Shielded Metal Arc Welding Machine

USER MANUAL

Welding method and specifications

MMA Welding

DC 3 Phase

380-400V 2.5-5.9 mm

2 years limited spare part warranty (Clamps and cables excluded)
OE

“AT” UYGUNLUK BEYANI
“EU” DECLARATION OF CONFORMITY

İmalatçı / Manufacturer
Kaynak Tekniği Sanayi ve Ticaret A.Ş.

Ürün / Product
Örtülü Elektrod Kaynak Makinesi - MMA Welding Machine

Marka - Model / Brand - Model
Askaynak® Inverter 255-ULTRA

Yukarıda tanımlanan beyanın nesnesi, ilgili uyuşturulmuş AB mevzuatı ile uyumludur.
The object of the declaration described above, is in conformity with the relevant union
harmonisation legislation.

Direktifler / Directives
2014/35/EU, 2014/30/EU

Uyuşturulmuş Standartlar / Harmonised Standards
TS EN 60974-1:2013, TS EN 60974-10:2014

Sertaç ÖZEN
Teknik Hizmetler Müdürü - Technical Services Manager
Kocaeli, TURKEY
03.10.2016

Bu uygunluk beyanı yalnızca imalatçının sorumluluğunda-runner dahilinde düzenlenir.
This declaration of conformity is issued under the sole responsibility of the manufacturer.

CE sertifikası 2015 yılında eklenmiştir.
CE mark was first affixed in 2015.

Kaynak Tekniği Sanayi ve Ticaret A.Ş.
TOSB Otomotiv Yan Sanayi İhtisas Organize Sanayi Bölgesi
2. Cadde, No: 5, Şekerpinar 41420 Çayırova, Kocaeli - TURKEY
Contents

Safety in Welding ................................................................. 38 - 43
General Characteristics ....................................................... 44
Installation and Operator Instructions ................................. 45
Preparations for Work .......................................................... 46 - 48
Maintenance and Troubleshooting ..................................... 49 - 53
Electromagnetic Compliance .............................................. 54 - 56
Efficient Use in Terms of Energy Consumption .................. 56
Accessories Delivered with the Machine .............................. 57
Unpacking ............................................................................ 57
Transportation and Storage Conditions .............................. 57
De-commissioning the Welding Machine .............................. 57
Spare Parts .......................................................................... 58 - 59
Electrical Connection diagram .......................................... 60 - 61
Warning Label and Technical Specification Table ............... 62

MANUFACTURER

Kaynak Tekniği Sanayi ve Ticaret A.Ş.
TOSB Otomotiv Yan Sanayi İhtisas Organize Sanayi Bölgesi
2. Cadde, No: 5, Şekerpınar 41420 Çayırova, KOCAELİ - TURKEY
Tel: (+90 262) 679 78 00 Fax: (+90 262) 679 77 00
www.askaynak.com.tr

Manufactured in People’s Republic of China by
KAYNAK TEKNİĞİ SANAYİ ve TİCARET A.Ş.
Safety in Welding - 1

This machine has been designed for MMA welding works with coated electrodes. Can not be used for any other purpose.

This machine must absolutely be used by authorized personnel, who is trained welder. Please make sure that all the operations, maintenance repair procedures are carried out by authorized persons. Before operating the machine read and understand this user manual. Not complying with the instructions given in the user manual may result in serious injuries, loss of life and damages in the machine. Please read the cautions stated with below symbols. Kaynak Teknigi Sanayi ve Ticaret A.S. is not responsible for damages caused by improper installation, improper storage or abnormal operation.

**WARNING:** This symbol means that the instructions provided in the user manual must absolutely be obeyed in order to prevent serious injuries, loss of life and severe damage to the machine. Please protect yourself and those around you.

**READ AND UNDERSTAND THE INSTRUCTIONS CAREFULLY:** Read and understand this manual before operating this equipment. Not complying with the instructions given in the user manual may result in serious injuries, loss of life and damages in the machine.

Welding works should not be performed in a careless, pre-occupied, tied or sleepless state.

Arc welding is a safe application only when adequate measures against any potential hazards are taken. If those measures are missed or ignored, it might result in serious or probably fatal electrical shock, exposure to excessive amounts of smoke and gases, arc radiation, fire or explosion etc. hazards.

Note: For detailed information on safety in welding, please read the ANSI Z49.1 standard.

**Protective Equipments:**

The welding operators should wear clothing for protection against risk of burning. Welding burns caused by the contact of the splashing sparks with the skin are one of the most common risks encountered.

Skin burns is one of the most common risks encountered caused by welding sparks.

Woolen clothing should be preferred due to the resistance against fire. Because the synthetic clothing melts when exposed to heat, they must not be worn.

The protective clothing should be kept away from grease and oil. Such materials may increase the flammability.

The shirt and pant sleeves should not be folded. Because the sparks of molten metal may fall in to the folds. The pants should be kept over the work boots and not inserted in. Otherwise the sparks of molten metal may fall in to the boots.
The other protective materials to be used in hazardous circumstances are as follows:

- Fire resistant clothing,
- Leg Dusters,
- Aprons,
- Leather arm covers and shoulder cloaks,
- A cap worn under the welding mask.

Gloves made of fire-resistant materials such as leather etc. must be worn without fail, in order to protect the hands against burns, cuts and scratches. Additionally, the gloves made of fire-resistant materials such as leather etc. have to be robust and dry to ensure protection against electrical shock.

**Noise:**

Ear protection should be used for protecting the ears against sparks and molten metal as well as loss of hearing caused by the noise of the arc welder. When the noise level in the work environment reaches a disturbing level for the ears and causes head ache, a hearing problem may be experienced. Ear protection must be used immediately in such cases.

The loss of hearing may not be evident until a test is conducted, but treatment after that point may also be too late.

