VSC300 / VSC400
VT300 / VT400
Operation Manual

Video Stop Clock
Video Timer

For NTSC and PAL operation

VSC300 Video Stop Clock (Composite/S-Video)
VSC400 Video Stop Clock (RGB/RGBS)
VT300 Video Timer (Composite/S-Video)
VT400 Video Timer (RGB/RGBS)

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Contents

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Specifications

Input level	(Y, Video) 1 Vpp Composite, 75 Ω (RGB) 0.7Vpp Non-Comp,1 Vpp Composite, 75 Ω (Chroma) 0.3 Vpp burst level, 75 Ω (S) 0.3 - 5.0 Vpp 75 Ω
Output level	Same as respective inputs ±3% into 75 Ω
Connectors	(Video) BNC female (S-Video) 4 pin mini-DIN female (RGBS) 9 pin D-Sub female (Remote) 8 pin mini-DIN female (Power) 2.1mm female coaxial power connector
Bandwidth	Greater than 20Mhz
Character colors	8 (NTSC), 8 shades of gray (PAL)
Background colors	8 and transparent
Pixel size	81nS NTSC/70nS PAL (H) x 1 scan line (V)
Character size	16 x 20 pixels
Color Bars	Full field (monochrome for PAL)
Display Position	Movable anywhere within 90% center screen
Remote Interface	TTL logic/switch closure compatible (5V only)
Stop Clock Accuracy	better than 0.006%
SC Max. Elapsed Time	Up to 99:59:59.9999
Switch Debounce	(front panel) Approx. 30mS debounce delay time
RTC Accuracy (VT)	Within 1 min. per month at 25 degrees C
RTC Battery Life (VT)	Approx. 10 years at 25 degrees C
DST Adjustment (VT)	Correctly calculated for the USA from year 2000 through 2099. May be disabled.
Day of Week (VT)	Automatically calculated from current date
Non-Volatile Memory	EEPROM
System Processor	16/32 bit
Display Controller	Custom MicroImage Video Integrated Display Controller
Remote Serial Control	RS-232, Factory Optional
Temperature	
Operating	0E - 40E C (32E - 104E F)
Storage	-40E - 60E C (-40E - 140E F)
Humidity	
Operating	10% - 90% (non-condensing)
Storage	5% - 95% (non-condensing)
Power	
Voltage	+12VDC (10-20VDC)
Consumption	approximately 210 mA at 12VDC
Size	7.3" (W) x 7.0" (D) x 1.6" (H) 186 mm (W) x 175 mm (D) x 47.5 mm (H)
Weight	1 lbs. 10 oz., (737g)

The VSC/VT is manufactured in USA by MicroImage Video Systems

Note: Specifications marked (VT) are applicable to VT300 and VT400 Video Timer only

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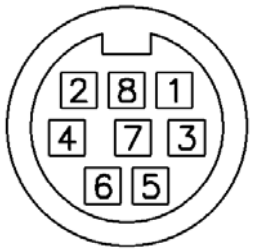
External Power Module (Universal type)

Part Number	DTS120150U/AC-1-P5
Type	Switching power supply, UL, CSA, CE, TUV, DVE approved
Output	12 VDC, 1500mA, Regulated (no minimum load)
Voltage In	100 - 240 VAC, 47 - 63 Hz
Input Cable	Standard IEC-320 3 wire input connector, Standard 6ft. Power cord for US use included
Output Cable	6ft. 2 wire, 2.1mm female coaxial barrel conn.
Consumption	0.4A max
Size	3.9" x 1.9" x 1.4" (99mm x 48mm x 36mm) without cable
Weight	7 oz. (198g)

The power module is manufactured in China

Remote connector pin out:



SERIAL/STOPCLOCK CONNECTOR

1 – STOP CLOCK RUN
2 – STOP CLOCK RESET
3 – TxD
4 – GROUND
5 – RxD
6 –
7 –
8 – STOP CLOCK FREEZE

Unpacking

The Video Stop Clock (VSC) or Video Timer (VT) package includes the following items:

One of the following units:
- VSC300 or VSC400 Video Stop Clock Unit
- VT300 or VT400 Video Timer with Real Time Clock

DTS120150 Universal Power Supply
This operation manual

Please inspect all items carefully and report damaged or missing items to your dealer or MicroImage Video Systems.

