

INHECO Incubator Shaker Control

Incubator MP / DWP

Part No.: 7300003 / 7300006

Incubator Shaker MP/ Shaker DWP

Part No.: 7300013 / 7300009

► **User's Manual**

INHECO Industrial Heating and Cooling GmbH reserves the right to modify their products for quality improvement. Please note that such modifications may not be documented in this manual.

This manual and the information herein have been assembled with due diligence.

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1 IMPORTANT NOTES

1.1. General Information

Read the user instructions completely. The manual explains how to use the INHECO Incubator Shaker Control Software to control the Incubator devices. The INHECO Incubator Shaker Control Software allows to operate Incubator devices as a stand-alone unit and is delivered with the Incubator only for functional testing. The Incubator is not intended for the use in automated systems, not as a standalone device. In case these manual instructions are not followed, injury or product damage cannot be excluded.

Missing or insufficient knowledge of the manual leads to loss of liability against INHECO GmbH.

This manual is part of the Incubator devices and must be retained until the unit is disposed and must be passed on with the Incubator devices when the units are taken over by a new user.

Manual instructions must be followed in order to ensure safe handling of the unit.

Security-related warnings in this manual are classified into three hazard levels:

- The signal word **WARNING** indicates hazards which – without precautionary measures – can result in serious injury or even death
- The signal word **CAUTION** is given to indicate hazards which – without precautionary measures – can result in minor to moderate injuries or could impair functioning.
- The signal word **NOTE** stands for the general precautionary measures that have to be taken to avoid damaging the device when using it.

Contact INHECO in case there are any uncertainties of how to operate or how to handle the Incubator devices with the INHECO Incubator Shaker Control Software.

Your opinion about this manual provides us with valuable insights on how we can improve this document. Please do not hesitate to direct your comments to sales@inheco.com, → How to contact INHECO, page 5

1.2. Explanation of symbols

Symbol	Explanation
	Warning: Potential danger of serious injury or death.
	Note: Potential danger of material damage.
·	Bullet points indicate steps of instructions.
-	Hyphens refer to enumeration.
→	Arrows indicate: “refer to” and are mostly active links
blue writing	indicates a software button

1.3. How to contact INHECO

INHECO GmbH	
Address	Fraunhoferstr. 11 82152 Martinsried Germany
Telephone - Sales	+49 89 899593 101
Fax	+49 89 899593 149
E-Mail - Sales	sales@inheco.com
E-Mail - Technical -Hotline	techhotline@inheco.com
Website	www.inheco.com

Technical Support & Trouble Shooting Instructions:

<http://www.inheco.com/service/technical-support.html>

1.4. Abbreviations and Glossary

Symbol	Explanation
FWCS	Firmware Command Set
DLL	Dynamic Link Library
°C	Degree Celsius
Hz	Hertz [1/s]
rpm	revolution per minute
Set Point	The desired process value programmed into a controller

2 PRODUCT DESCRIPTION

2.1. Intended Use

INHECO offers a Software called INHECO Incubator Shaker Control Software to provide limited functional control and the opportunity to send manually entered firmware commands, e.g. for error code reports. Incubator devices are designed for the use in liquid handling workstations. Typically they will be controlled by the software provided by the manufacturer of the automated workstation. We recommend to contact your workstation provider for integration (including software integration) of the Incubator devices into your workstation.

The technical requirements and the installation steps for the INHECO Incubator Shaker Control Software are explained in detail in this Manual.

The Incubator Shaker Control should be used exclusively by laboratory professionals trained in laboratory techniques with labautomation systems and having studied the instructions for use of this instrument.

3 SOFTWARE INSTALLATION

The following sections list the technical requirements and the stages of action for installing the IVDD Incubator Shaker Control Software.

The IVDD Incubator Shaker Control allows to check the main functions (open drawer, close drawer, shake and heat) of the incubator devices. → Manual INHECO Incubator Shaker Control

Please follow the instructions in the given order, depending on the used operating system. Ignoring the correct order may cause complications during installation. In case you have deviated from the correct process, we suggest to deinstall the Incubator software and to re-install it again.

In case you encounter problems contact your IT administrator.

3.1. System Requirement

- Operating system: Windows 10
Windows XP, Windows Vista or Windows 7 are still working but if you encounter problems not supported anymore
- Free USB port
- Minimal display resolution: 800 x 600 pixel

Hard- and software features of the Incubator USB virtual COM port are specified in this section.

