PROTIG-400CT/500CT

Quick Specs

Heavy Industrial Application:
Installation and set-up
Repair and maintenance
Metal fabrication workshops
Chemical and process industry

Processes:
DC TIG(GTAW)
Stick (SMAW)

Input Power: 400V, 3-Phase
Amperage Range:
400CT: 3-400A/ 500CT: 3-500A
Rated Output at 40 ° C (104°F):
400CT: 400A at 26V @60% Duty Cycle
500CT: 500A at 30V @60% Duty Cycle
Weight: 70KG

For TIG and Stick Welding

DC equipment for industrial applications

PROTIG-315Di has become an industry standard for many users, offering precise welding performance and with heavy duty power sources with 60% duty cycle at maximum output current.
Easy operation and full functions: From the control panel allowing fast adjustment of all necessary controls for DC Pulse 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

- **Pulse control:**
  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.
- **High-frequency TIG starting:**
  Makes it easy to establish an arc under a variety of conditions. Enhances quality by minimizing the potential for weld contamination created by tungsten inclusions in the weld.
- **Refined arc ignition from 5A (optional 3A).**
- **Hot Start Function** reliably ignites the electrode and melts perfectly to ensure the best quality even at the start of the seam.
- **Arc Force** makes it easier to weld large-drop melting electrode types at low current strengths with a short arc in particular.
- **Built-in water-cooling unit** offers a safe operation at high temperatures and during extended duty cycles.
- **Fast Spot Arc system** simply controls the spot arc parameter and offers a stable arc.
- **4T Trigger Hold** allows to hold the present current by user until press the trigger again.
- **Fast, precise, clean arc ignition and arc ending.**
- **10 channels memory capacity**

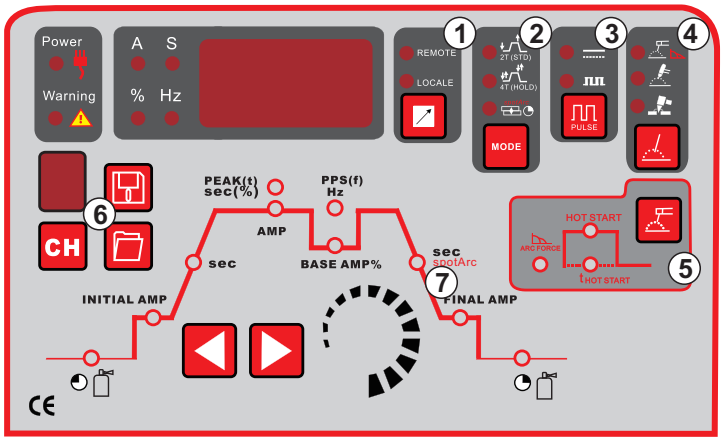
Outstanding Quality:

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

Technical specifications

Item No		PROTIG-400CT	PROTIG-500CT
Rated Input Voltage		3PH ~ 400V ±15%	3PH ~ 400V ±15%
Max. Load Power Capacity		TIG: 14.39 KVA	TIG: 20.76 KVA
		MMA: 14.21 KVA	MMA: 19.93 KVA
Rated Duty Cycle(40℃) 60%		TIG: 400A/26V	TIG: 500A/30V
		MMA: 315A/32.6V	MMA: 400A/36V
100%		TIG: 315A/22.6V	TIG: 400A/26V
		MMA: 250A/30V	MMA: 315A/32.6V
Welding Current/Voltage Range		TIG: 3A/10.1V~400A/26V	TIG: 3A/10.1V~500A/30V
		MMA: 20A/20.8V~315A/32.6V	MMA: 20A/20.8V~400A/36V
Open Circuit Voltage		70V~80V	70V~80V
Power Factor		0.85	0.85
Efficiency		85%	85%
TIG	Pulse Frequency	0.2Hz~200Hz	0.2Hz~200Hz
	Pulse Width (Ratio)	1~100%	1~100%
	Arc-starting Current	5A~400A	5A~500A
	Crater Filling Current	5A~400A	5A~500A
	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~315A	10A~400A
	Hot Start Time	0.1~3S	0.1~3S
	Hot Start Current	10A~315A	10A~400A
Dimension (LxWxH)		960x420x900mm	960x420x900mm
Weight (KG)		70KG	70KG

