



Sigma Weld

Digital Welding Inverters for MMA, TIG, MIG

PRO SERIES



#WeldLikeAPro



**Electronics
Devices**

Worldwide Pvt. Ltd.

Making things happen

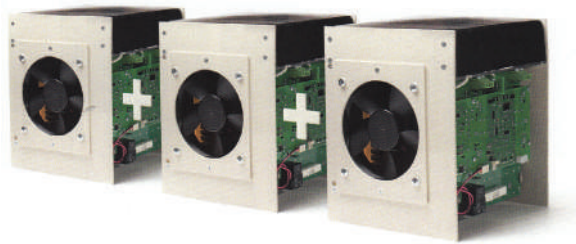
www.sigmaweld.com

TAKING WELDING INVERTER TECHNOLOGY TO THE NEXT LEVEL

PRO SERIES



Sigma Weld Pro Series is state of the art digital welding technology operating at 150kHz. Very quick response time and better welding performance each time. The modular technology helps increase duty cycl upto 100% and ensures maximum machine uptime.



MODULAR ARCHITECTURE

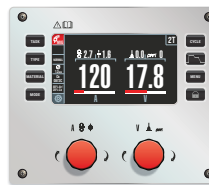
- ✓ Multiple modules of 200A
- ✓ Maximum Up time
- ✓ Easily Repairable
- ✓ Intelligent Water
- ✓ Upgradable
- ✓ High Duty Cycle
- ✓ Cooling Unit

2000A

Option of increasing currents by parallel connecting power modules upto 2000A

ECE 96%

Extremely high response(inverter operation frequency and control system operation cycle)



DIGITAL CONTROL

MicroController based digital control. 7-inch Graphical Display to ease of operator.



Air Flow from Left to Right

Duty Cycle
100%

Duty cycle 100% at $t=40^{\circ}\text{C}$ at the maximal current means that the welding unit operates non-stop

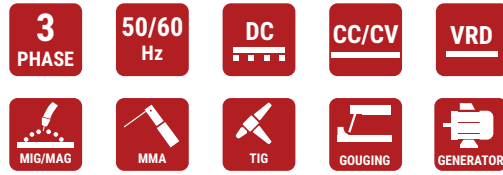
150kHz
6,7 ums

Extremely high response(inverter operation frequency and control system operation cycle)

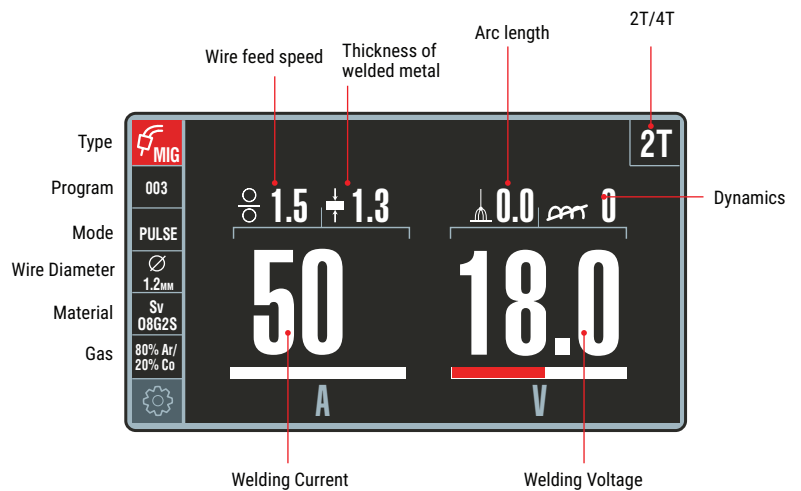
IP34

Protection class guarantees safety of unit under harsh operation conditions

SigmaWeld - Pro MIG



INTERACTIVE GRAPHICAL DISPLAY



In MIG/MAG welding the voltage reserve enables to set up the feeding mechanism up to 50m from power source

