

  
**CADCO**  
**SYSTEMS, INC.**  
**BROADBAND EQUIPMENT**

*Operating Manual*

*for*

***P-379***

***System M/N***

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## Important Notices

### Shipping Loss or Damage

Before signing the Common Carrier's delivery receipt, count the number of cartons and inspect each for visible damage. If the number of cartons does not agree with the receipt or there is damage, make note of these discrepancies on all copies of the receipt before signing.

Immediately unpack the equipment and inspect for concealed damage. If damage is found, notify the carrier immediately. We suggest you keep the shipping carton and packaging material should the equipment ever need to be returned.

After filing your claim, notify CADCO for assistance on repair or replacement disposition.

### CAUTION – Unauthorized Repair

Unauthorized repair, modification or disassembly during the warranty period may cancel the warranty. should field repairs or modifications be desired, CADCO technicians may be able to provide helpful suggestions, saving you both time and money.

### Notice of Proprietary Data and Changes

Data, drawings, designs represented and all other material contained herein are the proprietary property of CADCO Systems, Inc., and may not be reproduced or duplicated in any form without written authorization by CADCO Systems, Inc. All material is subject to change without notice or obligation.

### Equipment Return

Should you desire to return the equipment for service, please call CADCO prior to shipping. Enclosing as much information as possible on the reason for return and the work desired will expedite service and help insure your satisfaction. If possible, pack the equipment in the original carton and materials. If the original packing is no longer available, pack the equipment in cushioning material sufficient to provide a minimum of 1.5 inches separation between the carton and equipment. No Return Authorization number is required. Include your return address, telephone number and method of return of shipment. Ship the equipment prepaid to the address in this manual.

### Reasons for using CADCO Factory Service

- ... CADCO services exclusively CADCO equipment.
- ... designed and manufactured your CADCO equipment.
- ... knows CADCO equipment better than anyone else.
- ... technicians are trained on all CURRENT and PAST technical and product information.
- ... technicians use specialized testing and alignment tools designed by and for CADCO equipment
- ... technicians may often help with a specialized application.
- ... has a toll-free factory sales and service hotline.
- ... factory service rates are very competitive and in many cases less expensive than non-factory service stations.
- ... guarantees factory service for two years.
- ... factory service is convenient because you deal directly with factory people who depend upon your business
- ... is known for friendly, fast, turn-around customer service.

# Suggestions for Headend Racking and Maintenance

For prolonged equipment life and operating stability, the following recommendations are made:

- All headends should be installed in an environmentally controlled dust-free room having a nominal temperature of 80° F (26° C) and 60% humidity. The room should be protected from rodents and insect pests.
- All equipment should be mounted in standard equipment racks or cabinets.
- All equipment should be rack spaced one panel height, 1.75 inches (4.44 cm.). There should be nothing between the equipment that prevents air circulation.
- Be certain headend wiring and current capacity has adequate safety margins. Never cascade AC powering strips. Use separate outlets. If AC power is subject to fluctuation we recommend a constant voltage transformer be used. Beware of ground loops and be certain all wiring is bonded and properly grounded. Consult a code book as needed.
- All equipment racks should be electrically bonded together and earth grounded.
- All equipment interconnecting RF cables should be a minimum of double shielded and quad shielded is recommended. Poorly shielded cable causes cross-modulation picture degradation between equipment.
- always use the coax connector intended for the coaxial cable used. Be certain it is installed as recommended by the manufacturer. Connectors should be RFI shield type.
- RF input and FR output cables should be on opposite sides of the equipment rack. Never bundle input and output RF cables together.
- Operate each modulator and processor at the RF output levels recommended. If it is necessary to reduce RF output level, always operate the equipment as recommended and reduce the RF output level with the appropriate value 'barrel-type' pad.
- Equipment RF test points are only relative indicators of the actual RF output level and may vary +/- dB. All RF operating level measurements should be made at the RF output of each unit.
- When the headend is initially placed in service, create a log record of all operating parameters for each channel's equipment. Referring to these records during routine maintenance allows recognition of any operating changes.

# Agile Processor

P~379

## FEATURES

- Totally Microprocessor Controlled with Self-Diagnostic Monitoring
- Selectable Input Channels
  - Off Air Channels 2 through 83 (VHF and UHF)
  - Standard Cable Channels 2 through 181 (54 MHz - 1.2GHz)
  - HRC Channels 1 through 81 (72MHz - 1.2GHz)
- Selectable Output Channels
  - Standard Cable Channels T7 through 118 ( 7MHz - 750MHz)
  - HRC Channels 1 through 118
- Automatic Input Offset Control:
  - Unique Circuit Detects and Corrects Input Signal Offset Frequency for Heterodyne Processing Before the IF
- SAW Filtered IF Designed for Adjacent Channel Operation
- +60dBmV Output Using Low-Distortion Hybrid Amplifiers
- Non-volatile Channel Memory
- Synthesized Oscillators
- Crystal Referenced Phase Locked
- Digital LED Readout
- Internal Switch Selects Standard or HRC Output
- Surface Mount Technology Construction
- RF Muted During Tuning

## AVAILABLE OPTIONS

- T-Channel Input
- Dual RS232 Control Option for Daisy Chain Capability
- Defeatable AGC for Manual Gain Control

## HRC Output Frequency Set

All CADCO frequency agile modulators may be set for HRC frequency output. This feature is controlled by an internal dip switch assembly DS-1. The switch is located near the right front corner ( front panel towards you) between the test point and the output converter module. DS-1 is clearly marked on the PCB. Switch #3 placed in the OFF position switches the output frequency to HRC on all channels. The switch is normally set "ON" at the factory.

