TEST REPORT

EN 60974-1:2012

Arc welding equipment —Part 1: Welding power sources

EN 50445:2008

Product family standard to demonstrate compliance of equipment for resistance welding, arc welding and allied processes with the basic restrictions related to human exposure to electromagnetic fields (0 Hz - 300 GHz)

Report Reference No. .....:	SCC（16)-41103A-37-10-LVD
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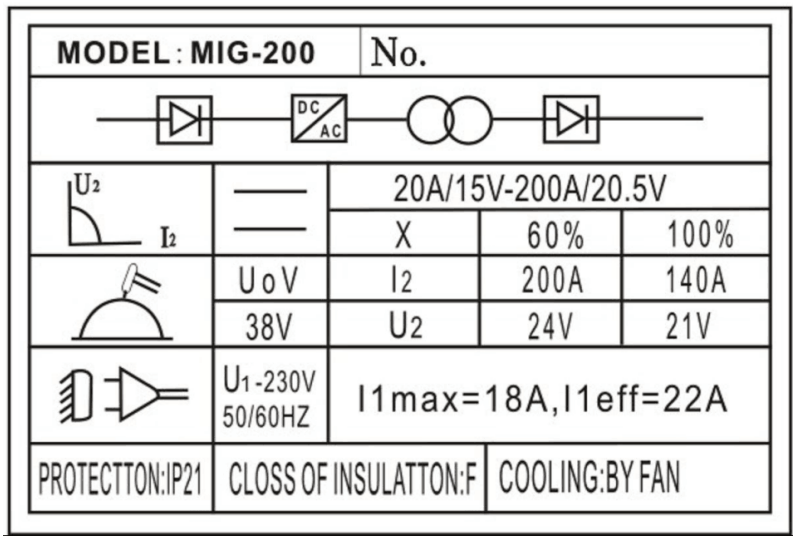
Date of issue .....:	2016-3-28
CB Testing Laboratory.....:	CHINA CEPREI (SICHUAN) LABORATORY.
Address .....:	No.45 Wenming Dong Road Longquangyi Chengdu 610100 P. R. China
Testing location/procedure.....:	CHINA CEPREI (SICHUAN) LABORATORY.
Address .....:	No.45 Wenming Dong Road Longquangyi Chengdu 610100 P. R. China
Applicant's name.....:	ZHEJIANG PONEY ELECTRIC CO.,LTD.
Address .....:	Xiazhaiwu Village,Shiqiaotou Town,Wenling City,Zhejiang,China
Manufacturer.....:	ZHEJIANG PONEY ELECTRIC CO.,LTD.
Address .....:	Xiazhaiwu Village,Shiqiaotou Town,Wenling City,Zhejiang,China
Test specification:	
Standard.....:	EN 60974-1:2012 ,EN 50445:2008
Test procedure.....:	CE
Non-standard test method……..:	N/A
Test Report Form No. .....:	IEC/EN60974_1A
TRF Originator.....:	SCC
Master TRF .....:	Dated 2012

Test item description .....:	WELDING MACHINE
Trade Mark……:	/
Model/Type reference .....:	MIG-100,MIG-105,MIG-125,MIG-130,MIG-135,MIG-150,MIG-165, MIG-175,MIG-180,MIG-195,MIG-200,MIG-230,MIG-250,MIG-270, MIG-280,MIG-300,MIG-350
Ratings…….	230V~,50/60Hz,IP21S

of marking plate and summary of test results (information/comments):



Ambient temperature: 20℃~25℃, humidity: 60%~65%RH

Complete test was conducted on **MIG-200**. 230V~,50/60Hz,IP21S .20A/15V---200A/20.5V.

The application model is **MIG-100,MIG-105,MIG-125,MIG-130,MIG-135,MIG-150,MIG-165,MIG-175,**

MIG-180,MIG-195,MIG-200,MIG-230,MIG-250,MIG-270,MIG-280,MIG-300,MIG-350 are the same series products.

A representative sample of the product covered by this report has been tested and complies with the applicable requirements of this standard.

Test item particulars ..... :	
Classification of installation and use ..... :	Class Ⅰ
Supply Connection ..... :	Non-detachable power supply cord
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P(Pass)
- test object does not meet the requirement ..... :	F(Fail)
Testing ..... :	
Date of receipt of test item ..... :	2016-2-18
Date (s) of performance of tests ..... :	2016-2-18 to 2016-3-28

General remarks:

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

General product information:

Complete test was conducted on **MIG-200**. 230V~,50/60Hz,IP21S .20A/15V---200A/20.5V.

The application model is **MIG-100,MIG-105,MIG-125,MIG-130,MIG-135,MIG-150,MIG-165,MIG-175,MIG-180, MIG-195,MIG-200,MIG-230,MIG-250,MIG-270,MIG-280,MIG-300, MIG-350** are the same series products.

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Clause	Requirement – Test	Result - Remark	Verdict
6	Protection against electric shock		
6.1	Insulation		P
	The majority of welding power sources fall within the overvoltage category III; mechanically powered welding power sources fall within overvoltage category II.	Category III	P
	Clearances or creepage distances corresponding to pollution degree 2 are permitted, if they are completely enclosed, coated or encapsulated.		N
6.1.1	Clearances (mm)		P
	Minimum clearances for overvoltage category III		P
	Basic or supplementary insulation		

Voltage V r.m.s.	Pollution degree 2	Pollution degree 3	Pollution degree 4
50	0,2	0,8	1,6
100	0,5		
150	1,5		
300	3		
600	5,5		
1000	8		

Reinforced insulation			
Voltage V r.m.s.	Pollution degree 2	Pollution degree 3	Pollution degree 4
50	0,5	0,8	1,6
100	1,5		
150	3		
300	5,5		
600	8		
1000	14		

