



CYME

Power Engineering Software and Solutions

CYME power system analysis software

Module reference guide

Reliable modeling, analytics and planning tools to
improve the performance of the distribution system



Powering Business Worldwide

CYME power system analysis software

Base package

CYMDIST is the distribution system analysis base package of the CYME software suite. It bundles all the modeling and analysis tools required to perform the various types of simulations involved in electric distribution system planning. The calculation engines support balanced or unbalanced distribution models that are built with any combination of phases and operated in radial, looped or meshed configurations. Reliable modeling, analytics and planning tools to improve the performance of the distribution system.

Software	Details	Description
CYMDIST - Distribution Analysis	Unbalanced load flow	Balanced/unbalanced voltage-drop and Newton-Raphson unbalanced (radial, looped or meshed)
	Fault analyses	Fault current calculations for RMS, asymmetrical and peak values for all shunt fault configurations. Short-circuit and fault voltage analysis throughout the network taking into account pre-fault loading conditions. Includes conventional/ANSI/IEC 60909/IEC61363 short-circuit, series fault, simultaneous fault, voltage sag, fault locator and equipment rating verification
	Load allocation	Load estimation using customer consumption data (kWh), distribution transformer size (connected kVA), real consumptions (kVA or kW) or the REA method. The algorithm supports multiple metering units as fixed demands and large metered customers as fixed load
	Load growth	Load growth studies for multiple years
	Optimal capacitor placement	Optimal capacitor placement and sizing to minimize losses and / or improve voltage profile
	Load balancing	Load balancing to minimize losses, or to balance the current/load/voltage
	Motor starting analysis	Voltage dip and maximum motor size calculations
	Batch analysis	Several analysis scenarios are performed on a selection of study files, self-contained files, or circuits. Detailed reports of every simulation as well as summary reports for network results are available

CYME power system analysis software

Additional module options

Additional Modules	Requirement	Description
Modeling		
Enhanced Substation Modeling	CYMDIST	Modeling of all the major components of the distribution substation and the detailed modeling of any sub-network such as an industrial facility
Low Voltage Distribution Network	CYMDIST	Detailed modeling of low-voltage distribution systems including center-tapped distribution transformers (120/240V) and triplex/quadruplex cables
Secondary Grid Network Analysis	CYMDIST	Detailed modeling of secondary network distribution systems which include network protectors. Allows the power flow and short circuit analyses of heavily meshed secondary network distribution systems for any voltage level
Microgrid Modeling and Analysis	CYMDIST	Modeling and simulation of grid-tied microgrids operating in either islanded or grid-connected mode as well as isolated microgrids, such as those of remote communities far from any transmission and distribution infrastructure
Geographic Overlay	CYMDIST	The display of raster or vector map images (geographical land base such as DWG, DXF, SHP, etc.) as layers directly underneath the electrical model
Online Maps Service	CYMDIST	A complement to the CYME Geographic Overlay module to provide the capability to display Google™ maps and MapQuest™ Open maps as layers underneath the geographical view of your electrical network model
Planning		
Advanced Project Manager	CYMDIST	Extensive tool that supports the collaborative and detailed preparation of a project that consists in modifications to the network with related simulations.
Automated Network Forecast Analysis	CYMDIST	Planning and management of expansions and changes over time on your distribution network (includes the Advanced Project Manager).
Techno-Economic Analysis	CYMDIST	Analysis to help electric utilities invest into their infrastructure by analyzing the technical impacts of modifications made to the network, and the cost they entail. Assists in the determination of the feasibility and the profitability of a project.
Operation		
Distribution State Estimator	CYMDIST	Estimation of the unbalanced power consumption and the voltages at every level of a distribution power system
Contingency Assessment and Restoration	CYMDIST	The impact of single outages on the electrical distribution system are studied to find the optimal switching plan to restore electrical power to priority customers and to recover the maximum possible load in the affected areas
Load Flow Contingency (N-p)	CYMDIST	Module to assist in power-flow-related static contingency analysis. To create contingency events and single- or multiple-outage scenarios and compare to a base case
Advanced Fault Locator	CYMDIST	Quick and precise identification of possible fault locations based on a mix of inputs such as fault indicator status, telemetry data during fault condition, range of possible fault impedance, etc. Field measurements can be read directly from COMTRADE oscillography files
Protection		
Protective Device Analysis	CYMDIST	Wide range of tools to efficiently and accurately design and validate the coordination scheme of the power system. Includes system-wide analysis, minimum fault analysis, sequence of operation and branch device coordination. TCC library of more than 15000 devices
Arc Flash Hazards	CYMDIST	Assessment of the electrical safety of employees working on or near electrical equipment by computing the necessary parameters required to assess the risk level and adopt the adequate safety procedures
Distance Protection	CYMDIST	Module to assist electrical engineers in identifying challenges and find solutions to power system protection problems using distance protection relays
Distributed Energy Resources (DER)		
Integration Capacity Analysis	CYMDIST	Assessment of the generation or load hosting capacity of the system without compromising system reliability and power quality. Different limiting criteria with adjustable thresholds can be considered
EPRI DRIVE™	CYMDIST	The EPRI DRIVE™ software determines the maximum amount of DER each distribution feeder can accommodate in its current state before unacceptable reliability, power quality, protection and thermal issues start to emerge*
DER Impact Evaluation	CYMDIST	Verification criteria, multiple loading scenarios and distributed generators contribution levels are integrated into a comprehensive system impact study that generates a tabulated report where results for each criterion are color-coded based on limit violations

