Panasonic CONNECT

Welding Robots

General Catalog

Arc Welding Robots

TS/TM/TL/LA Series

Achieves high-quality welding

TS Series

Space saving & high payload

TS
800
950

External type/
Through-arm type

TM Series

The torch type can be selected to suit your application

TM
1100
1400
1600
1800
2000

Separate type

Through-arm type

TL Series

Long arm & high payload

TL
1800
2000

External type

LA-1800

A single robot can perform material handling and welding operations

LA
1800

External type

■Manipulator lineup

	TS Series		TM Series					TL Series		LA
	800	950	1100	1400	1600	1800	2000	1800	2000	1800
Separate	–	–	○	○	○	○	○	–	–	–
Through-arm	○	○	○	○	○	○	○	–	–	–
External	○	○	*1	*1	–	–	–	○	○	○
Payload	8 kg		6 kg		4 kg	6 kg		8 kg	6 kg	26 kg

* Please contact us for products that comply with C-UL, UL, CE, KCS, and CCC standards.
*1 Supported for TIG and some other types

Various features specialized for arc welding

1 Enhanced basic performance

Increased motion speed (reduced takt time)

The maximum speed of each axis has been improved by up to 27% (compared to the G3 controller)

Extended maximum reach (applicable welding range)

TM-1400: 1 437 mm (63 mm more than the conventional TA type)

2 Arm structure specialized for welding

Side mount arm structure

Makes the arm compact and improves accessibility to workpieces

3 Structure designed specifically for welding

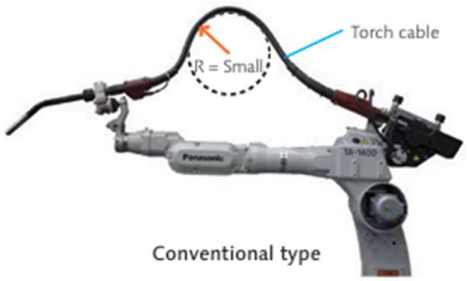
Tidy appearance with through-arm cables

* The optional internal flexible conduit is for use with a pail-pack wire only.

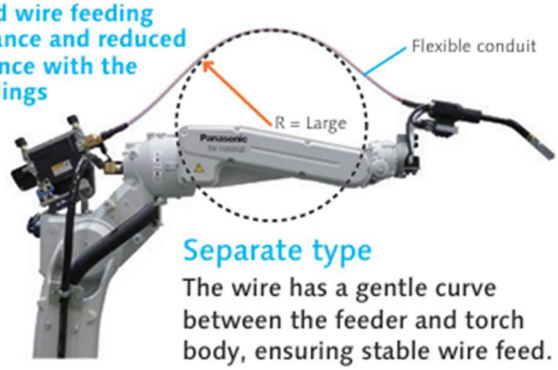
Separate type (TM Series)

The advantages of both the through-arm type and external type torch cables are achieved in a well-balanced manner.

1 External flexible conduit



Improved wire feeding performance and reduced interference with the surroundings



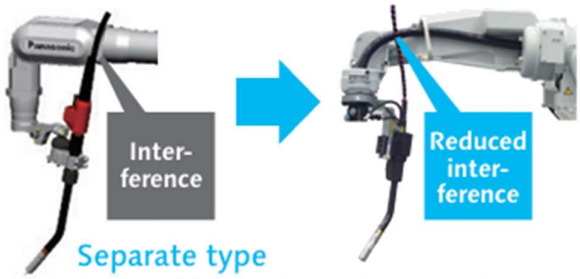
Separate type

The wire has a gentle curve between the feeder and torch body, ensuring stable wire feed.

2 Through-arm power cable

Conventional type

Power cable may interfere with the surroundings depending on the welding position.



Separate type

Power cable is built into the manipulator to reduce interference with the surroundings.

Separate type:
Example of circumferential welding

Suppresses wire twisting.

Reduces wire target position misalignment at the weld start and end points.

New welding robot configuration offers even higher quality welding.

Arc Welding Controller

G4 Controller Series

Further evolved welding functions and improved compatibility with peripheral devices

G4 WG4 WGH4

Panasonic GREEN IMPACT

1 Further evolved welding performance

●261 types of welding tables included (1.7 times the conventional models)

- Mild steel: 95 types
- Stainless steel: 42 types
- Stainless steel (ferrite-based): 34 types
- Hard aluminum: 31 types
- Zinc-plated steel: 26 types
- Soft aluminum: 18 types

*The above list represents a portion of the types.
*Tables will be added as necessary.
The number of tables include optional ones.

2 Optimized operation reduces the time required to move to the next weld point

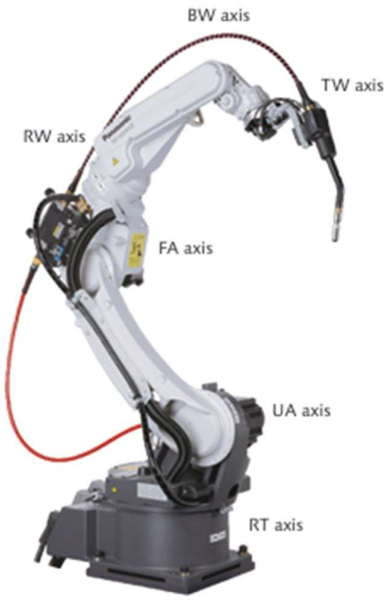
●The maximum speed of each axis has been improved by up to 27% (compared to the G3 controller)

●The basic performance has been enhanced through improved CPU performance and memory capacity

●The maximum speeds of all axes have been enhanced through improved acceleration and deceleration control

Maximum speeds of the 6 axes (compared to G3)*

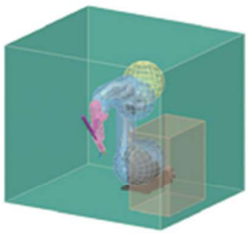
*The above are the TM-1400 test results (under our test environment).



3 Touch interactions and 3D display improve ease of use

- The touch panel is operable while wearing gloves
- 3D engine allows finer 3D display and intuitive operation
- Character enlargement function improves visibility

New teach pendant screen with a touch panel operable while wearing work gloves



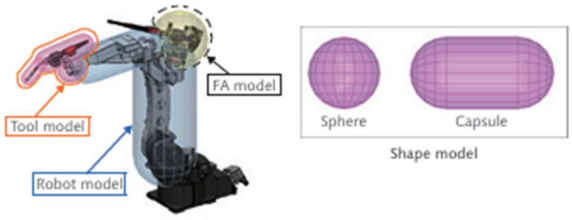
Fine 3D display on LCD with a resolution 1.6 times the conventional model

Intuitive operation simplifies text entry

4 Software-based safety mechanism enables more flexible and safer work environments

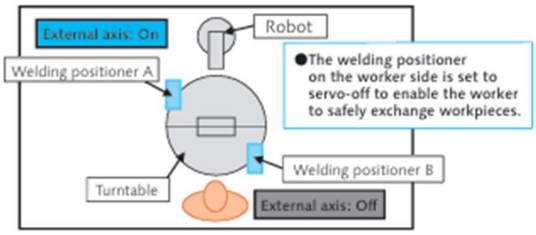
●Area monitoring function

Monitors whether the spherical or capsule-shaped models arranged on the manipulator and tool are within the safety area.
When the shape models are outside the specified safety area, an error is triggered to alert operators of unsafe conditions and halt the robot operation.



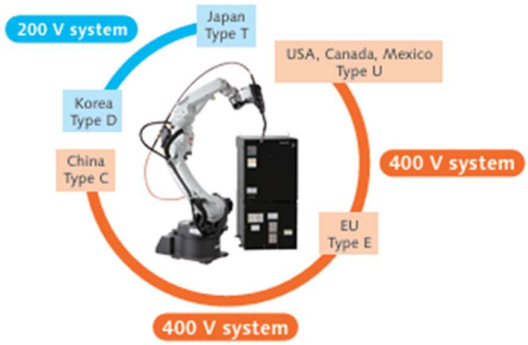
●Individual servo-off function

The individual servo-on/off function for external axes enhances the safety of workers.
In the example below, two welding positioners are on the turntable. The operation of welding positioner A, where the robot is welding, is on.
At that time, welding positioner B is turned off to allow the worker to safely exchange workpieces.

