



Vertical Articulated Robot

VM·VL series

Robot controller

RC9

DENSO

More powerful, Much longer



VM series

VM1500 / 1800

Max. arm length

1506/1804mm

Max. movable load

25kg

Features

Built for use in demanding hygienic and adverse environments

Available with standard specifications as well as specifications that deliver high levels of dustproofness/waterproofness (IP67) and cleanliness (ISO Class 5)*. The VM series can be used to automate operations in a variety of industries, including automobile part manufacturing and electric and electronic component, food product, pharmaceutical, and medical device manufacturing processes.

Fully covered design



Internally routed EtherCAT wiring and free hand design

An extensive range of options for user wiring, tubing, and solenoid valves makes it possible to mount a variety of devices and hands on the robot flange. Mix and match three valve types for a total of 15 possible combinations. Internally routed EtherCAT wiring means less complex wiring and tubing on the outside of the unit.

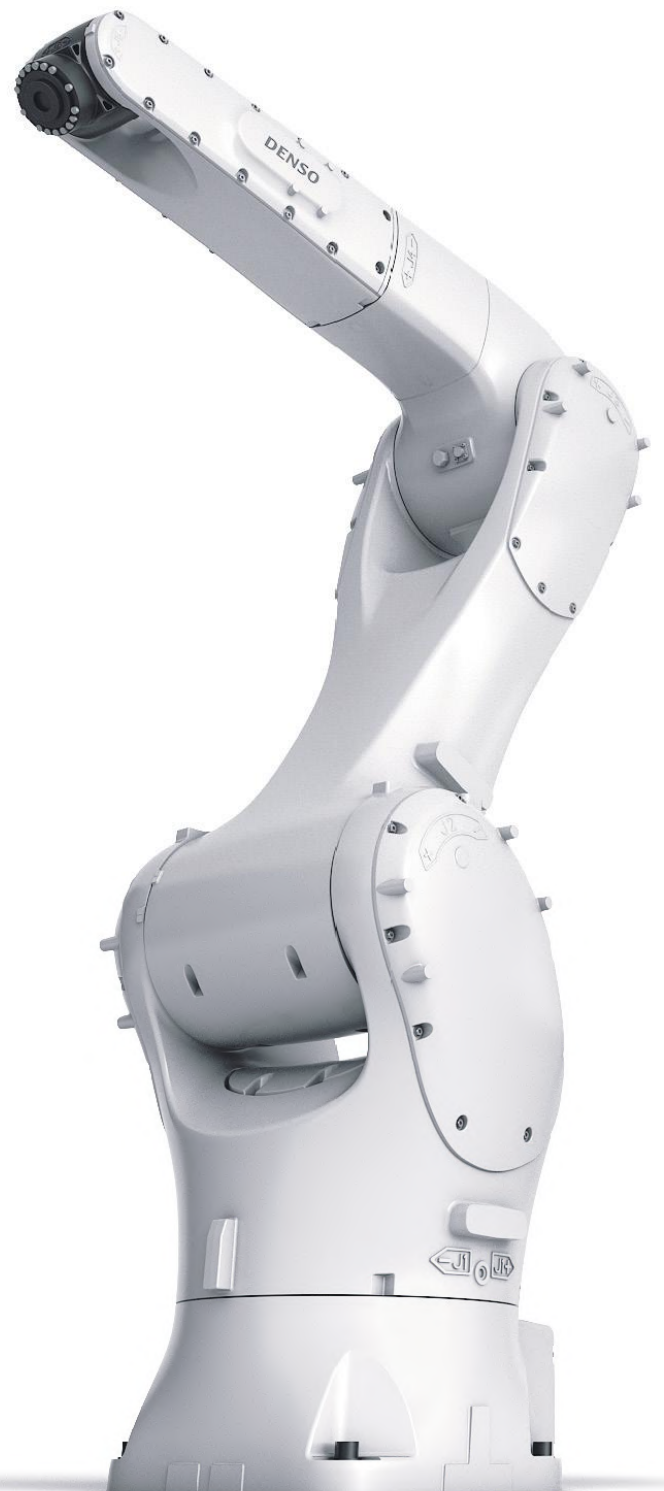
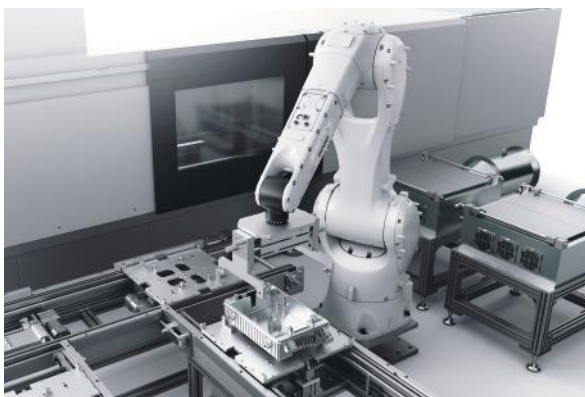


