ADVANCE WARNING VARIABLE MESSAGE TRAILER UNIT
NZTA CoPTTM Compliant
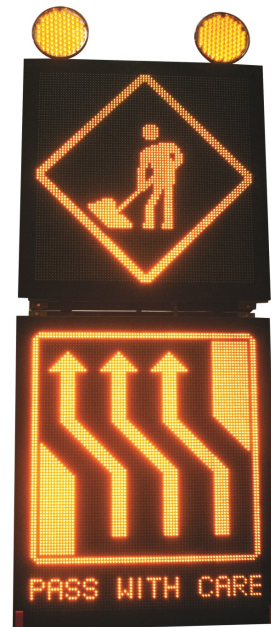
Tablet

- Maximum running time is 45 hours at full pixels before recharging is required
- Normal battery operating specifications are 3 x 12 volt Deep Cell Gel batteries
- Unit is controlled by on-board tablet with 87 pre-programmed graphic/text sequences and five favourite tabs for simple efficient use
- All panels have auto and manual light sensors for changing light conditions
- Unit stands 3.65m once fully erected
- Vehicle mount, trailer mount or unit mount options available
- 3 legged support system for stand alone option
- Vehicle can be wired with specialised plug (as supplied) to assist with the charging the batteries

1

VARIABLE MESSAGE TRAFFIC SIGN
NZTA CoPTTM Compliant

MAIN FEATURES OF THE AWVMS:

♦ **Custom built software for NZ market with pre-programmed favourites and simple to use tablet control**

♦ **Manufactured in Europe and tested to met EN standards**

♦ **Two year warranty - conditions apply refer to TSNZ**
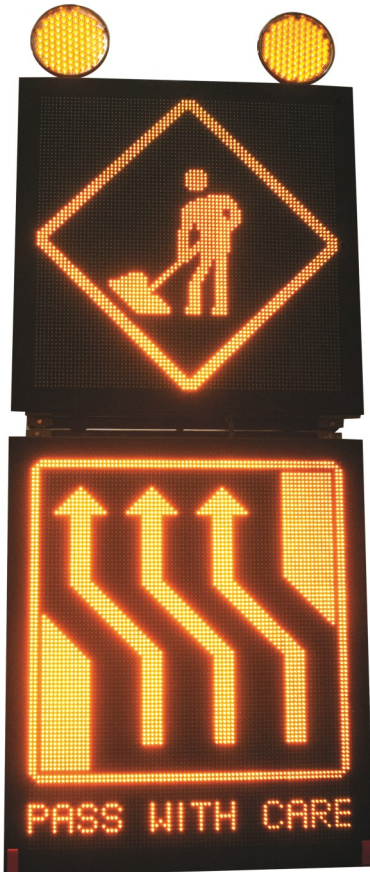
DIMENSIONS:

♦ AWS panel 1380mm x 1380mm

♦ AWS actual display 1190mm x 1190mm

♦ VMS panel 1620mm x 1380mm

♦ VMS actual display 1450mm x 1190mm

♦ 80 x 80 Pixels - 15mm pixel pitch

♦ AWS 6400 - VMS 7680 LED's as per NZTA Photo Metrix requirements

ENVIRONMENTAL DATA:

♦ Temperature Range: T1, T2, T3, (EN12966-1) from - 40ºC to +60 ºC

♦ Humidity: Up to 100%

♦ Mechanical Protection: P3 (EN 12966-1) IP56 (IEC / EN 60529)

OPTICAL CHARACTERISTICS:

♦ Pixel distance: 15mm

♦ Classification: C2, L3, B6, R2 (EN 12966-1:2005 + A1:2009)

♦ Luminance Regulation: Light sensors (default), day time or selection

XENON LIGHTS

♦ 340mm diameter amber light

♦ Compliant to European Std EN12352:2006

♦ Loop timing can be changed to allow for flashing sequence

As per COPPTM Specifications -
Advance Warning Variable Message Sign (AWVMS)
Refer web site for more details:
www.nzta.govt.nz/assets/resources/code-temp-traffic-management/docs/copttm-section-b-4th-ed.pdf

B9.1.1 Types of Variable

There are two types of variable warning message signs (VMS)
- Advanced warning variable sign (AWVMS)
  (covered in this section)
- Standard (VMS) covered in the NZTA'"P7 Specifications for mobile variable message signs (in press).

- The AWVMS is used in conjunction with the LAS on Level 2

B91.2 About the AWVMS

The AWVMS is designed to provide warning for either mobile or static level 2/3 operations.

It is used as a substitute for the tail pilot vehicle and is best suited for his role when mounted on light commercial vehicle such as a Ute.

The AWVMS must be carried on either a class NA lights goods vehicle, or a TA very light trailer with limited weights and dimensions. See weights and dimensions specified below.

Light goods vehicle (Maximums)	
Item	**Measurement**
Kerb weight (tare weight)	**Max = 1950kg**
Vehicle width (excluding mirrors)	**Les than 1910mm**
Total vehicle length	**Less than 5250mm**
Gross weight	**Less that 2750kg**

Very light trailer (Maximums)	
Item	**Measurement**
Kerb weight (tare weight)	**Max = 750kg**
Vehicle width (excluding mirrors)	**Less than 1500mm**
Total vehicle length	**Less than 5000mm**
Gross weight	**Less than 15 kg**

B9.1.3 Specifications

Detailed specifications for the AWVMS are listed in appendix E of the NZTA's P37 Specifications for mobile variable signs (in press)
_____-
The AWVMS must be capable of being operated from within the cab of its support vehicle. If it is to be used as a standards VMS it must comply with the relevant:
- Legislation
- Sections of this manual, and
- The NZTS's P37 Specifications for mobile variable message signs (in press).

B9.1.4 Height

The bottom of the message panel must be positioned a minimum of 600mm above the ground surface.

3

VMS Console—version 1.0.5

VMS Console is an application that enables control of a variable message sign (VMS) using Android based tabled. The application can be started by tapping on the corresponding application icon, or by plugging provided RS-232 adapter cable. When application is started,   welcome screen is shown first (Fig. 1).

Fig. 1. The welcome screen application.

ATTENTION: If you have problem connecting a VMS using RS-232 adapter cable, please restart the tablet leaving adapter cable attached (first check if the adapter power plug is connected). The tabled can be restarted by holding power button until *Device options* dialog appears, and

Connecting to a VMS device

In order to control it, the application must be connected with VMS device. VMS device can be connected using Wi-Fi/Ethernet, Wi-Fi/232, Bluetooth or RS-232 adapter cable. The first page that follows welcome screen is *Connect to Device* page (see Fig. 2, 3 and 4).
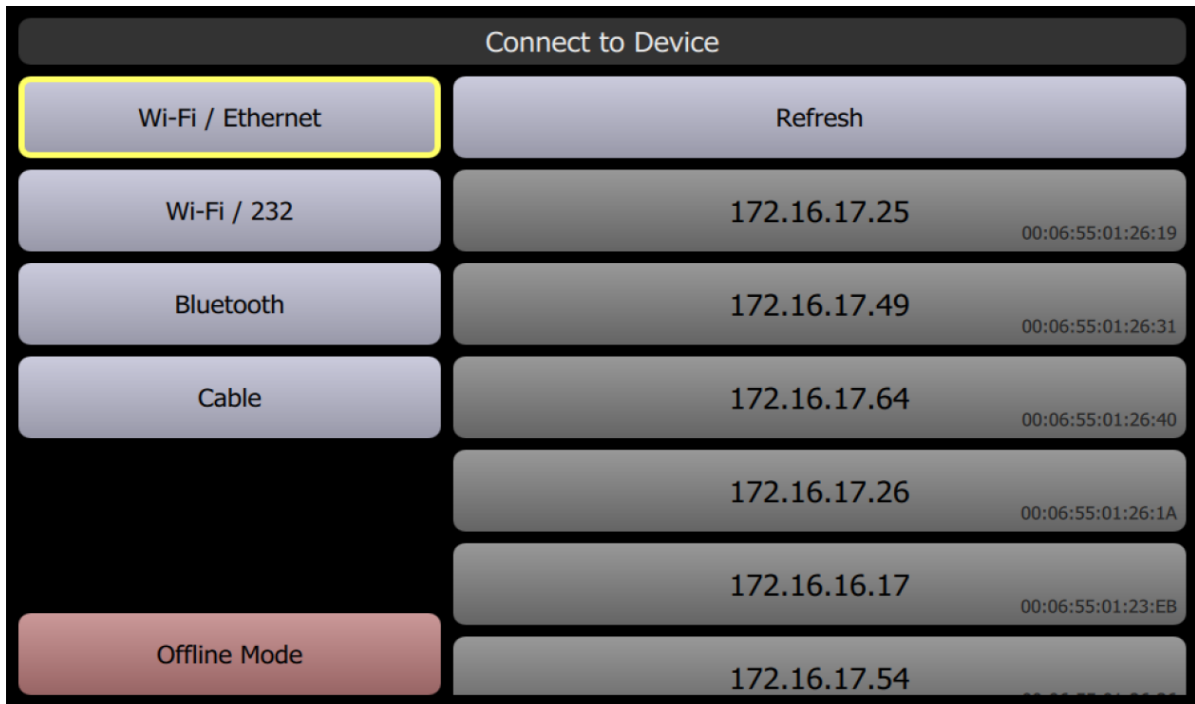
Fig. 2. Connect to device using Wi-Fi / Ethernet.

When Wi-Fi/Ethernet mode is active (Fig. 2) compatible devices are discovered and displayed in a list. Pressing button *Refresh* clears the list and fills it with devices that are currently available. Connecting to a device is done by tapping the corresponding button.
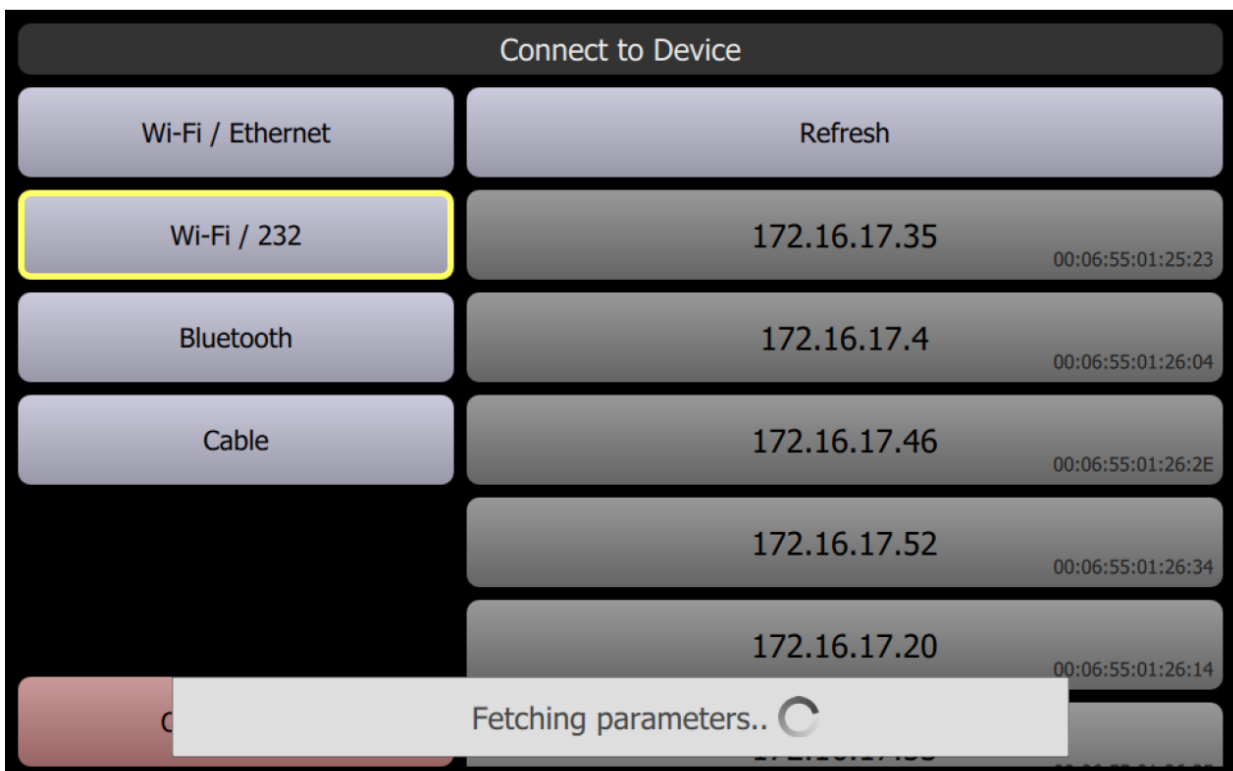

Fig. 3. Connect using Wi-Fi/232

Unlike *Wi-Fi/Ethernet*, tapping on the button *Wi-Fi/232* or button *Cable* immediately starts connection attempt. Finally, *Offline Mode* button skips connecting and goes directly to the main application page in offline mode (see Fig. 17).

