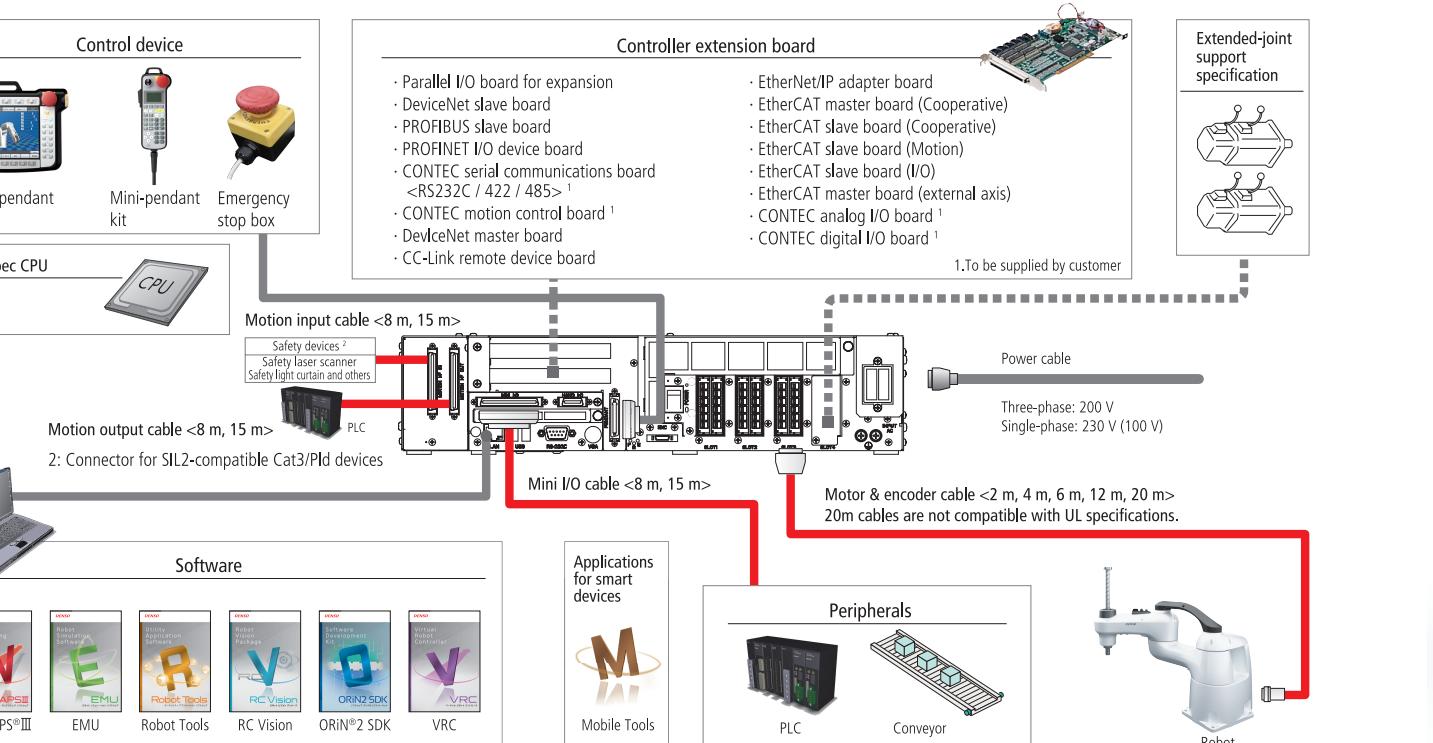


**C8A** Robot Controller Development Code No.8

#### Definitions

Item	Specifications
Power supply	1.80 kVA (Adaptable robot: HSR Series)
Input voltage range	Three-phase, 200 VAC -15% to 240 VAC +10% Single-phase, 230 VAC -10% to 240 VAC +10%
Power supply frequency	50 / 60 Hz
Le length	5 m
Le axes	4
Method	PTP, CP 3-dimensional linear, 3-dimensional arc (PTP control only for additional axes)
Method	Digital AC servo on all axes
Used	DENSO robot language (PacScript)
Capacity	User area—Variable area: 1.75 MB (equivalent to 32,766 points) / File area: 400 MB (5,000 steps x 256 files)
System	1) Remote teaching, 2) Numerical entry (MDI), 3) Direct teaching (HS series, HM series, HSR series)
Mini I/O	Input: User open 8 points + system fix 14 points / Output: 8 open user points + 18 fixed system points
Safety I/O less type	Input: User open 8 points + system fix 13 points / Output: 8 open user points + 14 fixed system points
Hand I/O	Input: User open 8 points / Output: 8 open sur
Motion I/O (option)	Input: Safety circuit signal: 30 points / Output: Safety circuit signal: 14 points
Parallel/O board (option)	Expansion slot: PCI / Input: 40 points / Output: 48 points
CC-Link remote device board (option)	Expansion slot: PCI Express / Input: 8,192 points max. / Output: 8,192 points max. Remote register input: 2,048 words max. / Output: 2,048 words (*1)
