Comfortably controlled and energy-saving.

Controlling ventilation and air conditioning systems in accordance with changing requirements and conditions is a must for comfortable, energy efficient ventilation.

MEASURE

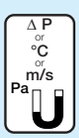
Changes in room occupancy, deteriorations in the quality of air at different times, fluctuating temperatures, day and night settings, etc. call for corresponding adjustments. Helios offers regulation, control and switch devices for all functions, which are tailored to the fans.

CONTROL

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

REGULATE

The extensive MSR range from Helios provides the ideal solution for any application and simultaneously meets all requirements in relation to energy saving and noise reduction.

Task	Helios controller solution			Page
 **Manual control of air flow volume**	■ **Manual speed controller**			
	– Without motor protection			
	– 10 V, 24 V DC	– Potentiometer for EC fans	**PU / PA, SU / SA**	541
	– 230 V~	– Electronic, flush / surface mounted	**ES, BSX**	531
	– 230 V~	– Transformer, surface mounted	**TSW, TSSW**	532
	– 400 V 3~	– Transformer, surface mounted	**TSD, TSSD**	533
	– 230 V~	– Transformer, electronic, surface mounted	**ETW**	535
	– With built-in motor full protection for connection to thermal contacts			
	– 230 V~ / 400 V 3~	– Transformer, surface mounted	**MWS / RDS**	532 f.
	– 400 V 3~	– Electronic, surface mounted	**ESD**	535
	– 400 V 3~	– Frequency inverter	**FU**	536 f.
	■ **Operation switch for fans with 2 speeds**			
	– Pole switch for Dahlander windings, flush / surface mounted		**PDA / PDU**	529
	– Pole switch for separated windings, flush / surface mounted		**PGWA / PGWU**	529
 **Overrun timer**	■ **Overrun switch**	Thermal electric, electronic, mechanic with adjustable and fixed times	**ZT, ZNE, ZNI, ZV**	527
 **Air quality – automatic system**	■ **Air quality sensor**	with on / off function depending on room air quality	**ACL**	543
Air flow velocity	■ **Air flow monitor**	for monitoring the minimum air flow velocity in ducts and pipes	**SWE, SWT**	543
 **Room temperature dependant**	■ **Ventilation thermostat**	– one step with on / off function	**TME 1**	542
		– four step, mechanical	**TME 4**	534
		– stepless, electronic	**EST**	534
	■ **Temperature controllers with integrated power unit, surface mounted**			
	– 230 V~	– electronic	**EUR 6 C**	538
	– 230 V~ / 400 V 3~	– transformer	**KTRW / KTRD**	534
 **Temperature difference dependant**	■ **Differential temperature controller** electronic,, stepless, with power unit			
	– 230 V~	for surface mounting	**EDTW**	543
 **Humidity dependant control**	■ **Humidistat**	with on / off function, surface mounted	**HY 3**	542
	■ **Fans for sanitary areas** with integrated humidity control		**M1/.. F, ELS-VF**	22, 53
 **Temperature, pressure, speed Pressure dependant control**	■ **Universal controller**	with power unit 230 V~	**EUR 6 C**	538
		with 0-10 V DC output, for EC fans	**EUR EC**	539
		with power unit 400 V~	**FU**	536 f.
	■ **Differential pressure controllers, surface mounted, with digital display**			
	– 0-10 V DC	– electronic	**EDR**	540
	■ **Differential pressure switch** for monitoring the air filters, system pressure and fan operation		**DDS**	542
 **Motor protection against overload**	■ **Motor full protection switch** to connect the thermal contacts for monitoring the windings temperature		**MD, MW M 2, M 3, M 4**	530
	■ **Motor protection tripping unit** for PTC – temperature sensor in windings		**MSA**	530
 **Operation switch**	■ **Reverse switch**	to change air flow direction of axial fans	**WS**	528
	■ **Isolation switch**	to disconnect all phases for service works	**RS, RHS**	528 f.
	■ **Pole / reverse switch**	as before, but for 2 speed axial fans	**PWGW, PWDA**	529
 **Timer**	■ **Weekly autotimer**	for automatic operation control	**WSUP, WSUP-S**	527

Type ZT Ref. no. 1277
Thermal electric overrun timer with adjustable run on time,
depending on duty cycle.
Optional delayed start via different wiring options.
In parallel wiring with light switch the fan can be temporarily switched off via a series switch.

Variable run on time, depending on duty cycle.
Min. approx. 2 min.; max. approx. 12 min.
Optional delayed start (approx. 45 sec.)
Voltage 230 V, 1~, 50/60 Hz
Current 4 A (ind.)
Protection class IP 20
Dimensions mm W 32 x H 40 x D 14
Installation flush mount box behind switch
Wiring diagram no. SS-174
– when two rooms/switches are to be controlled SS-174.3

■ Flush mounted overrun timer for installation in gang boxes behind a switch

Specially designed overrun timer for bathroom and toilet. The compact design allows installation behind a switch within a single gang box. Operation via on / off switch or ideally to be combined with a light switch in rooms without a window. Can be individually adjusted through different timer variations.

Interference immunity and emission
ZT is designed with a thermal electric circuit, is immune against tolerable peak voltages and interference-free. The interference immunity and emission of ZNE/ZNI comply with the latest EN guidelines. ZV is tested as follows: Interference emission to DIN EN 55014 / VDE 0875-14-1; DIN EN 50370 / VDE 0875-1; DIN EN 61000-3-3 / VDE 0838-3.

Type ZNE Ref. no. 0342
Electronic overrun timer with stepless adjustable run on times
Operation via on / off switch, e.g. in combination with light switch.
Compact design allows easy installation.

Stepless adjustable run on time 0 – 21 min.
Optional delayed start 45 sec.
Voltage 230 V, 1~, 50/60 Hz
Current min. 0.05 A max. 0.8 A (ind.)
Protection class IP 40
Dimensions mm W 17 x H 37 x D 13
Installation flush mount box behind switch
Wiring diagram no. SS-477.1
– when two rooms/switches are to be controlled SS-174.3

Type ZNI Ref. no. 0343
Electronic interval switch with adjustable interval and run on times
Starts operation automatically at adjustable time intervals, if no manual switching has taken place. If switched manually, e.g. light switch, the preset overrun time applies.

Adjustable interval time 0, 4, 8, 12, 24 hr.
Run on time if manually switched, stepless adjustable 0 – 21 min.
Optional delayed start 45 sec.
Voltage 230 V, 1~, 50/60 Hz
Current min. 0.05 A max. 0.8 A (ind.)
Protection class IP 40
Dimensions mm W 17 x H 37 x D 13
Installation flush mount box behind switch
Wiring diagram no. SS-477.1
– when two rooms/switches are to be controlled SS-174.3

■ Overrun timer for mounting in terminal box

Type ZV Ref. no. 1279
Electronic overrun timer with stepless adjustable run on times
and operation switch with run on time/continuous operation options. Parallel wiring to a light switch and fan is possible via an on / off switch or push button.

Stepless adjustable run on time 4 – 15 min.
Voltage 230 V, 1~, 50/60 Hz
Current 2,1 A (ind.)
Protection class IP 20
Dimensions mm W 18 x H 93 x D 67
Installation terminal box, 35 mm sectional rail
Wiring diagram no. SS-236.1

■ Weekly autotimer Surface mounted or in flush mounted box

Type WSUP Ref. no. 9990
Weekly autotimer
Digital autotimer with LCD display to automatically control any unit in accordance with the technical data. Suitable for switching the least electronic current from 1 mA / 20 mV through a standard, gilded µ-contact. Installation in dry environment.

Voltage 230 V, 1~, 50 Hz
Current 1 mA / 20 mV DC
Switching contact potential-free changeover 250 V, 1~, 8 A $\cos\varphi \approx 1$, µ-contact
Protection class IP 20 / II
Dimensions mm W 85 x H 85 x D 52
Installation surf. casing, flush box
Temperature range -10° C to +35° C
Memory space (switching time) 42
Wiring diagram no. SS-862

Control cabinet installation

Type WSUP-S Ref. no. 9577
Weekly autotimer for control cabinet installation
Digital autotimer with LCD display to automatically control any unit in accordance with the technical data. Suitable for switching low-voltage or low currents through a standard, gilded µ-contact. Installation in dry environment or with occasional condensation.

Voltage 230 V, 1~, 50-60 Hz
Current 1 mA / 20 mV DC
Switching contact potential-free changeover 250 V, 1~, 16 A $\cos\varphi \approx 1$
2 A $\cos\varphi \approx 0.6$, µ-contact
Protection class IP 20 / II
Dimensions mm W 36 x H 90 x D 69
Installation DIN rail mounting control cabinet
Temperature range -30° C to +55° C
Memory space (switching time) 56
Wiring diagram no. SS-1038

Reversing switch

For surface and flush mounting

Type WS Ref. no. 1271

To change air flow direction of 1 ph. and 3 ph. axial high performance fans. Installation: Surface or flush mounted (switch box is included as standard). With screw fixing (M 3, 60 mm). Similar to product pages the units are specified in the model chart.

Current	AC 3 / 5.5 kW / 12 A (ind.)
Voltage	230 V, 1~, 50/60 Hz 400 V, 3~, 50/60 Hz
Protection class	IP 54 (when flush mounted IP 30)
Wiring diagram no.	SS-752
Weight approx.	0.4 kg
Dimensions mm	W 91 x H 121 x D 109
– when flush mounted	W 72 x H 72 x D 35
Casing	polymer, light grey

Reversing, speed and on / off switch

Installation in FM switch box

Type DSEL 2 Ref. no. 1306

1. **Speed changeover switch** and on / off switch of fans with two speed steps such as ELS-V 60/35, -VN 100/60.
2. **Reverse switch** for changing the air flow direction of reversible fans (for supply and extract air) and on / off switch.

Similar to product pages the units are specified in the model chart.

Two switch rockers with symbols for speed change or reverse operation delivered as standard. Colour pure white.

