



# **PHASE**PERFECT®

Digital Phase Converter

## Product Lines:

### **PT** PERFORMANCE SERIES

230 V | 7.5 HP to 75 HP  
460 V | 7.5 HP to 175 HP

### **PTE** ENTERPRISE SERIES

230 V | 7.5 HP to 20HP  
460 V | 7.5 HP to 20 HP

### **PTE** ENTERPRISE SERIES *Voltage Doubling*

230 V Single-Phase to 460 V Three-Phase  
7.5 HP to 20 HP

### **PTS** SIMPLE SERIES

230 V | 3 HP to 7.5HP  
460 V | 5 HP to 7.5HP

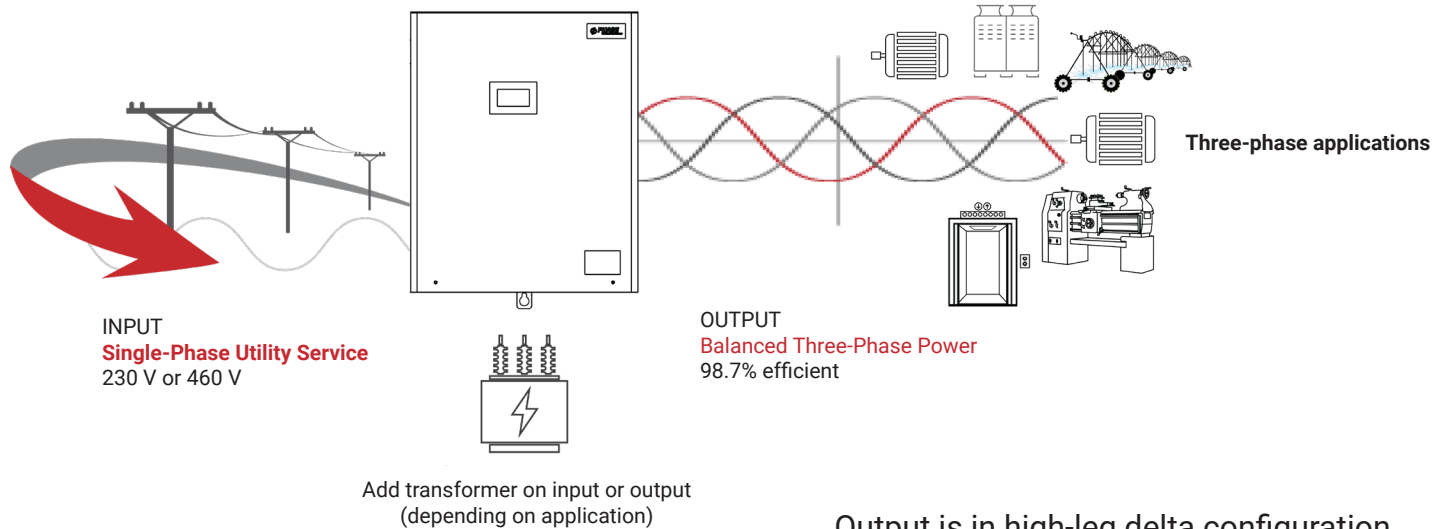


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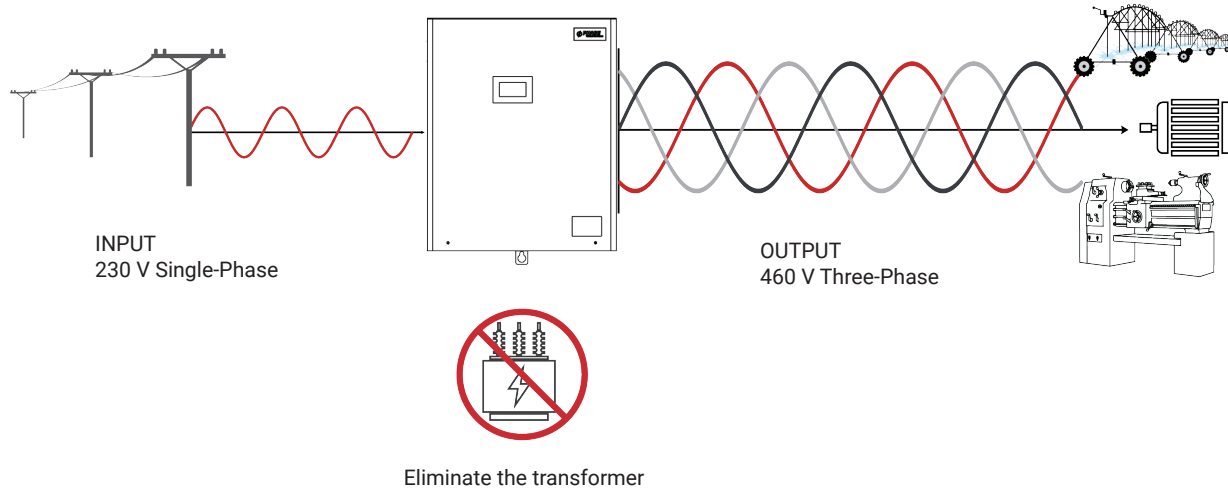


### Phase Perfect® Digital Phase Conversion (Solid-State Technology)



Output is in high-leg delta configuration.  
Leg to leg voltage will match input voltage,  
leg to ground will be higher on T3 than T1  
T1T1T2.

### VOLTAGE DOUBLING™





### Product Line Overview

#### **PTS** SERIES -

- 230V models - 3 HP to 7.5 HP
- 460V Models - 5 HP to 7.5 HP

#### **PTE** SERIES - *w/ Voltage Doubling*

- 230V models - 7.5 HP to 20 HP
- 230V to 460 V models - 7.5 HP to 20 HP
- 460V Models - 7.5 HP to 20 HP

#### **PT** SERIES -

- 230V models - 7.5 HP to 75 HP
- 460V Models - 7.5 HP to 175 HP

### Product Highlights

- 98.7% efficient at full load
- Low standby losses
- Voltage balance within 2%
- Compared to rotary phase converters, 82% quieter
- PERFECT Start - Proprietary control algorithm that prevents overcurrent tripping
- NEMA 1 indoor & NEMA 3R outdoor options available
- PTE Series models - Enterprise enclosure - smaller & reduced footprint
- PTE Series models - **Voltage Doubling** - eliminates need for additional transformer

*Converts: 230 V Single-Phase to 460 V Three-Phase*

Patented technology only from:



### Agency Approvals / Compliance

#### ETL listed to the following:

1. Conforms to UL STD 61800-5-1  
(Standard for Adjustable Speed Electrical Power Drive Systems)
2. Certified to CSA STD C22.2 NO.274  
(Canadian Standards Association pertaining to the installation and maintenance of electrical equipment in Canada)