**Importance and Cleanliness of Working Environment:**

The order and cleanliness of the work environment is equally important as maintaining the welding machine.

The degree of hazard increases along with the number of the employees. Despite reading the warning notes about the machine and taking the measures required, someone tripping on a live cable in the work environment could still create the risk of electric shock, contact with hot metals or falling down.

All the equipment, cables, hoses and gas cylinders must be kept away from the floors, corridors and stairs etc. with heavy traffic. The environment must be kept orderly and neat and the work environment must be cleaned after the welding works are finished. This will improve the work efficiency along with work safety. Moreover, somebody in the work environment my accidentally step in to the welding bath; therefore barriers should be placed around the area during the welding works.

**GAS CYLINDER MAY EXPLODE:** Only the gas cylinders specifically manufactured for welding purposes containing compressed gas should be used. Make sure that correct regulators for the gas and cylinder pressure used are installed properly. The cylinders must be kept in an upright position and attached somewhere with the safety chain. Do not displace the cylinders without installing the safety caps. Make sure that the electrodes, electrode handles, work clamps and all types of parts carrying voltage do not come in touch with the cylinders. Store the cylinders away from risky places, where heat and sparks are generated.

**WELDED MATERIAL MAY BURN:** Intense heat may be released while welding. Contact with the hot surfaces and materials may cause serious burns. Gloves must be used without fail while touching or carrying such materials.
ELECTRIC SHOCK CAN KILL: Electrical shock is the most serious risk that the welding operator might face frequently. Contact with the live electrical materials can lead to injuries, death, electrical shocks or sudden falls by reflex. Do not touch the electrode, grounding wire or work piece under voltage attached to the machine. Insulate yourself against contact with the electrode, grounding wire or work piece. Do not touch the plug’s metal pins after disconnection from the power. It contains risk of electrical shock.

The electrical shock risk associated with the welding machine is divided into two categories:

- Primary voltage shock (e.g. 230 - 460 V)
- Secondary voltage shock (e.g. 20 - 100 V DC)

The primary electrical shock is much more dangerous, since the voltage is higher than the welding voltage. Primary electrical shock may happen due to contact with a live part in the machine while the body is grounded when there is power on the machine. Please do not forget that the ON/OFF switch on the machine may not cut off the electricity connected to the machine itself. In order to get a safe disconnection from mains supply; switch off the fuse and disconnect the input cables from the connection terminals.

Never remove the side covers of the machine and in case of a failure, have an authorized technician check and repair the machine.

Ground the machine and work piece without fail.

Do not use un-insulated cables and electrode holders, replace them with new ones. Never immerse the electrodes in water for cooling.

Do not touch the electrode cables connected to two separate welding machines; the voltage carried may be equal to the sum of the open circuit voltage of both machines.

Please use a safety harness without fail while working on high places to prevent falling because of an electrical shock.

FUMES AND GASES MAY BE DANGEROUS: The welding works may cause the emission of smoke and gas hazardous for human health. In order to protect the user against this hazard, the smoke or gases have to be removed by providing adequate ventilation.

Generally short-term effects such as burns in the face and skin, dizziness, nausea and fewer etc. may be experienced during the welding operations depending on the exposure length to the smoke and amount of smoke present. Longer exposure to smoke may lead to the accumulation of iron in the lungs and may cause functional disorders. Bronchitis and lung fibrosis are the most frequently seen effects.

Some electrodes may contain certain alloys that make special ventilation compulsory. The labels on the products that require special ventilation should not be ignored and the “Material Safety Data Sheet (MSDS)” must be read carefully. Gas masks may have to be used while welding with such materials.

Keeping the head out of the smoke cloud is one of the easiest ways of protection against hazardous gases and smoke.

Do not breathe the smoke and gases and use mechanical air circulation and ventilation apparatus; and if the ventilation is still insufficient, gas masks should be used.
THE WELDING ARC MAY CAUSE BURNS: During the welding operations, appropriate masks, filters and protective lenses should be used for protecting the eyes against the light emitted by the welding arc and the flying particles. The skin should be protected using fire-resistant clothing. The people in the vicinity should be protected by panels made of fireproof materials, they should not look at the welding arc directly and must be warned against effects of the arc light.

Even short periods of exposure to the UV rays may cause eye burns called “welding dazzle”. The person affected may not be aware of the “welding dazzle” for hours after exposure, which can become extremely disturbing in the end and even cause temporary loss of sight. Normally the eye dazzle is a temporary condition, but long term exposure of the eyes to the UV rays may result in permanent damages in the eyes. As protective measures besides not looking at the welding arc, a protective welding mask with appropriate filtering lens should be used.

The following table may be used for selecting the proper filter against arc welding with shielded electrodes.

<table>
<thead>
<tr>
<th>Welding Method</th>
<th>Electrode Diameter (mm)</th>
<th>Current Range (Amper)</th>
<th>Protective Filter lower limit</th>
<th>Protective Filter recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covered Electrode</td>
<td>&lt; 2.4</td>
<td>&lt; 60</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Arc welding</td>
<td>2.5 - 4.0</td>
<td>60 - 160</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>4.0 - 6.4</td>
<td>160 - 250</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>&gt; 6.4</td>
<td>250 – 550</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>

From ANSI Z49.1-2005

WELDING SPLASHES MAY CAUSE FIRE OR EXPLOSION: Keep the flammable materials away from the welding areas and maintain a fire extinguisher at an easily accessible place. The splashes and hot materials ejected by arc welding may fly around easily even from the narrowest opening. Do not perform any welding on any barrel, container or material until making sure that the measures required for removing the flammable and noxious gases from the environment are taken. Never operate the machine in places, where flammable gases, vapors or fluids may be present.

Keep the possibility of fire risk in mind as arc welding may produce very high temperatures.