50m

WELDING MODES

- MIG/MAG
- MIG/MAG MANUAL
- MMA
- GOUGING
- TIG DC

SPECIAL PROGRAMS

- DAC-MD
- NORMAL
- NORMAL - 2N
- PULSE
- PULSE 2 PULSE
- ROOT
- JET ARC
- CSC

	Pro Synergic	Pro Pulse	Pro Aluminium
Synergetic control	Synergetic control	Synergetic control	Synergetic control
100 storage for recording of welding parameters	100 storage for recording of welding parameters	100 storage for recording of welding parameters	100 storage for recording of welding parameters
Root welding modes for welding of root pass	Root welding modes for welding of root pass	Root welding modes for welding of root pass	Root welding modes for welding of root pass
Deep Penetration mode	Deep Penetration mode	Deep Penetration mode	Deep Penetration mode
Mode of MMA Manual arc welding	Mode of MMA Manual arc welding	Mode of MMA Manual arc welding	Mode of MMA Manual arc welding
DAC function for aluminium alloys enables its direct control	DAC function for aluminium alloys enables its direct control	DAC function for aluminium alloys enables its direct control	DAC function for aluminium alloys enables its direct control
Blackgouging mode	Blackgouging mode	Blackgouging mode	Blackgouging mode
	Pulse programs for steel	Pulse programs for steel	Pulse programs for aluminium alloys

SIGMAWELD PROMIG 350/400/500/650 Synergic/Pulse/Aluminium

SPECIFICATION	SW PROMIG 350	SW PROMIG 400	SW PROMIG 500	SW PROMIG 650
Technology	Advanced Micro-processor IGBT Inverter			
INPUT				
Rated Input Supply	3 phase 415V,±25% 50 Hz			
OUTPUT				
Output Current Range				
MIG/MAG	25 - 350	25 - 400	25 - 500	25 - 650
MMA	30 - 350	30 - 400	30 - 500	30 - 650
TIG/DC LIFT	03 - 350	03 - 400	03 - 500	03 - 650
GOUGING	150 - 350	150 - 400	150 - 500	150 - 650
100% Duty Cycle @40°C	350A	400A	500A	650A
Current Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Max. current input	26A	32A	44A	66A
Circuit Breaker	3 x 32 A	3 x 40 A	3 x 63 A	3 x 100 A
Max. input capacity	12.2 kW	15.1 kW	21.7 kW	33.6 kW
Efficiency	96%	96%	96%	96%
Open circuit voltage	93 V	93 V	93 V	93 V
Protection Class	IP 34	IP 34	IP 34	IP 34
Insulation Class	H	H	H	H
Dimension	740x300x460 mm	740x300x460 mm	740x300x660 mm	900x1000x1100
Weight	42.5kg	42.5kg	55kg	110kg

WIRE FEEDER

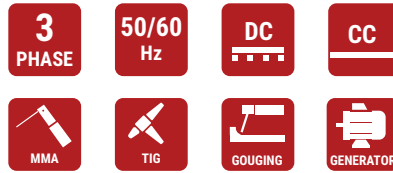
Wire Speed	1 - 25 m/min
Inching of wire	Available
Wire Drive	4 Roll Drive
Applicable Wire Size	0.8 - 2 mm
Duty Cycle	100% @ 550 A
Protection / Insulation Class	IP23/H
Dimension (LxWxH)	700x300x430 mm
Weight	19kg



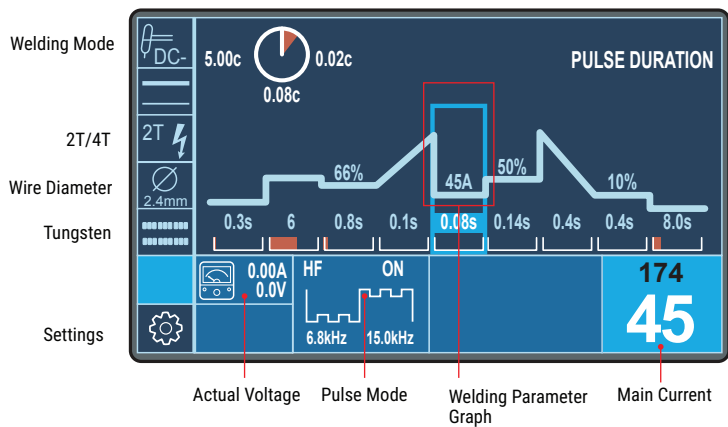
*ProMIG350 K is an in-built wire feeder.

