

***Disperanto***

***Manual Simulators***

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## **1. INTRODUCTION**

### **1.1 Identification**

This manual describes both simulators (display simulator and server simulator) which are released as reference application for the Disperanto protocol.

### **1.2 Document overview**

#### **1.2.1 Structure of the document**

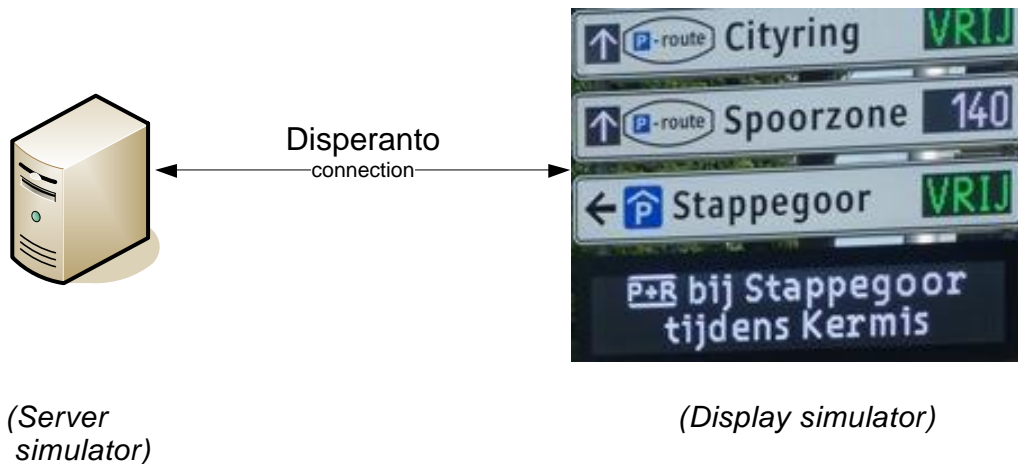
Chapter 2 gives an introduction to Disperanto.

Chapter 3 describes the display simulator.

Chapter 4 describes the server simulator.

## 2. INTRODUCTION TO DISPERANTO

Disperanto has been designed to control traffic displays. It is an application protocol on top of existing network protocols. The protocol is designed to be applicable to a variety of traffic displays, such as full matrix displays, simple number displays and even rotary signs.



**Figure 1: Disperanto is the protocol between servers and displays**

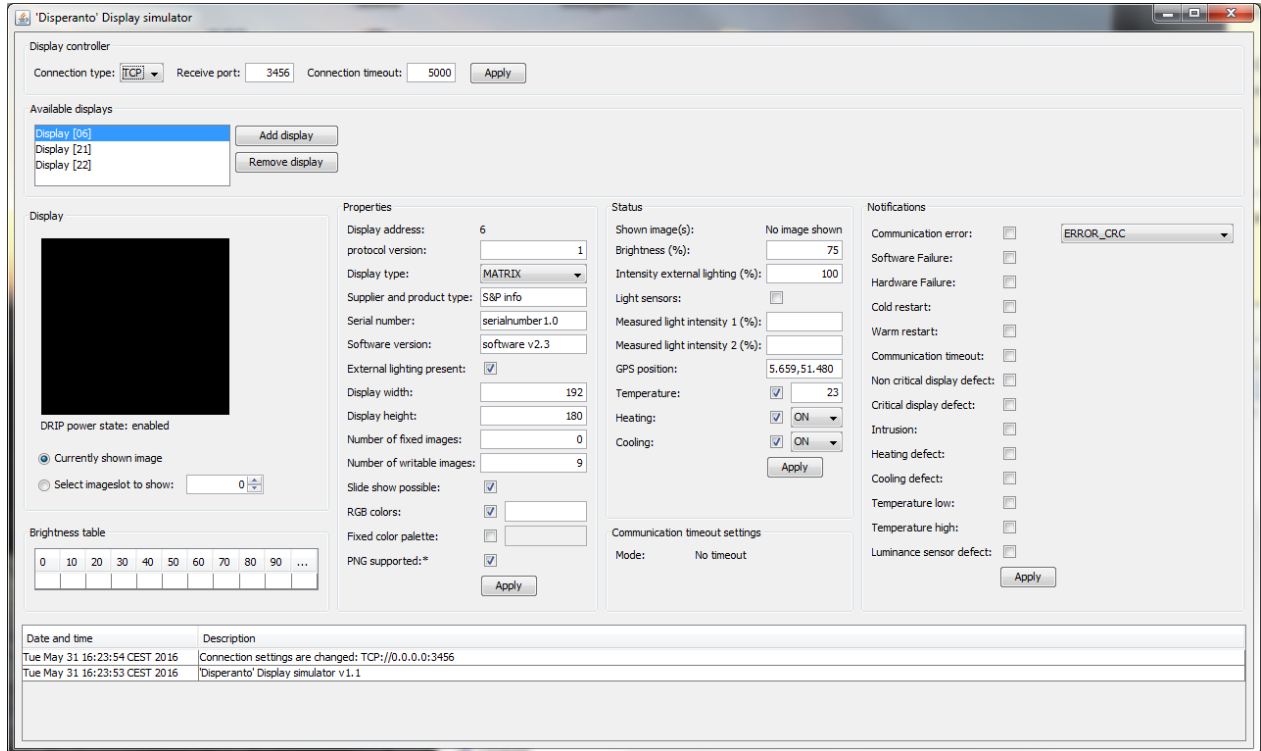
The protocol is suited both for simple displays as well as for high resolution multicolor displays. The protocol is efficient, flexible, scalable and can be used on various data connections. It has been optimized for use on networks for mobile communication.

