MFB Drum Computer Instruction Manual

**Operating Manual
Drum Computer
MFB-301 Pro**

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General

The MFB-301 Pro is a technically advanced reissue of the model MFB-301, expanded by the claps of model MFB-401. This analog drum computer is programmable and storable. The patterns can be programmed step by step with their corresponding parameters. In addition, the unit is fully controllable by MIDI. To avoid a faulty operation, please follow the described key combinations to carry out specific functions in the exact sequence as described.

Setup

Plug the connector of the supplied power adapter into the mini-USB socket of the unit. Alternatively, the unit can be supplied with power from a computer or from a power bank with at least 100 mA current.
Connect the input MIDI Into a keyboard or sequencer.
The unit provides stereo as well as headphone outputs.
Sounds
Available are eight analog instruments, being editable in the following parameters:

BD	Bassdrum	Pitch, Decay, Tone, Level
SD	Snare drum	Pitch, Decay, Noise Level, Level
CP	Clap	Decay, Attack, Level
TT	Tom	Pitch, Decay, Attack, Level
BO	Bongo	Pitch, Decay, Attack, Level
CL	Claves	Pitch, Decay, Attack, Level
CY	Cymbal	Pitch, Decay, Mix Noise/Metal, Level
HH	Hihat	Pitch, Decay, Mix Noise/Metal, Level

Sequencer

Push **Play** to start and stop the sequencer. Use the **Value** control to adjust the sequencer tempo, given that the LEDs (Tune/Decay) above are not lit. Apart from that, the **Value** control serves to adjust values for the sound parameters.

Loading, saving, and deleting patterns

The MFB-301 Pro offers three banks with 36 patterns each. A pattern is loaded by pressing **Bank 1/2/3** (LED above lit). Release the button and subsequently press two buttons **1-6** to select the memory location (11-66). Saving patterns follows the same scheme: Here, press and additionally hold REC after pressing Bank first.

Now release both buttons and select the memory location by a combination of **1- 6**. A pattern is deleted by pressing and subsequently releasing the buttons REC and Play.

Hint: It is only possible to load and save patterns with both LEDs above the **Value** control turned off. In addition, patterns can only be stored with the sequencer being stopped.

Programming Patterns Step Record Mode

In this mode, a pattern is programmed by sequentially entering up to 16 steps using the buttons **REC** and **Play**.

- Press **REC** followed by an instrument button (e.g. BD).
- Now release both buttons (both LEDs lit)
- Use **REC** to set steps (instrument sounding), while **Playsets** rests
- After setting a step on 16, complete the operation by pressing **Play**.

Example:

Press **REC** once, then 7 x Play, then REC once more and Play another 7 times.

The result is: o— —- o— —-

Hint: It is only possible to enter a complete track. Upon erroneous inputs, you may abort the operation by pressing the instrument button. Restart programming from scratch afterward. Alternatively, you may as well press **REC** for a while to

delete a track.

By using the **Value** control's push-function, you may circle through the following parameters and individually adjust their values per step by using the control:

- Pitch (**Tune** LED lit)
- Length (**Decay** LED lit)
- Extra function (both LEDs lit)

The extra functions are:

- Attack for BD, CP, TT, BO, and CL
- Noise for SD
- Noise/Metal-mix for CY and HH.

Parameter changes are carried out using the **Value** control. These are displayed by the LEDs **1-6**. By this, you can program high and low toms or closed and open hi-hats. Any changed value also applies to successive steps in case no new values are being entered here. Bear this in mind for hi-hats especially!

Example:

- Press REC and HH, then release both buttons.

- Press REC to program the first hi-hat.
- Press the button of the Value control until the right LED is lit, Then turn to set the desired length (e.g. Open Hi-hat).
- Continue programming by pressing **Play** (Pause) or **REC** to add a second hi-hat.
- Now, turn the **Value** control again to create a closed hi-hat by setting a short **value** for the note length (example).
- Subsequently, program the rest of the pattern.
- Complete the procedure by pressing the corresponding instrument button.

Hint: You only need to turn the **Value** control in case you want to change the parameter value for this step.

CL and **BO** are programmed by first pressing **REC** followed by a double click on **CP/CL** respectively **TT/BO**. Next, release both buttons. For example: (**REC** + **CP/CL** + **CP/CL**).