The welding arc temperature may reach 5000°C, but heat alone is not a reason for fire generally. The fire risk is created by the sparks and molten metal particles splashing around. Such metal splashes may reach ten meters of distance. Therefore, keep the easily flammable materials away from the welding environment. Furthermore, make sure that your work piece does not contact any material that might flame as it heats up. The materials that might catch fire when heated are divided in to three groups as fluids (gasoline, oil, paint, thinner, etc.), solids (wood, cardboard, paper etc.) and gases (acetylene, hydrogen etc.)
Watch the welding environment. If there is any systems using gasoline or hydraulic oil present and if the welding environment cannot be moved elsewhere, place a fire-resistant barrier in between. If you are welding at a high place or on a ladder, make sure that no explosive or flammable materials are stored below. Moreover do not forget the possibility of slag and sparks falling on the people around.

Special measures have to be taken while welding in a dusty environment. The dust particles may catch fire and cause a sudden fire or explosion. If you have no idea about the flammability or volatility of the ambient dust, do not start the welding or cutting works before obtaining the approval of an expert or authorized person.

Before starting welding, check if the welding piece has a flammable coating that could catch fire when heated.

When you take a pause during the welding works, make sure that the electrode handle does not touch the ground or work piece.

If you are carrying out welding works within ten meters from flammable materials, keep an observer with you. The observer should watch where the sparks and splashes are falling around and should have easy access to the fire extinguishers if necessary. Once the welding work is finished, check the welding area for any trace of smoke for about half an hour with the observer.

The first rule during a welding-related accident is not to panic just like any other emergency situation. Depending on the magnitude of the fire, activate the fire alarm, notify the fire department, turn off the welding machine and leave the area as fast as possible through the fire exits.

**ELECTRICAL EQUIPMENT:** Before starting to work on the machine, cut the power supply by means of the switch located in the fuse box. Make the electrical connections in conformity with the rules currently in force.

**GROUNDING:** For your safety and trouble-free operation of the machine, it should be connected to a power outlet with proper power supply and grounding cables.

**ELECTRICAL EQUIPMENT:** Check the condition of the electrical cables such as supply and welding cables regularly. In case of any irregular condition, replace the defective parts immediately. In order to prevent any arc flashing and fire risks, do not leave the electrode clamp (handle) on the welding table or any surface in contact with the grounding clamp.

**ELECTRIC and MAGNETIC FIELDS MAY BE HAZARDOUS TO THE HUMAN HEALTH:** The current passing through the conductors creates an electromagnetic field. The electromagnetic field thus formed may have an effect on the pace-maker etc. equipment. The welders, who use pace-makers, should consult with a physical therapist before working with the machine. The electrical and magnetic fields could also cause other unknown health—related problems.

**MOVING PARTS MAY CRUSH YOUR HANDS:** Do not place your hands on or near the fan and the moving parts of the machine.

**COMPLIANCE WITH CE NORMS:** This machine has been manufactured in compliance with the European Instructions.

**SAFE OPERATION:** This machine is suitable for carrying out welding works in the places with high probability of electrical shock.
EXTRA SAFETY MEASURES:
Applying the safety measures under certain circumstances may become difficult; nonetheless, the rules set forth should be abided with. Keep your gloves dry and if that becomes impossible, keep a spare pair with you.

Stand on a non-conducting material such as plywood, plastic mat etc. Insulate your body from the welding piece.

If you have to carry out welding works with high possibility of electrical shock such as in a moist environment, in wet clothing, grids or scaffolding on your knees or leaning out or, where contact with the ground is prevented, prefer to use the machine types specified below:

- Semi-automatic fixed DC voltage machines,
- DC manual arc welding machines,
- Reduced voltage controlled AC welding machines.

The condition of the electrode handle and cables is very important. The plastic or fiber insulator on the handle prevents contact with live parts. Always check the condition of the handle before operating the welding machine. Replace the old and worn out handles and do not try to repair. Conduct the same checks on the cables as well and since replacing the cable may be costly, repair them with a high-resistance heat shrink etc. Check the insulation at all times before operating the machine.

If you feel an electrical shock, remember that this is a warning. In such a case, before continuing with the work, check your working habits and work environment in terms of electrical shock risks. In case of any abnormal situation, do not continue with welding without taking the measures required. If you cannot identify the source of the problem, have it checked by an authorized specialist.

PRECAUTIONS FOR THE OTHER PERSONS IN THE WORK AREA:
The cleanliness and order of the work area are very important for you and the other people in the area both. Other welders or people walking around may step into your welding bath accidentally or trip on the cables and fall inviting the risk of an electrical shock to you and the other people around. Furthermore, the welding splashes may cause risk of burns to the other people in the vicinity.

Segregating the welding site with a fire-proof barrier could reduce the above risks.

Warn other people in the work area about using work safety equipment. In particular if they have to work in a welding site, warn them about wearing fire-resistant work outfits, work goggles, insulated shoes and gloves etc. remove the people, who do not heed your warnings, from the work site.

If you are welding on a high place, use warning signs showing the risk of welding splashes falling down on the people below.

Electromagnetic fields may be dangerous for the pace-makers.

Warn the people in the vicinity, regardless of welders or otherwise, regarding the above and post warning signs. Tell such people that they should consult a doctor before entering the welding area. The welding sites pose high risk of electrical shocks. Other people may face the risk of an electrical shock by passing on a cable while working around. Do not use un-insulated welding cables and pass the cables through insulated, plastic ducts where possible.

