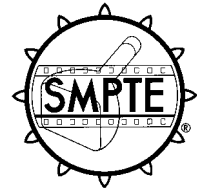


# SMPTE ENGINEERING GUIDELINE

**EG 7-1994**

Revision of EG 7-1989

## Audio Sync Pulse for 8-mm Type S Cameras, Magnetic Audio Recorders and Rerecording Projectors



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### 1 Scope

This guideline specifies the characteristics of the audio sync pulse for 8-mm type S cameras and film recorders and for magnetic tape recorders and audio projectors used for transfer of audio records from magnetic tape and film to a magnetic edge stripe on an 8-mm type S print.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this guideline. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this guideline are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

ANSI/SMPTE 164-1993, Motion-Picture Film (8-mm Type S) — Magnetic Audio Record — Position, Dimensions and Reproducing Speed

NAB Standard for Magnetic Tape Recording and Reproducing (Reel-to-Reel)

### 3 Terminology

#### 3.1 Camera and projector classes

**3.1.1 Class A:** Speed controllable (self-resolving)

**3.1.2 Class B:** Speed uncontrollable

#### 3.2 Sync signal phase

**3.2.1 Open shutter sync:** Sync occurs while the shutter is open.

**3.2.2 Closed shutter sync:** Sync occurs while the shutter is closed.

### 4 Camera specifications

#### 4.1 Sync signal

The camera shall provide a sync pulse at frame rate (24 fps nominal) as a voltage pulse, tone burst, or other sync signal.

#### 4.2 Photographic sync mark

The photographic sync mark shall be on the edge of the film opposite the sprocket holes and shall be approximately one frame in length.

### 5 Recorder specifications

#### 5.1 Location of sync signal

##### 5.1.1 Cassette recorder

The signal shall be located on track 4 in accordance with IEC and NAB standards for audio-visual cue pulses.

##### 5.1.2 Reel-to-reel quarter-inch tape recorders

The signal shall be located on track 3 (right stereo channel) as specified in NAB Standard Magnetic Tape Recording and Reproducing (Reel-to-Reel), Four-Track Stereophonic Recordings Section.

##### 5.1.3 Full-coat film recorders

The signal shall be located in the audio record position as specified in ANSI/SMPTE 164 on recorders using 8-mm type S full-coat magnetic stock.

## 5.2 Recorded signal level

The signal shall be recorded at 10 dB below the reference level of 185 nWb/m at 315 Hz.

# 6 Projector specifications

## 6.1 Sync signal

The projector shall provide a sync pulse at frame rate (24 fps nominal) as a voltage pulse or a tone burst.

## 6.2 Sync signal phase

The sync pulse shall be generated immediately following the first shutter opening of a new frame.

NOTE – Socket-pin connections. Use of the 8-pin miniature socket (IEC type 130-9-21) is recommended since it offers enough connections to accomplish all sync camera requirements. The connections shall be:

- Pin 1, Camera chassis ground (sync circuit common)
- Pin 2, 1/F (1-pulse-per-frame) signal
- Pin 3, 1/4F (1-pulse-per-4-frames) signal
- Pin 4, Motor circuit, positive speed control
- Pin 5, Motor circuit, negative speed control
- Pin 6, Tape recorder start/stop normally closed
- Pin 7, Tape recorder start/stop insulated common
- Pin 8, Tape recorder start/stop normally open