

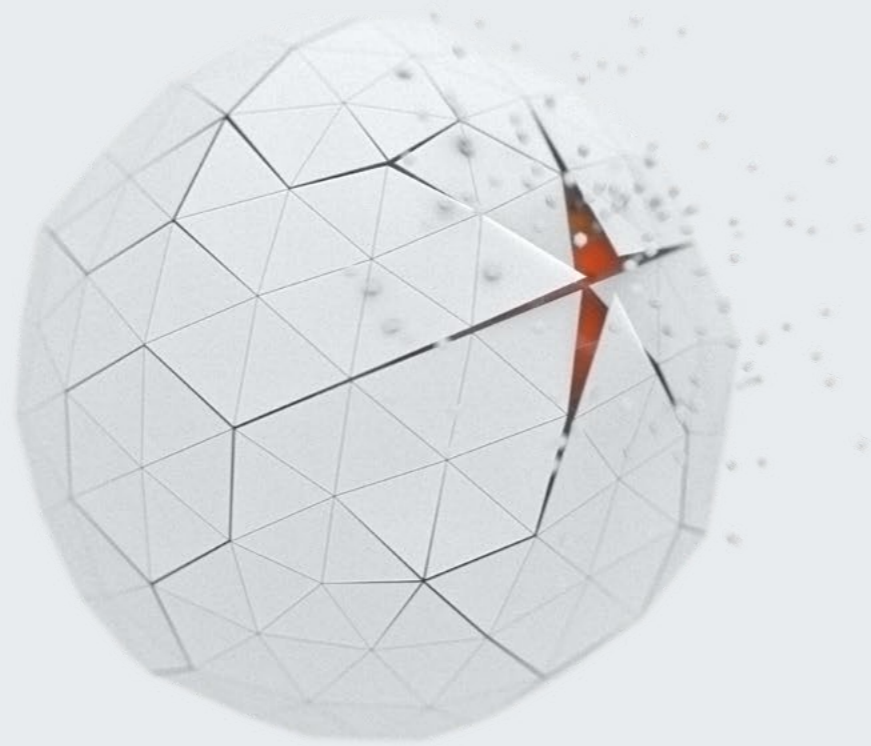
KUKA



Product portfolio_01/2022



It's the inside
that makes the difference.



Reaping the benefits of intelligent automation. Together. Worldwide.

For over 100 years, we have been driven by the goal of making living and working easier for people. We stand for the holistic optimization of production systems. Opening up new paths and being a real "enabler" for our customers is what drives us. With our comprehensive robot portfolio, we make our customers more flexible, more productive and, last but not least, more competitive.

In addition to first-class technologies, KUKA offers comprehensive know-how in a wide range of industries. Our objective is to dive deep into our customers' branches of industry and understand their requirements. Our aim goes far beyond the mere distribution of a first-class portfolio. We bring all our process and application expertise to bear in order to find optimal solutions. The close relationship with our customers is the basis for our work, because we firmly believe that excellence only comes when you, the customer, are our compass.

KUKA also offers a broad portfolio for the digital world. Our intelligent software solutions make industrial production increasingly transparent and efficient. With iiQKA, we are creating a new, powerful and, above all, intuitive operating system. iiQKA is also a digital ecosystem. It allows inexperienced users to benefit from the advantages of robot automation without prior knowledge. Experts become even faster and more efficient using iiQKA.

Our complete portfolio for your robot-based automation.

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A tradition at KUKA: Innovation for more value creation.

KUKA is a global automation corporation with sales of around 2.6 billion euro and roughly 14,000 employees. The company is headquartered in Augsburg, Germany. As one of the world's leading suppliers of intelligent automation solutions, KUKA offers customers everything they need from a single source: from robots and cells to fully automated systems and their networking in markets such as automotive, electronics, metal & plastic, consumer goods, e-commerce/retail and healthcare.

The company is firmly rooted in its home city of Augsburg. This is where the success story began in 1898, when Johann Josef Keller and Jakob Knappich founded an acetylene plant for lighting. The telegram abbreviation from the initial letters of the company name ("Keller und Knappich Augsburg") became the KUKA brand name. This is where tradition meets innovation at KUKA.

KUKA has grown strongly in recent years and has developed into a global group.

As one of the world's leading automation specialists, KUKA plays a central role in the implementation of intelligent automation. Industrie 4.0 is bringing the digital networking of production, modular and flexible manufacturing concepts, and new business models to the fore. With decades of experience in automation, process know-how and digital services, KUKA gives its customers a head start and helps them optimize value creation.



KUKA's headquarters in Augsburg, the development and technology center.



Shop floor meets IT: KUKA speaks the language of both worlds.

Our new releases for more freedom in automation.

KUKA HO robots: impressively harmless.

The KUKA HO portfolio is the world's most comprehensive robot portfolio for the food industry.

The abbreviation HO stands for Hygienic Oil and describes so-called NSF H1 lubricants, which are certified for use in the food sector.

Classic application scenarios for our HO robots are the handling, sorting, stacking and packaging of food or repackaging and palletizing in the secondary food sector.

The HO portfolio is wide-ranging. It covers reaches from 900 to 3,200 millimeters and payloads from 6 to 240 kilograms.

The robots in the HO portfolio thus combine maximum efficiency with uncompromising hygiene and food safety.



Safe for food: Robots of the KUKA HO portfolio.

Micro meets nano:
More freedom for your automation.



KR C5 micro now combined with the KR CYBERTECH nano. Small footprint – big possibilities.

KR CYBERTECH nano is now also available in a bundle with the KR C5 micro controller. The result is an overall solution that offers completely new installation options thanks to a footprint that has been halved and a volume that has been reduced by 70%.

Being compatible with 220/230 volts, the KR C5 micro also creates more freedom in terms of the power source. Wherever flexibility is a priority, the KR C5 micro is a high-performance alternative to the standard controller of the KR CYBERTECH nano.

For automation, this product bundle means: less space required, lower infrastructure requirements and thus more possibilities.



_Robotics

Robots, peripheral equipment, controllers and software from **KUKA**: the whole world of robotic automation from a single source.

KUKA offers industrial robots in a wide range of versions with various payload capacities and reaches. Our spectrum of products also includes the appropriate robot peripheral equipment – from linear units to end effectors. Combined with cutting-edge software and innovative controllers, we develop individual solutions for your manufacturing processes together with you. Whether for maximum speeds behind the safety fence of your system, as a mobile solution for your Industrie 4.0 requirements, or for direct collaboration between humans and machines in HRC operation.

_Cobots

Hands-on robots.

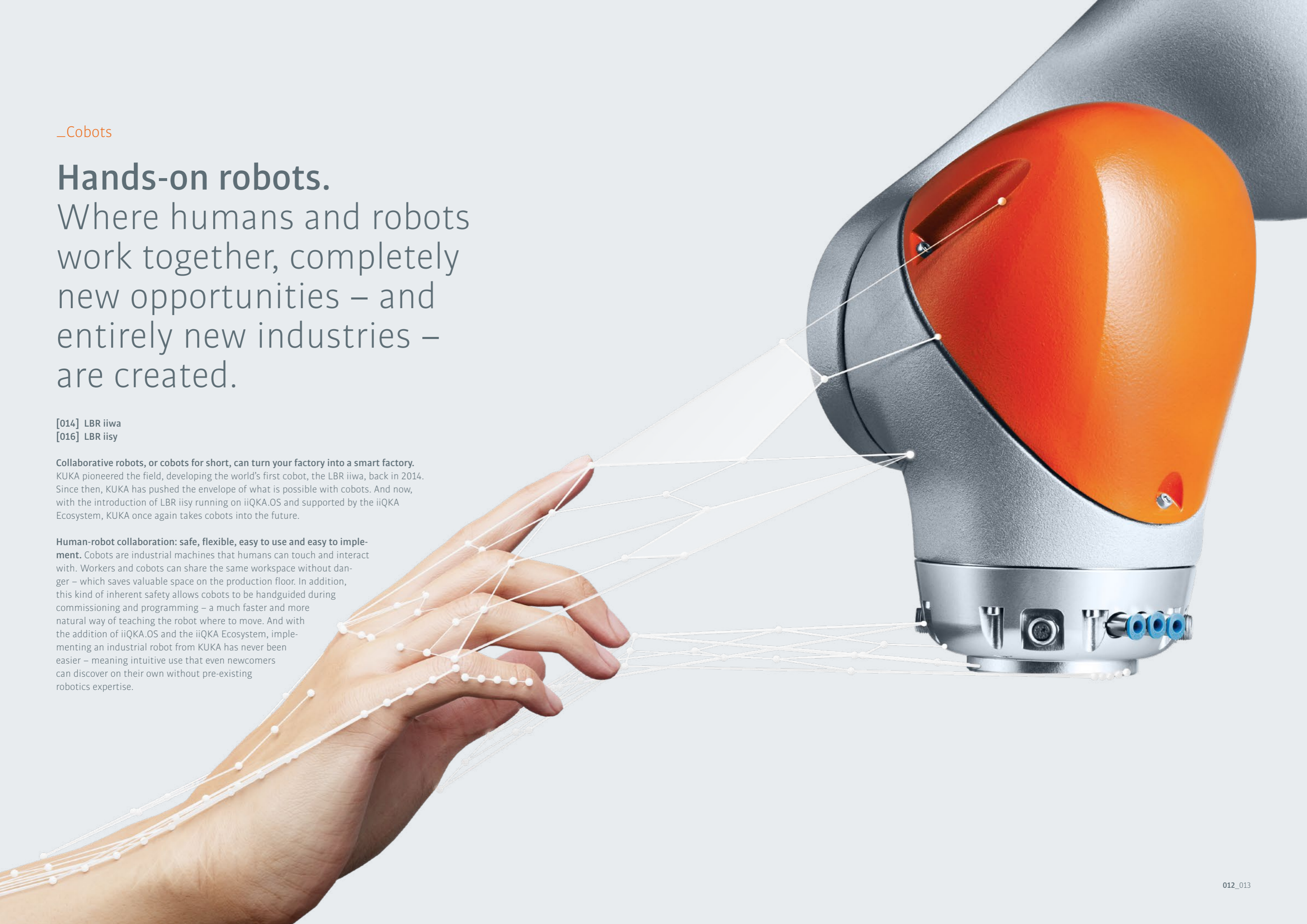
Where humans and robots work together, completely new opportunities – and entirely new industries – are created.

[014] LBR iiwa

[016] LBR iisy

Collaborative robots, or cobots for short, can turn your factory into a smart factory. KUKA pioneered the field, developing the world's first cobot, the LBR iiwa, back in 2014. Since then, KUKA has pushed the envelope of what is possible with cobots. And now, with the introduction of LBR iisy running on iiQKA.OS and supported by the iiQKA Ecosystem, KUKA once again takes cobots into the future.

Human-robot collaboration: safe, flexible, easy to use and easy to implement. Cobots are industrial machines that humans can touch and interact with. Workers and cobots can share the same workspace without danger – which saves valuable space on the production floor. In addition, this kind of inherent safety allows cobots to be handguided during commissioning and programming – a much faster and more natural way of teaching the robot where to move. And with the addition of iiQKA.OS and the iiQKA Ecosystem, implementing an industrial robot from KUKA has never been easier – meaning intuitive use that even newcomers can discover on their own without pre-existing robotics expertise.





LBR iiwa. A feel for the production world of tomorrow.



With the arrival of the LBR iiwa – one of KUKA's lightweight cobots specializing in sensitive assembly work – safety fences make way for human-robot collaboration in the workspace.

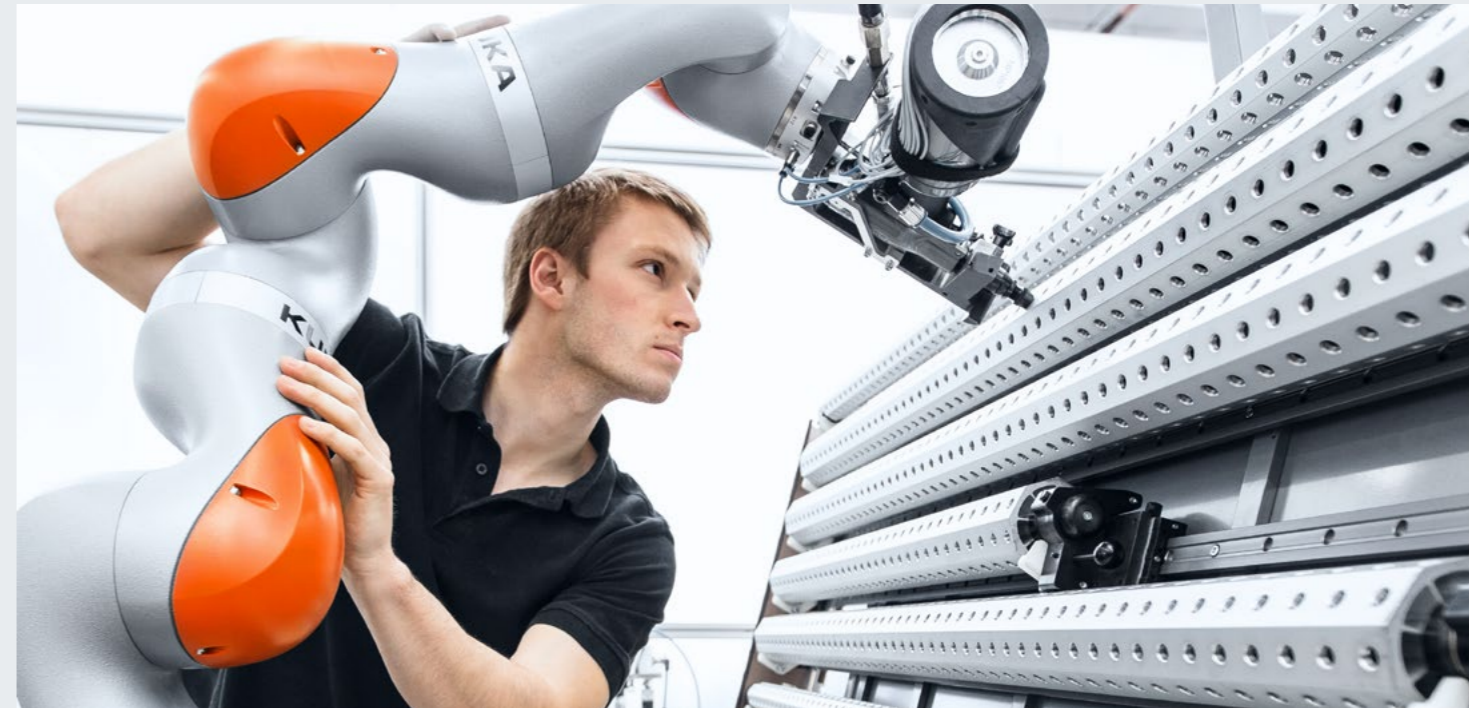
Quick reactions. Thanks to its joint torque sensors, the LBR iiwa detects contact immediately and reduces its level of force and speed instantly. Its position and compliance control enables it to handle delicate components without creating crushing and shearing hazards.

Able to learn. Choose from three operating modes and program the LBR iiwa by means of simulation: show it the desired position – it remembers the coordinates of the point on the path. Stop for breaks and control it with simple touch commands.

Sensitive. The lightweight LBR iiwa with its high-performance servo control is able to detect contours quickly under force control. It establishes the correct installation position and mounts components quickly and with the utmost precision with an axis-specific torque accuracy of ±2 percent of the maximum torque. The LBR iiwa can also find small, delicate components in next to no time without your assistance.

Independent. The LBR iiwa's controller, KUKA Sunrise Cabinet, simplifies the quick start-up of even complex applications. Give your operator a third hand – and have the LBR iiwa take care of unergonomic, monotonous tasks reliably and independently.

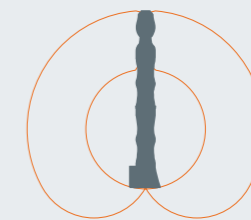
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Industrial change is in full swing. IoT and Industrie 4.0 are replacing established structures with a cyber-physical production environment. The active agents in this process of change are intelligent machines with completely new capabilities: robots equipped with sensitivity and superior intelligence. Working side-by-side with humans, they operate more independently and with more sensitivity than ever before. They

are mobile, highly flexible and extremely versatile. At the same time, they provide you with seamless digital networking and autonomous adjustment to the rapidly changing production requirements. KUKA is making the vision of a production environment free from rigid structures into reality. As part of this, lightweight robots (LBR) play a key role as "intelligent industrial work assistants" (iiwa). In short: LBR iiwa.

Greater freedom. The LBR iiwa does not require a safety fence.



Reach
800 – 820 mm

Payload
7 – 14 kg

| LBR iiwa | LBR iiwa 14 R820 | LBR iiwa 7 R800 |
|-------------------------------|----------------------|----------------------|
| Rated payload | 14 kg | 7 kg |
| Number of axes | 7 | 7 |
| Reach | 820 mm | 800 mm |
| Wrist variant | In-line wrist | In-line wrist |
| Mounting flange on axis 7 | DIN ISO 9409-1-A50 | DIN ISO 9409-1-A50 |
| Pose repeatability | ±0.15 mm | ±0.1 mm |
| Axis-specific torque accuracy | ±2 % | ±2 % |
| Weight | 29.9 kg | 23.9 kg |
| Protection rating | IP 54 | IP 54 |
| Variants | CR | CR |
| Installation position | Floor, ceiling, wall | Floor, ceiling, wall |

CR Suitable for clean rooms



LBR iisy. The cobot for a new era.



click for more



Based on KUKA's next generation operating system, iiQKA.OS, the LBR iisy cobot experience is user-friendly, well-thought-out and straightforward for a wide range of industries with applications that require precise, fast and sensitive activities.

With its new, user-friendly software, the LBR iisy can be operated immediately by anyone, from automation experts to

Cobot newcomers. This makes the robot equally at home in complex automation environments as it is in unstructured environments where it interacts with workers. And the best part: LBR iisy is ready for use in a matter of minutes, from unpacking to productive work.

LBR iisy can also work without safety fences directly with human operators and can be handguided smoothly with

the commander input device on the end of the robot arm to help simplify setup and programming.

As the first robot running on iiQKA.OS, LBR iisy sets new standards for easy, straightforward and intuitive integration into production landscapes.



Flexible. Flexible robot system due to easy operation and programming, as well as low weight and many pre-configured elements



Suitable for industry. Fully industrial cobot through the use of proven technologies



Fast time to production. Ready to use from unboxing within a matter of minutes – and just as quickly re-used for new applications

Flexible, intuitive to use, fast to implement and safe in direct contact with human colleagues – the LBR iisy is an all-around cobot for automated production. It combines the know-how, precision and reliability of industrial automation with the intuitive flexibility of a smart device.

In order for robots to be more usable in more applications than ever before, automating tasks should be one thing above all else: simple. This is the mantra of KUKA's new cobot running on iiQKA.OS and supported by the iiQKA Ecosystem.

Intuitive. Simple programming with smooth handguiding

Collaborative. Enables direct, fence-free collaboration with humans

Sensitive. Detects collisions and measures process forces

Flexible. Simple installation of components, fast re-use in new applications



| LBR iisy | LBR iisy 3 R760 |
|----------------------------------|---------------------------------------|
| Rated payload | 3 kg |
| Number of axes | 6 |
| Reach to end of flange on axis 6 | 760 mm |
| Safety for HRC | PL d / Kat 3 |
| Temperature range | +5°C to +45°C |
| Pose repeatability | ±0.1 mm |
| Protection rating | IP 30 |
| Weight | 22.8 kg |
| Integrated energy supply system | Gbit Ethernet and 8 individual cables |
| Operator panel | KUKA smartPAD pro |
| Controller | KR C5 micro |
| Software | KUKA iiQKA.OS |
| Installation position | Floor, ceiling, wall, angle |

Small robots

Little helpers – great help. The versatile world of KUKA small robots.

[020] KR DELTA
[022] KR SCARA
[024] KR 4 AGILUS
[026] KR AGILUS

When it comes to compact solutions and payloads of up to 10 kilograms, small robots from KUKA shine out. Our portfolio in the field of small robots impresses with a large number of variants and possible applications.

All robots in this class are characterized by impressive precision and speed and combine this with minimal space requirements.

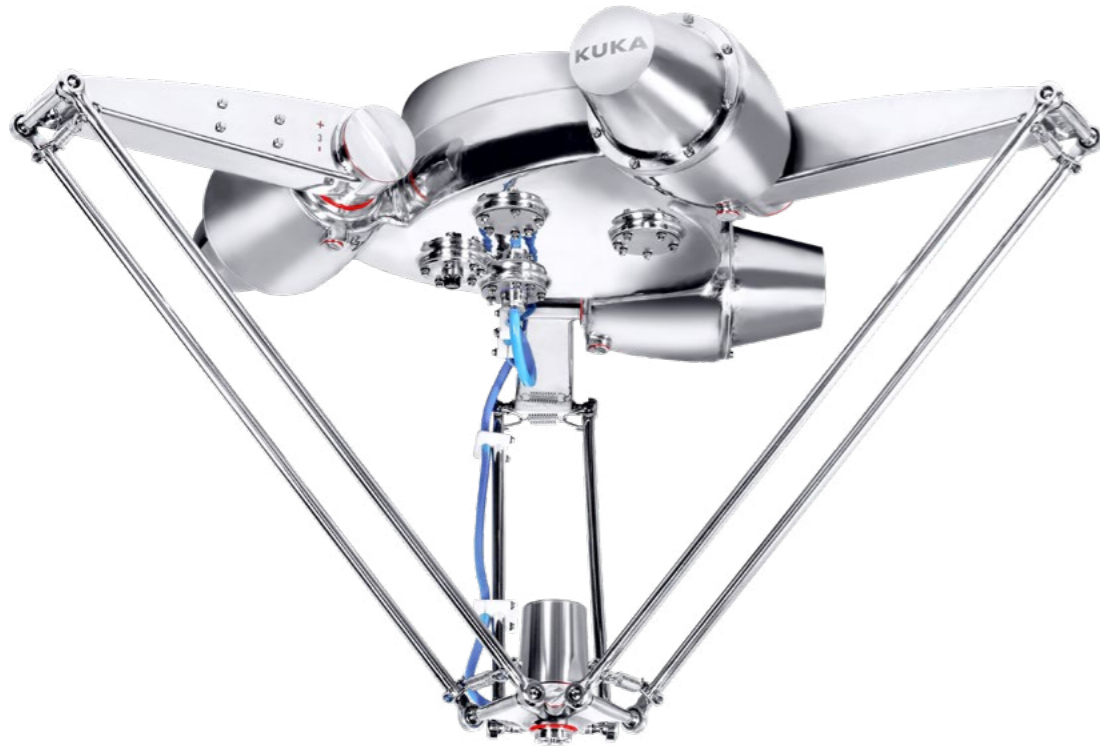
KUKA offers an ideal solution for every automation project – from six-arm robots and robots with internal media supply to parallel-arm robots with parallel kinematic systems. Small robots from KUKA are synonymous with freedom for automation. The flexible installation positions, for example, enable the implementation of a wide variety of production cell concepts.

The breadth of KUKA's portfolio of small robots is probably demonstrated most clearly, however, by the wide range of applications. These range from clean rooms to hygienically sensitive areas such as the food or pharmaceutical industries, and from ESD-compliant electrical assembly tasks to fields of work involving water spray or explosion hazards. Safe Robot functionalities are also already available for some small robots.





KR DELTA. High-level hygiene.



With the new KR C5 micro robot controller for small robots, KUKA is taking automated production to a new level: durable and future-proof.

KR 3 D1200 HM is the first KR DELTA parallel robot marketed by KUKA. It is suitable for applications with stringent health and safety requirements in industries such as food, medicine, household chemicals, etc. The entire body of the robot is made of stainless steel with a protection rating of IP 67 and can therefore be cleaned and sterilized with high-pressure cleaners as well as with various industrial cleaners. Both the materials used for the robot body and those used for lubrication comply with the regulations for food contact materials published by the FDA and in the LFGB.

High speed. The KR DELTA enables extremely short cycle times as fast as 0.5 seconds.

High flexibility. The KR DELTA is suitable for various fields of application, from pharmaceuticals to electronics to the food industry.

Flexible flange. The flange of the KR DELTA is suitable for easy mounting of a wide variety of tools.

Large workspace. The industrial robot operates reliably in a cylindrical workspace with a height of 250 millimeters and a diameter of 1,200 millimeters.

Small footprint. The ceiling-mounted robot has an installation area with a diameter of 350 millimeters.

High ease of maintenance. With an encapsulated gear unit and ball joints made of self-lubricating material, the maintenance requirements of the KR DELTA are particularly low.

Meets the hygiene standards according to the regulations for contact with food

- The entire body is made of stainless steel, and is smooth, dirt-repellent and corrosion-resistant, making it easy to clean and disinfect.
- The protection rating for the robot body is IP 67, while axis 4 meets the high protection rating IP 69K.
- The materials used for the robot body and for lubrication comply with the regulations for food contact materials published by the FDA and in the LFGB.
- Direct contact of the robot body with food and medicines is permissible. The robot is particularly suitable for food processing, primary packaging and similar applications.

High cost-effectiveness

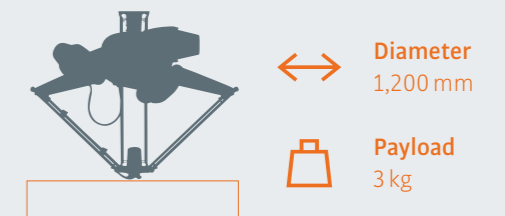
- No replacement of the lubricant in the reduction gears is required throughout the entire life cycle.
- The ball joints are self-lubricating.
- KR C5 micro, the latest generation of KUKA controllers, is included in the scope of supply. This takes up less space and consumes less energy.
- Low maintenance requirements
- Direct cleaning with high-pressure cleaners is possible, reducing cleaning-related downtime.

Powerful and easily accessible application system

- With the visualization application KUKA.VisionTech and the dedicated KUKA.PickControl software package, the seamless integration of up to ten robots and conveyor systems can be implemented with ease.
- The wide range of applications includes processing, picking, sorting, packaging, stacking and other applications in the food, medical, household chemical and other industries.



With flexible DELTA robots and matching hardware and software, KUKA offers cost-effective solutions for automated picking and packing.



| KR DELTA | KR 3 D1200 HM |
|-----------------------|---------------|
| Controller | KR C5 micro |
| Number of axes | 4 |
| Rated payload | 3 kg |
| Reach | 600 mm |
| Diameter | 1,200 mm |
| Pose repeatability | ±0.1 mm |
| Weight | 95 kg |
| Variants | HM |
| Installation position | Ceiling |

HM Hygienic Design



KR SCARA.

Extremely fast,
extremely precise.



Strong, fast, highly efficient. From the assembly of small parts to material handling or inspection – the ultra-compact KR SCARA robots immediately deliver maximum efficiency and cost-effectiveness. With integrated media supply systems, they can master almost any application straight out of the box.

The KR SCARA robots have an internally-routed media supply for air, power and data – a complete package for the smart integration of peripheral devices and the quick adaptation of the KR SCARA robot to almost any desired application. From the assembly of small parts to material handling or inspection – the 4-axis KR SCARA robots are characterized by flexible installation, highly precise motion and low maintenance requirements.



Strong, fast and absolutely reliable. The KR 6 R500 Z200-2 has a payload capacity of 6 kilograms and a reach of 500 millimeters.

click for more



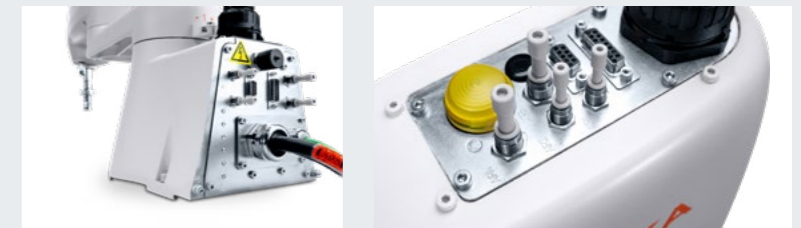
Unbeatable price/performance ratio. 6 kilogram payload, utmost precision, extremely short cycle times, high speed, low weight – and all at an affordable price.

Optimally adaptable to almost any task. Media supply in the complete package to enable fast adaptation of the robot to virtually any desired application.

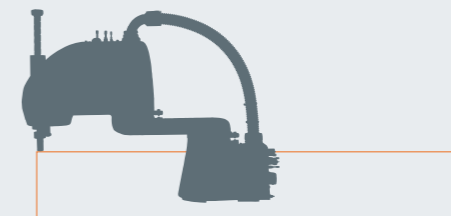
Robust in many working environments. Operational in the entire temperature range from 5° to 40° Celsius, protection rating IP 20.

Fast integration of peripheral equipment. Factory-prepared for the safe, quick and simple integration of peripheral equipment.

