GOSSEN METRAWATT

SSP-KONSTANTER, Series SSP 120 / 240 / 320
Laboratory Power Supplies

3-348-843-03
6/5.15

- Very short response times thanks to BET technology (bidirectional energy transformation)
- Auto-ranging output with 120 W, 240 W or 320 W
- Output power is doubled in short-time operating range
- Minimum residual ripple
- Very good dynamic control parameters
- Addressable RS 232 interface / analog interface as standard equipment
- Optional IEEE 488 interface
- Integrated sequence function for the generation of automatic voltage and current sequences
- Calibration procedure for menu-driven balancing
- Output ON / OFF function
- Output terminals at front and rear panels
- Master-slave operation for parallel and series connection
- Protection against overvoltage, overcurrent and excessive temperature
- Minimal power loss

CE

Description

The SSP KONSTANTER series (single output system power supplies) includes programmable, voltage and current regulated DC power supplies with 120 W, 240 W or 320 W of output power.

They include a µP-controlled operating system and are furnished with an addressable RS 232C serial interface as standard equipment. Up to 30 instruments can thus be controlled from a single PC port.

An IEEE 488 interface can be optionally integrated. Both PC interfaces allow for complete control of all instrument functions, and support the querying of measurement values, set-up parameters and instrument conditions.

Manual adjustment of voltage and current is accomplished with two rotary pulse generators with adjustable resolution.

Two 4-place multifunction displays allow for the accurate read-out of measurement values (V, A, W), as well as menu-driven parameter adjustments for a multitude of additional functions such as setting range limitation, overvoltage protection, delayed overcurrent shut-down or programmable digital signal inputs and outputs.

Up to 243 settings can be stored to memory and can be recalled either individually or sequentially, e.g. for the generation of specific current or voltage sequences. The advanced circuit technology is capable of essentially load-independent response times of less than 1 ms.

The output parameters can thus be superimposed with AC signals with values up into the kHz range with the analog interface which is furnished as standard equipment.

The measuring function is equipped with an extreme value memory, limit monitoring signals and a hold function.

Applications

Electrical and electronic devices may be subjected to substantial fluctuations from the power supply depending upon where they are used, as well as ambient conditions. This is especially true where stabilization and back-up systems are not used.

A typical example is represented by automotive electrical systems during operation of the starter motor.

It is thus imperative that R&D, production and testing departments assure that electrical equipment is capable of fulfilling all required functions at any point in time under conditions of this sort.

GOSSEN METRAWATT provides you with support in fulfilling these objectives with the SSP KONSTANTER series SSP 120 / 240 / 320.

SSP-KONSTANTERs are capable of high rates of throughput, especially where automated test systems for routine testing are concerned.

The short response time assures the most accurate possible replication of quickly changing voltage or current characteristics.

This allows for easy testing and simulation of the performance of load components dependent upon dynamic supply voltage.

The integrated calibration procedure and the included calibration report make the SSP KONSTANTER the ideal solution for use in ISO 9000 certified production facilities and test laboratories.

SSP-KONSTANTER, Series SSP 120 / 240 / 320
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Adjustable Functions

- Voltage and current setpoint values
- Voltage and current limit values (softlimits)
- Output ON and OFF
- Overvoltage protection – threshold
- Overcurrent protection (limiting with/without shut-down)
- Delay time for overcurrent shut-down
- Power-on condition
- Reset instrument parameters
- Save instrument parameter settings
- Individual or sequential recall of instrument parameter settings
- Sequence function
- Function selection for trigger input
- Function selection for digital control outputs
- Operating parameters for measuring functions (storage of extreme values, limit value monitoring, display resolution)
- Calibration procedure
- Self-test trigger
- Operating parameters for PC interfaces (device address, SRQ masks, data rate etc.)

