

**NACHI**



*Slim Collaborative Robot*

**CZ10**

# Collaborative people-friendly design

Nachi's new robot, CZ10, has several people-friendly functions and structures  
Makes it easier to install a robot with various applications.



*Slim Collaborative Robot*

# CZ10

**Stops safely  
when contact is  
made with person.**

Stops when collision is detected.



**Easy  
Programming**

Pinch Points Eliminated

**User-friendly  
Design**

Pinch points and sharp  
edges eliminated for safer  
human interaction.



## Basic Specification of Robot

Item	Specification	
Robot type	CZ10	
Number of axis	6	
Drive system	AC servo motor	
Max. working envelope *1	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	$2.09\text{rad/s}(120^\circ/\text{s})$
	Axis 2	$2.09\text{rad/s}(120^\circ/\text{s})$
	Axis 3	$3.14\text{rad/s}(180^\circ/\text{s})$
	Axis 4	$3.14\text{rad/s}(180^\circ/\text{s})$
	Axis 5	$3.14\text{rad/s}(180^\circ/\text{s})$
	Axis 6	$3.14\text{rad/s}(180^\circ/\text{s})$
Max. payload*1	Wrist	10kg
Allowable static load torque*1	Axis 4	25.9N·m
	Axis 5	25.9N·m
	Axis 6	5.9N·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		$\phi 4 \times 1$
Application signal line		DIx4,DOx3
Installation *4		Floor/Inverted
Ambient conditions		Temperature: $0 \sim 45^\circ\text{C}^{*5}$ Humidity: $20 \sim 85\%RH$ (No dew condensation) Vibration to the installation face: $0.5G(4.9\text{m/s}^2)$ or less
Dust-proof Drip-proof performance *6		IP54 equivalent (dust and drain proof-type)
Robot mass		61kg
Safety certification		ISO 10218-1(Equivalent) TS 15066(Equivalent)

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: Range of motion limited when robot is inverted mounted.

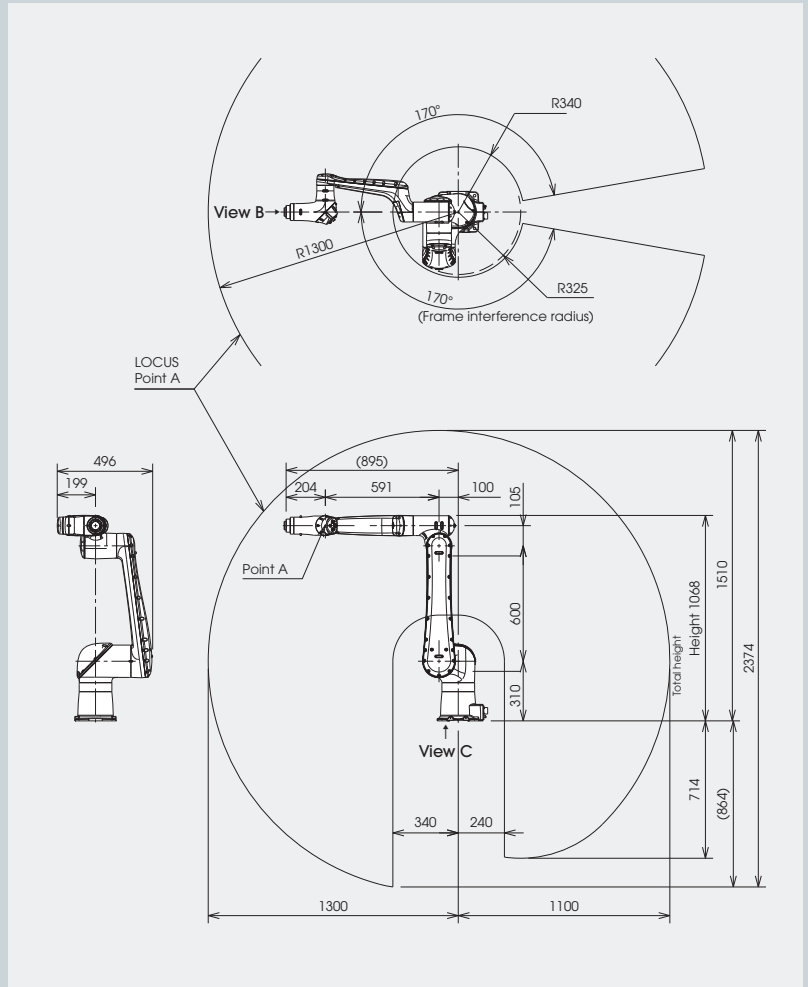
\*5: Permitted installation is less than 1,000m above sea level.

