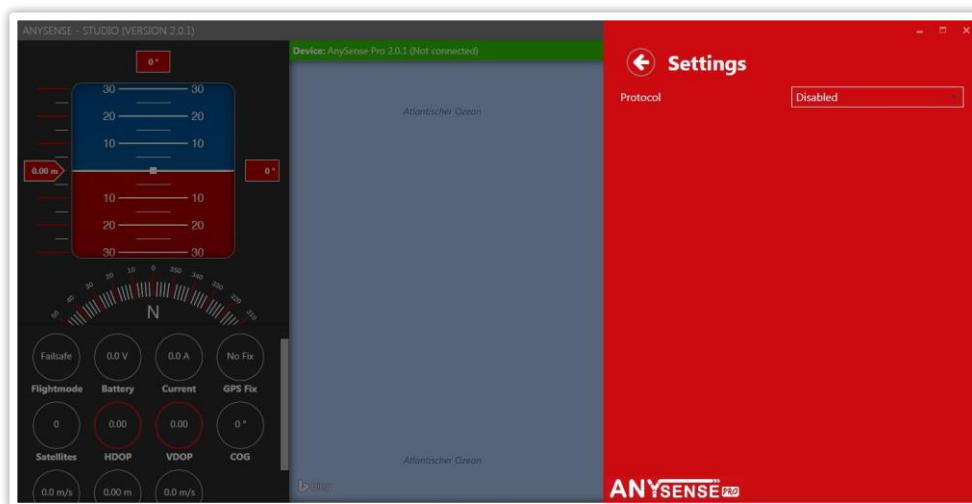
6. Now connect your AnySense Pro unit to your computer by way of the supplied USB cable.
7. AnySense Studio should now be connected to your AnySense Pro unit.

2.2 Settings

Please select the “gear symbol” to access the settings in AnySense Studio.



The settings for AnySense Pro will now open.



In settings, you have the opportunity to select the telemetry protocol that you would like. However, you can also set alarms. Please be aware that, at the time of writing this, only Graupner and Spektrum provide the latter.

Alarm Charge: This is where you can set the percentage at which you will receive an alarm message, informing you that the battery charge has dropped below the value entered.

Alarm Distance: This is where you can set the distance in meters at which you will receive an alarm message, informing you that the distance in meters has dropped below the value entered.

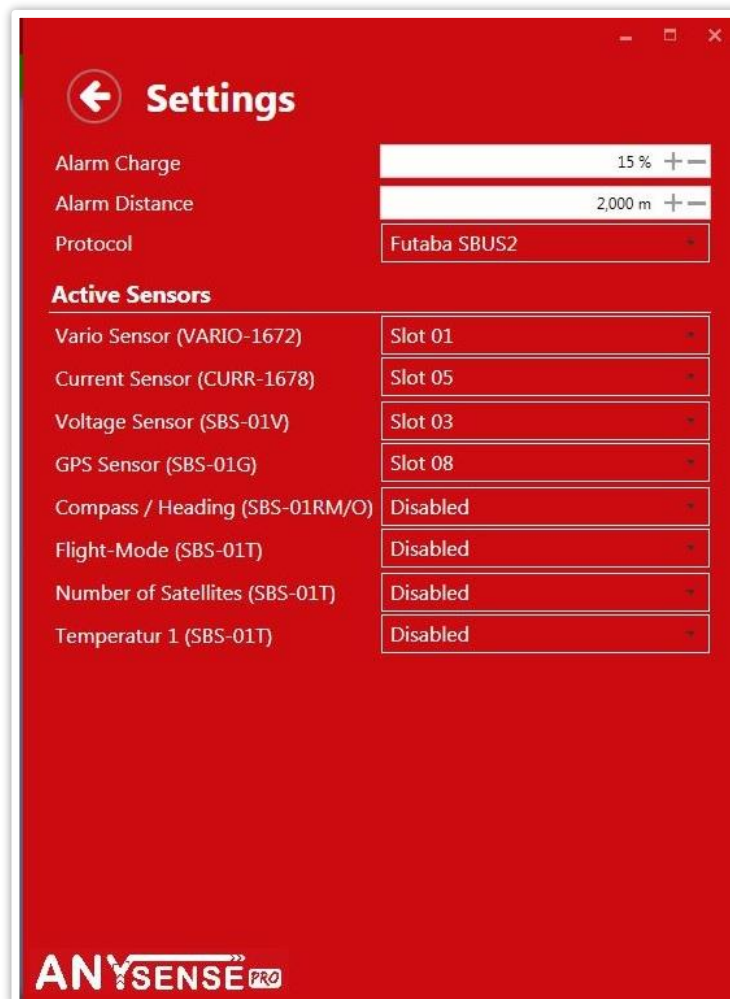
To save your settings, please leave the settings by clicking on the left arrow.



2.2.1 Futaba

The Futaba telemetry system uses what is referred to as time slots or slots. You have 32 slots.

You can assign each slot to the sensors that you would like AnySense Pro to provide. You will only need to make changes to this if you have used sensors in the past and if this would mean that slots may overlap. You can disable slots used by other sensors for AnySense. Alternatively, you can assign them to different slots.



