… and this time:
Something useful!

A Super cheap DIY Smart-home solution

Tim Waizenegger

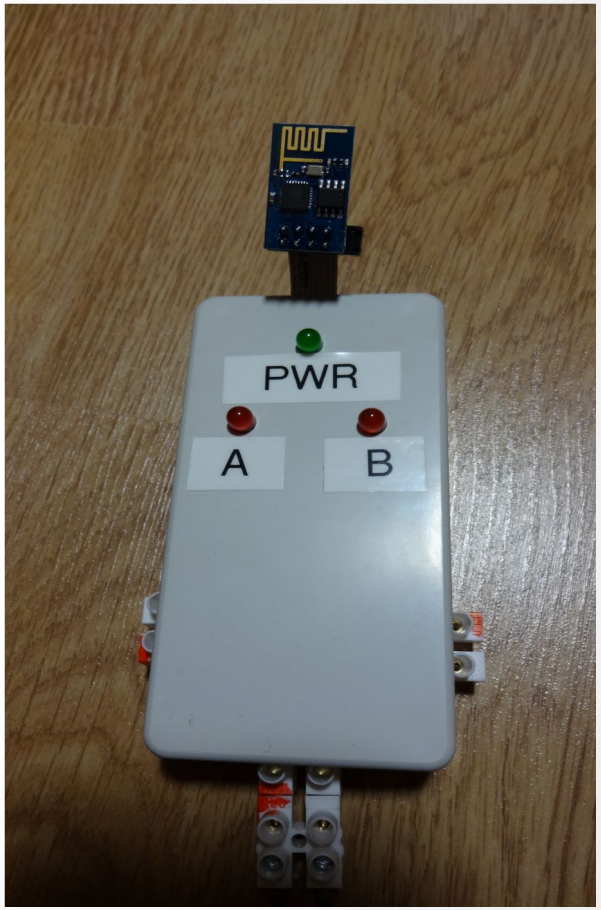
Agenda

- Why?
- What does it do?
- What do you need to build one yourself?
- How does it work?
- Cracking the code

