DOT-X

Displays by Dotronix

DNR II SERIES

Handheld Addressable Remote Control

DOT-X
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User's Manual

PRECAUTIONS

This remote control contains circuits and components designed to meet specific performance and safety requirements. No component changes may be made without the written permission of the manufacturer.

To prevent electrical shock, do *not* attempt to disassemble the monitor. There are no user-serviceable parts inside. Servicing, if required, should be performed only by qualified service technicians familiar with the equipment and safety procedures.

Servicing by unauthorized personnel may be *dangerous* and will void the warranty.

If any damage to the remote control is found, report it immediately to Dotronix.

DO NOT RETURN DAMAGED MERCHANDISE TO THE MANUFACTURER UNTIL AN APPROPRIATE CLAIM HAS BEEN FILED WITH THE CARRIER AND A RETURN MATERIAL AUTHORIZATION NUMBER (RMA) HAS BEEN RECEIVED FROM THE MANUFACTURER.

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Dotronix Limited Warranty

Dotronix warrants that for one (1) year from date original purchase, it will, at its option, repair, replace or refund the purchase price of any product which it manufactured that proves defective in material or workmanship in normal use and service.

To obtain service under this Warranty, contact Dotronix Inc. at the address below, within one (1) year of original purchase, to receive a Return Material Authorization (RMA) number. Then ship the product believed to be defective, transportation prepaid, for inspection.

Dotronix shall not be responsible for unauthorized returns that do not list the RMA number and quantity returned on the outside of the shipping container (i.e. on packing list in plain view).

For products supplied without a frame (Less CRT and Printed Circuit Board Mounting), the buyer must inspect the products within ten (10) days of receipt. After ten (10) days have lapsed, there shall be no warranty coverage for broken or damaged parts, or misalignment (i.e. broken torque seals where used). The products will be packed to allow Buyer to test the unit within its packing carrier.

This Warranty applies only to goods manufactured by Dotronix Inc. Various component parts manufactured by others (such as cathode ray tubes, semi-conductors, and fuses) are covered by the separate warranty of their manufacturers. Where Dotronix, Inc. warranty differs, only the warranty of the original component part manufacturer is offered. Of course, the Dotronix warranty does not apply to CRT's that are scratched, broken, burned or have imperfections in any special coatings. It also does not apply to products which have been altered, damaged, abused, or subjected to misuse, or repaired by anyone other than an authorized Dotronix repair person.

These displays require DHHS traceability under sub-part E, Section 1002.40 of the Regulations for the Administration and Enforcement of the Radiation Control for Health and Safety Act of 1968. It is the customer's responsibility to maintain records that satisfy this requirement.

THE TERMS OF THIS WARRANTY CONSTITUTES THE BUYER'S SOLE AND EXCLUSIVE REMEDY AGAINST DOTRONIX. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCE SHALL DOTRONIX BE LIABLE FOR INCIDENTAL AND CONSEQUENTIAL DAMAGES, OR IN ANY AMOUNT BEYOND THE REPLACEMENT COST OF THE ALLEGEDLY DEFECTIVE PART, REGARDLESS OF THE THEORY OF RECOVERY.

All products returned to Dotronix must include:

1. A tag or label on each unit with a description of the defect or reason for return, or identify each unit on the packing list by serial number and defect.
2. A packing list attached to the outside of the shipping container showing the Return Authorization Number (RMA) and the quantity returned.

Products returned that are not identified in accordance with the above procedure will be refused and returned at Buyer's expense.
To obtain a Return Material Authorization (RMA) number contact:

DOTRONIX INC.
160 First Street S.E. • St. Paul • Minnesota • 55112-7894
Phone 651-633-1742 • FAX 651-633-1065

INDEX

ACTIVATING OPTIONS 16
ADVANCED SETUP MENU 8
AVAILABLE MENUS 7
BASIC MENU OPERATION 7
CHANGING SECURITY CODE AND UNIT NUMBER 15
CHECKING REVISION LEVEL 21
CUSTOM OPTIONS 17
CUSTOMER SETUP MENU 8
GETTING STARTED 3
INTRODUCTION 3
JUMPER LOCATIONS 17
LOST OR FORGOTTEN SECURITY CODE 21
MENU - ADVANCED SETUP 8
MENU - AVAILABLE 7
MENU - BASIC OPERATION 7
MENU - CUSTOMER SETUP 8
MENU - SERVICE 9
MENU - TO ACTIVATE 4
ON/OFF TIMER PROGRAMMING 19
PRECAUTIONS 2
PROGRAMMING ON/OFF TIMER 19
PROGRAMMING PURITY GUARD TIMER 18
PURITY GUARD TIMER PROGRAMMING 18
REMOTE CONTROL PICTORIAL 6
SECURITY CODE - CHANGING 15
SECURITY CODE - LOST 21
SERVICE MENUS 9
SERVICE PACK CONTENTS 3
TO ACTIVATE MENUS AND CONTROLS 4
WARRANTY 23

INTRODUCTION

Congratulations on your purchase of a new DNR II Series with HARC (**H**andheld **A**ddressable **R**emote **C**ontrol) option.

