GROLAB TANKBOT

EAN 0768855932289

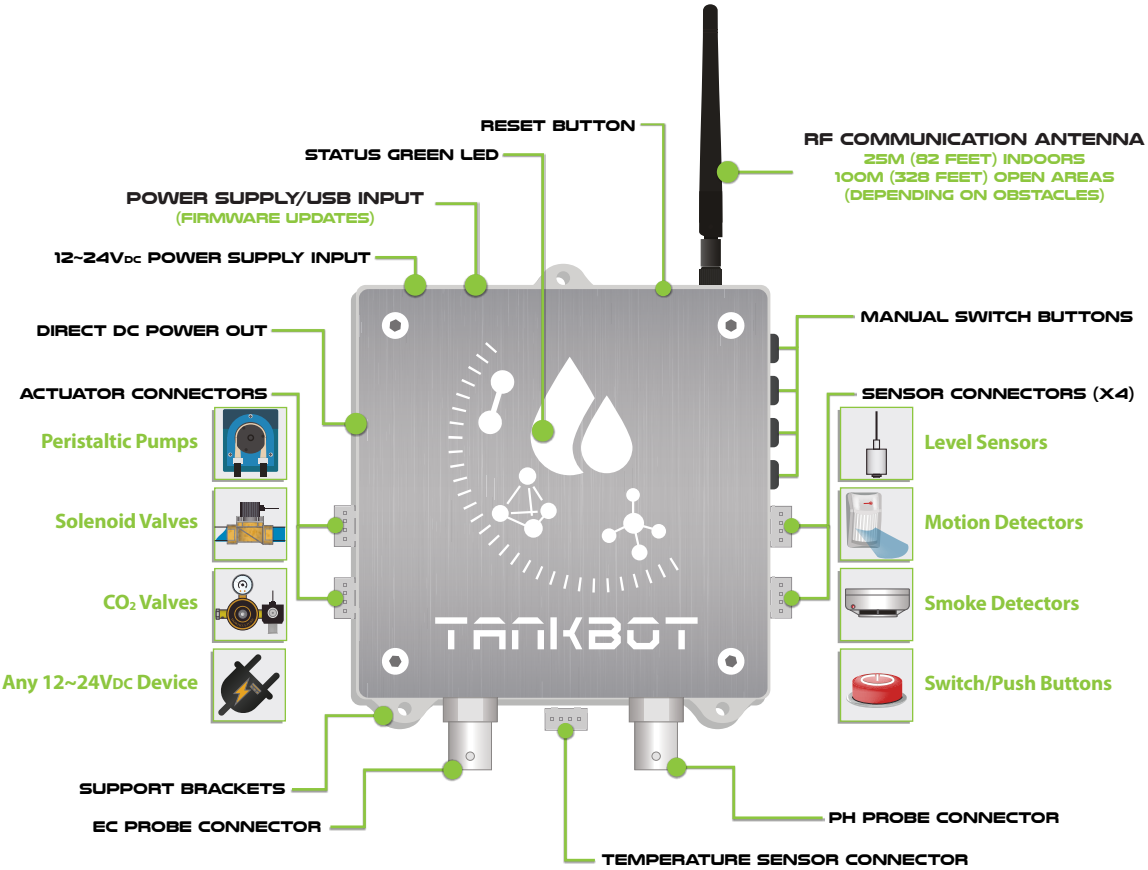
GroLab TankBot is a precise grow controller that ensures complete monitoring and management of the water tank, making it an essential module for any agricultural growing system.

Supports up to four actuators of 12~24VDC allowing to connect a wide variety of peripherals like peristaltic pumps, solenoid valves, water pumps, relays, air pumps, and power contactors, that can be used to automate several tasks like nutrient dosing, pH regulation, water recycling, tank refilling, irrigation...

In terms of monitoring capabilities, TankBot can monitor the pH, EC, water temperature, and four universal switch sensors (e.g. water level sensors and motion/smoke detectors).

GroNode (the system's core module) manages the TankBot wirelessly through radio frequency (RF) communication.

