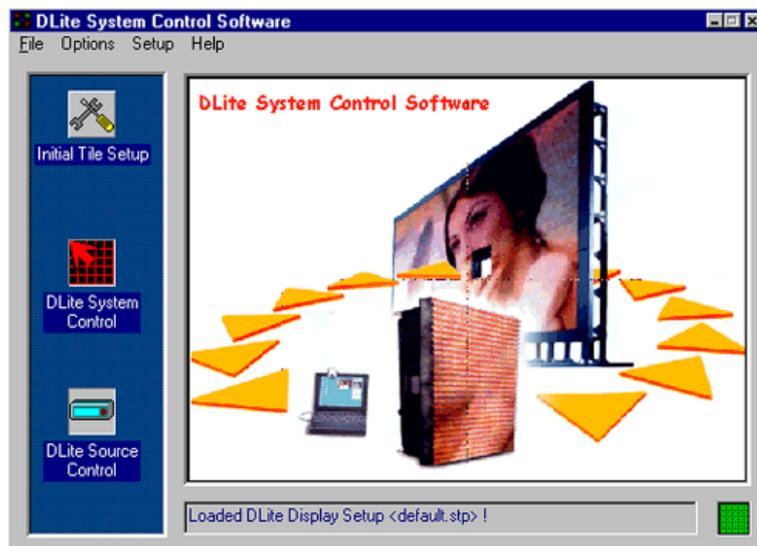


# BARCO

DAYLIGHT DISPLAY SYSTEMS



R9850040 DLite Software  
R9828832 DLite Digitizer

## INSTALLATION & OPERATIONS MANUAL

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R9828832	.....	DIGITIZER	.....	R9004021	.....	DLITE L5 P19 VGN10 G1	.....
R9850420	.....	DIGITIZER	.....	R9004020	.....	DLITE L5 P19 VGN10 G2	.....
R9850080	.....	DIGITIZER	.....	R9004030	.....	DLITE L5 P28	.....
R9850160	.....	DLITE RENTAL STRUCTURE	.....	R9004010	.....	DLITE L5 P28 VGN14	.....
R9850361	.....	DLITE TRUSS BEAM DUAL	.....	R9004015	.....	DLITE L5 P28 VGN14 M	.....
R9850360	.....	DLITE TRUSS BEAM SINGLE	.....	R9850290	.....	DLITE FRONT ACCESS	..... P14
R9850060	.....	DLITE PC DATA CARD	.....	R9850300	.....	DLITE FRONT ACCESS	..... P19
R9850050	.....	DLITE POWER/FUSE BOX	.....	R9850310	.....	DLITE FRONT ACCESS	..... P28
R9850070	.....	DLITE ROOTER BOX	.....	R9850110	.....	DLITE FLIGHT-CASE	..... BTM+TOP
R9850210	.....	DATA CABLE	.....	R9850120	.....	DLITE FLIGHT-CASE	..... 1 LAYER
R9850270	.....	DUMMY DATA PLUG	.....	R9850130	.....	DLITE FLIGHT-CASE	..... 1 TILE
R9850220	.....	DATA CABLE	.....	R9850180	.....	DLITE FLIGHT-CASE	..... 2 RENTAL
R9850230	.....	DATA CABLE	.....	R9850385	.....	DLITER TRIM	..... L1.344 M
R9850250	.....	POWER CABLE	.....	R9850375	.....	DLITER TRIM	..... L0.896M
R9850240	.....	POWER CABLE	.....	R9850410	.....	SOFT OMNIPOINT CTRL	.....
R9850280	.....	DUMMY POWER PLUG	.....	R9850200	.....	FIBERLINK MEDIUM	..... RECEIVER
R9850260	.....	POWER CABLE	.....	R9850190	.....	FIBERLINK MEDIUM	..... TRANSMITTER
R9850351	.....	DIV PERIPHERALS	.....	R9850430	.....	FIBER CABLE	..... 50M
R9850100	.....	DLITE AEC	.....	R9850431	.....	FIBER CABLE	..... 100M
R9850040	.....	DLITE CTRL SOFT	.....	R9850432	.....	FIBER CABLE	..... 150M
R9850090	.....	DLITE LDL	.....	R9850433	.....	FIBER CABLE	..... 200M
R9004001	.....	DLITE L5 P14 VGN7 G1	.....	R9850434	.....	FIBER CABLE	..... 250M
R9004006	.....	DLITE L5 P14 VGN7 G1M	.....	R9850435	.....	FIBER CABLE	..... 300M
R9004000	.....	DLITE L5 P14 VGN7 G2	.....				
R9004005	.....	DLITE L5 P14 VGN7 G2M	.....				

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Produced by BARCO NV, 19/06/2001

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Printed in Belgium

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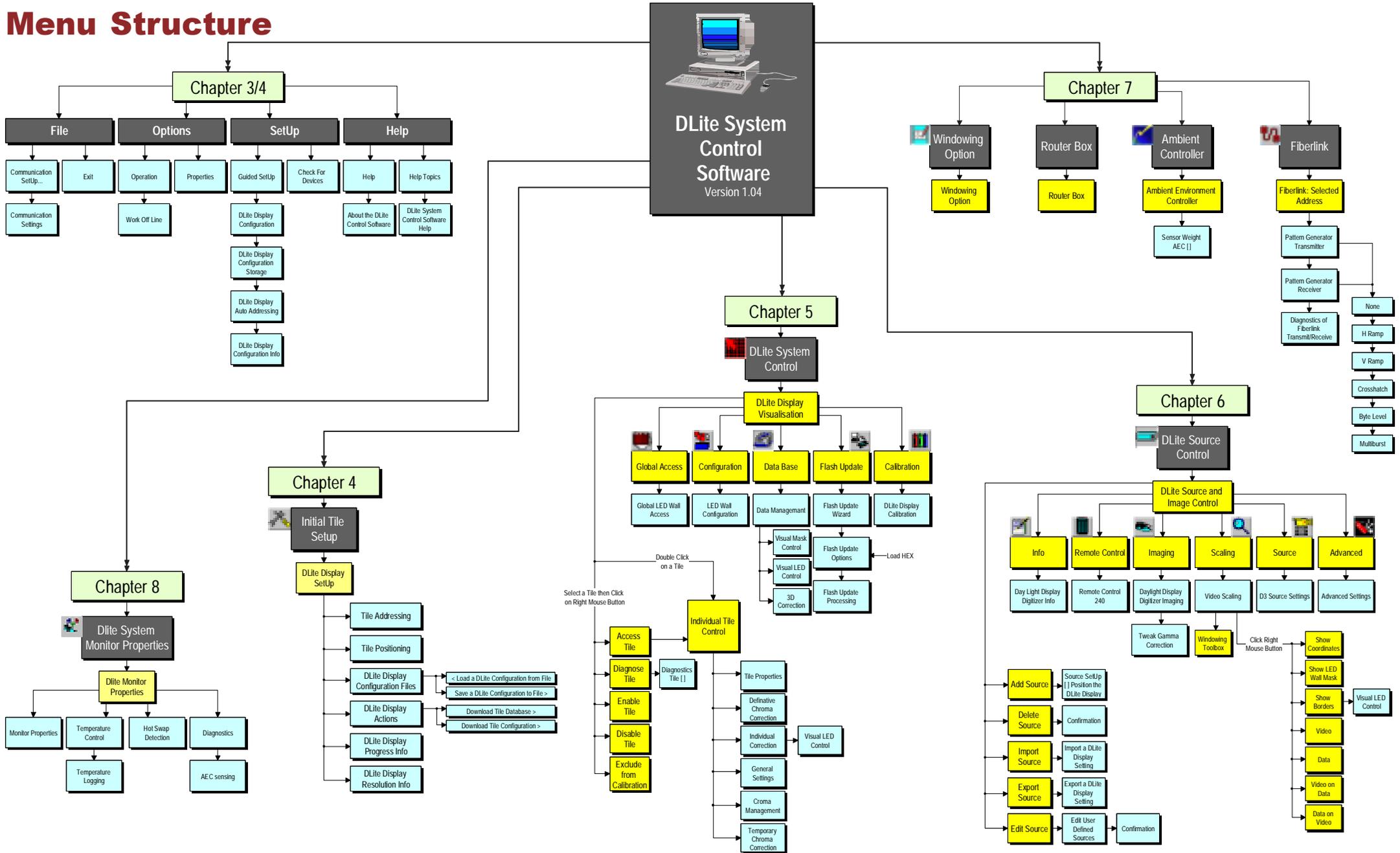
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# Block Diagram DLite Control Software

## Menu Structure





# CHAPTER 1

## Introduction

The DLite System Control Software is designed preliminary as a user interface to be used with BARCO Digitizer and DLite Display in a windows environment (Windows 95/ Windows 98/ Windows NT).

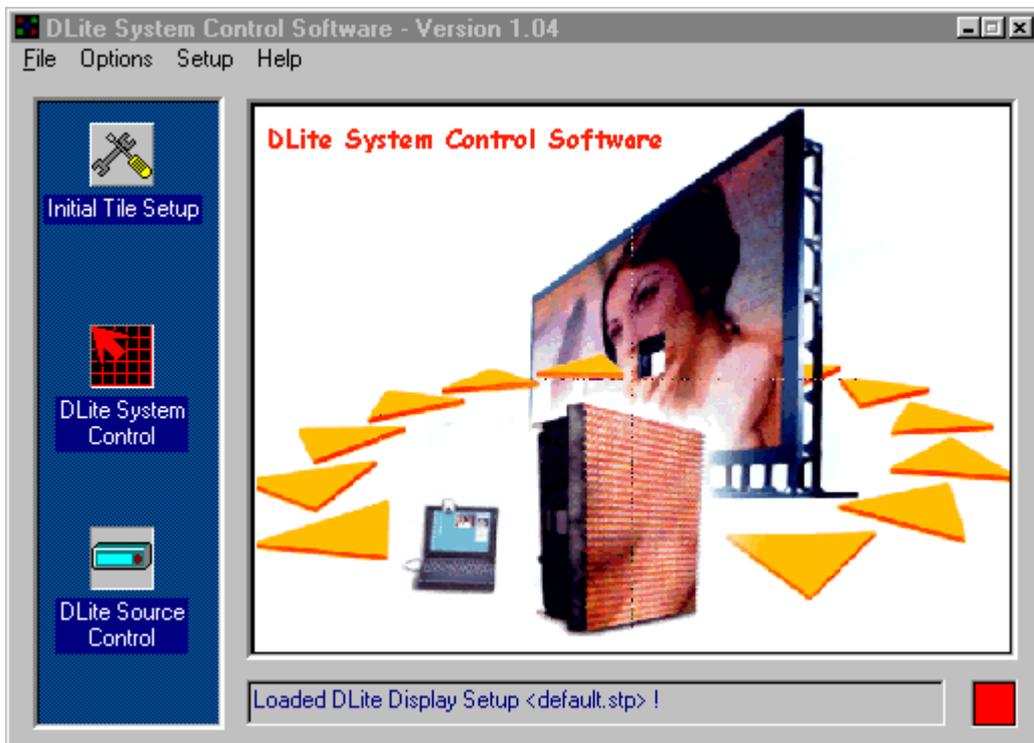
The Control Software can be used to control the Barco Digitizer/DLite Display when connected through a serial RS232 connection

## Implemented Features

### 1.1.Introduction

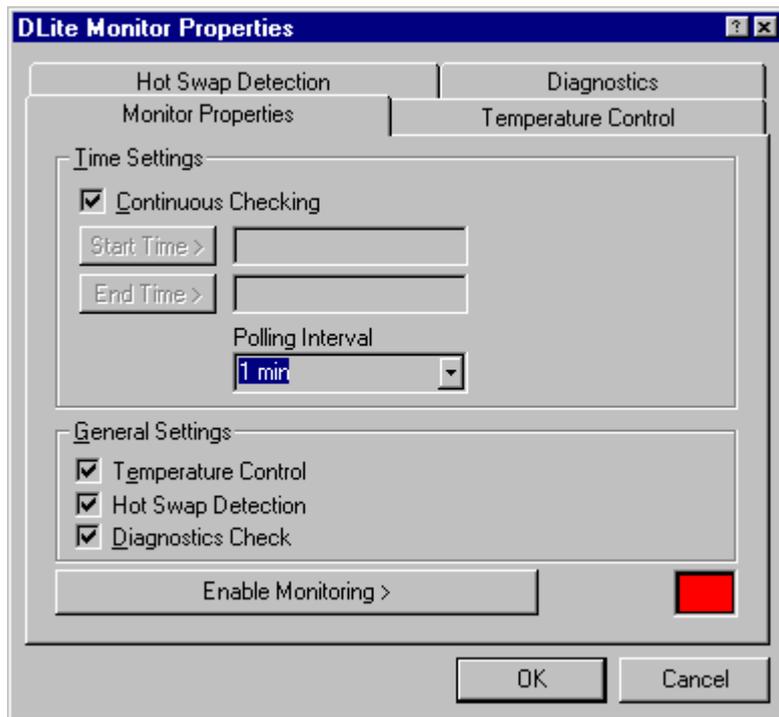
The DLite System Control software resides in the Taskbar during startup, is always resident. The software is divided in two main parts:

### DLite System Control Software Dialog



This window gives the user access to ALL controls to the DLite System

# Monitoring



This part window resides in the Taskbar  09:06 and can be accessed by clicking the right mouse button over the icon. This part is important for monitoring the DLite System. The software keeps monitoring (when enabled) even when the DLite System Control Software Dialog is closed.

## 1.2.Setup

The user can choose between the Initial Tile Setup or the Guided Setup Wizard (where the system will ask the user, step by step to provide the necessary information).

The Setup allows the user to make the DLite Display setup in a simple manner. The user can change the Display layout (number of rows, number of columns and the linking orientation), while the system takes care of Automatic Addressing, Automatic Positioning and Automatic Configuration.

## 1.3.System Control

The control software visualizes the DLite Display in its real configuration, providing the following features:

### EASY ACCESS TO ALL SETTINGS

By simply clicking on a tile, the user can access all its settings (Tile properties, general settings, chroma adjustment, individual correction data,...)

### ALTER DLITE DISPLAY CONFIGURATION BY DRAG AND DROP

GLOBAL ACCESS TO THE DLITE DISPLAY WITH POSSIBILITY TO CHANGE THE CONTRAST SETTINGS, RESOLUTION MODE,...

OVERVIEW OF THE DLITE DISPLAY CONFIGURATION WITH POSSIBILITY TO TOGGLE EASILY BETWEEN ALL THE TILES

EMBEDDED SOFTWARE & FIRMWARE UPDATE

DATABASE MANAGEMENT

CALIBRATION

INDIVIDUAL DIAGNOSTICS

VISUALIZATION OF HOT SWAP DETECTION

## **1.4.Source & Image Control**

USER DEFINED SOURCES AND QUICK SOURCE SWITCHING

SIMULATED REMOTE CONTROL

IMAGE PROCESSING, TO IMPROVE THE IMAGE ON THE DLITE DISPLAY

SCALING: COMPRESSING AND PANNING OF THE VIDEO IMAGE

UP-SCALING

GAMMA CONTROL

## **1.5.Monitoring**

RESIDENT TEMPERATURE CONTROL

HOT SWAP DETECTION + AUTO CALIBRATION

RESIDENT DIAGNOSTICS



# CHAPTER 2

## Control Software package

### System Requirements

Install the Software Package on a PC with **minimum 5 MB** of free space available.

A minimum configuration of a **486 processor, 75 MHz and 32 MB RAM** is necessary.

The minimum operating system required is a 32 bit Windows version:

- **Win95 / Win98** and later versions
- **Win NT.3.5.** and later versions

The screen resolution of the software is suggested at **800\*600** for a good working environment.

### Software Installation

To install the software, put the CD-ROM in your CD-ROM drive.

From within the Windows environment go to the Start Menu. Choose Run... from the menu and proceed as follows:

- 1.PUSH BROWSE
- 2.CHOOSE YOUR CD-ROM DRIVE
- 3.SELECT SETUP.EXE PRESS OPEN TO SELECT SETUP.EXE
- 4.PRESS OK TO RUN THE INSTALLATION
- 5.PRESS ENTER TO EXECUTE THE INSTALLATION PROGRAM.
- 6.EVERYTHING WILL BE INSTALLED AUTOMATICALLY BY THE INSTALLATION PROGRAM.





RGB, SDI and PC Data.

It's the Daylight Display Digitizer that processes all source signals for digital distribution to every DLite display tile. The Digitizer can be accessed directly or via the DLite Display Control Software. This software is designed as a user interface to be used with the Daylight Display Digitizer and the DLite Display and can be used when connected to the Digitizer through a serial RS232 connection.

# Getting Started with the DLite Display System

To get started with the DLite Display System act do as follows

## 1. MAKE SURE...

- To have the software installed properly
- To have made the proper connections between Display & Digitizer and between Digitizer & Controlling PC

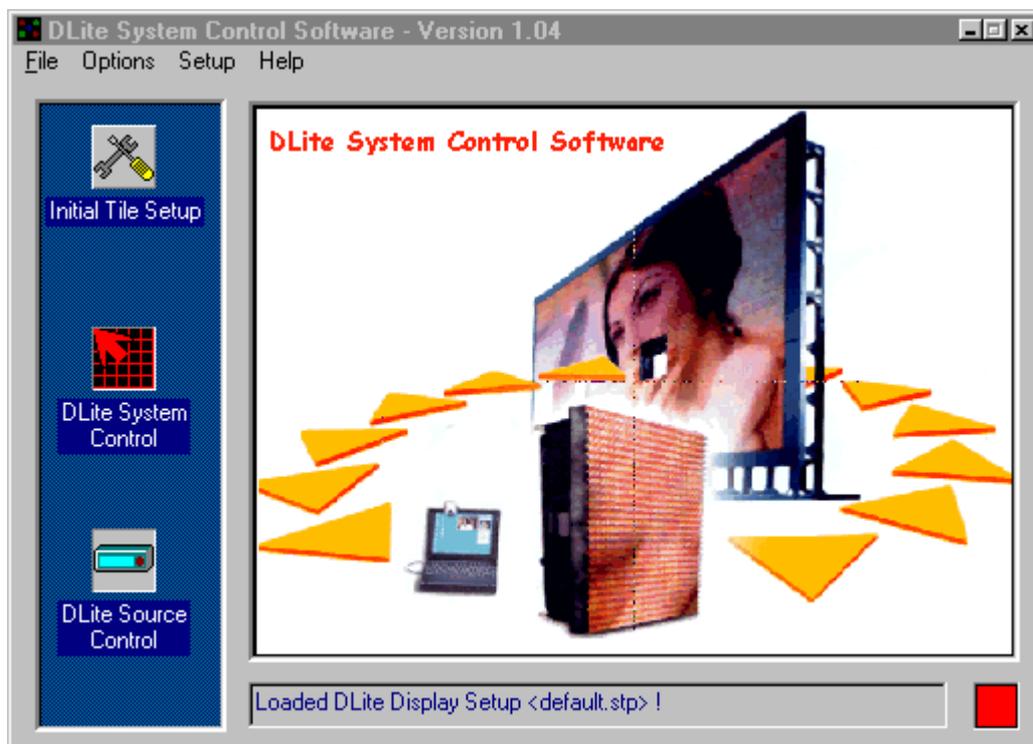
## 2. ACCESS FROM THE TASKBAR

When one starts up the DLite software for the first time, an icon appears in the taskbar.



This icon represents the DLite Software being resident in the Taskbar.

The DLite System Control Software Dialog also appears simultaneously.



Setting up a DLite Display Configuration and controlling the entire system is always done from the box shown above. However, when one closes this box, this doesn't close down the software because it remains resident in the taskbar.

## REMARK

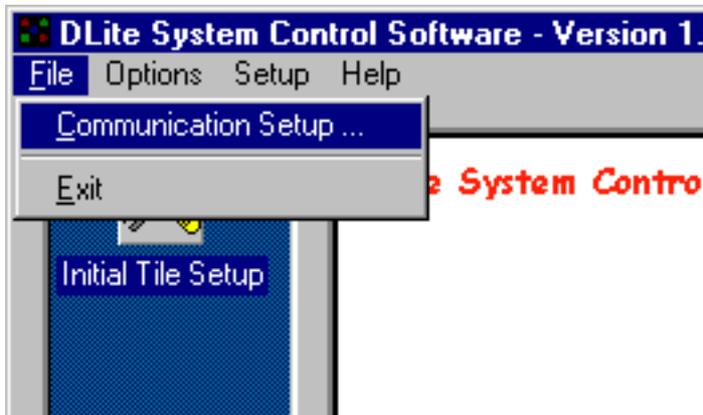
Exit the software by clicking the right mouse on the DLite Software icon and selecting <Exit> from the menu.

## 3. COMMUNICATION SETUP

Proceed as follows to change your communication settings

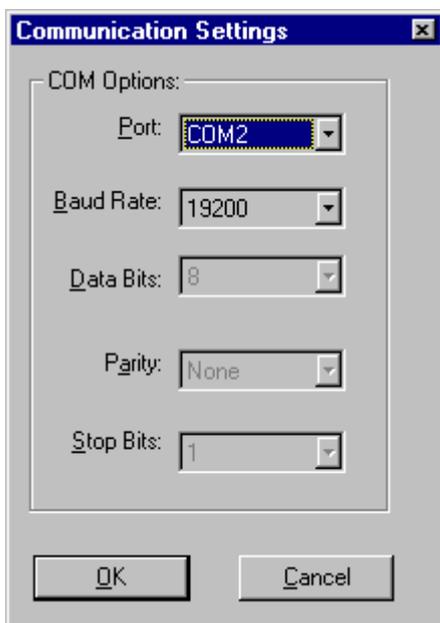
### COMMUNICATION SETUP

From the File menu, choose Communication Setup



### SETUP

The Communication Setting dialog box appears.



### COMMUNICATION PORT

Change the Communication port to the serial port

Used for connecting the PC to the Digitizer.

### BAUDRATE

If required, change the baudrate to match the baudrate of the digitizer.

The baudrate determines the speed of the data transfer.

## OK BUTTON

Click the **OK** button to save changes or **CANCEL** to abort.

## REMARKS

Other settings as the data bits, stop bits and parity are default and can not be altered

Exit the software by clicking the right mouse on the DLite Software icon and selecting **<Exit>** from the menu.

## 4. DISPLAY SETUP

Before using a DLite Display it must be initialized (addressing, positioning,...), either:

Follow the **'Guided Setup Wizard'** (started automatically when setting up a display for the first time)



or, follow the **'Initial Tile Setup'**

See Control Software SetUp

## 5. DEFINE SOURCES

Add user defined sources via the Source Control

See Source & Imaging Control to add sources

## 6. GENERAL USE

By far the most commonly used features for the DLite System will be:

### IMAGING

### SCALING

See Source & Imaging Control

## 7. MONITORING

Monitoring is available via the taskbar . Several Monitoring options are possible

### MONITORING PROPERTIES

### TEMPERATURE CONTROL

### HOT SWAP DETECTION

### DIAGNOSTICS

# CHAPTER 4

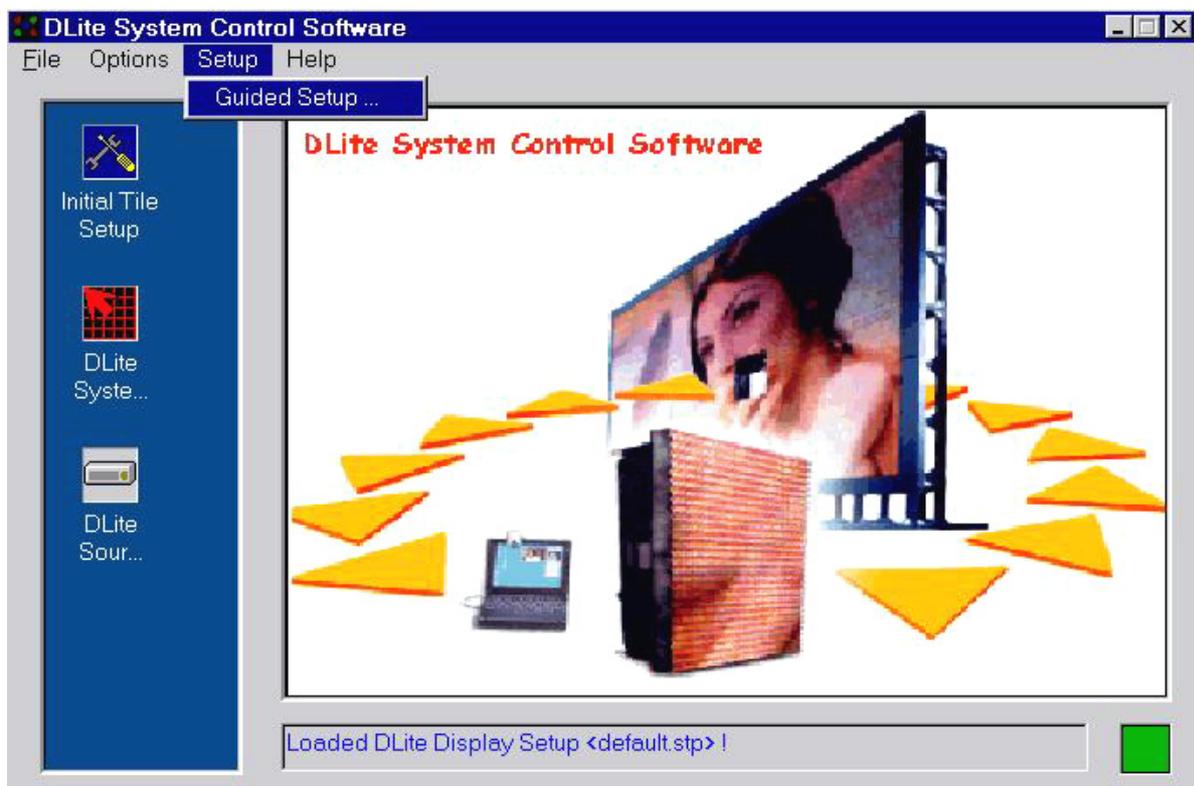
## Control Software

### Setup

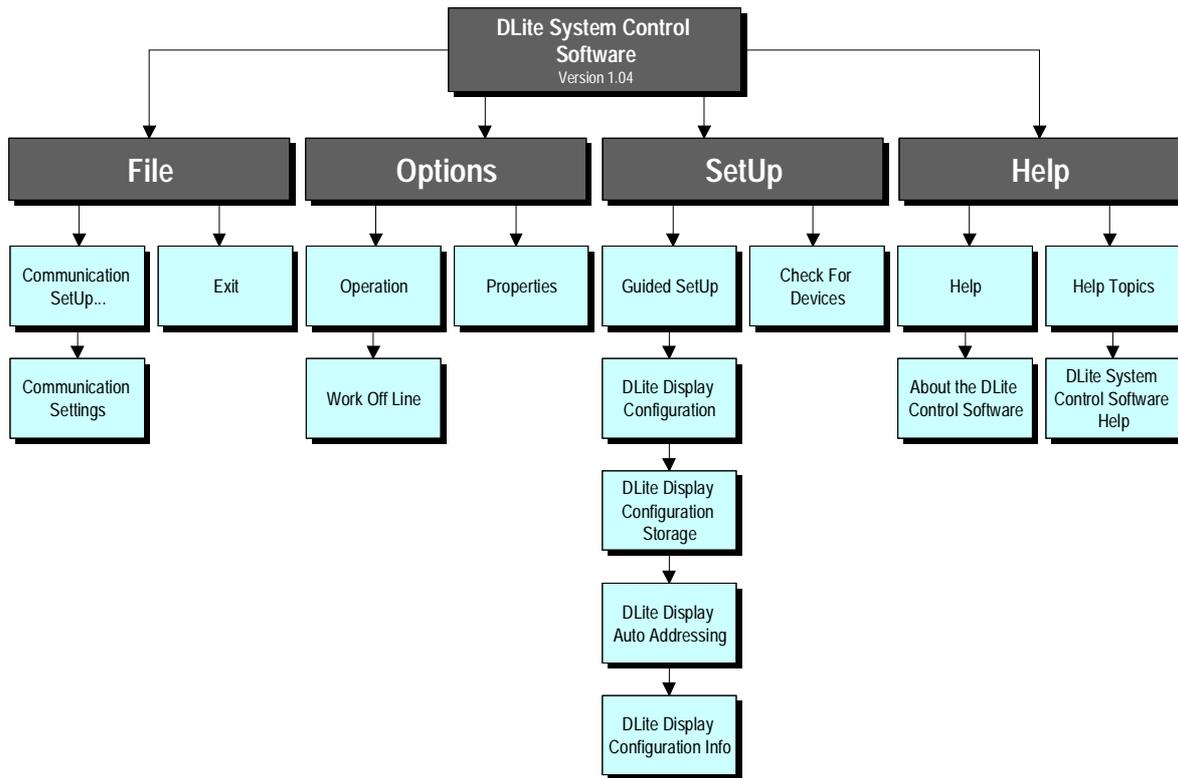
#### 4.1.Guided Setup

##### Introduction

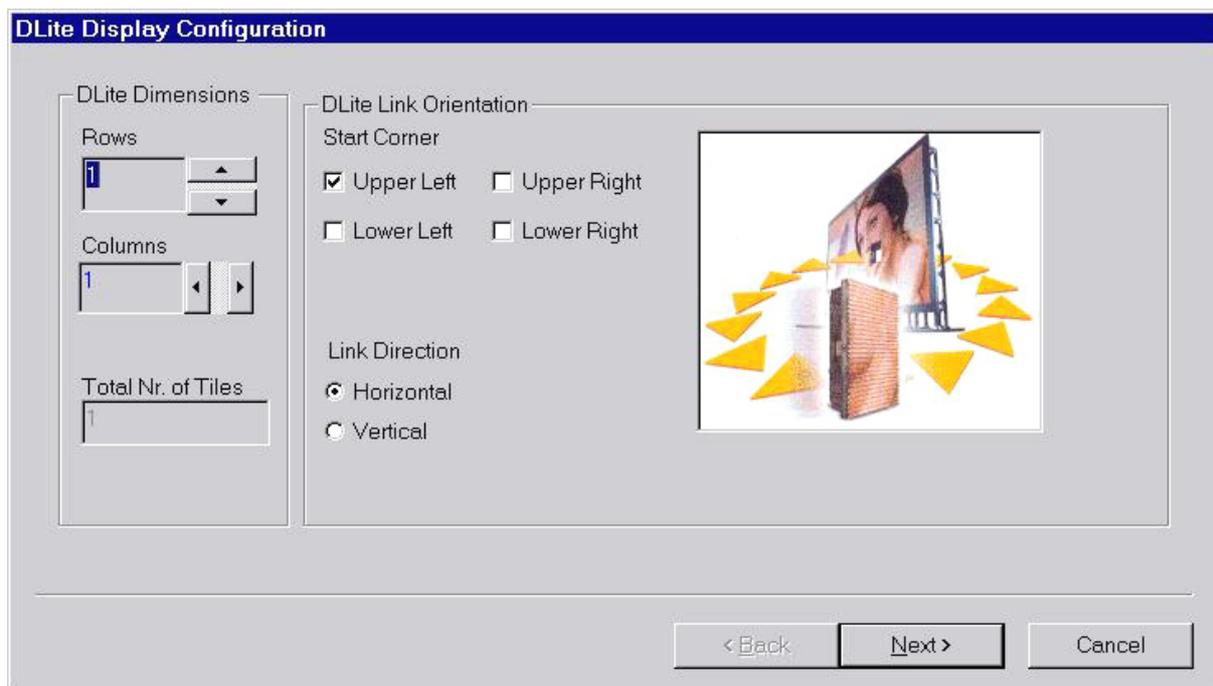
The guided setup wizard will start automatically when clicking the **INITIAL TILE SETUP** icon for the first time. It guides the user through the process of setting up a DLite Display Configuration, displaying each step the user has to take action and automating the main setup tasks. For accessing this wizard afterwards click the **GUIDED SETUP** in the **SETUP** menu.



# Menu Structure



## 1.DISPLAY CONFIGURATION



Initialize the DLite Dimensions and Link Orientation as follows

## DLITE DIMENSIONS

- select the desired number of rows and columns or use the corresponding arrows. The number of tiles will be changed automatically

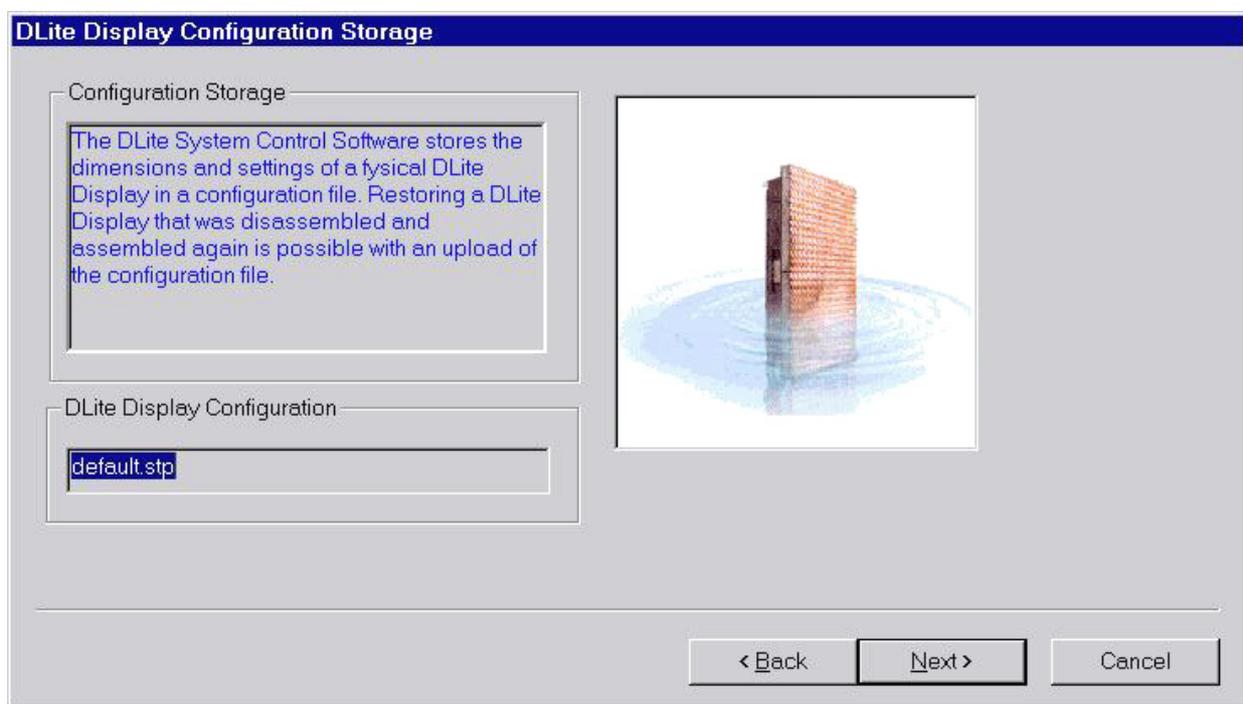
## DLITE LINK ORIENTATION

- select the start corner, this is the place of the first tile (i.e. the tile connected to the Digitizer) in the display
- select the **Link Direction** to define the way tiles are connected to each other (H / V)

## NEXT-BUTTON

Click the **NEXT**-button to proceed

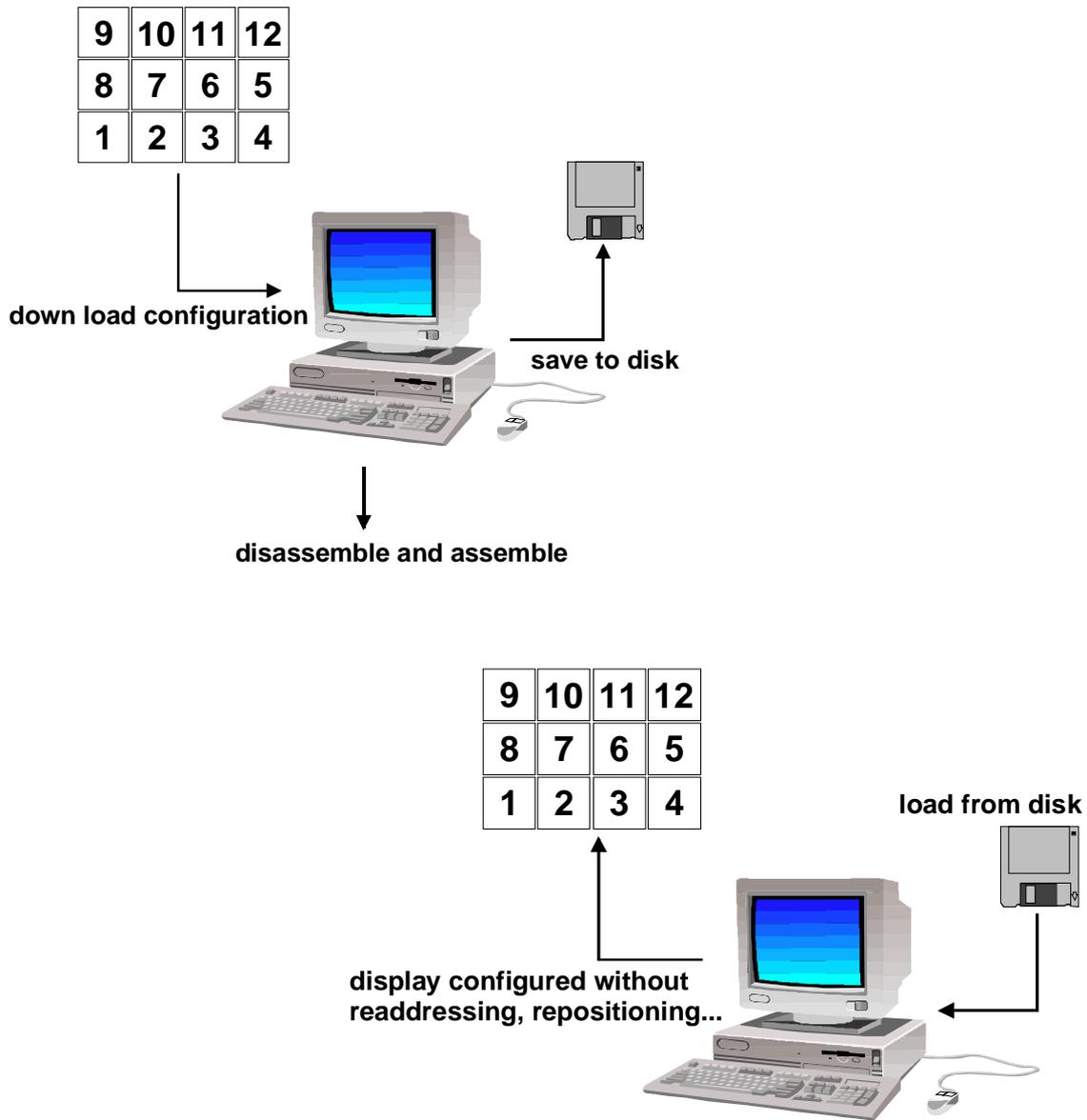
## 2.DISPLAY CONFIGURATION STORAGE



A configuration file stores a real configuration. For each tile it stores the address, the positioning, the correction data for the quadrants, the chroma measurements data and some general information.