User wiring and tubing can be routed through the three axes to accommodate devices mounted on the robot arm.

Secondary user wiring and tubing
Up to two EtherCAT runs can be routed inside the unit.

Example application

Transferring, transporting, and packaging work

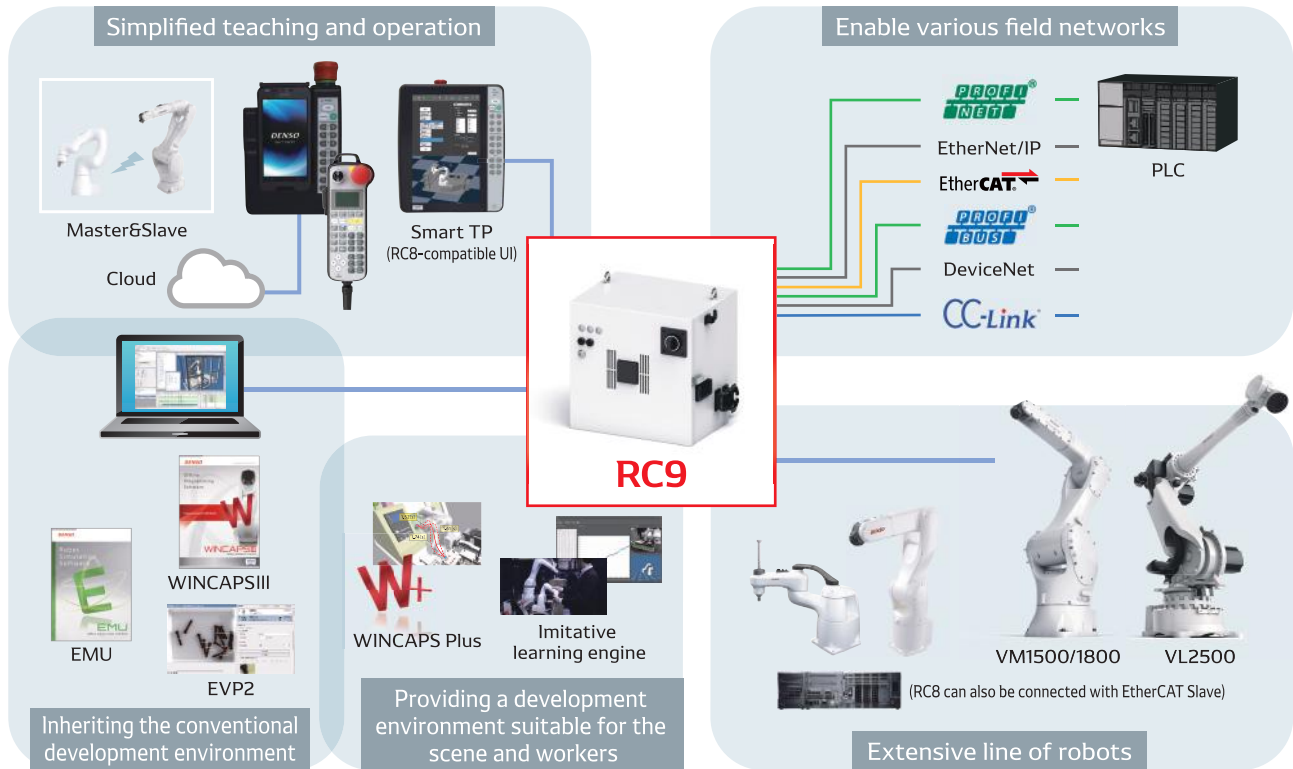


New robot controller

RC9

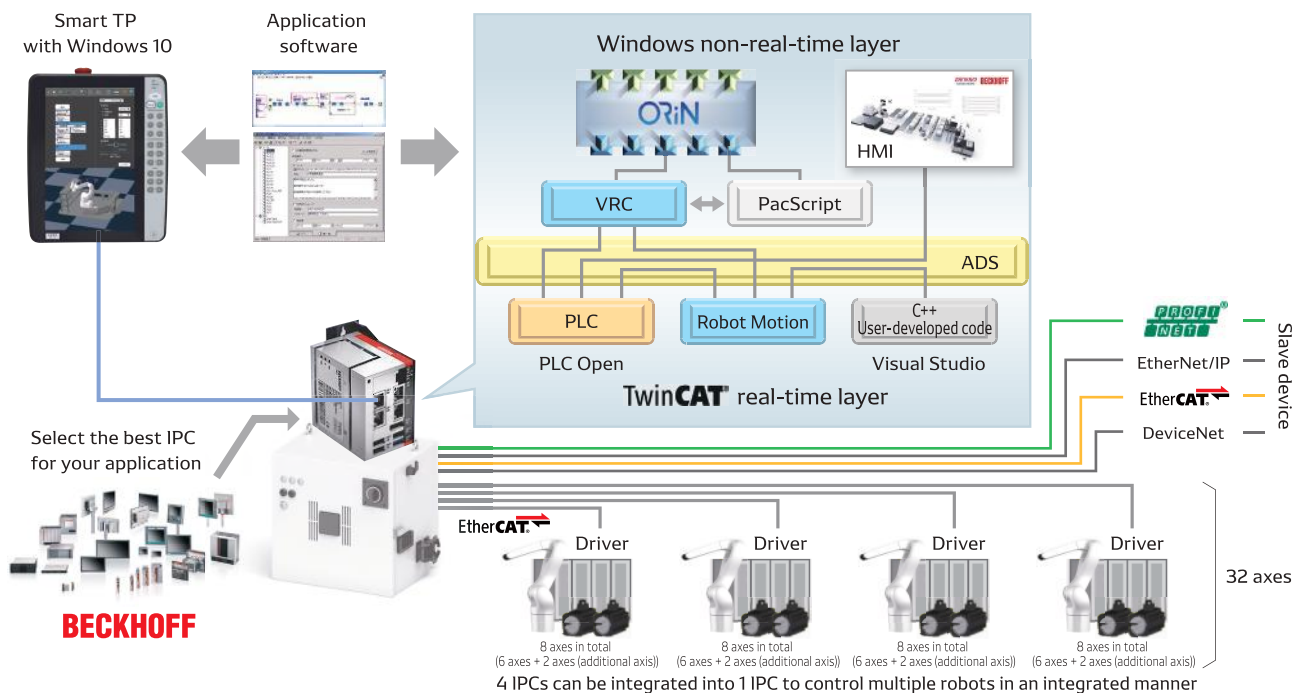
Delivering the simplicity that DENSO robots are designed to provide

This controller lets you build a system by choosing the optimal robot, peripheral equipment, and software for your application. The new teaching devices and application software "WINCAPS Plus" are also available to achieve further simplification while inheriting the RC8 development environment. It offers simplicity and peace of mind to all personnel involved with equipment setup and operation.

