



# Vehicle Roof Mounted VMS System

With two options – full matrix or pre-defined messages – this is an ideal solution for escort vehicles and traffic management services. The system consists of a VMS with roof mounting structure with linear actuator for lifting and lowering the sign. The sign can be controlled locally and also managed remotely via our Cloud Control application.



## MAIN FEATURES

|                               |                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Certificate</b>            | EN12966-1:2005+A1: 2009                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Type of sign</b>           | Vehicle roof-mounted system which consists of either a full matrix VMS or one with pre-defined pictograms, single-colour (yellow) matrix field, two rectangular flashers in the upper corners of the sign, and a roof mounting structure with a linear actuator for lifting and lowering the VMS.                                                                                                         |
| <b>LED</b>                    | LEDs with high luminous intensity and long lifetime.                                                                                                                                                                                                                                                                                                                                                      |
| <b>Maintenance</b>            | Hardware is designed so that each part can be easily removed and replaced.                                                                                                                                                                                                                                                                                                                                |
| <b>Brightness control</b>     | Brightness can be:<br>a) Automatically adjustable according to external illumination measured by a light sensor.<br>b) Automatically adjustable according to the actual time using a precise algorithm. The precise time brightness algorithm depends on the geographical location of the sign installation, taking into account time changes during the year.<br>c) Pre-adjusted or set from the system. |
| <b>Temperature monitoring</b> | The VMS is equipped with sensors to continuously measure the temperature inside the cabinet.<br><br>The temperature monitoring and control system provides an optimal working temperature and prevents condensation or component overheating. The system also protects LEDs from temperature peaks that might happen during device operation.                                                             |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operational logs</b>  | The operational logs provide a lot of information about the working conditions. Logs are stored in the VMS internal memory and can record: VMS reset, maximum and minimum temperature in the cabinet, cooling and heating system activation, messages displayed, malfunctions such as - LED error for each individual LED per colour, light sensor malfunction, overheating, communication errors.<br><br>The precise time each item is logged is recorded in the VMS memory.<br><br>Logs can be retrieved locally using Command Console or remotely using Cloud Control.<br><br>Logs in the sign memory could be used for maintenance, troubleshooting, statistical analysis and system improvements. |
| <b>LED errors</b>        | The LED error detection feature works on a chain level (EDC) with 3 or 5 LEDs in a chain. Error history is stored into the sign memory. Self-diagnostics do not affect the displayed information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Interfaces</b>        | Serial RS232, Bluetooth, GPRS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Power consumption</b> | Maximum consumption: ~ 45W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Power supply</b>      | 12 or 24 VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |



## MECHANICAL FEATURES

|                                         | FIXED MESSAGE                                                          | FULL MATRIX                                                            |
|-----------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|
| VMS housing dimensions (VxH)            | 950mm x 1000mm                                                         | 965 x 965mm                                                            |
| VMS approx weight                       | ~ 35 kg                                                                | ~ 35 kg                                                                |
| VMS material                            | Aluminium<br>AlMg3, powder coated, resistant to aggressive atmosphere. | Aluminium<br>AlMg3, powder coated, resistant to aggressive atmosphere. |
| Housing colour                          | Black, RAL 9005                                                        | Grey, RAL 9007                                                         |
| Front colour                            | Black, RAL 9005                                                        | Black, RAL 9005                                                        |
| Physical performance                    | T1, T2, T3 / P3 in accordance with EN12966                             | T1, T2, T3 / P3 in accordance with EN12966                             |
| Resistance to pollution                 | D3 in accordance with EN12966                                          | D3 in accordance with EN12966                                          |
| Opening                                 | From the front                                                         | From the front                                                         |
| Roof mount structure dimensions (VxH)   | 1000 x 1200mm                                                          | 1000 x 1200mm                                                          |
| Roof mount structure approximate weight | ~ 60 kg                                                                | ~ 60 kg                                                                |
| Roof mount structure material           | Stainless steel                                                        | Stainless steel                                                        |

## OPTICAL FEATURES

|                                                | FIXED MESSAGE                                                                                                | FULL MATRIX                                                                                                                                                                                        |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Optical performance in accordance with EN12966 | Luminous intensity: class L3 / L3(*)<br>Contrast ratio: class R3<br>Beam width: class B6<br>Colour: class C2 | Luminous intensity: class L3 / L3(*) / L3(T)<br>Contrast ratio: class R3<br>Beam width: class B6<br>Colour: class C2                                                                               |
| LED protection                                 | UV resistant lenses for each LED.                                                                            | UV resistant lenses for each LED.                                                                                                                                                                  |
| LED currents                                   | Constant current LED drivers, stable luminance, independent of the battery voltage.                          | Less than 20% of nominated current for each colour.<br><br>This provides longer LED lifecycle.<br><br>Constant current LED drivers, stable luminance, independent of the mains voltage tolerances. |

