

GV-198

TV GENERATOR

**Test Equipment
Depot**
1-800-517-8431

99 Washington Street
Melrose, MA 02176
Fax 781-665-0780
TestEquipmentDepot.com



TABLE OF CONTENTS

1	GENERAL.....	1
1.1	Description.....	1
1.2	Specifications.....	1
2	SAFETY RULES.....	5
2.1	Generals.....	5
3	INSTALLATION.....	9
3.1	Power requirements.....	9
3.2	Installation.....	10
4	OPERATING INSTRUCTIONS.....	11
4.1	Description of the controls.....	11
4.2	Output description.....	15
4.2.1	Composite video output.....	15
4.2.2	Euroconnector (EN50049 DIN connector).....	15
4.2.3	CS Output.....	15
5	MAINTENANCE.....	17
5.1	Replacing the mains fuse.....	17
5.2	Cleaning recommendations.....	17

TV GENERATOR

GV-198

1 GENERAL

1.1 Description

The new **GV-198** TV pattern generator has been designed in accordance with the latest trends of modern electronics industry technology. It is easy to use, compact and sturdy and it covers a wide range of applications, TV standards and formats thus being ideal for service of TV sets, projectors and flat screens.

GV-198 portability makes it an efficient partner for after sales service professionals both in the workshop tasks as well as customers home repairs. Direct access keys to nine different patterns allow for quick essential tests on television receivers and easy identification of potential technical problems through visual picture examination.

There are 4:3 and 16:9 format patterns and it covers PAL / SECAM /NTSC colour systems and B / G / D / K / L / I / M / N standards. A comfortable rotary knob gives access to the various functions available. The built-in frequency synthesised RF modulator can be tuned from 37 MHz to 865 at 50 KHz steps. Tuning can also be performed by channel using CCIR, OIRT or FCC channel tables. RF modulated signal level can be adjusted in a 50 dB range at 10 dB steps.

GV-198 settings are displayed in a large and bright 2 x 16 character display and it has 10 memories for storing 10 different test configurations. This unique pattern generator has EUROCONNECTOR interface, composite video and sync outputs.

1.2 Specifications

TV SYSTEM

System	PAL / SECAM	NTSC
RF standard	PAL B/G, D/K, I, N SECAM B/G, D/K, L	M

No. of lines / field	625	525
Frame frequency	50 Hz.	60 Hz.
Line frequency	15625 Hz.	15734 Hz.
Horizontal synchronism		
Line period (1/f_H)	64 μs ± 100 ns	63.56 μs ± 100 ns
Previous pedestal	1.6 μs ± 100 ns	1.59 μs ± 100 ns
Synchronism	4.8 μs ± 100 ns	4.77 μs ± 100 ns
Blanking	12 μs ± 100 ns	11.12 μs ± 100 ns
Vertical synchronism		
Frame period	20 ms ± 100 ns	16.68 ms ± 100 ns
	(H=64 μs)	(H=63.56 μs)
Blanking	25 H + 12 μs	21 H + 11.12 μs
Pulse time of:		
Pre-equalizing	2.5 H	3 H
Equalizing	2.5 H	3 H
Post-equalizing	2.5 H	3 H
PAL colour subcarrier		
Frequency (B, G, H, D, K, I)	4.43361875 MHz <± 30 ppm (10 °C to 40 °C)	
Frequency (N)	3.58205625 MHz <± 30 ppm (10 °C to 40 °C)	
Frequency (M)	3.5756118 MHz <± 30 ppm (10 °C to 40 °C)	
Burst duration	2.4 μs (10 ± 1 Fsc period)	
Burst position	5.6 μs + 100 ns from the line previous synchronism flank.	
Phase	135° as referred to U axis	
Amplitude Error	± 5%	
Burst	ON / OFF, selectable	
Chrominance	ON / OFF, selectable	
NTSC colour subcarrier (M)		
Frequency (M)	3.579545 MHz <± 30 ppm (10 °C to 40 °C)	
Burst duration	2.38 μs (10 ± 1 Fsc period)	
Burst position	5.56 μs + 100 ns from the line previous synchronism flank.	
Phase	-180° as referred to U axis	
Amplitude Error	± 5%	
Burst	ON / OFF, selectable	
Chrominance	ON / OFF, selectable	
SECAM colour subcarrier (B, G, H, D, K, L)		
Subcarrier frequency	Fdr = 4.406250 MHz ± 2 kHz	
	Fdb = 4.250000 MHz ± 2 kHz	
Line identification points	Selectable ON / OFF using burst key	

