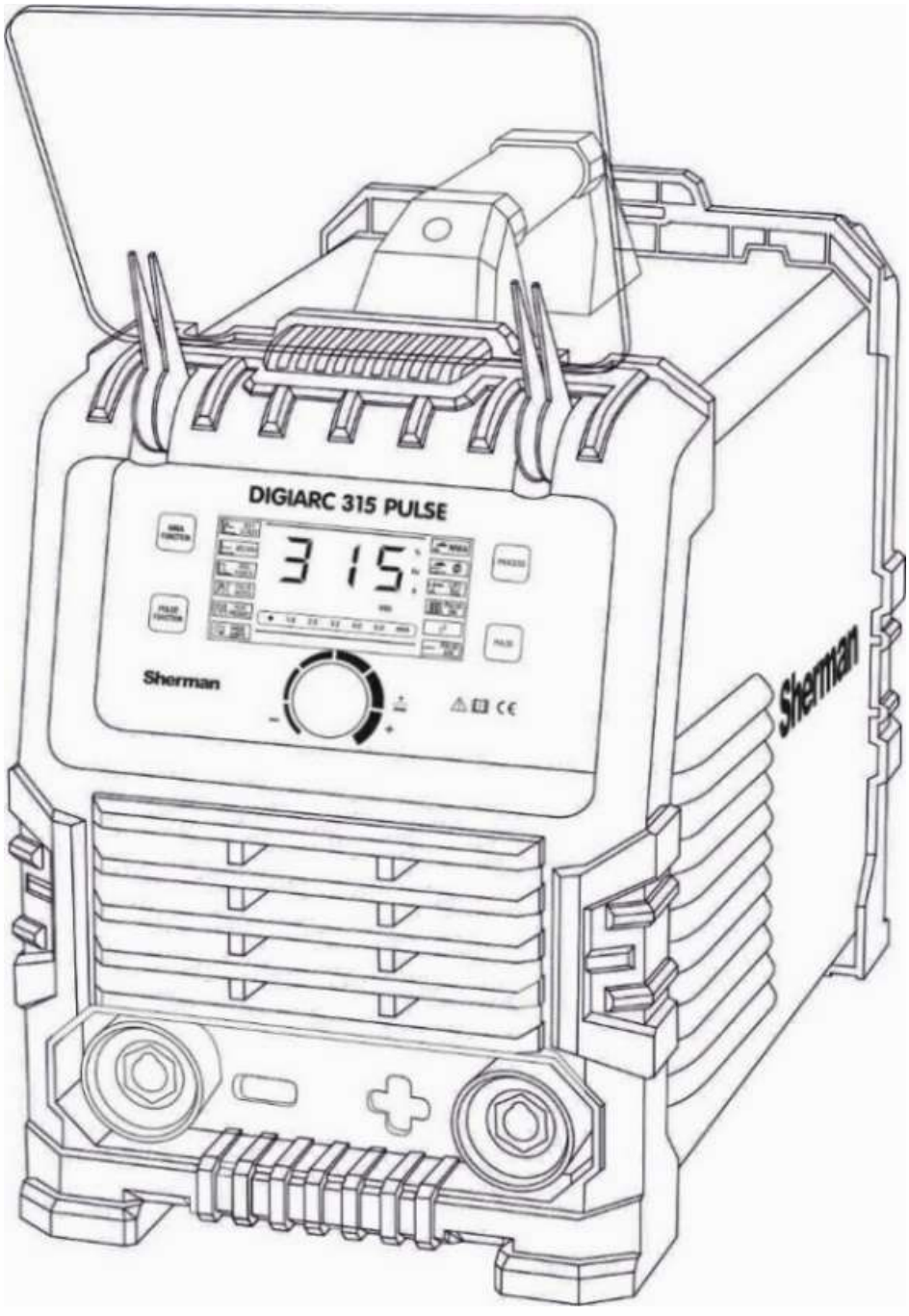
Sherman

ENG V1.2 04.11.2026

USER MANUAL

DIGIARC 315 PULSE INVERTER WELDING MACHINE



CE



WARNING!
Before installing and starting the appliance, please refer to this manual

1. GENERAL COMMENTS

The device can only be commissioned and operated after carefully reading these Operating Instructions.

Due to the continuous technical development of the device, some of its functions may be modified and their operation may differ in detail from the descriptions in the manual. This is not a fault of the device, but the result of progress and continuous modification work of the device.

Damage to the device caused by improper operation will void your warranty rights.
Any modifications to the welding machine are prohibited and will void the warranty.

2. SAFETY

Employees operating the device should have the necessary qualifications to perform welding work:
- they should have an electric welder license in the field of welding in gas,
- know the health and safety rules in the operation of electric power equipment, such as welding equipment and auxiliary equipment powered by electricity,
- know the rules of health and safety when operating cylinders and installations with compressed gas (argon),
- Be familiar with the contents of this manual and operate the appliance for its intended purpose.



