



Automation for a Changing World

# Delta Articulated Robots DRV Series



[www.deltaww.com](http://www.deltaww.com)

 **DELTA**  
Smarter. Greener. Together.

## Smart Robots for Industry Upgrades

In this age of smart automation for production lines and factories, industrial robots are applied to accomplish dangerous tasks, save manpower cost, improve flexibility for manufacturing and shorten operation time.

Delta's latest articulated robots DRV Series with robot controller DCV Series facilitate smooth integration with other Delta peripheral devices to establish simple and easy-to-operate systems for robot control. Delta's highly integrated robot workstations enable excellent production efficiency and reduce labor costs.

With excellent flexibility, the 6-axis articulated robots have two different working ranges to meet a variety of application demands. The robots can be widely used in industries such as 3C, electronics and electrical engineering, metal processing, rubber and plastics, as well as applications including inspection, assembling, glue dispensing, machine tending, packaging, soldering, and load/ unload. Delta's DRV Series is your best partner for moving towards Industry 4.0.

**H**igh Flexibility

**H**ollow Wrist

**M**ultiple Installations

**U**ser-Friendly Interface

**E**asy-to-Operate



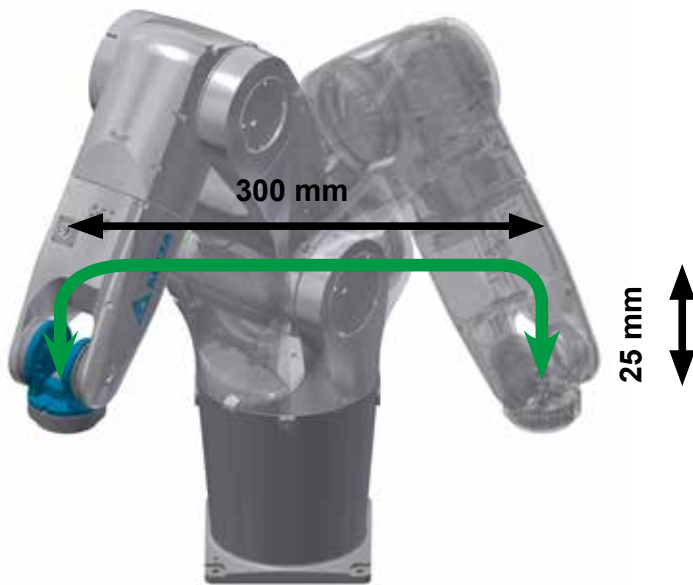
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# Product Features

## Excellent Speed & Repeatability



### Fixed Distance (300mm / 25mm)

Model	Payload (kg)	C/T (sec)
DRV70L Series	1 kg	0.32 sec
DRV90L Series	1 kg	0.35 sec
DRVA1L Series	1 kg	0.48 sec
DRVA4L Series	1 kg	0.54 sec

## Hollow-wrist Design for Cable Routing

**Non-hollow Design:**  
Tangled cables hinder robot operation



**Hollow Design:**  
Enhanced cable reliability

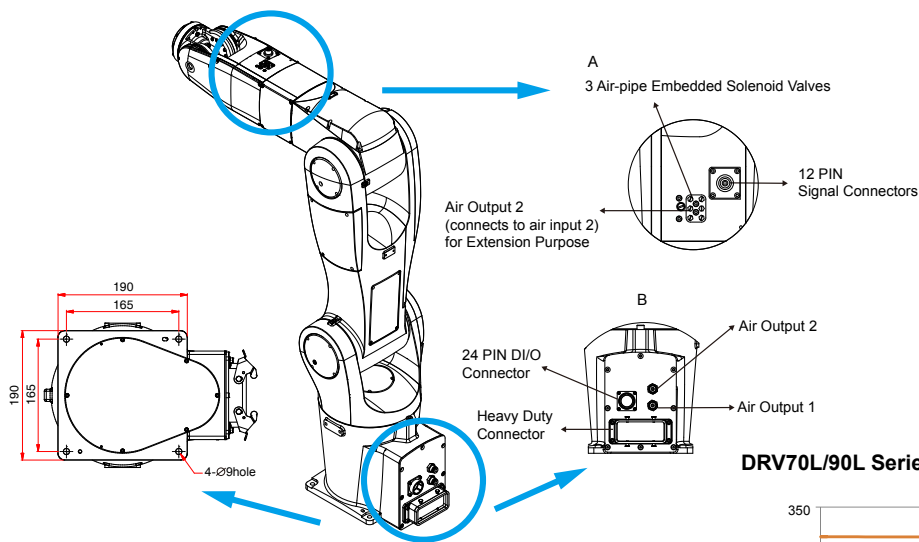


## Table-top, Ceiling-mount, and Wall-mount Installations

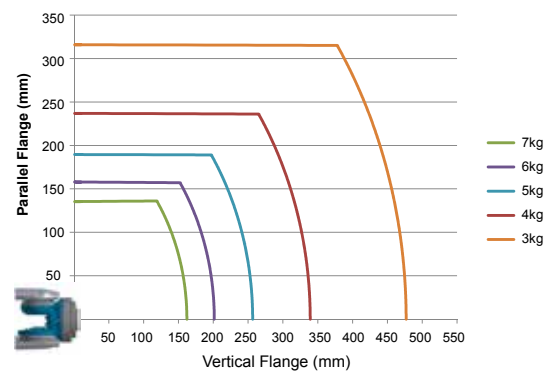
High installation flexibility fulfills production line demands and enhances efficiency



## Compact Design for Easy Installation and Fast Production Line Application



DRV70L/90L Series Payloads and Center of Gravity Graph



# Product Features

## User-Friendly Interface



Convenient for Project Management

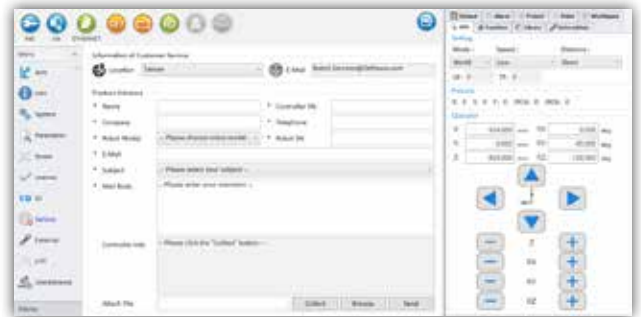
Instant Feedback Remote Maintenance

Simple Programming Languages

DRASudio Intuitive interfaces



Real-time support via complete customer feedback interface



Categorized projects and models for easy management



Intuitive coding environment with drag and drop functions



## Easy-to-Operate

### User-defined IO Functions

- Multiple DI/Os for real-time monitoring and operation
- Total system development with external equipment via serial connection



