

**PR3200**  
NTSC

**COMMERCIAL  
SATELLITE  
RECEIVER**

**Installation**  

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**And**  

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**Operation**  

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**Manual**

Doc. No.OM2148N-1 REV. A  
Date: 8/30/95

# SAFEGUARDS

## IMPORTANT INFORMATION

### *Product Inspection*

Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

### *Important Safety Instructions*

To insure proper installation and operation, take a moment to read this guide before proceeding with the installation. If you have any questions or comments about the **PR-3200** satellite receiver, please contact your dealer or have him contact the PICO MACOM Service Center at the phone numbers at the bottom of the page.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

**CAUTION:** TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

**ATTENCION:** POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

- 1. Read Instructions** - All the safety and operating instructions should be read before the appliance is operated.
- 2. Retain Instructions** - The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings** - All warnings on the appliance should be adhered to.
- 4. Follow Instructions** - All operating and user instructions should be followed.
- 5. Cleaning** - Unplug this appliance from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleansers.
- 6. Do Not Use Attachments** - not recommended by the manufacturer or they may cause hazards.
- 7. Water and Moisture** - Do not use this product near water for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool - and the like.
- 8. Accessories** - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the appliance.
- 9. Ventilation** - This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to. Any slots or opening in the cabinet are provided for ventilation. To ensure reliable operation of the video product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.

# SAFEGUARDS

## IMPORTANT INFORMATION CONT'D

**10. Grounding or Polarization** - This video product is equipped with a polarized alternating - current line plug (a plug having one blade wider than the other). This plug will fit into the power socket only one way. This is a safety feature. If you are unable to insert the plug full into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

**11. Power Sources** - This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your appliance dealer or local power company.

**12. Power-cord Protection** - Power-supply cords should be routed so they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

**13. Lightning** - For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet.

**14. Power Lines** - An outside antenna system should not be located in the vicinity of overhead power lines, other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them may be fatal.

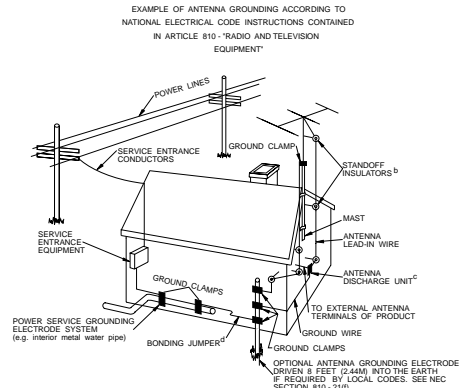
**15. Overloading** - Do not overload wall outlets and extension cords as this can result in risk of fire or electric shock.

**16. Object and Liquid Entry** - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

**17. Servicing** - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

**18. Damage Requiring Service** - Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instruction. Adjust only those controls that are covered by the operating instructions. An improper adjustment may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or the cabinet has been damaged.



f. When the product exhibits a distinct change in performance - this indicates a need for service.

**19. Replacement Parts** - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock or other hazards.

**20. Safety Check** - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating conditions.

**21. Outdoor Antenna Grounding** - Before attempting to install this product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges.

- Use No.10 AWG (5.3mm ) copper, No.8 AWG (8.4mm (aluminum, No.7 AWG (10mm ) copper-clad steel or bronze wire or larger, as ground wire.
- Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22m) to 6 feet (1.83m) apart.
- Mount antenna discharge unit as close as possible to where lead-in enters house.
- A driven rod may be used as the grounding electrode where other types of electrode systems do not exist. Refer to the National Electrical Code, ANSI/NFPA 70-1984 for information.
- Use jumper wire not smaller than No.6 AWG (13.3mm ) copper or equivalent, when a separate antenna grounding electrode is used.

### NOTE TO THE CATV SYSTEM INSTALLER:

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820 - 22 OF THE NEC THAT PROVIDES GUIDELINES FOR PROPER GROUNDING AND, IN PARTICULAR, SPECIFIES THAT THE CABLE GROUND SHALL BE CONNECTED TO THE GROUNDING SYSTEM OF THE BUILDING, AS CLOSE TO THE POINT OF CABLE ENTRY AS PRACTICAL.