NOTE

Since the USB interface is not optimized for a secure real time data transfer, all communication is secured by a cyclic checksum (CRC). In case the communication between the computer and the Incubator Unit often fails due to timeouts, it is likely that it is due to the computer. Consider the following with regards to communication stability:

- In case you encounter communication instability, verify the communication stability with different computers of different configurations.
- Disconnect other devices from the computer which may interfere with the communication stability.
- De-activate the automated Windows update. For integration purpose, use INHECO's DLL and Firmware Command Set → Scope of Delivery, page 8

3.2. Windows 10

NOTE

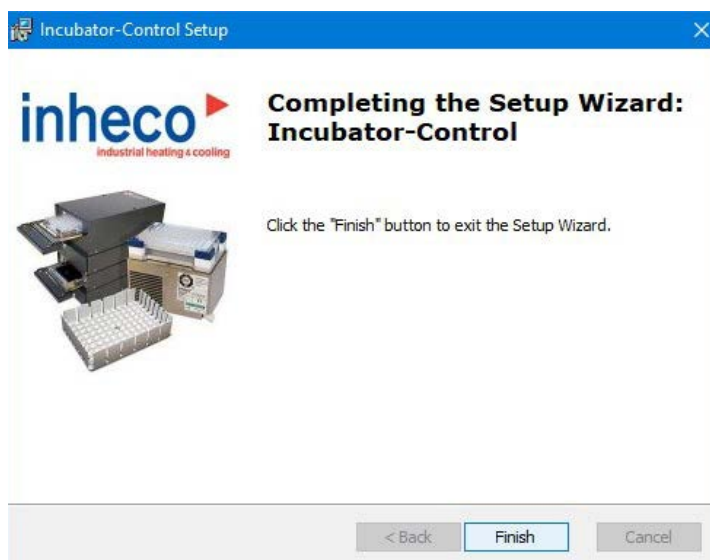
Do not connect the Incubator devices to the computer before the installation routine asks you to do so.

3.2.1. Installation

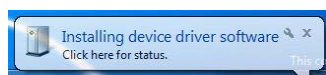
Connect the USB Memory Stick to the PC and open the following file:
Incubator Control Setup_x.x.x_32bit.exe or Incubator Control Setup_x.x.x_64bit.exe
The installation will start automatically.

- Follow the instructions in the dialogs given below. Additional dialogs could appear, depending on Windows configuration, user rights and firewall. For questions about these, please contact your administrator.





After the software and driver installation is completed, you can connect the Incubator Unit to the PC. When connecting, the pre-installed driver will be loaded automatically. Afterwards, the following Windows status message will appear at the lower right:



The Incubator Unit is given a free COM port by the operating system automatically. The COM port, to which the incubator device is connected, has to be known to initialise the incubator unit by the incubator software.

3.2.2. COM port identification

- Connect the Incubator via USB cable to the PC.
- Click on **Start** in the taskbar and start the control Panel
- Open **Hardware and Sound**



Fig.1: Image of control panel in Windows 7

The following window will open

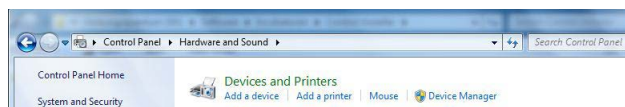


Fig.2: Select device manager

- Select the **device manager** and the following window is displayed.

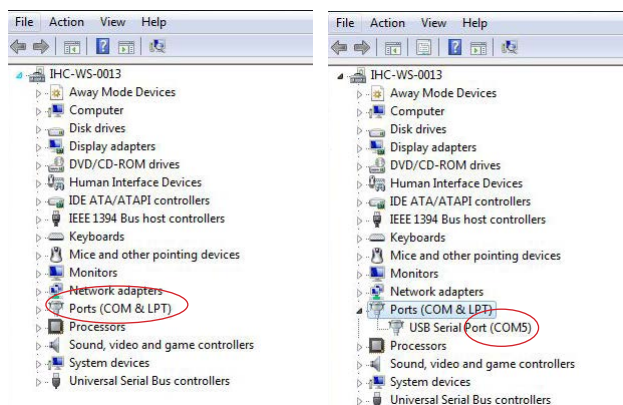


Fig.3: Device Manager

- Select the subitem **Ports (COM & LPT)**:

The Incubator Device should be found in the list of assigned ports.

