

Panasonic

6 Axis Articulated Arc Welding Robots

TM/TL(GIII) Series

Separate

*Selectable from
Three Torch Types*



TM Manipulators That Support Both External & Through-Arm Torch Cable Routing

Payload on Wrist Axis

TL-1800: 8 kg

TL-2000: 6 kg



External

TL Manipulators with Long Arm & High Payload

TM/TL Series GII

Combination with Full Digital Welding Power Source Achieves Stable and High Quality Welding

Torch type selectable to fit your application!

TM series



Separate Type



Through-Arm Type



External Type

TM
1100
1400
1800

Long-arm & high payload!

TL series



External Type

TL
1800
2000

Payload
TL-1800: **8 kg**
TL-2000: **6 kg**

Manipulator Lineup (as of April 2014)

	TM series			TL series	
	1100	1400	1800	1800	2000
Separate	○	○	○	—	—
Through-Arm	○	○	○	—	—
External	○	○	—	○	○
Payload	6 kg			8 kg	6 kg

A variety of features specialized for arc welding

Feature 1 (TM/TL) Enhanced Basic Performance

Increased Motion Speed

TM-1400: Speed of main 3 axes increased by 22 % on average. (approx. 42 °/s more than TA type)

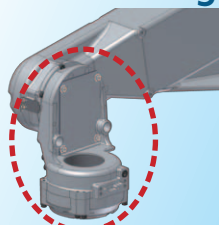
Extended Reach

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

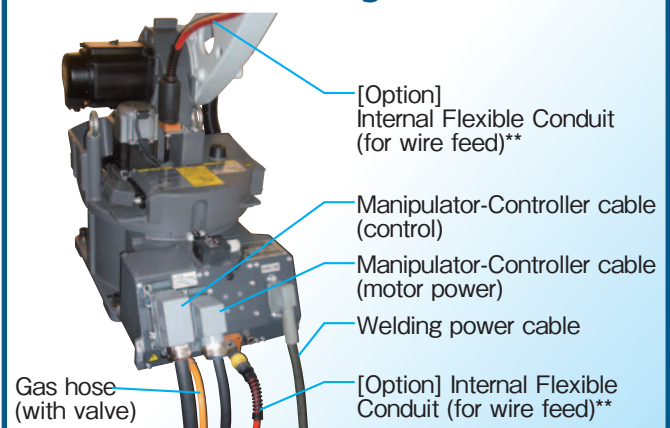


Feature 2 (TM) Arm Specialized for Welding

Cantilever Structure makes arm compact and improves accessibility to workpieces.



Feature 3 (TM/TL) Structure Specialized for Welding Clean Cable Management!



**For use with drum packing wire only.

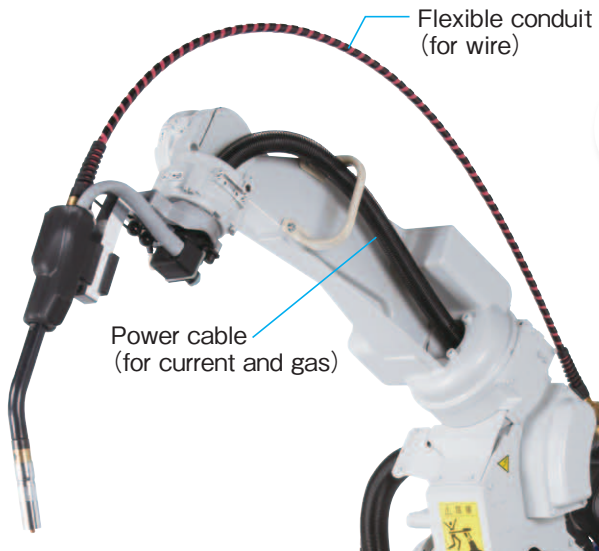
*According to our own research

TM Series GII

Selectable from Three Torch Types.
Focused on Wire Feedability and
Reduced Cable Interference.