Certified quality. The KR SCARA robot is internationally certified according to the applicable EU standard.



As a robot of the latest generation, the KR SCARA has an internally-routed media supply for air, power and data. A coordinated complete package for the simple integration of peripheral devices and fast adaptation of the robot to virtually any desired application.



↔ **Reach**
500 – 700 mm

📦 **Payload**
3 kg

| KR SCARA | KR 6 R500 Z200-2 | KR 6 R700 Z200-2 |
|-------------------------|------------------|------------------|
| Controller | KR C5 micro | KR C5 micro |
| Number of axes | 4 | 4 |
| Payload (maximum/rated) | 6kg / 3 kg | 6kg / 3 kg |
| Reach | 500 mm | 700 mm |
| Pose repeatability | ±0.02 mm | ±0.02 mm |
| Weight | 20 kg | 22 kg |
| Installation position | Floor | Floor |



KR 4 AGILUS. New possibilities, shaped from greater functionality.



Custom-tailored for maximum performance in production. High performance in any installation position and with minimal space requirements – the KR 4 AGILUS impresses with its compact design, long reach and high precision.

The KR 4 AGILUS combines ultra-compact, interference-free design with optimum performance: with a payload capacity of 4 kilograms and a reach of 600 millimeters, the compact robot performs a wide variety of tasks, such as handling and assembly in the electronics industry or in small automation cells. It works reliably and precisely even with the shortest cycle times.

Multi-functional applicability, flexible positioning and unbeatable reliability – the new KR 4 AGILUS pushes back the boundaries of technical feasibility in small robotics. With a payload of up to 3 kilograms, it impresses with a top cycle time as fast as 0.4 seconds*. Whether handling, continuous-path motion or working with pinpoint accuracy – the KR 4 AGILUS simplifies the automation of compact and ultra-compact cells. Flexible in installation, highly precise in motion, economical in maintenance.

With just one type of robot, your applications will sustainably reach new levels of performance and efficiency. For maximum performance over the entire temperature range between 0 and 55 °C. Furthermore, the KR 4 AGILUS has an internally-routed media supply for air, power and data, enabling the quick and easy integration of peripheral devices. As a robot of the latest generation, the KR 4 AGILUS operates with the KR C5 micro, incorporating state-of-the-art control technology from KUKA. In order to solve and control tasks more efficiently and intuitively.

*Cycle time according to the "Small Adept Cycle" reference standard

Speed. Cycle times as fast as 0.4 seconds

Durability. Suitable for use in the temperature range from 0 to 55 °C, equipped with protection rating IP 40 and ESD protection

Precision. Repeatability of 0.02 millimeters and improved continuous-path accuracy

Integrated energy supply system. Compatible with most supply systems
4×4 compressed air
1×M12 8-pin (24 V, 2 A)
1×M12 8-pin Ethernet (optional)

Utmost flexibility. Compact, interference-free design, flexible installation position and various interfaces for peripheral devices.

ESD protection. As standard, the robot is protected against uncontrolled electrostatic charging or discharging and is thus equipped for the safe handling of sensitive electronic components.

Maximum reliability. Particularly long service life and low servicing and maintenance requirements, e.g. thanks to fewer steps when exchanging cables

Simple operation. Control via KR C5 micro and operation via the KUKA smartPAD



Integrated media supply for air, power and data. For minimum disruptive contours and maximum reliability in operation.




↔ **Reach**
601 mm

📦 **Payload**
4 kg

| KR 4 AGILUS | KR 4 R600 |
|-----------------------|-----------------------------|
| Controller | KR C5 micro |
| Number of axes | 6 |
| Payload | 4 kg |
| Reach | 601 mm |
| Pose repeatability | ±0.02 mm |
| Weight | 27 kg |
| Installation position | Floor, ceiling, wall, angle |



KR AGILUS. Custom-tailored for maximum performance in production.

The KR AGILUS sixx is our compact six-axis robot designed for particularly high working speeds. Different versions, installation positions, reaches and payloads transform the small robot into a precision artist.

The KR AGILUS stands out due to its versatility that enables you to tap new fields of application. Irrespective of the installation position – whether on the floor, ceiling or wall – it achieves the utmost precision in confined spaces thanks to its integrated energy supply system and the new KR C5 micro controller. The Safe Robot functionality paves the way for innovative automation concepts. With a wide range of variants for operation in clean rooms or potentially explosive environments, or with a particularly hygienic or splash-proof design: every version of the KR AGILUS is always precise and fast.



click for more



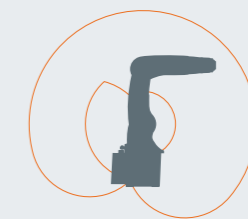
Agile in every environment. No matter how dirty, wet or sterile – the KR AGILUS achieves top performance in every production environment. A wide range of variants, such as Cleanroom, Hygienic Machine, EX – for potentially explosive environments – and Waterproof make it a specialist for many different tasks.

Extreme precision with any cycle time. Thanks to its robust design, the KR AGILUS achieves maximum repeatability and continuous precision. With its extreme speed, it reduces cycle times – and increases production quality, without ever getting out of step.

Sustainably robust. Thanks to its lifetime lubrication, the KR AGILUS never needs a change of lubricant in the gear units and has minimal maintenance requirements. The robust design ensures continuous productivity.

Extremely compact. Inverted on the ceiling, sideways on the wall or fixed to the floor: the KR AGILUS adapts to any installation position. We have integrated the energy supply system so that you can integrate the six-axis robot into your space-saving cell concepts.

Protected against electrostatic charges. Electrostatic charges are a problem especially in electronics production. The KR AGILUS has ESD protection even in its standard version. It is thus optimally protected against charging.



Reach
706 – 1,101 mm

Payload
6 – 10 kg

Hygienic Machine variant. The KR AGILUS is available as a Hygienic Machine. The design and the materials used in this variant are absolutely hygienic. This allows it to be used in applications involving direct contact with food and pharmaceutical substances.

Waterproof variant (IP 67). In the Waterproof variant, the KR AGILUS is splash-proof from all sides and achieves maximum performance even in the case of extreme external production conditions. Stable stainless steel covers have replaced plastic parts, and resistant surface treatments and additional seals in the interior of the small robot enable it to be used in a machine tool environment, for example.

Cleanroom variant. The KR AGILUS CR is suitable for use in clean rooms and meets the requirements of cleanroom class ISO 2. The KR AGILUS CR can thus be perfectly integrated into the smallest of spaces and complex applications with high cleanliness requirements.

EX variant. The KR AGILUS can be adapted to even the most extreme environmental conditions: with the KR AGILUS EX, we have added explosion protection to the Waterproof variant. With this design, the KR AGILUS can also work with maximum precision in potentially explosive environments (zone 2).

| KR AGILUS | KR 10 R1100 | KR 10 R900 | KR 6 R900 | KR 6 R700 | KR 10 R1100-2 | KR 10 R900-2 | KR 6 R900-2 | KR 6 R700-2 |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Controller | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact | KR C5 micro, KR C4 compact |
| Number of axes | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Payload | 10 kg | 10 kg | 6 kg | 6 kg | 10 kg | 10 kg | 6 kg | 6 kg |
| Reach | 1,101 mm | 901 mm | 901 mm | 706 mm | 1,101 mm | 901 mm | 901 mm | 726 mm |
| Pose repeatability | ±0.03 mm | ±0.03 mm | ±0.03 mm | ±0.03 mm | ±0.02 mm | ±0.02 mm | ±0.02 mm | ±0.02 mm |
| Weight | 54 kg | 52 kg | 52 kg | 50 kg | 55 kg | 55 kg | 55 kg | 53 kg |
| Variants | CR, EX, HM, WP | CR, HM, WP | CR, EX, HM, WP | CR, HM, WP | HO | – | HO | – |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |

CR Suitable for clean rooms EX For potentially explosive atmospheres HM Hygienic Design HO Food compatible lubricants WP Splash-proof

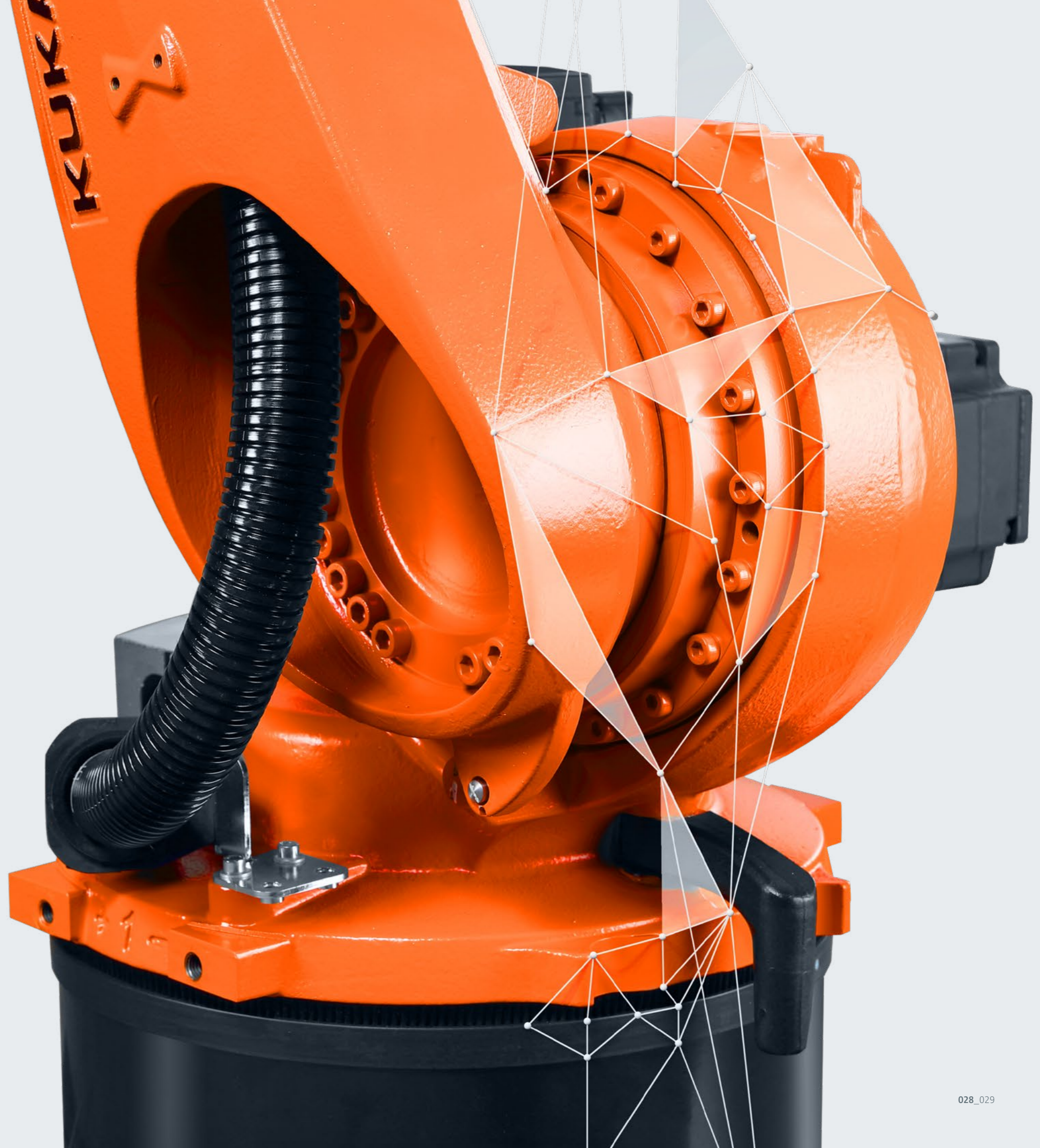
—Low payloads

Low payload meets maximum flexibility. A wealth of variants for a wide range of processes.

- [030] KR CYBERTECH nano
- [032] KR CYBERTECH nano ARC
- [034] KR CYBERTECH
- [036] KR CYBERTECH ARC

KUKA's low payload category from 6 to 22 kilograms.
KUKA robots with low payloads demonstrate unique strengths in bonding, sealing, foaming and all tasks requiring a high path accuracy. In arc welding, KUKA robots for low payloads boast the best acceleration values on the market.

Even tasks such as component testing, small-part assembly or grinding, polishing, assembly as well as machine loading and unloading are in the best of hands when performed by KUKA robots of the low payload category. With optimal reach and payload coverage, this range of robots offers a level of performance that is hard to beat.



 **KR CYBERTECH nano.**
Every variant:
a master of speed.

Surpasses limits to master every task. Regardless of the application for which you use the KR CYBERTECH nano robots, both the in-line wrist and hollow-wrist variants achieve optimal results from the outset. For reducing the maintenance costs in small, compact cells, for complex tasks or in demanding, high-density production chains. Their deployment quickly pays off. Because the new KR CYBERTECH nano series combines maximized performance with minimized investment, integration and maintenance costs.

Ready for the dynamic markets of the future. The robots of the KR CYBERTECH nano series set new standards in terms of performance and flexibility. Developed to achieve optimal results in any conceivable application. Unrivalled spectrum of capabilities: outstandingly agile, extremely fast and yet uncompromisingly precise in continuous-path motion – all combined in a single machine. With their sleek and streamlined design, the robots look good even in harsh surroundings.



Utmost precision. The industrial robots of the KR CYBERTECH nano family offer a repeatability of 0.04 millimeters. They therefore take full advantage of their strengths even at high speed.

Streamlined and compact. Maximum performance with minimal disruptive contours: the new robots are extremely compact, light and streamlined – for a wide range of applications in industrial manufacturing.

Maximum freedom. The robots open up previously inaccessible workspaces: they can cover long distances, with an extremely large workspace to the rear and a long downward reach.

ESD protection. As standard, the robot is protected against uncontrolled electrostatic charging or discharging and is thus equipped for the safe handling of sensitive electronic components.

Any installation position. Install the KR CYBERTECH nano industrial robots on the floor, wall or ceiling, or at any other angle – for a wide range of different requirement profiles in any desired installation position.

Most streamlined in-line wrist. With a minimal interference radius, the KR CYBERTECH nano handling robots have one of the smallest in-line wrists in their class – worldwide. It enables work to be carried out in positions that are inaccessible for other robots.

Maximum flexibility. Simply integrate external axes via the robot controller and benefit from the innovative K-PIPE-ES energy supply concept.

Process-optimized motion sequences. The KR CYBERTECH nano family has optional digital plug-in Motion Modes. These are digitized motion modes that optimize the robot sequence for specific application scenarios. “Path Mode”, for example, enables high-precision continuous-path motion. “Dynamic Mode” allows a higher acceleration and velocity in order to minimize cycle times still further.



The KR CYBERTECH nano in a welding application in our standard KUKA cell4_arc compact cell.



| KR CYBERTECH nano | KR 10 R1440-2 | KR 8 R1640-2 | KR 6 R1840-2 |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|
| Controller | KR C5, KR C5 micro | KR C5, KR C5 micro | KR C5, KR C5 micro |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 10 kg | 8 kg | 6 kg |
| Reach | 1,440 mm | 1,640 mm | 1,840 mm |
| Pose repeatability | ±0.04 mm | ±0.04 mm | ±0.04 mm |
| Weight | 153 kg | 158 kg | 162 kg |
| Variants | HO | – | – |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |

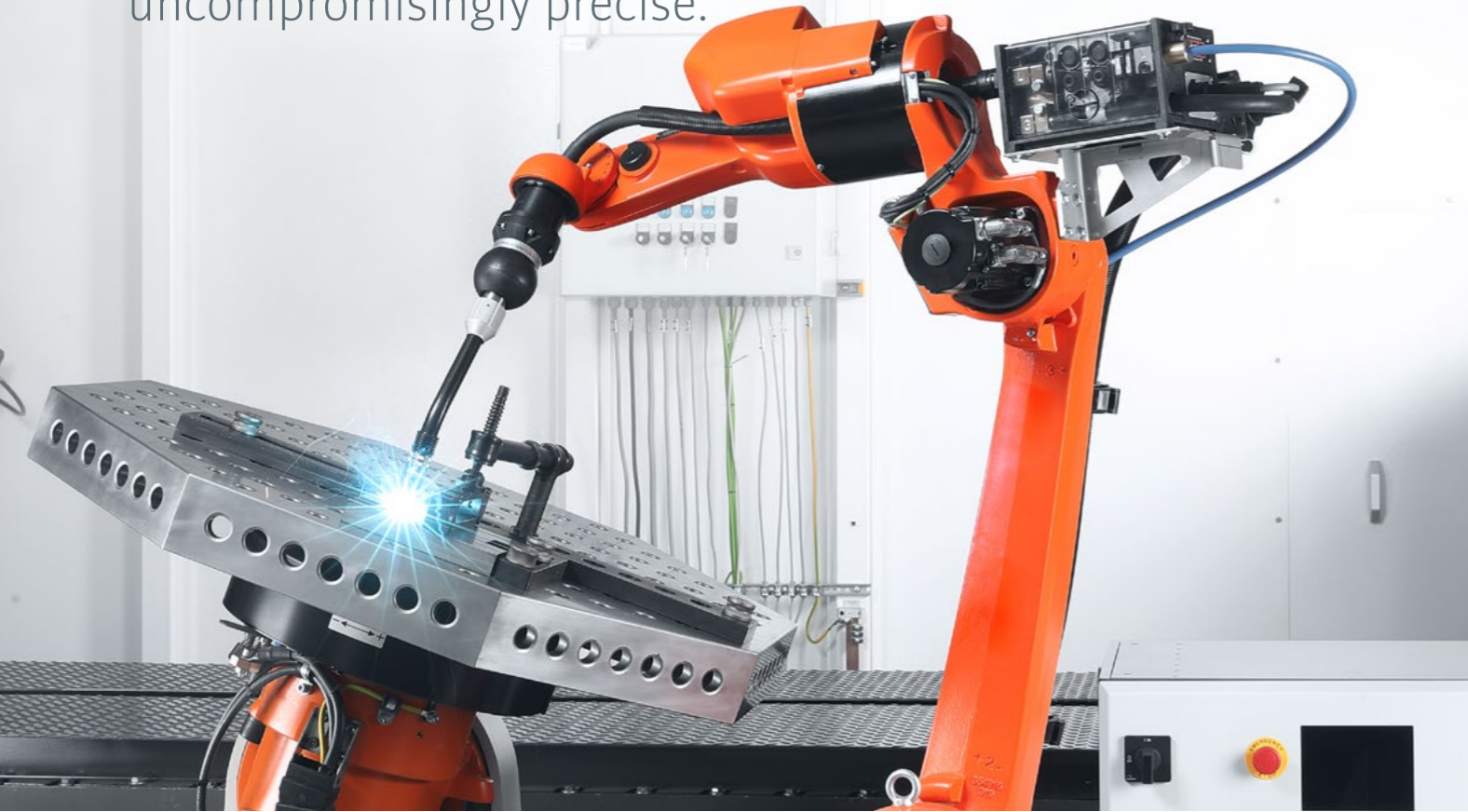
HO Food compatible lubricants

_Low payloads



KR CYBERTECH nano ARC.

Extremely fast and uncompromisingly precise.



click for more

Maximum precision. With their repeatability of 0.04 millimeters, the KR CYBERTECH nano ARC robots work extremely exactly and precisely even at high speed.

New KUKA hollow wrist. The 50-millimeter hollow-shaft wrist is a future-oriented innovation: the hollow axis allows reduced main axis motion with short cycle times and utmost precision of movement.

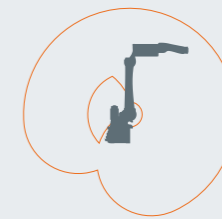
ESD protection. As standard, the robot is protected against uncontrolled electrostatic charging or discharging and is thus equipped for the safe handling of sensitive electronic components.

Simplified integration. Thanks to standardized mounting surfaces, the robot is easily integrated into existing production lines and allows the uncomplicated mounting of welding equipment.

High flexibility. The use of modern KUKA controllers facilitates the integration of external axes.

Maximum freedom. The KR CYBERTECH nano ARC robots have a large workspace to the rear and a long downward reach. This enables them to open up previously inaccessible workspaces.

Streamlined compactness. The industrial robots are particularly light, highly streamlined and exceedingly compact. They deliver maximum performance with minimal disruptive contours.



Reach
1,441 – 1,843 mm

Payload
6 – 8 kg

| KR CYBERTECH nano ARC | KR 8 R1440-2 arc HW | KR 8 R1640-2 arc HW | KR 6 R1840-2 arc HW |
|-----------------------|---------------------|---------------------|---------------------|
| Controller | KR C5 | KR C5 | KR C5 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 8 kg | 8 kg | 6 kg |
| Reach | 1,441 mm | 1,641 mm | 1,843 mm |
| Pose repeatability | ±0.04 mm | ±0.04 mm | ±0.04 mm |
| Weight | 167 kg | 172 kg | 175 kg |
| Installation position | Floor, ceiling | Floor, ceiling | Floor, ceiling |

Maximum performance with minimal costs. The KR CYBERTECH nano ARC product family is optimized for CP applications. The industrial robots offer ideal performance combined with a high power density – for maximum economy at low cost. With their new controller structures, the industrial robots of the KR CYBERTECH nano ARC family have extremely high path accuracy and speed. The acceleration values and the new ergonomic design with minimized disruptive contours ensure continuous-path motion at the very highest level – even deep inside the workpieces. With very fine payload intervals of 6 and 8 kilograms, you will find the ideal robot model for your application.


The KR CYBERTECH nano ARC features “Path mode” as standard, which enables high-precision CP motion. It is also calibrated for positional accuracy before delivery.



KR CYBERTECH nano ARC E. In the Edition variant, the KR CYBERTECH nano ARC E marks the entry into the world of welding automation. It has been created specifically for simple welding tasks. The KR CYBERTECH nano ARC E enables very cost-effective implementation of robot-based automation for processes of low complexity. At the same time, it is uncompromising when it comes to quality, accessories or software.

| KR CYBERTECH nano ARC | KR 6 R1440-2 arc HW E* |
|-----------------------|------------------------|
| Controller | KR C5 |
| Number of axes | 6 |
| Rated payload | 6 kg |
| Reach | 1,441 mm |
| Pose repeatability | ±0.06 mm |
| Weight | 205 kg |
| Installation position | Floor, ceiling |

*Only available in selected countries.

 **KR CYBERTECH.** For space-saving cell concepts – with particularly low follow-up costs.



Fast and accurate. The industrial robots of the KR CYBERTECH series reach exceptionally high speeds, allowing them to work even faster – without any loss of precision.

Extensive portfolio. The KR CYBERTECH series is suitable for handling large components, machining, assembly, palletizing and arc welding.

Flexible installation. For planning security and low costs in the design of cells: the robots can be flexibly floor-, wall- or ceiling-mounted or even installed at a certain angle.

Variety of energy supply systems. Separation of the cable set and the dress package means that you can choose from a large variety of compatible energy supply systems.

Streamlined design. The KR CYBERTECH family is set apart by a streamlined wrist and an extremely compact and simultaneously athletic appearance.

Improved motion characteristics. The optimized controller structures make for smooth and sensitive motion characteristics – on the path and during positioning.

ESD protection. As standard, the robot is protected against uncontrolled electrostatic charging or discharging and is thus equipped for the safe handling of sensitive electronic components.

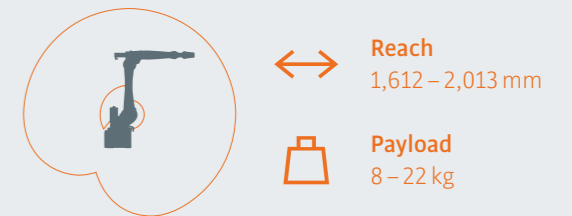


The space-saving and intelligently integrated cabling ensures that the KR CYBERTECH robots have maximum freedom of motion in any installation position.

The specialist for handling applications.

The industrial robots of the KR CYBERTECH family represent the world's largest range of models in the low payload category with the greatest power density. They are ideally suited to space-saving cell concepts and provide top performance – with particularly low follow-up costs.

The powerful multifunction robots of the KR CYBERTECH series are specialized for handling applications: handling of large components, machining, assembling, palletizing and arc welding. A central innovation of the KR CYBERTECH series: the industrial robots are even more compact. This enables you to benefit from the greater integration density and reduced disruptive contours. Choose the right industrial robot for every application from the wide-ranging portfolio.



| KR CYBERTECH | KR 22 R1610-2 | KR 20 R1810-2 | KR 16 R2010-2 | KR 16 R1610-2 | KR 12 R1810-2 | KR 8 R2010-2 | KR 20 R1810-1 |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Rated payload | 22 kg | 20 kg | 16 kg | 16 kg | 12 kg | 8 kg | 20 kg |
| Reach | 1,612 mm | 1,813 mm | 2,013 mm | 1,612 mm | 1,813 mm | 2,013 mm | 1,813 mm |
| Pose repeatability | ±0.04 mm | ±0.04 mm | ±0.04 mm | ±0.04 mm | ±0.04 mm | ±0.04 mm | ±0.04 mm |
| Weight | 255 kg | 255 kg | 260 kg | 255 kg | 255 kg | 260 kg | 250 kg |
| Variants | – | – | – | – | – | – | CR, F, HO |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |

CR Suitable for clean rooms F Foundry variant HO Food compatible lubricants

_Low payloads


KR CYBERTECH ARC.

Groundbreaking in terms of precision and ease of maintenance.



Specialized process robots for CP applications. The industrial robots from the KR CYBERTECH ARC product family are characterized by their utmost precision and top performance. The low-maintenance series ensures particularly low follow-up costs.

The industrial robots of the KR CYBERTECH ARC product family are specialized process robots for continuous-path applications such as arc welding and the application of adhesives and sealants.

click for more 

Fast and accurate. Particularly fast without compromising accuracy: the robots of the KR CYBERTECH ARC product family work even faster while maintaining the same precision.

Flexible installation. Adapt the mounting arrangement of the robots to your requirements: install them on the ceiling, floor, wall or at an angle.

Athletic design. The industrial robots of the KR CYBERTECH ARC family are highly compact in appearance but nevertheless streamlined.

Optimized motion characteristics. Thanks to optimized controller structures, the industrial robots move smoothly and sensitively both on the path and during positioning.

Broad portfolio. The KR CYBERTECH ARC product family is optimized for continuous-path applications, for example for arc welding and the application of adhesives and sealants.



The KR CYBERTECH ARC product family is optimized for continuous flow applications, for example for arc welding and the application of adhesives and sealants.



Reach
2,101 mm

Payload
6 kg

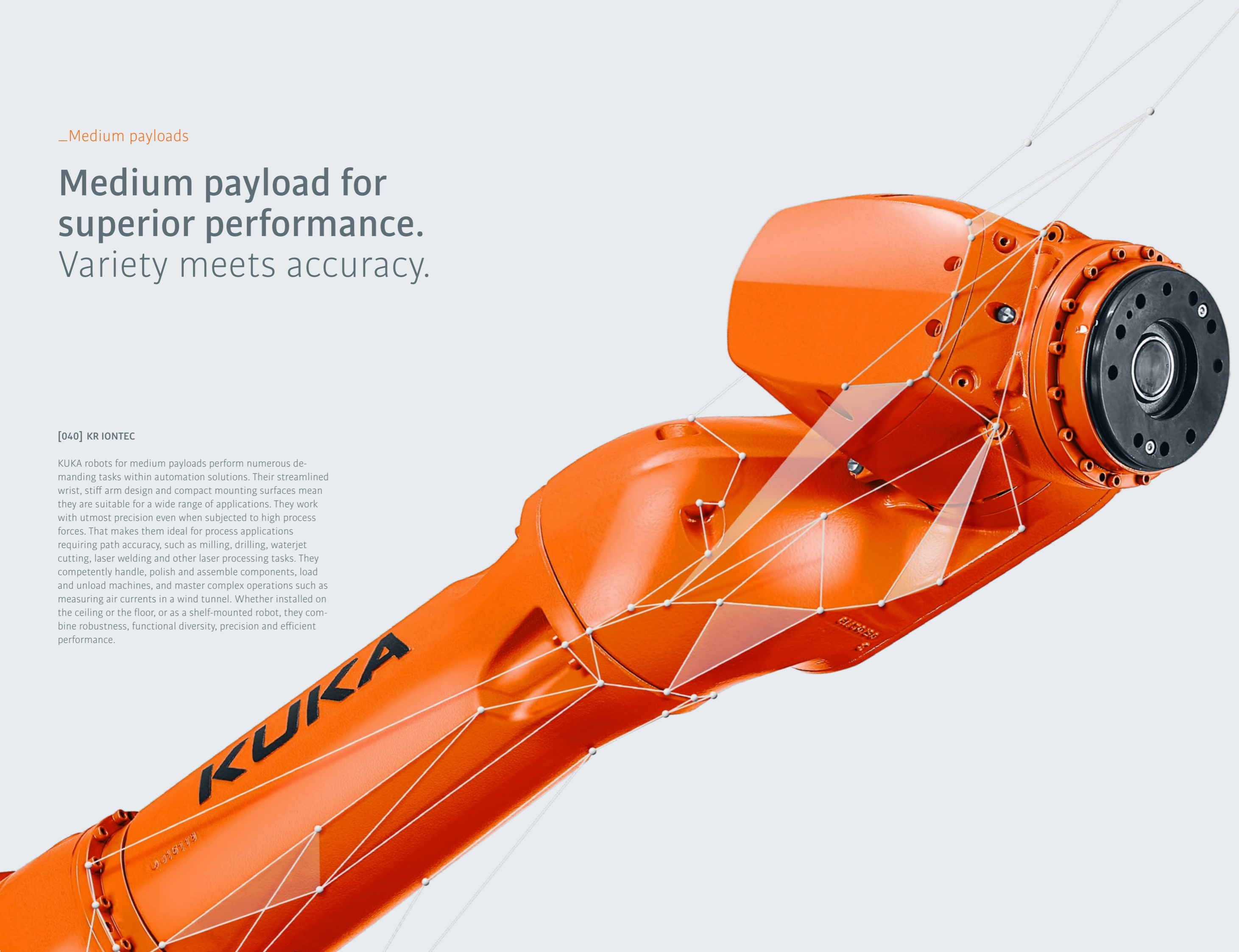
| KR CYBERTECH ARC | KR 8 R2100-2 arc HW |
|-----------------------|-----------------------------|
| Controller | KR C5, KR C4 |
| Number of axes | 6 |
| Rated payload | 8 kg |
| Reach | 2,101 mm |
| Pose repeatability | ±0.04 mm |
| Weight | 260 kg |
| Installation position | Floor, ceiling, wall, angle |

_Medium payloads

Medium payload for superior performance. Variety meets accuracy.

