OPENGROW.

GRONODE

TANKBOT

SOILBOT

POWERBOT 1 2 3 4

Agricultural Automation Techonologies

GROLAB
CATALOGUE
2019

CONTENTS

1. Letter from our CEO

I would like to start this letter by thanking all of our customers, partners, suppliers and all the people who have supported us somehow, it's because of you that we're still here.

The year 2019 marks the Open Grow's fifth anniversary, also the third year since we finished and start selling our first and main product, GroLab.

It has been a much more challenging and demanding adventure than I ever thought it would be, but at the same time quite rewarding. It is a pleasure and pride to share all these years with such sensational people, in this way I would also like to thank all the people who made/are part of the Open Grow team.

November 2016 was the month we launched GroLab to market, since then we have not only increased our distribution network, currently more than 35 sale points but also continued to improve GroLab, implementing more than 43 new functionalities through free updates for both GroLab Software and modules firmware.
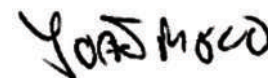
Inside this catalogue you will NOT find a list of regular growing equipment, you'll get an introduction to the GroLab world, with all the controllers and equipment that makes the grower's life easier every day. With more than 20 sensors and actuators compatible with our system available in our catalogue, from pH & EC probes, flood detectors, temperature & humidity sensors, dosing pumps or even solenoid valves. However, GroLab is not limited to just those sensors/actuators, thousands more can be interfaced with it due to its versatility.

We are proud to have more than 250 customers around the world, from scientists finding new nutrients formulas, astronauts figuring how to feed themselves in Mars, professionals automating their greenhouses, or medical patients growing their own medicine. It's a pleasure to help each and every one of these cases.

Thank you for reading this catalogue and hope you enjoy it!

Let us know if you have any questions or if you need additional info, it is always our pleasure to help.

Best Regards,

João Melo
CEO, Open Grow
joao.melo@opengrow.pt

OPENGROW.

WELCOME TO THE FUTURE OF AGRICULTURAL AUTOMATION

GroLab is the most versatile and powerful grow controller, that allows to automate all the aspects of any agricultural grow.

This system is intended to suit from hobbyist to professional growers, providing industrial grade technology with an extremely easy-to-use interface.

Its modular architecture makes it possible to adapt to any environment regardless of its size, type, growing medium or growing system.

GroLab monitors every variable and precisely control all the devices from a growing environment, in real-time, through an intuitive software. All of this from anywhere at any time thanks to remote control and notifications systems.

Improve the growing productivity and drastically reduce its maintenance time with GroLab!

What exactly does GroLab provide?

GroLab is a modular system composed of distinct modules: GroNode, PowerBot, TankBot, SoilBot, and UserBot. Each module has its own capabilities, that can be combined to fulfill the requirements of any grower.

GroNode is the core piece, it is responsible to control the other modules, supporting up to 4 of each type. GroNode analyzes all the data from sensors/devices plugged on the modules and then acts/notify based on the user instructions, configurable through the GroLab Software and stored in the GroNode's memory.

PowerBot is an all-in-one power supplier, capable to automate the basic elements like temperature, humidity, airflow, lighting, and irrigation.

TankBot is a tank management controller, it can control the irrigation, nutrients dosing, pH correction, and tank management tasks.

SoilBot is a substrate analyzer, that completely monitors the plants' substrate regardless of whether it is soil, rock wool, coconut or a recurrent dipping of roots in water.

The grower is free to choose which GroLab modules he wants to acquire, the best part is that he can expand the system at any time in the future.

On the example schematics below, it is possible to see a combination of several GroLab modules, acting together to fully monitor and automate a grow tent with two distinct grows (one in soil and the other in hydroponics). As shown in the schematics, GroLab is taking care of the lamp, climate (temperature & humidity), irrigation (based on substrate's moisture), nutrients dosing and pH correction. GroLab also adds a security layer to the growing area, it supports smoke, flood and fire detectors, that can be used to create procedures to act in case of any issues arise.

GroLab Example Schematics

GROLAB SOFTWARE **THE SYSTEM'S INTERFACE**

The GroLab Software main purpose is to allow to fully configure the whole system, providing all the tools to customize modules and devices settings matching the functionalities of any agricultural growing system.

Tracking the grow(s) progress was never so easy, this software provides a quick way to integrate IP cameras and access a variant of data inputs, like graphs, historical data, and trends.

All sensors/actuators data can easily be exported to a friendly file for an external deep analysis or periodically uploaded to a third-party cloud server.

Thanks to the remote control feature, this easy-to-use software allows to keep controlling and monitoring the growing area, even if the user is on the other side of the planet.

GroLab Software provides all of these features in a forward thinking, easy and simple way. It is full of simple illustrations that provide a quick introduction to the growing automation world. Based on a simple click and go function, it basically extinguishes all the complicated operations usually associated with this kind of product.

Nowadays, our time is a valuable concept and it can be difficult to constantly take care of plants. Using GroLab means no more arduous tasks and time-consuming maintenance.

MODULES

After installing the GroLab modules and software, it's time to start configuring the system. The first step is to configure the modules, for that GroLab software offers a menu that basically it's an illustration of your modules. With just two or three clicks it's possible to configure any device/sensor plugged to the modules.
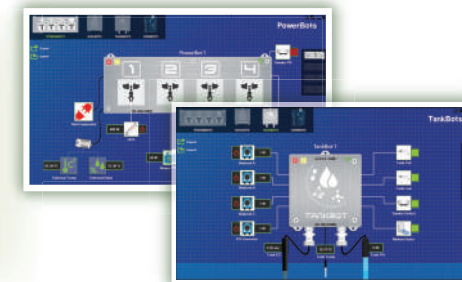
SCHEDULES

GroLab Software offers all the tools a grower expect from a scheduling system and even more. Create from simple daily schedules to more complex ones, with recurrence, persistence or even a schedule that only executes once. In addition, it's possible to restrict which weekdays it will operate as well as set a specific start date.

ALARMS

Unlike schedules, alarms are not triggered by a date/time, but by a condition input. This condition can be anything user wants, from a sensor to a device. Besides that, alarms offer lots of customization and can act in any device or group of devices that belong to an area/grow. Alarms, provide distinct modes of acting, including timed actions.

AREAS & GROWS

GroLab can control up to 4 distinct growing areas with 2 grows each. Based on a drag-n-drop system, GroLab Software offers a quick and intuitive way that guides the user through the configuration of its own growing areas and nutrients solution. This way, a couple of minutes is enough to fully configure all the areas and grows.

GROLAB SOFTWARE   THE CONTROL BOOTH

QUICK ACCESS TO CHARTS

DID YOU KNOW?

