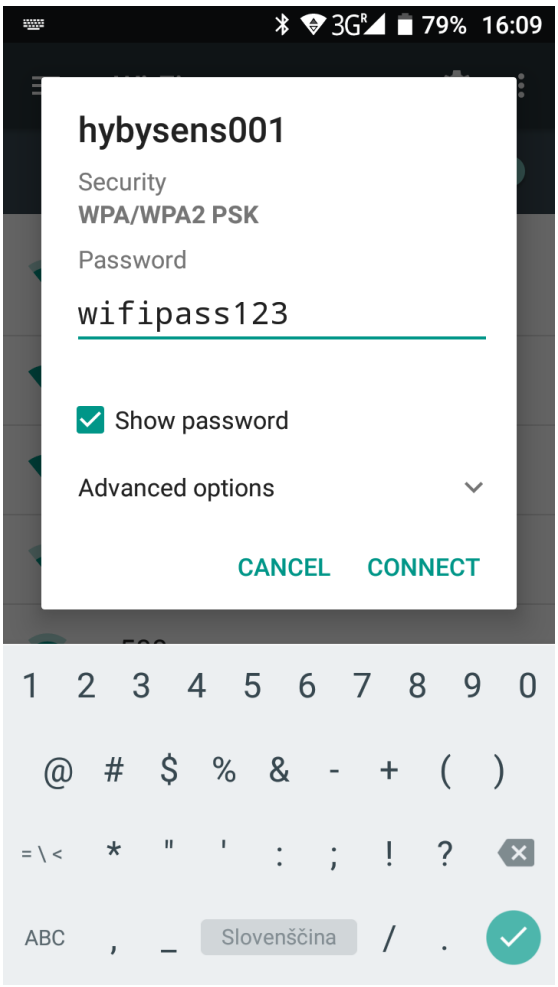
Communication with WiFi pressure sensor

Brief instructions to setup the communication via WiFi access point implemented in the sensor with NodeMCU and HPSDxxxx.

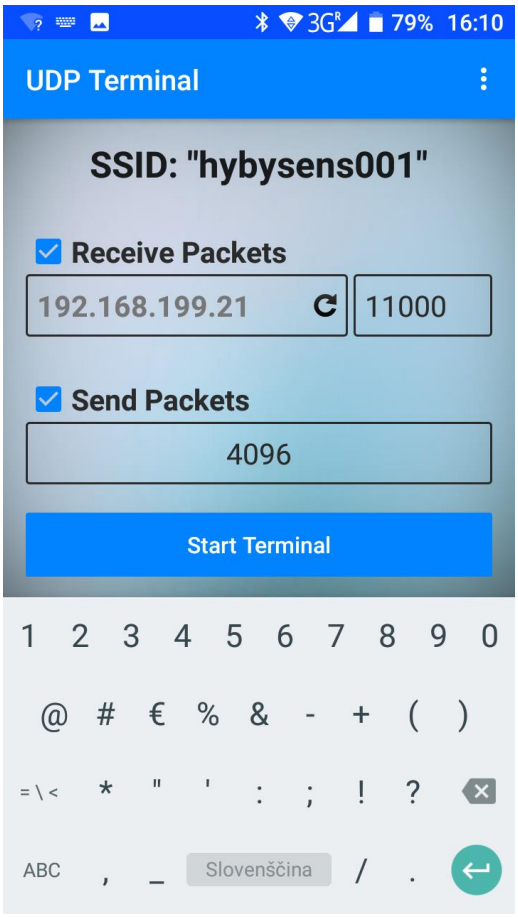
1. **connect to WiFi** sensor access point. SSID is hybysens001 and password is wifipass123:



2. **Install Android UDP Terminal** application form play store:

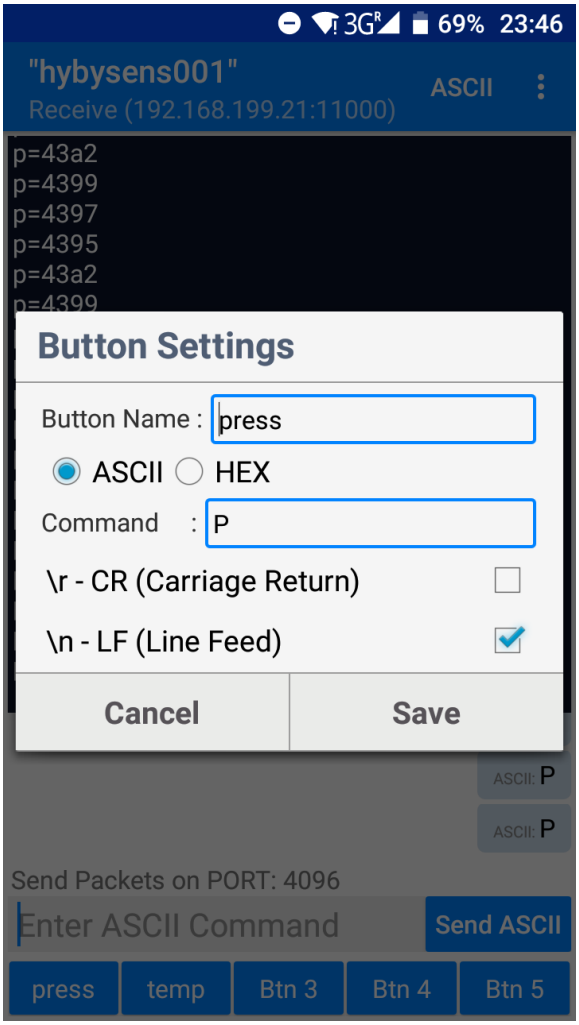
https://play.google.com/store/apps/details?id=com.mightyit.gops.udpterminal&hl=en

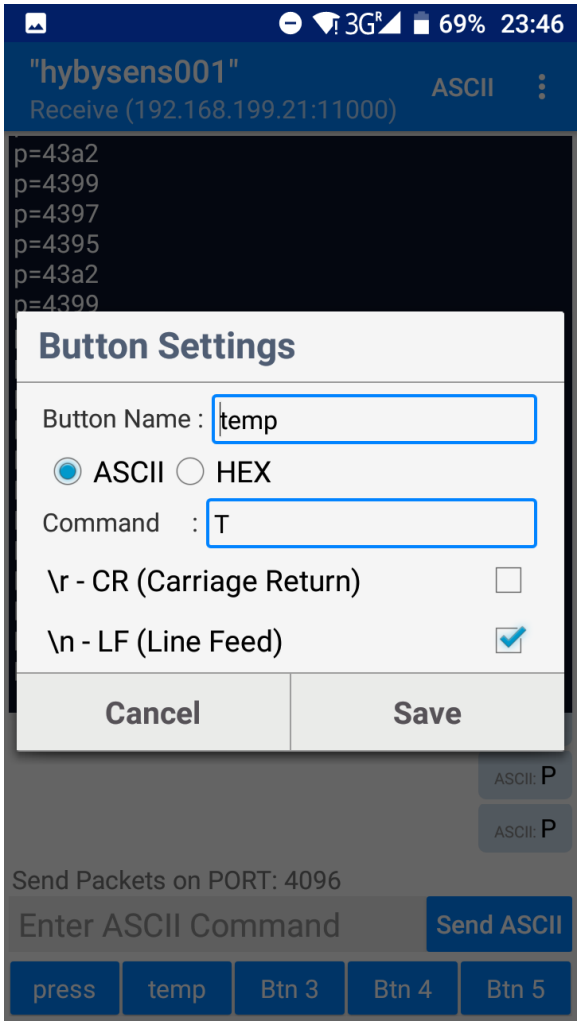
3**. Start application** UDP Terminal and enter WiFi sensor UDP IP and ports:



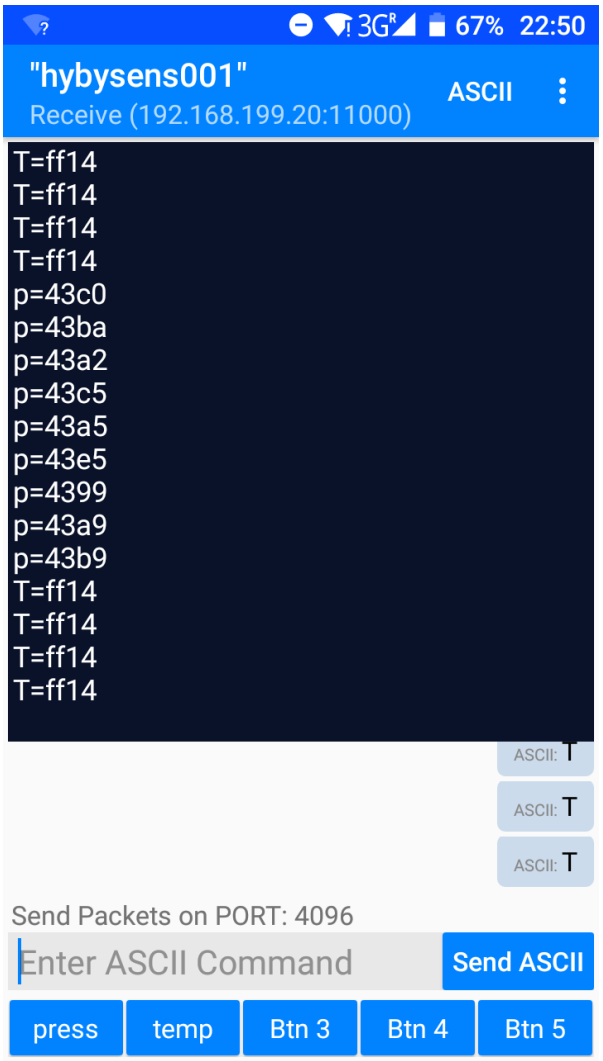
The Receive IP will be filled automatically with the IP address assigend by DHCP in the WiFi sensor.
Use port 11000 for receiving packets and port 4096 to send packets.

4. **Assign button macros**. First button will be used for requesting the pressure channel request and second button will be used for temperature channel request:





5. Now **press the »Press« or »Temp« button** to receive the readouts.



Custom applications to get the readouts:

1. Pressure channel:
   send ascii 80(dec), capital letter »P«, followed by ascii 10(dec), LineFeed

2. Temperature channel:
   send ascii 84(dec), capital letter »T«, followed by ascii 10(dec), LineFeed

Use port 4096 for sending packets to the WiFi sensor.

IP address of the sensor is always 192.168.199.1

Use port 11000 for receiving UDP packets with the readouts from the sensor.

Pressure calculation

Pressure sensor readout is raw pressure data represented as a 15 bit value which can be converted to actual pressure. The pressure value is returned in format

p=xxxx

where xxxx is 16 bit hexadecimal integer. The pressure is calculated using simple liear formula:

$$S = \frac{\mathrm{Dmax} - \mathrm{Dmin}}{\mathrm{Pmax} - \mathrm{Pmin}} \qquad P = \frac{\mathrm{D} - \mathrm{Dmin}}{\mathrm{S}} + \mathrm{Pmin}$$

where...

P= calculated pressure (pressure units)
Pmin= min pressure (pressure units)
Pmax= max pressure (pressure units)
D= digital pressure (ADC readout returned by WiFi sensor)
Dmax= max digital pressure (counts)
Dmin= min digital pressure (counts)
S= sensitivity (count/pressure unit)

P is final calculated pressure, D is current digital value. Other values are constants and taken from the sensor datashhet for specific pressure range and pressure type (gauge, differential, absolute).