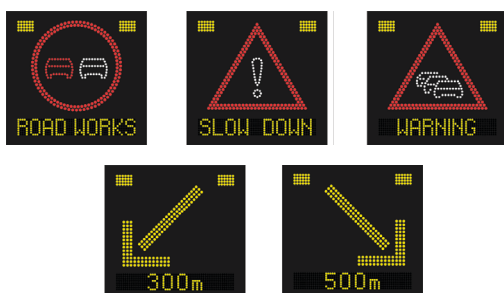
## DISPLAY FEATURES – FIXED MESSAGE

|                      |                                                                                                                                                                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pictograms           | VMS shows 5 pre-defined pictograms: <ul style="list-style-type: none"> <li>Danger on the road</li> <li>No overtaking</li> <li>Traffic jam</li> <li>Left arrow</li> <li>Right arrow</li> <li>Yellow matrix field can show text messages, with character size up to 120mm</li> </ul> |
| Pictogram dimensions | Circle diameter: 650 mm (size B to the standard EN12966)<br>Triangle side: 700 mm (size B to the standard EN12966)<br>Flasher resolution (VxH): 5x7                                                                                                                                |

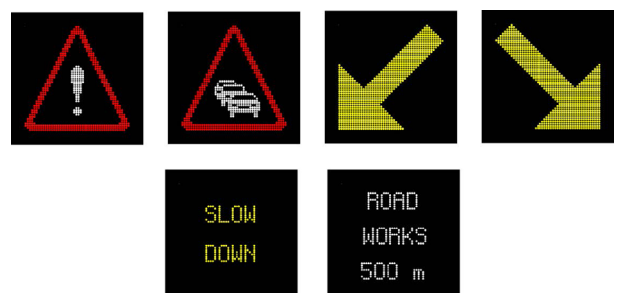
## DISPLAY FEATURES – FULL MATRIX

|                   |                                                                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution        | 48 x 48 pixels                                                                                                                                                       |
| Pixels pitch      | 16mm                                                                                                                                                                 |
| Matrix field      | 768 x 768mm                                                                                                                                                          |
| Pixel composition | 1 LED                                                                                                                                                                |
| Text messages     | VMS is able to display all character heights and types and traffic sign pictograms.<br>A number of text messages and pictograms are available in the display memory. |

## POSSIBLE DISPLAY SCENARIO



## POSSIBLE DISPLAY SCENARIO



## MONITORING AND CONTROL SOFTWARE OVER PC/TABLET/ SMART PHONE

### COMMAND CONSOLE

Command Console is an Android and Windows application for operators, directly connecting them to the device using dedicated software for PC/Tablet/Smart phone. The operator usually handles only one device at a time, near the location via Ethernet cable, serial communication RS232 or Wi-Fi up to 100m.

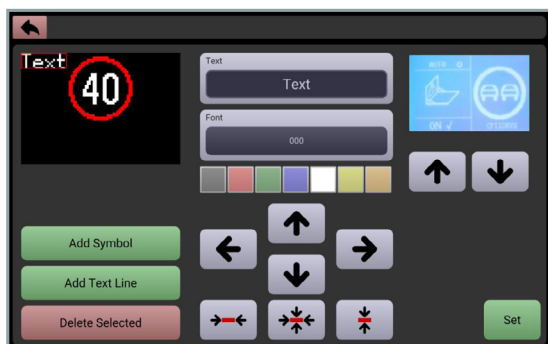
- The application is provided with the VMS.
- It is a user-friendly application and provides both control and maintenance functions.



CommandConsole

### CONTROL FUNCTION

The user can set and change text messages, pictograms or animations, as well as raise or lower the sign on its roof mounting structure.



Control function

### MAINTENANCE FUNCTION

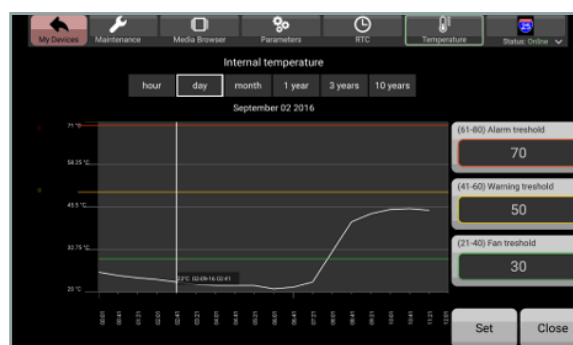
The user can check sign functionality, read and download all parameters and logs. The maintenance function checks the operation of various hardware components is correct:

- Digital clock
- Battery status
- Light sensor function
- Temperature inside the cabinet
- Cooling function
- Flash disk

It provides a lot of information about malfunctions such as: overvoltage or low battery voltage, temperature alarms, VMS reset, LED error detections (short circuit, open circuit and thermal error), light sensor malfunction and communication error.



