KLINGER BORN

Manual for Installation and Putting into Service

Electronic Add-on brake ASB20 with stand-still detection and controlled braking-current

Dear customer,

thank you for purchasing this article.

This article complies with the requirements of the pertinent European and national directives. CE conformity has been demonstrated.

To maintain the condition of this article as delivered and to ensure safe operation, you, the user, must observe this manual. Read the entire manual before putting the article into service and observe all operational and safety notices.

All information on technical data and properties is non-binding. In the interest of technical advancement we reserve the right to changes at any time.

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1. Safety Instructions

Please observe the following rules!

This manual belongs with the product.
It contains important information on initial operation and use of the product.
When you transfer this product to a third party, remember to include this manual.

Keep this manual for further reference.

Any damage caused by failure to comply with this manual will void the warranty. We will not bear liability for consequential damage.

- When connecting the device and putting it into service, the user must comply with all legal and technical provisions, including but not limited to VDE0100, VDE0113 (EN60204), VDE0660 etc. For reasons of safety and approval (CE) unauthorized modifications of and changes to the product are not allowed. Never disassemble the product. This device is sealed. Breaking the seal by opening the housing voids the warranty.
- Do not put into service any devices with a visibly damaged mains cable, motor cable or switch.
- Pull the mains plug or the back-up fuse before connecting wires or carrying out maintenance, setting-up, or repair work. Wait for rotating masses like saw blades, planer blades, drill chucks and other revolving parts to come to a standstill.
- Live parts may remain live even after the ains plug has been disconnected for a while.
  Check the mains supply before connecting. Wrong connections may destroy electric equipment.
- Observe line voltage: The information on the type plate must conform with the the data of the power supply.
- Electric equipment may only be operated on a mains supply that is sufficiently protected against overcurrent.
- The ASB20 may not be operated on power from a generator with a non-stable output frequency (under load). Doing so may destroy the device.
- Before leaving the machine without supervision for an extended work-break and before shutting down the machine, disconnect the device from the mains supply.
- Only qualified technical personnel may adjust the braking time.
- Avoid short switching cycles. The enormous thermic load caused by frequent starting may damage the motor, the device and the electronic control PCB.
- For use in commercial facilities observe the accident prevention regulations for electric system and equipment by the Association of the Industrial Employer's Liability Insurance Associations (Verband der gewerblichen Berufsgenossenschaften).
- Operation of the product in schools, training facilities, hobby and DIY workshops must be supervised by trained personnel.
- Handle the product with care. Impact, shock or a drop from a low height will damage the product.
- Never use the product after it has been moved from a cold room to a warm room. Water condensation may destroy the product. The device needs to adapt to room temperature before you connect it to the mains supply. This may take several hours.
- Never touch the product with wet or moist hands.
  Make sure that the isolation of the entire product is neither damaged nor destroyed.
- At the place of installation and during shipping avoid the following environmental conditions: moisture or excessive air humidity, extreme cold or heat, dust or flammable gases, vapors or solvents, strong vibrations, strong magnetic fields as can be found near machines or loudspeakers.

2. Technical data and Article Numbers

Article number	8700.0201 = 110V 50/60Hz 8700.0202 = 230V 50/60Hz 8700.0204 = 400V 50/60Hz
Voltage	110V + 10% ... -15% 230V + 10% ... -15% 400V + 10% ... -15%
Frequency	50/60Hz, limited generator use
Braking current	adustable, controlled, 5A ... 20A
Performance Level	PL = b in accordance DIN EN ISO13849-1
PFH	4,23 x$10^{-6}h^{-1}$
MTTFd	259
Certificate no.	IFA1203002
Motor capacity	up to 7.5kW (depending on flywheel mas), min. 1.1 kW
Stand-still detection	Monitorung through the third motor connection
Operation display	two LED
Braking time	automatic adjustment with stand-still detection 0,8 ... 10s
Delay before restart	approx. 300ms
Max. switching capacity	10% ED at 10 sec. brakung time (60/h)
Monitoring of semiconductors	excess temperature shutdown (optional)
Back-up fuse	16A gL
Connection Load	Wago spring clamp terminal
Stripping length	8-9mm
Diamater	0,08 - 4,0mm² single-core 28-12 AWG 0,25 - 2,5mm² fine-stranded with ferrule
Connection Control circuit	Wago spring clamp terminal
Stripping length	5-6mm
Diamater	0,08 - 2,5mm² single-core 28-12 AWG 0,25 - 2,5mm² fine-straded with ferrule
Case material	PA6.6-GF10-V0
Ambient temperature	-10°C ... +45°C
Storage temperature	-25°C ... +75°C
Weight	345gr
Dimensions	43x106x103mm (LxWxH)

