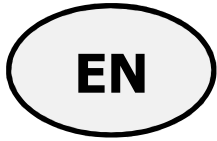


INSTALLATION MANUAL



Battery-protection "BAT BREAKER"



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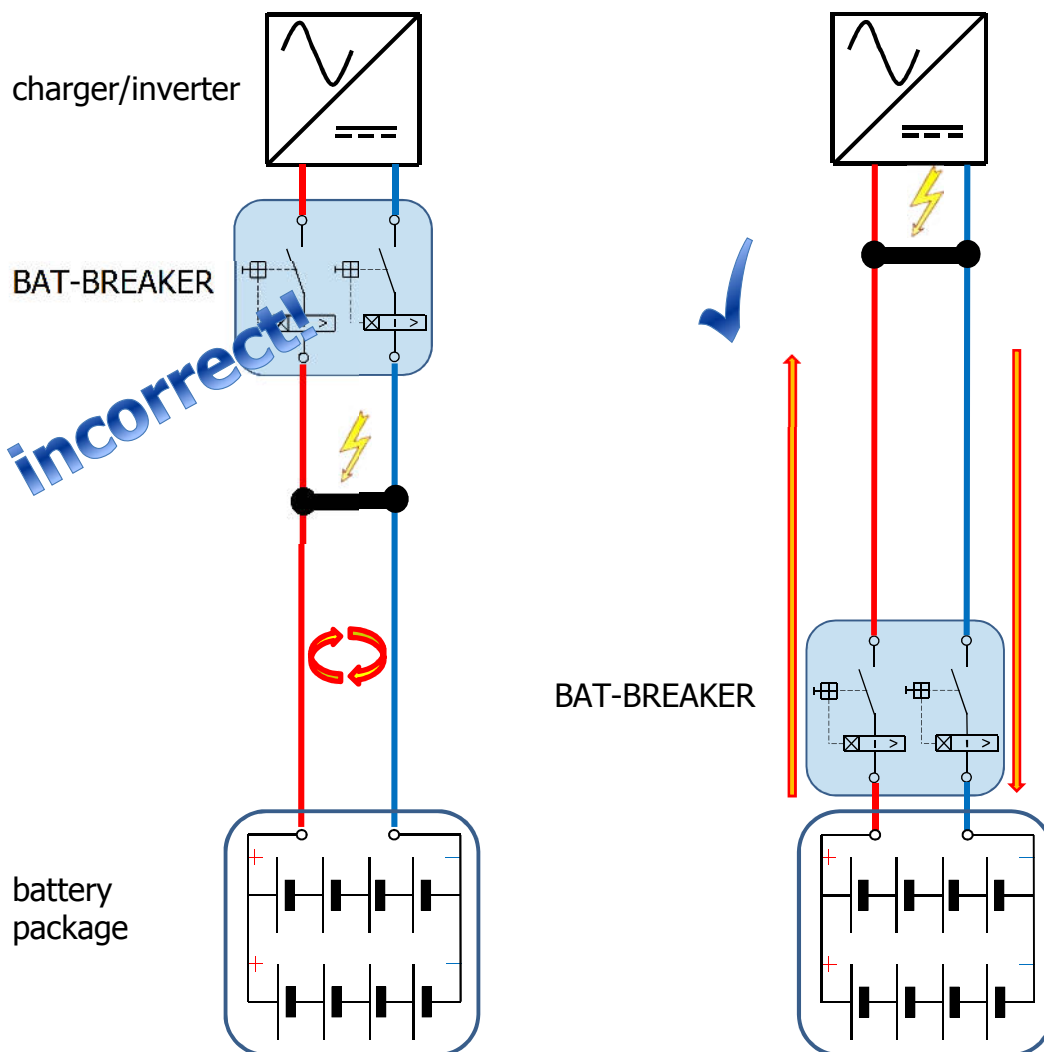
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1. Scope of application and appropriate usage

You may use the battery-protection "BAT BREAKER" for stationary or even mobile battery-storage systems of different technologies (Lead, Lithium...) as a protection against overcurrent and short-circuit current. The voltage for charging/discharging is limited to max. 75V DC. The max. short-circuit current may not occur with a value more than 10kA. The inserted circuit breakers are tested for even more short-circuit current (>25kA) and they had left the tests without any damage. But actually the confirmation IEC/EN 60947-2 conceded the usage up to 10kA and this is mandatory.