WARNING



Welding may endanger the safety of the operator and other people in the vicinity. Therefore, special precautions must be taken when welding. Before starting welding, you should familiarize yourself with the health and safety regulations applicable at the workplace.
The following hazards exist during MMA and TIG electric welding:
- **ELECTRIC SHOCK**
- **NEGATIVE EFFECTS OF THE ARC ON HUMAN EYES AND SKIN**
- **EXPOSURE TO WELDING FUMES AND GLASSES**
- **BURNS**
- **EXPLOSION AND FIRE HAZARDS**
- **NOISE**

Electric shock prevention:
- connect the device to a technically efficient electrical system with proper protective grounding and electrical protection
- (additional protection against electric shock); other devices at the welder's workplace should also be checked and correctly connected to the network,
- install power cables when the device is switched off,
- Do not touch the non-insulated parts of the electrode torch, electrode and welded object at the same time, including the device housing,
- do not use torch and power cords with damaged insulation,
- in conditions of particular risk of electric shock (work in environments with high humidity and closed tanks), work with an assistant supporting the welder's work and watching over safety, use clothing and gloves with good insulating properties,
- if you notice any irregularities, you should contact competent people to remove them,
- It is forbidden to operate the device with the covers removed.

Preventing the negative effects of the electric arc on the eyes and skin of a person:
- Wear protective clothing (gloves, apron, leather shoes),
- Use protective shields or visors with a properly selected filter,
- Use protective curtains made of non-flammable materials and properly choose the colors of the walls that absorb harmful radiation.

Prevention of poisoning by vapours and gases emitted during welding from the electrode coating and metal evaporation:

- Use ventilation devices and exhausts installed in positions with limited air exchange,
- Blow fresh air when working in confined spaces (tanks),
- Use masks and ventilators.

Burn prevention:

- Wear appropriate protective clothing and footwear to protect against burns caused by arc radiation and spatter,
- Avoid staining the garment with greases and oils that may lead to its inflammation.

Explosion and fire prevention:

- It is forbidden to operate the device and weld in rooms at risk of explosion or fire,
- The welding station should be equipped with fire-fighting equipment,
- The welding station should be located at a safe distance from flammable materials.

Preventing the negative effects of noise:

- Use earplugs or other noise protection equipment,
- Warn of danger to people nearby.



WARNING!

Do not use a power source to defrost frozen pipes.

Before starting the device, you should:

- Check the condition of electrical and mechanical connections. It is forbidden to use torch and power cords with damaged insulation. Improper insulation of torch and power wires may result in electric shock,
- Ensure proper working conditions, i.e. ensure proper temperature, humidity and ventilation in the workplace. The appliance is not designed to work in the rain.
- Place the welding machine in a place that allows it to be easily operated.
  Welding machine operators should:
- have a license for electric welding using the MMA and TIG processs,
- know and comply with health and safety regulations applicable when performing welding work,
- use appropriate, specialized protective equipment: gloves, apron, rubber shoes, welding shield or visor with a properly selected filter,
- Know the contents of this instruction manual and operate the welding machine as intended.

Any repairs to the appliance may only be carried out by unplugging the plug from the power socket.
When the appliance is connected to the mains, it is not allowed to touch any components that make up the welding current circuit with your bare hand or through damp clothing.
It is forbidden to remove the external covers when the device is plugged in.
Any modifications to the welding machine on your own are prohibited and may impair safety conditions.
All maintenance and renovation work may only be carried out by authorized persons in compliance with the occupational safety conditions applicable to electrical equipment.
It is forbidden to operate the welding machine in rooms with a risk of explosion or fire!
The welding station should be equipped with fire-extinguishing equipment.
When you have finished working, the power cord of the appliance must be unplugged.

The hazards and general health and safety rules presented above do not exhaust the issue of welder's work safety, as they do not take into account the specifics of the workplace. An important complement to them are workplace health and safety instructions as well as training and instructions provided by supervision employees.

3. GENERAL DESCRIPTION

The DIGIARC 315 PULSE welding machine is designed for manual DC welding of structural steels with coated electrodes (MMA) and the TIG Lift process (in argon shielding, with arc ignition). The device also has a pulse welding function, offering full adjustment of pulse parameters, which allows for precise adjustment of the welding process to the type of material and technological requirements. The welding machine is equipped with adjustable Hot Start (which makes it easier to ignite the arc) and Arc Force (which increases its dynamics). The optional VRD function lowers the idle voltage, increasing user safety.
The device is made in inverter technology with the use of IGBT transistors and is equipped with digital control, which ensures high efficiency and stable operating parameters.
The welding machine is designed to work indoors or under a roof, without direct exposure to weather conditions.

4. TECHNICAL PARAMETERS

4.1 Welding Machine

Supply Voltage	AC 3x400V 50Hz
Rated Welding Current:/ Duty Cycle	315A / 60%
Rated no-load voltage	74 V (21 V with VRD)
Maximum power consumption	MMA: 23.1 A; TIG: 17.4 A
Fuse protection	16 A
Weight (without attachments)	10kg
Dimensions [mm]	445x223x326 mm
Degree of protection	IP 21S

4.1.1 Parameter control ranges

Welding Current	MMA: 20 – 315 A; TIG:15 – 315 A
Arc Force (MMA)	0 – 50 A
Hot Start (MMA)	0 – 50 A
VRD	ON / OFF
Base Current	20-315 A
Pulse width	5-95%
Pulse Rate	1-200 Hz

Duty cycle
The duty cycle is based on a 10-minute period. A 60% duty cycle means that a 4-minute break is required after 6 minutes of operation of the device. A 100% duty cycle means that the device can operate continuously, without interruptions.
Attention! Heating tests were carried out at the temperature of the surrounding air. The duty cycle at 40ºCwas determined by simulation.

