Home e-paper screen v2 guide.

New on v2 :

- Use it with or without touch screen.
- First install is easyest
- Update if new version is available by web page (no need arduino IDE)
- More customize your display than the v1
- Choose about 52 icons
- Control device with touch screen
- Display value is optimized than v1
- Card action need to display values are (very) reduced
- Button on board are implemented
- And few little options…

Updated for : v2.1.0

Installation :

You have 2 possible way to install Homey e-paper v2 :

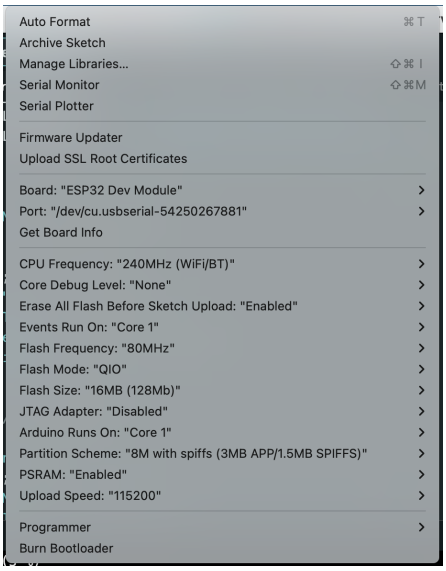
- With Arduino IDE
- With Flash Download Tool

Arduino IDE :

Download arduino IDE (1.8.X or 2.X), and install ESP32 board.

If you don't know how install ESP32 board in Arduino IDE you can follow this guide :
https://randomnerdtutorials.com/installing-the-esp32-board-in-arduino-ide-windows-instructions/

On arduino IDE, install AsyncElegantOTA library in the library manager.
Then go to → file → examples → AsyncElegantOTA → Demo
Change SSID and PASSWORD in the code and upload with this parameters.
Be sure « Erase all flash content… » is enable to clear all the memory.
(If you are on Windows, you can set Upload Speed to 921600):



Then dowload the Homey e-paper .bin file here :
https://github.com/sebyldino/Homey-e-paper-v2
To install it, go to http://IP-ADDRESS-OF-YOUR-ESP32/Update.
you will have the page bellow. Select 'Firmware', choose the .bin file and upload will start automatically.

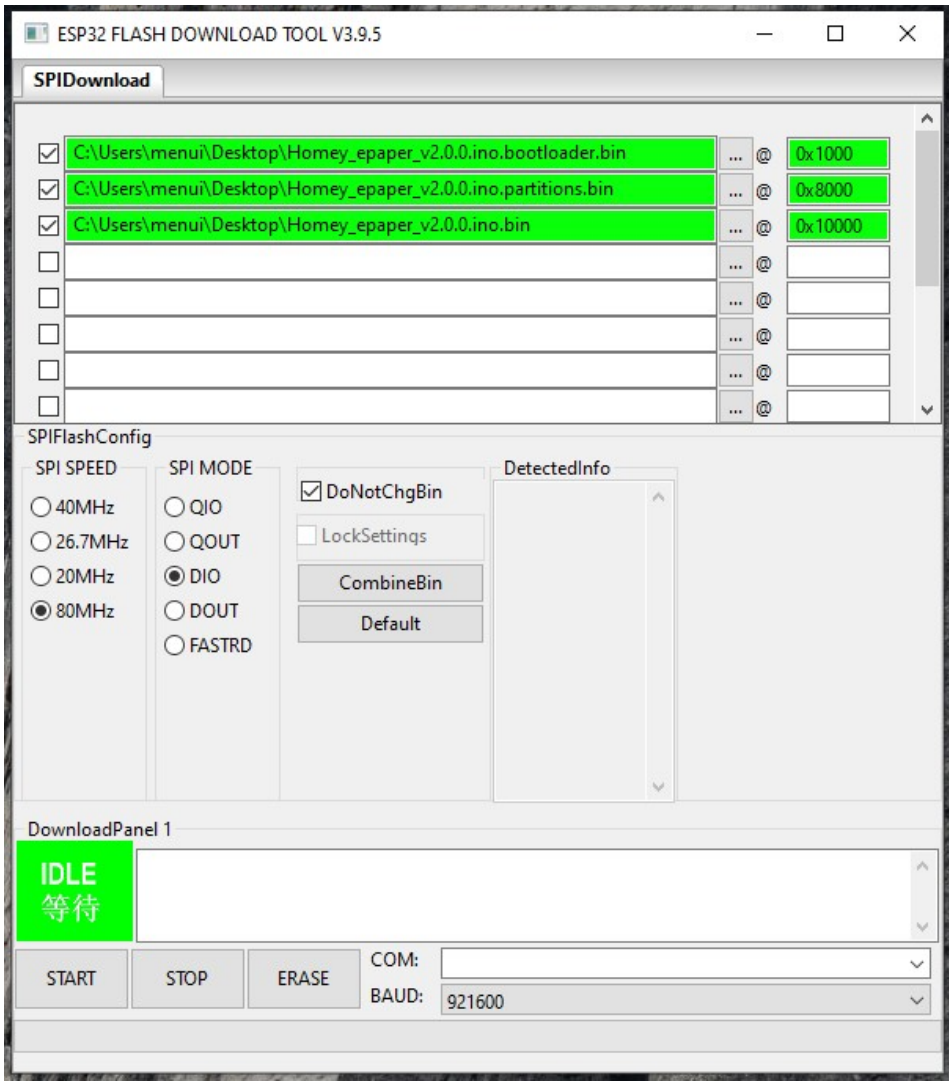
That all ! See your Homey e-paper screen to continue.

