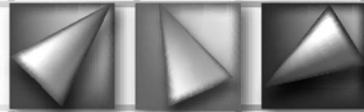

Scan Do Pro II®

High Resolution Computer-to-Video Scan Converter
with Genlock and Optional SDI Output (Scan Do Pro II/D)

USER'S MANUAL



CSI **Communications
Specialties, Inc.**

WORLDHEADQUARTERS
55 Cabot Court
Hauppauge, NY 11788 USA
TEL: (631) 273-0404 FAX: (631) 273-1638
WWW: <http://www.commspecial.com>
EMAIL: info@commspecial.com

Communications Specialties Pte Ltd
100 Beach Road
#22-09 Shaw Tower
Singapore 189702
TEL: +65 6391 8790 FAX: +65 6396 0138
EMAIL: csiasia@commspecial.com

CONTENTS

Introduction	3
Installation	4
Operation	6
Tips for Improving Your Converted Computer Images	9
Troubleshooting	11
Accessories	12
Rear Connector Pin-outs	13
Statement of Warranty	14
Certification Information	15

INCLUDED WITH THIS PRODUCT YOU SHOULD HAVE:

- 1 - *Scan Do*[®] *Pro II* Computer-to-Video Scan Converter
- 1 - AC power line cord
- 1 - 6 foot Computer input cable for VGA and Macintosh
- 1 - 12 foot composite video output cable
- 1 - 12 foot S-Video output cable
- 1 - User's Manual
- 1 - Product Registration card

AVAILABLE OPTIONAL ACCESSORIES

- RF Modulator for North America channels 3 and 4
- AC line cords for North America, Japan, UK, Europe or Australia
- Rack mounting kits

Scan Do is a registered trademark of Communications Specialties, Inc.
Macintosh and Mac are registered trademarks of Apple Computer, Inc.

INTRODUCTION

Communications Specialties, Inc.
55 Cabot Court
Hauppauge, NY 11788 USA
TEL: (631)273-0404
FAX: (631)273-1638
WWW: <http://www.commspecial.com>
EMAIL: info@commspecial.com

Communications Specialties Pte Ltd
100 Beach Road
#22-09 Shaw Tower
Singapore 189702
TEL: +65 6391 8790
FAX: +65 6396 0138
WWW: <http://www.commspecial.com>
EMAIL: csiasia@commspecial.com

Thank you for purchasing *Scan Do Pro II*, the amazingly affordable, high-performance, computer-to-video scan converter. With *Scan Do Pro II*, you now have the ability to convert your high-resolution computer video signal into a form suitable for recording on a VCR, displaying on a conventional TV or video monitor, or integrating into a professional video production system. *Scan Do Pro II* does not require any special software and operates completely externally from your computer.

We advise that you read the section entitled *Tips for Improving Your Converted Computer Images* later in this manual. It provides some useful suggestions for obtaining the best possible image from your *Scan Do Pro II*. It also explains what you should expect, in terms of image quality, when your computer images are recorded on a VCR or displayed on a conventional video monitor or TV.

Like all the products from Communications Specialties, *Scan Do Pro II* comes with our continuing commitment to provide support. In order to assist us in this process, please be sure to mail in your product registration card. This will make it easier for us to notify you with any new product announcements or other information concerning our product line. Should you need to contact us for support, our office is open Monday through Friday, from 8:30 AM to 5:00 PM Eastern Time. We also offer a comprehensive web site for your added convenience.

Thank you for choosing *Scan Do Pro II*. As always, we welcome your comments and suggestions.

INSTALLATION

INSTALLATION STEPS:

1. Disconnect your monitor from the monitor port on your PC.
2. Using the reversible 6-foot input cable provided with Scan Do Pro II, connect one end to the monitor port on your computer and the other to the connector on the rear panel of Scan Do Pro II marked either *VGA In* or *Mac In*.
3. Connect your monitor, if you have one, to the Scan Do Pro II connector labeled *VGA Out* or *Mac Out*. Use the cable that is attached to your monitor for this purpose.
4. Connect the AC line cord provided with Scan Do Pro II to the connector labeled *Power*. Plug the AC line cord to the wall outlet to provide power.
5. Connect Scan Do Pro II's Video, S-Video or component output to your video equipment. If desired, you may use all outputs simultaneously. (Refer to the next section.)
6. Complete the installation by turning your computer on, if it is not on already. The front panel green LED labeled *Input* should illuminate, indicating the unit is receiving a valid signal from the computer.