Chroma signal
Amplitude $D'r = -1.9 (E'r - E'y)$
 $D'r = -1.5 (E'b - E'y)$

Chroma pre-correction Bell filter

DISPLAY Digital, 16 characters, with backlight, with memory indication, TV standard and sound system, SCART commutation, channel and frequency (5 digits). Attenuation level

TEST PICTURES

Pattern charts available

- 1.- Colour bars
- 2.- Red pattern
- 3.- Green pattern
- 4.- Blue pattern
- 5.- Checkboard
- 6.- 100% white pattern
- 7.- Black pattern
- 8.- Grid
- 9.- Dots

RADIOFREQUENCY OUTPUT

Range From 37 to 865 MHz (synthesized)
Tuning By frequency: in 50 kHz steps
Channel plans CCIR, OIRT and FCC
Frequency indication 5 digits
Output amplitude 85 dB μ V \pm 3 dB
Attenuator 50 dB (in 10 dB steps)
Impedance 75 Ω
Connector BNC

VIDEO MODULATION

Modulation type AM double side band
Modulation index 85%

SOUND MODULATION (MONO MULTISTANDARD)

Carrier ON / OFF selectable
Carrier frequency 4.5 MHz (M, N)
5.5 MHz (B, G, H)
6.0 MHz (I)
6.5 MHz (D, K, L)
Sound / video carrier ratio 13 dB
Modulation type FM int. (1 kHz) (M, N, B, G, H, D, K, I)
AM int. (1 kHz) (L)
FM modulation
Pre-emphasis 50 μ s (B, G, H, D, K, I)
75 μ s (M, N)

Modulation deviation	30 kHz	(FM) (B, G, H, D, K, I)
	15 kHz	(FM) (M, N)
Modulation indication	50%	(AM)

COMPOSITE VIDEO SIGNAL

Amplitude	1 Vpp
Bias	Negative
Output impedance	75 Ω
Connector	BNC and EUROCONNECTOR

R-G-B OUTPUTS

Amplitude	0.7 Vpp
Output impedance	75 Ω
Connector	EUROCONNECTOR

TRIGGER OUTPUT FOR OSCILLOSCOPE

Signal	Vertical + Horizontal
Amplitude	2.5 Vpp
Output impedance	1 k Ω
Connector	BNC

LOW FREQUENCY OUTPUT

Amplitude	500 mVpp
Frequency	1 kHz
Output impedance	10 k Ω
Connector	EUROCONNECTOR

POWER SUPPLY

Mains voltage	110-125-220-230 / 240 V AC \pm 10% / 50-60 Hz
Consumption	15 W

OPERATING ENVIRONMENT CONDITIONS

Max. altitude	2000 m
Temperature range	From 5 $^{\circ}$ C to 40 $^{\circ}$ C
Max. relative humidity	80% (up to 31 $^{\circ}$ C), decreasing lineally up to 10% at 40 $^{\circ}$ C.