Disperanto has the following capabilities:

- applicable to various displays: graphical, VVX(G), arrow and rotation panels;
- capable of showing fixed loadable images;
- efficient transfer of full color images in low and high resolution;
- reliable communication with feedback from display;
- extended status messages from display to server;
- extended properties and capability messages from display to server;
- flexible in use because displays only have to support the functions specified in their capabilities;
- efficient communication by mobile infrastructure due to low overhead;
- can be used with communication over TCP/IP, UDP/IP and/or serial lines.

### 3. DISPLAY SIMULATOR

#### 3.1 Overview



The window of the display simulator can be divided into several frames:

- display controller;
- available displays;
- display;
- brightness table;
- properties;
- status;
- communications timeout settings;
- notifications;
- log window.

##### 3.1.1 Display controller

This frame gives the connection settings. The simulator supports UDP as well as TCP/IP.

The list with display addresses is hardcoded in the software.

The new settings will be active after clicking *Apply*.

##### 3.1.2 Available display

The simulator is able to simulate multiple displays at once. The *add* and *remove* buttons can be used to manipulate the number of displays.



### 3.1.3 Display

The display frame shows the images. The dimensions of the display in the simulator are defined by the settings in the *Properties* frame for *Display height* and *Display width*.

It is possible to switch between the currently shown image on the display and the images in the image slots of the display.

### 3.1.4 Brightness table

The table shows the last values of the brightness table received from the server.

### 3.1.5 Properties

This frame gives the connection settings. The display address is defined by *Display address* in the *Display controller* frame.

The new settings will be active after clicking *Apply*.

### 3.1.6 Status

This frame gives the settings of the display for simulating the display's current status.

The new settings will be active after clicking *Apply*.

### 3.1.7 Communications timeout settings

This frame shows the settings for the communication timeout (set by the command Set communication timeout).

### 3.1.8 Notifications

One or more notifications can be selected in this frame.

The new settings will be active after clicking *Apply*.

