



***GE Energy Services***

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# **DART Charger**

## **Product Description, Information and Specification**

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# About this Guide

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## Purpose of this Document

The purpose of this document is to fully describe the capabilities of the DART Charger. GE Energy Services staff should and customers should use the document to specify, design and test systems, which employ the DART Charger. This document supersedes any other literature that may contain product information on the DART Charger.

## Distribution of this Document

GE Energy Services Product Management Department will distribute this document to the people outlined on the Document Distribution List. GE Energy Services Product Management Department manages the Document Distribution List.

## Control of this Document

The master copy is retained under the control of the Product Manager.

All errors or omissions related to this document are to be brought to the attention of the Product Manager.



# Chapter 1: Product Information

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## 1.1 Features of the Dart Charger

The DART Charger features the following:

- Switched and fused input suitable for 120VAC 50/60 Hz operation. 12VDC or 24VDC temperature compensated fused and current limited 30-Watt output.
- Over voltage, low voltage and loss of AC contacts and visual indicators.
- External load disconnect relay connection for high current applications.
- Protection consisting of battery low voltage load disconnect and over voltage load and battery disconnect.
- Start and end battery test inputs.
- Environmental hardening consisting of conformal coating, extreme low and high temperature operation, suppression of EMI emissions, and surge withstand capability.
- Small size and weight.

## 1.2 Ordering the dart Charger

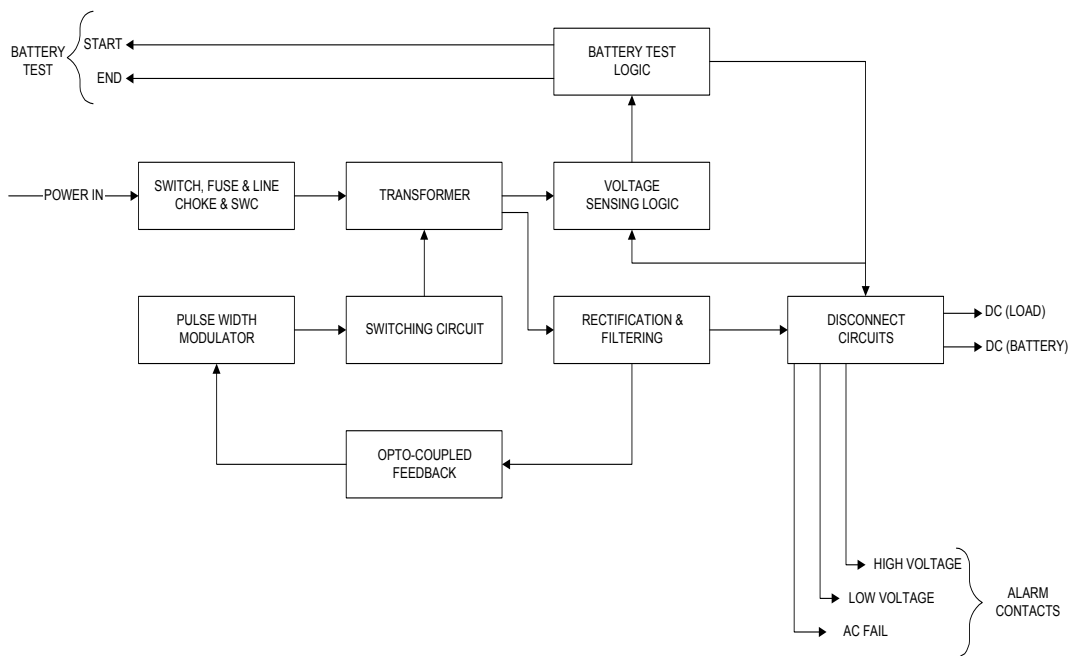
To order a DART Charger specify the part number shown below:

- 540-0186 12V nominal output
- 540-0190 24V nominal output



# Chapter 2: Product Description

The DART Charger is composed of components that are assembled to form a single printed circuit board (PCB). This PCB can then be installed inside an enclosure using mounting screws or studs. A block diagram illustration of the DART Charger is shown below.



**Figure 1 Block Diagram of the Dart Charger**



# Chapter 3: Product Specification

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## 3.1 Input

Voltage	96VAC to 144 VAC
Power	55VA maximum
Efficiency	70% minimum
Frequency	50/60 Hz
Protection	switched, ¾ Amp slow blow fuse

## 3.2 Output

Voltage	540-0186: 13.8VDC +/- 1% @ 30 degrees C 540-0190: 27.6VDC +/- 1% @ 30 degrees C
Power	30 Watts; 5 Amps maximum peak on load output (part of peak load will be supplied by the battery)
Charging method	temperature compensated float charging; temperature compensated charging curve tuned to Cyclon 8 Amp-hour battery part number 0859-0012.
Ripple	50-mV peak to peak maximum
Protection	10 Amp slow blow fuse, current limited to 30 Watts

### 3.3 Alarms

Over voltage	temperature compensated 540-0186: 14VDC @ 30 degrees C 540-0190: 28VDC @ 30 degrees C
Low voltage	540-0186: 11.9VDC 540-0190: 23.8VDC
Loss of AC	90VRMS or less
Contacts	single form A for each alarm; 2A @ 30VDC
Time constant	four-second-time constant in alarm sense circuit to prevent false alarms due to pulsed load

### 3.4 Battery and Load Protection

Low voltage load disconnect	Charging is maintained if input voltage is present.  540-0186: 11.5VDC +/- 100 mV. 540-0190: 23.0 VDC +/- 100 mV.
Over voltage disconnect	over voltage alarm causes charger output to be disconnected from the load and battery. The load is still connected to the battery during over voltage.

### 3.5 Visual Indicators

The following states are alarmed using three indicators:

- AC absent, load disconnected.
- AC present, battery disconnected from supply due to over voltage.
- AC absent, load disconnected.
- AC absent, load connected to batteries.
- AC present, load connected to batteries, batteries not connected to supply because of over voltage or battery test.
- AC present, load disconnected, battery voltage below disconnect level, battery is being charged.
- Normal; AC present, load, batteries and supply output connected.

### 3.6 Battery Test

Method	during the test, the battery and load are connected together. The charger output is disconnected from the load and battery.
Start/stop trigger	test is started or stopped by applying 8VDC to 30VDC for more than 100 msec.
Auto stop	test is automatically stopped if the battery voltage is less than 11.7 VDC for 540-0186 and less than 23.4VDC for 540-0190.

### 3.7 Physical

Size	7-1/4" long x 4-7/8" wide x 2" high
Weight	1 pound (without batteries)
Mounting	four 1/8" holes
Terminations	removable compression type screw terminations; AWG #12 wire capacity

### 3.8 Environmental

Operating ambient temp.	-40 degrees C to +80 degrees C
Humidity	100% condensing (conformal coated)

### 3.9 Standards & Protection

Surge	ANSI/IEEE C37.90.1-1989 SWC ANSI/IEEE C62.41 – 1980 category B 1.2 X 50 uS 3KA
EMI	FCC Part 15 Class A conducted and radiated emissions
Isolation	2000VAC input to output 1500VDC input or output to ground

### 3.10 Product Documentation

Standard            Product Description, Information & Specification

Quantity of product documentation is defined on a per contract basis. Documentation for additional contract deliverables is arranged on a per contract basis.