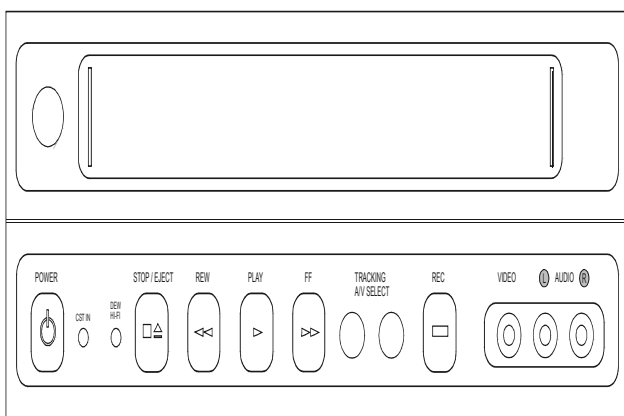


HTRS

Mobile Video System

HTR62 Installation and Operating Guide



HTR62 Installation and Operating Guide

Revisions

Issue	Date	Revisions
1.00	3/05	New document
1.01	12/05	Changed HTGPS62 to HTRGPS module.

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About This Document

This document describes how to install and operate the HTR62 mobile video recording system. This guide is intended for installers, administrators, and operators.

The HTR62 mobile video recording system is referred to as the HTR62 throughout this guide.

Overview of Contents

This document contains the following chapters and appendixes:

- *Chapter 1, System Overview*, introduces the HTR62 and its components and describes the system features.
- *Chapter 2, Installation*, describes how to install the HTR62 in a bus, including wiring connections to all the peripherals.
- *Chapter 3, System Setup*, shows you how to configure the system after installation.
- *Chapter 4, System Operation*, describes how to perform routine operations.
- *Appendix A, Solutions*, provides answers for common technical issues.
- *Appendix B, Specifications*, lists specifications for the HTR62.

Important Safeguards and Warnings

Caution The installation of this equipment should be made only by qualified technicians and should conform to all local codes.

WARNING! Connection of this device to any equipment other than that recommended by Honeywell may result in a safety hazard, defective operation, and/or equipment damage.

Warranty and Service

Subject to the terms and conditions listed on the Product Warranty Card, during the warranty period Honeywell will repair or replace, at its sole option, free of charge, any defective products returned prepaid.

In the event you have a problem with any Honeywell product, please call Customer Service for assistance or to request a Return Authorization (RA) number:

Call +1.800.796.CCTV

Be sure to have the model number, serial number, and the nature of the problem outlined for the technical service representative.

Prior authorization must be obtained for all returns, exchanges, or credits. Items shipped to Honeywell without a clearly identified Return Authorization (RA) number may be refused.

System Overview

The HTR62 mobile video system records and displays audio and video signals, time and date, vehicle speed, and the status of vehicle warning signals.

The HTR62 mobile video system consists of the following components:

- An industrial grade VHS VCR
- A sturdy, 18-gauge steel, tamper-resistant enclosure
- A Honeywell mobile camera
- Cables

Features

The HTR62 mobile video system gives you:

Recording

- Two camera inputs for optional Stop arm camera system (single channel recording)
- Two Hi-Fi audio channels for higher audio quality
- Up to nine hours of recording time (T180 tape)
- Continuous loop recording (on/off user programmable)
- Recording for up to 54 minutes after the vehicle ignition is switched off (user programmable)
- Delay recording for up to 60 minutes after the vehicle ignition is switched on (user programmable)

On-Screen Display

- Time and date stamps on recorded video signals with automatic Daylight Saving Time adjustment
- On-screen alphanumeric recording of vehicle speed and up to five status signals (typically, brake lights, turn indicators, and warning indicators)
- On-screen programmable title (up to 20 characters)

Ease of Operation

- Monitor video and audio output through front panel jacks for easy access
- User friendly programming using the supplied infrared remote control and on-screen display
- The VCR settings are saved for ten years without powering the unit
- EP or SP recording speed (user programmable)
- Five daily timers for programming VCR operation
- Temporary power—using the POWER button—to remove tapes and program the VCR while the vehicle ignition is off
- Automatically detects if the video signal from the camera is missing
- Improved speed sensor capability—no external signal conditioner required

GPS Module (Optional)

The HTRGPS module records vehicle speed without tapping into transmission speed sensors or calibrating the speed sensor. The HTRGPS module sends vehicle position, bearing and speed data via serial interface to the HTR62.

The HTR62 is fully upgradable to an HTRD100 digital mobile system.

The HTR62 is fully compatible with previous Silent Witness mobile video installations such as the SWS310, SWS210, and SWS210A mobile video systems. The HTR62 may be installed in existing non-Honeywell systems with minimal adjustment.

Installation

This chapter tells you how to install the HTR62 mobile video system in a bus.

Before You Begin

Please read this guide carefully before you install the HTR62 mobile video system.

Keep this guide for future reference.

Unpack Everything

The HTR62 kit should include the following items in addition to this guide:

- One VCR enclosure (base, cover, and access panel with two keys)
- One 20 ft. (6.1 m) wiring harness
- One VCR kit:
 - One VCR
 - One remote control with battery
 - One 3 ft. (.91 m) audio and video RCA cable
- One hardware package:
 - Four #10 x 3/4 in. Phillips sheet metal screws
 - Two wire taps
 - One inline fuse holder and 3A fuse
 - One safety grommet for the enclosure cable outlet
- One Warranty card

Check that the items received match those listed on the order form and packing slip. If any parts are missing or damaged, please contact the dealer you purchased the HTR62 system from, or call Honeywell Customer Service (see *Warranty and Service*, page *viii*).

Equipment Required

The following tools may help you to complete the installation:

- Drill
- Phillips screwdriver
- Wire cutters

New Installation

This section shows you how to install an HTR62 in a school bus that does not have an existing mobile video system. To upgrade an existing mobile video system (for example, a Silent Witness SWS310 or SWS210), see *Upgrade Installation*, page *10*.

Choosing the Location

Choose a location for installation that:

- Provides convenient access for installing or removing the VCR or tapes
- Has a rigid surface, such as the dashboard, headliner, or under a seat
- Conforms to local regulatory guidelines

Avoid any location for installation:

- That is subject to high vibration
- That is subject to high sunlight levels
- Where passengers can interfere with it
- Next to a heater duct
- On the floor if the bus is washed out with a hose

Table 2-1 lists recommended location options.

