

# 400XAC Series

## 3 Phase AC Power Sources



Your Power House  
**VP ELECTRONIQUE**



### Overview

Our 400XAC Series automated 3 $\emptyset$  AC power sources provide an advanced 3 $\emptyset$  power source in a single box. When the smartCONFIG<sup>®</sup> option is installed the 400XAC can be switched from a 3 $\emptyset$  output to a 1 $\emptyset$  or DC output via the touch of a button. The 400XAC Series consists of two models: the 430XAC is a 3 kVA AC power source and the 460XAC is a 6 kVA AC power source.



**Instrument  
Control  
Software**

### Highlights

- Single phase input power requirements
- Built-in power factor correction (PFC)
- Advanced metering circuits monitor voltage, current, peak current, power, apparent power, reactive power, power factor, and crest factor
- External voltage sensing for accurate metering
- Transient feature simulates voltage variations, brownouts and transient voltage conditions
- Programmable starting and ending angle of the output sine wave
- DC output capability
- 50 built-in memory locations with 9 test steps
- Rack mount handle kit included
- IVI Drivers available
- Free APT instrument control software available

### Options

- GPIB Interface
- SmartCONFIG<sup>®</sup>
- Ethernet Interface

***APT...Power to the Customer!***



INPUT		430XAC	460XAC	
Phase		1Φ	1Φ or 3Φ	
Voltage		200 - 240 VAC	1Ø : 200~240 VAC ± 10% 3Ø3W : 200~240 VAC ± 10% 3Ø4W : 346~416 VAC ± 10%	
Frequency		47 - 63 Hz		
AC OUTPUT				
Power rating	1Ø2W	3000 VA	6000 VA	
	1Ø3W	Total 2000 VA (1000 VA per phase)	Total 4000 VA (2000 VA per phase)	
	3Ø4W	Total 3000 VA (1000 VA per phase)	Total 6000 VA (2000 VA per phase)	
	DC	3000 VA	6000 VA	
Max. Current (r.m.s)	1Ø2W	5-150 V	27.6 A at <110 V	55.2 A at <110 V
		5-300 V	13.8 A at <220 V	27.6 A at <220 V
	1Ø3W	5-150 V	9.2 A at <110 V for per phase	18.4 A at <110 V for per phase
		5-300 V	4.6 A at <220 V for per phase	9.2 A at <220 V for per phase
	3Ø4W	5-150 V	9.2 A at <110 V for per phase	18.4 A at <110 V for per phase
		5-300 V	4.6 A at <220 V for per phase	9.2 A at <220 V for per phase
Inrush Current (peak)	1Ø2W	5-150 V	110.4 A	220.8 A
		5-300 V	55.2 A	110.4 A
	1Ø3W	5-150 V	36.8 A for per phase	73.6 A for per phase
		5-300 V	18.4 A for per phase	36.8 A for per phase
	3Ø4W	5-150 V	36.8 A for per phase	73.6 A for per phase
		5-300 V	18.4 A for per phase	36.8 A for per phase
Phase		1Ø2W 1Ø3W 3Ø4W, provided option		
THD (Total Harmonic Distortion)		<0.5% (Resistive Load) at 40.0~70.0 Hz and output voltage within the 80~140 VAC at Low Range or the 160~280 VAC at High Range. <1% (Resistive Load) at 70.1~1000 Hz and output voltage within the 80~140 VAC at Low Range or the 160~280 VAC at High Range.		
Crest Factor		≥ 3		
Line Regulation		± 0.1 V		
Load Regulation (Hardware)		± (1% of output +1 V) at Resistive Load, < 400 μS response time		
Load Regulation (Software)		± 0.2 V, <1 S response time		
DC offset		≤±5 mV		
Poly-phase mode (3Ø4W) for per phase output setting		430XAC	460XAC	
Voltage	Range	5.0~300 VAC (phase), 8.6~520 VAC (line), 150/300 V Auto Range		
	Accuracy	± (0.2% of setting + 3 counts)		
Frequency	Range	40~1000 Hz Full Range Adjust		
	Accuracy	±0.03% of setting		
Starting & Ending Phase Angle	Range	0~359°		
	Accuracy	±1°(45~65 HZ)		
Current Hi Limit	5V~150 V	0.01~9.20 A	0.01~18.40 A	
	5V~300 V	0.01~4.60 A	0.01~9.20 A	
	Accuracy	± (2.0% of setting + 2 counts)		
OC Fold Back Response Time		< 1.4 s		
Ramp-Up Timer (second)	Range	0.0~999.9 s		
	Accuracy	± (0.1% + 0.05 sec)		
Ramp-Down Timer (second)	Range	0.0~999.9 s		
	Accuracy	± (0.1% + 0.05 sec)		
Delay Timer	Range	1 s~999.9 s 0.1 m~999.9 min 0.1 h~999.9 h		
	Accuracy	± (0.1% + 0.1 sec)		
Dwell Timer	Range	0, 1s~999.9 h (0=continuous)		
	Accuracy	± (0.1% + 0.1 sec)		
Frequency	Range	0.0-1000 Hz		
	Resolution	0.1 Hz		
	Accuracy	±0.1 Hz (501-1000 Hz Accuracy ±0.2 Hz)		
Voltage	Range	0.0-420.0 V		
	Resolution	0.1 V		
	Accuracy	± (0.2% of reading + 3 counts)		

