

# Our modular system for safe brake resistors



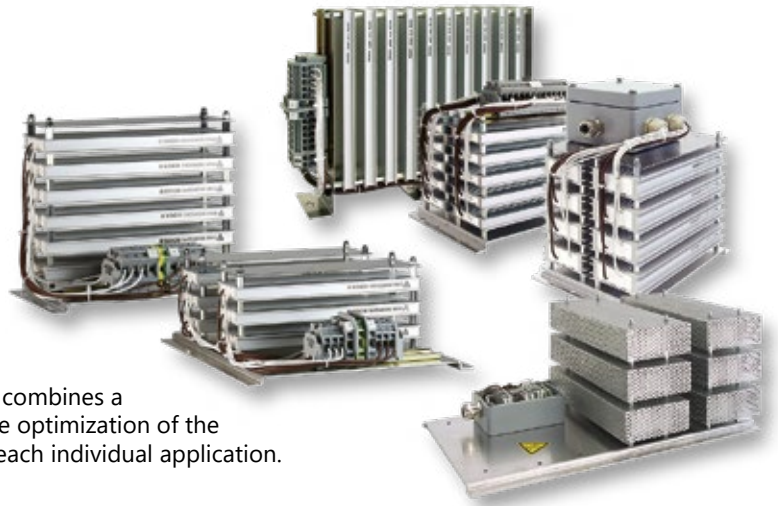
BWx...K...L...  
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# Our modular system for safe brake resistors

We manufacture resistor combinations by an extensive set of accessories for high performance applications.

The modular system is based on individual modules of the BWD series 250 to 1000 with nominal output of 100 to 400 watts.

In addition to its high performance, this modular system combines a compact design with extreme flexibility. This results in the optimization of the braking resistor in accordance with the specifications of each individual application.



## Optimized to the requirements of your application:

- Required power - no „unnecessary over-dimensioning“
- Many resistance values – based on the inverters requirements
- Mechanical design – according to the existing installation space
- Assembly - horizontal or vertical
- Protection class IP 20 or IP 65<sup>1</sup> - according to installation location and environmental conditions
- Individual modules with UL and CSA standard approval
- Several braking resistors in a resistor combination, e.g. for moving and hoisting gear
- Optional: Temperature switch, strain relief, protective cover, etc.



## Technical specifications of individual modules ( $\vartheta_A = 20^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Value	Unit	Conditions
Tolerance (resistance)		$\pm 5$	%	Room temperature
Insulation resistance	$R_{ISO}$	$\geq 100$	$M\Omega$	$U_{mess} = 1,000 \text{ VDC}$
Inductance	$L$	$\leq 30$	$\mu\text{H}$	$f = 300 \text{ kHz}, U_{mess} = 50 \text{ mV}$
Capacity against enclosure	$C$	$\leq 300$	$\text{pF}$	$f = 300 \text{ kHz}, U_{mess} = 50 \text{ mV}$
Thermal time constant	$\tau$	approx. 550	s	BWD250/500
	$\tau$	approx. 600	s	BWD600
	$\tau$	approx. 850	s	BWD1000
Energy absorption BWD250	$Q$	4	$\text{kJ}$	with 1.2 s (1% duty cycle)
		8	$\text{kJ}$	with 7.2 s (6% duty cycle)
Energy absorption BWD500	$Q$	7,5	$\text{kJ}$	with 1.2 s (1% duty cycle)
		15	$\text{kJ}$	with 7.2 s (6% duty cycle)
Energy abs. BWD600/1000	$Q$	13	$\text{kJ}$	with 1.2 s (1% duty cycle)
		26	$\text{kJ}$	with 7.2 s (6% duty cycle)
Maximum permissible operating voltage	$U_B$	$\leq 700 \text{ AC}$	V	Taking into consideration
		$\leq 1,000 \text{ DC}$	V	the „intrinsic safety“ <sup>2</sup>
		$\leq 600 \text{ AC}$	V	according to CSA and UL
		$\leq 848 \text{ DC}$	V	
Isolation voltage	$U_{iso}$	$\geq 4,000 \text{ AC}$	V	$f = 50 \text{ Hz}; t = 1 \text{ s}$
Max. permissible case temp.	$\vartheta_C$	$\leq 250$	$^\circ\text{C}$	unobstructed convection
		$\leq 300$	$^\circ\text{C}$	unobstructed conv. (BWD1000)
Storage temperature	$\vartheta_S$	-25 ... +85	$^\circ\text{C}$	

<sup>1</sup> Test conditions: Water jet from nozzle 6.3 mm inside diameter, flow rate 12.5 l / min +/- 5%, water pressure according to volume flow, distance 2.5-3m, test duration 3min.  
<sup>2</sup> With fourfold type power and free convection. 1. no short-circuit, 2. no fault to frame, 3. self-extinguishing, 4. no melting of casing. Type power always corresponds to 35% duty cycle of the respective resistor type.