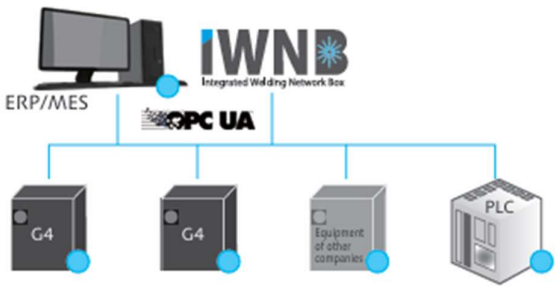


5 The 400 V systems (380 to 460 V) as well as the 200 V systems (200/220 V) are available

- No step-down transformer is required, even in factories with different input voltages



6 The conformance to the OPC UA standard facilitates integration with peripheral devices



● Please refer to the website for other ancillary devices and details.

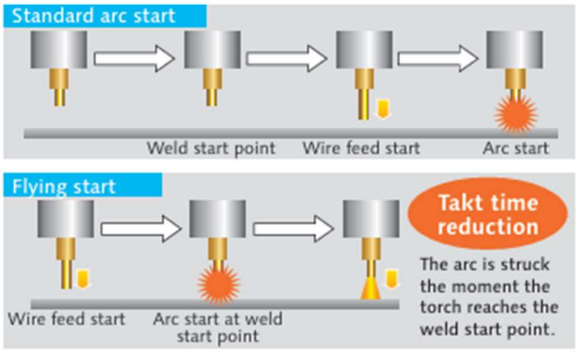
Standard Functions

WG4/WGH4/G4

1 Flying start

* Same as the wire stick auto release function (for CO2/MAG welding)

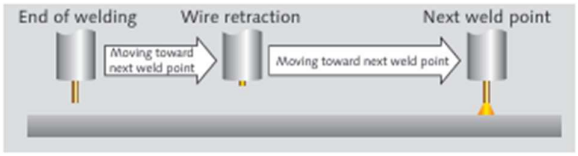
Executes welding start/end programs just before the torch reaches the weld start/end points. This function helps reduce the takt time.



2 Auto wire retraction

*Same as the wire stick auto release function (for CO2/MAG welding)

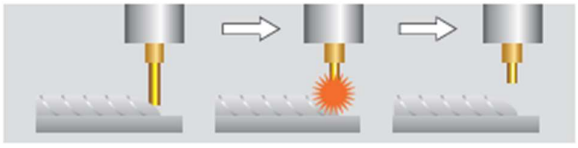
Simple operation/settings allow automatic wire retraction while moving toward the next weld start point, securing improved arc start at the next point. It prevents touch start at arc start.



3 Auto stuck wire release

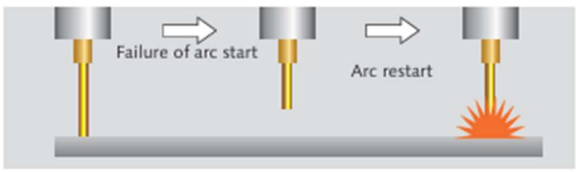
(for CO2/MAG welding)

Automatically detects a wire stuck at the end of welding and re-ignites the arc to release the wire.



4 Arc start retry

When detecting an arc start failure, the robot automatically restarts arc ignition without stopping the operation as an error.

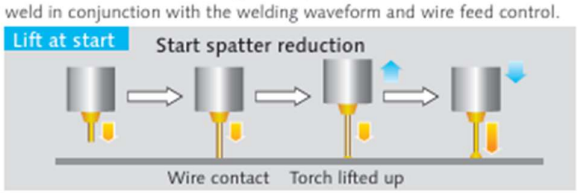


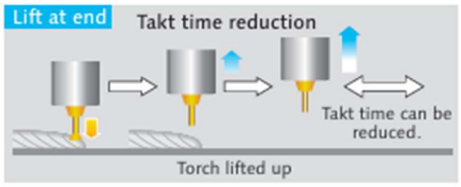
5 Lift at start/end

*G4 is non-supported.

Quality improvement at weld start and end points and high-speed processing

The robot lifts up the welding torch quickly at the start and end of the weld in conjunction with the welding waveform and wire feed control.



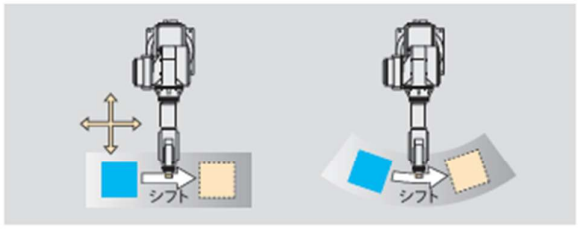


6 Collision detection

The operation stops immediately when a collision is detected through dynamics-based collision detection. After the operation stops, the manipulator enters a flexible control state to reduce the impact from collisions and minimize damage to equipment.

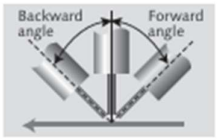
7 Parallel shift + RT axis rotation shift

The shift function can reduce the teaching time for identical workpieces.



8 Torch angle display (teach pendant)

The torch angle is displayed on the screen, making it possible to reduce teaching time and obtain consistent bead appearance.



Standard and Optional Functions

WG4/WGH4

1 Weld Navigation enables the easy setting of welding parameters

Easily check and set welding conditions with the teach pendant.

The pendant offers an extensive welding parameters database accumulated through years of experience.

*WG4/WGH4: Standard function

*Screens are subject to change without notice for improvement purposes.

This function reduces the time required for setting welding parameters.

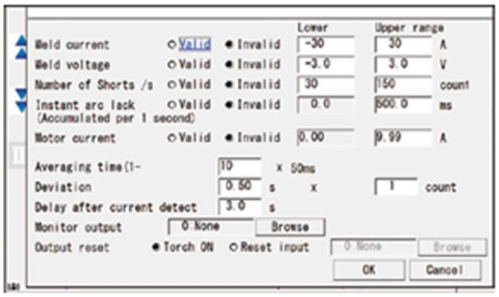
2 Weld data management function

Significantly evolved toward the ideal production/quality control.

Welding data can be sampled with a minimum interval of 10 μsec, enabling high-precision monitoring and status/error output. Welding results can be recorded in log files, which can be used as base data for production/quality control.

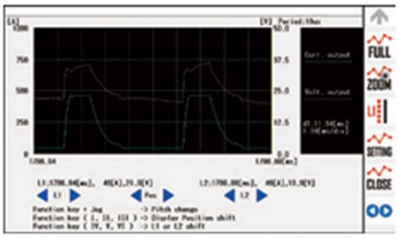
Welding quality monitor Included as standard

Constantly monitors data such as welding current, welding voltage, and wire feed speed to accurately detect minor welding anomalies and alert operators.
(Only one monitoring condition included as standard)



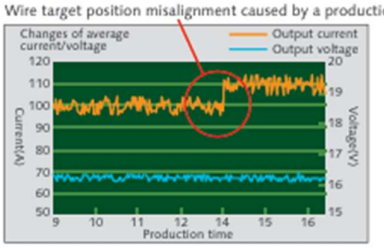
Weld data management function Software option

- ●Welding quality monitor (extended function)
  Up to 50 welding quality monitoring conditions can be defined.
- ●Welding data recording
  Data such as welding current, welding voltage, and the number of short-circuits can be recorded at short intervals based on specified triggers. The log data can be graphed on the teach pendant and recorded on the SD memory card.



