



## SIB 100 Series

Distribution:



**Schulz-Electronic**  
Professional Power Supplies

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4-Quadrant  
Voltage and Current Amplifiers

400 W - 18.000 W  
DC ... 200 kHz / 1 MHz

# 4-Quadrant Voltage and Current Amplifiers SIB 100 Series 400 W - 18.000 W DC - 200 kHz / 1 MHz



SIB 110-35N

## Special Features

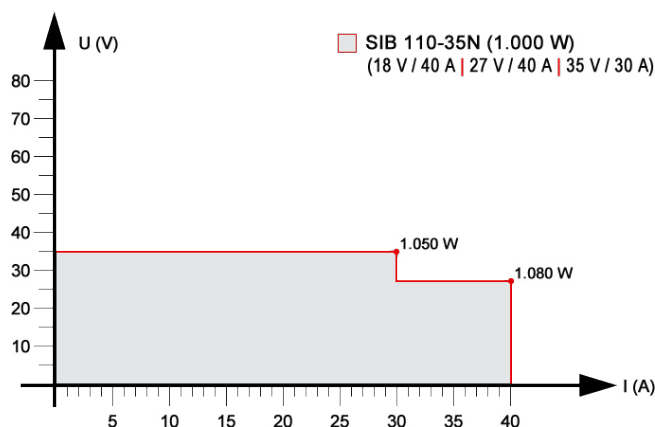
- DC ... 200 kHz full range bandwidth
- DC ... 1 MHz (small signal -3 dB)
- Output voltage 35 V / 70 V / 75 V
- Rise time / fall time 100 V/ $\mu$ s
- Internal impedance less than 10 m $\Omega$
- Recovery time less than 0.1 ms
- Analogue input 0 ...  $\pm$ 10 V for voltage or current control
- Monitor outputs for measured values of voltage and current
- Modularly expandable in Master/Slave mode
- USB interface standard
- Voltage step less than 0.1 V
- Voltage resolution less than 0.01 V
- Voltage ripple less than 0.1 Vp-p
- Good continuous heat dissipation

## Instrument Overview

### +35 V / -16 V

Models	Range 1 18 V	Range 2 27 V	Range 3 35 V	Output Power	Size
SIB 104-35N	20 A	11 A	11 A	400 W	3 U
SIB 110-35N	40 A	40 A	30 A	1.000 W	4 U
SIB 120-35N	76 A	76 A	57 A	2.000 W	14 U
SIB 130-35N	114 A	114 A	85 A	3.000 W	18 U
SIB 140-35N	152 A	152 A	114 A	4.000 W	22 U
SIB 150-35N	190 A	190 A	143 A	5.000 W	26 U
SIB 160-35N	228 A	228 A	171 A	6.000 W	30 U
SIB 180-35N	304 A	304 A	228 A	8.000 W	2 x 22 U
SIB 200-35N	380 A	380 A	285 A	10.000 W	2 x 26 U
SIB 220-35N	456 A	456 A	342 A	12.000 W	2 x 30 U
SIB 250-35N	570 A	570 A	429 A	15.000 W	3 x 26 U
SIB 280-35N	684 A	684 A	516 A	18.000 W	3 x 30 U

