

SSP KONSTANTER, Series 62 N and Series 64 N Computer Controlled Laboratory Power Supplies

3-349-078-03
1/12.99

- Series 62 N: 500 W, 1000 W output power
Series 64 N: 2000 W, 3000 W output power
- Measuring functions for voltage, current and power with extreme value memory
- Minimal residual ripple and short response times
- IEC-625 / IEEE-488 and RS-232C interfaces (plug-in module option)
- Automatic time controlled memory recall for the generation of voltage and current profiles with up to 245 interpolation points
- Output can be activated and deactivated
- 255 device configurations can be stored to memory
- Lockable operating elements
- Master-slave operation is possible
- Overvoltage, overcurrent and excessive temperature protection
- Compact design, lightweight and minimal power loss thanks to switching controller technology

Series 62 N



Series 64 N



QUALITY MANAGEMENT SYSTEM



DQS Certified per
DIN EN ISO 9001 Reg. no. 1262

Description

SSP KONSTANTER (single-output system power supplies) DC power supplies can be manually or remote controlled for laboratory or systems applications. Despite high output power, the devices are small in size and lightweight as well.

The floating output is provided with protective isolation from the mains power supply, as well as all optional computer interfaces, and has been classified as a safety extra-low voltage circuit (SELV) in accordance with VDE / IEC. Nominal power supplied by the voltage and current controlled output can be delivered over widely adjustable voltage and current ranges.

These devices are generally equipped with operating elements and displays, as well as an analog interface. An optional IEC-625 / IEEE-488 and V.24 / RS-232C interface (single module including both interfaces) can be inserted into the device in order to link it to computer controlled systems.

Manual adjustment of voltage and current is accomplished by means of two rotary knobs with adjustable resolution. A wide variety of additional functions can be selected with the keys. Two 4-place digital LED displays provide information concerning measurement and set values. Current operating modes, selected display parameters and the status of device and interface functions are indicated with LEDs.

The analog interface allows for the adjustment of output voltage and current with external control voltages, and for the linking of several devices in the master-slave operating mode. The power output can be activated and deactivated, the front panel can be locked, and stored configurations can be recalled via the floating optocoupler input.

Applications Range

Electrical and electronic devices may be subjected to substantial supply power fluctuations depending upon where they are used and prevailing ambient conditions.

The automotive electrical system characteristics which can be observed when the starter motor is cranked is a typical example. R&D, production and testing departments must therefore assure that electrical equipment reliably fulfills all of the required functions at any point in time under adverse conditions.

Series 62 N and 64 N SSP KONSTANTERs provide the user with a number of functions for solutions to these problems. High throughput rates can be achieved with automatic systems for routine testing in combination with the SSP KONSTANTER.

Short response time assures highly accurate simulation of rapidly changing voltage or current profiles.

The performance of consuming devices as related to dynamic supply power can thus be easily tested and simulated.

SSP KONSTANTER, Series 62 N and Series 64 N Computer Controlled Laboratory Power Supplies

Adjustable Functions

- Voltage and current setpoints
- Voltage and current limit values (soft-limits)
- Output activation and deactivation
- Overvoltage protection trigger value
- Overcurrent protection (limiting with or without shutdown)
- Delay time for overcurrent shutdown
- Power-on status
- Reset device configurations
- Save device configurations to memory
- Recall device configurations individually or sequentially
- Lock front panel
- Select trigger input function
- Rounding of measurement value for display purposes
- Service request masks (SRQ) *
- Activate and deactivate digital displays *
- Start self-test at power-up *

* Only via computer interface

Acquirable Information

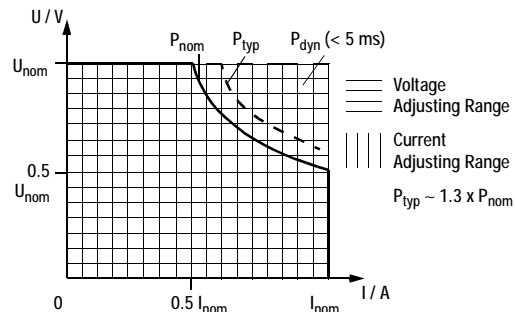
- Current voltage and current measurement values
- Min. and max. voltage and current measurement values
- Current output power
- Current device settings (individual or complete)
- Current device status (control mode, overheated, busy *)
- Occurred event (power or phase failure, excessive temperature, overvoltage, overload, program error *)
- Device ID *

* Only via computer interface

Protective and Additional Functions

- Sensor terminals protected against pole reversal with automatic switching to sensing mode (auto-sensing)
- Protection against excessive temperature
- Protection against output pole reversal
- Device configuration memory with battery backup
- Power and phase failure recognition
- In-rush current limiting

Output Working Ranges



Analog Interface

Connector 14-pin plug connector with screw clamps
Reference Potential Negative output pole, floating TRIGGER input

Connector Pin Assignments		
Pin	Designation	Function
1	+15 V	Auxiliary voltage + 15 V (max. 10 mA), $R_i = 510 \Omega$
2	AGND	Reference point, connected to -output
3	TRIGGER+	Floating control input with selectable function, (low: 0 to 1 V, high: 4 to 26 V)
4	TRIGGER-	
5	Uset+	Analog control input for voltage adjustment, (0 to 5 V \cong 0 to U_{nom} , $R_i = 10 \text{ k}\Omega$)
6	Uset GND	
7	M / S Uset+	Control input for master-slave series connection
8	U-Monitor	Output voltage measuring output (0 to 10 V \cong 0 to U_{nom} , $R_i = 5 \text{ k}\Omega$)
9	Iset+	Analog control input for current adjustment, (0 to 5 V \cong 0 to I_{nom} , $R_i = 10 \text{ k}\Omega$)
10	Iset GND	
11	I-Monitor	Output current measuring output (0 to 10 V \cong 0 to I_{nom} , $R_i = 9,3 \text{ k}\Omega$)
12		not in use
13	+SENSE	Positive sensing terminal
14	-SENSE	Negative sensing terminal

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IEEE-488 / RS-232C Interface (optional)

This single module includes both interfaces. It is shipped separately and is easily inserted from the outside of the power supply.

