# Manual: Serial Control Manager
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Further Informations : Bachelor Thesis Andreas Bernatzky [1]

The GUI ArduinoSaveReceive.exe must be in the same folder as the application library kayChart.dll. By double-clicking on the ArduinoSaveReceive.exe, it opens and awaits an assignment of the corresponding COM port to which the Arduino is connected. This must be taken from the Device Manager under Windows (Figure 1). By clicking the "Start" Button the Serial Connection opens. Clicking the "Stop" Button the Connection gets terminates. Make sure you specify the correct Baud-Rate of your device, for example "9600".
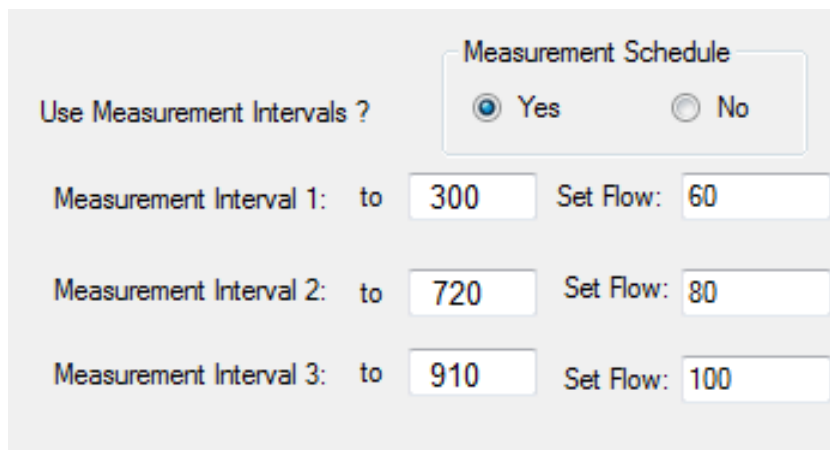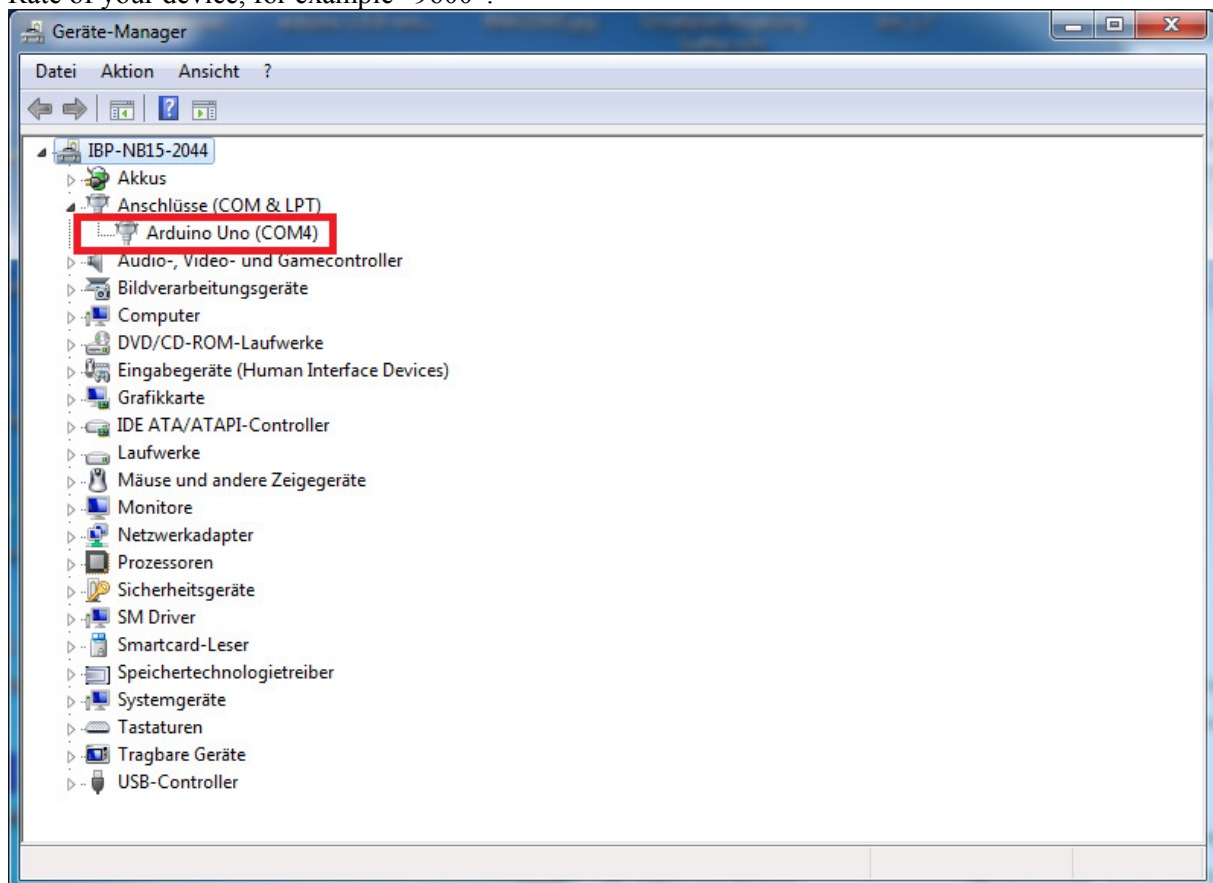

