



RO.VE.R. BROADCAST

PRELIMINARY INFORMATION

mod. "DM3/D..."
STANDARD

PROFESSIONAL AGILE TV STEREO IF-RF RECEIVER/DEMODULATOR with TELETEXT and RS 232 FOR ADJACENT CHANNELS

- REMOTE PROGRAMMABLE VIA RS 232
- PROGRAMME/CHANNEL OR FREQUENCY SELECTION
- 100 STORABLE PROGRAMMES OR CONFIGURATIONS
- INPUT FREQUENCY FROM 46.25 TO 860.25 MHz
- N.1 VIDEO/TXT OUTPUT
- N.2 ISOLATED VIDEO OUTPUTS
- HIGH AUDIO/VIDEO QUALITY
- INPUT LEVEL RANGE 50 to 120 dB μ V
- INPUT LEVEL ALARM INDICATOR
- ALL STANDARDS AVAILABLE (B-G-I-D-K-L-M-N) ON REQUEST
- LINE 15 ZERO CARRIER PULSE
- SIMULTANEOUS MONO & STEREO BALANCED AUDIO OUTPUTS
- 50 dB SWITCHABLE ATTENUATOR AT THE RF INPUT
- CONVENIENT FRONT PANEL TUNING CONTROLS & ADJUSTMENTS
- EXT. I.F. LOOP-THROUGH, ALLOWS SIGNAL REPLACEMENT WITH AN ALTERNATIVE I.F. SOURCE
- MONITORING I.F. OUTPUT



TECHNICAL SPECIFICATIONS

RF (down converter)

- Input freq. range: 46.25 - 860.25 MHz
- Input frequency step: 62,5 KHz
- Input level range (to lock on AGC):
55 to 80 dB μ V with 0 dB RF atten.
80 to 120 dB μ V with 50 dB RF atten.
- Input impedance: 50 Ω ("N" connector)
- Image frequency rejection: ≥ 70 dB
- Adjacent channel rejection: ≥ 60 dB
- IF output frequency: 38.9 MHz
- IF output level: -23 dBm
- IF output imped.: 50 Ω ("BNC" connector)
- IF output return loss: ≥ 23 dB
- Noise figure: 7 dB ± 2

IF (demodulator)

- Vision carrier frequency: 38.9 MHz
- Video carrier level input:
-48 to -8 dBm
- Input impedance: 50 Ω , (BNC connector)
- Return loss from 33 to 41 MHz: ≥ 23 dB
- Bandwidth: according to the standard

VIDEO (through IF input)

- Bandwidth: according to the standard
- Output level: 1 VpV
- Output level adjustment: $\pm 8\%$
- Output level variation from 0 to +50°C: $\pm 1\%$
- Output dc level: 0 V (synchro level)
- Output impedance: 75 Ω , (BNC connector)
- Return loss from 0 to 7 MHz: > 32 dB
- Level variation on output 1: with output 2 & 3 open or loaded & viceversa: $< 0.5\%$
- Frequency response:
0,5 dB (25 Hz to 4,43 MHz)
- B L D: $\leq 2\%$
- Tilt: $\leq 1\%$
- $\Delta 2T$: $\leq 5\%$
- Static non linearity: $\leq 2.5\%$
- Chroma Subcarrier 331: $\leq 5.5\%$
- 331 line intermodulation: $< 1\%$
- Chroma Subcarrier 20 T: $\leq 4\%$
- 20T pulse intermodulation: $< 3\%$ stereo

- Luminance/chrominance delay flatness from 0 to 4.43 MHz: $\leq \pm 40$ ns
- Differential gain (5th step): $\leq 1\%$
- Differential phase (5th step): $\leq 4.5^\circ$
- Sync: $\leq 3.5\%$
- Burst: $\leq 4\%$
- Weighted S/N: ≥ 61 dB (IF level > -23 dBm)

TELETEXT

- Video OUT level: 1 VpV (at out 3)
- Selection: on front panel

VIDEO (through RF input)

- Frequency response:
25 Hz (± 1.5 dB) to -4.43 MHz
- Chroma Subcarrier 331: $\pm 15\%$ (25 max.)
- Chroma Subcarrier 20T: $\pm 15\%$ (25 max.)
- Burst: $\pm 15\%$ (25 max.)
- Weighted S/N: ≥ 55 dB