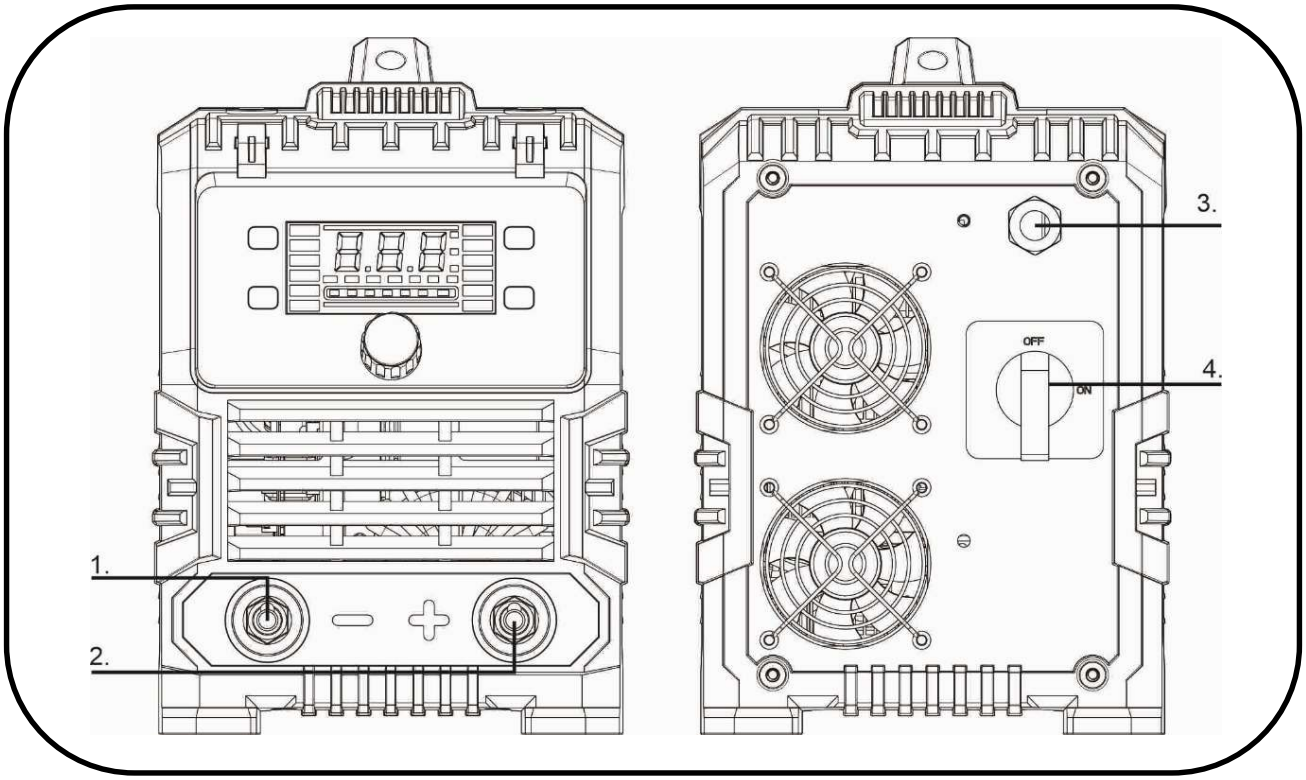
Degree of protection
IP determines the degree to which a device is resistant to solid and water contaminants entering the interior. IP 21S means that the device is suitable for indoor use.

Overheating protection
The IGBT module is protected from overheating by a protective installation that shuts off the power supply to the welder. Overheating is indicated by the message E02 on the display. After a few minutes, the device is cooled down to a temperature that allows it to be switched on again automatically. Do not disconnect the power supply during this time, as the continuously running fan cools the internal heatsinks of the device to reduce the temperature faster. After restarting, remember to limit the welding parameters in order to continue to operate the device continuously.

5. PREPARING THE DEVICE FOR OPERATION

If the device is stored or transported in freezing conditions, bring the device to a temperature above zero before starting work.