GroLab Software offers a panel that provides real-time monitoring of 4 Areas and 8 Grows, with quick access to all the data and even allows to perform a quick tuning.
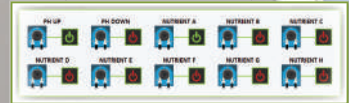
AREA/GROW SELECTOR

AREA'S DAY/NIGHT STATUS

CAMERA VIEWER

NUTRIENTS & PH PANEL

AREA & GROW NAMES

AREA/GROW CURRENT DAY

POWER CONSUMPTION

EXTRA DEVICES/SENSORS PANEL

My New Area - Day 38

My New Grow - Day 26

TOTAL POWER
899 W

INSTANT POWER
0 W

SENSORS   DEVICES

Button 1

MOTION DETECTOR

VENTILATION OUT

SMOKE DETECTOR

STARTED AT
08:00:00
27-09-2017

ENDS AT
20:00:00
27-09-2017

NUTRIENTS

FILL   PH   EC   TEMPERATURE

5.90   2.25 ms   19.72 ºC

26.30 ºC   52.30 %

SUBSTRATE TEMPERATURE   SUBSTRATE MOISTURE

20.00 ºC   50.05 %

TANK LEVEL

TANK MONITOR & CONTROL

AIR PUMP   WATER PUMP   FEEDER

FLOOD SENSOR

GROWING SYSTEM

CONNECTIVITY & CLOCK

11:47:47
27-09-2017

DID YOU KNOW?

GroLab was released in November 2016, since then more than 40 new features have been added through free updates for both GroLab Software and modules.

Indoor X   Outdoor

Area 1 Light

GROW CONTROL   G2   CONFIG

OPENGROW.

FAQ

Q Why choose GroLab instead of other grow controllers?

A GroLab system is capable to cover all the aspects of any agricultural grow. Climate regulation, lighting, airflow, fires and floods detection, irrigation, nutrients dosing, pH correction, tank management, IP camera surveillance, notifications, and remote control are just some examples of the GroLab capabilities.

Thanks to the GroLab modular architecture, it is possible to adapt GroLab to any environment regardless of its size, type, growing medium or growing system.

In addition to all of this, Open Grow is a company that counts with specialized teams that daily dedicate themselves to improve the GroLab system. Constantly retrieving users feedback to provide the features they want.

GroLab system includes automatic updates feature, that allows the users to receive free updates not only for the GroLab Software but also for all GroLab modules. Giving access to new features without the need to buy the equipment again.

GroLab never stops growing.

Q Does GroLab work with any growing environment?

A GroLab was designed to scale and adapt to any type of growing environment, whether it is a small grow-tent/room or an industrial one, with several areas and grows. GroLab offers a wide variety of features that can be freely combined, we do not force growers to follow a fixed path or a configuration preset, this means growers can literally play with the system the way they want.

Believe it or not, GroLab system can even be used to automate other areas outside the agricultural growing domain, like aquariums automation. Open Grow is a company that challenges the automation world, if you have a peculiar system that you think GroLab can't fit in please challenge us back, we will surprise you.

Q Is it required to have third-party devices to make GroLab work?

A GroNode, the core unit of GroLab system, is a powerful computer that is capable to continuously execute hundreds of instructions by its own, meaning that it is not required to have other third-party devices to keep GroLab working*.

However, to configure or perform detailed analysis it is required to have a PC with GroLab Software installed. After performing the configuration or the desired analysis, the user can close the software and shut down the PC. Everything will keep working the same way, 24 hours a day.   *Note that GroLab is a grow controller, so obviously you will need to have growing devices (lamps, pumps…) in order to control/automate them.

Q Is GroLab compatible with other manufacturers equipment?

A GroLab is a versatile grow controller designed to not force the user to follow a fixed path or to use specific equipment.

In this way, for the electrical devices, we guarantee full support for 230VAC/120VAC devices when using the PowerBot and full support for 12VDC/24VDC devices in the case of using TankBot, regardless of the manufacturer.

When talking about sensors, TankBot is fully compatible with any kind of switch sensor, it also supports most of pH and EC probes that uses a BNC connection.

Q How to install GroLab?

A Open the package containing the GroLab modules, choose the preferred location and place them, plug the power supply cables, antennas and the desired sensors/devices to the GroLab modules.

Apart from that, it's only needed to plug the Ethernet cable on GroNode and connect it to a router, PC or another access point.

Install GroLab software, open it, type GroNode's serial number and authenticate with credentials. After those steps, you are ready to fully use GroLab system.

Q What are the average GroLab system installation and configuration times?

A The installation and configuration times are always related to the number of GroLab modules acquired and the desired sensors/devices to plug on the modules.

However, using GroLab Starter Kit (composed by GroNode and PowerBot) as a reference, the approximately average times are 20 minutes to install and 30 minutes to configure.

This means it will take less than 1 hour to fully install and configure GroLab Starter Kit.

Q Is it necessary to have GroLab connected to the Internet?

A No. GroLab system can fully operate locally. To access GroLab system through GroLab Software, you can choose to plug the GroNode's Ethernet cable directly to PC, router or another access point. Internet connection is completely irrelevant for GroLab core features, it is only required if you want to use remote control, e-mail notifications and/or cloud features.

Q What is the maximum allowed distance between GroLab modules?

A GroLab system is composed of different module types: GroNode, PowerBot, TankBot, SoilBot, and UserBot.

GroNode is the system's core unit that communicates with all the other modules through a wireless network.

When placing the modules in the growing area(s), take in mind the distance between GroNode and other modules. For the majority of environments, our advice is to not exceed 100 meters without obstacles and 25 meters with obstacles.

Since the distance can change based on obstacles, its always recommended to try it out by yourself. For that, place the modules close to GroNode and turn them on. Then with GroLab Software keep checking modules connectivity while moving them away from GroNode. This way you can discover the maximum distance for GroLab modules on your growing environment.

Q Can GroLab be used without a router?

A Yes. It is possible to plug the GroNode's Ethernet cable directly to the PC or another access point.

Also, it is not required to constantly have GroNode's Ethernet cable plugged. It is just needed to access the system, to perform operations like configuration, monitor and analysis.

Q Are there any additional costs associated with the GroLab Software?

A GroLab Software is free. It is included in the USB pen that comes with every GroLab Kit. In addition, it is available for download at opengrow.pt/software. The software also contains a demo mode, which gives the user the possibility to explore the features and interface, without using any GroLab module, this way he can get an idea how easy it is to configure and use GroLab before buying the system.

GROLAB NETWORK

250+ CUSTOMERS AROUND THE WORLD

3+ DISTRIBUTORS IN EUROPE

One easy-to-use grow system, fully automated that has the ability to control everything!

Andy
London Grow (UK)

We can always tell when a grow gear has been designed by real growers. Super impressed with the Open Grow automation starter set (GroNode & PowerBot). With growing automation, we stand to harvest more while working less.

Erik Biksa
Grozine (Canada)

9+ **10+** **12+**

Pavel Brands
Nature Tech (Israel)

Filipa Pereira
NutriNova Researcher (Portugal)

We have started to connect the system in one of our grow tents... I have to admit the whole process is very straight-forward and quite easy to grasp... the software configuration is beyond easy!

20+ PARTNERS

GroLab is a very useful system in the research I'm currently working on. It allows a precise and automatic control of the amount of nutrients to be supplied to plants.

20+ COUNTRIES

35+ SALE POINTS

1000+ UNITS SOLD

100+ DIFFERENT STRAINS ALREADY CONTROLLED

OPENGROW.

GroNode
Ref. KIT0005

GRONODE **THE CENTRAL CONTROLLER UNIT**

A state of the art unit that controls the other GroLab modules, making it the system's core piece.

GroNode communicates with the other modules through radio frequency, sending them instructions and retrieving information about all the elements from the growing environment. It can singly handle up to 4 distinct growing areas with 2 grows each and up to 16 different modules.

