

# STC-205AC/DC



## Quick Specs



### Light industrial Application:

Metal fabrication workshops  
Shipyards and offshore industry  
Chemical and process industry  
Mechanized welding  
Car body repairs and maintenance

### Process:

DC TIG (GTAW)  
AC TIG (GTAW)  
MIX TIG (GTAW)  
Stick (SMAW)  
Plasma Cutting

**Input Power:** 230V or 115/230V, 1-Phase

**Amperage Range:** TIG:5-205A;PAC:20-50A;MMA:10-160A;

### Rated Output at 40°C (104°F):

TIG: 200A at 18V @60% Duty Cycle  
PAC: 50A at 100V @60% Duty Cycle  
MMA: 160A at 26.4V @60% Duty Cycle

**Weight:** 25.7 kg

## For TIG, Plasma and Stick Welding

### A total solution of precise AC/DC TIG welding and plasma cutting machine

**STC-205AC/DC** built base on the Mastertig System offers precise, expert AC/DC TIG welding process. It's a precise aluminum welding specialist that suits all welded materials. Modular design allows you to build the package that best suits your needs.

**STC-205AC/DC** also comes with a 50A@60 heavy duty cycle plasma cutting power source. What you need for any metal welding or cutting works, you just get this combo machine and it's all you needs.

Easy operation and full functions: From the control panel allowing fast adjustment of all necessary controls for DC, AC 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.
- **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.
- **MIX TIG:** we can get an excellent Arc Concentration, can be carried out the excellent welding performance from thin to thick plate.
- **Pilot Arc for superior arc performance and easy start.**
- **HF or Non-HF Arc ignition:** reliable plasma arc initiation without high frequency.
- **Continuous Output Control:** focus the arc for different material thickness.
- **Rapid Arc Restrike:** fast cutting through gaps, even expanded metal.
- **Powerful with heavy duty: 50A @60%.**
- **10 channels memory capacity**



### Outstanding Quality:

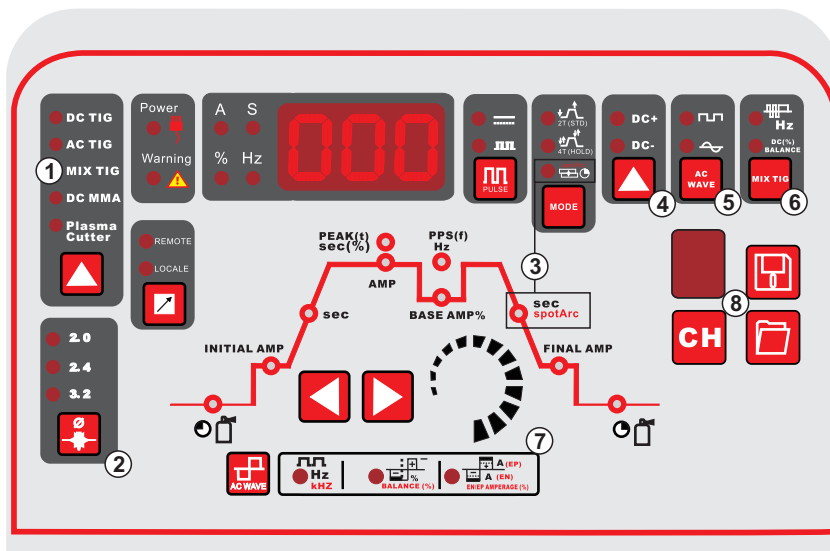
- Newly designed using the latest power electronic technology for improved reliability.
- CE Certified.
- One-Year Warranty on parts.



## Technical specifications

Item No			STC-205AC/DC
Rated Input Voltage			1PH ~ 230V ±15%
Max. Load Power Capacity			TIG:5.63KVA
			MMA: 6.60KVA
			PAC: 8.20KVA
Rated Duty Cycle(40℃) 60%			TIG: 200A/18V
			MMA: 160A/26.4V
			PAC: 50A/105V
100%			TIG: 160A/16.4V
			MMA: 130A/25.2V
			PAC: 40A/100V
Welding Current/Voltage Range			TIG: 5A/10.2V~200A/18V
			MMA: 10A/20.4V~160A/26.4V
			PAC: 20A/90A~50A/105V
Open Circuit Voltage			TIG/MMA:70V~80V
			PAC:260V~290V
Power Factor			0.8
Efficiency			80%
TIG	Pulse	Peak Current	5A~200A
		Base Current	5A~200A
		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~200A
		Crater-filling Current	5A~200A
		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~160A
	Hot Start Time		10A~160A
	Hot Start Current		0.1~3S
PAC	Required Air Pressure		0.3~0.5MPa
	Gas Pro-flow/Retard Time		0.1S~15S
	Quality Cutting Thickness(500mm/min)		12mm
	Severance Cutting Thickness(125mm/min)		22mm
Dimension (LxWxH)			517x230x451mm
Weight (KG)			25KG

## Special Feathers



### Control Panel Parameter Values

#### 1.MIX TIG:

In a cycle time that mixed with EN/EP output (AC TIG) and EN output (DC TIG).

