The talented TS1 can successfully record a sync stripe and synchronise a MIDI sequencer using any decent tape machine. Moreover, you won’t need to swap around the MIDI wiring between stripe record and playback, as the TS1 has four MIDI ports and automatic signal routing.

**Multiple formats**
A sync tone is a digitally coded signal that will fit into an audio channel, similar to a modem or fax warble. When a sync tone is recorded on a tape track it is called a stripe. The stripe and MIDI datastream format (SMPTE/MTC or SPP/SRT - see below) is easily selected by means of a straightforward front-panel rotary control.

Even reads dodgy stripes
The TAPE IN port has special signal conditioning, so it can recover the data from dodgy stripes that would defeat lesser units. The TAPE IN port is so good that it will work through noise reduction - even dbx!

**SMpte and MIDI Time Code**
The TS1 can generate and recognise all four SMPTE frame-rate formats (24 frames per second, 25 fps, 30 fps and 30 fps drop frame). The TS1 will convert SMPTE to MIDI Time Code (MTC). TS1 is not able to converts a MIDI Time Code datastream into a SMPTE signal - you are very unlikely to want to do this anyway.

The start time of the SMPTE sync tone can be left at zero or manually set (using a small pushbutton on the right-hand side panel) to any number of hours and minutes. By using special MIDI commands any start time can be selected and the SMPTE User Bits can be set if required.

**Song Pointer/SRT format**
Even if your sequencer is not MTC capable, you can use the TS1 by way of its Song Position Pointer/System Real Time format (“FSKplus”). When syncing to an SPP/SRT format stripe, the TS1 provides two different restart timing options. Fast chase gives you rapid ‘lock-in’ and is compatible all modern sequencers and drum machines. The ‘slow chase’ option extends compatibility to older devices which require the five-second delay between the Song Position Pointer and subsequent Continue command.

When recording an SPP/SRT format stripe the TS1 can generate a tone based on the clock stream arriving at the MIDI SYNC IN port. For non-musical applications, it can also generate a tone based on an internal 120 beats per minute fixed tempo clock. The TS1 FSKplus SPP/SRT format stripe is similar to what other people call “Smart FSK”. It is not the same thing as ordinary “FSK”, but is functionally superior.

**Level adjustments**
An LED is provided to tell you when a valid sync signal is being received or transmitted by the TS1. Screwdriver-operated level adjustment presets are provided for both the TAPE IN and TAPE OUT ports, so you can adjust for optimum signal levels without having to use a mixer channel. The adjustment spans from -20dB to +6dB, so both -10dB and +4dB standards are within range.

**Flexible MIDI routing**
The TS1 merges MIDI data received at its MIDI AUX IN port with the timing datastream it generates. This lets you overlay new tracks on your sequence or sync with your tape machine.

The diagram here shows a basic example of a TS1-compatible installation using a reel-to-reel multitrack and hardware sequencer. The MIDI routing through the TS1 is different for each of its four operating modes. The MIDI routing scheme is summarised in the table below.

**Useful features**
When syncing to a SMPTE or FSKplus stripe you are free to shuttle your tape backward or forward as you wish. The synchronisation should pick up wherever you start to play. You can also use the TS1 to copy any compatible stripe between tape tracks.

The TS1 is remarkably compact (109mm x 109mm x 41mm), especially bearing in mind that it includes an built-in mains power supply, obviating the need for an external adaptor. The integral mains lead comes fitted with a plug.