3a. Versions ASB20

Braking current	Operating voltage	Motoren kw (1)	Standstill-detection	Fix braking time	Designation	Art.No.
1-5A	230V	0,18...0,75	Yes	-	ASB20/05/230	8700.0219
1-5A	400V	0,18...0,75	Yes	-	ASB20/05/400	8700.0220
1-5A	230V	0,18...0,75	No	5s	ASB20/05/FB5/230	8700.0221
1-5A	400V	0,18...0,75	No	5s	ASB20/05/FB5/400	8700.0222
1-5A	230V	0,18...0,75	No	10s	ASB20/05/FB10/230	8700.0223
1-5A	400V	0,18...0,75	No	10s	ASB20/05/FB10/400	8700.0224
4-10A	230V	0,75...2,2	Ýes	-	ASB20/10/230	8700.0203
4-10A	230V	0,75...2,2	Ýes	-	ASB20/10/400	8700.0204
4-10A	230V	0,75...2,2	No	5s	ASB20/10/FB5/230	8700.0217
4-10A	400V	0,75...2,2	No	5s	ASB20/10/FB5/400	8700.0218
4-10A	230V	0,75...2,2	No	10s	ASB20/10/FB10/230	8700.0211
4-10A	400V	0,75...2,2	No	10s	ASB20/10/FB10/400	8700.0212
6-20A	230V	1,5...7,5	Yes	-	ASB20/20/230	8700.0202
6-20A	400V	1,5...7,5	Yes	-	ASB20/20/400	8700.0204
6-20A	230V	1,5...7,5	No	5s	ASB20/20/FB5/230	8700.0213
6-20A	400V	1,5...7,5	No	5s	ASB20/20/FB5/400	8700.0214
6-20A	230V	1,5...7,5	No	10s	ASB20/20/FB10/230	8700.0206
6-20A	400V	1,5...7,5	No	10s	ASB20/20/FB10/400	8700.0207
10-30A	230V	5,5...11	Yes	-	ASB20/30/230	8700.0250
10-30A	400V	5,5...11	Yes	-	ASB20/30/400	8700.0251
10-30A	230V	5,5...11	No	5s	ASB20/30/FB5/230	8700.0256
10-30A	400V	5,5...11	No	5s	ASB20/30/FB5/400	8700.0257
10-30A	230V	5,5...11	No	10s	ASB20/30/FB10/230	8700.0254
10-30A	400V	5,5...11	No	10s	ASB20/30/FB10/400	8700.0255

3b. Versions ASB20/S

Braking current	Operating voltage	Motoren kw (1)	Standstill-detection	Fix braking time	Designation	Art.No.
1-5A	230V	0,18...0,75	Yes	-	ASB20/S/05/230	8700.1219
1-5A	400V	0,18...0,75	Yes	-	ASB20/S/05/400	8700.1220
1-5A	230V	0,18...0,75	No	5s	ASB20/S/05/FB5/230	8700.1221
1-5A	400V	0,18...0,75	No	5s	ASB20/S/05/FB5/400	8700.1222
1-5A	230V	0,18...0,75	No	10s	ASB20/S/05/FB10/230	8700.1223
1-5A	400V	0,18...0,75	No	10s	ASB20/S/05/FB10/400	8700.1224
4-10A	230V	0,75...2,2	Yes	-	ASB20/S/10/230	8700.1203
4-10A	400V	0,75...2,2	Yes	-	ASB20/S/10/400	8700.1205
4-10A	230V	0,75...2,2	No	5s	ASB20/S/10/FB5/230	8700.1217
4-10A	400V	0,75...2,2	No	5s	ASB20/S/10/FB5/400	8700.1218
4-10A	230V	0,75...2,2	No	10s	ASB20/S/10/FB10/230	8700.1211
4-10A	400V	0,75...2,2	No	10s	ASB20/S/10/FB10/400	8700.1212
6-20A	230V	1,5...7,5	Yes	-	ASB20/S/20/230	8700.1202
6-20A	400V	1,5...7,5	Yes	-	ASB20/S/20/400	8700.1204
6-20A	230V	1,5...7,5	No	5s	ASB20/S/20/FB5/230	8700.1213
6-20A	400V	1,5...7,5	No	5s	ASB20/S/20/FB5/400	8700.1214
6-20A	230V	1,5...7,5	No	10s	ASB20/S/20/FB10/230	8700.1206
6-20A	400V	1,5...7,5	No	10s	ASB20/S/20/FB10/400	8700.1207
10-30A	230V	5,5...11	Yes	-	ASB20/S/30/230	8700.1250
10-30A	400V	5,5...11	Yes	-	ASB20/S/30/400	8700.1251
10-30A	230V	5,5...11	No	5s	ASB20/S/30/FB5/230	8700.1256
10-30A	400V	5,5...11	No	5s	ASB20/S/30/FB5/400	8700.1257
10-30A	230V	5,5...11	No	10s	ASB20/S/30/FB10/230	8700.1254
10-30A	400V	5,5...11	No	10s	ASB20/S/30/FB10/400	8700.1255

