



CLOCK SYSTEM

ELAN AUDIO

2 STEEL COURT SOUTH GUILDFORD WESTERN AUSTRALIA

www.elan.com.au

CLOCK SYSTEM COMPONENTS



ASC-01 Radio Clock

Battery operated wall mount radio clock.

350 mm diameter.

Operates for approx. 12 months on 1 x AA Battery.

Receives and synchronises to low power VLF AM signal transmitted from SCT-01 SMPTE code converter-transmitter.

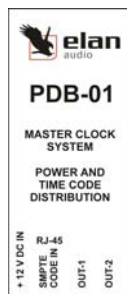


SCT-01 Transmitter

Converts standard 25 Hz SMPTE-EBU time code to radio clock code and transmits this at very low power to ASC-01 radio clocks.

Under normal conditions ASC-01 clocks can be located up to 5 metres from the SCT-01 unit.

An internal dip switch allows time-offsets to 30 minute resolution permitting operation from SMPTE code locked to UTC Time.



PDB-01 Power Supply & Distribution Box

DC Power and SMPTE code distribution box.

Complete with 12 Volt DC 4 Amp switch mode power supply.

Other components available in the Elan Audio Clock System:



RTG-01 GPS Locked Master Clock

Supplied complete with active GPS Antenna and protocol adapter



DSC-01 Digital Display Wall Clock

Large easy to read LED display, end of hour indication, 30 second down counter.

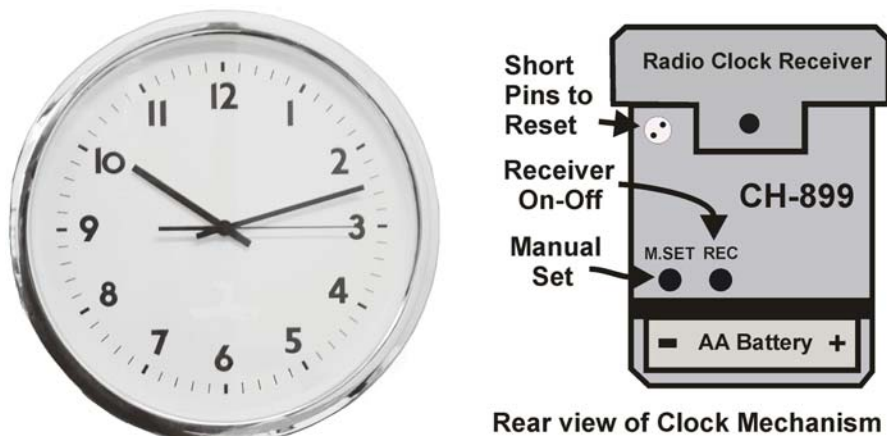


TP-GEN Time Pip Generator

Provides end of hour time pips

(requires mounting and power from RUC-01)

ASC-01 RADIO CLOCK



The ASC-01 is a battery operated radio clock, designed to operate from DCF-77 coded radio signals transmitted on 77.5 KHz. This signal is provided by the SCT-01 transmitter.

The ASC-01 clock itself is extremely easy to install requiring only wall mounting, an Alkaline AA battery and placement within range of a SCT-01 Transmitter.

Time code containing minute and hour's data is sent once a minute with synchronisation for seconds occurring at the start of each minute.

To commission an ASC-01 radio clock all that is required is to insert a battery and place in position. The ASC-01 can be reset by either briefly removing the battery or using a metal tipped object to short circuit the two pins shown on the drawing (such as a screwdriver or the tip of a ballpoint pen).

On insertion of the battery (or on reset), the second hand will start moving at about twice normal speed and stop at 12. The minute and hour's hands will then start moving at an accelerated pace and stop when both hands point at 12. They will stay there until the ASC-01 clock has received 3 or more valid clock code data transmissions (approx. 3 to 5 minutes). When locked the second hand will start at the beginning of the minute, and then the minute and hour's hands advance until they show the correct time.

The receiver on-off and manual set buttons are not used when the ASC-01 is operated as a radio clock and should be ignored.

A time code sequence containing minute and hour's data is transmitted once a minute which allows the ASC-01 clocks to be started and synchronised at any time.