AUDIO SUBCARRIER (output)

- Audio subcarrier freq.: 4.5 to 6.5 MHz
- Audio subcarrier level: -19 dBm
- S.C. output impedance: 75 Ω
(BNC connector)
- S.C. return loss from 2.5 to 10 MHz:
 ≥ 20 dB

MONO AUDIO (through IF input)

- Subcarrier frequency:
from 4.5 to 6.5 MHz: according to standard
- Out imped.: ≤ 20 Ω balanced (XLR connector)
- Freq. response 40 Hz to 14,5 KHz: ± 0.3 dB
- Output level: 9 dBm
- Output level adjust.: from +1 to +12 dBm
- Harmonic distortion at +9 dBm: $\leq 0.4\%$
- Weighted S/N: ≥ 62 dB, IF level -23 dBm
- De-emphasis, selectable: 50 μ S - 75 μ S
- Headphones output level: +1/9 dBm
switchable (internal jumper)
- Headphones out conn.: \varnothing 6 mm fem. jack
- Headphones output impedance: < 1 Ω
- Headphones output current: > 55 mA

MONO AUDIO (through RF input)

- Weighted S/N: ≥ 59 dB

DUAL CARRIER STEREO AUDIO DECODER (at IF input)

- S.C. 1 frequency: 5.5 MHz
- S.C. 2 frequency: 5.74 MHz
- Output impedance: ≤ 20 Ω balanced
(XLR connector)
- Freq. resp. 40 Hz to 14,5 KHz: ± 0.3 dB
- Output level: 9 dBm
- Output level adjust.: from +2 to +10 dBm
- Harmonic distortion +9 dBm: ($< 0.5\%$ mono),
($< 0.7\%$ stereo)
- Cross talk stereo: > 48 dB
(at 1 KHz, dev. 50 KHz)
- Weighted S/N (RMS Detector):
 ≥ 62 dB mono, ≥ 55 dB stereo
- De-emphasis: 50 μ S
- Headphones output level: +1/9 dBm switchable
(internal jumper)
- Headphones out conn.: \varnothing 6 mm female jack
- Headphones output impedance: < 1 Ω

DUAL CARRIER STEREO AUDIO DECODER (at RF input)

- Weighted S/N: ≥ 59 dB mono, ≥ 52 dB stereo

MODULATION DEPTH MEAS.

- Zero Carrier Pulse: on line 15

OTHERS

- RS 232 port
- Power supply voltage:
220 Vac $\pm 10\%$
- Power: 10 W
- Dimensions: 485 x 185 x 45 mm
- Units: 19" Rack, 1 unit
- Weight: 2.1 Kg
- Operation temp.: 0 to +50°C

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INTRODUCTION AND GENERAL DESCRIPTION

The "DM3/D" receiver/demodulator was designed and developed specifically for professional applications, combining easy-to-use functions with an agreeable design.

The combination of the various elements assures the maintenance of the various radio-electrical characteristics even in the most difficult, prolonged operating conditions.

The "DM3/D" receiver/demodulator is able to provide high quality audio/video signals, which makes it ideal for use as a relay receiver or monitoring and control demodulator for automatic stations.

The shielding was designed with special constructive solutions in order to guarantee a perfect performance

even in the presence of strong local electromagnetic fields.

The "DM3/D" receiver/demodulator was designed using the best electronic components available, applying each element on the basis of its continuous use.

During the test stages, the equipment undergoes thermic cycles, mechanical vibration and accelerated ageing. This is followed by the final test of its features.

Each piece of equipment has all its specifications checked both before and after the ageing process.

The circuit boards are arranged according to the function of each block and to simplify any up-grading or repair.

