

Power Supply Units

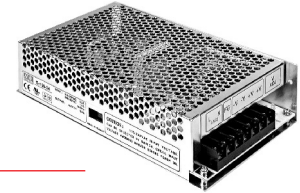
Power Supply Units

Type	Voltage (Output)	Current (Output)	Power	Voltage (Input)
S 150 W 12	12 V DC	12.5 A	150 W	110 / 230 V AC. 50 ...60 Hz
S 150 W 24	24 V DC	6.5 A	150 W	110 / 230 V AC. 50 ...60 Hz
SP 150 W 27	27 V DC	5.6 A	150 W	110 / 230 V AC. 50 ...60 Hz
SP 200 W 12	12 V DC	16.7 A	200 W	110 / 230 V AC. 50 ...60 Hz
SP 320 W 12	12 V DC	25 A	320 W	110 / 230 V AC. 50 ...60 Hz
SP 320 W 24	24 V DC	12.5 A	320 W	110 / 230 V AC. 50 ...60 Hz
SP 320 W 27	27 V DC	11.7 A	320 W	110 / 230 V AC. 50 ...60 Hz
SP 500 W 12	12 V DC	40 A	500 W	110 / 230 V AC. 50 ...60 Hz
SP 500 W 24	24 V DC	20 A	500 W	110 / 230 V AC. 50 ...60 Hz
SP 500 W 27	27 V DC	18 A	500 W	110 / 230 V AC. 50 ...60 Hz
RSP 1500 W 27	27 V DC	56 A	1500 W	110 / 230 V AC. 50 ...60 Hz

Power Supply Units

S 150 W 12 / S 150 W 24 / SP 150 W 27

- AC input range selectable by switch
- Protections: Short circuit/Over load/Over voltage
- Cooling by free air convection
- 100% full load burn-in test
- Fixed switching frequency at 25KHz



Specifications

Type	S 150 W 12	S 150 W 24	SP 150 W 27
Input:			
AC input voltage range	88 ... 132 VAC 176 ... 264 VAC (47 - 63 Hz) 248 ... 370 VDC	88 ... 132 VAC 176 ... 264 VAC (47 - 63 Hz) 248 ... 370 VDC	85 ... 264 VAC (47 - 63 Hz) 120 ... 370 VDC
AC input current (at 230 V)	1.6 A	1.6 A	1.6 A
AC inrush current (at 230 V)	35 A	35 A	35 A
Efficiency	82 %	85 %	86 %
Output:			
DC voltage	12 V	24 V	27 V
Voltage adjust range	10.6 ... 13.2 V	21 ... 28 V	25,7 ... 29,7 V
Voltage tolerance	+/- 1.0 %	+/- 1.0 %	+/- 1.0 %
Ripple & noise	max. 180 mVpp	max. 240 mVpp	max. 240 mVpp
Rated current	12,5 A	6,5 A	5,6 A
Current range	0 ... 12.5 A	0 ... 6.5 A	0 ... 5,6 A
Rated power	150 W	156 W	151.2 W
Setup time, rise time	100 ms, 50 ms at full load (at 230 VAC)	100 ms, 50 ms at full load (bei 230 VAC)	100 ms, 50 ms at full load (bei 230 VAC)
Hold time (typ.)	28 ms at full load (at 230 VAC)	28 ms at full load (at 230 VAC)	28 ms bei at full load (at 230 VAC)
Protection:			
Over voltage	13.8 ... 16.2 V (Protection type: Shut down o/p voltage, re-power on to recover)	30 ... 34,8 V (Protection type: Shut down o/p voltage, re- power on to recover)	29.7 ... 36.45 V (Protection type: Shut down o/p voltage, re-power on to recover)
Withstand voltage	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC
Dimensions in mm	199 x 110 x 50	199 x 110 x 50	199 x 110 x 50

I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss, I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss (Ground)

Power Supply Units

SP 200 W 12

- Universal AC input / full range
- Built-in active PFC function, PF>0.93
- Built-in fan speed control
- Built-in cooling fan speed control
- Built-in constant current limiting circuit