Query Functions

- Momentary voltage, current and power measurement values
- Minimum and maximum voltage and current measurement values
- Current instrument parameter settings
- Current operating condition (control type, excessive temperature, busy)
- Events (power failure, excessive temperature, overvoltage, overload, programming error)
- Memory contents
- Device identification
- Calibration date

Protection and Additional Functions

- Sensor terminals equipped with pole reversal protection and automatic activation (auto-sensing)
- Control panel operating elements can be disabled
- Overvoltage-protected outputs
- Pole reversal protection at outputs (Sense line)
- Protection against excessive temperature
- Parameter settings memory protected with backup battery
- Master-slave link
- Inrush current limiting
- Temperature controlled fan

Auto-Sensing

Switch-over to sense mode (remote sensing) is possible to compensate the voltage drop in the load conductors.

If the Sense terminals are connected to the appropriate output terminals, remote sensing is automatically activated.

Max. compensatable voltage drop: 1 V / load conductor

Control Panel Disabling

The operating elements can be protected against unauthorized operation by pressing a key, with a command from the PC or with a signal to the trigger input.

Output Activation and Shut-Down

The power output can be switched on and off by pressing a key, with a command from the PC or with a signal to the trigger input (no electrical isolation).

Power-On Condition

Any of the following conditions can be selected for the instrument after mains power has been switched on:

- reset = default settings (0 V, 0 A, output inactive etc.)
- recall = latest settings (as before last disconnection from mains)
- standby = latest settings, except with inactive output

Overcurrent Protection

A selection can be made between one of the following output functions for the use of current control:

- OCP off = continuous current limiting (UI characteristic curve)
- OCP on = output is deactivated if current limiting duration exceeds DELAY time
  DELAY time: adjustable from 0.00 to 99.99 sec.

Trigger Selection

The floating trigger input can be set up to control any one of the following functions at the analog interface:

- output = switch the power output on and off
- local lock = disable the control panel
- recall = step by step recall of individual settings from memory
- sequence = start / stop the SEQUENCE function
- minmax = activate and deactivate storage of extreme values to memory
- off = has no effect on instrument settings, although status query is possible via PC interface

Storage of Extreme Measurement Values

The MINMAX function automatically acquires minimum and maximum voltage and current values as they occur, and saves them to memory.

Limit Value Monitoring

This function compares momentary voltage and/or current values with the adjustable limit values (HI, LO). If any of the limit values are violated, a message is read out to the PC interfaces or the digital control outputs at the analog interface.

Memory Function

The memory function allows for the storage and recall of instrument settings which are protected with a backup battery. The memory includes three storage areas:

- 10 memory locations for complete instrument settings
- 243 memory locations for the SEQUENCE function (voltage setpoint value USET, current setpoint value ISET, dwell time TSET, signal status SSET)
- 2 memory locations (HI, LO) for measuring function limit monitoring

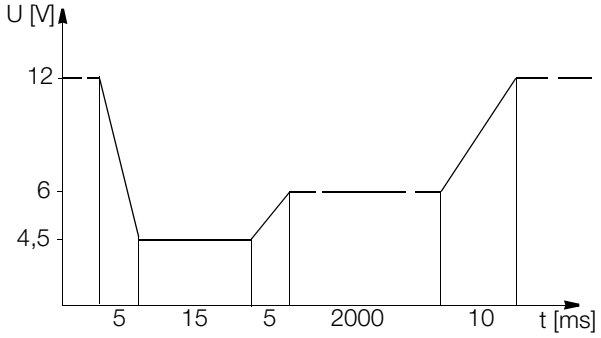
SEQUENCE Function

The SEQUENCE function allows for the automatic recall of settings which have been stored to the SEQUENCE memory.

The SEQUENCE function includes the following parameters:

- START = memory location start address
- STOP = memory location stop address
- REPETITION = number of sequence repetitions (1 to 255, or 0 for continuous repetition)
- TSET = dwell time specific to the memory location (10 ms to 99.99 s)
- TDEF = dwell time independent of the memory location (10 ms to 99.99 s)
- Additional pause, abort, restart

Application Example:
Generation of a voltage sequence in accordance with DIN 40 839 (automotive electrical system voltage while starting the engine)



Comment:

Adherence to the voltage rise and drop times is only guaranteed in a restricted load resistance range.

Programmable Control Outputs

The analog interface is equipped with two digital control outputs for reading out status messages to external monitoring systems, for switching external components on and off or for the creation of links.

