

Target Feeder Voltage Drop Calculator

The Target Feeder Voltage Drop calculator was created to assist electrical designers in selecting the optimum feeder sizes to target emplacements based on voltage drop considerations. The application includes diversity factors allowed due to utilization of the target loads through the target control system.

A copy of the application is available upon request. Email DLL-CEHNC-RTLTP@usace.army.mil to request a copy of the voltage drop application in Microsoft Excel format.

Target Feeder Voltage Drop Calculator Instructions

- Inputs are only allowed in the yellow fields
- Project conditions are limited with pull down menus.
- Voltage and Phase are locked to single phase, 240 volts for target standard requirements.
- The “To” column represents the current target in the target feeder. Input is not limited in this column.
- Ensure the “Target Type” column matches the target listed in the “To” column.

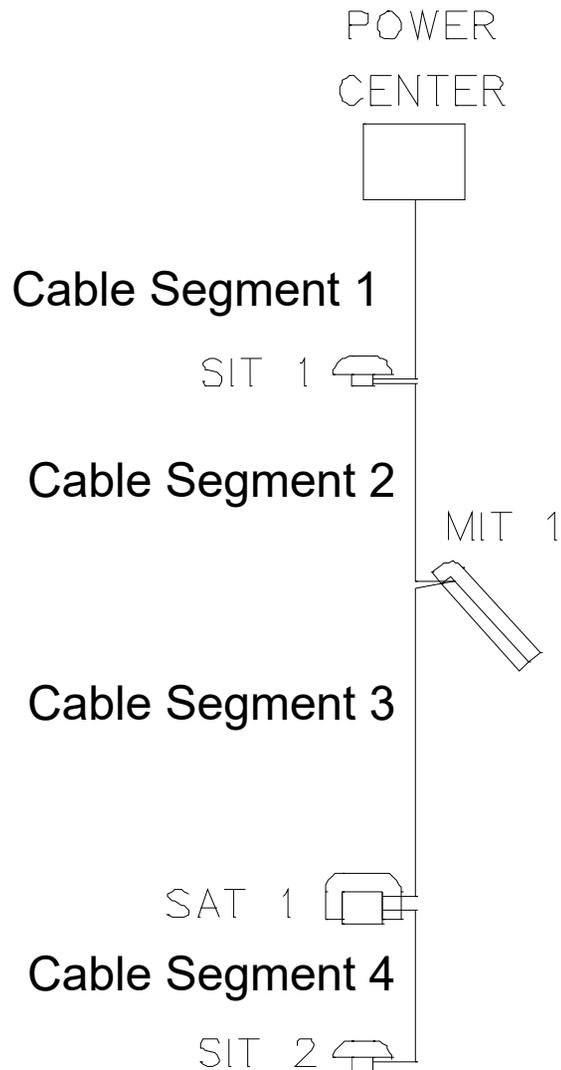
Target Feeder Voltage Drop Calculator Instructions

- Distances may be entered in Feet or Meters. The “Units” box sets the English units to feet and the metric units to Meters under the distance title.
- Wire size should be limited to panel board lug sizes. #2 is recommended maximum wire size.
- The thermal blanket column, when set to yes, automatically enters continuous load for each target selected. The selected target is the target listed in the “To” column.

Target Feeder Voltage Drop Calculator Instructions

- The T-Feeder tab may be copied to allow for multiple feeders to be calculated within the same spread sheet.
- The “Clear Form” button, when pushed, clears only the Feeder information fields. If “Macros” are not enabled this function will not work.

Target Feeder Voltage Drop Calculation Basis



Voltage Drop < 5% Rated Transformer Secondary Voltage at Every Target

Voltage Drop Must Be Calculated For Each Cable Segment

Determine Maximum Current Draw For Each Segment To Determine Voltage Drop For Each Segment of Cable

Voltage Drop For Each Target Is Summation of Voltage Drop Of Each Segment of Cable Connected To Target

Target Feeder Calculator Diversity

Target Diversity used by the application.

Target Diversity = 100% Largest Target Design Load + 75% 2nd Largest Target Design Load + 75% 3rd Largest Target Design Load + Sum Of Remaining Target Static Load

Thermal Blanket Load is calculated as a continuous load.

EMPLACEMENT TYPE	POWER FEED TYPE	PEAK	STATIC LOAD	DESIGN LOAD
SIT	120/240V, Single Phase	700VA while raising or lowering target & firing Infantry Hostile Fire Simulator (IHFS)	50VA	700VA
Thermal Target		260VA	260VA	260VA
SAT	120/240V Single Phase	2kW	100VA	1.8kW
Thermal Target		1kVA	1kVA	1kVA
MIT	120/240V Single Phase	2kVA during system charging	50VA	2kVA
MAT	120/240V Single Phase	3.8kVA during system charging	100VA	3.8kVA

Target Feeder Voltage Drop Calculator Sample

Target Feeder Voltage Drop					Name:	Joe	
					Project:	Ft Knox - MPMG	
					Company:	COE	
					Date:	29-Mar-07	
PROJECT CONDITIONS - USER INPUTS IN YELLOW							
Phase	PF	Conductor	Conduit	Voltage	Power Center	Units	
1	100%	Copper	Non-metallic	240	PC1	English	
<u>From</u>	<u>To</u>	<u>Target Type</u>	<u>Distance (Feet)</u>	<u>Load</u>	<u>Voltage Drop</u>	<u>Wire Size</u>	<u>Thermal Blanket</u>
PC1	V-1	Sat	460	2800	1.83%	2	Yes
V-1	H-1	Sit	150	960	1.07%	6	Yes
H-1	H-2	Sit	20	960	0.13%	6	Yes
H-2	H-3	Sit	20	960	0.12%	6	Yes
H-3	H-4	Sit	20	960	0.09%	6	Yes
H-4	M-1	MIT	20	2000	0.07%	6	Yes
M-1							
Feeder Name		6	690	8640	3.31%	Totals	Clear Form
PC1-1							
<p><small>Disclaimer! Application developed by CEHNC Electrical Section although use is permitted by any interested party. All reasonable efforts have been made to verify application is accurate and utilizes the most recent data on target control system diversity, but there is no expressed or implied warranty of correctness. It is the responsibility of the user to ensure the accuracy, completeness, applicability, workability, and criteria compliance of information whether used in whole or part.</small></p>							