This manual has been prepared to act as a guide in the operation of your unit when the HARC option is installed. Please read the following operating instructions carefully before using your unit so that you are familiar with all of its features and capabilities. All precautions and safety warnings should be read and strictly observed.

SERVICE PACK CONTENTS

The service pack consists of the following:

- Storage box
- Remote Control
- 2 AA Batteries
- Adjustment Stick
- This Manual

GETTING STARTED

Refer to the monitor manual for connecting power and signal to the monitor.

For initial operation of multiple unit installations, apply power to only one unit at a time, while changing the unit identification number (Unit ID) from the factory set 01 to a sequence of unique numbers for each unit.

Unpack the remote control and install batteries.

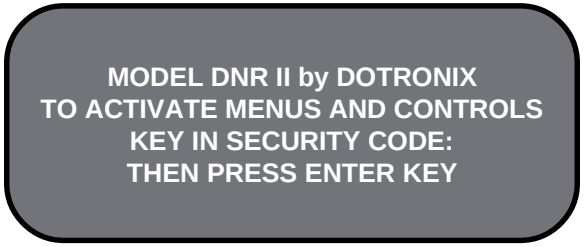
The DNR II with HARC responds to remote control inputs in a manner similar to many other remote control devices including TVs, VCRS etc. with two important differences. First, a security code is required before access to any menus is allowed. Second, a unit selection number is required to select one unit from a group of several units, allowing individual adjustments to individual units with one remote control.

Until the security code and unit selection numbers are entered, the monitor will not respond to the remote control.

TO ACTIVATE MENUS AND CONTROLS

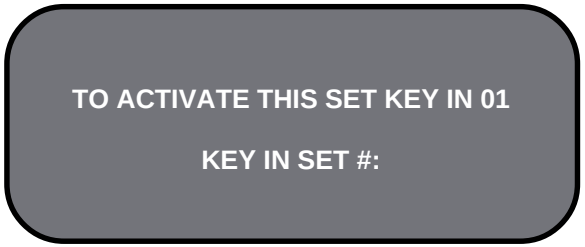
Stand in front of the unit (monitor) and aim the remote at the InfraRed (IR) receiver located on the lower right corner of the unit. Press and hold the ENTER key on the remote for several seconds (typically 6 to 8 seconds).

The following on screen display (OSD) will appear.



The factory set security code is 5432. You can change this code at any time. Refer to a later section of this manual titled **CHANGING SECURITY CODE AND UNIT NUMBER.** At this point key in the security code 5432. As each number is pressed, an x will appear after the KEY IN SECURITY CODE: line. If you miss-key a number the x's will disappear allowing you another chance to enter the code. When the correct code is entered, press the ENTER key.

The following on screen display (OSD) will appear.



All units are shipped from the factory programmed as unit # 01. For multiple unit installations, you will want to change the unit number of all but one unit to other numbers. Typically the units are numbered in sequence from 01 upward. The DNR II HARC will accept unit numbers up to 99. (If you need more than 99, consult the factory for a special program.) At this point, key in 01, the numbers will appear after the colon. If you miss-key the number, simply key in the desired number, the new number will replace the miss-keyed number. When you are satisfied with the number, press the ENTER key.

CUSTOM OPTIONS

If the entered time is not the desired time, key in the desired number again (and again if necessary) until the displayed time is correct. Then press the ENTER key. Repeat for the new Stop time.

Pressing the ENTER key saves the displayed times and as the new Start and Stop times.

After pressing the ENTER key the On Screen Display is erased until another selection is made via the remote control.

CHECKING REVISION LEVEL

On some occasions it may be useful to know the revision level of the program in the HARC. This function displays that information.

First it is necessary to enter the current security code and unit number, refer to **GETTING STARTED** earlier in this manual for the procedures to enter the security code and unit number.

Press and hold the 8 (eight) key until the following display appears.

This display will be erased after 5 seconds. The monitor may switch to channel 8 as a result of this command. If so key in the desired channel and press ENTER. The AUX channel (used for external video input) is 999.

LOST OR FORGOTTEN SECURITY CODE

A lost or forgotten security code can be handled by temporarily installing the jumper that de-activates security, refer to the **ACTIVATING OPTIONS** section for details. After installing the jumper use the remote control to change the security code as described in the **CHANGING SECURITY CODE AND UNIT NUMBER.** When the new code is saved, remove the temporary jumper and security will be re-activated with the new code.