INFORMATION ABOUT THE RESIDUAL RISKS:
Askaynak Inverter 255-ULTRA welding machine has been designed and manufactured in conformity with the safety rules setout by the TS EN 60974-1 standard. All the measures required for eliminating the safety risks involved have been taken and the measures to be taken by the users and the rules to be observed have been indicated in the user manual. Eliminating the said risks is not possible if due care is not exercised and the safety measures prescribed are not taken. Such risks may start from slight injuries, but the risk of explosion may become fatal for multiple people as well. Ensuring the safety of the welding area is the responsibility of the user and if the said measures are not taken properly, the work must be stopped and the authorized persons must be notified.
General Characteristics

The ASKAYNAK Inverter 255-ULTRA is an inverter type MMA welding machine manufactured using the latest PFC (Power Factor Correction) technology. Starting from the 1980s, the welding machines in the market have been sized down thanks to the inverter arc welding machines appearing in the market while increasing the efficiency. However, many semi-conductor devices (i.e. diodes, transistors, IGBTs etc.) used in such machines chop the mains voltage for use, hence distorting the wave-form of the mains supply that result in harmonic waves. The total current drawn by the machine from the mains (RMS) includes all such harmonic components. With the - technology, active PWM technique is used for filtering out the harmonic components drawn from the mains although they are not used by the machine.

The Askaynak Inverter 255-ULTRA - reduces the amount of energy used, hence the operating costs, for the consumers while reducing the pollution in the transmission and distribution lines, contributing to the sustainable development through the reduction of power losses.

The advantages offered by the ASKAYNAK Inverter 255-ULTRA welding machine are:

1- Smooth DC current, high-quality welding capability and stable arc,
2- Increased energy efficiency thank to the - feature.
3- Ease of controlling the welding bath in dissolved (molten) state.
4- Ease of electrode ignition by means of the sufficient open-circuit voltage.
5- Light and easy to carry, simple installation.
6- Ease of welding with the arc power and hot start settings.

<table>
<thead>
<tr>
<th>Input</th>
<th>Welding Current Output Rates</th>
<th>Output Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage 380 - 400 V / 3 Phase</td>
<td>Power Consumption 9.5 kVA (30% operation cycle)</td>
<td>Maximum Open Circuit Voltage 47 V (DC)</td>
</tr>
<tr>
<td>Power Factor (cos θ) : 0.96</td>
<td>Frequency 50/60 Hertz (Hz)</td>
<td></td>
</tr>
<tr>
<td>Duty Cycle (10 minutes period)</td>
<td>Output Current (Amper)</td>
<td>Output Voltage (Volt)</td>
</tr>
<tr>
<td>% 30</td>
<td>250 A</td>
<td>30.0 V (DC)</td>
</tr>
<tr>
<td>% 60</td>
<td>180 A</td>
<td>27.2 V (DC)</td>
</tr>
<tr>
<td>% 100</td>
<td>150 A</td>
<td>26.0 V (DC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Range</th>
<th>Physical Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding Current Range 30 - 250 A</td>
<td>Height 280 mm</td>
</tr>
<tr>
<td></td>
<td>Width 165 mm</td>
</tr>
<tr>
<td></td>
<td>Length 440 mm</td>
</tr>
<tr>
<td></td>
<td>Weight 13.5 kg</td>
</tr>
</tbody>
</table>

Supply Cable: 4 x 1.5 mm²

Operation Temperature between –10°C and +40°C

Insulation Class : H

Pollution degree : 3
Location and ambient conditions:
(Read this section well before installing and operating the machine)

In order to ensure a long and reliable service life of this machine, the simple preventive measures indicated below should be observed:

1- Do not place or operate the machine on a surface with more than 15° of incline.
2- Machine has to be operated in a place with fresh air flow and any obstructions that could prevent air flow should be eliminated. Do not cover the machine with paper or cloth while operating.
3- Dust and dirt may enter the machine. It must be minimized dust to enter the machine. Do not operate the machine in very dusty places or in an environment with water, paint, oil particles or corrosive gases.
4- This machine has a protection class of IP21S. Please keep the machine as dry as possible and do not place or puddles of water.
5- The welding machine should be used in well lighted place and not used in the dark. Furthermore, it is designed for indoor usage and is not suitable for use under direct sunlight and rain or snow. The welding machine mustn’t be used for pipe thawing purposes.
6- Place the machine away from the radio-controlled devices. The normal operation of the machine may affect the operation of the other machines of this type in the vicinity adversely, which may lead to injuries or equipment failure. Please read the section “Electromagnetic Compliance” in this manual.
7- Do not operate this machine in temperatures below –10°C and above +40° C with a relative humidity of above 70 %. The heating tests have been conducted at the ambient temperature and the duty cycle has been determined by simulation at 40°C.
8- Do not allow unauthorized people to open the work covers of the machine and carry out any work inside, which might lead to mortal danger. Any contrary behavior shall be considered as having accepted the possible consequences in advance.
9- This is a dropping characteristic welding machine designed for welding with the 2.50 and 5.00 mm diameter welding electrodes with rutile and basic coating used for light welding operations.

Duty Cycle and Overheating:

The duty cycle of the machine is the percentage rate of welding capability of the machine at the specified welding current to 10 continuous minutes without resulting in overheating or interrupting the work.

The machine is protected against overheating by the basic protection provided. When this protection trips, the warning lamp on the panel lights up. When the machine is cooled to the safe working temperature, the warning lamp goes off and welding is resumed.

Idle State:

As described in EN 60974-10 idle state is the operating state in which the power is switched on and the welding circuit is not energized.

There is no idle state at this machine.
Preparation for Work - 1

Mains Cable Connection / Controls and Operational Characteristics:

Check the mains voltage, phases and frequency before operating the machine. The mains voltage to be used is declared in the section “Technical Characteristics” of this manual and on the name-plate of the machine.

Make sure that the cables connecting the machine to the mains are properly grounded and power supply is sufficient for the normal operation of the machine.