AVAILABLE OUTPUTS:

Composite: This is a single composite video signal and is compatible with the "video" input on consumer TVs, monitors and VCRs as well as on all professional video equipment. It cannot be connected to the "antenna" input.

S-Video: This is an advanced form of video where the brightness and color parts of the image are actually on two separate signals. This signal is sometimes called S-VHS, S-Video or Y/C. It is also compatible with Hi-8 and the Beta-ED standards. Using this output will result in a better quality picture than using the *video* output.

Component: This is another advanced form of video used in professional video applications. The luminance and two color difference signals are used. Scan Do Pro II may also output separate red, green, blue and sync signals instead of Y, R-Y, B-Y component signals.

SDI: This is a SMPTE-259M compatible serial digital signal. It is standard on the Scan Do Pro II/D model only. A Scan Do Pro II may be upgraded at the factory for this SDI option.

SYNC TYPES SUPPORTED:

Scan Do Pro II will automatically lock to any one of three different sync types: separate H & V; composite sync; and sync-on-green.

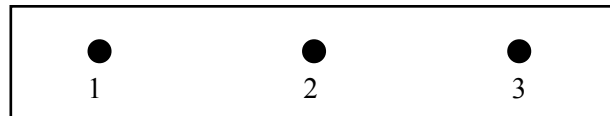
VIDEO STANDARD SELECTION:

NTSC/PAL: This switch selects the video timing standard to be used for the *Video* and *S-Video* outputs. NTSC is the standard for the USA, Canada, Mexico, Japan and parts of South America. PAL is used throughout most of Europe, the Middle East, Southern Asia and the Pacific Rim.

REMOTE CONTROL:

Scan Do Pro II provides for a hard-wired RS-232 remote control connection using a 3-pin Phoenix-type connector on the rear panel. The baud rate is 9600 baud, no parity, 1 start bit, 1 stop bit. The pin out is as follows:

1 - Ground 2 - Receive Data 3 - Transmit Data



Please contact the sales department at Communications Specialties or our web site at www.commspecial.com for detailed specifications on the command structure for this remote control port.

GENLOCK MODE:

The genlock button turns the mode on and off. When the genlock mode is on, the unit looks at the genlock input and determines if a signal is present. If a signal is present, it determines if it is the correct format (525 or 625) according to the personality of the rear panel output format switch.

When the genlock mode is off, the LED is off. The LED is on steady when the genlock mode is on and a valid signal is present on the genlock input connector. The LED blinks slowly when genlock mode is on and a valid signal is not present on the connector. The LED blinks fast for 3 seconds when the genlock mode is on, there is no valid signal and the genlock phasing button is pressed.

The factory default setting is genlock mode off.

GENLOCK PHASING:

The genlock phasing button turns the mode on and off only when the genlock mode is on and a valid signal is present on the genlock input. When genlock mode is off, the genlock phasing mode is automatically off. Pressing the button in this case does not initiate any action. In the case where the genlock mode is on but no valid signal is present, genlock phasing cannot be turned on. Pressing the genlock phasing button in this instance causes the genlock mode LED to blink fast for 3 seconds as described in the section above.

The LED is on when the genlock phasing mode is on and off when the genlock phasing mode is off.

When the genlock phasing mode is on, the arrow buttons become the Horizontal and Subcarrier phasing advance and delay buttons. Panning the image, moving to a quadrant and centering the image horizontally and vertically are not available from the front panel when genlock phasing mode is on.

HORIZONTAL PHASING:

When the unit is in genlock phasing mode, the right and left arrows are the horizontal phase delay and advance buttons respectively. They are auto-repeat functions and will single step for approximately 2 seconds then step in increments of 10 after that as long as the button is held down.

The factory default is the center of the horizontal phasing range.