[040] KR IONTEC

KUKA robots for medium payloads perform numerous demanding tasks within automation solutions. Their streamlined wrist, stiff arm design and compact mounting surfaces mean they are suitable for a wide range of applications. They work with utmost precision even when subjected to high process forces. That makes them ideal for process applications requiring path accuracy, such as milling, drilling, waterjet cutting, laser welding and other laser processing tasks. They competently handle, polish and assemble components, load and unload machines, and master complex operations such as measuring air currents in a wind tunnel. Whether installed on the ceiling or the floor, or as a shelf-mounted robot, they combine robustness, functional diversity, precision and efficient performance.



 **KR IONTEC.** One robot – many applications.



With the KR IONTEC, you are opting for pure performance and the largest work envelope in the medium payload category. Maximum dynamics and minimum cycle times.

Whether mounted on the floor, on the wall, or in an inclined position, the KR IONTEC combines a compact design with optimum use of space. Equipped with a waterproof and dustproof in-line wrist and protected motors, it is suitable for almost every area of application. A Foundry option also enables use in extremely hot environments with an extended temperature range from 0 to 55 °C.

KR IONTEC combines high output and a wide range of applications with a low total cost of acquisition, operation, and maintenance. This makes it a valuable investment in the future of your production.

Adaptable to processes at the push of a button. Thanks to digital Motion Modes, you can adapt the performance of the robot to various processes or substeps depending on the need for higher precision or speed.

Lowest maintenance requirements. With KR IONTEC, an oil change is only required every 20,000 operating hours. The robot also has an in-line wrist design without belts.

Flexible cell and system planning. The efficient use of the work area, the low space requirement due to a small footprint and the streamlined disruptive contour enable a compact cell design.

Low inventory costs. The robot requires 50 percent fewer spare parts than its predecessor model. Spare parts availability for 25 years guarantees long-term planning reliability.

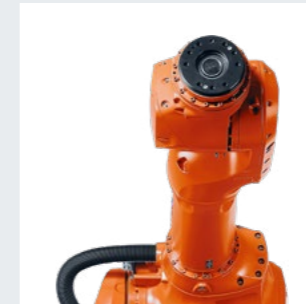
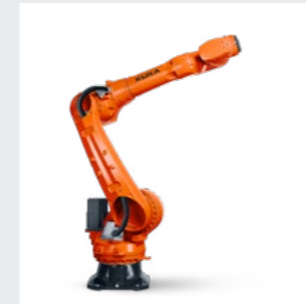
Convertible payload capacity. The payload capacity of the KR IONTEC can also be subsequently adjusted on a robot already installed – allowing for maximum flexibility in your production.

Simplified start-up. An optimized engineering tool and low training requirements using proven KUKA technology simplify start-up for you.

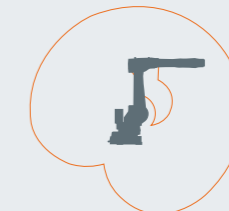
Optimized energy supply system. An A1 hollow shaft with a diameter of 119 millimeters ensures easy energy supply with a minimized footprint.

ESD protection. As standard, the robot is protected against uncontrolled electrostatic charging or discharging and is thus equipped for the safe handling of sensitive electronic components.

Maximum availability. The KR IONTEC has a technical availability of 99.999% with a mean time between failures of 400,000 hours.



Long reach. The enormous work envelope provided by the long arm and the long link arm of the KR 20 R3100 vastly expands the range of production options.



Reach
2,101–3,101 mm

Payload
20–70 kg

| KR IONTEC | KR 70 R2100 | KR 50 R2100 | KR 50 R2500 | KR 30 R2100 | KR 20 R3100 |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 | 6 | 6 |
| Rated payload | 70 kg | 50 kg | 50 kg | 30 kg | 20 kg |
| Reach | 2,101 mm | 2,101 mm | 2,501 mm | 2,101 mm | 3,101 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm |
| Weight | 536 kg | 533 kg | 559 kg | 533 kg | 549 kg |
| Variants | F | HO | F, HO | – | – |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |

F Foundry variant HO Food compatible lubricants

_High payloads

Reach meets payload.

The safe choice for a wide range of production tasks.

[044] KR QUANTEC

KUKA robots for high payloads are the right choice when it comes to processes and handling tasks with a required range of up to 300 kilograms. The KR QUANTEC series impresses with a clever range of reach and payload intervals. This makes it possible to determine the optimum robot for your requirements very flexibly. As veritable workaholics, our robots for high payloads excel with innovative features such as Motion Modes and availability assurance. At the same time, they stand for efficiency and significantly low running costs.



 **KR QUANTEC.** The smart robot family for efficiency and a wide range of applications.



The future of your production. The KR QUANTEC robots have the largest payload/reach portfolio on the market in the high payload category. The all-rounder from KUKA is designed for applications in virtually all market segments – from the automotive industry to the foundry and medical sectors.

Optimal portfolio for maximum flexibility and low total cost of ownership. The KR QUANTEC series was developed on the basis of KUKA's experience in the dynamic world of automation. The result: a reliable, versatile and efficient high-quality solution for your production environment. Customers benefit from the uniquely wide range of applications of the KR QUANTEC robots, which stand out for their performance, cost-effectiveness and flexibility.

An intelligent modular system ensures perfectly coordinated and flexible robots, and low total cost of ownership – due, for example, to minimized maintenance requirements and a reduced number of spare parts. The capability of upgrading payload capacity in the field and the Motion Modes for ideal process quality within production make the KR QUANTEC a secure investment in the future of your production operations.



Best in class. With the KR QUANTEC series, KUKA is presenting a robot generation whose innovative features taken together set new standards – for both conventional and digitalized production worlds. The result goes way beyond technical details, also encompassing long-term aspects such as simplification of commissioning, maintenance requirements and process optimization of the system.

Sustainably low TCO. The KR QUANTEC impresses not only with its outstanding production efficiency, but also with its economical start-up and maintenance concept. With energy efficiency, top values for the mean time between failures and a reduced number of components in the complete modular system, the series sets new market standards for TCO. Features contributing to a minimization of downtimes and maintenance requirements include the innovative cabling and energy supply concept. As a result, the KR QUANTEC series excels with a significant reduction in running costs. The energy supply concept is set apart by its durability and optimal availability.

Process-optimized motion sequences. The KR QUANTEC series were the world's first industrial robots to have digital plug-in Motion Modes. These are digitized motion modes that optimize the robot motion for specific application scenarios. "Path Mode", for example, enables high-precision continuous-path motion. "Dynamic Mode" allows a higher velocity in order to minimize cycle times.

Maximum flexibility. The KR QUANTEC series is distinguished by the optimal portfolio with its maximized performance and advanced design. Streamlined disruptive contours, extended permissible ambient conditions and an extremely small footprint ensure utmost flexibility in operation as well as in cell and system planning. The perfected workspace in front of and behind the machine offers improved accessibility in a wide range of different applications.



| KR QUANTEC | KR 300 R2700-2 | KR 250 R2700-2 | KR 240 R2900-2 | KR 210 R3100-2 | KR 180 R2900-2 | KR 210 R2700-2 | KR 150 R3100-2 |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Rated payload | 300 kg | 250 kg | 240 kg | 210 kg | 180 kg | 210 kg | 150 kg |
| Reach | 2,701 mm | 2,701 mm | 2,900 mm | 3,100 mm | 2,900 mm | 2,701 mm | 3,100 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm |
| Weight | 1,101 kg | 1,101 kg | 1,120 kg | 1,134 kg | 1,105 kg | 1,077 kg | 1,105 kg |
| Variants | F | F | F, HO | F | F | F | F, HO |
| Installation position | Floor, ceiling | Floor, ceiling | Floor, ceiling | Floor, ceiling | Floor | Floor | Floor |

| KR QUANTEC | KR 150 R2700-2 | KR 120 R3100-2 | KR 120 R2700-2 | KR 270 R3100-2 K | KR 210 R3300-2 K | KR 180 R3500-2 K | KR 120 R3900-2 K |
|-----------------------|-------------------|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Rated payload | 150 kg | 120 kg | 120 kg | 270 kg | 210 kg | 180 kg | 120 kg |
| Reach | 2,701 mm | 3,100 mm | 2,701 mm | 3,105 mm | 3,305 mm | 3,505 mm | 3,904 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm |
| Weight | 1,072 kg | 1,105 kg | 1,069 kg | 1,260 kg | 1,266 kg | 1,256 kg | 1,280 kg |
| Variants | F | F | F, HO | F | F | F | – |
| Installation position | Floor | Floor | Floor | Floor (shelf) | Floor (shelf) | Floor (shelf) | Floor (shelf) |

| KR QUANTEC nano | KR 160 R1570 nano | KR 120 R1800 nano |
|-----------------------|----------------------|----------------------|
| Controller | KR C4 | KR C4 |
| Number of axes | 6 | 6 |
| Rated payload | 160 kg | 120 kg |
| Reach | 1,573 mm | 1,803 mm |
| Pose repeatability | ±0.06 mm | ±0.06 mm |
| Weight | 677 kg | 684 kg |
| Variants | – | – |
| Installation position | Floor, ceiling | Floor, ceiling |

F Foundry variant HO Food compatible lubricants

_Heavy payloads

Making difficult tasks easy. Greater ease for complex processes.

[048] KR FORTEC
[050] KR 1000 titan

KUKA robots for heavy payloads from 360 to 1,000 kilograms. Where complex work sequences with large loads are involved, KUKA robots for heavy payloads give your business decisive productivity advantages. They master the reliable handling and processing of large and heavy parts, the linking of work processes, the tending of machines, and palletizing. Special variants, such as the heat-resistant Foundry variant, optimally adapt KUKA robots for heavy payloads to your specific task. Here you can keep a cool head even in the high temperature range. The robots for heavy payloads are optimized for large and heavy tools. This means that tools with high mass inertias are no problem for these robots.



KR FORTEC. Heavy-duty robot with open kinematic system and unique payload capacity.



The KR FORTEC is our six-axis, heavy-duty robot for intelligent system concepts. Due to its top precision and outstanding reach, this heavy-duty industrial robot is particularly suited to handling heavy assemblies.

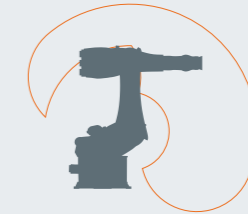
The dynamic KR FORTEC jointed-arm robot is intended for handling heavy components. When it comes to workspace, modularity, dynamism and repeatability, this heavy-duty robot is one of a kind on the market. With the FORTEC series, KUKA has developed a flexible solution for space- and cost-saving cell concepts. Various installation positions and special variants pave the way for innovative solutions that execute heavy-duty tasks with ease in various industries, yet particularly in the automotive industry. This involves the harmonious combination of extreme strength (FORce) and the latest technology (TEChnology): FORTEC.

Versatile and flexible. The FORTEC family provides you with a wide range of products for heavy-duty tasks, including variants for a large number of applications requiring resistance to heat, dust and water. A range of mounting positions allows for even more adaptability.

Powerful and efficient. Robots of the KR FORTEC series handle large and heavy components weighing up to 600 kilograms with great precision and ease. At the same time, they require very little maintenance and are characterized by cost-efficiency as a result.

Absolute precision. The KR FORTEC combines power and technology with a pose repeatability of 0.08 millimeters – for unbeatable product quality in the heavy-duty range.

Optimum utilization of the workspace. The new generation of heavy-duty robots is made up of FORTEC robots with a more streamlined design. This compactness enables the robots to enlarge their work envelope.



Reach
2,826 – 3,326 mm

Payload
240 – 600 kg



| KR 360 FORTEC | KR 360 R2830 | KR 280 R3080 | KR 240 R3330 |
|-----------------------|----------------|--------------|----------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 360 kg | 280 kg | 240 kg |
| Reach | 2,826 mm | 3,076 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,385 kg | 2,415 kg | 2,421 kg |
| Variants | F | F | F |
| Installation position | Floor, ceiling | Floor | Floor, ceiling |



| KR 500 FORTEC | KR 500 R2830 | KR 420 R3080 | KR 340 R 3330 |
|-----------------------|----------------|--------------|---------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 500 kg | 420 kg | 340 kg |
| Reach | 2,826 mm | 3,076 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,385 kg | 2,415 kg | 2,421 kg |
| Variants | F | F | F |
| Installation position | Floor, ceiling | Floor | Floor |



| KR 600 FORTEC | KR 600 R2830 | KR 510 R3080 | KR 420 R3330 |
|-----------------------|--------------|--------------|--------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 600 kg | 510 kg | 420 kg |
| Reach | 2,826 mm | 3,076 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,650 kg | 2,680 kg | 2,686 kg |
| Variants | F | F | F |
| Installation position | Floor | Floor | Floor |

| KR 500 FORTEC MT | KR 500 R2830 MT | KR 480 R3330 MT |
|-----------------------|-----------------|-----------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 |
| Rated payload | 500 kg | 480 kg |
| Reach | 2,826 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm |
| Weight | 2,440 kg | 2,475 kg |
| Variants | F | F |
| Installation position | Floor | Floor |

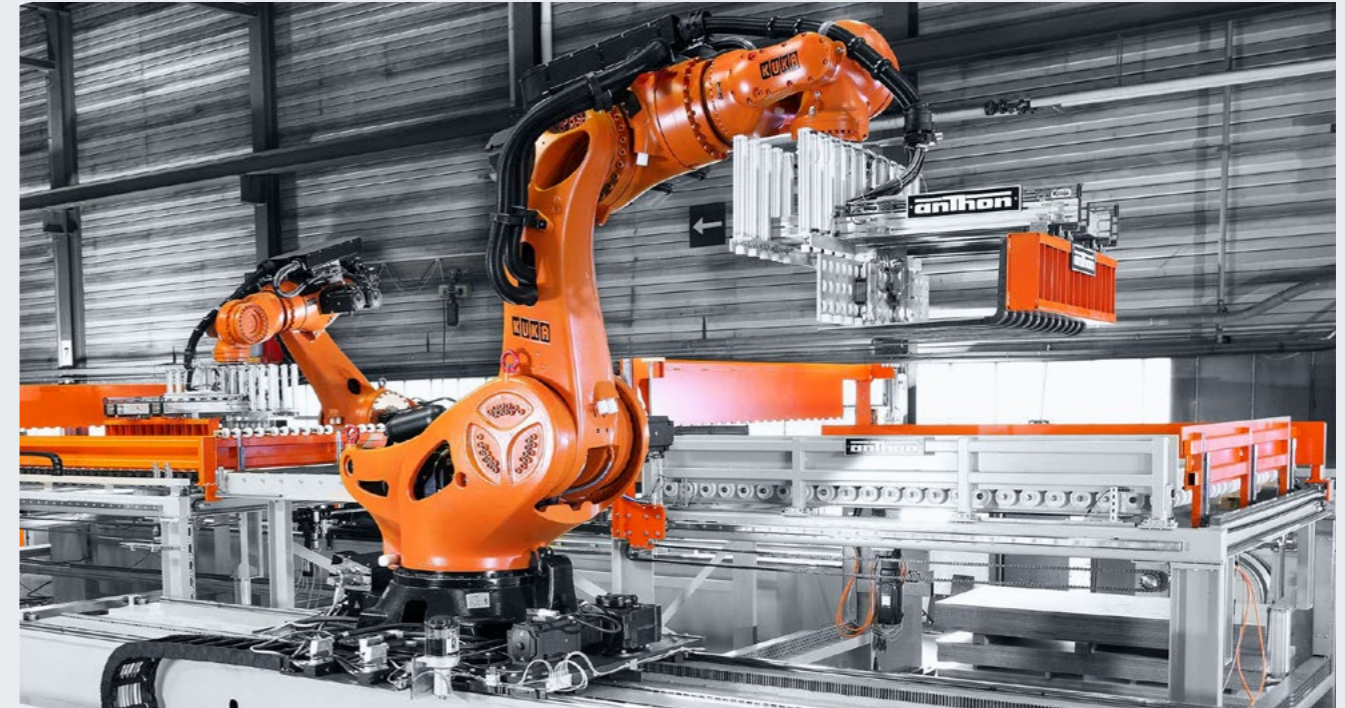
F Foundry variant

 **KR 1000 titan.** Our powerful robot for heavy loads.



The heaviest workpieces and components even over long distances. The KR 1000 titan is our powerful robot for heavy loads and large, heavy tools with high mass inertias.

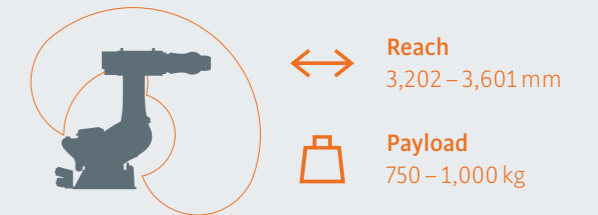
It is the first six-axis robot with an open kinematic system and an unparalleled payload capacity. It masters the handling of heavy loads precisely and quickly, even over long distances. Engine blocks, stones, glass, steel beams, components for ships and aircraft, marble blocks, precast concrete parts – all of these heavy loads are no problem for the KR 1000 titan. For special areas of application, we offer the Foundry variant with the best payload/reach ratio or the version as a palletizing robot for heavy loads of up to 1.3 tonnes.



High dynamic performance. The KR 1000 titan handles the heaviest workpieces and components precisely and safely. With high speed and dynamic acceleration, it ensures optimal cycle times.

Enormous productivity. Thanks to the accuracy of the KR 1000 titan robot, you can improve your manufacturing quality and reduce costs. The low interference contours extend the effectively usable workspace.

Greater flexibility. The KR 1000 titan offers you a wide range of possible applications: as a palletizer or combined with linear axes, you increase its flexibility. It can be integrated into existing systems easily and without the need to adapt the foundations.



| KR 1000 titan | KR 1000 titan | KR 1000 L750 titan |
|-----------------------|---------------|--------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 |
| Payload | 1,000 kg | 750 kg |
| Reach | 3,202 mm | 3,601 mm |
| Pose repeatability | ±0.10 mm | ±0.10 mm |
| Weight | 4,690 kg | 4,740 kg |
| Variants | F | F |
| Installation position | Floor | Floor |

F Foundry variant

_Palletizing robots

Palletizing robots from the market leader. When speed is of the essence.

_Medium payloads
[054] KR 40 PA

_High payloads
[055] KR QUANTEC PA

_Heavy payloads
[056] KR 300-2 PA
[056] KR 470-2 PA
[056] KR 700 PA

[057] KR 1000 titan PA

Largest possible work envelope, minimized interference contour and maximum robustness. KUKA palletizing robots combine everything that is required for perfect automation. As the leading palletizer manufacturer, KUKA covers the payload range from 40 to 1,300 kilograms with an unparalleled variety of robots.

All of our palletizing robots are specially designed for demanding palletizing and de-palletizing tasks. The result is short cycle times and increased throughput combined with low space requirements and high cost-effectiveness.

Advantages of automatic palletizing with KUKA robots.


Powerful. The robots from KUKA are among the fastest palletizers on the market – while also offering extreme precision and repeatability. With their streamlined, lightweight design, KUKA palletizing robots achieve greater dynamic performance, shorter cycle times and higher throughput – even in confined spaces.

Versatile. A wide range of different payload capacities, reaches and special variants ensure that our customers always find the right solution, no matter how challenging the palletizing task. All interfaces and energy supply systems are designed for versatility.

Compact. The compact and streamlined design of all robots for palletizing enables simple integration into existing systems. Their low interference contours extend the effectively usable workspace and allow innovative cell concepts.

Low maintenance. All components of KUKA palletizing robots are equipped with low-wear drive trains. Thanks to their advanced and robust design, they have extremely long maintenance intervals – with an availability of 99.995 percent and maximum energy efficiency.




 **KR 40 PA.** Our smallest and lightest palletizing robot.



The KR 40 PA picks and packs your goods in record time. It can palletize products with a weight of up to 40 kilograms and reach net stacking heights of up to 1.8 meters; all in a very small space. Cycle times are shortened significantly thanks to its low weight.



| KR 40 PA | KR 40 PA |
|-----------------------|---------------|
| Controller | KR C5 , KR C4 |
| Number of axes | 4 |
| Payload | 40 kg |
| Reach | 2,091 mm |
| Pose repeatability | ±0.05 mm |
| Weight | 695 kg |
| Variants | - |
| Installation position | Floor |

 **KR QUANTEC PA.** Shorter cycles, best availability and low operating costs.



The KR QUANTEC PA robots are the most powerful robots in their class. The streamlined design and low weight enable unbeatable dynamic performance and precision. The KR QUANTEC PA robots are thus perfectly suited to challenging palletizing tasks with payloads from 120 to 240 kilograms and maximum reaches – including the Arctic variant designed specially for use in cold-storage rooms. They can be used to stack multiple pallets to a great height effortlessly.



| KR QUANTEC PA | KR 240 R3200-1 PA | KR 180 R3200-1 PA | KR 120 R3200-1 PA | KR 240 R3200-2 PA | KR 180 R3200-2 PA | KR 140 R3200-2 PA |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Controller | KR C4 | KR C4 | KR C4 | KR C5 | KR C5 | KR C5 |
| Number of axes | 5 | 5 | 5 | 5 | 5 | 5 |
| Payload | 240 kg | 180 kg | 120 kg | 240 kg | 180 kg | 140 kg |
| Reach | 3,195 mm | 3,195 mm | 3,195 mm | 3,195 mm | 3,195 mm | 3,195 mm |
| Pose repeatability | ±0.06 mm | ±0.06 mm | ±0.06 mm | ±0.07 mm | ±0.07 mm | ±0.07 mm |
| Weight | 1,103 kg | 1,093 kg | 1,075 kg | 1,017 kg | 1,017 kg | 1,017 kg |
| Variants | A, HO | A, HO | A, HO | HO | HO | HO |
| Installation position | Floor | Floor | Floor | Floor | Floor | Floor |

A Arctic version to -30°C HO Food compatible lubricants

KR 300 PA, KR 470 PA and KR 700 PA.

High flexibility with the heavy-duty palletizers up to 700 kilograms.



KUKA palletizing robots for heavy loads can get to grips with far more. As well as their high payload capacity, combined with a reach of up to 3,150 millimeters, they stand out for their extremely high working speeds. They handle heavy payloads at high speed – with extremely long maintenance intervals. The hollow-wrist design with its extra-large opening measuring an unbeatable 60 millimeters enables space-saving cell concepts.

↔ **Reach**
3,150 – 3,320 mm

🛒 **Payload**
300 – 700 kg



| KR 300 PA, KR 470 PA and KR 700 PA | KR 300-2 PA | KR 470-2 PA | KR 700 PA |
|------------------------------------|--------------|--------------|--------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 5 | 5 | 4 |
| Payload | 300 kg | 470 kg | 700 kg |
| Reach | 3,150 mm | 3,150 mm | 3,320 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,150 kg | 2,150 kg | 2,850 kg |
| Variants | – | – | – |
| Installation position | Floor | Floor | Floor |

👉 KR 1000 titan PA. Handling of heavy loads over long distances.



With the palletizing robots of the KR 1000 titan series, you can lift the heaviest loads with ease. The KR titan PA is the world's first robot for payloads of up to 1,300 kilograms – with unrestricted dynamic performance and short cycle times, it is the strongest palletizing robot on the market. With their long reach and minimal disruptive contours, the strong robots of the titan series open up additional workspace.

↔ **Reach**
3,202 – 3,601 mm

🛒 **Payload**
950 – 1,300 kg

| KR 1000 titan PA | KR 1000 L950 titan PA | KR 1000 1300 titan PA |
|-----------------------|-----------------------|-----------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 4 | 4 |
| Payload | 950 kg | 1,300 kg |
| Reach | 3,601 mm | 3,202 mm |
| Pose repeatability | ±0.10 mm | ±0.10 mm |
| Weight | 4,740 kg | 4,690 kg |
| Variants | F | F |
| Installation position | Floor | Floor |

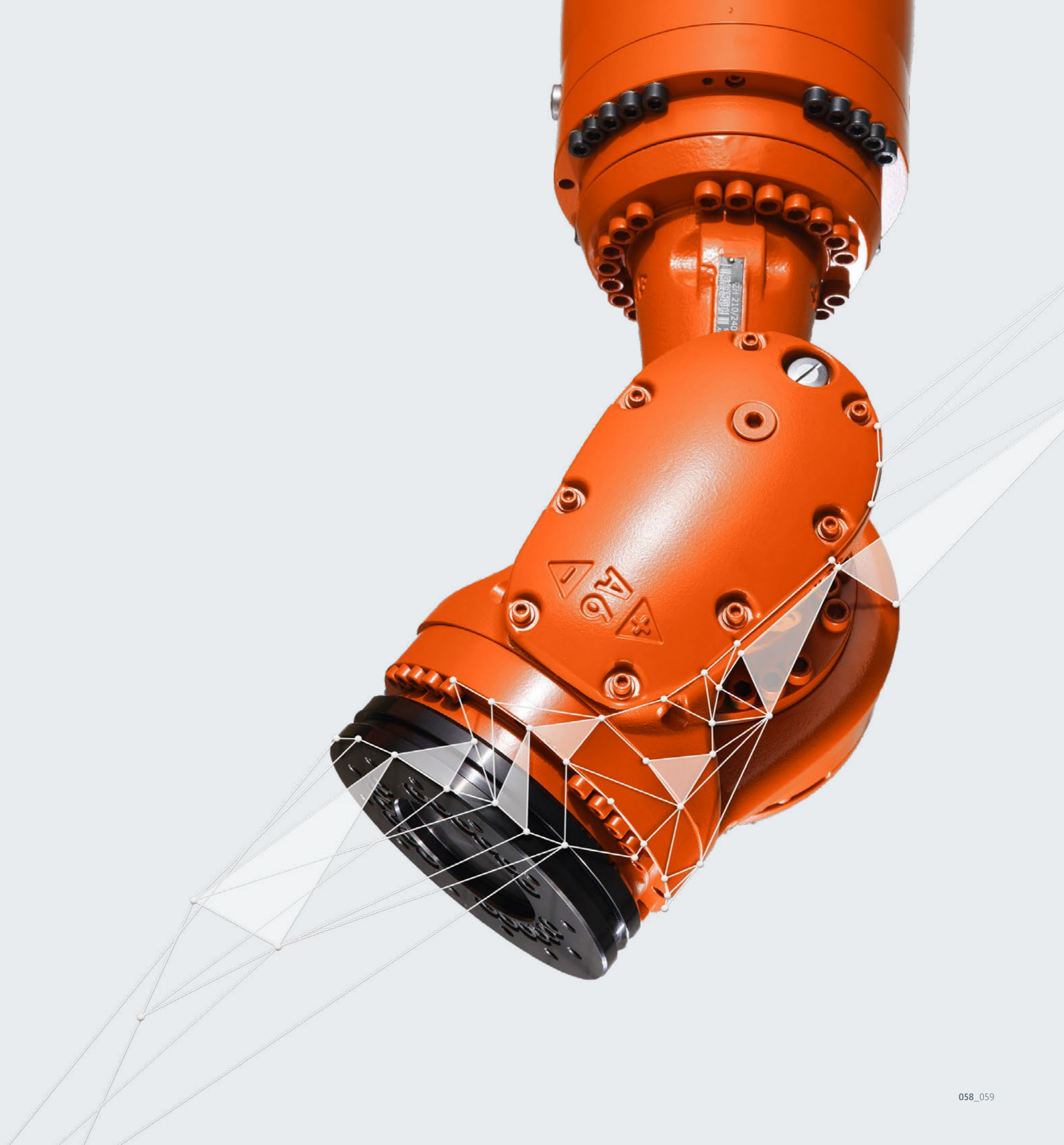
F Foundry variant

_Press-to-press robots

Always there when something takes shape.
For the quick linking of presses.