- Protections: Short circuit/Over load/Over voltage/Over temperature
- Fixed switching frequency at PFC: 67KHz PWM: 134KHz
- LED indicator for power on
- 100% full load burn-in test
- Remote ON-OFF control (Optional)



Specifications

Type	SP 200 W 12
Input:	
AC input voltage range	85 ... 264 VAC (47 - 63 Hz) 120 ... 370 VDC
AC input current (at 230 V)	1.7 A
AC inrush current (at 230 V)	40 A
Efficiency	79 %
Output:	
DC voltage	12 V
Voltage adjust range	11.4 ... 13.2 V
Voltage tolerance	+/- 2.0 %
Ripple & noise	max. 100 mVpp
Rated current	16.7 A
Current range	0 ... 16.7 A
Rated power	200.4 W
Setup time, rise time	600 ms, 30 ms at full load (at 230 VAC)
Hold time (typ.)	20 ms at full load (at 230 VAC)
Protection:	
Over voltage	14.85 ... 18.2 V (Protection type: Shut down o/p voltage, re-power on to recover)
Withstand voltage	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC
Dimensions in mm	199 x 110 x 50

I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss, I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss (Ground)

Power Supply Units

SP 320 W 12 / SP 320 W 24 / SP 320 W 27

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- Protections: Short circuit/Over load/Over voltage/Over temperature
- Forced air cooling by built-in DC Fan
- Built-in fan speed control
- Fixed switching frequency at 100KHz



Specifications

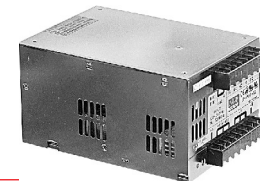
Type	SP 320 W 12	SP 320 W 24	SP 320 W 27
Input:			
AC input voltage range	88 ... 264 VAC (47 - 63 Hz) 248 ... 370 VDC	88 ... 264 VAC (47 - 63 Hz) 248 ... 370 VDC	88 ... 264 VAC (47 - 63 Hz) 248 ... 370 VDC
AC input current (at 230 V)	2.5 A	2.5 A	2.5 A
AC inrush current (at 230 V)	40 A	40 A	40 A
Efficiency	86 %	87 %	88 %
Output:			
DC voltage	12 V	24 V	27 V
Voltage adjust range	10 ... 13.2 V	20 ... 26.4 V	26 ... 31.5 V
Voltage tolerance	+/- 1.0 %	+/- 1.0 %	+/- 1.0 %
Ripple & noise	max. 150 mVpp	max. 150 mVpp	max. 200 mVpp
Rated current	22 A	12.5 A	11.7 A
Current range	0 ... 22 A	0 ... 12.5 A	0 ... 11.7 A
Rated power	300 W	312 W	315.9 W
Setup time, rise time	800 ms, 50 ms at full load (at 230 VAC)	800 ms, 50 ms at full load (at 230 VAC)	800 ms, 50 ms at full load (at 230 VAC)
Hold time (typ.)	16 ms at full load (at 230 VAC)	16 ms at full load (at 230 VAC)	16 ms at full load (at 230 VAC)
Protection:			
Over voltage	13.8 ... 16.2 V (Protection type: Shut down o/p voltage, re-power on to recover)	27.6 ... 32.4 V (Protection type: Shut down o/p voltage, re-power on to recover)	33.7 ... 39.2 V (Protection type: Shut down o/p voltage, re-power on to recover)
Withstand voltage	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC
Dimensions in mm	215 x 115 x 50	215 x 115 x 50	215 x 115 x 50

I/P = Eingang (Input), O/P = Ausgang (Output),
 FG = Masseanschluss, I/P = Eingang (Input), O/P = Ausgang (Output),
 FG = Masseanschluss (Ground)

Power Supply Units

SP 500 W 12 / SP 500 W 24 / SP 500 W 27

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- Built-in remote ON-OFF control
- Forced air cooling by built-in DC fan
- Protections: Short circuit/Over load/Over voltage/Over temperature
- Built-in cooling Fan ON-OFF control
- Built-in remote sense function
- Fixed switching frequency at 110KHz