IEC-625 / IEEE-488 Interface

Interface Functions	AH1	ACCEPTOR HANDSHAKE
	SH1	SOURCE HANDSHAKE
	T6	TALKER
	L4	LISTENER
	TE0	No extended talker function
	LE0	No extended listener function
	SR1	SERVICE REQUEST
	RL1	REMOTE / LOCAL
	DC1	DEVICE CLEAR
	PP1	PARALLEL POLL
	DT1	DEVICE TRIGGER
	C0	No controller function
	E1 / 2	Open collector driver
Codes / Formats	in accordance with IEEE 488.2	
Device Address	adjustable from 0 to 30 or UNL (unlist)	
Max. Setting Rate	approx. 40 settings / s	
Max. Measuring Rate	approx. 15 measurements / s	
Connector	24-pin IEEE-488 socket	
Control Elements	DIP switches for address	

V.24 / RS-232C Interface

Transmission Mode	half-duplex, asynchronous
Pin Assignments	pin 2: TXD (transmitted data) pin 3: RXD (received data) pin 7: GND (ground)
Transmission Speed	adjustable from 110 to 19,200 baud
Max. Setting Rate	approx. 2 settings / s
Max. Measuring Rate	approx. 2 measurements / s
Connector	25-pin subminiature socket DIN 41652
Control Elements	DIP switches for baud rate

Applicable Regulations and Standards

IEC 61010-1+A1 ('92) EN 61010-1 ('93) VDE 0411-1 ('94)	Safety requirements for electrical equipment for measurement, control and laboratory use
IEC 950+A1+A2 ('93) EN 60950+A1+A2 ('93) VDE 0805+A2 ('94)	Safety requirements for data processing systems and office machinery
IEC 529 ('89) EN 60529 ('91) VDE 0470-1 ('92)	Protection provided by enclosures (IP code)
EN 50081-2 ('94) VDE 0839-81-2 ('94)	Electromagnetic compatibility (EMC) generic standard for interference emission – industrial
EN 50082-2 ('96) VDE 0839-82-2 ('96)	Electromagnetic compatibility (EMC) generic standard for immunity emission – industrial
IEC 68-2-6 ('90)	Vibration resistance
IEC 68-2-27 ('89)	Impact resistance
CISPR 11 ('90) EN 55011 ('91) VDE 0875-11 ('92)	Limit values and measuring methods for transmitted interference for ISM devices
IEC 1000-4-2 ('95) EN 61000-4-2 ('95) VDE 0847-4-2 ('96)	Electrostatic discharge
IEC 1000-4-3 ('95) ENV 50140 ('95) VDE 0847-3 ('95)	Electromagnetic RF fields
IEC 1000-4-4 ('95) EN 61000-4-4 ('95) VDE 0847-4-4 ('96)	Transient interference – bursts

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Computer Controlled Laboratory Power Supplies

Auto-Sensing

Operation in the sensing mode (remote sensing) can be activated in order to compensate for voltage drops at the power lines.

The sensing mode is automatically activated by connecting the (-) negative sensing terminal to the negative load level.

Max. compensatable
voltage drop 1 V per line

Front Panel Lock

The control elements can be secured against unauthorized use by pressing a key, with a computer command, or by applying a signal to the trigger input.

Activating and Deactivating the Output

The power output can be activated and deactivated by pressing a key, with a computer command, or by applying a signal to the trigger input (no electrical isolation).

Power-On Status

The power supply can be placed into one of the following conditions after power-up:

- Reset = default setting (0 V, 0 A, output inactive etc.)
- Recall = last setting (same as prior to last shutdown)
- Standby = last setting, but with inactive output

Overcurrent Protection

The device can be configured to respond to current limiting in one of the following ways:

- OCP off = continuous current limiting (UI characteristic curve)
- OCP on = deactivate output if duration of current limiting is greater than delay time
Delay time: setting range from 0.00 to 99.99 s
resolution: 10 ms

Trigger Selection

The device can be configured to respond to the floating trigger input at the analog interface in one of the following ways:

- output = activate / deactivate the power output
- local lock = lock the control elements
- recall = individual, step-by-step recall of stored settings
- sequence = start / stop the sequence function

Extreme Measurement Value Memory

The MIN-MAX function causes automatic acquisition and storage to memory of minimum and maximum voltage and current measurement values.

Memory Function

Device configurations can be saved to, and recalled from the memory with battery backup. The memory has two storage areas:

- 10 memory locations for complete configurations
- 245 memory locations for the sequence function (voltage setpoint USET, current setpoint ISET, dwell time TSET)

Sequence Function

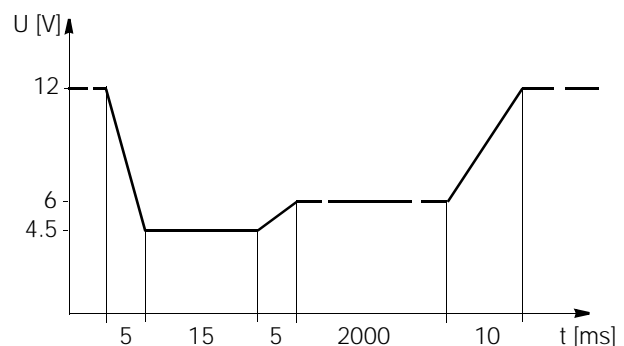
The sequence function allows for automatic recall of settings which have been saved to the sequence memory.