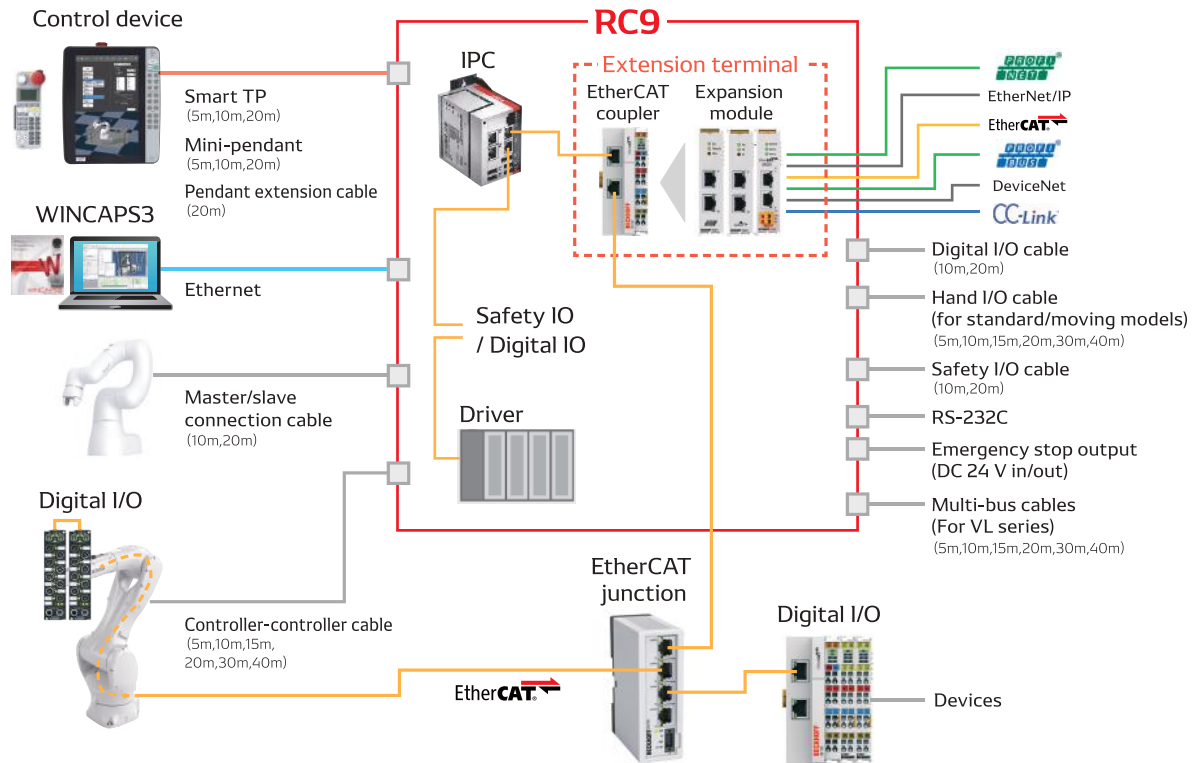


Controller that realizes integrated equipment control

RC9 can be provided with firmware. Since it has the selectivity that can be optimized according to the application, the openness that allows the fusion of user, Sier, and maker technologies, and the expandability that allows the entire system to be simply integrated, simple equipment integrated control is realized.



