

<p style="text-align: center;">TECHNICAL SPECIFICATIONS for Three Phase, 15 to 500 KVA High Isolation Power Conditioner Systems with “K-Factor” Rating of “K-13”</p>	
<p style="text-align: center;">K-13, Iso-Care</p>	<p style="text-align: center;">195-GS-K13 Rev. A 12/8/21</p>

1.0 General

This specification covers the electrical characteristics and general requirements for a Three Phase, Conditioning System. The specified equipment herein shall be referred to as a “K-13” rated, three Phase Power Conditioning Unit (ISOCARE). The “K-13” rated ISOCARE includes all components and systems required to install, operate and maintain the system.

2.0 Applicable Documents

- 2.1 The National Electrical Code NFPA 1984 (Latest Edition)
- 2.2 American National Standards Institute Corp. and its Applicable standards C39.1, C80.1, C89, C84.1.
- 2.3 FCC Part 15, Sub-Part J, Class A.
- 2.4 IEC 435 International Electrotechnical Commission Recommendation "Safety of Data Processing Equipment".
- 2.5 VDE 0804/3.77 Verbrauch Deutscher Elektotechniker standard. "Telecommunication and Electronic Data Processing Unit and Systems".
- 2.6 UL 1561 Underwriters Laboratories Inc.
- 2.7 VDE 0806 Verband Deutscher Electrotechniker Standard "Safety Design".
- 2.8 CSA 22.1 Canadian Standards Association, "Data Processing Equipment".
- 2.9 NEMA National Electrical Manufactures Association and its applicable standards.
- 2.10 Local Inspection Authorities having jurisdiction over electrical equipment and its installation.
- 2.11 MIL-T-27B Dry Transformer Insulation.

3.0 Major Components

The Basic components of the “K-13” rated ISOCARE shall consist of base, case, three phase, copper wound, shield isolation transformer, internal wiring, single point ground, and EMI shielding.

4.0 System Package and Construction

- 4.1 Agency approval.
The ISOCARE shall be UL Listed under standard 1561.
- 4.2 Cabinet
The cabinet shall consist of the following:
 - 1. Base
The base shall be of heavy gage sheet metal of a minimum of 14 gage. Each base shall be treated and painted with baked enamel paint.

2. Removable Access Panels

Removable front and rear panels shall be provided. All exposed access screws shall be nickel-plated.

3. Cover

A cover shall be provided to prevent metal objects from falling into the ISOCARE. The front and rear panels case shall be easily removed to provide access to the transformer taps for field changes. Convection cooling is accomplished by front and rear vent panel openings.

4.3 Isolation Transformer

The isolation transformer shall be designed and manufactured in accordance with the latest revisions of UL 1561. It shall be a dry type, copper wound, three phase, common core, computer grade, electrostatic shielded, isolation transformer designed to provide a separately derived power source for computer applications and to help protect computers and associated peripheral equipment from electrical noise and input power noise (transients) in the common mode.

No direct electrical connection shall exist between the primary and secondary windings within the transformer.

In order to achieve maximum electrical noise isolation, all output wiring from the secondary of the isolation transformer to the output lugs shall be kept at the maximum physical distance from any primary winding going into the transformer.

The transformer coils shall be continuously wound with copper magnet wire conforming to ANSI (American National Standards Institute) class M16 and shall be listed as a UL (Underwriters Laboratory, Inc.) recognized component. The coils shall be constructed with materials listed in UL, "Recognized Electrical Insulation System, Class 220° C." The secondary neutral shall be rated for 200%.

The transformer shall be designed for a maximum temperature rise of 150° C above 40° C ambient, as measured by the rise change or resistance method. The maximum temperature rise of the coil hot spot shall not exceed 180° C. The transformer shall be cooled by convection method and protected against thermal overload. The unit shall be provided with an alarm contact to notify personnel should the transformer coil reach 140° C. A second contact shall be provided to notify personnel should the transformer coil reach 160° C.

To provide minimum interwinding capacitance, the transformer shall have multiple electrostatic copper shields that extends the full height of the windings.

The transformer core shall be constructed of high-grade, non-aging, grain oriented, cold rolled silicon steel with carlite insulation, corresponding to ANSI C-5 insulation. The transformer shall produce minimum exciting currents, minimum no-load losses and minimum interlaminar vibrations. It shall have a core-grounding strap. The coil leads and terminal strips shall be on the opposite sides of the core in order to provide the maximum distance between the the input and output wires, thereby reducing the coupling capacitance and enhancing the overall isolation characteristics.

The core and coils assembly shall be immersed in a varnish which is listed as a component of a UL, "Recognized Electrical Insulation System." The unit shall be thoroughly baked to provide high dielectric strength, superior bond strength and corrosion protection.

The transformer shall be manufactured to UL listed "K-factor" rating of "K-13" specs. Harmonic tolerant for 100% non-linear loads.

4.4 Internal Wiring

All internal wiring shall be UL Listed appliance wire or power wiring of multi stranded construction. Secondary and Primary Power wiring from the transformer shall not be in close proximity of each other.