(*) Standardtype
(1) Nur Richtwerte - Abhängig von angetriebener Masse

3. Special features

• DC brake with controlled braking current up to 20 A

• Delayed add-on of braking current

• Release of the motor after stand-still detection

• Automatic adjustment of the braking time through stand-still detection

• Repeatable adjustment of the braking current

• Automatic adjustment to motor resistance

• Least thermal charge of the motor

• Overload protection (optional, no short-circuit protection)

• Error detection with automatic shutdown

• Connection with spring-clamp terminals

• LED-display for operation mode

• BG-Prüfzert in accordance to GS-HO-01

5. For use in

• Saws, centrifugals, woodworking machines, balancing machine, etc.

Anmerkung
Bei Maschinen mit Riemenantrieb, Untersetzung und ungünstigen Einstellungen können je nach Motor bei der Bremsung Resonanzen auftreten, welche die Sillstanderkennung stören können. Durch eine geänderte Einstellung des Bremsstroms kann dies in vielen Fällen behoben werden. Sollten Sie hierzu Hilfe benötigen, kontaktieren Sie uns einfach.

6. Functional description

Due to the zero stand-still detection of the add-on brake ASB20 it is only the braking current to set. The current controller regulates the brake from any thermal change of the motor resistance, so that it is always about the same braking duration achieved. Similarly, fluctuations in production of motor winding will balanced.

The standstill detection dynamically adapts to different engine sizes in star or delta connection. No further adjustment is necessary. If the stand-still is detected, it still flows for optimized delayed braking time of only 0.5 s, a brake current through the motor.

The device monitors the standards of the professional association in accordance to GS-HO-01 with respect to the braking times and error detection. If by incorrect setting of the braking current, overload or aging, the maximum braking time exceeded 10 s several times, the brake shut down the machine.

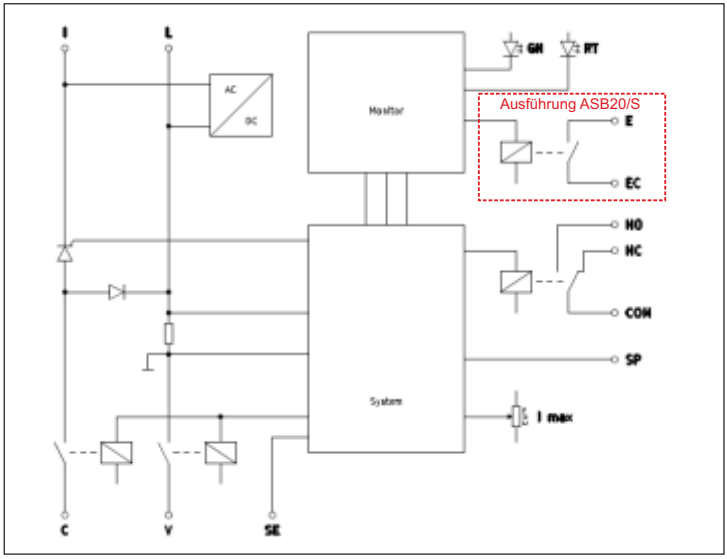
If braking occurs in the correct time window after the first or second detected braking time error of 10s, the error will be reset.

If the required braking time is more than 14s, the brake switch off immediately. The engine run on in this case. A restart is prevented. Both locks are released by a power interruption.

Additional the brake is monitoring the internal power semiconductor and the external circuitry. The current regulator prevents the acceleration of the current at overload. The sensor detects any interruption of the brake circuit and prevent another startup.

If the controller is connected to the network, the brake completes a short self-test. During this test for about 200ms, the braking power is on. After about 0.5 s the controller is ready for an engine starting.

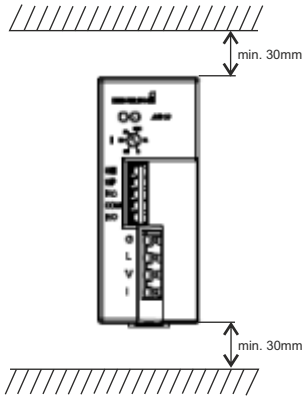
7. Block diagram



8. Install note

There must be a minimum vertical clearance of 30 mm between the ASB20 and the wall of the housing to prevent heat accumulation.

Mount the ASB20 on a 35 mm DIN rail. Slide the ASB20 into the upper part of the rail and then apply light downward pressure until it snaps into place. When removing the device, use a tool to unlock the clip-on mechanism.