The COM port is shown behind the the USB Serial Port in brackets.

Please continue with → Start Incubator Software (chapter 6.2).

Additional dialogues could appear, depending on Windows configuration, user rights and firewall. For questions about these, please contact your administrator.

3.3. Windows XP, 7 oder Vista

3.3.1. Installation

NOTE!

Do not connect the Incubator devices to the computer before the installation routine asks you to do so.

- Connect the USB Memory Stick to the PC and open the following file:
Incubator Controll Setup_x.x.x_32bit.exe or Incubator Controll Setup_x.x.x_64bit.exe
- The installation will start automatically.
- Follow the instructions in the dialogs similarly to Windows 10.
Additional dialogs could appear, depending on Windows configuration, user rights and firewall. For questions about these, please contact your administrator.

3.4. Commands

All commands for the integration of the single Incubator are described in the document "Incubator FCS /Document NR: 900334-XXX".

3.5. Uninstall Incubator Control Software

NOTE!

The Incubator Unit must be disconnected from the computer before deinstalling the IVDD Incubator Shaker Software

- Click on [Start > All Programs](#) in the taskbar.
- Select [Incubator Software](#).
- Select [Uninstall](#).
Follow the instructions in the dialogue boxes.

4 DAILY USAGE

4.5.1. IVDD Incubator Shaker Control Software

In order to control the incubator devices directly via computer without workstation software use the IVDD Incubator Shaker Control can be used. The software has been mainly developed to test the functions and of the incubator devices and to support the service team to evaluate the status of the device in case there is a malfunction.

- Make sure that the Incubator unit is connected to the PC.

NOTE

After the installation, the following icon is installed on the desktop. The program can be also found at: [Start > All Programs > Incubator Control > IVDD Incubator Shaker Control](#)

- Open the software by double-clicking on the icon shown here.



The following screen is shown:

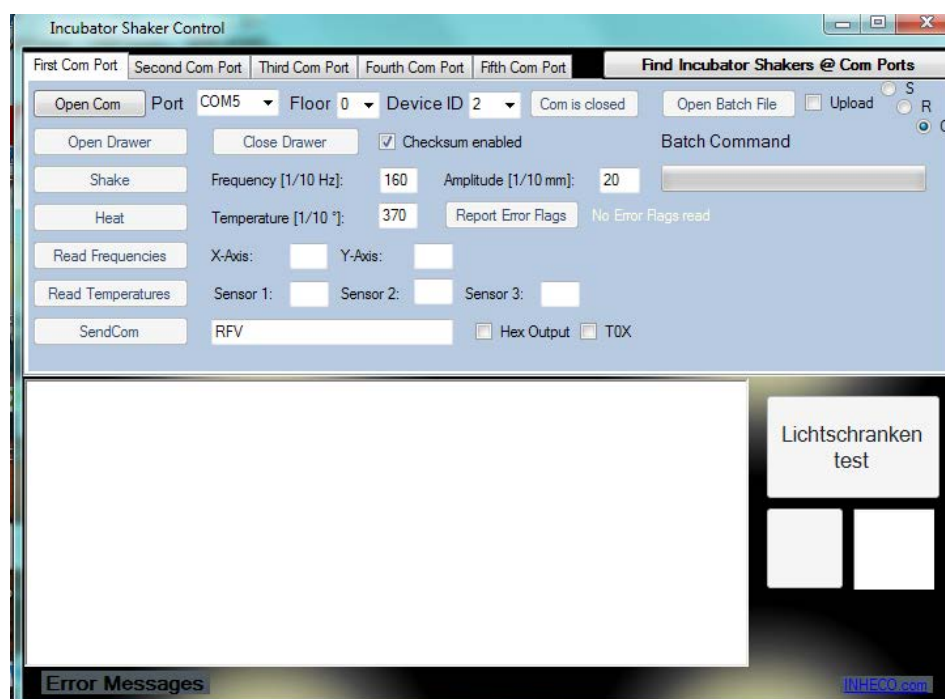


Fig.4: User interface of IVDD Incubator Shaker Control

4.5.2. User Interface of the IVDD Incubator Shaker Control

The following chapter and figure 5 explains and shows the functions of the user interface of the Incubator Shaker Control Software. If you are using a workstation software with integrated incubator control please contact your provider for further instructions.