6.1.2 Creepage distances (mm)

Basic or supplementary insulation

Voltage V r.m.s.	Pollution degree 2			Pollution degree 3			Pollution degree 4		
	Material group			Material group			Material group		
	I	II	III	I	II	III	I	II	III
10	0,4			1			1,6		
12,5	0,42			1,05					
16	0,45			1,1					
20	0,48			1,2					
25	0,5			1,25			1,7		
32	0,53			1,3			1,8		
40	0,56	0,8	1,1	1,4	1,6	1,8	1,9	2,4	3
50	0,6	0,85	1,2	1,5	1,7	1,9	2	2,5	3,2
63	0,63	0,9	1,25	1,6	1,8	2	2,1	2,6	3,4

		13.7	P

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Clause	Requirement – Test										Result - Remark	Verdict
	80	0,67	0,95	1,3	1,7	1,9	2,1	2,2	2,8	3,6		
	100	0,71	1	1,4	1,8	2	2,2	2,4	3	3,8		
	125	0,75	1,05	1,5	1,9	2,1	2,4	2,5	3,2	4		
	160	0,8	1,1	1,6	2	2,2	2,5	3,2	4	5		
	200	1	1,4	2	2,5	2,8	3,2	4	5	6,3		
	250	1,25	1,8	2,5	3,2	3,6	4	5	6,3	8	12.9	P
	320	1,6	2,2	3,2	4	4,5	5	6,3	8	10		
	400	2	2,8	4	5	5,6	6,3	8	10	12,5		
	500	2,5	3,6	5	6,3	7,1	8	10	12,5	16		
	630	3,2	4,5	6,3	8	9	10	12,5	16	20		
	800	4	5,6	8	10	11	12,5	16	20	25		
	1000	5	7,1	10	12,5	14	16	20	25	32		
	Reinforced insulation											N
	Voltage V r.m.s.	Pollution degree										
		2			3			4				
		Material group										
		I	II	III	I	II	III	I	II	III		
	10	0,48			1,2			1,6				
	12,5	0,5			1,25			1,7				
	16	0,53			1,3			1,8				
	20	0,56	0,8	1,1	1,4	1,6	1,8	1,9	2,4	3		
	25	0,6	0,85	1,2	1,5	1,7	1,9	2	2,5	3,2		
	32	0,63	0,9	1,25	1,6	1,8	2	2,1	2,6	3,4		
	40	0,67	0,95	1,3	1,7	1,9	2,1	2,2	2,8	3,6		
	50	0,71	1	1,4	1,8	2	2,2	2,4	3	3,8		
	63	0,75	1,05	1,5	1,9	2,1	2,4	2,5	3,2	4		
	80	0,8	1,1	1,6	2	2,2	2,5	3,2	4	5		
	100	1	1,4	2	2,5	2,8	3,2	4	5	6,3		
	125	1,25	1,8	2,5	3,2	3,6	4	5	6,3	8		
	160	1,6	2,2	3,2	4	4,5	5	6,3	8	10		
	200	2	2,8	4	5	5,6	6,3	8	10	12,5		
	250	2,5	3,6	5	6,3	7,1	8	10	12,5	16		
	320	3,2	4,5	6,3	8	9	10	12,5	16	20		
	400	4	5,6	8	10	11	12,5	16	20	25		
	500	5	7,1	10	12,5	14	16	20	25	32		
	630	6,3	9	12,5	16	18	20	25	32	40		

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Clause	Requirement – Test										Result - Remark	Verdict
	800	8	11	16	20	22	25	32	40	50		
	1000	10	14	20	25	28	32	40	50	63		
6.1.3	Insulation resistance											P
	Input circuit to welding circuit: ≥5MΩ										500 MΩ	P
	Input circuit to exposed conductive parts: ≥2,5MΩ										500 MΩ	P
	Welding circuit to exposed conductive parts: ≥2,5MΩ										500 MΩ	P
	Control circuits to welding circuits: ≥2,5MΩ										500 MΩ	P
	Control circuits to exposed conductive parts:≥2,5MΩ										100 MΩ	P
	Control circuits to input circuits: ≥2,5MΩ										500 MΩ	P
6.1.4 a)	Dielectric strength											P
	Maximum rated voltage Vrms	All circuits to exposed conductive parts, input circuit to all circuits except the welding circuit									Protection class I Input circuit to exposed conductive parts: 1875V/1min; Output circuit to exposed conductive parts: 1875V/1min Control circuit to exposed conductive parts: 250V/1min Input circuit to control circuit: 1875V/1min	P
	All circuits	Class I	Class II									
	Up to 50	250	500									
	200	1000	2000									
	450	1875	3750									
	700	2500	5000									
	1000	2750	5500									
	Maximum rated voltage Vrms	All circuits except input circuit to welding circuit										P
	Up to 50	500									Control circuit to welding circuit: 1875V/1min	
	200	1000										
	450	1875										
	700	2500										
	Maximum rated voltage Vrms	Input circuit to welding circuit										P
	200	2000										
	450	3750									3750V/1min	
	700	5000										
	1000	5500										
6.2	Protection against electric shock in normal service (direct contact)											P
6.2.1	Protection provided by the enclosure											P
	The minimum degree of protection for welding power sources shall be IP21S for indoor use.											P
	The minimum degree of protection for welding power sources shall be IP23 for outdoor use.											N
6.2.2	Capacitors											N
	If used as part of a welding power source and connected either across input supply lines or across a winding of a transformer providing welding current											N