In this way, if it is necessary to add more peripherals, sensors, or even spare parts to help get the most out of GroLab, please consult the nearest specialized store (**opengrow.pt/store-locator**) or check out our online shop at: **opengrow.pt/shop** .



One GroLab GroNode is required to have access to all the TankBot features.

Designed by Open Grow, Lda. Assembled in Portugal.

Learn quickly and easily with the GroLab Video Tutorials:
opengrow.pt/tutorials/

Open Grow Technical Support:
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Revision 1
June 2025
GL-MN-0007-EN

SPECIFICATIONS

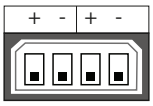
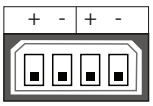
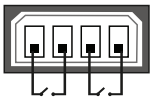
TankBot Specifications

Hardware	HW11
Dimensions	93.20mm x 113.84mm x 47.64mm (3.70in x 4.50in x 1.90in)
Net Weight	~250 grams (~8.82 oz)
Exterior	Casing: Stainless Steel and Acrylic Colors: Silver and White Buttons: Reset and 4 x Output Controller
Visual Indicators	Status Green LED
Operation Conditions	0 to 55ºC RH <95% non-condensing
Expected Service Life	>5 years
Power Consumption	@5VDC - max. 110mA - 0.5W
Power Supply	12VDC/2A
Connections	USB 2.1 type B SMA female

Connections	12~24VDC (1~2A) (Jack ID 2.1mm OD 5.5mm) 2 x 12~24VDC Direct Power Output (2.1mm 4-Pin male) 4 x 12~24VDC Actuator (2.1mm 4-Pin male) 4 x Switch Sensor (2.1mm 4-Pin male) Temperature Sensor (2.5mm 4-Pin male) PH Connector (BNC) EC Connector (BNC)
Inter-Module Communication	Radio Frequency - 2.4GHz
Includes	Antenna USB Cable Type B-A (2-meter cable) Power Adapter 12VDC/2A (1-meter cable) PH Probe Temperature Sensor (2-meter cable) 4 x Connector Plug (2.1mm 4-Pin female) PH Calibration Solutions
Warranty	3-years limited hardware warranty

Frequency Band(s)	Max. Output Power (EIRP)
2.4 G	2.4 - 2.4835 GHz	100 mW

Useful Pinouts

Port Name	Power Out	Outputs	Inputs	Temperature	PH	EC	Power Input
Visual Representation							
General Specifications	Vout 12~24VDC IMAX 2A	Vout 12~24VDC IMAX 0.5A	Vsupply + 5VDC	Vsupply + 5VDC Range: 0ºC ~ 150ºC Accuracy*	Range: 1 ~ 14 Accuracy*	Range: 0 µS/cm ~ 20 µS/cm Accuracy*	Vin 12~24VDC

*It depends on the model of the sensor used. Check our local/online shop or partners for more information.

MAIN FEATURES

POWER SUPPLIER

TankBot can provide power to all peripherals of the growing environment. It has four connectors that support 12~24VDC actuators allowing a wide variety of devices from small water pumps, peristaltic pumps, relays, power contactors, etc.

PH MONITOR & ADJUSTMENT

This module gives the possibility to deep analysis, monitor, and control the pH. The GroLab system programmable procedures offer several options to regulate pH based on the user's needs.

EC MONITOR & ANALYSIS

TankBot also supports the EC probe extending the monitor and control of the water tank to another level. GroLab system can notify the user and even react based on the electrical conductivity of the water.

WATER TEMPERATURE

Combining the water temperature sensor support with the capability to handle the device to heat/cool the water makes the TankBot a great option to continuously regulate the water temperature, ensuring the optimum conditions for plants to grow.

NUTRIENTS DOSING

Connecting peristaltic pumps on TankBot opens the door to the nutrients dosing domain. GroLab system provides all the necessary tools to calibrate the peristaltic pumps and to create procedures to precisely pump the amount of the required nutrients.

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SPEED CUSTOMIZATION

TankBot provides the capability to customize device speed.* This feature can improve precision even with low-cost devices.
*Note that the first actuator connector does not have this capability.

