

**MINISTOP**  
**Motor Brake Relay**  
**BN 9034, GB 9034**

Translation  
of the original instructions



**Your advantages**

- Higher safety and economic efficiency due to shorter run-out times
- Easy to fit also into existing control circuits
- Wear and maintenance free

**Features**

- According to IEC/EN 60947-4-2
- DC brake with one way rectifier up to 600 A
- Can be used on all asynchronous motors
- Integrated braking contactor for devices up to 60 A
- Mounting on 35 mm DIN-rail for 25 A units
- Adjustable braking current
- With automatic standstill monitoring
- As option with indicator relay for standstill monitoring
- As option with star-delta start function
- As option with thermistor motor protection
- As option with wide voltage input  
BN 9034: 200 ... 575 V, GB 9034: 200 ... 690 V
- Width max. 310 mm

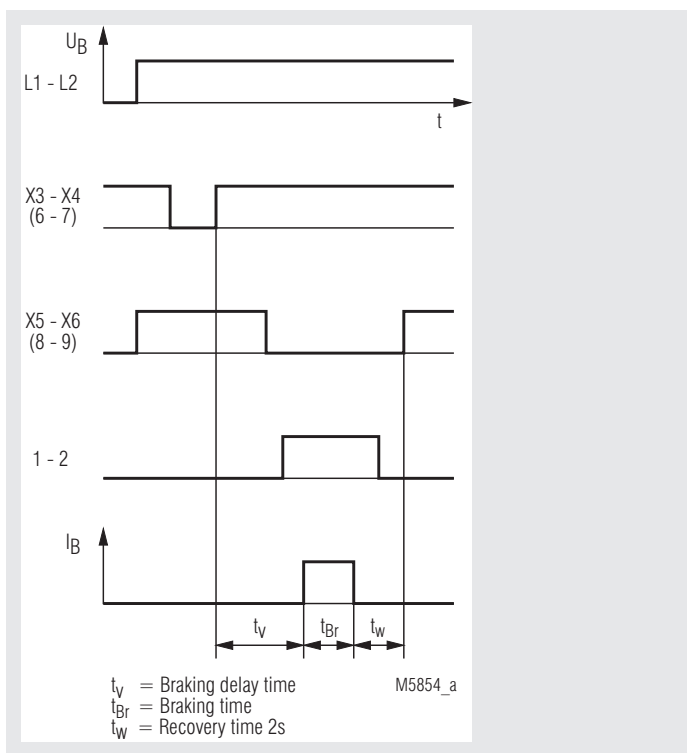
**Product Description**

The electronic braking devices enable wear-free braking of three-phase and alternating current asynchronous motors. The braking devices are used for drives that must be reliably braked for safety and functional reasons. Depending on the device version and the user's specification, the braking current switches off after a set braking time or via the integrated standstill detection after the motor has come to a standstill. With standstill-dependent braking, a potential-free signal contact signals if the motor has not come to a standstill within the maximum braking time.

**Approvals and Markings**



**Function Diagram**



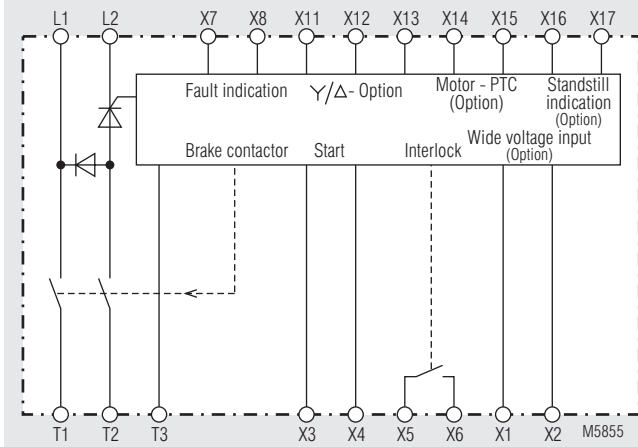
**Application**

- Saws
- Centrifuges
- Woodworking machines
- Textile machines
- Transportation conveyors

