

MASTER TIG-315 AC



Quick Specs



Light industrial Application:
Metal fabrication workshops
Shipyards and offshore industry
Chemical and process industry
Installation and set-up
Mechanized welding

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

Input Power: 400V, 3-Phase
Amperage Range: 5-315A
Rated Output at 40 ° C (104°F):
315A at 22.6V @60% Duty Cycle
Weight: 45KG

For TIG and Stick Welding

The powerful AC/DC tig welding equipment

MASTERTIG-315 AC built with a maximum power output of 315 amp at 60% duty cycle ensures you have enough power and the integral water cooling unit keeps torches cool during high duty production welding.

MASTERTIG-315 AC is a precise aluminum welding specialist that suits all welded materials. The control panels provide all of the necessary functions needed for TIG welding. Modular design allows you to build the package that best suits your needs.

It's a total solution for your TIG welding jobs.

Specialist Features

Precision Arc Performance:

- **Built in pulsing functions** help minimize heat input on thin materials, and provide for a faster freezing weld puddle for uphill welding on curved surfaces such as process piping. The TIG pulse also helps moderate filler metal deposition for consistent bead appearance.
- **DC+/DC-**: Improved TIG starting. Now starts DC(-) to maintain a sharp tungsten.
- **Lift-Arc start** provides AC or DC arc starting without the use of high frequency.
- **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,
 - Soft squarewave** for a soft buttery arc with maximum puddle control and good wetting action,
 - Sine wave** for a traditional softer sounding arc,
 - Triangular wave** to reduce the heat input into the weld at low amperage.
- **HF or Non-HF Arc ignition:** reliable plasma arc initiation without high frequency.
- **Continuous Output Control:** focus the arc for different material thickness.
- **10 channels memory capacity**



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-315AC
Rated Input Voltage		3PH ~ 400V ±15%
Max. Load Power Capacity		TIG:9.85 KVA MMA: 10.38 KVA
Rated Duty Cycle(40°C) 60%		TIG: 315A/22.6V MMA: 250A/30V
100%		TIG: 250A/20V MMA: 200A/28V
Welding Current/Voltage Range		TIG:5A/10.2V~315A/22.6V MMA: 20A/20.8V~250A/30V
Open Circuit Voltage		70V~80V
Power Factor		0.85
Efficiency		85%
TIG	Pulse	Peak Current 5A~315A
		Pulse Frequency 0.2Hz~200Hz
		Pulse Width (Ratio) 1~100%
	AC TIG	AC Frequency Range 20Hz~250Hz
		AC Clean Width (AC Balance) +40~-40
		AC Clean Ratio (AC Bias) % +30~-50
	MIX TIG	MIX Frequency: 1Hz~5Hz
		DC Balance: (%) 20-80
		Arc-starting Current 5A~315A
		Crater Filling Current 5A~315A
		Current Up-slope Time 0.1S~15S
		Current Down-slop Time 0.1S~15S
		Pre-Gas Time 0.1S~15S
		Flow-Gas Time 0.1S~15S
		Spot Arc Time 0.1S~10S
MMA		Arc Force 10A~250A
		Hot Start Time 0.1~3S
		Hot Start Current 10A~250A
Dimension (LxWxH)		490X230X385mm
Weight (KG)		45KG

