ACP SERIES

FEATURES

- **Microprocessor based, crystal referenced, synthesized sine wave**
- **Independent or simultaneous control of 3 phase voltage**
- **Remote programming and measurement**
- **Front panel programming and measurement**
- **IEEE-488 interface included**
- **Low distortion, wide bandwidth linear amplifier**

ACP-250

ACP-3X3000

PRECISION, HIGH QUALITY POWER FOR COMPUTER CONTROLLED APPLICATIONS

Behlman's ACP Series programmable AC Power Sources deliver clean, regulated linear power. Models provide from 250 VA up to 9000 VA of power at output frequencies from 45 to 10,000 Hz. The ACP Series combines highly advanced magnetics with solid state circuitry and computer programmability.

Programming is accomplished via a front panel keyboard or through a built-in IEEE-488 interface. ACP Series units allow for programming of simulated events such as voltage dropouts, transients and surges and provide truly independent measurements of output while tests are in progress.

The ACP series has many unique features including low output distortion, wide bandwidth, fast transient response, rapid programming, independent control of phase voltage and phase angle control.

A feedback system in the power amplifier ensures tight regulation and low distortion. Built-in test (BIT) circuits continuously perform fault monitoring and diagnostic self test. Sophisticated electronic overload and short circuit protection systems recover instantly when an overload is removed. The ACP Series is ideal for a variety of automatic test and manufacturing applications.

All rated specifications are based on 25 degree C ambient temperature, nominal input line, unity power factor and operation at 74 to 100% of voltage output range, unless otherwise specified.

Specifications subject to change without prior notice.

Table 1: ACP SERIES MODEL SELECTION

Model Number	Power Output		Output Current/Phase (Amps)		Weight. lbs (kgs)	Dimensions 19" (48.3 cm) Rack-mount chassis H" x D" (cm)	No. of chassis
	Rated	Maximum	135 V range	270 V range			
Single-phase output models							
ACP-250	250 VA	335 VA	2.5	1.3	40 (18.2)	5.25" x 22" (13.3 x 55.9)	1
ACP-750	750 VA	1000 VA	7.5	3.8	69 (31.3)	7.00" x 22" (17.8 x 55.9)	1
ACP-1500	1500 VA	2025 VA	15.0	7.5	126 (57.2)	14.00" x 22" (35.6 x 55.9)	2
ACP-3000	3000 VA	4050 VA	30.0	15.0	189 (85.8)	21.00" x 22" (53.3 x 55.9)	3
Three-phase output models							
ACP-3X100	300 VA	400VA	1.0	0.5	45 (20.4)	5.25" x 24" (13.3 x 60.9)	1
ACP-3X500 Note 1	1500 VA	2025 VA	5.0	2.5	153 (69.5)	14.00" x 22" (35.6 x 55.9)	2

1. Five chassis mounted in cabinet with casters, dimensions: 51.3"H x 32.7"D x 24.2"W (130.3 x 83.1 x 61.5 cm)
2. Designed to meet the requirements of IEC testing, includes Option 01 and 08/411… output impedance less than 10 milli-ohms
3. Requires an additional 7" (17.8 cm) chassis with Option 02

INPUT

Voltage:

ACP-250—ACP-1500 and ACP-3X100—ACP-3X500

Standard:115/230 VAC +/- 10%, 1-phase
Option 05:100/200 VAC +/- 10%, 1-phase

ACP-3000

Standard:120/208 VAC +/- 10%, 3-phase
Option 03:230/400 VAC +/- 10%, 3-phase
Option 04:240/415 VAC +/- 10%, 3-phase

Frequency: 48-72 Hz

PROTECTIVE CIRCUITS

Input: Fast-acting main circuit breaker
Overload: Electronic overload and short circuit protection, folds back the voltage and in instantaneously recovers when the over load is removed
Thermal: Internal temperature sensor prevents heat damage

ENVIRONMENTAL / CONNECTIONS

Operating Temp: 32° F to 131° F (0-55° C)
Humidity: 0-95% RH non-condensing
Input Connections: Barrier strip on rear
Output Connections: Barrier strip on rear
Remote Control: IEEE-488 connector

OUTPUT

Power: See Table 1
Voltage: 0-135, 0-270 VAC, or Autorange... Automatic range change at 135 VAC Switch selectable or IEEE-488 programmable
Option 06: 0-34, 0-135 VAC, or Autorange...
Note : *Current output on 0-34VAC range is 4 times the 0–135VAC range per phase up to maximum of 30 Amps per phase*
Frequency: 45-2500 Hz
Option 07: 45-10000 Hz
Current: See Table 1
Peak current: 200% of rated output current... Repetitive current required to charge a capacitor in a typical diode capacitor filter

Power Factor: 100% of rated output into any power factor load … (unity to zero, leading or lagging)
Distortion: Less then 1.0% THD at rated power output into linear load, up to 2500 Hz
Less then 2.0%THD at rated power output into linear load, up to 10000 Hz
Max. Power Output: Obtainable at 100% of either output voltage range
Max. Output Current : Up to 120% of rated current output for a maximum of one-half hour
Line Regulation: +/- 0.1% for +/- 10% line change
Load Regulation: +/- 0.5% no load to full load
Amplifier response: 50 microseconds to 90% of programmed value

Table 2: SETTING AND MEASUREMENT SPECIFICATIONS (Measured at output sense terminals)

