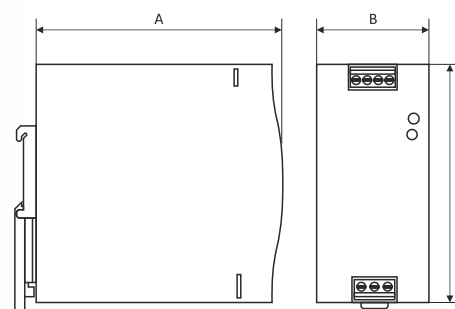


KSB 040; KSB 060; KSB 100



KSB 180

Power: **40; 60; 100; 180W**
 Rated input voltage: **90 - 264VAC; 127 - 370VDC**
 Output voltage: **13,8V; 27,6V**
 Efficiency: **86 - 90%**

Features:

- simultaneous powering of connected loads and battery charging,
- automatic switchover to battery operation in the event of AC mains failure,
- comprehensive protection system: short-circuit, overload, and overvoltage protection,
- battery protection against deep discharge and reverse polarity connection,
- high operating temperature range – up to 70°C*,
- high efficiency and reliability,
- long service life,
- natural convection cooling (fanless design).

Description:

The KSB series regulated switching buffer power supplies, designed for DIN rail mounting, are intended for applications requiring uninterrupted power supply. They enable simultaneous powering of connected loads from the AC mains while charging the backup battery. In the event of a mains power failure, the units automatically switch to battery operation.

Built-in short-circuit, overvoltage, and overload

Type	Power	Output voltage CH1	Current CH1	Output voltage CH2	Current CH2	Dimensions [mm]			Weight [kg]
	[W]	[V]	[A]	[V]	[A]	A	B	C	
KSB 04012	40,02	13,8	1,9	13,8	1	100	40	90	0,3
KSB 04024	40,02	27,6	0,95	27,6	0,5	100	40	90	0,3
KSB 06012	59,34	13,8	2,8	13,8	1,5	100	40	90	0,3
KSB 06024	59,34	27,6	1,4	27,6	0,75	100	40	90	0,3
KSB 10012	96,6	13,8	4,5	13,8	2,5	100	55	90	0,37
KSB 10024	96,9	27,6	2,25	27,6	1,25	100	55	90	0,37
KSB 18012	179,4	13,8	9	13,8	4,5	113,5	63	125,2	0,71
KSB 18024	179,4	27,6	4,5	27,6	2	113,5	63	125,2	0,71

protection functions, together with battery protection features, enhance operational reliability and safety.

The power supplies are equipped with natural convection cooling, LED status indicators, and signaling outputs, facilitating integration and monitoring in industrial automation, security, and industrial control systems.

Applications:

- industrial automation,
- security and alarm systems,
- emergency lighting,
- DC UPS systems,
- video surveillance and access control systems.

KSB 04012 / KSB 04024

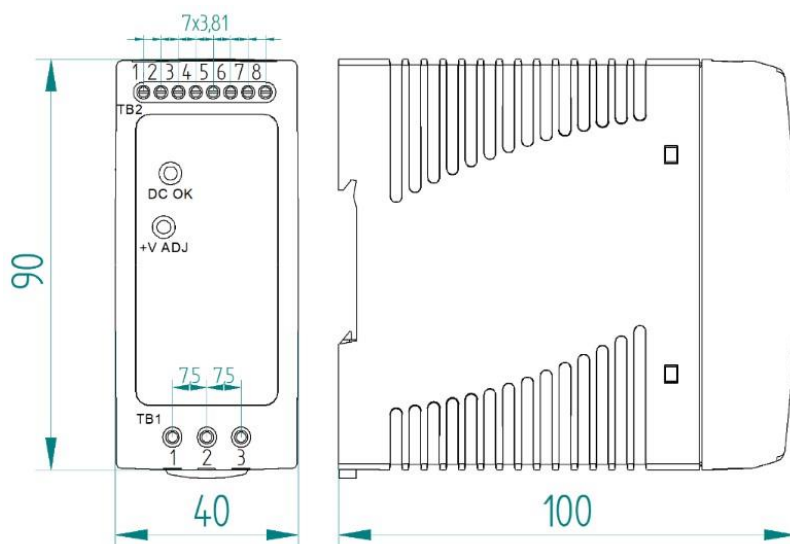
1. Introduction:

The user manual applies to stabilized, switched-mode buffer power supplies in DIN-rail mount enclosures, designed to power devices in industrial automation systems, security systems, and other installations requiring uninterrupted operation. The KSB series power supplies enable simultaneous powering of loads from the AC mains and battery charging, with automatic switching to battery mode in the event of a mains power failure. An integrated protection circuit safeguards the unit and connected loads against overload (OPP – Over Power Protection), overvoltage (OVP – Over Voltage Protection), and short circuits (SCP – Short Circuit Protection). Additionally, protection against excessive battery discharge and reverse polarity (via a fuse) is provided. The housing, designed for DIN rail mounting (TS-35/7.5 or TS-35/15), allows for easy integration into switchgear and control cabinets. Cooling is achieved through natural air convection, and LED indicators and signal outputs enable monitoring of operating status and alarms. These power supplies are suitable for use in, among other applications, safety systems, emergency lighting, alarm systems, DC UPS, central monitoring, and access control.

2. Features:

- **Over-load protection:** The power supply is equipped with a hiccup-mode protection scheme, which protects the unit against output overload and short-circuit conditions. If the permissible load is exceeded, the DC output voltage is periodically switched off and on. Normal operation resumes automatically once the fault is cleared or the overload condition ceases.
- **Over-voltage protection:** The power supply is equipped with an Over-Voltage protection (OVP) function that protects both the unit and the connected equipment from damage caused by excessive output voltage. If an over-voltage condition is detected, the DC output is automatically disconnected to prevent potential failures. After the OVP is triggered, operation is automatically restored once the fault condition has been removed.
- **Output voltage adjustment potentiometer:** The power supply includes a user-accessible potentiometer, enabling precise adjustment of the output voltage to match the requirements of the connected equipment.

3. Mechanical specifications:



TB1 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	FG/PE
2	AC/N / DC-
3	AC/L / DC+

TB2 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	Bat. Low
2	
3	AC OK
4	
5	Battery -
6	Battery +
7	DC/V+
8	DC/V-

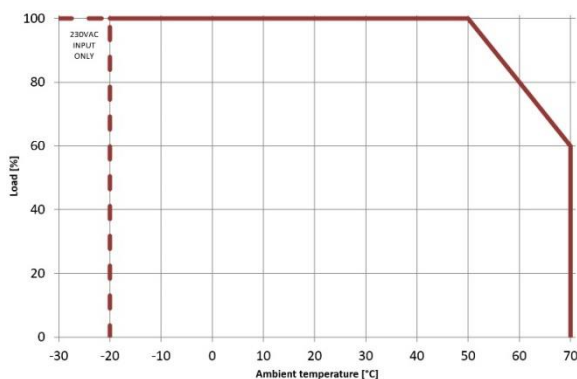


Figure 1. Derating curve of rated output load as a function of ambient temperature.

