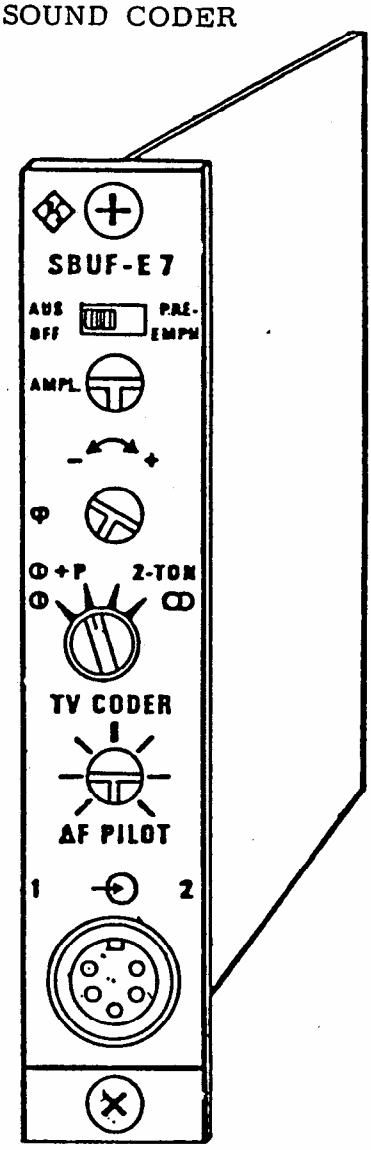
ROHDE & SCHWARZ
MÜNCHEN

Preliminry Information SBUF-E7

TV DUAL - SOUND CODER



Special features:

- Encodes external AF signals to form dual-sound TV, stereo or mono signals
- Pilot and identification frequencies are crystal-referenced and can be synchronized with line frequency
- Preemphasis is carried out before matrixing
- Fine adjustment of amplitude and phase for symmetrical deviation
- Plug-in for SBUF and SBTF 2 modulator section (instead of program selector)

The TV dual-sound coder SBUF-E7 can be inserted into the modulator section of the SBUF or SBTF 2 instead of the program selector SBUF-E4. It encodes two AF signals to form the input signals for the two sound modulators in dual-sound TV systems. The AF signal for the second sound carrier contains the pilot signal for controlling the dual-sound, stereo or mono operating modes. The 54.6875-kHz pilot signal and the switching signal for dual sound (274.1 Hz) and stereo (117.5 Hz) are derived from a crystal oscillator and can be synchronized with the line frequency.

The following four modes of operation can be selected:

1. mono, without pilot signal
2. mono, with unmodulated pilot signal
3. dual-sound, pilot signal modulated with 274.5 Hz
4. stereo, pilot signal modulated with 117.5 Hz

The two AF channels, CH 1 and CH 2, are designed identically; they have balanced inputs (Z_{in} = 5 kΩ) with differential amplifier stages. These are followed by the preemphasis stage, a lowpass filter for filtering out the harmonics which fall within the pilot frequency range, and a matrixing circuit. In channel 2, a further stage is provided for adding the pilot signal together with circuitry for fine adjustment of amplitude and phase. The outputs are unbalanced and designed for a minimum load impedance of 600 Ω (Z_{out} < 30 Ω).

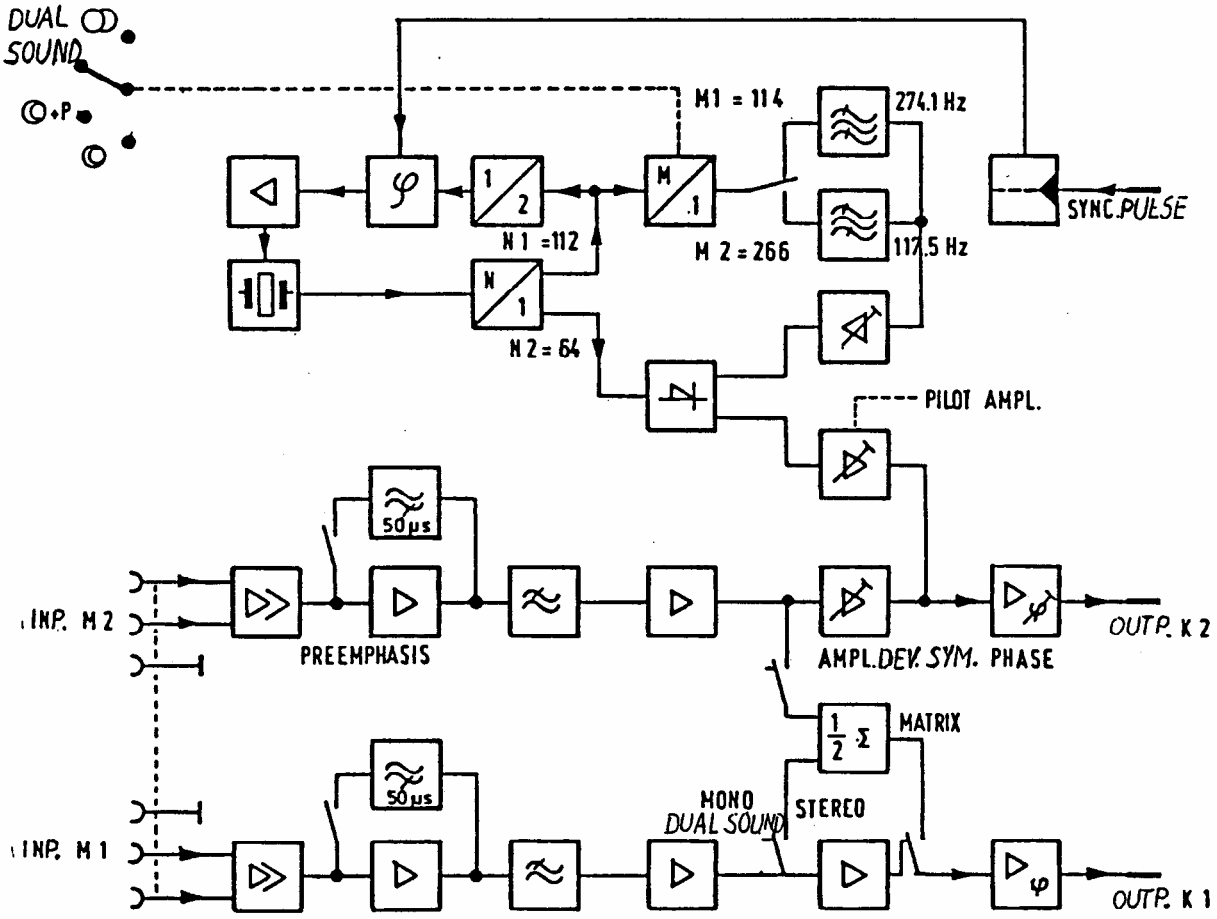
The reference level for 30-kHz deviation is +6 dBm. The gain between input and output is internally adjusted to 1. In channel 2, the gain can be varied by ±0.5 dB and the phase at 15 kHz by about ±3°, using the front-panel controls. The level of the pilot signal can be varied by about ±6 dB from the nominal value (unmodulated pilot signal -15.6 dBm). The preemphasis, which corresponds to a time constant of 50 µs, can be disabled.

