Convenient and **energy-saving controlled.**

The adjustment of ventilation and air-conditioning system performance to changing requirements is essential for meeting comfort standards and mandatory for energy policy reasons.

Measure.

Appropriate adjustments are required for changes in room occupancy, air deterioration at different times, changing temperatures, day and night settings, etc.
Helios offers regulation, control and switching units adapted to the fans for all functions.

Control.

Complete system solutions provide maximum possible security for the user, fully guaranteed by Helios. Furthermore, a lot of time can be saved during planning, installation and operation if the control and regulation units are perfectly adapted to the fans and their functions. Problems are solved before they arise.

Regulate.

The extensive MSR range from Helios offers the ideal solution for every task and simultaneously meets all requirements in relation to energy saving and noise reduction.

Task	Our solutions at a glance			Page
 Manual control of fan volume flow	■ **Manual speed controller**			
	– without motor protection			
	– 10 V, 24 V DC	– Potentiometer for EC fans	**PU / PA, SU / SA**	615
	– 230 V~	– Electronic, flush-m., surface-m., install.	**ES.., BSX**	605
	– 230 V~	– Transformer, surface-m., installation	**TSW, TSSW**	606
	– 400 V 3~	– Transformer, surface-m., installation	**TSD, TSSD**	607
	– 230 V~	– Transformer, elec., surface-mounted	**ETW**	609
	– with built-in motor protection for connection to thermal contacts			
	– 230 V~ / 400 V 3~	– Transformer, surface-mounted	**MWS / RDS**	606 f.
	– 400 V 3~	– Electronic, surface-mounted	**ESD**	609
	– 400 V 3~	– Frequency inverter	**FU..**	610 f.
	■ **Operating switch for fans with 2 speeds**			
	– Pole changing switch for Dahlander winding, surface / flush-mounted		**PDA / PDU**	603
	– Pole changing switch for separate windings, surface / flush-mounted		**PGWA / PGWU**	603
 Turn-off delay	■ **Turn-off delay switch**	electronic, mechanical, with variable and fixed periods	**ZNE, ZNI, ZV**	601
 Air quality - automatic element	■ **Air quality controller**	with on/off function depending on room air quality	**ACL**	617
 CO_2 traffic light display	■ **Air quality**	with traffic light display, for determining the CO_2 content of the room air	**CO_2 monitor**	618
 Flow velocity	■ **Flow monitor**	for monitoring the minimum flow velocity in rectangular and round ducts	**SWE, SWT**	617
 Room temperature-dependent	■ **Ventilation thermostat**	– single-step with on/off function	**TME 1**	616
		– four-step, mechanical	**TME 4**	608
		– continuously variable, electronic	**EST**	608
	■ **Temperature control units with integrated power unit, surface-mounted**			
	– 230 V~	– electronic	**EUR 6 C**	612
	– 400 V 3~	– via transformer	**KTRD**	608
 Temp. difference-dependent	■ **Diff. temp. controller** – 230 V~	Elec., cont. variable, with power unit for surface-mounting	**EDTW**	617
 Humidity-dependent control	■ **Ventilation hygrostat**	with on/off function, room surf.-mount.	**HY 3, HY 3 SI**	616
	■ **Diff. humidity control system**	System component for optimal indoor humidity	**FDR**	619
	■ **Fan for sanitary rooms**	with integ. humidity control function	**M1.. F, ELS-VF**	26, 55
 Temp.-, pressure-, speed-dependent control	■ **Universal controller**	with power unit 230 V~	**EUR 6 C**	612
		with 0 - 10 V DC output, for EC fans	**EUR EC**	613
		with power unit 400 V~	**FU..**	610 f.
	■ **Control units for differential pressure or temperature, with digital display**			
	– 0 - 10 V DC	– electronic, surface-mounted	**EDR / ETR**	614
	■ **Differential pressure switch**	for monitoring air filters, system pressure and fan operation	**DDS**	616
 Motor protection against overloading	■ **Motor prot. circuit breaker**	for connection of thermal contacts for monitoring the winding temperature	**MW, MD**	604
			M 2, M 3, M	604
	■ **Motor prot. trigger unit**	for PTC therm. temp. sensor in winding	**MSA**	604
 Operating switch	■ **Reverser switch**	for changing the direction of rotation and flow for axial fans	**WS**	602
	■ **Isolator switch**	for all-pole mains disconn. for serv. work	**RS, RHS**	602 f.
	■ **Pole changing switch with reverser**	application like above, but only for axial fans with 2 speeds	**PWGW, PWDA**	603
 Automatic timer	■ **Weekly timer**	for automatic control of the operating mode	**WSUP, WSUP-S**	601

Flush-mounted turn-off delay timer for installation in flush-mounted boxes behind any switch

- Special development with ideal features for fan turn-off delay e.g. in bathrooms/WCs. The small dimensions allow installation in flush-mounted box behind any switch. Activation via on/off switch coupled with the light in windowless rooms. Individually applicable due to various period variants.
- Interference immunity and emitted interference of switch ZNE/ZNI comply with current EN guidelines.
- ZV tested as follows, emitted interference according to: DIN EN 55014/VDE 0875-14-1; DIN EN 50370/VDE 0875-1; DIN EN 61000-3-3/VDE 0838-3.

Turn-off delay timer for installation in flush-m. box behind switch

ZNE

ZNE Ref. no. 00342

Electronic turn-off delay timer with continuously adjustable turn-off delay periods
Activation via on/off switch, e.g. together with light. Minimal dimensions allow almost unrestricted installation.

Contin. adjustable turn-off delay period	0 – 21 min.
Start-up delay, deactivatable	45 sec.
Voltage	230 V, 1~, 50/60 Hz
Load cap. min. 0.05 A max. 0.8 A (ind.)	
Protection category	IP40
Dim. mm	W 17 x H 37 x D 13
Installation	Flush box behind switch
Wiring diagram no.	477.1
– for controlling two rooms / switches	174.3

Turn-off delay timer for installation in flush-m. box behind switch

ZNI

ZNI Ref. no. 00343

Electronic interval switch with adjustable interval and turn-off delay periods
Automatically ventilates in adjustable time intervals unless there is manual ventilation during these time phases. In case of manual operation, e.g. activation via light switch, there will be a turn-off delay in the set duration.

Adjust. interval period	0, 4, 8, 12, 24 h.
Turn-off delay per. w/ manual operation, Continuously adjustable	0 – 21 min.
Start-up delay, deactivatable	45 sec.
Voltage	230 V, 1~, 50/60 Hz
Load cap. min. 0.05 A max. 0.8 A (ind.)	
Protection category	IP40
Dim. mm	W 17 x H 37 x D 13
Installation	Flush box behind switch
Wiring diagram no.	477.1
– for controlling two rooms / switches	174.3

Turn-off delay timer for installation in distribution box

ZV

ZV Ref. no. 01279

Electronic turn-off delay timer with continuously adjustable periods and operating switch with turn-off delay and continuous operation positions. Parallel connection of light and fan possible via on/off switch or button.

Contin. adjustable turn-off delay period	4 – 15 min.
Voltage	230 V, 1~, 50/60 Hz
Load capacity	2.1 A (ind.)
Protection category	IP20
Dim. mm	W 18 x H 93 x D 67
Installation	Distribution box, 35 mm profile rails
Wiring diagram no.	236.1

Weekly timer Surface-mounted or installation in flush-mounted box

WSUP

WSUP Ref. no. 09990

Digital timer with illuminated LCD display for automatic controlling the operating modes of any units up to 10 A rated current. Suitable for switching the smallest electric currents from 1mW (0.1V/1mA) through standard, gold-plated µ contact. 56 programmable switching times for all weekdays. With smartphone via NFC (free App).

Voltage	230 V, 1~, 50-60 Hz
Load capacity	1 mW (0.1 V / 1 mA)
Switch cont.	Pot.-fr. changeover contact, 250 V, 1~, 10 A $\cos\varphi \approx 1$ 6 A $\cos\varphi \approx 0.6$, µ contact
Protection category/class	IP20 / II
Dim. mm	W 84 x H 84 x D 40
Installation	Surf.-m. casing, flush-m. box
Temp. range	–30° C to +55 °C
Memory spaces (switching time)	56
Wiring diagram no.	862.1

Weekly timer for switch cabinet installation

WSUP-S

WSUP-S Ref. no. 09577

Digital timer with illuminated LCD display for automatic controlling the operating modes of any units up to 16 A rated current. Suitable for switching the smallest electric currents from 1mW (0.1V/1mA) through standard, gold-plated µ contact. 56 programmable switching times for all weekdays. With smartphone via NFC (free App).

Voltage	230 V, 1~, 50-60 Hz
Load capacity	1 mW (0.1 V / 1 mA)
Switch cont.	Pot.-fr. changeover contact, 250 V, 1~, 16 A $\cos\varphi \approx 1$ 6 A $\cos\varphi \approx 0.6$, µ contact
Protection category/class	IP20 / II
Dim. mm	W 36 x H 90 x D 63
Installation	DIN top-hat rail installation Switch cabinet (2 space units)
Temp. range	–30° C to +55 °C
Memory spaces (switching time)	56
Wiring diagram no.	862.1

■ Reverser switch
□ Surface-mounted and flush-mounted installation possible

WS

WS Ref. no. 01271

For switching the air flow direction of 1~ and 3~ high-performance axial fans.
Installation: Surface-mounted or flush-mounted (switch box included in delivery). With screw attachment (M 3, 60 mm).
Assignment as specified in type table on product pages.

Load capacity	AC 3 / 5.5 kW / 12 A (ind.)
Voltage	230 V, 1~, 50/60 Hz
	400 V, 3~, 50/60 Hz
Protection category	IP54
	(for flush-mounted installation IP30)
Wiring diagram no.	752
Weight approx.	0.4 kg
Dim. mm	W 91 x H 121 x D 109
– for flush-m. install.	W 72 x H 72 x D 35
Casing	Plastic, light grey

■ Reverser switch, speed switch and on/off switch
□ Installation in flush-mounted switch box

DSEL 2

DSEL 2 Ref. no. 01306

1. **Speed switch** and on/off switch for fans with two performance levels like ELS-V 60/35, -VN 100/60.
2. **Reverser switch** for switching the air flow direction of reversible fans (for supply and extract ventilation) and on/off switching.
Assignment as specified in type table on product pages.

Two replacement rockers with symbols for speed change or reversing operation included in delivery. Colour pure white.

Load capacity	3 A (ind.)
Voltage	230 V, 1~, 50/60 Hz
Protection category	IP30
Installation	in standard flush-m. box
Wiring diagram no. – two level	827
– reversing operation	828
Dim. mm	W 80 x H 80 x D 15
Weight approx.	0.1 kg

■ Three level speed switch and operating switch with 0 position
□ Installation in flush-mounted switch box

DSEL 3

Convenient flush-mounted speed switch for fans with three performance levels. Room light cannot be connected in parallel.

Voltage	230 V, 1~, 50/60 Hz
Weight approx.	0.1 kg

DSEL 3 Ref. no. 01611

Can be used with fan types ELS-V 100/60/35 and ZEB 380.

DSZ Ref. no. 01598

Can be used with central extract ventilation box ZEB EC.

Type DSEL 3

Load capacity	3 A (ind.)
Protection category	IP30
Installation	in standard flush-m. box
Wiring diagram no.	See fan type
Dim. mm	W 80 x H 80 x D 23

Type DSZ

Load capacity	AC 3 / 2.2 kW, AC 15 / 6 A
Protection category	IP20
Installation	in flush-m. box 55 mm deep
Wiring diagram no.	735
Dim. mm	W 80 x H 80 x D 23

■ Speed switch, operating switch and reverser switch
□ Surface-mounted and flush-mounted installation possible

FR 22/30

FR 22/30 Ref. no. 00998

For switching fan type GX 225 or 300.
For surface-mounted and flush-mounted installation in dry rooms. Three slide switches perform the following functions: Two-pole operating switch on/off with operating display, high or low speed and reverser switch (supply and extract ventilation).