*The VRD function is optionally installed at the request of the customer.

SigmaWeld - Pro TIG



INTERACTIVE GRAPHICAL DISPLAY



Constant Current Output Provided

The output of sigmaWeld welding inverters are constant even if there is a power fluctuation in the mains of upto $\pm 20\%$. The power source equally works well on generator sets with balanced load.

Robust and Versatile

Pro Series TIG welders can weld all kind of Arc welding elctrodes, Basic Rutile, Alloys and Cellulosic with ease. Special Settings available starting current, Hot start, etc., Modes available for Carbon Arc Gouging as well. In GTAW one can weld with HF Initiation or weld in Lift Arc mode. Intensity of HF can be adjusted in case of longer torches to ensure smooth starting each time. Special modes for SPOT welding and Liner tacking.

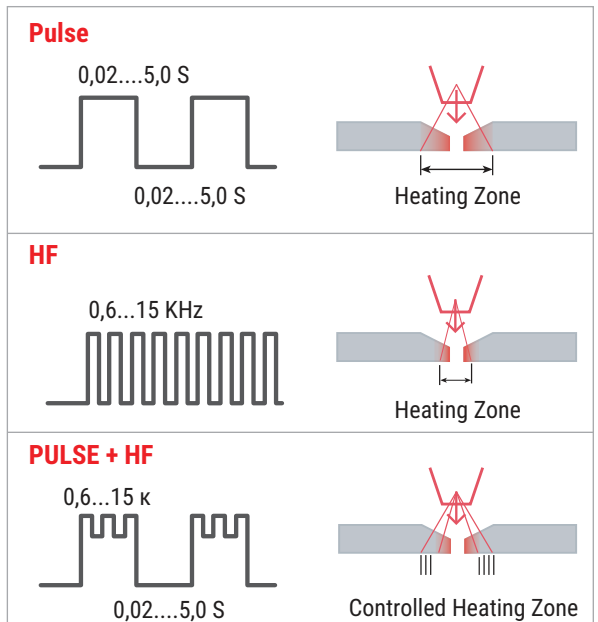
Remote Control

Can be interfaced with multiple options, potential meter type remotes, Foot Control with current variations, Torches with One, Two, Three Switches, etc., The Pro Series adapts easily to every welders need.

Smart Interlocks

- The Water Cooling Unit has smart sensors to keep a check on water flow, Pressure, Temperature, etc., The cooling unit can work in Auto mode for ON DEMAND work loads, or continuous ON/OFF options, Light Indicators for healthy, Idle or Error Modes.
- By choosing the Tungsten Size, current range is automatically limited to avoid melting of tungsten due incorrect current settings.
- The optional WELD WEB allows welding data to be collected wirelessly and can be accessed from any PC, Notebook or Tablet.
- Pulse on Demand: Welder can swap between two current setting during welding as and when he wants. This is possible with the new 4T control mode.

WELDING MODES	CONTROL
MMA	2T
TIG DC	4T
TIG SYN DC	4T Control
WELDING TYPES	PULSE MODE
CONTINUOUS	PULSE
SPOT	HF
INTERVAL	PULSE + HF

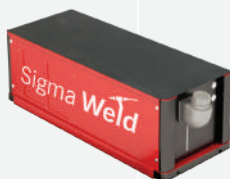


SIGMAWELD PROTIG 400/500 PDC

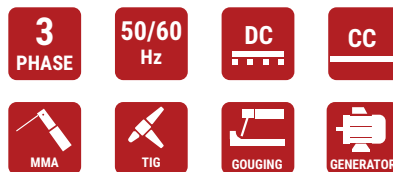
SPECIFICATION	SW PROTIG 400 PDC	SW PROTIG 500 PDC
Technology	Microprocessor based Digital Inverter	Microprocessor based Digital Inverter
INPUT		
Rated Input Supply	3 phase 415V,±15% 50 Hz	3 phase 415V,±15% 50 Hz
OUTPUT		
Output Current Range(MMA)	30 - 400	30 - 500
Output Current Range(TIG DC)	03 - 400	03 -500
Duty cycle 100% and t = 40 °C	400A	500A
Max. current input	32 A	44 A
Circuit Breaker	3 x 32 A	3 x 63 A
Max. input power	16 kW	22.2 kW
Efficiency	96%	96%
Open circuit voltage	87 V	87 V
Protection Class	IP 34	IP 34
Insulation Class	H	H
Dimension	740x300x460 mm	740x300x660 mm
Weight	62.5kg	68kg

