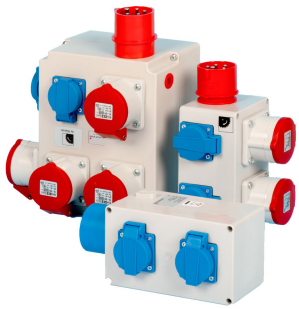
Instruction manual Automatic Starter Single-Phase and Three-Phase

KLINGER BORN



Dear Customer,
We thank for choosing our product.

The product is tested and in accordance to the European and national norms.
The CE-conformity is assured. The certifications are deposited at the producer.

For a safety use please take notice of this manual. Please read the whole manual before using the product and pay attention for the instructions of use and safety.

Scope of delivery:
- Automatic starter
- Instruction manual

Functional description
Automatic starting units are used for auomatic delayed switching of motors and other inductive loads. This is important to ensure a failure-free start-up. Starting a motor creates high starting currents that exceed the rated current approximately by a factor of 6. Starting two or more motors simultaneously can create starting currents that trigger the fuse. To prevent this from happening, automatic starting units are used to start the second drive after a certain time delay. This provides an additional advantage: The second drive will start automatically and without operator intervention after approximately 3 seconds. After switching off the main drive, the second drive will be switched off with a certain delay. This feature is useful for dust extractors and many other applications. The suction switch (slave) can also be put into operation via the auto-0-hand switch (optional) if the saw (master) is not switched on. Each master socket independently activates the two slave sockets.

Functions of versions with operating mode selector switch

„Auto“	Automatic master-slave operation If it is detected that a consumer connected to the master socket is switched on, the slave socket is switched on automatically.
„0"	Switching on the slave socket is prevented
„Hand“	Slave sockets are switched on permanently (bypassing auto operation)

Please note
- The connected rating with 7.5 kW or 16 A at 400 V and 3.6 kW or 16 A at 230 V may not be exeeded.
- The extraction (Slave) may not have an undervoltage release.
- The automatic switch-on function requires a minimum current of 1.2A in the master circuit (in phase L1). This does not apply to the statements with CCST board.
- When the motor is switched off, the current in phase L1 must fall below 300mA so that the slave can switch off (does not apply to the CCST board). For working machines with a standby current higher as this threshold value in phase L1 this automatic starter can‘t be used. Maybe you can change the standby current to the phases L2 or L3 in the machine.

Technical data

Input voltage	Single-phase: 230 V / 50 Hz Thee-phase: 400 V / 50 Hz
Mains connection	Single-phase: Schuko-plug Three-phase: CEE-plug 3P+N+T 16 A 400 V with phase inverter
Total load (max.)	16A or 3.6 kW at 230 V and 7.5 kW at 400 V
Allowable load current (Master)	16 A
Max. output load (switched)	Single-phase: 3.0 kW 230 V/AC-3 Three-phase: 4.0 kW 400 V/AC-3 Three-phase: 7.5 kW 400 V/AC-3 for models 0098.3909, 0098.3929 and 0098.3939
Switching on threshold	approx. 1.2 A / with CCST-board approx. 0.1...0.6 A
Breaking threshold	approx. 300 mA / with CCST-board approx. 0.1...0.4 A
Making delay	approx. 3 sec. / with CCST-board approx. 0.5...8.0 sec.
Breaking delay	approx. 8 sec. / with CCST-board approx. 0.1...12 sec.
Dimensions of control PCB	75 x 55 x 31mm (LxWxH)

If you have question don‘t hesitate to contact our technical service
Monday up to Friday 7:30 Uhr up to 16:30 o‘clock

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Bedienungsanleitung Einschaltautomatik 1Ph + 3Ph

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Please observe the following rules:

Do not put into operation any devices with a visibly damaged mains cable, motor cable or switch.

Before conducting maintenance work, adjustments, or repairs, switch off the switch and withdraw the mains plug. Wait for moving parts (e.g. saw blades, plane irons, or drill chucks) to come to a standstill. Withdraw the plug too if you displace or move the machine.

