Documentation NETbee

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1. System overview



Data transfer between components



DCLK/CFIL/FFIT

CLK

nRES

GND

2. Used HW components

Used HW-pins at ATTiny2313 for radio wave transmitter:



nINT/VDI

GND.

VDD

ANT

RFM12S

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

		\cup		
(XCK/T0) PB0 🗆	1		40	PA0 (ADC0)
(T1) PB1 🗆	2		39	PA1 (ADC1)
(INT2/AIN0) PB2	3		38	PA2 (ADC2)
(OC0/AIN1) PB3	4		37	PA3 (ADC3)
(SS) PB4	5		36	PA4 (ADC4)
(MOSI) PB5	6		35	D PA5 (ADC5)
(MISO) PB6	7		34	PA6 (ADC6)
(SCK) PB7	8		33	D PA7 (ADC7)
RESET	9		32	
	10		31	
GND 🗆	11	11 30 AVCC		
XTAL2	12		29	PC7 (TOSC2)
XTAL1	13		28	PC6 (TOSC1)
(RXD) PD0	14		27	PC5 (TDI)
(TXD) PD1	15		26	PC4 (TDO)
(INT0) PD2	16	•	25	PC3 (TMS)
(INT1) PD3	17		24	D PC2 (TCK)
(OC1B) PD4	18		23	D PC1 (SDA)
(OC1A) PD5	19		22	PC0 (SCL)
(ICP1) PD6	20		21	□ PD7 (OC2)
				. ,

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

<u>UART Init</u>

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.

STATUS	
ALLGEMEIN	
• GPIO	
SERIELL	

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.

~inc:head.inc~ ~header(STRTBLID_GPIO)~								
~string(STRTBLID_LCD_NAME)~:	~lcdtext~	~string(STRTBLID_SEND_TEXT)~						
~string(STRTBLID_NAME)~	~string(STRTBLID_CURRENTVALUE)~							
LED gr	~gpio(GPIO_00_ID)~							
LED yl	~gpio(GPIO_01_ID)~							
LED rd	~gpio(GPIO_02_ID)~							
Standby	~gpio(GPIO_08_ID)~							
	~string(STRTBLID_SEND_BUTT)~							
		NETbee-Control						
	~string(STRTBLID_BUTTON1)~		~string(STRTBLID_BUTTON2)~					
	[~string(STRTBLID_FORW)~						
	~string(STRTBLID_LEFT)~	~string(STRTBLID_HOLD)~	BLID_RIGHT)~					
		~string(STRTBLID_BACK)~						
	~string(STRTBLID_BUTTON3)~		~string(STRTBLID_BUTTON4)~					
		Distance Viewer						
		0000000						

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.