4.5 Single Point Ground (SPG)

A single point ground bus shall be provided and shall be of copper construction. Minimum thickness shall be 1/4" X 1/4" and be silver plated to provide connection of the lowest possible resistance to all ground wires secured to the SPG. The following shall be grounded to the SPG:

1. Equipment grounds.

2. Neutral of isolation transformer.
3. Core of the Transformer.
4. Primary and Secondary shields.
5. Base
6. Equipment grounding conductor from the branch circuit.
7. Case.

4.6 Secondary Surge Suppression Network (**OPTIONAL**)

A secondary surge suppression network shall be located on the secondary side of the isolation transformer. The network shall suppress load-induced noise to reduce the sensitivity of one load from another load. The network shall have the following characteristics:

1. Parallel (Shut) Protection
2. Response time of < 5 ns
3. Repetitive transients up to 5000/sec
4. Clamping Voltage:

160 VAC line to neutral
274 VAC line to line
5. Peak Pulse Power Rating:

19 KW line to neutral
37.5 KW line to line

6. Each device shall be fused for circuit protection. Visual service indicators (one for each phase) shall be provided on the side panel of the ISOCARE to indicate that the OTSN is no longer providing protection.

4.7 Input/Output transient Noise Filter (**OPTIONAL**)

The Input transient Noise Filter consists of a resistor/capacitor network that acts as a large snubber circuit to eliminate high frequency impulses from entering the power conditioner. The Output Transient Noise Filter consists of a capacitor network installed on the secondary. This capacitor, when coupled with the primary filter, virtually eliminates most electronic noise from reaching the applied load or being fed back to the unit from noise generating loads.

4.8 TVSS (**OPTIONAL**)

The TVSS is a commercial grade and light industrial primary surge protection device. It combines surge suppression and filtering to provide effective protection for sensitive electronic loads. The TVSS is fuse protected, has status indicator lights. Meets: IEEE cat c# and cat B3. UL 1449, 2nd ed., UL 1283 listed, CSA approved, CE marked. Surge current 80 kA/phase.

5.0 Electrical Characteristics

5.1 60 Hz Frequency units

1. Rating KVA: 15,30,50,75,100,125,150,175,200,225,250,300,400,500,
2. Input Voltage: 208 or 480 VAC
3. Output Voltage: 208Y/120 or 480Y/277 VAC
4. Input Frequency Tolerance: 60 Hz \pm 3 Hz

5.2 50 Hz Frequency

1. Rating KVA: 380 or 415 VAC
2. Input Voltage: 380Y/220 or 415Y/240 VAC
3. Output Voltage:
4. Input Frequency Tolerance: 50 Hz \pm 3 Hz

5.3 Transformer

1. Type: Dry, isolation, dual shield, all copper, three phase, computer grade, delta-wye
2. Impedance: 3% to 5% maximum
3. Load Regulation: \pm 1.2%
4. Efficiency: 96% @ full load
5. Load Power Factor: Unity to 0.3 leading or lagging

- 6. Harmonic Distortion: <1% maximum added
- 7. Noise Rejection (typical): Common mode: -120 dB (.1Hz to 30 MHz)
Normal Mode: -20 dB/decade (1KHz to 10 MHz.)
- 8. Taps: 2-FACN @ 2.5% each
4-FBCN @ 2.5% each
- 9. Audible noise: Meets or exceeds NEMA standards
- 5.4 Electromagnetic Noise: 0.1 gauss and 1.5 ft.
- 5.5 Load rating: Continuous regardless of line/load conditions
- 5.6 Overload inrush rating: 200% of full load for 30 minutes
500% of full load for 10 seconds
1000% of full load for 1 cycle
- 5.7 Dielectric Strength: 4000 VAC

6.0 Physical characteristics

6.1 Dimensions:

	15 - 30 kVA	50 kVA	75 kVA	100 kVA	125 - 225 kVA	250 - 300 kVA	400 - 500 kVA
Height	32.0"	38.5"	40.5"	40.5"	51.5"	66.0"	80.25"
Width	26.5"	28.5"	31.5"	36.5"	40.5"	50.5"	64.0"
Depth	17.0"	20.0"	21.75"	21.75"	26.5"	32.0"	44.25"

7.0 Operating environment

- 7.1 Temperature: 32° f to 104° F (0° to 40° C)
- 7.2 Humidity: 10% to 90% relative humidity, without condensation.
- 7.3 Altitude: 0 to 1000 Ft.

8.0 Storage environment

- 8.1 Temperature: 5° F to 122° F (-15° C to 50° C)
- 8.2 Humidity: 0% to 95% relative humidity, without condensation

9.0 Warranty

The manufacturer shall warrant the ISOCARE to be free from defects in both material and workmanship for a period of 5 years from the time of installation.

10.0 Manufacturer's Qualifications

The ISOCARE shall be furnished by a manufacturer who specializes in the manufacturing of Power Conditioning Systems and has been in business for at least 16 documented years, and with a nation wide service organization. The manufacturer shall be an ISO9001 certified company.

11.0 Qualified Systems

The unit shall be an ISO-CARE manufactured by:

OnLine Power, Inc.
Los Angeles CA