DATASHEET ENGINE START MODULE

PRODUCT CODE	CTS 00375C0 0030V0 TB00
DATASHEET VERSION	V2021-1 of 25/08/2021

CapTop Engine Start Module is a small-size, easy installation and maintenance free auxiliary system for improving start-up performance of heavy vehicles. It extends battery life reducing replacing costs and has a long service life itself (8-10 yrs). The engine starter has extended operation temperature, low stand by consumption and four operation modes: Starting Enhanced, On-line, Normal and Emergency. Switching between modes is automatic, depending on the status of the batteries. Suitable for heavy duty vehicles engine start.

FEATURES AND BENEFITS
Operating temperature -40°C - +65°C
Improving the start-up performance of heavy-duty vehicles in ultra-low temperature
Effective reducing the engine start failures
Automatic switching between“Auxiliary Start”and“Jump start”depending on battery power status
Emergency starting function enables vehicles to start up in case of battery deep discharge and damage
Prolonging battery life and reducing the costs of battery replacement
Unique on-line mode improving vehicle driving performance and reducing fuel consumption
Low standby power consumption
Small size and weight enable easy assembling
Up to 8-10 years of service life
Maintenance-Free

SPECIFICATION	
Electrical	
Nominal Capacitance	375 F
Capacitance Tolerance	0% / +20%
Cold Cranking Amps	1100 CCA
Peak Power	50.7 kW*
Input voltage (B+ terminal)	10 ~ 32 VDC
Output voltage	30.0 V
Current draw (on batteries)	30 A max. *(from battery when charging) Current draw (on batteries) ＜10 mA
Charging time (min)	5min max. (Initial installation)
Environmental	
Operating Temperature Range	Designed for heavy duty environments -40°C to +65°C
Environment Humidity	0% ~ 90%
Storage Temperature Range	-20℃ ~ 60℃
Physical	
Size	BCI Group 31 13”L x 6 13/16”W x 9 7/16”H (330mm L x 173mm W x 240mm H)
Weight	13 Kg
Environmental Protection	IP 65

*All values are provisional and may vary

UNIQUE FEATURES

Starting Enhanced Mode

CapTop Engine Start Module has a monitoring function of temperature and battery status , can switch automatically to starting enhanced mode.

Under this mode, the module can provide a larger starting current to compensate the adverse effects to engine caused by external ambient temperature and battery status.

On-line Operating Mode

During driving, CapTop Engine Start Module parallel with the battery can enhance the stability of the power system, improve the driving performance and reduce the fuel consumption.

Normal Operating Mode

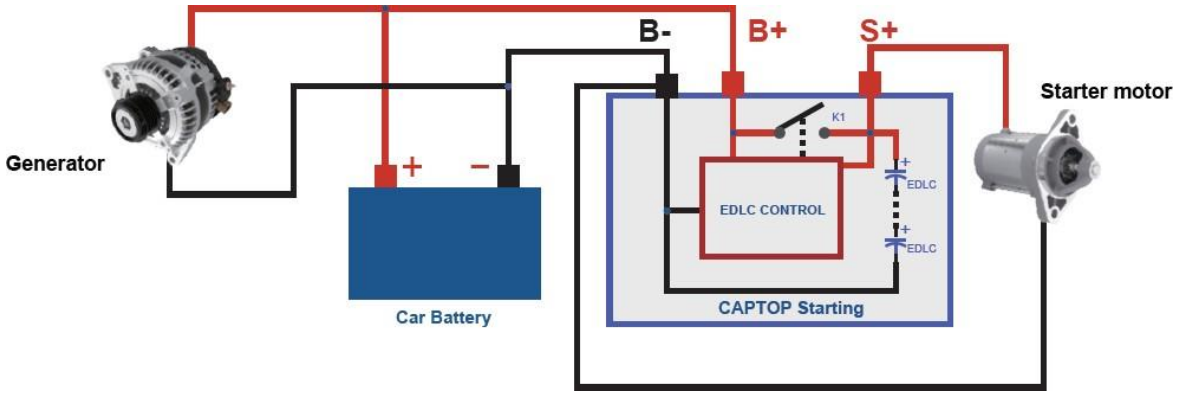
CapTop Engine Start Module monitors the operating environment temperature and the battery status, in case of “normal” the module can automatically switch to normal operation mode, the car can start repeatedly without waiting, and the starting energy comes from the battery and starting module, whereat the module takes 70% of the starting energy and reduces the battery start load.