[060] KR QUANTEC P

A long reach and a wide range of payloads – these are the strengths of the KUKA press-to-press robots. Whether they are bridging short press gaps or transferring large or medium-sized panels, thanks to their modular design and our long experience of press linking, we can optimally tailor your robot to the individual application. The robust design with low-wear components increases the service life and extends the maintenance intervals – thereby reducing your costs.





KR QUANTEC P. First choice for linking press lines.

The KR QUANTEC P is the KUKA industrial robot specially designed for press linking and is the first choice for loading, unloading and linking press lines.

The KR QUANTEC P has been optimized for press shop integration. It can be used to implement a wide range of applications, for press linking across narrow or wide press gaps, transferring large and medium-sized blanks as well as loading and unloading press lines. Its faster axes enable high-speed press-to-press automaton, which is ideal for the automotive industry.

The KR QUANTEC press-to-press robots are available in floor and ceiling-mounted variants.



click for more

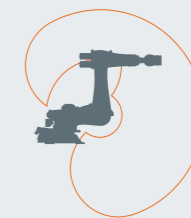


Robust with powerful gear units. The extremely robust design with reinforced axes and highly resistant gear units ensures reliable performance and availability even under constant high stress.

Fast with high throughput rates. Thanks to a specially adapted drive train and machine data, the press-to-press robot shortens processing times, allowing it to achieve extremely high throughput.

Far-reaching, both downwards and upwards. The shelf-mounted robots have a reduced interference contour thanks to the hollow shaft in axis 1 for routing all cables. The robot knee, which is positioned lower down and further forward, enables greater downward reach.

Space-saving at a low height. The shelf-mounted robots from the KR QUANTEC P series make optimum use of the workspace from above. Thanks to their low height, they require very little space above the robot base, thus opening up new possibilities for space-saving cell concepts.



↔ Reach
3,505 mm

📦 Payload
120 kg

| KR QUANTEC | KR 120 R3500-2 P |
|-----------------------|------------------|
| Controller | KR C5 |
| Number of axes | 6 |
| Payload | 120 kg |
| Reach | 3,505 mm |
| Pose repeatability | ±0.05 mm |
| Weight | 1,281 kg |
| Installation position | Floor, ceiling |

_Special variants

Anything but standard. KUKA robots for special operating conditions.

- [064] HO Food compatible lubricants
- [064] WP Splash-proof
- [064] EX For potentially explosive atmospheres
- [065] CR Suitable for clean rooms
- [065] HM Hygienic Design
- [065] A Arctic version up to -30°C
- [066] F Foundry variant

Special operating conditions place exceptional demands on robotics. We at KUKA are familiar with these challenges and offer a wide range of solutions that allow efficient robot automation even under extreme conditions.

The spectrum of special variants ranges from use in particularly cold or hot environments, through solutions for the food or hygiene sector, to robots that are suitable for clean rooms, potentially explosive or even humid environments.

All special variants have highly specialized features in addition to our KUKA quality promise of precision, flexibility or process reliability.





HO robots. Safe handling of food: Uncompromisingly hygienic, safe and efficient.

Robotic automation has become indispensable in the food industry. Robots play an important role when it comes to palletizing, repackaging or food handling – such as sorting, transferring or packaging. The KUKA HO portfolio is the largest of its kind, thus expanding the range of applications in the food sector, where automation plays an ever-increasing role and where the need for flexible solutions is great. With our HO robots we only use NSF H1 lubricants, which are food compatible. Concerning cleanability KUKA HO robots are also the perfect solution, and of course, they can be equipped with all standard software and hardware options.



CR robots. No fear of emissions: Safe automation solutions for clean rooms.

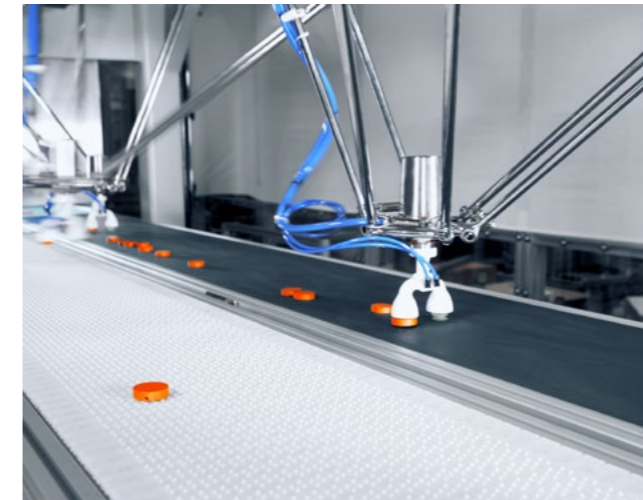
Especially in microelectronics, the pharmaceutical industry, microsystem production, the optics industry as well as medical technology it is the primary objective to prevent the contamination of products and processes. KUKA has developed three types of robots that can be used in clean rooms – KR AGILUS CR, KR CYBERTECH CR and LBR iiwa CR. All our cleanroom robots comply with cleanroom class 2 of DIN EN ISO 14644-1, the second highest of eight cleanroom classes. Due to a special powder coating, the cleanroom robots have extremely smooth surfaces. Air-bonded particles can, thus, be avoided, and special seals stop dust and seal abrasion to escape from the robots. CR robots meet the strict cleanroom criteria of the Fraunhofer Institute.



WP robots. Due to its waterproof design, the KR AGILUS WP is suitable for permanent use in working environments with splashing water. One example is the inside of machine tools. The WP robot meets the requirements of protection class IP 67 and is, therefore, even protected against temporary immersion in water. This is made possible by additional seals, constant surface treatment and the use of plastic covers instead of stainless steel covers.



EX robots. Wherever an explosive atmosphere can occur – for example in paint shops or in the chemical industry – the KR AGILUS EX is a reliable contribution to secondary explosion protection. To achieve this, the robot is not only sealed (it meets protection rating IP 67), but can also be pressurized. This overpressure ensures that gases and dusts cannot intrude and, therefore, ignite. For monitoring the pressure the robot can be upgraded with an optional detection unit.



HM robots. Hygiene begins with design. The robots of the Hygienic Machine class (KR AGILUS HM and KR DELTA HM) are technically designed in such a way that dirt cannot settle. In particular, the electrical interface, which is difficult to clean, is not located in the primary contact area, but underneath the robots. In addition, all surfaces are corrosion-resistant. Cleaning is carried out with commercial detergents and can also be performed at high pressure. This means that HM robots can be safely used in direct contact with food and pharmaceutical substances.



A robots. Robots that work reliably in extremely cold temperatures are in demand in the food sector. With the KR QUANTEC PA Arctic, KUKA has designed a robot that will handle tasks with large ranges and short cycle times even at minus 30° C (-22° Fahrenheit) without a protective cover. Despite deep-freeze conditions, the mechanical systems do not need to be extra heated. The large operational range is not limited by additional insulation.

Our Foundry robots are all-rounders in the world of the foundry and forging industry.

Robots need to meet a number of requirements for the new, innovative casting processes: a surface that is resistant to heat, corrosion, alkalis and acid is essential, as are special seals on the motor and gear unit flanges. The Foundry wrists of the KUKA robots hold gripper tooling made of heat-resistant special steel and are provided with a special paint finish. This makes even higher heat resistance possible in this espe-

cially critical area. The robot wrist and in-line wrist are provided with redundant safety through sealing air and high-quality Viton seals with thermal and chemical resistance.

Wide product range. KUKA foundry robots for payloads from 20 to 1,300 kilograms can do almost anything.

Our portfolio of specialized foundry machines. With over 50 years of experience, we are your competent and reliable partner in the sector of foundry technology. From casting machines to immersion cooling basins through to spotting and fast trimming presses, you can find everything you need at KUKA for a modern and efficient foundry.



You can find our range of foundry machines under www.KUKA.com/foundry-machines

KR CYBERTECH



The Foundry robot from our proven KR CYBERTECH family.



Reach
2,010 mm

Payload
20 kg

| KR CYBERTECH | KR 20 R1810-1 F | KR 20 R2010-1 KS-F |
|-----------------------|-----------------------------|--------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 |
| Rated payload | 20 kg | 20 kg |
| Reach | 1,813 mm | 2,010 mm |
| Pose repeatability | ±0.04 mm | ±0.04 mm |
| Weight | 250 kg | 242 kg |
| Variants | F | F |
| Installation position | Floor, ceiling, wall, angle | Floor (shelf) |

KR IONTEC



The KR IONTEC combines compact design with the largest working envelope in its class for optimum use of space with a small footprint. Equipped with a waterproof and dustproof in-line wrist and protected motors, the robot is suitable for almost every area of application. A Foundry option also enables use in extremely hot environments with an expanded temperature range from 0 to 55 °C.



Reach
2,101 – 2,501 mm

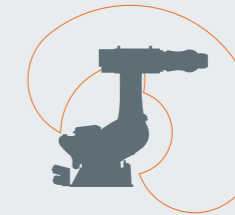
Payload
50 – 70 kg

| KR IONTEC | KR 70 R2100 F | KR 50 R2500 F |
|-----------------------|-----------------------------|-----------------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 |
| Rated payload | 70 kg | 50 kg |
| Reach | 2,101 mm | 2,501 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm |
| Weight | 536 kg | 559 kg |
| Variants | F | F |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |

KR 1000 titan



The KR 1000 titan F series – with a payload of up to 1300 kg and a long reach – enables the precise handling of XL workpieces such as large engine blocks.



Reach
3,202 – 3,601 mm

Payload
750 – 130 kg

| KR 1000 titan | KR 1000 titan F | KR 1000 L750 titan F | KR 1000 L950 titan PA-F | KR 1000 1300 titan PA-F |
|-----------------------|-----------------|----------------------|-------------------------|-------------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C4 | KR C4 |
| Number of axes | 6 | 6 | 4 | 4 |
| Payload | 1,000 kg | 750 kg | 950 kg | 1,300 kg |
| Reach | 3,202 mm | 3,601 mm | 3,601 mm | 3,202 mm |
| Pose repeatability | ±0.10 mm | ±0.10 mm | ±0.10 mm | ±0.10 mm |
| Weight | 4,690 kg | 4,740 kg | 4,740 kg | 4,690 kg |
| Variants | F | F | F | F |
| Installation position | Floor | Floor | Floor | Floor |

F Foundry variant



KR FORTEC



KR FORTEC is the perfect choice for handling heavy parts. With an unparalleled range of models for payloads up to 600 kilograms.



| KR 360 FORTEC | KR 360 R2830 F | KR 280 R3080 F | KR 240 R3330 F |
|-----------------------|----------------|----------------|----------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 360 kg | 280 kg | 240 kg |
| Reach | 2,826 mm | 3,076 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,385 kg | 2,415 kg | 2,421 kg |
| Variants | F | F | F |
| Installation position | Floor, ceiling | Floor | Floor |



| KR 500 FORTEC | KR 500 R2830 F | KR 420 R3080 F | KR 340 R 3330 F |
|-----------------------|----------------|----------------|-----------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 500 kg | 420 kg | 340 kg |
| Reach | 2,826 mm | 3,076 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,385 kg | 2,415 kg | 2,421 kg |
| Variants | F | F | F |
| Installation position | Floor, ceiling | Floor | Floor |



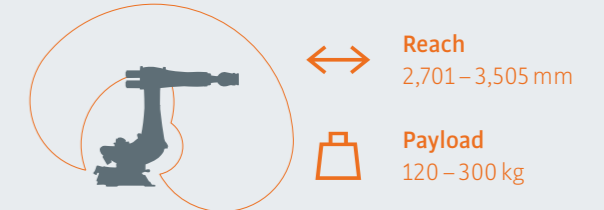
| KR 600 FORTEC | KR 600 R2830 F | KR 510 R3080 F | KR 420 R3330 F |
|-----------------------|----------------|----------------|----------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 | 6 |
| Rated payload | 600 kg | 510 kg | 420 kg |
| Reach | 2,826 mm | 3,076 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm | ±0.08 mm |
| Weight | 2,650 kg | 2,680 kg | 2,686 kg |
| Variants | F | F | F |
| Installation position | Floor | Floor | Floor |

| KR 500 FORTEC MT | KR 500 R2830 MT F | KR 480 R3330 MT F |
|-----------------------|-------------------|-------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 |
| Rated payload | 500 kg | 480 kg |
| Reach | 2,826 mm | 3,326 mm |
| Pose repeatability | ±0.08 mm | ±0.08 mm |
| Weight | 2,440 kg | 2,475 kg |
| Variants | F | F |
| Installation position | Floor | Floor |

KR QUANTEC



KUKA has completely revised the standard version of its bestselling robot, ensuring that it remains state-of-the-art technology. KUKA is now presenting the second generation of the special version for the foundry, forging and machining industries – more digitalized and even better than before.



| KR QUANTEC | KR 300 R2700-2 F | KR 250 R2700-2 F | KR 240 R2900-2 F | KR 210 R3100-2 F | KR 180 R2900-2 F |
|-----------------------|------------------|------------------|------------------|------------------|------------------|
| Controller | KR C5 | KR C5 | KR C5 | KR C5 | KR C5 |
| Number of axes | 6 | 6 | 6 | 6 | 6 |
| Rated payload | 300 kg | 250 kg | 240 kg | 210 kg | 180 kg |
| Reach | 2,701 mm | 2,701 mm | 2,900 mm | 3,100 mm | 2,900 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm |
| Weight | 1,101 kg | 1,101 kg | 1,120 kg | 1,134 kg | 1,105 kg |
| Variants | F | F | F | F | F |
| Installation position | Floor | Floor | Floor | Floor | Floor |

| KR QUANTEC | KR 210 R2700-2 F | KR 150 R3100-2 F | KR 150 R2700-2 F | KR 120 R3100-2 F |
|-----------------------|------------------|------------------|------------------|------------------|
| Controller | KR C5 | KR C5 | KR C5 | KR C5 |
| Number of axes | 6 | 6 | 6 | 6 |
| Rated payload | 210 kg | 150 kg | 150 kg | 120 kg |
| Reach | 2,701 mm | 3,100 mm | 2,701 mm | 3,100 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm |
| Weight | 1,077 kg | 1,105 kg | 1,072 kg | 1,105 kg |
| Variants | F | F | F | F |
| Installation position | Floor | Floor | Floor | Floor |

| KR QUANTEC | KR 120 R2700-2 F | KR 270 R3100-2 K-F | KR 210 R3300-2 K-F | KR 180 R3500-2 K-F |
|-----------------------|------------------|--------------------|--------------------|--------------------|
| Controller | KR C5 | KR C5 | KR C5 | KR C5 |
| Number of axes | 6 | 6 | 6 | 6 |
| Rated payload | 120 kg | 270 kg | 210 kg | 180 kg |
| Reach | 2,701 mm | 3,105 mm | 3,305 mm | 3,505 mm |
| Pose repeatability | ±0.05 mm | ±0.05 mm | ±0.05 mm | ±0.05 mm |
| Weight | 1,069 kg | 1,260 kg | 1,266 kg | 1,256 kg |
| Variants | F | F | F | F |
| Installation position | Floor | Floor (shelf) | Floor (shelf) | Floor (shelf) |

| KR QUANTEC nano | KR 180 R2100 nano F exclusive | KR 120 R2100 nano F exclusive |
|-----------------------|-------------------------------|-------------------------------|
| Controller | KR C5, KR C4 | KR C5, KR C4 |
| Number of axes | 6 | 6 |
| Rated payload | 180 kg | 120 kg |
| Reach | 2,100 mm | 2,100 mm |
| Pose repeatability | ±0.05 mm | ±0.06 mm |
| Weight | approx. 998 kg | 963 kg |
| Variants | F | F |
| Installation position | Floor | Floor |

F Foundry variant

_Robots in the medical industry

KUKA Medical Robotics. A head start in medical experience.

[072] LBR Med
[074] KR QUANTEC HC

From diagnostics to surgery to therapy: KUKA robots meet the high demands of the medtech industry and are suitable for a wide range of medical applications. With our LBR Med, we are taking the idea of cobots one step further. The human robot interaction thus becomes a robot-based assistance system that supports medical personnel in a wide variety of interventions.

The LBR Med is the first robotic component in the world to be certified for integration into medical devices. Our robotic technology is used in a wide range of medical fields such as in specialized rehabilitation applications, minimally invasive surgery, intraoperative surgery, intraoperative radiotherapy, breast cancer diagnosis, bone surgery breast cancer diagnosis, in bone surgery and also in orthopedic and orthopedic and aesthetic surgery.



LBR Med. Your partner in the medical sector.

The LBR Med bundles all the robotic capabilities that are specifically required in medical technology.


With the LBR Med, KUKA supplies a robotic component for integration into a medical device.

Certification according to the "IECEE CB Scheme". The certification was achieved according to the internationally established "IECEE CB Scheme" – a procedure that certifies conformity to certain safety and quality standards. In order to receive the CB test certificate, the LBR Med lightweight robot must meet medical requirements and comply with the international standards IEC 60601-1:2016 and IEC 62304:2006 (First Edition) + A1:2015. These include extensive testing of the hardware and software of the two 7- and 14-kilogram payload variants of the lightweight robot. On the one hand, compliance with the safety requirements for medical electric devices stipulated in the international standards was assessed. On the other, the processes in the life cycle of medical software development were also verified and approved. In both cases, the inspection was carried out by an accredited certified body.



Media flange inside electrical Med. Connections for power supply, I/Os or EtherNet are available for customer-specific tools on the flange via the media flange inside electrical Med.



click for more 



Precise

The LBR Med requires no additional devices for calibration or highly precise work. Thanks to its integrated mastering sensors, it calibrates itself fully autonomously and achieves an outstanding repeatability from ± 0.1 mm to ± 0.15 mm.



Safe

The LBR Med sets standards with its safety structures. Its safety-rated hardware and software processes the relevant data. Functions covered by the equipment include encoder signals, force/torque sensors, safety circuit, single fault safety, safety-rated interfaces and configurable safety events – in short: everything that predestines it for medical technology.



Sensitive

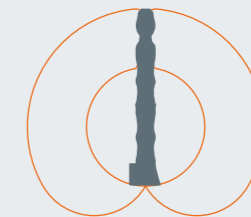
The LBR Med has redundant, integrated torque sensors. It can detect forces applied externally and react according to the freely programmable system responses you have specified. Benefit from its haptic capabilities for manual guidance, teleoperation with haptic support or gravity compensation. Use the LBR Med to apply predefined forces during a motion or as a compliant robot that responds adaptively to process forces. Furthermore, the integrated sensors are also used for safe collision detection, thereby enabling human-robot collaboration (HRC).



The new generation of KUKA Sunrise.OS Med 2.6 software generation for LBR Med

The Java-based software generation for the LBR Med – Sunrise.OS Med 2.6 – meets the requirements of IEC 62304:2006 (First Edition) + A1:2015. The system software offers all functions needed for programming and configuring medical robot applications. Object-oriented programming with Java enables fast commissioning and, based on Java 8 and Windows 10, access to high-end robotics. Thereby, the software additionally offers a user-friendly program editor with many powerful comfort functions such as:

KUKA Sunrise.FRI Med / KUKA Sunrise.Servoing Med / KUKA Sunrise.PreciseHand-Guiding / KUKA Sunrise.IncreasedStiffness / KUKA Sunrise.BrakeHandling



Reach
800 – 820 mm

Payload
7 – 14 kg

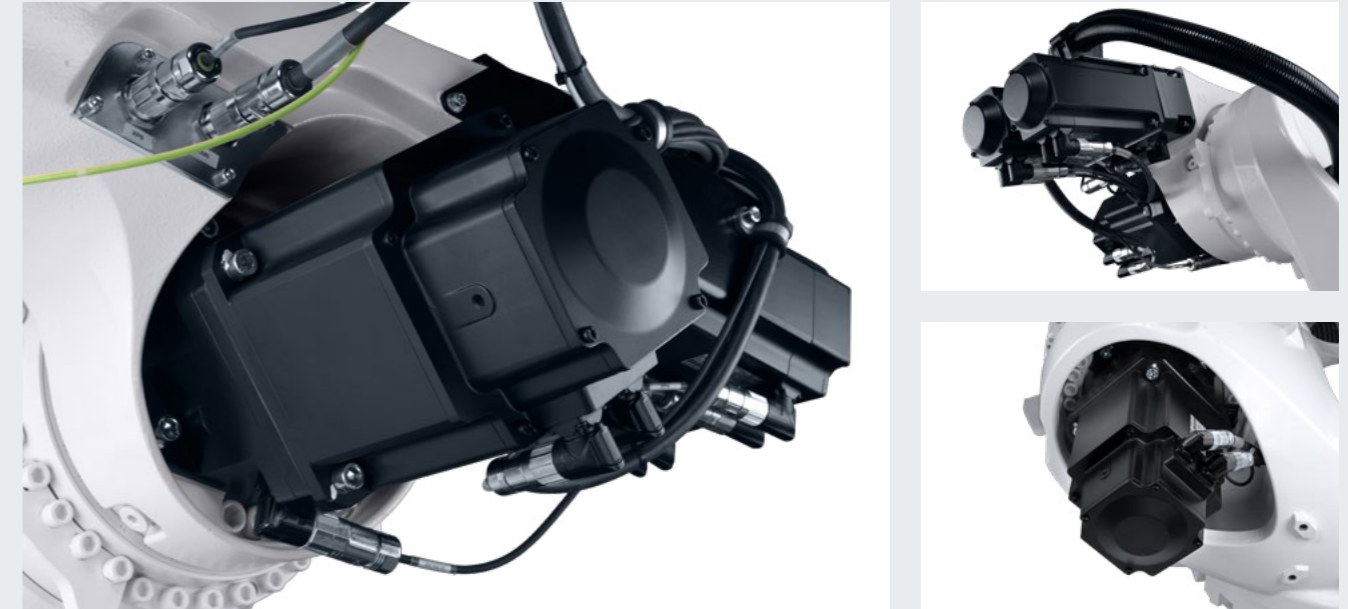
| LBR Med | LBR iiwa 14 R820 | LBR iiwa 7 R800 |
|-------------------------------|----------------------|----------------------|
| Rated payload | 14 kg | 7 kg |
| Number of axes | 7 | 7 |
| Reach | 820 mm | 800 mm |
| Wrist variant | In-line wrist | In-line wrist |
| Mounting flange on axis 7 | DIN ISO 9409-1-A50 | DIN ISO 9409-1-A50 |
| Pose repeatability | ± 0.15 mm | ± 0.1 mm |
| Axis-specific torque accuracy | ± 2 % | ± 2 % |
| Weight | 32.3 kg | 25.5 kg |
| Protection rating | IP 54 | IP 54 |
| Installation position | Floor, ceiling, wall | Floor, ceiling, wall |

KR QUANTEC HC.

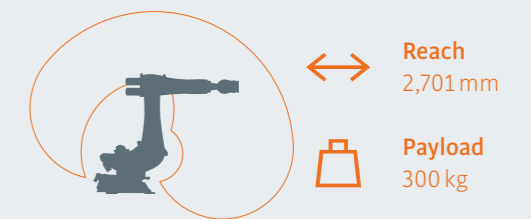
The safest of its family.

A strong partner in many fields

The KR QUANTEC HC is based on the KR 300 R2700-2. A trademark feature is the high and versatile payload of up to 300 kg, which predestines the robot for use in almost all areas. In addition, the KR QUANTEC HC has a reach of up to 2,700 mm and additional brakes in the axes, which ensure even greater safety. The KR QUANTEC HC comes with a counterbalancing system and a pressure sensor, which allows the pressure to be checked during use and the robot to be stopped if the pressure drops. Thanks to the person rescue system, the brakes can be opened manually in case of unpredictable situations for example in order to be able to move the KR QUANTEC HC manually in the event of a power failure.



Additional brakes. Compared with the standard version of the KR QUANTEC series, additional brakes are integrated in axes 2 to 5. They ensure that the robot is stopped even if the first brake fails.



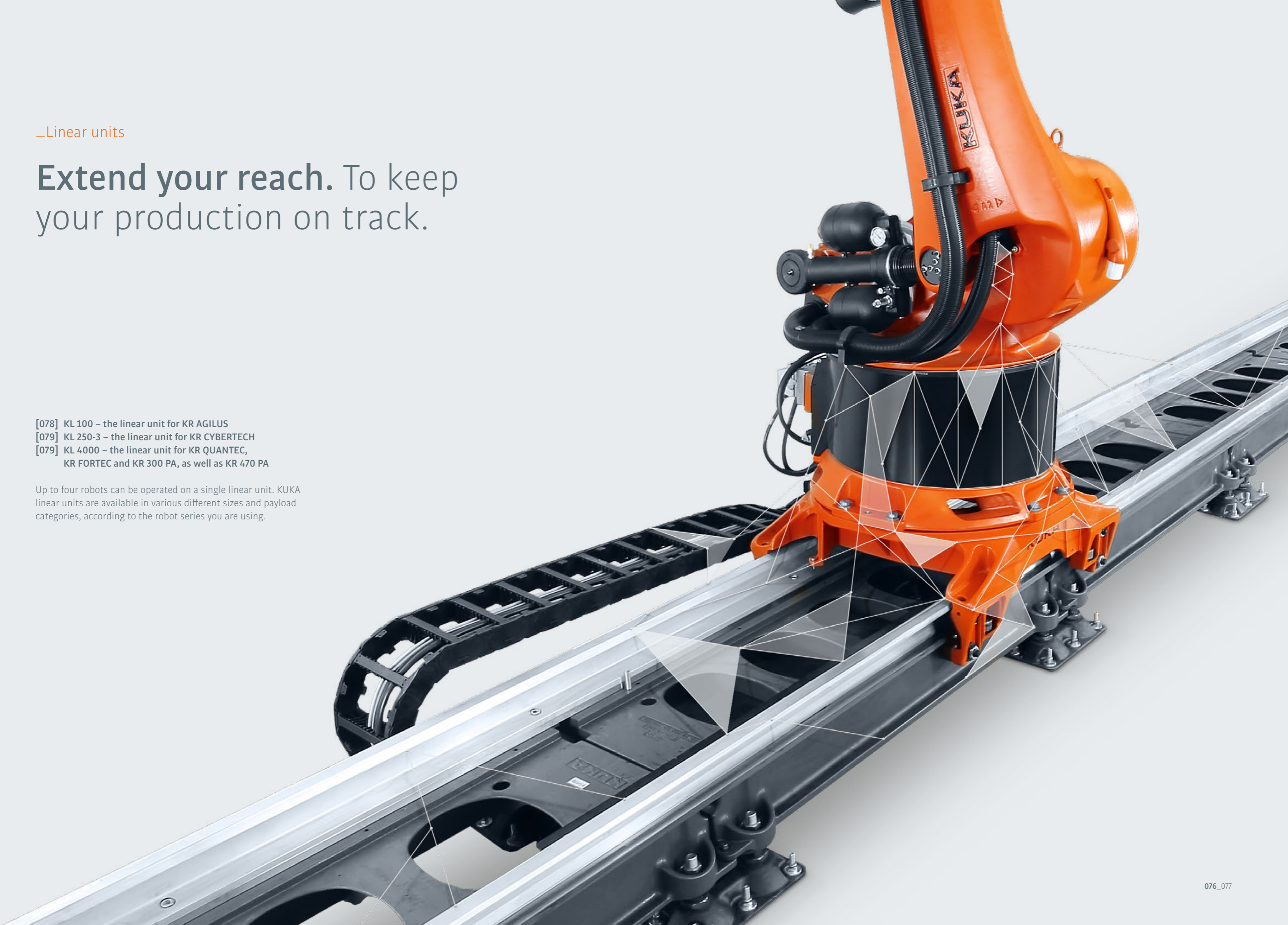
| KR QUANTEC HC | KR 300 R2700-2 HC |
|-----------------------|-------------------|
| Controller | KR C5 |
| Rated payload | 300 kg |
| Number of axes | 6 |
| Wrist variant | In-line |
| Reach | 2,701 mm |
| Pose repeatability | ±0.05 mm |
| Weight | 1,150 kg |
| Protection rating | IP 65 |
| Installation position | Floor |

_Linear units

Extend your reach. To keep your production on track.