Two independent drive mechanisms are employed; one driving the second hand, the other driving the minute and hour's hands. Minor corrections to seconds displayed takes place at the top of every odd hour.

Correction to minutes and hours display takes place a few minutes past 3 AM.

At this time the clock performs a complete reset sequence.

Daylight Saving

The ASC-01 radio clock is locked to and displays the time information transmitted by the SCT-01 transmitter and does not itself have any provision for displaying different time zones such as required for summer-winter daylight time changes.

The easiest and most convenient method is to run the SMPTE code in local time and change this to local summer or winter time as required.

This can be done very easily when using the RTG-01 Time Code Generator by moving the daylight saving toggle switch from winter to summer time as and when required.

Time correction to the new time will take place automatically at a few minutes past 3 AM, or instantly when deliberately reset.

Notes

The ASC-01 clocks are guaranteed to operate reliably from DCF-77 time code transmitted from the SCT-01 transmitter.

No assistance will be provided by Elan Audio to make other makes and models of DCF-77 clocks operational with the SCT-01.

The ACS-01 clocks are normally quiet enough to be used in broadcast studios with consideration to its placement in relation to live microphones be given.

If placed on a hard, highly reflective wall, mechanical noise reflected from the wall can be reduced by placing a small square of carpet or other sound absorbing material on the wall directly behind the clock mechanism.

SCT-01 SMPTE TIME CODE CONVERTER-TRANSMITTER



The Elan Audio SCT-01 accepts standard 25 Hz SMPTE-EBU time code, converts this to an abbreviated DCF-77 time code and transmits this on low power (2 microwatts) 77.5 KHz DCF amplitude modulated (AM) radio signal to ASC-01 clocks located within 5 metres from it.

A complete DCF-77 time code sequence is repeated once a minute and is inherently capable of carrying data identifying minutes, hours, calendar day, day of the week, month and year.

The time code transmitted by the SCT-01 contains only data identifying minutes and hours because calendar day, day of the week, month and year data is unavailable from SMPTE code.

Installation of the SCT-01 is very easy. Place one or more units as required on top of ceiling or walls, less than 5 metres from the ASC-01 clocks to be controlled. The SCT-01's connect together by daisy chaining using CAT-5 or Cat 6 cable fitted with RJ-45 connectors.

The RJ45 connectors are wired in parallel to allow daisy chaining of several SCT-01 units.

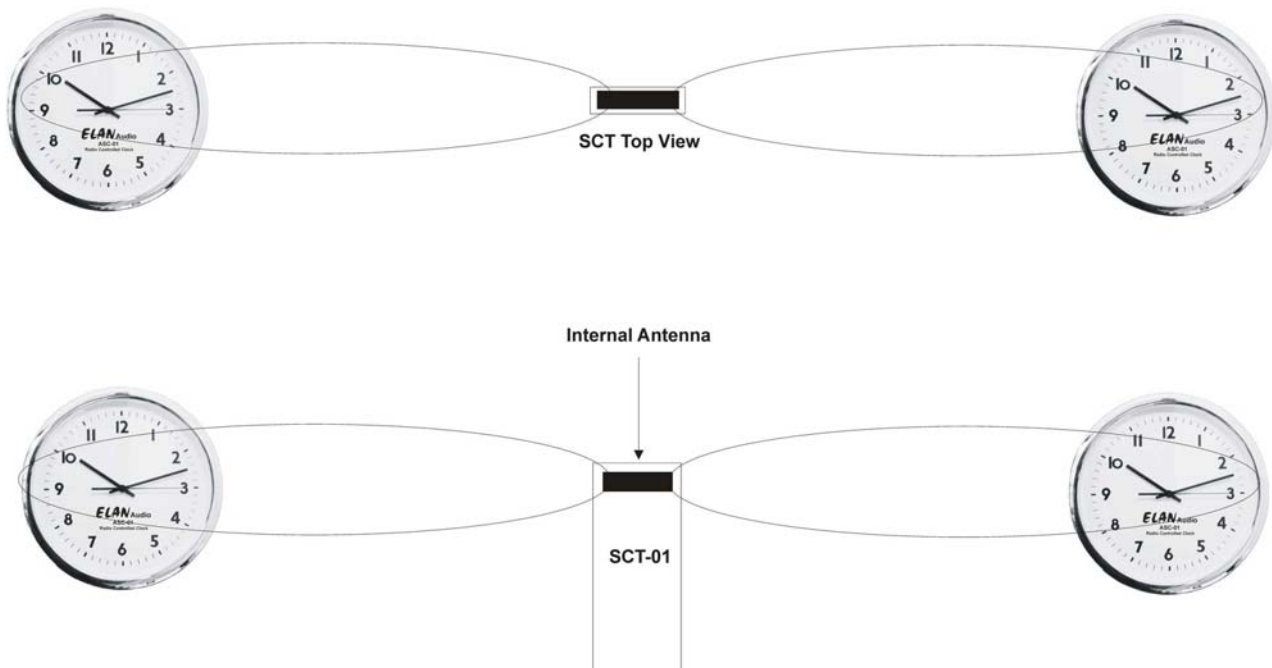
Power supply for the SCT-01 units (each requiring 12 V DC at 50 mA) is provided by the Elan Audio PDB-01 power and SMPTE code distribution box.