The sequence function includes the following parameters:

- START = beginning memory location address
- STOP = ending memory location address
- REPETITION = number of sequence repetitions (1 to 255 or 0 = continuous repetition)
- TSET = dwell time specific to memory location (10 ms to 99.99 s)
- TDEF = dwell time independent of memory location (10 ms to 99.99 s)

Applications Example:

Generation of a voltage profile in accordance with DIN 40839 (automotive electrical system while cranking the starter motor)

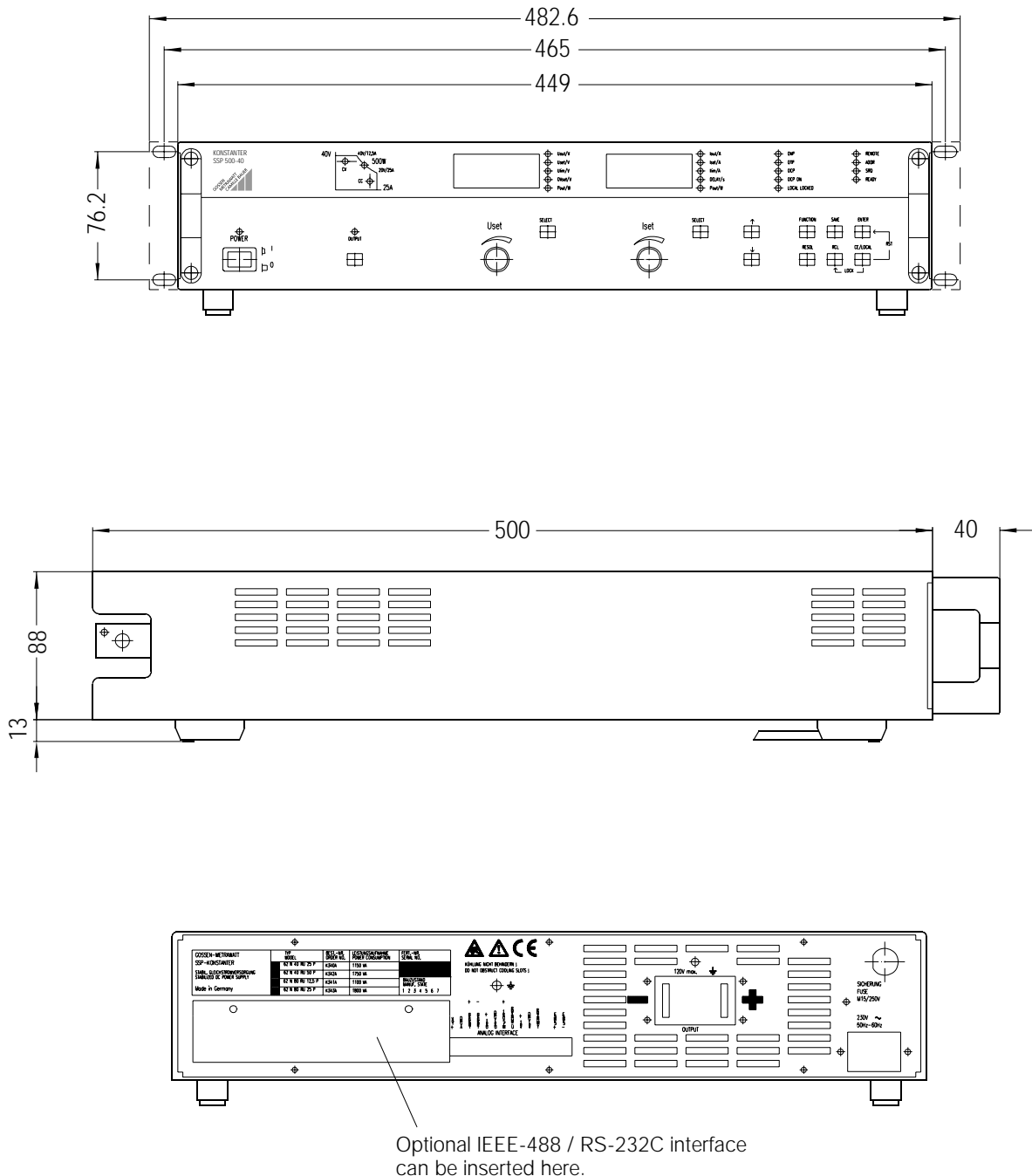


Note:

Maintenance of voltage rise and decay times can only be assured within a limited load impedance range.

