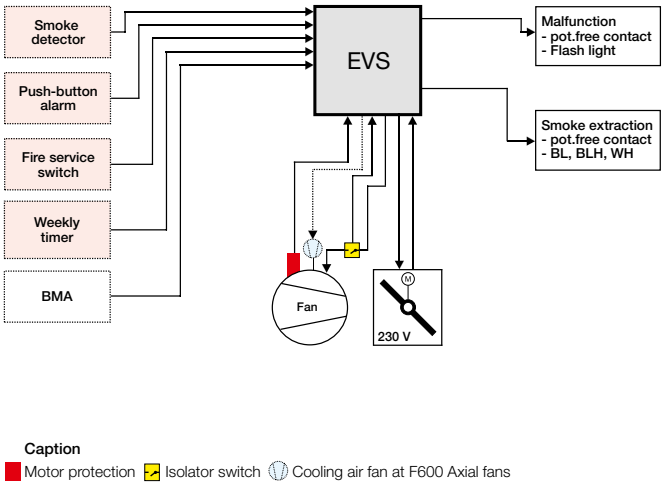
EVS

System diagram EVS (different for EVS-FUEC)



Smoke exhaust fan control system

☐ By generating low-smoke layers and areas, Helios smoke exhaust fans facilitate the safe evacuation of people. The smoke exhaust fan control system EVS was specifically designed for controlling the fans available in temperature classes F300, F400 and F600.

☐ EVS is particularly suitable for smoke extraction in small properties as well as individual fire sections and it also has a ventilation function. This ensures a significant improvement of air quality during normal operation due to the regular air exchange.

Delivery range

The Helios range of smoke exhaust fan control systems includes 1~ and 3~ models in various performance ranges for direct and star-delta start-up and with Dahlander winding for fan operation at two different speeds pursuant to the table below.
For fans with EC motor or control via frequency inverter with 0-10V output signal.

Order information

When ordering the Helios smoke exhaust fan control system, the following specifications are required:

☐ Smoke exhaust fan type to be controlled
The performance range, switching type and motor protection device of the smoke exhaust fan control system can be found in the type specification of the smoke exhaust fan to be controlled (Helios reference number).

Casing and operation

The EVS types up to 22 kW are delivered in a light grey ISO casing (IP54). The models from 30 kW are designed in a robust sheet metal casing with a side-mounted, lockable “Emergency Stop”main switch, which can be sealed in the “ON” position (not for EVS-FUEC). The front control and display panel enables the control of the individual functions with visual indication of the current operating states. The casing type of EVS for F600 with the addition for a cooling air fan and casing dimensions of the respective control available upon request.

Functions

The functionality of the Helios smoke exhaust fan control system complies with the requirements of the VDMA standard sheet 24177.
The following control functions can be adjusted via the control panel connected to the EVS casing:

☐ Ready:
The smoke exhaust fan is deactivated. The smoke extraction mode is activated when the EVS is triggered via the smoke detector, push-button alarm or other external smoke extraction warning device.

☐ Smoke extraction:
All motor protection devices for the smoke exhaust fan are bridged. Once the damper is opened by the EVS, the smoke exhaust fan runs at the nominal speed. Stage 2 (maximum fan speed) is automatically set for control systems with Dahlander windings.

☐ On or stage 1 and 2:
All motor protection devices for overload protection are activated. Once the multi-leaf damper is opened by the EVS, the smoke exhaust fan runs at the selected speed for manual ventilation. The smoke extraction mode is activated when the EVS is triggered via the smoke detector, push-button alarm or other external smoke extraction warning device.

Connection options

☐ Input:
– Fire alarm system
– 60x smoke detector
– 20x push-button alarm
– 6x fire service switch
– Motor monitoring by PTC thermistor or thermal contact
– 1x WSUP
(2x WSUP for EVS-DA)
– 1x feedback from isolator switch

☐ Output:
– 1x smoke exhaust fan
– 1x 230 V damper
– 2x cooling air fan for F600 smoke exhaust fan,
flow monitor system included
– Fault
- 1x pot.-free contact
- 1x flash light
– Smoke extraction
- 1x pot.-free contact
- 1x flash light
- 1x flash light siren
- 1x siren

Information

One smoke exhaust fan can be connected and operated per EVS. Smoke exhaust fan control systems for the connection of multiple smoke exhaust fans are also available upon request.

Information

The installation of the EVS should be as close as possible to the relevant smoke exhaust fan, but outside the area from which smoke is to be extracted. The installation of the power supply for the EVS and the smoke exhaust fan must be function-preserving and directly connected to the low-voltage main distribution board.