# DESCRIPTIONS

The **PR-3200** is an economic descrambler compatible commercial satellite receiver designed for SMATV systems. The unit has been tested by General Instruments to meet all VideoCipher® II performance requirements. The

**PR-3200** provides three video outputs configured to interface with all known scrambling systems. The standard 950 to 1750 MHz tuning range of the **PR-3200** allows direct compatibility for international CCIR standards.

## **Technical Operation**

**RF Input** The **PR-3200** receives either C-Band or Ku-Band signals from a 950-1450 MHz LNB or a 950-1750 MHz LNB. Typical installations using 60 dB gain LNB's have -25 dBm available at the output of the LNB. The **PR-3200** will operate at input levels ranging from -30 dBm to as low as -60 dBm. A front panel signal strength meter is provided. At full IF gain; a meter reading of **2** corresponds to a -60 dBm input, a reading of **8** corresponds to an input of -30 dBm.

**70 MHz IF** The selected RF input signal is converted to a 70 MHz Intermediate Frequency (I.F.). The **PR-3200** comes with a short I.F. jumper cable that must be installed between the "I.F. OUT" and the "I.F. IN" connectors on the back of the receiver. Terrestrial interference traps may be inserted in the loop should microwave interference be encountered.

**LNB Power** Most commercial headend systems consist of several receivers and modulators. The PICO MACOM **Satellite Signal Processor SSP-10** provides the dual LNB power and the amplified power divider for such applications. The **PR-18DC** external power supply is also available for single receiver applications. The **PR-18DC** power cable plugs directly into the back of the **PR-3200** to provide +18 VDC power for the LNB.

**H/V Switching** The **PR-3200** provides automatic H/V switching.

**Channel Selection** is phase locked loop controlled with a digital display of channel numbers. The receiver comes factory tuned for standard 24 channel C-Band operation.

**Ku Band Operation** The **PR-3200** may also be used for Ku band signals by use of the video invert rear panel switch.

**Audio Subcarrier** selection is made from the front panel in one of two ways. A preset PLL tuned 6.8MHz demodulator or variable tuned 5.0MHz to 8.0MHz demodulator can be selected.

**Outputs** Three video outputs are provided on the rear of the **PR-3200**. Video and audio output levels are factory set for C-band operation. Level controls are accessible from bottom of unit. One video output is filtered and clamped for unscrambled programming. The composite video output is de-emphasized, un-clamped and un-filtered for VideoCipher® operation. The MAC descrambler compatible flat video output is unclamped, un-filtered and has no de-emphasis.

# SPECIFICATIONS

## IF Input

**Input Impedance:** ..... 75 Ohm  
**Input Frequency:** ..... 950-1450 MHz or  
..... 950-1750 MHz  
**Input Level:** ..... -30 to -60 dBm  
**IF Frequency:** ..... 70 MHz  
**AFC Range: @ 70 MHz** .....  $\pm 4$  MHz  
**Fine Tuning: @ 70 MHz** .....  $\pm 8$  MHz typical  
**IF Bandwidth: @ -3 dB** ..... 27 MHz  
**Static Threshold:** ..... 7 dB  
**Intermodulation:** ..... -40 dB  
**Spurious Rejection:** ..... -40 dB

## Audio

**Subcarrier Frequency:** ..... 6.8 MHz fixed  
..... or 5 - 8.5 MHz (tunable)  
**Impedance:** ..... 600 ohm  
**Freq. Response: 50 Hz - 15 kHz** .....  $\pm 2.0$  dB  
**Harmonic Distortion:**  
**@ 75 kHz deviation** ..... 2% maximum  
**Output Level:**  
**@ 600 ohm load** ..... 1Vp-p minimum  
**De-emphasis:** ..... 75 microseconds

## General

**Input Power:** ..... 108-125 VAC 50/60 Hz,  
..... 40 watts nominal  
**V/H Control:** ..... +5VDC/-5VDC  
**LNB Supply Voltage:** ..... Optional external  
..... +18 Vdc Supply PR-18DC  
**Operating Temperature:** ..... 0 to 40 degrees C  
**Mechanical Dimensions:** ..... 19" x 1.75" x 8"