A configuration file can be useful in the following situations

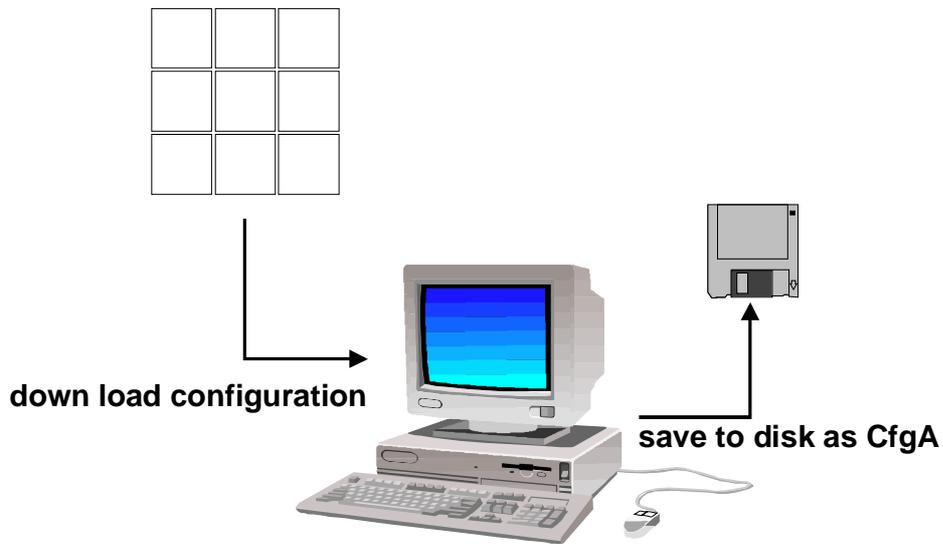
- Disassembling an existing DLite Display and assembling it again (with the same dimensions and link orientation)



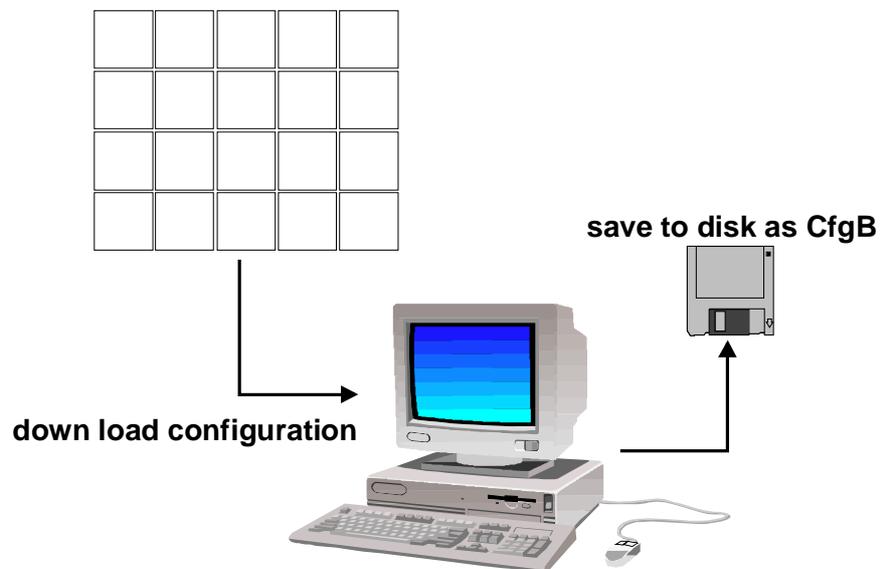
ADVANTAGE: no setup needed again! (Software is already configured)

- Accessing different DLite Displays (for example with a laptop) in different locations, with different configurations

### PLACE A



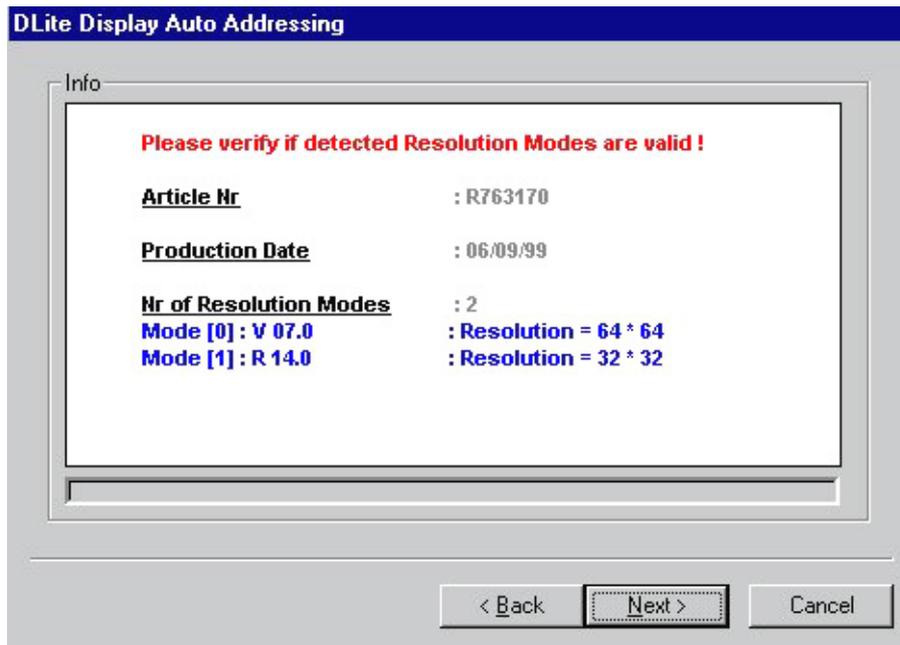
### PLACE B



**ADVANTAGE:** Once configured for a DLite Display, you can load the desired configuration to work with the software

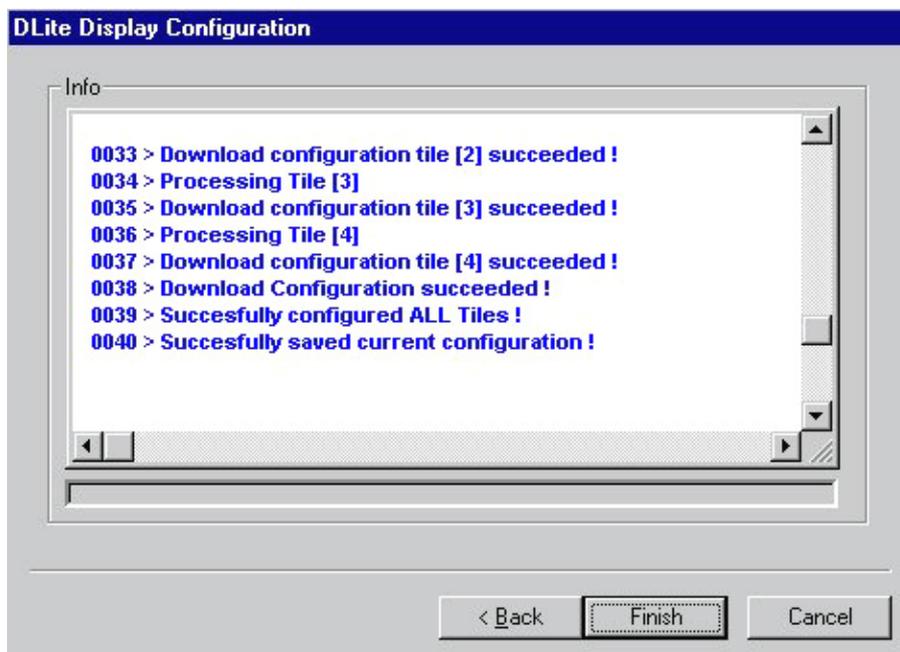
1. Fill in the name of the Configuration file in the DLite DISPLAY CONFIGURATION-window (automatically displays default loaded file)
2. Click the **NEXT**-button to proceed

### 3.DISPLAY AUTO ADDRESSING



Here one can see which kind of display is used and what the possible resolution modes are. Check if the detected resolution modes are valid. If not, click the **CANCEL**-button. If everything is detected correctly, click the **NEXT**-button.

### 4.DISPLAY CONFIGURATION



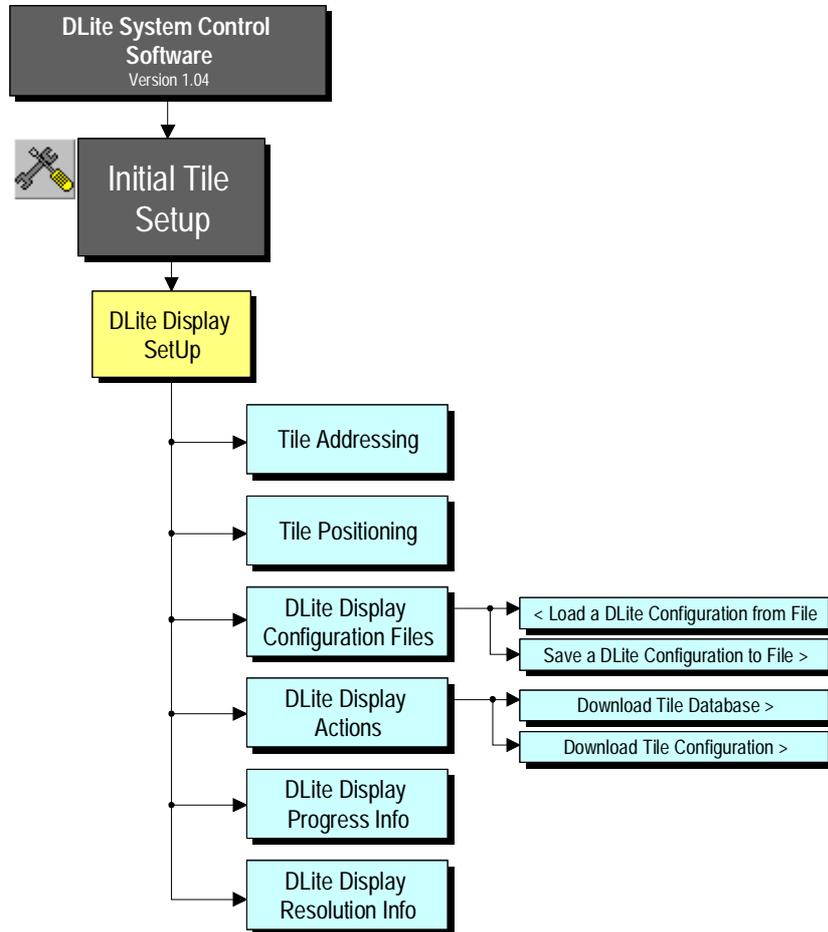
The DLite Display Configuration displays the info about the progress of the configuration. Info about the addressing of the tiles, the positioning, the database creation and the downloading of the configuration are viewable.

When done, scroll through it using of the scrollbar or save the log by opening a popup menu with the right mouse button.

Finish the guided setup by clicking the **FINISH**-button.

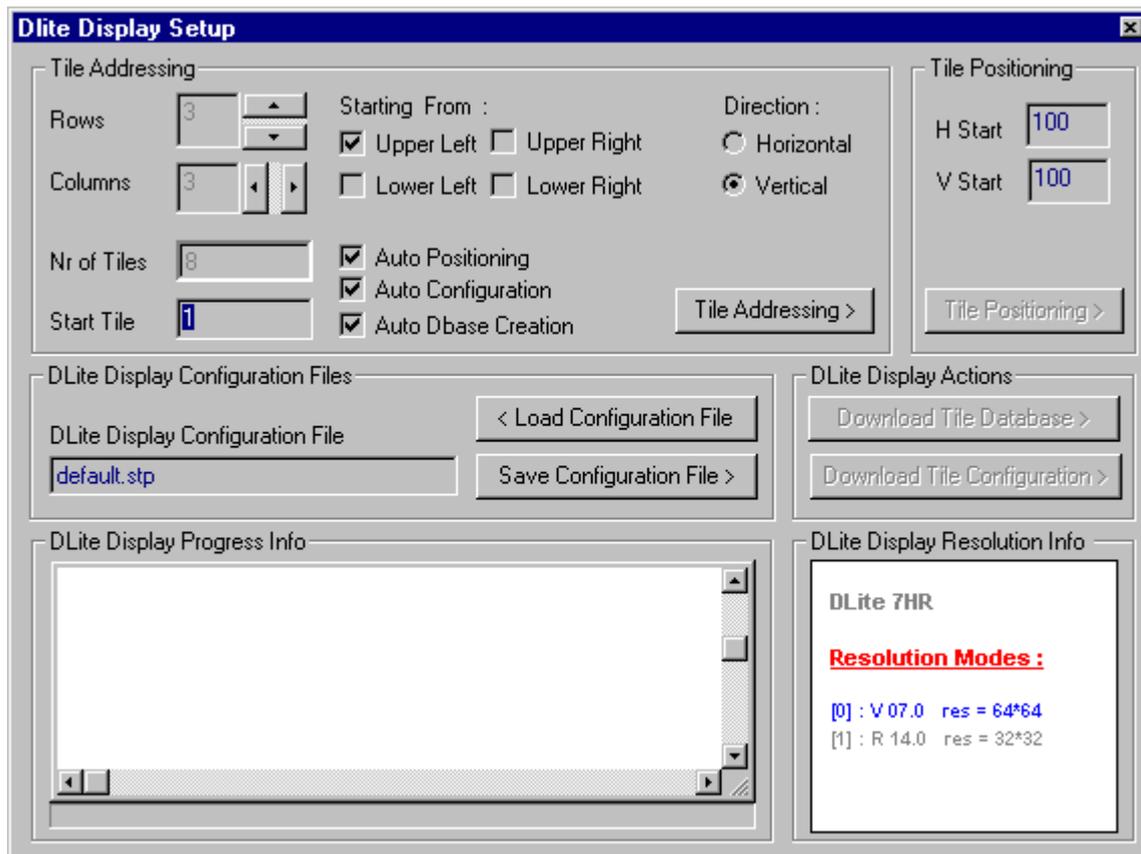
## 4.2.Initial Tile Setup

### Menu Structure



(click the **INITIAL TILE SETUP**-icon)

When entering the initial tile setup for the first time the guided setup will be started automatically. Otherwise the **<DLite Display Setup>** screen appears:



Here the DLite Display can be configured without following the guided setup wizard.

## 1. TILE ADDRESSING

### SELECT THE DLITE DIMENSIONS

Select the desired number of rows and columns or use the corresponding arrows. The number of tiles will be changed automatically. Also the Start Tile can be initialized (i.e. the address of the first tile, the tile that is connected to the Digitizer).

### SELECT THE LINK ORIENTATION

Select the start corner, this is the place of the first tile (i.e. the tile that is connected to the Digitizer) in the display.

Select the Link Direction to define the way tiles are connected to each other (H / V).

### AUTOMATICALLY EXECUTE TILE POSITIONING

Tile Configuration or Database Creation by selecting the corresponding check box.

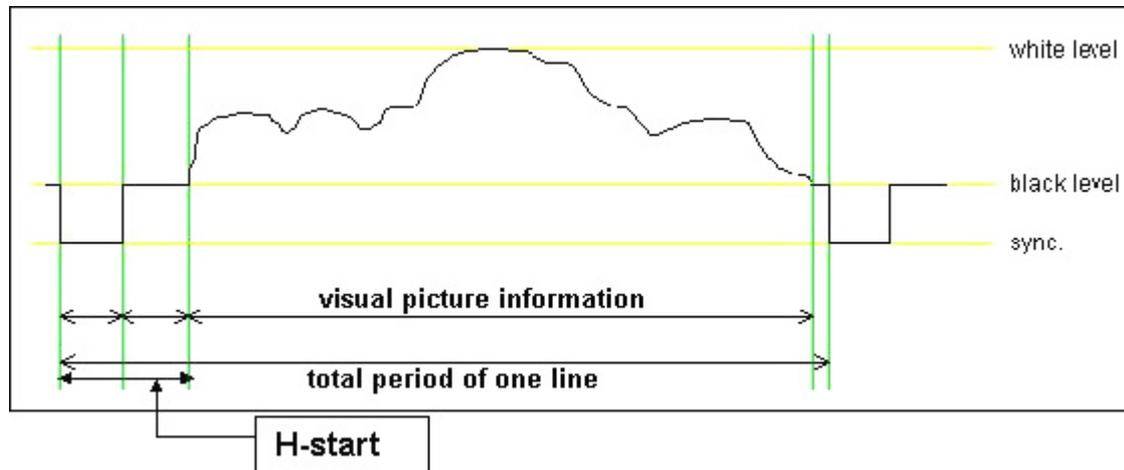
### TILE ADDRESSING BUTTON

Clicking this button will start giving each tile its individual address, starting with the first tile that gets the address you chose as start-address.

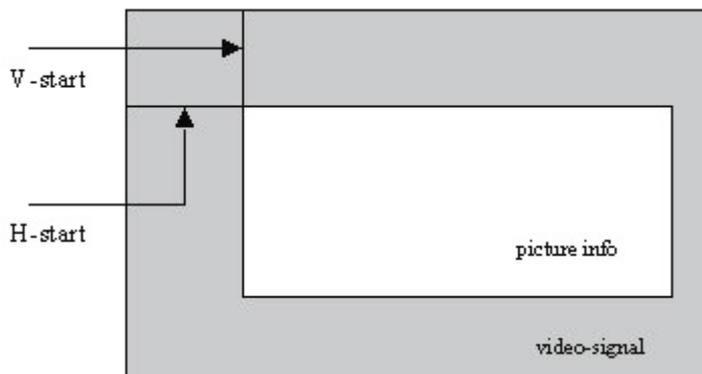
The progress of the addressing is displayed in the DLite Display Progress Info-window. When done, scroll through it using of the scrollbar or save the log by opening a popup menu with the right mouse button.

## 2.TILE POSITIONING

Define the horizontal and vertical start position of the incoming video. The information of one video image consists of several video lines. On such line contains more information than only the visual picture information (e.g. sync pulse, color burst,...). The time between the start of the line and the start of the picture information is defined as the horizontal start position.



In the same way the information of one video image contains more information than only the several video lines. The time between the start of the image information and the first actual video line with picture information is defined as the vertical start position.



Do as follows:

1. Select the desired horizontal and vertical start position values
  2. Clicking **TILE POSITIONING**, gives each tile its individual position in relation to the incoming video-signal, each tile position is calculated according to the start position.
- The progress of the positioning is displayed in the DLite Display Progress Info-window. When done, scroll through it using of the scrollbar or save the log by opening a popup menu with the right mouse button.

### 3.DISPLAY CONFIGURATION FILES

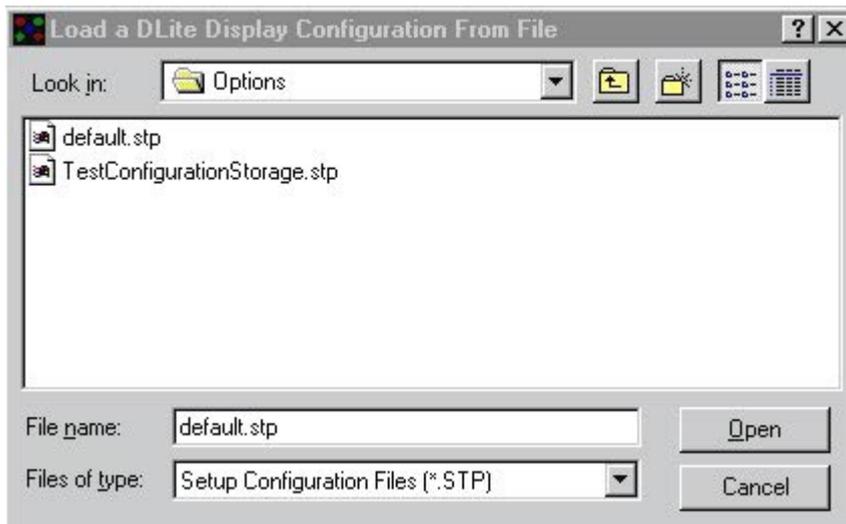
A configuration file is the storage of the real configuration. It stores the addressing and the positioning of the display and the Tile Configuration (i.e. the correction data for the quadrants, the chroma measurements data and some general info for each tile separately).

Saving of such a configuration file can be interesting when disassembling a configuration; when assembling it again the system doesn't have to collect all the information from the tiles again, but can load it from the configuration file.

In the DLite **DISPLAY CONFIGURATION FILE**-window one can read the last loaded configuration file.

For loading a previous configuration file act as follows

- 1.Click **LOAD FROM DISK** to enter the following screen

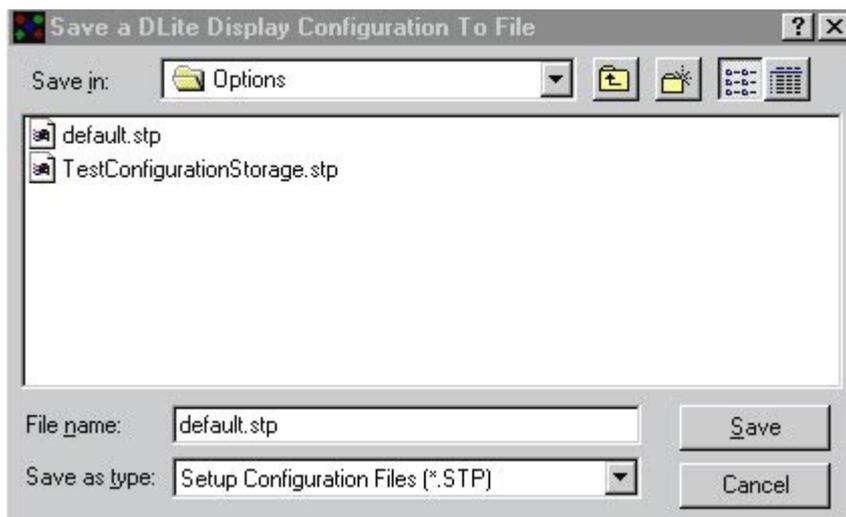


- 2.Select the configuration file to open or fill in the name in the **FILE NAME**-screen.

- 3.Click **OPEN**

For saving the actual configuration file do as follows:

- 1.Click **SAVE FROM DISK** to enter the following screen



- 2.Select the configuration file to save (then this file will be overwritten) or fill in a new file name in the **FILE NAME** screen.

- 3.Click **SAVE**.

## 4.DISPLAY ACTIONS

Downloads information about the tiles in the actual display.

### DOWNLOAD TILE CONFIGURATION

Downloads the Tile Configuration, i.e. the correction data for each quadrant, the chroma measurement data and general info for each tile separately. The actual Configuration File (the file seen in the **DLite Display Configuration File** window) will be overwritten with this information. To store this information on disk, follow the instructions to save a configuration file to disk.

### DOWNLOAD TILE DATABASE

Download the Tile Database, which stores the Correction Data for every single LED of a tile. This information is stored in a file for each tile separately which is linked to the tiles' serial number. One can manipulate this database afterwards in the **DATABASE MANAGEMENT** of the DLite SYSTEM CONTROL.

The progress of the downloading is displayed in the **DLite Display Progress Info** window. When done, scroll through it using of the scrollbar or save the log by opening a popup menu with the right mouse button.

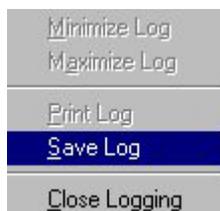
## 5.DISPLAY RESOLUTION INFORMATION

This shows the possible Resolution Modes and which Resolution Mode is active. The active resolution mode is colored blue. The DLite Display is identified in gray.

## 6.DISPLAY PROGRESS INFORMATION

Shows the progress of the communication when executing an action. Afterwards one can scroll through it by use of the scrollbar.

By clicking the right mouse button the following popup menu appears



<Save Log> saves the log to a file

<Print Log> prints



# CHAPTER 5

## Control Software

### System Control

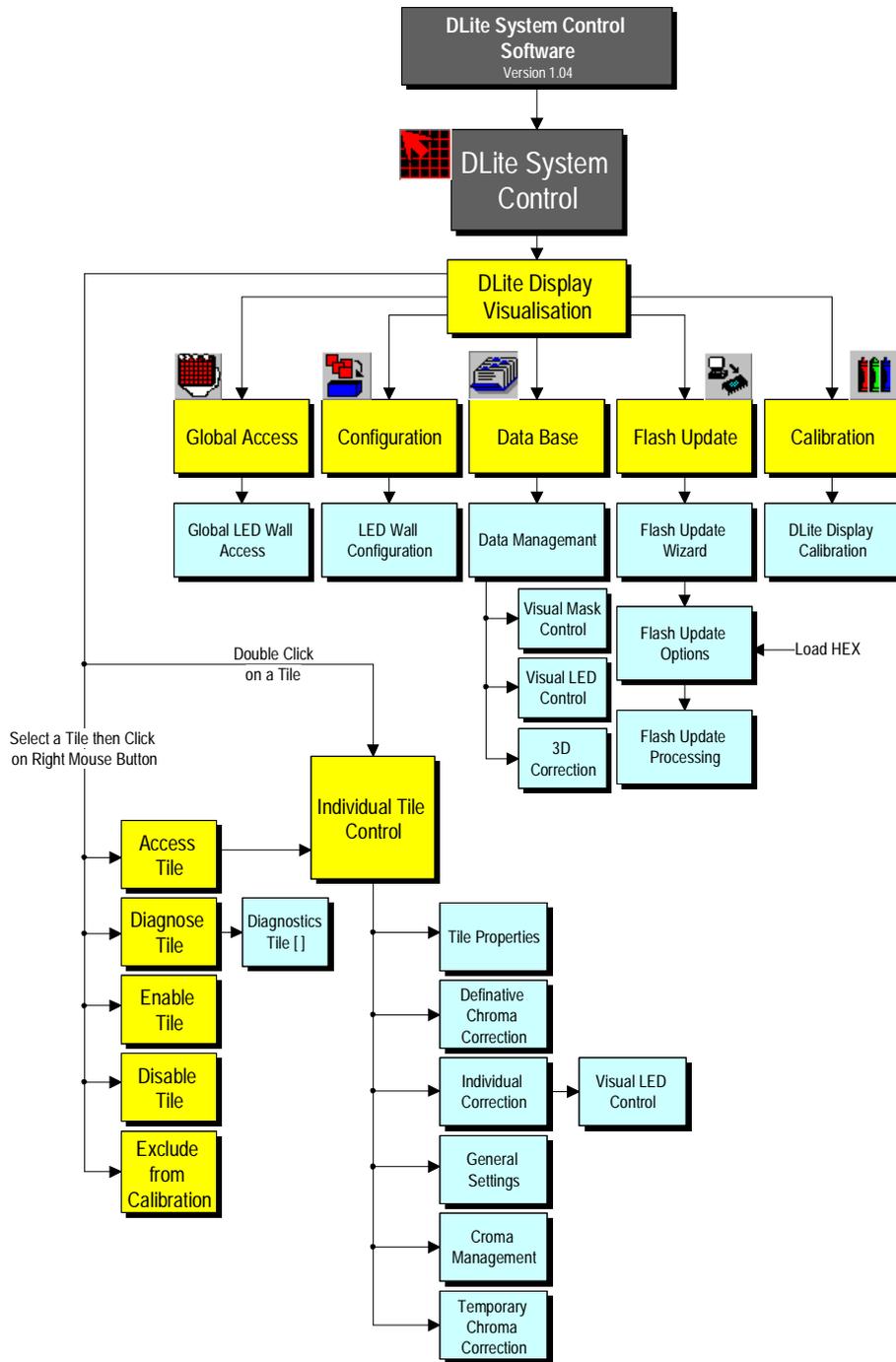
#### 5.1.Introduction

##### Introduction



Accessing the DLite System Control visualizes the DLite Display- tiles in their real configuration. From here it's easy to access a single tile by double clicking it with the left mouse button or one can get a global access to the DLite Display. It's also possible to alter the DLite Display configuration by simply drag and drop.

# Menu Structure



(click the DLite SYSTEM CONTROL-icon)

The icons underneath the visualization of the DLite Display provide features that influence the complete Display. These features are:

## **1.GLOBAL ACCESS**

For accessing all tiles at once

## **2.CONFIGURATION**

For having an overview of the DLite Display configuration

## **3.DATABASE**

For accessing the database

## **4.FLASH UPDATE**

For updating the flash memory of tiles, AEC and Fiberlink

## **5.CALIBRATION**

To calibrate a range of tiles

Double clicking a tile provides features that influence only the selected tile.

These features are:

## **1.TILE PROPERTIES**

For having an overview of the tiles' properties

## **2.DEFINITIVE CHROMA CORRECTION DATA**

For changing the chroma data correction values definitive

## **3.INDIVIDUAL CORRECTION**

For having access to the individual LED's of the tile

## **4.GENERAL SETTINGS**

For changing the general settings of the tile

## **5.CHROMA MEASUREMENTS**

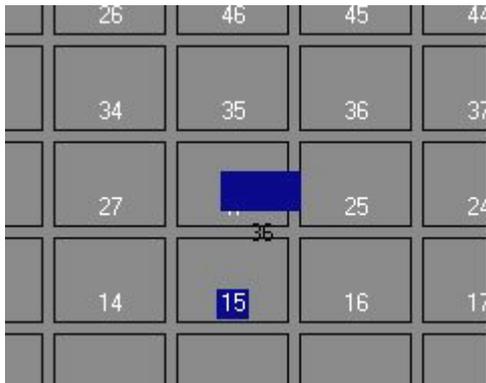
Gives an overview of the measured chroma values of the tile

## **6.TEMPORARY CHROMA CORRECTION DATA**

For changing the chroma data correction values temporary

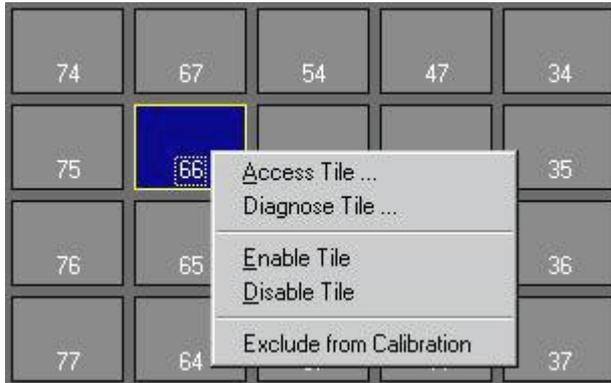
## 5.2.Alter Configuration

It is possible to simply change the configuration of the DLite Display by clicking on a tile, dragging and dropping it on another one. The addresses and corresponding files of both tiles will be switched



## 5.3.Tile Accessing/Enabling

Clicking on a tile with the right mouse button opens the following pop up menu, where it's possible to Access the tile or to Enable/Disable the (monitoring of the) tile:

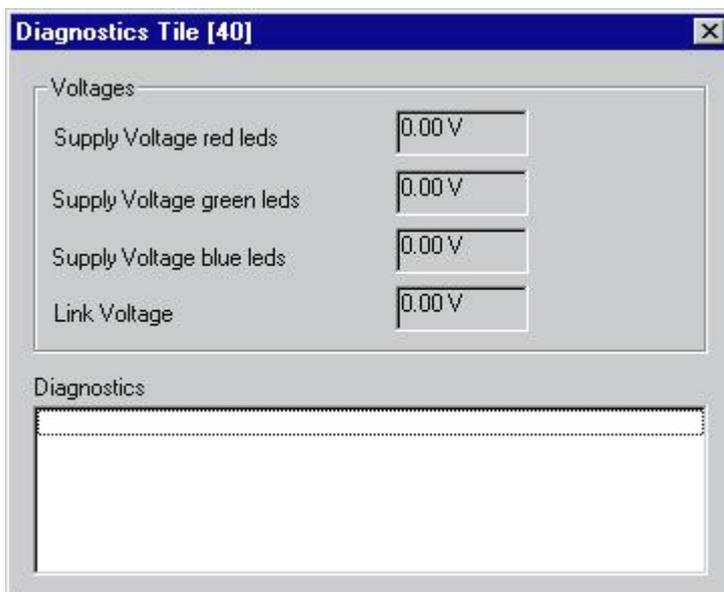


### 1.ACCESS TILE

Access all the tiles properties and settings. See Individual Tile Control.

### 2.DIAGNOSE TILE

Diagnosing a tile id done in the following window, supply voltages for all colors, link voltage and errors are displayed



The following error messages can appear in the Diagnostic listing:

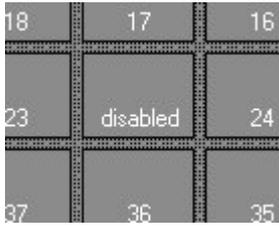
1. Fan fail detection
2. Altera Configuration Status
3. I<sup>2</sup>C errors
4. LED boards don't match
5. Error during Flash Update

plus further updated errors are possible....

### 3.ENABLE/DISABLE TILE

Enable or disable a tile.

A tile is disabled when 'DISABLED' appears in the tile:



### 4.EXCLUDE FROM CALIBRATION

Excludes the selected tile in the calculation for calibration. The tile will not influence the calibration of the wall in any way.

When a tile is excluded, the tile appears as:



Multiple tiles can be excluded and the exclusion is saved within the current configuration until selecting the tile and clicking <Exclude from Calibration>

## 5.4.Individual Tile Control

### Introduction

#### INDIVIDUAL TILE CONTROL

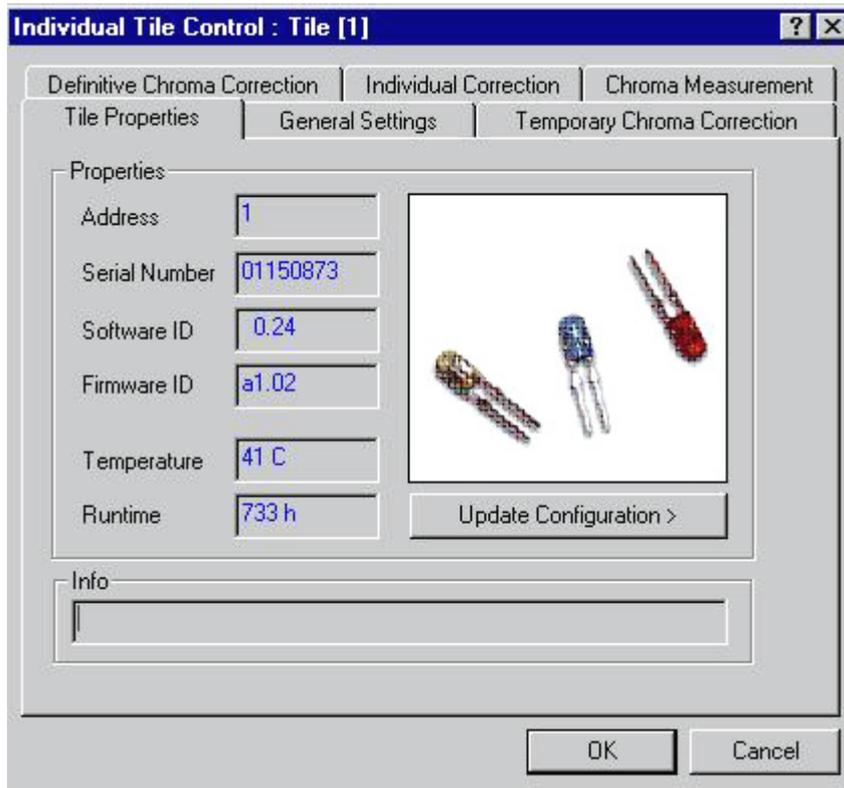
(double click on a tile with the left mouse button)

Double clicking the left mouse button on a tile gives access to all the tiles properties and settings. Switch between the different topics by clicking on the corresponding header.

Features:

- Tile Properties
- General Settings
- Temporary Chroma Correction
- Definitive Chroma Correction
- Individual Correction
- Chroma Measurement

# 1.Tile Properties



## ADDRESS

The tiles address, each tile is addressed individually

## SERIAL NUMBER

A tiles serial number, each tile has its own Serial Number.

## SOFTWARE IDENTIFICATION

The version of embedded software a tile uses.

## FIRMWARE IDENTIFICATION

The version of Firmware a tile uses.

## TEMPERATURE

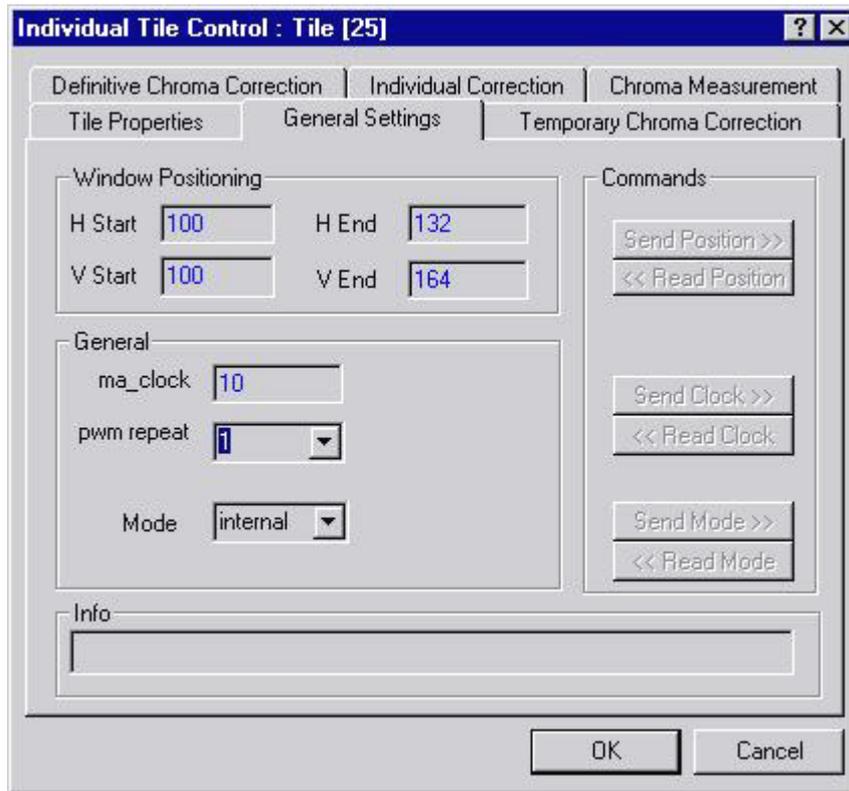
The temperature of an tile.

## RUNTIME

The tiles time in use.

Pushing <Update Configuration> updates the configuration for the selected tile

## 2.General Settings



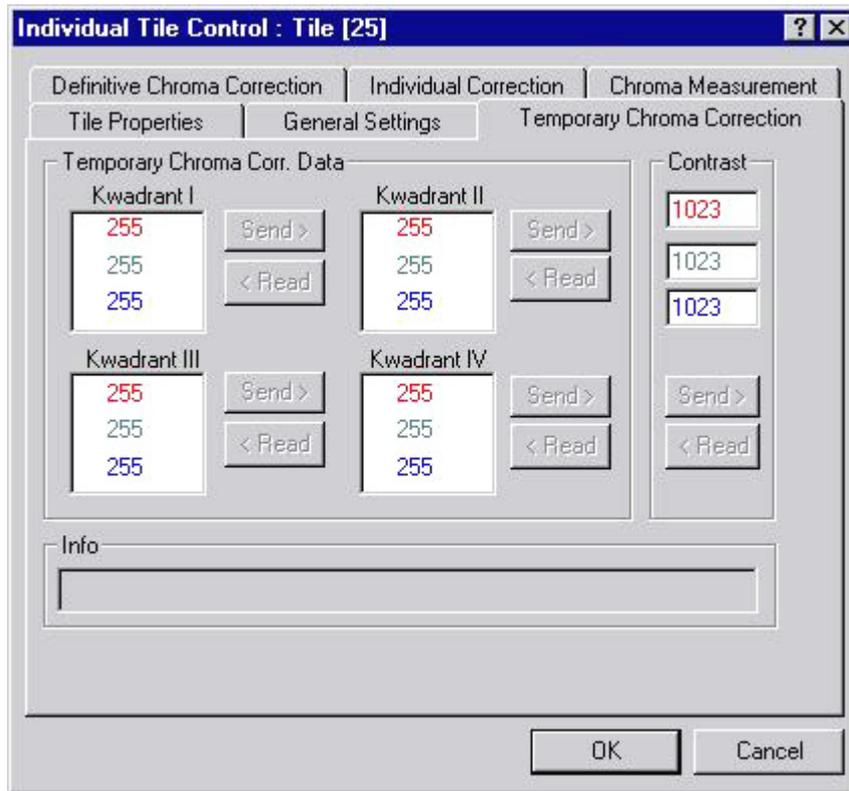
### WINDOW POSITIONING

1. Read the actual window positioning by clicking the READ POSITION command button.
2. Change the positioning of the tile (horizontal and vertical start and end position) by typing the desired values in the corresponding boxes.
3. For actually changing the tiles window positioning, send these changed values to the tile by clicking the SEND POSITION command button.

### GENERAL

1. Read the actual ma\_clock and PWM repeat by clicking the READ CLOCK command button.
2. Change the ma\_clock and the PWM repeat by typing the desired values in the corresponding boxes.
3. Send these values to the tile by clicking the SEND CLOCK command button.
4. Put the tile in internal or external mode by choosing the desired mode and send it to the tile by clicking the SEND MODE command button

## 3. Temporary Chroma Correction



### TEMPORARY CHROMA CORR. DATA

Overview of the chroma correction data of the tile. These correction data are used to adjust the slight color-differences between the four quadrants of a tile.

For each quadrant and for each color one can see the correction data.

1. Read the actual data by clicking the READ button of the desired quadrant.
2. If necessary change the data.
3. Update the tile by clicking the corresponding SEND button.

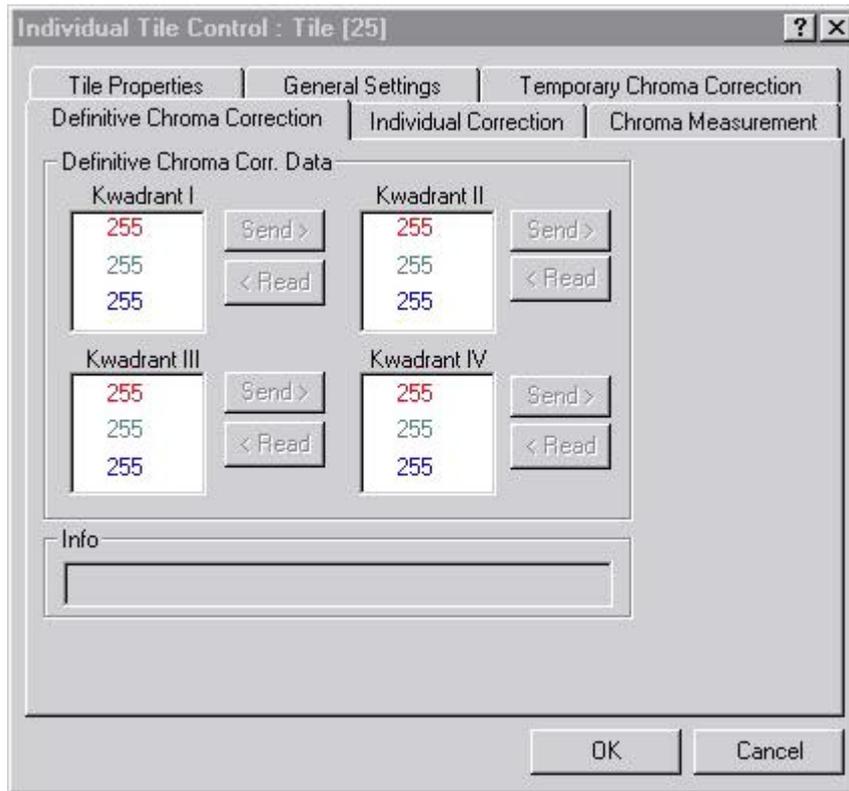
Changing the data this will be temporary, so the changes will be lost when turning off this tile, for changing the data definitive, use the Definitive Chroma Correction Data menu.