DeviceNet slave board (option)	Expansion slot: PCI Express / Input: 256 points max. / Output: 256 points max.
DeviceNet master board (option)	Expansion slot: PCI Express / Input: 1,024 points / Output: 1,024 points
EtherNet / IP adapter board (option)	Expansion slot: PCI Express / Input: 4,032 points max. / Output: 4,032 points max.
PROFIBUS slave board (option)	Expansion slot: PCI Express / Input: 256 points max. / Output: 256 points max.
PROFINET I/O device board (option)	Expansion slot: PCI Express / Input: 8,192 points max. / Output: 8,192 points max.
EtherCAT slave board (option)	Expansion slot: PCI Express / Input: 2,048 points max. / Output: 2,048 points max.
Communication	RS-232C: 1 line, Ethernet: 1 line (GbE: Gigabit Ethernet), USB: 2 lines, VGA: 1 line (option)
slot	PCI: 1 slot, PCI Express: 1 slot
agnosis function	Overrun, servo error, memory error, input error, short circuit detection (user wiring part), etc.
ental condition (in motion)	Temperature: 0 to 40°C Humidity: 20-90% RH or less (no condensation allowed)
rating	IP20
	Safety I/O less type, standard type: approx. 10 kg, safety motion type: approx. 11 kg (*2)

## Functional systems diagram



NO WAVE INCORPORATED

site: <https://www.denso-wave.com/en/robot/>

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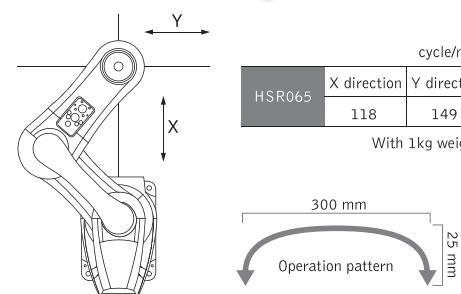
True high speed performance  
that changes everything