SUBCARRIER PHASING:

The up and down arrows are the subcarrier phase advance and delay buttons, respectively, when the genlock phasing mode is on. They are also auto-repeat functions and will single step for about 2 seconds then step in increments of 10 as long as the button is held down.

The factory default is the center of the Subcarrier phasing range.

OPERATION

Scan Do Pro II not only offers high performance and reliability, but also provides an extremely easy, intuitive user interface. Please read this section in its entirety. If, after becoming familiar with the unit's operation and features, you still have questions and need to contact us, please refer to Page 3 for our phone, fax, email and web address.

DIAGNOSTIC LEDES:

Power: This indicator tells when power is present and Scan Do Pro II is ON. If this light is glowing dim or not at all, it is an indication that something might be wrong with the internal power supply.

Input: This indicator tells when a valid computer signal is present at the *VGA In* or *Mac In* connector on the rear panel.

VGA AND MAC RESOLUTIONS SUPPORTED:

Scan Do Pro II will support any computer resolution having a horizontal sync frequency within the range of 31-71 kHz. Generally, this will include PCs up to 1280 x 1024 at 60 Hz. Interlaced resolutions are not supported.

HOW TO ACTIVATE TEST SIGNALS:

Test: This button will force Scan Do Pro II to generate a color bars test signal on its outputs. Press once to activate it. Press it again to turn it off. The green LED on the *Test* button indicates when the test pattern generator is in operation.

COLOR BARS WHEN TEST IS NOT ACTIVATED:

From time to time, your Scan Do Pro II may output color bars even though you have not pushed the *Test* button on the front panel. If your unit is generating color bars but the LED on the *Test* button is not illuminated, there is either no input signal from the computer or the input signal from the computer is not in a resolution or mode supported by Scan Do Pro II.

SIZING THE IMAGE:

Zoom: The zoom feature performs two important functions. First of all, it provides an "underscan" function, which shrinks the image display both horizontally and vertically by 15%. This ensures that no edges of your image are lost beyond the borders of your screen when converted to a TV video format.

Secondly, the zoom feature provides three settings which enlarge your image display while also enhancing its resolution. By repeatedly pressing the zoom button, you can cycle through the different image sizes shown on the chart to the right.

Zoom Ratio	Indicator LED
85%	ON
100%	OFF
130%	ON
160%	ON
200%*	ON

**The 200% zoom ratio may not be available at the highest input frequency.*

Zoom Shortcut Buttons: Scan Do Pro II provides the option to go directly to three of the zoom settings using the following button combinations. Both buttons must be pushed simultaneously to access this feature.

Zoom Ratio	Button Combination
85% (lowest zoom; "underscan mode")	ZOOM & ↓
100% (standard "overscan mode")	ZOOM & →
200% (highest zoom mode)	ZOOM & ↑

REDUCING FLICKER IN THE IMAGE:

Anti-Flicker: This button will activate one of four levels of flicker reduction. To turn on the flicker filter, push the *Anti-Flicker* button once. This activates level one of the filter. The green LED should illuminate, indicating that this feature is now active.

Press the button repeatedly to cycle through levels two, three and four of the flicker filter. The green light will remain lit for all four stages. Pushing the button a fifth time will turn off the flicker filter and extinguish the green LED.

Try the different settings for this button to see which gives the best results for the application you are viewing. You'll discover that depending on the type of image, different settings provide the maximum benefit.

VERTICAL FILTER:

This button toggles the vertical filter on and off. The LED is lit when the vertical filter is on and off when it is off. The factory default setting is vertical filter off.

FREEZING THE IMAGE ON YOUR VIDEO SCREEN:

Freeze: Scan Do Pro II gives you the ability to freeze or stop the image on your video screen without halting your computer application. When you push the *Freeze* button, the images output by Scan Do Pro II will freeze and the green LED will illuminate. (The loop-through support to your local computer monitor will remain active.) Press the button again to deactivate the freeze feature and extinguish the LED.

While in the freeze mode, all keypad functions are still active. However, you will not see the effects from using any other features, such as *Zoom*, until the *Freeze* mode is turned off.

YUV/RGB COLOR SPACE:

This button toggles between YUV and RGB color space. The LED is lit when in YUV and off when in RGB. YUV is the factory default setting.