### CONTRAST

The analog contrast.

1. Read the actual contrast by clicking the READ button.
2. After possibly changing these values, update the tile by clicking the SEND button.

## 4. Definitive Chroma Correction



### DEFINITIVE CHROMA CORR DATA.

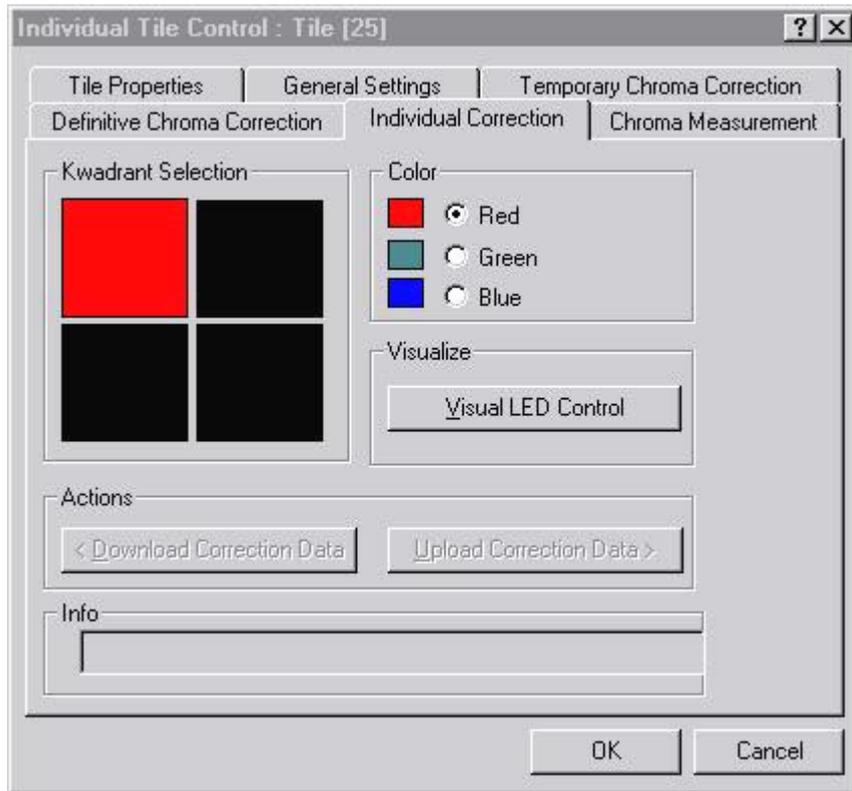
Overview of the chroma correction data of the tile. These correction data are used to adjust the slight color-differences between the four quadrants of a tile.

For each quadrant and for each color one can see the correction data.

1. Read the actual data by clicking the READ button of the desired quadrant.
2. If necessary change the data.
3. Update the tile by clicking the corresponding SEND button.

Changing this data will be definitive, so the data in the tile will be lost; for changing the data only temporary, use the Temporary Chroma Correction Data menu

## 5. Individual Correction



Access to the individual LED's of the tile, and possibility to change their correction data.

### QUADRANT SELECTION

Choose the desired quadrant by clicking on the corresponding square.

### COLOR

Choose the desired color by clicking on the corresponding radio button.

### VISUALIZE

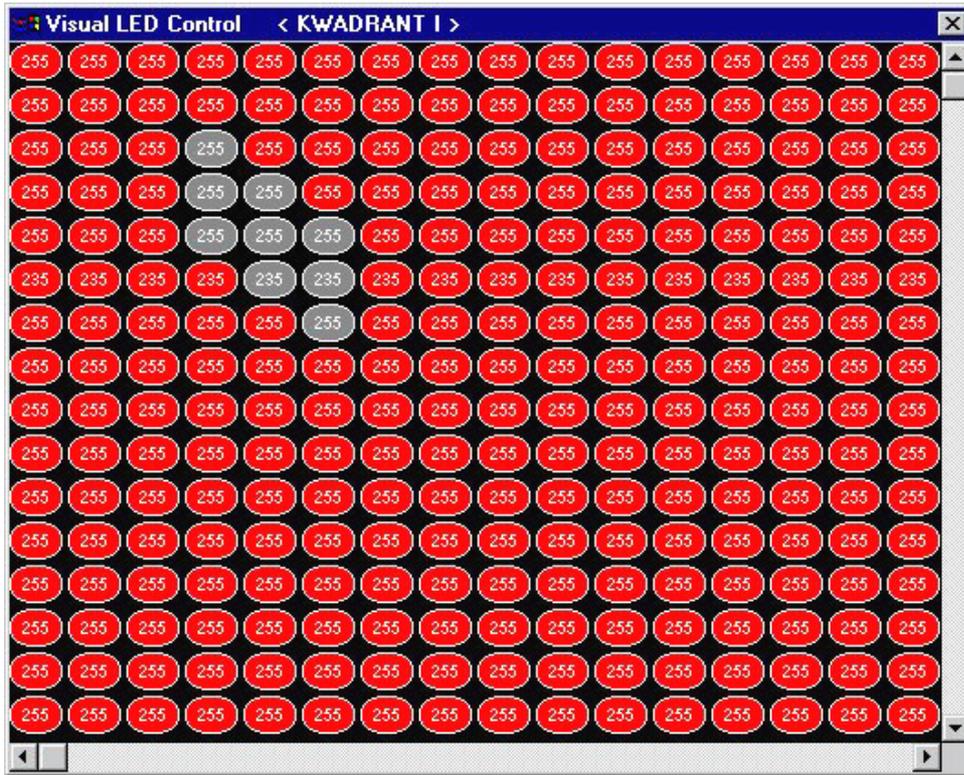
Clicking the VISUAL LED CONTROL button makes the selected quadrant and color visible and makes it possible to change its values (see Visual LED Control).

### ACTIONS (DISABLED)

1. Download the correction data of the selected quadrant and color, stored in the tile, by clicking the DOWNLOAD CORRECTION DATA-button.
2. If necessary change these values (by using the VISUAL LED CONTROL-button).
3. Update the tile with the stored values by clicking the UPLOAD CORRECTION DATA-button.

### VISUAL LED CONTROL

Visual representation of stored individual led correction data.



Select or deselect a single led by clicking it with the left mouse button. Clicking the right mouse button opens a pop up menu:



## SELECTION

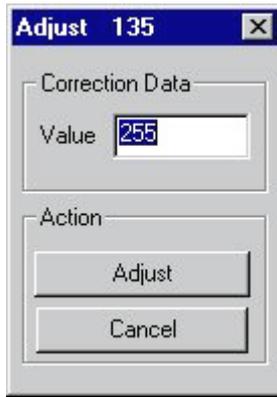
SELECT/DESELECT ALL/CURRENT ROW/CURRENT COLUMN

It's possible to select/ deselect all LED's or one row or column at once.

## SEND TO PRINTER

Print the values of this quadrant by selecting SEND TO PRINTER.

## ADJUST SELECTED ADDRESSES



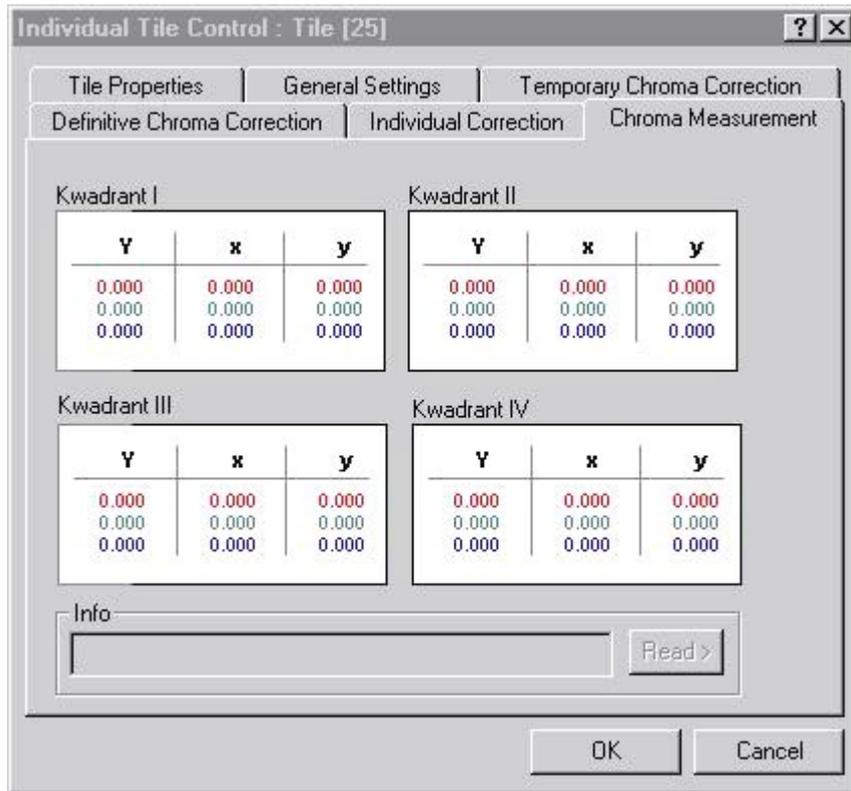
Fill in the desired correction data value (0-255) and by clicking the ADJUST-button all the values of the selected LED-addresses will be adjusted (off-line, for updating the tile click the UPLOAD CORRECTION DATA-button in the previous menu).

## ACCUMULATE SELECTED ADDRESSES



Fill in the desired correction data for accumulation and by clicking the ADD-button this value will be accumulated with all the values of the selected LED-addresses (off-line, for updating the tile click the UPLOAD CORRECTION DATA-button in the previous menu).

# 6.Chroma Measurements



Overview of the measured values for this tile for each quadrant.

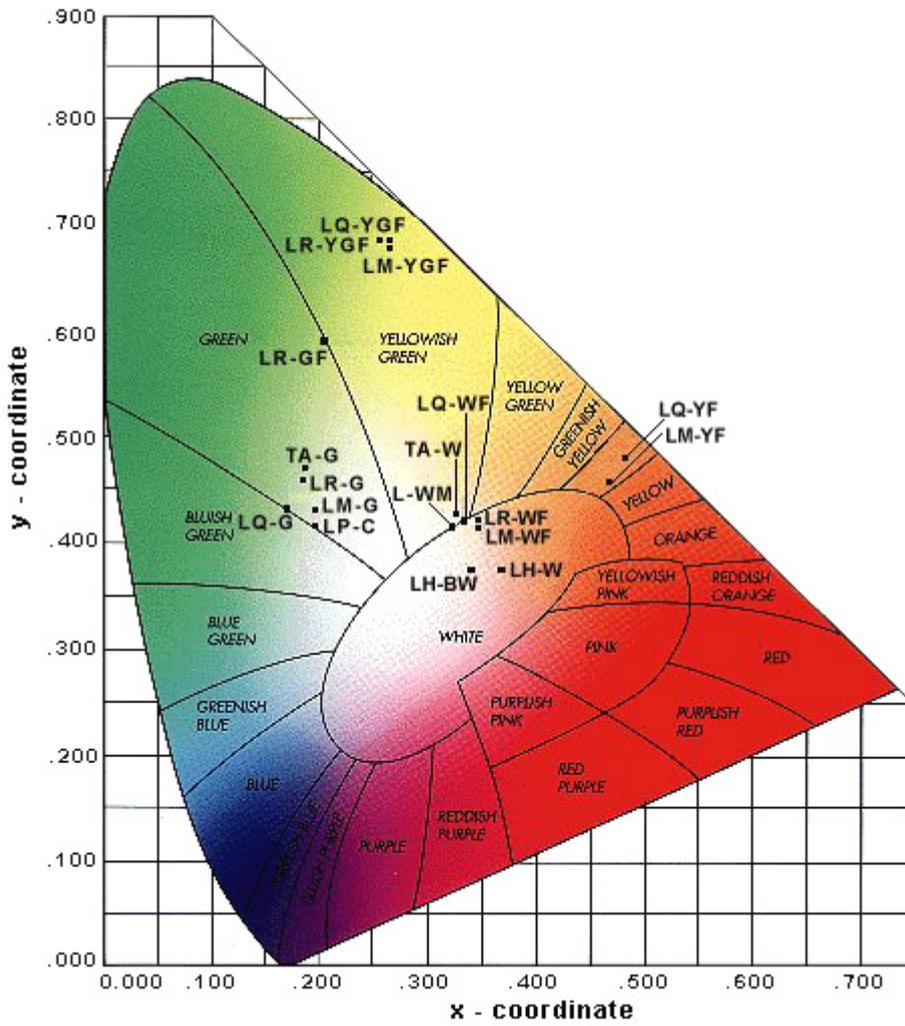
## Y-LUMINANCE

Abbreviation or symbol for luminance, the black & white information in a video signal.

## x,y-COLOR COORDINATES

Color-coordinates, the color part in a video signal.

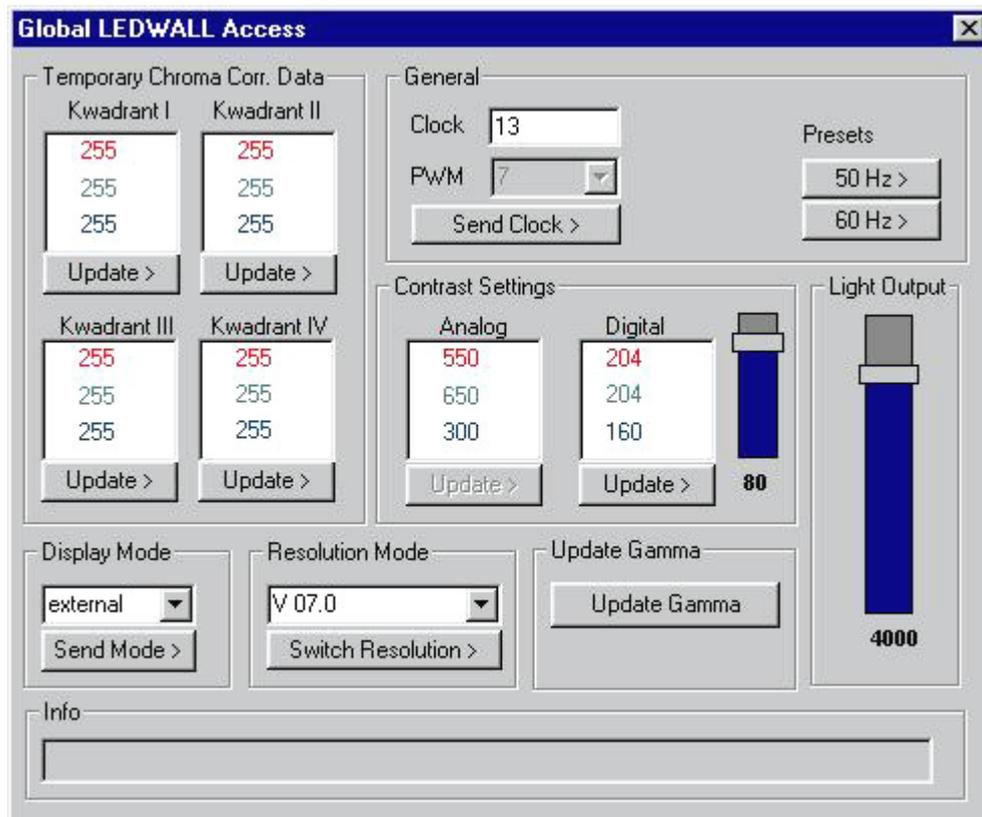
Each point on the next diagram, representing a unique color, may be identified by two coordinates, x and y.



## 5.5.Global Access

(Click the GLOBALACCESS-icon)

Pushing the Global Access Icon makes the Global LED Wall Access box appear



### 1.TEMPORARY CHROMA CORRECTION. DATA

Change the chroma correction data of all the tiles of the DLite Display. These correction data are used to adjust the slight color-differences between the four quadrants. For each quadrant and for each color one can see the correction data.

1. Change the data
2. Update the wall by clicking the corresponding UPDATE button.

This update will only be temporary, so the update will be lost after turning off the DLite Display.

### 2.CONTRAST SETTINGS

Change the Analog or Digital contrast for all tiles in the DLite Display.

1. Enter the desired values or use the slider.
2. Click the UPDATE-button.

### 3.LIGHT OUTPUT

Change the Light Output for all tiles in the DLite Display by using the slider in the Light Output tab

## 4.GENERAL

Change the clock- and the PWM value of all tiles of the DLite Display.

1. Click the appropriate 50 or 60 Hz button according to the used source.
2. Enter the desired values or use the default values.
3. Click the SEND CLOCK button.

## 5.DISPLAY MODE

Put the wall in internal or external mode.

1. Choose the desired mode.
2. Send it to the wall by clicking the SEND MODE button.

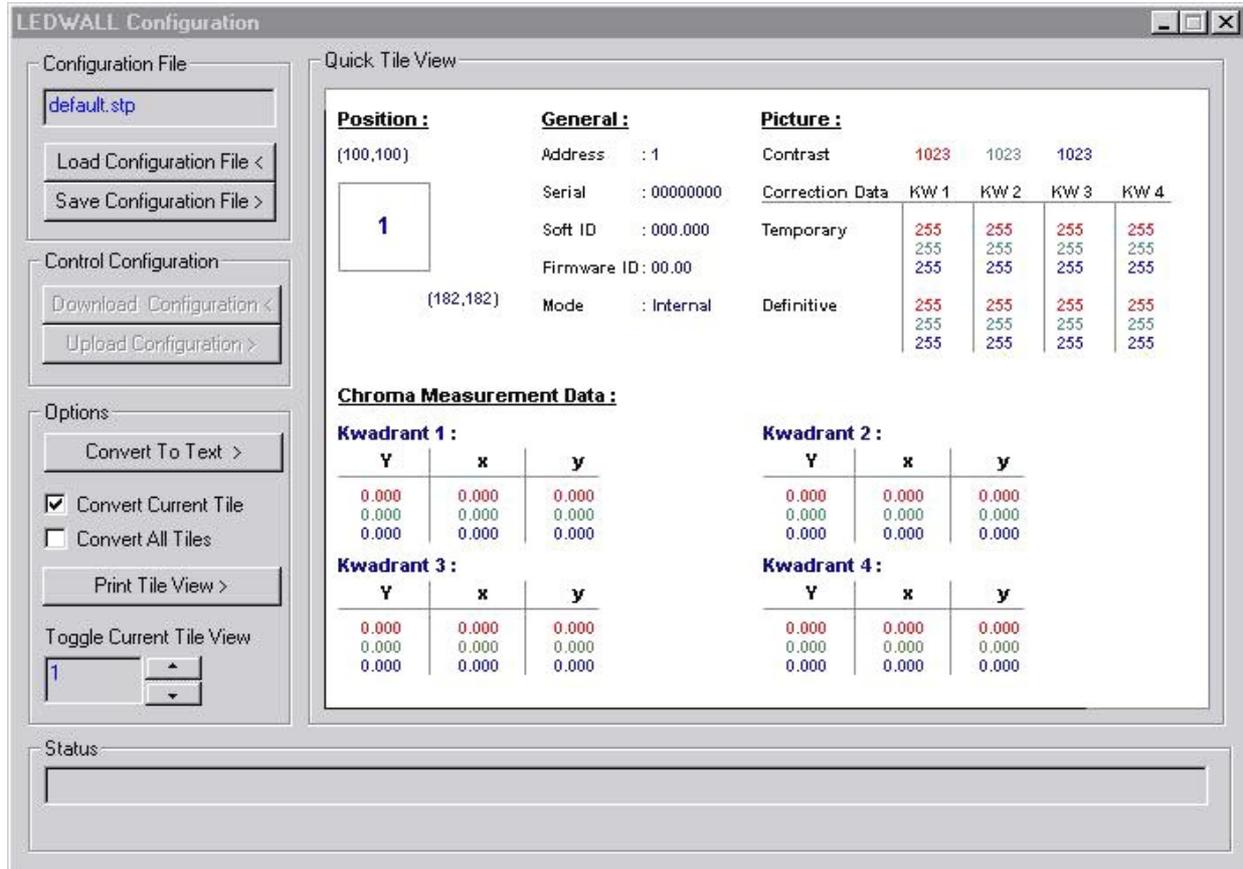
## 6.RESOLUTION MODE

Select the resolution you want to use.

1. Choose the desired resolution.
2. Send it to the wall by clicking the SWITCH RESOLUTION-button.

## 5.6.Configuration

(Click the CONFIGURATION-icon)



Overview of the configuration of the whole DLite Display. The most important information of each tile separately is displayed and it's easy to switch from one tile to another.

### 1. QUICK TILE VIEW

Overview of one tile. Switch to another tile by use of the arrows of the TOGGLE CURRENT TILE VIEW in the OPTIONS box.

#### POSITION

The actual positioning: the horizontal and vertical start position (upper left corner) and the horizontal and vertical end position (the lower right corner).

#### GENERAL

The tile its serial number and its actual address.  
Version of embedded software (SOFT ID) and firmware (FIRMWARE ID) its using.  
Mode (internal or external) the tile is working in.

#### PICTURE

The analog contrast values and an overview of the chroma correction data. These correction data are used to adjust the slight color-differences between the four quadrants of a tile. For each quadrant and for each color one can see the temporary and the definitive correction data. The temporary data values are the ones that will be lost when turning of the tile, the definitive ones are the ones that are stored.

## CHROMA MEASUREMENTS DATA

The measured values for this tile for each quadrant. For each color one can see the Y (intensity) and x-, y- (color coordinates) values.

## 2.CONFIGURATION FILE

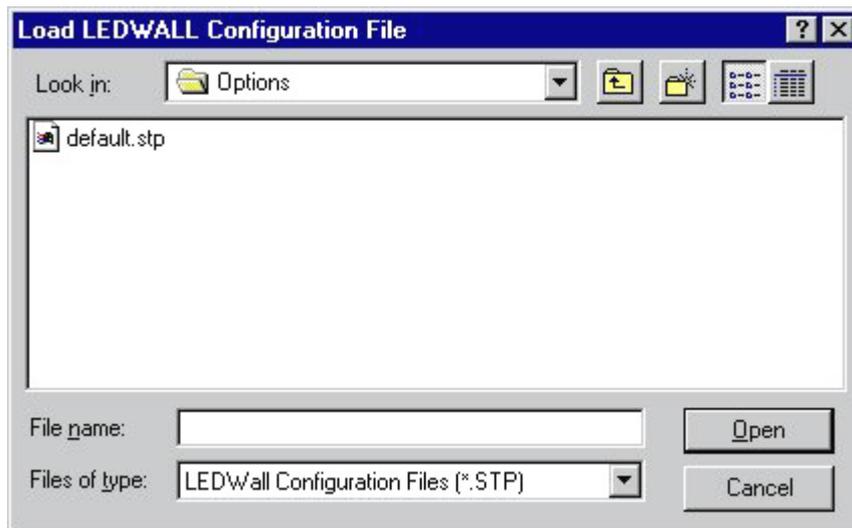
The configuration file that is actually used.

### LOAD CONFIGURATION FILE

Load a saved configuration as follows:

When loading a configuration file make sure the file is related to the actual DLite Display. If not errors will occur.

1. Click the LOAD CONFIGURATION FILE- button to enter the following screen:

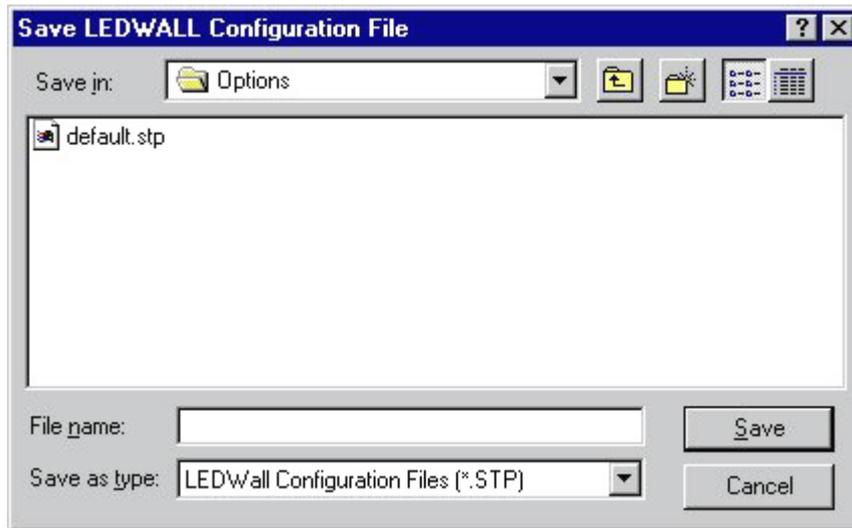


2. Select the configuration file to open or fill in the file name in the FILE NAME- screen
3. Click the OPEN-button, a new configuration will be loaded.

### SAVE CONFIGURATION FILE

Saving the actual configuration:

1. Click the SAVE CONFIGURATION FILE-button to enter the following screen:



2. Select the configuration file to save (then this file will be overwritten) or fill in a new file name in the FILE NAME- screen
3. Click the SAVE-button.

### 3.CONTROL CONFIGURATION

#### DOWNLOAD CONFIGURATION<

Download the actual running configuration of the DLite Display by clicking the DOWNLOAD CONFIGURATION button.

#### UPLOAD CONFIGURATION>

Upload the DLite Display with the configuration you're watching by clicking the UPLOAD CONFIGURATION button.

### 4.OPTIONS

#### CONVERT TO TEXT

Convert this configuration to a text-file by clicking the CONVERT TO TEXT-button. Choose to convert only the configuration of the current tile or to convert all tiles by choosing the corresponding radio button.

#### PRINT TILE VIEW

Print the configuration of the current tile by clicking the PRINT TILE VIEW-button.

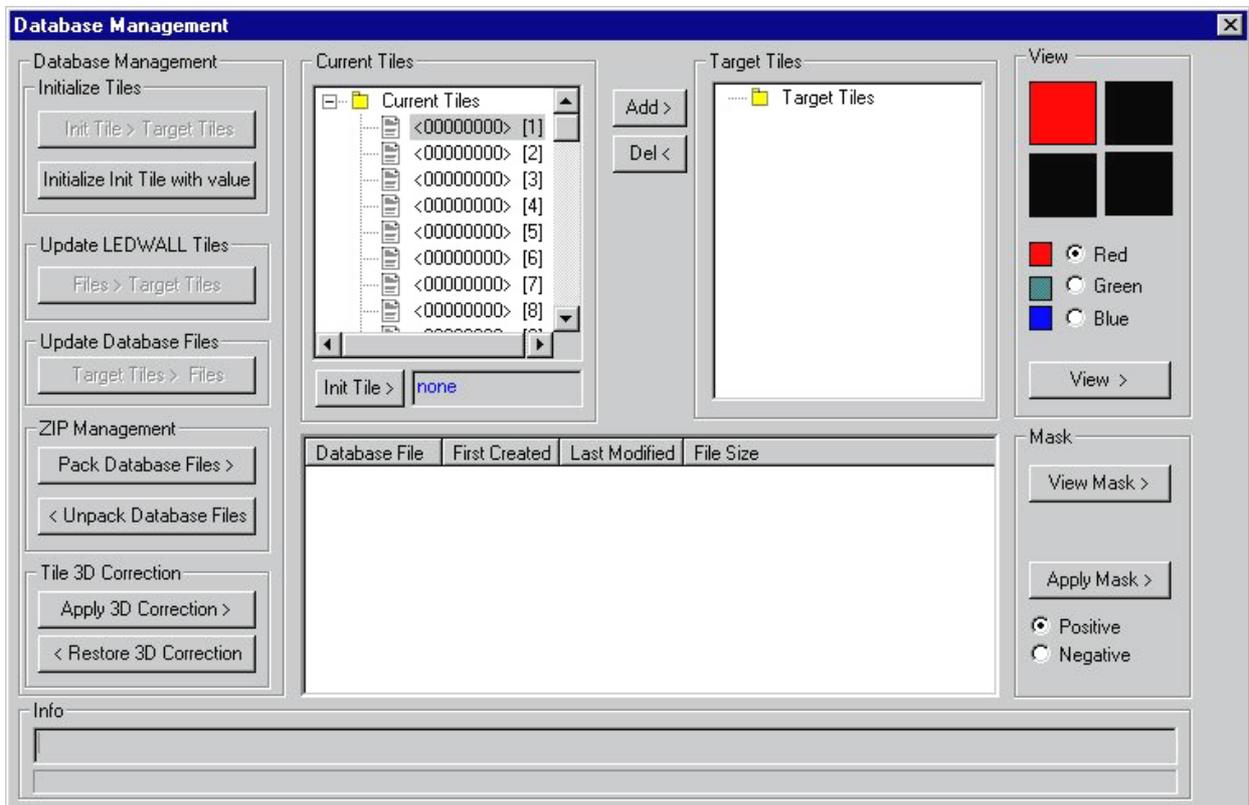
#### TOGGLE CURRENT TILE VIEW

Toggle from one tile to another by using the arrows of the TOGGLE CURRENT TILE VIEW-command.

## 5.7.Database

(click the DATABASE-icon)

All procedures only influence the data stored in the files and not the data of the related tiles, except for the INIT TILE> TARGET TILES-button and the FILES> TARGET TILES-button in the DATABASE MANAGEMENT-window.



Access to the database of the DLite Display. This database contains all the individual correction data of all the tiles of the DLite Display, and can be created during Setup. The information of each tile is stored in a separate file and linked to its serial number.

### 1.CURRENT TILES

All the current tiles of the DLite Display, their serial number and their address.

#### INITIAL TILE>

Choose one tile to be the initial tile. The initial tile can be used to make adjustments on only one tile until satisfaction with the result. Adjust all other (target) tiles with the same values as this initial tile, this by use of the INIT TILE> TARGET TILES-button.

To select a tile as init tile act as follows:

- 1.Click the desired tile in the CURRENT TILES-window
- 2.Click the INIT TILE-button.

### 2.TARGET TILES

These are the tiles on which adjustments will be made. To add a tile to the target tiles do the following:

1. Click the desired tile in the CURRENT TILES-window
2. Click the ADD-button

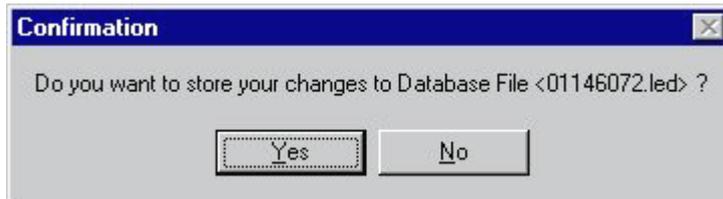
And for removing a tile from the target tiles:

1. Click the desired tile in the TARGET TILES-window
2. Click the DEL-button

## 3.VIEW

Access to the individual LED's of a tile and possibility to change their correction data. For using this view function follow the next steps:

1. Choose a tile by clicking the desired tile. This can be done in the CURRENT TILES-window, as well as in the TARGET TILES-window or the database information window below.
2. Choose the quadrant to view by clicking the corresponding square.
3. Choose the desired color by clicking the corresponding radio button.
4. Click the VIEW-button.
5. If necessary, adjust the values as explained in Individual Tile Control - Individual Correction - Visual Led Control
6. After possible adjustments the system will ask to store those new values in the file (Click YES for saving them)



## 4.MASK

With this function it's possible to create a mask to put over all the target tiles. When applying this mask the correction values of all LED's of the selected quadrant and color of all target tiles will be accumulated (or subtracted) with the values of the corresponding LED's of the mask. For applying this act as follow:

1. Choose the desired quadrant by clicking the corresponding square in the VIEW-window.
2. Click the VIEW MASK-button.
3. Adjust the mask in the same way as explained in Individual Tile Control - Individual Correction - Visual LED Control
4. After adjusting the mask the system will ask to store those new values in the mask file (Click YES for saving them)



5. Choose to accumulate the mask values or subtract them by choosing the POSITIVE-, respectively NEGATIVE-radio button.
6. Click the APPLY MASK-button

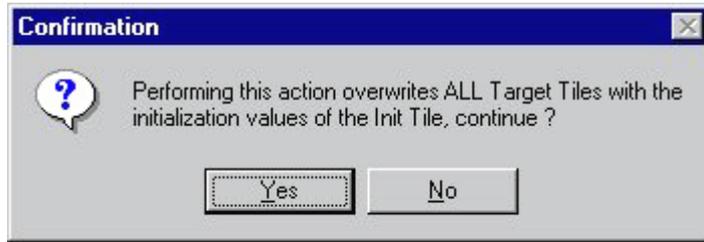
## 5.DATABASE MANAGEMENT

### 1.INITIALIZE TILES

#### INIT TILE> TARGET TILES

This function will influence the tiles and not their files!

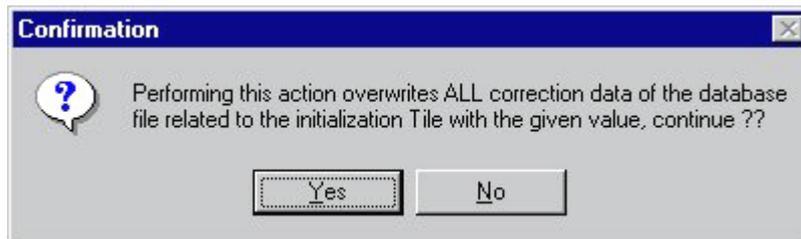
By clicking this button all the values of the target tiles will be overwritten with that of the init tile. Because this action is definitive the system will ask to confirm to do this:



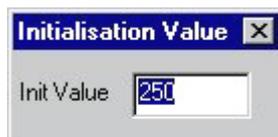
After clicking YES the action proceeds.

### INITIALIZE INIT TILE WITH VALUE

Click this button to give the tile selected as init tile an initial value. All the LED's of this tile will get this value as correction data. Because this action is definitive the system will ask to confirm to do this:



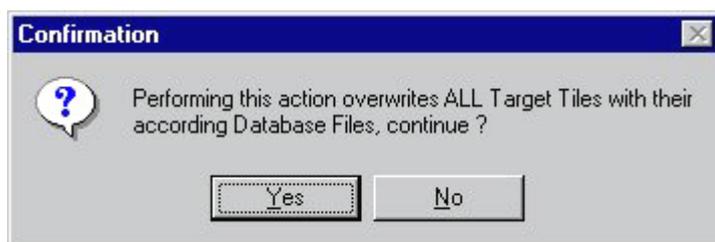
After clicking YES the action will proceed with the following screen where one can select the desired initial value:



## 2.UPDATE LED WALL TILES

This function will influence the tiles and not their files!

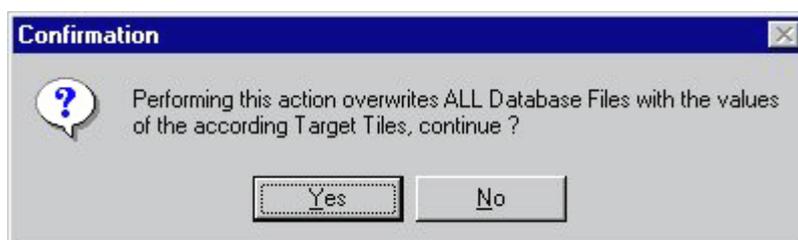
By clicking the FILES> TARGET TILES-button all the data stored in the tiles selected as target will be overwritten with the data in their related files. Because this action is definitive the system will ask to confirm to do this:



After clicking YES the action proceeds.

## 3.UPDATE DATABASE FILES

By clicking the TARGET TILES> FILES-button all the data in the files selected as target will be overwritten with the data stored in the tiles. Because this action is definitive the system will ask to confirm to do this:



After clicking YES the action proceeds.

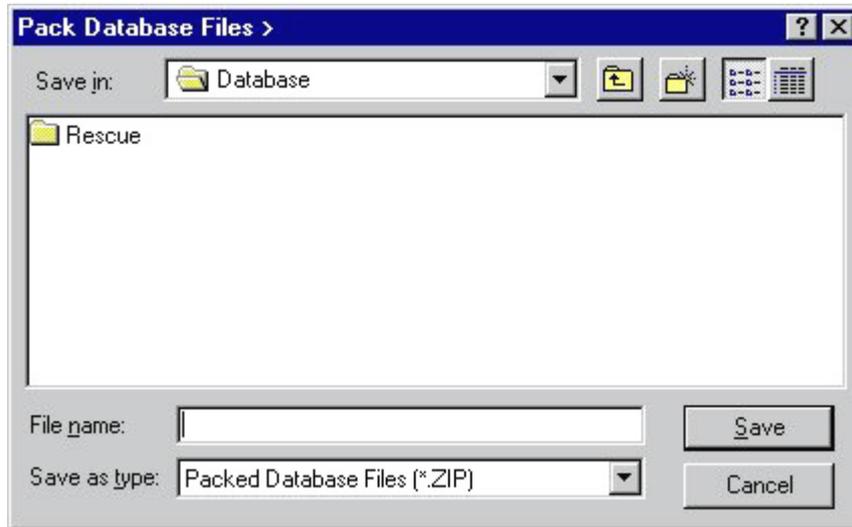
## 4.ZIP MANAGEMENT

This function gives the possibility to make a back up of the database. This can be very interesting; when some or all information in the tiles is lost, it can be repaired.

For making this back up file do the following:

### PACK DATABASE FILES

Click the PACK DATABASE FILES-button to enter the following screen:



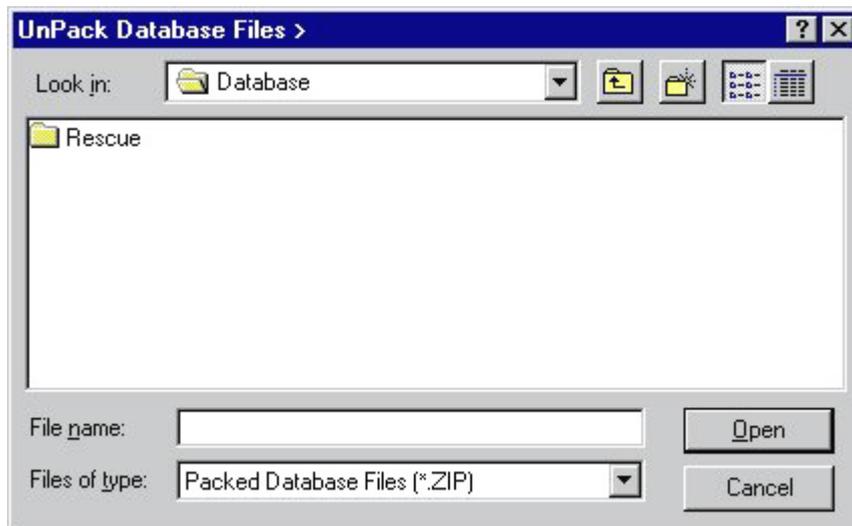
Select the Packed Database File to save (then this file will be overwritten) or fill in a new file name in the FILE NAME-screen.

Click the SAVE-button

To load a saved back up file (Restore after losing information)

### UNPACK DATABASE FILES

Click the UNPACK DATABASE FILES -button to enter the following screen:



Select the Packed Database File to open or fill in the file name in the FILE NAME-screen.

Click the OPEN-button.

## 5.TILE 3D CORRECTION

### APPLY 3D CORRECTION

This function can be applied when there is an inequality in the tiles due to measurements; then a correction formula is applied on the tiles. After clicking the APPLY 3D CORRECTION-button choose between automatic and custom correction.

The automatic correction will,

- update the current database
- store the current database (pack to ZIP-file)
- apply the correction formula on ALL tiles + send update

The custom correction will,

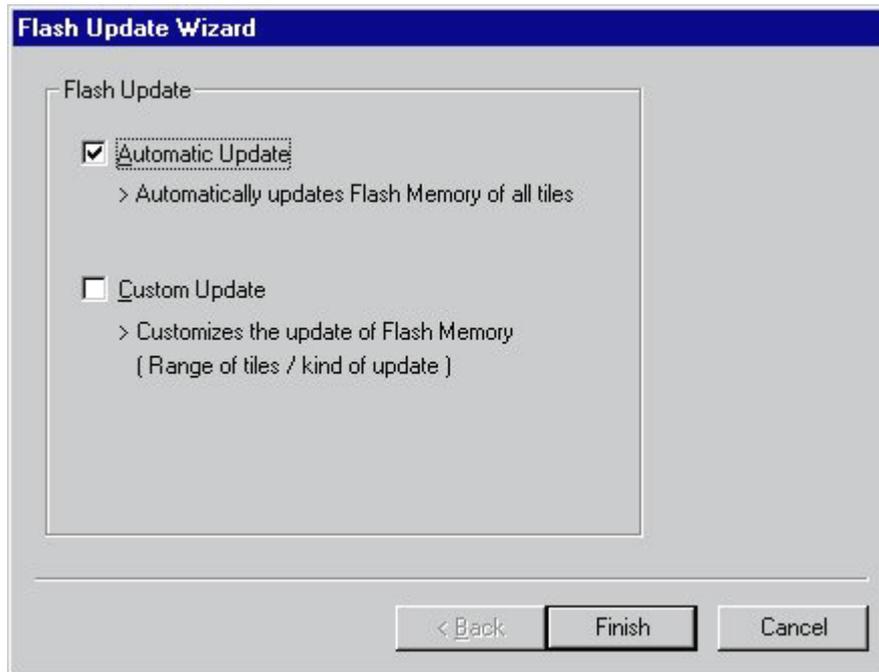
- confirm to update the current database
- confirm to store the current database (pack to ZIP-file)
- apply the correction formula on ALL tiles or target tiles + send update

### RESTORE 3D CORRECTION

If necessary, restore this 3D Correction (unpack the ZIP-file) by clicking the RESTORE 3D CORRECTION-button and do the same as with UNPACK DATABASE FILES.