GroNode is capable to execute hundreds of instructions and to store a large amount of data allowing a detailed analysis about the plants' life cycle.

This little controller automates all the growing environment tasks, freeing the user from all the hard work. In addition, it can send notifications if a risk situation arises or a simple daily report, keeping the grower always up to date.

It also provides remote control, cloud features, e-mail notifications and the tools to create your own homemade security system!

GroNode can be your grow assistant that knows all the info regarding the needs of your plants!

Autonomous

It is not necessary to have a PC or other third-party device for it to continue to take care of the plants 24/7.

Programmable Procedures

Alarms & schedules are the 2 main types of programmable procedures. GroNode can store and execute up to 100 of each type allowing a precise and extensive automation of any grow(s).

Data-logging

GroNode is capable of storing hundreds of thousands of data. With data-logging and data-visualization features, it is possible to do a detailed analysis of the plants' life cycle.

Modular

Capable of controlling 4 modules of each type, allowing to easily adapt GroLab to any environment regardless of its size, type, medium or growing system.

Multitasking

GroNode has the ability to perform hundreds of tasks simultaneously. This capacity provides the GroLab system fast and precise reactions based on the desired user instructions.

Remote Control

Providing Internet connection to GroNode, allows the user to activate the system's remote control. This feature grants user access from anywhere at any time through the GroLab software.

GroNode Installation Example Schematics

GRONODE   THE CORE

ANTENNA

POWER/USB

RESET BUTTON

ETHERNET

MEMORY STORAGE

FLASH

MICRO PROCESSOR

CLOCK BATTERY

3V 250mAh

BUZZER SINGLE TONE

LED RGB

MANUAL FW UPDATE BUTTON

NET RESET BUTTON

SUPPORT BRACKETS

GRONODE

Specifications

Dimensions	91mm x 91mm x 28.7mm
Exterior	Casing: Stainless Steel Colors: Silver Buttons: Reset, NET Reset, FW Update
Power Supply	USB - 5VDC 1000mA
Connections	USB 2.1 type B Ethernet LAN RJ45 RP-SMA female
Includes	Antenna USB Cable Type B-A (2 meters) Power Adapter Type A 230AC-5VDC Ethernet Cable (1.5 meters)
Inter-Module Communication	Radio Frequency - 2.4GHz
Battery	CR2032 Lithium 3V 250mAh
Storage Memory	2MB
Audiovisual Indicators	Buzzer single tone LED RGB
Warranty	2-years limited hardware warranty

PowerBot
Ref. KIT0004

POWERBOT **THE POWER OUTLET WITH CLIMATE CONTROL**

PowerBot is a complete power supply module from the GroLab family. It provides the tools to monitor, control and automate all the basic elements of any agricultural grow, maximizing the plants' growth and overall efficiency.

Equipped with a temperature & humidity sensor, allows the PowerBot to keep the perfect climate conditions for the plants, at the same time GroLab makes it simple and easy to customize the desired temperature & humidity values.

PowerBot has 4 universal outlets supporting up to 2300W (per outlet and in total) or unlimited power when using an external electrical contactor. Lighting & ventilation systems, water pumps, humidifiers, heaters, and Co2 dispensers are some examples of peripherals that PowerBot can automate.

In addition, it supports one flood detector, one universal input (e.g. water level sensor, motion/smoke detector) and one combined sensor. Besides automating most of the growing tasks, PowerBot also allows the creation of safety protocols & procedures to avoid overheating and minimize the damage in case of fire or flood.

Its design features 5 LEDs, 1 per outlet that indicates if the plugged device is ON, and another LED that indicates the module state (powered on and connectivity). It also offers external switches that provide manual control on the spot.

Power Supplier

Provides power to the peripherals of a growing area. It has 4 universal outlets that supports up to 2300W (per outlet & in total) or unlimited power if using an external electrical contactor.

Lighting Control

Automate any lighting system connected to the PowerBot. GroLab provides a huge amount of options to create light schedules, including full customization of day/night cycles length.

Flood Detection

Equipped with flood detection system, it will detect water leaks or excess water, then automatically activates the security actions (user defined) to minimize damages and/or send a notification.
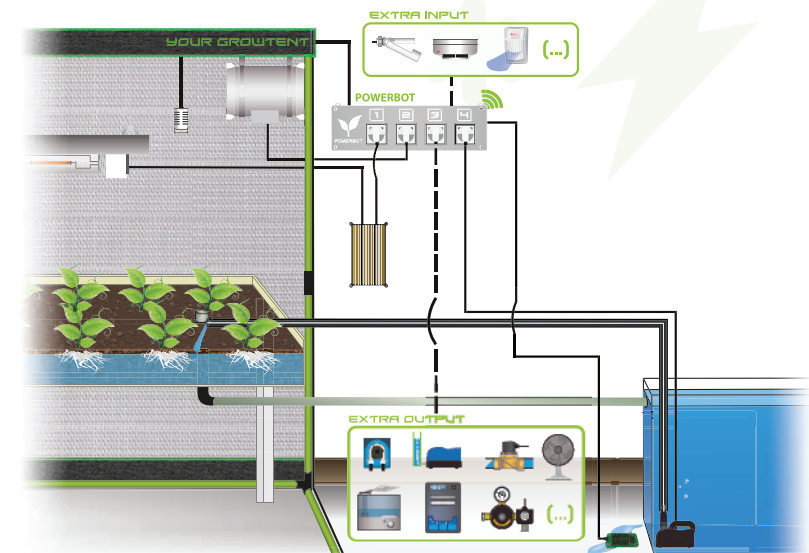
Climate Regulation

With the temperature & humidity sensor and the capacity to independently control the electrical devices, PowerBot performs a precise climate regulation.

Manual Control

This module comes with 4 external switches that provide the ability to manually control all connected peripherals at any time on the spot.

Tank Level Monitoring

Supports 1 universal input of user's choice like a water level sensor, allowing to continuously monitor the tank's level. With the right peripherals, PowerBot can automatically drain & refill the tank.