Obviously, you will get only in rare cases a short circuit of more than 10kA. For example in parallel connection of more than TWO battery-serial strings and maybe batteries with very low internal resistance. However, you have to calculate the max. short-circuit current in case of uncertainty. You may also use a Excel[®]-sheet for your help which is available on request - ask our sales team. If you experienced an activating breaker during the ongoing operation you would have to expect a failure in your system. Make sure that this failure is eliminated before reactivating the BAT BREAKER.

Always mount the BAT-BREAKER very close to the battery package in order to get an appropriate protection!



2. Scope of delivery

2.1 BAT BREAKER -SLIM-



position	quantity	component
A	1	BAT BREAKER -SLIM-
B	6	Cable gland M32 x 1,5 (clamping range Ø 9 – 17mm)
C	1	Equalising membrane M12
D	2	Twisting sleeve (without aperture) M32 x 1,5
E	6	Locknut M32
F	1	Locknut M12
G	2	Connection thread gasket M32 (usage with Twisting sleeve)
H	4	Wall mounting brackets with screws and locknuts

2.2 BAT BREAKER -BIG-

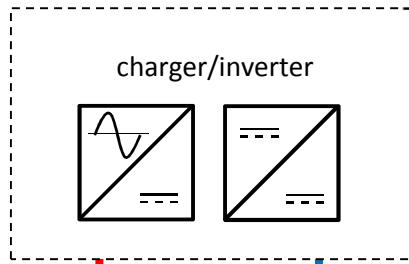


position	number	component
A	1	BAT BREAKER -BIG-
B	2	electrical cabinet key (two-teeth key)
C	4	Wall mounting brackets with screws
D	12	Cable gland M32 x 1,5 (clamping range Ø 9 – 17mm)
E	2	Equalising membrane M12
F	4	Twisting sleeve (without aperture) M32 x 1,5
G	12	Locknut M32
H	2	Locknut M12
I	4	Connection thread gasket M32 (usage with Twisting sleeve)

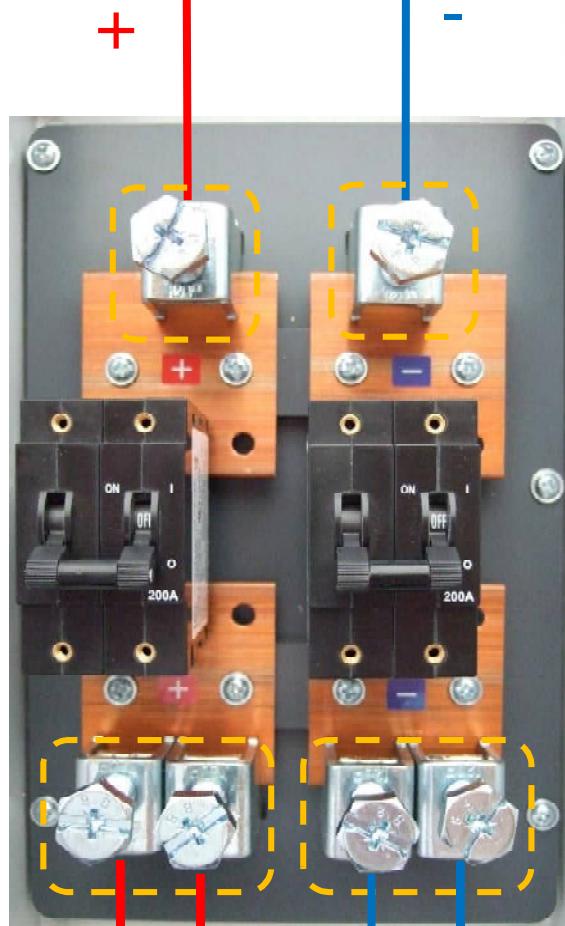
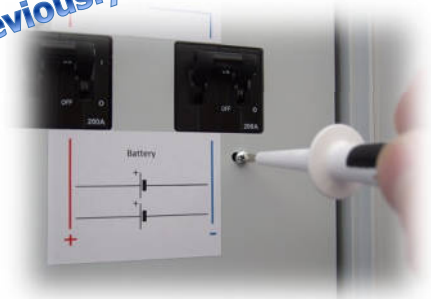
3. Electrical connecting