WATER COOLING UNIT

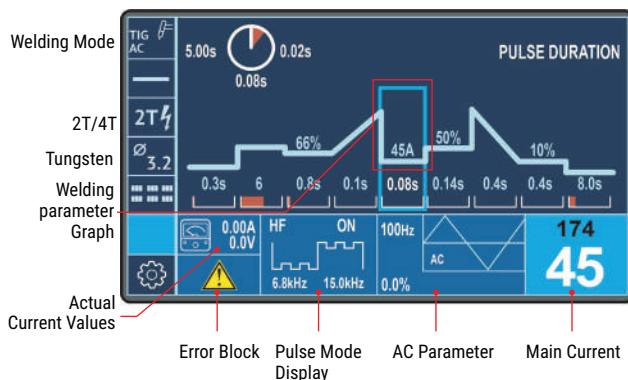
Rated Supply	400V+25%, 50 Hz, 3 Phase
Input Power	0.375 kva
Rated Flow Rate	10 litre/min
Rated Flow Rate	10 l/min
Capacity	10litre
Dimensions (LxWxH)	198x299x289 mm
Weight	21kg



SigmaWeld Pro TIG AC/DC



INTERACTIVE GRAPHICAL DISPLAY



FUNCTIONAL DESCRIPTION
OF POWER SOURCES
OF TIG P AC/DC

WELDING METHODS

MMA
TIG DC-
TIG DC+
TIG AC
TIG AC+DC
TIG SYN + DC
TIG SYN +AC

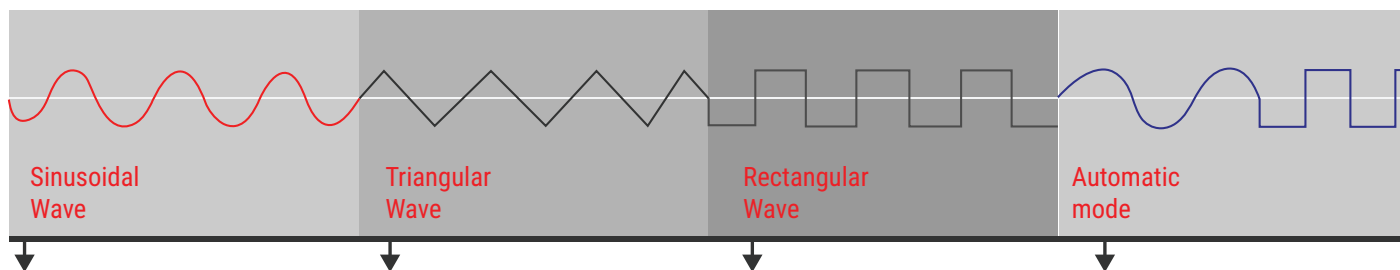
MMA FUNCTIONS

Hot Start

TIG FUNCTIONS

2T/4T \ HF (soft high frequency arc ignition) \ Lift (contact arc ignition)

1. AC WAVEFORM (affects sound level and arc penetration depth)



Sinusoidal Wave
Traditional and classic waveform. Soft and less noisy arc has the effect of wide and complete fusion of base metal.

Triangular Wave
Non- traditional wave form ensures efficient peak amperage as total supplied heat is reduced. Quick wave formation reduces welding time, limits heat input, and decreases weld deformation degree, especially on thin materials.

Rectangular Wave
Deep penetration, fast travel speed and more stable welding arc.