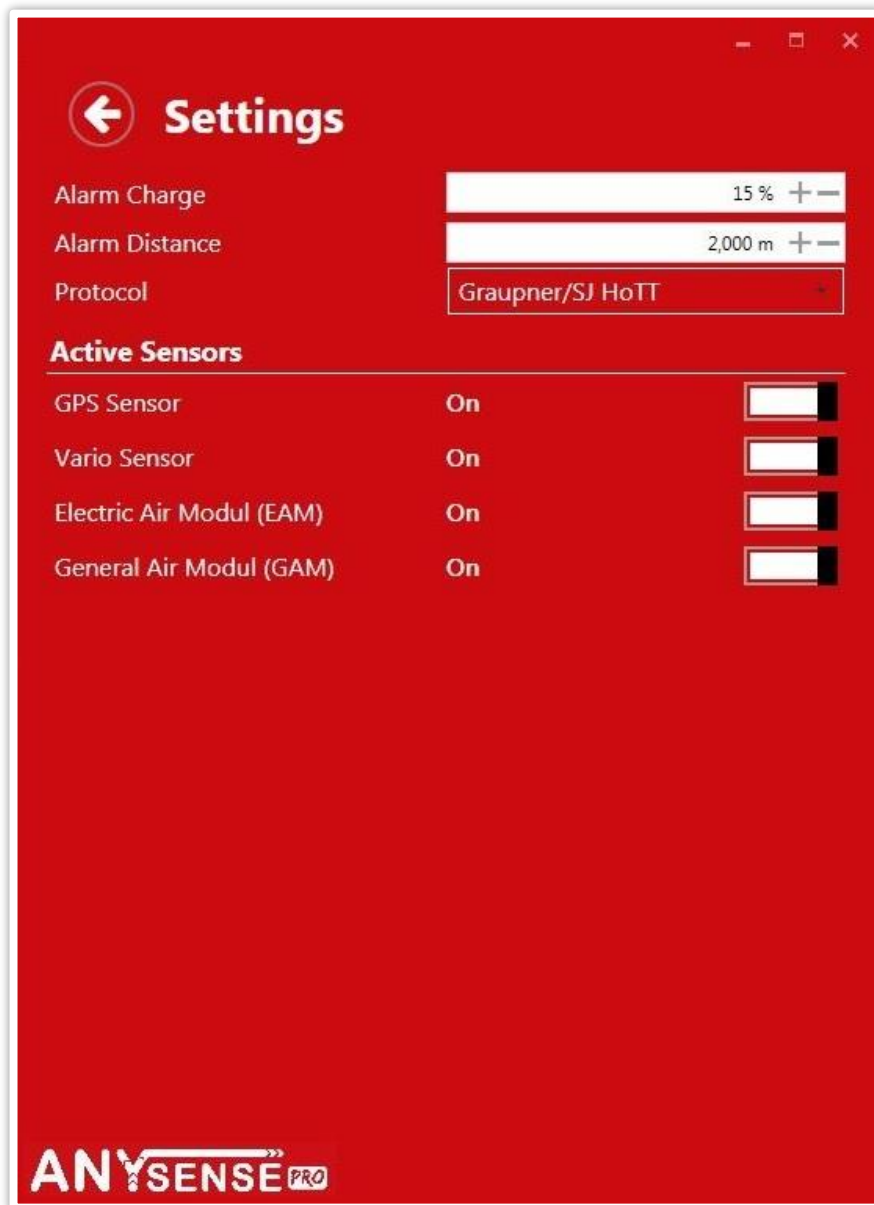
If, for example, you are using the Futaba temperature (SBS-01T) sensor, you can set the temperature sensor to “Disabled” within AnySense Studio.

AnySense Pro will then emulate sensors that have been defined within the Studio and will give you GPS information on your flight control. This is if you have selected the GPS sensor (SBS-01G).

This is why it is necessary to tell the transmitter which sensors should be expected in each slot. This is in addition to the settings selected here.

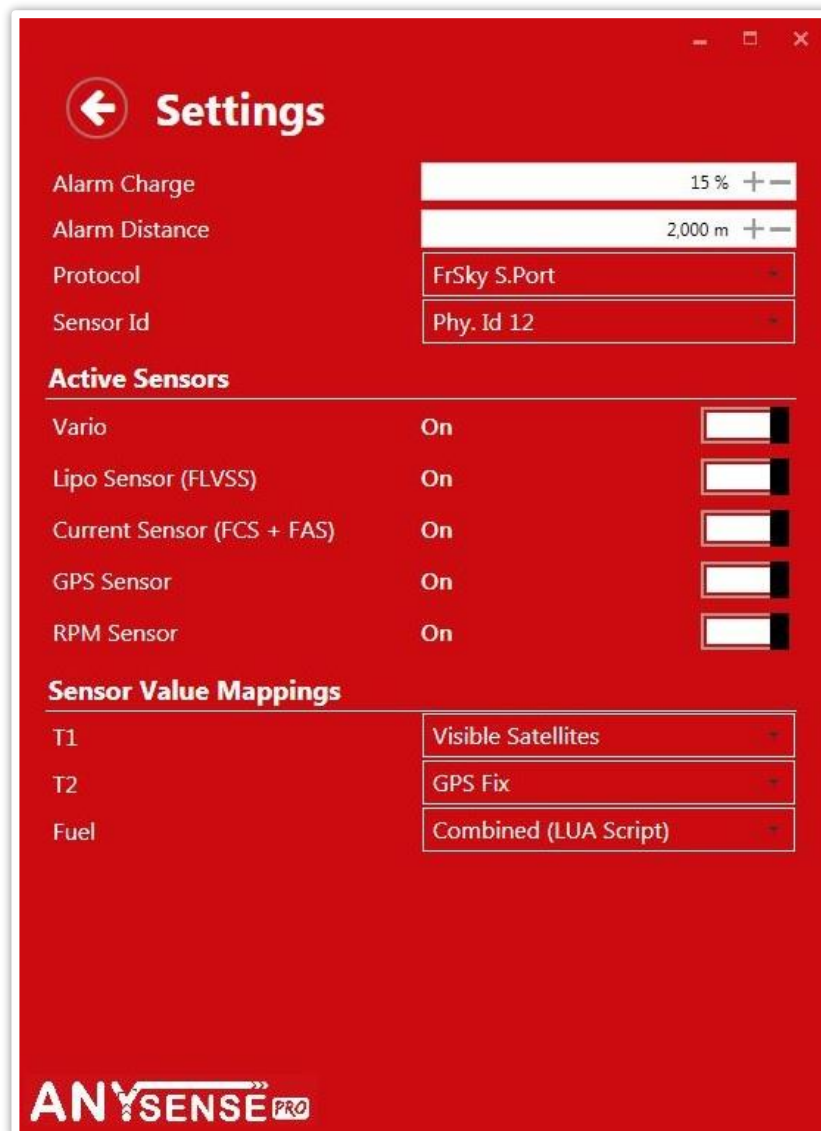
2.2.2 Graupner

Graupner offers the following sensors: GPS Sensor, Vario Sensor, Electric Air Module, and the General Air Module. Should you already be using one of these sensors, you can set it to OFF by using the “On/Off” switch. By doing so, AnySense Pro's emulation for this sensor will be disabled and you will receive telemetry data from the sensor directly connected to the unit.



