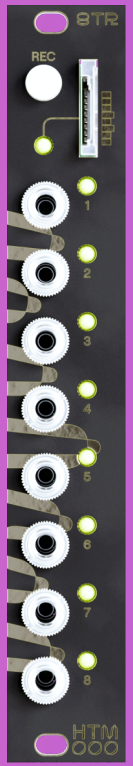

8TR
REC
1
2
3
4
5
6
7
8
HTM


8TR
1
2
3
4
5
6
7
8
REC
HALF TIME
MODULAR


9J
TRIG IN
1
2
3
4
5
6
7
8
HTM

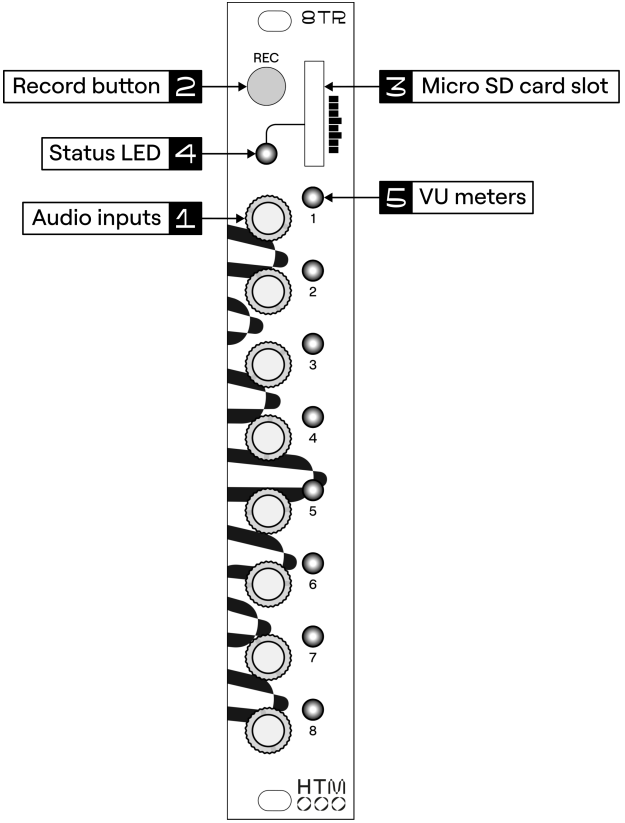
GETTING STARTED

8TR comes with a 16-pin to 10-pin ribbon cable and a pair of screws. Before installing it into a case, make sure that both rails of your power supply have sufficient current capabilities for your new configuration (see "Specs" section).

Switch off the power supply before plugging the module into the case. Plug the 10-pin connector of the ribbon cable into the power input on the back of the module, and the 16-pin connector into the power supply's busboard. Make sure that you connect both connectors with the correct polarity on both sides before switching the power supply on. The -12V pole is in red on the ribbon cable; it corresponds to the white stripe on the module.

If you are unsure about any step of this process, please get in touch with us before doing anything. We are glad to help!

Happy patching :)



OVERVIEW

8TR is a high fidelity, 8 audio channel multitrack recorder designed for Eurorack systems.

The included 32GB micro SD card provides up to 8 hours of continuous recording in 24bit/48kHz quality.
The optional 9J expander provides copies of the input signals, as well as a trigger/gate input.

While it can be used as a basic audio recorder out of the box, there are several options and configurations that make it a versatile ecosystem even for the most demanding setups.

IN DEPTH

Recording

Plug the audio tracks you want to record into the audio inputs[1]. To start recording, simply press the REC button[2]. It should light up when 8TR is recording. Press it again to stop recording - the button LED should turn off.
For maximum flexibility, there are no predefined stereo pairs; all inputs are recorded on the micro SD card[3] as independent tracks in a multichannel .wav file.

Status LED

The status LED[4] shows the current state of 8TR:
- Off: SD card not inserted
- Green: SD inserted
- Orange: memory warning threshold reached
- Red: memory full
- Blinking red: critical error

Folder and File Structure

For each recording session, 8TR creates a folder named *SESH0000* ... *SESH9999*. All the recordings made during a single session can be found inside the session folder.
8TR always uses to the lowest session number available and never overwrites sessions, so trying to start a recording with an *SESH9999* folder already existing on the SD card will result in a critical error.

The *_TMP* folder contains files needed by 8TR to operate. This folder might also contain the backup recording created when the system loses power (see Emergency Shutdown section).

The recording settings are set using the settings.txt file that can be found on the root of the SD card.

Recording Settings

The recording settings can be edited in the *settings.txt* file using a basic text editor from a computer. The table opposite summarizes up all the possible parameter values and their meaning.