## 5.8.Flash Update Wizard

(Click the FLASH UPDATE-icon)



### FLASH UPDATE

Enables the user to easily update the embedded software (Program code of the tiles & Firmware of the Altera's) of the tiles through RS232.

Updates the flash-memory of the tiles. Choose between AUTOMATIC UPDATE and CUSTOM UPDATE by clicking the corresponding radio button.

#### AUTOMATIC UPDATE

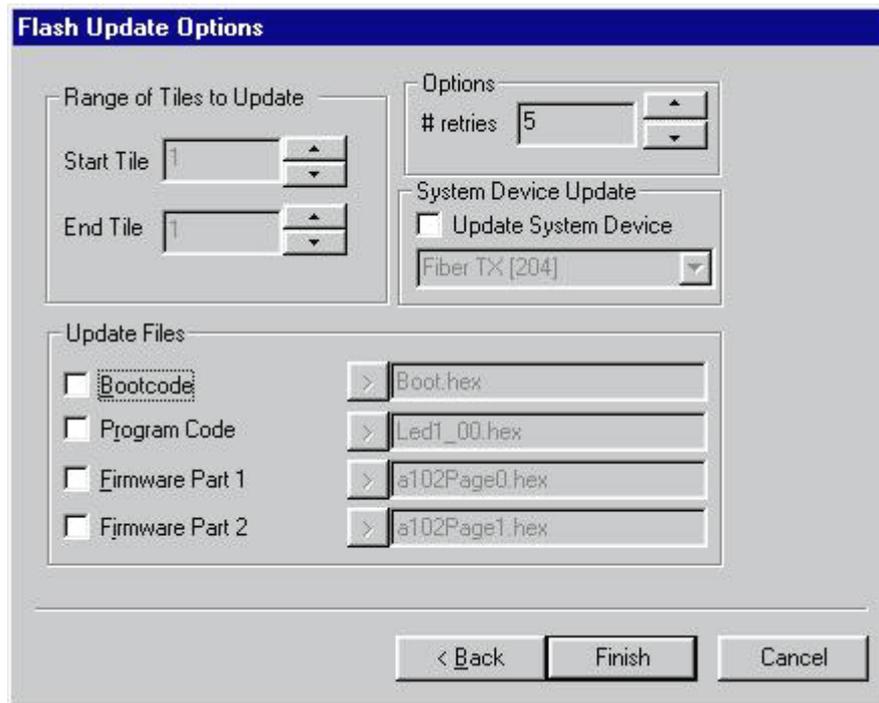
This will Automatically update Flash Memory of all tiles.

#### CUSTOM UPDATE



**WARNING: ONLY LOAD THE CORRECT HEX FILE INTO A TILE OR DEVICE. IF NOT A CRASH WILL RESULT AND ALL UPDATED TILES & DEVICES MUST HAVE THERE FLASH EEPROM'S RENEWED**

Click the FINISH-button to enter the Flash Update Options box:



## 1. RANGE OF TILES TO UPDATE

Select the range of tiles to update by selecting the start and end tile by use of the corresponding arrows.

## 2. OPTIONS

Choose the number of retries; this is how many times the system must restart the update if eventually the update should fail.

## 3. UPDATE FILES

Choose the kind of update by clicking the corresponding selection button(s)

### BOOT CODE

Boot Code updates the code, the flash RAM uses to boot from. This code is essential to be able to run the Program Code/ configure the Altera's from This probably never has to be updated in the future!

Be aware: if this update fails: the tile's embedded software can crash! So avoid to do this!

### PROGRAM CODE

The Program Code is the embedded software of the tiles.

Extra code needs to be loaded when the hardware contains a Long Distance Link, an AEC or a Data Mixer. This is how you do it:

Switch the Update System Device button on and select the desired System Device in the scrollbox

Switch on the Program Code checkbox in the Update Files

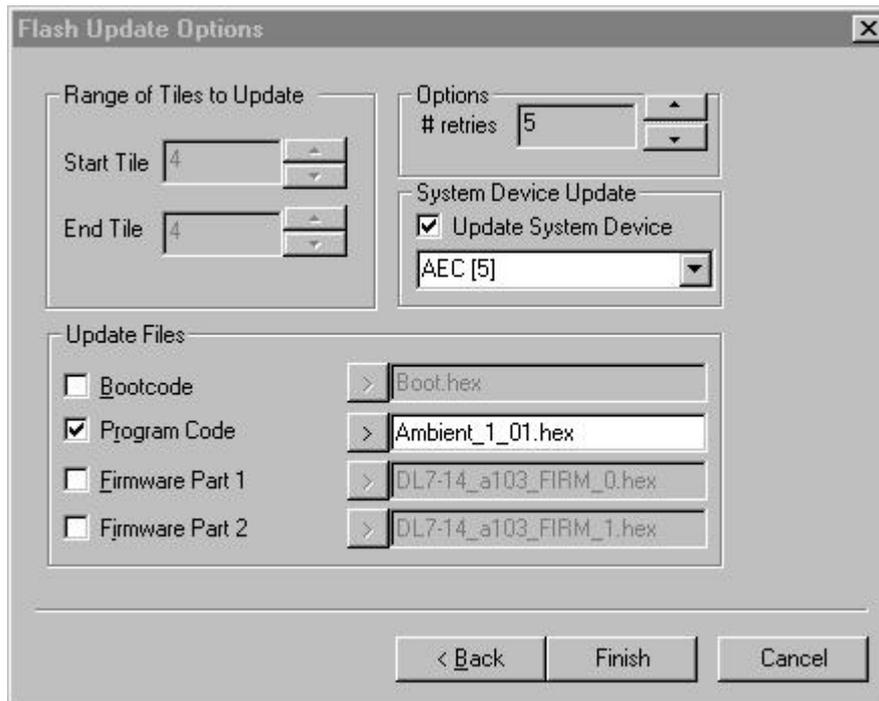
### FIRMWARE CODE

Altera Configuration 1 & Altera Configuration 2

These two files represent the firmware code of the tiles

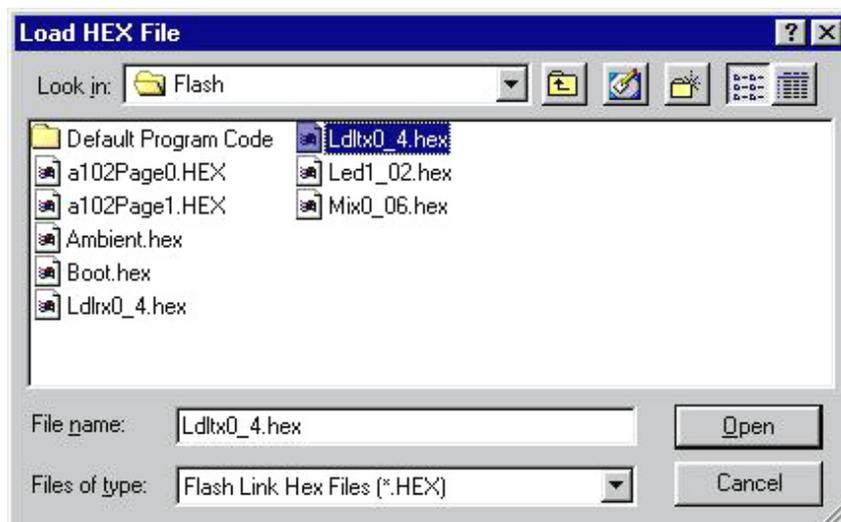
## 5.SYSTEM DEVICE UPDATE

Use this to update a particular system device HEX code such as that of an AEC



## 6.LOAD HEX FILE

To select the update file click on the corresponding arrow (>) to enter the following screen:



Select the configuration file to use for update or fill in the file name in the FILE NAME- screen and then click the OPEN-button.

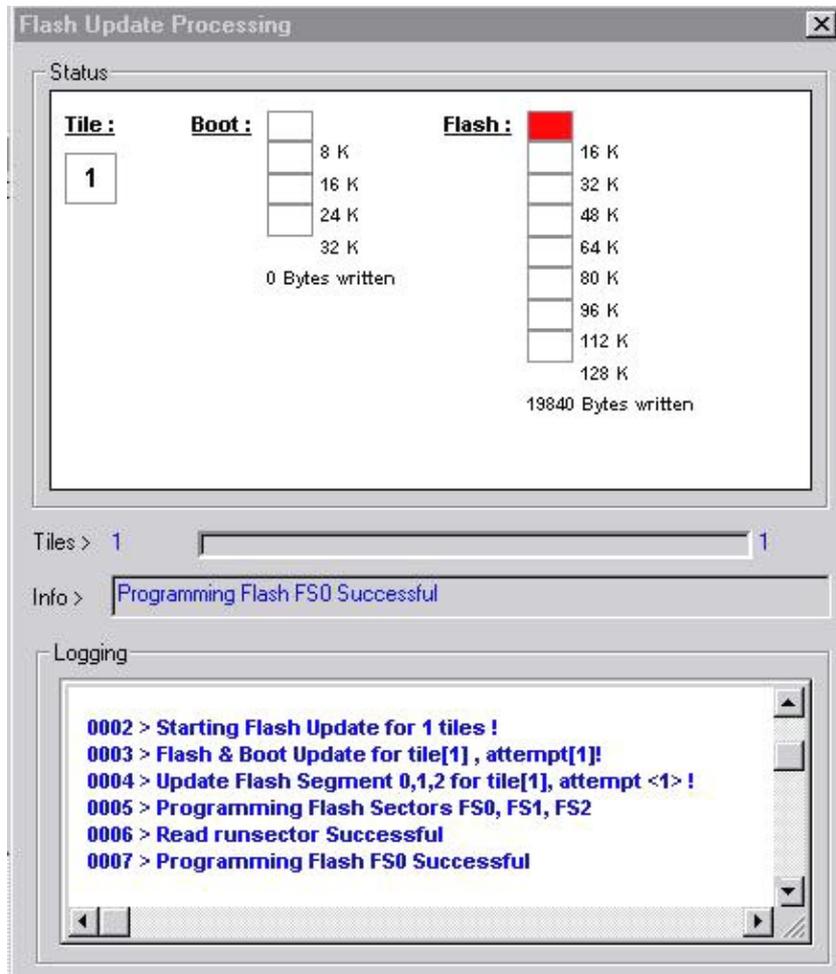
To update the respective files, choose these combinations

- Boot Code: Boot.hex
- Program Code: Led1\_02.hex
- Altera Configuration 1: a102Page0.hex

- Altera Configuration 2: a102Page1.hex
- Ambient Environment Controller: Ambient.hex
- ...

## 7.FLASH UPDATE PROCESSING

Finally click the FINISH-button to execute the Flash Update.



The Flash Processing Window appears, showing the user the progress of the flash update. The physical sectors of the flash RAM are visually represented to the user, the size of the sectors is displayed next to the sectors. A Boot Code update, updates the first Boot sector. A Program Code update updates the three other Boot sectors. The <firmware update> only updates the first six Flash sectors.

Before the Flash RAM of each tile is updated, all needed hex-files (containing the soft update) are processed. These files are processed only once. Then, the DLite System Control Software begins to update all the sectors needed to be updated for all tiles that need a software upgrade. The progressbar shows the progress of the Flash Update for the tiles and for each tile, the Flash Update is visual represented by filling each updated sector red! (the number of bytes updated are also shown ...)

## 5.9. Calibration

(Click the Calibration-icon)

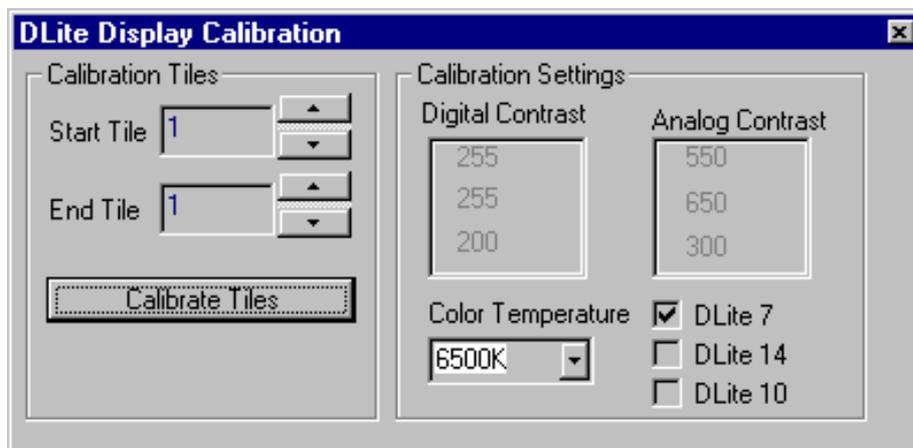
### INTRODUCTION

Calibration enables the user to recalibrate the DLite Display. Normally ALL tiles are calibrated and this should only be performed when one or more tiles don't match the other tiles in the DLite Display.

All tiles are equipped with the unique system color signature, which guarantees color uniformity across the whole screen and across time. Tiles are calibrated at some temperature color to achieve color uniformity for the entire wall.

### CALIBRATION

The Calibration Box is as follows:



### CALIBRATION SETTINGS

#### COLOR TEMPERATURE

Select the Color Temperature to calibrate your Display at.

#### RESOLUTION

Select the resolution of your DLite Display (one can check this in the lower right corner of the DLite Setup Box). The optimal digital & analog contrast settings will be altered. DO NOT change the ANALOG contrast unless you are completely familiar with the implications of any changes.

### CALIBRATION TILES

Select the range of tiles to calibrate by selecting a start tile and an end tile.

#### CALIBRATE

Pushing <Calibrate Tiles> calibrates the range of tiles. ALL tiles will be measured again (to avoid hot swapped tiles) but ONLY the selected range will be calibrated. If a messagebox pops up, saying that the entire wall must be recalibrated, one of the tiles to calibrate has a lower light output and the entire wall will be recalibrated.

### REMARK

When a tile is excluded from calibration (see pop up menu!), and is in the range to calibrate, the software does not take the excluded tile into account.



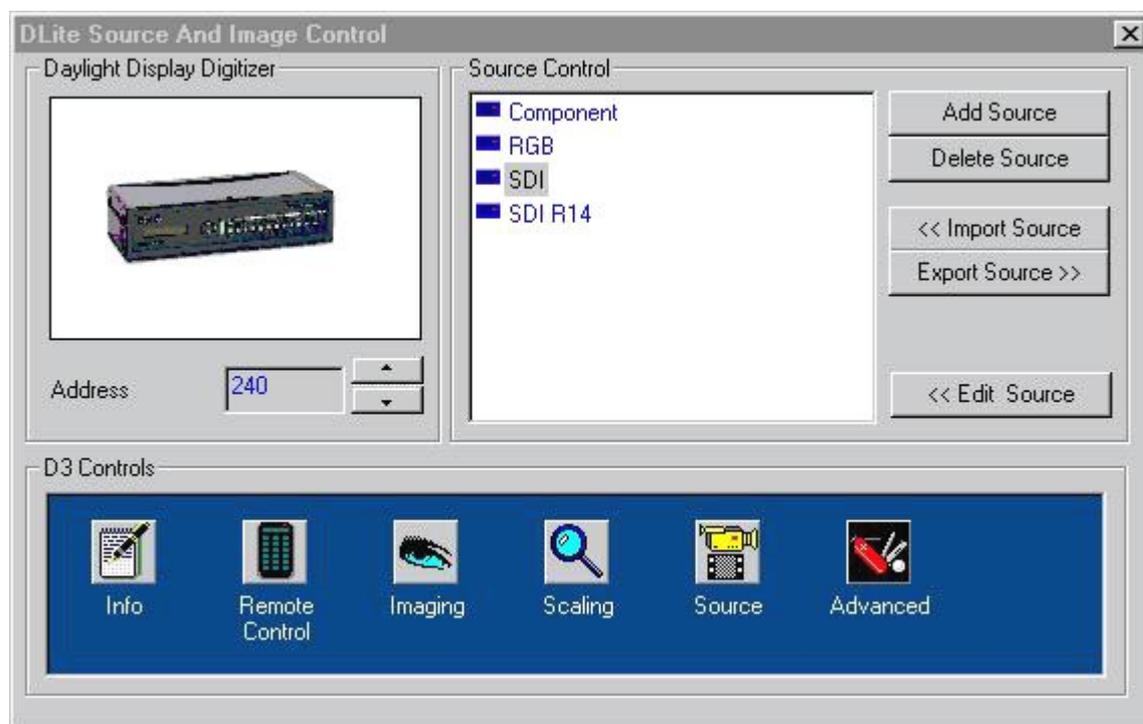
# CHAPTER 6

## Control Software

## Source & Image Control

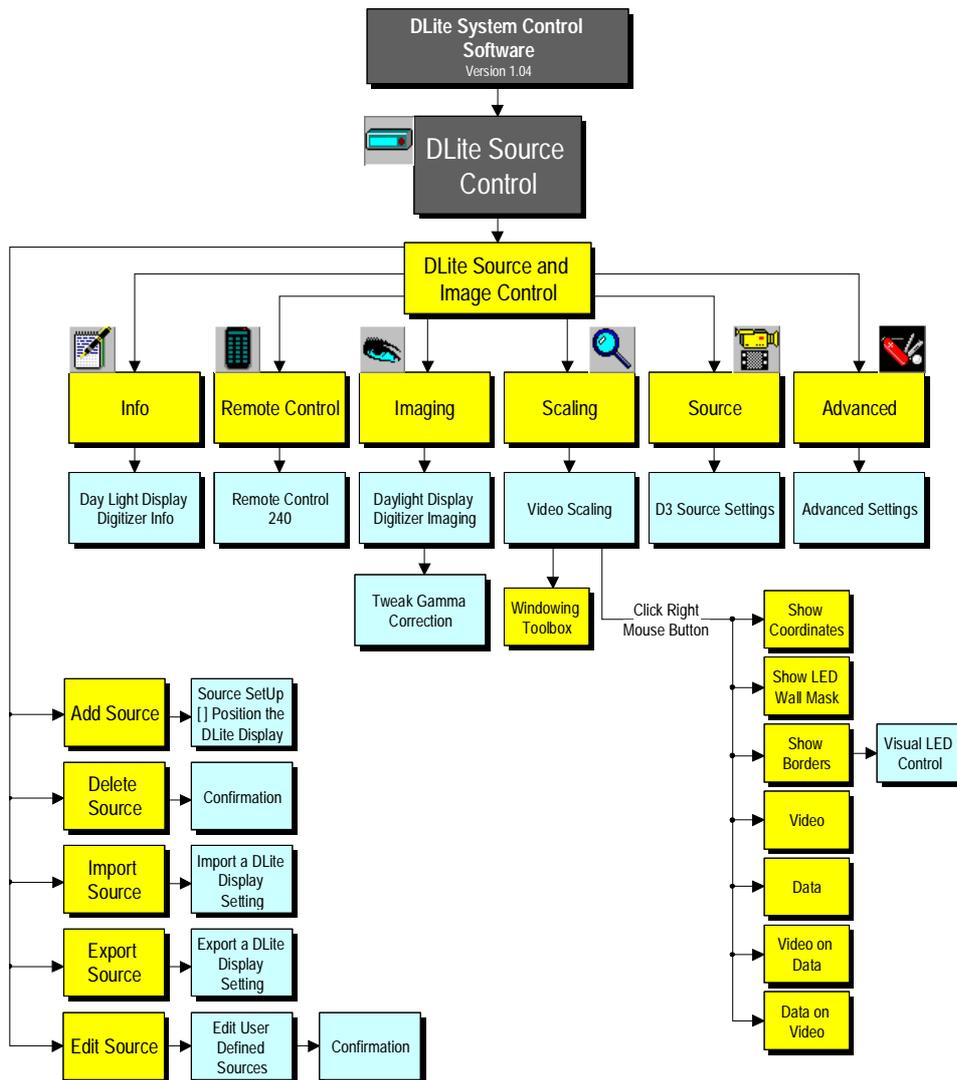
### 6.1.Introduction

(Click the DLite SOURCE CONTROL-icon)



Accessing the DLite Source Control makes it possible to switch easily between different user defined sources, adjust settings for a specific source and save those settings. It's easy to add or delete a source. It is even possible to export you Source Settings to a file (\*.src) or import a previous defined source to the Source Control Window.

# Menu Structure



The icons underneath provide the following features:

## INFORMATION

Displays info about the used digitizer

## REMOTE CONTROL

Simulation of the remote control

## IMAGING

Provides features to improve the image on the DLite Display

## SCALING

Adjust the compression, the panning and positioning of the video

## **SOURCE**

Create backup settings or restore backed settings

## **ADVANCED**

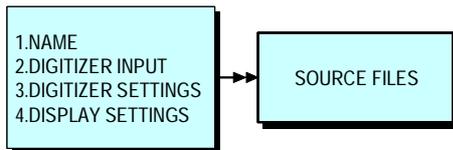
Advanced features to improve the image on the DLite Display

## 6.2.Source Control

### 1.Defining and Using User Defined Sources

The DLite System Control Software enables the user to store it's own source settings to a file. The user defined Source contains the following information:

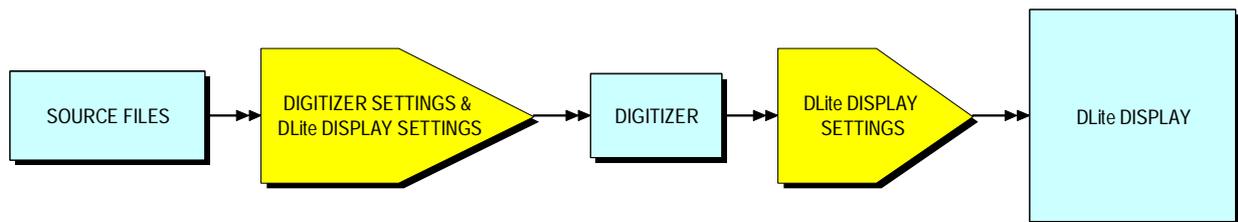
- 1.A name
- 2.An input related to the Digitizer
- 3.All DLite Display Digitizer Settings that can be altered from within the Source control window (Image / Scaling / some Advanced)
- 4.Some Display related settings like the start positions, resolution, clock settings & digital contrast.



All the settings are stored in a Source File.

The name of the user defined source is displayed in the DLite Source Control Window.

The following happens when selecting a user defined source from the control window ...



## 2.Add & Delete Sources

The Source Control-window displays the user defined sources to switch between. Once such a source is defined its settings can be saved which makes it easy to switch between sources without having to reset every time the settings of each source.

A user defined source stores:

- Settings related to the DLite Display Digitizer (controls in the lower control bar like Imaging, Scaling, Advanced ...)
- Settings related to the DLite Display like digital contrast, position, resolution ...

### TO ADD A SOURCE

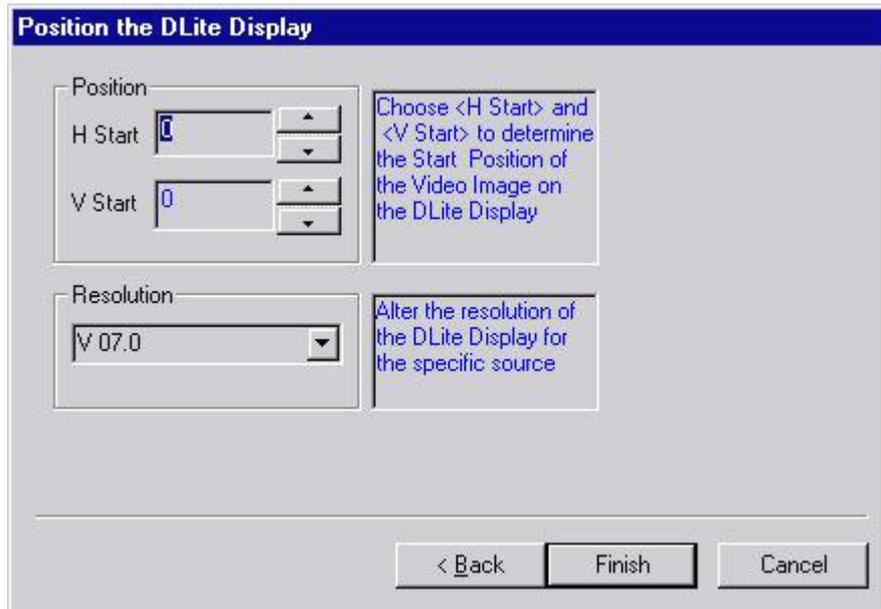
1.Click the ADD-button to enter the following screen:

The screenshot shows a dialog box titled "Source Setup 1". It has two main sections. The first section is labeled "Source Name" and contains the instruction "Assign a name to the userdefined source :". Below this is a text input field containing the text "Default Source". The second section is labeled "D3 Input Relation" and contains the instruction "Associate the userdefined source with an input on the Daylight Display Digitizer". Below this is a dropdown menu with "Vid1" selected. At the bottom of the dialog are three buttons: "< Back", "Next >", and "Cancel".

2.Fill in the name to assign to the user defined source

3.Select the input on the DLite Display Digitizer associated with the user defined source by clicking the arrow and selecting the desired one

4. Click the NEXT-button, to enter the following screen:



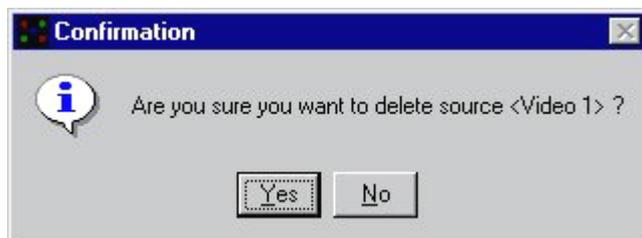
5. Fill in the Horizontal and Vertical Start Position to determine the Start Position of the Video Image on the DLite Display

6. Alter the resolution of the DLite Display for the specific source

7. Click the FINISH button

## TO DELETE A SOURCE

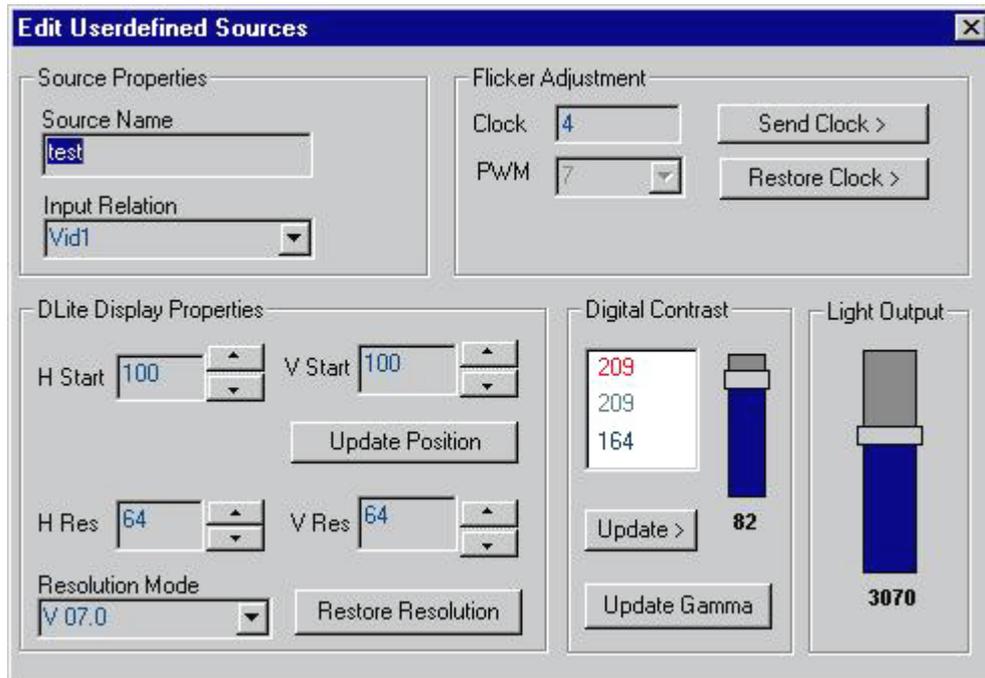
1. Click the DEL-button to enter the following screen



2. Click the YES-button. The source is now deleted from your Source Control View but not from your disk (stored as <sourcename>.src by default)

## 3.Edit a user Defined source

Click the EDIT-button to enter the following screen



### SOURCE PROPERTIES

In Source Properties one can change the Source Name and Input Relation

### DIGITAL CONTRAST

In Digital Contrast, adjust the slider to adjust the Digital Contrast.

Changing the values (color related) and clicking <Update> will adjust the Digital Contrast relative to the values you typed in ... .The Digital Contrast value is linked with the Light Output value in the Light Output tab.

### LIGHT OUTPUT

In the Light Output tab you can directly change the light output of the Daylight Display. The Digital Contrast value will change accordingly.

### FLICKERADJUSTMENT

In Flicker Adjustment one can manipulate the flicker by changing the Clock. If one pushes <Restore Clock>, the Clock Setting will be recalculated to match the best Clock Setting for the selected source.

### DLITE DISPLAY PROPERTIES

In DLite Display Properties Change the H start & V start position of the video, the upper left tile will take as the start position of his source input. Push <Update Position>.

Upscale the output by lowering the resolution of the tile (H Res & V Res). (Automatically limited, see comment with Scaling)

### SUGGESTIONS

Only upscale when you need a resolution higher than 800 x 600

Set the Digitizer to FULL Scale

## RESOLUTION MODE

Change the resolution of the wall with the Resolution Mode combobox. The H Res & V Res will automatically change within there allowed limits. Restore the normal resolution for the selected Resolution Mode by clicking the <Restore Resolution> button.

### STORE THE CHANGES

Close the EDIT USERDEFINED SOURCES window, the system will ask to agree with the edit

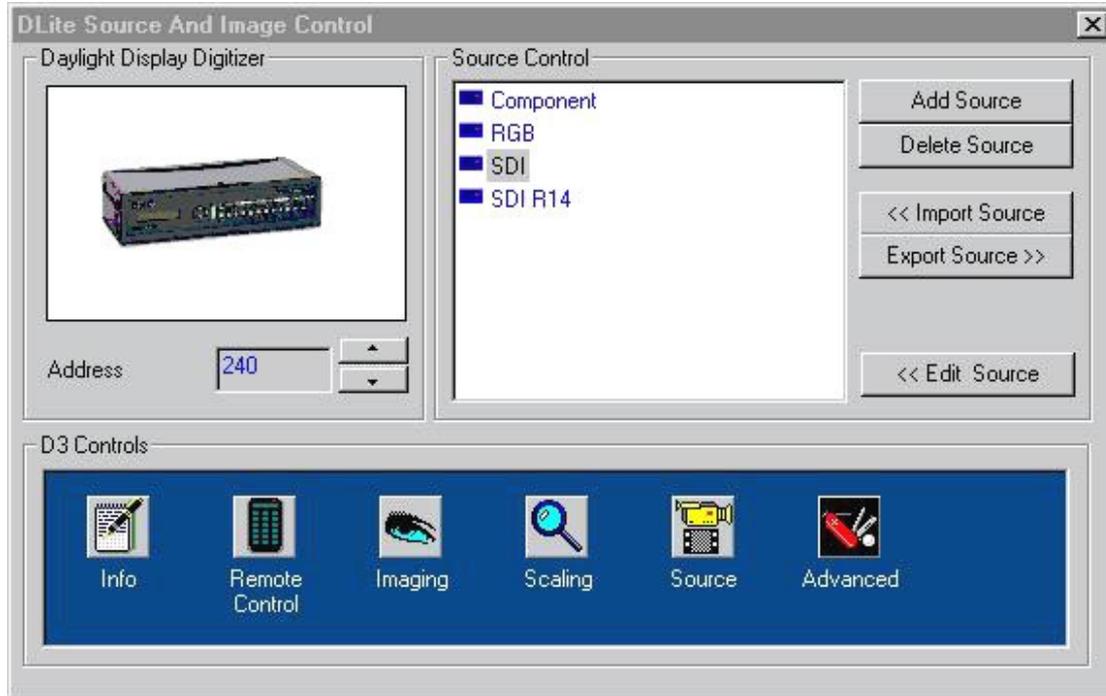


Click YES to store the changes

# 4.Import & Export Userdefined Sources

The user has the ability to exchange his userdefined sources or save them to disk ...

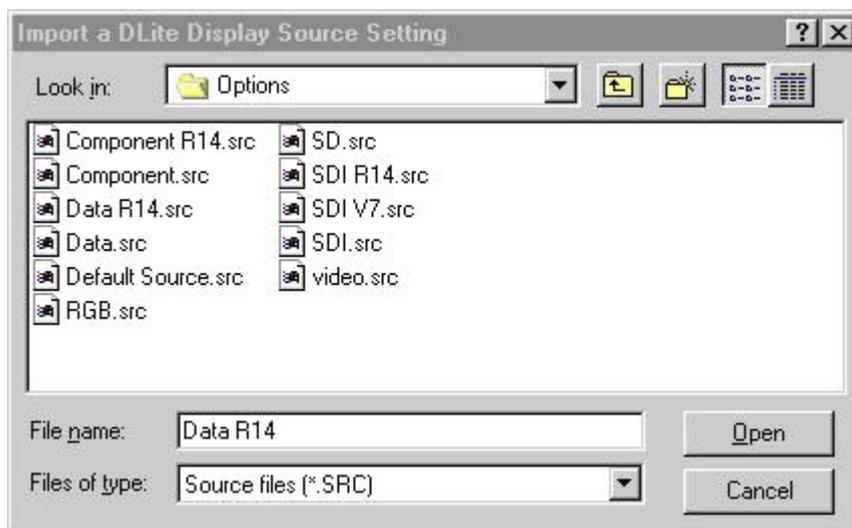
No need to define a source twice, once defined for a specific display one can easily import it back again in the software.



## IMPORT SOURCE SETTING

To import a userdefined source:

Click on [ <<Import Source ] and a dialog will popup ...

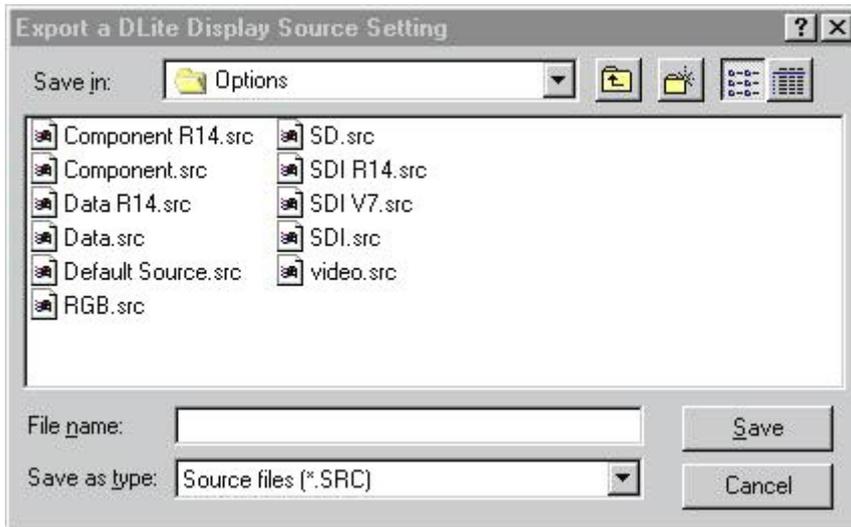


Select the file you want to import and a new userdefined source will appear in the Source Control Box.

## EXPORT SOURCE SETTING

To export a userdefined source:

Click on [ >> Export Source ] and a dialog will popup asking you which source to export ...



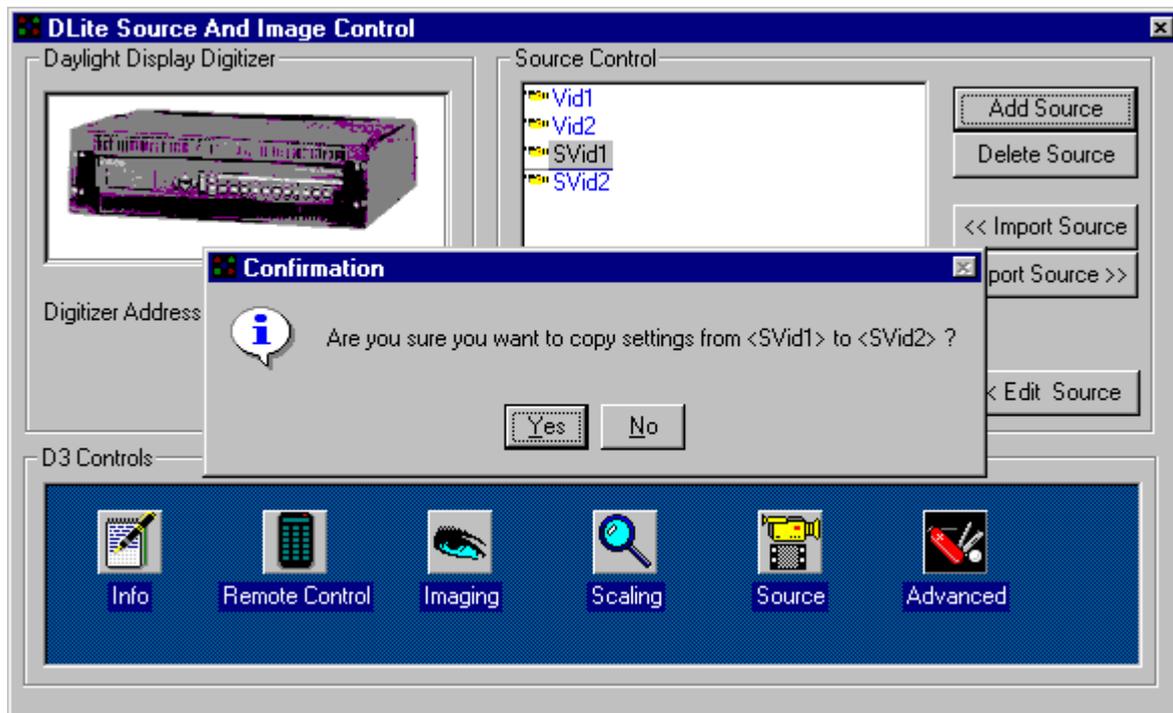
Select the userdefined source to export and type a file name to store the source to ...

## 5. Copying User Defined Source Settings

To copy settings of one userdefined source to another

Once the settings for one userdefined source are initialized, another source can easily be initialized with the same settings:

1. Select the source to copy from by clicking on it
2. Drag and drop it on the source to copy to

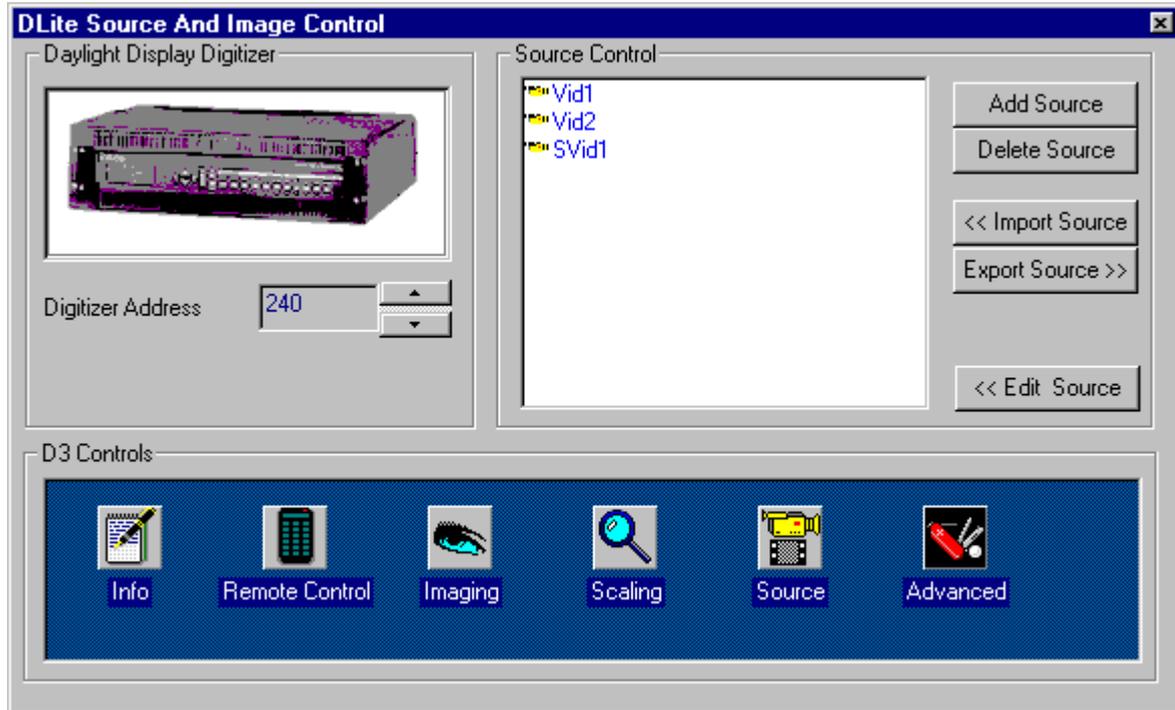


3. THE system will ask to agree to copy the settings

4. Click YES to copy the settings

## 6.3. Daylight Display Digitizer

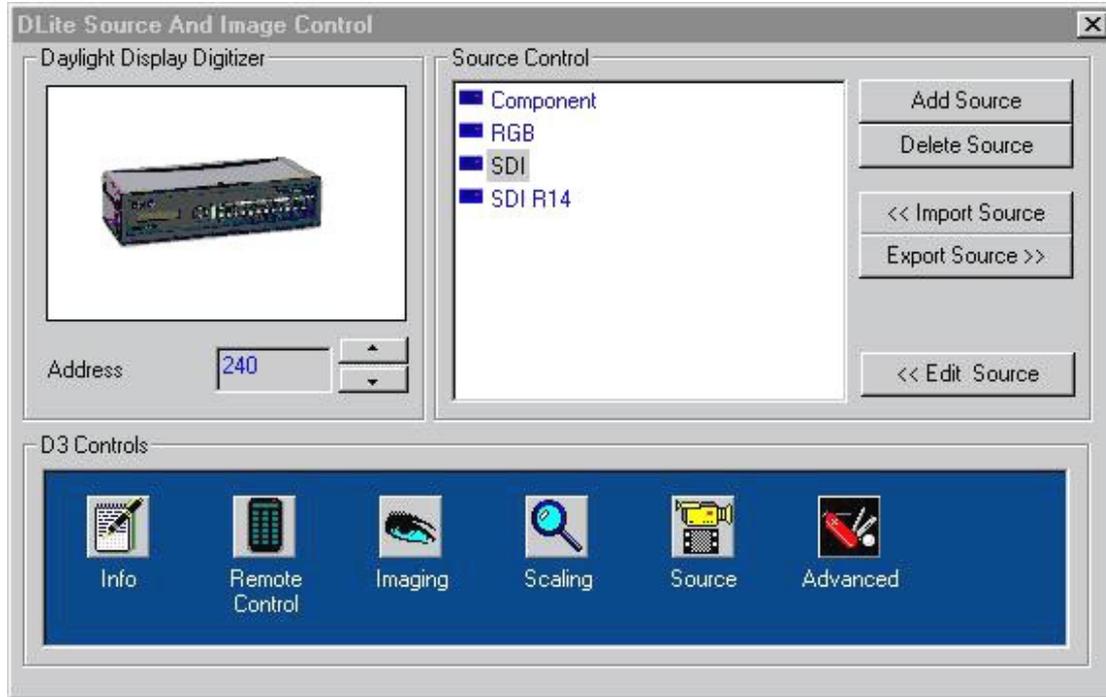
Select the address of the digitizer by use of the arrows.



