

Rotator with SpeedControlTouch

Manual

June 2026

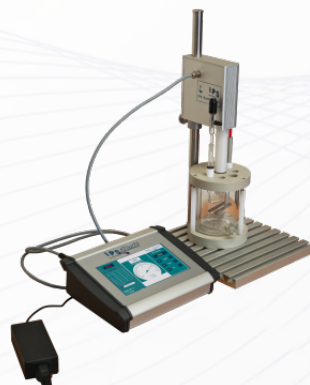


Table of Contents

1	Preface	3
1.1	Goals	3
1.2	Intended Audience	3
2	General Hints	3
2.1	Safety	3
2.2	Warranty	4
2.3	Service instructions and maintainance	4
2.4	Overview	5
2.5	Connections for external control	6
3	Commissioning	7
3.1	User interface	7
3.2	Actual speed	10
3.3	External control	10
3.4	Rotator	11
4	Computer support	13
5	Appendix	16
5.1	Firmware update	16
5.2	Technical specifications	16
5.3	List of documents	17

1 Preface

1.1 Goals

This document describes usage and handling of the rotator in connection with the **SpeedControlTouch**.

1.2 Intended Audience

The paper is addressed to the user or operator of the system.

2 General Hints

After unpacking, the devices should be checked for mechanical damage and loose parts inside. In the case of transport damage, the supplier must be informed immediately. In this state, the units must not be put into operation.

Since the rotator is powered by the **SpeedControlTouch** (safety extra-low voltage), the following notes are of minor relevance for the rotator. Due to the safety extra-low voltage, there is no danger of direct or indirect contact with the rotator. The rotating electrode can be stopped by hand, so that this does not pose any particular danger either.

2.1 Safety

The device (**SpeedControlTouch**) has been designed and tested in accordance with VDE 0411 Part 1, safety regulations for electrical measuring, control and laboratory devices, and has left the factory in perfect safety condition. It therefore also complies with the specifications of the European standard EN 61010-1 and the international standard IEC 1010-1.

In accordance with protection class I, all housing and chassis parts are connected to the mains protective conductor.

Disconnecting the earthing contact connections inside or outside the device is not permitted.

If it can be assumed that safe operation is no longer possible, the device must be switched off and secured against unintentional operation.

This assumption is valid

- if the device is visibly damaged,
- if the device contains loose parts,
- if the device does not work anymore,
- after prolonged storage under inappropriate conditions (e.g. outdoors or in damp rooms).

When opening or closing the housing, the device must be disconnected from all power sources.

If measurement or adjustment on an open device under voltage is not avoidable, this may only be carried out by the manufacturer or by a specialist authorised by the manufacturer who is familiar with the associated dangers.

There are dangerous parts inside the device which are covered by the housing during normal operation.

2.2 Warranty

Every device must pass a 48-hour endurance test before leaving the production line. This test detects component failures at an early stage. However, it is possible that a component may fail only after prolonged use. For this reason, we offer a 2-year warranty on all our products. This warranty is valid provided that no modifications have been made to the device.

Damage incurred during transport is excluded from the warranty.

In the event of a complaint, please attach a note describing the problem to the device's housing. To expedite processing, please include the sender's name and/or phone number on the housing.

2.3 Service instructions and maintainance

Under normal operating conditions, no maintenance or adjustment is required. Therefore, there is no need to open the device. If the measured and displayed values differ after several years of operation, the device should be sent to the manufacturer for inspection.

Operating conditions:

The permissible ambient temperature during operation is between +10 °C and +40 °C. During storage or transport, the temperature may range from -10 °C to +70 °C. If condensation has formed during transport or storage, the device must be allowed to acclimate for approximately 2 hours before use.

The device is intended for use in clean, dry rooms. It must not be operated in environments with particularly high levels of dust or humidity in the air, where there is a risk of explosion, or where it is exposed to corrosive chemicals.