Load capacity approx.	0.8 A (ind.)
Voltage	230 V, 1~, 50/60 Hz
Protection category	IP20
Dim. mm	W 210 x H 85 x D 55
Weight approx.	1.2 kg
Wiring diagram no.	497
Casing	Plastic, white

■ Isolator switch
□ 3-pole with auxiliary contact for direct start-up

RS 3+1 7.5

RS 3+1 7.5 Ref. no. 06387

Plastic casing for surface-mounted installation. Locking options in “0 OFF” and “I ON” positions.

Technical data

Voltage	400 V, 3~, 50/60 Hz
Operating current	20 A
Load capacity	AC–23 B, 7.5 kW
Protection category	IP65
Protection class	II
Actuation	Rotary drive
Temperature range	–25 to +60 °C
Dim. mm	W 90.5 x H 90.5 x D 102
Weight approx.	0.3 kg
Wiring diagram no.	1088
Casing	UV-resistant and weather-resistant

■ Isolator switch
□ 6-pole with auxiliary contact for Dahlander winding or Y/△ start-up

RS 6+1

RS 6+1 7.5 Ref. no. 06388

Load capacity	20 A, AC–23 B, 7.5 kW
Dim. mm	W 90.5 x H 90.5 x D 139
Weight approx.	0.4 kg

RS 6+1 11 Ref. no. 06389

Load capacity	25 A, AC–23 B, 11 kW
Dim. mm	W 115 x H 115 x D 163
Weight approx.	0.6 kg

Technical data

Voltage	400 V, 3~, 50/60 Hz
Protection category	IP65
Protection class	II
Actuation	Rotary drive
Locking options	“0 OFF” and “I ON”
Temperature range	–25 to +60 °C
Wiring diagram no.	1088
Casing	UV-resistant and weather-resistant for surface-mounted installation

■ Isolator switch/main switch
□ 3-pole with auxiliary contact

RHS 3+1

RHS 3+1 Ref. no. 01594

"0" position can be locked with a padlock. In accordance with DIN EN 60204 p.1/VDE 0113-1. Plastic casing for surface-mounted installation. 3-pole with auxiliary contact, for single-speed and speed-controlled fans.

Technical data

Voltage	400 V, 3~, 50 Hz
Load capacity	
– Main contact	AC 3 / 5.5 kW 12 A ind.
– Aux. contact	AC 3 / 2.2 kW 4 A ind.
Protection category	IP54
Dim. mm	W 101 x H 126 x D 104
Weight approx.	0.35 kg
Wiring diagram no.	505.2

■ Isolator switch/main switch
□ 6-pole with 2 aux. contacts

RHS 6+2

RHS 6+2 Ref. no. 01595

"0" position can be locked with a padlock. In accordance with DIN EN 60204 p.1/VDE 0113-1. Plastic casing for surface-mounted installation. 6-pole with 2 auxiliary contacts, for all pole-changing fans.

Technical data

Voltage	400 V, 3~, 50/60 Hz
Load capacity	AC 3 / 5.5 kW
Protection category	IP65
Dim. mm	W 82 x H 82 x D 125
Weight approx.	0.3 kg
Wiring diagram no.	505.3

■ Pole changing switch
□ for separate winding PGWA
□ for Dahlander winding PDA

Surface-mounted

PGWA / PDA

Surface-mounted operating switch for pole-changing fans.

Type	Ref. no.	Load capacity	No.
For separate winding			
PGWA 12	05083	AC 3/5.5 kW 12 A	345
PGWA 25	05061	AC 3/11 kW 25 A	345
For Dahlander winding			
PDA 12	05081	AC 3/5.5 kW 12 A	733[1)]
PDA 25	05060	AC 3/11 kW 25 A	733[1)]

[1)] For motors w/o TK: Wiring diagram no. 732.

Technical data for all types

Voltage	400 V, 3~, 50/60 Hz
Protection category	IP65

Type	Dim. mm			Weight
	B	H	T	aprx. kg
P 12	82	82	130	0.4
P 25	92	92	140	0.5

■ Pole changing switch
□ for separate winding PGWA
□ for Dahlander winding PDA

Flush-mounted

PGWU / PDU

Pole chang. switch PGWU / PDU
Flush-mounted operating switch for pole-changing fans.

Type	Ref. no.	Load capacity	No.
For separate winding			
PGWU 12	05084	AC 3/5.5 kW 12 A	345
For Dahlander winding			
PDU 12	05082	AC 3/5.5 kW 12 A	733[1)]

[1)] For motors with thermal contacts; w/o TK: Wiring diagram no. 732.

Technical data for all types

Voltage	400 V, 3~, 50/60 Hz
Protection category	IP30
Dim. mm Installation depth	87
Protrusion	40
Cover plate	80 x 80
Delivery	incl. flush-mounted box
Weight approx.	0.2 kg

■ Reverser and pole changing switch
□ for separate winding PGWA
□ for Dahlander winding PDA

Surface-mounted

PWGW / PWDA

PWGW Ref. no. 01281
For separate winding

PWDA Ref. no. 01282
For Dahlander winding

For speed switching and changing the air flow direction of individual pole-changing fans.
Grey plastic casing.

Technical data for all types

Voltage	400 V, 3~, 50/60 Hz
Load capacity	AC 3 / 7.5 kW
Protection category	IP55
Dim. mm	W 96 x H 105 x D 147
Weight approx.	0.5 kg
Wiring diagram no. for PWGW	13
Wiring diagram no. for PWDA	11

■ Speed switch DS 2

□ for two-speed Y/Δ switchable three-phase current fans

□ for two level alternating current fans (SlimVent, RR)

DS 2

DS 2 Ref. no. 01351
Speed switch and on/off switch for two-speed three-phase current fans in Y/Δ connection. Grey plastic casing for surface-mounting.

DS 2/2 Ref. no. 01267
Speed switch and on/off switch for two-speed 1~ fans,
Types RR and SlimVent SVR, SVS.

Technical data for all types

Voltage	400 V, 3~, 50/60 Hz
Load capacity	AC 3 / 5.5 kW / 12 A
Dim. mm	W 82 x H 82 x D 130
Weight approx.	0.4 kg
Protection category, Type DS 2	IP65
Wiring diagram no. for Type DS 2	87
Protection category, Type DS 2/2	IP54
Wiring diagram no. for Type DS 2/2	939

Motor protection
Regulations and standards

The harmonised European standards and national Installation regulations stipulate that electric motors must be protected against thermal overload. This can be done in several ways and it depends on the motor features.

- Optimal protection is provided by thermal contacts (hereinafter “TK”) which monitor the winding temperature. They also protect speed-controlled motors.
- The “TK” are connected in series with the winding, i.e. internally wired, for low motor outputs. This results in an automatic function (deactivation and reactivation after cooling) without the operator necessarily having to react to the fault.
- In case of motors/fans with larger outputs, the “TK“ or PTC thermistor temperature sensors are connected to the terminal block and must be wired to the adjoining motor protection circuit breakers/triggering devices. Warranty claims shall only be applicable if this condition is met.
- Motors/fans without thermal monitoring elements in the winding (e.g. IEC standard motors) must have all-pole protection with appropriate motor protection circuit breakers.

For alternating current fans with external thermal contacts on terminal board

Motor protection circuit breaker MW
Switch and motor protection circuit breaker in plastic casing for surface-mounted installation or installation in switch cabinet (clamp fastening for mounting rails).

For three-phase current fans with thermal contacts

Motor protection circuit breaker MD
Switch and motor protection circuit breaker in plastic casing for surface-mounted installation or installation in switch cabinet (clamp fastening for mounting rails).

For pole-changing three-phase current fans with separate winding and thermal contacts

Motor protection circuit breaker M 2
Switch and motor protection circuit breaker in light grey plastic casing with indicator lights for surface-mounted installation.

For pole-changing three-phase current fans with Dahlander winding and thermal contacts

Motor prot. circuit breaker M 3
Design and function like M 2.

For two-speed three-phase current fans with Y/Δ connection and thermal contacts

Motor prot. circuit breaker M 4
Design and function like M 3.

For three-phase current fans with built-in PTC thermistors (PTC temperature sensors) for thermal motor protection. Mandatory use for speed-controlled, explosion-proof fans.

Motor prot. circuit breaker MSA
Triggering device with restart lockout for 1 to 6 in PTC thermistor temperature sensors connected in series.

Reference	Page
Technical information	19 ff.
Transformer speed controller with motor protection circuit breaker	
– for 1~ altern. current MWS	606
– for 3~ 3-ph. current RDS	607

MW

MW Ref. no. 01579
On/off operation by pushbutton switch. Manual recommissioning after fault.
Potential-free auxiliary contact for connection for fault signal.
230 V, 1~, 50/60 Hz, applic. from 80 V
Rated current 0.4 to 10 A
Protection cat. IP55 Weight aprx. 0.5 kg
Dim. mm W 80 x H 140 x D 95
Wiring diagram no. 517

MD

MD Ref. no. 05849
On/off operation by pushbutton switch. Manual recommissioning after fault.
Potential-free auxiliary contact for connection for fault signal.
400 V, 3~, 50/60 Hz, applic. from 80 V
Rated current 0.1 to 25 A
Protection cat. IP55 Weight aprx. 0.5 kg
Dim. mm W 80 x H 140 x D 95
Wiring diagram no. 518

M 2

M 2 Ref. no. 01292
Motor disconnected from mains when TK react. Recommissioning after fault by turning switch to “0” position.

Voltage 400 V, 50/60 Hz
Switching capacity AC 3 / 5.5 kW
Rated current approx. 12 A
Protection cat. IP55 Weight aprx. 1.0 kg
Dim. mm W 170 x H 135 x D 115
Wiring diagram no. 142

M 3 / M 4

M 3 Ref. no. 01293
Like M 2, but for pole-switching 3~ fans with Dahlander winding and built-in TK.
Dim. mm W 170 x H 135 x D 135
Wiring diagram no. 143

M 4 Ref. no. 01571
Like M 3, but for two-speed 3~ fans with Y/Δ connection and built-in TK.
Wiring diagram no. 144

MSA

When a PTC thermistor reaches the nominal response temperature, the built-in relay drops out. Faults are indicated by the built-in LED. Recommissioning by pressing the “Reset” button or via external connectable switches. Plastic casing for switch cabinet installation on mounting rails according to DIN EN 60715.

MSA Ref. no. 01289
For the thermal protection of electric motors (even explosion-proof electric motors according to Directive 2014/34/EU (ATEX) with built-in PTC thermistor temp. sensors according to DIN 44081 and DIN 44082.

Voltage 230 V ± 15 %, 50/60 Hz
3~ operation via contactor
Switching capacity at 230 V 3 A AC 15
Connection options 1 to 6 PTC thermistors connected in series.
Type tested by Physikalisch-Technische Bundesanstalt, according to
DIN EN 60079-14 / VDE 0165-1,
DIN EN 60079-0 / VDE 0170-1,
DIN EN 60079-17 / VDE 0165-10-1.
Protection category IP20
Weight approx. 0.2 kg
Dim. mm W 35 x H 90 x D 58
Wiring diagram no. 325.1

Electronic speed controller for the continuously variable speed control of alternating current fans

- Multiple different fans can be operated with one controller until the rated load capacity is reached. A reserve of 10% must be taken into account for dimensioning.
- Minimum output voltage can be adjusted to motor characteristics via potentiometer. The lower limit for smooth motor start-up must be maintained!
- Overload protection from built-in microfuse.
- Additional connection of indicator lights or shutter possible via uncontrolled output.
- Complies with EMC guidelines, DIN EN 50370, DIN EN 61000 / VDE 0838, DIN EN 55014, DIN EN 60669.

