DCODE™

TS-2(SB)

FITS IN A FRONTBOX!

The **TS-2(SB)** reads and displays SMPTE/EBU Time code. The **SB-2 SyncBox**, is mounted in the battery box. Eight "AA" batteries are used to make a compact lightweight unit. The replaceable lexan face and black & white or color walnut sticks ensure long life.

The **SB-2 Time Code Generator** jams to all standard frame rates, including 30 df. User bits jam automatically when the time is set. A High stability crystal is used to ensure low drift. The **TS-2(SB)** is available with Optional TCXO for extreme temperature ranges and Optional GPS input for the Trimble Scout Master.

FEATURES

HIGH INTENSITY ONE INCH READOUT displays time code, user bits and dropframe status. Switchable high, medium and low brightness.

SB-2 SYNCBOX is mounted internally in the battery compartment for a compact, light weight system.

LEXAN FACE can be easily replaced. The TS-2 fits in the standard 11" front box.

TS-2(SB) can be upgraded from the standard combination of the TS-1 and SB-2 syncbox.

SPECIFICATIONS

SIZE: 8.25" high, 11" wide, 1.9" deep

WEIGHT: 2.6 lbs. (3lbs with batteries)

INPUT: -15db at 4.7k 1/4 inch phone jack.

POWER: 8v to 16v DC; 4 pin male Cannon connector. Display off, 10 ma.; Display on, 1.5 amps max. pin #1 -v; pin #2 n/c; pin #3 T/C in; pin #4 + v

BATTERY PACK: uses 8 alkaline "AA" batteries.

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The Dcode® TS-1 Time Code Slate was originally designed in 1986 for music playback. It has since been upgraded to the TS-2(SB) with the addition of the built in Dcode® SB-2 Syncbox Time Code Generator. There are numerous improvements in this new version, including: A 3-position brightness switch, an "AA" battery pack, and a new face plate with an easily replaceable Lexan overlay. The TS-2(SB) is lighter than the original TS-1 and can be stored in the camera front box. None of the original TS-1 features are lost with the TS-2(SB). In fact, the TS-2(SB) is simply an upgrade from the TS-1 and SB-2.
The TS-1 can be used in live action filming as well as for sync playback work. One time code Nagra with a pre-striped playback tape can now be used instead of using two tape machines thus creating a music video technique that is free from re-recording the playback tape. Time code also shows you the current position of the tape, no more confusion about which verse you are filming.
Time Code is a sync pulse with the addition of hours, minutes, seconds, and frames in every frame. There are several types of time code. The Denecke DCODE® Time Code Products are designed to work specifically with SMPTE/EBU time code for both film and video production.

TS-1 Time Code Slate

The Dcode® TS-1 Time Code Slate is a simple battery operated time code reader connected to a set of conventional clapper sticks. Time code is read on 1" LED's which display hours, minutes, seconds, and frames. The digit pairs are separated by decimal points while displaying time code. The decimal points turn off when user bits are displayed. The display runs as long as the sticks are open. When the sticks are closed, the time code display freezes for three frames then changes to "User Bits" and holds the "User Bit" display for one second, then turns off.
Time Code can be sent to the slate from the Syncbox Time Code Generator or an outside time code source such as a Nagra IVS-TC. Drop frame time code is indicated when a decimal point appears above the "DF".
There are many advantages to using the TS-1 Time Code Slate and Syncbox Time Code Generator. In the long run, they will save you both time and money by eliminating the need for work prints and mag transfers.

TS-1 OPERATION

1. Turn the slate on by selecting high or low brightness with the three position switch on the back.

   (Viewed from the back . . . Left = High, Center = Off, Right = Low.)

2. Connect the slate to the time code source by using the 1/4# jack or 4 pin cannon input.
3. Before the camera rolls, open the clapper. Running time code will be displayed. Film the running code for approximately 1 second before clapping the sticks. Pre-roll is for sound. Don't pre-roll film. Make sure the display is readable for the telecine operator or editor. (IN FOCUS, NO KICKS, RIGHT EXPOSURE, RUNNING CODE).
4. Live action audio must start recording sound at least 10 seconds before rolling camera to allow for the videotape pre-roll necessary to automatically sync sound and picture by time code.
5. Sync play back does not need pre-roll. The music has code from the beginning of the song. Film one second of code at the head of each playback segment. Try to avoid tail slates. If tail slates are used do not turn the slate upside down. (The telecine operator can't turn over his monitor.)