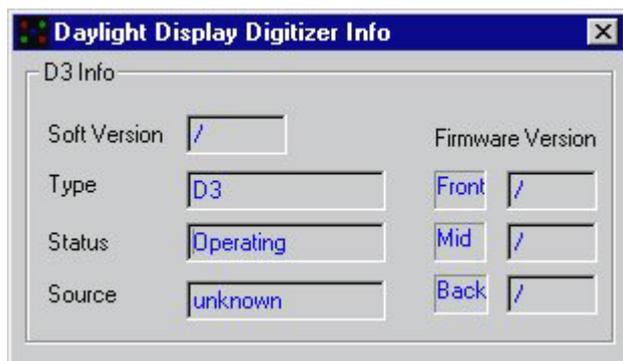
# 6.4.Daylight Display Digitizer (D3) Controls

## 1.Info

(Click the INFO-icon)



## DAYLIGHT DISPLAY DIGITIZER INFO



Displays information about the digitizer:

### SOFT VERSION

Version of embedded control software

### TYPE

Type of Digitizer

## STATUS

Status of Digitizer (Operating/Off)

## SOURCE

Current source

## FIRMWARE VERSION

Version of embedded video-processing software

## 2.Remote control

(Click the REMOTE CONTROL-icon)



Simulated Remote Control, to be used as the remote control of the digitizer.

Main features:

### SOURCE SWITCHING

By clicking a number, the corresponding input source of the digitizer is selected

### ADJUSTMENT

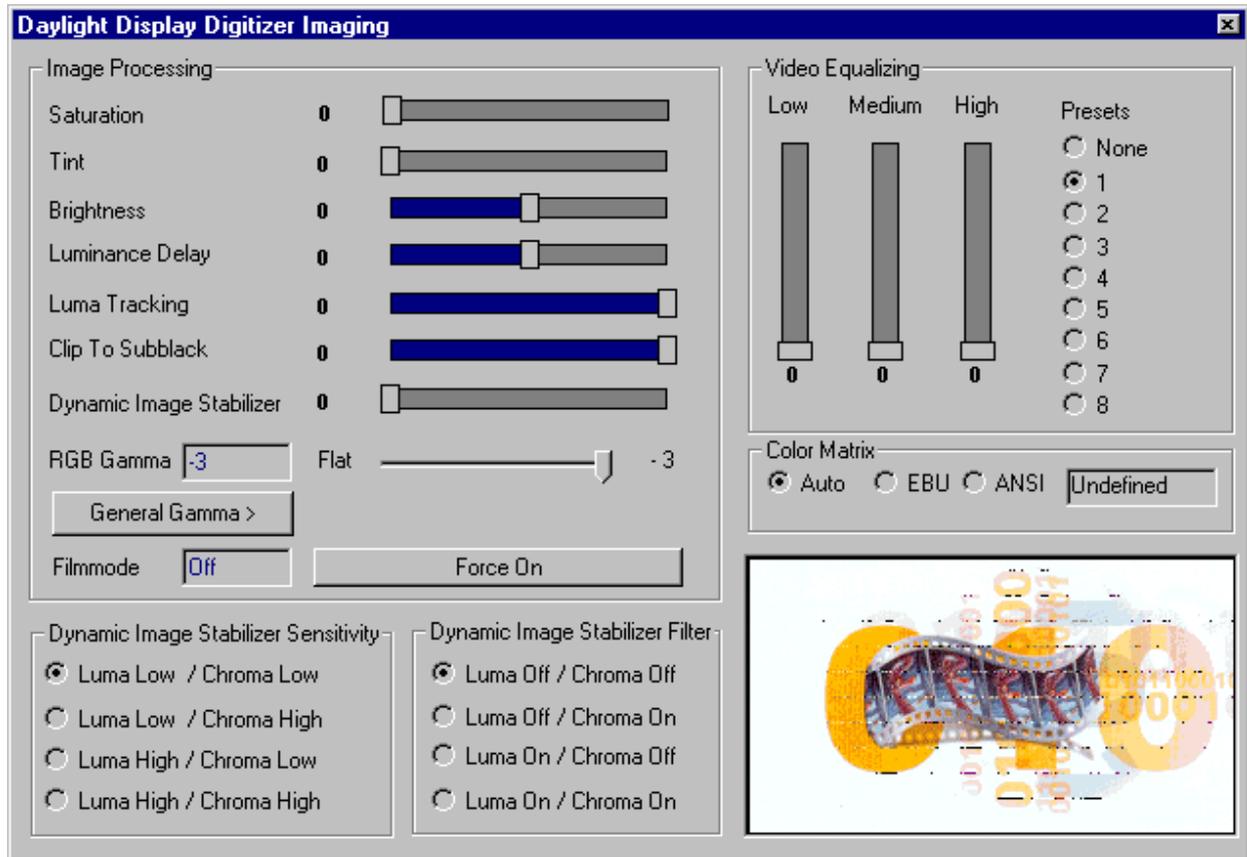
Adjust Video and Audio settings

### OPERATE

Operate with the menus of the digitizer by use of the corresponding buttons

# 3.Imaging

(Click the IMAGING-icon)



General video-settings of the DLite Display System:

## 1.IMAGE PROCESSING

### SATURATION

Adjustable from 0 to 15 with the corresponding slider  
Saturation is the intensity of the color, 0 will be black-and-white.

### TINT

Adjustable from 0 to 127 with the corresponding slider  
Tint (or hue) is the parameter of color that allows to distinguish between colors, 0 will give a more red image and 127 a greener one. (only possible video / S-video input)

### BRIGHTNESS

Adjustable from -31 to +31 with the corresponding slider  
Brightness is the intensity of the displayed signal.

### LUMINANCE DELAY

Adjustable from -7 to +7 with the corresponding slider  
Luminance Delay adjust the phase between the Luma- and the Chroma- signal of the incoming video., so Luma-Chroma timing errors in sources (color information is shifted) can be corrected.

## LUMA TRACKING

Adjustable from -15 to 0 with the corresponding slider  
Luma Tracking prevent that green haze appears in low lights.

## CLIP TO SUBBLACK

Adjustable from -15 to 0 with the corresponding slider  
Clip To Subblack will filter spurious LSB's in low lights under black-level, to prevent that spurious pixels appear in black planes., even after Dynamic Image Stabilization.

## DYNAMIC IMAGE STABILIZER

Adjustable from 0 to 7 with the corresponding slider  
The DIS causes the image to be more stabilized. In high gain displays like the DLite Display this is very important. The DIS will filter the video in time, where 0 means nearly filtering in time and 7 very high filtering. Too high filtering can causes smearing in fast moving video. Therefore the DIS is adjustable to achieve an optimal compromise. Because of this the DIS will minimize spurious pixels in low lights, makes high contrast performance possible and cleans up sources of lesser quality for display.

## RGB GAMMA

Adjustable: flat/-1/-2/-3  
The RGB Gamma provides adjustable gamma curves on R G and B outputs, which causes to reserve a high relative contrast, also in low lights. RGB gamma is processed in the digitizer.

## GENERAL GAMMA

General gamma is a more accurate gamma adjustment, performed in the tiles to reserve a better relative contrast for the images (video / data ..) and for a more accurate color representation. See · General Gamma

## FILMMODE

ON/OFF  
Select ON to enable a film logic circuit which recognizes whether the source material was originally film or video to prevent the creation of motion artifacts.

## 2.DYNAMIC IMAGE STABILIZER SENSITIVITY

Select the amplitude sensitivity of the DIS  
e.g. for low video quality sources choose Luma Low/ Chroma Low for video sources of high quality choose Luma High/ Chroma High (preferable)

## 3.DYNAMIC IMAGE STABILIZER FILTER

Select the frequency sensitivity of the DIS  
e.g. for low video quality sources choose Luma On/ Chroma On (preferable) for video sources of high quality choose Luma Off/ Chroma Off

## 4.VIDEO EQUALIZING

Adjustment of the sharpness impression of the image in three frequency ranges.  
Adjust sharpness completely conform own preferences or use predefined preset.

## 5.COLOR MATRIX

Select Color Matrix:

### AUTO

automatic adapted to incoming source, depending on measured raster frequency

## EBU

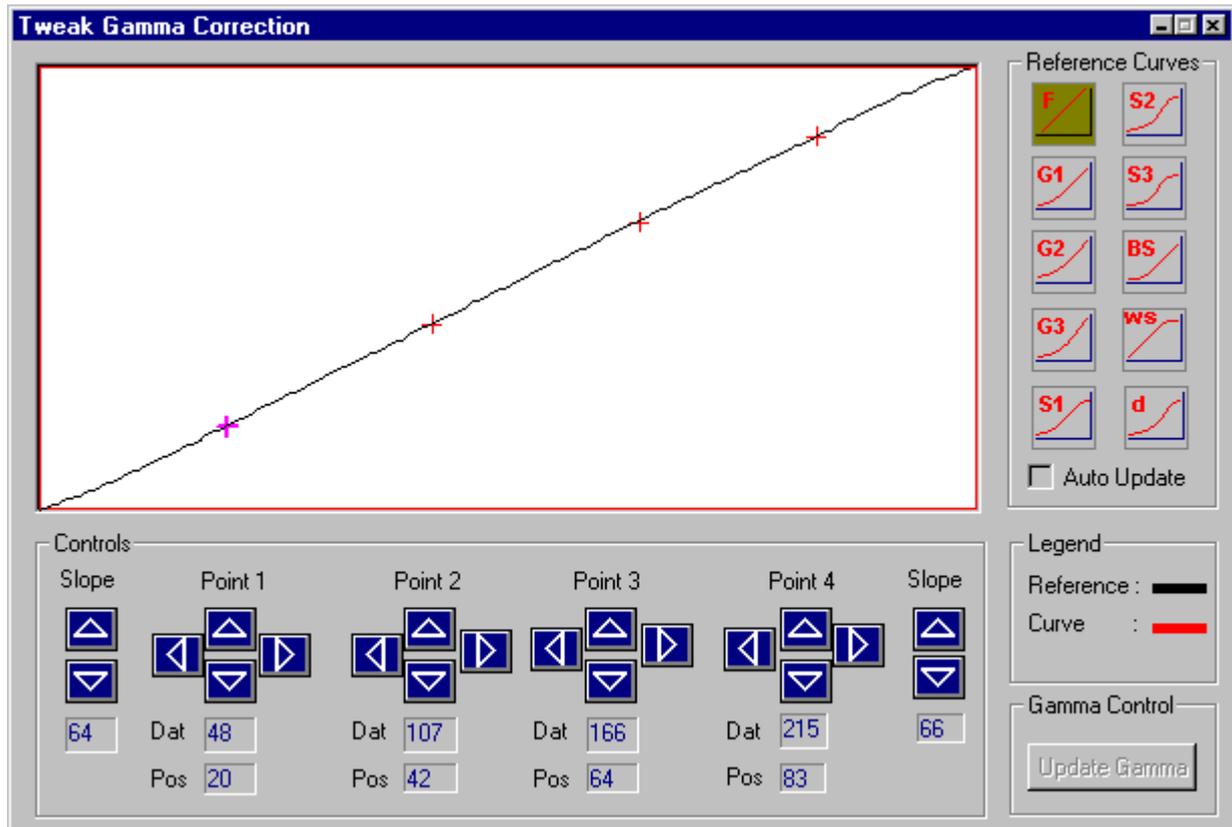
European Standard (PAL/SECAM)

## ANSI

American Standard (NTSC)

# 6.GENERAL GAMMA

## TWEAK GAMMA CORRECTION



## REFERENCE CURVES

The <General Gamma> option in <Imaging> enables control on the gamma of the displayed source. The curve represents the gamma curve that will be selected for that source. There are 10 gamma presets on the right:

F	Flat	No gamma
G1 -> G3	General curves	general gamma adjustment
S1-> S3	S curves	dark = darker & light = lighter =>better relative contrast
BS	Black Stretch	more gamma in the low lights => darker impression
WS	White Stretch	more gamma in the high lights => brighter impression
D	Data curve	Optimal gamma for data

Push the according button for the gamma preset

Select <Auto update> if you want the gamma to be updated immediately after selecting a preset.

## CONTROLS

The gamma curve is represented through 4 points and 2 slopes. Changing any of the points or slopes results in a different gamma. One can change the points by clicking the arrows below the gamma curve or by moving the crosses (representing the positions of the 4 points) with the mouse. The black curve shows then the last selected preset as a reference for the altered gamma curve. This option is only accessible for authorized people.

Push <Update Gamma> to update the gamma immediately

## REMARK

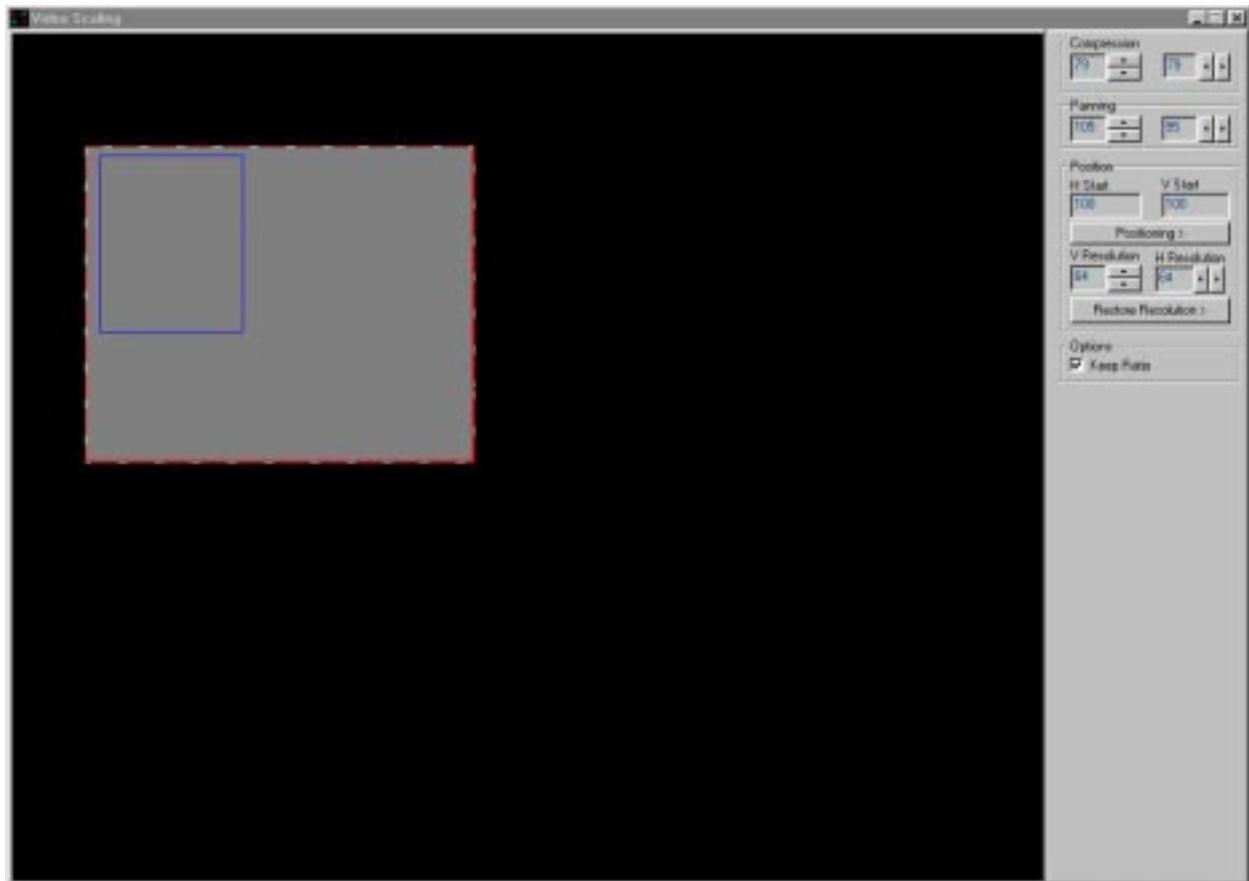
Updating the digital contrast resolves in a loss of gamma (= flat curve). You must select the source again or go in this dialog and push <Update Gamma>.

The gamma is adjusted with the selection of a userdefined source.

## 4. Scaling

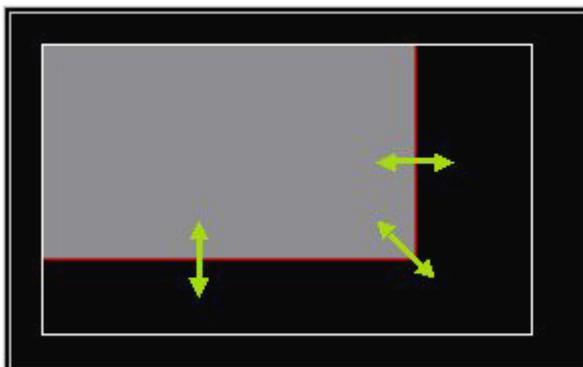
(Click the SCALING-icon)

### VIDEO SCALING



### COMPRESSION

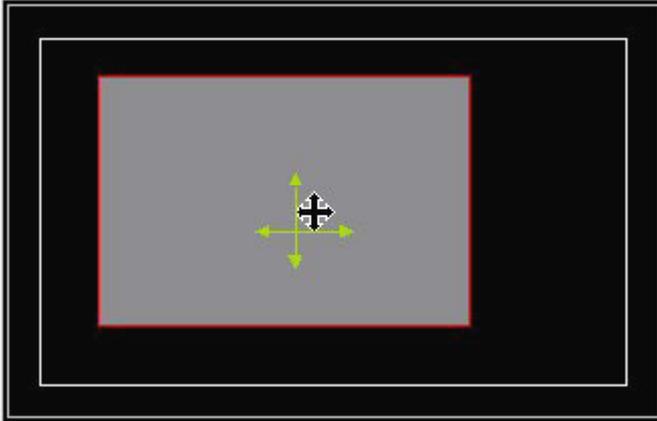
Adjust the horizontal and vertical compression factor of the video image. One can change this compression by clicking on a border of the scaled video (i.e. the gray colored rectangle) and drag it until desired compression is reached. If the KEEP RATIO-option is selected the scaled video will keep its ratio.



The compression can also be changed by use of the corresponding arrows in the COMPRESSION-menu. The maximal compression factor is 8.

## PANNING

Change the panning of the scaled video. One can change this panning by clicking on the scaled video (i.e. the gray colored rectangle) and drag it until desired panning is reached.



When trying to pan the scaled video outside the active video, the scaled video will be compressed automatically.

The panning can also be changed by use of the corresponding arrows in the PANNING-menu.

## POSITION

Change the Horizontal and Vertical Start Position of the video source on the DLite Display by use of the corresponding + or - button.

## OPTIONS

Select to keep the ratio of the image or not.

## UPSCALING

Upscaling is also a possibility (but only relevant if the configuration of the DLite Display exceeds 800\*600 resolution). One can diminish the resolution of the tile Horizontal & Vertical so the image is upscaled. It is automatically limited within the correct resolution range.

Pushing the <Restore Resolution> button forces the tiles back to their normal resolution.

Keep in mind that the changed resolution are dependent of the resolution mode you're in (and also will be restored when one readdresses the Display)

Selecting the <Keep Ratio> check box determines whether the simulated image keeps its detected ratio.

## POP UP MENU

By clicking the right mouse button one can open the following popup menu (only with the Windowing option):



Here one can select:

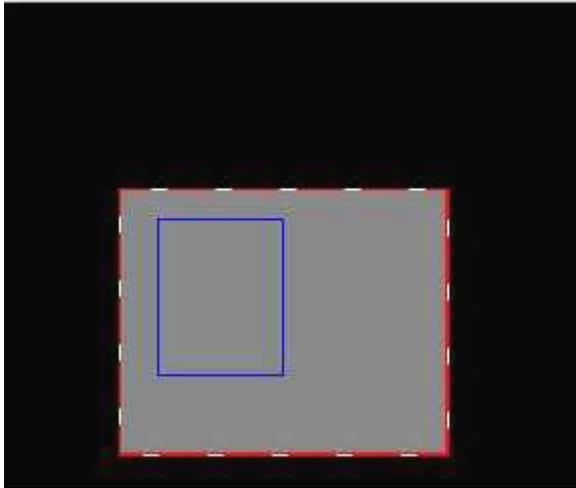
### SHOW COORDINATES

Displays the horizontal and vertical start and end position of the Video Image.



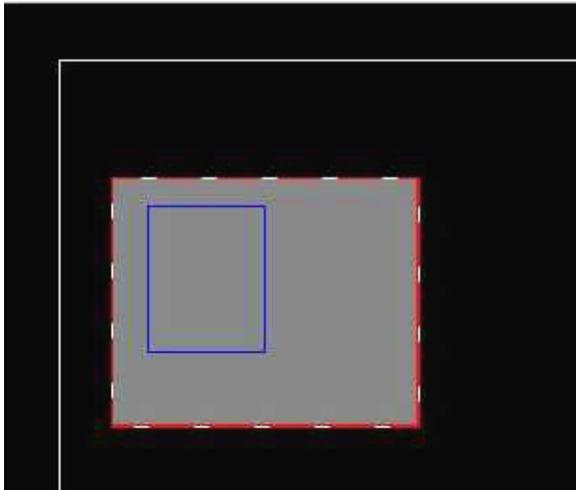
### SHOW LED WALL MASK

Visualizes the position of the DLite Display (in relation to the active incoming video and the scaled video) by means of a blue colored rectangle.



## SHOW BORDER

Visualizes the active incoming video by means of a white colored rectangle.



## VIDEO

Selects video

## DATA

Selects data

## VIDEO ON DATA

Sets the video to be displayed on top of the data.

## DATA ON VIDEO

Sets the data to be displayed on top of the video.

## WINDOWING OPTION

When a windowing option is present, the scaling window will automatically be adjusted to this option. A Windowing toolbox will appear allowing the user to define the data/video window.

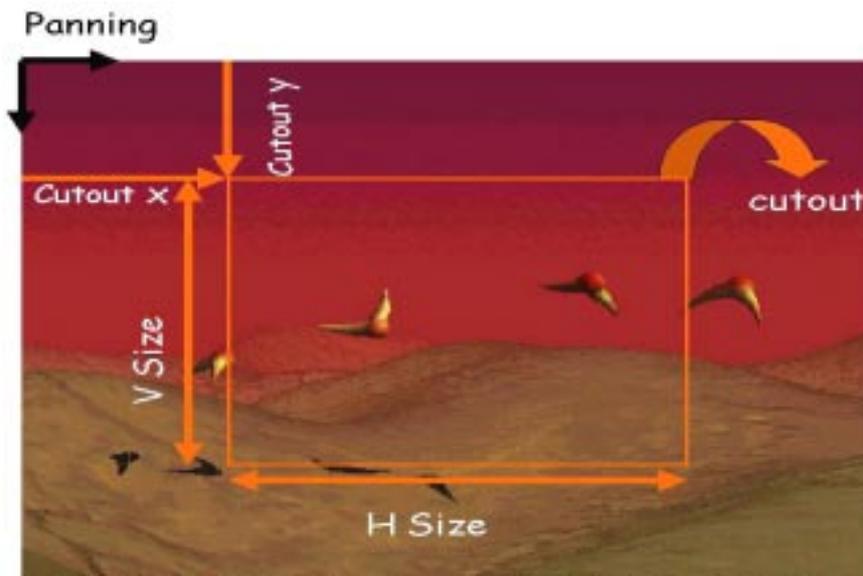
As well as for data as for video three parameters can be adjusted

### 1.CUTOUT POSITION

### 2.CUTOUT SIZE

### 3.PANNING

These three parameters will be explained with a picture ...



For example, if one tries to display the selected part in this image (orange selection = cutout), one chooses a part of the total image to be displayed. This part is the cutout. The cutout is defined by its offset from the start of the image (H Cutout and V Cutout) and its size (H & V cutout size).

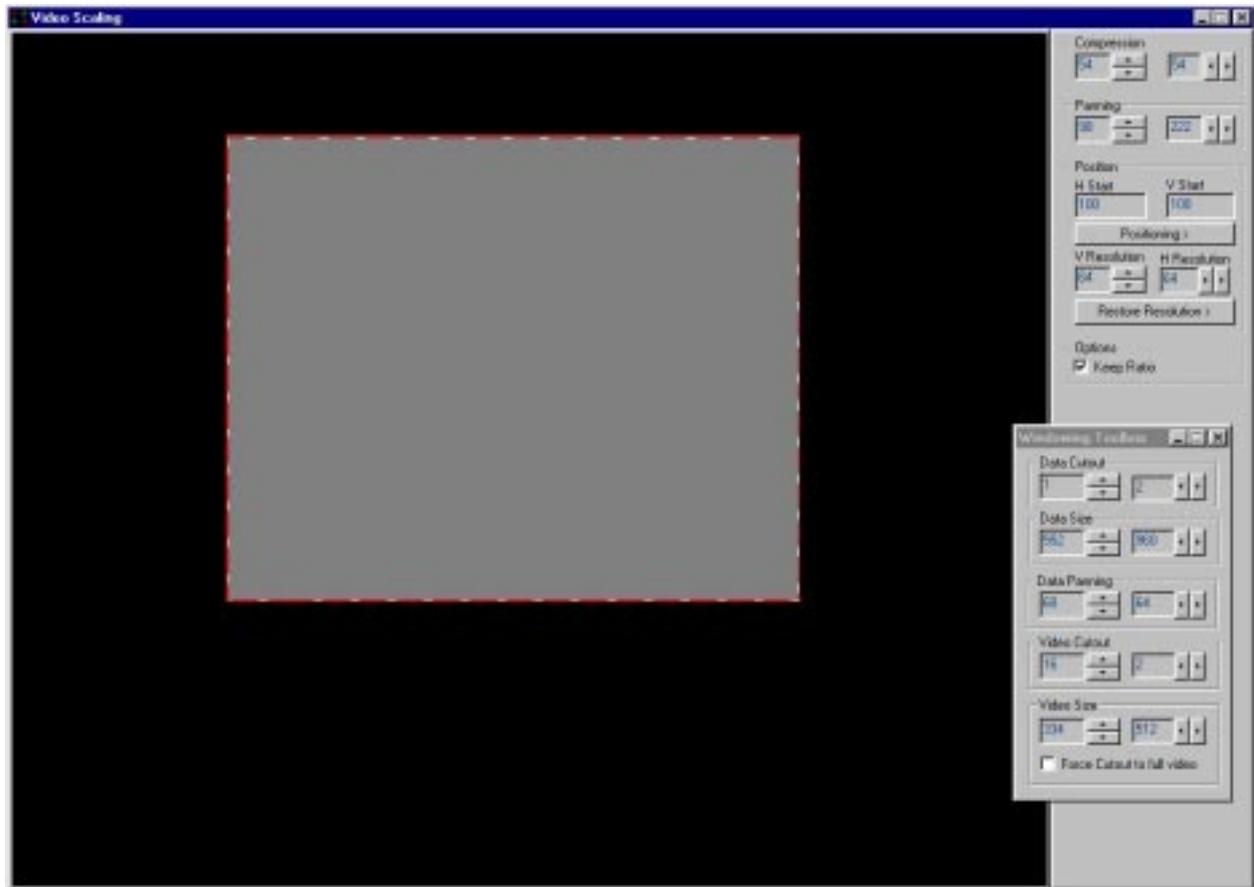
If one takes the orange part as the cutout window, one can scroll the information Horizontal AND Vertical. These are the H & V Panning parameters.

The meaning of these parameters are alike for the data cutout as well as the video cutout ...

The video cutout window is simulated on the software, but the data cutout window has to be setup visually.

## WINDOWING TOOLBOX

This tool box is available only when the Windowing Option is installed.



### THE DATA CUTOUT TAB

Represents the H & V cutout position of the data cutout window.

### THE DATA SIZE TAB

Represents the H & V cutout size of the data cutout window.

### THE DATA PANNING TAB

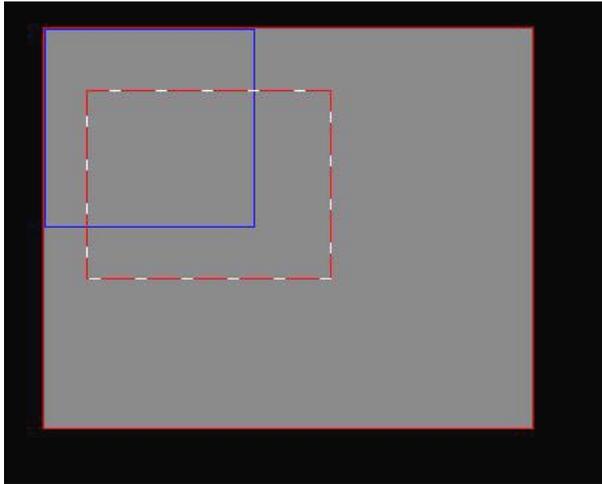
Represents the H & V panning parameter for the data cutout window.

### THE VIDEO CUTOUT TAB

Represents the H & V cutout position of the video cutout window.

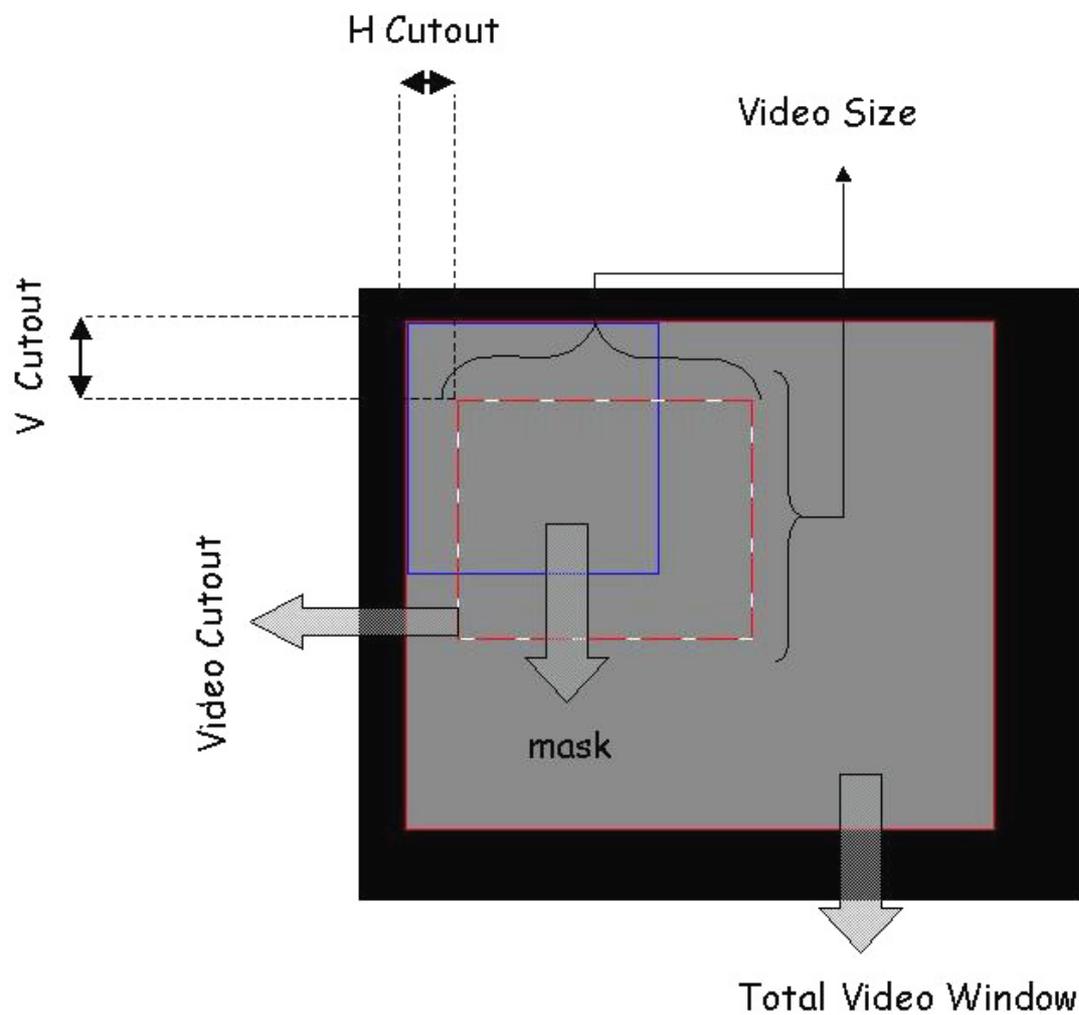
### THE VIDEO SIZE TAB

Represents the H & V cutout size of the video cutout window.

**Example 1**

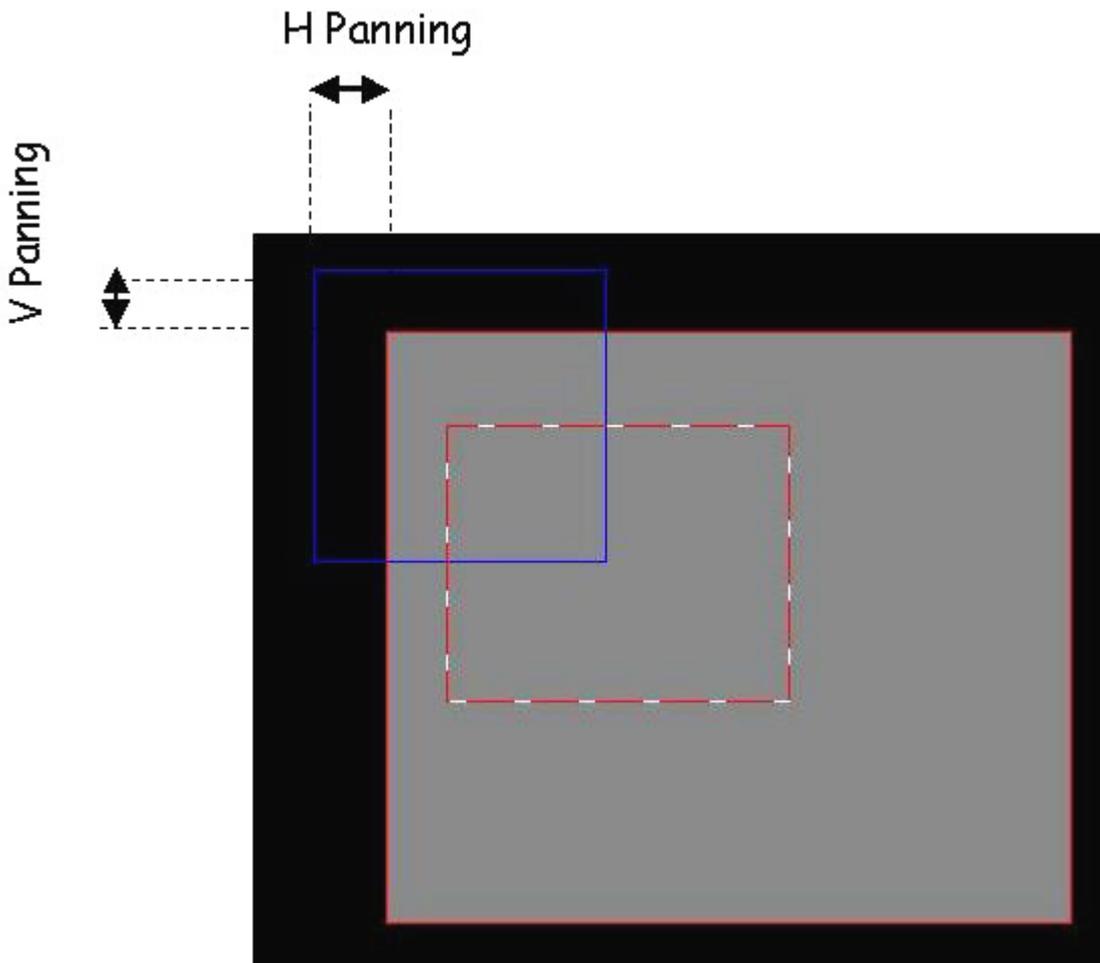
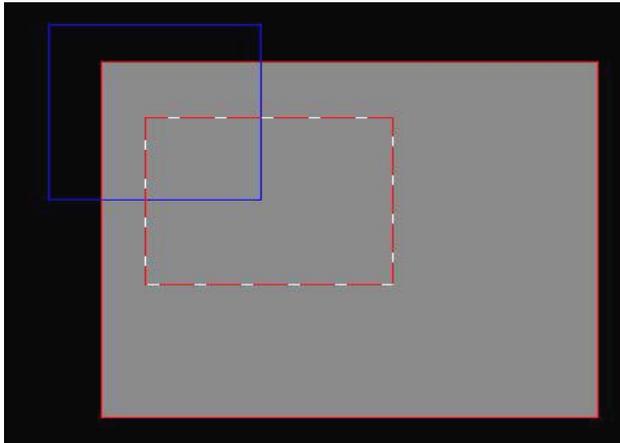
On the above picture one distinguishes 3 parts:

- 1) blue rectangle = mask of the DLite Display
- 2) full gray window = total video window
- 3) dashed red/ white rectangle = video cutout



**Example 2**

The panning is the offset between the LED Wall mask and the total video window. The two pictures below show the above picture but panned H & V

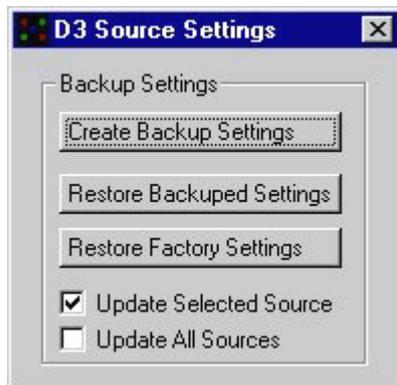


<force cutout to full video> forces the video cutout to the total information

## 5.Source

(Click the SOURCE-icon)

### D3 SOURCE SETTINGS



### BACKUP SETTINGS

For one input source or for all input sources (select corresponding selection-button).

#### CREATE BACKUP SETTINGS

Applied changes can be stored. If anybody makes changes to certain settings, your stored settings can be restored afterwards. (See further).

#### RESTORE BACKUPED SETTINGS

After adjusting any setting on any input source and intend to return to your own saved settings.

