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for more Doosan Robot Applications



Switch on the Future  
**Doosan Robotics**



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**DOOSAN**

# DOOSAN ROBOT SERIES



**Doosan Robotics**

# DOOSAN HERITAGE

## Super SAFE



- Space restriction and five workspace settings to fully protect the operator



Improve efficiency and secure the operator's safety by setting various zones in accordance with the site application

- Outstanding product safety certified by international organizations

Doosan robots have received safety certifications for designs that meet international criteria, and boast the highest level of safety in the industry NRTL (US), CE (Europe), KCs (Korea)

## Super EASY



- Easy to complete, one-touch programming

Doosan robots automatically recognize attached peripherals and suggest ideal work process in forms of various templates from simple material handling to machine tending. It also provides pre-programmed skills, commonly used in the field, which makes it very easy to teach the robot even for beginners

- Cockpit to quickly and easily teach robots

Through the cockpit (Direct teaching button) on Doosan robots, it is possible to select various teaching modes as well as to save coordinates with simple button operations, allowing easy direct teaching

## Super FLEXIBLE



- Doosan Mate maximizing the utilization of Doosan robots

Doosan Mate is comprised of a variety of industry-leading partner products from grippers to electric tools machines, sensors and software, providing the best automation solutions optimized for customer needs. All registered products are highly compatible with Doosan robots, allowing easy and fast set-up and immediate operation

- Convenient communication connections

Doosan robots are capable of being connected even without a gateway, making it easy to interface with various types of industrial equipment and systems

\*Supported Communications:  
RS-232, RS-485, TCP/IP Socket, Modbus-TCP/RTU, PROFITNET, EtherNet/IP



# High-Power H-SERIES

H-SERIES is the most powerful cobot in the market  
The outstanding 25 kg payload and 6-axis torque sensor are capable of performing precise and safe work



**H2515**  
Payload 25kg  
Reach 1500mm

**H2017**  
Payload 20kg  
Reach 1700mm

## MAIN APPLICATIONS



### Palletizing

Heavy objects stacking and palletizing on logistics and automated procedures



### Machine Tending

Feed heavy subjects into the CNC machine and load/unload them from/to the pallet



### Heavy Object Handling

Stacking, transport and handling of multiple objects simultaneously in fast-paced production procedures, such as those found in the logistics and fabric industries



### Video Shooting

Can be used at professional broadcasting sites, such as for musicals and broadcasting transmissions, to carry out safe and precise tasks



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Applications

# H-SERIES KEY FEATURES

## High+ Payload

Boast the highest payload among existing cooperation robots and can efficiently organize work through the simultaneous handling of objects of various weights

# 25kg

Experience the overwhelming payload capable of easily handling heavy objects up to 25 kg!

## High+ Safety

The highest collision sensitivity in the industry, with six high-tech torque sensors. Through the application of a counterbalance mechanism, the light-weight hardware reduces shock to improve the safety of the robots

# PL e Cat 4

Configure a secure and safe work environment for operators with safety reliability that meets the highest international safety level\*

\*Performance Level  
Emergency Stop, Safe Torque Off (STO), and Safe Brake Control (SBC)

-PL e·Cat 4 is an indicator of the performance of the safety-related control system in accordance with the functional safety standard ISO 13849-1



## High+ Reach

Applicable to various work environments, with a wide work radius and the highest efficiency for multiple work processes or remote palletizing