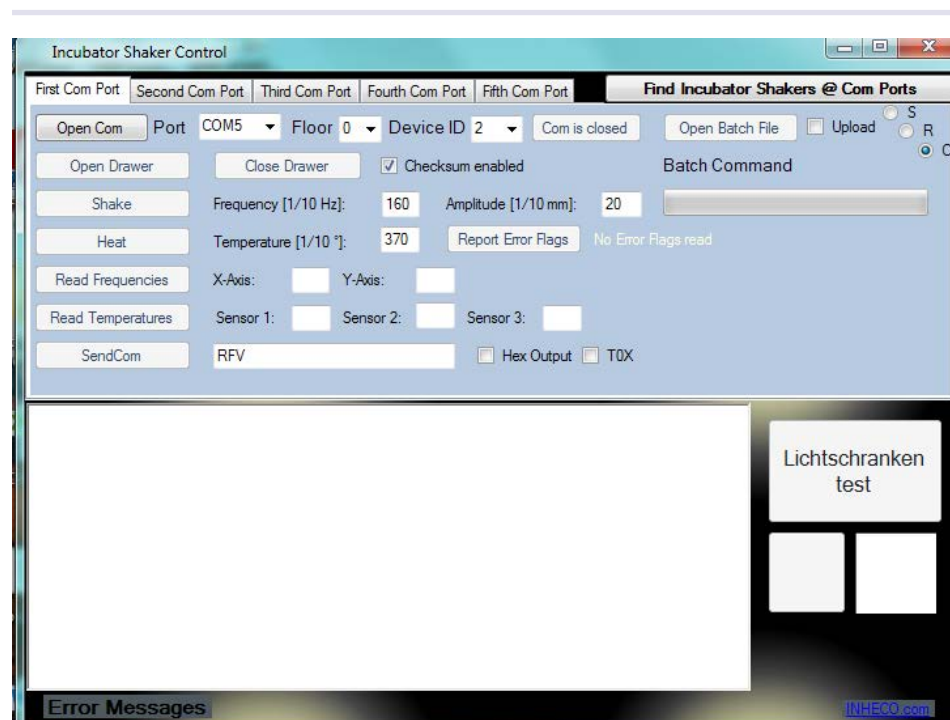
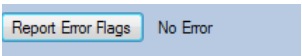


Fig.5: User Interface of the Example Tool: IVDD Incubator Shaker Control

The following table explains the user interface buttons and entry fields in more detail

Button or Field	Description
Open Com	Before a devices can be controlled the COM port has to be opened
Port	Selector for COM port → COM port identification, page 10
Floor	Select instrument within one stack which you like to control. (0= incubator connected to computer by USB (Master), 1= incubator connected directly to Master,
Device ID	The Device ID is corresponding to the address set by the address switch on the rear side of the instrument. The Default setting is 2. If you have several Incubators connected to one PC each master needs a different Device ID.
Com is closed	Message that Com has to be opened
Open batch file	Batch file with sequence of commands that should be executed by the incubator device automatically, can be loaded. A batch file should not be used by customer without written approval of INHECO as it could have an effect on the operation of unit => DO NOT check the upload button
Open Drawer	Opens Drawer
Close Drawer	Closes Drawer
Shake	Starts shaking process with the set frequency and amplitude only when labware is inserted => button changes to "stop shaking" if the incubator is shaking.

Button or Field	Description	
Shake	Frequency [HZ]	Enter the desired shaking frequency in Hz
	Amplitude [1/10mm]	Enter the amplitude in 1/10 mm, e.g. for target amplitude 1.0 enter 10 into the field Minimum Amplitude: 1.0 Maximum Amplitude: 3.0
Stop Shaking	Stops shaking process	
Heat	Starts heating process with the set temperature => button changes to "stop heating" if the incubator is heating.	
Heat	temperature [1/10]	Enter the temperature in 1/10°C, e.g. for target temperature 20°C enter 200 into the field
stop heating	Stops heating process	
Report error flags	After clicking this button the currently present errors are shown (right from the button). The Flag code is reported as a 32-bit code.	
		