PHYSICAL FEATURES

Dimensions	W. 212 x H. 102 x D. 241 mm
Weight	1.78 kg

ACCESSORIES INCLUDED

- 90901207 BNC/TV coaxial cable, CC-07
- 90901105 Mains cable, CA-05
- Spare fuse, 5 x 20 mm, 250 mA, F, 250V

2 SAFETY RULES



2.1 Generals

- * Use this equipment connected **only to devices or systems with their common at ground potential** or insulated from the mains.
- * This is a **class I** equipment, for safety reasons plug it to a supply line with the corresponding **ground terminal**.
- * This equipment can be used in **Over-Voltage Category II** installations and **Pollution Degree 1** environments.
- * When using some of the following accessories **use only the specified ones** to ensure safety:
 - Power cord
- * Observe all **specified ratings** both of supply and measurement.
- * Remember that voltages higher than **60V DC** or **30V AC rms** are dangerous.
- * Use this instrument under the **specified environmental conditions**.
- * **The user is only authorized to** carry out the following maintenance operations:
 - Replace the mains fuse of the **specified type** and **value**.
 - On the Maintenance paragraph the proper instructions are given.
 - Any other change on the equipment should be carried out by qualified personnel.
- * **The negative of measurement** is at ground potential.
- * **Do not obstruct the ventilation system**.
- * Follow the **cleaning instructions** described in the Maintenance paragraph.

* Symbols related with safety:



DIRECT CURRENT



ALTERNATING CURRENT



DIRECT AND ALTERNATING



GROUND TERMINAL



PROTECTIVE CONDUCTOR



FRAME TERMINAL



EQUIPOTENTIALITY



ON (Supply)



OFF (Supply)



DOUBLE INSULATION PROTECTED
(CLASS II Protection)



CAUTION
(Risk of electric shock)



CAUTION REFER TO ACCOMPANYING DOCUMENTS



FUSE

2.2 Descriptive Examples of Overrange Categories

Cat I Low voltage installations isolated from the mains.

Cat II Portable domestic installations.

Cat III Fixed domestic installations.

Cat IV Industrial installations.

3 INSTALLATION

3.1 Power requirements

This equipment requires a mains power source of 110-125-220 or 230/240 V AC 50 to 60 Hz. Mains operating voltage can be selected at the rear panel.

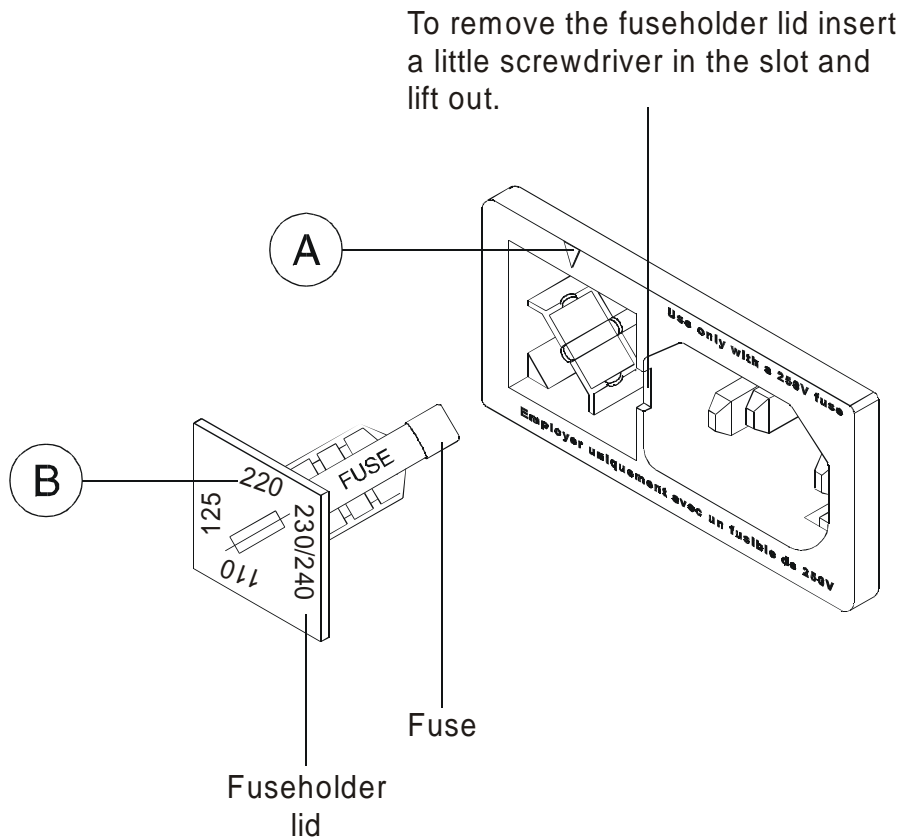


Figure 1.- Selection of mains voltage.