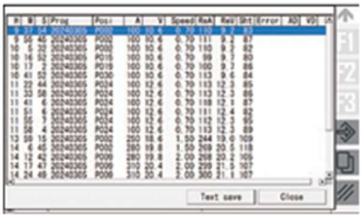
Example of log data processing:
Usable for defect rate reduction

Wire target position misalignment caused by a production lot change



Welding log function Software option

Data for each welding point can be recorded in a log file.
Users can make effective use of the stored data for tracking surveys.



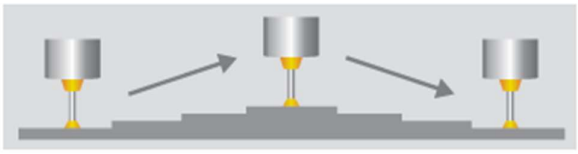
More advanced welding system can be built

Make full use of an external I/F (network), TP display operation, high-capacity memory (welding operation database), etc.

Auto extension control Software option

Effectively mitigates the effects of teaching errors or heat distortion of odd-shaped workpieces.

Robots detect changes in wire extension and compensate automatically. No additional hardware is required, and the operations can be simply performed using only robots.

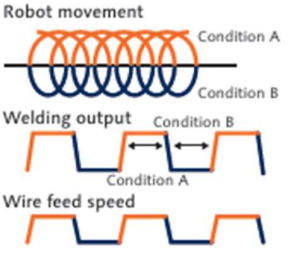


Cooperative multi-robot control

Allows cooperative control between three robots (2 arc welding robots + 1 handling robot).

Synchronous weaving low pulse function (Spiral weaving included)

Spiral weaving movement



Seamlessly synchronizes 3 elements: welding output, wire feed speed, and weaving movement.
Alternates between conditions A and B during spiral weaving, ideal for welding plates of different thicknesses (high current for a thick plate, low current for a thin plate).

TAWERS®
WG4/WGH4

TAWERS enables flexible welding process selection/switching

Pulse MAG welding (high-current range)
HD-Pulse for high-speed and low-spatter welding
Normal-Pulse for low-spatter welding of medium and thick plates

HD-Pulse

HD-Pulse(Hyper Dip-Pulse Control)

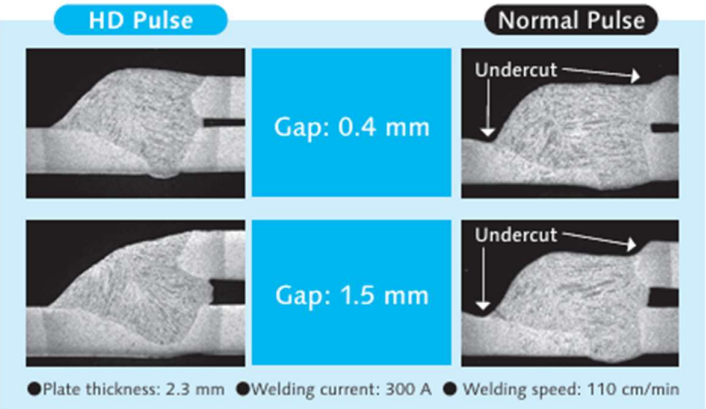
Achieves high-speed pulse welding

Short arc length and narrow arc width prevents undercuts caused by insufficient deposition during high-speed welding.

HD-Pulse welding features

- **Prevents undercuts during high-speed welding.**
- **The short-circuit transfer enables lower heat input than drop transfer. Gap tolerance is improved.**
- **Precisely controls dip timing, reducing spatter.**

■Example of high-speed welding



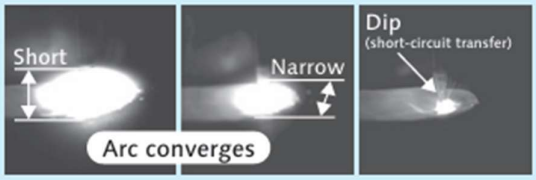
●Plate thickness: 2.3 mm ●Welding current: 300 A ● Welding speed: 110 cm/min

Preventing undercuts with ideal penetration

■Types of droplet transfer

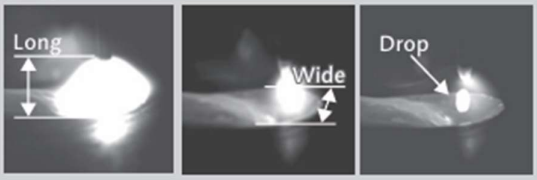
HD-Pulse control

Transfer type: 1 dip by 1 pulse (short-circuit transfer)



Normal-Pulse control

Transfer type: 1 drop by 1 pulse (drop transfer)



■Process comparison in spray transfer range (280 A or more)

Welding process	SP-MAG Ⅱ	Normal-Pulse	HD-Pulse
Welding speed	Good	Good	Excellent
Spatter	Average	Excellent	Good
Penetration pattern	Marginal	Average	Excellent
Undercut	Marginal	Marginal	Excellent
Base metal heat input	Marginal	Marginal	Good
Gap handling	Marginal	Marginal	Good
Overall evaluation	Marginal	Marginal	Excellent

- **SP-MAG Ⅱ:**
  Spatter control is a challenge in the high-current range.
- **Normal-Pulse :**
  Undercut control is a challenge in high-speed welding.

HD-Pulse control is ideal for high-current and high-speed welding

TAWERS®
WG4/WGH4

TAWERS enables flexible welding process selection/switching

SP-MAG Ⅱ for MAG welding
(short-circuit transfer range for thin plates)
MTS-CO_2 for CO_2 welding

TAWERS Standard Welding Process

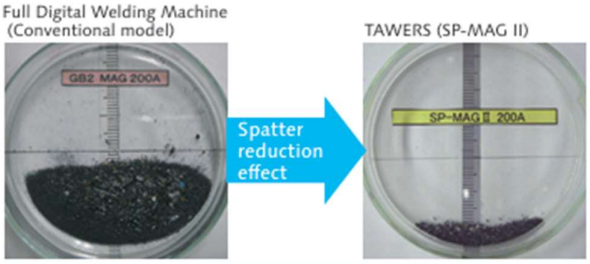
SP-MAGⅡ

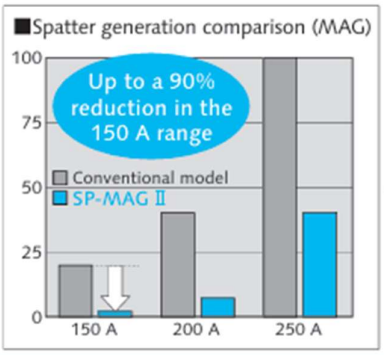
SP(Super-imposition) Control

Reduces spatter significantly during MAG welding of thin plates

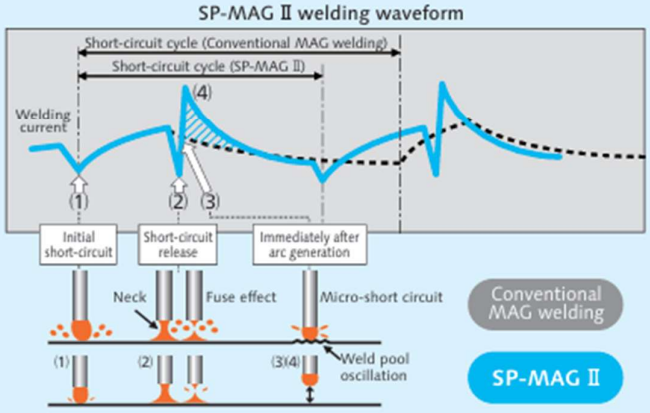
Welding waveform control technology achieves low spatter in short-circuit transfer range.

■Spatter generation comparison (1 minute at 200 A)





Wire used: YM-50MT



(1)Initial short-circuit control
Detects an initial short-circuit accurately and then enables secondary switching*1 to rapidly reduce the welding current to prevent a micro-short circuit that causes spatter, and ensure short circuiting transfer.

(2)Neck control
etects a neck of the wire tip and then enables secondary switching*1 to rapidly reduce the welding current to prevent the fuse effect of the wire tip that causes spatter.

(3)HS control
Suppresses the weld pool oscillation immediately after arcgeneration, and prevents a micro-short circuit that causes spatter.

