

# **Power Stooage PSWS1**

## **User Manual**

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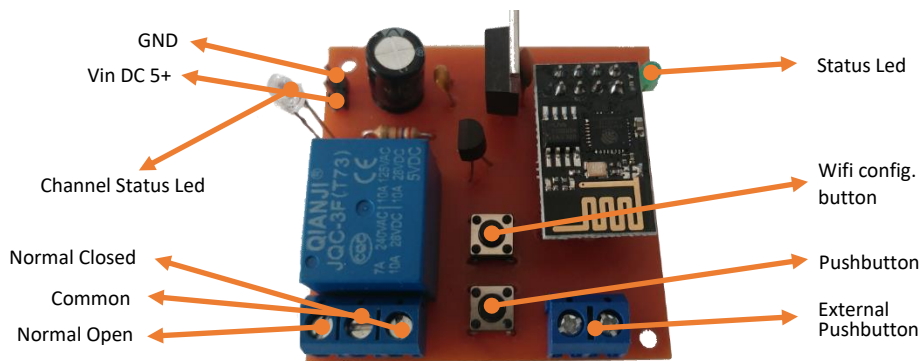
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## Overview

Power Stooge PSWS1 is a Wifi smart switch applicable for lights, engines, heaters, and most of the household or office appliances.

Includes all the Coiaca firmware features. And since works with MQTT protocol, can be easily integrated to automation systems.



## Features

- Supports status tracking
- Supports remotely turn on or off connected appliance/light.
- Support for external pushbutton
- Indicator led for channel status
- Connection status indicator led
- Local Switch feature for configuring pushbutton behavior
- Wifi AP configuration button
- Supports Remote Management
- Telemetry feature
- MQTT debug
- Supports up to 14 timers for scheduling device operation
- NTP server synchronization

## Specifications

- Wireless standard: Wifi 802.11 b/g/n
- Antenna built in +19.5dBm output power in 802.11b mode
- Security Mechanism: WEP/WPA-PSK/WPA2-PSK
- Communication protocol: MQTT (with Birth message and LTW support for availability status)
- TLS version: 1.2
- Voltage range: 90/250v AC(50/60Hz)
- Max current: 10A (2200W)
- Operating Temperature: 0°C-40°C(32°F-104°F)

## Installation instructions (wiring)



### WARNING: HAZARD OF ELECTRICAL SHOCK

When performing the following operation there may be exposed components at above line potential. Extreme care should be taken to protect against electrical shock.

**Be careful not to touch wiring or connector terminals while device is connected to mains.** Be sure to place the device in an insulated place on a nonconductive surface before working on it

Stand on an insulating pad and make it a habit to use only one hand when checking components. Always work with another person in case an emergency occurs.

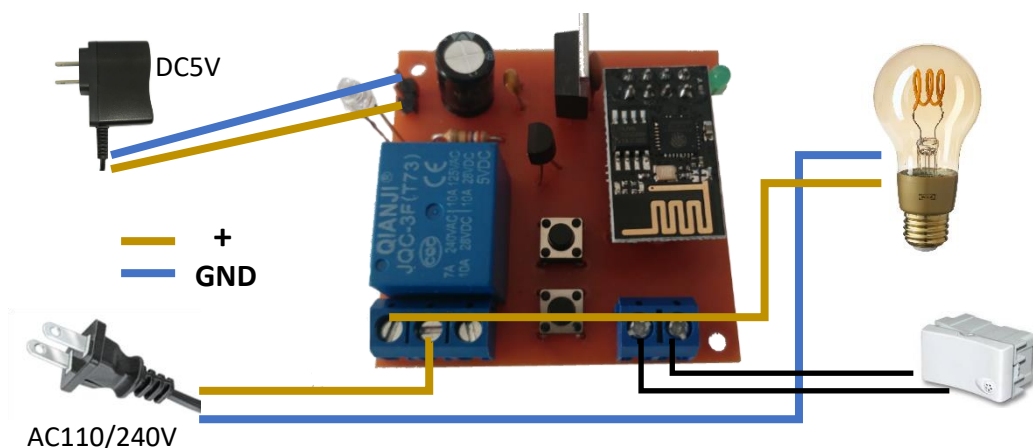
If you don't know how to install it, call a professional electrician (some countries prohibit installation without a licensed electrician present)

The device should be powered with DC5v. Refer to the image above and connect Vin DC 5+ pin to positive and GND to ground. It's recommended to supply 700ma or higher.

