

## POWERCUBE™ TRANSFORMERS ENERGY EFFICIENCY & COST SAVINGS DELIVERED



**THE INDUSTRY'S TRUSTED CHOICE** As the pioneer of critical power distribution technology, ONYX Power leads the way with proven solutions when it comes to high efficiency transformers. Backed by three modern US manufacturing facilities, a staff of over 300 dedicated people, and 30 years of industry experience, ONYX Power has one of the largest installed bases of high efficiency transformers among any power quality provider.

### LOWER OPERATING COSTS

ONYX Power's advanced technology high efficiency transformers are designed to deliver optimal high efficiency for lower operating costs. Exceeding national efficiency standards (NEMA TP-1), PowerCube™ transformers deliver true energy savings under both linear and non-linear loads.

**SYSTEM MONITORING** The award winning Wavestar™ monitoring system with PDI<sup>®</sup> provides real time energy and power quality information at a glance. All monitors are equipped with universal communications ports for easy interface with building management systems.

**MAINTAINABILITY** An available hinged front port provides a quick and easy way to access all power connections, while optional infrared transparent windows allow for safe routine thermal scanning without opening the interior doors.

**REDUCING THE FOOTPRINT** ONYX Power's high efficiency transformers are designed to provide years of reduced energy costs, reduced energy consumption, and therefore reduced impact on the environment. Additionally, our eco-friendly design and manufacturing process strives to maximize recycling methods for sustainability.

### TESTED AND VERIFIED TO NATIONAL STANDARDS

To verify performance of actual efficiency, all ONYX Power energy efficient transformers are tested to a nationally recognized method using third party verified equipment. All transformers are provided with a serialized test data sheet to validate performance to ensure customers get the efficiency they pay for.

**BETTER BY DESIGN** We invite you to look further at the technology and advantages of ONYX Power PowerCube™ transformers. A 240°C thermal shielding between windings delivers an extra margin of safety and design and extends operating life. Welded tap connections and large flat bus termination points also eliminate "hot spots" found in most other manufacturer's transformers.

**APPLICATIONS** The PowerCube™ represents an optimal solution for: data centers, K-12, colleges, universities, government, healthcare, industrial, and commercial buildings where lower operating costs, energy savings, and the environment are a priority.

### FEATURES

- Lower operating costs
- Lower heat generation / less cooling capacity required
- Reduced greenhouse emissions
- Meets TP-1 efficiency standards
- Qualifies for LEED building criteria
- Optional revenue-accurate metering connection port
- Integral electrical performance & commissioning capability via ONYX Power's nationwide service team
- Customizable load level efficiency maximization
- Customer-specific power quality characteristics available
- Independently verified efficiency testing & verification
- Real time efficiency status monitoring capability
- Long term warranty available

# HIGH EFFICIENCY POWER QUALITY TRANSFORMER: POWERCUBE™

## SPECIFICATIONS

### RATINGS

- kVA Ratings: 30-1000 kVA
- K Factor: specifiable K1 through K30
- 6 Compensation Taps (4 FCBN, 2 FCAN)
- Input: 3-phase, 3 wire plus ground
- Input Voltage @ 50 Hz: 415 or 380V  
@ 60 Hz: 600, 480 or 208V
- Output: 3-phase, 4 wire plus ground
- Output Voltage @ 50 Hz: 415/240 or 380/220V  
@ 60 Hz: 600, 480 or 208/120V
- Impedance: 2.0-4.5% average  $\pm$  0.25%

### FEATURES

- Copper wound construction – better conducting and more resilient than aluminum
- Dual electrostatic shield – attenuates high frequency noise
- Natural convection cooling
- Operating Efficiency: 98% typical
- Oversized neutral for non-linear loads
- UL Listed

### ENCLOSURE

- Drip-proof NEMA 1
- Removable front and rear panels

### OPERATING CONDITIONS

- Operating Temperature: ambient 0°C to 40°C
- Storage Temperature: ambient -10°C to +40°C
- 50 Hz Operating Range: 47-53 Hz
- 60 Hz Operating Range: 57-63 Hz
- Relative Operating Humidity: 90% non-condensing

### WARRANTY

- 12 years prorated - the industry's best

### TRANSFORMER DESIGNS

- Delta Wye
- Delta Zig Zag
- Dual Zig Zag
- Quad-Wye
- Medium Voltage
- Autotransformers

**PDI** = POWER DISTRIBUTION INTELLIGENCE QUOTIENT  
YOUR SMART MONITORING SOLUTION

## POWERCUBE™ OPTIONS

### TRANSIENT SUPPRESSION NETWORK (TSN)

This feature provides an integrated system designed and engineered to meet ANSI/IEEE category C standards for transient voltages and surge currents.