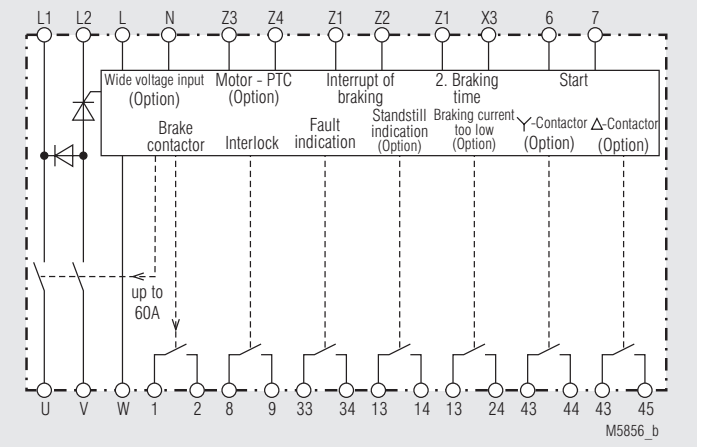
**Function**

The supply voltage is connected to terminals L1-L2. The interlock contact for the motor contactor closes. The LED „ready“ indicates that the supply voltage is connected. The motor can be started with the start button. The DC voltage for the motor windings UV is supplied from T1-T2. The external braking contactor (Devices for > 60 A) is controlled by contact 1-2. This contact is timed in a way, that a safety time is provided between reset of the motor contactor and start of the brake contactor. This is necessary to avoid damage of the semiconductors by induced back EMF voltage. The timing of the different functions during braking is as follows: The motor contactor is switched off and disconnects the motor. After elapse of the safety time, the brake contactor is energized and shortly after that the brake current is switched on for the adjusted braking time.

## Circuit Diagrams



BN 9034



GB 9034

### Indicators BN 9034

LED „ready“:	On, when supply voltage connected flashing, when braking current is adjusted too high
LED „I“:	On, when braking current is flowing

### Indicators GB 9034

Without display	With display, option / _ _ 1 _	Description
LED 2 lights up	Current setpoint is displayed	Mains supply is on / ready for operation
LED 1 lights up LED 2 and LED 3 light up alternately	Actual current value is displayed * DP1 and DP2 light up alternately	Braking current flows
LED 3 lights up		Standstill-dependent braking selected
LED 2 and LED 3 flash continuously	* DP1 and DP2 flash continuously	No standstill in monitoring time
LED 2 and LED 3 flashes 2 times	* DP1 and DP2 flashes 2 times	Overtemperature (motor or heat sink)
LED 2 and LED 3 flashes 4 times	* DP1 and DP2 flashes 4 times	Braking current setpoint not reached
LED 2 and LED 3 flashes 5 times	* DP1 and DP2 blink 5 times	No motor standstill detected 3 times in a row

\*DP1 and DP2 are the decimal points of the display

### Notes

For optimum braking effect, the braking current should be 1.8 ... 2 times the nominal motor current. This current corresponds to the necessary saturation current of the magnetic field needed for braking. Higher currents show not much more effect, but will heat up the motor. A better braking effect is achieved by using more than one motor winding for braking. The permitted braking ration relates to the braking current, the ambient temperature and the brake model.

### ATTENTION




The terminal W or T3 serves as measuring input for the standstill monitoring, with 2.5 mm<sup>2</sup> max. cross section. With devices for > 40 A a fuse must be used to protect this connection wire at the point where the wire with smaller cross section is connected to the motor line. The choice of the fuse is suited to the used crossed section and serves the short circuit protection of the line.



### Danger to life due to electric shock!

- Even when the motor is at a standstill, it is not galvanically isolated from the mains.
- The control terminals X3 and X4 of the BN 9034 have mains potential. If a switch or contactor contact is connected to these terminals, it must have a test voltage of 2.5 kV.
- The connection terminals X14, X15 of the BN 9034 have mains potential. When laying the connecting cables, ensure that they are safe from contact.