The appliance that will be controlled by the switch should be connected as follows:

- Negative should be connected directly from the source to the appliance.
- Positive from the source should be connected to common.
- Positive to the appliance should be connected depending on the desired behavior
  - If you want the appliance to be powered when switch is on (most commonly used), connect the appliance to Normal Open connector
  - If you want the appliance to be powered when switch is off (useful for emergency light, for instance), connect the appliance to Normal Closed connector.

A complementary external pushbutton can be connected to the device for easiest operation. Any pushbutton without retention can be wired on the External Pushbutton terminals.



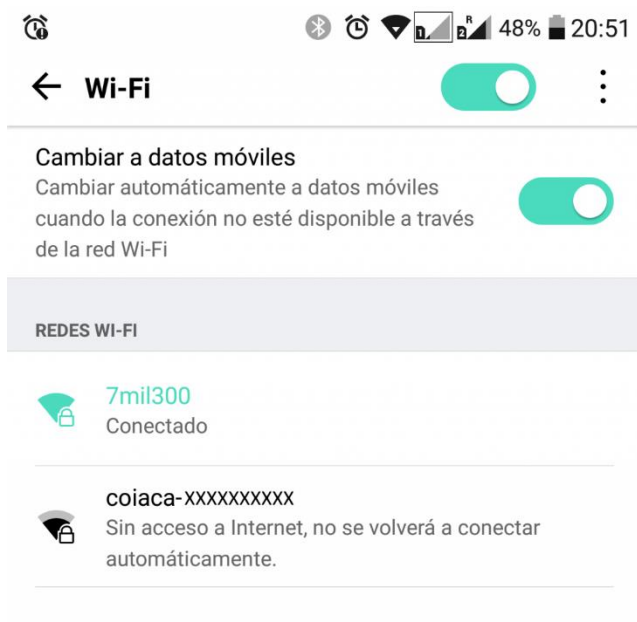
*Normally open wiring example*

## Device Configuration

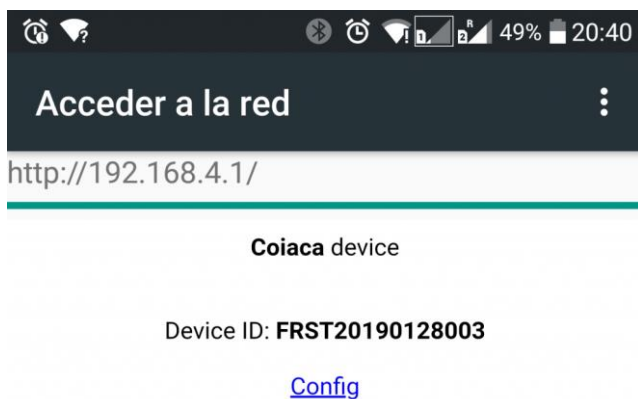
### WiFi and AP configuration

When no WiFi network is configured to connect to, or the configured network is unavailable, the device will start AP mode (Access Point) allowing clients to connect directly to make the configuration.

- Search for available Wi-Fi networks.
- Connect to a network with SSID similar to coiaca-xxxxxxx (where xxxxxx is the deviceId of your device)
- Use configured password to connect. If device is new, you will find the password on the label stuck on the device. If you don't know the current password, see below.

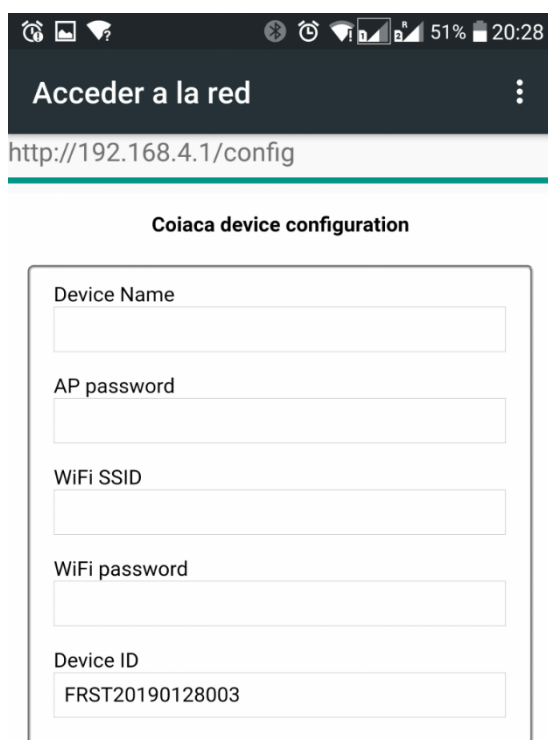


Once connected, a welcome page will show up. Click or tab on “Config” to enter configuration page.



