

SHERMAN DIGITIG 200GD

INSTRUCTIONS MANUAL



WARNING! FOR SAFETY REASON PLEASE READ AND UNDERSTAND THE FOLLOWING INSTRUCTIONS BEFORE FIRST USE OF THE DEVICE.

1. General instructions

Read the operating instructions!

The operating instructions provide an introduction to the safe use of the products. An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

- Read the operating instructions for all system components!
- Observe accident prevention regulations!
- Observe all local regulations!
- Confirm with a signature where appropriate.

2. Safety instructions

DANGER!

Electromagnetic fields!

The power source may cause electrical or electromagnetic fields to be produced which could affect the correct functioning of electronic equipment such as IT or CNC devices, telecommunication lines, power cables, signal lines and pacemakers.

- Observe the maintenance instructions! (see Maintenance and Testing chapter)
- Unwind welding leads completely!
- Shield devices or equipment sensitive to radiation accordingly!
- The correct functioning of pacemakers may be affected (obtain advice from a doctor if necessary).

Do not carry out any unauthorised repairs or modifications!

To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons! The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

Electric shock!

Welding machines use high voltages which can result in potentially fatal electric shocks and burns on contact. Even low voltages can cause you to get a shock and lead to accidents.

- Do not touch any live parts in or on the machine!
- Connection cables and leads must be free of faults!
- Switching off alone is not sufficient!
- Place welding torch and stick electrode holder on an insulated surface!
- The unit should only be opened by specialist staff after the mains plug has been unplugged!
- Only wear dry protective clothing!
- Wait for 4 minutes until the capacitors have discharged!

WARNING!

Risk of injury due to radiation or heat!

Arc radiation results in injury to skin and eyes.

Contact with hot workpieces and sparks results in burns.

- Use welding shield or welding helmet with the appropriate safety level (depending on the application)!
- Wear dry protective clothing (e.g. welding shield, gloves, etc.) according to the relevant regulations in the country in question!
- Protect persons not involved in the work against arc beams and the risk of glare using safety curtains!

Explosion risk!

Apparently harmless substances in closed containers may generate excessive pressure when heated.

- Move containers with inflammable or explosive liquids away from the working area!
- Never heat explosive liquids, dusts or gases by welding or cutting!

WARNING!

Smoke and gases!

Smoke and gases can lead to breathing difficulties and poisoning. In addition, solvent vapour (chlorinated hydrocarbon) may be converted into poisonous phosgene due to the ultraviolet radiation of the arc!

- Ensure that there is sufficient fresh air!
- Keep solvent vapour away from the arc beam field!
- Wear suitable breathing apparatus if appropriate!

Fire hazard!

Flames may arise as a result of the high temperatures, stray sparks, glowing-hot parts and hot slag produced during the welding process.

Stray welding currents can also result in flames forming!

- Check for fire hazards in the working area!
 - Do not carry any easily flammable objects such as matches or lighters.
 - Keep appropriate fire extinguishing equipment to hand in the working area!
 - Thoroughly remove any residue of flammable substances from the workpiece before starting welding.
 - Only continue work on welded workpieces once they have cooled down.
- Do not allow to come into contact with flammable material!
- Connect welding leads correctly!

Risk of accidents if these safety instructions are not observed!

Non-observance of these safety instructions is potentially fatal!

- Carefully read the safety information in this manual!
- Observe the accident prevention regulations in your country.
- Inform persons in the working area that they must observe the regulations!

Danger when coupling multiple power sources!

Coupling multiple power sources in parallel or in series has to be carried out by qualified personnel and in accordance with the manufacturer's guidelines. Before bringing the power sources into service for arc welding operations, a test has to verify that they cannot exceed the maximum allowed open circuit voltage.

- Connection of the machine may be carried out by qualified personnel only!
- When decommissioning individual power sources, all mains and welding current leads have to be safely disconnected from the welding system as a whole. (Danger due to inverse voltages!)
- Do not couple welding machines with pole reversing switch (PWS series) or machines for AC welding, as a minor error in operation can cause the welding voltages to be combined.

