PC - User application

C# application for Windows
+ Creating, saving, loading of measurement and devices setup

+ Control of temperature, sensors voltage/current, measurement, ...
+ Setup of Inputs Controller parameters (Supply, Load, Interrupt, Levels)
+ Setup of Silent Stepper Brick parameters (Motor step, drive speed, ...)
+ Reading and logging of measured values (Position, Sensors voltage/state, .)

Other
Measuring device /
Power supply /
Temperature chamber

USB / RS-232 / GPIB

USB / RS-232

Adjustable Power Supply

For sensors supply
+ Remote adjustable voltage/current
+ Can be used without remote control

USB / RS-232

Temperature chamber

CTS defaultly
+ Set temperature
+ Get temperature
+ Set ramp heating/cooling
+ Turn on/off chamber

Master Brick

C# firmware on AT91SAM3SXC MCU
+ Communication bridge between PC and rest of HW

Stack Power Supply
Step-down converter
24 V >>> 5 V

5 V DC

+ Inputs Controller setup and reading values using I2C bus
+ Silent Stepper Brick setup and reading indicator and motor state

I2C bus

Interrupt signal

Stack Bus
SPI

Inputs Controller (Custom Bricklet)

C firmware on ATXMega MCU
+ Invocation of interrupt request
+ Optically coupled I2C bus and Interrupt signal

+ Switching of input voltages sensing range
+ Continuous reading of inputs voltages using ADC
+ Switching on/off sensors supply using relay
+ Switching on/off sensors load using relay

Silent Stepper Brick

C# firmware on AT91SAM3SXB MCU
+ Stop/Read position on interrupt request
+ Read position callback function to Master Brick

+ Digital indicator position request
+ Motor control

Bricklet
Power Supply
24 V

24 V DC

max 65 V DC

12 V DC

Stepper Motor
Power Supply
8 - 46 V

max 999 V AC/DC

External supply for higher or AC voltage

8 supplies

8 signals
max 65 V DC

RS-232

RS-232 / RS-422
Converter

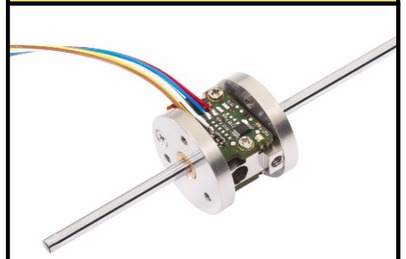
RS-422

4-wires to coils

Sensors

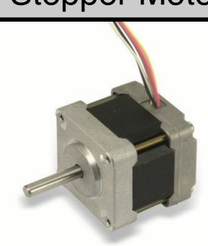
1 2 3 4 5 6 7 8

Digital Indicator



LinACE Encoder
+ Encoder position
+ 500kb/s

Stepper Motor



Nanotec ST4018M1404-B
+ min. voltage: 1,7 V
+ max. current: 1,4 A