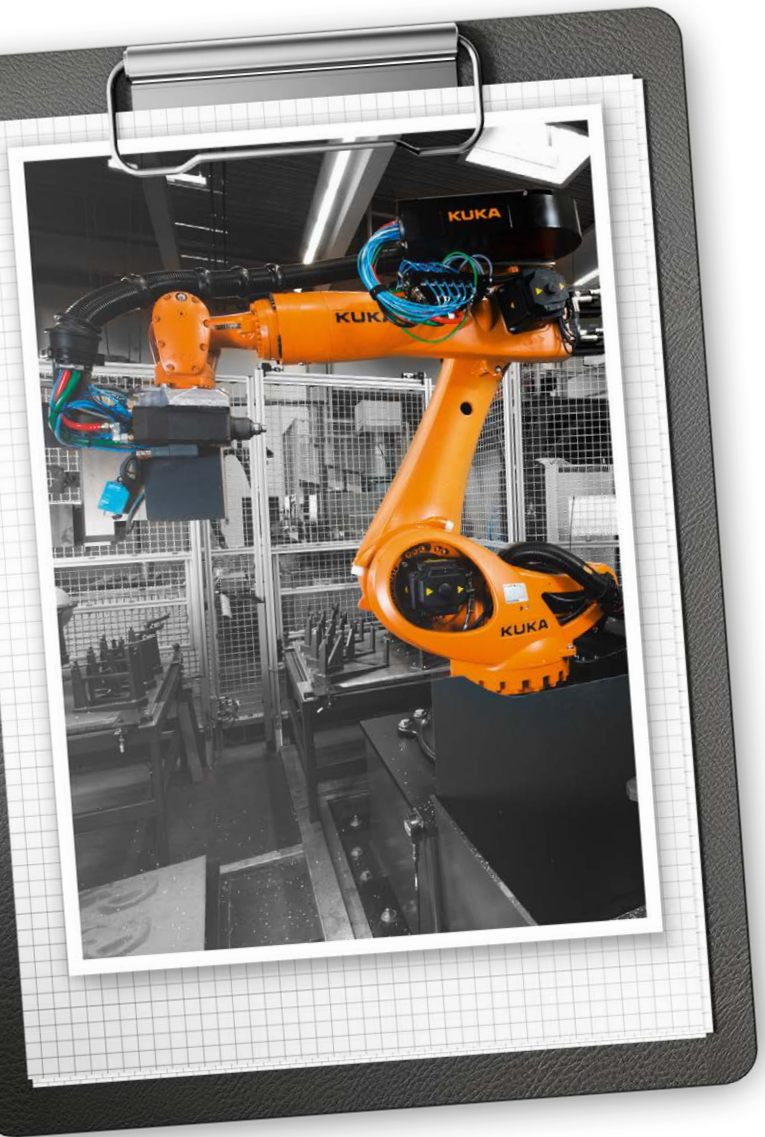
KUKA

Quality connections: KUKA energy supply systems.

KUKA energy supply systems. The best connections for successful robotics.

KUKA energy supply systems stand for uncompromising quality. That's because they contain over 30 years of robotic experience. As early as 1980, the KUKA Project department created the first customized energy supply solutions. Six years later, these were followed by the first standard portfolio. With extensive improvements and technical innovations, KUKA continued to extend its developmental lead. Typical characteristics of the KUKA energy supply systems are extremely high reliability, quality and durability. They ensure the highest levels of productivity, wherever they are in use in industry.



Performance features

LONG SERVICE LIFE. Due to tested standards and a robust design. In-house testing and release procedures ensure the highest quality.

SERVICE-FRIENDLY. The package can be exchanged in only 10 minutes. Cables and hoses can be exchanged, reducing the follow-up costs.

ADAPTABLE. The defined interference contour enables offline programming for optimal integration into a system concept. Applications can be integrated via an interface on the arm.

SPACE-SAVING. KUKA energy supply systems are integrated into the robot structure, replacing earlier solutions featuring detached systems guided from above.

REDUCED INTERFERENCE CONTOURS. KUKA energy supply systems are partially routed through the robot structure and are continuously guided from the base frame to the arm or the wrist.

BETTER ACCESSIBILITY. From the rotating column onwards, KUKA energy supply systems are easily accessible from the outside.

COMPLETE FREEDOM OF MOTION. KUKA energy supply systems are perfectly adapted to specific robot tasks and loads.

HIGH FLEXIBILITY. The above-average length compensation of the dress package, amounting to over 0.8 m, permits highly complex robot motions.

SUITABLE FOR INDUSTRY. Universally applicable due to its all-metal housing and a requirement-specific selection of high-quality fiber-reinforced or low-friction plastics. The K-Box is simple and quick to open.

KUKA

One energy supply system per model:

KUKA makes diversity simple.

The diversity of KUKA robots is huge. The advantages of KUKA energy supply systems too. That's because KUKA energy supply systems are designed in such a way that all the models of one robot family are covered by a single dress package. This gives you greater planning security and saves customization costs.

Small robots
for 2 kg to 12 kg

Low payloads
for 5 kg to 16 kg

Medium payloads
for 30 kg to 60 kg

High payloads
for 90 kg to 300 kg

Heavy payloads
for 300 kg to 500 kg

Heavy payloads
for 1,000 kg to 1,300 kg

Palletizing robots
for 40 kg to 1,300 kg

Special models

Control cable Page 5
Multibus Page 10
Profinet Page 12
Power supply for Profinet Page 16

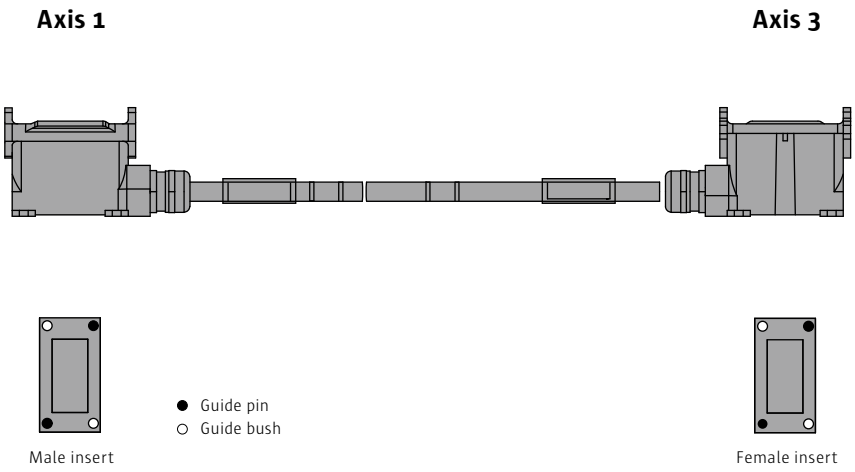
Wide range, exacting requirements: all the standard variants of KUKA energy supply systems.