### LIGHTNING ARRESTOR/SURGE SUPPRESSOR

The Lightning Arrestor and Surge Suppressor option protects the major insulation of the magnetics from high energy surges that are associated with lightning discharges. The suppressor circuit reduces the rate of rise of high energy transient voltages, thereby increasing the effectiveness of the Lightning Arrestor.

### OPTIONAL TRANSFORMER FEATURES

- Temperature rise at 130°C, 115°C, 105°C and 80°C rise
- Temperature monitor
- Zero and thirty degree phase shift transformer available
- Thermal warning and shutdown sensors
- Harmonic mitigation
- WaveStar™ graphics display
- PowerLogic monitor
- NEMA 3 enclosure
- IR scan port
- Custom impedances are available upon request.
- 25 year prorated warranty
- Customized spare parts kits available

ONYX Power offers over 800 different PowerCube™ configurations. Couple these with ONYX Power's TVSS option to ensure system reliability.

| kVA  | WEIGHT | NEMA 1             |
|------|--------|--------------------|
|      | (LBS)  | H x W x D (INCHES) |
| 30   | 380    | 36 x 28 x 17       |
| 45   | 490    | 36 x 28 x 17       |
| 75   | 700    | 42 x 35 x 21       |
| 100  | 750    | 42 x 35 x 21       |
| 125  | 830    | 50 x 40 x 28       |
| 150  | 980    | 50 x 40 x 28       |
| 225  | 1200   | 63 x 49 x 30       |
| 300  | 1600   | 63 x 49 x 30       |
| 500  | 2400   | 63 x 49 x 30       |
| 750  | 3600   | 72 x 66 x 44       |
| 1000 | 3600   | 72 x 66 x 44       |

Consult specific design for impedance value.



Onyx Power | 4011 Carriage Drive | Santa Ana, California, 92704  
714.513.1500 | 714.513.1510 fax | web site: www.onyxpower.com

©PDI 4/09

# HIGH EFFICIENCY POWER QUALITY TRANSFORMER

## WEIGHTS, DIMENSIONS AND ELECTRICAL SPECIFICATIONS

ONYX POWER, INC. CLAIMS PROPRIETARY RIGHTS IN THE MATERIAL DISCLOSED HEREIN. THIS DOCUMENT IS ISSUED FOR ENGINEERING INFORMATION ONLY. IT MAY NOT BE DISCLOSED TO OTHERS NOR MAY IT BE USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM ONYX POWER, INC.

### DIMENSIONS AND WEIGHTS


| KVA                          | A     | B     | C     | D     | E     | F     | G     | H     | J     | H(MTG SLOT) | WT/LB |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------|
| <input type="checkbox"/> 30  | 36.00 | 28.00 | 17.00 | 25.14 | 14.00 | 22.50 | 15.50 | 15.50 | 6.75  | .625 X 1    | 380   |
| <input type="checkbox"/> 45  | 36.00 | 28.00 | 17.00 | 25.14 | 14.00 | 22.50 | 15.50 | 15.50 | 6.75  | .625 X 1    | 490   |
| <input type="checkbox"/> 75  | 42.00 | 35.00 | 21.00 | 32.14 | 18.00 | 29.50 | 19.00 | 19.00 | 10.75 | .625 X 1    | 700   |
| <input type="checkbox"/> 100 | 42.00 | 35.00 | 21.00 | 32.14 | 18.00 | 29.50 | 19.00 | 19.00 | 10.75 | .625 X 1    | 750   |
| <input type="checkbox"/> 125 | 50.00 | 40.00 | 28.00 | 37.04 | 25.00 | 34.50 | 26.00 | 26.00 | 12.75 | .625 X 1    | 830   |
| <input type="checkbox"/> 150 | 50.00 | 40.00 | 28.00 | 37.04 | 25.00 | 34.50 | 26.00 | 26.00 | 12.75 | .625 X 1    | 980   |
| <input type="checkbox"/> 225 | 63.00 | 49.00 | 30.00 | 45.52 | 24.59 | 42.00 | 28.00 | 28.00 | 14.75 | .625 X 1    | 1200  |
| <input type="checkbox"/> 300 | 63.00 | 49.00 | 30.00 | 45.52 | 24.59 | 42.00 | 28.00 | 28.00 | 14.75 | .625 X 1    | 1600  |
| <input type="checkbox"/> 500 | 63.00 | 49.00 | 30.00 | 45.52 | 24.59 | 42.00 | 28.00 | 28.00 | 14.75 | .625 X 1    | 2400  |
| <input type="checkbox"/> 750 | 72.00 | 66.00 | 44.00 | 45.52 | 24.59 | 42.00 | 28.00 | 28.00 | 14.75 | .625 X 1    | 3600  |