**Technical Data**

<b>Nominal voltage [U<sub>n</sub>]:</b>	AC 400 V ± 10 % Others to 600 V / 690 V on request						
<b>Nom. frequency [Hz]:</b>	50/60						
	BN 9034	GB 9034					
<b>Motor power [kW] at 400 V:</b>	5.5	7.5	15	22	55	110	160
<b>Max. adjustable braking current [A]:</b>	25	40	60	100	200	400	600
<b>ED at max. braking current [%]:</b>	8	20	20	20	20	20	20
<b>I<sup>2</sup>t value of the power semiconductors in A<sup>2</sup>s:</b>	1250	1050	4900	6050	80000	32000	1125000
<b>Backup value (assignment type 1) [A]:</b>	20	35	40	63	125	250	400
 <b>Coordination type!</b> Coordination type 1 according to IEC 60947-4-1: The engine control unit is defective following a short circuit and must be replaced.							
<b>Braking voltage [V]:</b>	DC 0 ... 230						
<b>Max. braking time [s]:</b>	15	320					
<b>Back-EMF braking time delay:</b>	Selfoptimizing (100 ... 2500 ms)						
<b>Connection diameter (max.)</b>							
Box terminal [mm <sup>2</sup> ]:	1.5	16	16	16	35		
Screw terminal:						M12	M12
<b>Power consumption for electronic [VA]:</b>	6						
<b>Contacts:</b>	6 A / 250 V AC; 6 A / 30 V DC		3 A / 250 V AC; 3 A / 30 V DC				
<b>Temperature range [°C]:</b>	0 ... + 45						
<b>Storage temperature [°C]:</b>	- 25 ... + 75						
<b>Degree of protection:</b>	IP 20 (25 A)		IP 20 (40 ... 600 A)				
<b>Mounting:</b>	To 25 A mounting on DIN-rail to 40 A screw fixing M5						
<b>Weight [kg]:</b>	0.8	2.1	2.1	2.1	3.1	7.2	10.2
<b>Overvoltage category:</b>	III						
<b>Pollution degree:</b>	2						
<b>Rated insulation voltage [V]:</b>	600						
<b>Rated impuls voltage [kV]:</b>	6						
<b>Electrostatic discharge (ESD) [kV]:</b>	4 (contact) 8 (air)						
<b>Interference emission:</b>	Wire guided 150 kHz - 30 MHz, device class A		Wire guided 150 kHz - 30 MHz, device class A irradiated 30 MHz - 1000 MHz, device class A				
<b>HF irradiation:</b>			Wire guided 150 kHz - 30 MHz, device class A irradiated 30 MHz - 1000 MHz, device class A				
<b>HF-wire guided [V]:</b>	10 (EN 61000-4-6)						
<b>Fast transients [kV]:</b>	Wires for power supply: 2 I/O interfaces, data and control lines: 1						
<b>Surge voltage [kV]:</b>	Between wires for power supply: 1 Between wire and ground: 2						
<b>Voltage dips:</b>	According to DIN EN 61000-4-11						

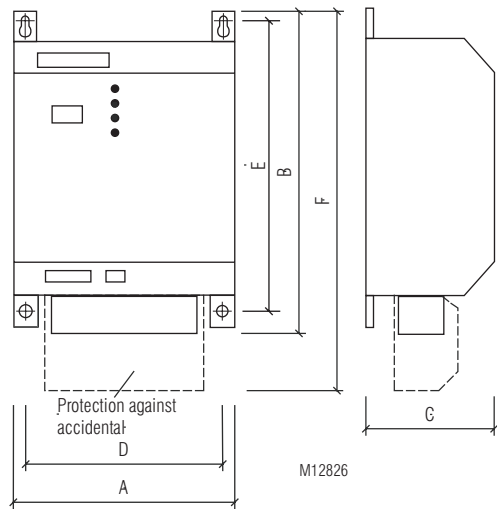
## Technical Data

### Dimensions:

#### Width x height x depth

BN 9034: 100 x 73 x 120 mm

GB 9034:



	A	B	C	D	E	F
40 A	110	242	140	86	226	-
60 A	110	242	140	86	226	-
100 A	110	242	140	86	226	-
200 A	110	255	155	80	226	-
400 A	210	275	165	180	226	340
600 A	310	280	165	280	226	355
Dimensions in mm						

40-100 A	PE	L1	U	L2	V	PE
200 A	PE	L1	U	L2	V	
400 A	PE	L1/U	L2	V		
600 A	L1/U	PE	V	L2		
Wire connection configuration						

### Standard Type

BN 9034 25 A AC 400 V 50/60 Hz 15 s  
 Article number: 0057148  
 • Integrated braking contactor  
 • Mounting on 35 mm DIN-rail  
 • Width: 100 mm

### Variant

BN 9034 /

- 1: Thermistor-motor protection input
- 1: Star-delta control
- 1: Output relay for standstill indication
- 1: Wide voltage input ( $U_N = 200 \dots 575 \text{ V}$ )

The 4 options can be ordered single or in combinations.

The variant with wide voltage input needs an auxiliary supply of AC 230 V or AC 24 V.

BN 9034 / \_ \_ \_ 25 A AC 400 V 50 / 60 Hz 15 s

- Braking time
- Nominal frequency
- Nominal voltage
- Max. braking current
- Variant, if required
- Type

### Inputs BN 9034

Opening the contact on terminal X3 and X4 makes the device ready for braking. When the contact is closed the braking current starts to flow. X14-X15 monitors the motor temperature (option)

### Outputs BN 9034

X5, X6: Interlock for monitor contactor  
 X16, X17: Standstill indication (option)  
 X7, X8: Fault indicating output  
 X11, X12: Control of Y-contactor (option)  
 X12, X13: Control of  $\Delta$ -contactor (option)

### Setting facilities BN 9034

Potentiometer	Function	Initial setting
I	Braking current	Left end of scale
$t_1$	Braking time	Middle of scale
$n_0$	Standstill level	Middle of scale
$t_2$	2. braking time	Left end of scale

### Standard Type

GB 9034 100 A AC 400 V 50/60 Hz  
 Article number: 0056975  
 • Screw fixing M5  
 • Width: 110 mm

### Variant

GB 9034 /

- 1: Removable terminals for control signals
- 1: Brake current indicator
- 1: Brake current monitoring, thermistor-motor protection input, star-delta control and output relay for standstill indication
- 1: Wide voltage input ( $U_N = 200 \dots 690 \text{ V}$ )

The 4 options can be ordered single or in combinations.

The variant with wide voltage input needs an auxiliary supply of AC 230 V.

GB 9034 / \_ \_ \_ 100 A AC 400 V 50 / 60 Hz

- Nominal frequency
- Nominal voltage
- Max. braking current
- Variant, if required
- Type

### Inputs GB 9034

Z3, Z4: Motor PTC  
 Z1, Z2: Braking interrupt  
 Z1, X3: 2. braking time  
 6,7: Start of braking

### Outputs GB 9034

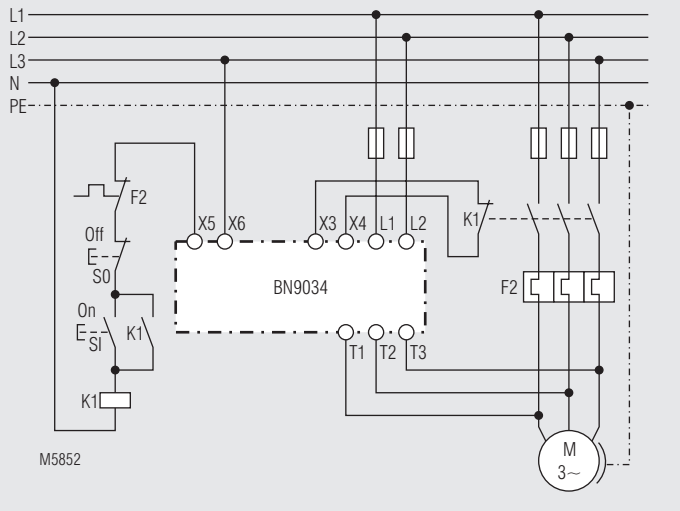
1,2: External braking contactor  
 8,9: Interlock for motor contactor  
 33,34: Fault indication output  
 43,44: Control of Y-contactor (option)  
 43,45: Control of  $\Delta$ -contactor (option)  
 13,14: Standstill indication (option)  
 13,24: Braking current too low (option)

