

Application Brief - Simplified Circuit Protection Selection

June 26, 2007

In the April issue of Circuit Solutions™ newsletter, Blue Sea Systems' [DC Circuit Wizard](#) was introduced. The DC Circuit Wizard simplifies the calculations necessary to choose appropriate DC circuit protection and wire size. Based on DC circuit values entered by the user, it offers recommendations of circuit protection devices (fuses and circuit breakers), amperage ratings, and appropriate circuit wire gauge. The DC Circuit Wizard is available at www.blueseas.com.

Not only does the DC Circuit Wizard provide circuit protection device options, but it also provides links to product pages on Blue Sea Systems' website corresponding to each circuit protection device recommendation. Product pages provide a complete product description including features, specifications, and all supporting documentation.

Here's an example of values entered in the DC Circuit Wizard.

The screenshot displays the DC Circuit Wizard interface, divided into two main sections: "DC Wire Selection" and "DC Circuit Protection Selection".

DC Wire Selection:




- Information required to meet ABYC Standards:**
 - Circuit Voltage: 12 V
 - Load Current: 25 amps
 - Length of Conductor: 5 feet
 - Allowable Voltage Drop: 3 %
 - Type of Load: Fixed
 - Wire Insulation Temperature Rating: 105 (°C)
 - In Engine Room?
- Additional Derating Factors:**
 - Duration: 30 minutes
 - Terminated on Fuse?
 - In Conduit or Sheath?
 - Extra Thermal Insulation?

DC Circuit Protection Selection:

- Battery CCA: 650
- Main or Branch: Branch

A yellow "Show help" button is located below the protection selection fields. At the bottom of the interface are "Calculate" and "Reset" buttons.

Click **Calculate** to see the results of the Circuit Wizard computations. Circuit protection devices with optimal amperage ratings are displayed in bright green. In this example, the part numbers for three options that satisfy the values entered above are presented by DC Circuit Wizard. Notice that each recommendation is the intersection of a type of device, and an amperage rating: 7060 = 35 Amp Push Button Reset-Only, 7010 = 35 Amp 185-Series Thermal Circuit Breaker, and 7037 = 35 Amp 187-Series Thermal Circuit Breaker.


Amperage too low to avoid nuisance blows.	Amperage and AIC within acceptable range.	Near rating					
Amperage: 15 20 25 30 35							
Push Button Reset-Only AIC: 2500@28V		<table border="1"> <tr> <td>7056</td> <td>7057</td> <td>7058</td> <td>7059</td> <td>7060</td> </tr> </table>	7056	7057	7058	7059	7060
7056	7057	7058	7059	7060			
185 Thermal AIC: 3000@42V		<table border="1"> <tr> <td>7054</td> <td>7055</td> <td>7056</td> </tr> </table>	7054	7055	7056		
7054	7055	7056					
187 Thermal AIC: 1500@48V		<table border="1"> <tr> <td>7025</td> <td>7026</td> <td>7027</td> </tr> </table>	7025	7026	7027		
7025	7026	7027					

Click 7060 to view the corresponding product page on Blue Sea Systems' website.

Information tabs

Push Button Thermal

PRODUCT OVERVIEW | **DETAILED SPECIFICATIONS** | **PRODUCT DOCUMENTS**



Product features

Product specifications

Product certifications

- Ideal for 24-hour circuit protection
- Incorporated into Blue Sea Systems' Waterproof Circuit Breaker panels and main Battery Main Distribution Panels
- Push to reset operation
- "Trip Free" design cannot be held "ON" during fault current condition
- Ignition protected - Safe for installation aboard gasoline powered boats

SPECIFICATIONS	
Boot Thread	3/8"-27
Weight Lb (Kg)	Circuit Breaker 0.06Lb (0.03Kg)
Maximum Voltage Rating	28 Volts DC
Weight Lb (Kg)	Waterproof boots (package of 5) 0.04 Lb (0.02 Kg)
Boot Material	UV Resistant Silicone Rubber
Interrupt Rating	2,500 Amperes DC
Operating Temperature Range	-10°C to +60°C
Boot Thread Material	Nickel-Plated Brass
Trip Time Delay	See www.blueseas.com
Circuit Breaker Type	Thermal trip, manual push-button reset only

CERTIFICATIONS & AGENCY STANDARDS

- CE Marked

To make the correct circuit protection device selection, click the cell for each resulting option to view features and specifications on Blue Sea Systems' website product page. While each device is rated to meet the particular rating requirements, choose the circuit protection device that meets the needs of the situation. For instance, choose a Push Button Reset-Only circuit breaker for a bilge pump that is never turned off. Or choose a switchable circuit breaker such as a 187-Series to switch the circuit ON and OFF from a convenient location.