File No: 3187280





## Specifications - ALL MODELS

### General

Output Voltage.....	Equal to input voltage	
Voltage Doubling.....	Equal to 2X input voltage ( <i>limit of 480 V</i> )	
Output Voltage Unbalance.....	≤2%	
Operating Temperature.....	-10°C (14°F) to 50°C (122°F)	
Operating Temperature (PTE and PTS SERIES).....	-10°C (14°F) to 40°C (104°F)	
Storage Temperature.....	-20°C (-4°F) to 60°C (140°F)	
Efficiency.....	Standard Models: <b>98.7%</b> (Phase Perfect®, PTE and PTS) Standard Models: <b>95%</b> PTE Voltage Doubling models)	
Short Circuit Rating.....	10kA	
Audible Noise.....	Phase Perfect®	75 dBA
	PTE and PTS Models	70 dBA
Start Delay On Power Up.....	2 sec	
Enclosure Rating .....	NEMA 1 or NEMA 3R	

## Part Number Key

#	Part Number Example	Description
0	(PT007R or PTE007)	230 V Input - 1PH   230 V Output - 3PH
2	(PTE207)	230 V Input - 1PH   460 V Output - 3PH - <b>Voltage Doubling™</b>
4	(PT407R or PTE407)	460 V Input - 1PH   460 V Output - 3PH



### Model Specifications **PTS** SERIES



	230 V 1PH to 230 V 3PH			460 V 1PH to 460 V 3PH	
Model / Part Number	PTS003	PTS005	PTS007	PTS405	PTS407
Rated Horsepower	3 HP	5 HP	7.5 HP	5 HP	7 HP
Output kVA	4.5 kVA	7.4 kVA	10.8 kVA	8.3 kVA	10.8 kVA
Input Voltage Range	187 - 260 V	187 - 260 V	187 - 260 V	440 - 520 V	440 - 520 V
Output Voltage	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input
Phase-to-Phase Voltage Balance	<2%	<2%	<2%	<2%	<2%
Maximum Steady-State Output	11 A	18 A	26 A	10 A	13 A
Maximum AC Input Current	19 A	31 A	45 A	18 A	22 A
Standby Power Consumption	60 W	60 W	70 W	48 W	52 W
Full Load Energy Loss	205 BTU/hr	205 BTU/hr	239 BTU/hr	163 BTU/hr	177 BTU/hr
Efficiency	98.7%	98.7%	98.7%	98.7%	98.7%
Recommended Circuit Breaker	30 A	40 A	60 A	30 A	30 A

Enclosure	PTS - Small Enclosure	PTS - Medium Enclosure	PTS - Large Enclosure
Models	PTS003 PTS005	PTS007	PTS405 PTS407
NEMA 1 (H x W x D)	17 9/16" x 11 1/2" x 5 5/8"	17 9/16" x 11 1/2" x 6 5/16"	17 15/16" x 13 1/4" x 6 5/16"
NEMA 3R (H x W x D)	17 7/8" x 13 1/4" x 10 1/2"	17 15/16" x 13 1/4" x 11 1/4"	18 11/16" x 14 15/16" x 11 3/16"
NOTE: Dimensions are measured at maximum size and includes mounting hardware.			
Weight	PTS003 - 19 lbs PTS005 - 19 lbs	PTS007 - 22 lbs	PTS405 - 23 lbs PTS407 - 23 lbs



### Model Specifications **PTE** SERIES

#### 230V Models | 230 V 1PH to 230 V 3PH

Model / Part Number	PTE007	PTE010	PTE015	PTE020
Rated Horsepower	7.5 HP	10 HP	15 HP	20 HP
Output kVA	10.8 kVA	14.9 kVA	21.6 kVA	26.6 kVA
Input Voltage Range	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V
Output Voltage	Equal To Input	Equal To Input	Equal To Input	Equal To Input
Phase-to-Phase Voltage Balance	<2%	<2%	<2%	<2%
Maximum Steady-State Output	26 A	36 A	52 A	64 A
Maximum AC Input Current	45 A	62 A	90 A	111 A
Standby Power Consumption	70 W	74 W	77 W	80 W
Full Load Energy Loss	479 BTU/hr	661 BTU/hr	958 BTU/hr	1,180 BTU/hr
Efficiency	98.7%	98.7%	98.7%	98.7%
Recommended Circuit Breaker	60 A	80 A	125 A	150 A

#### Voltage Doubling™ Models | 230 V 1PH to 460 V 3PH

Model / Part Number	PTE207	PTE210	PTE215	PTE220
Rated Horsepower	7.5 HP	10 HP	15 HP	20 HP
Output kVA	10.8 kVA	14.9 kVA	22.4 kVA	26.6 kVA
Input Voltage	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V
Output Voltage	440 - 520 V	440 - 520 V	440 - 520 V	2X Input (max 480 V)
Phase-to-Phase Voltage Balance	<2%	<2%	<2%	<2%
Maximum Steady-State Output	13 A	18 A	27 A	32 A
Maximum AC Input Current	45 A	62 A	94 A	111 A
Standby Power Consumption	200 W	320 W	435 W	550 W
Full Load Energy Loss	1,938 BTU/hr	2,685 BTU/hr	4,029 BTU/hr	4,777 BTU/hr
Efficiency	95 %	95.2%	94.9 %	94.8 %
Recommended Circuit Breaker	60 A	80 A	125 A	150 A

#### 460V Models | 460 V 1PH to 460 V 3PH

Model / Part Number	PTE407	PTE410	PTE415	PTE420
Rated Horsepower	7.5 HP	10 HP	15 HP	20 HP
Output kVA	10.8 kVA	14.9 kVA	22.4 kVA	26.6 kVA
Input Voltage Range	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V
Output Voltage	Equal To Input	Equal To Input	Equal To Input	Equal To Input
Phase-to-Phase Voltage Balance	<2%	<2%	<2%	<2%
Maximum AC Input Current	13 A	18 A	27 A	32 A
Maximum Steady-State Input	22 A	32 A	48 A	55 A
Standby Power Consumption	52 W	68 W	71 W	74 W
Full Load Energy Loss	479 BTU/hr	661 BTU/hr	994 BTU/hr	1,180 BTU/hr
Efficiency	98.7%	98.7%	98.7%	98.7%
Recommended Circuit Breaker	30 A	40 A	60 A	70 A



### Dimensions & Weight

### PTE SERIES Including Voltage Doubling™ Models

Enclosure	PTE - Small Enclosure (HxWxD inches)	PTE - Medium Enclosure (HxWxD inches)	PTE - Large Enclosure (HxWxD inches)
Models	PTE007 PTE010	PTE015 PTE020 PTE407 PTE410 PTE415 PTE420	PTE207 PTE210 PTE215 PTE220
NEMA 1 (H x W x D)	25 7/16" x 16 3/8" x 7 3/8"	27 1/2" x 16 7/16" x 8 7/16"	33 9/16" x 17 11/16" x 8 3/8"
NEMA 3R (H x W x D)	25 9/16" x 18 5/16" x 12"	29 1/4" x 19 3/16" x 15 9/16"	34 3/4" x 19 15/16" x 13 7/16"
NOTE: Dimensions are measured at maximum size and includes mounting hardware.			
Weight	PTE007 - 51 lbs PTE010 - 51 lbs	PTE015R - 71 lbs PTE020R - 72 lbs PTE207 - 65 lbs PTE210 - 68 lbs PTE407R - 56 lbs PTE410R - 56 lbs PTE415 - 70 lbs PTE420 - 72 lbs	PTE215 - 74 lbs PTE220 - 80 lbs