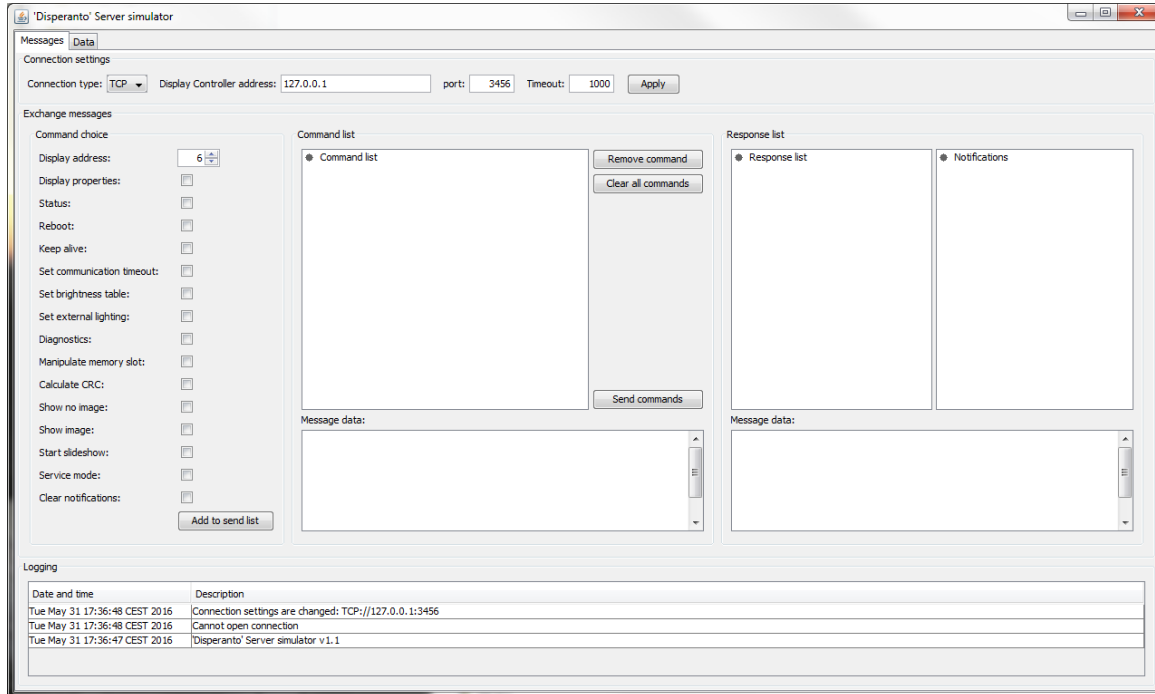
The selected notifications will be sent together with the next response message of the display.

### 3.1.9 Log window

The log window shows log messages with regard to the connection and the disperanto-messages. It shows the command data and response data of the messages in hexadecimal form.

## 4. SERVER SIMULATOR

### 4.1 Overview



The window of the server simulator can be divided into tabs:

- messages;
- data.

The tab 'messages' contains the following frames:

- connection settings;
- exchange messages;
  - command choice;
  - command list;
  - response list;
- logging.

The content of several commands can be configured in the tab 'data'. This tab contains the following frames:

- communications timeout settings;
- external lighting settings;
- calculate CRC;
- show image;
- slide show settings;
- brightness table.





## 4.2 Tab Messages

### 4.2.1 Connection settings

The connection settings are given in this frame. The simulator supports UDP as well as TCP/IP.

The new settings will be active after clicking *Apply*.

### 4.2.2 Exchange messages

#### 4.2.2.1 Command choice

Messages can be added to a command list with the command choice. Messages can be added for different display addresses.

#### 4.2.2.2 Command list

The command list shows a tree with all the messages that will be sent if the button 'Send commands' is clicked.

It is possible to select a command in the tree and remove it from the list by clicking 'Remove command'.

The list can be emptied by clicking 'Clear all commands'.

When a command is selected in the list, the window 'Message data' shows part of the message content in readable form.

#### 4.2.2.3 Response list

The response list shows the tree with response messages that are received after the command list is sent. Notifications are shown in a separate window.

When a response is selected in the list, the window 'Message data' shows part of the message content in readable form.

### 4.2.3 Logging

The logging window shows information about the connection and the number of messages that are sent and received.

## 4.3 Tab Data

### 4.3.1 Communications timeout settings

Configuration for the command Set communication timeout.

### 4.3.2 External lighting settings

Configuration for the command Set external lighting.

### 4.3.3 Calculate CRC

Configuration for the command Calculate CRC of images.

### 4.3.4 Show image

Configuration for the command Show image



#### **4.3.5 Slide show settings**

Configuration for the command Start slide show.

#### **4.3.6 Brightness table**

Configuration for the command Set brightness table.

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