3.1 BAT BREAKER -SLIM-

1 x charger/inverter

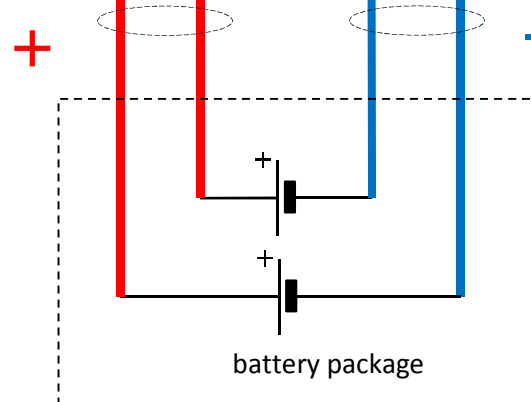


previously remove the cover!



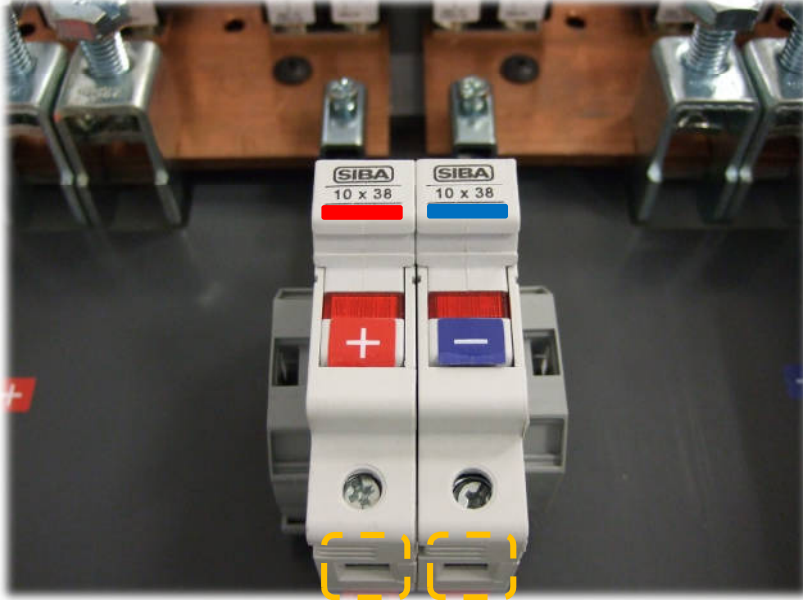
- ⇒ clamping range 16 - 120mm²
- ⇒ finely stranded (with- or without wire-end sleeve)
- ⇒ tightening torque: **22Nm**

maximum of TWO strings in parallel!



take care of similar cable length for all strings per potential!

Our special version "VT" includes an additional voltage tap for supporting other equipment except of the battery. Both potentials are protected against overcurrent and short-circuit current. PV-fuses with a nominal fuse value of 8A have to be used and are included in the delivery.



- ⇒ clamping range max. 25mm² (without wire-end sleeve)
- ⇒ clamping range max. 16mm² (with wire-end sleeve)
- ⇒ Copper - finely stranded (with- or without wire-end sleeve)
- ⇒ tightening torque: **3Nm**

4. Mounting the BAT BREAKER

4.1 Selecting the mounting location



DANGER

risk of explosion or fire

- do not mount the BAT BREAKER on flammable construction materials!
- do not mount the BAT BREAKER near highly flammable materials!
- do not mount the BAT BREAKER in potentially explosive areas!

