
SPECIFICATION FOR A 60 ADC INTERPHASE TRANSFORMER/VIRTUAL CHOKE

1.0 INTENDED USE

The Interphase Transformer Virtual Choke(IPTVC) provides two functions in a line commutated converter that inverts dc power produced by a high frequency permanent magnet generator/rectifier into 50 Hz or 60 Hz mains frequency power. First, the IPTVC provides the differential mode interphase transformer inductance necessary to buffer the output voltages of the paralleled 6-pulse bridges that make up the 12-pulse converter. This function is usually provided by an interphase transformer. Second, the IPTVC provides common-mode inductance adequate to reduce the dc link ripple voltage to an acceptable level.

2.0 DESIGN CONCEPT

The combined differential and common mode inductance is created by winding the two IPTVC coils on the outer legs of a core made from three-leg laminations. The coupling between the coils on the outer core legs provides the differential mode inductance while the shunt flux path of the center leg creates the common mode inductance.

A block diagram of the system block diagram is shown in Figure 1. The physical configuration of the IPTVC is sketched in Figure 2

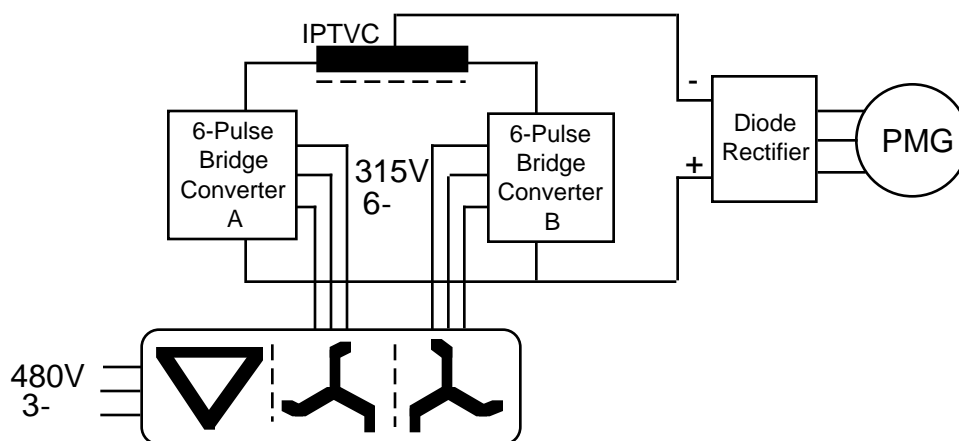


Fig. 1 System Block Diagram

3.0 ELECTRICAL PERFORMANCE

The square wave voltage across the two coils in series is 330V p-p at 360 Hz. Current in each coil is dc with a superimposed triangular shaped magnet-izing current. Current is 10 A min., 90 A max., 50 A ave. and 55 A rms.

The nominal inductance of the two coils in series is 2.0 mH at 360 Hz. The actual inductance will be adjusted for optimum harmonic cancellation by selection of the airgap shim thickness.

4.0 MANUFACTURING SPECIFICATIONS

- | | | |
|-----|-------------------------|--|
| 3.1 | Laminations : | EI-1.5, M6, 0.014 in. thick |
| 3.2 | Stack Height : | 2.0 in. |
| 3.3 | Turns: | 58 ± 4 turns per coil, |
| 3.4 | Copper area | $\geq 42,000$ circular mils or 32,900 sq. mils |
| 3.5 | Winding Insulation : | double polythermaleze |
| 3.6 | Interlayer Insulation : | Tufquin 200 deg. C |
| 3.7 | Gap Shims : | 0.125 in. |
| 3.8 | Terminals : | 0.125 x 0.625 in. copper tabs |
| 3.9 | Mounting Brackets : | 1.25 x 1.25 x 0.125 x 11.0 steel angle |

5.0 PART NUMBERING

This item is to be stamped with the Part No. **T1PWS188** and the date of manufacture.

6.0 HIPOT TESTING

The IPT shall be capable of withstanding a 2500 Vrms hipot test between windings and core for a minimum of 1 minute.

