# SB-T Overview

The Denecke SB-T generates all common SMPTE time code rates and video references in 1920 X 1080 (Sony) and 1280 X 720 (Panasonic) High Definition standards. Standard Definition (29.970 fps Nondrop & Drop Frame) and PAL (25 fps) black burst or color bars are generated as well. Three LEDs indicate battery status, sync/internal run and presence of external power.

Three AA batteries power the SB-T or external power can be fed through a 4 pin Hirose or an optional 5 pin Lemo. The amber LED indicates the battery status. OFF = battery good (assuming unit is ON), a once per second flash = battery low, and twice per second flash = battery dead. The batteries should be replaced as soon as possible when dead battery is indicated. External power is indicated when the red LED is ON. When external power is removed, internal battery power change over is automatic and the red LED turns OFF.

The sync LED (green) indicates whether the SB-T is in jam sync mode or in internal run mode. The sync LED flashes once per second (at the start of the frame 00) when in jam sync mode or if the SB-T has been running in internal run mode for 10 minutes. Note that the tc rate and mode switches are locked out to prevent accidental change of the settings and the unit must be powered down for different switch setting to take affect. The SB-T features an automatic jam sync capability, which rejams to any break in time code without the need to power down. The jam occurs at the 00 frame so cross jamming of different rates can be accomplished.

Internal run mode is indicated by the sync LED strobing. When the SB-T is turned on, without time code present at its input, it will generate its own time code/video reference starting at 00:58:30:00. The TC frame rate and video reference are dependent upon the switch settings. Pressing the set button will increment the minutes, while holding down the set button will scroll the minutes. The minutes roll over into the hours therefore enabling control of the hours and minutes.

The time code rate rotary switch serves two functions. It selects a **time code frame rate** as well as a **video reference**. For example, position 4 selects 23.976 fps time code as well as a trilevel sync video reference.

**Rotary Switch Settings**

**0) 30 fr TC with HD Progressive or Segmented Scan**
**1) 29.970 fr TC with HD Progressive or Segmented Scan**
**2) 25 fr TC with HD Progressive or Segmented Scan**
**3) 24 fr TC with HD Progressive or Segmented Scan**
**4) 23.976 fr TC with HD Progressive or Segmented Scan**
**5) 25 fr TC with Black Burst or Color Bars in PAL**
**6) 29.970 fr TC with Black Burst or Color Bars in NTSC**
**7) 29.970 Drop fr TC with Black Burst or Color Bars in NTSC**
**8) 30 Drop fr TC with HD Progressive or Segmented Scan (Version 1.8)**
**9) 29.970 Drop fr TC with HD Progressive or Segmented Scan (Version 1.5)**

The mode dip switch selects the trilevel sync format i.e. Progressive, Segmented or 2 X Progressive. To generate 23.976 fps time code with segmented scan, the rotary switch is set to position 4 and the mode switch is set to **01**. Where **0 = Down Position and 1 = Up Position**.

**Mode Switch Settings**

**00 = 1080 Progressive Scan Trilevel Sync**
**01 = 1080 Segmented Scan Trilevel Sync**
**10 = 1080 Progressive Scan At Twice The Video Rate**
**11 = 720 Progressive Scan Trilevel Sync**
**11 = Color Bars In PAL or NTSC modes instead of default Black Burst in all other dip switch settings. Note that there is no sync relation to Time Code in this mode.**

Checking the Software Version of the SB-T:

**Power = Off**
**Rotary Switch = Pos 9**
**Mode Switch = 00**
**Set Push Button = Pressed**

Turn the SB-T **ON** while pressing the set button. The Sync and Low Battery LEDs will flash according to the software version. Example: **V1.7** (current version) Sync Led = 1 Flash, Battery Led = 7 Flashes.

**Quick Lookup Table**

**Sony F900 @ 23.976**
**Rotary Switch: 4**
**Mode Switch: 01**

**Panasonic AJ-HDC27V**
**Rotary Switch: 1**
**Mode Switch: 11**

**PAL Black Burst**
**Rotary Switch: 5**
**Mode Switch: 00, 01, 10**

**PAL Color Bars**
**Rotary Switch: 5**
**Mode Switch: 11**
**Note that there is no sync relation to Time Code in this mode.**

**NTSC Black Burst**
**Rotary Switch: 6, 7 (Drop Frame)**
**Mode Switch: 00, 01, 10**

**NTSC Color Bars**
**Rotary Switch: 6, 7**
**Mode Switch: 11**
**Note that there is no sync relation to Time Code in this mode.**

**RED ONE**

When operating at 23.976, 24.00, 25.00 or 29.970 Project Time Bases, set the SB-T to SMPTE 274 progressive scan format, at the same frame rate as the project TIME BASE. Do not use PsF or interlaced signals.

**Mode Switch: 00 (1080P)**

| Frame Rate | Rotary Switch |
|---|---|
| 23.98 fps | 4 |
| 24.00 fps | 3 |
| 25.00 fps | 2 |
| 29.97 fps | 1 |

When operating at 50.00 or 59.94 Project Time Bases, set the SB-T to SMPTE 296 progressive scan format, at the same frame rate as the project TIME BASE.

**Mode Switch: 11 (720P)**

| Frame Rate | Rotary Switch |
|---|---|
| 25.00 fps | 2 |
| 29.97 fps | 1 |

* Note: After changing any of the above switch settings, power cycle the SB-T unit.