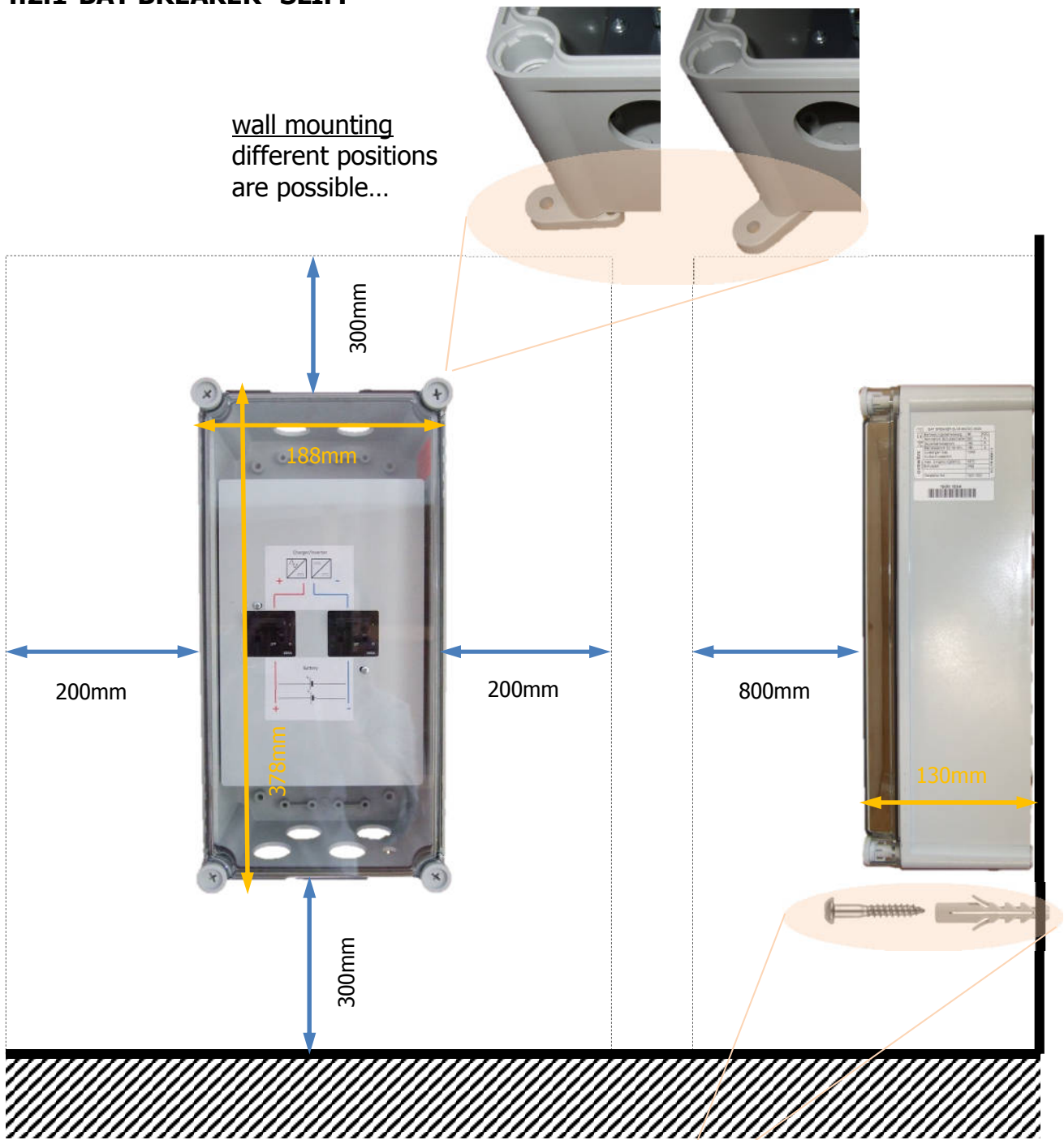
- mount on a solid surface
- the mounting location and method must be suitable for the weight and dimension
- the mounting location must be accessible at all times
- climatic conditions must be in compliance with the specification
- the device may not be exposed to direct sunlight and weathering
- the mounting location has to be protected against splashing water