In addition to Through-Arm Type and External Type,

A third choice—Separate Type



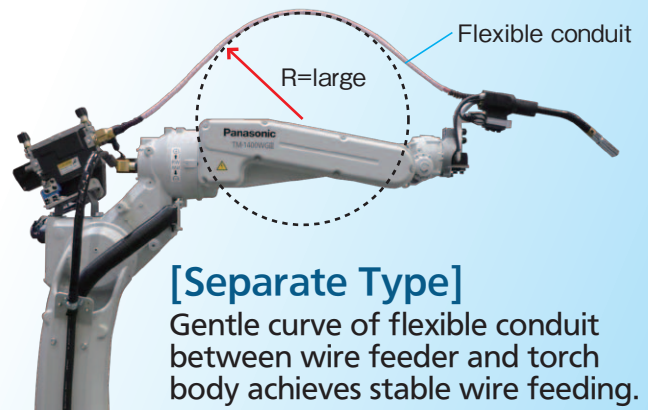
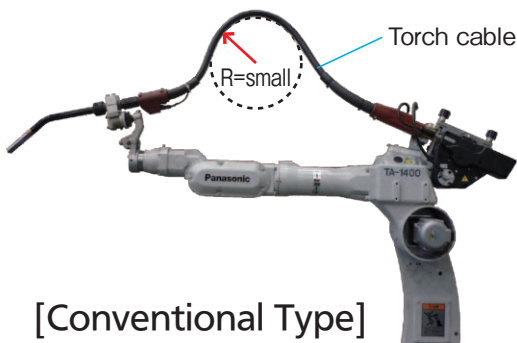
**High Wire Feedability
Less Cable Interference**

TM
1100
1400
1800

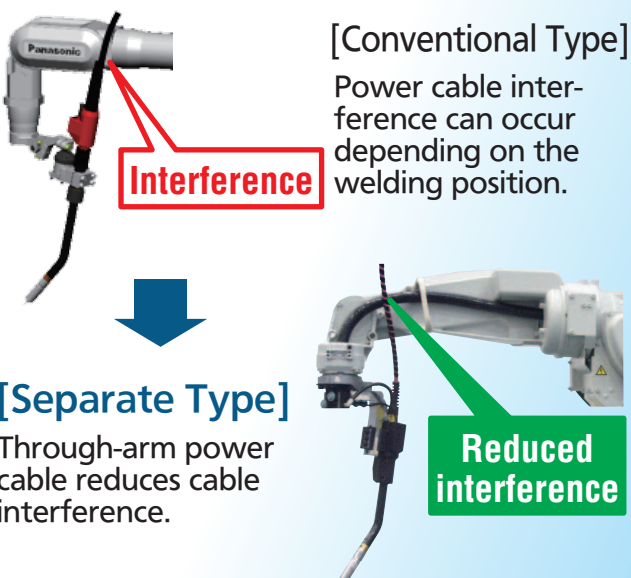
Separate Type—

Revolutionary new type of arc welding robot with advantages of both Through-Arm Type and External Type.

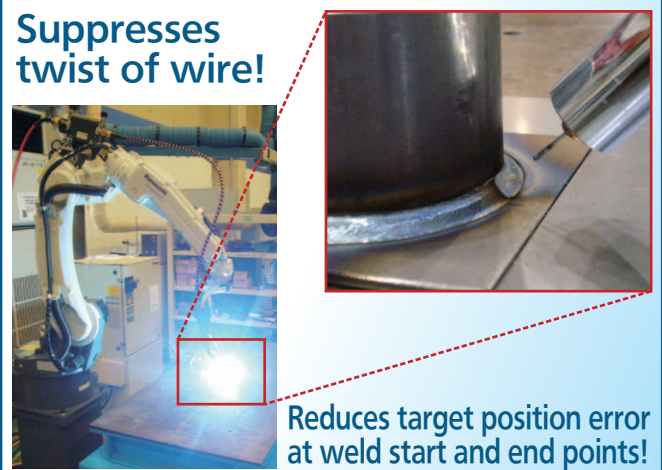
Feature 1 External Flexible Conduit



Feature 2 Through-Arm Power Cable



An example of circumferential welding



New type welding robot achieves even higher quality welds.

GIII controller with high performance

- Faster CPU reduces start-up time to **about 30 seconds.** (50 % reduction from previous model)
- Optional memory allows storing 800,000 teaching points in addition to the standard 40,000 points.