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Clause	Requirement – Test	Result - Remark	Verdict
	shall: a) not cause the welding power source to exhibit hazardous electrical breakdown or present risk of fire in event of a failure;		
	b) not contain more than 1L of flammable liquid;		N
	c) be designed not to leak during normal service;		N
	d) be contained within the welding power source enclosure or other enclosure which conforms to the relevant requirements of this standard.		N
	There shall be no leakage of liquid during the test.		N
6.2.3	Automatic discharge of input capacitors		N
	Each capacitor shall be provided with a means of automatic discharge which shall reduce the voltage across the capacitor to 60V or less within 1s for any plug.		N
	Capacitors having a rated capacitance not exceeding 0,1μF are not considered to present a risk of electric shock.		N
6.3	Protection against electric shock incase of a fault condition (indirect contact)		P
	Welding power source shall be built to protection class I or class II with the exception of the welding circuit.	Class I	P
6.3.1	Isolation of the input circuit and the welding circuit		P
	The welding circuit shall be electrically isolated from the input circuit by reinforced or double insulation or equivalent means.	Double insulation	P
	If another circuit is connected to the welding circuit, the power of the other circuit shall be supplied by an isolating transformer or equivalent means.	An isolating transformer	P
	The welding circuit shall not be connected internally to the connected means for the external protective conductor, the enclosure, frame or core of the welding power source.		P
	The leakage current between the welding outlets and the protective conductor terminal shall not exceed 10mA a.c. r.m.s.	0,02A	P
6.3.2	Insulation between windings of the input circuit and the welding circuit.		P
	Windings of the input circuit and the welding circuit shall be insulated by: a) reinforced insulation: or		P
	b) basic insulation to a metal screen between them which is connected to the protective conductor.		N
	Rated supply voltage Vrms: Minimum distance through insulation(mm)		N
	Rated supply voltage Vrms: Single layer		
	Up to 440: 1,3		
	441 to 690: 1,5		
	691 to 1000: 2,0		
	Rated supply voltage Vrms: Minimum distance through insulation(mm)		P

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Clause	Requirement – Test	Result - Remark	Verdict

		Total of three or more separate layers				
	Up to 440	0,35			0,7m	
	441 to 690	0,4				
	691 to 1000	0,5				
6.3.3	Internal conductors and connections					P
	Internal conductors and connections shall be secured or positioned to prevent accidental loosening.					P
	a) the input circuit or any other circuit and the welding circuit so that the output voltage could become higher than the allowable no-load voltage.					P
	b) the welding circuit and the protective conductor, enclosure, frame or core.					P
	Where insulated conductors pass through metallic parts, they shall be provided with bushings of insulating material or the openings shall be smoothly rounded with a radius of at least 1,5mm.				Bushings of insulating material	P
	Bare conductors shall be so fixed that the clearance and creepage distance from each other and from conductive parts is maintained.					P
6.3.4	Movable coils and cores					N
	If movable coils or cores are used to adjust the welding current, the construction shall be such that the prescribed clearances and creepage distance are maintained.					N
6.3.5	Additional requirements for plasma cutting system					N
	Plasma tips shall be considered sufficiently protected from normal and single fault conditions if : a) when no arc current is present, the voltage between the plasma tip and the work piece and/or earth is no higher than the peak value of 68V or 48V r.m.s; and					N
	b) for manual system, when an arc is present, the d.c. voltage between the plasma tip and the work piece and/or earth is no higher than 113V peak.					N
	c) when the voltage of a) or b) is exceeded, the voltage are reduced as specified in Clause 13.					N
7	Thermal requirements					P
7.3	Limits of temperature rise					P
7.3.1	Class of insulation (℃)	Limits of temperature rise (K)				Main transformer: Primary: 29.1 Secondary: 24.7 High voltage transformer: Primary:29.7 Secondary:26.9
		Windings			Commutators and slip-rings	
		Surface temperature sensor	Resistance	Embedded temperature sensor		
	105(A)	55	60	65	60	
	120(E)	70	75	80	70	
	130(B)	75	80	90	80	
	155(F)	95	105	115	90	

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Clause	Requirement – Test					Result - Remark	Verdict
	180(H)	115	125	140	100		
	200	130	145	160	Not determined		
	220(C)	150	160	180			
7.3.2	External surface			Limits of temperature rise			P
	Bare metal enclosures			25 K			
	Painted metal enclosures			35 K		18.9K	
	Non-metallic enclosures			45 K			
	Metal handles			10 K			
	Non-metallic handles			30 K			
7.4	Loading test						P
	Welding power sources shall withstand repeated load cycles without damage or functional failure.						P
7.5	Commutators and slip-rings						N
	Commutators, slip-rings and their brushes shall show no evidence of injurious sparking or damage throughout the range of the rotating welding power source.						N
8	Abnormal operating						P
	A welding power source shall not suffer hazardous electrical breakdown or cause a risk of fire under the conditions of operating of 8.1 to 8.3.						P
	Welding power sources, protected internally by for example circuit-breaker or thermal protection, meet this requirement if the protection devices before an unsafe condition occurs.					Protective devices are provided which can operate before hazard occurred.	P
8.1	(Stalled fan) A welding power source is operated at rated supply voltage or rated load speed for a period of 4 h while the fan motor is stalled at the output condition which produces the maximum heating.					Protective devices operated	P
8.2	(Short-circuit) The welding power source is short-circuited with the torch and the welding cables normally supplied by the manufacture.						P
	The welding power source shall not clear the supply fuse or circuit breaker when short circuited: a) for 15s in case of a drooping characteristic;						P
	b) three times for 1s, within a period of 1min, in case of a flat characteristic.						N
	The short circuit is then applied for 2min or until the input protection operates.						P
	The input voltage shall not decrease by more than 10% during this test.						P
	Mechanically driven welding power sources are short circuited for 2 min at maximum output setting and set for operation at rated load speed.						N
8.3	(Overload)The welding power source is operated for						P

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Clause	Requirement – Test	Result - Remark	Verdict