Table 2-1 Installation Locations				
Location	Convenient operation	Easy to install	Low vibration	Good air flow
Bottom of glove box - horizontal mount	✓	✓	✓	✓
Inside glove box - horizontal, vertical mount	✓	✓	✓	✓
Bottom of passenger seat behind bus driver - horizontal mount		✓	✓	✓
Underneath bulkhead - horizontal mount	✓	✓		✓
Front of bulkhead - vertical mount	✓	✓		✓
Console - horizontal mount	✓	✓	✓	✓
Console - vertical mount	✓	✓	✓	✓
Beside driver seat - horizontal mount	✓	✓		✓

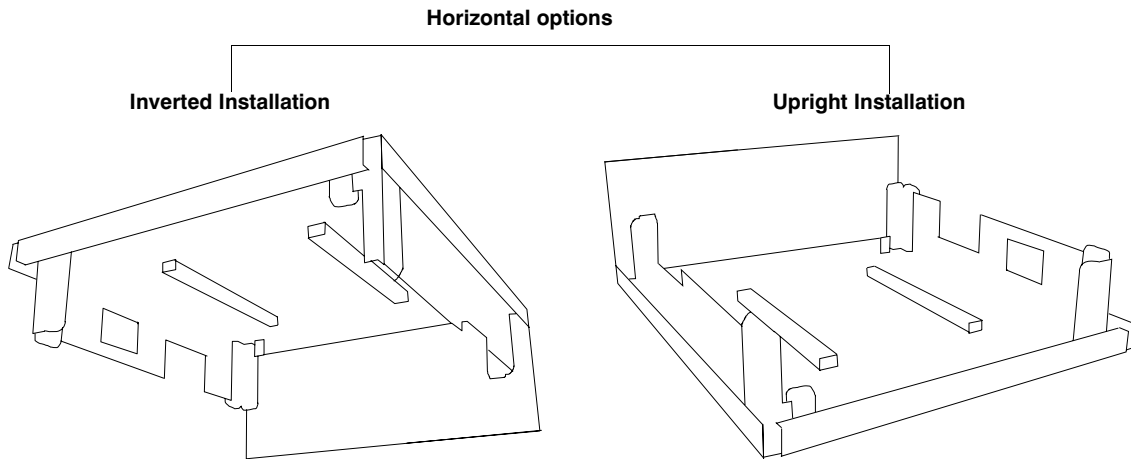
Caution Honeywell recommends that you do not install the HTR62 on the transmission access hatch. This location has the highest level of vibration (and may be subject to water damage).

Mounting Options

The VCR enclosure can be mounted:

- Horizontally, either upright or inverted, as shown in *Figure 2-1*.
- Vertically with the cassette opening pointing up.

Figure 2-1 Mounting Options



Mounting the VCR Enclosure Base

To mount the VCR enclosure base:

1. Unlock the access panel in the front of the VCR enclosure cover, using one of the keys included with the enclosure.
2. Slide the cover forward and lift it off the enclosure base.
3. Use the VCR enclosure base as a template to mark and drill pilot holes for the four #10 x 3/4 in. sheet metal mounting screws (included with the hardware package).

Note If desired, you can drill alternate mounting holes in the VCR enclosure base. Locate the mounting holes as close as possible to the outside edges of the enclosure base. Ensure that the mounting fasteners do not touch the VCR when it is installed.

4. Attach the VCR enclosure base to the mounting surface, using the four #10 x 3/4 in. sheet metal mounting screws.

Wiring

Figure 2-2 shows the wiring harness and camera harness that connects into the back panel of the VCR.

Note Start cabling at the VCR to ensure that the DB25 connector has sufficient length to reach the VCR.

To connect the wiring harness:

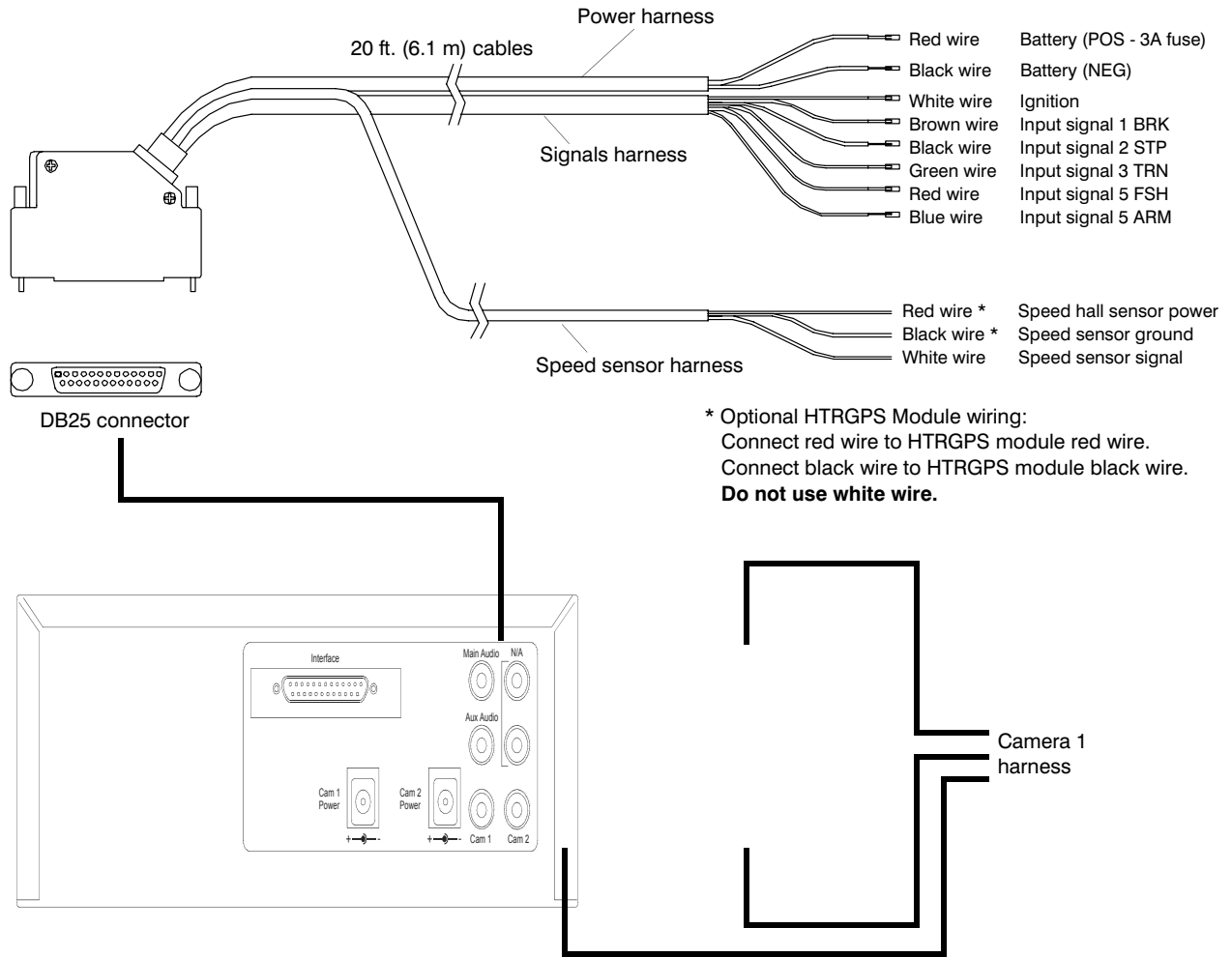
1. Plug the DB25 connector on the HTR62 wiring harness into the back of the VCR (see *Figure 2-2*) and tighten the retaining screws.
2. Remove the 3A fuse from the fuse holder.
3. Connect the fuse holder and power harness to the vehicle main battery power and ground points. If a master power switch (kill switch) is used in the vehicle, attach the power harness after the switch.
4. Connect the signal harness to the ignition switch and input signals at the fuse box or under the dash.