Teach pendant with enhanced operability

Operating function key



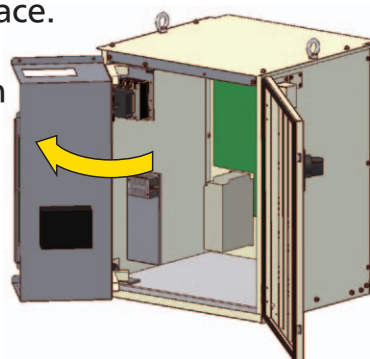
User function key

Same basic operation procedure with G2 Series model
Easy to use Windows based operation

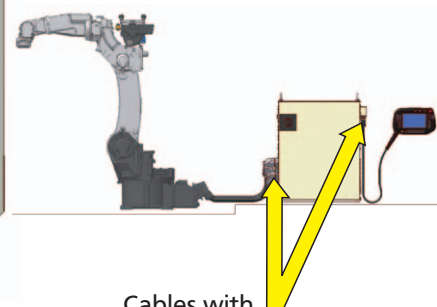
- Light weight design under 1 kg (0.99 kg) giving you less stress during teaching
- Liquid crystal LED back light improving impact resistance
- USB and SD memory interface realizing great expandability
- Increased number of function keys (four to eight), enabling same action with less key strokes during teaching

Improved maintainability

- Swivel rack in the case makes maintenance easy and saves space.
- Cables with connectors on both ends reduce Cable exchange time.



Swivel rack

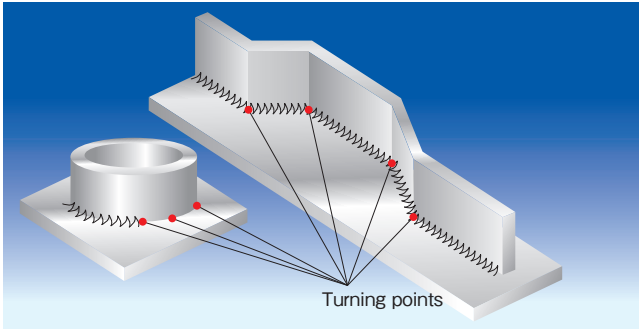


Cables with connector on both ends

Standard Features

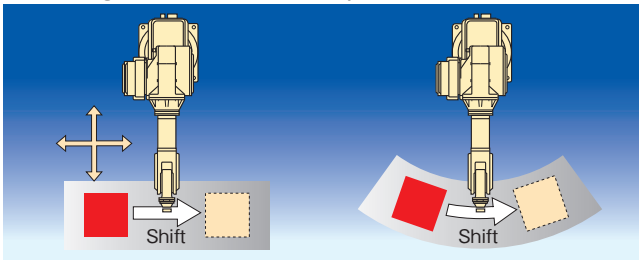
Weaving Function (6 patterns)

You just have to teach the starting point, amplitudes, turning points and ending point. Teaching time will be reduced.



Parallel Shift + RT Axis Rotating

Teaching time of same workpieces is reduced.



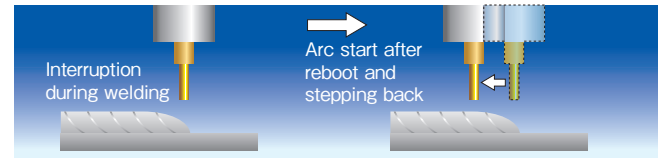
Torch Angle Display (Teach Pendant)



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

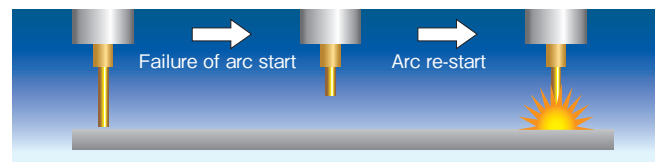
Overlap Function (CO₂/MAG welding)

In case of interruption during welding, the torch is stepped back by reboot and resumes the welding from the welding end point.



Arc Start Retry (CO₂/MAG welding)

Detecting a failure of arc start, the robot automatically starts arc ignition again.



Optional Features

"Weld Navigation" allows easy parameter setting

Easy setting with Teach Pendant



Note: Screens are subject to change without notice.