	4h in accordance with the maximum rated welding current at 1,5 times the corresponding duty cycle.				
	If the welding power source is rated for more than 67% duty cycle, this test is conducted at 100% duty cycle.				N
	If the welding power source is provided with output regulating taps, those taps producing the highest supply current are used.				N
	If the duty cycle at the rated maximum welding current is 100%, the welding power source need not be tested.				N
6.1.4 b)	Dielectric strength				P
	Maximum rated voltage Vrms	All circuits to exposed conductive parts, input circuit to all circuits except the welding circuit		Input circuit to exposed conductive parts: 1500V/1min; Output circuit to exposed conductive parts: 1500V/1min Control circuit to exposed conductive parts: 200V/1min Input circuit to control circuit: 1500V/1min	P
	All circuits	Class I			
	Up to 50	200			
	200	800			
	450	1500			
	700	2000			
	1000	2200			
	Maximum rated voltage Vrms	All circuits except input circuit to welding circuit			P
	Up to 50	400			
	200	800			
	450	1500		1500V/1min	
	700	2000			
	Maximum rated voltage Vrms	Input circuit to welding circuit			P
	200	1600			
	450	3000		3000V/min	
	700	4000			
	1000	4400			
9	Thermal protection				P
	A mains operated welding power source shall be fitted with thermal protection if the duty cycle at rated maximum welding current is lower than: a) 35% in case of a drooping characteristic; b) 60% in case of a flat characteristic.				P
9.1	Construction				P
	The thermal protection shall be so constructed that it is not possible to change its temperature setting or alter its operation without inflicting obvious physical damage to the device.				P
9.2	Location				P
	The thermal protection shall be permanently located within the welding power source in such a way that				P

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Clause	Requirement – Test	Result - Remark	Verdict
	the heat transfer is reliable.		
9.3	Operation		P
	a) The thermal protection shall prevent the welding power source windings from exceeding the peak temperature limits given in table 6		P
	b) The thermal protection shall not operate when the welding power source is loaded with the rated maximum welding current at the corresponding rated duty cycle.		P
9.4	Resetting		P
	The thermal protection shall not reset automatically or manually until the temperature has dropped below that of the insulation class given in TABLE 6.		P
9.5	Operating capacity		P
	The thermal protection shall be able to operate at the rated maximum welding current consecutively without defect.		P
	a) 100 times, in case of a duty cycle of 35% or higher	100times	P
	b) 200 times, in case of a duty cycle lower than 35%		P
9.6	Indication		P
	Welding power sourced fitted with thermal protection shall indicate that the thermal overload device has reduced or disconnected the welding power source output.	Yellow light	P
	The indicator shall be either a yellow light (or yellow flag within an aperture), or an alphanumeric display showing symbols or words whose meanings are given in the instruction manual.	Yellow light	P
10	Connection to the input supply		P
10.1	Supply voltage		P
	Welding power sources shall be capable of operating at the rated supply voltage ±10%.		P
	In case of a mechanically driven, electrically powered welding power source, the motor torque shall be sufficient at 90% of the rated voltage to supply the rated maximum welding current.		N
	In case of a mechanically driven, engine powered rotating welding power source, the engine shall be capable of tolerating load variations between maximum load and no-load without adversely affecting the welding performance of the generator.		N
10.2	Power supply		N
	Welding power sources which are designed to operate from different supply voltages shall be fitted with one of the following:		N
	a) an internal voltage selection panel where the adjustment for the supply voltage is made by links. A marking shall indicate the arrangement of links for each supply voltage;		N
	b) an internal terminal box or panel in which the terminals are clearly marked with the supply voltages;		N
	c) a switch for tap selection which shall be fitted with an interlocking system which prevents the switch		N

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Clause	Requirement – Test	Result - Remark	Verdict
	being moved to an incorrect position. The interlocking system shall be adjusted only by the use of a tool;		
	d) two supply cables, each fitted with a different plug, and a selector switch which ensures that the pins of the plug not in use cannot become live;		N
	e) a system to automatically configure the welding power source in accordance with the supply voltage.		N
	In the case of welding power sources with several supply connections, the points of connection not provided with covers which are secured by the use of a tool are tested with a voltage tester, using all possible supply connections and switch positions. The requirements are met if no voltage or only a voltage below 12V is measured between the points of connection not provided with covers and between these points and the enclosure.		N
10.3	Means of connection		P
	Acceptable means of connection are one of the following:		P
	a) terminals intended for the permanent connection of flexible supply cables;		P
	b) terminals intended for the connection of supply cables to a permanent installation;		N
	c) appliance inlets fitted to the welding power source		N
10.4	Input supply terminals		P
	Terminals shall be provided for the connection of input conductors.	Terminals on the switch	P
10.4.1	Terminals shall be clearly marked. The identifying marking notation shall be located on or adjacent to the corresponding terminal.		P
10.4.2	The internal protective circuit shall be capable of withstanding currents likely to be encountered in the case of a fault.		P
	Welding power sources of protection class I shall have a suitable terminal, adjacent to the phase-conductor terminals, dimensioned in accordance with annex E and table E.1, for the connection of the external protective conductor.		P
	On and inside the welding power source, if there is a neutral-conductor terminal, this shall not be in electrical contact with the terminal for the connection of the protective conductor.		N
	The terminal for the external protective conductor shall be marked with the symbol "⏚". Optionally the following may be added: a) the letters: PE or b) the twin colours: green and yellow.	⏚	P
	Insulated protective conductors shall have the twin colors green and yellow.		P
	If the welding power source is supplied with a flexible multiconductor supply cable is pulled away from the terminals, the phase conductors break before the protective conductor.		P
	If the welding power source is fitted with a protective		P

