

Intelligent Manufacturing Expert EFORT

# GR-SERIES PAINTING ROBOT

喷涂机器人系列产品



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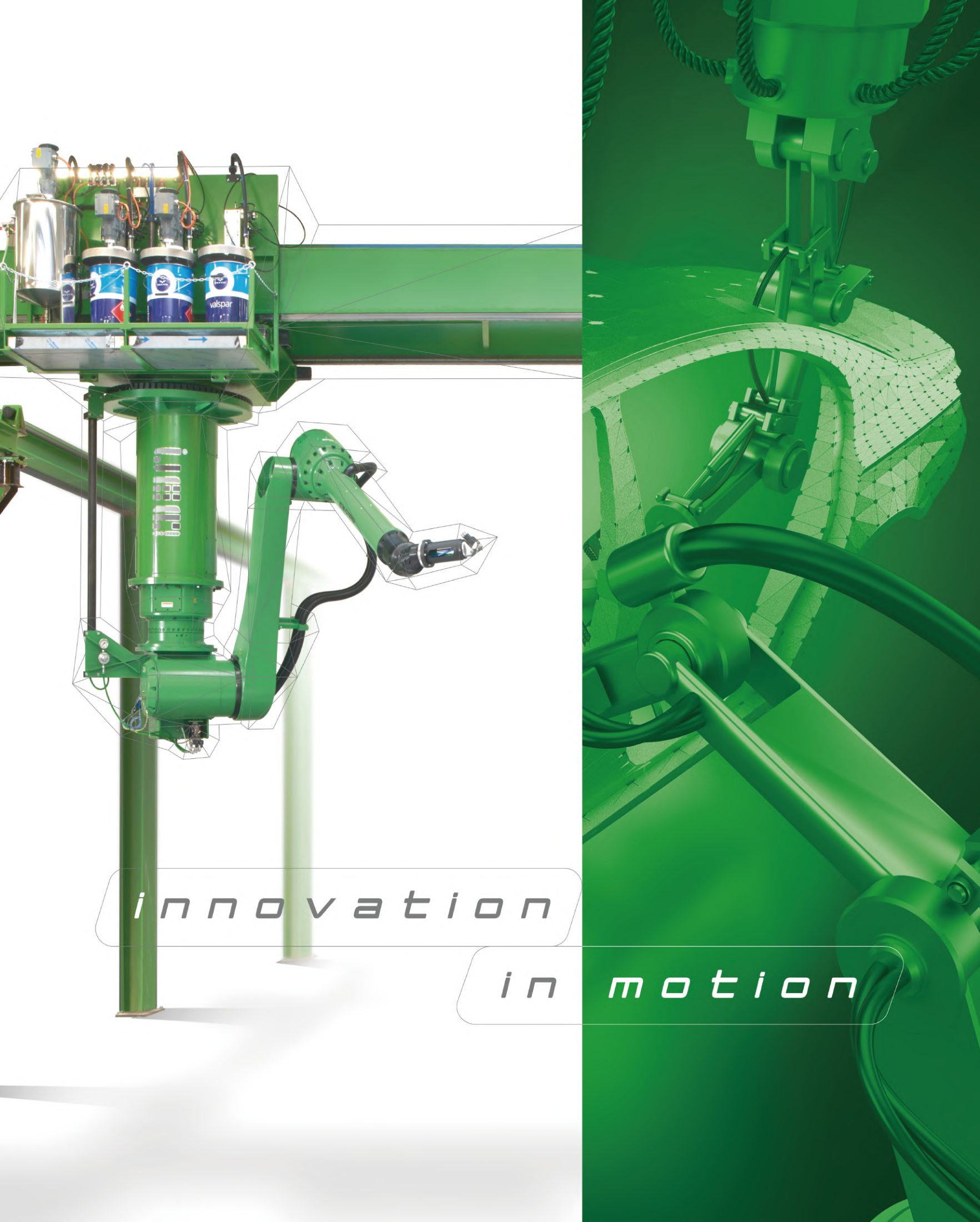


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*[ we paint your future. ]*







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# COMPANY PROFILE



***“We focus on industrial robotic business.”***

Since 2007, we started our journey on industrial robotic business, we believe what we chose and never changed our direction after that. Now we keep the focus and help our customers to apply EFORT robotics in various scenarios with continuous value creation.

***“We are the leading industrial robotic company in China.”***

We have the full capacity in the industrial robotic value chain: from the robot core hardware

& software to robot body to the application integration field, we have the key of know-how to ensure your success.

***“We are global presence.”***

We come from China, and we have 19 branches in different continents currently. We help you increase your competitiveness with global resource.

***“We are EFORT, your trusted partner.”***

We are robotics practitioner, and we are more than a hardware provider, we also apply the

modern technology like AI and cloud to accelerate your business growth. We delivered thousands of robots in different industries with different applications world wide every year. From the automotive to 3C to new energy industries, from the handling to painting to welding application, we know your demands and we treasure your trust.

From a small place located in Friuli Venezia Giulia to the established presence in 60 countries around the world, CMA ROBOTICS started its business since

1994 with the constant focus in painting application. Till 2020, CMA has delivered more than 3000 sets of painting robots in worldwide proudly, and kept innovation development.

Since 2015, CMA has been part of the EFORT Group, which helps both serve customers with better products and solutions.





