

Display Studio 2011

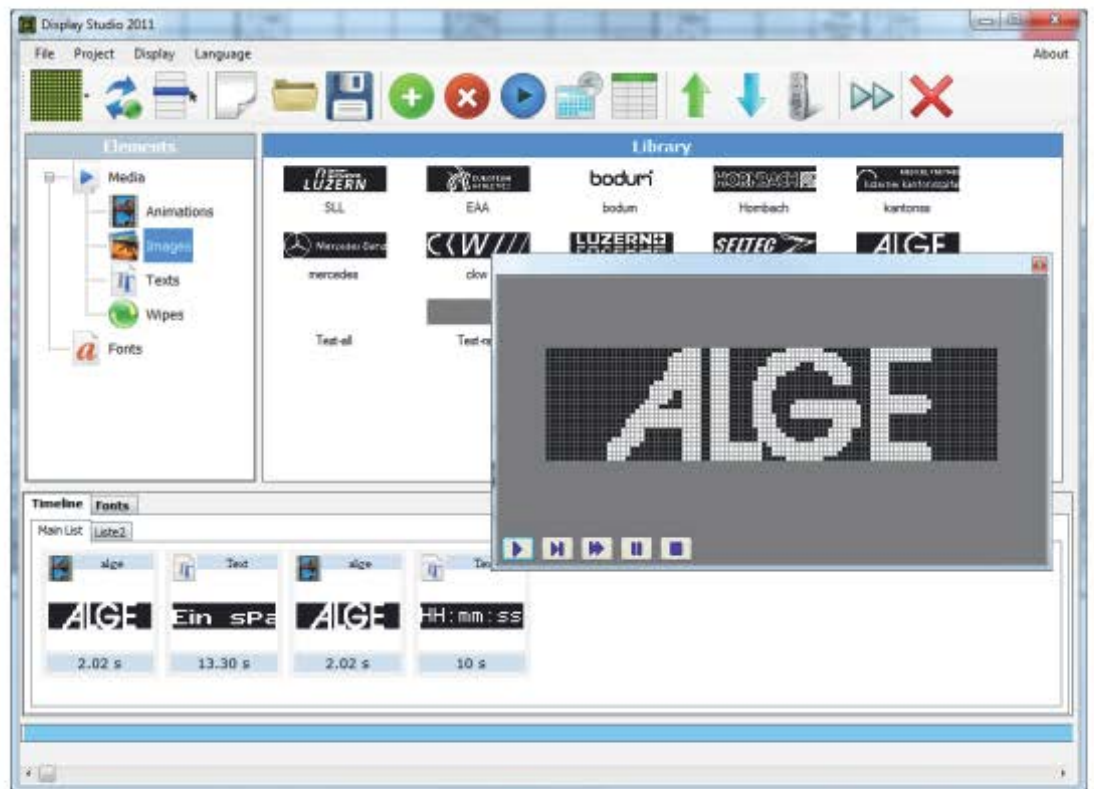


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1 Compatibility with older versions

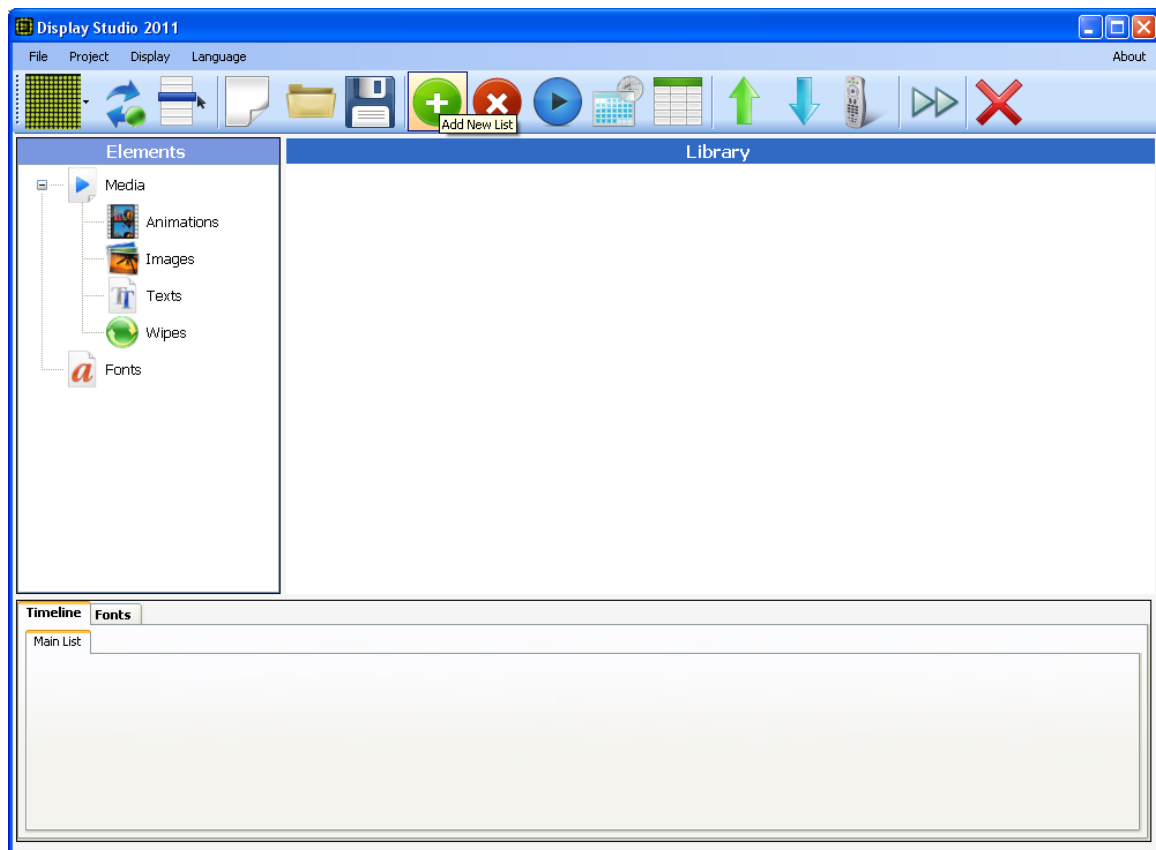
Before starting the manual user should be notified about compatibility with older versions of the Display Studio. Displays with the newer embedded software will be compatible with older versions of the Display Studio 3.xx until July 2011. That means that older DDS files will be usable for the displays released until this date. New Display Studio 2011 is compatible with older versions of displays, so the user can upload and download DDS files built with new Display Studio 2011. With new Display Studio 2011 user can download display content uploaded with older version of Display Studio such as 3.xx and lower.

2 Getting started

Display Studio 2011 application is intended for design of textual and graphical information that will be displayed via LED displays. There is also a preview or simulation, so user (designer) is fully independent of real display. Prior to making display project, if display is connected to PC, it is recommended to connect to display using option Get from display as described in [Connecting to Displays](#), so display properties (pixel width, pixel height etc.) will be used from display. In case DDS file made for current display is opened, display properties are also updated. Otherwise, display properties should be manually set.

2.1 Main Window

After Display Studio 2011 is opened, it starts with blank project. Project encapsulates the whole variety of data that could be displayed on LED displays. Project file format has extension dds. User can load previously saved project using **File/Open**, or via  toolbar button. Picture below shows application main window just after launching. Workspace is divided to Elements tree view which is used for selecting type of media or fonts, Library containing media of each type and Project time line and Font containing lists and fonts used in project.



