



R&S®HMP POWER SUPPLY SERIES

versus Keithley 2231A-30-3



Key features

R&S®HMP power supplies are primarily designed for industrial use – for production environments as well as for development labs. These rugged instruments offer high efficiency with low residual ripple and many protection functions.

Four models:

- 2 or 3 channels with 188 W total output power
- 3 or 4 channels with 384 W total output power
- ▶ Galvanically isolated, floating outputs with overload and short-circuit protection
- ▶ Remote sensing eliminates voltage drops on the load leads
- ▶ Comfortable programming features and 19" rack adapters ensure perfect integration in production environments.

Your benefit	Features
Flexible configuration for any specific application; including sense lines for each channel to compensate voltage drops over the supply leads	Up to 4 channels in a single compact box
Serial operation with up to 128 V or parallel operation with up to 40 A	Channels galvanically isolated and floating
To safeguard instrument and DUT. The FuseLink function switches off all selected channels when one reaches its current limit	Overcurrent protection (electronic fuse) and overvoltage protection
To vary voltage or current during a test sequence; can be programmed manually via the user interface or via the external interfaces	Easily programmable time/voltage or time/current curves

Parameter	R&S®HMP2000 series	R&S®HMP4000 series	Keithley 2231A-30-3
Number of output channels	2/3 (all equal)	3/4 (all equal)	2 plus 1 auxiliary channel
Total output power	max. 188 W	max. 384 W	195 W
Max. output power per channel	80 W (HMP2020: 160 W)	160 W	90 W / 90 W / 15 W
Max. output voltage	32 V (all channels)	32 V (all channels)	30 V / 30 V / 5 V
Maximum current per channel	5 A (HMP2020: 10 A)	10 A	3 A
Max. voltage in serial operation	64 V / 96 V	96 V / 128 V	60 V
Max. current in parallel operation	15 A	30 A / 40 A	6 A
Voltage ripple (20 Hz to 20 MHz)	typ. 1.5 mV (RMS)		< 1 mV (RMS)
Current ripple (20 Hz to 20 MHz)	< 1 mA (RMS)		< 6 mA (RMS)
Load regulation voltage	< 0.01 % + 2 mV		< 0.02 % + 4 mV
Load regulation current	< 0.01 % + 250 µA		< 0.2 % + 3 mA
Voltage readback accuracy	< 0.05 % + 5 mV		< 0.06 % + 20 mV
Current readback accuracy	< 0.1 % + 2 mA		< 0.2 % + 10 mA
Sense function	yes, for each channel		no
Remote control interfaces	RS-232, USB, LAN, GPIB		DB9, USB
Protection functions	OVP, OCP, FuseLink, OTP		OVP, OCP
Arbitrary function	yes		no
Front panel connections	4 mm safety sockets		4 mm sockets
Rear panel connections	yes		no
Dimensions W x H x D [mm]	285 x 95 x 405	285 x 136 x 405	215 x 88 x 355
Weight	7.8 kg / 8.0 kg	12.4 kg / 12.8 kg	7.1 kg



For more information, visit
www.rohde-schwarz.com/product/HMP

R&S®HMP series and Keithley 2200-30 family

R&S®HMP series:

- ▶ 4 instruments, 188 W or 384 W total output power
- ▶ 32 V max. output voltage (all models)



GW INSTEK GPS-2303/3303/4303:

- ▶ 3 instruments
- ▶ 2220-30-1: 90 W, 2230-30-1: 120 W total output power (not considered here)
- ▶ 2231-30-3: 195 W total output power
- ▶ 5 V and 30 V channels

Connections on front and rear panels



R&S only:

Connections for all channels – including sense lines – are also provided on the rear panel (Keithley 2231A-30-3 does not provide sense functionality)

R&S®HMP series: all channels are equal

R&S®HMP4030 and Keithley 2231A-30-3, both instruments have 3 channels, but:



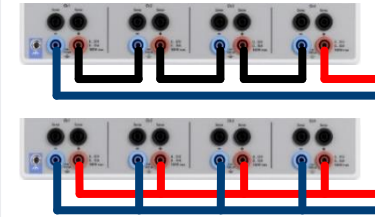
R&S®HMP4030:

- All channels provide
- ▶ 160 W max. output power
 - ▶ 32 V max. output voltage
 - ▶ 10 A max. output current

Keithley 2231A-30-3:

- Channels are different
- ▶ Ch 1/2: 90 W, ch 3: 15 W
 - ▶ Ch 1/2: 30 V, ch 3: 5 V
 - ▶ 3 A max. output current per channel

Parallel and serial operation



max. 128 V

max. 40 A

R&S®HMP series:

All output channels can be configured in series to achieve higher output voltage, or in parallel for higher output current



Keithley 2231A-30-3:

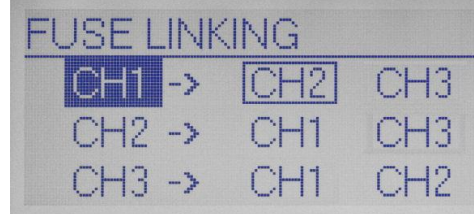
- ▶ Only channels 1 and 2 can be combined in series or in parallel (max. 60 V or max. 6 A)
- ▶ Like R&S®HMP, external cables are required to connect the outputs, however the instrument displays the total output voltage/current

Protection functions to safeguard instrument and DUT

R&S and Keithley offer overvoltage protection and overcurrent protection (electronic fuse)

R&S additionally provides over-temperature protection

R&S only:



Electronic fuses can be linked logically in any combination.

Example shown in picture:

- ▶ If channel 1 exceeds the maximum current level, then channel 1 and the linked channel 2 will be switched off
- ▶ Channel 3 is not involved because fuse 3 is not linked