MONTAGE- UND BETRIEBSVORSCHRIFT INSTALLATION AND OPERATING INSTRUCTIONS

DE

ΕN



Ventilatoreinsatz Fan unit

ELS-V.. inkl. Innenfassade incl. inner facade

einsetzbar in allen ELS-Unterputz- und ELS-Aufputzgehäusen suitable for all ELS flush-mounted and ELS surface-mounted casings



ENGLISH

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CHAPTER 1

GENERAL INFORMATION

1.0 Important information

To ensure safety and correct operation please read and observe the following instructions carefully before proceeding. The electrical connection must be fully isolated from the supply up to the final assembly! Once installation is complete, place the installation and operating instructions and accessories for the final assembly in the ELS casing and close the casing with plaster protection cover until the final assembly. After the final assembly, the installation and operating instructions must be issued to the operator (tenant/owner).

<u>^</u>	\ DANGER
<u> </u>	\ WARNING
<u>/</u> ?	\ CAUTION

1.1 Warning instructions

The adjacent symbols are safety-relevant warning symbols. All safety regulations and/or symbols in this document must be absolutely adhered to, so that any risks of injury and dangerous situations are avoided!

⚠ DANGER

1.2 Safety instructions

Special regulations apply for use, connection and operation; consultation is required in case of doubt. Further information can be found in the relevant standards and legal texts.

- All electrical work, commissioning and servicing and maintenance work must only be carried out by authorised electricians!
- The protection type specified on the type plate is only valid when the unit is properly installed in accordance with these installation and operating instructions and with closed facade.
- The ELS-V.. fan units must only be operated with functional filters!
- The following must be observed before all cleaning, maintenance and installation work or before opening the terminal compartment:
 - Isolate the device from the mains power supply and secure the against being switched on again!
 - Rotating parts must first come to a standstill!
 - Once the rotating parts come to a standstill, a waiting time of 5 min. must be observed, as dangerous voltages may be present due to internal capacitors even after disconnection from the mains!
- All plant-related safety regulations must be observed!
 If applicable, further country-specific regulations must also be observed!
- Protection against contact must be ensured pursuant to DIN EN 13857 in the installed condition (see section 2.1)!
 Contact with rotating parts must be avoided.
- A uniform inflow and free outlet must be ensured!
- When using a vented fire place (chimney) in a ventilated room, there
 must be sufficient supply air for all operating conditions (consult chimney
 sweep).

The current locally applicable regulations and laws must be observed!

• ELS-V.. complete units can be used by children over the age of 8 as well as persons with physical, sensory, or mental disabilities or lack of experience and knowledge, if they are supervised or instructed with regard to the safe use of the unit and they understand the resulting risks. Children must not play with the unit. Cleaning or user maintenance must not be carried out by unsupervised children.



1.3 Warranty claims - Exclusion of liability

All versions of this documentation must be observed, otherwise the warranty shall cease to apply. The same applies to liability claims against Helios. The use of accessory parts, which are not recommended or offered by Helios, is not permitted. Any possible damages are not covered by the warranty. Changes and modifications to the unit are not permitted and lead to a loss of conformity, and any warranty and liability shall be excluded in this case.

1.4 Regulations

If the product is installed correctly and used to its intended purpose, it conforms to all applicable regulations and CE guidelines at its date of manufacture.

1.5 Shipping

The fan is packed ex works in such a way that it is protected against normal transport strain. Carry out the shipping carefully. It is recommended to leave the fan in the original packaging.

1.6 Receipt

The shipment must be checked for damage and correctness immediately upon delivery. If there is any damage, promptly report the damage with the assistance of the transport company. If complaints are not made within the agreed period, any claims could be lost.

1.7 Storage

When storing for a prolonged time, the following steps are to be taken to avoid damaging influences: When storing for a prolonged time, the following steps are to be taken to avoid damaging influences: Motor protection by dry, airtight and dust-proof packaging (plastic bag with desiccant and humidity indicators). Vibration-free, water-tight and constant-temperature storage at a temperature in the range -20 °C to +40 °C.

In case of a storage period of more than three months or motor standstill, maintenance must be carried out before commissioning according to chapter 8. In case of reshipment (above all, over longer distances; e.g. by sea), it must be checked whether the packaging is suitable for the form and route of transport. Damages due to improper transportation, storage or putting into operation are not liable for warranty.

1.8 Application

- Normal use:

The ELS-V.. fan units are suitable for conveying normal or slightly dusty, less aggressive and humid air, in moderate climates and in the range of their performance curves (see Helios sales documents/internet). Operation is only admissible with fixed installation in a ELS flush-mounted or surface-mounted casing within buildings. The maximum admissible media and ambient temperature is 40 °C. ELS-V.. complete units correspond to protection type IPX5, protection class II and must be installed according to VDE 0100 part 701 in wet rooms in zone 1.

- Reasonably foreseeable misuse:

The fans are not suitable for operation under difficult conditions, such as high levels of humidity, aggressive media, long standstill periods, heavy contamination, excessive loads due to climatic, technical or electronic influences. The same applies for the mobile use of fans (vehicles, aircraft, ships, etc.). Usage under these conditions is only possible with release approval from Helios, as the standard version is not suitable in this case.

- Improper, prohibited use:

Any use other than the intended use is not permitted! The conveying of solid matter and liquid is not permitted. Transport media, which affect the materials of the fan, and abrasive media are not permitted. Use in explosive atmospheres is not permitted!

1.9 Performance data

The unit must be installed correctly with correctly designed extract air ducting and sufficient supply air flow to achieve the optimum performance.

When using a vented fire place (chimney) in a ventilated room, there must be sufficient supply air for all operating conditions (consult chimney sweep).

Different versions and unfavourable installation and operating conditions can lead to a reduction of output. In accordance with DIN 18017, pt. 3, the flow rate for the simultaneous operation of multiple fan units in a line and caused by external influences may be up to 15 % below the planned flow rate.

1.10 Noise data

The noise data is indicated as A-weighted sound power levels LWA (according to DIN 45 635 pt.1).

Noise data that refers to certain distances apply to free field conditions. With regard to installation, the sound pressure level can differ significantly from the catalogue data, as it is highly dependent on the installation conditions, i.e. on the absorption capability of the room and the room size among other factors.

1.11 Approval

General technical approval, DIBt (German Institute for Structural Engineering). Approval number: **Z-51.1-193**



NOTE 🖾





CHAPTER 2

GENERAL OPERATING INSTRUCTIONS

⚠ DANGER

2.0 Personnel qualification

⚠ The electrical connection and commissioning as well as the installation, servicing and maintenance of the fan must only be carried out by qualified electricians.

ELS-V.. complete units can be used by children over the age of 8 as well as persons with physical, sensory, or mental disabilities or lack of experience and knowledge, if they are supervised or instructed with regard to the safe use of the unit and they understand the resulting risks. Children must not play with the unit. Cleaning or user maintenance must not be carried out by unsupervised children.

2.1 Protection against contact

- ELS fan units with inner facades are delivered with intake-side protection guards as standard. Depending on the
 installation conditions, protection against contact may be necessary on the discharge side. Corresponding protection guards are available as accessories.
- Fans which are protected by their installation method (e.g. installation in ventilation ducts or closed assemblies) do
 not require protection guards if the plant provides the necessary level of safety. Please note that the operator is
 responsible for complying with the current standard and can be held liable for accidents as a consequence of missing protection systems.

