HCA Tech Note 615

Shelly WiFi devices (Updated 21-Dec-2021)

This note describes the support for Shelly WiFi devices. Not all device types are supported at this time.

Step 1.

Use the instructions that come with the device to install it into your environment. You can use the Shelly app or its built-in web server. This note shows using the webserver and not the app to adjust necessary settings. But both would work.

Once installed, it is necessary to make sure that the device IP address doesn't change over time as HCA stores that address as part of the device configuration. Use whatever means are available for that - IP Reservations, Reserved IP address – in your router.

Step 2.

Import the Shelly package into your HCA design from the online library.

Step 3.

Create a new device of type "Shelly Relay" or "Shelly Sensor". When completed, open the properties of the device and on the "User Class Object" tab, enter the IP address of the device. For example:

If you are using a multi-channel relay module, then suffix the ID with a colon followed by the relay number. For example, if you are using the 4-channel relay module with IP address 192.168.0.45, create 4 HCA devices and in the class id use 192:168.0.45:1 for the first relay, 192.168.0.45:2 for the second, 192.168.0.45:3 for the third, and 192.168.0.45:4 for the fourth.

Step 4.

If the device controls a load, test the device by a right-click on the device name in the HCA left pane or on the icon in the right pane and select ON and OFF from the popup menu. The load controlled by the device should go on and off. If you are close to the device you should hear the relay click. If it doesn't go on and off, then check the IP address.

NOTE: The following steps are only needed if you want to handle actions sent from the devices. For example, from the optional button on the Relay device (Shelly 1) or an asynchronous report from a sensor device.

At this time (9-Nov-21) only Shelly Gen1 device reports are supported. Gen1 devices let you specify a URL in the device configuration to report actions. An example is given below. Gen2 devices use MQTT which is not supported at this time.

Step 5.

In HCA create a new interface of type "Generic Server". Name that interface "Shelly HTTP" and make sure its properties are configured like this:

Configuration for: Shelly HTTP (Port:8082)   ✕

A name is needed when referencing this generic IP Server in programs that use it.

Name: Shelly HTTP

Connection

IP Port: 8082

☐ Clients connect using WebSocket Protocol

Logging

☐ Log receptions from this interface
☐ Log sends to this interface

Data

◯ Data is binary
◉ Data is text

What character(s) delimit each message SENT TO this interface?   None ⌄

What character(s) delimit each message RECEIVED FROM this interface?   None ⌄
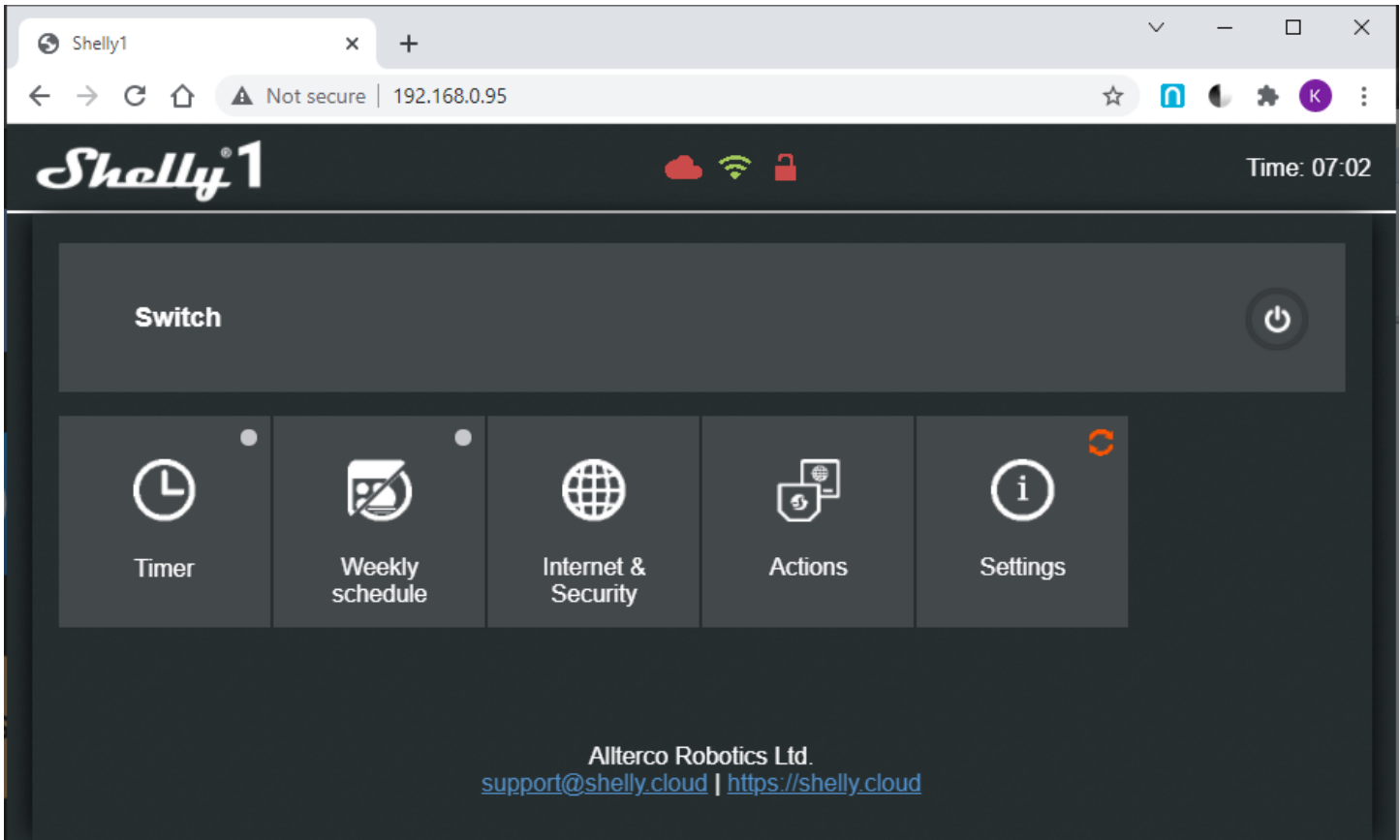
OK   Cancel