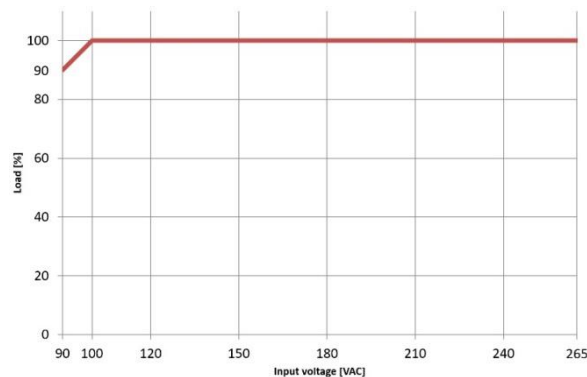


Figure 2. Derating curve of rated output load as a function of input voltage.

4. Installation:

- KSB series switching power supplies are designed for mounting on a standard TS35 DIN rail (35 × 15 / 7.5 mm).
- Ensure that the mounting position of the device provides optimal cooling performance. The recommended mounting position is vertical. The ventilation openings must remain unobstructed.
- Suitable protective devices (such as a fuse or miniature circuit breaker) and readily accessible isolation devices for disconnecting the power supply must be provided.
- Before connecting the power supply, ensure that the main power switch to which it will be connected is switched off and properly secured against accidental activation. Failure to comply with this instruction may result in contact with live parts, which can cause death or serious injury.
- To mount the device on a DIN rail, hook the upper part of the mounting bracket onto the upper edge of the rail, then press the lower part of the device downward and inward until the locking mechanism audibly clicks into place.
- To remove the device from the DIN rail, insert a flat-blade insulated screwdriver into the latch release opening as close as possible to the lower edge of the enclosure. Press the screwdriver to release the locking mechanism and pull the lower part of the device away from the rail, then lift the device upward to disengage the upper hook.
- Connect the device to the power supply. When using flexible conductors, ferrules should be used to ensure proper connection to the terminals. The cross-sectional area of a flexible supply conductor should be at least 0.5 mm².
- Adequate insulation clearance must be maintained between the mounting screws and the internal components of the power supply.

5. Safety precautions:

- **Do not remove** the housing of the power supply while the mains power is connected.
- **Do not touch** the device with wet hands.
- **Do not touch** the housing when the unit is fully loaded, high surface temperature may cause burns.
- **Do not use** the device if any metal objects, water, or other foreign bodies have entered it.
- **Do not use** the device if it has been damaged, as the voltage-regulating circuitry may have failed or may be operating outside the normal control parameters. Failure to comply may result in high voltage and subsequent damage to the connected load.
- **NO objects** may touch the output terminals of the device.
- If inspection of the device interior is necessary, allow it to cool completely. In case of a fault, the high temperatures of certain components may cause burns.
- **Do not block** the air-intake vent.

6. Recommended application:

A typical connection method is shown in Figure 3. Under normal operating conditions, the power supply supplies power to the load while maintaining the battery in a fully charged state. In the event of an AC mains failure, the unit automatically switches to battery operation, ensuring uninterrupted operation of the load.

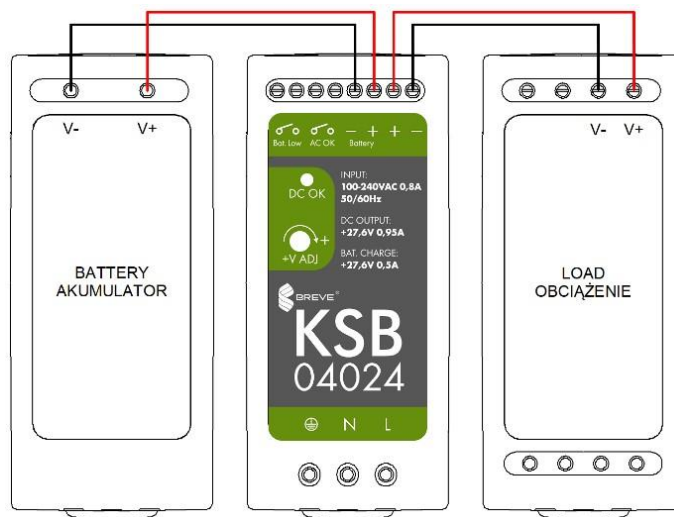


Figure 3. Typical buffered power supply application with backup battery.

The power supply is equipped with two signaling outputs implemented by means of volt-free relay contacts:

- **AC OK** - indication of the presence of AC mains voltage and correct power supply operation.
- **Battery Low** - indication of low battery voltage.

The signaling functions require an external voltage source. The maximum voltage switched by the relay contacts is **50 VDC**, while the maximum load current is **30mA**.

FUNCTION	OPERATING CONDITION	OUTPUT STATE
AC OK	Normal power supply operation	Contact closed
	AC mains failure or power supply switched off	Contact open
Battery Low	Battery voltage below alarm threshold	Contact closed
	Battery voltage above alarm threshold	Contact open

In the event of overload protection activation and the power supply entering protection mode, the **AC OK signal switches to the alarm state.*

7. Technical data:

	KSB 04012	KSB 04024
Voltage Range	90-264VAC; 127-370VDC DC operation possible by connecting AC/L (+) and AC/N (-)	
Frequency	47-63Hz~	
Full Load AC Current	0,8A/115VAC; 0,6A/230VAC	
Inrush Current, Cold Start at 25°C*	30A/115VAC; 60A/230VAC	
Efficiency	86%	87%

Output

Rated DC Voltage	13,8V	13,8V	27,6V	27,6V
Voltage Adjust Range	12-15V		24-30V	
Rated Current	1,9A	1,0A	0,95A	0,5A

Rated Current Range	0~2,9A	-	0~1,45A	-
Rated Power	40,02W		40,02W	
Ripple and Noise (peak-to-peak)*	≤ 120mV		≤ 200mV	
Voltage Tolerance	≤ 1%	-	≤ 1%	-
Line Regulation	≤ 0,5%	-	≤ 0,5%	-
Load Regulation (10–100%)	≤ 0,5%	-	≤ 0,5%	-
Setup / Rise Time (full load)	800ms, 50ms/115VAC; 400ms, 50ms/230VAC (full load)			
Hold-Up Time (full load)	>10ms/115VAC; > 50ms/230VAC (full load)			
Parallel Operation	Not possible			

Protection

Overload / Over Current	The power supply may operate at short-term loads in the range of 105–150% of rated power.	
	Type of protection: Hiccup mode protection, recovers automatically after fault condition is removed.	
Over Output Voltage	14,5-18,6VDC	29,9-37,2VDC
	Type of protection: Output shutdown. Operation can be restored after normal operating conditions have been restored and the power supply has been restarted.	
Battery Supply Disconnect Voltage	10±0.5V	20±1V

Alarm functions

AC OK – Mains Voltage Status	Relay contact output: Closed contact: Correct mains voltage Open contact: Mains voltage failure	
Battery Low – Low Battery Voltage Status	<10,5V	<21V
	Relay contact output: Closed contact: Low battery voltage Open contact: Correct battery voltage	
Relay Contact Rating (AC OK / Bat Low)	50V/30mA	

Safety & EMC

Safety Standard	EN IEC 62368-1
Withstand Voltage	I/P-O/P 3kVAC; I/P-F/G 2kVAC; O/P-F/G 0,5kVAC
Insulation Resistance	I/P-O/P, I/P-F/G, O/P-F/G 100MΩ/500VDC/25°C/70%RH
EMI Radiation & Conduction	Complies with EN55032 Class B (CISPR32)
Harmonic Currents	Complies with EN61000-3-2, -3
EMC Immunity	Complies with EN61000-4-2, -3, -4, -5, -6, -8, -11