# 1700 mm

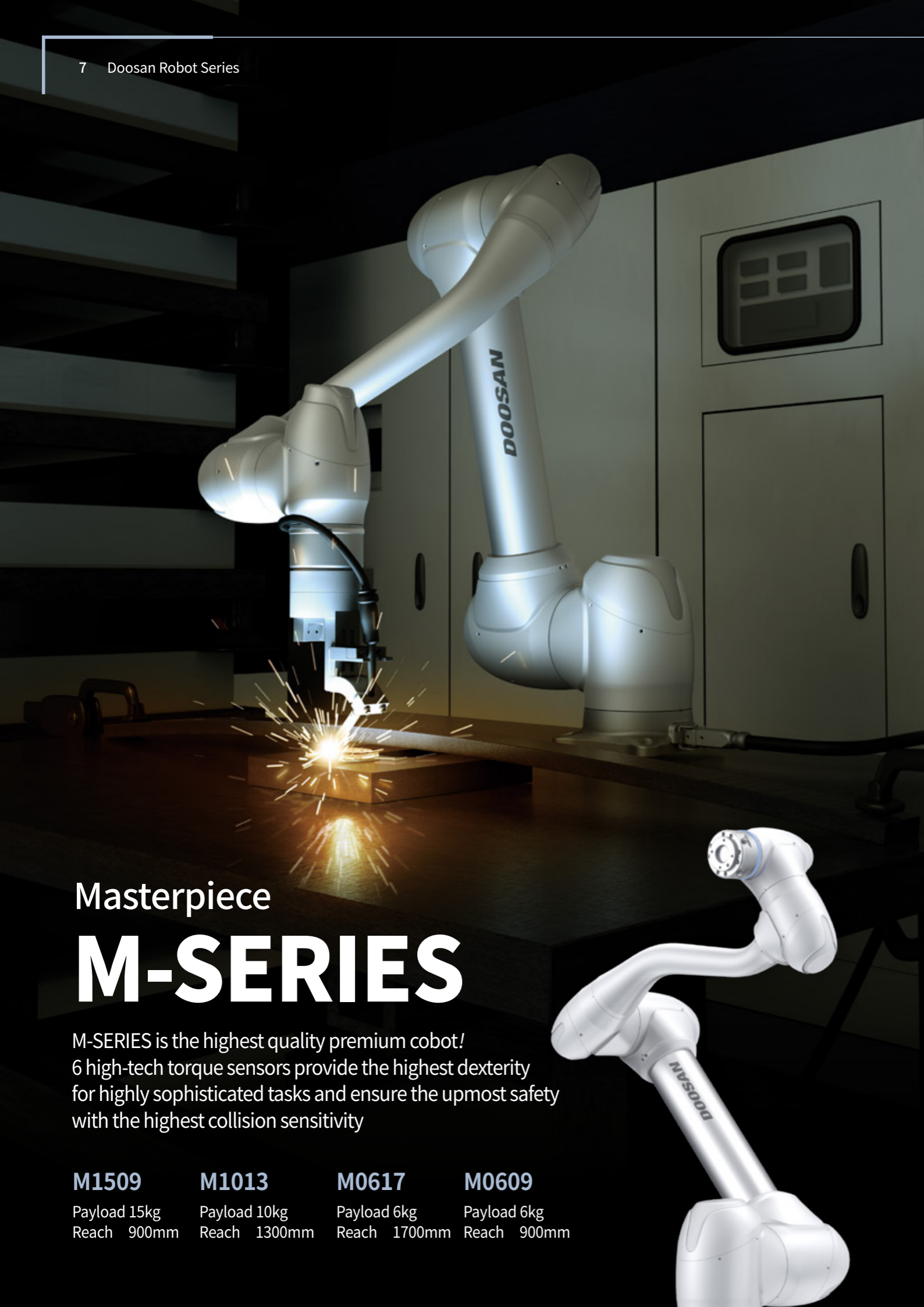
Handle objects in a wide range, with a work radius of up to 1700 mm

## High+ Flexibility

The lightweight design allows for free movement, simple flexible work environment settings and easy coupling with mobile robots

# 1/2

Since relocation of the robots is easy and the robots are suitable for coupling with AGV and AMR due to their light weight of about one half of the equivalent six-axis multi-joint robots, various applications can be configured



# Masterpiece M-SERIES

M-SERIES is the highest quality premium cobot!  
6 high-tech torque sensors provide the highest dexterity for highly sophisticated tasks and ensure the upmost safety with the highest collision sensitivity

<b>M1509</b>	<b>M1013</b>	<b>M0617</b>	<b>M0609</b>
Payload 15kg Reach 900mm	Payload 10kg Reach 1300mm	Payload 6kg Reach 1700mm	Payload 6kg Reach 900mm