Connections

Power

The Video Stop Clock or Video Timer (VSC/VT) uses an external +12VDC power supply. A 120-230VAC universal power adapter is included with the unit. Connect the power module to the VSC/VT and to an appropriate power outlet.

Video

Connect the video source (i.e. video camera) to the appropriate INPUT connector on the rear of the unit. Use the BNC connector for composite or B&W (VSC300/VT300), the 4 pin connector for S-Video (VSC300/VT300), or the 9 pin D-sub connector for RGB/RGBS (VSC400/VT400).

Connect the OUTPUT signal from the unit to the video display as required. Each output can only have a single 75 ohm termination. You must use the same signal type and connector for output that was used for input.

If the signal must drive multiple monitors or other devices, please see the documentation for those devices for multiple unit connections and termination settings. A Video Distribution Amplifier may be required, especially for S-Video signals. MicroImage Video Systems offers a variety of units for these applications (VDA series).

Operation

The VSC300 and VSC400 are Video Stop Clocks that operate like an on-screen stopwatch. The VSC series do not show the time and date.

The VT300 and VT400 are Video Timers that show the time and date (clock/calendar) along with the stop clock modes.

The VSC300 and VT300 support black&white, composite video and S-video signals. The VSC400 and VT400 support RGB and RGB with sync signals.

The VSC and VT have nine switches and eight LEDs on the front panel. All functions are set by these controls. Following is a brief description of each switch and its functions:

Power Switch

The power switch is used to turn the unit on or off. When off, the unit draws minimal power. When on, the power light will illuminate (green) and the VSC/VT will be ready to use.

Start Switch (up)

The start switch is used to start the stop clock function running. The green indicator next to this switch will illuminate when the clock is running. This switch is also used to move in the "up" direction when navigating menus and setting the screen position. If the external start/stop function is enabled, the start switch will not function except when navigating the menus and positioning.

Stop Switch (down)

The STOP switch is used to stop the count. The red indicator next to this switch will illuminate when the clock is stopped. This switch is also used to move in the "down" direction when navigating menus and setting the screen position. If the external start/stop function is enabled, the STOP switch will not function except when navigating the menus and positioning.

Freeze Switch (left)

The FREEZE switch is used to freeze or hold the stop clock display, while the clock continues to count. The yellow indicator next to this switch will illuminate when the display is frozen. This switch is also used to step through available choices for the currently selected menu item, and to move in the "left" direction while setting the screen position. If the external freeze function is enabled, the FREEZE switch will not function except when navigating the menus and positioning.

Reset Switch (right)

The RESET switch is used to set the count back to zero. This switch is also used to step through available choices for the currently selected menu item, and to move in the "right" direction when setting the screen position. If the external reset input is enabled, the RESET switch will not function except when navigating the menus and positioning.

Display Switch (Select)

The DISPLAY switch is used to enable or disable the on-screen alphanumeric display. This will allow the video signal to pass through with or without the clock display overlay. The unit will continue to count if the count has been started and all other functions will continue to operate. The blue indicator next to this switch will illuminate when the display is enabled. This switch also functions as the SELECT switch when using the menus.

CBG Switch (Exit)

The CBG (Color Bar Generator) switch is used to enable or disable the built in color bar generator. When on, the unit will generate a test pattern of vertical bars and the camera or other video signal will not be visible. The green indicator next to this switch will illuminate when the color bar generator is enabled. This switch also functions as the EXIT switch when using the menus. Color will not be visible in PAL composite and S-Video, or with B&W video signals.

Position Switch

The POSITION switch is used to set the screen position of the Stop Clock and Timer display. The yellow indicator next to this switch will blink when the unit is in position mode and all other indicators (except power) will be extinguished. While the unit is in position mode, press one of the four switches with the arrows under them to move the display in that direction. When finished, press the POSITION switch a second time to place the unit back into it's normal operating mode and save the position to the non-volatile memory.