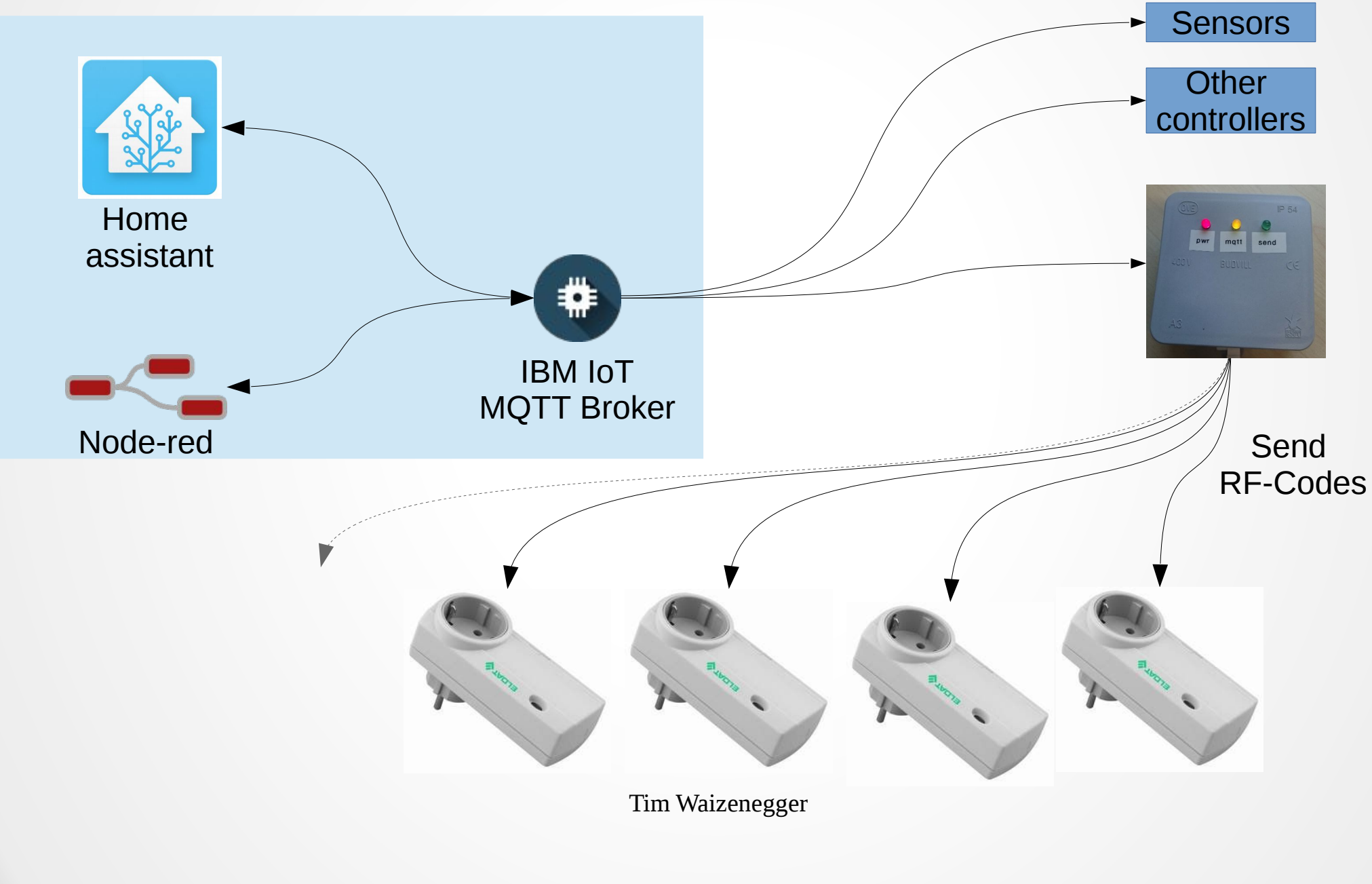
Why?

- Smart homes are fun!
- But building controllers for everything is too much work!
- Buying them is too expensive and no fun!