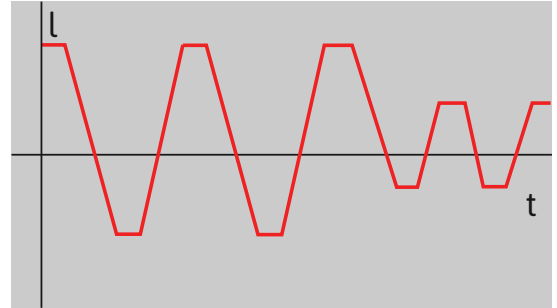
Automatic mode
Automatic adaptation of AC curve shape to amperage. The sinusoid form curve is set automatically with low current (<180A). The rectangular shape curve is used with high currents(>180A).

2. ALTERNATING CURRENT FREQUENCY REGULATION 30 - 300Hz DC PULSE WELDING FREQUENCY 40 - 15000Hz

CONTROL IN AC and AC DC MODES (MIX)

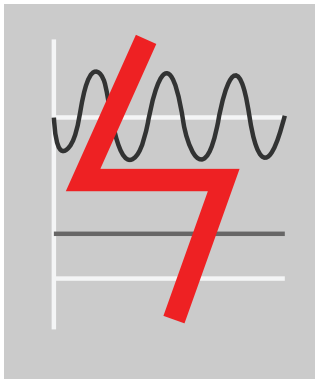
3. AUTOMATIC ALTERNATING CURRENT FREQUENCY REGULATION

The automatic alternating current frequency control for welding in AC mode. The high frequency of AC welding arc at low welding currents is applied to focus the welding arc, and reliably to capture the weld root e.g. when making fillet welds on thin sheet metal. Due to low AC frequency the amperage applied to electrodes reduces subject to high welding currents. It is achieved by the automatic synchronization of the pulsation frequency with the actual welding current value. The max. frequency is used to weld with low currents and the min. one with high currents.



Such function significantly simplifies welder operations as it does not have to set the pulsing frequency subject to the performed job.

4. TIG AC DC (MIX) MODE



Simple welding of aluminium alloy even in complicated situation. The double arc mode reduces the redundant component of the alternating current in the electric arc to the required minimum. The reduced heat input enables welder more fully to control the weld area. It is especially important to weld in hard to reach places, on edges of the bank or aluminium sheets or aluminium alloys which have different thickness and enables to achieve best quality welding. This mode also enables to reduce the load on the tungsten electrode.

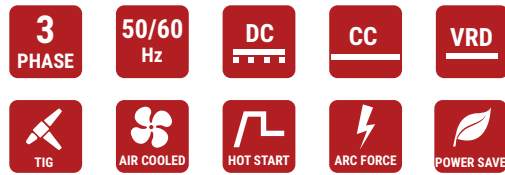
- It simplifies welding with forced formation;
- In DC phase the weld area cools down, and it is easier to control;
- The materials of different thickness may be welded;
- AC welding is much easier for inexperienced users.

SIGMAWELD PROTIG 350/400/500 P AC/DC





SPECIFICATION	SW PROTIG 350	SW PROTIG 400	SW PROTIG 500
Technology	Microprocessor based Digital Inverter		
INPUT			
Rated Input Supply	3 phase 415V, $\pm 25\%$ 50 Hz		
OUTPUT			
Output Current Range(MMA)	30 - 350	30 - 400	30 - 500
Output Current Range(TIG DC)	03 - 350	03 - 400	03 - 500
Duty cycle 100% and $t = 40^\circ\text{C}$	350A	400A	500A
Max. current input	26 A	32 A	44 A
Circuit Breaker	3 x 32 A	3 x 32 A	3 x 63 A
Max. input power	13, 2 kW	16 kW	22.2 kW
Efficiency	96%	96%	96%
Open circuit voltage	87 V	87 V	87 V
Protection Class	IP 34	IP 34	IP 34
Insulation Class	H	H	H
Dimension	740x300x460 mm	740x300x460 mm	740x300x660 mm
Weight	62.5kg	62.5kg	68kg

S.W.A.T MODE

SigmaWeld Accelerated TIG



S.W.A.T (SigmaWeld Accelerated TIG) is a keyhole welding mode available upto 1000Amps. Increases the speed of welding upto 100% compared to traditional GTAW process. No edge preparation upto 10mm required.