Check the mains supply before connecting. Wrong connections may destroy the electrical equipment.

Observe the line voltage. Make sure the line voltage matches the voltage information on the type plate.

Connect electrical equipment only to a mains supply that is sufficiently protected against overcurrent.

Withdraw the mains switch when leaving the machine without supervision for extended work breaks or when shutting down the machine (main switch functionality).

Only qualified technical personnel may connect the SPC to the motor.

Avoid short switching cycles. Frequent starting and braking causes significant thermal stress and may damage the motor, the switching device and the electronic brake.

Our components and ready-for-connection electric equipment are used in a wide range of different machines and applications. When the electric equipment is integrated in the machine, the correct placement of the electric equipment is of vital importance. In the case of an unfavorable placement and transportable machines dangers can arise through unintentional starting of the machine.

No liability will be accepted for any damage caused by failure to observe the above rules.

Warranty

- 12 months after date of shipment (calendar week and year are stated on the type plate).
- Damage caused by overload, normal wear and tear, incorrect wiring, or incorrect treatment is not covered by warranty.
- Any warranty is voided if the power class of the switch is not suitable for the application.
- Warranty claims are only accepted it the complete device is sent in. Warranty claims beyond the switch are not accepted

It is not economic to repair switches that are older than three years. Please do not send them for repair.
All switches must be sent postage paid.

Malfunction	Possible reason	Corrective
Motor does not start after pressing the ON button	- Wrong connection - No line voltage available - Emergency stop button pressed - End position switch (if any) tripped - Overload protection tripped - Cam switch (if any) in position 0 - Phase sequence monitoring (if any) tripped	- Check connection. - Check line voltage. - Reset emergency stop button. - Close protective hood. - Allow motor sufficient time to cool down and restart. - Check switch position. - Check phase sequence of mains connection.
Motor starts with wrong direction of rotation after pressing the ON button	- Incorrect phase sequence of mains connection - Motor connection is not correct	- Use phase inverter (if any) to invert the phases. - Check motor connection.
Motor makes a humming noise and does not reach nominal speed after pressing the ON button	- One phase of the mains line is missing - Wiring of motor is not correct	- Check mains supply. - Check motor connection.
Mains fuse trips when the device is connected to the mains line	- Wrong connection (phase and neutral swapped) - Defective power semiconductor (switches with electronic brake) - Defective mains line	- Check connection. For safety reasons send in switch for testing. - For safety reasons send in switch to be tested and repaired. - Check mains line.
Device suddenly switches off during operation	- Overload protection tripped - Mains failure	- Allow motor sufficient time to cool down and restart. - Check mains voltage. Check mains fuse.
	- Protective hood (if any) has come loose - Limit switch, position switch, or emergency stop button were operated - Mechanical parts of the machine are tight or sluggish	- Check - Check and reset if necessary. - Service tight or sluggish parts.
After switching off, the motor makes a humming noise for 10 - 15 seconds	- When switching off the machine, the electronic brake is activated for 10 to 15 seconds and is then switched off	- Normal state during operation. (The humming noise is caused by the electronic brake.)
Electronic brake does not switch off (humming noise does not stop)	- Failure of a component of the electronic brake	- Withdraw mains plug to avoid overheating of the motor. Send in switch for repair.
After switching off, the moving part is stopped too quickly or only after more than 10 seconds	- Settings for the electronic brake are not ideal	- Adjust jumper or potentiometer of the electronic brake for best braking effect and braking time. - Do not exceed maximum braking current. - Withdraw the mains plug before working on the switch. - Only qualified personnel may work on the switch.
No braking function	- See above - Failure of electronic brake	- Send in switch for repair.
Other malfunctions	Contact our service department or send in the defective switch (with cable, without motor) and a short fault description.	