# APPLICATION TECHNOLOGY

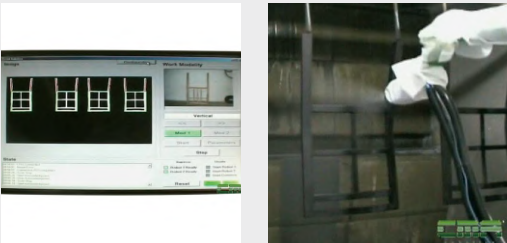
## • Drag Demonstration Programming

Drag Demonstration Teaching Programming: The Self-teaching function developed by CMA brings evolution to the traditional point-to-point or offline programming mode. As the workers hold the robot arm with demonstration painting, the robot record the movements then playback. Operators even do not need to have the knowledge of using robots and they still can quickly master the programming technology through simple learning, and it helps the robot ‘Easy Opeation’ .



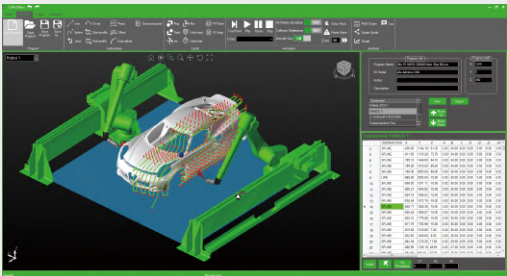
## • Visual Automatic Programming

Visual Automatic Programming :CMA developed the special AxPS software with the visual automatic programming method and helps customer efficiency increasing. Focus on plane and simple three-dimensional workparts, CMA applies advanced visual technology , which helps robot automatically identify and extract the position and contour characteristics of workparts, and automatically generate painting program according to the painting process expert system and preset painting rules. Manual intervention is not needed in the programming process, which indicate the real ‘automatic programming’ .



## • Offline Programming

Offline programming software developed by CMA can use easlied on your PC without interrupting production; Operation results can be observed simultaneously; Operator can manipulate each single program parameters (flow, atomization, speed, etc.) for robot programming and user training.



## • Certification

### Quality Management System Certification

CMA Italy passed DNV ISO9001 Quality Management System Certification in 1999;

CMA (Wuhu) passed GB/T 19001-2016/ISO9001:2015 Quality Management System Certification in 2016.



### Safety Certificate

The explosion-proof requirements of safety certification painting robot are critical.

CMA painting robot passed ATEX certification (European Explosion-proof certification) in 2006 and dust explosion-proof certification in 2012.



### Explosion Proof Certificate

CMA painting robot obtained the domestic explosion-proof certification in 2017 in China.



# APPLICATION AREA

## AUTOMOBILE AND PARTS

## VAN CONTAINER

## WOODEN PARTS

## METAL PARTS

## PLASTIC PARTS



# GR6150-1500

Maxium Reach:1500 mm /  
Hollow Wrist / Max Payload:15 kg

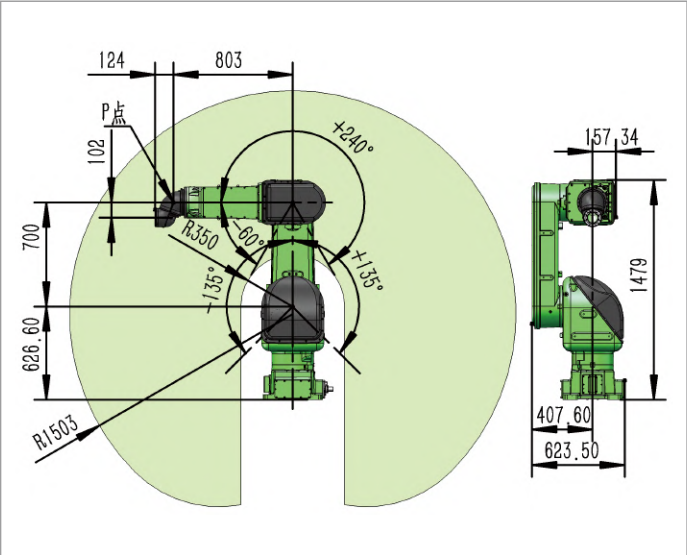
- Highlights**  
A painting robot designed for China domestic SMEs, explosion-proof structure design;  
Hollow wrist structure, easy for spray paint pipeline layout;  
Large load, high rigidity, easy installation;  
Standard painting software package, built-in peripheral I/O points, easy integra-tion, simple programming;  
Especially suitable for auto parts,hardware parts and other irregular shape parts.
- Applications**  
Specially designed for small irregular shape parts painting:such as auto parts (door handles, mirrors, lampshades, tailfins, interior trim), motors, reducer.
- Industries**  
Suitable for automotive parts , hardware and other industries.



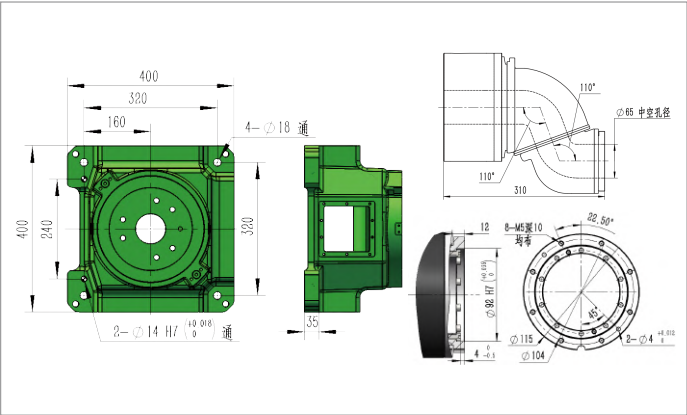
## SPECIFICATIONS

Wrist Payload		15 kg	
Reach		1500 mm	
Repeatability		± 0.15 mm	
Motion Range & Speed		Range	Speed
	J1	± 160°	180°/s
	J2	± 135°	180°/s
	J3	-60°/+240°	180°/s
	J4	± 540°	360°/s
	J5	± 540°	400°/s
Allowable Torque	J6	± 540°	450°/s
	J4	44.2 N.m	
	J5	28.8 N.m	
Allowable Moment of Inertia	J6	15.1 N.m	
	J4	1.17 kg.m²	
	J5	0.87 kg.m²	
	J6	0.15 kg.m²	