Rich welding parameter database developed through our long experience

"Weld Navigation" reduces parameter setting time.

Two Easy Steps:

1. Select weld joint. The figure changes according to the joint.
2. Select plate thicknesses. That's all!

Note: Torch angle and aiming point also calculated

The right parameters automatically

Leg length and weld speed are also adjustable.

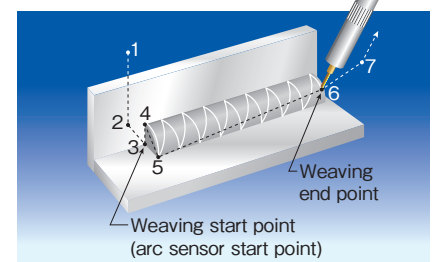
Notes: Parameters by Weld Navigation are guideline only and do not guarantee welding result.
 Consult us for material and processes available with Weld Navigation.



Model: 350GZ4

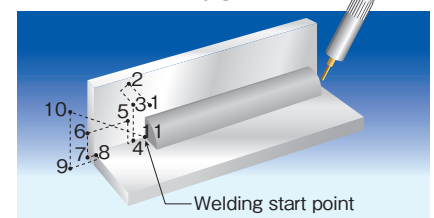
Arc Sensor

The sensor corrects deviation from the taught weld line by detecting weld current changes during weaving welding.



Touch Sensor

The welding wire touches the workpiece and compensates a workpiece position error, which reduces jig costs.



Expansion

Multi-Mechanism Control

Controls maximum 6 groups of robots and external axes in parallel.

Cooperative Multi-Robot Control

Allows cooperative control between two robots.

Units

- Analog I/O Expansion Unit
- Relay Connection Unit
- Terminal Block Conversion Unit
- External Power Input Unit

CO₂/MAG/MIG Robot System (GIII)

Combination with Full Digital Welding Power Source Achieves Stable and High Quality Welding

CO₂/MAG/MIG welding robot system selectable to fit your application

Full Digital CO₂/MAG welding machines GZ4 series

TM	TL
1100	1800
1400	2000
1800	

SP-MAG

(Super-imposition Control)



Equipped with TAWERS's SP Control
Praised by Many of Our Customers

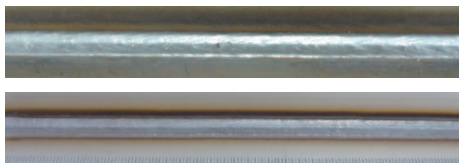
SP-MAG benefits:

- Reduced spatter (Reduced removal work)
- Shorter short-circuit cycle suited for high speed welding
- Shorter arc length for good bead appearance



TM-1400GIII (Separate)

Good bead appearance and low spatter even in high speed welding



MAG welding (220 A)

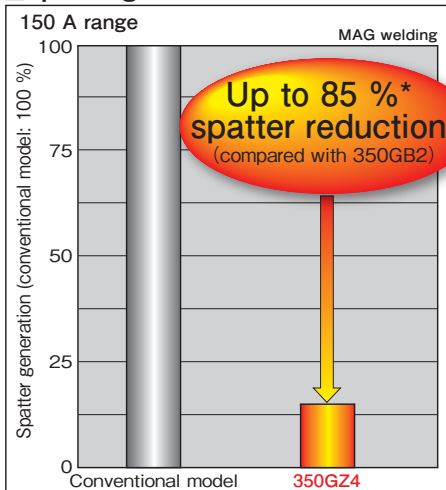
- Joint: Fillet · Base metal: Mild steel SPCC (t2.3 mm) · Weld current: 220 A
- Weld speed: 100 cm/min · Wire size: 1.2 mm (YM-50MT)
- Shielding gas: MAG (80 % Ar + 20 % CO₂)

MIG welding (180 A)

- Joint: Fillet · Base metal: SUS308(t1.5 mm) · Weld current: 180 A
- Weld speed: 80 cm/min · Wire size: 1.2 mm (Y308Lsi)
- Shielding gas: MIG (98 % Ar + 2 % O₂)

Note: Optional parts are necessary to connect GZ4 to robot.