POSITIONING THE IMAGE ON THE SCREEN:

Cursor Buttons (Arrows): As TV monitors and video projectors may not always display the image in the center of the screen, you may use the four "arrow" buttons on the front of Scan Do Pro II to position the image up, down, left and right. The image will move one increment each time you push the button. If you continue to push down any of the arrow buttons, the image will begin to move continuously, first slowly and then more quickly.

Positioning Shortcut Buttons: Pushing the following button combinations simultaneously will immediately position your image as follows:

IMAGE POSITION	BUTTON COMBINATION
Center image vertically	↑ and ↓
Center image horizontally	← and →
Upper left corner	↑ and ←
Upper right corner	↑ and →
Lower left corner	↓ and ←
Lower right corner	↓ and →

**RETURNING TO FACTORY
DEFAULT SETTINGS:**

Reset: You may quickly return all Scan Do Pro II functions to their factory default settings by simultaneously pressing the *Test* and ← buttons.

**LOCKING THE BUTTON
PANEL:**

Lock/Unlock: The button panel may be locked or unlocked by simultaneously pressing the following button combinations:

LOCK:	TEST AND ↑
UNLOCK:	TEST AND ↓

**SYNC-ON-GREEN, PEDESTAL ON/OFF,
PAL M AND PAL N:**

An internal switch located on the Scan Do Pro II and Pro II/D board allows you to configure the unit for several custom settings. To access the switch, first disconnect AC power. Then, remove the two screws from the front panel. Drop the panel, which is connected to the board by a ribbon cable. The switch, labeled "S2", is blue with four white levers and is located on the front left corner of the board. The unit comes preset with all levers set to "OFF." Printed to the left of the switch, on the board, are instructions for use. A summary is provided below:

Sync-on-Green: Set "lever 1" to "ON"

Pedestal On/Off: Unit is preset for Pedestal Use. To turn it off, set the switch to "ON"

PAL M: Set "lever 3" to "ON" and set exterior back panel switch to NTSC.

PAL N: Set "lever 4" to "ON" and set exterior back panel switch to PAL.

**LOCKING THE GENLOCK AND
GENLOCK PHASING BUTTONS:**

Genlock Buttons Lock/Unlock: Once the genlock timing has been set, it may be desirable to lock the *Genlock* and the *Genlock Phasing* buttons so that nothing happens if they are accidentally pressed. This can be accomplished by simultaneously pressing the following button combinations:

GENLOCK BUTTON LOCK:	VERT FILTER AND ↑
GENLOCK BUTTON UNLOCK:	VERT FILTER AND ↓

When the genlock keys are locked, the function of the arrow keys will automatically become set to the panning mode. Once the genlock keys are unlocked, the *Genlock Phasing* button must be pressed to put the arrow keys back in genlock phasing mode.

TIPS FOR IMPROVING YOUR CONVERTED COMPUTER IMAGES

It has been our experience, at CSI, that customers are sometimes surprised that computer images converted to video do not look as sharp and vivid as the original computer image does. Unfortunately, this result is inevitable regardless of the scan converter you use, for the technology behind TV video is far inferior to that behind newer computer video standards. This is not to say that the quality of scan converter you use doesn't matter, but even the very best scan converter will not provide output that matches the quality of your original computer picture.

Scan converters, like Scan Do Pro II, were created to bridge the differences between the relatively new standards of computer video and the 40-year old standards of conventional TV video. When using a scan converter, there are several things you can do to get the best possible results from the conversion process. These involve understanding the limitations of standard TV video and creating images that "work around" these shortcomings. The following tips apply whether you are displaying your scan converter output directly on a monitor or recording it onto videotape. While you should have realistic expectations regarding the type of image you will be able to obtain, taking the following steps will definitely improve your results:

KNOW WHAT YOUR CONVERTED IMAGE WILL LOOK LIKE:

First of all, when *creating* any computer presentation that you ultimately plan to display in video format, it is always a good idea to hook up a Scan Do Pro II and view the output on a TV monitor during the creation process. While this may require a little bit of extra set-up time, it has the potential to save you far more time and aggravation later on by avoiding the need to correct any unwanted "surprises" in your finished work.

