Programmable Power Supply HM8142

- **Performance: 2 x 0 to 30V / 1A, 5V / 2A Fixed**
- **3 Independent, Electrically Isolated Outputs**
- **IEEE-488 / RS-232 Interface Optional**
- **Programmable Load (Modulating Input)**
- **Arbitrary Waveform Function (up to 512 Points)**
- **Constant Current Source 1mA Resolution**

Low Frequency Power Curves "Tailor-made"

The programmable Power Supply **HM8142** offers a number of features not normally found in comparable instruments of its kind. In addition to its function as a regulated triple output supply, it can be utilized as an **electronic sink/load** and/or as an **arbitrary waveform generator**.

The **HM8142** is a linear power supply that offers low ripple and noise and other advantages compared to switching power supplies commonly available. The two variable outputs are electrically isolated and independently **variable**, with a maximum output voltage of **30V** up to **1A**. Either both outputs can be combined in a **series** or a **parallel** connected array to either increase the current or voltage capability. The third output provides **5V fixed** at a maximum output current of **2A**.

Tracking operation is available with identical value either of the two variables or by retaining a selectable offset for current limit and voltage. The **sense** operation allows for compensation of voltage drop on the leads between the supply and connected load.
An **Arbitrary Waveform** function adds the capability to generate a time varying waveform. The waveform is generated from a table of **512 pairs of voltage and time duration parameters**. These are stored in the non volatile memory of the instrument and are entered via remote control interface. The waveforms can be programmed to be either single shot output, repetitive or continuous duration. The programmable output voltage can be **modulated** by the external control inputs. The linear output stages provide a low noise output and a frequency range extending to 8kHz.

The front panel of the instrument has been designed for fast and easy operation, providing **four displays** for independent voltage and current readings with a maximum resolution of **10mV** or **1mA**, respectively. The parameters are set by a rotary dial and programmable or retrievable via field installable a (optional) **IEEE-488** or **RS-232** interface.

The interface can also be used to access the separate built in measuring circuits for the read back of voltage and current actually present at the output terminals with an accuracy of 12 bits.

All these features considered, the **HM8142** is ideally suited for innumerable applications in laboratory, service and educational use or automated test systems, where accurate and reliable results are a necessary.

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Specifications HM 8142

(Ref. Temp.: 23°C ± 2°C)

Output Voltages:	Dual 0 to 30V and single fixed 5V
Output Currents:	Dual 0 to 1A and single fixed 2A
Resolution:	Voltage 10mV, Current 1mA
Operating Modes:	Constant Voltage (CV) Constant Current (CC)
Output Impedance:	<5mΩ II 0.1µF + 1.5mH (V source)
Ripple: (V):	(Specs. below are at max. load) <2mV$_{RMS}$ (10Hz to 100kHz) 1A / 2A <3mV$_{RMS}$ (10Hz to 1MHz) 1A / 2A
(A):	<60µA$_{RMS}$ (1A / 2A)
Bandwidth (-3dB):	>8kHz
Slew Rate (dV/dt):	typ. 0.7V/µs nom.
Rise Time:	50µs nom.
Recovery Time:	40µs nom.
Current Limit Response:	200µs (2ms at I$_{OUT}$ >3A)
Stability: (dV/dϑ):	<300ppm/°C+250µV/°C
(dI/dϑ):	<300ppm/°C+25µA/°C
Modulation Inputs:	0 to 3V(±1V); Ri = 10kΩ
Accuracy: (setting):	0.2% of value ± 3 digit
(measurement):	0.2% of value ± 1 digit
Load Regulation:	0.03% (at V$_{OUT}$ = 15V; ΔI = 1A)
Line Regulation:	<1mV / V
Compensation of line resistance (sense):	up to 1Ω max.
Setting Time:	<5ms (manually); <10ms (IEEE)

Arbitrary Function: (only for left output voltage)