- **Design ESU 1 and ESU 3 An innovation by HELIOS**
  - Both types are compatible with the current light switch ranges of many manufacturers. Thus, the speed controller can be integrated in the intended switch range on site. Colour adjustment is also not a problem. The frame, central insert and rotary knob are taken from the “dimmer range” in the switch series.
  - Standard delivery includes: Controller insert, flush-mounted cover plate and rotary knob made of plastic in white.
  - Operation indicator via light ring surrounding the rotary knob.

- **Surface-mounted design**
  - Closed plastic casing in attractive design.
  - ESA 1 and ESA 3 with operation indication via light ring.

- **Important information**
  Only motors which are suitable for electronic control through voltage reduction can be connected.

- **Electronic speed control units,** which function on the basis of the phase control principle, can generate motor humming noises which may be perceived as disturbing in the lower speed/ voltage range. Transformer control units which do not generate noise should therefore be used in noise-critical applications.

- **For flush-mounted installation**
  1~ alternating current, 230 V

ESU 1

ESU 1 Ref. no. 00236
Max. load 1 A
Front and rotary knob made of white plastic. Installation in standard flush-mounted box. Operation indicator via light ring.

Minimum load	0.15 A
Protection category (installed)	IP30
Wiring diagram no.	556.1
Dim. mm	W80 x H80 x D21 prot.

ESU 3

ESU 3 Ref. no. 00237
Max. load 2.5 A (T 40 E)
Front and rotary knob made of white plastic. Installation in standard flush-mounted box. Operation indicator via light ring.

Minimum load	0.15 A
Protection category (installed)	IP30
Wiring diagram no.	556.1
Dim. mm	W80 x H80 x D21 prot.

- **For surface-mounted installation**
  1~ alternating current, 230 V

ESA 1

ESA 1 Ref. no. 00238
Max. load 1 A
White plastic casing, operation indicator via light ring in rotary knob.

Minimum load	0.15 A
Protection category	IP40
Wiring diagram no.	556.1
Dim. mm	W 80 x H 80 x D 65

ESA 3

ESA 3 Ref. no. 00239
Max. load 2.5 A (T 40 E)
White plastic casing, operation indicator via light ring in rotary knob.

Minimum load	0.15 A
Protection category	IP40
Wiring diagram no.	556.1
Dim. mm	W 80 x H 80 x D 65

- **Surface-mounted, with reverser**
  1~ altern. current, 230 V
  Can only be used with fan types: REW 150 and REW 200, series HV, H 200/4 and window fans GX.

BSX

BSX Ref. no. 00240
Max. load 1 A (T 40 E)
Surface-mounted speed controller with reverser for reversible fans (supply and extract ventilation) in white plastic casing. Only for fans which are reversible using a changeover switch.

Minimum load	0.15 A
Protection category	IP40
Wiring diagram no.	480.2
Dim. mm	W 80 x H 80 x D 65

- **For distribution box installation**
  1~ alternating current, 230 V

ESE 2.5

ESE 2.5 Ref. no. 01302
Max. load 2.5 A
For installation in switch cabinets and distribution cabinets. Compatible with 35 mm standard profile rails.

Minimum load	0.1 A
Protection category	IP30
Wiring diagram no.	376
Dim. mm	W 35 x H 86 x D 94

Transformer speed controllers with and without motor protection for alternating current fans 1~, 230 V, 50/60 Hz

Five-step transformer speed controller for the speed control of alternating current fans

- Can be used for controlling the power of all speed-controllable 1~ alternating current fans.
- Four secondary voltage in the gradations 80 / 100 / 130 / 170 and 230 V (full mains voltage) allow five fan performance levels.
- Multiple different fans can be connected to one control unit until the rated load capacity is reached.

Advantages
- ☐ Advantageous price/performance ratio.
- ☐ Low fault susceptibility.
- ☐ Low-loss and low-noise fan operation.
- ☐ Uncontrolled output for connection of indicator lights or shutter for MWS-, TSW- (from type TSW 1.5) and STSSW types.

Surface-mounted unit design
- ☐ Robust ISO casing, light grey, made of break-resistant plastic in protection category IP54. Types from TSW 7,5 and MWS 10 made of steel, lacquered twice, protection category IP54.
- ☐ Built-in operating switch for five speeds and activation/deactivation.
- ☐ Operation indication via indicator lights.
- ☐ Dip impregnated autotransformer T 40 E.
- ☐ Design complies with DIN VDE 0550.
- ☐ Max. permissible ambient temperature +40 °C.
- ☐ Delivered ready for operation, simple connection to terminal board.

Integral transformer design
- ☐ Mounted terminal block for five voltage taps.
- ☐ Mounted angled rails for simple attachment.
- ☐ Dip impregnated autotransformer T 40 E.

Accessories
Six-step cam switch Type STSSW for switch cabinet installation, with front attachment.

For surface-mounted installation
Max. load 0.35 A
1~ alternating current, 230 V

TSW 0.3

Mini speed controller TSW 0.3
Compact five-step speed controller with on/off switch for surface installation in dry rooms. Plastic casing, white.

TSW 0.3	Ref. no. 03608
Max. load	0.35 A
Protection category	IP20
Dim. mm	W 160 x H 85 x D 60
Wiring diagram no.	496.1

For surface-mounted installation
1~ altern. current, 230 V

TSW

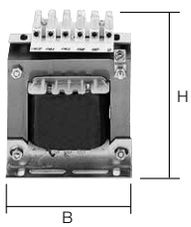
Transformer speed control. TSW
For one or more alternating current fans.

Type	Ref. no.	I max. A	Dim. mm B	H	T
TSW 1.5[1]	01495	1.5	115	205	100
TSW 3.0[2]	01496	3.0	170	255	140
TSW 5.0[2]	01497	5.0	170	255	140
TSW 7.5[2]	01596	7.5	200	305	140
TSW 10[2]	01498	10.0	300	325	185

Wiring diagram no. [1] 1494 [2] 1495

For switch cabinet installation
1~ alternating current, 230 V

TSSW



Speed contr. transformer TSSW
Integral transformer with foot rails and terminal block for 5 voltage taps.

Type	Ref. no.	I max. A	Dim. mm B	H	T
TSSW 1.5	06520	1.5	78	90	78
TSSW 3	06521	3.0	84	94	92
TSSW 5	06522	5.0	105	111	87
TSSW 10	06523	10.0	120	122	112

Wiring diagram no. 268

STSSW

Five-step operating switch STSSW Accessory for control transformer TSSW for 230 V, 1~ fans. For switch cabinet installation with front attachment and front plate. connections are recessed.

STSSW	Ref. no. 00234
Voltage	AC 3, 230 V
Max. load	2.2 kW
Installation depth	70 mm, □ 46 mm
Wiring diagram no.	548

With motor protection circuit breaker
1~ alternating current, 230 V
For surface-mounted installation

MWS

Transformer speed controller MWS with motor protection circuit breaker
Five-step speed controller with integrated triggering device for 230 V, 1~ fans. For connection of external thermal contacts on terminal board.
Connection of multiple fans possible up to the rated load.
All fans deactivated when thermal contact reacts. With step switch and indicator lights. Recommissioning after fault or mains disconnection via “0”position.

Type	Ref. no.	I max. A	Casing IP54 made of	Dim. mm W	H	D	Wiring diagram
MWS 1,5	01947	1.5	Plastic	205	115	100	1488
MWS 3	01948	3.0	Plastic	255	170	140	1489
MWS 5	01949	5.0	Plastic	255	170	140	1489
MWS 7,5	01950	7.5	Plastic	305	200	140	1489
MWS 10	01946	10.0	Steel	325	300	185	1489

Five-step transformer speed controller for the speed control of three-phase current fans

- Can be used for controlling the power of all speed-controllable 3~ three-phase current fans, in large steps for ϒ/△ switchable types.
- Four secondary voltage in the gradations 80 / (115)* / 140 / 200 / 280 and 400 V (full mains voltage) allow five fan performance levels.
  * internally switchable for voltage-controllable, explosion-proof rectangular duct and roof fans for TSD.
- Multiple different fans can be connected to one control unit until the rated load capacity is reached.

Advantages

- ▢ Advantageous price/performance ratio.
- ▢ Low fault susceptibility.
- ▢ Low-loss and low-noise fan operation.
- ▢ Uncontrolled output for connection of indicator lights or shutter for RDS-, TSD- and STSSD-types.

Surface-mounted unit design

- ▢ Robust ISO casing, light grey, made of break-resistant plastic, protection category IP54. Types TSD and RDS made of steel, lacquered twice, protection category IP54.
- ▢ Built-in operating switch for five speeds and activation/deactivation.
- ▢ Operation indication via indicator lights.
- ▢ Dip impregnated autotransformer T 40 E, protection class II.
- ▢ Design complies with DIN VDE 0550.
- ▢ Max. permissible ambient temperature +40 °C.
- ▢ Delivered ready for operation, simple connection to terminal board.

Integral transformer design

- ▢ Two autotransformers in V circuit allow the function described above.
- ▢ Mounted terminal block for five voltage taps.
- ▢ Mounted angled rails for simple attachment.
- ▢ Dip impregnated autotransformer T 40 E.
- ▢ Contactors and wiring on site.

Accessories

Six-step cam switch Type STSSD for switch cabinet installation, with front attachment.

For surface-mounted installation
3~ three-phase current, 400 V

TSD

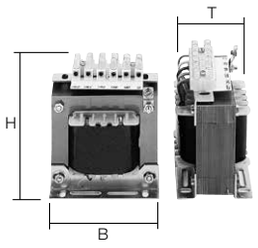
Transformer speed control. TSD
Like TSW, but for 3~ fans.

Type	Ref. no.	I max. A	Dim. mm B	H	T
TSD 0,8[4]	01500	0.8	325	300	185
TSD 1,5[3]	01501	1.5	325	300	185
TSD 3,0[4]	01502	3.0	425	300	185
TSD 5,5[1]	01503	5.5	425	300	235
TSD 7,0[2]	01504	7.0	425	300	235
TSD 11,0[2]	01513	11.0	420	400	235

Wiring diagram no. 1491

For switch cabinet installation
3~ three-phase current, 400 V

TSSD



Speed contr. transformer TSSD
Like TSSW, but two integral transformers, connection in V circuit.

Type	Ref. no.	I max. A	Dim. mm B	H	T
TSSD 1	06516	1.0	84	95	80
TSSD 2	06517	2.0	96	104	92
TSSD 4	06518	4.0	105	112	98
TSSD 7	06519	7.0	120	122	134
TSSD 11	06515	11.0	150	146	158

Wiring diagram no. 267.1

STSSD

Five-step operating switch STSSD compatible with speed control transformer TSSD for 3~, 400 V fans. For switch cabinet installation with front attachment and front plate. Recessed connections.

STSSD	Ref. no. 00235
Voltage	AC 3, 400 V
Max. load	5.5 kW
Installation depth	110 mm, □ 46 mm
Wiring diagram no.	549.1

With motor protection circuit breaker
3~ three-phase current, 400 V
For surface-mounted installation

RDS

Transformer speed controller RDS with motor protection circuit breaker
Five-step speed controller with integrated thermal contact triggering device for 3~, 400 V three-phase current fans. For connection of external thermal contacts on terminal board.
Connection of multiple fans possible up to the rated load. All fans deactivated when thermal contact reacts. With step switch and indicator lights. Recommissioning after fault or mains disconnection via “0” position.