## KEY FEATURES

### Master+ Safety

The 6 high-tech torque sensors are capable of detecting subtle force changes and providing perfect safety, with the best collision sensitivity in the industry

### Master+ Force Control

The high-tech torque sensor completes the high-level force control and compliance control technologies capable of subtle and sophisticated work

### Master+ Setup

The Smart Setup function allows quick system installation and immediate operation, as it automatically measures inclination angles, tool position and weight

**6** Torque Sensors

**2N** Precision

**12** Minutes

## MAIN APPLICATIONS



### Assembly

Traditional assembly tasks like screw driving and gear assembling



### Machine Tending

Feed the CNC machine and load/unload the subject into the pallet



### Welding

Welding parts like skilled welder by various paths with certain quality



### Polishing & Deburring

Burr removal and surface polishing after processing



### Gluing & Bonding

Spraying of consistent amount of adhesive for gluing and bonding



### Plastic Injection Support

Detaching item from mold of injection molding machine and loading onto/unloading from pallet



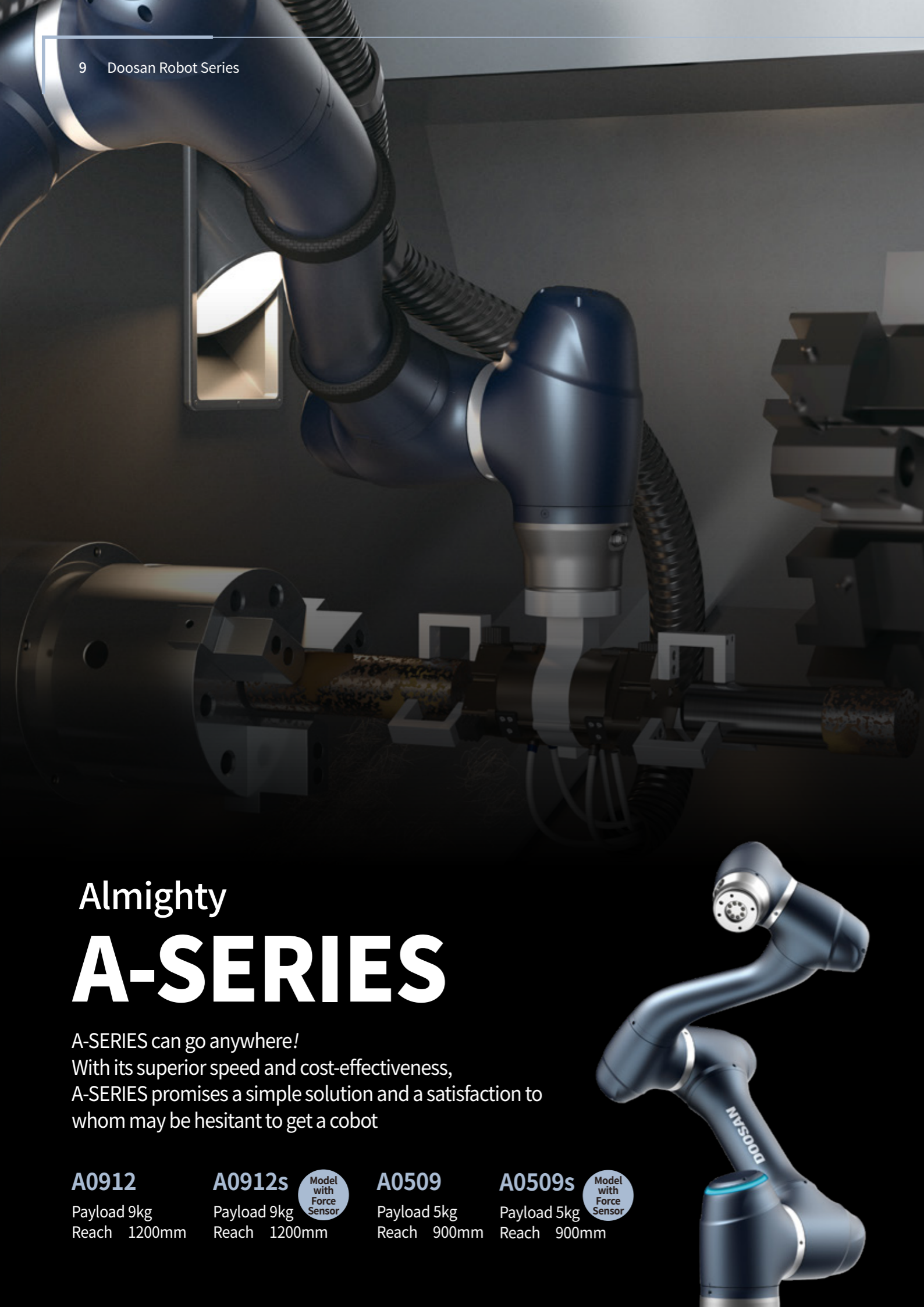
### Press Forming

Picking up panel for loading onto/unloading from press machine



### Service

Safely and repeatedly performs pre-defined tasks in accordance with user needs in service industries like medical and Food and Beverage



# Almighty A-SERIES

A-SERIES can go anywhere!  
With its superior speed and cost-effectiveness,  
A-SERIES promises a simple solution and a satisfaction to  
whom may be hesitant to get a cobot

- |                                             |                                                                                     |                                            |                                                                                    |
|---------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------|
| <b>A0912</b><br>Payload 9kg<br>Reach 1200mm | <b>A0912s</b> <small>Model with Force Sensor</small><br>Payload 9kg<br>Reach 1200mm | <b>A0509</b><br>Payload 5kg<br>Reach 900mm | <b>A0509s</b> <small>Model with Force Sensor</small><br>Payload 5kg<br>Reach 900mm |
|---------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------|

## KEY FEATURES

### A+ Speed

Twice faster joint speed enhances productivity, efficiency and effectiveness on any tasks