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Clause	Requirement – Test	Result - Remark	Verdict
	conductor, it shall be connected in such a way that if the cable is pulled away from the terminals, the phase conductor break before the protective conductor.		
	A current of 200% of the maximum effective supply current as given on the rating plate id applied from an enclosure part, that is likely to become live, through the external protective conductor terminal. During the test there shall be no melting of any metal, deterioration of the bond to the welding power source, or heating likely to cause a fire hazard, nor shall be measured voltage drop from the enclosure part to the terminal exceed 4V.	0.41V	P
10.5	Cable anchorage		P
	Welding power sources fitted with terminals for the connection of flexible supply cables shall be provided with a cable anchorage that relieves the electrical connection from strain.		P
	The cable anchorage shall be so constructed that: a) it is dimensioned for flexible cables having the range of cross-sectional area of conductor as specified in table E.1;		P
	b) the method of anchorage can be easily recognized;		P
	c) the cable can be easily replaced;		P
	d) the cable cannot come into contact with conductive clamping screws of the cable anchorage if these screws are accessible or in electrical contact with exposed conductive parts;		P
	e) the cable is not retained by a metal screw which bears directly on it;		P
	f) at least one part of the cable anchorage is securely fixed to the welding power source;		P
	g) any screws that need to be loosened or tightened during cable replacement do not serve to fix any other component;	No such screw	P
	h) when fitted to a welding power source of protection class II , it shall be made of insulating material or so insulated that, if there is an insulation fault, exposed conductive parts shall not become live.		N
	After the test, the cable shall not have been displaced by more than 2mm and the ends of the conductors shall not have been noticeably displaced in the terminals.		P
10.6	Inlet openings		P
	Where the supply cables passes through metallic parts, it shall be provided with a bushing of insulating material, or the openings shall be smoothly rounded with a radius of at least 1,5mm.		P
10.7	Input supply on/off switching device		P
	Where an integral input supply on/off switching device is provided, this shall switch all ungrounded mains conductors.		P
	The switching device shall plainly indicate whether the circuit is open or closed		P

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Clause	Requirement – Test	Result - Remark	Verdict
	The switching device shall be rated not less than the values given on the rating plate of voltage and current.		N
	The switching device shall be suitable for this application.		P
10.8	Supply cables		P
	Supply cables shall be suitable for the application and meet national and local regulation;		P
	Supply cables shall be dimensioned in accordance with the maximum effective supply current.		P
	It shall have a length of at least 2m as measured from the exit point of the enclosure.		P
10.9	Supply coupling device (attachment plug)		N
	The rated current of supply coupling device shall not less than the current rating of the fuse required to comply with the tests specified in 8.2		N
	The rated current of supply coupling device shall not less than the maximum effective supply current I_{1eff}		N
	The rated current of supply coupling device shall not less than 70% of the rated maximum supply current.		N
	The rated current of supply coupling device shall not less than 70% of the supply current measured with the output short-circuited at maximum setting for equipment not incorporating a supply switch.		N
11	Output		P
11.1	Rated no-load voltage (U_0)		P
	Working conditions / Rated no-load voltage		
11.1.1	Environment with increased hazard of electric shock: ≤d.c.113V peak; ≤a.c. 68V peak and 48V r.m.s.		N
11.1.2	Environment without increased hazard of electric shock: ≤d.c. 113V peak; ≤a.c. 113V peak and 80V r.m.s.		P
11.1.3	Mechanically held torched with increased protection for the operator: ≤d.c. 141V peak; ≤a.c. 141V peak and 100V r.m.s.		N
11.1.4	Plasma cutting: ≤d.c. 500V peak		N
	A rated no-load voltage exceeding 113V peak d.c. may only be used if the following requirements are fulfilled.		N
	a) these power sources with their corresponding torches shall prevent the output of no-load voltage if the torch is disassembled or disconnected from the power source.		N
	b) the no-load voltage shall be less than 68V peak not later than 2s after the control circuit is opened.		N
	c) the voltage between the tip of the torch and the work piece or earth shall not exceed 68V peak when the arc current is interrupted, that is when both pilot and main arc are extinguished.		N
	The conditions for complying with these requirements		N

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Clause	Requirement – Test	Result - Remark	Verdict
	shall be given in the instructions.		
	Such power sources may be marked with the symbol [S]		N
11.2	Type test values of the conventional load voltage		P
	Throughout its range of adjustment, the welding power source shall be capable of supplying conventional welding currents (I_2) at conventional load voltages (U_2).		P
11.2.1	Manual metal arc welding with covered electrodes		N
	Drooping characteristic: I_2≤600A: U_2=(20+0,04I_2) V I_2>600A: U_2=44V		
11.2.2	Tungsten inert gas and plasma arc welding		P
	Drooping characteristic: I_2≤600A: U_2=(10+0,04I_2) V I_2>600A: U_2=34V		
11.2.3	Metal inert/active gas and selfshielded flux cored arc welding		N
	Flat characteristic: I_2≤600A: U_2=(14+0,05I_2) V I_2>600A: U_2=44V		
11.2.4	Submerged arc welding		N
	I_2≤600A: U_2=(20+0,04I_2) V; I_2>600A: U_2=44V		
11.2.5	Plasma cutting		P
	I_2≤300A: U_2=(80+0,4I_2) V; I_2>300A: U_2=200V		
11.2.6	Plasma gouging		N
	I_2≤300A: U_2=(100+0,4I_2) V; I_2>300A: U_2=220V		
11.3	A switch, contactor, circuit-breaker or other control device used to adjust or control the level of output from the welding power source shall have endurance suitable for the application.		N
11.4	Output connections		P
11.4.1	Protection against unintentional contact		P
	Welding output connections shall be protected against unintentional contact by persons or by metal objects.		P
11.4.2	Location of socket outlets		P
	Uncovered socket-outlets shall be located so that their openings are not tilted upwards.		P
11.4.3	Outlet openings		P
	Where welding cables pass through metallic parts, the openings shall be smoothly rounded with a radius of at least 1,5mm.		P
11.4.4	Three-phase a.c. multi-operator welding transformer		N
	All welding output connections shall have a common interconnection within the welding power source.		P
11.4.5	Marking		P
	Connections shall be so identified.		P
	The polarity shall be clearly marked for d.c. welding		P