Parameters	Setting / Programming		Measurement	
	Resolution	Accuracy	Resolution	Accuracy (+/- 1 LSD)
Voltage	0.1 V	+/- 0.2% of max. Volts +/- 0.4% of max. Volts (Opt.02)	0.1 V	+/- 0.2% of max. Volts +/- 0.3% of max. Volts (Opt.02)
Frequency	0.1 Hz	+/- 0.005% of setting	< 1KHz: 0.1 Hz > 1KHz: 1.0 Hz, 0.1 Hz (Opt.02)	+/- 0.005% of reading
Current	NA	NA	≤ 2.5A*: 0.001 Amps ≤ 25A*: 0.01 Amps > 25A*: 0.1 Amps	+/- 0.5% of max. output current +/- 0.7% of max. output current (Opt. 02)
Current monitor	Same as current measurement resolution	+/- 2.0% of max. output current of low range...See Note 2	NA	NA
Current Limit (Opt. 02)	Same as current measurement resolution	+/- 0.7% of max. output current	NA	NA
Phase angle Ref. phase A	1.0 degree	+/- 1.0 degree	NA	NA
True Power (Opt. 02)	NA	NA	< 1000 VA/ Ø*: 0.001 > 1000 VA/ Ø*: 0.01 * at rated output current	+/- 2% of power output
Power Factor (Opt. 02)	NA	NA	0.001	+/- 0.03 from 10 to 100% of max. Volts and 10 to 120% of output current of low range

STANDARD FEATURES

Remote Interface: IEEE-488 (GPIB) Listener/ Talker controls all operating parameters and reports measured values in addition to operating status.

Self Test: A user requested test which compares published specs with actual output values… out of tolerance conditions are indicated via the front panel display and remote Interface

Internal Fault monitor:
Examines operating conditions and parameters on a continuous basis.

Parameters include:

- Input line voltage
- Internal cabinet temperature
- Output characteristics in relation to specifications. Faults are reported via the front panel display and Remote Interface

High Rate Programming:
Allows host computer to program rapid voltage and frequency deviations of less than 200 microseconds per step

Programming: Independent or simultaneous programming of output voltage, current monitor, current limit and independent phase measurements on three-phase units

CONTROLS/INDICATORS

Power On/Off: Circuit breaker and indicator

Display: 40 character, alphanumeric, blue vacuum fluorescent display

Displayed Information:
Any combination of 3 (4 on 3 phase models) of the following measurements are available:

- Frequency
- Voltage (by phase)
- Current (by phase)
- Phase Angle on 3 phase models

Programming Information Internal self test / fault monitor error status

Option 02:

- True Power (by phase)
- Power Factor (by phase)

Data entry: Alphanumeric Keypad

Output On/Off: Toggle switch

Range Select: 3 position rotary switch for selecting output range. There is a 200-300 msec output dead-time when the voltage transitions through the range boundary in auto-range setting.

Option 01: Event Programming

Includes all of the standard features and features designed to simulate events such as line dropouts, voltage transients, surges, etc.

Number of Events Four

Voltage

Changes / Event: Up to three
Programming: 0-100% of selected voltage range

Timing

Duration: 0 to 6553.5 milliseconds
Resolution: 0.1 millisecond
Accuracy: 0.1 millisecond except at 0 duration, then 0.2 milliseconds

Programmable Transition Time

Allows user to specify a point in time when programmed voltage changes occur after zero crossing

Delay

Range: 0-25.5 milliseconds
Resolution: 0.1 milliseconds
Accuracy: +/- 0.1 milliseconds
Repeatability: +/- 0.05 milliseconds
Accuracy of zero crossing trigger: **+/-** 0.1 milliseconds

External Frequency Sync Input

Allows output to be frequency synchronized to external source

Input: 2-10 V peak square wave (50% duty cycle)
Phase Lock: +/- 5 degrees referenced to zero crossing of output

Frequency Sync Output

5.1 volt square wave synchronized to "A" phase

Voltage/Frequency Transition Trigger Output

Five volt pulse of approximately 20 microseconds duration generated at the time a programmed voltage or frequency change takes place

Output Inhibit

Allows output to be disabled remotely by a high level TTL input

Option 02: True RMS measurements

Includes all standard features, Option 01 features and adds true RMS responding measurement of voltage, current, true power and power factor, plus a user programmable output current limit

The current limit maintains current at user programmed value by automatically adjusting output voltage amplitude...replaces adjustable current monitor

ADDITIONAL OPTIONS:

08: Expanded event programming (requires Option 01) Enhanced programming capabilities to include:

- Frequency transients
- Phase angle transients
- 16 Events with arbitrary length and command order
- Precision delays
- Greater then 7 Kilobytes of battery backed-up storage RAM
- Timed linear ramps of amplitude, frequency & phase angles

08/160C: Preprogrammed events for RTCA/DO-160C testing
08/411: Preprogrammed events for CEI/IEC 61000-4-1 testing
08/704D: Preprogrammed events for MIL-STD-704D testing
09: Bi-directional RS-232 Interface
10: Provides the ability to incorporate three user defined waveforms in addition to the standard sine wave.
13: Allows user to parallel phases on three phase models
CE: Available with CE mark

Proudly made in the U.S.A.

www.behlman.com

ORBIT POWER GROUP
Behlman Electronics

Headquarters:
80 Cabot Court, Hauppauge, NY 11788
631 435-0410 800 874-6727
Fax: 631 951-4341

2363 Teller Road, Suite 108
Newbury Park, CA 91320
805 375-7046 800 456-2006
Fax: 805 498-2147

sales@behlman.com