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DELTA | APPLICATION NOTE

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BATTERY CHARGING WITH SM-series POWER SUPPLIES

Warning: always use a circuit breaker in combination with the protective diodes! See table below for circuit breakers.

• Battery charging

The CV / CC regulated SM power supplies are ideal battery chargers. Once the output is set at the correct voltage the battery will charge constantly without overcharging. This can also be useful for emergency power systems.

• Protective measures

Use a CIRCUIT BREAKER in series in order to protect the power supply from accidental reverse connection, see fig. 1. The circuit breaker should have a DC voltage rating. If available, use the very fast type (Z), a type meant for protecting semiconductors. The unit has a reverse diode in parallel with the output, this diode and the wiring cannot withstand the thousands of amperes supplied by a wrongly connected battery.

- **Remote sensing** is not recommended, because it easily causes defects inside the power supply.

Although for SM800-, SM1500N- and SM6000-units the sense circuit is protected internally, one must still be very careful.

Please contact factory if remote sensing is required.

Notes:

Several units need an extra parallel diode on the output, even in combination with a circuit breaker. Without this diode the internal diode will still blow. See table below and on the following page for details. The diodes have to be connected externally.

* Circuit breakers are not supplied by Delta Elektronika B.V.
Inquire for availability of external diodes.

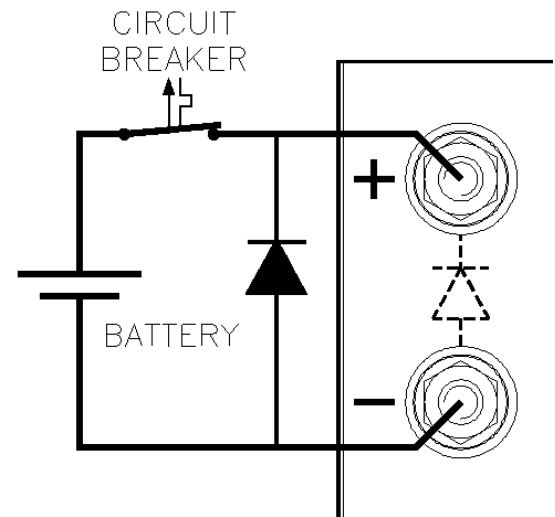


fig. 1
Circuit breaker protecting the power supply from
accidental battery reversal

Suggested circuit breakers for protection of the power supply			
SM800-Series	Type number circuit breaker*	Brand	Remarks
SM7.5-80	S281 UC-B 100	ABB	-
SM18-50	S281 UC-Z 63	ABB	-
SM70-AR-24	S281 UC-Z 25	ABB	-
SM400-AR-4	S282 UC-Z 6	ABB	2 poles of the circuit-breaker in series. External parallel diode on output needed. Order OPTION P201 = 2pcs BYT261PIV-400, to be mounted externally. - connect the 2 diodes inside each BYT261 in parallel. - connect the 2pcs BYT261 in series.

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Suggested circuit breakers for protection of the power supply			
SM1500N-Series	Type number circuit breaker*	Brand	Remarks
SM15-100	HTI102 B 100	GE	-
SM35-45	S281 UC-Z 50	ABB	-
SM52-30	S281 UC-Z 32	ABB	External parallel diode on output needed. Order OPTION P197 = 1pcs STTH20002TV1, to be mounted externally. - connect the 2 diodes inside the STTH in parallel.
SM52-AR-60	S282 UC-Z 63	ABB	External parallel diode on output needed. Order OPTION P198 = 1pcs STTH20002TV1, to be mounted externally. - connect the 2 diodes inside the STTH in parallel.
SM70-22	S281 UC-Z 25	ABB	-
SM120-13	S281 UC-Z 16	ABB	External parallel diode on output needed. Order OPTION P199 = 1pcs STTH20002TV1, to be mounted externally. - connect the 2 diodes inside the STTH in parallel.
SM300-5	S282 UC-Z 6	ABB	2 poles of the circuit-breaker in series. External parallel diode on output needed. Order OPTION P200 = 2pcs BYT261PIV-400, to be mounted externally. - connect the 2 diodes inside each BYT261 in parallel. - connect the 2pcs BYT261 in parallel.
SM400-AR-8	S282 UC-Z 10	ABB	2 poles of the circuit-breaker in series. External parallel diode on output needed. Order OPTION P201 = 2pcs BYT261PIV-400, to be mounted externally. - connect the 2 diodes inside each BYT261 in parallel. - connect the 2pcs BYT261 in series.