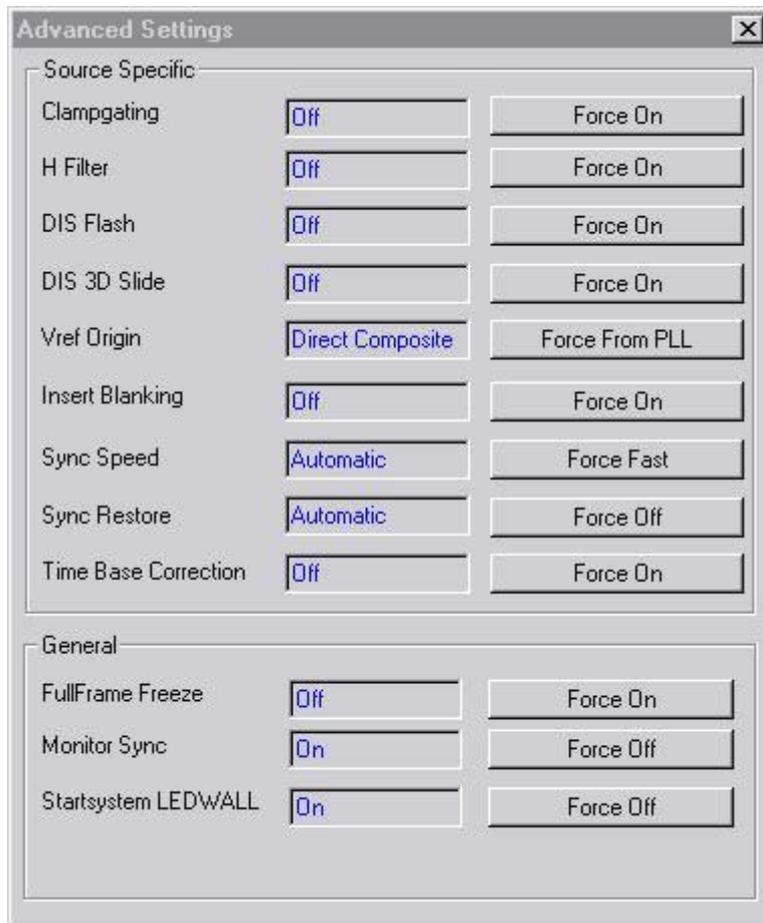
#### RESTORE FACTORY SETTINGS

After adjusting any setting on any input source and intend to return to the initial factory settings.

## 6.Advanced

(Click the ADVANCED-icon)

### ADVANCED SETTINGS



### SOURCE SPECIFIC

#### CLAMPGATING (ON/OFF)

Clampgating is to be used for video with Macrovision Protection and Time Base Correction ON. Macrovision Protection: Pseudo Sync Pulses and modulated AGC pulses With Clampgating ON, clamp is switched off during vertical flyback, what avoid clampdrift on Macrovision AGC pulses.

#### H FILTER (ON/OFF)

H-filter is to be used with image-compression with a factor higher than two.

#### DIS FLASH (ON/OFF)

To compensate for fast moving images, the DIS Flash will detect such movements and put the DIS temporary off.

#### DIS 3D SLIDE (ON/OFF)

DIS 3D Slide will keep the same characteristic than the DIS but the effect will be more intense.

## VREF ORIGIN (FROM PLL/FROM DIRECT COMPOSITE)

Select if vertical reference has to come from sync or from PLL .e.g. for Fast Forward Search select FROM DIRECT COMPOSITE when FROM PLL selected, source errors will be compensated

## INSERT BLANKING (ON/OFF)

Will insert blanking on the monitor in the parts of the image that are not displayed on the DLite Display.

## SYNC SPEED (AUTOMATIC/FAST)

Select FAST to avoid bad sync on low quality VHS-video sources. With AUTOMATIC this will be detected automatically.

## SYNC RESTORE (AUTOMATIC/OFF)

Select AUTOMATIC if picture distortions appear due to Macrovision copy protection.

## TIME BASE CORRECTION (ON/OFF)

For the Time Base Correction, select ON which cleans-up low quality videotape noise for a more stable image. When Time Base Correction put on, Clampgating is best put ON also.

## GENERAL

### FULL FRAME FREEZE (ON/OFF)

Full frame definition is stored and displayed.

### MONITOR SYNC (ON/OFF)

With Monitor Sync OFF a 'green' certified monitor will go in standby.

### START SYSTEM LED WALL (ON/OFF)

Activate/disactivate start system.

# CHAPTER 7

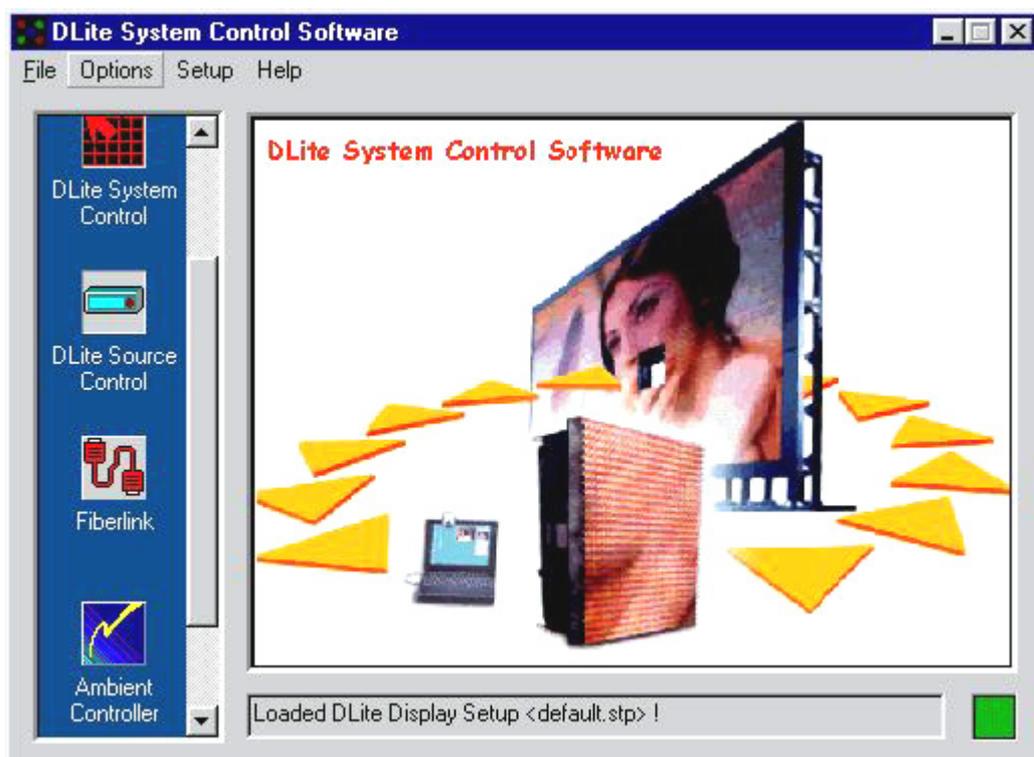
## Control Software

### Devices

#### 7.1.Ambient Environment Controller

(Click the AEC-icon)

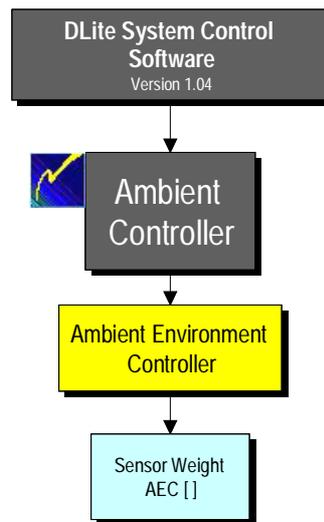
#### Introduction



The Ambient Environment Controller (AEC) is a device containing one temperature sensor and four light sensors used to measure the ambient environment. The software integrates the control of the DLite Display with the AEC.

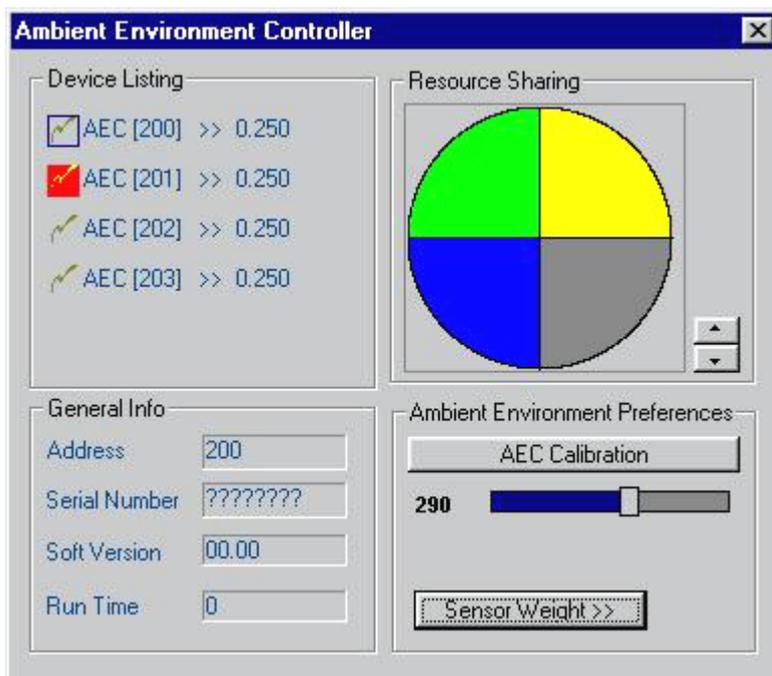
One or more AEC's can be placed next to the DLite Display to measure the environmental light during the day. Each AEC is assigned a certain percentage of weight, dependent on it's relevance. (e.g. an AEC is positioned next to a light spot and extremely influenced by variances of light). A percentage of weight can even be assigned at the level of the light sensors. A weighted average is calculated out of all the measurements and the software responds according to a certain reaction slope. The reaction slope determines the time of response to filter out peaks in light measurements. The light output is changed accordingly to the value which the AEC is calibrated at.

# Menu Structure



## AMBIENT ENVIRONMENT CONTROLLER

By pushing the Ambient Controller button in the main window, the AEC Box appears



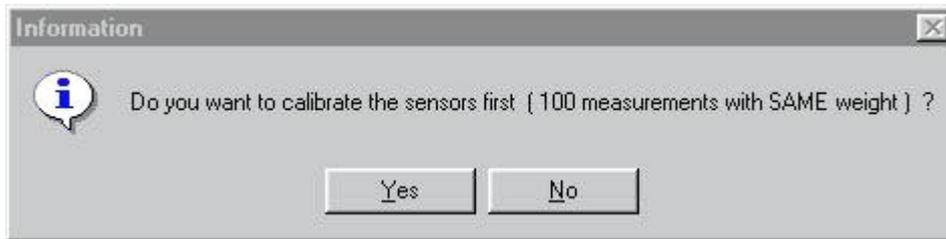
In the Device Listing tab you find all linked AEC's with their address and their weight of importance. This is shown in a pie representation under the Resource Sharing tab. By selecting a AEC in the Device Listing tab or by selecting a portion of the pie in the Resource Sharing tab and pushing the up and down button in the Resource Sharing tab you can alter the weight attached to the selected AEC. The selected area is always yellow.

The General Info tab displays general info such as the address of the AEC, the serial number, the software version and the run time.

The last tab contains the Ambient Environment Preferences. In the middle of this tab you can see a slider bar that references to a certain light output expressed in a corresponding number from 1 to 500. The calibration

value is proportional to the Light Output (expressed in Nit) E.g. when the ambient light is only half as bright as normal, you can set the reference number to 250 instead of 500. The AEC will be calibrated according to this number. To Calibrate the AEC push the AEC Calibration button and wait a second. All measurements will return a value proportional to the calibration value.

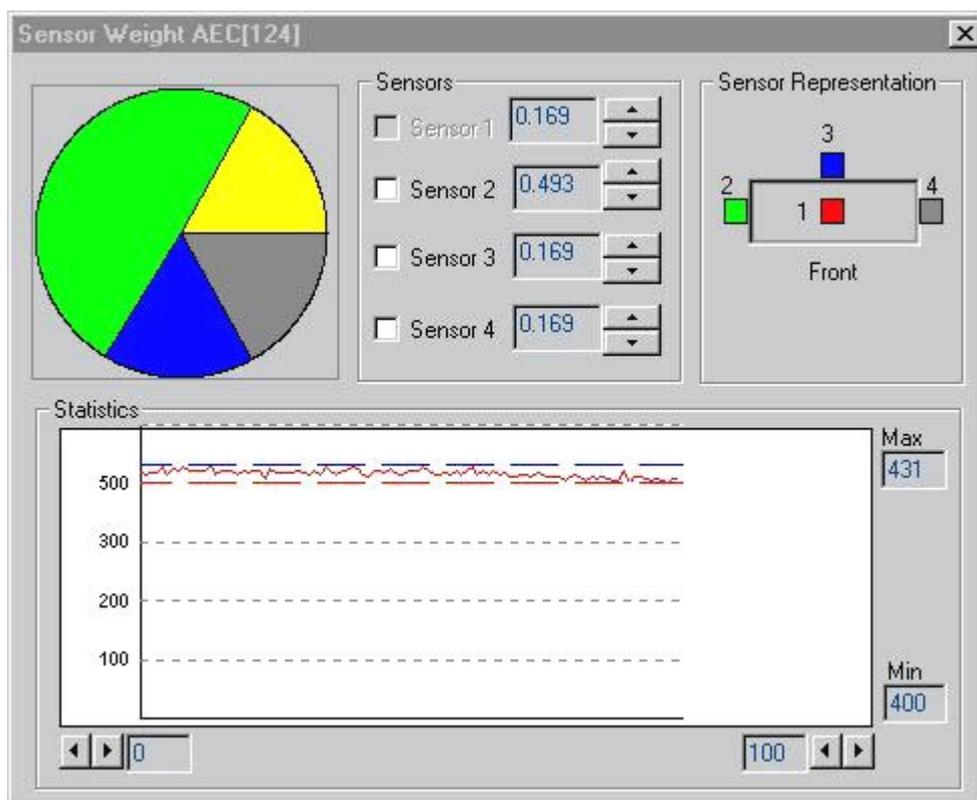
At the bottom of the tab you can push the Sensor Weight button to pull up a next box where you can change the sensor weight according to its importance. The next window will appear:



To be able to assign weight's to the individual sensors, one can perform 100 measurements on each sensor. In this way, the chart for each sensor is a reference to the measured light of this sensor. If one sees one or more sensors having unstable measurements, the sensors can be weighted by the ens user.

After you've pushed either one of the buttons the Sensor weight AEC box appears

## SENSOR WEIGHT AEC

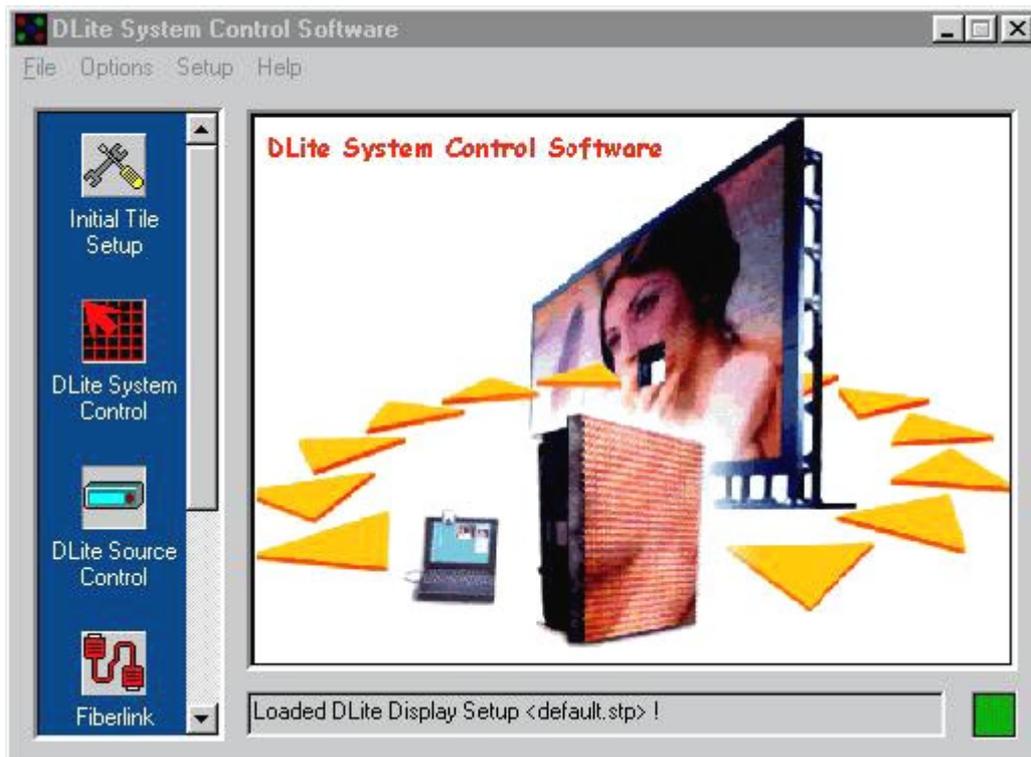


Select a sensor by selecting a portion of the pie diagram. The portion selected depends on the sensor required, represented in the Sensor Representation tab. At the bottom are visible the according statistics in the Statistics tab.

Altering the sensor weight can be done by pushing the up and down buttons in the Sensors tab. Check buttons in the Sensors tab are also visible. Switching on these checkbuttons make sure that the weight of the respective sensors will change in the same proportional way.

It is also possible to hold the weight of a specific sensor while changing the other sensors weights. This can be accomplished by right clicking the portion of the pie corresponding to the desired sensor provided this portion of the pie isn't already selected in anyway.

## 7.2.Fiberlink



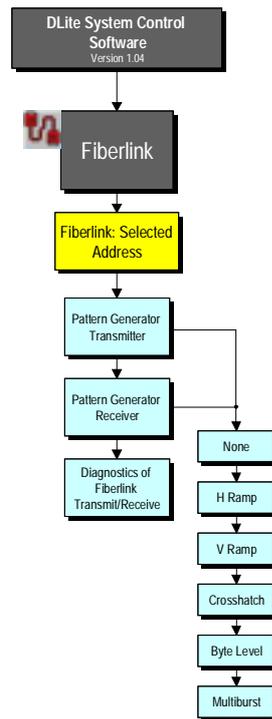
(Click the Fiberlink-icon)

### Introduction

The Fiberlink is a digital fiber optic transmission system from Digitizer to DLite Display. It covers very long distances and has a very high bandwidth (1.5 GB/s). This enables the end-user for instance to setup the Digitizer in a remote control room.

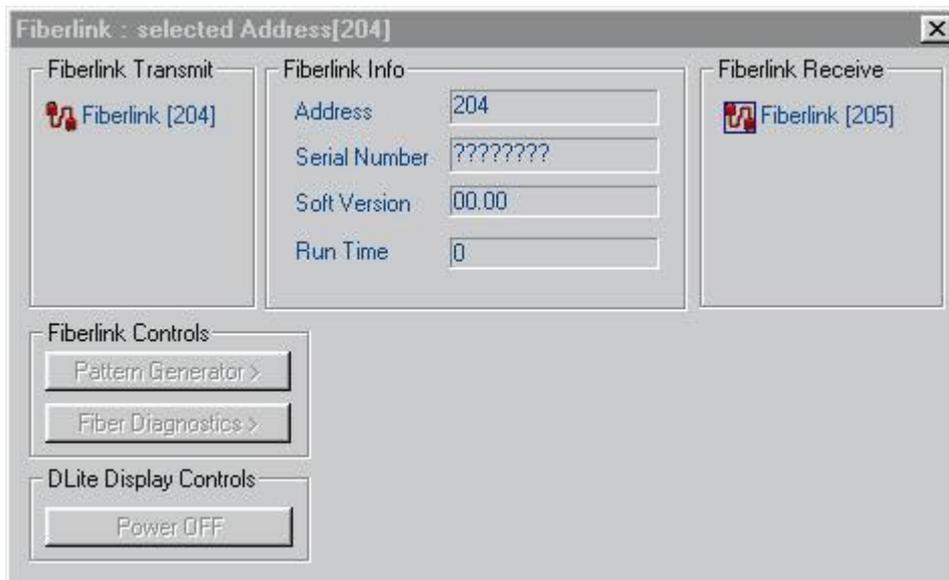
The fiberlink transmits not only the video signals but also the communication to the display. Therefore an extensive self-diagnose system is implemented for possible failure of transmission.

# Menu Structure



## FIBERLINK

When pushing the Fiberlink button in the main window, the Fiberlink Box appears:



The Fiberlink Box contains a Fiberlink Transmit tab and a Fiberlink Receive tab. Selecting one of these provides the corresponding information such as address, serial number, software version, and run time in the Fiberlink Info tab.

In the Fiberlink Controls tab, one can test the Fiberlink Transmitter or Receiver corresponding to your selection at the top.

To bring out the Test Pattern box, push the Pattern Generator button

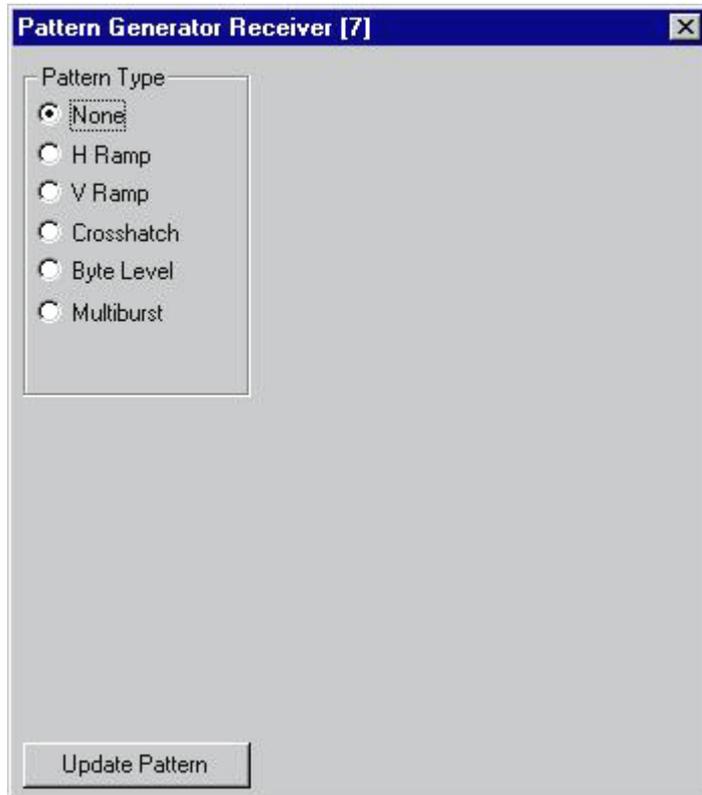
## PATTERN GENERATOR TYPE

The Pattern Generator box allows generation of patterns for the Dlite Display. There are several test patterns to choose from and all can be tuned in different ways.

### NONE

Pattern Generator <None> switches to the normal output (no pattern selected)

There are several test patterns and all of them can be generated for the receiver as well as for the transmitter.

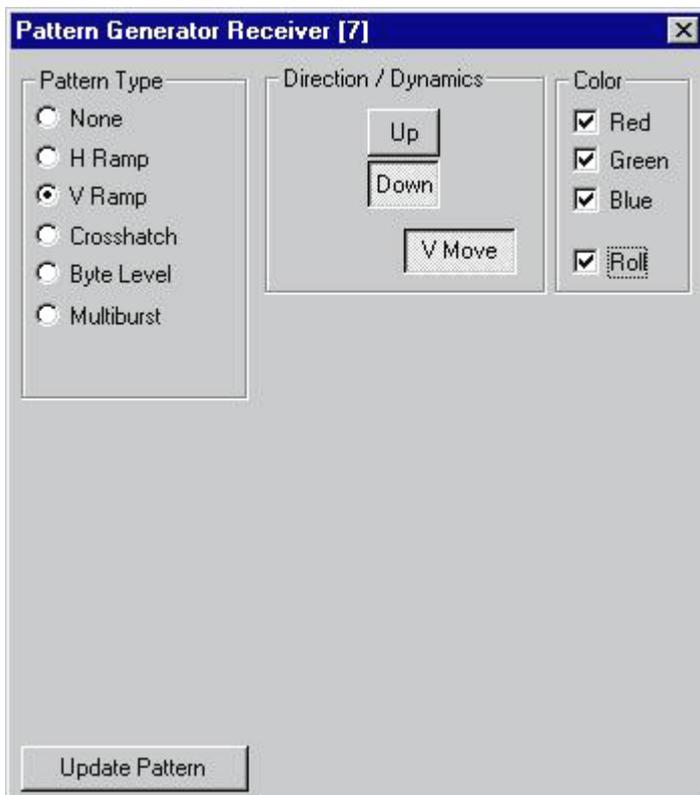
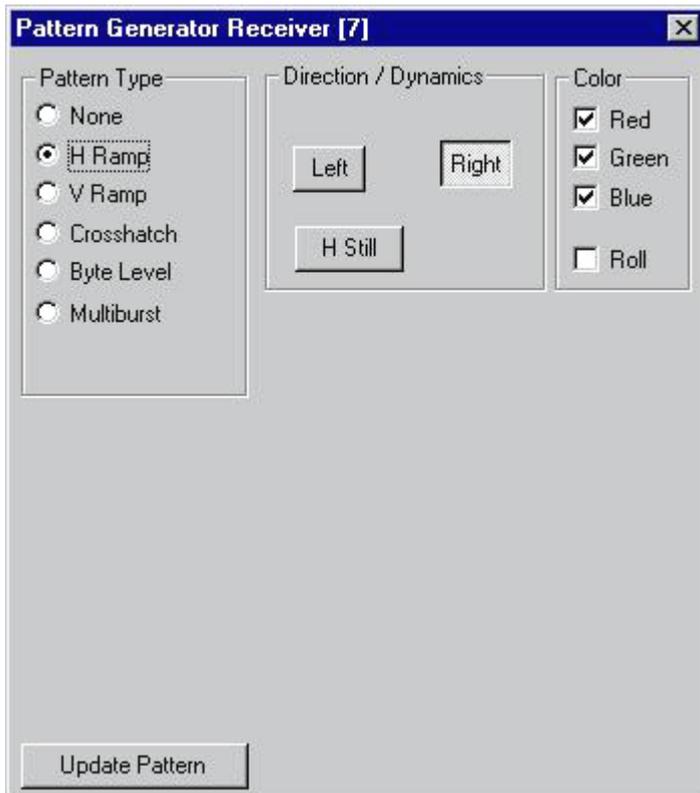


### HORIZONTAL / VERTICAL RAMP

Pattern Generator <H Ramp>/<V Ramp> generates respectively a horizontal/vertical ramp.

Move the ramp in H/V direction with the H Still or the V Still button. Select the desired direction - with the left, right, up and down buttons. Select the color of the testpattern with the color check boxes on the right. Change the colors periodically by switching the Roll checkbox in the Color Tab.

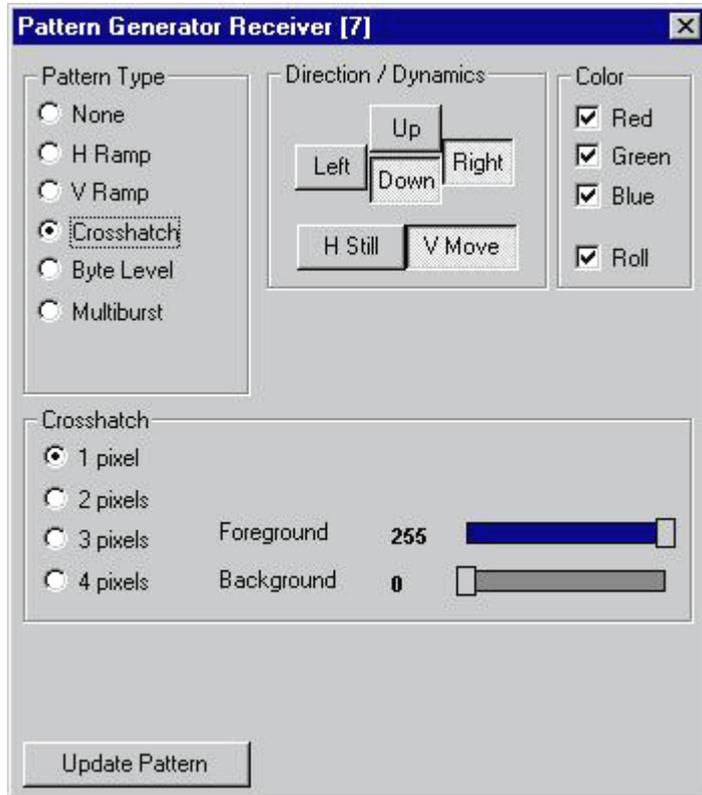
To force an update of the pattern according to the selection made, push the <Update Pattern> button at the bottom of the box.



## CROSSHATCH

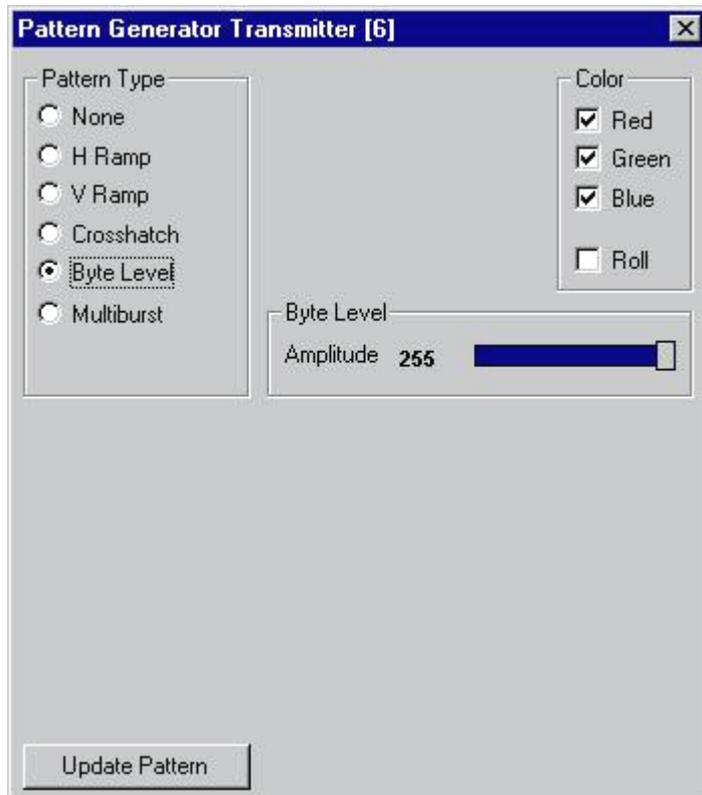
<Crosshatch> generates an adjustable crosshatch. Once again, choose the direction and/or dynamics of the pattern by You can let the crosshatch scroll in any direction: left, right, up, down or a combination. Choose the color with the appropriate checkbuttons.

In the Crosshatch tab you can switch on one of the x pixel checkbuttons to define the width of the crosshatch. Control the foreground and the background amplitude with the appropriate sliders.



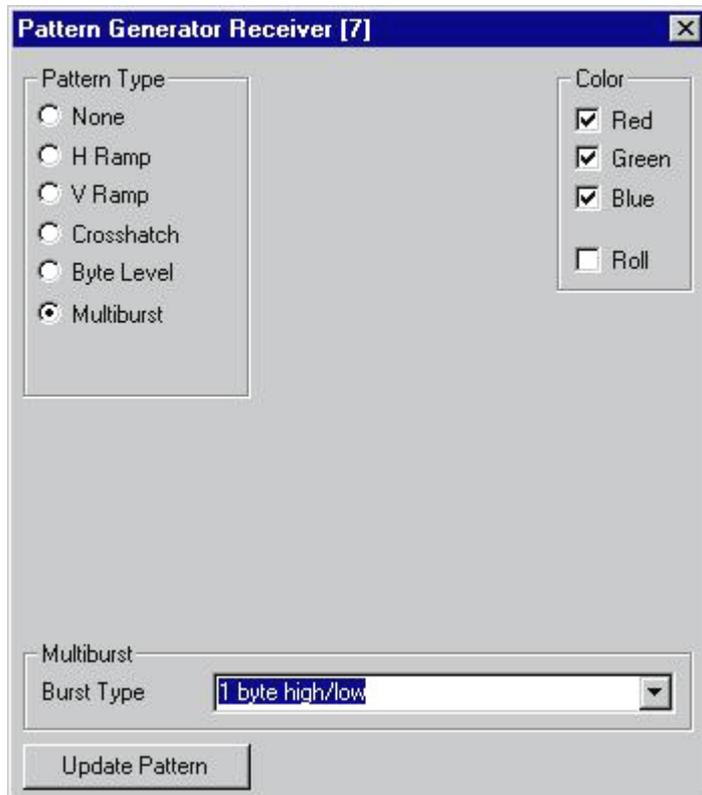
## BYTE LEVEL

<Byte Level> creates a byte level pattern with an amplitude that can be adjusted with the slider in the Byte Level tab. You can also adjust the color of the screen and put in a color scroll loop.



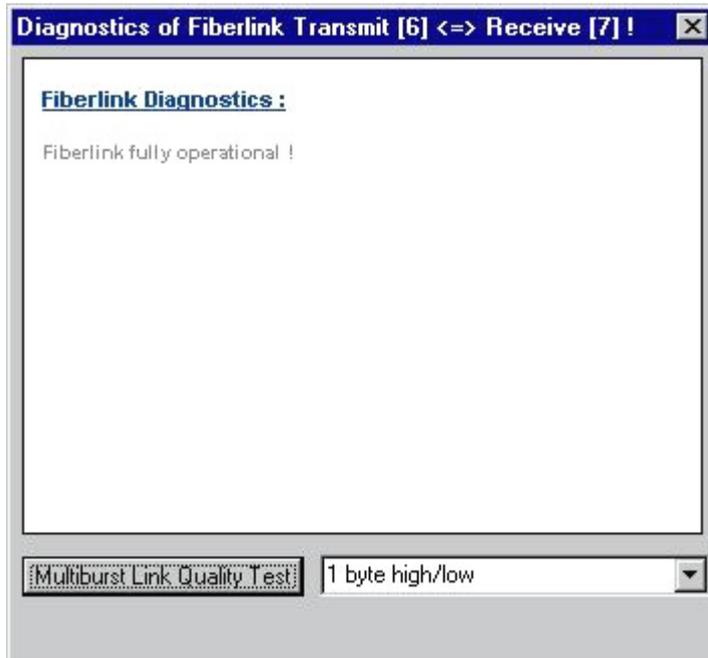
## MULTIBURST

<Multiburst> generates a multiburst pattern with an adjustable burst type of 1 to 8 bytes high/low. The color can once again be adjusted.



## FIBER DIAGNOSTICS BOX

To bring out the Fiber Diagnostics box, push <Fiber Diagnostics>



The Fiber Diagnostics box allows you to see the diagnostics of the fiberlink. (same as shown on the Transmitter's display)

### POSSIBLE DIAGNOSTICS

- Fiberlink fully operational
- Failed to diagnose the Fiberlink due to a communication error
- I<sup>2</sup>C errors detected
- I<sup>2</sup>C error detected in back Altera
- I<sup>2</sup>C error detected in front Altera
- I<sup>2</sup>C errors detected in eeprom
- Link errors detected and local loop failed. FATAL ERROR
- Problem detected in Receiver path of Fiberlink

Possible cause:

- 1) Bad Fiberlink
- 2) Failure of Transmitter Laserdiode
- Problem detected in Transmitter path of Fiberlink

Possible cause:

- 1) Bad Fiberlink
- 2) Failure of Transmitter Laserdiode
- 3) Failure of Transmitter opto-receiver

Severe problem detected

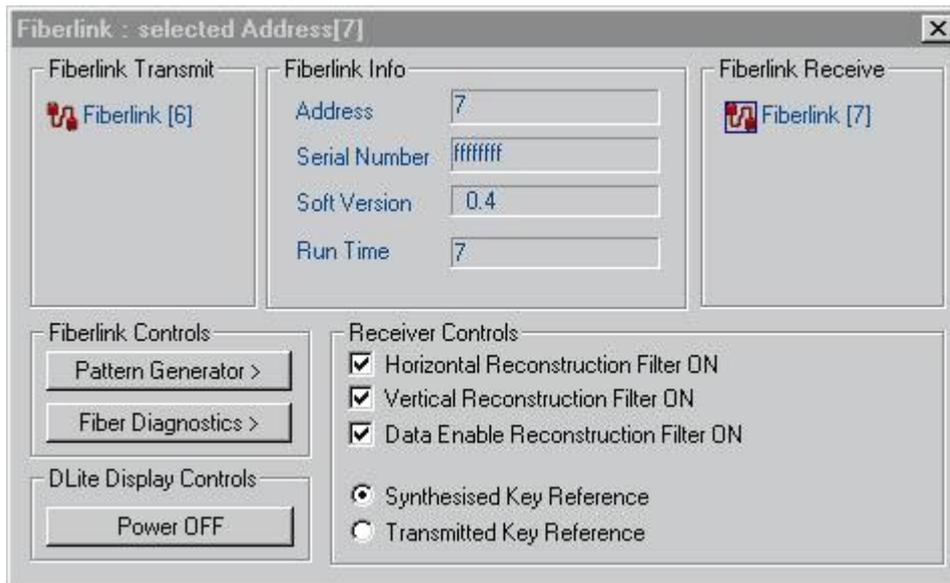
- Undefined error: PLEASE CONTACT YOUR VENDOR
- Transmitter Status bits:
  - Status bit 0: OK/FAILED
  - Status bit 1: OK/FAILED

- Link Ready: OK/FAILED
- PLL Locked: OK/FAILED

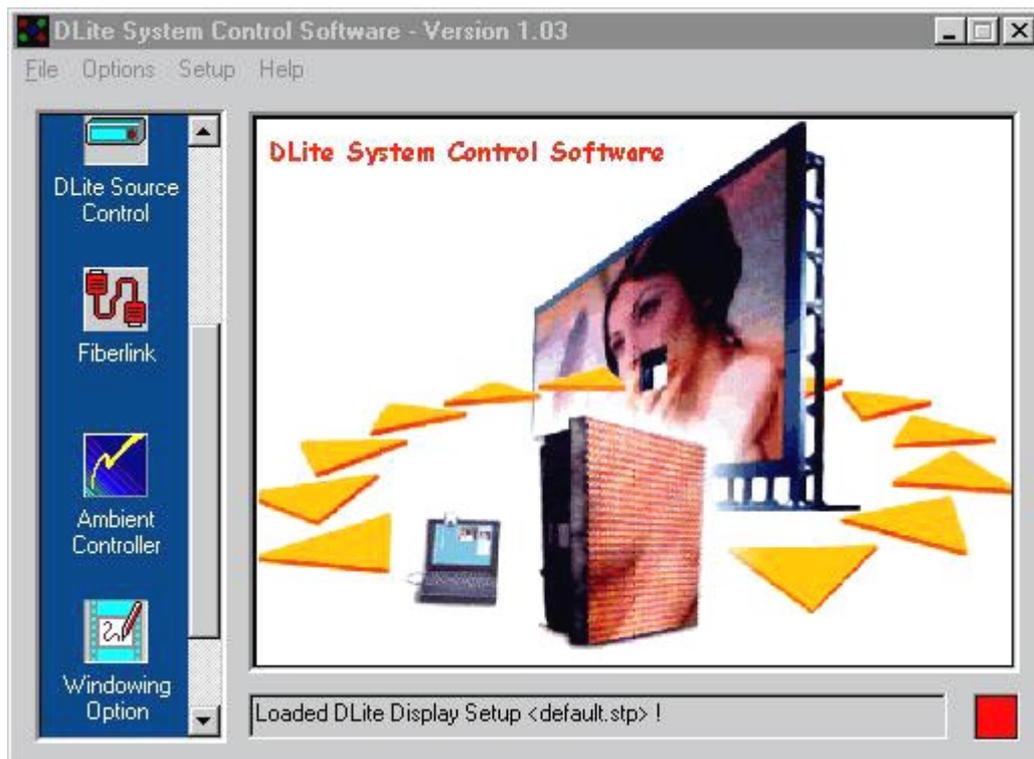
## DISPLAY POWER OFF/ON

<Power OFF> shuts down the DLite Display and pushing the same button - now with the text <Power ON> - restarts the DLite Display.

The Receiver Controls tab appears if a Fiberlink Receiver is selected at the top. In this tab, one can adjust some receiver controls in the event of lesser transmission quality. One can switch on three filters: the Horizontal Reconstruction Filter, the Vertical Reconstruction Filter and the Data Enable Reconstruction Filter. One can also choose between Synthesized or Transmitted Key Reference. In case the original or Transmitted Key Reference gets lost, a Synthesized Key Reference can be used to improve transmission quality.



# 7.3.Windowing Option

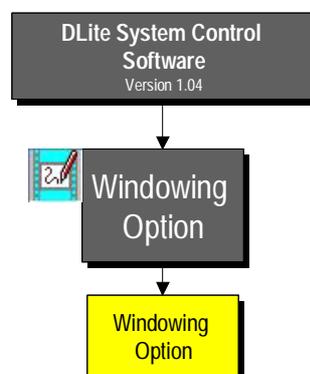


(Click the Windowing Option-icon)

## Introduction

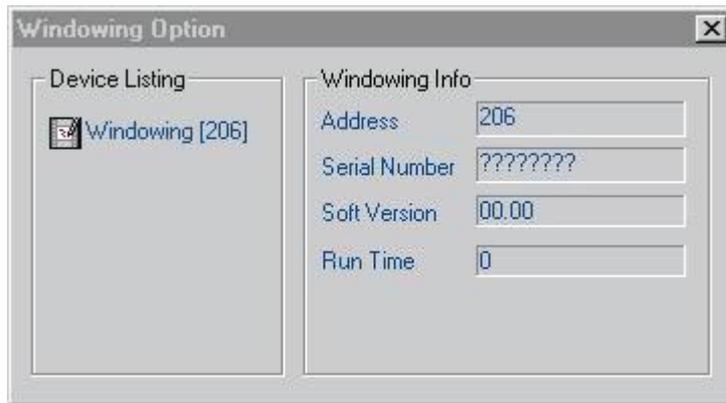
The Video/data Windowing option is a software controlled windowing system enabling video inserts and underlay/overlay effects , thus enabling the customer to display video, data, video on data and data on video. Video can be any source connected to the digitizer. Data can be an internet page, a power point presentation or a picture such as a JPEG, Gif or any other format image.

