



校准证书

CALIBRATION CERTIFICATE

证书编号 DBB201506647
Certificate No.

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委托方 广州市依泰电子科技有限公司
Client

委托方地址
Add. of Client

计量器具名称 DOUBLE CLAMP DIGITAL PHASE METER
Description

型号规格 ETCR4000
Model/Type

制造厂 广州市依泰电子科技有限公司
Manufacturer

出厂编号 40150052
Serial No.

设备编号
Equipment No.

接收日期 2015 年 04 月 30 日
Date of Receipt Y M D

结论 见校准结果页
Conclusion Shown in the results of calibration

校准日期 2015 年 05 月 06 日
Date of Calibration Y M D

批准人 戴伟
Approved Signatory

核 验 石劲波
Inspected by

校 准 叶跃华
Calibrated by





说 明

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DIRECTIONS

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1. 本中心是国家质量监督检验检疫总局在华南地区设立的国家法定计量检定机构, 本中心的质量管理体系符合 ISO/IEC 17025:2005 标准的要求。

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision. The quality system is in accordance with ISO/IEC 17025:2005.

2. 本中心所出具的数据均可溯源至国家计量基准和国际单位制(SI)。

All data issued by this laboratory are traceable to national primary standards and International System of Units (SI).

3. 本次校准的技术依据:

Reference documents for the calibration:

FFD1301-2013 数字双钳相位伏安表校准方法 Calibration Method of Digital Double clamp Phase Meter

4. 本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

设备名称/型号 Name of Equipment /Model	编号 Serial No.	证书号/有效期 Certificate No. /Due Date	计量特性 Metrological Characteristic
多功能校准源 Multifunction Calibrator /5520A	8080014	DBB201506413 /2016-04-13	ACV: $\pm 0.015\%$ rdg; ACA: $\pm 0.04\%$ rdg; FREQ: $\pm 2.5 \times 10^{-6}$ rdg
功率标准源 Electrical Power Standard /6100A	852147534~8521475 36	DLdr2014-1068 /2015-09-25	0.02 级 Grade 0.02

5. 校准地点、环境条件:

Place and environmental conditions of the calibration:

地点 本中心电磁实验 温度 (22±2) °C 相对湿度 (55±5) %
Place 室(Electrics-magnetics Lab) Temperature R.H.

6. 被校准仪器限制使用条件:

Limiting condition of the instrument calibrated:

注: 1. 本证书校准结果只与受校准仪器有关。

2. 未经本机构书面批准, 不得部分复制此证书。

Note: 1. The results relate only to the items calibrated.

2. This certificate shall not be reproduced except in full, without the written approval of our laboratory.



校准结果

RESULTS OF CALIBRATION

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一、外观: 符合要求(Apparent inspection:Pass)

二、交流电流: 见表1 (ACA: In table 1, $f=50$ Hz)

表1(Table 1)

回路 Channel	量程 Range	示值 Indication Value	实际值 Reference Value	误差 Error	允许误差 MPE	结论 Conclusion	
		(mA)	(mA)	(mA)	(mA)	(Pass/Fail)	
11	200mA	19.9	20.00	- 0.1	±0.4	Pass	
		99.8	100.00	- 0.2	±1.2	Pass	
		189.9	190.00	- 0.1	±2.1	Pass	
	2A	(A)	(A)	(A)	(A)	(A)	
		0.199	0.2000	- 0.001	±0.004	Pass	
		0.498	0.5000	- 0.002	±0.007	Pass	
		0.999	1.0000	- 0.001	±0.012	Pass	
		1.501	1.5000	+ 0.001	±0.017	Pass	
	10A	1.902	1.9000	+ 0.002	±0.021	Pass	
		1.98	2.000	- 0.02	±0.04	Pass	
		5.00	5.000	- 0.00	±0.07	Pass	
	12	200mA	8.99	9.000	- 0.01	±0.11	Pass
(mA)			(mA)	(mA)	(mA)		
19.8			20.00	- 0.2	±0.4	Pass	
2A		100.2	100.00	+ 0.2	±1.2	Pass	
		190.6	190.00	+ 0.6	±2.1	Pass	
		(A)	(A)	(A)	(A)		
		0.199	0.2000	- 0.001	±0.004	Pass	
		0.499	0.5000	- 0.001	±0.007	Pass	
		1.002	1.0000	+ 0.002	±0.012	Pass	
10A	1.506	1.5000	+ 0.006	±0.017	Pass		
	1.911	1.9000	+ 0.011	±0.021	Pass		
	1.99	2.000	- 0.01	±0.04	Pass		
	5.00	5.000	0.00	±0.07	Pass		
	9.03	9.000	+ 0.03	±0.11	Pass		