### A+ Customization

Force control accuracy of FTS (Force Torque Sensor) is twice as high as competitors, ensuring higher performance and outcome

### A+ ROI

10% faster work speed on average combined with competitive price shortens your ROI period

**×2** Axis Speed

**×2** Force Control Accuracy of FTS

**10%**

## MAIN APPLICATIONS

A0509 · A0912



### Machine Tending

Feed the CNC machine and load/unload the subject into the pallet



### Pick & Place

Simple loading/unloading work such as moving objects between tasks



### Packaging

Quick product packaging and transporting tasks in electronic, material handling and plastic industry



### Inspection

Inspecting internal/external defects and assembly quality



### Air Blowing

Exterior cleaning of finished products or workpieces with spiral spray motion and multi-angle composite spray motion



### Gluing & Bonding

Spraying of consistent amount of adhesive for gluing and bonding



### Polishing & Deburring

Burr removal and surface polishing after processing



### Assembly

Traditional assembly tasks like screw driving and gear assembling








A0509s · A0912s

# DOOSAN ROBOT APPLICATION

## Manufacturing

 <p><b>Pick &amp; Place</b> Simple loading/unloading work such as moving objects between tasks</p>	 <p><b>Press Forming</b> Picking up panel for loading onto/unloading from press machine</p>	 <p><b>Polishing &amp; Deburring</b> Burr removal and surface polishing after processing</p>
 <p><b>Assembly</b> Traditional assembly tasks like screw driving and gear assembling</p>	 <p><b>Gluing &amp; Bonding</b> Spraying of consistent amount of adhesive for gluing and bonding</p>	 <p><b>Air Blowing</b> Exterior cleaning of finished products or workpieces with spiral spray motion and multi-angle composite spray motion</p>
 <p><b>Packaging &amp; Palletizing</b> Heavy objects stacking and palletizing on logistics and automated procedures</p>	 <p><b>Inspection</b> Inspecting internal/external defects and assembly quality</p>	 <p><b>Machine Tending</b> Feed the CNC machine and load/unload the subject into the pallet</p>
 <p><b>Welding</b> Welding parts like skilled welder by various paths with certain quality</p>	 <p><b>Plastic Injection Support</b> Detaching item from mold of injection molding machine and loading onto/unloading from pallet</p>	 <p><b>Heavy Object Handling</b> Stacking, transport and handling of multiple objects simultaneously in fast-paced production procedures, such as those found in the logistics and fabric industries</p>