## Voltage Ranges

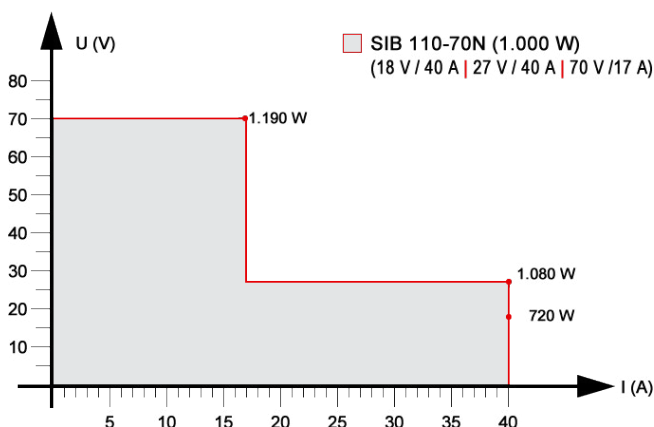


## Instrument Overview

### +70 V / -16 V

Models	Range 1 +18 V	Range 2 +27 V	Range 3 +70 V	Output Power	Size
SIB 105-70N	15 A	10 A	7,5 A	500 W	3 U
SIB 110-70N	40 A	40 A	17 A	1.000 W	4 U
SIB 120-70N	76 A	76 A	32 A	2.000 W	14 U
SIB 130-70N	114 A	114 A	49 A	3.000 W	18 U
SIB 140-70N	152 A	152 A	65 A	4.000 W	22 U
SIB 150-70N	190 A	190 A	81 A	5.000 W	26 U
SIB 160-70N	228 A	228 A	97 A	6.000 W	30 U
SIB 180-70N	304 A	304 A	129 A	8.000 W	2 x 22 U
SIB 200-70N	380 A	380 A	162 A	10.000 W	2 x 26 U
SIB 220-70N	456 A	456 A	194 A	12.000 W	2 x 30 U
SIB 250-70N	570 A	570 A	242 A	15.000 W	3 x 26 U
SIB 280-70N	684 A	684 A	291 A	18.000 W	3 x 30 U

## Voltage Ranges



## Selectable Operating Voltage

Three selectable operating voltage ranges allow to adapt to applications for high voltage / low current or low voltage / high current. The power is almost constant.

Especially when controlling extremely low impedance loads, the operating voltage range can be reduced to one third of the maximum output voltage. This leads to an immense reduction of power dissipation.

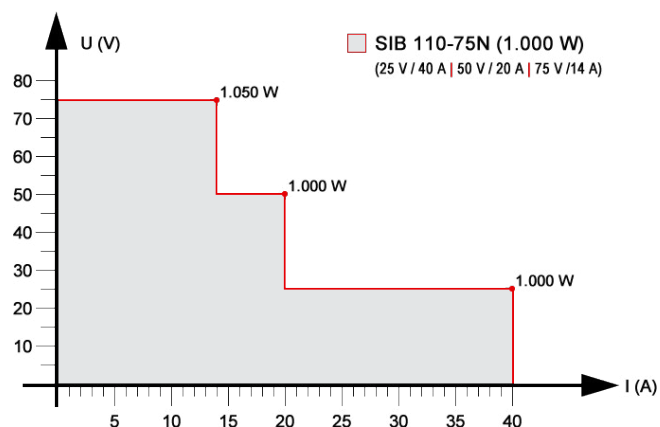
- Reduction of power dissipation
- One system for 12 V / 24 V / 48 V vehicles

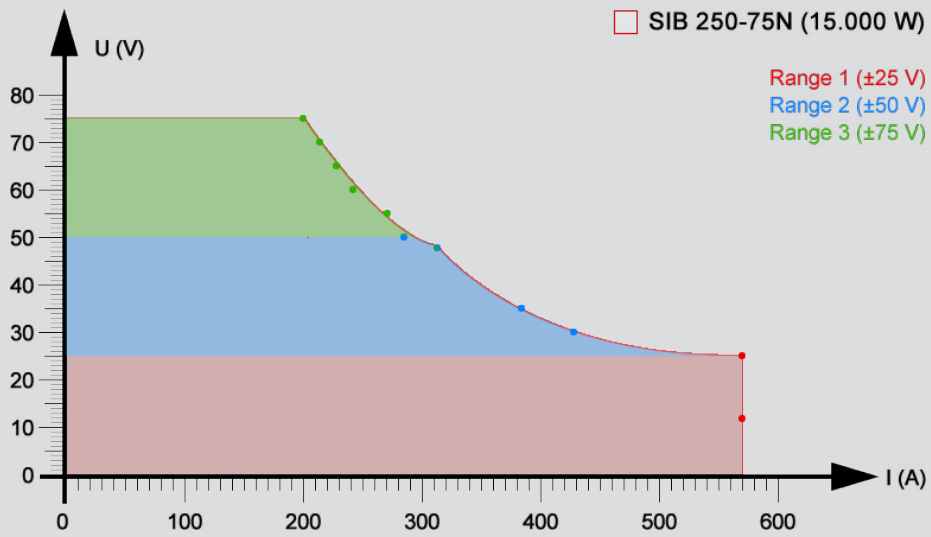
# 4-Quadrant Voltage and Current Amplifiers SIB 100 Series 400 W - 18.000 W DC - 200 kHz / 1 MHz