Allowable operating temperature dependent on installation height.

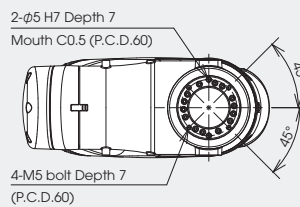
\*6: Limit use in applications where liquids, such as, organic compound, acidity, alkalinity, chlorine, gasoline and/or cutting fluids. These could deteriorate seal material.

Wire harness is IP54 equivalent, controller is IP20 equivalent.

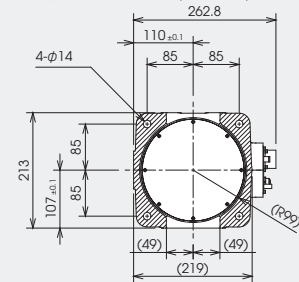
## Robot Dimensions and Working Envelope



Wrist Dimensions (View B)



Installing Dimensions (View C)



## Application examples

### Mutual harmony with people

Assembly support

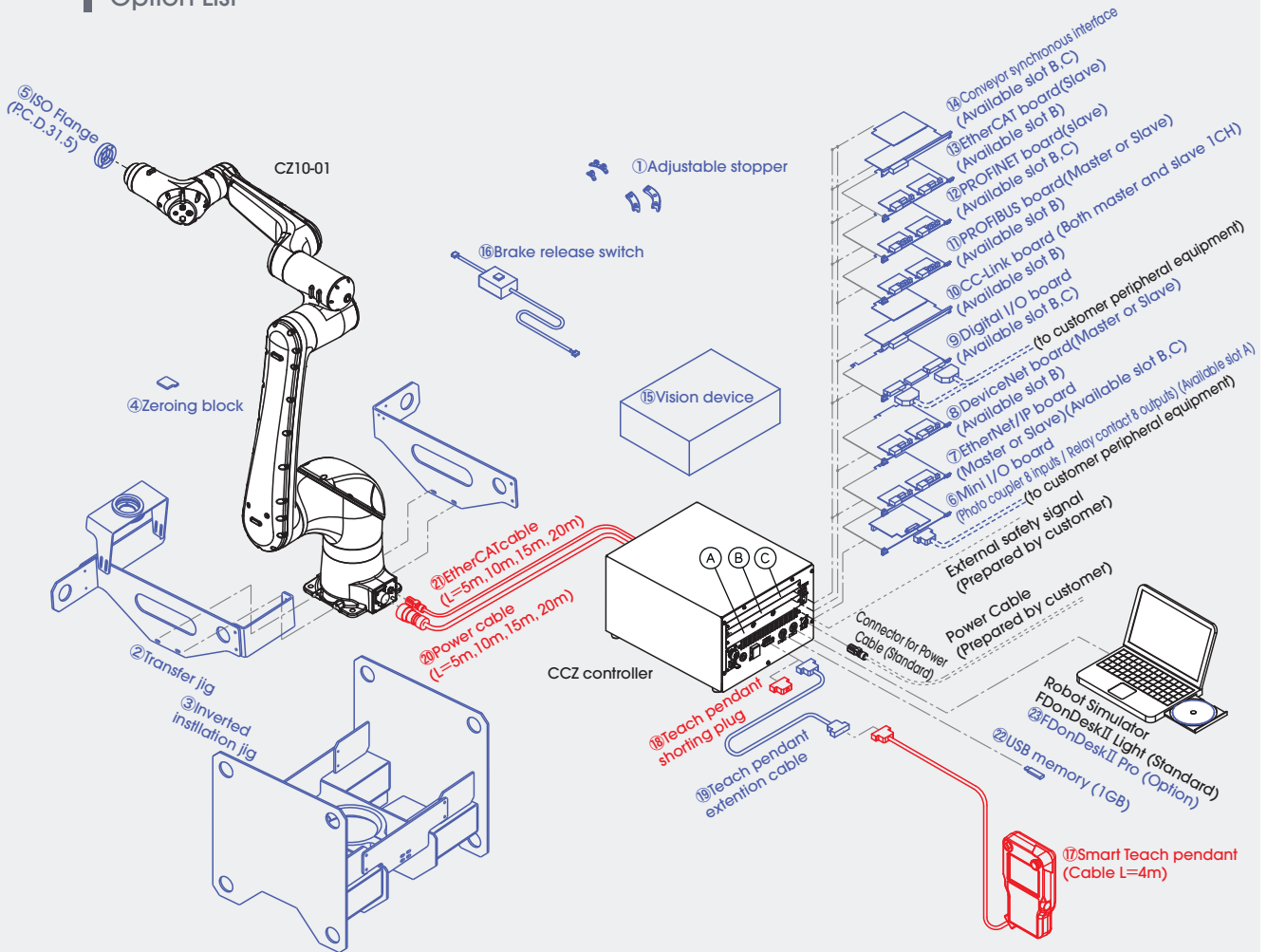


Sorting



Contents written in this document do not ensure safety of system. Risk analysis of entire system is required to reduce the associated risk of the system.

# 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 For axis 2 For axis 3	OP-S5-040 OP-A5-038 OP-A6-035
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	PC.D.31.5	OP-W2-016
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	Master 1 CH Slave 1 CH Master 1 CH + 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	Device net board	Master 1 CH Slave 1 CH Master 1 CH + 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	Both master and slave 1CH	CFD-OP98-B