### Model Specifications **PT** SERIES

#### 230V Models | 230 V 1PH to 230 V 3PH

Model / Part Number	PT007	PT010	PT020	PT030	PT040	PT050	PT060	PT075
Rated Horsepower	7.5 HP	10 HP	20 HP	30 HP	40 HP	50 HP	60 HP	75 HP
Output kVA	10.8 kVA	14.9 kVA	26.6 kVA	39.4 kVA	54.0 kVA	68.5 kVA	78.9 kVA	99.7 kVA
Input Voltage	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V	187 - 260 V
Output Voltage	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input
Phase-to-Phase Voltage Balance	<2%	<2%	<2%	<2%	<2%	<2%	<2%	<2%
Maximum Steady-State Output	26 A	36 A	64 A	95 A	130 A	165 A	190 A	240 A
Maximum AC Input Current	45 A	62 A	111 A	165 A	225 A	286 A	329 A	416 A
Standby Power Consumption	70 W	74 W	80 W	175 W	190 W	235 W	260 W	300 W
Full Load Energy Loss	479 BTU/hr	661 BTU/hr	1,180 BTU/hr	1,752 BTU/hr	2,395 BTU/hr	3,043 BTU/hr	3,500 BTU/hr	4,427 BTU/hr
Efficiency	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%
Installed Optional Breaker Size	60 A	80 A	150 A	225 A	300 A	400 A	n/a	n/a

#### 460V Models | 460 V 1PH to 460 V 3PH

Model / Part Number	PT407	PT410	PT415	PT420	PT430	PT440	PT450	PT460	PT475	PT4100	PT4150	PT4175
Rated Horsepower	7.5 HP	10 HP	15 HP	20 HP	30 HP	40 HP	50 HP	60 HP	75 HP	100 HP	150 HP	175 HP
Output kVA	10.8 kVA	14.9 kVA	22.4 kVA	26.6 kVA	38.2 kVA	50.7 kVA	64.0 kVA	75.6 kVA	88.9 kVA	118.0 kVA	164.4 kVA	118.0 kVA
Input Voltage	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V	440 - 520 V
Output Voltage	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input	Equal To Input
Phase-to-Phase Voltage Balance	<2%	<2%	<2%	<2%	<2%	<2%	<2%	<2%	<2%	<2%	<2%	<2%
Maximum Steady-State Output	13 A	18 A	27 A	32 A	46 A	61 A	77 A	91 A	107 A	142 A	198 A	220 A
Maximum AC Input Current	22 A	32 A	47 A	55 A	80 A	105 A	134 A	157 A	185 A	246 A	343 A	381 A
Standby Power Consumption	52 W	68 W	71 W	74 W	87 W	180 W	190 W	220 W	270 W	300 W	300 W	300 W
Full Load Energy Loss	479 BTU/hr	661 BTU/hr	994 BTU/hr	1,180 BTU/hr	1,694 BTU/hr	2,249 BTU/hr	2,839 BTU/hr	3,358 BTU/hr	3,992 BTU/hr	5,239 BTU/hr	7,305 BTU/hr	8,117 BTU/hr
Efficiency	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%	98.7%
Installed Optional Breaker Size	30 A	40 A	60 A	70 A	100 A	150 A	175 A	200 A	250 A	400 A	400 A	500 A

### Dimensions & Weight

Enclosure	Small	Medium	Large
Models	PT407, PT410, PT415, PT420	PT007, PT010, PT020, PT430	PT030, PT040, PT050, PT060, PT075, PT440, PT450, PT460, PT475, PT4100
NEMA 1 (H x W x D)	31 3/8" x 17 3/16" x 15 1/16"	36 15/16" x 25 3/8" x 17 1/16"	44 15/16" x 25 13/16" x 19"
NEMA 3R (H x W x D)	31 3/8" x 22 7/16" x 15 1/16"	37 7/16" x 25 3/8" x 19 5/16"	46 1/8" x 25 13/16" x 20 1/8"
NOTE: Dimensions are measured at maximum size and includes mounting hardware.			
Weight	PT407 - 70 lbs PT410 - 74 lbs PT415 - 80 lbs PT420 - 80 lbs	PT007 - 102 lbs PT010 - 104 lbs PT020 - 129 lbs PT430 - 141 lbs	PT030 - 222 lbs PT040 - 233 lbs PT050 - 251 lbs PT060 - 255 lbs PT075 - 288 lbs  PT440 - 242 lb PT450 - 246 lbs PT460 - 256 lbs PT475 - 268 lbs PT4100 - 305 lbs



### Input Wiring Recommendations - ALL MODELS

Wire size recommendations based on 600 VAC copper wire, rated either 60°C or 75°C. Assuming 86°F (30°C) ambient and no more than 3 current carrying conductors in raceway or earth (directly buried). If phase converter will be in warmer environments, consult NEC Handbook for temperature correction factor.

Models	Min. Wire Gauge (60°C)	Min. Wire Gauge (75°C)
<b>230 V Models</b>		
PT007/PTE007	4 AWG	6 AWG
PT010/PTE010	3 AWG	4 AWG
PTE015	1/0 AWG	1 AWG
PT020/PTE020	--	1/0 AWG
PT030	300 kcmil	4/0 AWG
PT040	--	350 kcmil
PT050	2 x 250 kcmil	2 x 3/0 AWG
PT060	2 x 300 kcmil	2 x 250 kcmil
PT075	2 x 500 kcmil	2 x 350 kcmil
<b>Voltage Doubling™ Models</b>		
PTE207	4 AWG	6 AWG
PTE210	3 AWG	4 AWG
PTE215	1/0 AWG	1 AWG
PTE220	--	1/0 AWG
<b>460 V Models</b>		
PT407R/PTE407	10 AWG	10 AWG
PT410R/PTE410	8 AWG	8 AWG
PT415R/PTE415	4 AWG	6 AWG
PT420R/PTE420	4 AWG	4 AWG
PT430R	1 AWG	3 AWG
PT440R	--	1/0 AWG
PT450R	--	2/0 AWG
PT460R	250 kcmil	3/0 AWG
PT475R	350 kcmil	250 kcmil
PT4100R	2 x 250 kcmil	2 x 3/0 AWG
PT4150R	2 x 250 kcmi	2 x 3/0 AWG
PT4175R	2 x 250 kcmi	2 x 3/0 AWG



### Input & Output Power Terminals

#### Part Number Key

<b>0</b> (PT007R or PTE007R)	230 V Input - 1PH   230 V Output - 3PH
<b>2</b> (PTE207RQT)	230 V Input - 1PH   460 V Output - 3PH
<b>4</b> (PT407R or PTE407R)	460 V Input - 1PH   460 V Output - 3PH

### PT SERIES

PT007, PT010, PT020, PT407R, PT410R, PT415R,  
PT420R, PT430R, PT440R, PT450R.....