CYME power system analysis software

Additional module options

Additional Modules	Requirement	Description
Network Disturbance Assessment D-A-CH-CZ	CYMDIST	Evaluation of network disturbances caused by new load, motor or generator interconnections based on a set of technical rules established by a European working group
Load Relief DER Optimization	CYMDIST	Determination of the optimal sites and sizes for energy storage systems and dispatchable generation in support to load relief projects based on non-wires alternatives. Sizing of non-dispatchable generation is also supported
Power Quality		
Reliability Assessment	CYMDIST	A framework within which predictive and historical reliability assessment scenarios are run and the impacts of the related investment such as DA (Distribution Automation) can be evaluated and understood
Harmonic Analysis	CYMDIST	Harmonic penetration assessment in electric power systems
Dynamic Motor Start	CYMDIST	Simulation of the dynamic behavior of starting motor to assess system voltage dips and acceleration times using a variety of starting methods
Optimization		
Network Configuration Optimization	CYMDIST	Determination of the optimal feeder configuration that will minimize losses, improve the voltage profile and balance the load between feeders
Volt/Var Optimization	CYMDIST	Optimal settings for Volt/VAR control devices are evaluated to optimize distribution networks
Optimal Voltage Regulator Placement	CYMDIST	Optimal regulator locations are identified to improve the network conditions based on selected objectives
Optimal Recloser Placement	Reliability Assessment	Optimal recloser locations are identified to improve the network conditions based on selected objectives
Time-Series		
Steady State Analysis with Load Profiles	CYMDIST	Time-range simulation based on a combination of historical consumption patterns and real-time monitoring (AMR)
Long-Term Dynamics Analysis	CYMDIST	Time-series simulation to study the impact of insolation variations, wind fluctuations and load variations on network controls
Transient Stability Analysis	CYMDIST	Simulation of the dynamic behavior of distribution systems with distributed generation under various transient events
Scripting		
Scripting Tool with Python	CYMDIST	Through a simple mouse-click on a Python® script, performing batch analysis, automate routine studies, create new algorithms and quickly retrieve network/equipment information.

* Distribution Resource Integration and Value Estimation (DRIVE) is provided under license and is powered by technological research developed by the Electrical Power Research Institute, Inc. (EPRI). EPRI does not endorse or advocate for any particular measure, valuation, answer, finding, conclusion, hypothesis, assumption, or other result.

Eaton

1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Energy Automation Division

CYME International T & D
1485 Roberval, Suite 104
St. Bruno, QC Canada J3V 3P8
P: 450.460.3655 F: 450.461.0966
P: 800.361.3627 (Canada/USA)
Eaton.com/cyme

© 2020 Eaton
All Rights Reserved
Publication No. PA917005EN
October 2020

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.



Powering Business Worldwide