TANDBERG

TAPE SYNC UNIT 110

The Tandberg Instrumentation Tape Recorder Series 100 has a speed accuracy of ± 0.2 %, which is sufficient for nearly all applications. However, some special applications require an extremely high tape speed accuracy. To fill this requirement, the Tandberg Tape Sync Unit 110 was developed. Working together with the Series 100 recorder, this unit provides a high quality tape servo system for long term tape speed stability of ± 50 PPM (± 0.005 %).

Although the tape recorder has its own speed servo which ensures constant angular velocity of the capstan (capstan sync), the signal wavelength on the tape may have variations introduced by varying tape tension and stretching of the tape. Such variations must be compensated by corresponding variations in the playback speed if time base errors and DC errors in the data output voltage are to be reduced. This particular speed control problem can be solved with the Tape Sync Unit which compares a recorded reference signal with the reference source, and provides a speed correction current to the sync input of the recorder. The internal reference source in the tape sync unit operates at the centre carrier frequency for the tape speed in question.

If an external reference is used for playback, it is possible to operate at a speed different from the one used during recording.

Before recordings are made, it must be decided whether tape sync will be needed during playback, so that the appropriate reference signal can be recorded together with data. One channel from the TIR 100 is required for operation with the Tape Sync Unit 110. In using channel No. 2 for sync, the advantage of applying flutter compensation during reproduction can take place on the same channel.

The Tape Sync Unit 110 is primarily intended for tape speed control, but it is also very useful for calibration of the Series 100 recorder as a very accurate crystal oscillator provides the carrier frequencies which correspond to the selected tape speed.

For centre carrier calibration of modulator and demodulator, the modulator is placed in phase-locked loop with a reference oscillator, whereas for speed calibration the reproduced reference is phase-locked to the reference source via the tape speed servo of the recorder.

Examples of general applications are:

1. The data must be reproduced with a very high time bace accuracy.
2. The data signal to be recorded is closely related to a sync signal that will later be needed for recovery of the data (time-multiplexed signal).
3. The tape speed during recording, or the signal wavelength on the tape is varying under influence of external speed control or as a result of mechanical strain, extreme temperatures or poor tape quality.

The application of the Tape Sync Unit 110 does not require any changes to the existing Series 100 Recorder.

TECHNICAL SPECIFICATIONS

Power requirements:	115/230 V ± 10 %, 48 - 1000 Hz, 12 W.
Temperature range:	0 to + 55 degrees Centigrade, operating, - 40 to + 75 degrees Centigrade, nonoperating.
Humidity:	10 % to 95 % (- 25 to + 40 degrees Centigrade), noncondensing.
Vibration:	0.1" displacement, 5 - 18 Hz, 1.3 g, 18 - 200 Hz.
Shock:	50 g max. (10 ms, half-sine), nonoperating.
Altitude:	15,000 ft., operating, 25,000 ft., nonoperating.
Internal reference frequency:	13500, 6750, and 3375 Hz.
Reference stability:	± 50 PPM.
Synchronizer tracking range:	± 2880 degrees at the relevant reference frequency.
Usable external reference signal:	Any frequency within the deviation range for the tape speed in question. Minimum amplitude ± 2.5 V Maximum amplitude ± 10 V
Dimensions:	Width 8 1/4" (21 cm). Height 4" (10 cm). Depth 12 7/8" (15 cm).
Weight:	3.3 lbs (1.5 kg)

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