Environment

Working Temperature	-30°C ~ +70°C
Derating Temperature above 50°C	See: Output Load Derating Curve vs. Temperature.
Working Humidity	20-90% RH, non-condensing
Storage Temperature & Humidity	-40°C to +85°C, 10-95% RH, non-condensing
Vibration	10–500 Hz, 5 G, 10 min/cycle, 60 min along each of the X, Y, and Z axes

General

Case Material	PC/ABS
Case Protection	IP 20
Weight	0,3kg
Dimensions	40 × 90 × 100mm
Mounting	Snap-on mounting on 35 mm DIN rails (7.5 mm or 15 mm profile), vertical position
Connection	Screw terminals, double output terminals

Note

1. *Unless otherwise specified, all technical parameters are measured at an input voltage of 230 VAC, rated load and an ambient temperature of 25 °C.*
2. *Method for measuring ripple and noise: a twisted-pair cable of approximately 30 cm in length is used, with capacitors of 0.1 μ F and 47 μ F connected in parallel at the output terminals; measurement is carried out with a bandwidth of 20 MHz.*
3. *Output voltage accuracy includes: setting error, line regulation, and load regulation.*
4. *Line regulation test: performed by measuring changes in the output voltage when the input voltage is varied from minimum to maximum, while maintaining rated load.*
5. *Load regulation test: performed by varying the load from 0% to 100% of the rated value.*
6. *For continuous operation at full load, a clearance of 40 mm above the unit, 20 mm below the unit, and 5 mm on each side is recommended. If adjacent devices are heat sources, a clearance of 15 mm is recommended.*
7. *Start-up time is specified for a cold start. Frequent power-on/power-off cycles may prolong the start-up time.*
8. *For operation at altitudes above 2000 m (6500 ft), the maximum permissible ambient operating temperature should be reduced by 5°C for each additional 1000m of altitude.*

8. Additional information:

The latest version of this manual is available on our website:

<https://www.brevetrafo.com/catalog/power-supplies/ksb.html>

(scan the QR code below to access the page directly)



KSB 06012 / KSB 06024

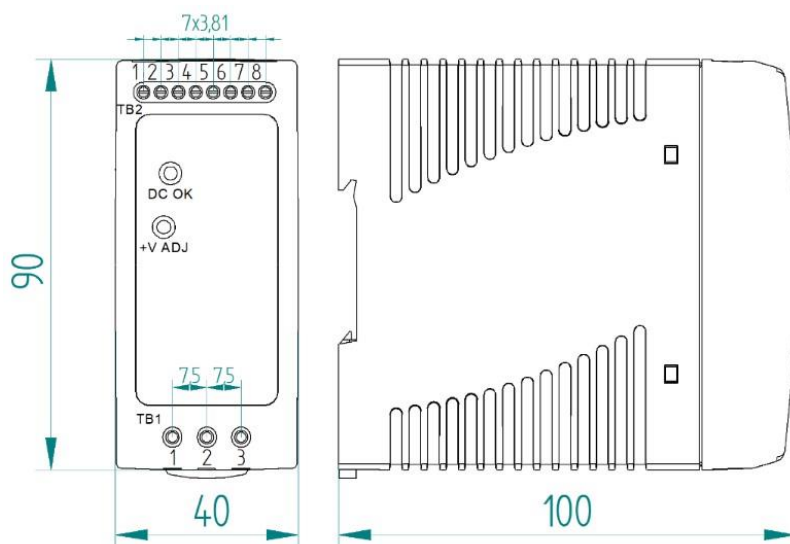
1. Introduction:

The user manual applies to stabilized, switched-mode buffer power supplies in DIN-rail mount enclosures, designed to power devices in industrial automation systems, security systems, and other installations requiring uninterrupted operation. The KSB series power supplies enable simultaneous powering of loads from the AC mains and battery charging, with automatic switching to battery mode in the event of a mains power failure. An integrated protection circuit safeguards the unit and connected loads against overload (OPP – Over Power Protection), overvoltage (OVP – Over Voltage Protection), and short circuits (SCP – Short Circuit Protection). Additionally, protection against excessive battery discharge and reverse polarity (via a fuse) is provided. The housing, designed for DIN rail mounting (TS-35/7.5 or TS-35/15), allows for easy integration into switchgear and control cabinets. Cooling is achieved through natural air convection, and LED indicators and signal outputs enable monitoring of operating status and alarms. These power supplies are suitable for use in, among other applications, safety systems, emergency lighting, alarm systems, DC UPS, central monitoring, and access control.

2. Features:

- **Over-load protection:** The power supply is equipped with a hiccup-mode protection scheme, which protects the unit against output overload and short-circuit conditions. If the permissible load is exceeded, the DC output voltage is periodically switched off and on. Normal operation resumes automatically once the fault is cleared or the overload condition ceases.
- **Over-voltage protection:** The power supply is equipped with an Over-Voltage protection (OVP) function that protects both the unit and the connected equipment from damage caused by excessive output voltage. If an over-voltage condition is detected, the DC output is automatically disconnected to prevent potential failures. After the OVP is triggered, operation is automatically restored once the fault condition has been removed.
- **Output voltage adjustment potentiometer:** The power supply includes a user-accessible potentiometer, enabling precise adjustment of the output voltage to match the requirements of the connected equipment.

3. Mechanical specifications:



KONFIGURACJA ZŁĄCZY TB1:

ZŁĄCZE NR	OPIS
1	FG/PE
2	AC/N
3	AC/L

KONFIGURACJA ZŁĄCZY TB2:

ZŁĄCZE NR	OPIS
1	Bat. Low
2	
3	
4	AC OK
5	
6	Battery -
7	Battery +
8	DC/V+
	DC/V-

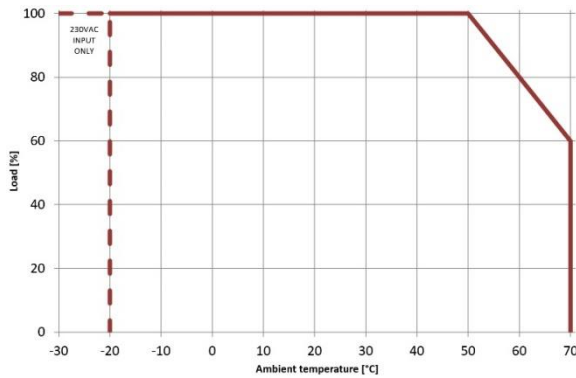


Figure 1. Derating curve of rated output load as a function of ambient temperature.

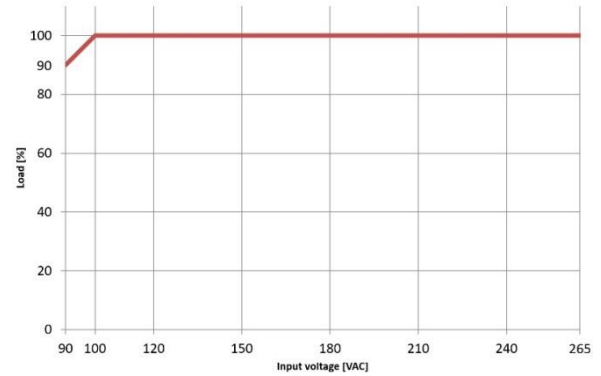


Figure 2. Derating curve of rated output load as a function of input voltage.