- 1.- Pull out the fuseholder lid.
- 2.- Set the proper fuse for the desired mains voltage.
- 3.- Insert the fuseholder lid so the [A] pointer faces the desired mains voltage display [B].

CAUTION THE EQUIPMENT IS FACTORY SET FOR 220 V OPERATING VOLTAGE.

BEFORE SWITCHING ON THIS INSTRUMENT, SET THE VOLTAGE SELECTOR TO THE PROPER POSITION AND BE SURE THAT THE FUSE VALUE IS ACCORDING TO THE MAINS VOLTAGE.

AVOIDING THIS DIRECTIONS COULD DAMAGE THE EQUIPMENT.

3.2 Installation

The equipment is prepared for use as desk top equipment.

4 OPERATING INSTRUCTIONS

4.1 Description of the controls

Front Panel

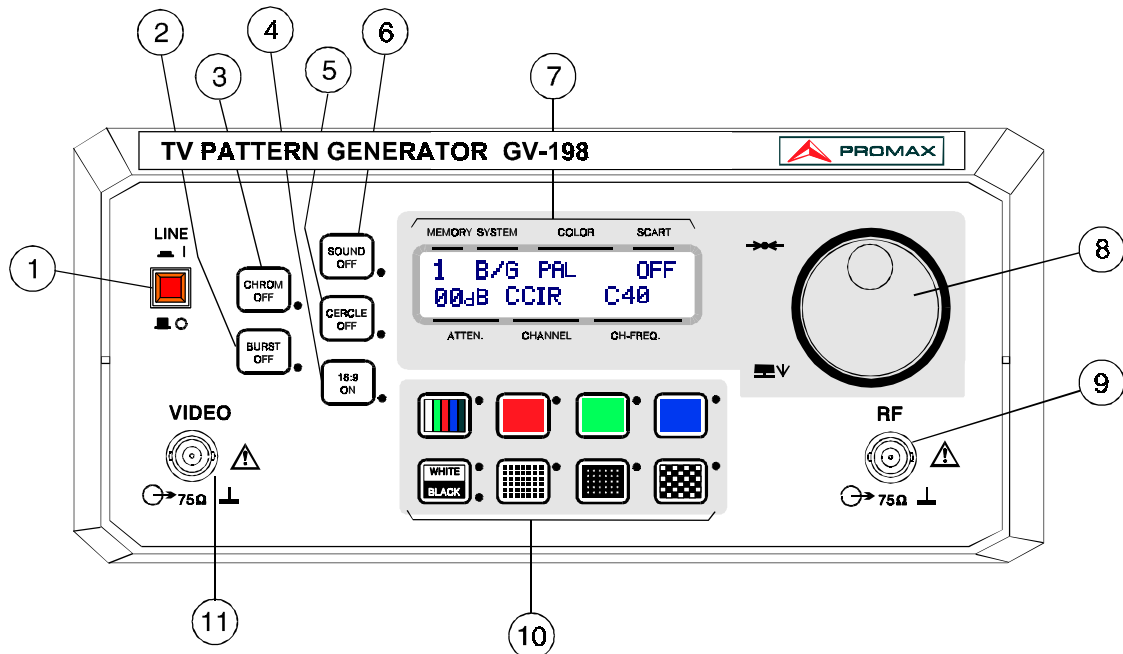



Figure 2.- Front panel

- [1] **LINE**
Mains switch.
- [2] **BURST OFF**
With the luminous indicator lit the burst pulse is disabled.
- [3] **CHROM OFF**
With the luminous indicator lit the chrominance pulse is disabled.
- [4] **16:9 ON**
With the luminous indicator lit the signal format is 16:9.
- [5] **CIRCLE OFF**
With the luminous indicator lit there is not circle signal.
- [6] **SOUND OFF**
With the luminous indicator lit there is not sound carrier.
- [7] Set-up numeric display.
- [8] Rotary selector
- [9]  **RF**
RF output