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Dimensional Drawing, Series 62 N



All dimensions in millimeters

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Dimensional Drawing, Series 64 N

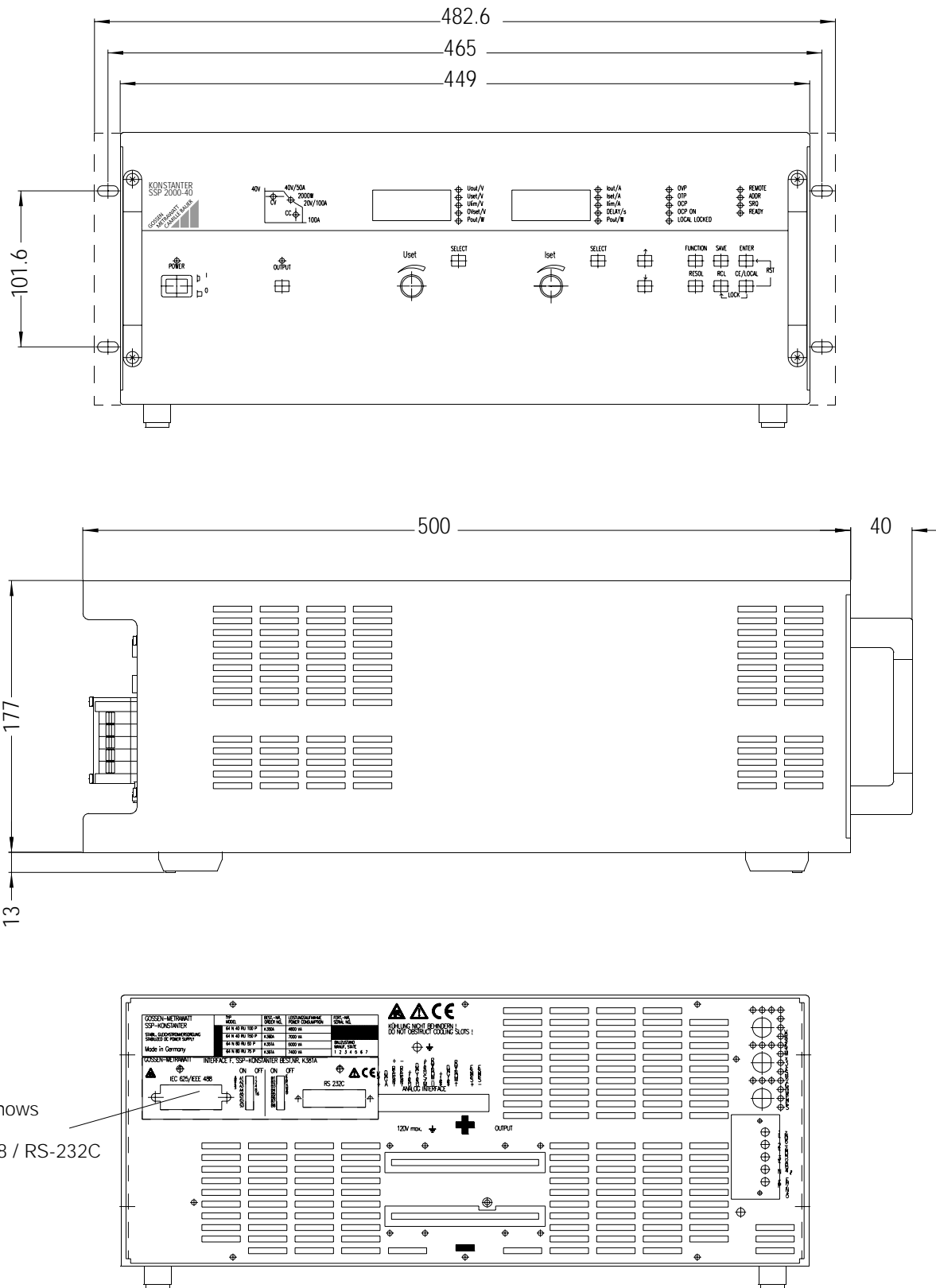


Figure shows optional IEEE-488 / RS-232C interface

All dimensions in millimeters

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Electrical Data, 40 V Models xx N 40 RU ...

If not indicated otherwise, entries represent maximum values and apply within an operating temperature range of 0 to 50 °C after a warm-up period of 30 minutes.

