

Onsite Estimating Sheet

Contractor _____ Email _____

Phone _____ Fax _____

Job Name _____

Date _____ Location _____

VOLTAGE 120/240 1Ø 120/208 3Ø 120/240 3Ø 277/480 3Ø

TYPE Natural Gas LP Vapor (LPV)

ELEC. SERVICE 100 Amp 200 Amp 400 Amp 600 Amp Other _____

Before installation contact local jurisdiction to confirm all requirements are met. Jurisdictions may vary. recommends contacting local authorities prior to installation.

LOADS: Look for heavy building loads such as refrigeration, air conditioning, pumps or UPS systems.

Use the following for sizing and determining generator kW.

| TABLE 1 Motor Load Table (refer to Table 1) | | | | | |
|---|----|----|-----|-------------------|--------------------------|
| Device | HP | RA | LRA | kW Running (= HP) | Starting kW ¹ |
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¹ Starting kW for HP < 7.5 starting kW = HP x 3
 Starting kW for HP > 7.5 starting kW = HP x 2
 Starting kW for loading with no listed HP, calculate HP based on running amps in the chart on the right

| TABLE 2 Non-Motor Load Table (refer to Table 2) | | |
|---|------|----|
| Device | Amps | kW |
| | | |
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Applications

The QT Series does not meet the necessary requirements for the following applications:

- NEC 695 Fire Pumps
- NEC 700 Emergency Systems
- NFPA 20 Fire Pumps
- NFPA 99 Healthcare
- NFPA 110 Emergency Systems

Reference Codes

Related Codes and Standards:

- NEC 225 Branch Circuits and Feeders
- NEC 240 Overcurrent Protection
- NEC 250 Grounding
- NEC 445 Generators
- NEC 700 Emergency Systems
- NEC 701 Legally Required Standby
- NEC 702 Optional Standby
- NFPA 37 Installation & Use of Stationary Engines
- NFPA 54 National Fuel Gas Code
- NFPA 58 LP Gas Code

| To Calculate kW | |
|-----------------|---------------------------------------|
| 120 V 1Ø | Amps x 120/1000 = kW |
| 240 V 1Ø | Amps x 240/1000 = kW |
| 208 V 3Ø | (Amps x 208 x 1.732 x PF) / 1000 = kW |
| 240 V 3Ø | (Amps x 240 x 1.732 x PF) / 1000 = kW |
| 480 V 3Ø | (Amps x 480 x 1.732 x PF) / 1000 = kW |

PF is application power factor (worst case 1.0)
 Typical application power factor is 0.95.

UPS Information
 1.5 x kVA rating for a filtered system
 3 – 5 x kVA rating for an unfiltered system

Transfer Switch Availability
SE-RTS – 100, 200 and 400 Amp service entrance rated
RTS – 100, 200, 400 Amp
RTSS200A3 – Service entrance rated load shed switch
GenReady – 200 Amp service panel
RTS and GenReady switches only work with the R-controller.
HTS – 100, 150, 200, 300, 400, 600, 800 Amp
HTS switch only works with H100 controller. Avail. in NEMA 1, NEMA 3R and NEMA 12.

Recommended Generator Size _____ Refer to Generator Sizing Instructions on other side of this sheet.

INSTALL NOTES:

1. Suggested concrete pad minimum thickness of 4" with 6" overhang on all sides. Composite pad included with air-cooled products.
2. Consult manual for installation recommendations
3. Consult local authority having jurisdiction for local requirements

System Capacity – Load Calculator

DIRECTIONS FOR NEC 2008, ARTICLE 220, PART IV

220.80 Optional Feeder and Service Load Calculations (RESIDENTIAL)

NEC REFERENCE

SECTION CAN BE USED FOR DWELLING UNITS

- Served by a single feeder conductor (generator)
- 120/240 volt or 208Y/120 volt service
- Ampacity of 100 amps or greater

220.82 (A)

The calculated load will be the result of adding

- 220.82 (B) General Loads, and
- 220.82 (C) Heating and Air-Conditioning Load

220.82 (B)

• Calculated neutral load determined by 220.61. (Additional 70% demand factor can be taken for cooking appliances and dryers when tables 220.54 and/or 220.55 are used)

220.82 (C)

GENERAL LOADS

General Lighting and General-Use Receptacles

220.82 (B)

- Calculate at 3 VA per square foot
- Use exterior dimensions of the home to calculate square footage – do not include open porches, garages, or unused or unfinished spaces not adaptable for future use.