## OPERATING SPACE

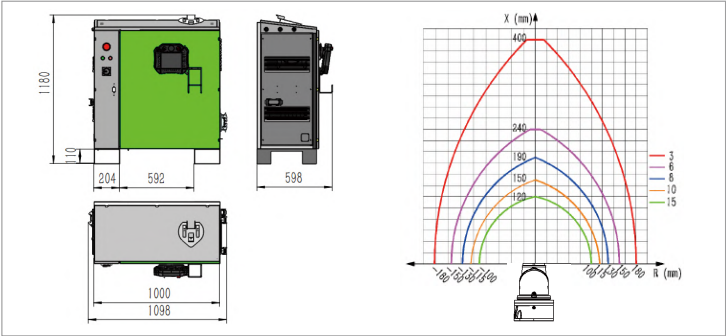


## BASE& END FLANGE MOUNTING SIZE



Structure		6-Axis Series Structure	
Installation		Floor, Angel, Wall,Upside-down	
Safety Level		EN ISO13849 PLd	
IP Grade	Robot	IP 66	
	Cabinet	IP 54	
Explosion-Proof	China	Ex ib mb px IIC T4 Gb	
	ATEX-Gas	II 2G Ex pxb IIC T4 Gb	
	ATEX-Dust	II 2D Ex pxb IIIC T135℃ Db	
Environment Requirements	Voltage	AC380V(± 10%)	
	Power Capacity	5.0 kVA	
	Temperature	0-45 °C	
	Humidity	20-80RH ( No Condensation )	
Arm Payload	Outer Arm	15 kg	
	Inner Arm	10 kg	
Weight	Robot	245 kg	
	Cabinet	160 kg	

## CONTROL CABINET SIZE&WRIST END LOAD MAP



## SELECTION&CONFIGURATION TABLE

Item	Standard		Optional
Driver	6 Axes		6+2 Axes
Connecter Cable	Static	/	
	8 m	Max:30 m	
Pendant	10 m	Max:30 m	
DI/DO	12/12	Customized	
Safety DI/DO	8/4	Customized	
AI/AO	/	Customized	
Communication Mode	TCP/IP	ProfiBus	ProfiNet
Memory Capacity	1G	/	
Connector	USB	/	
Software Package	Painting Package	Visual Programming	
Program Mode	Pendant	Touch Panel	
Color	RAL6018	Customized	



# GR630-1900

Maxium Reach:1929 mm /  
Lemma Wrist / Max Payload:3 kg

### Highlights

Self-teaching function with user friendly interface;  
Lemma wrist, no singularity in the front, especially suitable for painting for in-the-front workpiece;  
Painting application software is default in robot, with online tracking function, and aux axis integration possibility;  
ATEX explosion-proof certification of China and EU, can be used in Zone 1 gas and Zone 21 dust dangerous operation environment;  
Especially suitable for hardware parts, furniture, 3C plastic parts and other irregular shape parts.

### Applications

Self-teaching function supported. Specially designed for small irregular shape parts painting: such as motor, reducer, water pump, valve, single cylinder engine, chair, nightstand, electric car, bicycle, motorcycle parts.

### Industries

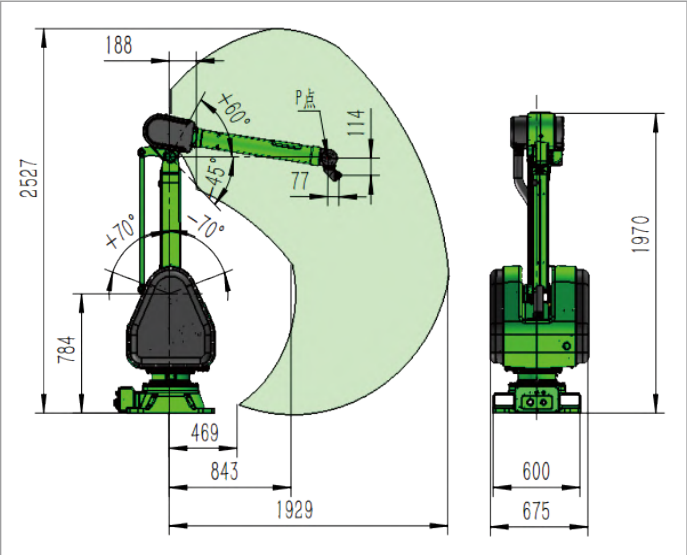
Suitable for metal parts, auto parts, furniture, motorcycle parts and other industries.