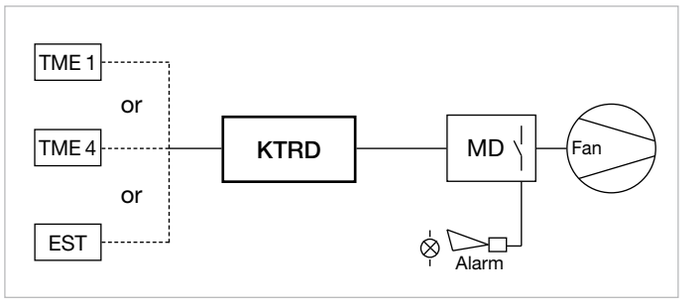
Type	Ref. no.	I max. A	Casing IP54 made of	Dim. mm B	H	T	Weight aprx. kg
RDS 1[2]	01314	1.0	Steel	325	300	175	8.9
RDS 2[1]	01315	2.0	Steel	325	300	185	11.2
RDS 4[2]	01316	4.0	Steel	425	300	235	13.0
RDS 7[1]	01578	7.0	Steel	425	300	235	21.2
RDS 11	01332	11.0	Steel	430	400	235	37.9

Design according to VDE 0550, dip impregnated transformer in V circuit.
Max. perm. ambient temp. + 40 °C. Wiring diagram no. 1490.

1) Illustration and dimensions probably valid for deliveries from Q2/2023.
2) Illustration and dimensions probably valid for deliveries from Q4/2023.
3) Illustration and dimensions probably valid for deliveries from Q2/2024.
4) Illustration and dimensions probably valid for deliveries from Q4/2024.

Five-step climate transformer controller KTRD

- Fault-resistant, low-loss transformer controller for temperature-dependent fan control including motor protection.
- Recommended for noise-critical applications.
- An electronic thermostat type TME 4 or EST is required for control and must be ordered separately as an accessory.



For three-phase current fans 3~, 400 V, 50/60 Hz

Climate transformer controller KTRD 400 V
For five-step automatic control of three-phase current fans depending on room temperature. Via built-in operating switch, also manually step-controllable.
Integrated motor protection through connection of external thermal contacts on the motor.
Robust casing made of steel, lacquered twice in light grey.

KTRD

Type	Ref. no.	I max. A	Dim. mm B	H	T
KTRD 3	01650	3.0	300	500	200
KTRD 5.5	01651	5.5	300	500	200
KTRD 10	01652	10.0	400	500	200
KTRD 15	01653	15.0	400	500	200

Voltage	400 V, 3~, 50/60 Hz
Protection category	IP54
Max. ambient temperature	+40 °C
Wiring diagram no.	676.1

Accessories for KTRD

Four-step electronic thermostat

For temperature-dependent control of a KTR transformer controller or for series connection (on/off) of up to four 1~ fans. Supply voltage 230 V~ required.

Electronic four-step thermostat with switching sequence of 1 K to the defined setpoint. Allows five-step temperature-controlled fan operation depending on the pre-defined setpoint and actual temperature in combination with climate controller KTR.
Robust casing made of impact-resistant plastic, light grey.
Cable routing to bottom of casing in PG 11.

TME 4

TME 4	Ref. no. 01335
Voltage	230 V~, 50/60 Hz
Max. continuous current (AC 3)	6 A
Temperature range	0 to +50 °C
Switching accuracy	+/- 0.8 K at 20 °C
Switching distance	1 K
Protection class	II
Protection category	IP54
Dim. mm	W 120 x H 80 x D 75
Weight approx.	0.4 kg
Wiring diagram no.	702

Electronic control thermostat EST

with multiple control variables for controlling a climate transformer controller KTR.

Control functions

- Temperature-dependent, five-step fan control via KTR units. Control range limit possible through specification of a minimum and maximum air rate (voltage). Minimum air rate can be switched on and off.
- Ventilation valve control (analogue 0...10 V)
- Frequency inverter control (analogue 0...10 V)
- Heating thermostat
- Temperature monitor (under and overtemperature with external temperature compensation).
- via a dirt-resistant membrane keyboard.

Displays

- Displays for operating mode, room temp., external temperature and setpoint temperature.
- Signal LED for auto. reduction.
- Alarm signal LED for overtemperature, undertemperature, system fault.
- Scaled illuminated point display (0–100 %) for fan speed and valve opening.

Temperature sensor

One external and one internal temperature sensor included in delivery. Casing in IP 55, installation up to a distance of 100 m from the controller, connection via NYM 3 x 1.5 mm².

EST

Possible settings

- Continuously variable specification of setpoint temp. and control range.
- Min./max. power (speed) limit.
- Minimum volume flow can be switched on and off.
- Automatic reduction on/off.
- Continuously variable temp. specification for activation of heating.
- Continuously variable specification for alarm signal if temperature is too high or too low.
- Min. and max. valve opening.

Casing

- Plastic, light grey with transparent hinged cover, for surface-mounted installation.

EST	Ref. no. 01355
Voltage	230 V, 1~, 50/60 Hz
Protection category	IP54
Transformer conn.	230 V AC / max. 10 A
Temperature range (adjustable)	0 to 40 °C
Control range (adjustable)	2 to 12 K
Alarm low temp. (adjustable)	−20 to 0 K
Alarm high temp. (adjustable)	0 to 25 K
Heating (adjustable)	−15 to +5 K
External temp. compensation	0 to 20 K
Min. air rate approx.	0 to 40 %
Max. air rate approx.	60 to 100 %
Minimum air shut-off	−25 to 0 K
Dim. mm	W 260 x H 215 x D 120
Weight approx.	2.0 kg
Wiring diagram no.	357.3

ESD

ETW

Helios creates a simple solution by combining fans and customer-specified central building control technology with these speed control units!

Common features

- Control via analogue 0 – 10 V input through on-site signal, electronic control system EUR 6 C or other control units.
- Multiple different fans can be connected to a control unit up to the maximum control current load.
- Multiple control devices can be controlled in parallel by the building control technology and this enables the distribution of fan power to multiple fans or fan groups and circuits.

- **Accessories for both series**
  In case control is not via central building control technology, universal controller with 10 V output can be used for this purpose.

EUR 6 C Ref. no. 01321
See Electronic control system page for description.

Description ESD

Convenient, continuously variable electronic speed controller for 3~ fans, which can be phase angle-controlled by voltage reduction (except KVD Ex types).
State-of-the-art technology through use of microcontrollers.

- **Setting options/Display**
  - ☐ On/off and continuously variable speed specification through rotary potentiometer.
  - ☐ 0 – 10 V input. Remote control possible through on-site rotary potentiometer (22 kOhm).
  - ☐ 3 ~ phase monitoring, protection against phase loss.
  - ☐ Soft start-up function.
  - ☐ Automatic minimum start-up voltage 80 V.
  - ☐ Meets EMC requirements class B, shielded cable between unit and motor not required.
  - ☐ LEDs as status and fault indicators.
  - ☐ Integrated protection of electronics against overload.
  - ☐ Motor protection by monitoring the motor's thermal contacts.

- **Casing**
  - ☐ Plastic casing, light grey with wide cooling element.
  - ☐ Can be used directly in heavily contaminated environments (e.g. kitchen) due to protection category IP65.

Description ETW

Seven-step, electronic transformer control unit for controlling the speed of 1~ fans.
Robust and low-loss power units for ventilation systems which are controlled via central building control technology.

- **Setting options/Display**
  - ☐ Built-in operating switch enables on, off and direct mains connection.
  - ☐ Performance level rotary switch allows manual step specification (1–7) or automatic operation. The transformer control unit is automatically controlled by the on-site ventilation control system in the "Auto" position.
  - ☐ The respective performance level is indicated by an LED.
  - ☐ The integrated minimum air flow rate circuit can be switched off completely by the ventilation controller via the analogue input.

- **Overload protection**
  ETW types are protected against permanent overloading by a built-in temperature switch. When the overload protection is activated, the control unit automatically switches to the direct mains power supply.
  The control unit returns to normal operation after a cooling down phase. The fault can and should be indicated via the signal output to an on-site alarm system.

- **Casing**
  - ☐ Plastic casing, light grey.

Dimensions

Type	Ref. no.	Dim. mm			Weight
		W	H	D	approx. kg
ETW 5	01263	240	315	210	8.0
ETW 10	01264	240	315	210	12.5

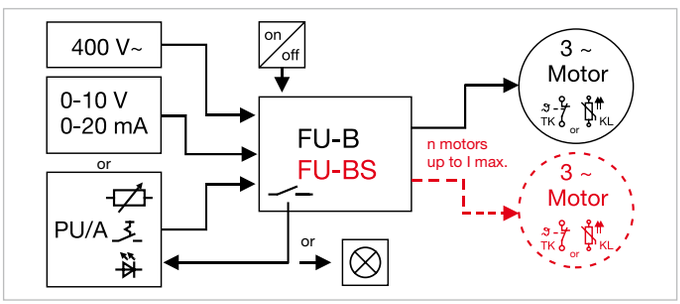
Product range

Type	Ref. no.	Output current	Power consumpt.	Wiring diagram	Dimensions			Width cooling element	Weight	Prot. cat.
					W	H	D			
		A	kW	No.	mm	mm	mm	mm	ca. kg	IP
For three-phase current fans, 3~, 400 V, 50/60 Hz										
ESD 5	00501	5.0	2.2	831	115	160	165	23	1.5	65
ESD 11.5	00502	11.5	5.5	831	160	160	165	68	1.7	65

Product range

Type	Ref. no.	Outlet current	Outlet voltages Steps							Wiring diagram	Prot. cat.
			❶	❷	❸	❹	❺	❻	❼		
		A	V							No.	IP
For alternating current fans, 1~, 230 V, 50/60 Hz											
ETW 5	01263	5.0	80	95	115	135	165	195	230	683	54
ETW 10	01264	10.0	80	95	115	135	165	195	230	683	54

FU-B and FU-BS



Description FU-B “Basic”

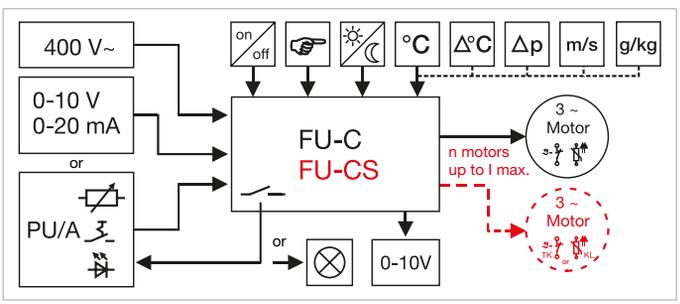
- Frequency inverter FU-B in basic design without sine filter for controlling the speed of an individual fan.
- Speed specification via 0–10 V control signal (e.g. PU/PA, AFS 0–10 V, accessories).
- Maximum cable length between FU-B and fan is 10 m with shielded cable.
- The fan must be designed for operation with frequency inverter (EMC suitable fan/motor, optional special design).
- The FU-B is fixed at its rated current.
- The frequency inverter compatibility must be specified when ordering fan for FU-B operation (without sine filter).

Description FU-BS “Basic-Sine”

- Frequency inverter FU-BS in basic design with integrated, all-pole effective sine filter.
- For controlling the speed of one or more fans. The permitted number of fans is calculated from the maximum FU current.
- Speed specification via 0–10 V control signal (e.g. PU/PA, AFS 0–10 V, accessories).
- Cable length between FU-BS and fan can be over 10 m.
- No additional EMC shielding of electrical cables required. The fans and motors do not require special EMC measures for frequency inverter operation.
- The FU-BS is fixed at its rated current.
- Conventional standard fans/ motors can be used when using the frequency inverter with integrated sine filter.

