



Ardumower Sunray Firmware Console Debuection issues etc.)

- Wenn die SD-Karte gefunden wurde • Sunray-Firmware-Version • Typ der verwendeten MCU (Due, M4 usw.) • Bluetooth-BLE-Modul-Firmware-Version • WiFi-Modul-Firmware-Version • Wenn BLE/ WiFi-Module sind verbunden und empfangen Daten • Wenn ublox GPS gefunden und die RTK-Konfiguration erfolgreich gesendet wurde • Wenn MPU IMU gefunden wurde •

Prüfsummenfehler für GPS-, WiFi-, Bluetooth-Module Schritte: 1. Roboter einschalten und PC mit USB- nativer Port 2. Starten Sie die Arduino IDE und wählen Sie 'Tools->Port->Arduino Due (native) port' 3. Wählen Sie 'Tools->Serial Monitor' aus dem Menü 4. Sie müssen möglicherweise die Platine zurücksetzen (z. B. über App-> Menü: REBOT ROBOT), um die vollständige Ausgabe des Bootvorgangs zu sehen.

App and Bluetooth BLE

The Bluetooth module firmware will be shown in the Arduino serial console:

versucht, das Bluetooth 4.0/BLE-Modul zu erkennen (stellen Sie sicher, dass Ihr Telefon NICHT verbunden ist)9600... BLE: AT versucht, das Bluetooth 4.0/BLE-Modul zu erkennen (stellen Sie sicher, dass Ihr Telefon NICHT verbunden ist)115200... BLE: AT OK Bluetooth 4.0/BLE-Modul gefunden! BLE: AT+NAMEArdumower +NAME=Ardumowe

```
BLE: AT+LADDR
+LADDR=00:13:AA:00:2D:95
BLE: AT+CHAR
+CHAR=0xFFE1
BLE: AT+VERSION
+VERSION=Firmware V4.2.0,Bluetooth V4.0 LE
BLE: AT+RESET
+RESET
OK
```

When connecting via Bluetooth in the App...

....the Arduino serial console should show:

```
File Edit Sketch Tools Help
sunray LinkedList
// Ardumower Sunray
// Copyright (c) 2015
// Licensed GPLv3 for
// or Grau GmbH Comm

// -----
// NOTE: Before upl
// 1. Rename file '
// 2. Open the file
// -----

#include "config.h"
#include "robot.h"

void setup(){
  start();
}

void loop(){
  run();
}

Board at /dev/ttyACM0

/dev/ttyACM0
Send

SD card found!
RESET cause: unknown
Ardumower Sunray,1.0.175
compiled for: Arduino Due
enableCharging 0
trying to detect Bluetooth 4.0/BLE module (make sure your phone is NOT connected)9600...
BLE: AT
trying to detect Bluetooth 4.0/BLE module (make sure your phone is NOT connected)115200...
BLE: AT
OK
Bluetooth 4.0/BLE module found!
BLE: AT+NAMEArdumower
+NAME=Ardumower
OK
BLE: AT+LADDR
+LADDR=00:13:AA:00:2D:95
BLE: AT+CHAR
+CHAR=0xFFE1
BLE: AT+VERSION
+VERSION=Firmware V4.2.0,Bluetooth V4.0 LE
BLE: AT+RESET
+RESET
OK
SERIAL_BUFFER_SIZE=1024 (increase if you experience GPS checksum errors)
-----
NOTE: if you experience GPS checksum errors, try to increase UART FIFO size:
1. Arduino IDE->File->Preferences->Click on 'preferences.txt' at the bottom
2. Locate file 'packages/arduino/hardware/sam/xxxxx/cores/arduino/RingBuffer.h
   for Grand Central M4 'packages/adafruit/hardware/samd/xxxxx/cores/arduino/RingBuffer.h
change:  #define SERIAL_BUFFER_SIZE 128      into into:  #define SERIAL_BUFFER_SIZE 1024
-----
ublox f9p: connecting - trying baud 115200...GPS receiver found!
ublox f9p: sending GPS rover configuration...config sent successfully
sizeof Point=4
map load... ok
map dump - mapCRC=48315
points:
perimeter pts: 5
exclusion pts: 0
exclusions: 0

Autoscroll Show timestamp Newline 115200 baud Clear output
Arduino Due (Native USB Port) on /dev/ttyACM0
```

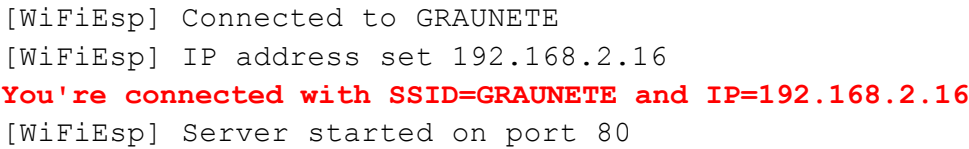
```
BLE:AT+V,0x16
sending encryptMode=1 encryptChallenge=163
BLE:#6l2mqmyowqzsrwtmvsoswxuszwxmqZy
decrypt:AT+P,0,8.60921633,52.26742967,0x8
absolutePosSource=0 lon=8.60921633 lat=52.26742967
BLE:#6l5mqZrt
decrypt:AT+S,0x13
BLE:#6l5mqZrt
decrypt:AT+S,0x13
BLE:#6l5mqZrt
decrypt:AT+S,0x13
```