Specifications

Type	SP 500 W 12	SP 500 W 24	SP 500 W 27
Input:			
AC input voltage range	88 ... 264 VAC (47 - 63 Hz) 124 ... 370 VDC	88 ... 264 VAC (47 - 63 Hz) 124 ... 370 VDC	88 ... 264 VAC (47 - 63 Hz) 124 ... 370 VDC
AC input current (at 230 V)	3.5 A	3.5 A	3.5 A
AC inrush current (at 230 V)	36 A	36 A	36 A
Efficiency	84 %	85.5 %	86.5 %
Output:			
DC voltage	12 V	24 V	27 V
Voltage adjust range	10 ... 13.2 V	20 ... 26.4 V	24 ... 30 V
Voltage tolerance	+/- 1.0 %	+/- 1.0 %	+/- 1.0 %
Ripple & noise	max. 240 mVpp	max. 240 mVpp	max. 200 mVpp
Rated current	40 A	20 A	18 A
Current range	0 ... 40 A	0 ... 20 A	0 ... 18 A
Rated power	480 W	480 W	486 W
Setup time, rise time	1500 ms, 50 ms at full load (at 230 VAC)	1500 ms, 50 ms at full load (at 230 VAC)	1500 ms, 50 ms at full load (at 230 VAC)
Hold time (typ.)	24 ms at full load (at 230 VAC)	24 ms at full load (at 230 VAC)	24 ms at full load (at 230 VAC)
Protection:			
Over voltage	13.8 ... 16.2 V (Protection type: Shut down o/p voltage, re-power on to recover)	27.6 ... 32.4 V (Protection type: Shut down o/p voltage, re-power on to recover)	31 ... 36.5 V (Protection type: Shut down o/p voltage, re-power on to recover)
Withstand voltage	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC
Dimensions in mm	170 x 120 x 93	170 x 120 x 93	170 x 120 x 93

I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss, I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss (Ground)

Power Supply Units

RSP 1500 W 27

- Universal AC input/Full range
- AC input active surge current limiting
- Built-in active PFC function, PF>0.95
- Forced air cooling by built-in DC ball bearing fan
- High efficiency

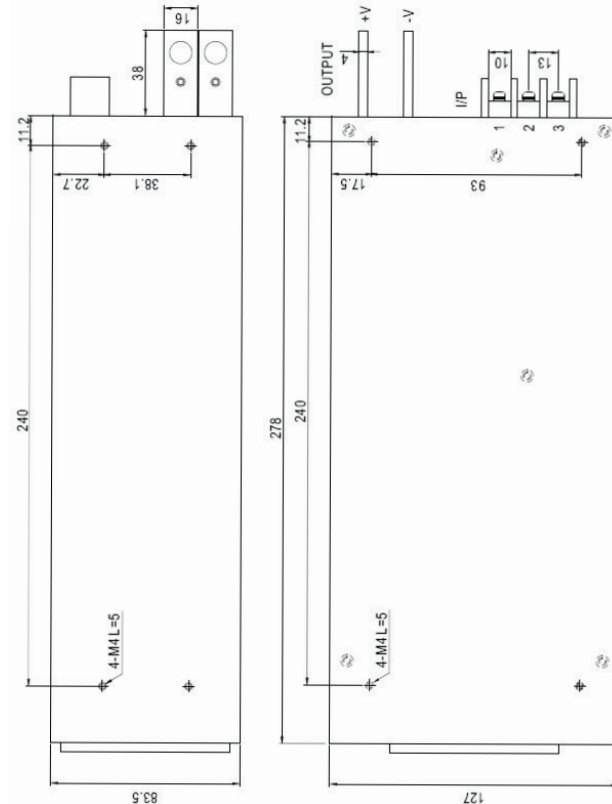
- Built-in remote sense function
- Built-in 12V/0.1A auxiliary output for remote control
- Built-in remote ON-OFF control
- Protections: Short circuit / Overload / Over voltage / Over temperature



