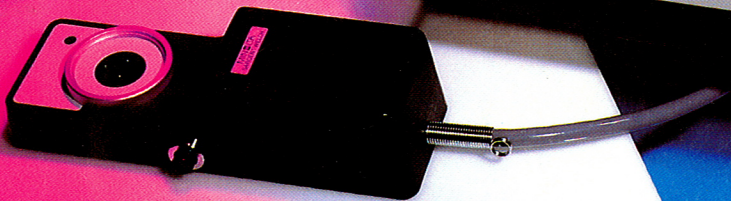


DENSICHRON®

DMT-II
MINOLTA/SARGENT-WELCH
Color Translator
The Micro-computer Data Translator
for Hand Enlargers and Automatic Printers



 SARGENT-WELCH

...to produce consistent quality prints easier and faster

The Minolta/Sargent-Welch DMT-II is micro-computer designed to meet modern data translator requirements for hand enlargers and automatic printers. It combines the proven stability of the previous Minolta/Sargent-Welch DMT Translator with the repeatability of a micro-computer system for the ultimate in translator accuracy to insure consistent quality prints with reduced testing.

The digital display indicates the current status of the selected functions for emulsion memory, exposure, color and time—plus a full set of warning prompts to make quality print production easier and faster.

In addition, the DMT-II has many new automatic operational features only available through computer technology.

First, —“touch pad control”—the latest in keyboard design. It is fast and has long term reliability even when used under adverse environmental conditions.

Second, ten emulsion memory standards may be stored in memory and automatically recalled upon channel selection. Each memory may be independently sloped to match the analyzed and printed data over a wide range of density values. Either slope or memory may be changed by a selected reset function. All operations are battery backed-up in the event of a power failure.

Third, the DMT-II Translator includes a fully automatic timer system that is accurate to 0.01 seconds. The timer settings of 0.10 seconds to 999 seconds includes automatic range changes. In addition to keyboard programming, the translator also includes an “Auto-Timer” feature that programs the correct time setting by measuring the actual light available. Use the Auto-Timer mode and the digital display will show the correct timing.

Fourth, the external input connector is RS232C compatible and will accept data input for exposure and color from a remote source, thus providing for future computer control.

Finally, computer technology has brought many new operational features to the DMT-II Color Translator, with an even more affordable price.

For additional information and/or a demonstration of the DMT-II Color Translator, call Densichron at Sargent-Welch Scientific Company.

Specifications*

Measuring Methods

Translation: Digital display bipolar zero balance without negative; slope biasing possible

Spot Exposure: Digital display direct reading with negative

Minimum Illumination Requirement

Translation Color Balance: 0.005 ft-c (at 2850k)

Translation Exposure: 0.002 ft-c (at 2850k)

Spot Exposure: 0.005 ft-c (at 2850k)

Audible warning if below minimum level.

Digital Display

Memory Channel: 0-9

Timer Setting: 0.10 to 999 seconds (autoranging)

Mode: Normal or Sloped

Exposure: 0-199 cc

Additive: Red, Green, Blue (0-199 cc)

Subtractive: Cyan, Magenta, Yellow (0-199 cc)

Rear Panel Controls (Mode Select)

Additive/Subtractive

Spot/Translate

Internal/External

Power—On/Off

Memory Lock—On/Off

Slope Control—On/Off

Front Panel Controls (Touch Pads)

Numerical Key Pad

Function Select—Exposure, Red/Cyan, Green/Magenta, Blue/Yellow, Timer

Set Data

Memory, Slope and Calibration

Automatic Timer Set

Data/Measure Select

Enlarger Focus/Print

Start Timer

Memory

10 Channels; memory lock and memory recall with independent slope input

External Data Input

RS232C Standard (auto-programming)

Probe

Standard 6 ft. cable

For Mural applications, 20 ft., available on special request.

Dimensions (wxdxh)

320 x 200 x 100 mm

Weight

Approximately 40 kg (including photoreceptor)

Accessory

Calibration Cap

Power Sources

100, 115, 200, 220, 240 V (selectable on rear panel), 50/60 Hz, 10 VA

Power Consumption

10 Watts

Outlet Power Rating

750 Watts

**Specifications subject to change without notice.*

Distributed by

SARGENT-WELCH SCIENTIFIC COMPANY

7300 NORTH LINDER AVENUE, P.O. BOX 1026, SKOKIE, ILLINOIS 60077

Telephone: AC 312/677-0600, Ext. 293 Telex: 72-4442 TWX: 910-223-4541

DENSICHRON®

Operating Instructions
for the
Minolta/Sargent-Welch DMT-II Color Translator

The Minolta/Sargent-Welch DMT-II Color Translator is a Microprocessor based data translator for use with Video Color Negative Analyzers (VCNA's) and other off-easel analyzers designed to help improve productivity and reduce waste by reducing the number of tests needed to produce great prints.