Signal cable Page 20
Force sensor cable Page 22
Motor cable Page 24
Primary cable Page 25
Air, water, vacuum Page 26
Ground conductor Page 28

23x 1 + 2x 1 mm² / Harting connector 25D

Control cable for A1 and A3

Graphic representation of the product



Specifications

Configuration	23x 1 mm² + (2x 1 mm² shielded)
Rated voltage	250 V AC/HAN 25D
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	13.5 mm–17.0 mm
Minimum bending radius	10 x outside diameter

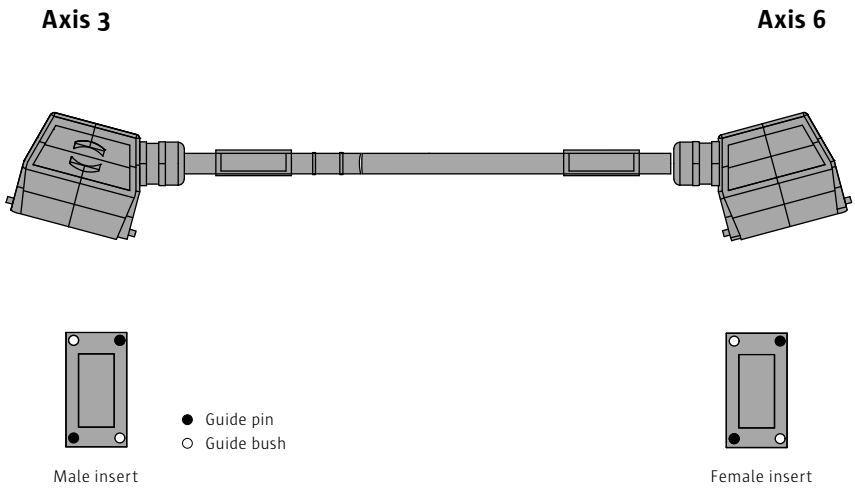
Connection	Specifications	Location
A1	**Surface-mounted housing HAN® 25D,** 25 contacts	on base frame
A3	**Surface-mounted housing HAN® 25D,** 25 contacts	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

23x 1 + 2x 1 mm² / Harting connector 25D

Control cable for A3 and A6

Graphic representation of the product



Specifications

Configuration	23x 1 mm² + (2x 1 mm² shielded)
Rated voltage	250 V AC/HAN 25D
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	13.5 mm
Minimum bending radius	10 x outside diameter

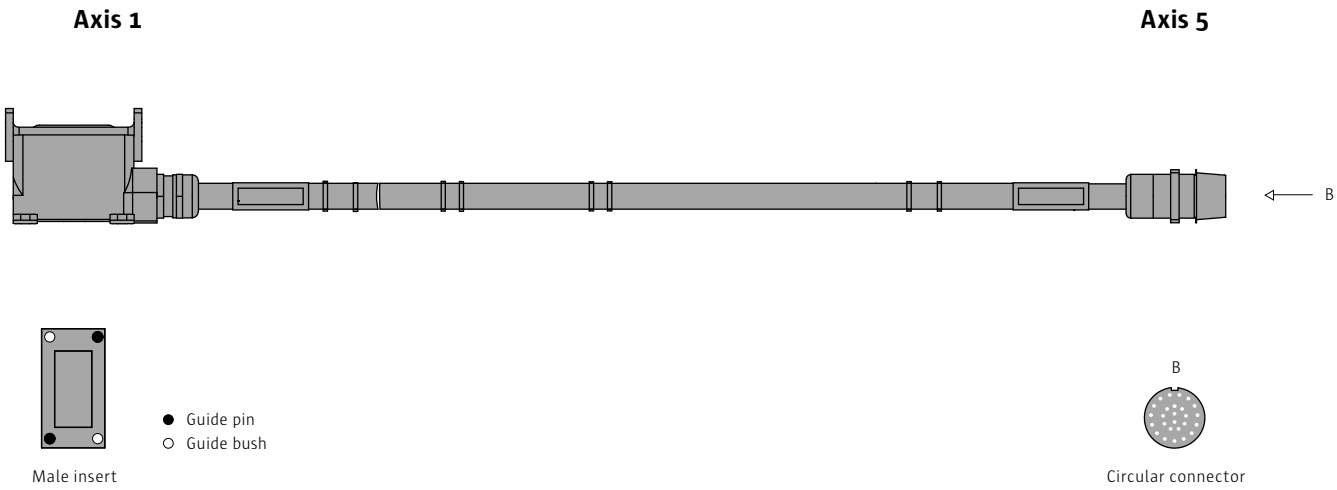
Connection	Specifications	Location
A3	**Hood HAN® 25D,** 25 contacts	on arm
A6	**Hood HAN® 25D,** 25 contacts	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

23x 1 + 2x 1 mm² / Harting connector 25D

Control cable for palletizing robot

Graphic representation of the product



Specifications

Configuration	23x 1 mm² + (2x 1 mm² shielded)
Rated voltage	60 V AC/DC Circular connector 26 contacts
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	13.5 mm–17.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A1	**Hood HAN® 25D,** 25 contacts	on base frame
A5	**Circular connector,** 26 contacts	on wrist

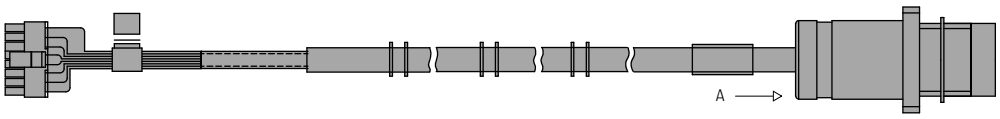
KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

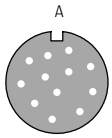
Single axis

Control cable A1 and A3

Graphic representation of the product

Axis 1 **Axis 3**





Circular connector

Specifications

Configuration	4x (2x 0.25 mm²), shielded in pairs
Rated voltage	160 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	8.0 mm
Minimum bending radius	10 x outside diameter

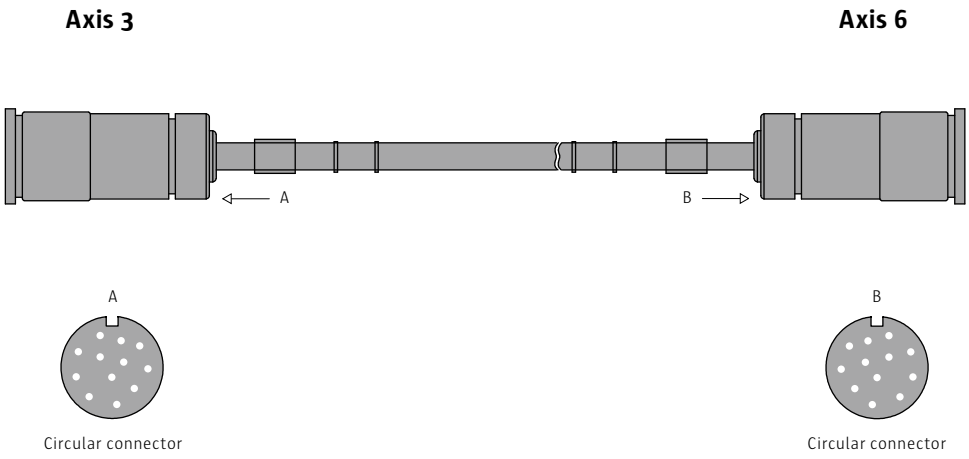
Connection	Specifications	Location
A1	**Molex connector,** 8 contacts	on RDC
A3	**Female signal coupling,** 12 contacts	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Single axis

Control cable for A3 and A6

Graphic representation of the product



Specifications

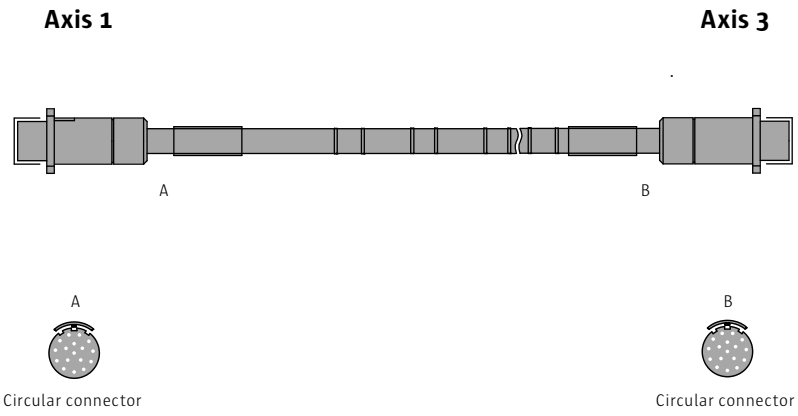
Configuration	4x (2x 0.25 mm²), shielded in pairs
Rated voltage	160 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	8.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

Connection	Specifications	Location
A3	**Signal connector,** 12 contacts	P-part on arm
A6	**Signal connector,** 12 contacts	E-part on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Multibus cable for A1 and A3