2.2 Motor protection

The units have an energy-efficient, maintenance-free EC motor (interference-free, ball bearing) with the highest level of efficiency, stall protection and electronic restart.

2.3 Information on duct systems for ventilation systems with common extract air ducts

The ventilation system must be designed according to DIN 18017, pt. 3. The extract air lines consist of the connecting lines for the fans and the common extract air line (main line). The line section above the highest unit connection is described as the discharge line and must be vented via the roof.

Extract air lines must be leak-proof, stable and made from fireproof material class A according to DIN 4102 for more than two full floors. They must be provided or thermally insulated so that no condensation damage occurs. A sufficient number of cleaning openings with leak-proof closures must be positioned so that the extract air lines can be cleaned easily. Screwable cleaning openings are not permitted.

The main line should be straight and vertical with a constant cross-section. In case the main line is not vertical, it must be mathematically verified that the requirements according to DIN 18017, pt.3, section 3.1.3 are fulfilled. When measuring the main line, it is required that all fans are simultaneously operated at full output. Throttle devices are not permitted.

The diameter of the main line can be determined from the dimensioning diagram (Helios main catalogue). In this respect, it should be noted that there are increased pressure losses for a discharge line length over 1.5 m and a floor height over 2.75 m, which must be compensated for with a larger main line cross-section.

The Helios ELS software can be used for dimensioning.

Available via the Helios website: www.heliosventilatoren.de.

Maximum three ELS fan units per floor can be connected to a common main line. The ventilation of other rooms in an apartment must not take place via the same fan that is used to ventilate the bathroom and toilet. Observe minimum bending radius of connecting lines R = DN.

Design and installation of ventilation system must comply with the building acoustics regulations (DIN 4109 sound insulation in building construction).

2.4 Supply air duct

Each room to be ventilated must have a non-closable air vent opening of 150 cm² free cross-section.

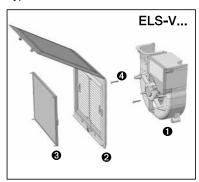
NOTE 🕸

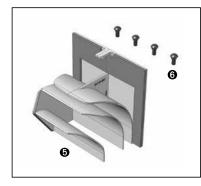


CHAPTER 3

TYPE OVERVIEW AND TECHNICAL DATA

Type overview: ELS fan unit incl. inner facade and ELS accessories 3.0





ELS-ARS

Air diverter unit for installation in ELS-V...

Adaption kit, rear discharge (accessories)

Ref. no. 8185

Page 8

3.1 ELS components

- Fan unit spiral casing with fan, electronic control board and plug contact
- Grille with hinged facade cover with filter holder and filter cleaning indicator
- 9 Permanent filter
- 4 2x screws (25 mm), 2x screws (40 mm)
- **3** ELS-ARS air diverter unit for rear discharge
- 6 Plastic rivets required for adaption of casing ELS-GUBA

3.2 Type overview/delivery unit

Ret. no. 8131
Ref. no. 8132
Ref. no. 8133
Ref. no. 8136
Ref. no. 8137
Ref. no. 8138
Ref. no. 8139
Ref. no. 8141
Ref. no. 8143
Ref. no. 8144
Ref. no. 8149
Ref. no. 8150
Ref. no. 8161
Ref. no. 8163

3.3 Technical data

- Possible ventilation stages: 100/60/35 m³/h - Protection class: Ш - Protection type: IPX5 in zone 1 wet rooms - Application - Maintenance-free energy-saving motor: 230 V/50 Hz - Permanent filter: Class G2 - Filter cleaning indicator

3.4 Spare parts

Spare permanent filter ELF-ELS Ref. no. 8190 Spare filter VE: 2 pcs, washable Spare filter for second room extraction unit ELS-ZS Ref. no. 0557 1 set = 5 pcs



TIP! Spare filters can be ordered online at www.ersatzluftfilter.de

♠ DANGER



FN

CHAPTER 4

FUNCTION

4.0 Functional description Fan unit ELS-V..

Ventilation through activation/deactivation e.g. in combination with light switch or multistage with stage switch.

4.1 Functional description Fan unit ELS-VN.. overrun timer

Integrated overrun timer with set start-up delay of approx. 45 sec. and three specifically defined overrun times of 6, 15 and 21 minutes. The start-up delay is activated by switching on, e.g. in combination with the light switch. The overrun time is activated by switching off.

4.2 Functional description Fan unit ELS-VNC.. overrun and interval timer

Integrated overrun and interval timer. Optional start-up delay 0 or approx. 45 sec., optional overrun time approx. 6, 10, 15, 21 minutes, optional interval time approx. 4, 8, 12, 24 hours.

⚠ The factory settings (6 minutes) may only be set or changed by an authorised electrician!

Operation with push button only possible in connection with start-up delay of 0 seconds.

4.3 Functional description Fan unit ELS-VP.. with integrated presence sensor

This control unit contains a PIR sensor. The sensor detects thermal radiation, which is invisible to the human eye, but typical for human beings. If a person enters the detection range of the sensor, it recognises the room use and activates the fan. If no other movement is detected in the detection range, the 15 minute overrun time will begin. Any other movement within the overrun time will restart the overrun time.

Range and detection angle:

Under ideal conditions up to approx. 5 m, horizontal 100°, vertical 82°, see Fig. 23. The temperature difference between the object and background must be at least 4 °C. The lowest object speed is 0.5 to 1.5 m/s. The range depends on the temperature difference, movement and speed.

Note: The sensor cannot detect movement if it is covered, e.g. by shower curtains or the like. If the object moves at the border of the measuring range, it is possible that the object will not be detected.

The best detection coverage is achieved when the predominant movement direction in the room is at a right angle to the sensor. There is an area in which no objects can be detected directly in front of the Sensor (0°).

The following errors can occur during movement detection:

Other heat sources

- Animals
- Light sources with high IR proportion (e.g. sunlight, incandescent lamps, etc.)
- Rapidly changing air temperature differences, which result from e.g. the activation of air conditioning units, fan heaters
 or the like.

Other error sources

- IR filters in front of the sensor, e.g. glass or acrylic, absorb a proportion of the thermal radiation, so that the objects may no longer be detected.
- If the heat source moves very rapidly or very slowly (see above), detection is not possible.

4.4 Functional description Fan unit ELS-VF.. with automatic humidity control

With integrated, electronic, humidity curve-dependent automatic control unit. If 70 % relative humidity is exceeded or a rapid increase in humidity, the fan will be automatically activated. Always at the highest stage for multi-speed types. Once the normal room air humidity is achieved, the fan will deactivate again. Regardless of the humidity control unit, the fan can be activated with an external switch (possibly connected to light) with approx. 45 sec. start-up delay and approx. 15 overrun time.

Factory settings:

Start-up delay: 45 sec., overrun: 15 min,

Humidity threshold: 70/60 %

The following functions are implemented:

⚠ Only an authorised electrician may change the settings!

Automatic humidity control system

The humidity control system always controls the required ventilation or the highest stage for multi-speed types. The microprocessor-controlled electronics detect two different types of humidity increase in the room air. It distinguishes between a slow and rapid humidity increase.

- High air humidity (slow humidity increase)

In case of a slow humidity increase (e.g. due to washing, drying textiles, temperature reduction), the fan will be activated above the set room humidity of 70 % RH (factory setting) and it will run until the room humidity has fallen by approx. 10 %, but at least for the set 15 minute overrun time.