The translator itself should not be plugged into a voltage regulator. This translator is self regulated and the use of an external regulator may degrade the performance of the unit.

Additionally, your enlarger's power supply may need minor rewiring so that when the enlarger is plugged into the translator's power output the START button controls only the enlarger lamp and not the cooling fan.

Before you begin using your translator, you will need to analyze your lab standard negative (Shirley) set. Write down the analyzed values for the normal, over-, and under-exposed negatives. If you are using a standard set of your own making, the over- and under-exposed negatives should be one f/stop difference from your normally exposed negative.

Follow these instructions and you should be on your way to making great prints with less effort in less time.

Setting up a new emulsion

7

Programming the translator for normal negatives

- 1) Choose the paper emulsion you wish to program and best-print the normal negative in your usual manner at your standard printing time. Once you have made a perfect print, leave the enlarger or printer set-up exactly as it is.
- 2) Plug the power supply of the enlarger/printer into the outlet in the side of the translator. Although this outlet recommends 750 W Max., it will accommodate lamps up to 1200 watts. For lamps of a higher wattage than this, it will be necessary to add a relay between the translator and the lamp.
- 3) The switches on the back of the translator should be set as follows: The LOCK-OFF switch should be in the OFF position, the SLOPE-NORM switch on NORM., the SOUND-OFF switch on SOUND, the C.M.Y.-R.G.B. switch on C.M.Y., the SPOT-TRANS. switch on TRANS., and finally, the INT.-EXT. switch should be on INT.
- 4) Place the plastic cap firmly over the probe and turn the translator on. The right-hand side of the display should show: CAP.
- 5) Hold down the O-CAL button and press the SET button. The display should change from CAP to CAL and in a few seconds the display will change again so that the numbers in the EXPOSURE, RED/CYAN, GREEN/MAGENTA, and BLUE/YELLOW displays all show 000.

Setting up a new emulsion

NOTE: From now on, whenever you press a button you should hear a soft beep. If you press a button and hear two beeps, it is an indication that you pushed a button in the wrong order.

6) Press the button. This clears the zeros from the display and you are ready to begin working. The display will show the last information displayed before the power was turned off. Press the button. The MEMORY CH. display will go blank. Enter the number of the memory channel you wish to work with. This number will appear in the MEMORY CH. display. (Memory channels may be any number from 0 to 9 at your discretion, each representing only one emulsion.) Press the button. (Pressing the button is equivalent to pressing the ENTER key on a computer.)

7) Now you're ready to enter the analyzed data from your "normal" negative. This data can be entered in any order but for clarity we'll enter it in the order that it's displayed on the translator. Let's assume that the analyzed data was E 64, C 0, M 16, Y 16, and that your standard printing time is 10 seconds, you would enter the data as follows:

(You must press for the translator to accept this information.)

8) Press the button to turn the enlarger lamp on. Remove the cap from the probe and place the probe on the easel so that it is approximately centered in the light.

Setting up a new emulsion

- 9) Press the button. The display should have the word 'MEAS.' lit in the mode display. Now press . This will zero the numbers displayed in the EXPOSURE, RED/CYAN, GREEN/MAGENTA, and BLUE/YELLOW displays. Press the button again and the display will return again to the DATA mode. Press the button again to turn the enlarger lamp off.

The translator is now programmed for printing normal negatives in this memory channel and this information will be retained in memory even if the unit is turned off.

Keep in mind that each memory channel is for only one emulsion number. If you have Kodak Ektacolor 78 glossy (F) paper in 8x10, 11x14, and 16x20, you will need to set up three different channels for them unless they are exactly the same emulsion number.

One precaution though; if you are using different sized papers with the same emulsion number but with significantly different printing times, you may have to set up a different channel for each size because of reciprocity problems associated with long exposure times.

Example: If you print 8x10's at 10 seconds, 16x20's at 40 seconds, and 30x40's at 100 seconds, then you should probably set up a different channel for each size even if all prints are on the same emulsion. The time difference is enough that reciprocity failure could cause color balance and density to be off.

To use another memory channel, press , the number of the memory channel you want to use and . If is not pressed, the translator will revert back to the previous channel.


Sloping control is a great asset when printing over- and under-exposed negatives because these types of negatives require a different percentage of color and neutral density correction than normally exposed negatives. The DMT-II translator is fully equipped for sloping, and we urge you to use this feature. When set up correctly, it will allow you to improve your productivity by reducing the number of bad first prints made from over- and under-exposed negatives.