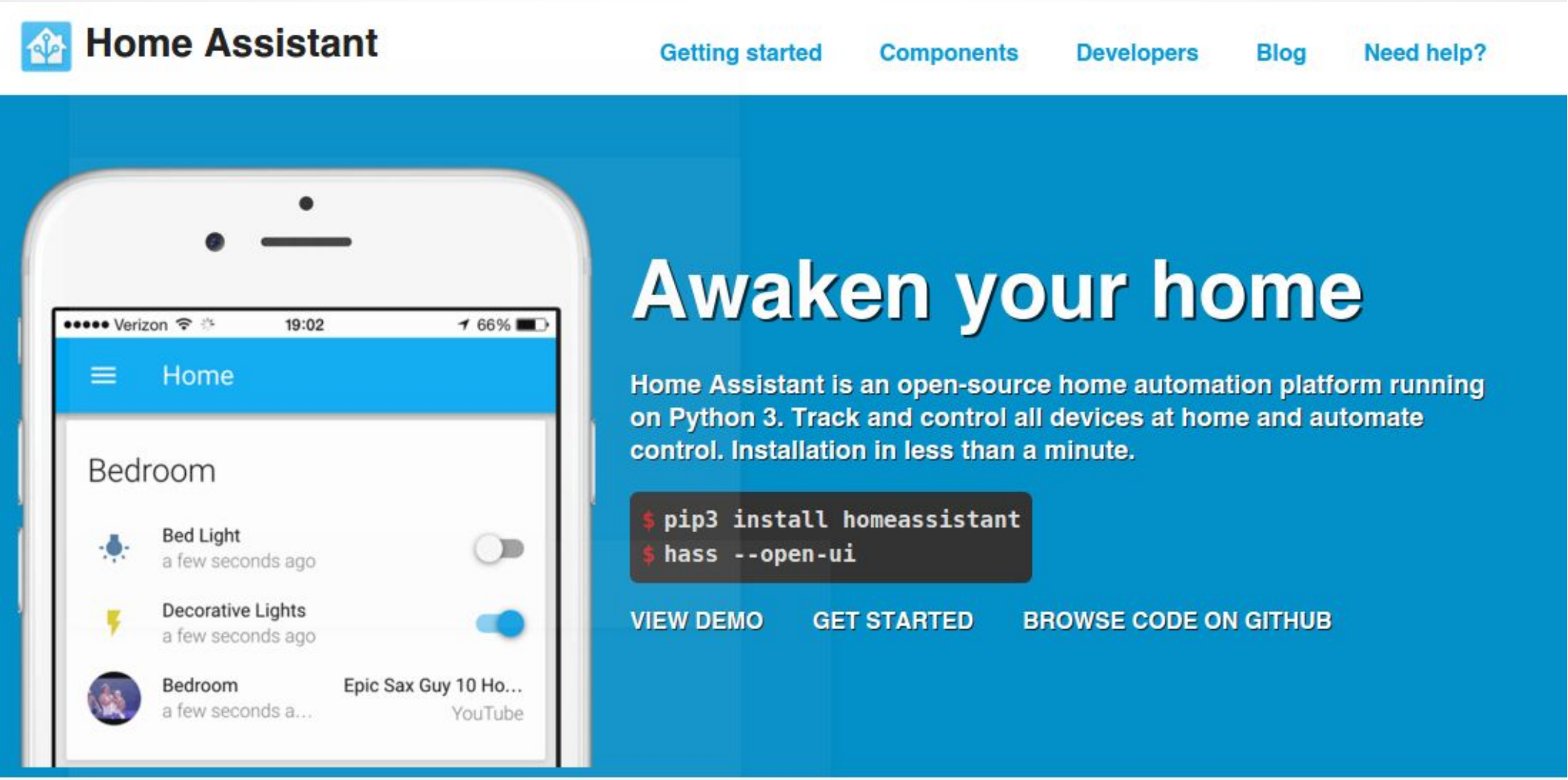
  ==> We need something in between



What does it do?

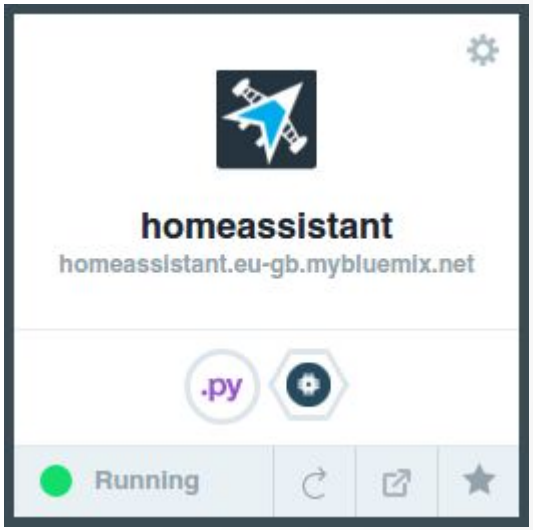


What you need



What you need

- Home assistant on Bluemix
  - Inside a VM
  - Inside a container
  - As a CF-app
- Bluemix IoT Service (for MQTT)



What you need

Deploying home assistant on Bluemix

- clone the code
  `git clone https://github.com/balloob/home-assistant.git`
- Prepare config file from the example in `config/`
- Patch h.a. to work on cloud foundry: replace
  `server_port = conf.get(CONF_SERVER_PORT, SERVER_PORT)`
  in `homeassistant/components/http.py` with
  `server_port = int(os.getenv('VCAP_APP_PORT', SERVER_PORT))`
- Create a new bluemix app with python starter pack
- Copy all the h.a. files into the starter pack dir
- In `runtime.txt` replace all with `python-3.4.3`
- In `Procfile` replace all with `web: python -m homeassistant --config config/`
- Push the app and you're done!