1- This machine has been designed to operate on 3 phase, 380 V (AC) and 50-60 Hz mains voltage with insulation based on the line-neutral voltage values. It should be used only with the single phase, 3 wire systems with earthed neutral.

2- No mains plug is provided with the machine. Please select an appropriate plug for the mains outlet to be used and connect the yellow-green cable in the mains cable to the grounding terminal of the plug.

3- The machine must not be connected to the mains and turned on without a proper protective grounding approved by an authorized electrician. The electrical leaks may be fatal for the human health.
Preparation for Work - 2

Front and Rear Panel components:

1- **Power Indicator Led**: Shows the On/Off state of the machine.

2- **Welding Current Control Knob**: Adjusts the output current of the machine (welding amps).

3- **Hot-Start**: Increases the welding current temporarily before starting the welding operation. This feature enables igniting the welding arc easily and without problem. The hot start value may be adjusted manually from the front panel.

4- **Arc-Force**: Increases the welding current temporarily during the welding operation. The temporary increase in the welding current facilitates the passage between the welding electrode and molten welding pool. The short arc distance results in higher arc power and prevents sticking. The arc force value may be adjusted manually from the front panel.

5- **Negative (–) Welding Cable Connection**: Welding current negative (–) output connection.

6- **Positive (+) Welding Cable Connection**: Welding current positive (+) output connection.

7- **Digital Ammeter**: Shows the output current value of the machine.

8- **Overload/temperature Warning Led**: These LEDs light up when the machine cannot provide output current due to overheating. This situation is encountered when the ambient temperature rises above 40°C and the duty cycle (operating efficiency) of the machine is exceeded. Leave the machine on and wait until it cools off. The machine will be ready for operation again when the lamp goes off.

9- **Input cable**: This machine is provided with a plugged input cord. Connect it to the mains.

10- **On/Off switch**: Controls the main power input to the machine.
Preparation for Work - 3

Coated Electrode Welding:

The following actions need to be done before starting the welding procedures:

1- First determine the pole appropriate for the electrode used. This information can be found in the data sheet of the electrode. Then connect the welding cables to the output according to the pole required. For example; if DC (+) is to be used, connect the electrode cable to the (+) output of the machine (6) and the grounding cable to the (–) output (5).

   Turn the connector 1/4 clockwise after inserting in the plug with the guide pin on top. Make sure that the connector is seated firmly in place without tightening too much. Otherwise, the loose sockets may overheat and burn out during a prolonged period of use or high welding currents. For the electrodes to be connected to DC (–), connect the electrode cable (–) to the output (5) and the grounding clamp to the (+) output (6). Selecting a wrong connection may result in unstable arc formation, too much splashing and the electrode sticking to the work piece.

2- Attach the electrode to the electrode clamp.

3- Connect the work clamp to a clean place on the work piece free of paint or rust with the jaws in complete contact.

4- Insert the cable (9) to a suitable plug and mains outlet.

5- Perform the following checks before starting the welding procedure:

   a- Make sure that the welding machine is grounded securely.
   b- Make sure that all contact surfaces, especially the contact between the work clamp and work piece are well secured.
   c- Check that the welding cables are attached correctly.
   d- The particles and sparks splashing around while welding may cause a fire. Therefore, make sure that no flammable materials are present in the welding area.

6- Turn on the On/Off switch (10).

7- Adjust the proper welding current to be found from the electrode data sheet according to the electrode diameter, type and welding position with the “Welding Current Control Knob (7)”. In general, the welding current should be between the values indicated below. However, adjusting your settings according to the values setout in the catalog of the welding electrode manufacturer recommendations would be more appropriate.

This welding machine is designed for 2.50 and 5.00 mm diameter welding electrodes with rutile and basic coating used for light welding operations.

   Current range for rutile and basic electrodes:
   Ø 2.5 mm : 70 - 100 A
   Ø 3.2 mm : 100 - 140 A
   Ø 4.0 mm : 140 - 190 A
   Ø 5.0 mm : 180 - 240 A

   You can monitor the value of the welding current entered from the digital display on the front panel and change the value accurately according to the condition of the welding work.

8- Start welding observing the welding rules.
The periodic maintenance procedures have to be carried out regularly to ensure the efficient and safe operation of the welding machine. The user needs to understand the maintenance procedures, two know the welding machine well, to be able to carry out the safety practices alone and take care to prolong the service life of the machine by minimizing the error rates. Detailed information about periodic maintenance has been given in the table below.

**Warning:** The welding machine must absolutely be disconnected from the mains supply during the maintenance works. The maintenance works must be carried out by authorized specialists.

### DAILY MAINTENANCE

Make sure that the welding current adjustment knob of the front panel of the machine and the On/Off switch on the rear panel are in place and good working order. If current adjustment knob is not installed properly or if the on/off switch is loose and not working freely, contact to an authorized service shop.

After turning on, check the machine for vibrations, whistling sounds and smoke etc. In case of any problem, try to find the source; if the problem is stemming from the environment, eliminate it and if the problem is stemming from the machine, do not intervene and contact to an authorized service after disconnecting from the mains.

Check the proper operation of the thermal protection of the machine. To check this: Load the machine at 250 A at %30 duty cycle. If the thermal protection does not activate within approximately 4-5 minutes at this current value, something must be wrong with the thermal protection. Contact the service in such a case. Otherwise, overheating may lead to a risk of fire.

Check the short circuit protection. To check this: Touch the electrode to the work piece and measure the current passing through the welding cable with clampmeter. The current should drop to 5 A in a short time. If not contact your service.

Make sure that the welding current is according to the setting value. In case of difference, re-adjust as this may affect the normal welding operation.

Make sure that the cooling fan is not faulty and rotates normally. If the fan does not cut in when the machine gets really hot, check if the fan impeller is stuck. If the fan is defective, contact your service.