### Easy Setup for Fast Integration

- Provides 9 user frames and tool frames



### Wide Range of Motion Setting for Enhanced Safety and Reliability



Diversified Motion Commands

Simple Inspection & Quick Maintenance

Optimized Parameter Settings

# Product Specifications

## DRV Series

Model		DRV70L Series	DRV90L Series	DRVA1L Series	DRVA4L Series
Number of Axes		6			
Max. Working Range		710 mm	900 mm	1,111 mm	1,411 mm
Max. Payload		7 kg			
Motion Range	J1	±170°			
	J2	+133° / -105°	+135° / -105°	+135° / -105°	
	J3	+60° / -205°			
	J4	±190°			
	J5	±120°			
	J6	±360°			
Max. Speed	J1	450° / sec	370° / sec	240° / sec	200° / sec
	J2	340° / sec	260° / sec	220° / sec	165° / sec
	J3	510° / sec	410° / sec	295° / sec	220° / sec
	J4	550° / sec		465° / sec	
	J5	550° / sec		480° / sec	
	J6	820° / sec		705° / sec	
Max. Composite Speed		11,000 mm / sec	10,600 mm / sec	9,400 mm / sec	9,100 mm / sec
Allowable inertia	J4	0.47 kg*m <sup>2</sup>			
	J5	0.47 kg*m <sup>2</sup>			
	J6	0.15 kg*m <sup>2</sup>			
Allowable moment	J4	16.6 Nm			
	J5	16.6 Nm			
	J6	9.4 Nm			
Repeatability		±0.02 mm	±0.03 mm	±0.04 mm	±0.05 mm
Standard Cycle Time <sup>*1</sup>		0.32 sec	0.35 sec	0.48 sec	0.54 sec
Installations		Table-top, ceiling-mount, wall-mount <sup>*2</sup>			
Built-in Design		With 1 12Pos. circular connector for sensor connections and 2 ø6 pneumatic tubes (one for the embedded 3 sets of solenoid valves, one for extension)			
IP Rating <sup>*3</sup>		IP40 (Standard) / IP65 (Optional) <sup>*4</sup>		IP65 (Standard)	
Environment	Ambient Temperature	0°C ~ 40°C			
	Humidity	20 ~ 85 %RH			
	Vibration	0.5 G			
Weight		37 kg	39 kg	76 kg	82 kg
Robot Controller		DCV Series			

\*1: When carrying a payload of 1kg and reciprocating 25 mm in vertical and 300 mm in horizontal directions, under an operating temperature of 25°C and within a humidity of 45% - 65% RH.

\*2: For wall-mount installation, please contact our local sales/distributors.

\*3: The environment resistance can be altered for different applications. For special IP standard or wrist models, please contact local sales / distributors.

\*4: Please contact local sales / distributors for optional IP65 models



# Product Specifications

## DCV Series

DCV Series		
<b>Power Supply</b>	Single-phase: 200-230Vac+PE, 50/60Hz, 15A	
<b>Dimensions (W) x (H) x (D) / Weight</b>	383 mm x 223 mm x 406 mm / 22 kg	
<b>Cooling Method</b>	Fan Cooling	
<b>Robot Control</b>	<b>Programming Language</b>	Delta robot language
	<b>Motion Mode</b>	Point-to-point motion, linear interpolation, and circular interpolation
	<b>Memory Capacity</b>	20MB: for programming editor and data users 1K location point is available for global variables (allows it to be shared among different programs) 30K location point is available for all programming editors
<b>Digital Input (DI) / Output (DO)</b>	<b>Standard DI/O</b>	System DI/O : 7 sets of DI, 8 sets of DO User DI/O: 24 sets of DI, 12 sets of DO
<b>Communication Interface</b>	<b>Ethernet</b>	One channel, RJ-45
	<b>DMCNET</b>	One channel, RJ-45, connects with Delta DMCNET products
	<b>RS-232 / RS-485</b>	One connecting port, D-sub 9P/Female
	<b>Teach Pendant</b>	One circular connector
	<b>Safety</b>	8 PIN circular connector Provides dual channels for emergency stop and connection with other safety components
	<b>Ext .Encoder</b>	D-sub 37P / Female, provide 1 external encoder feedback signals
	<b>DC Power</b>	3 PIN circular connector, provide DI/O options to meet diverse needs
	<b>Power IN</b>	3 PIN terminal block connector for power supply
	<b>Robot</b>	Multipole connectors / Female
<b>Environment</b>	<b>Installed Location</b>	Indoors (avoid direct sunlight), no corrosive liquid and gas (avoid fumes, flammable gas and dust)
	<b>Altitude</b>	1000m or lower above sea level
	<b>Atmospheric Pressure</b>	86 ~ 106 kPa
	<b>Ambient Temperature</b>	0 ~ 40°C (If ambient temperature is above 45°C, forced cooling will be required)
	<b>Humidity</b>	0 ~ 90% RH (non-condensing)
	<b>Vibration</b>	9.80665 m/s <sup>2</sup> (1G) less than 20 Hz, 5.88 m/s <sup>2</sup> (0.6G) 20 - 50 Hz
	<b>IP Rating</b>	IP20
	<b>Power System</b>	TN system: A power distribution system having one point directly earthed, the exposed conductive parts of the installation being connected to that point by a protective earth conductor.

