Section 1- General

1.1 Zero-Sequence Transformer to mitigate triplen harmonics
The zero sequence transformer (ZST-series) is designed to remove triplen harmonics from the neutral conductor in a 3-phase, 4-wire electrical system resulting in reduced neutral current, reduced neutral to ground voltage and reduced upstream system harmonic voltage distortion.

1.1.1 The transformer shall provide a low impedance path for the 3rd, 9th, 15th and 21st harmonics and other zero-sequence currents from the upstream circuit.

1.1.2 The transformer shall connect in parallel with a 3-phase, 4-wire system.

1.1.3 The transformer shall be suitable for connection at an electrical distribution panel.

1.1.4 The transformer shall not utilize any electronic circuitry or capacitors.

1.2 Electrical Ratings:

1.2.1 System Voltage: [208Y/120, 380Y/220, 400Y/230, 415Y240, 480Y/277, 600Y/346].

1.2.2 System Frequency: [50 hertz, 60 hertz, other]

1.2.3 Phase Current: [15, 20, 25, 30, 40, 50, 60, 75, 100, 150, 200, 300, other] amps
Section 2 – Basic Product Requirements

2.1 The zero-sequence transformer shall meet the following basic requirements:

2.1.1 Neutral current carrying capacity shall be three times the phase conductor ampacity.

2.1.2 The transformer shall be suitable for loads having a K-factor of up to 20.

2.1.3 The impedance to zero sequence currents shall be less than (1%) one percent.

2.1.4 Fundamental frequency impedance shall be less than 0.5%.

2.1.5 The transformer shall be a standard catalog item for the manufacturer.

2.1.6 Product warranty period shall be 10 years pro-rated with typical limited liability clauses.

2.2 Construction:

2.2.1 Three-phase, 4-wire, common core & coil assembly

2.2.2 Free convection cooled, no fans required.

2.2.3 Windings shall be aluminum, but with copper terminations.

2.2.4 Terminations shall be copper and must be welded to the winding conductor.

2.2.5 Insulation system shall be UL class H (220C).

2.2.6 Maximum ambient temperature shall be 40C.

2.2.7 Temperature rise shall be 150C [80C, 115C, other]

2.2.8 Construction shall be [open core & coil, Nema 1/IP20, Nema 3R/IP ,other]

2.2.9 Efficiency shall be 97% minimum at full load at 25C ambient temperature.

2.2.10 Construction shall be in accordance with UL, CSA and ANSI requirements.

2.2.11 Audible noise shall not exceed 45dBA at full load when properly mounted in a suitable floor standing enclosure.

2.2.12 Enclosure color shall be [ASA-61 grey, other].

2.3 Options:
2.3.1 Solid copper windings with copper terminations.
2.3.2 Thermal switches [N.O., N.C.] installed in [center coil only, all coils].
2.3.3 Vibration mounting pads for enclosed transformers.
2.3.4 Series input reactor rated no less than 3% impedance to prevent the attraction of triplen harmonics from other electrical panels.
2.3.5 Enclosure style and color.

Section 3 - Acceptable Manufacturer

3.1 The approved and acceptable Zero-Sequence Transformer is the ZST – Series as manufactured by Controlled Magnetics Inc.