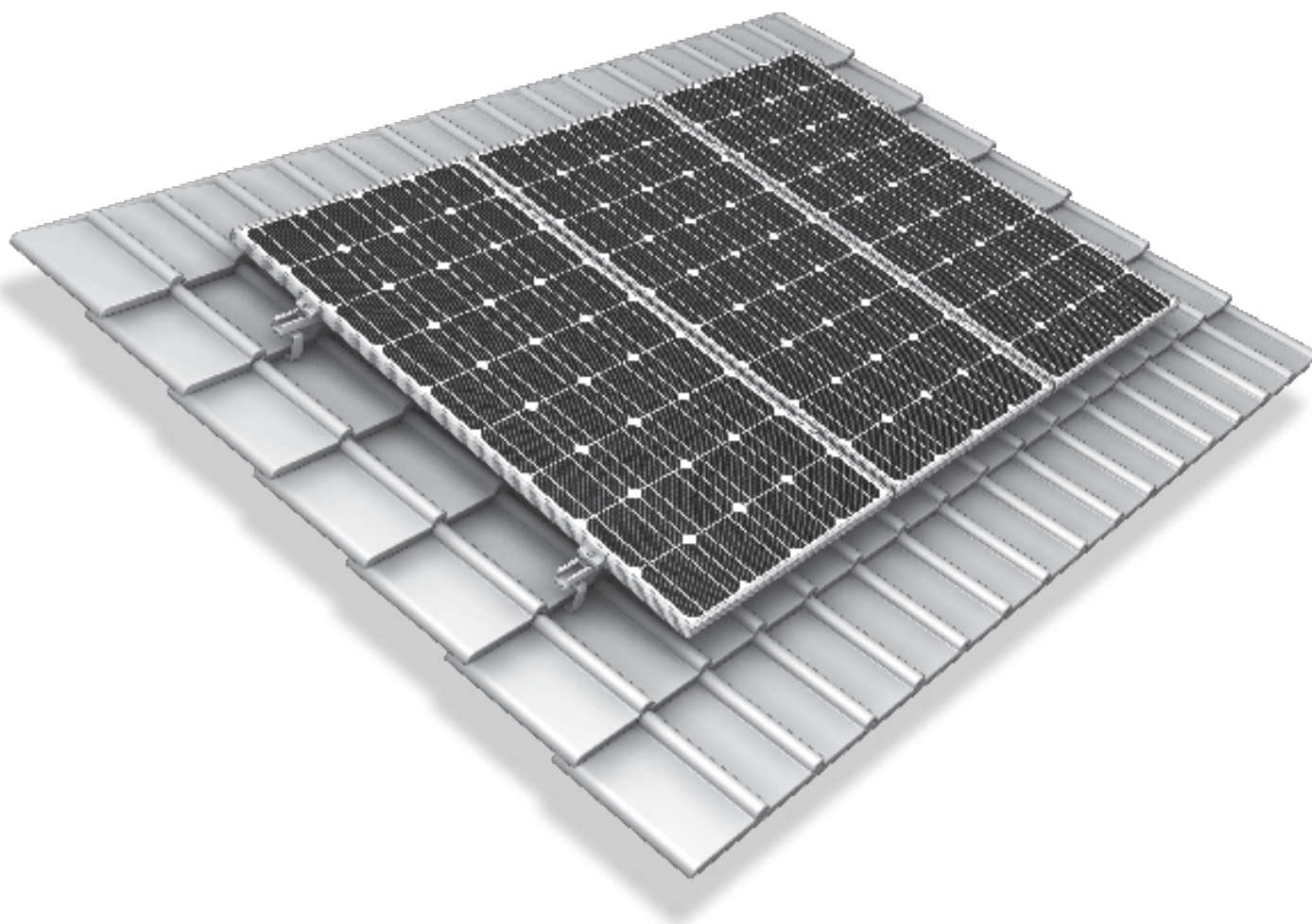


Mounting systems for solar technology



ASSEMBLY INSTRUCTIONS
ROOF FASTENER PAN TILE

GB

TABLE OF CONTENTS

TABLE OF CONTENTS	2
THE COMPANY	3
SAFETY REGULATIONS	4
MATERIALS REQUIRED	5
TOOLS REQUIRED	7
ASSEMBLY	8
TERMS AND CONDITIONS	14
NOTES	15

PARTNER WITH A SYSTEM

With sophisticated, fully developed product ideas and obvious customer-orientation, K2 Systems is your friendly partner in the field of mounting systems for solar technology. International customers appreciate the tried and tested designs for use on roofs or facades and in outdoor and individual solutions.