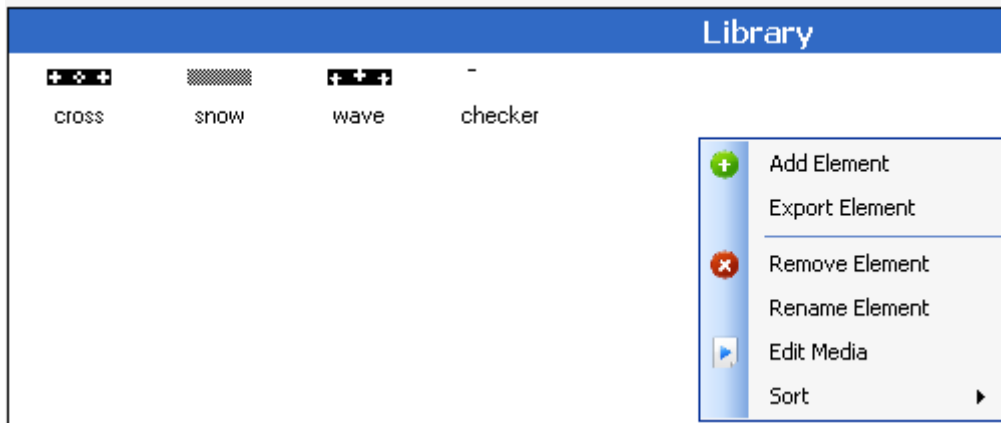
2.2 Elements

As was mentioned earlier, tree view on the left-hand side of the main window is intended for navigation through the content that is stored in the library for use with display. Project data categorization could be described as:



- **Animations** – all animations in the library.
- **Images** – all images in the library that can be used as static images.
- **Texts** – text elements for displaying all kinds of text (static, rolling, date, time, temperature)
- **Wipes** – all wipes currently assigned to project. A purpose of a wipe is an effective animated transition from previous image into new image. When user inserts a wipe between two elements, whether it was animation or textual element, this will make transition effect into the first frame of next element. A series of frames of this animated transition is defined using the rule that white pixels mark pixels from previous image that will be shown and black from new image. In other words, wipe, as we see it as a standalone animation, is a wipe from white to black.
- **Fonts** – all fonts added to the library

2.3 Library

User can see library content in the Library. Elements are inserted in the selected list of the time line bar by double clicking on the desired element or by dragging and dropping it. To insert new media or font to the library user should right click on the library window and select **Add Element** property or by drag and drop from other window. Media or font can also be **exported, removed, renamed and edited** by using appropriate options from context menu strip.



3 Lists

Time line and fonts bar are located in the bottom of the window. The time line contains the lists with content that is going to be uploaded to display. Each list contains elements. New project contains one blank list, **Main List**. New lists are added using menu option **Project/Add New List** or by clicking the icon . Selected list is removed by using option **Project/Remove List** or by clicking on icon . Also by right clicking on list name there is menu shown for **adding, removing and renaming** of lists. List can also be renamed by double-clicking on list name. Adding elements from the library to the list is done by double clicking on the element or by dragging and dropping it in the desired position in the list. The position of the element in the list defines the time when the element is going to be displayed. The order of the lists can be manipulated by dragging the list to the desired position. Each element can be edited by opening properties window or removed from the list.


3.1 Populating the list

As we mentioned, the list is populated with elements from the library. User, when adding elements, enters the properties of the element such as: duration, frame rate, loop, and other functions. If user needs to reorder the elements added to the list it can be done by dragging the element to the desired position. Also there are cut, copy, paste and delete options from context menu strip or by classic keyboard commands (Control + X, Control + C, Control + V and Delete).


3.1.1 Text elements

Text elements are intended for displaying text information, like static text, rolling text, current time, date, temperature etc. Element properties are shown when placing the text element in the list or by double clicking on the text element in the list or by right-clicking from menu choosing option **Properties**. Text element properties are:


Add Background  - adds a background image for the text that is displayed behind the text.


Remove Background  - removes the background image

Add Text  - adds a text to display

Add Time  - shows the time on display

Add Date  - shows the date on display

Add Temperature  - shows the temperature on display

Remove Object  - removes object from display

Center Object  - center object to middle position of display

Zoom plus  - zoom in display pixels

Zoom minus  - zoom out display pixels

Name – Name of element

Duration – Duration of the element appearance on the display (in 100ms), i.e. Duration = 10 means that element is going to be displayed 1 sec.

Loop - define how many times the element will be displayed

Loop after wipe – If there is wipe before this element, wipe will also be displayed before element.

Because of the possibility of the text element to have multiple texts, every text has its own property that is editable by clicking on the text that needs to be configured. Texts properties are:

Text – Current text that needs to be displayed. User can write any text in this field.

Font – Font of the current text. The property is displaying only fonts inserted in font list.

Zoom - Represents text zooming and takes integer values between 1 and 4.

Left and Top – Defines the position of the text relative to upper left corner. Properties **Left** and **Top** can be changed by dragging and moving object in the panel view.

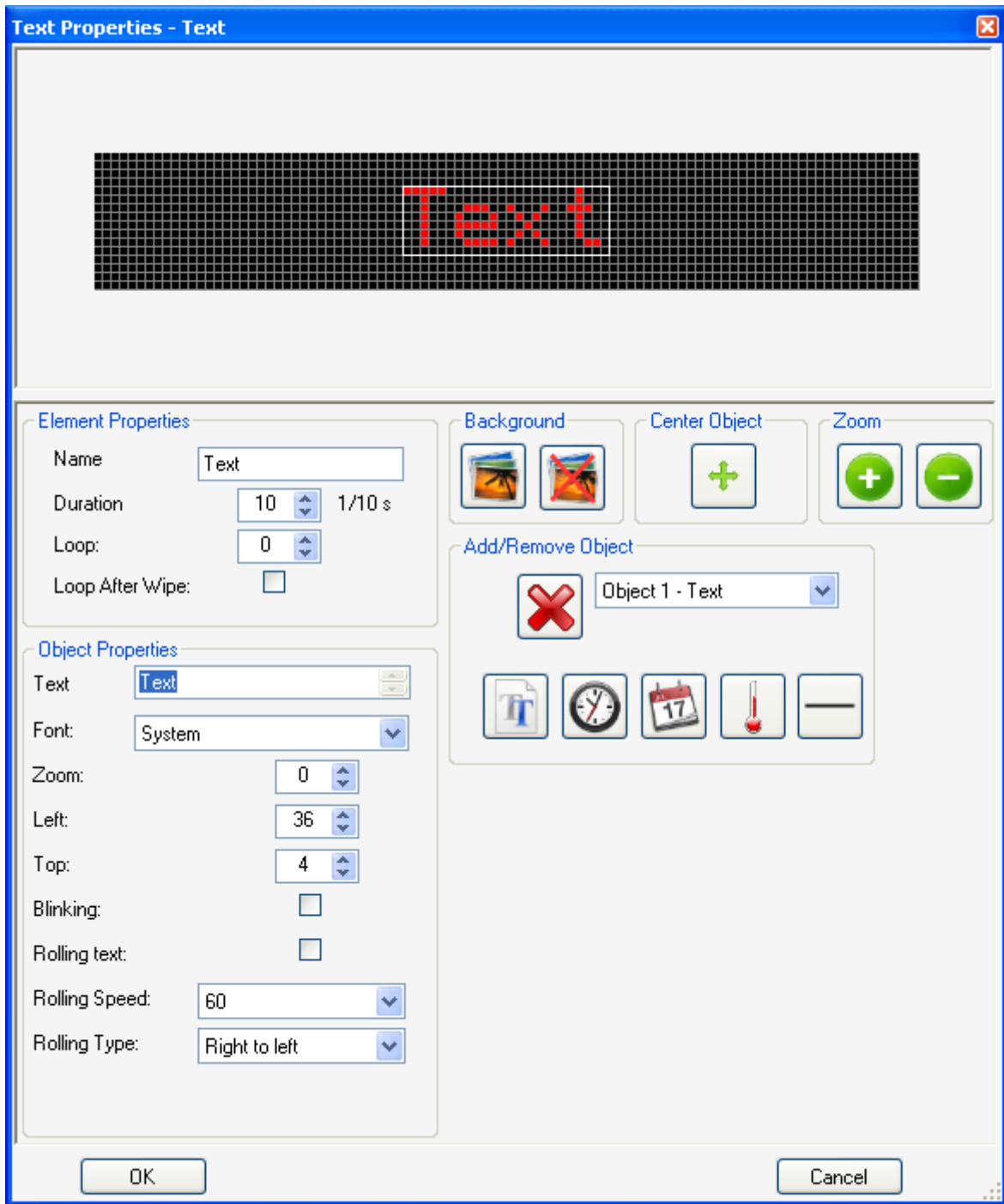
Blinking – if property is on, text will appear for the time defined by Duration property and disappear for the same amount of time.

Rolling text – if checked, text will roll.

Rolling speed – rolling speed in frames per second

Rolling type – choose from roll right to left, left to right etc.

User can place the text at desired position of display by moving the object. Also there is a **Center Object** button that can automatically position text in the center.

