LED Display

Supplementary display for the reaction wall twall®

THE INTERACTIVE
TOUCH WALL

User Manual Rev. 1.1

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Hardware Documentation

1 Intended Use

The LED display is designed for the personal use of custom text and graphics, and as an added component to the **t**wall®. The device is used to display game scores and other information across an LED matrix, via a serial interface (RS232). The design of the display allows easy, fixed mounting upon the **t**wall® - creating optimal dimensions for gaming activities and accessibility. Gaming involving balls or similar objects cause high impulses across the **t**wall® and are unsuitable for use with these devices. The LED display is not suitable for unprotected outdoor use.

2 Scope of Delivery

Components:

- Power supply
- RS232 Serial Interface Cable 1:1 (for connection to the **t**wall®)
- USB cable
- Bracket fixture (for mounting to the **t**wall®)
- 4 x screws
- 2 x Double T-Slot Nut M8 fasteners
- CD Data Disc

3 Safe Assembly

The mounting fixture of the LED display is designed to place the device at a centred overhead of the **t**wall®. Insert the device bracket fixtures into grooves found at cross-sectional points along the top of the **t**wall® frame. Secure the display using the T-Slot Nut fasterners supplied. These must be screwed and tightened firmly in order to prevent the display from tipping. Use the Serial Interface Cable (RS232) provided to connect the LED display and **t**wall®, using both ports found at the back of each device. The cable provided is not designed for use with reverse polarity and doing so may result in product damage.

NOTE: The LED display may only be used with the power supply (AC adapter) provided. The indicated assembly may only be used for a **t**wall® with a universal stand. Disposal of the display is not appropriate for household waste.

4 Technical Specifications

4.1 Data Sheet for LED Display

- Power supply: 24V DC / 1A
- Dimensions (L x H x W): (1140 x 310 x 67)mm
- Display area (L x W): (1000 x 225)mm
- Number of display elements: x 2 alphanumeric rows x 12 digits each
- LED segment resolution: 8 x 6 pixels
- LED segment dimensions: display height of 10 cm per row
- Connections:
  - Power supply: 1 x XLR connector, 4 pin, 24V
  - 1 x DSUB9 RS232
  - 1 x USB

Software Documentation

5 Software Description

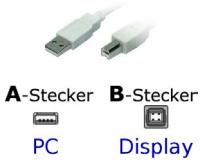
The **t**wall®-DisplEY! Control Center software offers direct management of your LED display content. Use this software to make your custom design of text, graphics and animations come to life! Your preferred composition of text or graphics (termed "Playlist"), can then be stored within the display for automatic playback, without the use of a computer.
When using the LED display as a complementary device for the reaction-wall **t**wall®, playback of your playlist will pause for the display of recorded game scores (time, number of points). Seven seconds following the end of each gameplay, the LED display will automatically continue relaying a playlist (if playback is activated).

NOTE: This software is currently available for Windows XP, Windows Vista and Windows 7. Users of other operating systems and software for serial communication or command line instruction may only perform limited programming.

6 Installation

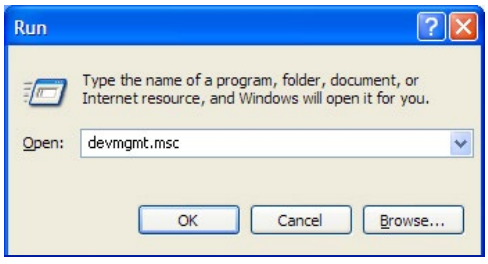
The installation consists of two parts - driver and software installation.

6.1 USB to Serial Driver



Communication between the LED display and PC software takes place over a virtual COM port via a USB cable, for which a driver is necessary.

Connect the display and PC using a USB 2.0 Type A/B Cable.

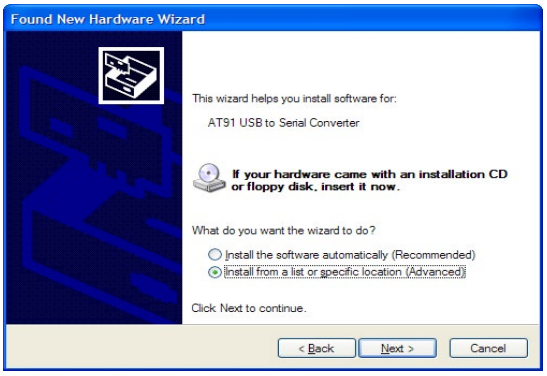


Plug the power supply into the LED display. If the necessary driver is not installed, Windows XP and Vista will issue a request.
When using Windows 7, open the Device Manager of the Windows 7 system. In order to reach the Device Manager quickly, click Start Menu > Run (or on the keyboard: Windows Key + R), then enter "devmgmt msc".

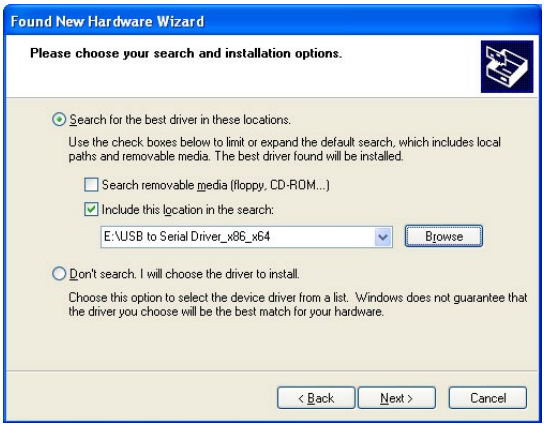
Now right-click on the highlighted faulty device, selecting "Update". Add the files "6119.inf" and "UsbSer.sys" to folder "USB to Serial Driver_x86_x64", and continue with the installation until completion.

