4160V TO 440V YDD PHASE SHIFT MULTIPHASE TRANSFORMERS

CUSTOM-ENGINEERED POWER TRANSFORMATION FOR DEMANDING INDUSTRIAL APPLICATIONS

High Efficiency

Reliable

Long-Term Durability

Our 4160V to 440V YDD transformers are engineered to deliver exceptional performance and long-term reliability in mission-critical environments. Designed with advanced modeling tools, manufactured under strict quality control, and validated through comprehensive testing, these transformers ensure high efficiency, superior thermal management, and robust durability tailored to your operational needs.

Key Features & Benefits

- 3-Phase, 4160V Wye primary to 440V Delta dual secondaries
- Vacuum Pressure Impregnated (VPI) insulation system for improved dielectric strength and moisture resistance
- High-conductivity copper windings for superior electrical and thermal performance
- Flexible cooling options: natural air, forced-air fan, or water-cooled configurations
- Full primary-to-secondary isolation for safe and reliable operation
- Optional electrostatic shielding to minimize noise coupling

Typical Applications

- Industrial control power systems
- Power distribution systems
- Load balancing applications
- Phase conversion and load management
- Isolation transformers for sensitive equipment
- UPS and power conditioning systems

PARAMETER	SPECIFICATION
General	
Transformer Type	Dry Type, Vacuum pressure impregnated (VPI)
Service	Small power transformer
Environmental Conditions	
Maximum altitude	3300 ft
Min. ambient non-operating temperature	-40 °C
Max. ambient non-operating temperature	75 °C
Ambient operating temperature range	0–50 °C
Design ambient operating temperature	50 °C
Shock	Grade A, MIL-S-901D (Vertical 25 G's, Side-to-Side 15 G's, Fore & Aft 15 G's)
Location	Indoor
Unusual service conditions	Yes
Vibration	Type I, MIL-STD-167-1
Airborne noise	MIL-STD-1474, 79 dB max
Structure-borne noise	MIL-STD-740-2, 60 dB max
Technical Data	
Electrical System	
Rated voltage (HV)	4160 V
Rated voltage 1 (LV1)	440 V
Rated voltage 2 (LV2)	440 V
Rated frequency	60 Hz
Rated power	630 kVA
Transformer Data	
Dielectric withstand – HV (60 s)	9.32 kV
Dielectric withstand – LV (60 s)	1.88 kV
Dielectric withstand – RTDs (60 s)	500 VDC
Insulation resistance – HV (2500 VDC)	50 MΩ
Insulation resistance – LV (500 VDC)	50 MΩ
Insulation resistance – RTDs (500 VDC)	10 MΩ
Lightning impulse – HV	60 kV
Lightning impulse – LV	Not required
Number of phases	3
Vector group	YDD

PARAMETER	SPECIFICATION
Technical Data Continued	
Transformer Data Continued	
Partial discharge	75 pC
Winding	
Conductor material	Copper
Stabilizing winding required	No
Earthing method	Ungrounded
Insulation class	N
Non-uniform (graded) insulation	Yes
High-temperature insulation	Yes
Termination	
HV termination	Cable + Bus
LV termination	Cable + Bus
Cooling	
Cooling method	Cooling Water
Accessories	
Lifting lugs	Removable hoist rings optional
Design Data	
Electrical Parameters	
No-load loss @ rated tap	1410 W
Load loss @ rated tap	4585 W
Efficiency @ 500 kW load	98.60%
Impedance (AN, rated tap)	3.10%
Construction	
Conductor material	Copper
HV winding type	Layer wound
LV winding type	Layer wound
Core + winding weight	4140 lb
Overall width	43 in.
Overall depth	24 in.
Overall height	44.25 in. + 4.85 in. removable hoist rings
Testing Requirements	
Temperature rise test (90 °C rise)	Yes
Dielectric type tests	Yes
No-load loss & current @ 90% / 110%	Yes
Dielectric special tests	Yes
Capacitance measurement (winding-to-earth & between windings)	Yes

Design, Engineering & Manufacturing Capabilities

- Custom-engineered to meet specific load profiles and customer requirements
- Advanced Ansys Maxwell and FEM-based thermal modeling for efficient heat dissipation and extended lifespan
- Optimized winding layout to reduce eddy current losses, improve efficiency, and minimize noise/vibration
- Full in-house electrical and mechanical engineering teams for tailored designs
- Vacuum Pressure Impregnation process ensures long-term reliability and insulation integrity

Testing & Compliance

- Designed and tested per IEEE Standard C57.12.91-2020
- Meets Grade A shock requirements of MIL-S-901D
- Meets Type I vibration requirements of MIL-STD-167-1
- Full Factory Acceptance Testing (FAT) available with complete documentation
- Optional customer-specific test programs available upon request

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Reliable power transformation engineered for performance, efficiency, and mission-critical applications.

GET IN TOUCH

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