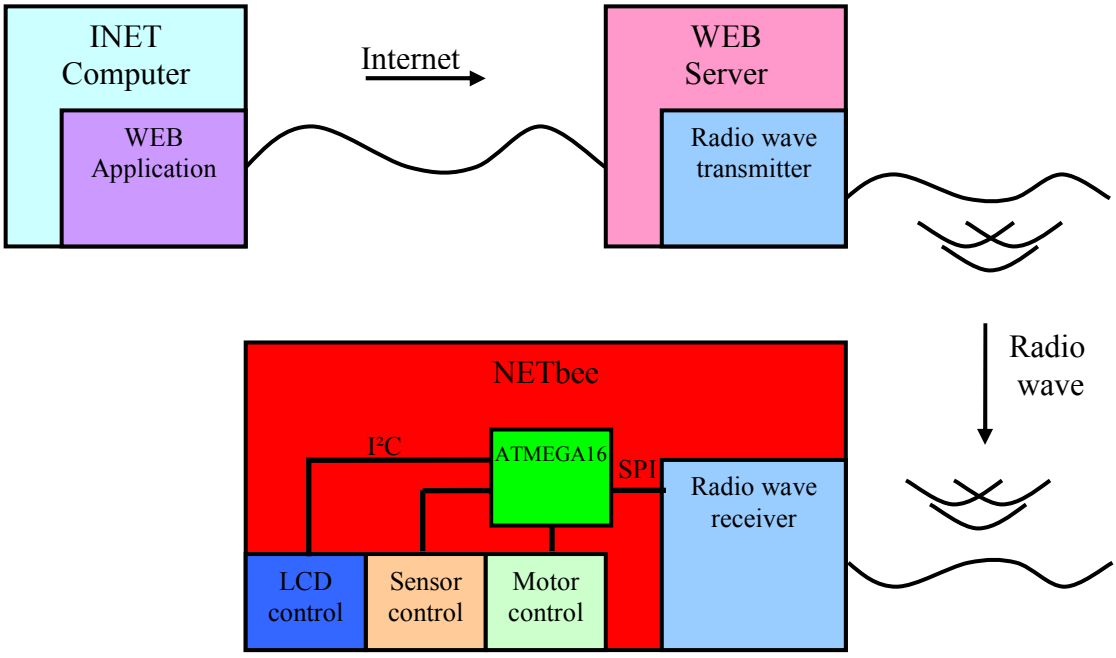
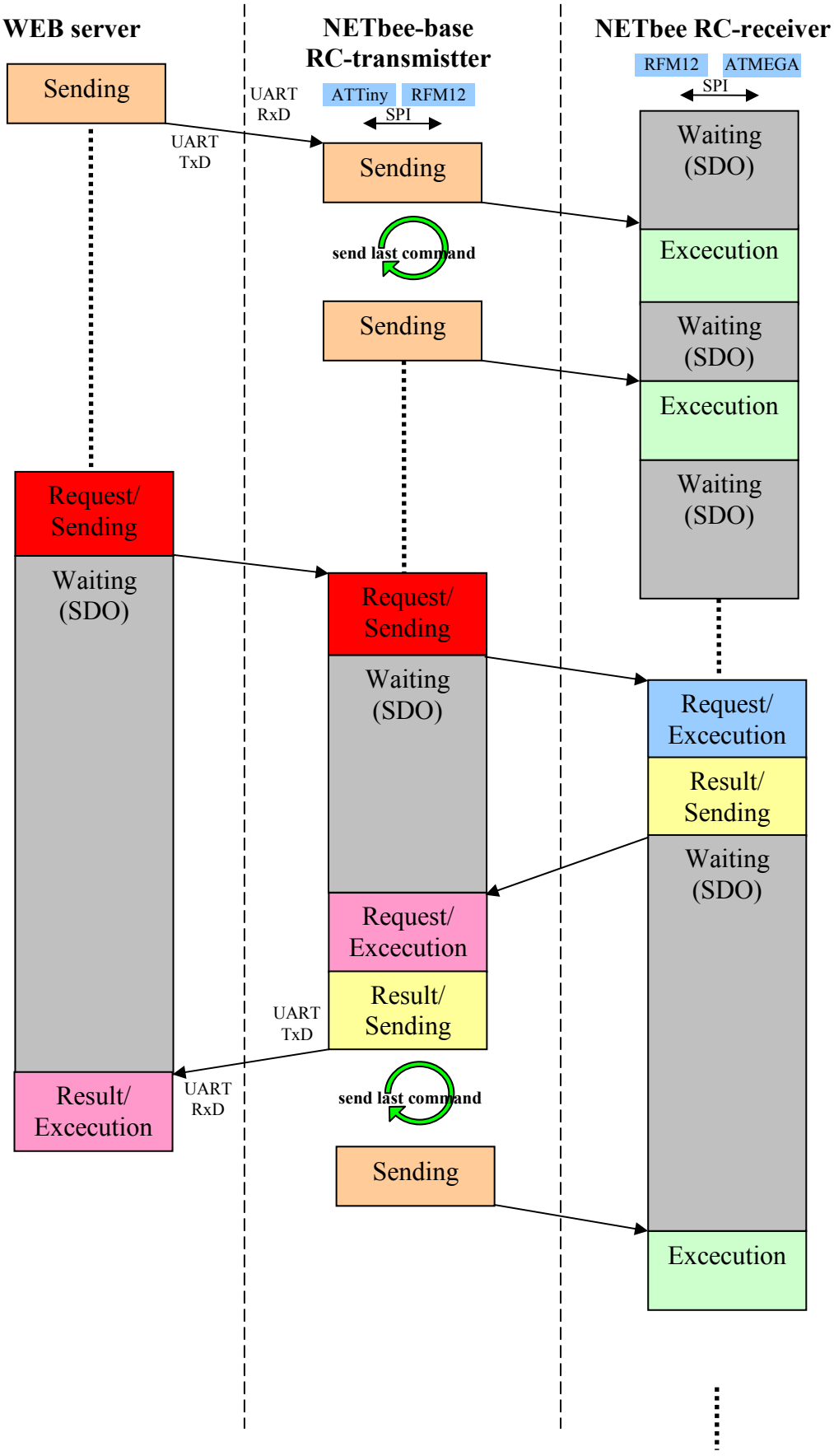
Documentation NETbee