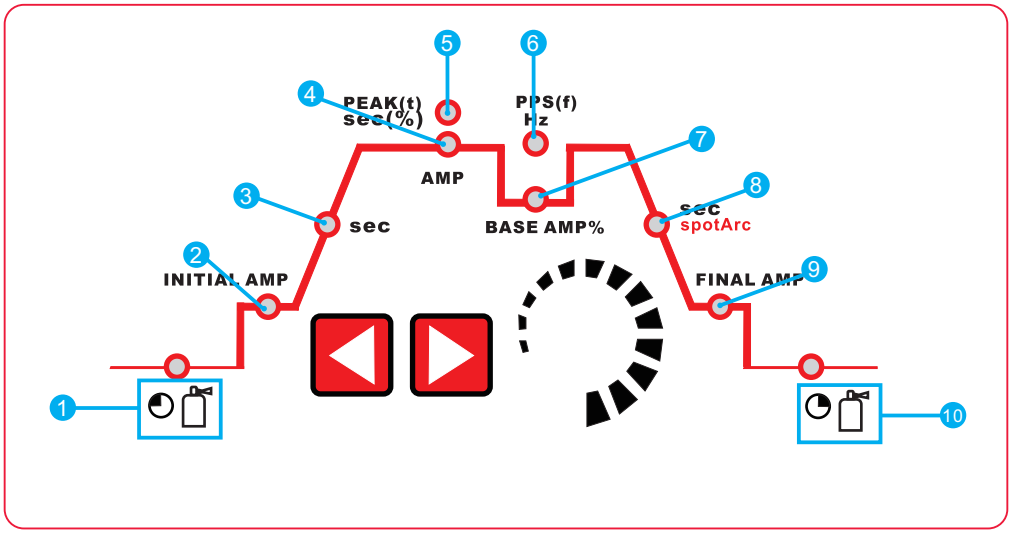
General View of Control Panel



Control Panel Parameter Values

1. **Remote**:used for foot pedal or Remote torch.
   Local:adjusted Currents bu face panel
2. **2T/4T** holding mode or Spot Welding mode selection.
3. Pulse ON/OFF selection.
4. Process selsction.
5. **ARC FORCE/HOT START**
6. Memory with capacity of 10 sets parameters.
7. **Function Sequence(see next chapter)**

Definitions & Glossary

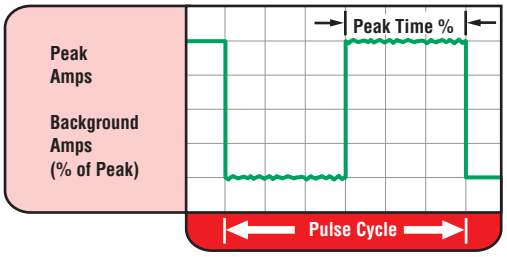
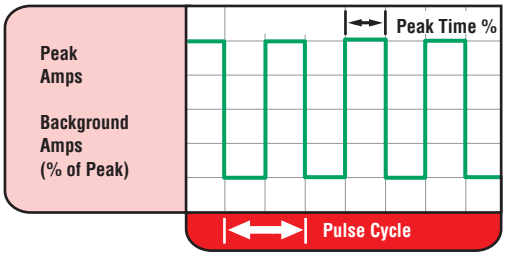


Item	Symbol	Description	
1		Gas pre-flow time (TIG) Absolute setting range 0.1 s to 5.0 s (0.1 s increments).	
2	INITIAL AMP	Ignition current (TIG) Percentage of the main current. Setting range 1 % to 100 % (1 % increments).	Hotstart current (MMA) Percentage of the main current. Setting range 1 % to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

DC TIG-Pulse

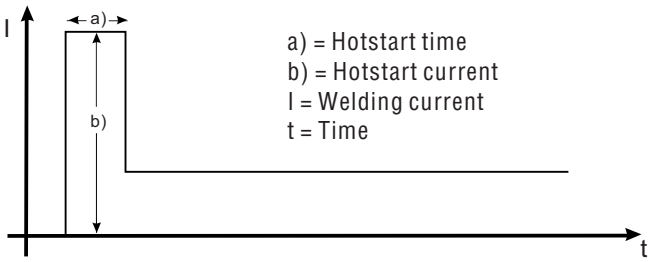
High Speed DC TIG-Pulse Controls

- **PPS Pulses per second (Hz):** DC = 0.1 – 5,000 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
	
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.	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 stability and concentration potential — which is extremely beneficial to automation where maximum travel speeds are required.

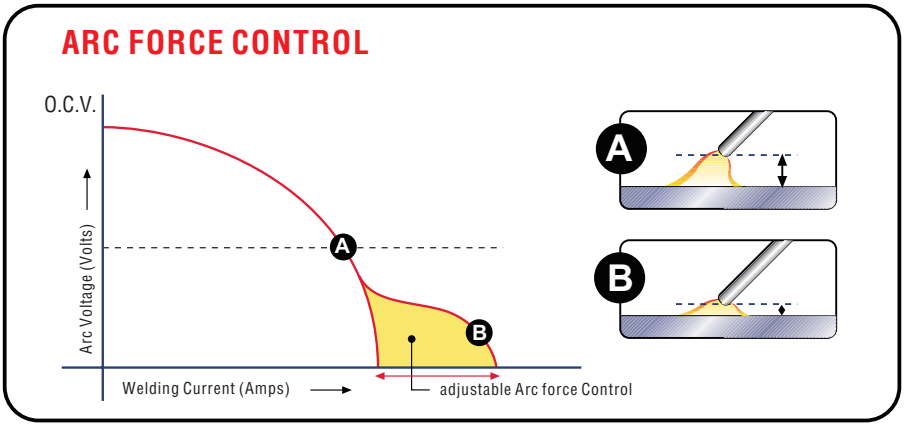
Hot Start

Hot start function reliably ignites the electrode and melts perfectly to ensure the best quality even at the start of the seam. This solution makes lack of fusion and cold welds a thing of the past and significantly reduces weld reinforcement. Adjust the hot start current here and the time here.