Nevertheless what communication mode is chosen, the first step in the connection process is fetching of the device parameters (Fig. 4).
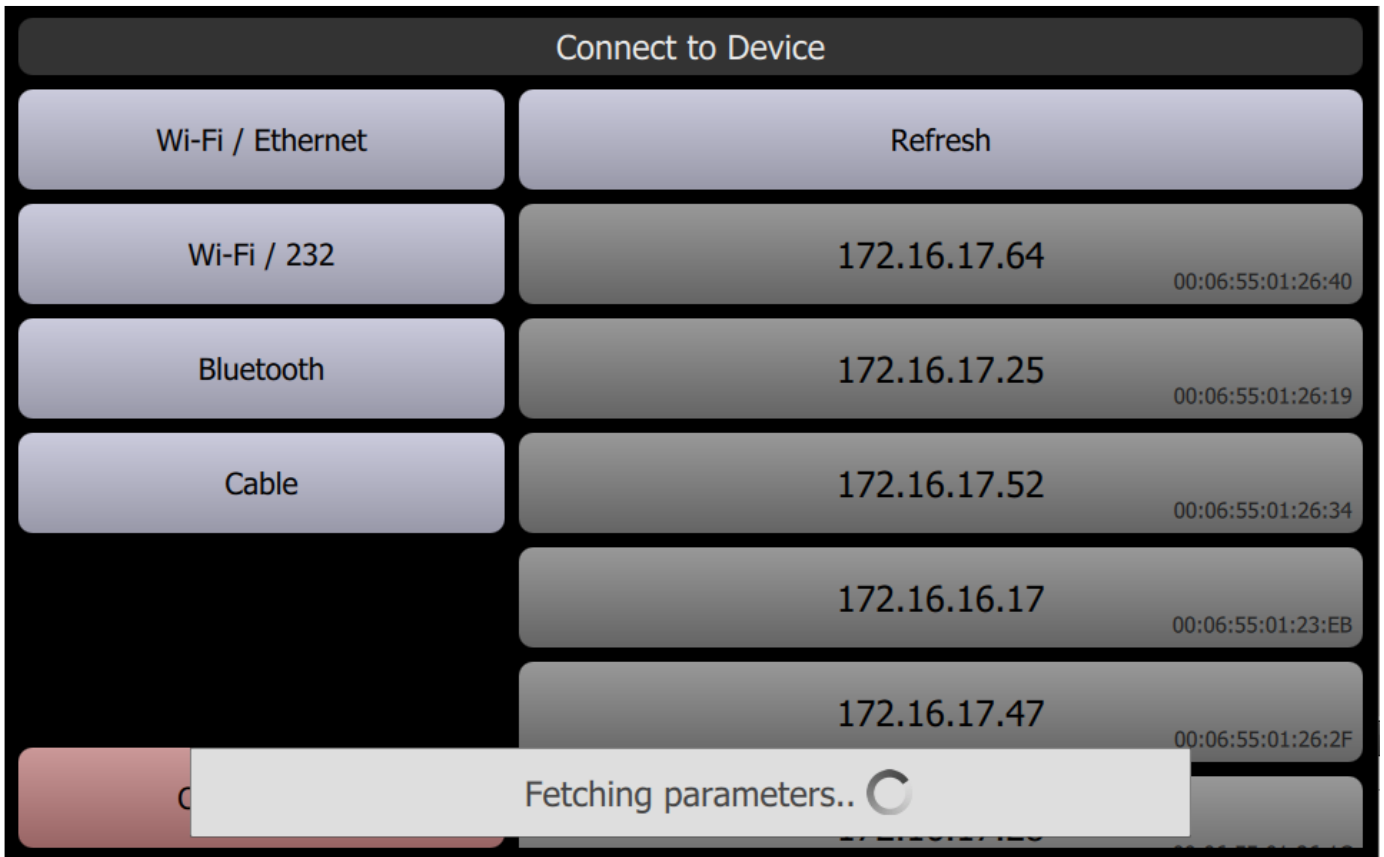

Fig. 4. Progress display during device parameters fetching.

After all parameters are fetched, application decides whether media should be also fetched. Media fetching is required when connecting to a different device, or when device content is (re) loaded since last connecting. The process of media fetching (see Fig. 5) requires few minutes, so be patient.
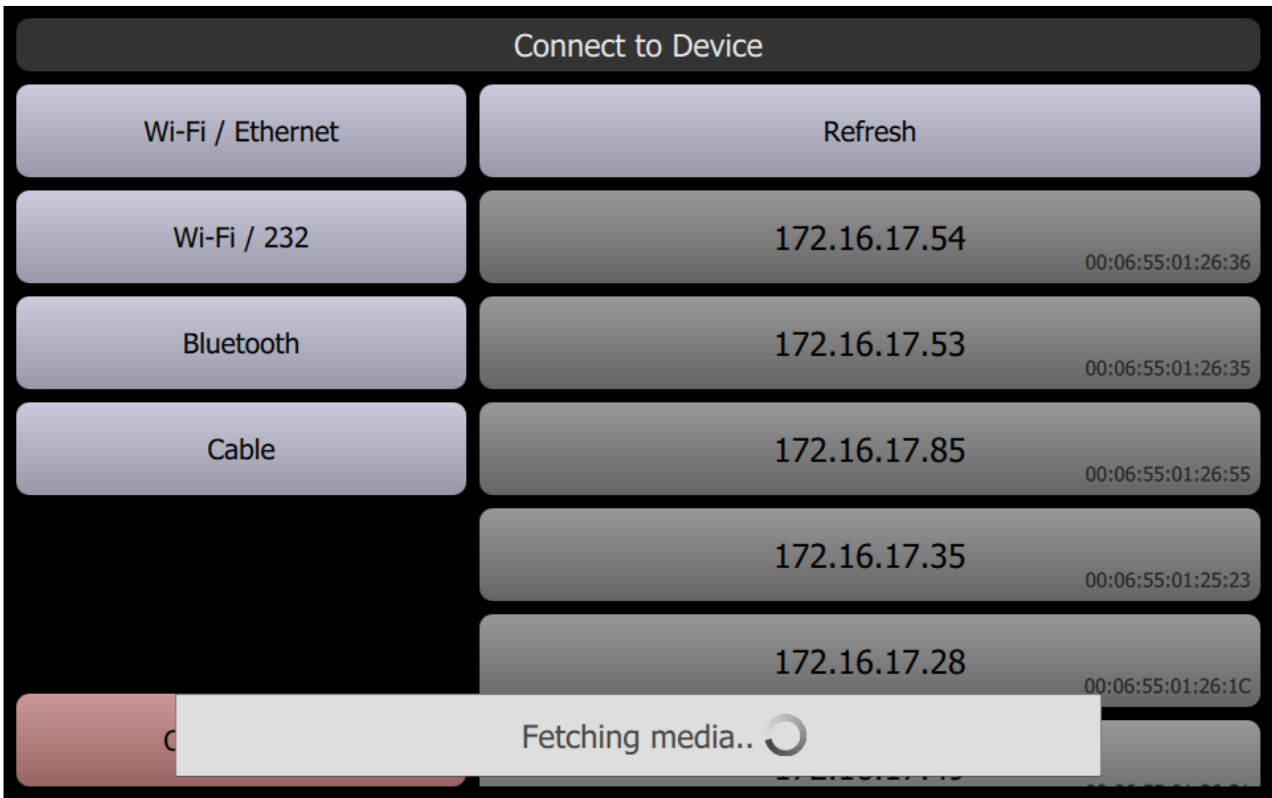
Fig. 5. Optional media fetching from the connected device.

VMS preview and favourites switching

After successful connecting sequence, the main application page is displayed (Fig. 6). Be ware, that the content of the connected VMS is automatically set.
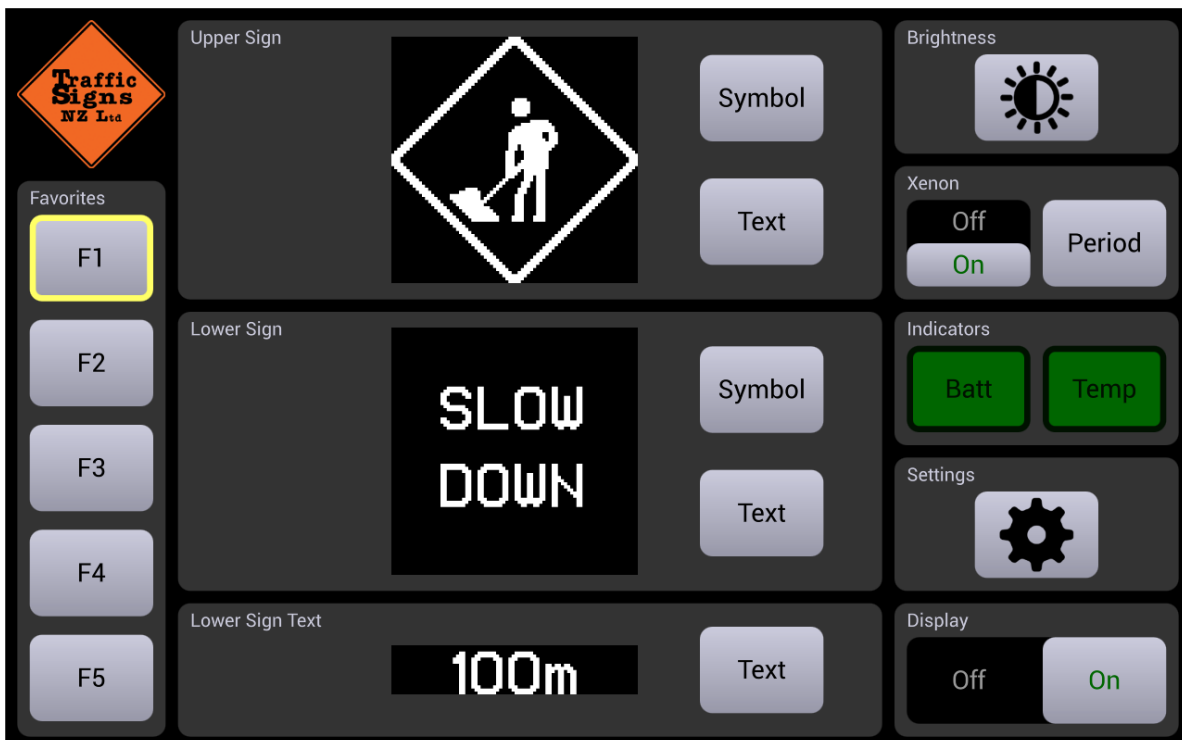

Fig. 6. The main application page.

The main application page contains buttons *F1*, *F2*, *F3*, *F4*, and *F5* for favourite selection, pre-view area with buttons for setting VMS content, and the menu area with various options and indicators.
Activating a favourite is done by tapping on the corresponding button, and by confirming choice after looking at the favourite preview.
After favourite is changed, the VMS content is set accordingly.

Fig. 7. Favourites switching with preview and confirmation request.

Editing VMS content

VMS is divided into three parts: upper sign, lower sign and bottom text (physically part of the lower sign). Upper and lower sign area can display symbols and text. In order to set symbol of upper or lower sign, you should tap on a corresponding *Symbol* button. To edit and set text there's *Text* button.
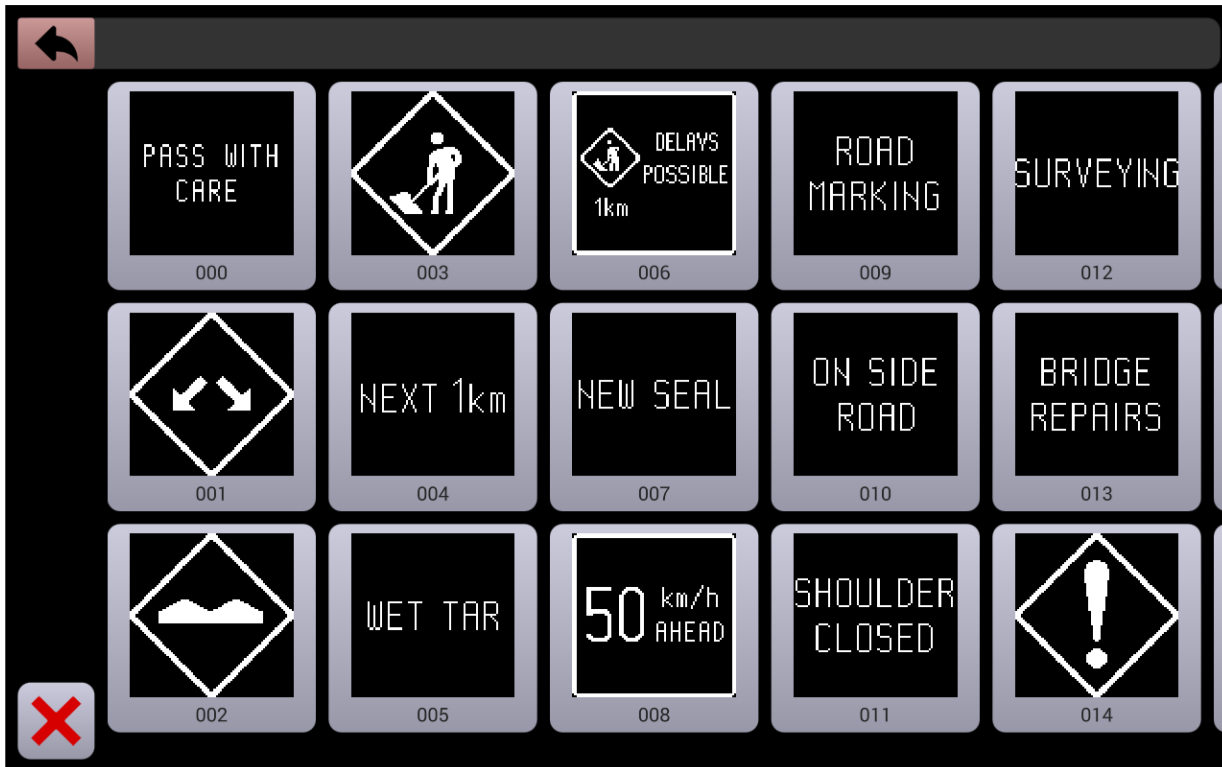
Fig. 8. The symbol selection page.

Tapping on one of the two signs *Text* button activates text editor that is displayed in the Fig. 9. In the text editor you can add up to 5 lines of text, delete selected line, change text and font of the Fig. 10. Finally, by tapping button *Set* edited text becomes active, and page is closed.

Fig. 9. The text editor page.

