APPLICATION EXAMPLES

Dynamic Route Information Panel (DRIP), freely programmable, full matrix, full color RGB, walk-in housing
The Netherlands

Freely programmable parking guidance display, UTMC communication protocol, full matrix, full color RGB, 16 mm pixel pitch
United Kingdom

Freely programmable DRIP combination on a gantry with variable message signs showing limited content
Russia

Variable message signs in tunnel, limited sign content, lane control sign (reduced total height) for mounting on tunnel ceiling
Germany

Combination of limited and freely programmable displays in one housing
Application: advertising and variable message sign
Sweden

Full color, fully graphical, freely programmable RGB sign (left part) with freely programmable, fully graphical, yellow text area (right part)
Belgium

LED VARIABLE MESSAGE SIGNS
TECHNICAL DETAILS

Light source	High Power LEDs from renowned manufacturers
Housing	modular design principle in seawater-proof, powder-coated profiles made of aluminum $AlMg_3$ or stainless steel (V4A, 1.4571)
Protection class	P1, P2, P3, to IP 65
Temperature classes	T1 (-15°C to +60°C) / T2 (-25°C to +55°C) / T3 (-40°C to +40°C)
Humidity range	20 – 95% rel. humidity
Controller	■ Embedded controller designed for industrial temperature range: -40 to +85 °C ■ Integrated fast access solid state data memory ■ High speed picture interface using latest type of Dual port RAM and FPGA technology ■ Number of colors: monochrome, traffic colors or RGB ■ typ. picture rate 20 frames/second
Interfaces	■ RS485/RS422, Profibus, Profinet, Ethernet IP, WLAN others on request ■ TCP/IP connection via RJ45 ■ digital inputs ■ digital and analogue sensors
Mounting options	C-rails pipe clamps other constructions on request
Protocols	FUTURITCOM 2 FUTURITCOM 2 via Profibus TLS 2002 / 2010 XDR/DAP NTCIP UTMC others on request
Optic	optical equipment fits into the matrix luminance ratio (contrast) up to 100, even at low sun position <10°
Pixel pitch (freely programmable VMS)	12 / 16 / 20 / 25 / 30 / 35 mm
Light distribution	for all VMS, beam width classes from B1 to B6 can be fulfilled with the highest luminance class L3(*) and luminance ratio R3 for various element spacings B7 on request
Matrix	anodized aluminum and coated – avoiding the front screen is standard
Power supply	80 - 265 VAC 12 - 48 VDC optional: photovoltaics, wind turbine, fuel cell
Maintenance access	easy maintenance access Rear door or front matrix access (depending on the type of variable message sign)
Certification	EN 12966:2005+A1:2009 CE-certification by SGS/INTRON BASt-certified

YOUR LOCAL CONTACT:

SWARCO FUTURIT

SWARCO FUTURIT is the leading global player in LED-based signaling technology. The company specializes in traffic lights, variable message signs, street lighting and railway signals using the very latest developments in light emitting diode (LED) technology offering ecological friendliness and the advantages of low failure rate, energy savings and long operating life.

Customers in over 60 countries around the world rely on the outstanding quality of SWARCO FUTURIT products, made in Austria to the highest standards to support road safety and keep traffic in motion.

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SWARCO FUTURIT
Verkehrssignalsysteme GesmbH

LED VARIABLE MESSAGE SIGNS
TRENDSETTING IN LED SIGN TECHNOLOGY

SWARCO FUTURIT is the leading supplier of high quality LED variable message signs for traffic guidance and information purposes. SWARCO FUTURIT's optically outperforming variable message signs are highly reliable components of numerous traffic management systems on motorways, in urban traffic guidance, lane control signaling and tunnel information. Further applications are car parking systems, traffic calming, road safety enhancement, warning of upcoming hazards and traffic routing at customs facilities, toll gates and truck checkpoints.

BRILLIANT & EFFICIENT DISPLAYS

SWARCO FUTURIT variable message signs are certified by SGS/INTRON according to EN 12966. All displays provide brilliant legibility, high energy efficiency and outstanding LED luminosity. Based on the patented mounting technology, the LED lenses are directly inserted into the matrix screen. A unique design avoids light reflection. Even at low sun position (< 10°) the variable message signs are clearly legible. SWARCO FUTURIT offers a wide range of variable message signs tailor-made to the customer's needs.

Limited variable message sign, speed limit with integrated lane control signaling

Limited variable message sign, speed limit and warning signs in a tunnel

Combination of limited / freely programmable variable message sign, multicolor graphical display / monochrome text lines

SWARCO FUTURIT I LEaDing the way.