 <p>LCD Screen Display</p>	 <p>Modular Architecture Max. Up time.</p>
<p>NORMAL MODE</p> <p>A wider arc and less deeper penetration when welding without pulsation or with low frequency.</p> 	<p>S.W.A.T MODE</p> <p>Deeper penetration and concentrated arc pulsation welding</p> 

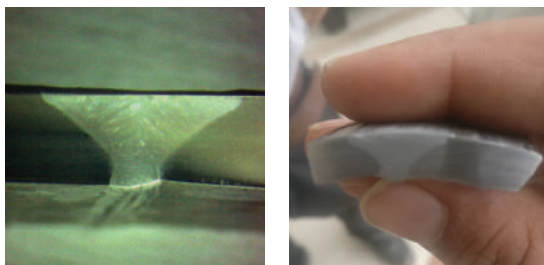
FAST, PRECISE, DEPENDABLE

- No edge preparation upto 10mm
- High speed single pass upto 1000mm/min
- No filler wire required
- Square Butt Welds
- Low heat input, Low distortion
- Suitable for welding in 1G & 2G positions
- Suitable for SS, Duplex SS, Alloy Steel, Titanium.
- Automated process, Retrofittable on standard automation Systems.

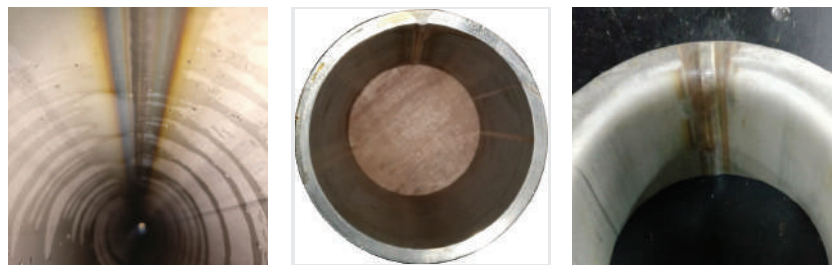
APPLICATIONS

- Tube Mills
- Tanks & Vessels
- Food, Pharma & Dairy Equipment
- Aerospace
- Nuclear

SIDE VIEW



BOTTOM VIEW



SIGMAWELD ACCELERATED TIG (S.W.A.T)

SPECIFICATION	S.W.A.T 500 PDC	S.W.A.T 1000 PDC
Technology	Microprocessor based Digital Inverter	Microprocessor based Digital Inverter
INPUT		
Rated Input Supply	400V ±25% 50 Hz	400V ±25% 50 Hz
Power KVA @100 %	16.5 KVA	45 KVA
OUTPUT		
Output Current Adjustable Range	3 - 500 A	3 - 1000 A
Open Circuit Voltage	93 V	93 V
Positons	1G & 2G	1G & 2G
Consumed Current	31 A	88 A
Filler required	Not required upto 8 mm	Not required upto 8 mm
Joint type	Square Butt Joint	Square Butt Joint
Duty cycle @ 40°C	100% @ 500 A	100% @ 1000 A
Penetration	Deeper and constant	Deeper and constant
Handling Mode	Mechanized	Mechanized
Weld Max. Thickness	10mm	10mm
Speed	upto 1000 mm/min at 2 mm thickness	upto 1000 mm/min at 2 mm thickness
Dimensions (LxWxH)	740x300x660	800 x 404 x 942
Weight	60 Kg	90 Kg

PROTECTION & SAFETY FEATURES		PARAMETER	
Insulation Class	H	Gas Pre Flow	Adjustable
Protection Class	IP 34	Gas Post Flow Time	Adjustable
Thermal Shutdown	In-built(Over Temp)	Peak Current Time	Adjustable
Under Voltage	In-built(Phase Failure)	Base Current Time	Adjustable
Over Voltage	In-built(Phase Failure)	Frequency	Adjustable
IGBT Peak Current	In-built	Digital Ammeter and Voltmeter	In-built
VRD, Energy Saving	In-built	Welding Mode	S.W.A.T Mode
Cooling Type	Forced air Cooling	Process Memory Recall	In-built
Output Short	Inbuilt (Output Short)		



CHILLER



COLD WIRE FEEDER

**CONTROL PANEL
INTEGRATION**

WeldWEB



WeldWEB Software builds <<networks>> of welding machines to record welding parameters & operator details.