The status of the outputs can be directly defined, or can be set in accordance with the following instrument conditions:

- Output ON / OFF
- Voltage / current regulation
- Running / completed SEQUENCE function
- SSET signal status specific to the SEQUENCE step
- Measuring function limit monitoring

Calibration Procedure

The integrated calibration procedure allows for re-adjustment of setting tolerances and measuring accuracy without opening the instrument. Output parameters including voltage and current offset and upper range value, which are automatically adjusted one after the other and measured with an external precision multimeter, can be entered with the keypad or via the PC interface. The processor permanently stores these data for the correction of internal D-A and A-D converters.

Applicable Regulations and Standards

IEC 61010-1/EN 61010-1/ VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use
EN 60529 VDE 0470 Part 1	Test instruments and test methods Degrees of protection provided by enclosures (IP code)
DIN EN 61326 VDE 0843 Part 20	Electrical equipment for measurement, control and laboratory use – EMC requirements

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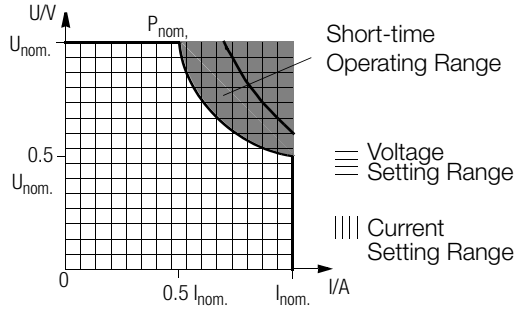
General Characteristics

Output

Termnals

Output	front panel, 2 x 4 mm safety jacks rear panel, 6-pin screw terminal block, plug-in version
Sensor	rear panel, in 6-pin screw terminal block, plug-in version
Analog interface	rear panel, 11-pin screw terminal block, plug-in version
Controller principle	Primary discontinuous-action controller with BET-technology
Operating modes	adjustable constant-voltage / constant-current source with automatic, sharp transition
Output isolation	Floating output with „safe electrical isolation“ against mains input and PC interfaces; max. admissible potential output – earth 120 V; Capacitance output – earth (housing) 60 nF

Output operating range



Short-time operating range:

If the instrument is operated in the short-time range for a lengthy period of time, the excessive temperature protection system may be tripped, thus deactivating the output.

Analog Interface

Connection	11-pin screw terminal block, plug-in version
Reference Potential	minus pole at output,floating TRG input

Connector Pin Assignments:

PIN	Designation	Function
1	SIG1 OUT	digital, programmable open collector outputs (max. 30 V– / 20 mA)
2	SIG2 OUT	
3	TRG IN –	digital, programmable control input (low: < 1.0 V, high: 4 ... 26 V), floating input
4	TRG IN +	
5	+15 V	auxiliary voltage: +15 V / max. 50 mA reference point connected to –output
6	AGND	
7	U_{set} –	analog, inverted voltage control input (0 ... –5 V corresponds to 0 ... $U_{nom.}$, Ri = 10 kΩ)
8	U_{set}+	analog voltage control input (0 ... +5 V corresponds to 0 ... $U_{nom.}$, Ri = 10 kΩ)
9	I_{set}+	analog current control input (0 ... +5 V corresponds to 0 ... $I_{nom.}$, Ri = 10 kΩ)
10	U-MON	output voltage measurement output (0 ... 10 V corresponds to 0 ... $U_{nom.}$, Ri = 9.8 kΩ
11	I-MON	output current measurement output (0 ... 10 V correspond to 0 ... $I_{nom.}$, Ri = 9.4 kΩ)

Addressable V.24/RS 232C Interface

Input	9-pin subminiature socket
Output	9-pin subminiature plug
Operating Mode	half-duplex, asynchronous, XON / XOFF
Data Rate	adjustable from 50 to 19,200 bits / sec.
Device Address	adjustable from 0 to 30, or UNL (un-list)
Max. Setting Rate	approx. 15 settings / sec.
Max. Measuring Rate	approx. 7 measurements / sec.