CUSTOM OPTIONS

As shipped from the factory, the ON/OFF timer is not active. To activate the ON/Off timer, refer to the previous section **ACTIVATING OPTIONS.** If the ON/OFF timer is not activated, the timer can be programmed as described below, but the ON/OFF action will not occur until the ON/OFF function is activated.

The service menu offers another ON/OFF timer (menu selection #18) that should be de-activated by entering 0 for the selection. This timer can be set for 15 minute intervals while the HARC timer can be set to 1 minute resolution. Operation of both timers could be confusing to the user and thus the timer on service menu 18 should be de-activated.

The ON/OFF timer depends on the monitor clock. If the clock is not set properly or is not operating, the ON/OFF timer will not work properly. To set the monitor clock, refer to earlier section titled **CUSTOMER MENUS.**

To set the ON/OFF time, first it is necessary to enter the security code and unit number, refer to GETTING STARTED earlier in this manual for the procedures to enter the security code and unit number.

Then press and hold the TIMER key until the following screen appears (typically 6 – 8 seconds).

The times displayed are the current Start and Stop times and may be any value from _1:00 to 24:59. Notice that the time is in 24 hour format and that values from 00:00 to 00:59 are not accepted. For times from mid-night (12:00 am in 12 hour format) to 1:00 am, use 24:00 to 24:59.

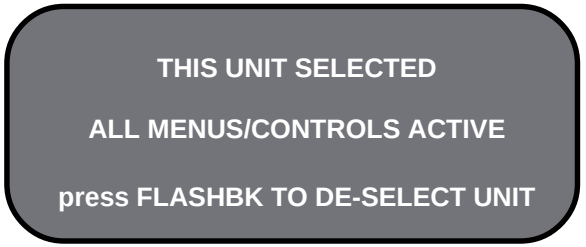
To accept the current times, press the ENTER key twice.

To change the times, key in the new Start time. Notice that as the numbers are keyed in they move from left to right until all four digits have been entered.

Some digits are not accepted. For example numbers larger than 2 that will be in the first digit position are not accepted, numbers larger than 4 are not accepted for the second digit and numbers larger than 5 are not accepted for the third digit.

TO ACTIVATE MENUS AND CONTROLS

The following on screen display (OSD) will appear.



At this point, you can use the remote to control all available functions of the unit. Please refer to later sections of this manual for details on using those controls.

If this is a multiple unit (monitor) installation, this is a good time to change the unit number so that each unit will have a unique number when all units are powered up. Refer to the section of this manual titled **CHANG-ING SECURITY CODE AND UNIT NUMBER** for the procedure to change the unit number. If you desire, you can change the security code at the same time.

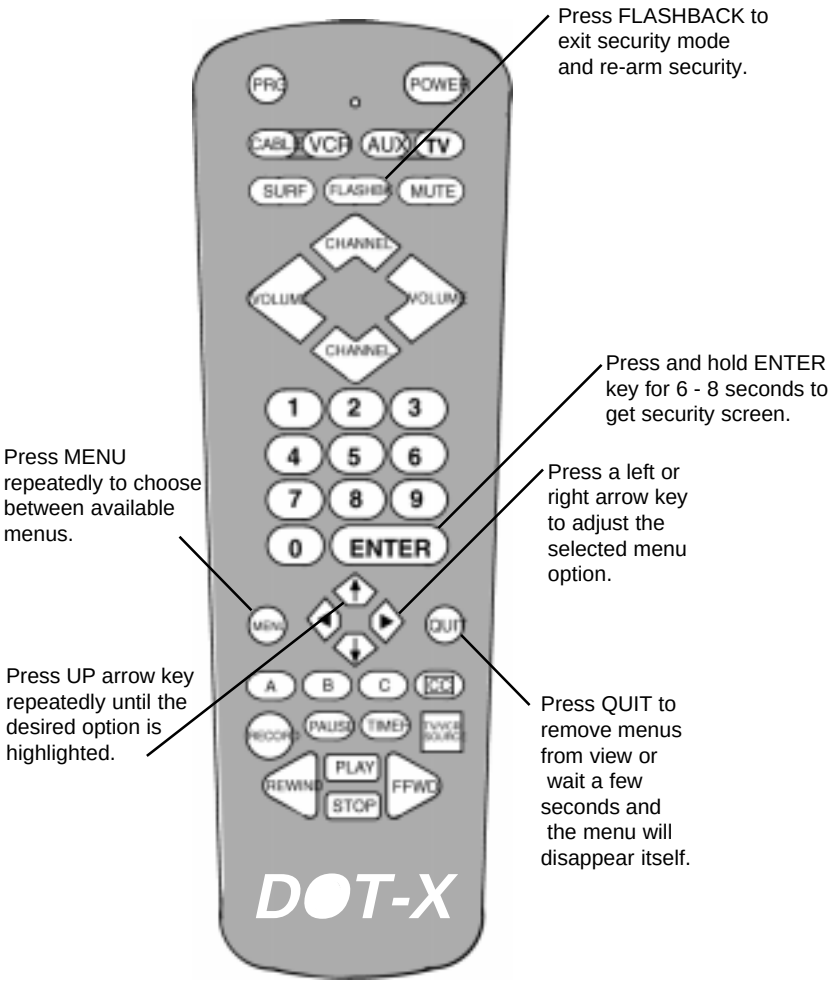
When you are done using the controls, press the FLASHBK key. This de-selects the unit, returning security and unit selection to their original state. To reselect this unit or to select another unit, follow the same procedure starting with pressing and holding the ENTER key.