WARNING!

Hazards due to improper usage!

Hazards may arise for persons, animals and material objects if the equipment is not used correctly. No liability is accepted for any damages arising from improper usage!

- The equipment must only be used in line with proper usage and by trained or expert staff!
- Do not modify or convert the equipment improperly!

CAUTION!

Installation site!

The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!

- The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.
- Safe operation of the machine must be guaranteed at all times.

Equipment damage due to dirt accumulation!

Unusually high quantities of dust, acid, corrosive gases or substances may damage the equipment.

- Avoid high volumes of smoke, vapour, oil vapour and grinding dust!
- Avoid ambient air containing salt (sea air)!

Non-permissible ambient conditions!

Insufficient ventilation results in a reduction in performance and equipment damage.

- Observe the ambient conditions!
- Keep the cooling air inlet and outlet clear!
- Observe the minimum distance of 0.5 m from obstacles!

3. Applications,

The manufacturer is not liable for damage caused by improper use of the device.

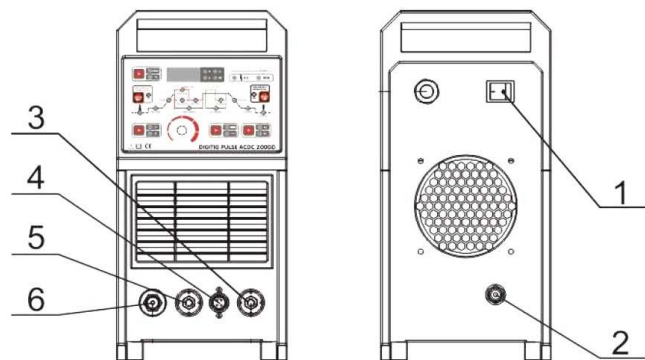
Digital welding machine is a latest generation of welding devices intended for professional use. It is made using IGBT transistor technology and equipped with digital control. It's purpose is TIG welding of steel and non-ferrous metals with use of AC or DC current. It can also be used for MMA process. The device enables full digital adjustment and control of welding parameters, arc and pulse characteristics.

Among main functionalities there is HF ignition, Pre flow, Post flow, Upslope, Downslope, VRD, ARC FORCE, HOT START and 2T/4T. The welding machine has the last settings memory, ie after it has been turned off and then on again the last parameters are restored. You can also store up to 10 sets of settings in the device memory.

4. Welding machine description

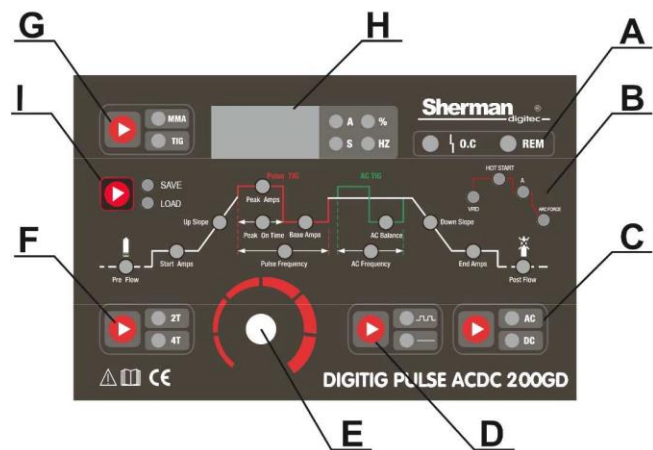
4.1 Front view

1. Power switch on/off
2. Gas supply intake
3. Connection socket (+)
4. Torch control connector
5. Shield gas valve
6. Connection socket (-)



4.2 Control panel

- A. Overheat and Remote mode indicator
- B. MMA parameters adjustment
- C. AC/DC current selector
- D. Pulse on/off button
- E. Adjustment knob
- F. 2T/4T selector button
- G. Welding process selector
- H. Active parameter indicator / Value screen
- I. Save and load predefined values