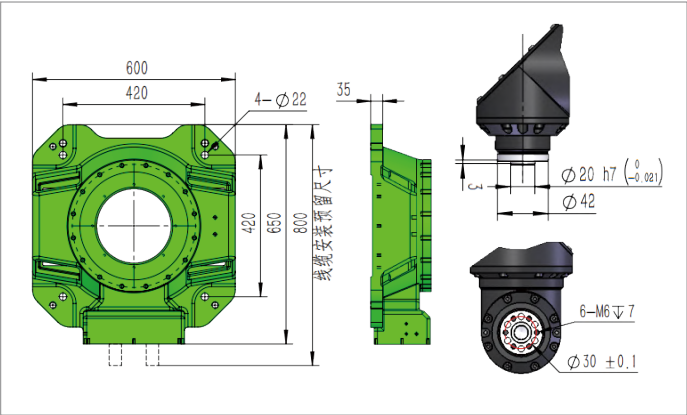
## SPECIFICATIONS

Wrist Payload		3 kg	
Reach		1929 mm	
Repeatability		± 1 mm	
Motion Range & Speed		Range	Speed
	J1	± 120°	120°/s
	J2	± 70°	120°/s
	J3	+60°/-45°	120°/s
	J4	± 360°	540°/s
	J5	± 360°	540°/s
Allowable Torque	J4	9.8 N.m	
	J5	8.4 N.m	
	J6	3 N.m	
Allowable Moment of Inertia	J4	0.12 kg.m²	
	J5	0.08 kg.m²	
	J6	0.02 kg.m²	

## OPERATING SPACE

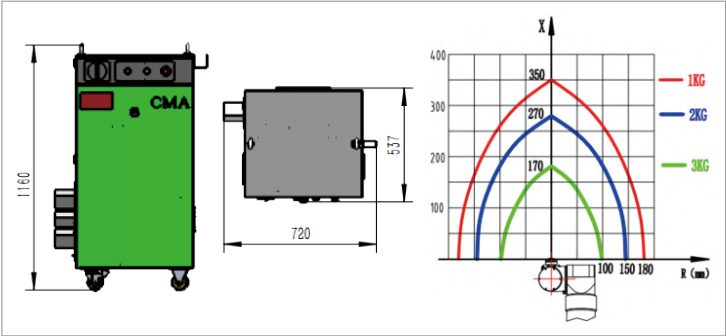


## BASE& END FLANGE MOUNTING SIZE



Structure		6-Axis Series Structure
Installation		Floor, Upside-down
Safety Level		EN ISO13849 PLd
IP Grade	Robot	IP 65
	Cabinet	IP 52
Explosion-Proof	China	Ex ib mb px IIC T4 Gb
	ATEX-Gas	II 2G Ex pxb IIC T4 Gb
	ATEX-Dust	II 2D Ex pxb IIIC T135℃ Db
Environment Requirements	Voltage	AC380V(± 10%)
	Power Capacity	4.0 kVA
	Temperature	0-45 °C
Arm Payload	Humidity	20-80RH ( No Condensation )
	Outer Arm	3 kg
	Inner Arm	3 kg
Weight	Robot	400 kg
	Cabinet	90 kg

## CONTROL CABINET SIZE&WRIST END LOAD MAP



## SELECTION&CONFIGURATION TABLE

Item	Standard	Optional	
Driver	6 Axes	6+2 Axes	
Connector Cable	Static	Static	Flexible
	8 m	Max:30 m	
Pendant	10 m	Max:30 m	
DI/DO	16/16	Customized	
Safety DI/DO	8/4	Customized	
AI/AO	/	Customized	
Communication Mode	ProfiNet	EtherCAT	
Memory Capacity	512 Mb	/	
Connector	USB/TCPIP	/	
Software Package	Painting Package	Visual Programming	
Program Mode	Pendant	/	
Color	RAL6018	Customized	

# GR680-2700

Maxium Reach:2715 mm /  
Lemma Wrist / Max Payload:8 kg

■ Highlights

Lemma wrist, no singularity in the front, especially suitable for painting for in-the-front workpiece;  
The electric control cabinet complies with EN ISO13849 PLd security level and supports aux axis;  
Standard painting application software, built-in I/Os, easy integration, simple programming;  
ATEX explosion-proof certification of China and Eu, can be used in zone 1 gas and zone 21 dust dangerous operation environment.

■ Applications

Specially designed for irregular shape parts painting: such as engineering engines, engineering machinery accessories, etc;  
Also can be used for multi-size regular parts painting, such as containers.

■ Industries

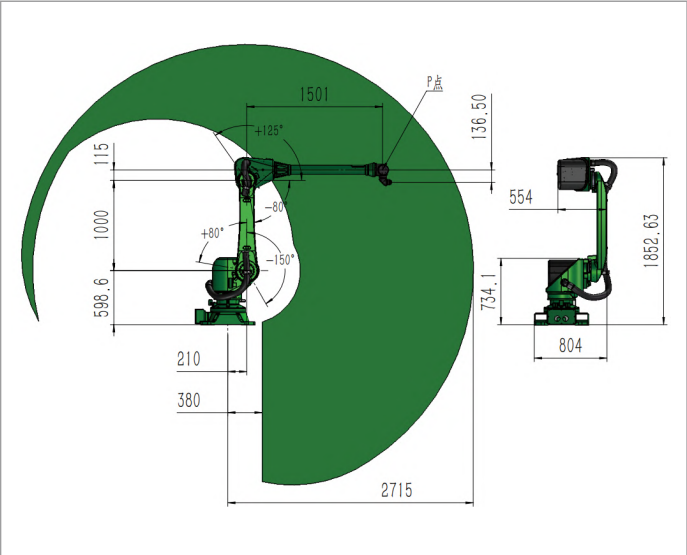
Suitable for auto parts, logistics and transportation industries.



