



PVT

Peschel Variable Transformer

■ The patented **Peschel® Variable Transformer** was designed specifically for high power applications. In production for over 15 years, the PVT is still the solution for economical, uncomplicated, high power variable voltage requirements. The PVT has been put to the test in wide range of applications and has proven itself to be the best method to achieve a high power variable voltage output, while maintaining a clean sinusoidal wave shape.

Over 25 years ago, Hipotronics designed and patented the Peschel® Variable Transformer specifically to handle high power. This effort was brought about by our need to reduce the mass of coils and the high cost impact on the power test systems that we were producing. The PVT design eliminated the shorted turn problem and the carbon brushes that are common to all variable transformers. The PVT is much more compact, less complex and more competitive than multiple, ganged toroids at any power rating above 8 kVA. Over the years the PVT has proven itself to be a truly superior design. Here is why:

- Can supply up to 120 Amperes from a single coil and 240 Amperes from two coils on a single core assembly
- Highly efficient in a smaller, lighter, more economical package



- Very reliable, easy to service and reasonably priced
- Wide range of models and options that make it easy to use
- Used in applications previously impossible with other variable transformers

FEATURES

- ✓ Continuously adjustable output
- ✓ Compact, linearly wound design
- ✓ Up to 200% voltage step up at full rated current*
- ✓ Up to 120 amperes from a single coil
- ✓ No shorted coil turns
- ✓ Negligible phase imbalance
- ✓ Dry type convection cooled
- ✓ Rugged electrical and mechanical design

BENEFITS

- Ease of use
- Compact - takes up less space
- Negligible output distortion
- Long life - Low maintenance
- Runs cooler
- Less costly throughout

APPLICATIONS

Primary voltage control of:

- High Voltage Power Supplies
- High Current Power Supplies

Testing:

- Appliances
- Motors
- Transformers
- Power Supplies
- UPS units
- Inverters
- Production Line
- Heat Runs

THE PVT DESIGN

- Copper coils are wound on a rectangular coil form, providing separate tracks of odd and even coil turns.
- The coil face is cast in epoxy, then sanded to expose the copper turns. The copper turns are then nickel plated.
- The coil is assembled over the laminated steel core in a vertical configuration, providing a chimney like effect that is highly efficient for convection cooling.
- Sliding, copper contacts traverse the odd and even turns. Our patented design eliminates the shorted coil turn problem and allows power handling at levels that are unattainable with toroid designs.
- The contact assembly is motor driven and can be controlled by simple push-button switches or automatic controllers.

SPECIFICATIONS

Efficiency	98 – 99%
Duty	Continuous to 50°C ambient
Cooling	Dry-type convection cooled
Humidity	95% non-condensing
Short Circuit Overload	12 times rated current for 200 mSec
Impedance (Typical)	1-3% - varies with brush position
Frequency	47 ... 63 Hz
Output Distortion	Negligible
Output Imbalance	Less than 1%

SINGLE PHASE INPUT: 240V

VARIABLE OUTPUT 0 TO 300V							
CATALOG NUMBER	KVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A24-30S5	15	50	1	0.69	15 x 19 x 32	250	CB
30A24-30S7	21	70	1	0.69	15 x 19 x 32	275	CB
30A24-30S10	30	100	1	0.69	15 x 20 x 37	325	CB
30A24-30S12	36	120	1	0.69	17 x 20 x 37	355	CB
30A24-30S14	42	140	2	0.69	19 x 20 x 32	320	CC1
30A24-30S19	57	190	2	0.69	19 x 21 x 37	380	CC1
30A24-30S24	72	240	2	0.69	19 x 21 x 37	420	CC1
30A24-30S36	108	360	2+	0.69	19 x 21 x 63	675	CC1
30A24-30S44	132	440	2+	0.69	19 x 21 x 63	750	CC1

+ Double Coil PVT

240V models can also operate from 208V and 220V, output voltage is reduced proportionally.

VARIABLE OUTPUT 0 TO 480V							
CATALOG NUMBER	KVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A24-48S5	24	50	1	0.44	15 x 20 x 40	335	CB
30A24-48S7	34	70	1	0.44	15 x 20 x 40	360	CB
30A24-48S10	48	100	1	0.67	15 x 21 x 37	460	CB
30A24-48S12	57	120	1	0.67	15 x 21 x 37	500	CB
30A24-48S14	67	140	2	0.44	19 x 20 x 40	425	CC1
30A24-48S20	96	300	2	0.67	19 x 22 x 37	525	CC1
30A24-48S24	115	240	2	0.67	21 x 23 x 37	625	CC1
30A24-48S36	173	360	2+	0.67	19 x 23 x 64	975	CC1
30A24-48S44	211	440	2+	0.67	21 x 24 x 64	1125	CC1

+ Double Coil PVT

480 models can also operate from 380V, 400V, 415V and 440V, output voltage is reduced proportionally.