Pattern Length
In case you want a pattern with less than 16 steps, end programming at any time by pressing the corresponding instrument button. The last programmed track sets the overall pattern length.
Example:
BD-track, press **REC** once, 5 x **Play**, **REC** once, 5 x Play, and finally **BD** to complete programming. As a result, you did program 12 steps, equaling a 3/4 bar.

Real-Time Mode
Start the sequencer and press **REC** (You will hear the clave sound **CL** in a 4/4 beat). You can now set the steps in real-time by pressing the corresponding instrument buttons or by using MIDI (see MIDI implementation list). By pressing and holding the instrument button, the track will be deleted.
Use the **Value** control to change the pitch, length, or extras for the instrument that was programmed last.
Programming of **CL** and **BO** is possible by pressing **REC** twice. In explanation: 1 x **REC** = **CP** and **TT**, once more **REC** = **CL** and **BO**. Pressing **REC** again will end the recording.
The level of the instruments can be changed per pattern. Press **Play** followed by the Value control's push function until the left **LED** is lit. Press the instrument button afterward, e.g. **BD**. Use the Value control to adjust the level of the **BD** track. **CL** and **BO** can be adjusted with the red **LED** are lit. (Press Value twice). The headphones level can be set with both **LEDs** being lit. Make sure to directly save the pattern. Else, the settings will be lost when switching the unit off.

Sound Parameters

It is possible to adjust the pitch, the note length, and the extra parameters upfront. This way, you can create a default setting that applies, e.g. when deleting a pattern. To do so, press the button of the **Value** control once (left LED lit). Next, press **REC** and e.g. **BD**, then release both buttons. Subsequently, the **Value** control can be used to adjust the pitch (Tune LED lit), the length (Decay LED lit), and the extra function (both LEDs lit) of the **BD**. To exit this mode, press **BD**. The same procedure can be used for the other instruments. **BO** and **CL** can be adjusted by pressing the buttons twice (**REC** + **CP/CL** + **CP/CL**, then release both buttons).
In addition, it is possible to adjust the instruments' level for the pattern. When deleting a pattern, this level will be used as the default level. To do so, press the button of the Value control once (left LED lit). Press for example BD subsequently and adjust the level of the BD by using the Value control. The same procedure can be used for the other instruments. The levels for BO and CL can be adjusted with the right LED of the Value control is lit.

Playing instruments directly

In order to trigger the individual instruments directly on the unit, press the button of the **Value** control (left LED-lit – press twice to select **CL** and **BO**, right LED lit). The instruments can now be triggered using the corresponding buttons.

Programming Songs

This function allows chaining multiple patterns. Chained patterns are played consecutively in a pre-programmed sequence. Programming is carried out as follows. Note that the sequencer has to be stopped:
Press and release **Song** (LED lit), then press and release **REC** (LED lit).
Programming starts by selecting the first pattern.

Example:

Press and release **Bank1**, select a pattern by pressing two buttons **1-6** and confirm by pressing **Play**/**Step**. You have now saved the first pattern. The second pattern is created as follows: Press **Bank1**, press two buttons **1-6**, and confirm by pressing **Play**/**Step**. Continue programming respectively until all patterns are stored. Then confirm the whole procedure by pressing **REC**.

Loading and saving songs

Songs are loaded just like patterns. Press **Song** and two buttons **1-6**. To save a **song**, press Song, then **REC**. Release both buttons and press two buttons **1-6**. In order to playback a song, press Song first, followed by **Play**. Else, the last pattern will be played.

Shuffle

The MFB-301 Pro offers five **shuffle** intensities. With the sequencer being stopped, press **Shuffle** followed by a button **1-6**. 1 stand for no shuffling. LEDs **1-6** visualize the selected pattern. This setting applies globally.
Hint: MIDI functions can only be adjusted with the sequencer being stopped.

MIDI Channel

Use the learn function to set the MIDI channel. While the sequencer is being stopped, press MIDI, followed by a note on your **MIDI** keyboard. As soon as the LED above the **MIDI** button turns off, the procedure is completed.

MIDI Velocity

To enable the reception of velocity data, press **MIDI** followed by button **1**.
Velocity is enabled with LED 1 is lit. It is inactive with LED 1 being turned off.

MIDI CC

The unit can receive more than 20 MIDI-control commands (see MIDI implementation list). Press **MIDI** and button **2** to either enable reception of
controllers (LED 2 lit) or not (LED 2 off).

