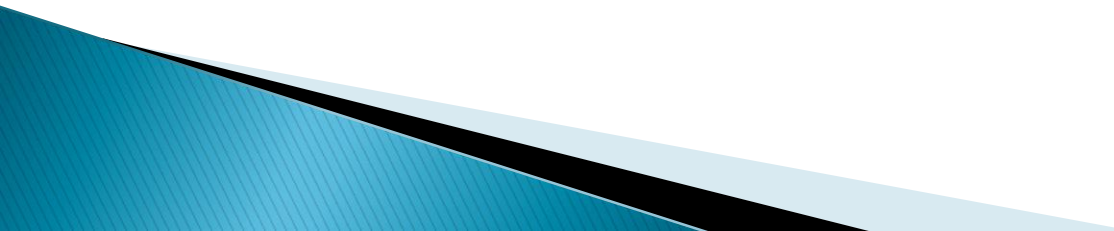


Raspberry Pi töötuba

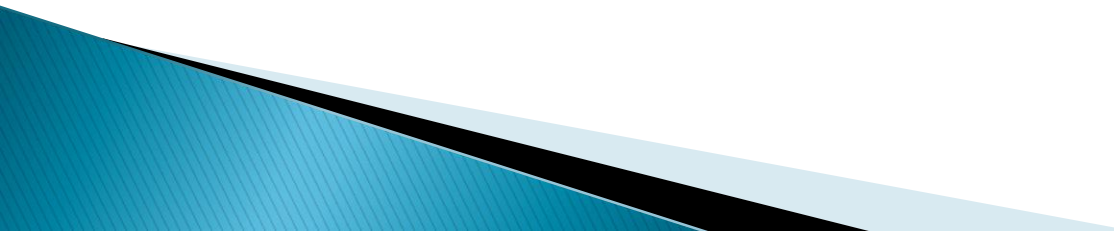
Indrek Brifk

26.10.2016

Millest juttu tuleb

- ▶ Mis on Raspberry Pi?
 - ▶ Kuidas Raspberry Pi-ga ühendust saada?
 - ▶ Ülevaade erinevatest sensoritest
 - ▶ Mõõdame mullaniiskust
- 

Mis on Raspberry Pi?

- ▶ Pangakaardi suurune mikroarvuti
 - ▶ 02.2016 Raspberry Pi 3
 - ▶ 1.2GHz 64-bit quad-core ARMv8 CPU
 - ▶ 802.11n Wireless LAN
 - ▶ Bluetooth 4.1 (Low Energy)
- 

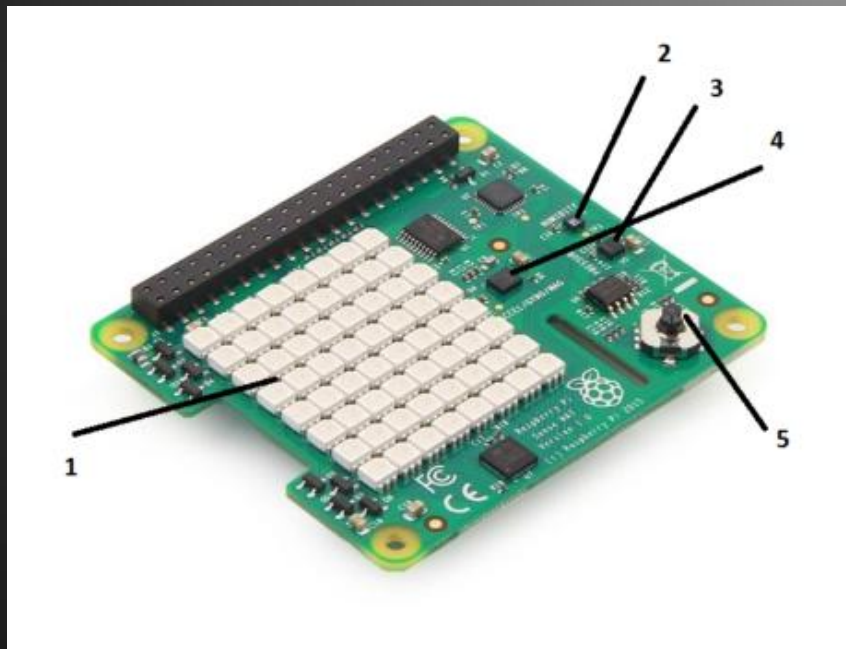
Mis on Raspberry Pi?