Graphic representation of the product



Specifications

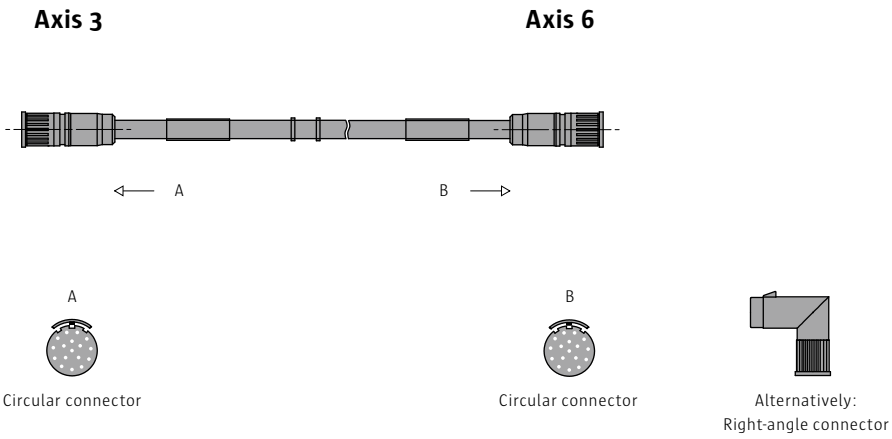
Configuration	2x (2x 0.25 mm²), shielded; IBS
	2x (2x 0.34 mm²), shielded; CAN
	2x 0.34 mm², shielded; Profibus
	2x (2x 1 mm²), 24 V/0 V supply
	1x 1 mm² Ground conductor (YE/GN)
Rated voltage	30 V DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	14.5 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A1	**Bus coupling,** 17 contacts	E-part on base frame
A3	**Bus coupling,** 17 contacts	P-part on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Multibus cable for A3 and A6

Graphic representation of the product



Specifications

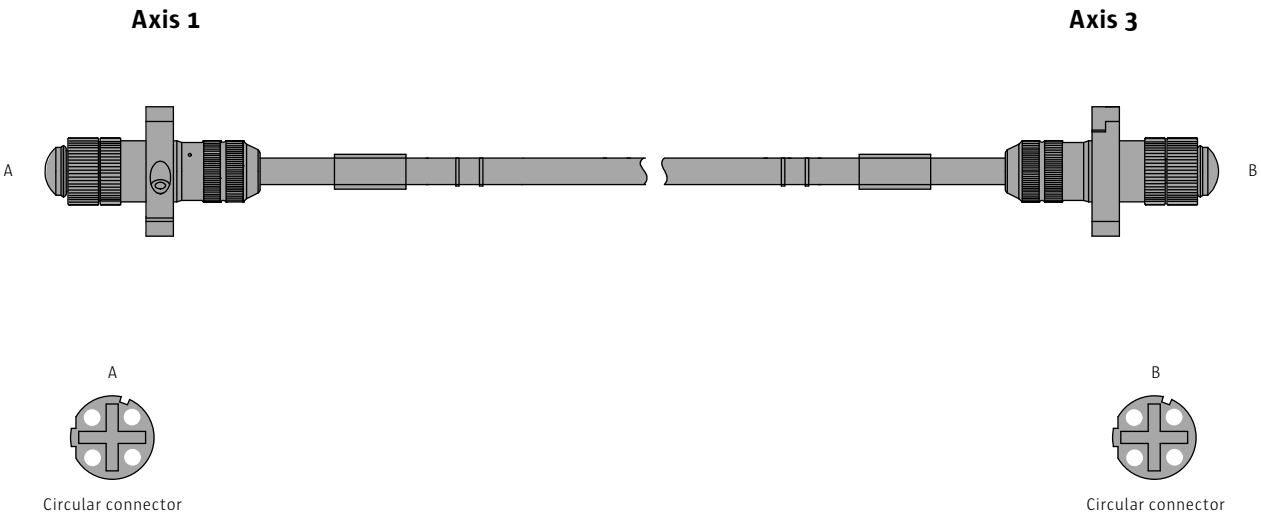
Configuration	2x (2x 0.25 mm²), shielded; IBS
	2x (2x 0.34 mm²), shielded; CAN
	2x 0.34 mm², shielded; Profibus
	2x (2x 1 mm²), 24 V/0 V supply
	1x 1 mm² Ground conductor (YE/GN)
Rated voltage	30 V DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	14.5 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A3	**Bus connector,** 17 contacts	E-part on arm
A6	**Bus connector, alternatively: right-angle connector,** 17 contacts	P-part on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Profinet M12 for A1 and A3

Graphic representation of the product



Specifications

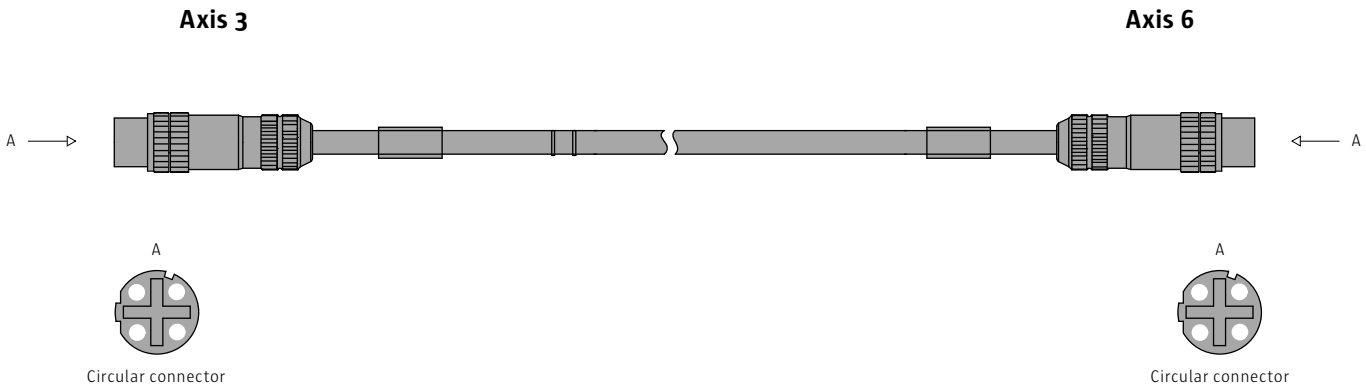
Configuration	2x (2x AWG22), shielded
Rated voltage	30 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 8.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

Connection	Specifications	Location
A1	**Circular connector M12,** D-coded, 4 contacts, Female	on base frame
A3	**Circular connector M12,** D-coded, 4 contacts, Female	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Profinet M12 for A3 and A6

Graphic representation of the product



Specifications

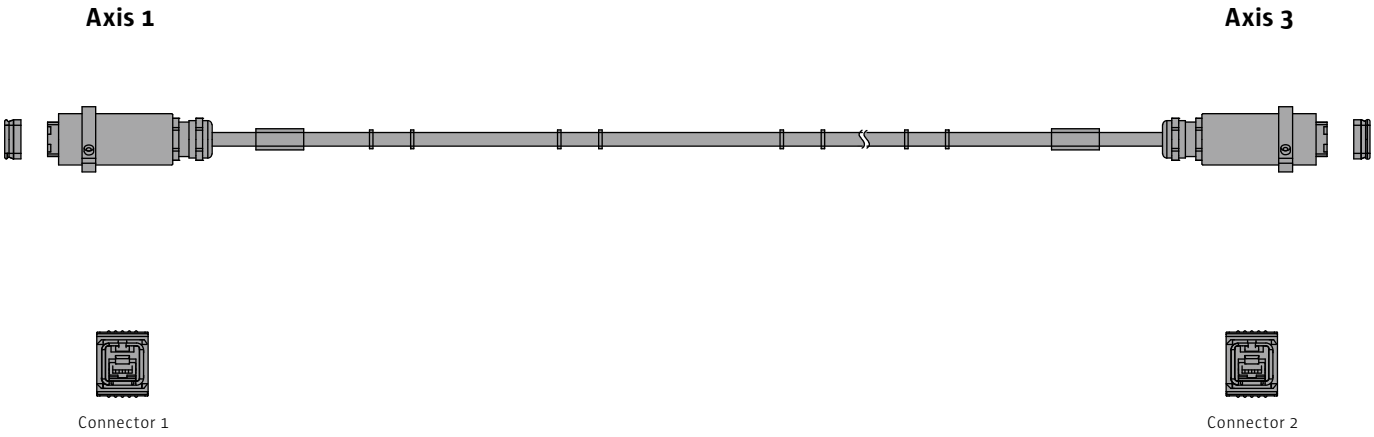
Configuration	2x (2x AWG22), shielded
Rated voltage	30 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 8.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