# Quick Acceleration. Runs Continuously at High Speed. Stops Precisely.

## High-speed motion

High acceleration & motion profiles

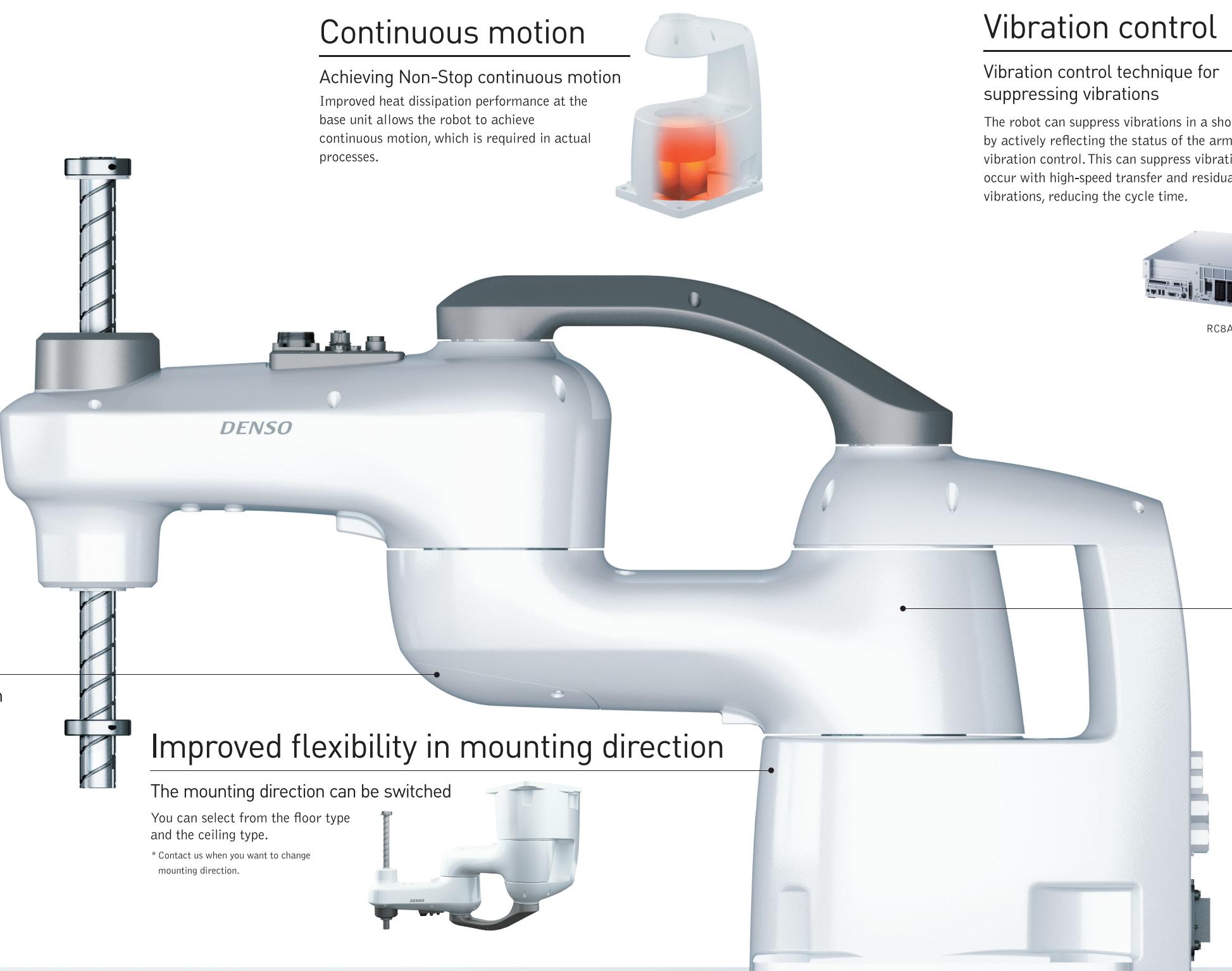
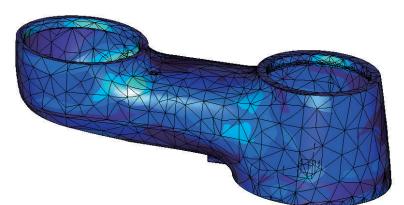
Improved CPM (cycle per minute) allows the robot to move at high speed continuously.



## Light weight

Newly designed, highly rigid, lightweight arm

The combination of high rigidity and light weight allows the robot to achieve a high payload (8kg) and high-speed motion at the same time.



## True High Speed performance never seen before has been achieved

Sometimes, the performance of a robot cannot be known only from its specifications. You may not be confident whether it can complete the motion within the listed cycle time, or whether it can actually continue its motion. To address those challenges, we have pursued the basic performances of robots—quick acceleration; runs continuously at high speed; stops precisely—that have been requested from fields to the utmost limits, and have developed new high-speed SCARA robots, the HSR Series, that can achieve "True high-speed performance." As a result of pursuing high-speed performance, high-speed picking systems can be realized with small, space-saving robots not only in conventional parts assembly processes, but also in packaging processes of food, medical supplies, and cosmetics, which is bringing about a revolution in performance.

## Continuous motion

Achieving Non-Stop continuous motion

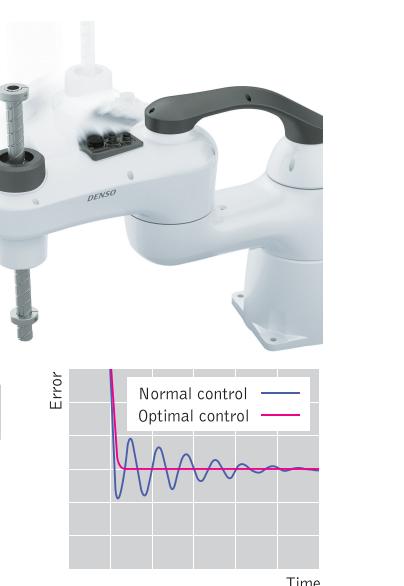
Improved heat dissipation performance at the base unit allows the robot to achieve continuous motion, which is required in actual processes.