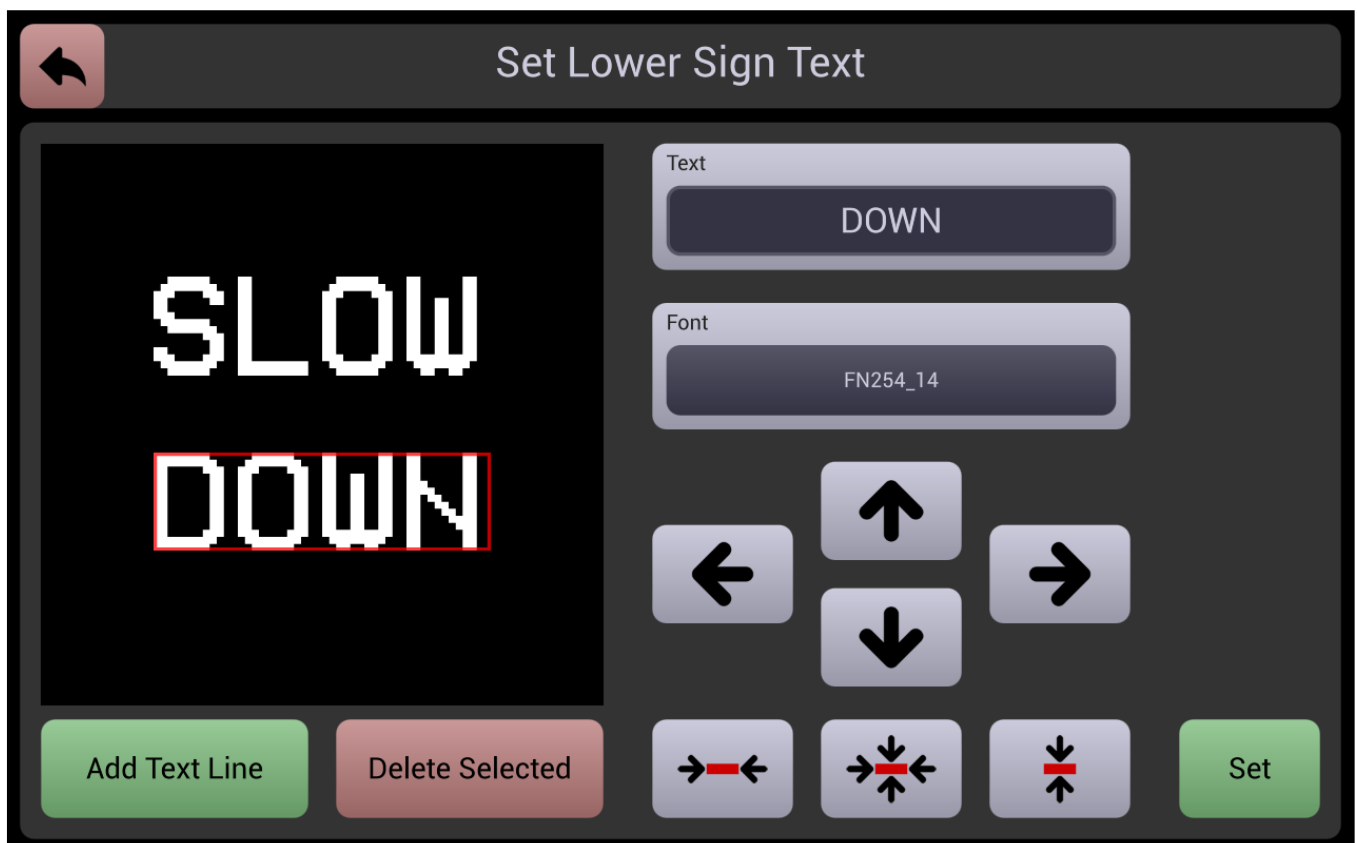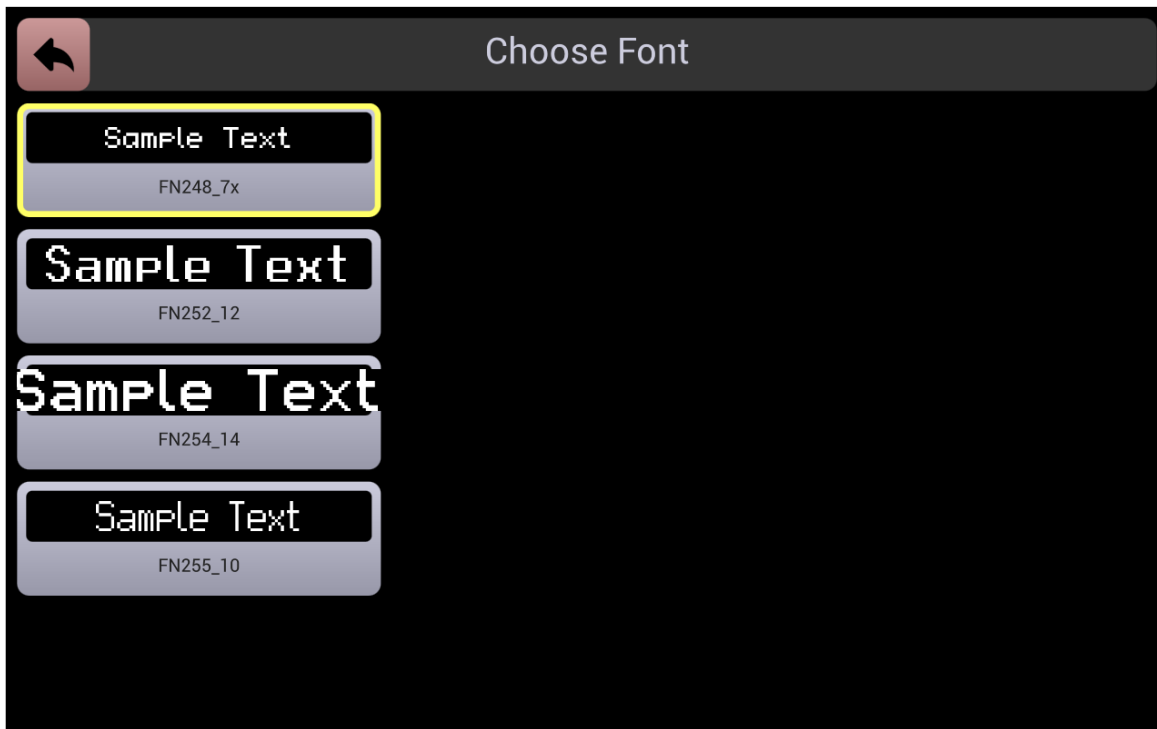Fig. 10. Page for font changing.

Bottom text line can be selected and/or edited using page displayed after tapping corresponding *Text* button (Fig. 11). Button plus is used for adding new entries, button X for setting blank text line. By tapping text items they become active and page is closed. Tap and hold action opens single line text editor (Fig. 12).
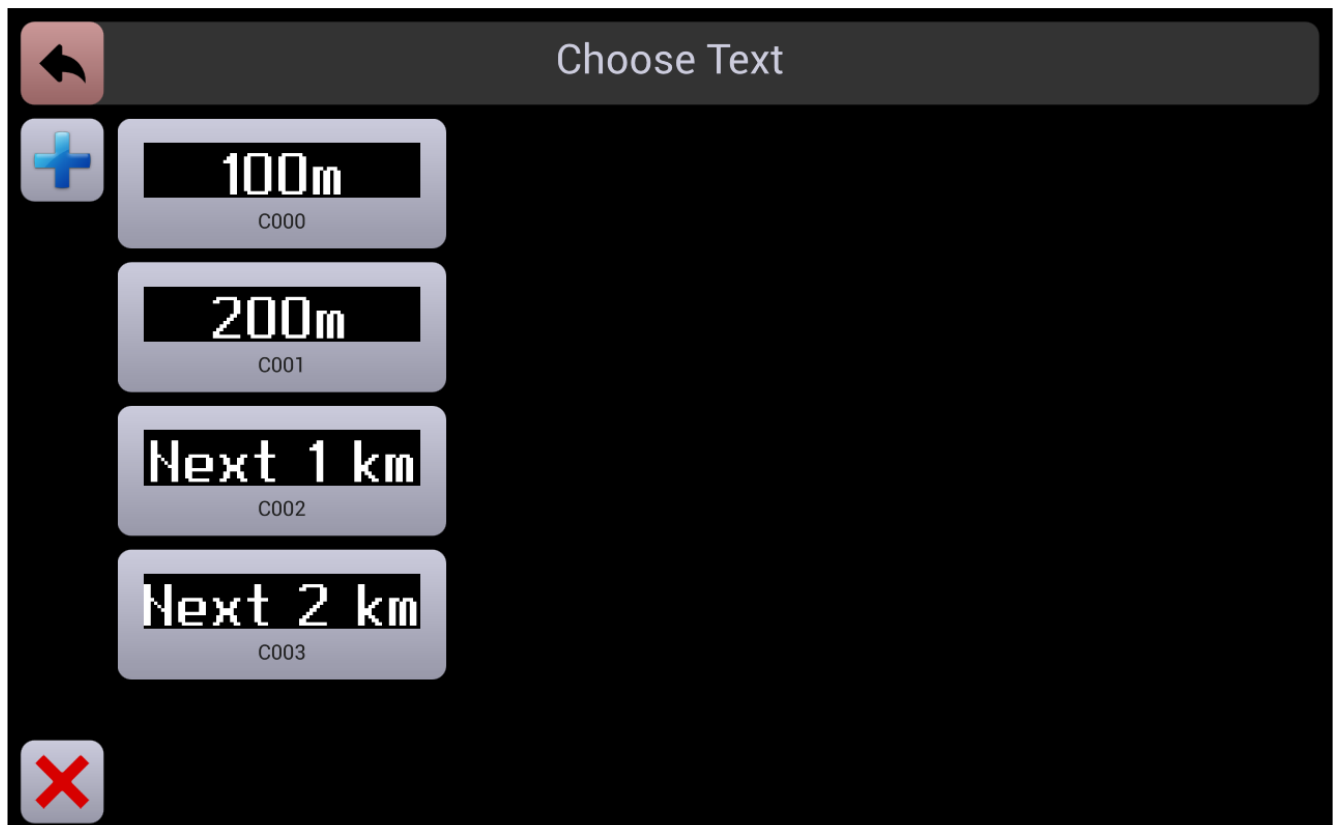

Fig. 11. Bottom text selection page.

Single line text editor (Fig. 12) is very similar to previously described sign text editor. The only different is that it only allows one line of text, and that it has *Delete Item* button that is used for deleting text entry. Button *Save* (instead of *Set*) saves current item in its current state and closes the page.
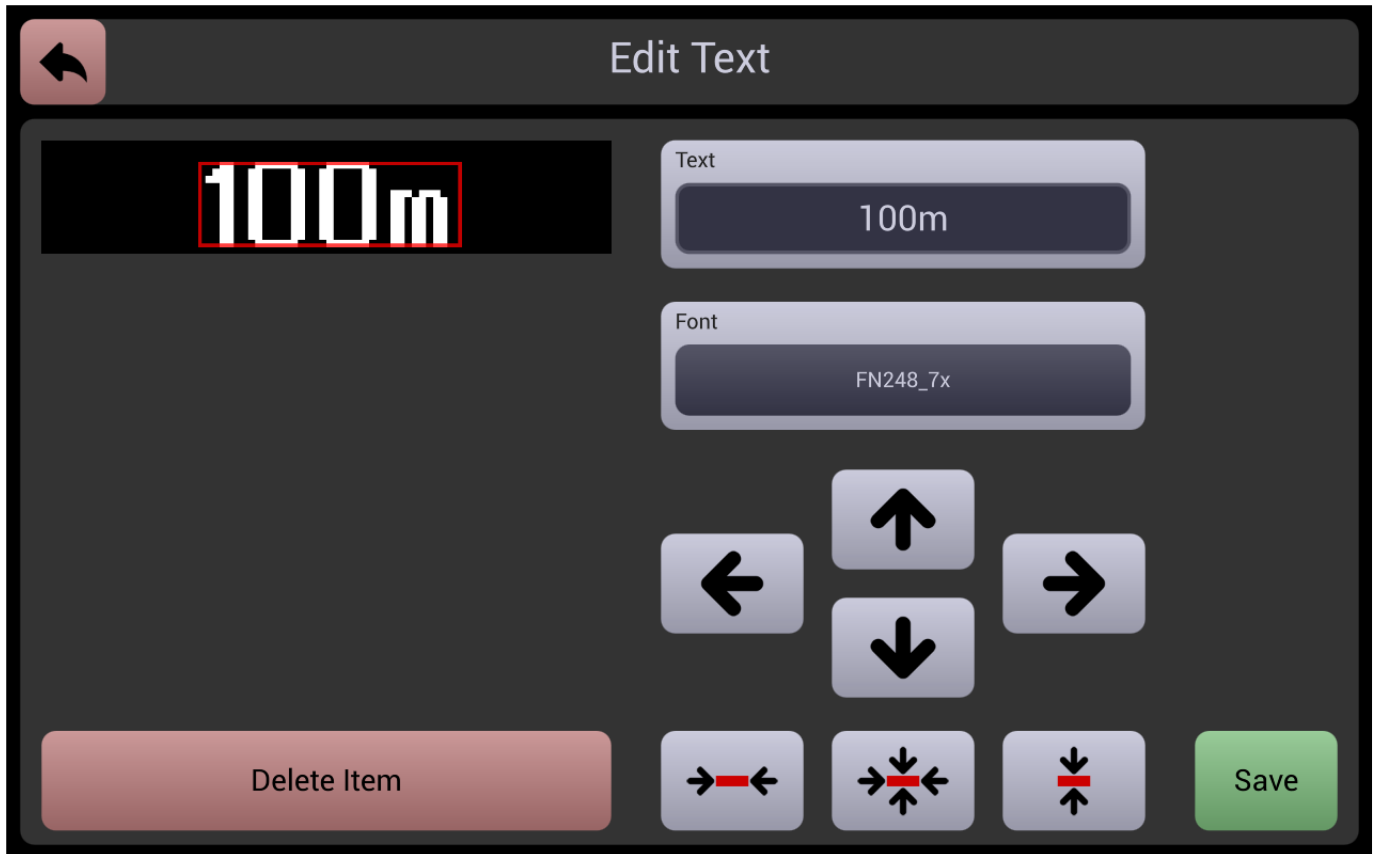
Fig. 12. Single line text editor.

Menu area

Menu area covers right side of the main application page and it contains following options and indicators:

Brightness control
Xenon control
Battery and temperature indicators
Settings
Display on/off switch

The state of these options and indicators are read from the connected VMS and they are not related to previously described favourites.

By tapping brightness control button, page shown in the Fig. 13 is displayed. This page indicates which brightness mode is active (button with yellow border), and let you activate some other brightness mode. Besides fixed brightness modes (1%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100%), there are additional *Daytime* and *Sensor* brightness priority
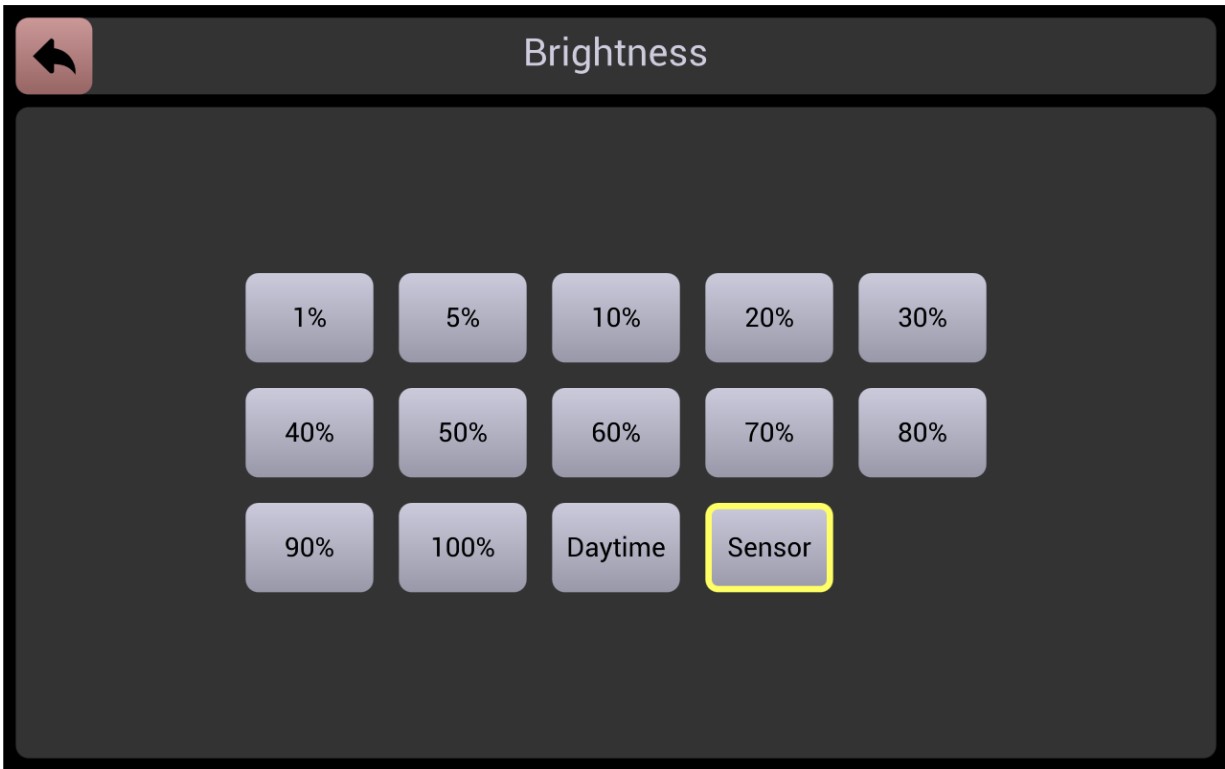
Fig. 13. Brightness mode selection page.

