

Instruction Manual
for
Model 1201SR
TV
MODULATOR/CONVERTER



BK PRECISION®

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INTRODUCTION

The **B & K-Precision** Model 1201SR TV Modulator/Converter provides a relatively low-cost method of generating modulated carrier frequencies on all U.S. VHF broadcast and CATV channels.

The unit can function in a twofold manner, as indicated by its name. The output can either be a carrier, modulated by a user's composite video source ("modulator"), or a conversion of an already-modulated channel 3 RF carrier to some other desired frequency ("converter").

Frequency-synthesis techniques provide excellent channel accuracy; this, coupled with the number of channels programmed, makes the 1201SR ideal for testing tuners and verifying correct channel assignments of "cable-ready" TV's and VCR's.

A clean front panel layout and push-button channel selection combine to facilitate use of the product.

SPECIFICATIONS

BAND AND CHANNEL SELECTION

Band	Pushbutton switches for STD TV, STD CATV, HRC CATV, and ICC CATV band selection.
Channel Readout	LED digital display.
Channel Selection	
X10 pushbutton	Advances tens digit with each push, or hold to scroll
X1 pushbutton	Advances units digit with each push, or hold to scroll
UP/DOWN pushbuttons	Increase or decrease channel selection by one channel with each push
RESET switch	Resets to CH 2.

VIDEO INPUT

Video Bandwidth	15 Hz to 4.2 MHz
Level	1 Volt peak-to-peak
Polarity	Positive (negative sync)
Input Impedance	75 ohms

RF INPUT

Frequency	Channel 3 (61.25 MHz)
Input Level	60 mV p-p maximum

OUTPUT

Frequency Coverage	U.S. VHF TV and CATV video carrier frequencies (see Table 1)*
STD TV (VHF)	Ch 2 thru Ch 13 (55.25 to 211.25 MHz)
STD TV (UHF)	Ch 14 thru Ch 18 (471.25 to 495.25 MHz)
STD CATV	Ch 0 thru Ch 70 (109.25 to 499.25 MHz)
HRC CATV	Ch 0 thru Ch 70 (108.00 to 498.00 MHz)
ICC CATV	Ch 0 thru CH 70 (109.25 to 499.25 MHz)
Level	
Using CH 3 Input	Proportional to CH 3 input level. 10 mV p-p typical at maximum CH 3 input. -20 dB attenuator step available using separate input jack
Using Video Input	10 mV p-p typical

Channel Frequency Accuracy	
Using CH 3 Input:	±50 PPM ± accuracy of channel 3 input signal
Using Video Input:	±50 PPM ±0.008 MHz
Impedance	75 ohms

MISCELLANEOUS:

Power Requirements	100, 120, 220, 240 VAC ±10%, 50/60 Hz, 21 watts (when wired for 120 VAC).
Operating Temperature	0 to +45°C
Dimensions (HxWxD)	3.5 x 9 x 10.5" (89 x 230 x 270 mm) less handle.
Weight	3.5 lbs (1.59 kg)

*Unit may be factory-programmed, with special EPROM, for any frequencies in the 55-500 MHz band.

