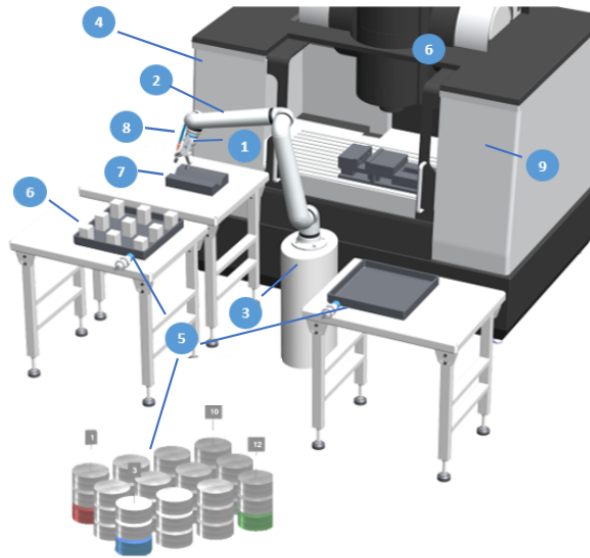


# DATASHEET

D:PLOY - CNC MACHINE TENDING APPLICATION

v1.0.800

# CNC Machine Tending Application



1/ a.	Grippers	2FG7		2FG14		3FG15		3FG25	
		RG2		RG6		VGC10	G2FG	G3FG	GVG
1/ b.	Tool mounting	Quick Changer or Dual Quick Changer			Angle Bracket 45°			Angle Bracket 90°	
2.	Robot brands	ABB		Denso		Doosan	Elite	FANUC	FANUC CRX
		Techman	UR	Jaka	Omron TM	Schneider	Kawasaki	Yaskawa	
3.	Robot mounting	Can be mounted at any height, can be tilted 0°, 30°, 45° or 90°							
4.	CNC machine types	CNC Milling	CNC Lathe	Communicating via <b>Digital I/O</b> or <b>EtherNet/IP</b> fieldbus			Only <b>Automatic door</b> is supported (robot cannot be used to open/close door)		
5.	In/Outfeed options	<b>Grid</b> (set row and/or column) or <b>Honeycomb</b> (for cylindrical parts), and <b>can be stacked</b> (parts on top of each other)			<b>Fixed</b> - only one part at the in/outfeed (requires conveyor belt or turn table)			<b>Pattern</b> and <b>Fixed</b> can be combined (Pattern as infeed and Fixed as outfeed or the other way around)	
6.	Part size/weight/type	<b>Any size</b> (the gripper/machine can handle)			<b>Any weight</b> (the gripper/machine can handle)			<b>Cuboid</b> or <b>Cylindrical</b> (both may not be available on a given gripper)	

7.	Re-alignment	Optional steps <b>before load</b> and/or <b>after unload</b>		It can be used either to make sure the <b>part is gripped properly</b> (aligned) or to <b>change the gripping</b> (re-grip at a different angle, as <b>picking angle can be defined</b> or change the orientation before placed)	
8.	Cleaning	Optional step <b>before load</b> (to make sure the workholding is clean)	And/or optionally <b>before unload</b> (make sure part is clean)	Both support: <b>Fixed point</b> (waiting time) or <b>movement</b> (via multiple waypoints)	<b>Robot (mounted) Machine Cleaning</b> output device needs to be added to the cell setup

### Additional Information

#### 1/a. Grippers

Grippers can be customized with any OnRobot accessory or custom fingertip/vacuum accessory.

		Finger grippers								Vacuum grippers	
		2FG7	2FG14	3FG15	3FG25	RG2	RG6	G2FG	G3FG	VGC10**	GVG
Can grip	Cuboid	✓	✓	✗	✗	✓	✓	✓	✗	✓	✓
	Cylindrical	✓*	✓	✓	✓	✓*	✓*	✓	✓	✓	✓
Pick with an angle		✓	✓	✗	✗	✓	✓	✓	✗	✗	✗

\* With special fingertips.

\*\* Do not use vacuum grippers in wet or damp conditions, particularly in CNC applications with moisture or cutting fluids. It can damage the gripper.

#### 1/b. Tool mounting

HEX-E/H QC is not supported.