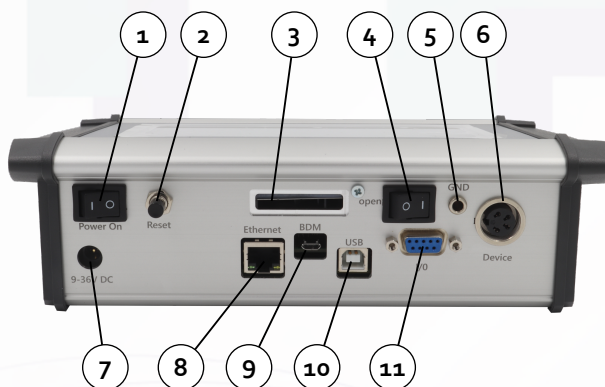
The device must be operated in an upright position, i.e., standing on its feet. However, sufficient air circulation (convection cooling) must be ensured.

2.4 Overview



1. LCD screen, User interface

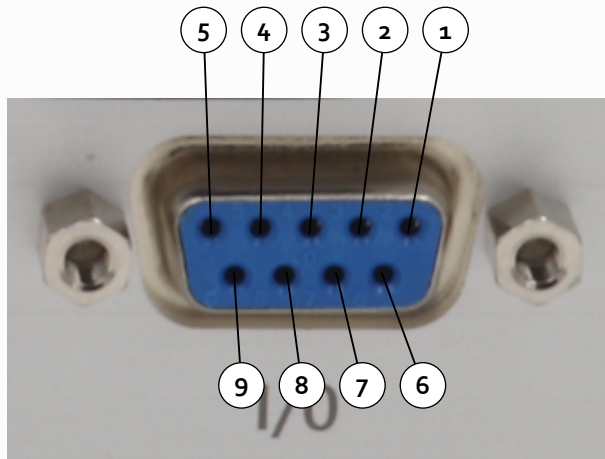
Top view of SpeedControlTouch.



1. Mains on/off switch
2. Reset push button
3. Cooler slot
4. Rotator on/off switch
5. Ground jack
6. Rotator connection socket
7. Connection for power supply unit
8. RJ45 socket for computer communication
9. USB socket for firmware updates
10. USB socket for computer communication
11. Connection for external control

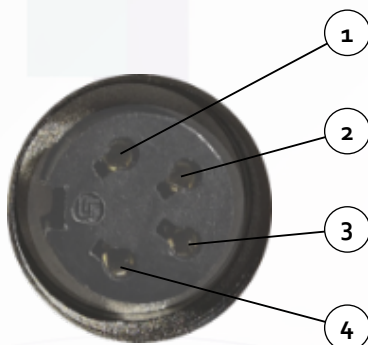
Back view of SpeedControlTouch.

2.5 Connections for external control



1. U_{nominal} extern GND
2. U_{nominal} extern
3. NC
4. Speed analog
5. Speed analog GND
6. NC
7. NC
8. On/Off external
9. On/Off external GND

D-Sub connector



1. Motor GND
2. Speedometer -
3. Speedometer +
4. Motor OUT

Rotator connector

3 Commissioning

Connecting the rotator to the **SpeedControlTouch** is the initial step in operating the system. A connection cable with a multi-pin plug is permanently mounted on the rotator. The socket on the back of the **SpeedControlTouch** is where this plug should be inserted.

Then connect the **SpeedControlTouch** to the power supply (230 V/50 Hz) and use the switch [2] to turn it on. Now you can adjust the speed of the rotator via the user interface displayed on the LCD [1].

To achieve the highest speed stability, the system should have warmed up for about 30 minutes.

3.1 User interface

The touch screen is divided in 3 parts. On the left side you see a Start and a Stop buttons, a graphical representation of the set and actual speed within the last 3 minutes and also the present date and time. In the middle of the TFT screen a speedometer and a numeric value display shows the actual RPM value. Finally you can enter the desired revolution per minute on the right side.

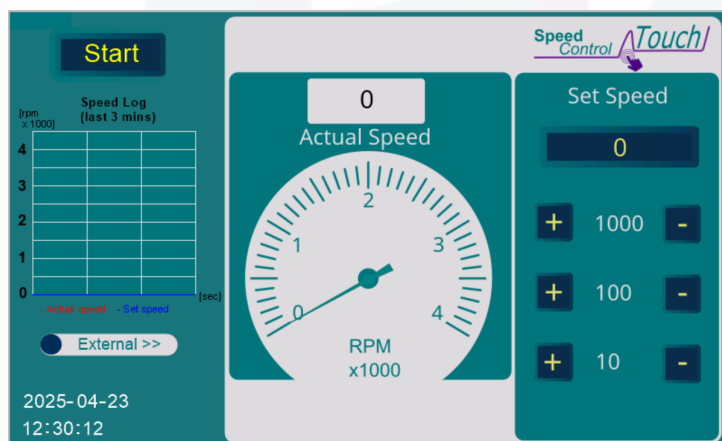


Figure 1: User Interface

3.1.1 Set speed

There are two means to set the desired speed on the right side of the TFT screen:

- By pressing the + or – buttons placed at the numbers 1000, 100 and 10 which increases resp. decreases the target value for the rotator speed.