2.2.3 FrSky

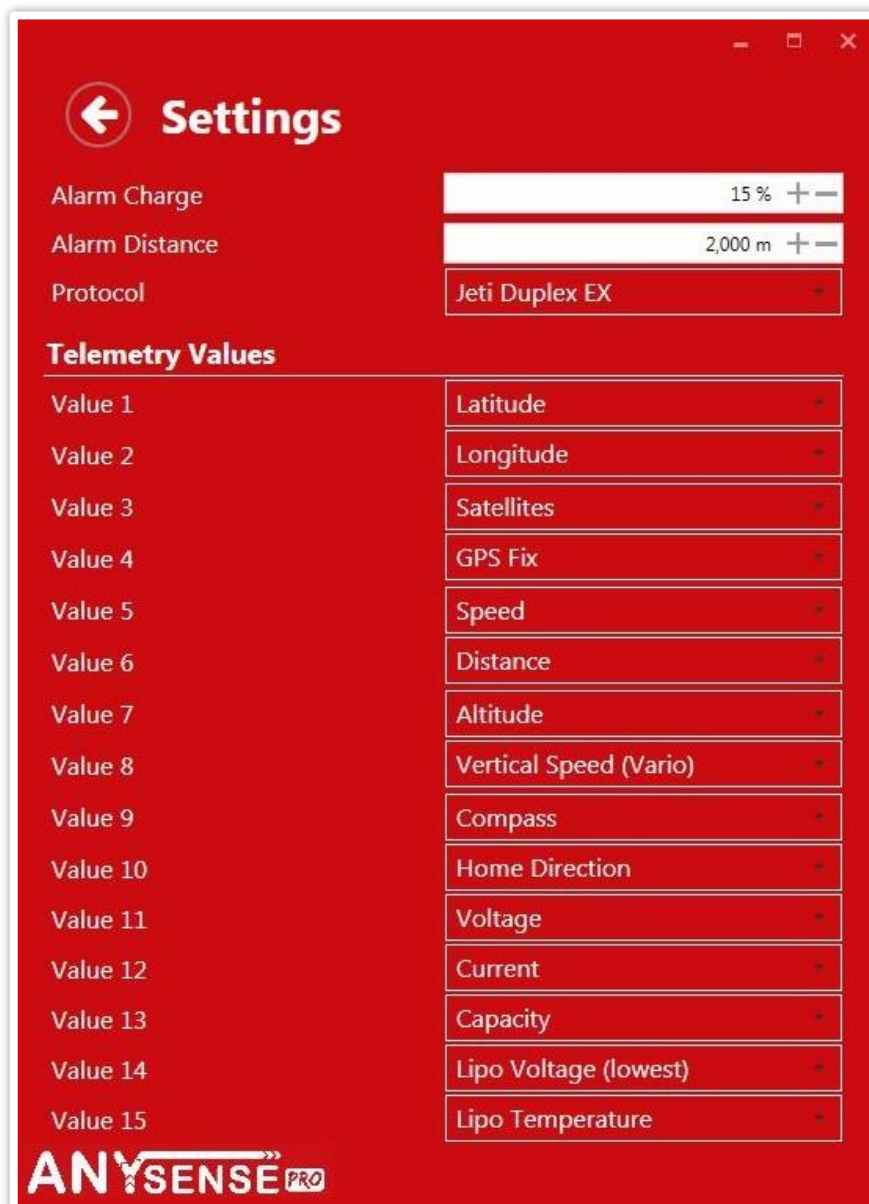
FrSky offers the following sensors: Vario, Lipo Sensor, Current Sensor, GPS Sensor, and the RPM sensor. Should you already be using one of these sensors, you can set it to OFF by using the “On/Off” switch. By doing so, AnySense Pro's emulation for this sensor will be disabled and you will receive telemetry data from the sensor directly connected to the unit. In addition, Taranis offers individual telemetry views that create what is called LUA scripts. For this, AnySense Pro gives you the option to assign the readings provided by AnySense (right column) to Taranis' telemetry (left column). This is under T1 & T2 and Fuel. AnySense gives you this option for all Open TX versions up to version 2.1.



2.2.4 Jeti

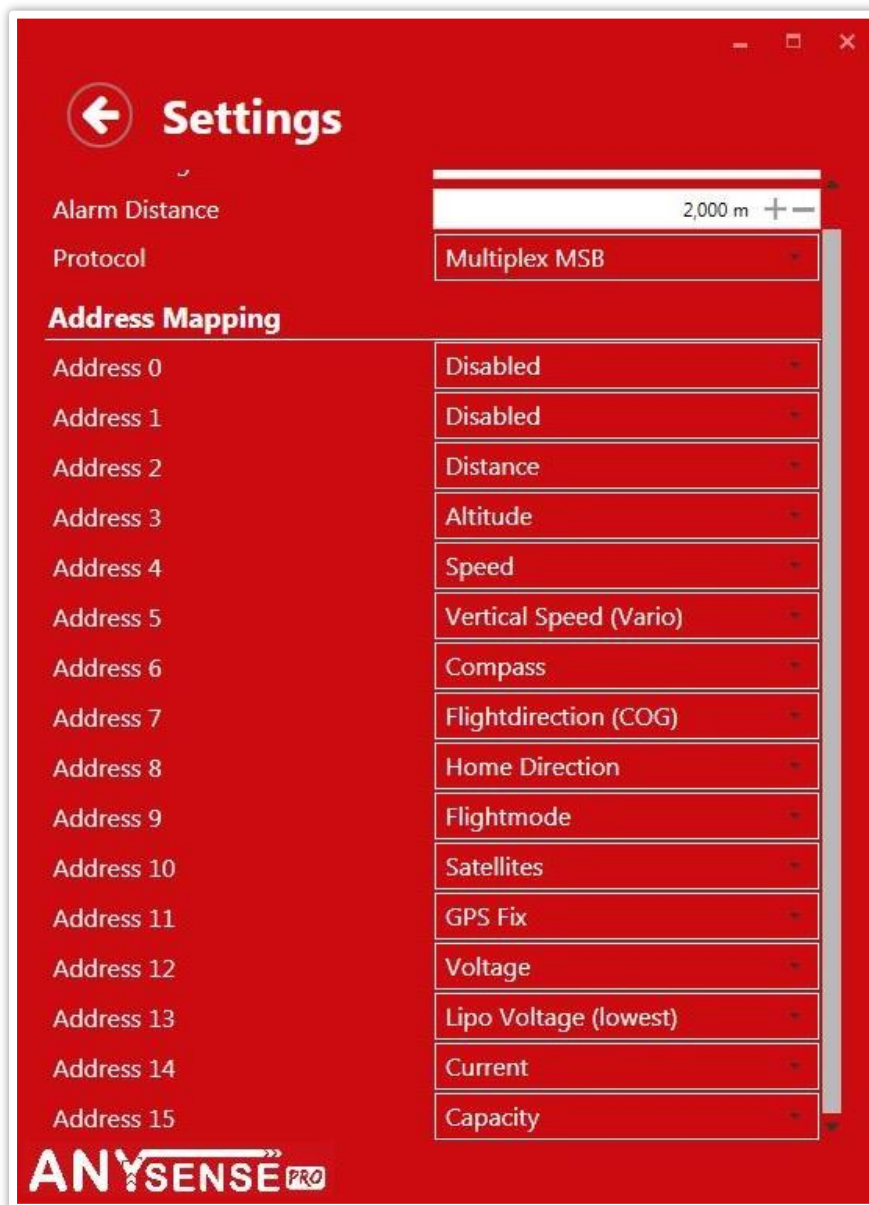
The Jeti Duplex EX system allows you to transmit up to 15 telemetry values. Because AnySense Pro can provide more readings, the telemetry values displayed will be transmitted in the standard configuration.