	FU-B and FU-BS
Analogue inputs	1 x 0–10 V, Ri 100 kOhm or 0–20 mA
Logic inputs	1 x digital 24 V, release
Analogue output	—
Relay output	1 x NOC 250 V / 2 A ind.
Module power supply	1 x 10 V DC, 10 mA, 1 x 24 V DC, 70 mA
Motor temperature monitoring	Thermal contact or PTC thermistor

FU-C and FU-CS



Description FU-C “Comfort”

- Frequency inverter FU-C in comfort design without sine filter for controlling the speed of an individual fan.
- Includes display and three operating buttons for adjusting the fan and control parameters.
- Parameterisation and control options via Modbus.
- With integrated, full control system for temperature, pressure and air velocity and absolute humidity difference. Required sensors LDF 500, LGF 10, LT.., AFS 0–10 V (access.) available.
- Speed specification via 0–10 V control signal (e.g. PU/PA, AFS 0–10 V, accessories) or via direct input on display.
- Cable length and fan suitability for operation with frequency inverter see FU-B.
- The frequency inverter compatibility must be specified when ordering fan for FU-C operation (without sine filter).
- With protection mode for use in smoke extraction systems, bridges internal protection device for max. operating duration.

Description FU-CS “Comfort-Sine”

- Frequency inverter FU-CS in comfort design with integrated, all-pole effective sine filter.
- For controlling the speed of one or more fans. The permitted number of fans is calculated from the maximum FU current.
- Includes display and three operating buttons for adjusting the fan and control parameters.
- Parameterisation and control options via Modbus.
- With integrated, full control system for temperature, pressure and air velocity and absolute humidity difference. Required sensors LDF 500, LGF 10, LT.., AFS 0–10 V (access.) available.
- Speed spec., cable length, EMC measures see FU-BS.
- Conventional standard fans/ motors can be used when using the frequency inverter with integrated sine filter.
- With protection mode for use in smoke extraction systems, bridges internal protection device for maximum operating duration.

	FU-C and FU-CS
Analogue inputs	2 x 0–10 V, Ri 100 kOhm or 0–20 mA, or KTY
Logic inputs	2 x digital 24 V, function can be parameterised
Analogue output	1 x 0–10 V DC, 10 mA
Relay output	2 x changeover contact 250 V / 2 A ind.
Module power supply	1 x 10 V DC, 10 mA (in analogue output), 1 x 24 V DC, 70 mA
Motor temperature monitoring	Thermal contact or PTC thermistor

General features

- Inverter especially optimised for HLK application.
- Energy-saving through continuously variable speed setting.
- Specially adapted to fan operation, i.e. minimal energy consumption and minimal noise generation in partial load range.
- Use of maintenance-free three-phase current asynchronous motors of all types and performances.
- No performance restriction when using standard motors.
- Operating signal via potential-free contact.
- Potentiometer power supply: 10 V DC/10 mA for potentiometer with e.g. 10 kOhm
- Analogue input for speed specification (0–10 V, 0(4)–20 mA).
- Short-circuit and earth fault proof.
- Integrated electronic motor protection via TK or PTC thermistor.
- Controller galvanically isolated.
- Overvoltage-proof
- Also suitable for switch cabinet installation.
- Power reduction at ambient temp. over 40 °C – 55 °C.

Type-specific features

Basic types:

- Additional power supply: 24 V DC/70 mA for wiring of digital inputs and additional external components.

Sine types:

- Includes internal, all-pole effective sine filter.
- For the simple retrospective extension of existing ventilation systems.

Comfort types:

- Free specification of acceleration and deceleration times to reduce start-up noises.
- Additional power supply: 24 V DC/120 mA for wiring of digital inputs and additional external components.
- Simple adjustment and control of values using display.
- Comprehensive diagnostic display in case of fault.
- Speed specification directly on unit via display.
- Serial interface RS 485 / Modbus-RTU.
- Parameterisable, performance adjustment as required.

Information

- **Internal, all-pole effective sine filter** (Types FU-..S)
  Filters the voltages between the individual phases as well as the phase voltage between phase and protective conductor. The output voltage of the frequency inverter is purely sinusoidal and corresponds to the quality of a standard mains voltage.
- **Earth leakage circuit breaker** (all types)
  When using FU in an environment where an earth leakage circuit breaker is required, it must be sensitive to universal currents, type B+, 300 mA.
- **EMC**
  All FU types comply with EMV Directive 2004/108/EC and the applicable standards, such as DIN EN 60335-1 and DIN EN 550011. Radio interference filters are integrated to comply with cl. B (living area). The cable between the fan and frequency inverter must be shielded for FU-B and -C with a max. length of 10 m. The motor power supply and temp. monitoring system must be installed separately.
- **Design Motor current / Frequency**
  When selecting a suitable frequency inverter, the maximum motor current must be taken into account. When operating multiple fans, the sum of the individual flows must be applied. In order to prevent faults and failures, a 10% reserve should be planned. A max. frequency of 50 Hz must not be exceeded for controlling the speed of a standard fan, otherwise the motor will be overloaded and destroyed. Operation at a higher frequency is only possible upon request.
- **Motor protection**
  Maximum motor protection is achieved by monitoring (thermal contact/PTC thermistor), whereby max. 6 PTC thermistors can be connected in series to a unit. The number of PTC thermistors can be increased by using monitoring units (Type MSA, accessories).

Type	Ref. no.	Maximum power		Cable cross sections from mains and to motor cable	Wiring diagram	Dimensions			Weight net aprx.
		Output current	Motor			Height	Width	Deep	
		A	kW	mm²	No.	mm	mm	mm	kg
Basic design without sine filter for three-phase current fans, 3~, 400 V, 50/60 Hz, protection category IP54									
FU-B 3.6	05453	3.6	1.5	4 x 1.5 [1]	1020	284	240	115	2.6
FU-B 5.0	05454	5.0	2.2	4 x 1.5 [1]	1020	302	250	196	4.6
FU-B 7.0	05455	7.0	3.0	4 x 1.5 [1]	1020	302	250	196	4.7
FU-B 8.5	05456	8.5	4.0	4 x 1.5 [1]	1020	302	250	196	5.6
FU-B 12	05457	12.0	5.5	4 x 1.5 [1]	1020	302	250	196	5.7
FU-B 17	05458	17.0	7.5	4 x 1.5 [1]	1020	302	250	196	5.9
Basic design with all-pole effective sine filter for three-phase current fans, 3~, 400 V, 50/60 Hz, protection category IP54									
FU-BS 2.5	05459	2.5	[2]	4 x 1.5	1028	284	240	115	2.7
FU-BS 5.0	05460	5.0	[2]	4 x 1.5	1028	302	250	196	5.2
FU-BS 8.0	05461	8.0	[2]	4 x 1.5	1028	302	250	196	6.3
FU-BS 10	05462	10.0	[2]	4 x 1.5	1028	302	250	196	6.8
FU-BS 16	05463	16.0	[2]	4 x 1.5	1028	302	250	196	6.9
Comfort design without sine filter for three-phase current fans, 3~, 400 V, 50/60 Hz, protection category IP54									
FU-C 4.2	05865	4.2	1.5	4 x 1.5 [1]	1030	302	250	195.5	6.4
FU-C 8.5	05868	8.5	4.0	4 x 1.5 [1]	1030	302	250	195.5	7.3
FU-C 12	05869	12.0	5.5	4 x 1.5 [1]	1030	302	250	195.5	7.5
FU-C 17	05870	17.0	7.5	4 x 2.5 [1]	1030	302	250	195.5	7.5
FU-C 25	05464	25.0	11	4 x 4.0 [1]	1030	355	280	239	12.5
FU-C 32	05465	32.0	15	4 x 6.0 [1]	1030	524	386	283	24.5
FU-C 39	05466	39.0	18.5	4 x 10.0 [1]	1030	524	386	283	26.3
FU-C 46	05467	46.0	22	4 x 10.0 [1]	1030	524	386	283	26.3
FU-C 62	05468	62.0	30	4 x 16.0 [1]	1030	524	386	283	26.3
Comfort design with all-pole effective sine filter for three-phase current fans, 3~, 400 V, 50/60 Hz, protection category IP54									
FU-CS 2.5	05871	2.5	[2]	4 x 1.5	1032	284	240	115	3.3
FU-CS 8	05873	8.0	[2]	4 x 1.5	1032	302	250	195.5	7.9
FU-CS 10	05874	10.0	[2]	4 x 1.5	1032	302	250	195.5	8.2
FU-CS 14	05875	14.0	[2]	4 x 1.5	1032	302	250	195.5	8.7
FU-CS 18	05469	18.0	[2]	4 x 2.5	1032	302	250	196	9.1
FU-CS 22	05470	22.0	[2]	5 x 4.0	1032	355	280	239	14.5
FU-CS 32	05471	32.0	[2]	4 x 6.0	1032	525	386	283	29.6
FU-CS 40	05472	40.0	[2]	4 x 10.0	1032	525	386	283	29.6
FU-CS 50	05473	50.0	[2]	4 x 16.0	1032	525	386	283	32.8

[1] Max. 10 m shielded, Motor power supply and protection installed separately.
[2] The max. current for all connected fans is decisive for the design.

Accessories

PU 24/PA 24 No. 01736/01737
Speed potentiometer, flush/surface, LED 24 V, poti 10 V/1.3–10 V.

SU-3 10/SA-3 10 No. 04266/04267
Three-step speed switch, flush/surface-mounted, 10 V/1.7–10 V.

SA-5 10 Ref. no. 40229
Five-step speed switch, surface-mounted, IP54, 10 V/2–10 V.

WSUP Ref. no. 09990
Weekly timer with LCD display, potential-free contact.

WSUP-S Ref. no. 09577
Weekly timer potential-free contact, for DIN top hat rails.

EDR Ref. no. 01437
Elec. differential pressure controller 0–1000 Pa, 10–24 V / 0–10 V.

ETR Ref. no. 01438
Electronic temperature controller (sensor see accessories ETR).

LDF 500 Ref. no. 01322
Differential air pressure sensor, measurement range 0 to 500 Pa.

LGF 10 Ref. no. 01325
Air velocity sensor, measurement range 0 to 10 m/s.

LTA 40 Ref. no. 01336
External temperature sensor, measurement range –20 °C to +60 °C, protection category IP54.

LTK 40 Ref. no. 01324
Temperature sensor for rectangular duct installation, measurement range 0 °C to +40 °C.

LTR 40 Ref. no. 01323
Room temperature sensor, measurement range +0.5 °C to +40 °C.

AFS 0–10 V Ref. no. 06532
Absolute humidity sensor, with 0–10 V control output.

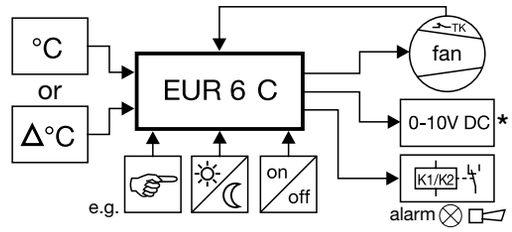
AFS set 0–10 V Ref. no. 07376
Set consisting of 2 sensors.

General technical data

Mains voltage	3~, 208 – 480 V
Mains frequency	50/60 Hz
Output voltage	95 % of U_{mains}
Output frequency	50 Hz
Protection category	IP54
Ambient temperature (–20 °C not current-free)	0 to +40 °C

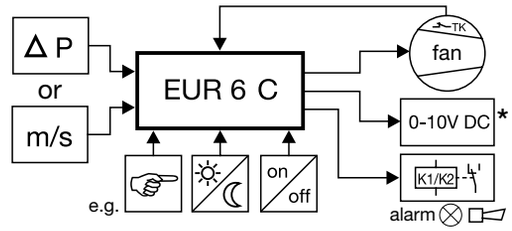
EUR 6 C

Mode 2.03: Temperature control with additional function
Mode 2.05: Differential temperature control



* e.g. for valve, frequency inverter.