(4)SP control
Superimposes the current immediately after short-circuit release to increase the melting rate of the wire tip, thereby making the next short-circuit smoother and shortening thecycle.

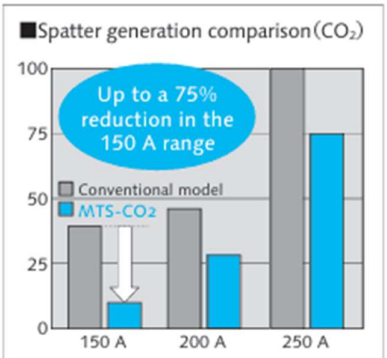
*1 Secondary switching
Spatter reduction process that rapidly reduces welding current immediately before and after a short-circuit, and enables a smooth transition betweenthe arc and short circuit.

MTS-CO_2

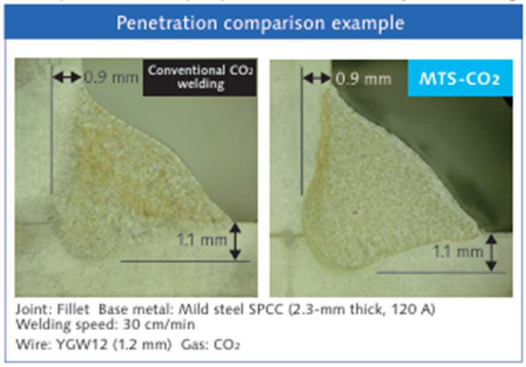
MTS(Metal Transfer Stabilization)Control

Reduces spatter by up to 75% using CO_2 gas

MTS control added to our SP-MAG technologies reduces spatter generation specific to CO_2 welding.



Stable pan-bottom shaped penetration achieved by CO_2 welding.



Joint: Fillet Base metal: Mild steel SPCC (2.3-mm thick, 120 A)
Welding speed: 30 cm/min
Wire: YGW12 (1.2 mm) Gas: CO_2

Active TAWERS 4

WG4

The welding power source integrated robot has evolved into a new range, achieving high-speed and ultra-low-spatter welding

TAWERS

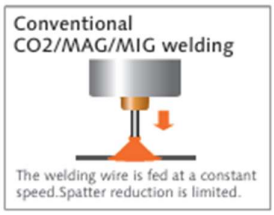
Active Wire Feed Process 4 (AWP4)

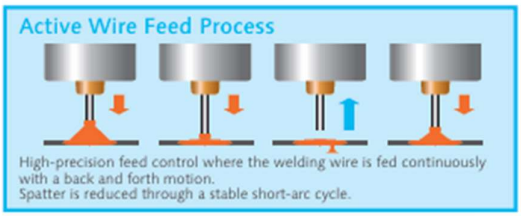
AWP4 (Active Wire Feed Process 4)

Wider current range and precise wire feed

- **Contribute to productivity improvement with high-speed welding and ultra-low spatter**
- **Achieve 100% duty cycle at 310 A**

(When using CO_2 gas, 1.2 mm mild steel solid wire, and an air-cooling unit)



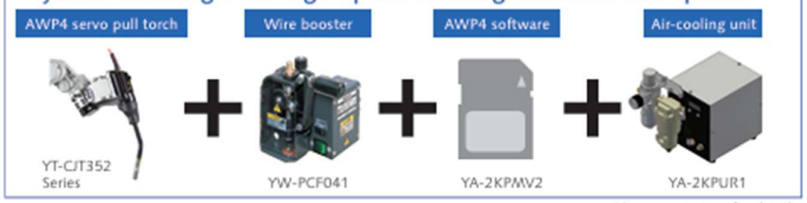


WG4

TS	TM	TL	LA
800	1100	1800	1800
950	1400	2000	
	1600		
	1800		
	2000		

* TS:Through-arm/External
* TM:Separate/Through-arm
* TL:External
* LA:External

System enabling both high-speed welding and ultra-low spatter



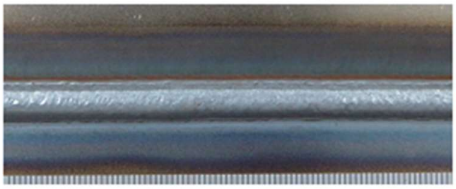
Please contact us for details.

High-speed welding

- **Productivity improved at speeds of 100 cm/min or higher**
- **Smooth and beautiful bead appearance**

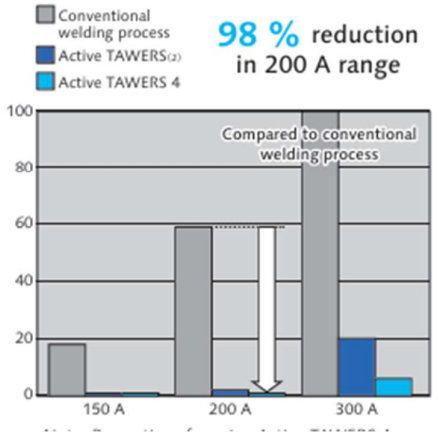
Welding conditions: Joint: Lap Gas: CO_2
Welding current: 320 A
Welding speed: 110 cm/min
Plate thickness: 3.2 mm

Example of mild steel SPCC welding

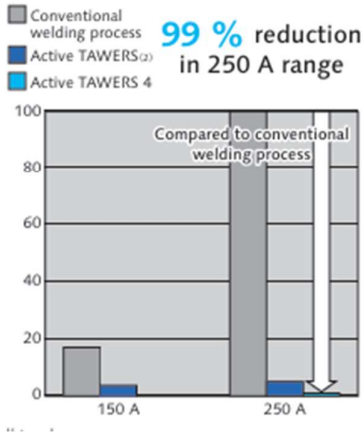


Reduces spatter by up to 99% (compared to conventional models)

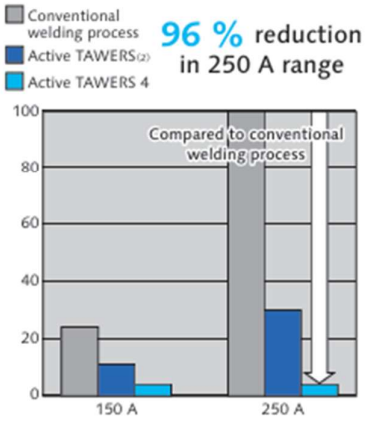
CO_2 welding



MAG welding



Stainless steel welding



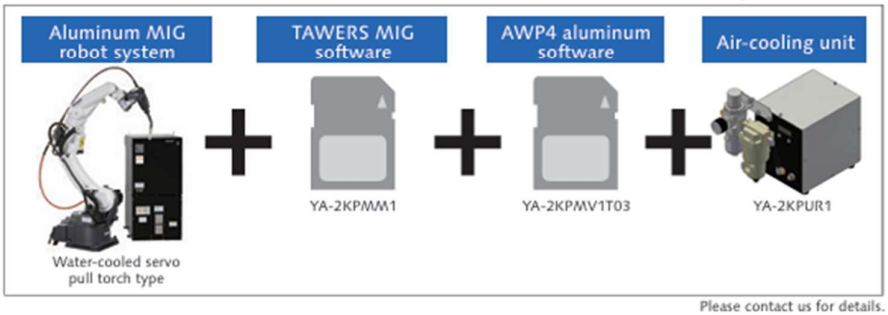
Active TAWERS WG4

Welding technology for zinc-coated steel

Solution to reduce excessive spatter generation and residual blowholes

S-AWP Aluminum

The ultra-low spatter welding performance of Active TAWERS is extended to aluminum MIG welding.



Please contact us for details.