1. System overview

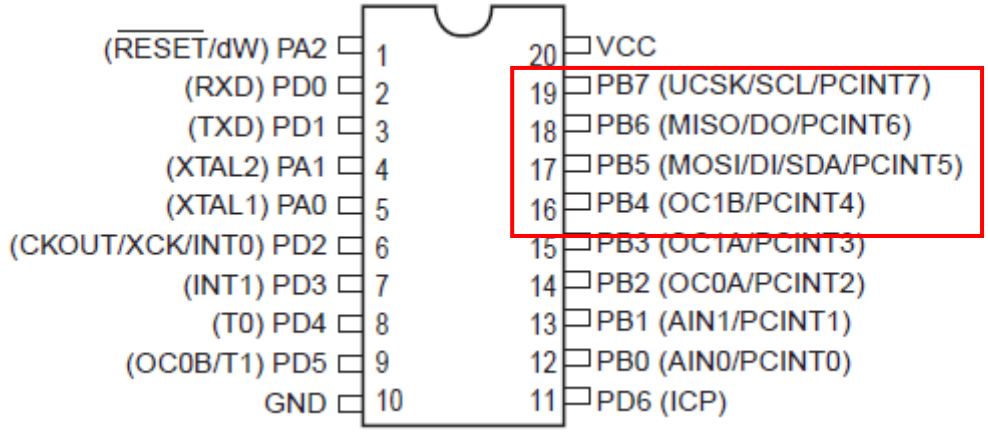


Data transfer between components



2. Used HW components

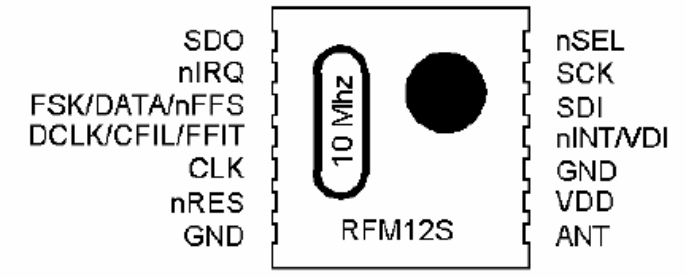
Used HW-pins at ATTiny2313 for radio wave transmitter:



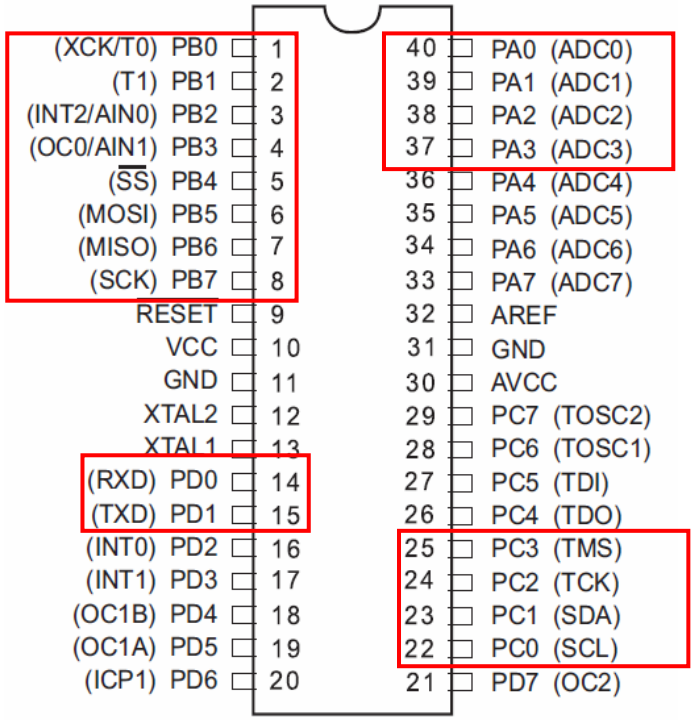
PB7 – SCK
PB6 – MISO
PB5 – MOSI
PB4 – SC
FSK Data (10kpull up)

LED:
PD5 – red LED
PD6 – red LED

RFM12:



HW-pins at ATMEGA16 for rw receiver, LCD and Dist View placed on NETbee:

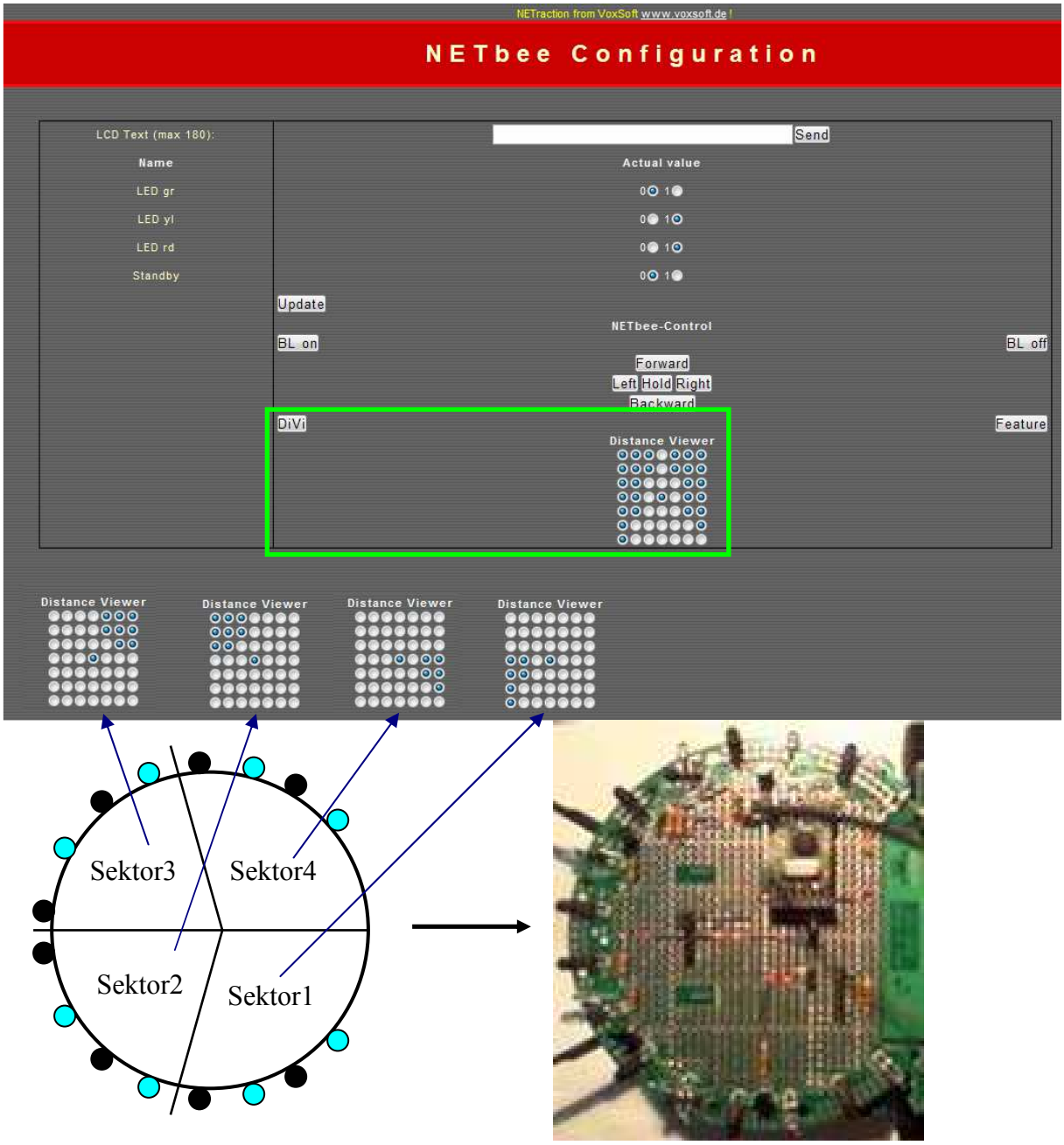


Communication with radio wave module RFM12:
PB7 – SCK
PB6 – MISO
PB5 – MOSI
PB4 – SC
FSK Data (10kpull up)

Communication with Distance View (BKit2)
Connector X1:
PA0 - DiVi (Sens Sektor 2&3)
PA1 - DV (Sens Sektor 1&4)
Connector X2:
PA2 - DiVi (IR LED)
PC2 - DiVi (T2)
Connector X3 :
PA3 - DiVi (IR LED)
PC3 - DiVi (T3)
Connector X5:
PD0 - DiVi (T1)
PD1 - DiVi (T4)
Communication with LCD-Display
Connector X4:
PC0 - I2C (SCL)
PC1 - I2C (SDA)
Communication with LEDs
PB0 - LED0
PB1 - LED1
PB2 - LED2
PB3 - LED3

3. Infrared (IR) Sensor control (DistView)

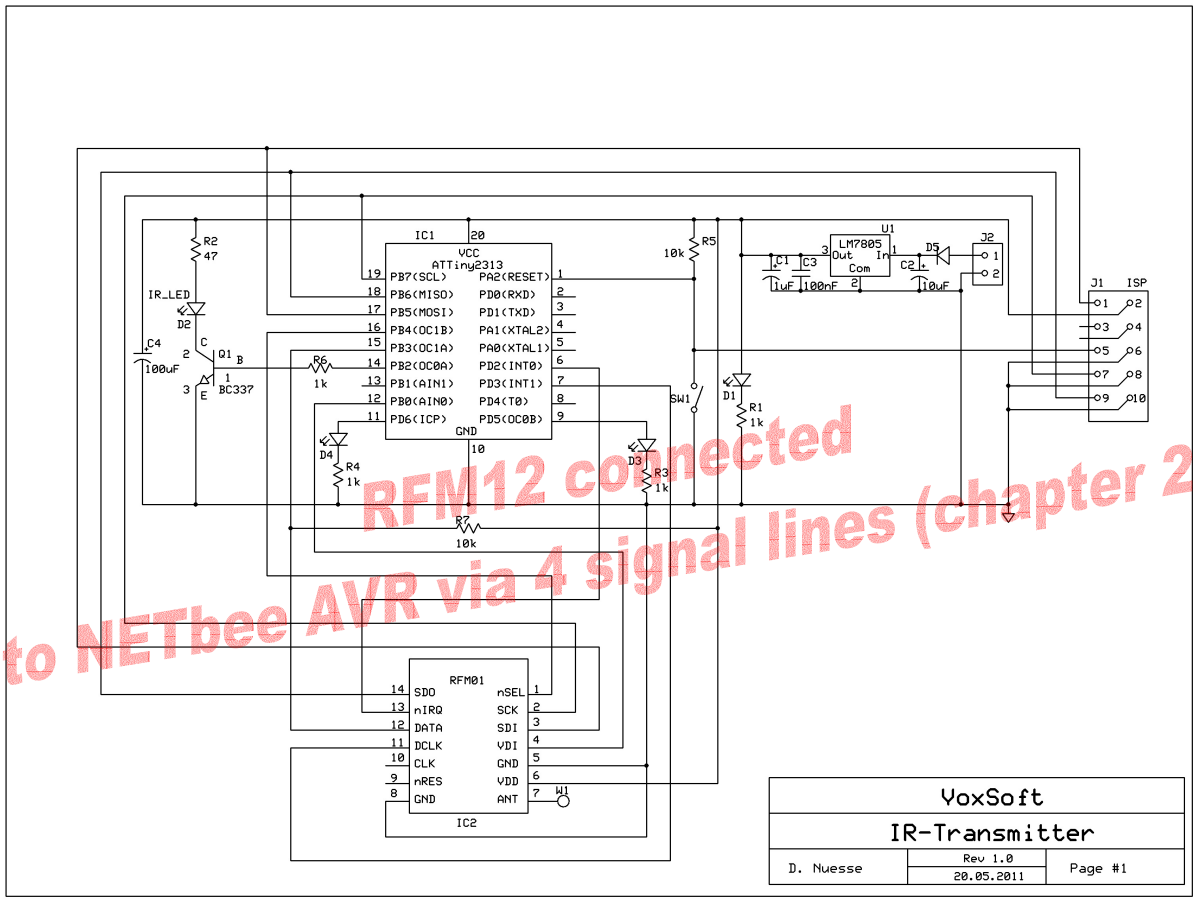
With the BKit2 it is possible to show barriers by implementing distance detection.