## **Operating Instructions**

### **Model P~379 Agile Processor**

#### **INTRODUCTION**

CADCO thanks you for purchasing the Model P~379 Heterodyne Low-Noise Processor. The P~379 contains the latest in CATV electronics, including Synthesized Crystal Referenced Phase Locked Oscillators, Microprocessor control. SAW Filtered IF, and Hybrid Amplifiers. Now in addition to these features, the new P~379 (U.S. version) contains Automatic Input Off set to remove input offsets inherent to Off-Air (0, +10KHz), Standard Cable (0, +12.5,+25KHz) and HRC Cable (0.3 KHz master oscillator offset).

#### **Setup and Operation Processor P~379**

1. Connect the input to a signal source such as a cable drop or antenna. The recommended input level for best performance is 0 to +10 dBmV (+60 to +70 dBuV). Connect the output to a 75 ohm load, normally a channel combiner. A Hybrid Combiner, such as the CADCO Combiner 24-1000, is strongly recommended for flat response and maximum isolation between channel.
2. The Automatic Input Offset feature automatically removes any input offset and the microprocessors selects the proper FCC offset for the output channel, therefore no calculations or adjustments are required.
3. Connect to a proper AC electrical source as indicated on the back of the unit. Observe the front panel Display Window while power is applied. All the elements of the displays will be turned on momentarily as a display test. The following numbers displayed after the LED test will be the microprocessor software version, the internal option dip switch settings, and finally the last frequency tuned. After a moment, the Lock Detect LED will illuminate. The unit is now ready for operation.
4. The desired input and output channel of operation is selected by the front panel CHANNEL SELECT toggle switch. If you require a lower Channel



than the one currently displayed, push the toggle switch DOWN. The channels will change one at a time as many times as you press the switch. Holding the select switch in the DOWN position will "scan" to the desired channel. If you desire a higher channel, push the toggle switch UP. The Channels will change one at a time as many times as you press the switch. Holding the select switch in the UP position will "scan" to the desired channel. It is normal for the FREQUENCY LOCK LED to be extinguished during and for a few seconds after changing channels. The RF OUTPUT is muted when the FREQUENCY LOCK LED is off. This insures moving RF carriers do not interfere with any existing channels on the cable system. FCC offsets (in U.S. versions) are microprocessor controlled and fully automatic for both Standard and HRC channels.

5. Using a Field Strength Meter or Spectrum Analyzer to either the rear panel RF OUTPUT or front panel -20dBmV TEST POINT, adjust the front panel OUTPUT LEVEL control to the desired level. The recommended output level is between +55dBmV (+115dBuV) and +60dBmV (+120dBuV). If the TEST POINT is used for this adjustment, the RF OUTPUT must be terminated.

**Note:** The optimum input signal level is +10dBmV (+70 dBuV) to be centered within the AGC window. Signal input levels less than 0dBmV (+60 dBuV) may require an antenna-mounted preamplifier. An alternative is to increase signal gain by stacking two or more antennas. Remember, the processor's AGC will increase gain for full output, but with inadequate input signal level the Signal to Noise ratio suffers.

6. When in the Off-Air position for INPUT SOURCE, observe the Aural Carrier level on a Field Strength Meter or Spectrum Analyzer and adjust the AURAL CARRIER LEVEL control for the desired Visual to Aural Carrier level ratio. Normal operation off the Aural Carrier is 13 to 17 below the Visual Carrier. When switching to either of the cable frequency plans, the internal aural carrier attenuator drops automatically from 6 to 0dB, since Cable Aural signals have been preset down at the headend. readjustment when switching between frequency plans may be desired.

7. The Model P-379 processor accepts and passes-through television station broadcast stereo.
8. To use the T-Channel Input Option, move the T-Channel switch located on the back panel to the on position. The green T-Channel Indicator LED, located on the front panel, will light up when in the " T " band. When the T-Channel switch is on only the " T " band may be used.

## **IMPORTANT**

CADCO power supplies are designed so under certain power line or heat buildup conditions the units shut off. An indication is no RF output, but the POWER LED remains on. If this occurs, unplug the power cord and wait two minutes before repowering. Upon applying power, you should again have RF output. If not, or should the unit return to shutdown mode, telephone CADCO or your Distributor for assistance. CADCO highly recommends a 1.75 inch air circulation space between any rack mounted equipment.

**CADCO**

**S Y S T E M S , I N C .**

**B R O A D B A N D E Q U I P M E N T**

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