Xenon control section has one on/off switch and additional *Period* button for setting flashing period. The period is set from the page shown in the Fig. 14. It can be 1, 2, 3, 4, or 5 seconds.
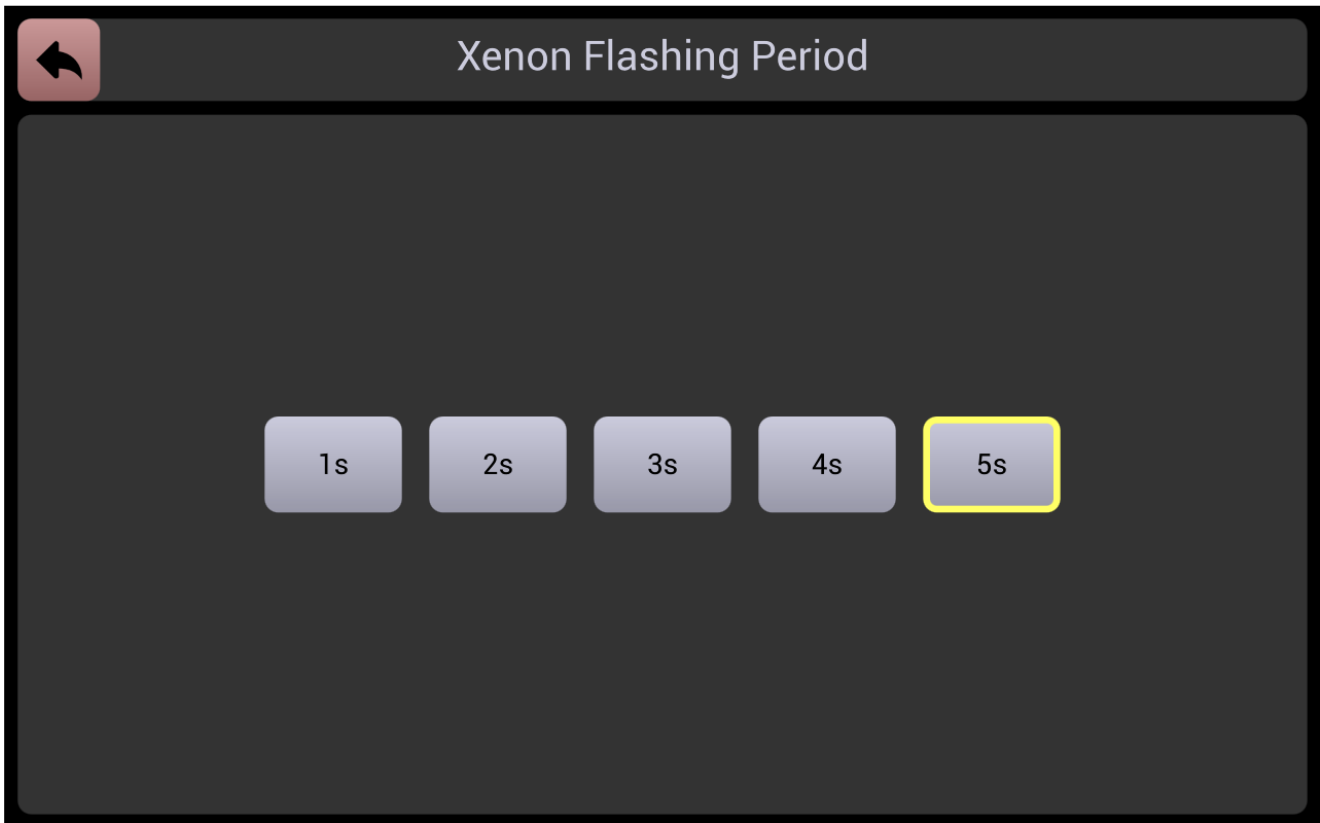
Fig. 14. Xeon flashing period selection.

Settings area can be accessed by tapping on the corresponding button.

Device parameters are displayed in the separate page shown in the Fig. 15.
To enable easier navigation, parameters are divided in sections. Tapping on parameter allows editing. (with in parameter is not read only).
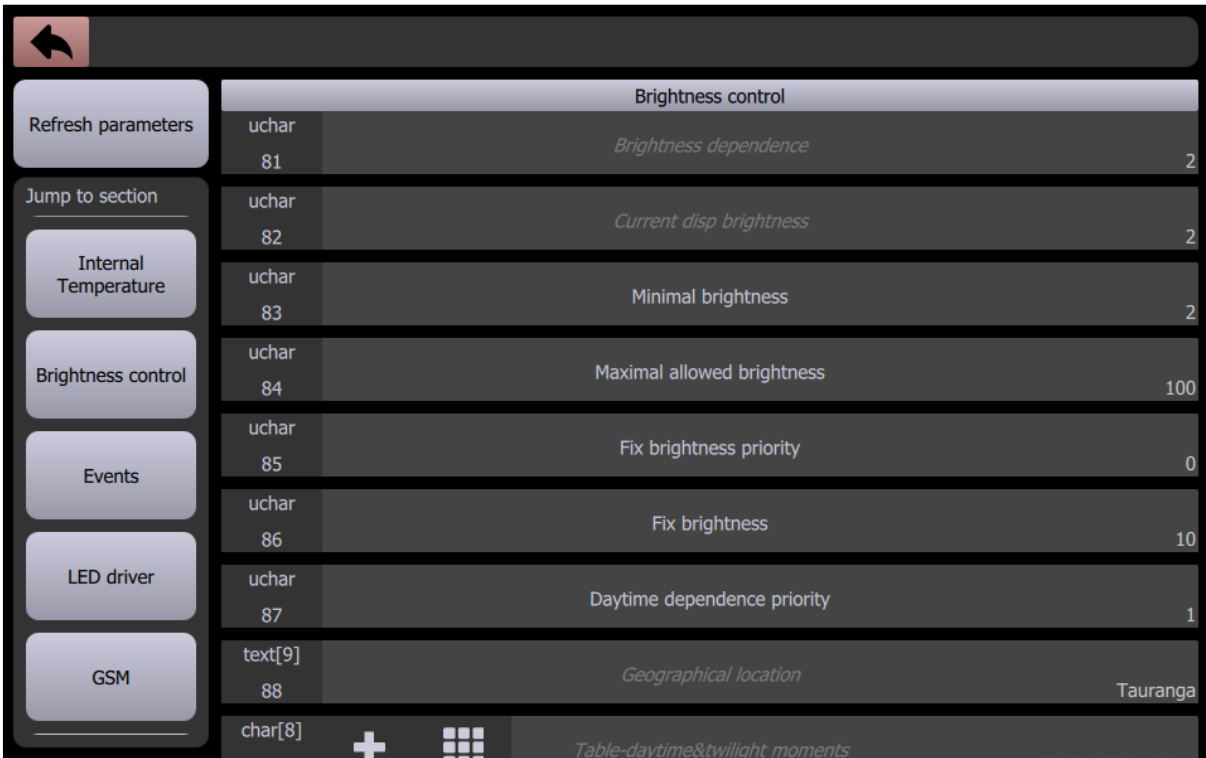
Fig. 15. Page for parameters display and editing.

Display on/off switch is used to display and change current on/off state of the display. When display is off, VMS preview is dimmed and red text "OFF" is shown accordingly.
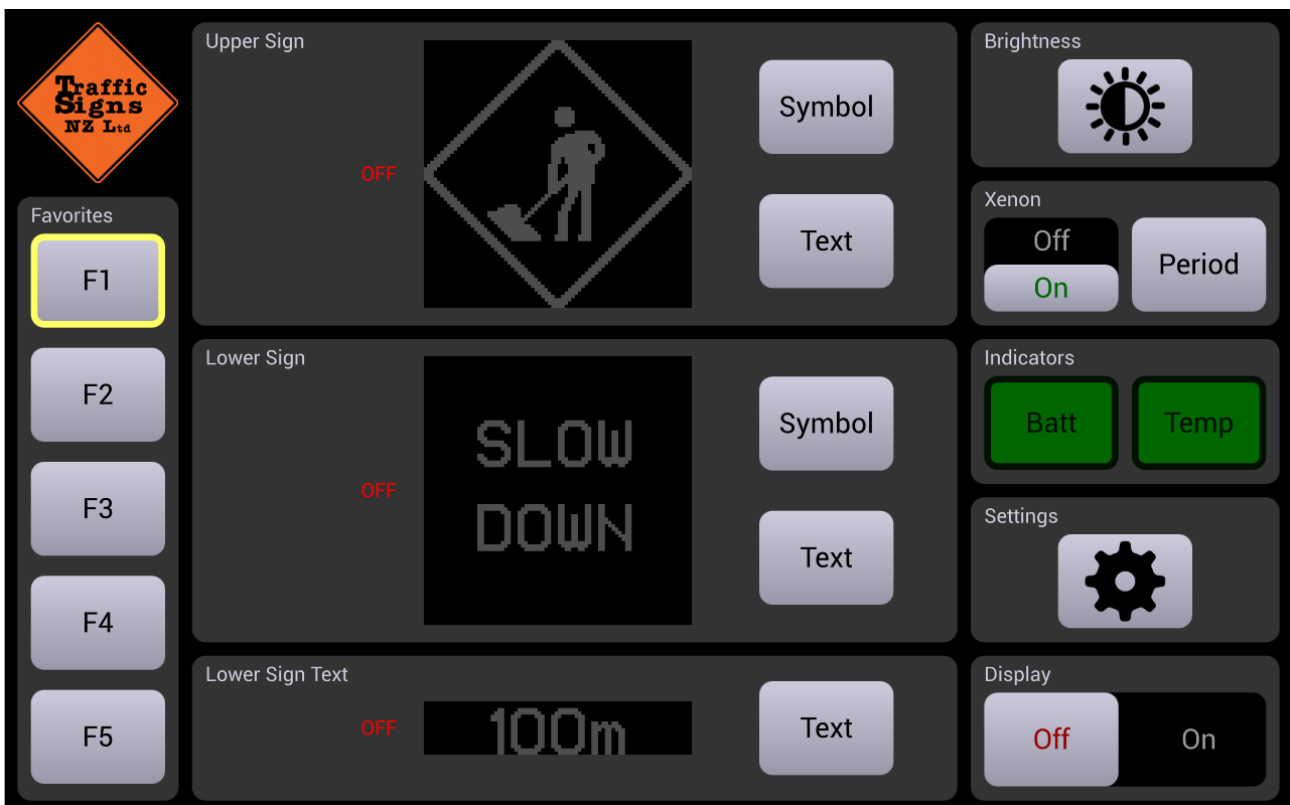
Fig. 16. The main application page when display is turned off.

Dimmed preview is also used to depict offline mode. But now, red text "DISCONNECTED" is shown accordingly. Display on/off switch is replaced with button *Connect*. Tapping it you return to the connection page shown in the Fig. 2.

Fig. 17. The main application page after connection lost (offline mode).

VMS Console
VERSION 1.0.0

SOFTWARE INSTALLATION AND UPDATING MANUAL

Introduction

SOFTWARE INSTALLATION AND UPDATING MANUAL

VMS Console is an application that enables control of a variable message sign (VMS) using Android based tabled. The application is distributed using standard Android application package (APK file).

There are several ways to install/update application using APK file. Here we will describe one of them that relies on use of USB flash drive and Micro USB OTG cable.

Prerequisites

In order to begin installation procedure you must have 1 x USB flash drive (Fig. 1), and

Fig. 1. USB flash drive.

Fig. 2. Micro USB OTG cable

USB flash drive must be formatted using FAT16 or FAT32 file system in order to be recognized by the tablet. The capacity of the USB flash drive must be greater than the size of the APK file. Since APK file is about 10 MB, any size of USB flash drive will do.

Installation Instructions

In order to install *VMS Console* you should follow these simple steps:
Copy received APK file into the USB flash drive.
Plug USB flash drive into Micro USB OTG cable female connector.
Plug other side of the micro USB OTG cable into tablet.
The tablet will recognize the USB flash drive is connected and will automatically launch *My Files* application (Fig. 3).

Tap on the *Usb Drive A* icon to open USB drive and show its content.
Tap on the *VMS Console TSNZ< version> apk* file in order to update/install the application (Fig. 4).

The dialog will appear that shows new or all permissions required by the application (Fig. 5). In order to continue you must tab *Install* button.
Sometimes warning will appear that Google will check installed apps that you should also accept tapping on *Accept* button (Fig. 6).

Now installation process can start (Fig. 7). It usually takes less than a minute.
After installation is finished you get informed with a message shown on Fig. 8. Tap on *Done* button to close the dialog.

Now you should safely remove USB flash drive before physical disconnecting OTG cable.

You should swipe screen from top to bottom and select option *USB mass storage connected* shown in the Fig 9.