6.1.1 Driver installation for Microsoft Windows XP®

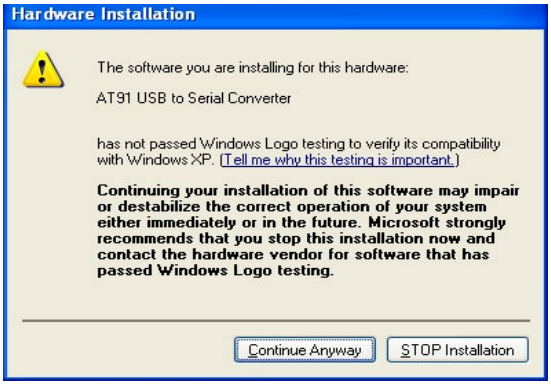
❶ In the first step of the installation you will be offered to search for your driver using Windows Update. Select "No, not this time".



❷ Select "Install software automatically (Recommended)". The computer will automatically search the CD disc provided for the driver.



❸ If the required driver files "6119.inf" and "Usbser.sys" are not found on your computer, enter the direct location of the file as found on the CD, titled "USB to Serial Driver_x86_x64".

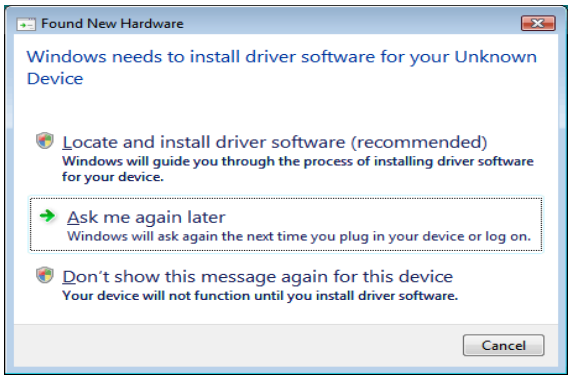


❹ In this dialogue box, select "Continue installation."

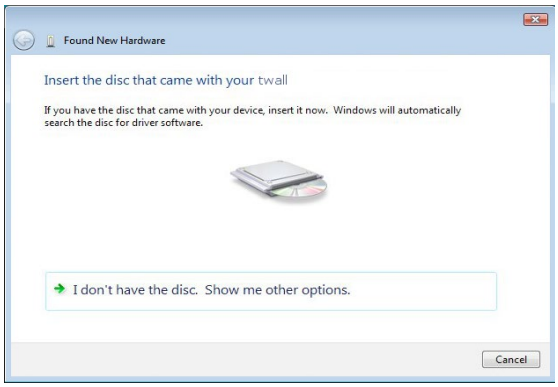
❺ The installation has now successfully completed. You may now install and use the software for the LED display.

❻ If the LED display is connected to a different USB port, install the driver again. This should however, happen automatically. Note: administrator access is required.

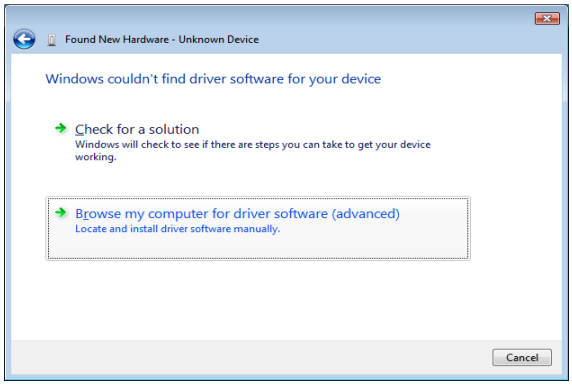
6.1.2 Driver installation for Microsoft Windows Vista®



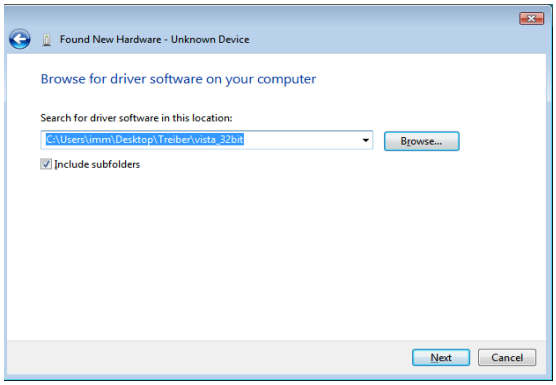
❶ In the first step of the installation, select "Find and install driver software (Recommended)."



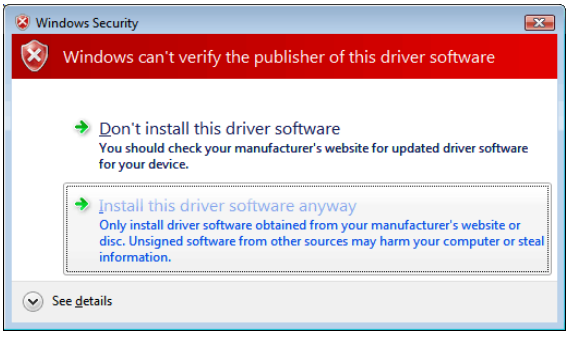
❷ If this dialogue box appears, select the green arrow command "Show me other options"* from the bottom.



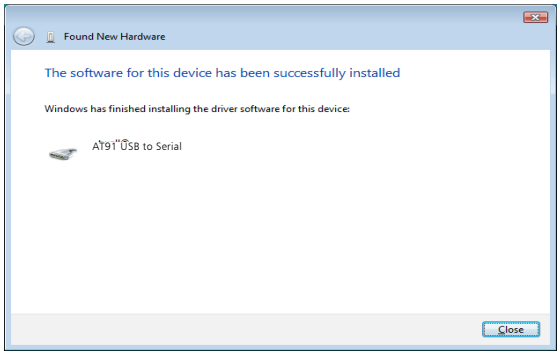
❸ Select "Browse my computer for driver software (Advanced)".