Specifications subject to change

Poly-phase mode (3Φ4W) for per phase measurement			430XAC	460XAC
Current(r.m.s)	Range	L	0.005 A~1.200 A	0.005 A~2.400 A
		H	1.00 A~13.00 A	2.00 A~26.00 A
	Accuracy	L	± (1% of reading +5 counts) at 40.0-500 Hz ± (1% of reading +5 counts) at 501-1000 Hz, CF < 1.5 and Current (peak) ≤ 3.6 A	± (1% of reading +5 counts) at 40.0-500 Hz ± (1% of reading +5 counts) at 501-1000 Hz, CF < 1.5 and Current (peak) ≤ 7.2 A
		H	± (1% of reading +5 counts) at 40.0-500 Hz ± (1% of reading +5 counts) at 501-1000 Hz, CF < 1.5 and Current (peak) ≤ 27.6 A	± (1% of reading +5 counts) at 40.0-500 Hz ± (1% of reading +5 counts) at 501-1000 Hz, CF < 1.5 and Current (peak) ≤ 55.2 A
Current(peak)	Range	0.0 A~38.0 A		0.0 A~76.0 A
	Accuracy	± (1% of reading + 5 counts) at 40.0-70.0 Hz ± (1.5% of reading + 10 counts) at 70.1 - 500 Hz ± (1.5% of reading + 10 counts) at 501 - 1000 Hz and CF<1.5		
Power	Range	L	0.0 W~120.0 W	0.0 W~240.0 W
		H	100 W~1300 W	200 W~2600 W
	Accuracy	L	± (2% of reading +15 counts) at 40.0-500 Hz and PF>=0.2 ± (2% of reading +30 counts) at 501-1000 Hz and PF>=0.5	
		H	± (2% of reading +5 counts) at 40.0-500 Hz and PF>=0.2 ± (2% of reading +15 counts) at 501-1000 Hz and PF>=0.5	
Power Factor	Range	0 - 1.000		
	Accuracy	W / VA ,Calculated and displayed to three significant digits		
Power Apparent (VA)	Range	L	0.0 VA~120.0 VA	0.0 VA~240.0 VA
		H	100 VA~1300 VA	200 VA~2600 VA
	Accuracy	VxA ,Calculated value		
Power Reactive (Q)	Range	L	0.0 VAR~120.0 VAR	0.0 VAR~240.0 VAR
		H	0 VAR~1300 VAR	0 VAR~2600 VAR
	Accuracy	$\sqrt{(VA)^2 - (W)^2}$ ,Calculated value		
Crest Factor	Range	0 - 10.00		
	Accuracy	Ap / A ,Calculated and displayed to two significant digits		
Poly-phase mode (3Φ4W) for Σ measurement			430XAC	460XAC
Frequency	Range	0.0-1000.0 Hz		
	Accuracy	±0.1 Hz (501-1000 Hz Accuracy ±0.2 Hz)		
Voltage	Range	0.0-727.5 V		
	Calculated Formula	$(A+B+C)/\sqrt{3}$ , Calculated and displayed to one significant digits		
Current(r.m.s)	Range	L	0.005A~1.200A	0.005A~2.400A
		H	1.00A~13.00A	2.00A~26.00A
	Calculated Formula	L	$\frac{\sum I_A}{\sum I} \cdot I_{IS}$	
		H		
Power	Range	L	0.0W~360.0W	0.0W~720.0W
		H	300W~3900W	600W~7800W
	Accuracy	L	A Power + B Power + C Power, Calculated value	
		H		
Power Factor	Range	0 - 1.000		
	Resolution	0.001		
	Accuracy	SUM P / SUM VA ,Calculated and displayed to three significant digits		
Power Apparent (VA)	Range	L	0.0VA~360.0VA	0.0VA~720.0VA
		H	300VA~3900VA	600VA~7800VA
	Calculated Formula	L	$\sqrt{(\sum P)^2 + (\sum Q)^2}$	
		H		
Power Reactive (Q)	Range	L	0.0VAR~360.0VAR	0.0VAR~720.0VAR
		H	300VAR~3900VAR	600VAR~7800VAR
	Accuracy	L	A VAR + B VAR + C VAR, Calculated value	
		H		
Single-phase mode (1Φ2W) Setting			430XAC	460XAC
Voltage	Range	5.0~300 VAC, 150/300 V Auto Range		
	Resolution	0.1 V		
	Accuracy	±(0.2% of setting + 3 counts)		

