

# KUKA

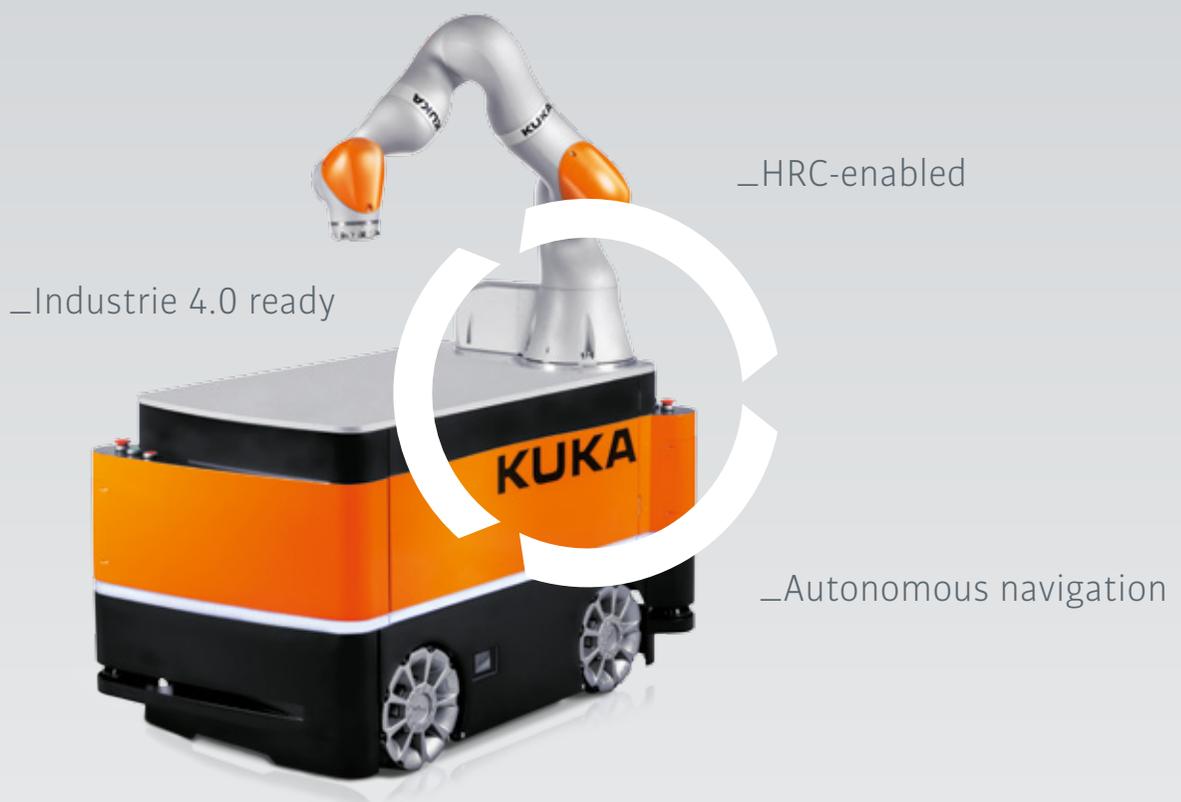


Mobile robotics\_KMR iiwa



## Intelligent, flexible, mobile and autonomous.

With the KMR iiwa, we are uniting the strengths of the sensitive LBR iiwa (intelligent industrial work assistant) lightweight robot with a mobile and autonomous platform. The robot thus becomes a highly flexible, location-independent production assistant with an unrestricted workspace – an ideal basis for the intelligent, networked production worlds of Industrie 4.0.



Mobile KUKA platform

+



Robot

+



Sunrise OS & navigation software



=

your solution

## KMR iiwa

### The mobile, intelligent production assistant

The industrial manufacturing of tomorrow will require production and logistics concepts which are intelligently networked, modular, versatile and thus also mobile. Solutions which can work in the vicinity of humans, workpieces and machines in equal measure. Just like humans, the KMR iiwa (KUKA Mobile Robot) production assistant can also track moving workpieces, move around them freely and link solitary production islands to form new, highly flexible production units. As a mobile, intelligent helper, the KMR iiwa is prepared for the challenges of Industrie 4.0.



#### Freely scalable, modular system.

The interaction of service-proven KUKA robot technology, mobile platforms and industrial components offers a mobile solution for all conceivable scenarios. Both the position and the number of installed robots are variable, as are their size and their payload capacity. Grippers, tools and special equipment can be easily mounted on the KMR iiwa and supplied with power. Integral components of the package are a mobile KUKA platform, an LBR iiwa robot and an expanded Sunrise controller. Power is supplied by lithium-ion batteries via an inverter. The system can also be expanded, for example, to include a Hardware Application Layer for external PCs or additional hardware to meet your application requirements.



#### Maximum flexibility and unrestricted maneuverability.

Where manufacturing processes are subjected to continual changes, one thing counts more than anything else: flexibility. The KMR iiwa stands for unlimited adaptability. The omnidirectional wheel concept enables unrestricted motion in any direction from a standing start. Furthermore, the immense working range opens up a wide range of options for entirely new production concepts and increased cost-effectiveness in logistics management.



**Autonomous navigation.** The integrated laser scanner monitors the work environment, while the integrated control software for navigation and motion enables reliable and flexible work sequences. The independent power supply combines high-performance batteries with industrial WLAN technology and liberates the KMR iiwa from the restrictions of complex cabling. Safe monitoring of the robot is also possible, however. The "KUKA Navigation Solution" navigation software enables collision-free path planning in the work environment. Implementation is quick and uncomplicated.