[10] Keyboard chart

[11]  **VIDEO**
Composite video output

Set-up numeric display

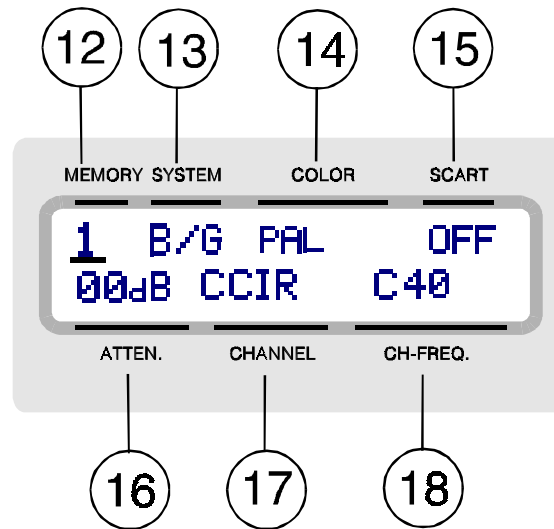


Figure 3.- Set-up numeric display

The chart generator **GV-198** allows to set a large variety of parameters, through the keyboard and the rotary selector. In order to be able to select the most habitual configurations with no need to modify the parameters individually, the equipment offers the possibility of storing in memory up to 10 configurations [1 to 10].

The display movement is done turning the rotary selector [8] the location is indicated by means of an emphasised script underneath of each selection. In order to change the selected value the rotary selector [8] must be pressed once and when is selected the digit blinks. When turning the rotary selector in this position, the selection changes based on the possibilities available. In order to quit the selection the rotary selector must be pressed again.

[12] **MEMORY**

It indicates the position of active memory. When turning on, it appears in the position 1. In the memory all the values that appear in display, in the chart selection and the other function keys of the panel are stored. In order to modify the content of a memory, it will have to enter this field, select the wished memory number and to keep pressed the rotary selector until the configuration beep is heard.

[13] **TELEVISION SYSTEM**

Selection of the television system B / G, I, D / K, L, M or N.

[14] **COLOUR SYSTEM**

Selection of the colour system between the PAL, NTSC or SECAM.

- [15] **SCART COMMUTATION**
In position OFF there is not output in pin 8 of the SCART. In position ON there is 12 V in format 4:3 or 5 V in format 16:9 in pin 8 of the **SCART**.
- [16] **ATTEN**
It indicates the RF signal attenuation in dB. The maximum attenuation is 50 dB and is increased or decreased in steps of 10 dB.
- [17] **MODE TUNING**
Tuning mode selection between frequency-tuning FRQ or channel-tuning, in this last case appears on display the table name of channels CCIR, STDL or FCC (See appendix A).
- [18] **TUNING**
Selection of RF output frequency. In the frequency-tuning mode, this parameter can vary between 37 and 865 MHz in 50 kHz steps. In the channel-tuning mode, it appears the channel name.

Keyboard chart

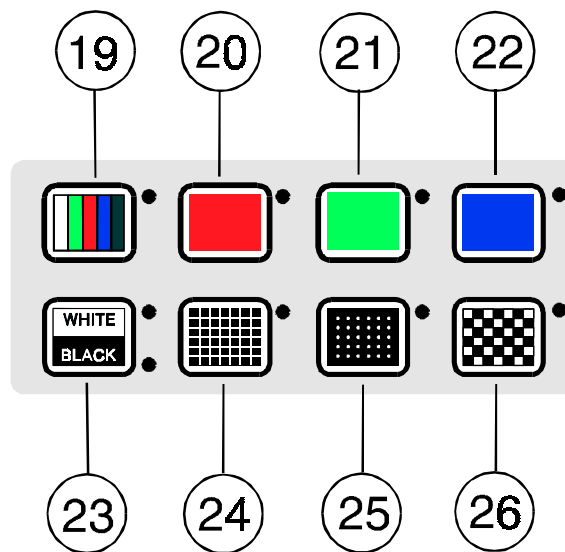


Figure 4.- Keyboard chart

Chart selection: The chart keyboard [10] allows the selection of a chart when pressing the corresponding key. The LED that accompanies the keys will indicate the selected chart. In the case of WHITE/BLACK [23] chart, the hold pulsation of this key will make appear the white or black chart.

