

Operating Instruction & Manual

Sipylus 6 channel unit



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Version 1.3

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1. - Concept overview

Sipylus is a six channel transmitter / pre-amplifier unit. The 6 input channels are as standard pre-defined with 2 x DO, 2 x pH and 2 x temp/conductivity (temp/conductivity selected via software).

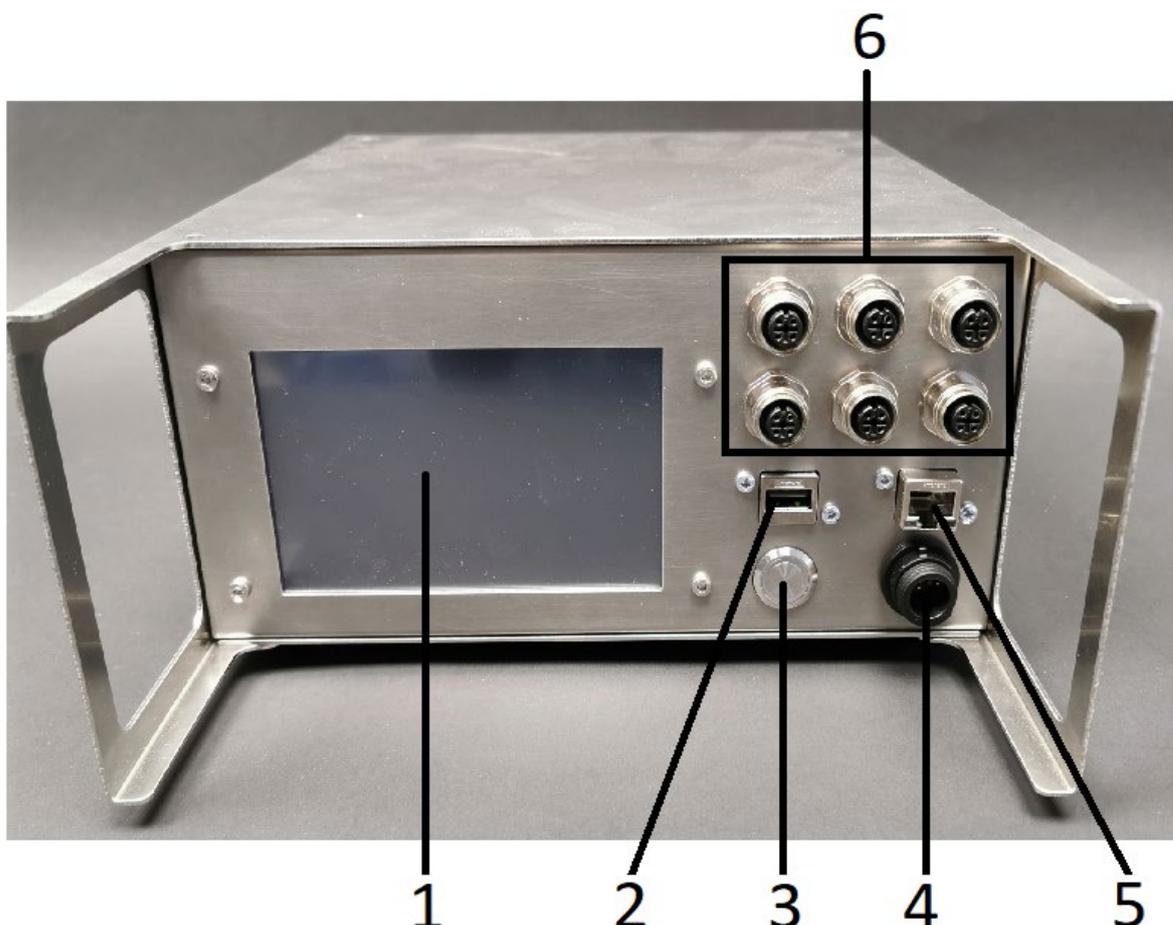
Sipylus can be configured to your need - selectable from the table below - will though prolong delivery time depending on your requirements.

Sipylus is designed, developed and manufactured by www.cronus-pcs.com

Find the latest info here - <https://cronus-pcs.com/products/niobe-sensors/sipylus>

2. - Device Overview

Sipylus is a product from www.Cronus-PCS.com housed in a Hephaestus U2 cabinet.