(REFER TO MECHANICAL SPECIFICATION DRAWING)

| KVA | INPUT CURRENT (AMPS) |         |         | OUTPUT CURRENT (AMPS) |         |         | HEAT REJECTION<br>(BTUH @ FULL LOAD) |
|-----|----------------------|---------|---------|-----------------------|---------|---------|--------------------------------------|
|     | 600 VAC              | 480 VAC | 208 VAC | 600 VAC               | 480 VAC | 208 VAC |                                      |
| 30  | 29                   | 36      | 83      | 29                    | 36      | 83      | 1.6                                  |
| 45  | 43                   | 54      | 125     | 120                   | 54      | 125     | 2.5                                  |
| 75  | 72                   | 90      | 208     | 201                   | 90      | 208     | 4.1                                  |
| 100 | 96                   | 120     | 278     | 268                   | 120     | 278     | 5.5                                  |
| 125 | 120                  | 151     | 347     | 335                   | 151     | 347     | 6.8                                  |
| 150 | 145                  | 181     | 417     | 402                   | 181     | 417     | 8.2                                  |
| 225 | 217                  | 271     | 625     | 602                   | 271     | 625     | 12.3                                 |
| 300 | 289                  | 361     | 834     | 803                   | 361     | 834     | 16.4                                 |
| 500 | 482                  | 602     | 1390    | 1339                  | 602     | 1390    | 27.3                                 |
| 750 | 723                  | 903     | 2084    | 2008                  | 903     | 2084    | 41.0                                 |

NOTE: OBSERVE ALL NEC AND LOCAL GUIDELINES WHEN SELECTING OVERCURRENT PROTECTION AND CABLING

|             |          |  |  |
|-------------|----------|--|--|
| TITLE       |          | HIGH EFFICIENCY<br>POWER QUALITY TRANSFORMER |  |
| DWG. NUMBER | 2 OF 4   | ON-92-10001-00_2-X0                          |  |
| DRAWN BY    | JLL      | REVISION                                     |  |
| DATE        | 01-30-09 | XO   |  |



**ONYX POWER, Inc.**  
4011 W. CARRIAGE RD.  
Santa Ana, CA. 92704 U.S.A.

ONYX POWER, INC. CLAIMS PROPRIETARY RIGHTS IN THE MATERIAL DISCLOSED HEREIN. THIS DOCUMENT IS ISSUED FOR ENGINEERING INFORMATION ONLY. IT MAY NOT BE DISCLOSED TO OTHERS NOR MAY IT BE USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM ONYX POWER, INC.

# HIGH EFFICIENCY POWER QUALITY TRANSFORMER

## GENERAL NAMEPLATE DRAWING

### DRY TYPE POWER TRANSFORMER <sup>(1)</sup>

KVA 3 PH  Hz  
 CLASS AA  °C RISE  
 HV  V  A  
 LV  V  A  
 LV2  V  A <sup>(4)</sup>  
 RATED K FACTOR   
 TYPE   
 INS. SYSTEM  °C  
 % IMP @ 170°C <sup>(2)</sup>  
 WEIGHT  LB APPROX.  
 PDI P/N:   
 DATE CODE   
 SERIAL NO.   
 TEMP. SENSOR   V  A  
 YEAR OF MANUFACTURE

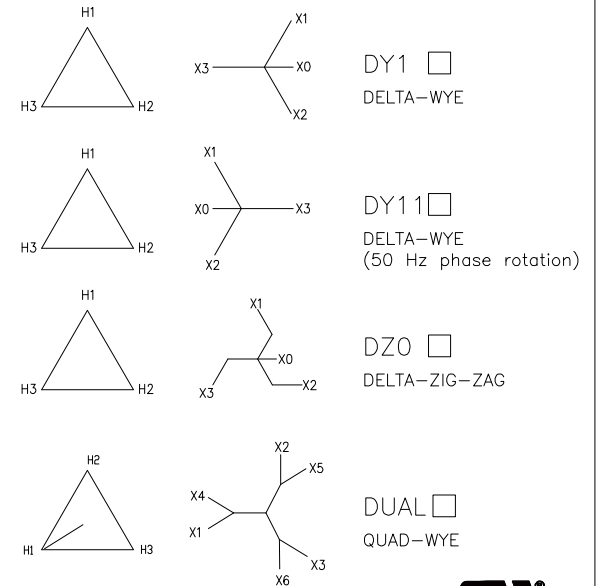
### VOLTAGE TAPS <sup>(5)</sup>

| HV CONNECTION (H1-H2-H3) |             |
|--------------------------|-------------|
| %RATED VOLTAGE           | CONNECTIONS |
| 105                      | 3T04        |
| 102.5                    | 2T04        |
| 100                      | 3T05        |
| 97.50                    | 2T05        |
| 95                       | 2T06        |



ONYX POWER, Inc.  
4011 W. CARRIAGE RD.  
Sants Ana, CA. 92704 U.S.A.