The application is updated and ready to use.
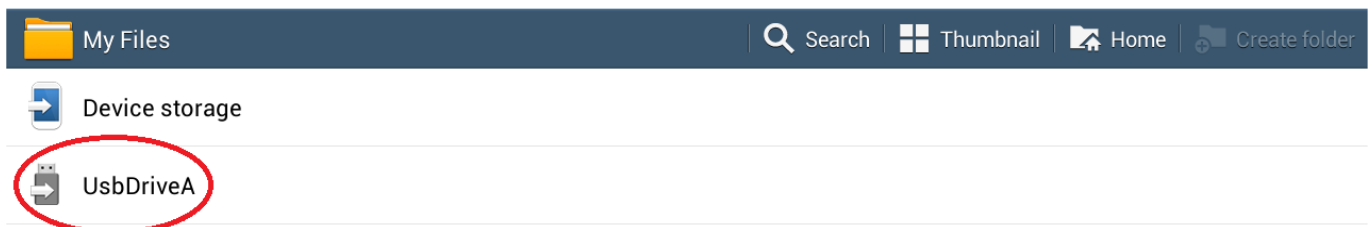
Fig. 3. Open USB flash drive in My Files.
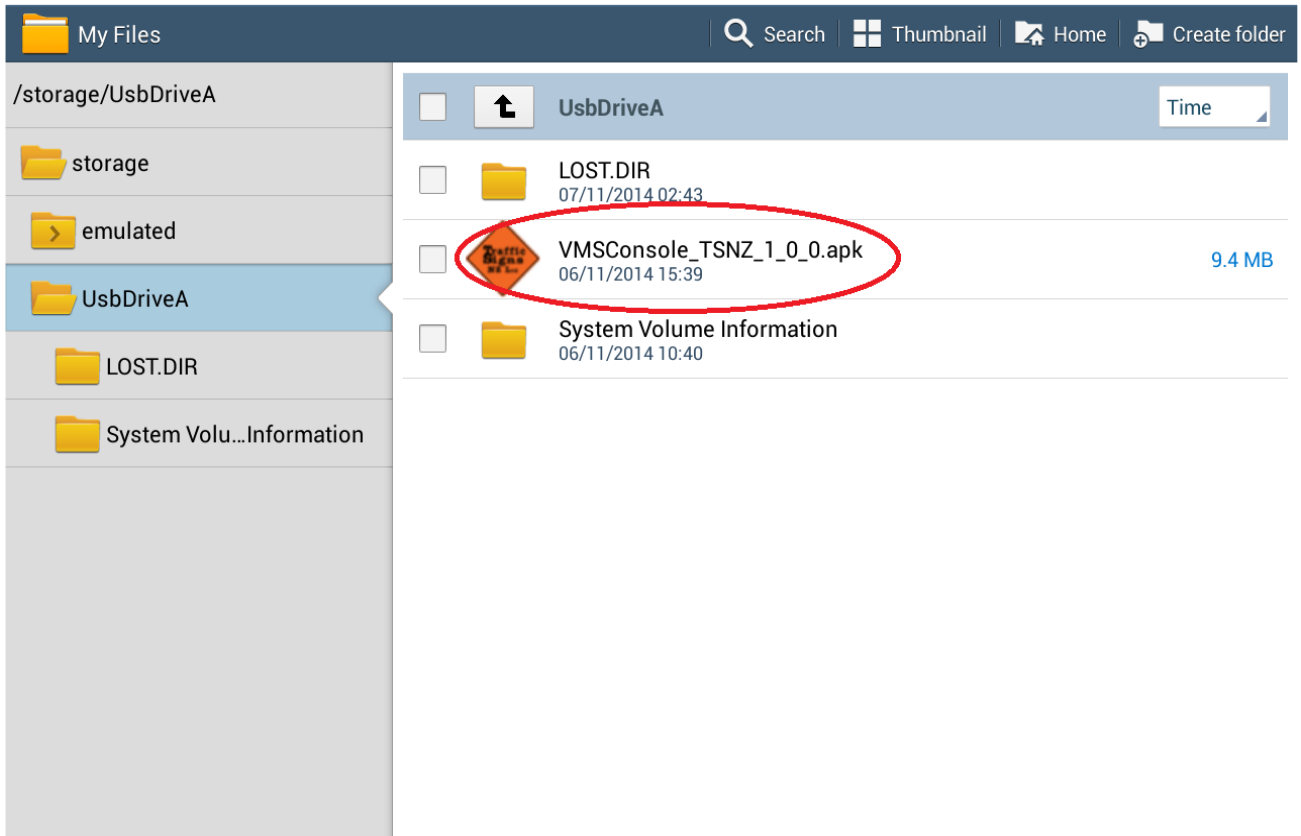
Fig. 4. Select APK file to start installation process.
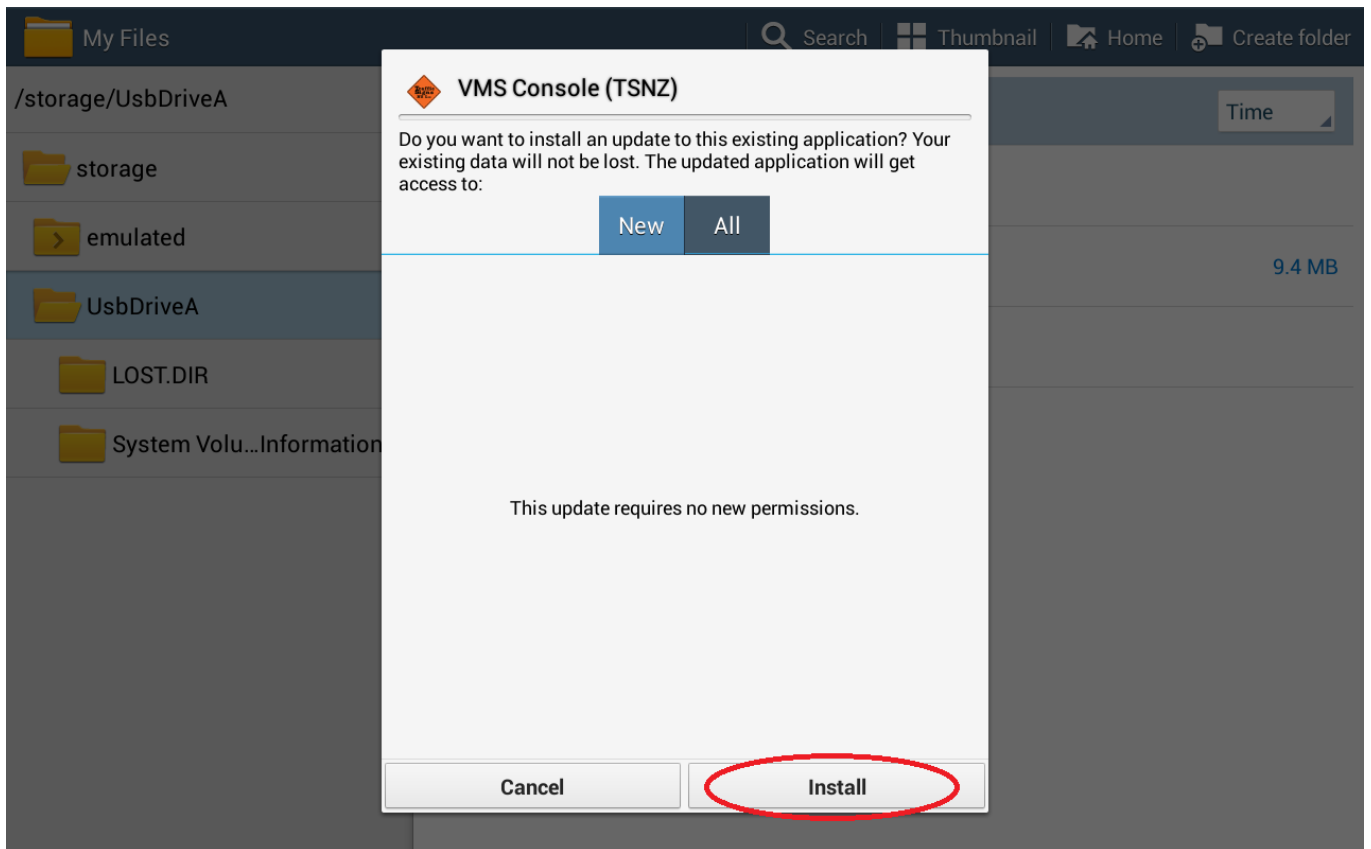
Fig. 5. Review permissions and confirm that installation can start.
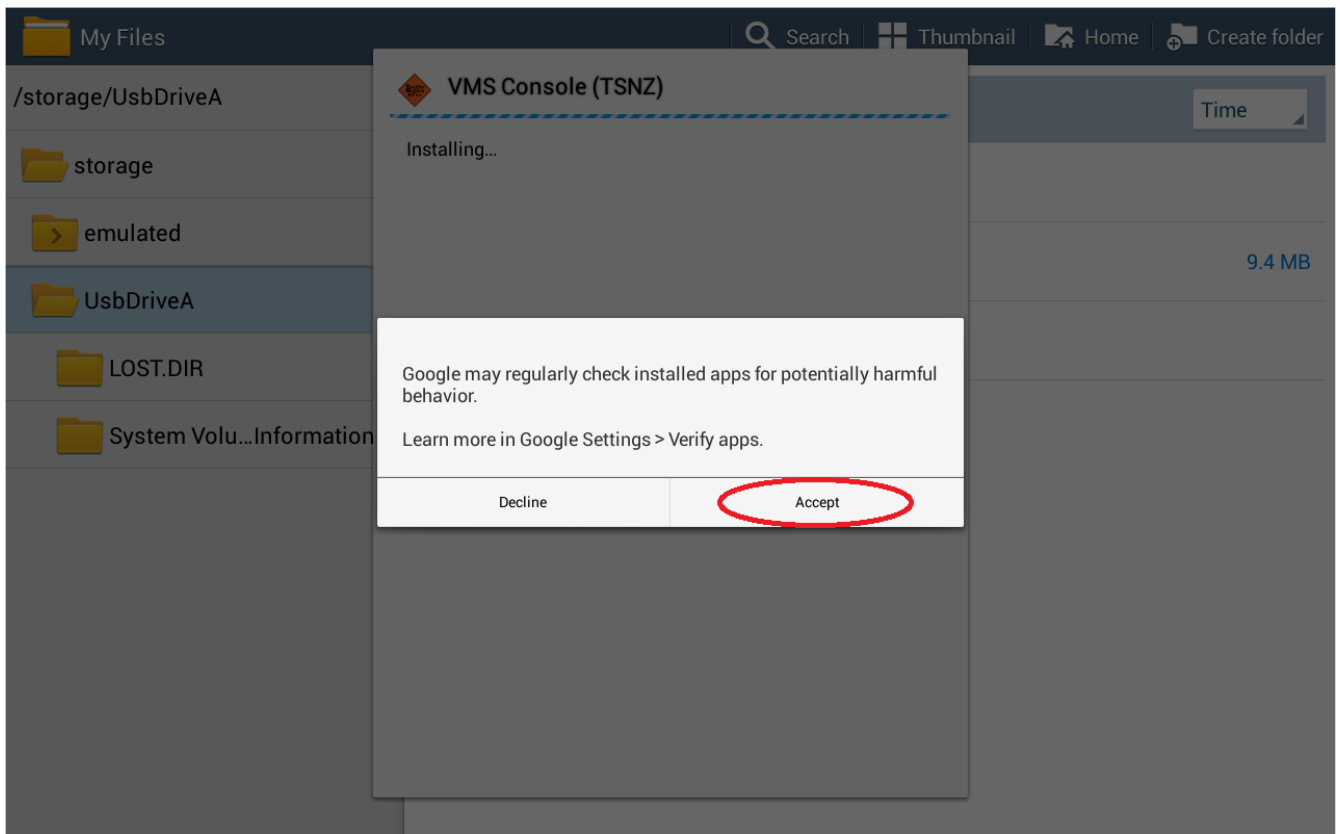
Fig. 6. Accept that Google may check installed apps for harmful behavior.
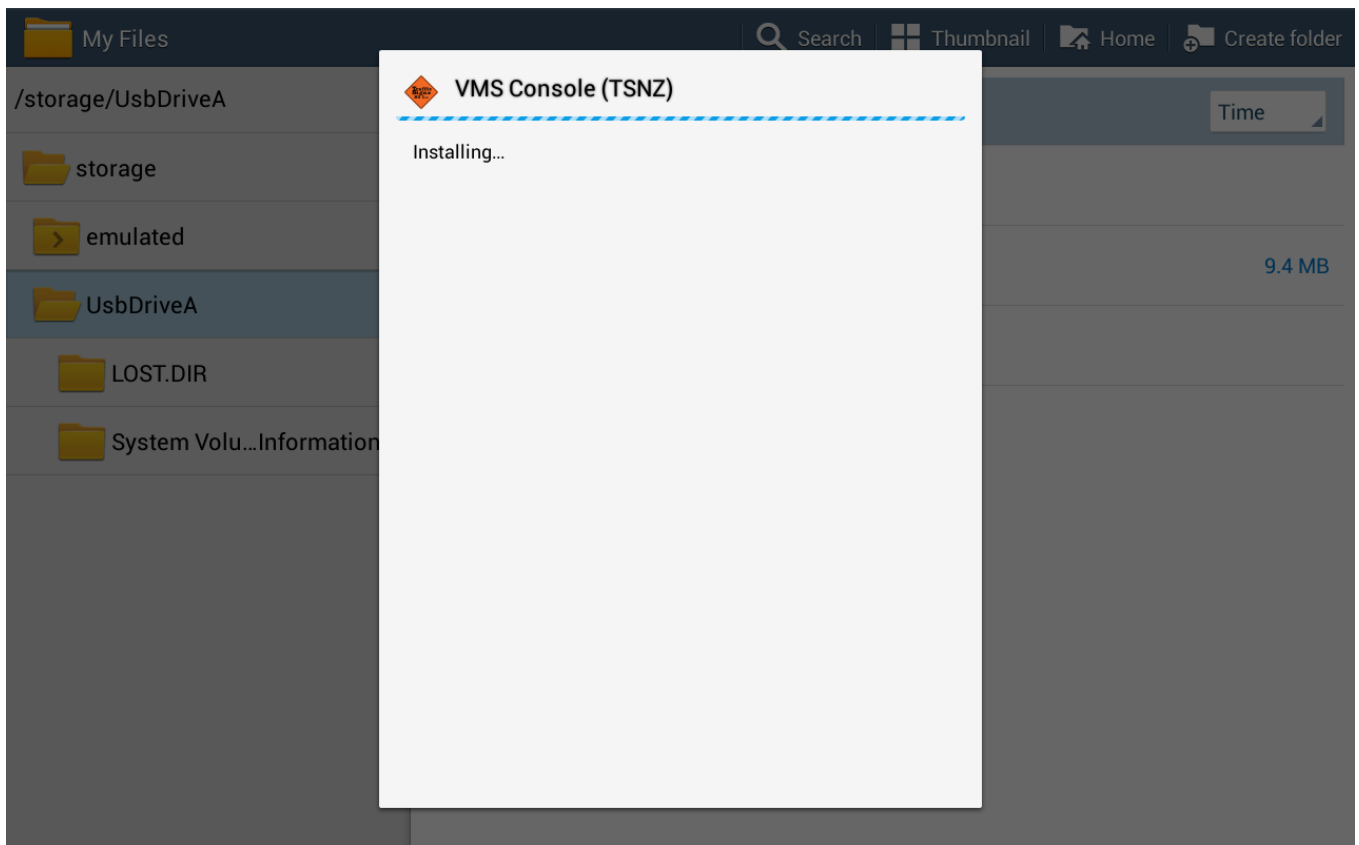
Fig. 7. Wait until installation is finished.