#### 2.Electrode Dia. selection

#### 3.Spot Welding Mode

#### 4.DC +/-

converter output arc-starting of AC TIG process

#### 5.AC Wave Type

#### 6.MIX TIG BALANCE & MIX TIG FREQUENCY

#### 7.AC Wave Control System:

AC Frequency Control

AC Balance Control

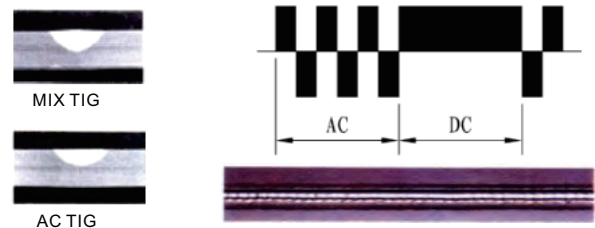
Independent AC Amperage Control

## MIX TIG Control

### Features of MIX TIG:

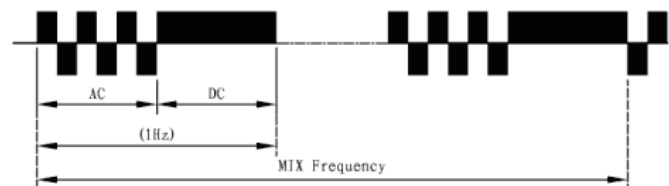
The AC current can get a very good clearance, and DC current can get a deeper penetration. Use the MIX TIG we can get an excellent Arc Concentration, can be carried out the excellent welding performance from thin to thick plate.

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



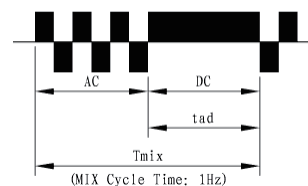
### MIX TIG Frequency (Hz):

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



### MIX TIG Balance (DC) %:

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



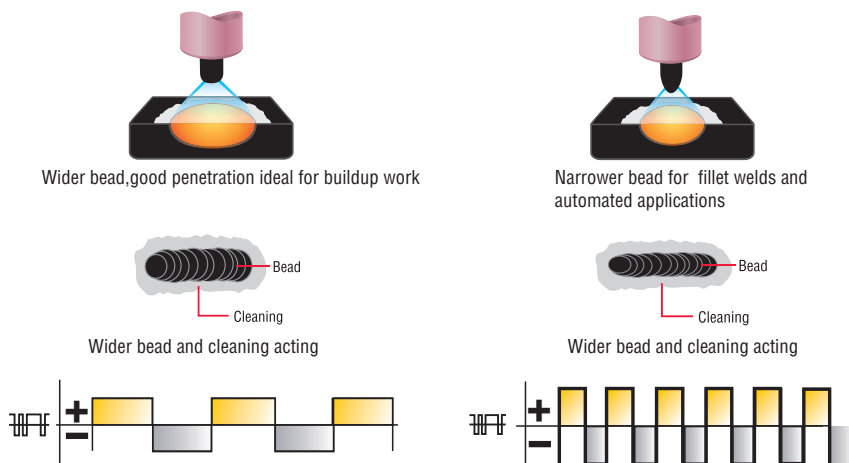
# AC Waveshape Controls



## AC Frequency control

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

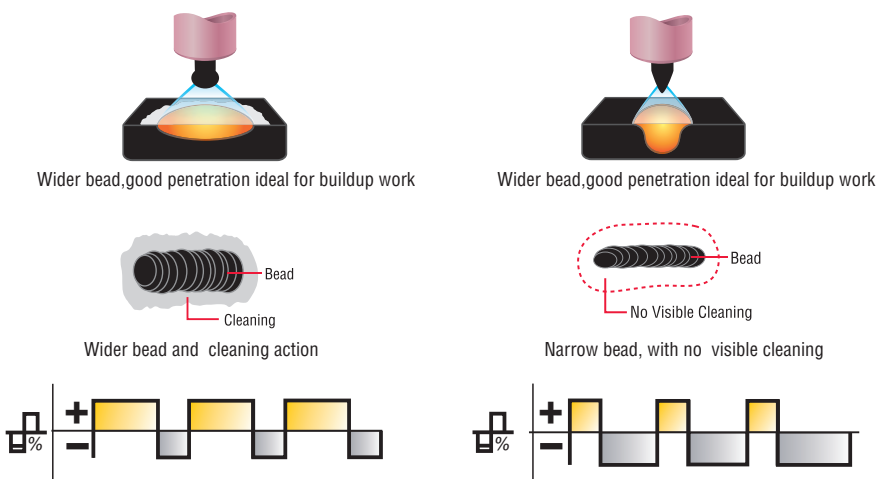
Note: Decreasing the AC Frequency softens the arc and broadens the weld puddle for a wider weld bead.