- [078] KL 100 – the linear unit for KR AGILUS
- [079] KL 250-3 – the linear unit for KR CYBERTECH
- [079] KL 4000 – the linear unit for KR QUANTEC, KR FORTEC and KR 300 PA, as well as KR 470 PA

Up to four robots can be operated on a single linear unit. KUKA linear units are available in various different sizes and payload categories, according to the robot series you are using.



Maximum productivity all along the line.

Maximize your productivity all the way down the line. KUKA linear units allow you to increase workspaces significantly.

Another major advantage: the linear units are implemented as an external axis – which means that no additional controller is required. The KUKA product range covers every payload category and every requirement. The spectrum ranges from ceiling-mounted units to the high-speed variant and even linear units with a protective cover. You thus hold all the options for decisively expanding your success margin.

Positionally accurate. Up to four robots can be operated on one linear axis. Multiple robot positions on the linear axis allow optimal adaptation to existing requirements and workspaces.

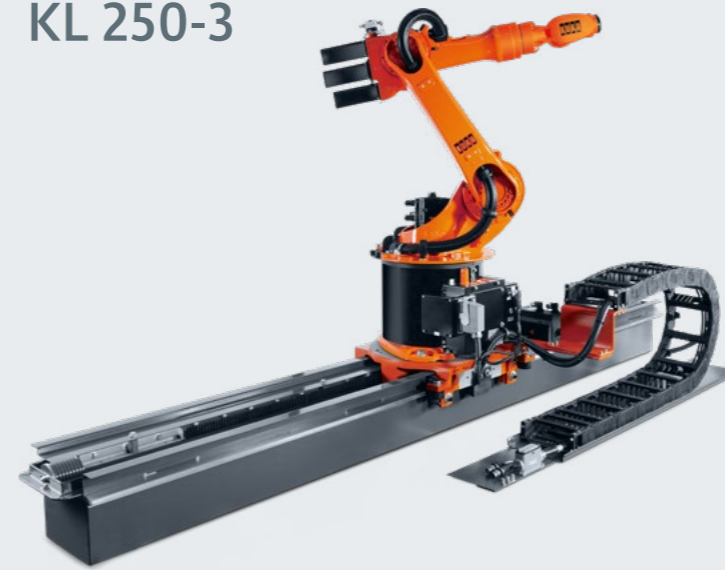
Flexible. Long travel extends the work envelope by several times the reach of the robot. The linear units are ideal for linking production lines.

Versatile. Floor, ceiling and wall-mounted variants are available, as well as a cover to provide protection from dirt during operations in harsh environments.


Powerful. Additional version with high torque (e.g. for milling applications) and a high-speed variant for tasks requiring extreme speed and short cycle times.

Productive. Moving workpieces/tools with additional carriages, driven or non-driven (tender carriages) helps to shorten cycle times.

KL 250-3



The KL 250-3 linear unit is suitable for the KR CYBERTECH robot series with a payload of up to 300 kilograms.


 **Payload**
300 kg

| Lineareinheit | KL 250-3 |
|-----------------------------|----------------|
| Rated payload | 300 kg |
| Number of carriages | max. 4 |
| Rated travel | max. 30.1 m |
| Velocity with rated payload | 1.41 m/s |
| Pose repeatability | ±0.02 mm |
| Variants | CV |
| Installation position | Floor, ceiling |

KL 100



The KL 100 is the linear unit for the KR AGILUS robot series. It can be installed on the floor, ceiling and wall and supports up to 100 kilograms.


 **Payload**
100 kg

| Lineareinheit | KL 100 |
|-----------------------------|----------------------|
| Rated payload | 100 kg |
| Number of carriages | max. 4 |
| Rated travel | max. 30 m |
| Velocity with rated payload | 2.5 m/s |
| Pose repeatability | ±0.02 mm |
| Variants | – |
| Installation position | Floor, ceiling, wall |

KL 4000



Suitable for the KR QUANTEC, KR FORTEC, KR 300 PA and KR 470 PA series. The KL 4000 is our linear unit for loads of up to 4,000 kilograms.

 **Payload**
4,000 kg

| Lineareinheit | KL 4000 |
|-----------------------------|----------------|
| Rated payload | 4,000 kg |
| Number of carriages | max. 4 |
| Rated travel | max. 30.4 m |
| Velocity with rated payload | 2.35 m/s |
| Pose repeatability | ±0.02 mm |
| Variants | S |
| Installation position | Floor, ceiling |

CV Covered S Speed

_Positioners

Success is down to position. Fast and precise positioners for greater quality and productivity.

| | |
|------------------|-----------------|
| [083] KP1-MD | [085] KP1-V2T |
| [083] KP1-MD HW | [085] KP1-V2T M |
| [083] KP1-MDC | [086] DKP |
| [083] KP1-MDC HW | [086] KP2-HV |
| [084] KP1-MC | [086] KP2-HV HW |
| [084] KP1-MB HW | [086] KP2-SV HW |
| [084] KP1-V | [087] KP3-V2H |
| [084] KP1-H | [087] KP3-H2H |
| [085] KP1-H HW | [087] KP3-V2MD |
| [085] KP1-HC | [087] KP5-V2S2V |

KUKA offers a broad portfolio of workpiece positioners for payloads from 250 to 12,000 kilograms.

Depending on the production task and workpiece, you will find the right solution for every application – for example, for arc welding, spot welding or metalworking. The objective of every automation solution is to boost productivity and quality. With KUKA positioners, you can achieve this from all angles – they allow you to align workpieces quickly and precisely. Ideal for automating production operations. For this purpose, service-proven standard robotics components are used, which can be combined to form customized solutions. The result is highly dynamic automatic positioners with one to five axes. Depending on the specific task, kinematic systems of all sizes can be implemented for payloads ranging from 250 to 12,000 kilograms. With KUKA you are in a strong position to implement your automation ideas.



Whether standardized or customized – the optimum solution for every positioning task.



High productivity. Higher throughput, fewer rejects or the quick change of tool carriers: dynamic drives, perfect coordination between robot and positioner, and machine data that can be individually optimized for cycle time optimization enable successful production.

Efficiency and profitability. Robot positioner systems make use of proven KUKA robot components with a high proportion of identical parts. Preconfigured elements ensure reduced integration time, while KUKA.Sim ensures complete and easy simulation capability.

Uncompromising quality. Robots and positioners from KUKA operate with high precision and virtually error-free in all CP applications. The result of flexible, repeatable performance is consistently flawless workpieces.

Integration – simple, safe, fast. Electrically insulated face plates, easy mastering with the KUKA EMD and simple programming: proven and familiar solutions and standardized interfaces stand for efficient integration and fast implementation of individual customer solutions.

Customized solutions from a single source. From robots and positioners to linear units and other components: the modular system ensures simple implementation of customer-specific solutions and thus precise coordination between positioners and workstations.

KP1-MD

| | KP1-MD500-2 | KP1-MD750-2 | KP1-MD1000-2 | KP1-MD1500-2 | KP1-MD2000 |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Rated payload | 500 kg | 750 kg | 1,000 kg | 1,500 kg | 2,000 kg |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |
| Loading height | 417 mm | 417 mm | 417 mm | 417 mm | 505 mm |
| Hollow shaft Ø | - | - | - | - | - |



KP1-MD HW

| | KP1-MD250 HW | KP1-MD500 HW | KP1-MD750 HW |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|
| Rated payload | 250 kg | 500 kg | 750 kg |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |
| Loading height | 417 mm | 417 mm | 417 mm |
| Hollow shaft Ø | 60 mm | 60 mm | 60 mm |



KP1-MDC

| | KP1-MDC500-2 | KP1-MDC750-2 | KP1-MDC1000-2 |
|-------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Rated payload | 500 kg | 750 kg | 1,000 kg |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |
| Loading height | 417 mm | 417 mm | 417 mm |
| Hollow shaft Ø | - | - | - |
| Counterbearing hollow shaft Ø | 68 mm | 68 mm | 68 mm |

| | KP1-MDC1500-2 | KP1-MDC2000 | KP1-MDC4000 |
|-------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Rated payload | 1,500 kg | 2,000 kg | 4,000 kg |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |
| Loading height | 417 mm | 505 mm | 505 mm |
| Hollow shaft Ø | - | - | - |
| Counterbearing hollow shaft Ø | 68 mm | 69 mm | 69 mm |



KP1-MDC HW

| | KP1-MDC250 HW | KP1-MDC500 HW | KP1-MDC750 HW | KP1-MDC1000 HW |
|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Rated payload | 250 kg | 500 kg | 750 kg | 1,000 kg |
| Installation position | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle | Floor, ceiling, wall, angle |
| Loading height | 417 mm | 417 mm | 417 mm | 417 mm |
| Hollow shaft Ø | 60 mm | 60 mm | 60 mm | 60 mm |
| Counterbearing hollow shaft Ø | 68 mm | 68 mm | 68 mm | 68 mm |



KP1-MC

| KP1-MC1500-2 | |
|-------------------------------|-----------------------------|
| Rated payload | 1,500 kg |
| Installation position | Floor, ceiling, wall, angle |
| Loading height | 417 mm |
| Counterbearing hollow shaft Ø | 68 mm |



KP1-MB HW

| | KP1-MB2000-2 HW | KP1-MB4000-2 HW | KP1-MB6000-2 HW |
|-----------------------|-----------------|-----------------|-----------------|
| Rated payload | 2,000 kg | 4,000 kg | 6,000 kg |
| Installation position | Floor | Floor | Floor |
| Loading height | 449 mm | 449 mm | 593 mm |
| Hollow shaft Ø | 136 mm | 136 mm | - |



KP1-V

| | KP1-V500 | KP1-V1000 |
|-----------------------|----------|-----------|
| Rated payload | 500 kg | 1,000 kg |
| Installation position | Floor | Floor |
| Loading height | 705 mm | 705 mm |
| Hollow shaft Ø | 60 mm | 60 mm |



KP1-H

| | KP1-H500-2 | KP1-H750-2 | KP1-H1000-2 | KP1-H1500-2 |
|---------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Rated payload | 500 kg | 750 kg | 1,000 kg | 1,500 kg |
| Max. tool radius (in steps of 200 mm) | 800 mm to 1,200 mm | 800 mm to 1,200 mm | 800 mm to 1,200 mm | 800 mm to 1,200 mm |
| Installation position | Floor | Floor | Floor | Floor |
| Loading height (in steps of 200 mm) | 840 mm to 1,240 mm | 840 mm to 1,240 mm | 840 mm to 1,240 mm | 840 mm to 1,240 mm |
| Hollow shaft Ø | - | - | - | - |



KP1-H HW

| | KP1-H1100 HW | KP1-H2600 HW | KP1-H5000 HW | KP1-H6300 HW | KP1-H12000 HW |
|---------------------------------------|--------------------|--------------------|--------------|--------------|---------------|
| Rated payload | 1,100 kg | 2,600 kg | 5,000 kg | 6,300 kg | 12,000 kg |
| Max. tool radius (in steps of 100 mm) | 900 mm to 1,200 mm | 900 mm to 1,200 mm | 1,100 mm | 1,100 mm | 1,100 mm |
| Installation position | Floor | Floor | Floor | Floor | Floor |
| Loading height (in steps of 100 mm) | 930 mm to 1,230 mm | 930 mm to 1,230 mm | 1,200 mm | 1,200 mm | 1,200 mm |
| Hollow shaft Ø | 135 mm | 135 mm | 80 mm | 175 mm | 175 mm |



KP1-HC

| | KP1-HC500-2 | KP1-HC750-2 | KP1-HC1000-2 | KP1-HC1500-2 |
|---------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Rated payload | 500 kg | 750 kg | 1,000 kg | 1,500 kg |
| Max. tool radius (in steps of 200 mm) | 800 mm to 1,200 mm | 800 mm to 1,200 mm | 800 mm to 1,200 mm | 800 mm to 1,200 mm |
| Installation position | Floor | Floor | Floor | Floor |
| Loading height (in steps of 200 mm) | 840 mm to 1,240 mm | 840 mm to 1,240 mm | 840 mm to 1,240 mm | 840 mm to 1,240 mm |
| Hollow shaft Ø | - | - | - | - |
| Counterbearing hollow shaft Ø | 68 mm | 68 mm | 68 mm | 68 mm |

| | KP1-HC2000 | KP1-HC4000 |
|--|----------------------|----------------------|
| Rated payload | 2,000 kg | 4,000 kg |
| Max. tool radius (in 250 mm-Schritten) | 970 mm to 1,470 mm | 970 mm to 1,470 mm |
| Installation position | Floor | Floor |
| Loading height (in 250 mm-Schritten) | 1,000 mm to 1,500 mm | 1,000 mm to 1,500 mm |
| Hollow shaft Ø | - | - |
| Counterbearing hollow shaft Ø | 69 mm | 69 mm |



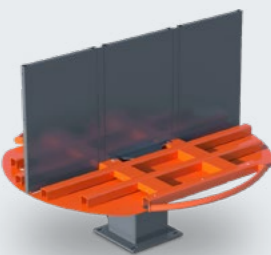
KP1-V2T

| | KP1-V2T500 | KP1-V2T1000 |
|------------------------|----------------|----------------|
| Rated payload per side | 500 kg | 1,000 kg |
| Installation position | Floor | Floor |
| Loading height | 727 mm | 575 mm |
| Station change | Electrical | Electrical |
| Possible work plates | 1,200 x 800 mm | 1,600 x 900 mm |



KP1-V2T M

| | KP1-V2T250 M |
|------------------------|----------------|
| Rated payload per side | 250 kg |
| Installation position | Floor |
| Loading height | 727 mm |
| Station change | Manual |
| Possible work plates | 1,200 x 800 mm |



_Positioners / two-axis



DKP



DKP-400

| | |
|-----------------------|--------|
| Rated payload | 400 kg |
| Installation position | Floor |
| Loading height | 857 mm |
| Tilting range | ±90° |

_Positioners / three-axis



KP3-V2H

| | KP3-V2H500-2 | KP3-V2H750-2 | KP3-V2H1000-2 | KP3-V2H1500-2 |
|---|----------------------|----------------------|----------------------|----------------------|
| Rated payload per side | 500 kg | 750 kg | 1,000 kg | 1,500 kg |
| Distance between face plates (in steps of 200 mm) | 1,600 mm to 3,000 mm | 1,600 mm to 3,000 mm | 1,600 mm to 3,000 mm | 1,600 mm to 3,000 mm |
| Max. tool radius (in steps of 200 mm) | 600 mm to 1,000 mm | 600 mm to 1,000 mm | 600 mm to 1,000 mm | 600 mm to 1,000 mm |
| Installation position | Floor | Floor | Floor | Floor |
| Loading height | 835 mm / 950 mm | 835 mm / 950 mm | 835 mm / 950 mm | 835 mm / 950 mm |
| Counterbearing hollow shaft Ø | 68 mm | 68 mm | 68 mm | 68 mm |



KP2-HV



KP2-HV500

| | |
|-----------------------|-----------------------------|
| Rated payload | 500 kg |
| Installation position | Floor, ceiling, wall, angle |
| Loading height | 500 mm |
| Tilting range | ±135° |



KP3-H2H

| | KP3-H2H500 | KP3-H2H750 | KP3-H2H1000 |
|---|----------------------|----------------------|----------------------|
| Rated payload per side | 500 kg | 750 kg | 1,000 kg |
| Distance between face plates (in steps of 400 mm) | 1,600 mm to 4,400 mm | 2,000 mm to 4,400 mm | 2,000 mm to 4,400 mm |
| Max. tool radius (in steps of 100 mm) | 600 mm | 600 mm to 800 mm | 600 mm to 800 mm |
| Installation position | Floor | Floor | Floor |
| Loading height | 1,019 mm | 1,019 mm | 1,019 mm |
| Counterbearing hollow shaft Ø | 68 mm | 68 mm | 68 mm |



KP2-HV HW



KP2-HV1100 HW KP2-HV2600 HW

| | | |
|-------------------------------|----------|----------|
| Rated payload | 1,100 kg | 2,600 kg |
| Installation position | Floor | Floor |
| Loading height | 1,085 mm | 1,145 mm |
| Tilting range | ±115° | ±120° |
| Counterbearing hollow shaft Ø | 135 mm | 135 mm |



KP3-V2MD

| | KP3-V2MD2000 |
|------------------------|--------------|
| Rated payload per side | 2,000 kg |
| Installation position | Floor |
| Loading height | 880 mm |
| Hollow shaft Ø | 139 mm |



_Positioners / five-axis



KP2-SV HW



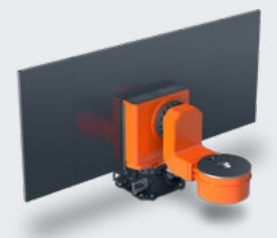
KP2-SV1100 HW KP2-SV2600 HW KP2-SV5000 HW

| | | | |
|-----------------------|----------|----------|----------|
| Rated payload | 1,100 kg | 2,600 kg | 5,000 kg |
| Max. tool radius | 1,030 mm | 1,230 mm | 2,200 mm |
| Installation position | Floor | Floor | Floor |
| Hollow shaft Ø | 80 mm | 175 mm | 175 mm |
| Swivel range | ±185° | ±185° | ±185° |
| Loading height | 700 mm | 700 mm | 934 mm |



KP5-V2S2V

| | KP5-V2S2V500 | KP5-V2S2V1000 |
|---------------------------------------|--------------------|--------------------|
| Rated payload per side | 500 kg | 1,000 kg |
| Max. tool radius (in steps of 200 mm) | 600 mm to 1,000 mm | 600 mm to 1,000 mm |
| Installation position | Floor | Floor |
| Swivel range | ±185° | ±185° |
| Loading height | 700 mm | 700 mm |



_Mobile platforms and mobile robotics

Mobile solutions for agile production. If you want to get things moving, you have to stay in motion.

[092] KMP 1500
[094] omniMove
[096] KMR iiwa

Mobility is an important driver of Industrie 4.0. KUKA develops mobility concepts for the next stage in the evolution of more flexible industrial production. In the cyber-physical world of Industrie 4.0, established structures are becoming a thing of the past. Static production facilities and assembly lines are obsolete. KUKA develops intelligent, mobile units that work together perfectly and find their destination autonomously.



Get your production moving.



Mobile platforms from KUKA open up new dimensions of mobility in the age of Industrie 4.0. Whether for the aerospace or automotive industry, or for many other sectors: it has never been easier to integrate autonomous robots and mobile platforms quickly and reliably into cells and systems.

All mobile platforms ensure maximum freedom of movement. The Mecanum wheel system enables high-precision transport – even with the heaviest loads.

Autonomously navigating systems are used for fully automatic operation. Our portfolio of omnidirectional mobile robot platforms provides the foundation for the flexible production facilities of the future.

The factory of the future demands mobility and flexibility. Static production lines make way for the next generation of robots: intelligent, mobile robotic units are taking their place. Mobile robots navigate autonomously, act in swarms and offer total flexibility for industrial manufacturing. This is especially important for internal logistics. KUKA offers a vast mobility portfolio, from manually movable to autonomously navigating solutions.

Our robots work hand in hand with humans and align to the workpiece with millimeter precision. In addition, the fully autonomous variants work without any induction loops, floor markings or magnets. Our range of mobile robots is heralding the next era of cyber-physical production.

KUKA.NavigationSolution. The reliable interface for your autonomous logistics.

Mobile robots receive their commands via WLAN. They perform their driving and handling tasks fully autonomously. They use algorithms to position themselves, plan their route and take on loads.

All mobile robotic systems from KUKA can be equipped with KUKA.NavigationSolution. This makes them flexible and mobile. The navigation solution also includes an ideal fleet management system.

It meets the latest demands of mobile robotics with the appropriate interfaces – fully in keeping with Industrie 4.0.

Our smart navigation solution consists of an industrial PC that is installed in the automated guided vehicle system and the actual navigation software – a software package that manages all vehicles and coordinates planning.

Autonomous control. KUKA.NavigationSolution enables autonomous navigation of mobile platforms – with no risk of collision and without the need for artificial markings.

The software acquires all the data from the safety laser scanners and wheel sensors and uses them to create a corresponding map of the surroundings by means of the SLAM method (Simultaneous Localization and Mapping).

The system responds to changes in the environment – which occur frequently in a flexible logistics system. The use of virtual tracks makes it possible to move the platform exclusively along defined routes.

Flexible software integration. KUKA offers an Eclipse-based development environment that can be used to program applications in Java. The modular Java API with suitable interfaces for the requirements of mobile robotics allows the integration of third-party software. The existing platform fleets can be simply updated, and other platforms can be added to or removed from the existing system.

Exact positioning. KUKA.NavigationSolution offers the following options for high-precision positioning of the mobile platform in its environment:

- Fine localization for precise determination of the vehicle position relative to the object or in an environment
- Fine positioning for increased pose repeatability
- Relative positioning through CAD-based object recognition and tracking, e.g. for picking up loads


Hardware-independent software. The hardware-independent navigation software of KUKA.NavigationSolution can be used for different platform kinematic systems.

It can handle any motion principles, including holonomic vehicles with Mecanum wheels, such as the KUKA omniMove.

The machine parameters are configured via a standardized interface.

Freely scalable, modular setup Additional features, such as object recognition and tracking and relative positioning, enable coordinated planning.



 **KMP 1500.** The solution for a flexible production process.

The KUKA KMP 1500 autonomously controlled platform is our answer to the increasing demand of production departments for shorter response times and greater flexibility in their manufacturing concepts. Predefined routes and rigid processes are a thing of the past in the factory of the future.

The KMP 1500 is an autonomously controlled platform that integrates seamlessly into the production process. The vehicle is also excellently suited to the matrix body shop. The KMP 1500 independently and autonomously handles the transport of the products through all process steps.

This is why KUKA develops intelligent, autonomous vehicles that supply materials to robots and machines with perfect timing. The KMP 1500 makes flexible production possible to an extent that has been unimaginable before.

This production concept from KUKA enables you to optimize your logistics management. The KMP 1500 provides cost-effective support for your warehouse organization or between manufacturing processes – and is used only as needed.



Unrestricted and precise maneuvering Thanks to KUKA omniMove drive technology, the KMP 1500 can move in any direction from a standing position. The sophisticated wheel technology allows for precise positioning with an accuracy of ±5 millimeters even in tight spaces. This results in space-saving and highly precise automation solutions for logistics.

Autonomous, flexible warehouse management The KMP 1500 autonomously fetches the required components or returns them to the warehouse after processing. Thanks to the KUKA.NavigationSolution, it can move about freely and without conventional guidance or navigation elements. This makes integration into modified environments much easier and increases efficiency in logistics management.

Strong, safe and reliable. With a payload capacity of up to 1,500 kilograms, the KMP 1500 safely moves your products through the entire manufacturing process. It meets all necessary safety standards and is also extremely flexible. Integrated safety laser scanners enable autonomous navigation through your production shop.

KMP 1500

| | |
|----------------------------------|---|
| Dimensions (L×W×H) | 2,000×800×470 mm (with scanners) |
| Weight | 711 kg / 935 kg (with lifting system and battery system extender) |
| Rated payload | 1,500 kg |
| Velocity straight ahead | max. 1 m/s |
| Velocity diagonally and sideways | max. 0.56 m/s |
| Wheel diameter | 310 mm |
| Battery capacity | 52 Ah / 96 V (at least 4 hours) |
| Charging time | 1 hour |

Lifting system (optional)

| | |
|-------------------|--------------|
| Lift table height | max. 200 mm |
| Lifting speed | max. 50 mm/s |
| Weight | +144 kg |

Battery system extender (optional)

| | |
|------------------|----------------------------------|
| Battery capacity | 104 Ah / 96 V (at least 8 hours) |
| Charging time | 2 hours |
| Weight | +80 kg |

Supplied accessories

| | |
|------------------------------|--|
| Radio control unit | |
| Floor charging contact plate | |
| Brake release device | |



KUKA omniMove.

We move big things – with millimeter precision.

Simply move underneath and lift. The KUKA omniMove mobile heavy-duty platform can move your XXL loads with ease. The heavy-duty AGV can be controlled manually, but can also move autonomously. Despite its enormous size and payload capacity, it navigates safely, moving virtually independently. You can also optionally expand it with a self-contained energy supply.

Specially developed wheels allow the mobile heavy-duty platform to move in any direction – even from a standing start. The sophisticated navigation system KUKA.NavigationSolution ensures autonomous maneuvering without risk of collision and without requiring artificial floor markings.

The KUKA omniMove can be freely scaled in size, width and length within a modular system – just the way you need it.

Mecanum wheel for maximum mobility: the specially developed KUKA omniMove drive technology based on the Mecanum wheel ensures that the KUKA omniMove can maneuver omnidirectionally. The wheels with individual, barrel-shaped rollers can move independently of each other. This allows the KUKA omniMove to perform translational and rotational motions in the tightest of spaces from a standing start. It can thus move swiftly and compactly in all directions.



Powerful. Depending on the vehicle variant, the KUKA omniMove can safely and conveniently move even the heaviest components in XXL format. It has a payload capacity of up to 90 tonnes and – in the maximum version – reaches a length up to 30 meters.

Precise. The KUKA omniMove positions even enormous payloads to within ±3 millimeters without contact.

Modular. We design your ideal solution. You can choose from ten different vehicle variants, and we will then personalize your selection with individual option packages and modules – fully in accordance with your requirements and wishes.

| Wheel sizes E375 | 3,000 | 6,000 |
|-----------------------------|----------|----------|
| Payload | 3,000 kg | 6,000 kg |
| Height | 420 mm | 420 mm |
| Length (with laser scanner) | 2,750 mm | 3,650 mm |
| Width (with laser scanner) | 1,600 mm | 1,600 mm |
| Number of wheels | 4 | 8 |
| Weight | 2,000 kg | 4,000 kg |
| Travel speed | 3.0 km/h | 3.0 km/h |

| Wheel sizes E575 | 7,000 | 15,000 | 25,000 |
|-----------------------------|----------|-----------|-----------|
| Payload | 7,000 kg | 15,000 kg | 25,000 kg |
| Height | 650 mm | 650 mm | 650 mm |
| Length (with laser scanner) | 3,200 mm | 4,755 mm | 5,560 mm |
| Width (with laser scanner) | 2,120 mm | 2,120 mm | 2,800 mm |
| Number of wheels | 4 | 8 | 12 |
| Weight | 4,000 kg | 6,000 kg | 9,000 kg |
| Travel speed | 3.0 km/h | 3.0 km/h | 3.0 km/h |

| Operating condition | |
|---------------------|-------------|
| Ambient temperature | +5 to 40 °C |

| Power supply connection | |
|-------------------------|--|
| Charger, type 1 | 400 V / 50 Hz / 32 A CEE |
| Charger, type 2 | 480 V / 60 Hz / 30 A Hubbell HBL2731; UL |



KMR iiwa.

Always on the spot – safely.

Optimizes your production significantly.

The KMR iiwa is a combination of the sensitive LBR iiwa lightweight robot and a mobile, flexible platform. As the name and the individual components already suggest, the KMR iiwa stands out with its high degree of mobility and flexibility.

Manufacturing processes are changing constantly. This is why mobile robot systems must be very adaptable. Maximum mobility and autonomous working methods optimize your production significantly.



Combinable. Design your individual turnkey system solution. The modular KMR iiwa system offers numerous combinations of robot technology, mobile platforms and industrial components.

Sensitive. Seven special joint torque sensors on each axis of the LBR iiwa lightweight robot make it highly sensitive to its environment. It navigates safely and without protective fencing – external contact will cause it to stop immediately.

Autonomous. Thanks to the laser scanners, the mobile platform too can navigate fully autonomously. It monitors its environment. And it reacts immediately if a person or object is in the way.

Agile. Specially developed Mecanum wheels allow the mobile platform to move omnidirectionally and execute 360° rotations. A wheel consists of several rollers that are each aligned at an angle of 45° relative to the axle. This top-notch maneuverability shortens throughput times and reduces idle times in the manufacturing process.

Precise. The KMR iiwa achieves a positioning accuracy of up to ±0.1 millimeters, even in the tightest spaces.

Intelligent. With KUKA.Navigation-Solution, the KMR iiwa can reliably move around obstacles and look for a new route.

Independent. The vehicle and robot are supplied directly with power from Li-ion batteries.