HOW TO USE THE "DM3/D"

1) START-UP PROCEDURE

- Connect the RF signal to the **RF IN** [40] "N" connector on the rear panel
 - Position the **RF ATTENUATOR** [39] slide switch on the rear panel according to the RF level available (**0 dB** or **50 dB**)
 - Using a BNC/BNC cable, bridge the **I.F. OUT** [33] connector with the **I.F. IN** [32]
 - The demodulated video signal is available at connectors **VIDEO 1 OUT** [30], **VIDEO 2 OUT** [36] and **VIDEO 3 OUT + TXT** [35]
 - The mono demodulated audio signal is available at the XLR connector **AUDIO OUT MONO** [31] and the stereo audio signal at XLR connectors **AUDIO OUT RIGHT 2B** [26] and **LEFT 1A** [27]
 - Another I.F. 38.9 MHz signal is available at the **I.F. OUT MONITOR** [34] connector.
 - A sub-carrier audio signal is available at the **S.C. OUT** [29] connector.
 - Connect the mains [41] and turn on the "DM3/D" [1]
 - Position the **KEYS** [20] slide switch to "ON" to activate the front keyboard
 - The **CH/PRG** [8] key selects CHANNEL mode or PROGRAMME mode. In CHANNEL mode the UP ▲ [7] and DOWN ▼ [22] keys set the desired channel
- N.B.** on the **DISPLAY** [5] the special "S" channels are shown by the letter **S**, for example **S 13**

2) HOW TO CHECK THE SIGNAL LEVEL

The two **RF INPUT LEVEL** LEDs [3] and [4] indicate if the level of the tuned channel's RF signal is sufficient (green LED "OK" [3]), insufficient (red LED "LOW" [4]) or too high (both LEDs [3] + [4] "FLASH = Too HIGH" alternately flashing).

3) HOW TO STORE A CHANNEL IN A PROGRAMME

- Press the **CH/PRG** [8] key to start from CHANNEL mode (the display should show **CH ...**).
- Press the UP ▲ [7] and DOWN ▼ [22] keys to set the desired channel to be stored.
- Press the **MEMORY/ CONFIG. SAVE** key [23] (the display will start flashing).
- Set the programme number where you wish to store the tuned channel using the ▲ [7] or ▼ [22] keys.
- Press the **MEMORY/CONFIG. SAVE** [23] key to store, es. **P 01**

N.B. The ▲ [7] & ▼ [22] keys only call up the programmes stored (it is possible to store up to 99 programmes)

4) HOW TO CALL UP AND STORE TELETEXT PAGES

- Press the **CH/PRG** [8] key to start from PROGRAMME mode (the display must show **Pr...**)
 - Press the **TV/TXT** [6] key to activate the teletext (available at the **VIDEO 3 OUT + TXT** [35] connector)
- N.B.** The **TV/TXT** key activates the teletext only if the tuned channel contains teletext information)
- Press the UP ▲ [7] or DOWN ▼ [22] keys to select the page to be shown, for example **P 199**
 - Press the **MEMORY/CONFIG. SAVE** [23] key twice to store the chosen page in its associated tuned programme.

5) HOW TO SELECT THE FREQUENCY READING

- N.B.** This can be carried out in either PROGRAMME or CHANNEL mode.
- Press the **MHz/KHz** [21] key. The display will first show the frequency in MHz, e.g. **F 175**, and pressing once again the frequency in KHz, e.g. **F.250**.
 - Press the ▲ [7] or ▼ [22] key to change frequency.
 - Press the **MEMORY/CONFIG. SAVE** key [23] to store

6) HOW TO SET "CONFIGURATION SAVE"

One of the three settings, channel mode **CH = CHAN**, frequency mode **F = FREQ**, or teletext pages **P = TXT** can be saved so that when the "DM3/D" is turned on it is automatically called up and shown on the display.

To do this, press down the **MEMORY/CONFIG. SAVE** [23] key for 3 seconds until the words **CH ON** appears on the display (configuration ON).

