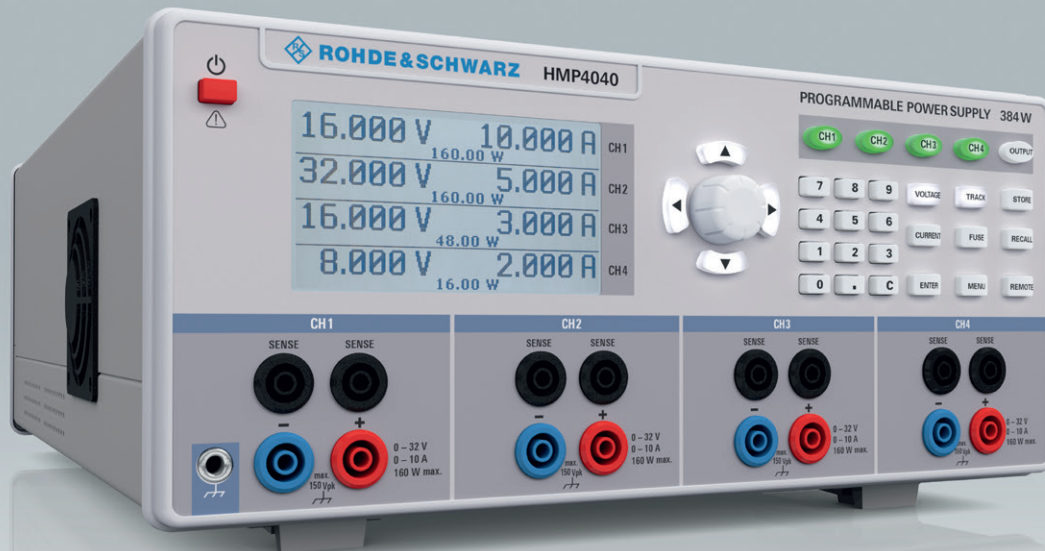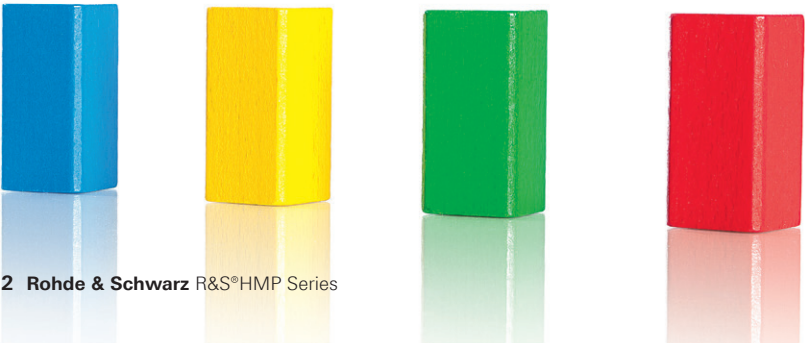# Programmable Power Supplies
188 W | 384 W
R&S®HMP Series

The R&S®HMP Series

Key facts

- Low residual ripple due to linear post-regulators
- Real-time voltage, current and watt values
- High setting and read-back resolution: 1 mV and 0.1 / 0.2 / 1.0 A (current output and model dependent)
- FuseLink (electronic fuse) freely combinable for all channels
- FuseDelay tunable up to 250 ms
- EasyArb function directly programmable at the device
- PC software (free of charge) to easily generate user-defined waveforms
- Independently adjustable over-voltage protection (OVP) for each channel
- Advanced parallel- and serial operation through V/I tracking
- Front connectors: 4 mm safety sockets
- Rear connectors for all channels including SENSE
- RS-232/USB dual interface, remote control via SCPI based commands