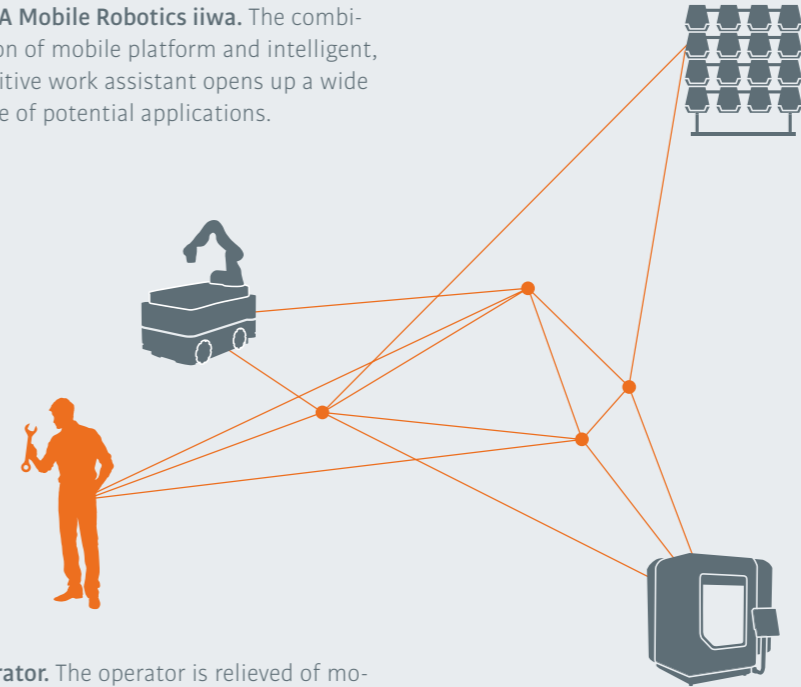
User-friendly. KUKA Sunrise Cabinet and KUKA Sunrise.OS for vehicles and robots simplify the operation and use of the KMR iiwa.

click for more



Intelligent system.

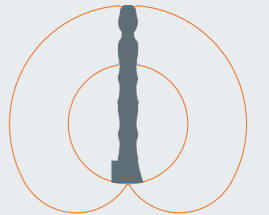
KUKA Mobile Robotics iiwa. The combination of mobile platform and intelligent, sensitive work assistant opens up a wide range of potential applications.



Operator. The operator is relieved of monotonous, non-ergonomic tasks and can concentrate on important processing steps.

High-bay racking. Thanks to its innovative navigation system, the KMR iiwa operates autonomously and is able, for example, to set down machined workpieces or independently fetch required components.

Machine tool. The KMR iiwa takes over the tending of machine tools and relieves the human operator of strenuous and tiring tasks.



| LBR iiwa | LBR iiwa 14 R820 | LBR iiwa 7 R800 |
|-------------------------------|----------------------|----------------------|
| Rated payload | 14 kg | 7 kg |
| Number of axes | 7 | 7 |
| Reach | 820 mm | 800 mm |
| Wrist variant | In-line wrist | In-line wrist |
| Mounting flange on axis 7 | DIN ISO 9409-1-A50 | DIN ISO 9409-1-A50 |
| Pose repeatability | ±0.15 mm | ±0.1 mm |
| Axis-specific torque accuracy | ±2 % | ±2 % |
| Weight | 29.9 kg | 23.9 kg |
| Protection rating | IP 54 | IP 54 |
| Variants | CR | CR |
| Installation position | Floor, ceiling, wall | Floor, ceiling, wall |

| Mobile platforms | |
|------------------------------------|--|
| Dimensions (H x W x B) | 700 x 1,080 x 630 mm (with scanners and protected areas) |
| Weight | 390 mm |
| Maximum payload | 170 kg / 200 kg without LBR iiwa |
| Velocity in longitudinal direction | max. 3.6 km/h |
| Velocity in lateral direction | max. 2.0 km/h |
| Wheel diameter | 250 mm |
| Cleanroom class | ISO 5 |



_Robot controller

Programming, operating, teaching or simply guiding: the intuitive and powerful robot controllers from KUKA.

A robot can only perform as well as its controller. KUKA offers robot controllers as well as operating and teaching modules for every requirement. What all of these solutions have in common is that they can be effortlessly integrated into existing infrastructures. The controllers themselves are designed for minimal space requirements, low energy consumption and maximum flexibility and performance. In addition to conventional programming, two innovative and above all intuitive tools are available for operation: the KUKA smartPAD used as the teach pendant and the KUKA ready2_pilot teaching module. These enable our robots to be controlled even without any programming knowledge.

_Robot controller

Intuition meets performance.

The beating heart at the center of the production of tomorrow.

- [102] KR C5
- [104] KR C5 micro
- [106] KUKA smartPAD
- [108] KUKA.Handguiding with ready2_pilot

Maximized performance, connectivity and flexibility – with the ground-breaking latest generation of robot controllers from KUKA that set the pulse of automated production racing: the KR C5 can be seamlessly integrated into existing infrastructures and immediately delivers added value with more efficient performance in all areas of application.

The KUKA smartPAD teach pendant was designed to master even complex operating tasks easily. KUKA ready2_pilot expands your programming options with teaching via manual guidance.



KR C5 controller. The heartbeat of intelligent automation.

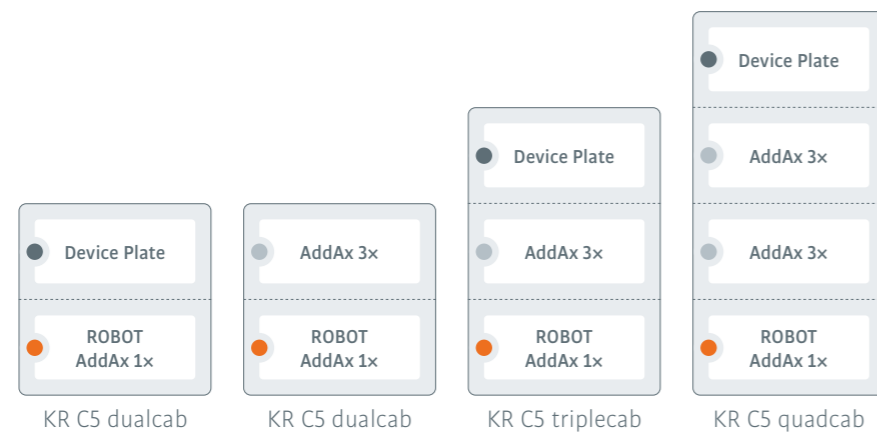
The production of the future is smart and operates on a whole new level with the KR C5. KUKA's latest platform for robot controllers enables space-saving solutions, delivers supremely efficient performance and conserves resources. It can thus also be seamlessly integrated into heterogeneous automation landscapes, enabling a wide variety of robot applications.

The reduced hardware and lower energy requirements offer more application options with maximum cost-effectiveness. And thanks to the interconnectivity of the open platform design, mere data are transformed into valuable information.

Compatibility. The current system software is functionally compatible with the KR C4 and has identical software applications and software technologies.

Low training requirements. The easy integration into control cabinets and the availability of service-proven system software enable fast start-up.

Many control options. Diverse options and hardware expansion possibilities, e.g. various IO and communication options for a wide variety of system concepts.



The cabinets of the KR C5 are available in different sizes and can be equipped in a modular fashion.

Interfaces for input / output signals

| |
|---|
| 16 input / output signals 24 V |
| Safe signals for cell safety |
| Safe signals for SafeOperation technologies |
| PROFINet / PROFIsafe |
| EthernetIP / CIP Safety |
| Expansion module EtherCAT Slave / FSoE |
| Expansion module PROFibus Master / Slave |
| Expansion module DeviceNet Master / Slave |
| Integrated Ethernet switch |

Supplied accessories

| |
|---------------|
| KUKA smartPAD |
| Plug pack |

Controller options

| |
|--|
| Reserved installation space and device plate |
| US1 / US2 peripheral power supply |
| Various IO and communication options |
| Front panel interfaces |
| Various cabinet locks |
| Set of rollers |
| Cable holder |
| Fork slots |
| Exchangeable SSD mass storage medium |
| KUKA smartPAD cable reel |
| Transformer |

Supported robot series

| |
|-----------------------|
| KR CYBERTECH nano |
| KR CYBERTECH nano ARC |
| KR CYBERTECH |
| KR CYBERTECH ARC |
| KR IONTEC |
| KR QUANTEC |
| KR FORTEC |
| KR 1000 titan |
| Palletizing robots |

Technical data

| | |
|--------------------------------------|---|
| Infeed | 380 – 480 V AC 3-phase (without transformer), 380 – 575 V AC 3-phase (with transformer) |
| Axes | 6 robot axes, up to 6 additional external axes |
| CPU architecture | Intel X86 (main CPU) + ARM (for safety functions) |
| Internal memory | 60 GB (SSD M.2) |
| Dimensions (H x W x D) | dualcab 720 x 720 x 600 mm triplecab 960 x 720 x 600 mm quadcab 1,210 x 720 x 600 mm Controller 207 x 392 x 500 mm |
| Weight | dualcab approx. 83 kg triplecab approx. 107 kg quadcab approx. 131 kg Controller approx. 22 kg |
| Protection rating | IP 54 (for the cabinet) |
| Ambient temperature during operation | 0 °C to +45 °C |
| Safety | ISO 10218-1 Robots and robotic devices, ISO 13849-1 Cat. 3 / Performance Level d |
| Certification | UL / CSA |



KR C5 micro.

Small footprint with big-time performance.

Maximum performance, connectivity and flexibility in the smallest of spaces. This is the new KR C5 micro robot controller for small robots. The KR C5 controller generation from KUKA is programmed for the future. For instance, the KR C5 micro unites robot, PLC, motion and safety control in an ultra-compact housing with a volume of just 16 liters.



Smaller, more flexible, smarter. Developed as an open and flexible platform with no compromises, the KR C5 micro represents the next quantum leap in robot control. The controller can not only be seamlessly integrated into existing automation landscapes, for example, but can also easily take on KR C4 applications as a “functional twin”.

The wide range of technology products enables the quick and easy implementation of robot applications. The controller meets current field bus standards for cell and line integration via software options. At the same time, the KR C5 micro is equipped with the necessary hardware resources and flexible I/O ports in order to adapt quickly to future tasks and standards as well.



Ready for digital

- Seamless integration into OT, IT and cloud environments
- Ethernet and digital IO interfaces, supports various cloud systems



Compatibility

- Simple integration into existing infrastructures
- Seamless integration into the KUKA robot portfolio
- Easy and intuitive to operate via KUKA smartPAD (KSS) and KUKA smartPAD pro (iiQKA.OS)



Low TCO

- Reduced energy consumption
- Minimized complexity
- Increased reliability



Ready for use worldwide

- Meets globally relevant ISO standards
- 25 languages available, including the most important Asian languages



| Features | Supplied accessories | Supported robot series |
|--|----------------------|------------------------|
| Drive axes (6 axes) | KUKA smartPAD | KR CYBERTECH nano |
| Embedded computer with safety controller | External battery box | KR AGILUS |
| Ethernet interfaces | Plug pack | KR DELTA |
| Digital I/O interfaces | Mounting brackets | KR SCARA |
| Discrete safety signals | Power supply lead | LBR iisy |
| Active cooling | | |

| Technische Daten | |
|--|--|
| Infeed | 200 V – 240 V AC, 1-phase 50 Hz – 60 Hz, 2-phase |
| Axes | 6 axes / 3 × 12 A + 3 × 5 A |
| CPU architecture | Intel X86 (main CPU) + ARM (for safety functions) |
| Internal memory | 60 GB (SSD M.2) |
| Dimensions (L × W × H) | 392 × 300 × 134 mm (without attachments and without bases) |
| Weight | 9.8 kg |
| Protection rating | IP 20 |
| Wide range of line integration options | Digital I/O: 16 inputs / 16 outputs (pnp or npn) EtherCAT (KUKA Extension Bus) PROFINET + PROFINET safe EthernetIP + CIP Safety EtherCAT slave + FSoE (via external gateway) |
| Ambient temperature during operation | 0 °C to +45 °C |
| Safety | ISO 10218-1 Robots and robotic devices, ISO 13849-1 Cat. 3 / Performance Level d |
| Certification | UL / CSA |

KUKA smartPAD. A firm grip on all tasks.

Simple programming with the KUKA smartPAD. Whether you're a novice or programming expert, the KUKA smartPAD will quickly take you to your goal. Because it offers the suitable programming options for every requirement. This single control panel enables you to perform the most varied of tasks.

Incredibly efficient: programming with inline forms. KSS-based KUKA robot controllers offer inline forms for fast, error-free programming of tasks and motion steps. They can be called via menus and are available as standard. This simplifies even the programming of RoboTeams with up to six synchronized robots.

Customer-defined program modules. KUKA integrators can expand the library of available KUKA inline forms according to customer requirements. This leads to the creation of special applications which can be easily programmed for recurring tasks. A competitive advantage for system integrators: specially developed inline forms allow for unique solutions, optimally tailored to the companies which use them.



Universally deployable in the KUKA world. All KUKA robots running on KSS and Sunrise.OS can be operated in the desired language with the KUKA smartPAD.

Comfortable handling. Straps and handgrips that can be used with both hands greatly simplify operator control. An optional shoulder strap enables the operator to work without tiring – particularly during time-intensive projects.

Simple robot jogging with ergonomic 6D mouse. The 6D mouse offers intuitive jogging and reorientation of the robot in three or six degrees of freedom.

Eight jog keys. Up to eight axes or external axes can be controlled directly using separate jog keys on the KUKA smartPAD with no switching required.

Integrated protectors. Integrated protectors offer the greatest possible protection in the event of falling. The scratch-resistant display and IP 54 protection rating enable operation in harsh industrial environments.

Simple data transmission. Two easily accessible USB ports enable direct saving and loading of application programs and connection of other supported USB devices.

Efficient operator control. Inputs are made quickly and easily via a brilliant, capacitive touch display with an 8.4" product portfolio screen and high luminosity.

Maintenance-friendly design. A service flap enables simple exchange of the cable as required.



KUKA smartPAD pro. The future is in your hands. With the KUKA smartPAD pro and the new iiQKA.OS operating system, we are revolutionizing robot control – simply and intuitively.



Integrated protectors. This provides the KUKA smartPAD with maximum protection in the event of falling. The scratch-resistant display and IP 54 protection rating enable operation in harsh industrial environments.



Comfortable, relaxed handling. The KUKA smartPAD features impressively pleasant handling. Straps and handgrips that can be used with both hands greatly simplify operator control. An optional shoulder strap enables the operator to work without tiring – particularly during time-intensive projects.



State-of-the-art hardware. Thanks to the latest hardware, the KUKA smartPAD impresses with strong performance. Two easily accessible USB ports enable direct saving and loading of application programs and connection of other supported USB devices.



Simple robot jogging with the ergonomic 6D mouse. It offers intuitive jogging and reorientation of the robot in three or six degrees of freedom.



Efficient operator control with brilliant, capacitive touch display. Inputs are made quickly and easily via the 8.4" screen.



Elements for ergonomic left- and right-handed operation. The user-friendliness of the KUKA smartPAD is rounded off with the service flap for easy cable exchange.

| KUKA smartPAD | |
|------------------------|--|
| Display | Scratch-resistant industrial touch display |
| Display size | 8.4" |
| Dimensions (L x W x H) | 292 x 247 x 63 mm |
| Weight | 1,100 g |



_Robot controller

 **KUKA.Handguiding with ready2_pilot.**
Guide your production to success.

click for more 

Teaching instead of programming. Robot handling easier than ever. As the world's first control package of its type, KUKA.ready2_pilot makes robot control mere child's play. The package is quickly mounted on the robot and can be used directly without complex programming. Manual guidance of the robot is all that

is required to teach it the desired sequences. From precise welding to rough palletization, and from small robots such as the KUKA KR AGILUS to heavy-duty giants such as the KUKA KR 1000 titan – KUKA.ready2_pilot enables you to master a wide range of different requirements simply and straightforwardly.

Intuitive, reorienting 6D mouse. Operation of KUKA.ready2_pilot is child's play and is carried out using an intuitive 6D mouse with no training required. Fastened with adapter plates, this mouse can be used from different positions, always within the user's reach.

Freedom of motion to the right degree. Move the robot exclusively on the desired paths by simply deactivating directions that are not required. This prevents unintentional slipping during motion and saves time-consuming corrections.

Connectivity and flexibility. The wireless concept of KUKA.ready2_pilot is compatible with all standard KUKA robots and offers maximum freedom for operator control.

Adaptable navigation buttons. Two buttons on the side of the 6D mouse enable quick access to freely selectable functions. From opening and closing a gripper to adjusting process parameters or saving motions in the robot program – a simple click suffices and saves precious time.



_Software

From cloud services to simulation and application modules: when it comes to software, KUKA offers the full range from a single source.

KUKA's software portfolio is designed to come together seamlessly to meet all application requirements – from the control of applications to the communication and networking of the robots themselves as well as the simulation of robot-based automation concepts to reliable operating systems and cloud-based services. We offer the optimal digital basis for every automation and networking requirement. With these perfectly coordinated modules, we ensure that robot automation succeeds quickly and reliably in any application environment.

_Software

Productivity starts with the right software.

Our software portfolio for successful robot automation.

[114] Application software. Our range is tailored to the most common robot applications – each application is easy to program, ensuring high process reliability. The optional features can be installed on the controller easily and quickly and can also be tailored to the specific production environment.

[128] Base technology. Base technologies can be used with any KUKA robot – irrespective of the payload, variant or application. Be it software for sensor communication, for the intelligent networking of robots or for enabling safe human-machine interaction: KUKA base technologies boost the flexibility and competitiveness of your production operations.

[130] Simulation. Our program modules will support you in planning your new systems or optimizing existing ones. They enable you to plan and calculate future production processes with a high degree of reliability.

[132] System software. The linchpins of the entire control system for KUKA industrial robots are the operating systems KUKA.SystemSoftware, KUKA Sunrise.OS and the new KUKA iiQKA.OS.

[138] Cloud-based services. Cloud-based software is one of the cornerstones of Industrie 4.0. Cloud-based services from KUKA digitalize and optimize your production.



KUKA.ArcTech. For automated arc welding with easy programming and fast operation.

The KUKA.ArcTech family adds intuitive commands, structured menus and practical status keys to a KUKA robot system for robotic arc welding.

With our application packages for arc welding, KUKA offers a wide range of functions enabling easy operation of arc welding processes as well as efficient and fast programming. Preconfigured libraries ensure high compatibility with all power sources commonly available on the market and enable uncomplicated integration into the production facility. By mirroring the integrated EasyTeach status keys to the KUKA.ready2_pilot keys of the 6D mouse, welding technology commands can be programmed without taking your eyes off the weld seam.

Areas of application: Additive manufacturing, 3D printing, arc welding, other welding



Easy start-up and programming for fast start-up time

- Simple and fast configuration based on predefined weld power sources
- Fast programming with inline forms – accessible via the ‘EasyTeach’ row of keys

Flexibility and a wide range of applications

- Large number of predefined weld power sources and types as well as the possibility of integrating any weld power source via customized configuration
- Various predefined weave patterns enable the easy and flexible implementation of a wide range of different welding tasks
- Further adjustments via modification of predefined patterns for specific application requirements

Assures performance and welding quality

- Optimization of the welding process while an application is running via online modification of the weld parameters
- User-defined “weld parameter sets” – defined in advance by welding experts – prevent operator errors by limiting the permissible range of values during programming and operation
- Display of important weld parameters from the power source on the KUKA smartPAD – no need to look at the welding source or go into the cell to monitor all system parameters
- Easy fault diagnosis through continuous logging of process data with the ‘ArcTech Technology LogBook’ in WorkVisual
- Avoidance of quality problems through continuous monitoring of the correct weld seam length
- Predefined strategies for responding to typical welding errors

KUKA.SeamTech. For operating line laser sensors for seam detection and tracking purposes.

The KUKA.SeamTech Tracking and KUKA.SeamTech Finding application software can be optionally added to the KR C5 robot controller. With the aid of an intelligent triangulation sensor, the robot can use KUKA.SeamTech Finding

to detect components and seams prior to welding and use KUKA.SeamTech Tracking to track edges and seams during the welding process.

Areas of application: Additive manufacturing, 3D printing, arc welding, adhesive bonding, sealing, laser welding and cutting, measuring and inspection

Smooth communication between sensor and controller. KUKA.SeamTech Finding and Tracking are options for controlling and programming intelligent triangulation sensors via Ethernet – SeamTech Tracking even makes use of a powerful real-time protocol.

Programming made easy with KUKA programming aids. The application programming of robot sensor commands is carried out as usual with clear inline forms that can be programmed quickly. Status keys which enable robot and sensor functions to be operated quickly also support this process.

Flexibly combinable technology packages. KUKA.SeamTech Finding and Tracking are independent technology packages that can be combined with other options, for example with ArcTech Basic, ArcTech Advanced, LaserTech or GlueTech.

KUKA.TouchSense. Deviations in shape or position of workpieces are reliably detected and compensated.

KUKA.TouchSense is an option package that determines and compensates for deviations in the shape or position of weld seam preparations and workpieces by means of comparative measurements prior to welding. The application software is normally used for arc welding tasks.

The component position can be determined by tactile or non-contact methods. Any deviations that occur can be compensated in up to six dimensions. Combining this with the fast measurement inputs enables a higher search velocity and more precise measurement results.

Highly precise measurement results. Very precise position data can be determined using the Fast Measurement inputs.

Custom-tailored correction calculation. Fast and custom-tailored application programming through preconfigured correction commands.

Programming made easy with KUKA programming aids. The application programming of robot sensor commands is carried out as usual with clear inline forms that can be programmed quickly. Status keys which enable speedy operator control during start-up and maintenance also support this process.

Areas of application: Arc welding, other welding



KUKA.TRACC TCP. Robots automatically monitor and update the TCP in production operation.

KUKA.Tracc TCP is a highly precise software- and hardware-based TCP (Tool Center Point) calibration and checking system. KUKA.Tracc TCP is normally used for spot welding, arc welding and adhesive application tasks.

The option package determines the actual TCP values (X, Y, Z) and thus ensures correct positioning on the workpiece. This safeguards productivity and process reliability, which can be impaired by welding torch deformation or the production-related tolerances of wearing parts, among other things. KUKA.Tracc TCP requires a fork-type photo-electric barrier and a connecting cable.

Areas of application: Additive manufacturing, 3D printing, palletizing, painting, arc welding, adhesive bonding, sealing, other welding

Highly precise measurement results. Very precise TCP position data are determined via the unique measuring algorithm.

Full system integration. The measuring system includes a comprehensive interface to the higher-level controller.

Transparent measurement results. The measurement results are saved and depicted graphically over time.

KUKA.LaserTech. Easily program and quickly implement laser welding and laser cutting.

KUKA.LaserTech is an add-on option package for configuring and programming laser applications – for example, for laser cutting or laser welding.

KUKA.LaserTech enables the integration of laser controllers and other devices of the application periphery, e.g. gas valves, consumables (welding wire, welding powder) and optics, into the robot controller.

Areas of application: Additive manufacturing, 3D printing, cutting, deburring, laser welding and laser cutting

Flexibility

- One software package for various laser applications, for example, welding, cutting, brazing or soldering
- Close cooperation with partners to integrate processing optics, for example, Solid Cutter from Precitec
- Interfacing of laser equipment possible using various field buses
- Combinable with other KUKA software packages such as KUKA.SeamTech for straightforward integration of sensor systems, seam tracking and component detection

Quality

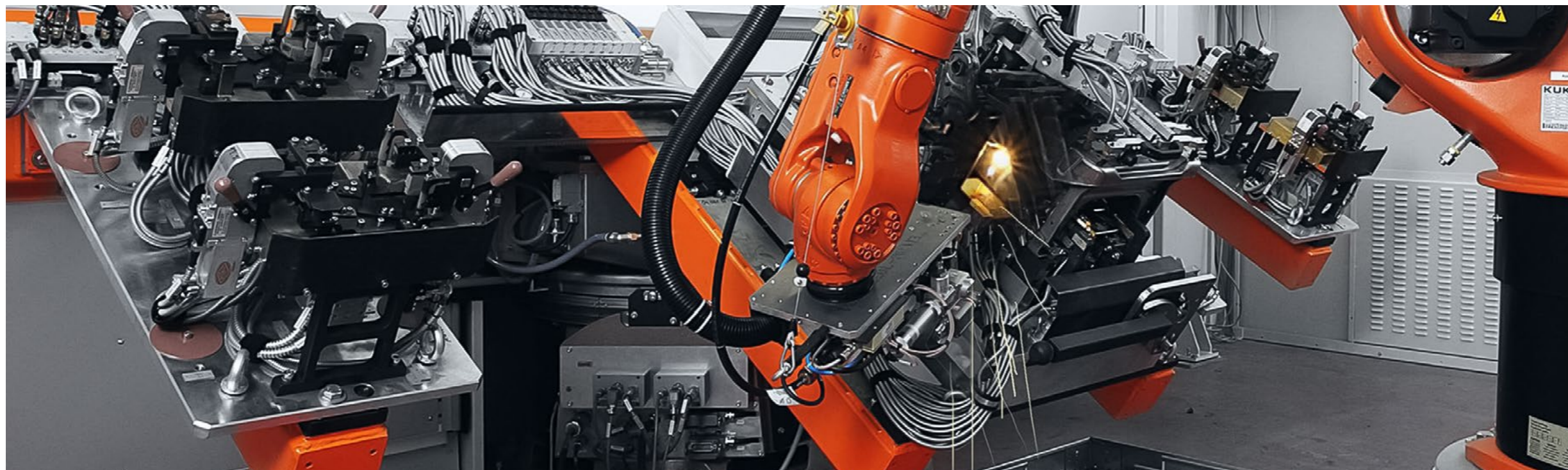
- Control of the laser power proportional to the velocity
- Support for extremely precise motion sequences
- Time and distance-based slopes for the laser power

User-friendly design

- Quick and simple programming of process commands using the KUKA standard inline forms
- All process-relevant parameters (laser, wire, gas, etc.) can be controlled via the robot
- Quick access to important functions using icon status keys

Productivity

- Access to the laser can be switched between several robots very quickly in order to optimize utilization of the laser source
- Numerous functions to facilitate programming – for example, the step seam function, ready-made geometries and wire cutting function





KUKA.ForceTorqueControl.

Allows the use of a force/torque sensor.

The KUKA.ForceTorqueControl option package allows the use of a force/torque sensor on the robot for implementing special applications in which the robot has to apply defined forces and torques or modify its behavior on the basis of the forces and torques that occur.

Areas of application: Assembly, deburring, machining and polishing, riveting, clinching, fastening, grinding, polishing, screw-driving



Integration

- Intuitive programming interface for creating force-controlled tasks: KUKA.ForceTorqueControl wizard + inline forms
- Graphical representation of the process: forces, torques, detected paths and angles via FTCtrl – RSI monitoring function
- Sensor connection possible via Ethernet (KLI and KONI) and RSI inputs and outputs

Performance

- Best control performance in its class: KUKA.ForceTorqueControl processes within 4 milliseconds
- Distinction between gravity and applied forces and torques: integrated gravitational force compensation
- Implementation of assembly in motion tasks: combinable with KUKA.ConveyorTech

Flexibility

- Expert programming for the implementation of sophisticated applications: FTCtrl jobs customizable and expandable through RSI Visual



KUKA.PerceptionTech. Allows your robot to perceive the environment.

KUKA.PerceptionTech is an option package for commissioning an rc_visard sensor from Roboception. Additionally, it is possible to access the sensor functionality via the software during the runtime.

Object management for LCs and SKUs. You can make the settings for load carriers and stock keeping units yourself.

Inexpensive and effective application. You can achieve a high level of productivity using this low-cost solution for bin picking of non-mixed parts.

Quick and easy start-up. The bin-picking application can be configured directly on the KUKA smartPAD in just a few steps.

Quality from a single source. The complete KUKA package is a top-class, tailored solution comprising hardware and software.



KUKA.VisionTech. Powerful 2D object, code and OCR recognition with integrated quality control.

With the high-quality camera in its IP 67 housing, object recognition allows flexible robot operation, even in unstructured environments. Code recognition simplifies the traceability of your products and is able to safeguard quality and reduce costs in the long term due to automatic checks.

Reliable and powerful flexibility

- The industry-leading COGNEX library provides powerful and robust algorithms
- Detects a large number of parts with a high degree of reliability

Cost-effective and robust

- Only camera required, no additional image processing hardware needed as image processing is handled by the KUKA controller
- Flexible software platform to upgrade the system over time without new hardware
- Fewer parts lead to longer operating time
- Works with any KUKA robot

Less effort for integration

- Wizard-supported programming in WorkVisual
- Easy-to-use technology package installed via WorkVisual
- Workshop settings during start-up and operation can be made on the KUKA smartPAD
- Wizard-supported calibration on the KUKA smartPAD
- Web server-based image viewer during production operation

KUKA.CNC. Enables you to operate your robots as with a CNC controller.

With KUKA.CNC, an NC controller kernel has been completely integrated on a KR C5, making it possible to process NC programs (G-code) directly on the KUKA KR C5 controller.