- Event control (rapid humidity increase)

In case of a rapid humidity increase (e.g. due to showering, bathing), the fan will be activated before the set activation threshold of 70 % RH is reached to eliminate the excessive humidity in the room as effectively as possible and to quickly restore the comfort zone (40-70 % RH) in the room. As soon as the relative humidity has fallen to approx. 60 % RH (factory setting), the fan will be deactivated, but no earlier than after the set overrun time of 15 minutes.

NOTE 🖾

⚠ DANGER



Runtime limiter

In cases with constant, excessive amount of humidity, the fan will be automatically deactivated after two hours, e.g. if the incoming air is above the set relative humidity of 70 % (e.g. in case of a stormy atmosphere in the summer or if there is constantly damp laundry in the room) or in case of an insufficient air exchange rate due to small-scale or blocked air vent openings.

In this respect, there are two possible stop times depending on the situation:

a. Short stop time

The humidity has fallen below the activation threshold by the end of the overrun limit, but it has not yet reached the deactivation threshold. The fan will then be deactivated, the short stop time of one hour will run.

<u>Background</u>: There was a humidity reduction during fan operation. However, the reduction was not enough to fall below the deactivation threshold. A short stop time will be activated, because it is assumed that the humidity can be effectively reduced after short break. Any humidity measurements are ignored during the stop time.

 \rightarrow The required ventilation stages can still be operated. The stop time will continue to run in the background. Only mains deactivation and activation can delete the stop time.

b. Long stop time

The humidity has not fallen below the activation threshold by the end of the overrun limit. The fan will then be deactivated, the long stop time of six hours will run.

<u>Background</u>: Since the humidity value has not fallen below the activation threshold, it can be assumed that further ventilation makes no sense. A long stop time will be activated. Any humidity measurements are ignored during the stop time.

 \rightarrow The required ventilation stages can still be operated. The stop time will continue to run in the background. Only mains deactivation and activation can delete the stop time.

A balance between minimised energy consumption and optimal humidity reduction is achieved with these humidity curve control functions. Damp surfaces due to condensation and the associated risk of mould formation and unpleasant odours are largely avoided.

4.5 Test mode (function 4.1 to 4.4)

When there is no voltage present (power failure, fuse, etc.), the ELS-V.. is in the test mode for 1 minute. If the factory settings have been changed, normal operation will activate straight away.

When test mode is running, the fan can be activated without start-up delay using the switch input for demand-controlled ventilation (always the highest stage for multi-speed units). When deactivating demand-controlled ventilation in the test minute, the fan will immediately switch off without overrun. This applies for a switch cycle within the test minute. The activation and deactivation of demand-controlled ventilation within the test period will end the test period with the deactivation of demand-controlled ventilation. If the switch input remains activated beyond the test minute, the fan will continue to run until the switch input is deactivated and the subsequent overrun time is finished.

The humidity sensor (function 4.4) remains active in test mode, but only works as "push button" during the test minute (humidity activation threshold reached \rightarrow immediately on, level falls below humidity activation threshold \rightarrow immediately off).

The aforementioned conditions shall apply, as with demand-controlled ventilation.

NOTE 🖾

CHAPTER 5

CLEANING/ USER MAINTENANCE



5.0 Cleaning

⚠ The safety instructions specified in section 1.2 must be observed!

- Clean the facade, protection grille and visible casing parts with a damp cloth and warm soapy water if necessary!
- Do not use aggressive cleaning agents that could damage the paintwork!
- High-pressure cleaners or jet water is not permitted!

5.1 User maintenance

The fan unit has an extremely large-scale permanent filter with a high dirt absorption capacity for long cleaning intervals. The permanent filter must be cleaned and undergo a status test at certain time intervals e.g. semi-annually (depending on the level of contamination). A contaminated filter will cause a significant reduction in performance and can cause the overheating and thus failure of the unit.

The filter can be cleaned with warm water or in the dishwasher up to 60 °C (). Allow to dry properly after cleaning. In case of damage, the permanent filter must be replaced with a new filter.



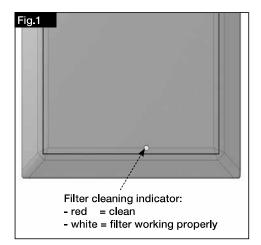
Spare filters can be ordered online at www.ersatzluftfilter.de

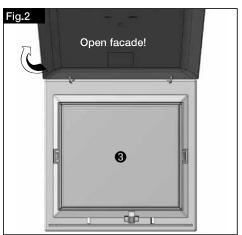
- Filter cleaning indicator (Fig.1)

The filter cleaning indicator in the facade indicates the level of contamination of the permanent filter and the associated reduction in performance via the red check point.

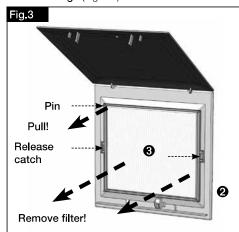


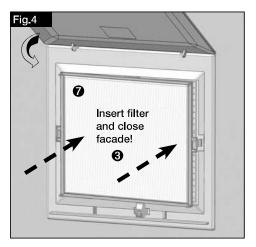






- Filter change (Fig.2-4)





Place insert foil below filter for second room connection.

Commissioning without a filter is not permitted, as otherwise the unit and entire duct system will be contaminated. The functionality of the fire damper may be affected by contamination.

Non-observance will result in a loss of warranty.

All of the following information and instructions are intended for an <u>authorised electrician</u> only!

CHAPTER 6

INSTALLATION

⚠ DANGER

∧ NOTE

⚠ DANGER

6.0 Electrical connection

⚠ The safety instructions specified in section 1.2 must be observed!

The electrical connection must only be carried out by an authorised electrician according to the information in the enclosed wiring diagrams.

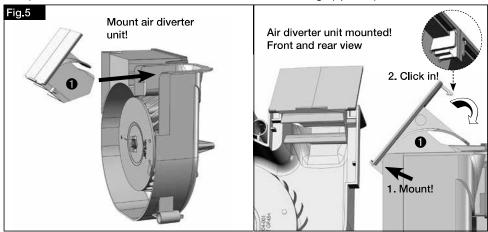
- The relevant standards, safety regulations (e.g. DIN VDE 0100) and the technical connection regulations of the energy supply companies must be observed!
- An all-pole mains switch/isolator, with at least a 3 mm contact opening (VDE 0700 T1 7.12.2 / EN 60335-1) is mandatory!
- The network configuration, voltage and frequency must be consistent with the information on the type plate.
 Note yellow label on casing!
- The power cable must be introduced so that, in case of water exposure, water entry along the power-supply cable is impossible. The cable must never be placed over sharp edges.
- The units are protection type IPX5 (jet water-proof) and correspond to protection class II.
- The electrical connection is carried out at the connection terminals in the casing. The corresponding wiring diagram
 for the respective fan type and casing must be observed.
- A control unit parallel to the light is recommended in rooms without windows (exceptions: ELS-VF, ELS-VP).
- ⚠ The electrical connection must be fully isolated from the mains power supply until final assembly!



6.1 Installation of fan unit

Remove the delivery unit from the packaging directly before installation to prevent any possible damage and contamination during shipping and on the construction site. If the flush/surface mounted casing is distorted or dented by improper installation or should the fan unit fall to the ground or be damaged in another way, installation must be avoided since faultless functionality is no longer guaranteed. The installation and commissioning of the fan unit must only take place after the completion of all other trade work and after the final cleaning to prevent damage and contamination of the fan unit.