Mounting systems from K2 Systems impress with their attractive design and many well thought-out details. High grade materials and quality workmanship guarantee outstanding functionality and durability.

Our products consist of few yet perfectly matching components - this reduces the amount of material used, simplifies assembly while saving time and money.

As a young company, and in keeping with the times, we benefit from cooperation as partners in order to ensure the dynamic development of our company. The experiences from the personal dialogue with our customers forms the basis for permanent optimisation of our range of products. The team of K2 Systems looks forward to a successful cooperation with you.

TESTED QUALITY – FOUR CERTIFICATIONS

K2 Systems stands for secure connection, highest quality and precision. Our customers and business partners have already known that for a long time. And three independent institutes have tested, confirmed and certified our capabilities and components.



GENERAL SAFETY INSTRUCTIONS






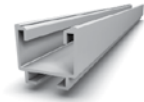


Please be aware that our General Assembly Regulations must be adhered to. They can be viewed under www.k2-systems.de/english/downloads/customer-area.html. If you don't already have them, you can obtain access data for our customer area on request.

In general, the following applies:

- Systems may only be installed and put into use by people who can ensure the proper carrying-out of the work due to their technical suitability (e.g. training or occupation) and/or experience.
- Before assembly, it must be checked that the product meets the local static requirements. For roof systems, the load-bearing capacity of the roof is also to be checked.
- National and local building regulations, standards and environmental regulations are always to be adhered to.
- Work safety and accident prevention regulations and corresponding standards and regulations of occupational associations are to be adhered to! In particular, it is to be ensured that:
 - Safety clothing is worn (especially safety helmets, work shoes and gloves).
 - For work on roofs, the regulations for working on roofs are to be adhered to (e.g. use of anti-fall guards, scaffolding with arrestor equipment from an eaves height of 3m etc.)
 - Presence of two people is vital for the entire course of the assembly, so that swift help can be ensured in the case of an accident.
- K2 mounting systems are constantly being developed further. Because of this, assembly procedures can change. Therefore, before assembly, always check that the assembly instructions are up-to-date under www.k2-systems.de/english/downloads/customer-area.html. We can also send you the latest version on request.
- The assembly instructions of the module manufacturer are to be adhered to.
- Earthing must be ensured, use lightning arrestor clamp if necessary.
- During the entire assembly time it is to be ensured that at least one copy of the assembly instructions is available on site.
- In the event of non-adherence to our General Safety Instructions and if competitor's parts are built in or attached, K2 Systems GmbH reserves the right to refuse liability.
- If all safety instructions are adhered to and the system is correctly installed, there is a guarantee entitlement of 12 years! Please read out Terms and Conditions of Warranty which can be viewed under www.k2-systems.de/deutsch/downloads. We can also send them to you on request.
- The dismantling of the system takes place according to the assembly steps, in reverse order.

ESSENTIAL: THE MATERIALS REQUIRED

All system components listed in the following are essential for assembling the K2 Systems Roof Fastener Pan Tile system. The piece quantities are calculated on the basis of the respective requirements. The listed item numbers facilitate the comparison of items.

	K2 Roof Fastener Pan Tile (standard) Material: Aluminium	Item number system specific	
<hr/>			
Alternatively: This instruction also applies to the K2 roof fasteners Vario 1, Vario 2, Coppo, Spanish tile roof (rafter & concrete), Spanish tile roof (purlin)			
	Self-drilling timber screw, flat head Material: Stainless steel	Item number system specific	
	Alternatively: For roof insulation, a self-drilling timber screw with distance screw is required.	Item number system specific	
	Hammer head screw (T-bolt) M10 x 20 Material: Stainless steel	P1000637	
	Self-locking nut M10 Material: Stainless steel, drive: SW 15	P1000042	
	Mounting rail LightRail 37 Material: Aluminium	Item number system specific	
<hr/>			
Alternatively: MediumRail, AlpinRail			
	Rail connector Set LightRail Material: Aluminium	P1004107	
<hr/>			
Alternatively: Rail connector Set MediumRail, AlpinRail			
	End Clamp Set Standard Material: Aluminium	Item number system specific	
<hr/>			
Alternatively: End Clamp Set XS			Item number system specific