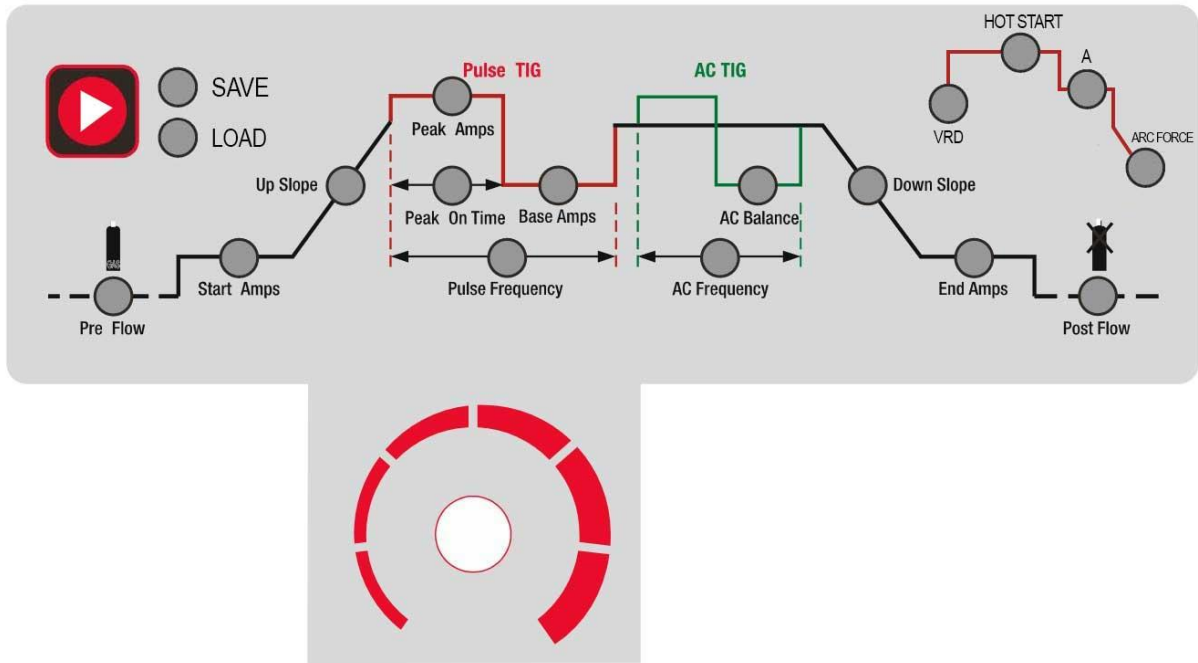


4.2.A Overheat and Remote mode indicator



When O.C Indicator is on it means the device is overheating or does not work properly. REM light indicates when a remote is connected.

4.2.B Welding parameters control panel



Welding parameters adjustment

To change value of desired parameter it needs to be selected with the press of selection knob and then with turning the knob set the specific value. Currently selected parameter is indicated by corresponding LED light. LCD screen shows actual value of the parameter, turning the adjustment knob to the right increases the value, turning it to the left decreases it. Confirming your selection by pressing the knob. It automatically jumps to the next parameter.

Settings memory

Device has a memory module to store up to 10 sets of settings of welding parameters. It also keeps the last used settings in the memory after device has been turned off.

To store a specific set of settings press the SAVE/LOAD button for 3 seconds. "Save" LED indicator will turn on. It means that you can save your settings under one of the sets number from 1 to 10. To change the set number use adjustment knob. After desired set number is selected press the knob to save it. Please remember that if you save your settings under previously used number the previous settings will be overwritten.

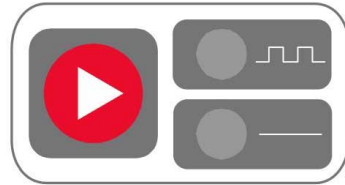
To restore a specific set of settings from the device memory quickly press and release the SAVE/LOAD button. After "Load" indicator light is on use the adjustment knob to choose desired set number and press the knob to load it.

4.2.C AC/DC current selector



Press the button to choose between the AC and DC current. Indicator light shows currently selected current.