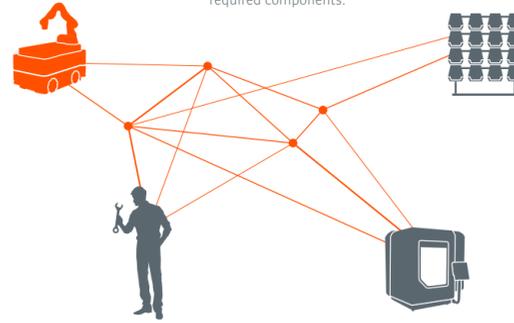


**Utmost precision and simple operator control.** With the omnidirectional wheel technology, the KMR iiwa moves safely to the desired position, even in confined spaces, with a positioning accuracy of up to  $\pm 1$  mm – irrespective of whether the distance to the workplace is 5 m or 150 m. For the first time, the KMR iiwa makes it possible to utilize the efficiency and reliability of KUKA robotic technology for large-area automation solutions in the logistics sector.



**Safe human-robot collaboration.** The KUKA LBR iiwa lightweight robot is an intelligent, industrial production assistant for the manufacturing concepts of the future and enables safe collaboration between humans and robots. In conjunction with the safe mobile platform, different degrees of automation can be implemented within a system. In particular, tasks for which a fully automatic solution would be too complex or too expensive can be partially automated in this way, providing support to the operator and relieving his workload at ergonomically unfavorable workstations.

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



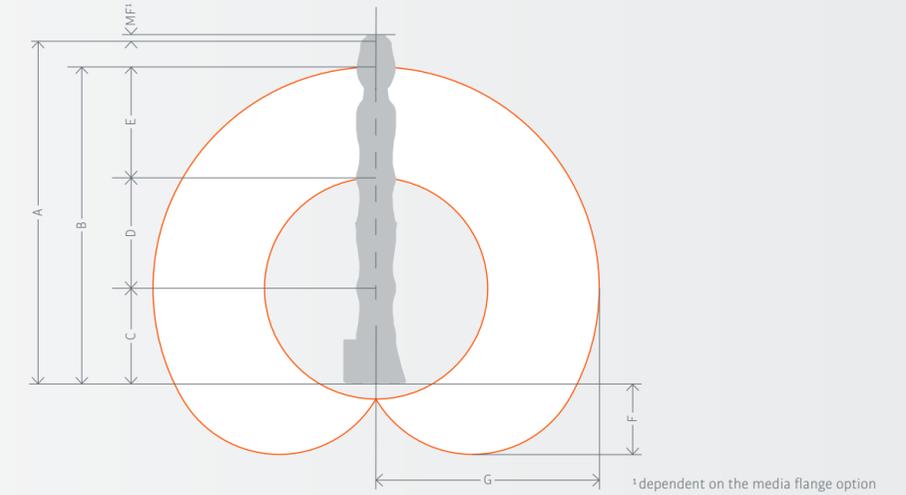
**Rack storage**  
Thanks to its innovative navigation system, the KMR iiwa operates autonomously and is able, for example, to set down machined workpieces or independently fetch required components.

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

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

## Mobile robotics from KUKA

### Technical data



Work envelope	Dimensions A	Dimensions B	Dimensions C	Dimensions D	Dimensions E	Dimensions F	Dimensions G	Volume
LBR iiwa 7 R800	1,266 mm	1,140 mm	340 mm	400 mm	400 mm	260 mm	800 mm	1.7 m <sup>3</sup>
LBR iiwa 14 R820	1,306 mm	1,180 mm	360 mm	420 mm	400 mm	255 mm	820 mm	1.8 m <sup>3</sup>

LBR iiwa	LBR iiwa 7 R800	LBR iiwa 14 R820
Max. total payload	7 kg	14 kg
Number of axes	7	7
Wrist variant	In-line wrist	In-line wrist
Mounting flange A7	DIN ISO 9409-1-A50	DIN ISO 9409-1-A50
Installation position	any	any
Positioning accuracy (ISO 9283)	$\pm 0.1$ mm	$\pm 0.1$ mm
Axis-specific speed accuracy (at max. speed)	$\pm 2$ %	$\pm 2$ %
Weight	22.3 kg	29.5 kg
Protection rating	IP54	IP54

Mobile platform	
Vehicle height	700 mm
Length with scanners and safety zones	1,190 mm
Width with scanners and safety zones	720 mm
Weight, approx.	375 kg
Max. payload	175 kg
Max. velocity straight ahead and sideways	4 km/h
Max. velocity diagonally	2 km/h
Wheel diameter	250 mm



## Industrie 4.0

### Prepared for transformation of the worlds of production

Smart Production, Internet of Things or Industrie 4.0. Even if the names and terms used vary from one country to another, they all share the same goal: the creation of elementary competitive advantages – at both company level and in global competition.

Work on the factory of the future is thus in full swing worldwide. This involves intelligent, networked industrial production and logistics processes on the basis of cyber-physical production systems (CPPS). Or, to put it simply: factories that, by means of advanced networking, respond intelligently to changing tasks and continuously reconfigure themselves. The factory of tomorrow should be able to organize and continuously optimize its production processes, thereby counteracting the consequences of another development: demographic change. New solutions are called for because of falling birth rates and increasingly aged populations in modern industrial societies. Without the “smart factory”, it will be simply impossible to achieve a productivity increase on this scale at the same time as effectively husbanding our existing natural resources.

In order to make new working environments both highly productive and ergonomically beneficial for the labor force, KUKA is developing central key technologies: collaborative robots, mobile assistance systems, autonomously controlled vehicles and intelligently networked automation solutions that support humans in the work setting, easing the workload in a variety of ways.

In collaboration with experts from diverse sectors, KUKA is now already implementing highly flexible, digitized manufacturing processes that will open up new opportunities in a competitive environment and lastingly change the way we work and produce.



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