DELTA ELEKTRONIKA B.V.
DC POWER SUPPLIES

Vissersdijk 4, 4301 ND
Zierikzee, the Netherlands

www.DeltaPowerSupplies.com
Tel. +31 111 413656

SM800 - Power Sink Option

2 Quadrant operation: Source and Sink

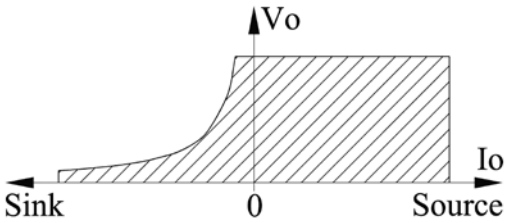
SM70-AR-24

Models	Order-Code
SM 7.5-80	Option P245
SM 18-50	Option P246
SM 70-AR-24	Option P247
SM 400-AR-4	Option P248

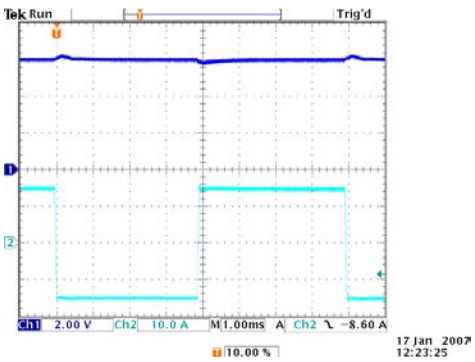
Order code table

The Power Sink Option permits the power supply to absorb bursts of power fed back to the unit. An internal module senses the status of power supply and sinks current across the output terminals, thus maintaining a constant output voltage.

The Power Sink Option allows a faster response when the power supply is step programmed to a lower voltage at low load conditions.

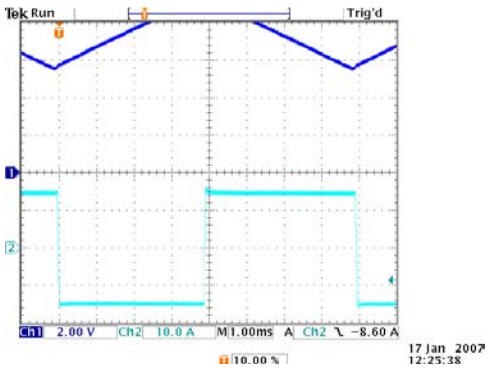


- Can absorb up to 140 W peak power
- Maintains output voltage setting regardless output power is positive or negative (source and sink)
- Ideal solution for supplying electric motors with PWM-speed control. These systems often return power to the power supply during a braking action
- Ideal solution for ATE systems requiring fast down programming at no load conditions
- Generation Automotive waveforms (fast)



*SM18-AR-50 **with** Power Sink Option*
Current –15 A means the load delivers 15 A to the power supply (sink operation)

Upper trace: output voltage
Lower trace: output current
(current switching from +15 A to –15 A at Vo=6 V)

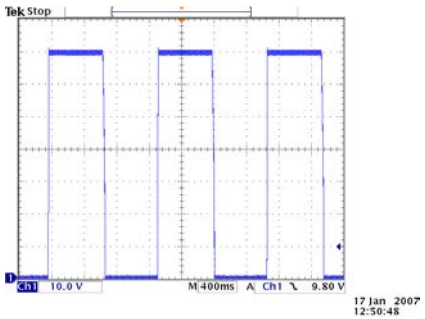


*SM18-AR-50 **without** Power Sink Option*
*The output voltage is out of control when the output current is **negative***

Upper trace: output voltage
Lower trace: output current
(current switching from +15 A to –15 A at Vo=6 V)

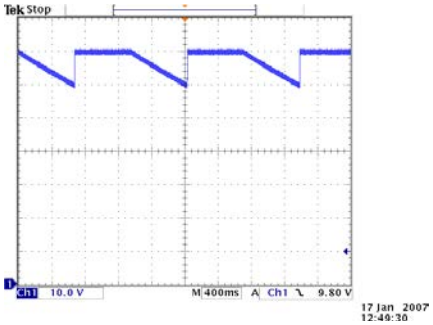
Power Sink Specifications	SM7.5-80 ***Option P245***	SM18-50 ***Option P246***	SM70-AR-24 ***Option P247***	SM400-AR-4 ***Option P248***
Sink Power Rating max. peak power (electronically limited) max. continuous power ($T_{amb.}$ = 25 °C) max. continuous power ($T_{amb.}$ = 50 °C)	140W 140W 110W			
Max duration Sink Peak Power P_{sink} = 140 W, $T_{amb.}$ = 25 °C **Duty cycle for use a Peak Power** P_{sink} = 140 W, $T_{amb.}$ = 25 °C	Continuous 100%			
Max Sink Current (V_o >= 2 V and P <= 140 W)	Limited at 36 A	Limited at 36 A	Limited at 25 A	Limited at 5 A
Protection	Electronic Power Limit limits the current. The temperature of the power sink is fan controlled, and the circuit shuts down in case of thermal overload.			
Recovery time / Deviation V_o = 6 V, I_o: +30 A → –10 A recovery within 100 mV / deviation: V_o = 15 V, I_o: +20 A → –4 A recovery within 100 mV / deviation: V_o = 24 V, I_o: +15 A → –2 A recovery within 100 mV / deviation: V_o = 60 V, I_o: +9 A → –1 A recovery within 100 mV / deviation: V_o = 150 V, I_o: +3 A → –0.5 A recovery within 1 V / deviation: V_o = 350 V, I_o: +1 A → –0.1 A recovery within 1 V / deviation: *(load current switches from positive to negative)*	 di/dt=–0.7A/µs 200µs / 0.15 V - - - - - *note: values are typical*	 di/dt=–0.7A/µs 400µs / 0.25 V di/dt=–0.5A/µs 700µs / 0.20 V - - - - *note: values are typical*	 - di/dt=–0.5A/µs 700µs / 0.85 V di/dt=–0.4A/µs 800µs / 0.75 V di/dt=–0.3A/µs 4ms / 0.65 V - - *note: values are typical*	 - - - - di/dt=–0.1A/µs 800µs / 4.0 V di/dt=–0.05 A/µs 2.0ms / 2.7 V *note: values are typical*
Programming Down Speed Fall time at **no load** (90 – 10%) Fall time at no load *without Power Sink* Unit with Hi Speed Programming Option Fall time at **no load** (90 – 10%) Fall time at no load *without Power Sink*	(7.5 → 0 V) 6.5ms 5s ***P245 + P250*** 120µs 65ms	(18 → 0 V) 17ms 6s ***P246 + P251*** 390µs 210ms	(70 → 0 V) 25ms 4s ***P247 + P252*** 1ms 760ms	(400 → 0 V) 19ms 4.5s ***P248 + P253*** *Not possible.*
Parallel and Series operation Refer to power sink manual for details and restrictions.	Using multiple units in parallel operation, only one unit can have a power sink. Using multiple units in series operation, all units must have a power sink.			

Notes: *- The maximum sink current at higher voltages will not be the maximum specified current due to the power limit. For example, at 30V, the max sink current will be 4.7 A (30 V x 4.7 A = 140 W = max power).*
- A higher sink current than the maximum current will cause the output voltage to rise.



*SM70-AR-24 **with** Power Sink Option*
fast discharge of output capacitors
by Power Sink circuit

Trace: output voltage
Voltage Programming Speed at NO LOAD



*SM70-AR-24**without** Power Sink Option*
slow response time during voltage step down,
time needed to discharge the output capacitors

Trace: output voltage
Voltage Programming Speed at NO LOAD