Menu Switch

The MENU switch is used to enter the menu setup system. This is where all the operating parameters are set. The red indicator next to this switch will blink when the unit is in menu mode and all other indicators (except power) will be extinguished. The screen will display the main (highest level) menu when the MENU button is pressed. Use the >and ? buttons to browse different menus.

Press SELECT to change to a sub menu. Then use < and = to change the settings. Most functions will be stored in non-volatile memory that will be retained after power is removed.

1. System Settings (VSC and VT)

1 Display Mode

The first item on the System submenu allows the user to individually enable or disable the Time display, the Date display, or the Stop Clock display. The < and = buttons may be used to cycle this setting through the 8 combinations (default = All ON).

2 Color/B&W Select

The VSC/VT may be set for either color or B&W operation by using the < and = buttons (default = color). In B&W mode all Menus and numeric displays will appear in shades of gray.

Note that when used with PAL/CCIR video, the unit will automatically override this setting to B&W. The menu will not display the override however.

3 Filter Rate

The remote switch inputs are provided with adjustable digital filters to reduce switch bounce and false triggering in exchange for slower signal response time. This filter rate may be changed by factors of 10X from 10uS to 10mS by using the < and = buttons (default = 100uS).

4 Timer/Counter Mode

The VSC/VT can be configured as a timer or as an event counter by using the < and = buttons (default = timer).

5 Restore Factory Defaults

The VSC/VT may be reset to its factory default settings by using the >and ? buttons to select this item, then pressing the SELECT button. Note that once the select button is pressed, all user set information will be lost and the unit will be restored to the factory defaults.

2. Time Date Settings (VT300 and VT400 Only)

The VT300/VT400 has several additional menus that are used to set the time and date display parameters. The VT300/VT400 allow considerable flexibility in setting the display modes of the time and date. The following will explain each menu item in the "Time/Date Settings" menu:

1. Daylight Saving Time (Off, Auto)
The VT300/VT400 can calculate Daylight Saving Time for the USA. If your area uses Daylight Saving Time, you can set this to auto and the unit will automatically change at 2:00:00 AM on the proper dates, or correct for DST the next time the unit is switched on. If you live in an area without Daylight Saving Time, in a part of the world with

different DST dates, or wish to set it manually, then set this menu item to OFF.

2. 12/24 Hour Mode (12 Hour with AM/PM, 12 HR without AM/PM, 24 Hour)
Either a 12 hour or 24 hour "Military Time" display can be set. In the 12 hour mode, the unit will count from 12:00:00AM to 11:59:59PM, and can be displayed with or without the AM/PM indicator. In 24 hour mode, the unit will count from 0:00:00 to 23:59:59 hours (12:00:00AM to 11:59:59PM).

3. Seconds Display (Off, On)
For applications where the seconds display is not needed, it may be suppressed by setting this function to OFF. Turning seconds off will also remove the distraction of constantly seeing the seconds change on the display.

4. Day Display (No Day Display, Day of Month only, Day of Week Only, Both Day of month and Week)
Use this function to set how the day is displayed. The day of the month (numbered 1 to 31) may be displayed or suppressed and the day of the week (Sunday through Saturday) may also be displayed or suppressed. Both Day of Month and Day of Week are displayed as the factory default setting.

5. Date Format
Six date display formats are available as follows:

mm-dd-yyyy	example: "05-27-2003" The entire date is displayed numerically, starting with the month. This is the common numerical date format used in the US.
dd-mm-yyyy	example: "27-05-2003" The entire date is displayed numerically, starting with the day of the month. This is the common numerical date format used in the UK.
MMM dd, yyyy	example: "MAY 27, 2003" This layout starts with the month which is displayed as a three character abbreviation.
dd-MMM-yyyy	example: "27-MAY-2003" This layout displays the month with the three character abbreviation and starts with the day of the month first. This is the factory default.
mm/dd/yyyy	example: "05/27/2003" The entire date is displayed numerically, starting with the month. A slash is used as the divider. This is commonly used in the USA.
dd/mm/yyyy	example: "27/05/2003" The entire date is displayed numerically, starting with the day of the month. A slash is used as the divider. This is commonly used in the UK.