ESSENTIAL: THE MATERIALS REQUIRED



Middle Clamp Set Standard

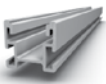
Material: Aluminium

| Item number
system specific

Alternatively: Middle Clamp Set XS

| Item number
system specific

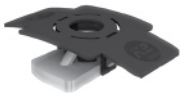
ADDITIONAL MATERIAL FOR CROSS BRACING



Mounting rail CrossRail 36

Material: Aluminium

| Item number
system specific



M K2 slot nut

Material: Stainless steel, plastic

| P1001643

Alternatively, also slot nut made of galvanised steel can be used.



Climber 36/48 (with long slot)

Material: Aluminium

| P1002286



Hexagon socket head cap screw DIN 912 M8 x 25

for Climber mouting

Material: Stainless steel, drive: SW 6

| P1000191

AT A GLANCE: TOOLS OVERVIEW

K2 Systems mounting systems are designed to ensure effortless assembly. Only the tools required are not included in the delivery scope. Here we have listed them for ease of reference.



Torque wrench

With attachment for SW 13, SW 15, HW 6



Measuring tape



Cordless screwdriver

With mount for T-40



Angle grinder

ROOF FASTENER SYSTEM ASSEMBLY: STEP BY STEP

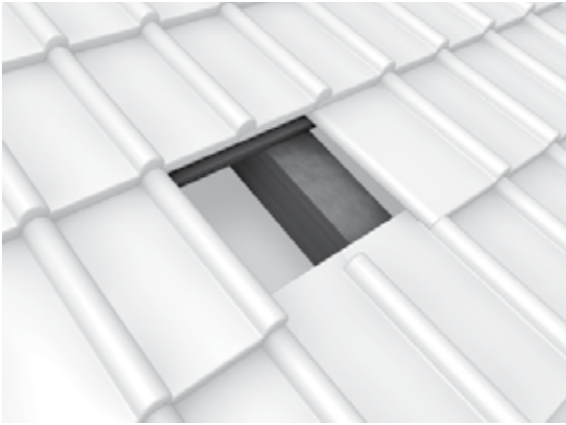
Please carefully read through all the steps first to ensure safe and correct assembly of the system. The required material is listed for each step. Should you have any problems during assembly or questions relating to the system please contact us on our

SERVICE HOTLINE: +49 (0) 7152-3560-0

IMPORTANT:

- The General Assembly Instructions must be observed.
These can be viewed at www.k2-systems.de/deutsch/downloads/kundenbereich.html .
- If you don't already have them, you can obtain access data for our customer area on request.
- In the case of high snow loads the roof fastener boom must be supported with suitable measures (base plate) to avoid tile breaking.
In the case of on-roof insulation or counter lathing, special screws must be used, to guarantee an even distance screw joint

ROOF FASTENER SYSTEM ASSEMBLY: STEP BY STEP



1
of 7

UNCOVER RAFTERS (REMOVE TILES)

The rafters, on which the roof fasteners are to be mounted on must be exposed. The height of the roof fastener must be checked and adjusted if necessary.



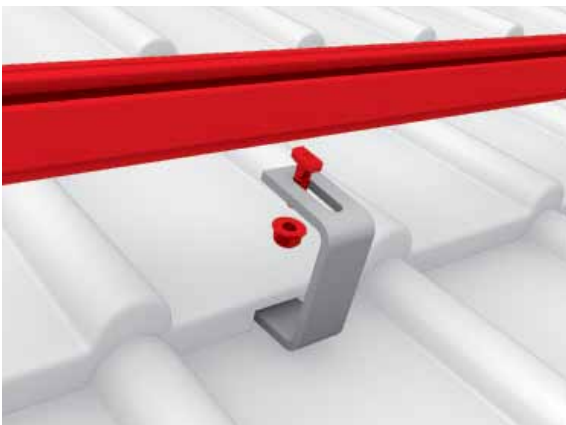
2
of 7

ASSEMBLE ROOF FASTENER

The roof fastener must be mounted with a minimum of 2 stainless steel timber screws on to the wooden rafters (at least one screw per row of holes). This also applies to roof insulation or counter lathing. Horizontally align the roof fastener hangers in order to get into the hollow of the tile. Flex deck tiles and lower tiles in the area of the hanger. The top edges of the roof fasteners in a horizontal row must be at the same height. The roof fasteners must be mounted in such a way that there is sufficient spacing between the roof fastener bracket and the tile.