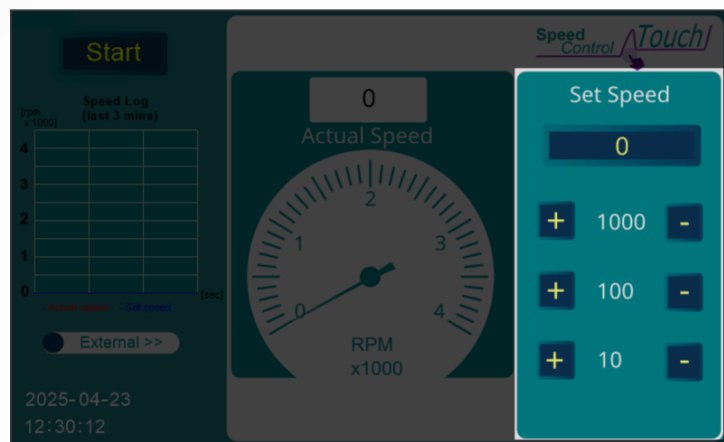


Figure 2: Set speed by pressing + or -

- Directly as a number by pressing on the value under "Set Speed" (which shows here "0") and then entering in the appearing keyboard window.

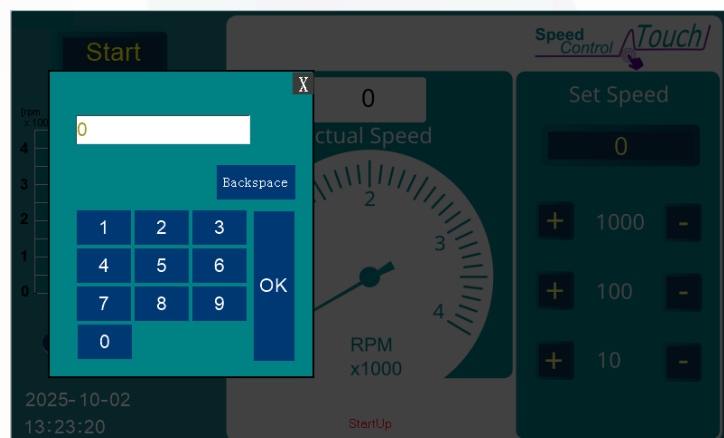


Figure 3: Set speed by entering

3.1.2 Start - Stop button

By pressing the Start button, the rotator starts to run and increases its speed continuously until it has reached the target speed set under **Set Speed**. When *Start* is selected, the button changes its function and labelling to *Stop*.