WG4

TS	TM	TL	LA
800	1100	1800	1800
950	1400	2000	
	1600		
	1800		
	2000		

* TS:External
* TM:Separate
* TL:External
* LA:External

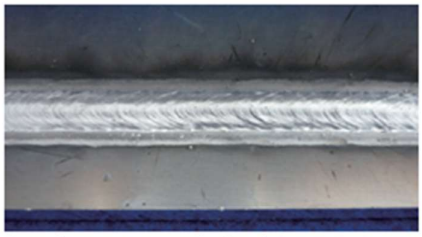
TAWERS AL

Active TAWERS 4 for aluminum MIG reduces spatter and smut

- **The ultra-low spatter welding performance of AWP, demonstrated on mild steel, is now extended to aluminum**
- **A wider current range of 40 to 180 A enables high-speed welding and expansion of applicable plate thickness**

Example of medium thickness plate welding (3.0 mm)

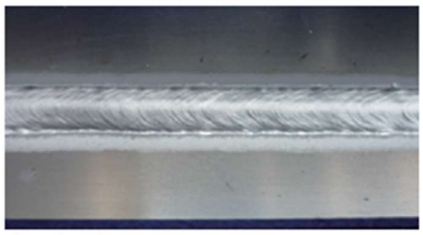
Conventional TAWERS (DC pulse MIG)



Smut formation over the bead

Smut generation suppressed

Active TAWERS 4 Aluminum

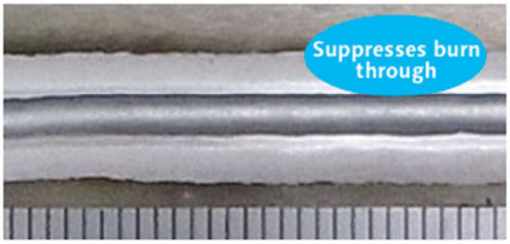


Shiny bead appearance

Welding conditions: Material: A5052 Joint: T joint Welding current: 155 A Welding speed: 60 cm/min Plate thickness: 3.0 mm

Effective for welding thin aluminum plates

Example of thin plate welding (0.6 mm)



Welding conditions:
Material: A5052 Joint: Butt Welding current: 50 A
Welding speed: 150 cm/min
Plate thickness: 0.6 mm

AC-MIG System

AC control and stable wire feed ensure high-quality aluminum MIG welding, and powerful output. Useful for a variety of welding situations.

Additional AC unit increases applications of aluminum MIG welding.

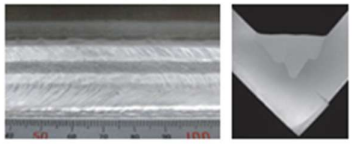
* This system cannot be used in combination with the Active TAWERS aluminum function.

AC unit

YX-350AC1

Rated output of 350 A Thin to medium and thick plates

One unit can support a wide range of conditions from AC aluminum welding of delicate thin plates to powerful DC welding of medium and thick plates. (Output current: 22 A to 350 A)



Joint: Flat fillet
Base metal: A5052
Plate thickness: 15.0 mm
Wire: A5356WY (1.2 mm)
Welding speed: 40 cm/min
Welding current: 280 A DC for 1 pass
250 A DC for 2 to 3 passes

TAWERS® WGH4

High-power model specialized for welding medium and thick plates

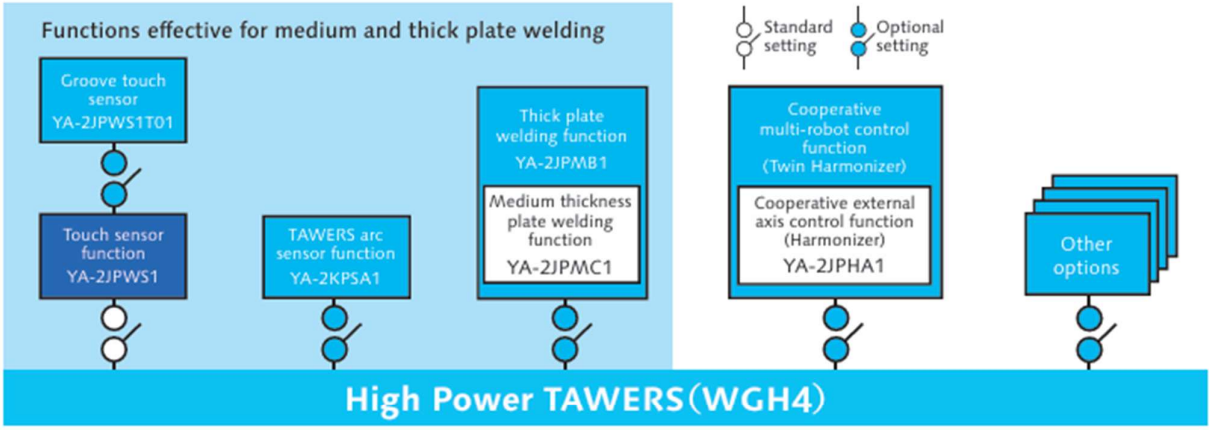
TAWERS for medium and thick plates

WGH4

TS	TM	TL	LA
800	1100	1800	1800
950	1400	2000	
	1600		
	1800		
	2000		

Various functions can be selected based on your application

Select necessary options for TAWERS for medium and thick plates.



High Power TAWERS (WGH4)

* TAWERS for medium and thick plates: Supplied with touch sensor software and a wire clamp unit

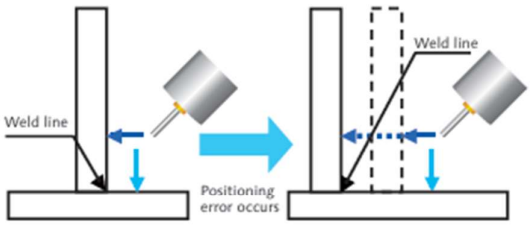
TAWERS Medium and Thick Plates

Examples of functions

Touch sensor operation

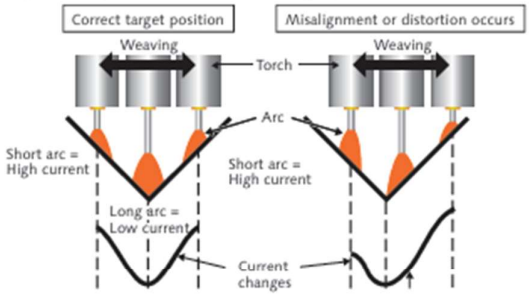
The robot calculates the point of contact with the base metal and determines the weld line.

Measures deviation in the weld line due to errors and determines the weld line again.



Arc sensor operation

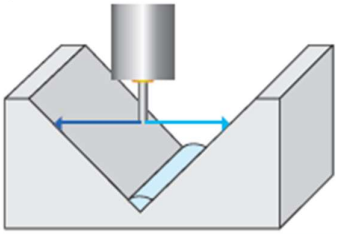
Detects misalignment or distortion of the workpiece and adjusts the position to the correct target position.



A deviation of weaving center from joint center changes the balance of current changes.

Groove touch sensor function

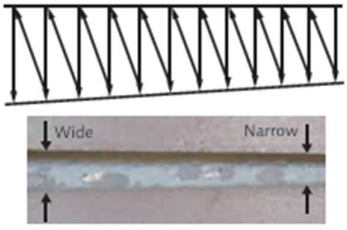
Searches for the groove and detects positioning errors. Senses groove width and center, compensating for misalignment in each workpiece.



Variable weaving function

Thick plate welding function (YA-2JPMB1)

Adapts to changes in the groove width. Controls the amount of deposited metal, ensuring uniform bead height.



TAWERS®

WG4

High deposition enables high-speed TIG welding

TAWERS TIG

TAWERS-TIG

High-frequency start

TAWERS-TIG start unit

Achieves excellent arc start. Enables improved welding quality and reduces takt time.

WG4

TS	TM	TL	LA
800	1100	1800	1800
950	1400		

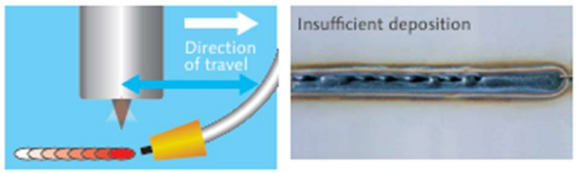
* TS:External
* TM:External
* TL:External
* LA:External

Not applicable to aluminum.