RS-232 | USB | optional TCP/IP | optional IEEE-488 | Lab-VIEW | Software | Printed Manual

|	R&S®HMP4040	R&S®HMP4030	R&S®HMP2030	R&S®HMP2020
Output voltage per channel	0 V to 32 V			
Output current per channel	0 A to 10 A		0 A to 5 A	1 x 0 A to 10 A 1 x 0 A to 5 A
Maximum output power per channel	160 W		80 W	1 x 160 W 1 x 80 W
Total output power	384 W		188 W	
Channels	4	3	3	2

2, 3 or 4 Channels

The four power supply units R&S®HMP2020, R&S®HMP2030, R&S®HMP4030 and R&S®HMP4040 offer you the choice between 2, 3 and 4 channels with a total operating performance of 188 or 384 watt. Depending on the model, you have up to 80 or 160 watt available per channel.

In addition to the 80 watt channel the R&S®HMP2020 model also offers you a 160 watt channel.

In the R&S®HMP series, the measured output voltage and current as well as the resulting output power are displayed in real time.
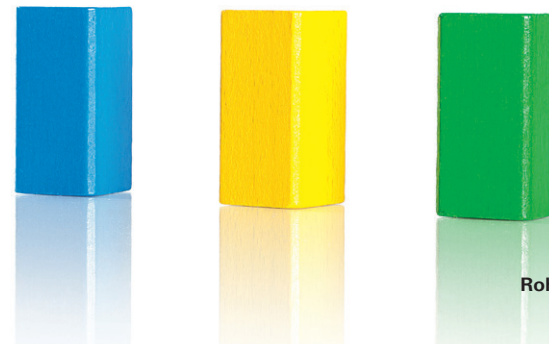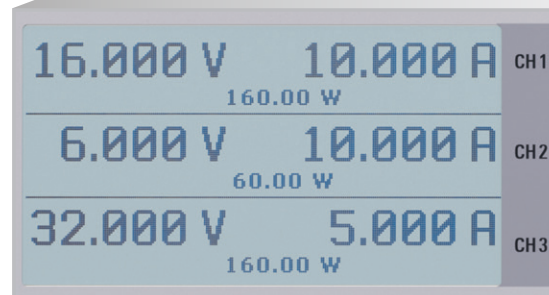
Easy to operate. Easy to explain.

Aside from electricity our power supply units in the R&S®HMP series provide many useful functions for practical use. For example, the output power is displayed in real time and a safety shutdown is available for any combination of channels.
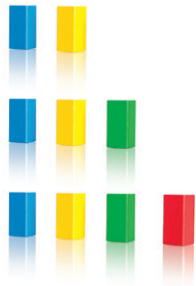
2, 3 and 4 channels
Depending on the application and your needs you can select our power supply units with 2, 3, or 4 channels.

Parallel operation mode
In the parallel operation mode you can bundle the channels to achieve higher currents. The integrated power management function also ensures an intelligent power distribution over each channel in this operation mode.

Serial operation mode
In the serial operation mode you can combine the channels for a maximum of up to 120 volt.
The V/I tracking function of the instrument is also available in this operation mode.

EasyArb
EasyArb is the time/current flow or time/voltage curve that is freely programmable by channel. Our instruments allow you to program the process either via remote software or directly on the instrument. Several different EasyArb curves can run at the same time - independently programmable.

FuseLink
Overcurrent or voltage surge protection can be set for each channel individually. In addition instruments of the R&S®HMP series also allow any combination of the overcurrent protection with other channels. For instance, a channel with a connected fan can continue to run while all other channels have been switched off.
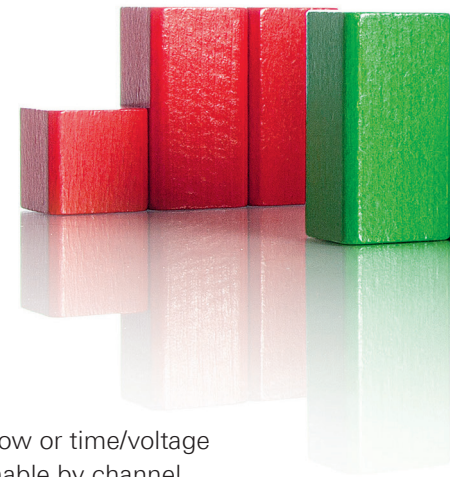
Industrial production environment