USING THE TS-1 WITH THE ...

COMTEK M72 WIRELESS SYSTEM

Combining the TS-1with the Comtek Transmitter and Receiver is recommended for playback when the camera and sound are close together on the set. Keep in mind that the maximum range for the Comtek is about 300 feet.

Set the time code source according to Nagra IVS-TC Manual. Take the time code out from the Nagra and reshape it with a "TC Lemo" cable to bring it down to a 1volt level. This is very important, because you can overdrive the Comtek with the 5volt output out from the Nagra. Make sure you are properly grounded so you don't get time code bleed on the tape. Pin 1 of the lemo connector must be connected to the shell of the connector.

Connect the antenna. Plug the Transmitter into time code playback or record source. If using a Nagra S-TC, connect the Comtek M72 Transmitter to the TC socket on the right side of the recorder via the "TC Lemo" cable. Locate the Transmitter away from the Nagra to minimize crosstalk. Turn transmitter on and check gain (set to mid-range with green screwdriver adjustment).

Attach the PR-72 Receiver with Velcro to the back of the slate. Connect the unit to the slate with the "TC RX" cable by inserting a ¢" plug into the Receiver, and the 3" phone plug into the side of the slate. Let cable hang loosely, as it serves as the antenna. DO NOT WRAP OR TUCK! When the Comtek is mounted on the slate the receiver will turn on when the sticks are opened. Make sure the Receiver and Transmitter frequencies match and that the gains are set to mid-range.

WHEN USING THE TS-1 IN CONJUNCTION WITH COMTEK:

1. Test equipment around the shooting area to detect potential problems.
2. Monitor Receiver with headphones and listen for interfering signals.
3. Set the gain controls on both the Transmitter and Receiver to 50% for optimum results.
4. Separate microphone cables from the Transmitter to avoid recording time code "cross talk" on the audio.
5. **DO NOT PERMIT METAL PARTS TO TOUCH CABLE CONNECTORS.**

USING THE TS-1 WITH THE

Dcode® "SYNCBOX" TIME CODE GENERATOR

1. Jam sync the Syncbox with code from the Nagra in the "TEST" position (time code is offset in the "RECORD" position). A once per second blink at turn on indicates jam sunk code.
2. The internal frame rate of the Nagra and Syncbox should be the same (30 FPS is standard for film). Consult the telecine post house if there is any question.
3. Velcro the Syncbox to the back of the slate and connect it with the TC-RX cable (CA-2 cable).
4 Jam the Syncbox every 4 or 5 hours.
5. Keep an eye on the code. Check the numbers against the Nagra. Blank numbers or "CODE" will be displayed in the user bits if the Syncbox has been reset by accident (it helps to tape the cover closed).

THE TS-2(SB) TIME CODE SLATE

The TS-2 works in the same manner as the TS-1, with a few improvements. The power switch is now separate from the brightness switch. The slate, including the Syncbox, receives powers through the power switch. Jamming of the Syncbox is accomplished through the ¼" phone jack on the side of the slate. Time code is set from your source. Turn on the master power switch to jam the TS-2. A once per second blink on the LED mounted between the minutes and seconds on the front display indicates Jam. To use a Comtek or to hard wire the slate turn off the internal Syncbox power, located in the battery compartment. The frame rate of the slate should match the frame rate of the tape machine's time code. The brightness switch now has a new LOW position. The TS-2 uses 8 "AA" batteries instead of "C" Cells. Battery life is about 1/3rd in most circumstances. The new design will now fit into a standard 11" front box.

The TS-1 is still recommended for bright exterior shoots. A plastic sun shade is available for the TS-1, for use in direct sunlight. "C" cell batteries are needed when using the high brightness position for extended periods.