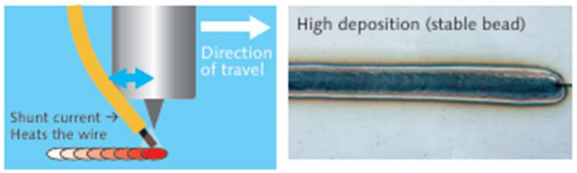
The proximity of the electrode and filler wire increases the wire heating effectExample of high-speed welding (80 cm/min, stainless steel)

Example of high-speed welding (80 cm/min, stainless steel)

Conventional process



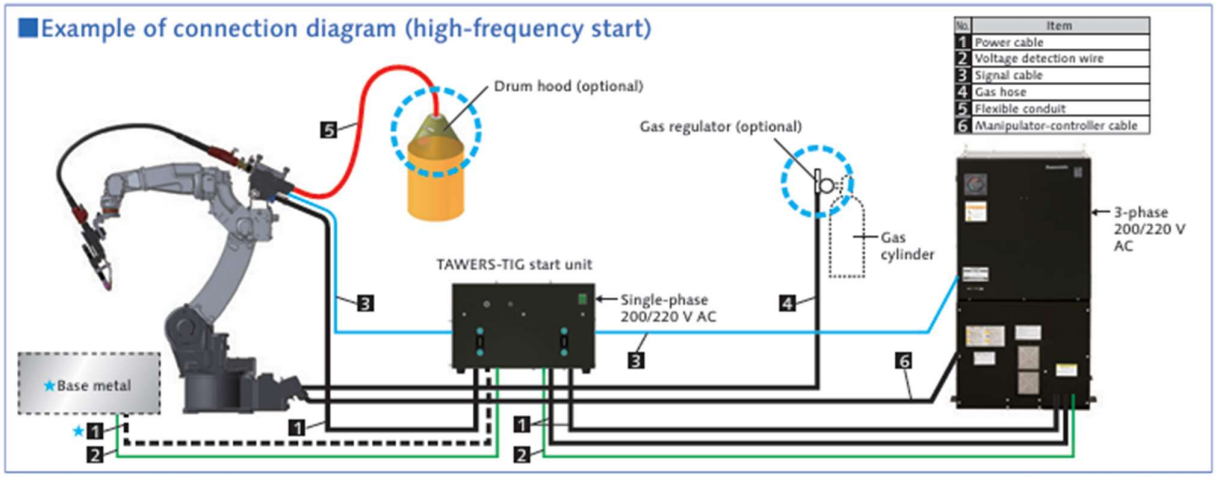
TAWERS-TIG



Curved neck filler conduit

Achieves consistent filler wire feeding.
Effective in improving weld quality and limiting misalignment.

Example of connection diagram (high-frequency start)



No.	Item
1	Power cable
2	Voltage detection wire
3	Signal cable
4	Gas hose
5	Flexible conduit
6	Manipulator-controller cable

★Items to be supplied by the customer

Please contact us for details.

Standard Arc Welding Robots

TM Series

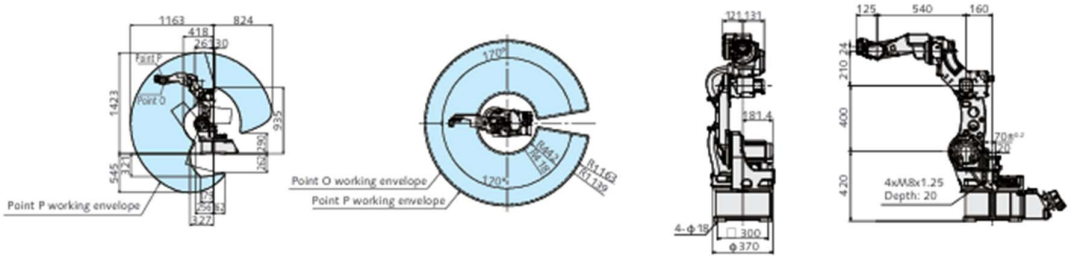
The torch type can be selected to suit your application

Separate type | Through-arm type | External type

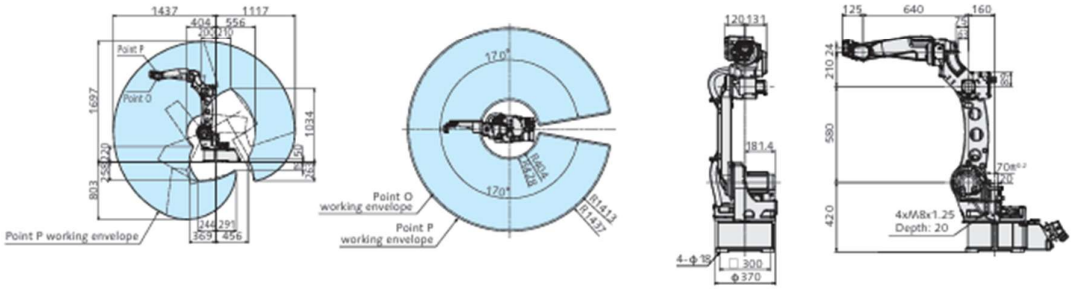
Working envelopes and dimensions (Unit = mm)

* For the working envelope of point O, please consult with our sales office.

