

1 Automation RS232/RS485

External systems can be connected to this interface. By default, an ASCII protocol runs at this interface. If required, it is possible to switch to the protocol of the service interface.

Data interface

- Baud rate: 9600
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: without

Both interfaces can be connected via the 25-pin Sub-D connector.

Pin 10	RS-485	A
Pin 11	RS-485	B

Pin 25	RS232	TX
Pin 24	RS232	RX
Pin 12	GND	

1.1 Protocol

The SmartBox always works as a slave and responds to commands.

The protocol is structured as a simple ASCII protocol. The commands consist of a text part and, if necessary, a number separated from the text by a space and a terminating character.

Attention: The command must always be sent as a complete data packet. As soon as a pause of more than 25ms occurs between the individual characters, the data received so far is discarded! The input e.g. a keyboard is not possible. For test purposes the tool "HTerm" can be used. See example in chapter tbd.

The commands can be divided into two groups. There are commands for reading data and commands for writing data. The differences are shown in the table below.

If the value to be written is not within the specified value range for this data field, the data is not written. The response packet then contains the current value.

Invalid commands are directly discarded by the box, there is no response.

Protocol structure Based on an example

	Read data	Write data
Request	<p><i>getTarget</i>↵</p> <p>Command word Terminator</p>	<p><i>setTarget</i> 5↵</p> <p>Command word Space Number Terminator</p>
Reply	<p><i>getTarget</i> 4↵</p> <p>Command word Space Number Terminator</p>	<p><i>setTarget</i> 5↵</p> <p>Command word Space Number Terminator</p>
Notes	<p>To read data, only the command word with the terminating character is sent. The response contains the command word and after the space the corresponding value from the data field as a decimal number, as well as the terminating character.</p>	<p>To write data, the command word is sent followed by a space and the value as a decimal number, and the terminating character. When the command has been executed, the data packet is returned with the same structure and the value standing in the memory cell.</p>

Command word: The command word must always start with a letter and may also contain digits. Upper and lower case are distinguished.

Space: The space character is mandatory when specifying a number to separate the command and the value.

Number: Numbers are always specified as positive decimal numbers.

Terminating character: The character CR (carriage return, "\r", Ascii: 13) is used as terminating character. Likewise, a Windows line break ("Enter key") is permitted, since this consists of CR + LF and the LF is ignored.

1.2 Available commands

Command	Perm.	Values	Description
setTarget	no	Targets 0-511 / no target 65535	Sets / deletes a destination to which the LEO transporter with container is to travel. Is set back to "no destination" when the destination has been transferred to a LEO.
getTarget	no	Targets 0-511 / no target 65535	Reads out the currently set target.
setTargetwoL	no	Targets 0-511 / no target 65535	Sets / deletes a destination to which the LEO transporter is to travel if it has no container loaded. Is automatically reset to "no destination".
getTargetwoL	no	Targets 0-511 / no target 65535	Reads out the currently set target for an unloaded LEO

setPayload	no	0 to (2 ³²)-1	Sets the value in the Payload field.
getPayload	no	0 to (2 ³²)-1	Reads the value in the Payload field.
getPickUpfree	no	0 / 1	Indicates whether the delivery side of the station is free.
getDropOfffree	no	0 / 1	Indicates whether the recording side of the station is free.
getLoadPosCorr	no	0 / 1	Indicates whether the container is correctly positioned at the stop.
setSmartID	yes	0 to 511	Defines the SmartID of the station (must match StationID).
getSmartID	yes	0 to 511	Reads out the set SmartID.
setStationID	yes	0 to 511	Defines the station ID of the station (must match SmartID).
getStationID	yes	0 to 511	Reads out the set station ID.
setATarget?	yes	0 to 511	Defines the destination assigned to the digital input IN? => The placeholder ? must be replaced by the corresponding digit 1 to 6.
getATarget?	yes	0 to 511	Reads the destination assigned to the digital input IN? => The placeholder ? must be replaced by the corresponding digit 1 to 6.
setAIOMode	yes	0 = Standard	This parameter can be used to switch the function assignment of inputs 1-6.
getAIOMode	yes	0 = Standard	This command reads out the function assignment of inputs 1-6.
storeSettings	-	-	This command permanently saves the settings that have a 1 in the EE column.

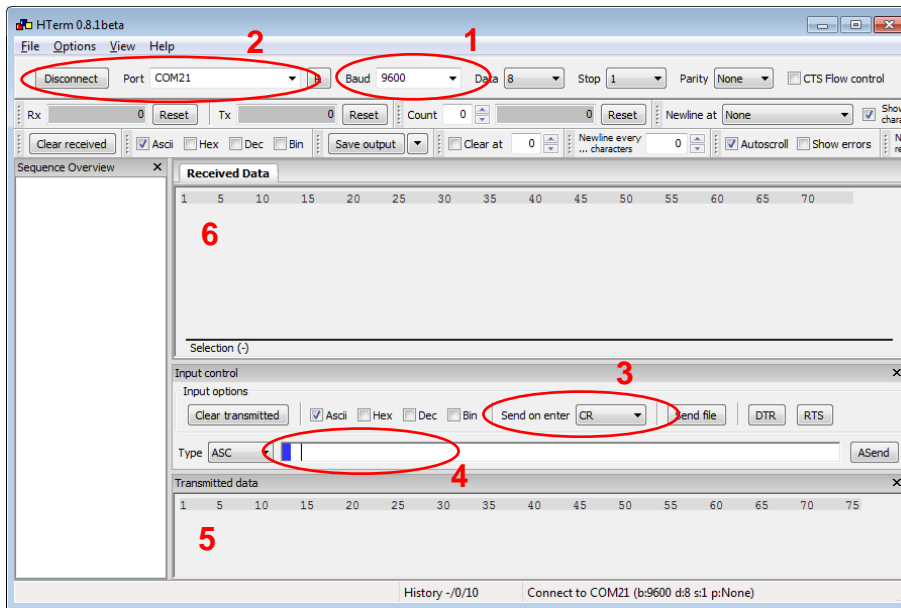
All commands are to be used as described in chapter tbd. The distinction is made by the beginning of the command. Commands that begin with "get" access the SmartBox in read mode and are therefore used without a subsequent value. All commands that begin with "set" require a value separated from the command by a space in decimal notation followed by a terminating character.

Settings that can be permanently stored are marked yes in the "Permanent" column in the previous table. If these values are changed, they must be stored permanently after the configuration is completed, this is done by the command "storeSettings". If the command is not executed, the settings made will be lost the next time the device is switched off.

The command "storeSettings" is simply sent followed by a terminating character. The response is just "storeSettings" with terminating character.

1.3 Example (with terminal program)

The "HTerm" tool is recommended for testing the connection. This can be downloaded from the following URL: <http://www.der-hammer.info/terminal/>. An installation is not necessary.



1. First the baud rate is set to 9600 baud.
2. The correct COM port is selected and the connection is established by clicking on "Connect".
3. The terminating character "CR" is selected. This is automatically appended when the Enter key is pressed.
4. Here the command, e.g. "setTarget 5" can be entered.
5. Sent commands are displayed in this part of the window.
6. Received commands are displayed here.

Now both Received Data and Transmitted Data should display the command:

`setTarget 5`. The character after the 5 stands for the "CR" terminator.

In this way, all other commands can be sent to the SmartBox and the response can be checked.

If this did not work, please check the following points:

- Is the SmartBox ready for operation?
- Is the software version greater than 2.1.8?
- Is the cable correctly connected to the 25-pin Sub-D connector?
- Are COM port, baud rate and termination character correct?