- Preparation of fan unit ELS EC.. and ELS-ARS for rear discharge (optional)



Preparation of fan unit ELS EC F/P

- 1. Remove sensor bracket ② with sensor ③ from the fan unit.
- Remove sensor 3 from the sensor bracket 2 pressing the lock (see arrow).
- Dispose of sensor bracket.
- Fig.6
- the ELS-ARS air diverter unit for rear discharge
- Sensor bracket
- Sensor

⚠ The safety instructions in section 1.2 must be observed!

The following steps must be taken during installation:

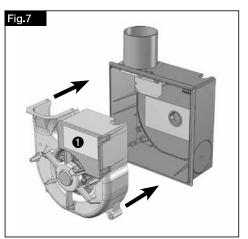
- 1. Isolate the unit fully from the mains electric supply.
- 2. Check that the electrical connection terminals are hard-wired in the installation casing and the connection cable is stored correctly.
- 3. Check the electrical connection for conformity with the provided fan unit by comparing the marked diagram (yellow label on installation casing).
- 4. Check correct installation of casing and correct if necessary (see Installation and Operating Instructions "Casing").
- 5. Remove any existing contamination (gypsum, mortar residues, construction dust).
- $\textbf{6.} \quad \textbf{Check the electrical power supply for conformity with the voltage and frequency information on the type plate.} \\$
- 7. Hold fan unit on the spiral casing with both hands and insert into installation casing so that the air outlet in the spiral casing is facing the direction of the backdraught shutter (see Fig. 7).
- 8. Push fan unit with both hands, applying constant pressure, up to the stop in the casing and forcefully engage the snap closure in the casing (see Fig. 8/a.).
- 9. In case of ceiling installation, secure the 3 snap closures with countersunk-head screws (4 x 40 mm, provided by customer) (see Fig. 8/b.).
- After installation, ensure that the electrical connection correctly snapped-in, by applying light pressure on the electric compartment.

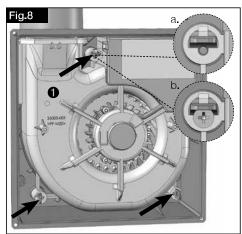


NOTE

⚠ DANGER



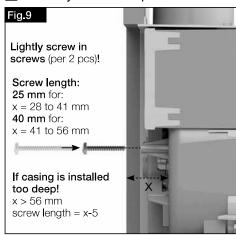


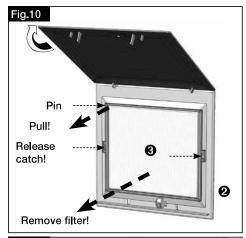


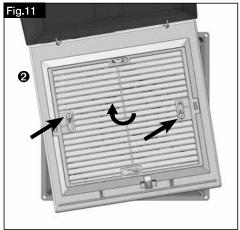
• Fan unit

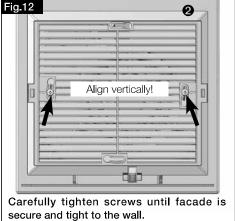
6.2 Installation of ELS inner facade

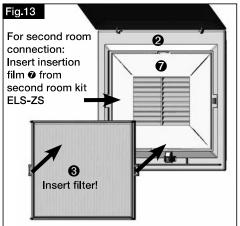
⚠ The safety instructions specified in section 1.2 must be observed!

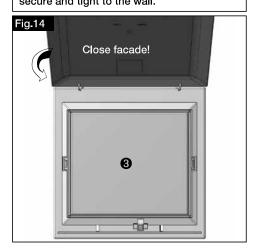














Commissioning without a filter is not permitted, as otherwise the unit and entire duct system will be contaminated. The functionality of the fire damper may be affected by contamination. This can be prevented through regular cleaning. Non-observance will result in a loss of warranty.

Special installation situations - plaster compensation

- casing too deep:

If the casing has been fitted too deep into the wall, the facade can be fixed with longer plastic screws (suitable plastic screws are provided for each facade, scope of delivery: per 2 pcs, 25 mm and 40 mm).

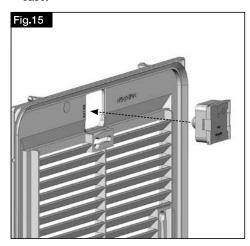
6.3 Installation of presence sensor ELS-VP.. (optional)

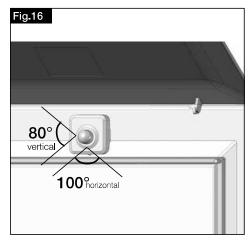
Detection angle horizontal approx. 100°, vertical approx. 80° (see Fig. 16, range information see section 7.3).

After the installation of the fan unit in the flush-mounted/surface-mounted casing, the sensor hanging from the cable must be clipped in the provided opening on the rear of the facade frame (see Fig. 15/16). The correct position of the sensor is ensured by a guide. Before mounting the facade frame, the sensor cable must be stored carefully (do not clamp or mechanically load the cable).

Subsequently mount and screw the facade frame into place.

- Do not allow facade frame with mounted sensor to hang freely from the sensor cable, as otherwise the sensor and control unit could be damaged.
- The sensor contains a very sensitive electronic component and it must not be opened or damaged in any case.





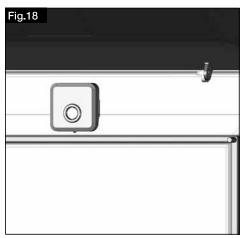
6.4 Installation of humidity sensor ELS-VF.. (optional)

After the installation of the fan unit in the flush-mounted/surface-mounted casing, the humidity sensor hanging from the cable must be clipped in the provided opening on the rear of the facade frame (see Fig. 17/18). The correct position of the sensor is ensured by a guide. Before mounting the facade frame, the sensor cable must be stored carefully (do not clamp or mechanically load the cable).

Subsequently mount and screw the facade frame into place.

- Do not allow facade frame with mounted sensor to hang freely from the sensor cable, as otherwise the sensor and control unit could be damaged.
- The sensor contains a very sensitive electronic component and it must not be opened or damaged in any case.









⚠ DANGER

6.5 Operation

⚠ The safety instructions specified in section 1.2 must be observed!

In order to ensure the faultless functioning of the fan, the following must be checked regularly:

- Formation of dust or dirt deposits in the casing or on the motor and impeller
- Free movement of the impeller
- Occurrence of excessive vibrations and noises

In case of problems with one of the aforementioned points, maintenance must be carried out according to the instructions in chapter 8.

CHAPTER 7

FUNCTION FOR INSTALLERS

⚠ NOTE

7.0 Functional description Fan unit ELS-V..

Ventilation through activation/deactivation e.g. in combination with light switch or multistage with stage switch.

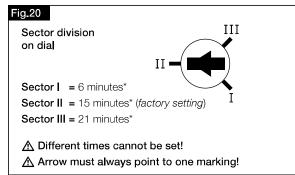
7.1 Functional description Fan unit ELS-VN.. overrun timer

Integrated overrun timer with set start-up delay of approx. 45 sec. and three specifically defined overrun times of 6, 15 and 21 minutes*, divided into 3 sectors on a dial. The times can be adjusted by setting the arrow to the respective sector marking I, II or III (see Fig. 20). A flat-headed screwdriver with max. 2 mm width is required for this purpose.

The adjustment must take place before the installation of the fan unit!

The start-up delay is activated by switching on, e.g. in combination with the light switch. The overrun time is activated by switching off.





*The times may differ depending on hardware +/- 2 %!