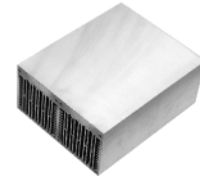
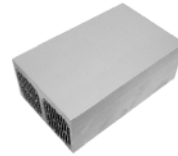
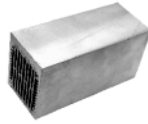
Specifications

Type	RSP 1500 W 27
Input:	
AC input voltage range	90 ... 264 VAC (47 - 63 Hz) 127 ... 370 VDC
AC input current (at 230 V)	8 A
AC inrush current (at 230 V)	60 A
Efficiency	90 %
Output:	
DC voltage	27 V
Voltage adjust range	24 ... 30 V
Voltage tolerance	+/- 1.0 %
Ripple & noise	max. 150 mVpp
Rated current	56 A
Current range	0 ... 56 A
Rated power	1512 W
Setup time, rise time	1500 ms, 100 ms at full load (at 230 VAC)
Hold time (typ.)	10 ms at full load (at 230 VAC)
Protection:	
Over voltage	31 ... 36.5 V (Protection type: Shut down o/p voltage, re- power on to recover)
Withstand voltage	I/P-O/P: 3.0 kV AC I/P-FG: 1.5 kV AC O/P-FG: 0.5 kV AC
Dimensions in mm	278 x 127 x 83.5

I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss, I/P = Eingang (Input), O/P = Ausgang (Output),
FG = Masseanschluss (Ground)

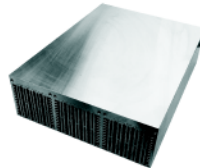


Heat Sinks



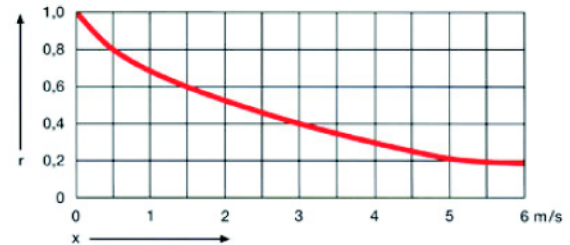
Specifications

Type	SK 120 - 75	SK 200 - 80	SK 150- 62	SK 200 - 125	SK 200 - 160
Dimensions in (mm)	150 x 75 x 40 mm	200 x 80 x 85 mm	150 x 62 x 75 mm	200 x 125 x 75 mm	200 x 160 x 85 mm
Material	Aluminium black anodized	Aluminium blank flat milled base	Aluminium blank flat milled base	Aluminium blank flat milled base	Aluminium blank flat milled base
K / W	1.25	0.13 at 5 m/s	0.21 at 5 m/s	0.09 at 5 m/s	0.065 at 5 m/s
Weight	typ. 470 g	typ. 1700 g	typ. 800 g	typ. 2200 g	typ. 3500 g



Specifications

Type	SK 300 - 62	SK 320 - 240
Abmessungen	300 x 62 x 75 mm	320 x 240 x 85 mm
Material	Aluminium blank flat milled base	Aluminium, blank flat milled base
K / W	0.15 at 5 m/s	0.03 at 5 m/s
Weight	typ. 1600 g	typ. 8000 g

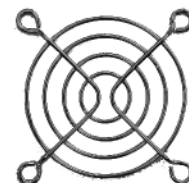


Reduction of thermal resistance with forced convection of airspeed 'x' in m/s

For more information how to dimension a heat sink please visit our website on www.kuhne-electronic.de

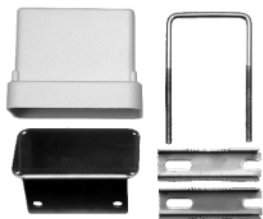
Fans incl. fan grills

Specifications				
Type	FAN 60x60 12 V	FAN 60x60 24 V	FAN 80x80 12 V	FAN 80x80 24 V
Dimensions in (mm)	60 x 60 x 25	60 x 60 x 25	80 x 80 x 25	80 x 80 x 25
Supply voltage	12 V	24 V	12 V	24 V
Current consumption	0,12 A	0,12 A	0,14 A	0,071 A
Airflow	40 m³/h	40 m³/h	71 m³/h	71 m³/h
Noise	34 dBA	34 dBA	34 dBA	34 dBA
Bearing System	Ball	Ball	Ball	Ball
Typ	Fan grill 60x60	Fan grill 60x60	Fan grill 80x80	Fan grill 80x80
Dimensions (mm)	60x60	60x60	80x80	80x80