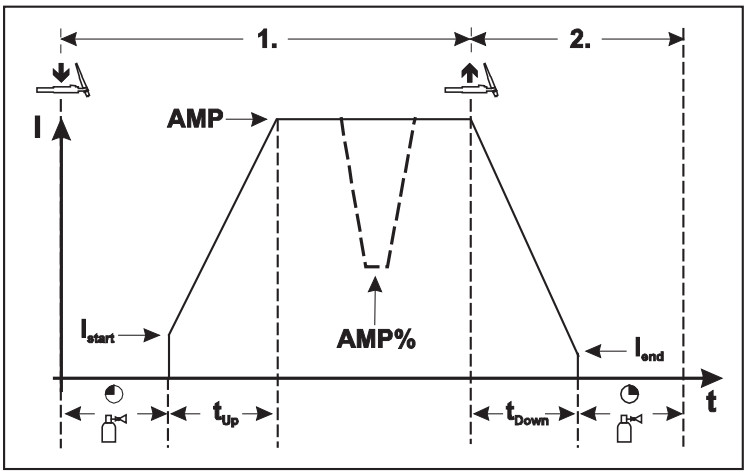
Arcforce correction (welding characteristics)

During the welding process, arcforce prevents the electrode sticking in the weld pool with increases in current. This makes it easier to weld large-drop melting electrode types at low current strengths with a short arc in particular.



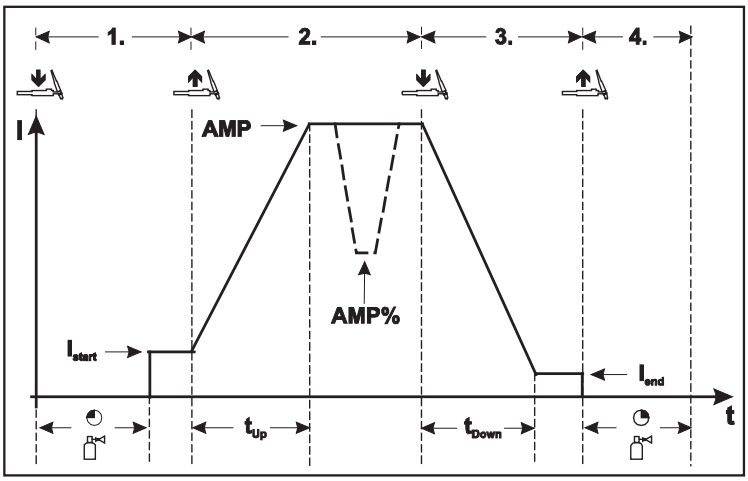
2T/4T

Non-latched mode



1st cycle:
• Press and hold torch trigger 1.
• The gas pre-flow time elapses.
• HF ignition pulses jump from the electrode to the workpiece, the arc ignites.
• The welding current flows and immediately assumes the value set for the ignition current Istart.
• HF is switched off.
• The welding current increases with the adjusted up-slope time to the main current AMP.
Switching from main current AMP to secondary current AMP%:
Press torch trigger 2 or Tap torch trigger 1
2nd cycle:
• Release torch trigger 1.
• The main current falls in the set down-slope time to the end-crater current Iend (minimum current).
If the 1st torch trigger is pressed during the down-slope time, the welding current returns to the
main current AMP set.
• The main current reaches the end-crater current Iend, the arc extinguishes.
• The set gas post-flow time elapses.

TIG latched operation



Step 1
• Press torch trigger 1, the gas pre-flow time elapses.
• HF ignition pulses jump from the electrode to the workpiece, the arc ignites.
• Welding current flows and immediately assumes the ignition current value set (search arc at minimum
setting). HF is switched off.
Step 2
• Release torch trigger 1.
• The welding current increases with the set up-slope time to the main current AMP.
Switching from main current AMP to secondary current AMP%:
Press torch trigger 2 or Tap torch trigger 1
Step 3
• Press torch trigger 1.
• The main current drops with the set down-slope time to the end-crater current Iend (minimum current).
Step 4
• Release torch trigger 1, the arc extinguishes.
• The set gas post-flow time begins.
Immediate termination of the welding process in the downslope by releasing torch trigger 1.

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

Water-cooling unit: WC-150

Operating Voltage: 230V 50/60Hz
Rated Power: 260W
Cooling Power: 1.5KW(1L/MIN)
Tank Volume: 6.5L

For Optional accessories

Argon gas regular

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

Trolley: WT-150

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