If no remote control activity is sensed for 15 minutes, the HARC will de-activate security and it will be necessary to re-enter the security code and reselect this unit following the procedure just described.

REMOTE CONTROL

The following has been prepared to act as a guide in the operation of your HARC REMOTE CONTROL equipped units (monitors). Please read the following operating instructions carefully so that you are familiar with all of its features and capabilities before using your remote. All precautions and safety warnings should be read and strictly observed.

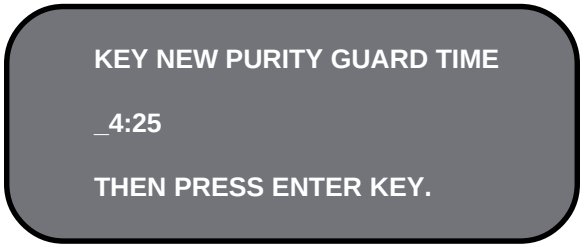
Each unit can be controlled by entering a security code and unique unit selection number as described in the previous section. After entering the security code and unit selection numbers, the following controls and menus are available.



CUSTOM OPTIONS

code and unit number, refer to **GETTING STARTED** earlier in this manual for the procedures to enter the security code and unit number.

Then press and hold the 9 (nine) key until the following screen appears (typically 6 – 8 seconds).



The time displayed is the current Purity Guard time and may be any value from _1:00 to 24:59. Notice that the time is in 24 hour format and that values from 00:00 to 00:59 are not accepted. For times from midnight (12:00 am in 12 hour format) to 1:00 am, use 24:00 to 24:59.

To accept the current time, press the ENTER key

To change the time, key in the new time. Notice that as the numbers are keyed in they move from left to right until all four digits have been entered.

Some digits are not accepted. For example numbers larger than 2 that will be in the first digit position are not accepted, numbers larger than 4 are not accepted for the second digit and numbers larger than 5 are not accepted for the third digit.

If the entered time is not the desired time, key in the desired number again (and again if necessary) until the displayed time is correct. Then press the ENTER key.

Pressing the ENTER key saves the number and begins the Purity Guard timing process.

After pressing the ENTER key the On Screen Display is erased until another selection is made via the remote control.

PROGRAMMING ON/OFF TIMER

In some installations it will be desirable for the monitor(s) to turn on an off at the same time each day. The programmable ON/OFF timer provides this function.

CUSTOM OPTIONS

monitors in a multi-monitor installation from drawing power up current simultaneously which can momentarily overload building circuits and trip circuit breakers needlessly. The delay is proportional to the unit number and is slightly more than 0.1 seconds multiplied by the unit number. Thus a unit with a number 10 would experience a delay slightly longer than 1 second. Normally this slight delay is not noticeable. Where necessary this jumper can be installed to reduce the delay to the minimum possible.

Jumper J7 activates Purity Guard when installed in the position to connect the pins of J7. For more information on Purity Guard refer to the next section titled **PROGRAMMING PURITY GUARD TIMER.**

Jumper J8 activates the ON/OFF timer when installed in the position to connect the pins of J8. For more information on the ON/OFF timer refer to a later section titled **PROGRAMMING ON/OFF TIMER.**

Additional jumper positions J9 – J11 are provided on the module for factory use. Jumpers must not be installed in these locations. Installing jumpers in these locations will lead to erratic operation of the monitor.

PROGRAMMING PURITY GUARD TIMER

Purity Guard activates the Degauss function of the monitor once each 24 hour period. Degauss compensates for the effects of stray magnetic fields including the earth's field, from affecting the quality of the picture presented by the monitor.

Degauss is activated at power up which is sufficient for monitors that are powered down at least once each day. For units that operate continuously, it is recommended that the degauss circuit be operated at a selected time each day. Purity Guard provides the timer and selection of time for the degauss function.

Degauss causes a short (approximately 20 second) interruption of the picture and thus should be timed to occur at a time that is least disruptive to the use of the monitor.