Positioning of SCT-01 transmitters in relation to ASC-01 clocks

The SCT-01 transmits using an internal antenna; this is located at the top of the SCT-01.

In cases where clocks are placed at maximum range, or through a wall or ceiling, the received signal strength from the SCT-01 may be weakened. In this case reception by an ASC-01 clock can be improved by placing it closer to the SCT-01 or directly in line to the SCT-01 internal antenna where signal strength is strongest.

Please refer to diagram below.



Time Offset

Normally the SMPTE-EBU time code used in the system is set to operate in local time and all DIP switches in the SCT-01 units set to factory setting making it transmit local time. A time offset can be programmed by adding or subtracting up to 15 ½ hours from SMPTE time by using the SCT-01 DIP switch. Use this to display time differing from the distributed SMPTE time code such as local time in another state, or local time referenced to UTC (GMT).

Remove power to the SCT-01 briefly after any changes to DIP switch settings to allow changes to take effect.

Operating the Daylight Saving toggle switch on the Elan Audio RTG-01 master clock from winter to summer time provides a 1 hour time offset which is satisfactory in most cases.

SCT-01 Time Offset DIP switch

Factory setting shown - No Time Offset

Option 1 & Option 2 - factory set – **do not adjust**

Z O		8	Option 2	OFF
		7	Option 1	ON
		6	8 Hour Offset	OFF
		5	4 Hour Offset	OFF
		4	2 Hour Offset	OFF
		3	1 Hour Offset	OFF
		2	½ Hour Offset	OFF
		1	Add-Subtract	OFF
			OFF ON	

We have conducted experiments at Elan Audio involving the use of several ASC-01 clocks placed about 600 mm apart and with SCT-01 units placed directly behind them, arranged to display different time zones such as Sydney, Adelaide and Perth. An aluminium plate may need to be placed between the ASC-01 and SCT-01 to reduce the received RF Level.

Time offset settings for each of the time zones are shown below with EST as the local time (0 offset).

Z O		8	Option 2	OFF
		7	Option 1	ON
		6	8 Hour Offset	OFF
		5	4 Hour Offset	OFF
		4	2 Hour Offset	OFF
		3	1 Hour Offset	OFF
		2	½ Hour Offset	OFF
		1	Add-Subtract	OFF
			OFF ON	

Sydney (EST) 0hr offset

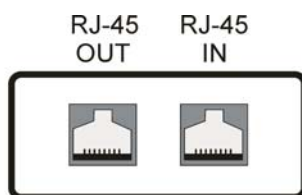
Z O		8	Option 2	OFF
		7	Option 1	ON
		6	8 Hour Offset	OFF
		5	4 Hour Offset	OFF
		4	2 Hour Offset	OFF
		3	1 Hour Offset	OFF
		2	½ Hour Offset	ON
		1	Add-Subtract	ON
			OFF ON	

Adelaide (CST) +½ hour offset

Z O		8	Option 2	OFF
		7	Option 1	ON
		6	8 Hour Offset	OFF
		5	4 Hour Offset	OFF
		4	2 Hour Offset	ON
		3	1 Hour Offset	OFF
		2	½ Hour Offset	OFF
		1	Add-Subtract	ON
			OFF ON	

Perth (WST) +2 hr offset

RJ-45 connector pinouts



Pin 1	+ 12 V DC
Pin 2	Gnd or Negative
Pin 3	N/C
Pin 4	DATA * SMPTE
Pin 5	DATA SMPTE
Pin 6	N/C
Pin 7	+ 12 V DC
Pin 8	Gnd or Negative

PDB-01 DC POWER & SMPTE TIME CODE DISTRIBUTION BOX

The PDB-01 is a passive SMPTE Code and DC power distribution box.

