

# PROHD1

## PORTABLE Audio HARDDisk RECORDER

Manual 1.40 (05-10-20)

ProHD1 is a powerful, yet easy to use, recording unit intended for professional use in challenging environments. It is a heavy-duty machine that includes the most often used functions when recording on location, i. e. recording and playback, basic editing and easy file transfer through USB 2.0.

ProHD1 can be divided into four main sections. These are

- Audio section
- Recording control section
- USB section
- Power supply section



### Audio section

This is essentially an ordinary two-channel microphone mixer. There are two balanced XLR inputs for mic/line and two balanced XLR line outputs. In addition, there is a phones output.

The inputs have selectable 48 V phantom power, both at mic and line levels. Each input has its own gain and pan pot's as well as mic/line selector. Both inputs share the same switch for a HPF (highpass filter).

Input gain is up to 66 dB in mic mode and 26 dB in line mode. With no input source attached the equivalent noise level is close to  $-126$  dBu.

The line outputs are electronically balanced. **Do not short-circuit pins 2 or 3 to pin 1 for an unbalanced output; simply leave the unused pin floating.** Output level is + 12 dBu when the PPM meter indicates peak = 0 dB.

The monitor pot controls headphones level as well as the speaker level, when no headphone is attached.

The monitor and the PPM meter works in parallel. For monitoring the input signal (necessary during recording) the MIX IN+HD switch should be in the IN position.

There is no signal from the disk during recording.

The PPM meter is digitally scaled; peak level is 0 dB. A suitable reference level could be  $-12$  dB, whereas the line output level then is 0 dBu. There is an additional 3 dB headroom in the recorded signal.

## **Recording control section**

The internal harddisk records files in standard wav-format @ 16 bit stereo / 48 kSa. This equals approximately 10 MB / minute of recording. The disk offers 20 GB capacity that corresponds to approximately 33 hours of recording. Note that the disk is not intended for permanent storage of recordings. File transfer is easily and quickly performed through the USB 2.0 connection.

The recorder is controlled by a 12 keys keypad on top of the unit along with a red access key on the front panel.

### ***Recording***

Recording is initiated by pressing the red key or the REC key. The LED next to the red key will then be lit.

Pressing the red key briefly, during recording will pause recording and a new brief press on the key will resume. Alternatively, pressing PAUSE and REC keys on the keypad has the same effect. In pause mode the red LED is flashing.

Pressing the red key for more than two seconds will stop recording.

During recording the display will indicate REC mode, current file number and used disk capacity in MB, up to 20,000 MB (= 20 GB). Also shown is the date + time for the start of the recording. (This is the date/time that will be added to the file and show up in File Explorer and other PC/Mac softwares.)

## **Playback**

Pressing play will play back the latest recorded file.

Pressing << or >> will scroll through the file list, backward or forward.

During playback, pressing << or >> will fast forward or fast reverse with audio within the selected file. The speed will increase by time during this mode. At the beginning of the file playback will stall, repeating the first 1,5 seconds of the recording. The same happens at the end of the file. Pressing PLAY will resume normal playback from the current position. Pressing PAUSE will hold playback.

Starting playback will briefly bring up file information on the display. After a few seconds the display will show a graph representing the played portion of the entire file. **Note: for files shorter than approx. 30 seconds this graph is not always accurate.**

During playback it is possible to add Edit Marks, MARK IN and MARK OUT.

Whenever there is a marked portion of the file, the part between a MARK IN and a MARK OUT, this is shown with a <sup>0</sup> next to the file number. In all, there can be 32 MARK INs and 32 MARK OUTs in an Edit List.

The Edit List should be cleared before a new Edit List is started. This is simply done by pressing CLEAR MARKS twice.

The Edit List can include marked portions from several files. In fact, only the physical location on disk is stored in the Edit List, with a resolution of 1,5 seconds.

Pressing the EDIT PLAY key will start playing the Edit List.

Marks are treated in strict chronological order. The list is automatically re-arranged whenever a new mark is set. For more advanced editing functions the file(s) should be transferred to a PC and edited with a suitable audio editing software.

The Edit List can be saved in non-volatile memory from within the menu system, see more on this below.

The Edit list can also be used to create a new file that will copy the selected portions of the previous file(s) according to the Edit list. This function is selected in the menu. Note that creation of a new file may take some time.

## **Menu system**

The menu system offers a way to perform secondary functions. It is available by pressing the MENU key, while in standby mode (not recording or playback).

There are five sub-functions. These are accessed in sequence by pressing MENU key repeatedly:

- Info functions shows the number of recorded files, up to 511 and the used capacity, in percents, of 20 GB
- Erasing the latest recorded file
- Formatting the disk and erasing all files
- Saving edit marks to non-volatile memory
- Creating an Edited file
- Updating firmware from a file on disk
- Adjusting the internal clock
- Exiting to standby mode

## **USB section**

ProHD1 includes a USB 2.0 interface. This is enabled by pressing the USB key. Then a USB cable can be attached between the proHD1 and a PC or Mac.

**Note that the cable should NOT be attached before pressing the USB key.**

In USB mode the disk is accessed as any other disk on the PC or Mac system.

