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JES smart/HUB Operating Unit

Features

• Connects one or multiple JES or 3rd party sensors to an IP network
• Integration into the JES smart/Architecture
• IoT enabled
• DIN rail mount
• Standard interfaces on base unit
  ◦ MODBUS RTU (RS-485)
  ◦ MODBUS/TCP (Ethernet)
  ◦ Web service (Ethernet)
• Additional interface options (implemented on request)
  ◦ MQTT
  ◦ OPC UA
  ◦ NTCIP
• Inputs and outputs on smart/HUB
  ◦ 1 x Ethernet
  ◦ 1 x USB
  ◦ 1 x RS485
  ◦ 2 x digital input
  ◦ 2 x relay output
  ◦ 1 x HDMI
• DIN rail extension modules
  ◦ 4 x RS-485 galvanically isolated
• Optional integrated 2.4„ touch display (Configuration code D2)
• Optional external 7“ smart/CORE-D7 touch display

System

• smart/HUB IoT gateway, data logger and control unit for DIN rail mounting
• Optional smart/HUB-D2 Sensor Display for displaying status and current measured values
• Optional smart/HUB-D7 7„ touch display connected via HDMI
• Optional DIN rail modules with additional functionalities connected via bus connectors in DIN rail

Operation

smart/HUB is a universal operating unit for collecting, storing or forwarding sensor data in IP networks to a server. Different interfaces are available on the base unit or via extensions for connecting the sensors. Extensions are connected to the base unit via a bus connector integrated into the DIN rail.
The base unit reads the data from sensors from various manufacturers via sensor-specific plugins and records them. Protocols such as MODBUS RTU, MODBUS ASCII, Lufft UMB*, 1-wire as well as 4-20 mA analog inputs and digital inputs are supported as standard. Additional plugins can be implemented at any time.
smart/HUB can be expanded into a universal operator panel with a 7“ touch display.
smart/HUB is part of the JES smart/architecture and serves both as an operator panel and as an IoT gateway for sensors without an Ethernet connection. The smart/Architecture also includes smart/sensors and smart/CONTROL, a sensor control center for collecting and visualising all sensor data, central user administration, sensor monitoring, and maintenance control and documentation.
smart/HUB can be used wherever data from sensors from different manufacturers is to be collected and administered in a uniform form in one platform, e.g. road weather stations, tunnel sensors.

Advantanges

• Specially developed for use in transport infrastructure
• Condition monitoring
• Central administration
• Remote maintenance
• Flexible integration into existing environment

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

smart/HUB IoT Gateway, Data logger and Control unit

IoT gateway, data logger and control unit smart/HUB	
Type	smart/HUB
Ethernet	1 x RJ-45
Field bus	1 x RS-485 half-duplex (2-wire)
Relays	2 x SPDT, 60 W (30 VDC, 2 A)
Digital inputs	2 x 24 V input (optically isolated)
Video output	1 x HDMI for connecting a 7„ smart/CORE-D7 touch display
Power supply	24 VDC ± 10 %
Power consumption	max. 12 W
Material	Polycarbonate (UL94 V-0)
IP rating	IP 20
Dimensions	107.6 x 89.7 x 60.7 mm
Weight	180 g
Temperature range	-40 .. +60 °C
Humidity range	0 .. 100% relative humidity, non-condensing
Pollution degree	2

smart/HUB IoT Gateway, Data logger and Control unit with display

IoT gateway, data logger and control unit smart/HUB-D2	
Type	smart/HUB
Configuration Code	D2
Ethernet	1 x RJ-45
Field bus	1 x RS-485 half-duplex (2-wire)
Relays	2 x SPDT, 60 W (30 VDC, 2 A)
Digital inputs	2 x 24 V input (optically isolated)
Video output	1 x HDMI for connecting a 7“ smart/CORE-D7 touch display
Integrated display	2.4„ touch display, 320 x 240 px
Power supply	24 VDC ± 10 %
Power consumption	max. 12 W
Material	Polycarbonate (UL94 V-0)
IP rating	IP 20
Dimensions	107.6 x 89.7 x 60.7 mm
Weight	200 g
Temperature range	-20 .. +60 °C
Humidity range	0 .. 100% relative humidity, non-condensing
Pollution degree	2

Accessories

smart/HUB-485 4 x RS-485 Extension

4 x RS-485 extension	
Type	smart/HUB-485
Power supply	via smart/HUB bus extender
Field bus	4 x RS-485 half-duplex (2-wire), all galvanically isolated
Material	Polycarbonate (UL94 V-0)
IP rating	IP 20
Dimensions	17.8 x 89.7 x 60.7 mm
Weight	200 g
Temperature range	-40 .. +60 °C
Humidity range	0 .. 100% relative humidity, non-condensing
Pollution degree	2

smart/CORE-D7 7" Touch Display

7“ External touch display smart/CORE-D7	
Type	smart/CORE-D7
Display type	Super Fine TFT (SFT)
Diagonal screen size	7„ (177.8 mm)
Display area	149.76 x 93.60 mm
Resolution	1280 x 800 px
Luminance	500cd/m^2
Touch type	capacitive
Backlight	LED - white
Operating voltage	24 VDC ± 10 %
Currrent consumption	180 mA
Connections	1 x HDMI, 1 x USB
Operating temperature	-20 .. +60°C
Humidity range	0 .. 100% relative humidity, non-condensing
Pollution degree	2
Dimensions	approx. 202 x 146 mm
Weight	725 g

Conformities

Conformities	
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 EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use EN IEC 61326-1:2021 Electrical equipment for measurement, control and laboratory use - EMC requirements