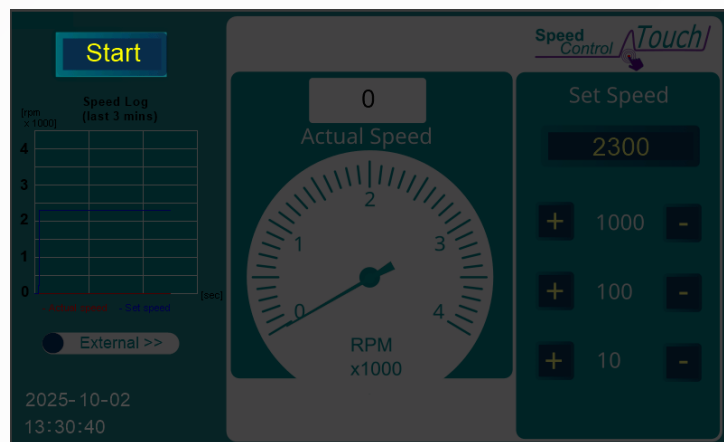


Figure 4: Start Button for starting the rotator

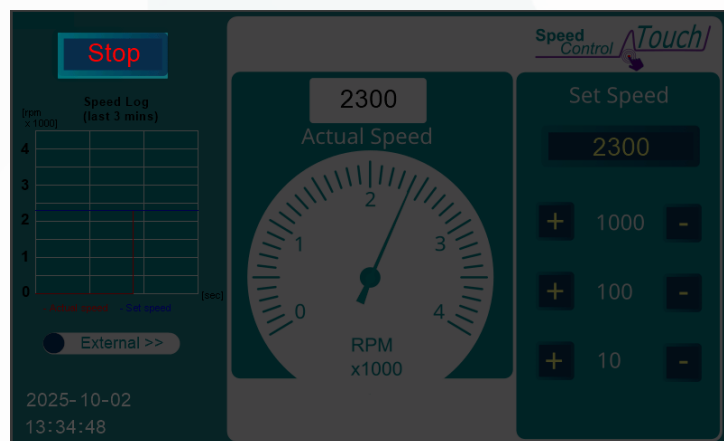


Figure 5: Stop Button for stoppingt the rotator

Caution: The Rotator on/off switch [5] must be set to on when pressing Start

3.1.3 Date and time

Touching the date and time display initially enters the date setting menu. Here you can touch the + key or - keys to change the system date resp. time.



Figure 6: Set date / time screen

The actual date can be completed by pressing the Set button or canceled by pressing the Cancel button. The setting of the time is done analogously to the date setting by pressing the + key or - key of the respective numerical data. The date/time setting is completed by pressing the Set button or the Cancel button and the main menu appears.

3.2 Actual speed

The speedometer represents the current rpm value of the rotator.



Figure 7: Analogue speed display

3.3 External control

If you want to set the speed via a computer-supported measuring system, you can apply a speed per proportional voltage to socket [10]. Hereby 2 mV corresponds to one revolution. Via this interface you can also measure the speed. The socket supplies a signal proportional to the speed, i.e. 1 mV corresponds to 1 revolution.

3.3.1 Switch to external control

To set to an external control just use the slider labelled External >> and move it in direction of the speedometer.

The screen changes to the following layout. Here you can see the actual speed which will now set by the external controller.

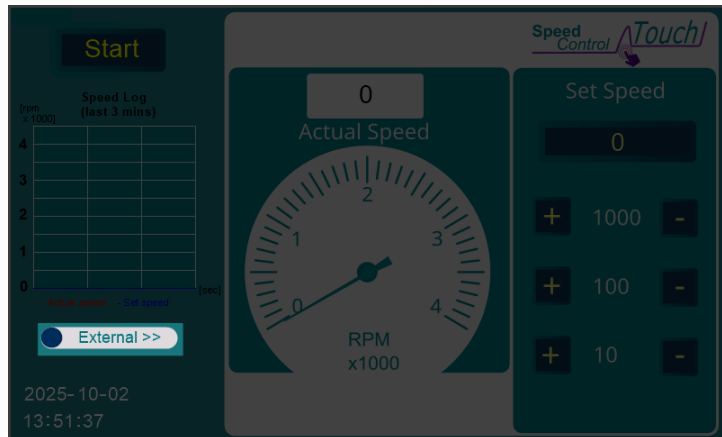


Figure 8: Switch to external control

To get back to the default screen of the Speed Controller just use the slider now tagged << Internal accordingly.

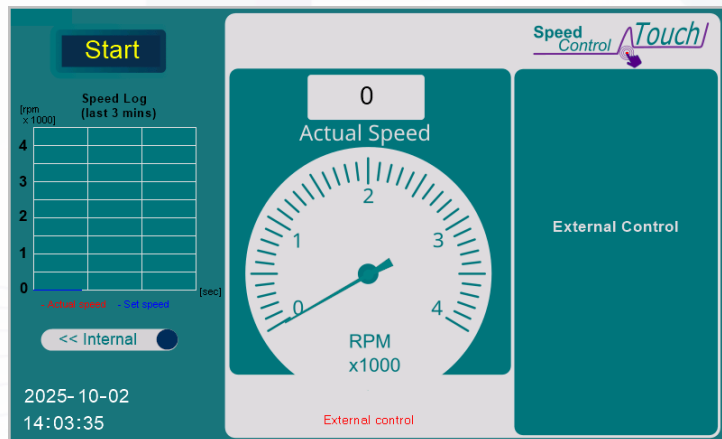


Figure 9: Switch back to internal control

3.4 Rotator

Inserting the electrode into the rotator:

1. Hold the shaft with one hand and tighten the bright locking cap upwards
2. Screw the electrode onto the shaft just before the locking cap.
3. Lock the electrode with the locking cap.

