CONTROLLED POWER COMPANY

GENERAL SPECIFICATIONS

FOR THE *POWER PROCESSOR*

SERIES 700A - THREE PHASE POWER LINE CONDITIONERS

1.0 SCOPE

This specification covers the electrical characteristics of the Power Processor, which provides clean regulated power for electric/electronic equipment and peripherals.

2.0 GENERAL

The Power Processor, Power Line Conditioner consists of an all copper, multiple tapped, triple shield isolation transformer. The low output impedance of the transformer in conjunction with the electrostatic shields assures precision computer grade performance with excellent noise and transient attenuation. Independently controlled inverse parallel electronic switches for each of the 7 taps per phase provide tight regulation over a wide input range. Linear devices are used for line synchronization to prevent phase shift errors normally associated with simple CT zero current crossing acquisition. The microprocessor control accurately selects the correct tap to maintain the output no greater than 3% of nominal, correcting for voltage disturbances within one cycle. Digital processing technique provides fast and accurate regulation without output voltage over or undershoots.

2.1 AGENCIES

2.1.1 STANDARDS

The systems shall be designed in accordance with:
American National Standards Institute
Institute of Electrical and Electronic Engineers
National Electric Code (NEC)
National Fire Protection Association (NFPA Article 70)
Underwriters Laboratories (U/L) 1012
FCC Article 15, Section J, Class A
ISO 9001:2015

2.1.2 LISTINGS / COMPLIANCE

The system shall be listed to U/L standards UL1012
The system shall comply to: FCC Article 15, Section J, Class A and ANSI C62.14 (electromagnetic compatibility)

3.0 DYNAMIC ELECTRICAL CHARACTERISTICS

3.1 OPERATING VOLTAGES - Three Phase

3.1.1 - The standard input voltages shall be 480VAC or 208VAC, three phase 60Hz.

3.1.2 - The standard output voltages shall be a wye derived 7 tap regulating system at either 480VAC or 208VAC, rated for 100% continuous duty at rated kVA.

3.2 LINE VOLTAGE REGULATION

3.2.1 - Usable Input Line Voltage +15%, -30%. Output Line Voltage $\pm$3.0% typical.

3.2.2 - The design of the system shall indicate that with an input voltage of -10% of nominal, increasing the load to 400% shall cause the output voltage to fall no lower than -6%.

3.3 RESPONSE TIME
3.3.1 - Response time is less than 1/2 cycle.

3.4 CORRECTION TIME
3.4.1 - The output voltage is corrected within 1 cycle.

3.5 LOAD REGULATION
3.5.1 - The output is maintained to within 2.5% of nominal or less, from no load to full load.
3.5.2 - Output impedance shall be less than 3%

3.6 OPERATING FREQUENCY
3.6.1 - 60 Hertz ± 3 Hertz

3.7 HARMONIC DISTORTION
3.7.1 - Less than 1% THD added to the output waveform under any dynamic linear loading conditions presented to the line regulator.

3.8 OVERLOAD RATING
3.8.1 - 200% for ten seconds.
3.8.2 - 1000% for one cycle.

3.9 NOISE ATTENUATION
3.9.1 - Common mode noise attenuation is typically 140 dB or greater.
3.9.2 - Transverse mode noise attenuation is 3 dB down at 300 Hertz, 40 dB down per decade to below 50 dB with a resistive load.

3.10 AUDIBLE NOISE
3.10.1 - Not to exceed 55dB measured @1 meter

3.11 EFFICIENCY
3.11.1 - 97% or greater typical at full load.

3.12 POWER FACTOR - Three Phase
3.12.1 - Input power factor shall be greater than .95 with a resistive load and reflect no triplen harmonics to the utility under non-linear loads.

3.13 CONTINUOUS DUTY
3.13.1 - Continuous duty output power ratings: (10) (15) (25) (30) (45) (50) (75) (100) (125) (150) (225) (300) (350) (400) (500) kVA / kW, rated at unity power factor.

4.0 MAIN TRANSFORMER

4.1 BASIC CONSTRUCTION
4.1.1 - The transformer windings are of all copper conductor construction with separate primary and secondary isolated windings.

4.2 MAGNETIC
4.2.1 - Grain oriented, M6 grade, stress relieved silicon transformer steel is utilized to minimize losses and provide maximum efficiency. Flux density will not exceed 15k gauss.

4.3 INSULATION
4.3.1 - Class N (200° C) insulation is utilized throughout.

4.4 SHIELDING

4.4.1 - The transformer has multiple (three) copper shields to minimize inner winding capacitance, transient and noise coupling between primary and secondary windings.

4.5 COOLING

4.5.1 - The transformer is designed for natural convection cooling.

4.6 OPERATING TEMPERATURE

4.6.1 - The system operating range: 0 to 40 degrees C

4.7 HUMIDITY

4.7.1 - Relative humidity of 0 to 95% non-condensing.

5.0 MAIN INPUT BREAKER

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

6.0 BY-PASS SWITCH (Optional)

A manually operated rotary bypass switch provides bypassing of the regulator portion of the Power Line Conditioner. The regulator can be either on-line or bypassed with one turn of the switch. The transformer and suppression circuitry remains in the circuit when in the bypass mode.

7.0 MONITORING

7.1 ALERT LIGHT

7.1.1 - An indicator light shall annunciate that the output has been disabled by one of the following conditions:
(1) Transformer over-temperature
(2) SCR thermal over-temperature

7.2 DIGITAL METERING (Optional)

7.2.1 - The Power Line Conditioner shall be equipped with a digital meter.

7.2.2 - The output digital voltmeter shall read the voltages of all 3 phases. The voltage readings shall be derived and displayed directly from line-line voltage measurements and line to neutral voltage measurements. Calculated line-to-line voltages derived from phase-to-neutral measurements are not permissible. The minimum and maximum voltage values shall be digitally recorded and logged.

7.2.3 - The output digital ammeter shall read all three-phase currents. The minimum and maximum values shall be digitally recorded and logged.

7.3 INDICATING LAMPS

7.3.1 - Output ON indicating lamps shall provided for each phase.

8.0 CABINET

8.1 TERMINATION

8.1.1 - Termination is rear access for units up to 150kVA. Input and output connections are available via a terminal strip on units up to 30kVA and copper standoff bus for units above.

8.1.2 - Termination is top access for units 225kVA and above. Output connections are constructed from a copper standoff bus. Input termination is direct to the input breaker and ground bus.

8.2 VENTILIATION

8.2.1 - For units up to 150kVA, ventilation originates from the bottom of the cabinet and exhausts at the rear of the cabinet.

8.2.2 - For units 225kVA and above, ventilation originates from the bottom of the cabinet and exhausts at the top of the cabinet.

8.3 MOBILITY

8.3.1 - The Power Line Conditioner cabinets are equipped with fixed casters up to 150kVA, located so as not to exceed 600 lbs/sq inch on any one caster.

8.3.2 - Units above 150kVA are equipped with steel channels.

8.4 ACCESSABILITY

8.4.1 - The cabinet is constructed with lift off panels for ease of access.

9.0 CONTROLS

The control portion of the cabinet containing the circuit boards and connection to the semi- conductor devices is separate from the transformer and input / output termination.

10.0 WARRANTY

Standard commercial one year warranty.