Ensure sufficient ventilation when the ASB20 is installed inside a housing or a control cabinet. The inside temperature must not exceed 40 degree. In critical cases provide a fan in the cabinet.

9. Connection

⚠ The device must be connected by a qualified electrician and in compliance with the pertinent safety regulations.

Connect the ASB20 as follow
(see description on the bottom of this page too):

Port	Description
SE	Motor connection for stand-still detection
SP	Control signal for brake
NC	Control output for special function
COM	Relais-relays COM (base point)
NO	Control release
EC + E	Potential-free contact for ext. error message

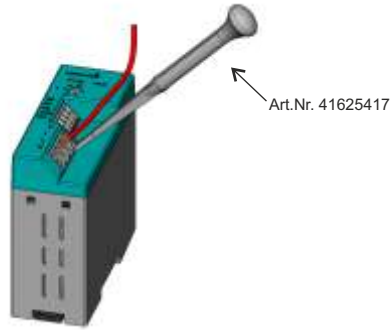
⚠ It is mandatory to ground the motor.

The ASB20 / ASB20/S works with star and delta connection motors.

Refer to the motor documentation for the correct connection method.

Wrong connections may destroy the motor.

Use the provided spring clamp terminals to connect the device. Use a screwdriver with a maximum blade width of 3.5 mm or the optionally available tool to open the clamps. Strip 8- 9 mm of the wires for the load circuit and 5-6 mm of the wires for the control circuit and insert the bare wire end into the clamp (see picture). Remove the screwdriver to close the clamp.



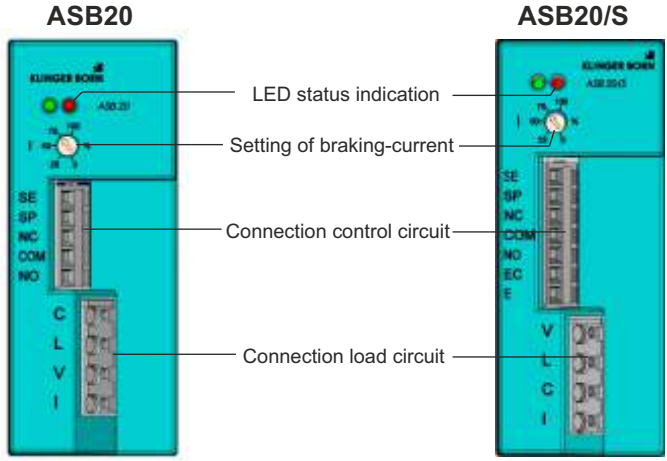
10. Putting into service

After the proper connection can now be put into operation ASB20 and ASB20/S.

During connection it is imperative to connect the COM and NO release relay in the control group the motor contactor are included!

The brake must not be operated on an isolation transformer! If the brake in conjunction with our soft starter is used, be sure to pay attention to the order of the connections.

11. Control panel



12. LED-Display

LED-Display	Description
Red LED glows for short time after switching-on the mains supply	Normal operation display, Device initializing
Green LED glows	Stand-still or actuated motor, normal operating mode
Green LED flashes	Motor brakes
Red LED glows	Error indication through: - Excessed braking time - Disrupted power supply - Error during test braking after switching on
Red LED flashes and flashing output signal to EC-E (potential-free contact)	- flashes when the braking time is exceeded Option with temperature monitoring: flashes when the temperature is too high

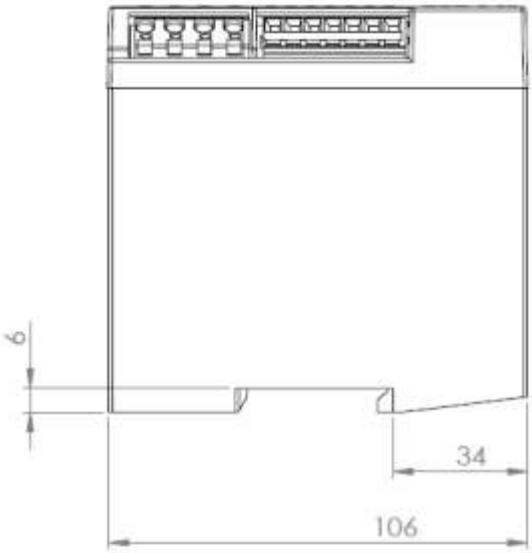
13. Failures and Corrective

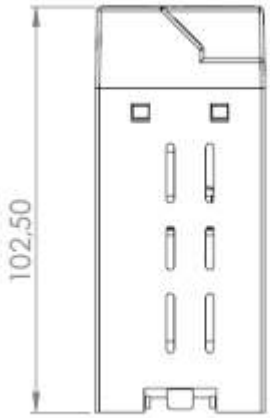
If a fault occurs, the red LED lights up permanently and a new start is not possible.
Fix the lock by disconnecting the power supply for about 2 seconds.

