

**Panasonic**

# Welding Machine

**CO<sub>2</sub>/MAG/MIG**

Panasonic pursues *Only one* in welding



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## Welding Selection Reference

### ■ G Series Full Digital CO<sub>2</sub>/MAG/MIG Welding Machine

Welding power source	Welding method					Output		Applicable thickness range ( mm )	
	CO <sub>2</sub> MAG	MAG Pulsed	MIG Pulsed		DC Gouging	MMAW	Current ( A )		Rated duty cycle ( % )
			Stainless steel	Aluminum					
350GR5	●						350	60	0.8 ~ 12
500GR5	●						500	100	1.2 ~ 25
350GL5	●	●	●				350	60	0.8 ~ 12
500GL5	●	●	●				500	60	1.2 ~ 25
350GS6	●	●	●				350	60	0.8 ~ 12
500GS6	●	●	●				500	100	1.2 ~ 25
350GP5	●	●	●	●			350	60	1.0 ~ 12
500GP5	●	●	●	●			500	60	1.5 ~ 25

### ■ F Series Digital Inverter CO<sub>2</sub>/MAG/MIG Welding Machine

Welding power source	Welding method					Output		Applicable thickness range ( mm )	
	CO <sub>2</sub> MAG	MAG Pulsed	MIG Pulsed		DC Gouging	MMAW	Current ( A )		Rated duty cycle ( % )
			Stainless steel	Aluminum					
350FR2	●					●	350	60	0.8 ~ 12
500FR2	●					●	500	100	1.2 ~ 25
630FR2	●				●		600	100	1.2 ~ 40
350FD2				●			350	60	1.0 ~ 12
500FD2				●			500	60	1.5 ~ 25

### ■ Digital Inverter CO<sub>2</sub>/MAG Welding Machine

Welding power source	Welding method					Output		Applicable thickness range ( mm )	
	CO <sub>2</sub> MAG	MAG Pulsed	MIG Pulsed		DC Gouging	MMAW	Current ( A )		Rated duty cycle ( % )
280RK	●					●	280	60	1.0 ~ 8
500EL3	●				●	●	500	100	1.2 ~ 25

### ■ Thyristor CO<sub>2</sub>/MAG Welding Machine

Welding power source	Welding method					Output		Applicable thickness range ( mm )	
	CO <sub>2</sub> MAG	MAG Pulsed	MIG Pulsed		DC Gouging	MMAW	Current ( A )		Rated duty cycle ( % )
200KR2	●						200	60	0.8 ~ 6
350KR2	●						350	50	1.2 ~ 12
500KR2	●						500	60	1.2 ~ 25

● - Standard

# GS6 Series

Full Digital MIG/MAG Welding Machine

Fully upgraded ultra-low welding spatter technology

CO<sub>2</sub>/MAG

Pulse MAG

SUS Pulse MIG



## Further reduction in welding spatter

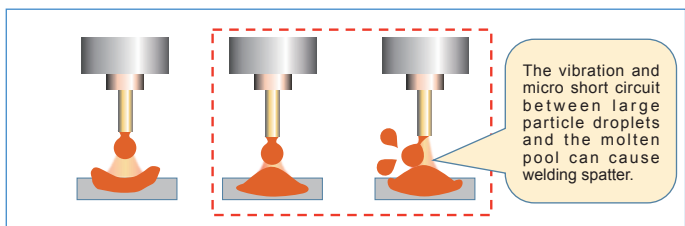
### New MTS control further reduces CO<sub>2</sub> welding spatter

Even if the low-cost CO<sub>2</sub> is used, GS6 welding machine is capable of realizing high quality with the spatter level similar to MAG welding.

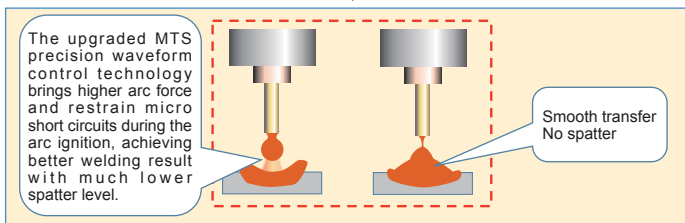
### New SP control realizes ultra-low spatter for MAG.

After the necking is detected accurately for MAG, the secondary switching control makes the cliff-effect and the superposition happen to suppress the level spatter!

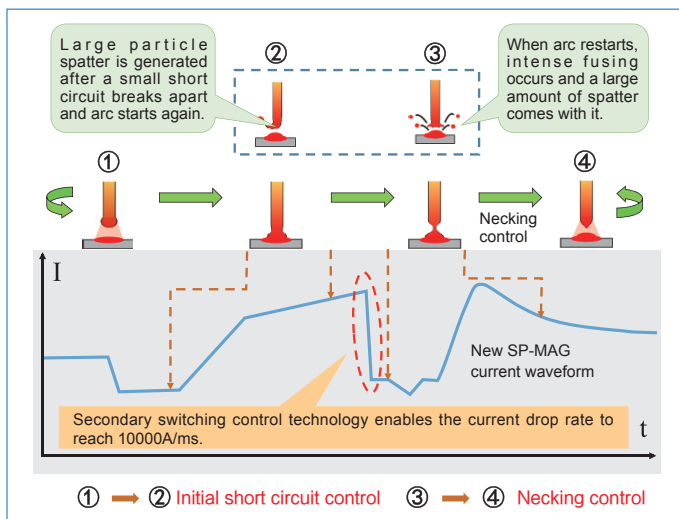
#### Waveform control of previous models



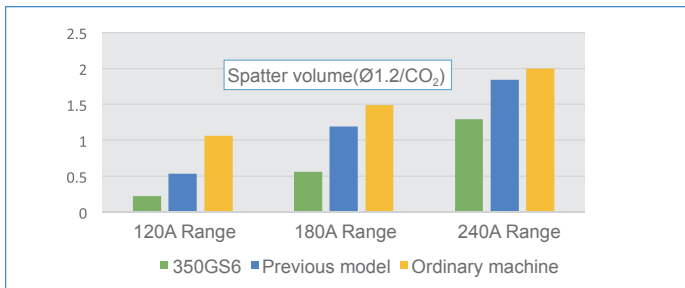
#### New MTS-CO<sub>2</sub> process



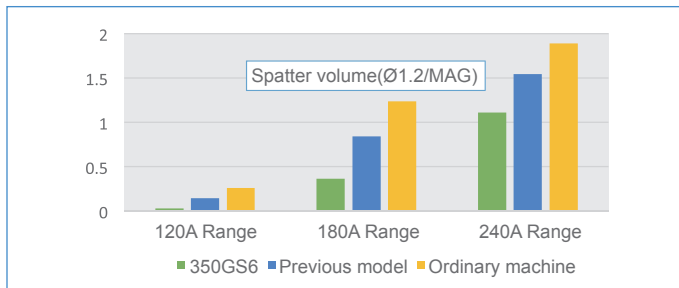
#### A schematic diagram of the droplet transfer mode and a short-circuit single period transition



#### Spatter volume comparison (CO<sub>2</sub>)



#### Spatter volume comparison (MAG)

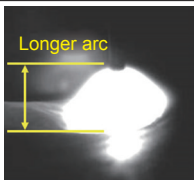
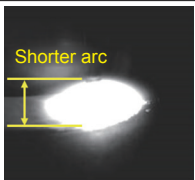
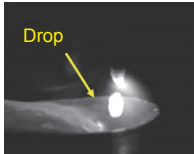
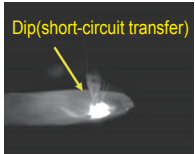


## Easy-to-operate

- 1. Unified adjustment**  
Thanks to the built-in expert database for different materials, wire diameters and gases, welding specifications can be set with a single button in a unified manner.
- 2. Welding navigation**  
The operator only needs to set the conditions such as material, plate thickness and joint type and the welding machine can automatically provide recommended welding parameters, suitable for beginners and inexperienced welders.

