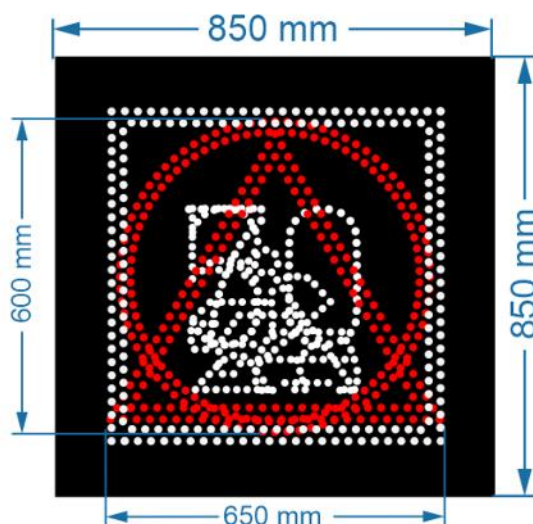




TRS-SD-VASL60-30/50/70-RC_L-VQ-WS-LS-DOD-LBCED-BT-4G



Main features

Certificate	EN12966-1:2005+A1: 2009
Type of sign	Sign with Doppler radar and predefined pictograms.
LED	LEDs with high luminous intensity and long lifetime, from top world brands.
Maintenance	Hardware is designed so that each part can be easily removed and replaced.
Brightness control	Brightness could be: <ul style="list-style-type: none"> a) Automatically adjustable according to external illumination measured by light sensor. b) Automatically adjustable according to actual day time using precise algorithm. Precise daytime brightness algorithm depends on geographical location where the sign is installed, taking into account daytime changing during whole year. c) Pre-adjusted or set from the system.
Temperature monitoring	The VMS equipped with sensor for continuously measuring the temperature inside the cabinet. Temperature monitoring and control system provides optimal working temperature and prevents condensation or component overheating. System also protects LEDs from temperature peaks that might happen during device operation.
Operation logs	Logs system provides a lot of information about working conditions. Logs are stored in VMS internal memory and could be depend on implemented hardware:



VMS reset, maximal and minimal temperature in the cabinet, overheating, communication errors etc.

Precise time when each log happens also is recorded in the VMS memory.

Logs in sign memory could be used for maintenance, troubleshooting, statistic analysing and system improvements.

Internal time VMS has real time clock with 2ppm precision.

Door open detection DOD (Door Open Detection) function warns user when door is not closed properly and when door is opened. A warning can be seen in Control Center software

LED boards chain error detection LBCED (LED boards chain error detection) function warn user when some LED board is broken. A warning can be seen in Control Center software and can be sent as SMS message (if SMS notification is available).

Interfaces

- Serial RS232
- Bluetooth communication includes: Bluetooth module integrated into the sign and anti-vandal antenna. Sign can communicate with tablet or laptop with Bluetooth communication. Distance range is up to 50m.
- 4G – Ethernet modem integrated into the sign and anti-vandal antenna. Allow sign monitoring and control from remote location (monitor sign state, monitor battery...).

Power consumption

- Sign in Bright Load: ~65W
- Sign in Dim Load: ~55W
- Sign in Quiescent Load: ~45W

Power supply

- 230 VAC or
- 12VDC

Mechanical features

Housing dimensions (VxH) 850 x 850 mm

Approximate weight ~30 kg

Material Aluminium AlMg3, powder coated, resistant to aggressive atmosphere.

Housing color Gray, RAL 9007

Front color Black, RAL 9005

Physical performance T1, T2, T3 / P3 in accordance with EN12966

Resistance to pollution D3 in accordance with EN12966

Opening From the front side.