The IR LEDs and sensors are separated into four sectors which can indicate the obstacles in the surrounding area. By pressing the “DiVi” button a request will be send from the WEB Server over UART to the NETbee-base controller (ATTINY2313). Via radio wave the results will be transferred between NETbee and the Web-Server(Browser).

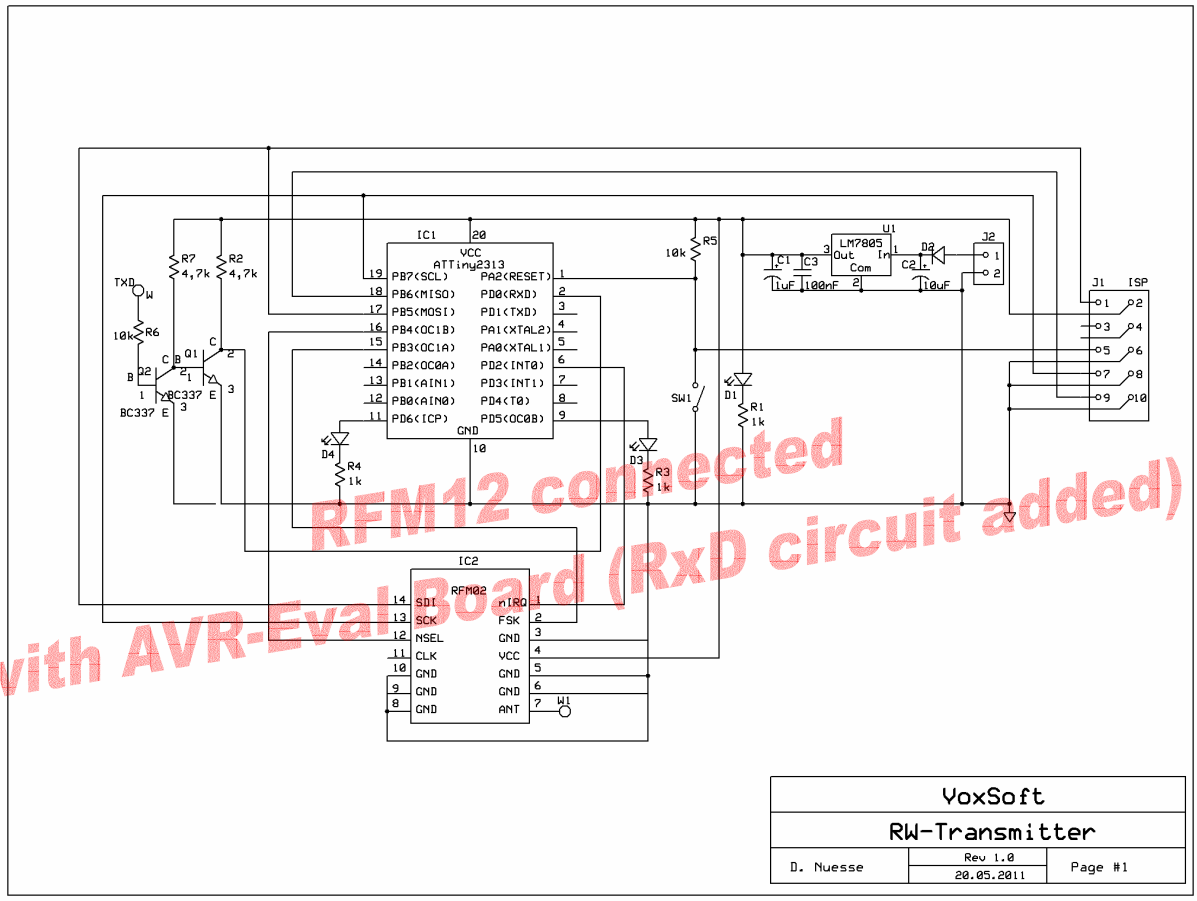
4. Documents for radio wave receiver

Schematic from NETcopter:



5. Documents for radio wave transmitter

Schematic from NETcopter:



6. SW for WEB Server interface and radio wave transmitter

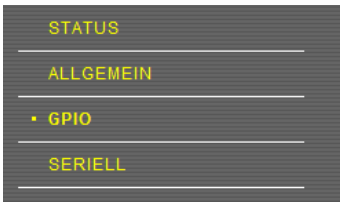
Source code -> see web page

The following functions were added to the project NETraction:

- UART Init
- Drive control functions
- Distance View functions

UART Init

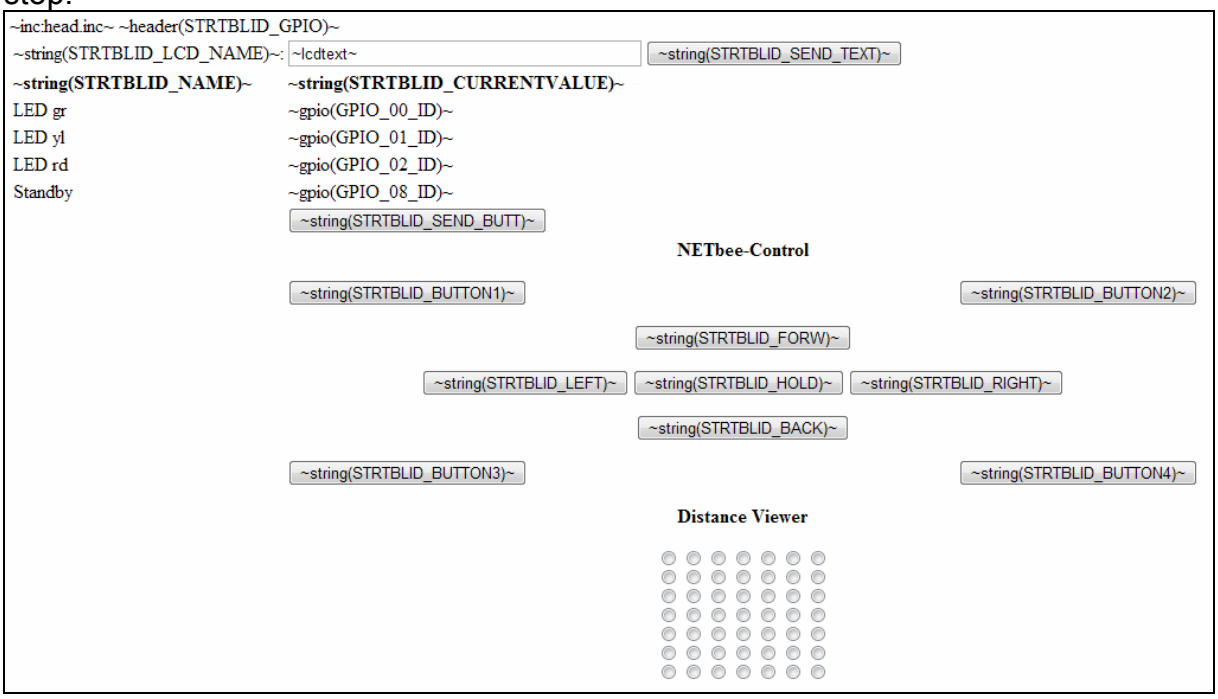
The initialisation of the UART was already implemented in the “Netzer” project and could be activated via the “Seriell” web page.
To activate the UART change the mode in the “Allgemein” web page. An indication of the mode is a “High”(3V) level at TX pin.



In the project “NETbee” the radio wave transmitter (ATtiny2313 @8MHz) works with a baud rate of 19200. Setting for the Web server can be selected in the web page “Seriell”.

HTML page for motor, distance viewer and other controls

The control for the NETbee is realized with five control buttons for each direction and stop.



7. SW for radio wave receiver at NETbee

Source code -> see web page, project also available at http://www.roboter.cc

8. SW for WEB server NETraction

Application specific implementation into the existing “Netzer” software structure are marked in red.