

The Lord of the Rings: CAN-HSB ring bus

For controlling fire protection and smoke removal dampers

Introduction

The implementation of secure and reliable fire protection solutions including controls for fire protection dampers is one of numerous use cases of the DEOS CAN-HSB (High Safety Bus) ring bus system. This cost-optimized system solution has established itself in buildings like hotels or offices and fulfils customer requirements flexibly. This DEOS AG solution is around **up to 40% cheaper** than comparable systems on the market.

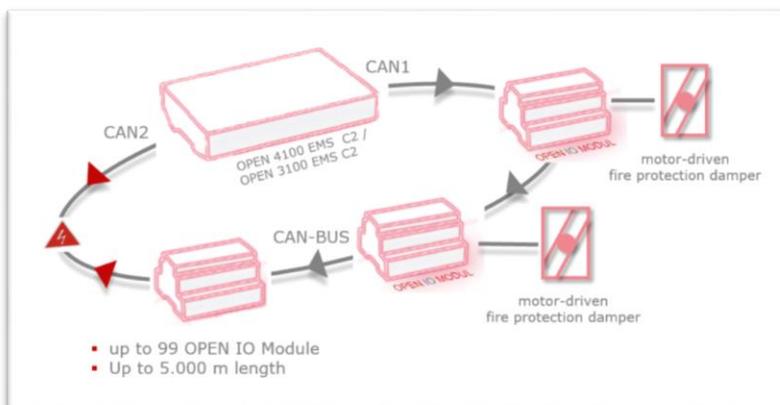
General information

Ring bus systems are an economical and ideal alternative to conventional cabling for fire protection and smoke removal dampers, which prevent fire and smoke from spreading in buildings in case of fire. The DEOS AG solution detects failures, interruptions, and short circuits in the bus line or a defective module and massively reduces potential maintenance times (operational downtime). The operational reliability of the interruption-secure ring bus system is always the focus. In this case, medium to large-scale control systems form the optimal area of application of the CAN-HSB ring bus system.

The maintenance process also plays a decisive role during the selection of the correct control system. With the DEOS AG solution, the maintenance process for the fire protection controls is executed for the individual dampers or for the complete system.

Structure and functions

All of the IO modules are connected to the CAN-HSB ring bus, and they are monitored centrally and controlled via the OPEN EMS (Energy Management Station) central unit. For this functional area, the DEOS DDC (OPEN 4100 EMS C2 and OPEN 3100 EMS C2) has been optimized for the ring bus system. Up to 99



DEOS OPEN IO modules may be connected to the CAN-HSB ring bus for this controller. To reduce cable costs, the IO modules may be placed in the immediate vicinity of the fire protection dampers:

The fire protection dampers, smoke removal dampers, and control and messaging contacts in the field levels are arranged in the IO modules.

This also optimizes the fire load in the building overall, which is another advantage of the DEOS AG system.

Thanks to its modular structure and featuring **strong communication properties**, the OPEN IO modules are ideally suitable for all controller applications in technical building automation (BA). They are compact, easy to mount, and may be used universally. For the individual areas of use in the building, a number of DEOS IO modules may be selected for the most cost-optimized variation.