# Product Specifications

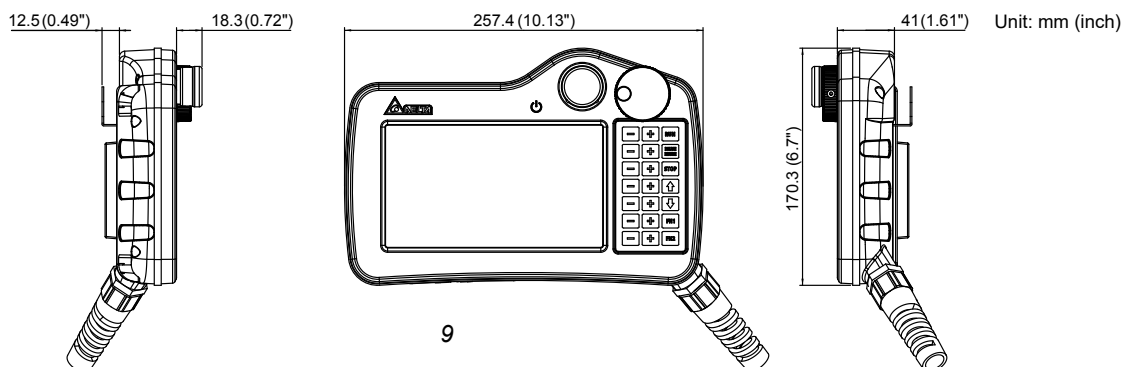
## DTV Series

Model		DTV-2FM	DTV-2GM
LCD Display	Panel	7" TFT LCD (65535 colors)	
	Resolution	800 x 480 pixels	
	Backlight	LED Back Light (under temperature 25°C half-life period > 20k hrs) <sup>*1</sup>	
	Range	154.08 x 85.92 mm	
Operating System		Delta Real Time OS	
CPU		32-bit RISC micro-controller	
Flash ROM		Flash ROM 128 MB (OS System: 30MB / Backup: 16MB / User Application: 82MB)	
Power-Off Memory		16M bytes ROM, 128K bytes SRAM	
Buzzer		Multi-tone frequency ( 2K - 4K Hz ) / 85dB	
Network Interface		10/100 Mbps auto detection (built-in isolating circuit) <sup>*2</sup>	
Communication Port		N/A	
Memory Card		SD / SDHC	
USB		1 USB Client Ver 2.0	
Emergency Stop Switch		Standards: IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL 508, CSA C22.2 No.14, GB 14085.5	
3-Position Operation Switch		Standards: EN/IEC60947-5-8, IEC60947-5-1, EN60947-5-1, JIS C8201-5-1, UL508, CSA C22.2 NO. 14 Applications: ISO12100-1, -2/EN12100-1, -2, IEC60204-1/EN60204-1, ISO11161/prEN11161, ISO10218/EN775, ANSI/RIA R15.06, ANSI B11.19	
MPG		Rated voltage: < DC 24V Resolution: 50(P/R) Output wave: square wave Output phase: A, B A, B phase difference: 90° ± 45° Max. frequency response: 200Hz	
Buttons		21	
Cable Length		5 m	10 m
Calendar		Built-in	
Cooling Method		Natural Cooling	
Safety Approval		CE	
Protection Rating		IP55	
Work Voltage		DC +24V (± 15%) (Supplied by SELV circuits, isolated from MAINS by double insulation)	
Insulation Endurance		AC500V 1 min (between DC24V terminal and FG terminal)	
Power Consumption		5.6W <sup>*3</sup>	
Backup Battery Life		3V lithium CR2450 × 1	
Backup Battery Life		More than 5 years at 25°C (according to temperature and usage condition)	
Operating Temperature		0°C - 40°C	
Storage Temperature		-10°C - 60°C	
Operating Environment		10% - 90% RH (0 - 40°C), 10% - 55% RH (41 - 50°C); Pollution degree 2	
Vibration Resistance		Conforms to: IEC61131-2; Continuous: 5Hz-8.3Hz 3.5mm, 8.3Hz-150Hz 1G	
Shock Resistance		Conforms to IEC60068-2-27; 11ms, 15G Peak , X, Y, Z direction for 6 times	
Dimensions (W) x (H) x (D) mm		257.4 x 170.3 x 71.8 (with emergency stop switch and hook)	
Weight		750g (without cable)	

\*1 Half-life period: Under max. drive current, when the back light's brightness diminishes to half of the max brightness it is defined as the half-life period. The life-time period is estimated under 25°C moist working environment.

\*2 Resistance of the isolating circuit: 1500V high voltage surge / 1 min

\*3 Without extension of other devices



# Model Introduction

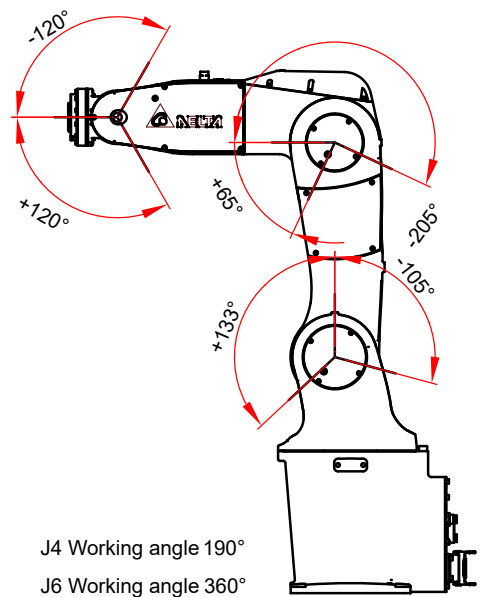
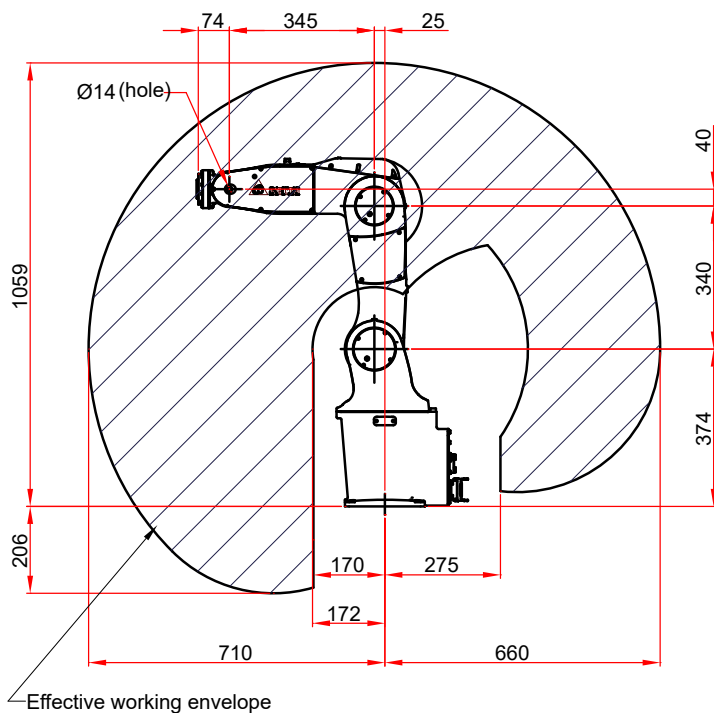
## DRV Series

DRV	90	L	7	A	6	3	1	3	N
Company/ Product/ Robot Type	Max. Working Range	Series	Max. Payload	IP Rating	Number of Axes	version	Wiring	Robot Cable	Accessories
<b>D : Delta</b> <b>R : Robot</b> <b>V : Vertical</b>	70 : 710 mm	L : Lite	7 : 7 kg	<b>A : IP40</b> <b>B : IP65</b> <b>D:CE/IP40</b>	6 : 6 axes		1 = Standard	3 = 3m	N = No teach pendant
	90 : 900 mm							5 = 5m	
	A1 : 1,111mm								
	A4 : 1,411mm								

# Dimensions - DRV Series

## Range of Motion

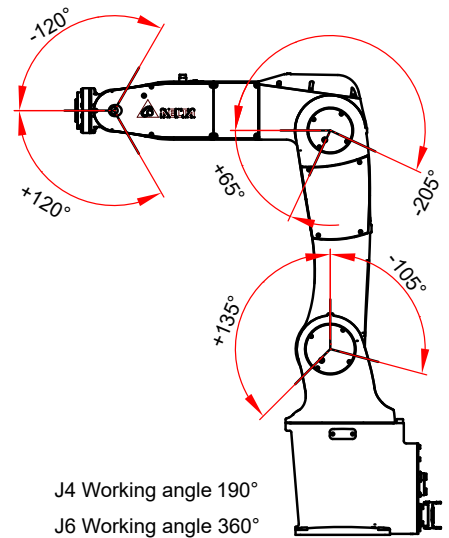
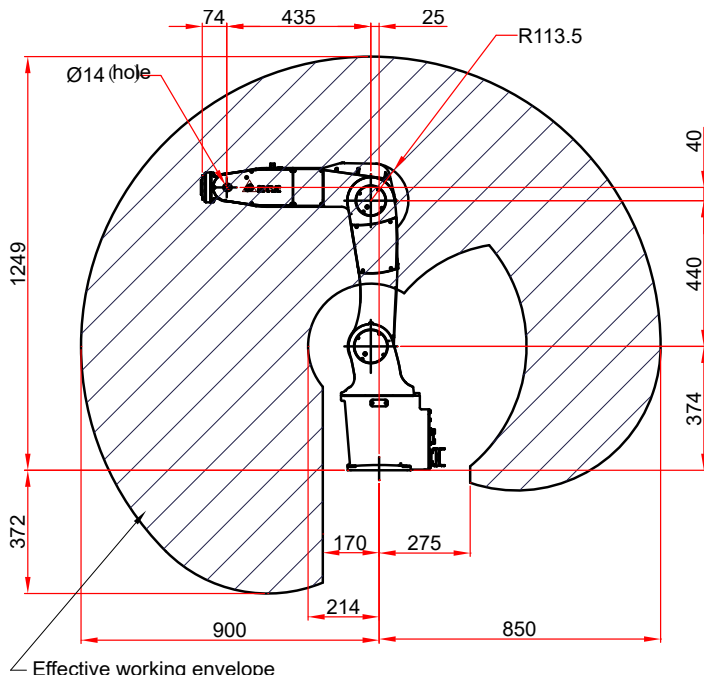
### DRV70L Series