Current	3 A (ind.)
Voltage	230 V, 1~, 50/60 Hz
Protection class	IP 30
Installation	in standard FM box
Wiring diagram no.	– two speed SS-827 – reverse operation SS-828
Dimensions mm	W 80 x H 80 x D 15
Weight approx.	0.1 kg

Three speed and operating switch with 0 position

Installation in FM switch box

Convenient flush mounted speed switch for fans with three speed steps. Cannot be parallel wired with the light switch

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

Type DSEL 3 Ref. no. 1611

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

Type DSZ Ref. no. 1598

Can be used with the central extract air box ZEB EC.

Type DSEL 3

Current	3 A (ind.)
Protection class	IP 30
Installation	in standard FM box
Wiring diagram no.	see fan model
Dimensions mm	W 80 x H 80 x D 23

Type DSZ

Current	AC 3 / 2,2 kW, AC 15 / 6 A
Protection class	IP 20
Installation	in FM box with 55 mm depth
Wiring diagram no.	SS-735
Dimensions mm	W 80 x H 80 x D 23

Speed, operation and reversing switch

For surface and flush mounting

Type FR 22/30 Ref. no. 0998

Suitable for fan models GX 225 or 300.

For surface and flush mounted installation in dry rooms.

Three sliding switches with following functions: Two pole operation switch on/off with operating display, high or low speed and reverse switch (supply/extract air).

Current approx.	0.8 A (ind.)
Voltage	230 V, 1~, 50/60 Hz
Protection class	IP 20
Dimensions mm	W 210 x H 85 x D 55
Weight approx.	1.2 kg
Wiring diagram no.	SS-497
Casing	polymer, white

Isolation switch
– 3 pole with auxiliary contact for direct starting

Type RS 3+1 7.5 Ref. no. 6387

Plastic casing for flush mounting. Locking options in position "0 OFF" and "I ON".

Technical data

Voltage	400 V, 3~, 50/60 Hz
Operating current	20 A
Current	AC-23 B, 7.5 kW
Protection class	IP 65
Protection category	II
Actuation	Rotary actuator
Temperature range	-25 to +60 °C
Dimensions mm	W 90.5 x H 90.5 x D 102
Weight approx.	0.3 kg
Wiring diagram no.	SS-1088
Casing	UV and weather-resistant

Isolation switch
– 6 pole with auxiliary contact for Dahlander windings or Y/Δ starting

Type RS 6+1 7.5 Ref. no. 6388

Current	20 A, AC-23 B, 7.5 kW
Dimensions mm	W 90.5 x H 90.5 x D 139
Weight approx.	0.4 kg

Type RS 6+1 11 Ref. no. 6389

Current	25 A, AC-23 B, 11 kW
Dimensions mm	B 115 x H 115 x T 163
Weight approx.	0.6 kg

Technical data

Voltage	400 V, 3~, 50/60 Hz
Protection class	IP 65
Protection category	II
Actuation	Rotary actuator
Locking options	"0 OFF" and "I ON"
Temperature range	-25 to +60 °C
Wiring diagram no.	SS-1088
Casing	UV and weather-resistant for surface mounting

Isolation / main switch
– 3-pole with auxiliary contact

Type RHS 3+1 Ref. no. 1594

Position "0" is lockable via padlock. Conforms to DIN EN 60204 T.1 / VDE 0113-1. Polymer casing for surface mounting.
3-pole isolator with additional terminals, for single speed and speed controlled fans.

Technical data

Voltage	400 V, 3~, 50 Hz
Current	
– Main contact	AC 3 / 5.5 kW 12 A ind.
– Aux. contact	AC 3 / 2,2 kW 4 A ind.
Protection to	IP 54
Dimensions mm	W 101 x H 126 x D 104
Weight approx.	0.35 kg
Wiring diagram no.	SS-505.2

Isolation / main switch
– 6-pole with 2 auxiliary contacts

Type RHS 6+2 Ref. no. 1595

Position "0" is lockable via padlock. Conforms to DIN EN 60204 T.1 / VDE 0113-1. Polymer casing for surface mounting.
6-pole isolator with 2 additional terminals, for all pole changing fans.

Technical data

Voltage	400 V, 3~, 50/60 Hz
Current	AC 3 / 5.5 kW
Protection to	IP 65
Dimensions mm	W 82 x H 82 x D 125
Weight approx.	0.3 kg
Wiring diagram no.	SS-505.3

Pole switches
– for separate windings PGWA
– for Dahlander windings PDA

For surface mounting

Surface mounted operation switch for pole changing fans.

Type	Ref. no.	Current		SS no.
For separate windings				
PGWA 12	5083	AC 3/5.5 kW	12 A	345
PGWA 25	5061	AC 3/11 kW	25 A	345
For Dahlander windings				
PDA 12	5081	AC 3/5.5 kW	12 A	733[1)]
PDA 25	5060	AC 3/11 kW	25 A	733[1)]

[1)] For motors without thermal contacts: SS-732.

Technical data for all types

Voltage	400 V, 3~, 50/60 Hz
Protection to	IP 65

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

Pole switches
– for separate windings PGWA
– for Dahlander windings PDU

For flush mounting

Pole switch PGWU / PDU

Flush mounted operation switch for pole changing fans.

Type	Ref. no.	Current		SS No
For separate windings				
PGWU 12	5084	AC 3/5.5 kW	12 A	345
For Dahlander windings				
PDU 12	5082	AC 3/5.5 kW	12 A	733[1)]

[1)] For motors with thermal contacts; without thermal contacts: Connection to wiring diagram no. SS-732.

Technical data for both types

Voltage		400 V, 3~, 50/60 Hz
Protection to		IP 30
Dim. mm	Installation depth	87
	Excess length	40
	Cover plate	80 x 80
Delivery		incl. flush mounting box
Weight		approx. 0.2 kg

Reverse and pole switch
– for separate windings PWGW
– for Dahlander windings PWDA

For surface mounting

Type PWGW Ref. no. 1281
For separate windings

Type PWDA Ref. no. 1282
For Dahlander windings

To switch speed and air flow direction of individual pole changing fans.
Grey polymer casing.

Technical data for both types

Voltage	400 V, 3~, 50/60 Hz
Current	AC 3 / 7.5 kW
Protection to	IP 55
Dimensions mm	W 96 x H 105 x D 147
Weight approx.	0.5 kg
Wiring diagram no. for PWGW	SS-13
Wiring diagram no. for PWDA	SS-11

Speed reversing switches DS 2

– for two speed three phase Y/Δ fans

Type DS 2 Ref. no. 1351

On / off and speed reversing switch for two speed three phase Y/Δ-fans. Grey polymer casing for surface mounting.

– for two speed alternating current fans (SlimVent, RR)

Type DS 2/2 Ref. no. 1267

On / off and speed reversing switch for two speed 1 ph. fans, RR and SlimVent SVR, SVS.

Technical data for both types

Voltage	400 V, 3~, 50/60 Hz
Current	AC 3 / 5.5 kW / 12 A
Dimensions mm	W 82 x H 82 x D 130
Weight	approx. 0.4 kg
Protection to, Type DS 2	IP 65
Wiring diagram no. for Type DS 2	SS-87
Protection to, Type DS 2/2	IP 54
Wiring diagr. no. for Type DS 2/2	SS-939

Motor protection
Regulations and standards
The harmonised European standards and national installation directives require thermal overload protection for electric motors. This can be achieved in various ways and depends on the motor specification.

- Optimal protection is provided by thermal contacts (“TK” consecutively), which monitor the motor winding temperature. These contacts protect also the speed controlled motors.
- For low motor powers, the thermal contacts are wired in series with the motor windings, in other words, they are internally wired. This ensures an automatic function (resetting after cooling), without the operator reacting necessarily on the interference.
- For motors/fans with higher performances the leads of the thermal contacts or PTC thermistor-temperature sensor are wired to the terminal block and must be connected to the adjacent motor full protection/tripping units. Only under this condition is the warranty claim valid.
- Motors/fans without thermal monitoring elements in the windings (e.g. IEC norm motors) must be secured on all poles by a suitable motor protection switch.

Information	Page
Technical information	15 on
Transformer controllers with motor full protection unit	
– for 1 ph. motors MWS	532
– for 3 ph. motors RDS	533

For 1 ph. fans with thermal contact leads wired to the terminal block

Motor full protection switch MW
in polymer casing for surface mounting or installation in fuse board (clamping assembly for support rail).

Type MW Ref. no. 1579
On/off operation via push-button switch. Manual reset function interference.
Volt free auxiliary contact for connection of failure indication alarm.
230 V, 1~, 50/60 Hz, applicable from 80 V
Nominal current 0.4 to 10 A
Protection to IP 55 Weight approx. 0.5 kg
Dimensions mm W 80 x H 140 x D 95
Wiring diagram no. SS-517

For 3 ph. fans with thermal contacts

Motor full protection switch M
Operation and full protection unit in polymer casing for surface mounting or installation in fuse board (clamping assembly for support rail).

Type MD Ref. no. 5849
On/off operation via push-button switch. Manual reset function interference.
Volt free auxiliary contact for connection of failure indication alarm.
400 V, 3~, 50/60 Hz, applicable from 80 V
Nominal current 0.1 to 25 A
Protection to IP 55 Weight approx. 0.5 kg
Dimensions mm W 80 x H 140 x D 95
Wiring diagram no. SS-518

For pole changing 3 ph. fans with separate windings and thermal contacts

Motor full protection switch M 2
Switching and full protection unit in light grey polymer casing with control lamp for surface mounting.

Type M 2 Ref. no. 1292
If the thermal contact opens the motor disconnects from the supply. Restarting after interference via “0“ position on the switch.

Voltage 400 V, 50/60 Hz
Power AC 3 / 5.5 kW
Nominal current approx. 12 A
Protection to IP 55 Weight approx. 1.0 kg
Dimensions mm W 170 x H 135 x D 115
Wiring diagram no. SS-142

For pole changing 3 ph. fans with Dahlander windings and thermal contacts

Motor full protection switch M 3
Design and functions as M 2.