## Instrument Overview

### +75 V / -75 V

Models	Range 1 ±25 V	Range 2 ±50 V	Range 3 ±75 V	Output Power	Size
SIB 105-75N	11 A	8 A	5,5 A	500 W	3 U
SIB 110-75N	40 A	20 A	14 A	1.000 W	4 U
SIB 120-75N	76 A	38 A	27 A	2.000 W	14 U
SIB 130-75N	114 A	57 A	40 A	3.000 W	18 U
SIB 140-75N	152 A	76 A	53 A	4.000 W	22 U
SIB 150-75N	190 A	95 A	67 A	5.000 W	26 U
SIB 160-75N	228 A	114 A	80 A	6.000 W	30 U
SIB 180-75N	304 A	152 A	106 A	8.000 W	2 x 22 U
SIB 200-75N	380 A	190 A	133 A	10.000 W	2 x 26 U
SIB 220-75N	456 A	228 A	160 A	12.000 W	2 x 30 U
SIB 250-75N	570 A	285 A	200 A	15.000 W	3 x 26 U
SIB 280-75N	684 A	342 A	240 A	18.000 W	3 x 30 U





# General Information

## General

The SIB 100 series are linear precision 4-quadrant power amplifiers for fast voltage and current signals - each positive and negative (bipolar).

They also work as sink in applications to absorb power. Extremely high bandwidth at highest power requirements, necessary for fast signals, characterizes this series.

Especially these amplifiers are characterized by their signal quality.

## Multiple Instrument Functions In One Device

**Bipolar Power Supply**

**Voltage Amplifier**

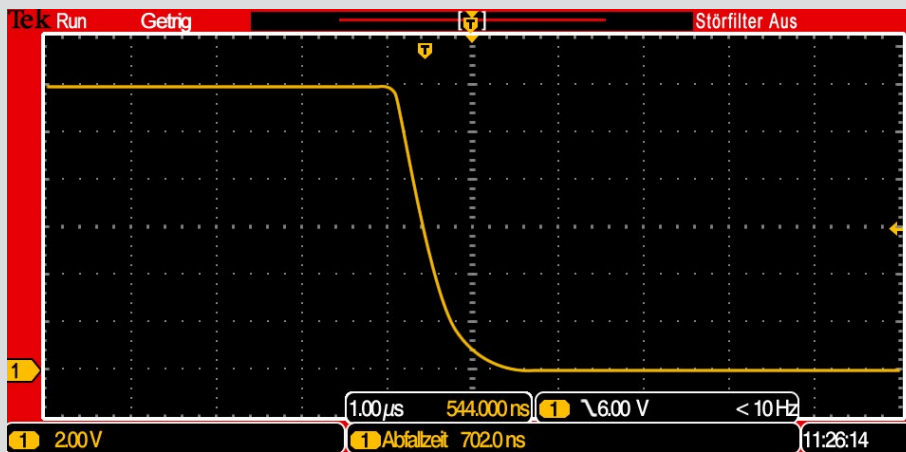


**Electronic Load  
(Current Sink)**

**Current Amplifier**

## Signal Quality

- Rise time:  $< 1 \mu\text{s}$
- Fall time:  $< 1 \mu\text{s}$
- No overshoot / no undershoot



## Protective Functions

Various protective functions avoid damage of the instrument and also guarantee protection for tested devices.