Enter or edit the following parameters

- **Device Name:** is the SSID name that the device will show when acting as AP (Access Point)
- **AP password:** is the key to connect to the device when acting as AP to be configured. (It's mandatory to set this parameter if device is new. Fill and remember or save it in a safe place.)
- **WiFi SSID:** Is the name of the WiFi network the device will connect through. (Be aware that this parameter is case sensitive)
- **WiFi password:** Is the password key of the WiFi access point.



Acceder a la red

http://192.168.4.1/config

Coiaca device configuration

Device Name

AP password

WiFi SSID

WiFi password

Device ID

FRST20190128003

Scroll down to the bottom of the page and click on **"Apply"** button to save the changes and reset the device.

Apply

From now on, the device is configured to use the specified WiFi connection (WiFi SSID and WiFi password) and will connect to servers specified on the same config page. Configure servers accordingly to your needs or leave the default parameters to allow the device to be configured remotely later.



## Use cases

1. **You turn your Coiaca device on for the first time:** It turns into AP (access point) mode and waits for you to connect. For the first connection the default factory password (printed on the label stuck on the device case) is requested. When you connect to the AP, your device will likely automatically pop up the configuration portal page. (a Captive Portal.) with a web interface to set up your local network, and other configurations. When configuration is done, you must disconnect from AP. Then, the device detects that no one is connected, and continues with normal operation.
2. **WiFi configuration is changed (or device is moved to another location with a different network):** When the device cannot connect to the configured WiFi, it falls back to AP mode, and waits for you to change the network configuration. When no configuration was made, then it keeps trying to connect with the already configured settings. The Thing will not switch off the AP while anyone is connected to it, so you must disconnect from the AP when finished with the configuration.
3. **You want to connect to the AP to configure but have forgotten the configured AP WiFi password you set up previously:** Disconnect your device from power source. Then, follow the steps described below on *“What to do In case of losing or forgetting AP password”* (From this point operation follows as Case 1)
4. **You want to change the configuration before the device connects to the Internet:** The device always starts up in AP mode and provides you a time frame to connect to it and make any modification to the configuration. You must use the password configured on Case 1 to connect. While anyone is connected to the AP (provided by the device) the AP will stay on until the connection is closed. So, take your time for the changes, the Thing will wait for you while you are connected to it.
5. **You want to change the configuration at runtime:** Coiaca devices keeps the config portal up and running even after the WiFi connection is finished. In this scenario you must enter username “admin” and the password (already configured) to enter the config portal. Note, that the password provided for the authentication is not hidden from devices connected to the same WiFi network. You might want to force rebooting the device to apply your changes and make them persistent.

## What to do in case of losing or forgetting AP password.

If you lose or forget the AP password you have specified, you won't be able to access the devices configuration. But don't worry, your device can be forced to start in AP mode with the default password shipped from factory, usually printed on a label stuck on the product case, instead the last configured one.

To force the device to ask for the default password on start up, it needs to be powered on while Wifi configuration button is pressed.

Be sure that the device is not connected to mains and unplug one of the wires that powers the device.

While pressing the Wifi Configuration Button reconnect the unplugged wire to power the device, then release the Wifi Configuration Button.

The device will start in AP mode, the led will flash will blink fast and you will be able to connect using the default credentials to set a new configuration.

Once configured accordingly you can reconnect the device to mains.

From now on, the device will request the recently configured password to be accessed as AP or via Admin web interface.

### Channels and Connection status indicator led

This device has a led that represent the state of the switch and the connection status.

#### Statuses for switch status:

For the state of the switch, the interpretation is simple: When the led is on, the channel (or switch) is active, otherwise the channel is inactive.

If the led blinks every one second means that the channel is active but is running a timer to be turned off automatically.