IEC 625/IEEE 488 Interface (optional)

Terminal	24-pin socket connector per IEC 625.1, IEEE488.1
Interface functions	SH1 SOURCE HANDSHAKE Handshake source function
	AH1 ACCEPTOR HANDSHAKE Handshake sink function
	T6 TALKER Talker function with series query and automatic final addressing, without secondary address and without speak-only mode
	L4 LISTENER Listener function with automatic final addressing, without secondary address and without listen-only mode
	SR1 SERVICE REQUEST Service request function
	RL1 REMOTE / LOCAL Switch-over function between remote/ manual operation with interlocking
	DC1 DEVICE CLEAR Reset function including Selected Device Clear
	PP1 PARALLEL POLL Parallel query function with remote setting
	DT1 DEVICE TRIGGER Trigger function
	C0 no controller function
	E1/2 Open collector driver
Codes / Formats	in compliance with IEEE 488.2
Device Address	adjustable from 0 to 30, or UNL (un-list)
Max. Setting Rate	approx. 40 settings / sec.
Max. Meas. Rate	approx. 15 measurements / sec.

Power Supply

Connectors	In: 10 A IEC inlet plug connector Out: 10 A IEC inlet socket connector, no switch, no fuse
Line Voltage	230 V~, +10 / –15%, 47 ... 63 Hz
Power Consumption	see Characteristic Values
Inrush Current	max. 50 A_s
Mains Fusing	1 ea. T 4 A / 250 V (6.3 x 32 mm, UL) internal: 1 ea. T 5 A / 250 V (5 x 20 mm)

Electrical Safety

Safety Class	I
Measuring Category:	II for mains inlet I for output and interfaces
Contamination Level	2
Earth Leakage Current	typ. 2,5 mA

Electrical Isolation	test voltage
Mains/Output – PE	1,35 kV~
Mains–Output	2,7 kV~ (type test: 3,7 kV~)

IEC 61010-1:1990 + A1:1992 / DIN EN 61010-1: 1993 / VDE 0411-1:1994

DIN VDE 0160:1988 + A1:1989 class W1

EN 60950:1992 / VDE 0805:1990

protection	IP 20 for housing and mains terminals, output and analog interface; IP 00 for PC interface per IEC 529: 1989 EN 60529: 1991 VDE 0470-1: 1992

Extract from table on the meaning of IP codes

IP XY (1st digit X)	Protection against foreign object entry	IP XY (2nd digit Y)	Protection against the penetration of water
0	not protected	0	not protected
1	≥ 50,0 mm Ø	1	vertically falling drops
2	≥ 12,5 mm Ø	2	vertically falling drops with enclosure tilted 15°

Electromagnetic Compatibility EMC

Product Standard	EN 61326-1:1997 + A1: 1998
Interference Emission	EN 55022:1998 class A
Interference Immunity	EN 61000-4-2:1995 performance feature A EN 61000-4-3:1996 + A1:1998 performance feature B EN 61000-4-4:1995 performance feature B EN 61000-4-5:1995 performance feature B EN 61000-4-6:1996 performance feature B EN 61000-4-11:1994 performance feature B