❹ Click on the "Browse" button and select the directory: "USB to Serial Driver_x86_x64" on the data CD. Then click "Next".



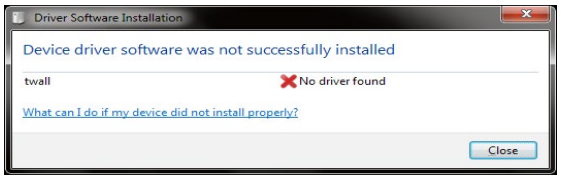
❺ Select "Install this driver software anyway."



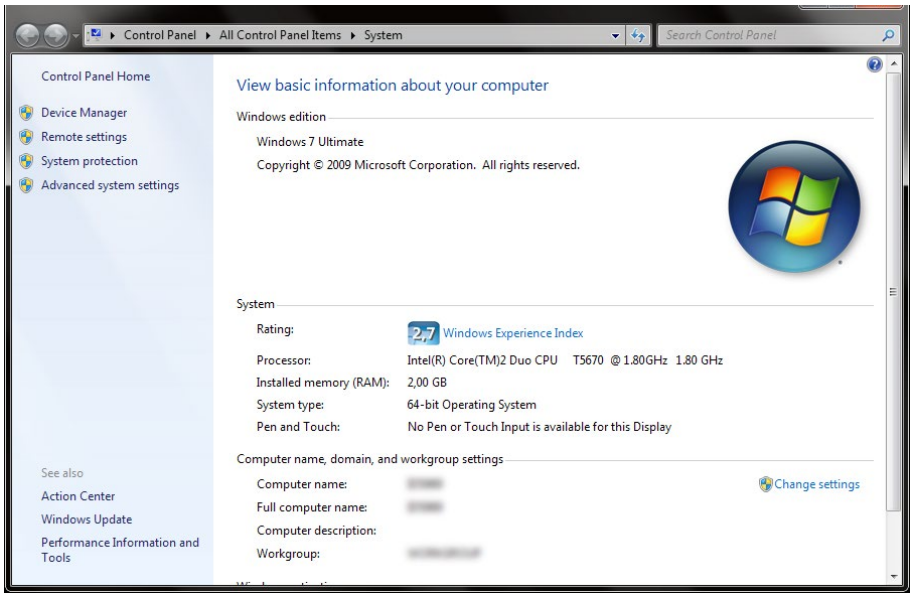
❻ The installation of the driver for the LED display is now successfully complete.

❼ If the LED display is connected to a different USB port, install the driver again. This should however, happen automatically. Note: administrator access is required.

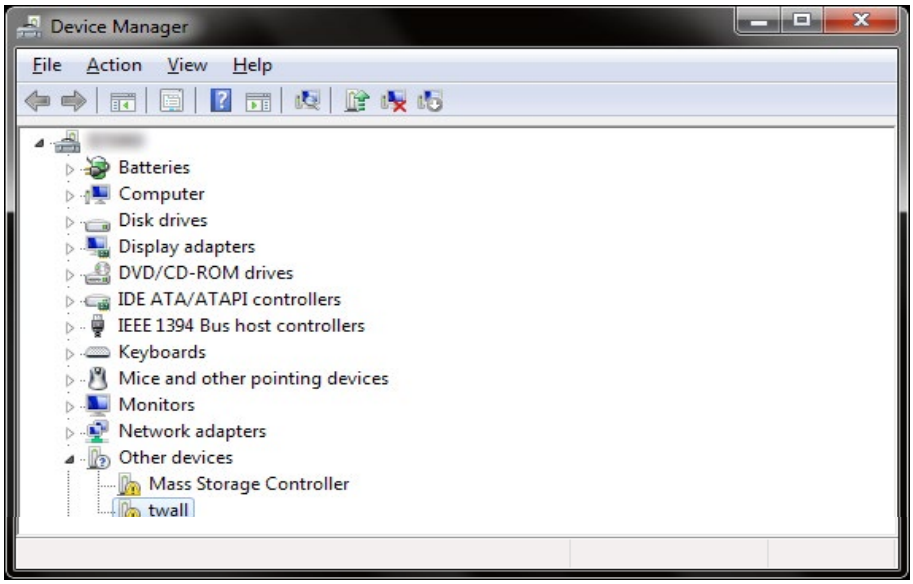
6.1.3 Driver installation for Windows 7®



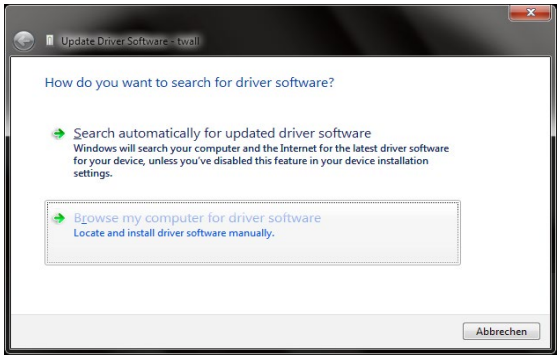
❶ Windows should try to install the driver automatically. If this is unsuccessful, the following message will be displayed. Continue with Step 2.



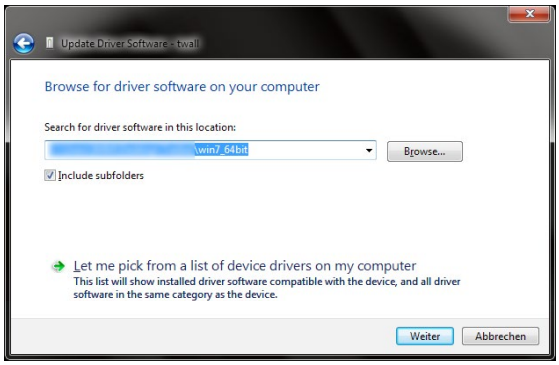
❷ Start the Device Manager. Open the Start Menu > Control Panel > System and Security > System. A window displaying system information should appear. On the left sidebar, click "Device Manager".



