

# MASTER TIG-250AC/250MV



## Quick Specs



**Light industrial Application:**  
Metal fabrication workshops  
Shipyards and offshore industry  
Chemical and process industry  
Mechanized welding

**Process:**  
DC TIG (GTAW)  
AC TIG (GTAW)  
MIX TIG (GTAW)  
Stick (SMAW)

**Input Power:** 230V or 115/230V, 1-Phase  
**Amperage Range:** 5-250A  
**Rated Output at 40°C (104°F):**  
250A at 20V @60% Duty Cycle  
**Weight:** 23 kg

## For TIG and Stick Welding

### Aluminum welding expert, precise and efficient

MASTERTIG-250AC/250MV offers TIG welding professionals the necessary control to meet their exacting needs. Whatever the application, enjoy the performance.

MASTERTIG-250AC/250MV is a precise aluminum welding specialist that suits all welded materials. Modular design allows you to build the package that best suits your needs.

Easy operation and full functions: from the control panel allowing fast adjustment of all necessary controls for DC, AC and MIX TIG welding with either HF or contact ignition. It's also very convenient to store or call out the welding parameters from the memory channels.

## Specialist Features

### Precision Arc Performance:

- **DC+/DC-:** Improved TIG starting. Now starts DC(-) to maintain a sharp tungsten.
- **HF Start:** non-touch start to decrease tungsten loss.
- **Adjustable AC output frequency** allows the operator to focus the arc minimizing the heat affected zone.
- **Extended AC Balance Control** helps maintain a pointed tungsten to direct the arc in the weld joint.
- **Independent amplitude/amperage control** allows EP and EN amperages to be set independently to precisely control heat input to the work and electrode.
- **Multiple Waveshapes:**  
**Standard Squarewave** for fast travel speeds and excellent puddle control,  
**Sine wave** for a traditional softer sounding arc,  
AC current and DC current in one duty cycle.  
Advanced function for aluminum welding.
- **MIX TIG:** we can get an excellent Arc Concentration, can be carried out the excellent welding performance from thin to thick plate.

### Professional Features:

- Program memory features 10 independent program memories that maintain/save your parameters.
- Voltage Reduction Device (VRD). When enabled from the set up menu reduces the open circuit voltage in STICK mode for use in electrically hazardous conditions or when the use of a VRD is required.
- Auto-reconnects for single phase 115/230V 50/60 Hz input allows the flexibility to weld in the shop or take in the field where 230V may not be available.
- Weighs in at a mere 16 kg making it easy to carry around the shop or job site.

### Outstanding Quality:

- Newly designed using the latest power electronic technology for improved reliability.
- CE Certified.
- One-Year Warranty on parts.



## Technical specifications

Item No	Master TIG-250AC	Master TIG-250MV
Rated Input Voltage	1PH ~ 230V ±15%	1PH ~ 110/230V ±15%
Max. Load Power Capacity	TIG: 5.63KVA MMA: 6.60KVA	TIG: 5.63KVA MMA: 6.60KVA
Rated Duty Cycle(40°C) 60%	TIG: 200A/18V MMA: 160A/26.4V	TIG: 200A/18V MMA: 160A/26.4V
100%	TIG: 160A/16.4V MMA: 130A/25.2V	TIG: 160A/16.4V MMA: 130A/25.2V
Welding Current/Voltage Range	TIG: 5A/10.2V~200A/18V MMA:20A/20.8V~160A/26.4V	TIG: 5A/10.2V~200A/18V MMA:20A/20.8V~160A/26.4V
Open Circuit Voltage	70V~80V	70V~80V
Power Factor	0.8	0.8
Efficiency	80%	80%
TIG Pulse	Peak Current: 5A~200A Pulse Frequency: 0.2Hz~200Hz Pulse Width (Ratio): 1~100%	5A~200A 0.2Hz~200Hz 1~100%
AC TIG	AC Frequency Range: 20Hz~250Hz AC Clean Width (AC Balance): +40~-40 AC Clean Ratio (AC Bias) %: +30~-50	20Hz~250Hz +40~-40 +30~-50
MIX TIG	MIX Frequency: 1Hz~5Hz DC Balance: (%) 20-80	1Hz~5Hz 20-80
Arc-starting Current	5A~200A	5A~200A
Crater Filling Current	5A~200A	5A~200A
Current Up-slope Time	0.1S~15S	0.1S~15S
Current Down-slop Time	0.1S~15S	0.1S~15S
Pre-Gas Time	0.1S~15S	0.1S~15S
Flow-Gas Time	0.1S~15S	0.1S~15S
Spot Arc Time	0.1S~10S	0.1S~10S
MMA Arc Force	10A~160A	10A~160A
Hot Start Time	0.1-3S	0.1-3S
Hot Start Current	10A-160A	10A-160A
Dimension (LxWxH)	490X230X385mm	490X230X385mm
Weight (KG)	23KG	23KG