In this mode it is possible to perform:

- File transfer from proHD1 disk to PC disk
- Playback directly from the proHD1 disk with any useful media player
- Advanced disk maintenance

Note that in USB mode it is not allowed to

- transfer files to the proHD1 disk, except for a firmware update file
- deleting files
- renaming files
- formatting the disk for any other format than FAT32
- Naming the disk by any other name than "PROHD1"

Normally it is not necessary to delete files or format the disk in USB mode. This is best performed from the proHD1 built-in functions within the Menu mode.

WindowsXP already includes the necessary drivers, for other operating systems, use the installation instructions and the CD, included.

When the USB cable is disconnected the proHD1 will automatically restart.

## **Power supply section**

ProHD1 is powered by 10 pcs. Of NiMh AA size accumulators. This equals 12 V DC @ 1500 Ah. Fully charged cells should supply power to proHD1 for 3 hours.

An internal fast-charger will charge the NiMh cells to 80% in 1,5 hours.

There is a standard 4-pin XLR connector for external power supply. Pin 1 = 0 V, pin 4 = + V.

This could be a PAG type supply, a NP-1 accumulator or any voltage source capable of supplying 12-15 V DC @ 500 mA. The external supply will work in parallel to the internal NiMh cells.

## Charging

For re-charging the internal accumulators the voltage should be 18 V DC @ 1,3 A. The included mains adapter will double as both a charger and mains supply. Note that charging from a car battery is not possible unless the generator keeps the voltage above 14 V DC. Even then the charging will only be partial.

During charging the green LED on the back panel will be lit. During boost charging the red LED will also be lit. At end of a boost-charge cycle the internal charger-controller reduces the charging current to a low level for the final part of the charge cycle, up to 100%. This may take 10 hours.

There is no need to interrupt the charging cycle nor is it necessary to discharge the internal NiMh cells. **Note that NiMh accumulators have a fairly high degree of self-leakage. Therefore, it is recommended that proHD1 is connected to the mains adapter even when it is not in use.**

ProHD1 is powered up by setting the POWER switch in ON position.

During recording or playback or in USB mode the unit has a hold-circuit that inhibits powering-off.

The BATT switch will put the PPM LED meter in battery voltage monitor mode. When voltage level drops below 9 V the leftmost LED will flash. Prepare to turn off the unit immediately. When voltage has dropped to below 8 V (this can happen in less than one minute!) proHD1 will automatically end the recording, save the file and power off. Note that the included power supply system keeps all voltages internal to proHD1 at constant levels. There is no degradation at all at low battery voltage compared to high voltage supply. However, current consumption increases as voltage drops. This leads to even further voltage drop, and so on.

## Serial numbering convention

ProHD1-ddd-M.m.xxx

where ddd is year + week number and xxx is unit number manufactured that week.  
M is major h/w revision while m is minor h/w revision.

## SHORT-FORM MANUAL proHD1

**POWER-ON:** allow the unit to boot for 5 seconds. LCD shows date/time and used capacity of 20 GB disk space (33 hours).

**RECORD:** Press REC on keypad or red front panel key. LCD shows record id# and start date/time.

**PAUSE:** Press PAUSE on keypad or red key.

**RESUME:** Press PLAY on keypad or red key.

**STOP REC:** Press STOP key or press red key in front panel for 3 seconds.

**PLAY:** Press PLAY key.

Use << / >> keys for fwd/rew in play mode and for next / previous file selection in stop mode.

**USB:** in stop mode, press USB and then connect USB socket to a PC/Mac. Remove USB cable and proHD1 will reboot.

**EDIT PLAY:** Create Edit play list while in playback by pressing MARK IN and MARK OUT at desired locations. Play edit list by pressing EDIT PLAY. Clear all marks by pressing CLEAR MARKS. Edit play list may be saved to a new file in menu.

**MENU** key steps through the menu:

1. Shows number of files recorded.
2. Erase last file? OK confirms.
3. Erase all files? OK confirms.
4. Save edit play list to new file? OK confirms.
5. Firmware update? OK confirms.
6. Set date/time. Use <<, >> and OK keys.

## SPECIFICATIONS

### **proHD1 analog input section**

Number of inputs		2
Input gain, MIC		max 68 dB
Input gain, LINE		max 28 dB
Maximum input levels		Nominal level + 24 dB
Equiv. input ref. noise	MIC (open input)	-125 dBu
Frequency response		18 Hz – 22 kHz +0/-3 dB
High-pass filter		-3 dB @ 200 Hz, 6 dB / octave
THD+N	MIC @ 40 dB gain, 1 kHz	0,01% @ -20 dBu in
	LINE @ 0 dB gain, 1 kHz	0,006% @ +20 dBu in
	MIC / LINE	< 0,01%
	MIC	typ. 70 dB @ 1 kHz, max. gain
<b>DIM30</b>		
Crosstalk		
<b>General</b>		
Phantom voltage		48 Volts +- 2 Volts
Supply Power		12-15 Volts DC @ 0,30 Amps
Charging voltage		18 Volts DC +- 0,5 Volts
Charging time		10 hours for 100 % charge
		1,5 hours for 80 % charge
Size	WxHxD	246 x 44 x 166 mm, sockets/knobs excl.
Weight		Approx. 2 kg's