Ready for immediate use. With KUKA.CNC, an NC controller kernel has been completely integrated on a KR C5 for the first time, making it possible to run NC programs directly on the KUKA KR C5 controller. NC programs that have been programmed offline using a CAD/CAM system can be processed and executed with the robot without prior conversion to KRL (KUKA Robot Language).

In addition to the CNC kernel, KUKA.CNC offers a dedicated CNC-specific user interface. The CNC user interface "CNC-HMI" (CNC operator control) is thus available on the KUKA smartPAD alongside the KRL user interface "smarthMI" (KRL operator control).

Intuitive operator control and far greater precision. The KUKA.CNC user interface incorporates typical operator control elements of a CNC controller, enabling machine operators with experience of CNC machine tools to start operating the CNC robot quickly and easily. The CNC control now makes it possible to process even large programs consisting of a large number of program blocks.

Areas of application: Additive manufacturing, 3D printing, drilling, cutting, deburring, grinding, polishing

Programs with up to one million path points have been successfully processed. The short distances between the individual CNC path points, together with advance path planning with a range of 150 path points, result in substantial improvements in the path accuracy and continuous-path performance of a KUKA.CNC robot.

Familiar user interface for fast programming. KUKA robots perform machining tasks like machine tools – and can be programmed like them too in G-code (DIN 66025) thanks to the KUKA.CNC user interface. Users understand them straight away, can create programs using a CAD/CAM process chain and, after simulation, execute them on the robot without having to compile them into the robot language. Already included: tool radius correction, sister tools and many other familiar CNC functions.



KUKA.Gripper&SpotTech. Simple control for grippers and pneumatic spot weld guns.

KUKA.GripperSpotTech is an add-on technology package for the configuration, control and programming of up to 32 grippers for industrial applications. For each gripper, up to 16 switching states can be defined and multiple inputs and outputs or signals can be used. Up to 512 input signals and 512 output signals can be defined.

Advantages

- 32 freely configurable grippers
- 256 configurable welding programs
- Gripper conditions statically and dynamically monitored
- Unlimited user-defined gripper icons
- Freely programmable error handling routines
- Graphical user interface with indicator lamps, status display and online adaptation
- Adaptation via WorkVisual and, for production-relevant elements, on the KUKA smartPAD

Areas of application: Handling, resistance spot welding



KUKA.PalletTech. Allows easy configuration of complex palletizing tasks.

KUKA.PalletTech is an add-on option package that can be used for the simple implementation of palletizing applications. KUKA.PalletTech supports so-called mono-palletizing, i.e. the unmixed palletizing of products on pallets using a robot in a palletizing cell. KUKA.PalletTech takes into consideration all major cell components of a palletizing cell, such as infeed and outfeed stations, grippers, pallets, products and slipsheets.

Quick configuration of cell components. The PalletTech editor in KUKA.WorkVisual ensures guided and complete configuration of cell components such as grippers, infeed stations and outfeed stations.

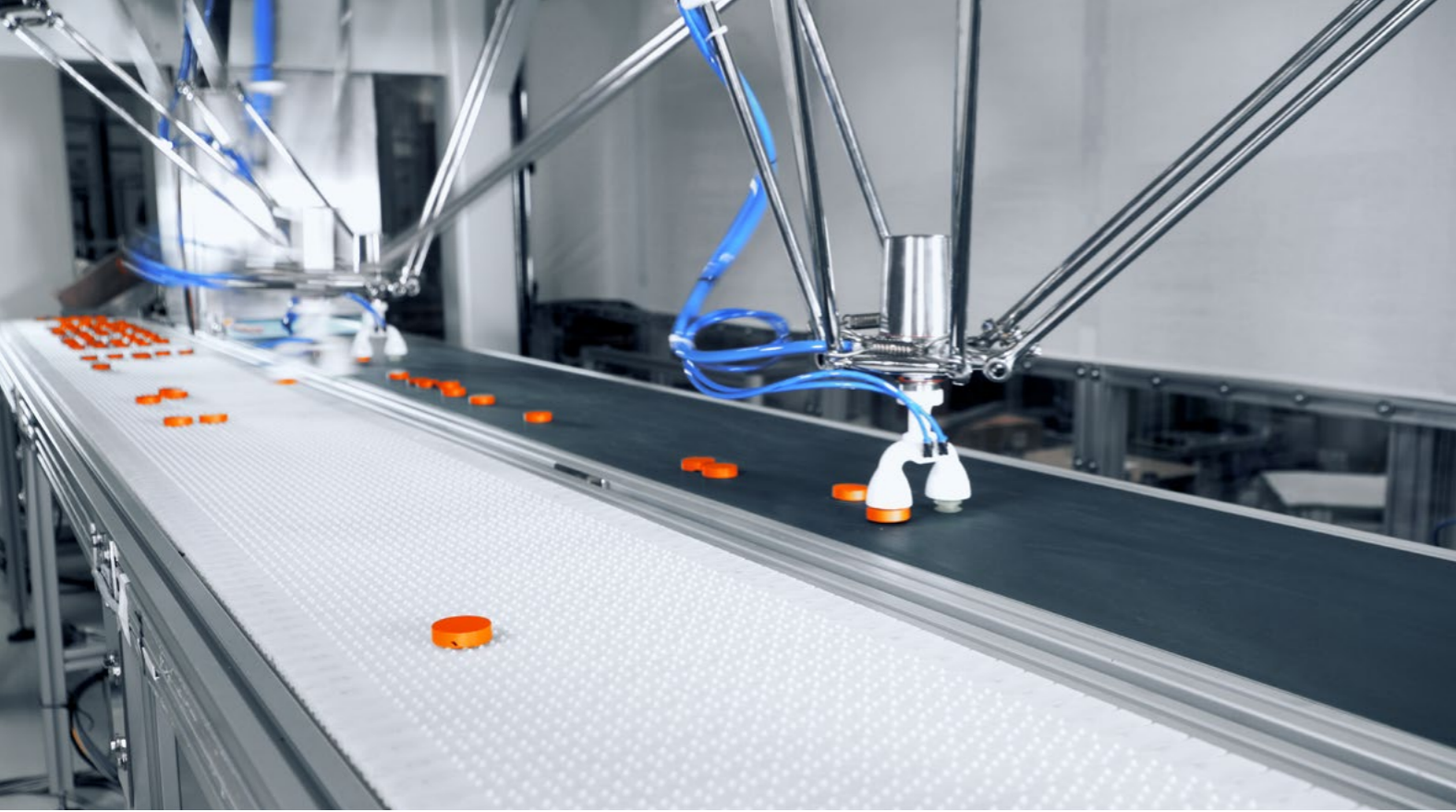
Simple definition and modification of palletizing tasks. The layers and items on a pallet as well as their patterns can be configured and modified in a user-friendly manner. Modification, in particular, is possible without advanced software knowledge.

Maximum system availability. The available error strategies and monitoring functions minimize downtimes during operation.

Custom adaptability to meet specific requirements. The automatically generated robot programs offer entry points for flexible expansion of the program code.

Areas of application: Palletizing / packaging / pressing / pick & place / handling / material transport





–Spot Welding series

KUKA.EqualizingTech. Compensates servo spot-welding guns through motions of the robot.

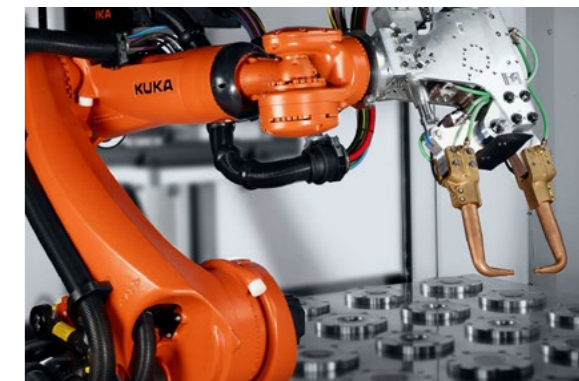
KUKA.EqualizingTech is an add-on option package for KUKA.ServoGunBasic and KUKA.ServoGunAdvanced. It enables the robot to compensate for incorrect positioning of workpieces.

Maintenance and costs. The complicated commissioning required for pneumatic compensation systems can be eliminated through use of the application software. The elimination of conventional components in the compensation system through KUKA.EqualizingTech also saves you investment costs and reduces maintenance requirements.

No additional elements required. Thanks to the KUKA.EqualizingTech software, additional components (such as linear bearings, support brackets or valves, pressure reducers and hoses) can be dispensed with. Sensors, electrical control systems and a compressed air infrastructure are also no longer required.

Weight reduction. The use of KUKA.EqualizingTech substantially reduces the overall weight (compared to conventional spot weld guns) by 10 to 15 percent.

Areas of application: Resistance spot welding



–Handling series

KUKA.PickControl. Simply package more productively by coordinating multiple robots.

PickControl is an add-on option package for control, management and monitoring of pick & place systems. PickControl can be used to pick up parts quickly using one or more robots and place them in an organized manner, no matter what orientation the parts have or what position they are in. The size and shape of the parts can vary. The work area can be a fixed work area (e.g. a fixed location) or a moving work area (e.g. a conveyor).

Complete package with hardware and software. KUKA supplies you with everything you need for the automation of pick & pack tasks. From the hardware, such as cameras and lenses, to standardized cabling and software solutions.

Integrated KUKA Work.Visual simulation tool. The KUKA.WorkVisual engineering suite enables you to design and configure your system. Even if you use an industrial PC for your image processing. Configuration interfaces and runtime are strictly separated from one another.

Areas of application: Handling, material transport, pick & place

Fast start-up with wizard. A wizard helps you with programming by providing step-by-step start-up assistance: Among other things, this helps you to avoid errors and save time when calibrating conveyors or image processing systems.

Scalability. The processing power is insufficient? No problem: KUKA.PickControl is scalable. If required, you can simply offload the processing power to one or more industrial computers to increase your capacity.



KUKA.RoboSpin. Better welding due to rotary motion.



KUKA.RoboSpin is an add-on option package for KUKA.ServoGun Basic and KUKA.ServoGun Advanced.

KUKA.RoboSpin makes it possible to execute a spin motion about the TCP. The spin improves the weld quality and reduces the tip wear due to tip dressing. It can be executed during or after welding. If RoboSpin is installed on the robot controller, backward motion is not possible.

Areas of application: Resistance spot welding

Higher weld quality. By having the robot rotate the electrode tips during the process, you improve the weld quality. In addition, KUKA.RoboSpin is also able to handle sheet metal joints that are difficult to weld and coated panels with ease.

Efficient operation. The improved welding process protects the tip against wear due to tip dressing, resulting in a longer tip life.

_Spot Welding series



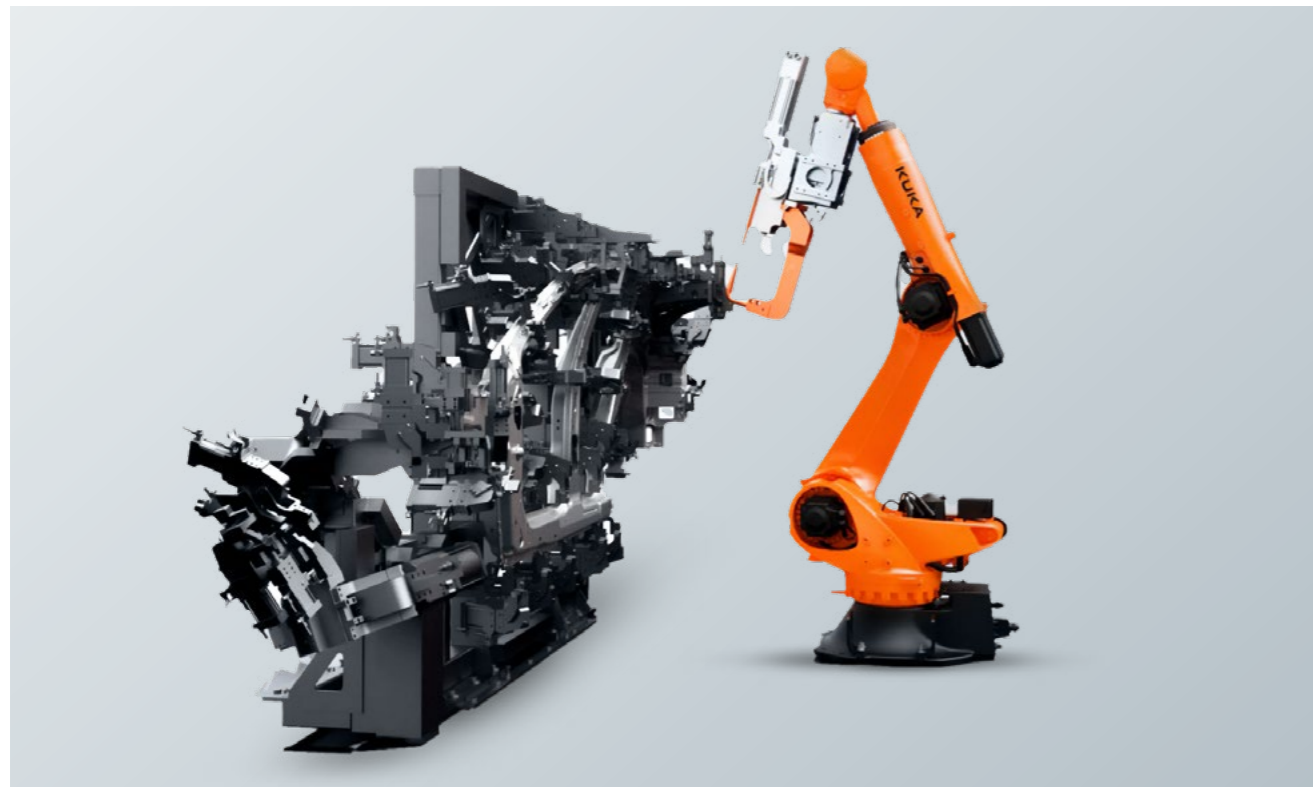
KUKA.ServoGun. Enables electric control of spot welding guns.

The KUKA.ServoGun software technology package is a software option for controlling spot welding guns with an electric servomotor. It enables you to use the external axes of the robot controller to control the servo gun.

Two technology variants are available in the KUKA.ServoGun technology package: KUKA.ServoGunAdvanced (currently only available from KUKA) for the use of electric servomotors with an integrated force sensor and KUKA.ServoGunBasic, with which electric servomotors are used following force calibra-

tion by the robot controller. The two variants therefore cover different applications.

Areas of application: Resistance spot welding



Easy installation. KUKA.ServoGun is easy to configure thanks to its start-up wizard. Status keys make operating the basic functions very straightforward. Thanks to the detailed acceptance documentation, you can improve diagnosis and logging after start-up.

Flexible application. With KUKA.ServoGun, you can use any servomotors on the market that are compatible with KUKA controllers. An integrated operator control concept makes it possible to use inline forms for all applications. In addition, the software provides freely configurable weld timer interfaces and numerous expansion options. The effective welding gun force is independent of gravitational force, age and temperature.

Efficient calibration. The software allows for automatic force calibration using an external, controller-supported force sensor which is operated via the standard interface of the mastering sensor. In addition, background processes such as robot handling provide greater process efficiency during stationary tip dressing.

Precise compensation. Thanks to the new force control mechanism, you achieve greater force accuracy with KUKA.ServoGun. This ensures a higher level of quality, precision and resistance to external influences.



_Process Monitoring series



KUKA.ProcessScreen. Visualize, monitor and document comprehensively in real time.

The KUKA.ProcessScreen process monitoring software enables overall and component-oriented documentation, evaluation and analysis of your production data – particularly for continuous-path processes, but also for point-to-point processes.

Through comparison with individually configurable limit values, the software can detect any violation of these limits and thus allows you to keep an eye on the quality of your production. The results are available in tabular and graphical overviews at the touch of a button.

Simple operation

- Freely configurable for various applications
- One software package for the entire production process
- Reduced training requirements

Scalability

- Easy expansion to further processes: arc welding, laser welding, laser cutting, adhesive bonding, CNC

Areas of application: Additive manufacturing, 3D printing, application / painting / bonding, arc welding, adhesive bonding, sealing, laser welding and cutting, measuring and inspection, other welding (grinding, polishing, spot welding)

Increased quality

- Direct feedback from the manufacturing process
- Data-driven analysis
- Efficient process optimization
- Optimal troubleshooting

Web-based software

- Visualization on any end device
- All important data at a glance
- Local storage of process data
- Transfer of data to distributed customer networks possible

...System software extensions



KUKA.AppTech. Simple modular programming.

The KUKA.AppTech option package markedly simplifies the programming of KUKA robots in the application environment. The components included in the option package are modular in design and also provide a “common thread” for implementing application programming.

Furthermore, the function libraries provide a standardized interface to the higher-level controller, which makes on-site start-up times more efficient thanks to the PLC blocks supplied. With the unchanged sequences in the station programs, KUKA.AppTech offers high time savings in on-site programming with only minor modifications (e.g. adaptation of the end point).

KUKA.AppTech provides a variety of program templates that can be extended and individually adapted as required, and established as a company standard.



Advantages

- Customizable application programming standards through reuse of elements for station and component programs
- Benefit from applied control concepts from KUKA’s practical experience as a manufacturer and application expert
- Fixed I/O interface for various PLCs and KR C controllers
- Service-proven and fully automatic homing for an efficient and risk-reduced return motion strategy in the event of a fault
- Shortened start-up times with efficient offline programming for reduced preparation effort
- Maximum performance from the outset – motion- and cycle time-optimized programming using a modular system with ready-made elements
- Reduction of training effort through comprehensible, recurring program for integrators and end customers
- Better understanding and intuitive readability of the source code
- Easy and fast cooperation between internal or external programmers through creation of a programming standard



KUKA.HMI. Makes communication between humans and machines easier and more efficient than ever.

The KUKA.HMI product family offers perfectly tailored software solutions for operating, controlling and monitoring robots in industrial production. Depending on requirements, the KUKA.HMI easy and KUKA.HMI zenon variants allow you to quickly convert the generic user interface on the KUKA smart-PAD to a customized appearance that is optimally adapted to the user’s needs and can be used with no training required. Compatibility with the KR C5 robot controller makes KUKA.HMI the ideal visualization software for individual industrial robots as well as for complex robot cells.

Productivity & safety

- Visualization of current and target status as well as provision of guided work instructions via HMI (e.g. for start-up & tool change)
- Quick overview of frequently used KPIs for process control
- Interaction between KRL programs and HMI possible – control and querying of HMI views with KRL
- Targeted fault diagnosis through fault visualization via HMI

Efficiency & convenience

- “What you see is what you get” editor in WorkVisual
- Simple configuration using drag & drop function
- No programming knowledge required
- Multilingual user interfaces

Cost-effectiveness

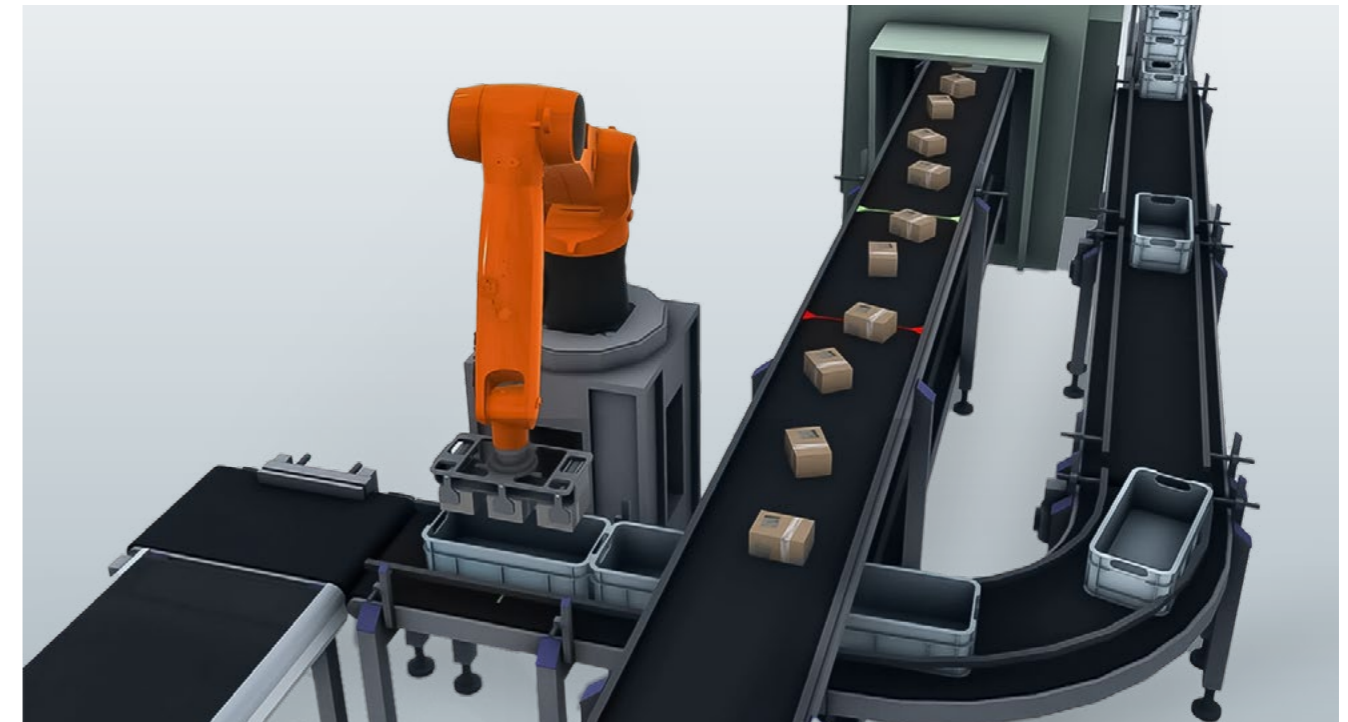
- No additional editor required
- Compared to HMI.Zenon – cost savings of up to 85 percent per robot



KUKA.ConveyorTech. Organizes the coordination of robot actions and conveyor motions.

The KUKA.ConveyorTech option package is designed as a solution for applications that require synchronization between the robot motion and the motion of workpieces through a conveyor system. Through synchronization, the robot can process, grip or set workpieces down on the conveyor system. The position of the workpiece on the conveyor system and the motion of the conveyor system must be clearly known for this purpose. Conveyors of various designs or mobile platforms can be used as conveyor systems.


Areas of application: Handling, material transport



Shorter cycle times. The robot uses the KUKA.ConveyorTech software in the background to synchronize with the conveyor motion. This means that it is not necessary to stop the conveyor during the production process. The new motion command DynamicLIN makes it possible to optimize the velocity of the robot for linear motion.

Synchronization “on the fly”. When changing from a non-synchronized to a synchronized program section, the software independently calculates the motion to be synchronized with the conveyor. As the conveyor runs continuously, the entire production process is thus more flexible. Robot and conveyor can be stopped synchronously in case of a stop request (e.g. Emergency Stop).

Greater flexibility. The KUKA.ConveyorTech technology package impresses with its high precision and can thus also be used flexibly in assembly processes. External axes (linear units) can be coupled to the conveyor progress (EO driver), with the result that the robot can work longer parallel to the conveyor. The “External conveyor” option offers the possibility of transferring the position and workpiece information from a linear conveyor or even AGVs (6D) via a PLC.

 **KUKA.PLC mxAutomation.** The convenient, universal interface makes KUKA robots extremely easy to operate.

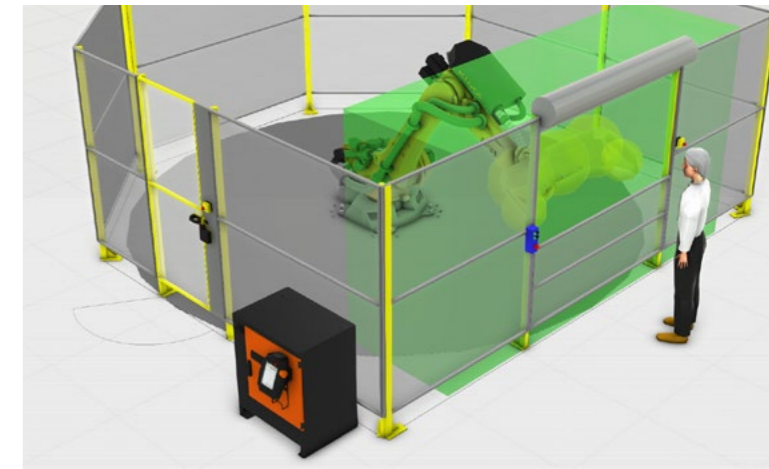
Operate robot-based production machines independently of the controller. With the KUKA.PLC mxAutomation control software, external controllers can command KUKA robots with all basic motion commands. This provides an easy route to implementing a central, customer-friendly operator control concept for robot-controlled production machines. The outstanding kinematic and safety-relevant functions of the KUKA controller are still available. This is because the mxAutomation command interpreter of the robot controller communicates the commands to the path planning system, which sets the robot in motion with the usual precision and reliability.



 **KUKA.SafeOperation.** Safe human-robot collaboration.

You want to produce quickly, safely and in a space-saving manner? The KUKA.SafeOperation software supports human-robot collaboration in every respect.


KUKA.SafeOperation combines the latest safety-relevant software and hardware components. You simultaneously define and monitor the workspaces and protected spaces. In this way, you can dispense with mechanical monitoring of the workspaces. Moreover, you reduce the cycle times. KUKA.SafeOperation supports safe and efficient cooperation by means of human-robot collaboration (HRC). Safe operational stop can be used in manual loading stations, for example, to reduce the distance to the operator.



Monitoring spaces with KUKA.SafeOperation. The focus is on safety. The software package provides up to 16 monitoring spaces and a fixed cell area for safe reduction of the theoretical workspace – the definition of these monitoring spaces determines the response of the robot.

Each area can be defined individually. Choose between Cartesian and axis-specific definition. A further distinction is made between these types of space:

- Workspace
- Protected space
- Alarm protected space (non-stopping)
- Alarm workspace (non-stopping)
- Cell area (non-switchable)

 **KUKA.RoboTeam.** Turns robots into real team players.

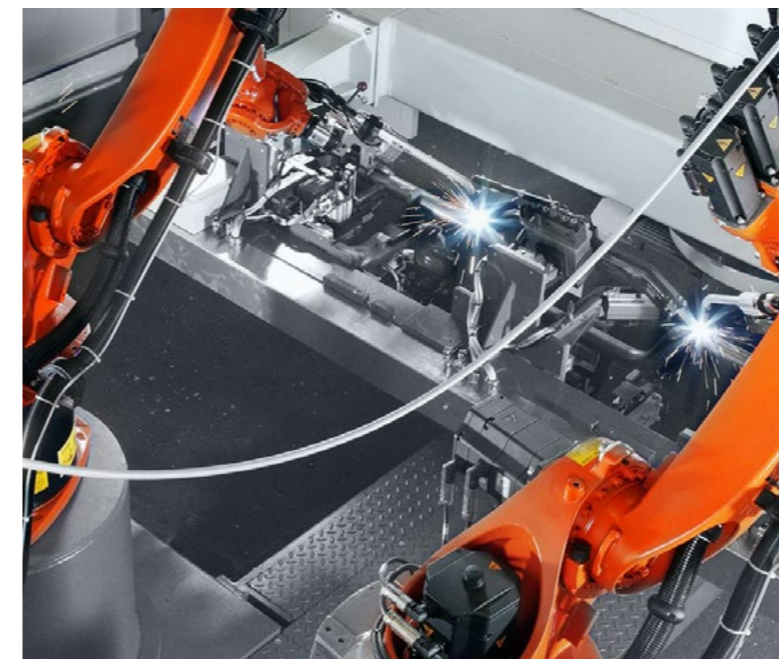
Simple programming. With KUKA.PLC mxAutomation, the user requires minimal knowledge of robot programming. The mxAutomation function blocks allow the KUKA robot to be commanded within the familiar programming environment.

High flexibility. If the requirements in production are changed, the appropriate modifications or expansions can be implemented at any time with mxAutomation-based operator control. The flexibility made possible by using robots with regard to processing new series of parts or performing additional tasks is made available for the operator in his customary environment.

Certified in accordance with PLCopen. KUKA is the first robot manufacturer to meet the requirements of the PLC Open organization with the KUKA.PLC mxAutomation software and is thus certified in accordance with “PLCopen Motion Control Part 4”. Access functions predefined by KUKA are available to the customer.

Picking up moving workpieces. Connecting KUKA.PLC mxAutomation to KUKA.ConveyorTech enables robots to pick up moving workpieces. The motions of the robot are adapted by the application software to those of assembly lines and conveyors. Using KUKA.VectorMove enables the robot to be switched vectorially to “soft” mode in order to facilitate the removal of components from injection molding machines and die-casting machines.