Specifications			
Type	FAN 60x60 HP 12 V	FAN 80x80 HP 12 V	FAN 80x80 HP 24 V
Dimensions in (mm)	60 x 60 x 25	80 x 80 x 25	80 x 80 x 25
Supply voltage	12 V	12 V	24 V
Current consumption	0,47 A	0,38 A	0,21 A
Airflow	63 m³/h	1.5 m³/min	1.5 m³/min
Noise	44 dBA	34 dBA	40 dBA
Bearing System	Ball	Kugellager	Ball
Typ	Fan grill 60x60	Fan grill 80x80	Fan grill 80x80
Abmessungen	60x60	80x80	80x80

Tower Mount Case



TTTT Waterproof case for self mounting available

Dimension inside max. 40 x 90 x 57 mm incl. V2A - Mastclip

Imprint

KUHNE electronic

MICROWAVE COMPONENTS

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**Internet Information via
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WEEE-Reg.-Nr. DE 341 866 65**



Post office account Nürnberg

Bank code: 760 100 85
Account no.: 108 321 855
For bank transfer from abroad you have to use:
IBAN: DE51 7601 0085 0108 321 855
SWIFT-Code: PBNKDEFF

Kreis- und Stadtparkasse Hof

Bank code: 780 500 00
Account no.: 220 407 191
For bank transfer from abroad you have to use:
IBAN: DE27 7805 0000 0220 4071 91
SWIFT-Code: BYLADEM1HOF



Erfüllungsort ist / Place of performance and court of jurisdiction is Hof/Saale - Amtsgericht - HRB 3350
Geschäftsführerin / Manager: Jutta Kuhne

General Terms and Conditions of Business with Private Customers

Note: This is a translation of a German document into English language.
As we do business only under German Law, in cases of dispute only the German wording of the GTCs will apply.

1. Scope

The following general terms and conditions (GTCs) apply for all contracts, shipments, and other services between Kuhne electronic GmbH and private customers. Private customers in the sense of this document are natural persons which do or intend to do business with Kuhne electronic GmbH not practising a commercial or self-employed business thereby.

Kuhne electronic GmbH does not accept any conditions which are opposite to or deviating from these GTCs conflicting terms and conditions of a customer do not become valid unless the terms and conditions are explicitly and individually recognized in writing by Kuhne electronic GmbH.

2. Conclusion of Contract

The presentation of the products in the catalogue does not constitute a legally binding offer of Kuhne electronic GmbH but an invitation to order. By sending an order, customer enters into a legally binding offer for a respective contract. The contract will be concluded with our confirmation of the order within two weeks after dispatch of the order or by delivery of goods ordered.

3. Instruction on Right of Revocation:

Right of Revocation

You may declare the revocation of your contractual statement in text form (e.g. letter, fax, email) or by returning the merchandise within a period of two weeks. The revocation does not have to contain any grounds. The revocation period commences upon receipt of this declaration of revocation in text form but not before receipt of merchandise (in cases of recurrent deliveries of uniform goods not before receipt of first instalment) and also not before fulfilment of our information obligation upon § 312 c para 2 BGB (German commercial Code) in conj. with § 1 para 1,2, and 4 BGB-InfoV. The time-limit shall be deemed to be observed by the timely dispatch of the declaration of revocation or the return shipment.