7) HOW TO CANCEL "CONFIGURATION SAVE"

To cancel the CONFIGURATION SAVE function (so that the "DM3/D" starts from Prog. 01) press down the **MEMORY/CONFIGURATION SAVE** [23] key for 6 seconds until the words **coFF** appear on the display (configuration OFF)

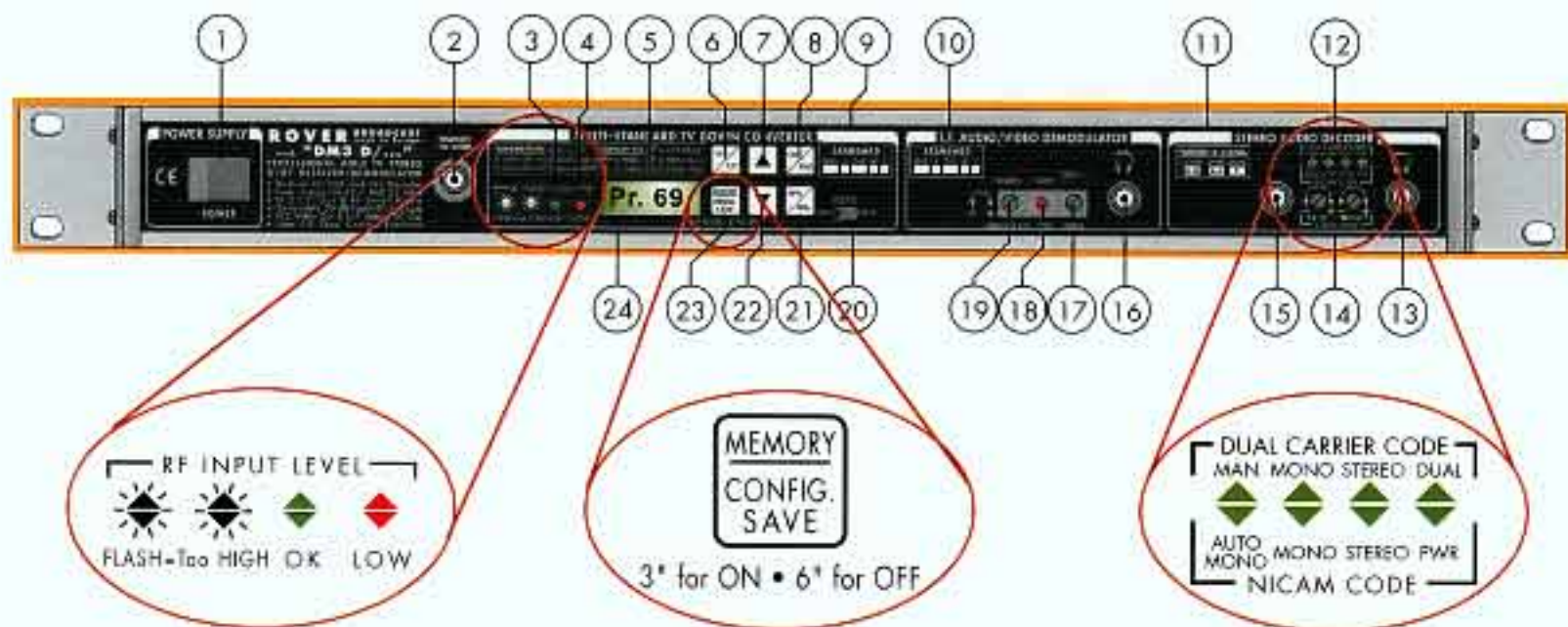
8) HOW TO INSERT THE ZERO CARRIER PULSE

Keep the **ZERO CARRIER** [17] key pressed down to insert the zero carrier pulse (line 15) at the video outputs. This allows you to measure the modulation depth using appropriate instruments.

Position the **KEYS** [20] slide switch to "OFF" to deactivate the six front panel keys.

N.B. The "DM3/D" can be connected to a PC via the RS232 socket on the rear panel [38]