LINE SIDE (Input)		LOAD SIDE (Output)	
Wire Size	Torque	Wire Size	Torque
2/0 – 6 AWG	120 in-lb	2/0 – 6 AWG	120 in-lb
8 AWG	40 in-lb	8 AWG	40 in-lb
10 - 14 AWG	35 in-lb	10 - 14 AWG	35 in-lb

PT030, PT040, PT460R, PT475R.....

Wire Size	Torque	Wire Size	Torque
350 kcmil - 6 AWG	275 in-lb	2/0 – 6 AWG	120 in-lb
		8 AWG	40 in-lb
		10 - 14 AWG	35 in-lb

PT050, PT060, PT075, PT4100R.....

Wire Size	Torque	Wire Size	Torque
2 x 500 kcmil - 2 x 4 AWG	375 in-lb	350 kcmil - 6 AWG	275 in-lb

### PTE SERIES *Including Voltage Doubling™ Models*

PTE207, PTE210, PTE215, PTE220.....  
PTE007, PTE007, PTE010, PTE010  
PTE407, PTE410, PTE415, PTE420

LINE SIDE (Input)		LOAD SIDE (Output)	
Wire Size	Torque	Wire Size	Torque
2 – 20 AWG	17.5 in-lb	4 – 18 AWG	16 in-lb

PTE015, PTE020.....

Wire Size	Torque	Wire Size	Torque
2/0 – 6 AWG	120 in-lb	4 – 18 AWG	16 in-lb
8 AWG	40 in-lb		
14 - 10 AWG	35 in-lb		



### Ground Wire Sizes

#### Part Number Key

0 (PT007 or PTE007)	230 V Input - 1PH   230 V Output - 3PH
2 (PTE207)	230 V Input - 1PH   460 V Output - 3PH
4 (PT407R or PTE407)	460 V Input - 1PH   460 V Output - 3PH

### PT SERIES

230V Models	Min Wire Size	Max Wire Size
PT007.....	10 AWG	2 AWG
PT010.....	8 AWG	2 AWG
PT020.....	6 AWG	2 AWG
PT030.....	4 AWG	2 AWG
PT040.....	4 AWG	2 AWG
PT050.....	3 AWG	2/0 AWG
PT060.....	2 AWG	2/0 AWG
PT075.....	1 AWG	2/0 AWG
460V Models	Min Wire Size	Max Wire Size
PT407R.....	10 AWG	2 AWG
PT410R.....	10 AWG	2 AWG
PT415R.....	10 AWG	2 AWG
PT420R.....	8 AWG	2 AWG
PT430R.....	8 AWG	2 AWG
PT440R.....	6 AWG	2 AWG
PT450R.....	6 AWG	2 AWG
PT460R.....	6 AWG	2 AWG
PT475R.....	4 AWG	2 AWG
PT4100R.....	3 AWG	2/0 AWG
PT4150R.....	3 AWG	2/0 AWG
PT4175R.....	3 AWG	2/0 AWG

### PTE SERIES Including Voltage Doubling™ Models

230V Models	Min Wire Size	Max Wire Size
PTE007.....	10 AWG	2 AWG
PTE010.....	8 AWG	2 AWG
PTE015.....	6 AWG	2 AWG
PTE020.....	6 AWG	2 AWG
Voltage Doubling Models	Min Wire Size	Max Wire Size
PTE207.....	8 AWG	2 AWG
PTE210.....	6 AWG	2 AWG
PTE215.....	6 AWG	2 AWG
PTE220.....	6 AWG	2 AWG
480V Models	Min Wire Size	Max Wire Size
PTE407.....	10 AWG	2 AWG
PTE410.....	10 AWG	2 AWG
PTE415.....	10 AWG	2 AWG
PTE420.....	8 AWG	2 AWG



### Recommended Breaker Sizes

#### PT SERIES

#### Part Number Key

0 (PT007 or PTE007)	230 V Input - 1PH   230 V Output - 3PH
2 (PTE207)	230 V Input - 1PH   460 V Output - 3PH
4 (PT407R or PTE407)	460 V Input - 1PH   460 V Output - 3PH

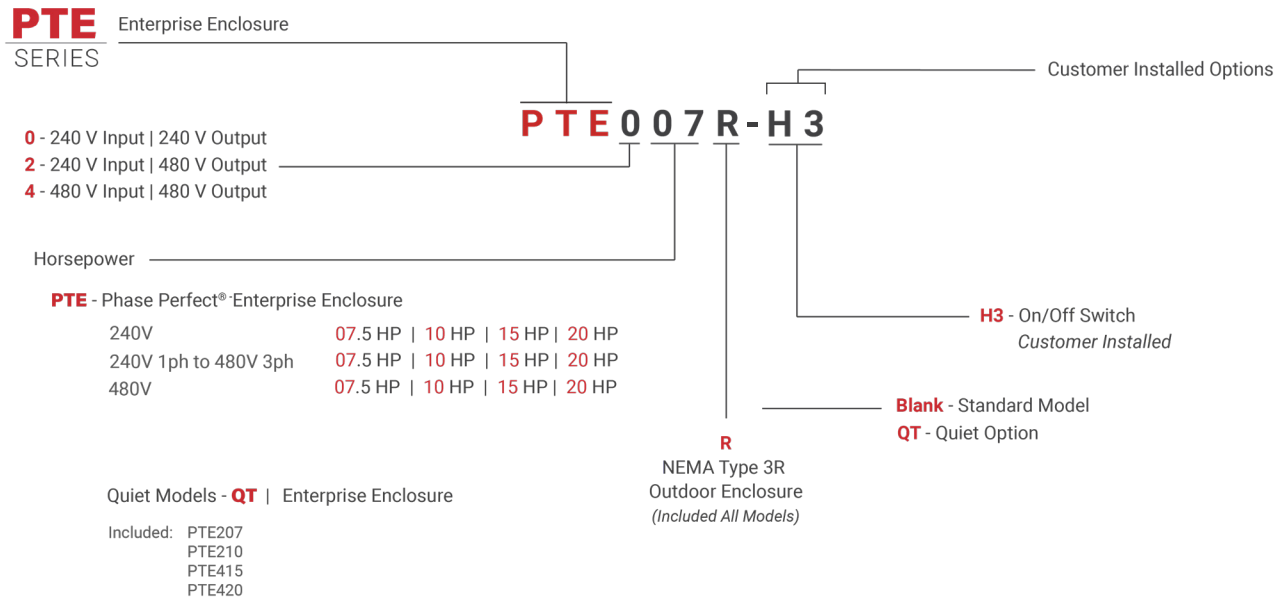
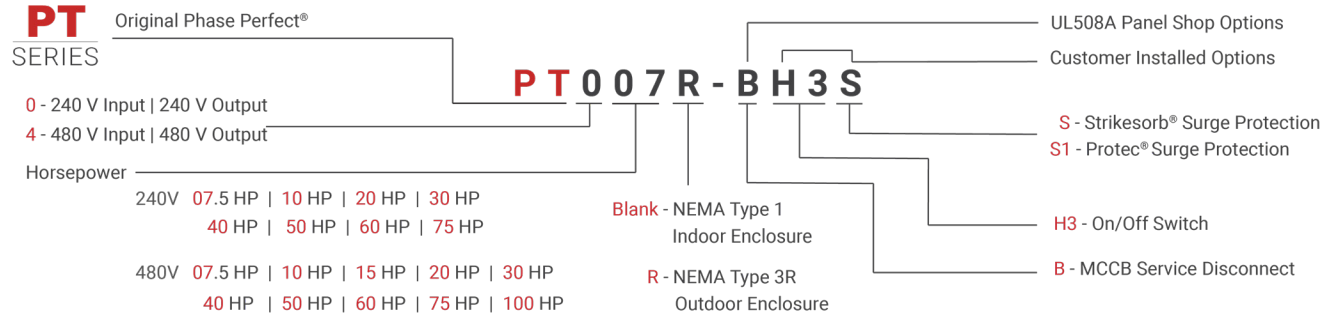
240V Models	Horsepower	Recommended Breaker Size
PT007.....	7.5 HP	60 A
PT010.....	10 HP	80 A
PT020.....	20 HP	150 A
PT030.....	30 HP	225 A
PT040.....	40 HP	300 A
PT050.....	50 HP	400 A
PT060.....	60 HP	500 A
PT075.....	75 HP	600 A
480V Models	Horsepower	Recommended Breaker Size
PT407R.....	7.5 HP	30 A
PT410R.....	10 HP	40 A
PT415R.....	15 HP	60 A
PT420R.....	20 HP	70 A
PT430R.....	30 HP	100 A
PT440R.....	40 HP	150 A
PT450R.....	50 HP	175 A
PT460R.....	60 HP	200 A
PT475R.....	75 HP	250 A
PT4100R.....	100 HP	400 A
PT4150R.....	150 HP	400 A
PT4175R.....	175 HP	500 A