USE BLACK AND WHITE:

In the world of standard TV video, shades of gray are processed differently than colors. In fact, TVs and VCRs process black, white and all grays in between with a minimum of distortion. Use this to your advantage in the design process by substituting gray in place of color whenever appropriate.

AVOID INTENSE COLORS:

Along the same lines, fully saturated colors (like bright red and green) look terrible on a TV monitor. And, recording these colors to videotape makes them look even worse. Whenever possible, try to use slightly muted colors instead.

**USE HIGH GRADE VIDEO
TAPE:**

When making a VCR recording, use a name brand videotape with a “Pro” or “Broadcast” grade. An S-VHS tape can also be used, even if you’re only making a standard VHS recording. Also, record using the fastest possible speed (shortest time mode). You will have less noise and tape jitter in your recording.

**PAY ATTENTION TO
YOUR BORDERS:**

TV and video signals are designed to bleed off the edges of the screen. This means that when a computer picture is converted to a TV standard, the borders of your picture will be lost. In order to avoid this cropping effect, you can use the *Zoom* feature on Scan Do Pro II to display your image at 85%. If you would prefer to use the bleeding effect in your final display, be sure to design your presentation with ample borders surrounding the “live area” of your image. That way, when the cropping does occur, no critical part of your picture will be lost.

ELIMINATE FLICKER:

By far, the most annoying effect that occurs when a computer image is converted to video is “flicker.” This rapid flashing may appear throughout the screen or localized in one particular area, and is due to the fact the TV monitors, unlike computer monitors, draw the even and odd lines within the picture in alternating passes. This effect is most noticeable on thin horizontal lines – particularly, bright lines against a dark background.

The four-step anti-flicker filter in Scan Do Pro II employs an advanced design technique to overcome this annoying problem with only a very slight loss in vertical detail. When using this feature, experiment with different settings, as you will receive the maximum benefit from different levels depending on the type of visual you are displaying. You may also want to keep in mind when designing your presentation that the less thin, horizontal lines you use in your image, the less likely that any flicker will be visible.

USES-VIDEO:

Almost all new, larger screen commercial TVs have an S-Video jack. S-Video is a superior form of the standard TV video signal, in that the brightness and color components of the image are separated into two separate signals. This results in far fewer distortions and noticeably superior image quality. So, if your TV or VCR is S-Video equipped, definitely use the S-Video output from Scan Do Pro II. You’ll see a difference.

TROUBLESHOOTING

IF THIS IS YOUR PROBLEM

THEN CHECK THE FOLLOWING:

Nothing works or there is no video output

- Is the green POWER LED lit? If it is not, check to make sure that the AC power cord is connected and plugged into the AC wall outlet.
- Check to make sure that the computer is properly sending out a VGA or Mac signal by plugging the monitor directly into the computer's video output.

No video on outputs (Just a color bar test pattern)

- Is the green *Input* LED lit? If it is not, check that your computer is correctly connected to the *Input* connector on Scan Do Pro II. If it is connected properly (see page 6), then your computer may not be producing a resolution within the valid range or may not be producing any signal at all.
- Press the *Test* button to see if you get color bars on the *composite* and *S-Video* outputs. If you do get color bars, then the problem is related to your input signal. Check the items mentioned in the above bullet. If you do not get color bars, the problem is related to your output. Is the VCR or video monitor in the proper mode to accept direct video input? Is the output cable connected properly?
- When using a laptop, try turning off the laptop's LCD screen and having the VGA signal output through the external port only.

Some of the image is being lost off the sides, top or bottom

- This is normal unless you are in the 85% *Zoom* mode. See page 6 for instructions on how to use the *Zoom* button. Then use the cursor buttons to center your image on the screen.

The color on the TV monitor is different than the color on the computer monitor

- The colors on your TV monitor will never exactly match the colors on your computer monitor because each of these devices reproduce color differently. However, try adjusting the *color*, *tint*, *contrast* and *brightness* controls on your TV to help match the colors as best you can. The color bar test pattern built into Scan Do Pro II may help you in this process.

ACCESSORIES

The following accessories are available for Scan Do Pro II. They may be ordered from your dealer or directly from Communications Specialties, Inc. If you have a need for an accessory that isn't listed here, or have a specific application for which you need assistance, please give us a call.