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Clause	Requirement – Test	Result - Remark	Verdict
	power sources. (Not relevant for plasma cutting)		
11.4.6	Connections for plasma cutting torches		N
	The torch shall be connected to and disconnected from the plasma cutting power source within the power source: -- by use of a tool, by screws or coupling devices, or		N
	-- on the plasma cutting power source by a coupling device which is designed to avoid connection of incompatible torches, or operated by use of a tool.		N
	When the coupling device is disconnected, there shall be present no voltage higher than the limits of SELV.		N
11.5	Power supply to external devices		N
	When a welding power source provides means to supply electrical power to an external wire feed unit or similar auxiliary, such power shall be supplied: a) the welding circuit;		N
	b) a safety transformer in accordance with IEC 61558-2-6 or equivalent means incorporated in the welding power source;		N
	c) an isolating transformer in accordance with IEC 61558-2-4 with a secondary voltage rating up to 120V rms, if all exposed conductive parts of the external device, as recommended by the manufacture, are connected to the protective earth conductor that is protected against the welding current.		N
11.6	Auxiliary power output		N
	In the case of welding power sources designed to supply electrical power, e.g. for lighting or electric tools, these auxiliary circuits and accessories shall comply with the standards and regulations relating to the use of this equipment.		N
	The welding circuit shall be electrically isolated and insulated from such supply circuits in accordance with 6.3.1 and 6.3.2.		N
	Power, current, voltage, the duty cycle, the frequency, the number of phases or d.c. and the status of the neutral shall be clearly and indelibly marked.		N
12	Control circuits		P
	Control circuits shall comply with the relevant requirements of IEC 60204-1.		P
	Connections between control circuits and the welding circuit are permitted in accordance with 6.3.1.		P
13	Hazard reducing device		N
	A hazard reducing device shall reduce the electric shock hazard that can originate from no-load voltages exceeding the allowable rated no-load voltages.		N
	A hazard reducing device shall operate within 2s if the voltage is between the allowable rated no-load voltage;		N
	It shall operate within 0,3s if the voltage is exceeded		N
13.1	Voltage reducing device		N
	A voltage reducing device shall have automatically reduced the rated no-load voltage to a level not		N

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Clause	Requirement – Test	Result - Remark	Verdict
	exceeding the values at the moment the resistance of the external welding circuit exceeds 200Ω.		
13.2	Switching device for a.c. to d.c.		N
	A switching device for a.c. to d.c. shall have automatically switched the rated a.c. no-load voltage to a rated d.c. no-load voltage not exceeding the values given in 11.1.1 to 11.1.3.		N
13.3	Connection of a hazard reducing device		N
	The design about the connection of a hazard reducing device shall be such that the operator cannot disconnect or by-pass the hazard reducing device without the use of a tool.		N
13.4	Interference with operation of a hazard reducing device		N
	Remote controls and arc striking or arc stabilizing devices of welding power source shall not interfere with the proper functioning of the hazard reducing device.		N
13.5	Indication of satisfactory operation		N
	A reliable device shall be provided which indicate the normal operating of the hazard reducing device.		N
13.6	Fail to a safe condition		N
	The fail-to-a-safe condition device shall fall to a safe condition within 1s if the hazard reducing device fails to operate.		N
14	Mechanical requirements		P
	A welding power source shall be so constructed and assembled that it has the strength and rigidity necessary to withstand the normal service without increasing the hazard of electric shock or other hazard		P
	A welding power source shall be provided with a case or cabinet that encloses all live and hazardous moving parts except for supply, control and welding cables and output terminals for the connection of welding cables.		P
	Accessible parts shall have no sharp edges, rough surfaces or protruding parts likely to cause injury.		P
14.1	Enclosure		P
	Enclosure impact test: impact energy: 10Nm.	10Nm, No damage	P
	Alternatively, the enclosure may be constructed of sheet metal with a minimum thickness in accordance with annex J.		P
14.2	Impact resistance of handles, push buttons etc.		P
	Controls, meters, handles, push-buttons shall withstand the mechanical stress of an impact of (0,5±0,05) Nm applied to its surface.	0,5Nm, No damage	P
14.3	Handling means		P
	Welding power source shall be capable of being handled safely.		P
	Handing means, withstanding the mechanical stress of a static pull test:		P

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Clause	Requirement – Test	Result - Remark	Verdict
	-- 10 times the mass for welding power sources of less than 150kg; -- 4 times the mass (or at least 15kN) for welding power sources of 150kg or more.	8,0kN No damage	P
14.4	Drop withstand		P
	An assembled welding power source shall be capable of withstanding a drop test.		P
	-- welding power sources of 25kg or less shall withstand a drop of 250mm; -- welding power sources of more than 25kg shall withstand a drop of 100mm.	250mm No damage	P
14.5	Tilting stability		P
	Welding power sources, when they are in their most unstable position, shall not topple over when tilted up to 10°.	Not topple over	P
15	Rating plate		P
	A clearly and indelibly marked rating plate shall be fixed securely to or printed on each welding power source.	Clearly and definitude	P
15.1	Description		P
	The rating plate shall be divided into sections containing information and data.		P
15.2	a) Identification:		P
	-- name and address of the manufacture or distributor or importer or a trade mark and the country of origin	ZHEJIANG PONEY ELECTRIC CO.,LTD.	P
	-- type	MIG-200	P
	-- traceability of design and manufacturing data		P
	-- welding power source symbol		P
	-- reference to this standard confirming that the welding power source complies with its requirements.		P
	b) Welding output:		P
	-- welding process symbol		P
	-- symbol for welding power sources which are suitable for supplying power to welding operations carried out in an environment with increased hazard of electric shock.		N
	-- welding current symbol		P
	-- rated no-load voltage (U_0…V)	38V	P
	-- range of output, minimum and maximum welding current and their corresponding load voltage (…A/…V to …A/…V)		P
	-- duty cycle (X…%)	60%,100%	P
	-- rated welding current (I_2…A)	200A,140A	P
	-- conventional load voltage (U_2…V)	24V,21V	P
	c) Energy input:		P
	-- energy input symbol		P
	-- rated supply voltage (U_1…V)	230V	P
	-- rated maximum supply current (I_{1max}…A)	18A	P
	-- maximum effective supply current (I_{1eff}…A)	22A	P
	-- rated load speed (n…min^{-1})		N
	-- rated no-load speed (n_0…min^{-1})		N
	-- rated idle speed (n_i…min^{-1})		N