## Brake resistor combination BWx...K...L...

Short-circuit-proof, „intrinsically safe“<sup>2</sup> resistor combination for operation with drive controllers (brake transistors), consisting of numerous single resistor modules of the 250/500/600/1000 series. These resistor combinations are particularly well suited for wall mounting and mounting on the control cabinets top. Due to the modular design of the individual units, our range is very versatile. Version with IP20 + IP65<sup>1</sup> protection classes available.



**Rated power (kW)**  
0.1 - 7.2 or upon request

**Technical specifications**  
The technical data can be found on page 2 of this document.

**Resistance (Ohm)**  
1 - 14,940 or upon request

**Dimensions (mm)**  
Upon request

**Dimensions and mounting holes (mm)**  
Mounting bracket for brake resistor combinations BWx...K...L...  
Detailed dimensions for specific versions available upon request.

### Individual solutions



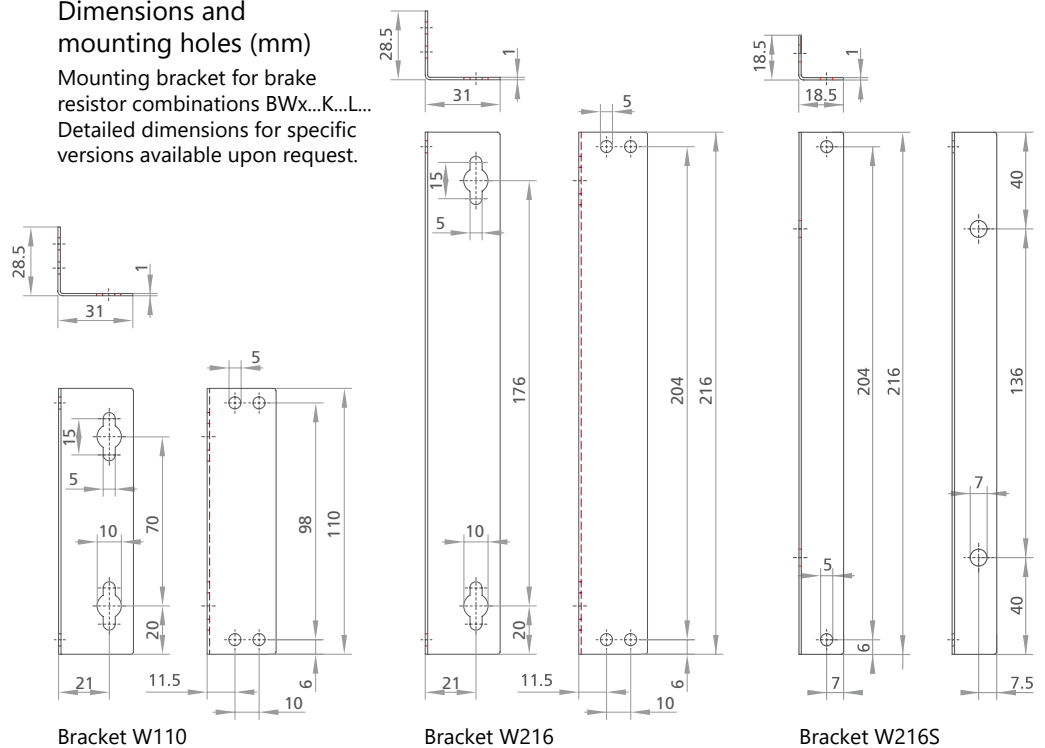
Brake resistor combination in IP20 consisting of single resistor modules BWD250 mounted with bracket W110



Brake resistor combination in IP20 consisting of single resistor modules BWD600/1000 mounted with bracket W216