Type M 3 Ref. no. 1293
As M 2, but suitable for pole changing 3 ph. fans with Dahlander windings and built-in thermal contacts.
Dimensions mm W 170 x H 135 x D 135
Wiring diagram no. SS-143

For two speed 3 ph. fans with Y/Δ switching and thermal contacts

Motor full protection switch M 4
Design and function as M 3.

Type M 4 Ref. no. 1571
As M 3, but suitable for two speed 3 ph. fans with Y/Δ switching and built-in thermal contacts.
Wiring diagram no. SS-144

For 3 ph. fans with built-in positive temperature coefficient thermistors (PTC temperature sensors) for thermal motor protection. Specified for use in speed controlled, explosion proof fans.

Motor full protection switch MSA
Tripping unit with manual reset for 1 to 6, PTC thermistors wired in series.

If the nominal response temperature in PTC thermistors reaches a set limit the built-in relay disconnects the motor. The fault is indicated by a light emitting diode. Restarting via pressing the “Reset” button or an external switch. Casing made of polymer, suitable for fuse board installation on support rail according to DIN EN 60715.

Type MSA Ref. no. 1289
For thermal protection of electric motors (even explosion-proof electric motors) according to Directive 2014/34/EU (ATEX) with integrated PTC temperature sensors according to DIN 44081 and DIN 44082.

Voltage 230 V ± 15 %, 50/60 Hz
3 phase operation via contactor
Current at 230 V 3 A AC 15
Connection options 1 to 6 PTC thermistors in series
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 to IP 20
Weight approx. 0.2 kg
Dimensions mm W 35 x H 90 x D 58
Wiring diagram no. SS-325.1

■ **Electronic speed controller for stepless speed control of single phase fans**

☐ Multiple, different fans can be operated with a controller up to the full load capacity. A reserve of 10% must be considered when calculating.

☐ The minimum output voltage can be adjusted to motor characteristics via potentiometer. Values must not fall below the lower limit for liquid motor start-up!

☐ Overload protection from built-in fine wire fuse.

☐ Additional connection of indicator lights or shutter possible via unregulated output.

☐ Corresponds to EMC guidelines, DIN EN 50370, DIN EN 61000 / VDE 0838, DIN EN 55014, DIN EN 60669.

■ **Version ESU 1 and ESU 3 A HELIOS innovation**

☐ Both types are compatible with the standard light switch programmes of many manufacturers.
Thus, the speed controller can be integrated in the existing switch programme on-site. Colour matching is also not a problem. Frame, central insert and rotary knob are taken from the "dimmer programme" of the switch series and connected.

☐ Standard delivery includes: Controller insert, flush mounted cover plate and rotary knob made from white polymer.

☐ Operating display through circumferential light ring on rotary knob.

■ **Surface mounted models**

– Attractive, totally closed casing of polymer.
– ESA 1 and ESA 3 with illuminated control knob.

■ **Important note**

☐ Only motors which are suitable for speed control via electronic control should be used.

■ **Electronic speed controllers** which operate on the phase control principle, can create humming noises which can be considered disturbing in the lower speed/voltage range. Silent transformer controllers should be used for noise-critical applications.

For surface mounting 230 V / 3 ph.

Type ESU 1 Ref. no. 0236
Max. load 1 A

Type ESU 3 Ref. no. 0237
Max. load 2.5 A (T 40 E)
White polymer casing. Installation Operation display via illuminated ring.

Minimum current	0.15 A
Protection to (installed)	IP 30
Wiring diagram no.	SS-556.1
Dimensions mm	W 80 x H 80 x D 21 protr.

Type ESU 5 Ref. no. 1296
Max. load 5 A (T 40 E)
(for install. in lightweight walls 4 A)
White polymer casing. The double-box required for flush mounting is included in the scope of delivery.

Minimum current	0.2 A
Protection to	IP 20
Wiring diagram no.	SS-165
Dimensions mm	W 81 x H 152 x D 40

For surface mounting 230 V / 1 ph.

Type ESA 1 Ref. no. 0238
Max. load 1 A

Type ESA 3 Ref. no. 0239
Max. load 2.5 A (T 40 E)
White polymer casing.
Operation display via illuminated ring in control knob.

Minimum current	0.15 A
Protection to	IP 40
Wiring diagram no.	SS-556.1
Dimensions mm	W 80 x H 80 x D 65

Type ESA 5 Ref. no. 1299
Max. load 5 A (T 40 E)
Light grey polymer casing, facia plate anodied aluminium.

Minimum current	0.2 A
Protection to	IP 44
Wiring diagram no.	SS-165
Dimensions mm	W 84 x H 170 x D 40

For surface mounting, with reversing switch 230 V / 1 ph.
Suitable for fan models: HVR 150/2 RE, REW 150 and 200, range HV. H 200/4 and 250/4 and window fans GX.

Type BSX Ref. no. 0240
Max. load 1 A (T 40 E)
Surface mounted speed controller with reversing switch for reversible fans (intake/extract) in a white polymer casing. Only suitable for fans, that are reversible via reversing switch.

Minimum current	0.15 A
Protection to	IP 40
Wiring diagram no.	SS-480.2
Dimensions mm	W 80 x H 80 x D 65

For fuse board installation 230 V / 1 ph.

Type ESE 2.5 Ref. no. 1302
Max. load 2.5 A (T 40 E)
For installation in fuse boards (35 mm standard buzzbar profile and for 68 mm built-in range).

Minimum current	0.1 A
Protection to	IP 20
Wiring diagram no.	SS-376
Dimensions mm	W 50 x H 85 x D 60 (there from 10 mm protruding)

■ **Five step transformer speed controller for speed controlling of 1 ph. alternating current fans**

☐ Suitable for power control of all speed controllable 1 ph. alternating current fans.

☐ Four secondary voltages stepped in 80 / 100 / 130 / 170 and 230 V (full mains voltage) allow to control 5 fan speeds.

☐ A number of different fans can be connected to one controller up to its nominal load.

■ **Advantages**
- Good cost effectiveness.
- Reliable.
- Low loss and low noise fan operation.
- MWS-, TSW- (from the model TSW 1.5) and STSSW models with full power output for connection with the signal lamp or shutter.

■ **Design for surface mounting units**
- Robust ISO casing, light grey, made of impact resistant polymer. Protection to IP 54.
- Built-in operating switch for five speed steps and on/off function.
- Operation display via control lamp.
- Fully impregnated transformers T 40 E.
- Conforms to DIN VDE 0550.
- Max. permitted ambient temperature +40 °C.
- Delivered ready for installation, simple connection to terminal block.

■ **Design for built-in transformers**
- Built-up terminal block for five voltage outputs.
- Attached fixing brackets for simple fixture.
- Fully impregnated transformers T 40 E.

☐ **Accessories**
Six step cam switch, model STSSW for switch board installation, with front mounting plate.

For surface mounting
Max. load 0.35 A
1 ph. alternating current, 230 V

Mini speed controller TSW 0.3

Compact five step speed controller with on/off switch for surface mounting in dry rooms. Polymer casing, white.

Type TSW 0.3	Ref. no. 3608
max. load 0.35 A	
Protection to	IP 20
Dimensions mm	W 160 x H 85 x D 60
Wiring diagram no.	SS-496.1

For surface mounting
1 ph. alternating current, 230 V

Transformer speed contr. TSW

For one or more alternating current fans.

Type	Ref. no.	I max. A	Dim. in mm B	H	T
TSW 1.5[1]	1495	1.5	154	200	79
TSW 3.0[1]	1496	3.0	154	200	148
TSW 5.0[2]	1497	5.0	200	254	167
TSW 7.5[2]	1596	7.5	200	254	167
TSW 10[2]	1498	10.0	200	254	167

Wiring diagram no. [1] SS-960 [2] SS-437.1

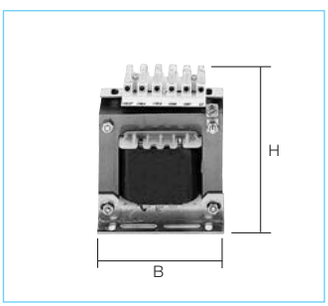
For switchboard installation
1 ph. alternating current, 230 V

Speed control transformer TSSW

Built-in transformer with rail and terminals for 5 output voltages.

Type	Ref. no.	I max. A	Dim. in mm B	H	T
TSSW 1.5	6520	1.5	78	90	78
TSSW 3	6521	3.0	84	94	92
TSSW 5	6522	5.0	105	111	87
TSSW 10	6523	10.0	120	122	112

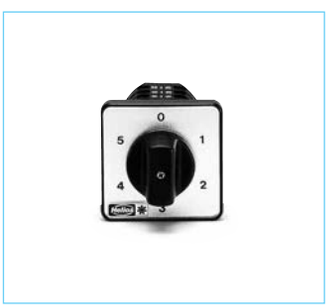
Wiring diagram no. SS-268



Five step operating switch STSSW

Accessory for control transformer TSSW for 230 V, 1 ph. fans. For switchboard installation with front fixing and front panel. Connections are deepened.

Type STSSW	Ref. no. 0234
Voltage	AC 3, 230 V
max. load	2,2 kW
Installation depth	70 mm, ☐ 46 mm
Wiring diagram no.	SS-548



With motor full protection facility
1 ph. alternating current, 230 V
For surface mounting

Transformer speed controller MWS with motor full protection facility

Five step speed controller with integrated tripping unit for 230 V, 1 ph. fans.
To connect thermal contacts wired to the terminal box. A number of fans can be controlled up to the nominal load.
If a thermal contact trips all fans will be disconnected.
Step switch and control lamp included. Restarting via “0” position after interference or power cut off.