Description (short name)		SSP 500-40	SSP 1000-40	SSP 2000-40	SSP 3000-40
Type		62 N 40 RU 25 P	62 N 40 RU 50 P	64 N 40 RU 100 P	64 N 40 RU 150 P
Nominal Output Data	Voltage setting range	0 ... 40 V	0 ... 40 V	0 ... 40 V	0 ... 40 V
	Current setting range	0 ... 25 A	0 ... 50 A	0 ... 100 A	0 ... 150 A
	Power	max. 500 W	max. 1000 W	max. 2000 W	max. 3000 W
Operating Characteristics (ppm and percentages make reference to the respective set value or measurement value)					
Setting resolution	Voltage	10 mV	10 mV	10 mV	10 mV
	Current ¹⁾	6.25 mA	12.5 mA	25 mA	40 mA
Setting accuracy (at 23 ± 5 °C)	Voltage	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV
	Current	0.2% + 25 mA	0.2% + 50 mA	0.25% + 100 mA	0.3% + 150 mA
Set value temperature coefficient	Voltage	50 ppm + 0.2 mV	50 ppm + 0.2 mV	50 ppm + 0.2 mV	50 ppm + 0.2 mV
	Current	100 ppm + 0.2 mA	100 ppm + 0.2 mA	100 ppm + 0.4 mA	100 ppm + 0.6 mA
Static control deviation at 100% load variation	Voltage ²⁾	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV
	Current	0.05% + 10 mA	0.05% + 20 mA	0.05% + 40 mA	0.05% + 60 mA
Static control deviation at 15% line voltage variation	Voltage	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV
	Current	0.03% + 8 mA	0.03% + 15 mA	0.03% + 30 mA	0.03% + 40 mA
Residual ripple					
for U _A	Ripple 10 Hz ... 300 Hz	12 mV _{pp}	15 mV _{pp}	20 mV _{pp}	20 mV _{pp}
	Ripple 10 Hz ... 300 kHz	30 mV _{pp}	30 mV _{pp}	30 mV _{pp}	30 mV _{pp}
for I _A	Ripple + noise 10 Hz ... 10 MHz	50 mV _{pp} / 10 mV _{eff}	50 mV _{pp} / 10 mV _{eff}	50 mV _{pp} / 10 mV _{eff}	50 mV _{pp} / 10 mV _{eff}
	Ripple + noise 10 Hz ... 10 MHz	15 mA _{eff}	25 mA _{eff}	80 mA _{eff}	120 mA _{eff}
Output voltage settling time with sudden load variation within a range of 20 ... 100% I _{nom}	Tolerance	80 mV	80 mV	80 mV	80 mV
	ΔI = 10%	100 μs	100 μs	100 μs	100 μs
	ΔI = +80%	300 μs	300 μs	300 μs	300 μs
	ΔI = -80%	900 μs	300 μs	300 μs	300 μs
Output voltage over and undershooting with sudden load variation within a range of 20 ... 100% I _{nom}	ΔI = 10%	150 mV	150 mV	150 mV	150 mV
	ΔI = 80%	500 mV	750 mV	750 mV	750 mV
Output voltage response time ³⁾	Tolerance	80 mV	80 mV	80 mV	80 mV
	with U _{set} jump = 0 V → U _{nom} no load; nominal load	5 ms; 10 ms	5 ms; 10 ms	5 ms; 10 ms	5 ms; 10 ms
	with U _{set} jump = U _{nom} → 1 V no load; nominal load	100 ms; 10 ms	100 ms; 10 ms	100 ms; 10 ms	100 ms; 10 ms
Additional Functions					
Measuring function					
Measuring range	Voltage	-2.00 ... +44.08 V	-2.00 ... +44.08 V	-2.00 ... +44.08 V	-2.00 ... +44.08 V
	Current	-0.96 ... +26.68 A	-1.92 ... +53.37 A	-3.84 ... +106.74 A	-5.76 ... +160.12 A
	Power	0 ... > 550 W	0 ... > 1100 W	0 ... > 2200 W	0 ... > 3300 W
Measuring resolution – local; remote	Voltage	10 mV; 5 mV	10 mV; 5 mV	10 mV; 5 mV	10 mV; 5 mV
	Current	5 / 10 mA; 5 mA	10 mA; 10 mA	20 mA; 20 mA	20 / 100 mA; 20 mA
	Power	1 W; 0.1 W	1 W; 0.1 W	1 W; 0.1 W	1 W; 0.1 W
Measuring accuracy (at 23 ± 5 °C)	Voltage	0.05% + 20 mV	0.05% + 20 mV	0.05% + 20 mV	0.05% + 20 mV
	Current	0.3% + 20 mA	0.3% + 30 mA	0.4% + 60 mA	0.4% + 90 mA
	Power	0.4% + 1 W	0.4% + 1.5 W	0.5% + 2.5 W	0.5% + 4 W
Output overvoltage protection					
Trigger value	Setting range	3 ... 50 V	3 ... 50 V	3 ... 50 V	3 ... 50 V
	Setting resolution	100 mV	100 mV	100 mV	100 mV
	Setting accuracy	0.3% + 100 mV	0.3% + 100 mV	0.3% + 100 mV	0.3% + 100 mV
General					
Power supply	Mains voltage	230 V ~ +10 / -15%	230 V ~ +10 / -15%	3 x 400 / 230 V ~ +10 / -15%, 47 ... 63 Hz	3 x 400 / 230 V ~ +10 / -15%, 47 ... 63 Hz
		47 ... 63 Hz	47 ... 63 Hz		
Power consumption	at nominal load	1100 VA; 650 W	1800 VA; 1200 W	5000 VA; 2800 W	7400 VA; 4000 W
Switching frequency	typical	100 kHz	200 kHz	200 kHz	200 kHz
Efficiency	at nominal load	> 75%	> 80%	> 72%	> 75%
Order Number		K340A	K342A	K350A	K360A

¹⁾ Current setting values are rounded to the nearest multiple of 10 mA (< 100 A) or 100 mA (≥ 100 A) for digital displays.

²⁾ For sensing operation at the output terminals

³⁾ At max. current setpoint and without processing time for the previous voltage setting command

SSP KONSTANTER, Series 62 N and Series 64 N Computer Controlled Laboratory Power Supplies

Electrical Data, 52 V Models xx N 52 RU ...

If not indicated otherwise, entries represent maximum values and apply within an operating temperature range of 0 to 50 °C after a warm-up period of 30 minutes.

