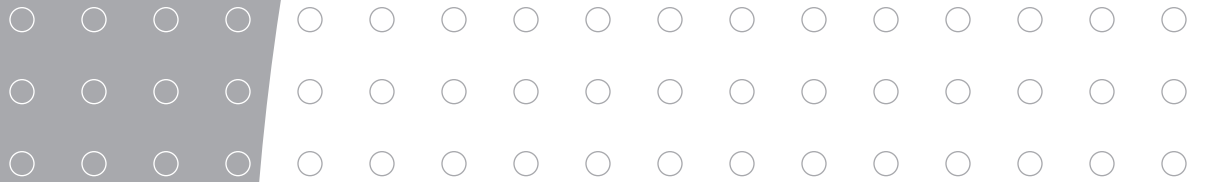




**TELEGRA**

*Smart Traffic Management®*



**PROGRAMMABLE LED MESSAGE SIGNS**

« SIGNS OF INTELLIGENCE® »



## Programmable LED Message Signs

**CONSUME LESS ENERGY.**

**COMMUNICATE MORE EFFECTIVELY.**

Telegra's fully programmable monochromatic and full color LED message signs are among the most technologically advanced intelligent transportation system (ITS) products available. From simple text to complex color graphics, you can create custom messages that meet your specific traffic needs – on demand.

Designed to comply with the most stringent optical, mechanical and environmental requirements, Telegra's programmable LED displays offer exceptional longevity, ease-of-use and intelligent error detection, as well as:

- » Message display in static, multi-page and scrolling formats
- » Monochromatic and full color displays in 24-bit resolution
- » Crisp, clearly recognizable text and pictograms
- » Versatile design and display options
- » Multiple interfaces, protocols and communication choices
- » Fast, easy and reliable control
- » Pre-programmed message and symbol storage
- » Image transmission using standard graphics formats
- » Engineering of the highest quality for durability and longevity
- » Proven reliability

And with the ability to quickly and easily change messages and symbols, you'll stay ahead of problems and effectively communicate with drivers – all at a moment's notice.

## SMART FEATURES FOR INTELLIGENT TRAFFIC MANAGEMENT

Telegra's Programmable LED products typically exceed the most stringent quality standards. In fact, Telegra uses the latest generation of LEDs to provide high light intensity with the lowest power consumption rates.



Our LED products also utilize the most advanced environmental control systems to intelligently monitor and regulate internal temperature and power usage. External systems also

track and measure light intensity for optimum LED output. Core features include:

- » Storage capability for several hundred symbols with symbol display sequences at a rate of 10 symbols per second
- » Highly recognizable and outstanding symbol uniformity with character display in TrueType fonts
- » Text displays with smoothening/anti-aliasing to minimize distortion and maintain clarity
- » Lens-based front plate optical system for low LED current drive and superior clarity
- » Uniform monochromatic and full color display modules for easy maintenance
- » Independent control, adjustment and reporting on every single LED
- » Certified for highest optical requirements according to EN 12966
- » Error detection and event logging for each pixel in both "on" and "off" states
- » EMC immunity to eliminate power disruptions
- » Advanced safety alerts for internal environmental monitoring
- » Adjustable light intensity from 0 to 100% in 1% increments and high contrast ratios
- » Customized dimension, color combination and pixel pitch options
- » State-of-the-art prismatic optical system optimizes light output, LED performance and longevity
- » State-of-the-art color mixing technology increases luminance factors on all RGB full color signs
- » Enhanced message and graphic image quality ensures visibility under the most adverse weather and environmental conditions
- » Specially designed optical system applies lower current through the LED to provide light intensity, improving LED light output and efficiency and significantly increasing LED life

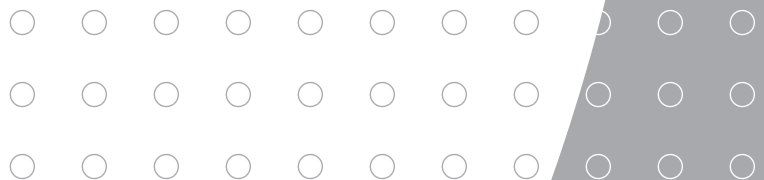


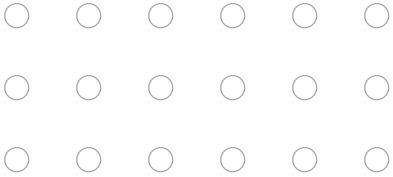
## ALL THE PROGRAMMING COMPONENTS YOU NEED