#### PTE SERIES Including Voltage Doubling™ Models

230V Models	Horsepower	Recommended Breaker Size
PTE007.....	7.5 HP	60 A
PTE010.....	10 HP	80 A
PTE015.....	15 HP	125 A
PTE020.....	20 HP	150 A
460V Models	Horsepower	Recommended Breaker Size
PTE407.....	7.5 HP	30 A
PTE410.....	10 HP	40 A
PTE415.....	15 HP	60 A
PTE420.....	20 HP	70 A
Voltage Doubling™ Models	Horsepower	Recommended Breaker Size
PTE207.....	7.5 HP	60 A
PTE210.....	10 HP	80 A
PTE215.....	15 HP	125 A
PTE220.....	20 HP	150 A



### Nomenclature





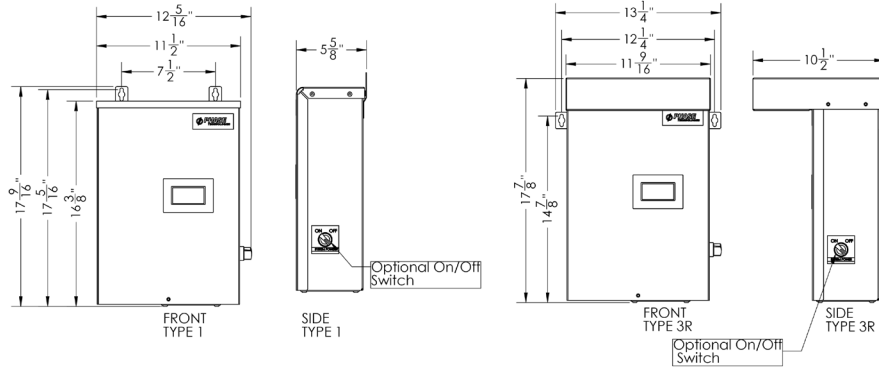
### Line Drawings **PTS** SERIES



Model Number

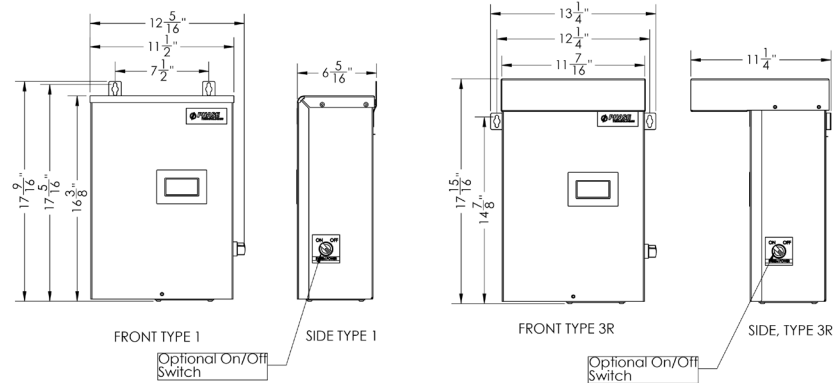
PTS003

PTS005



Model Number

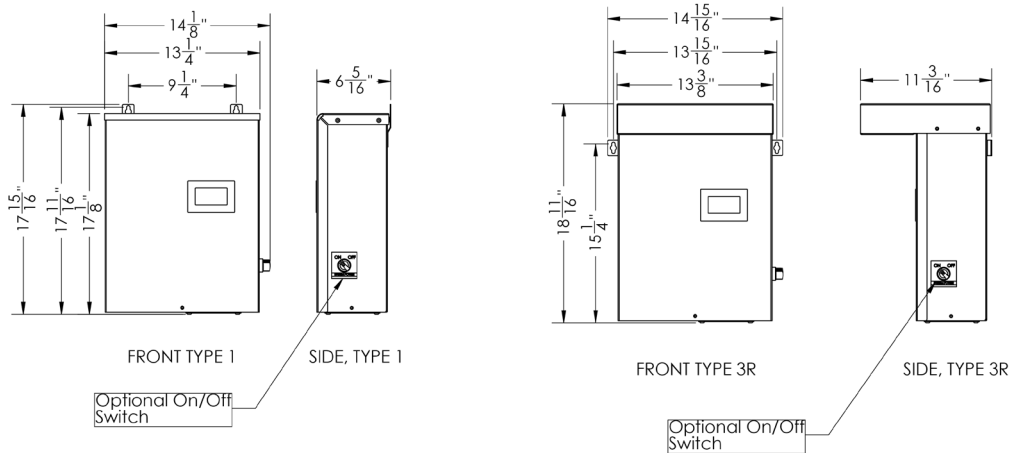
PTS007



Model Number

PTS405

PTS407





### Line Drawings **PTE** SERIES Including Voltage Doubling™ Models

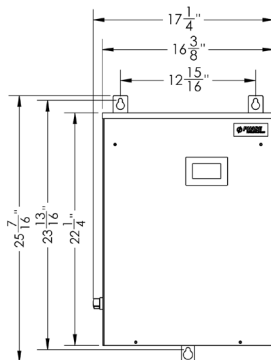
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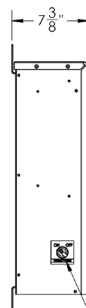
#### Model Number

