

# *CADCO*

*SYSTEMS, INC.*

## **BROADBAND EQUIPMENT**

Operating Manual

*for the*

# **375**

## **Agile Demodulator**

**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 to insure your satisfaction. If possible, pack the equipment in the original carton and materials. If the original packaging material is no longer available, pack the equipment in cushioning material sufficient to provide a minimum of 1.5 inches separation between the carton and the equipment. No Return Authorization number is required. Include your return address, telephone number and method of return 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 any other service provider

Technicians are trained on all CURRENT and PAST technical product information

Technicians use specialized testing and alignment tools designed for CADCO equipment

Technicians may often help with a specialized application

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

Is known for fast, friendly 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 at one panel height, 1.75 inches (4.44cm). There should be nothing between the equipment preventing air circulation.
- Please make 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 shielded.
- RF Input and RF 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 level recommended. If it is necessary to reduce the RF Output level, always operate the equipment as recommended and reduce the RF
- Equipment RF test points are only relative indicators of the actual RF output level. 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 record of all operating parameters for each channel's equipment. Referring to these records during routine maintenance provides a helpful record of operating changes.

# Agile Demodulator 375

## FEATURES

The CADCO 375 Demodulator (375T with Optional T-Channel Input) precisely demodulates an RF video/audio television signal to Baseband video and audio. Designed for CATV applications, the 375 economically satisfies many TV station, LPTV and MMDS requirements. The 375 features multiple output configurations, such as video/4.5MHz audio Subcarrier (System M/N) separately selectable or as a composite and two additional standard video only ports. The 375 contains a Synchronous Detector and Zero Chopper (the Zero Chopper is the zero carrier reference signal used to accurately set depth of video modulation without a spectrum analyzer.) Composite and Vertical Sync are externally available for frame synchronization of auxiliary equipment.

- Frequency Agile
- Microprocessor controlled
- Selectable Input Channels – VHF/UHF Off-Air, Cable STD and Cable HRC
  - **375**: 54-860MHz
  - **375T**: 7-860MHz
- External Composite IF Loop
- Multiple Video Output Ports
- Front Panel Controls with Digital Display
- Composite and Vertical Sync Output Ports
- 4.5 MHz Aural Subcarrier Output (System M/N)
- Composite Video and Aural Subcarrier Output Port

## AVAILABLE OPTIONS

- T-Channel Input (T7-T14)
- Dual RS-232 Control with Daisy Chain Capabilities which allows for remote control by PC workstation

## Operating Instructions

### Model 375 Agile Demodulator

#### INTRODUCTION

CADCO thanks you for purchasing the Model 375 Demodulator. The 375 contains the latest in CATV electronics, including Synthesized Crystal Referenced Phase Locked Oscillators, SAW filtered IF, Hybrid Amplifiers and Microprocessor Control.

#### OPERATION

##### 375 Demodulator

- Connect to a proper AC electrical source as indicated on the back of the unit. Observe the front panel Power light while power is applied. The LED will illuminate; the unit is now ready for operation.
- **Controls:**
  - Audio Level – Adjusts Baseband audio output level
  - Zero Carrier Reference – Used as a reference in setting modulation depth of any modulator
  - Video Level – Adjusts Baseband video output level
  - Input Source – Selects between 3 different types of RF input
    - Off-Air
    - Cable STD (Standard)
    - Cable HRC
  - Input Channel Select – Tunes the input to the desired channel of operation
  - Band Select (Option) – Selects between the Standard Input Channel port and the T Channel input port on the rear panel
- Channel Selection – Move the Input Source switch to the desired position. Select the desired channel of operation by ‘toggling’ the Input Channel Select switch. The channels will change either one at a time or will scan if the switch is held continuously. It is normal for the Frequency Lock Detect LED to go out during tuning operations and come back on within a few seconds after tuning is ceased.
- Setting Levels – The input range on the 375 is from  $-10$  to  $+20$  dBmV ( $+50$  dBuV to  $+80$  dBuV). The optimum range for best signal to noise performance is between  $+10$  and  $+20$  dBmV ( $+70$  and  $+80$  dBuV). Signal input levels less than  $+0$  dBmV ( $+60$  dBuV) may require an antenna-mounted preamplifier. The 375’s AGC will increase gain for full output, but with inadequate signal level, the video S/N ratio suffers.

- The Video Output is set to 1 Volt Peak to Peak into 75 Ohms. This level may be varied by +/- .5 Volts.
- The Audio Output is set to 1 Volt Peak to Peak into 600 Ohms. Vary the level as necessary to achieve proper sound levels.
- Note: The Zero Carrier Reference should only be used while setting video levels. In normal operation the Zero Carrier Reference should be off.
- **T-Channel Operation:** The T-Channel option for the 375T consists of an internal block converter that converts Channels T7- T14 to standard channel 7-13. To use the 375T as a T-Channel Demodulator, place the Band Select Switch on the rear panel to the T-Channel position. Connect RF input cable to the 'T-Channel' F-connector fitting on the rear panel. The front panel Source Select switch should be in the Cable STD position. When using a T-Channel input, the 'Standard Frequency' input, if not used, should be fitted with a 75 Ohm terminator. The desired T-Channel is selected by the INPUT CHANNEL SELECT switch as described earlier.

## **IMPORTANT**

CADCO power supplies are designed so that under certain power line or heat buildup conditions the unit shuts off. An indicator would be no RF output, but the POWR LED remains on. If this occurs, unplug the power cord and wait two minutes before re-powering. Upon applying power, you should again have RF output. If not, or should the unit return to shutdown mode, please contact CADCO or your Distributor for assistance. CADCO highly recommends a 1.75 inch air circulation space between any rack mounted equipment.