Connection	Specifications	Location
A3	**Circular connector M12,** D-codiert, 4 contacts, Male	on arm
A6	**Circular connector M12,** D-codiert, 4 contacts, Male	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Profinet AIDA for A1 and A3

Graphic representation of the product



Specifications

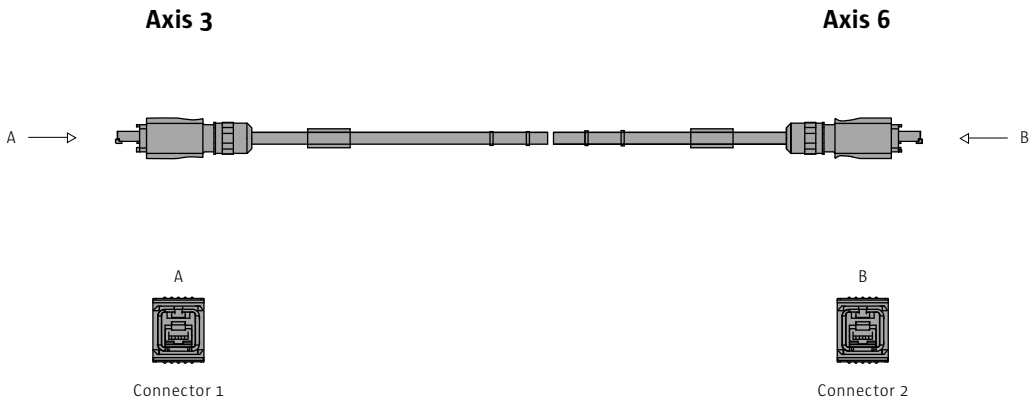
Configuration	2x (2x AWG22), shielded
Rated voltage	30 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 8.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

Connection	Specifications	Location
A1	**Coupling, round, V14 RJ45**	on base frame
A3	**Coupling, round, V14 RJ45**	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Profinet AIDA for A3 and A6

Graphic representation of the product



Specifications

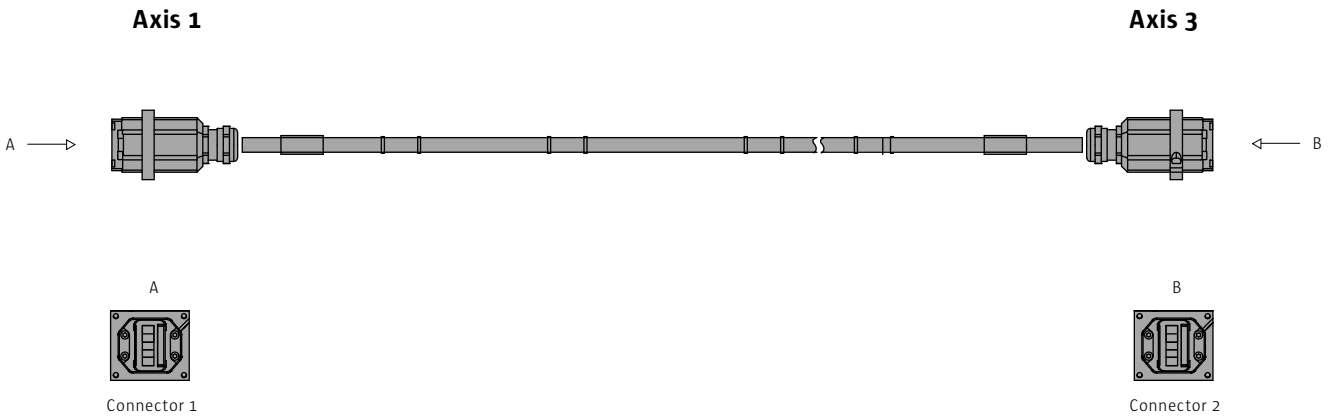
Configuration	2x (2x AWG22), shielded
Rated voltage	30 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 8.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A3	**Connector V14 RJ45**	on arm
A6	**Connector V14 RJ45**	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Power supply AIDA for A1 and A3

Graphic representation of the product



Specifications

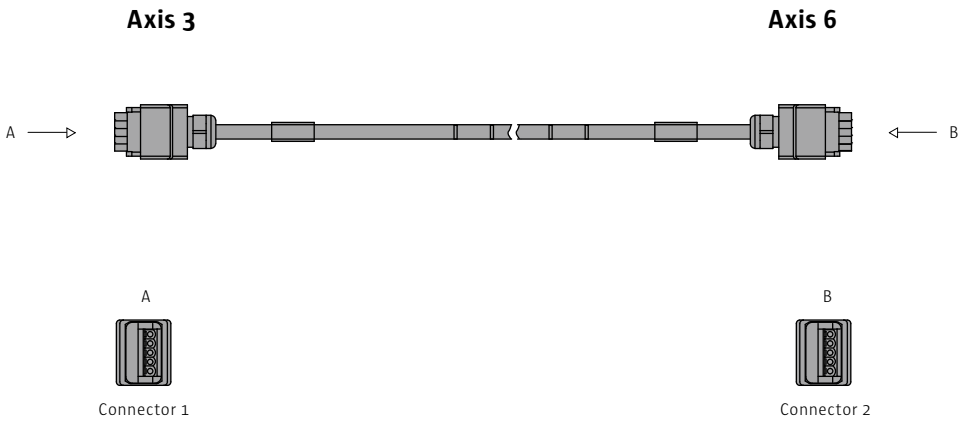
Configuration	5x 1.5 mm²
Rated voltage	24 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 10.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A1	**Coupling,** Push-Pull Power, L 5 contacts	on base frame
A3	**Coupling,** Push-Pull Power, L 5 contacts	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Power supply AIDA for A3 and A6

Graphic representation of the product



Specifications

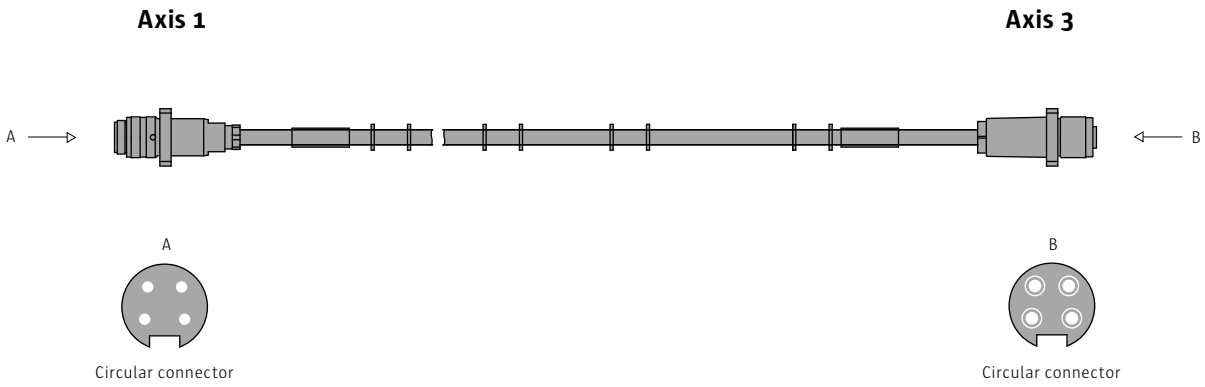
Configuration	5x 1.5 mm²
Rated voltage	24 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 10.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A3	**Connector,** Push-Pull Power, L 5 contacts	on arm
A6	**Connector,** Push-Pull Power, L 5 contacts	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Power supply 7/8" for A1 and A3