The front panel is equipped with:

1. TFT 5" colour display
2. USB socket for Wi-Fi access
3. Button main power breaker
4. One Buccaneer socket for 24 VDC supply
5. RJ45 socket for Local-Are-Network (LAN) connection
6. Is a variation of 6 difference plugs according to the combination of sensor reading electronics inside Sipylus

2.1 Specification

When connected to a suitable supply of power the spec is:

External sensor	pH, DO, temperature, conductivity, Glucose only DO sensors from Hamilton is supported
GUI	5" TFT display
Computer power	900 MHz quad-core ARM Cortex-A7 CPU running Linux with Code-Sys PLC software
USB socket	Wi-Fi data download connection to C-CIT Glucose SUS (future version)
RJ45socket	for IP/TCP via LAN and ModBus and OPC communication protocols
Power supply	24 VDC
Noise level, dB	<45
Duty cycle	100%
Orientation	Any
Operating conditions	10°C to 50°C, <80% relative humidity, non-condensing
Lifetime, estimated, hours	>50,000
MTBM (Mean Time Before Maintenance)	>50,000
Cabinet size and material	U2 – AISI304
Weight, kilo	3.5

2.1 Be aware - IMPORTANT

1. USB Wi-Fi unit must be plugged in before turning ON Sipylus to work. USB Wi-Fi unit will not work if inserted while Sipylus is running.
2. After Sipylus is turned OFF wait at least 60 seconds before turn Sipylus ON again - because Sipylus need time to shut down correctly.

3. Start-up

Requirement

The system must be properly installed and connected in accordance with the specifications and previous information. Operator must also have gained familiarity with the Safety Instructions to be found separately on www.cronus-pcs.com/support/Safety_Instruction .