- 1 GB RAM
 - 4 USB porti (USB2)
 - 40 GPIO pin
 - HDMI
 - Ethernet
 - 3.5mm audio
 - Kaamera liides (CSI)
 - Ekraani liides (DSI)
 - Micro SD
- 

Ühendusvõimalused

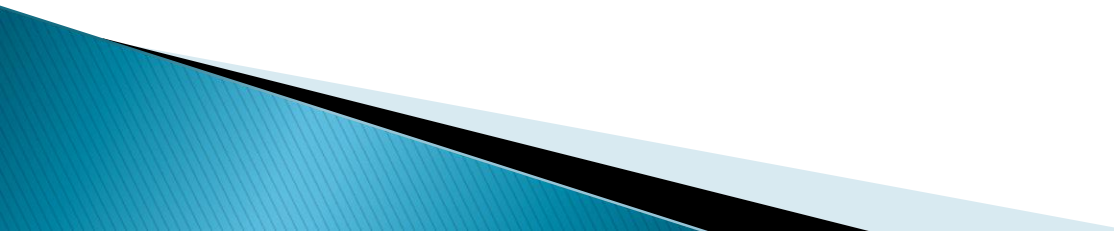
- ▶ Lokaalsed ühendused
- ▶ Kaughaldus
 - Putty (terminal)
 - Remote desktop connection (RDP)
 - VNC

SenseHAT

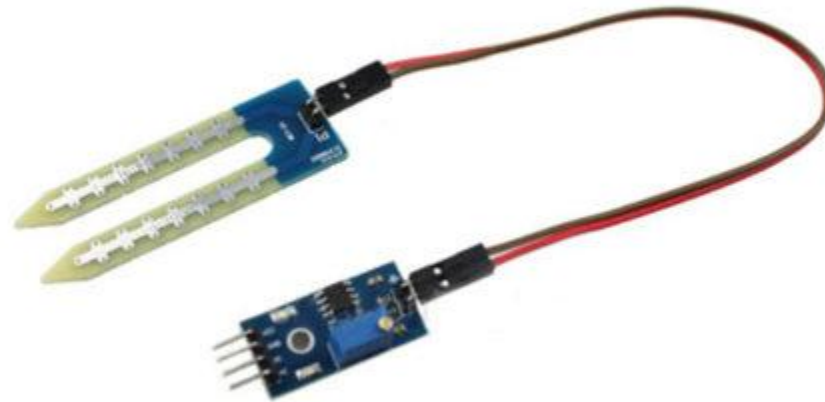


- ▶ 8x8 RGB LED maatriks
- ▶ temperatuuri ning õhuniiskuse andur
- ▶ õhurõhu andur
- ▶ küroskoop, kiirendusmõõtur, magnetomeeter
- ▶ juhtkang (joystick)

Sensoritest

- ▶ Kaamerad (IR ja NOIR)
 - CSI
 - USB
 - ▶ Liikumisandur (PIR)
 - ▶ Temperatuuri ja niiskuse andur
 - ▶ Mullaniiskuse andur
- 

Mullaniiskuse määramine























Niiskusanduri töö põhimõte

- ▶ Haaradeks galvanseeritud metall
- ▶ Juhtme teises otsas on takisti
- ▶ Väljastab analoogsignaali 0 või 1

GPIO tabel

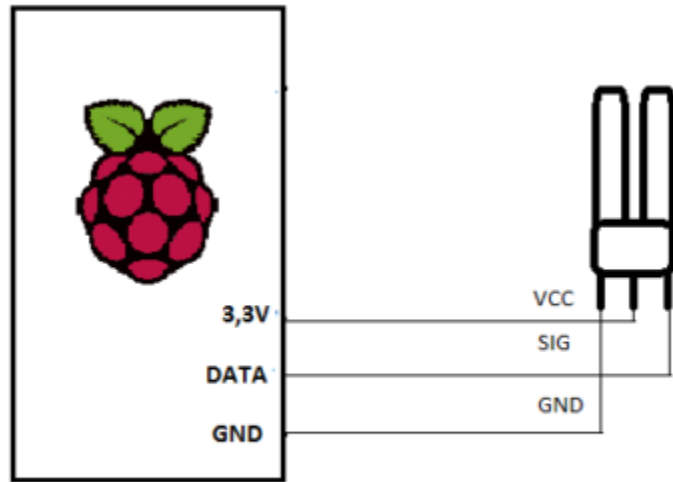
Raspberry Pi 3 GPIO Header

Pin#	NAME		NAME	Pin#
01	3.3v DC Power		DC Power 5v	02
03	GPIO02 (SDA1 , I ² C)		DC Power 5v	04
05	GPIO03 (SCL1 , I ² C)		Ground	06
07	GPIO04 (GPIO_GCLK)		(TXD0) GPIO14	08
09	Ground		(RXD0) GPIO15	10
11	GPIO17 (GPIO_GEN0)		(GPIO_GEN1) GPIO18	12
13	GPIO27 (GPIO_GEN2)		Ground	14
15	GPIO22 (GPIO_GEN3)		(GPIO_GEN4) GPIO23	16
17	3.3v DC Power		(GPIO_GEN5) GPIO24	18
19	GPIO10 (SPI_MOSI)		Ground	20
21	GPIO09 (SPI_MISO)		(GPIO_GEN6) GPIO25	22
23	GPIO11 (SPI_CLK)		(SPI_CE0_N) GPIO08	24
25	Ground		(SPI_CE1_N) GPIO07	26
27	ID_SD (I ² C ID EEPROM)		(I ² C ID EEPROM) ID_SC	28
29	GPIO05		Ground	30
31	GPIO06		GPIO12	32
33	GPIO13		Ground	34
35	GPIO19		GPIO16	36
37	GPIO26		GPIO20	38
39	Ground		GPIO21	40

Rev. 2
29/02/2016

www.element14.com/RaspberryPi

Praktikum 1 skeem



Praktikum 2 skeem