- 3. Panel with LCD display**  
LCD can display menu content and fault contents as well as provide prompts for welding function settings and panel operation.
- 4. Storage and quick recall**  
The welding machine can store 100 sets of set welding process parameters. The commonly used sets of data can be called up with one press on the panel or remotely stored and called up on the wire feeder.

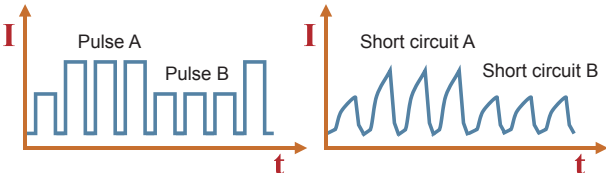
## HD Pulse (Hyper-Dip Pulse)

Ordinary pulse	HD pulse	Advantages of HD Pulse
		Short pulsed arc, higher stiffness and anti-interference. High arc tracking performance during high-speed travelling.
		

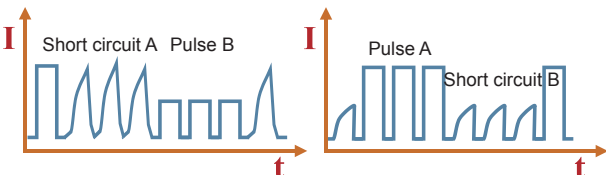
## AB Current Process (AB Condition)

AB Condition is a welding process combining two different welding condition A and B, suitable for thin plate and vertical welding. The low frequency condition is used to control heat input and gain a fish-scale bead. There are three combination modes:

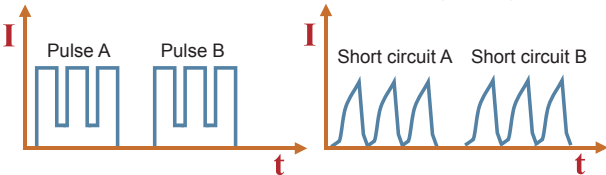
**MIX** Two combinations: (Pulse A + Pulse B) and (Short A + Short B)  
Current B follows the pattern of the current A (main welding).



**MUP** Two combinations (Pulse A + Short B) and (Short A + Pulse B)  
Current B is the opposite of current A (main welding).



**CBK** Two combinations (continuous pulse/short-circuit arc-breaking welding)  
Current B is 0. The continuous rapid arc-breaking welding is obtainable.



## Initial and crater mode settings

The default settings for pulse/DC during initial and crater stages are consistent with the main welding. However, it can be freely set to DC or pulse in the menu as you wish, providing the optimized treatment for both ends of the welding bead.



Welding mode of each sequence can be set up in Detailed menu.

Menu item No.	Sequence	Settings
118	Initial	0: Same as main welding 1: Pulse OFF 2: Pulse ON
119	Crater	0: Same as main welding 1: Pulse OFF 2: Pulse ON

## Wire sticking detection and quick release control

At the end of welding, the machine can automatically detect whether the wire is stuck with work piece or not and fuse the wire being stuck, avoiding shutdown caused by the alarm and effectively improving the efficiency of automatic welding operations.

## Convenient connection with robots and special purpose machine

1. After connecting with Panasonic robot, the ultra-thin plate and low spatter welding system and high speed welding system can be built up.
2. Standard analog interface is ready for automatic welding system.



## Adjusting welding parameters just at hand

The remote controller with digital displays facilitate the operator to remotely observe and preset welding parameters and remotely store and recall 100 sets of welding parameters.

## Rated specifications for welding power source

Item	Unit	Contents	
		YD-350GS6	YD-500GS6
Control mode	—	Digital IGBT control	
Rated input power	—	Three phase AC380V ±20%	
Input power frequency	Hz	50/60	
Rated input capacity	kVA/kW	17.6/13.5	28.2/24.3
Rated no-load output voltage	V	DC 76	DC 80
Rated output current	A	DC 350	Pulse OFF DC 500 Pulse ON DC 400
Rated output voltage	V	31.5	39
Rated duty cycle	%	60	100
Output current range (*)	A	DC 40~350	Pulse OFF: DC 60~500 Pulse ON: DC 60~400
Output voltage range(*)	V	16~35.5	17~39
Control mode	—	IGBT inverter	
Memory	—	100 channels for storage and recall	
Welding method	—	CO <sub>2</sub> /MAG/Pulsed MAG/Stainless steel MIG/Pulsed stainless steel MIG	
Instruction sequence	—	Welding/Welding-crater/ Initial- welding-crater /Spot welding	
Shielding gas	—	(CO <sub>2</sub> welding) CO <sub>2</sub> : 100%	
	—	(MAG) Ar: 80%, CO <sub>2</sub> : 20%	
	—	(Stainless steel MIG welding) Ar: 98%, O <sub>2</sub> : 2% Or Ar: 97.5%, CO <sub>2</sub> : 2.5%	
Welding wire diameter	mm	0.8/0.9/1.0/1.2	1.0/1.2/1.4/1.6
Welding wire material	—	Mild steel / Flux cored mild steel / Stainless steel / Flux cored stainless steel	
Gas pre-flow time	s	0~10 Continuous (0.1 Increment)	
Gas post-flow time	s	0~10 Continuous (0.1 Increment)	
Spot welding time	s	0.3~10.0 Continuous (0.1 Increment)	
Enclosure protection degree	—	IP23	
Insulation grade	—	200 °C (Main transformer 155 °C)	
Cooling mode	—	Forced air cooling	
Dimensions (L×W×H)	mm	750×380×655	750×380×875

\*Note: The output range of the welding power source measured under the resistive load as specified in GB/T 15579.1-2013

# GL5 Series

Full Digital MIG/MAG Welding Machine

High quality welding of mild steel & stainless steel

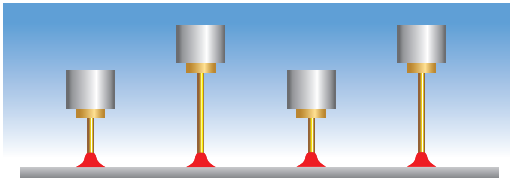
- CO<sub>2</sub>/MAG
- Pulse MAG
- SUS Pulse MIG



## Fine arc stabilization control

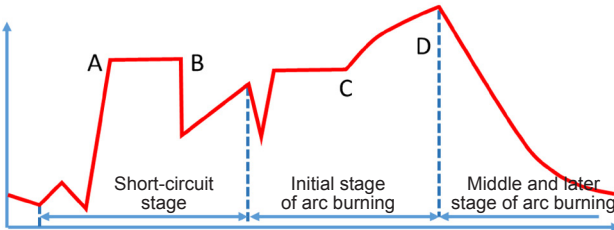
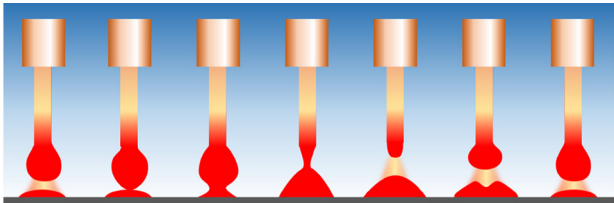
Even when the wire extension changes greatly, the stable arc is still achievable.