As shipped from the factory, Purity Guard is not active. To activate Purity Guard, refer to the previous section **ACTIVATING OPTIONS**. If Purity Guard is not activated, the timer can be programmed as described below, but the degauss action will not occur until Purity Guard is activated.

To set the Purity Guard time, first it is necessary to enter the security

AVAILABLE MENUS

Your unit is menu operated. In other words, adjustments to the unit are made via a list of choices which appear on your monitor screen. To view these menus, press the MENU key on the remote. Press MENU repeatedly to toggle through the available menus.

Setup Menu
Auto Program
Add/Del/Blnk
Ch. Labels
Timer Setup
Clock Set
Caption/Text

Video Menu
Contrast
Brightness
Color
Tint
Sharpness
Picture Pref

BASIC MENU OPERATION

The remote control buttons which are most frequently used for menu operations are shown here. In addition to these buttons, the number buttons may also be used where a number value is necessary, such as setting the time on the unit.

Menu Option	Function
Auto Program	Finds and stores active channels with the CHANNEL Up/Down arrows.
Add/Del/Blnk	Creates a list of favorite channels to use with CHANNEL Up/Down arrows.
Channel Labels	Assigns a network/station label, or call letters to channels. (Example: If you assign ABC to channel 13, then ABC will appear when you select channel 13.
Timer Setup	Note: The clock must be set before you can use the timers. 1. Sets the Sleep Timer and On/Off Timer. 2. The Sleep Timer programs the monitor to turn off after a period from 15 minutes up to 4 hours. 3. The On/Off Timer programs the monitor to turn on and off at specific times. This timer can be set to 15 minute intervals. A second timer that can be set to 1 minute intervals is available by pressing and holding the timer key (see next page). It is recommended that only one On/Off Timer be used.
Clock Set	Sets the monitor's clock to the current time.
Caption/Text	Displays closed captions or text when available on the selected channel. Options are Off, Caption 1, Caption 2, Caption 3, Caption 4, Text 1, Text 2, Text 3, and Text 4.

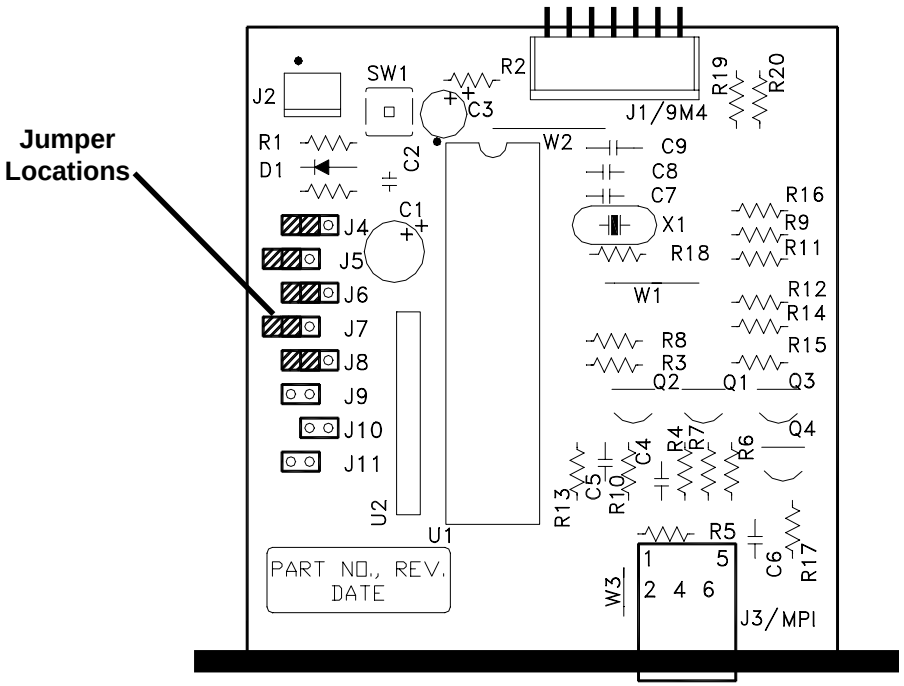
CUSTOMER SETUP MENU

Menu Option	Function
BRIGHTNESS	Adjusts the brightness level of black areas in the picture.
CONTRAST	Adjusts the overall contrast and color level of the picture.
COLOR	Adjusts the intensity of the colors in the picture.
SHARPNESS	Adjusts the definition of the object edges for best picture quality.
TINT	Adjusts the color of the flesh tones to more red or more green.
PICTURE PREF	Returns the display settings to their original factory settings.

ADVANCED SETUP FEATURES

Advanced setup features are accessed by pressing and holding keys on the remote control until the setup screen appears (typically 6 to 8 seconds).