The amount of roof fasteners that need to be mounted depends on roof requirements and will be specified when order is placed.

Required materials: K2 roof fasteners, timber screw



3
of 7

MOUNT CARRIER RAIL

The rail is mounted to the roof fastener with an M10 T-bolt and a self-locking nut. Due to thermal expansion, we recommend to break the rows after 20 m, however, no further than 24.4 m. The minimum spacing for separation between the two K2 rails K2 is 3-5 cm. Tightening torque 35 Nm.

Required materials: LightRail, M10 T-bolt, M10 self-locking nut



4
of 7

RAIL CONNECTOR ASSEMBLY

Lay CrossRail on joint with rail connector and connect with the 2 T bolts and self-locking nuts. The rail joint may not be in the range of the roof fastener.
Tightening torque 35 Nm.

Required materials: Rail Connector Set



5
of 7

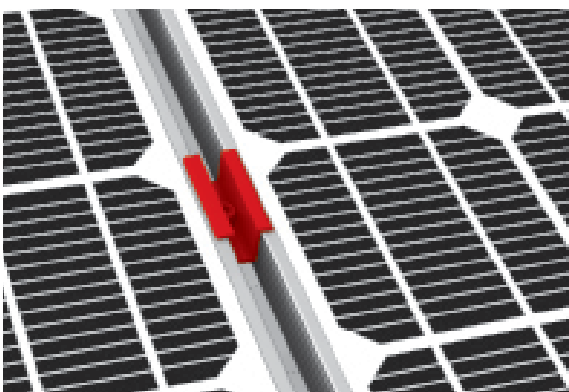
ATTACH MODULES

The slot nut M K2 is first inserted into the rail and rotated clockwise by 90 degrees. If the end clamps and middle clamps are delivered as a set, the entire set must be fixed to the rail in the same way. Attach module to the mounting rails according to manufacturer's instructions. Attach module at the end of each row with end clamps and screws DIN 912 M8 as well as the slot nuts. Never mount end clamps directly on to the rail joint or end of the rail! (Spacing: min. 20 mm from end clamp)

Pay attention to the mounting guidelines by module manufacturer!

Tightening torque 14 Nm.

Required materials: End clamps set



6
of 7

ATTACH MODULE GAPS

Attaching with Standard Middle Clamp

Use two Standard Middle Clamps between two modules, which also need to be screwed with DIN 912 M8 screws in the slot nuts. Pay attention to the mounting instructions by module manufacturer! Tightening torque 14 Nm.

Required materials: Middle Clamp Set



6b
of 7

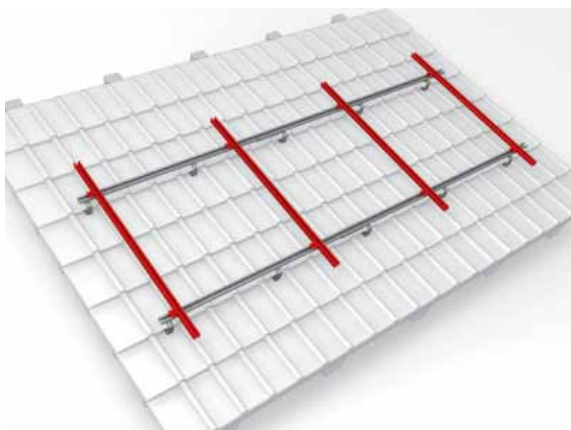
Attaching with XS Middle Clamp

Use two XS Middle Clamps between two modules, which must also be screwed with the DIN 912 M8 screws in the slot nuts.

For the Xs Middle Clamps, longer screws are required than for the Standard Middle Clamps. Tightening torque 14 Nm.