ADVANCED IRRIGATION

Thanks to the capability of handling actuators of 12~24VDC, it is possible to create impressive irrigation systems that can independently feed multiple grows.

TANK LEVEL MANAGEMENT

This module supports four extra switch sensors of the users' choice like water level sensors, allowing the continuous monitoring of the tanks' water level. With the right peripherals connected to TankBot, like solenoid valves or water pumps, one can create procedures to automatically drain and refill, allowing complete tank maintenance.

SAFETY PROTOCOLS & PROCEDURES

TankBot allows the creation of safety protocols and procedures to avoid risky situations or even react to them to minimize damage. Fires and intrusions are some examples of risk situations this module can handle. The cool-down feature prevents damage to devices that need some time to cool down before turning them on.

MODULE COMUNICATION

TankBot communicates with GroNode through radio frequency with a range of 25 meters (82 feet) indoors (depending on obstacles) and 100 meters (328 feet) in open spaces. This makes it easy to install the TankBot close to the water tank.

MONITOR & ANALYSIS

Using GroLab Software the user can monitor and analyze the different pH, EC, temperature, and the four extra sensors in real-time. The software provides notifications, charts, and grow(s) overview and even allows the user to export the sensors' values from the beginning of the grow(s) life cycle.

NOTIFICATIONS

When a user provides an Internet connection to GroNode it can send real-time alerts and updates to their e-mail, keeping them updated about the state of the grow(s) anywhere, anytime. One just needs to permit GroNode to access the Internet, and configure it to notify in case of any issue arises.

LED INDICATOR

Its design features a LED that indicates if the module is currently powered ON (LED blinking) and the successful connection with GroNode (LED static).

FREE FIRMWARE UPDATE

One of the advantages of a digital system is the ability to receive updates that can be easily applied. With this in mind, the Open Grow team works every day to fix any reported/discovered bugs as well as to improve and add new features to the GroLab system (software and modules). These updates are free of charge and can be quickly obtained through the GroLab Software with just a few clicks.

REMOTE CONTROL

Connecting the GroNode to a router with an Internet connection allows to activate the GroLab system's remote control. This feature grants user access from anywhere at any time through the GroLab Software, allowing complete control of all the modules, including TankBot.

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INSTALLATION EXAMPLE

The image below (Figure 1) represents a generic installation of a TankBot module, however, the installation can differ depending on the user's needs.

In this installation example, the monitoring and management of a water tank by TankBot are perfectly visible, being useful in several situations such as pH and EC monitoring, pumping precisely the number of required nutrients, regulating the water temperature, supplying energy to all the four peripherals of the growing environment, and offering complete tank maintenance with sensors.

In addition to being a complete feed module, it can also monitor the level of any tank through a switch sensor. With this, the user can create procedures to automatically drain and refill the tank.

Finally, this module has a major impact on security due to its smoke and motion detection system which are extremely useful to notify the user (via e-mail and software) to avoid risky situations.

The installation/usage of TankBot should be adjusted according to the growing environment and user needs. If there is a need for help, please reach out to any GroLab representant or directly to us, we will be happy to assist.