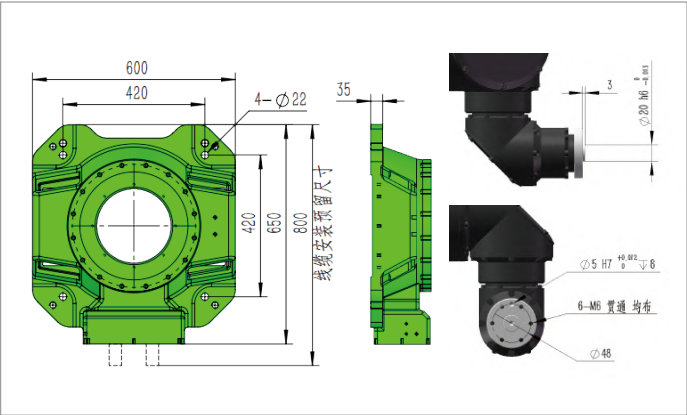
## SPECIFICATIONS

Wrist Payload		8 kg	
Reach		2715 mm	
Repeatability		± 0.2 mm	
Motion Range & Speed		Range	Speed
	J1	± 175°	150°/s
	J2	+80°/-150°	145°/s
	J3	+125°/-80°	150°/s
	J4	± 360°	500°/s
	J5	± 360°	500°/s
Allowable Torque	J4	30 N.m	
	J5	25 N.m	
	J6	12 N.m	
Allowable Moment of Inertia	J4	0.8 kg.m²	
	J5	0.59 kg.m²	
	J6	0.1 kg.m²	

## OPERATING SPACE

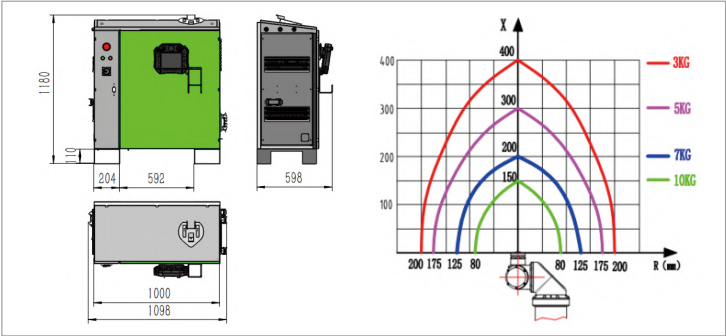


## BASE& END FLANGE MOUNTING SIZE



Structure		6-Axis Series Structure
Installation		Floor, Angel, Wall,Upside-down
Safety Level		EN ISO13849 PLd
IP Grade	Robot	IP 65
	Cabinet	IP 54
Explosion-Proof	China	Ex d ib px IIB T4 Gb
	ATEX-Gas	II 2G Ex pxb IIB T4 Gb
	ATEX-Dust	II 2D Ex pxb IIIC T135℃ Db
Environment Requirements	Voltage	AC380V(± 10%)
	Power Capacity	5.0 kVA
	Temperature	0-45 ℃
Arm Payload	Outer Arm	8 kg
	Inner Arm	8 kg
Weight	Robot	450 kg
	Cabinet	160 kg

## CONTROL CABINET SIZE&WRIST END LOAD MAP



## SELECTION&CONFIGURATION TABLE

Item	Standard	Optional	
Driver	6 Axes	6+2~4 Axes	
Connector Cable	Static	Static	Flexible
	8 m	Max:30 m	
Pendant	10 m	Max:30 m	
DI/DO	12/12	Customized	
Safety DI/DO	8/4	Customized	
AI/AO	/	Customized	
Communication Mode	TCP/IP	ProfiBus Slave	ProfiNet Slave
Memory Capacity	1GB	/	
Connector	USB/TCP/IP	/	
Software Package	Painting Package	Visual Programming	
Program Mode	Pendant	Touch Panel	
Color	RAL6018	Customized	



**Maxium Reach:2900 mm /  
Hollow Wrist / Max Payload:15 kg**

Large hollow wrist with possibility of paint pipeline arranged in the wrist, convenient integration;  
The electric control cabinet complies with EN ISO13849 PLD security level and supports aux axis;  
Standard painting application software, built-in I/Os, easy integration, simple programming;  
ATEX explosion-proof certification of China and Eu, can be used in zone 1 gas and zone 21 dust dangerous operation environment.

Specially designed for painting applications in automotive industries: such as BIW, bumpers;  
Also can be used for container, engineering vehicles and other large workpiece painting.

Suitable for automobile and auto parts, tricycle and other industries.



Wrist Payload		15 kg	
Reach		2900 mm	
Repeatability		± 0.2 mm	
Motion Range & Speed		Range	Speed
	J1	± 160°	120°/s
	J2	± 135°	120°/s
	J3	-75°/+250°	120°/s
	J4	± 540°	360°/s
	J5	± 540°	420°/s
	J6	± 540°	530°/s
Allowable Torque	J4	44.2 N.m	
	J5	28.8 N.m	
	J6	15.1 N.m	
Allowable Moment of Inertia	J4	1.17 kg.m²	
	J5	0.87 kg.m²	
	J6	0.15 kg.m²	

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Structure		6-Axis Series Structure
Installation		Floor, Angel, Wall,Upside-down
Safety Level		EN ISO13849 PLd
IP Grade	Robot	IP 65
	Cabinet	IP 54
Explosion-Proof	China	Ex ib mb px IIC T4 Gb
	ATEX-Gas	II 2G Ex pxb IIC T4 Gb
	ATEX-Dust	II 2D Ex pxb IIIC T135℃ Db
Environment Requirements	Voltage	AC380V(± 10%)
	Power Capacity	5.0 kVA
	Temperature	0-45 ℃
	Humidity	20-80RH ( No Condensation )
Arm Payload	Outer Arm	15 kg
	Inner Arm	15 kg
Weight	Robot	640 kg
	Cabinet	160 kg

Item	Standard	Optional	
Driver	6 Axes	6+2~4 Axes	
Connector Cable	Static	Static	Flexible
	8 m	Max:30 m	
Pendant	10 m	Max:30 m	
DI/DO	12/12	Customized	
Safety DI/DO	8/4	Customized	
AI/AO	/	Customized	
Communication Mode	TCP/IP	ProfiBus Slave	ProfiNet Slave
Memory Capacity	1GB	/	
Connector	USB/TCPIP	/	
Software Package	Painting Package	Visual Programming	
Program Mode	Pendant	Touch Panel	
Color	RAL6018	Customized	