3.1 – Sipylus GUI instructions

3.1.1 – Sipylus Main GUI with Conductivity only

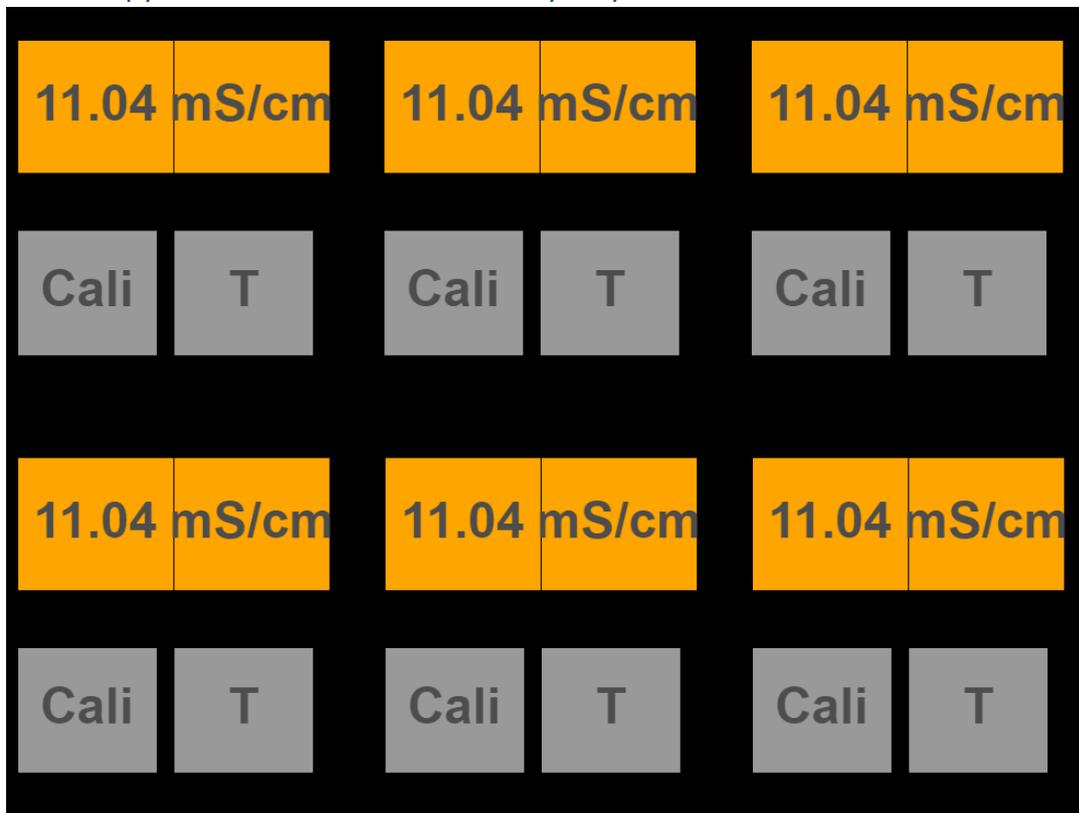


Figure 1 Example of the 6 channels configured for EC with manual temperature adjustment (*Bad screenshot*)

Sipylus can show 6 values from 6 sensors, we call them channels they are numbered as such:

1	2	3
4	5	6

Each channel is also related to a connectors/plugs to the right, numbered in the similar way.

The 6 channels can be configured by the factory to the following options

- 1) Conductivity and temperature for the sensors from CerCell. M12 connector.
- 2) pH with Lemo connector.
- 3) Temperature pt100 sensors with M8 connector.
- 4) DO galvanic sensor with Lemo connector.
- 5) Modbus connector M12 for Hamilton Arc sensors. In this case it is user configurable. The user can choose which channel the Arc sensor shall occupy of the free available channels. Two Arc sensors are supported DO and pH
- 6) Not used. It is also optional not to use a channel

In the following each possible channel option is described.

3.1.2 – Conductivity and temperature

The display shows temperature and $\mu\text{S}/\text{cm}$ or mS/cm and two buttons Cali or T. The temperature is automatically used for adjusting the conductivity measurement. It happens every time the temperature has changed $0.2\text{ }^{\circ}\text{C}$

T is for calibration of temperature sensor. Press T and a dialog window pops up. Press on the shown temperature. Next, enter a temperature which you think is right and press OK.

Next, press “Set Temp” and the temperature sensor is calibrated. Press “CANCEL” to cancel the entered value.

Cali is for calibration of the conductivity sensor. Pressing Cali and Figure 2 is shown. Either a one point or a two-point calibration is possible. All calibrations start with a dry calibration which means $0\text{ }\mu\text{S}$ in other words the sensor is not immersed in a liquid.

Before a calibration is possible the measurement must be stabilized if it isn't stabilized the button will be greyed out. It can take minutes and it is the users' responsibility to decide when the value is stabilized enough.

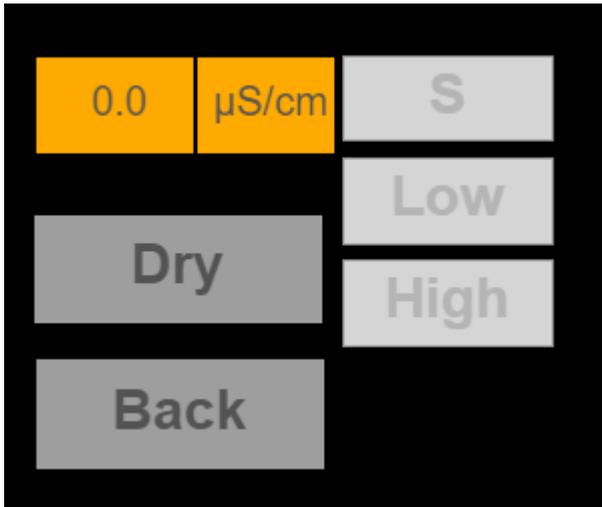


Figure 2 No calibration has been done but the measure is stabilized. Ready to go.

1. Dry – a dry calibration is only okay to start if the conductivity sensor is completely dry.
It will be greyed out if the measurement hasn't stabilized. It can take minutes.
2. S – single calibration is when only 1 point of calibration is needed.
It will be greyed out if no dry calibration has been done or if the measurement hasn't stabilized. It can take minutes. It will also be greyed out if a two points calibration has been initiated.
3. Low – low calibration. The first calibration of a two-point calibration with the low value.
It will be greyed out if no dry calibration has been done or if the measurement hasn't stabilized. It can take minutes. It will also be greyed out if a single points calibration has been initiated.
4. High – high calibration is the second point of a two-point calibration with the high value.
5. It will be greyed out if no low calibration has been done or if the measurement hasn't stabilized. It can take minutes.
6. Back – go back to main GUI



Figure 3 Dry calibration has been done and measure is stabilized.