The AF inputs are internally taken to the male multipoint connector on the rear panel of the SBUF and from there connected to the rear AF inputs of the two sound modulators (for sound 1 and sound 2) by means of a plug-on link. The front-panel sockets of the sound modulators can be used as test sockets since they are connected in parallel.

Since in TV stereo transmissions any unbalance after matrixing and before dematrixing (in the receiver) is identical with channel crosstalk, particular care should be taken - before measuring the crosstalk - to achieve symmetrical adjustment of the deviation of the sound modulators (fine adjustment on coder).

Block diagram:

TV DUAL-SOUND CODER



Specifications:

Inputs (sound 1 and sound 2): 6-way round female connector (T3402) on front panel

Frequency range	40 Hz to 15 kHz
Preemphasis	50 µs ±5% time constant, can be disabled
Nominal input level	+6 dBm
Input impedance	5 kΩ ±2%, balanced
Maximum input level	+12.5 dBm
Input for sync signals	> 12 V_{pp} pos., input impedance approx. 1 MΩ shunted by 20 pF; source; SBUF mod.

Outputs (channel 1 and channel 2): 21-way male connector

Frequency range	40 Hz to 15 kHz
Channel 2, additionally	pilot carrier with AM
Output impedance	< 30 Ω, unbalanced
Output level	+6 dBm ±0.2 dB (at 500 Hz)

Auxiliary frequencies

Pilot carrier frequency	54.6875 kHz ±5 Hz, synchronous with line frequency (3.5 times f_{line})
	54.6875 kHz ±50 Hz without synchronization
Pilot carrier modulation	AM 3, 40 to 60% modulation depth
Identification frequencies	117.5 Hz for stereo ≈ $f_{line}/133$
	274.1 Hz for dual sound ≈ $f_{line}/57$ (mod. distortion < 2%)
Output level	-15.6 dBm, variable by ±6 dB, unmodulated (in channel 2)

Distortion and noise

Weighted S/N ratio	> 70 dB, referred to +6 dBm, with pre-emphasis, peak-responsive measurement in line with DIN 45505, CCIR Rec. 468-2, measured via decoder with deemphasis
Unweighted S/N ratio	> 70 dB, referred to +6 dBm, with pre-emphasis, peak-responsive measurement in line with DIN 45505, CCIR Rec. 468-2, measured via decoder with deemphasis
Total harmonic distortion 40 Hz to 5 kHz	< 0.2%, at nominal level
Intermodulation distortion 5 to 15 kHz	d_1 < 0.15% d_3 < 0.2%

Frequency response flatness (without preemphasis)	< +0.2 dB (40 Hz to 5 kHz) < ±0.4 dB (5 kHz to 15 kHz)
Channel crosstalk	> 50 dB down in stereo mode > 70 dB down in dual-sound mode

Operating modes, selectable on front panel

Mono (◎)	output channel 1 = M 1 (input 1)
Mono (◎ + P)	output channel 1 = M 1 output channel 2 = M 1 unmodulated pilot signal
Dual sound (2-T)	output channel 1 = M 1 output channel 2 = M 2 + pilot signal, modulated with 274.1 Hz
Stereo (◯◯)	output channel 1 = (L + R)/2 output channel 2 = R + pilot signal, modulated with 117.5 Hz

Potentiometer adjustments on front panel

Amplitude (A)	level CH2/CH1, setting range approx. ±0.5 dB
Phase (φ)	phase CH1/CH2, setting range approx. 3° at 15 kHz
Pilot level (P)	output level setting range approx. +6 dB, referred to nominal value -15.6 dBm (unmodulated)

General Data

Rated temperature range	+5 to +35°C
Operating temperature range	+5 to +45°C
Storage temperature range	-40 to +70°C
Power supply	+12 V/35 mA at pin 16 of rear male connector -12 V/35 mA at pin 18 of rear male connector
Dimensions H x W x D	132 mm x 24 mm x 315 mm
Weight	approx. 0.5 kg
Colour	grey, RAL 7035

Order designation ..... ▶ TV Dual-Sound Coder SBUF-E7
241.3812.00