Optical features

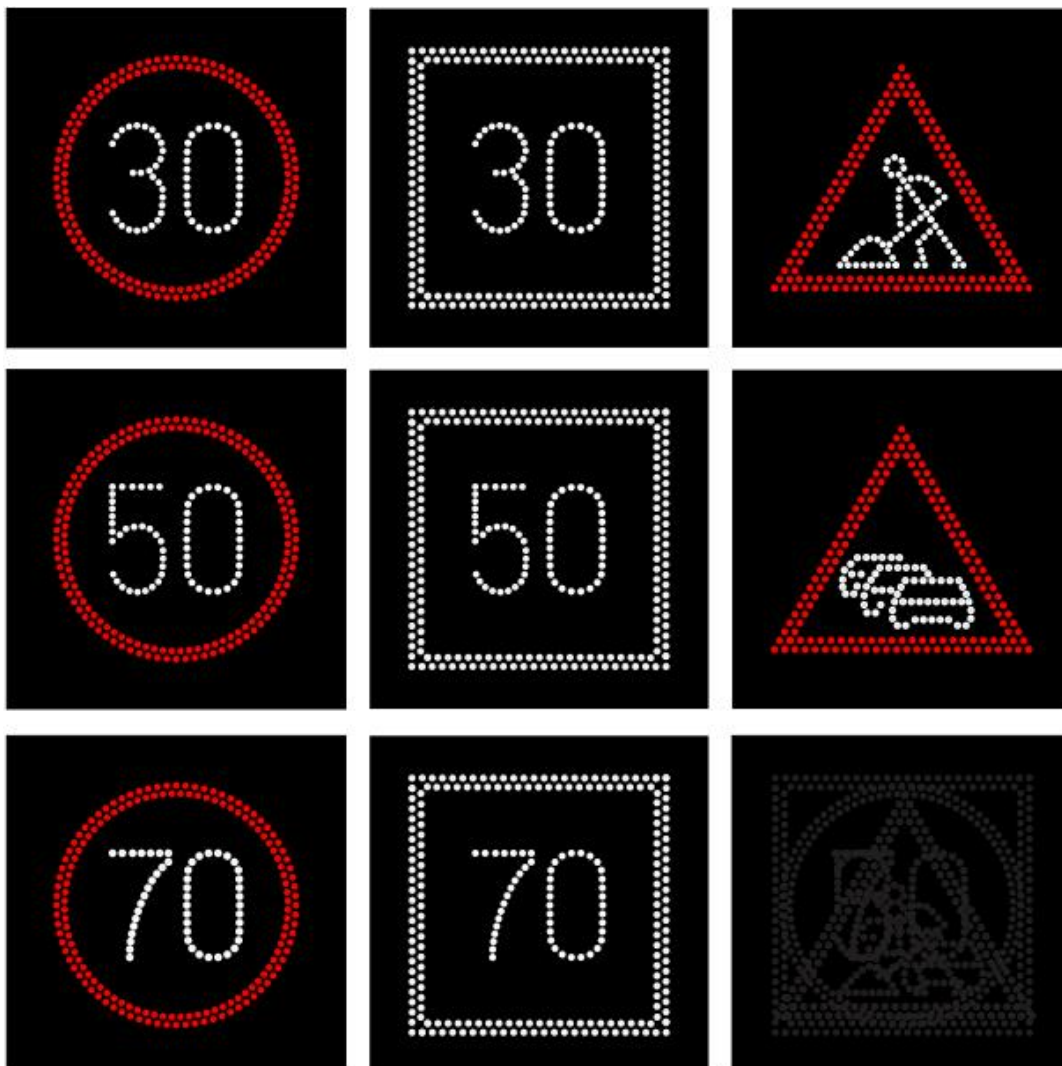
Optical performance in accordance to EN12966

- Luminous intensity: class L3 / L3(*)
- Contrast ratio: class R3
- Beam width: class B6
- Color: class C2