5.1 Connecting the Wires

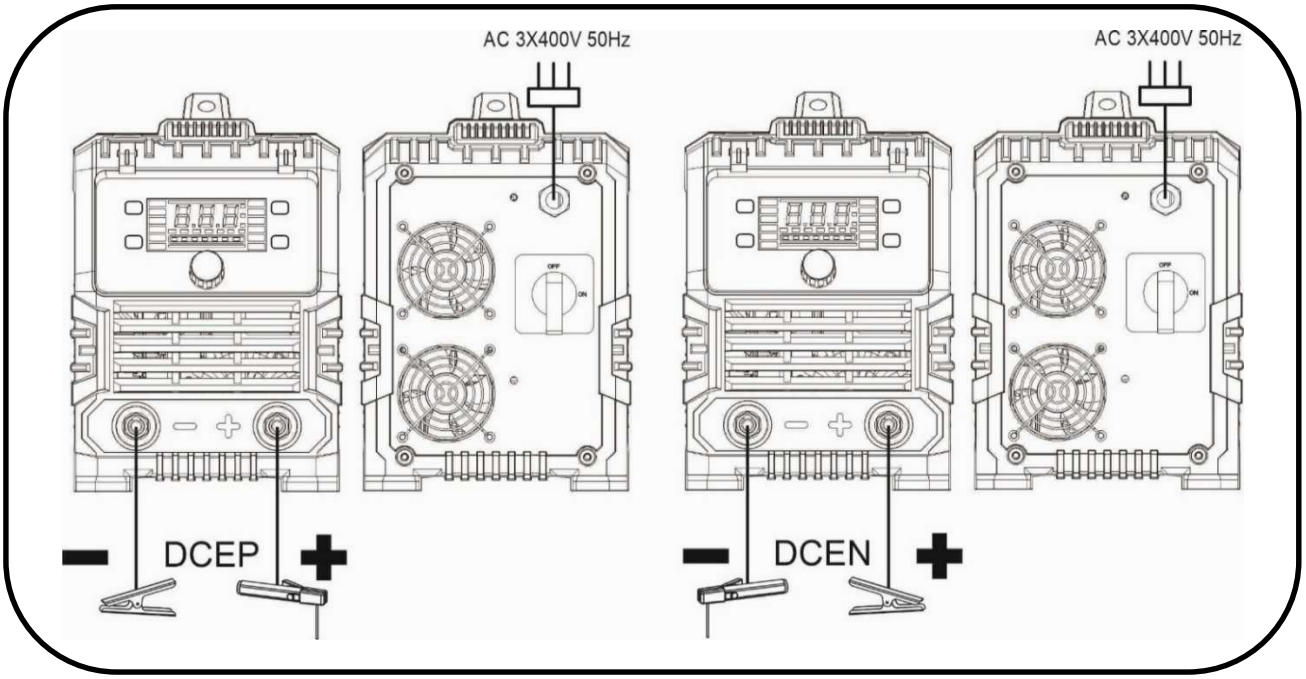


1. Socket "-"
2. "+" socket
3. Power cord
4. Power on/off switch

5.2 Connecting the Wires

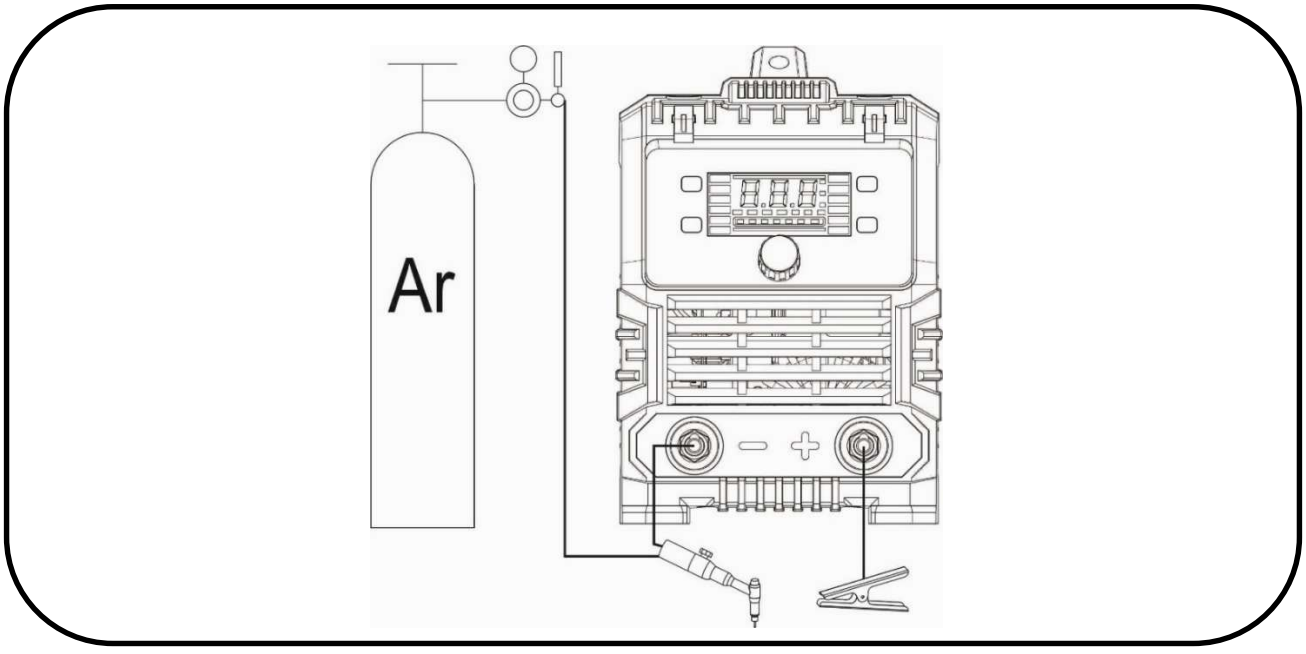
5.2.1 MMA process

Connect the ends of the welding wires to the sockets (1) and (2) on the faceplate so that the electrode torch has the correct electrode pole. The polarity of the connection of the welding wires depends on the type of electrode used and is indicated on the electrode packaging (DCEN negative polarity or DCEP positive polarity). The return wire clamp must be carefully fixed to the welded material. Connect the appliance plug to a 3x400V 50Hz mains socket.



5.2.2. TIG process

An additional TIG torch is required for TIG welding (not included in the standard equipment). The load capacity of the torch should be adapted to the welding current – for higher values, a 315 A torch is recommended, and above 200 A, a liquid-cooled torch with a radiator.
The torch should be connected to the negative terminal (1), the gas line to the reducer on the gas cylinder, and the positive terminal (2) to the welded material. The device is powered from a 3 × 400 V, 50 Hz mains.



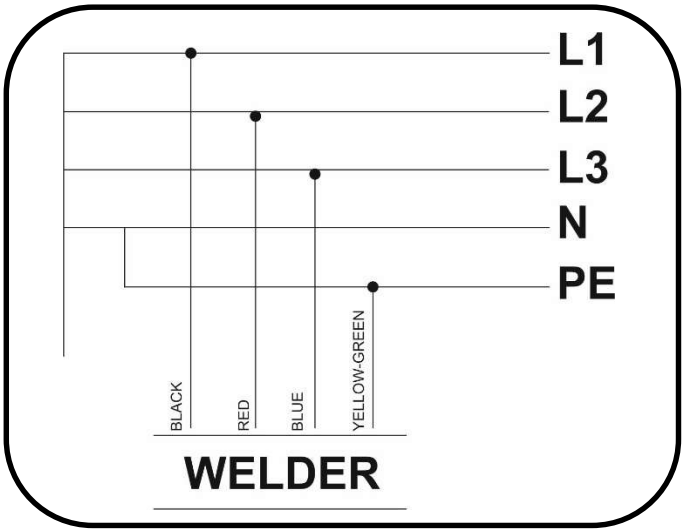
5.3 Shielding Gas Connection (TIG Process Only)