installation position



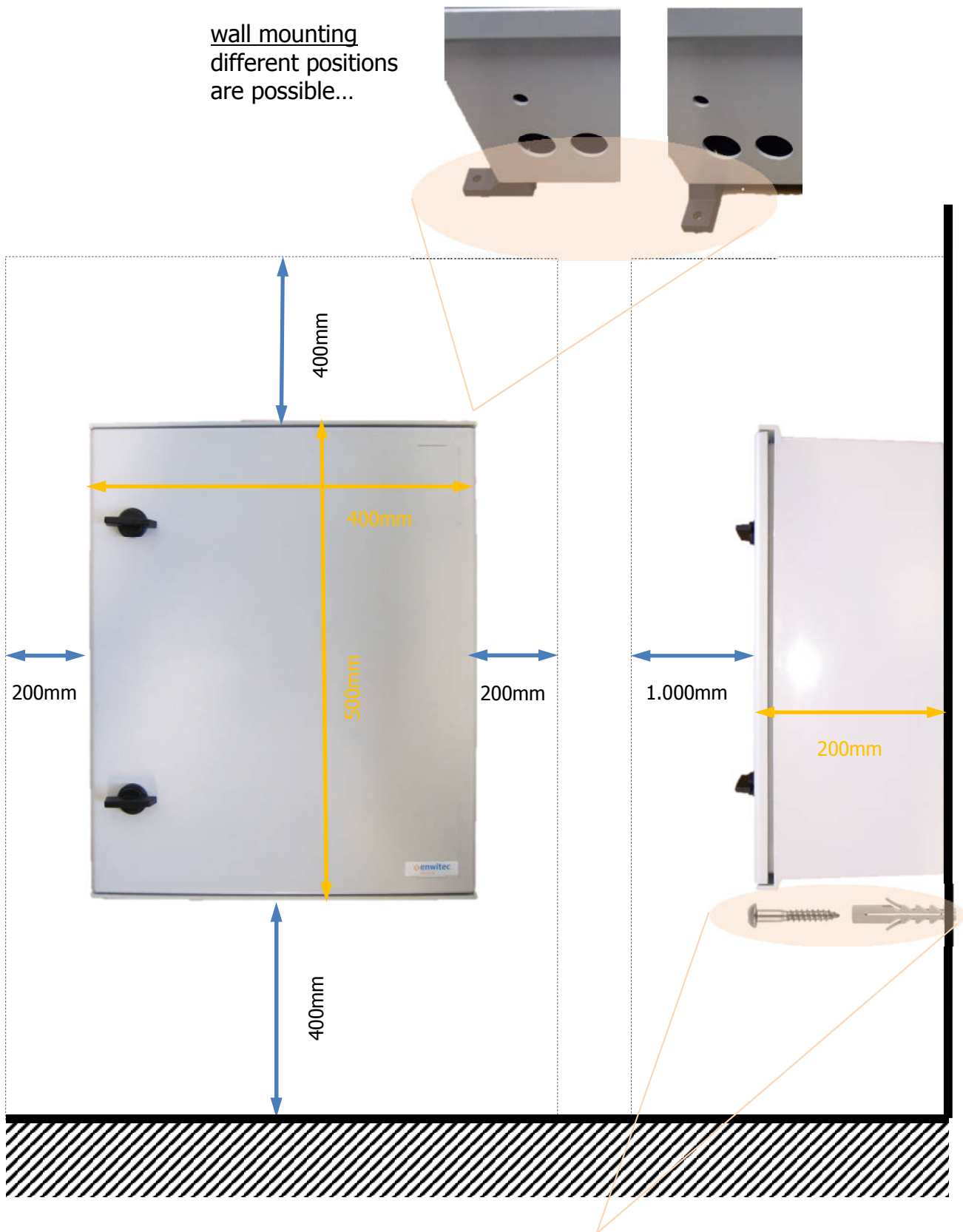
4.2 Minimum distances/dimension/mounting method

4.2.1 BAT BREAKER -SLIM-



Select the correct mode of mounting, **depending on the mounting surface**, for example 4 x expansion anchor "S8" + 4 x chipboard screw Ø 5,5

4.2.2 BAT BREAKER -BIG-



Select the correct mode of mounting, **depending on the mounting surface**, for example 4 x expansion anchor "S8" + 4 x chipboard screw Ø 5,5

5. Maintenance and cleaning

You should do a frequent short inspection of your BAT BREAKER for keeping a long durability and avoiding an operational breakdown of the system. Please also consider your national standards and provisions regarding the requirements of battery- and/or PV-power installations and their equipment. Potentially, you have to do an electrical test procedure once a year as it is to adduce in Germany.

Visual inspection

Depending on the installation side and the environmental conditions you have to expect some pollution on the device's surface. Clean carefully with the help of a moist cloth! During this time do not open the case of the device under any circumstances!