### Water-cooling Unit: WC-100 (optional)

Operating Voltage	230V 50/60Hz
Rated Power	260W
Cooling Power	1.5KW(1L/MIN)
Maximum Pressure	0.3MPA/60HZ
Recommended Cooling Liquid	20%~40% ethanol/water
Tank Volume	6.5L

## 4 kinds of wave shapes

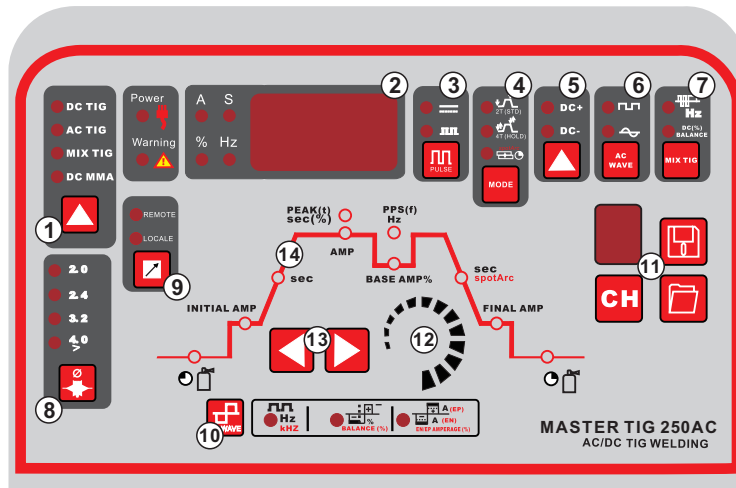


Standard  
Square wave



Soft wave

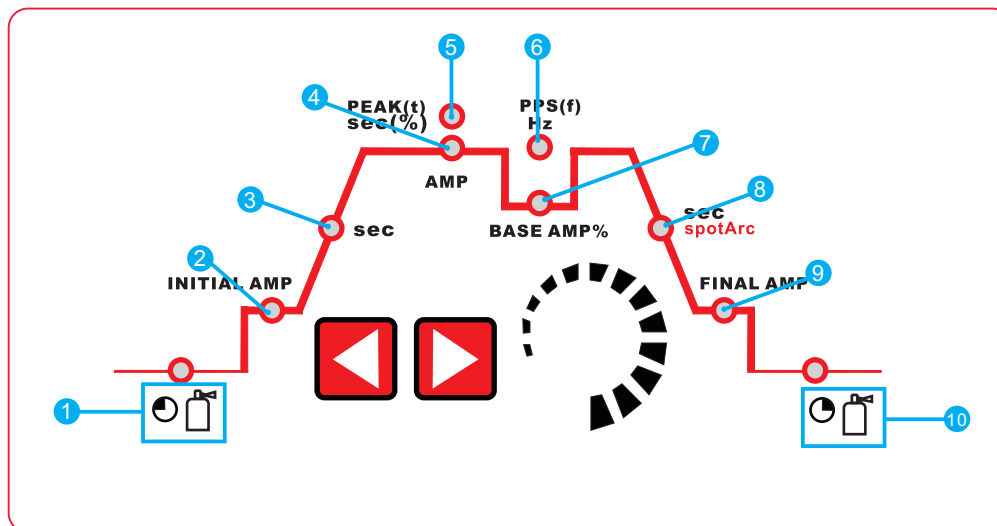
# General View of Control Panel




## Control Panel Parameter Values

<b>1. Welding Process</b>	DC TIG AC TIG MIX TIG DC MMA	<b>5. Arc Ignition Polarity</b>	DC+/DC-	<b>Local:</b> adjusted Currents by face panel
<b>2. Ammeter/Voltmeter Display</b>		<b>6. AC Waveshape types</b>	Advanced Squarewave Triangular Wave	<b>10. AC Waveshape</b>
<b>3. Pulsar Control</b>	Pulse ON/OFF selection.	<b>7. MIX TIG</b>	MIX Frequency: 0.1Hz~5Hz DC Balance: (%) 10~90	AC Frequency Range 20Hz~200Hz AC Clean Width (AC Balance) +40~-40 AC Clean Ratio (AC Bias) % +30~-50
<b>4. Mode</b>	2T(STD) 4T(HOLD) Spot Arc	<b>8. Tungsten Electrode Dia.</b>	From 2.0mm to >4.0mm	<b>11. Memory</b>
		<b>9. Remote:</b>	used for foot pedal or Remote torch.	<b>12. Encoder Control</b>
				<b>13. Select welding parameters button</b>
				<b>14. Function Sequence(see next chapter)</b>

## Definitions & Glossary



Item	Symbol	Description
1		Gas pre-flow time (TIG) Absolute setting range 0.1 s to 5.0 s (0.1 s increments).
2	<b>INITIAL AMP</b>	Ignition current (TIG) Percentage of the main current. Setting range 1 % to 100 % (1 % increments).
		Hotstart current (MMA) Percentage of the main current. Setting range 1 % to 150 % (1 % increments).

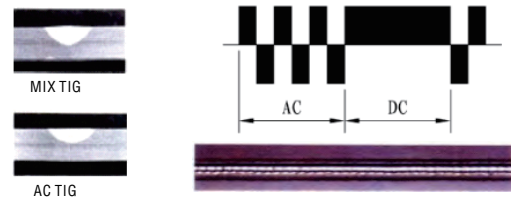
Item	Symbol	Description	