4.2.C Pulse ON/OFF button



Press the button to choose between welding with pulse and without pulse. Indicator light shows currently selected mode.

4.2.E Adjustment knob

Turn the adjustment knob to change value of selected parameter. Turning it to the right increases the value, turning it to the left decreases it.

4.2.F 2T/4T selector button



Button is active only when using TIG process. Selected mode is indicated by LED light. In 2T mode, operation is fairly simple. Activating the torch switch in 2T mode is simply a process of pressing the switch and holding it down and the machine will operate at the preselected settings on the machine panel. This is very good and simple operation of the machine for new beginners and tasks where the required amperage can be preset if it is required.

The 4T setting is a little more complex as you have control over the stages of the welding cycle and when each stage begins and ends. To operate, simply press and hold the torch switch. The preflow and start current should initiate. During this time, you are still holding the switch. When a puddle begins to develop, you can release the switch and the torch automatically begins the preset upslope cycle until it reaches full operating amperage. To terminate the weld, simply touch and hold the switch again and the torch will begin the downslope cycle and continue to the end current phase which will allow you to precisely fill the crater without overmelting.

4.2.G Welding process selector



Welding process selector button. Currently selected process is indicated by LED light. MMA – welding with coated electrode. TIG – welding with tungsten electrode in a shield gas atmosphere.

4.2.H Active parameter indicator / Value screen



Digital screen shows actual value of selected parameter. For a specific parameter appropriate unit LED indicator lights on. After machine start screen shows “LL” for loading. “Err” prompt indicates problem with the welder or overheating.

1.1 Overheat protection module

Device is equipped with overheating protection. When the temperature of the welder components is too high it automatically turns off welding current. **O.C** indicator lights on and screen shows “**Err**” prompt. After the temperature cools down the device restart and is ready to work again.

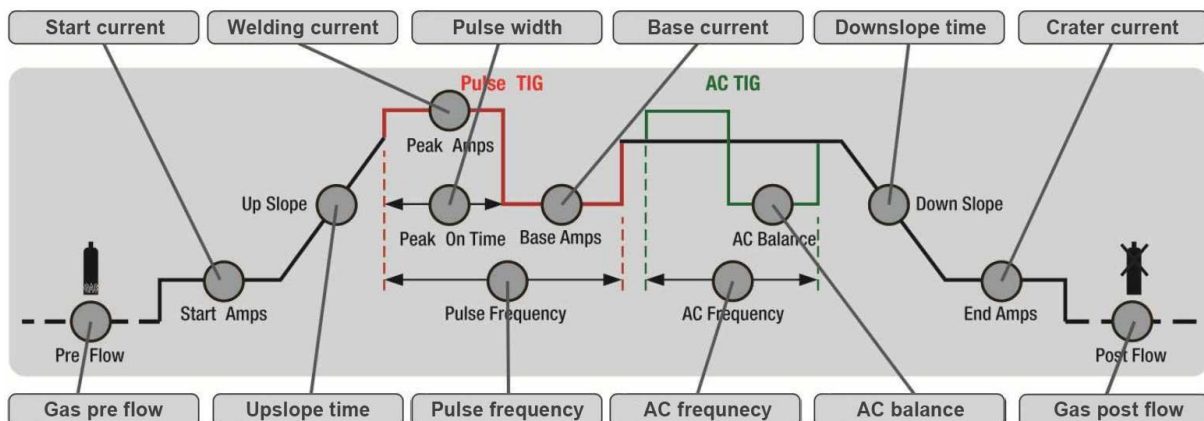
2. Parameters adjustment

2.1 MMA process

When MMA process is selected there only a welding current can be adjusted.

2.2 TIG process

Select the welding process to TIG, choose between AC or DC current, select if you want to use pulse or not. After those parameters are selected you can proceed to adjust values of other parameters listed below.