## Service and others

 <p><b>Chicken</b> Cooking food in a fryer for the appropriate time in 170 degree oil</p>	 <p><b>Construction perforation</b> Achieve a reduction in labor costs and complete construction just like the actual drawings by using cooperation robots for the repetitive and precise perforation process</p>	 <p><b>Charging electric vehicles</b> Connecting the plug to the charging terminal of the electric vehicle</p>
 <p><b>Coffee</b> Making hand-drip coffee by pouring water into a dripper in the same manner as a barista, or 3 cups of espresso in 15 seconds</p>	 <p><b>Prevention of Epidemics</b> Disinfection work using disinfectant spray and UV lamps in combination with the autonomous driving robots</p>	 <p><b>Video Shooting</b> Can be used at professional broadcasting sites, such as for musicals and broadcasting transmissions, to carry out safe and precise tasks</p>
 <p><b>Ice cream</b> Direct delivery to the customer after scooping the ice cream into the cone</p>	 <p><b>Medical treatment</b> Advanced medical applications that can be utilized in surgical assistance, rehabilitation, and support fields</p>	

# DOOSAN ROBOT LINE-UP

High-Power  
**H-SERIES**

H2515 · H2017

H-SERIES is the most powerful cobot in the market. Outstanding 25kg payload and 6 torque sensors brings safe work environment for any kind of application

Masterpiece  
**M-SERIES**

M1509 · M1013 · M0617 · M0609

M-SERIES is the highest quality premium cobot! 6 high-tech torque sensors provide the highest dexterity for highly sophisticated tasks and ensure the upmost safety with the highest collision sensitivity

Almighty  
**A-SERIES**

A0912 · A0912s · A0509 · A0509s

A-SERIES can go anywhere! With its superior speed and cost-effectiveness, A-SERIES promises a simple solution and a satisfaction to whom may be hesitant to get a cobot