Specifications subject to change

Single-phase mode (1Ø2W) Setting		430XAC	460XAC	
Frequency	Range	40~1000 Hz Full Range Adjust		
	Resolution	0.1 Hz at 40.0~99.9 Hz , 1 Hz at 100~1000 Hz		
	Accuracy	±0.03% of setting		
Starting & Ending Phase Angle	Range	0~359°		
	Resolution	1°		
	Accuracy	±1°(45~65 HZ)		
Current Hi Limit	5V~150V	0.01~27.60 A	0.01~55.20 A	
	5V~300V	0.01~13.80 A	0.01~27.60 A	
	Accuracy	± (2.0% of setting + 2 counts)		
OC Fold Back Response Time		< 1.4 s		
Single-phase mode (1Ø2W) measurement		430XAC	460XAC	
Frequency	Range	0.0~1000 Hz		
	Accuracy	±0.1 Hz (501~1000 Hz Accuracy ±0.2 Hz)		
Voltage	Range	0.0~420.0 V		
	Accuracy	± (0.2% of reading + 3 counts)		
Current(r.m.s)	Range	0.05 A~39.00 A	0.05 A~78.00	
	Accuracy	± (1% of reading +5 counts) at 40.0~500 Hz ± (1% of reading +5 counts) at 501~1000, CF < 1.5 and Current (peak) ≤ 82.8 A	± (1% of reading +5 counts) at 40.0~500 Hz ± (1% of reading +5 counts) at 501~1000 Hz, CF < 1.5 and Current (peak) ≤ 165.6 A	
Current(peak)	Range	0.0 A~114.0 A	0.0 A~228.0 A	
	Accuracy	± (1% of reading + 5 counts) at 40.0~70.0 Hz ± (1.5% of reading + 10 counts) at 70.1~500 Hz ± (1.5% of reading + 10 counts) at 501~1000 Hz and CF<1.5		
Power	Range	0 W~3900 W	0 W~7800 W	
	Accuracy	± (2% of reading +5 counts) at 40.0~500 Hz and PF>=0.2 ± (2% of reading +15 counts) at 501~1000 Hz and PF>=0.5		
Power Factor	Range	0 - 1.000		
	Accuracy	W / VA ,Calculated and displayed to three significant digits		
Power Apparent	Range	0 VA~3900 VA	0 VA~7800 VA	
	Accuracy	VxA ,Calculated value		
Power Reactive (Q)	Range	0 VAR~3900 VAR	0 VAR~7800 VAR	
	Accuracy	$\sqrt{(VA)^2 - (W)^2}$ ,Calculated value		
Crest Factor	Range	0 - 10.00		
	Accuracy	Ap / A ,Calculated and displayed to two significant digits		
Poly-phase mode (1Ø3W) for per phase output setting		430XAC	460XAC	
Voltage	Range	5.0~300 VAC (phase), 10.0~600 VAC (line), 150/300 V Auto Range		
	Accuracy	±(0.2% of setting + 3 counts)		
Frequency	Range	40~1000 Hz Full Range Adjust		
	Accuracy	±0.03% of setting		
Starting & Ending Phase Angle	Range	0~359°		
	Accuracy	±1°(45~65 HZ)		
Current RI Limit	5V~150V	0.01~9.20 A	0.01~18.40 A	
	5V~300V	0.01~4.60 A	0.01~9.20 A	
	Accuracy	± (2.0% of setting + 2 counts)		
OC Fold Back Response Time		< 1.4 s		
Poly-phase mode (1Ø3W) for per phase measurement		430XAC	460XAC	
Frequency	Range	0.0~1000 Hz		
	Accuracy	±0.1 Hz (501~1000 Hz Accuracy ±0.2 Hz)		
Voltage	Range	0.0~420.0 V		
	Accuracy	± (0.2% of reading + 3 counts)		
Current (r.m.s)	Range	L	0.005 A~1.200 A	0.005 A~2.400 A
		H	1.00 A~13.00 A	2.00 A~26.00 A
	Accuracy	L	± (1% of reading +5 counts) at 40.0~500 Hz ± (1% of reading +5 counts) at 501~1000 Hz, CF < 1.5 and Current (peak) ≤ 3.6 A	± (1% of reading +5 counts) at 40.0~500 Hz ± (1% of reading +5 counts) at 501~1000 Hz, CF < 1.5 and Current (peak) ≤ 7.2 A
		H	± (1% of reading +5 counts) at 40.0~500 Hz ± (1% of reading +5 counts) at 501~1000 Hz, CF < 1.5 and Current (peak) ≤ 27.6 A	± (1% of reading +5 counts) at 40.0~500 Hz ± (1% of reading +5 counts) at 501~1000 Hz, CF < 1.5 and Current (peak) ≤ 55.2 A