Start current – start current turn up when a torch trigger is activated. If the start current is higher the arc ignition is easier however when welding thin material start current should be lower to avoid burning through working material. Adjustment range: 10A – 200A

Welding current – actual welding current. Adjustment range: 10A – 200A

Pulse width - Pulse duration (width) allows you to adjust the depth of the penetration. When width is increased it makes the penetration deeper and reduces the amount of heat entering the material minimizing the risk of burning through thin sheets. Lower pulse width values should be used for higher currents. Larger pulse width should be used for small currents, for example, a width greater than 50% should be used for currents below 100A. Adjustment range: 10% - 90%

Base current – base current responds to the lower value of the current pulse. The base current is responsible for maintaining the welding process. It makes it easier to control the amount of heat entering the material. The base current adjustment is only possible during pulse welding. Adjustment range: 5% - 90%

Downslope time – downslope refers to the gradual ramping down of welding current. Downslope allows the welding current to be reduced gradually, allowing the metal to cool more slowly than it would without downslope control

Crater current – crater current occurs after downslope time ends. It keeps the specified current to fill the crater with a melted metal at the end of a weld. Adjustment range: 10A – 200A

Gas pre flow – time from trigger activation until the arc is ignited. It should normally be longer than 0.5s to provide enough shield gas to the nozzle. For a longer gas hose the gas pre flow should be longer.

Upslope time – current ramping time from start current to welding current. Adjustment range: 0s – 10s

Pulse frequency – the frequency of how often the current value changes from base current to welding current. Adjustment range: 40Hz – 200Hz

AC frequency – a parameter that is most needed when welding aluminium. The greater the value the better the weld quality and arc is more stable. Adjustment range: 40Hz – 200Hz

AC balance – ratio between the duration of the positive to negative phase. Decrease the balance causes more heat input into the material, resulting in a narrower joint and deeper penetration, at the same time reduces the thermal load of the tungsten electrode. Increasing the balance causes introducing less heat into the material, resulting in better cleaning a broad joint and a shallow penetration, however significantly increasing wear of the tungsten electrode. Adjustment range: 30% - 70%

Gas post flow – time taken from arc put out to completely cut off shield gas. Gas post flow time should be long enough to prevent welding joint from oxidising and allowing the tungsten electrode to cool down. Adjustment range: 0s – 15s

3. Welding

3.1 Welding using MMA process

In MMA process arc is ignited by touching and rubbing the electrode against the material being welded. Electrode tip should be cleaned from its coating to allow conductive inner core to contact with working material.

3.1.1 Conducting the welding

Choose the welding process to MMA. In this mode you can only adjust welding current. You can adjust the current value by turning the adjustment knob right or left.

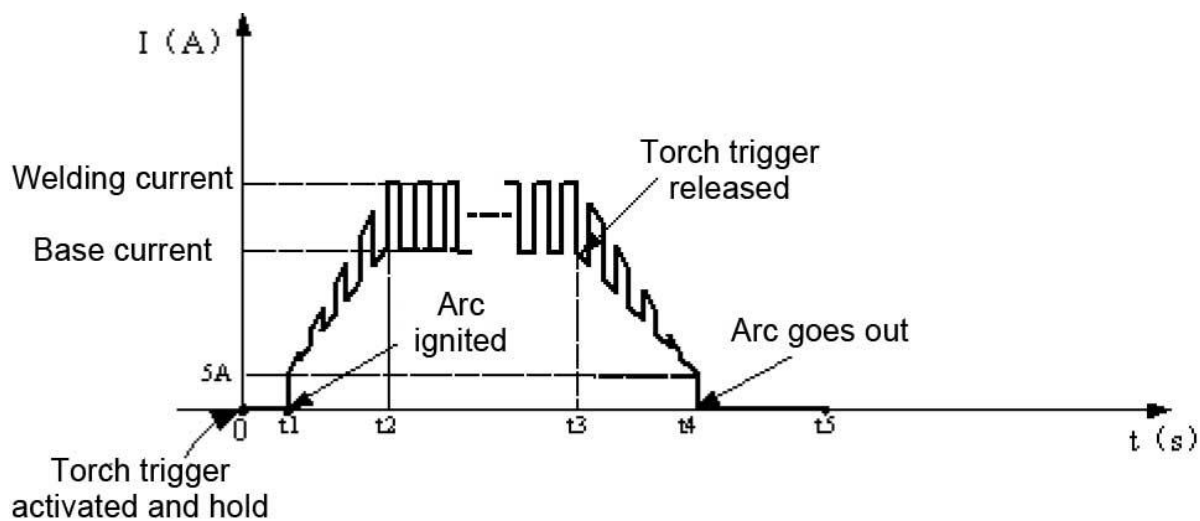
3.2 Welding using TIG process

Device is equipped with a HF arc ignition allowing to start the arc without touching the working material what reduces electrode wear to minimum.