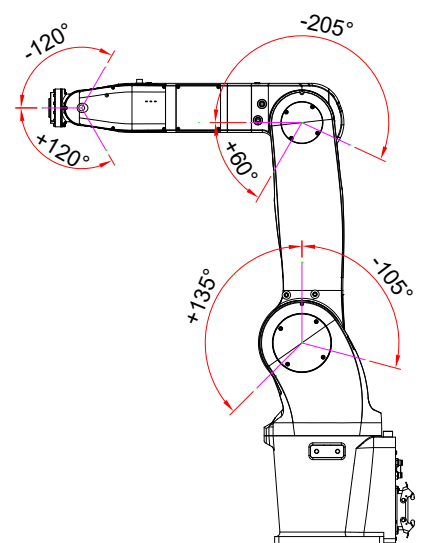
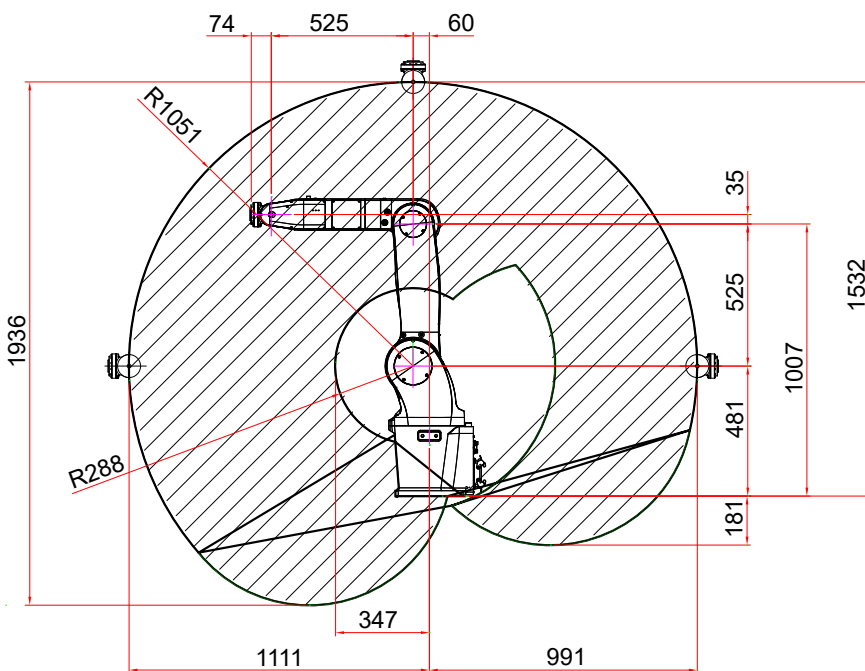
# Dimensions - DRV Series

