ZB-Shield with Home Assistant

This document describes how to use POPP ZB- Shield with existing Home Automation platform called Home Assistant (Hass.io) (<u>https://www.home-assistant.io/</u>).

POPP ZB-Shield firmware version, referenced in this guide: 6.3.0

Home Assistant (Hass.io) software version, referenced in this guide: 0.112.4

This guide focuses on:

- Connect POPP ZB-Shield to your Raspberry Pi
- Setup Zigbee Home Automation component in Home Assistant
- Zigbee devices Pairing and Removal
- Zigbee device example

This guide DOES NOT focus on Home Assistant (Hass.io) installation and initial configuration. Please follow the official instructions <u>https://www.home-assistant.io/hassio/installation/</u>.



Introduction

POPP ZB-Shield can be used with a Raspberry Pi with Home Assistant installed.



Home Assistant installed and running

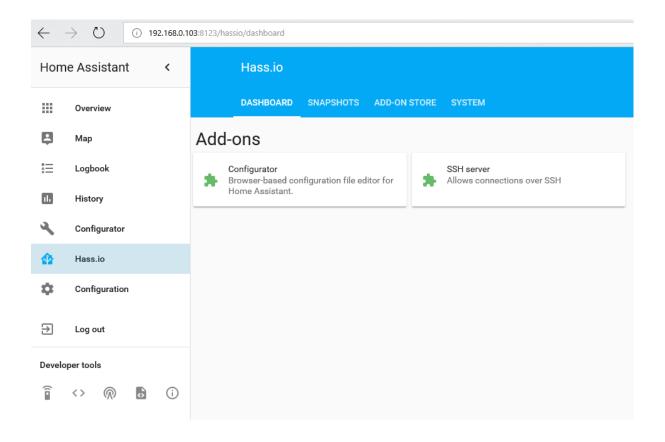


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Initial setup and connection

This guide does not cover Home Assistant (Hass.io) installation. We assume, that you can access Home Assistant Web Interface using your browser.

It is highly recommended to have SSH Server and Configurator addons installed, at least during the Zigbee setup phase. To install them just follow the Hass.io installation guide (<u>https://www.home-assistant.io/hassio/installation/</u>).



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Connect POPP ZB-Shield to your Raspberry Pi



Disable Serial Console

By default, the Raspberry Pi (1,2,3,4) has the Serial Console enabled on the UART, which is used by the POPP ZB-Shield. This results in conflict, so we need to disable the Serial Console.

To do it:

- Insert the SD card with installed Hass.io into your PC/laptop.
- Find the cmdline.txt file in the SD card file system

Name	Date modified	Туре	Size
overlays	7/3/2020 5:06 PM	File folder	
bcm2710-rpi-3-b.dtb	7/3/2020 5:06 PM	DTB File	26 KB
📄 bcm2710-rpi-3-b-plus.dtb	7/3/2020 5:06 PM	DTB File	27 KB
bcm2710-rpi-cm3.dtb	7/3/2020 5:06 PM	DTB File	25 KB
📄 boot.scr	7/3/2020 5:06 PM	SCR File	3 KB
📄 bootcode.bin	7/3/2020 5:06 PM	BIN File	52 KB
🗾 cmdline.txt	7/21/2020 11:04 PM	TXT File	1 KB
📕 config.txt	7/21/2020 11:05 PM	TXT File	2 KB
📄 fixup.dat	7/3/2020 5:06 PM	DAT File	7 KB
start.elf	7/3/2020 5:06 PM	ELF File	2,818 KB
u-boot.bin	7/3/2020 5:06 PM	BIN File	384 KB

- Modify this file and remove `console=tty1`:

cmdline.txt ×	
dwc_otg.lpm_enable=0	

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Enable UART Bluetooth overlay (RPi 3 and Rpi 4)

If you are using Raspberry Pi 3 you need to perform an additional step of enabling the Bluetooth UART overlay configuration. To do it:

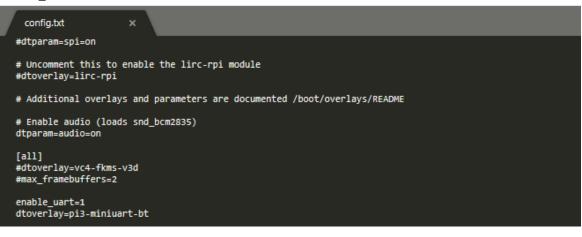
- Insert the SD card with installed Hass.io into your PC/laptop.
- Find the config.txt file in the SD card file system