6. How to stock the BAT BREAKER

Demands

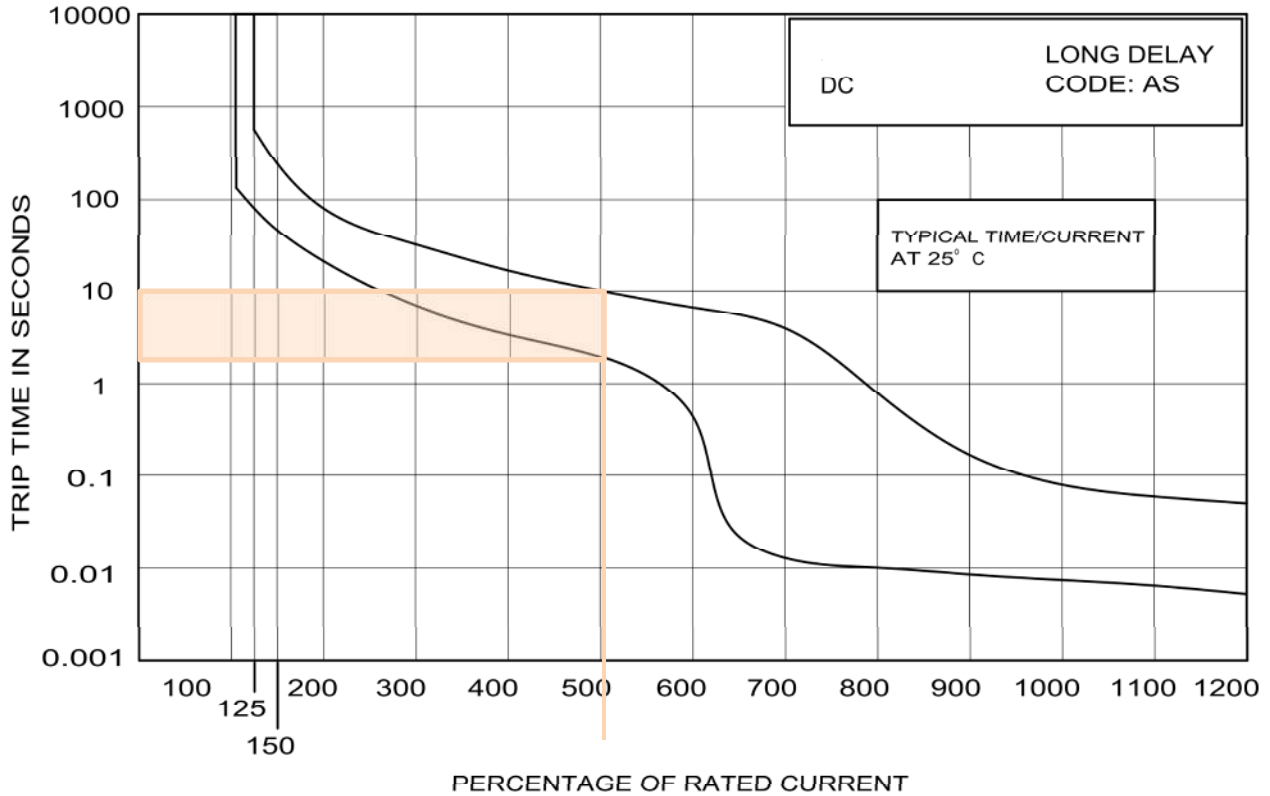
- dry conditions
- ambient air temperature ranges from -25°C up to +55°C
- for a maximum of 24 hours: temperature might get higher up to +70°C

7. Disposal

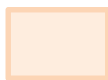
Disposal is due to your national/local regulations. The BAT BREAKER is to classify as "Electronic waste" (it is no "Household waste"!)
Take care of that and protect the environment!