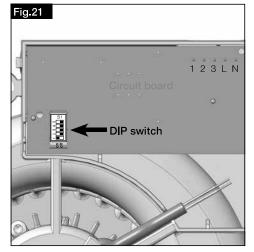
If the dial is not set to the factory setting, normal operation will activate immediately. When test mode is running, the fan can be activated without start-up delay using the switch input for demand-controlled ventilation (always the highest stage for multi-speed units). When deactivating demand-controlled ventilation in the test minute, the fan will immediately switch off without overrun. This applies for a switch cycle within the test minute. The activation and deactivation of demand-controlled ventilation within the test period will end the test period with the deactivation of demand-controlled ventilation. If the switch input remains activated beyond the test minute, the fan will continue to run until the switch input is deactivated and the subsequent overrun time is finished.

7.2 Functional description Fan unit ELS-VNC.. overrun and interval timer

Integrated overrun and interval timer. Optional start-up delay 0 or approx. 45 sec., optional overrun time approx. 6, 10, 15, 21 minutes, optional interval time approx. 4, 8, 12, 24 hours. The factory settings (6 minutes) can be set or changed using the DIP switch on the circuit board (see Fig. 21 and 22).

The coding must take place before the installation of the fan unit!

Operation with push button only possible in connection with start-up delay of 0 seconds.



g.2	j.22		DIP-Schalter / Switch / Commutateu				
			1	2	3	4	5
() Dela	Einschaltverzögerung	0 sec	off			—	
	Delayed start Démarrage temporisé	45 sec	on				
()	Nachlauf / Einschaltzeit	6 min		off	off		
	Run on time /	10 min	_	off	on		
	Running time	15 min	_	on	off		
	Temporisation / Durée de fonctionnement	21 min	_	on	on		_
0	Intervallzeit,	0 Std	230V~ auf Deaktivierungs-Eingang *				
	Einschaltdauer= Nachlaufzeit	4 Std	_			off	off
	Interval time	8 Std	_			off	on
	Running time = Run on time Durée intervalle	12 Std				on	off
	Durée de fonctionnement = Temporisation	24 Std	_	_	_	on	on



- The following functions are implemented:

1. Start-up delay

Following the activation of the fan via the required ventilation (terminal 1/2/3), operation begins after the set delay time (at all stages for multi-speed types). Thus, e.g. in case of joint activation/deactivation with the light, a room can be entered temporarily, without the fan becoming operational. Factory setting approx. 45 seconds.

2. Overrun

The fan will continue to run after the deactivation during the set time and it will then automatically deactivate. Factory setting approx. 6 minutes.

3. Interval operation

The fan can be automatically operated in adjustable time intervals. After the set overrun time, it automatically deactivates. The interval time begins after the last deactivation process, even if manual operation is active in the meantime. Factory setting approx. 4 hours.

4. Changing the factory settings

Changes must be made before the installation of the fan unit. An installed fan unit • must be removed from the casing (see section 8.1), and the terminal box cover must be removed (see section 9.1).

5. Automatic function

The automatic function can be externally activated or deactivated at the deactivation input (see wiring diagram overview).

6. Initial commissioning, or after a power failure

When the operating voltage is applied, a start initialisation is carried out. The fan will then be in test mode for one minute.

Condition: the DIP switch has the factory setting (10000).

If the DIP switch is not set to the factory setting, normal operation will be activated after approx. 20 second lockout period.

When test mode is running, the fan can be activated without start-up delay using the switch input for demand-controlled ventilation (always the highest stage for multi-speed units). When deactivating demand-controlled ventilation in the test minute, the fan will immediately switch off without overrun. This applies for a switch cycle within the test minute. The activation and deactivation of demand-controlled ventilation within the test period will end the test period with the deactivation of demand-controlled ventilation. If the switch input remains activated beyond the test minute, the fan will continue to run until the switch input is deactivated and the subsequent overrun time is finished.

7.3 Functional description Fan unit ELS-VP.. with integrated presence sensor

This control unit contains a PIR sensor. The sensor detects thermal radiation, which is invisible to the human eye, but typical for human beings. If a person enters the detection range of the sensor, it recognises the room use and activates the fan (always at the highest stage for multi-speed types). If no other movement is detected in the detection range, the 15 minute overrun time will begin. Any other movement within the overrun time will restart the overrun time.

Range and detection angle:

Under ideal conditions up to approx. 5 m, horizontal 100°, vertical 82°, see Fig. 23. The temperature difference between the object and background must be at least 4 °C. The lowest object speed is 0.5 to 1.5 m/s. The range depends on the temperature difference, movement and speed.

The sensor cannot detect movement if it is covered, e.g. by shower curtains or the like. If the object moves at the border of the measuring range, it is possible that the object will not be detected.

The best detection coverage is achieved when the predominant movement direction in the room is at a right angle to the sensor. There is an area in which no objects can be detected directly in front of the Sensor (0°).

The following errors can occur during movement detection:

Other heat sources

- Animals
- Light sources with high IR proportion (e.g. sunlight, incandescent lamps, etc.)
- Rapidly changing air temperature differences, which result from e.g. the activation of air conditioning units, fan heaters
 or the like.

Other error sources

- IR filters in front of the sensor, e.g. glass or acrylic, absorb a proportion of the thermal radiation, so that the objects may no longer be detected.
- If the heat source moves very rapidly or very slowly (see above), detection is not possible.

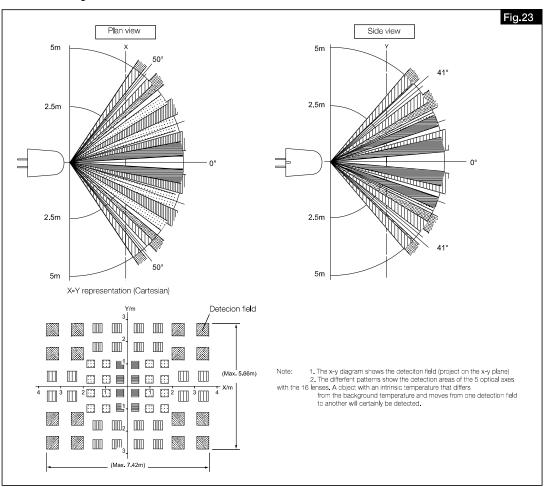
1. Initial commissioning or after a power failure

Upon connection of the operating voltage, the movement sensor will be started after approx. 30 seconds due to the stabilisation of the movement sensor.

∧ NOTE



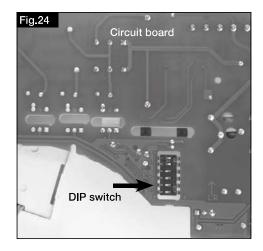
2. Detection range



Quelle: Panasonic

7.4 Functional description Fan unit ELS-VF.. with automatic humidity control

With integrated, electronic, humidity curve-dependent automatic control unit. If 70 % relative humidity is exceeded or a rapid increase in humidity, the fan will be automatically activated (always at the highest stage for multi-speed types). Once the normal room air humidity is achieved, the fan will deactivate again. Regardless of the humidity control unit, the fan can be activated with an external switch (possibly connected to light) with approx. 45 sec. start-up delay and approx. 15 minute overrun time.



