FRANKA ROBOTICS

Datasheet

FRANKA RESEARCH 3

The Reference Platform
for AI & Robotics

Datasheet[1] Franka Research 3

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

Document number: R02212

Document release version: 2.6 (July 2026)

ARM (v2.1, v2.2)

Degrees of freedom	7
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	~ 18.3 kg
Ingress protection	IP40
Ambient temperature [2]	+5 °C to +45 °C
Air humidity	20 – 80 %, non-condensing
Interfaces	• 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

CONTROL (v5.1)

Rackmount form factor	19'', 355 x 483 x 89 mm (D x W x H)
Supply voltage	100 – 240 V_{AC}
Mains frequency	50– 60 Hz
Power consumption	~ 80 W
Active power factor correction (PFC)	yes
Weight	~ 7 kg
Ingress Protection	IP20
Ambient temperature [2]	+5 °C to +45 °C
Air humidity	20 – 80 %, non-condensing
Permitted mounting orientation	horizontal
Interfaces	• ethernet (TCP/IP) for internet, shop-floor connection, fieldbuses and 1 kHz Franka Control Interface (FCI) • power connector IEC 60320C14 (V-Lock) • Arm connector

PERFORMANCE

Motion	
Joint velocity limits	A1-A4: 150 deg/s A5-A7: 301 deg/s (FCI use, A6: 239 deg/s)
Cartesian velocity limits	up to 2 m/s at TCP
Position repeatability [3]	<+/- 0.1 mm (ISO 9283)
Interaction	
Guiding force	~ 2.5 N
Adjustable translational stiffness	10 – 3000 N/m
Adjustable rotational stiffness	1 – 300 Nm/rad
Monitored signals	joint position, velocity, torque cartesian position, force

ADD-ONS

Fully integrated end effectors	• 2-finger gripper • Vacuum gripper
Fieldbuses	• 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)	PL d, Cat 3
External Enabling Device (X4)	PL d, Cat 3
Enabling Button	PL d, Cat 3
Two configurable safe inputs (X3.2 and X3.3)	PL d, Cat 3
SLP-C: Safely limited Cartesian position [4]	PL d, Cat 3
SLS-C: Safely limited Cartesian speed [5]	PL d, Cat 3
SLS-J: Safely limited joint speed	PL d, Cat 3
SLD: Safely limited distance	PL d, Cat 3
SEEPO: Safe End Effector Power off	PL b, Cat b
Stopping Functions	
Category 0 stop	PL d, Cat 3
Category 1 stop	PL d, Cat 3
Category 2 stop	PL d, 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)	$< 1 \times 10^{-7}$

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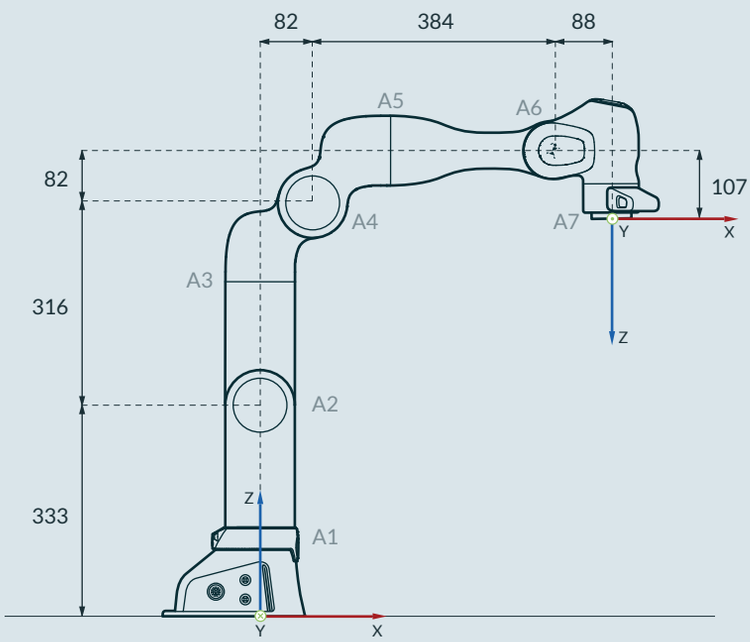
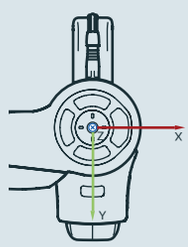
DIMENSIONS & WORKSPACE

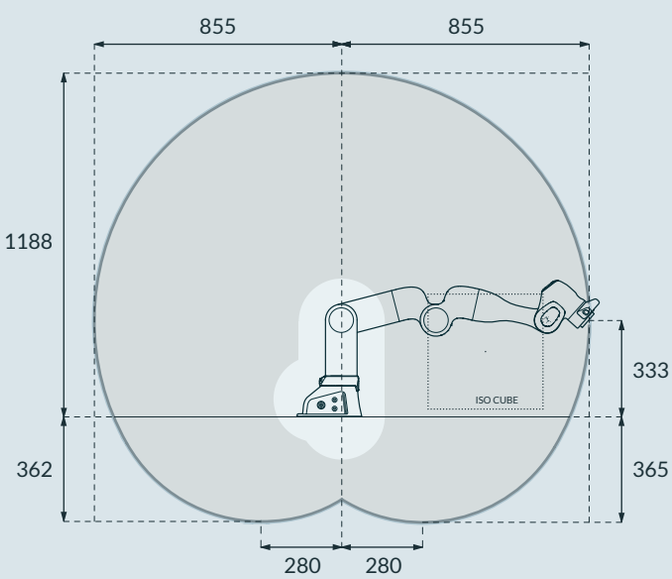


Axes names with link distances [mm]

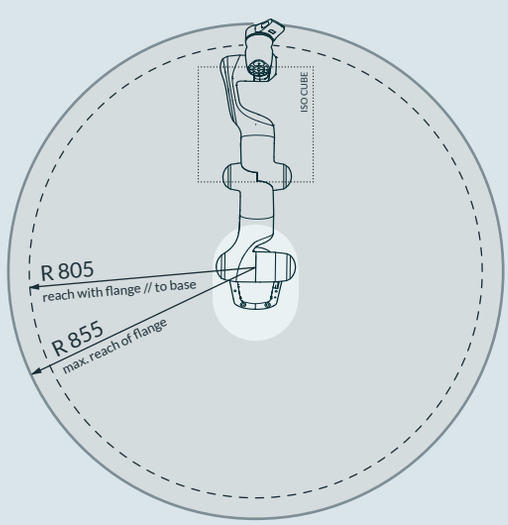
Alignment axis 7 without end effector



Alignment axis 7 with Franka Hand



Workspace | side view [mm]



Workspace | top view [mm]