Description (short name)		SSP 500-52	SSP 1000-52	SSP 2000-52	SSP 3000-52
Type		62 N 52 RU 25 P	62 N 52 RU 50 P	64 N 52 RU 100 P	64 N 52 RU 150 P
Nominal Output Data	Voltage setting range	0 ... 52 V	0 ... 52 V	0 ... 52 V	0 ... 52 V
	Current setting range	0 ... 25 A	0 ... 50 A	0 ... 100 A	0 ... 150 A
	Power	max. 500 W	max. 1000 W	max. 2000 W	max. 3000 W
Operating Characteristics (ppm and percentages make reference to the respective set value or measurement value)					
Setting resolution	Voltage	16.7 mV	16.7 mV	16.7 mV	16.7 mV
	Current ¹⁾	6.25 mA	12.5 mA	25 mA	40 mA
Setting accuracy (at 23 ± 5 °C)	Voltage	0.1% + 17 mV	0.1% + 17 mV	0.1% + 17 mV	0.1% + 17 mV
	Current	0.2% + 25 mA	0.2% + 50 mA	0.25% + 100 mA	0.3% + 150 mA
Set value temperature coefficient	Voltage	50 ppm + 0.2 mV	50 ppm + 0.2 mV	50 ppm + 0.2 mV	50 ppm + 0.2 mV
	Current	100 ppm + 0.2 mA	100 ppm + 0.2 mA	100 ppm + 0.4 mA	100 ppm + 0.6 mA
Static control deviation at 100% load variation	Voltage ²⁾	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV
	Current	0.05% + 10 mA	0.05% + 20 mA	0.05% + 40 mA	0.05% + 60 mA
Static control deviation at 15% line voltage variation	Voltage	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV
	Current	0.03% + 8 mA	0.03% + 15 mA	0.03% + 30 mA	0.03% + 40 mA
Residual ripple for U _A	Ripple 10 Hz ... 300 Hz	12 mV _{pp}	15 mV _{pp}	20 mV _{pp}	20 mV _{pp}
	Ripple 10 Hz ... 300 kHz	30 mV _{pp}	30 mV _{pp}	30 mV _{pp}	30 mV _{pp}
	Ripple + noise 10 Hz ... 10 MHz	50 mV _{pp} / 10 mV _{eff}	50 mV _{pp} / 10 mV _{eff}	50 mV _{pp} / 10 mV _{eff}	50 mV _{pp} / 10 mV _{eff}
	Ripple + noise 10 Hz ... 10 MHz	15 mA _{eff}	25 mA _{eff}	80 mA _{eff}	120 mA _{eff}
Output voltage settling time with sudden load variation within a range of 20 ... 100% I _{nom}	Tolerance	80 mV	80 mV	80 mV	80 mV
	ΔI = 10%	100 μs	100 μs	100 μs	100 μs
	ΔI = +80%	300 μs	300 μs	300 μs	300 μs
	ΔI = -80%	900 μs	300 μs	300 μs	300 μs
Output voltage over and undershooting with sudden load variation within a range of 20 ... 100% I _{nom}	ΔI = 10%	150 mV	150 mV	150 mV	150 mV
	ΔI = 80%	500 mV	750 mV	750 mV	750 mV
Output voltage response time ³⁾ with U _{set} jump = 0 V → U _{nom} no load; nominal load	Tolerance	80 mV	80 mV	80 mV	80 mV
	no load; nominal load	6 ms; 12.5 ms	6 ms; 12.5 ms	6 ms; 12.5 ms	6 ms; 12.5 ms
	no load; nominal load	150 ms; 12.5 ms	150 ms; 12.5 ms	150 ms; 12.5 ms	150 ms; 12.5 ms
Additional Functions					
Measuring function					
Measuring range	Voltage	-2.666 ... +58.770 V	-2.666 ... +58.770 V	-2.666 ... +58.770 V	-2.666 ... +58.770 V
	Current	-0.48 ... +26.68 A	-1.92 ... +53.37 A	-3.84 ... +106.74 A	-5.76 ... +160.12 A
	Power	0 ... > 550 W	0 ... > 1100 W	0 ... > 2200 W	0 ... > 3300 W
Measuring resolution – local; remote	Voltage	10 mV; 3.3 mV	10 mV; 3.3 mV	10 mV; 3.3 mV	10 mV; 3.3 mV
	Current	5 / 10 mA; 5 mA	10 mA; 10 mA	20 mA; 20 mA	2 / 100 mA; 20 mA
	Power	1 W; 0.1 W	1 W; 0.1 W	1 W; 0.1 W	1 W; 0.1 W
Measuring accuracy (at 23 ± 5 °C)	Voltage	0.05% + 20 mV	0.05% + 20 mV	0.05% + 20 mV	0.05% + 20 mV
	Current	0.3% + 20 mA	0.3% + 30 mA	0.4% + 60 mA	0.4% + 90 mA
	Power	0.4% + 1 W	0.4% + 1.5 W	0.5% + 2.5 W	0.4% + 4 W
Output overvoltage protection					
Trigger value	Setting range	3 ... 62.5 V	3 ... 62.5 V	3 ... 62.5 V	3 ... 62.5 V
	Setting resolution	100 mV	100 mV	100 mV	100 mV
	Setting accuracy	0.3% + 100 mV	0.3% + 100 mV	0.3% + 100 mV	0.3% + 100 mV
General					
Power supply	Mains voltage	230 V ~ +10 / -15%	230 V ~ +10 / -15%	3 x 400 / 230 V ~ +10 / -15%; 47 ... 63 Hz	3 x 400 / 230 V ~ +10 / -15%; 47 ... 63 Hz
		47 ... 63 Hz	47 ... 63 Hz		
Power consumption	at nominal load	1100 VA; 650 W	1800 VA; 1200 W	5000 VA; 2800 W	7400 VA; 4000 W
Switching frequency	typical	100 kHz	200 kHz	200 kHz	200 kHz
Efficiency	at nominal load	> 75%	> 80%	> 72%	> 75%
Order Number		K344A	K345A	K352A	K362A

¹⁾ Current setting values are rounded to the nearest multiple of 10 mA (< 100 A) or 100 mA (≥ 100 A) for digital displays.

²⁾ For sensing operation at the output terminals

³⁾ At max. current setpoint and without processing time for the previous voltage setting command

SSP KONSTANTER, Series 62 N and Series 64 N Computer Controlled Laboratory Power Supplies

Electrical Data, 80 V Models xx N 80 RU ...

If not indicated otherwise, entries represent maximum values and apply within an operating temperature range of 0 to 50 °C after a warm-up period of 30 minutes.