Factory settings:

Start-up delay: 45 sec., overrun time: 15 min. Threshold humidity: 70/60 %

DIP switch	Value	1	2	3	4	5	6
Start-up delay	0 se	c off					
Start-up delay	45 se	ec on					
Overrun time	6 mi	n	off	off			
Overrun time	10 m	in	off	on			
Overrun time	15 m	in	on	off			
Overrun time	21 m	in	on	on			
Humidity switching threshold On/Off	70/60 rF	%			off	off	
Humidity switching threshold On/Off	90/80 rF	%			off	on	
Humidity switching threshold On/Off	80/70 rF	%			on	off	
Humidity switching threshold On/Off	60/50 rF	%			on	on	
No speed without timer function							of
All switch inputs with timer function							10
actory settings upon delivery							
DIP switch	1	2	3	4		5	6
Delivery	on	on	off	off	-	off	of





- The following functions are implemented:

1. Start-up delay

Following the activation of the fan, operation begins after the set delay time. Thus, e.g. in case of joint activation/deactivation with the light, a room can be entered temporarily, without the fan becoming operational. Factory setting approx. 45 seconds (adjustment with DIP switch).

2. Overrun

The fan will continue to run after the deactivation during the set time and it will then automatically deactivate. Factory setting approx. 15 minutes (adjustment with DIP switch).

3. Automatic humidity control system

The humidity control system always controls the required ventilation or the highest stage for multi-speed types. The microprocessor-controlled electronics detect two different types of humidity increase in the room air. It distinguishes between a slow and rapid humidity increase.

- High air humidity (slow humidity increase)

In case of a slow humidity increase (e.g. due to washing, drying textiles, temperature reduction), the fan will be activated above the set room humidity of 70 % RH (factory setting, using DIP switch) and it will run until the room humidity has fallen by approx. 10 %, but at least for the set 15 minute overrun time.

- Event control (rapid humidity increase)

In case of a rapid humidity increase (e.g. due to showering, bathing), the fan will be activated before the set activation threshold of 70 % RH is reached to eliminate the excessive humidity in the room as effectively as possible and to quickly restore the comfort zone (40-70 % RH) in the room. As soon as the relative humidity has fallen to approx. 60 % RH (factory setting, using DIP switch), the fan will be deactivated, but no earlier than after the set overrun time of 15 minutes.

4. Runtime limit

In cases with constant, excessive amount of humidity, the fan will be automatically deactivated after two hours, e.g. if the incoming air is above the set relative humidity of 70 % (e.g. in case of a stormy atmosphere in the summer or if there is constantly damp laundry in the room) or in case of an insufficient air exchange rate due to small-scale or blocked air vent openings. In this respect, there are two possible stop times depending on the situation:

a. Short stop time

The humidity has fallen below the activation threshold by the end of the overrun limit, but it has not yet reached the deactivation threshold. The fan will then be deactivated, the short stop time of one hour will run.

<u>Background</u>: There was a humidity reduction during fan operation. However, the reduction was not enough to fall below the deactivation threshold. A short stop time will be activated, because it is assumed that the humidity can be effectively reduced after short break. Any humidity measurements are ignored during the stop time.

The required ventilation stages can still be operated. The stop time will continue to run in the background.

Only mains deactivation and activation can delete the stop time.

b. Long stop time

The humidity has not fallen below the activation threshold by the end of the overrun limit. The fan will then be deactivated, the long stop time of six hours will run.

<u>Background</u>: Since the humidity value has not fallen below the activation threshold, it can be assumed that further ventilation makes no sense. A long stop time will be activated. Any humidity measurements are ignored during the stop time.

The required ventilation stages can still be operated. The stop time will continue to run in the background. Only mains deactivation and activation can delete the stop time.

A balance between minimised energy consumption and optimal humidity reduction is achieved with these humidity curve control functions. Damp surfaces due to condensation and the associated risk of mould formation and unpleasant odours are largely avoided.

5. Pause function

Deactivation of automatic humidity control system and active operation

The automatic humidity control system and active demand-controlled ventilation can be deactivated for one hour by switch or push button (push button for at least 0.5 sec.), see wiring diagram SS-881, SS-882 and SS-883 (excluding three-speed type).

→ When using a switch that is active for longer than one hour, the deactivation will be extended by another hour. Push button operation within the 1-hour pause period will not cause an extension. A permanently active switch or a control line permanently connected to the automatic deactivation input will lead to a permanent pause of the humidity control system. The existing demand-controlled ventilation stages can still be operated. The input will be read uninterrupted, so that the pause is reactivated immediately after fan operation via demand-controlled ventilation in case of such operation.









6. Activation of start-up delay and overrun timer at all power levels

This function can be adjusted for multi-speed types. Adjust DIP switch 6 to "on" (factory setting is "off"). By activating all levels as time input, even the smaller levels can be used as push button inputs for multi-speed fans (for adjustment without start-up delay). The inputs are then equivalent for multi-speed fans.

Active switch input results in:

- deactivation of humidity control system
- the last activation specifies the level, any other previously activated level will be overridden

During a running humidity stop period, the activation or deactivation of demand-controlled ventilation (manual operation) will result in the activation or deactivation of the desired level after overrun time. In this case, the humidity stop period will continue to run in the background or until the end. In this case, the humidity control system will not be reset by activating demand-controlled ventilation. If multiple switches are activated after the end of the humidity stop period, the highest level will be activated.

7. Initial commissioning, or after a power failure

When the operating voltage is applied, a start initialisation is carried out. The fan will then be in test mode for one minute.

Condition: the DIP switch has the factory setting (10000).

If the DIP switch is not set to the factory setting, normal operation will be immediately activated. When test mode is running, the fan can be activated <u>without start-up delay</u> using the switch input for demand-controlled ventilation (always the highest stage for multi-speed units). When deactivating demand-controlled ventilation in the test minute, the fan will immediately switch off <u>without overrun</u>. This applies for a switch cycle within the test minute. The activation and deactivation of demand-controlled ventilation within the test period will end the test period with the deactivation of demand-controlled ventilation.

If the switch input remains activated beyond the test minute, the fan will continue to run until the switch input is deactivated and the subsequent overrun time is finished.

The humidity sensor (function 4.4) remains active in test mode, but only works as "push button" during the test minute (humidity activation threshold reached \rightarrow immediately on, level falls below humidity activation threshold \rightarrow immediately off).

The aforementioned conditions shall apply, as with demand-controlled ventilation.

8. Checking the humidity function

If the humidity required for the initial commissioning is not available, then the fan unit can be checked as follows:

If a damp cloth is held below the facade, the humidity sensor will detect a rapid humidity increase and it will activate the fan after approx. 20-40 seconds.

9. Functional disturbances

In order to enable a correct humidity measurement, the fan or the fan temperature must be adjusted to the temperature of the installation site. A warm fan in a cold environment or a cold fan in a warm environment will lead to a shift in the humidity measurement value. The electronic control unit has been designed and extensively tested according to the current regulations (DIN, EMV). Should functional disturbances still occur, proceed as follows:

- Check that electrical connection is correct.
- Disconnect the unit from the power supply by switching off the fuse for at least 30 sec. Then switch
 the fuse on again.
- It must be ensured that sufficient supply air can flow into the room to be ventilated. If the functional disturbance cannot be resolved with these measures, please contact the Helios customer service team.

⚠ There must be no repair attempts in the terminal box!

♠ NOTE

⚠ DANGER



ΕN

CHAPTER 8

SERVICING AND MAINTENANCE

8.0 Service work instructions

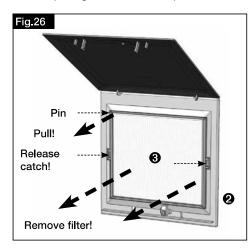
⚠ The safety instructions specified in section 1.2 must be observed!

