

DC Load Flow & Short-Circuit

Useful Effective Integrated

DC Load Flow and Short-Circuit modules provide analysis capabilities for engineers to design and maintain DC power systems. DC Load Flow calculates bus voltage profiles and branch power flows for user-specified conditions. It compares the calculated operating values against capabilities such as bus voltage limits, cable ampacities, and source output limits. DC Short-Circuit evaluates system conditions under a fault and assesses protective device ratings.

load flow &
short-circuit

Utilizes the Same Database as AC Modules

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Key Features

- DC Load Flow
- DC Voltage Drop
- DC Short-Circuit

Flexible Operation

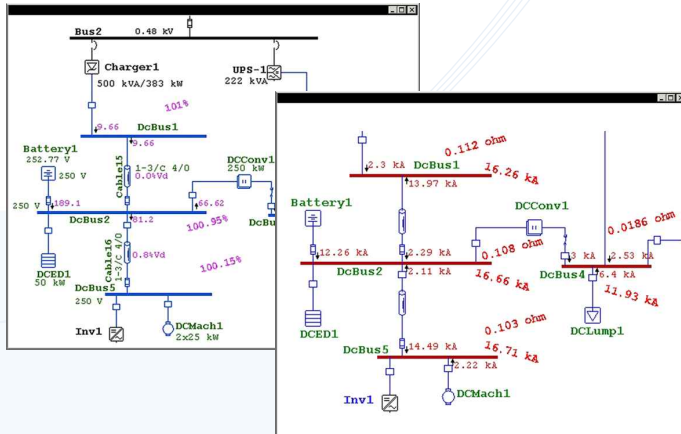
- Integrated AC & DC systems
- Complies with IEEE 946
- Interdependent AC & DC calculations
- Unlimited configurations to model different system conditions
- Model different loading levels

DC Components

- Battery
- AC-DC converters: charger, inverter, UPS
- DC-DC converter
- Cable & impedance
- Motor, static load, & lumped load
- Circuit breaker, fuse, & switch
- Composite network & composite motor

Capabilities

- Evaluate system voltage profiles
- Batteries auto-activate during reduced voltage conditions
- Analyze ratings of protective devices
- Calculate the total fault current
- Calculate contributions from different sources
- Calculate decay rate of the fault currents
- Calculate voltage drops for different system components
- Customizable battery libraries
- Automatic alert of overloaded components & abnormal voltages
- Automatic switching of charger & UPS models based on load conditions
- Automatic switching of DC motor models based on terminal voltages



Reporting

- Automatically flag marginal & overstressed devices
- Export output reports to your favorite word processor
- Export one-line diagrams with results to third party CAD systems
- Use Crystal Reports® for full color, customizable reports

Integrated AC & DC Systems

- Unlimited Buses* & Elements
- No Voltage Limitations
- Looped & Radial Systems
- Integrated 1-Phase, 3-Phase, & DC Systems
- Multiple Battery, Charger, Inverter, & UPS Connections
- Multiple Isolated Sub-Systems
- Customizable Libraries
- Graphical Display of Results on One-Line Diagrams
- Customizable Font Types, Sizes, Styles, & Colors
- Customizable Display of Ratings & Results
- Graphical Display of Equipment Impedance & Grounding
- Automatic Error Checking
- Graphical Display of Overstressed Devices
- Graphical Display of Over/Under Voltage Buses
- Dynamically Adjust Display of Results

*Maximum number of energized buses during calculations is license dependent.

Interrupting Current					Device Capability	
Bus ID	V	Device ID	Type	kA Fault Current	Bus Fault	Max If
DcBus1	250.000		None	77.641	77.641	
DcBus2	250.000	DCCB6	CB	77.641	77.641	75.000
		DCFuse4	Fuse	79.801	79.801	
		DCCB3	CB	79.801	79.801	
		DCCB9	CB	79.801	79.801	
		DCCB2	CB	79.801	79.801	
DcBus3	125.000		None	10.264		
DcBus4	125.000		None	11.933	11.933	
		DCCB11	CB	11.933	11.933	
		DCCSW3	SPST	11.933	11.933	
		DCCB12	CB	11.933	11.933	
		DCCB5	CB	11.933	11.933	
DcBus5	250.000		None	79.533	79.533	
		DCFuse5	Fuse	79.533	79.533	
		DCCB4	CB	79.533	79.533	
		DCCB10	CB	79.533	79.533	

Summary of Total Sources and Demands	
Charger/UPS Source:	87.17 kW
Battery Source:	171.43 kW
Total Source:	258.60 kW
Total Motor Load:	160.56 kW
Total Static Load:	90.71 kW
Total Demand:	251.27 kW
Total Losses:	7.33 kW
System Mismatch:	0.10
Number of Iterations:	3



10 CFR 50 Appendix B • 10 CFR 21 • ANSI/ASME N45.2-1977 • ASME NQA-1
ISO 9001 A3147 • ANSI/IEEE Std 730.1-1989 • CAN/CSA-Q396.1.2-89