Name	Date modified	Туре	Size
overlays	7/3/2020 5:06 PM	File folder	
bcm2710-rpi-3-b.dtb	7/3/2020 5:06 PM	DTB File	26 KB
📄 bcm2710-rpi-3-b-plus.dtb	7/3/2020 5:06 PM	DTB File	27 KB
bcm2710-rpi-cm3.dtb	7/3/2020 5:06 PM	DTB File	25 KB
boot.scr	7/3/2020 5:06 PM	SCR File	3 KB
📄 bootcode.bin	7/3/2020 5:06 PM	BIN File	52 KB
🗾 cmdline.txt	7/21/2020 11:04 PM	TXT File	1 KB
🧧 config.txt	7/21/2020 11:05 PM	TXT File	2 KB
📄 fixup.dat	7/3/2020 5:06 PM	DAT File	7 KB
start.elf	7/3/2020 5:06 PM	ELF File	2,818 KB
u-boot.bin	7/3/2020 5:06 PM	BIN File	384 KB

 Modify this file and add an extra line at the end: enable_uart=1 dtoverlay=pi3-miniuart-bt

Raspberry 4: dtoverlay=disable-bt

enable_uart=1



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Check configuration in the Web Interface

Once you have modified the hardware setup, boot up the Raspberry Pi and check the configuration.

- Insert your SD card back inside the Raspberry Pi
- Wait for Hass.io to boot
- Connect to the web interface using your favourite browser
- Navigate to the Supervisor -> System -> Hardware menu

=<	Home Assistant			Dashboard Add-on s	store Snapshots	System		
==	Overview	Information		3		1		
₽	Мар	Supervisor	Host system					
≣	Logbook	Version 229	Hostname	homeassistant	t			
11.	History	Latest version 229	System Deployment	HassOS 4.11 production		2		
			HARDWARE	CHANGE HOSTNAME		1		
			_					
		RELOAD JOIN BETA CHANNEL	REBOOT SHUTDOWN	IMPORT FROM USB				
		System log						
7	1 Developer Tools	[Ss-int] making user provided files available at // [Ss-int] making user provided files have control files that carrs.d] applying omership & permissions fixer [fir-attrs.d] does. [cont-init.d] does.int reacting [lat0:Si3] IMO: Updata user informations [cont-init.d] does.int reacting [cont-init.d] does.int reacting [services.d] does.int reacting [services.d] does.int reacting [services.d] does.int reacting [_main_] Init 20-07-23 10:05:13 INIO (MainTread) [_main_] Init 20-07-23 10:05:13 INIO (MainTread) [_main_] Init	permsexited 0. S ripts ialize Supervisor setup tstrap] Setup coresys foi	machine: raspberrypi3	nt/arm/7-hassio-supervise	or with version 229		
	Supervisor	20-07-23 10:05:31 INFO (Synchorker_0) [supervisor.dd 20-07-23 10:05:32 INFO (Synchorker 0) [supervisor.dd	ocker.supervisor] Connect	Supervisor to hassio Netv	work			
۵	Configuration	20-07-23 10:05:34 INFO (MainThread) [_main_] Setu 20-07-23 10:05:34 INFO (MainThread) [_upervisor.uti 20-07-23 10:05:34 INFO (MainThread) [supervisor.uti	p Supervisor ls.gdbus] Connect to dbus	: org.freedesktop.systemd1	1 - /org/freedesktop/syst	temdi		
	Notifications	20-07-23 10:05:35 INFO (MainThread) [supervisor.uti 20-07-23 10:05:35 INFO (MainThread) [supervisor.uti 20-07-23 10:05:35 INFO (MainThread) [supervisor.hos	ls.gdbus] Connect to dbu t.info] Update local host	: org.freedesktop.Network information	Manager - /org/freedeskto			
a	admin	20-07-23 10:05:35 INFO (MainThread) [supervisor.uti 20-07-23 10:05:35 INFO (MainThread) [supervisor.hos 20-07-23 10:05:35 INFO (MainThread) [supervisor.uti	t.services] Update servi	e information				

- Confirm the UART serial ports are visible for you (/dev/ttyAMA0 and /dev/ttyS0)



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Zigbee HA Component configuration

To work with POPP ZB-Shield from Home Assistant we are using Zigbee Home Automation Component (<u>https://www.home-assistant.io/components/zha/</u>). It comes preinstalled into Hass.io so we only need to configure it properly to get it working.