3	<b>sec</b>	Up-slope time (TIG) Setting ranges: 0.00 s to 20.0 s (0.1 s increments). The up-slope time can be set separately for non-latched and latched.	Hotstart time (MMA) Setting ranges: 0.00 s to 5.0 s (0.1 s increments).
4	<b>AMP</b>	Main current (TIG) / pulse current I min to I max (1 A increments)	Main current (MMA) I min to I max (1 A increments)
5	<b>PEAK(t)</b> <b>sec(%)</b>	Pulse time Pulse time setting range: 0.01 s to 9.99 s (0.01 s increments)	
		TIG pulses The pulse time applies to the main current phase (AMP) for pulses.	TIG AC Special The pulse time applies to the AC phase for AC special.
6	<b>PPS(f)</b> <b>Hz</b>	Pulse break time Pulse break setting range: 0.01 s to 9.99 s (0.01 s increments)	
		TIG pulses The pulse break time applies to the secondary current phase (AMP%)	TIG AC Special The pulse break time applies to the DC phase with AC special.
7	<b>BASE AMP%</b>	Secondary current (TIG) / pulse pause current Setting range 1 % to 100 % (1 % increments). Percentage of the main current.	
8	<b>sec</b> <b>spotArc</b>	Down-slope time (TIG) 0.00 s to 20.0 s (0.1 s increments). The down-slope time can be set separately for non-latched and latched.	
9	<b>FINAL AMP</b>	End-crater current (TIG) Setting range 1 % to 100 % (1 % increments). Percentage of the main current.	
10		Gas post-flow time (TIG) Setting ranges: 0.1 s to 20.0 s (0.1 s increments).	

## MIX TIG Control

### Features of MIX TIG:

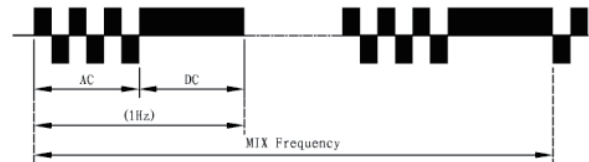
The AC current can get a very good clearance, and DC current can get a deeper penetration. Use the MIX TIG we can get an excellent Arc Concentration, can be carried out the excellent welding performance from thin to thick plate.