## Menu Structure



## WINDOWING OPTION INFO

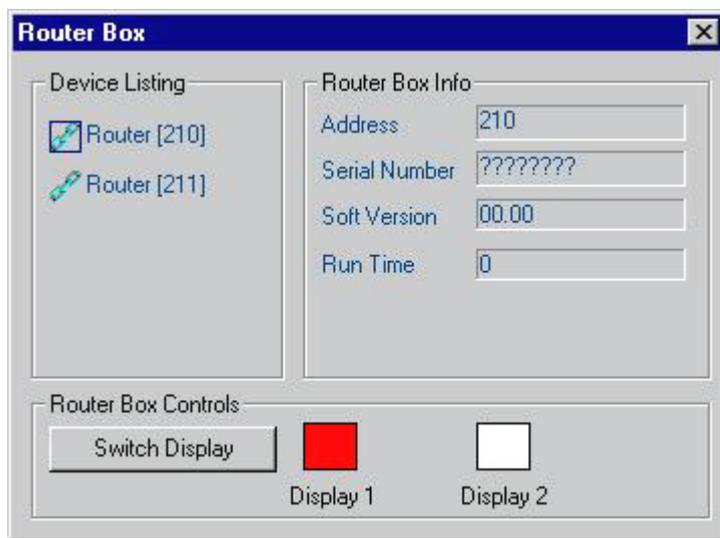
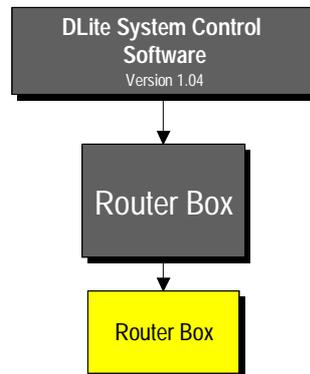
By pushing the Windowing Option button in the main window, the Windowing Option Info Box appears:



At the right side of the box, one can find the detected Windowing Options in the Device Listing tab. By selecting one of the listed Windowing Options, one sees information such as address, serial number, software version and run time appearing in the Windowing Option Info tab.

# 7.4.Routerbox

## Menu Structure





# CHAPTER 8

## Software Monitoring

### Controlling the Taskbar



When the software starts up, the DLite Taskbar Icon resides in the taskbar at your desktop. If this icon shows on your taskbar, it means that the software is still running on your system. (resident or even monitoring)

The software is controlled by clicking the mouse on the icon:

- 1) double click on the icon: reveals the DLite System Control Software
- 2) right click the icon and a popup menu appears:



<DLite System Control software> reveals the DLite System Control Software

<DLite System Monitoring Properties> reveals the Monitoring Properties.

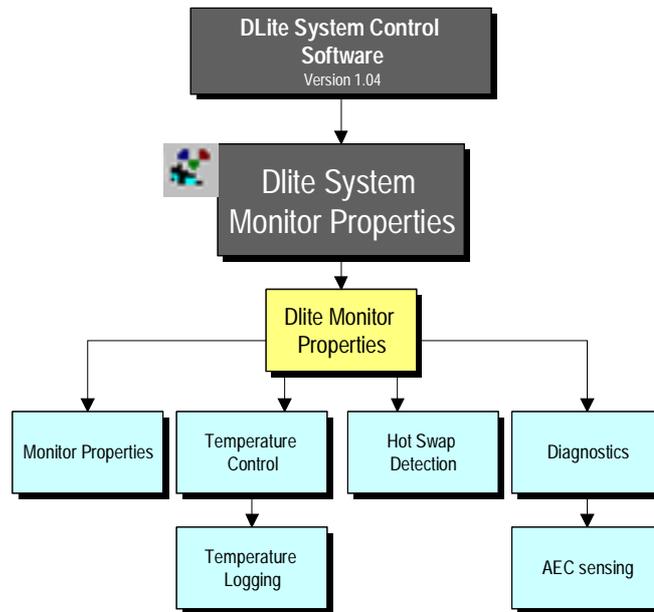
<Communication Setup> reveals the communication setup

<Exit> finishes the DLite System Control Software. If there is still a monitoring session going on, the software will ask for confirmation to end the monitoring.

# System Monitoring

## 8.1.Introduction

### Menu Structure



## Introduction

The monitoring feature is included to provide the user with lots of useful information:

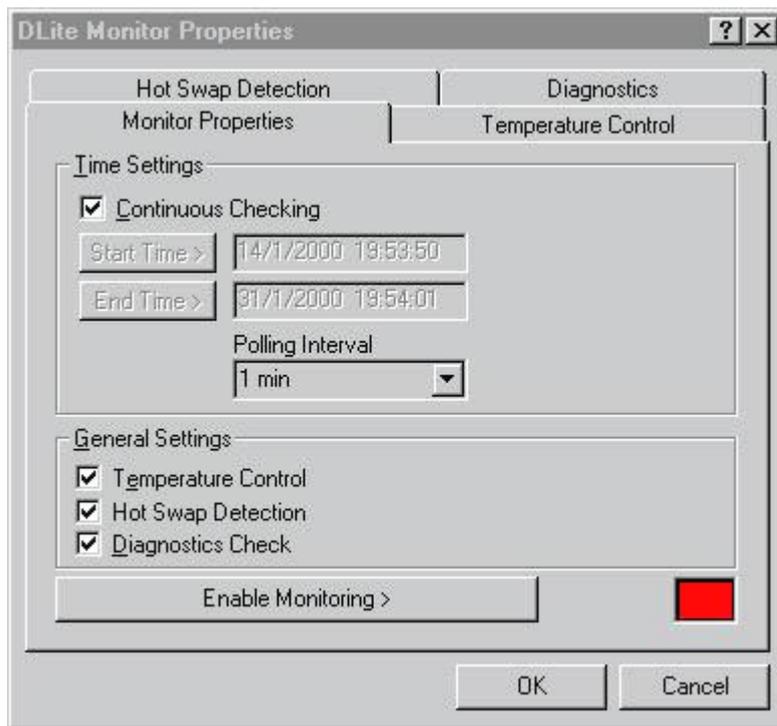
Temperature behavior of the DLite Display & interactive control

Hot swap detection of a tile & interactive control

Diagnostics of tiles

These features extend the users capability of automating the control of the software over the display

## 8.2. Monitoring Properties



### TIME SETTINGS

In <Time Settings> , the user has to determine:

Start Time of monitoring

End Time of monitoring

Time of the polling interval

Choosing <Continuous Check> sets the Start Time at the start of monitoring and the End Time infinite (or when the user manually disables monitoring.)

### START TIME AND END TIME

Select the time range for monitoring. Therefore select the START and END TIME. To do so click the corresponding button to enter the following screen:

**Select Time**

Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Date Selection

Month:

Year:

Date:

Time Selection

Hour:

Minutes:

Seconds:

Time:

## CALENDAR

Change the desired day by clicking on it.

## DATE SELECTION

Change the MONTH and YEAR of the moment to start (end) the monitoring by use of the corresponding arrows. The CALENDAR box will be adapted automatically.

## TIME SELECTION

Change the HOUR, MINUTES and SECONDS of the moment to start (end) the monitoring by use of the corresponding arrows.

When leaving this screen, the start (end) time is selected.

## POLLING INTERVAL

The polling is the time between two monitoring actions. If one action is finished it will take that long to the next action.

## GENERAL SETTINGS

In <General Settings> , the user can enable/disable monitoring control:

1. Temperature Control
2. Hot Swap detection
3. Diagnostics

Choosing <Enable Monitoring> enables the monitoring (the side rectangle turns green indicating the process of monitoring). If monitoring has (preliminary) ended or the end time elapsed, the side rectangle turns red indicating that monitoring has stopped.

**REMARK**

1. The user has the ability to work further with the DLite System Control Software while monitoring is in process. If the user decides to perform an action during monitoring that consumes a lot of communication time between the computer and the display, the user always gets priority (during a dead interval) and so shifting the time for the next poll ...
2. While monitoring, KEEP the computer connected with the display. There is still communication going on, even though the DLite System Control Software might be shut down.
3. Choose a wise polling interval: not too small (<1 min) and not too big (> 15 min)

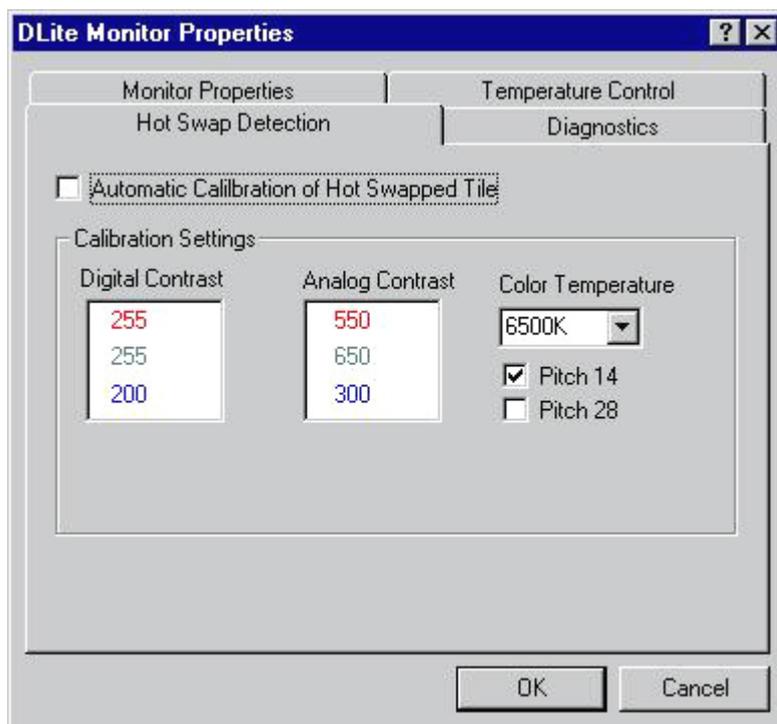
## 8.3.Hot Swap Detection

### Introduction

While a DLite Display is connected to a computer, it is possible to check whether a tile is hot swapped or whether a tile is not responding/missing. The DLite Software automatically detects whether a tile is missing or replaced from its original configuration.

### A TILE IS REPLACED

When a Tile is replaced, the DLite software detects this and forces the new tile to the expected address from the original configuration. The new tile also is reconfigured: its position and contrast are automatically adjusted. When selected, the tile is also calibrated to match the entire DLite Display.



For the tile to have the same calibration for the whole display, select the pitch and color temperature to match that of the entire DLite Display.

### A TILE IS MISSING

When a tile is missing for the software (not responding or actually being replaced), the software automatically tries to reconfigure the DLite Display. This could result in a shift of addresses. When a tile is actually missing, this is represented in the DLite Display Visualization as shown next. The software keeps the same configuration for the remaining tiles, so nothing is visually different for the client.

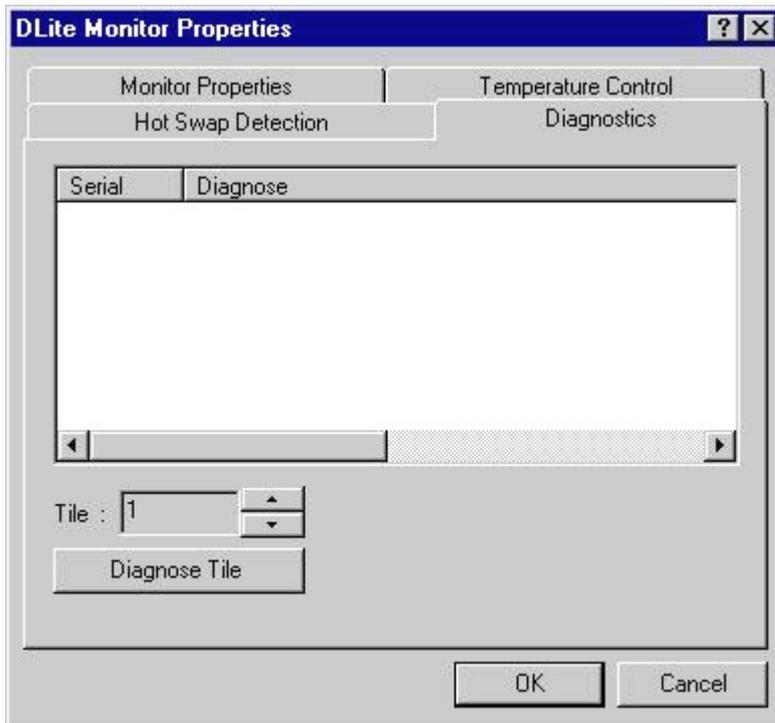
54	53	42	41	31	30	19	18	7	6
55	52	43	40	32	29	20	17	8	5
56	51	44	39	33	28	21	16	9	4
57	50	45	38	disabled	27	22	15	10	3
58	49	46	37	34	26	23	14	11	2
59	48	47	36	35	25	24	13	12	1

When the software detects a new tile, everything is automatically repaired.

## 8.4.Diagnostics

### Introduction

The DLite Display can also be monitored for errors. When errors are detected, they are listed in the dialog below with their serial number, description of the error, time of detection and a description of the action taken. (not implemented yet.)



Every tile can also be individually monitored like in Individual Tile Diagnostics. Just select the appropriate Tile and push <Diagnose Tile> to perform a diagnostic listing of a tile. If nothing is shown everything is alright.

## 8.5. Temperature Control

### Introduction

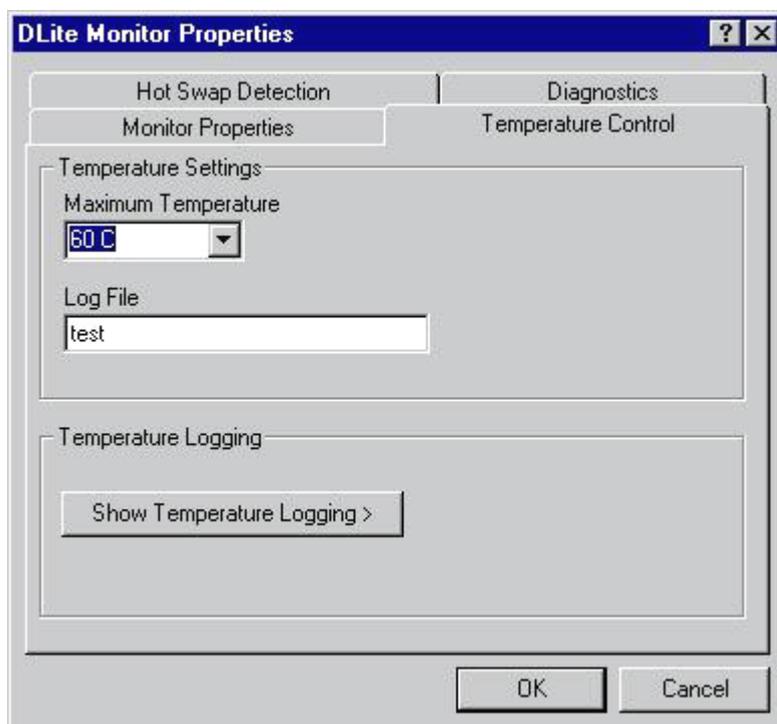
Temperature Control features control over the temperature of the Tile. The temperature of a tile can be viewed in it's properties (see Individual Tile Access). The average internal temperature of a tile with an ambient temperature of 25 degrees Celsius is:

- Video: +/- 40 degrees Celsius average
- Data: +/- 45 degrees Celsius average

The default limit on the tile's temperature is average 60/65 degrees Celsius.

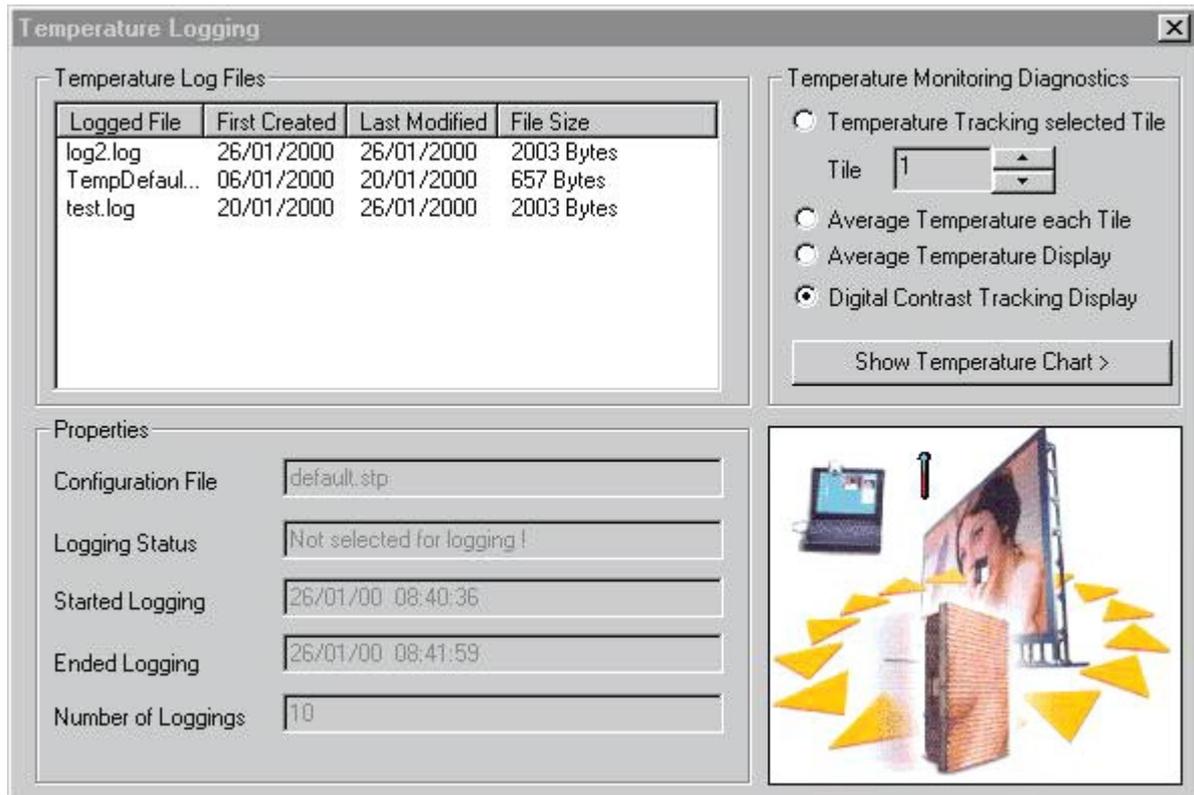
The temperature can be controlled by regulating the digital contrast.

### TEMPERATURE CONTROL



In <Temperature Settings> it is possible to set the maximum temperature of the DLite Display.

The log file logs all temperature measurements for the DLite Display. Be aware that each new, monitoring action overwrites the log file displayed in the appropriate field. One can view the logging graphically. Click <Show Temperature Logging> > to popup the dialog shown below:



## TEMPERATURE LOG FILES

In <Temperature Log Files> all logged files are shown in a list with their name, size, date of first logging and data of last logging. If the user selects a file, the file's properties are shown in the lower <Properties> .

### CONFIGURATION FILE

Points to the DLite Configuration that was loaded during logging

### LOGGING STATUS

Shows whether the log file is selected for monitoring (file to write to).

### STARTED LOGGING

Start Time of logging

### ENDED LOGGING

End Time of logging

### NUMBER OF LOGGINGS

Shows how many times the temperature was logged

## TEMPERATURE MONITORING DIAGNOSTICS

In <Temperature Monitoring Diagnostics> , the user can display several Temperature Characteristics. All these characteristics are drawn in an Excel chart, so having excel installed is a must to display the graphs.

Four different diagnostics are possible:

### TEMPERATURE TRACKING SELECTED TILE

Shows the Tracking of the Temperature in function of time for the selected Tile

### AVERAGE TEMPERATURE EACH TILE

Shows the average Temperature over time for each Tile

### AVERAGE TEMPERATURE DISPLAY

Shows the average Temperature in function of time for the Display

### DIGITAL CONTRAST TRACKING DISPLAY

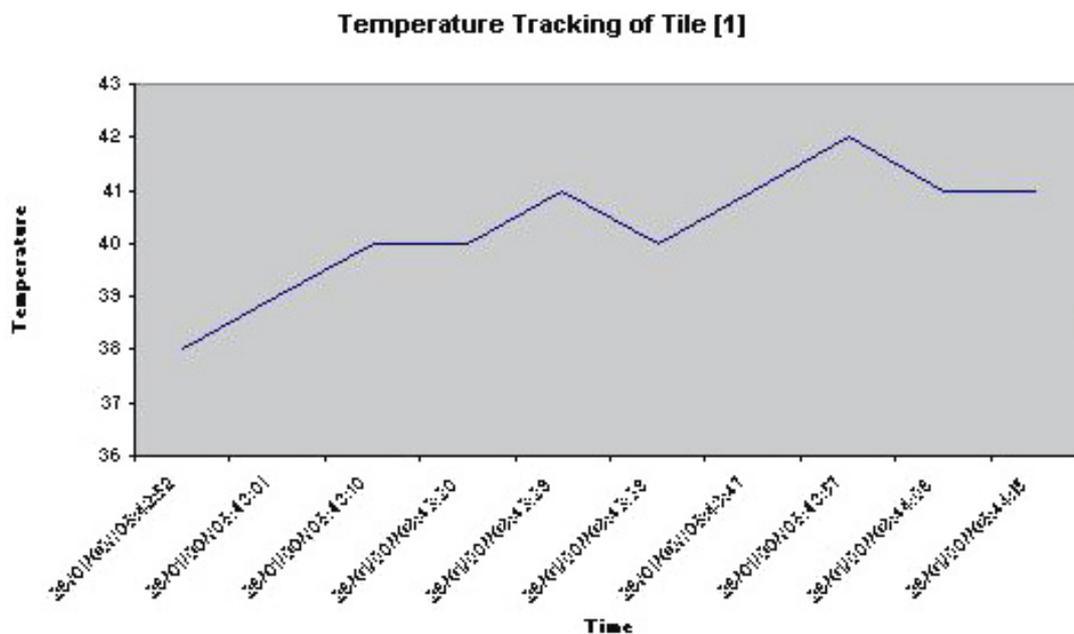
Shows the Digital Contrast Tracking for the Display

To show the Temperature Tracking for a Tile, one must select the tile first.

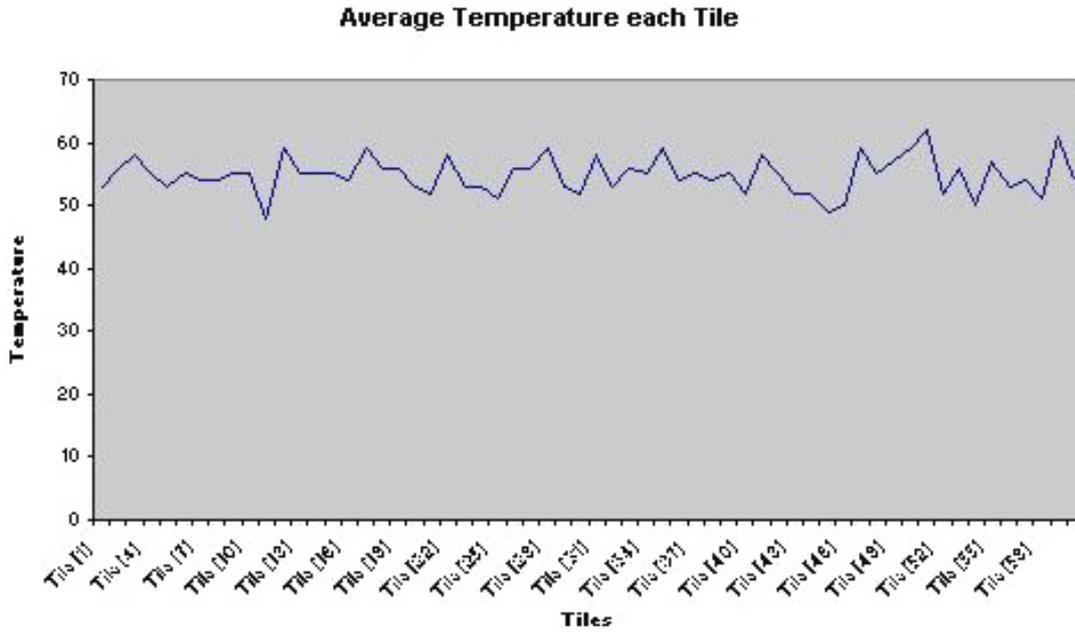
To show an Excel Chart/Sheet, push <Show Temperature Chart>

Some examples are shown next:

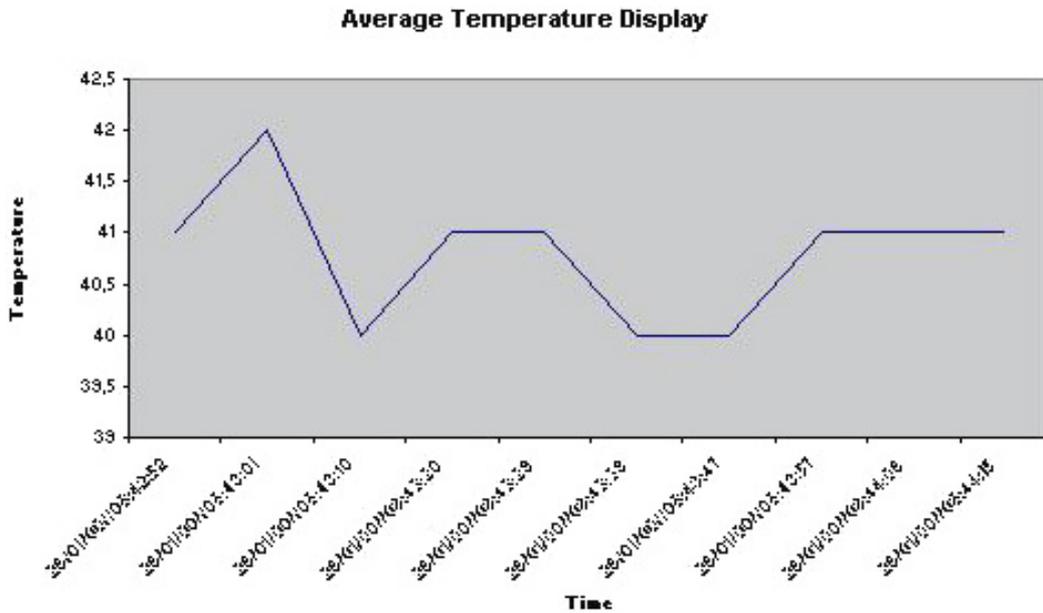
### 1. TEMPERATURE TRACKING SELECTED TILE



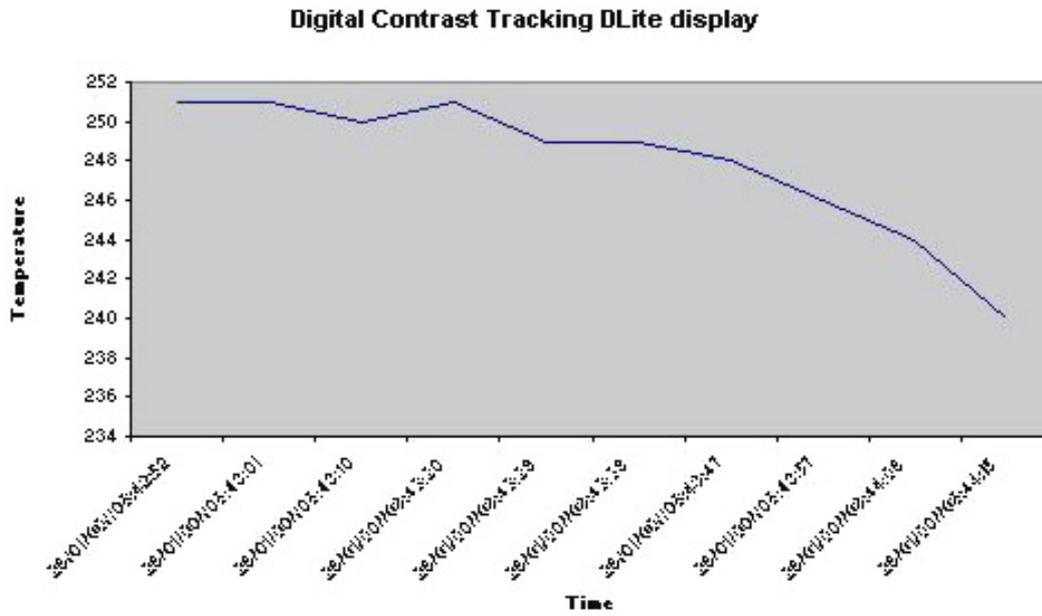
## 2. AVERAGE TEMPERATURE EACH TILE



## 3. AVERAGE TEMPERATURE DISPLAY



## 4. Digital Contrast Tracking Display



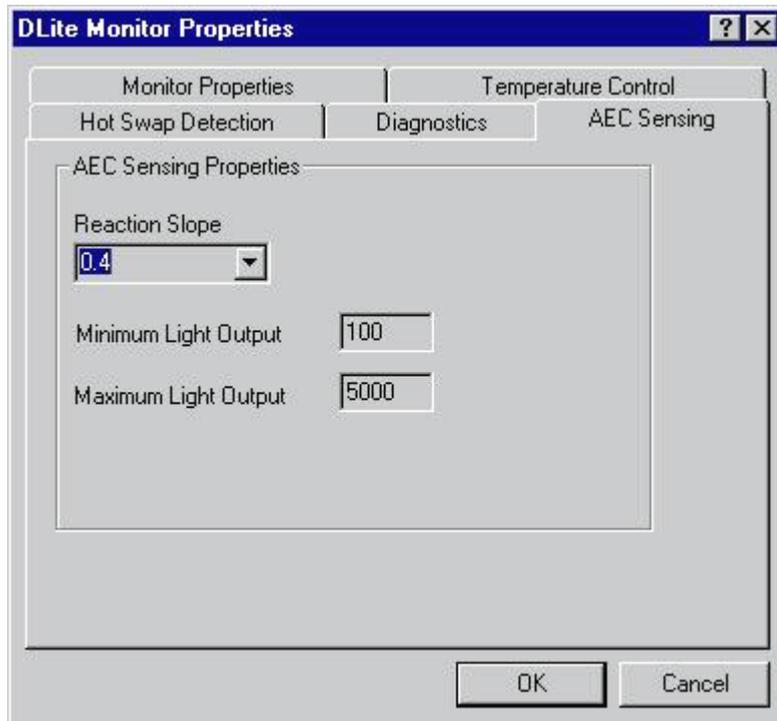
### REMARK

All information is not only displayed in charts but also in Excel sheets, and besides that, the user has all control to his Excel data.

## 8.6.AEC Sensing

### Introduction

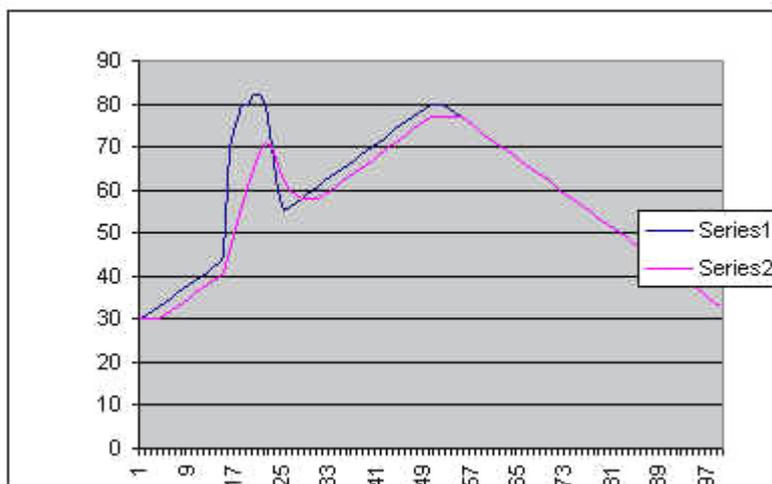
This tab only appears when an Ambient Environment Controller is implemented in the hardware and configured in the DLite Software. In <Monitor Properties> , one can select the <AEC Sensing> checkbutton to let the software read the measurements from the AEC.



### AEC SENSING PROPERTIES

<Reaction Slope> sets the characteristic of a filter on the measured values. A value of 1 means immediate interaction, where a lower value means a filtered reaction. The lower the value, the slower reaction ...

#### Example



An example of a reaction (slope 0.3) which flattens the peak that occurred ...

The light output of the DLite Display is automatically adjusted to the measurements ... (referenced towards the calibration value.). The light output is limited between the minimum and maximum limit that can be set.

The output of the measurements (real light output & measured value) are written in a file, called <LightRes.txt> (located in the subdirectory <Options> beneath the installation directory. This file can be pulled in Excel to (two tables => + create a chart) create a chart.



# Chapter 9

## Trouble shooting

### General

#### THERE IS NO PICTURE ON THE WALL AND THE DIGITIZER IS NOT OPERATIONAL

- Check Check the power on the digitizer
- Make sure the digitizer isn't in stand-by mode

#### THERE IS NO PICTURE ON THE WALL AND THE DIGITIZER IS FULLY OPERATIONAL

- Check the main power of the wall (every single fuse)
- Check the power entering the modules (min 190 V)
- Check the selected video source and its connections to the digitizer
- Check the cable between the digitizer and the first module
- Bridge the fist module (data cable), and Check again
- Check the contrast of the wall
- Check the scaling of the active video
- Check the fiberlink power status. In the DLite Soft Fiberlink Window you are able to shut down the power to the fiberlink transmitter resulting in an empty-picture wall.
- Check the content source (black ??)

#### THERE IS NO COMMUNICATION BETWEEN THE PC AND THE MODULES / DIGITIZER

- Check the power on the wall and digitizer
- Check whether the DLite control soft is set on-line (bottom right square in the DLite main window should be colored green)
- Check the communication setup of the software (communication port / baud rate)
- In case of a portable PC Check whether the serial com port is in fact switched on, and not used by another resident program
- Check the RS232 cable (max 30 m long) itself and whether it is plugged in right on both sides

**THERE IS NO COMMUNICATION WITH THE DIGITIZER**

- Check the RS232 address setup on the digitizer. This should be the same as the address setup in the DLite Soft.

**THERE IS A PICTURE ON THE WALL, BUT IT STOPS OR STARTS BEING CORRUPTED, AFTER ONE OF THE TILES**

- Check to see whether the data cable in between the last good module and the first problem module isn't corrupted
- Bridge the last good module (the data output could be corrupted)
- Bridge the first problem module (the data input could be corrupted)

**THERE ARE SPURIOUS SPIKES IN THE BLACKS**

- One of the data cables in the wall is bad or too long. The problem can only be solved finding this cable. Try to isolate the cable by switching on row by row.

**THERE'S A SPURIOUS UNIFORM COLOR HAZE IN FRONT OF A PIECE OR THE ENTIRE VIDEO.**

- Check to see whether the data cable in between the last good module and the first problem module isn't corrupted
- Bridge the last good module (the data output could be corrupted)
- Bridge the first problem module (the data input could be corrupted)

**A MODULE REPLACEMENT IS NEEDED IN THE FOLLOWING CASES**

- The color and / or contrast is wrong and remains wrong after calibration. The module needs to be recalibrated
- A small portion of LED's are not lighting up any more or the light output is not matching the other LED's (defective constant current driver on the driver board)
- The video information of one of the colors is not correct any more (bad contact on the driver board)
- A lot of defective LED's on one board

# Initial Tile Setup / Guided setup

## RS232-SWITCH NOT OPEN

- Check the communication port settings: port number, baudrate, ...
- Make sure the selected serial port isn't currently in use by another program
- Check whether the RS232 cable is intact and plugged in right
- If the line-up includes the Fiberlink, Check the power connections to the Fiberlink transmitter and receiver and Check if it is not powered off.
- If the line-up includes the Fiberlink, Check the messages on the display of the Fiberlink transmitter to see if there aren't any errors in the Fiberlink connection

## FAILED TO DETECT RESOLUTION ID

- Each tile must have an internal id unique for each type of tile. This is missing or corrupt.
- Contact your vendor.

## DURING INITIAL TILE SETUP THE VIDEO GETS ALL SCRAMBLED UP

- Check whether the start position and direction of the link correspond with the way the tiles are linked together

## FAILURE DURING ADDRESSING: TILE ADDRESSING DOESN'T REACH THE SET UP NUMBER OF TILES IN THE WALL

- Each one of the tiles could be responsible for not sending a response back to the digitizer. Each tile should be controlled and not only the last tile.

# System Control

## THE VIDEO IS FLICKERING

- Check to see whether the Clock and the PWM setting in the Global Access window is conform to the video source you want to display: 50 or 60 Hz

## ONE MODULE IS BRIGHTER OR IS NOT DISPLAYING THE RIGHT COLOR

- Try to readjust the contrast to 5000 nit (full contrast)
- Recalibrate the color of the module
- The Flash Update (for any device) isn't successful
- Check the flag on Update System Device in Flash Update Options and the selection in the scroll box. Make sure the correct file is loaded!

# Source and Image Control

**THE ACTIVE VIDEO IS JOINED BY A VERTICAL BAR AT THE BOTTOM AND A HORIZONTAL BAR AT THE RIGHT. THIS MEANS THE BLANKING IS COMING THROUGH.**

- Check the setting Insert Blanking in the Advanced Settings window. This setting should be turned Off

**THE ACTIVE VIDEO OR THE ACTIVE BORDERS ARE SCRAMBLED. MAKE SURE THAT THE LED WALL MASK IS BETWEEN THE WHITE ACTIVE VIDEO BORDERS!**

- Check the H Start (> 52) & V Start (> 36)

**THE VIDEO SEEMS NOISY, SPECIALLY IN THE DARKER COLORS**

- Check the Video Equalizing settings in the Daylight Display Digitizer Imaging window

**THE VIDEO IS FROZEN**

- Check the setting Full Frame Freeze in the Advanced Settings window
- Check the settings on the selected video source

**THE VIDEO COLORS ARE PALE / GRAY**

- Check the Saturation setting in the Daylight Display Digitizer Imaging window

**THE VIDEO ISN'T SHOWN BRIGHT EVEN WHEN THE LIGHT OUTPUT IS SET ON A HIGH SETTING**

- Check the Brightness setting in the Daylight Display Digitizer Imaging window

**THE DATA IS DISPLAYED IN A PARALLELOGRAM SHAPE**

- Lower the data size in the Windowing Toolbox provided with the Video Scaling window

**THE DATA DOESN'T SHOW WHILE THE SETTING 'DATA ON VIDEO' IS SELECTED**

- Adjust the Data Panning and Size in the Windowing Toolbox provided with the Video Scaling window

**THE DIGITIZER DOESN'T COME OUT OF STAND-BY MODE**

- Check whether the fiberlink if included is fully operational

# Devices

## **THE AEC DOESN'T CALIBRATE RIGHT.**

- Check whether none of the sensors on the AEC is completely covered.
- Check whether the AEC is not placed on its bottom!

## **THE FIBERLINK TRANSMITTER DISPLAYS THIS MESSAGE: “SYSTEM OPERATIONAL BUT SIGNAL MISMATCH TX-RX”**

- Check whether the digitizer isn't in stand-by mode

## **THE FIBERLINK TRANSMITTER DISPLAYS THIS MESSAGE WHILE TRANSPORTING PC DATA: “SYSTEM OPERATIONAL BUT SIGNAL MISMATCH TX-RX”**

- Because of the large diversity of video cards with digital video output the clock frequency can't be taken into account. The former digitizers without windowing option will cause the fiberlink message to appear but no errors will occur. Digitizers with windowing option won't cause the fiberlink message to appear though, because the incoming clock frequency of the video card is converted to a default clock frequency.

# Monitoring

## **DURING HOT SWAPPING A TILE IS REPLACED, BUT THE NEW TILE DOESN'T GET THE SETTINGS OF THE ORIGINAL TILE**

- Hot Swapping is among other things based on the serial numbers of the tiles in order to provide each tile with the exact portion of the total video. So, when completing the initial tile setup, you should not forget to mark auto positioning and auto configuration.