- [19] **Chart no. 1**
Colour bars 100 / 0 / 75 / 0. It does not admit circle.
- [20] **Chart no. 2**
Red signal full picture.

- [21] **Chart no. 3**
Green signal full picture.
- [22] **Chart no. 4**
Blue signal full picture.
- [23] **Chart no. 5 and 6**
Pressing the key repeatedly to go from the white chart to the black chart.
- [24] **Chart no. 7**
Convergence format 4:3.
16 vertical lines x 13 white horizontal lines on black background. In the left upper zone there is a white square.
Convergence format 16:6.
22 vertical lines x 13 white horizontal lines on black background. In the left upper zone there is a white square.
- [25] **Chart no. 8**
Points format 4:3.
16 vertical points x 13 white horizontal points on black background.
Points format 16:6.
22 vertical points x 13 white horizontal points on black background.
- [26] **Chart no. 9**
Checkerboard format 4:3.
9 alternating black and white squares in horizontal and 7 in vertical.
Checkerboard format 16:6.
11 alternating black and white squares in horizontal and 7 in vertical.

Rear panel

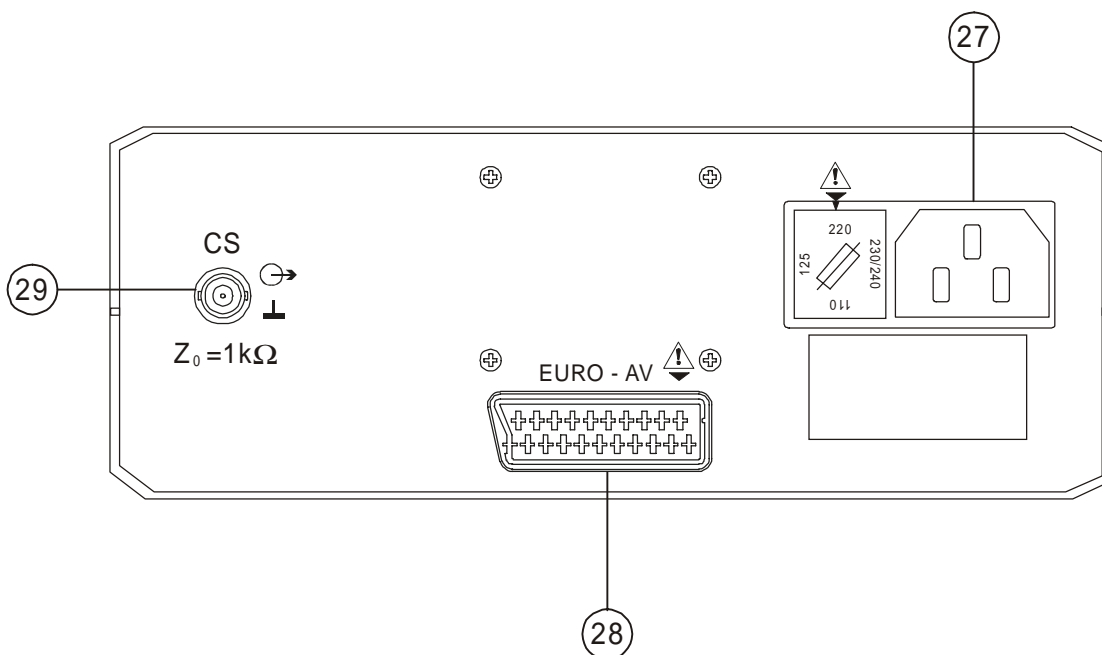


Figure 5.- Rear panel

- [27] Mains supply and fuse-holder set with voltage selector
- [28] **EURO-AV**
Euroconnector or SCART.
- [29] **CS** \rightarrow
CS signal output.