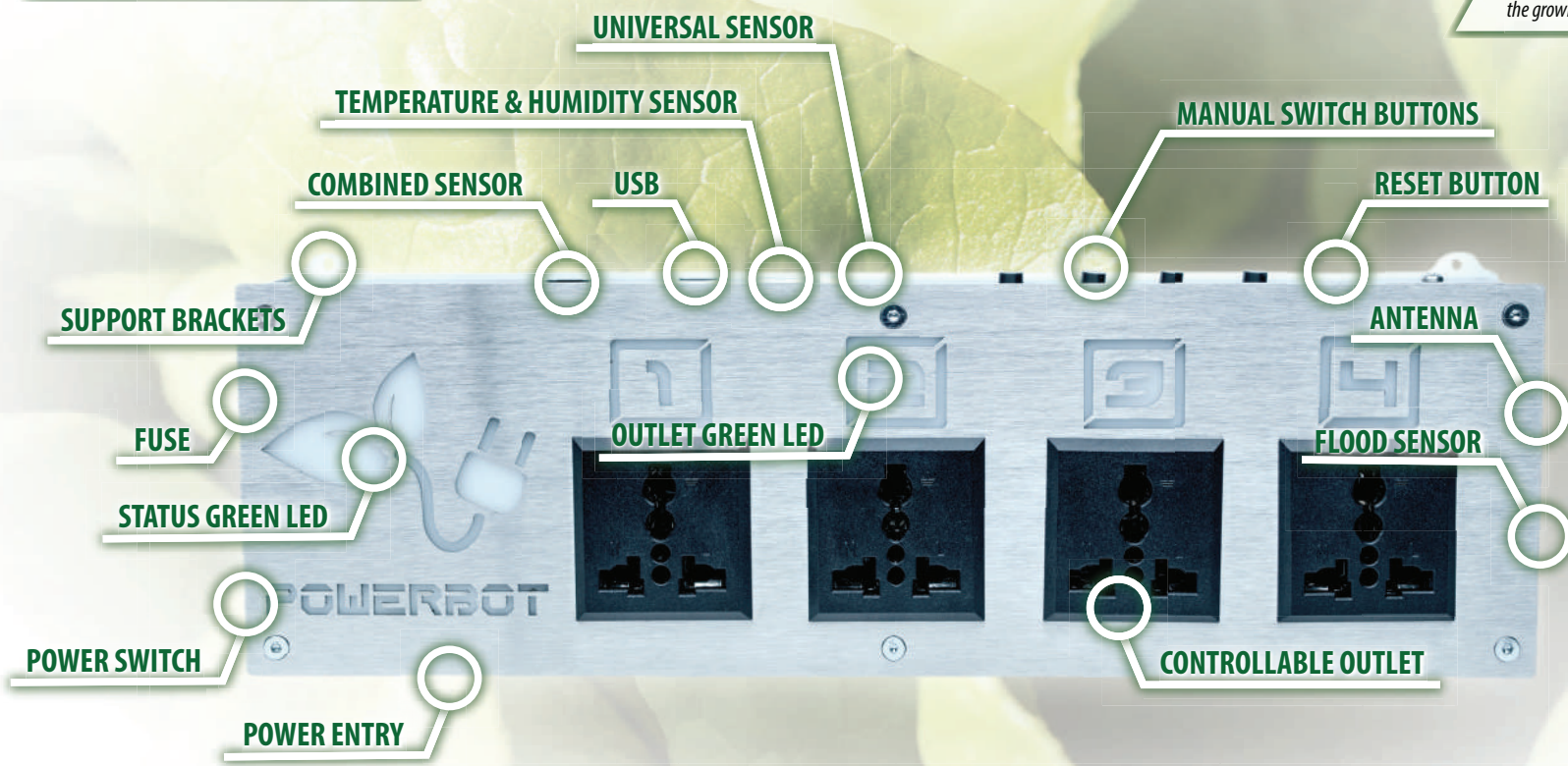*PowerBot Installation Example Schematics*

POWERBOT THE SMART OUTLET

UNIVERSAL SENSOR

TEMPERATURE & HUMIDITY SENSOR

COMBINED SENSOR

USB

MANUAL SWITCH BUTTONS

RESET BUTTON

SUPPORT BRACKETS

ANTENNA

FUSE

OUTLET GREEN LED

FLOOD SENSOR

STATUS GREEN LED

POWER SWITCH

CONTROLLABLE OUTLET

POWER ENTRY

Specifications	
Dimensions	236.4mm x 91.4mm x 46.7mm
Exterior	Casing: Stainless Steel Colors: Silver Buttons: On/Off Switch, Reset, 4 x Outlet Controller
Power Supply	EU - 230v AC / US - 120v AC
Outlets	4 x Universal Outlet
Outlet Maximum Power	EU - 2300W(10A) / US - 1200W(10A)
Total Maximum Power	EU - 2300W(10A) / US - 1200W(10A)
Connections	USB 2.1 type B RP-SMA female Power Entry IEC 320-C14 Temp. & Hum. Sensor (2.5mm 4-Pin male) Flood Detector (2.5mm 4-Pin male) Switch Sensor (2.5mm 2-Pin male) Combined Sensor (RJ12 6-Pin female)
Includes	Antenna Fuse 250V 10A Universal Power Cord (2 meters) USB Cable Type B-A (2 meters) Temp. & Hum. Sensor
Inter-Module Communication	Radio Frequency - 2.4GHz
Visual Indicators	5 x LED (1 per outlet plus 1 general for module status signaling)
Warranty	2-years limited hardware warranty

TankBot
Ref. KIT0003

TANKBOT **THE TANK MANAGER & NUTRIENT DOSER**

TankBot is the most versatile and precise module in the GroLab family. It could be described as a complete controller that is able to cover all the aspects of tank management. However, this description is not enough because TankBot is much more than that.

PH & water temperature regulation, nutrients dosing, water level management, and tank refill/drain are just some examples of the TankBot capabilities.

Supports up to 4 actuators of 12V allowing to connect a wide variety of devices like water pumps, solenoid valves, peristaltic pumps, relays, air pumps, and power contactors. With the capability to independently control those 4 actuators makes it possible to automate a variety of tasks like irrigation, dosing, and air flow.

This powerful module also offers the possibility to connect 4 extra universal inputs of user's choice like water level sensors, motion/smoke detectors or switch buttons. Extending the TankBot capabilities to the surveillance & security domains, granting GroLab system a huge amount of options to react/notify in case of any security threats/issues arises.

TankBot does not simply free the user from the boring management tasks, but it will also help to keep the growing environment protected.

Power Supplier

Provides power to the peripherals of a growing area. It has 4 connectors that support 12V actuators, like solenoid valves, peristaltic pumps, relays, and power contactors.

Nutrients Dosing

Connecting peristaltic pumps into the TankBot allows to automatically dose nutrients. GroLab offers the tools to calibrate the pumps and to create procedures to precisely dose as required.

PH & EC Monitoring

This module allows a deep analysis, monitor and control of the solution's pH & EC. The GroLab system programmable procedures offer several options to regulate pH based on the user needs.
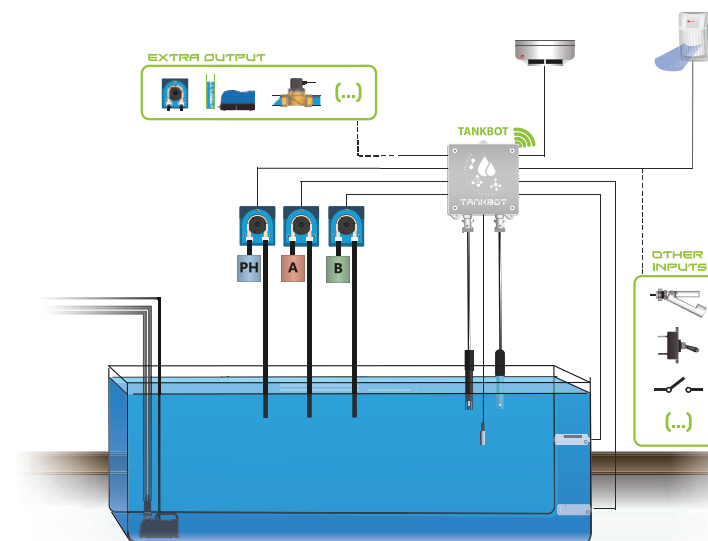
Manual Control

This module comes with 4 external switches that provide the ability to manually control all connected peripherals at any time on the spot.