1) To program slope data, the switch in the back of the translator should remain in the NORM. position rather than the 'SLOPE' position. Only after slope data has been programmed into a memory channel should the switch be moved into the 'SLOPE' position.

2) Let's assume that the negative analyzer read the over-exposed negative at 98 @ 20 20, and the under-exposed negative at 32 @ 10 8. You'll need to match the color balance and density for the over- and under- prints to the "normal" print that you made earlier. To do this, proceed as follows:

1) Enter the analyzed data for the over-exposed negative by pressing:

E 9 8 $\frac{G}{M}$ 2 0 $\frac{B}{Y}$ 2 0 SET

2) Press  to turn on the printing lamp.

3) Place the over-exposed negative in the enlarger and adjust as necessary for sizing, cropping and focus.

Programming slope bias

- 4) Remove the negative from the enlarger and place the probe on the easel so that it is approximately centered in the light. Remove the cap from the probe.
- 5) Press

MEAS.
DATA

 (The mode display should read 'MEAS.')
- 6) Adjust the enlarger/printer's dichroic filters (magenta & yellow) until the translator's corresponding displays reach zero. Adjust the aperture of the lens until the EXPOSURE display goes to zero. (If necessary, re-zero the dichroics and aperture.)
- 7) Press

MEAS.
DATA

 again to return to the DATA mode.
- 8) Put the negative back in the enlarger. Press

FOCUS
PRINT

 to turn the enlarger lamp off. Now make a print by loading your paper and pressing

START

.
- 9) If the print does not exactly match the normal print you made before, determine what color corrections and density corrections are necessary to match the normal print. For example, if the print we just made is 4 cc too magenta, 2 cc too yellow, and 6 cc too dark, then change the values on the translator from 98 0 20 20 to 104 0 26 22.

(NOTE: As in this example, all corrections needed are made by adding or subtracting the corrections to or from the analyzed negative values. The numbers on the dichroic wheels of your lamphouse are meaningless when using a translator.)

Programming slope bias

- 10) Repeat step 9 until the over-exposed negative print looks the same as the normal print. Write down both the numbers that the negative analyzed at and the values that they printed at. You'll need them later.
- 11) Repeat steps 1-10 for the under-exposed negative.
- 12) By now you should have prints from the over- and under-exposed negatives which match the print made from the normal "Shirley" negative. Enter the sloping information as follows:

(EXAMPLE)

```
Over- Analyzed      98 0 20 20
Best-print         104 0 26 22
```

```
Under- Analyzed    32 0 10 8
Best-print         34 0 11 7
```

Press

Press

Note the small + in the MODE display.

Press

Press

+ - should be in the MODE display.

This channel is now fully programmed for sloping bias.

You will need to follow the preceding procedure for each channel you program to take advantage of the sloping feature of this translator. The SLOPE/NORM. switch on the back of the translator should only be in the SLOPE position when using this channel and other channels, which have been programmed for slope bias, if the slope bias factors are to be used for translation.

Re-programming Sloping Biases

If you need to re-program the slopes for whatever reason, you should follow this procedure:

1. Make sure the translator is in the DATA NORM mode.
2. Enter the analyzed numbers for the normal Shirley negative and press .
3. Press the button and place the probe under the enlarger so that it is approximately centered in the light.
4. Press the button and adjust the dichroic filters until the magenta and yellow displays null to 0.
5. Press .
6. Press the button to return to the DATA mode.
7. This will allow the translator to accept new slope data.

You can now follow the example on page 7 to enter the correct slope information.

Color correcting guidelines

Color correcting for subtractive printing can sometimes be confusing. It's difficult to realize that if a print from a negative is too yellow then you should add yellow to the filter pack. With this in mind, the following chart should help you if you forget which way to correct.

For prints from negatives, internegatives, etc.

If the print looks too:

RED	ADD the correction to MAGENTA and YELLOW
GREEN	SUBTRACT the correction from MAGENTA
BLUE	SUBTRACT the correction from YELLOW
CYAN	SUBTRACT the correction from MAGENTA and YELLOW
MAGENTA	ADD the correction to MAGENTA
YELLOW	ADD the correction to YELLOW
DARK	ADD the correction to EXPOSURE
LIGHT	SUBTRACT the correction from EXPOSURE

For correcting prints or duplicate transparencies made from slides, transparencies, etc.

If the print looks too:

RED	SUBTRACT the correction from MAGENTA and YELLOW
GREEN	ADD the correction to MAGENTA
BLUE	ADD the correction to YELLOW
CYAN	ADD the correction to MAGENTA and YELLOW
MAGENTA	SUBTRACT the correction from GREEN/MAGENTA
YELLOW	SUBTRACT the correction from BLUE/YELLOW
DARK	SUBTRACT the correction from EXPOSURE
LIGHT	ADD the correction to EXPOSURE Recalling memory data

Color correcting guidelines

Density Corrections

The following is a conversion sheet for converting percent densities to cc units for making exposure corrections.