❸ In Device Manager, the LED display is shown under "Other devices", highlighted by a yellow warning sign. Right-click "AT91 USB to Serial" and select "Update Driver".



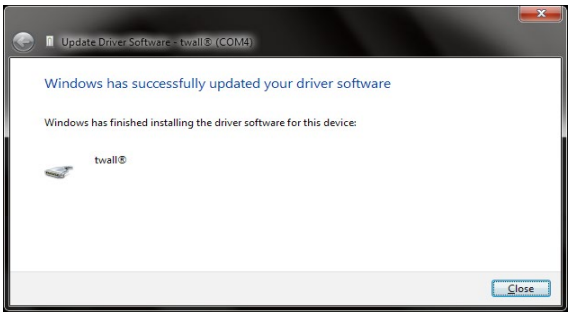
❹ The driver installation wizard should now appear. At this first step, select "Browse my computer for driver software.".



❺ Please note the directory in which the driver for the LED display is located.

NOTE: Windows 7 is available in a 32-bit and 64-bit version. Select the driver directory which matches your version of Windows. If you are unsure whether you are using Windows version 32-bit or 64-bit, you may check before this stage of the installation by viewing system information.

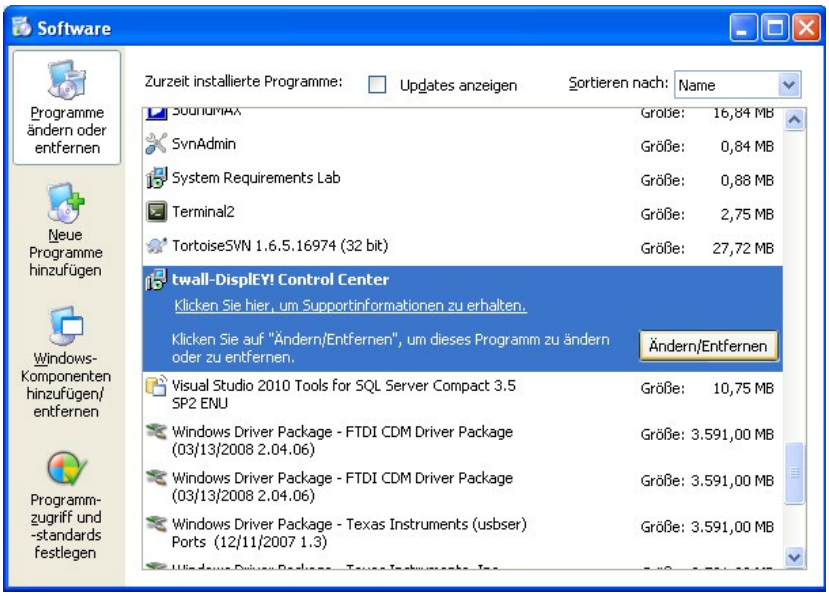
❻ If the correct driver is specified, the installation may continue. When shown this warning message, confirm "Install this driver software anyway".



❼ The installation is now successfully complete.

6.2 PC software setup

In order to successfully install and use the **t**wall®-DisplEY! Control Center software, Microsoft. NET Framework 4.0 must be installed on your PC. If necessary, check that this exists on your machine, using the system search title "dotNetFx40_Full_x86_x64.exe".
You may use the **t**wall®-DisplEY! Control Center software to install Microsoft. NET Framework 4.0 by running the setup.exe file in the folder **t**wall®-DisplEY! Control Center 1.X.X. If you already have an installation of the **t**wall®-DisplEY! Control Center, you will receive an error message during setup. You will be prompted to delete the existing installation. Thereafter, you may restart the setup.exe file.



The installation of **t**wall®-DisplEY!1.XX Control Center is fully automatic (please ignore the security warning). You do not require administrator access.
Once installed, the program can always be accessed using the shortcut on the desktop, or via the Start Menu > All Programs > IMM group > **t**wall®> **t**wall®-DisplEY!Control Center.

7 twall®-DisplEY! Control Center

7.1 Start

It is recommended to launch the display before using the PC software. Thereby, the PC software will automatically detect the size of the display and the virtual COM port. Otherwise, the connection must be established manually (using the Options tab).

The software is available in German and English. Upon startup, the software will automatically detect your machine's operating system language and configure its settings accordingly. It is also possible to set the language manually using the "Options" tab.

NOTE: The software can easily be expanded or moderated between basic and advanced modes. The advanced mode offers additional settings parameters. Use the "Options" tab to switch between the two modes.