Type	Ref. no.	I max. A	Casing IP 54 made of	Dimensions in mm W	H	D	Weight kg
MWS 1.5	1947	1.5	Polymer	200	254	98	3.0
MWS 3	1948	3.0	Polymer	200	254	98	4.0
MWS 5	1949	5.0	Polymer	200	254	167	5,3
MWS 7.5	1950	7.5	Polymer	236	316	188	10.0
MWS 10	1946	10.0	Polymer	236	316	188	13.5

Connection according to wiring diagram no. SS-440.4

■ **Five step transformer speed controller for speed controlling of 3 ph. alternating current fans**

☐ Suitable for speed control of all speed controllable 3 ph. alternating current fans, for Y/Δ reversible switching models in higher steps.

☐ Four secondary voltages stepped in 80 / (115)* / 140 / 200 / 280 and 400 V (full mains voltage) allow to control 5 fan speeds.
* On TSD internally adjustable for voltage controllable, explosion proof in-duct and roof fans.

☐ A number of different fans can be connected to one controller up to its nominal load.

■ **Advantages**
- Good cost effectiveness.
- Reliable.
- Low loss and low noise fan operation.
- RDS-, TSD- and STSSD models with full power output for connection with the signal lamp or shutter.

■ **Design for surface mounting units**
- Robust ISO casing, light grey, made of impact resistant polymer. Protection to IP 54. Models from RDS 7 and TSD 5.5 made of steel, double painted, protection to IP 65.
- Built-in operating switch for five speed steps and on/off function.
- Operation display via control lamp.
- Fully impregnated transformers T 40 E, protection class II.
- Conforms to DIN VDE 0550.
- Max. permitted ambient temperature +40 °C.
- Delivered ready for installation, simple connection to terminal block.

■ **Design for built-in transformers**
- Two transformers in V switching ensure the functions as described above.
- Built-up terminal block for five voltage outputs.
- Attached fixing brackets for simple fixture.
- Fully impregnated transformers T 40 E.
- Contactors and external wiring to be supplied onsite.

☐ **Accessories**
Five step switch STSSD for fuse board installation, with front board.

For surface mounting
3 ph. alternating current, 400 V

Speed control transformer TSD

As TSW, but for 3 phase fans.

Type	Ref. no.	I max. A	Dim. in mm W	H	D
TSD 0.8	1500	0.8	200	254	167
TSD 1.5	1501	1.5	200	254	167
TSD 3.0	1502	3.0	200	254	167
TSD 5.5	1503	5.5	300	300	150
TSD 7.0	1504	7.0	300	300	150
TSD 11.0	1513	11.0	300	400	200

Wiring diagram no. SS-436.2

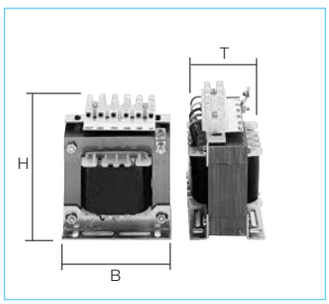
For switchboard installation
3 ph. alternating current, 400 V

Speed control transformer TSSD

As TSSW, but two transformers without casing, in V switching.

Type	Ref. no.	I max. A	Dim. in mm W	H	D
TSSD 1	6516	1.0	84	95	80
TSSD 2	6517	2.0	96	104	92
TSSD 4	6518	4.0	105	112	98
TSSD 7	6519	7.0	120	122	134
TSSD 11	6515	11.0	150	146	158

Wiring diagram no. SS-267.1



5 step operating switch STSSD

Suitable for control of transformer TSSD for 400 V, 3 ph. fans. For switchboard installation with front fixing and front panel. Connections are deepened.

Type STSSD	Ref. no. 0235
Voltage	AC 3, 400 V
max. load	5.5 kW
Installation depth	110 mm, □ 46 mm
Wiring diagram no.	SS-549.1

With motor full protection facility
3 ph. alternating current, 400 V
For surface mounting

Transformer speed controller RDS with motor full protection facility

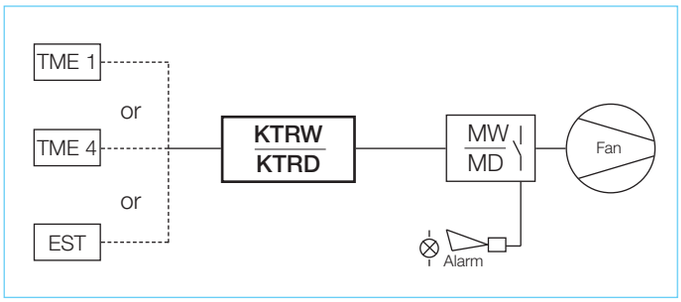
Five step speed controller with integrated thermal contact tripping unit for 400 V, 3 ph. alternating current fans.
To connect thermal contacts wired to the terminal box. A number of fans can be controlled up to the nominal load.
If a thermal contact trips all fans will be disconnected.
Step switch and control lamp included. Restarting via “0” position after interference or power cut off.

Type	Ref. no.	I max. A	Casing IP 54 made from	Dimensions in mm W	H	D	Weight kg
RDS 1	1314	1.0	Polymer	236	316	128	6.0
RDS 2	1315	2.0	Polymer	236	316	128	9,7
RDS 4	1316	4.0	Polymer	236	316	128	10.5
RDS 7	1578	7.0	Steel	300	300	150	21.0
RDS 11	1332	11.0	Steel	300	400	200	26.0

Designed to comply with VDE 0550, fully impregnated transformers in V switching.
Max. permitted ambient temperature +40 °C. Wiring diagram no. SS-139.

■ Five-step climate transformer controller KTRW and KTRD

☐ Trouble-free, low-loss transformer controller for temperature-dependent fan control including full motor protection.
☐ Recommended for noise critical applications.
☐ Control via an electronic thermostat type TME 4 or EST to be ordered separately as accessory.



For single phase fans
1 ph., 230 V, 50/60 Hz

Climate transformer controller KTRW 230 V

For automatic control of one or several 1 ph. fans in relation to the room temperature.
Five-step automatic operation, whereby each step can also be switched manually. Integrated full motor protection by connecting the thermal contacts on the motor.
Suitable for stable ventilation.
Light grey polymer casing.

Type	Ref. no.	I max. A	Dim. in mm B	H	T
KTRW 3	1662	3	236	316	128

Voltage	230 V~, 50/60 Hz
Protection class	IP 54
Max. ambient temperature	+40 °C
Wiring diagram no.	SS-674

For three phase fans
3 ph., 400 V, 50/60 Hz

Climate transformer controller KTRD 400 V

For automatic control of five step 3 ph. fans in relation to the room temperature. The built-in operating switch also allows manual control. Integrated full motor protection by connecting the thermal contacts on the motor.
Robust casing made of steel, dual coating in light grey.

Type	Ref. no.	I max. A	Dim. in mm B	H	T
KTRD 3	1650	3	300	500	200
KTRD 5.5	1651	5.5	300	500	200
KTRD 10	1652	10	400	500	200
KTRD 15	1653	15	400	500	200

Voltage	400 V, 3~, 50/60 Hz
Protection class	IP 54
Max. ambient temperature	+40 °C
Wiring diagram no.	SS-676.1

■ Accessories for KTRW and KTRD

Four-step electronic thermostat

For temperature-dependent control of a KTR transformer controller or for on/off operation of up to four single phase fans.
(Supply voltage 230 V required.

Electronic four step thermostat with a switching sequence of 1 K for adjusted setpoint. Enables five step temperature-controlled fan operation in combination with the climate controller KTR in relation to the pre-set setpoint and actual temperatures.
Robust casing made of impact-resistant, light grey polymer.
Cable entry at the bottom of the casing in PG 11.

Type TME 4	Ref. no. 1335
Voltage	230 V~, 50/60 Hz
Max. continuous current (AC 3)	6 A
Temperature range	0 to +50 °C
Switching precision	+/- 0.8 K at 20 °C
Switching distance	1 K
Protection category	II
Protection class	IP 54
Dim. mm	W 120 x H 80 x D 75
Weight approx.	0.4 kg
Wiring diagram no.	SS-702

Electronic control thermostat EST

with various control variables to control a climate transformer controller KTR.

Control functions
- Temperature dependent, five-step fan control via KTR units. Limitation of control range possible by selecting a minimum and maximum air rate (voltage). Minimum air rate can be switched on and off.
- Ventilation damper control (analogue 0...10 V)
- Control of a frequency inverter (analogue 0...10 V)
- Heating thermostat
- Temperature monitor (insufficient and excessive temperatures with outside air temperature compensation).
- Adjustments made via a dirt-resistant membrane keypad.

☐ **Displays**
- Displays for operation mode, room temperature, outside temperature and adjusted setpoint temperature.
- Signal LED for soft-closing mechanism.
- Alarm signal LED for insufficient, excessive temp., system error.
- Scaled LED display (0–100 %) for fan speed and opening of shutter.

☐ **Temperature sensor**
An outside and an inside temperature sensors are included as standard. Casing protected to IP 55, installation up to 100 m distance from controller, connection by means of NYM 3 x 1.5 mm².

☐ **Possible settings**
- Stepless specification of setpoint temp. and control range.
- Min. / max. power (speed) limit.
- Min. air flow vol. can be on/off.
- Soft-closing mechanism on/off.
- Stepless temperature specification for activation of heating.
- Stepless specification for alarm signal for low and high temperatures.
- Min. and max. shutter opening.

Type EST	Ref. no. 1355
Voltage	230 V, 1~, 50/60 Hz
Protection class	IP 54
Transf. connection	230 V AC / max. 10 A
Temperature range (adjustable)	0 – 40 °C
Control range (adjustable)	2 – 12 K
Alarm low temp. (adjustable)	-20 – 0 K
Alarm high temp. (adjustable)	0 – 25 K
Heating (adjustable)	-15 – +5 K
Outside temp. compensation	0 – 20 K
Min. air rate approx.	0 – 40 %
Max. air rate approx.	60 – 100 %
Disable minimum air speed	-25 – 0 K
Dim. mm	W 260 x H 215 x D 120
Weight approx.	2.0 kg
Wiring diagram no.	SS-357.3

■ **Casing**
Polymer, light grey with transparent hinged lid, for surface installation.