Push & Hold	Function	Page
0 (zero)	Change security code and unit ID number.	15
9	Set or change purity guard time.	18
8	Display "Firmware" revision number.	21
TIMER	Set or change ON/OFF (Start/Stop) timer in 1 minute increments.	19



Jumper location	Pins disconnected (Factory setting)	Pins connected
J4	Security Active	No Security
J5	Unit # required	Unit # not req'd
J6	Sequenced start	Immediate start
J7	Purity Guard inactive	Purity Guard active
J8	ON/OFF timer inactive	On/OFF timer active

Jumper J4 will deactivate security when it is placed in the position to connect the pins of J4. Some installations do not require security and this option may be used in those cases. This option is also useful to temporarily bypass security in case the security code is lost.

Jumper J5 will deactivate the request for a Set # (Unit ID #) when it is placed in the position to connect the pins of J5. This is useful in single unit installations.

Jumper J6 removes any intentional delay on power up (turn on) when the jumper is placed in position to connect the pins of J6. The monitor is shipped from the factory with a small delay on power up to keep all

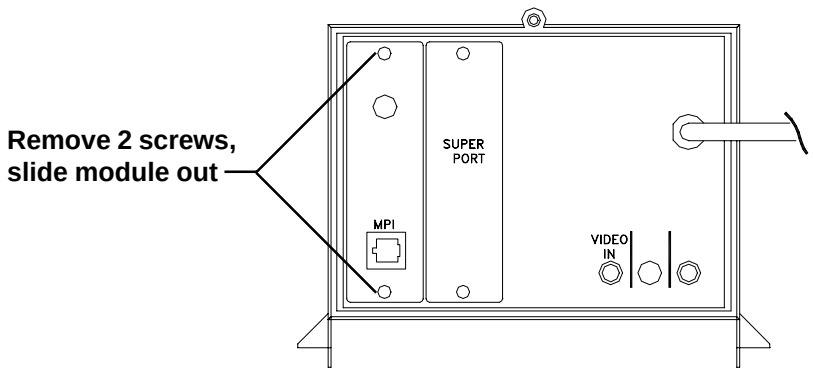
If you have changed the unit number from the factory setting, the current number will appear where the 01 is shown above. To change the number, key in the new number. Then press the ENTER key. If you do not wish to change the number, simply press the ENTER key. Pressing the ENTER key saves the number and makes it active for all future operations requiring the unit number. It is not necessary to save the unit number in a safe place since the unit will display its unit number on screen whenever a unit number is required.

After pressing the ENTER key the On Screen Display is erased until another selection is made via the remote control.

ACTIVATING OPTIONS

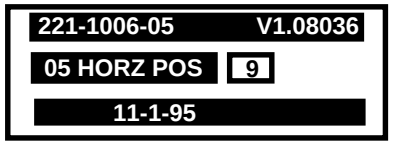
Five jumper selections are provided on the HARC module to activate or de-activate certain optional features. To access these jumpers go to the rear of the monitor and find the HARC module installed in one of two slots in the plastic panel, just to the left of the power cord and the video connectors. The HARC module may be partially removed by removing the two screws that hold it in place and then sliding the unit out of its slot. The module is connected to the monitor by an eight conductor cable which can remain connected for this operation or may be temporarily disconnected if desired.

Five jumper locations, labeled J4 through J8 are located across the top of the module and will have jumpers installed on one pin of the jumper location in such a way that there is no connection between the pins of the jumper location. Moving the jumper from this non-active position to the position where it covers and connects the two pins activates or de-activates the selected function as noted in the table at right and the option descriptions that follow the table.



Rear of Monitor

Accessing the Service Menu can only be accomplished using the remote. Press and hold the Menu until the User Menu display disappears, then press 9876, then ENTER to access Service Menu.
The black bar at the top indicates the part number of the software in the set. The date on the left of the black bar at the bottom indicates the date the module went through the factory, and at the right is a number indicating that the module has been tested.
When the Service Menu appears, it will always default to item 05 on HORIZ POS. Use the SELECT UP/DOWN keys to toggle through all of the adjustments. Use ADJUST to make a change to the selected item.



(Example)

O1 F Mode

(Factory Mode) Use the Select UP and DOWN keys to select item #01, which is the first item in the Service Menu, the Factory Mode. This item is used by the factory when the module is being tested. It has 3 positions, 0, 1 and 2. In the field, this item should always be left “OFF”. 0 is “Off”!

When the Factory Mode is Off, only the first twenty three items in the Service Menu can be brought up. When the Factory Mode is set to 1, all 52 menu items will be available. They will appear on the screen one at a time, at the top left of the screen.

When the Factory Mode is On, the AC power on feature is always enabled regardless of the setting of "AC ON" in the Service Menu. The unit will automatically come on when AC is applied.