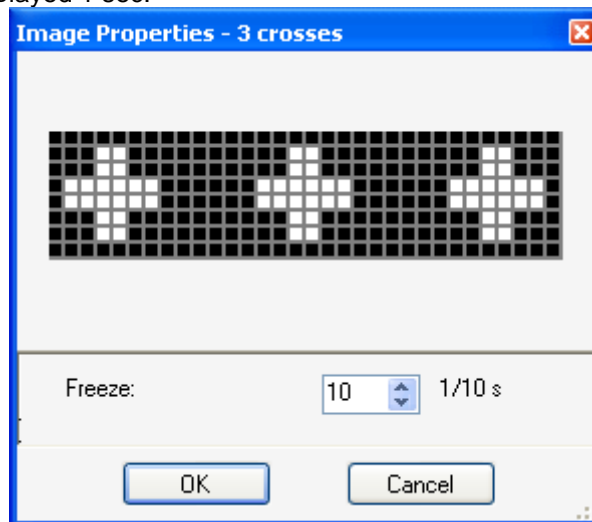


3.1.2 Image elements

Image elements are used to display a static image on the display. User can insert the image elements to the Timeline by double clicking on the element in the library list, or by dragging and dropping it to the desired location. User can insert new image elements to the library by selecting the Image from the elements tree, right clicking in the library window and clicking on the **Add Element** property or by drag and drop from other window. Supported formats are .bmp, .jpg, .png and .gif. There is always the conversion from color to black&white performed when the image is imported, so user can use color images also. Element properties are shown when placing the image element in the list.

The parameters defining the inserted image element to the list are:

Freeze – Duration of the element appearance on the display (in 100ms), i.e. Freeze = 10 means that element is going to be displayed 1 sec.



3.1.3 Animation elements

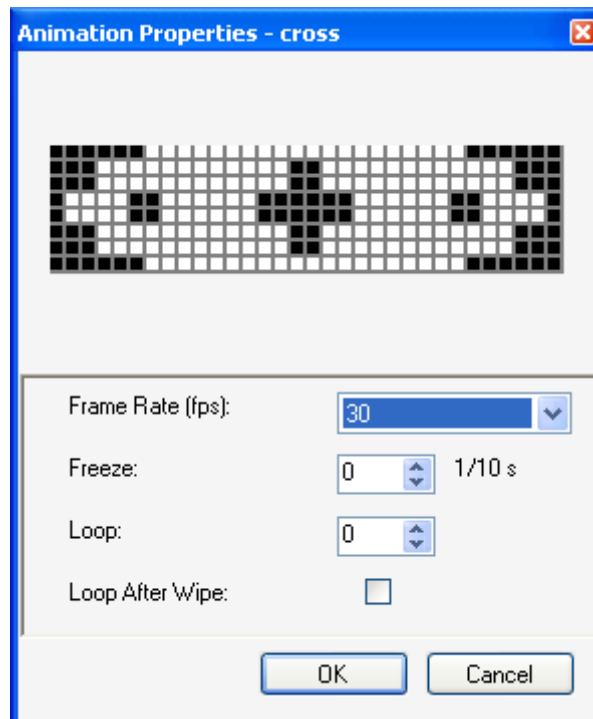
Animation elements are used for displaying animation. User can use animation from the library, or can import existing animation from file (avi and gif file format). This is done by right clicking in the library window and selecting the **Add Element** property or by drag and drop from other window. Same as image importing there is conversion from color to black&white so user can use color animations also. Inserting animation in the list is done in the same way as other elements. Animation element properties are:

Frame rate (fps) – playing speed in fps (frames per second)

Freeze – duration of last frame in tenths of a second

Loop - define how many times the element will be displayed

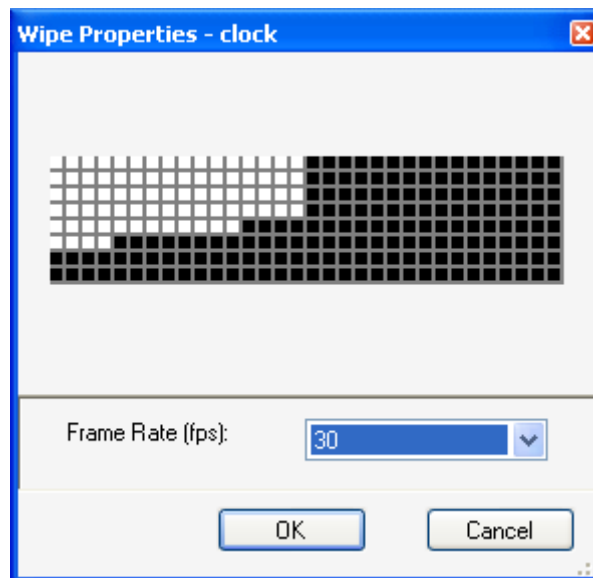
Loop after wipe - If there is wipe before this element , wipe will also be displayed before element



3.1.4 Wipe elements

A purpose of a wipe is an effective animated transition from previous image into next image. When user inserts a wipe between two elements, the last frame from previous element, whether it was animation or textual element, will make transition effect into the first frame of next element. A series of frames of this animated transition is defined using the rule that white pixels mark pixels from previous image that will be shown and black from new image. In the other words, wipe, as we see it as a standalone animation, is a wipe from white to black. Inserting the Wipe in to the library is the same as inserting animation element. Adding the wipe in to the list is somehow different from the adding ordinary element, because of the fact that user cannot insert wipe at the end of the list, or insert two wipes in the row. Valid insertion of the wipe is only between two elements.

The property of the Wipe element is **Frame rate (fps)** that defines the wiping speed in fps (frames per second).



4 Fonts

4.1 Adding fonts to the library

User can import fonts from DNT file to the library by selecting the font element from the element tree, right clicking on the library window and selecting the **Add Element** property or by using drag and drop from other window. When fonts are present in the library use needs to add them to the Font list so these fonts can be used for texts inserted in the list. Fonts in library can be reordered, removed, renamed and edited.

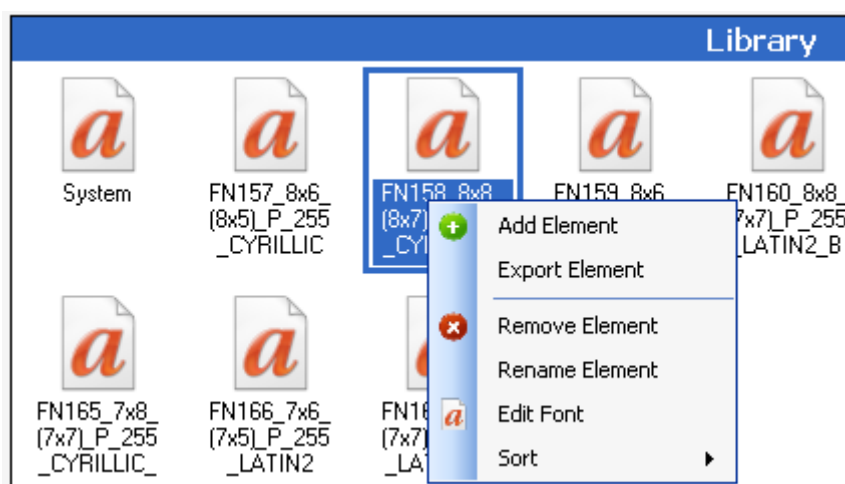
4.2 Font list

Fonts added to the Font list can be used for building texts in the text elements. Fonts in font list can also be reordered and removed.



4.3 Font editor

Font editor is used for editing of fonts. With right mouse click on font element in library, select **Edit Font**. New window will appear, called **Font Editor**.



From the **File** menu, there are several options:

Compare Fonts – for comparing two fonts

Save Font – overwrite current font

Save Font as new – save current font as new with different name

Rename current font – change name of the current font

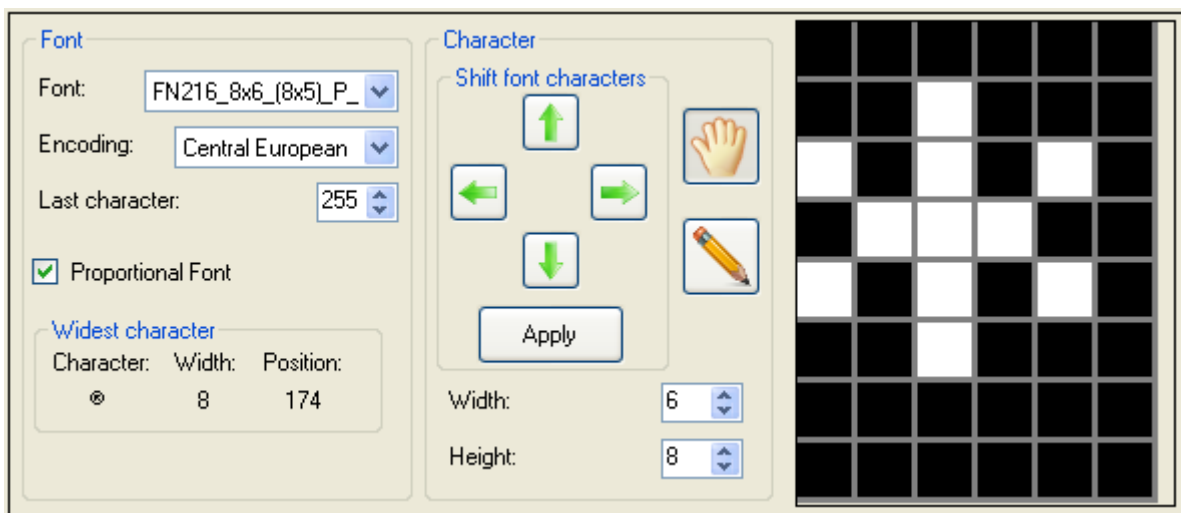
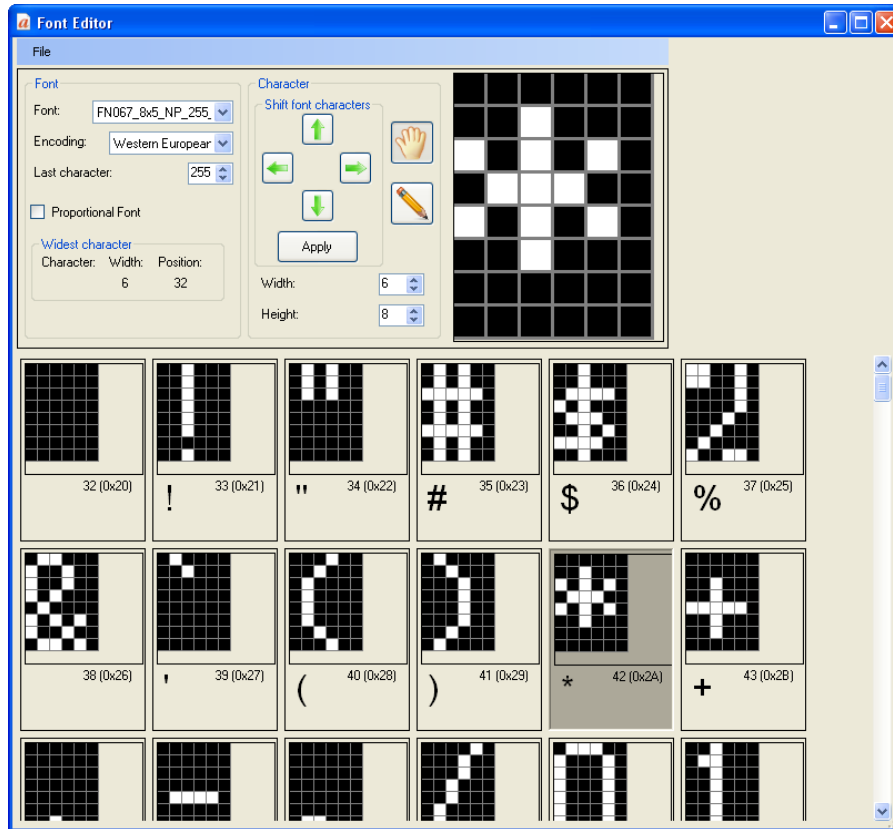
Delete current font – delete current font from library

Import Dnt font – Import font in dnt format. (dnt is unique file format for bit-mapped fonts. Every font that is created with Display Studio is saved in dnt format).

Import Windows font – import existing font from installed Windows fonts.

Export dnt font – export current font as dnt file.

Exit – close Font editor.



There are several options for current font.

Font – select font for editing, only dnt format

Encoding – choose Windows encoding, standard software support Central European, Cyrillic, Western European, Greek, Turkish, Hebrew, Arabic, Baltic and Vietnamese encoding.

Proportional - if this option is checked, font will be proportional, which means every character can have different width, if this option is not checked, font is unproportional, meaning all characters have equal width.

Width – width of font character (if not proportional, all characters have equal width)

Height – height of all font characters

Last character – set number of characters in font, can be from 0 to 255

Shift font characters – there are four arrows: Up, Down, Left and Right. On every left mouse click on one of arrows, all characters from font will be shifted in direction set by arrow direction. When font shifting is finished, just click **Apply**.

Widest character – describes the widest character in current font and its width and position.

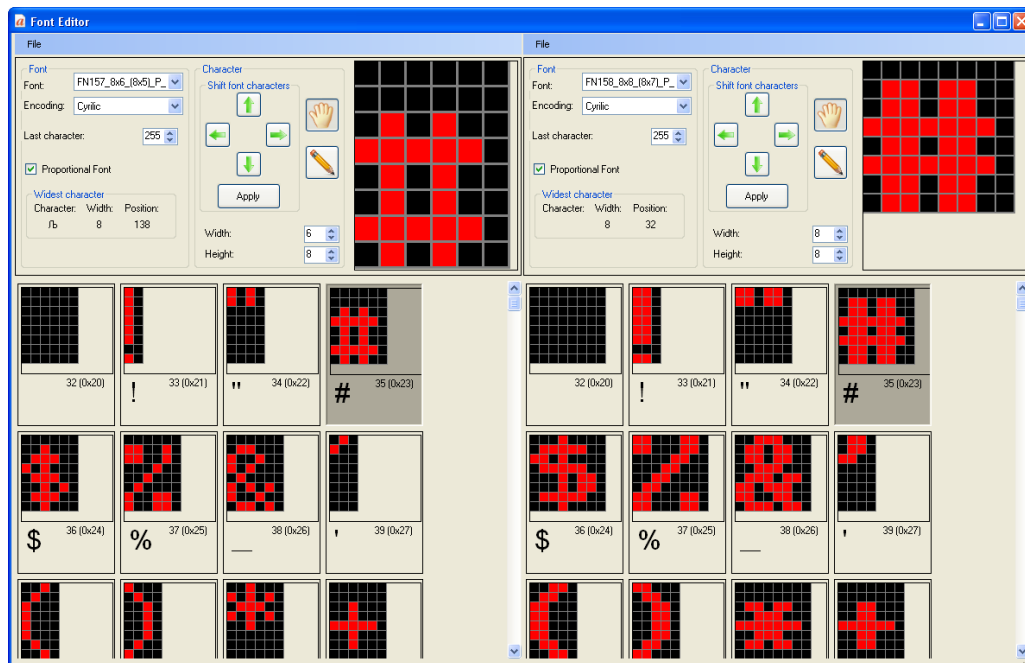
Character preview and drawing field – when you click on some character, it will appear in this field. You can edit every character in this field, using Hand and Pencil.

Hand – when selected, you can move whole character in all directions.

Pencil – when selected, with left mouse click you can add pixels to character, with right mouse click you can delete pixels from character.

Bellow each character is its unique sign, showing how that character looks in chosen encoding and also its decimal and equivalent hex number in the font.