MIDI Clock/External Sync

With the MFB-301 Pro's sequencer set to internal (LEDs above buttons **3** and **4** turned off), an incoming MIDI-clock or an analog sync signal will be ignored. To activate an external synchronization, press **MIDI** and button **3** for **MIDI**-clock or button **4** for an external analog clock (LED 3 respectively 4 lit).
The external sync jack is a TRS-jack where the tip receives the clock signal and the ring receives the start and stop commands.

Sound Changes via MIDI

Received MIDI controller data will permanently change the sound settings.
Should you wish to return to the last saved state, press **MIDI** followed by **5**.

Hint: When using MIDI CCs to dynamically change sound parameters, it is recommended to use the drum kit on MIDI-notes 36 to 47. Higher notes already use MIDI CCs internally. See table MIDI implementation.

Saving Basic Settings

Sound-, MIDI- and shuffle settings can be saved, making them available when turning the unit back on. To do so, press MIDI, release the button, and press **REC**.

Loading and saving patterns using USB, USB-Firmware-Update
Given the appropriate driver has been installed and the MFB-301 Pro has been connected to a Windows computer using the USB connection, terminal software can be used to save and load patterns from and to the unit. To do so, press **Bank 1**, release the button, and press **Play** to initiate the transfer to the computer. Or, press **Bank 1**, release the button, press **REC**, release the button and then press **Play** to initiate the transfer to the MFB-301 Pro. More detailed descriptions, as well as information on how to carry out firmware updates, are soon to be found on our website.

Control Elements
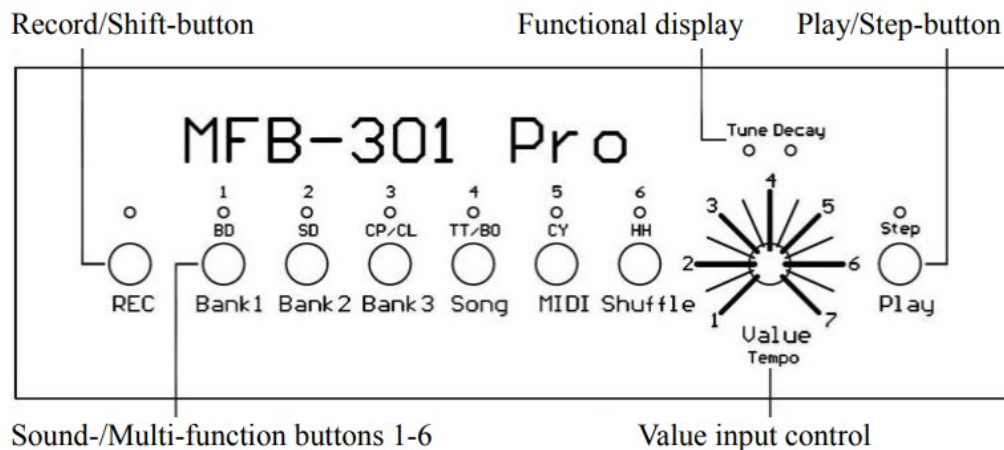
MIDI-Implementation

MIDI-Note	Instrument/Function	CC-Number	Function
Note # 36 (C)	BD	CC# 03	BD Tune
Note # 37 (C#)	HH	CC# 11	SD Tune
Note # 38 (D)	SD	CC# 19	TT Tune
Note # 39 (D#)	CY	CC# 21	BO Tune
Note # 40 (E)	CP	CC# 86	CL Tune
		CC# 84	CY Tune
Note # 41 (F)	REC button	CC# 89	HH Tune
Note # 42 (F#)	TT		
Note # 43 (G)	LED TUNE On/Off	CC# 64	BD Decay
Note # 44 (G#)	BO	CC# 67	SD Decay
Note # 45 (A)	LED DECAY On/Off	CC# 75	CP Decay
Note # 46 (A#)	CL	CC# 20	TT Decay
Note # 47 (B)	Play button	CC# 78	BO Decay
		CC# 87	CL Decay