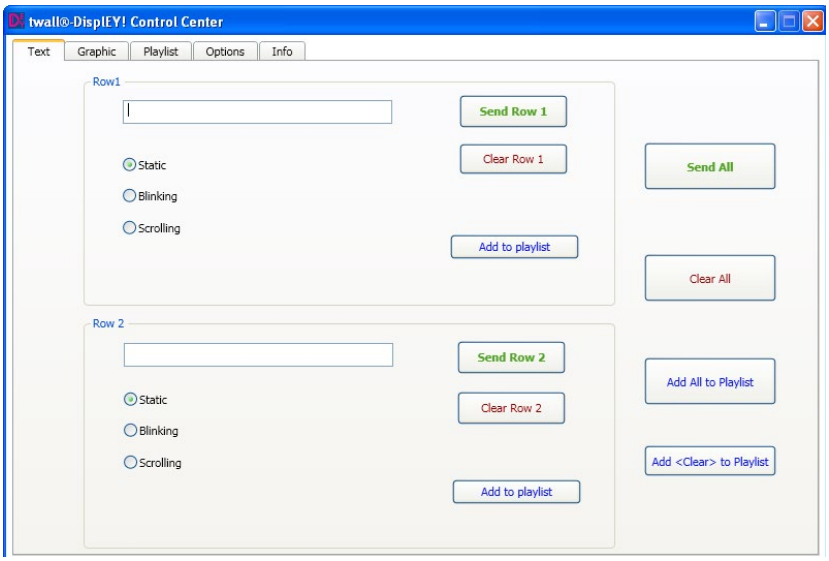
7.2 Creating and editing displays

7.2.1 Configuring Text

By navigating to the "Text" tab the user is able to programme text for display on the LED device.

To do this, enter your chosen text and submit by clicking "Send Row X". The text should appear on the display. You may delete the text by clicking "Clear Row X".
These two sets of command buttons operate identically, but function separately correspondent to each text row.

Three different versions of text can be used for display: static text, flashing text and scrolling text. The text can also be centred by entering spaces.



Having completed your chosen text input, this can be added to a playlist. The display duration for playback of static and flashing texts is five seconds and depending on length, until completion (full circuit) for scrolling text.

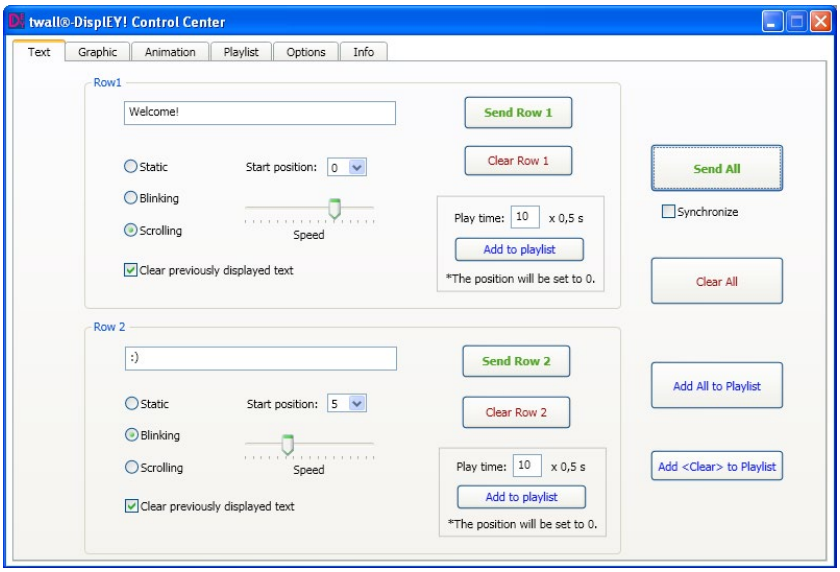
If the texts are to be displayed simultaneously, users must use the navigation buttons on the right of the window. Static and flashing texts for simultaneous output are saved using "Add All to Playlist". Since two consecutive texts are not legible at the same time, scrolling text is not included in this function.

It is recommended that following the input of graphics or scrolling text, the "Clear All" function is used to effectively remove all possible remaining content.

Advanced settings

When using advanced mode, it is possible to set additional parameters.
"Speed" determines the blinking frequency of flashing text and speed of scrolling text.

The starting position of static and flashing text can be entered using the "Starting point" button function. This option however, cannot be used in connection with a set playlist (the start position of each display sequence within a playlist will always reset to zero).



The setting "Delete all text previously displayed" is the default operation for removing all previous content before of each new entry. Should you wish to introduce a new combination of static and blinking text styles to existing content, remove this tick-option (note: always enter the static text first, and flashing second).

In the box "Play time", display time can be determined. Times are specified in half-seconds, (value "2" corresponds to one second).

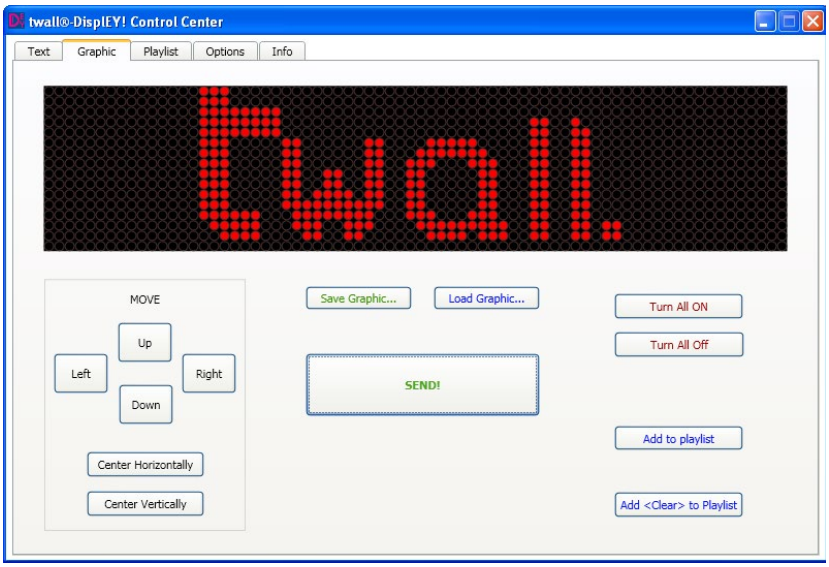
The "Synchronise" option synchronises flashing or scrolling text. The display will now automatically assume the speed of the first row for both text inputs. This option cannot be used in connection with a playlist.