Required materials: Middle Clamp Set XS

ALTERNATIVE SYSTEM DESIGNS (CROSS BRACING) WITH CROSSRAIL



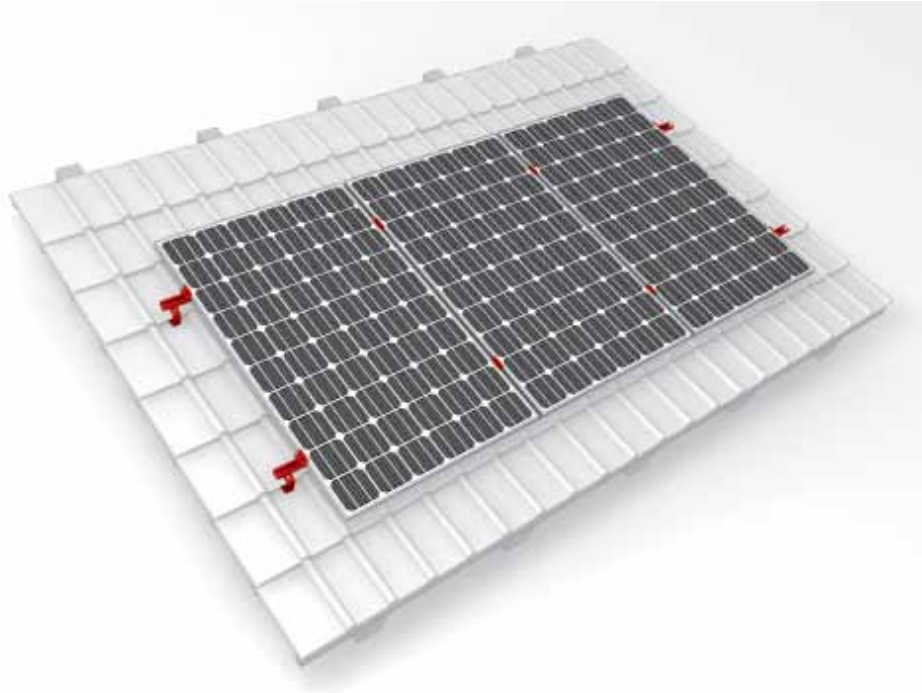
7
of 7

ASSEMBLE RAILS WITH CROSS BRACING

In cross bracing, the upper rail position is fitted using slot nut M K2 and the mounting bracket Climber to the desired location and with appropriate spacing.

Tightening torque 16 Nm

Required materials: Crossrail, Climber, M K2, K2 M, cylinder-head bolt M8



THANK YOU FOR CHOOSING A K2 MOUNTING SYSTEM.

Systems from K2 Systems are fast and simple to install. We hope these instructions have helped you in this. Please contact us if you have any questions or suggestions for improvements. We are looking forward to receive your call on our

Service-Hotline +49 (0) 7152-3560-0

TERMS AND CONDITIONS

§ 1 Ambit, contractual item

1. Our General Business Terms and Conditions apply to the delivery of moveable merchandise in accordance with the contract concluded between us and the customer. These therefore also apply for all future business relations, even where they have not been expressly agreed upon once again.
2. Our General Business Terms and Conditions apply exclusively. We do not recognise customer conditions contradictory to or deviating from our General Business Terms and Conditions, unless we have expressly approved their validity in writing. Our General Business Terms and Conditions also apply if, in circumstances where we are aware of customer conditions contradictory to or deviating from our General Business Terms and Conditions, we realise the delivery without any reservation.

§ 2 Offer, documentation at conclusion of contract

1. The customer's order represents a binding offer which we can accept within four weeks by forwarding an order confirmation or through delivery of the merchandise. Offers submitted by us in advance are non-binding.
2. We reserve rights of ownership and copyright to all illustrations, drawings, calculations and other documents. This also applies to those written documents designated as "confidential". The customer requires our express written permission prior to their transfer to third parties.
3. Drawings, illustrations, dimensions, weights or other performance data are only binding when this is expressly agreed in writing.

§ 3 Prices and payment conditions

1. The agreed remuneration must be paid. In cases where the price has increased at the time of performance of service as a result of a change in the market price or an increase in remuneration paid to third parties involved in performance of service, the higher price applies. The customer is entitled to withdraw from the contract if the higher price is twenty percent or more greater than the agreed price. This right must be exercised immediately on communication of the increased price.
2. Prices should be understood with the addition of the mandatory turnover tax (VAT) valid on the day of invoicing.
3. The complete remuneration should be paid within 14 days after receipt of the merchandise and without any discount, provided no other agreement has been reached. Statutory regulations governing the consequences relating to arrears of payments apply.
4. The customer is only entitled to offset payment if his counterclaims have been determined to be valid, indisputable or are recognised by us. The customer is only entitled to exercise a right of retention if his counterclaim relates to the same contractual relationship.