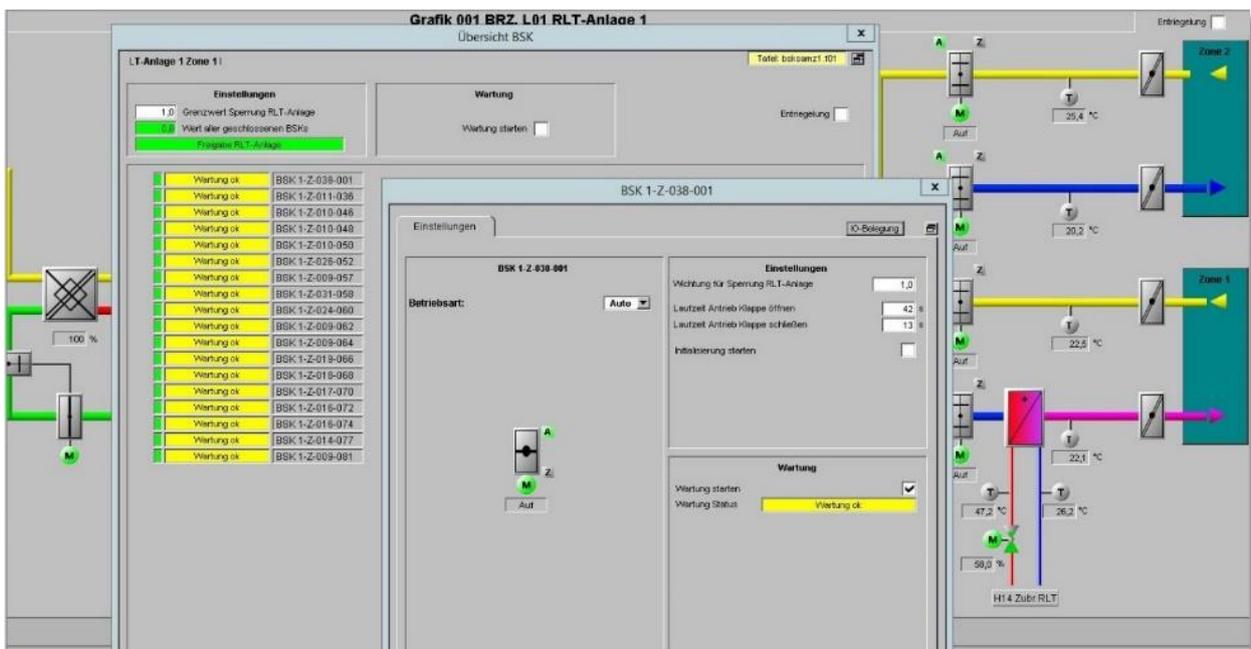
For example, if a short circuit or a power failure occurs in a segment of the ring bus line, then data cannot be transmitted via this line segment. The central control unit (e.g. the OPEN 4100 C2 EMS) redirects the data communication immediately in the opposite direction. This ensures uninterrupted communication. All IO modules and all of the connected fire protection dampers may be reached continuously via the CAN bus in spite of a line interruption.



This ring bus error and the status change are visualized via the certified BACnet OPEN EMS in the building management system (BMS), e.g. on a tablet PC.

The maintenance process in the DEOS fire protection damper system

During commissioning of the entire fire protection damper system, the controller of the OPEN EMS family installed in the building completes an initialization process for each fire protection damper. In this case, the run times of both actuating directions until the limit switch is reached are measured automatically and saved.



During a later maintenance run, the damper is closed and opened automatically. The run times measured in this case are compared with the times from the initialization run. In case of deviations in the run times, an error message will be issued. The maintenance run is started manually. This may be executed for individual fire protection dampers or for the complete.

The OPEN EMS controller unit in the CAN-HSB ring bus system

The OPEN 4100 EMS is a high-performance controller for medium to large-scale projects. The central task of this DDC is the communication via BACnet between the management and automation levels on the one hand, while on the other, the OPEN EMS records measurement information of the sensors, processes this, and then transmits it to the actuators.