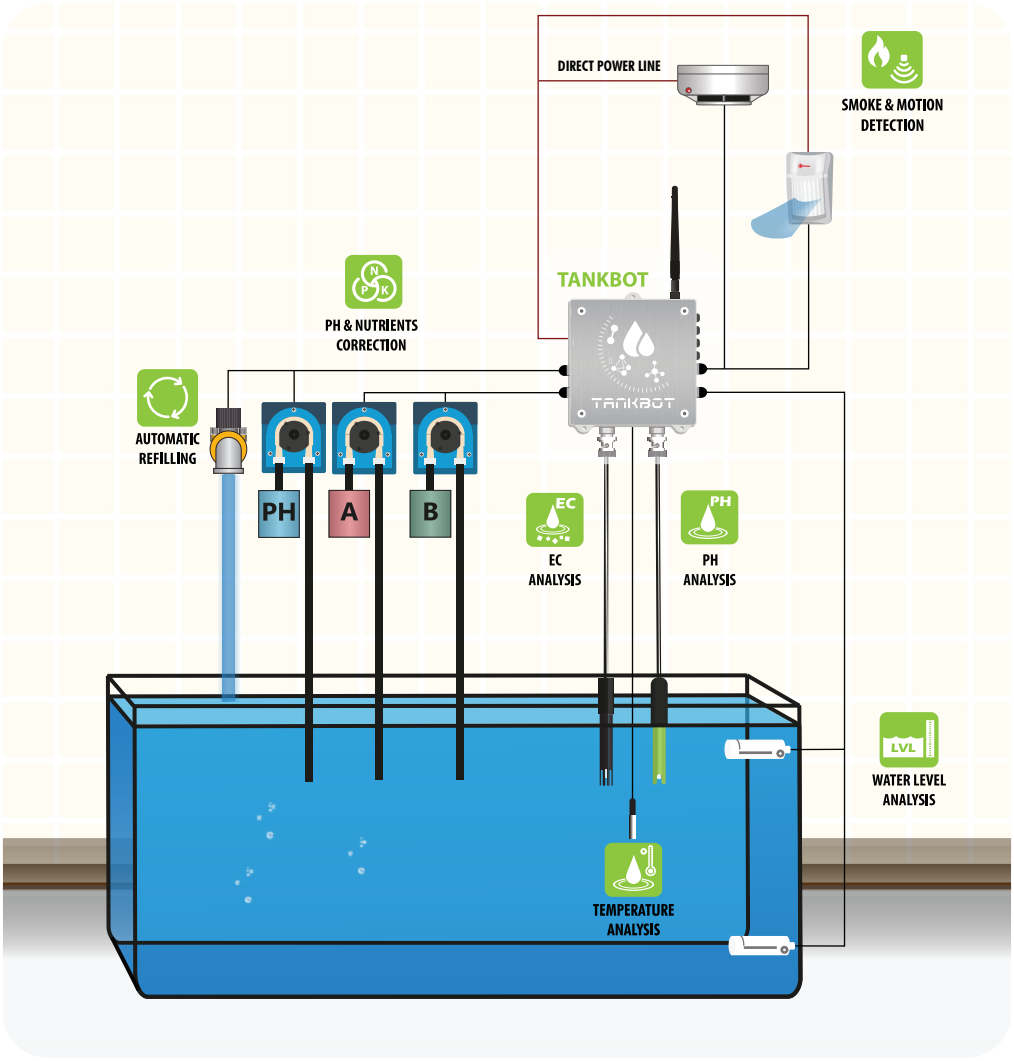

Figure 1 - TankBot Installation Example Schematics

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USEFUL TIPS

To facilitate and avoid possible issues, please find below some tips regarding the installation of TankBot.

- The user should pay attention to not switching the pH and EC probes when installing them on the module.
- TankBot has the capacity to function with a higher voltage (e.g. 24VDC), for that the user simply needs to switch the power supply.
- The user can use the direct power out connector on TankBot, to directly power devices that need so, like smoke or motion detectors.
- Probes calibration procedure using the GroLab software tools is quite intuitive, but make sure to read all the step descriptions provided.
- Calibrating peristaltic pumps before starting any automation procedure will allow the user to work in milliliters instead of seconds.

<u>For better wireless communication</u>

- Ensure that the maximum distance between TankBot and GroNode is not exceeded, typically 25 meters (82 feet) indoors and 100 meters (328 feet) in open areas. In addition, avoid obstacles between TankBot and GroNode.
- Do not install the TankBot near other equipment that communicates wirelessly (including GroLab modules), ensuring a minimum of 20 centimeters (0.66 feet) between equipment.
- Make sure antennas are screwed on tightly and positioned upward. When the module is installed on the wall, the antenna must be parallel to the wall. If the module is on a surface (a table, for example), the antenna must be perpendicular to the surface.