§ 4 Time of performance, transfer of risk

1. Delivery deadlines or delivery times which can be agreed upon as binding or non-binding require the written form.
2. Even where agreed and binding periods and deadlines are involved, we are not obliged to answer for delays in delivery and performance due to force majeure and due to events which render delivery by us considerably difficult for a period that is not only temporary, or render delivery impossible, these including in particular strikes, lockouts, official ordinances, etc. We are also not obliged to answer for these if our suppliers or their contractors are affected by the same. They entitle us to delay the delivery or service for the duration of the obstruction and an appropriate start-up period, or to withdraw completely or partially from the contract because of the unfulfilled part of the same.
3. Where the obstruction lasts for longer than three months, the purchaser is, after an appropriate additional period of time, entitled to withdraw from the contract with regard to the unfulfilled part of same. In the event of the delivery duration being extended or where we are freed of our obligations, the purchaser is not entitled to claim any compensation on the basis of these circumstances. We can only invoke the circumstances mentioned if we inform the purchaser immediately.
4. Insofar as we must answer for the failure to honour agreed periods and deadlines, or where we find ourselves in arrears, the purchaser is entitled to claim compensation for the delay to the value of a half a percent of the invoice value for each complete week of default, but only to a maximum of up to five percent of the invoice value of the deliveries and services affected by the delay. Claims above and beyond this are excluded, unless the delay can be at least traced back to gross negligence.
5. We are entitled to make partial deliveries and perform partial services at any time, unless the purchaser is not interested in the partial delivery or performance of the partial service.
6. Observance of delivery and performance obligations depends on the timely and correct fulfilment of the purchaser's obligations.
7. In the event of a delay in acceptance on the part of the purchaser, we are entitled to demand compensation for the damages accrued. The risk of accidental deterioration and accidental loss is transferred to the purchaser as soon as a delay in acceptance occurs.
8. Delivery ex works is agreed, provided no other arrangements are stipulated in the order confirmation.

§ 5 Packaging

1. Packaging is invoiced separately.
2. The packaging arrangement stipulates that transportation and all other packaging will not be taken back. The purchaser is obliged to bear the costs for disposal of packaging himself.

§ 6 Rights of purchaser in case of deficiency or defects

1. Products are delivered free of manufacturing and material defects or deficiencies. The duration for asserting warranty claims is one year after delivery of the products.
2. Claims relating to product deficiencies are excluded if operating or maintenance instructions supplied by the seller are not followed, modifications to the products are realised, parts are changed or consumable materials utilised that do not conform to the original specification and the purchaser cannot refute an appropriately-substantiated allegation that only one of the above circumstances has caused the deficiencies in question.
3. We reserve the right to choose the manner of subsequent fulfilment in the event of a deficiency occurring.
4. Any liability for normal wear is excluded.
5. Claims relating to deficiencies made against the seller can only be made by the immediate purchaser and cannot be transferred.

§ 7 Liability for damages

1. Our liability for breaches of contractual obligation and breaches arising from an offence is limited to intent and gross negligence. This does not apply to injury to the life, limb and health of the customer, claims relating to breach of contractual obligations and compensation for damages relating to delay (§ 286 BGB – Civil Code). We will bear liability for every degree of responsibility in this respect.
2. Also excluded is any liability in the case of claims for the loss of earnings relating to the PV system.
3. The afore-mentioned exclusion of liability also applies to minor negligent breaches of obligation by our vicarious agents.
4. Insofar as liability for damages for minor negligence not relating to injury to the life, limb or health of the customer is not excluded, such claims lapse within a year, commencing with the assertion of the claim or, in the case of compensation claims relating to a deficiency, from the time of transfer of the merchandise.
5. Insofar as liability for compensation is excluded and limited on our part, this also applies with regard to personal liability for compensation on the part of our employees, workers, personnel, representatives and vicarious agents.