SPECIFICATIONS

CHANNEL Number	BAND 1	BAND 2	BAND 3	BAND 4	CHANNEL Number	BAND 1	BAND 2	BAND 3	BAND 4
0	--	109.25	108.00	109.25	27	--	241.25	240.00	241.25
1	--	115.25	114.00	115.25	28	--	247.25	246.00	247.25
2	55.25	55.25	54.00	55.25	29	--	253.25	252.00	253.25
3	61.25	61.25	60.00	61.25	30	--	259.25	258.00	259.25
4	67.25	67.25	66.00	67.25	31	--	265.25	264.00	265.25
5	77.25	77.25	78.00	79.25	32	--	271.25	270.00	271.25
6	83.25	83.25	84.00	85.25	33	--	277.25	276.00	277.25
7	175.25	175.25	174.00	175.25	34	--	283.25	282.00	283.25
8	181.25	181.25	180.00	181.25	35	--	289.25	288.00	289.25
9	187.25	187.25	186.00	187.25	36	--	295.25	294.00	295.25
10	193.25	193.25	192.00	193.25	37	--	301.25	300.00	301.25
11	199.25	199.25	198.00	199.25	38	--	307.25	306.00	307.25
12	205.25	205.25	204.00	205.25	39	--	313.25	312.00	313.25
13	211.25	211.25	210.00	211.25	40	--	319.25	318.00	319.25
14	471.25	121.25	120.00	121.25	41	--	325.25	324.00	325.25
15	477.25	127.25	126.00	127.25	42	--	331.25	330.00	331.25
16	483.25	133.25	132.00	133.25	43	--	337.25	336.00	337.25
17	489.25	139.25	138.00	139.25	44	--	343.25	342.00	343.25
18	495.25	145.25	144.00	145.25	45	--	349.25	348.00	349.25
19	--	151.25	150.00	151.25	46	--	355.25	354.00	355.25
20	--	157.25	156.00	157.25	47	--	361.25	360.00	361.25
21	--	163.25	162.00	163.25	48	--	367.25	366.00	367.25
22	--	169.25	168.00	169.25	49	--	373.25	372.00	373.25
23	--	217.25	216.00	217.25	50	--	379.25	378.00	379.25
24	--	223.25	222.00	223.25	51	--	385.25	384.00	385.25
25	--	229.25	228.00	229.25	52	--	391.25	390.00	391.25
26	--	235.25	234.00	235.25	53	--	397.25	396.00	397.25

Table 1. Model 1201SR output frequencies (in MHz).

CHANNEL Number	BAND 1	BAND 2	BAND 3	BAND 4	CHANNEL Number	BAND 1	BAND 2	BAND 3	BAND 4
54	--	403.25	402.00	403.25	66	--	475.25	474.00	475.25
55	--	409.25	408.00	409.25	67	--	481.25	480.00	481.25
56	--	415.25	414.00	415.25	68	--	487.25	486.00	487.25
57	--	421.25	420.00	421.25	69	--	493.25	492.00	493.25
58	--	427.25	426.00	427.25	70	--	499.25	498.00	499.25
59	--	433.25	432.00	433.25	71	--	89.25	72.00	73.25
60	--	439.25	438.00	439.25	72	--	95.25	78.00	79.25
61	--	445.25	444.00	445.25	73	--	101.25	84.00	85.25
62	--	451.25	450.00	451.25	74	--	107.25	90.00	91.25
63	--	457.25	456.00	457.25	75	--	--	96.00	97.25
64	--	463.25	462.00	463.25	76	--	--	102.00	103.25
65	--	469.25	468.00	469.25					

BAND 1: Standard Broadcast.

BAND 2: Standard CATV.

BAND 3: Harmonically Related Carriers.

BAND 4: Incrementally Correlated Carriers.

Table 1 (cont.)

CONTROLS AND INDICATORS

Refer to Fig. 1.

1. **POWER Switch.** Turns unit on/off.
2. **EXT VIDEO Switch.** Enables VIDEO IN jack (7). When this switch is pushed in, a composite video signal connected to VIDEO IN is used to modulate the output carrier.
3. **BAND Switches.** Used to select one of four groups of frequencies associated with the displayed CHANNEL. See Table 1. BAND indicator (14) shows which of the four is selected.
4. **X10 Switch.** Increments 10's digit of CHANNEL display (13). Push for single increment, hold for scroll.
5. **X1 Switch.** Increments 1's digit of CHANNEL display (13). Push for single increment, hold for scroll. Does not affect 10's digit.
6. **DOWN Switch.** Decrements CHANNEL display (13). Push for single decrement. Automatically decrements 10's digit when 1's digit changes from "0" to "9".
7. **VIDEO IN Jack.** Input for standard composite video source. Jack is enabled when EXT VIDEO switch (2) is pushed in.
8. **CH3 IN 0 dB Jack.** Input for channel 3 (61.25 MHz) RF source. Input signal is applied with no attenuation.
9. **CH3 IN -20 dB Jack.** Input for channel 3 (61.25 MHz) RF source. Input signal is attenuated by -20 dB.
10. **OUTPUT Jack.**
11. **RESET Switch.** Resets CHANNEL display (13) to channel 2.
12. **UP Switch.** Increments CHANNEL display (13). Push for single increment. Automatically increments 10's digit when 1's digit changes from "9" to "0".
13. **CHANNEL Display.**
14. **BAND Display.** Indicates frequency band currently selected by BAND switches (3).
15. **EXT VIDEO Indicator.** Lights when VIDEO IN jack (7) is enabled (EXT VIDEO switch (2) pushed in).