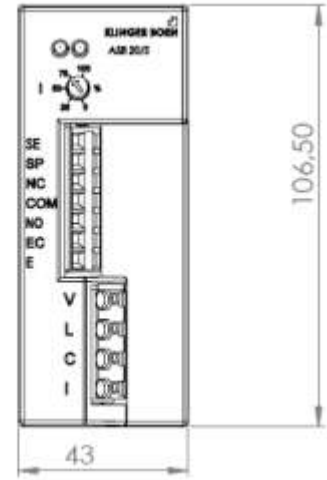
The cause of the disorder may be due too:

Failures	Causes and Correctives
Braking time is over 14 seconds. In this case, the switch-on lock occurs immediately.	Improve the braking power so far that the engine stops under 10 seconds
The braking time is between 10 and 14 seconds. This is shown by blinking of the red LED and a flashing output signal at EC-E. The switch-on lock occurs after the third braking. The fault is reset when the braking time is below 10 seconds again.	Improve the braking power so far that the engine stops under 10 seconds
The motor cannot start (without error)	- Brake or mains circuit wrong connected *Please check wiring* - Mains supply incorrect Check mains supply (fuse and so on) - Brake defect *Send back device*
Error occurs immediately when switched on	- Brake circuit (C or V) wrong connected *Check wiring* - Incorrect device selection - Brake defect *Send back device*
The engine starts, but then it don't brakes. Unit indicates error.	- Connection for stand-still detection is wrong (SE or C) *Check wiring* - Brake defect *Send back device*
Trouble for no apparent reason - red LED glows	- The cause could be due to a short performance from the network fault *Error message by interrupting the power supply reset of about 2 seconds. Possibly. caused the disorder to another device on the same circuit.*
Red LED flashes	- Switching frequency or braking currents too high. *Let the system cool down for 10 minutes.*