# GR6160-3200

Maxium Reach:3240 mm /  
Wrist / Max Payload:16 kg

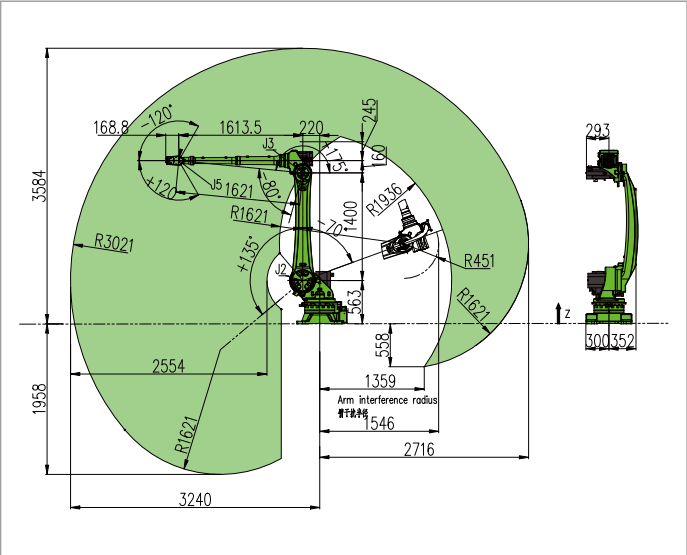
- Highlights**  
An economical painting robot, non-explosion-proof structure design;  
Orthogonal spherical wrist structure, large load, high stiffness, wide working range;  
Default painting application software , built-in I/Os, easy integration, simple programming;  
Especially suitable for painting furniture, large tank, board and frame parts;  
Non-explosion-proof robot.
- Applications**  
Specially designed for flat workpiece and similar application scenarios: such as wood doors, window frames, pipes, etc;  
Also can be used for multi-size regular parts spraying, such as containers.
- Industries**  
Suitable for furniture, logistics and other industries.



## SPECIFICATIONS

Wrist Payload		16 kg	
Reach		3240 mm	
Repeatability		± 0.15 mm	
Motion Range & Speed		Range	Speed
	J1	± 180°	140°/s
	J2	+70°/-135°	140°/s
	J3	+175°/-80°	165°/s
	J4	± 360°	500°/s
	J5	± 120°	350°/s
Allowable Torque	J6	± 360°	900°/s
	J4	41 N.m	
	J5	41 N.m	
Allowable Moment of Inertia	J6	23 N.m	
	J4	1.6 kg.m²	
	J5	1.6 kg.m²	
	J6	0.3 kg.m²	

## OPERATING SPACE





# GR6100-3800

Maxium Reach:3750 mm /  
Lemma Wrist / Max Payload:10 kg

### Highlights

Wider painting range, with lemma 3R wrist at the robot end, no singularity in the front;  
The electric control cabinet complies with EN ISO13849 PLd security level and supports aux axis;  
Standard painting application software, built-in I/Os, easy integration, simple programming;  
ATEX explosion-proof certification of China and Eu, can be used in zone 1 gas and zone 21 dust dangerous operation environment.

### Applications

Specially designed for large flat workpiece painting: such as wooden door, window frame, pipe;  
Also can be used for multi-size irregular parts: such as large vehicles.

### Industries

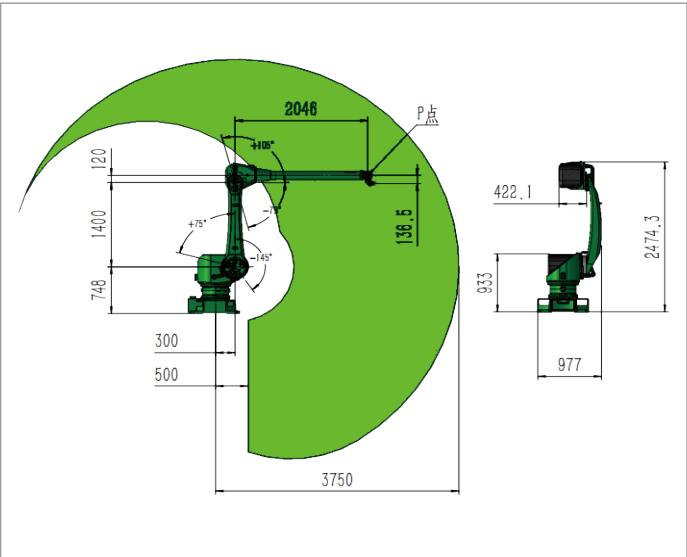
Suitable for furniture, automobile and other industries.