LED VARIABLE MESSAGE SIGNS

Key Benefits

- worldwide integration in traffic management systems using different interfaces and protocols for control and data exchange
- The patented LED optical system:
  - provides highest optical performance
  - directs the LED light to where it is needed
  - allows a 90% reduction of LED forward current, maintaining all optical requirements during the whole life cycle of the variable message sign, therefore increased availability and lowest energy consumption
- all LEDs are continuously monitored, even when they are off; LED status will be reported to the traffic center or to a local control
- conformity to EN 12966: more than 100 class-combinations of different color, luminosity, contrast, beam width, pixel pitch, LEDs, forward current, etc. have been tested and certified by SGS/INTRON
- a wide range of pixel pitch options from 12 mm to 35 mm, fitting to any application
- the onboard operating system of the variable message sign provides permanent diagnosis and reports any error status to the central system
- full traceability of all used assemblies in the internal data base
- a pulse width modulated constant current at a very low level increases LED life time and avoids ageing effects and luminosity losses
- use of cutting edge LED technology: only highest quality LEDs from renowned manufacturers are used
- higher resolution by small pixel pitch (12mm with RGB) fulfilling strongest EN 12966 requirements (including contrast)
- quick and easy replacement of parts without use of tools
- reliable power supply for LED displays and controller
- optimized stability by proven construction
- low weight by weight-saving construction using non-corrosive aluminum or stainless steel reduces costs of structural system
- attractive and modern design
- adaptable to different ambient light conditions
- integrated sensors for temperature and light

OUTSTANDING OPTICAL PERFORMANCE

The optical system “3G“ of SWARCO FUTURIT is the new reference in the development of variable message signs. This generation is unique in design, workmanship and performance and thus constitutes the new benchmark for LED variable message signs.

THE REASONS WHY

- One lens system per RGB-LED
- Highest perceptibility and legibility
- High luminosity due to a perfect self-adjusting LED lens system
- Unbeatable contrast intensity – especially at adverse position of the sun
- No ageing effect of the LEDs as a result of the very low LED forward current
- Robust lens system made from high grade material of highest transluminescence
- Best value for OPE* - the key figure assessing the optical performance, energy consumption, operating cost, performance life, perceptibility and durability

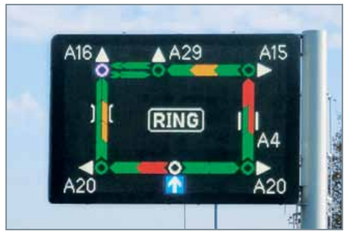
* OPE: Optical Performance Efficiency

$$OPE = \frac{L_R \times I_N \times F_{BW} \times pp^2 \times F_L}{a \times I^2}$$

Using the “3G” optical system and a pixel pitch of 20 mm, a luminance of more than 15,000 cd/m² is achieved for RGB white light fulfilling the requirements of classes L3/L3(*), R3, C2 of EN 12966:2005+A1:2009 and prEN 12966:2013. And this is attained at max. 15% of the allowed LED current.

Due to the low LED current and an optimized energy concept for the overall system, the typical power consumption of a limited sign (Signaalgever, NL) is no more than 12 W, that of a freely programmable sign (BermDRIP, NL, with 50 % of light dots at full brightness) less than 1000W.

Signaalgever, limited variable message sign, 27 pictograms and 4 flashers
The Netherlands



BermDRIP, freely programmable variable message sign, fully graphical, RGB
The Netherlands

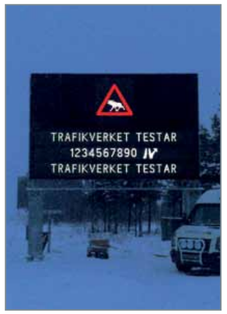
SUSTAINABILITY AND LONGEVITY

Product sustainability is a focus in the environmental policy of SWARCO FUTURIT and concerns all phases of the product life cycle. In order to achieve this objective, eco-design methods are also applied in many subdomains of product design.

- pioneer in 1999: First company awarded with BASt approval for LED variable messaging signs
- pioneer in 2006: First European company awarded with EC Certificate for variable message signs according to EN 12966
- pioneer in 2012: First permanently lit sign complying with VDE 0831 safety class „D“, approved by TÜV-Rheinland
- no degradation of LED light output due to preventive operating mode
- low total cost of ownership
- low energy consumption in operating and standby mode as result of power optimization
- operating even at very low temperature of -40°C without need for heating
- highest reliability and low failure rate thanks to 30 years of experience in design and manufacturing of variable message signs for use in harsh climate and environment
- robust power supplies with power factor Pf >85%
- alternative power supply from renewable energy sources (sun, wind, fuel cells)
- no use of hazardous substances
- product design based on eco-design methods

Limited variable message sign, bicolor, integrated flashers
United Arab Emirates

Radar activated/limited variable message sign powered by PV panel, bicolor **Austria**



Freely programmable, RGB graphical area (top); white, fully graphical text lines (bottom), **Sweden**