The connection to the ignition switch starts and stops the VCR; it does not power the VCR. If possible, connect this wire to the radio accessory fuse to avoid electrical interference from fans or blowers.

5. Connect the speed sensor harness to the vehicle speed sensor, if desired. See *page 20* for calibration programming. Refer to the vehicle wiring guide for correct location of wires.
6. Connect the Video and Audio connectors from Camera 1 into Cam 1 Video and Main Audio respectively.
7. If a second camera (for example, Stop Arm) is used, connect it to Cam 2 Power and Cam 2 Video.
8. An optional external microphone can also be connected to the Aux In Audio. To order, contact your Honeywell representative. See the back cover of this guide for contact information.
9. Insert the 3A fuse into the fuse holder connected to the positive battery terminal of the vehicle.

Figure 2-2 shows the wiring on the wiring harness that connects to the electrical system.

Figure 2-2 Wiring Connections

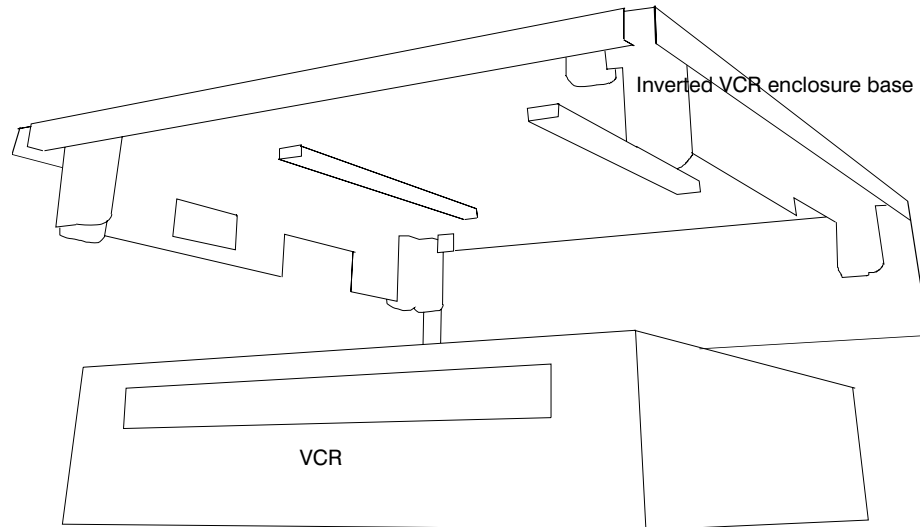


Installing the VCR

To install the VCR:

1. Slide the VCR into the foam padded holder in the VCR enclosure base and secure it in place with the velcro retaining strap. Do not press on the center of the VCR.
2. For inverted mount installations, see *Figure 2-3*.

Figure 2-3 Enclosure Inverted Mount Installation

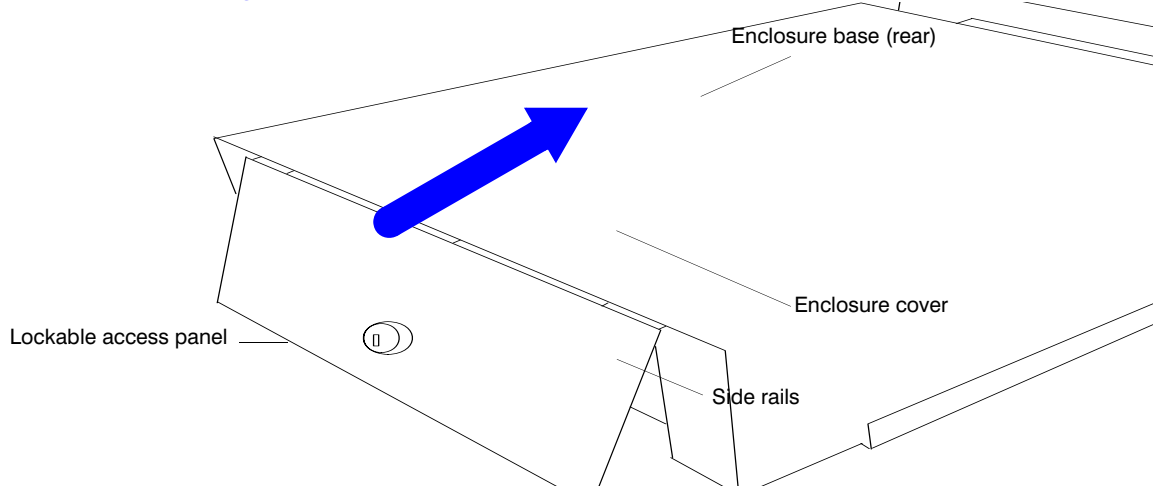


Installing the Enclosure Cover

To install the enclosure cover:

1. Unlock the access panel in the front of the enclosure cover, using one of the keys supplied with the VCR enclosure.
2. Place the enclosure cover inside the side rails of the enclosure base.
3. Slide the cover toward the rear of the base (see *Figure 2-4*).
4. Replace the access panel and lock it to secure the cover to the base.