System configuration



List of expansion options

Cables	Power cable for EtherCAT box	M8-Open : 2, 10, 40m M8-M8 : 0.5, 2, 5, 10, 20, 40m 7/8"-open, movable : 2, 10, 40 m 7/8"-7/ 8", movable : 0.5, 2, 5, 10, 20, 40 m
	EtherCAT cable for EtherCAT box	M8-RJ45, movable : 0.5, 2, 5, 10, 20, 40 m M8-M8: 0.5, 2, 5, 10, 20, 40m
	IO-Link sensor cables	M12-Open, Class A : 0.5, 2, 10, 40m M12-M12, Class A : 2, 5, 10, 20, 40m M12-Open, Class B : 2, 10, 40m M12-M12, Class B, movable : 0.5, 2, 5, 10, 20, 40 m
	DIO sensor cables	M8-Open : 2, 10, 40m
	EtherCAT cables	RJ45-RJ45 : 0.5, 2, 5, 10, 20, 40m RJ45-RJ45, movable : 0.5, 2, 5, 10, 20, 40 m
	Expansion functionality (USB dongle/license)	TwinCAT3 PLC TwinCAT3 OPC UA TwinCAT3 PLC + HMI Web TwinCAT3 PLC + OPC UA TwinCAT3 PLC + HMI Web + OPC UA

I/O terminals	EtherCAT junction	3 ports, 4 ports, 8 ports
	EtherCAT bridge terminal	
	Profinet RT controller terminal	
	Profinet RT device terminal	
	Ethernet/IP master terminal	
	Ethernet/IP slave terminal	
	Profibus master terminal	
	Profibus slave terminal	
	DeviceNet master terminal	
	DeviceNet slave terminal	
	CC-Link slave terminal	
	RC232C 2-channel terminal	
	RS422/RS485 2-channel terminal	
	Digital input terminal (PNP, 8-point, 10 μ s, IP20)	
	Digital input terminal (PNP, 16-point, 3 μ s, IP20)	
	Digital output terminal (PNP, 8-point, 0.5 A, IP20)	
	Digital output terminal (PNP, 16-point, 0.5 A, IP20)	
	Digital input terminal (NPN, 8-point, 10 μ s, IP20)	
	Digital input terminal (NPN, 16-point, 3 μ s, IP20)	
	Digital output terminal (NPN, 8-point, 0.5 A, IP20)	
	Digital output terminal (NPN, 16-point, 0.5 A, IP20)	
	Digital output terminal (NPN, 16-point, 0.5 A, IP20)	
	Digital I/O terminal (PNP, 16-point, 3 ms, IP67)	
	Digital I/O terminal (NPN, 16-point, 3 ms, IP67)	
	IO-Link master, Class A, IP67	4 ports, 8 ports
	IO-Link master, Class B, IP67	4 ports, 8 ports
	EtherCAT coupler terminal (standalone)	
	EtherCAT expansion terminal	
	Ethernet expansion module (assembly)	
	EtherCAT coupler terminal + bus end-cap set (assembly)	
	Bus end-cap (standalone)	
	Digital I/O protective plug (M8, set of 50)	
	IO-Link protective plug (M12, set of 50)	

Smart TP

The Smart TP is a multifunctional teaching pendant that can be used in a variety of situations to teach based on robot settings or as an equipment display.

Features

Large touch panel

The Smart TP runs Windows 10 and features a large, 10.1-inch screen for improved ease of use.

Improved GUI to increase work efficiency

The Smart TP offers an easy-to-see menu architecture and excellent ease of use. Its GUI and functionality have been improved so that you can check simulations related to robot deployment on the pendant, shortening work times.

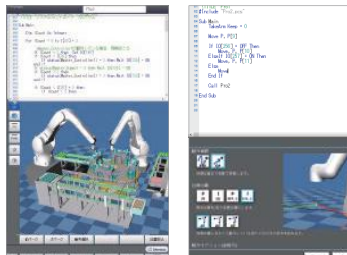
The Smart TP provides IP65 level drip-proof protection



Functionality

RC8-compatible UI

The Smart TP is compatible with the existing RC8 controller so that you can continue using the same development environment and operability that you've enjoyed to date.



TwinCAT3 PLC/HMI

It can display screens created with TwinCAT3 PLC/HMI.



WINCAPS Plus UI

Offline programming software suite, The Smart TP supports the WINCAPS Plus GUI.



Applications

As a teaching pendant

The Smart TP incorporates teaching functionality that can be used to adjust individual robot axes.



As an equipment control panel display

It can serve as a display for not only the robot, but the entire equipment setup.