By adopting pulse arc stability control technology (ALC), the arc performance is greatly improved, and the arc length can be kept constant even when the wire extension changes, adapting to work situations such as rapid waving of the welding gun.



## The control technology of [light spatter] under short circuit transfer

By accurately determining the short-circuit transfer state, different waveform control strategies are adopted at the early and later stages of short-circuit and instantaneous moment of arc start to minimize large spatter grains and reduce adverse impacts on the molten pool, achieving a light spatter short-circuit transfer.



## Excellent stainless steel weldability

According to the difference of welding characteristics between 3- and 4-series stainless steel materials, different welding expert data can be used to obtain excellent welding results under pulse mode, especially suitable for welding stainless steel materials of automotive exhaust system.

## Standard root welding (Root) function

By using the combination of voltage compensation and electronic reactor control technologies, the root welding function achieves lower arc power and heat input and stable shorter arc, applicable to the thin plate large gap, root pass and one side welding bot.



## Multiple pulse processes

There are two welding processes in the pulse mode: Normal pulse (single pulse) and AB current (double pulse). Different process and parameter settings can precisely control the heat input to meet various welding requirements.

Process	Waveform	Weld section shape	Quantity of heat	Welding speed
Normal Pulse			High	High
AB Current (Dual Pulse)			Low	Low

## Rated specifications for Welding Power source

Item	Unit	YD-350GL5	YD-500GL5
Control method	—	Digital IGBT control	
Rated input power	—	Three phase AC 380-415V (304V ~ 456V)	
Rated input frequency	Hz	50/60	
Rated input capacity	kVA/kW	17.6/13.5	29.9/23.9
Output characteristics	—	CV (constant voltage)	
Rated output current	A	Pulse OFF: DC 350 Pulse ON: DC 350	Pulse OFF: DC 500 Pulse ON: DC 400
Rated output voltage	V	31.5	Pulse OFF: 39 Pulse ON: 34
Rated duty cycle	%	60	100
Rated output no-load voltage	V	DC 80	DC 80
Output current range *	A	Pulse OFF: DC 40 ~ 430 Pulse ON: DC 40 ~ 350	Pulse OFF: DC 60 ~ 500 Pulse ON: DC 60 ~ 400
Output voltage range *	V	Pulse OFF: 16 ~ 35.5 Pulse ON: 16 ~ 31.5	Pulse OFF: 17 ~ 39 Pulse ON: 17 ~ 34
Parameter adjustment	—	Unified/Individual	
Welding method	—	CO <sub>2</sub> /MAG/ Pulse MAG/Stainless steel MIG/Stainless steel pulse MIG	
Enclosure protection degree	—	IP23S	
Insulation grade	—	Main transformer 155 °C (Reactor 200 °C)	
Cooling mode	—	Forced air cooling	
Suitable for welding wire type	—	Flux cored/solid	
Welding wire diameter	mm	Solid 0.8/1.0/1.2/1.4/1.6	
	mm	Flux cored mild steel 1.2/1.4/1.6 Flux cored stainless steel 1.2	
Memory	—	100 channels for storage and recall	
Sequence	—	Welding/Welding-crater/Initial-welding-crater/Spot Welding	
Shielding gas	—	(CO <sub>2</sub> Welding) CO <sub>2</sub> : 100% (MAG welding) Ar:80%, CO <sub>2</sub> :20% CO <sub>2</sub> (MIG welding) Ar: 98%, O <sub>2</sub> : 2%	
Gas check time	s	60 (Maximum)	
Pre-flow time	s	0 s-5.0 Continuous (0.1 Increment)	
After-flow time	s	0 s-5.0 Continuous (0.1 Increment)	
Spot welding time	s	0.3-10.0 Continuous (0.1 Increment)	
Dimensions (L×W×H)	mm	682×380×612	
Weight	kg	68	75

# GR5 Series

Full Digital CO<sub>2</sub>/MAG welding machine

CO<sub>2</sub>/  
MAG

## Comprehensive Welding Performance Improvement



GR5 is suitable for non-pulse welding of mild steel, as compared with GL5:

Model	Mild steel pulse	Stainless steel pulse	Deep penetrating arc	Root weld	Process package expansion	Wire feeder
GR5	×	×	×	●	×	General
GL5	●	●	○	●	○	

●Yes; ○Optional; × No

### Rated specifications for Welding Power source

Item	Unit	YD-350GR5	YD-500GR5
Control method	—	Digital IGBT control	
Rated input power	—	Three phase AC 380-415V (304V ~ 456V)	
Rated input frequency	Hz	50/60	
Rated input capacity	kVA/kW	17.6/13.5	29.9/23.9
Output characteristics	—	CV (constant voltage)	
Rated output current	A	DC 350	DC 500
Rated output voltage	V	31.5	39
Rated duty cycle	%	60	100
Rated output no-load voltage	V	DC 80	DC 80
Output current range *	A	DC 40 ~ 430	DC 60 ~ 500
Output voltage range *	V	16 ~ 35.5	17 ~ 39
Parameter adjustment	—	Unified/Individual	
Enclosure protection degree	—	IP23S	
Insulation grade	—	Main transformer 155 °C (Reactor 200 °C)	
Cooling mode	—	Forced air cooling	
Suitable for welding wire type	—	Flux cored/solid	
Welding wire diameter	mm	Solid 0.8/1.0/1.2/1.4/1.6	
	mm	Flux cored mild steel 1.2/1.4/1.6 Flux cored stainless steel 1.2	
Memory	—	100 channels for storage and recall	
Sequence	—	Welding/Welding-crater/Initial-welding-crater/Spot Welding	
Shielding gas	—	(CO <sub>2</sub> Welding) CO <sub>2</sub> : 100% (MAG welding) Ar:80%, CO <sub>2</sub> :20% CO <sub>2</sub> (MIG welding) Ar: 98%, O <sub>2</sub> : 2%	
Gas check time	s	60 (Maximum)	
Pre-flow time	s	0 s-5.0 Continuous (0.1 Increment)	
After-flow time	s	0 s-5.0 Continuous (0.1 Increment)	
Spot welding time	s	0.3-10.0 Continuous (0.1 Increment)	
Dimensions (L×W×H)	mm	682×380×612	735×380×895
Weight	kg	68	110

