

NACHI

CZ10

Slim arm collaborative robot



Collaborative people-friendly design

Nachi's slim arm collaborative, CZ10 has several people-friendly functions and structures. Safety fences are not required and makes it easier to install a robot with various applications.

CZ10

Functional safety, Intrinsic safety

Double safety 1. Functional safety: Stops when detecting contact with person. 2. Intrinsic safety: Designed not to pinch person.



Easy Programming

Intuitive teaching by moving the robot arm by a hand.



User-friendly Design

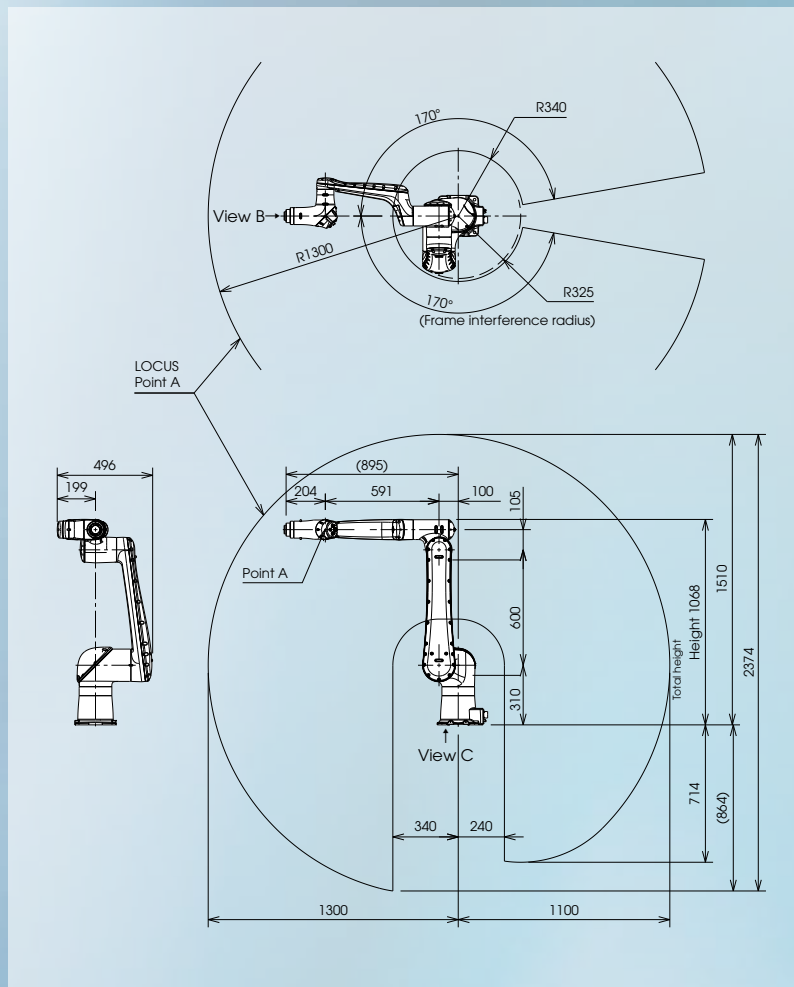
Pinch points and sharp edges eliminated for safer human interaction.



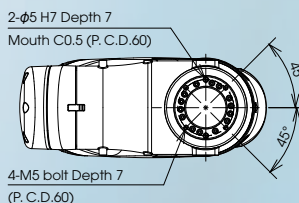
Basic Specification of Robot

Robot Dimensions and Working Envelope

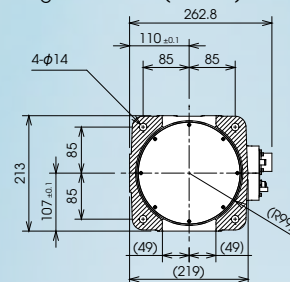
Item	Specification	
Robot type	CZ10-01	
Number of axis	6	
Drive system	AC servo motor	
Max. working envelope	Axis 1	$\pm 2.96\text{rad}$ ($\pm 170^\circ$)
	Axis 2	$-1.30 \sim +3.92\text{rad}$ ($-75 \sim +225^\circ$)
	Axis 3	$-1.34 \sim +3.96\text{rad}$ ($-77 \sim +227^\circ$)
	Axis 4	$\pm 3.14\text{rad}$ ($\pm 180^\circ$)
	Axis 5	$\pm 2.96\text{rad}$ ($\pm 170^\circ$)
	Axis 6	$\pm 6.28\text{rad}$ ($\pm 360^\circ$)
Max. speed *1	Axis 1	2.09rad/s ($120^\circ/\text{s}$)
	Axis 2	2.09rad/s ($120^\circ/\text{s}$)
	Axis 3	3.14rad/s ($180^\circ/\text{s}$)
	Axis 4	3.14rad/s ($180^\circ/\text{s}$)
	Axis 5	3.14rad/s ($180^\circ/\text{s}$)
	Axis 6	3.14rad/s ($180^\circ/\text{s}$)
Max. payload	Wrist	10kg
Allowable static load torque	Axis 4	$25.9\text{N}\cdot\text{m}$
	Axis 5	$25.9\text{N}\cdot\text{m}$
	Axis 6	$5.9\text{N}\cdot\text{m}$
Allowable moment of inertia *2	Axis 4	$0.75\text{kg}\cdot\text{m}^2$
	Axis 5	$0.75\text{kg}\cdot\text{m}^2$
	Axis 6	$0.08\text{kg}\cdot\text{m}^2$
Position repeatability *3	$\pm 0.1\text{mm}$	
Max. reach	1300mm	
Air piping	$\phi 4 \times 1$	
I/O on the wrist part	DI $\times 4$, DO $\times 3$	
Installation	Floor/Inverted	
Ambient conditions	Temperature: $0 \sim 45^\circ\text{C}$ *4	
	Humidity: $20 \sim 85\% \text{RH}$ (No dew condensation) Vibration to the installation face: 0.5G (4.9m/s^2) or less	
Dust-proof Drip-proof performance *5	IP54 equivalent (dust and drain proof-type)	
Robot mass	61kg	
Safety certification	Conforming to ISO 10218-1 *6 Conforming to TS 15066	