However, you can also select or disable different telemetry values from the drop-down menu in the relevant value line.



2.2.5 Multiplex

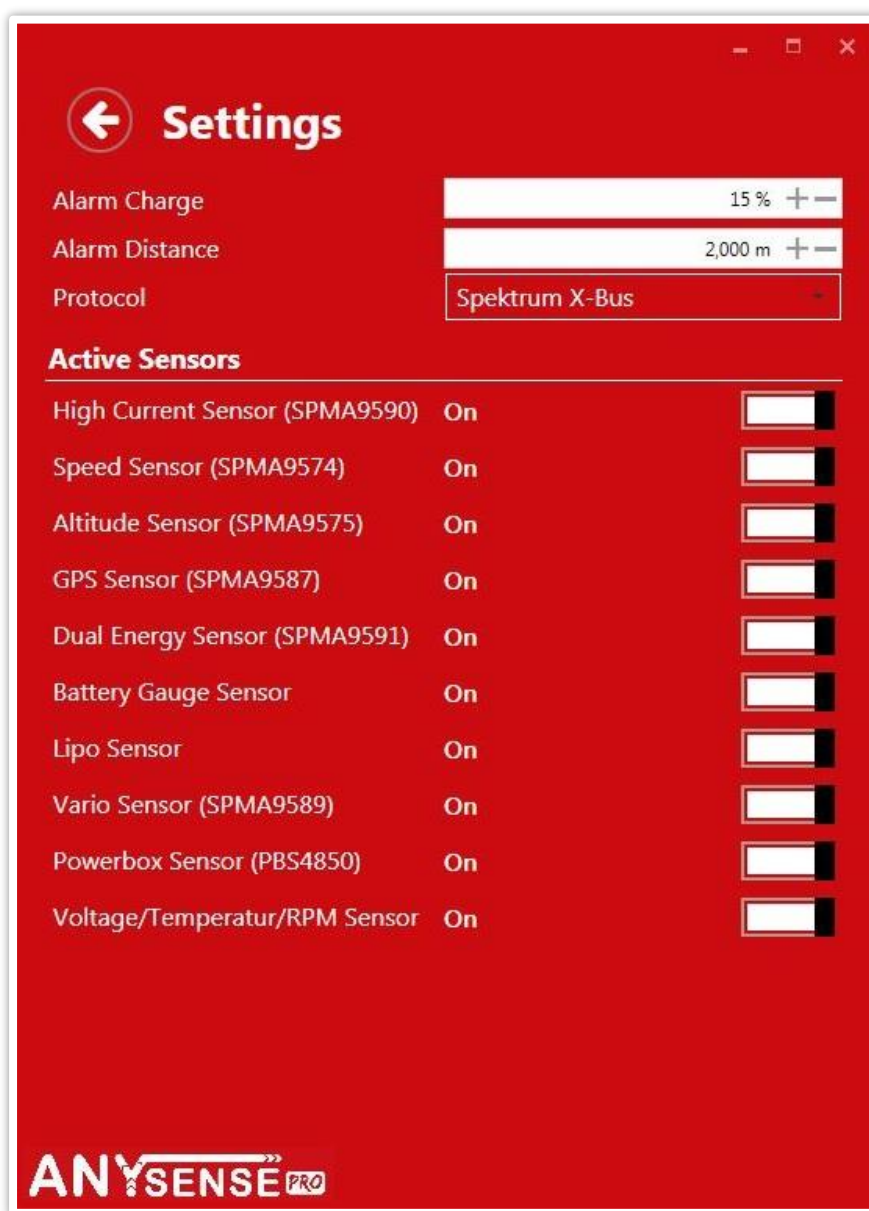
The MultiPlex system allows you to transmit up to 15 telemetry values. Because AnySense Pro can provide more readings, the telemetry values displayed will be transmitted in the standard configuration.



However, you can also select or disable different telemetry values from the drop-down menu in the relevant address bar.

2.2.6 Spektrum

Spektrum offers the following sensors: High-current sensor, speed sensor, altitude sensor, GPS sensor, dual-energy Sensor, battery-gauge sensor, Lipo sensor, vario sensor, power-box sensor, and the voltage/temperature/RPM sensor. Should you already be using one of these sensors, you can set it to OFF by using the “On/Off” switch. By doing so, AnySense Pro's emulation for this sensor will be disabled and you will receive telemetry data from the sensor directly connected to the unit.



3 Connecting to flight control

3.1 DJI

The AnySense Pro telemetry module can be connected to any CAN bus port of your DJI flight control. You can do this by using the AnySense Pro CAN bus cable.

You can check the link between your AnySense Pro unit and your flight control by switching on the multicopter after establishing the CAN bus connection. A permanently-lit orange LED within AnySense Pro indicates that the connection and communication with your flight control have failed.