Output voltage and current can be limited and also over-temperature shutdown is included.

The inside calculation of power dissipation and totally monitoring of current ensure perfect short circuit and over-voltage protection.

Also for security aspects an interlock shut down can be triggered.

## Voltage And Current Control

Both voltage and current control of the comprehensive amplifiers is possible. This can be selected on the front panel of the instrument.

Control input is  $0 \dots \pm 10 \text{ V}$   
for  $0 \dots \pm V_{\text{rated}}$  respectively  $0 \dots \pm I_{\text{rated}}$ .

An optional compensation network for current control is necessary, which achieves highest slew rates and signal quality for current signals.

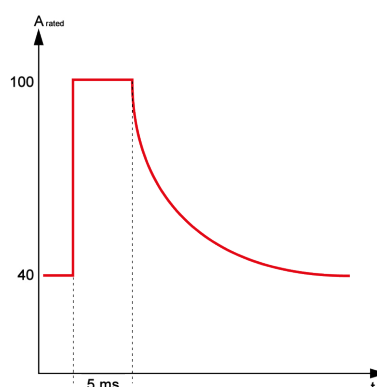
## Short-Time Current

In a period of time of 5 ms, the amplifier systems supply a short-time current.

E.g. the 1.000 W instruments with their 40 A reach 100 A.

Generally the instruments provide a short-time current of two and a half times their nominal current.

## Short Time Current At SIB 110-75N



# Modular Hardware Architecture



SIB 110-35N

## Modular Concept / Modularly Expandable

- Modular hardware architecture
- Starting with one single unit of e.g. 1 kW
- Extension up to 18 kW in parallel
- Building up 3-phase systems with up to 6 kW per phase
- Serial connection for increasing voltage
- In case of a defective module, only this module needs to be repaired
- Each module has its own indication for functional capability

## Monitor Outputs

Located on the back of the instruments there are monitor outputs for voltage and current with the respective measured values.

Output values are  $0 \dots \pm 10 \text{ V}$   
for  $0 \dots \pm V_{\text{rated}}$  respectively  $0 \dots \pm I_{\text{rated}}$ .

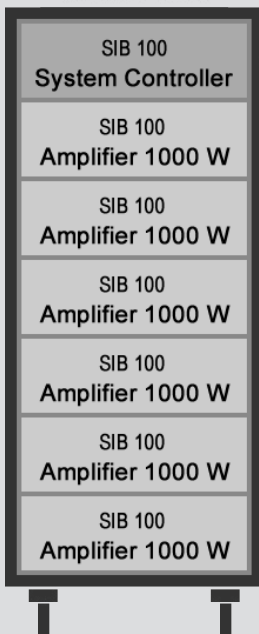
The current is measured by means of an internal shunt with an accuracy of approx. 1 %.

Optionally a current sensor with 0.01 % accuracy can be integrated easily.