8. Technical data

8.1 Tripping characteristic



PERCENTAGE OF RATED CURRENT	100%	125%	200%	400%	600%	800%	1000%	1200%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	80	21	3.5	0.45	0.01	0.0075	0.005
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	560	80	17	6.8	0.8	0.08	0.05



for example: BAT BREAKER -SLIM 200-
 fault current of 1000A (= 500% of nominal current 200A)
 trip time between 2s and 10s

8.2 Technical data BAT BREAKER -SLIM- standard version

enwitec part number	10011138
parameter	BAT-BREAKER -SLIM 150-
<u>electrical data</u>	
max. number of battery charger/inverter	1
max. number of battery parallel-connect	2
max. DC-voltage	75V
rated current of circuit-breaker	150A
continuous operation current	120A
max. current within 30 minutes	135A
tripping characteristic	delay-action - please note the tripping curve
max. short circuit breaking capacity	10kA
<u>electrical connection (busbar contactor terminal)</u>	
towards - charger/inverter	1 x 16mm ² -120mm ² per potential
towards - battery	2 x 16mm ² -120mm ² per potential
<u>cabinet</u>	
IP protection class	IP65 (within pressure compensation element -anti-condensation-)
protection class against electric shock	II
dimensions (WxHxD)	188x378x130(mm)
plastic material	polycarbonate - base part in grey -RAL7035-; cover clear
installation type	wall mounting
<u>cable entry (plastic metric cable glands)</u>	
towards - charger/inverter	M32 (clamping range 13-21mmØ)
towards - battery	M32 (clamping range 13-21mmØ)
<u>environmental conditions for operation</u>	
humidity	5%...95%
ambient temperature range	-25°C... +45°C (temporary 50°C)
<u>miscellaneous</u>	
weight	3,7Kg

enwitec part number	10011033
parameter	BAT-BREAKER -<i>SLIM 200</i>-
<u>electrical data</u>	
max. number of battery charger/inverter	1
max. number of battery parallel-connect	2
max. DC-voltage	75V
rated current of circuit-breaker	200A
continuous operation current	160A
max. current within 30 minutes	180A
tripping characteristic	delay-action - please note the tripping curve
max. short circuit breaking capacity	10kA
<u>electrical connection (busbar contactor terminal)</u>	
towards - charger/inverter	1 x 16mm ² -120mm ² per potential
towards - battery	2 x 16mm ² -120mm ² per potential
<u>cabinet</u>	
IP protection class	IP65 (within pressure compensation element -anti-condensation-)
protection class against electric shock	II
dimensions (WxHxD)	188x378x130(mm)
plastic material	polycarbonate - base part in grey -RAL7035-; cover clear
installation type	wall mounting
<u>cable entry (plastic metric cable glands)</u>	
towards - charger/inverter	M32 (clamping range 13-21mmØ)
towards - battery	M32 (clamping range 13-21mmØ)
<u>environmental conditions for operation</u>	
humidity	5%...95%
ambient temperature range	-25°C... +45°C (temporary 50°C)
<u>miscellaneous</u>	
weight	3,7Kg

enwitec part number	10011139
parameter	BAT-BREAKER -SLIM 250-
<u>electrical data</u>	
max. number of battery charger/inverter	1
max. number of battery parallel-connect	2
max. DC-voltage	75V
rated current of circuit-breaker	250A
continuous operation current	200A
max. current within 30 minutes	225A
tripping characteristic	delay-action - please note the tripping curve
max. short circuit breaking capacity	10kA
<u>electrical connection (busbar contactor terminal)</u>	
towards - charger/inverter	1 x 16mm ² -120mm ² per potential
towards - battery	2 x 16mm ² -120mm ² per potential
<u>cabinet</u>	
IP protection class	IP65 (within pressure compensation element -anti-condensation-)
protection class against electric shock	II
dimensions (WxHxD)	188x378x130(mm)
plastic material	polycarbonate - base part in grey -RAL7035-; cover clear
installation type	wall mounting
<u>cable entry (plastic metric cable glands)</u>	
towards - charger/inverter	M32 (clamping range 13-21mmØ)
towards - battery	M32 (clamping range 13-21mmØ)
<u>environmental conditions for operation</u>	
humidity	5%...95%
ambient temperature range	-25°C... +45°C (temporary 50°C)
<u>miscellaneous</u>	
weight	3,7Kg