FRONT PANEL



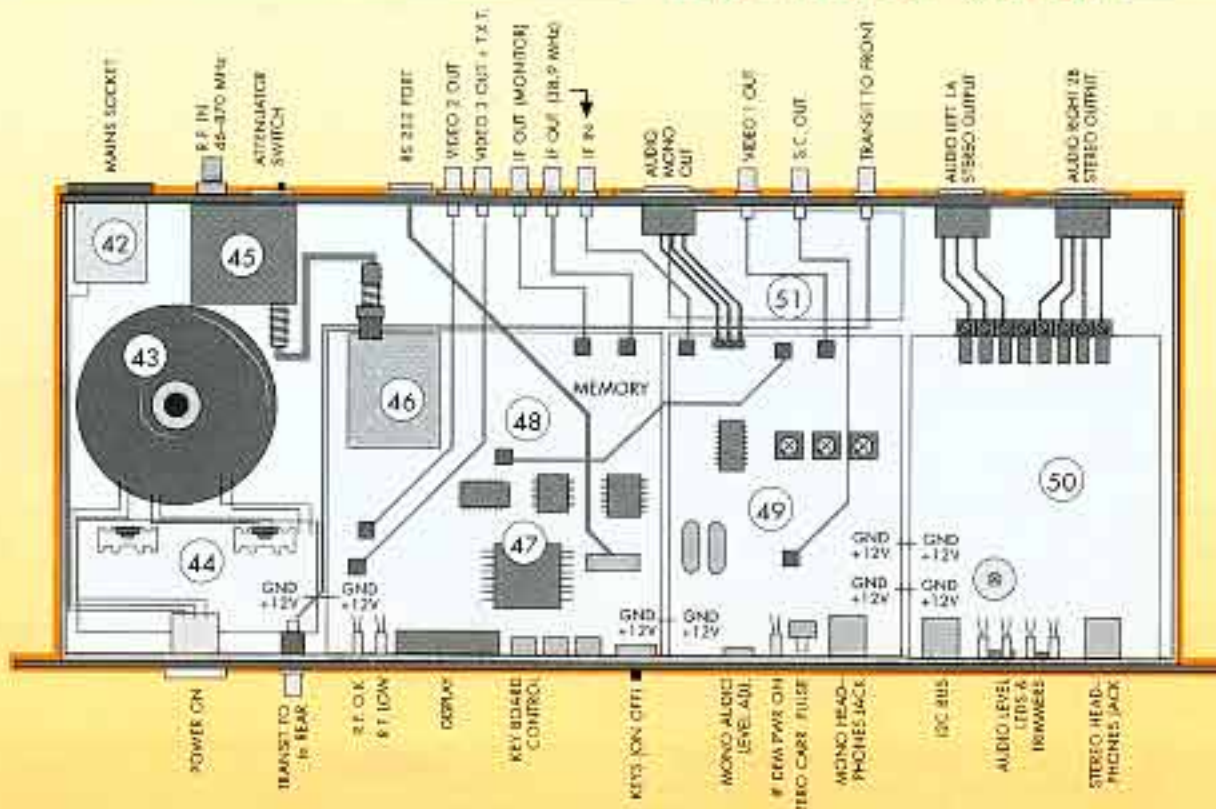
- | | |
|---|---|
| <p>1 POWER ON switch</p> <p>2 Transit to rear BNC connector (see 28)</p> <p>3 RF INPUT LEVEL "OK" green LED</p> <p>4 RF INPUT LEVEL "LOW" red LED</p> <p>5 Memorization process description</p> <p>6 TV /T.X.T. key</p> <p>7 UP ▲ key</p> <p>8 Channel/Programme selection key</p> <p>9 TV down converter standard indicator label</p> <p>10 I.F. audio/video demodulator standard indicator label</p> <p>11 Stereo audio decoder format & standard indicator label</p> <p>12 Dual carrier audio code & NICAM audio code LEDs</p> | <p>13 Stereo audio out headphones jack</p> <p>14 2B RIGHT/1A LEFT audio level adjust. trimmers</p> <p>15 I2C BUS connector (factory only)</p> <p>16 Mono audio out headphones jack</p> <p>17 Zero carrier pulse key</p> <p>18 I.F. A/V demod. board POWER ON LED</p> <p>19 Mono audio level adjust. trimmer</p> <p>20 KEYS ON/OFF switch</p> <p>21 MHz/KHz selection key</p> <p>22 DOWN ▼ key</p> <p>23 MEMORY/CONFIG. SAVE key</p> <p>24 Display</p> |
|---|---|