Wrist Dimensions (View B)



Installing Dimensions (View C)



Application examples



Machine loading

Safety fences are not required so that space-saving installation is possible without changing the layout of equipment.*7



Assembly

Humans and robots can share work space because the robots stops when contacting with them.*7

1 (rad) = $180/\pi(^{\circ})$, 1 (N·m) = 1/9.8 (kgf·m)

*1: The "Max. speed" in this table is the available maximum value and will change depending on the work-program and the wrist load condition.

*2: The allowable moment of inertia of wrist changes with load conditions.

*3: Based on JIS B8432

*4: Permitted installation is less than 1,000m above sea level. Allowable operating temperature dependent on installation height.

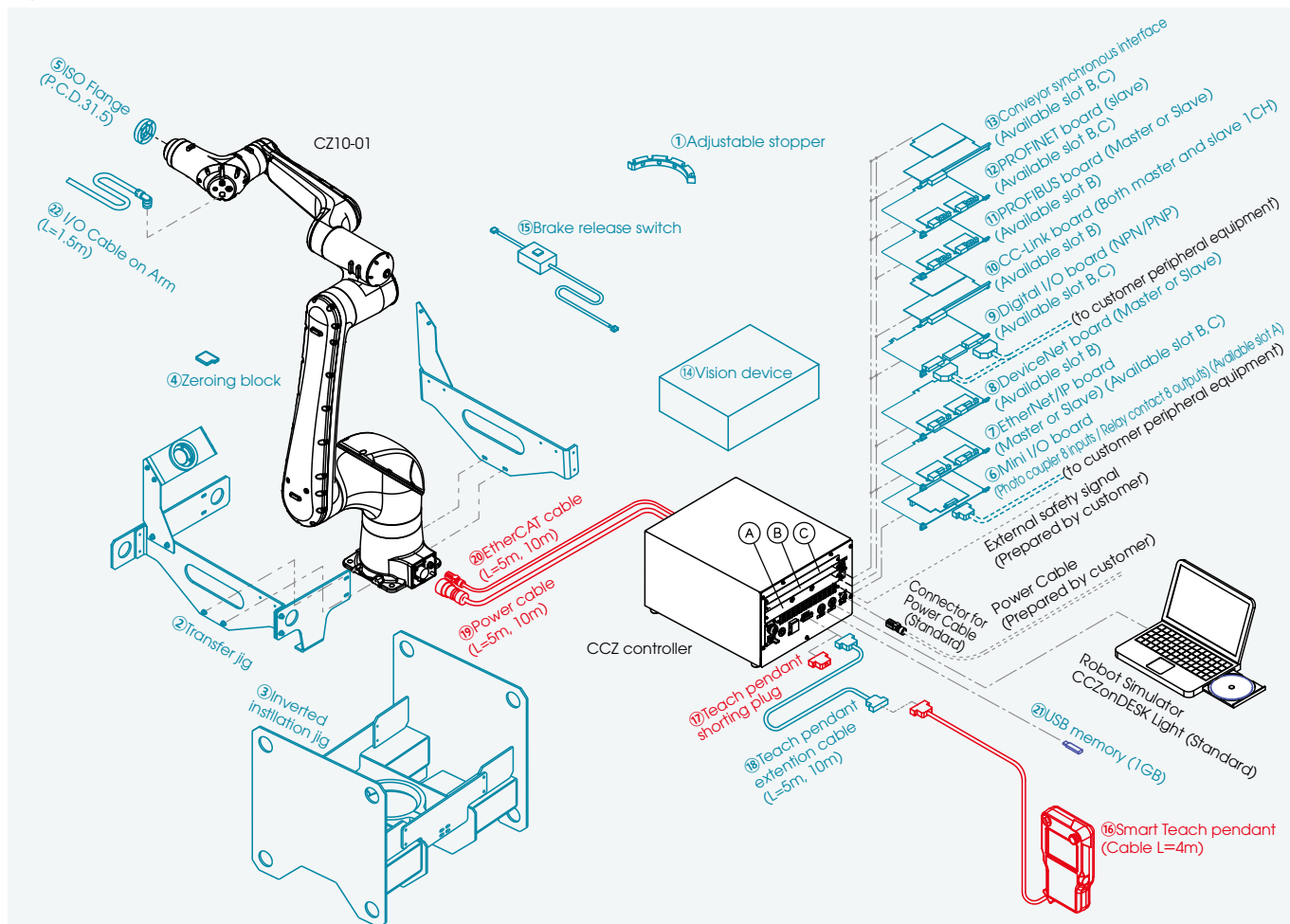
*5: Limit use in applications where liquids, such as, organic compound, acidity, alkalinity, chlorine, gasoline and/or cutting fluids.