Description (short name)		SSP 500-80	SSP 1000-80	SSP 2000-80	SSP 3000-80
Type		62 N 80 RU 12.5 P	62 N 80 RU 25 P	64 N 80 RU 50 P	64 N 80 RU 75 P
Nominal Output Data	Voltage setting range	0 ... 80 V	0 ... 80 V	0 ... 80 V	0 ... 80 V
	Current setting range	0 ... 12.5 A	0 ... 25 A	0 ... 50 A	0 ... 75 A
	Power	max. 500 W	max. 1000 W	max. 2000 W	max. 3000 W
Operating Characteristics (ppm and percentages make reference to the respective set value or measurement value)					
Setting resolution	Voltage	20 mV	20 mV	20 mV	20 mV
	Current ¹⁾	3.125 mA	6.25 mA	12.5 mA	20 mA
Setting accuracy (at 23 ± 5 °C)	Voltage	0.1% + 20 mV	0.1% + 20 mV	0.1% + 20 mV	0.1% + 20 mV
	Current	0.2% + 15 mA	0.2% + 25 mA	0.25% + 50 mA	0.3% + 80 mA
Set value temperature coefficient	Voltage	50 ppm + 0.4 mV	50 ppm + 0.4 mV	50 ppm + 0.4 mV	50 ppm + 0.4 mV
	Current	50 ppm + 0.2 mA	100 ppm + 0.1 mA	100 ppm + 0.2 mA	100 ppm + 0.4 mA
Static control deviation at 100% load variation	Voltage ²⁾	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV
	Current	0.05% + 10 mA	0.05% + 10 mA	0.05% + 20 mA	0.05% + 30 mA
Static control deviation at 15% line voltage variation	Voltage	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV	0.01% + 5 mV
	Current	0.03% + 5 mA	0.03% + 10 mA	0.03% + 20 mA	0.03% + 30 mA
Residual ripple					
for U _A	Ripple 10 Hz ... 300 Hz	35 mV _{pp}	35 mV _{pp}	35 mV _{pp}	35 mV _{pp}
	Ripple 10 Hz ... 300 kHz	50 mV _{pp}	50 mV _{pp}	50 mV _{pp}	50 mV _{pp}
for I _A	Ripple + noise 10 Hz ... 10 MHz	60 mV _{pp} / 10 mV _{eff}	80 mV _{pp} / 15 mV _{eff}	80 mV _{pp} / 15 mV _{eff}	80 mV _{pp} / 15 mV _{eff}
	Ripple + noise 10 Hz ... 10 MHz	15 mA _{eff}	20 mA _{eff}	30 mA _{eff}	60 mA _{eff}
Output voltage settling time with sudden load variation within a range of 20 ... 100% I _{nom}	Tolerance	160 mV	160 mV	160 mV	160 mV
	ΔI = 10%	100 μs	100 μs	100 μs	100 μs
	ΔI = +80%	700 μs	400 μs	400 μs	400 μs
	ΔI = -80%	700 μs	800 μs	800 μs	800 μs
Output voltage over and undershooting with sudden load variation within a range of 20 ... 100% I _{nom}	ΔI = 10%	200 mV	200 mV	200 mV	200 mV
	ΔI = 80%	500 mV	650 mV	650 mV	650 mV
Output voltage response time ³⁾	Tolerance	160 mV	160 mV	160 mV	160 mV
	with U _{set} jump = 0 V → U _{nom} no load; nominal load	5 ms; 15 ms	5 ms; 10 ms	5 ms; 10 ms	5 ms; 10 ms
	with U _{set} jump = U _{nom} → 1 V no load; nominal load	300 ms; 15 ms	300 ms; 15 ms	300 ms; 15 ms	300 ms; 15 ms
Additional Functions					
Measuring function					
Measuring range	Voltage	-4.00 ... +88.16 V	-4.00 ... +88.16 V	-4.00 ... +88.16 V	-4.00 ... +88.16 V
	Current	-0.48 ... +13.34 A	-0.96 ... +26.68 A	-1.92 ... +53.37 A	-2.88 ... +80.06 A
	Power	0 ... > 550 W	0 ... > 1100 W	0 ... > 2200 W	0 ... > 3300 W
Measuring resolution - local; remote	Voltage	10 mV	10 mV	10 mV	10 mV
	Current	2 / 10 mA; 2 mA	10 mA; 5 mA	10 mA; 10 mA	10 mA; 10 mA
	Power	1 W; 0.1 W	1 W; 0.1 W	1 W; 0.1 W	1 W; 0.1 W
Measuring accuracy (at 23 ± 5 °C)	Voltage	0.05% + 40 mV	0.05% + 40 mV	0.05% + 40 mV	0.05% + 40 mV
	Current	0.3% + 10 mA	0.3% + 20 mA	0.3% + 30 mA	0.4% + 40 mA
	Power	0.4% + 1 W	0.4% + 1.5 W	0.4% + 2.5 W	0.4% + 4 W
Output overvoltage protection					
Trigger value	Setting range	3 ... 100 V	3 ... 100 V	3 ... 100 V	3 ... 100 V
	Setting resolution	100 mV	100 mV	100 mV	100 mV
	Setting accuracy	0.3% + 100 mV	0.3% + 100 mV	0.3% + 100 mV	0.3% + 100 mV
General					
Power supply	Mains voltage	230 V ~ +10 / -15%	230 V ~ +10 / -15%	3 x 400 / 230 V ~ +10 / -15%, 47 ... 63Hz	3 x 400 / 230 V ~ +10 / -15%, 47 ... 63 Hz
		47 ... 63 Hz	47 ... 63 Hz		
Power consumption	at nominal load	1150 VA; 680 W	1750 VA; 1150 W	4800 VA; 2500 W	7000 VA; 3800 W
Switching frequency	typical	100 kHz	200 kHz	200 kHz	200 kHz
Efficiency	at nominal load	> 74%	> 85%	> 80%	> 80%
Order Number		K341A	K343A	K351A	K361A

¹⁾ Current setting values are rounded to the nearest multiple of 10 mA (< 100 A) or 100 mA (≥ 100 A) for digital displays.