8.3 Technical data BAT BREAKER -BIG- standard version

enwitec part number	10011140
* option including voltage tap -BIG 150VT-	10011142
parameter	BAT-BREAKER -BIG 150-
<u>electrical data</u>	
max. number of battery charger/inverter	3
max. number of battery parallel-connect	3
max. DC-voltage	75V
rated current of circuit-breaker	3x150A
continuous operation current	3x120A
max. current within 30 minutes	3x135A
tripping characteristic	delay-action - please note the tripping curve
max. short circuit breaking capacity	10kA
<u>electrical connection (busbar contactor terminal)</u>	
towards - charger/inverter	3 x 16mm ² -120mm ² per potential
towards - battery	3 x 16mm ² -120mm ² per potential
<u>cabinet</u>	
IP protection class	IP65 (within pressure compensation element -anti-condensation-)
protection class against electric shock	II
dimensions (WxHxD)	400x500x200(mm)
plastic material	fibre glass reinforced polyester, grey - similar RAL 7035
installation type	wall mounting
<u>cable entry (plastic metric cable glands)</u>	
towards - charger/inverter	M32 (clamping range 13-21mmØ)
towards - battery	M32 (clamping range 13-21mmØ)
option voltage tap*	M16 (clamping range 4,5-10mmØ)
<u>environmental conditions for operation</u>	
humidity	5%...95%
ambient temperature range	-25°C... +45°C (temporary 50°C)
<u>miscellaneous</u>	
weight	13Kg
option voltage tap for external devices*	yes (8A fuse in both potentials +/-)

enwitec part number	10011034
* option including voltage-tap -BIG 200VT-	10011143
parameter	BAT-BREAKER -BIG 200-
<u>electrical data</u>	
max. number of battery charger/inverter	3
max. number of battery parallel-connect	3
max. DC-voltage	75V
rated current of circuit-breaker	3x200A
continuous operation current	3x160A
max. current within 30 minutes	3x180A
tripping characteristic	delay-action - please note the tripping curve
max. short circuit breaking capacity	10kA
<u>electrical connection (busbar contactor terminal)</u>	
towards - charger/inverter	3 x 16mm ² -120mm ² per potential
towards - battery	3 x 16mm ² -120mm ² per potential
<u>cabinet</u>	
IP protection class	IP65 (within pressure compensation element -anti-condensation-)
protection class against electric shock	II
dimensions (WxHxD)	400x500x200(mm)
plastic material	fibre glass reinforced polyester, grey - similar RAL 7035
installation type	wall mounting
<u>cable entry (plastic metric cable glands)</u>	
towards - charger/inverter	M32 (clamping range 13-21mmØ)
towards - battery	M32 (clamping range 13-21mmØ)
option voltage tap*	M16 (clamping range 4,5-10mmØ)
<u>environmental conditions for operation</u>	
humidity	5%...95%
ambient temperature range	-25°C... +45°C (temporary 50°C)
<u>miscellaneous</u>	
weight	13Kg
option voltage tap for external devices*	yes (8A fuse in both potentials +/-)

enwitec part number	10011141
* option including voltage-tap -BIG 250VT-	10011144
parameter	BAT-BREAKER -BIG 250-
<u>electrical data</u>	
max. number of battery charger/inverter	3
max. number of battery parallel-connect	3
max. DC-voltage	75V
rated current of circuit-breaker	3x250A
continuous operation current	3x200A
max. current within 30 minutes	3x225A
tripping characteristic	delay-action - please note the tripping curve
max. short circuit breaking capacity	10kA
<u>electrical connection (busbar contactor terminal)</u>	
towards - charger/inverter	3 x 16mm ² -120mm ² per potential
towards - battery	3 x 16mm ² -120mm ² per potential
<u>cabinet</u>	
IP protection class	IP65 (within pressure compensation element -anti-condensation-)
protection class against electric shock	II
dimensions (WxHxD)	400x500x200(mm)
plastic material	fibre glass reinforced polyester, grey - similar RAL 7035
installation type	wall mounting
<u>cable entry (plastic metric cable glands)</u>	
towards - charger/inverter	M32 (clamping range 13-21mmØ)
towards - battery	M32 (clamping range 13-21mmØ)
option voltage tap*	M16 (clamping range 4,5-10mmØ)
<u>environmental conditions for operation</u>	
humidity	5%...95%
ambient temperature range	-25°C... +45°C (temporary 50°C)
<u>miscellaneous</u>	
weight	13,5Kg
option voltage tap for external devices*	yes (8A fuse in both potentials +/-)

enwitec electronic GmbH & Co. KG
Scherrwies 2
84329 Rogglfing - Lower Bavaria
-Germany-
phone +49 8725 9664-0
fax +49 8725 9664-96
info@enwitec.eu

enwitec
electronic