1. Fix the cylinder and secure it from tipping over.
2. Unscrew the cylinder valve for a moment to remove any debris.
3. Install the reducer on the cylinder.
4. Connect the reducer with the TIG torch gas hose with a hose.
5. Unscrew the cylinder and reducer valve.

5.4 Connecting to the power supply

1. The appliance should only be used in a three-phase, three-wire, grounded zero point power supply system.
2. The DIGIARC 315 PULSE inverter rectifier is adapted to work with a 3x400V 50 Hz network protected by 16 A delay-acting fuses. The power supply should be stable, with no voltage drops.
3. Before connecting the power supply, make sure that the power switch (4) is in the OFF position.

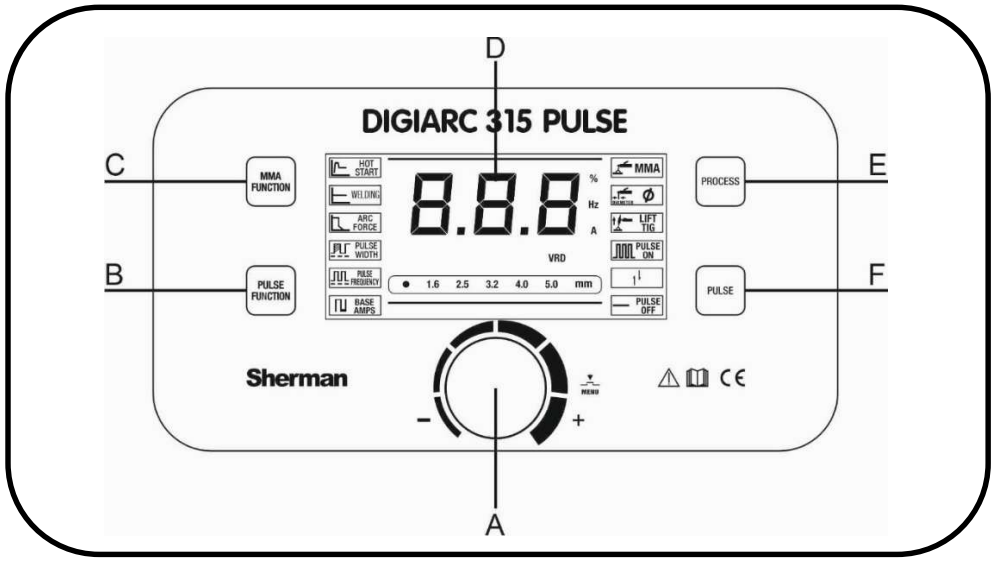
5.5 Connecting the Power Cords to the Three-Phase AC Plug



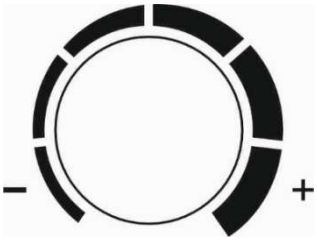
The yellow-green cable (protective wire) must be connected to the mains plug in the place marked with the symbol "PE" or "N".
The black, red, blue wires are the cables that supply power to the device (phase) and must be connected to the mains plug in the places marked with the symbols L1, L2, L3 or R1, S2, T3. The order in which the phase wires are connected to the plug in the marked places is arbitrary and does not cause any changes in the operation of the device.