Suggested circuit breakers for protection of the power supply			
SM3300-Series	Type number circuit breaker*	Brand	Remarks
SM18-220	HTI102 B 125	GE	2 poles of the circuit-breaker in parallel.
SM66-AR-110	HTI102 B 100	GE	2 poles of the circuit-breaker in parallel. External parallel diode on output needed. Order 1pcs STTH20002TV1, to be mounted externally. - connect the 2 diodes inside the STTH in parallel.
SM100-AR-75	HTI101 B 100	GE	no remarks.
SM330-AR-22	S281 UC-Z 50 or S282 UC-Z 20	ABB	External parallel diode on output needed. Order 5pcs BYT261PIV-400, to be mounted externally. - connect the 2 diodes inside each BYT261 in parallel. - connect the 5pcs BYT261 in parallel.
SM660-AR-11	FHL 3603013	Schneider Electric	2 poles of the circuit-breaker in series. External parallel diode on output needed. Order 2pcs STTH12010TV1, to be mounted externally. - connect the 2 diodes inside each STTH in parallel. - connect the 2pcs STTH in parallel.

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Suggested circuit breakers for protection of the power supply			
SM6000-Series	Type number circuit breaker*	Brand	Remarks
SM15-400	2x HTI102 B 100	GE	4 poles of the circuit-breaker parallel
SM30-200	HTI102 B 100	GE	2 poles of the circuit-breaker parallel
SM45-140	HTI102 B 100	GE	2 poles of the circuit-breaker parallel External parallel diode on output needed. Order OPTION P151=1pcs STTH20002TV1, to be mounted externally - connect the 2 diodes inside the STTH in parallel.
SM60-100	HTI101 B 100	GE	-
SM70-90	HTI101 B 100	GE	-
SM120-50	S281 UC-Z 50	ABB	External parallel diode on output needed. Order OPTION P152=1pcs STTH20002TV1, to be mounted externally - connect the 2 diodes inside the STTH in parallel.
SM300-20	S282 UC-Z 20	ABB	2 poles of the circuit-breaker in series External parallel diode on output needed. Order OPTION P153 = 2pcs BYT261PIV-400, to be mounted externally - connect the 2 diodes inside each BYT261 in parallel. - connect the 2pcs BYT261 in parallel.
SM600-10	FHL 3603013	Schneider Electric	2 poles of the circuit-breaker in series. External parallel diode on output needed. Order 2pcs STTH12010TV1, to be mounted externally. - connect the 2 diodes inside each STTH in parallel. - connect the 2pcs STTH in parallel.

Suggested circuit breakers for protection of the power supply			
SM15k-Series	Type number circuit breaker*	Brand	Remarks
SM70-CP-450	S804PV-S125	ABB	4 poles of the circuit-breaker in parallel. External parallel diode on output needed. Order 4 pcs STPS160H100TV, to be mounted externally. - connect the 2 diodes inside each STTH in parallel. - connect the 4 pcs STTH in parallel.
SM210-CP-150	S802PV-S125	ABB	2 poles of the circuit-breaker in parallel. External parallel diode on output needed. Order 2pcs STTH20002TV, to be mounted externally. - connect the 2 diodes inside each STTH in parallel. - connect the 2 pcs STTH in parallel.
SM500-CP-90	S802PV-S100	ABB	2 poles of the circuit-breaker in series (one in + lead, and one in – lead) External parallel diode on output needed. Order 2pcs STTH200L06TV, to be mounted externally. - connect the 2 diodes inside each STTH in parallel. - connect the 2pcs STTH in parallel.
SM1500-CP-30	S802PV-S32	ABB	2 poles of the circuit-breaker in series (one in + lead, and one in – lead) External parallel diode on output needed. Order 2pcs Littlefuse MD16110A-DKM2MM, to be mounted externally. - connect the 2 diodes inside each module in parallel. - connect the 2 modules in parallel.