### 2. Robot brands

#### Supported robot models and controllers

Robot Type	ABB	Denso	Doosan	Elite	FANUC	FANUC CRX	Jaka
<b>Robot Model</b>	CRB 1100 -4/0.58 CRB 15000 -5/0.95 CRB 15000 -10/1.52 CRB 15000 -12/1.27 IRB 1100 -4/0.58 IRB 1100 -4/0.47 IRB 120 IRB 1200 -5/0.9 IRB 1200 -7/0.7 IRB 1300 -7/1.4 IRB 1300 -10/1.15 IRB 1300 -11/0.9 IRB 1300 -12/1.4 IRB 1600 -6/1.2 IRB 1600 -6/1.45 IRB 1600 -10/1.2 IRB 1600-10/1.45	VM-6083 VM-60B1 VP-6242 VS050A3 VS087A4 VP-5243 VS-050-S2 VS-087A4 VS-6577 VS-6556 VS-087	A0509 A0509s A0912 A0912s H2017 H2515 M0609 M0617 M1013 M1509 E0509	CS63 CS66 CS612 CS620 CS625	CR-7iA CR-7iA/L CR-14iA/L CR-15iA CR-35iB LR Mate 200iD LR Mate 200iD/4S LR Mate 200iD/7L LR Mate 200iD/14L	CRX-5iA CRX-10iA CRX-10iA/L CRX-20iA/L CRX-25iA	Zu3 Zu3S Zu5 Zu5S Zu7 Zu7S Zu12 Zu12S Zu18 Zu18S Zu20 Pro5 Pro12 Pro16
<b>Robot Controller</b>	IRC5 OmniCore	RC8	CS-03	EliRobot + EliServer CS-04	R-30iB R-30iB Plus R-30iB Mini Plus	R-30iB Mini Plus	Electrical cabinet

Robot Type	Kawasaki	Omron TM	Schneider	Techman	UR	Yaskawa
<b>Robot Model</b>	RS003N RS005L RS005N RS006L RS007N RS007L RS010L RS010N RS013N RS015X RS020N RS025N RS030N RS050N RS080N	TM5-700 TM5X-700 TM5-900 TM5X-900 TM5S TM5S-X TM7S TM7S-X TM12 TM12X TM12S TM12S-X TM14 TMX14 TM14S TM14S-X TM16 TM16X TM20 TM20X TM25S TM25S-X	RL03 RL05 RL07 RL12 RL18	TM5-700 TM5X-700 TM5-900 TM5X-900 TM5S TM5S-X TM7S TM7S-X TM12 TM12X TM12S TM12S-X TM14 TMX14 TM14S TM14S-X TM16 TM16X TM20 TM20X TM25S TM25S-X	UR3 UR3e UR5 UR5e UR10 UR10e UR16e UR20 UR30	GP4, GP4FGG GP7, GP7FGG GP8, GP8FGG, GP8FGG HS GP8L GP12, GP12FGG GP20 GP20HL GP25, GP25FGG GP25-12 GP35L HC10 HC10DT HC10DTP, HC10DTPF, HC10DTP Classic HC20 HC20DT HC20DTP HC30PL
<b>Robot Controller</b>	E01 E02 F01 F02 F60	TM	LXMRL03S000 LXMRL05S000 LXMRL05S000 LXMRL12S000 LXMRL12S000	TM	CB3 e-Series CB5.3+	YRC1000 YRC1000 Micro

### 3. Robot mounting

The robot cannot be facing downward (ceiling mounted).

### 4. CNC machine types

#### Supported communication protocols between D:PLOY and the CNC machine

- Digital Inputs and Outputs
- EtherNet/IP

Using the OR:MACHINE module (with relays) the front panel push buttons can be used to operate it.

### 5. In/Outfeed options

**Pattern** requires in/outfeed container, **Fixed** requires in/outfeed sensor. Both can be ultrasonic, laser/infra or any other type 24V digital sensor.

### 6. Part type/size/weight

Part parameter can be changed at unloading. For complex shapes use a bounding box.

## 7. Re-alignment

Two or more side machining is not supported (but can be done by having a complete run finished on one side and then do the rest).

## 8. Cleaning

Integrator needs to take care of nozzle, air supply and a 24V controllable valve to activate the air pressure. After-unload cleaning is not supported.

### Layout configuration

- Using CNC Milling or Lathe machine
- Without or with 1 or 2 cleaning steps
- Without or with 1 or 2 re-alignment steps
- Using Single or Dual QC
- Pattern as infeed and Pattern as outfeed
- Fixed as infeed and Pattern as outfeed
- Pattern as infeed and Fixed as outfeed
- Fixed as infeed and Fixed as outfeed

### Examples