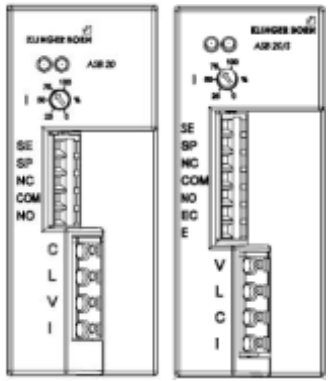
14. Dimension drawing



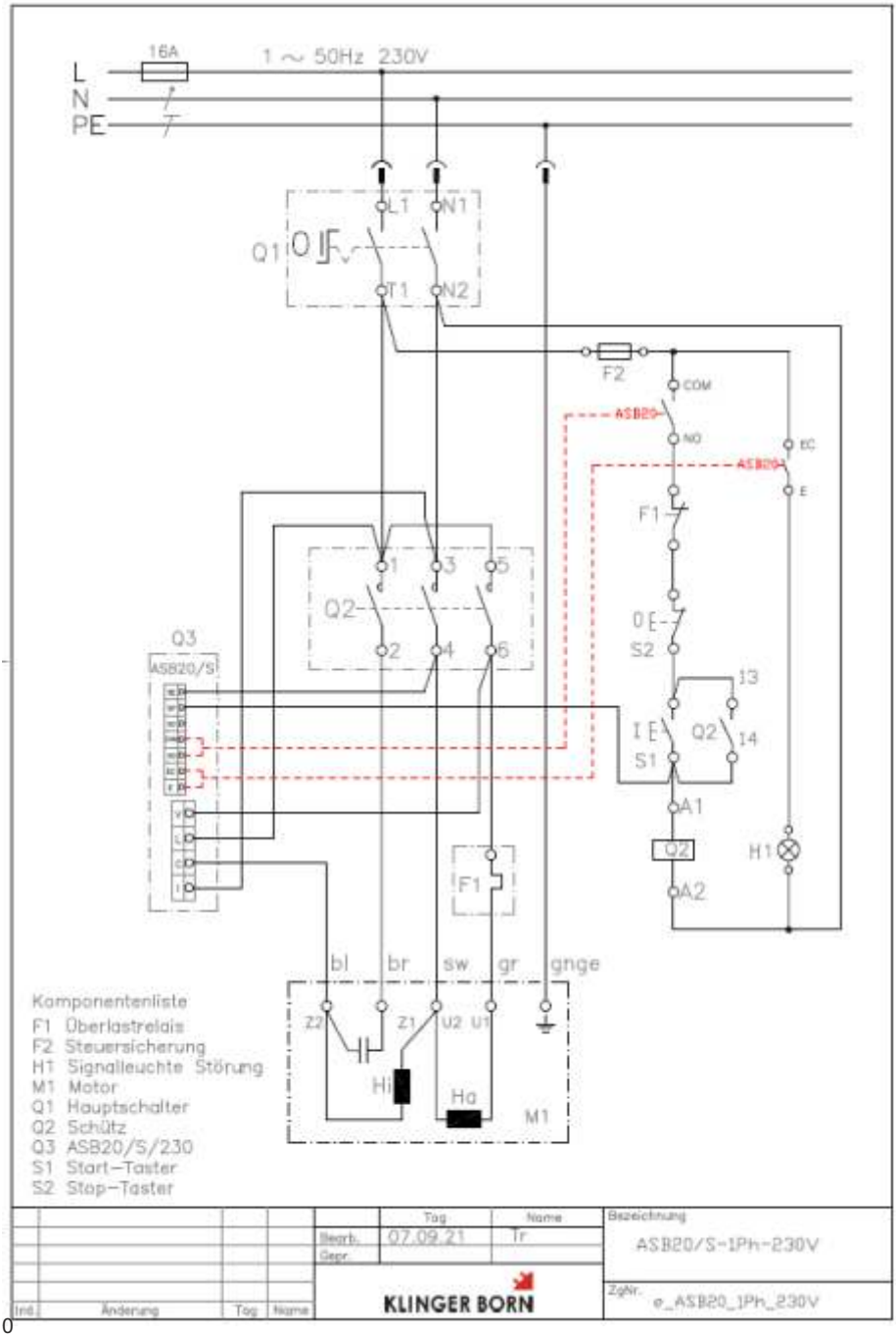




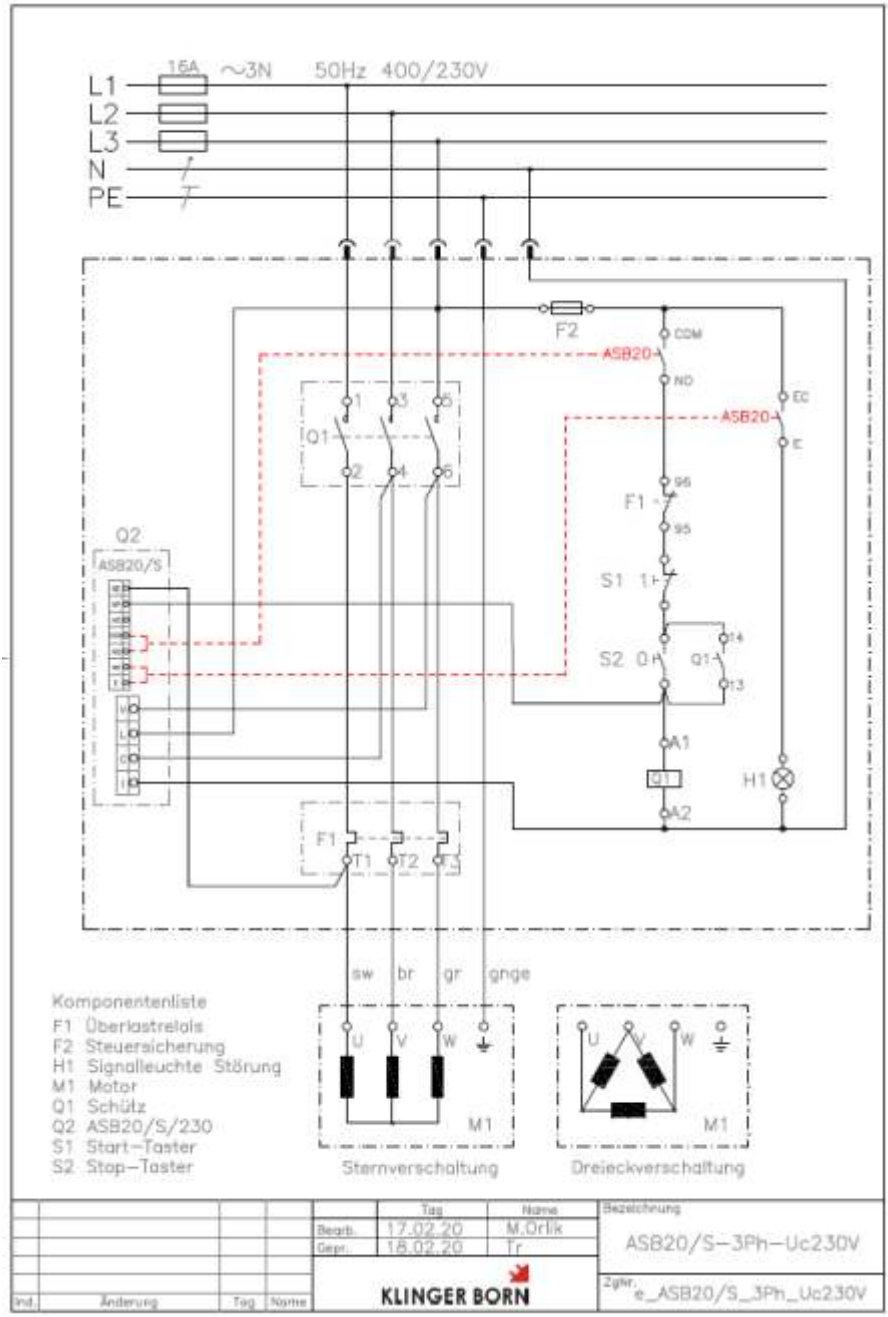