What you need

amazon.de Prime testen

Alle | funk steckdose

Alle Kategorien | Mein Amazon | Angebote | Gutscheine | Verkaufen | Hilfe | In English - Beta NEW!

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‹ Zurück zu den Suchergebnissen für "funk steckdose"

REV Ritter 00834514 Funk-Schalter-Set 1+3 Aktion

von REV Ritter

57 Kundenrezensionen | 3 beantwortete Fragen

Preis: EUR 14,99 Kostenlose Lieferung ab **EUR 29** (Bücher immer versandkostenfrei). Detai

Alle Preisangaben inkl. MwSt.

Auf Lager.

Lieferung Samstag, 5. Dez.: Bestellen Sie innerhalb **2 Stunden und 39 Minuten** per **Premiun**

Verkauf und Versand durch Amazon. Geschenkverpackung verfügbar.

43 neu ab EUR 14,63 1 gebraucht ab EUR 14,24

- - 35m Reichweite (Freifeld)- Übertragungssicherheit durch Codierung
- - 3 Geräte jeweils über Fernbedienung schaltbar- Schalten von beliebigen Lasten (Relais)

› Weitere Produktdetails

REV Ritter Marken-Shop

Finden Sie weitere Top-Angebote in unserem REV Ritter Marken-Shop.

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What you need

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Alle esp8266

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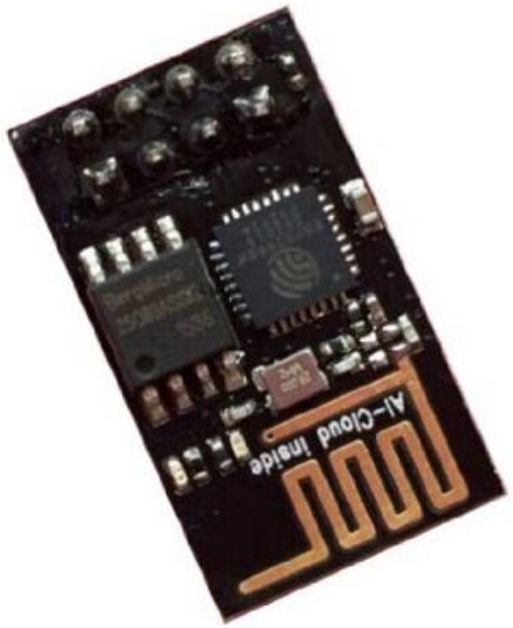
ELEKTRONIK Geschenkideen ›Hier klicken

‹ Zurück zu den Suchergebnissen für "esp8266"



Für größere Ansicht Maus über das Bild ziehen

Demarkt ESP8266 Serial WIFI Wireless Transceive Modul Sen AP+STA

von Demarkt

7 Kundenrezensionen | 3 beantwortete Fragen

Preis: EUR 3,99

Alle Preisangaben inkl. MwSt.

Auf Lager.

Voraussichtliche Lieferung 15. Dez. - 5. Jan. wenn Sie Standardversand an der Kasse wäh

Verkauf und Versand durch Demarkt. Für weitere Informationen, Impressum, AGB und Widerr den Verkäufernamen.

- ESP8266 Serial WIFI Modul
- Größe: 14.3mmx24.8mm
- LWIP Vereinbarung
- Unterstützt drei Betriebsarten: AP, STA, AP+STA
- Achtung: BITTE BEACHTEN Sie, dass aufgrund Lichteffekte, Monitor-Helligkeit / Kontras könnte einige geringfügige Unterschiede in den Farbton der Bilder und der tatsächlichen P