ESD

ETW

With these speed controllers, Helios offers a simple solution by connecting the fans and central building management systems specified by the customer!

Common features

- ☐ Control via analogue 0–10 V on-site input signal, electronic control system EUR 6 C or other controllers.
- ☐ A number of different fans can be controlled by one controller up to its maximum load.
- ☐ Several controllers can be controlled in parallel by a central building management system that allows the ventilation to be distributed to several fans or fan units and therefore in several circuits.

Accessories for both series

An universal control unit with 10 V output can be used if the fans are not controlled by a central building management system.

Type EUR 6 C Ref. no. 1321
See electronic control system page for description.

Specification ESD

Convenient, stepless, electronic speed controller for 3 ph. fans, which can be controlled via phase control through voltage reduction (except KVD Ex types). Latest technology through use of micro-controllers.

Possible settings / Display

- ☐ On/off and stepless speed selection via rotary potentiometer.
- ☐ 0–10 V input. Thus, remote control possible with on-site rotary potentiometer (22 kOhm).
- ☐ 3 ph. phase monitoring, protection against phase failure.
- ☐ Smooth start-up function.
- ☐ Automatic minimum initial voltage 80 V.
- ☐ Fulfils EMC requirements class B, shielded cable not required between unit and motor.
- ☐ LEDs as status and fault display.
- ☐ Integrated protection for electronics against overload.
- ☐ Full motor protection by monitoring the thermal contacts of motors.

Casing

- ☐ Polymer casing, light grey with wide cooling element.
- ☐ Can be used directly even in dirty areas (e.g. kitchen) due to protection class IP 65.

Specification ETW

Seven-step electronic transformer control unit for speed control of 1 ph. fans. Robust and low-loss power units for ventilation systems controlled by central building management systems.

Possible settings / Display

- ☐ Built-in operating switch allows on, off and direct supply switching.
- ☐ Power step rotary switch allows manual operation of steps (1–7) or automatic operation. In “auto” mode, the transformer control unit is automatically controlled by the on-site ventilation control.
- ☐ The operating step is displayed by a LED.
- ☐ The built-in minimum air volume switch can be totally switched off from the ventilation controller via the analogue input.

Overload protection

ETW types are protected against permanent overload by a built-in temperature switch. When the overload protection trips, the unit switches automatically to direct supply. After cooling down, the unit switches back to normal operation. The interference can or should be signalised via the output to an on-site alarm system.

Casing

- ☐ Polymer casing, light grey.

Dimensions

Type	Dim. in mm H	W	D	Weight kg
ETW 5	315	240	210	8
ETW 10	315	240	210	10

Model range

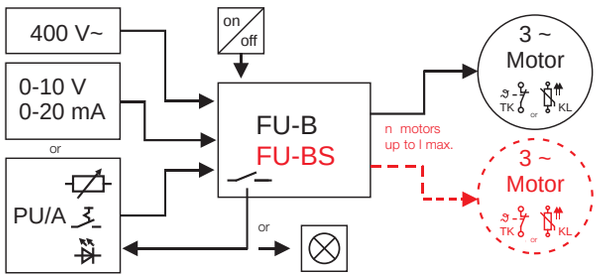
Type	Ref. no.	Output current	Power consumption	Wiring diagram	Dimensions H	W	D	Cooling element width	Weight	Protection to
		A	kW	No.	mm	mm	mm	mm	kg	IP
For three phase fans, 3~, 400 V, 50/60 Hz										
ESD 5	0501	5.0	2.2	831	160	115	165	23	1.5	65
ESD 11.5	0502	11.5	5.5	831	160	160	165	68	1.7	65

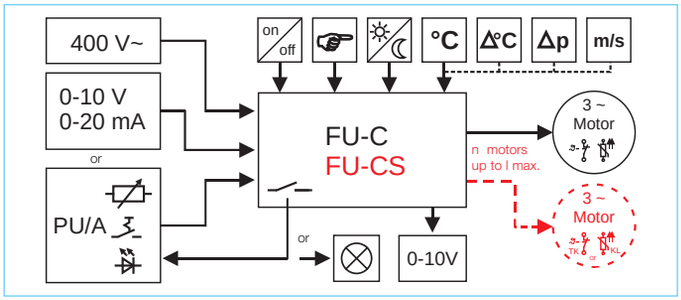
Model range

Type	Ref. no.	Output current	Output voltages Step ❶	❷	❸	❹	❺	❻	❼	Wiring diagram	Protection to
		A	V							No.	IP
For single phase fans, 1~, 230 V, 50/60 Hz											
ETW 5	1263	5.0	80	95	115	135	165	195	230	683	54
ETW 10	1264	10.0	80	95	115	135	165	195	230	683	54

FU-B and FU-BS

FU-C and FU-CS





Specification
FU-B “Basic”

- ☐ Frequency inverter FU-B in basic design without sine filter to control the speed of a single fan.
- ☐ Speed specified by a 0-10 V control signal (e.g. potentiometer PU/PA, accessories).
- ☐ Maximum line length between FU-B and fan 10 m with shielded lines.
- ☐ The fan must be designed for operation with a frequency inverter (suitable EMC fan / motor, possibly with a special design).
- ☐ The FU-B is fixed to its nominal current.
- ☐ For FU-B operation (without sine filter), the suitability for the frequency inverter must be stated when ordering the fan.

Specification
FU-BS “Basic-Sine”

- ☐ Frequency inverter FU-BS in basic design with built-in sine filter effective on all poles.
- ☐ To control the speed of one or more fans. The permitted number of fans is calculated from the maximum FU current.
- ☐ The speed is specified by a 0-10 V control signal (e.g. potentiometer PU/PA, accessories).
- ☐ Line lengths between FU-BS and fan greater than 10 m are possible.
- ☐ No additional EMC shielding of the electrical lines required. The fans, including motor, do not require any specific EMC precautions to operate the frequency inverter.
- ☐ The FU-BS is fixed to its nominal current.
- ☐ When using the frequency inverter with a built-in sine filter, conventional standard fans / motors can be used.

Specification
FU-C “Comfort”

- ☐ Frequency inverter FU-C in comfort design without sine filter to control the speed of a single fan.
- ☐ Includes display and three buttons to set the fan and control parameters.
- ☐ Parameters can be set and unit can be controlled via modbus.
- ☐ With built-in, fully-fledged control system for temperature, pressure and air speed. The required sensors LDF 500, LGF 10, LT.. can be delivered as accessories (see page EUR 6 C).
- ☐ Speed specified by a 0-10 V control signal (e.g. potentiometer PU/PA, accessories) or direct entry on the display.
- ☐ Line length and suitability of the fan for operation with frequency inverter, see FU-B description.
- ☐ For FU-C operation (without sine filter), the suitability for the frequency inverter must be stated when ordering the fan.

Specification
FU-CS “Comfort-Sine”

- ☐ Frequency inverter FU-CS in comfort design with built-in sine filter effective on all poles.
- ☐ To control the speed of one or more fans. The permitted number of fans is calculated from the maximum FU current.
- ☐ Includes display and three buttons to set the fan and control parameters.
- ☐ Parameters can be set and unit can be controlled via modbus.
- ☐ With built-in, fully-fledged control system for temperature, pressure and air speed. The required sensors LDF 500, LGF 10, LT.. can be delivered as accessories (see page EUR 6 C).
- ☐ See FU-BS description for speed specification, line length, EMC precautions.
- ☐ When using the frequency inverter with a built-in sine filter, conventional standard fans / motors can be used.

	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 closing contact 250 V / 2 A ind.
Power supply for modules	1 x 10 V DC, 10 mA, 1 x 24 V DC, 70 mA
Motor temp. monitoring	Thermal contact or PTC thermistor

	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 parametrisable
Analogue output	1 x 0-10 V DC, 10 mA
Relay output	2 x changeover contact 250 V / 2 A ind.
Power supply for modules	1 x 10 V DC, 10 mA (in analogue output), 1 x 24 V DC, 70 mA
Motor temp. monitoring	Thermal contact or PTC thermistor

■ General properties

- ☐ Inverter specially designed for HLK use.
- ☐ Saves energy thanks to stepless speed adjustments.
- ☐ Specially tailored to the fan motor, i.e. minimal energy consumption and noise in partial load operations.
- ☐ Use of zero-maintenance alternating current asynchronous motors with all construction designs and powers.
- ☐ No power restriction when using standard motors.
- ☐ Operating notification via potential-free contact.
- ☐ Potentiometer voltage supply: E.g. 10 V DC / 10 mA for potentiometer with 10 kOhm
- ☐ Analogue input for speed specification (0-10 V, 0(4)-20 mA).
- ☐ Short-circ.-proof and grounded.
- ☐ Built-in electronic motor protection via thermal contacts or PTC thermistors.
- ☐ Electrically isolated control unit.
- ☐ Overvoltage protection
- ☐ Also suitable for installation into a control cabinet.
- ☐ At amb. temp. of 40 °C – 55 °C, consider a loss of performance.

■ Type-based properties

Basic types:

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

Sine types:

- ☐ Includes internal sine filter effective on all poles.
- ☐ For the simple, subsequent enhancement of existing ventilation systems.

Comfort types:

- ☐ Free specification of the acceleration and delay times to reduce noise on start-up.
- ☐ Additional voltage supply: 24 V DC / 120 mA for wiring digital inputs and additional external components.
- ☐ Easy to adjust and control values using the display
- ☐ Extensive diagnostic display in case of an error.
- ☐ Speed specification directly on the device via the display.
- ☐ Serial interface RS 485 / Modbus-RTU.
- ☐ Adjustment of performance according to needs and configurable parameters.

■ Information

☐ **Internal sine filter effective on all poles** (types FU-..S)
Filters the voltages between the individual phases and string voltage between phase and protective conductor. Thus the output voltage of the frequency inverter is purely sinusoidal and matches the quality of a standard mains voltage.