Read frequencies	X-Axis	Frequency is indicated in rpm
	Y-Axis	Frequency is indicated in rpm
Read Temperatures	Sensor 1 (see figure 22)	Temperature PT100_1 is indicated in °C
	Sensor 2 (see figure 22)	Temperature PT100_2 is indicated in °C
	Sensor 3 (see figure 22)	Temperature PT100_3 is indicated in °C
Send Com	Execute the command entered in the field next to the button (refer to FW command set for Incubators for specific command types)	
Reply field	After sending a command to the incubator devices the answer is displayed here	
Lichtschrankentest	should not be used by customer as it could have an effect on the operation of unit	

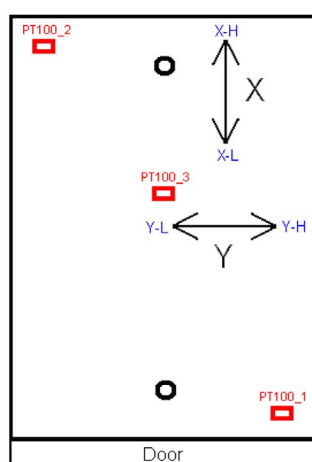


Fig.6: Temperature sensor locations

NOTE!

The COM port may change after the device was reconnected to the PC again. Please follow the procedure of COM port identification.

Shaking can only take place when the labware is inserted. If a labware is not inserted, the following message will be displayed: INVALID OPERAND

4.1. Operate the Incubator devices with IVDD Incubator Shaker Control

- Select [Open COM](#)

NOTE

If the Comport cannot be opened it might be necessary to run the program as administrator.

- right mouse click on icon
- run as administrator
- start program with double click

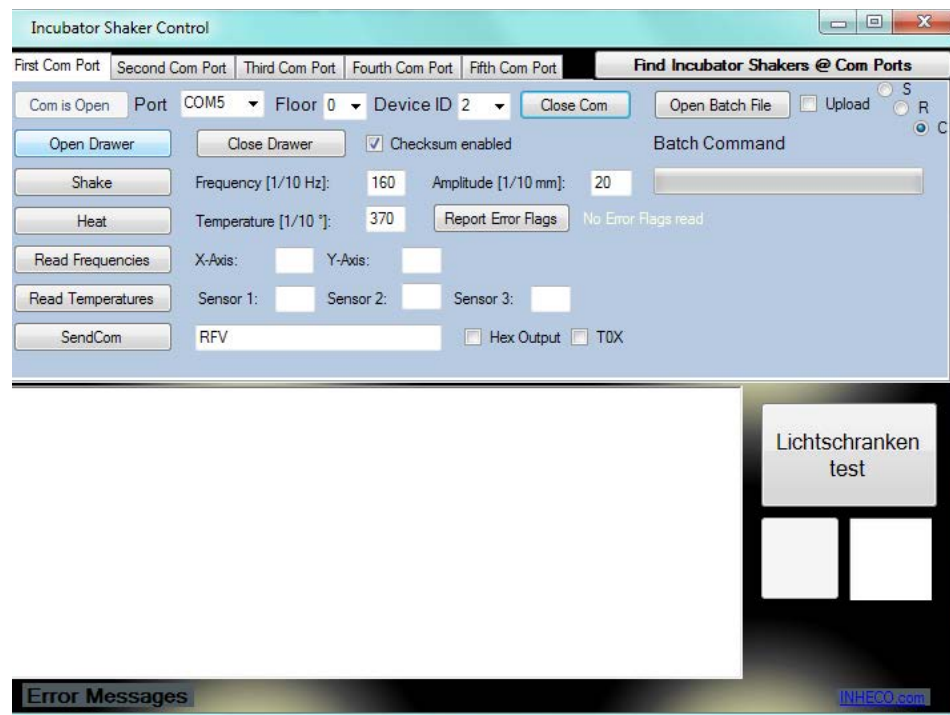


Fig.7: Userinterface after COM is opened

- Select [Floor ID](#) (0= device connected to computer by USB -> Master)
- Enter Command: AID into command field
- [send com](#)

NOTE

If the Comport is opened but commands are not accepted please check whether the correct comport is used → Comport identification, page 29. As the your current selected Com might be related to another device.