7.2.2 Configuring Graphics

Graphics can easily be drawn by clicking across the screen. Either hold down and drag the mouse, or click on chosen points one by one. Right-click to individually delete marked points. The entire display area can be marked or switched off using "Turn All ON/Off" - or moved left, right, up and down via the arrows. Any pixels which may run over the border are deleted. "Undo" does not work in this case!

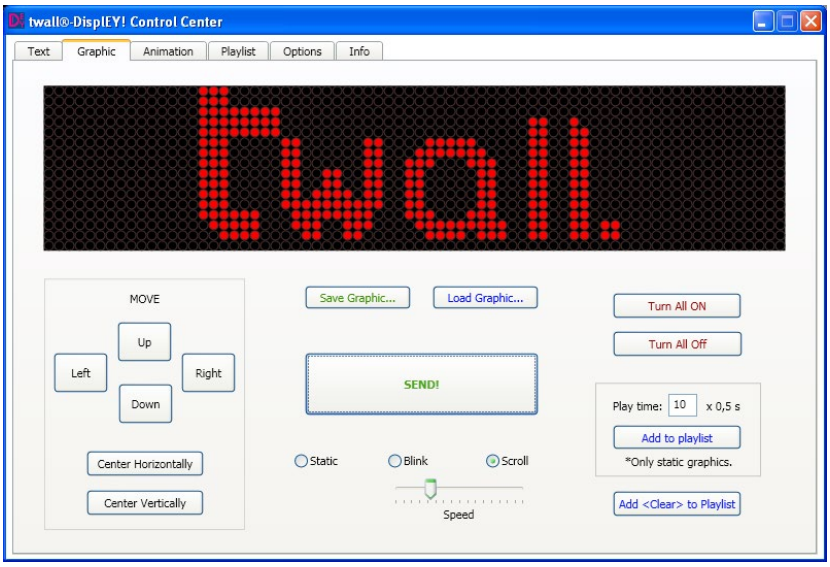
After successfully adding an image to the playlist, a delete command should be carried out in order to ensure the clear display of any subsequent text entries. This is recommended for alternating input of graphics and text content.

LED graphics can also be saved and reloaded from the computer.



Advanced Settings

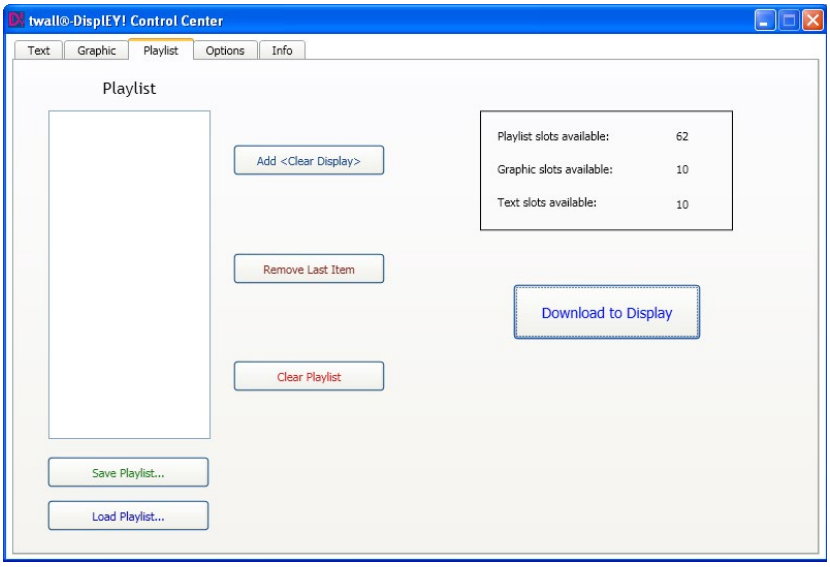
It is also possible to create flashing and scrolling graphics (right to left) with a configured speed. Only static graphics however, can be added as part of a playlist.



7.2.3 Configure a Playlist

When different elements, (text, graphics, animations) are added to a respective playlist, these are displayed in numerical order of input. By using the button "Save Display", all data is transferred to and stored on the display device. Having saved here, the playlist will play automatically, running as an endless loop. If the display is rebooted, the playlist will play automatically without the use of a computer. Different playlists can be saved on a computer, transferred, and played as preferred by the user.

The length of the playlist is dependent on the length of texts inserted, as well as the amount of graphics drawn. It is possible to view remaining memory space in this tab.



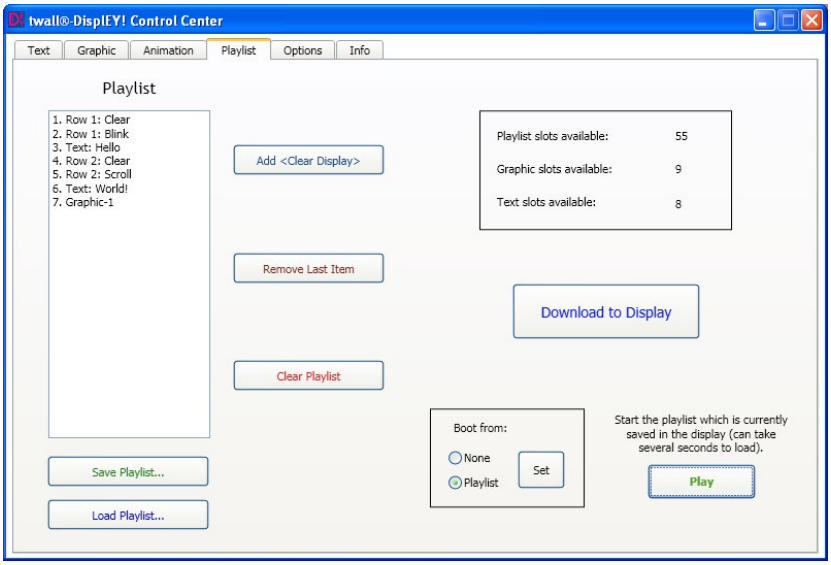
The action button "Save Message" transfers all playlist data to the LED device memory, where your progress is displayed. After successful transfer the playlist display sequence will begin, using your preconfigured data and parameter settings. This sequence is equivalent to rebooting the device.