## Range of Motion

### DRV90L Series



### DRVA1L Series

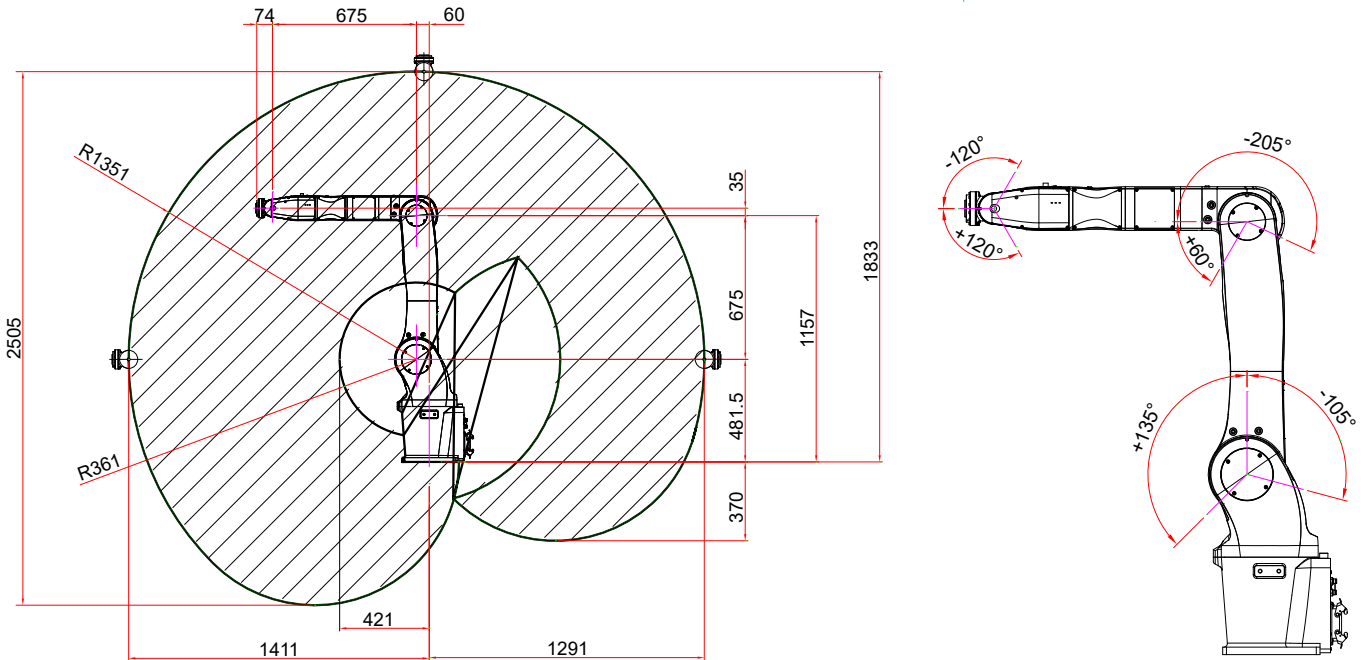




# Dimensions - DRV Series

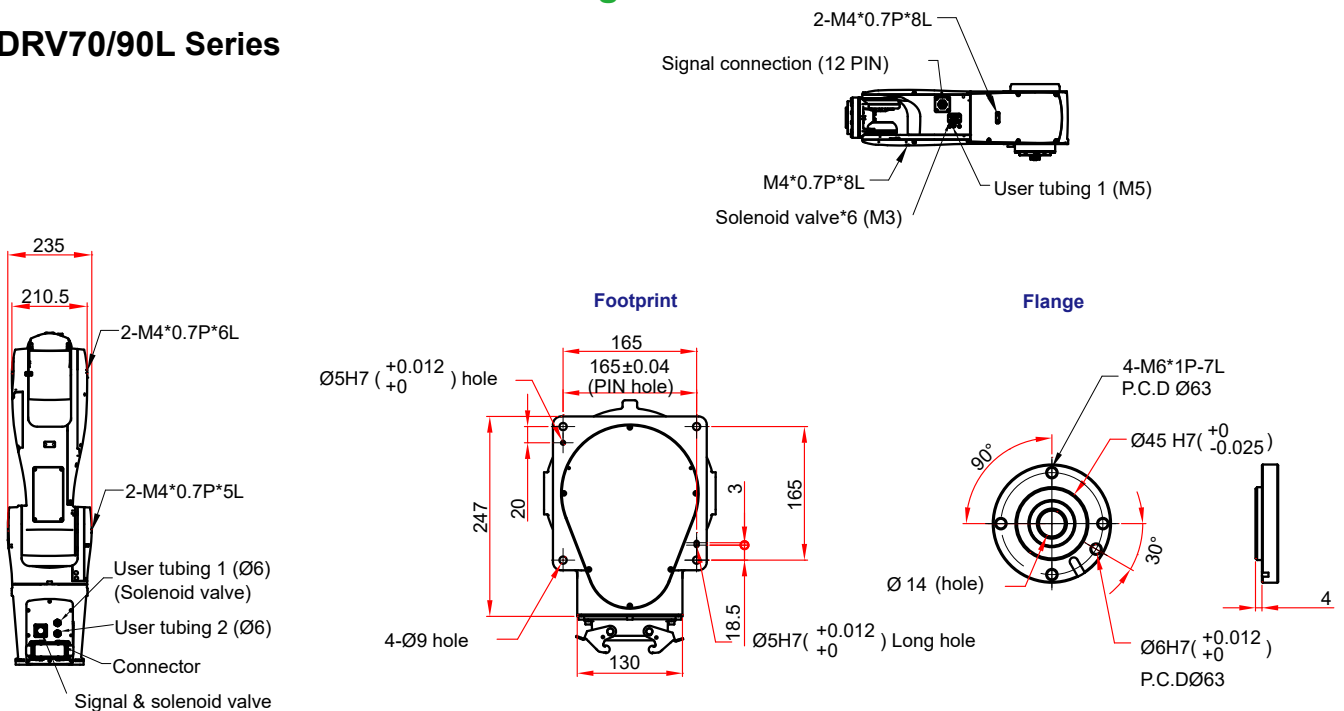
## Range of Motion

### DRVA4L Series



## External Dimensions and Mounting Holes

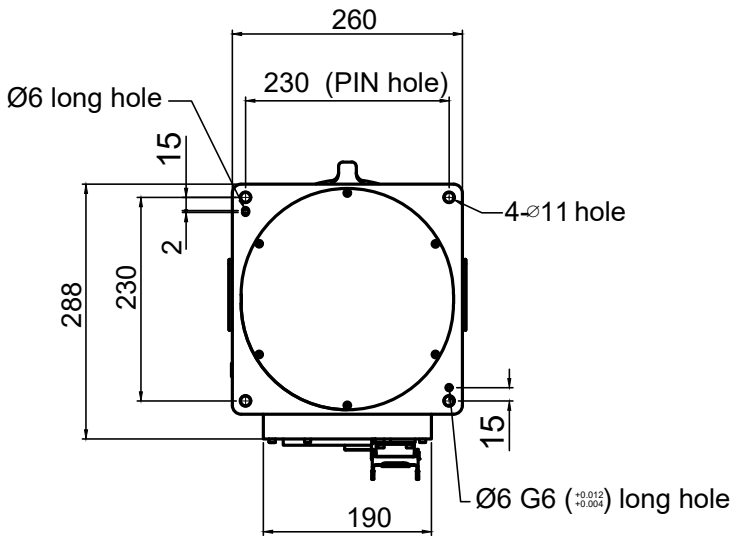
### DRV70/90L Series



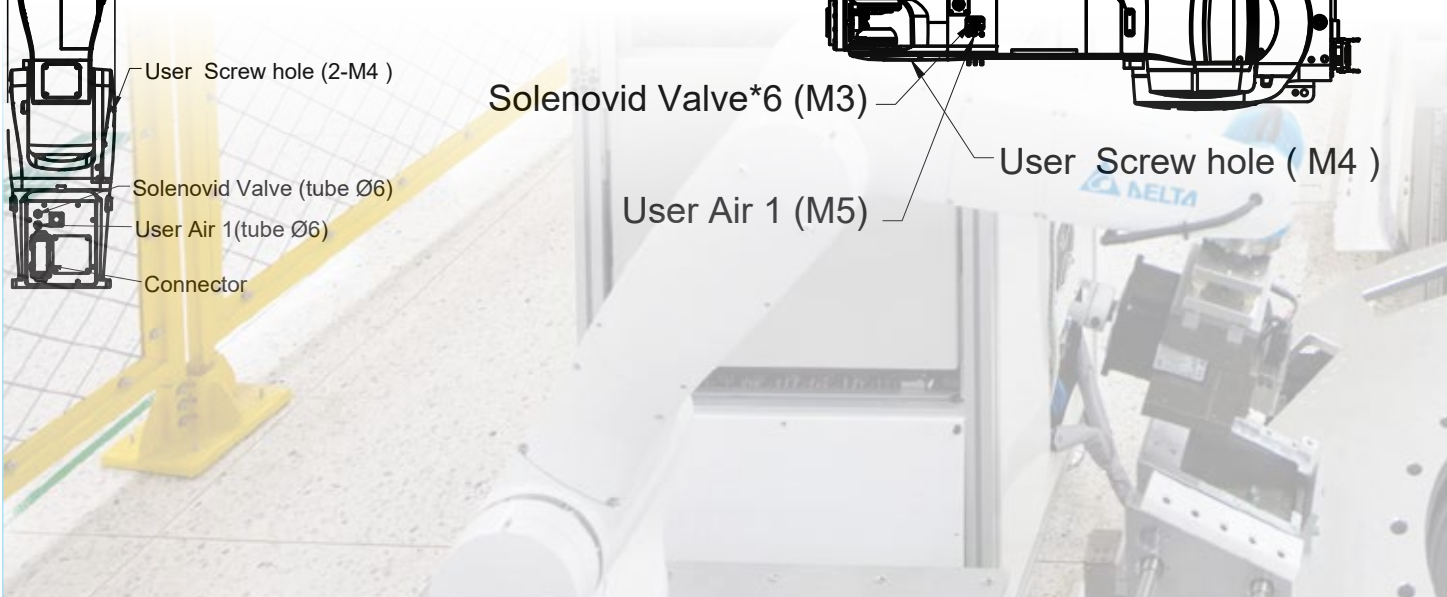
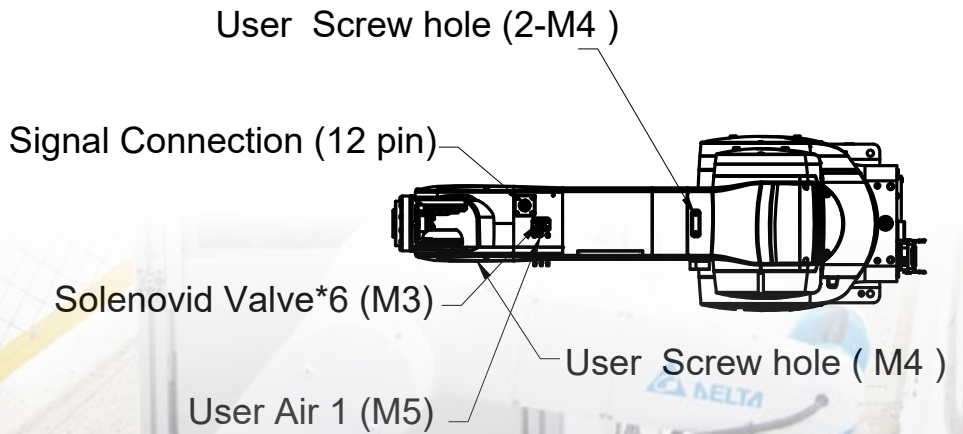
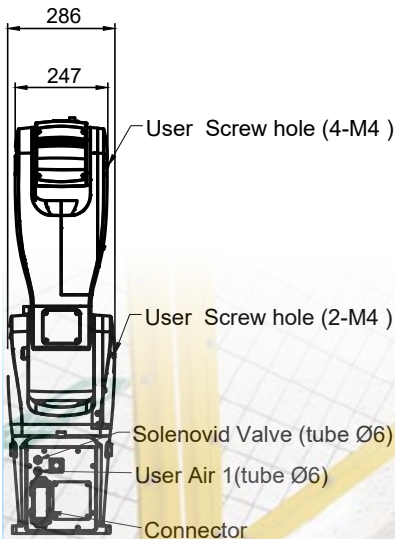
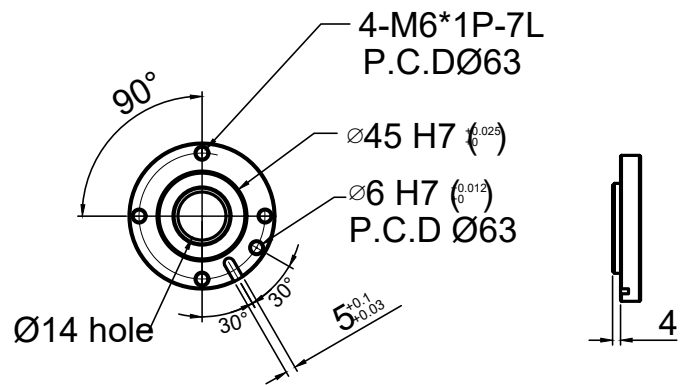
# Dimensions - DRV Series