Flash Download Tool:

Download Flash Download Tool here : https://www.espressif.com/en/support/download/other-tools
and run it.

Erase you Lilygo : Click "ERASE" you will see green square pass to "SYNC", put your Lilygo in boot mode (in my case i need to press S6 button on my board), green square pass to "downloading" and wait for blue square pass to "FINISH"

Then, select the differents files and define the addresses to write them like this :
(I dont know if the addresses will change with future releases. If it is, i will define them in the release description.)



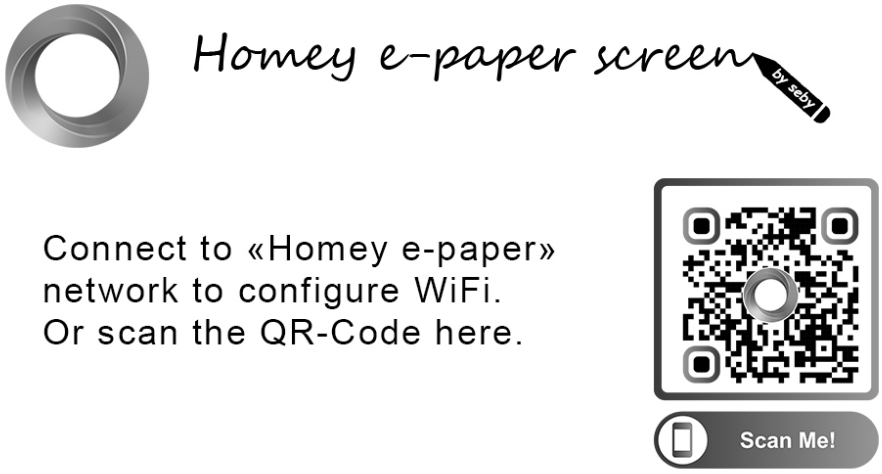
That all ! See your Homey e-paper screen to continue.

Updating :