Note that all parameters must be written in UPPERCASE, as provided on the original *settings.txt* file which can be found at halftimemodular.com.
If a setting is unvalid, misspelled, or if the *settings.txt* file is missing, the following settings are used by default:
SAMPLING_RATE=48kHz
BIT_DEPTH=24
MEM_THRESHOLD=90%
MAX_FILE_SIZE=4GB
SYNC=LEADER

Parameter	Values	Notes
SAMPLING_RATE	48kHz 96kHz	96kHz is only supported when BIT_DEPTH=16.
BIT_DEPTH	16 24	Smaller file size, but lower quality when using 16-bit.
MEM_THRESHOLD	0% to 100%	Memory level above which the status LED turns orange.
MAX_FILE_SIZE	1GB to 4GB 250MB to 4096MB	Maximum file size before splitting the recording to a new file.
SYNC	LEADER	Serves as the master device for all units daisy chained through the SYNC OUT port.
	FOLLOWER	Synchronizes its recording start/stop and time base to a master unit connected to its SYNC IN port, and passes the master time base through the SYNC OUT port.

Sync Connection

Several 8TR units can be chained together to synchronize the recording start and end points.
Chaining two units is achieved by connecting a *leader* unit SYNC OUT port to the SYNC IN port of a *follower* unit using the optional sync cable. Any number of additional *follower* units can be daisy chained to a *follower*, but it is important to keep a *leader* unit at the beginning of the chain.

When chained, the recording can only be started and stopped on the *leader* unit. The REC button and trigger input of *follower* units are always disabled.

The internal time bases of all *follower* also get synced to the *leader* time base to prevent drift between units, meaning the phase and transients stay perfectly aligned, no matter the length of the recording.
File splitting might occur at slightly different moments on synced units, but the overall number of samples will be the same when all the files are put together.

To have consistent result between all chained units, the SAMPLING_RATE setting must be identical across all units. It is also recommended to delete all recording folders on the synced units to have consistent folder names.

Emergency Shutdown

8TR has a built-in mechanism to prevent corrupted recordings when the module loses power, for example when the rack is turned off by accident.
When 8TR detects more than a 0.5V drop on the +12V power rail, it will do its best to save the current recording as *BACKUP.WAV* in the *_TMP* folder.
This mechanism should not be relied on to stop recordings during normal use: there can only be a single *BACKUP.WAV* file, and subsequent power losses will overwrite it.
Lowering the value of the MAX_FILE_SIZE setting is also a great strategy to reduce the chance of losing an entire recording session; files that are already closed when the power is lost have virtually no chance of being corrupted.

Firmware Updates

New firmware versions can be downloaded from the halftimemodular.com website.

To update the firmware, first copy the firmware.bin file to the root folder of the SD card.
You can then enter the firmware update mode on 8TR by holding the button down while turning on the rack or while reinserting the SD card in the module.

The button will flash rapidly when the firmware update is complete; 8TR will load the new firmware when you release the button.

9J EXPANDER

The 9J expander provides passive copies of the input signals, as well as a trigger/gate input to start and stop the recording using an external control voltage.

Note that the trigger/gate input is ignored when 8TR is in *follower* mode.

The expander can be connected using the 9 pairs of jumper cables provided with 9J. For each pair, connect the GND pins together, and the CH1...8 and TRIG IN pins on 8TR to the pins labeled "T" on 9J.

SPECS

Electrical

- Power draw:
  +12V: 130mA
  -12V: 70mA
- Power input protected from reverse polarity
- I/O impedance:

All audio inputs: 12kΩ
Trigger input: 100kΩ

Mechanical

3U version:
  Height: 128.5mm
  Width: 4HP (20mm)
  Depth: 30mm
1U version:
  Height: 39.6mm
  Width: 22HP (111.4mm)
  Depth: 30mm

Audio

Input signal range: ±12V (approx. +20.8dBu)

Frequency response, 20Hz - 20kHz: ±0.2dB

Equivalent Input Noise:
Unweighted RMS: -106dBFS
A-weigthed RMS: -110dBFS

THD: typ. -96dB

Crosstalk, adjacent channels (1kHz, 5Vpp):
typ. -115dB

WARRANTY

8TR is covered by a 2-year warranty from the date of purchase. This warranty excludes damage caused by improper use of the module, such as:
- connection to wrong power supply voltages or incorrect power connection
- intentionnally modifying the circuit (i.e modding)
- reprogramming using unofficial firmware
- damage caused by mechanical stress (e.g. dropping)
- damage caused by heat or liquids

If you think your module is not functioning properly, please get in touch using the contact form at www.halftimemodular.com/contact or by sending an email to support@halftimemodular.com.