SINGLE COLOR
VARIABLE MESSAGE TRAFFIC SIGN
TRS-TRA-Y4
USER MANUAL

To ensure proper use of this product, please read this manual carefully and retain for future reference. This document will give you information how to use, install and service the unit. In case of unit failure and required service, contact an authorized service or local distributor.

Symbols used in this Manual:

⚠ Indicates that personal injury or electrical or mechanical damage of the unit can result if proper precautions are not taken.

△ Indicates important information.

1. Technical specification

Model	Dimensions (mm)	Supported pictograms
TRS-TRA-Y4UP-Y-80x80	1380x1380	80x80px
TRS-TRA-Y4DN-Y-96x80	1620x1380	96x80px

Electrical data
Nominal voltage: 24VDC
Maximal power consumption
TRS-TRA-Y4UP-80x80:   500 W
Maximal power consumption
TRS-TRA-Y4DN-96x80:   600 W
Communication interface: RS232, Bluetooth, GPRS, Ethernet

Optical characteristics
Pixel distance: 15 mm
Classification   C2, L3, B6, R2 (EN 12966-1:2005+A1:2009)

Luminance regulation: light sensors (default), daytime or fix

Environmental data
Temperature range: T1, T2, T3 (EN 12966-1), from -40°C to +60°C
Humidity: up to 100%
Mechanical protection: P3 (EN 12966-1)
                                            IP56 (IEC / EN 60529)

Mechanical data
Fixation: On the back side
Access inside: From the front side
Horizontal load: WL9, DSL4, TDB2

Product Code for upper sign: TRS-TRA-Y4UP-80x80
Product Code for lower sign: TRS-TRA-Y4DN-96x80

2. Dimensions
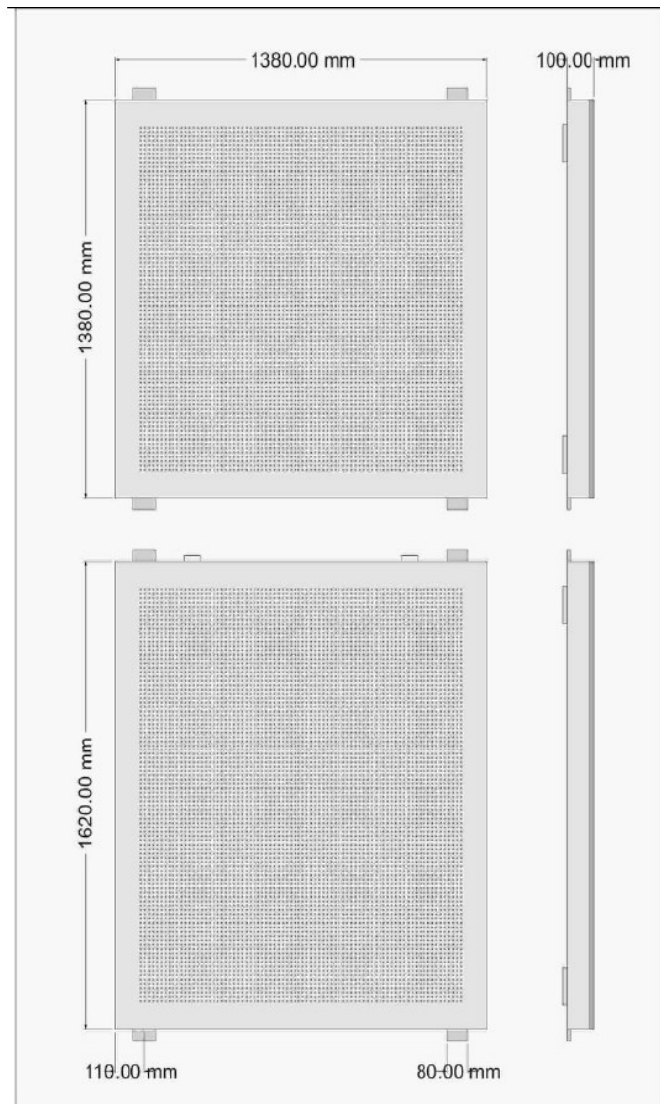
3. General information

3.1 Main features

- Freely programmable, single-color variable message sign (VMS)
- For use on open roads and in tunnels
- Modular design ensures simple maintenance by simple replacements of the parts
- Sign is resistant to permanent presence of dust, rain and/or snow
- LEDs with high luminous intensity and long life time
- Use of UV resistant lenses
- Special system to protect LEDs from temperature peaks that might happen during device operation
- Stable luminance, independent of the mains voltage tolerances
- Luminance could be: manually controlled, automatically adjustable according to actual day time using precise algorithm or automatically adjustable according to external illumination measured by 1 or 2 light sensors
- Precise daytime brightness algorithm depends on geographical location where the sign is installed, taking into account daytime changing during whole year
- A number of logs in memory that can be used for maintenance, troubleshooting and system improvements
- Real time clock with 2ppm precision

- User friendly PC application for controlling and configuring sign
- Available communication interfaces: RS232, Bluetooth, GPRS, Ethernet
- Tablet with serial RS232 and Bluetooth communication interface for controlling the sign.

3.2 Principle of operation

VMS shows pictograms and texts according to defined VMS content. VMS is divided into three parts: upper sign, lower sign and bottom text (physically part of the lower sign). Upper and lower sign area can display symbols and text.

Existing pictograms can be edited and it is possible to add new pictograms. This can be done in two ways, by manufacturer or by customer.

All signs are stored into VMS memory.

VMS content is defined by following parameters:

Upper Sign Symbol (or Text) – defines symbol (or text) to be displayed on the Upper Sign
Lower Sign Symbol (or Text) – defines symbol (or text) to be displayed on the Lower Sign
Bottom Text – defines text to be displayed on the bottom of the Lower Sign
Brightness – defines display brightness and could be:
    1, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100% – it is fix brightness, manually set
    Daytime – Brightness will depend on day time
    Sensor - Brightness will depend on light sensor
Xenon Flashing Period – defines period of Xenon Lights flashing and could be: 1, 2, 3, 4, or 5 seconds

Traffic sign display state can be changed either using tablet or by PC software delivered with the sign.

3.3 Brightness

In order to ensure maximum visibility and readability, TRS has precise brightness regulation.
Sign supports three types of brightness regulation:

- Light sensors
- Daytime
- Fixed value

Current brightness dependence is determined by brightness regulation priorities. Priority can be high, medium or low. If light sensors regulation has highest priority, brightness is regulated by light sensors.

Light sensor regulation means that brightness depends on external illumination measured by sensors. In case of light sensors failure, sign will switch automatically to next highest priority regulation mode.
When daytime brightness regulation is active, brightness depends on actual time, date and geographical location where sign is installed. It takes into account daytime changing during whole year for particular location. One location per country or in 500km circle in the same time zone is good enough.

Fixed brightness sets sign to fixed brightness value.

4. Controlling the sign using VMS console on tablet

Tablet adjusts signal plan parameters and load plan into the sign. For detail instruction about controlling the sign using tablet see separate user manual "UP506_TRS_Tablet_DMVConsole".
Communication between tablet and sign could be Bluetooth or wired RS232.

TABLET

USB

RS232

USB-POWER

POWER CABLE
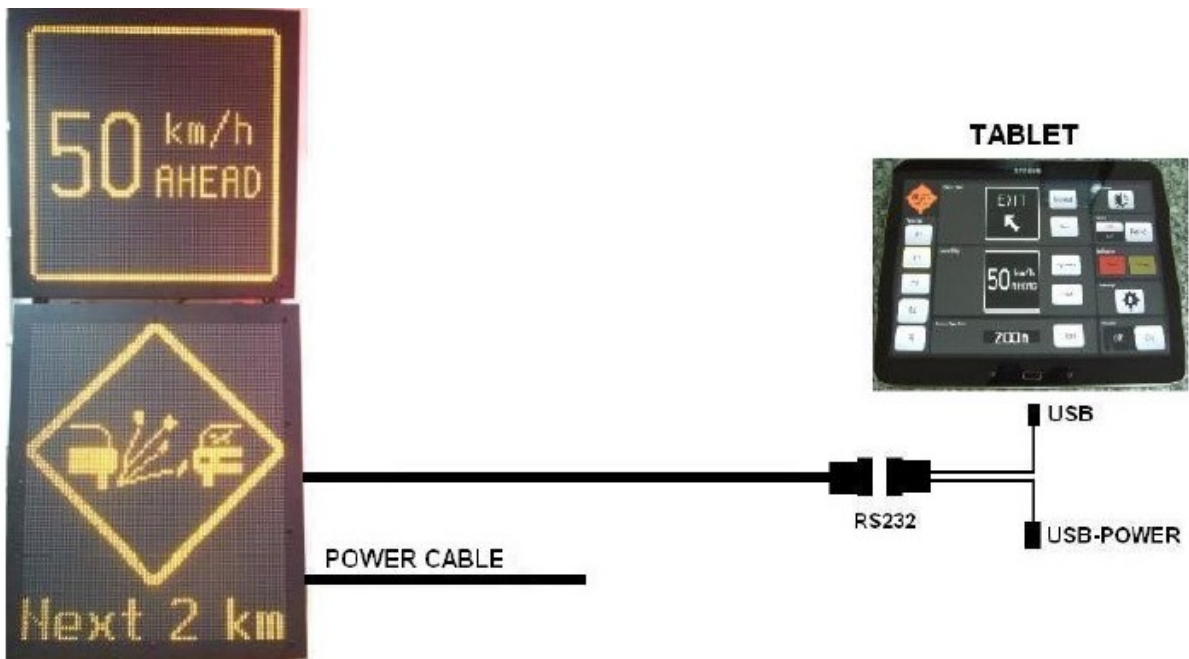
5. Controlling the sign using SMS and GPRS

VMS has built in GSM/GPRS modem for wireless connecting the sign via GSM/GPRS communication protocol.

Connecting and controlling the sign over GSM/GPRS is described in detail in separate user manual "UP475_Controlling the sign using SMS and GPRS".

6. Connecting the sign to PC

In order to read data from the sign or to re-configure sign user can connect to PC, and use appropriate PC software, delivered with sign. Communication interfaces for connection to PC is ETHERNET.

To connect the sign to PC follow next few steps:

1. Install and start PC software "DMV Display Studio".
2. Disconnect the sign from power supply
3. Open front panel of the sign
4. Connect Ethernet cable to Ethernet connector on CPU board
5. Connect the sign to the power supply

Prior to controlling sign via Ethernet, it is needed to adjust sign IP configuration to existing LAN. Adjusting IP configuration is described in user manual "UP320-EN_Setting_IP_adress_of_DMV_network_devices".

RJ-45 CONNECTOR

RJ-45 CONNECTOR

POWER CABLE

REMOTE PC

24

7. Parameters

User can read and change parameters using tablet or PC software delivered with sign.
Parameters are divided into sections and can be editable or not. Value of editable parameter could be changed while non-editable parameters could only be browsed.

7.1 Parameters related to Internal temperature

Parameter section: Internal temp	Description of parameters
Min int Temp	Minimal read temperature inside the sign
Min int Temp was	Date and time when minimal temperature was read
Max int Temp	Maximal read temperature inside the sign
Max int Temp was	Date and time when maximal temperature was read
Temp alarm active	Indicates which temperature alarm is active 0=no temperature alarm active 1=cooler on 2=alarm temperature active 3=alarm temperature high active
Cooler on temp	Temperature value that turns cooler on
Alarm temperature	Temperature value on which display takes action defined by parameter "Action on temp alarm"
Alarm temperature high	Temperature value that turns display off
Action on temp alarm	Action that sign takes on temperature alarm 0=no action 1=display off 2=dimm

7.2 Parameters related to Brightness

Parameter section: Brightness control	Description of parameters
Current brightness dependence	Brightness regulation mode. Shows how brightness is regulated. Depends on priorities 0=Fix mode, 1=Brightness depends on day time 2=Brightness depends on light sensor(s)
Current disp brightness	Current display brightness in % (1-100%)
Minimal display brightness	Value of minimal display brightness. This parameter defines minimal brightness if brightness depends on daytime or on light sensors. Do not change this value before consulting with the manufacturer!
Maximal allowed brightness	Value of maximal display brightness. This parameter defines maximal brightness if brightness depends on daytime or on light sensors.
Fix brightness priority	Priority of fix brightness 0=Low 1=Medium 2=High
Fix brightness	Brightness intensity (in %) if brightness is in Fix mode.
Daytime dependence priority	Priority of daytime dependence 0=Low 1=Medium 2=High
Geographical location	Place of installation, important if brightness depends on day time
Light sensor priority	Priority of light sensors 0=Low 1=Medium

Parameter section	Description
	2=High
Sensor1	Actual value [lux] of the Front Light Sensor.
Sensor2	Actual value [lux] of the Back Light Sensor.
Light sensor error	Indicates if there is light sensors error 0=no error 1=error on both light sensors This parameter must be manually set to 0 after replacing of faulty light sensors.
Minimal daytime illumination	Minimal external illumination of the sign (from the sun or other sources) that is considered as full daytime. If measured value is greater than this value sign brightness will be 100%.
Night illumination	This is the illumination of the sign during the night when sign have minimal allowed brightness (defined with the parameter "Minimal display brightness").