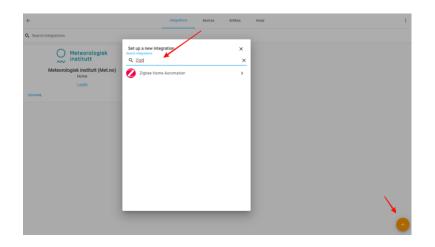
Configure ZHA component

To setup Zigbee Home Automation component to work properly with POPP ZB-Shield we need to:

- Navigate to the **Configuration -> Integrations**

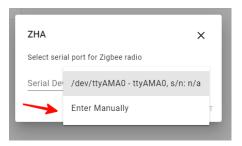
≡<	Home Assistant
88	Overview
ę	Map
ΙΞ	Logbook
il.	History
ァ	Developer Tools
≙	Supervisor 🗡
۵.	Configuration

- Add new Integration and search for Zigbee Home Automation

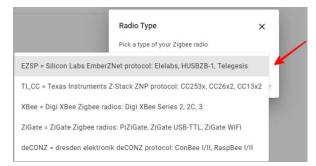


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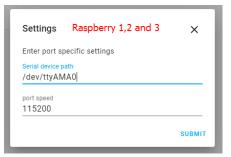
- Select Enter Manually



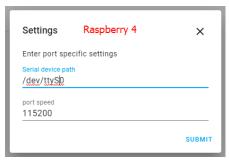
- Select EZSP radio type



- For Raspberry Pi 1,2,3 enter /dev/ttyAMA0 as Serial Port and select Baud rate 115200



- For Raspberry Pi 4 enter /dev/ttyS0 as Serial Port and select Baud rate 115200



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- The installation should be successful

Success!		×
Created configuration f	or /dev/ttyS0.	
We found the following	devices:	
Zigbee Coordinator EZSP = Silicon Labs Er protocol: Elelabs, HUSI Telegesis (ZHA)		
Area Living Room	× -	
		FINISH

Now the Zigbee Integration should appear:

⇒ Home Assistant	<	Integrations Devices	Entities Areas
Overview	Q Search integrations	•	
😫 Мар			
E Logbook	Meteorologisk institutt		🙋 zigbee
tk History	Meteorologisk institutt (Met.no)		Zigbee Home Automation
Kile editor	Home		/dev/ttyAMA0
Log Viewer	RENAME		
> Developer Tools			
Supervisor			
Configuration			

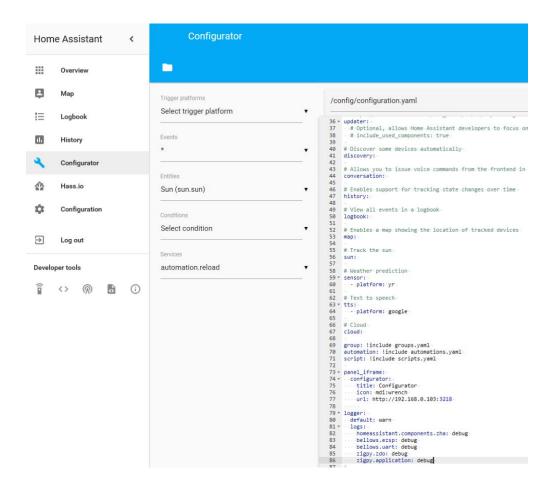
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Setup Logging (optional)

To spot any potential issues it's good practice to enable logging, at least during the setup and installation period. To do it, just add the following lines to the configuration file **/config/configuration.yaml**:

logger:

default: warn logs: homeassistant.components.zha: debug bellows.ezsp: debug bellows.uart: debug zigpy.zdo: debug zigpy.application: debug



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Zigbee HA Component Usage

Once Zigbee Component is added and configured properly you can start to use it.

Add your devices to the Home Assistant

Open Configuration and go to Devices and Zigbee Coordinator

≡<	Home Assistant	(Integrations Devices	Entities Areas		
==	Overview	Q Search	1			
Ę	Мар	↑ Device	Manufacturer	Model	Area	Integration
i=	Logbook History	Zigbee Coortinator	214	EZSP - Gilloon Labs EmberZNet prot	No area	Zigbee Home Automation
عر	File editor					
	Log Viewer					
~	Developer Tools					
ŵ	Supervisor					
۰.	Configuration	+				

Start "Add Devices via this device"

igbee Coordinator				💋 zigbee
Device info				
	Automations	•	Scripts	•
EZSP = Silicon Labs EmberZNet protocol: Elelabs, HUSBZB-1, Telegesis				
by ZHA	No automations		No scripts	
Zigbee info				
IFFF: 14:b4:57:ff.fe:3c:71:aa				
Nwk: 0x0000				
Device Type: Coordinator				
LQI: 255				
RSSI: Unknown				
Last Seen: 2020-07-23T13:32:39				
Power Source: Mains				
Quirk: bellows.zigbee.application.EZSPCoordi nator				
ADD DEVICES VIA THIS DEVICE	-			

When you will call it, you have 60 seconds to add the device.