220.82 (B) (1)

- Add 20-amp small appliance & laundry circuits @ 1500 VA each

220.82 (B) (2)

Calculate the following loads at 100% of nameplate rating

- Appliances fastened in place, permanently connected or located on a specific circuit
- Ranges, wall-mounted ovens, counter-mounted cooking units (Tables 220.54 & 220.55)
- Clothes dryers not connected to the laundry branch circuit
- Water heaters
- Permanently connected motors not included in Heat & Air-Conditioning Load section

220.82 (B) (3)

220.82 (B) (3) a

220.82 (B) (3) b

220.82 (B) (3) c

220.82 (B) (3) d

220.82 (B) (4)

220.82 (C)

HEATING & AIR-CONDITIONING LOADS

Include the largest of the following six selections (kVA load) in calculation

Air Conditioning and Cooling

- 100% of nameplate rating

220.82 (C) (1)

Heat Pumps Without Supplemental Electric Heating

- 100% of nameplate rating

220.82 (C) (2)

Heat Pumps With Supplemental Electric Heating

- 100% of nameplate rating of the heat pump compressor*
- 65% of nameplate rating of supplemental electric heating equipment
 - If compressor & supplemental heat cannot run at the same time do not include the compressor

220.82 (C) (3)

Electric Space Heating

- Less than 4 separately controlled units @ 65% of nameplate rating
- 4 or more separately controlled units @ 40% of nameplate rating
- 40% of nameplate rating if 4 or more separately controlled units

220.82 (C) (4)

220.82 (C) (5)

Electric Thermal Storage (or system where the load is expected to be continuous at nameplate rating)

- 100% of nameplate rating

220.82 (C) (6)

- Systems of this type cannot be calculated under any other section of 220.82 (C).

LOAD CALCULATIONS

General Lighting Load

- Small Appliance & Laundry Circuits
- General Appliances & Motors (100% rated load)
- Sum of all General Loads

3 VA x ft²

+ 1500 VA per circuit
+ Total general appliances
= Total General Load (VA)

APPLY DEMAND FACTORS

- First 10 kVA @ 100%
- Remainder of General Loads @ 40%

= 10,000 VA
= (Total VA - 10,000) x .40
= Calculated General Load (VA)
= Largest Heat or A-C Load (VA)
= TOTAL CALCULATED LOAD

- HEAT / A-C LOAD @ 100%

Converting VA TO kW (Single-phase applications with 1.0 power factor only) 1 kVA = 1 kW

Worksheet — NEC 2008, 220 Part IV

| | | | | | |
|--|----------|----------------------|---------|------------|----------------------------|
| Contractor | | Email | | | |
| Phone | | Fax | | | |
| Job Name | | | | | |
| Date | Location | | | | |
| Voltage (Circle) | 240V-1Ø | | | | |
| Fuel | | NG | LPV | | |
| Elec. Service | 100 Amp | 200 Amp | 400 Amp | Other | |
| NET SQUARE FOOTAGE | | | | | |
| GENERAL LOADS | Qty | Rating (Load) | Factor | Loads (VA) | Loads (kW) (VA ÷ 1,000) |
| General Lighting and General Use Receptacles | | 3 VA/ft ² | 100% | | |
| Branch Circuits (1500 VA/ft ²) | | | | | |
| Small Appliance Circuits (20 Amp) | | 1500 | 100% | | |
| Laundry Circuits | | 1500 | 100% | | |
| Fixed Appliances | | Full Current Rating | | | |
| Well | | | 100% | | |
| Sump Pump | | | 100% | | |
| Freezer | | | 100% | | |
| Microwave (Not counter-top model) | | | 100% | | |
| Disposal | | | 100% | | |
| Dishwasher | | | 100% | | |
| Range (See Table 220.55 for multiple cooking appliances) | | | 100% | | |
| Wall-Mounted Oven | | | 100% | | |
| Counter-Mounted Cooking Surface | | | 100% | | |
| Water Heater | | | 100% | | |
| Clothes Dryer | | | 100% | | |
| Garage Door Opener | | | 100% | | |
| Septic Grinder | | | 100% | | |
| Other (list) | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| | | | 100% | | |
| Total General Loads | | | | VA | kW |
| HEAT / A-C LOAD | | | | | |
| A-C / Cooling Equipment | | | 100% | | |
| Heat Pump | | | | | |
| • Compressor (if not included as A-C) | | | 100% | | |
| • Supplemental Electric Heat | | | 65% | | |
| Electric Space Heating | | | | | |
| • Less than 4 separately controlled units | | | 65% | | |
| • 4 or more separately controlled units | | | 40% | | |
| System With Continuous Nameplate Load | | | 100% | | |
| Largest Heat / A-C Load (VA) VA kW | | | | | |
| GENERAL LOADS | | | | | |
| • 1st 10 kW of General Loads | | | 100% | kW | |
| • Remaining General Loads (kW) | | | 40% | kW | |
| CALCULATED GENERAL LOAD (kW) kW | | | | | kW |
| LARGEST HEAT / A-C LOAD 100% kW kW | | | | | kW |
| TOTAL CALCULATED LOAD (Net General Loads + Heat/A-C Load) | | | | | kW |