7.3 Parameters related to Events

Parameter section: Events	Description of parameters
Event Enable 1	This parameter is an 8-bit register. Setting particular bit of this parameter will enable corresponding event: (7) - reserved (6) RESET - hardware reset of the sign (5) SIGNAL CHANGED – VMS content changing (4) TEMP CNT - Temperature alarm (3) LED ERR – LED error detection (2) BATT - battery state changing (1) HW ERR - hardware error (faulty light sensors for example) (0) TIMER – periodically event Examples: If value of this parameter is 255 (binary 11111111), it means that all events are enabled. If value of this parameter is 6 (binary 00000110), it means that BATT and HW ERR events are enabled.
Event Enable 2	This parameter is an 8-bit register. Setting particular bit of this parameter will enable corresponding event: (7) CALL REC – received call or SMS (6) GPRS CONN - GPRS connection (5-0) – reserved Example: If value of this parameter is 128 (binary 10000000), it means that CALL REC event is enabled.
Cloud conn on event enable 1	This parameter is an 8-bit register. Setting particular bit of this parameter will enable Cloud connection on corresponding event: (7) - reserved (6) RESET - hardware reset of the sign (5) SIGNAL CHANGED – VMS content changing (4) TEMP CNT - Temperature alarm (3) LED ERR – LED error detection (2) BATT - battery state changing (1) HW ERR - hardware error (faulty light sensors for example) (0) TIMER – periodically event Example: If value of this parameter is 6 (binary 00000110), it means that device will make connection to Cloud server when BATT or HW ERR event occurs.
Cloud conn on event enable 2	This parameter is an 8-bit register. Setting particular bit of this parameter will enable Cloud connection on corresponding event:

	(7) CALL REC – received call or SMS (6) GPRS CONN - GPRS connection (5-0) – reserved Example: If value of this parameter is 128 (binary 10000000), it means that device will make connection to Cloud server when CALL REC event occurs.
SMS on event enable 1	This parameter is an 8-bit register. Setting particular bit of this parameter will enable SMS sending on corresponding event: (7) - reserved (6) RESET - hardware reset of the sign (5) SIGNAL CHANGED – VMS content changing (4) TEMP CNT - Temperature alarm (3) LED ERR – LED error detection (2) BATT - battery state changing (1) HW ERR - hardware error (faulty light sensors for example) (0) TIMER – periodically event Example: If value of this parameter is 6 (binary 00000110), it means that device will send SMS when BATT or HW ERR event occurs.
SMS on event enable 2	This parameter is an 8-bit register. Setting particular bit of this parameter will enable SMS sending on corresponding event: (7) CALL REC – received call or SMS (6) GPRS CONN - GPRS connection (5-0) – reserved Example: If value of this parameter is 128 (binary 10000000), it means that device will send SMS when CALL REC event occurs.

7.4   Parameters related to GSM

Parameter section: GSM	Description of parameters
Last GSM call	Date and time of last received GSM call
Last GSM caller	Last caller ID (0,1, 2, 3, 4, 5, 6, 7 or 8)
GSM call No.	Number of valid received GSM calls
Last SMS	Date and time of last received SMS
Last SMS sender	Last sender ID (0,1, 2, 3, 4, 5, 6, 7 or 8)
No. of valid SMS	Number of all received SMS
Phone number format	International phone number format (taken from last valid received call)
Caller 0 num.	1st group user, receives SMS, can read parameters
Caller 1 num.	1st group user, receives SMS, can read parameters
Caller 2 num.	1st group user, receives SMS, can read parameters
Caller 3 num.	2nd group user, does not receive SMS, can read and write parameters
Caller 4 num.	2nd group user, does not receive SMS, can read and write parameters
Caller 5 num.	2nd group user, does not receive SMS, can read and write parameters
Caller 6 num.	3rd group user, receives SMS, can read and write parameters
Caller 7 num.	3rd group user, receives SMS, can read and write parameters
Caller 8 num.	3rd group user, receives SMS, can read and write parameters
GSM working mode	Working mode of GSM modem 0=Power on event 2=Always on

7.5 Parameters related to Cloud

Parameter section: Cloud	Description of parameters
Connection interval (min)	Interval for Cloud connection in minutes (if Timer event for Cloud connection is enabled)
Connect at	Set exact date and time for cloud connection
Connection timer (min)	Remaining time in minutes until next Cloud connection
Establish connection timeout (s)	Timeout for establishing connection in seconds
Reply from Cloud timeout (s)	Timeout for Cloud server reply in seconds
Maximal session duration (s)	Maximal session duration in seconds
Minimal interval between sessions (s)	Minimal interval between sessions in seconds
APN	Internet Access Point Name
User	Internet User Name
Password	Internet Password
Server IP	IP address of Cloud server
Server Port	Cloud server port

7.6 Parameters related to Battery monitor

| Parameter section: Battery monitor	Description of parameters
Batt.nominal voltage (12/24/48...)	Battery nominal voltage: 12=12V, 24=24V, 48=48V...
Battery voltage (x100mV)	Measured battery voltage (in multiplication of 100mV)
Overvoltage threshold (x100mV)	Upper limit of regular battery voltage (in multiplication of 100mV)
Batt.low threshold (x100mV)	Lower limit of regular battery voltage (in multiplication of 100mV).
Disp.off threshold (x100mV,0=dissabled)	Battery voltage value which turns the display off (in multiplication of 100mV)
Hysteresis (x100mV)	Hysteresis value (in multiplication of 100mV)
Batt. state	Indicates Battery state 0=normal 1=overvoltage 2=low 3=display off

8. Display Studio 2011

Display Studio 2011 is software for changing parameters – controlling the sign, and loading pictograms to sign. It enables user to change pictograms or add new pictograms to device. All functions of the software are described in detail in user manual delivered with the software.

8.1 Editing and adding pictograms by manufacturer

Customer delivers to manufacturer the list of pictograms that need to be changed or added. Manufacturer delivers new project file and also new installation of Traffic Sign Monitor with updated list of pictograms. Customer needs to load new project file to device by following this steps:

- Open Display Studio 2011
- From menu click on File->Open Project
- Select project file received from manufacturer (extension .dds)
- From menu select Display->Connect to Display to open Communication window

28
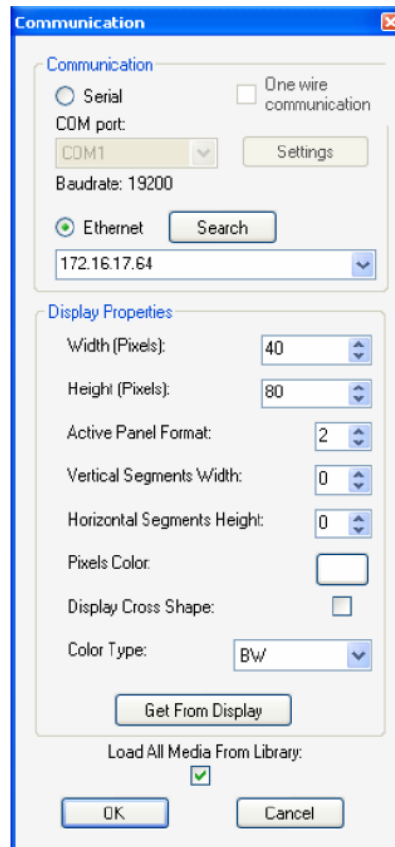
- Select communication type, Ethernet.
- For Ethernet, click on Search button to find sign connected to LAN and select IP address from combo box and check Load All Media From Library
- Click on Get From Display. Application will read parameters from sign and set properties to match with connected sign.
- If successfully connected, click on OK button
- From menu in main window, select Display->Write to Display(s)
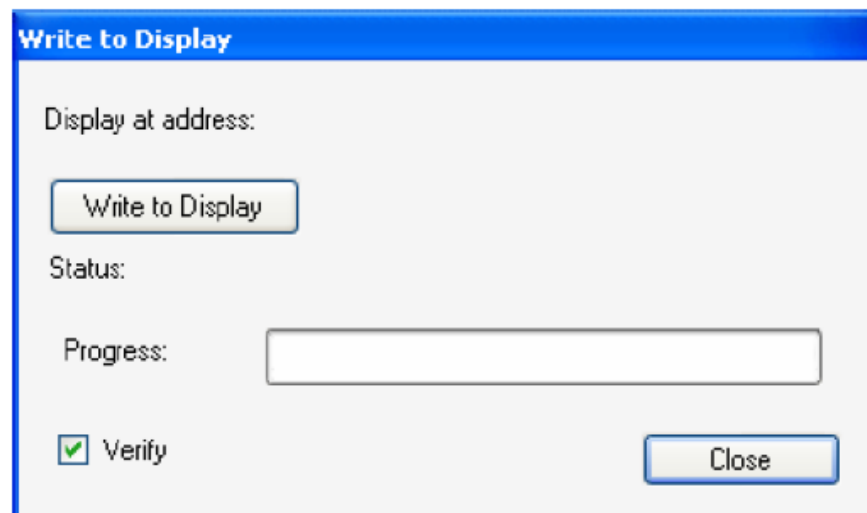
- Check Verify and click on Write to Display to load project to the sign

Application will report if project is successfully loaded to the sign

8.2 Editing and adding pictograms by customer

If user wants either to change existing pictogram, animation and text or to add a new one, it is recommended to start from original .dds file provided by manufacturer. There are three lists (Main list, List1 and List2) in .dds file, and those lists should not be deleted.

Customer needs to change and/or add new pictograms and load project to sign by following this steps:

- Start Display Studio 2011 and open original .dds file, located on CD delivered with sign
- To change existing pictograms, click on Images in Elements tree list and in Library right click on pictogram and choose Edit Media. New widow will pop up as it is shown on picture below.
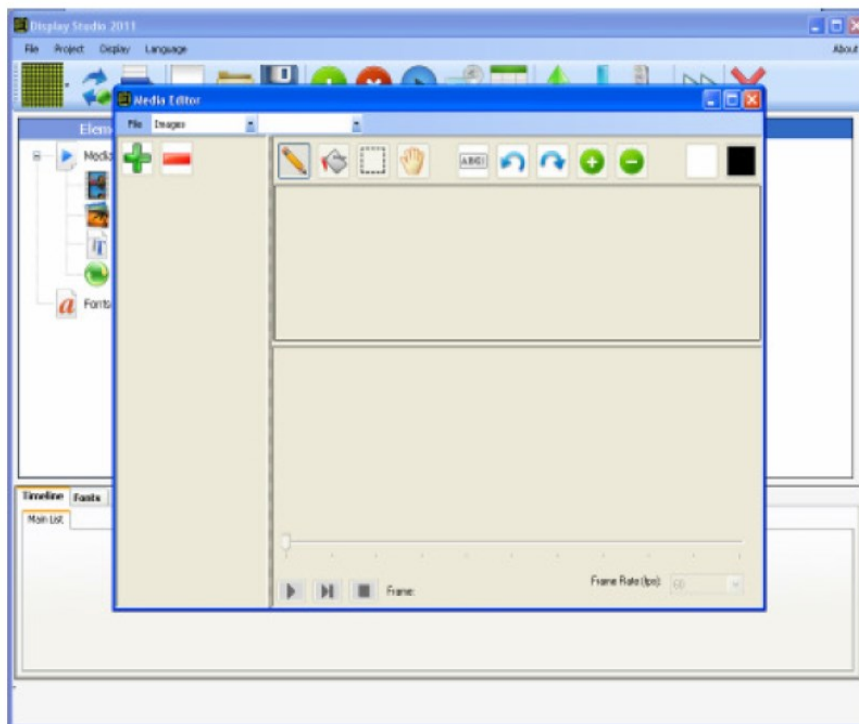
- First choose Images from the list and than go to File -> New Media and save picture as new file. After that all options for drawing will be available. More details on how to use Media Editor are in Display Studio Tutorial.

While drawing a pictogram only white and black colour should be used. When pictogram is uploaded to the device, embedded software will interpret white pixels as LEDS on and black ones as LEDS off.
When pictogram is ready it should be saved as *.bmp file (refer to Display Studio Tutorial for information on how to export pictogram into *.bmp file) which can be later imported to Display Studio Images library.
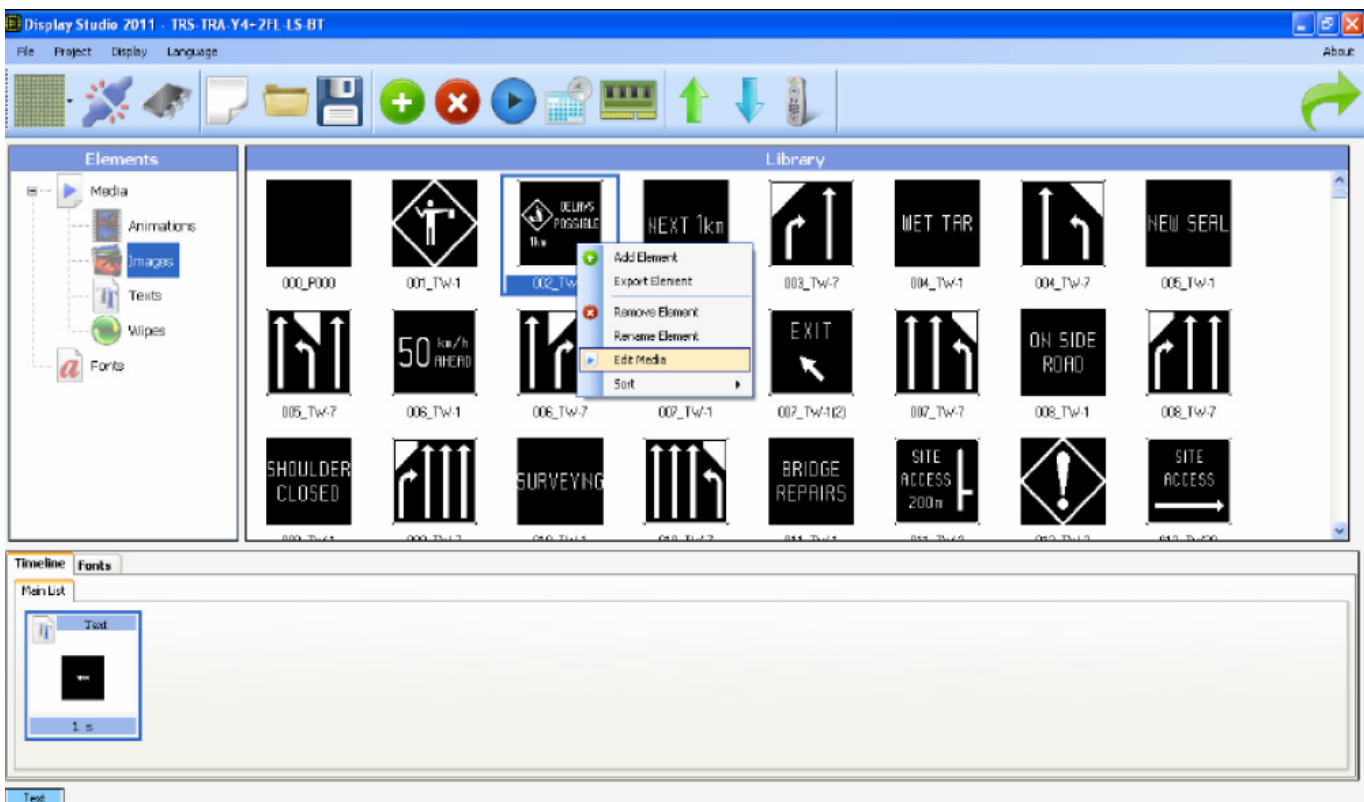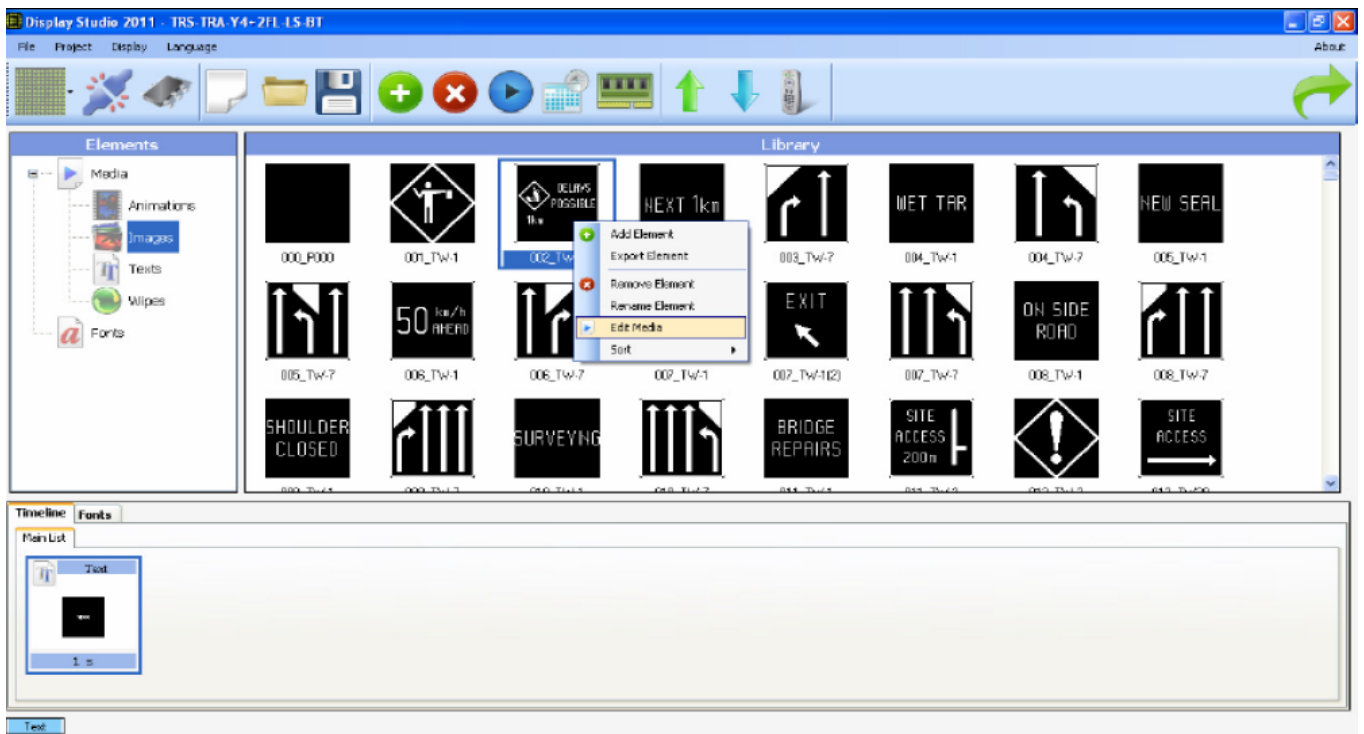
- Finish editing by saving media
- To add new pictograms, right click on Library and select Add Element. Pictograms can be in bmp, jpg, png and gif format and resolution can be different from sign resolution but it is recommended that resolution be the same
- When you select one or more pictograms click on Open. Pictogram(s) will be added to Library
- If needed, you can edit new pictograms the way described in steps above
- After editing and adding pictograms is finished, save project by clicking on File->Save Project As from menu
- Connect to device and load project to sign as described in section Editing and adding pictograms by manufacturer.