The calibration can be done with both a single and a low-high calibration, so the measure can be more precise if the area of measure is known and Sipylus is calibrated with Low-High calibration, where the single calibration will work best if it is calibrated with a point in the middle of the target range.

To do single calibration then:

1. Do a Dry calibration
The measure will vary a little $<10\mu\text{S}$
2. Do a S calibration
3. Go Back

To do Low-High calibration then:

1. Do a Dry calibration
The measure will vary a little $<10\mu\text{S}$
2. Do a Low calibration
3. Do a High calibration
4. Go Back

To calibrate a little patience is needed, cause the sensor has an average value over 30 sec, and can take some time to settle, so that's why the buttons can be greyed out, then simply wait until they are available to press and start calibration, it is also very important to make sure the sensor tip is free of air bubbles so when in fluid stir it a bit if possible.

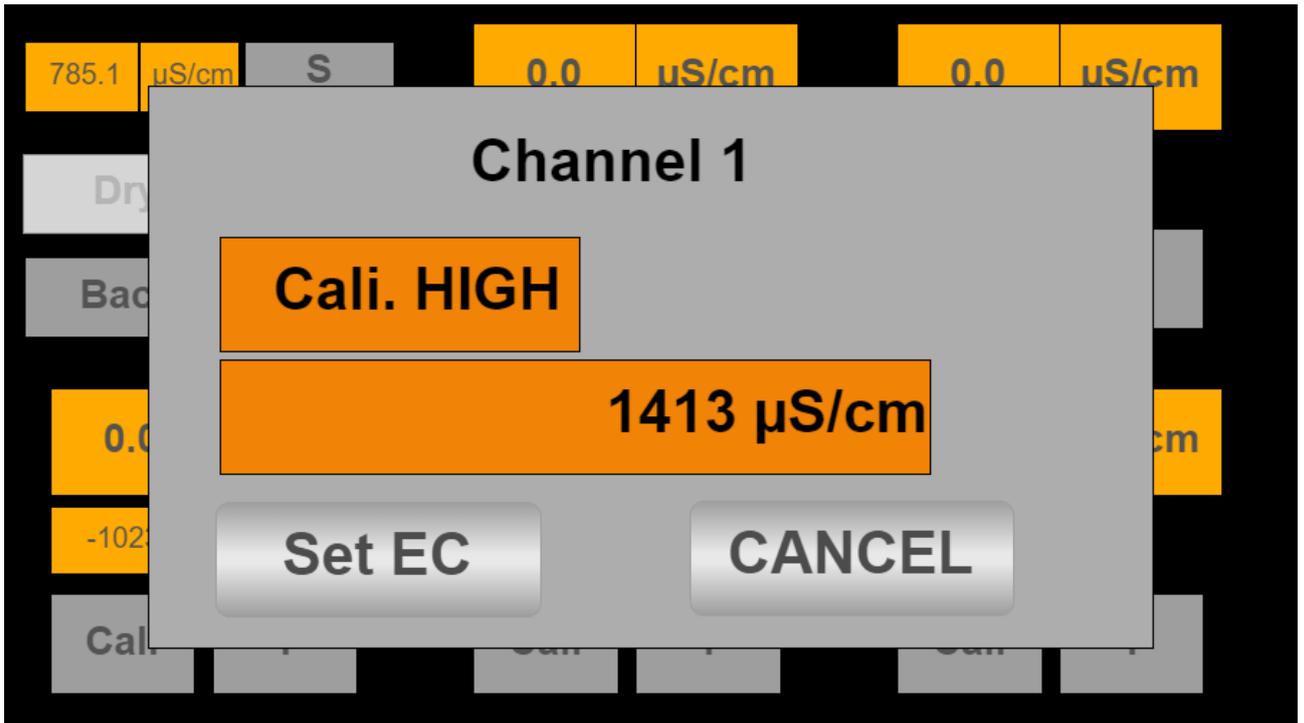


Figure 4 The Dry calibration will do itself when pressed, but the S, Low and High calibration will get a similar pop-up screen

Next, press the area where the value is showed and set it with the keypad that is showed, then either press Set EC to set value or press CANCEL, to go back without any changes.