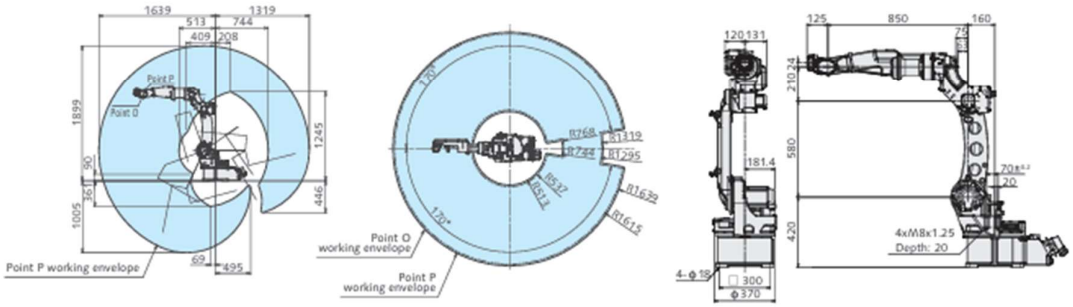
Short Type TM-1100



Standard Type TM-1400

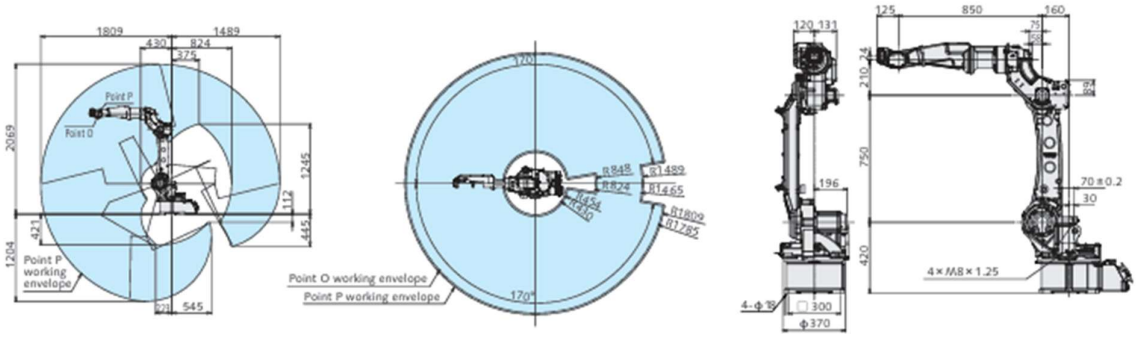


Middle Type TM-1600

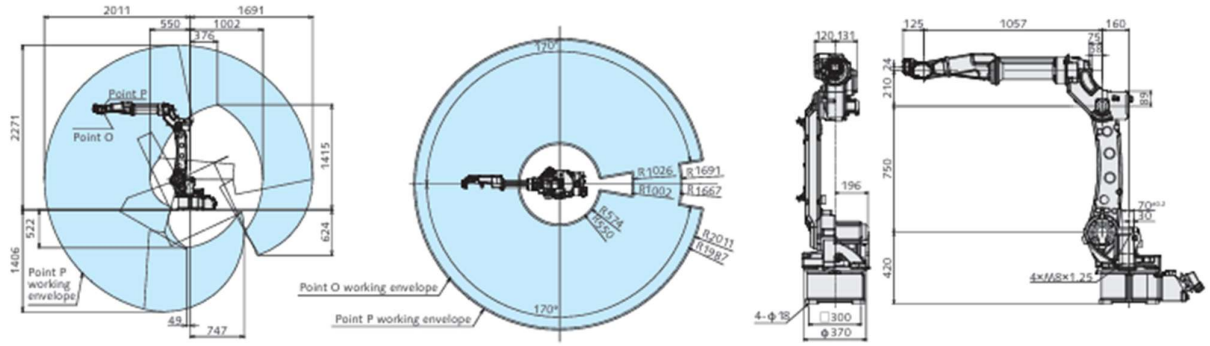


TM Series

Long Type TM-1800



Long Type TM-2000



TM Series

■General specifications of manipulators

Name			TM-1100	TM-1400	TM-1600	TM-1800	TM-2000
Type			Short type	Standard type	Middle type	Long type	Long type
Structure			6 axis articulated				
Payload			6 kg		4 kg	6 kg	
Working range		Maximum reach	1 163 mm	1 437 mm	1 639 mm	1 809 mm	2 011 mm
		Minimum reach	0 418 mm	0 404 mm	513 mm	430 mm	550 mm
		Front-back working range	0 745 mm	1 033 mm	1 126 mm	1 379 mm	1 461 mm
Motion speed	Arm	Swivel (RT axis)	225°/s		210°/s	195°/s	
		Upper arm (UA axis)	225°/s		210°/s	197°/s	
		Front arm (FA axis)	225°/s		215°/s	205°/s	
	Wrist	Rotation (RW axis)	425°/s		425°/s	425°/s	
		Bending (BW axis)	425°/s		425°/s	425°/s	
		Twist (TW axis)	629°/s		629°/s	629°/s	
Position repeatability			Within ±0.08 mm				Within ±0.10 mm
Motor		Total power	3 400 W			4 700 W	
		Brakes	All axes				
Mounting			Floor/Ceiling*				
Unit weight			Approx. 156 kg	Approx. 170 kg	Approx. 180 kg	Approx. 215 kg	Approx. 217 kg

* The ceiling-mounted type is available as a factory-configured option.

Standard Arc Welding Robots

TL Series

Long arm & high payload

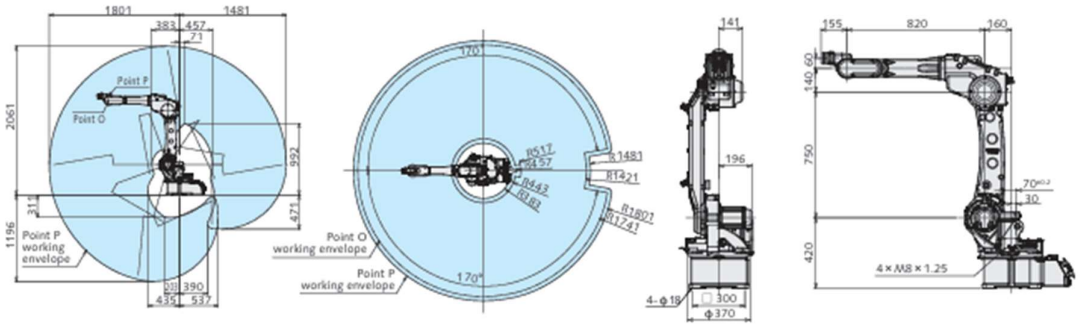
TL-1800

TL-2000

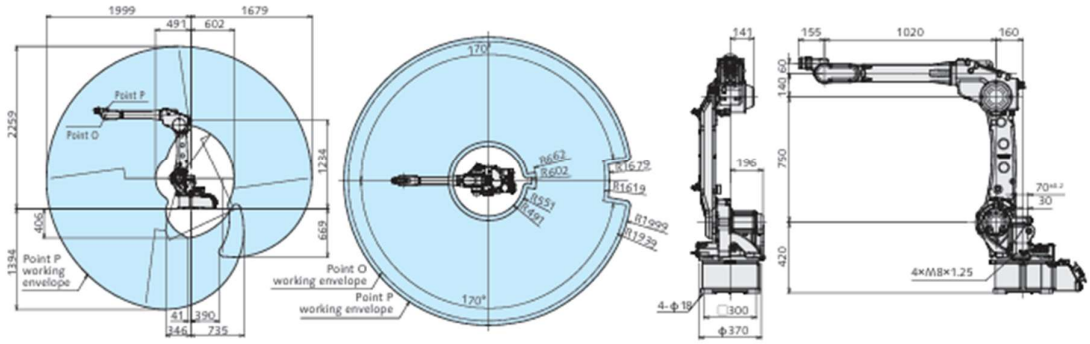
Working envelopes and dimensions (Unit = mm)

* For the working envelope of point O, please consult with our sales office.

Long Type TL-1800



Long Type TL-2000



■General specifications of manipulators

Name			TL-1800	TL-2000
Type			Long type	
Structure			6 axis articulated	
Payload			8 kg	6 kg
Working range		Maximum reach	1 801 mm	1 999 mm
		Minimum reach	383 mm	491 mm
		Front-back working range	1 418 mm	1 508 mm
Motion speed	Arm	Swivel (RT axis)	95°/s	
		Upper arm (UA axis)	197°/s	
		Front arm (FA axis)	205°/s	
	Wrist	Rotation (RW axis)	385°/s	
		Bending (BW axis)	375°/s	
		Twist (TW axis)	624°/s	
Position repeatability			Within ±0.08 mm	Within ±0.15 mm
Motor		Total power	5 050 W	
		Brakes	All axes	
Mounting			Floor/Ceiling*	
Unit weight			Approx. 215 kg	Approx. 216 kg

* The ceiling-mounted type is available as a factory-configured option.

TL Series

Medium Type Multi-purpose Robot

LA-1800

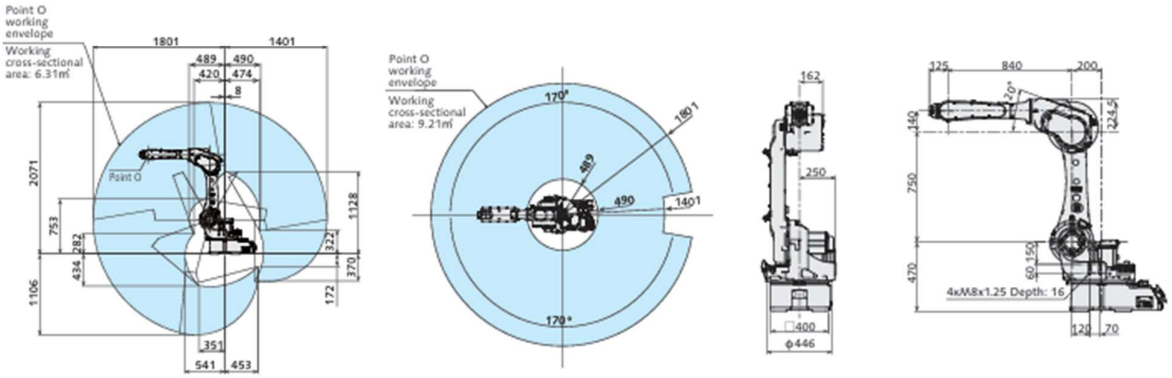
A single robot can perform material handling and welding operations

LA-1800G4

Working envelopes and dimensions (Unit = mm)

* For the working envelope of point O, please consult with our sales office.