Mode 4.01: Differential pressure control
Mode 6.01: Air velocity control



* e.g. for valve, frequency inverter.

Universal controller EUR 6 C Electronic automatic controller with phase angle-controlled power unit.

Area of application

For control of central/ventilation systems or for the continuously variable control of one or more speed-controllable single phase fans.
In the residential, commercial, industrial and agricultural sector.

Control functions

Quick and easy commissioning of parameters using the integrated Commissioning assistant. The following control parameters can be controlled depending on the connected sensors:

- ☐ **Manual speed control,** e.g. adjustable via keyboard
- ☐ **Temperature** (required accessory Temperature sensor LTR 40 or LTK 40).
- ☐ **Temperature with additional functions** pre-programmed, (required accessory Temperature sensor LTR 40 or LTK 40).
- ☐ **Differential temp. control** (required accessory Temperature sensor LTR 40 or LTK 40).
- ☐ **Differential pressure** (required accessory Differential air pressure sensor LDF 500).
- ☐ **Differential pressure with outdoor temperature compensation** (required accessory Differential air pressure and temperature sensors LDF 500 and LTR 40 or LTK 40). Ideal for central ventilation systems according to DIN 18017 in residential buildings.
- ☐ **Air velocity** (required accessory Air velocity sensor LGF 10).

The desired sensors must be ordered separately as accessories. The control ranges are freely adjustable within the sensor measurement ranges.

The controlled output voltage balancing the actual value and setpoint value lies between 0% (35 V) and 100% (corresponds to approx. 80 V – 230 V).
The minimum and maximum values can be specified.

Main switch with positions:
"0" = control unit off.
"I" = automatic operation.
"230 V" = uncontrolled direct mains operation.

Inputs and outputs:
Outputs:
- 1 x motor connection phase angle-controlled.
- 1 x analogue output 0–10 V for controlling e.g. frequency inverter, valve, EC motor.
- 2 x potential-free relay, programmable, alarm, heating or status reports.

Inputs:
- 2 x sensor inputs, programmable to the respective required sensor type.
- Connection of thermal contacts for motor protection.

When a TK is triggered, the entire system will deactivate and it must be manually reactivated once the motor has cooled down.
- 2 x digital inputs, can be programmed to release, external fault, limit on/off, switching night reduction, internal/external, control/manual operation, reset, max. speed on/off.

Possible settings
- Continuously variable specification of setpoints and control range.
- Min./max. power (speed) limit.
- Minimum volume flow can be activated and deactivated.
- Connection of e.g. heating via programmable relay.
- Continuously variable specification for alarm signal if temperature is too high or low, output to display or also to relay.
- Min. and max. valve opening.
- Reversal of control function.
- Constant control of ventilation valves.
- Adjustment via a dirt-resistant membrane keyboard.

Display

- ☐ Multifunctional LC display.
- ☐ Numerical setpoint and actual value display with measurement unit.
- ☐ Symbols (alarm, heating, release).
- ☐ Bar/level display.
- ☐ Text display for menu, status and fault signals.

Required accessories

LDF 500 Ref. no. 01322
Differential air pressure sensor, measurement range 0 to 500 Pa.

LGF 10 Ref. no. 01325
Air velocity sensor, measurement range 0 to 10 m/s.

LTA 40 Ref. no. 01336
External temperature sensor, measurement range –20 to +60 °C, protection category IP54.

LTK 40 Ref. no. 01324
Temperature sensor for rectangular duct installation, measurement range 0 to +40 °C.

LTR 40 Ref. no. 01323
Room temperature sensor, measurement range 0.5 to +40 °C.

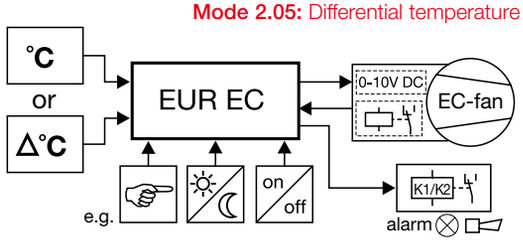
EUR 6 C	Ref. no. 01321
Voltage	230 V~, 50/60 Hz
Max. load	6 A
Required minimum current	0.2 A
Controlled output voltage	0 – 100 %
Temp. measurement range	0 – 40 °C
Pressure measurement range	0 – 500 Pa
Speed measurement range	0 – 10 m/s
Permitted ambient temp.	0 to +40 °C
Protection category	IP54
Casing	Surface installation, plastic, light grey
Dim. mm	W 223 x H 200 x D 131
Weight approx.	1.4 kg
Wiring diagram no.	911

References

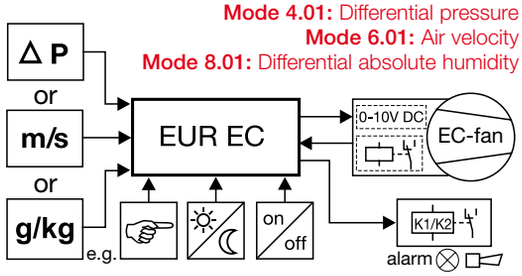
Electronic speed control units can generate motor humming noises. Transformer control units should be used in noise-critical applications.

EUR EC

Mode 2.03: Temperature control with additional function
Mode 2.05: Differential temperature control



Mode 4.01: Differential pressure control
Mode 6.01: Air velocity control
Mode 8.01: Differential absolute humidity control



Universal control system EUR EC Electronic automatic controller with 0–10 V DC control output.

Area of application

For continuously variable control or control of single and three-phase EC fans with a setpoint input of 0–10 V DC.

Control functions

Quick and easy commissioning of parameters using the integrated Commissioning assistant. The following control parameters can be controlled depending on the connected sensors:

- ☐ **Manual speed control,** e.g. adjustable via keyboard
- ☐ **Temperature** (required accessory Temperature sensor LTR 40 or LTK 40).
- ☐ **Temperature with additional functions** pre-programmed, (required accessory Temperature sensor LTR 40 or LTK 40).
- ☐ **Differential temp. control** (equired accessory Temperature sensor LTR 40 or LTK 40).
- ☐ **Differential pressure** (required accessory Differential air pressure sensor LDF 500).
- ☐ **Differential pressure with outdoor temperature compensation** (required accessory Differential air pressure and temperature sensors LDF 500 and LTR 40 or LTK 40). Ideal for central ventilation systems according to DIN 18017 in residential buildings.
- ☐ **Air velocity** (required accessory Air velocity sensor LGF 10).
- ☐ **Differential absolute humidity control** (required accessory AFS..).

The desired sensors must be ordered separately as accessories. The control ranges are freely adjustable within the sensor measurement ranges.

The controlled output voltage balancing the actual value and setpoint value lies between 0% (0 V DC) and 100% (10 V DC). The minimum and maximum values can be specified.

Inputs and outputs:

Outputs:
- 2 x analogue outputs 0–10 V for controlling e.g. EC motor, frequency inverter, valve.
- 2 x potential-free relay, programmable, alarm, heating or status reports.

Inputs:
- 2 x sensor inputs, programmable to the respective required sensor type.
- 2 x digital inputs, can be programmed to release, external fault, limit on/off, switching night reduction, internal/external, control/manual operation, reset, max. speed on/off.

Possible settings
- Continuously variable specification of setpoints and control range.
- Min./max. power (speed) limit.
- Minimum volume flow can be activated and deactivated.
- Connection of e.g. heating via programmable relay.
- Continuously variable specification for alarm signal if temperature is too high or low, output to display or also to relay.
- Min. and max. valve opening.
- Reversal of control function.
- Constant control of ventilation valves.
- Adjustment via a dirt-resistant membrane keyboard.

Display

- ☐ Multifunctional LC display.
- ☐ Numerical setpoint and actual value display with measurement unit.
- ☐ Symbols (alarm, heating, release).
- ☐ Bar/level display.
- ☐ Text display for menu, status and fault signals.

Accessories

LDF 500 Ref. no. 01322
Differential air pressure sensor, measurement range 0 to 500 Pa.

LGF 10 Ref. no. 01325
Air velocity sensor, measurement range 0 to 10 m/s.

LTA 40 Ref. no. 01336
External temperature sensor, measurement range –20 to +60 °C, protection category IP54.

LTK 40 Ref. no. 01324
Temperature sensor for rectangular duct installation, measurement range 0 to +40 °C.

LTR 40 Ref. no. 01323
Room temperature sensor, measurement range 0.5 to +40 °C.

AFS 0–10 V Ref. no. 06532
Absolute humidity sensor, with 0–10 V control output, integrated measuring transducer and measuring transducers.

AFS set 0–10 V No. 07376
Set consisting of 2 absolute humidity sensors, with 0–10 V control output, integrated measuring transducer and high long-term stability.

EUR EC	Ref. no. 01347
Voltage	230 V~, 50/60 Hz
Control output	0 – 10 V / max. 10 mA
Controlled output voltage	0 – 100 %
Temp. measurement range	0 – 40 °C
Pressure measurement range	0 – 500 Pa
Speed measurement range	0 – 10 m/s
Humidity measurement range	0...50 g/kg
Permissible ambient temp.	0 to +40 °C
Protection category	IP54
Casing	Surface installation, plastic, light grey
Dim. mm	W 223 x H 200 x D 131
Weight approx.	1.0 kg
Wiring diagram no.	1084

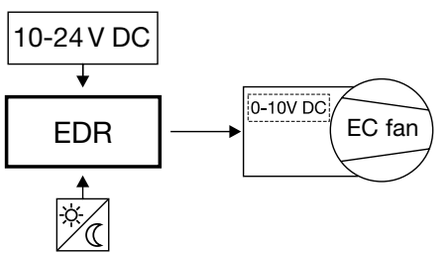
References

If necessary, multiple fans can be connected in parallel to one EUR EC depending on the fan type to be connected.

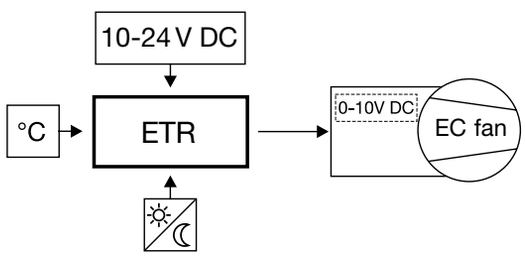
EDR

ETR

Pictorial schematic EDR



Pictorial schematic ETR



Electronic controller for differential pressure or temperature

Area of application
For continuously variable control of single and three-phase EC fans or frequency inverters with a setpoint input of 0–10 V DC. Provides the EC fan or frequency inverter with a supply voltage of 10–24 V DC/6 mA (safety extra-low voltage), the controller can be supplied directly from it, alternatively via a power supply unit (NG 24, accessories).

Display
- Multifunctional LCD display.
- Numerical setpoint and actual value display with measur. unit.
- Alarm, day/night operation.
- Text display for menu, status.

Control functions

Quick and easy commissioning of parameters using the LCD display and three internal input buttons.
Permanent measurement display in LCD display.
Optional parameterisation as
Actuator = 0–10 V analogue output proportional to measured actual value as control variable for external controls or as
Controller = controlled 0–10 V analogue output depending on the set setpoint and the measured actual value.
The controlled output voltage balancing the actual value and setpoint value lies between 0% (0 V DC) and 100% (10 V DC).
The minimum and maximum values can be specified, two setpoints (e.g. for day/night operation) can also be set.
Switching by means of weekly timer (types WSUP, WSUP-S, see accessories).