SINGLE PHASE INPUT: 480V

VARIABLE OUTPUT 0 TO 480V

CATALOG NUMBER	KVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-48S6	29	60	1	0.67	15 x 22 x 32	335	CC
30A48-48S9	43	90	1	0.67	15 x 21 x 37	400	CC
30A48-48S12	57	120	1	0.67	17 x 22 x 37	420	CC
30A48-48S14	67	140	2	0.67	19 x 20 x 40	425	CC1
30A48-48S18	86	180	2	0.67	19 x 21 x 37	470	CC1
30A48-48S24	115	240	2	0.67	21 x 22 x 37	480	CC1
30A48-48S36	173	360	2+	0.67	19 x 23 x 64	1000	CC1
30A48-48S44	211	440	2+	0.67	21 x 24 x 64	1150	CC1

+ Double Coil PVT

VARIABLE OUTPUT 0 TO 600V

CATALOG NUMBER	KVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-60S5	30	50	1	0.70	17 x 21 x 32	375	CC
30A48-60S7	42	70	1	0.70	17 x 21 x 32	400	CC
30A48-60S10	60	100	1	0.70	17 x 22 x 36	435	CC
30A48-60S12	72	120	1	0.70	17 x 22 x 36	455	CC
30A48-60S14	84	140	2	0.70	19 x 21 x 34	485	CC1
30A48-60S19	114	190	2	0.54	21 x 22 x 42	540	CC1
30A48-60S24	144	240	2	0.70	21 x 22 x 38	600	CC1
30A48-60S36	216	360	2+	0.70	17 x 22 x 64	990	CC1
30A48-60S44	264	440	2+	0.70	17 x 22 x 64	1075	CC1