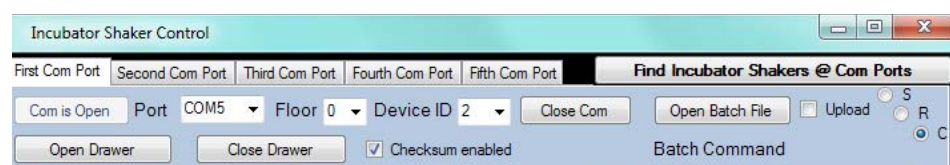


Fig.8: Userinterface after COM is opened

- Set in your desired Frequency , Amplitude [in 1/10mm], Temperature [in 1/10°C] in the entry field
- Select [Shake](#)

NOTE!

The command [Shake](#) can only be executed with an Incubator with shaking option and with a labware present in the system.

- Select [Heat](#)
- For stopping shaking and/or heating select [Stop Shaking](#) and/or [Stop Heating](#)

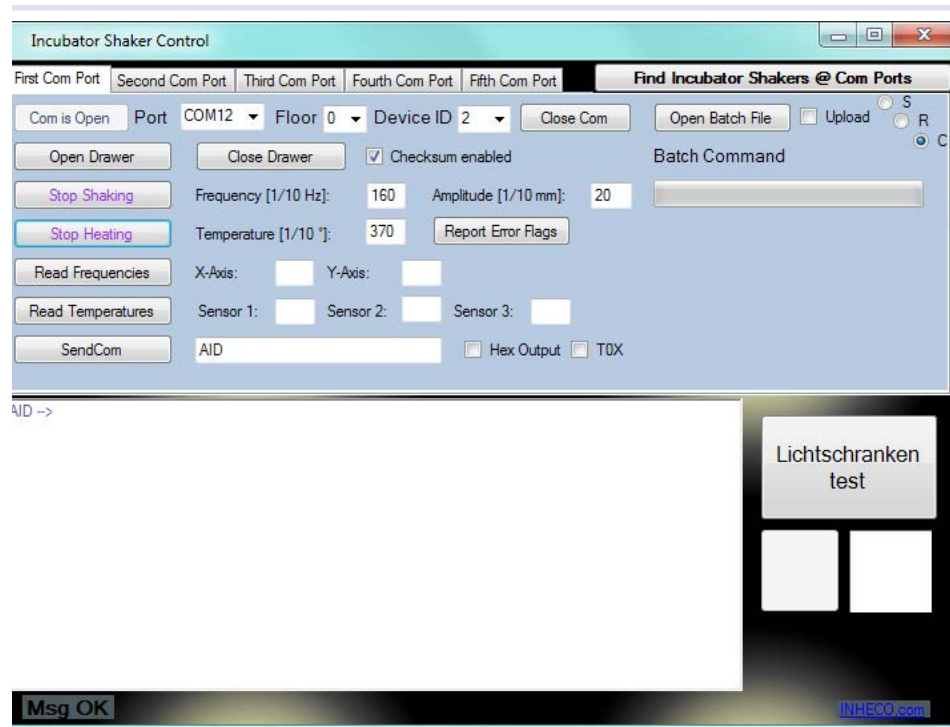
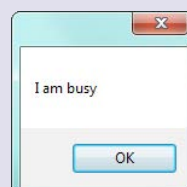


Fig.9: User interface after heating and shaking has been activated

NOTE!

If commands are send to rapidly after each other, the incubator device might not be able to execute all commands. If this is the case the incubator will return the "I am busy" message. Click the command butonn again to execute the command again.



4.2. Send Firmware Commands to devices

All commands for the integration of the Incubator devices are described in the document "Incubator FCS /Document NR: 900334-XXX".

The commands can be executed by entering the commands into the entry field and then sending it to the incubator device.

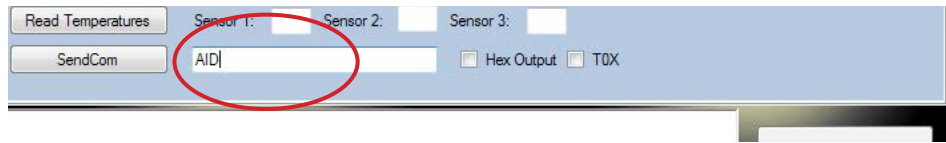


Fig.10: Command section of User Interface

- Overwrite the command that is shown in the entry field (default is RFV).
- Select [SendCom](#)



Fig.11: Command section after sending a command with reply