#### Statuses for Connection Status:

- **Fast blink:** The device is in AP mode with default factory password waiting to be configured.
- **Fast blink, but mostly on:** The device is in AP mode, waiting for eventual configuration changes (password configured by user must be used).
- **Normal blinks:** Device is attempting connection to the configured WiFi network.
- **Mostly off with rare rapid blinks:** The device is connected to WiFi and is performing normal operation.
- **Blinking every one second:** "Time to OFF" feature is enabled and timer is running to turn off the channel automatically.

## Home automation system integration

Coiaca **Power Stooge WS01** can be easily integrated to any home automation system that supports MQTT protocol.

MQTT broker, topics and message payloads can be configured by the user to integrate the device according to the system of preference.

### Home Assistant

Lights or Switches components are used to integrate Coiaca **PSWS1** to Home Assistant.

An MQTT broker needs to be already installed and configured on Home Assistant. The following example shows how the configuration file *configuration.yaml* should looks like, in case of controlling a light:

light:

```
- platform: mqtt
  name: "My Smart Light"
  command_topic: "PSW3S1000000001/swcmd"
  state_topic: "PSW3S1000000001/state"
```

```
value_template: "{{ value_json.SW1 }}"
payload_on: "ON"
payload_off: "OFF"
availability_topic: "PSW3S1000000001/Status"
payload_available: "online"
payload_not_available: "offline"
```

Additionally, a sensor can be configured to get the wifi signal strength information:

```
sensor:
- platform: mqtt
  name: "My Smart Light Wifi Signal"
  state_topic: "PSW3S1000000001/state"
  unit_of_measurement: "dBm"
  value_template: "{{ value_json.dBm }}"
  availability_topic: "PSW3S1000000001/Status"
```

Depending on the implemented interface on Home Assistant *groups.yaml* or *lovelace.yaml* files may need to be updated in order to display components.

### Others MQTT home automation systems

This device can be integrated with any application or system that supports MQTT protocol. Most known systems are Home Assistant, OpenHab and Hubitat.

Refer to the application or automation system documentation to know how to configure MQTT options.

### How to retrieve current switch state?

Most home automation systems sometimes needs to know the current state of the devices (when restarting for instance). If devices receive a message on the command topic with an empty payload won't perform any action and will publish states on state topic.

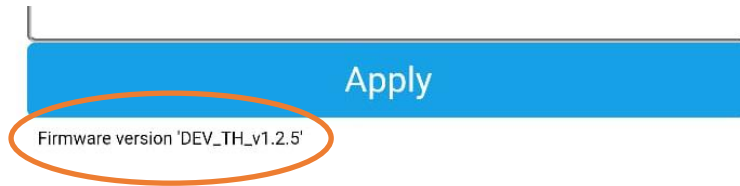
So systems like Home Assistant can be configured (with an automation) to publish an empty payload message on the device command topic after starting.

### Hardware and Firmware versions

If knowing the hardware version of the device is needed, it can be found printed on the board.

The firmware version the device was shipped from factory with, can be found on the printed label stucked on the packaging of the product or can be queried by scanning the QR code.

Since firmware can be updated, the current one could differ from the one originally shipped from factory. If the current firmware was officially provided by Coiaca, its version can be found on the config screen when connecting to the device via Wifi, on AP mode, at the bottom, next to the APPLY button.



Firmware version can also be queried with the Remote Management command `getConfigVersion`. (A complete Remote Management commands reference can be found on [coiaca.com](http://coiaca.com))

If device had been updated with a non Coiaca firmware, contact the firmware provider or developer to get support.

## Advance Configuration

### Features configuration

#### Update Interval

The device can be configured to publish a MQTT message with the state of the switch every certain period of time. That time is the Update Interval that needs to be specified in seconds. If valued is set to 0 (zero) the feature is disable and switch status will not be published until the switch is toggled and its state changed.

If "Publish Timer String" option is enabled, a second MQTT message containing the timer string will be published also, every time the Update Interval is elapsed.

#### Initial State

Initial State can be set to 0 (zero), that will make the switch to be turned off upon device startup. If set to 1, the switch will be turned on when device starts and if set to 2, the switch will recover the state of the moment the device was switched off or power supply was interrupted. Default value is 2.

