



Datasheet

FRANKA RESEARCH 3

Datasheet¹ Franka Research 3

Arm (Art. No. 309969) & Control (Art. No. 295341)

Document number: R02212

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ARM (v2.0)			
Degrees of freedom	7	Interfaces	<ul style="list-style-type: none"> Ethernet (TCP/IP) for programming and administration via Desk safety-rated input for external enabling device safety-rated input for emergency stop 2 configurable safety-rated inputs for e.g., emergency stop devices, safeguards or other protective devices (OSSD devices via external OSSD converter connectable) Control connector connector for end effector
Rated payload	3 kg		
Maximum reach	855 mm		
Force/Torque sensing	link-side torque sensor in all 7 axes		
Joint position limits	A1: -166/166 deg A2: -105/105 deg A3: -166/166 deg A4: -176/-7 deg A5: -165/165 deg A6: 25/265 deg A7: -175/175 deg		
Joint torque limits	A1-A4: ±87 Nm A5-A7: ±12 Nm		
Mechanical interface to end effector	DIN ISO 9409-1-A50		
Installation position	upright		
Weight	~ 17.8 kg		
Ingress protection	IP40		
Ambient temperature ²	+5 °C to +45 °C		
Air humidity	20 – 80 %, non-condensing		
CONTROL (v5.1)			
Rackmount form factor	19", 355 x 483 x 89 mm (D x W x H)	Motion	
Supply voltage	100 – 240 V _{AC}	Joint velocity limits	A1-A4: 150 deg/s A5-A7: 301 deg/s (FCI use, A6: 239 deg/s)
Mains frequency	50– 60 Hz	Cartesian velocity limits	up to 2 m/s at TCP
Power consumption	~ 80 W	Position repeatability ³	< +/- 0.1 mm (ISO 9283)
Active power factor correction (PFC)	yes	Interaction	
Weight	~ 7 kg	Guiding force	~ 2.5 N
Ingress Protection	IP20	Adjustable translational stiffness	10 – 3000 N/m
Ambient temperature ²	+5 °C to +45 °C	Adjustable rotational stiffness	1 – 300 Nm/rad
Air humidity	20 – 80 %, non-condensing	Monitored signals	joint position, velocity, torque cartesian position, force
Permitted mounting orientation	horizontal		
Interfaces	<ul style="list-style-type: none"> ethernet (TCP/IP) for internet, shop-floor connection, fieldbuses and 1 kHz Franka Control Interface (FCI) power connector IEC 60320C14 (V-Lock) Arm connector 	ADD-ONS	
		Fully integrated end effectors	<ul style="list-style-type: none"> 2-finger gripper Vacuum gripper
		Fieldbuses	<ul style="list-style-type: none"> Modbus/TCP OPC UA

1. Technical data are subject to change.

2. For more details see Product Manual Franka Research 3.

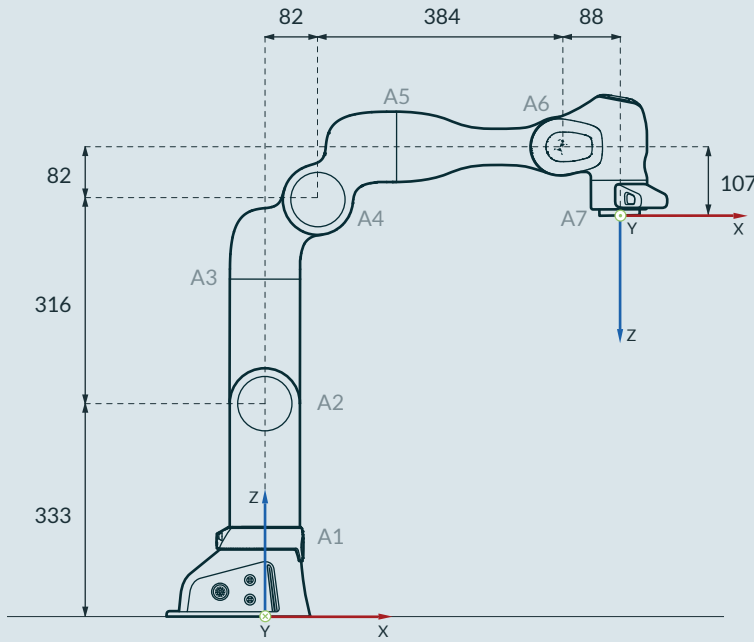
3. Based on ISO 9283 (Annex A), specified values refer to a workspace of 0.4 x 0.4 x 0.4 m centered at [0.498, 0.0, 0.226] m, with the Z-Axis of the flange oriented parallel to earth-gravity and the elbow positioned upwards.