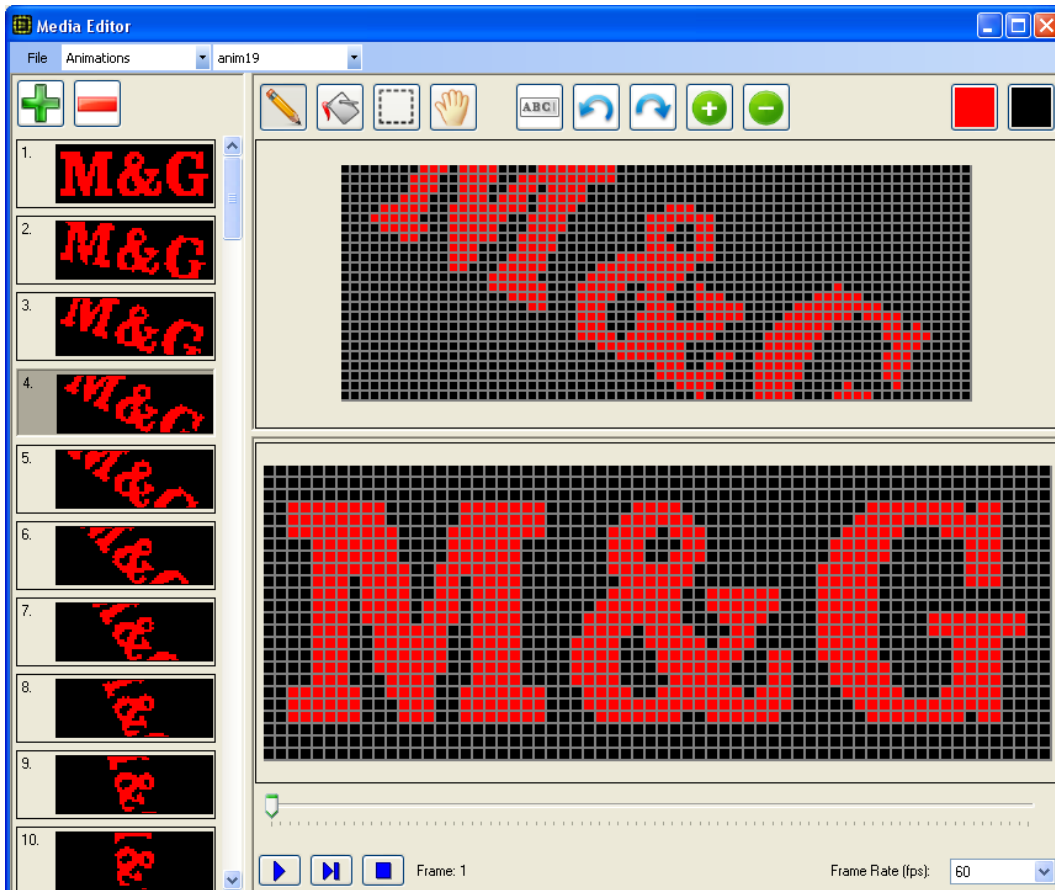
4.3.1 Comparing fonts



User can compare two fonts by selecting **Compare Fonts** from **File** menu. Option **Scroll fonts simultaneously** is automatically selected so both fonts are scrolled at same time so user can see corresponding characters all the time.

5 Media editor


For editing library elements, such as Animations, Images and Wipes, user can open Media Editor from menu Project->Media Editor or by right-clicking on the element that needs to be changed and selecting Edit Media.

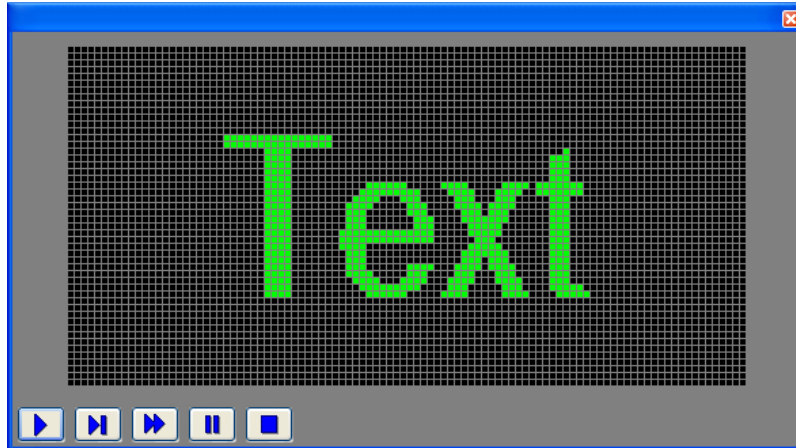


In the Media Editor menu user can select the type of media (Animations, Wipes or Images). After choosing media type user can select existing media from the library, make new media or import media. Also media can be saved after editing over old one or as new, renamed or deleted. Media can be also exported to corresponding format (jpg and bmp for images, avi and gif for animations and wipes). Work space has 3 areas.


1. Area on the left shows list of all frames of current media. Plus and minus buttons are for adding and removing of frames. When user clicks on + button blank frame is added after current frame. When clicked on – button all selected frames are removed. One frame is selected by clicking on it, multi frames are selected by holding Shift keyboard key and clicking on first and last frame so all frames between are selected. Right clicking on frame gives context menu strip with functions cut, copy, paste and delete. There are also **Export frame as Image** for exporting selected frames to selected folder as images and **Import image as frame** for importing images to frame list after selected frame.
2. Lower area is for real-time preview of media and has play, frame by frame and stop buttons and also a slider for changing current frame for preview. There is a frame rate selection for preview.
3. Upper area is for frame editing. There are basic functions for picture editing such as drawing (pencil icon), fill (bucket icon), selection of area of frame for copying, cutting or moving (selection icon), move selected area (hand icon), draw text (text icon), undo and redo functions and zoom in and zoom out. In upper right part of area there are two buttons which shows the current colors of display. The left color is associated with left mouse button and right with right mouse button. So if user wants to draw with left color user should use left mouse button and if want to fill area with right color, right mouse button needs to be used.

6 Preview

Trough the building process of the content that needs to be uploaded to the display user can always preview content by clicking on the icon  from toolbar. There are standard buttons for playing of preview (play, frame by frame, skip, pause and stop buttons).



7 Connecting to Displays


For establishing communication with the display, basic project parameters must be set. Because of the fact that Display Studio 2011 can communicate to more than one display simultaneously, user should first select the display mode of communication by clicking on the icon . There are three display modes:

Single Display – communicating with single display only

Split Display – user can stack smaller displays with equal resolutions to build larger one.



Multi Display - user can upload same content to more displays at once.

After choosing the working display mode user should set connection type and the display properties by going to **Display/Connect to Display** or clicking on the icon .

7.1 Single Display mode

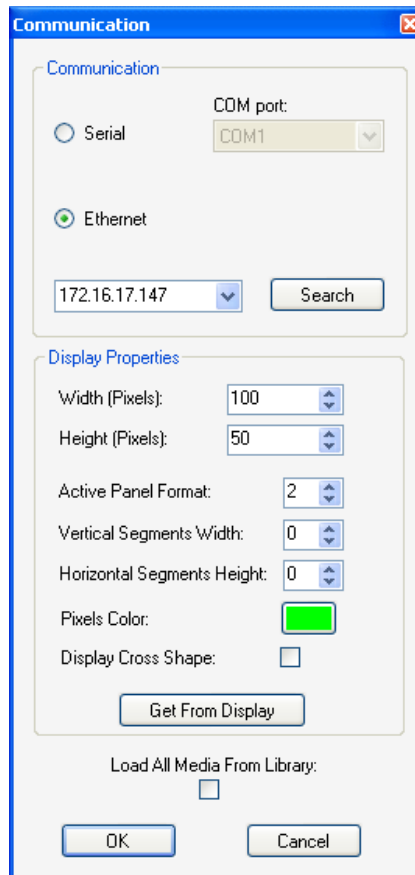
In this mode content is going to be uploaded only to one display. After entering Display properties user can set following options:

Serial Port - communication via serial port, form drop down list choose COM port.

Ethernet (LAN) – communication via Ethernet (LAN) , where user can search for the available displays connected to LAN by pressing **Search** button

Display IP address – user can choose IP address of device from combo box after pressing **Search** button.

Get from display – automatically reads properties from display and sets properties to match connected display. Properties are display width, height and active panel format. Also if specified, width of vertical segments, height of horizontal segments, color of display pixels and shape of display which can be rectangle or cross. User can also set properties as desired.



7.2 Split Display mode

Split Display mode gives user ability to build a higher resolution display by combining few smaller displays. Uploading content in this mode is only available for displays connected to LAN. When entering the display properties user can set following options:

Search Display – search for the available displays on the LAN

Display matrix section:

Vertical Displays – sets the number of vertical displays

Horizontal Displays – sets the number of horizontal displays

Effective Display Section:

Number of displays – number of displays selected

Effective Resolution Section:

Width – Width in pixels of the all displays combined

Height – Height in pixels of the all displays combined

Display Addresses section:

In this field user is setting appropriate addresses for every display that is part of split display

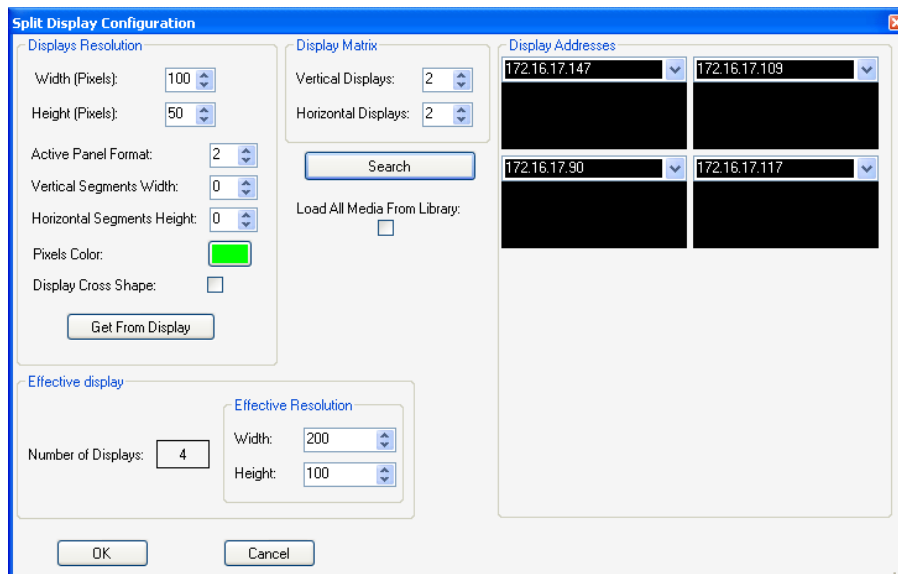
Display Resolution section:

This section describes common properties for each display that is part of split display.