#### Timer

Timer feature allows to program actions to be performed regularly by switch at certain times. Up to 14 actions can be programed creating a code that must be included on the Timer String.

For understanding how Timer String works and how it should be configured, refer to "Timer String format" chapter below.

#### NTP server configuration

For Timer feature to work properly NTP server should be configured. The device will retrieve the date and time information from server and will use it to evaluate timers and trigger actions, if any.

Devices are shipped with a default configuration that can be changed anytime modifying the NTP Server parameter and the Update Interval that is the period in seconds between device retrieves the information from server to remain updated.

Time Zone also need to be configured.

#### Local Switch

This parameter will determine the behavior of the device physical pushbutton. When this value is set to 1 the pushbutton will toggle the switch but If this parameter is set to 0 (zero) no visible action will be performed but an MQTT message will be publish according to the configuration specified on parameters “MQTT Button Payload on Press” and “MQTT Button Payload to OFF”

#### Time to off (Pulse)

When turning on switches, device can be configured to switch off automatically after a period specified in seconds.

If this parameter Is greater than 0 (zero) and the pushbutton is pressed when switch is off, it will be turned on, and will remain ON until Time to OFF period is elapsed. Then it will be switched off. Note that while Time to OFF timer is running the status indication led will blink every second until OFF.

If pushbutton is pressed while Time to OFF timer is running (and status led is blinking every one second) the Time to OFF period will be disregarded and switch will remain ON until pushbutton is pressed again or a MQTT message is received with the Switch OFF specified payload.

If this value is set to 0 (zero) Time to OFF feature will be disable, therefore the pushbutton will act as a regular switch toggling ON or OFF but without running any timer.

Default value is 60 seconds

#### Configuration parameters

The following is a description of each parameter that can be configured on device and its default setting from factory.

##### DeviceID

This is the unique identifier of the device. It's strongly recommended that user don't modify this parameter.

##### MQTT Server

The server the device will connect to publish its state and to listen for commands. The connection to this server is unsecure. To use the device with a secure connection (TLS 1.2) “Force all traffic through this secure connection” option should be used. (See below)

##### MQTT Port

Is the port MQTT server listens for unsecured connections (usual and default value is 1883)

##### MQTT ClientID

Is the unique identifier that the device will use to connect to the MQTT broker. For using Coiaca services or applications recommended by Coiaca is recommended not to modify this parameter. When using other services or applications the vendor or provider may need to

specify the value to be configured. The default value is the concatenation of the word “Coiaca” and the default DeviceID (Ex: CoiacaPSW3S1000000001)

#### MQTT User Name

The username for connecting to MQTT server. This parameter is optional since some brokers may not require it.

#### MQTT Password

The password for connecting to MQTT server. This parameter is optional since some brokers may not require it.

#### MQTT Switch Command Topic

Is the MQTT topic the device will subscribe to listen for commands. Do not modify the default parameter when using Coiaca services or Coiaca recommended applications. Otherwise this parameter should be specified by the service provider. The default value is the concatenation of the default DeviceID and “/swcmd”. (Ex: PSW3S1000000001/swcmd)

#### MQTT Switch State Topic

Is the MQTT topic the device will publish states on. Do not modify the default parameter when using Coiaca services or Coiaca recommended applications. Otherwise this parameter should be specified by the service provider. The default value is the concatenation of the default DeviceID and “/state”. (Ex: PSW3S1000000001/state)

#### MQTT Switch ON Payload

This value will be included on MQTT message payload when publishing states to indicate that the switch is on.

When this value is found on command messages will make the device to switch on.

#### MQTT Switch OFF Payload

This value will be included on MQTT message payload when publishing states to indicate that the switch is off.

When this value is found on command messages will make the device to switch off.

#### Update interval

Device can be configured to publish the switch state periodically. The time between publishes can be configured setting this parameter. The value must be specified in seconds. If set to 0 (zero) the feature will be disabled, and states only will be published when an action is performed.

#### Initial State

Indicates the initial state of the switch when the device is turned on. Allowed values are as follows:

- 0 (Zero) The switch will be turned off after device start.
- 1 the switch will be turned on after device start.
- 2 the switch will recover the state of the moment the device was powered off.