4. For System Images < 5.10, FCI cannot control the robot while SLP-C is configured.

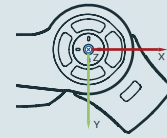
5. For System Images < 5.10, FCI cannot control the robot while SLS-C is configured.

SAFETY	
Certification process ongoing	
EN ISO 13849-1:2015 safety of machinery - safety-related parts of control systems	
EN ISO 10218-1:2011 Robots and robotic devices - safety requirements for industrial robots Part1: Robots	
Collaborative operation modes	
Monitored stop	fully integrated in PL d, Cat 3
Hand-guiding	fully integrated in PL d, Cat 3
Speed and separation monitoring	realizable in combination with external protective devices up to PL d, Cat 3
Safety Functions	
Emergency Stop (X3.1)	PLd, Cat 3
External Enabling Device (X4)	PLd, Cat 3
Enabling Button	PLd, Cat 3
Two configurable safe inputs (X3.2 and X3.3)	PLd, Cat 3
SLP-C: Safely limited Cartesian position ⁴	PLd, Cat 3
SLS-C: Safely limited Cartesian speed ⁵	PLd, Cat 3
SLS-J: Safely limited joint speed	PLd, Cat 3
SLD: Safely limited distance	PLd, Cat 3
SEEPO: Safe End Effector Power off	PLb, Cat b
Stopping Functions	
Category 0 stop	PLd, Cat 3
Category 1 stop	PLd, Cat 3
Category 2 stop	PLd, Cat 3
Worst case safe Cartesian position accuracy for stopping functions	50 mm
Safety values according to EN ISO 13849-1	
PFH of PL d, Cat 3 safety functions (Probability of Failures per Hour)	$< 1 \times 10^{-7}$
PFH of PL b, Cat b safety functions (Probability of Failures per Hour)	$< 1 \times 10^{-7}$

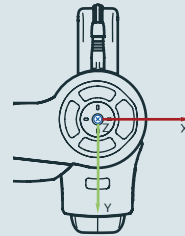
DIMENSIONS & WORKSPACE



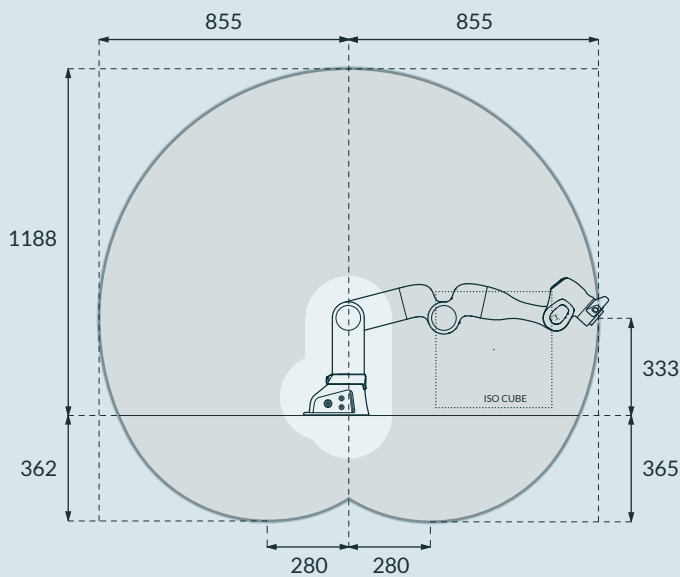
Axes names with link distances [mm]



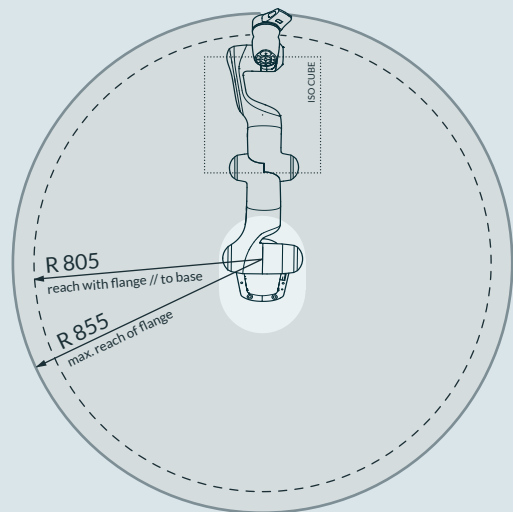
Alignment axis 7 without end effector



Alignment axis 7 with Franka Hand



Workspace | side view [mm]



Workspace | top view [mm]