### VECTOR TYPE <sup>(3)</sup> (note selected vector)



**MADE IN USA**

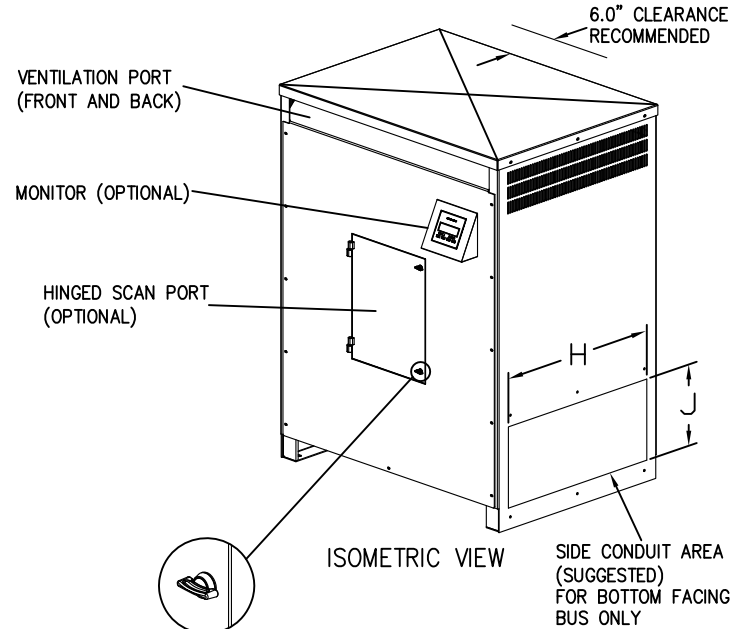
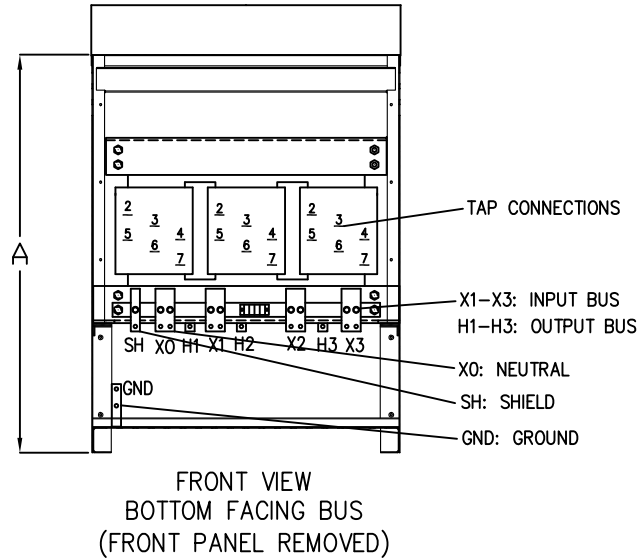
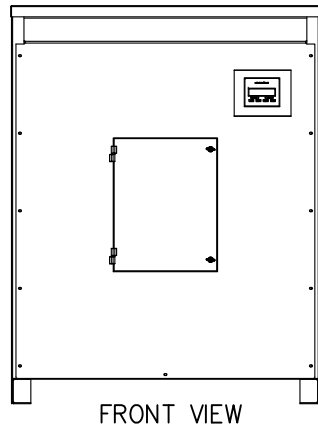