Note # 48 (C)	BD + CC long Attack	CC# 85	CY Decay
Note # 49 (C#)	SD + CC low	CC# 90	HH Decay
Note # 50 (D	BD + CC medium		
Note # 51 (D#)	SD + CC high	CC# 13	SD Snappy
Note # 52 (E)	CP + CC long		
Note # 53 (F)	CP + CC short	CC# 02	BD Attack
Note # 54 (F#	TT + CC low	CC# 76	CP Attack
Note # 55 (G)	TT + CC low Attack	CC# 79	TT Attack
Note # 56 (G#)	TT + CC medium	CC# 82	BO Attack
Note # 57 (A)	TT + CC medium Attack	CC# 53	CL Attack
Note # 58 (A#)	TT + CC high		
Note # 59 (B)	TT + CC high Attack	CC# 88	CY Mix
Note # 60 (C)	BO + CC low Attack	CC# 93	HH Mix
Note # 61 (C#)	BO + CC medium		
Note # 62 (D)	BO + CC medium Attack		
Note # 63 (D#)	BO + CC high		
Note # 64 (E)	CL + CC low		
Note # 65 (F)	CL + CC high		
Note # 66 (F#)	CY + CC Metal		
Note # 67 (G)	HH + CC short Mix		
Note # 68 (G#)	CY + CC Mix		
Note # 69 (A)	HH + CC long Mix		
Note # 70 (A#)	CY + CC Noise		
Note # 71 (B)	HH + CC short Noise		
Note # 72 (C)	HH + CC long Noise		

Hint: The MFB-301 Pro's MIDI implementation is compatible with the models MFB Tanzmaus and MFB Tanzbär Lite. You may use both units' control elements to remote-control the MFB-301 Pro.

MFB-301-Pro USB-Data-Transfer
The MFB-301 Pro can be connected to a computer running a recent Windows operating system. Given that the corresponding driver has been installed, terminal software can be used to load and save patterns and to request and update the firmware of the unit.

Driver Installation

The MFB-301 Pro uses the CY7C65213 chip by Cypress to convert USB to serial data and vice versa. To setup a connection to your computer, a driver needs to be installed. This driver can be found on the Cypress website: **https://www.cypress.com/sdc**

Navigate to the USB section and search for the entry
Download USB-Serial Driver – Windows
Hint: Before being able to download the driver, you will need to register with the manufacturer and confirm this procedure by e-mail.

- Install the driver by double-clicking the .exe file.
- Next, connect your computer to the MFB-301 Pro by using a suitable USB cable and switch on both units.
- You may use the USB cable that comes with the power supply of the MFB-310 Pro.

  The MFB-301 Pro does not require a separate power supply.
- Wait until Windows recognizes the unit and displays it as usable.

Terminal Software
Ideally, terminal software is used to communicate between the computer and the MFB-301 Pro. We recommend the free software HTerm.exe. HTML can be found here for an example:
https://www.heise.de/download/product/hterm-53283

Connecting to HTerm

- Launch HTerm.exe by double click.
- The top left of the GUI will display the COM ports.
- Connect the MFB-301 Pro to your computer via USB. A COM number should appear after a short while. If not, you may need to click the R button once in the GUI.
- Next to the COM display, a few numbers are being shown. There is no need to edit any of these. The values are BAUD 115200, DATA 8, STOP1, Parity None.
- On the left side of the GUI, press Connect until the display entry reads Disconnect. Ready!
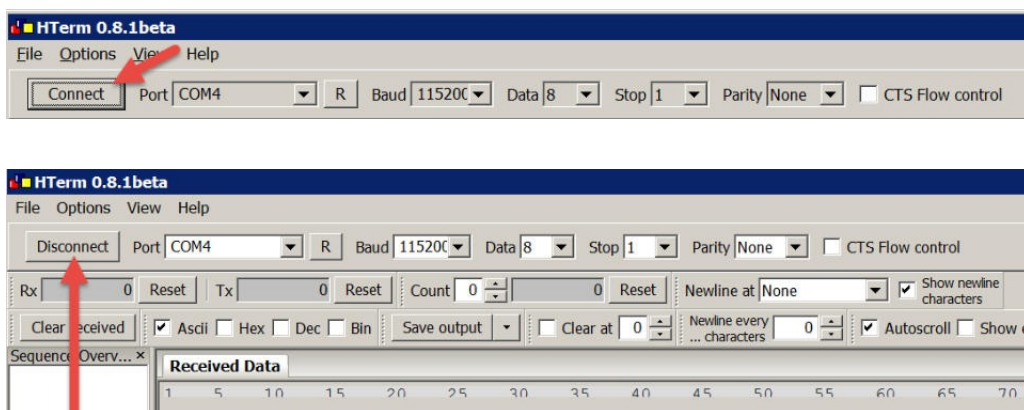
Hint: In case nothing happens, the driver has not been successfully installed.
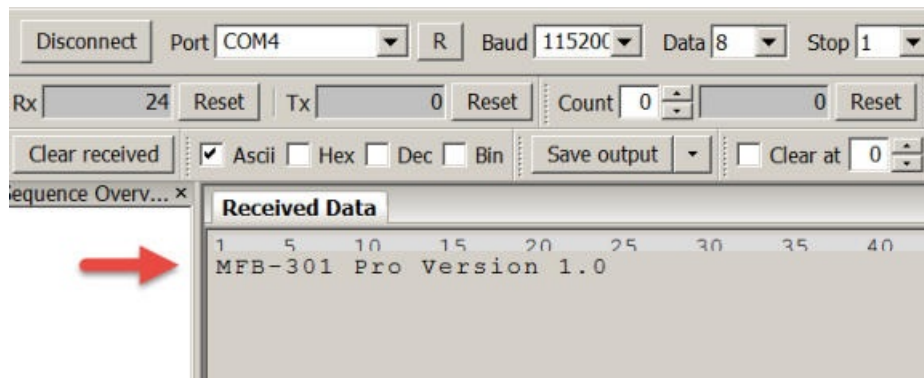
Displaying the Firmware-Version