Spatter generation



*UP to 80% spatter reduction from 500GB2 to 500GZ4 in 250 A range

Conventional model



Conventional model (150 A)



350GZ4



350GZ4 (150 A)



- Joint: Fillet · Base metal: Mild steel SPCC (t2.3 mm) · Weld current: 150 A
- Weld speed: 50 cm/min · Wire size: 1.2 mm (YM-50MT)
- Shielding gas: MAG (80 % Ar + 20 % CO₂)

Full Digital Controlled Welding Machine

FULL DIGITAL

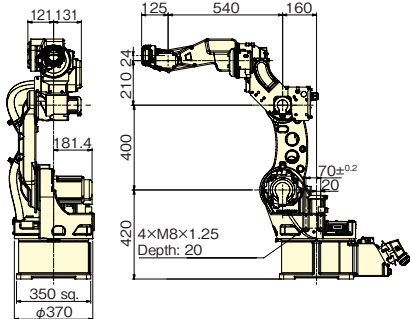
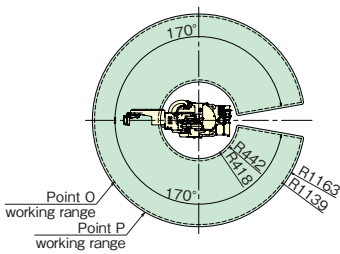
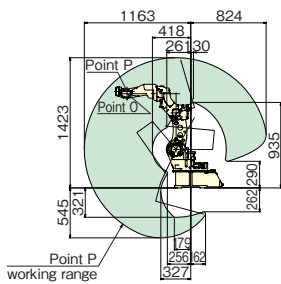
CO₂/MAG/MIG
Welding Machine
Lineup for
High Quality Welds



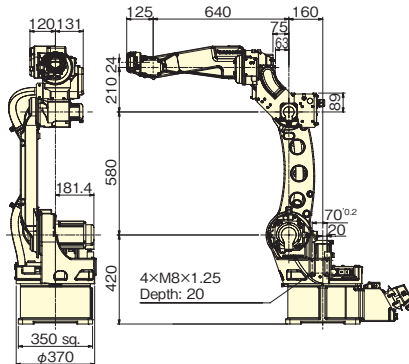
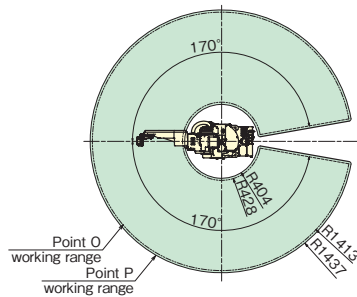
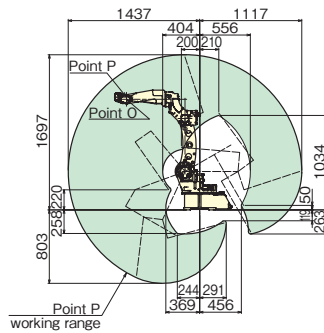
Dimensions & Work Envelope

(Unit: mm)

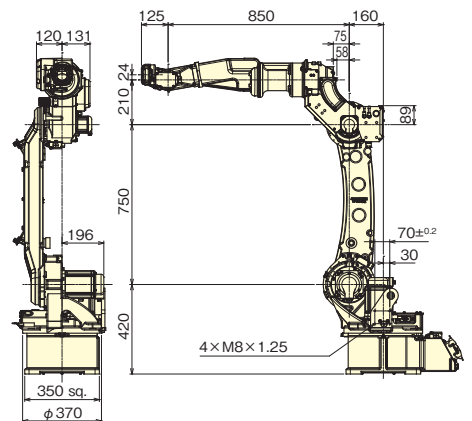
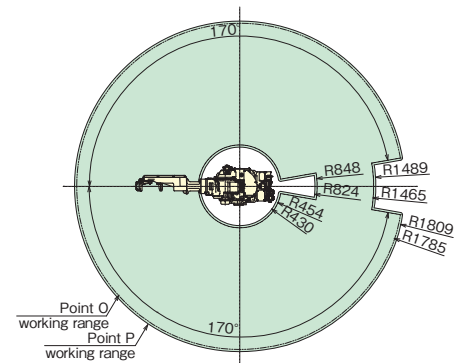
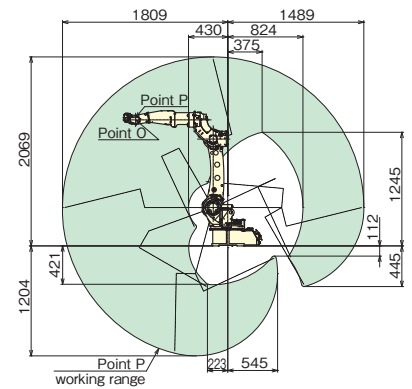
Short Type TM-1100