6. OPERATION

6.1 Front Panel



A. Control knob.



The control knob is used to set the welding parameters. Rotating the knob allows you to smoothly change the selected values, allowing you to adjust the settings to the current operating conditions.

B. PULSE FUNCTION Button



The button is used to select pulse welding functions such as:



Pulse width - The duration of the pulse, allows you to adjust the depth of the intake. Increasing the width increases the depth of embedding, reducing reduces the amount of heat introduced into the material, reducing the risk of burning through thinner sheets or smaller components.
Adjustment range: 5 – 95 %



Pulse Frequency - The frequency with which the pulse current value between the welding current and the base current changes.
Adjustment Range: 1-200Hz



Base Current - The lower value of the current during pulse welding responsible for maintaining the stability of the arc and limiting the amount of heat supplied.
Adjustment range: 20 – 315 A

C. MMA FUNCTION Button



The button is used to select MMA welding functions such as:



Hot Start Function - It operates when the arc ignites, causing the welding current to temporarily increase above the value set by the welder. Hot Start is designed to prevent sticking
electrodes to the material and is a great facilitator when igniting the arc. In the case of welding small components, it is recommended to disable this function, as it may cause the weld material to burn out.
Adjustment range: 0 – 50 A



Peak current - The peak value of the current during pulse welding, responsible for the melting of the material and the ignition of the arc.
Adjustment range: 20 – 315 A



Arc Force function - This function allows you to adjust the dynamics of the arc. The shortening of the arc length is accompanied by an increase in the welding current, which stabilizes the arc. A decrease in value results in a soft arc and a shallower penetration depth, while an increase in value results in deeper penetration and the possibility of short arc welding. With a high value of the Arc Force function, you can weld while maintaining a minimum arc length and a high electrode melting speed
Adjustment range: 0 – 50 A

D. Display



The display is part of the visualization of the process data and presents the current value of the welding current and the values of the welding function parameters during their adjustment (m.in. in units %, Hz, A). In addition, it indicates the activation status of the VRD function via an appropriate indicator on the screen.

E. PROCESS button



The button is used to select welding modes:

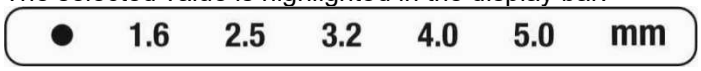


Switches to MMA (electrode coated) welding mode



Diameter function - this function allows you to select the diameter of the electrode in the device settings. Based on the set diameter, the device automatically selects the appropriate welding parameters.

The selected value is highlighted in the display bar.



Thickness Electrodes	Φ2,5	Φ3,2	Φ4,0	Φ5,0
Electricity	70-100A	110-140A	170-220A	230-280A



Switches to TIG (tungsten electrode) welding mode

F. PULSE button



The button allows you to enable/disable pulse welding.



Backlight indicates that the welding pulse is on



Backlight informs about the welding pulse off

G. VRD function

The VRD function lowers the voltage in the no-load state. The correct voltage value is only restored just before the arc is ignited. This minimizes the risk of electric shock, but in some cases it can make it difficult to ignite the arc.
To set the VRD, hold down the MMA Function button (C) and then turn the control knob (A) to turn the function on or off.

7. ARC INITIATION

7.1 MMA process

1. Touch the electrode to the welded material, rub briefly and tear off.
2. In the case of arc initiation with electrodes, the coating of which forms non-conductive slag after solidification, pre-clean the tip of the electrode by hitting the hard surface several times until metallic contact with the welded material is achieved.

7.2 TIG process

1. Unscrew the valve in the TIG torch to allow the shielding gas to escape.
2. Lightly touch the welded material with the electrode, detach the electrode from the welded material by tilting the torch so that the gas nozzle touches the material.
3. Once the arc is ignited, straighten the torch and start welding.

8. BEFORE YOU CALL FOR SERVICE

In the event of malfunction of the device, before sending the welding machine for service, you should check the list of basic failures and try to fix them yourself.
Any repairs to the appliance may only be carried out by unplugging the plug from the power socket.
Attention! The device is not sealed and the user can remove the welding machine housing to remove minor malfunctions.
ATTENTION! The welding machine is equipped with a Fan Stop function that turns off the fan a few minutes after welding is finished and the device has cooled down. The fan restarts under load.