## External Dimensions and Mounting Holes DRVA1L/DRVA4L Series

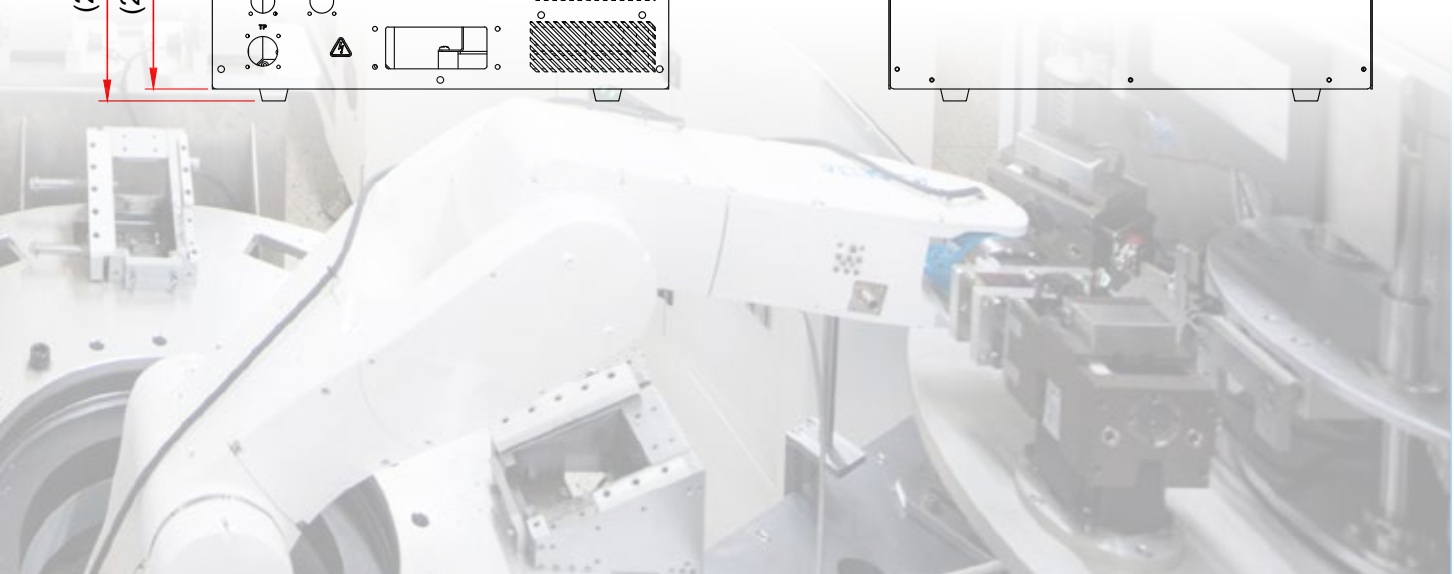
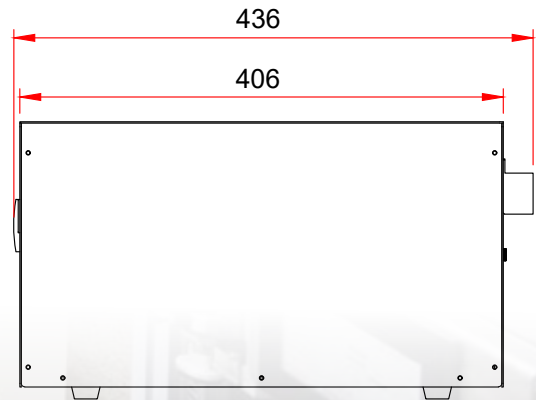
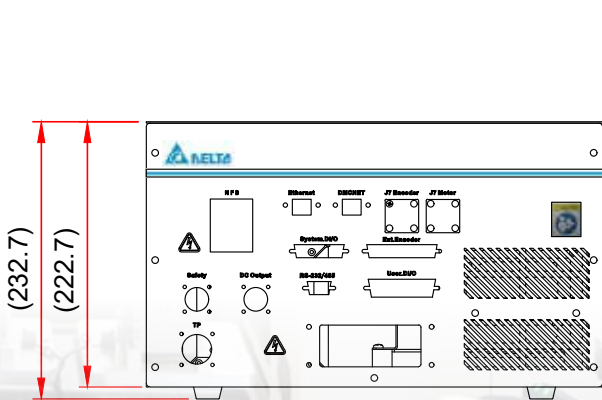
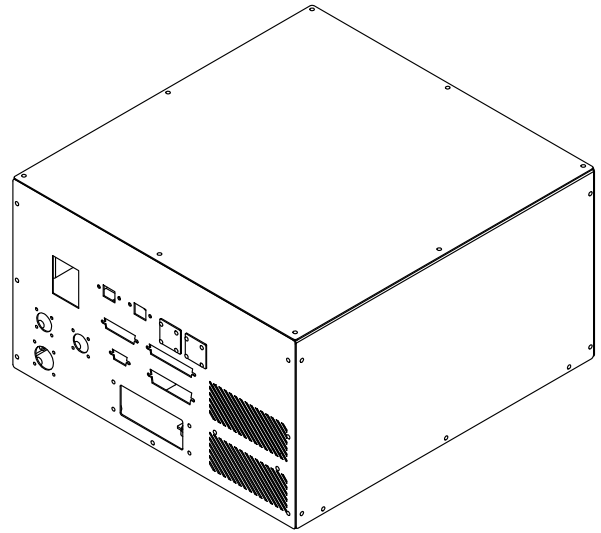
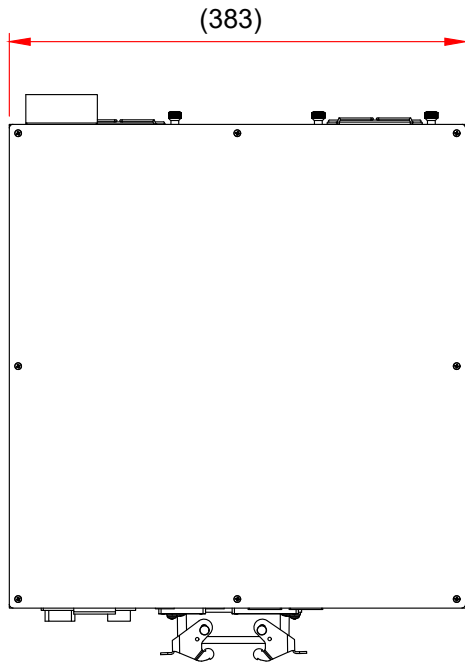
BASE FIX DRAWING