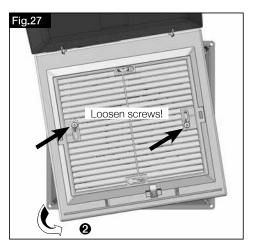
Contaminated and humid air can affect constant functional reliability. A periodical functional inspection of the backdraught shutter is recommended. With regard to units with a fire protection damper, the corresponding points of the relevant approval must be observed. With regard to units with integrated start-up delay and overrun, it must be ensured that there is a delayed start after activation and an overrun corresponding to the overrun time after deactivation.

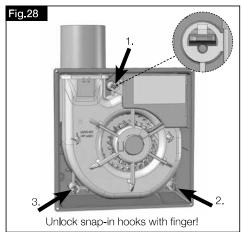
8.1 Disassembly of fan unit

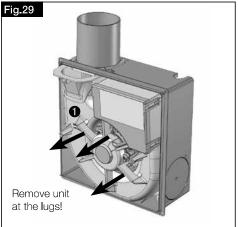
 \triangle The safety instructions specified in section 1.2 must be observed!

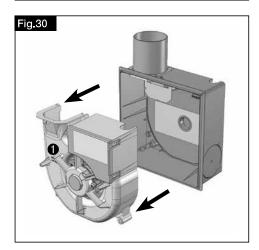
⚠ The unit must be fully isolated from the power supply before all maintenance and installation work and before opening the terminal compartment!















⚠ DANGER

8.2 Servicing and maintenance

⚠ The safety instructions specified in section 1.2 must be observed!

The fan must be fully isolated from the power supply before all work and before opening the terminal compartment!

- There is no provision for maintenance beyond the scope of user maintenance. If maintenance work is still required (due to faults), then this must be carried out by electricians!
- Excessive deposits of dirt, dust, grease, etc. on the impeller, motor, protection guard and, above all, between the
 casing and the impeller, are not permitted, as these can lead to an unbalance in the impeller, overheating of the
 motor or the blocking of the impeller. In such cases, the unit must be cleaned.
- In cases of longer periods of standstill, maintenance must be carried out when the unit is restarted.

The following should be checked:

- Secure mounting of the fan in casing, replace in case of doubt.
- · Remove dirt deposits.
- In case of mechanical damage, replace damaged parts or decommission the unit (the fan unit can only be replaced as a whole).
- Check tightness of screw connections, do not loosen screws in the process!
- · Casing quality (cracks, brittleness of the plastic)
- Free movement of the impeller. If the impeller does not move freely, see Fault causes in section 8.3!
- Bearing noises
- Vibrations see Fault causes in section 8.3
- Check power consumption according to type plate see Fault causes in section 8.3

⚠ DANGER

8.3 Fault causes

⚠ The safety instructions specified in section 1.2 must be observed!

- General fault causes

See section 7 for function-specific faults.

Fault	Cause	Solution				
Fan does not start	- No voltage	Check mains voltage Check connection according to wiring diagram				
	- Impeller blocked	Clear blockage (facade screws too long), clean, replace fan unit if necessary				
	- Motor blocked	Replace fan unit				
Fuse has tripped	- Shorted coil in motor	Replace fan unit				
	Supply line/connection damaged or defective control board.	Replace parts, replace fan unit if necessary (contact Helios customer service team)				
	- Connected incorrectly	Check, modify connection				
Vibrations	- Contamination	Clean				
	- Attachment-related resonance	Check or repair attachment				
Abnormal noises	- Grinding impeller	Clean impeller, replace fan unit if necessary				
	- Bearing damage	Replace fan unit				
	- Mechanical damage	Carry out maintenance				
Fan no longer perfor-	- Filter contaminated/clogged	Check/clean/replace filter				
ming (speed)	- Insufficient air delivery	Check/clear inflow and outflow				
	- Incorrect voltage	Check/modify connection				
	- Bearing damage	Replace fan unit				
	- Contamination	Clean				
	- Insufficient backflow	Widen backflow openings				

8.3 Standstill and disposal

⚠ The safety instructions specified in section 1.2 must be observed! The instructions in section 1.5 must be observed for shipping.

Parts and components of the fan, whose service life has expired, e.g. due to wear and tear, corrosion, mechanical load, fatigue and/or other effects that cannot be directly discerned, must be disposed of expertly and properly after disassembly in accordance with the national and international laws and regulations.

The same also applies to auxiliary materials in use. Such as oils and greases or other substances. The intended and unintended further use of worn parts, e.g. impellers, rolling bearings, filters, etc. can result in danger to persons, the environment as well as machines and systems. The corresponding operator guidelines applicable on-site must be observed and used.



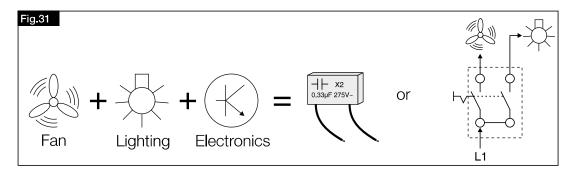
CHAPTER 9

ELECTRONICS

IMPORTANT NOTE 🖾

9.0 Influence of reverse voltage or induced voltages of glow lamps / energy-saving lamps / LED / room lighting and the like

Our units comply with the latest regulations, see section 1.4. Reverse voltages or induced voltages are not "faults". They can occur depending on the installation and fan / switch / lighting combination and they can cause undesired symptoms, such as glowing, misfires and malfunctions.



WARNING A

Fan in connection with glow lamps / room lighting

- REVERSE VOLTAGE STANDARD TYPES without internal electronics

For multi-speed types, there is reverse voltage at the other non-switched terminal. In general, room lighting / glow lamps / LED must only be connected via 2-pole switches. The capacitor measure is not possible in this case! (see **SS-1011**).

- REVERSE VOLTAGE ELEKTRONICS TYPES (N, NC, P, PC, F)

As a result of the internal electronics in the fan, there is "low-energy" reverse voltage at the switch input (always the highest level for multi-speed types). A damping measure with an X2 capacitor can be implemented at the "electronic" switch input (always the highest level for multi-speed types) to suppress the reverse voltage. For multi-speed types, the capacitor measure is not possible at the respective lower levels.

- GLOW LAMPS / LED

In order to prevent permanent glowing when using a glow lamp / LED in the switch, a customer-provided capacitor can be used in parallel to the fan switch input (see SS-1010).

- (X2 capacitor with 0.33 μF/275 V~ with wire, Ref. no. 84955-001).

- ROOM LIGHTING WITH ELECTRONIC CONTROL

$\mbox{e.g.}$ energy-saving lamps or LED lamps at the switch input

In order to prevent faults in the lamp (e.g. misfires or flickering) when using an "electronically" controlled lamp at the switch input, a customer-provided capacitor can also be used in parallel (SS-1010).

– (X2 capacitor with 0.33 μ F/275 V~ with wire, Ref. no. 84955-001)

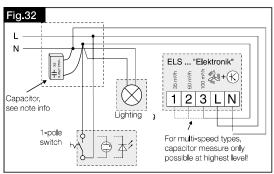
Alternatively, the lighting must be connected via a 2 pole switch (SS-1011).

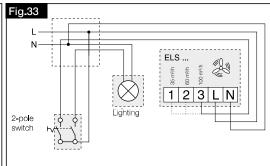
Examples:

SS-1010

Solution with capacitor

SS-1011
Solution with 2-pole switch









⚠ DANGER

∧ NOTE

IMPORTANT NOTE 🖾

9.1 Opening the control box

⚠ The safety instructions specified in section 1.2 must be observed!