Check is the welding connections are loose and overheating. Incase of overheating or looseness, tighten them or contact to your service.

Check the current cable for damages. If damaged, wrap the damaged section with an appropriate insulator or replace the cable.

### MONTHLY MAINTENANCE

Clean the dust accumulated in the machine in time using a dry air compressor. Be careful about the pressure value of the air against damaging the smaller components.

Check the screws on the machine. Re-tighten any loose screws. Re-install any missing screws and replace any rusty screws.
QUARTERLY MAINTENANCE
Check the current delivered by the machine is equal to the value adjusted with the potentiometer. Measure the actual current value with a clamp-type ammeter.

YEARLY MAINTENANCE
Contact to authorized service for yearly maintenance. Grounding continuity and insulations test must be applied during yearly maintenance. Check if this tests has been done from the yearly maintenance report.

1- The welding machine is checked against any defects before leaving the factory. Therefore, do not allow unauthorized persons to tamper with the machine.
2- The repair works must be carried out only by the “Authorized Technical Services” allowed by Kaynak Teknigi Sanayi and Ticaret A.Ş.
3- Watch out for the air pressure while cleaning in order to protect the smaller components. Never direct water in to the machine for cleaning.
4- The welding machine should not be cleaned with volatile and synthetic cleaners. Use a moist and soapy piece of cloth for cleaning the exterior.
5- The maintenance works must be carried out with care. Kinking or wrong connection of a cable may be very dangerous for the user.
6- Ingress of water or steam should not be allowed in to the welding machine. If the machine might be affected by humidity, the interior must be dried and the insulation re-checked.
7- The welding machine should be protected against tossing around while lifting and protected against impacts.
8- If the welding machine is to be stored for a long time, place it in the original box and store in a dry place.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE REASON</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Machine does not work, No Output, Fan does not work.</td>
<td>No mains power.</td>
<td>Check the voltage of the phases entering the machine. Reconnect the phases.</td>
</tr>
<tr>
<td></td>
<td>Mains input cable defective.</td>
<td>Replace as necessary</td>
</tr>
<tr>
<td></td>
<td>On/off switch defective.</td>
<td>Replace the switch. Contact to the service if necessary.</td>
</tr>
<tr>
<td></td>
<td>Input filter and/or power board defective.</td>
<td>Contact to the service.</td>
</tr>
</tbody>
</table>
## Maintenance and Troubleshooting

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE REASON</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc not stable, welding cannot be done properly</td>
<td>Pole connections wrong or weak.</td>
<td>Change the poles correctly and tighten the connections.</td>
</tr>
<tr>
<td></td>
<td>Improper voltage value.</td>
<td>Is the mains voltage 220 V? Extension cable of improper length and size used. Check and correct as necessary.</td>
</tr>
<tr>
<td>Machine vibrates.</td>
<td>Not seated on a sound and flat surface.</td>
<td>Place the machine on a strong and flat surface.</td>
</tr>
<tr>
<td>Strange sounds and smell from the machine</td>
<td>Problem in the cooling fan</td>
<td>Check the cooling fan. Contact to the service if necessary.</td>
</tr>
<tr>
<td>No voltage output at no load</td>
<td>Machine defective</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>No welding current output.</td>
<td>Not connected to the machine outputs.</td>
<td>Connect properly.</td>
</tr>
<tr>
<td></td>
<td>Welding cable damaged</td>
<td>Replace the welding cable.</td>
</tr>
<tr>
<td></td>
<td>Work cable not connected or loose.</td>
<td>Check the work cable, re-connect if not connected.</td>
</tr>
<tr>
<td>Welding arc starts with difficulty or the electrode sticks to the work piece.</td>
<td>Connections loose or not good.</td>
<td>Check the connections</td>
</tr>
<tr>
<td></td>
<td>Work piece dirty, oily or excessively dusty</td>
<td>Check the work piece surface clean as necessary.</td>
</tr>
<tr>
<td>Fuse blows when the main switch of the machine is turned on</td>
<td>Input filter board defective.</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>Welding current cannot be adjusted properly.</td>
<td>The current control potentiometer on the front panel is defective or not working.</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>Not enough penetration.</td>
<td>Welding current setting too low.</td>
<td>Increase the welding current setting.</td>
</tr>
</tbody>
</table>
# Maintenance and Troubleshooting - 4

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE REASON</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc blow.</td>
<td>Air ventilation is too strong.</td>
<td>Use a protective barrier against air ventilation.</td>
</tr>
<tr>
<td></td>
<td>Problem in the welding electrode.</td>
<td>Check the welding electrode.</td>
</tr>
<tr>
<td></td>
<td>Magnetic field effect.</td>
<td>If the welding electrode has an eccentric problem, replace the electrode.</td>
</tr>
<tr>
<td></td>
<td>Overheating due to high welding current or long period of work.</td>
<td>Reduce the welding current or reduce the work periods with pauses.</td>
</tr>
<tr>
<td></td>
<td>Over current protection tripping due to an abnormal current in the main circuit.</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>The power lamp lights up when the machine is turned on, but the fan does not work.</td>
<td>Something is squeezed into the fan blades.</td>
<td>Clean the stuck piece.</td>
</tr>
<tr>
<td></td>
<td>Fan capacitor defective.</td>
<td>Replace the capacitor. Contact to the service if necessary.</td>
</tr>
<tr>
<td></td>
<td>Fan defective.</td>
<td>Replace the fan. Contact to the service if necessary.</td>
</tr>
</tbody>
</table>
# Maintenance and Troubleshooting - 5

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE REASON</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The fan works, but the LED does not light up.</td>
<td>The LED is defective or connections are weak</td>
<td>Check the LED connections, replace if defective.</td>
</tr>
<tr>
<td></td>
<td>Control board defective.</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>The numbers on the indicator display are</td>
<td>Indicator defective.</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>missing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The welding arc is not equal to the setting</td>
<td>Front control board defective</td>
<td>Contact to the service.</td>
</tr>
<tr>
<td>value.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Electromagnetic Compliance - 1

Designed according to the TS EN 60974-1
The EMU class of the machine according to TS EN 55011 is Group 2, class A.
Pls. see TS EN 60974-10 for detailed information.
There is no idle state at this machine.