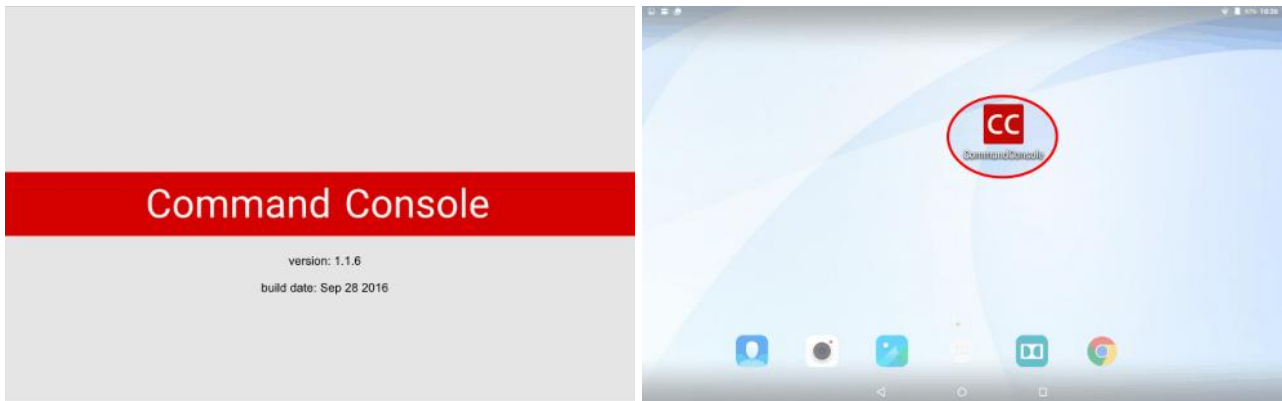
LED protection	UV resistant lenses for each LED.
LED currents	Constant current LED drivers, stable luminance, independent of the mains voltage tolerances or of battery voltage.

Display features

Pictograms	VMS shows predefined pictograms – speed limits and recommended speed 30, 50 and 70km/h, Road Construction and Queue.
Pictograms dimensions	Circle diameter 600mm, size range A in accordance with EN12966. Triangle side 650mm, size range A in accordance with EN12966.
Operation	Pictograms are activated by radar. When radar detects speed above the set threshold speed, e.g. 50, the sign turn on the defined speed limit for 60 seconds.
Pixel composition	1 LED

Possible display scenario


Monitoring and controlling software



Command Console is Android and Windows application for the operators that are directly connected to the device using dedicated software for PC/Tablet/Smart phone. Operator usually handles only one device at the time, near the location via Ethernet cable, serial communication RS232 or Bluetooth up to 50m.

The application is delivered free of charge with the devices.

It is user friendly application and provides controlling function and maintenance function.

Controlling function

A device that has built-in radar as a vehicle detector, can activate scenarios automatically when a vehicle approaches. Scenarios are activated based on the speed of the oncoming vehicle and the predefined thresholds. The software provides the technique for defining scenarios and speed thresholds of the sign within the activated scenario.

Maintenance function

The application provides maintenance function. User can check sign function without opening, (even from the car), read and download all logs. Maintenance function check proper operation of various hardware components:

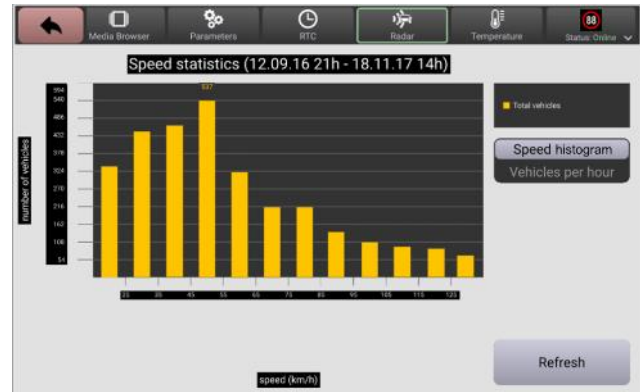
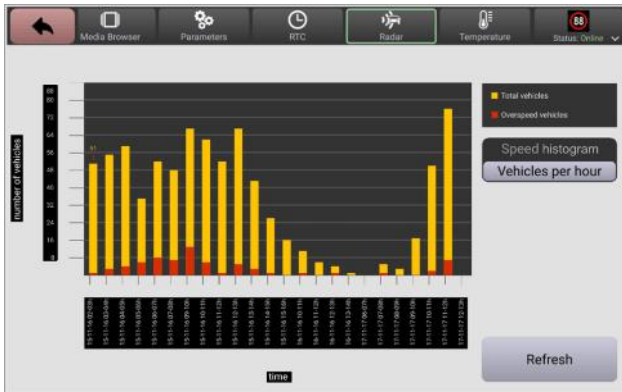
- Real time clock;
- Battery status;
- Solar charging;
- Light sensor function;
- Flash disk;
- Radar function, etc.