## Video

**Impedance:** ..... 75 ohm  
**Video Output Level:** ..... Adjustable  
Preset for 10.75 MHz deviation ..... 1.0 Vp-p  
**Video S/N Ratio:** ..... 52 dB weighted  
..... @ 14 dB CNR  
**Video Polarity:** ..... Switchable Negative Sync  
**Differential Gain:** ..... 5% p-p maximum,  
at 10% to 90% APL  
**Differential Phase:** ..... 5 deg p-p maximum,  
at 10% to 90% APL

## Clamped, Filtered, DeEmphasized Output

**Bandwidth:  $\pm 1.0$ dB** ..... 50 Hz - 4.2 MHz  
**Clamping:** ..... 40 dB  
**De-emphasis:** ..... CCIR REC 405-1

## Video Monitor

**Impedance:** ..... 75 ohm  
**Output Level:** ..... 1 Vp-p

## Composite Video

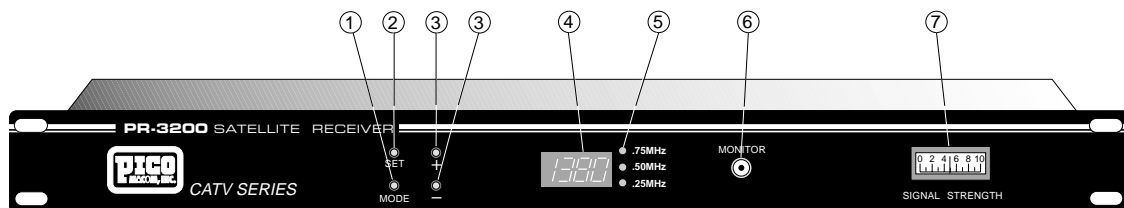
**Frequency Response:**  
**30 Hz - 3.58 MHz** .....  $\pm 0.5$  dB  
**3.58 MHz-4.2 MHz** .....  $\pm 1.0$  dB  
**De-emphasis:** ..... CCIR REC 405-1

## Flat Video

**Bandwidth:  $\pm 1.0$ dB** ..... 15.0 Hz to 10.5 MHz

# FRONT PANEL

## FRONT & REAR PANEL



### 1. MODE KEY:

The "MODE" key selects the audio mode: 6.8MHz preset or 5.0MHz to 8.MHz tunable.

### 2. SET KEY:

The "SET" key is for programming the video I.F. frequency and the audio sub-carrier frequency.

### 3. +/- Keys:

These keys are used for changing, up or down, the channels, I.F. frequency and audio modes.

### 4. SEVEN SEGMENT DISPLAY:

The display indicates the channel number. I.F. frequency and audio for both C-band and Ku band transponders.

### 5. LED's:

The LED's indicate changes in the I.F. frequency in 250KHz increments.

### 6. MONITOR:

The front panel "F" connector provides a clamped video output.

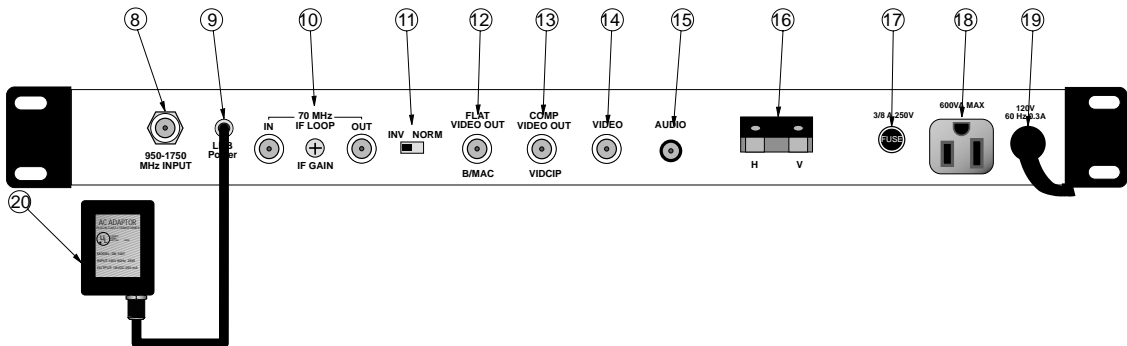
### 7. SIGNAL STRENGTH:

The meter provides a relative measure of RF input to the receiver.

