

SkelStart 24V
ENGINE START MODULE

The most powerful engine start module for mining

Eliminate down time and forget about battery problems - the SkelStart Engine Start Module will crank your engine reliably in any weather conditions.



skeleton+

What is SkelStart?

The SkelStart Engine Start Module is a supercapacitor engine start module. It will start your engine anywhere, every time, and will crank any large diesel engine reliably, time after time.

Supercapacitors are an energy storage technology similar to batteries, but their strengths are different: very high power, 10+ year lifetime, and excellent reliability, even in extreme temperatures.



Why SkelStart?

Your batteries have to power the lights, the A/C, and all electronics in your vehicle. All this on top of having to crank the engine, which requires high current and decreases the lifetime of your batteries. Supercapacitors are designed to provide high current and are ideal for cranking large diesel engines. You'll never need to worry about your engine not starting again.



High power
60X the power
of batteries



No downtime
reliable engine starting
even with dead batteries



Long lifetime
1M+ lifecycles, no
maintenance needed



**Works even at
-40 °C/°F**
with full efficiency

Reliable engine starting

Supercapacitors are highly resistant to harsh temperatures and operate at almost full efficiency even at -40 °C/°F.

The SkelStart only needs 9V to recharge, so it works even if your batteries are dead.

Improved safety

Supercapacitors are very safe compared to battery technologies. They do not explode even if crushed, burned, or short-circuited.

Supercapacitors also contain no rare metals.

Longer battery lifespan

Increases battery lifetime significantly.

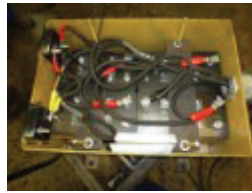
Supercapacitors provide the starting power instead of batteries, protecting them from frequent, high peaks of current.

One-time investment

Supercapacitors have a lifetime of 1+ million charge-discharge cycles, meaning the SkelStart will last the entire lifetime of your vehicle.

No maintenance required, no upgrades needed.

Real Life Use Cases



Mining haul truck
 + 2x SkelStart 24V
 + Operated without issues at -40 °C/ °F



Mining haul truck
 + 2x SkelStart 24V
 + Operated without issues at -40 °C/ °F
 + No problems with engine starting



D10T C27 bulldozer
 + 27-liter engine, started with one 24V SkelStart
 + Operated without issues at -35 °C / -31 °F



L-size drilling rig
 + 5 hydraulic pumps
 + 1 compressor connected with the engine without the clutch (Cummins engine)
 + 2x SkelStart connected in parallel

Compatible Mining Trucks*

Size class (MT payload)	Caterpillar	Hitachi	Komatsu	Liebherr	Volvo (Terex)
90-110	776, 776B, 776C, 776D, 776F, 777, 777B, 777C, 777D, 777E, 777F, 777G, BD180, M100, M120, MK24, MK30, MK30B, MT3000	CH120, CH130, CH135, CH145, CH150, CH160, EH1600, EH1700, EH1700-3, R100, R120, R90, R90C	120B, 120C, 120CM, 120D, 120DM, 150CT, 325M, 330M, 445E, HD1200, HD1400, HD1400B, HD1400B-1, HD1400B-3, HD785, HD785-2, HD785-3, HD785-5, HD785-5LC, HD785-7, HD785-7AS, HD785-8, HD785-8E0, HD785C-MR-7, HD985, HD985-3, HD985-5	KL2420, T252	DAR150, DART4160, K100, K95, TR100, TR100C
127-150	784, 784B, 784C, 785, 785B, 785C, 785D, 785G, MK33, MT3300, MT3300AC	CH210, R130, R130B, R150	140D, 140DM, 510E, 530M, HD1500-5, HD1500-7, HD1500-8		
154-190	788, 789, 789B, 789C, 789D, BD240, BD270, M170, MK36, MK37, MT2050, MT2120, MT3600, MT3600B, MT3700, MT3700AC, MT3700B, MT3700DC	EH3000, EH3500, EH3500AC-3, EH3500ACII, R170, R170C, R190, R190C, R220	170C, 170D, 630E, 685E, 730E, 730E-10, 730E-4, 730E-7, 730E-8, T2170, T2190, T2200		
218-255	783F, 793, 793B, 793C, 793D, 793F, 793F AC, MT4000, MT4400, MT4400AC, MT4400DAC, MT-4400DC	EH4000, EH4000AC-3, EH4000ACII, EH4500, EH4500-2, R260, R280, R280AC	830E, 830E-15, 830E-17, 830E-17AC, 830E-1AC, 830E-1AT, 830E-1LE, 830E-5, 860E-1K, 860E-1KT, T2240	T262, T262/ KL2450, T264	
290	794 AC, MT5300D AC	EH5000, EH5000AC-3, EH5000ACII	930E, 930E-1, 930E-2, 930E-2SE, 930E-3, 930E-3SE, 930E-4, 930E-4AT, 930E-4E, 930E-4SE, 930E-5	T272	
308-363	795F AC, 796 AC, 797, 797B, 797F, 798 AC, MT5500, MT5500AC, MT5500B, MT6300AC		960E-1, 960E-1K, 960E-2, 960E-2K, 960E-2KT, 980E-4, 980E-4AT, 980E-5	T282, T282B, T282C, T284	