4. Installation:

- KSB series switching power supplies are designed for mounting on a standard TS35 DIN rail (35 × 15 / 7.5 mm).
- Ensure that the mounting position of the device provides optimal cooling performance. The recommended mounting position is vertical. The ventilation openings must remain unobstructed.
- Suitable protective devices (such as a fuse or miniature circuit breaker) and readily accessible isolation devices for disconnecting the power supply must be provided.
- Before connecting the power supply, ensure that the main power switch to which it will be connected is switched off and properly secured against accidental activation. Failure to comply with this instruction may result in contact with live parts, which can cause death or serious injury.
- To mount the device on a DIN rail, hook the upper part of the mounting bracket onto the upper edge of the rail, then press the lower part of the device downward and inward until the locking mechanism audibly clicks into place.
- To remove the device from the DIN rail, insert a flat-blade insulated screwdriver into the latch release opening as close as possible to the lower edge of the enclosure. Press the screwdriver to release the locking mechanism and pull the lower part of the device away from the rail, then lift the device upward to disengage the upper hook.
- Connect the device to the power supply. When using flexible conductors, ferrules should be used to ensure proper connection to the terminals. The cross-sectional area of a flexible supply conductor should be at least 0.5 mm².
- Adequate insulation clearance must be maintained between the mounting screws and the internal components of the power supply.

5. Safety precautions:

- **Do not remove** the housing of the power supply while the mains power is connected.
- **Do not touch** the device with wet hands.
- **Do not touch** the housing when the unit is fully loaded, high surface temperature may cause burns.
- **Do not use** the device if any metal objects, water, or other foreign bodies have entered it.
- **Do not use** the device if it has been damaged, as the voltage-regulating circuitry may have failed or may be operating outside the normal control parameters. Failure to comply may result in high voltage and subsequent damage to the connected load.
- **NO objects** may touch the output terminals of the device.
- If inspection of the devices interior is necessary, allow it to cool completely. In case of a fault, the high temperatures of certain components may cause burns.
- **Do not block** the air-intake vent.

6. Recommended application:

A typical connection method is shown in Figure 3. Under normal operating conditions, the power supply supplies power to the load while maintaining the battery in a fully charged state. In the event of an AC mains failure, the unit automatically switches to battery operation, ensuring uninterrupted operation of the load.

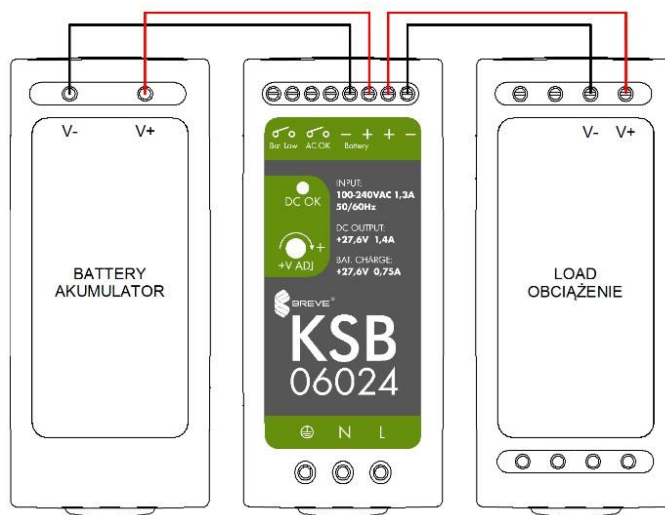


Figure 3. Typical buffered power supply application with backup battery.

The power supply is equipped with two signaling outputs implemented by means of volt-free relay contacts:

- **AC OK** - indication of the presence of AC mains voltage and correct power supply operation.
- **Battery Low** - indication of low battery voltage.

The signaling functions require an external voltage source. The maximum voltage switched by the relay contacts is **50 VDC**, while the maximum load current is **30mA**.

FUNCTION	OPERATING CONDITION	OUTPUT STATE
AC OK	Normal power supply operation	Contact closed
	AC mains failure or power supply switched off	Contact open
Battery Low	Battery voltage below alarm threshold	Contact closed
	Battery voltage above alarm threshold	Contact open

In the event of overload protection activation and the power supply entering protection mode, the **AC OK signal switches to the alarm state.*

7. Technical data:

	KSB 06012		KSB 06024	
Voltage Range	100-240VAC; 140-340VDC DC operation possible by connecting AC/L (+) and AC/N (–)			
Frequency	47-63Hz~			
Full LoadAC Current	1,3A/115VAC; 0,8A/230VAC			
Inrush Current, Cold Start at 25°C*	25A/115VAC; 50A/230VAC			
Efficiency	86%		88%	
Output				
Rated DC Voltage	13,8V	13,8V	27,6V	27,6V
Voltage Adjust Range	12-15V		24-30V	
Rated Current	2,8A	1,5A	1,4A	0,75A

Rated Current Range	0~4,3A	-	0~2,15A	-
Rated Power	59,3W		59,3W	
Ripple and Noise (peak-to-peak)*	≤ 120mV			
Voltage Tolerance	≤ 1%	-	≤ 1%	-
Line Regulation	≤ 0,5%	-	≤ 0,5%	-
Load Regulation (10–100%)	≤ 0,5%	-	≤ 0,5%	-
Setup / Rise Time (full load)	400ms, 50ms/230VAC (full load)			
Hold-Up Time (full load)	>10ms/115VAC; > 50ms/230VAC (full load)			
Parallel Operation	Not possible			

Protection

Overload / Over Current	The power supply may operate at short-term loads in the range of 105–150% of rated power.	
	Type of protection: Hiccup mode protection, recovers automatically after fault condition is removed.	
Over Output Voltage	14,5-18,6VDC	29,9-37,2VDC
	Type of protection: Output shutdown. Operation can be restored after normal operating conditions have been restored and the power supply has been restarted.	
Battery Supply Disconnect Voltage	10±0.5V	20±1V

Alarm functions

AC OK – Mains Voltage Status	Relay contact output: Closed contact: Correct mains voltage Open contact: Mains voltage failure	
Battery Low – Low Battery Voltage Status	<10,5V	<21V
	Relay contact output: Closed contact: Low battery voltage Open contact: Correct battery voltage	
Relay Contact Rating (AC OK / Bat Low)	30V/1A	

Safety & EMC

Safety Standard	EN IEC 62368-1
Withstand Voltage	I/P-O/P 3kVAC; I/P-F/G 2kVAC; O/P-F/G 0,5kVAC
Insulation Resistance	I/P-O/P, I/P-F/G, O/P-F/G 100MΩ/500VDC/25°C/70%RH
EMI Radiation & Conduction	Complies with EN55032 Class B (CISPR32)
Harmonic Currents	Complies with EN61000-3-2, -3
EMC Immunity	Complies with EN61000-4-2, -3, -4, -5, -6, -8, -11

Environment

Working Temperature	-30°C ~ +70°C
Derating Temperature above 50°C	See: Output Load Derating Curve vs. Temperature.
Working Humidity	20-90% RH, non-condensing
Storage Temperature & Humidity	40°C to +85°C, 10-95% RH, non-condensing
Vibration	10–500 Hz, 5 G, 10 min/cycle, 60 min along each of the X, Y, and Z axes

General

Case Material	PC/ABS
Case Protection	IP 20
Weight	0,3kg
Dimensions	40 × 90 × 100mm
Mounting	Snap-on mounting on 35 mm DIN rails (7.5 mm or 15 mm profile), vertical position
Connection	Screw terminals, double output terminals