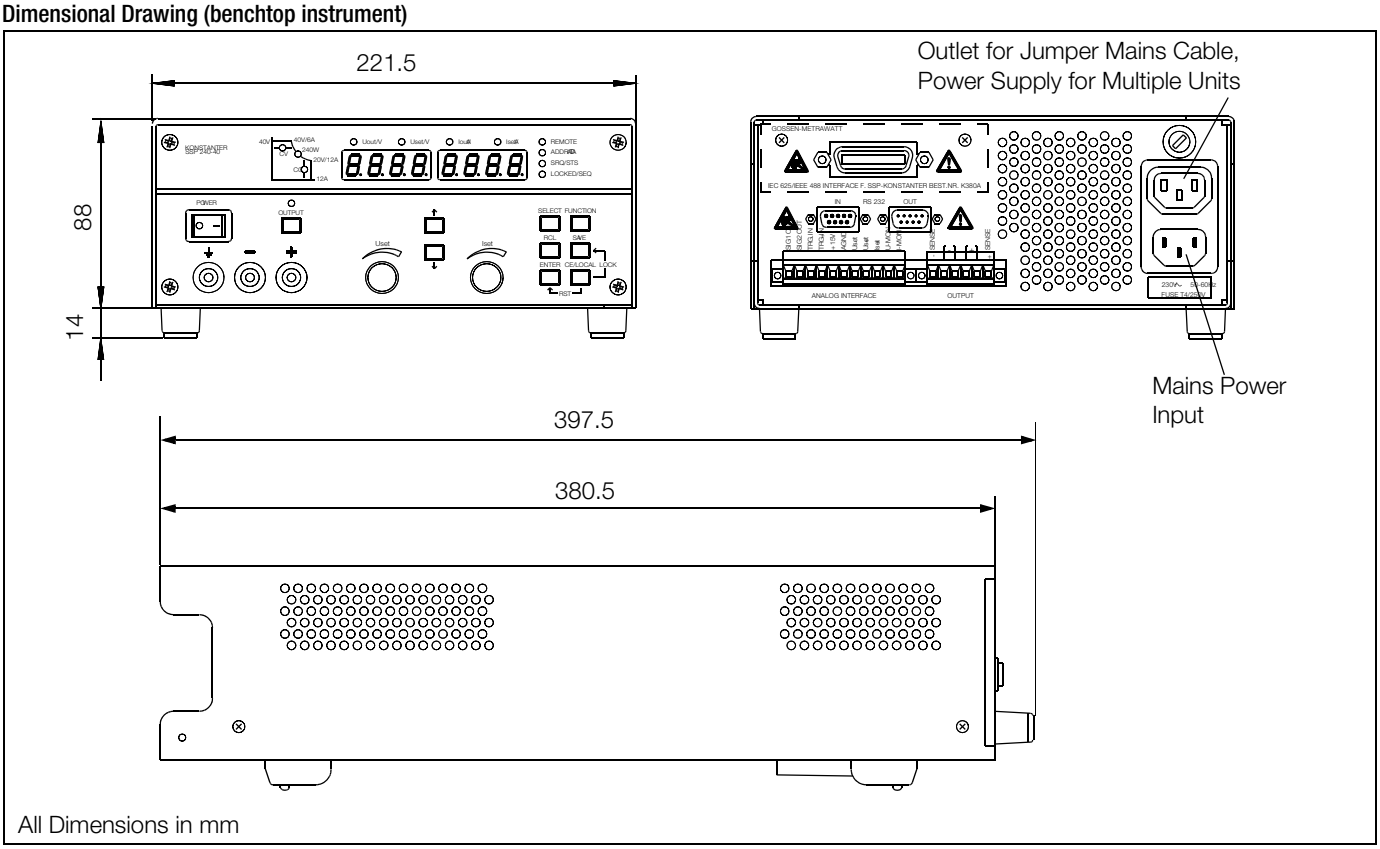
Ambient Conditions

Vibration Resistance	IEC 68-2-6: 1990 10 ... 55 Hz, 0.3 mm, 1 oct. / min. 3 x 30 min.
Impact Resistance	IEC 68-2-27: 1989 15 gr.; 11 ms, semi-sinusoidal, 3 x 6 impacts
Temperature Range	operation: 0 ... 50 °C at > 40 °C current derating storage: –25 ... +75 °C
Humidity	operation: ≤ 75 % relative humidity, no condensation allowed
Cooling	with built-in fan air intake: side panel / air outlet: rear panel

Mechanical Design

Type	benchtop instrument, suitable for rack mounting
Dimensions (W x H x D)	benchtop unit: 221.5 x 102 x 397.5 mm 19“ rack unit:: ½19” x 2 standard height units x 400 mm
Weight	benchtop unit: approx. 2.8 kg IEEE 488 interface (option): approx. 0.1 kg

Dimensional Drawing (benchtop instrument)



All Dimensions in mm

SSP-KONSTANTER, Series SSP 120 / 240 / 320
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Electrical Values, 120 W Series

- **Unless otherwise indicated, all data represent maximum values and are valid within an operating temperature range of 0 to 50° C, the nominal power range and a line voltage range of 230 V ± 10% after a warm-up period of 30 minutes.**
- **Percentages refer to the respective setting value or measured value**