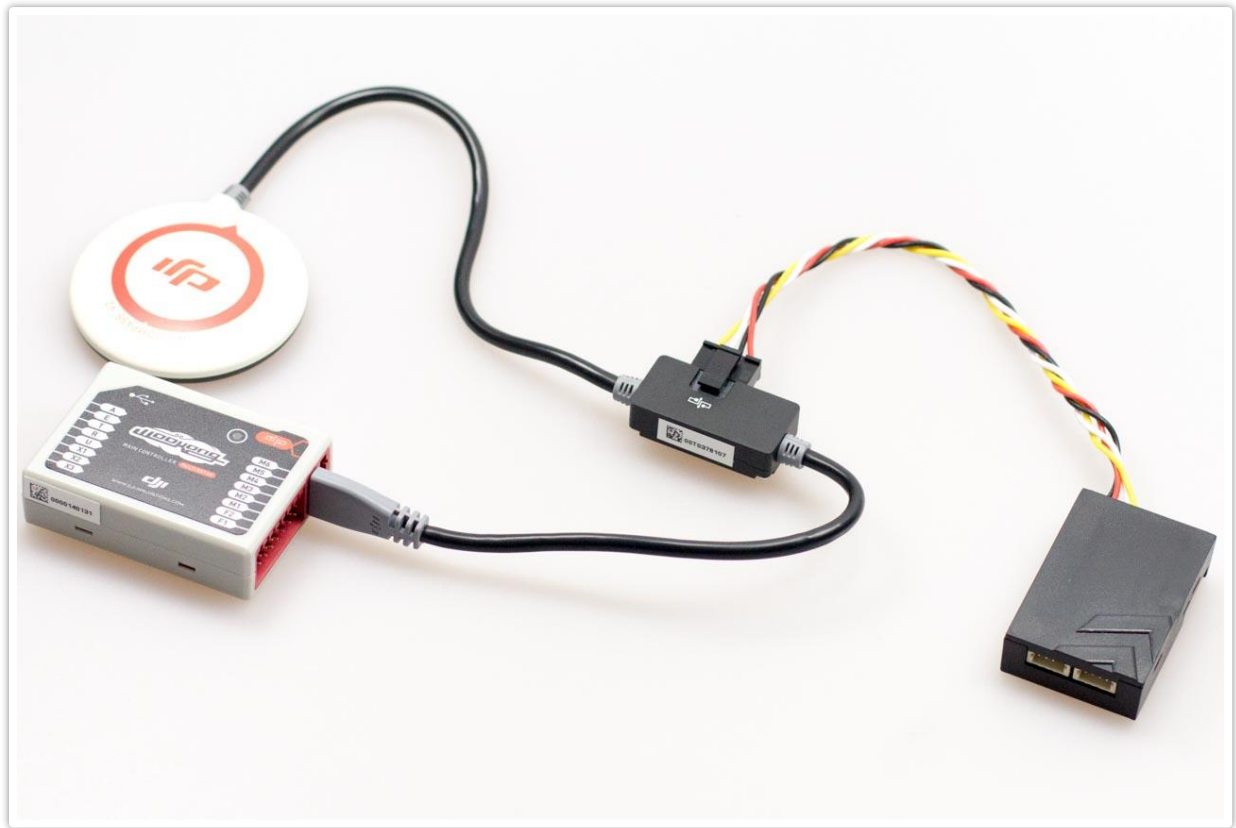
3.1.1 A2-M

AnySense Pro is connected to a free **CAN 1** bus port.



3.1.2 Wookong-M

AnySense Pro can be connected either to Wookong PMU or GPS by using Wookong M.



3.1.3 Naza-M V1/2/Phantom 1

For Naza M V1/V2, the connection with AnySense Pro is established by using Naza PMU V2. For the V1 or the Phantom models, you will need to use the PMU V2 port.



3.1.4 Phantom 2

The CAN bus port of Phantom 2 is located on the landing gear. The CAN bus cable can be run along the landing gear as illustrated here. Please ensure that the cable is not under tension or compressed in order to ensure smooth operation. The telemetry cable is connected to the relevant opening on the lower side of the Phantom.

Should the telemetry cable be too short to install and position the AnySense Pro unit properly, the cable can be extended using a servo extension cable.

3.2 Tarot

3.2.1 ZYX-M

The AnySense Pro telemetry module can be connected to the Tarot flight control by using a Y cable and the AnySense Pro Tarot cable to the LED/OSC port.

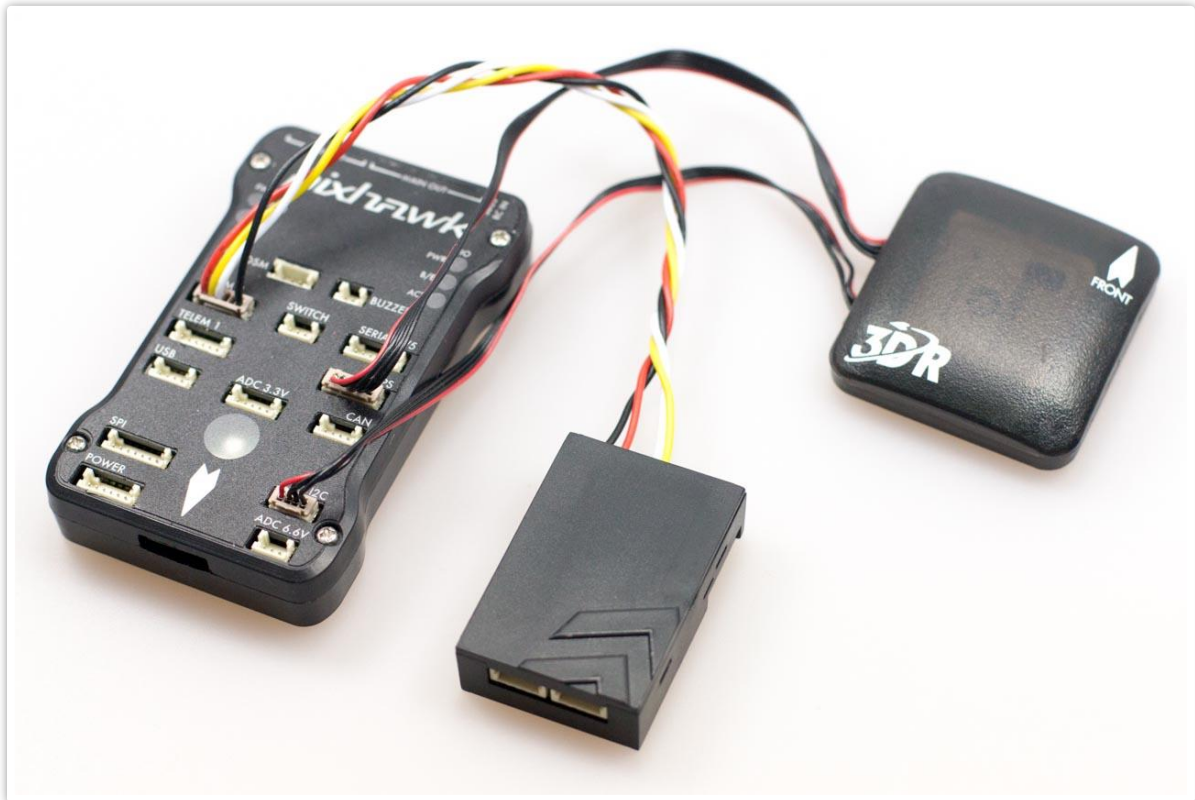


You can check the link between your AnySense Pro unit and your flight control by switching on the multicopter after establishing the connection. A permanently-lit orange LED within AnySense Pro indicates that the connection and communication with your flight control have failed.

3.3 3D Robotics

3.3.1 PixHawk/Iris+

The AnySense Pro telemetry module can be connected to the Telem 1 port of your 3DR flight control. You can do this by using the AnySense Pro PixHawk cable.