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

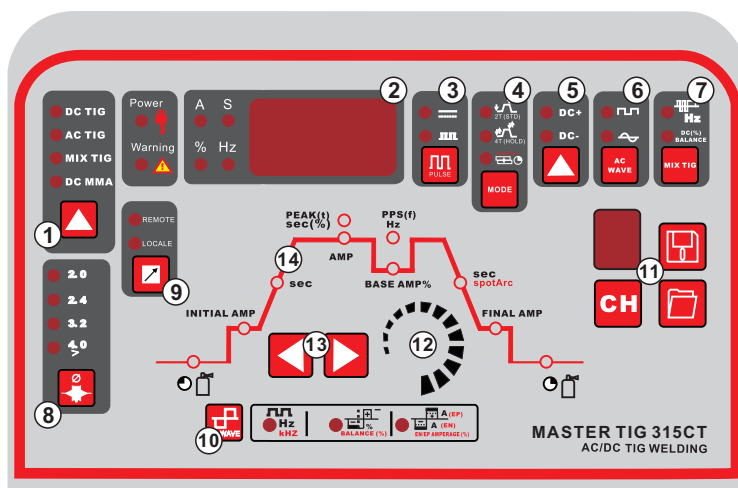


Standard
Square wave



Soft wave

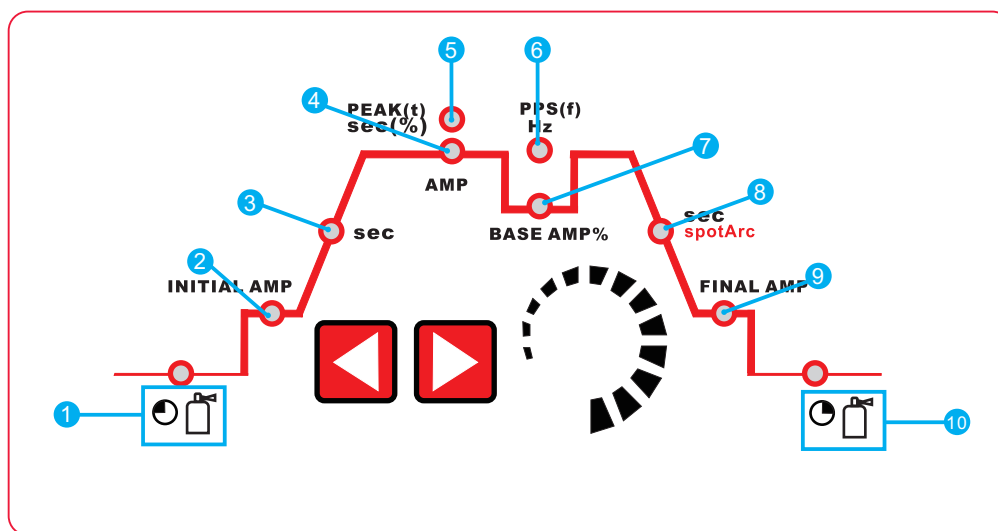
General View of Control Panel




Control Panel Parameter Values

1. Welding Process	DC TIG AC TIG MIX TIG DC MMA	5. Arc Ignition Polarity	DC+/DC-	Local: adjusted Currents by face panel
2. Ammeter/Voltmeter Display		6. AC Waveshape types	Advanced Squarewave Triangular Wave	10. AC Waveshape
3. Pulsing Control	Pulse ON/OFF selection.	7. MIX TIG	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
4. Mode	2T(STD) 4T(HOLD) Spot Arc	8. Tungsten Electrode Dia.	From 2.0mm to >4.0mm	11. Memory
		9. Remote:	used for foot pedal or Remote torch.	12. Encoder Control
				13. Select welding parameters button
				14. Function Sequence(see next chapter)

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	INITIAL AMP	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).

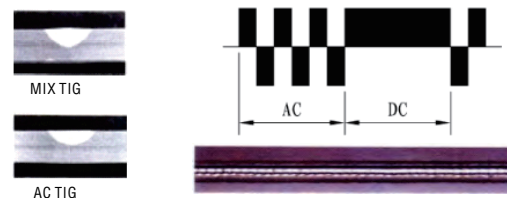
Item	Symbol	Description	
3	sec	Up-slope time (TIG) Setting ranges: 0.00 s to 20.0 s (0.1 s increments). The up-slope time can be set separately for non-latched and latched.	Hotstart time (MMA) Setting ranges: 0.00 s to 5.0 s (0.1 s increments).
4	AMP	Main current (TIG) / pulse current I min to I max (1 A increments)	Main current (MMA) I min to I max (1 A increments)
5	PEAK(t) sec(%)	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	PPS(f) Hz	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	BASE AMP%	Secondary current (TIG) / pulse pause current Setting range 1 % to 100 % (1 % increments). Percentage of the main current.	
8	sec spotArc	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	FINAL AMP	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.

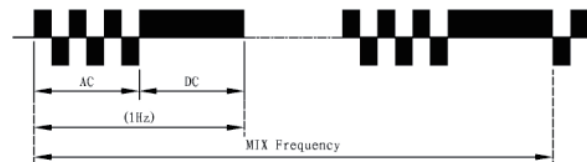
- 1) Nice weld appearance, deep penetration.
- 2) Excellent Arc Concentration.
- 3) Substantially reduce the electrode consumption.



MIX TIG Frequency (Hz):

the cycle time of MIX

TIG in 1 second. Adjustable range: 0.1-10Hz.



MIX TIG Balance (DC) %:

DC Balance (%) = (tad/Tmix) x 100



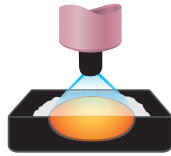
AC Waveshape Controls



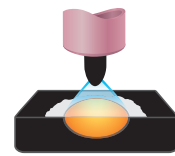
AC Frequency control

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

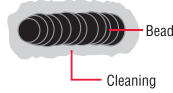
Note: Decreasing the AC Frequency softens the arc and broadens the weld puddle for a wider weld bead.