Symptoms	Cause	Procedure
Lack of power, malfunction signal, or malfunction of the device	No connection or loose plug inside the device	Check and correct the connections of all electrical plugs inside the device
The arc does not ignite	Lack of proper contact of the ground cable terminal	Improve the contact of the ground terminal
When the power is turned on, the displays and LEDs do not light up	No supply voltage	Check the fuses on the mains connection
The display indicates E02 the fan is running,	The device has overheated.	Wait a few minutes for the appliance to cool down. Do not turn off the power. When the warning sign disappears, the start menu will be displayed.
Fan not working	The fan has been blocked by a bent cover	Straighten the fan cover
Unsatisfactory weld quality in MMA welding, the electrode sticks to the welded material	Incorrect polarity of the connection of welding cables	Connect the welding wires correctly
	Damp electrode.	Replace the electrode
	The welding machine is powered by a generator or through a long extension cord with too small a cable cross-section	Connect the device directly to the mains
Unsatisfactory weld quality in TIG welding	Check the quality of the materials and consumables used, especially the tungsten electrode and shielding gas	Replace consumable parts, replace shielding gas with higher quality
	Shielding gas does not flow out or flows out with insufficient intensity	Check the cylinder reducer, gas supply hose, improve the connection of the hose with the fittings and the condition of the quick connectors

9. OPERATING INSTRUCTIONS

The operation of the DIGIARC 315 PULSE welding machine should take place in an atmosphere free of corrosive components and high dust. Do not place the appliance in dusty areas, near running grinders, etc. Dust and metallic swarf contamination of control boards, cables and connections inside the device can lead to an electrical short circuit and, as a consequence, damage to the welding machine.
Avoid use in environments with high humidity, especially in situations where dew occurs on metal components. In the event of dew on metal elements, e.g. after introducing a cold device into a warm room, wait until it is completely dry and the device warms up to ambient temperature. Running a cold welding machine under these conditions may cause damage to the welder. It is recommended that the welding machine be placed under a roof in order to protect it from adverse weather conditions.
The DIGIARC 315 PULSE should be operated under the following conditions:

- changes in the rms value of the supply voltage not greater than 10%
- ambient temperature from –10°C to +40°C
- atmospheric pressure 860 to 1060 hPa
- relative humidity of atmospheric air not exceeding 80%
- altitude up to 1000m above sea level

10. MAINTENANCE INSTRUCTIONS

Before each start-up

- Check the power cord for damage and looseness in the plug
- Inspect the enclosure – pay attention to signs of overheating at the ventilation openings
- Make sure the air inlets and outlets are unobstructed
- Check the correct connection of the ground cable and the welding torch
- Check the condition of the electrode (MMA or tungsten TIG) and consumables

Post-work activities

- Allow the fan to cool down fully
- Switch off the welding machine and unplug it
- For TIG: close the cylinder valve and drain the pressure from the regulator
- Clean the TIG torch and wires from debris
- Store wires without tight turns

Every week or every approx. 20-30 hours of work

- Clean the ventilation grilles with compressed air (low pressure)
- Check the condition of the power outlets (no backlash or burnout)
- Check the stability of the arc ignition (MMA and TIG Lift)

Monthly maintenance

- Open the case and remove dust and metallic deposits
- Check fan operation (noise, airflow)
- Inspect internal wires and connectors
- In TIG mode: check the tightness of the gas system and the regulator

Maintenance every 6 months

- Perform a functional test of MMA and TIG Lift modes (also with pulse function)
- Check the thermal protection
- Check the insulation condition of the power cord

Maintenance once a year

- Recommended inspection at an authorized service center
- Current Output Parameter Control
- Checking power and cooling components
- Replacement of worn fixtures and cables

Symptoms requiring service intervention

- Difficulty igniting the arc (MMA or TIG Lift)
- Unstable arc despite correct settings (also in pulse mode)
- Automatic shutdown of the device
- Burning smell or unusual fan operation
- Gas flow problems in TIG mode

Damage resulting from operating the welding machine under improper conditions and failure to follow maintenance recommendations are not covered by warranty repairs.

