

Power TransFilter™

Type 'PY' Harmonic Mitigating Transformer for Medium K-Factor Loads

A Solution for Voltage Distortion and Network Communication Problems

PRODUCT BENEFITS

- Reduces 'penalty losses' due to harmonic currents
- Reduces apparatus heating and A/C loading
- Reduces power costs
- Provides an attractive 'payback' and return-on-investment
- Balances primary phase currents
- Reduces THD_v to less than 5% at non-linear electronic loads
- Restores switch-mode power supply's 'ride-through' capability
- Assures system compatibility with sensitive electronic loads
- Optional TP unit exceeds NEMA TP1-2002, CSA C802.2-00 & EPA Energy Star® linear efficiency requirements
- Optional *e-Rated*® unit exceeds the preceding efficiency requirements under moderate non-linear loading up to 50% THD_i



PRODUCT DESCRIPTION

Type 'PY' **Power TransFilters**™ are high efficiency, three-phase, single or multi-output power transformers that have been specifically designed to supply phase-to-phase and phase-to-neutral connected, non-linear electronic loads. These harmonic mitigating transformers reduce voltage distortion to less than 5% THD_v at their loads and eliminate the network communication problems caused by high neutral-to-ground voltages, the result of load-generated zero-sequence harmonic neutral currents in four-wire distribution systems.

Optional TP transformers exceed the efficiency requirements of NEMA TP1-2002, CSA C802.2-00 and the EPA Energy Star® under linear loading. Optional *e-Rated*® units exceed these efficiency requirements under moderate non-linear loading ($\leq 50\%$ THD_i).

Type 'PY' transformers cancel positive- and negative-sequence harmonic currents on their common primary bus or within their multi-output secondary windings. They are available in a number of standard primary-to-secondary phase-shifts so that they may be used to create twelve-, eighteen- or twenty-four-pulse systems.

Type 'PY' **Power TransFilters**™ may be used as 'stand-alone' mitigation solutions (i.e. without zero-sequence harmonic filters) if THD_i levels are less than 50% at their loads.

Alternatively, Type 'DY' units may be used at higher THD_i levels if **I₀Filters**™ and/or **Mini-Z**™ zero-sequence harmonic filters are used to shunt zero-sequence harmonic currents. The application of **I₀Filters**™ will improve any limitations on circuit length and/or loading. These limitations are graphically detailed in two PQI Publications entitled: (i) 'Neutral-to-Ground Voltage vs. Branch Circuit Length & Loading for Typical Non-Linear Electronic Workstation Loads' and (ii) 'Neutral-to-Ground Voltage vs. Branch Circuit Length & Loading for Typical 120V Non-Linear Electronic Gaming Machine Loads'.

Type 'PY' units are cost-effective alternatives to de-rated or K-Rated power transformers, which cannot reduce voltage distortion and are only intended to survive in a harmonic environment. Optional *e-Rated*® units provide the most attractive 'payback' and 'return-on-investment' in the industry.



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SELECTION TABLES

15kV Class, 60kV B.I.L.,		
kVA	Enclosure Size (Inches)	Weight (lbs.) *
750	80.00W x 48.00D x 91.50H	6050
1000	80.00W x 48.00D x 91.50H	7250
1500	90.00W x 60.00D x 91.50H	9250
2000	90.00W x 60.00D x 91.50H	10750
2500	100.00W x 60.00D x 110.00H	11950
3000	100.00W x 60.00D x 110.00H	13550
3750	110.00W x 72.00D x 110.00H	18600
5000	120.00W x 72.00D x 120.00H	21400
Other kV Classes Available		Approx

The above weights and measures apply to 15kV Class, 60kV B.I.L. single output configurations with a NEMA 1 enclosure and a standard temperature rise (150°). Other kV Classes (up to 25kV, 125kV B.I.L.), multiple output units and some options will change the enclosure size and weights. Consult PQI for detailed product information for these and other configurations. Enclosure provided will be determined by PQI unless otherwise specified.

TECHNICAL SPECIFICATIONS

UL Listed

CSA Approved

Related Standards: UL-506, ANSI C75.110

NEMA ST-20, NEMA TP1-2002

CSA C9-M1981, CSA 22.2 No.47-1977

CSA C802.2-00

Voltage Class: 15kV [Standards to 35kV]

BIL Rating: 60kV [Standard for Class]

Voltage: 12470 : 277/480 [All Standards to 35kV]

Frequency: 60Hz [50Hz][400Hz][Other]

Type: ANN [Other]

Temp. Rise: 150° [130°C][115°C][80°C][Other]

Insulation Class: 220°C

Definitions

Type:	PY (Delta : Modified Wye)
ANN:	Cooling Medium – Air, Internal & External Circulation - Natural Frequency
Hz:	Frequency
kVA:	Power Rating of Transformer
PV:	Primary Voltage
SV:	Secondary Voltage
Temp:	Temperature Rise: 150°C (Standard) [130°C][115°C][80°C][Other]

Options

Phase Shift:	0°, 15°, 20°, 30°, 40°, 45° [Other]
Efficiency TP1-2002:	TP
<i>e-Rated</i> ®:	ER
Enclosure NEMA 1:	N1 (Standard)
NEMA 3R:	N3R (Optional)
Other:	(Optional)
Electrostatic Shield:	ES – Single 2ES – Dual 3ES – Triple
Thermal Sensors:	TS
Color:	PQI White [ASA 61 Gray][Other]

Catalogue Number Configuration

Type & Phase Shift(s)–Hz–kVA–PV–SV–Temp–Options

Sample Catalogue Number

PY15–60–2000–12470:277/480–150–ER–N3R–ES–TS



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PQI Warranty - 10 years pro-rated.

All specifications are subject to change without notice. Revision 1, January 2005

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