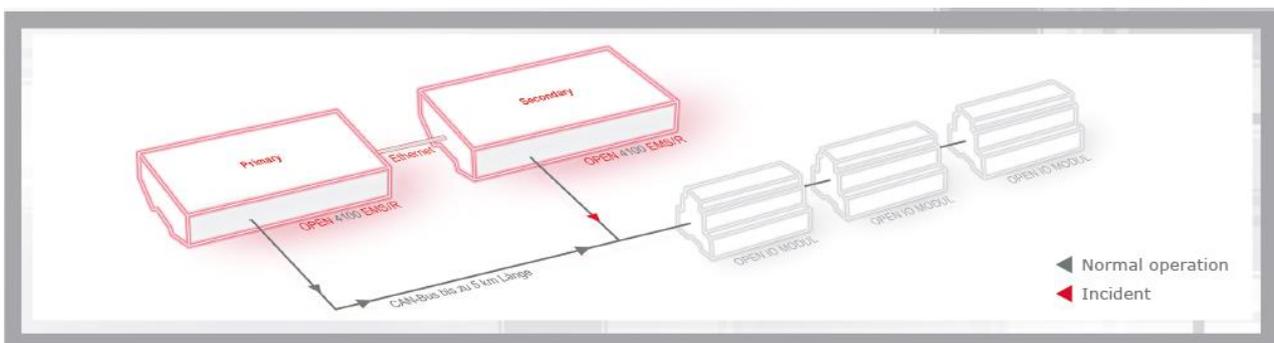
The 2nd Ethernet socket is new. This enables simple and low-cost serial Ethernet wiring (daisy chain) and uninterrupted service application. The OPEN EMS features a power PC processor and works on one of four programmable Linux OS operating systems. This DDC family supports every important protocol and interface.



You can also configure two DEOS controllers of the type OPEN 4100 EMS as a hot standby controller in a redundant system for maximum operational dependability.

Hot Standby Controller: increased operational reliability

In order to implement increased security requirements, the CAN-HSB now also features a redundant DDC system. In this case, two identical OPEN 4100 EMS C2/R or C1/R controllers are connected with each other via an Ethernet cable. The first controller (primary) normally possesses the task of control and regulation. A second controller (secondary) is available in standby mode. In case the primary controller fails, the secondary controller takes over control and regulation functions fully automatically.



Advantages and benefits: The CAN-HSB ring bus system

The simple design and reliable functionality of the overall system provides numerous advantages for practical application:

- **Uninterrupted bus communication:**
CAN-HSB ring bus technology on the field level
- **The offset IO module is closer to the fire protection damper:**
Optimal CAN-HSB bus lengths of up 5,000 m
- **Fire load reduction:**
Reduced wiring costs and cable quantities
- **Fewer controllers necessary in the building:**
Up to 99 IO modules may be connected to the CAN-HSB ring bus
- **Status information display in the BMS:**
Specially developed function modules in the system
- **High quality and high availability during bus-communication:**
Continuous recording and examination of all data
- **May be expanded everywhere for low cost:**
The ring bus system grows individually in case of building expansion
- **Automatic maintenance process:**
Automatic completion and logging of results
- **Up-to-date and clearly laid-out:**
Transfer of all operating and fault message to the DEOS OPEN EMS
- **Cost and space savings:**
Much fewer pipelines and cables required than with CAN-HSB

Note: No VDS or EN approval is necessary for the German / EU market. An individual acceptance process may be required for each country.

Info corner: The DEOS CAN-Bus

The CAN-Bus has been developed together with BOSCH and INTEL and matches the ISO 11898 international standard. The CAN (Controller Area Network) is a high-speed bus with a twisted pair cable that offers a maximum data transmission rate of 1 Mbit/s. The entire line length of the ring bus wiring equals up to 5,000 m. This bus has established itself over decades in safety-relevant vehicle areas.

Reference extract

CAN-HSB for fire protection damper controls



Ciel et Terre apartment building,
Düsseldorf, Germany

You can use this intelligent technology as well for your customers and buildings and become the "Lord of the Rings".

In case of further inquiries regarding this area of application or another for the DEOS CAN-HSB (High Safety Bus), we're pleased to help.

Please contact our sales department.

About us

Since 1967 DEOS AG, with headquarters in Rheine, develops and distributes forward-looking intelligent building automation systems which connect energy efficiency, cost transparency and comfort into a perfect balance.

DEOS AG
Birkenallee 76
48432 Rheine
Germany

+49 5971 91133-0
+49 5971 91133-2999
info@deos-ag.com
www.deos-ag.com