<u>To increase the lifetime and ensure the best functioning of the TankBot</u>

- Keep the TankBot out of extremely humid areas and prone to contact with water. When installed outdoors, TankBot must be protected from environmental factors.
- Perform periodic maintenance to ensure that TankBot remains clean and dust free.
- PH and EC probes must be cleaned and calibrated every two months.

USEFUL AUTOMATION PROCEDURES

Two main types of automation procedures can be created with the GroLab system: Schedules and Alarms.

The first type offers all the tools a grower expects from a scheduling system and even more. The second one makes it possible to trigger actions based on conditions, those actions/conditions can be freely chosen by the user.

Among several options, these procedures can act in any device or group of devices that belong to an area/grow. In addition, they provide distinct action modes, including timed actions.

These can be notified to the user by sending a warning e-mail or through sound (GroNode's buzzer).

To make it easy to understand and configure, we prepared some automation procedures examples that can be configured when using the TankBot and its devices/sensor:

- In Figure 2 you can see the configuration for an alarm that can control your pH. Whenever the pH is higher than 7.1, the peristaltic pump will turn ON and debit 15 milliliters (ml) of acid. If after 15 minutes the pH value is still above 7.1, the pump will add more 15ml of acid, and wait 10 more minutes, until the value gets below 7.1.

Figure 2 - Low pH Alarm Example

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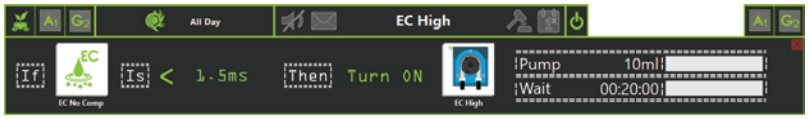

Figure 3 - Low EC Alarm Example

➤ Figure 3 shows a scheduled alarm that if the EC value is higher than 1.5 millisiemens (mS), will activate a peristaltic pump for 10 seconds, and then it will stop for 20 minutes so that the solution can be mixed and the values measured again. The process is repeated until the value is lower.

➤ Figure 4 shows a scheduled 10-minute irrigation which is repeated every 50 minutes. This schedule is programmed to send an e-mail when it starts and finishes. Also, it is consistent with some irrigation systems, like Flood & Drain. The blue background on this schedule means, that it's configured but it's currently disabled.

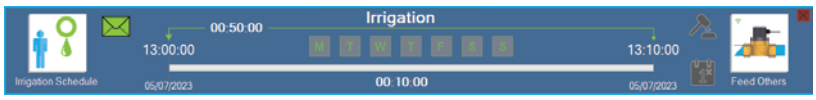

Figure 4 - Irrigation Schedule Example

Figure 5 - Feed Alarm Example

➤ Figure 5 illustrates an alarm that activates an irrigation pump only whenever the solenoid valve is open. This allows for intricate irrigation paths. This alarm has persistence active, meaning that while this alarm is active, the signal to turn ON is constantly being sent.

➤ In Figure 6 there is a representation of an alarm that triggers a solenoid valve (Feed Valve) each time the other one (Feed Others) is ON. "Feed Valve" will stop working when the solenoid valve (Feed Others) is OFF.