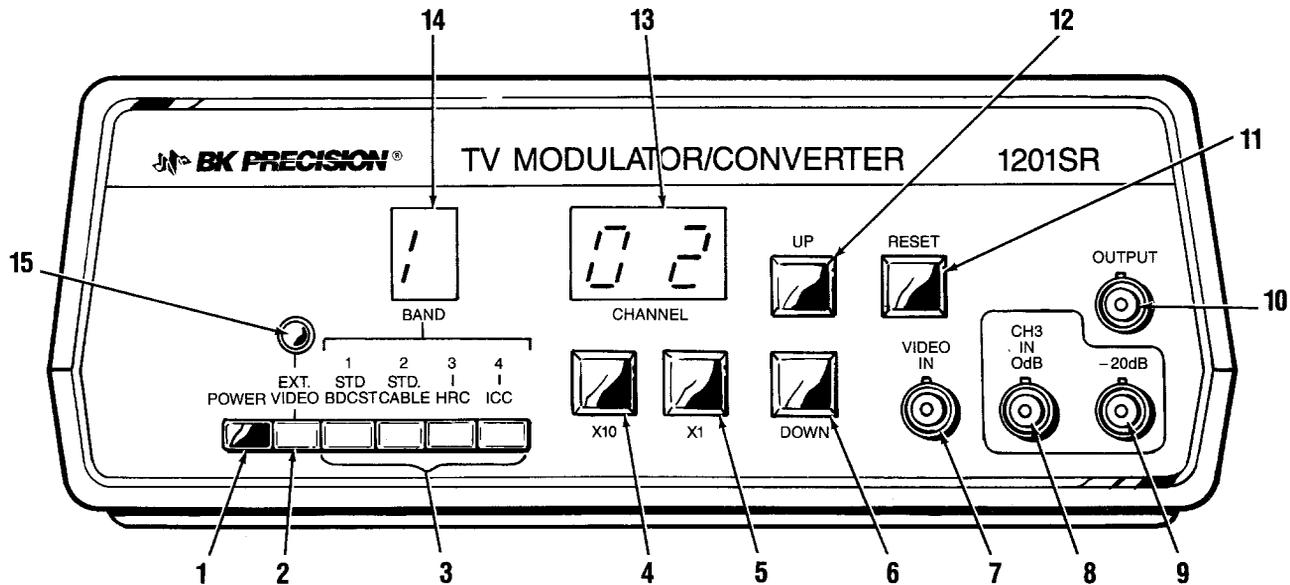


Fig. 1. Controls and indicators.

OPERATING INSTRUCTIONS

WARNING

To prevent personal injury, observe the "TEST INSTRUMENT SAFETY" precautions on the inside front cover of this manual.

OPERATION

1. Connect the unit to an AC outlet of proper line voltage.
2. Depress the POWER switch. The BAND and CHANNEL displays will light.
3. Connect a video source to the unit as follows:
 - a. If the source is a channel 3 RF carrier, such as the output of a color bar generator (**B&K-Precision** Model 1249), connect it to either of the CH3 IN jacks on the 1201SR. The 0 dB jack applies the signal to the unit directly; the -20 dB jack attenuates it by a factor of 10. Make sure that the EXT VIDEO switch is "out" (EXT VIDEO indicator is off).
 - b. If the source is a composite video signal, such as the output of a video pattern generator, or the VIDEO OUT jack of a VCR, connect it to the VIDEO IN jack on the 1201SR. Push the EXT VIDEO switch in to enable this jack. The EXT VIDEO indicator will light when this switch is pushed in. Make sure that there is no signal connected to either of the CH 3 IN connectors.
4. Connect the OUTPUT of the unit to the appropriate RF input jack on the TV/VCR to be tested.
5. Use one of the BAND switches to select the appropriate frequency group, or "band". Refer to Table 1 in the SPECIFICATIONS section, which lists the output frequencies programmed into the unit for each channel in a given band. Further information on these frequency bands is provided in the "Considerations" section.
6. Select the appropriate channel using the X1, X10, UP, DOWN, and RESET switches:
 - a. Pushing the X1 or X10 switches increments the 1's and 10's units of the CHANNEL display, respectively. These switches can be pushed and released

for a single increment, or held down for a continuous scroll. Changing the 1's digit has no effect on the 10's digit. For example, incrementing from 39 takes the display back to 30.