ITEM #	DESCRIPTION
1246	Single rackmount kit. This kit allows one Scan Do Pro II unit to be rackmounted.
1247	Double rackmount kit. This kit allows two Scan Do Pro II units to be rackmounted.
1009	RF modulator. Modulates the composite video output of Scan Do Pro II to TV channel 3 or 4 for connection to the antenna input of your TV.

REAR CONNECTOR PIN-OUTS

**VGA OUT/MAC IN
(HD-15 CONNECTOR)**

PIN	VGA OUT	MAC IN
1	Red	Red
2	Green	Green
3	Blue	Blue
4	ID bit 2	ID bit-2
5	Ground	Ground
6	Red Ground	Red Ground
7	Green Ground	Green Ground
8	Blue Ground	Blue Ground
9	N/C	N/C
10	Monitor Present	Computer Present
11	Ground (ID bit 0)	Ground (ID bit 0)
12	ID bit 1	ID bit 1
13	H-Sync Out	H-Sync In
14	V-Sync Out	V-Sync In
15	ID bit 3	Comp. Sync In

**VGA IN/MAC OUT
(DB-15 CONNECTOR)**

PIN	VGA IN	MAC OUT
1	Ground	Ground
2	Red	Red
3	Reserved	Comp. Sync Out
4	ID bit 0	ID bit 0
5	Green	Green
6	Red Ground	Red Ground
7	ID bit 1	ID bit 1
8	N/C	N/C
9	Blue	Blue
10	ID bit 2	ID bit 2
11	Ground	Ground
12	V-Sync In	V-Sync Out
13	Computer Present	Monitor Present
14	Ground	Ground
15	H-Sync In	H-Sync Out

**GENLOCK IN/OUT,
COMPONENT, SDI,
COMPOSITE VIDEO OUTPUT**

Center	Video Out
Outer	Video Ground

S-VIDEO OUTPUT

1	Ground
2	Ground
3	Luminance
4	Chrominance

RS-232 REMOTE

1 (left)	Ground
2 (middle)	Receive Data
3 (right)	Transmit Data

WARRANTY

Communications Specialties, Inc. (CSI) warrants that for a period of three years after purchase by the Buyer, Scan Do Pro II will be free from defects in material and workmanship under normal use and service. A Return Material Authorization (RMA) number must be obtained from CSI before any equipment is returned by the Buyer. All material must be shipped to CSI at the expense and risk of the Buyer.

CSI's obligation under this warranty will be limited, at its option, to either the repair or replacement of defective units, including free materials and labor. In no event shall CSI be responsible for any incidental or consequential damages or loss of profits or goodwill.

CSI shall not be obligated to replace or repair equipment that has been damaged by fire, war, acts of God, or similar causes, or equipment that has been serviced by unauthorized personnel, altered, improperly installed, or abused.

RMA numbers and repairs can be obtained from:

**Communications Specialties, Inc.
55 Cabot Court
Hauppauge, NY 11788 USA
TEL: (631) 273-0404
FAX: (631) 273-1638**

or, in the Asia Pacific Region:

**Communications Specialties Pte Ltd
TEL: +65 6391 8790
FAX: +65 6396 0138
(See page 5 of this manual for complete address)**

RMA numbers can also be obtained from our web site:

<http://www.commspecial.com>

Please have your serial number (located underneath Scan Do Pro II) available when contacting us.

CERTIFICATION

FCC STATEMENT:

WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

UL INFORMATION:

This product carries the UL and CUL marks for ITE equipment, File E173243; Project 99ME42861.

CE INFORMATION:

Standards to which conformity is declared:

EMC EN 55022: 1994, CISPR 22: 1993, Class A Limit
EN 50082-1: 1992
IEC 801-2: 1991
IEC 801-3: 1984
IEC 801-4: 1988

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRONIC SHOCK, DO NOT EXPOSE. THIS APPLIANCE TO RAIN OR MOISTURE.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRONIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol warns the user of uninsulated voltage within the unit that can cause dangerous electronic shocks.



This symbol alerts the user that there are important operating and maintenance instructions in the literature accompanying this unit.