PTE007

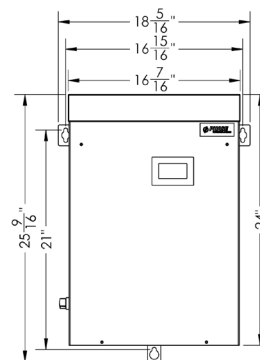
PTE010



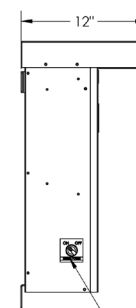
FRONT TYPE 1



SIDE, TYPE 1



FRONT TYPE 3R



SIDE, TYPE 3R

Optional On/Off  
Switch

Optional On/Off  
Switch

#### Medium Frame



#### Model Number

PTE015

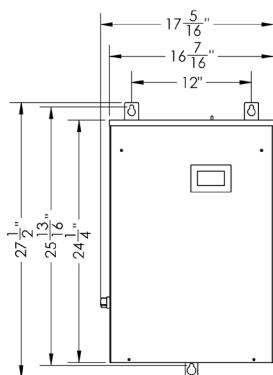
PTE020

PTE407

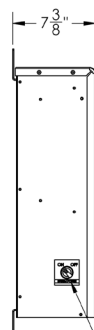
PTE410

PTE415

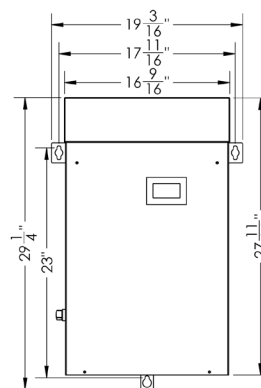
PTE420



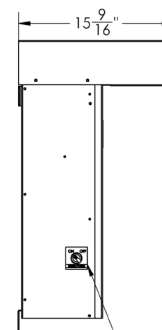
FRONT TYPE 1



SIDE, TYPE 1



FRONT TYPE 3R



SIDE, TYPE 3R