### Set-up Procedure

The braking time cannot be set on the unit BN 9034. It is limited by the standstill detection. If the feedback input T3 is not connected to terminal W of the motor the standstill detection is disabled and the internal max. braking time of 15 s is valid. The GB 9034 allows to set different braking times and can be used for standstill depending as well as time depending braking function. More details are available in the operating manual.

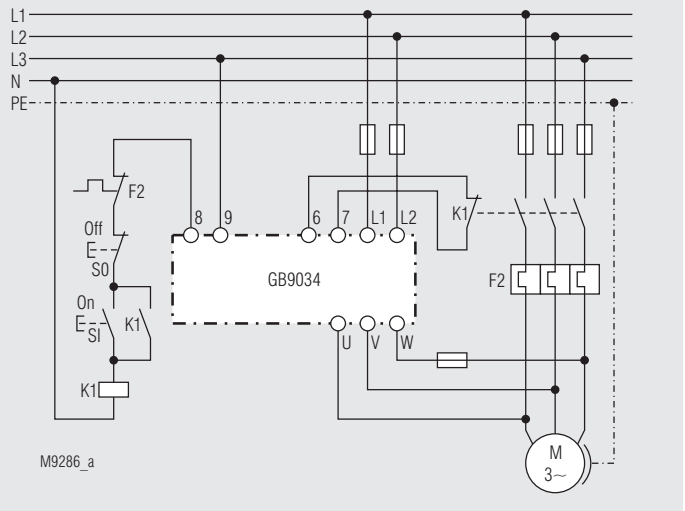
With potentiometer I the braking current can be adjusted. With a current meter (true RMS) the current should be measured so that 2 times the braking current is not exceeded in order not to overheat the motor. The braking device cannot be overloaded, as it limits the current even on full potentiometer setting to the nominal current of the unit. This status is indicated by the flashing „ready“ LED.

### Connection Example

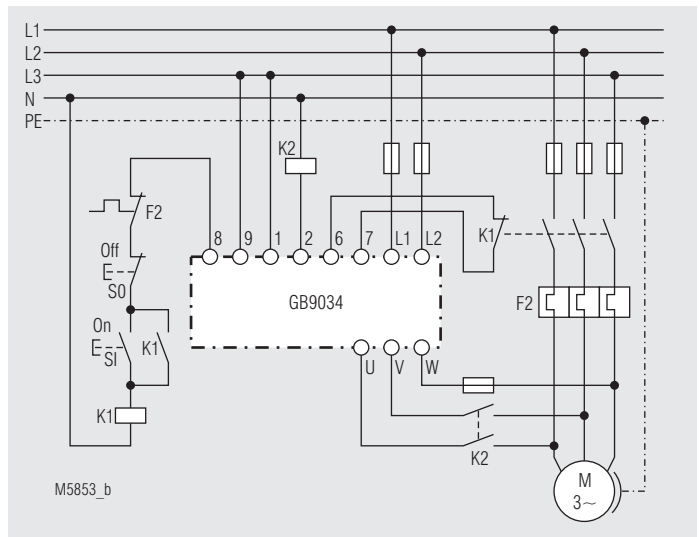


For BN 9034 25 A

### Connection Examples



For GB 9034 40 A, 60 A



For GB 9034 from 100 A