What you need

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Alle | 433mhz module

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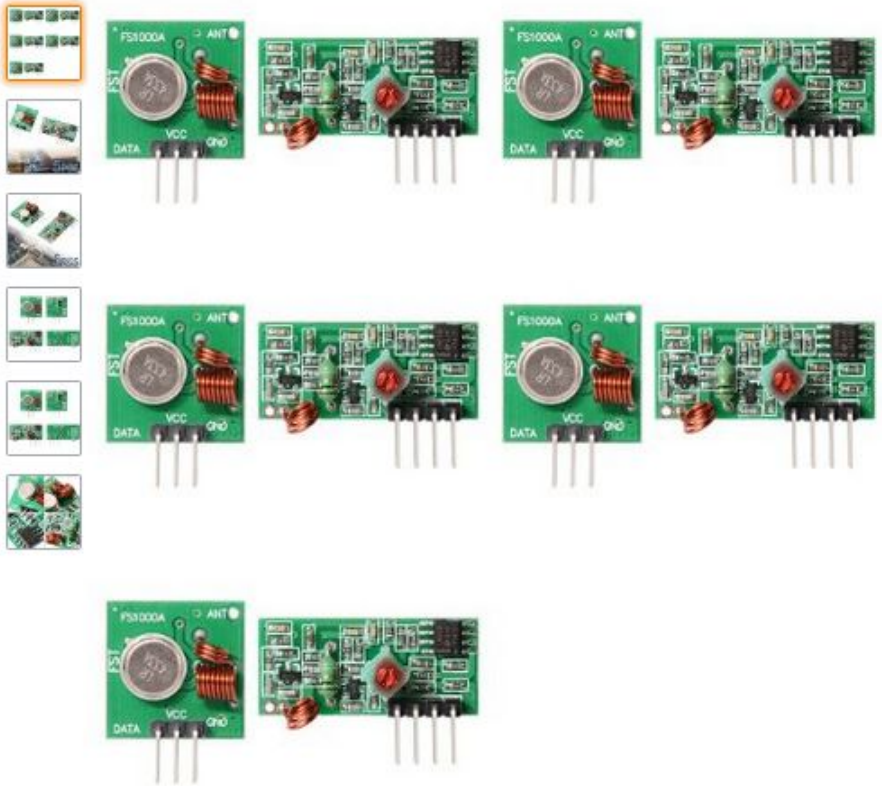
‹ Zurück zu den Suchergebnissen für "433mhz module"



Für größere Ansicht Maus über das Bild ziehen

XCSOURCE® 5 STK 433Mhz RF Transmitter Modul MCU WL TE122

von XCSOURCE

★★★★★ 1 Kundenrezension

Preis: EUR 8,99 **kostenlose Lieferung.**

Alle Preisangaben inkl. MwSt.

Auf Lager.

Voraussichtliche Lieferung 14. - 18. Dez. wenn Sie Standardversand an der

Verkauf und Versand durch XCSOURCE. Für weitere Informationen, Impressu auf den Verkäufernamen.

2 neu ab EUR 8,99

- TX technisch: Arbeitsspannung: 3-12V
- Arbeitstemperatur: -10 - + 70 Grad
- Resonanzmodus: Sound Wave Resonanz (SAW)
- Modulationsmodus: ASK / OOK