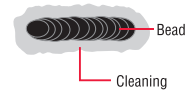
Wider bead, good penetration ideal for buildup work



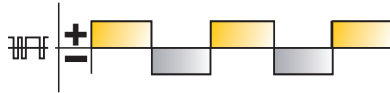
Narrower bead for fillet welds and automated applications



Wider bead and cleaning acting



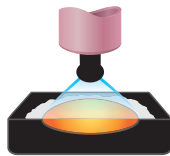
Wider bead and cleaning acting



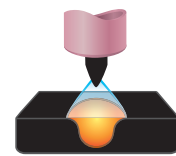
AC Balance Control

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

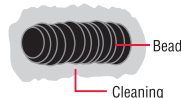
Note: Set the AC Balance control for adequate arc cleaning action at the sides and in front of the weld puddle. AC Balance should be fine tuned according to how heavy or thick the oxides are.



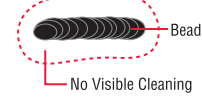
Wider bead, good penetration ideal for buildup work



Wider bead, good penetration ideal for buildup work



Wider bead and cleaning action

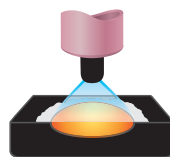


Narrow bead, with no visible cleaning

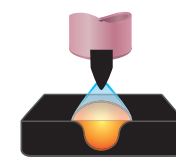


Independent AC Amperage Control

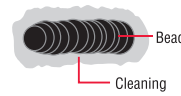
Allows the EN and EP amperage values to be set independently. Adjusts the ratio of EN to EP amperage to precisely control heat input to the work and the electrode. EN amperage controls the level of penetration, while EP amperage dramatically effects the arc cleaning action along with the AC Balance control.



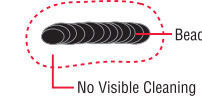
More current in EP than EN: Shallower penetration



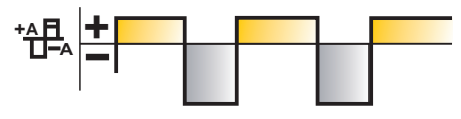
More current in EN than EP: Deeper penetration and faster travel speeds



Wider bead and cleaning action



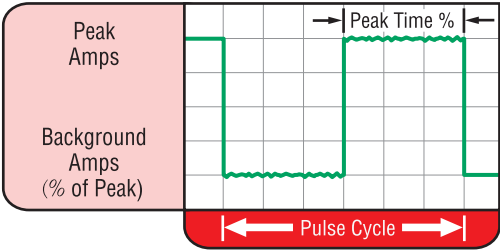
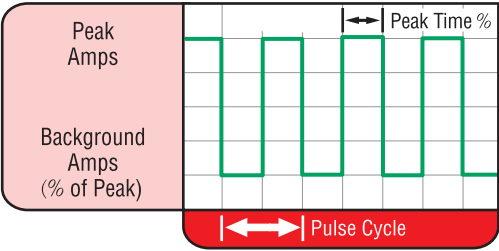
Narrow bead, with no visible cleaning



DC TIG-Pulse

High Speed DC TIG-Pulse Controls

- **PPS Pulses per second (Hz):** DC = 0.1 – 5,000 PPS / AC = 0.1 – 500 PPS
- **% ON – % Peak Time:** 5 - 95% (Controls the amount of time during each pulse cycle at the PEAK amperage.)
- **Background Amps:** 5 – 99% (Sets the low-pulse amperage value as a % of the Peak Amps.)

CONVENTIONAL PULSED TIG	HIGH SPEED PULSED TIG
	
<p>Typically from 1 to 10 PPS. Provides a heating and cooling effect on the weld puddle and can reduce distortion by lowering the average amperage. This heating and cooling effect also produces a distinct ripple pattern in the weld bead. The relationship between pulse frequency and travel speed determines the distance between the ripples. Slow pulsing can also be coordinated with filler metal addition and can increase overall control of the weld puddle.</p>	<p>In excess of 40 PPS, Pulsed TIG becomes more audible than visible —causing increased puddle agitation for a better as-welded microstructure. Pulsing the weld current at high speeds — between a high Peak and a low Background amperage — can also constrict and focus the arc. This results in maximum arc stability, increased penetration and increased travel speeds (Common Range: 100 – 500 PPS). The Arc-Sharpening effects of high speed pulsing are expanded to new dimensions. The ability to pulse at 5,000 PPS further enhances arc stability and concentration potential — which is extremely beneficial to automation where maximum travel speeds are required.</p>

Accessories

For Standard accessories



TIG torch: TIG-18
 Cooling: Water Cooled
 Duty100%DC: 320AMP
 Duty100%AC: 240AMP
 Electrode Size: 0.5-4mm



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

For Optional accessories



Argon gas regular



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



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



Trolley: WT-100