Emergency Start Mode

CapTop Engine Start Module also has emergency starting function. When the battery is deep discharged and cannot offer the minimum energy to the module, the starting module can be recharged by an external power supply (10-30V). After charging the emergency start mode take effect manually by press the button on module to start the car.

Operating Mode 1 (Starting Enhanced Mode):

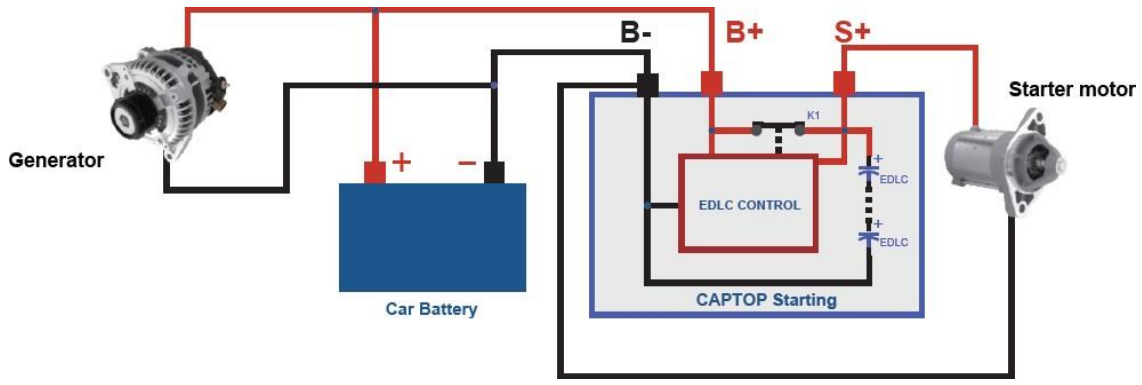
The vehicle is out of operation, the battery voltage is below 24V or the ambient temperature is less than 0 ℃:



The internal K1 disconnected, the control system starts boosting to increase the car battery voltage to 28.2-30V, the energy stored in EDLC can provide the energy needed to start the car.

Operating Mode 2 (On-line Operating Mode):

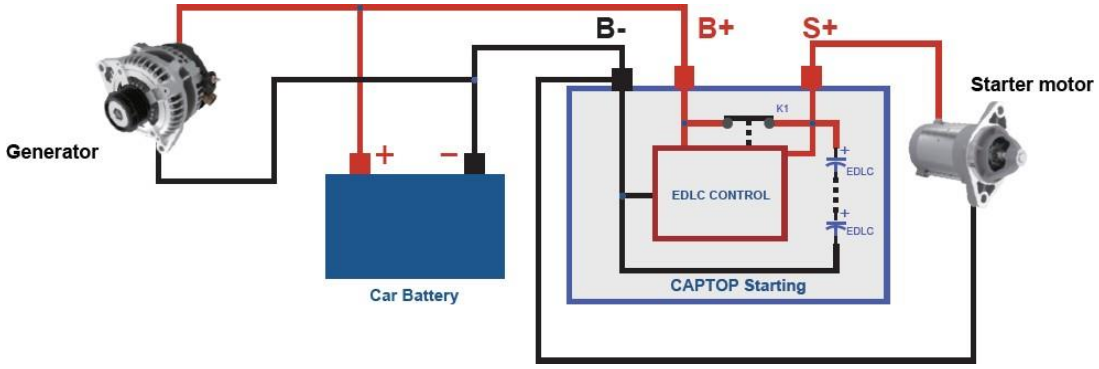
Driving condition:



During driving K1 is closed, the module in parallel with the battery stabilizes system voltage to make the whole power supply system more stable and can reduce fuel consumption.

Operating Mode 3 (Normal Operating Mode):

The vehicle is out of operation, the battery voltage is above 24V and the ambient temperature is higher than 0 ℃:

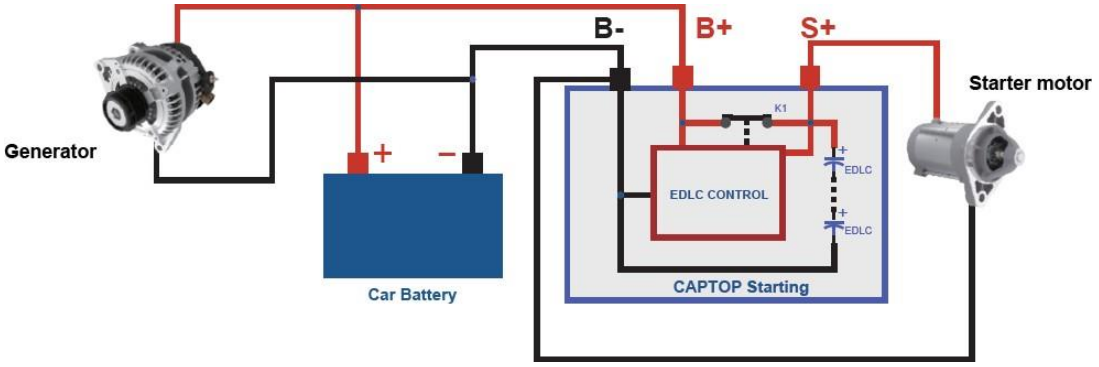


The internal K1 of the starting module is closed, the energy needed to start up is mainly supplied by the module, and the car battery acts as an auxiliar y power. This mode can reduce the interval time of frequent startup and directly operate the next start process without waiting, while a competitor's module requires a 5-15-minute charging process for each start-stop.

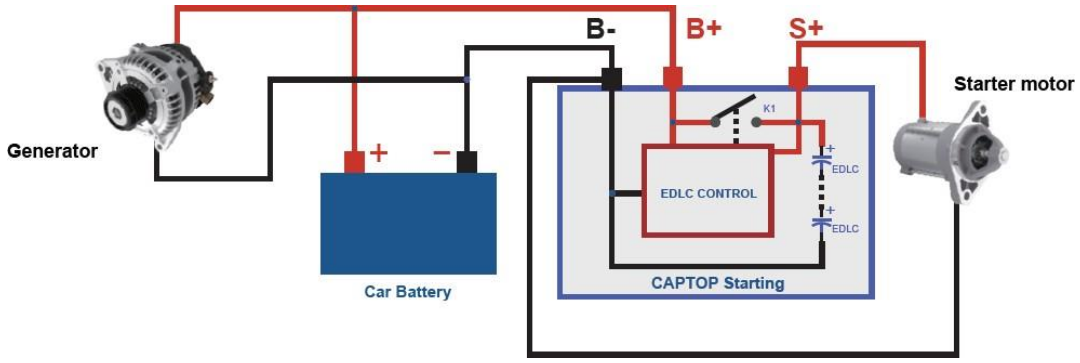
This application is suitable for waiting before the traffic lights and the engine start- stop.

Operating Mode 4 (Emergency Starting Mode):

The voltage of vehicle battery is 0, the module starts the emergency start mode:



The car battery has been damaged or deeply discharged (can't provide the minimum energy to start the module), SPS starting module can be recharged with an external power supply (10-30V). After charging, start manually the emergency mode by press the button on module to start the car.



In emergency starting mode, K1 will be closed aft er 15 seconds, SPS starting module will supply autonomously power to the car for starting, and switches automatically to operating mode 2 afterwards.

INSTALLATION

a. The module should be charged to 28V before connecting to the battery.

b. The B+ terminal should be connected with the positive terminal of the battery, the B- terminal should be connected with the negative terminal of the battery.

c. The S+ terminal should be connected with the positive terminal of the motor, the B- terminal should be connected with the negative terminal of the motor.

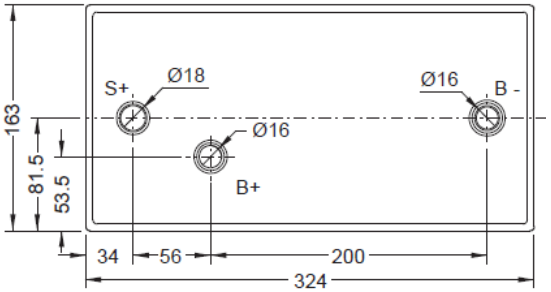
WARNINGS

a. The S+ and B- terminal should not be connected.

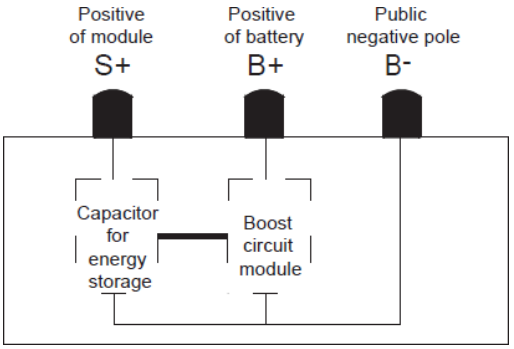
b. Do not connect the terminals to battery by reversed polarity.

c. The connection between the module and the cable is firm.

DIMENSION DIAGRAM



PRODUCT SKETCH DIAGRAM



Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice.

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Product complies to the following certification requirements:

Version	Date	Revision History
V2020-0	21/10/2020	Original Version
V2021-1	25/08/2021	Revised Version

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