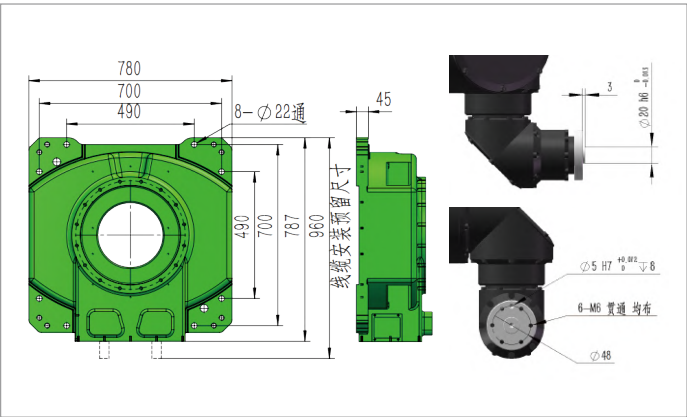
## SPECIFICATIONS

Wrist Payload		10 kg	
Reach		3750 mm	
Repeatability		± 0.5 mm	
Motion Range & Speed		Range	Speed
	J1	± 155°	130°/s
	J2	+75°/-145°	150°/s
	J3	+105°/-75°	150°/s
	J4	± 360°	600°/s
	J5	± 360°	600°/s
Allowable Torque	J4	33.2 N.m	
	J5	27.6 N.m	
	J6	15.1 N.m	
Allowable Moment of Inertia	J4	1.17 kg.m <sup>2</sup>	
	J5	0.62 kg.m <sup>2</sup>	
	J6	0.15 kg.m <sup>2</sup>	

## OPERATING SPACE

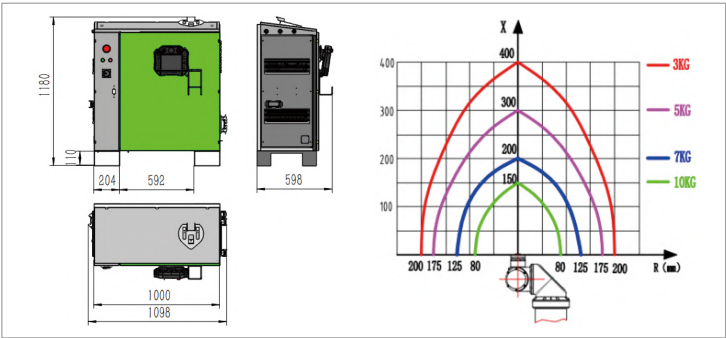


## BASE& END FLANGE MOUNTING SIZE



Structure		6-Axis Series Structure
Installation		Floor, Upside-down
Safety Level		EN ISO13849 PLd
IP Grade	Robot	IP 65
	Cabinet	IP 54
Explosion-Proof	China	Ex d ib px IIB T4 Gb
	ATEX-Gas	II 2G Ex pxb IIB T4 Gb
	ATEX-Dust	II 2D Ex pxb IIIC T135℃ Db
Environment Requirements	Voltage	AC380V(± 10%)
	Power Capacity	5.0 kVA
	Temperature	0-45 °C
Arm Payload	Outer Arm	10 kg
	Inner Arm	10 kg
Weight	Robot	920 kg
	Cabinet	160 kg