## AC Balance Control

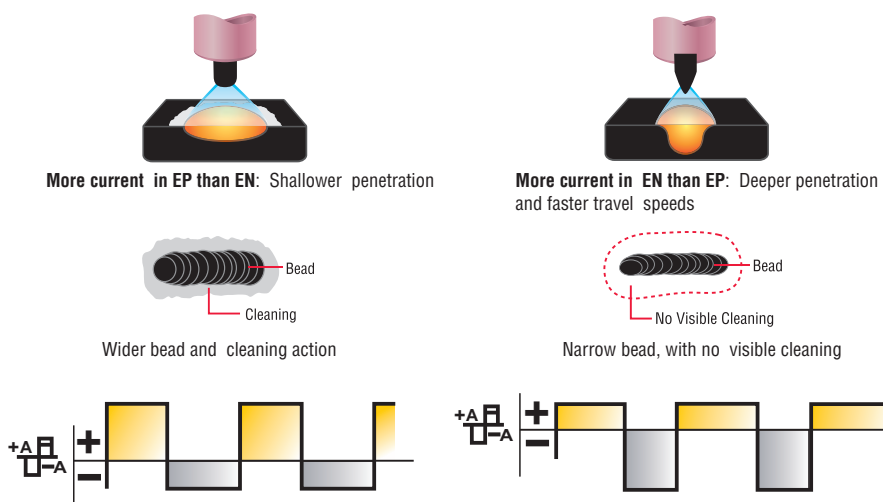
Controls arc cleaning action. Adjusting the % EN of the AC wave controls the width of the etching zone surrounding the weld.

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.



## Independent AC Amperage Control

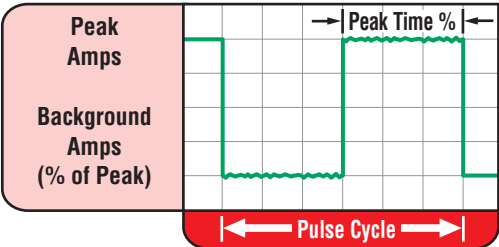
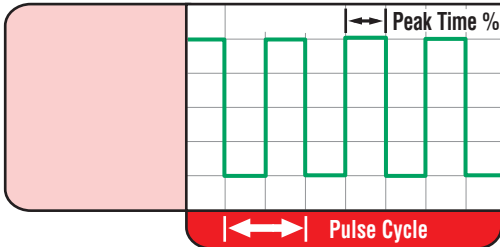
Allows the EN and EP amperage values to be set independently. Adjusts the ratio of EN to EP amperage to precisely control heat input to the work and the electrode. EN amperage controls the level of penetration, while EP amperage dramatically effects the arc cleaning action along with the AC Balance control.



## 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>

## CUT PERFORMANCE



Big cutting power in a small package - the industry's most portable and powerful 60-amp plasma cutter offers 10mm. mild steel cutting. The unit offers easy connection to 115V or 230V input with Auto-Line technology and MVP Adapters.

Hand Torch		
18mm (3/4")	23mm (7/8")	32mm (1-1/4")
Recommended	Maximum	Severance
Rated Cut @ 500 mm/min 20 IPM	Maximum Cut @ 250 mm/min 10 IPM	Sever Cut @ 125 mm/min 5 IPM



## 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**



**Plasma torch: HT-50CB**  
Current: 50 Amp  
Duty Cycle: 60%  
Gas: AIR  
Gas Pressure: 4.5-5.0 Bar  
Gas Flow: 120 LPM  
Ignition: HF  
Post Flow: 50 sec.recommended  
Standard Length: 6M

### For Optional accessories



**Argon gas regular**



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



**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



**Plasma torch: PT-60**  
Current: 60 Amp  
Duty Cycle: 60%  
Gas: AIR/N2  
Ignition: Without HF  
Standard Length: 6M



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