Power supply units in industrial production environments are often found in 19" racks. The R&S®HMP series instruments are very suitable for this use as all models can be integrated into 19" racks with the rack mounting kits R&S®HZ42 (for R&S®HMP20x0 instruments) and R&S®HZP91 (for R&S®HMP40x0 instruments). Additionally, all front panel connectors, including SENSE lines, are also located at the back panel of the instrument. And last but not least, the existing USB and serial connector card (R&S®HO720) in all R&S®HMP models can alternatively be replaced by an Ethernet/USB (R&S®HO732) or GPIB card (R&S®HO740) for remote control capability purposes.
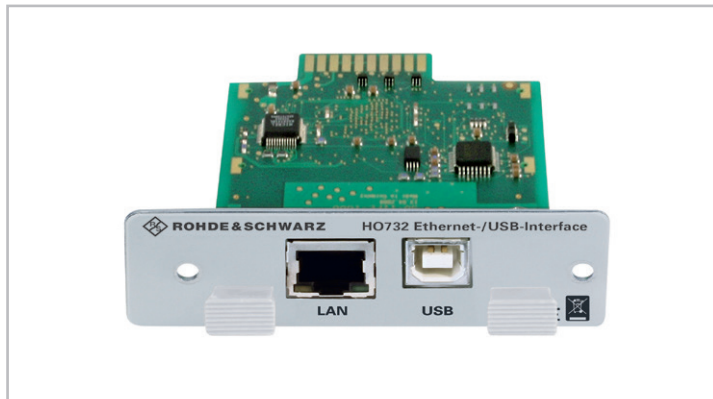
Rear connectors for all channels including SENSE
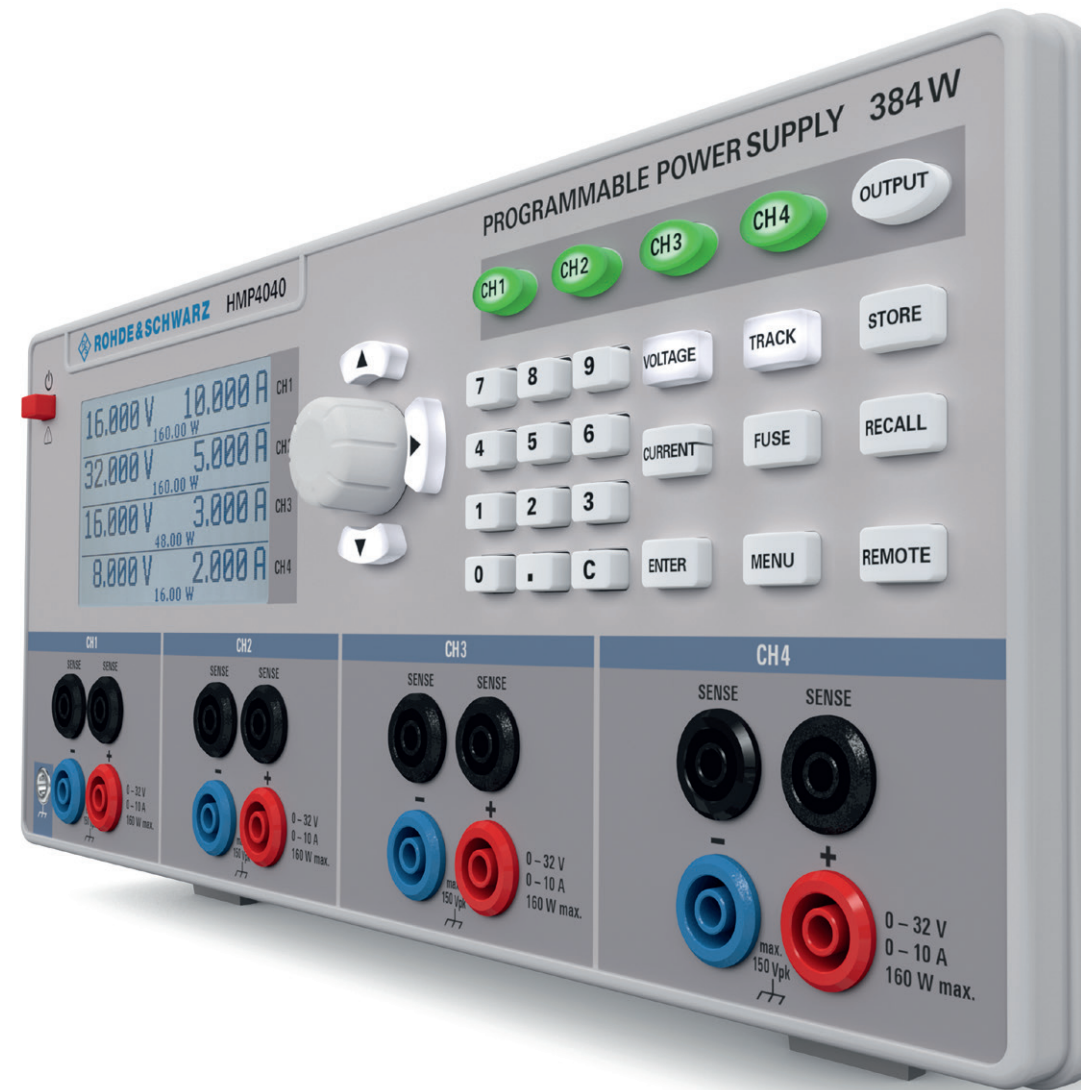
Recommended Accessories
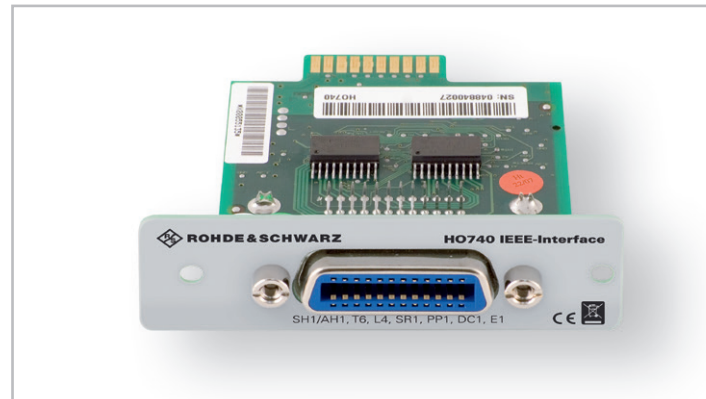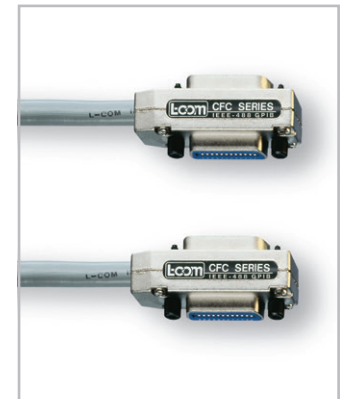
R&S®HO732
Ethernet/USB dual interface card