Width – Width in pixels of each display

Height – Height in pixels of each display

Get From Display - automatically set display width and height to match connected display. Also if specified width of vertical segments, height of horizontal segments, color of display pixels and shape of display which can be rectangle or cross. User can also set properties as desired.



7.3 Multi Display mode

Multi Display mode gives user ability to upload same content to more displays at once. This mode is also working with displays connected to LAN. When entering the display properties user can set options related to display:

Search – search for the available displays on the LAN

Number of displays – number of displays selected

Display Addresses section:

In this field user is setting appropriate addresses for every display.

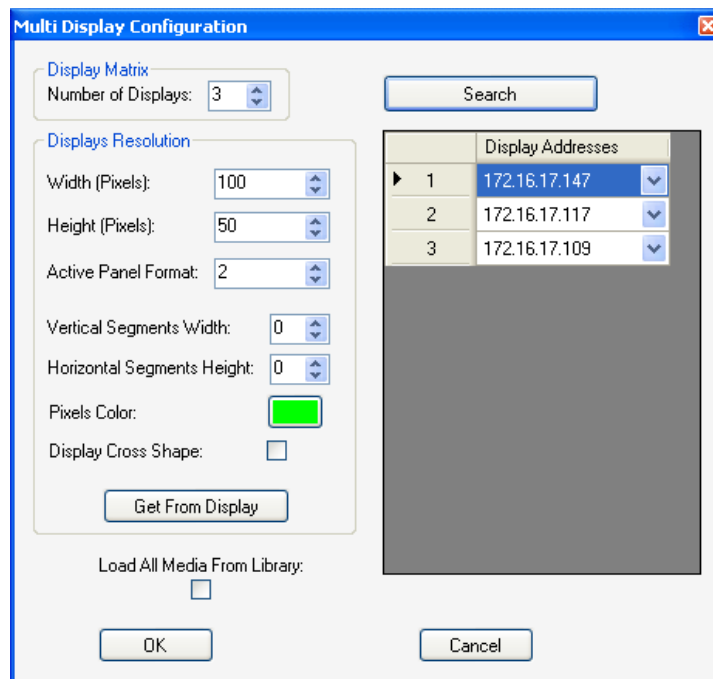
Display Resolution section:

This section describes common properties for each display.


Width – Width in pixels of each display

Height – Height in pixels of each display

Get From Display - automatically set display width and height to match connected display. Also if specified width of vertical segments, height of horizontal segments, color of display pixels and shape of display which can be rectangle or cross. User can also set properties as desired.

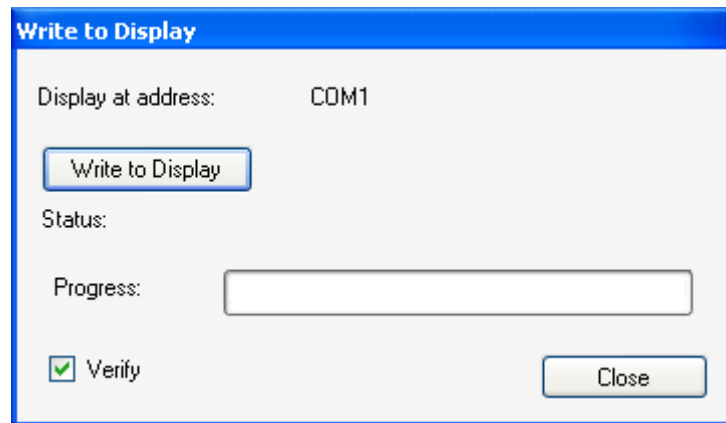


7.4 Write to display(s)


Loading content into display is launched by option **Display/Write to Display(s)** or by corresponding toolbar icon .

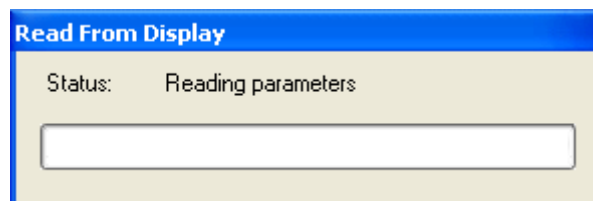
Write to Display – starts writing project to display.

Verify – upon uploading the display, if this option is checked, uploaded content (in display memory) is verified (compared) with uploaded project from Display Studio 2011.



7.5 Read from display(s)

To load content from display(s) start option **Display/Read from display(s)** or by corresponding toolbar icon .



8 Remote control

Remote control is used for controlling real LED display. It has following functions:



Play - starts playing

Stop – stops playing and turns display off

Pause - Pauses playing

Frame by frame – toggles frame-by-frame playing mode. When this mode is on, clicking on **Play** command shows next frame.

Skip – skips to next panel

Reset – Reset the display.

Insert list – Insert selected list, when list is finished, playing continues with active list

Set list – sets selected list as active

Set time – adjusts display time to PC time

Remote control is activated with **Display/Remote control** or by  button on taskbar.

9 List scheduler

User can define time/date of list activation using list scheduler option (**Project/Scheduler**).
 Procedure for scheduling lists is:

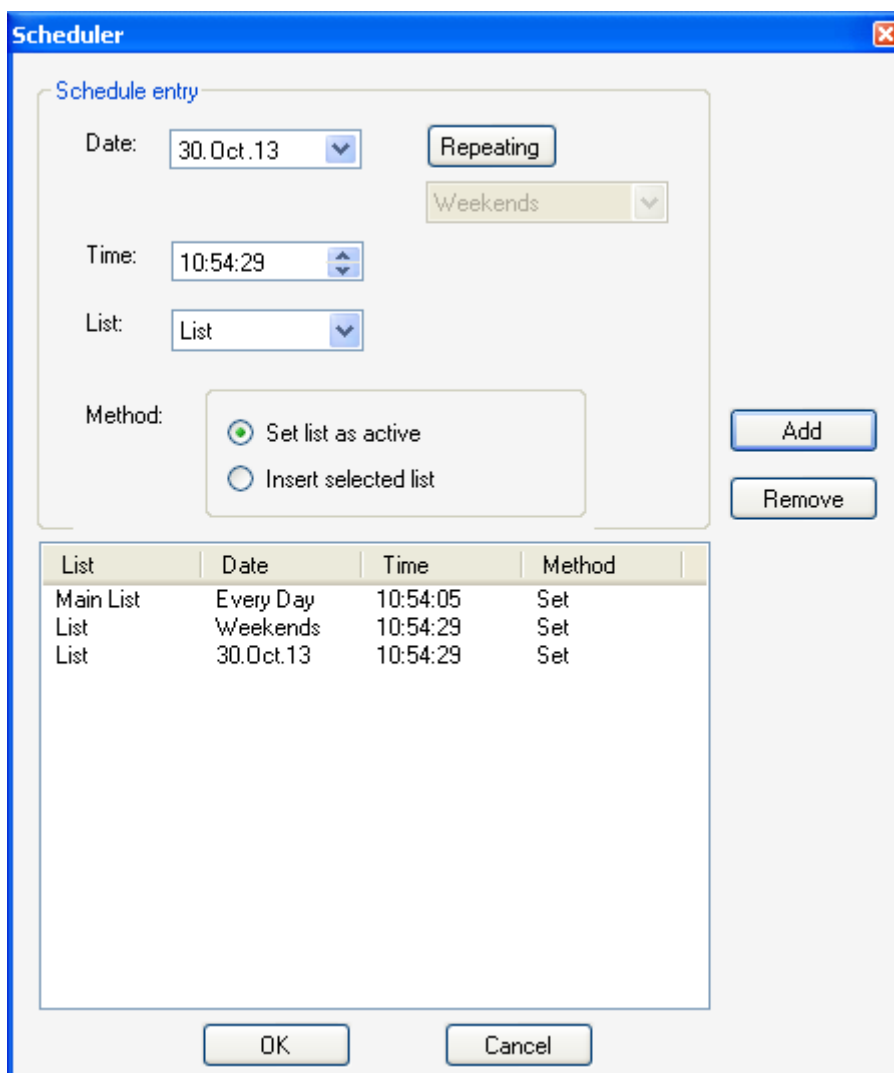
Enter list activation date in field Date. If Repeating button is activated, list can be activated/inserted everyday, on workdays, on weekends, on Mondays, on Tuesdays etc..