To request the firmware version of your MFB-301 Pro, make sure HTerm has recognized the unit.
On the MFB-301 Pro, press and release **Shuffle**, then press **Play**.
The software will now display the firmware-version under Received Data, e.g.
**MFB-301 Pro Version 1.0**

Hint: If this is not the case, please double-check whether the ASCI option in the software has been disabled (It needs to be enabled).
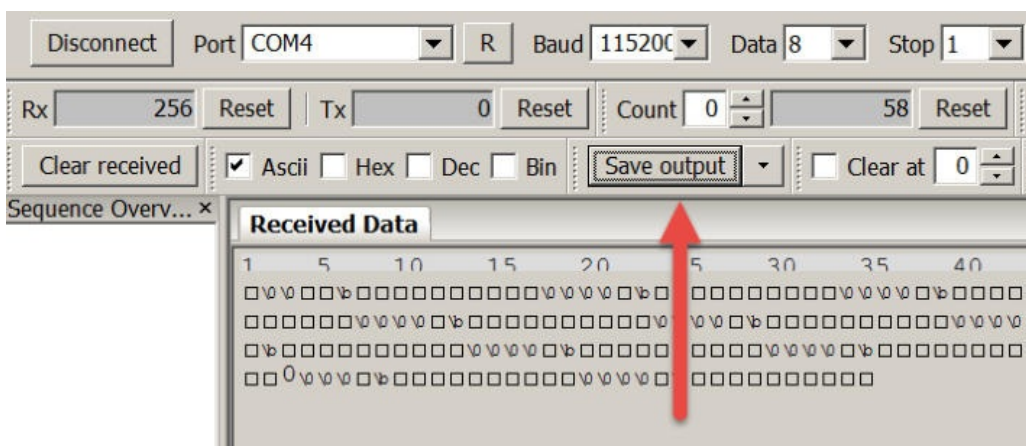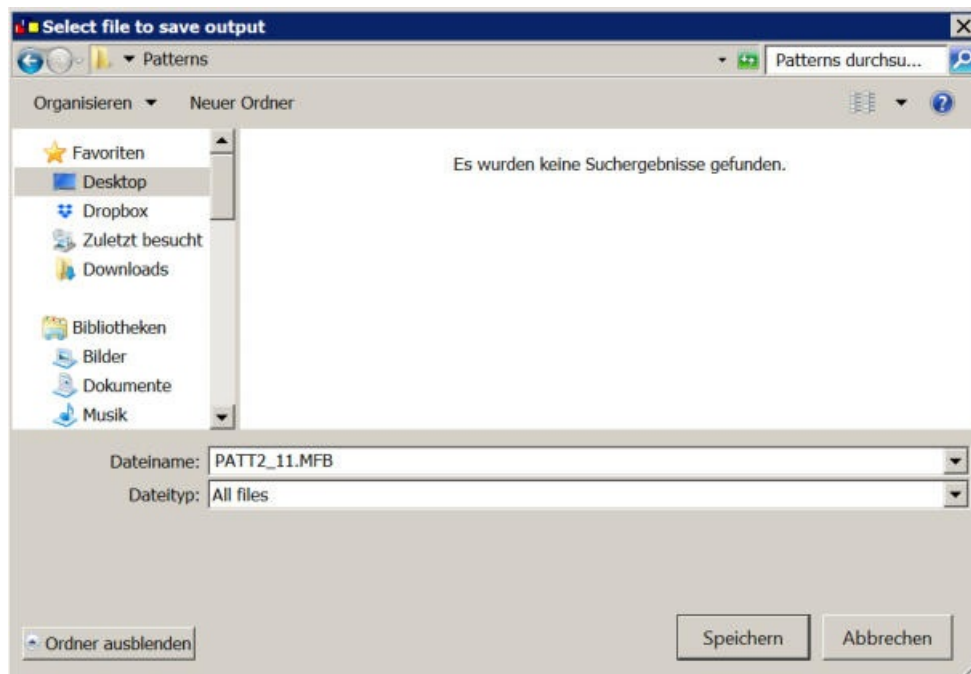
Transferring Patterns to a computer

