



# 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
  - Standard interfaces:
    - MODBUS RTU (RS-485)
    - MODBUS/TCP (Ethernet)
    - Web service (Ethernet)
  - Additional interface options:
    - MQTT\*
    - OPC UA\*
    - NTCIP\*
  - Inputs and Outputs on main device:
    - 1 x Ethernet
    - 1 x USB
    - 1 x RS485
    - 2 x digital input
    - 2 x relay output
    - 1 x HDMI
  - Extension modules with DIN rail connectors:
    - 4 x RS-485 galvanically isolated
    - 4 x Analog Input\*
  - Optional integrated 2.4" touch display (Configuration code D2)
  - Optional external 7" smart/CORE-D7 touch display
- \* planned, but will only be implemented in the case of an order

## 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

## 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 visualizing 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.

## Advantages

- Specially developed for use in traffic engineering
- Condition monitoring
- Central administration
- Remote maintenance
- Flexible integration into technology

## 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, NO<sub>2</sub> (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 $\pm$ 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 $\pm$ 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 bus extender                            |
| Field bus         | 4 x RS-485 half-duplex (2-wire)             |
| 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 <sup>2</sup>                        |   |
| Touch type            | capacitive                                  |   |
| Backlight             | LED - white                                 |   |
| Operating voltage     | 24 VDC ± 10 %                               |   |
| Current 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                                       |   |