\*Note: The output range of the welding power source measured under the resistive load as specified in GB/T 15579.1-2013

# GP5 Series

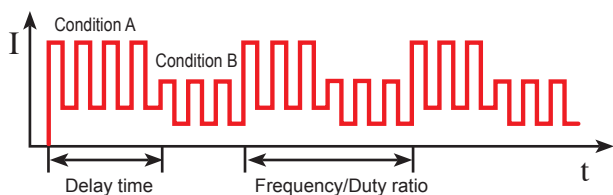
Full Digital MIG/MAG Welding Machine

- CO<sub>2</sub>/MAG
- Pulse MAG
- SUS pulse MIG
- Al pulse MIG

High-end multi-function welding machine specially designed for aluminum MIG welding

## High quality aluminum MIG welding

[Thin plate welding process] In order to achieve excellent results in the welding of aluminum thin plates, GP5 is equipped with AB current (double pulse) process. The condition A and B are switched at low frequency cycles (0.5-3Hz) to reduce the heat input of the weld and obtain a fish scale like weld similar to TIG welding. The clarity of the fish scales can be adjusted by setting the current difference under A&B conditions and the spacing of the fish scales can be changed by frequency.

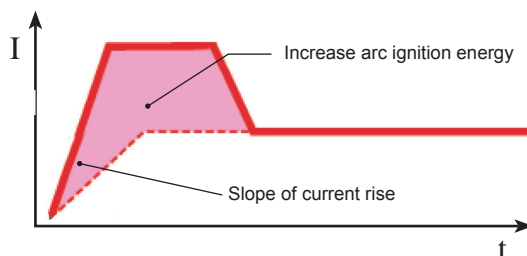


## Major features

- ALC Arc length control technology ensures stable welding in full current range;
- The fully closed wire feeder equipped with four-roll drive wire feeding system provides the precise and powerful wire feeding performance;
- Thanks to the built-in welding expert data, the intelligent unified adjustment can be realized;
- 100 sets of welding specifications can be stored and recalled;
- Equipped with the standard analog communication interface;



[Hot Start] can overlay arc ignition energy on the basis of the main welding current to ensure sufficient penetration at the beginning of aluminum welding.



## Rated specifications for welding power source

Item	Unit	Contents	
		YD-350GP5	YD-500GP5
Control mode	—	Digital IGBT control	
Input power voltage	—	Three phase AC380~415V (304V~456V)	
Input power frequency	Hz	50/60	
Rated input capacity	kVA/kW	17.6/13.5	29.9/23.9
Output characteristics	—	CV (constant voltage characteristic)	
Rated output current	A	DC 350	Pulse OFF: DC 500 Pulse ON: DC 400
Rated output voltage	V	31.5	Pulse OFF: 39 Pulse ON: 34
Rated duty cycle	%	60	
Rated no-load voltage	V	DC 80	
Output current range	A	DC 40~430	Pulse OFF: DC 60~500 Pulse ON: DC 60~400
Output voltage range	V	16~35.5	Pulse OFF: 17 ~ 39 Pulse: 17 ~ 34
Parameter adjustment	—	Separate/Unified	
Welding method	—	CO <sub>2</sub> /MAG/Pulsed MAG/Pulsed MIG	

Item	Unit	Contents	
		YD-350GP5	YD-500GP5
Enclosure protection degree	—	IP23S	
Insulation grade	—	Main transformer 155 °C (Reactor 200 °C)	
Cooling mode	—	Forced air cooling	
Applicable wire type	—	Flux cored/solid	
Applicable wire diameters	mm	Solid mild steel 0.8/1.0/1.2/1.4/1.6 Aluminum-Silicon/Aluminum-Magnesium 1.2/1.6 Flux cored mild steel 1.2/1.4/1.6 Cored stainless steel 1.2	
Memory	—	100 channels for storage and recall	
Sequence	—	Welding/Welding-crater/Initial-welding-crater/Spot welding	
Shielding gas	—	(CO <sub>2</sub> welding) CO <sub>2</sub> : 100% (MAG welding) Ar: 80%, CO <sub>2</sub> : 20% (MIG welding) Ar: 98% O <sub>2</sub> : 2% or Ar: 97.5% O <sub>2</sub> : 2.5%	
Pre-flow time	s	0-5.0 Continuous (0.1 Increment)	
After-flow time	s	0-5.0 Continuous (0.1 Increment)	
Spot welding time	s	0.3-10.0 Continuous (0.1 Increment)	
Dimensions (L×W×H)	mm	1135×575×1080 (Inclusive of the cooling system and gas cylinder supporter)	
Weight	kg	134	144

# Wire feeders

**NF series: fully closed wire feeder**  
**DG series: tubular wire feeder**



YW-50NF1HAG

Air-cooling



YW-50DG1 series

Air-cooling

Model	YW-40NF	YW-50NF	YW-50DG	
Product serial number	YW-40NFW1***	YW-50NF1***	YW-50DG1***	YW-50DG1***
Rated welding current	500A	500A	500A	350A
Welding wire type	Aluminum	Steel	Steel	Steel
Welding torch interface	Euro connector	Panasonic connector	Panasonic connector	
Torch switch	—	2 Core	3 Core	3 Core
Driving mode	4-roll 4-roll drive		4-roll 2-roll drive	
Welding power source	YD-350GP5 YD-500GP5	YD-350/500GR5 YD-350/500GL5	YD-500GS6	YD-350GS6

Model	YW-50DG	
Product serial number	YW-50DG1HN1	YW-50DG1HN3
Rated welding current	350A	500A
Welding wire type	Steel	
Rated speed range	2.5 ~ 20.1 m/min	
Welding torch interface	Panasonic connector	
Torch switch	2 Core	
Driving mode	4-roll 2-roll drive	
Welding power source	YD-350GL5 YD-350GR5	YD-500GL5 YD-500GR5

# 350/500FD2

Digital Inverter Aluminum Pulse MIG Welding Machine

Pulse  
MAG

AI  
Pulse  
MAG

MIG

The specialized models for aluminum MIG welding

Recommended application industries: construction aluminum formworks, aluminum alloy furniture and pallets etc.



350FD2

500FD2

## The high-quality aluminum MIG welding of both thin and middle thick aluminum plate

- Thanks to quad-core processor and integrated software control algorithm, the optimum pulse waveform control has been achieved, make welding arc more stable.
- By taking use of the built-in specialist database of 1.2 and 1.6 welding wires, the machine is suitable for the welding of thin and thick aluminum plate.

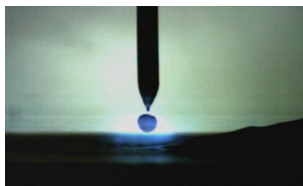
## The wire feeder motor equipped with the high-precision encoder

- The motor equipped with digital encoder provides the precise wire feeding, powerful feeding force and high anti-interference ability, ensuring stable welding.
- The enclosed structure can significantly prevent the contamination of the dust.
- The damping shaft offers proper braking capability.
- The 4-roll mechanism enables the wire feeder to give you powerful and stable wire feeding performance.