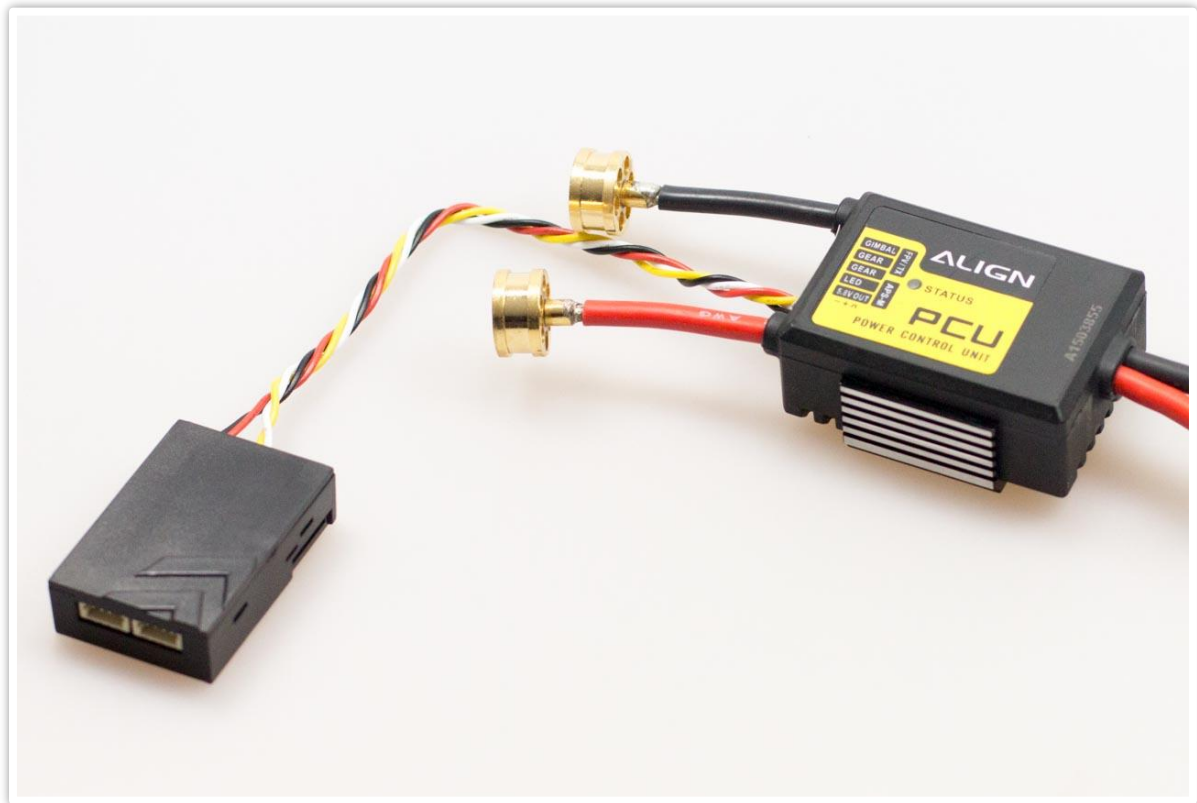


You can check the link between your AnySense Pro unit and your flight control by switching on the multicopter after establishing the connection. A permanently-lit orange LED within AnySense Pro indicates that the connection and communication with your flight control have failed.

3.4 Align

3.4.1 APS-M

The AnySense Pro telemetry module can be connected to the FPV port of your PCU. You can do this by using the AnySense Align cable.



You can check the link between your AnySense Pro unit and your flight control by switching on the multicopter after establishing the connection. A permanently-lit orange LED within AnySense Pro indicates that the connection and communication with your flight control have failed.

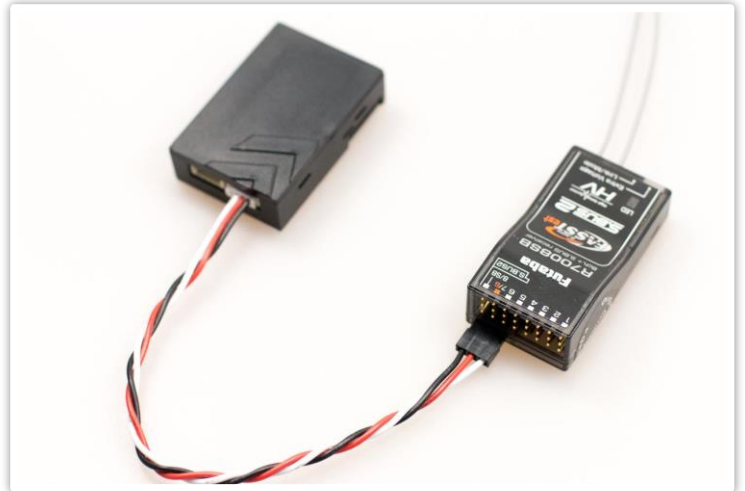
4 Connecting the telemetry system

4.1 Futaba

AnySense Pro is connected to your Futaba transmitter by way of the supplied AnySense Pro telemetry cable.

The settings you will have to select for your remote control will be explained for the Futaba T14SG model for illustration purposes. The process is the same for any S.BUS2-enabled remote controls.

This is how you connect the telemetry cable to the port labeled S.BUS2 on your receiver. Should you already have connected a transmitter to the S.BUS2 port, you can use a Y servo cable in order to run the AnySense Pro unit and your additional sensor using this S.BUS2 port.



This is all you have to do to connect AnySense Pro with the telemetry system. Now switch your remote on and go to Base Menu -> Sensors.

Start slow	Sensor	Telemetry value
1	VARIO-1672	Altitude
		Climbing & descending rate
3	SBS-01V	Total voltage
		Weakest LiPo cell
5	CURR-1678	Electricity
		Capacity
		Total voltage
8	SBS-01G	Speed
		Distance
		Altitude
		Climbing & descending rate

Following this, any existing sensor assignments will be removed by way of the "RELOADING" entry.

Now choose your sensor slot by slot, starting with line number 1.

Selection is made by selecting the DISABLED entry in the sensor list and by selecting the

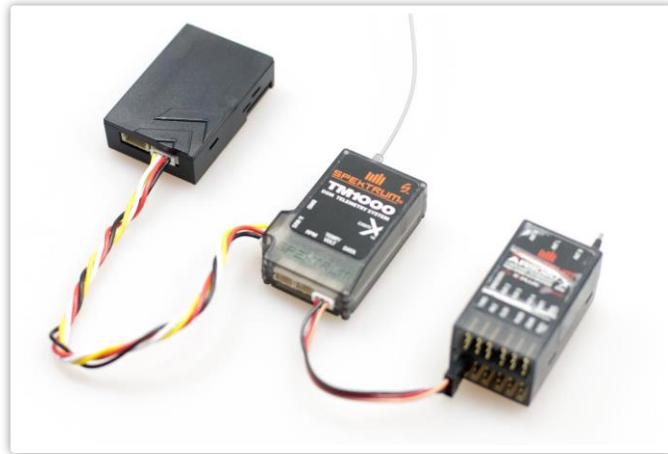
relevant sensor.