Specifications subject to change

Poly-phase mode (1Ø3W) for per phase measurement		430XAC		460XAC	
Current (peak)	Range	0.0 A~38.0 A		0.0 A~76.0 A	
	Accuracy	± (1% of reading + 5 counts) at 40.0-70.0 Hz ± (1.5% of reading + 10 counts) at 70.1-500 Hz ± (1.5% of reading + 10 counts) at 501-1000 Hz and CF<1.5			
Power	Range	L	0.0 W~120.0 W	0.0 W~240.0 W	
		H	100 W~1300 W	200 W~2600 W	
	Accuracy	L	± (2% of reading +15 counts) at 40.0-500 Hz and PF>=0.2 ± (2% of reading +30 counts) at 501-1000 Hz and PF>=0.5		
		H	± (2% of reading +5 counts) at 40.0-500 Hz and PF>=0.2 ± (2% of reading +15 counts) at 501-1000 Hz and PF>=0.5		
Power Factor	Range	0 - 1.000			
	Accuracy	W / VA ,Calculated and displayed to three significant digits			
Power Apparent (VA)	Range	L	0.0 VA~120.0 VA	0.0 VA~240.0 VA	
		H	100 VA~1300 VA	200 VA~2600 VA	
	Accuracy	VxA ,Calculated value			
Power Reactive (Q)	Range	L	0.0 VAR~120.0 VAR	0.0 VAR~240.0 VAR	
		H	0 VAR~1300 VAR	0 VAR~2600 VAR	
	Accuracy	$\sqrt{(VA)^2 - (W)^2}$ ,Calculated value			
Crest Factor	Range	0-10.00			
	Accuracy	Ap / A ,Calculated and displayed to two significant digits			
Poly-phase mode (1Ø3W) for L1-L2 measurement		430XAC		460XAC	
Frequency	Range	0.0-1000.0 Hz			
	Accuracy	± 0.1 Hz (501-1000 Hz Accuracy ± 0.2 Hz)			
Voltage	Range	0.0-840.0V			
	Accuracy	L1 Voltage + L2 Voltage, Calculated and displayed to one significant digits			
Current(r.m.s)	Range	L	0.005A~1.200A	0.005A~2.400A	
		H	1.00A~13.00A	2.00~26.00A	
	Calculated Formula	L	$\Sigma VA / \Sigma V$		
		H			
Power	Range	L	0.0VA~240.0VA	0.0VA~480.0VA	
		H	200VA~2600VA	400VA~5200VA	
	Accuracy	L	L1 Power + L2 Power, Calculated value		
		H			
Power Factor	Range	0 - 1.000			
	Accuracy	(L1 P + L2 P) / (L1 VA + L2 VA) ,Calculated and displayed to three significant digits			
Power Apparent (VA)	Range	L	0.0W~240.0VA	0.0W~480.0VA	
		H	200W~2600VA	± 400W~5200VA	
	Accuracy	L	L1 VA + L2 VA ,Calculated value		
		H			
Power Reactive (Q)	Range	L	0.0VAR~240.0VAR	0.0VAR~480.0VAR	
		H	200VAR~2600VAR	400VAR~5200VAR	
	Accuracy	L	L1 VAR + L2 VAR ,Calculated value		
		H			
DC OUTPUT					
Max. Power			3000 W	6000 W	
Max. Current	0-210 V	14.4 A		28.8 A	
	0-420 V	7.2 A		14.4 A	
Ripple and Noise (RMS)	Range: 5-210 V < 700 mV Range: 5-420 V < 1100 mV				
Ripple and Noise (p-p)	< 4.0 Vp-p				
DC SETTINGS					
Voltage	Range	5-210 V / 5-420 V Selectable			
	Accuracy	± (0.2% of setting + 3 counts)			
Current Hi Limit	5 V-210 V	14.40 A		0.10 - 28.80 A	
	5 V-420 V	7.20 A		0.10 - 14.40 A	
	Accuracy	± (2.0% of setting + 2 counts)			
OC Fold Back Response Time	< 1.4 s				