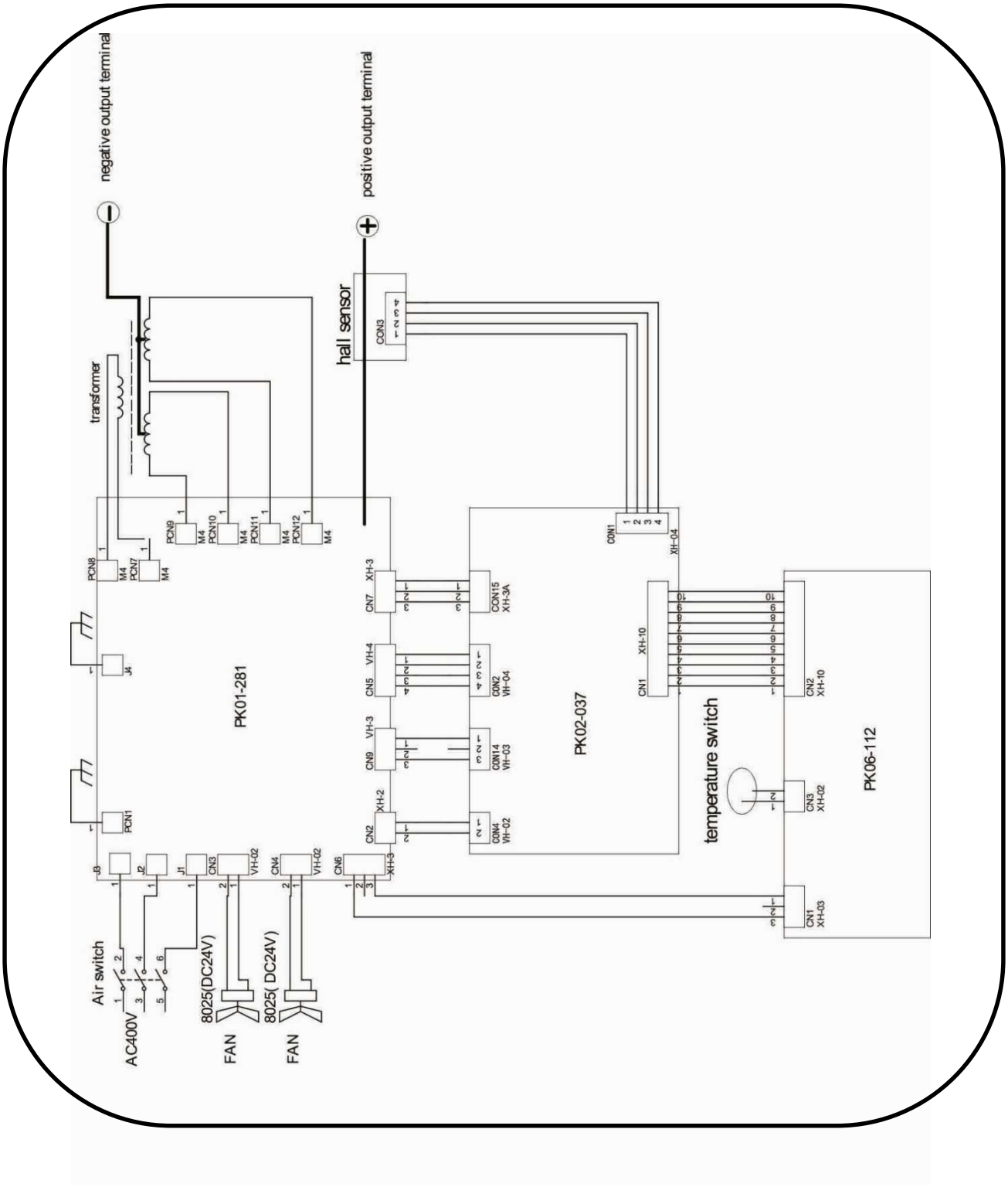
11. STORAGE AND TRANSPORT INSTRUCTIONS

Store the appliance at a temperature of –10°C to +40°C and a relative humidity of up to 80% free of corrosive fumes and dust. Transport of packaged equipment should be carried out by covered means of transport. During transport, the packaged device should be protected against movement and provided with the correct position.

12. SET SPECIFICATION

1. Welding Machine	1 pc.
2. Clamp Clamp Ground Wire	1 pc.
3. Electrode wire	1 pc.
4. User Manual	1 pc.
5. Packaging	1 pc.

13. ELECTRICAL DIAGRAM



14. WARRANTY

The warranty is granted for a period of 12 months for business entities, but excluding warranty claims, or 24 months for consumers from the date of sale.
The warranty will be respected upon presentation by the complainant of proof of purchase (invoice or receipt) and a warranty card with the product name, serial number, date of sale and stamped point of sale.
To order a warranty repair, you need to fill in the form on the www.tecweld.pl website in the SERVICE tab. On the basis of the notification, the device will be transported to the service by a courier company. Devices sent in any other way at TECWELD's expense will not be accepted!
The welding machine must be supplied with the welding torch. Complaints about a device without a welding torch will not be considered.
The device sent for complaint must be packed in the original cardboard box, secured with original polystyrene fittings. TECWELD is not responsible for damage to the welding machine resulting from transport.



If you are going to dispose of this product, do not throw it away with ordinary household waste. According to the WEEE Directive (Directive 2012/19/EU) in force in the European Union, separate disposal processs must be used for used electrical and electronic equipment.
In Poland, in accordance with the provisions of the Act of 11 September 2015 on Waste Electrical and Electronic Equipment, it is prohibited to place waste equipment marked with the crossed-out bin symbol together with other waste.

The user who intends to dispose of this product is obliged to take the waste electrical and electronic equipment to a waste equipment collection point. Collection points are run, m.in, by wholesalers and retailers of this equipment and by municipal organizational units conducting waste collection activities.
The above statutory obligations have been introduced in order to reduce the amount of waste generated from waste electrical and electronic equipment and to ensure an appropriate level of collection, recovery and recycling of waste equipment. The correct implementation of these obligations is especially important when there are hazardous components in used equipment that have a particularly negative impact on the environment and human health.

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