## The instant and stable arc ignition

- Thanks to the motor equipped with full-digital encoder and unique arc start control technology, the instant arc ignition is realizable.
- The control on the shape of the molten ball at the tip of welding wire paves the way for the next successful arc ignition.



## Rich arc characteristics

Welding method				
Welding wire material	Welding method	Shielding gas	Pulse	Diameter (mm)
Hard aluminum	MIG	Ar(99.99%)	Pulse ON	1.2, 1.6
Hard aluminum				1.0, 1.2, 1.6
Soft aluminum			Pulse OFF	1.2, 1.6
Pure aluminum (OP1)				1.2, 1.6, 2.0 ( OP1 )

## High performance-price ratio

### Convenient management functions

- 100 channels for storage and recall.
- The upper and lower limits on welding current can be set, avoiding the operation against preset parameters.

### The wire feeder motor equipped with the high-precision encoder

Model	YD-350FD2HGY	YD-500FD2HGY
Power control method	—	IGBT inverter type
Rated input voltage	—	Three phase AC 380~415V(304V~456V)
Rated input frequency	Hz	50/60
Rated input	kVA/kW	17.6/13.5
Output characteristic	—	CV(Constant Voltage)
Rated output current	A	DC 350
Rated output voltage	V	31.5
Rated duty cycle	%	60
Rated output no-load voltage	V	DC 80
Output current adjustable range	A	DC 40~430
Output voltage adjustable range	V	16~35.5
Method of welding	—	Individual/Unitary
Enclosure protection class	—	IP23S
Insulation grade	—	Main transformer 155°C(F class ) Reactor 200°C
Applicable wire size(diameter)	—	SoftHard A um num 1.2/1.6
Memory	—	100 channels for storage and recall.
Sequence	—	Welding/Welding-crater/Initial-welding-crater/ Tack welding
Shielding gas	—	MIG A um num Ar:99.99%
Gas check time	—	60 s (Max)
Pre-flow time	—	0 s~5.0 s continuous (0.1 s Increment)
Post-flow time	—	0 s~ 5.0 s continuous (0.1 s Increment)
Tack welding time	—	0.3 s~10.0 s continuous (0.1 s Increment)
Cooling liquid tank volum	L	9
Cooling method circulation type	—	Circulating cooling/Pump forced circulation
Cooling capacity	kW	1.5 (Tested at fbw rate of 1L/m in)
Cooling liquid max hydraulic head	m	20
Dimension	mm	1200×570×1060
Mass	kg	124

# FR2 Series

Digital Inverter CO<sub>2</sub>/MAG Welding Machine

CO<sub>2</sub>/  
MAG

MMA

**Multipurpose  
Digitization  
High performance**

## High Performance Multifunctional CO<sub>2</sub>/MAG Welding machine



350FR2

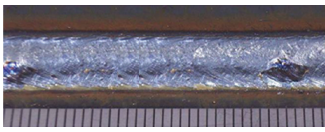


500FR2

### Multiple application modes

#### Standard mode (factory default mode)

This mode is suitable for general welding applications. You can fine tune the welding parameters as you wish according to the welding process requirement and operating habits. The unitary adjustment method enables the welding voltage to match the preset welding current.



Mild steel / fillet  
Thickness 2.3mm, Current 110A  
Voltage 17.2V, Welding speed 30cm/min  
Gas: CO<sub>2</sub>

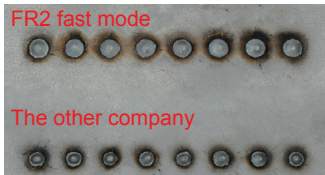


Mild steel / intersecting wire welding  
Thickness 1.5mm, Current 95A, Voltage 17V  
Welding speed 50cm/min  
Gas (20% Ar + 80% CO<sub>2</sub>)

#### Fast mode

The welding expert mode is designed for fast spot welding and short bead welding, offering rapid arc start and fast welding functions with high efficiency. Once the welding gun switch is pressed, arc starts; released, arc stops.

#### Comparison on the appearance of spot welding



Mild steel / spot welding  
Thickness 3mm, current 160A  
Unified voltage  
Spot welding time: 0.6 seconds

#### Gap welding



Mild steel / fillet  
Thickness 2mm, current 110A  
Unified voltage  
Clearance 3mm, welding speed 50cm/min

#### Stick welding function(SMAW)

- On the detailed menu, you can set the machine to "Manual welding" mode, suitable for all kinds of acid and alkaline electrodes (The maximum diameter is 5mm).
- This mode is excellent choice for long-distance welding operations, maintenance and other applications.
- The arc force and arc ignition current are adjustable.

### High-performance wire feeding system

Thanks to IVF, a patented technology, wire feeding system is able to provide powerful and stable feeding force. Even connecting 40m extension cable, the wire feeder can supply the normal feeding force, fitting to the industries requiring long distance operation.

IVF (Induction Voltage Feedback) control, a unique Panasonic patented technology, enables wire feeding system with ordinary printed circuit motor to provide high feeding capability.



The powerful wire feeder is capable of long distance welding

### Outstanding operation environmental adaptability(350/500FR2)

- The allowable mains fluctuation range reaches  $\pm 25\%$ .
- Dust-proof design for PC Boards and power components.
- The enclosure protection class as high as IP23S.

### Perfect protection functions

- Lightning protection
- Phase lack protection
- Output short circuit protection
- Overheat protection
- Over-voltage and under-voltage protection

### A variety of advanced settings and management functions

- The display on current or wire feed speed is selectable(350/500FR2).
- The upper and lower limits of current and voltage (percentage) can be set. Once the actual values exceed the preset ones, the machine outputs an alarm signal, realizing welding quality monitoring.
- Current and voltage display compensation function can adjust the current and voltage display errors.
- You can use the storage and recall functions to store and recall 9 sets of welding conditions on the operation panel and 3 sets on the wire feeder.

### Rated specification

Power source Model		YD-350FR2	YD-500FR2
control mode	—	Digital IGBT control	
Nominal input voltage • phase	—	AC380~415V (290V~470V)	
Input power frequency	Hz	50/60	
Rated input capacity	kVA/kW	13.5/13.0	23.3/22.4
Output characteristics	V	CV (constant voltage)	
Rated output current	A	350	500
Rated output voltage	V	31.5	39
Rated duty cycle	%	60	100
Rated output no-load voltage	V	70	70
Output Current Range (Silt)	A	40-430 (resistive load output capacity)	60-550 (resistance load output can be added)
Output voltage range (silt)	V	16-35.5 (resistive load output capacity)	17-41.5 (resistance load output can be added)
Welding method	—	Digital IGBT control	
Enclosure protection degree	—	IP23S	
Insulation class	—	155°C (Reactor 200 °C)	
Cooling method	—	Forced air cooling	
Applicable welding wire diameter	mm	Solid MS 0.8/1.0/1.2	Solid MS 1.0/1.2/1.6
	mm	Flux core MS 1.0/1.2	Flux core MS 1.2/1.4/1.6
Sequence	—	Welding/Welding-crater/spot welding/initial-Welding-crater	
Shielding gas	—	CO <sub>2</sub> welding CO <sub>2</sub> :100%; MAG welding Ar:80%, CO <sub>2</sub> :20%	
Gas pre-flow time	s	0.2	
Gas post-flow time	s	0.5	
Spot welding time	s	0.3-10 Continuous adjustment	
Dimensions (W×D×H)	mm	372×575×632	
Weight	kg	54	60
Wire feeder		YW-35KB3	YW-50KM3
Welding gun		YT-35CS4	YT-50CS4
Gas regulator		YX-25CD1HAK	