ASB20 **ASB20/S**



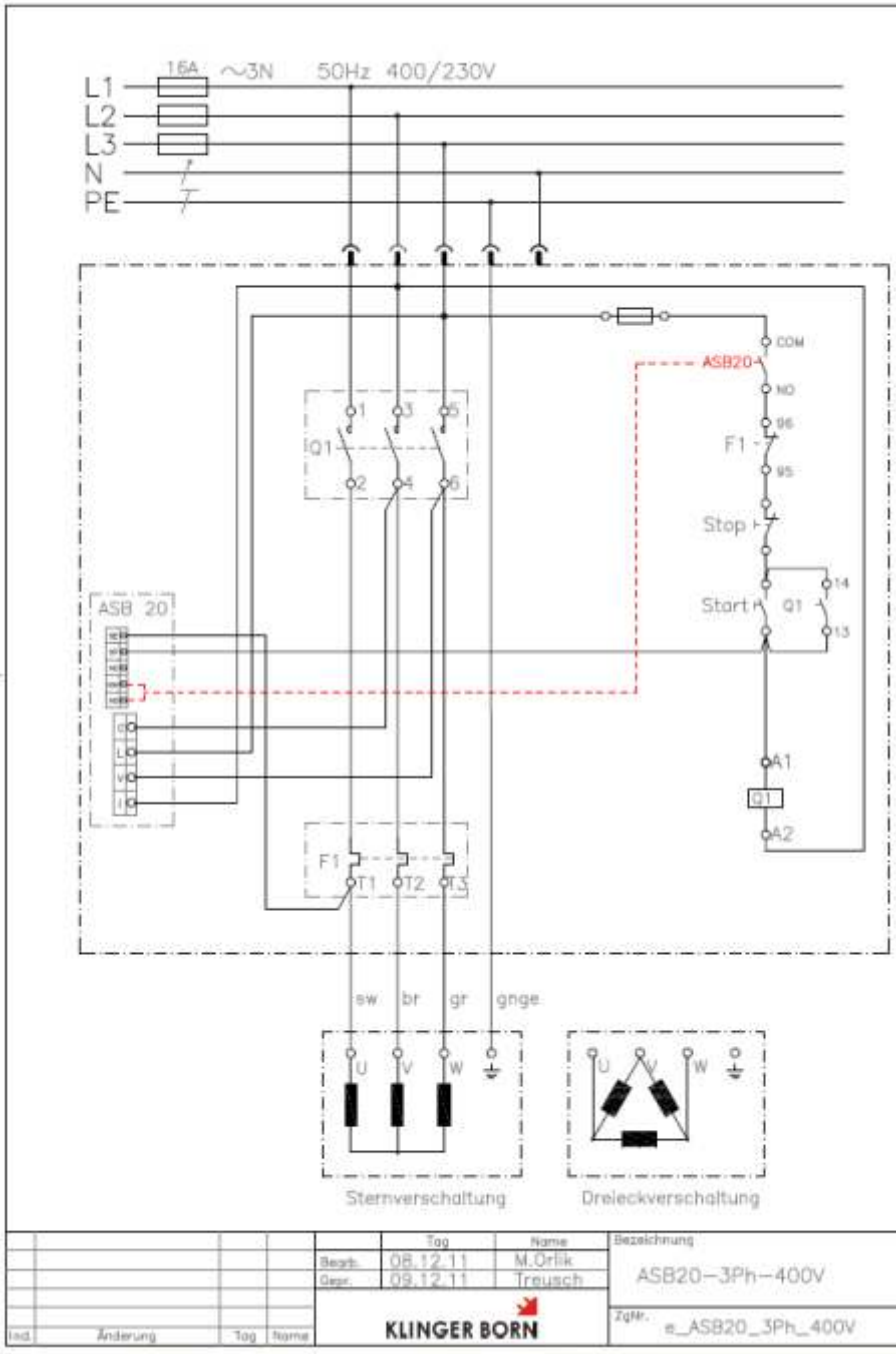
15a. Circuit diagram - example for 1Ph-230V, ASB20/S