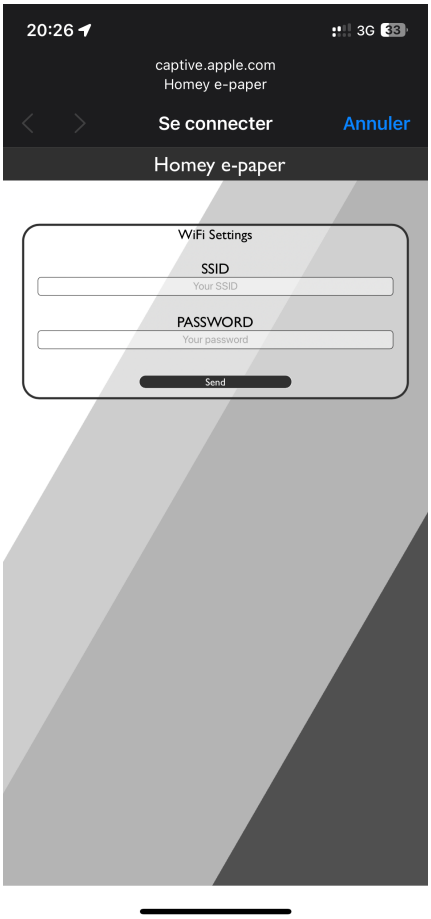
If new version is avalaible. To install it, go to
http://IP-ADDRESS-OF-YOUR-ESP32/Update
Select 'Firmware' an choose the .bin file of version you want to install.
This does not affect the saved values.

Connect to Wifi :

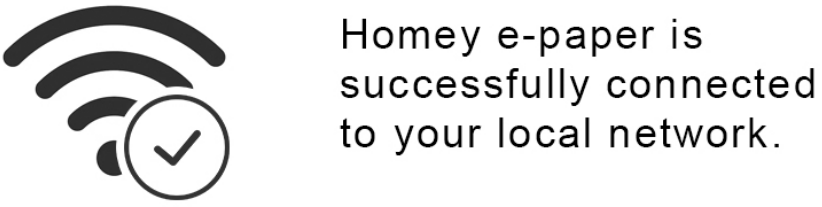
Normally, you will show this screen :



Select the Wifi network or scan QR code (on iPhone, you need unlock your iPhone before scan QR code. Dont know about this on Android).
Wait for the captive portal ask you WiFi settings. Set and send them.



If Wifi success, you will see :



Integration in Homey :

Download Homeyduino app on the Homey store.
Add a device like a classical device and Homeyduino will automatically detect Homey e-paper.

Specification of differents cards you will found :

Note :

- **Respect hyphens "_" commas "," semicolons "; » upper and lower case letters, spaces.**
- **All cards are of type [text]**

Settings card :

This card need to be call just one time when you need it (first start, or change settings). All values are saved and recovered at each startup

Options	Possible values	Default value	Example	Description
Language=X;	EN, FR, NL	EN	Language=FR;	Select your language (English, French, Dutch)
Deep_Sleep_Time=X;	time in minute. 0 to ... (0 need a touch screen)`	5	Deep_Sleep_Time=5;	Time between 2 wakes up of the Homey e-paper. 0 without touchscreen disable deep sleep, 0 and «Wake_Up_With_Touch_Screen=true; » wake up Homey e-paper only by touch the screen. 0 and «Wake_Up_With_Touch_Screen=false; » disable deep sleep
Time_Before_Sleep=X;	Time in seconde 0 to...	0	Time_Before_Sleep=1;	Time must wait Homey e-paper before enter in deep sleep. (this is only of interest with a touch screen in order to carry out actions.)
Click_Mark_Enable=X;	true or false	false	Click_Mark_Enable=true;	This draw clik mark on the top right of each device has the param « clickable » (see it on « Zone » section)
Wake_Up_With_Touch_Screen=X;	true or false	false	Wake_Up_With_Touch_Screen=true;	Wake up Homey e-paper by touch the Screen (need a touch screen). Can be false only if you set a deep sleep time > 0 to disable Deep sleep
Display_With_Touch_Screen=X;	true or false	false	Display_With_Touch_Screen=true;	Define if a touch screen is present

Important:
- Be careful to use « ; » to separate the values.
- Do not use space after « = » .
- No « ; » after latest value .
- Display_With_Touch_Screen=false will automatically set Click_Mark_Enable and Wake_Up_With_Touch_Screen to false

Example of full settings: Language=FR; Deep_SleepTime=0; Click_Mark_Enable=true; Wake_Up_With_Touch_Screen=true; Display_With_Touch_Screen=true

Battery_Calibration card :

This card is create to get accuracy value of the battery percent calculated.
It need to be call just one time when you need it (first start, or change settings). All values are saved and recovered at each startup