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Network	Groups
Searching for ZHA 2	Zigbee devices
3)
Make sure your devices are in pairing mode. Check t	he instructions of your device on how to do this.
Devices will show up he	re once discovered.

During this period, you need to follow Device manual to put it in Pairing mode. Sometimes you just need to give it power.

If the device is found, you will be able to see it in the logs (example device)

	Searching for ZHA Zigbee devices	
	×.	
	IKEA of Sweden TRADFRI bulb E27 CWS opal 600lm TRADFRI bulb E27 CWS opal 600lm by IKEA of Sweden Charge device name IKEA of Sweden TRADFRI bulb E27 CWS opal 600lm	
[0x3ce1:1:0x0000]: 'async_initialize' stage succeeded [0x3ce1:1:0x1000]: 'async_initialize' stage succeeded [0x3ce1:1:0x0005]: 'async_initialize' stage succeeded [0x3ce1:1:0x0005]: 'async_initialize' stage succeeded [0x3ce1](TRADFRI bulb E27 CWS opal 6001m): power source: Mains [0x3ce1](TRADFRI bulb E27 CWS opal 6001m): completed initialization [0x3ce1:1:0x0006]: attempting to update onoff state - from cache: False [0x3ce1:1:0x0006]: CL deserialize: -2CLHeader frame_control= <frameco command_id=Command.Read_Attributes_rsp> None: polling current state - from cache: True</frameco 	ntrol frame_type=GLOBAL_COMMAND manufacturer_specific=False is_reply=Tru	disable_default_response=True> manufacturer=None tsn=63

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Remove your device from Home Assistant

Open **Configuration** and go to **Devices**.

=	Home Assistant	÷	Integrations Dev	tes Entities Areas			
55	Overview	Q, Search					
印	Мар	↑ Device	Manufacturer	Madel	Area	integration	Batt
钽	Logbook	IREA of Execten TRADFRE bub E27 OWE opai 600m	IKEA of Sweden	TRADIFIC bulb E27 CWS opel 600 m	Living Room	Zigbee Home Automation	
	History	Zigbee Geordinater	214	EZOP - Silicon Labs EmberZNet prot.	No area	Zigbee Home Automation	
Å	File editor						
~	Developer Tools						
¢	Supervisor						
٠	Configuration						

Select the device, which you would like to remove

KEA of Sweden TRADFRI I	Devices	Entities A	ireas	💋 zigbee
Device info TRADFRI bulb E27 CWS opal 600lm by IKEA of Sweden Zigbee Coordinator Firmware: 013000272	Automations No automations	0	Scenes No scenes	0
Zigbee info Zigbee info IEEE: 14.b4.57.fff.e2.d50.f1 Nwk: 038.ce1 Device Type: Router L01; 255 RSB:-31 Last Seen: 2020-07-23113.42:26 Power Source: Mains			Scripts No scripts	0
RECONFIGURE DEVICE ADD DEVICES VIA THIS DEVICE ZIGBEE DEVICE SIGNATURE MANAGE CLUSTERS REMOVE DEVICE				
Entities	•			
ADD TO LOVELACE				

Once you call this service you can verify in the logs, that the device has left the network.

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Example: Philips Hue Bulb

This example is done with Hue White Single bulb E26 but is applicable to other products as well.



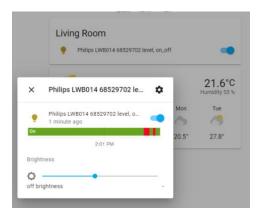
To control Philips Hue Light bulb using Home Assistant, one first needs to reset it.

Once it is reset, you can follow the regular process to Add it to the Home Assistant.

- Call Add Devices service as explained in Add devices section of this guide
- Power ON the Lightbulb
- Confirm it is added to the Home Assistant

Philips LWB014 Lwebora Printips	Philips LWB014 LWB014 by Miles Cuego deces name	Philips LWB014 LyMB014 P Comparation source Philips LWB014 Ann	s	earching for ZHA Zigbee device	
LURIO14 by Philips € Campt Inter name	Luttori A by Philips Oninger disent norma Philips LUNDO14 Ans	USBOIL 4 P Charger block starss Public UMDOI 4 Public UMDOI 4 Ariss Living Room X *		\smile	
		Living Room X +		LWB014 by Philips	

Now you can control it directly or use in the scenarios.



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Troubleshooting

If your issue is not described here or you need help resolving it, please contact support at info@popp.eu.

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