These could deteriorate seal material. Wire harness is IP54 equivalent, controller is IP20 equivalent.

*6: TÜV SÜD No.Z1 18 06 63642 017

*7: These examples are images and peripheral equipment needs to be built according to ISO 10218-2 at installation.

Option List



● Red Mark: Selectable Essential Option ● Blue Mark: Option
 Please install options according to option installation instructions. TP=Teach Pendant

No.	Item	Specification	Parts NO.
①	Adjustable stopper	For axis 1	OP-S5-040
②	Transfer jig	Crane transport jig	OP-S2-053
③	Inverted installation jig	Jig for inverted installation	OP-S7-013
④	Zeroing block	Zero point positioning block	OP-T2-104
⑤	ISO Flange	P.C.D.31.5	OP-W2-012
⑥	Mini I/O board	I/O optocoupler input 8 / NPN transistor output 8 I/O optocoupler input 8 / Relay output 8 points	CFD-OP150-A CFD-OP150-B
⑦	EtherNet/IP board *1	Master 1 CH Slave 1 CH Master 1CH + Slave 1 CH Slave 2 CH Master 2 CH	CFD-OP130-A CFD-OP130-B CFD-OP130-C CFD-OP130-D CFD-OP130-E
⑧	DeviceNet board *1	Master 1 CH Slave 1 CH Master 1CH + Slave 1 CH Slave 2 CH Master 2 CH	CFD-OP131-A CFD-OP131-B CFD-OP131-C CFD-OP131-D CFD-OP131-E
⑨	Digital I/O board	I/O optocoupler input 32/NPN transistor output 32 I/O optocoupler input 64/NPN transistor output 64 I/O optocoupler input 32/PNP transistor output 32 I/O optocoupler input 64/PNP transistor output 64	CFD-OP125-A CFD-OP125-B CFD-OP151-A CFD-OP151-B
⑩	CC-Link board *2	Both master and slave 1CH	CFD-OP98-B

No.	Item	Specification	Parts NO.
⑪	PROFIBUS board *3	Master 1 CH Slave 1 CH Master 1CH + Slave 1 CH Slave 2 CH Master 2 CH	CFD-OP132-A CFD-OP132-B CFD-OP132-C CFD-OP132-D CFD-OP132-E
⑫	PROFINET board *3	Slave 1 CH Slave 2 CH	CFD-OP136-B CFD-OP136-D
⑬	Conveyor synchronous interface	RS 422 differential input encoder counter	CFD-OP47-A
⑭	Vision device	Visual Sensor Unit for Controller (Separate Type)	CFD-OP139-A
⑮	Brake release switch	Manual brake release option (External unit)	CCZ-OP90-A-L
⑯	Smart Teach pendant	Cable length 4m	CFDTP-10-04M
⑰	Teach pendant shorting plug	Use when TP is not connected	CFD-OP153-A
⑱	Teach pendant extension cable	5m 10m	CFDTP-RC05M CFDTP-RC10M
⑲	Power cable	5m 10m	CZ101Z-J1P-05-A CZ101Z-J1P-10-A
⑳	EtherCAT cable	5m 10m	CZ101Z-J1C-05-A CZ101Z-J1C-10-A
㉑	USB memory (1GB)	1GByte	FD11-OP93-A
㉒	I/O Cable on Arm *4	Connector: L-shaped type, Cable Length: 1.5m Connector: Straight type, Cable Length: 1.5m	CZ10-OP02L-1P5M CZ10-OP02S-1P5M

*1. DeviceNet and EtherNet/IP is a trademark of ODVA (Open DeviceNet Vendor Association, Inc.).
 *2. CC-Link is a trademark of CC-Link Partner Association : CLPA.
 *3. PROFIBUS and PROFINET is a trademark of PROFIBUS & PROFINET International.
 *4. The robot connection side is a cable with a connector.



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● The specifications are subject to changes without notice.
 ● In case that an end user uses this product for military purpose or production of weapon, this product may be liable for the subject of export restriction stipulated in the Foreign Exchange and Foreign Trade Act. Please go through careful investigation and necessary formalities for export.

Conforming to ISO 10218-1 and awarded the certification by the German certification organization TÜV SÜD.

CATALOG NO. R7770E-4

2021.03.*-MD-ABE