§ 8 Retention of title

1. Until fulfilment of all demands (including all demands relating to the current account balance) which the seller is entitled for any legal reason to exercise now or in future against the purchaser, the seller is granted the following securities which will be released by him on demand and freely selected at his discretion, provided their value exceeds the demands on a sustained level by more than 20 %.
2. The merchandise remains the property of the seller. Processing or transformation is realised in all cases for the seller as manufacturer, but without any obligation on the part of the seller. Where the (co-) ownership of the seller expires through adjunction, an agreement will be concluded now that the (co-) ownership of the purchaser of the uniform object will be transferred proportionally according to value (invoice value) to the seller. The purchaser will take safe custody of the (common) property of the seller free of charge. Merchandise to which the seller is entitled to (co-) ownership will be referred to as reserved merchandise in the provisions below.
3. The purchaser is entitled to process and dispose of the reserved merchandise through orderly business channels, provided he is not in default. Assignments or transfers of ownership by way of security are not permitted. The purchaser will transfer all demands in full relating to the reserved merchandise arising from resale or other legal reasons (insurance, impermissible actions), including all demands relating to the current account balance, to the seller with immediate effect. The seller empowers him precariously to collect the transferred demands for his invoice in his own name. This authorisation to collect can only be rescinded if the purchaser fails to honour his payment obligations in an orderly fashion.
4. In the event of seizure of the reserved merchandise by third parties, particularly under warrants of execution (fieri facias), the purchaser will indicate the property of the seller and inform him immediately so that the seller can exercise his rights of ownership. Insofar as the third party is incapable of recompensing the seller for any legal or extra-judicial costs accrued in this context, the purchaser will bear liability for these.
5. The seller is entitled to withdraw from the contract and reclaim the reserved merchandise in the event of breach of contract on the part of the purchaser, particularly default of payment.

§ 9 Statute of limitation on own demands

Our demands for payment lapse in deviation to § 195 BGB (Civil Code) in five years. § 199 BGB (Civil Code) applies with regard to commencement of the period of limitation.

§ 10 Form of declarations

Legally-relevant declarations and notifications made by the customer to us or a third party require the written form.

§ 11 Place of fulfilment, choice of prevailing law, place of litigation

1. The place of fulfilment and payment is our seat of business, provided no other provisions are made in the contract.
2. The law of the Federal Republic of Germany applies to this contract. The validity of the United Nations Convention on Contracts for the International Sale of Goods (CISG) is excluded.
3. Insofar as the purchaser is a merchant, legal person as defined in public law or special fund as defined in public law, Leonberg is the exclusive place of litigation for all disputes arising directly or indirectly from the contractual relationship.
4. In the event of a provision in these business conditions or a provision in the context of other agreements proving to be or becoming ineffective, the effectiveness of all other provision or agreements remains unaffected.

Valid as of September 2009

NOTES

SERVICE-HOTLINE
+49 (0)7152 3560-0

K2 Systems GmbH
Riedwiesenstraße 13 – 17
71229 Leonberg | Germany
Tel. +49 (0)7152 3560-0
Fax +49 (0)7152 3560-179
info@k2-systems.de
www.k2-systems.com

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K2 Systems GmbH
Riedwiesenstraße 13 - 17
71229 Leonberg
Germany
Phone +49 (0) 7152 - 3560 - 0
Fax +49 (0) 7152 - 3560 - 179
info@k2-systems.de
www.k2-systems.com

K2 Systems SARL - Agence FRANCE NORD
14, rue des Hérons
67960 Entzheim
France
Tel. +33 (0) 3 88 21 66 02
Fax +33 (0) 3 88 21 66 03
info@fr.k2-systems.eu
www.k2-systems.com

K2 Systems s.r.l.
Via Madonna dello Schioppo 67
Secondo Piano Int. 17-19
47521 Cesena FC
Italy
Tel. +39 0547 63 20 80
Fax +39 0547 63 50 22
info@it.k2-systems.eu
www.k2-systems.it

K2 Systems SARL - Agence FRANCE SUD
19 Avenue du Pré de Challes
Parc des Glaisins
74940 Annecy le Vieux
France
Tel. +33 (0) 4 50 51 22 53
Fax +33 (0) 4 50 51 16 41
info@fr.k2-systems.eu
www.k2-systems.com