

LOAD CALCULATIONS FOR "PANEL P1"

BASED ON THE 2023 NEC

NEC 220.61(A)

	L1	L2	L3	NEUTRAL
CALCULATED LOAD (NEC 215.5)	9,890 VA	8,990 VA	7,465 VA	9,890 VA
CALCULATED LOAD WITH DEMAND FACTORS (NEC 215.5)				
GENERAL LOAD	1,500 VA	1,500 VA	1,500 VA	1,500 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	1,750 VA	950 VA	1,800 VA
PLUS 25%	450 VA	438 VA	238 VA	
0% (NEUTRAL) NEC 215.2(A) EX NO. 2				0 VA
MOTOR LOAD (NEC 430.24)	3,500 VA	3,500 VA	0 VA	3,500 VA
PLUS 25% OF LARGEST MOTOR	875 VA	875 VA	0 VA	875 VA
KITCHEN LOADS (NEC 220.56)				
L1 (1,650 X 0.8) =	1,320 VA			1,320 VA
L2 (800 X 0.8) =		640 VA		
L3 (3,575 X 0.8) =			2,860 VA	
TOTAL BALANCED LOAD (3-PHASE)	6,988 VA	6,988 VA	6,988 VA	
TOTAL BALANCED LOAD (1-PHASE)	3,155 VA	3,155 VA	0 VA	
TOTAL UNBALANCED LOAD (1-PHASE)	742 VA	0 VA	0 VA	
NEUTRAL LOAD				10,435 VA
LINE AMPS BALANCED (3-PHASE)	58.2 A	58.2 A	58.2 A	
LINE AMPS BALANCED (1-PHASE)	30.3 A	30.3 A	0.0 A	
LINE AMPS UNBALANCED (1-PHASE)	6.2 A	0.0 A	0.0 A	
TOTALS	94.7 A	88.5 A	58.2 A	87.0 A
ADJUSTMENT FACTOR	0.0 A	0.0 A	0.0 A	0.0 A
TOTAL DESIGN LOAD	94.7 A	88.5 A	58.2 A	87.0 A

VOLTAGE DROP CALCULATIONS

Three Phase $(2 \times 60' L \times 0.2450 R \times 94.7 A \div 1,000 \times 0.866) = 2.4 \text{ VD}$
 Voltage Drop % $(2.4 \text{ VD} \div 208 \text{ V} \times 100) = 1.2 \% \text{ VD}$

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

(Harmonic Load 0 VA \div Connected Load 26,345 VA) \times 100 = 0 %
 Harmonic Load Does Not Exceed 50%

FAULT CURRENT CALCULATIONS

Available Fault Current at Starting Point $((35,000 \text{ AFC} \times 1.00 \text{ UA}) + 116 \text{ MC}) = 35,116 \text{ AFC}$
 Conductor Factor CF - Formula $(1.732 \times 60 \text{ L} \times 35,116 \text{ AFC}) \div (4,774 \text{ C} \times 1 \text{ N} \times 208 \text{ V}) = 3.675 \text{ CF}$
 Conductor Multiplier CM - Formula $(1) \div (1 + 3.675 \text{ CF}) = 0.214 \text{ CM}$
 Conductor Let-Through Current CLC - Formula $(35,116 \text{ AFC} \times 0.214 \text{ CM}) = 7,515 \text{ CLC}$

- 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