Description (abbreviated designation)		**SSP 120-20**	**SSP 120-40**	**SSP 120-80**
Type		**32 N 20 RU 10 P**	**32 N 40 RU 6 P**	**32 N 80 RU 3 P**
Nominal Output Data	Voltage Setting Range	0 ... 20 V	0 ... 40 V	0 ... 80 V
	Current Setting Range	0 ... 10 A	0 ... 6 A	0 ... 3 A
	Continuous Power at Tu ≤ 40° C	max. 120 W	max. 120 W	max. 120 W
	Short-Time Rating for t < 90 s / Tu ≤ 25° C	max. 200 W	max. 240 W	max. 240 W
	Current Derating at Tu > 40° C	– 0.25 A / K	– 0.15 A / K	– 0.07 A / K
Output Operating Characteristics				
Setting Resolution [display (< 10.00 / ≥ 10.00), remote]	Voltage Current	5 mV / 10 mV, 5 mV 2.5 mA	10 mV 2 mA	20 mV 1 mA
Overall Setting Tolerance at 23 ± 5° C including System Deviation for Load / Line	Voltage Current	0.15% + 30 mV 0.4% + 35 mA	0.15% + 40 mV 0.5% + 20 mA	0.15% + 80 mV 0.5% + 10 mA
Static System Deviation [1] at 100% Load Variation [1]	Voltage Current	15 mV 20 mA	10 mV 10 mA	10 mV 10 mA
Static System Deviation [1] at 10% Line Voltage Variation [1]	Voltage Current	5 mV 8 mA	5 mV 5 mA	5 mV 5 mA
Residual Ripple [1]	Voltage (10 Hz ... 10 MHz) Current (10 Hz ... 1 MHz)	10 mV_{rms} 25 mA_{rms}	10 mV_{rms} 20 mA_{rms}	10 mV_{rms} 10 mA_{rms}
Common-Mode Interference (10 Hz ... 1 MHz)		0.5 mA_{rms}	0.5 mA_{rms}	0.5 mA_{rms}
Settling Time (voltage) with Sudden Load Variations of 10 to 90% $I_{nom.}$	Tolerance Δ I = 80%	40 mV 200 µs	80 mV 200 µs	160 mV 200 µs
Under and Overshooting with Sudden Load Variations of 50 A / ms	Δ I = 80%	400 mV	400 mV	800 mV
Response Time (voltage) with Setpoint Change 0 → 100% with Setpoint Change 100% → 0	Tolerance Open-Circuit / Nominal Load Open-Circuit / Nominal Load	40 mV 1 ms / 1 ms 1 ms / 1 ms	80 mV 1 ms / 1 ms 1 ms / 1 ms	160 mV 4 ms / 4 ms 4 ms / 4 ms
Response Time (current) with Setpoint Change 0 → 100% with Setpoint Change 100% → 0	Tolerance Short-Circuit / Nominal Load Short-Circuit / Nominal Load	100 mA < 5 ms / < 5 ms < 5 ms / < 5 ms	60 mA < 5 ms / < 5 ms < 5 ms / < 5 ms	30 mA < 10 ms / < 10 ms < 10 ms / < 10 ms
Measurement Value Display (4-place)				
Measuring Resolution [display (< 10.00 / ≥ 10.00), query]	Voltage Current Power	2 mV / 10 mV, 2 mV 1 mA, 1 mA 0.1 W, 0.1 W	10 mV, 4 mV 1 mA, 0.6 mA 0.1 W, 0.1 W	10 mV, 8 mV 1 mA, 0.5 mA 0.1 W, 0.1 W
Measuring Accuracy at 23 ± 5° C for Values > 0.1% of Nominal Value	Voltage Current Power	0.15% + 30 mV 0.4% + 25 mA 0.55% + 0.5 W	0.15% + 40 mV 0.5% + 15 mA 0.65% + 0.6 W	0.15% + 80 mV 0.5% + 10 mA 0.65% + 0.8 W
Protective Functions				
Output Overvoltage Protection, Threshold	Setting Range Setting Resolution Setting Tolerance	0 ... 25 V 0.1 V 2% + 0.2 V	0 ... 50 V 0.2 V 2% + 0.4 V	0 ... 100 V 0.4 V 2% + 0.8 V
Protection against Pole Reversal – Load Capacity	Continuous	10 A	6 A	3 A
Reverse Voltage Resistance	Continuous	40 V	80 V	100 V
General				
Power Supply [1]	Line Voltage	230 V~ +10 / –15% 47 ... 63 Hz	230 V~ +10 / –15% 47 ... 63 Hz	230 V~ +10 / –15% 47 ... 63 Hz
Power Consumption	at Nominal Load in Standby Mode at max. Short-Time Power	280 VA, 180 W 45 VA, 15 W 450 VA	280 VA, 170 W 45 VA, 15 W 500 VA	280 VA, 170 W 45 VA, 15 W 500 VA
Efficiency	at Nominal Load	> 70%	> 80%	> 80%
Switching Frequency	Typical	200 kHz	200 kHz	200 kHz
Article Number		**K320A**	**K321A**	**K322A**