Graphic representation of the product



Specifications

Configuration	5x 1.5 mm²
Rated voltage	125 V
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 10.0 mm
Minimum bending radius	10 x outside diameter

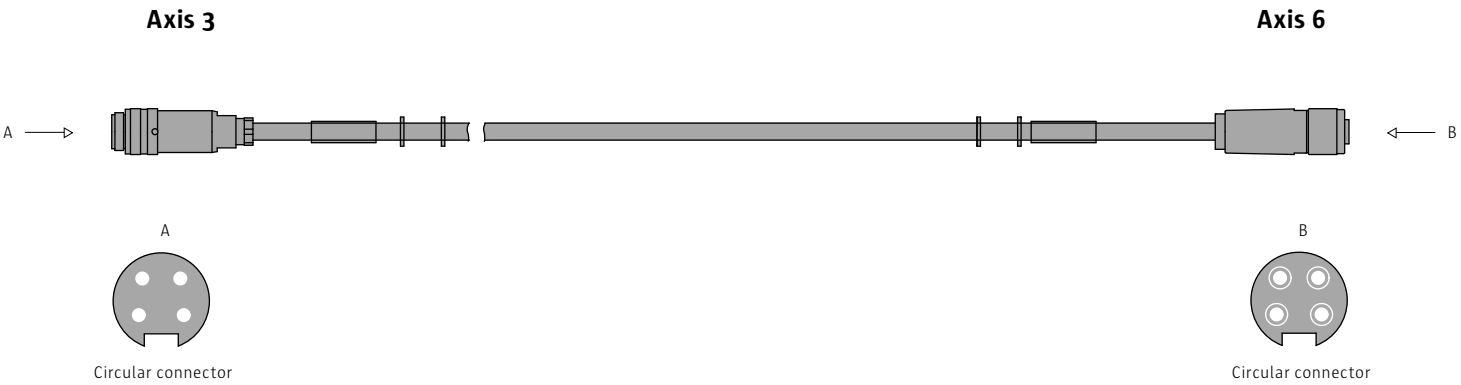
Connection	Specifications	Location
A1	**Connector 7/8",** Male	on base frame
A3	**Connector 7/8",** Female	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Power supply 7/8"

for A3 and A6

Graphic representation of the product



Specifications

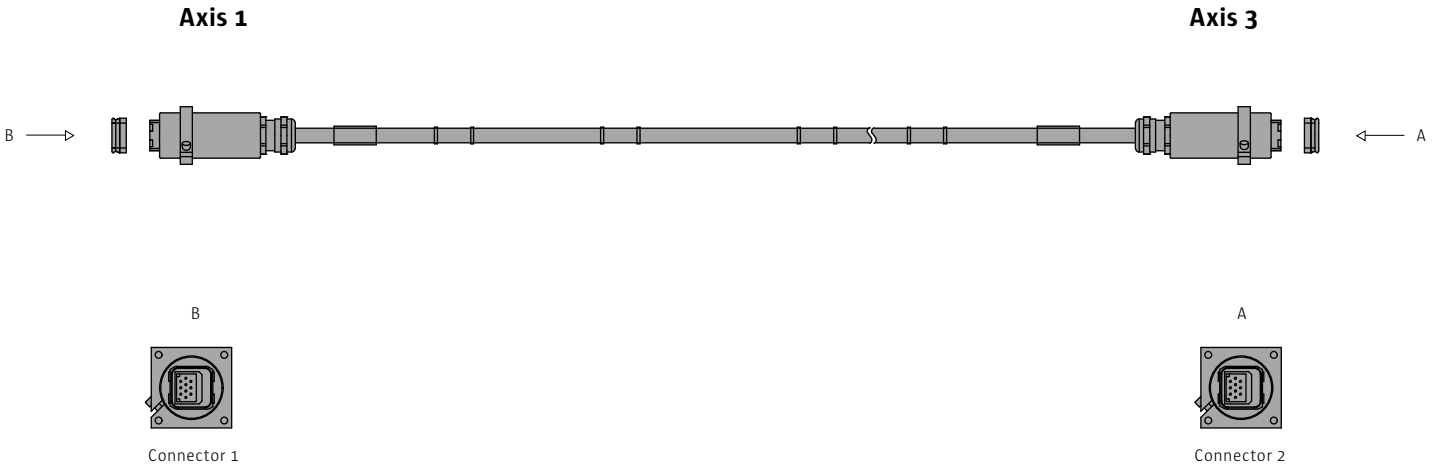
Configuration	5x 1.5 mm²
Rated voltage	125 V
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 10.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A3	**Connector 7/8",** Male	on arm
A6	**Connector 7/8",** Female	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Signal cable for A1 and A3

Graphic representation of the product



Specifications

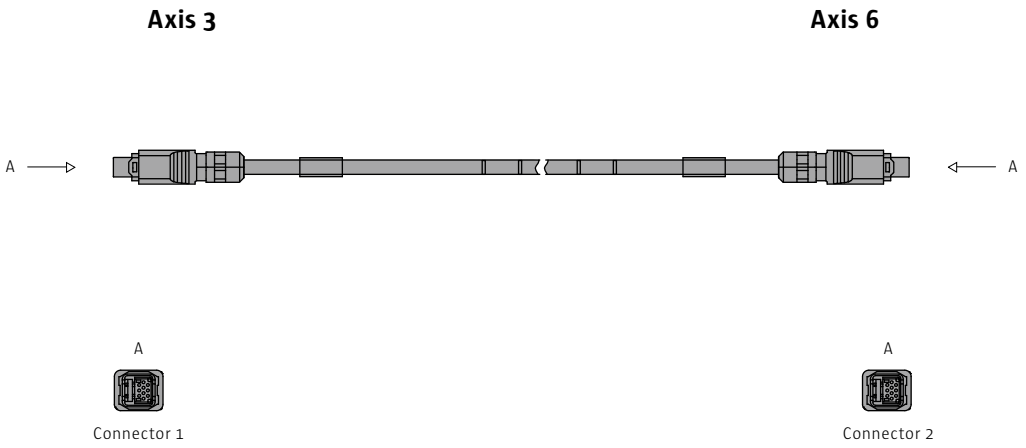
Configuration	2x 0.34 mm², shielded
	3x (2x 0.5 mm²), shielded
	1x 0.5 mm², Ground conductor (YE/GN)
Rated voltage	30 V DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	9.5 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A1	**Circular connector,** 10 contacts, Female	on base frame
A3	**Circular connector,** 10 contacts, Female	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Signal cable for A3 and A6

Graphic representation of the product



Specifications

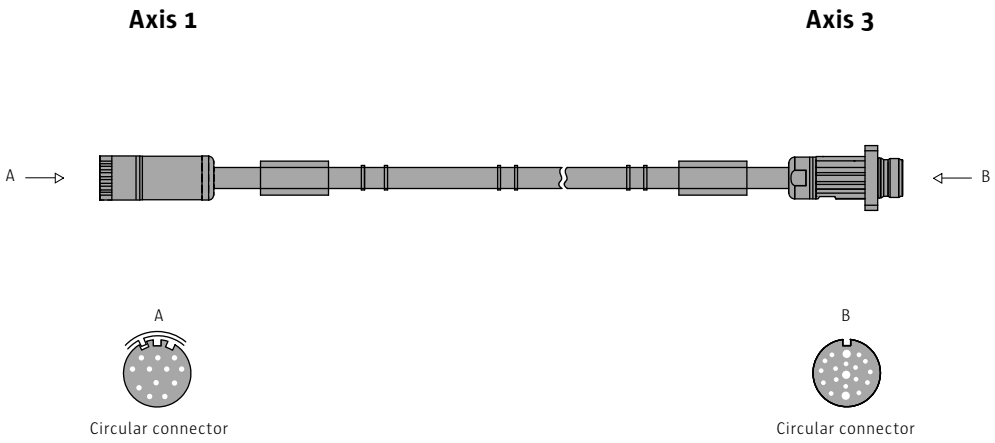
Configuration	2x 0.34 mm², shielded
	3x (2x 0.5 mm²), shielded
	1x 0.5 mm², Ground conductor (YE/GN)
Rated voltage	30 V DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	9.5 mm
Protection class when connected	IP 65