REAR PANEL



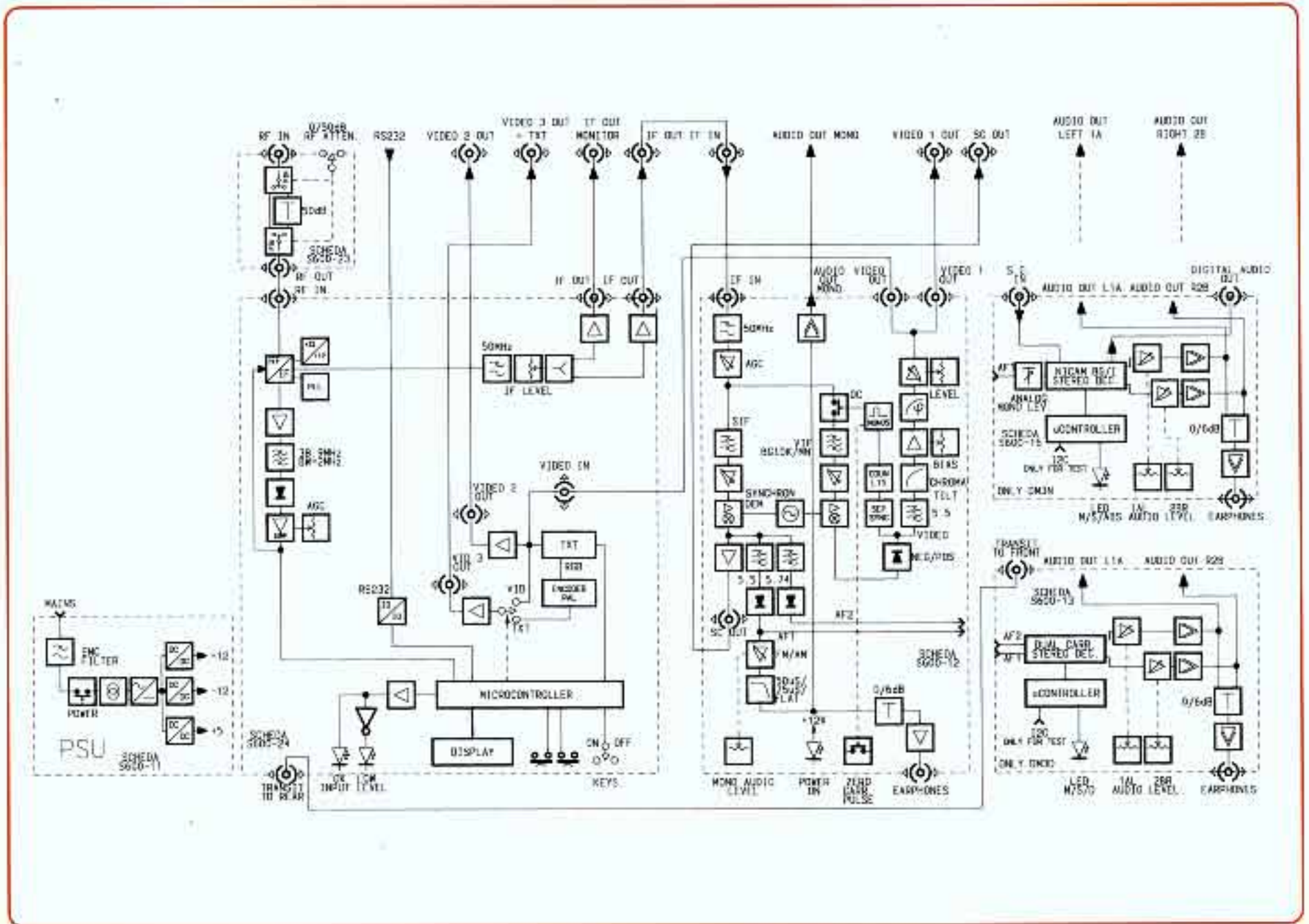
- | | |
|--|--|
| <p>25 Optional digital audio output, Nicam 75 Ω ("BNC" connector)</p> <p>26 Right 2B balanced stereo audio out ("XLR" connector)</p> <p>27 Left 1A balanced stereo audio out ("XLR" connector)</p> <p>28 Transit to front ("BNC" connector)</p> <p>29 S.C. output, -18 dBm, 75 Ω ("BNC" connector)</p> <p>30 Video 1 output ("BNC" connector)</p> <p>31 Balanced mono audio out ("XLR" connector)</p> <p>32 I.F. input, -48 to -8 dBm, 50 Ω ("BNC" connector)</p> <p>33 IF output 38,9 MHz, -23 dBm, 50 Ω ("BNC"connector)</p> | <p>34 IF output monitor, -23 dBm, 50 Ω ("BNC"connector)</p> <p>35 Video 3 output+ T.X.T. ("BNC"connector)</p> <p>36 Video 2 output ("BNC"connector)</p> <p>37 Ground screw</p> <p>38 RS 232 socket</p> <p>39 Input RF attenuator 0 to 50 dB switch</p> <p>40 R.F. input 46-870 MHz, 50 Ω ("N"connector)</p> <p>41 Mains connection (230 Vac only) and fuse</p> |
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INTERNAL VIEW