The remote must be used to reenter the Service Menu to turn the Factory Mode off. The factory mode can also be turned off by setting the clock, or running the Auto Program feature in the customer Set Up menu.

02 Preset Px

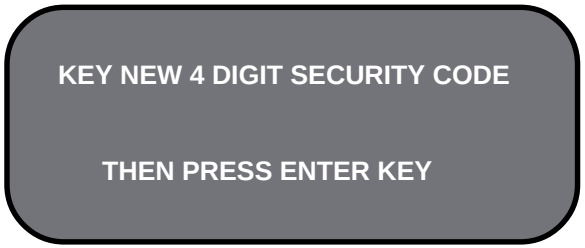
This is used to store the customer menu adjustments in the nonvolatile memory of the EAROM. The selections are Custom/Preset-Store. Settings for Contrast, Brightness, Color and Tint are stored in this manner. 0 is custom and 1 is Preset stored.

03 Pwr Man	(Power Manage) Range is 0 to 7. When set to 0, unit works normally. One to seven is length of time (in hours) unit will operate if not attended. When unit nears turn off time an on screen message appears telling you to press any key to resume normal viewing.
04 V Pos	Moves the On Screen Displays vertically. The range is from 0 to 25. Default setting is 5.
05 Horz Pos	Moves the On Screen Displays horizontally. The range is from 1 to 15. Default setting is 9.
06 Band/AFC	There are eight positions. 0 is Broadcast fixed, 1 is CATV afc,2 is HRC afc, 3 is ICC afc, 4 is Broadcast afc, 5 is CATV fixed, 6 is HRC fixed, 7 is ICC fixed. Band is automatically set when AUTO PROGRAM is used.
07 Min Vol	Sets minimum volume level provided to the speaker. The range is 0 to 63. When item is set to 0, user has full adjustment capability. Allows adjustment to minimum volume leve possiblel. Set to 0 or the desired minimum volume level. ***Note: No internal speakers.***
08 Max Vol	Sets the maximum volume level provided to the speaker. The range is 0 to 63. When item is set to 63, user has full adjustment capability. Allows adjustment to maximum level. Set to 63 or the desired maximum volume level. ***Note: No internal speakers.***
09 AC ON	There are two positions; 0 is off and 1 is AC On. In the on position the unit will turn on and off when AC Power is applied. Unit will not respond to ON/OFF commands from either remote of control panel and Sleep Timer will not function.
10 Key Defeat	Disables unmarked menu buttons on display control panel. The range is 0 to 1. 0 is off, 1 is on. Set to 1, which is on, to turn the keys off.
11 Strt Ch/Vol	Determines the channel and the volume level that is selected automatically each time the display is turned on. The range is 0 to 255. 0 is Aux position and 255 if off. Use ADJUST to change the channel number. Start volume is to be set before setting the start channel. Use volume control to set volume level.

CHANGING SECURITY CODE AND UNIT NUMBER

The security code and the unit number can be changed with the remote control. First it is necessary to enter the current security code and unit number, refer to **GETTING STARTED** earlier in this manual for the procedures to enter the security code and unit number.

Press and hold the 0 (zero) key until the following screen appears (typically 6-8 seconds).

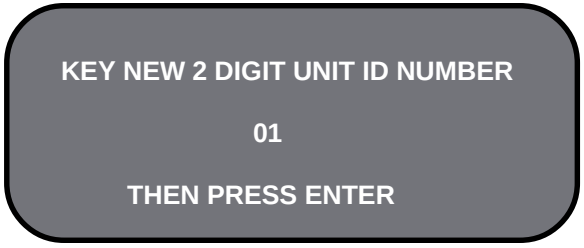


If you do not wish to change the security code, simply push the ENTER key and the current code will be retained. If you wish to change the code, key in the new code. As you key in numbers, x's will appear on the screen. When you have keyed in 4 digits, the screen will change as follows.

At this point, you must key in the new number again or key in the current code if you wish to retain the current code. Then press the ENTER key. This saves the new code and makes it active for all future operations requiring the security code.

Retain the new security code in a safe place for future reference.

The following on screen display (OSD) will appear.



* PIP module option not supplied.

__Underlined commands are used most often.

Should further adjustment or alignment be necessary contact DOTRONIX, INC. customer service.