TECHNICAL SPECIFICATION		H2515	H2017	M1509	M1013	M0617	M0609	A0912 / A0912s	A0509 / A0509s			
Manipulator	Payload	25 kg (55.1 lb)	20 kg (44 lb)	15 kg (33 lb)	10 kg (22 lb)	6 kg (13.2 lb)	6 kg (13.2 lb)	9 kg (19.8 lb)	5 kg (11 lb)			
	Reach	1,500 mm (59 inch)	1,700 mm (66.9 inch)	900 mm (35.4 inch)	1,300 mm (51.1 inch)	1,700 mm (66.9 inch)	900 mm (35.4 inch)	1,200 mm (47.2 inch)	900 mm (35.4 inch)			
	Weight	77 kg (169.8 lb)	79kg (174.2 lb)	33 kg (72.8 lb)	34 kg (75 lb)	35.5 kg (78.3 lb)	27.5 kg (60.6 lb)	31 kg (68.3 lb)	21 kg (46.2 lb)			
	<b>Performance</b>											
	Tool Speed	1 m/s	1 m/s	1 m/s	1 m/s	1 m/s	1 m/s	1 m/s	1 m/s			
	Repeatability	±0.1 mm	±0.1 mm	±0.03 mm	±0.05 mm	±0.1 mm	±0.03 mm	±0.05 mm	±0.03 mm			
	Temperature	0~45 °C	0~45 °C	0~45 °C	0~45 °C	0~45 °C	0~45 °C	0~45 °C	0~45 °C			
	<b>Joint Movement</b> (Range : °   Max Speed : °/s)											
	J1	±360°   100°/s	±360°   100°/s	±360°   150°/s	±360°   120°/s	±360°   100°/s	±360°   150°/s	±360°   180°/s	±360°   180°/s			
	J2	±125°   80°/s	±125°   80°/s	±360°   150°/s	±360°   120°/s	±360°   100°/s	±360°   150°/s	±360°   180°/s	±360°   180°/s			
	J3	±160°   100°/s	±160°   100°/s	±150°   180°/s	±160°   180°/s	±165°   150°/s	±150°   180°/s	±160°   180°/s	±160°   180°/s			
	J4	±360°   180°/s	±360°   180°/s	±360°   225°/s	±360°   225°/s	±360°   225°/s	±360°   225°/s	±360°   360°/s	±360°   360°/s			
	J5	±360°   180°/s	±360°   180°/s	±360°   225°/s	±360°   225°/s	±360°   225°/s	±360°   225°/s	±360°   360°/s	±360°   360°/s			
	J6	±360°   180°/s	±360°   180°/s	±360°   225°/s	±360°   225°/s	±360°   225°/s	±360°   225°/s	±360°   360°/s	±360°   360°/s			
<b>Other Features</b>												
Mount Position	Floor	Any Orientation						Any Orientation				
Protection Rating	IP 54	IP 54						IP 54				
Flange Interfaces	Digital in 6, out 6	Digital in 6, out 6						Digital in 2, out 2, RS-485* <small>*For pseudo serial communication, refer to the Programming Manual for more details</small>				
I/O Power Supply	DC 24 V / Max. 3 A	DC 24 V / Max. 3 A						DC 24 V / Max. 3 A				
FTS(6-axis) Option	N/A	N/A						Force 110 N/ Moment 11 Nm				
Controller <small>*Same in M · H-SERIES</small>	<b>Type</b>	AC (CS-01)		AC (CS-01P)		DC (CS-02)		AC (CS-03)		DC (CS-04)		
	Interfaces	RS-232, RS-422, RS-485, TCP / IP <small>*Requires a USB to RS-232, RS-422, RS-485 converter</small>								RS-232, RS-422, RS-485, TCP / IP <small>*Requires a USB to RS-232, RS-422, RS-485 converter</small>		
	Industrial Network	Modbus-TCP (Master/Slave), Modbus-RTU (Master), EtherNet, IP (Adapter), PROFINET (IO-Device), FANUC - FOCAS (NC Interface)								Modbus-TCP (Master/Slave), Modbus-RTU (Master), EtherNet, IP (Adapter), PROFINET (IO-Device), FANUC - FOCAS (NC Interface)		
	Dimensions	525(W) x 287(D) x 390(H) mm			577(W) x 241(D) x 422(H) mm			462(W) x 218(D) x 295(H) mm		482(W) x 214(D) x 375(H) mm		
	Weight	13 kg			17 kg			12 kg		13 kg		
	Protection Rating	IP 30			IP 54			IP 20		IP 40		
	I/O Port - Digital I/O	16 / 16								16 / 16		
	I/O Port - Analog I/O	2 / 2								2 / 2		
	I/O Power Supply	DC 24 V								DC 24 V		
	Rated Supply Voltage	100~240 VAC, 50~60 Hz						22-60 VDC		100~240 VAC, 50~60 Hz		22-60 VDC
Cable Length	6 m (Option : 3 m)						3 m (Option : 6 m)		6 m			
Teach Pendant <small>*Basic components of M · H-SERIES *Optional for A-SERIES</small>	Protection Rating	IP 40								<b>Emergency Button</b> <small>*Basic components of A-SERIES</small>	Protection Rating	IP 54
	Dimensions	264(W) x 218(D) x 69(H) mm									Dimensions	68(W) x 68(D) x 91.5(H) mm
	Weight / Screen Size	0.8 kg / 10.1 inch									Weight	0.2 kg (Without cable)
	Cable Length	4.5 m (Option 2.5 m)						2.5 m (Option 4.5 m)			Cable Length	6 m
										<b>Smart Pendant</b> <small>*Option only for A-SERIES</small>	Protection Rating	IP 40
										Dimensions	91(W) x 180(D) x 52(H) mm	
										Weight	0.3 kg (Without cable)	
										Cable Length	6 m	



# VALUE ADDING | 01 Accessories

Various functions can be added to maximize the performance and production efficiency of collaborative robots

## Mobile Base

Mobile Base integrates the robot, controller and Teach Pendant to allow flexible relocation and movement. Various apparatuses such as pallet and laser scanner can be installed, and various storage spaces allow convenient tool storage and usage