In order to ignite the arc in the two-stroke mode, the electrode should be brought closer to the welded material at a distance of 2 millimetres and press the button in the torch handle to turn on the ionizer. After the correct initiation of the arc conduct the welding with button pressed. Releasing the button on the handle will start phase of current downslope and completion of the welding process.

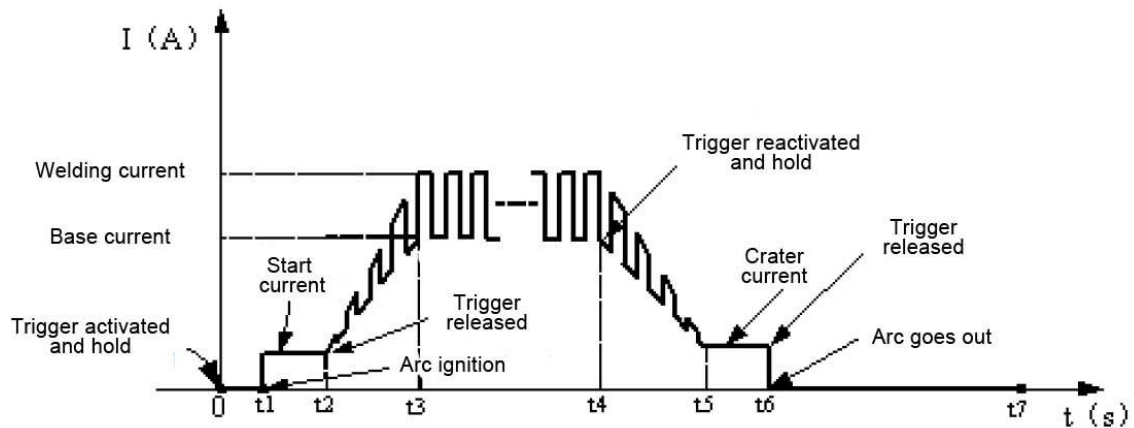
In order to ignite the arc in four-stroke mode, the electrode should be brought closer to the welded material for a distance of 2 millimetre and press the button on the torch handle to turn on the ionizer. After correct arc ignition you can release the button and conduct the welding with button released. To finish welding you must press and release the button on the handle.

3.3 TIG welding in 2T mode



- **0:** Press and hold torch trigger. Shield gas starts to flow
- **0 ~ t_1 :** Pre flow time
- **t_1 ~ t_2 :** Arc ignition. Current begins to ramp from start current value to welding current value
- **t_2 ~ t_3 :** Welding being conducted while holding the trigger.
- **t_3 :** Trigger has been released. Current is being reduced during downslope time
- **t_3 ~ t_4 :** Welding current reached the lowest set value. Arc goes out
- **t_4 ~ t_5 :** Shield gas post flow time
- **t_5 :** Shield gas valve has been closed. Welding ends.

3.4 TIG welding in 4T mode



- 0: Press and hold torch trigger. Shield gas starts to flow
- 0 ~ t_1 : Pre flow time. Adjustment range: 0s – 10s
- t_1 : Arc ignition, start current established
- t_2 : Trigger released. Current starts to ramp until welding current value reached.
- t_2 ~ t_3 : Upslope time duration.
- t_3 ~ t_4 : Welding beaming conducted.
- t_4 : Torch trigger activated. Welding current starts to decrease until crater current reached.
- t_4 ~ t_5 : Downslope time duration.
- t_5 ~ t_6 : Crater current duration.
- t_6 : Trigger released. Arc goes out, shield gas flows.
- t_7 : Shield gas valve shuts. Welding ends.