☐ **Ground fault circuit interrupters** (all types)
When using the frequency inverter in an environment that requires a ground fault circuit interrupter, this must match type B+, 300 mA sensitive to universal currents.

☐ **EMC**
All FU types comply with the EMC Dir. 2004/108/EG and the applicable standards such as DIN EN 60335-1 and DIN EN 550011. Radio interference filters are built in to ensure cl. B (res. area). For FU-B and FU-C, the line between the fan and frequency inverter must be shielded and must be no more than 10 m long. Motor supply/temp. monitoring lines laid separately.

☐ **Design motor current / frequency**
When selecting the right frequency inverter, the maximum motor current is to be used as a starting point. When operating multiple fans, the sum of the individual currents is to be used
To prevent faults and failures, a 10% reserve should be included in the plans. A maximum frequency of 50 Hz must not be exceeded when controlling the speed of a series fan, as otherwise the motor will be overloaded and broken.
A higher-frequency operation is only possible upon request.

☐ **Motor protection**
Maximum motor protection is achieved through monitoring (thermal contacts / PTC thermistors); a maximum of 6 PTC thermistors can be connected to the device in series. It is possible to increase the number of PTC thermistors by using monitoring devices (type MSA, accessories).

Type	Ref. no.	Max. power Output current	Max. power Motor	Cable cross section from mains to motor cable	Wiring diagram	Dimensions Height	Dimensions Width	Dimensions Depth	Weight net approx.	
		A	kW	mm²	No.	mm	mm	mm	kg	
Basic design without sine filter for 3 ph. AC fans, 400 V, 50/60 Hz, protection to IP 54										
FU-B 3.6	5453	3.6	1.5	4 x 1.5[1)]	1020	284	240	115	2.6	
FU-B 5.0	5454	5.0	2.2	4 x 1.5[1)]	1020	302	250	196	4.6	
FU-B 7.0	5455	7.0	3.0	4 x 1.5[1)]	1020	302	250	196	4.7	
FU-B 8.5	5456	8.5	4.0	4 x 1.5[1)]	1020	302	250	196	5.6	
FU-B 12	5457	12.0	5.5	4 x 1.5[1)]	1020	302	250	196	5.7	
FU-B 17	5458	17.0	7.5	4 x 1.5[1)]	1020	302	250	196	5.9	
Basic design with all-pole sine filter for 3 ph. AC fans, 400 V, 50/60 Hz, protection to IP 54										
FU-BS 2.5	5459	2.5	[2)]	4 x 1.5	1028	284	240	115	2.7	
FU-BS 5.0	5460	5.0	[2)]	4 x 1.5	1028	302	250	196	5.2	
FU-BS 8.0	5461	8.0	[2)]	4 x 1.5	1028	302	250	196	6.3	
FU-BS 10	5462	10.0	[2)]	4 x 1.5	1028	302	250	196	6.8	
FU-BS 14	5463	14.0	[2)]	4 x 1.5	1028	302	250	196	6.9	
Comfort design without sine filter for 3 ph. AC fans, 400 V, 50/60 Hz, protection to IP 54										
FU-C 4.2	5865	4.2	1.5	4 x 1.5[1)]	1030	302	250	195.5	6.4	
FU-C 8.5	5868	8.5	4.0	4 x 1.5[1)]	1030	302	250	195.5	7.3	
FU-C 12	5869	12.0	5.5	4 x 1.5[1)]	1030	302	250	195.5	7.5	
FU-C 17	5870	17.0	7.5	4 x 2.5[1)]	1030	302	250	195.5	7.5	
FU-C 25	5464	25.0	11	5 x 4.0[1)]	1030	355	280	239	12.5	
FU-C 32	5465	32.0	15	4 x 6.0[1)]	1030	524	386	283	24.5	
FU-C 39	5466	39.0	18.5	4 x 10.0[1)]	1030	524	386	283	26.3	
FU-C 46	5467	46.0	22	4 x 10.0[1)]	1030	524	386	283	26.3	
FU-C 62	5468	62.0	30	4 x 16.0[1)]	1030	524	386	283	26.3	
Comfort design with all-pole sine filter for 3 ph. AC fans, 400 V, 50/60 Hz, protection to IP 54										
FU-CS 2.5	5871	2.5	[2)]	4 x 1.5	1032	284	240	115	3.3	
FU-CS 8	5873	8.0	[2)]	4 x 1.5	1032	302	250	195.5	7.9	
FU-CS 10	5874	10.0	[2)]	4 x 1.5	1032	302	250	195.5	8.2	
FU-CS 14	5875	14.0	[2)]	4 x 1.5	1032	302	250	195.5	8.7	
FU-CS 18	5469	18.0	[2)]	4 x 2.5	1032	302	250	196	9.1	
FU-CS 22	5470	22.0	[2)]	5 x 4.0	1032	355	280	239	14.5	
FU-CS 32	5471	32.0	[2)]	4 x 6.0	1032	525	386	283	29.6	
FU-CS 40	5472	40.0	[2)]	4 x 10.0	1032	525	386	283	29.6	
FU-CS 50	5473	50.0	[2)]	4 x 16.0	1032	525	386	283	32.8	

[1)] max. 10 m shielded, motor supply and motor protection laid separately

[2)] The max. current for all connected fans is decisive for design

■ Accessories for all FU types

PU 24 / PA 24 No. 1736/1737
Speed potentiometer, flush / surface, LED 24 V, Poti 10 V / 1.3-10 V

SU-3 10 / SA-3 10 No. 4266/4267
Three-step speed switch, flush / surface, 10 V / 1.7-10 V

Type WSUP Ref. no. 9990
Week timer with LCD-display, potential-free contact

Type WSUP-S Ref. no. 9577
Week timer potential-free contact, for DIN rails

Type EDR Ref. no. 1437
Electronic differential pressure controller 0-1000 Pa, 10-24 V / 0-10 V

Type ETR Ref. no. 1438
Electronic temperature controller (sensor see accessory ETR)

Type EUR EC Ref. no. 1347
Electronic universal controller (sensor see accessory EUR EC)

Type MSA Ref. no. 1289
Full motor protection for PTC thermistor

■ 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 class	IP 54
Ambient temperature	0 to +40 °C (–20 °C not currentless)

■ Universal controller EUR 6 C Electronic control unit with power supply unit on the phase control principle.

☐ Area of application

For control of central ventilation systems or for stepless control of one or more speed controllable 1 ph. fans.
In domestic, commercial, industrial and agricultural applications.

☐ Control functions

Simple and quick start-up of parameters via integrated “startup wizard”. Depending on the connected sensor a control can be carried out according to following control variables:

- **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 temperature control** (required accessory temperature sensor LTR 40 or LTK 40)
- **Differential pressure** (required accessory differential air pressure sensor LDF 500)
- **Differential pressure with outside air temperature compensation** (required accessory differential air pressure and temperature sensor LDF 500 and LTR 40 or LTK 40). Ideal for central ventilation systems according to DIN 18017 in residential construction.
- **Air velocity** (required accessory air velocity sensor LGF 10)

The required sensor is to be ordered separately as an accessory. The control ranges are freely adjustable within the sensor’s range.

The aligned output voltage according to nominal value and current value is between 0 % (35 V) to 100 % (approx. 80 V – 230 V). The specification of minimum and maximum values is possible.

- Main switch with positions:
  “0” = Controller off
  “I” = Automatic operation
  “230 V” = uncontrolled direct supply.

Inputs and outputs:

Outputs:
- 1 x motor connection based on phase control principle
- 1 x analogue output 0–10 V for control of e.g. frequency inverter, shutter, EC motor.
- 2 x potential-free relay, programmable, alarm, heating or status signals

EUR 6 C

Inputs:
- 2 x sensor inputs, programmable on the respective necessary sensor type
- Connection of thermal contacts for motor protection

The whole system stops when a thermal contact TK trips. It must be restarted manually once the motor has cooled down.
- 2 x digital inputs, programmable ro release, external interference, limit on/off, switching night reduction, internal/external, control/manual operation, reset, max. speed on/off

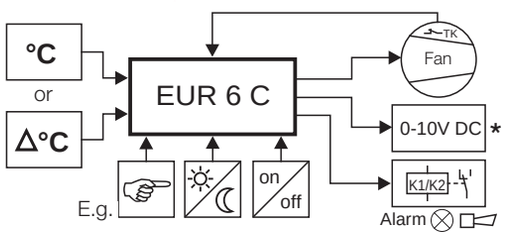
Possible settings

- Stepless selection of setpoints and control range
- Min./max. power (speed) limit
- On/off switching of minimum air flow volume
- Switching e.g. heating via programmable relay
- Stepless selection for alarm indication at low and high temperature, output on display or additionally on relay
- Min. and max. shutter opening
- Reverse control functions
- Continuous control of ventilation dampers
- Adjustments made via a dirt-resistant membrane keypad.

☐ Display

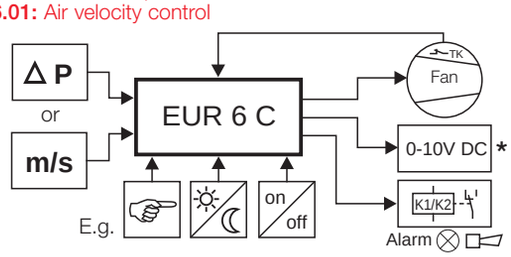
- Multi-function LC display
- Numerical setpoint and actual value display with scale
- Symbols (alarm, heating, release)
- Bar graph/level indicator
- Text display for menu, status and fault indications

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



* e.g. for shutter, frequency inverter

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



* e.g. for shutter, frequency inverter

Type EUR 6 C	Ref. no. 1321
Voltage	230 V~, 50/60 Hz
max. current	6 A
Required minimum current	0.2 A
Controlled output voltage	0 – 100 %
Control range temperature	0 – 40 °C
Control range pressure	0 – 500 Pa
Control range velocity	0 – 10 m/s
Permitted ambient temp.	0 to +40 °C
Protection class	IP 54
Casing	surface mounted installation, polymer, light grey
Dim. mm	W 223 x H 200 x D 131
Weight	approx. 1.4 kg
Wiring diagram no.	SS-911

☐ Note

Electronic speed controllers may produce motor humming. Transformer controllers are to be used for noise critical applications.