As a programming-use computer

It can run not only WINCAPS Plus, but also customer-developed and general-purpose applications. It can be connected to a keyboard and used to author programs.

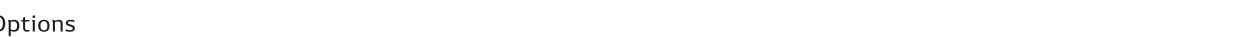


Specifications

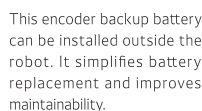
Size	10.1" (16:10)
Resolution	WXGA (800 × 1,280 pixels)
Touch screen	Transmissive capacitive touch panel
Backlight	LED
Dimensions (length × width × height)	215×284×69mm
Weight	Approx. 1,120 g

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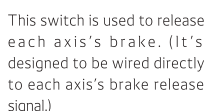
*1 Range of movement will be reduced if unit is hung on a wall or installed at an angle. *2 Positioning repeatability figure indicates precision at constant ambient temperature.
*3: Only $\phi 6$ can be controlled by built-in solenoid valve. *4: Allowable current is subject to limitations. *5: Future release planned



External battery unit



Brake release unit



Robot fixing plate kit
With leveling

Forklift attachment

Robot fixing plate
Without leveling

■ Power supply transformer (VM)



This option is required for overseas use
3-phase 400 VAC → 3-phase 200 VAC

Variable mechanical stopper for axis 1 /
Variable mechanical stopper bolts for axis 2/3

*Product appearance and specifications are subject to change without notice.

RC9 specifications

Specifications

Compatible robots		VMB-2515 series	VLA-4025 series
			
Power supply	Power supply capacity	4.5kVA	10.0kVA
	Input voltage range	3-phase 200 V AC -10% to 230 V AC +10%	3-phase 400 V AC -10% to 480 V AC +10%
	Power supply frequency	47~63Hz	
Power cable length		10m	
Number of control axes		6	
Control method		PTP, CP 3-dimensional straight line, 3-dimensional arc	
Drive method		All-digital AC servos for all axes	
Language		DENSO robot language (PacScript)	
Memory capacity		User domain Global variables: 32,766 (for each point); number of program files: up to 256	
Teaching method		1) Remote teaching 2) Numerical entry (MDI)	
External signals	Digital I/O	System (fixed): 8 dedicated inputs and 8 or 9 dedicated outputs (ships with No. 28 set to user output) User: 8 general-purpose inputs and 7 or 8 general-purpose outputs (ships with No. 28 set to user output)	
	Hand I/O	General-purpose inputs: 12; general-purpose outputs: 12	General-purpose inputs: 6; general-purpose outputs: 6 (including controller-controller cable)
	Safety I/O	System (fixed): 8 inputs and 8 outputs	
External communications	Ethernet	Panel: 1 line (GbE: Gigabit Ethernet)	
	USB	Panel: 1 line; internal: 3 lines	
Optional expansions		3 units	
Self-test function		Overrun, servo error, memory error, input error, short-circuit detection (user wiring), etc.	
Timer function		Unit: 1 ms	
Error display		External error output	
		Display of error codes on mini-pendant (option)	
		Display of error messages and recovery methods on teaching pendant (option)	
Environmental conditions (during operation)		Temperature: 0° C to 40° C; humidity: 20% to 90% RH (non-condensing)	
I/O power supply	Uses external power supply	Supply 24 V DC ±10% from external source.	
	Uses internal power supply	24 V DC ±10% is supplied by the controller.	
SCCR		5kA	
Stop category		1	
Safety-related control systems and performance		Emergency stop, protective stop, enable: PLd, Cat. 3	
Protection class		IP54	
Weight		65kg	85kg

※ The appearance and specifications are subject to change for improvement without prior notice.



Please visit our website for more information on products and functions.
<https://www.denso-wave.com/>



Official DENSO WAVE Channel:
Provides explanatory videos of functions, case studies, and robot applications.



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