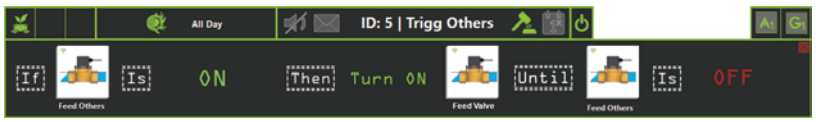

Figure 6 - Trigger Valve Alarm Example

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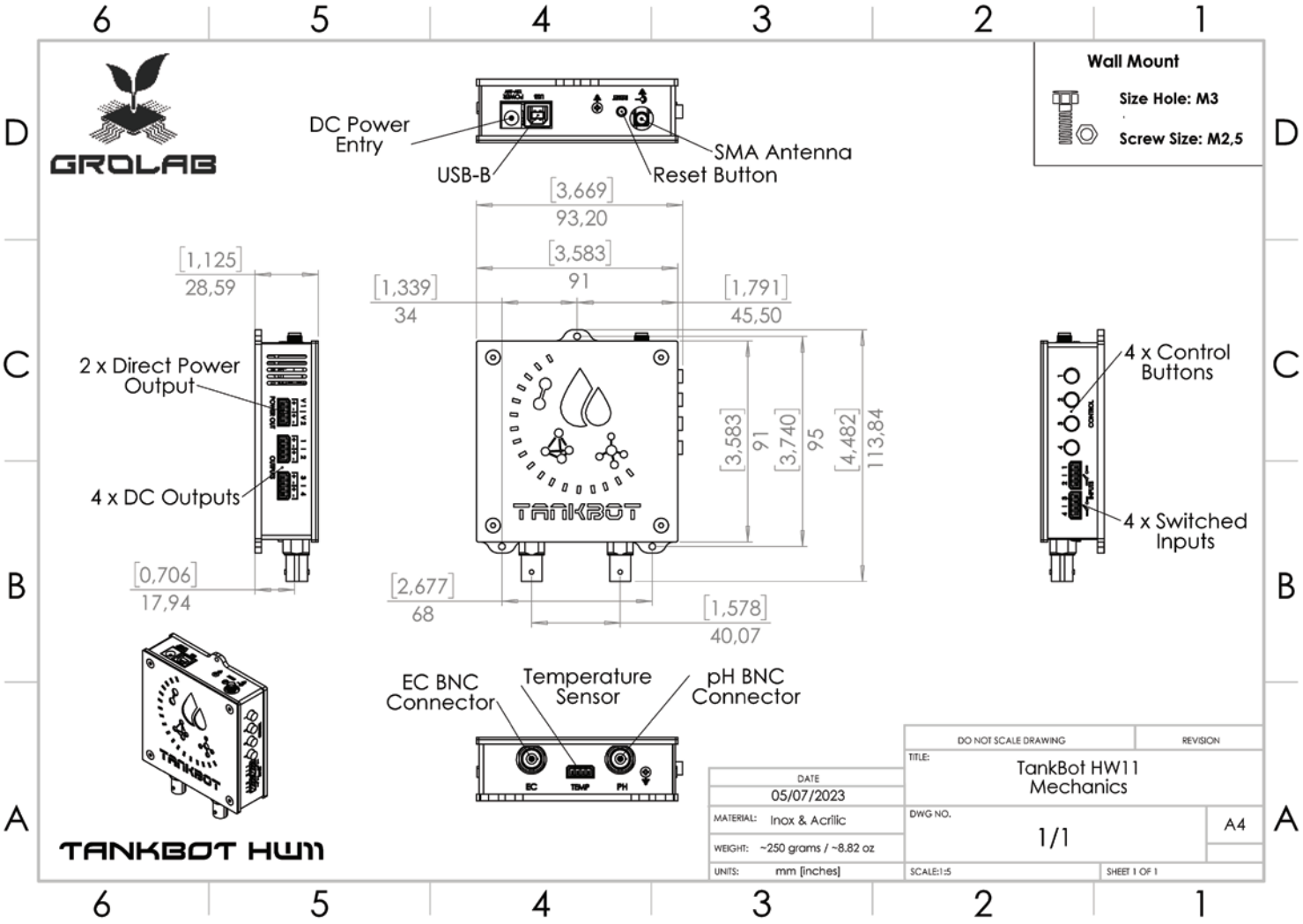
MECHANICS



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COMPLIANCE

This symbol on the product or packaging means that according to local laws and regulations, this product should not be disposed of in household waste but sent for recycling. Please take it to a collection point designated by your local authorities once it has reached the end of its life, some will accept products for free. By recycling the product and its packaging in this manner you help to conserve the environment and protect human health.

This symbol on the product or packaging means that this product is compliant with RoHS Regulations of the European Parliament and Council Directive on the Restrictions of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (2011/65/EU).

This symbol on the product or packaging means that this product complies with the following directives and regulations:
•(2014/53/EU) Radio equipment directive.
•(2011/65/EU) RoHS directive.
•(2014/35/EU) Low voltage directive.
•(2014/30/EU) EMC.

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