You can use any port number you want just make note of your choice. Make sure that data is specified as "text" and that the delimiters are both set to "None".

Step 6.

The next step configures the Shelly device. Open a browser and enter the IP address of the device in the address bar. Only Gen1 devices have the *Action* section.

Open the *Actions* section and edit the URL for each button action you want HCA to be notified for.

The Shelly UI has some quirks. Make sure you both tick the "Enabled" box and enter the URL <u>before</u> saving. If you don't tick the *enabled* box and only enter a URL, it will not get saved. Also, don't forget to press the "Save" button.

For actions, the URL should be of the form:

http://<ip address of the HCA computer>:<port #>/HCA?action=<action>

For the 1-button relay with the optional button, the actions are buttonLong, buttonShort, buttonOn, buttonOff, relayOn, relayOff

This is all documented in the Shelly package program "Receive message" in the program notes. For other devices types you can use whatever actions names you want. See more below for working with Sensors.

Step 7.

Back in HCA, open the properties of the Shelly device that has been configured to send a message on some event. On the "Tags" tab enter a tag called "ShellyAction" like this:

The ShellyAction tag value is a comma separated list like this: <action name>,<program to start>,…

In the above example configuration, when an action "buttonShort" is received, the program "Outside-GateShort" Is started. If an action "buttonLong" is received, the program "Outside-GateLong" is started. The

TechSup@HCATech.com

www.homecontrolassistant.com

started program is supplied with two value parameters: The first is the name of the device sending the action and the second parameter is the action. In this way one program could handle multiple actions from multiple devices if desired.

Number of parameters: 2	

		Type	Default for value parameter if not supplied by calling program
Parameter 1:	Device	Value	
	What HCA Device		
Parameter 2:	Action	Value	
	What action		

NOTE: The action names listed above, "buttonShort, buttonLong, etc, are not really "must use". All that happens is that whatever text you put in the "action=" parameter of the URLs in the Shelly configuration, is matched against the text in the ShellyAction tag to determine which program to run.

Also, each time an action is received from a device, the action and time are saved in a tag called "LastAction" on that device.

Handling Sensors

The Shelly Sensor class implements a Get-Status operation. This allows the device to be polled and results decoded. To determine what elements of the status result you want to capture, tags are added to the sensor device. For example, this humidity sensor is configured to capture 2 items of state from the get-status report.

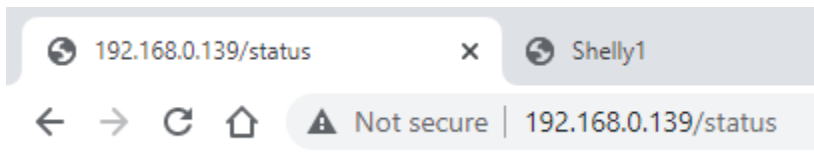| Tag Name	Current Value
ShellyStatus1	state,humidity_sensor,sensor_state
ShellyStatus2	humidity,humidity,percent

Each data item you want to capture is given as a tag name ShellyStatus#. The tag value is structured as the name of the tag to hold the data and the JSON path to that data.

In this example there are two pieces of information to be captured. The first will be called the "state" and the second will be called the "humidity". The JSON path to the first item is "humidity_sensor, sensor_state". The path to the second item is "humidity, percent".

To determine the path to an item, start a browser and enter into the address bar the IP address of the device followed by /Status. Copy the returned JSON and paste into a JSON viewer.

Viewed by using: http://json.parser.online.fr/

```
⊟{
    "wifi_sta": ⊞{…},
    "cloud": ⊞{…},
    "mqtt": ⊞{…},
    "time":"06:39",
    "unixtime":1636353587,
    "serial":1,
    "has_update":true,
    "mac":"10521C47C1F6",
    "humidity_sensor": ⊟{
        "sensor_state":"normal",
        "self_test_state":"not_completed",
        "alarm_state":"none"
    },
    "humidity": ⊟{
        "percent":67,
        "is_valid":true
    },
    "update": ⊞{…},
    "ram_total":50608,
    "ram_free":39916,
    "fs_size":233681,
    "fs_free":135289,
    "uptime":230579
}
```

From this the path to the items to be captured is easily determined. When the device is polled for status, those configured items are decoded from the reply and saved as tag values, named as you specified, in the device.
##end##

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