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三、交流电压: 见表2 (ACV: In table 2, $f=50$ Hz)

表2(Table 2)

回路 Channel	量程 Range	示值 Indication Value (V)	实际值 Reference Value (V)	误差 Error (V)	允许误差 MPE (V)	结论 Conclusion (Pass/Fail)	
U1	20V	1.99	2.000	- 0.01	±0.04	Pass	
		9.98	10.000	- 0.02	±0.14	Pass	
		18.99	19.000	- 0.01	±0.25	Pass	
	200V	19.9	20.00	- 0.1	±0.4	Pass	
		50.0	50.00	0.0	±0.8	Pass	
		100.2	100.00	+ 0.2	±1.4	Pass	
		150.7	150.00	+ 0.7	±2.0	Pass	
		191.1	190.00	+ 1.1	±2.5	Pass	
	500V	198	200.00	- 2	±4	Pass	
		298	300.00	- 2	±6	Pass	
		501	500.00	+ 1	±8	Pass	
	U2	20V	1.99	2.000	- 0.01	±0.04	Pass
			9.96	10.000	- 0.04	±0.14	Pass
			18.93	19.000	- 0.07	±0.25	Pass
		200V	19.9	20.00	- 0.1	±0.4	Pass
49.8			50.00	- 0.2	±0.8	Pass	
100.1			100.00	+ 0.1	±1.4	Pass	
150.4			150.00	+ 0.4	±2.0	Pass	
190.6			190.00	+ 0.6	±2.5	Pass	
500V		198	200.00	- 2	±4	Pass	
		298	300.00	- 2	±6	Pass	
		500	500.00	0	±8	Pass	



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四、相位: 见表3 (Phase: In table 3, $f=50$ Hz)

表3(Table 3)

回路 Channel	示值 Indication Value (°)	实际值 Reference Value (°)	误差 Error (°)	允许误差 MPE (°)	结论 Conclusion (Pass/Fail)
UII2	30	30.00	0	±3	Pass
	60	60.00	0	±3	Pass
	300	300.00	0	±3	Pass
	330	330.00	0	±3	Pass
	360	360.00	0	±3	Pass
UIU2	30	30.00	0	±3	Pass
	60	60.00	0	±3	Pass
	300	300.00	0	±3	Pass
	330	330.00	0	±3	Pass
	360	360.00	0	±3	Pass
IUI2	30	30.00	0	±3	Pass
	60	60.00	0	±3	Pass
	300	300.00	0	±3	Pass
	330	330.00	0	±3	Pass
	360	360.00	0	±3	Pass
IIU2	30	30.00	0	±3	Pass
	60	60.00	0	±3	Pass
	300	300.00	0	±3	Pass
	330	330.00	0	±3	Pass
	360	360.00	0	±3	Pass

说明(Notes):

1. 测量结果的扩展不确定度(Expanded uncertainty of measuring results):

交流电压(ACV) $U_{rel}=0.1\%$ 交流电流(ACA) $U_{rel}=0.1\%$ 相位(Phase) $U=0.6^\circ$

(包含因子 $k=2$, 依据 JJF1059.1-2012 测量不确定度评定与表示)

(Coverage factor $k=2$, In accordance with JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.)

2. 建议校准周期不超过1年。

The period of calibration advised within one year.