Simple control. The combination of robot and machine control by means of KUKA.PLC mxAutomation enables KUKA robots to be integrated effortlessly into existing operator control concepts. The robot can therefore also be controlled via the customary human-machine interface. Teach pendants for the machine can be used for setting the robot as well, provided appropriate safety precautions are implemented. A good integration example in this context is the incorporation of KUKA robots into the Sinumerik/Simatic world on the basis of mxAutomation, as offered by Siemens®.



With the KUKA.RoboTeam software, up to four robots can work together. Geometric coupling guarantees a significantly shorter cycle time.

Synchronization of robots. KUKA.RoboTeam software transfers responsibility for conventional, centralized PLC functions, such as the interlocking of workspaces or program synchronization, directly to the robot group. In this way, all tasks that directly affect the robot group are carried out autonomously by the group.

Geometric coupling of robots. The geometric path and transfer coupling of multiple robots is linked to various different processes. This enables state-of-the-art assembly line production and ensures significantly shorter cycle times. Geometrically coupled robots provide an extremely flexible solution for all handling tasks in which heavy loads need to be transferred and ensure process-optimized positioning even of pliant workpieces. This function can also be used for the application of parallel processes alongside the transfer of materials.

KUKA.Sim. Smart simulation software for efficient offline programming of KUKA robots.

With KUKA.Sim, you can optimize the operation of your systems and robots outside the production environment – quickly and easily.



KUKA.OfficeLite. Virtual programming system for seamless transition to automation practice.

The software uses the original KUKA SmartHMI and KRL syntax, so offline operation and programming correspond exactly to those of the robot.

The programming system has the same characteristics as the KUKA System Software:

- Each KUKA System Software release is available in full with all of the functions (a hardware periphery connection is not possible)
- KRL syntax check by the compiler and interpreter provided
- Executable KRL application programs can be created
- Sequence control of robot application programs in real time: improved cycle times
- Programs can be optimized on a standard PC at any time and on a regular basis
- Digital input signals can be simulated to test signal polling in the KRL program

- **Immediate productivity.** The KRL programs that are created can be transferred one-to-one to the KUKA robot controller and ensure immediate productivity.
- **Independent and flexible thanks to the virtual machine.** The installation is thus independent of the host system and its operating system. Different versions of KUKA.OfficeLite can be installed at the same time and are therefore flexible in terms of their application.

Use of KUKA.OfficeLite. KUKA.OfficeLite is the virtual KUKA robot controller and primarily intended for offline programming and application development. It can, however, also be used in conjunction with: KUKA robot training, application development, KUKA.WorkVisual 6.0 or higher.



Time savings
Plan your system and robot concepts quickly, easily and individually – without actually having to build them in the real world.



Increased sales
KUKA.Sim helps your sales team to professionally present your solutions to end customers and to increase your sales success.



Planning reliability
Design system concepts in advance with very accurate cycle times for increased planning reliability and competitiveness.



Verifiability
The reachability check and collision detection features allow you to test the viability of your robot programs and cell layouts.



Modular
KUKA.Sim can be expanded in accordance with the modular principle using add-ons for advanced modeling, virtual commissioning or arc welding.

More productivity, safety and competitiveness. The future-oriented KUKA.Sim software brings robot applications virtually to life – before the system has even been put into operation. The robot motion sequences programmed offline are depicted in real time and analyzed and optimized with regard to their cycle times. With features such as a reachability check and collision detection, you can make sure that robot programs and work cell layouts can really be implemented. Digital simulation thus offers maximum planning reliability for your manufacturing processes at minimum cost and effort. At the same time, production downtimes are kept as short as possible.

From offline programming to virtual commissioning. KUKA.Sim creates a digital twin and thus an identical image of the subsequent production process. The 3D simulation covers the entire planning process: from the design of the process to the PLC code. The data are 100 percent consistent, which means that the virtual controller and the real controller work with exactly the same data. In this way, KUKA.Sim creates the basis for virtual commissioning, so that new production lines can already be tested and optimized in advance.



The programs that are created using the virtual controller can be transferred to the robot one-to-one and ensure immediate productivity.



KUKA.SystemSoftware.

Established, flexible and safe: the open operating system for the entire robot control system.

The KUKA.SystemSoftware – KSS for short – is the operating system and thus the heart of the entire robot controller for the majority of the KUKA robot portfolio – including traditional 5- and 6-axis robots, as well as the new SCARA and DELTA robots.

KSS enables you to implement an extensive range of robot-based applications. KSS helps you to achieve your goals faster and more efficiently, whether you are planning, installing, commissioning, operating or maintaining a robot-based system. It is subjected to continuous further development by KUKA as an open, flexible and secure platform to meet the high demands in the robotics environment.



Open & flexible

As the only system software from a major robot manufacturer that is based on Windows 10, KSS offers a number of unique advantages. There are no limits to your imagination when it comes to using KUKA robots and the connected peripheral equipment. Whatever it is, KSS makes it possible, with unrivaled access to modification and adaptation for your solution within a familiar and convenient platform.



Secure & protected

In today's world, where productivity and competitiveness are heavily dependent on networked hardware and software, it has never been more important to ensure a stable and protected system. Safety and security at the highest level – KUKA is synonymous with safety and security. For us, there is no middle ground on this issue, which is why we place it at the foundation of every KUKA.SystemSoftware development.



Get it done faster

With industry-leading connectivity options based on an open and flexible platform, the “functional twins” KSS 8.6 and 8.7 provide a solid foundation for getting your work done faster – and we have incorporated additional user-friendly functions to reduce commissioning and integration times.



Designed for any application. The “functional twins” KSS 8.6 and 8.7 offer new functions without changing the existing programming environment and user interface – if you are familiar with KUKA.SystemSoftware and KRL, you will immediately feel at home. And thanks to the expertise that we have built up over decades, combined with feedback from our customers, the current KSS versions 8.6 and 8.7 are the result of internal and external feedback. In combination with assistance from inline forms, project-based engineering and project-independent online programming, it is clear that KUKA has listened to the suggestions and wishes of users during the development of KSS.

Basic functions

Programming for different skill levels. From simple programming using inline forms to expert programming in the high-level language KRL (KUKA Robot Language).

Interpreter. In addition to the robot interpreter, up to eight parallel cyclical (submit) interpreters are available.

Field bus communication. Configuration and I / O mapping of the field buses supported by the KUKA.SystemSoftware (ProfiBus, DeviceNet, PROFINET, ETHERNET / IP, EtherCAT) is carried out via KUKA.WorkVisual.

Multilingual user interface. Up to 26 languages are available for selection in the KUKA.SystemSoftware user interface.

Rights management. The system is supplied with the rights for operating modes and functions preassigned to the hierarchical user groups so that no adaptation is required for most customers. Nevertheless, this assignment can be configured by the administrator via function groups if required.

Flexible configuration of additional drives and / or customer kinematic systems. Operation of asynchronous, infinitely rotating or force-controlled external axes and master-slave drives in a group.

Backup / restore. Server-triggered, project-based backups of the system configuration and installed options through the integrated backup manager.

Connection to iiQoT pre-installed. With the pre-installed KUKA.DeviceConnector, KUKA systems are quickly integrated and connected to iiQoT – the Industrie 4.0 solution from KUKA.

Optional functions

Safe robot. Extended safe monitoring of the robot and assurance of system safety with KUKA.SafeOperation, KUKA.SafeRangeMonitoring or KUKA.SafeSingleBrake.

Cooperating robots. Both in terms of shared workspaces and in the form of load sharing between multiple robots in teams of up to 6 robots using KUKA.RoboTeam.

Data exchange. TCP / IP data communication (binary / xml) to external systems with KUKA.EthernetKRL.

Sensor applications. Real-time capable sensor connection / communication through KUKA.RobotSensorInterface or KUKA.ForceTorqueControl.

IT security. Protection of the controller against malware through the KUKA.Ikarus antivirus solution or the KUKA.CPC whitelisting procedure.

Conveyor. Synchronization of robot motion with the motion of components / conveyor systems using KUKA.ConveyorTech.

Safe communication. Available as a discrete dual-channel technology interface or as safe field bus communication via Ethernet-based protocols to the safety PLC (PROFIsafe via KUKA.Profinet M / S, CIP Safety via KUKA.EthernetIP or FSoE via EtherCAT master-master gateway).

User login. Additional login methods – enabled by KUKA.Userkey.

Expansion of the basic functionality. Integrated deterministic Soft PLC with all the advantages of access to the I / O system and the existing system through KUKA.ProConOS.

Customer-defined technology modules. KUKA integrators and end customers can expand the library of available KUKA inline forms and status keys according to customer requirements by using KUKA.UserTech technology. In interaction with the KUKA.OptionPackageEditor, these modules can be quickly and easily integrated into a KUKA system. Other possible modules are represented by preconfigurations (including dependency mapping) of KUKA technology packages – such as a KUKA.HMI solution,

a KUKA.GripperSpotTech configuration or a KUKA.RobotSensorInterface context.

Customer-specific interfaces. With the KUKA HMI product family, we provide the capability of entering the domain of customer-specific user interfaces at two different levels of complexity. For simple applications – KUKA.HMI Easy – and for the demanding user – KUKA.HMI Zenon.

Vision – in 2D and 3D. KUKA.VisionTech offers tools for 2D object recognition, quality recognition, and code and optical character recognition (OCR). KUKA.PerceptionTech enables the perception of the environment in 3D. Customers can implement any of the 3D vision applications from Roboception.

Engineering functions

Project-based. Configuration of the controller using database and catalog-based projects – created using KUKA.WorkVisual.

Soft PLC interface. Integrated interface in KUKA.WorkVisual to KUKA.Multiprogram – the Soft PLC engineering environment of KUKA.ProConOS.

Load data determination. Determination of the load parameters of real tool attachments by means of pendulum motions using the KUKA.LoadDataDetermination option.

Simulation. Installation and evaluation of complete robotic cells using KUKA.Sim.

Virtual robot controller. Virtualized version of KUKA.SystemSoftware KSS available as KUKA.OfficeLite.

Customer-specific technology packages. Creation of your own customer-specific software packages using KUKA.OptionPackageEditor. Further modules are provided here by the add-on technologies KUKA.UserTech and KUKA.HMI Easy.

Recovery. Image-based backup solutions through KUKA.Recovery.

KUKA iiQKA.OS. The new system software for intuitive work and maximum performance.

The powerful and intuitive new operating system from KUKA. iiQKA.OS is KUKA's future-proof robot operating system, making the implementation of robot-based automation faster, more efficient and more accessible than ever before.

With the new KUKA operating system, iiQKA.OS, KUKA ensures that both experts and robotics newcomers will boost their automation goals. iiQKA.OS is reliable and easy to work with – delivering a fast start into robotics for beginners and a distinct improvement of the automation process for the experienced. To achieve this kind of power, flexibility and usability, the new OS is built on a modern and modular software architecture that increases the overall efficiency and speed of development, so that new functionalities or components can be installed as fast as possible and customers can respond to market demands quickly.

This new architecture also enables the rapid delivery of updates and upgrades, so that more and more functionality will be added to our new robot OS over time – regularly scaling customer possibilities by offering a variety of smart solutions to its users.

Designed for users by users. The core value of iiQKA.OS is its user-friendliness built on a powerful architecture – manifesting in easy comprehensibility, reliable performance and intuitive operation across the complete customer journey. For this very reason, KUKA reviews the total system in every state

of development in close cooperation with users. To constantly learn from their experiences, KUKA has implemented a refined and well-structured feedback system. With this valuable know-how, KUKA is able to adapt robot software, hardware and services even better to the needs of its users, ensuring that iiQKA.OS together with the iiQKA Ecosystem provide the best possible robotics user experience. When combined with fast and regular updates to functionality, customers can always be assured of having access to the latest features and improvements.

Easy access to the world of automation for experts and non-experts alike. Drawing on its almost 50 years of deep robotics and automation know-how, KUKA once more proves its mastery in the design of flexible and future-oriented automation solutions with the iiQKA Ecosystem automation community. Based on the open interfaces in iiQKA.OS, it gives everyone, experts and robotics newcomers alike, access to the world of automation. To provide the most comprehensive experience possible at all times, KUKA iiQKA will be regularly updated in short release cycles, especially in during the scaling phase at the beginning. Users will benefit in stages from increasing functionality and services that allow simple operation, intuitive handling and safe operation of automated hardware.

iiQKA Ecosystem. A powerful network for the challenges of tomorrow.



The perfect environment for future-proof industrial automation. Since the beginning of this millennium, digital ecosystems have improved technology usability and access for everyone. Built on software and hardware platforms, these powerful partnerships of industry players make incredibly complex things easy to accomplish, allowing all participants to react faster to demands. Inspired by the natural ecosystem, they bring simplification to a completely new level, delivering an intuitive and user-friendly experience. They already reshaped the world of mobile devices. Now, KUKA brings its own digital ecosystem to the field of robotics – to make automation quicker, easier and more intuitive for everyone.

Easy, intuitive, reliable: the iiQKA Ecosystem. With iiQKA, our almost 50 years of expertise in automation, robotics and global collaborations are intuitively distilled and delivered digitally. Built on the iiQKA.OS platform and delivered via KUKA's my.kuka customer portal, the iiQKA Ecosystem is the key to making automation easier and opening it up to many more potential users. But the true power of the iiQKA Ecosystem comes from the content inside it: from easy-to-use and implement components such as grippers, safety sensors and vision systems, to software for automation solutions. Thus, the iiQKA Ecosystem allows for intelligent industrial automation in a reliable environment.

Extending the possibilities of robot-based automation. KUKA is teaming up with partners to expand the iiQKA Ecosystem step by step. Together, we are making smart applications, enhanced functionality and digital services available that will be the core of value to everyone with a need for robotics. The iiQKA Ecosystem grants its users convenient, intuitive and reliable access to both KUKA and third-party solutions.



Linux at its core

- open-source and well-supported
- large range of hardware compatibility
- IT and industry standard
- flexible and robust
- security as a design principle



Modular and containerized

- architectural elements separated with clear communications interfaces
- easy and fast development of new functionality
- allows for major changes while performance of the entire system remains stable
- a key foundation for the future-proof platform



Open interfaces

- application programming interfaces (APIs)
- foundation for offering extended value in an ecosystem
- stable and consistent access to subsystem



Web-based user interface

- responsive design that works in many formats
- easy and fast development of custom user interfaces and elements
- accelerates scaling and addition of new features and components



KUKA Sunrise.OS.

The operating system for graphical programming of sophisticated robot applications.

KUKA Sunrise.OS is the current operating system software for the KUKA LBR iiwa and other KUKA Mobility products. Together with KUKA Sunrise.Workbench, KUKA Sunrise.OS offers all the functions needed for programming and configuring sophisticated robot applications.



Graphical programming with KUKA Sunrise.OS

The approach to programming with Sunrise.OS: the Application Framework provides an editor that assists you in modeling the robot's work sequences graphically. Using the KUKA smartPAD, it is also possible to check the individual work steps that you modeled previously and, if necessary, intervene manually at any time. The fact that the JAVA program code is displayed in so-called blocks means that planners are also able to generate processes without programming knowledge. At the same time, it is possible to switch back to expert mode and use the full power of JAVA.

Other advantages of graphical programming

- **Structured.** The process diagram automatically illustrates the sequence in a structured manner due to its form. So-called wizards provide assistance during planning.
- **Consistent.** The block diagram can be used throughout the entire design process (planning, programming, planning, maintenance).
- **Reusable.** Each block can be used again in other applications and expanded as desired.
- **Efficient.** Many steps are transferred to the offline design process and expedited as a result. That saves time and cuts costs.
- **Scalable.** The blocks can be used in a hierarchical manner and also merged into a group.

KUKA Sunrise.Workbench engineering suite

- Ergonomic user interface
- Program editor with many powerful user-friendly functions
- Object-oriented programming with JAVA
- Fast start-up
- User-friendly diagnostics
- Integrated user manual
- Professional debugging

KUKA iiQoT. Data-based automation made easy.

Data-based added value through IIoT for your robots. Maximize the operating time of your robot fleet with KUKA iiQoT. The central IIoT (Industrial Internet of Things) platform supplies all important data in real time. This makes not only remote monitoring of the robot systems more efficient, but troubleshooting as well.



Optimization of the fleet

- Management of systems and machines
- Checking safety
- Robot maintenance



Fault finding and troubleshooting

- Notification of problems
- Saving time during fault finding
- Increasing availability



Clear and quick overview

- Transparency across the entire robot fleet due to IIoT technologies
- Remote monitoring outside the production halls
- Access to all required data from all devices



Increased efficiency

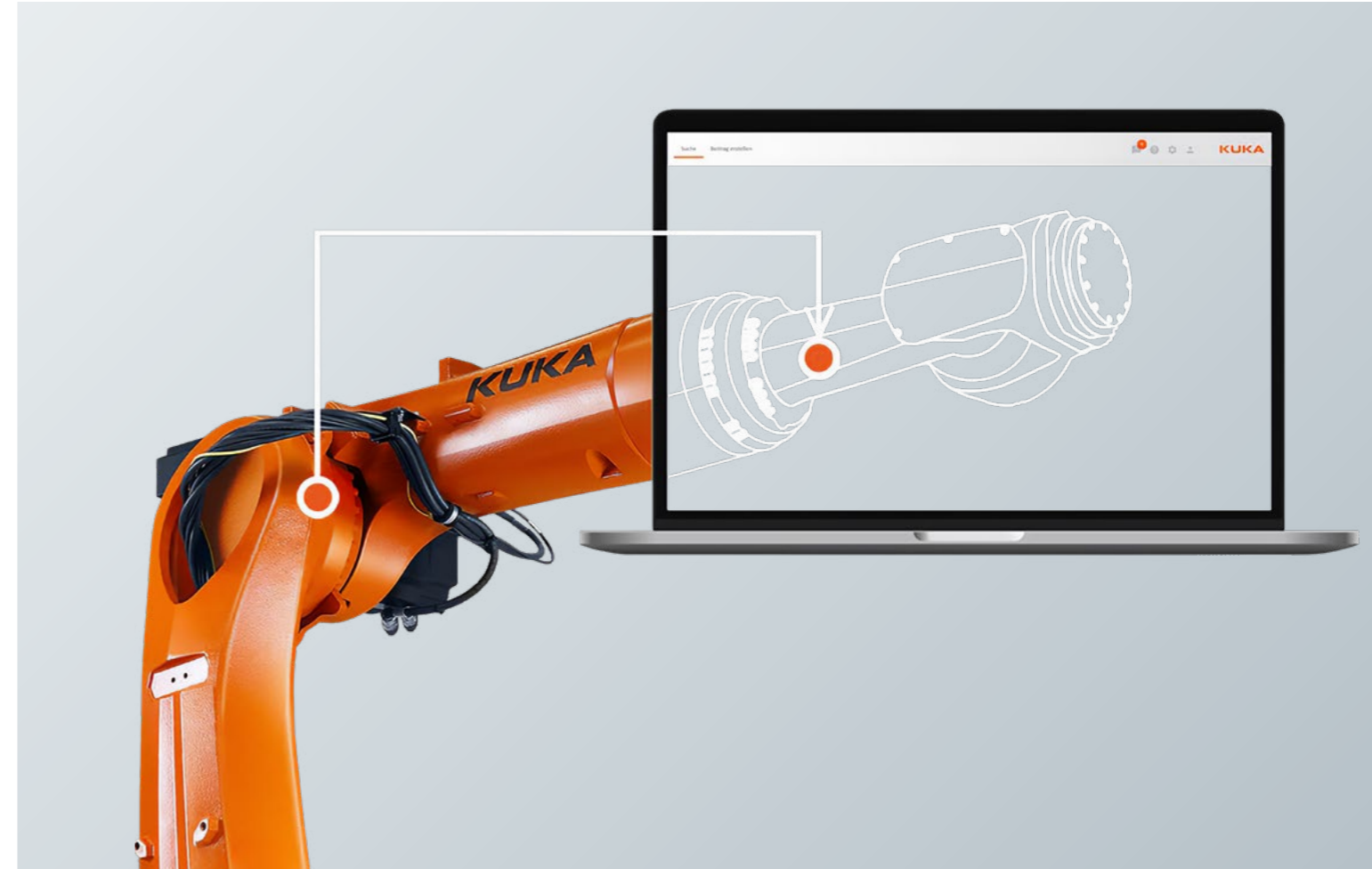
- Safeguarding system productivity
- Identifying potential for improvement in the industrial environment
- Targeted actions

One platform for all robots: monitoring, visualization and troubleshooting. What condition is your robot in? How efficiently is it working? And what about the entire robot fleet at your company? KUKA iiQoT has an eye on all the condition data: from hardware to software and on to the controller. The central platform leverages the advantages of the Industrial Internet of Things and bundles the data of a complete robot fleet transparently and clearly in one dashboard. You can gain access from anywhere around the clock. The most important functions include systems management, preventive maintenance, fault detection as well as warning messages. Instead of simply visualizing raw data, KUKA iiQoT delivers supplementary orientation parameters, enabling messages to be easily interpreted and faults efficiently rectified. The IIoT platform, implemented by KUKA subsidiary Device Insight, is suitable for small and large fleets – and paves the way for the smart factory.

IIoT: easy to use, for any industrial requirement. KUKA iiQoT is characterized by an expandable software architecture. iiQoT is modular in structure, which allows us to respond flexibly to a wide range of customer requirements. This makes it easy to find your way around and provides you with valuable functions depending on your industrial application requirements.

Avoiding production downtime thanks to IIoT applications The IIoT software from KUKA is strongly oriented towards the needs of companies: minimizing downtime and maximizing operating time. This is achieved through the optimal interaction of various modules, such as "Condition Monitoring", "Fault Diagnosis" and "Changelog". It is thus possible to identify and respond to faults quickly. KUKA iiQoT users can log into the corresponding robot in the selected line and cell in order to view the problem. If troubleshooting does not succeed in the first step, you can quickly access diagnostic data via "Fault Diagnosis".

KUKA Xpert. Knowledge. Any time. Anywhere.



A digital knowledge database covering all KUKA products, accessible from anywhere at any time. KUKA Xpert provides comprehensive technical information especially for service technicians, planners, programmers, operators and start-up technicians.

Instructions and documentation for all KUKA products always at hand. With our digital knowledge database for technically relevant information and documentation about all KUKA products. Independently solve problems as they arise and save valuable time.

Manuals, product instructions and more: what content does KUKA Xpert offer? KUKA Xpert offers you bundled and digitalized know-how about KUKA products in a web-based application. In addition to the paid version KUKA Xpert, the free version KUKA Xpert Basic is also available for our customers, containing all the required documents and information for your KUKA products.



_Service

**For us, service is partnership
in action. Our promise:
we have your back.**

We know that we can only be successful if our customers are successful with our products and services.

Ensuring this at all times and anywhere in the world is what spurs us on. That is why we offer a broad spectrum of services: from consulting and know-how transfer to competent 24 / 7 hotlines, and from programming services to spare parts, repairs, conversions and renovations, or even in the form of digital services for the production of the future. We are committed to your success. Anyone who builds on KUKA has a strong partner.



_Global Customer Services

For you. On site. Worldwide. We are at your service.

in **4** regions **70** subsidiaries worldwide

1,000 deliveries per week **8,000** different parts in stock

More than **200,000** industrial robots on the market

We listen to what customers want.
And develop appropriate solutions.
Harness valuable information.
And think in terms of superior solutions.
Understand what drives business.
And get going with a purpose.
Always there for you worldwide!

Find the right contact person for you here – we will be happy to help you.
www.KUKA.com/customer-service

Over **1,400** customer service employees

46 College sites with more than **19,000** participants

Because we live 360° support.

Perfect all-around service

- Unique consulting and support services at the highest level
- Employee training custom-tailored to your needs at our KUKA College
- 24 / 7 hotline and technical advice
- Individual modernization of robots, systems and entire plants
- Optimization of your production and thus maximization of your company's success through comprehensive engineering expertise and reliable field service
- A wide range of service and maintenance agreements
- Spare parts supply, used machines, machine overhaul and custom-tailored customer solutions



Application & robot programming. Because we boost your efficiency.

Every KUKA robot contains our technology – so we know best how to implement our products optimally in your new and existing system. Our objective: to support your production in the best possible way at all times and thus boost your efficiency, e.g. with:

- Comprehensive consulting services
- Performance of feasibility studies
- Implementation of test setups and pilot systems
- Start-up, programming and individual software development
- Cycle time and process optimization
- User training
- Assistance with the modernization of your existing system



Technical support, hotline & consulting. Because we believe in reliability.

Our technical hotline is available 24 hours a day, 365 days a year. If you need us, simply pick up the phone. In this way, KUKA's experts can help you directly and in your language.

And in the event of an emergency, our technicians will be at your site within the shortest possible time. Thanks to our comprehensive KUKA service network with over 800 qualified employees in more than 30 countries, we can respond quickly, competently and in a targeted manner – because we believe in reliability.

Our KUKA RemoteService, comprehensive maintenance management and individual KUKA service agreements round off our range of services – for maximum availability and customer service at the highest level.

Want to find out more?

You will find your contact person at KUKA under:

www.KUKA.com/customer-service

Used robots & machines. Cost-effective entry into automation.



You can always rely on used industrial robots from KUKA.

- Your cost-effective entry into robot-based automation – from the rental, loan or purchase of a used robot through to the repurchasing of your used robots
- Customer-specific adaptations, e.g. energy supply and bus systems
- Short delivery times
- Good condition or top level: our used robots are available in three quality categories – Superior, Premium and Certified
- Tested quality and warranty on all parts

KUKA College. Because we share our know-how.

You are looking for

- Personal and, above all, practical training?
- Someone who will provide you with holistic support throughout your professional life, from beginner to expert, from your first training course through to support in case of difficulties on site?
- The option of individual training with certified instructors directly on your premises or in a state-of-the-art training environment?

We offer you

- All types of modern training, also individual and customer-specific
- Our know-how through our dedicated and experienced trainers on your premises or in our new Colleges with state-of-the-art equipment, as well as digitally with our learner portal and our knowledge database
- The perfect symbiosis of theory and at least 50 percent practical content

Then you have found what you are looking for at KUKA College!



Spare parts & repairs. Spare parts for optimal performance.

Even the tiniest of parts can have a huge impact if they no longer work correctly. So benefit from our KUKA spare parts service:

- Utmost quality through perfect matching to our robots, cells and systems
- Fast and comprehensive spare parts supply via our modern central warehouse in Göttingen

- Creation of individual spare and wearing parts packages
- Exchange, reuse and repair of defective components in our KUKA repair center

In this way, we can minimize downtime in your company and you will receive functioning components in a much shorter time and at a significantly lower cost.



Conversions & modernization. Fit for the second life cycle.

When times change, KUKA robot systems can be easily adapted to new production and safety requirements, making them fit for their second product life cycle.

From modification of systems, cells and components to general overhauls of machines with warranty, and from software updates to the modernization of process automation – we have the right package for you!

In this way, we bring your system back up to date cost-efficiently and quickly. You benefit from maximum availability and an increase in the value of your system.



my.KUKA.

Your digital customer portal.

24 / 7 access to information and services on my.KUKA. In the my.KUKA digital customer portal, you can easily check product data and availability, order hardware and software products, manage licenses and support requests, and visit the cloud-based platforms KUKA Xpert and KUKA Robot Selector.

my.KUKA is a new way of interacting with our customers and partners. It provides updates, news and documentation about KUKA products and is constantly being expanded with new features.

my.KUKA is a so-called e-self-service system for customers. The portal supports you in your work with KUKA and KUKA products by combining various services, information and applications in a single user-friendly interface. You can start, use and manage this yourself, irrespective of time and place.



my.KUKA.com



View product data

The digital product catalog provides you with a comprehensive overview of our robot portfolio, the associated spare parts and our digital products.



Check product availability

Check online for delivery times and view the stocks of used robots and spare parts, as well as KUKA Ready Packs (only for KUKA partners). At the same time, request specific products with just a few clicks.



Buy products online*

Buy KUKA products, for example spare parts or software packages, easily and conveniently online, and request quotations for our robots. (*country-specific function)



Register and manage products

Register your KUKA products quickly and easily online and receive access to complete product documentation.



Use cloud-based software

Get free access to KUKA Xpert Basic and KUKA Compose. Use the login for KUKA Connect or test KUKA Sim.Pro.



Support management

Create your support requests online and view the processing status. In this way, you always remain up to date and quickly receive the support you need.



Digital knowledge database

The KUKA Xpert digital knowledge database provides comprehensive technical information, such as instructions and documentation for your KUKA products.



KUKA System Partners

As a KUKA System Partner, you benefit from special advantages in my.KUKA. Among other things, you will receive extended test access for KUKA cloud-based software, product announcements and notification of discontinuations, information about robot delivery times and much more.



Working ideas.
By simplicity.





-  kuka.com/contacts
-  facebook.com/kukaglobal
-  youtube.com/kukarobotgroup
-  twitter.com/kukaglobal
-  linkedin.com/company/kukaglobal

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