4.2 Output description

4.2.1 Composite video output

Positive composite video signal can be drawn through connector BNC, VIDEO \rightarrow [11] on the front panel, with 1 Vpp amplitude and 75 Ω output impedance.

CAUTION

This signal should never be switched to voltage circuit points, but only on video signal standardized inputs with 75 Ω impedance. Damages arisen in the unit ensuing from neglecting this caution are not covered by warranty.

4.2.2 Euroconnector (EN50049 DIN connector)

Generator **GV-198** is provided with an EUROCONNECTOR type connector, also known as SCART connector or PERITEL connector (according to NF-C92250 standard). Output signals from this connector are:

PIN No.	SIGNAL
1-3	1 kHz sound output
4	Sound ground
5	Blue ground (B)
7	Blue output (B)
9	Green ground (G)
11	Green output (G)
13	Red ground (R)
15	Red ground (R)
17	Composite video ground
19	Composite video output
21	Connector shell ground

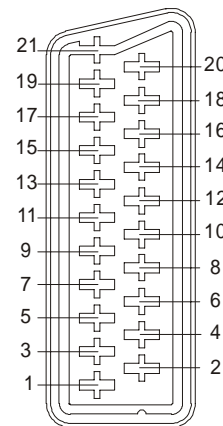


Figure 6.- Description of EUROCONNECTOR switching pins

4.2.3 CS Output

Output of composite impulses of negative polarity synchronisms (horizontal and vertical).

5 MAINTENANCE

5.1 Replacing the mains fuse

The fuseholder lid is placed in the mains base (see figure 1).

To substitute the fuse, disconnect the power cord.

With an appropriate screw driver remove the fuseholder lid.

Substitute the melt fuse for another of the following characteristics:

IMPORTANT

FUSE TYPE SHOULD BE: 5 x 20 mm., 250 V, F, and:

250 mA FOR ALL VOLTAGES

AVOIDING THIS DIRECTIONS COULD DAMAGE THE EQUIPMENT.

When inserting the fuseholder lid be careful that the voltage selector is in the correct position according to the mains.

5.2 Cleaning recommendations

CAUTION

TO CLEAN THE COVER, TAKE CARE THE INSTRUMENT IS DISCONNECTED.

CAUTION

DO NOT USE SCENTED HYDROCARBONS OR CHLORIZED SOLVENTS. SUCH PRODUCTS MAY ATTACK THE PLASTICS USED IN THE CONSTRUCTION OF THE COVER.

The cover should be cleaned by means of a light solution of detergent and water applied with a soft cloth.

Dry thoroughly before using the system again.

APÉNDICE A: Tablas de canal-frecuencia**APPENDIX A: Channel-frequency tables****ANNEXE A: Tables canal-fréquence**