The revocation is to be addressed to:

Kuhne electronic GmbH, Scheibenacker 3, D-95180 Berg
Telefax: + 49 (0)9293/800938
Email: info@kuhne-electronic.de

Consequences of revocation

In case of a valid revocation, all mutually received performances as well as emoluments taken, if applicable, are to be restituted by either side. If you are unable or partially unable to reconstitute the merchandise to us or can only reconstitute it in a deteriorated condition, then you have to insofar compensate for its value. This does not apply if the deterioration is exclusively due to examining the merchandise as for instance in a retail store. In addition you can avoid compensation for deterioration by having put merchandise to its intended use by not putting merchandise in its intended use as if it were your belongings and refrain from everything affecting its value. Things that can be shipped by parcel are to be returned on our risk. You are obliged to bear the costs of the return shipment if the merchandise delivered corresponds to the merchandise ordered, and if the price of merchandise to be sent back does not exceed an amount of 40 € or if, where the price is higher, you have at the date of the revocation not yet rendered consideration or given a part payment. In all other cases, the return shipment for you is free of charge. Things that cannot be shipped by parcel will be picked up.

All reimbursement obligations must be fulfilled within 30 days. For you, time limit starts with sending of the declaration of revocation or merchandise, for us with their receipt.

End of revocation instruction

4. Dispatch and Delivery

The delivery of goods ordered will be effected within one to three workdays. The compliance with our delivery obligation furthermore requires the due and orderly performance of the customer's obligations in due time. The defence of non-performance of the contract is reserved.

Delivery times for customized products and goods not in stock are not binding unless seller committed itself to a binding delivery date in written form.

In case we are not able to keep bidding delivery dates due to reasons we are not responsible for (impossibility of performance, e.g. because our suppliers fail to deliver) we shall inform the buyer without delay and determine a new delivery period which appears reasonable according to the circumstances.

If performance continues to be impossible also within the newly determined period, we shall be entitled to cancel the agreement completely or partly; we shall thereupon immediately reimburse any already provided counter-performance. Cases of impossibility of performance include cases of force majeure (e.g. strike, business interruptions/restraints, or transport difficulties).

5. Prices and Payment

The prices stated are EURO-prices (including VAT). Shipping cost are not included.

We offer delivery against payment in advance, against invoice, direct debit, or credit card. For delivery to new customers or customers from outside Germany, payment has to be effected in advance. In case of purchase on account (invoice), customer is obliged to settle invoice within 21 days after receipt of goods in full unless otherwise agreed. For payments with credit card or debit credit, collection takes place before the goods are dispatched.

The buyer shall not be entitled to offset payment against counterclaims unless such claims are undisputed or finally established by court. Further, buyer is only authorized to exercise the right of retention to the extent as his counter claim is based on the same contractual relationship.

If you use your right of revocation, you have to bear regular cost of return if the merchandise delivered corresponds to the merchandise ordered, and if the price of merchandise to be sent back does not exceed an amount of 40 € or if, where the price is higher, you have at the date of the revocation not yet rendered consideration or given a part payment. In all other cases, the return shipment for you is free of charge.

6. Warranty

Palpable defaults in material or production including transport damages should be notified to us in writing within two weeks upon receipt. Failure of timely complaint does not effect your legal claims.

Buyer has the choice if supplementary performance is to be executed by remedial action or substitute delivery. Whereas, we are authorized to refuse chosen alternative if this is only feasible under disproportional cost and the other alternative does not stay with any substantial disadvantages. During supplementary performance, a reduction of price or rescission of contract are excluded. Supplementary performance deems to be failed when performed twice without success if

General Terms and Conditions of Business with Private Customers

from the mod of article or failure any other result can be drawn.

In addition, statutory provisions apply.

7. Retention of Title

We reserve title of all goods delivered until complete settlement of all contractual receivables. Also, extended reservation of title applies.

Upon any levy of execution or other respective third party actions we have to be immediately informed to execute our rights under § 771 BGB.

8. Final Provisions

All disputes resulting from this contractual relationship are solely governed by German law. If any regulation in these terms and conditions or within the scope of further agreements should become ineffective the effectiveness of all remaining regulations or agreements is not touched. The stipulation which is invalid in whole or in part shall be replaced by an arrangement which comes as closely as possible to the invalid stipulation in terms of its economic effect.

In case of any dispute of these GTCs, the German version of the GTCs will prevail over the English version.