|  |               |                                       |   |  |
|--|---------------|---------------------------------------|---|--|
| <small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND [MILLIMETERS].</small><br><small>TOLERANCES ARE:</small><br><small>DECIMALS [MILLIMETERS]</small><br><small>.X=± DEC1 X=± MM0</small><br><small>.XX=± DEC2 .X=± MM1</small><br><small>.XXX=± DEC3 .XX=± MM2</small><br><small>ANGLES ± ANGLE</small><br><small>MATERIAL</small><br><br><small>FINISH</small><br>POWDER_COATED_BLACK | CONTRACT NO.  |                                       | ONYX POWER, Inc.<br>4011 W. CARRIAGE RD.<br>Sants Ana, CA. 92704 U.S.A. |  |
|  | APPROVALS     | DATE                                  |   | HIGH EFFICIENCY POWER<br>QUALITY TRANSFORMER |
|  | DRAWN<br>JJ   | 04/29/09                              |   |  |
|  | CHECKED<br>AK | 04/29/09                              |   |  |
| ISSUED<br>AK   | 04/29/09      | SIZE DWG NO.<br>B ON-92-10001-00_3-X0 | REV.<br>A00   |  |
| DO NOT SCALE DRAWING   |               | SCALE N/A                             | SHEET 2 of 2  |  |

# HIGH EFFICIENCY POWER QUALITY TRANSFORMER

## MECHANICAL SPECIFICATIONS

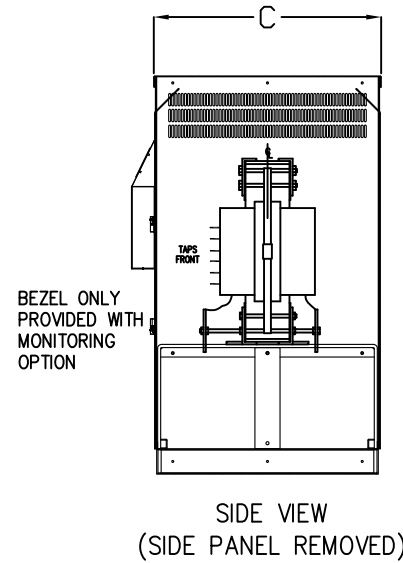
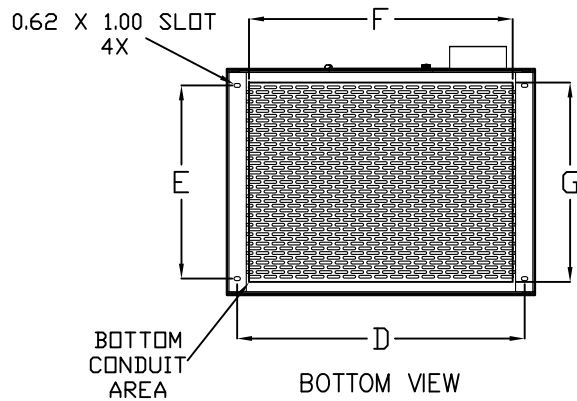
ONYX POWER, INC. CLAIMS PROPRIETARY RIGHTS IN THE MATERIAL DISCLOSED HEREIN. THIS DOCUMENT IS ISSUED FOR ENGINEERING INFORMATION ONLY. IT MAY NOT BE DISCLOSED TO OTHERS NOR MAY IT BE USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM ONYX POWER, INC.



GND: GROUND  
CAPTIVE HARDWARE

NOTES:

1. BUS BARS CAN BE CONFIGURED FOR TOP OR BOTTOM FACING CONFIGURATION. SPECIFY AT TIME OF ORDER.
2. REFER TO SPECIFIC TRANSFORMER CONSTRUCTION DRAWING FOR BUS DETAIL AND HOLE DIAMETERS.
3. CERTAIN MONITORING AND TVSS OPTIONS MAY OCCUPY A PORTION OF BOTTOM CONDUIT AREA. CONSULT JOB SPECIFIC DRAWINGS WHEN ORDERING TVSS AND/OR MONITORING OPTIONS.
4. DOOR SWING RADIUS IS 1/3 THE WIDTH OF THE ENCLOSURE.
5. DRAWING IS SPECIFIC TO NEMA 1 ENCLOSURE. CONSULT NEMA 3R ENCLOSURE DRAWING FOR OUTDOOR APPLICATIONS.
6. HINGED SCAN PORT, IR TRANSPARENT SCAN WINDOW, MONITOR AND TVSS ARE ALL OPTIONAL ACCESSORIES NOT PROVIDED UNLESS SPECIFIED.
7. STANDARD PAINT COLOR IS BLUE.



|             |          |  |   |
|-------------|----------|--|---|
| TITLE       |          | HIGH EFFICIENCY<br>POWER QUALITY TRANSFORMER |   |
| DWG. NUMBER | 4 OF 4   | ON-92-10001-00_4-X0                          |   |
| DRAWN BY    | JLL      | REVISION                                     | ONYX  |
| DATE        | 01-30-09 | XO   | ONYX POWER, Inc.<br>4011 W. CARRIAGE RD.<br>Santa Ana, CA. 92704 U.S.A. |