\*Applicable to the nominal voltage; 380 V/ 415 V

# 630FR2

## High Performance Multifunctional CO<sub>2</sub>/MAG Welding Machine

Digital Inverter CO<sub>2</sub>/MAG Welding Machine



CO<sub>2</sub>/MAG

Gouging

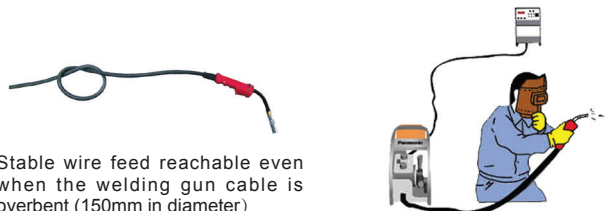
**Welding current @630A**  
**Duty cycle @100%**

### Unitary function

Relying on the built-in specialist data, welding voltage and arc parameter automatically match the adjustment of welding current, obtaining optimal welding parameters. One knob can finish full unitary function.

### High-performance wire feeding system

Thanks to IVF, a patented technology, wire feeding system is able provide powerful and stable feeding force. Even connecting 40m extension cable, wire feeder can supply the normal feeding force, fitting to the industries requiring long distance operation.



Stable wire feed reachable even when the welding gun cable is overbent (150mm in diameter)

The powerful feeder is capable of long distance welding

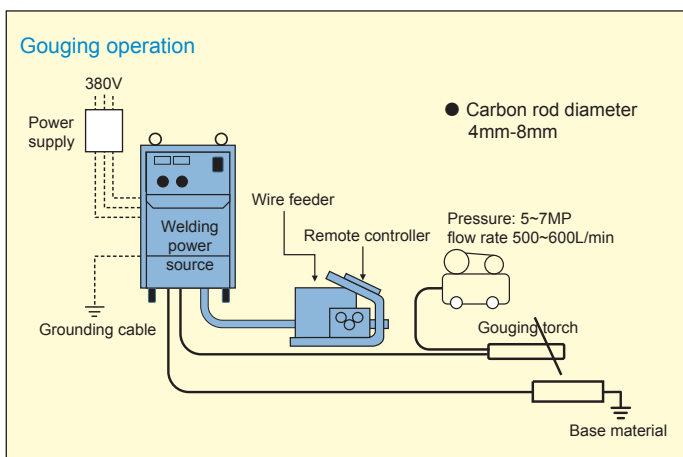
IVF (Induction Voltage Feedback) control, a unique Panasonic patented technology, enables wire feeding system with ordinary printed circuit motor to provide high feeding capability.

Turn clockwise to make the arc harder		The narrower arc, stronger arc force and higher transfer frequency are suitable for all-position welding at low current.	
Turn anticlockwise to make the arc softer		The softer arc and smoother welding bead are suitable for horizontal welding at high current.	

The knob generally set to the standard position.

### Carbon arc gouging function

The maximum actual gouging output current reaches 500A.



### Standard specifications for power source

Item	Unit	Contents
Model number	—	YD-630FR2HGF
Control mode	—	Digital IGBT control
Input voltage	—	Three phase AC 380-415V (304V ~ 456V)
Input power frequency	Hz	50/60
Rated input capacity	kVA/kW	31.8/30.4
Output characteristics	—	CV (constant voltage characteristic)
Rated output current	A	630
Rated output voltage	V	44
Rated duty cycle	%	100
Rated output no-load voltage	V	69
Output current range (* Note)	A	60-630 (resistive load output capacity)
Output voltage range (* Note)	V	17-44 (resistive load output capacity)
Welding method	—	Individual-/Meta
Enclosure protection grade	—	IP21S
Insulation grade	—	200°C (Main variation 155°C)
Cooling mode	—	forced air cooling
Suitable for welding wire type	—	Flux cored/solid
Welding wire diameter	mm	Solid 1.2/1.6
	mm	Flux cored mild steel 1.2/1.4/1.6
Welding wire material	—	Mild Steel — Flux cored mild steel
Sequence	—	Welding/Welding - Arc/Spot Welding
Shielding gas	—	CO <sub>2</sub> welding CO <sub>2</sub> :100% MAG welding Ar: 80%,CO <sub>2</sub> :20%
Pre-flow time	s	0.2
After-flow time	s	0.2
Spot welding time	s	0.3~10
Dimensions (W×D×H)	mm	372×615×745
Weight	kg	76.5

\*Note: The output range is the range of the welding power supply measured under the resistive load as specified by GB15579.1-2004.

### Wire feeder

Serial number	YW-60KC2MHM	
Rated welding current	630A	
Suitable for welding wire.	Diameter diameter	1.2mm, 1.6mm
	Materials	Mild steel
Cooling method	Air cooling	
Rated duty cycle	60%	

# 500EL3

Digital Carrier Inverter Control CO<sub>2</sub>/MAG Welding machine

A targeted design for the steel structure, shipbuilding and other similar industries which requires remote operations

First level energy efficiency



- CO<sub>2</sub>/MAG
- MMAW
- Gouging

## Dual frequency and bidirectional wave carrier technology

### Excellent welding performance

- Suitable to both solid and flux-cored wires
- Thanks to the built-in special welding data for metal powder cored wire, the well-formed appearance with short foot is achievable for thin plate vertical welding.

### Bidirectional carrier and precise control

- By adopting signal carrier technology, the control cable is eliminated and then the disconnection fault is greatly reduced.
- The weight of cable can be greatly reduced for long distance operation.
- The bidirectional high speed carrier communication between main power source and wire feeder makes information synchronization and precise welding control possible.

### Dual frequency carrier control

- 100 kHz and 120 kHz dual-frequency carrier redundancy design significantly strengthens the anti-interference capability. The carrier frequency can be switched manually or adaptively.

### Various welding processes

- Solid CO<sub>2</sub>/MAG
- Flux CO<sub>2</sub>/MAG
- Metal powder cored wire
- Gouging
- MMAW

### High adaptability to harsh working environment

- The special treatment is carried out on PC Board and important components to prevent corrosion and moisture, suitable for environments with high temperature, humidity and salt mist in shipbuilding and marine engineering industries.