Figure 2-4 Enclosure Cover Installation



Your HTR62 unit is now ready to program. Proceed to *Chapter 3, System Setup*.

Upgrade Installation

This section explains how to upgrade an existing mobile video system (for example, a Silent Witness SWS310 or SWS210) to an HTR62 system. You will require only a VCR to complete the upgrade

Note If the main wiring harness is not replaced when upgrading, trigger 5 may not be available.

Disassembling the Existing System

To disassemble the existing system:

1. Remove the enclosure cover:
 - a. Unlock the access panel in the front of the enclosure cover.
 - b. Slide the access panel to the right and remove it from the enclosure cover.
 - c. Pull the enclosure cover towards you until it is free of the enclosure base.
2. Make a note of the current system configuration settings:
 - a. Power up the VCR.

- b. Enter programming mode (refer to the manual that came with your existing system).
 - c. Note the settings on the Program screen(s) (for example, bus title, status indicators, bus speed calibration). You will need these settings to program into the new VCR after installation.
3. Power down the VCR.
 4. Remove the 3A fuse from the power cable.
 5. Remove the existing unit by loosening the velcro retaining strap and pulling it towards you until it is free of the enclosure.
 6. Disconnect the power connector, video and audio connectors, and DB25 wiring harness.
 7. Remove the VCR. Set aside.
 8. Replace the existing VCR with the new VCR.
 9. Plug the camera into the Cam 1 input for a one camera system. If you are using a second camera, plug it into the Cam 2 input (see *Figure 2-2*)
 10. Program the new VCR.

HTRGPS Module Installation

Note The HTRGPS Module is an optional component. Contact your sales representative or Honeywell Sales for more information about this product.

The HTRGPS Module easily installs at the rear of the enclosure base. Refer to the *HTRGPS Module Installation Application Note* for complete installation instructions. See *Chapter 3* for information on programming the VCR to accept and display GPS data.

System Setup

The HTR62 comes with a handheld wireless remote control. This chapter describes how to use the remote control to program the VCR. After you have done the initial system setup, *Chapter 4* shows you how to use the remote control for basic operating functions.

Programming Controls

Before you use the remote control, install the CR2025 battery (supplied with the remote control) inside the battery compartment. Then, simply point the remote control at the front panel of the VCR.

Note Install the battery into the remote control + side up.

Several of the buttons have dual functions (see *Figure 3-1*). That is, during Play mode each button functions as labeled, but during Program mode several buttons function differently. *Table 3-1* lists the remote control buttons and describes their functions in Play and Program modes.

Figure 3-1 Remote Control

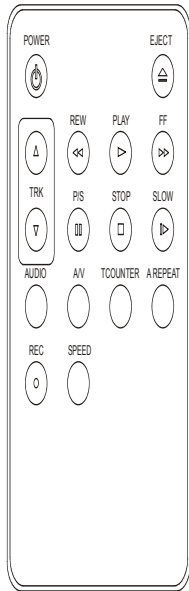


Table 3-1 Remote Control Button Functions

Control	Program mode function	Play mode function
POWER	Turns the HTR62 off.	Turns the unit off. To apply temporary power to program the VCR without turning the bus ignition on, use the VCR POWER button.
EJECT		Press to eject the tape.
TRK (▲, ▼)	<p>▲ Increases the value. Incrementing from the last value loops back to the first value.</p> <p>▼ Decreases the value. Decrementing from the first value loops back to the last value.</p>	<p>Video tracking. The VCR tries to video track automatically.</p> <p>Use this feature only when horizontal lines appear in the picture during playback</p>
REW (◀◀)	Moves the cursor to the left.	Rewinds the tape or searches through the images backwards from the most recent.
PLAY (▶)		Stops the current VCR operation to start playback.
FF (▶▶)	Moves the cursor to the right.	Plays back images in fast forward.
P/S Pause/Still ()		<p>Interrupts an image playback sequence and locks onto the image displayed.</p> <p>Press PLAY to continue playback.</p>

Table 3-1 Remote Control Button Functions

Control	Program mode function	Play mode function
STOP	<p>Use this button to:</p> <ul style="list-style-type: none"> Enter Program mode. Press and hold the button for three seconds to display the Setup screen. Exit Program mode. Press and hold for three seconds. Your configuration settings are saved when you exit Program mode. <p>Note The VCR automatically exits Program mode if no button is pressed in 60 seconds.</p>	<p>Stops the current VCR operation or stops image playback.</p> <p>If the ignition trigger is on, the VCR automatically starts recording.</p>
SLOW (►)		Resumes normal playback speed.
AUDIO		Selects audio playback function.
A/V		Not currently available.
TCOUNTER		Displays tape timer
A REPEAT		Not currently available.
REC		Not currently available. You can change the recording speed in Menu mode (see <i>Lines 5 and 6</i> , page 20).
SPEED		Not currently available.

Programming the VCR

The display parameters, date and time, speedometer calibration, and power control settings must be programmed into the VCR. The alphanumeric information displays on three lines at the top or bottom of the image on the screen (user selectable).

Note The programmed settings are retained in the VCR even if the HTR62 is disconnected from the vehicle battery.

To program the VCR:

1. Unlock the access panel on the front of the VCR enclosure and remove the enclosure cover.
2. Plug an RCA cable into the VIDEO OUT jack in the front panel of the VCR. Plug the other end into the VIDEO IN jack of a portable monitor.

3. Start the vehicle. The VCR automatically starts recording after approximately 10 seconds, subject to Record Delay and Timer settings. You should see the alphanumeric display superimposed on the video image from the camera.
4. Press the STOP button once to stop the VCR recording. OR press and hold for three seconds to enter Program mode.

For a short programming session, you may press the POWER button (temporary power feature) to avoid starting the vehicle.

Note You can program the VCR when no video camera is connected to the system. In this case the message NO VIDEO DETECTED displays on the screen.