## CONTROL CABINET SIZE&WRIST END LOAD MAP

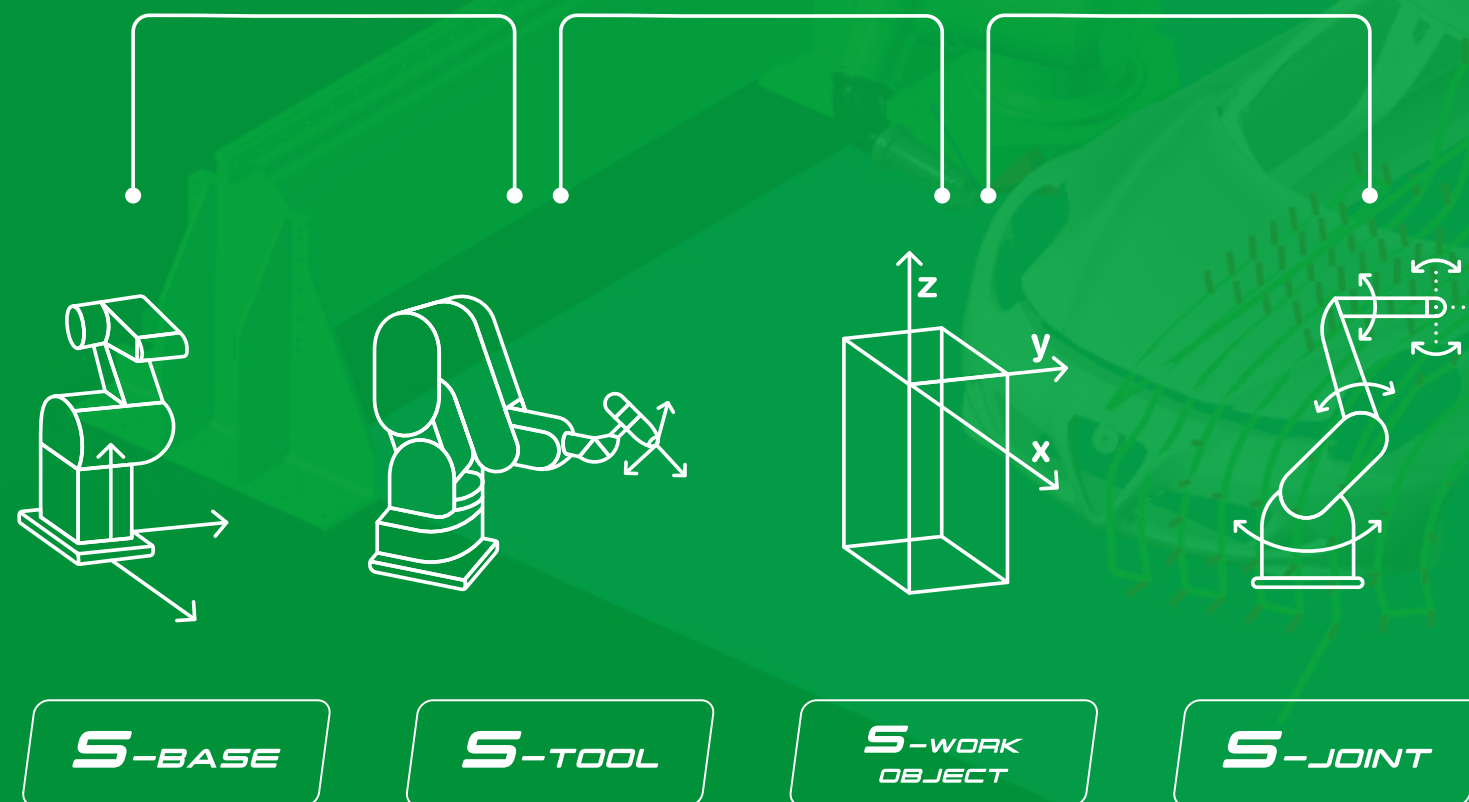


## SELECTION&CONFIGURATION TABLE

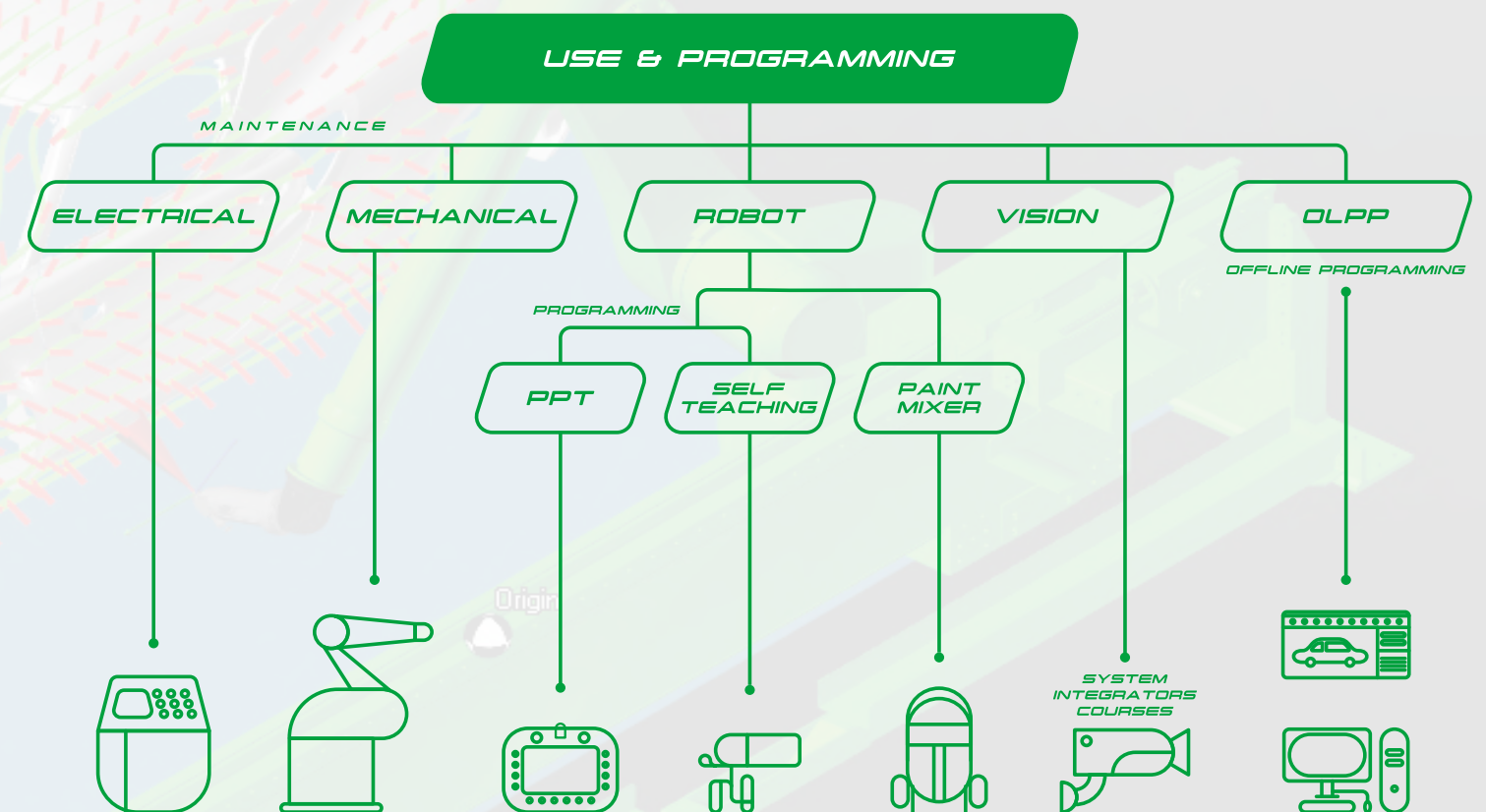
Item	Standard	Optional	
Driver	6 Axes	6+2~4 Axes	
Connector Cable	Static	Static	Flexible
	8 m	Max:30 m	
Pendant	10 m	Max:30 m	
DI/DO	12/12	Customized	
Safety DI/DO	8/4	Customized	
AI/AO	/	Customized	
Communication Mode	TCP/IP	ProfiBus Slave	ProfiNet Slave
Memory Capacity	1GB	/	
Connector	USB/TCP/IP	/	
Software Package	Painting Package	Visual Programming	
Program Mode	Pendant	Touch Panel	
Color	RAL6018	Customized	



# COORDINATE SYSTEM



# CURRICULUM SYSTEM





# SERVICE NETWORK



ITALY EAST CHINA SOUTH CHINA NOUTH CHINA SOUTHWEST CHINA GERMANY  
意大利 华东大区 华南大区 华北大区 西南大区 德国

# HONOR CUSTOMERS

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