TS-2(SB) OPERATION

1. Feed time code into the ¼" jack on the side. Turn on power. Both the time code and user bits will be jammed. Be sure to set the proper time code rate on the Syncbox. A once per second strobe indicates jam. A fast strobe indicates a non-jammed condition. The ¼" jack is also an output that can be used to jam other equipment.
2. Set the slate to the desired brightness. Too much light will flare the numbers and wastes the batteries. Keep the sticks closed to conserve power. A flickering or dim display indicates a low battery condition. The brightness can be changed while jammed.
3. Turning off the master power will reset the Time Code and you will lose sync. Tell the slate operator to **NOT** play with the power switch. Re-jam every 4 to 5 hours. Some DAT machines have poor time bases so you may need to re-jam more often..
4. Transmitting the time code works the same as with the TS-1. Turn off the internal Syncbox, (the SB-2 switch is located inside the battery pack on the back.) Then Velcro the Comtek receiver onto the back of the TS-2, connecting it with a cable such as the CA-2 (Mini/RA ¼".) The Comtek receiver will turn on when you open the sticks. The LED on the Comtek receiver will indicate power on. The Comtek level controls should be set at about 50%. Testing the radio system can be done with a set of headphones. You should hear code on pin two of the XLR connector.
5. You will need approximately 10 seconds of tape running with time code (pre-roll) before the film is slated. Pre-roll is only needed on the sound, no point in wasting ten seconds of film. This pre-roll code must be continuous code. Make sure to not have any breaks in the time code. Also run the tape a second or two longer than the camera in order to have some post roll on the end.

TS-1, TS-2 BATTERIES

BATTERY INSERTION:

1. Lay unit down on its face and unplug any cables that might be connected to the ¼" phone jack on the right side of the slate. Remove the screw on battery cover plate.
2. To remove cover plate, lift from the screw side first, then disengage the other side from the phone jack bushing.
3. Install batteries observing polarity diagram inside. There is NO protection for reverse polarity insertion. The regulator will burn out as a result of reverse polarity. Also, a reverse battery may leak.
4. Reverse procedure to close.

BATTERY SPECIFICATIONS:

1. The TS-1 uses 8 standard "C" cell batteries. The TS-2 uses 8 "AA" batteries. We recommend the use of alkaline cells.
2. Fresh batteries (1.5 volts per cell) will power the slate with 12 volts.
3. High intensity will be achieved down to 1.1 volts per cell, at which point the batteries must be replaced should high intensity be desired.
4. The TS-1 will not function below 6.8 volts, or .85v/cell.

TS-1

POSITION	CURRENT DRAIN	CONTINUOUS (TIME)	INTERMITTENT
"HIGH"	1.5 AMPS	15 MINUTES	1 DAY
"LOW"	.4 AMPS	10 HOURS	5 DAYS
"OFF"	NONE	NO DRAIN	
"DISPLAY OFF"	10 MA	10 DAYS	

- "HIGH" intensity will function down to 8.8 volts, or 1.1 v/cell.
- "LOW" intensity will function down to 7.2 volts, or .9 v/cell.
- DROPOUT will occur at 6.8 volts, or .85 v/cell.
- FLICKERING or DIM DISPLAY indicates low battery power.

REMEMBER: *For intermittent slating, switch power to "off" at night!*

The batteries should last about a week when the TS-1 Slate is turned off at night and used intermittently in low brightness. The current consumption is much higher in high brightness so the batteries need to be changed more often. In most instances the slate will be used in low brightness. Night shooting with the slate may require low brightness or with the TS-1 a ND6 gel or black netting taped across the front to dim light down. Do not use high brightness while using ND6 filter or you will waste the batteries.

TS-2(sb)

POSITION	CURRENT DRAIN	CONTINUOUS (TIME)	INTERMITTENT
"HIGH"	1 AMPS	5 MINUTES	½ DAY
"MEDIUM"	.4AMPS	3 HOURS	3 DAYS
"LOW"	.1 AMP - 100MA	8 HOURS	5 DAYS

EXTERNAL POWER

The TS-1 can be externally powered by the 4 pin connector. Since this input also connects to the battery compartment an external 12v camera battery can be used for power. *ALL BATTERIES SHOULD BE REMOVED WHEN EXTERNAL POWER IS BEING USED! AGAIN, OBSERVE POLARITY!*

OFFSETS

Offsets are easily corrected by the post production facility, and should be noted according to the following offset chart:

APPROXIMATE FRAME OFFSET

TAPE SPEED	TC SPEED(24/25 FPS)	TC SPEED(29/30 FPS)
3-3/4 IPS	7 Frames	8 Frames
7-1/2 IPS	4 Frames	4 Frames
15 IPS	2 Frames	3 Frames

FOR MORE SPECIFIC INFORMATION, PLEASE CONSULT THE POST-PRODUCTION FACILITY BEING USED!