Figure 3-2 Welcome Screen



Initial Setup

The HTR62 comes pre-configured from the factory with the default settings shown in [Figure 3-3](#). You can change the settings shown in [Table 3-2](#).

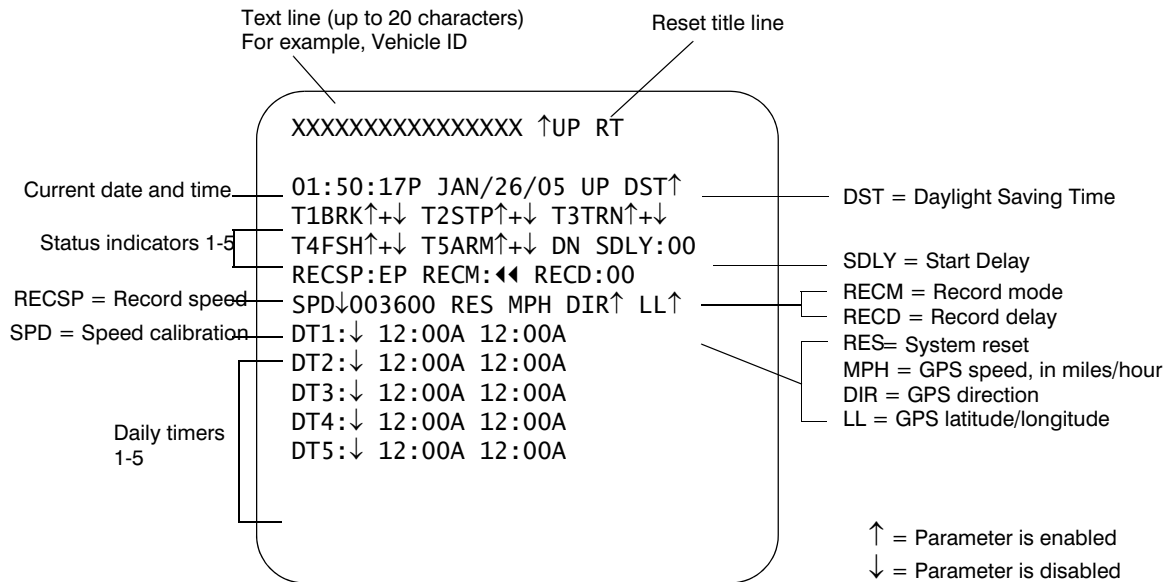
Table 3-2 System Default Settings

Setting	To program, see section ...
Title line	Line 1, page 18
Date and time, Daylight Saving Time	Line 2, page 18
Signal indicators (T1 to T5)	Lines 3 and 4, page 19
Start Delay (SDLY)	SDLY Start Delay, page 20
Recording speed (EP/SP)	Lines 5 and 6, page 20

Table 3-2 System Default Settings

Setting (cont'd)	To program, see section ...
Continuous recording loop (RECM)	<i>Lines 5 and 6, page 20</i>
Delayed-off time (RECD)	<i>Lines 5 and 6, page 20</i>
Speed indication (SPD↓ 3600)	<i>Lines 5 and 6, page 20</i>
Reset system (RES)	<i>Lines 5 and 6, page 20</i>
Record and display GPS data	<i>Lines 5 and 6, page 20</i>
Timers	<i>Lines 7 to 11, page 21</i>

Figure 3-3 Menu Screen, Default Settings Shown



The following symbols are common to all the settings:

Symbol	Description
↑	Enables the selected feature or makes the selected trigger active.
↓	Disables the selected feature or makes the selected trigger inactive.

The following tables describe where to change the settings on the Menu screen.

Line 1

Title A 20-character text line can be added to the recording. Use the directional buttons to cycle through the range of programmable characters:

Capital letters **A** to **Z**

Numbers **0** to **9**

-

Blank space

The title display can be:

- Displayed on the top or bottom of the screen
- Turned on and off without resetting the content
- Reset to blanks with the RT (Reset Title) option (see *Reset title*, page 18)

Reset title (RT) Resets the title to blanks. This feature is useful when a long title must be changed to a short one or no title. No confirmation is requested from the user.

Line 2

Time The 12-hour clock is used for all time settings. You can independently change:

- Hours (**1** to **12**)
- Minutes (**0** to **59**)
- Time of day (**A** for AM, **P** for PM)

The seconds automatically reset to 00 when the minutes or hours are changed.

Date You can independently set:

- Month (**JAN** to **DEC**)
- Day (**1** to **31**, depending on the month selected)
- Year (the first and second digits of the year)

The HTR62 automatically adjusts for leap years.

DST Daylight Saving Time Daylight Saving Time is enabled by default. To disable, select ↓.

Lines 3 and 4

T1 to T5

Status indicators. You can connect up to five signals coming from the bus electrical system to the VCR. For each signal, you can program:

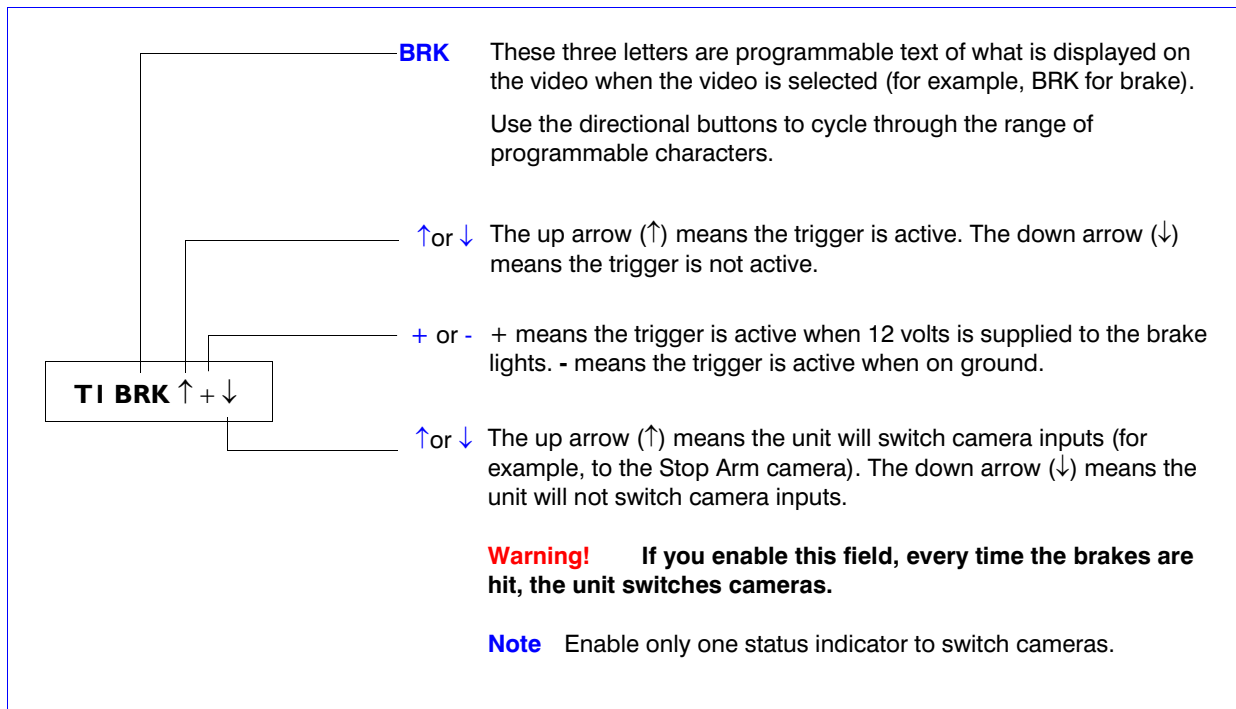
- Enable/disable its display
 - ↑ indicates the trigger is enabled and the system will respond.
 - ↓ indicates the trigger is disabled and the system will not respond.
- A three character descriptor (for example, BRK for brake, ARM for Stop Arm)

Use the directional buttons to cycle through the range of programmable characters:

Capital letters **A** to **Z**
 Numbers **0** to **9**
 -
Blank space
- Polarity
 - + indicates the trigger is active when 12 volts is supplied to the brake lights.
 - means the trigger is active when on ground.

You can program a signal input to switch cameras.

In the configuration example in *Figure 3-3*, what you see on lines three and four are described as follows:



T5 ARM	<p>The fifth status indicator is typically used for the Stop Arm.</p> <p>In the example on <i>Figure 3-3</i>, T5ARM↑+↓:</p> <p style="padding-left: 40px;">The first arrow (↑) indicates that this trigger is enabled.</p> <p style="padding-left: 40px;">The + indicates that the trigger is 12 volts, supplied to the Stop Arm.</p> <p style="padding-left: 40px;">The second arrow (↓) indicates that the unit will not switch cameras after the trigger.</p>
SDLY Start Delay	<p>Set this field to determine the time in minutes (00 to 60) that the unit will delay before initiating recording after the vehicle ignition is switched on.</p> <p>00 indicates the VCR starts recording as soon as the bus starts. 60 indicates the VCR will start recording 60 minutes after the bus starts.</p>

Lines 5 and 6

RECSPEED (EP/SP) Recording speed	<p>You can program the VCR to record at EP or SP speed. The recording time for a T180 tape is nine hours at EP speed and three hours at SP speed.</p> <p>This parameter can only be changed on the Program screen. The corresponding button in the remote control is disabled.</p>
RECM Continuous recording loop (◀/■)	<p>◀◀ indicates that the continuous recording loop is enabled. When the recording reaches the end of the tape, the VCR automatically starts rewinding. When it reaches the beginning of the tape, the VCR starts recording again.</p> <p>When the tape is put into fast forward or rewind, the VCR enters into the same sequence; that is, it automatically restarts recording from the beginning of the tape.</p> <p>■ indicates that the continuous recording loop feature is disabled. When the VCR is recording and reaches the end of the tape, it automatically stops.</p>
RECD Delayed-off time	<p>Set this field to determine the time in minutes (00 to 54) that the unit continues to record after the ignition is turned off.</p> <p>00 indicates that the VCR stops recording as soon as the ignition is turned off.</p>
SPD Speed indication (SPD↓ 3600)	<p>Enable (↑) or disable (↓) display of the speed sensor. When you select SPD using the tracking buttons, the text changes to CAL, indicating the VCR is in calibration mode.</p> <p>There are two calibration modes:</p> <ul style="list-style-type: none"> • Direct calibration. Run the bus for exactly one mile (or one km). Once the mile is completed, change the CAL field back into SPD. The number 3600 automatically updates with the new count of pulses per mile. Direct calibration can only be done when the unit is first installed or when the VCR is changed to a bus with a different type of speed sensor or bus characteristics. • Indirect calibration. Enter the pulses per mile by changing each of the five digits from the setup menu. After a VCR is calibrated for a certain bus, the local technician or bus driver should keep a record of this number for each bus. The VCR can be easily rotated between buses without recalibrating the speed sensor, by simply programming the corresponding pulses per mile number. <p>Note If your speed display is disabled, the calibration can not be changed and the speed is not displayed with the video.</p> <p>Note Optional equipment may be required to interface to your vehicle speed sensor.</p>

RES System Reset	<p>Resets all the programmable parameters of the VCR to factory defaults. This option is useful if the unit experiences intermittent programming.</p> <p>There are two ways to reset to factory defaults:</p> <ul style="list-style-type: none"> • If you want the system to ask for confirmation of a reset: <ul style="list-style-type: none"> a. Press once to change the text to CON. b. Press a second time. The reset takes effect and the parameters are reset to the factory defaults (see <i>Figure 3-3</i>). • To reset without confirmation, press once, then move forward or backward with the FF or REW buttons.
MPH	<p>When an HTRGPS module is installed and connected, the VCR can be programmed to accept GPS data. This field indicates whether the speed of the vehicle records in MPH (miles per hour) or KPH (kilometers per hour).</p>
DIR (Direction)	<p>Enable (↑) or disable (↓) display of vehicle direction from HTRGPS module.</p>
LL (Latitude, longitude)	<p>Enable (↑) or disable (↓) display of vehicle location from HTRGPS module.</p>

Lines 7 to 11

DT1 to DT5	<p>Daily timers. The setup of the timers is based on a 12-hour display as:</p> <p>12:00A 12:00A</p> <p>Up to five timers can be programmed. Each timer includes a start time (first time), a stop time (second time) and the arrow indicator that enables (↑) or disables (↓) the timer. It is not necessary to reset the start and stop time.</p>
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Notes

If no timers are enabled—that is, ↓ displays—the VCR responds to the ignition trigger only.