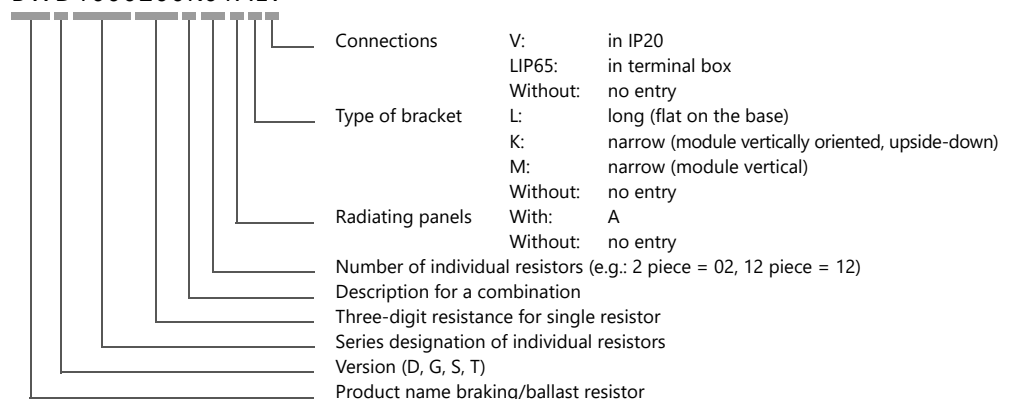
Brake resistor combination in IP65<sup>1</sup> consisting of single resistor modules BWD500 mounted with bracket W216



### Nomenclature

Brake resistor combination BWx...K...L...

BWD1000200K01ALV



<sup>1</sup> Test conditions: Water jet from nozzle 6.3 mm inside diameter, flow rate 12.5 l / min +/- 5%, water pressure according to volume flow, distance 2.5-3m, test duration 3min.

<sup>2</sup> With fourfold type power and free convection. 1. no short-circuit, 2. no fault to frame, 3. self-extinguishing, 4. no melting of casing. Type power always corresponds to 35% duty cycle of the respective resistor type.

## Brake resistor combination BWx...K...K...

Short-circuit-proof, „intrinsically safe“<sup>2</sup> resistor combination for operation with drive controllers (brake transistors), consisting of numerous single resistor modules of the 250/500/600/1000 series.

These resistor combinations are exclusively designed for mounting on the control cabinets top. Due to the modular design of the individual units, our range is very versatile. Version with IP20 + IP65<sup>1</sup> protection classes available.



**Rated power (kW)**  
0.1 - 7.2 or upon request

**Resistance (Ohm)**  
1 - 14,940 or upon request

**Dimensions (mm)**  
Upon request

**Technical specifications**  
The technical data can be found on page 2 of this document.

**Dimensions and mounting holes (mm)**  
Mounting bracket for brake resistor combinations BWx...K...K...  
Detailed dimensions for specific versions available upon request.

### Individual solutions



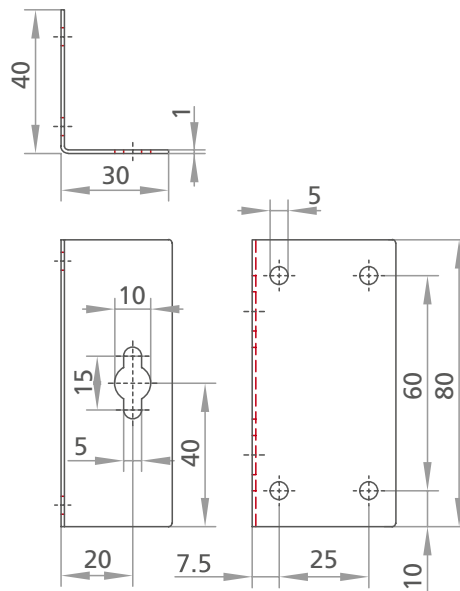
Brake resistor combination in IP20 consisting of single resistor modules BWD600/1000 mounted with bracket W080



Brake resistor combination in IP65<sup>1</sup> consisting of single resistor modules BWD600/1000 mounted with bracket W080



Brake resistor combination in IP20 consisting of single resistor modules BWD500 mounted with bracket W080