	Ch.	Freq.	Ch.	Freq.	Ch.	Freq.	Ch.	Freq.	Ch.	Freq.	Ch.	Freq.
CCIR	E02	48,25	E09	203,25	S24	327,25	S41	463,25	37	599,25	54	735,25
	E03	55,25	E10	219,25	S25	335,25	21	471,25	38	607,25	55	743,25
	E04	62,25	E11	217,25	S26	343,25	22	479,25	39	615,25	56	751,25
	S01	105,25	E12	224,25	S27	351,25	23	487,25	40	623,25	57	759,25
	S02	112,25	S11	231,25	S28	359,25	24	495,25	41	631,25	58	767,25
	S03	119,25	S12	238,25	S29	367,25	25	503,25	42	639,25	59	775,25
	S04	126,25	S13	245,25	S30	375,25	26	511,25	43	647,25	60	783,25
	S05	133,25	S14	252,25	S31	383,25	27	519,25	44	655,25	61	791,25
	S06	140,25	S15	259,25	S32	391,25	28	527,25	45	663,25	62	799,25
	S07	147,25	S16	266,25	S33	399,25	29	535,25	46	671,25	63	807,25
	S08	154,25	S17	273,25	S34	407,25	30	543,25	47	679,25	64	815,25
	S09	161,25	S18	280,25	S35	415,25	31	551,25	48	687,25	65	823,25
	S10	168,25	S19	287,25	S36	423,25	32	559,25	49	695,25	66	831,25
	E05	175,25	S20	294,25	S37	431,25	33	567,25	50	703,25	67	839,25
	E06	182,25	S21	303,25	S38	439,25	34	575,25	51	711,25	68	847,25
	E07	189,25	S22	311,25	S39	447,25	35	583,25	52	719,25	69	855,25
E08	196,25	S23	319,25	S40	455,25	36	591,25	53	727,25			
STDL	FA	47,75	13	240	23	487,25	35	583,25	47	679,25	59	775,25
	FB	55,75	14	288	24	495,25	36	591,25	48	687,25	60	783,25
	FC1	60,5	D01	303,25	25	503,25	37	599,25	49	695,25	61	791,25
	FC	63,75	D02	315,25	26	511,25	38	607,25	50	703,25	62	799,25
	05	176	D03	327,25	27	519,25	39	615,25	51	711,25	63	807,25
	06	184	D04	339,25	28	527,25	40	623,25	52	719,25	64	815,25
	07	192	D05	351,25	29	535,25	41	631,25	53	727,25	65	823,25
	08	200	D06	363,25	30	543,25	42	639,25	54	735,25	66	831,25
	09	208	D08	387,25	31	551,25	43	647,25	55	743,25	67	839,25
	10	216	D09	399,25	32	559,25	44	655,25	56	751,25	68	847,25
	11	224	21	471,25	33	567,25	45	663,25	57	759,25	69	855,25
	12	232	22	479,25	34	575,25	46	671,25	58	767,25		
OIRT	I	49,75	XII	223,25	31	551	42	639,25	53	727,25	64	815,25
	II	59,25	21	471,25	32	559,25	43	647,25	54	735,25	65	823,25
	III	77,25	22	479,25	33	567,25	44	655,25	55	743,25	66	831,25
	IV	85,25	23	487,25	34	575,25	45	663,25	56	751,25	67	839,25
	V	93,25	24	495,25	35	583,25	46	671,25	57	759,25	68	847,25
	VI	175,25	25	503,25	36	591,25	47	679,25	58	767,25	69	855,25
	VII	183,25	26	511,25	37	599,25	48	687,25	59	775,25		
	VIII	191,25	27	519,25	38	607,25	49	695,25	60	783,25		
	IX	199,25	28	527,25	39	615,25	50	703,25	61	791,25		
	X	207,25	29	535,25	40	623,25	51	711,25	62	799,25		
	XI	215,25	30	543,25	41	631,25	52	719,25	63	807,25		

FCC

A02	55,25	15	477,25	28	555,25	41	633,25	54	711,25	67	789,25
A03	61,25	16	483,25	29	561,25	42	639,25	55	717,25	68	795,25
A04	67,25	17	489,25	30	567,25	43	645,25	56	723,25	69	801,25
A05	77,25	18	495,25	31	573,25	44	651,25	57	729,25	70	807,25
A06	83,25	19	501,25	32	579,25	45	657,25	58	735,25	71	813,25
A07	175,25	20	507,25	33	585,25	46	663,25	59	741,25	72	819,25
A08	181,25	21	513,25	34	591,25	47	669,25	60	747,25	73	825,25
A09	187,25	22	519,25	35	597,25	48	675,25	61	753,25	74	831,25
A10	193,25	23	525,25	36	603,25	49	681,25	62	759,25	75	837,25
A11	199,25	24	531,25	37	609,25	50	687,25	63	765,25	76	843,25
A12	205,25	25	537,25	38	615,25	51	693,25	64	771,25	77	849,25
A13	211,25	26	543,25	39	621,25	52	699,25	65	777,25	78	855,25
14	471,25	27	549,25	40	627,25	53	705,25	66	783,25		