› Weitere Produktdetails

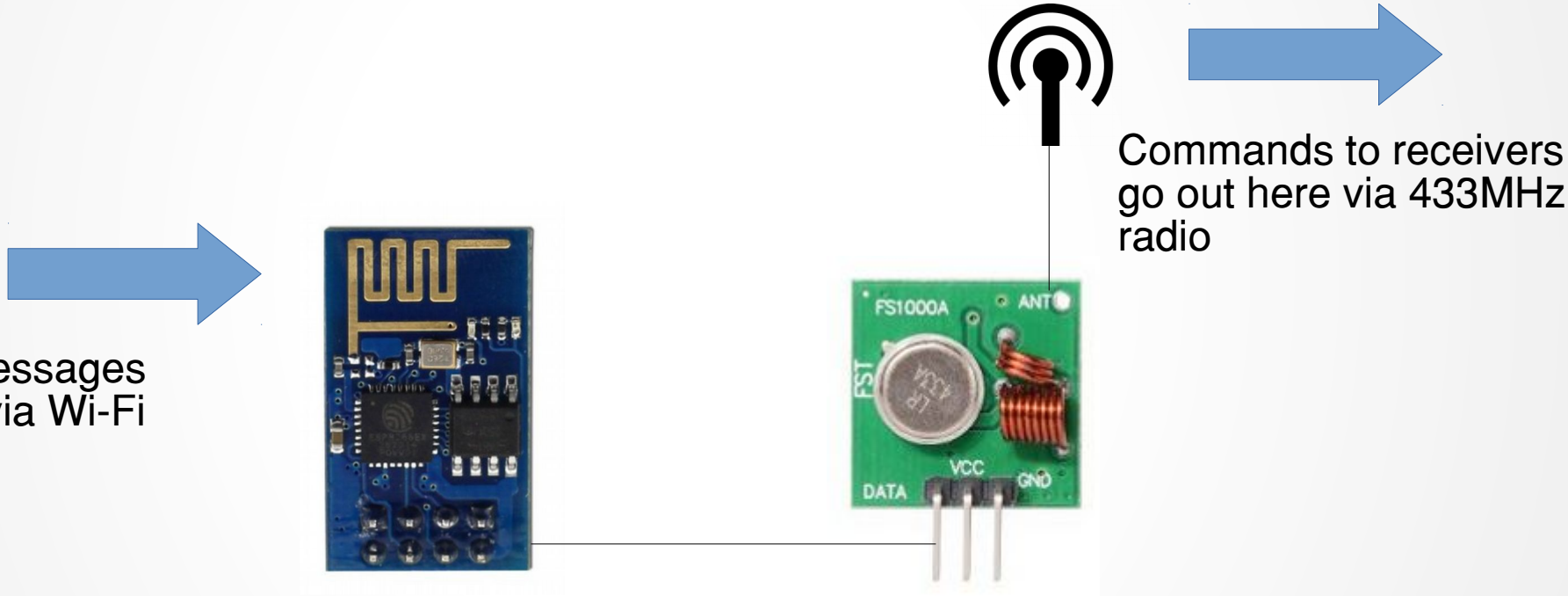
What you need

- RF-controlled plug receivers **(~ 15€ per set)**
- ESP8266 Wi-Fi microcontroller **(~ 5€ per piece)**
  - Or raspberry pi, arduino, …
- 433 MHz transmitter **(~ 3€ per piece)**
- Power supply and other electronics **(~ 10€)**