### Specification

<b>Dimension</b>	850(W) X 600(D) X 825(H) mm
<b>Weight</b>	166 kg
<b>Material</b>	Top Plate - Stainless Steel
<b>Compatible Robot Models</b>	M-SERIES / A-SERIES / H-SERIES*

\*Additional fixing work is required to apply the H-SERIES



## Smart Vision Module

Mounted to the end of the robot, Smart Vision Module provides the highest compatibility with Doosan robots in processes such as parts inspection, identification and position correction. It can be mounted quickly and easily and offers the convenience of setting a process with just a simple operation by providing dedicated SW\*

### Specification

<b>Dimension</b>	92mm(W) X 132mm(D) X 25.6mm(H)
<b>Weight</b>	348 g
<b>Camera</b>	CMOS 2.5M pixel (1920 X 1440)
<b>Lens</b>	Focal length 3.4mm View angle 75°
<b>Light</b>	White LED X 2ea (800lux @ WD500mm)
<b>Communication</b>	TCP/IP, 100Mbps
<b>Power</b>	24W (24V, 1A)
<b>Compatible Robot Models</b>	M-SERIES / A-SERIES / H-SERIES

\*DART-Vision



## Dress Pack

Dress Pack organizes various cables connected to the end tools of the robot allowing efficient operation. Integrated conduit bracket and holder ensures convenient organization, and it is easy to attach/detach and relocate on the robot

### Specification

<b>Model</b>	M0609 / M1013 / M1509	M0617
<b>Configuration</b>	A0509 / A0509s / A0912 / A0912s	H2017 / H2515
<b>Conduit</b>	1EA (3M)	1EA (3M)
<b>Dress Kit</b>	3 EA	4 EA
<b>Color</b>	Black, White	
<b>Conduit Size</b>	Φ23, Φ29	



## Robot Jacket

Robot Jacket protects robot from contamination by liquids used during cutter support work, etc. PU coating forms a 2-satage water barrier which ensures Doosan robot to maintain optimum operation conditions

### Specification

	Full Cover Jacket					Head Cover Jacket
<b>Dimension</b>	M0609 A0509 A0509s	M1509	M1013 A0912 A0912s	M0617	H2017 H2515	
	1560 mm	1840 mm	2100 mm	2240 mm	3240 mm	305 mm
<b>Material</b>	Spandex & Carbon Fiber					
<b>Color</b>	Navy					
<b>Thickness</b>	0.55 ± 0.02mm					
<b>Protected Range</b>	Liquid such as water and paint (85°C ± 5°C)					



## Teach Pendant Soft Cover

The cover designed to safely protect the Teach Pendant from external forces. Its edge impact protection design is made out of environment-friendly silicon known for its lightweight and anti-stain properties, and it also features a handle doubles as a stand for user convenience

### Specification

<b>Dimension</b>	280(W) x 225(D) x 125(H) mm
<b>Weight</b>	350g
<b>Color</b>	Navy
<b>Material</b>	Silicon



## VALUE ADDING | 02 Controller Option

### Protected AC Controller (CS-01P)

#### Specification

Dimension	577(W) X 241(D) X 422(H) mm
Weight	17 kg
Material	Zinc Plated Steel
Protection Rating	IP54
Compatible Robot Models	M-SERIES / H-SERIES



### DC controller (CS-02)

#### Specification

Dimension	462(W) X 218(D) X 295(H) mm
Weight	12 kg
Material	Zinc Plated Steel
Protection Rating	IP20
Compatible Robot Models	M-SERIES / H-SERIES



### DC controller (CS-04)

#### Specification

Dimension	482(W) X 214(D) X 375(H) mm
Weight	13 kg
Material	Zinc Plated Steel
Protection Rating	IP40
Compatible Robot Models	A-SERIES



## VALUE ADDING | 03 Operation Option

### DART-Platform

Applicable to all SERIES

DART-Platform, the Doosan Robotics user software, enables robot teaching along with the wide range of programming actions on a PC environment

-A separate PC is required for installation and use of the DART-Platform



### Smart Pendant

Option only for A-SERIES

A simple interface with commonly used function buttons including Home Position, Servo ON/OFF and Start/Stop for easy control