6. Century Display (Off, On)
The century display may be suppressed if it is not required. If the century display is turned off, the "2003" will display as only "03", without the century (20).

7. Row / Column Layout (Row, Column)
In "row" mode, the date is displayed to the right of the time display. In "column" mode, the date is displayed beneath the time display. Note that the time is always displayed beneath the stop clock when used.

8. Set Clock Calendar
Enter this menu to set the time and date. You can adjust the hours, minutes, seconds, day of the month, month and year. The century will always be set to "20". The day of the week is automatically calculated from the current date and cannot be manually changed. The > and ? buttons will change the highlighted field, while the < and = buttons will change between the fields. To save the changes you

have made, you must press the SELECT button. To cancel the changes, press the EXIT button.

3. Run Control Settings (VSC and VT)

1 Run Control Mode

The Stop Clock count (Run) may be activated either by the front panel buttons or through the back panel remote interface.

The control mode may be cycled using the < and = buttons to select from the following:

Front Panel - (default) allows starting and stopping via front panel buttons

Remote Alt/Action - first remote pulse on RUN input starts, second pulse stops the counter

Remote 2 Switch - RUN input line starts, the FREEZE line stops the counter

Remote Gate - counter starts on the leading edge of the RUN pulse and stops on the trailing edge.

2 Input Non-Inverted/Inverted

The remote Run input may be configured for a positive or negative logical signal using the < and = buttons (default = non-inverted).

3 Input Filter Off/On

The remote Run interface line may be digitally filtered to reduce the effect of switch "bounce", the brief mechanical settling time during which a switch may make and break contact several times. This filter may be turned on or off using the < and = buttons (default = OFF).

4 Power Up Running/Stopped

The VSC/VT may be configured to begin running upon power up or to remain halted until a start signal is received (default = stopped).

4. Reset Control Settings (VSC and VT)

1 Reset Control Mode

The Stop Clock may be configured to reset to 0 either via the Front Panel controls or the Remote interface by using the < and = buttons (default = Front Panel).

2 Input Active High/Low

The remote Reset input may be configured for a positive (High) or negative (Low) logical signal using the < and = buttons (default = High).

3 Input Filter Off/On

The remote Reset interface line may be digitally filtered to reduce the effect of switch "bounce". This filter may be turned on or off using the < and = buttons (default = OFF).

4 Reset Triggering

Edge Triggered - (default) The Stop Clock counter will be reset to 0 upon receiving a Reset signal, and will immediately begin counting again.

Level Triggered - The Stop Clock counter will be reset to 0 by a Reset signal and will wait for the signal to be removed before it begins counting.

5. Freeze Control Settings (VSC and VT)

1 Freeze Control Mode

The Freeze function may be activated either by the front panel buttons or through the back panel remote interface. The freeze function is useful for temporarily viewing the display while the counter continues to run. The Freeze control mode may be cycled using the < and = buttons to select from the following:

Front Panel - (default) allows freezing the displayed count when the FREEZE button is depressed.

Last Count on Reset - When reset is activated, the counter will reset to zero and immediately begin a new counting sequence, but the display will continue to show the final count of the last sequence until reset is activated again. The freeze button has no effect in this mode.

Freeze/Reset - When Reset is first asserted, the count will immediately reset to 0 and a new count begins. The display will remain frozen with the previous count until the Reset signal is de-asserted. The display only remains frozen while reset is active. The freeze button has no effect in this mode.

External Gate - The display will continue to show the count at the time when a remote Freeze signal was received, until the Freeze signal is removed. Counting will continue without interruption. The current count will again be displayed once the Freeze signal is removed.

2 Input Non-Inverted/Inverted
The remote Freeze input may be configured for a positive or negative logical signal using the < and = buttons (default = non-inverted).

3 Input Filter Off/On
The remote Freeze interface line may be digitally filtered to reduce the effect of switch "bounce". This filter may be turned on or off using the < and = buttons (default = OFF).

4 Update on Field 1/2
The VSC/VT may be configured to update the displayed time during either the odd(1) or even(2) video field (default = 1).

6. Color Settings (VSC and VT)

1. Foreground Color
The foreground characters can be changed to one of eight colors using the < and = buttons.

2. Background Color
The background rectangle around the characters can also be changed to one of eight colors, or made transparent. In B&W mode, these colors will appear as shades of gray.