Channel Display	I.F. MHz	C-Band MHz	Ku-Band MHz	Channel Display	I.F. MHz	C-Band MHz	Ku-Band MHz
1	1430	3720	12180	13	1190	3960	11940
2	1410	3740	12160	14	1170	3980	11920
3	1390	3760	12140	15	1150	4000	11900
4	1370	3780	12120	16	1130	4020	11880
5	1350	3800	12100	17	1110	4040	11860
6	1330	3820	12080	18	1090	4060	11840
7	1310	3840	12060	19	1070	4080	11820
8	1290	3860	12040	20	1050	4100	11800
9	1270	3880	12020	21	1030	4120	11780
10	1250	3900	12000	22	1010	4140	11760
11	1230	3920	11980	23	990	4160	11740
12	1210	3940	11960	24	970	4180	11720

# REAR PANEL

## FRONT & REAR PANEL



### 8. RF Input:

Input connection from C-band or Ku-band LNB. ( 950 to 1750 MHz). Also provides +18VDC output if **PS-18DC** is connected to **10 LNB Power**.

### 9. LNB Power:

This 3.5mm RCA jack accepts the optional **PS-18DC** LNB power supply voltage.

### 10. I.F. Loop:

The 70 MHz **IN** and **OUT** connectors loop the un-filtered tuner output for possible terrestrial interference filtering. Normally the short jumper is connected and the IF gain is set to maximum (fully CW).

### 11. Video Invert:

The **Normal/Invert** switch controls the video polarity of the the output amplifiers. Toggling the switch affects all three video outputs.

### 12. Flat Video Out:

A one volt peak to peak unfiltered, unclamped and non de-emphasized signal is provided for MAC type decoders.

### 13. Comp Video Output:

A one volt peak to peak composite CCIR 405-1 525 line de-emphasized, unfiltered and unclamped video signal is provided for the VideoCipher®II decoders.

### 14. Video:

A one volt peak to peak composite CCIR 405-1, 525 line de-emphasized, filtered and clamped video signal is provided for unscrambled programming.

### 15. Audio:

Standard RCA connection to feed either a descrambler or a SMATV modulator

### 16. H/V Electronic A/B Terminal:

A switching +5/-5 VDC voltage is provided between the push terminals to control a **PICO MACOM ABE-C/Ku** H/V switch.

### 17. Fuse:

Replace this fuse with only one of the same rating as indicated on the chassis.

### 18. Convenience Outlet:

The AC outlet is capable of delivering up to 600 watts of AC power.