²⁾ For sensing operation at the output terminals

³⁾ At max. current setpoint and without processing time for the previous voltage setting command

SSP KONSTANTER, Series 62 N and Series 64 N

Computer Controlled Laboratory Power Supplies

Ambient Conditions

Operating Temp.	0 ... +40 °C
Storage Temp.	-20 ... +70 °C
Cooling	built-in 2 speed fan air inlet at side air outlet at back

Power Supply

Mains Voltage	62 N: 230 V ~ +10 / -15%, 47 ... 63 Hz 64 N: 3 x 400 / 230 V ~ +10 / -15%, 47 ... 63 Hz
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Input / Output

Terminals (all at rear panel)	
Mains Input	62 N: 10-A-IEC inlet connector 64 N: 5-pole screw terminal block (3L + N + PE)
Output	Rails with drill holes for M8 screws and 4 mm diameter drill holes
Sensor	Integrated into analog interface
Analog Interface	14-pin plug connector with screw clamps
Regulator Type	Primary switched-mode regulator
Operating Mode	Adjustable constant voltage / constant current source with automatic sharp transition
Output Isolation	Floating output with protective isolation from the mains input and computer interfaces, max. allowable potential output to earth, 120 V capacitive output to earth (housing) Series 62 N: 500 W / 1000 W: typ. 90 nF Series 64 N: 2000 W / 3000 W: typ. 180 nF

Electrical Safety

Safety Class	I
Overvoltage Category	II for mains input I for output and interfaces
Contamination Level	2
Earth Leakage Current	62 N: < 3 mA _{eff} 64 N: < 1 mA _{eff}

Electrical Isolation	Rated Voltage	Test Voltage
Output – Mains	280 V _{eff}	4 kV ~ (type test)
Output – Bus / Earth	120 V _S	1.5 kV ~
Mains – Bus / Earth	230 V _{eff}	2.2 kV ~
Bus – Earth	no isolation	

IEC 61010-1+A1 / 1992
EN 61010-1 / 1993
DIN VDE 0411-1 / 1994
DIN VDE 0160 / 05.88
DIN VDE 0160 A1 / 04.89 (class W1)
DIN VDE 0805 / 05.90
IEC 950 / 1986

Electromagnetic Compatibility (EMC)

Interference Emission	EN 50081-2 / 1994 VDE 0839-81-2 / 1994
Limit values and measuring methods for transmitted interference for ISM devices	CISPR 11 / 1990 EN 55011 / 1991 VDE 0875-11 / 1992
Interference Immunity	EN 50082-2 / 1996 VDE 0839-82-2 / 1996
Electrostatic Discharge	IEC 1000-4-2 / 1995 EN 61000-4-2 / 1995 VDE 0847-4-2 / 1996 severity level 2 for contact discharge, severity level 3 for atmospheric discharge
Electromagnetic RF Fields	IEC 1000-4-3 / 1995 ENV 50140 / 1995 VDE 0847-3 / 1995 10 V / m, no influence
Transient Interference Bursts	IEC 1000-4-4 / 1995 EN 61000-4-4 / 1995 VDE 0847-4-4 / 1996 severity level 3

SSP KONSTANTER, Series 62 N and Series 64 N Computer Controlled Laboratory Power Supplies

Mechanical Design

Protection	IP 20 for housing and mains, output and analog interface terminals IP 00 for computer interfaces		
Device Type	Benchtop device, suitable for rack mounting		
Dimensions (W x H x D)	See also dimensional drawings 62 N: 19" x 2 std. height units x 500 mm 64 N: 19" x 4 std. height units x 500 mm		
Weight	62 N:	500 W:	prox. 12 kg
		1000 W:	prox. 13 kg
	64 N:	2000 W:	prox. 22 kg
		3000 W:	prox. 28 kg
	IEEE-488 / RS-232C interface (optional)		prox. 0.25 kg

Standard Equipment

- 1 operating instructions
- 1 mounting kit for rack installation
- 1 power cable with earthing contact plug (with 62 N only)

Accessories

Installation Accessories

Description	Note	Article No.
Bus Cable, RS 232, 2 m	For connecting a device to an RS 232 interface (extension cable, 9-pin socket / 9-pin plug)	GTZ 3241 000 R0001
Bus Cable, IEEE / IEEE, 2 m	For connecting a device to the IEEE 488 bus system	K931A

Software

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

Order Information

Description (short name)	Article No.
62 N 40 RU 25 P	K340A
62 N 40 RU 50 P	K342A
64 N 40 RU 100 P	K350A
64 N 40 RU 150 P	K360A
62 N 52 RU 25 P	K344A
62 N 52 RU 50 P	K345A
64 N 52 RU 100 P	K352A
64 N 52 RU 150 P	K362A
62 N 80 RU 12,5 P	K341A
62 N 80 RU 25 P	K343A
64 N 80 RU 50 P	K351A
64 N 80 RU 75 P	K361A
IEEE-488 / RS-232C Interface for SSP KONSTANTER	K381A

SSP KONSTANTER, Series 62 N and Series 64 N Computer Controlled Laboratory Power Supplies

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