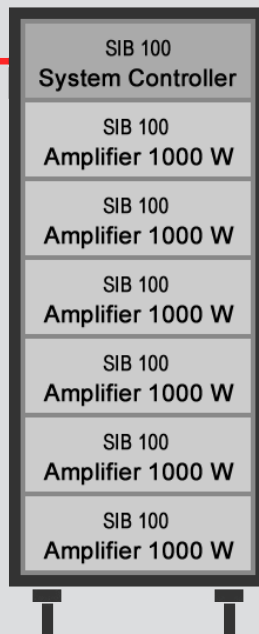


Max. 6 kW

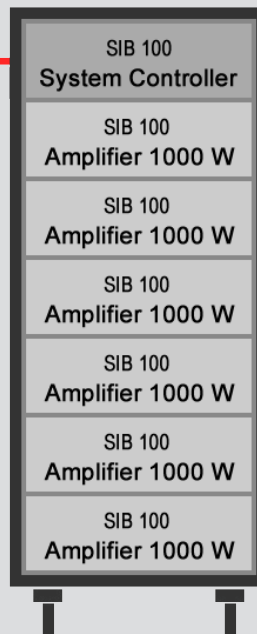
Master Unit



Max. 6 kW



Max. 6 kW



## Output ON/OFF

With its output on/off switch at the front of the instruments, the output can be activated or deactivated. When deactivating, there is a completely galvanic interruption to the tested devices.

# Technical Data / Order Information SIB 100-35N

## Technical Specifications

SIB	104-35N	110-35N	120-35N	130-35N	140-35N	150-35N
Voltage range	+35 V / -16 V					
Current max.	20 A	40 A	76 A	114 A	152 A	190 A
Current peak 5 ms	50 A	100 A	190 A	290 A	380 A	480 A
Current peak 500 ms / 1 s	on demand					
Source power	400 W	1.000 W	2.000 W	3.000 W	4.000 W	5.000 W
Sink power	175 W	450 W	900 W	1.350 W	1.800 W	2.250 W
Slew rate	100 V / $\mu$ s					
V mode Frequency full range small signal (-3 dB)	DC - 200 kHz DC - 1 MHz					
CC mode Frequency full range small signal (-3 dB)	Depending on RC network					
Input impedance unbalanced, 1 kHz balanced, 1 kHz	100 k $\Omega$ 200 k $\Omega$					
Instrument size	19", 3 U	19", 4 U	19", 14 U	19", 18 U	19", 22 U	19", 26 U
Delivery	Instrument	Instrument	19" rack	19" rack	19" rack	19" rack
Operating temperature	10° C - 55° C					

## Order Information

SIB 104-35N	35 V / 20 A / 0,4 kW
SIB 110-35N	35 V / 40 A / 1 kW
SIB 120-35N	35 V / 76 A / 2 kW
SIB 130-35N	35 V / 114 A / 3 kW
SIB 140-35N	35 V / 152 A / 4 kW
SIB 150-35N	35 V / 190 A / 5 kW
SIB 160-35N	35 V / 228 A / 6 kW
SIB 180-35N	35 V / 304 A / 8 kW
SIB 200-35N	35 V / 380 A / 10 kW
SIB 220-35N	35 V / 456 A / 12 kW
SIB 250-35N	35 V / 570 A / 15 kW
SIB 280-35N	35 V / 684 A / 18 kW

## Technical Specifications

SIB	160-35N	180-35N	200-35N	220-35N	250-35N	280-35N
Voltage range	+35 V / -16 V					
Current max.	228 A	304 A	380 A	456 A	570 A	684 A
Current peak 5 ms	570 A	760 A	950 A	1.140 A	1.430 A	1.710 A
Current peak 500 ms / 1 s	on demand					
Source power	6.000 W	8.000 W	10.000 W	12.000 W	15.000 W	18.000 W
Sink power	2.700 W	3.500 W	4.400 W	5.300W	6.600 W	7.900 W
Slew rate	100 V / $\mu$ s					
V mode						
Frequency						
full range	DC - 200 kHz					
small signal (-3 dB)	DC - 1 MHz					
CC mode						
Frequency	Depending on					
full range	RC network					
small signal (-3 dB)						
Input impedance						
unbalanced, 1 kHz	100 k $\Omega$					
balanced, 1 kHz	200 k $\Omega$					
Instrument size	19", 30 U	2x 19", 22 U	2 x 19", 26 U	2 x 19", 30 U	3 x 19", 26 U	3 x 19", 30 U
Delivery	19" rack	2 x 19" rack	2 x 19" rack	2 x 19" rack	3 x 19" rack	3 x 19" rack
Operating temperature	10° C - 55° C					