## Vibration control

Vibration control technique for suppressing vibrations

The robot can suppress vibrations in a short time by actively reflecting the status of the arm to vibration control. This can suppress vibrations that occur with high-speed transfer and residual vibrations, reducing the cycle time.



## Improved flexibility in mounting direction

The mounting direction can be switched

You can select from the floor type and the ceiling type.

\* Contact us when you want to change mounting direction.



## Optimum layout

Optimized layout allows the robot to achieve high-speed motion.

A large-capacity motor is integrated into the base unit. Weight reduction at the tip of the arm and optimized arm structure allow the robot to improve its high-speed performance.



## I HSR Series

DENSO 4-axis Robot  
SCARA robot

Robot controller supported **RC8A**

### HSR048/HSR055/HSR065

Best-in-class high-speed/high throughput performance allows the robot to run continuously at maximum speed in the most challenging applications.

Metal detectable bellows type is newly available.



Maximum reach	480~550~650 mm
Z-axis stroke	100~200~320~510 mm <sup>4</sup>
Maximum payload	8 kg
Cycle time	0.28 and 0.31 sec
Position repeating accuracy	±0.01~0.012 mm

#### ■ Specifications

Term	Specifications
Model <sup>1</sup>	HSR048A1-N/S*      HSR055A1-N/S*      HSR065A1-N/S*
Total arm length (J1: No. 1 arm + J2: No. 2 arm)	205+275=480mm      275+275=550mm      375+275=650mm
J1 (No.1 axis)	±130°
J2 (No.2 axis)	±143.5°      ±150°
Z (No.3 axis) *	±10 : 100mm ±20 : 200mm ±32 : 320mm ±51 : 510mm <sup>4</sup>
T (No.4 axis)	±360° J1 (No.1 axis) + J2 (No.2 axis) + Z (No.3 axis) + T (No.4 axis) 8kg
Axis combinations	
Maximum payload	
Cycle time <sup>2</sup>	0.28sec      0.28sec      0.31sec
J1	450deg/sec
J2	785deg/sec
Z	785deg/sec
T	2500deg/sec 10:1700mm/sec, 20:2300mm/sec, 32:2475mm/sec
Maximum joint speed	
Position repeatability (center of end-effector mounting face) <sup>3</sup>	±0.01mm      ±0.012mm J1+J2      Z      T ±0.01mm      ±0.01mm      ±0.012mm
Maximum pressure input (downward)	98N (1 second or less)
Maximum allowable moment of inertia	0.12kgm <sup>2</sup>
Position detection method	Absolute encoder
Drive motor / brake	All-axis servo motor / Z- and T-axis brake
User air pipe	4 systems (Ø4x2, Ø6x2)
User signal line	19 (for proximity sensor signals, etc.) Ethernet(8) *Option
Air source	Normal pressure Maximum allowable pressure 0.05 to 0.35MPa 0.59MPa
Airborne noise	80 dB or less
Weight	Approx. 31 kg      Approx. 31.5 kg      Approx. 32 kg

1: An asterisk (\*) in a model name indicates Z-axis stroke.

2: Time required for a robot to move a 2 kg payload between two points 300 mm apart at a height of 25 mm.

3: Position repeatability is the precision at constant ambient temperature.

4: Models with a Z-axis stroke of 510 mm will be available in and after 2019.

#### ■ Options

##### Wiring protection kit



Protects external wiring to prevent cables from becoming unorganized and avoid the risk of broken wires.

##### Built-in Ethernet



An Ethernet cable is built into the body. Easily connectable to external devices. \*Ethernet connectors (sold separately) are available as options.

##### External battery



The encoder backup battery installed outside the robot facilitates easy replacement of batteries and makes maintenance.

##### Stopper with bearing



This stopper can protect wiring that is installed through the hole of the bearing located at the top of the Z-axis shaft.