Figure 1 Arduino Uno assigned to COM4
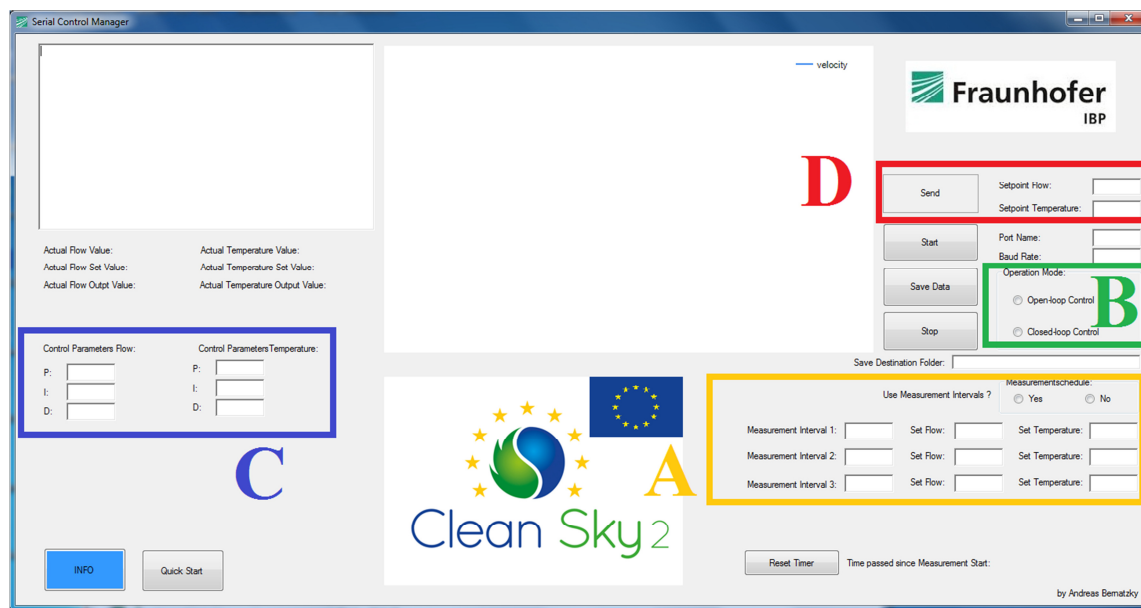
Figure 2 GUI with time Intervals

In section A, a measurement plan can be specified. To do this, select the radio buttons on the Measurement Schedule with "Yes" or "No". It should be noted that due to "Program Properties" all "Measurement Interval 1-3" must contain a value if the Measurement Schedule is used. The time intervals must be specified in seconds. A 5 - 7 - 3 minute measurement interval would look like this (Figure 4)
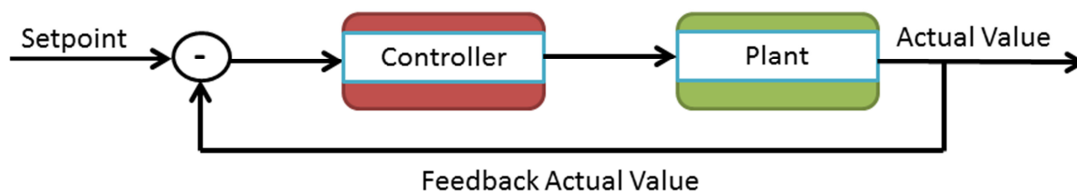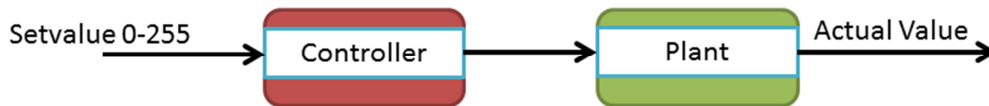

Figure 3

At the beginning of the Measurement Schedule, the timer must be reset via the "Reset Timer" button. Depending on whether you to run in closed-loop-control or open-loop-control, you can select "Open-Loop" or "Closed-Loop" for control under Operation Mode. One of the two operating modes must be selected. If Closed-Loop control is used, the PID-parameters have to be defined in section C. In Open-loop control Setpoint defines an Output Value from 0-255 Bits respectively 0-5V. In Closed-loop control the Setpoint is defined by a value of the temperature or velocity. After the measurement has been carried out, the "Save Data" button must be clicked to save the measurements to your specified Folder for example D:\Packages\Debugger\. The generated .txt file should be renamed to prevent overstoring by a new measurement.

Closed-loop Control

Setpoint → (-) → Controller → Plant → Actual Value

Feedback Actual Value

Open-loop Control

Setvalue 0-255 → Controller → Plant → Actual Value

Executive Summary:

1. Connect Arduino computer via USB cable.
2. Run ArduinoSaveReceive.exe.
3. Selection of the COM port via the device manager and set the Baud-Rate.
4. Start the serial communication via the "Start button".
5. Entering setpoint and control parameters.
6. Transfer of setpoint and the control parameters via "Send-Button".
7. (Optional) Specify a directory and Save the measured values via the "Save-Button".
8. Rename the saved file, otherwise risk of overstoring
9. Terminate connection via stop button. Or just unplug the Arduino.

Acknowledgement:

References:

[1] Bernatzky, A.: Aufbau und Regelungstechnischer Entwurf eines Lüfterprüfstandes, Bachelor Thesis at the University of Applied Sciences Rosenheim, 2017, https://www.fh-rosenheim.de/fileadmin/user_upload/Fakultaeten_und_Abteilungen/Fakultaet_ING/Laboratorien/Labor_fuer_Mess-_und_Regelungstechnik/Ingenieurprojekte/Aufbau_und_Regelungstechnischer_Entwurf_eines_Luefter_Pruefstandes/Bachelorarbeit_A.Bernatzky-Luefterpruefstand.pdf