-If Smart Pendant is installed, a separate PC is required to run the DART-Platform



### Teach Pendant

Standard for M · H-SERIES, Optional for A-SERIES

Offers tablet PC-like ease of use, and with the inclusion of the DART-Platform, it is capable of configuring various applications, from simple programming up to advanced control algorithms

-Teach Pendant Soft Cover (Option)

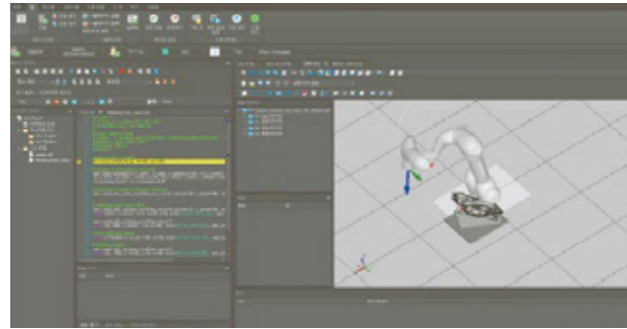


# VALUE ADDING | 04 Software

## DART-Studio

Simulation and offline programming features in DART-Studio provides fast and various robot programming on a PC

-A separate PC is required for installation and use of the DART-Studio



## DART-Vision

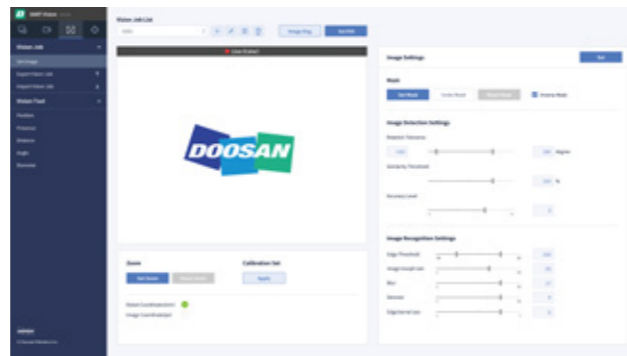
DART-Vision is SW for setting SVMs on PCs. It can set various vision tasks and carry out calibration with the robot

-A separate PC is required for installation and use of the DART-Vision

-Provide setting environments necessary for recognizing and detecting objects, inspecting the presence or absence of the objects, measuring distances/angles/diameters, tracking landmarks, and detecting barcodes/QR codes

-Manual/automatic calibration functions

-Applicable from SW v2.8



# Operating System

## ROS

ROS is an operating system for developing robot application programs. It provides various libraries and debugging tools for the implementation of necessary functions and the development environment

-ROS support for various platforms such as Windows and Amazon AWS Robomakers

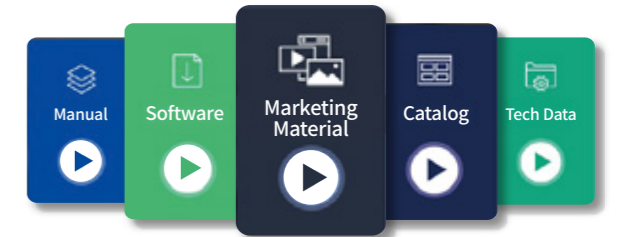
-Provision of Doosan ROS package for ROS Kinetic / ROS Melodic / ROS Noetic package ROS 2 Foxy



# VALUE ADDING | 05 Robot LAB

## Resources

Sharing of manuals, user software, product catalogs, and technical materials necessary for constructing robot systems, and provision of trouble-shooting guides



## Training

Introduction of training courses on system configuration and overall operations, such as installation/operation/programming/maintenance of Doosan robots, and provision of step-by-step online learning materials from basics for beginners to advanced applications for professionals



# EcoSystem

## Doosan Mate

Meet our partners from end effectors to safety devices to automate your work process with Doosan's collaborative robots



Scan this QR code for more mates



# GLOBAL NETWORK

Doosan Robotics continues to expand its global network around the world!  
Prompt service is available around the globe through dealer networks established in different countries



# 40+