After having selected all the sensors as illustrated, telemetry data can be display by going to Base Menu -> Telemetry.

For more information on telemetry, please consult the instruction manual of your Futaba remote.

4.2 Spektrum

In order to establish a connection with the Spektrum receiver, you will need the “TM1000 DSM Telemetry System”.



Connect AnySense Pro to the X bus port of the “TM1000 DSM Telemetry System” by using the supplied AnySense Pro Spektrum cable.

4.3 Graupner/SJ

Depending on the receiver used, AnySense Pro may be connected to the receiver by way of a dedicated or optional telemetry connector. This connector is usually labeled with a T.

Please consult the instruction manual of your remote/receiver to learn how you can operate telemetry sensors.

If you would like to use additional sensors at the same time as using AnySense Pro, you may do so by using a Y servo cable with your receiver.

The GR-24 features a dedicated telemetry port, and, as illustrated here, this port is labeled with a T.



You will be required to restart your remote after it has been connected to AnySense Pro. All the sensors available will be recognized automatically, and AnySense Pro will be ready for use. Please consult the

instruction manual of your remote for descriptions of the available telemetry displays as well as what these mean.

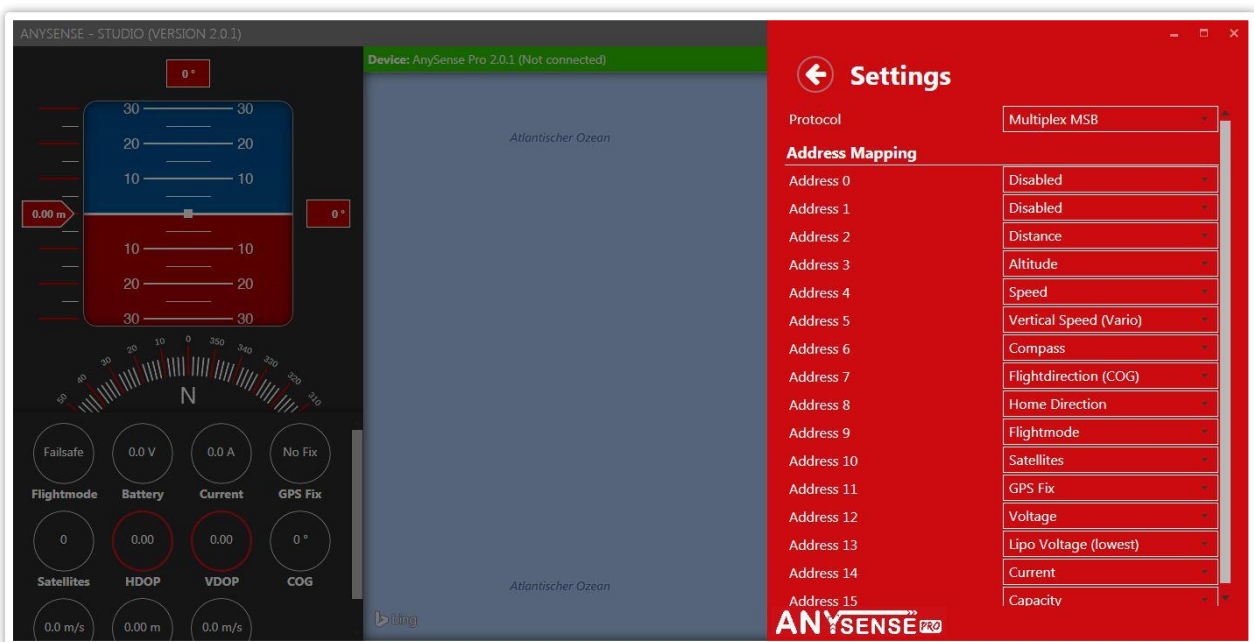
4.4 Multiplex

AnySense Pro is connected to the S port of your Multiplex receiver by way of the supplied AnySense Pro telemetry cable.



Multiplex MSB Telemetry lets you enter 16 telemetry values, starting with address 0 to address 15. Addresses are assigned across sensors. This means, for example, that address 1 may only be assigned once for all of the sensors connected to this sensor bus.

This is why you can define which address should be assigned to which AnySense telemetry value in the Configuration Manager. If, as illustrated in the following image, address 0 is assigned to a different sensor, you can disable the sensor by way of



AnySense.

For each of these addresses, you can set a designation in the Transmitter Menu under “Sensors.” Please refer to the instruction manual of your Multiplex system to learn more about this.

4.5 Jeti

AnySense Pro is connected to the telemetry-enabled sensor by way of the Ext. port.

If used with additional sensors, AnySense Pro can be connected by way of the Jeti Expander EX.



Once you have established the connection as shown here, please switch your remote and multicopter on.

Now any information available will be shown in the telemetry display. For more information on the telemetry display, please consult the instruction manual of your remote.

4.6 FrSky

FrSky sensors of the newer X generation (X 8/6/4 R) have a smart port. This port is usually labeled with the smart port logo and can be found on the side of the receiver antenna. For more information on the S.Port of the X4R, please consult the instruction manual of your receiver.

AnySense Pro can be connected to the S.Port of the receiver as shown here.

If you would like to use additional sensors at the same time as using AnySense Pro, you can make a daisy chain to connect them with the telemetry port on your receiver. Every sensor has a two-lined S.Port for this purpose.



Once you have connected your AnySense Pro, all you have to do is select the telemetry values to be displayed on your remote.

You can do this in the menu of your remote (page 12 – Telemetry) or by using the OpenTX software.

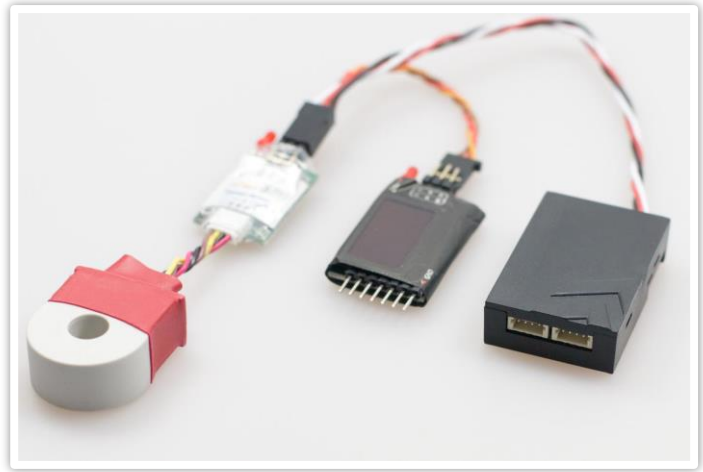
In addition, you can assign different graphic interfaces through what is called LUA scripts.