Radar statistic

Traffic statistic data stored into the sign. There are two statistics available:

- Hour by hour statistic, containing following data for each hour
 - Number of vehicles
 - Over speed vehicles
 - The fastest vehicle time
 - The fastest vehicle speed.
 - Number of vehicles within 12 speed ranges (0-9km/h, 10-19, 20-29...109+km/h).



Web based monitoring and controlling

DMV Control Center is web based portal for monitoring and controlling vehicle activated signs and collecting traffic statistic. User just needs to log in from any ordinary browser. There is no need to install any additional software on his computer. After logging in you will approach a friendly intuitive page, geographical map with all signs on their exact locations. Each individual sign can be accessed easily by clicking on the map or by searching its serial number or name.

- Some of the features and functionalities of the DMV Control Center:
 - List of all devices registered on the user's account
 - Setting messages, pictograms, triggering speeds and sign behaviour for each speed range
 - Calendar - different sign operation modes can be defined for different days (working days, weekends, holidays...)
 - Traffic statistic - tabularly and graphically presented data
 - Monitoring hardware components and their statuses
 - Communication status indicating if the sign is online or the last time of connection
 - Information about alarms and warnings for each sign
 - Brightness control
 - Firmware update
 - GPS track
 - Online manufacturer support through a ticketing system
- Each sign collects traffic data which are tabular and illustratively presented in software. Two traffic statistics are available:
 - Hour by hour statistics, containing following data for each hour
 - Total number of vehicles
 - Total number of over-speeding vehicle
 - The time of passing of fastest vehicle
 - The fastest vehicle speed
 - Percentage of street occupancy
 - Percentage of sign activity
 - Vehicle speed distribution. Vehicles are sorted into 12 speed ranges (0-9km/h, 10-19, 20-29...109+km/h).
- Various hardware components are permanently monitored:
 - Light sensor – sign checks if the sensor is inoperative or not clean enough
 - LED error detection – check if some of the LEDs do not work
 - LED board error detection – check if complete LED boards do not work
 - Radar error detection – check if radar does not detect any vehicle for more than 24 hours
 - Power supply error detection – check if some power supplies does not work
 - Door open detection – check if doors are opened
 - Battery voltage monitoring – check if battery voltage is within defined range
 - Real-time clock – check clock accuracy
 - Temperature and humidity inside the device – check if values are within defined range
 - GPS location – check if location is unauthorized changed in “locked” state

Name	Current Value	Status	Icon Status
Ball State	13.61 V	Normal	✓
Temp. alarm state	22 °C	Normal	✓
Light sensor	1.615 lx	Normal	✓
Internal memory	0	No Errors	✓
Reset & Watchdog	Current reset no: 18	Allowed reset no: 32	✓
Radar	2024-03-04 11:35:36	Detection time	✓
LED Boards	No Failures	No Errors	✓
Display configuration error	Load Status: 255	Dynamic panels are OK	✓

Dimensions and Preliminary Layout

PRELIMINARY DRAWING

sign type	Vehicle activated sign with predefined pictograms
Dimensions	850x850mm
Model:	TRS-SD-VASL60-4PIC

*Please do not make mounting constructions based on these preliminary drawings. The final sketch will be sent afterwards in agreement between manufacturer and customer.