



TELEGRA

SMART TRAFFIC MANAGEMENT



COMPLETE INTEGRATION OF ADVANCED TRAFFIC MANAGEMENT SYSTEM

TELEGRA'S CORE SUBSYSTEMS AND PRODUCTS

LED VARIABLE MESSAGE SIGNS

- Conforms to most stringent European and US standards (EN12966 certified and NEMA-TS4 compliant)
- Low cost of ownership over extended lifetime
- Failsafe operation increases safety in traffic applications
- Any interface, any protocol any transmission media
- Simple to operate and maintain
- PCB mounted LEDs provide for superior repetitive uniformity

GENERAL

BASIC FEATURES



LED variable Message Signs (LED VMS) can display multiple traffic symbols at low energy consumption. Led VMS's are manufactured with the latest generation of LED's providing high light intensity and long operating life. It can display any traffic symbol adjustable to the outdoor conditions within the light intensity range from 0 to 100% in 1% steps.

Applied optical and mechanical design insures specified visibility and continuous reliable operation in any climate and environment.

Failsafe – operator knows whether sign will operate correctly when switched on, even if not used for long time.

- Extended VMS lifetime due to high optical efficiency allowing low current LED drive
- Low picture degradation during exploitation due to low LED drive current
- High contrast ratio provides great visibility and low current LED drive
- Highly recognizable and outstanding uniformity of displayed symbols
- Independent control, adjustment and reporting up to single LED
- Error detection in both “off” and “on” state for each pixel
- Internal measurement and sign temperature alert
- Light intensity adjustable continuously from 0 ...100% in 1% steps
- Capable of storing up to 100 various symbols
- Able to display characters in true type fonts
- Text displaying with smoothening (anti-aliasing)
- EMC immunity
- High mechanical protection

MAIN COMPONENTS



Main Components of LED Variable Message Signs:

- Housing designed for outdoor exploitation:
- Back panel service door or front panel hinged opening
- Materials adopted in accordance with EU norms (AlMg2/3, AlMgSi0,5)
- Extremely durable self cleaning front panel lenses
- Intelligent Control and Drive Modules
- Power supply Modules (AC-DC SMPS)
- LED's mounted on Printed Circuits Board
- Temperature supervision Modules
- Ambient (External) Light Intensity Measuring Module (option)
- Intelligent Climate Control (multiple temperature, humidity sensors and efficient ventilation system)
- Communication Modules (RS485/422/232, Ethernet, GSM/GPRS, Bluetooth) for all transmission Media (SM/MM fiber/copper cables & Wireless)



TECHNICAL DATA

AC Supply:	Single phase 120/240 VAC, 60 Hz and 230 VAC, 50 Hz (-15% to +10%)	
DC Supply:	12 - 48 V	
Over-voltage/current and Surge Protection:	varistors, fuses, opto-couplers, suppressors, gas dischargers	
LED Control:	every LED separately	
Pixel raster:	12 mm minimum	
Classification according to EN 12966:	LED Intensity (Luminance) :	L3,L3(*),L3T
	Luminance ratio:	R2-R3
	Beam width:	B1-B7
	Colour Class:	C2
	Temperature:	T1, T2, T3 (-40 - +60)
	IP protection:	P2, P3 (IP55 - IP66)
Communication Protocol:	TLS, PROFIBUS, MODBUS, TCP/IP, XML-OPC, NTCIP (others on demand)	
LED Monitoring and Test:	Continuous, for each LED separately, testing of both ON and OFF state	

STANDARDS AND CERTIFICATES

Standards:

Telegra's Programmable LED VMS products meet and often exceed all international standards for the most stringent optical, mechanical and environmental requirements. Our products are UL and CUL listed, and approved for EN12966, TÜV, CE, RoHS, BAST and ISO 9001 standards. Telegra programmable LED products also comply with:

- NEMA TS4, NTCIP, and ITE requirements
- ANSI, IEEE, AASHTO, and AWS certification criteria
- IAC6008-2-34, IEC60068-2-37, and MIL-810C standards for vibration and shock endurance
- IEC60950-1, HD.384.4 and HD.638 safety standard
- IEC60529 standard for enclosure protection

Certificates and Third Party (Independent Laboratory) Test Results

- Optical performance certified according to EN-12966-1-Variable, vertical road traffic signs Part 1: Variable message signs

- Vibration tests according to IEC 60068-2-34, IEC 60068-2-37
- Temperature requirements
 - Cold in accordance to IEC 60068-2-1,
 - Dry Heat in accordance to IEC 60068-2-2
 - Humidity in accordance to IEC 60068-2-30
 - Temperature range in accordance to IEC 60068-2-14)
- Degrees of Protection provided by Enclosure in accordance to IEC 60529
- General Requirements – Information technology equipment – Safety in accordance with IEC 60950-1
- Electrical safety: Requirements for electrical installations in accordance to HD.384.4 and HD.638
- EMC testing in accordance to:
LED signs meet electro-magnetic interference immunity levels as defined in EN 50293:2000:
 - EN 55022: Terminal disturbance voltage, Class B
 - EN 55022: Radiated emissions, Class B
 - EN 61000-3-2: Limits for harmonic current emissions, Class A
 - EN 61000-3-3: Limitation and voltage fluctuations and flicker low voltage supply system
 - EN 61000-4-2: Immunity to electrostatic discharge, failure criteria: B
 - EN 61000-4-3: Immunity to radiated electromagnetic fields, failure criteria: A
 - EN 61000-4-4: Immunity to fast transients (Burst), failure criteria: B
 - EN 61000-4-5: Immunity to surges, failure criteria: B
 - EN 61000-4-6: Immunity to conducted high frequency interference, failure criteria: A
 - EN 61000-4-11: Immunity to voltage drops, short interruptions and voltage variations
- Environmental Standards for Shock in accordance to MIL-810C

European
Certificate of
Conformity



Quality System According to
EN ISO 9001:2000
Certificate Registration
No. 04 100 20021575



Member of:



GRAA award:



Telegra d.o.o. · Plešivička 3 · Sv. Nedelja 10431 · Croatia · Tel: +385 1 33 88 500 · Fax: +385 1 33 88 599 · info@telegra-europe.com