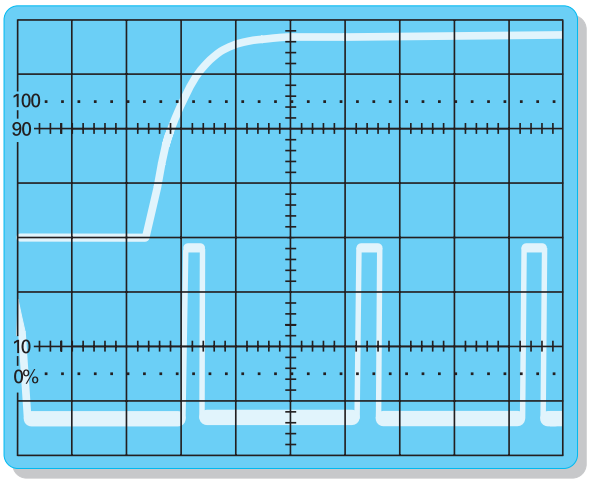
Points:	512 (voltage and time parameters)
Min. Time interval:	100µs
Max. Time interval:	50 seconds
Step width:	100µs - 50s (16 values) 1-2-5 seq.
Repetition of ARB. Function:	1-255 times or continuous
Vertical Resolution:	10mV

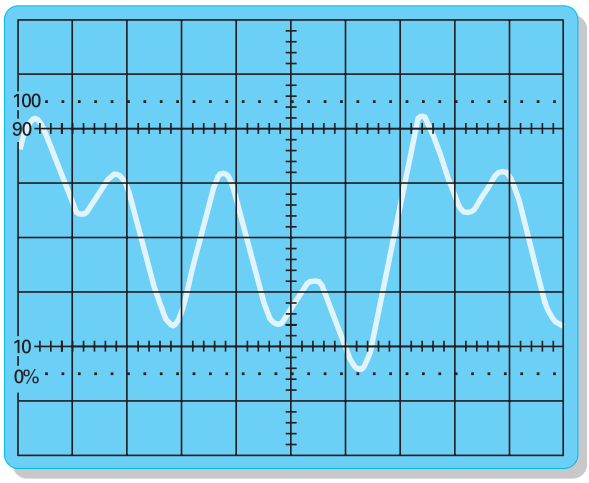
Sink-mode

Operating Mode:	constant current
Max. Power:	30W (max. 1A) per output
Output Impedance:	>100kΩ + 1µF (current source)
Programming Accuracy:	0.2% of value ± 3 digit
Resolution:	1mA
Meas. Accuracy:	0.2% of value ± 1 digit
IEEE Bus Equipment:	Talker and Listener SH1, AH1, RL1, DC1, DT0 and SR0

General

Dimensions:	**W** 285, **H** 75, **D** 365 mm
Weight:	approx. 10kg
Power Consumption:	approx. 160W
Operating Conditions:	0°C to +40°C
Max. Rel. Humidity:	10%-90% no condensation
Supply Voltage:	115/230V ± 10%; 50/60Hz
Safety:	Class I, according to IEC 1010-1





The high slew rate of 0.7V/µs and the minimum pulse width of 100µs in the arbitrary mode allow simulation of complex dynamic load conditions. Using external modulation, almost any waveform can be obtained in the frequency range up to 8kHz. This allows the HM8142 to be used as a power amplifier or high power function generator. The linear output stage ensures low distortion over the entire operating range. Arbitrary waveforms can easily be designed by simply entering voltage and time parameters by means of the IEEE-488 or RS-232 interfaces.

Accessories supplied: Line cord, Operating Manual

Optional Accessories: **HZ42:** 19" rack-mount-kit; **HZ10:** Test lead with banana plug; **HZ72-S/L:** Double shielded IEEE-bus cable, 1m/1.5m; **HO88-2:** IEEE-488 Interface; **HO89-2:** RS-232 Interface.

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