NOTE: data transfers and saving must not be interrupted.

Advanced Settings

When default settings are selected, data transfers are stored within the LED display device and are therefore loaded automatically.

When this feature is not desirable, select the setting "Load from" > "Playlist" to begin initiating playlists manually. Click "Play" to start a current playlist stored on the display, (see figure on next page).



7.2.4 Configure an Animation

There are eight different animations available to add to a playlist. These are categorised into two types.

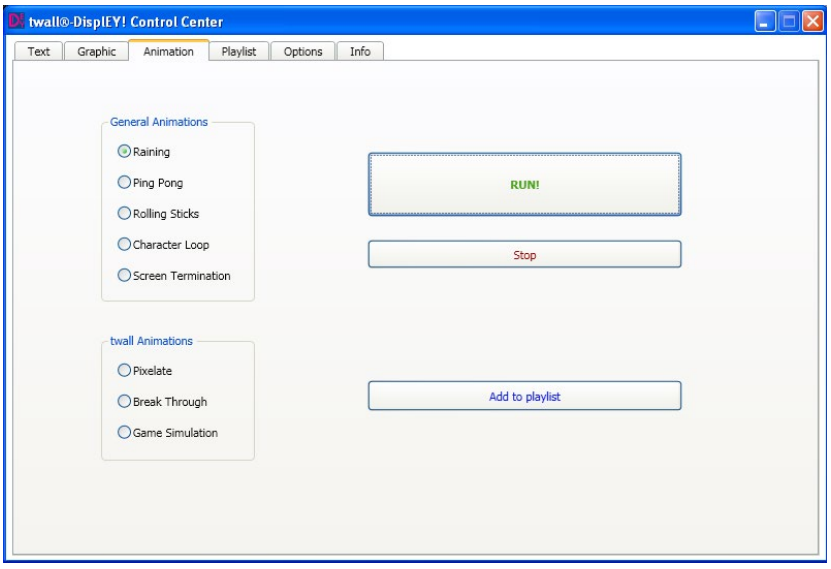
General Animations:

1. Raining - Rain simulation
2. Ping Pong - Table Tennis simulation
3. Rollings Sticks - Simulation of tumbling sticks
4. Character Loop - Letter, digit or symbol characters in looped animation
5. Screen Termination - Simulating "power off"

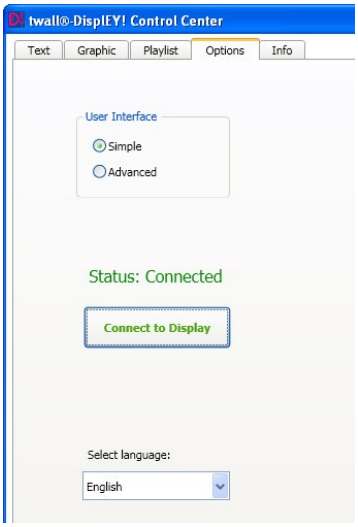
twall® Animations:

1. Pixelrate - the **t**wall® logo is built up of individual pixels
2. Break Through - the **t**wall® logo emerges as scattered blocks
3. Game Simulation - a simulation of the **t**wall® game

The display time of each animation is limited to either approximately a 10 second run, or until full formation of an end illustration (such as animated **t**wall® logos).



7.2.5 Configuring Options



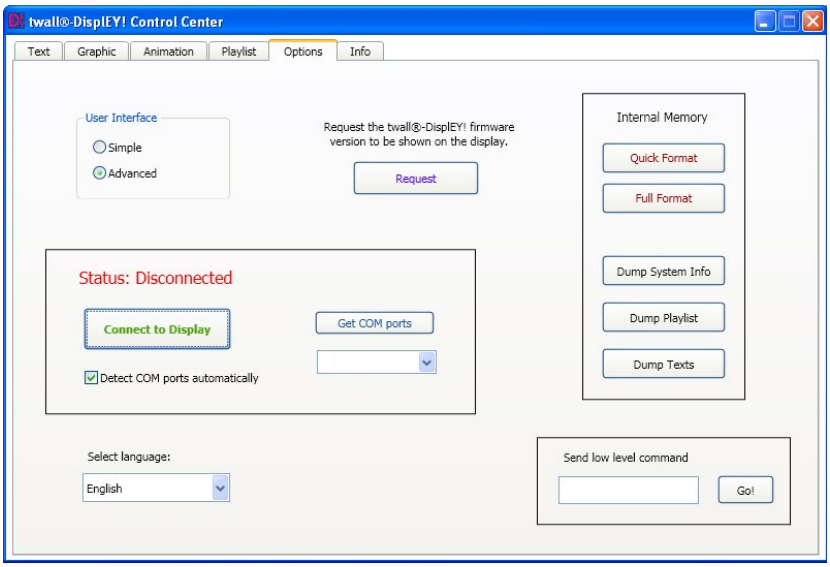
In addition to switching between simple and advanced modes, the programme's language can be set using the "Options" tab.

If the software programme has been unable to connect to the display device, the status button "Establish Connection" will be visible and a connection must be established must be done manually.

Advanced Settings

Here are various debugging methods for detecting errors and identifying their cause.

It is important that a correct version of the **t**wall®-DisplEY! firmware is present on the LED device. The PC software **t**wall®-DisplEY! Control Center version 0.9.0 requires the firmware version 0.9.0 and higher on the **t**wall®-DisplEY!. To check which firmware version you are using, click the programme button "Request". If nothing appears on the display, you are using an older version. When using the newer firmware version 0.9.0 or higher, the display's internal storage can be deleted by a software command.