Delivery range and technical data

Type	Switching	Power consumption	Nominal voltage	Ambient temperature
EVS-W	Direct	up to 4.0 kW	230 V	0 up to +40 °C
EVS-D	Direct	up to 4.0 kW	400 V	0 up to +40 °C
EVS-SD	Y/Δ	up to 55 kW	400 V	0 up to +40 °C
EVS-DA	Y/YY	up to 55 kW	400 V	0 up to +40 °C
EVS-FUEC	0-10 V	*	230 V	0 up to +40 °C

* Power supply direct to fan/frequency inverter, EVS-FUEC only transmits a control signal.

Motor protection
The motor of smoke exhaust fan is protected by deactivation in case of overload in ventilation mode. This motor protection is provided by the thermal contact or PTC thermistor of the smoke exhaust fan that is connected to the EVS.
If the smoke exhaust fan motor does not have a thermal contact or PTC thermistor, then a motor protection relay in the EVS will protect the motor against overloading.

☐ With regard to the smoke exhaust fan control system EVS, all motor protection devices are bridged in the event of smoke extraction. The smoke extraction function is therefore ensured until the destruction of the fan.

Line monitoring
The detector circuits for the fire alarm system, as well as the smoke detector, push-button alarm and fire service switch are monitored for wire breakage and short circuit. The detector circuits are executed in limit value technology.

EVS for F600 smoke exhaust fans
The motor cooling for Helios F600 smoke exhaust fans is carried out using separate cooling air fans (type KLG, Accessories). These cooling air fans are also controlled by the EVS and monitored in the ventilation mode by flow monitor systems. The flow monitor systems are already installed in the EVS.

EVS-FUEC for smoke extraction fans controlled via frequency inverter or EC motor in case of fire.
In case of smoke extraction in the temperature classes of EN 13501-4, the fan must be tested together with the frequency inverter (Types FU-C(S) with protection mode, accessories) and may then also be operated at different speeds in the event of smoke extraction. The frequency inverter is not bypassed.
Smoke extraction by means of a fan with EC motor is possible if the gases to be extracted are not in an increased temperature class (e.g. for sprinklers).
With regard to the EVS-FUEC, the fan is directly powered by the NSHV. The smoke extraction or ventilation function is controlled via the smoke exhaust fan control system EVS-FUEC.

Individual solutions
Helios delivers individual switch cabinets upon request and thus the matching smoke exhaust fan control system for every project.

Marking
– TÜV approval
– CE

Accessories

Smoke detector

RMR Ref. no. 04984
Smoke detector according to EN 54-7, incl. detector base for the automatic triggering of EVS for smoke detection.

Operating voltage	9-33 V DC
Power consum. rest/alarm	30 µA/20 mA
Protection category	IP40
Dimensions mm	Ø 100 x H 44

RMR

Push-button alarm

DKM Ref. no. 04985
Push-button alarm in limit value technology for manual triggering of EVS by button. Includes reset button and LED indicator for operating state.

Operating voltage	20-30 V DC
Protection category	IP40
Colour	RAL 2011
Dimensions mm	W 125 x H 125 x D 36

DKM

Control panel cover

EVS-AD Ref. no. 08212
Lockable control panel cover made of acrylic glass for Helios EVS smoke exhaust fan control system. Locking cylinder, incl. two keys, for front mounting.

Protection category	IP54
Dimensions mm	W 150 x H 150 x D 30

EVS-AD

Fire service switch

FWS 2 Ref. no. 08255
Fire service switch (incl. LED display) with connection for DIN profile half-cylinder (Accessories).

Accessories:
Locking cylinder FWS ZY
Ref. no. 82331
Smoke extr. panel FWT p. 170

FWS 2

Weekly timer

Digital timer with LCD display for automatic control of EVS ventilation function. Installation in dry environment..
– For surface-mounting
WSUP Ref. no. 09990
– For switch cabinet installation
WSUP-S Ref. no. 09577

WSUP / WSUP-S

Warning devices

Visual and acoustic warning devices as 24 Volt signal transmitters, incl. base. Casing made from impact-resistant plastic, for ceiling and wall installation.
– Flash light siren
BLH Ref. no. 04983
– Flash light
BL Ref. no. 08216
– Siren
WH Ref. no. 08217

BLH / BL / WH

Isolator switch

RS 3+1 7,5 Ref. no. 06387
3-pole isolator switch with auxiliary contact for fans. Plastic casing for surface-mounting.
RS 6+1 See page 184
6-pole isolator switch with auxiliary contact for fans. Plastic casing for surface-mounting.

Information

Cooling air fan B KLG for F600 smoke extraction fan 162 ff.

Isolator switch B RS in functional integrity F300 and F400 for installation within the area to be vented see p. 184