### Carrier wire short circuit protection function

- The short circuit protection function of the carrier wire can avoid PC Board damage caused by short circuits between the carrier wire and the base metal cable.
- Automatic recovery function: After the short circuit between carrier wire and base metal is removed, the welding power source can automatically return to normal state and continue working.
- The following exceptions are also protected:
  1. Shorted carrier wire and cable
  2. Shorted motor control wire
  3. Solenoid valve control wire short circuit
  4. Welding torch switch abnormal short circuit
  5. Carrier wire connector collision
  6. CT abnormal damage

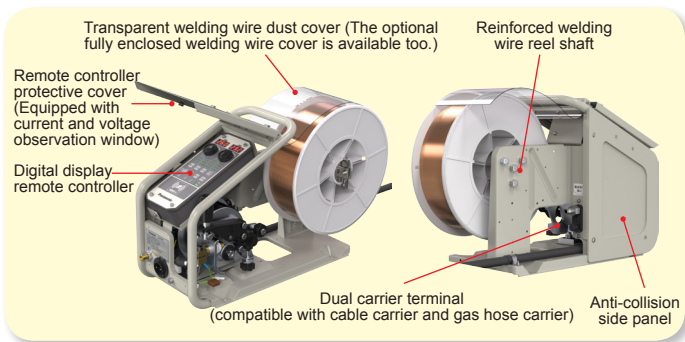
### First level energy efficiency

- The welding power source efficiency is as high as 88% and the first level of energy efficiency certification (Certificate number: CQC22701367573) is obtained, significantly reducing the welding power costs.

### Other thoughtful protections

- Abnormal temperature rise protection
- Input under- and over-voltage protection
- Compensation for grid fluctuations
- Output over-current protection
- Phase loss protection
- Secondary over-current protection

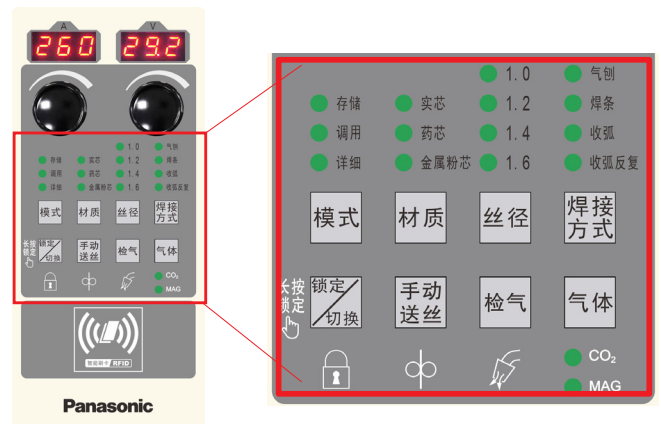
## Optimum design of wire feeder



- 15% lighter than previous models
- All PC Boards are arranged in the sealed chamber of the remote control, providing better sealing effect.
- Excellent protection: The wire feeder is equipped with an anti-collision side panel. The protection cover is added to the top of the remote control. Reinforced design of welding wire reel shaft can prevent deformation.

## Full function remote controller

- Dual digital displays are equipped, capable of observing/setting welding parameters nearby.
- You can complete all controls at your fingertips.
- 10 sets of welding parameters can be stored and recalled.



## Rated specifications for welding power source

Item	Unit	Contents
		YD-500EL3
Control mode	—	Digital IGBT control
Rated input · number of phases	—	Three phase AC380V ±25%
Input power frequency	Hz	50/60
Rated input capacity	KVA/kW	23.1/22.1
Rated output no-load voltage	V	DC 70
Rated output current	A	DC 500
Rated output voltage	V	39
Rated duty cycle	%	100
Output current range*	A	DC 60~500
Output voltage range*	V	17~39
Control mode	—	IGBT inverter mode
Welding method	—	CO <sub>2</sub> /MAG/MMA/Gouging
Command sequence function	—	Welding/Welding - Crater
Shielding gas	—	CO <sub>2</sub> Welding CO <sub>2</sub> :100% MAGW Ar:80%, CO <sub>2</sub> :20%
Applicable wire diameter	mm	1.0/1.2/1.4/1.6
Welding wire material	—	Mild steel/Flux cored/Metal powder cored
Pre-flow time	s	0-5 continuous adjustment (Default 0.1)
Post-flow time	s	0-5 continuous adjustment (Default 0.4)
Enclosure protection grade	—	IP23
Insulation class	—	200°C(155°C for main transformer)
Cooling mode	—	Forced air cooling
Dimensions(L×W×H)	mm	576×330×620
Mass	kg	56

\*Note: The output range of the welding power source measured under the resistive load as specified in GB/T 15579.1-2013

## Wire feeder

Wire feeder		YW-50CA3	
Rated welding current	A	500	
Applicable wires	Diameter	mm	1.0/1.2/1.4/1.6
	Type	—	Solid core, chemical core, metal powder core
Applicable reel	Diameter	mm	50
	OD	mm	Max.300
	Width	mm	Max.105
	Weight	kg	20
Shielding gas	Type	—	CO <sub>2</sub> ,MAG
	Pressure	Mpa	Max.0.4
Cable length	m	0.3 (With cable connector plug)	
Weight	kg	11.5	
Feeding speed range	m/min	1.6~20.1	
Rated duty cycle	%	60	
Applicable power source	—	YD-500EL2, YD-500EL3	

# 280RK

Digital Inverter CO<sub>2</sub>/MAG Welding Machine

CO<sub>2</sub>/  
MAG

MMAW

An ideal selection for thin plate industries such as agriculture, metal furniture, bicycle and case and cabinet etc.

## Multiple application modes

### Rapid mode

A welding specialist mode specially designed for fast tack and short bead welding, providing instant arc ignition and high speed welding. Welding starts just after pressing the welding gun switch and ends after releasing it, making high welding cycle and efficiency.

### Standard mode

A mode suitable for general condition, letting you to freely set and fine turn welding parameters according to welding process and operational habits.

### Manual welding mode

- By using P menu, "Manual welding mode" can be set to weld acid and alkaline welding electrodes as thick as 5.0mm.
- Applicable for remote operation and maintenance purpose

### Adaptability and reliability

- The fluctuation range of input voltage +/-25%
- Dust-proof design for PC boards and power devices
- Power modules at primary and secondary sides
- High brightness 7-segment digital displays show preset current and voltage, actual current and voltage, error code, wire feeding speed and time etc.