R&S®HO740
Interface IEEE-488 (GPIB), galvanically isolated

R&S®HZ72
IEEE-488 (GPIB), cable 2 m

R&S®HZ42
2 RU 19" rackmount kit

R&S®HZP91
4 RU 19" rackmount kit

Programmable power supplies 2/3/4 channels R&S®HMP2020 / R&S®HMP2030 R&S®HMP4030 / R&S®HMP4040

Outputs

Advanced parallel and series operation: simultaneous switching on/off of active channels via "output" button, common voltage- and current control using tracking mode (individual channel linking), individual mapping of channels which shall be affected by FuseLink overcurrent protection (switch-off), all channels galvanically isolated from each other and the protective earth

R&S®HMP4040	4 x 0V to 32V / 0A to 10A
R&S®HMP4030	3 x 0V to 32V / 0A to 10A
R&S®HMP2030	3 x 0V to 32V / 0A to 5A
R&S®HMP2020	1 x 0V to 32V / 0A to 10A
	1 x 0V to 32V / 0A to 5A
Output terminals	4mm safety sockets frontside, screw-type terminal rear side (4 units per channel)
Output power	188W max.
R&S®HMP4030/HMP4040	384W max.
R&S®HMP2020/HMP2030	188W max.
Compensation of lead resistances (SENSE)	1V typ.
Overvoltage/overcurrent protection (OVP/OCP)	Adjustable for each channel
Electronic fuse	Adjustable for each channel, may be combined using FuseLink
Response time	<10ms

32V channels

Output values		
R&S®HMP4040		4 x 0V to 32V / 0A to 10A (5A at 32V, 160W max.)
R&S®HMP4030		3 x 0V to 32V / 0A to 10A (5A at 32V, 160W max.)
R&S®HMP2030		3 x 0V to 32V / 0A to 5A (2.5A at 32V, 80W max.)
R&S®HMP2020	10A	1 x 0V to 32V / 0A to 10A (5A at 32V, 160W max.)
	5A	1 x 0V to 32V / 0A to 5A (2.5A at 32V, 80W max
Resolution		
Voltage		1mV
Current		
R&S®HMP4030/HMP4040		<1A: 0.2mA; ≥1A: 1mA
R&S®HMP2030		<1A: 0.1mA; ≥1A: 1mA

R&S®HMP2020	10A	<1A: 0.2mA; ≥1A: 1mA	
	5A	<1A: 0,1mA; ≥1A: 1mA	
Setting accuracy ± (% of output + offset)			
Voltage		<0.05% + 5mV	
Current		<0.1% + 5mA	
Measurement accuracy ± (% of output + offset)			
Voltage		<0.05% + 5mV	
Current		0.1% + 2mA	
Residual ripple		3Hz to 100kHz	3Hz to 20MHz
Voltage		<150µV$_{rms}$ typ. <250µV$_{rms}$	1,5mV$_{rms}$ typ.
Current		<1mA$_{rms}$	
Residual deviation after a load change (10 to 90%) ± (% of output + offset)			
Voltage		<0.01% + 2mV	
Current		<0.01% + 250µA	
Residual deviation after a line voltage change (±10%) ± (% of output + offset)			
Voltage		<0.01% + 2mV	
Current		<0.01% + 250µA	
Recovery time after a load step from 10 to 90% for return within a ±10mV window		<1ms	

Arbitrary function EasyArb

Parameters of points	Voltage, current, time
Number of points	128
Dwell time	10ms to 60s
Repetition rate	Continuous or burst mode with 1 to 255 repetitions
Trigger	Manually via keyboard or interface

Maximum ratings

Reverse voltage	33V max.
Reverse polarized voltage	0.4V max.
Max. permitted current in case of reverse voltage	5A max.
Voltage to earth	150V max.

Miscellaneous

Temperature coefficient/°C ± (% of output + offset)	23°C (-3°C / +7°C)
Voltage	0.01% + 2mV
Current	0.02% + 3mA