## **THE MESSAGE “ATTEMPT TO FIND MISSING TILE: HOT SWAP ADDRESSING” KEEPS APPEARING ON THE PC**

- Check whether the DLite Soft is on-line (bottom right square in the DLite main window should be colored green)
- Check whether the digitizer is fully operational (not in stand-by mode)
- Check whether the fiberlink if included is fully operational

## **WHILE THE AEC IS MONITORING , AN ILLEGAL OPERATION OCCURS.**

- Close resident programs, scan for virus
- Remove the suspend mode option
- Remove the screen saver option



# Chapter 10

## Digitizer

## Operation

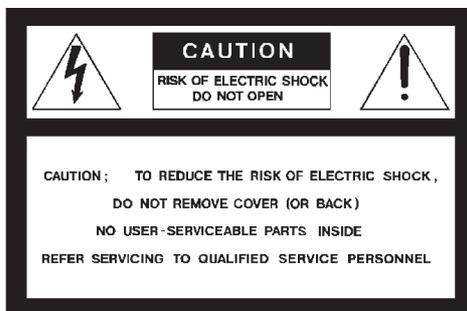
### SERVICE SAFETY PRECAUTIONS

#### WARNING

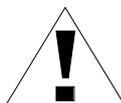
TO PREVENT FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE

#### VENTILATION

THE DIGITIZER WILL REQUIRE THAT AIR FLOWS FREELY IN BOTH THE BOTTOM AND TOP VENT HOLES. BLOCKING THESE HOLES WILL GREATLY REDUCE THE RELIABILITY OF THE UNIT AND LEAD TO THE POSSIBILITY OF OVERHEATING. THE MAXIMUM RECOMMENDED AMBIENT TEMPERATURE FOR THIS EQUIPMENT IS 40°C



The lightning flash with an arrowhead within a triangle is intended to tell the user that parts inside this product may cause a risk of electrical shock to persons.



The exclamation point within a triangle is intended to tell the user that important operating and/or servicing instructions are included in the technical documentation for this equipment.

### POWER REQUIREMENTS

The Digitizer D<sup>3</sup>10 is equipped with a built-in Power Supply  
**Autoranging from 100 to 240 V, 80W, 1.2-0.7A, 50 - 60 Hz.**

### FEDERAL COMMUNICATION COMMISSION

#### (FCC STATEMENT)

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## NOTICE ON OWNER'S MANUAL

Before operating your equipment please read this manual thoroughly, and retain it for future reference.

Installation and preliminary adjustments should be performed by qualified BARCO personnel or authorized BARCO service dealers.

### OWNER'S RECORD:

The part number and serial number are located at the bottom of the equipment. Record these numbers in the spaces provided below. Refer to them whenever you call upon your BARCO dealer regarding this product.

Part number:
Serial number:

## NOTICE ON SAFETY

Devices are built in accordance with the requirements of the international safety standards IEC 950 and UL 1950, which are the safety standards of information technology equipment including electrical business equipment.

These safety standards impose important requirements on the use of safety critical components, materials and isolation, in order to protect the user or operator against risk of electric shock and energy hazard, and having access to live parts.

Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire.

Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

- \* All the safety and operating instructions should be read before using this unit.
- \* The safety and operating instructions manual should be retained for future reference.
- \* All warnings on the equipment and in the documentation manuals should be adhered to.
- \* All instructions for operating and use of this equipment must be followed precisely.

All current or extended warranties will be made null and void should the product or device be subjected to conditions which are clearly detrimental to the its normal and proper use. The manufacture reserves the right to refuse repair under warranty should the defect or malfunction be suspected from want-ful neglect. The purchaser will be made liable for costs incurred in these cases.

## ON SAFETY

1. This product should be operated from an AC power source (see chapter Power Up/Down).

**Digitizer R9828830 provided with a power cord with CEE 7 plug plus power cord with ANSI 73.11 plug**

2. This product is equipped with a 3-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

**WARNING FOR THE CUSTOMERS: THIS APPARATUS MUST BE GROUNDED (EARTHED) VIA THE SUPPLIED 3 CONDUCTOR AC POWER CABLE. (IF THE SUPPLIED POWER CABLE IS NOT THE CORRECT VARIENT, CONSULT YOUR DEALER.)**

3. To comply with EMC regulations, use only shielded cables.

4. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

To disconnect the cord, pull it out by the plug. Never pull the cord itself.

5. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

**6. Never push objects of any kind into this product through cabinet slots as they may touch dangerous high voltage points or short out parts that could result in a risk of fire or electrical shock.**

Never spill liquid of any kind on the product. Should any liquid or solid object fall into the cabinet, unplug the set and have it checked by qualified service personnel before resuming operations.

7. Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the device due to lightning and AC power-line surges.

## NOTICE ON INSTALLATION

1. Do not place this device on an unstable cart, stand, or table. The device may fall, causing serious damage to it.

2. Do not use this device near water.

3. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the device and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This device should not be placed in a built-in installation or enclosure unless proper ventilation is provided.

4. When using the unit in a multi-unit rack assembly or closed assembly, the ambient temperature inside the assembly may not exceed the maximum rated ambient temperature of the Digitizer. The installation should be such that the amount of air flow required for safe operation of the equipment is not compromised.

5. When installed in a rack, the mounting should be such that no hazardous condition is achieved due to uneven mechanical loading.

6. When the mains switch located on the back of the digitizer is not accessible due to rack mounting, the socket outlet supplying the rack shall be installed near the equipment and be easily accessible or a readily accessible disconnect device shall be incorporated in the fixed wiring. When using a rack in an installation it is advisable to log the serial number of the device and to activate the warranty figure by registering utilising the included form.

## NOTICE ON SERVICING

Do not attempt to service this device yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock!

Refer all servicing to qualified service personnel.

**Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:**

- a. When the power cord or plug is damaged or frayed.
- b. If liquid has been spilled into the device.
- c. If the product has been exposed to rain or water.
- d. If the product does not operate normally when the operating instructions are followed.

**Note :** Adjust only those controls that are covered by the operating instructions since improper adjustment of the other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

- e. If the product has been dropped or the cabinet has been damaged.
- f. If the product exhibits a distinct change in performance, indicating a need for service.

### **Replacement parts**

When replacement parts are required, be sure the service technician has used original BARCO replacement parts or authorized replacement parts which have the same characteristics as the BARCO original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.

### **Safety check**

Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in proper operating condition.

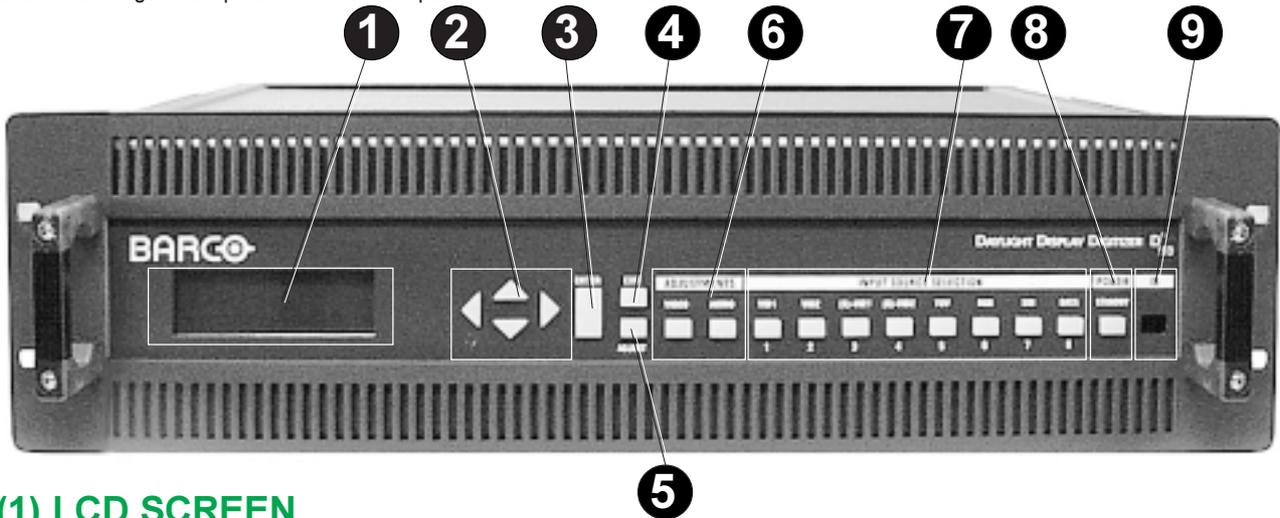
## NOTICE ON CLEANING

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution. Never use strong solvents, such as thinner or benzene, or abrasive cleaners, since these will damage the cabinet.

# Front Panel Description

Describes the general operation of the front panel controls and indications.



## (1) LCD SCREEN

An easy to read two-line by 24 characters display permits simultaneous viewing of any chosen menu in the adjustment mode or the last selected input source in operation mode.

## (2) MENU ARROWS

The four arrow switches are used to navigate through the menu options in the adjustment mode and to increment or decrement an analog level in the adjustment mode.

## (3) ENTER

Used to confirm an adjustment, to toggle between two selections in the adjustment mode or to move up one level in the menu structure.

## (4) EXIT

Used to leave the adjustment mode.

## (5) ADJUST

Used to enter or to exit the adjustment mode.

## (6) VIDEO ADJUSTMENTS

Direct keys to adjust the respective analog levels and settings of the picture.

Audio Adjustments

Not Active.

## (7) DIRECT SOURCE SELECTION

1	Video 1
2	Video 2
3	(S)-Video 1
4	(S)-Video 2
5	YUV (Component Video)
6	RGB
7	SDI
8	DATA

## (8) POWER/STAND-BY

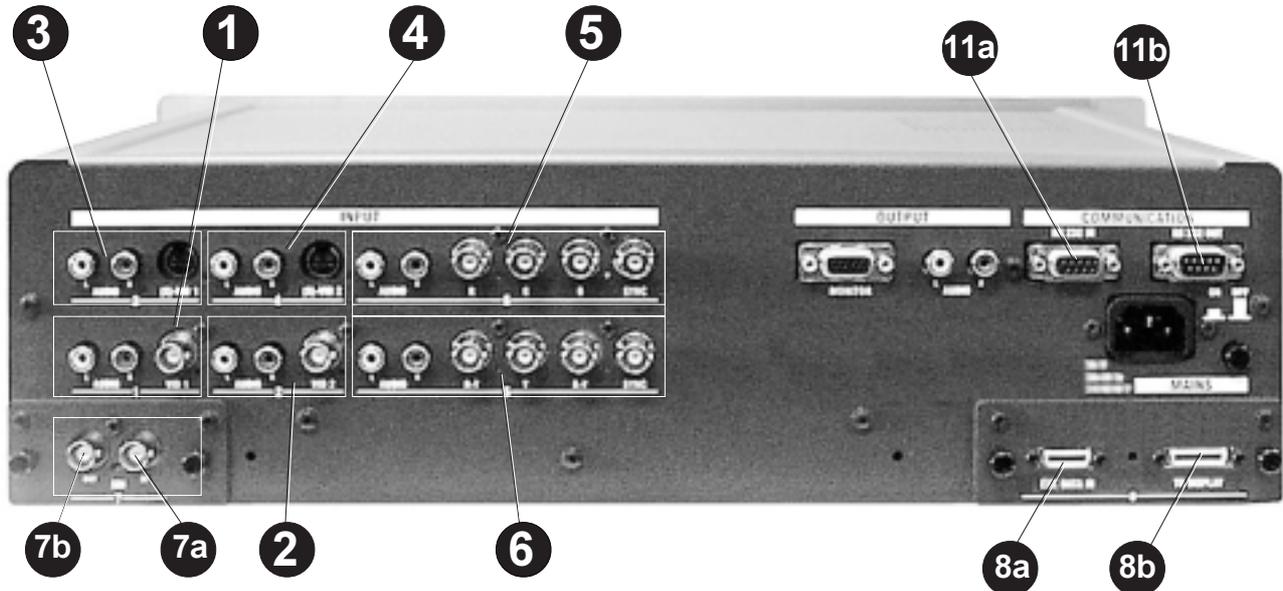
Used to initiate Power Up operation (Picture and Sound) or Power Down without Main Power Off.

## (9) IR RECEIVER

IR Receiver for the control signals transmitted from the IR Remote Control.

# Rear Panel Inputs

Describes the connections of the input sources, output signals to display and control signals.



## INPUT 1 (SELECTION 1)

### Video 1 (BNC)

CVSB:  $1V_{pp} \pm 3dB$  (0.7V Video+0.3V Sync) 75 Ohm termination

### Audio L & R (Cinch)

Input Impedance: 47kOhm

Input Level: max. 2Vpp

## INPUT 2 (SELECTION 2)

### Video 2 (BNC)

CVSB:  $1V_{pp} \pm 3dB$  (0.7V Video+0.3V Sync) 75 Ohm termination

### Audio L & R (Cinch)

Input Impedance: 47kOhm

Input Level: max. 2Vpp

## INPUT 3 (SELECTION 3)

### S-Video 1 (4-pins DIN)

Y:  $1V_{pp} \pm 3dB$  (0.7V Video+0.3V Sync) 75 Ohm termination

Note: Y-input can be configurated as Composite Video input

C(NTSC):  $0.286V_{pp} \pm 3dB$  75 Ohm termination

C(PAL):  $0.3V_{pp} \pm 3dB$  75 Ohm termination

### Audio L & R (Cinch)

Input Impedance: 47kOhm

Input Level: max. 2Vpp

## INPUT 4 (SELECTION 4)

### S-Video 2 (4-pins DIN)

Y:  $1V_{pp} \pm 3dB$  (0.7V Video+0.3V Sync) 75 Ohm termination

Note: Y-input can be configurated as Composite Video input

C(NTSC):  $0.286V_{pp} \pm 3dB$  75 Ohm termination

C(PAL):  $0.3V_{pp} \pm 3dB$  75 Ohm termination

### Audio L & R (Cinch)

Input Impedance: 47kOhm

Input Level: max. 2Vpp

## INPUT 5 (SELECTION 5)

### Component Video (BNC)

Ys: 1Vpp±3dB (0.7V Luma+0.3V Sync) 75 Ohm termination

Y (when using separate Sync): (0.7V Luma±3dB) 75 Ohm termination

R-Y: 0.7Vpp ±3dB 75 Ohm termination

B-Y: 0.7Vpp±3dB 75 Ohm termination

S: 0.3Vpp to 5Vpp 75 Ohm termination

### Audio L & R (Cinch)

Input Impedance: 47kOhm

Input Level: max. 2Vpp

## INPUT 6 (SELECTION 6)

### RGB (BNC)

Gs: 1Vpp±3dB (0.7V Luma+0.3V Sync) 75 Ohm termination

G (when using separate Sync): (0.7Vpp±3dB) 75 Ohm termination

R: 0.7Vpp ±3dB 75 Ohm termination

B: 0.7Vpp±3dB 75 Ohm termination

S: 0.3Vpp to 5Vpp 75 Ohm termination

### Audio L & R (Cinch)

Input Impedance: 47kOhm

Input Level: max. 2Vpp

## INPUT 7 (SELECTION 7)

### (7A) - SDI IN

525/625 interlaced

270 Mbit/s transmission

coax (75W)

Output Level: -65 dB <input level< +6 dB

## INPUT 8 (SELECTION 8)

### (8A) - DATA IN

External Data in

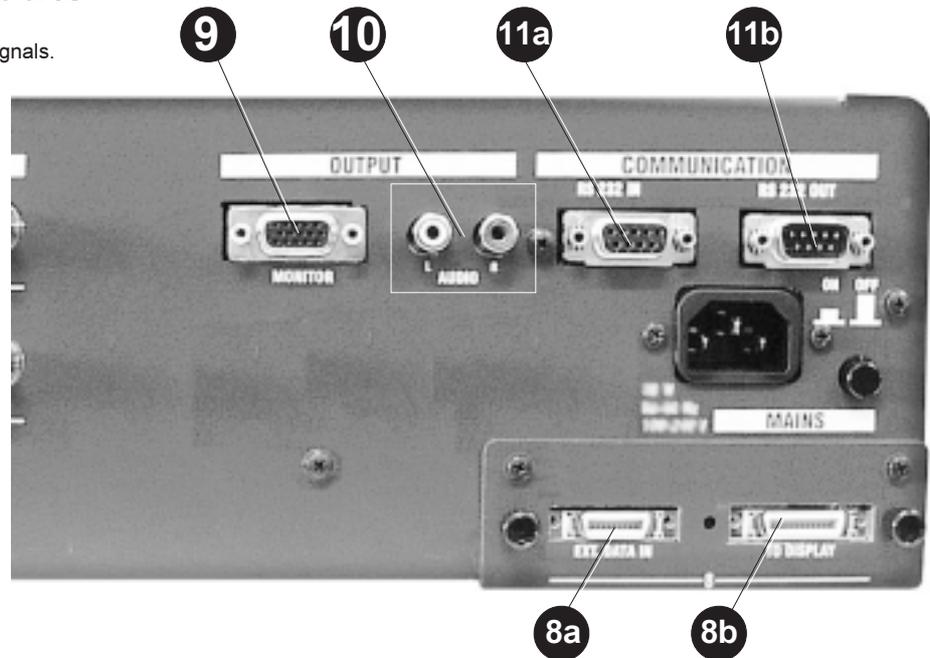
## INPUT COMMUNICATION PORT

### (11A) RS232 IN

Connection between the VSE40 and an IBM PC (or compatible) or MAC (RS232) for Remote computer control and Data Communication.

## Rear Panel Outputs

Describes the connection of output signals.



### OUTPUT DATA

(8B) - TO DELITE DISPLAY

### OUTPUT SDI

(7B) - SDI LOOP THROUGH

525/625 interlaced

270 Mbit/s transmission

coax (75 ohm)

Output Level: -65 dB <input level> +6 dB

### OUTPUT RGBHV (DD15)

(9) - RGBHV (DD15)

RED (75 OHM OUTPUT IMPEDANCE)

Default: 0.7 Vpp

Adjustable: 0.5Vpp to 1.0 Vpp via User interface

GREEN (75 OHM OUTPUT IMPEDANCE)

Default: 0.7 Vpp

Adjustable: 0.5Vpp to 1.0 Vpp via User interface

BLUE (75 OHM OUTPUT IMPEDANCE)

Default: 0.7 Vpp

Adjustable: 0.5Vpp to 1.0 Vpp via User interface

H/CS: TTL OUTPUT

Setup TTL-Level polarity via User interface

V: TTL OUTPUT

Setup TTL-Level polarity via User interface

### OUTPUT AUDIO (CINCH)

(10) - AUDIO L & R (CINCH):

Output Impedance: low Z

Output Level: -65 dB <input level> +6 dB

### OUTPUT COMMUNICATION PORT

(11B) RS232 OUT

RS232 Output Port allows a communication link for PC or MAC to the next Digitizer in chain.

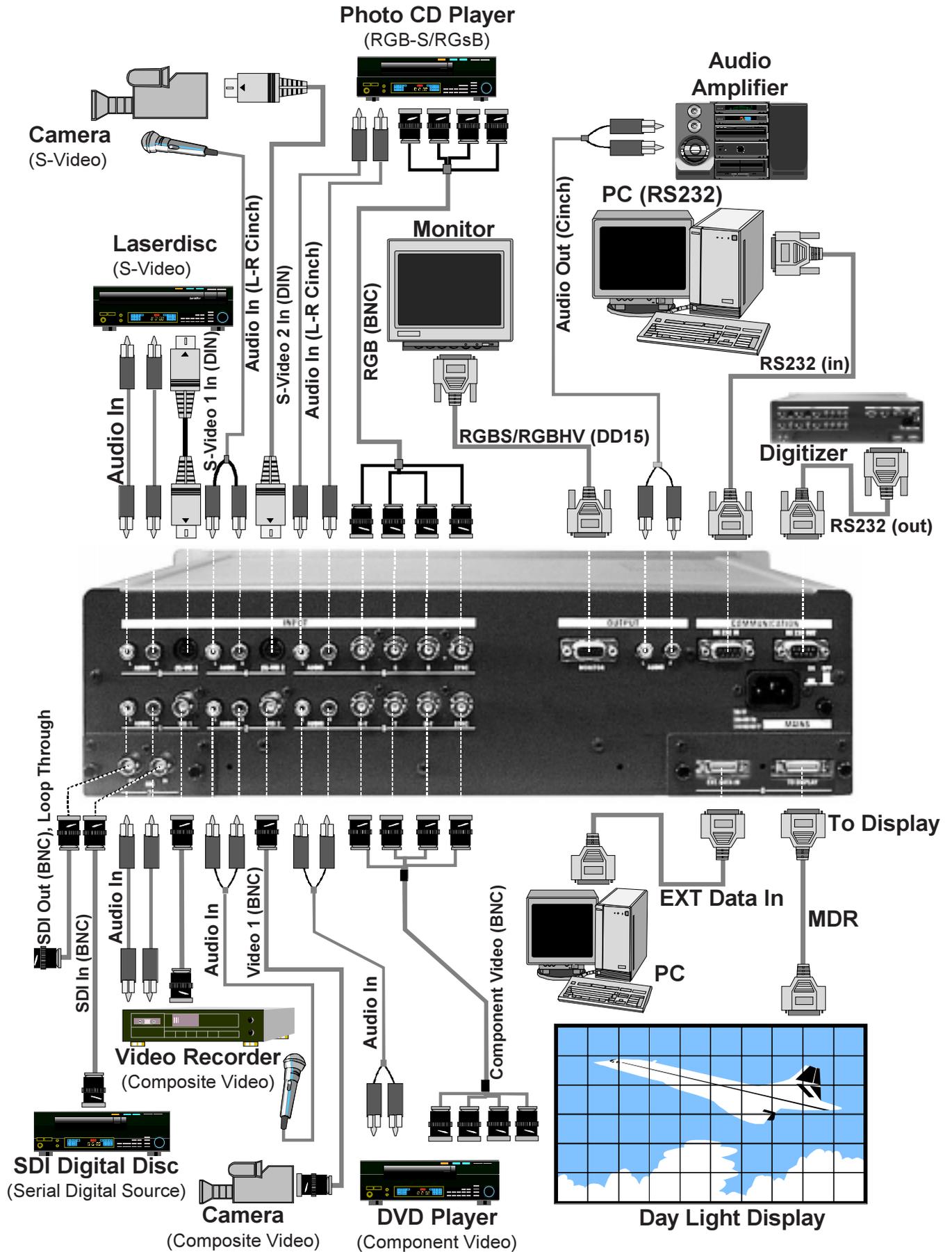
### POWER

(12A) AC POWER INPUT 100-240 V AC

50/60 Hz Auto ranging

(12B) - POWER SWITCH

# Connection Diagram



# Remote Control

## Functions keys of the IR Remote Control

### (1) MENU ARROWS

Not active

### (2) ADJ

Not active

### (3) TEXT

Not active

### (4) ADDRESS KEY (RECESSED KEY)

Used to enter the address of the Remote Control (between 0 and 9). To change the address of the RC, press the address key with a pencil followed by pressing one digit button, 0 to 9.

### (5) PAUSE

Not active

### (6) STBY

Stand-by button, used to initiate Power Up operation (Picture and Sound) or Power Down without Main Power off.

### (7) MUTE

Used to temporarily turn off the sound. To return to its previous level, press the key once again.

### (8) HELP

Not active

### (9) DIGIT BUTTONS

Used for direct source selection (1 to 8)

- |   |                       |
|---|-----------------------|
| 1 | Video 1               |
| 2 | Video 2               |
| 3 | (S)-Video 1           |
| 4 | (S)-Video 2           |
| 5 | YUV (Component Video) |
| 6 | RGB                   |
| 7 | SDI                   |
| 8 | DATA                  |

### (10) SOUND CONTROLS (GLOBAL CONTROLS)

Use these buttons to obtain the desired sound level and tone quality.

### (11) RC OPERATING INDICATION

A GREEN LED flickers when a button on the RC is pressed (RC battery check)

### (12) EXIT

Not active

### (13) ENTER

Not active

### (14) FREEZE

Used to freeze the displayed image (only active when Converter is set to 'ON').

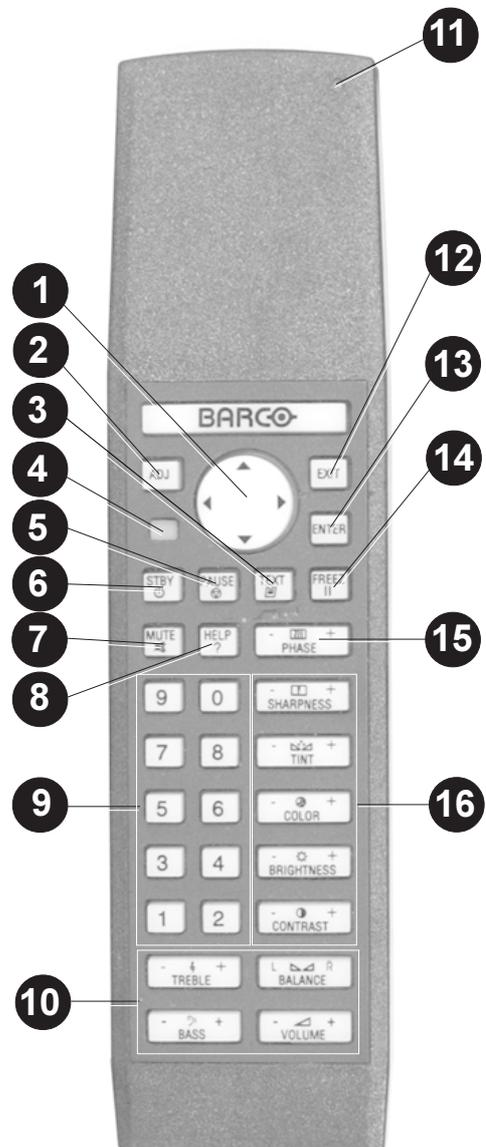
### (15) PHASE

Not active

### (16) PICTURE CONTROLS

Use these buttons to obtain the desired picture level.

- SHARPNESS
- TINT (NTSC only)
- COLOR (on RGB as well)
- CONTRAST (Not active)
- BRIGHTNESS

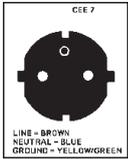


# Power Up/Down

## AC POWER (MAINS) CORD CONNECTIONS

This Digitizer has a built-in Power Supply which is **Autoranging from 100 to 240 V, 80 W, 1.2-0.7A, 50 - 60 Hz**. Use the supplied Power Cord to connect your Digitizer to the wall outlet. Plug the female power connector into the male connector on the rear side of the unit (A) and the male connector into the wall outlet.

### A. Mains lead (Power cord) with CEE 7 plug:



The wires of the mains lead are colored in accordance with the following code.

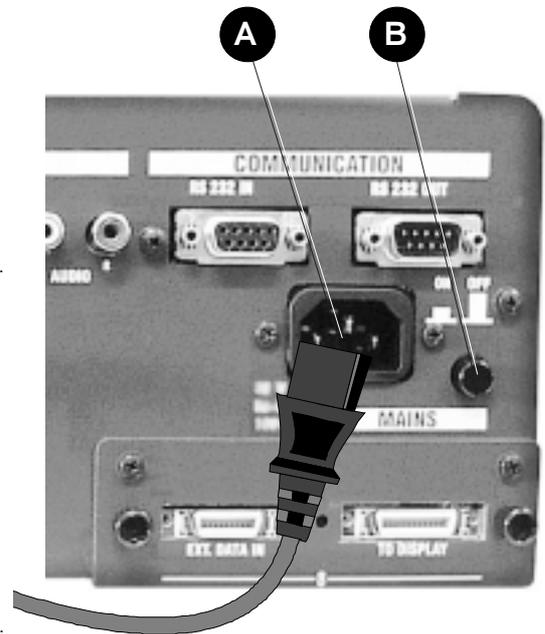
- Green and yellow: earth (safety earth)
- Blue: neutral
- Brown: line (live)

### B. Power cord with ANSI 73.11 plug:



The wires of the power cord are colored in accordance with the following code.

- Green/yellow: ground
- White: neutral
- Black: line (live)



**WARNING:** THIS EQUIPMENT MUST BE EARTHED (GROUNDED) VIA THE SUPPLIED 3 CONDUCTOR AC POWER CORD. If the supplied cable doesn't fit the mains outlet, consult your dealer.

**Important notes:** Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord. To disconnect the cord, pull it out by the plug. Never pull the cord itself

## SWITCHING ON/OFF

The unit is switched ON (Stand-by or Operation condition) and OFF using the Power (Mains) Switch On/Off <B> on the rear side, near the Power Supply input.

Switch pressed = the Unit starts displaying in the display the **info** of the last selected input source.

Switch not pressed = Unit totally switched off

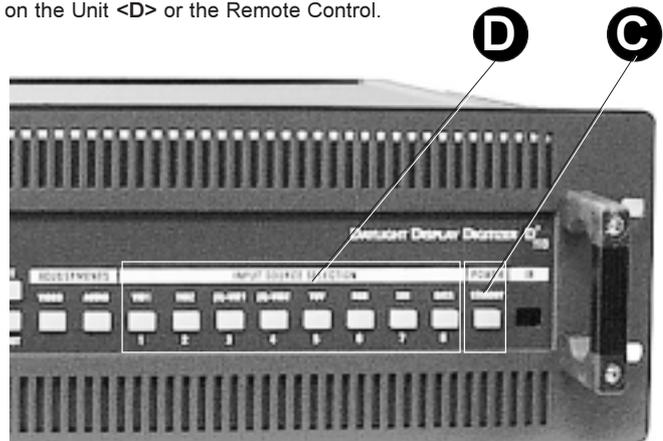
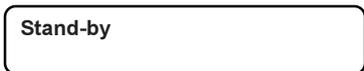
- 1 SOFTWARE VERSION X.XX  
BPS DAYLIGHT DISPLAYS
- 2 5: Component Video  
Type: R-Y/Ys/B-Y

## SWITCHING TO STAND-BY/OPERATION

To switch the unit to Stand-by mode, press the Stand-by key <C> on the front panel of the unit or the STBY key on the Remote Control. In the display appears the indication '**Stand-by**' and the button light, behind the Stand-by button on the front panel of the unit lights up. Return to picture display/sound playback:

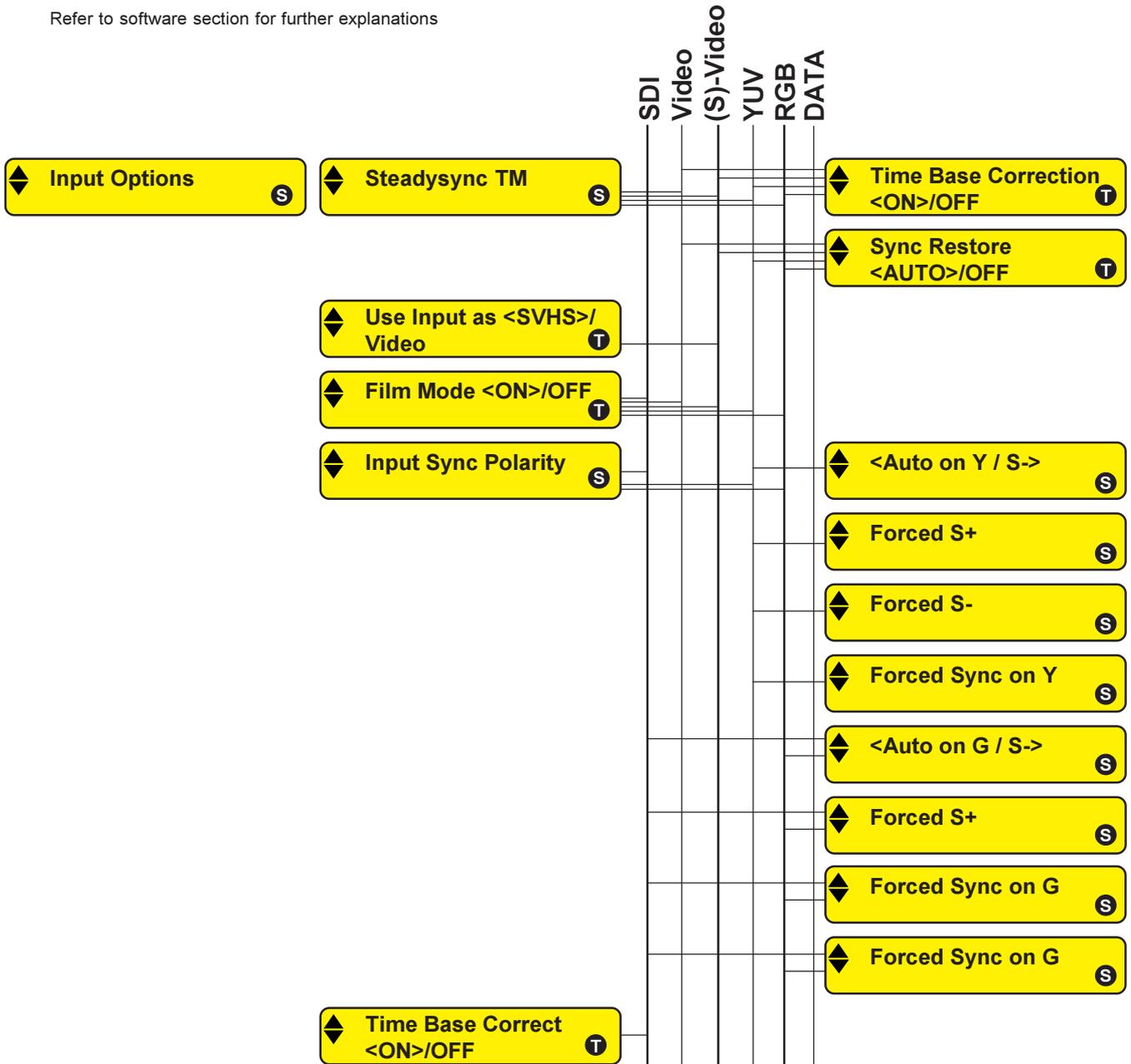
On the last selected input source: press once more the Stand-by key on the unit <C> or the remote control to restart.

New input source: press the respective input selection digit button on the Unit <D> or the Remote Control.



# Overview Menu Structure

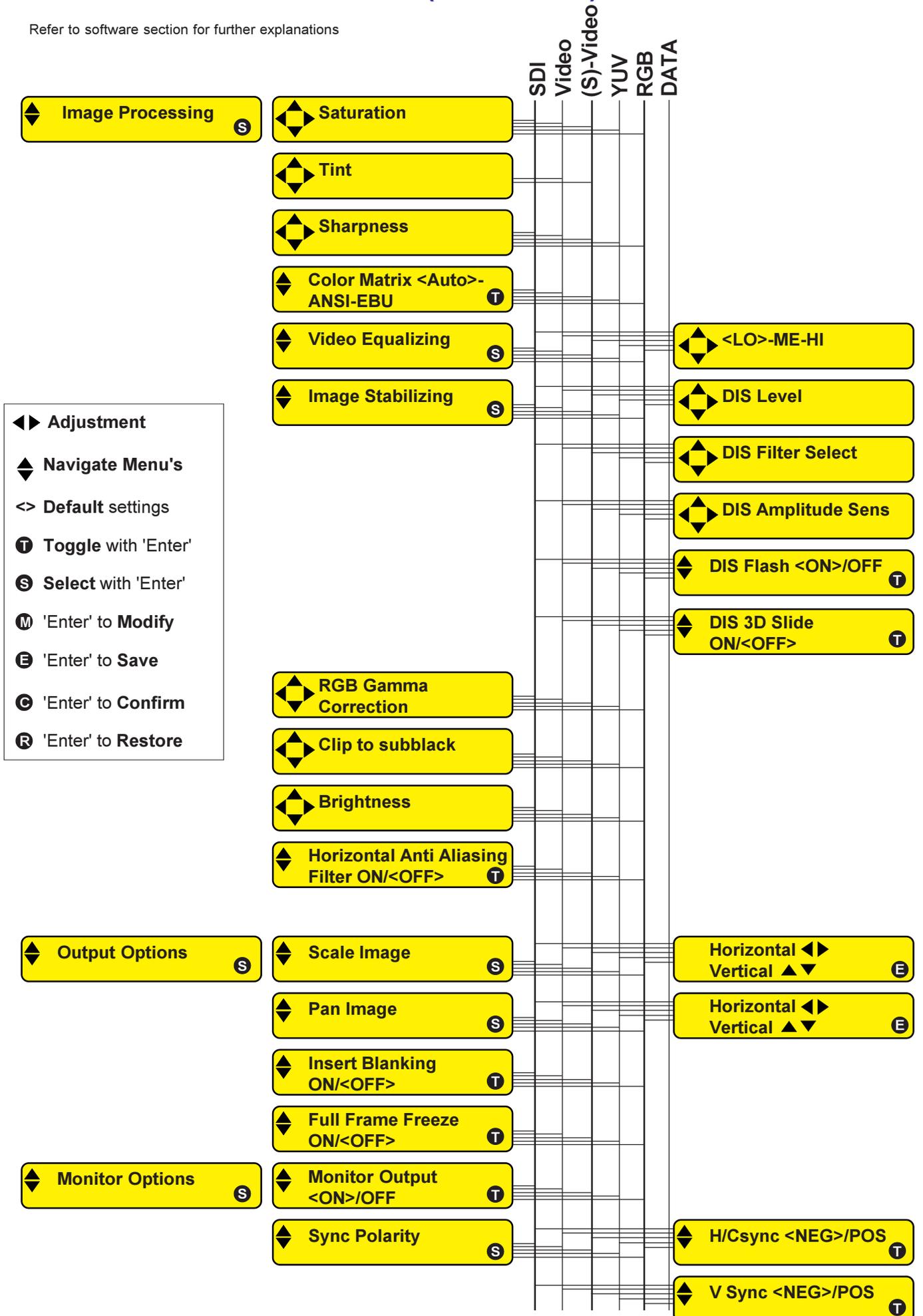
Refer to software section for further explanations



- ◀▶ Adjustment
- ◆ Navigate Menu's
- ↔ Default settings
- T Toggle with 'Enter'
- S Select with 'Enter'
- M 'Enter' to Modify
- E 'Enter' to Save
- C 'Enter' to Confirm
- R 'Enter' to Restore

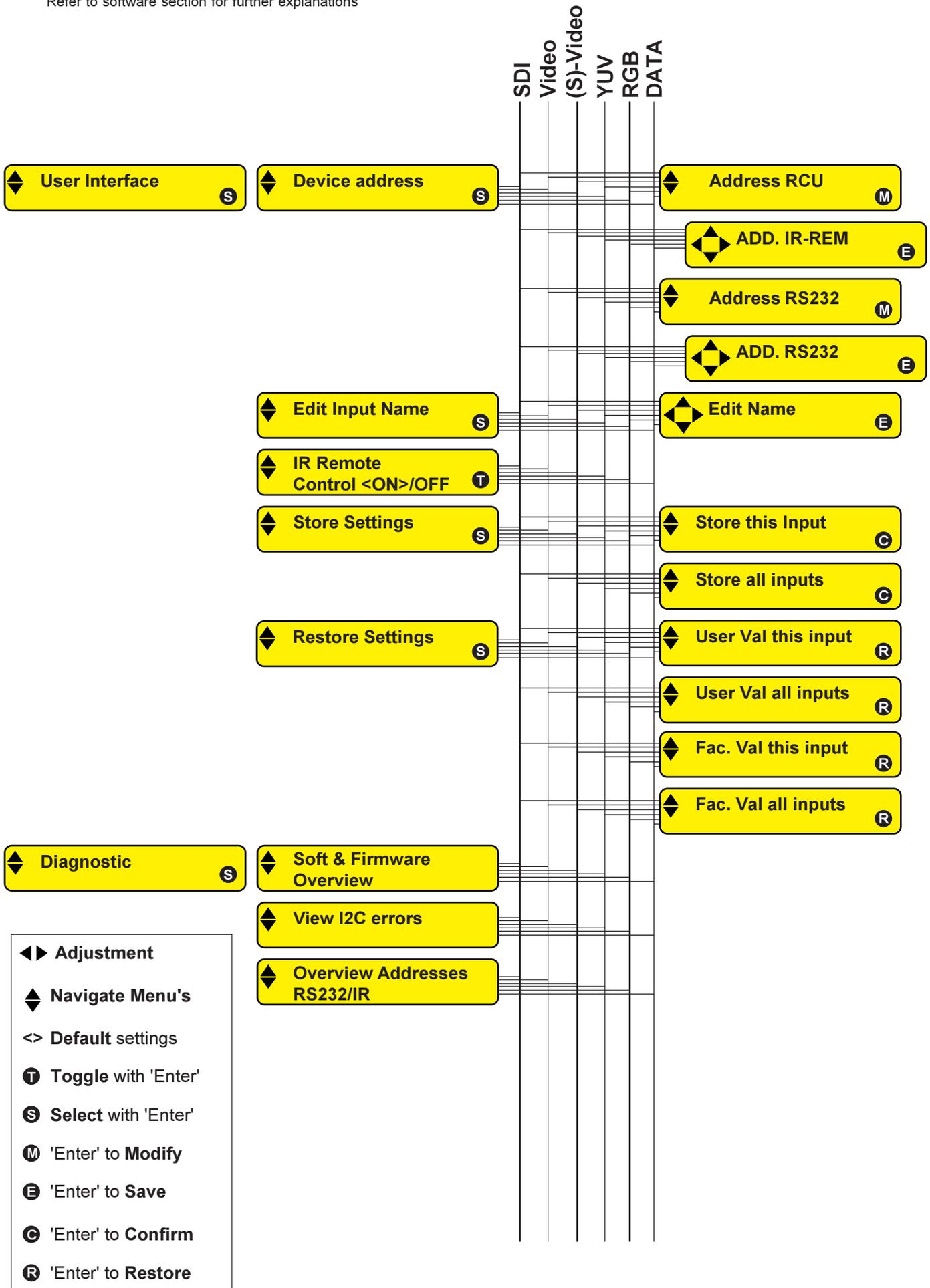
# Overview Menu Structure (continued)

Refer to software section for further explanations



# Overview Menu Structure (continued)

Refer to software section for further explanations



# Overview Menu Structure (continued)

Refer to software section for further explanations