12 Hos Mode	Not used. Leave default set to 0, which is off.
13 Chan Lock	Used in conjunction with #11 Start Channel/Volume. The range is 0 to 1. 0 is off, and 1 is on. Use Start channel to lock on a particular channel. When item is active, AUTO PROGRAM and CHANNEL ADD DEFEAT are not active.
14 Not Used	
15 Ghost Ch	The range is 0 to 1. 0 is off, 1 is on. In On Mode, channel number will stay on screen at all times, unless captions are present. The number moves slightly to prevent damage to screen. When captions are on, the "Ghost Channel" is not present.
16 Scan Mode	The range is 0 to 3. Sets turn-off when channel scan buttons are being used. In 0 Mode, scan Off is inoperative. In position 1, unit will turn off between auxiliary and lowest channel. In position 2, unit will turn off between Aux and FM. In position 3, unit will turn off after FM station scan.
17 Text Mode	Turns Text Mode on or off in the users menu. The range is 0 to 1. 0 is off, 1 is on. In On Mode, user can call up Text Mode. Set to 0 unless text is being used.
18 Sleep Timer	Enable sleep timer feature. The range is 0 to 1, 0 is off, 1 is on. Set to 1. With HARC installed this should be set to 0.
19 Alarm	Enables alarm feature. The range is 0 to 1. 0 is off, 1 is on. In Off Mode, alarm feature is not available. Set to 1.
20 Ch Override	The range is 0 to 1. 0 is off, 1 is on. In On Mode, display will work normally. Generally set to Off so it can be controlled by entertainment unit. In Off mode, Auto Program, Channel Add/Delete and Channel Lock do not function.
21 Old OCV	(On Commanl Video) The range is 0 to 1. 0 is off, 1 is on. Not used.
22 Capt Lock	(Caption Lock) Two settings, 0 and 1. 0 is off, 1 is on. Set to 1 to restore previous On/Off state after monitor is initially turned on.

23 Func Prev	(Function Preview) The range is 0 to 1. 0 is off, and 1 is on. Set to 1 to suppress channel prev screen and enable user function menu with some pay per view systems. Not used.
24 Trap 3.58	This is the 3.58 MHz trap. 0 is off, 1 is on. Set to 0. For normal monitor operation set to 1, if Y/C is used or the chassis has a comb filter.
25 Rf Bpf	(Rf Bandpass) Sets adjustment range of the customer control for brightness. The range is 0 to 63. Default setting is 30.
26 RF Brt	(RF Brightness) This sets the adjustment range of the customer control for brightness in the AUX Mode. The range is from 0 to 63. Default setting is 30.
27 Aux Brt	(Auxiliary Brightness) This sets the adjustment range of the customer control for brightness in the AUX Mode. The range is from 0 to 63. Default setting is 30.
28 VPHASE	(Vertical Phase) The range is from 0 to 7. Default setting is 0.
29 HPHASE	(Horizontal Phase) The range is 0 to 31. Default setting is18.
30 Snd ATT	The range is 0 to 63. Default setting is 46.
31 Snd Bal	The range is 0 to 63. Default setting is 63.
32 RF Agc	The range is from 0 to 63. Default setting is 48, Tune in the weakest channel and adjust for a snow free picture.
33 Horz Afc	There are two settings 0 and 1. Default setting is 0.
34 Wht Pk	(White PK Level) The range is 0 to 1. Default setting is 0.
35 MaxCon	(Maximum Contrast) This sets the adjustment range of the customer control for contrast. The range is from 0 to 63. Default setting is 63.
36 60Hz Sw	The range is 0 to 1. Sync stability item. 0 is off. Default setting is 0.

37 PIF VCO	The range is 0 to 127.
	ITEMS 38 THROUGH 52 VARIES WITH CRT.
38 Red CUT	B & W tracking adjustment. The range is 0 to 255. Default setting is 20.
39 Grn CUT	B & W tracking adjustment. The range is 0 to 255. Default setting is 0.
40 Blue CUT	B & W tracking adjustment. The range is 0 to 255. Default setting is 28.
41 Grn GAIN	B & W tracking adjustment. The range is 0 to 255. Default setting is 45.
42 Blue GAIN	B & W tracking adjustment. The range is 0 to 254. Default setting is 70.
43 In LEV*	(Input Level) The range is 0 to 15. Default setting is 9.
44 St Vco*	(Stereo Voltage Controlled Oscillator) The range is 0 to 63. Default setting is 10 to 39.
45 SapVco*	(Second Audio Program Voltage Controlled Oscillator) The range is 0 to 15. Default setting is 3 to 9.
46 SapLpf*	(Second Audio Program Low Pass Filter) The range is 0 to 15. Default setting is 7 to 9.
47 St Lpf*	(Stereo Low Pass Filter) The range is from 0 to 63. Default setting is 18 to 35.
48 Spectr*	This is high frequency separation. The range is 0 to 63. Default setting is 38 to 63.
49 WideBa*	This is low frequency separation. The range is 0 to 63. Default setting is 28 to 36.
50 Seq Permt	SEQ on-off. 0 is off, 1 is on.
51 Field Two	Effects captioning. Range is 0-1. 0 is off, 1 is on. Set to 1.
52	Set to 0.