Data are transferred via a radio channel of their permitted frequency, with no physical transfer of data on USB carriers.

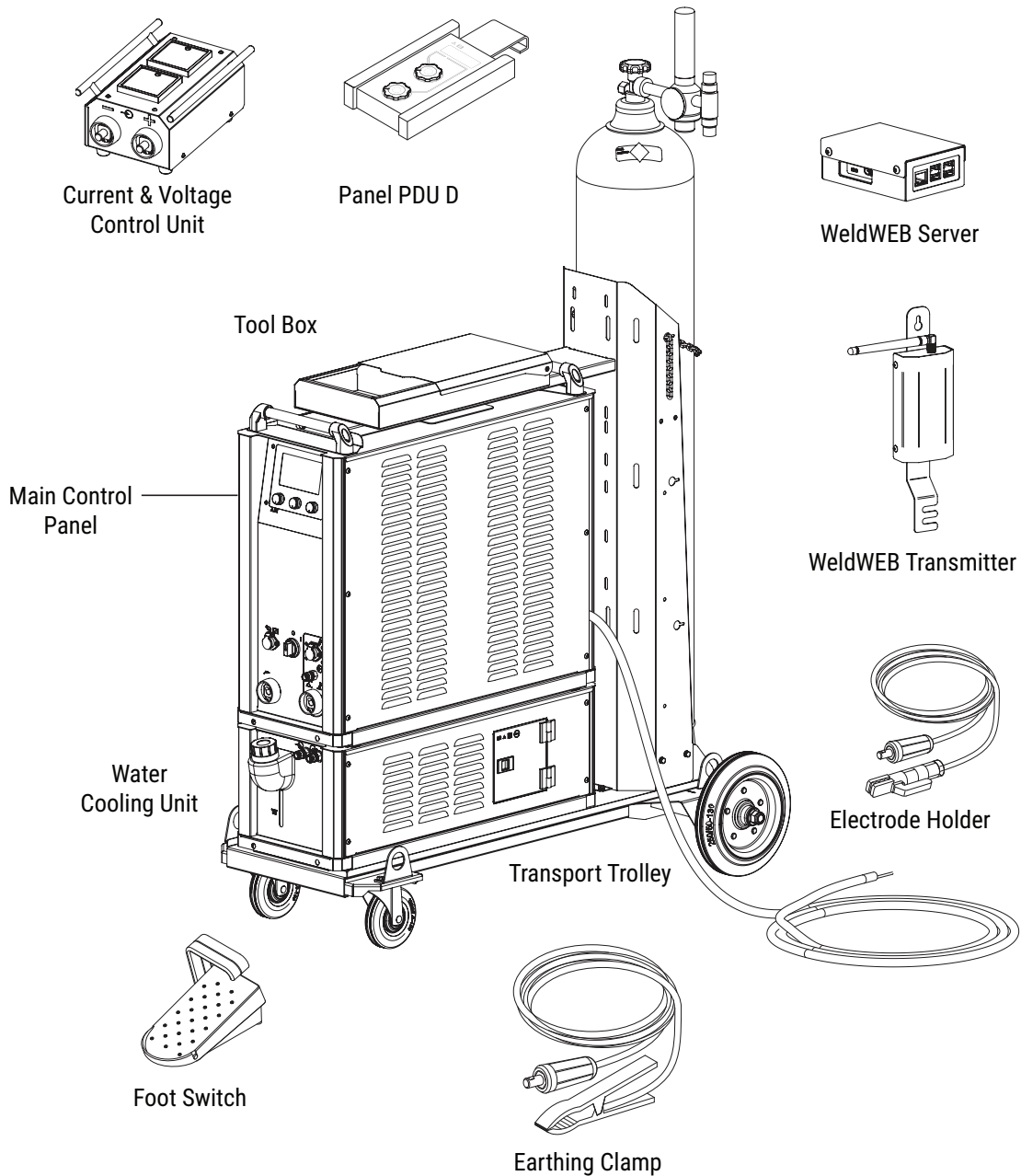
The interference free package transfer of data performs well in industrial conditions even if HF ignition is used in TIG welding.