Raise or lower the sign



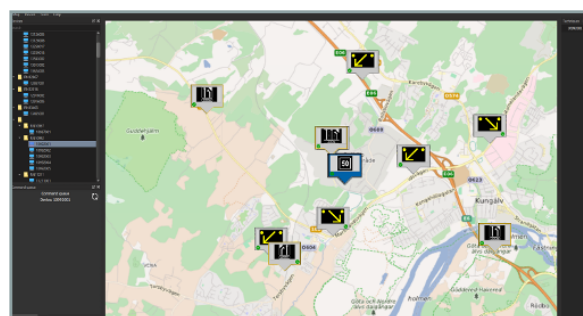
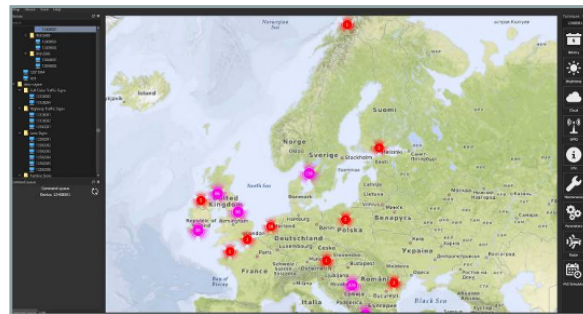
Maintenance function example

## MONITORING AND CONTROL SOFTWARE OVER CLOUD AND SMS

Cloud Control software provides full monitoring and control of your signs, remotely, from your office, in real time. The application is designed so that the user has an overview of all devices, however they can only work with one device at a time. The signs will be displayed on a geographical map in their exact locations. Each individual sign can be accessed by clicking on it on the map or searching by serial number or name. You can see its state, check battery voltage, the functioning of other hardware components or set new messages or pictograms to be displayed.

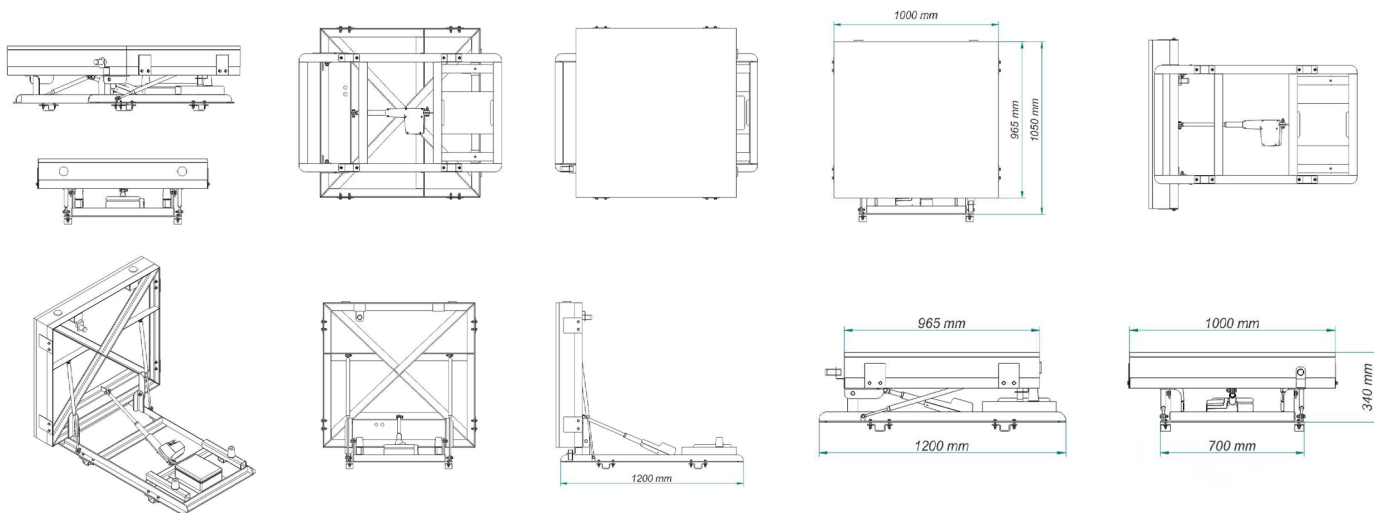
All alarms and warnings will be instantly and clearly displayed on the monitor, and SMS notification is also available. In case of battery voltage drop, for example - you will see an instant illustrative message on the monitor - and the person(s) responsible for the sign/site will receive a clear SMS message with the details of the issue.

All you need to do is to insert a SIM card with very low data usage.



Cloud Control

## ROOF MOUNTING STRUCTURE DIMENSIONS AND PRELIMINARY LAYOUT



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