## Options

SIB 100S	Sensing (0 V / 0,5 V / 1 V / 2 V)
SIB 100I3	3-channel isolation amplifier
SIB 100CS200	Current sensor
SIB 700-XX	19" rack
SIB 100K	Compensation network

## Scope Of Supply

- 1 Amplifier
- 1 Power cord
- 1 User manual
- 1 19" rack (systems greater than 1.000 W)

# Technical Data / Order Information SIB 100-70N

## Technical Specifications

SIB	105-70N	110-70N	120-70N	130-70N	140-70N	150-70N
Voltage range	+70 V / -16 V					
Current max.	15 A	40 A	76 A	114 A	152 A	190 A
Current peak 5 ms	40 A	100 A	190 A	290 A	380 A	480 A
Current peak 500 ms / 1 s	on demand					
Source power	500 W	1.000 W	2.000 W	3.000 W	4.000 W	5.000 W
Sink power	220 W	450 W	900 W	1.350 W	1.800 W	2.250 W
Slew rate	100 V / $\mu$ s					
V mode						
Frequency						
full range	DC - 200 kHz					
small signal (-3 dB)	DC - 1 MHz					
CC mode						
Frequency	Depending on					
full range	RC network					
small signal (-3 dB)						
Input impedance						
unbalanced, 1 kHz	100 k $\Omega$					
balanced, 1 kHz	200 k $\Omega$					
Instrument size	19", 3 U	19", 4 U	19", 14 U	19", 18 U	19", 22 U	19", 26 U
Delivery	Instrument	Instrument	19" rack	19" rack	19" rack	19" rack
Operating temperature	10° C - 55° C					

## Order Information

SIB 105-70N	70 V / 15 A / 0,5 kW
SIB 110-70N	70 V / 40 A / 1 kW
SIB 120-70N	70 V / 76 A / 2 kW
SIB 130-70N	70 V / 114 A / 3 kW
SIB 140-70N	70 V / 152 A / 4 kW
SIB 150-70N	70 V / 190 A / 5 kW
SIB 160-70N	70 V / 228 A / 6 kW
SIB 180-70N	70 V / 304 A / 8 kW
SIB 200-70N	70 V / 380 A / 10 kW
SIB 220-70N	70 V / 456 A / 12 kW
SIB 250-70N	70 V / 570 A / 15 kW
SIB 280-70N	70 V / 684 A / 18 kW

## Technical Specifications

SIB	160-70N	180-70N	200-70N	220-70N	250-70N	280-70N
Voltage range	+70 V / -16 V					
Current max.	228 A	304 A	380 A	456 A	570 A	684 A
Current peak 5 ms	570 A	760 A	950 A	1.140 A	1.430 A	1.710 A
Current peak 500 ms / 1 s	on demand					
Source power	6.000 W	8.000 W	10.000 W	12.000 W	15.000 W	18.000 W
Sink power	2.700 W	3.500 W	4.400 W	5.300W	6.600 W	7.900 W
Slew rate	100 V / $\mu$ s					
V mode						
Frequency						
full range	DC - 200 kHz					
small signal (-3 dB)	DC - 1 MHz					
CC mode						
Frequency	Depending on					
full range	RC network					
small signal (-3 dB)						
Input impedance						
unbalanced, 1 kHz	100 k $\Omega$					
balanced, 1 kHz	200 k $\Omega$					
Instrument size	19", 30 U	2x 19", 22 U	2 x 19", 26 U	2 x 19", 30 U	3 x 19", 26 U	3 x 19", 30 U
Delivery	19" rack	2 x 19" rack	2 x 19" rack	2 x 19" rack	3 x 19" rack	3 x 19" rack
Operating temperature	10° C - 55° C					

## Options

SIB 100S	Sensing (0 V / 0,5 V / 1 V / 2 V)
SIB 100I3	3-channel isolation amplifier
SIB 100CS200	Current sensor
SIB 700-XX	19" rack
SIB 100K	Compensation network