### 19. Power Cord:

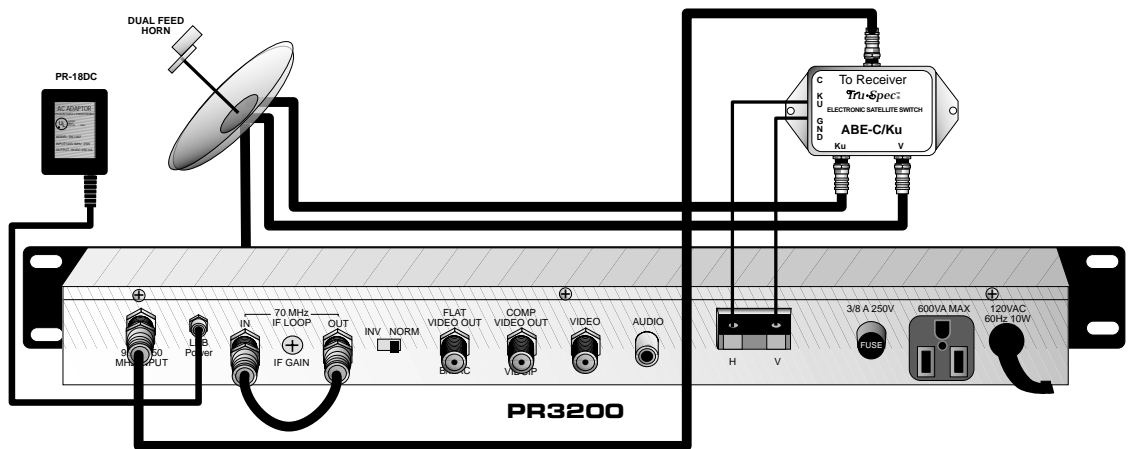
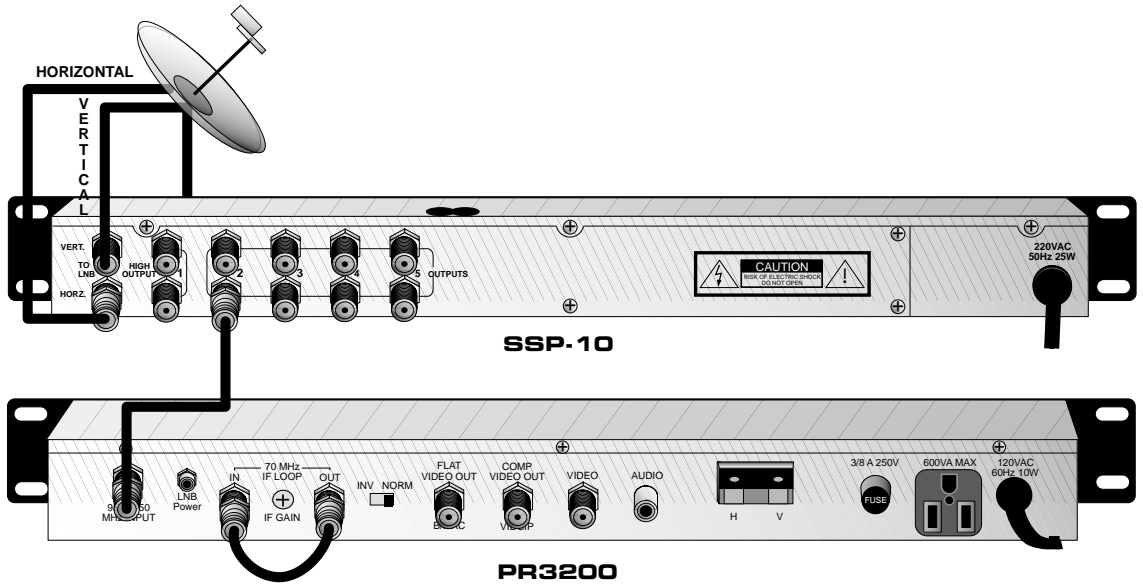
Connect to 108 to 125 VAC, 50/60 Hz electrical outlet.

### 20. PR-18DC:

Optional power supply to power LNB.