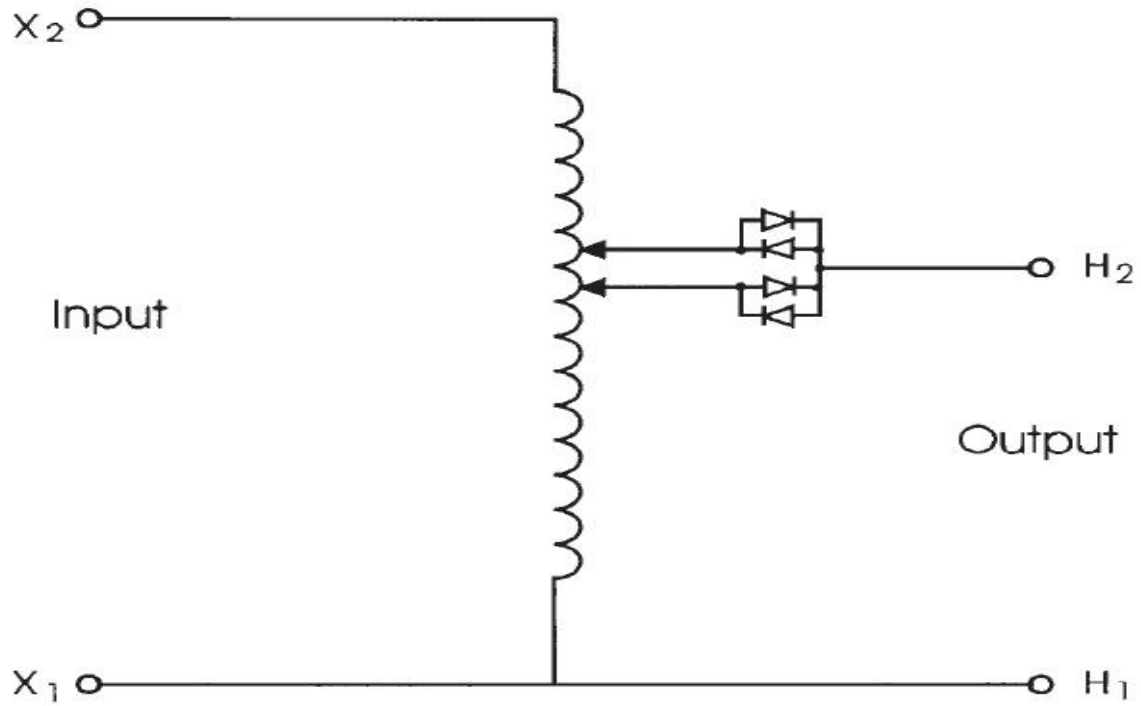
+ Double Coil PVT

VARIABLE OUTPUT 0 TO 960V

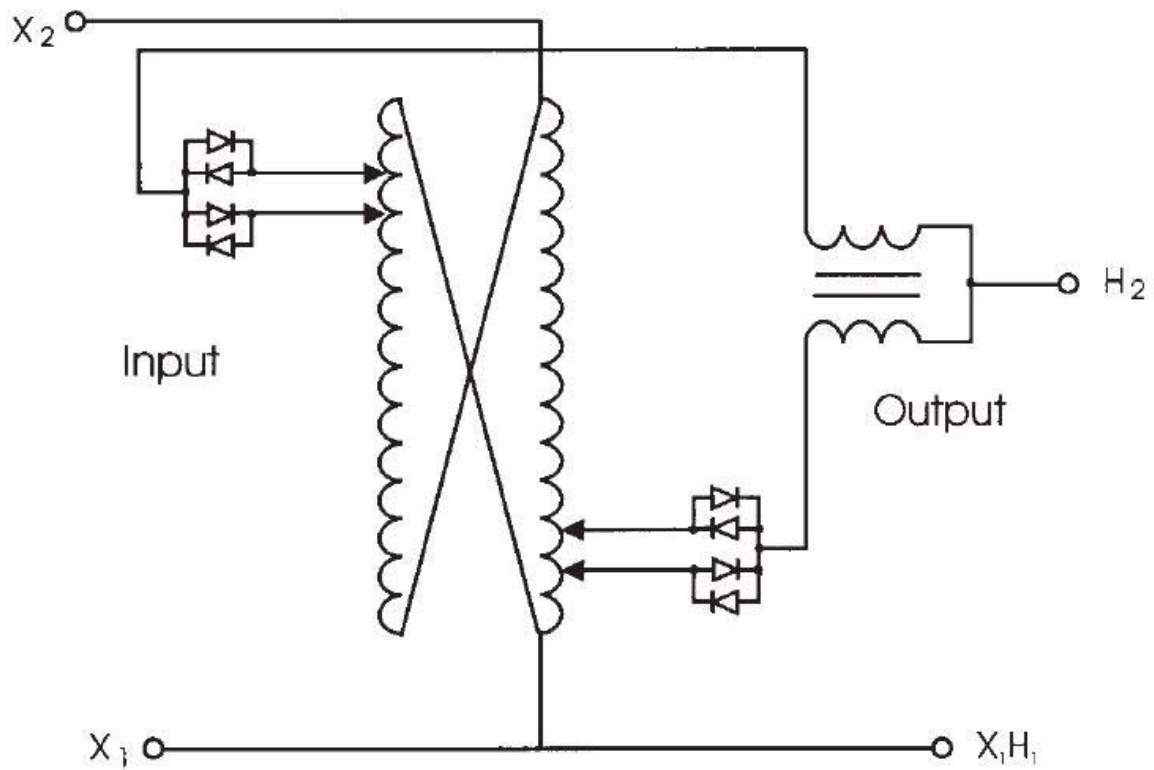
CATALOG NUMBER	KVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-96S5	48	50	1	0.44	17 x 21 x 40	500	CC
30A48-96S7	67	70	1	0.44	17 x 21 x 40	535	CC
30A48-96S10	96	100	1	0.44	17 x 24 x 47	625	CC1
30A48-96S12	115	120	1	0.44	21 x 22 x 47	670	CC1
30A48-96S14	134	140	2	0.44	21 x 22 x 42	700	CC1
30A48-96S19	182	190	2	0.44	21 x 24 x 49	825	CC1
30A48-96S24	230	240	2	0.44	21 x 24 x 48	905	CC1
30A48-96S38	365	380	2+	0.44	30 x 54 x 52	1825	*
30A48-96S48	461	480	2+	0.44	30 x 54 x 51	1945	*

+ Double Coil PVT

* Consult Factory



SINGLE PHASE, ONE COIL



SINGLE PHASE, TWO COIL

THREE PHASE INPUT: 240V

VARIABLE OUTPUT 0 TO 300V

CATALOG NUMBER	kVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A24-30Y5	26	50	3	0.58	20 x 19 x 34	300	CC1
30A24-30Y7	36	70	3	0.58	23 x 19 x 34	350	CC1
30A24-30Y10	52	100	3	0.72	23 x 19 x 36	425	CC1
30A24-30Y12	62	120	3	0.72	23 x 19 x 36	475	CC1
30A24-30Y15	78	150	3+	0.72	23 x 20 x 52	590	CC1
30A24-30Y19	99	190	3+	0.72	23 x 20 x 61	675	CC1
30A24-30Y24	125	240	3+	0.72	26 x 22 x 61	750	CD
30A24-30Y38	197	380	3++	0.72	26 x 54 x 64	1675	*
30A24-30Y48	249	480	3++	0.72	36 x 54 x 64	1835	*

240 models can also operate from 208V and 220V, output voltage is reduced proportionally.