Water Temperature

TankBot includes a temperature sensor, that can be used for both water, air and substrate. Connecting a heater/cooler to the TankBot allows to automatically regulate the temperature of any medium.

Tank Level Monitoring

Supports 4 universal inputs of user's choice like a water level sensors, allowing to continuously monitor the tank's level. With the right peripherals, TankBot can automatically drain & refill the tank.

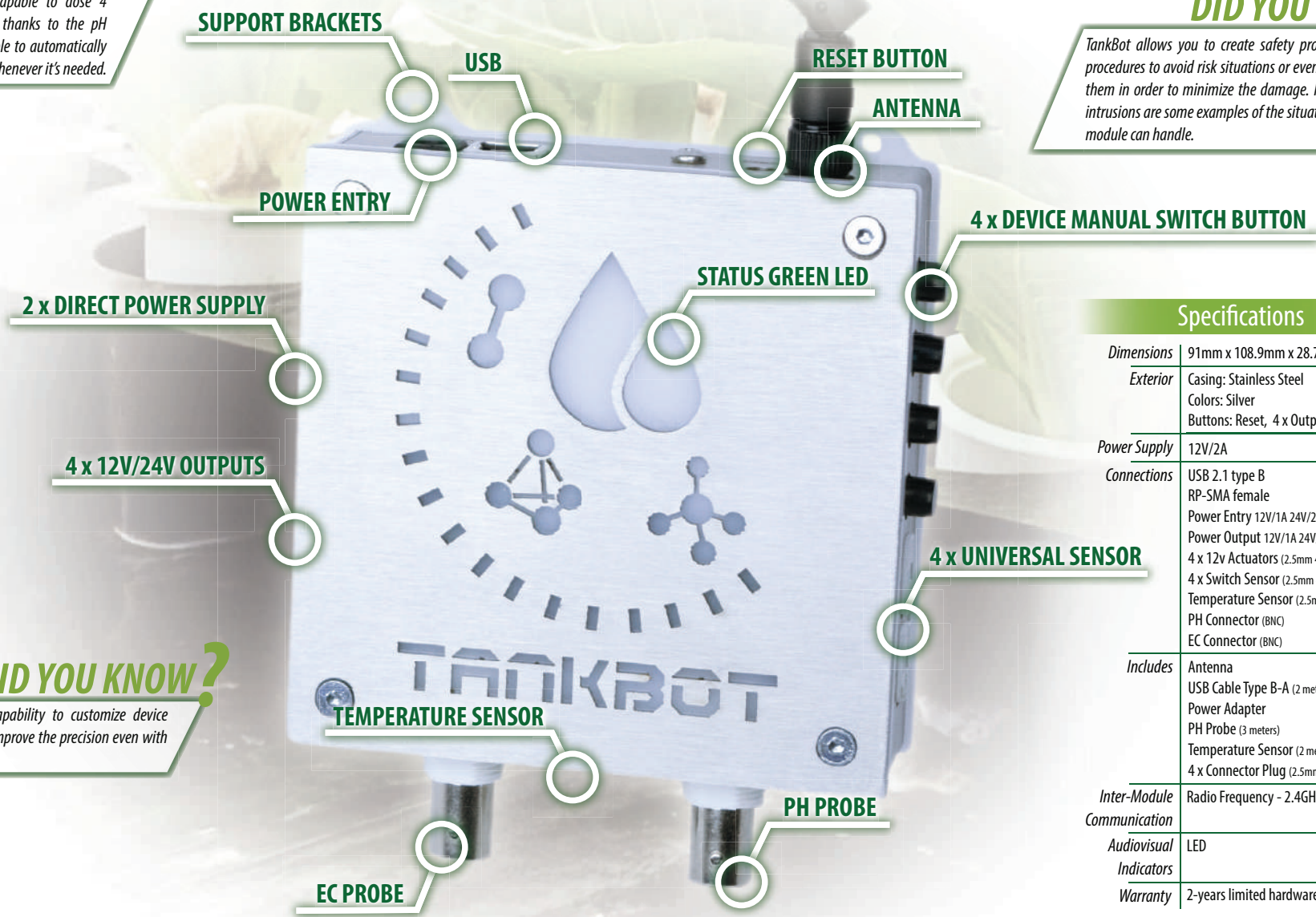*TankBot Installation Example Schematics*

OPEN**GROW.**

TANKBOT THE TANK MANAGER

SUPPORT BRACKETS

USB

RESET BUTTON

ANTENNA

POWER ENTRY

STATUS GREEN LED

4 x DEVICE MANUAL SWITCH BUTTON

2 x DIRECT POWER SUPPLY

4 x 12V/24V OUTPUTS

4 x UNIVERSAL SENSOR

TEMPERATURE SENSOR

PH PROBE

EC PROBE

Specifications

Dimensions	91mm x 108.9mm x 28.7mm
Exterior	Casing: Stainless Steel Colors: Silver Buttons: Reset, 4 x Output Controller
Power Supply	12V/2A
Connections	USB 2.1 type B RP-SMA female Power Entry 12V/1A 24V/2A Power Output 12V/1A 24V/2A (2.5mm 4-Pin male) 4 x 12v Actuators (2.5mm 4-Pin male) 4 x Switch Sensor (2.5mm 4-Pin male) Temperature Sensor (2.5mm 4-Pin male) PH Connector (BNC) EC Connector (BNC)
Includes	Antenna USB Cable Type B-A (2 meters) Power Adapter PH Probe (3 meters) Temperature Sensor (2 meters) 4 x Connector Plug (2.5mm 4-Pin female)
Inter-Module Communication	Radio Frequency - 2.4GHz
Audiovisual Indicators	LED
Warranty	2-years limited hardware warranty

SoilBot
Ref. KIT0002

Temperature

Fully monitors the temperature from the substrate. SoilBot supports up to 2 temperature sensors greatly extending its analysis capabilities. Temperature sensors can also be used for air or water.
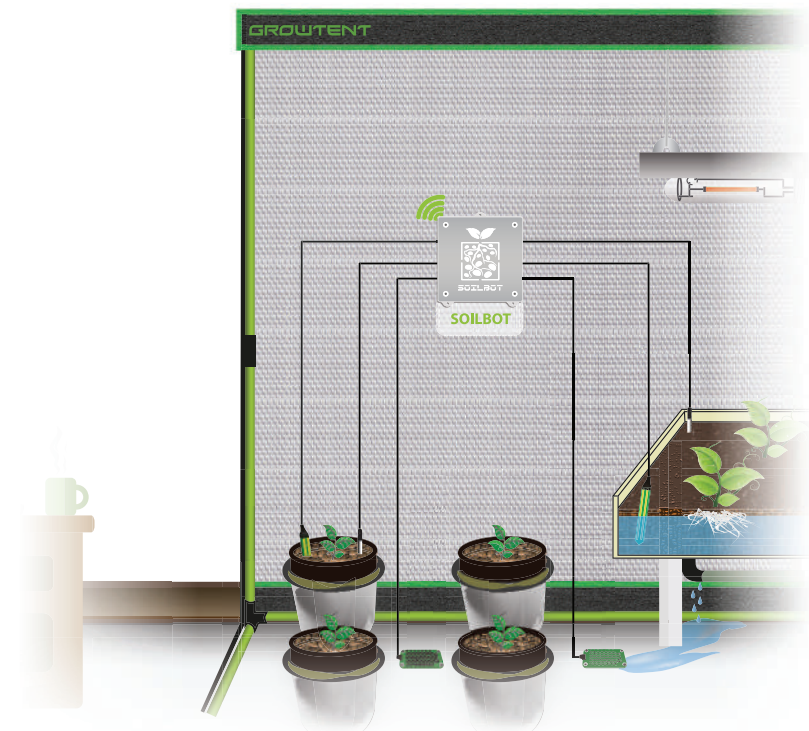
Moisture

Monitors the moisture from substrate regardless of whether it is soil, coconut or a hydroponics environment. Supports up to 4 moisture sensors, allowing to monitor 4 different groups of plants at same time.