Optional On/Off  
Switch

Optional On/Off  
Switch

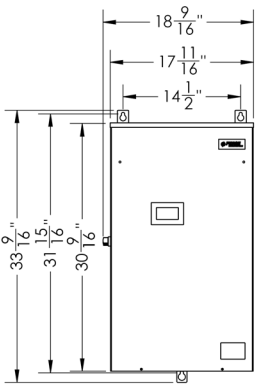


Line Drawings **PTE** SERIES Voltage Doubling™ 15 - 20 HP

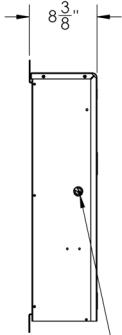
Large Frame



Model Number
PTE207
PTE210
PTE215
PTE220

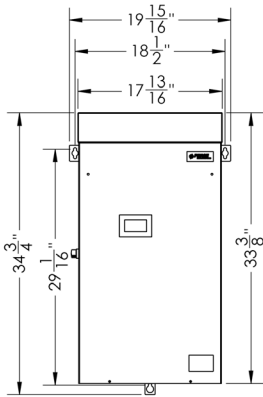


FRONT TYPE 1

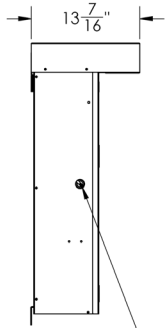


SIDE, TYPE 1

Optional On/Off  
Switch



FRONT TYPE 3R



FRONT TYPE 3R

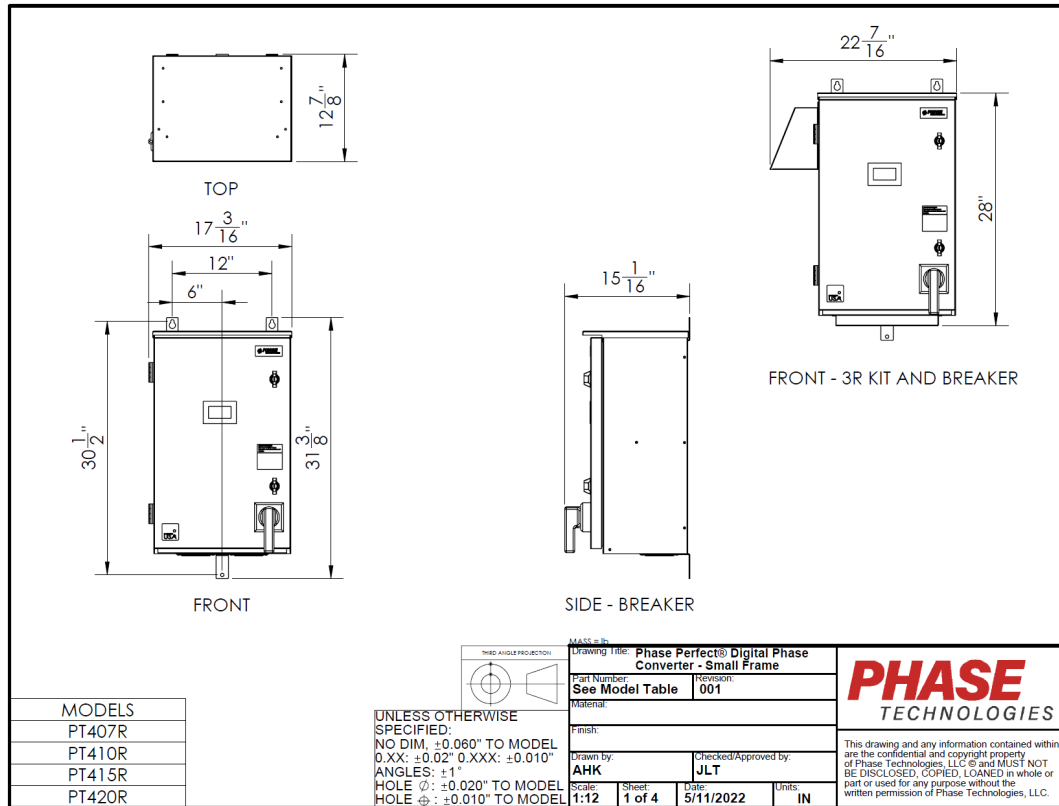
Optional On/Off  
Switch



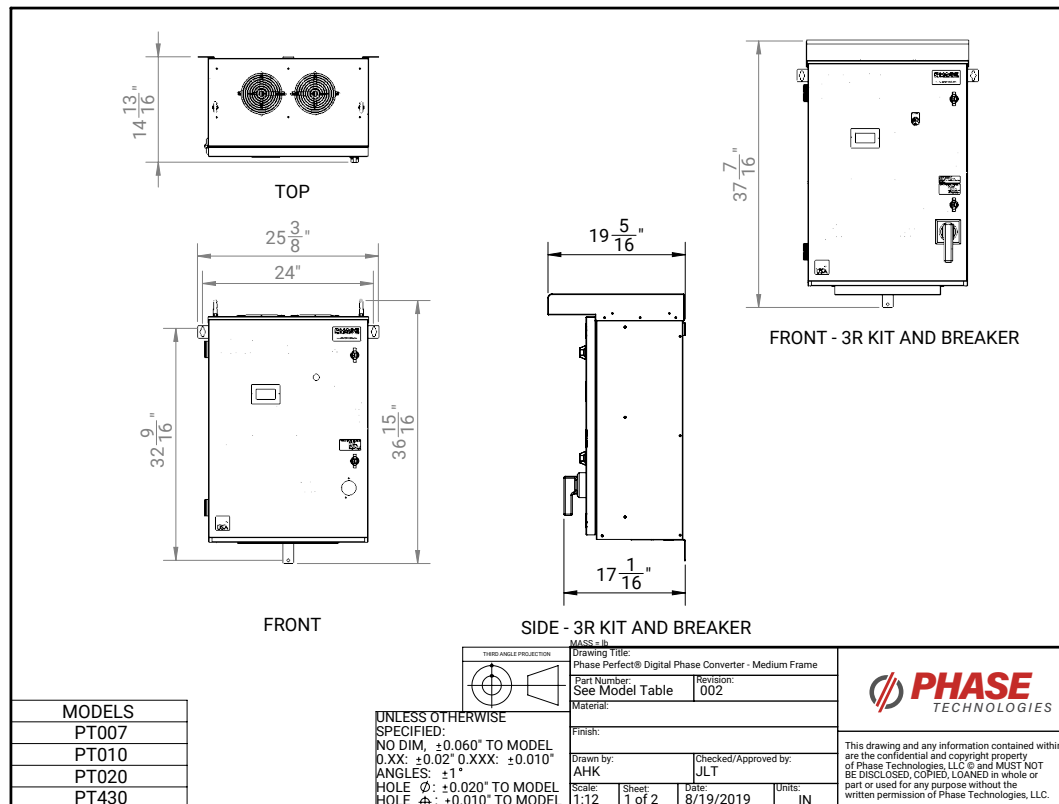