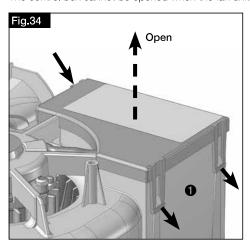
The unit must be fully isolated from the mains power supply before all maintenance and installation work or before opening the terminal compartment! The electrical connection must only be carried out by an authorised electrician according to the following wiring diagrams.

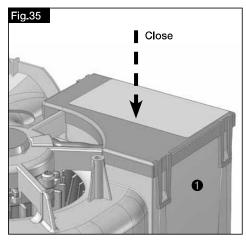
Observe yellow label on the casing!

- Opening the control box

Note: Do not forcibly bend the snap-in hooks, as otherwise there is a risk of breakage!

The control box cannot be opened when the fan unit $\mathbf{0}$!





9.2 Electronic control board

The electronic control board enables various type-specific modes of operation, such as e.g. interval, overrun, humidity and presence.

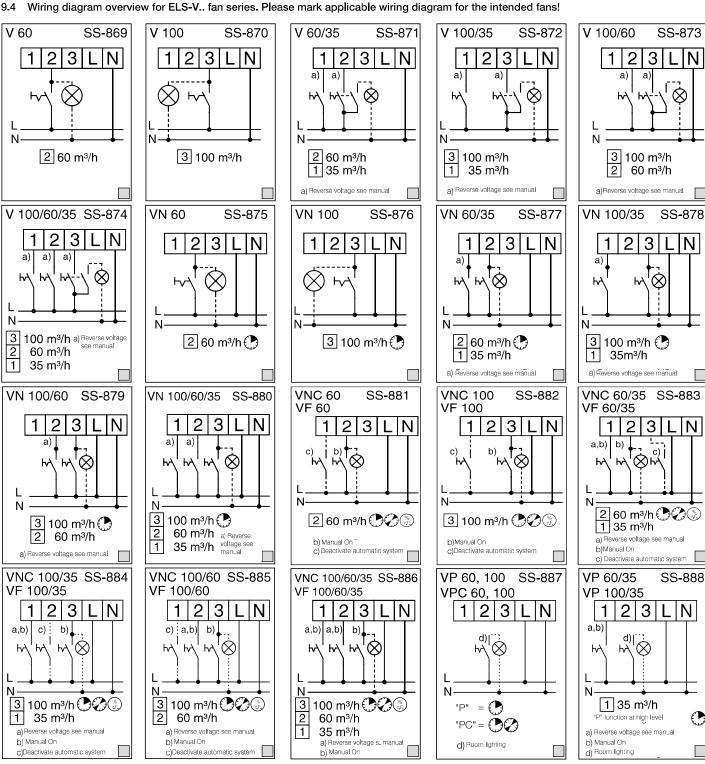
The board is located in the jet water-proof casing and holds the plug pins for the electrical connection with the casing.

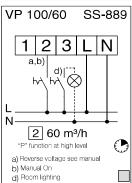
9.3 Parallel operation of multi-speed fans

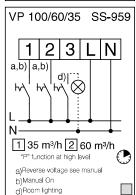
⚠ The direct parallel switching of the switch inputs is possible!

<u>Exception</u>: Electronic types may be directly connected in parallel at highest level (time input). The direct parallel switching of lower levels remains excluded. Indirect parallel switching is possible by means of decoupling via relay contact. Operation with lighting, see chapter 9.







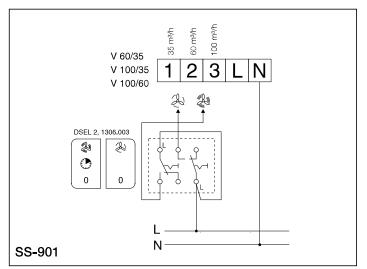


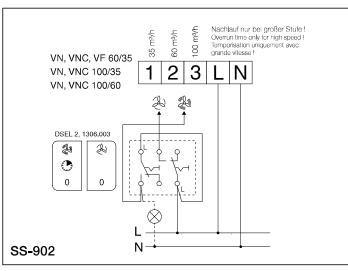
Footnotes:

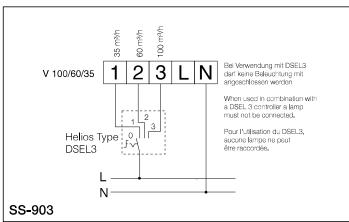
- a) In case of parallel connection of terminals 1-2-3, there is reverse voltage at the other non-connected terminal. Only connect room lighting via 2-pole switch.
- b) Subordinate to the automatic function (type VN, VNC, VF, VP), the respective available speed level can be manually adjusted.
- c) The interval function for VNC types and the automatic humidity system for VF types can be deactivated (excluding three-speed types)
- d) Fan-independent control of room lighting

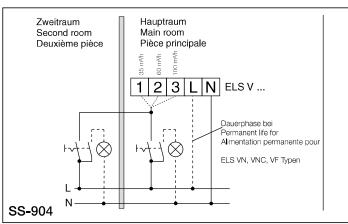












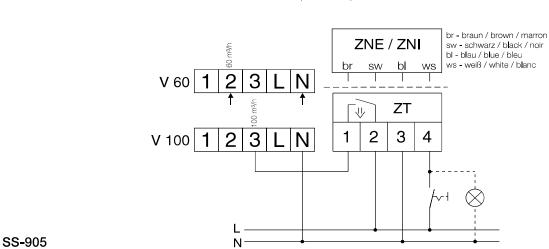
Vorsicht !! Attention !!

Externer ZNE/ZNI dürfen nur bei eintourigen V-Ventilatoreinsätzen V 60 und V 100 eingesetzt werden. Beim Einsatz des ZNE/ZNI/ZT mit mehreren Lüftern, muß pro Lüfter ein separater ZNE/ZNI/ZT eingesetzt werden.

Direkte Parallelschaltung von mehreren Lüftern ist nicht erlaubt.

External ZNE/ZNI timer may only be connected on ELS-V fans V 60 and V 100 with one speed. If used in combination with a number of fans, each fan needs its own ZNE/ZNI/ZT timer. The wiring of ELS-V fans in parallel is not permitted.

Pour tous types ELS-V à une vitesse un temporisateur extérieur ZNE/ZNI peut être connecté à un V 60 et V 100. Il est nécessaire d'installer un temporisateur ZNE/ZNI/ZT pour chaque ventilateur utilisé. Le branchement en parallèle de plusieurs ventilateurs est interdit.





Als Referenz am Gerät griffbereit aufbewahren! Druckschrift-Nr. Please keep this manual for reference with the unit! Print no. Garder cette notice à proximité de l'unité! N° d'impression

19 102-007/0318

www.heliosventilatoren.de

Service und Information

CH HELIOS Ventilatoren · Lupfenstraße 8 · 78056 VS-Schwenningen

CH HELIOS Ventilatoren AG · Tannstrasse 4 · 8112 Otelfingen

A HELIOS Ventilatoren · Postfach 854 · Siemensstraße 15 · 6023 Innsbruck

F HELIOS Ventilateurs · Le Carré des Aviateurs · 157 avenue Charles Floquet · 93155 Le Blanc Mesnil Cedex
 GB HELIOS Ventilation Systems Ltd. · 5 Crown Gate · Wyncolls Road · Severalls Industrial Park · Colchester · Essex · CO4 9HZ