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

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.

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TABLE 1: ACP SERIES MODEL SELECTION

Model Number	Power Output Rated	Maximum	Output Current/Phase (AmpS) 135 V range	270 V range	Weight. lbs (kgs)	Dimensions 19" (48.3 cm) Rack-mount chassis H" x D" (cm)	No. of chassis
Single-phase output models							
ACM-250	250 VA	335 VA	2.5	1.3	40 (18.2)	5.25"x 22" (13.3 x 55.9)	1
ACM-750	750 VA	1.000 VA	7.5	3.8	69 (31.3)	7.00"x 22" (17.8 x 55.9)	1
ACM-1.500	1.500 VA	2.025 VA	15.0	7.5	126 (57.2)	14.00" x 22" (35.6 x 55.9)	2
ACM-3.000	3.000 VA	4.050 VA	30.0	15.0	189 (85.8)	21.00" x 22" (53.3 x 55.9)	3
Three-phase output models							
ACM-3X100	300 VA	400 VA	1.0	0.5	45 (20.4)	5.25" x 24" (13.3 x 60.9)	1
ACM-3X500	1.500 VA	2.025 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

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TABLE 2: SETTING AND MEASUREMENT SPECIFICATIONS

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.

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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

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