

## LOAD CALCULATIONS FOR "PANEL CP1"

BASED ON THE 2023 NEC

NEC 220.61(A)

	L1	L2	L3	NEUTRAL
CALCULATED LOAD ( NEC 215.5 )	6,740 VA	4,440 VA	4,940 VA	6,740 VA
CALCULATED LOAD WITH DEMAND FACTORS ( NEC 215.5 )				
GENERAL LOAD	0 VA	1,200 VA	0 VA	0 VA
RECEPTACLE LOAD (NEC TABLE 220.44)				
1ST 10,000W	1,440 VA	1,440 VA	1,440 VA	1,440 VA
CONTINUOUS LOAD (NEC 215.2)	1,800 VA	1,800 VA	0 VA	1,800 VA
PLUS 25%	450 VA	450 VA	0 VA	
0% (NEUTRAL) NEC 215.2(A) EX NO. 2				0 VA
MOTOR LOAD (NEC 430.24)	3,500 VA	0 VA	3,500 VA	3,500 VA
PLUS 25% OF LARGEST MOTOR	875 VA	0 VA	875 VA	875 VA
KITCHEN LOADS (NEC 220.56)				
L1 ( 0 VA X 1 ) =	0 VA			0 VA
L2 ( 0 VA X 1 ) =		0 VA		
L3 ( 0 VA X 1 ) =			0 VA	
TOTAL BALANCED LOAD (3-PHASE)	4,890 VA	4,890 VA	4,890 VA	
TOTAL BALANCED LOAD (1-PHASE)	925 VA	0 VA	925 VA	
TOTAL UNBALANCED LOAD (1-PHASE)	2,250 VA	0 VA	0 VA	
NEUTRAL LOAD				7,615 VA
LINE AMPS BALANCED (3-PHASE)	40.7 A	40.7 A	40.7 A	
LINE AMPS BALANCED (1-PHASE)	8.9 A	0.0 A	8.9 A	
LINE AMPS UNBALANCED (1-PHASE)	18.8 A	0.0 A	0.0 A	
TOTALS	68.4 A	40.7 A	49.6 A	63.5 A
ADJUSTMENT FACTOR	0.0 A	0.0 A	0.0 A	0.0 A
TOTAL DESIGN LOAD	68.4 A	40.7 A	49.6 A	63.5 A

## VOLTAGE DROP CALCULATIONS

Three Phase  $( 2 \times 50' L \times 0.2450 R \times 68.4 A \div 1,000 \times 0.866 ) = 1.5 \text{ VD}$   
Voltage Drop %  $( 1.5 \text{ VD} \div 208 \text{ V} \times 100 ) = 0.7 \% \text{ VD}$

## HARMONIC CURRENT CALCULATION ( NEC 310.15 (B) 4 (C) &amp; NEC TABLE 310.15 B (2) A )

( Harmonic Load 0 VA  $\div$  Connected Load 16,120 VA )  $\times$  100 = 0 %

Harmonic Load Does Not Exceed 50%

## FAULT CURRENT CALCULATIONS

Available Fault Current at Starting Point  $( ( 44,000 \text{ AFC} \times 1.00 \text{ UA} ) + 116 \text{ MC} ) = 44,116 \text{ AFC}$

Conductor Factor CF - Formula  $( 1.732 \times 50 \text{ L} \times 44,116 \text{ AFC} ) \div ( 4,774 \text{ C} \times 1 \text{ N} \times 208 \text{ V} ) = 3.847 \text{ CF}$

Conductor Multiplier CM - Formula  $( 1 ) \div ( 1 + 3.847 \text{ CF} ) = 0.206 \text{ CM}$

Conductor Let-Through Current CLC - Formula  $( 44,116 \text{ AFC} \times 0.206 \text{ CM} ) = 9,088 \text{ CLC}$

A - Amps

AFC - Available Fault Current

C - Conductor Constant

CF - Conductor Factor

CLC - Conductor Let-Through Current

CM - Conductor Multiplier

L - Length of Conductor

MC - Motor Contribution

N - Number of Conductors Per Phase

R - Resistance

UA - Utility Adjustment 1.1

V - Voltage

VA - Volt Amps

VD - Voltage Drop