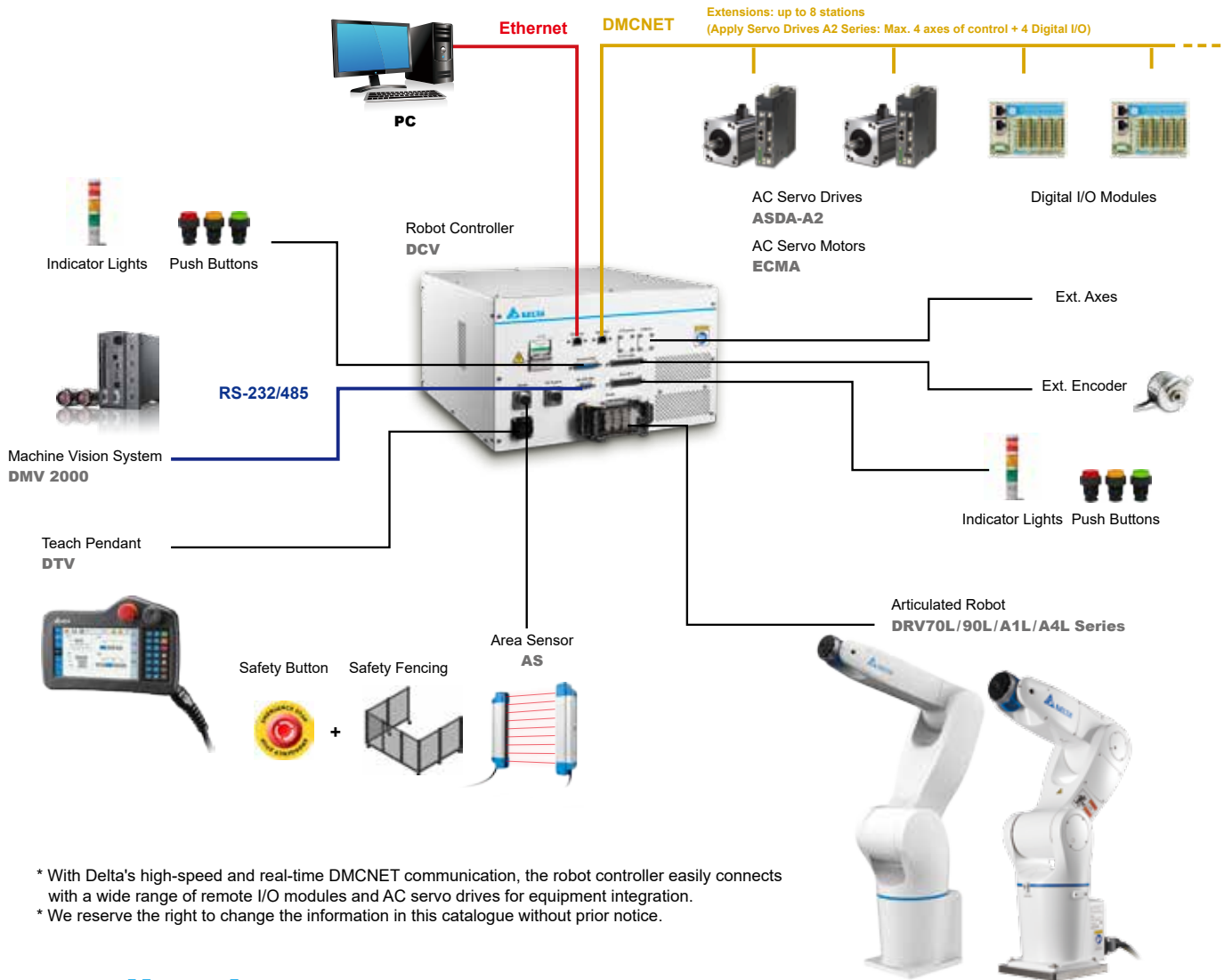
FLANGE DRAWING



# Dimensions - DVC Series



# Robot Controller Interface DRV Series



\* With Delta's high-speed and real-time DMCNET communication, the robot controller easily connects with a wide range of remote I/O modules and AC servo drives for equipment integration.  
 \* We reserve the right to change the information in this catalogue without prior notice.