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Clause	Requirement – Test	Result - Remark	Verdict
	-- maximum power consumption (P_{1max}…kW)		N
	-- degree of protection	IP21S	P
	-- symbol for protection class II		N
	d) Auxiliary power output (if applicable)		N
	-- frequency, phases or d.c.		N
	-- rated output voltage (…V)		N
	-- rated output current (…A)		N
	-- duty cycle (X…%)		N
15.3	Tolerance		P
	a) U_0:(V)±5%	0,0%	P
	b) I_{2min} (A) /U_{2min} (V): not be greater than those stated on the rating plate.		P
	c) I_{2max} (A)/U_{2max} (V): not be less than those stated on the rating plate.		P
	d) Rated no-load speed of rotation "n_0" : (min^{-1}) ±5%		N
	e) maximum power consumption "P_{1max}": (kW) $^{+10}_{0}$%		N
	f) Rated maximum supply current "I_{1max}" (A): ±10%	0.0%	P
15.4	Direction of rotation		N
	If necessary, the direction of rotation shall be indicated on rating welding power sources.		N
16	Adjustment of the output		P
16.1	Type of adjustment		P
	Type of adjustment: continuous, step-by-step, or both.	Continuous	P
	In the case of a continuous adjustment with several ranges, there shall be no gap between the ranges.		N
16.2	Marking of the adjusting device		N
	The output of welding power source corresponding to different control settings shall be clearly and indelibly marked either on or by the controls, or displayed digitally.		N
16.3	Indication of current or voltage control		P
	Where there is a voltage or current control, the output setting shall be indicated in Volt, Ampere or an arbitrary reference scale.		P
	The accuracy of voltage or current indication shall be: a) between 100% and 25% of the maximum setting ±10% of the true value;		N
	b) below 25% of the maximum setting ±2,5% of the maximum setting.		N
	If the manufacture provides an ammeter or a voltmeter on the equipment, this shall be of class 2,5 and be properly damped.		P
17	Instructions and markings		P
17.1	Instructions		P
	The instructions shall include the following contents:		P
	a) general description;		P
	b) mass of the welding power source and its various parts and correct methods of handling them and precautions to be taken with gas cylinders, wire feeders;		P
	c) the meaning of indications, markings and graphical symbols;		P
	d) information for selection and connection to the		P

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Clause	Requirement – Test	Result - Remark	Verdict
	input supply including the fuse and/or circuit-breaker rating;		
	e) correct operational use relating to the welding power sources;		P
	f) welding capability, static characteristic, duty cycle limitations and explanation of thermal protection;		P
	g) limitations of use relating to the degree of protection provided;		P
	h) basic guidelines regarding protection against personal hazards for operators and persons in the work area;		P
	i) conditions under which extra precautions are to be observed when welding or cutting;		P
	j) how to maintain the welding power source;		P
	k) adequate circuit diagram together with a list of recommended spare parts;		P
	l) information for a circuit designed to supply electrical power at normal supply voltage for lighting or electric tools;		N
	m) precautions against topping over		P
	n) warning against the use of a welding power source for pipe thawing;		P
	o) type of plasma cutting torches that are specified for use with the plasma cutting power source;		N
	p) pressure, flow rate and type of plasma gas and if relevant, of cooling gas or cooling liquid;		P
	q) steps or range of the output current and the corresponding plasma gas as a set of values.		N
	Other useful information may also be given, e.g. class of insulation, pollution degree, power factor, etc.		P
17.2	Markings		P
	Each welding power source shall be clearly and indelibly marked on or near the front panel or near the on/off switching device with the warning symbol combination: “Caution! Read operator’s manual”		P
	Indicating that arc welding and plasma cutting can be injurious to the operator and persons in the work area and that the instructions shall be consulted before operating.		P
	The equivalent wording may be used: “Read instruction manuals before operating and servicing this equipment.”		P

A	ANNEX A (INFORMATIVE) NOMINAL VOLTAGES OF SUPPLY SYSTEMS (see 6.1.1 and 6.1.2)		N
	The annex contain values of the nominal voltages presently used in the world		N

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Clause	Requirement – Test	Result - Remark	Verdict
B	ANNEX B (INFORMATIVE) EXAMPLE OF A COMBINED DIELECTRIC TEST (see 6.1.4)		N
	Execution of the combined dielectric test in accordance with the scheme in fig.B.1		N
C	ANNEX C (NORMATIVE) UNBALANCED LOAD IN CASE OF A.C. TUNGSTEN INERT-GAS WELDING POWER SOURCE (see 7.1)		N
C.1	Unbalanced welding voltage and current cause a d.c. component which cause severe over-heating		N
C.2	Unbalanced load used as required.		N
C.3	Example for unbalanced load		N
D	ANNEX D (INFORMATIVE) EXTRAPOLATION OF TEMPERATURE TO TIME OF SHUTDOWN (see 7.2.5)		N
	Procedure for the extrapolation used to determine the temperature at the instant of shutdown		N
	Alternative procedure used		N
E	ANNEX E (NORMATIVE) CONSTRUCTION OF INPUT SUPPLY TERMINALS (see 10.4)		N
E.1	Size of terminals		N
E.2	Spacing between terminals		N
E.3	Connections at the terminals		N
E.4	Constructions of terminals		N
E.5	Fixing of the terminals		N
F	ANNEX F (INFORMATIVE) CROSS–REFERENCE TO NON–SI UNITS		N
F.1	Cross reference for mm^2 to American wire gauge (AWG) (see 8.2 and E.1)		N
F.2	Cross reference for kW to horsepower (hp) (see 15.2, box 21)		N
G	ANNEX G (INFORMATIVE) SUITABILITY OF INPUT SUPPLY FOR THE MEASUREMENT OF THE TRUE R.M.S. VALUE OF THE SUPPLY CURRENT (see 10.8)		N
	Ratio between input supply impedance and input impedance of the welding power source is taken into account (4%)		N