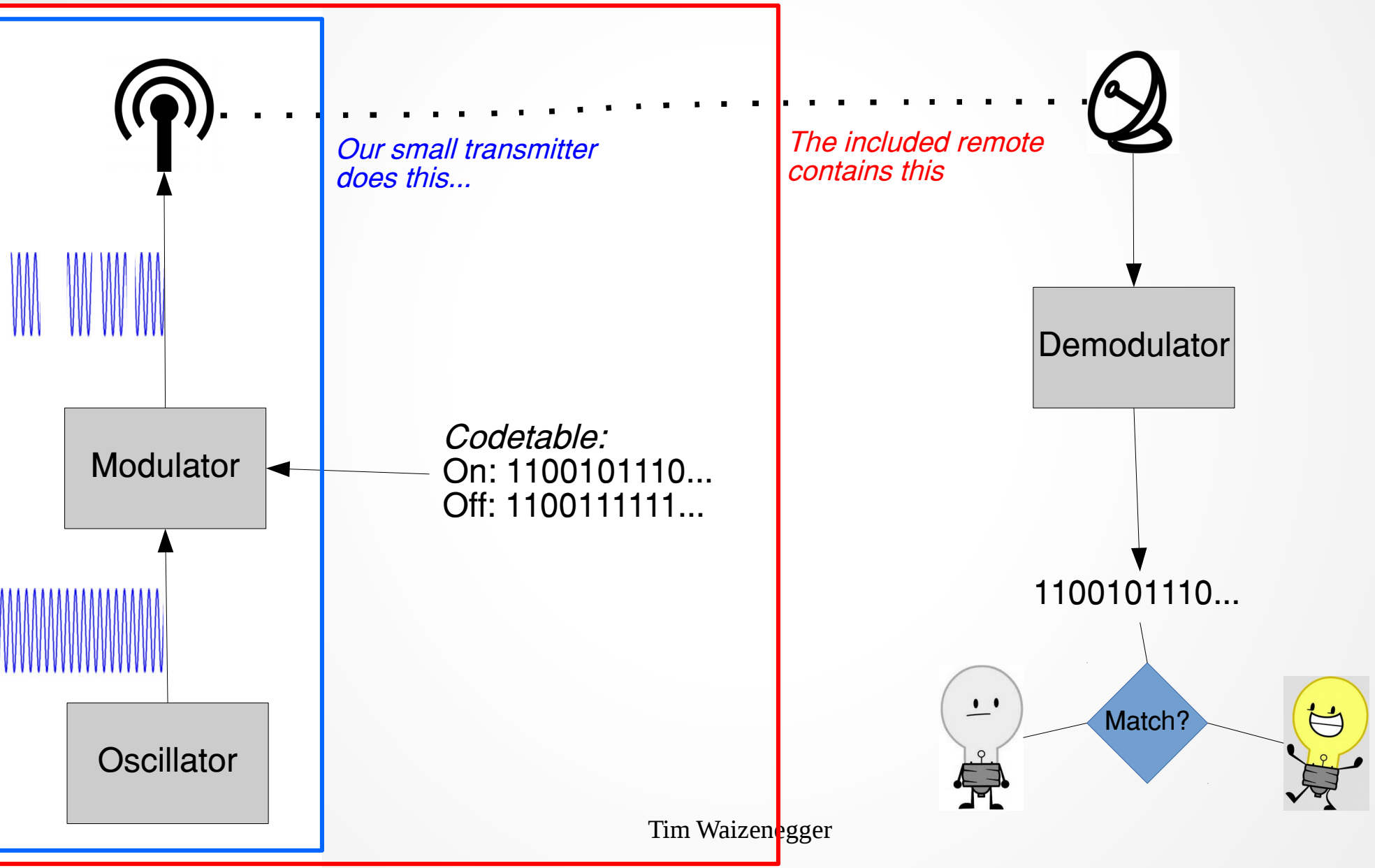
==> around 20€ for the RF-Sender

==> and 15€ for each set of 3 or 4 receivers

How does it work?