Smart Irrigation

Combined with PowerBot or TankBot, allows to automatically irrigate the plants based on the substrate's moisture, ensuring the perfect conditions and avoiding waste of water.

Flood Detection

Equipped with flood detection system, it will detect water leaks or excess water, then automatically activates the security actions (user defined) to minimize damages and/or send a notification.

SOILBOT **THE VERSATILE SUBSTRATE ANALYZER**

SoilBot is a rigorous and versatile substrate analyzer, it is another module that makes part of the GroLab family. It is capable to completely monitor the substrate of user's plants regardless of whether it is soil, rock wool, coconut or a recurrent dipping of roots in water.

Supports up to 4 moisture sensors giving you the possibility to monitor 4 different groups of plants at same time. When combined with PowerBot or TankBot, it allows to automatically perform the irrigation processes, keeping the perfect moisture for the plants avoiding water wasting and floods.

SoilBot also supports 2 temperature sensors providing a complete substrate analysis and 2 flood detectors that makes the system able to react/notify in case of flood detection.

Take control of the substrate with SoilBot!

SoilBot Installation Example Schematics

OPENGROW.

# SOILBOT   THE SUBSTRATE MASTER

One of the worst things that can happen to the plants is running out of 'food', and it's even worse in hydroponics, where a simple faulty water pump can be devastating. However, thanks to the SoilBot, GroLab continuously monitors the substrate, so if the substrate's moisture gets too low, it can send an e-mail to warn the grower about it.

POWER/USB

RESET BUTTON

ANTENNA

SoilBot supports up to 4 substrate moisture sensors, 2 flood detectors, and 2 temperature sensors (which can be used for air, water, and substrate).
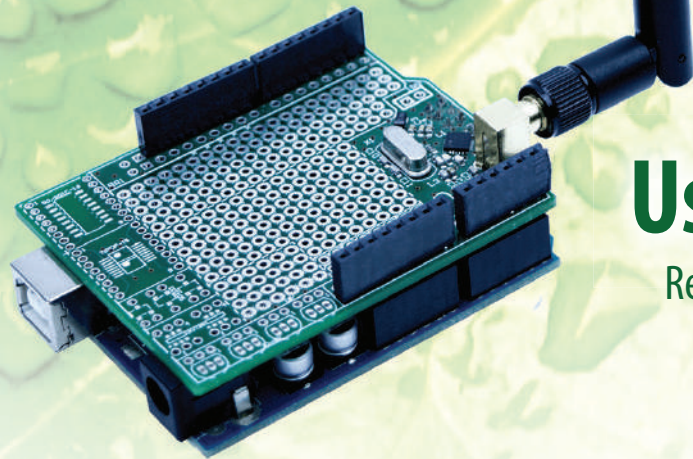
2 x MOISTURE SENSOR

STATUS GREEN LED

2 x MOISTURE SENSOR

TEMPERATURE SENSOR

TEMPERATURE SENSOR
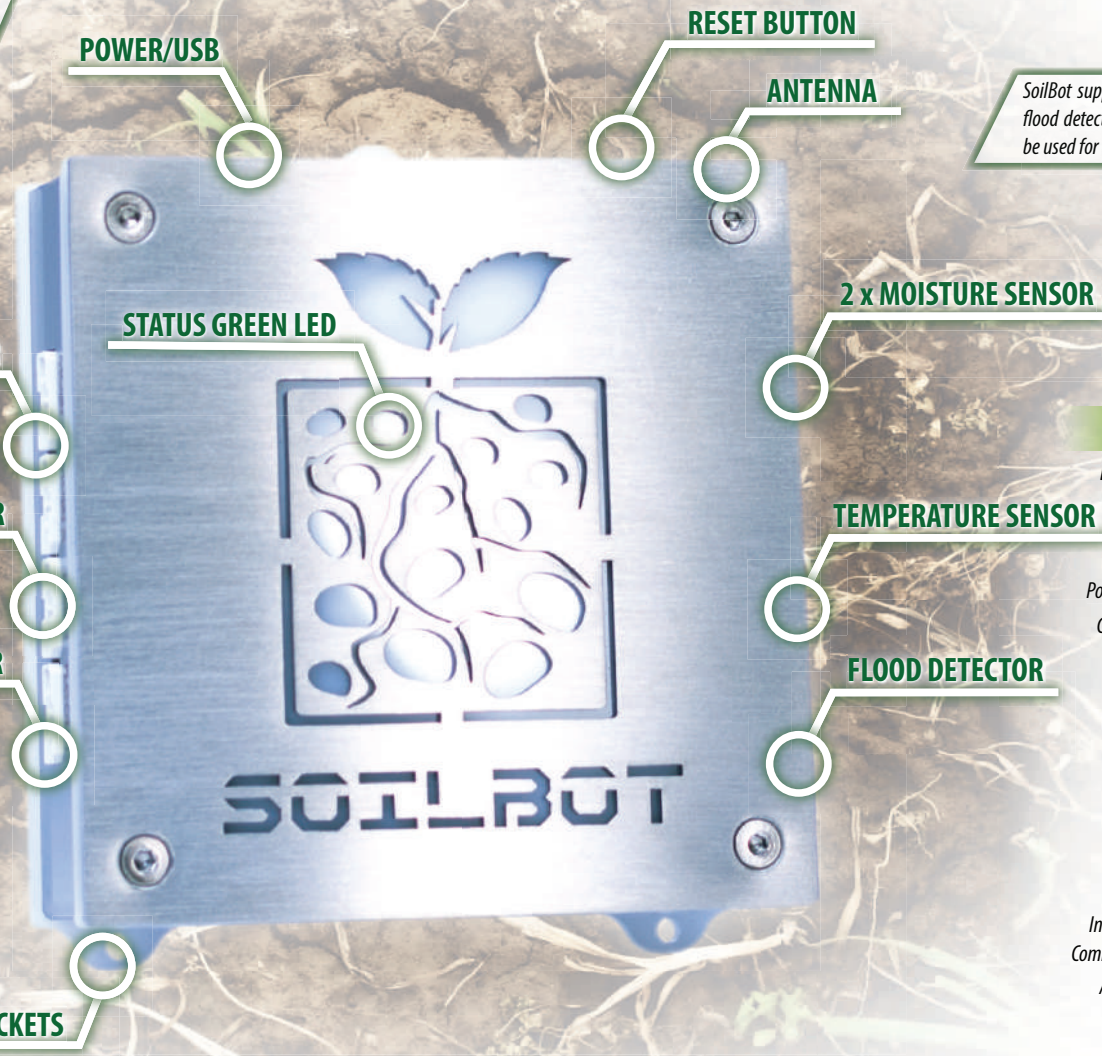
FLOOD DETECTOR

FLOOD DETECTOR

SoilBot is equipped with a flood detection technology that increases the security of a growing environment, since one can configure GroLab to perform preventive actions to minimize the flood or simply warn the grower through e-mail.