+Double Coil PVT

++Two Double Coil PVTs

*Consult factory

VARIABLE OUTPUT 0 TO 480V

CATALOG NUMBER	kVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-48S5	42	50	3	0.75	23 x 19 x 31	440	CC1
30A48-48S7	59	70	3	0.75	26 x 20 x 31	490	CC1
30A48-48S10	83	100	3	0.75	26 x 21 x 35	630	CC1
30A48-48S12	100	120	3	0.75	26 x 21 x 35	690	CC1
30A48-48S14	116	140	3+	0.75	26 x 21 x 50	830	CD
30A48-48S19	158	190	3+	0.75	26 x 21 x 59	1050	CD
30A48-48S24	200	240	3+	0.75	29 x 22 x 60	1150	CD
30A48-48S38	316	380	3++	0.75	26 x 54 x 62	2425	*
30A48-48S38	399	480	3++	0.75	26 x 54 x 63	3635	*

480 models can also operate from 380V, 400V, 415V and 440V, output voltage is reduced proportionally.

+Double Coil PVT

++Two Double Coil PVTs

*Consult factory

THREE PHASE INPUT: 480V

VARIABLE OUTPUT 0 TO 480V							
CATALOG NUMBER	kVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-48Y5	41	50	3	0.75	23 x 19 x 31	375	CC1
30A48-48Y7	58	70	3	0.75	23 x 19 x 31	400	CC1
30A48-48Y10	83	100	3	0.75	23 x 20 x 35	450	CC1
30A48-48Y12	100	120	3	0.75	26 x 20 x 35	500	CC1
30A48-48Y13	108	130	3+	0.75	23 x 20 x 35	725	CC1
30A48-48Y19	158	190	3+	0.75	23 x 20 x 58	800	CC1
30A48-48Y22	183	220	3+	0.75	26 x 21 x 58	900	CD
30A48-48Y26	216	260	3++	0.75	36 x 54 x 53	1775	*
30A48-48Y38	316	380	3++	0.75	36 x 54 x 61	1925	*
30A48-48Y44	366	440	3++	0.75	36 x 54 x 61	2125	*
30A48-48Y52	432	520	3+++	0.75	60 x 60 x 53	3600	*
30A48-48Y76	632	760	3+++	0.75	60 x 60 x 61	4000	*
30A48-48Y88	732	880	3+++	0.75	60 x 60 x 61	4400	*

480V models can also operate from 380V, 400V, 415V and 440V, output voltage is reduced proportionally.

+Double Coil PVT
 ++Two Double Coil PVTs
 +++Four Double Coil PVTs

*Consult factory

VARIABLE OUTPUT 0 TO 600V							
CATALOG NUMBER	kVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-60Y5	52	50	3	0.60	23 x 19 x 34	400	CC1
30A48-60Y7	73	70	3	0.60	23 x 19 x 34	450	CC1
30A48-60Y10	104	100	3	0.60	23 x 19 x 39	500	CC1
30A48-60Y12	125	120	3	0.75	26 x 21 x 35	600	CC1
30A48-60Y13	135	130	3+	0.60	23 x 20 x 57	825	CC1
30A48-60Y19	198	190	3+	0.75	23 x 20 x 59	950	CC1
30A48-60Y24	250	240	3+	0.75	26 x 21 x 59	1050	CD
30A48-60Y26	270	260	3++	0.60	36 x 54 x 60	1975	*
30A48-60Y38	395	380	3++	0.75	36 x 54 x 62	2225	*
30A48-60Y48	500	480	3++	0.75	36 x 54 x 62	2425	*
30A48-60Y52	540	520	3+++	0.75	60 x 60 x 60	4000	*
30A48-60Y76	790	760	3+++	0.75	60 x 60 x 62	4600	*
30A48-60Y96	1000	960	3+++	0.75	60 x 60 x 62	5000	*