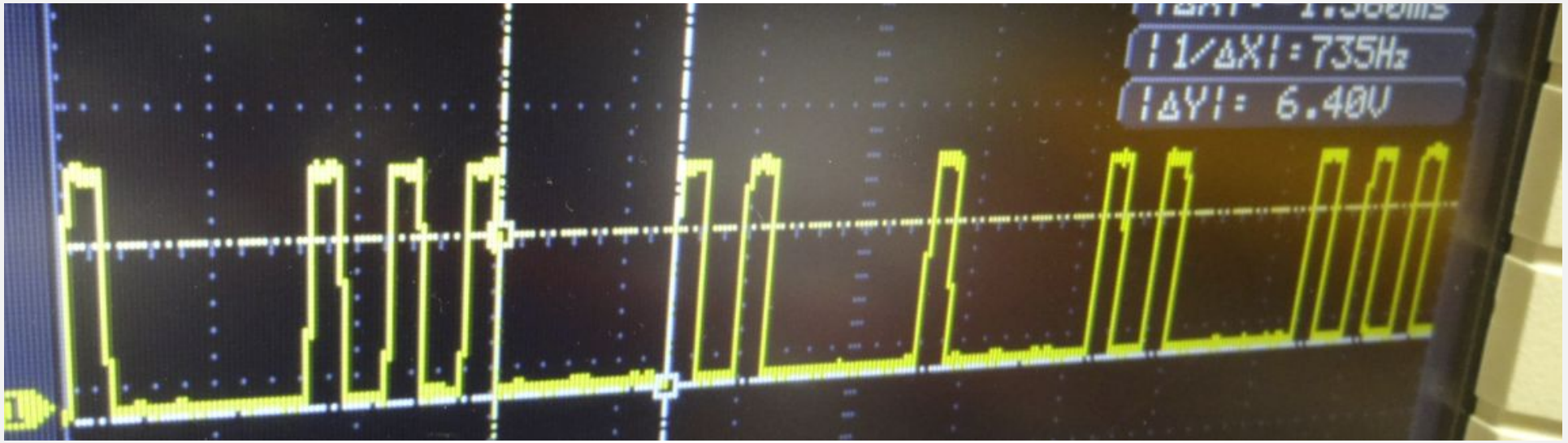
Wireless protocol



Cracking the code

1) Get it from the datasheet
2) Find it online in blogs/forums
3) Decode it yourself from the included remote
    1) Digital signal analyzer (“usb signal analyzer”; ~20€)
    2) Your microcontrollers input-pin
    3) An oscilloscope

Code Example



→ measure the timing of pulses and pauses
→ find the pattern and “write down” the code ...3 2 1 2 3…
→ if you can't figure out the pattern, just use a simple pulse/pause pattern:
… 1 0 1 1 1 0 1 1 0 1 0 1 1 0 1 1 1 ...

Reproduce the code

```
void sendCodeType2(const char code[]) {
  const int cycleLengthBpulse = 240;
  const int cycleLengthBwait = 300;
  const int cycleLengthBhold = 1360;

  // short pulse, header
  setSigOn();
  delayMicroseconds(cycleLengthBpulse);
  setSigOff();
  delayMicroseconds(2 * cycleLengthBhold);

  // send the bits!
  for (char i = 0; i < codesForType2Length; i++) {
    switch (code[i]) {
      case '3':
        setSigOn();
        delayMicroseconds(cycleLengthBpulse);
        setSigOff();
        delayMicroseconds(cycleLengthBwait);
      case '2':
        setSigOn();
        delayMicroseconds(cycleLengthBpulse);
        setSigOff();
        delayMicroseconds(cycleLengthBwait);
      case '1':
        setSigOn();
        delayMicroseconds(cycleLengthBpulse);
        setSigOff();
        delayMicroseconds(cycleLengthBwait);
        break;
    }
    // long pause at the end
    delayMicroseconds(cycleLengthBhold);
  }

}
```

- C++ code for the Arduino framework
- Arduino code can be run on the ESP8266
- The signal is very slow (5 kHz)

  ==> no clever tricks required when implementing...

Some of the codes I found

```
////////////////////////////////////////////////////////
// RF CODES WE KNOW

#define codesForType1Length 12
#define codesForType1Count 16
const char codesForType1[][codesForType1Length + 1] = {
  "022202222222", // 1-1-on
  "022202222220", // 1-1-off
  "022220222222", // 1-2-on
  "022220222220", // 1-2-off
  "022222022222", // 1-3-on
  "022222022220", // 1-3-off
  "022222202222", // 1-4-on
  "022222202220", // 1-4-off
  "222002222222", // 4-1-on
  "222002222220", // 4-1-off
  "222020222222", // 4-2-on
  "222020222220", // 4-2-off
  "222022022222", // 4-3-on
  "222022022220", // 4-3-off
  "222022202222", // 4-4-on
  "222022202220"  // 4-4-off
};
```

```
#define codesForType2Length 33
#define codesForType2Count 6
const char codesForType2[][codesForType2Length + 1] = {
  "213222123221322122232123132132221", // 1-on
  "213222123221322122232123132222221", // 1-off
  "213222123221322122232123132132212", // 2-on
  "213222123221322122232123132222212", // 2-off
  "213222123221322122232123132132131", // 3-on
  "213222123221322122232123132222131" // 3-off
};

#define codesForType3Length 51
#define codesForType3Count 2
const char codesForType3[][codesForType3Length + 1] = {
  "000010110111111010110000s000000110011011000110000", // 1-on
  "000011010110010110010000s000001111011001010100000" // 1-off
};
```

And next time...

... The Bluemix Remote!