Default value is 2

#### Channel Status Led

The device led always indicate the connection status. If this parameter is configured to YES, the led will behave also as channel indicator led. (See details on “Channels and Connection status indicator leds” section)

Default value is ON

#### Timer ON

Setting this parameter to YES enables the timer feature. Default value is OFF

#### Timer String

Is the string needed to program the timer feature.

#### *Timer String format*

Timer Strings contains 7 characters substrings including information about each action to be performed, the target partition, and the moment these actions will be triggered.

**First characters of the substring represent the day of the week, or the day combination when the action will be triggered.** Day combination character list is as follows:

A: Monday  
B: Tuesday  
C: Wednesday  
D: Thursday  
E: Friday  
F: Saturday  
G: Sunday  
H: Mo, Tu, We, Th, Fr, Sa, Su  
I: Mo, Tu, We, Th, Fr  
J: Sa, Su  
K: Mo, Tu, We, Th, Fr, Sa  
L: Mo, We, Fr,  
M: Tu, Th, Sa  
N: Mo, Tu, We  
O: Th, Fr, Sa  
P: Mo, We, Fr, Su

**Next four characters represent the time when action will be triggered**, in 24hs format without separators. For instances 13:30hs is “1330” and 18:30hs is “1830”

**Next character represents the action itself:** 1 to turn on and 0 to turn off.

**The last character represents the target switch.** Must be indicated with the switch number or with an A for all switches.

Example String:

Ex. "H090011H205901G030011G033001"

In the given example, switch 1 will be turned on at 9hs and will be turned off at 20:59hs every day. Also, switch 1 will be turned on every Sunday at 3am and will be turned off at 3:30am, same day.

#### Publish Timer String

When enabled, this option will make the device to publish timer string every time states are published. Default value is NO

#### NTP Server

Is the time server to retrieve the time information from. Default value is pool.ntp.org

#### Time Zone

Indicates the time zone the device will operate timers.

#### NTP Update Interval

Is the interval in seconds between the attempts of NTP feature to retrieve the time from server to stay synced and updated. Default value is 300 (5 minutes)

#### DST (Daylight Saving Time)

When enabled, this option will apply DST (Daylight Saving Time) offset to the time retrieved from server. Default value is NO (disabled)

#### MQTT Button Command Topic

Is the MQTT topic the device will publish a message on, when pushbutton is pressed. Do not modify the default parameter when using Coiaca services or Coiaca recommended applications. Otherwise this parameter should be specified by the service provider. The default value is the concatenation of the default DeviceID and "/btncmd". (Ex: PSW3S1000000001/btncmd)

#### MQTT Button Payload on Press

Is the payload of the MQTT message that is published every time the pushbutton is pressed. Default value is 1

#### MQTT Button Payload to OFF

Is the payload of the MQTT message that is published when "Time to OFF" specified time is elapsed. Default value is 0 (zero)

#### Local Switch

This setting indicates the behavior of the device when pushbutton is pressed

- Value = 0 (zero): Device will only publish MQTT message. No action will be performed on switches
- Value = 1 (default): Device will toggle switch and publish new states.



#### Time to OFF

When this parameter is greater than 0 (zero), this will be the time in seconds the switch will remain ON before being automatically switched OFF. While this time is running, if channel status led is enabled, it will blink every second until time is elapsed.

If during this time pushbutton is pressed, countdown will be canceled, and switch will remain ON until pushbutton is pressed again.

Default value is 60 seconds.

#### MQTT Retain

MQTT retain value for publishing MQTT messages. Default value is 0 (zero, false)

#### MQTT QoS

MQTT QoS value for publishing MQTT messages. Default value is 0 (zero)

#### Enable Remote Management

When enabled, Remote Management feature is enabled. Default value is YES (enabled)

#### Remote Management Password

The password to be included as “pwd” param in JSON payload in MQTT messages to issue a Remote Management command.

This password is usually printed on a label stucked on the device. Be careful when updating this password because if forgotten, it won't be possible to control the device with Remote Management until this password is reseted. For resetting this password, connect locally when the device is acting as AP will be needed.