+Double Coil PVT
 ++Two Double Coil PVTs
 +++Four Double Coil PVTs

*Consult factory

VARIABLE OUTPUT 0 TO 960V

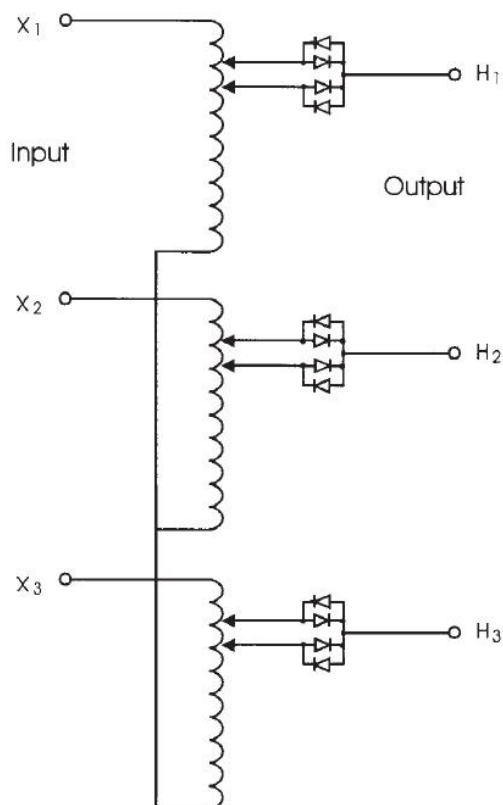
CATALOG NUMBER	kVA	AMPS	DIAG.	% RESOLUTION	DIMENSTIONS (W x D x H)	WEIGHT (lbs.)	CAB CODE
30A48-96Y5	83	50	3	0.38	23 x 19 x 44	575	CC1
30A48-96Y7	116	70	3	0.38	23 x 20 x 44	650	CC1
30A48-96Y10	166	100	3	0.58	26 x 22 x 40	800	CD
30A48-96Y12	200	120	3	0.58	26 x 22 x 40	900	CD
30A48-96Y14	233	140	3+	0.58	26 x 22 x 58	1250	CD
30A48-96Y19	316	190	3+	0.58	26 x 22 x 69	1500	CD
30A48-96Y24	400	240	3+	0.58	26 x 23 x 69	1675	CD
30A48-96Y28	466	280	3++	0.58	36 x 54 x 61	2850	*
30A48-96Y38	632	380	3++	0.58	36 x 54 x 72	3350	*
30A48-96Y48	798	480	3++	0.58	36 x 54 x 72	3700	*
30A48-96Y56	931	560	3+++	0.58	60 x 60 x 61	5800	*
30A48-96Y76	1264	760	3+++	0.58	60 x 60 x 72	6825	*
30A48-96Y96	1596	960	3+++	0.58	60 x 60 x 72	7600	*

+Double Coil PVT

++Two Double Coil PVTs

+++Four Double Coil PVTs

*Consult factory.



THREE PHASE, WYE

INPUT: 3 phase Wye or Delta

OUTPUT: 3 phase Wye, load can be connected Wye or Delta

6 wire Delta PVTs and DC output PVTs have not been included in this issue of the data sheet. Please contact Hipotronics for information about these models.

COIL FACE

PVT coils are cast in epoxy to provide a smooth coil face for brush travel. The coil face is sanded to expose two sets of coil turns.

OVERLOAD PROTECTION

THE PVT has a very low impedance characteristic. The internal impedance is low enough to pass over 20 times normal current. Unless specified and quoted, the PVT does not include overload protection. The user must provide adequate overload protection.

LONG LIFE - LOW MAINTENANCE

THE PVT has been designed to very high industry standards and will last many years. Proper preventive maintenance and inspection procedures should be performed to insure the maximum life. The "Users Manual", supplied with each PVT, outlines the procedures that should be followed.

RATINGS

PVTs are designed with sufficient safety margins. The coils are wound with Class H insulated wire to enable full current ratings with ambient temperatures up to 50° C. Diode heat sinks are designed to keep diode junction temperatures far below rating.

DIODES

The diode blocking circuit utilizes standard, stud mounted, silicon rectifiers. In this application, the diodes are selected for their forward voltage drop. There is no PIV stress placed on the diodes, thus eliminating the possibility of overvoltage failure.

OTHER PVT INFORMATION

In addition to the models outlined in this data sheet, Hipotronics manufactures variable transformers with isolated primary and secondary designs that can supply output voltages up to 6900 volts. For information about the HIGHER Voltage PVTs request data from the factory.

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