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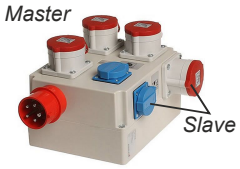
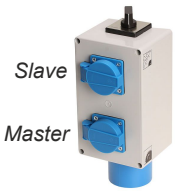
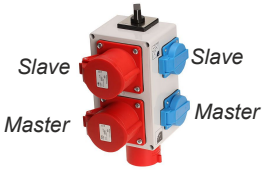
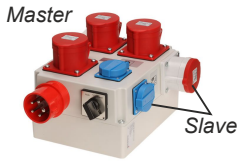
Standard versions

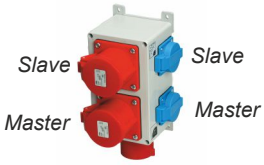
Master = Saw *Slave = Extraction*

Single phase with shrouded plug Art.No. 0098.3902	Single phase with mains lead Art.No. 0098.3908	Three-phase 400V Art.No. 0098.3915	Three-phase 400V Art.No. 0098.3909
			
Maße: 231x106x108mm Gewicht: ca. 0,74kg	Maße: 180x106x108mm Gewicht: ca. 1,2kg	Maße: 230x106x145mm Gewicht: ca. 1,18kg	Maße: 301x244x182mm Gewicht: ca. 2,47kg

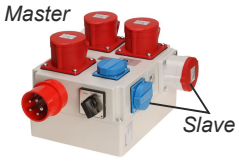
Version with additional switch Auto-0-Hand for manual operation of the suction

Single phase with shrouded plug Art.No. 0098.3926	Single phase with mains lead Art.No. 0098.3927	Three-phase 400V Art.No. 0098.3928	Three-phase 400V Art.No. 0098.3929
			
Maße: 258x106x108mm Gewicht: ca. 0,84kg	Maße: 207x106x108mm Gewicht: ca. 1,28kg	Maße: 257x125x146mm Gewicht: ca. 1,29kg	Maße: 301x244x182mm Gewicht: ca. 2,58kg

Version with CCST board (with variable switch-on and switch-off times and variable switch-on threshold)

Single phase with shrouded plug Art.No. 0098.3936		Three-phase 400V Art.No. 0098.3932	
			
Maße: 246x106x114mm Gewicht: ca. 0,8kg		Maße: 245x125x145mm Gewicht: ca. 1,2kg	

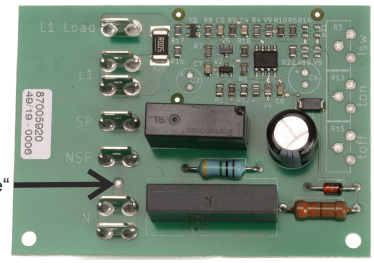
Version with CCST board and auto-0-hand switch for manual operation of the suction

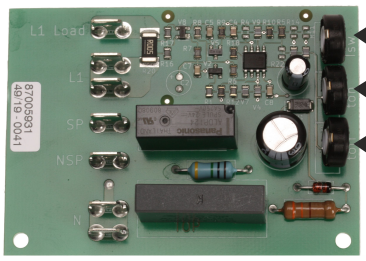
Single phase with shrouded plug Art.No. 0098.3937	Three-phase 400V Art.No. 0098.3933	Three-phase 400V Art.No. 0098.3938	Special version with connection terminals Art.No. 0098.3939
			
Maße: 258x106x114mm Gewicht: ca. 0,9kg	Maße: 258x125x145mm Gewicht: ca. 1,3kg	Maße: 301x244x182mm Gewicht: ca. 2,6kg	Maße: 240x190x162mm Gewicht: ca. 2,2kg

Adjustment note for CCST board

Live parts. Pull the power plug when working on the circuit board.

(1) Option "potential-free"





Switch-on thresholds
Adjustment range: ~0,1...0,6A

Switch-on delay
Adjustment range: ~0,5...8s

Switch-off delay
Adjustment range: ~0,1...12s

Turning it clockwise increases the value.

(1) If a potential-free switching contact is required, the bridge (plated through hole) between the connections N and NSP must be separated with a 3mm drill. The copper ring around the hole should be completely removed. The switching contact of the relay is then between SP and NSP.

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