## Applications



Load/Unload



Machine Tending



Assembly



Insertion



Inspection



Screw-driving



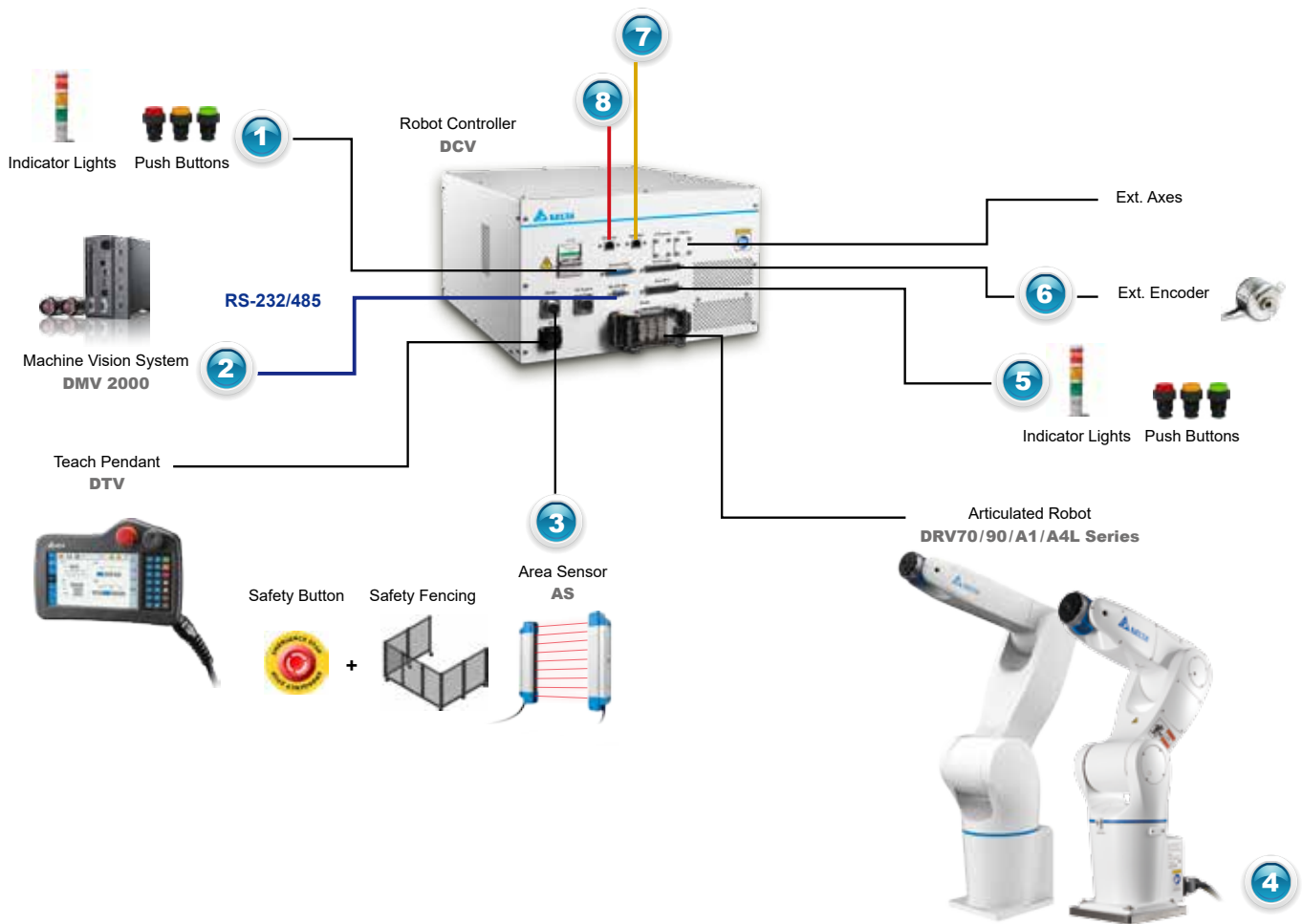
# Ordering Information

Category	Model	Specifications	Description
<b>Delta Articulated Robot DRV70L Series</b>	DRV70L7A6313N	710mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 3M standard robot cable	Multiple cable length and IP rating available
	DRV70L7A6315N	710mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 5M standard robot cable	
	DRV70L7B6213N	710mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRV70L7B6215N	710mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 5M standard robot cable	
	DRV70L7D6213N	CE type, 710mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRV70L7D6215N	CE type, 710mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 5M standard robot cable	
<b>Delta Articulated Robot DRV90L Series</b>	DRV90L7A6313N	900mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRV90L7A6315N	900mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRV90L7B6213N	900mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRV90L7B6215N	900mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 5M standard robot cable	
	DRV90L7D6213N	CE type, 900mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRV90L7D6215N	CE type, 900mm/7Kg, IP40 (with DCV controller/ DRASstudio software), 5M standard robot cable	
<b>Delta Articulated Robot DRVA1L Series</b>	DRVA1L7B6113N	1,111mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 3M standard robot cable	Coming soon
	DRVA1L7B6115N	1,111mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 5M standard robot cable	
<b>Delta Articulated Robot DRVA4L Series</b>	DRVA4L7B6113N	1,411mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 3M standard robot cable	
	DRVA4L7B6115N	1,411mm/7Kg, IP65 (with DCV controller/ DRASstudio software), 5M standard robot cable	
<b>Teach Pendant</b>	DTV-2FM	21-key / 5M / Military connector	Suggested optional devices for DRV operation
	DTV-2GM	21-key / 10M / Military connector	

## Ordering Information

Category	Model	Specifications	Description
<b>Teach Pendant</b>	DTV-2FM	21-key / 5m / military connector	Suggested optional devices for DRV operation
	DTV-2GM	21-key / 10m / military connector	
<b>Optional Accessories (Electrical Control)</b>	3081425800	SYS extension cord	Reduce wiring time
	3081425700	User. DIO extension cord / 3m / no deflection	
	3081427100	RS-232/485 extension cord / 3m / no deflection	
	3081735000	Safety extension cord / 3m / no deflection	
	3081734700	Signal extend cable / 5m / no deflection	
	3081734800	Signal extend cable / 7m / no deflection	
	3081734900	Signal extend cable / 12m / no deflection	
	3081427000	Ext.Encoder extension cord / 3m / no deflecti	
	3534815500	System DIO/1M + transfer module	
	3534815600	Ext.Encoder/1M + transfer module	
	3534815700	USER DIO/1M + transfer module	
	3864267000	CANopen communication cable / 1m	Optional devices to connect DI/O extension modules
	3864999300	CANopen communication cable / 3m	
	3864896200	CANopen communication cable / 10m	
	ASD-DMC-RM32MN	Remote 32 points (DI)	
	ASD-DMC-RM64MN	Remote 64 points (DI)	
	ASD-DMC-RM32NT	Remote 32 points (DO)	
	ASD-DMC-RM64NT	Remote 64 points (DO)	
	ASD-A2-0121-FN	100W Servo Drive	Optional devices to connect servo drives
	ASD-A2-0221-FN	200W Servo Drive	
ASD-A2-0421-FN	400W Servo Drive		
<b>Optional Accessories (Hardware)</b>	DMV1000-80GX	Delta Machine Vision DMV1000	Integrated with Delta's Machine Vision Systems (DMV) for different applications; for more information, please refer to DMV brochures Standard accessory with the whole-set robot
	3534538100	Accessory kits	

# Optional Accessory System Structure



Category	Model	Specifications
1	3081425800	SYS extension cord
2	3081427100	RS-232 / 485 extension cord / 3m / no deflection
3	3081735000	Safety extension cord / 3m / no deflection
4	3081734700	Signal extend cable / 5m / no deflection
5	3081425700	User. DIO extension cord / 3m / no deflection
6	3081427000	Ext. encoder extension cord / 3m / no deflection
7	ASD-DMC-RM32MN	Remote 32 points (DI)
	ASD-DMC-RM64MN	Remote 64 points (DI)
	ASD-DMC-RM32NT	Remote 32 points (DO)
	ASD-DMC-RM64NT	Remote 32 points (DO)
	ASD-A2-0121-FN	100W Servo Drive
	ASD-A2-0221-FN	200W Servo Drive
8	ASD-A2-0421-FN	400W Servo Drive
	3864267000	CANopen communication cable / 1m
	3864999300	CANopen communication cable / 3m
	3864896200	CANopen communication cable / 10m



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