### Line Drawings

### PT SERIES

#### Line Drawings Small Frame



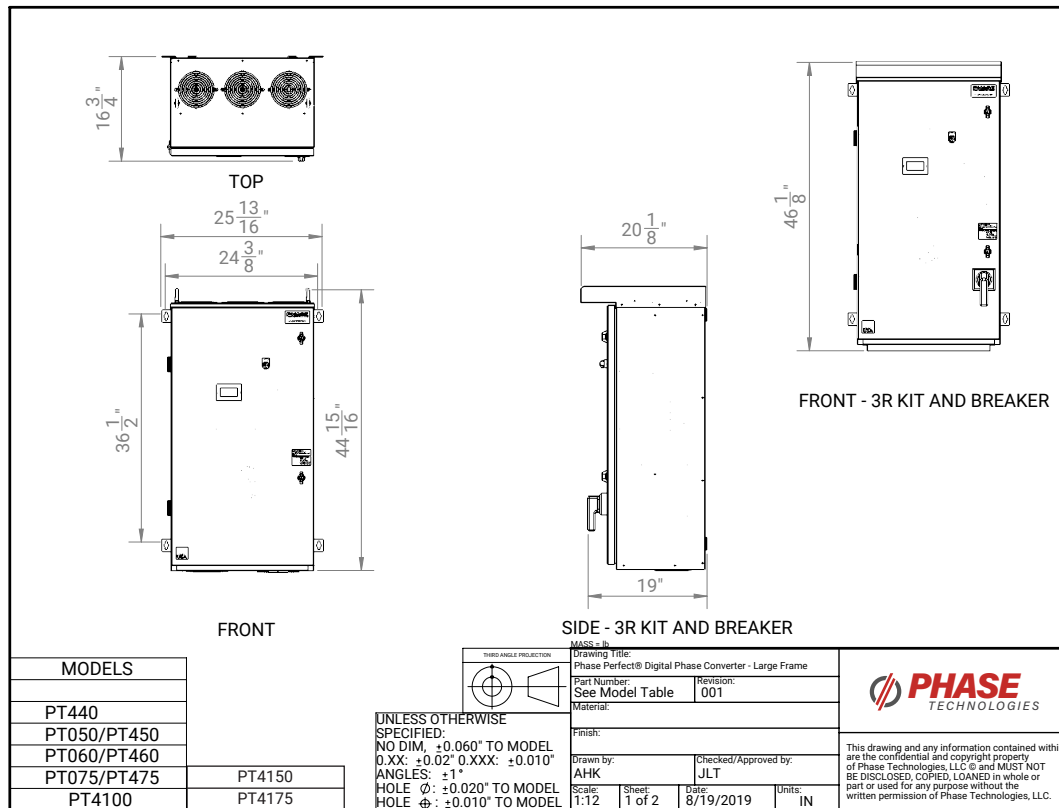
#### Line Drawings Medium Frame



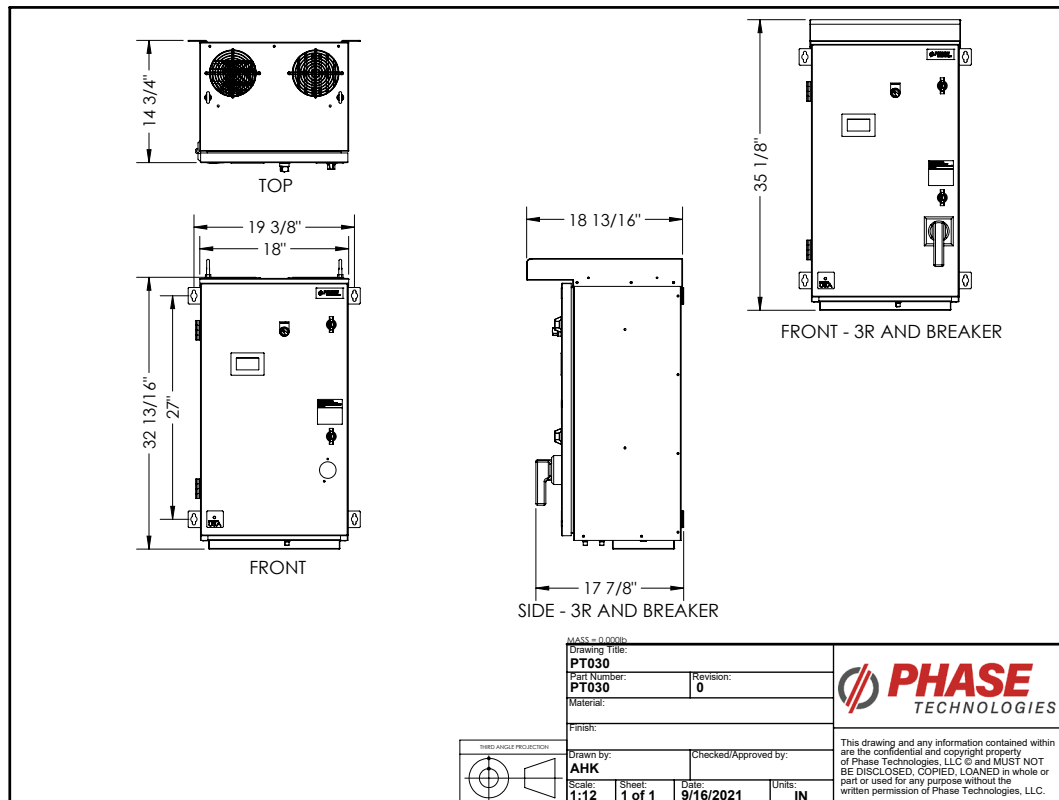


### Line Drawings | Continued **PT** SERIES

**Line Drawings**  
Large Frame



**Line Drawings**  
PT030

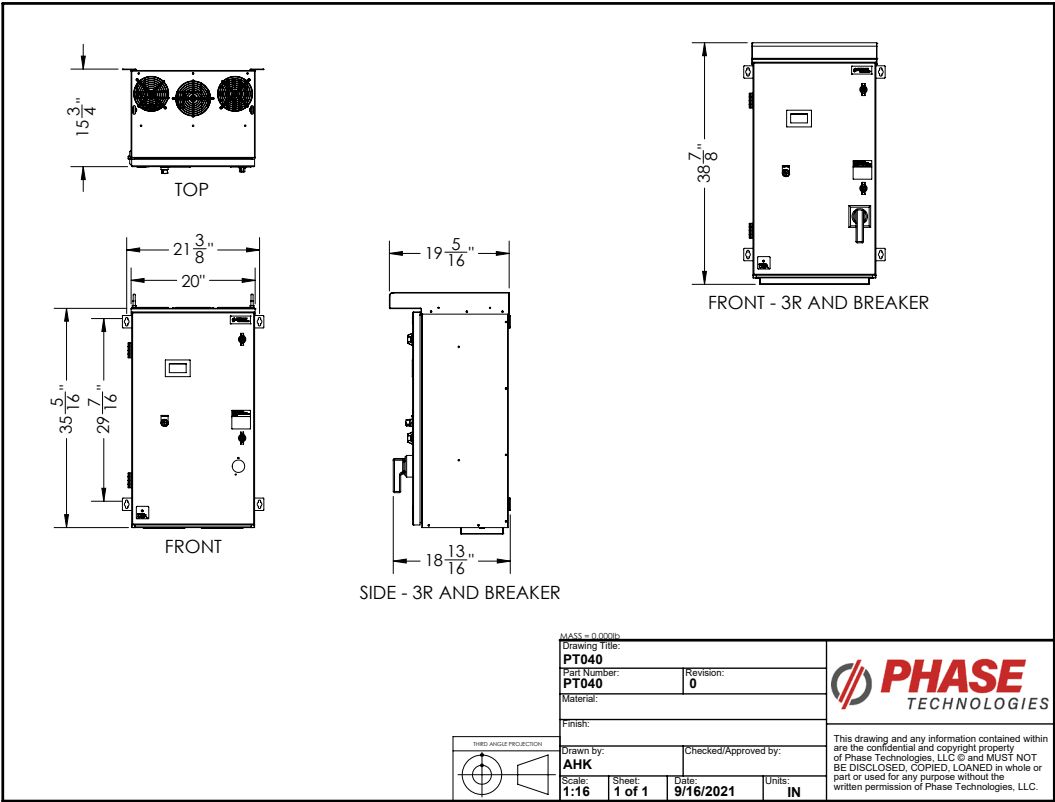




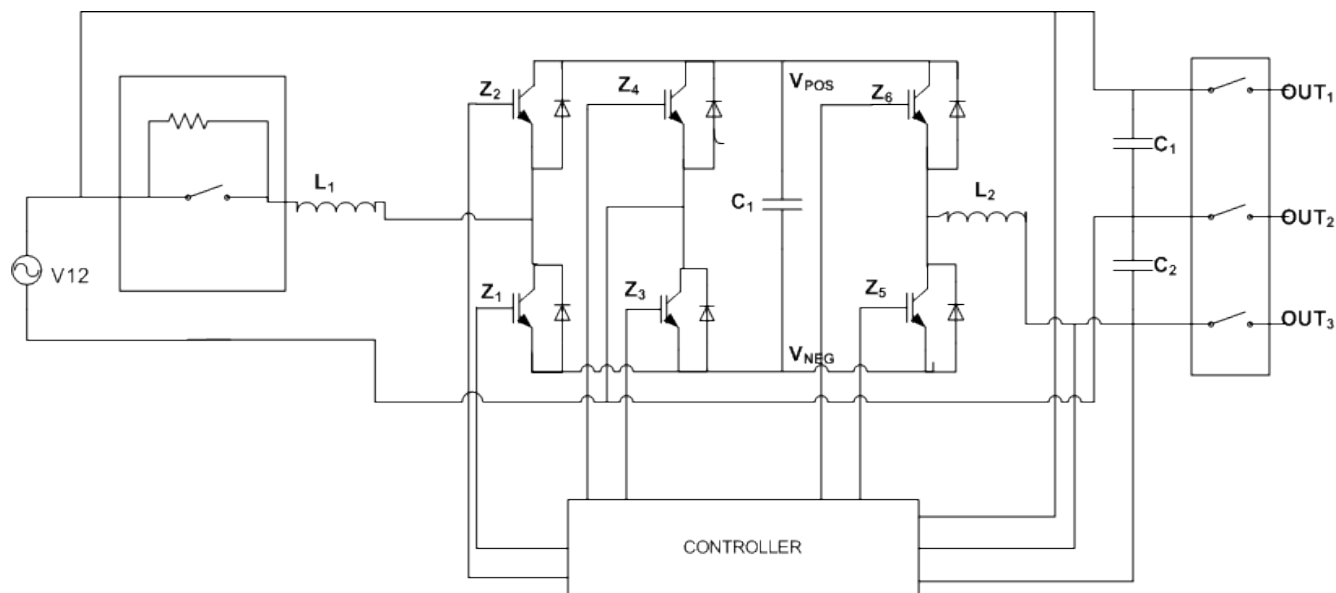
**Line Drawings** | *Continued*

**PT** SERIES

**Line Drawings**  
PT040



**Block Diagrams** **PT** SERIES



**PTE** SERIES *Voltage Doubling™ Models*