- Do not switch on-off machine during welding. This may cause fluctuations in the mains voltage and shorten the service life of the machine.
- Wait for approximately 5-10 seconds after turning on the power unit to stabilize the machine, then start welding.
- This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated radio-frequency disturbances.

The welding machine is designed according to the relevant norms and rules. However, it may still cause problems for the telecommunication equipment (telephone, radio, television etc.) and safety devices susceptible to the electromagnetic fields as it generates electromagnetic waves. In order to reduce the effects of the electromagnetic waves (interference) generated by the machine, please read the following carefully.

The Welding machine is designed for operating in industrial areas. If it is used in residential areas, certain measures have to be taken in order to eliminate the possible effects of the electromagnetic waves.

Installation and use

General: The user is responsible for installing and using the arc welding equipment according to the manufacturer’s instructions. If electromagnetic disturbances are detected, then it shall be the responsibility of the user of the arc welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the welding circuit (see note). In other cases, it could involve constructing an electromagnetic screen enclosing the welding power source and the work complete with associated input filters. In all cases electromagnetic disturbances shall be reduced to the point where they are no longer troublesome.

NOTE: The practice for earthing the welding circuit is dependent on local safety regulations. Changing the earthing arrangements to improve EMC can affect the risk of injury or equipment damage. Further guidance is given in IEC 60974-9.

Assessment of area: Before installing arc welding equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

a) other supply cables, control cables, signalling and telephone cables, above, below and adjacent to the arc welding equipment;
b) radio and television transmitters and receivers;
c) computer and other control equipment;
d) safety critical equipment, for example guarding of industrial equipment;
e) the health of the people around, for example the use of pacemakers and hearing aids;
f) equipment used for calibration or measurement;
g) the immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;

h) the time of day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

**Assessment of welding installation**

In addition to the assessment of the area, the assessment of arc welding installations may be used to evaluate and resolve cases of interference. An emission assessment should include in situ measurements as specified in Clause 10 of CISPR 11:2009. In situ measurements may also be used to confirm the efficiency of mitigation measures.

**Mitigation measures**

**Public supply system** : Arc welding equipment should be connected to the public supply system according to the manufacturer’s recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the public supply system. Consideration should be given to shielding the supply cable of permanently installed arc welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

**Maintenance of the arc welding equipment** : The arc welding equipment should be routinely maintained according to the manufacturer’s recommendations. All access and service doors and covers should be closed and properly fastened when the arc welding equipment is in operation. The arc welding equipment should not be modified in any way, except for those changes and adjustments covered in the manufacturer’s instructions. In particular, the spark gaps of arc striking and stabilising devices should be adjusted and maintained according to the manufacturer’s recommendations.

**Welding cables** : The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

**Equipotential bonding** : Bonding of all metallic objects in the surrounding area should be considered. However, metallic objects bonded to the work piece will increase the risk that the operator could receive an electric shock by touching these metallic objects and the electrode at the same time. The operator should be insulated from all such bonded metallic objects.

**Earthing of the workpiece** : Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, for example, ship’s hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

**Screening and shielding** : Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding area may be considered for special applications.

Not to be used in residential locations where the electrical power is provided by the public low-voltage supply system.
• If the machine is used in an area with high electromagnetic fields, the welding/cutoff current adjusted may exceed ±10%.

• This equipment complies with IEC/EN 61000-3-12 provided that the short-circuit power Ssc is greater than or equal to 3.5 MVA at the interface point between the user’s supply and the public supply network. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to 3.5 MVA.

Efficient Use in Terms of Energy Consumption

1- The welding machine has been designed and manufactured to consumpt low power when turned on.

2- In order to prevent excessive energy consumption while welding, current values suited to the electrode diameter should be used and using unnecessarily high currents should be avoided.
Transportation and Storage Conditions

When no welding work is done, place the machine in to its box to protect against dust and other adverse ambient effects, especially if it is to be transported long distance. Make sure that the welding machine does not sustain hard impacts and do not drop the machine.

Lift and carry the machine from the handle. Do not lift or carry the machine while in operation. Do not toss around the machine while lifting, carrying or operating and protect against impacts. The insulation range of the machines under impact may be reduced.

If the machine is to be idle or stored for a long time before re-use, clean the machine and place it in its original box and store in a dry and dust-free place.

De-commissioning the Welding Machine

When the service life of the machine expires and does not execute its functions anymore, do not dispose of as household waste and throw in the thrash. Decommission the welding machine in compliance with the local regulations.

Unpacking

ASKAYNAK Inverter 255-ULTRA welding machine is sold in a cardboard box. Do not buy the machines that are not in the original packaging. To remove the machine from the box, open the top cover of the box and pull out the machine from the protective bag. Do not discard the box and bag, keep them for repacking or storing the machine.