Options	Possible values	Default value	Example	Description
Voltage_Min=X;	Number	3.2	Voltage_Min=3.18;	Set the minimum voltage measured when the battery is empty
Voltage_Max=X;	Number	4.2	Voltage_Maxi= 4.25;	Set the maximum voltage measured when the battery is full

Important:
- Be careful to use « ; » to separate the values.
- Do not use space after « = » .
- No « ; » after latest value .
- Voltage value must have point « . » not a comma « , »

Example of full settings: Voltage_Min=3.18; Voltage_Maxi=4.3

Trigger card :

This card send a trigger to Homey to start any action

Trigger's name	Description
Homey_e_paper	On each startup, Homey e-paper send a trigger. Use it to start a flow.
Trigger_Device_1 to Trigger_Device_8	Need a touch screen. When you touch a device, it will send a trigger to Homey
Release	Trigger sent at each startup with a tag of the installed release. You can compare it with the one available on github. (See « others » for more)
Trigger_Button_1 to Trigger_Button_3	When button 1, 2 or 3 has been pressed, a trigger is send to Homey. Use it to trigger what you want.
Timeout_Updating	Triggered when the time to update values to display take more than 20 seonds. For eg. It can be use to restart the update.

Screen_Layout card :

This card need to be call every time AND before all Zone_X cards to define the layout's display.

Options	Possible values	Default value	Example	Description
Z1=''; Z2=''; Z3=''; ...	S, D, T, Q, X	None	Z1=T;	S = a Simple tile D = a Double tile T = a Triple tile Q = a Quadruple tile X = not usable zone

Important:
- **Do not use space after « = » .**
- **You need to define all values.**
- **Separate values is not mandatory, the code only search « = » and take the first value follow it.**

Example of full settings: Z1=Q; Z2=T; Z3=D; Z4=S; Z5=S; Z6=S; Z7=D; Z8=S

Note :
4 zones per line. Line 1 = Zone 1 to Zone 4. Line 2 = Zone 5 to Zone 8.
The code will take care of errors if there are any in order to produce a correct display.
In the example above, Z1 is Quadruple and it take space of Z1, Z2, Z5 and Z6.
So Z2 can not be Triple, Z5 and Z6 can not be Simple. The code will automatically set Z2, Z5 and Z6 to X.

Header card :

This card display value in the header. It is mandatory card.

Options	Possible values	Default value	Example	Description
Value_1=X; Value_2=X;	Text, number,...	None	Value_1=[tag]; Value_2=hello;	Display any value in the header, you can set empty value if you want Show long value on the other.

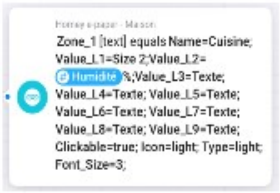
Important:
- Do not use space after « = » .

Example of full settings: Value_1=[tag]; Value_2=Hello

You can send it empty (Value_1=;Value_2=) if you dont want to show anything on the header, but you need to call it because it is count in the expected cards by the code.

Zone_X card :

This is the card to display values to the screen, with differents params.

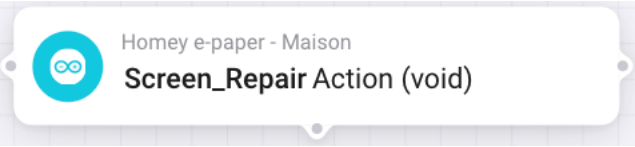


Options	Possible values	Default value	Example	Description
Name=X;	Name of your device	Empty	Name=Kitchen;	Displayanyname you want
Value_L1=X; Value_L2=X;	A value to display	Empty	Value_L1=Hello; Value_L1= [a tag];	Displayany value you want
Value_L3=X; Value_L4=X; Value_L5=X; ...	A value to display	Empty	Value_L3=Hello; Value_L3= [a tag];	To show it, need to define zone in Quadruple mode (Eg : Z1=Q. See Screen Layout)
Clickable=X;	true or false	Empty	Clickable=true;	Need a touch screen. If it's true, it will send a trigger to Homey. (See Trigger)
Icon=X;	Name of icon to display (see icon list)	Empty	Icon=gate;	See icon list to know wich icon are possible to display
Type=X;	light, door, heater, onoff, presence, yesno, lock	Empty	Type=door ;	If you choose a state tag device, Homey return « true » or « false ». For example to show « Open » for true or « Close » for false, Select type=door.
Font_Size=X;	1 to 5	1	Font_Size=3 ;	Select font size. if this is not specified the default is 1. 1 is the smallest, 5 the biggest. The larger the size, the fewer characters it is possible to display.