1) Indicated values are increased by a factor of approximately 1.2 within a mains input voltage range of –10% to –15%.

Electrical Values, 240 /320 W Series

- **Unless otherwise indicated, all entries represent maximum values and are valid within an operating temperature range of 0 to 50° C, the nominal power range and a line voltage range of 230 V ± 10% after a warm-up period of 30 minutes.**
- **Percentages refer to the respective setting value or measured value**

SSP 240-20	SSP 240-40	SSP 240-80		SSP 320-32
32 N 20 RU 20 P	**32 N 40 RU 12 P**	**32 N 80 RU 6 P**		**32 N 32 RU 18 P**
0 ... 20 V	0 ... 40 V	0 ... 80 V		0 ... 32 V
0 ... 20 A	0 ... 12 A	0 ... 6 A		0 ... 18A
max. 240 W	max. 240 W	max. 240 W		max. 320 W
max. 320 W	max. 360 W	max. 360 W		max. 430 W
– 0.5 A / K	– 0.3 A / K	– 0.15 A / K		– 0.5 A / K
5 mV / 10 mV; 5 mV 5 mA / 10 mA; 5 mA	10 mV 3.33 mA / 10 mA; 3.33 mA	20 mV 2 mA		10 mV 5 mA / 10 mA; 5 mA
0.15 % + 40 mV 0.5 % + 70 mA	0.15 % + 45 mV 0.5 % + 45 mA	0.15 % + 80 mV 0.5 % + 25 mA		0.15 % + 50 mV 0.5 % + 70 mA
25 mV 30 mA	18 mV 30 mA	18 mV 15 mA		30 mV 40 mA
5 mV 8 mA	5 mV 8mA	5 mV 5 mA		10 mV 20 mA
15 mV_{eff} 50 mA_{eff}	15 mV_{eff} 25 mA_{eff}	15 mV_{eff} 20 mA_{eff}		30 mV_{eff} 50 mA_{eff} (Ua > 10% U_{nenn})
0.5 mA_{eff}	0.5 mA_{eff}	0.5 mA_{eff}		0.5 mA_{eff}
40 mV 600 µs	80 mV 300 µs	160 mV 200 µs		64 mV 500 µs
450 mV	450 mV	800 mV		450 mV
40 mV 1 ms / 1 ms 1 ms / 1 ms	80 mV 1 ms / 1 ms 1 ms / 1 ms	160 mV 4 ms / 4ms 4 ms / 4ms		64 mV 1 ms / 1 ms 1 ms / 1 ms
200 mA < 5 ms / < 5 ms < 5 ms / < 5 ms	120 mA < 5 ms / < 5 ms < 5 ms / < 5 ms	60 mA < 10 ms / < 10 ms < 10 ms / < 10 ms		180 mA < 5 ms / < 5 ms < 5 ms / < 5 ms
2 mV / 10 mV; 2 mV 2 mA; 10 mA; 2 mA	10 mV; 4 mV 2 mA / 10 mA; 1.2 mA	10 mV; 8 mV 1 mA; 0.6 mA		10 mV; 4 mV 2 mA; 10 mA; 2 mA 0.1 W; 0.1 W
0.15 % + 40 mV 0.5 % + 70 mA 0.65 % + 1.4 W	0.15 % + 40 mV 0.5 % + 25 mA 0.65 % + 1 W	0.15 % + 80 mV 0.5 % + 15 mA 0.65 % + 1.2 W		0.15 % + 40 mV 0.5 % + 70 mA 0.65 % + 1.4 W
0 ... 25 V 0.1 V 2 % + 0.2 V	0 ... 50 V 0.2 V 2 % + 0.4 V	0 ... 100 V 0.4 V 2 % + 0.8 V		0 ... 40 V 0.2 V 2 % + 0.4 V
20 A	12 A	6 A		18 A
40 V	80 V	100 V		64 V
230 V~ +10 / –15 % 47 ... 63 Hz	230 V~ +10 / –15 % 47 ... 63 Hz	230 V~ +10 / –15 % 47 ... 63 Hz		230 V~ +10 / –15 % 47 ... 63 Hz
510 VA; 350 W 45 VA; 15 W 620 VA	500 VA; 340 W 45 VA; 15 W 690 VA	500 VA; 340 W 45 VA; 15 W 690 VA		650 VA; 460 W 50 VA; 15 W 770 VA
> 68 %	> 70 %	> 70 %		> 69 %
200 kHz	200 kHz	200 kHz		200 kHz
K330A	**K331A**	**K332A**		**K334A**