App and WiFi

The App is hosted at grauonline.de, and the App communicates with the mower directly.

```
APP (client) -----> MOWER (server, port 80)
```

```
[WiFiEsp] Initializing ESP module
[WiFiEsp] Initilization successful - 1.1.1
WiFi found! ESP8266 firmware: 1.1.1
Attempting to connect to WPA SSID: GRAUNETE
```



The screenshot shows the Arduino IDE interface with the serial monitor open. The output text is as follows:

```

[WiFiEsp] New client 0
WIF: AT+V,0x16

Sending encryptMode=1 encryptChallenge=163
[WiFiEsp] Disconnecting 0
[WiFiEsp] New client 0
WIF: #6L2mqmyowqzsrwtmtmvsoswxszwxmqZy

decrypt: AT+P,0,8.60921633,52.26742967,0x8

absolutePosSource=0 lon=8.60921633 lat=52.26742967
[WiFiEsp] Disconnecting 0
[WiFiEsp] New client 0
WIF: #6L5mqZrt

decrypt: AT+5,0x13

[WiFiEsp] Disconnecting 0
0:5:26 ctdLur=0.02 op=0 freem=77727 sp=2 volt=26.94 chg=0.00 tg=8.72,0.58 x=8.19 y=2.09 delta=-0.71 tow=475123200
[WiFiEsp] New client 0
WIF: #6L5mqZrt

decrypt: AT+5,0x13

[WiFiEsp] Disconnecting 0
0:5:31 ctdLur=0.02 op=0 freem=77727 sp=2 volt=26.94 chg=0.00 tg=8.72,0.58 x=8.19 y=2.09 delta=-0.71 tow=475128200
[WiFiEsp] New client 0
WIF: #6L5mqZrt

decrypt: AT+5,0x13

[WiFiEsp] Disconnecting 0
[WiFiEsp] New client 0
WIF: #6L5mqZrt

decrypt: AT+5,0x13

[WiFiEsp] Disconnecting 0
0:5:36 ctdLur=0.02 op=0 freem=77727 sp=2 volt=26.94 chg=0.00 tg=8.72,0.58 x=8.19 y=2.09 delta=-0.71 tow=475133200
[WiFiEsp] New client 0

```

...the Arduino serial console should show:

```
[WiFiEsp] New client 0
      WIF:AT+V,0x16

      sending encryptMode=1 encryptChallenge=158
[WiFiEsp] Disconnecting 0

[WiFiEsp] New client 0
WIF:{/e+fjfrhpjslkpmmfolhlpqnlspqfjSr

decrypt:AT+P,0,8.60921633,52.26742967,0x8

absolutePosSource=0 lon=8.60921633 lat=52.26742967
[WiFiEsp] Disconnecting 0
[WiFiEsp] New client 0
WIF:{/e.fjSkm

decrypt:AT+S,0x13

[WiFiEsp] Disconnecting 0
[WiFiEsp] New client 0
WIF:{/e.fjSkm

decrypt:AT+S,0x13

[WiFiEsp] Disconnecting 0
```

IMU

The MPU found will be shown in the **Arduino** serial console. The IMU calibration process **MPU ID=0x71**

MPU9250 found

IMU gyro calibration (robot must be static)... 1 [毎日の工数入力 ー統合](#)

IMU gyro calibration (robot must be static)... 2

IMU gyro calibration (robot must be static)... 4

0:0:21 ctiDur=0.02 op=0 freem=77727 sp=2 volt=26.87 chg=0.00 tg=8.72,0.58 x=8.1ss is shown
as well:

IMU gyro calibration (robot must be static)... 39 y=2.09 delta=-0.56 tow=59000 lon=0.00000000
lat=0.00000000 h=0.0 n=0.00 e=0.00 d=0.0
IMU gyro calibration (robot must be static)... 5
IMU gyro calibration (robot must be static)... 6
IMU gyro calibration (robot must be static)... 70 sol=0 age=0.88
IMU gyro calibration (robot must be static)... 8
IMU gyro calibration (robot must be static)... 9

GPS

The Arduino serial console will show if the GPS receiver was found and if the RTK configuration was sent successfully:

```
ublox f9p: connecting - trying baud 115200...GPS receiver found!  
ublox f9p: sending GPS rover configuration...config sent successfully
```

If the received data from the GPS module is incomplete, checksum errors will be shown:

```
ublox chka error, msgclass=1, msgid=14, msglen=24: D3!=1F
```