# INSTALLATION

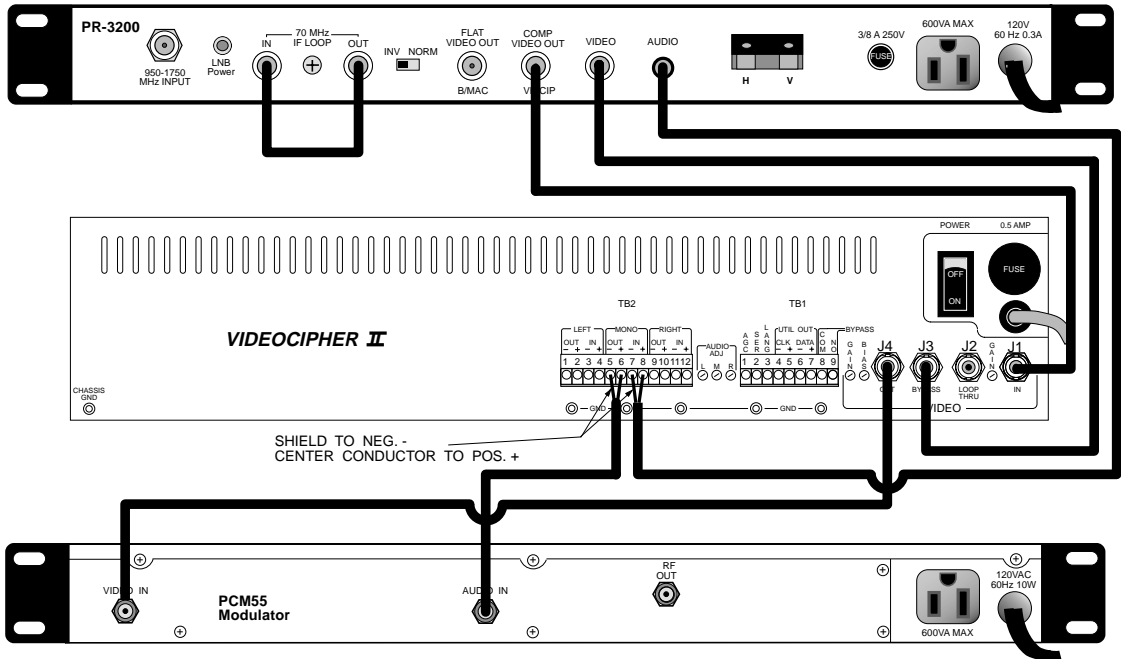
## LNB POWERING METHODS





# INSTALLATION

## DESCRAMBLER & MODULATOR INTERFACES

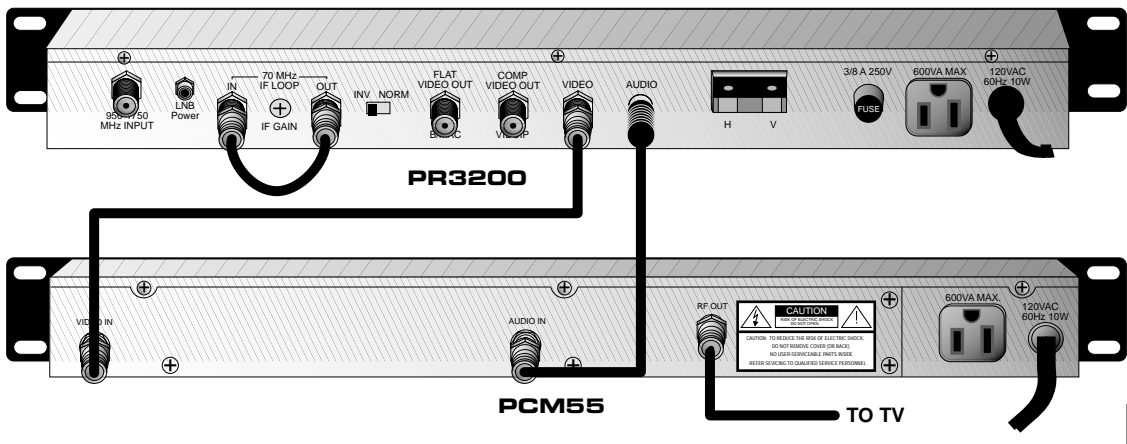


### THE PR-3200 WITH A VIDEOCIPHER®\*

- Carefully attach the receiver to the rack and plug the six foot cord into a grounded 115 VAC power receptacle.
- Install the short I.F. jumper cable between the "I.F. out" and the "I.F. In" connectors on the rear of the receiver
- Connect the R.F. lead coming from the LNB to the "R.F. In" connector. Monitor the signal level meter on the front panel. A meter reading between 2 and 8 is required. The meter is factory calibrated for C-band transmissions. A reading of 2 correlates to an input of -60 dBm. A reading of 8 correlates to an input of -30 dBm.
- Connect the PR-3200 to the VIDEOCIPHER® as follows:
  - "COMP VIDEO OUT" output to J-1 of the VIDEOCIPHER®.
  - "VIDEO" output to J-3 of the VIDEOCIPHER®.
  - Modulator video input to J-4 of the VIDEOCIPHER®.
  - Audio output, monaural: connect "AUDIO" to terminals 7 and 8 of VIDEOCIPHER®'s TB2.
- Connect appropriate TB2 output to either a modulator or a stereo processor.