When any timer is enabled, the VCR turns on with the ignition signal, but does not start recording until the current time is within the timer start and stop times. The only exception to this rule is if the stop time is earlier than the start time, the VCR records through midnight, provided the vehicle is running.

Examples

11:00P 02:30A↑ means that the VCR starts recording at 11:00 PM and stops recording at 2:30 AM, provided the vehicle is running.

To record for 23 hours and 59 minutes, set the start time to 12:05A↑ and the stop time to 12:04A.

When the timers are on, the VCR will not record unless the trigger is active (for example, the bus ignition is on) or the delay-off time has not ended.

When two or more timers do not overlap in time, the VCR starts and stops according to the timer schedule.

When two or more timers overlap chronologically, the earliest start time and the latest stop times are considered.

System Operation

This chapter describes how to use the front panel controls to operate the VCR. *Figure 4-1* shows the location of the controls and *Table 4-1* describes their function.

Figure 4-1 Front Panel VCR Controls

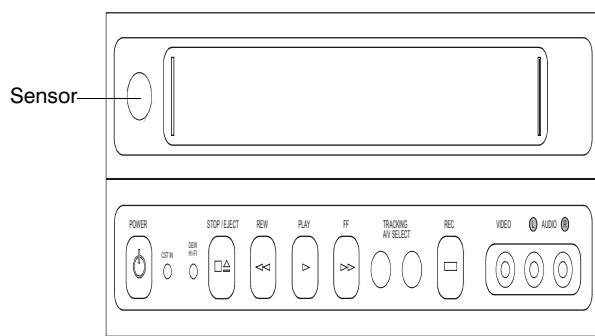


Table 4-1 Front Panel VCR Controls

Controls	Function
Sensor	Receives infrared signals from the remote control unit.
POWER	Turns the VCR on. It automatically turns off after one minute of inactivity. Use this button for temporary power to program the unit or to change VCR tapes without turning the vehicle ignition on. The VCR remains powered on for one minute after the last remote control button has been pressed.
CST IN	If lit, indicates a video cassette is in the VCR.
DEW/HI FI (Stereo)	If lit, indicates that audio is recording on the tape.
STOP/EJECT	Press this button once to stop the current VCR operation. Press this button a second time to eject the tape.
REW	Press this button once to rewind the tape or to search through the images from the most current image backwards. Press the PLAY button to resume normal playback. The VCR slows down before reaching the beginning of the tape. When it reaches the beginning, it automatically starts recording in a loop, if enabled (see <i>RECM Continuous recording loop</i> , page 20).

Table 4-1 Front Panel VCR Controls

Controls (cont'd)	Function
PLAY	Press this button once to stop the current VCR operation and play back the tape. The light in the middle of the PLAY buttons flashes green while the VCR is in Auto tracking mode. The light is steady green when the VCR has tracked the tape and is playing correctly.
FF (Fast Forward)	Press this button to advance the tape or to search forward. Press the PLAY button to resume normal playback. The VCR slows down before reaching the end of the tape. When it reaches the end, it automatically starts rewinding the tape, if enabled (see <i>RECM Continuous recording loop</i> , page 20).
TRACKING/AV SELECT	Use only when horizontal lines appear in the picture during playback.
REC	Not currently available.
VIDEO, AUDIO	Connect to monitor when programming or viewing tape.

Operating the HTR62

Every time the HTR62 receives an ignition trigger (see *Lines 7 to 11, page 21*), the unit starts a recording, subject to record delay and timer settings. When the ignition trigger is removed, the recorder stops recording, subject to record delay and timer settings. You can view recorded video by pressing PLAY on the remote control to enter Play mode.

Before you use Play mode the first time to view, familiarize yourself with the remote control functions (see *Table 3-1, page 14* for an overview).

The following subsections describe basic system operations.

Inserting a Tape in the VCR

To insert a tape in the VCR:

1. Unlock the access panel on the front of the VCR enclosure.
2. If the vehicle ignition is off, press POWER on the front panel of the VCR. The VCR must be powered to accept the tape.
3. Insert the video tape into the slot until the VCR pulls the tape inside. Do not force the tape to avoid damaging the VCR.

Starting Recording

Turn the vehicle ignition on. The VCR automatically starts recording after approximately 10 seconds, subject to Record Delay and Timer settings.

You can also start recording by pressing the REC button on the remote control.

Note Unless the VCR is in temporary power mode, the vehicle engine must be running to ensure that the battery voltage is high enough to start the HTR62 system.

Stopping Recording

Turn the ignition off.

If the Delayed-off time (see *Lines 5 and 6*, page 20) has been programmed to 00 minutes, the VCR switches off.

If the Delayed-off time has been programmed for 01 to 20 minutes, the VCR remains on for the specified time after the vehicle ignition is switched off.

You can also stop recording by pressing the STOP button on the remote control or the STOP/EJECT button on the front panel of the VCR.

Note The VCR begins recording again after one minute of no button activity if the ignition trigger is still active.

Removing a Tape from the VCR

To remove a tape from the VCR:

1. Unlock and open the access panel on the front of the VCR enclosure.
2. If the vehicle is switched off, press the POWER button on the front panel. This provides temporary power to the VCR so that the tape can be removed.
3. Press the STOP/EJECT button on the front panel once to stop recording. Press the button a second time to eject the tape.

Viewing Images

To view images in the vehicle:

1. Unlock and open the access panel on the front of the VCR enclosure.
2. Plug a monitor cable into the AUDIO/VIDEO output on the front panel of the VCR.
3. Plug the other cable end into the AUDIO/VIDEO IN connector on the back of a 12 VDC or battery powered audio/video monitor.
4. Start the vehicle or press the POWER button for temporary power. The camera light starts flashing and the VCR automatically starts recording after 10 seconds. Temporary power puts the VCR into Record mode.
5. Press the STOP button if the VCR is recording.
6. Press the REW (rewind) or FF (fast forward) button to search the tape for the desired image(s).
7. Press the PLAY button to play back the tape.

WARNING! Do not leave a tape in the VCR if storing the unit for extended periods.

Solutions

This appendix provides solutions to common program and operation issues.