To transfer a single pattern from your MFB-301 Pro's RAM to the computer, carry out the following steps:

- Make sure, the MFB-301 Pro has successfully been connected to the computer via USB and has been detected by them.
- First, erase the Received Data view in HTerm by pressing **Clear Received**.
- Now, load a pattern into the MFB-301 Pro's RAM, e.g. BANK 2, Pattern 11.
- Press **Bank 1** on your MFB-301 Pro.
- Release the button.
- Press **Play**.
- The pattern data are being transferred. The file size is 256 Bytes.
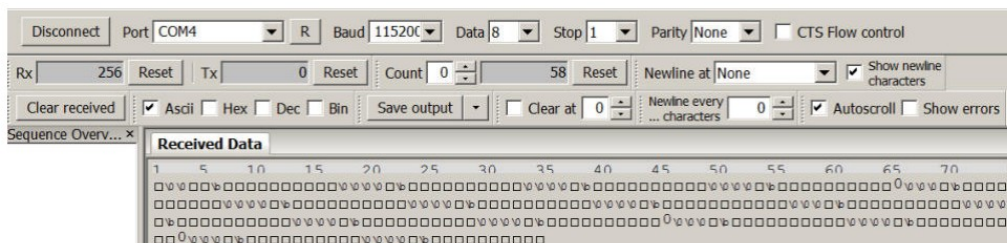
- By clicking **Save Output** in HTerm, these data can be saved anywhere on the computer under any name, such as PATT2_11.MFB.
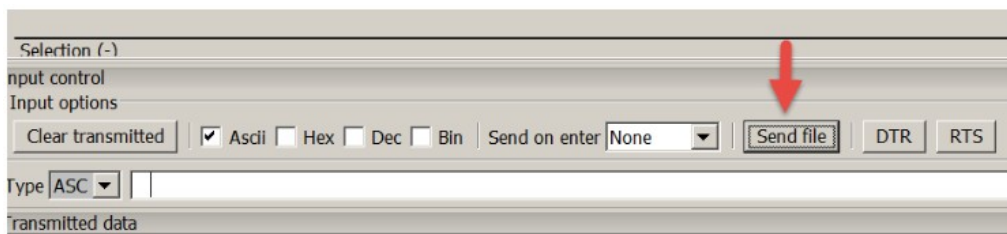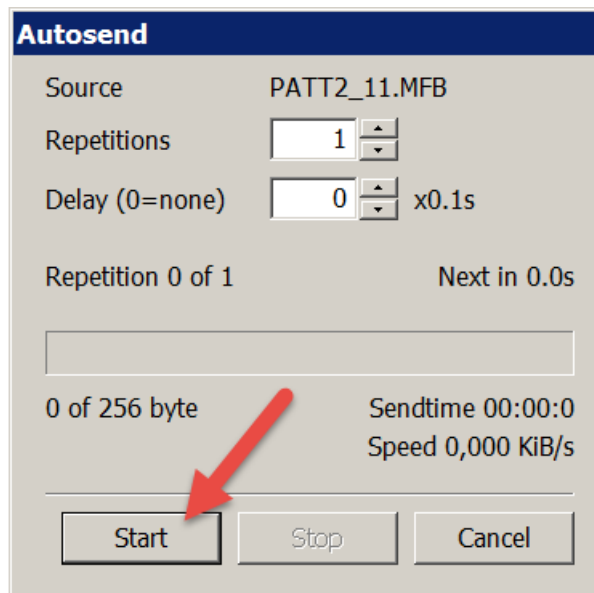
Transferring Patterns to the MFB-301 Pro

To transfer a single pattern to your MFB-301 Pro's RAM, carry out the following steps:

- Make sure, the MFB-301 Pro has successfully been connected to the computer via USB and has been detected by them.
- Ideally, delete the current pattern by pressing Rec and Play on the MFB-301 Pro. This way, you will be able to hear the difference after the transfer.
- Click Send File in HTerm.