Standard Type TM-1400



Long Type TM-1800



Manipulator General Specifications

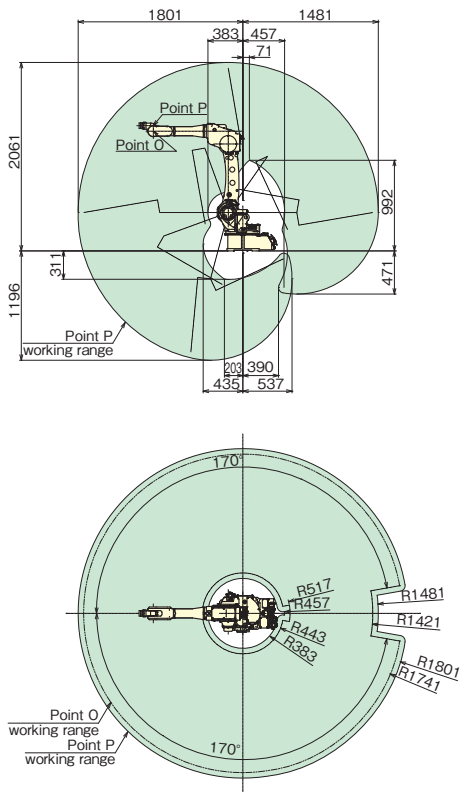
Model	TM-1100	TM-1400	TM-1800	TL-1800	TL-2000
Type	Short arm	Standard arm	Long arm	Long arm	Long arm
Structure	6 axis articulated				
Payload	6 kg			8 kg	6 kg
Maximum Reach	1 163 mm	1 437 mm	1 809 mm	1 801 mm	1 999 mm
Minimum Reach	418 mm	404 mm	430 mm	383 mm	491 mm
Working Range	745 mm	1 033 mm	1 379 mm	1 418 mm	1 508 mm
Max. Motion Speed	RT (Rotating trunk)	225° /s	195° /s	195° /s	
	UA (Upper arm)	225° /s	197° /s	197° /s	
	FA (Forearm)	225° /s	205° /s	205° /s	
	RW (Rotating wrist)	425° /s	425° /s	385° /s	
	BW (Bending wrist)	425° /s	425° /s	375° /s	
TW (Twisting wrist)	629° /s	629° /s	624° /s		
Position Repeatability	±0.08 mm				±0.15 mm
Motors	Total Power	3 400 W	4 700 W	5 050 W	
	Brakes	All axes			
Mounting	Floor / Ceiling*				
Weight	156 kg	170 kg	215 kg	215 kg	216 kg

*Ceiling mount type is factory optional.