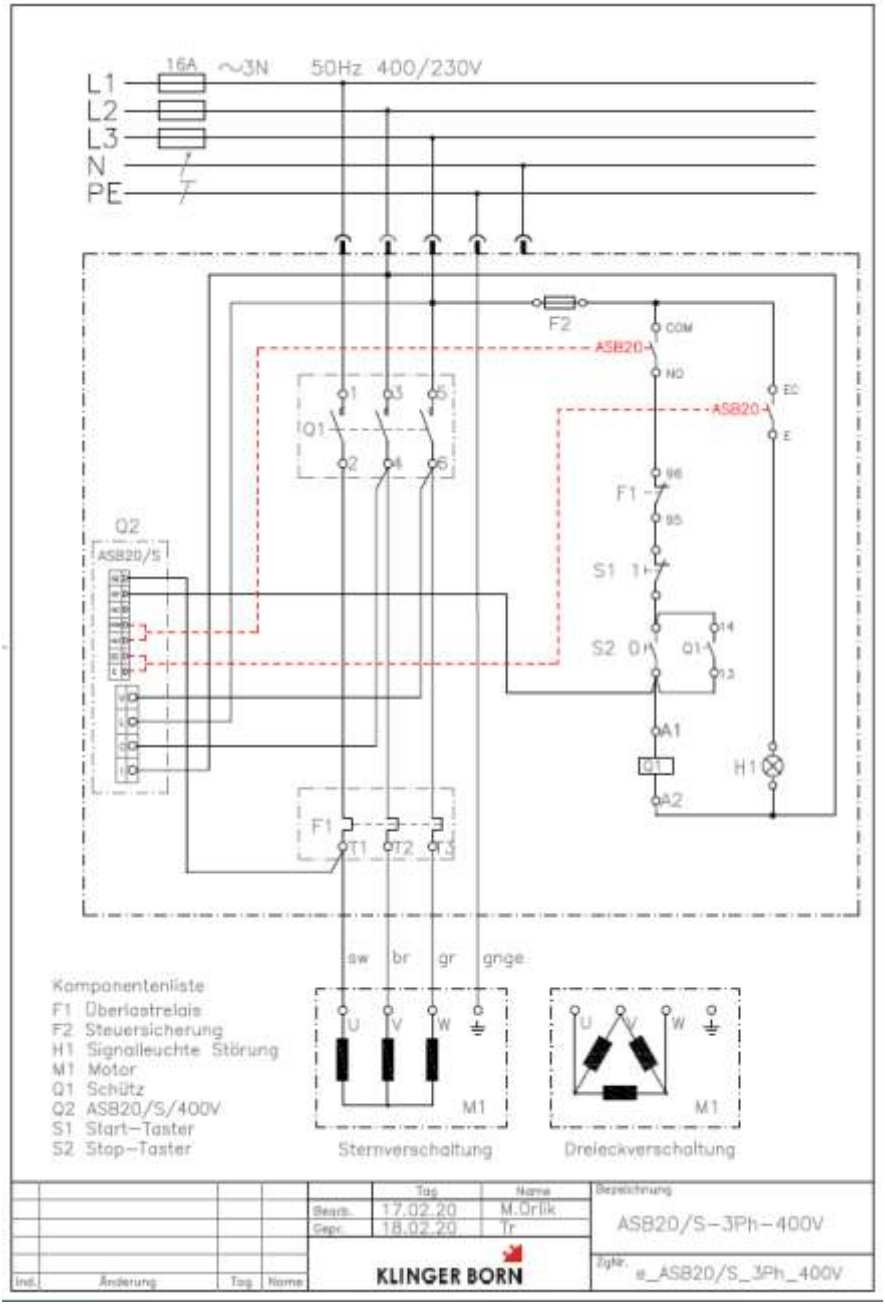
15b. Circuit diagram - example for 3Ph-400V, ASB20/S (Uc: 230V - with neutral wire)



15c. Circuit diagram - example for 3Ph-400V, ASB20



15d. Circuit diagram - example for 3Ph-400V, ASB20/S



15. Declaration of Conformity

We - Klinger & Born GmbH, In den Schlangenäckern 5, D-64395 Brensbach -
declare in our sole resposibility that the product

ASB20
ASB20/S

for which this declaration is pertinent, complies with the following standards or normative documents:

- DIN EN 60204 Abs. 9.2.5.4.2 Stillsetzen im Notfall in der Kategorie 1
- GS-HO-01

The stipulations of the following directives are pertinent:

Directive 2006/95/EC
EC EMC Directive 2004/108/EC

Relevant norms:
Fault-free operation/Emitted interference
EN60947-4-2:2007-09

The component that we supply is exclusively intended for installation in or on a machine. It must not be put into service unless and until it has been determined that the machine in which the component is installed complies with the pertinent stipulations of the EC Directive.

In case of questions consult our technical service:

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