Long Type LA-1800



LA

■General specifications of manipulators

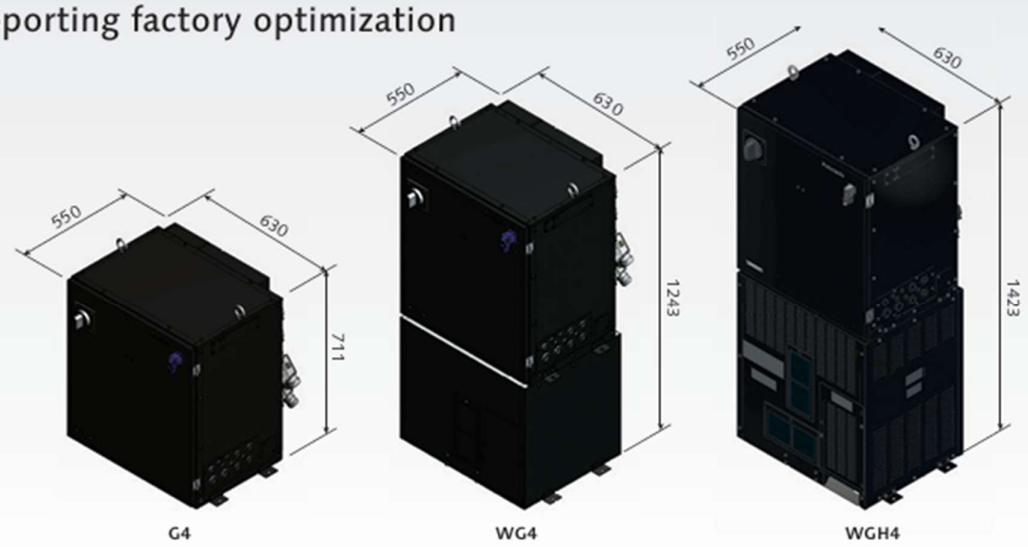
Name			LA-1800
Type			Medium multi-purpose type
Structure			6 axis articulated
Payload			26 kg
Working range		Maximum reach	1 801 mm
		Minimum reach	489 mm
		Front-back working range	1 312 mm
Motion speed	Arm	Swivel (RT axis)	201°/s
		Upper arm (UA axis)	199°/s
		Front arm (FA axis)	218°/s
	Wrist	Rotation (RW axis)	434°/s
		Bending (BW axis)	450°/s
		Twist (TW axis)	720°/s
Position repeatability			Within ±0.07 mm
Motor		Total power	6 600 W
		Brakes	All axes
Mounting			Floor/Ceiling*
Unit weight			Approx. 320 kg

* The ceiling-mounted type is available as a factory-configured option.

Arc Welding Robot Controller

G4 Controller Series

Next-generation robot controllers supporting factory optimization



G4 WG4 WGH4

Controller Specifications

Name	G4	WG4	WGH4
External dimensions (mm)	Width 630 × Depth 550 × Height 711	Width 630 × Depth 550 × Height 1243	Width 630 × Depth 550 × Height 1423
Mass (kg)	63 (Type T/D)/ 78 (Type Y)/ 82 (Type E)	141 (Type T/D)/ 163 (Type Y)/ 167 (Type E)	171 (Type T)/ 193 (Type Y)/ 198 (Type E)
Memory capacity (points)	160 000		
Position control method	Software servo system		
External memory I/F	TP: SD memory card slot × 1 USB2.0 (Hi-Speed) × 2		
Number of control axes	Simultaneous 6 axes (max. 27 axes)		
Input/output signal	Dedicated signal: Input: 6 points, Output: 8 points General signal: Input: 40 points, Output: 40 points		
Rated input voltage (V)	200 to 220 AC (±10%): (Type T/D) 380 to 460 AC (±10%): (Type Y/E)		200 to 220 AC (±10%): (Type T) 380 to 460 AC (±10%): (Type Y/E)
Number of phases, rated frequency (Hz)	3-phase, 50/60 (±2%)		
Input cable (mm²)	3.5(AWG12)	14(AWG6)	22 (AWG4): (Type T) / 14 (AWG6): (Type Y/E)
Ground cable (mm²)	14(AWG6)		22 (AWG4): (Type T) / 14 (AWG6): (Type Y/E)
Applicable welding process	—	CO_2/MAG/Stainless steel MIG Pulse MAG/Stainless steel pulse MIG	
Output current (A)		30 to 350 DC	40 to 500 DC
Output voltage (V)		12 to 36 DC	16 to 39 DC
Rated duty cycle (%)		CO_2/MAG/Stainless steel MIG: 80 Pulse MAG/Stainless steel pulse MIG: 60	450 A: 100 500 A: 60

* Type U will be offered for sale at a later date.

Center Mount Tilt-Rotate Positioners

R Series High-speed Type

*Two max. payload types available: 300 kg and 500 kg

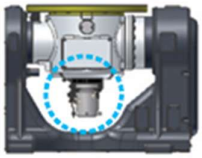
■Basic specifications

Name		Positioner unit	
Model		YA-1RJC62T10	YA-1RJC72T10
Applicable robot		TS/TM/TL/LA-WG4/WGH4/G4 robot systems	
Maximum payload		300 kg	500 kg
Maximum output speed	Rotation	190.0°/s(31 r/min)	165.0°/s(27 r/min)
	Tilt	125.5°/s(20 r/min)	90.0°/s(15 r/min)
Working range	Rotation	±10 rotations (with multi-rotation data reset function)	
	Tilt	−135° to +135°	
Allowable moment	Rotation	323 N·m	392 N·m
	Tilt	882 N·m	1 274 N·m
Position repeatability		±0.05 mm (R=250 mm position)	
Hollow shaft diameter		55 mm	
Allowable welding current		500 A, 60% duty cycle	
Applicable welding process		CO_2/MAG、MIG、TIG	
Unit weight		285 kg	
External axis controller		Internal or external type	

- 1.8 times faster maximum speed compared to conventional models
- Smallest-in-class footprint of 780 × 500 mm (300 kg payload type)
- Easier installation with three control cable outlet positions

Option

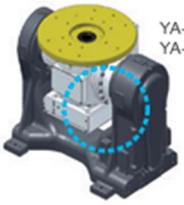
Rotary joint



AXU01428
for RJC

- Rotation angle of the rotation axis: ±∞
- 2 air piping systems (tube outer diameter: 8 mm)
- 6 signal cable systems (allowable current: 2 A)

Curl cable (factory option)



YA-1RJC62T12
YA-1RJC72T12

- Rotation angle of the rotation axis: ±360°
- 4 air piping systems (tube outer diameter: 8 mm)
- 26 signal cable systems (allowable current: 2 A to 4 A)

External Axes

Single-axis positioners

Maximum payload 250/500 kg
RJB 12/22

Maximum payload 1000 kg
RJB 32

Side mount 2-axis positioners

RJR 42T10

RJR 52T10

■Basic specifications of the positioner units (RJR drive units: Positioner units excluding parts related to the current collector)

Name	Positioner unit		
Model	YA-1RJB12	YA-1RJB22	YA-1RJB32
Applicable robot	TS/TM/TL/LA-WG4/WGH4/G4 robot systems		
Maximum payload	250 kg	500 kg	1 000 kg
Maximum output speed	190°/s (31.6 r/min)	120°/s (20 r/min)	120°/s (20 r/min)
Working range	±10 rotations (with multi-rotation data reset function)		
Allowable rotation torque	196 N·m	490 N·m	1 470 N·m
Allowable moment	1 470 N·m	1 470 N·m	6 125 N·m
Position repeatability	±0.05 mm (R=250 mm position)		
Hollow shaft diameter	55 mm	55 mm	75 mm
Brake	Provided		
Allowable welding current	500 A, 60% duty cycle		
Applicable welding process	CO_2/MAG、MIG、TIG		
Unit mass	125 kg	125 kg	255 kg
External axis controller	Internal or external type	Internal or external type	External type


Panasonic