%	=	cc	%	=	cc	%	=	cc
1		0	34		10	67		20
2		1	35		11	68		20
3		1	36		11	69		21
4		1	37		11	70		21
5		2	38		11	71		21
6		2	39		12	72		22
7		2	40		12	73		22
8		2	41		12	74		22
9		3	42		13	75		23
10		3	43		13	76		23
11		3	44		13	77		23
12		4	45		14	78		23
13		4	46		14	79		24
14		4	47		14	80		24
15		5	48		14	81		24
16		5	49		15	82		25
17		5	50		15	83		25
18		5	51		15	84		25
19		6	52		16	85		26
20		6	53		16	86		26
21		6	54		16	87		26
22		7	55		17	88		26
23		7	56		17	89		27
24		7	57		17	90		27
25		8	58		17	91		27
26		8	59		18	92		28
27		8	60		18	93		28
28		8	61		18	94		28
29		9	62		19	95		29
30		9	63		19	96		29
31		9	64		19	97		29
32		10	65		20	98		29
33		10	66		20	99		30
						100		30

These numbers are based on the Log $x 2$ whereas one f/stop equals 30 cc units.

A log book should be set up and maintained to recall the information stored in the translator's memory channels. To obtain these numbers, you must first be in the DATA mode. This information can be recalled by pressing . Three 3-digit numbers will be displayed. These numbers correspond to cc values of the light source within your enlarger/printer as compared to an optimum light source which registers 500 500 500. Write these numbers down. A good format for your logbook would be something like this:

PAPER & EMULSION	CH.#	EXPOSURE	GREEN/MAG.	BLUE/YELLOW

If for some reason you find that the numbers which are in the memory are not the ones you wrote in your logbook, you can re-enter them.

For example, if while in the RCL mode, you find that the EXPOSURE value on the translator is 546 but the value in your log book is 523, press

If you have programmed slope data for a particular channel, you can recall the best print data from your over- and under-exposed lab standard negatives. While in the DATA mode, press . This will show you the best-print data for the over-exposed negative. By pressing again, the under-exposed best-print data will be displayed. A small + or - will also be illuminated in the mode display depending on which information is currently being displayed.

To return to the DATA mode, press .

Printing production negatives

- 1) Place the analyzed negative in the enlarger.
- 2) Press the

FOCUS
PRINT

 button on the translator to turn on the focusing lamp and adjust the enlarger as necessary for proper magnification, crop and focus.
- 3) If you desire sloping bias and have already programmed the channel for slope, move the SLOPE/NORM switch on the back to the SLOPE position.
- 4) While in the DATA mode, enter the analyzed data and standard printing time into the translator.
- 5) Remove the negative from the enlarger and place the probe on the easel approximately centered in the light.
- 6) Press the

MEAS.
DATA

 button and adjust the dichroic filters on the enlarger until the numbers in the GREEN/MAGENTA and BLUE/YELLOW displays go to zero.
- 7) Adjust the lens aperture so that the EXPOSURE display reads zero. If the reading cannot be nulled, select an appropriate aperture ± 45 units and press the

AUTO
ADJ.

 button. The time will be adjusted so that the EXPOSURE display is nulled.
- 8) Press the

MEAS.
DATA

 button to return to the DATA mode.
- 9) Press the

FOCUS
PRINT

 button to turn the focus lamp off.
- 10) Place the negative back in the enlarger.
- 11) Remove the probe from the easel and position the paper.
- 12) Press the

START

 button to begin the exposure. If the exposure time is greater than 5.0 seconds and the SOUND/OFF switch is in the SOUND position, the translator will beep once every 10 % of the exposure time for dodging and burning.
- 13) If you used the auto-adjust, press the

T

 button and your normal printing time will return.

Troubleshooting

Problem: Color balance memory numbers lost or incorrect.

Possible Cause:

MEMO SET pressed when in the MEAS. mode during production printing.

Solution:

Re-enter the memory numbers from the logbook.

If all memory channels are lost, return for repair.

Problem: EDD displayed in BLUE/YELLOW display or keyboard won't accept information.

Possible Causes:

Cap not on tightly during daily calibration.

Solution:

Place cap firmly over probe, switch power off and on and recalibrate.

5 degree change in room temperature since calibration.

Place cap firmly over probe, switch power off and on and recalibrate.

Problem: Keyboard beeps but only start button is illuminated.

Possible Cause:

Button on side of probe has been pushed.

Solution:

Press button on side of probe again.