■ Necessary accessories

Type LDF 500 Ref. no. 1322
Differential air pressure sensor
Range 0 – 500 Pa

Type LGF 10 Ref. no. 1325
Air velocity sensor
Range 0 – 10 m/s

Type LTA 40 Ref. no. 1336
Temperature sensor for outside
Range –20 to +60 °C
Protection class IP 54

Type LTK 40 Ref. no. 1324
Temperature sensor for duct installation
Range 0 to +40 °C

Type LTR 40 Ref. no. 1323
Room temperature sensor
Range 0.5 to +40 °C

EUR EC

■ Universal control system EUR EC
Electronic control unit with 0–10 V DC control output.

☐ Area of application
For stepless control or regulation of single and three phase EC fans with a setpoint input of 0–10 V DC.

☐ Control functions
Simple and quick start-up of parameters via integrated “startup wizard”. Depending on the connected sensor a control can be carried out according to following control variables:
- **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 temperature control** (required accessory temperature sensor LTR 40 or LTK 40)
- **Differential pressure** (required accessory differential air pressure sensor LDF 500)
- **Differential pressure with outside air temperature compensation** (required accessory differential air pressure and temperature sensor LDF 500 and LTR 40 or LTK 40). Ideal for central ventilation systems according to DIN 18017 in residential construction.
- **Air velocity** (required accessory air velocity sensor LGF 10)

The required sensor is to be ordered separately as an accessory. The control ranges are freely adjustable within the sensor’s range.

The aligned output voltage according to nominal value and current value is between 0 % (0 V DC) to 100 % (10 V DC). The specification of minimum and maximum values is possible.

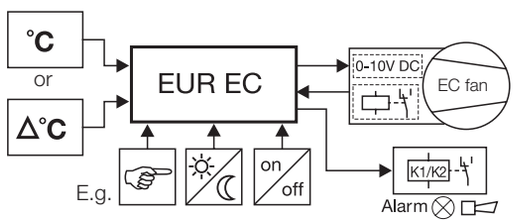
Inputs and outputs:
Outputs:
- 2 x analogue outputs 0–10 V to control e.g. EC motor, frequency inverter, shutter
- 2 x potential-free relay, programmable, alarm, heating or status signals

Inputs:
- 2 x sensor inputs, programmable on the respective necessary sensor type
- 3 x digital inputs, programmable ro release, external interference, limit on/off, switching night reduction, internal/external, control/manual operation, reset, max. speed on/off

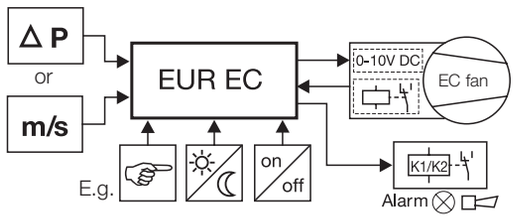
Possible settings
- Stepless selection of setpoints and control range
- Min./max. power (speed) limit
- On/off switching of minimum air flow volume
- Switching e.g. heating via programmable relay
- Stepless selection for alarm indication at low and high temperature, output on display or additionally on relay
- Min. and max. shutter opening
- Reverse control functions
- Continuous control of ventilation dampers
- Adjustments made via a dirt-resistant membrane keypad.

☐ Display
- Multi-function LC display
- Numerical setpoint and actual value display with scale
- Symbols (alarm, heating, release)
- Bar graph/level indicator
- Text display for menu, status and fault indications

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



Type EUR EC	Ref. no. 1347
Voltage	230 V~, 50/60 Hz
Control output	0–10 V / max. 10 mA
Controlled output voltage	0 – 100 %
Control range temperature	0 – 40 °C
Control range pressure	0 – 500 Pa
Control range velocity	0 – 10 m/s
Permitted ambient temp.	0 to +40 °C
Protection class	IP 54
Casing	surface mounted installation, polymer, light grey
Dim. mm	W 223 x H 200 x D 131
Weight	approx. 1.0 kg
Wiring diagram no.	SS-1001

Note
Depending on the fan type to be connected, multiple fans can be connected in parallel to an EUR EC.

■ Necessary accessories

Type LDF 500 Ref. no. 1322
Differential air pressure sensor
Range 0 – 500 Pa

Type LGF 10 Ref. no. 1325
Air velocity sensor
Range 0 – 10 m/s

Type LTA 40 Ref. no. 1336
Temperature sensor for outside
Range –20 to +60 °C
Protection class IP 54

Type LTK 40 Ref. no. 1324
Temperature sensor for duct installation
Range 0 to +40 °C

Type LTR 40 Ref. no. 1323
Room temperature sensor
Range 0.5 to +40 °C

EDR

ETR

Electronic controller for differential pressure or temperature

Area of application
For stepless control of 1 ph. and 3 ph. EC fans or frequency inverters with a setpoint input of 0-10 V DC. If the EC fan or frequency inverter provides a supply voltage of 10-24 V DC/6 mA (safety extra-low voltage), the controller can be directly powered or alternatively via a power supply unit (NG 24, accessories).

Display
- Multi-function LCD display
- Numerical setpoint and actual value display with measurement unit
- Alarm, day/night mode
- Text display for menu, status

Control functions
Simple and quick start-up of parameters using LCD display and three internal input keys. Permanent measurement display on LCD display.
Optional parameterisation as
- **regulator** = 0-10 V analogue output proportional to the measured actual value as control variable for external controls or as
- **controller** = controlled 0-10 V analogue output in relation to the set setpoint value and the measured actual value.

The controlled output voltage between the actual and setpoint value lies between 0 % (0 V DC) and 100 % (10 V DC). The specification of min. and max. values is possible, two setpoint values (e.g. for day/night mode) are also adjustable. Switching by means of week timer (types WSUP, WSUP-S, see accessories).

Differential pressure controller EDR
With firmly 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

Type EDR	Ref. no. 1437
Supply voltage	10-24 V DC, 6 mA
Analogue outputs	0-10 V DC 10 V / 0.3 mA 24 V / 10 mA
Signal input	10-24 V DC / 6 mA Switching setpoint 1/2 (day/night)
Permitted humidity	85 % non-condensing
Protection class	IP 54
Protection category	III (safety extra-low voltage, galvanically isolated)
Permitted ambient temp.	0 to +50 °C
Casing	Surface installation, Polymer, light grey
Dim. mm	W 114 x H 108 x D 56
Weight	250 g
Wiring diagram no.	SS-1039

Temperature controller ETR
The controller is freely adjustable within the sensor measuring ranges, with the optional functions of cooling or heating, 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.

Type ETR	Ref. no. 1438
Supply voltage	10-24 V DC, 6 mA
Analogue outputs	0-10 V DC 10 V / 0.3 mA 24 V / 10 mA
Signal input	10-24 V DC / 6 mA Switching setpoint 1/2 (day/night)
Permitted humidity	85 % non-condensing
Protection class	IP 54
Protection category	III (safety extra-low voltage, galvanically isolated)
Permitted ambient temp.	0 to +50 °C
Casing	Surface installation, Polymer, light grey
Dim. mm	W 114 x H 108 x D 56
Weight	200 g
Wiring diagram no.	SS-1040

Note
Depending on the fan type to be connected, multiple fans can be connected in parallel to an EDR or ETR.

Necessary accessories for EDR and ETR

Type NG 24 Ref. no. 1439
Power supply unit for DIN 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.

Type WSUP Ref. no. 9990
Week timer

Type WSUP-S Ref. no. 9577
Week timer for DIN rail mounting

Necessary accessories for ETR

Type LTA 40 Ref. no. 1336
Temperature sensor for outside
Measuring range –20 to +60 °C
Protection class IP 54

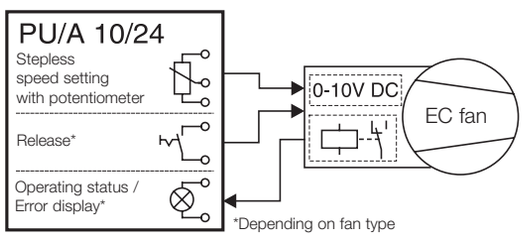
Type LTK 40 Ref. no. 1324
Temperature sensor for in-duct installation
Measuring range 0 to +40 °C

Type LTR 40 Ref. no. 1323
Room temperature sensor
Measuring range 0.5 to +40 °C

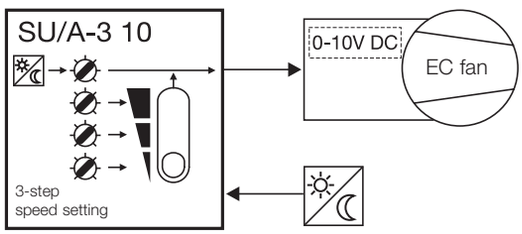
PU / PA

SU / SA

Basic circuit diagram



Basic circuit diagram



■ Speed-potentiometer PU / PA with additional functions switch and LED

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

☐ Control with potentiometer
The potentiometer is attached directly to the potentiometer input of the fan control. This has a potentiometer supply of e.g. 10 V DC and an input control signal of 0-10 V DC.

☐ Minimum voltage
A second potentiometer is firmly integrated in the PU/PA. The minimum voltage (min. 1.3 V) is steplessly adjustable, thus a reliable motor start-up is guaranteed on the lowest speed setting.

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

☐ LED light ring
The colour of the light ring signals the operating status of the fan. For fans with operating signal relay, change from green (normal operation) to red (fault). See technical data for necessary supply voltage.