- b. Pushing the UP or DOWN switches increments or decrements the CHANNEL display as a whole by one channel. Changes in the 1's digit will affect the 10's digit; for example, incrementing from 39 takes the display to 40. These buttons are activated by single pushes only; there is no scroll capability.
- c. Pressing the RESET switch takes the CHANNEL display back to 02.

CONSIDERATIONS

1. The four bands of frequencies programmed into this unit are as follows:

Band 1: STD BDCST - standard broadcast frequencies (all VHF channels, and UHF channels 14 thru 18).

Band 2: STD CATV - standard CATV frequencies.

Band 3: HRC (Harmonically related carriers) - a CATV standard wherein the frequencies are all harmonics of 6.0 MHz.

Band 4: ICC (Incrementally correlated carriers) - a CATV standard wherein the frequencies are identical to standard CATV, except for channels 5 and 6, which are each 2 MHz higher.

Channels 71 through 76 of bands 2, 3, and 4 are programmed with special purpose frequencies, as shown in Table 1 of the SPECIFICATIONS section. Also note from the Table that a number of channel selections are invalid, namely, those greater than 74 on band 2, those greater than 76 on bands 3 and 4, and anything other than 2 through 18 on band 1.

2. When using a channel 3 RF source as the input, the output of the 1201SR is directly proportional to the amplitude of that input. The CH 3 IN -20 dB input attenuates the input signal and, accordingly, the output. This attenuation feature can be used to do sensitivity checks on video products.
3. When a composite video source is being used as the input, there should be nothing connected to either of the CH 3 IN jacks, and the EXT VIDEO switch should be depressed (EXT VIDEO indicator lights). On the other hand, when a channel 3 RF signal is being used, the EXT VIDEO switch **MUST** be in the "out" position. Under these circumstances, the EXT VIDEO jack can remain connected to a video source, although it is generally advisable to connect only one source at a time to the unit.
4. When testing any TV (or VCR) equipped with an electronic tuner, it is advisable to set the 1201SR to the desired channel first, and then set the the TV. Some sets may fail to lock on a channel if the carrier frequency is applied after the channel has been selected.

MAINTENANCE

WARNING

The following instructions are for use by qualified personnel only. Both procedures involve circuits where high voltage is present, even with the unit switched off. Always disconnect the unit from line voltage before removing the cover.

FUSE REPLACEMENT

1. Turn the unit over and remove the four bottom screws.
2. Turn the unit over again and remove the top cover. The handle may or may not come off with it, depending on its position.
3. The fuse is easily accessible at the left rear of the PC board. Replace it with the proper type and value as follows:

LINE VOLTAGE:	FUSE TYPE/VALUE:
100, 120 V	3AG, 3/16 A Slow-Blow
220, 240 V	3AG, 0.1 A Slow-Blow

4. Replace the cover (and handle, if necessary). Use caution to keep cables clear of the cover spacers when closing.
5. Replace the four bottom screws.

LINE VOLTAGE MODIFICATION

1. Turn the unit over and remove the four bottom screws.
2. Turn the unit over again and remove the top cover. The handle may or may not come off with it, depending on its position.
3. Remove the two mounting screws from the center of the PC board.
4. Carefully remove from the case, as an assembly, the PC board, front panel, and back panel together.
5. Line voltage modifications are made by changing the PC board jumpers, JU1 – JU5, directly in front of the power transformer. The configurations are as follows:

LINE VOLTAGE JUMPER CONFIGURATION

CAUTION

100 V, 50/60 Hz	JU1, JU3, JU4 present, JU2, JU5 removed.
120 V, 50/60 Hz	JU1, JU3, JU5 present, JU2, JU4 removed.
220 V, 50/60 Hz	JU2, JU4 present, JU1, JU3, JU5 removed.
240 V, 50/60 Hz	JU2, JU5 present, JU1, JU3, JU4 removed.

Make certain that the proper fuse is installed for the new line voltage. See "Fuse Replacement" section.

6. Replace the PC board and front/back panels.
7. Replace the PC board mounting screws.
8. Replace the cover (and handle, if necessary). Use caution to keep cables clear of the cover spacers when closing.
9. Replace the four bottom screws.