SUPPORT BRACKETS

Specifications

Dimensions	91mm x 91mm x 28.7mm
Exterior	Casing: Stainless Steel Colors: Silver Buttons: Reset
Power Supply	USB - 5VDC 1000mA
Connections	USB 2.1 type B RP-SMA female 4 x Moisture Sensor (2.5mm 4-Pin male) 2 x Temperature Sensor (2.5mm 4-Pin male) 2 x Flood Detector (2.5mm 4-Pin male)
Includes	Antenna USB Cable Type B-A (2 meters) Power Adapter Type A 230AC-5VDC 2 x Moisture Sensor (2 meters) Temperature Sensor (2 meters) Flood Detector (2 meters)
Inter-Module Communication	Radio Frequency - 2.4GHz
Audiovisual Indicators	LED
Warranty	2-years limited hardware warranty

UserBot
Ref. COMP0009

Arduino Compatible

UserBot is fully compatible with Arduino, allowing the user to integrate their own electronics & code into the GroLab system. It follows the shield's standard design, making it easy to install into an Arduino.

GroLab Communication

Includes the GroLab communication layer, allowing to communicate with GroNode through radio frequency up to 25 meters indoors and 100 meters in open spaces.

Open Source Code

The base code for UserBot is Open Source and it is available in the official Open Grow's repository in GitHub*. It already contains some examples, but the real magic will happen by the user's hands.

*Official Open Grow's repository in GitHub: github.com/OpenWeGrow/

Components Compatibility

Since UserBot is fully compatible with Arduino, it means that users are free to use any component that works with Arduino, meaning that the users can go as far as their imagination allows.

USERBOT **YOUR CUSTOM MODULE, YOUR OWN RULES!**

UserBot is an Arduino shield that allows the user to create his own custom GroLab module, with the desired support for devices/sensors.

Create a remote control and set the desired action for each button (like turning some device on/off), make portable sensors (pH, EC, temperature, CO2...), add support to infrared/Bluetooth and start controlling third-party devices/sensors... Why not control some robot as well?!

The only required ingredients are a bit of coding/electronics skills and a lot of imagination!

UserBot shield connects the Arduino, as well as the user's own electronics and devices/sensors to GroLab. It contains all the necessary RF communications and a complete breakout board for sensors and circuits.

What does UserBot allow to control?

That's actually up to the user to decide! The UserBot shield allows to integrate the Arduino into the GroLab system, the sensors and devices, as well as extra features, are user-defined.

If it's needed to control a lamp, then use a relay, if it's needed to sample an analog voltage for any purpose, use Arduino analog pins or an external ADC.

This is a plug-and-play shield for Arduino that does not need any external power and allows to interface with whatever sensor or device users may need.
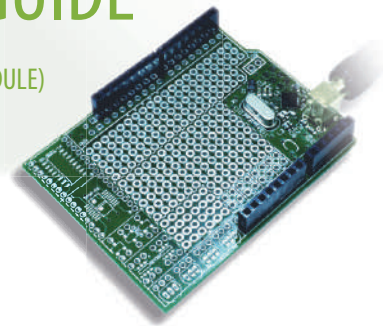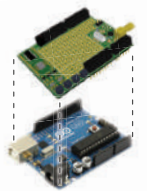
Example of UserBot's Compatible Components

USERBOT   YOUR OWN RULES

QUICK INSTALLATION GUIDE

(CREATE YOUR OWN GROLAB MODULE)

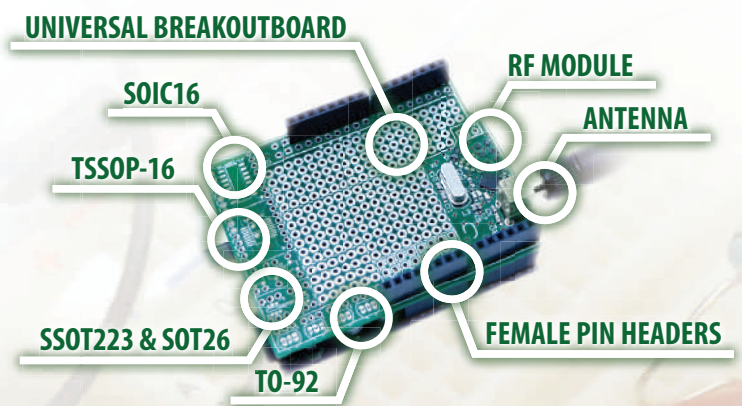**1** Install the UserBot Shield into Arduino

2 Download the UserBot's code*

3 Connect your sensors/devices

4 Adapt the code for your needs

5 Use it with GroLab

UNIVERSAL BREAKOUTBOARD

SOIC16

TSSOP-16

RF MODULE

ANTENNA

SSOT223 & SOT26

TO-92

FEMALE PIN HEADERS

? *Ideas for your custom modules*

- **Remote Controller**

  With a remote controller, you can create alarms to perform the desired actions when the button is pressed.

- **Weather Station**

  Add any sensor you want, like atmospheric pressure, wind, light, temperature, humidity and so on.

Specifications

Dimensions	68.6mm x 53.4mm
Exterior	Material: FR-4 Colors: Green
Operating Voltage	+3V3 VDC
Connections	RP-SMA female Female Pin Headers (Arduino connection/extension)
SMD Sockets	1 x SOIC16 2 x TSSOP 8 (=) 1 x TSSOP 16 3 x SSOT223 2 x SOT26
TH Sockets	4 x TO-92
BreakOut Board	DIP/1206/0805/0603
BreakOut Board Spacing	2.54mm - 100mil
Includes	Antenna
Inter-Module Communication	Radio Frequency - 2.4GHz
Warranty	2-years limited hardware warranty

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GroLab Kits

**GROLAB
STARTER KIT**
Ref. KIT0001

Includes:
- 1 x GroNode;
- 1 x PowerBot;
- 1 x USB Pen*.

**GROLAB
SOIL KIT**
Ref. COMBO001

Includes:
- 1 x GroLab Starter Kit;
- 1 x SoilBot;
- 1 x USB Pen*.

**GROLAB
HYDRO KIT**
Ref. COMBO002

Includes:
- 1 x GroLab Starter Kit;
- 1 x TankBot;
- 1 x USB Pen*.

**GROLAB
DOSER KIT**
Ref. COMBO004

Includes:
- 1 x GroNode;
- 1 x TankBot;
- 3 x Peristaltic Pump;
- 2 x Horizontal Level Sensor;
- 1 x USB Pen*.

**GROLAB
PRO KIT**
Ref. COMBO003

Includes:
- 1 x GroLab Starter Kit;
- 1 x TankBot;
- 1 x SoilBot;
- 1 x USB Pen*.

*USB Pen includes the GroLab Software, manuals, and video tutorials.

*USB Pen includes the GroLab Software, manuals, and video tutorials.