If this happens ...	Table A-1 Solutions	Do this ...
Power LED is off	<input type="checkbox"/>	Check the wiring to the battery. The red wire of the HTR62 power harness should be connected to the positive battery terminal through a 3A fuse. The black wire of the HTR62 power harness should be connected to the negative battery terminal.
	<input type="checkbox"/>	Check the fuse. If the fuse is blown, determine the cause and rectify it before replacing the fuse. Check for pinched or crossed wiring.
	<input type="checkbox"/>	Ensure that the DB25 connector on the HTR62 wiring harness is plugged into the VCR.
	<input type="checkbox"/>	Ensure that the white wire of the HTR62 signal harness is connected to the ignition switch and the ignition switch is on. If the VCR powers up when you press the POWER button (temporary power), the ignition switch connection may be faulty.
	<input type="checkbox"/>	Start the vehicle engine to make sure the battery voltage is high enough to power the HTR62; that is, more than 10 volts.
No picture on monitor	<input type="checkbox"/>	Ensure that the power, video, and audio connectors of the camera harness are plugged into the HTR62 power, video in, and audio in jacks. Make sure that the camera LED indicator is on.
	<input type="checkbox"/>	Start the vehicle engine to make sure the battery voltage is high enough to power the HTR62.
VCR is not recording	<input type="checkbox"/>	Ensure that the video tape is not write protected.
	<input type="checkbox"/>	Start the vehicle engine to make sure the battery voltage is high enough to power the HTR62.
VCR tape involuntarily ejects	<input type="checkbox"/>	Check to see if: <ul style="list-style-type: none"> • The tape is too old or worn; in either case the VCR cannot record to the tape. We recommend that you do not use a tape more than 10 to 20 times, depending on how dusty or rough the roads may be where the system is being used. The worse the operating conditions, the more often the tapes should be recycled.
	<input type="checkbox"/>	<ul style="list-style-type: none"> • The temperature is too cold; that is, lower than the recommended operating range of +41°F to +104°F (+5°C to +40°C). You can program the built-in timers to delay recording 10 to 20 minutes after the bus is first started to give the VCR a chance to warm up as the bus warms up (see <i>Lines 5 and 6</i>, page 20).

Table A-1 Solutions (cont'd)

If this happens ...	Do this ...
	<input type="checkbox"/> <ul style="list-style-type: none"> The record tab lever needs recalibration. This is a rare occurrence but can be avoided by regular preventive maintenance. We recommend that HTR62 units be serviced at least once a year.
Picture is fuzzy	<input type="checkbox"/> Clean the VCR heads with a cleaning tape. Caution Follow the instructions supplied with the cleaning tape. Excessive use of cleaning tapes can shorten VCR head life. <input type="checkbox"/> Replace worn or dirty video tapes. <input type="checkbox"/> Ensure that all video connectors are properly plugged in. <input type="checkbox"/> Check for electrical interference from fans and blowers in the vehicle by powering them down. Make sure the HTR62 power harness is connected directly to the battery.
Picture is rolling	<input type="checkbox"/> Check all power connections and power cables. <input type="checkbox"/> Start the vehicle engine to make sure the battery voltage is high enough to power the HTR62; that is, more than 10 volts.
Tape will not rewind	<input type="checkbox"/> Ensure that the VCR power is on. <input type="checkbox"/> Check to see if the tape is already rewound. <input type="checkbox"/> Ensure that the tape is not jammed (the VCR POWER LED is blinking).
POWER light is blinking	<input type="checkbox"/> Indicates the VCR has detected a faulty or jammed tape. Try to eject the tape and slowly remove it from the VCR. Caution Do not poke screwdrivers or other tools into the VCR. Failure to remove the tape properly may damage the VCR. If this procedure does not work, contact Honeywell Technical Support (see <i>Warranty and Service</i> , page <i>viii</i>).
PLAY light is blinking	<input type="checkbox"/> Indicates normal operation while the VCR is auto-tracking to find the best playback performance.

Specifications

This appendix lists the specifications for the HTR62.

Specification	Description
Power	
Input voltage	12.0 to 14.0 VDC
Input power	18 Watts
Power backup	Saves settings for a minimum of 10 years
VCR power up	Trigger signal connected to vehicle ignition or temporary power using the POWER button
Size and weight	
Dimensions	9.75" W x 3.75" H x 10.25" D (24.76 cm x 9.53 cm x 26.04 cm)
Weight	6.7 lb (3.02 kg)
Operating environment	
Operating temperature	41°F to 104°F (5°C to 40°C)
Storage temperature	32°F to 122°F (0°C to 50°C)
Humidity	10% to 85% RH, non-condensing
Recording parameters	
Recording format	VHS NTSC standard
Recording time	9 hours (T180 tape, EP mode)
FF/rewind time	Less than four minutes (T180 tape)
Continuous recording	On/off, user selectable
Delayed-off recording	0 to 20 minutes, user selectable
Timers	Five, independently user selectable
VCR video signal	
Video recording	Rotary, two-head helical scanning system
Output level	1.0 Vp-p into 75 Ω , unbalanced
Signal to noise ratio	45 dB
Resolution	240 TV lines

Specifications

Specification (cont'd)	Description	
Connector	RCA (back panel input) RCA (front panel output)	
No video signal	Auto detection, message displayed on the screen	
VCR audio signal	Hi Fi	Mono
Audio recording	Two heads, rotating	One head, stationary
Output level	-7 dBm, 10K Ω maximum	-6 dBm into 600 Ω , unbalanced
Signal to noise ratio	60 dB	40 dB
Frequency response	20 Hz to 20 kHz \pm 3 dB	100 Hz to 8 kHz
Audio distortion	Less than 0.5%	Less than 3% (SP mode)
Connector	RCA	
Text overlay		
Title	Up to 20 characters, user selectable	
Time and date	Real time clock with battery backup and automatic Daylight Saving Time AM/PM format, three letters for month	
Position	Top or bottom of screen, independent for each value, user selectable	
Recorded signals		
Number of inputs	Five	
Text	Three characters per signal, user selectable	
Input level	Active high (12 VDC) or active low (0 VDC), user selectable	
Input protection	Reverse polarity protection, 600W transient protection	
Speed indicator		
Range	0 to 255 MPH or KPH	
Calibration method	Direct: drive the bus one mile (or one km) Indirect: enter a calibration number	
Note Specifications are subject to change without notice.		

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