#### Remote Management MQTT server

The server the device will connect to listen for Remote Management commands and publish command results. The connection to this server mandatory secure (TLS 1.2)

#### Remote Management MQTT port

Is the port Remote Management MQTT server listens for secured connections (usual and default value is 8883)

#### Remote Management MQTT User Name

Username device will use to connect to Remote Management broker (this parameter is mandatory if Remote Management feature is enabled)

#### Remote Management MQTT Password

Password device will use to connect to Remote Management broker (this parameter is mandatory if Remote Management feature is enabled)

#### Force all traffic through this secure connection

If enable, this option will force the device not to use the main MQTT server connection that is unsecure Only the broker specified for Remote Management will be used for all matters and all traffic will take place though its secure connection.

Default value is YES (enabled)

#### Remote Management Command Topic

Is the MQTT topic the device will subscribe to listen for Remote Management commands. Do not modify the default parameter when using Coiaca services or Coiaca recommended applications. Otherwise this parameter should be specified by the service provider. The default value is the concatenation of "RMgmt/" and the default DeviceID. (Ex: RMgmt/PSW3S1000000001)

#### Remote Management Result Topic

Is the MQTT topic where the device will publish the results after executing a Remote Management command. Do not modify the default parameter when using Coiaca services or Coiaca recommended applications. Otherwise this parameter should be specified by the service provider. The default value is the concatenation of "RMgmt/", the default DeviceID and "/result". (Ex: RMgmt/PSW3S1000000001/result)

#### Telemetry update interval

When this parameter is greater than 0 (zero) the device will publish a state message in the topic specified on the "Telemetry Topic" parameter every time this period specified in seconds is elapsed.

If set to 0 (zero) the Telemetry feature is disabled therefore no message will be published.

Default value is 0 (zero)

#### Telemetry Topic

Is the topic where state messages are published when telemetry feature is enabled.

#### Remote Management MQTT Retain

MQTT retain value for publishing MQTT messages on Remote Management broker. Default value is 0 (zero, false)

#### Remote Management MQTT QoS

MQTT QoS value for publishing MQTT messages on Remote Management broker. Default value is 0 (zero)

## MQTT Debugging feature

Sometimes is needed to know what is happening on the device and you don't have physical access to connect and debug. You can enable the MQTT debugging feature to get some debug information remotely.

This feature requires the Remote Management MQTT broker to be configured in order to work properly.

#### Enable MQTT Debug parameter

When enabled, the device will publish on the specified topic, everything that happens on the device in a readable format, including deviceID.

Default value is 0 (zero, disabled).

#### MQTT Debug Topic

Is the topic where debug messages are published when MQTT debug feature is enabled.

## Disclaimer

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Coiaca reserves the rights to modify, improve, replace or cancel this product without any prior notification.

Coiaca reserves the rights to change or cancel the content of this document without any prior notification.

## Warranty

This Limited Warranty applies to Coiaca products still within their original warranty period.

You may need only simple instructions to correct a problem with your product. Try our website at [coiaca.com](http://coiaca.com), rather than going to your retailer. If the problem cannot be solved with the troubleshooting information available online, you will be offered express factory service. Please do not send any products to Coiaca without contacting us first.

#### Limited Hardware Warranty

Coiaca warrants to the original purchaser that the hardware product shall be free from defects in material and workmanship for three (3) months from the date of purchase. If a defect covered by this warranty occurs during this warranty period, Coiaca will repair or replace the defective hardware product or component, free of charge.\* The original purchaser is entitled to this warranty only if the date of purchase is registered at point of sale or the consumer can demonstrate, to Coiaca's satisfaction, that the product was purchased within the last 3 months.

#### Service after expiration of warranty

Please try our website at [coiaca.com](http://coiaca.com) for troubleshooting information and repair or replacement options and pricing.\*

\* In some instances, it may be necessary for you to ship the complete product, FREIGHT PREPAID AND INSURED FOR LOSS OR DAMAGE, to Coiaca. Please do not send any products to Coiaca without contacting us first.

#### Warranty Limitations

This warranty shall not apply if this product has been damaged by products not sold or licensed by Coiaca (including, but not limited to, adapters, software, and power supplies).

In addition, this warranty shall not apply if this product (a) is used for commercial purposes (including rental); (b) is damaged by any unauthorized modifications or tampering; (c) is damaged by negligence, accident, unreasonable use, or by other causes unrelated to defective materials or workmanship; (d) has had the serial number altered, defaced or removed; or (e)

has been intentionally modified using malicious code, malware, virus, bots, worms, trojans, backdoors, exploits, cheats, hacks, or hidden diagnostics that may harm the product or our systems.

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