DC power entry is via a standard 2.1 mm Line DC power connector.

SMPTE time code entry is via a 2 way Dinkle pluggable screw terminal.

DC Power and SMPTE time code output is available on 2 x 8 way RJ-45 sockets

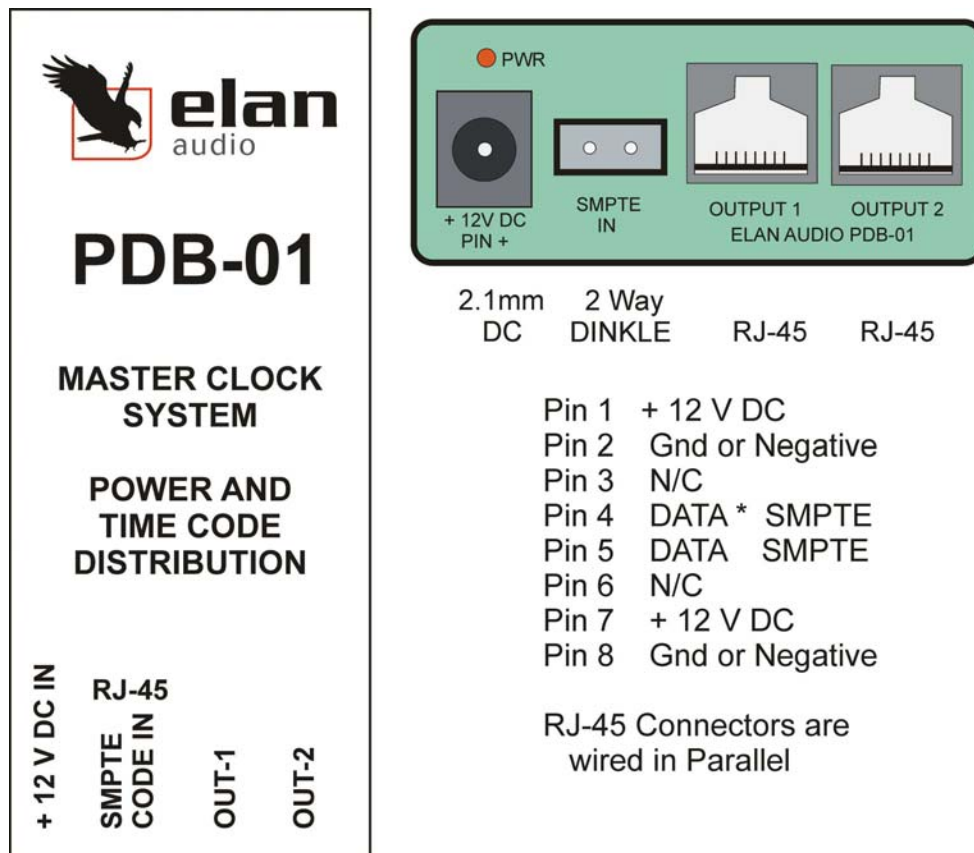
Supplied with each PDB-01:

- 1 x 4 Amp 12 V DC Switchmode PSU
- 1 x 3 Pin to IEC power cord
- 1 x 2 way pluggable screw terminal

The PDB-01 will power any combination of SCT-01 Transmitters and DSC-01 Digital Studio Clocks.

SCT-01 approximate power consumption 12 V DC 50 mA. 1 PDB-01 will safely power up to 50 SCT-01.

DSC-01 approximate power consumption 12 V DC 500 mA. 1 PDB-01 will safely power up to 8 DSC-01.



SAMPLE STUDIO CLOCK SYSTEM INSTALLATION