-

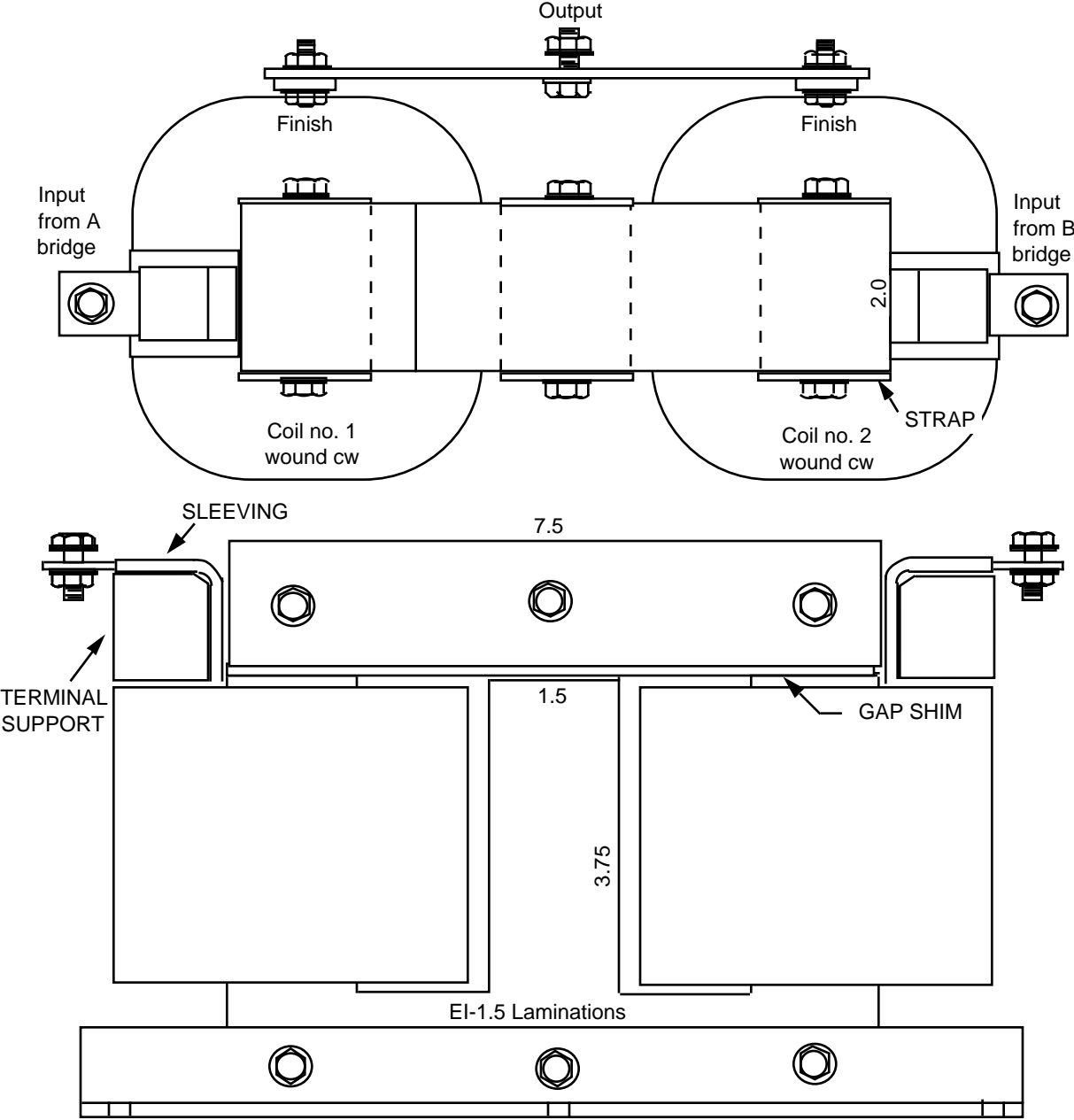


Figure 2 -- IPTVC Configuration