Next, when single or Low-High calibration is done, Sipylus is ready to measure the value of the target fluid, all 6 channels are separately calibrated.

3.2.1 – Sipylus pH calibration GUI section

The display shows pH, temperature and two buttons, Cali or T. The temperature is automatically used for adjusting the pH measurement. It happens every time the temperature has changed 0.2 °C

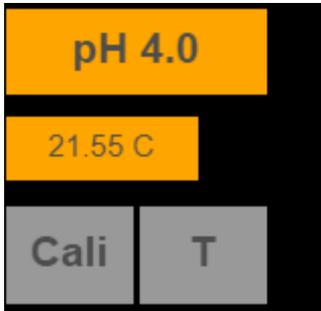


Figure 5 Icon on given channel for pH measurement

T is for calibration of temperature sensor. Press T and a dialog window pops up. Press on the shown temperature. Next, enter a temperature which you think is right and press OK.

Next, press “Set Temp” and the temperature sensor is calibrated. Press “CANCEL” to cancel the entered value.

Cali is for calibration of the pH sensor. Pressing Cali and figure 6 is shown. A one point, a two-point or a 3-point manual calibration is possible. All calibrations start with a middle-calibration, called Mid.

Before a calibration is possible the measurement must be stabilized if it isn't stabilized all buttons will be greyed out. It can take minutes and it is the users' responsibility to decide when the value is stabilized enough.

1. Low – low calibration. The first calibration of a two-point calibration with the low value. It will be greyed out if no Mid calibration has been done. It will be greyed out if the measurement hasn't stabilized. It can take minutes.
2. Mid – single calibration is when only 1 point of calibration is needed. It will be greyed if the measurement hasn't stabilized. It can take minutes. It will also be greyed out if a two points calibration has been done.
3. High – high calibration. The first calibration of a three-point calibration with the high value. It will be greyed out if no low calibration has been done or if the measurement hasn't stabilized. It can take minutes.
4. Mode – Calibration is made from the tag which is attached to the sensor.

5. Back – go back to main GUI

3.2.1.1 – Sipylus manual pH calibration

To do single calibration then:

1. Do a Mid calibration, using pH around 7
2. Go Back

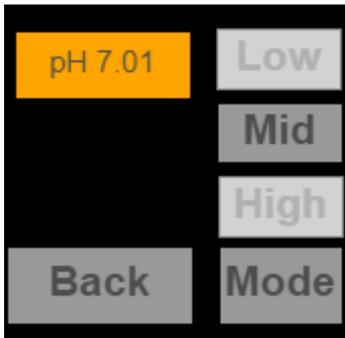


Figure 6 pH calibration screen initially

To do 2-point calibration then:

1. Do a Mid calibration, using pH around 7
2. Do a Low calibration, using pH around 4 or lower
3. Go Back



Figure 7 pH calibration screen before Low calibration

To do 3-point calibration then:

1. Do a Mid calibration, using pH around 7
2. Do a Low calibration, using pH around 4 or lower
3. Do a High calibration, using pH around 10 or higher
4. Go Back

To calibrate a little patience is needed, cause the sensor has an average value over 30 sec, and can take some time to settle, so that's why the buttons can be greyed out, then simply wait until they are available to press and start calibration, it is also very important to make sure the sensor tip is free of air bubbles so when in fluid stir it a bit if possible.

Please note, that it is recommended, that all calibration liquids are at least 3 pH apart from each other.