4. Technical specification

Power supply	230V
Welding current	MMA: 180A / TIG: 200A
Duty cycle	40%
No load voltage	59V
Electric protection	25A
Weight	18,5 kg
Dimensions	455 x 195 x 415 mm
Protection class	IP21
Pre flow time	0.1s – 1s
Post flow time	0s – 15s
Upslope time	0s – 10s
Downslope time	0s – 25s
Start current	10A – 200A
Welding current	MMA: 20A – 180A, TIG: 10A – 200A
Base current	5% - 95% of welding current
Crater current	10A – 200A
Pulse frequency	0,5Hz - 200Hz
Pulse width	10% – 90%
AC frequency	40Hz – 200Hz
AC Balance	30% - 70%
Torch type	T26

5. Protection class

The IP grade determines the extent to which the device is resistant to contamination and moisture. IP21 means that the device is suitable for indoor use and not suitable for use in the rain or extensive moisture conditions.

The manufacturer is not liable for damage caused by improper use of the device.

6. Before first use

6.1 MMA process

Welding cables should be connected to the sockets (3) and (6) on the device front so that the electrode holder is connected to the proper polarity. The polarity of the welding cable connection depends on the type of electrode used and is given on electrode packaging. The ground clamp should be securely attached to the welded material. Connect the device's plug to a 230V 50Hz mains socket.

6.2 TIG process

Welding torch is connected to negative polarity connector (-) torch control connector properly plugged into device, gas supply connected. Shield gas bottle connected to the device. Ground clamp connected to working material and plugged into positive polarity connector (+).

7. Troubleshooting

Symptoms	Remedy
Control panel is doesn't light up, fan not working, no output voltage	1. Check if the device is ON 2. Check power supply connection 3. Remove outer case to check if all plugs are connected inside the device.
Control panel lights up, fan not working, no output voltage	1. See if voltage isn't too high. Connect the device to 230V power supply, restart the device. 2. Power supply voltage not stable results in activating overload protection. Turn the device OFF wait 2 – 3 minutes before next use of the device. 3. Accidental turning the device on and then off again resulting in activation overload protection. Turn the device OFF wait 2 – 3 minutes before next use of the device. 4. Other multifunction. Contact service centre.
Control panel lights up, fan working, problem with arc ignition	1. Check TIG torch, replace used parts
Control panel lights up, fan working, O.C led indicator lights up, 'Err' prompt indicated	1. Device is overheating. Wait few minutes until device restart.
Low quality of welding joint when MMA welding. Electrode sticking	1. Check polarity of connected cables 2. Check if the coated electrode is dry or wet. If wet change the electrode. 3. Device is power supplied from a generator or using a too long extension cord. Connect directly to 230V power supply
Low quality of welding joint when welding TIG process	1. Change the torch parts if used. 2. Check if the gas supply is correct 3. Check gas regulator

8. Transporting and storage

Always store the devices in a dry, ventilated place, out of reach of children and bystanders. Protect the device against vibrations and shocks during transport.

9. Recycling

The packaging and device materials are suitable for recycling use. Disposal of the packaging and device must be done in accordance with local regulations. The packaging materials should be protected against children as they are potential source of danger.

10. Declaration of conformity

LVD 2006/95/EC
EMC 2004/108/EC
RoHS 2011/65/EU
EN 60974-1:2013-04
EN 60974-10:2010
EN 50581:2013-03

11. Warranty

The manufacturer of the device provides full warranty service for the power supply unit within 24 months from the day device was purchased. An individual warranty card is issued for each device. Warranty is valid only if all conditions listed in the instructions manual were fulfilled. If the device was used inappropriate or against instructions the warranty becomes invalid. Service centre does not cover the postage cost for sending the device for repairs or sending it back after repairs.

12. Service centre contact details

TECWELD Piotr Polak
ul. Szmaragdowa 21/3/6
41-943 Piekary Śląskie

serwis@tecweld.pl

tel: +48 323 869 428