Connection	Specifications	Location
A3	**Signal cable connector** with crimp contacts, 10 contacts, Male	on arm
A6	**Signal cable connector** with crimp contacts, 10 contacts, Male	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Sensor cable for A1 and A3

Graphic representation of the product



Specifications

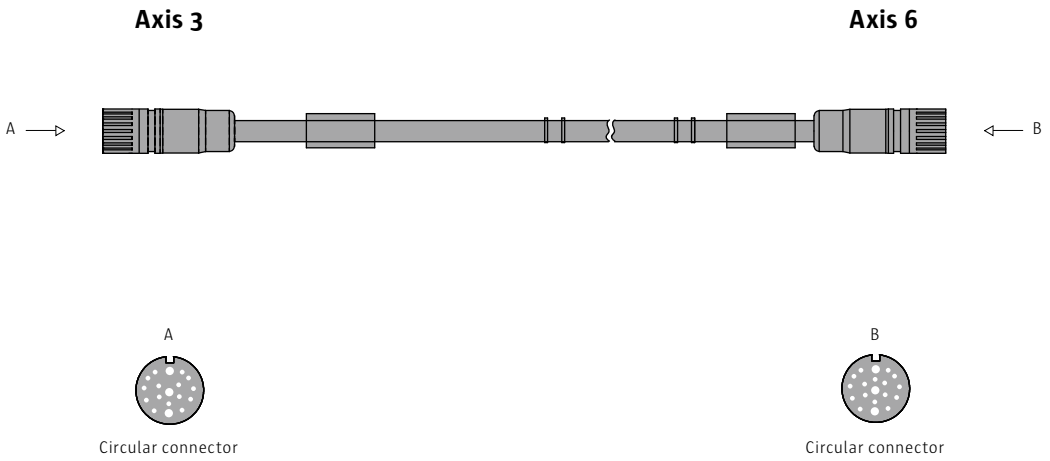
Configuration	8x (2x 0.25 mm²), Wire pairs shielded
Rated voltage	63 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 12.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A1	**Bus connector,** 12 contacts	E-part on RDC
A3	**Bus coupling,** 19 contacts	P-part on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Sensor cable for A3 and A6

Graphic representation of the product



Specifications

Configuration	8x (2x 0.25 mm²), Wire pairs shielded
Rated voltage	63 V AC/DC
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	approx. 12.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

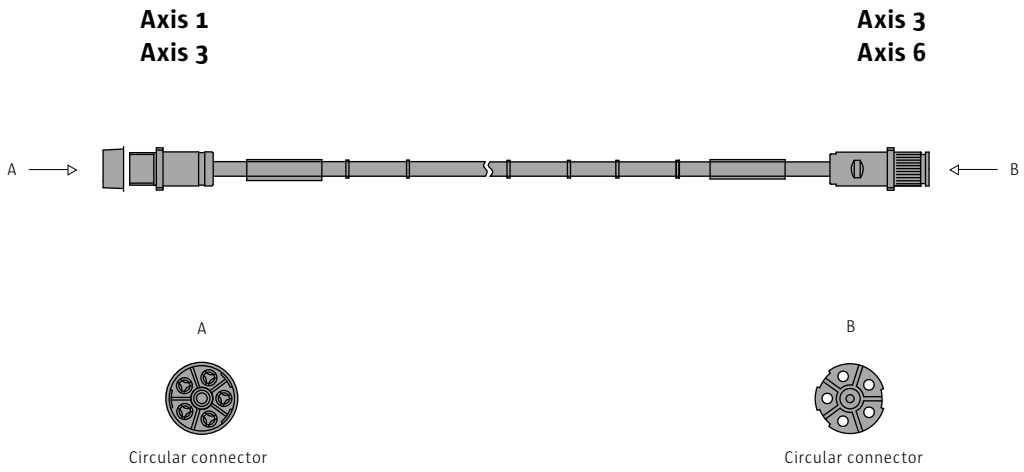
Connection	Specifications	Location
A3	**Connector,** 19 contacts, Male	E-part on arm
A6	**Connector,** 19 contacts, Male	P-part on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

External axis motor cable

for A1 and A3 as well as A3 and A6

Graphic representation of the product



Specifications

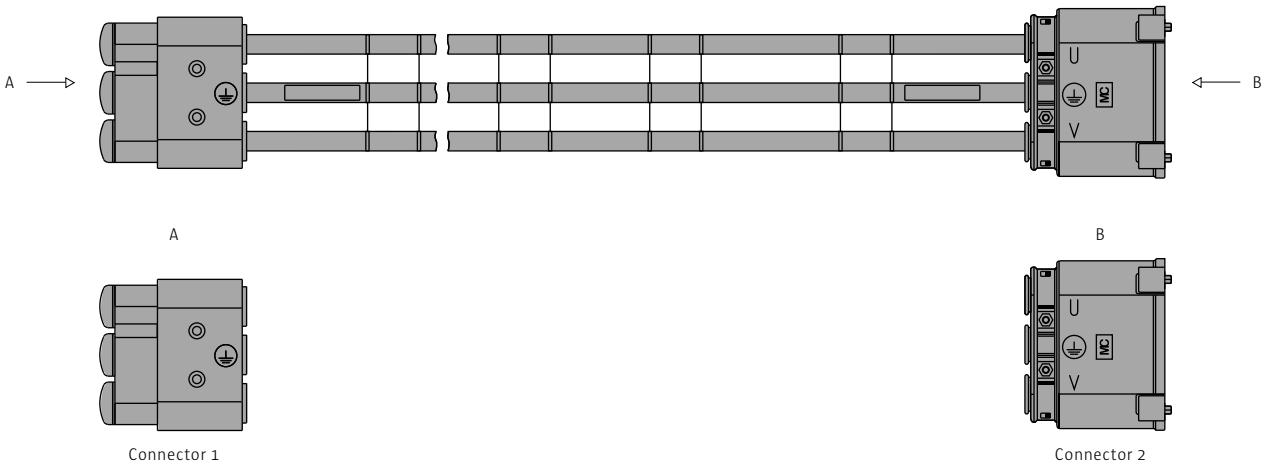
Configuration	4x 2.5 mm² + 2x 1 mm², Overall shield
Rated voltage	600 V
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	12.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

Connection	Specifications	Location
A1	**Power coupling,** 6 contacts, I1, Male	on base frame
A3	**Circular power connector,** 6 contacts, I1, Female	on arm
A3	**Power coupling,** 6 contacts, I1, Male	on arm
A6	**Circular power connector,** 6 contacts, I1, Female	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Primary cable for spot welding for A1 and A3 as well as A3 and A6

Graphic representation of the product



Specifications

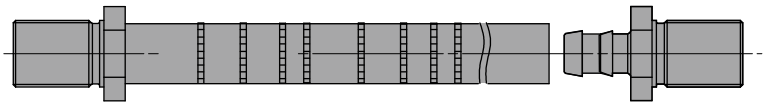
Configuration	1x 35 mm², GNYE
	2x 35 mm², BK
Rated voltage	600 V
Current	EN 60204-1 (derating factors must be taken into account)
Outside diameter	13.0 mm
Minimum bending radius	10 x outside diameter
Protection class when connected	IP 65