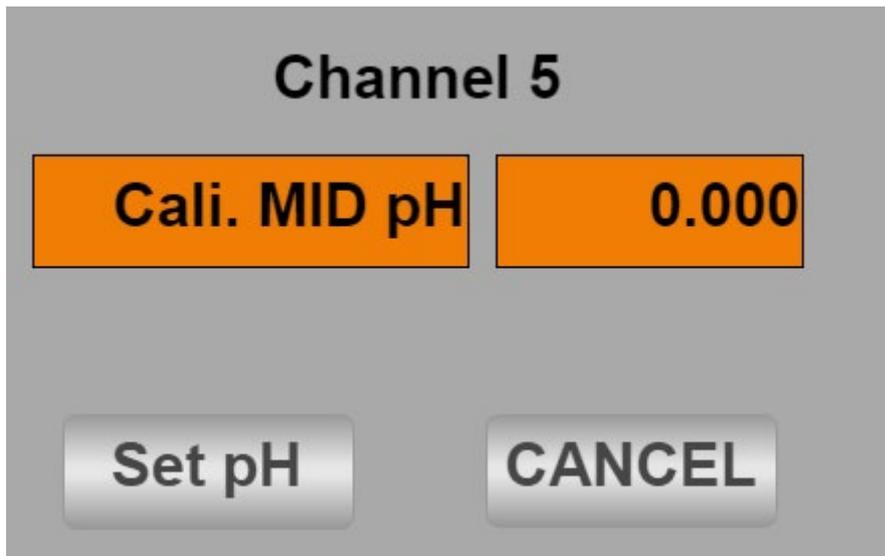


Figure 8 Pop-up screen, when Mid is pressed

When Mid is pressed, a pop-up screen will appear, as show on figure 8. Press the right button saying "0.000". Here the pH-value of the pH liquid will be written, using a keyboard the is shown upon pressing the button. When the correct value is written, press "set pH", and the calibration will be performed.

All six channels are calibrated separately.

3.2.1.2 – Sipylyus automatic pH calibration

For an calibration made from the tag attached to the sensor (slope and zero offset), press "Mode" shown on figure 6 and 7. Then a pop-up screen will appear, as seen on figure 9:



Figure 9 Pop-up screen for automatic calibration

All information needed for this calibration is noted on a tag, placed on top of the pH-probe.

Press the button showing the value, and a pop-up screen with a keyboard will show. When the values are written, press okay, and the buttons showing the values, will now be black, as seen on figure 10:

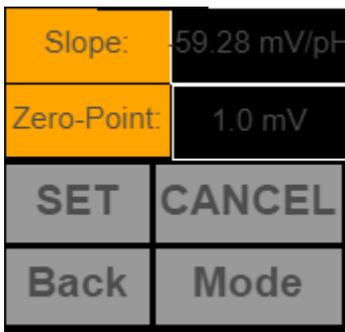


Figure 10 Calibration screen before pressing SET

Please notice that the slope is always negative.

To save the values, press SET. To perform a manual calibration instead, press Mode. To cancel the calibration without saving the changes, press CANCEL.

All six channels are calibrated separately.

4. Communication

- Internal 5" touch sensitive TFT display hooked to the Apollon PLC build into Sipylus
- External connection to PC, PADs or Smart-Phones via Wi-Fi for programming and info from the built-in webserver
- USB port for USB adapter with software upgrades / Wi-Fi connection
- RJ45 port for LAN and OPC
- Modbus connection on some models for Hamilton ARC sensors adaptor

4.2 - Wi-Fi connection

When Sipylus is equipped with the NetGear Wi-Fi access point a webhost will be accessible from a browser.

On your PC, PAD, Smart-Phone go into "Settings"/ Wi-Fi NETWORKS" and check that you can see the SSID (Service Set Identifier): SipylusXX-cronus and XX is the serial number. Next, select the network.

If it is the first time you access the network you will be asked for "Phrase", "password" or "network security key" or similar. You enter cronus-sipylus

. Return to a browser and write anything in the address line and press ENTER for access. It might only work if the device (PC, PAD etc) only is connected to one network.

4.3 – LAN IP/TCP connection

Check present development status on <https://cronus-pcs.com/support/>

4.4 – Software upgrade

Check out www.cronus-pcs.com/support/communication/software-upgrade

4.5 – Power supply

CE marked Sipylus operate on 24 VDC.

5. Safety precautions

Various components require individual attention. Operator must also have gained familiarity with the Safety Instructions to be found separately on www.cronus-pcs.com/support/Safety_Instruction .

END