Note

1. *Unless otherwise specified, all technical parameters are measured at an input voltage of 230 VAC, rated load and an ambient temperature of 25 °C.*
2. *Method for measuring ripple and noise: a twisted-pair cable of approximately 30 cm in length is used, with capacitors of 0.1 μ F and 47 μ F connected in parallel at the output terminals; measurement is carried out with a bandwidth of 20 MHz.*
3. *Output voltage accuracy includes: setting error, line regulation, and load regulation.*
4. *Line regulation test: performed by measuring changes in the output voltage when the input voltage is varied from minimum to maximum, while maintaining rated load.*
5. *Load regulation test: performed by varying the load from 0% to 100% of the rated value.*
6. *For continuous operation at full load, a clearance of 40 mm above the unit, 20 mm below the unit, and 5 mm on each side is recommended. If adjacent devices are heat sources, a clearance of 15 mm is recommended.*
7. *Start-up time is specified for a cold start. Frequent power-on/power-off cycles may prolong the start-up time.*
8. *For operation at altitudes above 2000 m (6500 ft), the maximum permissible ambient operating temperature should be reduced by 5°C for each additional 1000m of altitude.*

8. Additional information:

The latest version of this manual is available on our website:

<https://www.brevetrafo.com/catalog/power-supplies/ksb.html>

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KSB 10012 / KSB 10024

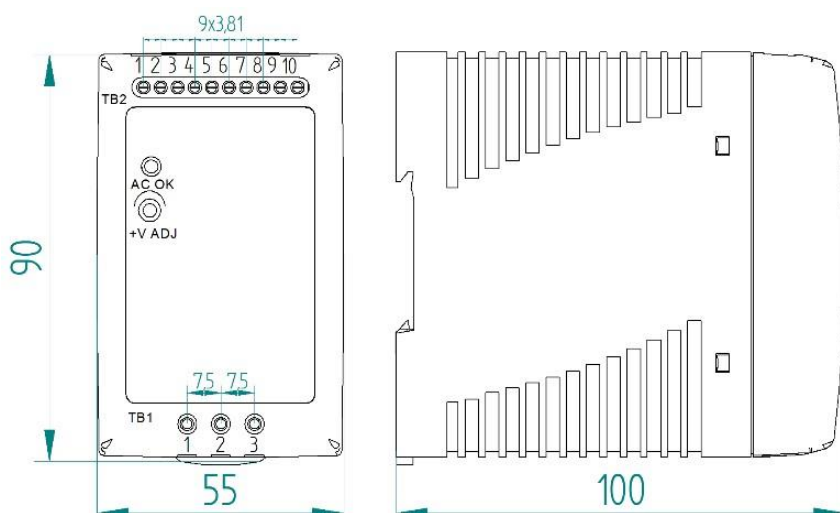
1. Introduction:

The user manual applies to stabilized, switched-mode buffer power supplies in DIN-rail mount enclosures, designed to power devices in industrial automation systems, security systems, and other installations requiring uninterrupted operation. The KSB series power supplies enable simultaneous powering of loads from the AC mains and battery charging, with automatic switching to battery mode in the event of a mains power failure. An integrated protection circuit safeguards the unit and connected loads against overload (OPP – Over Power Protection), overvoltage (OVP – Over Voltage Protection), and short circuits (SCP – Short Circuit Protection). Additionally, protection against excessive battery discharge and reverse polarity (via a fuse) is provided. The housing, designed for DIN rail mounting (TS-35/7.5 or TS-35/15), allows for easy integration into switchgear and control cabinets. Cooling is achieved through natural air convection, and LED indicators and signal outputs enable monitoring of operating status and alarms. These power supplies are suitable for use in, among other applications, safety systems, emergency lighting, alarm systems, DC UPS, central monitoring, and access control.

2. Features:

- **Over-load protection:** The power supply is equipped with a hiccup-mode protection scheme, which protects the unit against output overload and short-circuit conditions. If the permissible load is exceeded, the DC output voltage is periodically switched off and on. Normal operation resumes automatically once the fault is cleared or the overload condition ceases.
- **Over-voltage protection:** The power supply is equipped with an Over-Voltage protection (OVP) function that protects both the unit and the connected equipment from damage caused by excessive output voltage. If an over-voltage condition is detected, the DC output is automatically disconnected to prevent potential failures. After the OVP is triggered, operation is automatically restored once the fault condition has been removed.
- **Output voltage adjustment potentiometer:** The power supply includes a user-accessible potentiometer, enabling precise adjustment of the output voltage to match the requirements of the connected equipment.

3. Mechanical specifications:



TB1 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	FG/PE
2	AC/N / DC-
3	AC/L / DC+

TB2 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	Bat. Low
2	
3	
4	AC OK
5	Battery -
6	Battery +
7	DC/V+
8	DC/V-

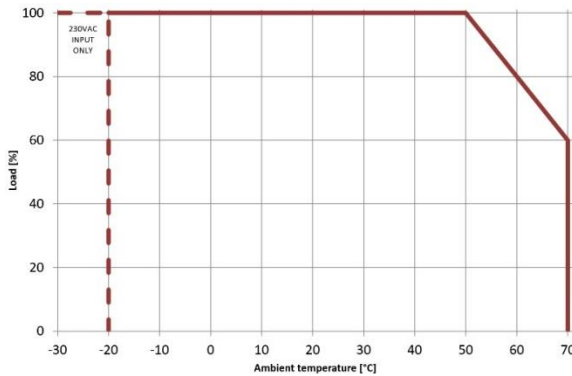


Figure 1. Derating curve of rated output load as a function of ambient temperature.

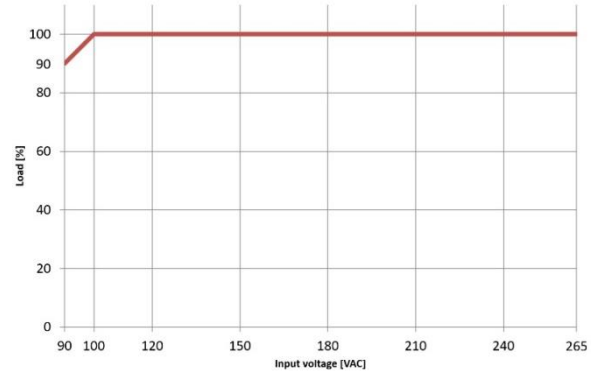


Figure 2. Derating curve of rated output load as a function of input voltage.

4. Installation:

- KSB series switching power supplies are designed for mounting on a standard TS35 DIN rail (35 × 15 / 7.5 mm).
- Ensure that the mounting position of the device provides optimal cooling performance. The recommended mounting position is vertical. The ventilation openings must remain unobstructed.
- Suitable protective devices (such as a fuse or miniature circuit breaker) and readily accessible isolation devices for disconnecting the power supply must be provided.
- Before connecting the power supply, ensure that the main power switch to which it will be connected is switched off and properly secured against accidental activation. Failure to comply with this instruction may result in contact with live parts, which can cause death or serious injury.
- To mount the device on a DIN rail, hook the upper part of the mounting bracket onto the upper edge of the rail, then press the lower part of the device downward and inward until the locking mechanism audibly clicks into place.
- To remove the device from the DIN rail, insert a flat-blade insulated screwdriver into the latch release opening as close as possible to the lower edge of the enclosure. Press the screwdriver to release the locking mechanism and pull the lower part of the device away from the rail, then lift the device upward to disengage the upper hook.
- Connect the device to the power supply. When using flexible conductors, ferrules should be used to ensure proper connection to the terminals. The cross-sectional area of a flexible supply conductor should be at least 0.5 mm².
- Adequate insulation clearance must be maintained between the mounting screws and the internal components of the power supply.