Access Control Card

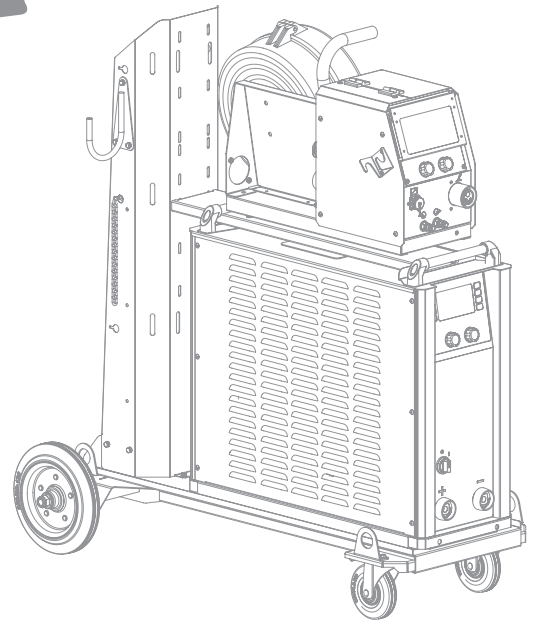
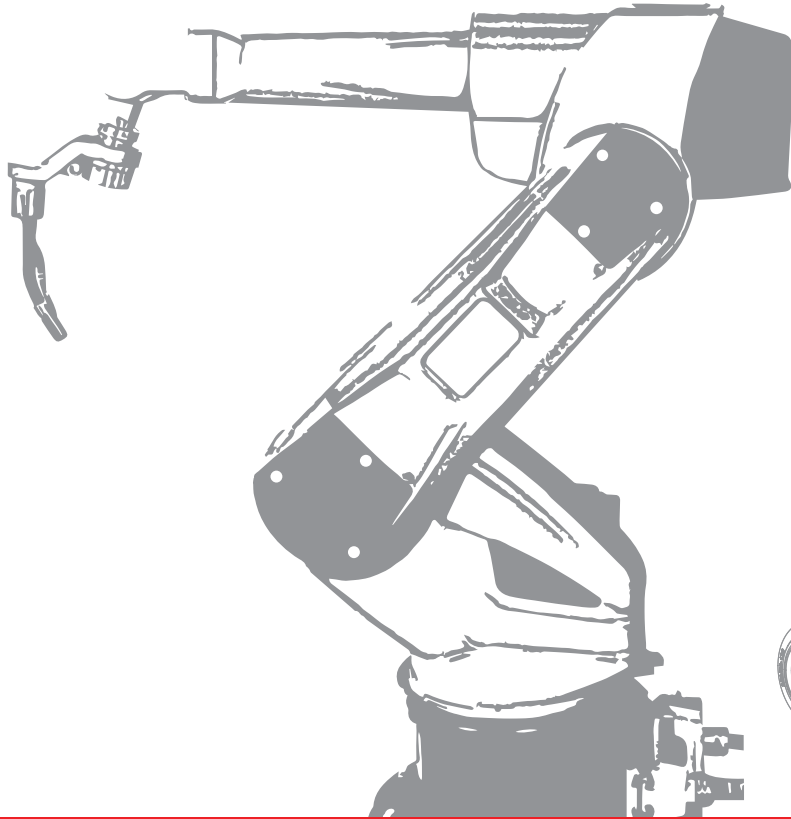


The device can be equipped with an access control system. The card with Administrator rights provides full access to the settings, the user card allows working in a limited mode.

After turning on the power, the source will ask you to attach an access card to the reader. Access cards are programmed for the factory pass, key-tablet or other media. The system includes two levels of management access - Administrator and User.



INCREASE **PRODUCTIVITY**,
IMPROVE **QUALITY**,
REDUCE **COST**.



WELDING AUTOMATION



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