1) Indicated values are increased by a factor of approximately 1.2 within a mains input voltage range of –10% to –15%.

SSP-KONSTANTER Series, SSP 120 / 240 / 320
Laboratory Power Supplies

Scope of delivery

- SSP KONSTANTER 32 N
- Mains power cable with earthing contact plug
- Operating instructions (printed)

Order Information

Description (Short-Form)	Type	Article No.
SSP 120-20	32 N 20 RU 10 P	K320A*
SSP 120-40	32 N 40 RU 6 P	K321A*
SSP 120-80	32 N 80 RU 3 P	K322A*
SSP 240-20	32 N 20 RU 20 P	K330A*
SSP 240-40	32 N 40 RU 12 P	K331A*
SSP 240-80	32 N 80 RU 6 P	K332A*
SSP 320-32	32 N 32 RU 18 P	K334A*
IEEE488-Interface	for SSP-KONSTANTER Types 32 N ..., Weight: 172 g, Mass: 150 x 100 x 60 (L x W x H)	K380A

* 115 V variant available with appendix -S001

Accessories

Mounting

Description	Comment	Article No.
19" Adapter, 1 x 32 N	Required for mounting 1 type 32 N ... instrument to a 19" rack Weight: 214 g (packed in polyethylene bag)	K990A
19" Adapter, 2 x 32 N	Required for mounting 2 type 32 N ... instruments to a 19" rack Weight: 50 g (packed in polyethylene bag)	K990B
Mains Jumper Cable, 0.4 meters long	The cable is equipped with one 10 A inlet connector plug and one 10 A inlet connector socket. Used for cascading mains power when several instruments are mechanically connected to a single multi-channel unit. The system thus requires only one mains outlet. Weight: 102 g (packed in polyethylene bag)	K991A
RS 232 Bus Cable, 2 meters long	For connecting one instrument to an RS 232 interface. (extension cable with 9-pin socket / 9-pin plug) Weight: 232 g (packed in polyethylene bag)	GTZ3241 000R0001
IEEE / IEEE Bus Cable, 2 meters long	For connecting an instrument to the IEEE 488 bus system Weight: 358g (packed in polyethylene bag)	K931A

Software (available as download from the internet)

Type	Designation	Article No.
K930D	LabView, device driver for SSP-KONSTANTER SSP 120, 240, 320 SSP 500, 1000, 2000, 3000	K930D
K930E	LabWindows / CVI, device driver for SSP -KONSTANTER SSP 120, 240, 320 SSP 500, 1000, 2000, 3000	K930E
K930F	HPVEE / VXI PnP, device driver for SSP-KONSTANTER SSP 120, 240, 320 SSP 500, 1000, 2000, 3000	K930F

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