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Clause	Requirement – Test	Result - Remark	Verdict

	ANNEX H (INFORMATIVE) PLOTTING OF STATIC CHARACTERISTICS (see 11.2)		N
H.1	The static characteristic is obtained by plotting required values on a graph with the welding current on the horizontal and the load voltage on the vertical axis		N
H.2	The number of values measured should be sufficient to enable a smooth curve to be plotted		N
H.3	The series of curves obtained for the static characteristics used to confirm conformity to the relevant requirements of this standard		N
	additionally, the formulae given is used		N

I	ANNEX I (NORMATIVE) METHODS OF A 10 Nm IMPACT TEST (see 14.1)		N
I.1	Pendulum impact hammer		N
	The welding power source is placed. Hammer and swing arm are sett to obtain the required impact energy		N
I.2	Free fall weight		N
	The welding power source is laid as specified and the mass of free fall is selected from the value in table I.1		N

J	ANNEX J (INFORMATIVE) THICKNESS OF SHEET METAL FOR ENCLOSURES (see 14.1)		N
	The minimum thickness of sheet metal for enclosure are selected:		N
	for steel, in accordance with table J.1		N
	for aluminium, brass or cooper, in accordance with table J.2		N

ZA	ANNEX ZA (NORMATIVE) Normative reference to International publications with their corresponding European publications		N

EN 50445			
Clause	Requirement – Test	Result - Remark	Verdict

1 –EN 50445

1.1 Compliance Criteria

Appliances are deemed to comply with the basic restriction if the reference levels are not exceeded.

If a value exceeds the reference level, the coupling factor can be taken into account to show compliance with the basic restriction. The coupling factor has been determined to cover the worst case for the same type of appliances.

If the value still exceeds the reference level, this does not necessarily mean that the basic restriction is exceeded. Calculation methods can be used to verify whether the basic restriction is fulfilled.

1.2 Test Setup

Test procedure : EN 50445: 2008;
Frequency range : 0Hz to 300 GHz;
Limits : EN 50445: 2008;
Sensor Location : Around the EUT

1.3 Test Methods

Frequency range of the used field-probe is 0Hz – 300GHz,

1.5 Test Conditions

Ambient Temperature : 22 ℃/ 22 ℃ (**Before Test /After Test**);
Relative Humidity : 60 %/ 60 % (**Before Test /After Test**);
Power Supply : 230 V / 50 Hz
Operating conditions :Continuously

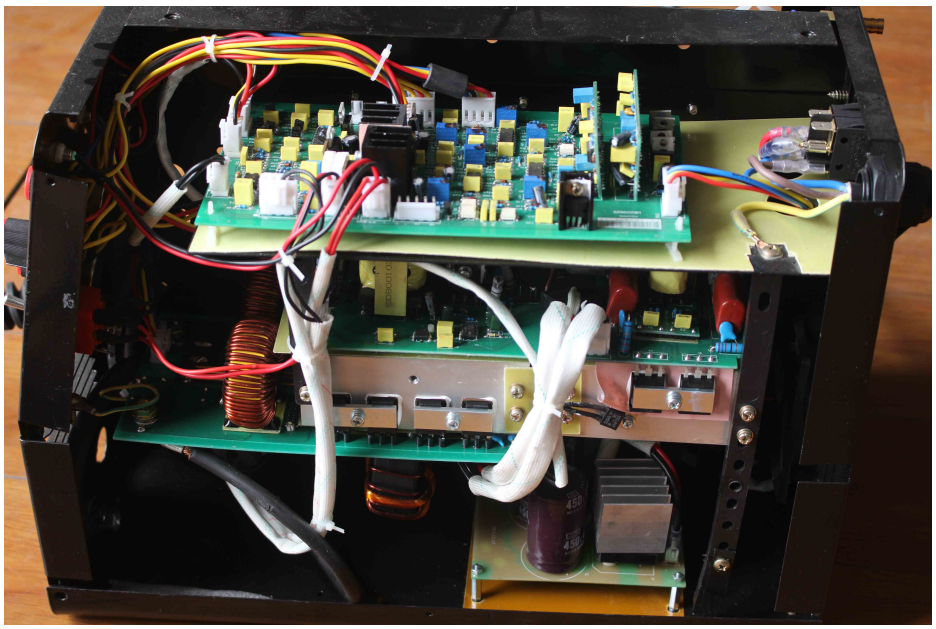
1.6 Test results

Test value below the relevant limits of EN 50444 and EN 50505.

1.7 Verdict

The EUT met the requirement

Photos of the sample



Photos of the sample

MODEL : MIG-200	No.			
DC / AC				
U_2 / I_2	—	20A/15V-200A/20.5V		
	—	X	60%	100%
	U o V	I_2	200A	140A
	38V	U_2	24V	21V
	U_1-230V 50/60HZ	I1max=18A,I1eff=22A		
PROTECTTON:IP21	CLOSS OF INSULATTON:F	COOLING:BY FAN		

Notice

1. This test report shall be invalidation without the cachet of the testing laboratory.
2. This copied report shall be invalidation without sealed the cachet of the testing laboratory.
3. This report shall be invalidation without tester signature, reviewer signature and approver signature.
4. This altered report shall be invalidation.
5. Client shall put forward demurrer within 15days after received report. The testing laboratory shall refuse disposal if exceeded the time limit.
6. The test results presented in this report relate only to the object tested.

Post code：610100

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