Important:
- Be careful to use « ; » to separate the values.
- Do not use space after « = » .
- No « ; » after latest value .

Example of full settings:
Name=Cuisine; Value_L1=Hello;Value_L2=[tag humidity]%;Value_L3=Texte; Value_L4=Texte; Value_L5=Texte; Value_L6=Texte; Value_L7=Texte; Value_L8=Texte;
Value_L9=Texte; Clickable=true; Icon=light; Type=light; Font_Size=3;

Screen_Repair card :



If you get wrong display or if you see previous image you can call it.

Special option for touch screen :
By long press (5 sec) on the header, you will run Screen Repair

Type=X

Value returned based on the "type=" entered.
Valeur renvoyée en fonction du « type= » renseigné.

Type	EN	FR	NL
type=light	true = ON false = OFF	true = Allumé false = Éteint	true = AAN false = UIT
type=door	true = Open false = Close	true = Ouvert false = Fermé	true = Open false = Dicht
type=onoff	true = ON false = OFF	true = ON false = OFF	true = AAN false = UIT
type=presence	true = Present false = Absent	true = Présent false = Absent	true = Aanwezig false = Afwezig
type=heater	true = ON false = OFF	true = Éteint false = Allumé	true = UIT false = AAN
type=lock	true = Lock false = Unlock	true = Verrouillé false = Déverrouillé	true = Gesloten false = Open
type=wetdry	true = Wet false = Dry	true = Sec false = Humide	true = Nat false = Droog
type=yesno	true = Yes false = No	true = Oui false = Non	true = Ja false = Neen
type=weather	Icon change with the weather description	L'icone changera suivant la description météo	Icon change with the weather description

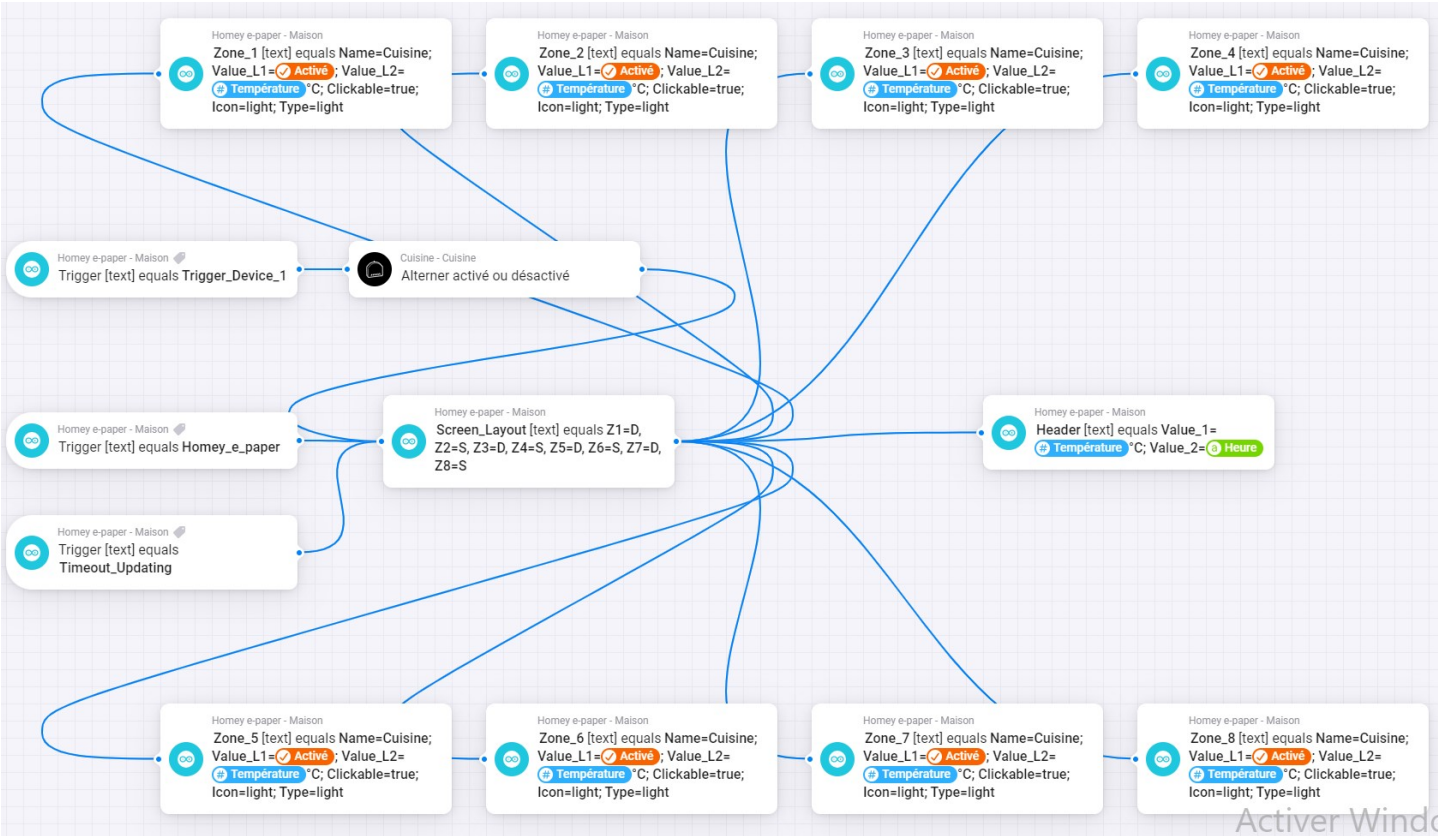
Weather Icon you can see :