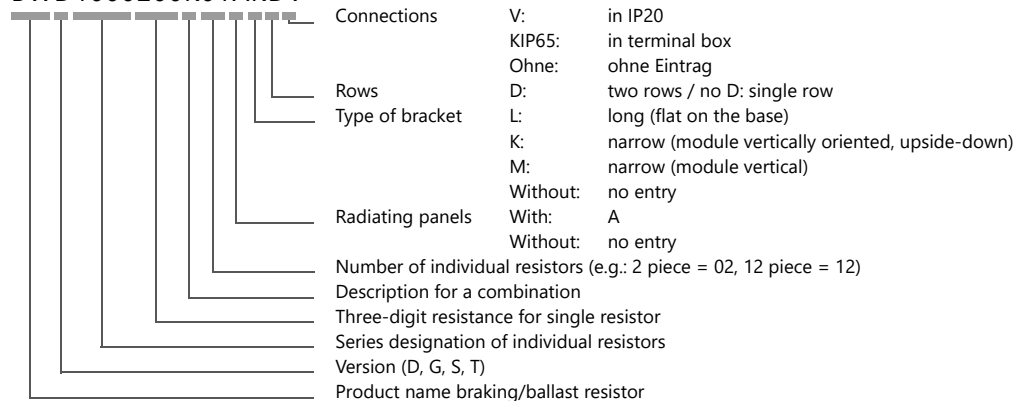


Bracket W080

### Nomenclature

Brake resistor combination BWx...K...K...

BWD1000200K01AKDV



<sup>1</sup> Test conditions: Water jet from nozzle 6.3 mm inside diameter, flow rate 12.5 l / min +/- 5%, water pressure according to volume flow, distance 2.5-3m, test duration 3min.

<sup>2</sup> With fourfold type power and free convection. 1. no short-circuit, 2. no fault to frame, 3. self-extinguishing, 4. no melting of casing. Type power always corresponds to 35% duty cycle of the respective resistor type.



# Special solutions

Customized designs demonstrate our flexibility:

Due to the large variety mechanical and electrical options, almost no limits apply to match the requirements of each individual application.

## Brake resistor combination G900S

Includes:

60 resistors, frame R900S, hood H904S, cover D904S and 3x fan DV6224

Rated<sup>3</sup>: up to 12 kW with 100 % D  
power up to 360 kW with 1 % D  
Prot. class: IP 20

RoHS-conform 2002/95/EG

Temperature monitoring

Fan performance: 120 W



## Brake resistor combination BWD1.5DV15B

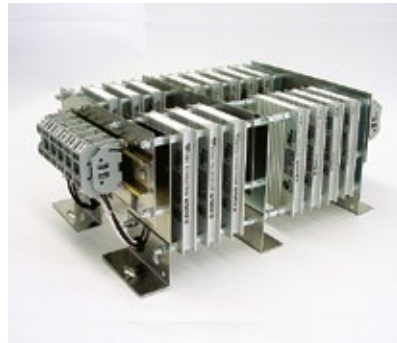
15x 0.1 kW, Resistance values upon request

Includes:

Mounting brackets, radiating panel,

15 resistors and customized pickups  
Rated<sup>3</sup>: up to 15x 0.1 kW with 100% D  
power up to 15x 3.0 kW with 1% D

Prot. class: IP20



## Brake resistor combination BWD0.3-250V3C

3x 0.1 kW, Resistance values upon request

Includes:

Mounting brackets, radiating panel,  
3 resistors and customized pickups

Rated<sup>3</sup>: up to 3x 0.1 kW with 100% D  
power up to 3x 3.0 kW with 1% D

Prot. class: IP 20

Temperature monitoring



## Brake resistor combination BWD6.0D-1000V3D

3x 2.0 kW, Resistance values upon request

Includes:

Mounting brackets, radiating panel,  
15 resistors and customized pickups

Rated<sup>3</sup>: up to 3x 2.0 kW with 100% D  
power up to 3x 60.0 kW with 1% D

Prot. class: IP 20



## Brake resistor combination BWD7.2D-1000IP65V2A

2x 3.6 kW, Resistance values upon request

Includes:

Mounting brackets, radiating panel, 18  
resistors and customized pickups of  
subframe incl. protective housing

Rated<sup>3</sup>: 2x 3.6 kW with 100% D  
power 2x 108.0 kW with 1% D

Prot. class: IP 65<sup>1</sup>



## Brake resistor combination BWD250xxxK02LVE

0.2 kW, Resistance values upon request

Includes:

Mounting brackets and 2 resistors

Rated<sup>3</sup>: up to 0.2 kW with 100% D  
power up to 6.0 kW with 1% D

Prot. class: IP 20



<sup>1</sup> Test conditions: Water jet from nozzle 6.3 mm inside diameter, flow rate 12.5 l / min +/- 5%, water pressure according to volume flow, distance 2.5-3m, test duration 3min.  
<sup>3</sup> Power at 70° C ambient temperatures  
D = Duty cycle

## Special solutions

Customized designs demonstrate our flexibility:

Due to the large variety mechanical and electrical options, almost no limits apply to match the requirements of each individual application.