## Scope Of Supply

1 Amplifier
1 Power cord
1 User manual
1 19" rack (systems greater than 1.000 W)

# Technical Data / Order Information SIB 100-75N

## Technical Specifications

SIB	105-75N	110-75N	120-75N	130-75N	140-75N	150-75N
Voltage range	+75 V / -75 V					
Current max.	11 A	40 A	76 A	114 A	152 A	190 A
Current peak 5 ms	30 A	100 A	190 A	290 A	380 A	480 A
Current peak 500 ms / 1 s	on demand					
Source power	500 W	1.000 W	2.000 W	3.000 W	4.000 W	5.000 W
Sink power	150 W	375 W	750 W	1.125 W	1.500 W	1.875 W
Slew rate	100 V / $\mu$ s					
V mode						
Frequency						
full range	DC - 200 kHz					
small signal (-3 dB)	DC - 1 MHz					
CC mode						
Frequency						
full range	Depending on					
small signal (-3 dB)	RC network					
Input impedance						
unbalanced, 1 kHz	100 k $\Omega$					
balanced, 1 kHz	200 k $\Omega$					
Instrument size	19", 3 U	19", 4 U	19", 14 U	19", 18 U	19", 22 U	19", 26 U
Delivery	Instrument	Instrument	19" rack	19" rack	19" rack	19" rack
Operating temperature	10° C - 55° C					

## Order Information

SIB 105-75N	75 V / 11 A / 0,5 kW
SIB 110-75N	75 V / 40 A / 1 kW
SIB 120-75N	75 V / 76 A / 2 kW
SIB 130-75N	75 V / 114 A / 3 kW
SIB 140-75N	75 V / 152 A / 4 kW
SIB 150-75N	75 V / 190 A / 5 kW
SIB 160-75N	75 V / 228 A / 6 kW
SIB 180-75N	75 V / 304 A / 8 kW
SIB 200-75N	75 V / 380 A / 10 kW
SIB 220-75N	75 V / 456 A / 12 kW
SIB 250-75N	75 V / 570 A / 15 kW
SIB 280-75N	75 V / 684 A / 18 kW

## Technical Specifications

SIB	160-75N	180-75N	200-75N	220-75N	250-75N	280-75N
Voltage range	+75 V / -75 V					
Current max.	228 A	304 A	380 A	456 A	570 A	684 A
Current peak 5 ms	570 A	760 A	950 A	1.140 A	1.430 A	1.710 A
Current peak 500 ms / 1 s	on demand					
Source power	6.000 W	8.000 W	10.000 W	12.000 W	15.000 W	18.000 W
Sink power	2.225 W	2.975 W	3.725 W	4.475 W	5.587 W	6.710 W
Slew rate	100 V / $\mu$ s					
V mode						
Frequency						
full range	DC - 200 kHz					
small signal (-3 dB)	DC - 1 MHz					
CC mode						
Frequency	Depending on					
full range	RC network					
small signal (-3 dB)						
Input impedance						
unbalanced, 1 kHz	100 k $\Omega$					
balanced, 1 kHz	200 k $\Omega$					
Instrument size	19", 30 U	2x 19", 22 U	2 x 19", 26 U	2 x 19", 30 U	3 x 19", 26 U	3 x 19", 30 U
Delivery	19" rack	2 x 19" rack	2 x 19" rack	2 x 19" rack	3 x 19" rack	3 x 19" rack
Operating temperature	10° C - 55° C					

## Options

SIB 100S	Sensing (0 V / 0,5 V / 1 V / 2 V)
SIB 100I3	3-channel isolation amplifier
SIB 100CS200	Current sensor
SIB 700-XX	19" rack
SIB 100K	Compensation network

## Scope Of Supply

- 1 Amplifier
- 1 Power cord
- 1 User manual
- 1 19" rack (systems greater than 1.000 W)

## Distribution:



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