If the code does not recognize the weather description, it will display the Homey logo.
Get back to me in this case with the description sent which was not recognized.

Flow example :

Note :

After the “Screen_Layout” card, you must send at least the “Header” card + the number of cards “Zone” you defined in “Screen_Layout”
In the example below, the zones are defined as follows: Z1=D, Z2=S, Z3=D, Z4=S, Z5=D, Z6=S, Z7=D, Z8=S
Zones 2, 4, 6 and 8 will not be taken into account because the zones preceding them are double and therefore take their place.
The code will therefore define them as X and will not expect anything from them and will calculate that it will have 5 zones to display
(Header + Zones 1, 3, 5, and 7) You MUST therefore send at least these 5 zones.



How it works :

On start up Homey e-paper try to connect to wifi. If failed it creates an Access Point wifi named "Homey e-paper". When you connect to it, it will open a captive portal to get SSID and PASSWORD, then restart and retry to connect.

Same thing if you move it outside of this network, change param of your network...
In Access Point mode, Homey e-paper will restart every 5 minutes, and try to reconnect with previous SSID and PASSWORD saved.
This is to avoid any blockage because the loss of connection may be due to a technical incident (work on the network, power outage, etc.)

When it is successfully connected to your local network and added to Homey, it will send a trigger on each startup, and you can (not mandatory but recommended) use it to send values to the display.
You need to call "Screen_Layout" card first before all others. When you call this card, the code knows that an update will arrive, define how many zones are expected and start a timer to wait for them.
If successful, it display values. If failed, it reset timer, set number expected zones to 0 and a "Timeout_Update" trigger is send to Homey. Use this trigger to send another time the values.

After that it goes to deep sleep (if you enable it), or wait before goes to sleep (if you configure it). If it must go to deep sleep with a defined "Time_Before_Sleep", every time the screen was touched, timer restart to 0.

When Homey e-paper is in deep sleep, it show an icon « zzz » on the header.

If you have not defined a deep sleep, you must call your flow or trigger it to display values.

After "Deep_Sleep_Time" defined, Homey e-paper wake up, send trigger "Homey e-paper", get values...

If you have a touch screen and if you enable "Wake_Up_With_Touch_Screen" you can wake up Homey e-paper by touch it.

Battery state is sent at startup to Homey, and periodically if Homey e-paper is not in deep sleep.