Connection	Specifications	Location
A1	**Pin housing RobiFix S 35 MTB**	on base frame
A3	**Socket housing RobiFix B 35 MTB**	on arm
A3	**Pin housing RobiFix S 35 MTB**	on arm
A6	**RobiFix-B35-FZEE**	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Air, water, vacuum for A1 and A3

Graphic representation of the product



Specifications

Hose line	Hose: 1/2" or 3/8"
	Air: blue or black
	Water: red or green
	Vacuum: yellow
Outside diameter	1/2": 19.5 mm
	3/8": 16.0 mm
Rated pressure max.	2.0 MPa (20 bar)
Minimum bending radius	1/2": 70 mm or 3/8": 50 mm
Temperature	243 K to 353 K (–40 °C to +80 °C)

Connection	Specifications	Location
A1	**Straight bulkhead,** union, M22 x 1.5	on base frame
A3	**Straight bulkhead,** union, M22 x 1.5	on arm

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

Air, water, vacuum for A3 and A6

Graphic representation of the product

Axis 3 **Axis 6**

Specifications

Hose line	Hose: 1/2" or 3/8"
	Air: blue or black
	Water: red or green
	Vacuum: yellow
Outside diameter	1/2": 19.5 mm
	3/8": 16.0 mm
Rated pressure max.	2.0 MPa (20 bar)
Minimum bending radius	1/2": 70 mm or 3/8": 50 mm
Temperature	243 K to 353 K (–40 °C to +80 °C)

Connection	Specifications	Location
A3	**Sealing head,** straight, union nut M 22 x 1.5	on arm
A6	**Sealing head,** straight, M 20 x 1.5	on wrist

KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

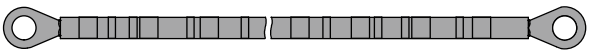
Ground conductor

for A1 and A3 as well as A3 and A6

Graphic representation of the product

Axis 1
Axis 3

Axis 3
Axis 6



Specifications

Configuration	1x 10 mm²
Outside diameter	approx. 7.0 mm
Minimum bending radius	10 x outside diameter

Connection	Specifications	Location
A1	**Ring cable lug,** 8 mm	on base frame
A3	**Ring cable lug,** 8 mm	on arm
A3	**Ring cable lug,** 8 mm	on arm
A6	**Ring cable lug,** 8 mm	on wrist

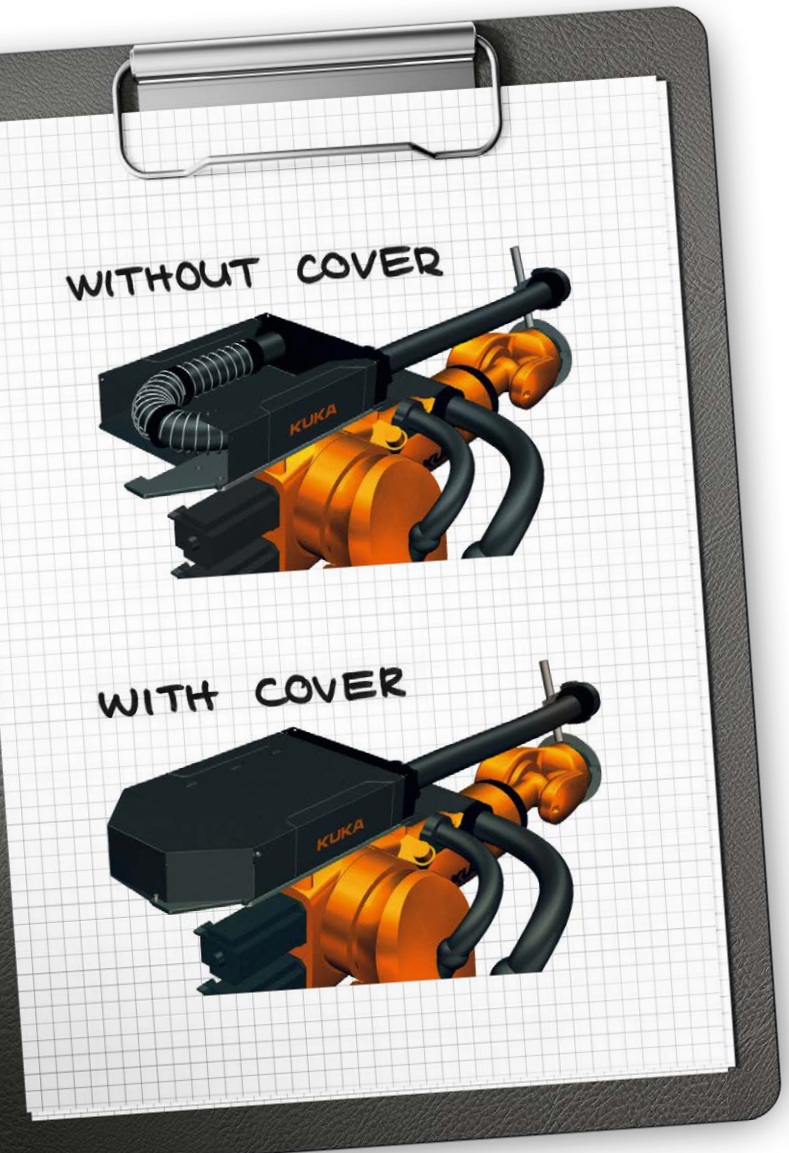
KUKA Roboter GmbH
Hery-Park 3000, 86368 Gersthofen, Germany, Phone: +49 821 4533-0, www.kuka-robotics.com

More flexible by lengths: the KUKA K-Box.

More flexible by lengths: the KUKA K-Box.

Many robotic applications require large motion ranges in the robot wrist axes. To ensure that the dress package nonetheless remains in its ideal position, KUKA has developed the K-Box. This replaces the loop energy supply systems with a standardized box for all KUKA robot series and payload categories from 6 to 60 kg and 90 to 500 kg.

The innovative system varies the length of the dress package depending on the robot position, thereby minimizing the interference contour and the load on the dress package. In order to minimize the number of spare parts needed, KUKA provides a flexible installation concept. Adapter plates allow the mounting position of the K-Box to be shifted. This makes it possible to equip an entire robot series with the same dress packages. For particularly narrow and height-limited installation spaces, side mounting of the K-Box is also possible. An optional cover to protect against fouling further extends the range of applications of the K-Box.



Performance features

REDUCED NUMBER OF SPARE PARTS. One K-Box model for all payload categories from 6 to 60 kg and from 90 to 500 kg, standardized dress package lengths within a robot series.

SIMPLER SIMULATION. Due to a defined interference contour.

SHORT COMMISSIONING TIMES. The defined interference contour enables offline programming for optimal integration into a system concept. Applications can be integrated via an interface on the arm.

STANDARDIZED DESIGN. Variant for ceiling-mounting with same structure.

MINIMAL DOWNTIME. Fast exchange of energy supply systems in less than 5 minutes.

DEFINED INTERFERENCE CONTOUR. Excellent guidance of the energy supply system close to the arm, due to the integrated spring system.

MINIMAL WEAR. The energy supply system lies protected in the K-Box; an optional cover is also available.