**Brake resistor combination**  
**BWD600xxxK04LIP65L**  
 0.96 kW, Resistance values upon request

Includes:  
 Mounting brackets, radiating panel,  
 4 resistors and customized pickups by cable

Rated<sup>3</sup>: up to 0.96 kW with 100% D  
 power up to 48.0 kW with 1% D

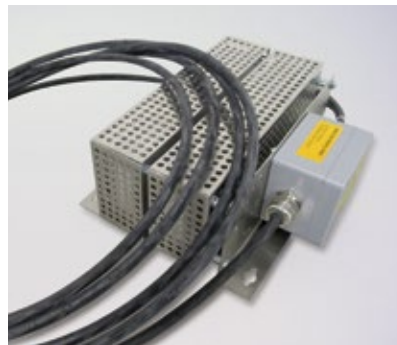
Prot. class: IP 65<sup>1</sup>



**Brake resistor combination**  
**BWD1000xxxK02LIP65T**  
 0.8 kW, Resistance values upon request

Includes:  
 Mounting brackets, radiating panel,  
 2 resistors with protection cover and  
 customer specific pickup with cable  
 Rated<sup>3</sup>: up to 0.8 kW with 100% D  
 power up to 24.0 kW with 1% D

Prot. class: IP 65<sup>1</sup>



**Brake resistor combination**  
**BWD1000xxxK04LIP65A**  
 1.6 kW, Resistance values upon request

Includes:  
 Mounting brackets, radiating panel,  
 4 resistors with protection cover

Rated<sup>3</sup>: up to 1.6 kW with 100% D  
 power up to 48.0 kW with 1% D

Prot. class: IP 65<sup>1</sup>



**Brake resistor combination**  
**BWD600xxxK02L-SET2**  
 2x 0.2 kW, Resistance values upon request

Includes:  
 specific retainer, 2 resistors and customer  
 specific connector

Rated<sup>3</sup>: up to 0.48 kW with 100% D  
 power up to 24.0 kW with 1% D

Prot. class: IP 65<sup>1</sup>



**Brake resistor combination**  
**BWD600xxxK02L-SET3**  
 0.48 kW, Resistance values upon request

Includes:  
 specific retainer, 2 resistors and customer  
 specific connector

Rated<sup>3</sup>: up to 0.48 kW with 100% D  
 power up to 24.0 kW with 1% D

Prot. class: IP 65<sup>1</sup>



**Brake resistor combination**  
**BWD1000xxxK04KA**  
 1.6 kW, Resistance values upon request

Includes:  
 Mounting brackets, radiating panel,  
 4 resistors with protective cover, not  
 connected

Rated<sup>3</sup>: up to 1.6 kW with 100% D  
 power up to 48.0 kW with 1% D

Prot. class: IP 65<sup>1</sup>

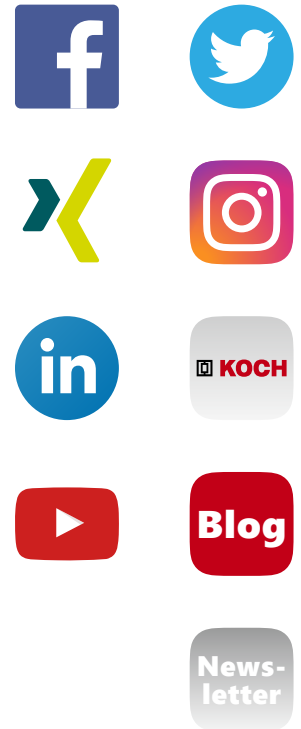


<sup>1</sup> Test conditions: Water jet from nozzle 6.3 mm inside diameter, flow rate 12.5 l / min +/- 5%, water pressure according to volume flow, distance 2.5-3m, test duration 3min.  
<sup>3</sup> Power at 70° C ambient temperatures  
 D = Duty cycle

## What we offer:

- Tested product quality
- Certified processes
- Individual application support
- Machine specific design and sizing
- Rapid reaction
- Quick delivery times
- On-time delivery
- Reliable partner
- Long-term business relationship
- Direct customer relations

Use our communication channels:



## Your specialist for:

- Active energy management devices and systems
- Safe brake resistors

We look forward to hearing from you!



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