- Locate the desired pattern file on your computer, e.g. PATT2_11.MFB.
- Click Open in HTerm.
- Press Bank 1 on the MFB-301 Pro.
- Release the button.
- Press Rec.
- Release the button.
- Press Play.
- You now have approx. 30 seconds to initiate the transfer in HTerm by pressing Start.

- Now, save the pattern in your MFB-301 Pro.

Hint: Only the data of a single pattern are being transferred.

Carrying out a Firmware-Update

The MFB-301 Pro offers a built-in update function. To carry out a firmware update, you will need a corresponding .bin file, which will be supplied to you sporadically from MFB's website or (whenever needed) by MFB's support.

- Make sure, the MFB-301 Pro has successfully been connected to the computer via USB and has been detected by them.
- Click on Send File in HTerm.
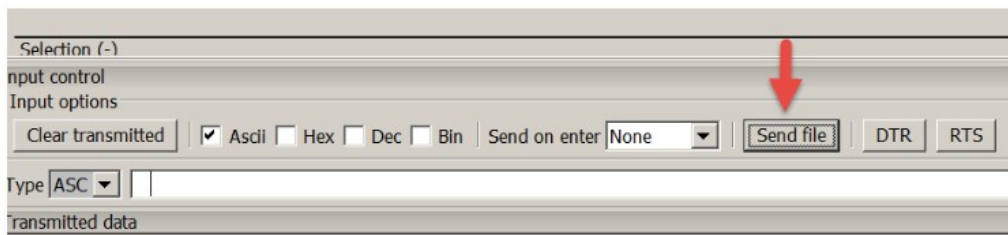
- Locate the update file on your computer, e.g.: MFB-301P_VerX_X.bin, and click on **Open**.
- Switch off your MFB-301 Pro.
- Press **Rec** and **Play** on your MFB-301 Pro and switch the unit back on.
- Release both buttons.
- Double-check if the USB connection to your MFB-301 Pro is still present in them.
- Press **Start** in HTerm to initiate the data transfer.
- Switch the MFB-301 Pro off and back on afterward.
- You may double-check the current firmware version anytime.
  See **Displaying the Firmware-Version**
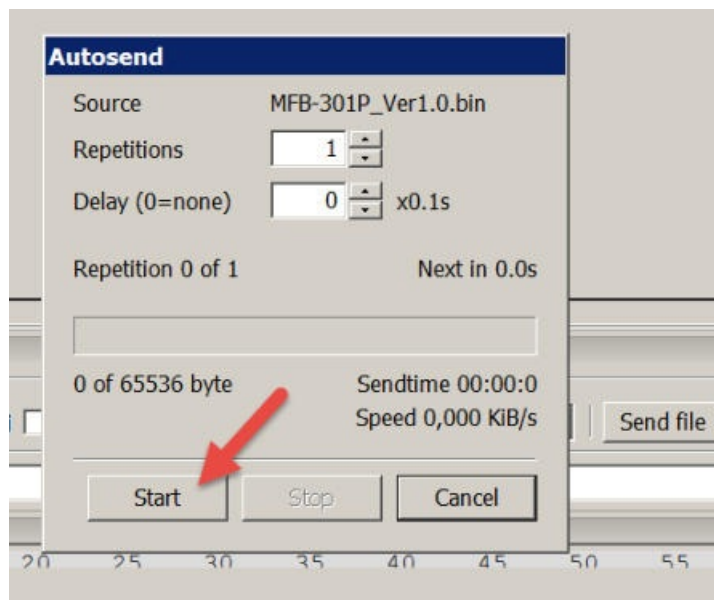
Documents / Resources

Operating Manual Drum Computer MFB-301 Pro	**MFB Drum Computer** [pdf] Instruction Manual Drum Computer, MFB-301 Pro

References

- ⓦ **HTerm | heise Download**