5. Safety precautions:

- **Do not remove** the housing of the power supply while the mains power is connected.
- **Do not touch** the device with wet hands.
- **Do not touch** the housing when the unit is fully loaded, high surface temperature may cause burns.
- **Do not use** the device if any metal objects, water, or other foreign bodies have entered it.
- **Do not use** the device if it has been damaged, as the voltage-regulating circuitry may have failed or may be operating outside the normal control parameters. Failure to comply may result in high voltage and subsequent damage to the connected load.
- **NO objects** may touch the output terminals of the device.
- If inspection of the devices interior is necessary, allow it to cool completely. In case of a fault, the high temperatures of certain components may cause burns.
- **Do not block** the air-intake vent.

6. Recommended application:

A typical connection method is shown in Figure 3. Under normal operating conditions, the power supply supplies power to the load while maintaining the battery in a fully charged state. In the event of an AC mains failure, the unit automatically switches to battery operation, ensuring uninterrupted operation of the load.

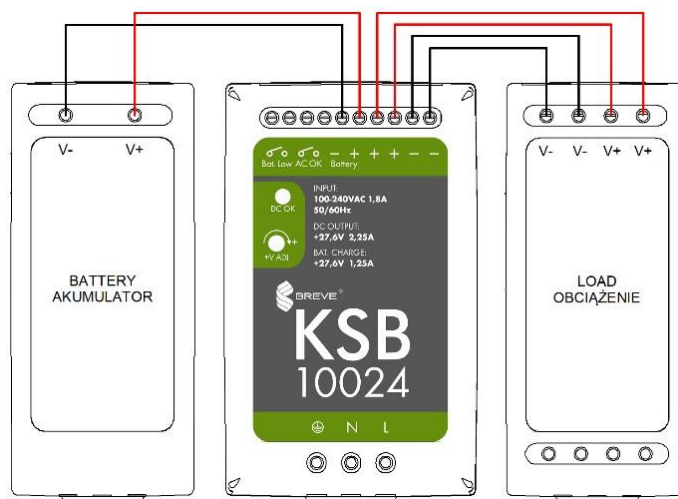


Figure 3. Output load derating versus input voltage.

The power supply is equipped with two signaling outputs implemented by means of volt-free relay contacts:

- **AC OK** - indication of the presence of AC mains voltage and correct power supply operation,
- **Battery Low** - indication of low battery voltage.

The signaling functions require an external voltage source. The maximum voltage switched by the relay contacts is **30 VDC**, while the maximum load current is **1A**.

FUNCTION	OPERATING CONDITION	OUTPUT STATE
AC OK	Normal power supply operation	Contact closed
	AC mains failure or power supply switched off	Contact open
Battery Low	Battery voltage below alarm threshold	Contact closed
	Battery voltage above alarm threshold	Contact open

In the event of overload protection activation and the power supply entering protection mode, the **AC OK signal switches to the alarm state.*

7. Technical data:

	KSB 10012		KSB 10024	
Voltage Range	90-264VAC; 127-370VDC DC operation possible by connecting AC/L (+) and AC/N (–)			
Frequency	47-63Hz~			
Full LoadAC Current	1,8A/115VAC; 1,1A/230VAC			
Inrush Current, Cold Start at 25°C*	30A/115VAC; 60A/230VAC			
Efficiency	87%		89%	
Output				
Rated DC Voltage	13,8V	13,8V	27,6V	27,6V
Voltage Adjust Range	12-15V		24-30V	
Rated Current	4,5A	2,5A	2,25A	1,25A

Rated Current Range	0~7,0A	-	0~3,5A	-
Rated Power	96,6W		96,6W	
Ripple and Noise (peak-to-peak)*	≤ 120mV		≤ 240mV	
Voltage Tolerance	≤ 1%	-	≤ 1%	-
Line Regulation	≤ 0,5%	-	≤ 0,5%	-
Load Regulation (10–100%)	≤ 0,5%	-	≤ 0,5%	-
Setup / Rise Time (full load)	2400ms, 50ms/115VAC; 2400ms, 50ms/230VAC (full load)			
Hold-Up Time (full load)	>10ms/115VAC; > 50ms/230VAC (full load)			
Parallel Operation	Not possible			

Protection

Overload / Over Current	The power supply may operate at short-term loads in the range of 105–150% of rated power.	
	Type of protection: Hiccup mode protection, recovers automatically after fault condition is removed.	
Over Output Voltage	14,5-18,6VDC	29,9-37,2VDC
	Type of protection: Output shutdown. Operation can be restored after normal operating conditions have been restored and the power supply has been restarted.	
Battery Supply Disconnect Voltage	10±0.5V	20±1V

Alarm functions

AC OK – Mains Voltage Status	Relay contact output: Closed contact: Correct mains voltage Open contact: Mains voltage failure	
Battery Low – Low Battery Voltage Status	<10,5V	<21V
	Relay contact output: Closed contact: Low battery voltage Open contact: Correct battery voltage	
Relay Contact Rating (AC OK / Bat Low)	30V/1A	

Safety & EMC

Safety Standard	EN IEC 62368-1
Withstand Voltage	I/P-O/P 3kVAC; I/P-F/G 2kVAC; O/P-F/G 0,5kVAC
Insulation Resistance	I/P-O/P, I/P-F/G, O/P-F/G 100MΩ/500VDC/25°C/70%RH
EMI Radiation & Conduction	Complies with EN55032 Class B (CISPR32)
Harmonic Currents	Complies with EN61000-3-2, -3
EMC Immunity	Complies with EN61000-4-2, -3, -4, -5, -6, -8, -11

Environment

Working Temperature	-30°C ~ +70°C
Derating Temperature above 50°C	See: Output Load Derating Curve vs. Temperature.
Working Humidity	20-90% RH, non-condensing
Storage Temperature & Humidity	-40°C to +85°C, 10-95% RH, non-condensing
Vibration	10–500 Hz, 5 G, 10 min/cycle, 60 min along each of the X, Y, and Z axes

General

Case Material	PC/ABS
Case Protection	IP 20
Weight	0,37kg
Dimensions	55 × 90 × 100mm
Mounting	Snap-on mounting on 35 mm DIN rails (7.5 mm or 15 mm profile), vertical position
Connection	Screw terminals, double output terminals

Note

1. *Unless otherwise specified, all technical parameters are measured at an input voltage of 230 VAC, rated load and an ambient temperature of 25 °C.*
2. *Method for measuring ripple and noise: a twisted-pair cable of approximately 30 cm in length is used, with capacitors of 0.1 μ F and 47 μ F connected in parallel at the output terminals; measurement is carried out with a bandwidth of 20 MHz.*
3. *Output voltage accuracy includes: setting error, line regulation, and load regulation.*
4. *Line regulation test: performed by measuring changes in the output voltage when the input voltage is varied from minimum to maximum, while maintaining rated load.*
5. *Load regulation test: performed by varying the load from 0% to 100% of the rated value.*
6. *For continuous operation at full load, a clearance of 40 mm above the unit, 20 mm below the unit, and 5 mm on each side is recommended. If adjacent devices are heat sources, a clearance of 15 mm is recommended.*
7. *Start-up time is specified for a cold start. Frequent power-on/power-off cycles may prolong the start-up time.*
8. *For operation at altitudes above 2000 m (6500 ft), the maximum permissible ambient operating temperature should be reduced by 5°C for each additional 1000m of altitude..*