## The edged tool for thin mild steel plate

Energy efficiency  
Easy-to-use  
Multi-function



## Rated specifications for Welding Power source

Power control method	—	Digital IGBT
Rated input voltage	—	Three phase AC 380~415V(304V~456V)
Rated input	kVA/kW	10.1/9.6
Output characteristic	—	CV(Constant Voltage)
Rated output current	A	280
Rated output voltage	V	28
Rated duty cycle	%	60
Rated output no-load voltage	V	63
Output current adjustable range	A	50~350A
Output voltage adjustable range	V	12V~31.5V
Method of welding	—	Individual / Unitary
Enclosure protection class	—	IP23S
Insulation grade	—	H Class (Main transformer F Class)
EMC class	—	A class
Cooling mode	—	Air forced AF
Applicable welding wire type	—	Solid
Applicable wire size(diameter)	mm	0.8/1.0
Applicable wire material	—	Carbon steel(MS)
Sequence	—	Welding/ Welding-crater
Shielding gas	—	CO <sub>2</sub> (CO <sub>2</sub> :100% ) MAG(Ar:80% , CO <sub>2</sub> :20%)
Pre-flow time	—	Adjustable on F menu
Post-flow time	—	Adjustable on F menu
Dimension	mm	580×270×515
Mass	kg	35

# KR2 Series

Thyristor control CO<sub>2</sub>/MAG welding machine

CO<sub>2</sub>/  
MAG  
Welding



200KR2



350KR2

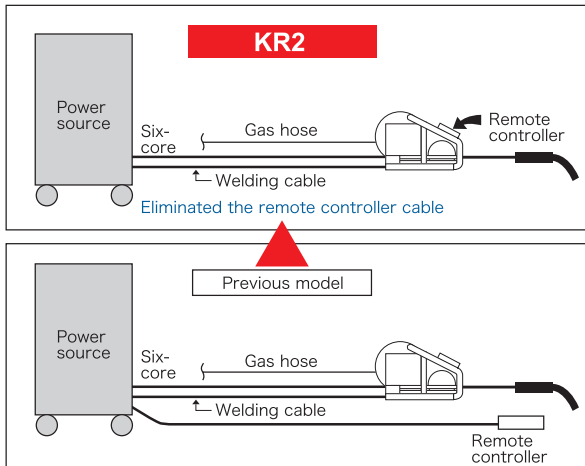


500KR2

Excellent performance, widely used popular models!

## Non-remote controller cable design

- By carrying the remote controller on the wire feeder and improvement of control circuit, the original two pieces of cable was integrated to one piece. This realized light weight, improved mobility and decreased wire breaking.



## Convincing high reliability

- High insulation strength (Class H), high temperature resistance and dust proof structure are adopted in main transformer and reactor.
- IP (International Protection) class of enclosure is IP21S and it effectively prevents the affection and interference of the main circuit to the control circuit. And moisture-proof, drip-proof and dust proof structure enables the operation under adverse circumstances.

## Good welding performance

- KR2 adopts the special control circuit which realizes low spatter welding in short circuit transfer and spray transfer of CO<sub>2</sub>/MAG-welding.
- The arc starting circuit ensures high rate of success of arc start, which reaches to almost 100% under any operating mode within the technical specifications. It is also possible to be equipped with various automatic welding systems.

## With Individual and Simple Unitary mode

- When Simple Unitary mode is selected and welding current is set by the current adjustment knob on the remote controller, almost corresponding welding voltage is automatically set. Fine-tuning of voltage is also possible.

## Various kinds of user-friendly design

- Exclusive protection function of secondary short-circuit current can avoid over burning of thyristor and transformer under short-circuit and make recovery after short-circuit is released.

## Rated specifications

Model	YD-200KR2	YD-350KR2	YD-500KR2	
Control method	—	Thyristor		
Input power source frequency	Hz	50/60		
Rated input capacity	kVA/kW	7.6/6.5	18.1/16.2	31.9/28.1
Rated output current	A	200	350	500
Rated output voltage	V	24	31.5	39
Rated duty cycle	%	60	50	60
Rated output no-load voltage	V	37	52	66
Output current range	A	50~220	60~380	60~550
Crater current range	V	16.5~25	17~33	17~41.5
Crater voltage range	A	50~220	60~380	60~550
Output voltage range	V	16.5~25	17~33	17~41.5
Method of welding	—	Individual/Unitary		
Endosure protection class	—	IP21S		
Insulation class	—	H		
Cooling mode	—	Forced air cooling		
Applicable welding wire type	—	Solid / FCW		
Applicable welding wire diameter	mm	Solid 0.8/1.0/1.2		
	mm	FCW 0.8/1.0/1.2		
Overall dimensions/W×D×H	mm	376×675×747		
	mm	436×675×762		
Mass	kg	89	117	158

Wire feeder	YW-35KB3	YW-50KB3	
Applicable wire diameter	mm	0.8/1.0/(1.2)	1.2/1.6
Length of cable	m	1.8	

Welding torch	YT-20CS4	YW-35CS4	YW-50CS4	
Rated current	A	200	350	500
Rated duty cycle	%	CO <sub>2</sub> :50 MAG:25	MAG:35	CO <sub>2</sub> :70 MAG:35
Applicable wire diameter	mm	0.8/1.0/(1.2)	(0.8)/1.0/1.2	1.2/1.6
Length of torch cable	m	3		

Gas regulator	YX-25CD1

\*Note: The output range of the welding power source measured under the resistive load as specified in GB/T 15579.1-2013

## Various kinds of protection functions, convenient functions and good expandability

- Overheat protection
- Under-voltage protection
- Output over-current protection
- Lighting-proof circuit
- Adjustable burn-back time
- Pre-flow on-off selection
- Current detection terminal for peripheral equipment

# Welding torches

## CS Series Air cooling

### General purpose torches

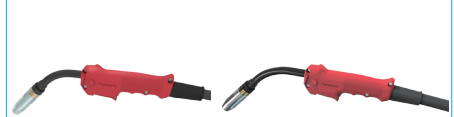


YT-20CS4\*\*\*

YT-35CS4\*\*\*

YT-50CS4\*\*\*

### Pulse torches



YT-35CS4HPF

YT-50CS4HPF

## MNW Series Water cooled (European connector)

### Water-cooled

YT-40MNW1HPJ



Product Serial Number		YT-40MNW1HPJ
Welding current		400A
Rated duty cycle	MIG	310A-100% 400A-60%
	MAG	358A-100% 400A-80%
	CO <sub>2</sub>	400A-100%
Welding method		MIG/MAG (Including CO <sub>2</sub> welding)
Applicable welding wire		Aluminum (Stainless steel) (Mild steel)
Applicable welding wire diameter		(Ø1.0mm) Ø1.2mm (Ø1.4mm) (Ø1.6mm)
Applicable gas		CO <sub>2</sub> 20%CO <sub>2</sub> +80%Ar Ar
Cable length		3m
Weight		2.6kg

Product model	YT-20CS	YT-35CS		YT-50CS	
Product Spec. number	YT-20CS4HAF	YT-35CS4HAF	YT-35CS4***	YT-50CS4HAF	YT-50CS4***
Applicable material	Steel	Steel	Steel	Steel	Steel
Cooling mode (interface type)	Air-cooled (Panasonic interface)				
Welding torch switch plug	2 Core	2 Core	3 Core	2 Core	3 Core
Rated welding current	200A	350A	350A	450A	450A
Rated duty cycle	MAG	200A,25%	350A,35% 200A,100%	450A,35% 270A,100%	
	CO <sub>2</sub>	200A,60%	350A,60% 270A,100%	450A,60% 350A,100%	
	MIG	—	—	—	
Welding wire diameter	0.8mm - 1.2mm	0.8mm - 1.4mm		1.2mm - 1.6mm	
Cable length	3m				

# Panasonic



## Safety precautions

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

# Panasonic<sup>®</sup>

Panasonic Welding Systems (Tangshan) Co., Ltd.

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E-mail: [sales@tsmi.cn](mailto:sales@tsmi.cn)

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