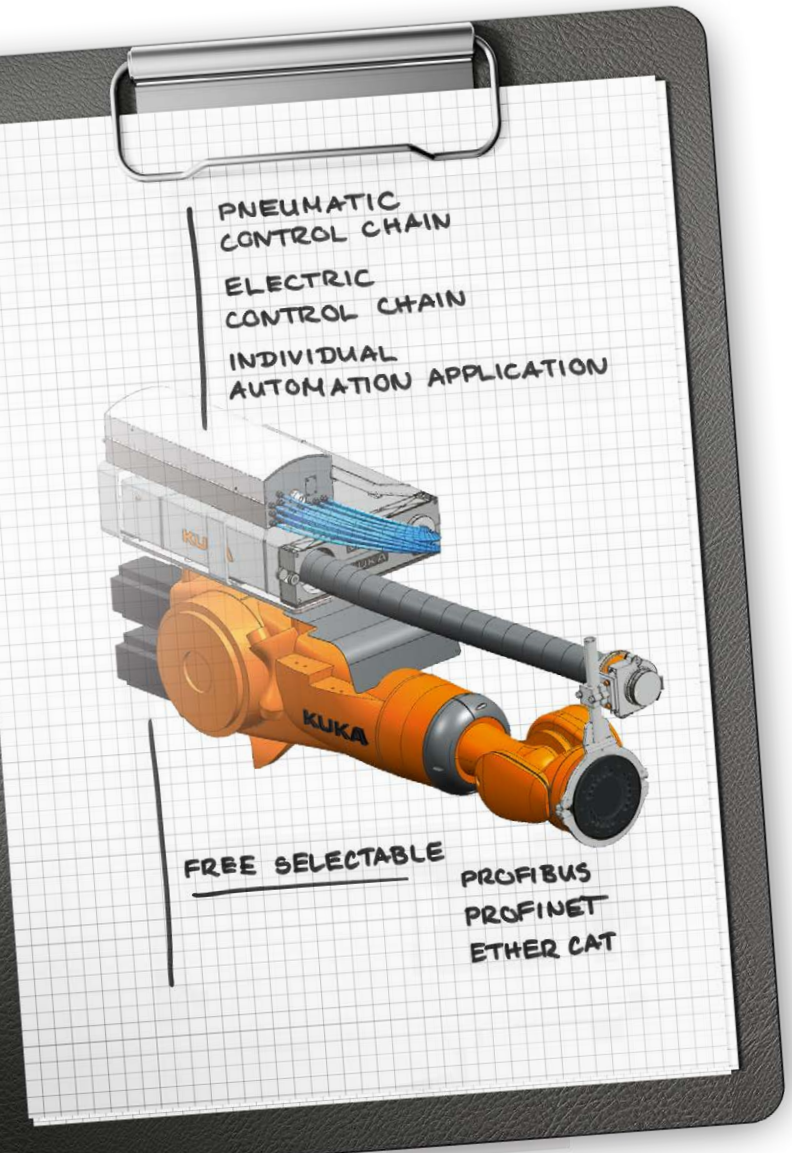
KUKA

Flexible control, perfect automation: KUKA media supply unit.

Flexible control, perfect automation: KUKA media supply unit.

The KUKA media supply unit makes it possible to flexibly connect pneumatic and electrical control chains to form a custom-tailored automation application. The following standards can be freely selected: Interbus, Profibus or CAN DeviceNet.

A standardized, more compact housing size ensures a smaller interference contour and can accommodate either the MIDI version with four valve positions and four vacuum connections or the MAXI version with eight valve positions and four vacuum connections. The KUKA media supply unit can be used for controlling all kinds of grippers and a wide range of vacuum applications.



Performance features

STANDARDIZED HOUSING SIZE. For MIDI version (4 valve positions + 4 vacuum connections) or Maxi version (8 valve positions + 4 vacuum connections).

VARIABLE SENSOR BOX. 8 I / 8 O or 16 I.

DEFINED INTERFERENCE CONTOUR. Thanks to an optimized, more compact design.

K-Box COMPATIBLE. The media supply unit can be used in combination with the K-Box.

MULTIBUS AND ETHERNET. Multibus-based field bus (Profibus) or Ethernet-based field bus (AIDA): Profinet and Ethercat. With use of Ethernet-based protocols, the network can be extended towards A6.

FOOD-SUITABLE. Also suitable for use in the food industry, due to stainless-steel body.

HIGH PROTECTION RATING. Conforms to protection rating IP 67 due to sealing.

CAN BE USED WITH SWITCHED LOAD VOLTAGE. Inputs and vacuum are always active, sensor box outputs and valves only with US2.

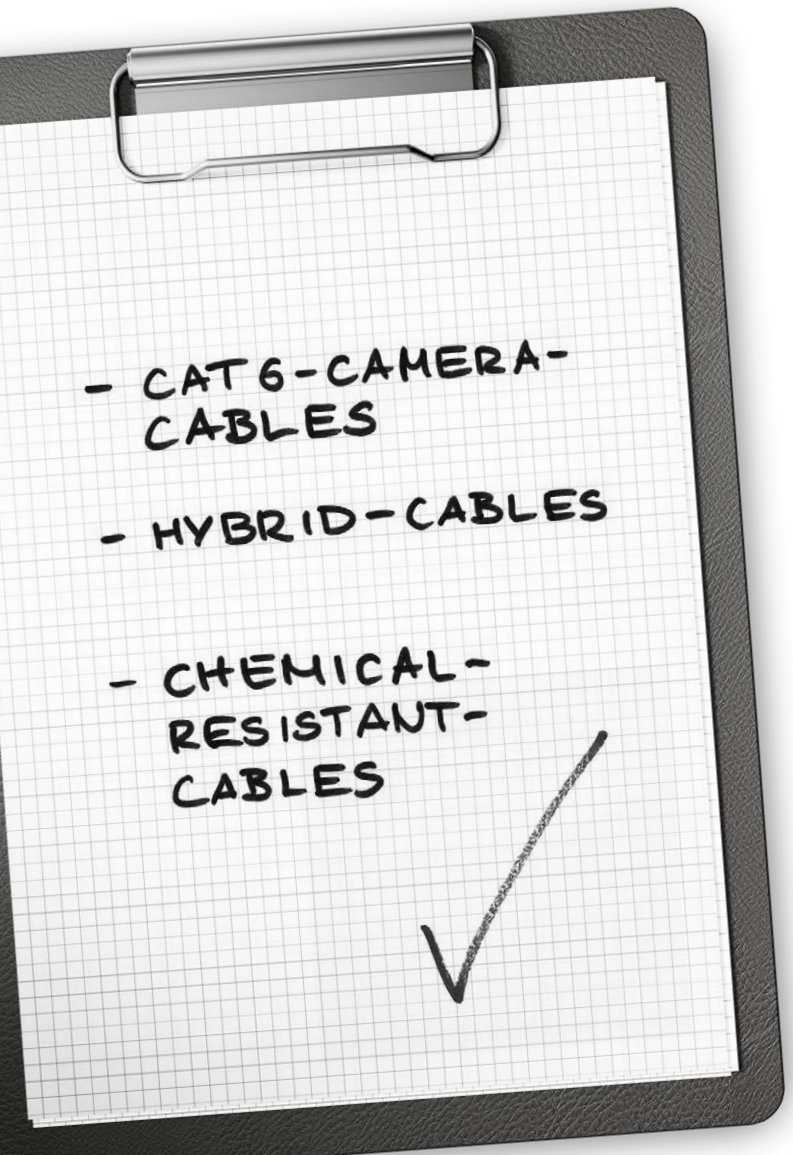
KUKA

KUKA special solutions: Specific connectors, bus systems, flexible tubes or connections? No problem.

KUKA special solutions: Specific connectors, bus systems, cables, hoses or special ES models? No problem.

The comprehensive standard range of KUKA energy supply systems is perfectly complemented by an extensive range of customization options. Tell us your requirements, and KUKA will put together the perfect package. Because we want you to benefit from the strengths of KUKA robotics to the maximum extent.

For the implementation of your individual solutions, KUKA assigns a dedicated engineering team. First of all, the general technical conditions and the feasibility are clarified. If requested by the customer, the KUKA engineers can integrate additional field bus functions such as Ethernet, Profibus, CAN and Interbus, together with additional hydraulic hoses or hybrid cables and much more into your tailored energy supply system. For the optimal use of robotics, KUKA places no limits on your wishes.



Contact KUKA at:

www.contact.kuka-robotics.com

www.facebook.com/**KUKA.Robotics**

www.youtube.com/**kukarobotgroup**

PB0007/E/1/0913