8. Additional information:

The latest version of this manual is available on our website:

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KSB 18012 / KSB 18024

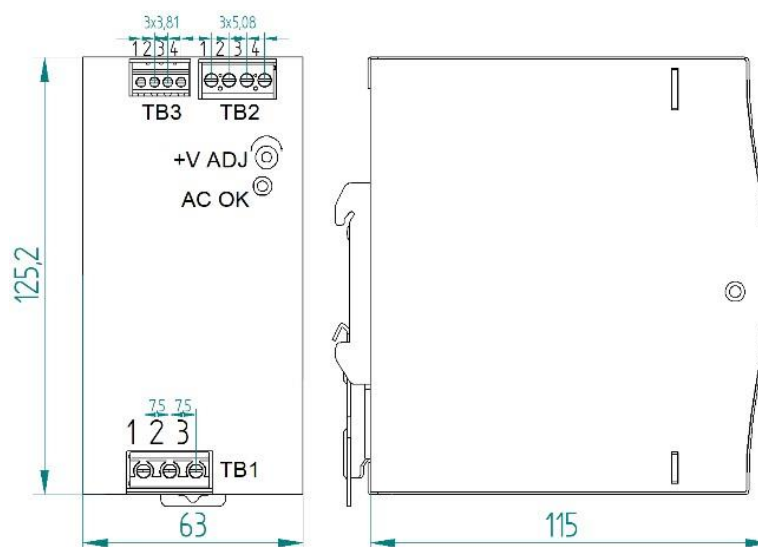
1. Introduction:

The user manual applies to stabilized, switched-mode buffer power supplies in DIN-rail mount enclosures, designed to power devices in industrial automation systems, security systems, and other installations requiring uninterrupted operation. The KSB series power supplies enable simultaneous powering of loads from the AC mains and battery charging, with automatic switching to battery mode in the event of a mains power failure. An integrated protection circuit safeguards the unit and connected loads against overload (OPP – Over Power Protection), overvoltage (OVP – Over Voltage Protection), and short circuits (SCP – Short Circuit Protection). Additionally, protection against excessive battery discharge and reverse polarity (via a fuse) is provided. The housing, designed for DIN rail mounting (TS-35/7.5 or TS-35/15), allows for easy integration into switchgear and control cabinets. Cooling is achieved through natural air convection, and LED indicators and signal outputs enable monitoring of operating status and alarms. These power supplies are suitable for use in, among other applications, safety systems, emergency lighting, alarm systems, DC UPS, central monitoring, and access control.

2. Features:

- **Over-load protection:** The power supply is equipped with a hiccup-mode protection scheme, which protects the unit against output overload and short-circuit conditions. If the permissible load is exceeded, the DC output voltage is periodically switched off and on. Normal operation resumes automatically once the fault is cleared or the overload condition ceases.
- **Thermal protection:** The power supply features a thermal protection system that prevents damage from excessive internal temperatures. If the allowable operating temperature is exceeded, the DC output is automatically disabled and the LED indicator which signals correct operation is turned off. To resume operation after thermal protection has been triggered, allow the unit to return to safe temperature conditions.
- **Over-voltage protection:** The power supply is equipped with an Over-Voltage protection (OVP) function that protects both the unit and the connected equipment from damage caused by excessive output voltage. If an over-voltage condition is detected, the DC output is automatically disconnected to prevent potential failures. After the OVP is triggered, operation is automatically restored once the fault condition has been removed.
- **Output voltage adjustment potentiometer:** The power supply includes a user-accessible potentiometer, enabling precise adjustment of the output voltage to match the requirements of the connected equipment.

3. Mechanical specifications:



TB1 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	FG/PE
2	AC/N / DC-
3	AC/L / DC+

TB2 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	DC/V+
2	DC/V-
3	AC OK
4	Battery +
5	Battery -

TB3 CONNECTOR CONFIGURATION:

TERMINAL NO	DESCRIPTION
1	Bat. Low
2	
3	AC OK
4	

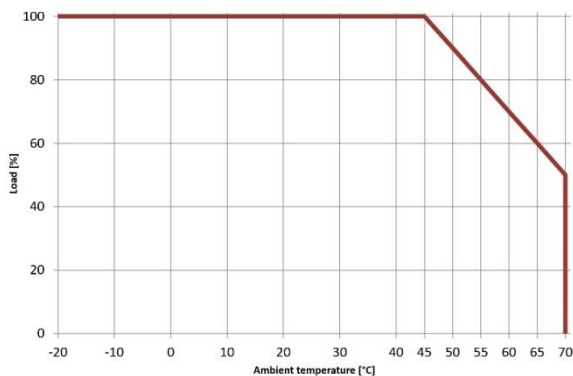


Figure 1. Derating curve of rated output load as a function of ambient temperature.

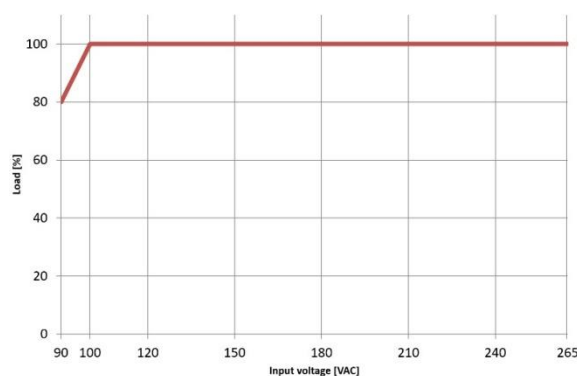


Figure 2. Derating curve of rated output load as a function of input voltage.

4. Installation:

- KSB series switching power supplies are designed for mounting on a standard TS35 DIN rail (35 × 15 / 7.5 mm).
- Ensure that the mounting position of the device provides optimal cooling performance. The recommended mounting position is vertical. The ventilation openings must remain unobstructed.
- Suitable protective devices (such as a fuse or miniature circuit breaker) and readily accessible isolation devices for disconnecting the power supply must be provided.
- Before connecting the power supply, ensure that the main power switch to which it will be connected is switched off and properly secured against accidental activation. Failure to comply with this instruction may result in contact with live parts, which can cause death or serious injury.
- To mount the device on a DIN rail, hook the upper part of the mounting bracket onto the upper edge of the rail, then press the lower part of the device downward and inward until the locking mechanism audibly clicks into place.
- To remove the device from the DIN rail, insert a flat-blade insulated screwdriver into the latch release opening as close as possible to the lower edge of the enclosure. Press the screwdriver to release the locking mechanism and pull the lower part of the device away from the rail, then lift the device upward to disengage the upper hook.
- Connect the device to the power supply. When using flexible conductors, ferrules should be used to ensure proper connection to the terminals. The cross-sectional area of a flexible supply conductor should be at least 0.5 mm².
- Adequate insulation clearance must be maintained between the mounting screws and the internal components of the power supply..