Specifications subject to change

DC MEASUREMENT		430XAC	460XAC
Voltage	Range	0.0-420.0 V	
	Accuracy	±(0.2% of setting + 3 counts)	
Current	Range	0.05 A~19.50 A	0.05 A~39.00 A
	Accuracy	± (1% of reading +5 counts)	
Power	Range	0 W~3900 W	0 W~7800 W
	Accuracy	± (2% of reading +5 counts)	
<b>Protection</b>			
Software OCP		Over Current 110% of full rated current>1 second	
Hardware OFL		The single unit Hardware OFL:Over Current 105 ~110% of full load. 3.3 second time constant. 15 second reaction from off state with 110% load and software disabled	
Output Short Shut Down Speed		<1 second	
Software OPP		When over Power 105 ~ 110% of full power >5 second. When over Power >110% of full power <1 second.	
Software OTP		Temperature over 95 degree C on the power amp and PFC heatsink	Temperature over 120 degree C on the power amp and PFC heatsink
Software OVP	L	When output frequency <100Hz, maximum voltage deviation +5V When output frequency 101-500Hz, maximum voltage deviation +15V When output frequency 501-1000Hz, maximum voltage deviation +20V	
	H	When output frequency <100Hz, maximum voltage deviation +10V When output frequency 101-500Hz, maximum voltage deviation +30V When output frequency 501-1000Hz, maximum voltage deviation +40V	
Software LVP	L	When output frequency <100Hz, maximum voltage deviation -5V >0.5 second When output frequency 101-500Hz, maximum voltage deviation -15V >0.5 second When output frequency 501-1000Hz, maximum voltage deviation -20V >0.5 second	
	H	When output frequency <100Hz, maximum voltage deviation -10V >0.5 second When output frequency 101-500Hz, maximum voltage deviation -30V >0.5 second When output frequency 501-1000Hz, maximum voltage deviation -40V >0.5 second	
Reverse Current Protection (RCP)		Over 75W	
<b>General</b>			
Transient (only for 40~70 Hz)		Trans-Volt 0.0-300.0 V Resolution 0.1 V Trans-Site 0°-359° Resolution 1° Trans-Time 0.5-999.9 mS Resolution 0.1 mS Trans-Cycle 0-9999, 0-Constant	
Operation Key Feature		Soft key, Numeric key, Rotary Knob.	
Remote Input Signal		Test, Reset, Interlock (*12), Recall program memory 1 through 7	
Remote Output Signal		Pass, Fail , Test-in Process	
Key Lock		Yes, Password Driven	
Memory		50 memories, 9 steps/memory	
Ext Trigger		START / END / BOTH / OFF in the Program mode, Output Signal 5 V ,BNC type	
Alarm Volume Setting		Range: 0-9 ;0=OFF, 1 is softest volume, 9 is loudest volume.	
Graphic Display		240 x 64 dot resolution Monographic LCD /Contrast 9 Levels 1-9	
PFC		PF ≥ 0.97 at Full load	
Efficiency		≥78% (at Full load)	
Auto Loop cycle		0 = Continuous, OFF, 2~9999	
Over Current Fold Back		On/Off, Setting On when output current over setting Hi-A value it will fold back output voltage to keep constant output current is setting Hi-A value, Response time <1400ms	
Safety		CE	
Dimension		430(W) x 400.5(H) x 500(D) mm	
Weight		105.8 lbs (48 kg)	125.6 lbs (57 kg)
Operation Enviroment		0-40%/20-80% RH	

Specifications subject to change

### Why We Use Counts

APT publishes some specifications using “counts” which allows us to provide a better indication of the tester’s capabilities across measurement ranges. A count refers to the lowest resolution of the display for a given measurement range.

For example, if the resolution for voltage is 1V then 2 counts = 2V.