Overview

The communication between ESP-12 and MCU is provided by the uart. The default baudrate is 115200 bps. The communication is transmitted in human readable string format. This is a default commando set written in Arduino, so many people can rewrite and use the code. The source code can be bought at https://www.iotboxx.nl

Features

All commands send to the ESP-12 module begin with “AT_”
It is necessary to transmit a ‘Carriage Return character(chr13)’ after each command.

The next command can be executed by the default firmware:

- AT_send=
- AT_subscribe=
- AT_unsubscribe=
- AT_Time_offset=
- AT_Get_time?
- AT_Get_mac?
- AT_Get_serial?
- AT_Get_ip?
- AT_Disconnect_AP
- AT_Connect_AP=
- AT_scan?

The below mentioned response messages can be send by the ESP-12 module.
A newline "\n" (chr10) character is send after each response message

- WiFi connected
- Mqtt connected
- Password incorrect
- SSID not found
- no networks found
- scan done
- OK
- Time_offset OK
- Disconnect_AP OK

Libraries

Below mentioned libraries are mandatory to run the functions described in the next section. These libraries should be included in Arduino. Instuctions on how to add these to the IDE can be found on the internet.

- ESP8266WiFi.h
- WiFiUdp.h
- NTPClient.h
- PubSubClient.h
- ArduinoOTA.h
- ArduinoJson.h

Functions

AT_send

With 'AT_send' you can send data to the MijnCloudData MQTT server. The data values are send in JSON. Each 'key value' and it's value can be used in the dashboard.

AT_send=TopicName&{Payload}

TopicName is the topic to publish to
Payload is always send in the Json format

For example:
AT_send=Topic1&{KeyString1:Value1,KeyString2:Value2}

AT_subscribe

With 'AT_subscribe' you can subscribe to receive messages published to the specified topic.

AT_subscribe=TopicName

Returns if subscribe is true:
OK

AT_unsubscribe

With 'AT_unsubscribe' you can unsubscribe from a topic.

AT_unsubscribe=TopicName

Returns if unsubscribe is true:
OK

AT_Time_offset

With 'AT_Time_offset' you can set a time offset in seconds.
The default offset is +2 hour (+7200 seconds) from UTC time.

AT_Time_offset=offset

For example:
AT_Time_offset=3600

Returns if offset is true:
'Time_offset OK'

AT_Get_time?

With 'AT_Get_time?' you can get the Epoch time from a NTP server.
The default time server pool is 'europe.pool.ntp.org' with an update interval of 1 hour.

Returns if you send 'AT_Get_time?'
Epoch=epochtime

For example:
Epoch=1644311343

AT_Get_mac?

With 'AT_Get_mac?' you can get the mac address of the WiFi module in hex format.

Return if you send 'AT_Get_mac?'
mac address=mac address

For example:
Mac address=01:23:45:67:89:ab

AT_Get_serial?

With 'AT_Get_serial?' you can get the serial ID from the WiFi module.

Return if you send 'AT_Get_serial?'
Serial=Serial ID

For example:
Serial=2624012345-6789ab

AT_Get_ip?

With 'AT_Get_ip?' you can get the local IPv4 number from the WiFi module.

Return if you send 'AT_Get_ip?'
IP address=IPv4 number

For example:
IP address=192.168.0.7

AT_Disconnect_AP

With 'AT_Disconnect_AP' it is possible to disconnect from a connected access point.

Return message:
'Disconnect_AP OK'

AT_Connect_AP

With 'AT_Connect_AP' it is possible to connect to an access point.

AT_Connect_AP=SSID,password

For example:
AT_Connect_AP=WifiName,password123

Return message:
'WiFi connected' If the connection is true.
'Password incorrect' If the given password is false.
'SSID not found' If the given access point is not found.

AT_scan?

With 'AT_scan?' you search for WiFi networks.

Return if you send 'AT_scan?'
';RSSI&SSID;' If a WiFi network is found.
'no networks found' If there is no WiFi network found

For example:
;52&SSIDname1;73&SSIDname2; ….. 96&SSIDname8;scan done

The output is sorted by RSSI