Caution: If the electrode has a plastic internal thread, it does not begin until a few millimeters in. Please be especially careful when screwing the electrode onto the external thread of the rotator, and do not use excessive force. Once the threads engage, the electrode will screw in very easily.

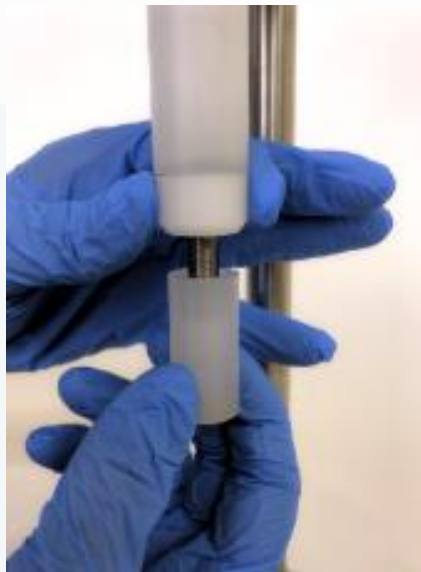


Figure 10: Mounting the electrode

Now place your measuring cell under the rotator. Connect the measuring electrode to your potentiostat via the connector on the side of the rotator. Furthermore, connect the counter electrode and the reference electrode in the glass vessel accordingly.

Then loosen the lateral locking screw on the guide rod on the rotator and slowly lower it downwards so that the electrode dips into the electrolyte. With disc electrodes, the electrode should immerse only approx. 1 mm. The lateral notch from the electrode should not be completely covered. It is for a better demolition of the electrolyte at the electrode edge. If a small funnel forms in the electrolyte at higher speeds, you may have to correct the height slightly. The exact position can be determined with a light trial and error

Start now your measuring system to record the desired measured values.

Note: After completion of the measurement, all parts contacted with electrolyte should be cleaned. Never leave the electrode in the rotator overnight or even over the weekend. Although the materials are made of V₄A, unintentional corrosion can occur with aggressive electrolytes.

4 Computer support

If the speed of the rotator should be controlled in conjunction with our EcmWin software [1], the computer and SpeedControlTouch must be connected via the supplied USB cable (USB-A plug to Micro-B plug) [9].

After starting the EcmWin software on the computer the following check windows appears, which you must close via the "X".

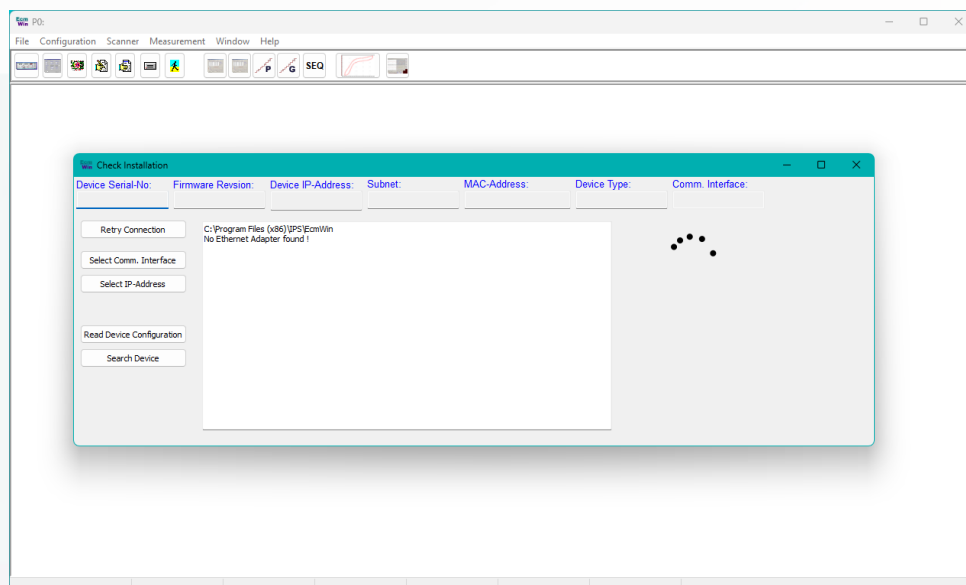


Figure 11: Close this Check window

After starting the EcmWin software select in the menu bar the item *Configuration, Interface* and then *SpeedController*.