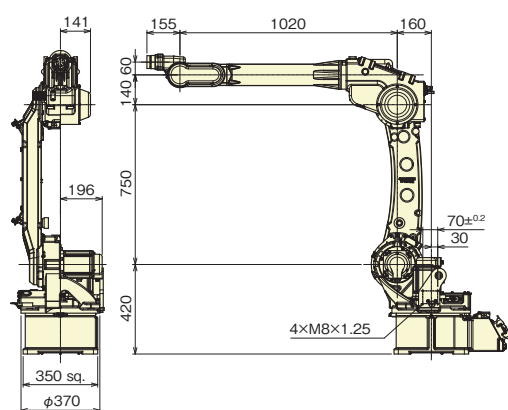
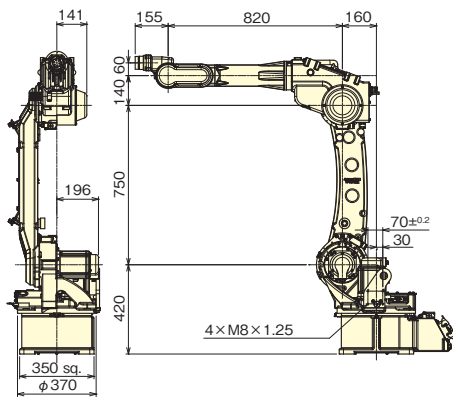
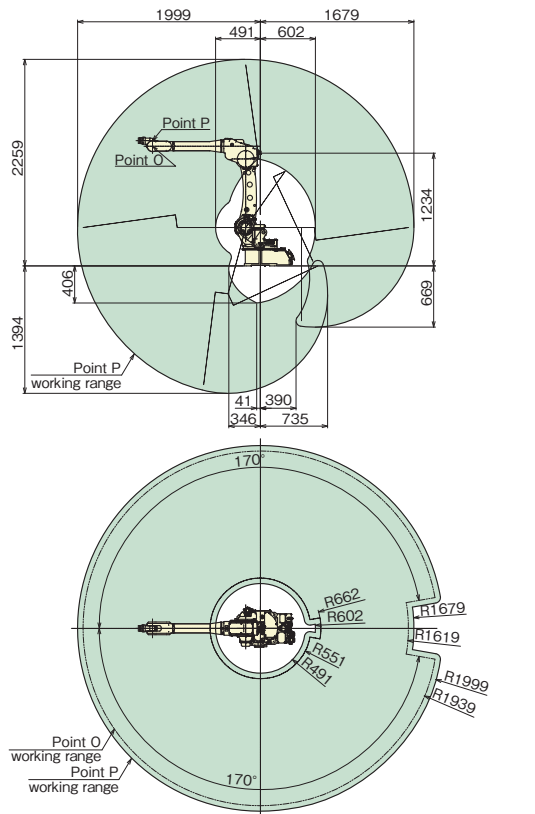
Dimensions & Work Envelope

(Unit: mm)

Long Type TL-1800

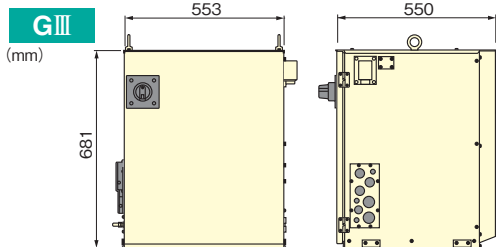


Long Type TL-2000

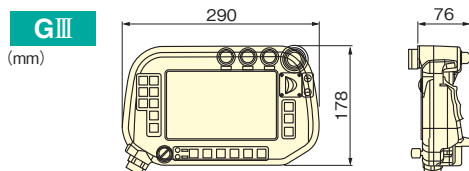


Specifications <Controller>

Controller



Teach pendant



Model	GIII
Dimensions*1	W 553 mm x D 550 mm x H 681 mm
Weight*2	60 kg
Memory Capacity	40 000 points
Position Control	Software servo control
External Memory	Teach Pendant: one SD memory card slot, Two USB 2.0 ports (USB 2.0. Hi-Speed not supported)
Control Axes	6 axes simultaneously (Max.27 axes)
Input and Output	Input: 40 points (Optionally expandable up to 2048 points) Output: 40 points (Optionally expandable up to 2048 points)
Input Power	3 phase, 200-220 VAC±20 V, 3 kVA, 50/60 Hz

*1: Protruding portions not included.

*2: Teach pendant and connection cable not included.

Large Robot Series (GIII Controller)

**Great material handling capability!
Coordinated multi-robot movement
for flexible system without jig.**

- Coordinated movement with WGIII/GIII robot(s)



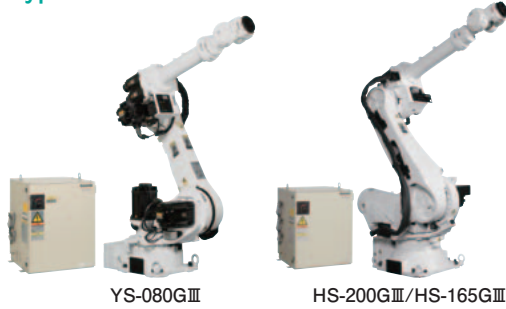
Allows to build flexible system without jig.