5. Safety precautions:

- **Do not remove** the housing of the power supply while the mains power is connected.
- **Do not touch** the device with wet hands.
- **Do not touch** the housing when the unit is fully loaded, high surface temperature may cause burns.
- **Do not use** the device if any metal objects, water, or other foreign bodies have entered it.

- **Do not use** the device if it has been damaged, as the voltage-regulating circuitry may have failed or may be operating outside the normal control parameters. Failure to comply may result in high voltage and subsequent damage to the connected load.
- **NO objects** may touch the output terminals of the device.
- If inspection of the devices interior is necessary, allow it to cool completely. In case of a fault, the high temperatures of certain components may cause burns.
- **Do not block** the air-intake vent..

6. Recommended application:

A typical connection method is shown in Figure 1. Under normal operating conditions, the power supply supplies power to the load while maintaining the battery in a fully charged state. In the event of an AC mains failure, the unit automatically switches to battery operation, ensuring uninterrupted operation of the load.

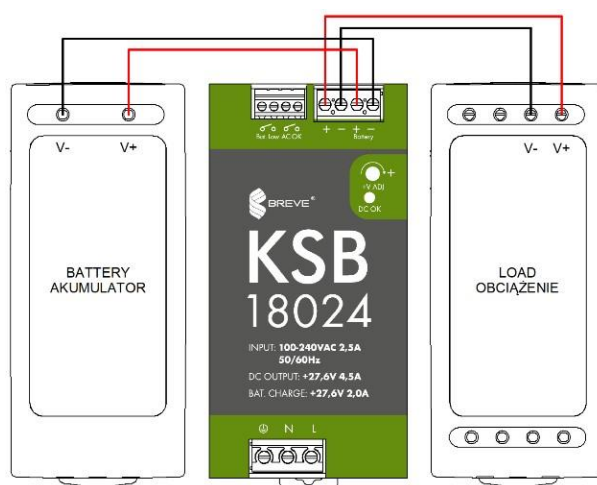


Figure 3. Typical buffered power supply application with backup battery.

The power supply is equipped with two signaling outputs implemented by means of volt-free relay contacts:

- **AC OK** - indication of the presence of AC mains voltage and correct power supply operation.
- **Battery Low** - indication of low battery voltage.

The signaling functions require an external voltage source. The maximum voltage switched by the relay contacts is **30 VDC**, while the maximum load current is **1A**.

FUNCTION	OPERATING CONDITION	OUTPUT STATE
AC OK	Normal power supply operation	Contact closed
	AC mains failure or power supply switched off	Contact open
Battery Low	Battery voltage below alarm threshold	Contact closed
	Battery voltage above alarm threshold	Contact open

**In the event of overload protection activation and the power supply entering protection mode, the AC OK signal switches to the alarm state.*

7. Technical data:

	KSB 18012	KSB 18024
Voltage Range	90-264VAC; 127-370VDC DC operation possible by connecting AC/L (+) and AC/N (-)	
Frequency	47-63Hz~	
Full Load AC Current	1,8A/115VAC; 1,1A/230VAC	

Inrush Current, Cold Start at 25°C*	30A/115VAC; 60A/230VAC	
Efficiency	87%	89%

Output

Rated DC Voltage	13,8V	13,8V	27,6V	27,6V
Voltage Adjust Range	12-15V		24-30V	
Rated Current	9,0A	4,0A	4,5A	2,0A
Rated Current Range	0~13,0A	-	0~6,5A	-
Rated Power	179,4W		179,4W	
Ripple and Noise (peak-to-peak)*	≤ 120mV		≤ 240mV	
Voltage Tolerance	≤ 1%	-	≤ 1%	-
Line Regulation	≤ 0,5%	-	≤ 0,5%	-
Load Regulation (10-100%)	≤ 0,5%	-	≤ 0,5%	-
Setup / Rise Time (full load)	2000ms, 30ms/115VAC; 2000ms, 30ms/230VAC (full load)			
Hold-Up Time (full load)	>20ms/115VAC; > 20ms/230VAC (full load)			
Parallel Operation	Not possible			

Protection

Overload / Over Current	The power supply may operate at short-term loads in the range of 105-150% of rated power.	
	Type of protection: Hiccup mode protection, recovers automatically after fault condition is removed.	
Over Output Voltage	15,8-19,5VDC	30,5-37,7VDC
	Type of protection: Output shutdown. Operation can be restored after normal operating conditions have been restored and the power supply has been restarted.	
Over Temperature	Type of protection: Output voltage shutdown, automatic recovery once the temperature drops.	
Battery Supply Disconnect Voltage	10±0,5V	20±1V

Alarm functions

AC OK – Mains Voltage Status	Relay contact output: Closed contact: Correct mains voltage Open contact: Mains voltage failure	
Battery Low – Low Battery Voltage Status	<11V	<22V
	Relay contact output: Closed contact: Low battery voltage Open contact: Correct battery voltage	
Relay Contact Rating (AC OK / Bat Low)	30V/1A	

Safety & EMC

Safety Standard	EN IEC 62368-1
Withstand Voltage	I/P-O/P 3kVAC; I/P-F/G 2kVAC; O/P-F/G 0,5kVAC
Insulation Resistance	I/P-O/P, I/P-F/G, O/P-F/G 100MΩ/500VDC/25°C/70%RH
EMI Radiation & Conduction	Complies with EN55032 Class B (CISPR32)
Harmonic Currents	Complies with EN61000-3-2, -3
EMC Immunity	Complies with EN61000-4-2, -3, -4, -5, -6, -8, -11

Environment

Working Temperature	-20°C ~ +70°C
Derating Temperature above 50°C	See: Output Load Derating Curve vs. Temperature.
Working Humidity	20-90% RH, non-condensing
Storage Temperature & Humidity	-20°C to +85°C, 10-95% RH, non-condensing
Vibration	10-500 Hz, 5 G, 10 min/cycle, 60 min along each of the X, Y, and Z axes

General

Case Material	Electro-galvanized steel and aluminium enclosure.
Case Protection	IP 20
Weight	0,75kg
Dimensions	63 × 125,2 × 115mm
Mounting	Snap-on mounting on 35 mm DIN rails (7.5 mm or 15 mm profile), vertical position
Connection	Screw terminals, double output terminals

Note

1. *Unless otherwise specified, all technical parameters are measured at an input voltage of 230 VAC, rated load and an ambient temperature of 25 °C.*
2. *Method for measuring ripple and noise: a twisted-pair cable of approximately 30 cm in length is used, with capacitors of 0.1 µF and 47 µF connected in parallel at the output terminals; measurement is carried out with a bandwidth of 20 MHz.*
3. *Output voltage accuracy includes: setting error, line regulation, and load regulation.*
4. *Line regulation test: performed by measuring changes in the output voltage when the input voltage is varied from minimum to maximum, while maintaining rated load.*
5. *Load regulation test: performed by varying the load from 0% to 100% of the rated value.*
6. *For continuous operation at full load, a clearance of 40 mm above the unit, 20 mm below the unit, and 5 mm on each side is recommended. If adjacent devices are heat sources, a clearance of 15 mm is recommended.*
7. *Start-up time is specified for a cold start. Frequent power-on/power-off cycles may prolong the start-up time.*
8. *For operation at altitudes above 2000 m (6500 ft), the maximum permissible ambient operating temperature should be reduced by 5°C for each additional 1000m of altitude.*

1. Additional information:

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