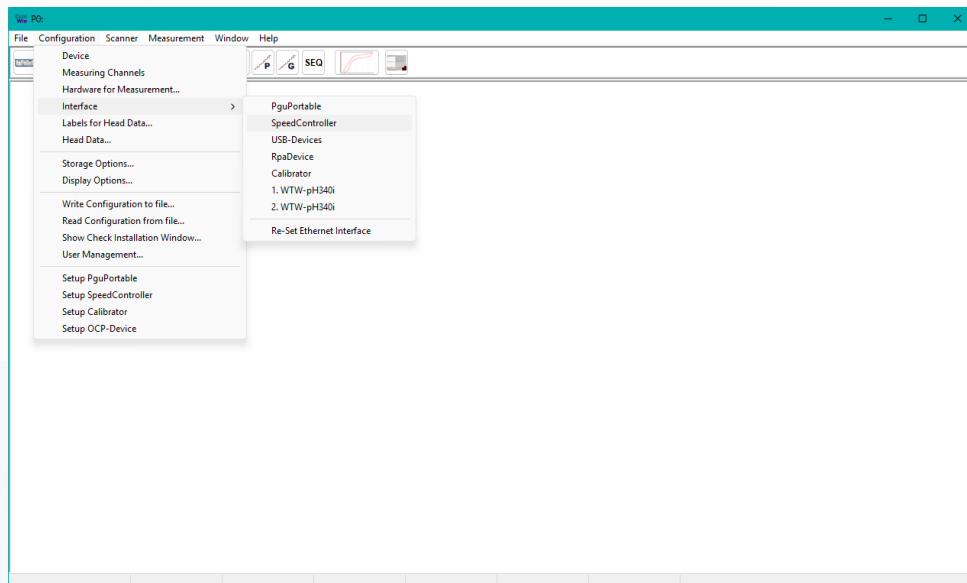


Figure 12: Selection in EcmWin menu

Now this dialogue windows with the current interface parameter is displayed. These values usually do not need to be changed.

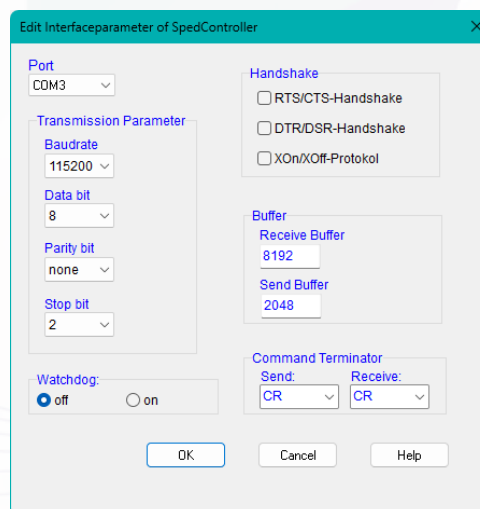


Figure 13: Interface parameter

Baudrate	115200
Data bit	8
Parity bit	None
Stop bit	2
RTS/CTS	unchecked
DTR/DSR	unchecked
XOn/XOff	unchecked

Watchdog	off
Receiver Buffer	n/a
Send Buffer	n/a
Command Terminator	n/a
Send	CR
Receive	CR

After having entered and checked the correct settings choose now *Configuration | Setup SpeedController*