For more information on LUA scripts, please visit <http://www.open-tx.org/luascripts.html>

5 Expanding with FrSky sensors

AnySense Pro also allows you to connect the following FrSky sensors. All of these have outstanding price/performance ratios. You can connect these units to telemetry systems with Futaba, Spektrum, Graupner, Multiplex, Jeti, and Mavlink.

As part of this, the sensor readings gathered by the following FrSky sensors may be processed and transmitted accordingly to your remote. This is for Futaba S.Bus2, Spektrum X-Bus, GRAUPNER/SJ HoTT, Multiplex MSB, Jeti Duplex EX or Mavlink.



- Lipo sensors (FrSky FLVSS)
- Electricity sensor 40 A (FrSky FCS-40)
- Electricity sensor 150 A (FrSky FCS-150)
- GPS V2
- Variometer
- RPM
- Airspeed

By using several Lipo sensors, you can measure up to 12 cells or more. Much in the same way, the electricity sensor may be connected several times in order to measure voltage in excess of 150A.

For use with several sensors of the same type, you will need to assign a unique ID to each of the sensors.

Connect the FrSky sensors to AnySense Pro. An additional telemetry cable will be required.

FrSky sensors usually use the receiver as a power source. Should you not have a receiver, AnySense Pro will need to be powered separately by way of a telemetry cable.

Please refrain from making further adjustments to AnySense Pro once the sensors have been installed. AnySense Pro transmits all telemetry data automatically to whatever telemetry protocol you have set up.

Please note: Given the fact that you will be receiving a large number of telemetry data from your flight control, please pay attention to the sensors connected. This is to prevent duplicates of telemetry readings.



6 Expansion with MAVLink components (MinimOSD)

AnySense Pro powered by MAVLink protocol adapts the gap between the standard protocol prevalent in the multicopter sector and the other products.

This means that DJI, Tarot, and Align pilots now have access to a wide range of extensions and expert functions that were previously only available to other flight controls.

MinimOSD

MinimOSD is a highly flexible OSD for which a wide range of open-source firmware is available. The images displayed and the descriptions refer to MinimOSD Extra Copter Firmware and MinimOSD 1.1 Hardware.

MinimOSD allows you to set up two different views, generally referred to as panels, for your OSD and to switch between these panels during operation by the flick of a switch on your remote. In addition, there is also an empty panel that allows you to switch off the OSD. The MinimOSD Config Tool allows you to define which telemetry readings should be displayed where on each panel.

More information on

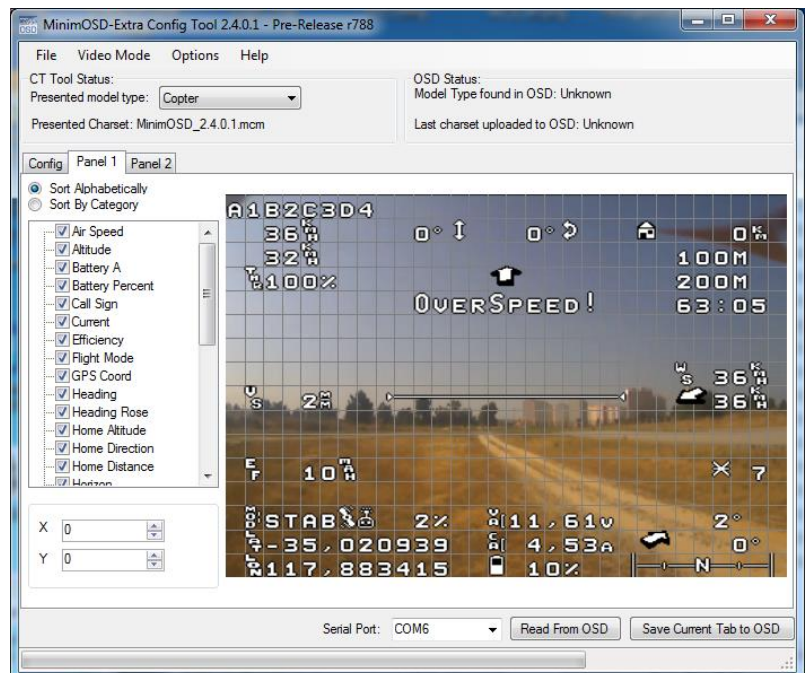
MinimOSD Extra Firmware can be found on the following project page:

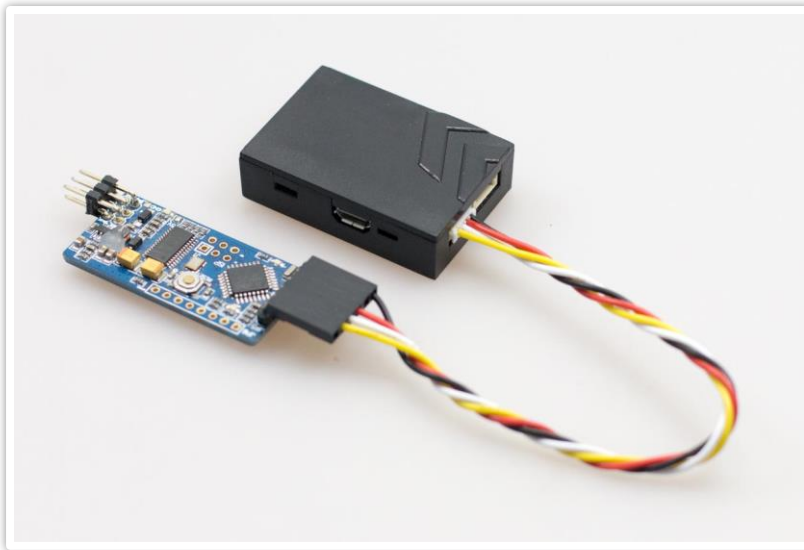
<https://code.google.com/p/minimosd-extra/>

In order to make it easier to connect OSD and AnySense Pro, an optional AnySense Pro MAV Link OSD cable is available.

We recommend closing the solder bridges on both sides of the OSD and having the OSD run on a 5-volt source as illustrated here. This prevents heat-related issues with the OSD.

Just like in this case, the 5-volt voltage supply can be used as a source.





Please connect the OSD using AnySense Pro's OSD port by means of the MAVLink OSD cable. This allows you to supply the OSD with the telemetry readings from your flight control. You do not need to make any other changes to the settings in AnySense Studio. Upon successful completion

of this process, the telemetry data of the AnySense Pro will be displayed on your OSD.