Our programmable LED signs come with all the components you need to customize your messages. Designed for maximum flexibility, our signs can be controlled and programmed from wherever you are – whether it's a remote traffic management or call center, over a wireless handheld device or at the sign site itself. Components include:

- » Standard processor module, LCD display, and keyboard
- » Communication via standard NTCIP client/server architecture
- » Connection of server and multiple client modules over TCP/IP networks
- » Compliance with NEMA 3R design and fabrication standards
- » Availability for Bluetooth interface and software application for handheld PDA operation
- » Compatibility with standard graphical formats (JPEG, BMP, WMF)
- » Intelligent control and drive modules
- » LED mounting on printed circuit boards
- » Flat panel, back-access or walk-in construction options
- » Temperature supervision modules as well as circuits and equipment for climate control (thermostat, hydrostat, ventilation system)
- » Compatibility with Telegra's topXview™ Intelligent Traffic and Tunnel Manager software and pre-programmed pictures stored in VMS controller memory

Telegra's Intelligent Traffic Manager™ and Intelligent Tunnel Manager™ allow a single operator to control even the most complex traffic management systems. With our **topXview™** software, you can manage multiple subsystems – like complex open-road and tunnel applications – easier and more effectively than ever before.





**CERTIFICATIONS**

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 EN 12966, TUV, CE, RoHS, BAST and ISO 9001:2000 standards. Telegra’s programmable LED products also comply with:

- » NEMA TS4, NTCIP, and ITE requirements
- » ANSI, IEEE, AASHTO, and AWS certification criteria
- » IEC60068-2-64 standard for vibration and shock endurance
- » MIL-STD-810F standard for sand and dust, vibration and icing/freezing rain
- » IEC60950-1, HD384.4, HD638 safety standards
- » IEC60529 standard for enclosure protection



American Welding Association | ISO 9001:2000 Certification

Telegra is a member of AAAE, AASHTO, ATSSA, IBTTA, IEEE, IMSA, IRF, ITE, ITS America, NEMA, TEAM Florida, TEAM Texas and TRB

## PRODUCT SPECIFICATIONS

Cabinet Welding	Process and fabrication meet ISO EN 131 (GMAW process) and ISO EN 141 (GTAW process) standards; also certified for EN 287
Character Heights	Available in 9", 12", 18" or 24"
Client/Server Architecture	Designed for server and multiple client modules over TCP/IP networks; meets NTCIP standard
Communication Modes	RS485/422/232, Ethernet, GSM/GPRS, Bluetooth, wireless; TLS, PROFIBUS, MODBUS, TCP/IP; SM/MM fiber, twisted copper pairs, radio; others on demand
Contrast Ratio	R2-R3 according to EN 12966
Control Panel	NEMA 3R design and fabrication standards
DC Power Supply	Stabilized, 5 V-12 V
Electromagnetic Interference	LED signs meet electromagnetic interference immunity levels as defined in EN 50293:2000: EN 55022: terminal disturbance voltage, class: B EN 55022: radiated emissions, class: B EN 55014-1: terminal disturbance voltage, discontinuous, clicks 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
EN 12966 Compliance Classification	LED intensity (luminance): L3, L3(*), L3t Luminance ratio: R2-R3 Beam width: B1-B7 Color class: C2 in amber or RGB Temperature: T1, T2, T3 (-38° to +140° F) IP protection: P2, P3 (IP55-IP56)
Exterior Finish	Electrostatic powder coating with chemical preparation using TIGER Drylac RAL matte (based on polyester)
Front Plate	Two-component black matte paint for low light reflection rate
Graphics Software	All standard graphical formats: JPEG, BMP, WMF and more
LED Color	White, yellow, green, red and blue; color class C2; various dimensions and combinations
LED Control	Discrete control of each LED
Manufacturer Experience	Over 20 years
Message Display Formats	Static, multi-page and scrolling formats available in alpha-numeric text
Options	Flashing signals installed on sign to alert drivers
Pixel Pitch	12 mm. minimum (.5 inches)
Power Requirements	120-240 VAC, 50-60 Hz; low power consumption
Pre-Programmed Messages	LED display can store up to 100 pre-programmed messages
Sign Housing Access	Back panel service door; self-cleaning front panel
Surge Protection	Varistors, fuses, opto-couplers, suppressors, gas dischargers
Warranty	10 years on the external casing; two years on products and services

