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JES t/SIG-D Traffic light controller

Features

• Switching and monitoring of traffic lights
• Up to 2 traffic lights can be switched via one device
• 1-, 2- or 3-signal traffic lights configurable
• Monitoring of light bulb and LED inserts both switched on and off
• Reduced brightness at night by second supply voltage
• Freely configurable operating/fault messages for each of the two traffic lights
• Connection to and control by PLC via
  ◦ Digital inputs/outputs
  ◦ MODBUS/TCP
  ◦ MODBUS RTU
• Touch display in the front panel for signalling the traffic light status and for manual switching on site
• 35 mm DIN rail mount

System

• Traffic light controller with touch display
• Optional transformer for providing a lower supply voltage to reduce brightness at nighttime

Function

Traffic lights in tunnels are essential for influencing traffic in the event of hazards or accidents. The status of such traffic lights must be monitored to ensure tunnel safety. A traffic light in the tunnel is usually controlled by the tunnel control system. It is connected to the signal monitoring device via conventional PLC inputs and outputs. The traffic light controller switches the signals (red, yellow, green) on and off as given by the outputs of the tunnel control system and reports back the status of the traffic light. In the event of faults such as broken wires or a defective light source, an error message is issued even when the respective signal is currently in switched off state.

Advantages

• Specially designed for use in front of and in tunnels
• Mounting on DIN rail for easy installation and replacement
• Suitable for conventional lamps and LED technology
• Display for indicating signal status and faults
• One device for monitoring up to two traffic lights
• On-site control via a touch display
• Freely configurable error or operating messages via web server
• Monitoring of signals both in switched-on and switched-off state

Application

Tunnels are important infrastructure elements in road networks and facilitate the connection of regions. Environmental conditions in tunnels are influenced by fog, particles and emissions and need to be monitored to protect people on their passage through the tunnel from danger and impacts on their health. Accidents in tunnels, and particularly fires, can have dramatic consequences and can prove extremely costly in terms of human life, increased congestion, pollution and repair costs. At every time people in the tunnel need to be supplied with breathable air and sufficient visibility.
Since 1990 JES Elektrotechnik GmbH develops, installs and maintains systems to monitor air characteristics and lighting conditions in tunnels. Our systems are robust, durable and resistant against the corrosive atmosphere in a tunnel. They operate reliably and have a high accuracy in measurement.
All systems fulfil the requirements of the EC guideline 2004/54/EC (Minimum safety requirements for tunnels in the trans-European road network) and the more detailed national guidelines and provisions:
• Austria: RVS 09.02 Tunnelausrüstung
• Germany: RABT Richtlinien für die Ausstattung und den Betrieb von Straßentunneln
• Switzerland: ASTRA Richtlinien und Fachhandbuch Betriebs- und Sicherheitsausrüstungen (BSA)
Our range of products for tunnel covers systems for monitoring of
• Visibility (extractive or in-situ)
• Toxic gases like CO, NO, NO2 (extractive or in-situ)
• Air velocity, direction and temperature
• Luminance (access, threshold and interior zone)
• Illuminance

Technical specifications

Monitoring of traffic lights with conventional lamps or LED inserts	
Traffic lights	Up to 2, can be controlled together or separately
Signals	1-, 2- or 3-signal traffic lights configurable
Flashing lights	must be implemented outside traffic light controller
Supported luminaires	0 - 230 VAC, 60 Hz, max. 100 W 0 - 60 VDC, max. 30 W
Reduction of brightness at night / alternative voltage supply for traffic lights	alternative voltage input
Active signal fault	< 50 % of configured nominal current
Inactive signal fault	> 30 mA OR > 3 V vs. N

Traffic signal controller	
Type	t/SIG-D
Operating voltage	24 VDC ± 10 %
Current consumption	max. 150 mA (controller only)
IP rating	IP20
Appliance class	II (double insulated)
Interfaces	Ethernet: MODBUS/TCP and web server for configuration RS485 MODBUS RTU
Digital inputs	1 x per signal (total 6) 2 x select night / alternative operating voltage
Digital outputs	1 x signal status (total 6) when operating with 2 traffic lights 1 x signal status, 1 x signal (total 3+3) error when operating with 1 traffic light 2 x operation / fault signal
Output rating	24 VDC, max. 50 mA
Mount	35 mm DIN rail
Width	45 mm
Height	120 mm
Depth	120 mm
Space requirement	45 x 140 x 120 mm
Weight	300 g

Conformities

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Markings	
Electrical standards	2014/35/EU Low Voltage Directive (LVD) 2014/30/EU Electromagnetic compatibility (EMC) EN IEC 61000-6-2:2019 Immunity standard for industrial environments EN IEC 61000-6-3:2007 + A1: 2011 Emission standard for residential, commercial and light-industrial environments