Differential pressure controller EDR

With fixed integrated pressure sensor and connections for pressure hoses (DN 5 mm, on-site.
Adjustable pressure ranges:
0–1000 Pa, 0–500 Pa,
0–300 Pa, 0–200 Pa.

Temperature controller ETR

The controller is freely adjustable withing the sensor measurement ranges, optionally in heating or cooling function, with adjustable minimum air shut-off.
Temperature control range
–50 to +150 °C.
Appropriate sensors (types LTA, LTK, LTR, see accessories) are available for temperature measurement.

References

If necessary, multiple fans can be connected in parallel to EDR or ETR depending on the fan type to be connected.

Accessories for EDR and ETR

NG 24 Ref. no. 01439
Power supply unit for DIN top hat rail mounting, input 100–240 V AC, output 24 V DC/1.75 A.
Required if fan type does not supply 10–24 V DC/6 mA.

WSUP Ref. no. 09990
Weekly timer.

WSUP-S Ref. no. 09577
Weekly timer for top hat rail mounting.

Accessories for ETR

LTA 40 Ref. no. 01336
External temperature sensor, measurement range –20 to +60 °C, protection category IP54.

LTK 40 Ref. no. 01324
Temperature sensor for rectangular duct installation, measurement range 0 to.

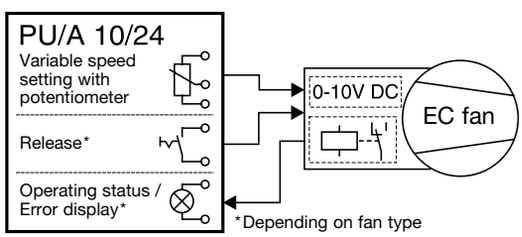
LTR 40 Ref. no. 01323
Room temperature sensor, measurement range 0.5 to +40 °C.

Type	Ref. no.	Power supply	Analogue outputs	Signal input	Perm. humidity	Protection category	Protection class	Permissible ambient temp.	Casing	Dim. mm	Weight	Wiring diagram
EDR	**01437**	10–24 V DC, 6 mA	0–10 V DC 10 V / 0.3 mA 24 V / 10 mA	10–24 V DC / 6 mA Switching setpoint 1/2 (day/night)	85 %	IP54	III (safety extra-low voltage, galvanically isolated)	–10 to +60 °C	Surf.-mount., plastic, light grey	W 137 H 106 D 56	250 g	1039
ETR	**01438**	10–24 V DC, 6 mA	0–10 V DC 10 V / 0.3 mA 24 V / 10 mA	10–24 V DC / 6 mA Switching setpoint 1/2 (day/night)	85 %	IP54	III (safety extra-low voltage, galvanically isolated)	–10 to +60 °C	Surf.-mount., plastic, light grey	W 137 H 106 D 56	200 g	1298

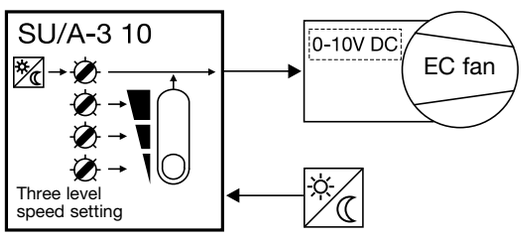
PU / PA

SU / SA

Pictorial schematic PU / PA



Pictorial schematic SU / SA



Speed potentiometer PU/PA with additional functions Switch and LED

Area of application
For direct control/setpoint specification for EC fans with a potentiometer input.
Also with release switch and LED display for operating status (depending on the fan type equipment).

Control with potentiometer
The potentiometer is directly connected to the potentiometer input on the fan control.
This has a potentiometer power supply of e.g. 10 V DC and a setpoint input of 0–10 V DC.

Minimum voltage
A second potentiometer is integrated in the PU/PA. The minimum voltage (min. 1.3 V) is continuously variable, so that a safe motor start-up is guaranteed at the lowest speed setting.

Release switch
The rotary knob for the potentiometer is also a pressure switch which can be used to activate/deactivate a fan with release input (e.g. 24 V DC).

Light ring with LED
Optical indication of fan operating status. Changes from green (normal operation) to red (fault) for fans with operation signalling relay.
Required supply voltage see technical data.

Product range

LED power supply 10 V

PU 10	Ref. no. 01734
Installation	in standard flush-m. box
Dim. mm	W 80 x H 80 x D 21 protr.

PA 10	Ref. no. 01735
Casing	Surf.-mounted installation, plastic, light grey
Dim. mm	W 80 x H 80 x D 65

LED power supply 24 V

PU 24	Ref. no. 01736
Installation, dimensions	see PU 10

PA 24	Ref. no. 01737
Installation, dimensions	see PA 10

Technical data for all types

Potentiometer	10 kOhm
(min. potentio. aprx. 7.9 – 16.5 kOhm)	
A potentiom. power supply of 10 V provides a control voltage 0 – 10 V DC.	
Min. volt. 1.3 – 6.7 V DC adjustable.	
LED supply voltage:	
10/24 V DC (P 10/24), min. 6 mA	
Perm. ambient temp.	0 to +40 °C
Protection category	IP40
Wiring diagram no.	1000

Three level switch SU/SA 10 V / 0–10 V

Area of application
Three level switch for flush-mounted or surface-mounted installation.
Three level controlling of EC fans or frequency inverters with a 0–10 V DC control input.

Functions
Three different setpoint specifications can be issued via SU/SA.
Each level is freely definable from 0–10 V DC via a separate potentiometer.
The connection of a weekly timer (WSUP, WSUP-S, accessories) for switching from 3 level day operation to e.g. night operation is also possible.
Night/reduced operation can also be adjusted via another potentiometer from 0–10 V DC.

Product range

Flush-mounted

SU-3 10	Ref. no. 04266
Install.	deep flush-m. box (D 65 mm)
Dim. mm	W 80 x H 80 x D 15 prot.

Surface-mounted

SA-3 10	Ref. no. 04267
Protection category	IP40
Casing	Surf.-mounted installation, plastic, white
Dim. mm	W 80 x H 80 x D 60

Technical data for all SU/SA types

Supply input:	10 VDC Ri=12.5 kOhm (safety extra-low voltage)
Internal consumption:	1.5 mA
Control output:	0 – 10 V DC either via switch or external switchover
Prot. category	IP30 when installed
Protection class	III
Wiring diagram no.	1022

References
If necessary, multiple fans can be connected in parallel to one speed potentiometer or three level switch depending on the fan type to be connected.

DDS

Function
Adjustable normally closed / normally open contact for monitoring drops in pressure and thus the contamination of air filters, fan pressure increases and ventilation system pressure levels.

Product range
Complete ready-to-install set consisting of:
- Differential pressure switch DDS
- 4 fixing screws
- 2 hose connections
- Connection hose Ø 6 mm x 1.5 mm x 2000 mm
- Drilling template for connections
- Mounting plate + 3 fixing screws
- 3 screw terminals

Differential pressure switch DDS
DDS Ref. no. 00445

Area of application
- ☐ Complete, installation set for monitoring air filters, system pressure and fan operation.
- ☐ Suitable for DDC applications due to the gold-plated connection contacts (24 V DC/0.1 A). When used in conventional technology (230 V AC/1.5 A), subsequent use in DDC applications is no longer possible.
- ☐ Suitable for applications according to VDI 6022.

Technical data

Adjustable meas. range	50 – 500 Pa
Switching differential Δp	20 Pa
Max. operating overpressure	5 kPa
Load capacity	230 V AC 1.5 (0.4) A 24 V DC 0.1 A
Ambient temp.	–20 to +85 °C
Air flow temp.	–20 to +85 °C
Humidity	0...50 % RH, non-condensing
Protection category	IP54
Dimensions mm	Ø 104, D 58
Weight approx.	0.23 kg
Wiring diagram no.	490

TME 1

Function
- ☐ One-stage control thermostat for direct switching of one or more fans.
- ☐ Can also be used to control heating elements with optional connection.
- ☐ Potential-free change-over contact.

Description
- ☐ Closed casing made of break-resistant plastic, light grey. Cable insertion on underside of casing using clamping gland PG 11.
- ☐ Connection via terminal block after removal of casing cover.

One-stage thermostat TME 1
TME 1 Ref. no. 01334

Area of application
- ☐ Robust, electronic thermostat for temperature-dependent on/off control of fans or heating elements.
  Suitable for installation in humid and dusty rooms. Surface installation in any position.

Technical data

Voltage	230 V~, 50/60 Hz
Load capacity	16 A
Max. current (AC 3)	6 A
Temperature range	0 to +50 °C
Switching accuracy	+/- 0.8 K at 20 °C
Protection class	II
Protection category	IP54
Ambient temp.	0 to +60 °C
Dim. mm	W 82 x H 80 x D 75
Weight approx.	0.2 kg
Wiring diagram no.	701
Connect. cable	NYM-O 4 x 1.5 mm²

HY 3

HY 3 SI

Description
- ☐ Universally applicable hygrostat in elegant plastic casing for surface-mounted installation. Colour white.
- ☐ Setpoint adjustment from outside via rotary knob. Via internal scale for type HY 3 SI.
- ☐ Not suitable for dusty or aggressive air.
- ☐ Sensor element made of polyamide fibres.
- ☐ Also suitable for humidification with optional connection.

Ventilation hygrostat
HY 3 Ref. no. 01359

Ventilation hygrostat
HY 3 SI Ref. no. 01360
Internal scale.

Area of application
- ☐ Electromechanical humidity controllers for on/off fan control (control using contactor for 3~ three-phase current types), which reduce the room air humidity with the adequate air exchange.

Technical data

Relative operating range Humidity	25 to 90 %
Switching differential approx.	± 6 %
Voltage max.	230 V~, 50/60 Hz
Load capacity	3 A (ind.)
Ambient temperature	0 – 40 °C
Protection category	IP20
Dim. mm	W 76 x H 76 x D 34
Weight approx.	0.25 kg
Wiring diagram no.	168.1

ACL

Air quality controller
ACL Ref. no. 00492

Area of application
- ▢ Electronic air quality controller for controlling:
  - 1~ alternating current fans
  - 3~ three-phase current fans using a contactor.
- For ventilation systems in conference rooms, restaurants, shops, production facilities, residential/community rooms.

Function
- ▢ Activation and deactivation of one or more fans depending on room air quality.
- ▢ The integrated sensor in the unit reacts to the oxidisable gases and odorous substances in the room air, such as carbon monoxide, alcohol, formaldehyde, benzene, solvents, methane, tobacco, etc.

Setting options
- ▢ Switching occurs when an adjustable setpoint is exceeded or a sharp increase in air pollution.
- ▢ Deactivation time with adjustable turn-off delay (adjustable from outside).
- ▢ Indicator light for operating mode (automatic/manual), fan operation and turn-off delay period.
- ▢ Function and operating mode switch on front of casing.

Casing
Flat casing with air exchange slots, made of light grey plastic, for surface-mounted installation.

Technical data

Voltage	230 V, 1~, 50/60 Hz
Turn-off delay time, adjust.	1 – 10 min.
Turn-on delay	approx. 5 sec.
Load capacity	2 A (ind.)
Protection category	IP30
Dim. mm	W 125 x H 75 x D 30
Weight approx.	0.2 kg
Wiring diagram no.	485.1

SWE

Electronic flow monitor
SWE Ref. no. 00065

Area of application
For monitoring the air flow in a duct section.
Open-circuit or closed-circuit principle possible.