9.   Installation

⚠ Only qualified and authorized staff shall do installation, maintenance and service work.

⚠ Use proper tools for connection and maintenance of device.

⚠ When mounting the sign on the carrier construction make sure to provide a stable carrier construction.

LED signs must be installed onto a structure designed to withstand wind load, seismic events, weight load of ice in winter time, or any other live load the structure might bear. The structure must comply with all national and local codes. Because every sign installation is unique, there is no single procedure for mounting the signs. Here is explained installation on a pole as this is most common installation.

9.1   Electrical installation

⚠ Carefully read the instructions for installation before switching on the device.

⚠ While closing the front door it is necessary to take care on tight fitting.

⚠ Device must be connected to grounded electrical socket

Sign is powered from 24VDC power source.

10.   Maintenance

The sign is exposed to severe environmental conditions therefore regular maintenance is of essential importance for reliable and long-lasting operation. The manufacturer recommends a precautionary maintenance of the unit once a year in order to maintain the high quality and stability of product.

Recommended maintenance
Visually inspection of the housing for any damages
Inspection of door sealing
Clean front surface and light sensors (if installed)
Control the drainage holes, if water is in the sign and is there any mark of water licking
Control the functionality
Setting the clock
Download "All data" from the sign, save into excel file and send it to manufacturer or supplier

10.1   Cleaning

For good visibility of the VMS regular cleaning of front plate is necessary. The frequency of cleaning is dependent from the pollution of the environment in which sign is used. We suggest cleaning of the front plate with warm water (temperature around 40 °C) and soft brush. If necessary a neutral detergent can be added to warm water. In case that this is not sufficient we advise use of cleaning alcohol.
High-pressure cleaners may be used with a maximum working-pressure of 80 Bar at a distance of 150 cm. It is not allowed to direct the jet of water directly onto rubber sealing or ventilation openings.
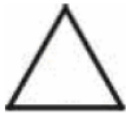
⚠️ The device must not be cleaned with aggressive detergents and solvents!

10.2 Service and troubleshooting

⚠️ Use only original spare parts recommended by the manufacturer of the TRS for replacement.

⚠️ When replacing spare parts device must be disconnected from power supply!

⚠️ Before start any service try to connect to the sign, download "All Data" tables into excel file and save it. Data downloaded from the sign (LED error table, temperature table, event table,...) can help to find the cause of the problem and to prevent the same problem happen again!

⚠️ Explain any non-trivial problem shortly and make few pictures of the device. Send the explanation to the manufacturer or supplier, along with the pictures, serial number of the device and "All Data" tables downloaded from the sign.

⚠️ Carefully read the instructions for installation before switching on the device.

⚠️ While closing the front door it is necessary to take care on tight fitting.

Service is performed on the level of parts replacement. Part replacement is usually done in following steps:

1. Switch OFF the main power supply.
2. Open the sign.
3. Check there are no phase voltages on the terminals.
4. Remove the mechanical parts and connectors.
5. Replace the faulty module.
6. Close the sign.
7. Switch ON the main power supply.

In order to open and close the sign use locker key (see picture below):

To disassemble faulty module from the board, unscrew nuts and remove star washers.

During the service, special measures of ESD protection must be taken. Recommended regulations of EN 61340-5-1 and EN 61340-5-2 "Protection of electronic devices from electrostatic phenomena" should be applied.

TRS-TRA-Y4 USER MANUAL

Do not touch any of electronic parts inside the device without proper ESD protection.	
Use antistatic wrist straps to ground personal to common ground point.	
Use antistatic gloves.	
Use only ESD packaging for transport.	

10.3 Troubleshooting list

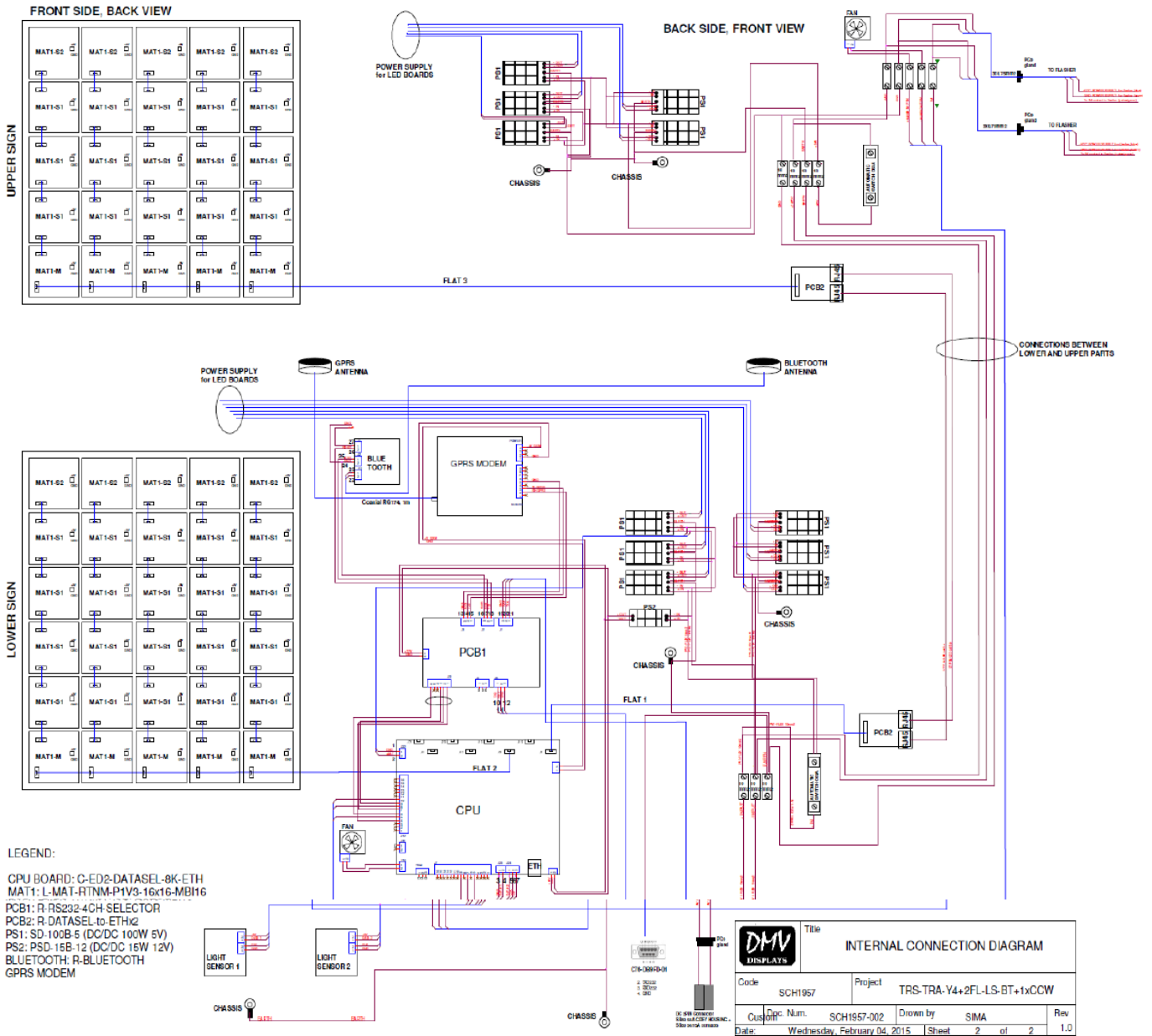| Symptom	Cause	Inspection and correction
Few or more LEDs are not lighting	LED fault or display PCB damage	Remove faulty display PCB and replace with new one
Sign doesn't display anything	Power is disconnected.	Check if red led on CPU board is lighting. If not, connect power properly.
	DC/DC converter fault.	Check if red led on CPU board is lighting. If not, disconnect sign from main supply and replace DC/DC converter.
Program can not be read and written from/to device	Wrong connection	Please go to Communication settings, and choose proper communication type.
	Wrong TCP/IP configuration	Check if correct IP address of sign is selected from list
	Wrong serial configuration	Please check if PC is properly connected to serial connector of the sign. Please ensure that proper COM port is selected in Communication & Monitor section.

LED brightness is low	Light sensor dirty	Clean light sensors

FRONT SIDE, BACK VIEW

UPPER SIGN

BACK SIDE, FRONT VIEW

POWER SUPPLY for LED BOARDS

CHASSIS   CHASSIS

TO FLASHER
TO FLASHER

FLAT 3

PCB2

CONNECTIONS BETWEEN LOWER AND UPPER PARTS

POWER SUPPLY for LED BOARDS

GPRS ANTENNA

BLUETOOTH ANTENNA

LOWER SIGN

BLUE TOOTH

GPRS MODEM

Coaxial RG174

PCB1

CHASSIS

CHASSIS

FLAT 1

PCB2

FLAT 2

CPU

FAN

ETH

LEGEND:

CPU BOARD: C-ED2-DATASEL-8K-ETH
MAT1: L-MAT-RTNM-P1V3-16x16-MBI16
PCB1: R-RS232-4CH-SELECTOR
PCB2: R-DATASEL-to-ETHx2
PS1: SD-100B-5 (DC/DC 100W 5V)
PS2: PSD-15B-12 (DC/DC 15W 12V)
BLUETOOTH: R-BLUETOOTH
GPRS MODEM

LIGHT SENSOR 1   LIGHT SENSOR 2

CHASSIS   CHASSIS

DMV DISPLAYS	Title	INTERNAL CONNECTION DIAGRAM		
Code		Project		
SCH1957		TRS-TRA-Y4+2FL-LS-BT+1xCCW		
Custom	Doc. Num. SCH1957-002	Drown by	SIMA	Rev
Date:	Wednesday, February 04, 2015	Sheet	2 of 2	1.0

TRS-TRA-Y4 USER MANUAL

10.5 Safety

⚠ This product should be used only in accordance with purpose

of its manufacturing

⚠ Unit must not be use in explosive atmosphere

⚠ FIRE EXTINGUISHMENT: Devices under voltage must extinguished

with dust or C02 free extinguisher!

10.6 Decomposition

Parts made of steel and aluminium as well as all the cables can be recycled.

Remove the filling material which is non-dangerous.

Printed circuit boards are non-recyclable.

Safety for AWVMS Tower & Lift System

When lifting tower unit, be aware of OVERHEAD OBSTRUCTIONS, clearance required,4.250mm.

When raising and lowering keep hands clear of hinged areas/landing pads.

Do not raise when vehicle is on acute side angle.

Maintenance Power Systems

Daily: Charging of batteries, through the 240 volt smart charger system (plug available right hand side), where available.

The vehicle, also charges battery systems through VSR system, when vehicle is running.

Check water in batteries where applicable (weekly minimum).

Maintenance Towers & Mechanism

Grease cylinder ends top and bottom (monthly)

Check the torque of bolts, at the centre hinge and bottom of tower, "when required", at the nut end of bots, using 30mm socket and ring spanner and torque wrench.

Torque Settings: Centre bolts is 145ftlb / 190nm Min
                      Lower hinge bolts is 35ftlb / 45nm Max

Valvoline ISO46 to top hydraulic fluid.

General Inspection

Check for oil leaks etc; in battery house and cylinder.

If hydraulic pressure needs adjusting, get in touch with Traffic Signs NZ Ltd.

FOR TECHNICAL SUPPORT PLEASE CONTACT OUR ELECTRONICS TEAM

SERVICE PLANNER

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E: service@trafficsigns.co.nz