Note: When using the VIDEOCIPHER®, be sure that the AGC is adjusted to 4 V.D.C. after warm up.

\*Videocipher is a registered trademark of General Instruments Corp.



## PROGRAMMING

1. Plug the AC cord to an AC outlet and turn on the receiver.
2. If the receiver has not been programmed for the **last channel**, the display shows "1" which indicates CH.1.
3. Normally, the receiver has been preset and factory programmed. See the preset Channel Table attached.
4. Select the channel number to be programmed by using "+"/"-" keys

### Video I.F. Frequency:

5. Start programming by pressing "SET" key. The first pressing of the "SET" key is for programming the video i.f. frequency. The display shows the reading of the i.f. frequency. Usually, the frequency shown is the preset frequency of this channel.
6. Program the i.f. frequency by using the "+"/"-" keys.
7. Press "+"/"-" keys once at a time, the frequency moves up/down in increments of 250KHz. The LED indicator on the right side of the main display indicates the changes. The display of the change would be carried to the main display every 1MHz.
8. Continue to press the "+"/"-" for more than one second. The rate of frequency increment/decrement will be sped up/down for faster programming.

### Audio Mode/ Audio Carrier Frequency

9. Press the "SET" key again. The second pressing of the "SET" is for programming the audio sub-carrier frequency.
10. Normally, the audio mode is preset in MONAURAL and the audio sub-carrier frequency is preset at 6.80MHz and is the

**only mode** that is currently operational. Disregard modes 2, 3, & 4.

### MODE DISPLAY STATUS

1. A.6.80 MONO/6.80MHZ/  
Wide Band
11. Use "MODE" key to select AUDIO MODE 1.
12. Use the "+"/"-" key to program the audio sub-carrier frequency.
13. Press "+"/"-" key. Each time the frequency moves up/down 10KHz.
14. Keep pressing the "+"/"-" key for more than one second. The rate of frequency increment/decrement will be speed up/down for faster programming.
15. Press the set key again. This third pressing of the "SET" key is to program the polarity. and LNB inputs. Currently, the only mode that is operational is MODE 1. Audio Sub-carriers from 5.0MHz to 8.0MHz can be accessed in this mode. Disregard MODES 2, 3 & 4.