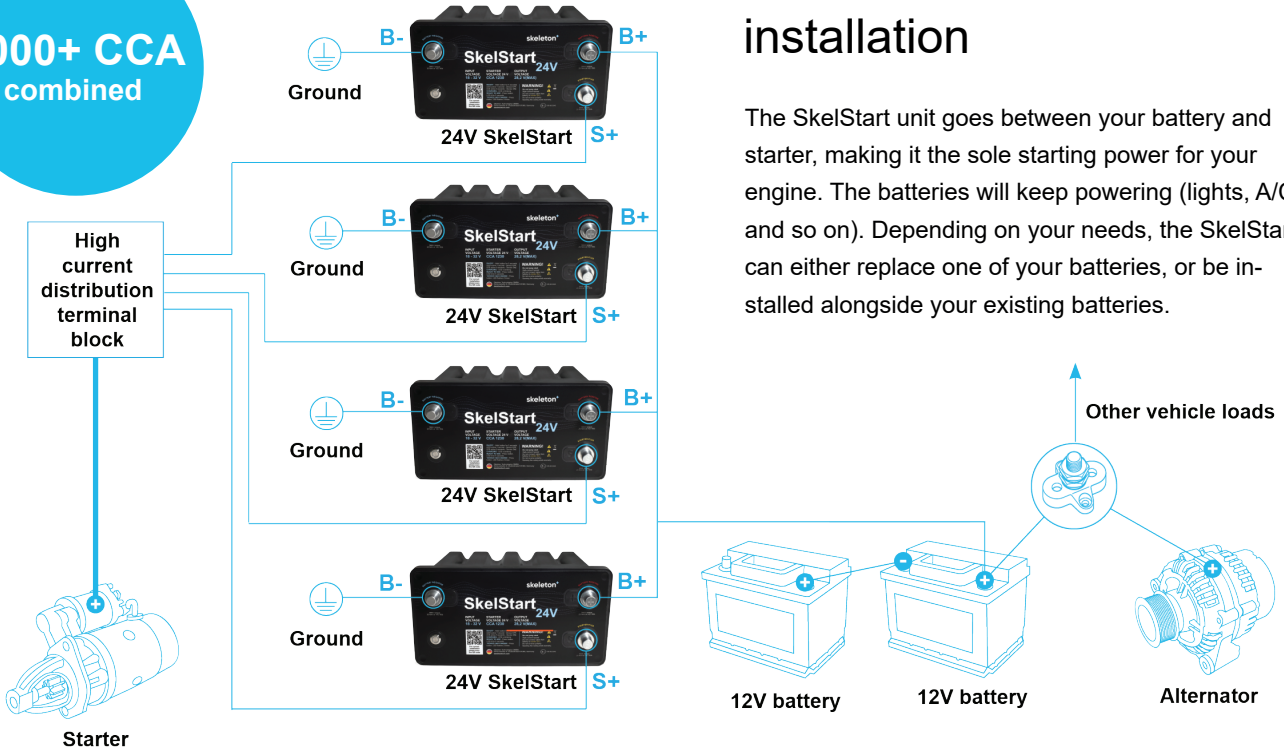
*The list is non-exhaustive

SkelStart 24V specifications



	Value	Unit		Value	Unit
Cold Cranking Amps (CCA)*	1140	A	Continuous input voltage range	18-32	V
Maximum Peak Current (0.4 sec current)**	2360	A	Continuous input voltage range with specified charge time	23-32	V
Peak Power**	65.7	kW	Recharge time (from 0 V)	10	min
Charged full voltage	26.2	V	Operating temperature	-40 to +65	Deg °C
Energy	32	Wh	Standby current draw	<10	mA
Rated Capacitance	340	F	Dimensions	328 L x 171 W x 241 H	mm
Individual Cell Capacitance	3400	F	Weight	8.5	kg
Charging current	20 (max)	A			

4000+ CCA combined



Easy and safe installation

The SkelStart unit goes between your battery and starter, making it the sole starting power for your engine. The batteries will keep powering (lights, A/C, and so on). Depending on your needs, the SkelStart can either replace one of your batteries, or be installed alongside your existing batteries.

* Based on 1s ESR

** Based on 10ms ESR

*** The stated maximum peak current should not be exceeded during use. If the limit is to be exceeded by the customer, Skeleton must be consulted beforehand and give approval for the exceeded power load.