Function
The air flow sensor (combined with a control unit) detects the air flow and compares it to the specified setpoint.
This can be adjusted on the front of the control unit (in the range from 1–20 m/s).
The relay closes when the setpoint is reached/exceeded. Two LED's indicate UN and switching state of the output relay. Connection of external fault display possible via relay output (1 changeover contact, potential-free, max. switching current 5 A / AC 250 V).

Installation
Control unit suitable for switch cabinet installation for attachment to 35 mm mounting rails.
Air flow sensor with rose fixing for pipe/duct installation and connection cable (length 2.5 m; can extend to max. 10 m), which must be connected to the control unit.

Technical data

Voltage	230 V, 1~, 50/60 Hz
Load capacity	5 A (ind.) cos φ 0.4
Setpoint adjust. range	1 – 20 m/s
Air flow temperature	max. 60 °C
Ambient temperature	max. 60 °C
Protection category	IP20
Dim. mm	W 35 x H 90 x D 66
Sensor length mm	140
Weight approx.	0.4 kg
Wiring diagram no.	689.1

SWT

Mechanical flow monitor
SWT Ref. no. 00080

Area of application
- ▢ Mechanical flow monitor with adjustable release force for monitoring a minimum flow velocity in ducts and pipes from NW 315.

Design
Robust design with paddle made of stainless steel and device for mounting to outside of rectangular ducts.

Function
- ▢ Electrical switching possible as NC or NO.
- ▢ Signal triggered if flow velocity exceeds or falls below a critical value.
- ▢ Minimum adjustable flow velocities:
  - shortfall approx. 1.5 m/sec.
  - excess approx. 3 m/sec

Installation
Must be installed so that the paddle weight does not act with or against the spring force.

Technical data

Voltage	24 – 230 V AC, 50/60 Hz
Load capacity	15 (8) A (ind.)
Air temp. limits	– 40 ... + 85 °C
Protection category	IP65
Dimensions mm	
– Paddle	W 55, L 200, D 0.15
– Casing	W 140 x H 65 x D 62
Weight approx.	0.4 kg
Wiring diagram no.	557.1

EDTW

Differential temp. controller
EDTW Ref. no. 01613

Area of application and advantages
- ▢ Elec. continuously variable differential temp. controller for connection to elec. controllable
  - ceiling fans and all
  - 1~ alternating current fans.
- ▢ For constant speed control depending on the temperature differential.
- ▢ This controller saves valuable heating energy when used with ceiling fans or fans which circulate the room air from top to bottom. It optimises the temperature difference between the ceiling and floor.

Function
- ▢ Continuously variable speed control (0 – 100 %) depending on the difference value between the two temp. sensors and the comparison with the setpoint specification.
- ▢ Includes temperature sensors with external cable (1 x 10 m long, for installation below the ceiling; 1 x 2 m long, for installation above the floor.
- ▢ The speed increases within the proportional range when the temperature difference increases and the speed decreases when the difference decreases.
- ▢ Variable adjustment of proportional band from 1–10 K.

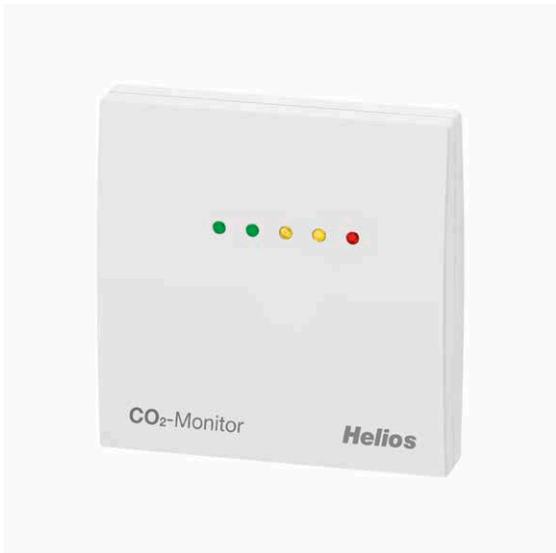
Setting options
- ▢ On/off (with function display).
- ▢ Automatic/manual operation.
- ▢ Change of direction of rotation.
- ▢ Proportional range.
- ▢ Summer operating mode:
  As manual speed controller.
  Motor humming noises can be generated during operation depending on the fan type.

Casing
Impact-resistant plastic, white, for surf. and flush-m. installation.

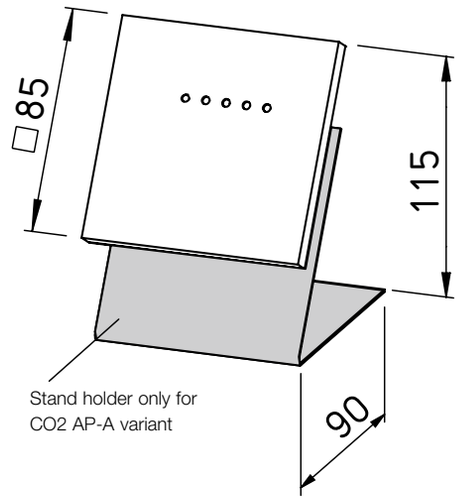
Technical data

Voltage	230 V, 1~, 50/60 Hz
Load capacity max.	2.5 A (T 40 E)
Control range adjustable	1 – 10 K
Protection category	IP20
Dim. mm	W 210 x H 85 x D 55
Weight approx.	0.7 kg
Wiring diagram no.	438

CO2 AP-A / CO2 AP / CO2 UP



Dimensions CO2 AP-A / CO2 AP / CO2 UP



Dim. in mm

Maintenance-free CO_2 monitor with traffic light display, incl. power supply unit or power plug, self-calibrating, in elegant plastic casing. For determining the CO_2 content of the room air (0...3000 ppm) in individual rooms, such as class rooms, training and meeting rooms, offices, hotels, retail stores, etc. This enables energy-saving, needs-based room ventilation.

- **Unit variants**
  Standing unit with stainless steel stand holder (CO2 AP-A), for direct wall installation (CO2 AP) and for installation in flush-mounted boxes (CO2 UP).

- **Casing**
  Plastic, material ABS, colour pure white (similar to RAL 9010).

- **Sensor**
  Optical NDIR sensor (non-dispersive infrared technology) with automatic calibration.

- **Air quality display**
  The measurement transducer converts the measurement variable into a standard signal that is visually displayed directly via five coloured LEDs (traffic light display). An acoustic signal can also be activated as an option.

- **Standards**
  CE conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2014 / 30 / EU, Low-Voltage Directive 2014 / 35 / EU.

CO2 AP-A

- **Installation**
  Mobile CO_2 measurement unit on stainless steel stand holder.

CO2 AP / UP

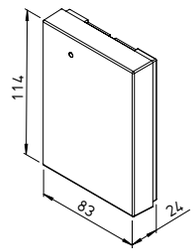
- **Installation**
  Wall installation or in flush-mounted box, Ø 55 mm, base with 4 holes, for attachment to vertically or horizontally installed flush-mounted boxes for cable entry at rear. With predetermined breaking point for cable entry at top / bottom for surface mounting.

- **Reference**
  The unit must not be used for safety-related tasks.

Technical data	CO2 AP-A	CO2 AP	CO2 UP
Ref. no.	40109	40107	40108
Supply voltage	230 V AC (50 – 60 Hz)	230 V AC (50 – 60 Hz)	24 V AC / DC (+- 10%)
Electrical connection	Power supply unit 230 V / 50 - 60 Hz (included in scope of delivery)		
Measurement range	0...3000 ppm		
Measurement accuracy	typical +- 30 ppm +- 3% of measurement value		
Long-term stability	< 2% in 15 years		
Gas exchange	Diffusion		
Ambient temperature	0...+ 50 °C		
Start-up time	approx. 1 hour		
Response time	< 2 minutes		
Protection class	III (according to EN 60 730)		
Protection category	IP30 (according to EN 60 529)		
Equipment	Traffic light display (five colour LEDs) for displaying the CO_2 concentration, CO2 AP with plug-in power supply unit (conn. cable aprx. 1.5 m), CO2 UP for flush-mounting with flush-mounted power supply unit, CO2 AP-A with stainless steel stand holder and power supply unit with Micro-USB.		

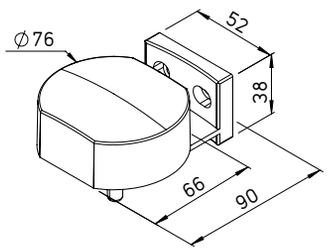
FDR

Dimensions Internal controller for FDR



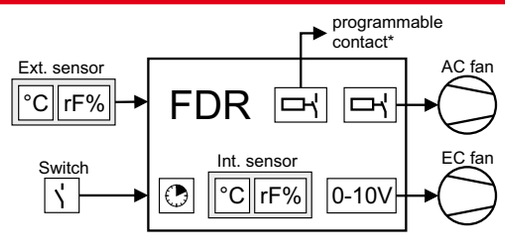
Dim. in mm

Dimensions External sensor for FDR



Dim. in mm

Pictorial schematic FDR



* Additional heater, additional dehumidifier, supply air function or fault signal

Differential humidity controller incl. integrated sensor for inside humidity and temperature, external sensor for intake air humidity and temperature as well as the necessary switching power supply.

Area of application

- For controlling/regulating extract air fans depending on the absolute humidity difference between two measurement locations, e.g. inside the building and the outdoor environment using an internal sensor and external sensor for humidity and temperature.
- The internal sensor is housed directly in the electronic controller and the external sensor is housed in a casing for wall installation.

Features

- Non-ventilation periods can be programmed with the integrated weekly timer.
- The integrated frost protection ensures that the ventilation process is temporarily suspended and thus no cold supply air actively flows in the building.
- The extract air fan can be manually activated for a pre-set turn-off delay period using standard switches, regardless of humidity-dependent ventilation operation.
- If ventilation is not required or if useful ventilation is not possible due to the inside and outside climate conditions, the controller will switch the extract air fan to an interval mode so that the preset regular air exchange takes place.

Additional switch output

- Allows the enabling of an additional external heater so that the minimum room temperature does not fall below the pre-set value while the fan ventilates the room.
- Or it can be programmed to operate an additional active external dehumidifier.
- Alternatively, it can be used for building control system signalling.

Control parameters FDR

- If the control parameter activation thresholds are exceeded, the room will be ventilated with the AC fan used in the room, which allows drier supply air to flow into the room.
- All single-phase Helios AC fans can be connected to the controller up to a max. current of 6 A.
- If fans with higher electrical outputs or three-phase current fans are required, a corresponding circuit breaker must be connected to the controller.
- If energy-saving EC extract air fans are used, the speed and thus the energy consumption will be reduced to a minimum depending on the absolute humidity difference.
- All Helios EC fans with a 0-10 V control input can be connected to the controller.

Control function

- Thanks to its basic factory settings, FDR is ready for operation in a very short time with only a few adjustments.
- All control parameters can be optimised in relation to the building using the free Helios FDR App.

Helios FDR App

- All parameters can be changed at any time via the Bluetooth interface by using the free App.
- Software updates can be loaded on the controller via the App.
- The setting parameters and function history from the past few days can be read out via the App.

Download on the App Store

GET IT ON Google Play

Technical data:

Type	FDR
Ref. no.	08157
Voltage	230 V~, 50 Hz
Power supply unit Controller	12 V DC
Switch output ON/OFF potential-free	max. 6 A, cos phi 0.95
Controlled output voltage	0–10 V / max. 2 mA / 0-100%
Max. temperature range	outside -30 °C – 55 °C inside 0 °C – 40 °C
IP external sensor	IP54
IP controller/internal sensor	IP20
Dimensions External sensor	(W x H x D) 76 x 40 x 90 mm
Dimensions Controller/internal sensor	(W x H x D) 83 x 114 x 24 mm
Wiring diagram no.	1381