No.	Item	Specification	Parts NO.
⑪	Profibus board	Master 1 CH Slave 1 CH Master 1 CH + Slave 1 CH Slave 2 CH	CFD-OP132-A CFD-OP132-B CFD-OP132-C CFD-OP132-D
⑫	Profinet board	Master 2 CH Slave 1 CH Slave 2 CH	CFD-OP132-E CFD-OP136-B CFD-OP136-D
⑬	EtherCAT board	Slave 1CH	CFD-OP169-B
⑭	Conveyor synchronous interface	RS 422 differential input encoder counter	CFD-OP47-A
⑮	Vision device	Visual Sensor Unit for Controller (Separate Type)	CFD-OP139-A
⑯	Brake release switch	Manual brake release option(External unit)	CCZ-OP90-A-L
⑰	Smart Teach pendant	Cable length 4m	CFDTP-10-04M
⑱	Teach pendant shoring plug	Use when TP is not connected	CFD-OP153-A
⑲	Teach pendant extension cable	5m 10m	CFDTP-RC05M CFDTP-RC10M
⑳	Power cable	5m 10m 15m 20m	CZ101Z-J1P-05-A CZ101Z-J1P-10-A CZ101Z-J1P-15-A CZ101Z-J1P-20-A
㉑	EtherCAT Cable	5m 10m 15m 20m	CZ101Z-J1C-05-A CZ101Z-J1C-10-A CZ101Z-J1C-15-A CZ101Z-J1C-20-A
㉒	USB memory(1GB)	1GByte	FD11-OP93-A
㉓	FD on DESK II Pro	Robot Simulator	FDONDESK2-Pro

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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.

CATALOG NO. R7770E-2

2018.08.V-ABE-ABE