Maximum configuration:
• Arc welding robot x 2
• Large robot x 1

- GIII controller for large robots

Same operation, maintenance and options as conventional robots

- 80 kg, 165 kg, and 200 kg payload types available



YS-080GIII

HS-200GIII/HS-165GIII

Manipulator General Specifications

Model	YS-080GIII	HS-165GIII	HS-200GIII	
Type	6 axis articulated robot			
Payload	80 kg	165 kg	200 kg	
Working Range	RT (Rotating trunk)	±180°		
	UA (Upper arm)	-90° to +155°	+80° to -65°	
	FA (Forearm)	-180° to +230°	+230° to -135°	
	RW (Rotating wrist)	±360°		
	BW (Bending wrist)	±125°	±130°	±125°
	TW (Twisting wrist)	±360°		
Max. Motion Speed	RT (Rotating trunk)	170°/s	105°/s	95°/s
	UA (Upper arm)	140°/s	105°/s	95°/s
	FA (Forearm)	160°/s	105°/s	95°/s
	RW (Rotating wrist)	230°/s	150°/s	135°/s
	BW (Bending wrist)	230°/s	145°/s	120°/s
TW (Twisting wrist)	350°/s	220°/s	190°/s	
Weight	620 kg	1 250 kg	1 270 kg	

Tilt-Rotate Positioners High-Speed Type R Series



Two types available: 300 kg and 500 kg payload

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

Specifications

Name	Positioner unit		
Model	YA-1RJC62	YA-1RJC72	
Applicable Robot	Panasonic robots TM/TL series with GIII/WGIII controller		
Payload	300 kg	500 kg	
Max. 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)
Operating Range	Rotation	-36 000° to +36 000° (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)		
Hollow Shaft Diameter	55 mm		
Allowable Welding Current	500 A @ 60 % duty cycle		
Weight	285 kg		
Applicable Welding Process	CO ₂ /MAG/MIG/TIG		
External Axis Controller Type	Internal/External		

Single-axis positioners

Payload: 250/500 kg

Payload: 1000 kg



RJB 12/22

RJB 32

Specifications

Name	Positioner unit		
Model	YA-1RJB12	YA-1RJB22	YA-1RJB32
Applicable Robot	Panasonic robots TM/TL series with GIII/WGIII controller		
Payload	250 kg	500 kg	1 000 kg
Max. Rotational Speed	190°/s (31.6 r/min)	120°/s (20 r/min)	120°/s (20 r/min)
Operating Range	-36 000° to +36 000° (with multi-rotation data reset function)		
Allowable 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)		
Hollow Shaft Diameter	55 mm	55 mm	75 mm
Brakes	Provided		
Allowable Welding Current	500 A @ 60 % duty cycle		
Weight	125 kg	255 kg	
Applicable Welding Process	CO ₂ /MAG/MIG/TIG		
External Axis Controller Type	Internal/External	External	

Side mount 2-axis positioners



RJR 42

RJR 52

FA Technical Centers

Feel the excellent performance of TAWERS

FATC (Tangshan)



FATC (Shanghai)



FATC (Guangzhou)



FATC (Jhajar)



FATC (Pune)



FATC (Bangkok)



FATC (Dusseldorf)



Welding and Robot College



We support development of highly skilled welding operators.

Workshops:

- Robot
- MAG/MIG
- TIG
- Special training

Process Development



Process verification prior to system installation.

Case Examples:

- New factory weld processing
- Improvement of existing processes
- Develop new welding solutions

Consulting



Professional staff offer technical solutions.

Qualifications:

- Welding coordination personnels (including first class)
- JIS qualified welding operators
- Metal materials inspectors
- International welding license holders



We provide products that are friendly to the environment.

As an earth-friendly company, Panasonic Welding Systems Co., Ltd. discourages the use of hazardous substances in our products. The products of Panasonic Welding Systems Co., Ltd. comply with the European RoHS directive.



Safety precautions

- Before attempting to use any welding product always read the manual to ensure correct use.

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