Enter list activation time in field Time.

Pick a list in List field.

Choose list activation method – Insert selected list (list content is displayed once, after that previously displayed list continues) or Set selected list as active (list content loops until some other list is set active).

Press **Add** button. List activation info appears in list below. Existing list schedules can be removed using **Remove** button.



Scheduler

Schedule entry

Date: 30.Oct.13

Weekends

Time: 10:54:29

List: List

Method:

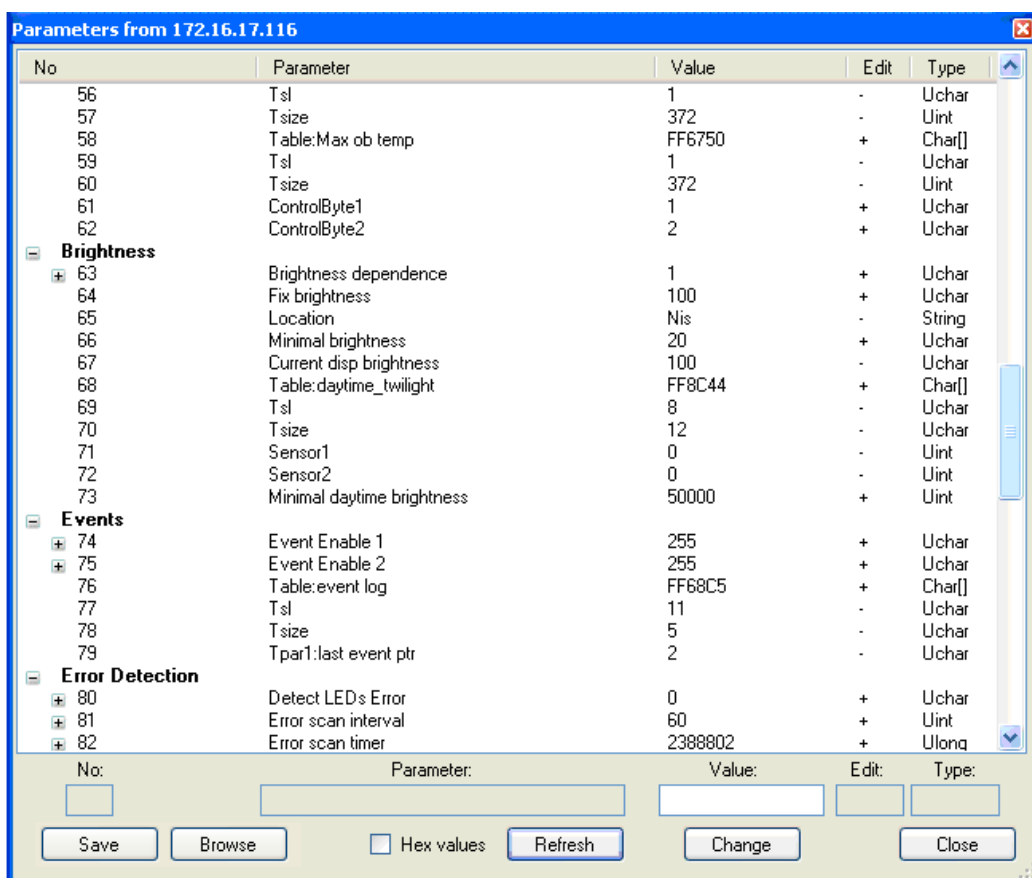
Set list as active

Insert selected list

List	Date	Time	Method
Main List	Every Day	10:54:05	Set
List	Weekends	10:54:29	Set
List	30.Oct.13	10:54:29	Set

10 Display parameters

User can see or even edit some display parameters. To list all parameters use menu option **Display/Display Parameters**. Some of the parameters relates to display work (like Working Hours, Number of Resets or Time of the last reset), some relates to hardware display configuration (Height, Width, Flash disc size...), some to specific software features (CR force LF, Special start number ...) etc. Number of parameters and their values depend on display. Generally, parameters can be separated in 2 groups. First are editable, second non editable parameters. In the DisplayStudio2011 parameters are grouped by type (General, Memory ...). Grouping by type brings easier way of parameters manipulating. Display Studio 2011 introduce parameter saving option as well as saving tables such as Event logs, Brightness regulation table, Temperature logs and so on, from display memory to Excel file format. Upon setting parameters, user can save current parameters setting by pressing **Save** button. Parameters are saved in Excel file that can be opened from Excel.



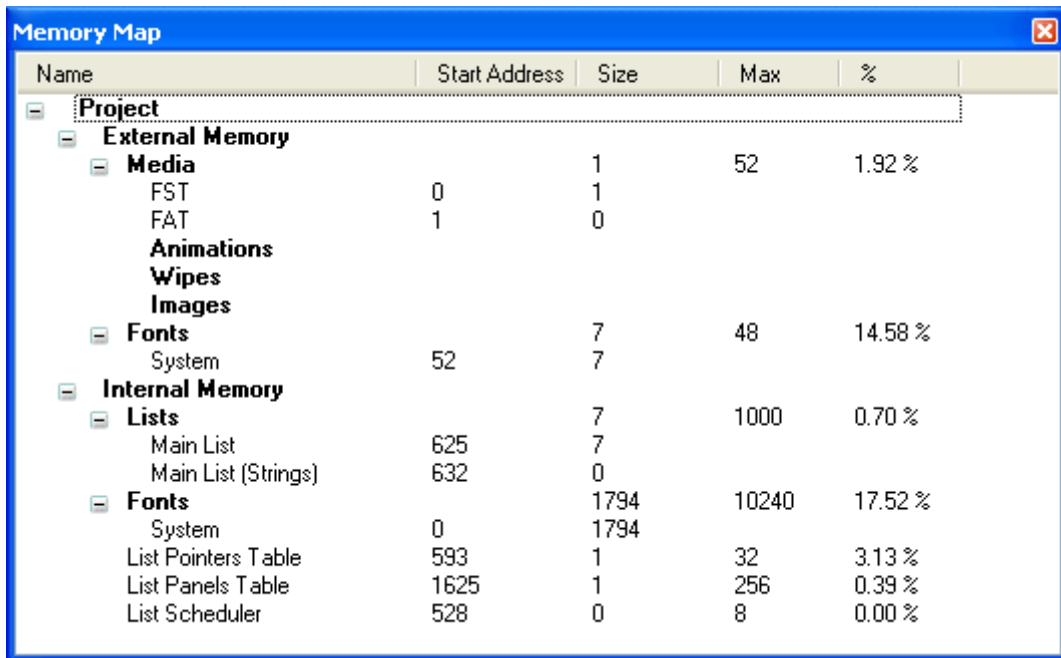
No	Parameter	Value	Edit	Type
56	Tsl	1	-	Uchar
57	Tsize	372	-	Uint
58	Table:Max ob temp	FF6750	+	Char[]
59	Tsl	1	-	Uchar
60	Tsize	372	-	Uint
61	ControlByte1	1	+	Uchar
62	ControlByte2	2	+	Uchar
Brightness				
63	Brightness dependence	1	+	Uchar
64	Fix brightness	100	+	Uchar
65	Location	Nis	-	String
66	Minimal brightness	20	+	Uchar
67	Current disp brightness	100	-	Uchar
68	Table:daytime_twilight	FF8C44	+	Char[]
69	Tsl	8	-	Uchar
70	Tsize	12	-	Uchar
71	Sensor1	0	-	Uint
72	Sensor2	0	-	Uint
73	Minimal daytime brightness	50000	+	Uint
Events				
74	Event Enable 1	255	+	Uchar
75	Event Enable 2	255	+	Uchar
76	Table:event log	FF68C5	+	Char[]
77	Tsl	11	-	Uchar
78	Tsize	5	-	Uchar
79	Tpar1:last event ptr	2	-	Uchar
Error Detection				
80	Detect LEDs Error	0	+	Uchar
81	Error scan interval	60	+	Uint
82	Error scan timer	2388802	+	Ulong

As we mentioned, Display Studio 2011 is capable of saving display parameters and tables from display memory to the template in Excel format. User can use template Excel file provided with current display to save and preview data. Tables are usually some logs that device collect during its work like “temperature log” with minimal and maximal temperature every day or “event log” that inform about important events or “short circuit and open circuit error data” ...