■ Delivery range

☐ **LED power supply 10 V**

Type PU 10	Ref. no. 1734
Installation	standard flush mounted box
Dim. mm	W 80 x H 80 x D 21 overhang

Type PA 10	Ref. no. 1735
Casing	Surface installation, Polymer, light grey
Dim. mm	W 80 x H 80 x D 65

☐ **LED power supply 24 V**

Type PU 24	Ref. no. 1736
Installation, dimensions	see PU 10

Type PA 24	Ref. no. 1737
Casing, dimensions	see PA 10

■ Technical data for all types
Potentiometer 10 kOhm
(min. potentiometer approx. 7.9-16.5 kOhm)
A Potentiometer supply of 10 V results in a control voltage 0-10 V DC.
Min. voltage 1.3-6.7 V DC adjustable.
LED supply voltage:
10/24 V DC (P 10/24), min. 6 mA
Permitted ambient temp. 0 bis +40 °C
Proteciton class IP 40
Wiring diagram no. SS-1000

■ Three-step switch SU / SA 10 V / 0-10 V

☐ Area of application
Three-step switch for flush or surface mounting.
For three-step control of EC fans or frequency inverters, with a 0-10 V DC control input.

☐ Functions
Three different setpoints can be specified/issued using SU/SA. Each step is freely adjustable via a separate potentiometer from 0 to 10 V DC.
A week timer (WSUP, WSUP-S, accessories) can also be connected to switch from 3-step day mode to e.g. night mode. The night/reduction mode is freely adjustable using another potentiometer from 0 to 10 V DC.

■ Delivery range

☐ **Flush mounting**

Type SU-3 10	Ref. no. 4266
Installation	in deep flush box (D 65 mm)
Dim. mm	W 80 x H 80 x D 15 overhang

☐ **Surface mounting**

Type SA-3 10	Ref. no. 4267
Protection class	IP 40
Casing	Surface installation, polymer, 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)
Own consumption: 1.5 mA
Control output: 0 to 10 V DC optional via switch or external switchover
Proteciton class IP 30 when installed
Protection category III
Wiring diagram no. SS-1022

☐ Note
Depending on the fan type to be connected, multiple fans can be connected in parallel to a speed-potentiometer or three-step switch.

Differential pressure switch DDS
Type DDS Ref. no. 0445

Area of application
- ☐ Complete kit to monitor air filter, system pressure and fan operation.
- ☐ Suitable for DDC applications (24 V DC/0.1 A) due to gold-plated connection contacts. Once the unit has been connected conventionally (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 pressure range	50 – 500 Pa
Switching difference Δp	20 Pa
max. operating overpressure	5 kPa
Current	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 class	IP 54
Dim. mm	Ø 104, D 58
Weight approx.	0.23 kg
Wiring diagram no.	SS-490

Function
Adjustable opener/closer to monitor pressure loss and thus the amount of dust in air filters, the pressure increase of fans and the pressure level within the ventilation system.

Delivery
Complete kit including:
- Differential pressure switch DDS
- 4 fastening screws
- 2 pipe connections
- Connection pipe Ø 6 mm x 1.5 mm x 2000 mm
- Drilling template for connecting points
- Retaining plate + 3 fastening screws
- 3 screw terminals

One-step thermostat TME 1
Type TME 1 Ref. no. 1334

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

Technical data

Voltage	230 V~, 50/60 Hz
Current	16 A
Max. current (AC 3)	6 A
Temperature range	0 to +50 °C
Switching sensitivity	+/- 0.8 K at 20 °C
Protection category	II
Protection class	IP 54
Ambient temp.	0 to +60 °C
Dim. mm	W 82 x H 80 x D 75
Weight approx.	0.2 kg
Wiring diagram no.	SS-701
Connection cable	NYM-O 4 x 1.5 mm²

Function
- ☐ Single step control thermostat for direct switching of one or a number of fans.
- ☐ Also suitable for heater control through optional connection.
- ☐ Potential-free switch-over contact.

Specification
- ☐ Enclosed casing made of impact resistant, light grey polymer. Cable entry on the bottom of casing via self-sealing grommet PG 11.
- ☐ Connection via terminal block, after removing the casing cover.

Ventilation hygrostat
Type HY 3 Ref. no. 1359

Ventilation hygrostat
Type HY 3 SI Ref. no. 1360
Internal scale.

Area of application
- ☐ Electromechanical humidity controller for on/off operation of fans (in 3 ph. models control via contactor) to reduce the relative humidity in a room through air exchange.

Technical data

Relative humidity level	30 to 90 %
Switching sensitivity approx.	± 6 %
Voltage max.	230 V~, 50/60 Hz
Current	3 A (ind.)
Ambient temperature	0 – 40 °C
Protection class	IP 20
Dim. mm	W 76 x H 76 x D 34
Weight approx.	0.25 kg
Wiring diagram no.	SS-168.1

HY 3

HY 3 SI

Specification
- ☐ Universal hygrostat housed in an attractive polymer casing for surface mounting. Colour white.
- ☐ Setpoint adjustment via external rotary knob. In HY 3 SI via the inner scale.
- ☐ Not suitable for dusty or aggressive air.
- ☐ Sensor element made of polyamide fibres.
- ☐ Also suitable for humidification through optional connection.

Air quality controller
Type ACL Ref. no. 0492

■ **Area of application**
☐ Electronic air quality controller to control:
– 1 ph. fans up to max. 1 A.
– 3 ph. fans via contactor.
■ For ventilation systems in conference rooms, restaurants, shops, manufacturing plants, living/meeting rooms.

■ **Function**
☐ On and off operation of one or a number of fans in relation to the room's air quality.
☐ The unit has an integrated sensor which reacts on oxidable gases and pollutants such as carbon mo noxide, alcohol, formaldehydes, benzene, solvents, methane, tobacco etc.

■ **Possible settings**
☐ The unit switches the fan on if the set value is exceeded or if the concentration rises quickly.
☐ Adjustable (from outside) overrun timer after the sensor has switched off.
☐ Indicator lamp for operation type (automatic/manual) and fan operation and overrun time.
☐ Functional and operational switch on the front casing

■ **Technical data**

Voltage	230 V, 1~, 50/60 Hz
Overrun time, adjustable	1 – 10 min.
Power-up delay	approx. 5 sec.
Current	2 A (ind.)
Protection class	IP 30
Dim. mm	W 125 x H 75 x D 30
Weight approx.	0.2 kg
Wiring diagram no.	SS-485.1

■ **Casing**
Compact casing with air exchange slots, made of light grey polymer, for surface installation.

Electronic air flow monitor
Type SWE Ref. no. 0065

■ **Area of application**
To monitor air flow in ducting. Open or closed circuit principles are available as options.
■ **Function**
The air flow sensor (connected to controller) registers the air flow and compares it with the preset value. That can be set on the front side of the control unit (in the range of 1 – 20 m/s). The relay contacts if the set value is reached or exceeded. Two LED's show UN and the position of the output relay. It is possible to connect an external failure display via a relay output (1 change-over, voltage free, max. current 5 A / AC 250 V).
■ **Installation**
Control unit suitable for mounting in switch cabinet for fixing on a 35 mm support rail.
Air flow sensor with mounting rosette for in-duct installation with cable (length 2.5 m; up to max. 10 m extendible), that is to be connected to the control unit.

■ **Technical data**

Voltage	230 V, 1~, 50/60 Hz
Current	5 A (ind.) cosφ 0.4
Setpoint adjustment range	1-20 m/s
Air flow temperature	max. 60 °C
Ambient temperature	max. 60 °C
Protection class	IP 20
Dim. mm	W 35 x H 90 x D 66
Sensor length mm	140
Weight	approx. 0.4 kg
Wiring diagram no.	SS-689.1

Mechanical air flow monitor
Type SWT Ref. no. 0080

■ **Area of application**
☐ Mechanical air flow monitor with adjustable trigger power to monitor the minimum air flow velocity in ducting minimum diameter 315.
■ **Design**
Robust design with a paddle made of high-grade steel and supplied with mounting plate to fix the unit outside of the ducting.

■ **Function**
☐ Can be used as a switch to make or break circuit connections.
☐ The unit can be set to respond if a minimum or maximum air flow velocity is achieved.
☐ Adjustable minimum air flow velocity:
– Lower than approx. 1.5 m/sec.
– Higher than approx. 3 m/sec.
■ **Installation**
Unit must be installed in a way that the weight of the paddle does not affect the spring mechanism inside the unit.

■ **Technical data**

Voltage	24-230 V AC, 50/60 Hz
Current	15 (8) A (ind.)
Air temperature limits	-40...+ 85 °C
Protection class	IP 65
Dim. 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.	SS-557.1

Differential temp. controller
Type EDTW Ref. no. 1613

■ **Area of application and advantages**
☐ Electronic, stepless differential temperature controller for connection of electronically controlled
– Ceiling fans and all
– 1 ph. fans.
☐ For continuous speed control in relation to the temperature difference.
☐ Designed for use in combination with ceiling fans or fans which move the room air towards the floor to save heating energy. The unit optimises the difference between the floor and ceiling temperature.

■ **Function**
☐ Stepless speed control between (0 – 100%) in relation to the temperature difference between both temperature sensors and the equalisation with the set-point specification.
☐ Includes tempera ture sensors with a flying lead (1 x 10 m long, for mounting below the ceiling; 1 x 2 m long, for mounting above the floor.
☐ If the temperature difference rises the fan speed increases proportionally and slows down for decreasing temperatures.
☐ Proportional range can be adjusted steplessly from 1–10 K.

■ **Technical data**

Voltage	230 V, 1~, 50/60 Hz
Current max.	2.5 A (T 40 E)
Adjustable control range	1 – 10 K
Protection class	IP 20
Dim. mm	W 210 x H 85 x D 55
Weight approx.	0.7 kg
Wiring diagram no.	SS-438

■ **Possible settings**
☐ On/off (with function display)
☐ Automatic/manual operation.
☐ Reverse of air flow direction.
☐ Proportional range.
☐ Summer operation: as manual speed controller. Depending on the fan type, motor humming might be produced.

■ **Casing**
Impact-resistant white polymer, for surface and flush mounting.