- | |
|--|
| <p>42 Mains receptacle with filter and fuse</p> <p>43 Mains transformer</p> <p>44 Switching power supply board</p> <p>45 0 to 50 dB RF INPUT attenuator and preamplifier</p> <p>46 Tuner</p> <p>47 Microprocessor</p> <p>48 TV down converter, TXT and microcontroller board</p> <p>49 IF video demodulator/mono audio board</p> <p>50 Audio stereo decoder board</p> <p>51 Optional RF, Video, TXT alarms board</p> |
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BLOCK DIAGRAM



CHANNEL / MHz TABLE & DISPLAY INDICATION

Any country's channel plan can be supplied on request

EUROPE / ITALY

CHS	DISP.	MHz	CHS	DISP.	MHz	CHS	DISP.	MHz	CHS	DISP.	MHz	CHS	DISP.	MHz	CHS	DISP.	MHz	CHS	DISP.	MHz			
E2	E2	48.25	S7	S7	147.25	H2	H2	224.25	S24	S24	327.25	S38	S38	439.25	31	31	551.25	45	45	663.25	59	59	775.25
A	A	53.75	S8	S8	154.25	S11	S11	231.25	S25	S25	335.25	S39	S39	447.25	32	32	559.25	46	46	671.25	60	60	783.25
E3	E3	55.25	S9	S9	161.25	S12	S12	238.25	S26	S26	343.25	S40	S40	455.25	33	33	567.25	47	47	679.25	61	61	791.25
B	b	62.25	S10	S10	168.25	S13	S13	245.25	S27	S27	351.25	S41	S41	463.25	34	34	575.25	48	48	687.25	62	62	799.25
S01	S01	69.25	D	d	175.25	S14	S14	252.25	S28	S28	359.25	21	21	471.25	35	35	583.25	49	49	695.25	63	63	807.25
S02	S02	76.25	E6	E6	182.25	S15	S15	259.25	S29	S29	367.25	22	22	479.25	36	36	591.25	50	50	703.25	64	64	815.25
C	C	82.25	E	E	183.75	S16	S16	266.25	S30	S30	375.25	23	23	487.25	37	37	599.25	51	51	711.25	65	65	823.25
S03	S03	83.25	E7	E7	189.25	S17	S17	273.25	S31	S31	383.25	24	24	495.25	38	38	607.25	52	52	719.25	66	66	831.25
S1	S1	105.25	F	F	192.25	S18	S18	280.25	S32	S32	391.25	25	25	503.25	39	39	615.25	53	53	727.25	67	67	839.25
S2	S2	112.25	E8	E8	196.25	S19	S19	287.25	S33	S33	399.25	26	26	511.25	40	40	623.25	54	54	735.25	68	68	847.25
S3	S3	119.25	G	9	201.25	S20	S20	294.25	S34	S34	407.25	27	27	519.25	41	41	631.25	55	55	743.25	69	69	855.25
S4	S4	126.25	E9	E9	203.25	S21	S21	303.25	S35	S35	415.25	28	28	527.25	42	42	639.25	56	56	751.25	70	70	863.25
S5	S5	133.25	H	H	210.25	S22	S22	311.25	S36	S36	423.25	29	29	535.25	43	43	647.25	57	57	759.25	71	71	871.25
S6	S6	140.25	H1	H1	217.25	S23	S23	319.25	S37	S37	431.25	30	30	543.25	44	44	655.25	58	58	767.25			

Warning: Some letters, for example "S" may be read as "5"