Note that color is not displayed with black and white signals or with PAL composite and PAL S-Video signals. If the VSC/VT is to be used with a B&W video source, the unit should be set for B&W operation using the Color/B&W Select line under the System Settings Menu.

PLEASE NOTE that setting the foreground and background colors the same will result in an unreadable display. Some color combinations may prove difficult to read, especially using composite video, due to decoding artifacts generated by video monitors and other equipment.

7. Display Settings (VSC and VT)

These are the display settings for the stop clock. They allow the user to suppress unneeded information in the display.

1. Seconds Digits (1, 1.9, 1.99, 1.999, 1.9999)
This selects the number of displayed digits to the right of the decimal point. This is indicated as 1 Second, 1.9 Second, 1.99 Second, 1.999 Second and 1.9999 Seconds.

2. Hours Digits (No Hours, 9 Hours, 99 Hours)
This setting selects the number of hours digits displayed by the stop clock. Possible choices are "No Hours" which allows the count to reach 59:59.9999 before rolling over to zero, "9 hours" which allows the count to reach 9:59:59.9999 and "99 hours" in which case it will count to 99:59;59.9999.

8. Status Information

Selecting Status Information will display the status of the three external input pins, the MicroImage web address and the firmware revision.

When using the external inputs, this display can help in troubleshooting the connections and determining the polarity of the input signals. The display will show the name and current status of each of the three input signals. Levels are displayed as either low (0) or High (1). Low is 0 volts and high is either unconnected (pulled high) or a positive voltage in the 3-5 volt range.

The firmware version is displayed at the bottom of the screen and may be required when calling MicroImage Video Systems for assistance with using this product.

Factory Default Settings

The VSC300 / VSC400 Video Stop Clock or VT300 / VT400 Video Timer can be easily set to its factory default by pressing the menu button, then selecting the top entry and then selecting the "Restore Factory Defaults" setting.

In case of difficulty

If you are experiencing problems with your MicroImage product, you can contact us in one of the following ways.

Mail MicroImage Video Systems
a division of World Video Sales Company, Inc.
PO Box 331
Boyertown, PA 19512 USA
Phone 610-754-6800
Fax 610-754-9766
Email support@mivs.com
Web www.mivs.com

Applications and Additional Information

Please visit the MicroImage Video Systems web site (www.mivs.com) for further information about this product line. Application Notes may be found under the Support section of the web site. You may also call MicroImage Video Systems to request a copy by Fax or mail. The following Application Notes relating to this product are recommended:

AN3 - NTSC vs. PAL
AN4 - Common Video Signal Standards
AN8 - Using the VSC300/VSC400 Remote Interface
AN9 - High Speed Timing with the VSC300/VSC400

Warranty

MicroImage Video Systems warrants that each VSC300 / VSC400 / VT300 / VT400 is free from defects due to faulty materials or improper workmanship for a period of one (1) year. MicroImage Video Systems further warrants that any part which proves defective in materials or workmanship within one (1) year, will be replaced or repaired at no cost to the user. Labor to replace defective parts will be done without charge, provided the equipment is returned to MicroImage Video Systems prepaid, insured and properly packaged. Prior return authorization must be obtained from MicroImage Video Systems.

NOTE

This warranty covers the MicroImage VSC300 / VSC400 Video Stop Clock and VT300 / VT400 Video Timer only.

CONDITIONS

This warranty is void if the warranted part has been altered or subjected to abuse or misuse. Defective parts must be returned to MicroImage Video Systems.

SOLE WARRANTY

This Warranty is in lieu of all other warranties expressed or implied including, without limitation, any implied warranty or any implied warranty of fitness for a particular purpose. MicroImage Video Systems shall have the final right to determination as to the existence and cause of any defect and its appropriate adjustment in accordance with the terms of this warranty. In no event shall MicroImage Video Systems be liable for any consequential or collateral damages.

Returns

All returns MUST have an RMA number. Please call, fax or email for an RMA form. The RMA form will have the proper shipping address for returns.

Phone	610-754-6800
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