Display	
R&S®HMP4030/HMP4040	240 x 128 pixel LCD (full graphical)
R&S®HMP2020/HMP2030	240 x 64 pixel LCD (full graphical)
Memory	Non volatile memory for 3 arbitrary functions and 10 device settings
Interface	Dual interface USB/RS-232 (R&S®HO720)
Processing time	<50ms
Protection class	Safety class I (EN61010-1)
Power supply	115/230V±10%; 50 to 60Hz, CAT II
Mains fuses	
R&S®HMP4030/HMP4040	115V: 2 x 10A slow blow 5 x 20mm 230V: 2 x 5A slow blow 5 x 20mm
R&S®HMP2020/HMP2030	115V: 2 x 6A slow blow 5 x 20mm 230V: 2 x 3.15A slow blow 5 x 20mm
Power consumption	
R&S®HMP4030/HMP4040	550VA max.
R&S®HMP2020/HMP2030	350VA max.
Operating temperature	+5°C to +40°C
Storage temperature	-20°C to +70°C
Rel. humidity	5% to 80% (non condensing)
Dimensions (W x H x D)	
R&S®HMP4030/HMP4040	285 x 125 x 365mm
R&S®HMP2020/HMP2030	285 x 75 x 365mm
Weight	
R&S®HMP4030/HMP4040	approx. 10kg
R&S®HMP2020/HMP2030	8.5kg

Accessories included:
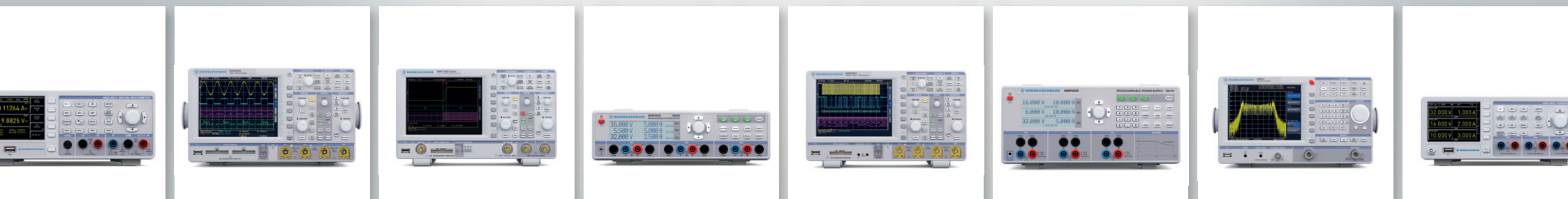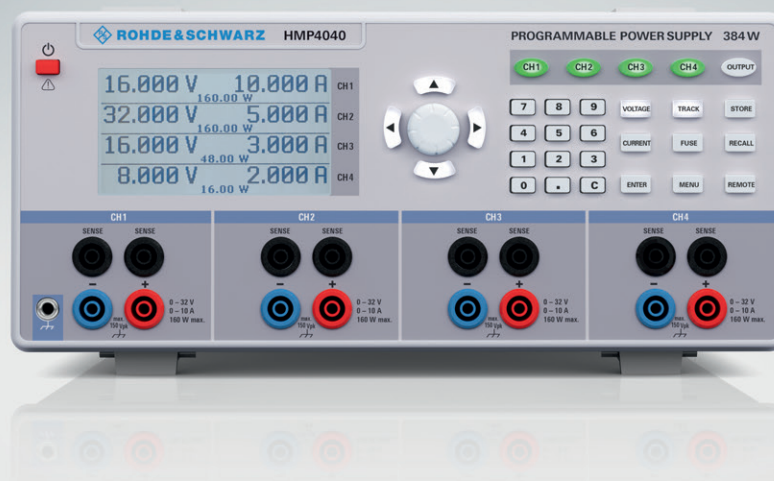Line cord, operating manual

Recommended accessories:

R&S®HO732	Dual interface ethernet/USB
R&S®HO740	Interface IEEE-488 (GPIB), galvanically isolated
R&S®HZ10S	5 x silicone test lead (measurement connection in black)
R&S®HZ10R	5 x silicone test lead (measurement connection in red)
R&S®HZ10B	5 x silicone test lead (measurement connection in blue)
R&S®HZ42	2RU 19" rackmount kit
R&S®HZ72	GPIB-cable 2m
R&S®HZP91	19" rackmount kit 4RU