Select the excel template file by clicking the **Save using template** button. It is advised to select the template file that comes with the device so the data can be more readable, but if file is not available an empty excel file can be used. After doing these steps user will be notified that data is saved and user is given an option to open Excel file to read data.

11 Memory Map

Animations, wipes and images, on the display side, are physically located at display flash disk, or as we call it display memory. This feature is used to define and manage storing in display memory. By creating or compiling of lists, memory reallocation is automatically performed. User can be informed about real address in memory display that a particular media is stored at. User can also see the amount of consumed memory.



Name	Start Address	Size	Max	%
Project				
External Memory				
Media		1	52	1.92 %
FST	0	1		
FAT	1	0		
Animations				
Wipes				
Images				
Fonts		7	48	14.58 %
System	52	7		
Internal Memory				
Lists		7	1000	0.70 %
Main List	625	7		
Main List (Strings)	632	0		
Fonts		1794	10240	17.52 %
System	0	1794		
List Pointers Table	593	1	32	3.13 %
List Panels Table	1625	1	256	0.39 %
List Scheduler	528	0	8	0.00 %

To see memory map appears use menu option **Project/Memory map**. Window shows all lists, animations, wipes, backgrounds and fonts with exact location in the memory where they are loaded and interval of addresses they are using.

12 Variables for Timing Devices and Game-Consoles

You can create an active list which is showing Timing-Data and Names directly from your ALGE Timing-Device.

12.1 Variables for Timers

Received by RS232 or black-yellow banana-sockets.

\$ Variable	Description
\$D195	Name of the Bib last received from names entered from scoreboard software
\$D196	Current Time received from Timing-Device, automatic format, hh:mm:ss.th
\$D197	Current Rank received from Timing-Device
\$D198	Current Bib received from Timing-Device
\$D199	Name of current Bib from Excel-Startlist
\$D200	Nation of current Bib from Excel-Startlist
\$D201	Club of current Bib from Excel-Startlist
\$s000	Name of Player with Bib 001-999
\$sA00	Nationality of Player with Bib A00-A99=000-099; B00-B99=100-199;...
\$sa00	Club of Player with Bib a00-a99=000-099; b00-b99=100-199;...
\$D000-\$D194	Byte from Datapacket

12.2 Variables for Game-Consoles D-CKx

Anzeigelisten die folgende Variablen enthalten zeigen die jeweiligen Informationen direkt auf der Anzeige an.

\$ Variable	Description
\$B00	Score home – 3 numerals, clear leading zeros
\$B01	Score guest – 3 numerals, clear leading zeros
\$B02	Time minutes
\$B03	Time seconds
\$B04	Time 1/10 seconds
\$B05	Remaining TimeOut Time
\$B06	Home team name
\$B07	Guest team name
\$B08	Guest team name, left alignment
\$B09	Number of fouls for home team
\$B10	Number of fouls for guest team
\$B11	Last player who has committed the foul
\$B12	Foul number for that player
\$B13*	1 point percentage for home team
\$B14*	2 points percentage for home team
\$B15*	3 points percentage for home team
\$B16*	2 and 3 points (field) percentage for home team
\$B17*	Number of fouls for home team
\$B18*	1 point percentage for guest team
\$B19*	2 points percentage for guest team
\$B20*	3 points percentage for guest team
\$B21*	2 and 3 points (field) percentage for guest team
\$B22*	Number of fouls for guest team
\$B23*	Name of the team who has exchanged player(s)
\$B24	Penalty1 home in format PP mm:ss (PP – player number, mm - minutes, ss – seconds)
\$B25	Penalty2 home in format PP mm:ss (PP – player number, mm - minutes, ss – seconds)
\$B26	Penalty1 guest in format PP mm:ss (PP – player number, mm - minutes, ss – seconds)
\$B27	Penalty2 guest in format PP mm:ss (PP – player number, mm - minutes, ss – seconds)
\$B28	Misconduct Penalty home in format MPP mm:ss (M – sign for misconduct PP - player number, mm - minutes, ss – seconds)
\$B29	Misconduct Penalty guest in format MPP mm:ss (M – sign for misconduct PP - player number, mm - minutes, ss – seconds)
\$B30	ScoreHome for 1. time period
\$B31	ScoreGuest for 1. time period
\$B32	ScoreHome for 2. time period

\$B33	ScoreGuest for 2. time period
\$B34	ScoreHome for 3. time period
\$B35	ScoreGuest for 3. time period
\$B36	ScoreHome for 4. time period
\$B37	ScoreGuest for 4. time period
\$B38	Sign for poss home or set home(volleyball)
\$B39	Sign for poss guest or set home(volleyball)
\$B40	Game Period (has value E for extra time period)
\$B41	Number of timeouts for home team
\$B42	Number of timeouts for guest team
\$B43	Shot Time
\$B44	Shot Time or TimeOut (for shoving shot time and timeout time in same place)
\$B45	Penalty home which is start first. (when only one penalty per team is shown) (format: PP mm:ss)
\$B46	Penalty guest which is start first. (when only one penalty per team is shown) (format: PP mm:ss)
\$B47	Minutes of misconduct penalty home when only minutes for this penalty is shown) (format: Mmm)
\$B48	Minutes of misconduct penalty guest when only minutes for this penalty is shown) (format: Mmm)
\$B49	Score Home - two digit score (format xx)
\$B50	Score Guest - two digit score (format xx)
\$Hxx*	Home player name, xx is player number, can be 00-99
\$H9:*	Home coach name
\$H9;*	Guest coach name
\$H9<*	1st arbiter
\$H9=*	2nd arbiter
\$H9>*	official delegate
\$H9?*	Number of spectators
\$Gxx*	Guest player name, xx is player number, can be 00-99
\$Pxx*	Player name leaded with player number. Depending on xx is: 0-4 5 Home players currently in the field 5-9 5 Guest players currently in the field 10-14 Home players who were in the field 15-19 Guest players who were in the field 20-24 Home players who were and who are currently in the field 25-29 Guest players who were and who are currently in the field 30-34 Players of the team that exchanged player(s) currently in the game 40-44 Players of the team that exchanged player(s) were in the game 50-54 Players of the team that exchanged player(s) were and are in the game
\$hxx	Home player name, typed from command console, xx can be 0-11
\$gxx	Guest player name, typed from command console ,xx can be 0-11
\$ixx	Home player number, typed from command console, xx can be 0-11
\$jxx	Guest player number, typed from command console, xx can be 0-11
\$Mxx	Messages typed from command console, xx is message number, can be 00-19

* Those variables are entered from Scoreboard software or Basketball statistic software.

13 Tutorial

As a short demonstration of all described above, we will create display contents with 2 textual panels with rolling text, which will be divided by a wipe effect. After that, an already created animation (we have it in avi file) will also be displayed.

So, let's go on with work. Here are project requirements:


Client wants company logo at the background and rolling text at the bottom of the display.



Client wants a commercial rolling on the whole display area (maximum possible font size).

Client has prepared animation he wanted to be displayed.

In order to work with text we need to add fonts to project. Select Fonts from the Element tree, right click in the Library window and click **Add Element** to choose font file (.dnt). Now select the font bar in the bottom of the window and add that fonts to the project by double clicking on them. Now, let's first import client's company logo bitmap to the library. Select **Image** from the Element tree and do similar with importing fonts, right click on the library window and **Add Element**, in this case the .bmp or .jpg file. Now add Animation and Wipe elements to the library as same as you added image logo. Note that Animation and Wipe elements should be avi or gif file format. When we have all elements in the library all we need to do now is to add them to the Main List in the Time Line bar.

First select Text from the element tree, and drag the Text element from the Library to the Main List. After

placing the text element in the list, a property appears. Click on **Add Text**  , insert desired text in the Text field, and position it in the wanted position by moving the text. Check the Rolling text checkbox

and select the font. Press the **Add Background** button  and add the background image. Click OK button to save changes. Now insert another text element and for the properties select larger font. Next go to Animation and drag the animation to the list. Select the frame rate, freeze and loop from the properties window. After inserting this elements go to Wipes and drag and drop it between two elements. Now you can see the preview by clicking the icon  . If everything is looking fine, upload the content to display.

Subject to alternations!

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