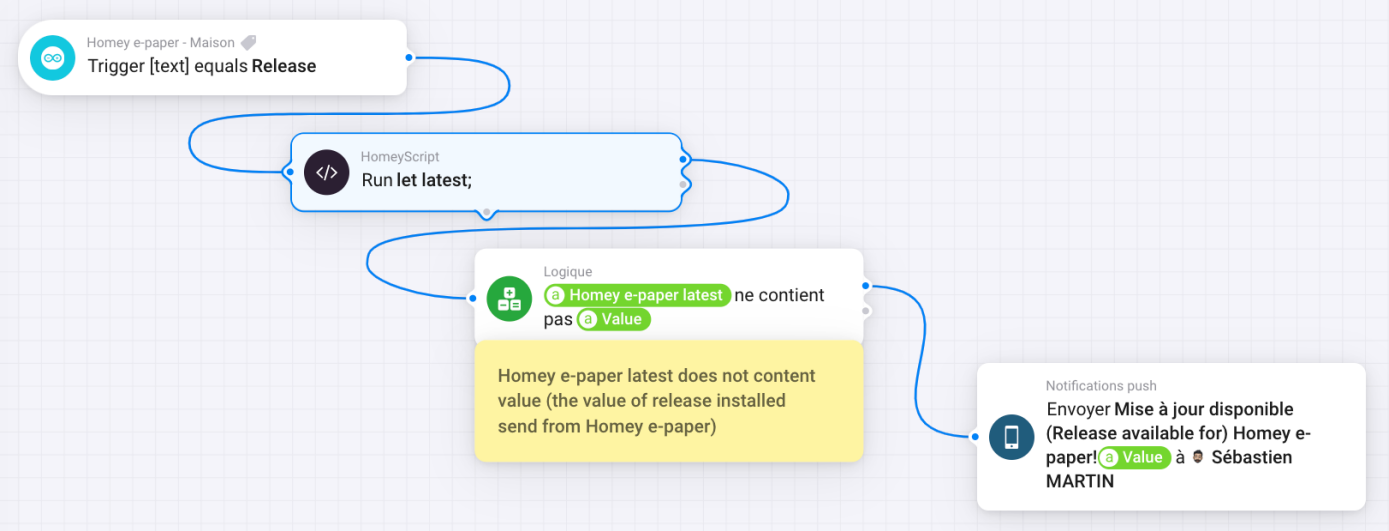
Enjoy !

Icon list :


bathroom
bedroom
door
fan
alarm
alarm 2
horizontal battery
vertical battery
garage door
garden
gate
heater
car
car 2
climate
co
home
humidity
kitchen
light
co2
smoke sensor
water plant
water sensor
lock
logo
lounge
power counter
water sensor 2
wifi
wireless
lux
pressure
roller shutter
stove
swimming pool
thermometer
water counter
window
wireless plug
3D print
close envelope
dollar
euro
lightbolt
open envelope
washing machine
weather
wind
spa
shopping
octoprint

Others:

- It is possible to have serial debugging. With the Arduino IDE and your Homey e-paper connected via USB, go to “Tools → Serial Monitor”, select the baud rate to 115200, restart your Homey e-paper. (Select a port if not detected automatically)
- It is obviously impossible to communicate with Homey e-paper when it is in deep sleep. You must wake it up (touch screen, reset button, wait for wake-up) before sending it information.
- Spaces are taken into account. You can shift a value to the right for example: « 20°C » by shifting it like this « 20°C »
- It is possible to check the version available on the github with the current one with homeyscript. You can create a flow like this



In the « Run (code) » card, put this :

```
let latest;
const url = 'https://api.github.com/repos/sebyldino/Homey-e-paper-v2/releases/latest';
const res = await fetch(url)
if (!res.ok) {
throw new Error(res.statusText);
}
const body = await res.json();
latest = body.tag_name;
await tag('Homey e-paper latest',latest);
return true;
```

“Homey e-paper latest” is the tag created by the Homeyscript card, but it must be executed 1 time before the tag appears in the list. Run the Homeyscript card alone the first time. (or right-click “Test from here”).
Take note that the trigger is sent at each startup so the flow like this will trigger at each startup. Add conditions.