**Power Processor - Series 700F**

Power Conditioning and Regulation for Commercial & Industrial Equipment

**Guide Specifications**

PART 1 - GENERAL

1.1 DESCRIPTION

This specification defines the electrical and mechanical characteristics and requirements of an AC power conditioning system with line voltage regulation. The system specified herein shall include all the components necessary to provide the electrical power quality needed for the improved operation, performance and reliability of commercial and industrial electronic equipment. Power conditioning shall be accomplished through use of an integral 3 phase, copper wound, triple shielded, low output impedance isolation transformer. Integral transient voltage surge suppression shall be included to meet and exceed ANSI/IEEE recommendations for surge voltages in AC power circuits. Line voltage regulation shall be as specified herein, providing 1 cycle correction of under and over voltage conditions. The regulator shall incorporate microprocessor control, digital processing and independent phase regulation to provide the specified voltage, without any voltage over or under-shoots.

1.2 STANDARDS

The power conditioner/regulator shall be designed in accordance with applicable portions of the following standards:

1. American National Standards Institute (ANSI)
2. Institute of Electrical and Electronic Engineers (IEEE)
3. National Electric Code (NEC)
4. National Fire Protection Association (NFPA Article 70)
5. FCC Article 15, Section J, Class A
6. ANSI C62.41 Category B-3
7. UL Listed to Standard 1012
8. C-UL listed to CSA Standard C22.2, No. 107.1-01
   1. SUBMITTALS

A. Manufacturer Requirements:

1. The manufacturer shall be ISO 9001 “Quality Assurance Certified” and shall upon request furnish certification documents.
2. The manufacturer shall be a United States based manufacturer with 10 years experience or greater in design and fabrication of three phase power conditioning and line voltage regulation equipment.
3. Product Data:
4. The manufacturer shall supply documentation for the installation of the system, including wiring diagrams and cabinet outlines showing dimensions, weights, BTUs, input/output connection locations and required clearances.
5. Factory test results shall be provided to show compliance with the requirements. The manufacturer shall include test documentation which demonstrates compliance with the specified requirements at the continuous rated kVA load.
6. The supplier shall furnish (6) equipment submittal copies. Submittals shall be specific for the equipment furnished and shall include as-built information.

PART 2 - PRODUCTS

2.1 Manufacturers

The equipment specified shall be the Power Processor, Series 700F Front Access Power Conditioning Voltage Regulator, manufactured by Controlled Power Company.

2.2 Input Specifications

* + 1. The nominal AC input voltage rating of the power conditioner/regulator shall be .
    2. The nominal operating frequency shall be 60 hertz, +/- 3 hertz.

2.3 Output Specifications

1. The nominal AC output voltage shall be 208/120VAC, wye derived.
2. The output impedance shall be 3-4% typical.
3. The power conditioning transformer shall include seven (7) full capacity taps per phase, allowing for the tight output voltage regulation specified.
4. The power conditioning transformer shall provide a continuous duty, full load output power of .

2.4 Performance Specifications

1. Input voltage range shall be +10 / -20% with the output voltage regulated to +/- 3% typical.
2. Response time shall be less than ½ cycle.
3. Correction time shall be within 1 cycle.
4. The output voltage of the power conditioning transformer shall drop no more than 2.5*%*, when stepping from no load to full load.
5. Less than 1% THD shall be added to the output waveform under any dynamic linear loading conditions presented to the system.
6. Input power factor shall be greater than .99 with a resistive load and not reflect any triplen harmonics to the utility under non-linear loads.
7. The overload rating for the power conditioner/regulator shall be 200% continuous load rating for 30 seconds, 1,000% for 1 cycle.
8. Common mode noise attenuation shall be 146 dB minimum.
9. Transverse mode noise attenuation shall be 3 dB down at 1,000 hertz, 40 dB down per decade below 50 dB with a resistive load.
10. Efficiency shall be 96-97% typical, excitation losses shall be less than 1.5% of the kVA.
11. The power conditioner/regulator system shall exhibit a MTBF greater than 100,000 hours.

2.5 Main Input Circuit Breaker

A main input molded case, thermal magnetic circuit breaker, rated at 125% of the full continuous load input current at the nominal input voltage, shall be furnished as an integral part of the unit.

2.6 Standard Monitoring

1. Alert Light  
   An indicator light shall show if the output has been disabled by one of the following conditions:
2. Transformer over-temperature
3. SCR thermal over-temperature
4. Indicating Lamps

Output ON indicating lamps shall be provided for each phase.

2.7 Main Transformer Construction

1. The transformer windings shall be of all copper conductor construction with separate primary and secondary isolated windings.
2. Fully processed, low carbon, silicon-iron transformer steel shall be utilized to minimize losses and provide maximum efficiency. Flux density shall not exceed 14k gauss.
3. Class N (200° C) insulation shall be utilized throughout with 115° C temperature rise.
4. The transformer shall have multiple (three) copper shields to minimize inner winding capacitance, transient and noise coupling between primary and secondary windings. Inner winding capacitance shall be limited to .001 pF or less.

2.8 Cabinet Construction

1. Design shall allow for front access to the status lights, input circuit breaker and serviceable parts. No side or rear access required for system installation, operation or service.
2. Input and output terminations shall be front access. Input terminations shall be made directly to the main input circuit breaker and the input ground terminal provided. Output terminations shall be made to the copper bus connections provided, 3 phase, neutral and ground.
3. Conduit landing plates shall be provided to permit top and/or bottom entry for input and output power connections.
4. Ventilation shall originate from the front of the cabinet and exhaust through the top of the cabinet.
5. Electronic control section shall be isolated from transformer section and power terminations.
6. Transformer section shall be designed for natural convection cooling.
7. Cabinet shall be NEMA 1 rated and constructed using a 12 gauge steel frame with 10 gauge steel floor mounting channels.
8. Exterior panels shall be pre-treated and powder-coat painted with manufacturer’s standard color.

2.9 Environmental

1. Temperature: The power conditioner/regulator system shall be required to operate without overheating in an ambient temperature range of -20°C to +40°C.
2. Humidity: The power conditioner/regulator system shall operate in a relative humidity of 0-95% non-condensing.
3. Altitude: The power conditioner/regulator system shall operate up to 5,000 feet above sea level without de-rating.
4. Audible noise: Maximum allowable noise shall not exceed 50 dba at 1 meter distance.

2.10 Warranty

The manufacturer shall guarantee the regulators power components and system electronics to be free from defects in material and workmanship during the warranty period.