Accessories Delivered With the Machine

- Welding clamp and cable
- Work connection clamp and cable

User Manual
# Spare Parts - 2

<table>
<thead>
<tr>
<th>No.</th>
<th>Supplier Part Number</th>
<th>Askaynak Part Number</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.232.017</td>
<td>82U7232017</td>
<td>Input switch 255 U</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>7.555.609-EA</td>
<td>82U7555609-EA</td>
<td>Input cable 255 U</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>7.155.021</td>
<td>82U7155021</td>
<td>Cable clamp 255 U</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>8.103.880-A</td>
<td>82U8103880-A</td>
<td>Rear panel label 255 U</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>8.307.003</td>
<td>82U8307003</td>
<td>Rear panel assembly sheet 255 U</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>8.068.994</td>
<td>82U8068994</td>
<td>Rear panel 255 U</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>7.511.249</td>
<td>82U7511249</td>
<td>Belt</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>8.253.085</td>
<td>82U8253085</td>
<td>Handle</td>
<td>1</td>
</tr>
<tr>
<td>9-10</td>
<td></td>
<td>82U8123475</td>
<td>Cover metal support 255 U</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>8.425.171</td>
<td>82U8425171</td>
<td>IGBT heatsink (3) 255 U</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>7.411.011</td>
<td>82U7411011</td>
<td>Rectifier Bridge 255 U</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>7.425.620</td>
<td>82U7425620</td>
<td>IGBT (405U-255U)</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>7.731.040-B</td>
<td>82U7731040-B</td>
<td>Control transformer 255 U</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>5.496.218-I</td>
<td>82U5496218-I</td>
<td>Soft start SM-1600 control board 255 U</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>8.425.169</td>
<td>82U8425169</td>
<td>IGBT heatsink (1) 255 U</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>3.201.049-T</td>
<td>82U3201049-T</td>
<td>Power system 255 U</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>8.713.448</td>
<td>82U8713448</td>
<td>Insulation sheet 255 U</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>8.069.994</td>
<td>82U8069994</td>
<td>Front panel 255 U</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>5.496.791-C</td>
<td>82U5496791-C</td>
<td>Front control pcb 255 U</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>8.742.101</td>
<td>82U8742101</td>
<td>Potentiometer washer 405 U</td>
<td>3</td>
</tr>
<tr>
<td>21</td>
<td>8.306.003</td>
<td>82U8306003</td>
<td>Front panel assembly sheet 255 U</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>8.103.070</td>
<td>82U8103070</td>
<td>Front panel label 255 U</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>7.458.010</td>
<td>82U7458010</td>
<td>Current potentiometer knob 405 U</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>7.458.330-R</td>
<td>82U7458330-R</td>
<td>Arc force/hot start knob</td>
<td>2</td>
</tr>
<tr>
<td>25</td>
<td>7.152.312-A</td>
<td>82U7152312-A</td>
<td>35-70mm² socket</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>6.271.449-T</td>
<td>82U6271449-T</td>
<td>Output choke 255 U</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>8.123.641</td>
<td>82U8123641</td>
<td>Metal support of power system 201 Tig PFC</td>
<td>2</td>
</tr>
<tr>
<td>28</td>
<td>7.321.046</td>
<td>82U7321046</td>
<td>Hall sensor 255 U</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>7.421.040</td>
<td>82U7421040</td>
<td>Fast recovery diode IXYS DSA90C200HB</td>
<td>4</td>
</tr>
<tr>
<td>30</td>
<td>8.425.172</td>
<td>82U8425172</td>
<td>MUR heatsink (4) 255 U</td>
<td>1</td>
</tr>
<tr>
<td>31</td>
<td>7.231.275</td>
<td>82U7231275</td>
<td>Thermal switch</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>8.055.001</td>
<td>82U8055001</td>
<td>Metal bottom panel 255 U</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>8.123.637-F</td>
<td>82U8123637-F</td>
<td>Heatsink support 405 U</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>8.425.170</td>
<td>82U8425170</td>
<td>IGBT heatsink (2) 255 U</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>6.185.049</td>
<td>82U6185049</td>
<td>Main transformer 255 U</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>8.713.447</td>
<td>82U8713447</td>
<td>Insulation sheet 255 U</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>8.052.710</td>
<td>82U8052710</td>
<td>Side metal sheet 255 U</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>7.720.010</td>
<td>82U7720010</td>
<td>Fan</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>8.860.071</td>
<td>82U8860071</td>
<td>Nameplate 255 U</td>
<td>1</td>
</tr>
</tbody>
</table>
Please read the “Safety in Welding” section in pages 38-43 for detailed information.

| Manufacturer (İmalatçı/İthalatçı): Kaynak Teknigi San. ve Tic. A.Ş. | Trademark: ASKAYNAK |
| TOSB Otomotiv Yan Sanayi İhtisas OSB | MADE in CHINA |
| 2. Cadde, No:5, Sekerpinar 41420 Çayırova, Kocaeli/TURKEY |  |

<table>
<thead>
<tr>
<th>Model: Inverter 255-ULTRA</th>
<th>Seri numarası makininın üzerindedir</th>
</tr>
</thead>
<tbody>
<tr>
<td>3~</td>
<td>TS EN 60974-1</td>
</tr>
<tr>
<td></td>
<td>TS EN 60974-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>30A/21.2V - 250A/30V</th>
</tr>
</thead>
<tbody>
<tr>
<td>300X</td>
<td>%30</td>
</tr>
<tr>
<td>300Y</td>
<td>%60</td>
</tr>
<tr>
<td>300Z</td>
<td>%100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S</th>
<th>47V</th>
</tr>
</thead>
<tbody>
<tr>
<td>250A</td>
<td>180A</td>
</tr>
<tr>
<td>250A</td>
<td>150A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>3~</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/60Hz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>U1</th>
<th>I1 maks</th>
<th>I1 eff maks</th>
</tr>
</thead>
<tbody>
<tr>
<td>380-400V</td>
<td>14.5A</td>
<td>8A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP21S</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S maks = 9.5kVA</td>
<td></td>
</tr>
</tbody>
</table>

PRODUCTION DATE IS EMBEDDED WITHIN THE SERIAL NUMBER ÜRETİM TARIHI SERİ NO. ETİKETİNDE BELİRTLİMİŞTİR