- 1) Nice weld appearance, deep penetration.
- 2) Excellent Arc Concentration.
- 3) Substantially reduce the electrode consumption.



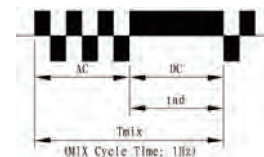
### MIX TIG Frequency (Hz):

the cycle time of MIX TIG in 1 second. Adjustable range: 0.1-10Hz.



### MIX TIG Balance (DC) %:

DC Balance (%) =  $(t_{ad}/T_{mix}) \times 100$



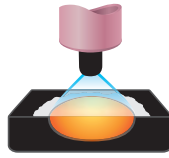
# AC Waveshape Controls



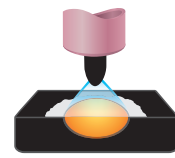
## AC Frequency control

Controls the width of the arc cone. Increasing the AC Frequency provides a more focused arc with increased directional control.

Note: Decreasing the AC Frequency softens the arc and broadens the weld puddle for a wider weld bead.



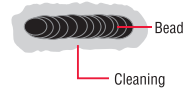
Wider bead, good penetration ideal for buildup work



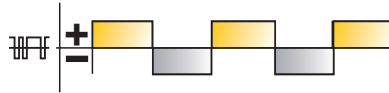
Narrower bead for fillet welds and automated applications



Wider bead and cleaning acting



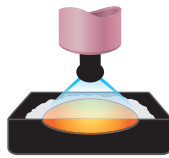
Wider bead and cleaning acting



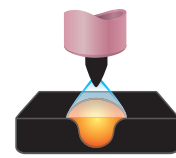
## AC Balance Control

Controls arc cleaning action. Adjusting the % EN of the AC wave controls the width of the etching zone surrounding the weld.

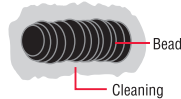
Note: Set the AC Balance control for adequate arc cleaning action at the sides and in front of the weld puddle. AC Balance should be fine tuned according to how heavy or thick the oxides are.



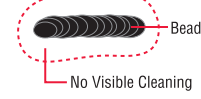
Wider bead, good penetration ideal for buildup work



Wider bead, good penetration ideal for buildup work



Wider bead and cleaning action

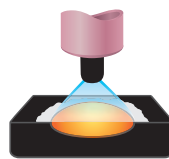


Narrow bead, with no visible cleaning

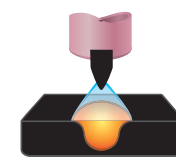


## Independent AC Amperage Control

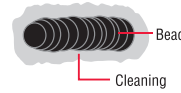
Allows the EN and EP amperage values to be set independently. Adjusts the ratio of EN to EP amperage to precisely control heat input to the work and the electrode. EN amperage controls the level of penetration, while EP amperage dramatically effects the arc cleaning action along with the AC Balance control.



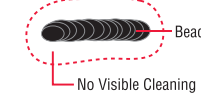
More current in EP than EN: Shallower penetration



More current in EN than EP: Deeper penetration and faster travel speeds



Wider bead and cleaning action



Narrow bead, with no visible cleaning





## Accessories

### For Standard accessories



**TIG torch: TIG-26**  
 Gas connector: M16  
 Cable length 4M  
 5-pin control coupler



**Electrode holder with cable 2M**  
**Earth clamp with cable 2M**

### For Optional accessories



**Argon gas regular**



**TIG torch: TIG-25**  
 Cooling: Water Cooled  
 Duty 100% DC: 250AMP  
 Duty 100% AC: 220AMP  
 Electrode Size: 0.5-3.2mm



**Trolley: ST-7**



**Water-cooling unit: WC-100**  
 Operating Voltage: 230V 50/60Hz  
 Rated Power: 260W  
 Cooling Power: 1.5KW (1L/MIN)  
 Tank Volume: 6.5L



**Foot Pedal**  
 Model No.: FX-390B  
 Serial No.: 12D36  
 Input Voltage: + 15V  
 Output Voltage: 0-13V



**Hand-hold Remote Controller for TIG torch**  
 Dimensions: 110x27x30mm  
 Material: ABS  
 Weight: 30g  
 Resistance: 10K / 0.5W