By clicking "Get COM Ports" a list of available COM ports is displayed. A connection to a selected COM port can be established by removing the tick-option listed "Detect COM ports automatically".

Using the programme area titled "Internal memory", you have direct access to the LED device memory, and to viewing and managing current playlists and texts.

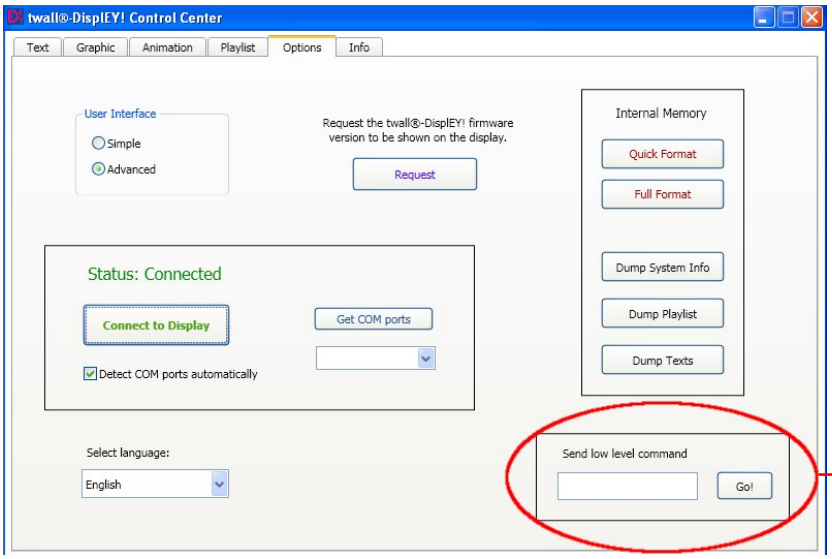
"Quick Format" will delete index tables, while "Full Format" will format the entire internal (EEPROM) memory. Formatting is demonstrated graphically by the programme display.
A "Quick Format" is always performed automatically before saving a new playlist .

7.2.6 Information

Here information is given about the **t**wall®-DisplEY! Control Center software.

8 Firmware Update

To stay up to date with the LED display firmware, it is possible to program newer firmware versions to the device memory manually. Before a programme rewrite can be run, the device's flash memory needs to be erased. To do this, run the direct command "_ERASEFLASH" in the programme's "Options" tab. The display then needs to be rebooted by briefly disconnecting it from the power supply for approximately 3 seconds.



Enter the direct instruction "_ERASEFLASH" here to delete program memory

8.1 PROG_FLASH.BAT Export

Running the PROG_FLASH.BAT file starts the display device update. The mandatory files "prog_ flash.tcl" and "Displayfirmwareat91sam7x512-flash.bin" must always to be located in the same folder. Firmware installation time takes approximately 30 seconds to write.

NOTE. The LED display must not be switched off during installation!

Upon completion, a data file titled "log.txt" is displayed and stored under this name. If the installation has completed successfully, no errors or warnings should be issued. Following the update, a reboot of the display is required by briefly disconnecting the power supply.

NOTE. Anti-virus programs (such as Kaspersky) may classify the PROG_FLASH.BAT file as dangerous and prevent programming of the display.

9. Service

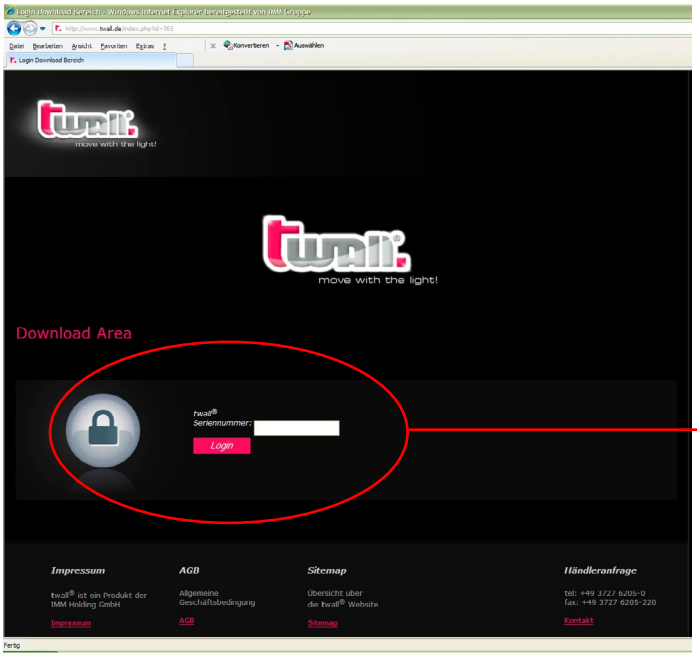
Contact:
Mo - Thu 7.00-15.30 Uhr
Fr 7.00-14.30 Uhr

tel +49 3727 6205-80
fax +49 3727 6205-220
service@imm-electronics.de

When making a service call please specifiy the following:

- Customer number, phone number, e-mail address
- LED Display Information: serial number, error description & frequency of errors

NOTE: For the latest LED display software updates, access the Download area on our website at www.twall.de / download (see figure below).
Enter "twall_Display" and click on "Download". You may now choose and download your desired PC software, drivers, and user manuals.



Login with your serial number for software updates at www.twall.de / download Entry: „twall_Display"

www.imm-electronics.de | info@imm-electronics.de

All information in this catalogue has been carefully checked and approved. Our products are constantly evolving however, so please check for possible updates online. Current versions are available at: www.twall.de / download.

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