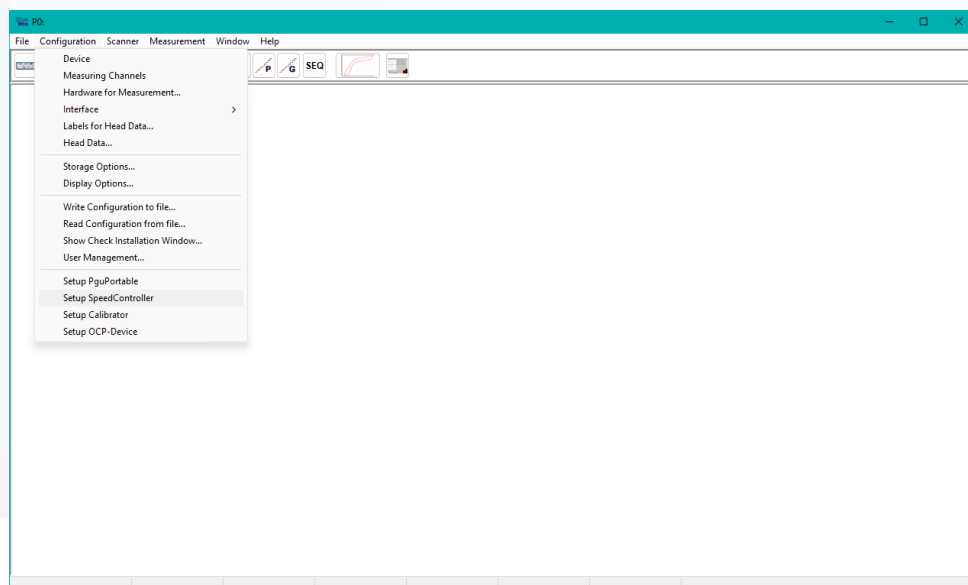


Figure 14: Interface parameter

In the following window you can retrieve miscellaneous device information by pressing the Read button. Furthermore you can Refresh the date and time on the SpeedControlTouch with the suitable data of the connected computer.

After entered a rotational speed in the Set Speedvalue you start the rotator by selecting the Rotating Unit radio button "On". In the Actual Speed field the current speed is displayed. By changing the value of the speed in the appropriate input field, the speed of the rotator alters to the given speed.

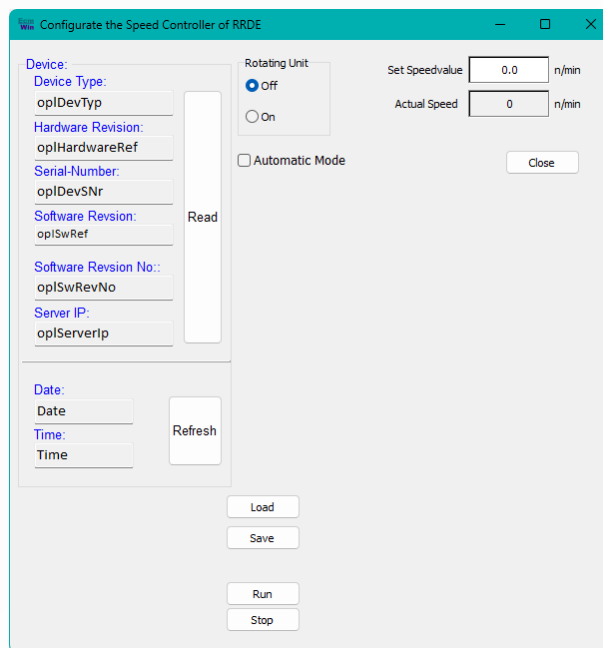


Figure 15: Interface parameter

5 Appendix

5.1 Firmware update

The SpeedControlTouch supports updating of the firmware (control software of the Controller) by the user of the device. IPS Elektroniklabor GmbH & Co. KG will usually send you a new version of the firmware via e-mail. It is a file with the the extensions ".hex" or ".elf".

To update the firmware, the computer and SpeedControlTouch must be connected via the supplied USB cable (USB-A plug to Micro-B plug).

To perform an update with this file type (".hex" or ".elf") you must use the software "TyCommander", which can be found on the tools which were included in the delivered software. Start the software and connect the device to the computer via an USB-cable. The software "TyCommander" automatically detects the Teensy (the microcontroller in the device) and you must select the appropriate file and transfer it via the UPLOAD button.

If the device does not restart by default to activate the new firm-ware just press the Reset button of the device.

5.2 Technical specifications

Supply voltage	230 V / 50 Hz
Digital display of speed	4-digit, 0 ... 6000 rpm
External speed control	1 external input, 2 mV = 1 rpm
Output signal for measurement data acquisition	1 proportional output 1 mV = 1 rpm

5.3 List of documents

[1]	IPS Elektroniklabor GmbH & Co KG: Manual „EcmWin - Software for Electrochemical Measurement“
[2]	IPS Elektroniklabor GmbH & Co KG: Manual „EcmView: Analysis and visual representation of Electro-Chemical Measurements“