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Peripherals & Extras

PH CALIBRATION
SOLUTION 4,01
Ref.
COMP0022

PH CALIBRATION
SOLUTION 7,01
Ref.
COMP0021

EC CALIBRATION
SOLUTION
1413 µS/cm
Ref.
COMP0023

SENSORS

USE IT ON
AIR

Ref.
COMP0012

TEMP. & HUMI.
SENSOR

Compatibility

USE IT ON
FLOOR/
SURFACE

Ref.
COMP0006

FLOOD
DETECTOR

Compatibility

USE IT ON
AIR
WATER
SUBSTRATE

Ref.
COMP0008

TEMPERATURE
SENSOR

Compatibility

USE IT ON
SUBSTRATE

Ref.
COMP0007

MOISTURE
SENSOR

Compatibility

USE IT ON
WATER

Ref.
COMP0003

LEVEL
SENSOR

Compatibility

USE IT ON
WATER

Ref.
COMP0001

PH
PROBE

Compatibility

SENSORS

USE IT ON
WATER

Ref.
COMP0024

PH ONLINE
PROBE

Compatibility

USE IT ON
WATER

Ref.
COMP0011

EC
PROBE

Compatibility

USE IT ON
WATER

Ref.
COMP0025

EC ONLINE
PROBE

Compatibility

USE IT ON
AIR

Ref.
COMP0014

MOTION
DETECTOR

Compatibility

USE IT ON
AIR

Ref.
COMP0013

SMOKE
DETECTOR

Compatibility

COMING SOON

USE IT ON
AIR

Ref.
COMP0066

COMBINED CO2
SENSOR

Compatibility

DEVICES

PUMP
LIQUIDS

Ref. COMP0002A
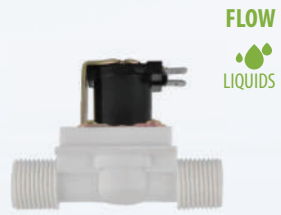**12V PERISTALTIC PUMP**
Compatibility

PUMP
LIQUIDS

Ref. COMP0035
12V PRECISION PERISTALTIC PUMP
Compatibility

FLOW
LIQUIDS

Ref. COMP0004A
SOLENOID VALVE
Compatibility

POWER BOARDS

POWERBOARD 17KW - 24 x 600W
Ref. COMP0028
Compatibility

POWERBOARD 17KW - 24 x 600W (TIMER INCLUDED)
Ref. COMP0027

CABLES

USE IT WITH
PERISTALTIC PUMPS

Ref. COMP0032
PRE ASSEMBLED PERISTALTIC PUMP CABLE
Compatibility

USE IT WITH
ANY SENSOR/DEVICE WITH 4-PIN MALE CONNECTION

Ref. COMP0034
PRE ASSEMBLED EXTENSION CABLE
Compatibility

USE IT WITH
SOLENOID VALVES

Ref. COMP0033
PRE ASSEMBLED SOLENOID VALVE CABLE
Compatibility

MISC.

4-PIN CONNECTOR (PACK OF 4)
Ref. COMP0005

2-PIN CONNECTOR (PACK OF 2)
Ref. COMP0038

4 CONDUCTORS CABLE
Ref. COMP0016

Product Comparison Chart		GroLab Starter Kit	GroLab Doser Kit	GroLab Soil Kit	GroLab Hydro Kit	GroLab Pro Kit
Management Software	Windows-based software	✓	✓	✓	✓	✓
	Remote access	✓	✓	✓	✓	✓
	Backups	✓	✓	✓	✓	✓
	Data logging & export	✓	✓	✓	✓	✓
	Data analysis	✓	✓	✓	✓	✓
	Alerts/notifications	✓	✓	✓	✓	✓
	Alarms & schedules	✓	✓	✓	✓	✓
	Areas & grows	✓	✓	✓	✓	✓
	Cameras IP integration	✓	✓	✓	✓	✓
	Real-time monitoring	✓	✓	✓	✓	✓
	Manual control	✓	✓	✓	✓	✓
	Automatic update system	✓	✓	✓	✓	✓
	Multilanguage (UK/US, PT, ES, FR)	✓	✓	✓	✓	✓
Climate	Control climate compartments	Up to 4 zones		Up to 4 zones	Up to 4 zones	Up to 4 zones
	Passive cooling (Ventilation, misting...)	✓		✓	✓	✓
	CO2 injection	✓		✓	✓	✓
	Heating control (Heaters...)	✓		✓	✓	✓
	Humidity control (Humidifier, fogging, dehumidifier...)	✓		✓	✓	✓
	Retractable roof/vent control	✓		✓	✓	✓
	Day & night automation	✓		✓	✓	✓
Lighting	Independent lamps control	Up to 4 lamps/groups		Up to 4 lamps/groups	Up to 4 lamps/groups	Up to 4 lamps/groups
	Damage prevention (cool-down time)	✓		✓	✓	✓
Irrigation	Independent irrigation systems	Up to 4 systems/groups	Up to 4 systems/groups	Up to 4 systems/groups	Up to 8 systems/groups	Up to 8 systems/groups
	Smart irrigation (substrate's moisture monitoring)			✓		✓
	Day & night automation	✓	✓	✓	✓	✓
Dosing	Dosing automation		✓		✓	✓
	pH automation		✓		✓	✓
	EC automation		✓		✓	✓
	Inline injection (Larger systems, EC & pH correction on-the-fly)		✓		✓	✓
	Device speed control		✓		✓	✓
	Day & night automation		✓		✓	✓
Security	Overheating	✓	✓	✓	✓	✓
	Fire	✓	✓	✓	✓	✓
	Flood	✓		✓	✓	✓
	Intrusion	✓	✓	✓	✓	✓
	Drought			✓		✓

OPENGROW.

5th

2014 • ANNIVERSARY • 2019

OPENGROW.

WHO ARE WE?

Open Grow is a Portuguese company dedicated to the research and creation of automation solutions for agricultural growing environments. We aim to provide innovative and versatile technology with an extremely easy-to-use interface, allowing every grower to use it. We are committed to developing high-quality systems at an affordable price.

OPENGROW. **IS BORN**

SURVEYING THE MARKET

SPANNABIS FERIA DEL CÁÑAMO 2015

GROLAB IS BORN

FIRST OFFICIAL TRADESHOW

SPANNABIS FERIA DEL CÁÑAMO 2016

GROLAB MANUFACTURE

GROLAB FIRST AWARD

Cannafest BEST PRODUCT 2016

OPENGROW. **AWARDED**

GROLAB TO MARS

2014 — **2015** — **2016** — **2017** — **2018** — **2019**

Roaming Spannabis 2015 to explore the market and present our ideas to possible partners/clients.

In the final development stage, GroLab was presented to the public as a consumer product, making a buzz at Spannabis 2016.

This was our first time at Cannafest Prague and it was a great experience, in fact, GroLab won the Best Product 2nd. place prize.

Italian Space Agency used GroLab to help growing microgreens on a Mars simulated environment, part of the AMADEE18 mission.

R&D is the word at Open Grow with prototype achievement in the first year.

GroLab is the final product that Open Grow intends to bring to its customers.

A production line was implemented to manufacture GroLab.

A year passes and Open Grow adds another achievement to its history. This time Open Grow was the protagonist at Bet24 where multiple Hardware projects were fighting for the first position.

GROLAB
CATALOGUE
2019

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