### MODE DISPLAY POLARTIY LNBNINPUT

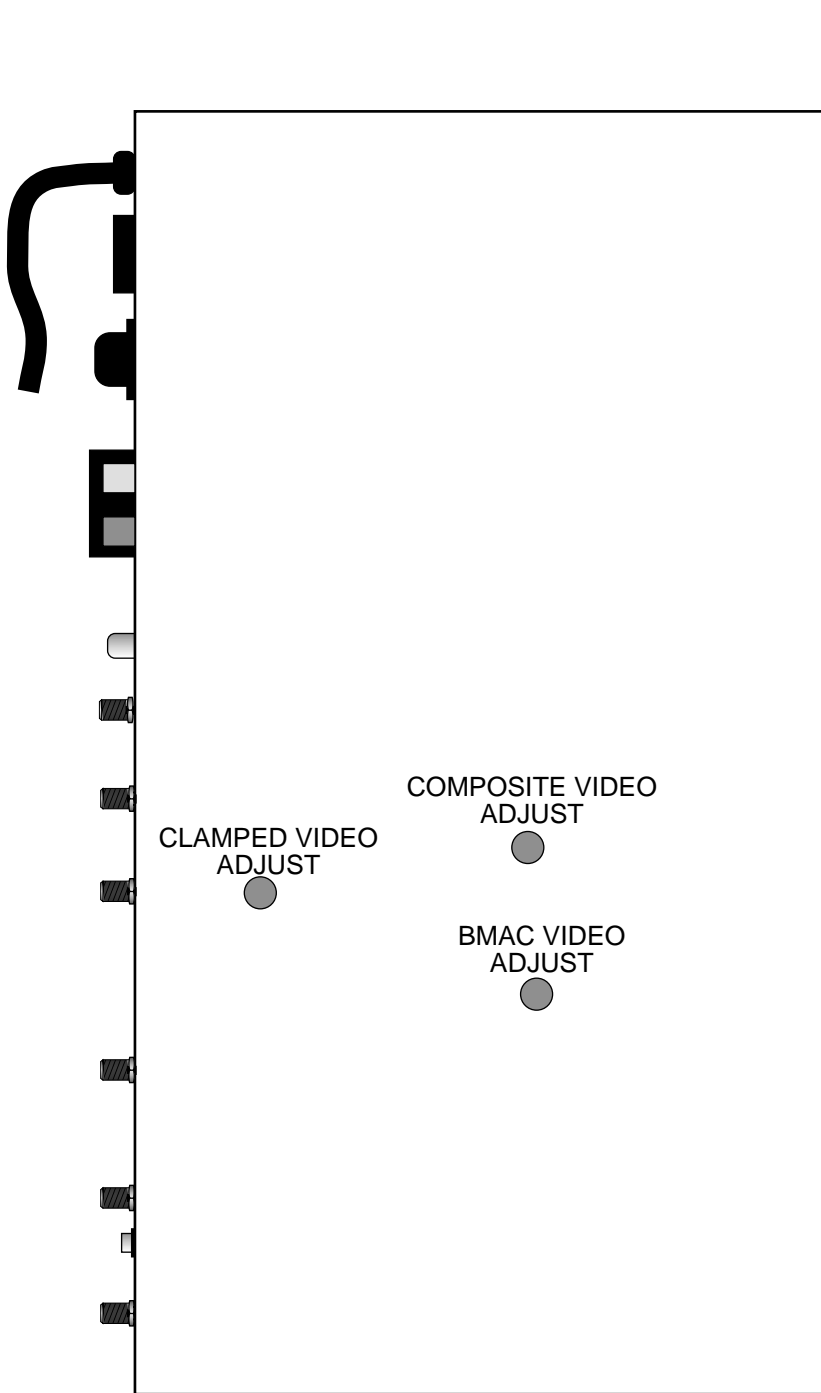
1. U. 1. Vertical 1.

### Completion of Programming:

In SMATV application, automatic **LAST** channel set-up may be required accidental power failure. The procedure for **LAST** channel programming are as follows.

1. Select the number of the **LAST** channel. to used by using "+"/"-" keys.
2. Press "SET" key 4 times, and confirm all of the parameters as they are going through the display.
3. As soon as the display goes back to channel display, the **LAST** channel programming is completed.

# PCB CONTROLS



# WARRANTY

## FIVE YEAR LIMITED WARRANTY

**P**ico Macom, Inc. warrants to the original purchaser this product shall be free of defects in material and craftsmanship with only the limitations or exclusions set out below.

During the warranty period Pico Macom Inc. or an authorized Pico Macom service facility will provide free of charge, the parts and labor necessary to correct defects in material and workmanship.

### WARRANTY DURATION

This warranty shall terminate five years from the original date of purchase of the product or at a time the product is:

1. Misused or damaged due to neglect or improper installation
2. Modified
3. Repaired by someone other than the warrantor
4. Sold by the original purchaser

### STATEMEN OF REMEDY

To obtain warranty service, contact the salesperson where the product was obtained. You will be issued a Return Authorization (RA) number which will be used to track your product.

Be prepared to provide:

1. The model number and channel number of the product
2. The date of purchase
3. A specific identification of the problem

Deliver the products to Pico Macom Inc. or ship the products in the original packing material at the address at the bottom of the page. Include satisfactory evidence of the date of purchase.

Products will not be accepted by Pico Macom Inc. without the RA number clearly indicated on the shipping label.

The foregoing constitutes the Pico Macom, Inc. entire obligation with respect to this product and the original purchaser and any user or owner *shall have no other remedy and no claim for incidental or consequential damages. Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusions or limitation of incidental or consequential damages, so the above limitation and exclusion may or may not apply to you.*

This warranty gives you specific legal rights, and you also have rights which vary from state to state.

# *NOTES*

# NOTES

# *NOTES*





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