FOR USE WITH FILM CAMERAS

When using a film camera with the Nagra IVS-TC, use the following frame rates:

CAMERA SPEED	TAPE MACHINE TC GENERATOR SPEED
24 FPS	30 FPS
30 FPS	30 FPS
29.97 FPS	29.97 FPS
25 FPS	25 FPS
PAL 24 FPS	25 FPS

1. Roll sound for 10 seconds before starting camera.
2. Show 1 second of time code to the camera before slating.
3. Focus on slate. Avoid kicks.
4. Run sound longer than film.

SPECIFICATIONS

	TS-1 AND SB-2	TS-2(SB)
WEIGHT:	1.8 lbs (4 lbs with batteries)	2.5 lbs (3 lbs with batteries)
SIZE:	8.2" high, 10" wide, 2.4" deep	8.25" high, 11" wide, 1.9" deep
POWER:	8v to 16v DC:	8v to 16v DC:
Display off:	10 ma.	18 ma
Display on high:	1.5 amps maximum	1 amp
Display on medium:	No medium setting	400 ma
Display on low:	400 ma.	100 ma

Pin #1 -- ground
Pin #2 -- n/c
Pin #3 -- time code input
Pin #4 -- +12v external DC (camera battery)

BATTERY PACK: Use 8 alkaline or rechargeable "C" cells for TS-1; 8"AA" for TS-2(SB)
(Charger access is through the 4 pin cannon connector.)

RECOMMENDED PRACTICES

1. Pre-roll the sound transport for at least 10 seconds before camera starts when doing live action recording.
2. Properly identify materials. Indicate film and Nagra time code speed (30/29/25/DF) on your log. Do not use 24FPS code.
3. Indicate if tracks are stereo or mono.
4. Voice slate reels and film rolls.
5. Use same type of code for the entire production (non-drop preferred) and indicate the frame rate on the sound report.
6. Jam time code at least every 4 hours when using the Syncbox. Make sure numbers are always changing. Jam the Slate in the Test Position of the Nagra.
7. Make sure the camera gets a clear shot of the slate's display and always close the clap-stick for an audible back up in case the time code display malfunctions.
8. When in doubt, check with transfer house.
9. Keep in mind that when the Nagra IVS-TC is in "record" the time code that the slate is displaying is offset by 4 frames (30 frame code at 7-1/2 IPS) from the code being recorded on the tape. This will offset the slate when hard wired or when transmitting code. Record this offset on sound log for transfer house.

TROUBLESHOOTING

If no time code is being transmitted:

1. Check if the antenna is plugged in on the Comtek.
2. Check connections by wiggling cables.
3. Use earphones to check for time code transmission. If you can hear code check the gain control on the Receiver. Adjust the Receiver and the Transmitter taking care not to overload the system.

CARE AND MAINTENANCE

1. Do not drop slate.
2. Use only alkaline batteries.
3. Do not leave clappers open when not in use.
4. Use dry erase Expo Marker for writing production information on the high gloss enamel or Lexan Surface.
5. The operating temperature of this unit ranges from -20 to 120°F. Temperature affects battery life. (Example: 10 hours in "LOW" position at 72°F = 1 hour in "LOW" at 0°F).

ADDITIONAL INFORMATION

1. If incoming time code is lost for any reason, the slate will show the last time code received with the clapper opened.
2. If the clapper is closed, it will retain the time code received at the moment it was last open.
3. In playback, no offset occurs.
4. The conventional "clapper sync" is a back up feature.
5. If you have any questions about what kind of time code is being used, call the post production facility where you are having the film transferred.