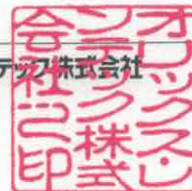


CERTIFICATE OF CALIBRATION



ORIX

オリックス・レントεκ株式会社



Customer Name

LIGHTHOUSE Inc.

Division : Calibration Consignment Certificate Number : KJ-P0283933-20220408-00-N-0

Description : SCOPE METER

Model No. : 123

Manufacturer : FLUKE

Customer ID No. : LHQ-02

Serial No. : DM6753120

Calibration Date : 08-Apr-2022

Location of : Tokyo Technical Center

Calibration 3-25-3 Kanamori, Machida-City, Tokyo 194-8585

Conditions : Temperature 23 °C Humidity 53 %R. H. Calibrated by : 314321

Calibration Status : Non Adjustment

Result : Pass

Location of Issue : Tokyo Technical Center

3-25-3 Kanamori, Machida-City, Tokyo 194-8585

TEL : +81-42-799-0586 FAX : +81-42-799-6154

<https://www.orixrentec.jp/>

ORIX Rentec Corporation certifies that the above instrument was calibrated according to our calibration procedures.

The standards used for this calibration are controlled by official regulations for standards and traceable to National Standards directly or through manufacturers on a regular basis.

The National Standards are such as AIST(National Institute of Advanced Industrial Science and Technology), and public calibration entities in other countries which participate in BIPM(Bureau International des Poids et Mesures), such as NIST(National Institute of Standards and Technology).

Date of issue : 11-Apr-2022

Head of Issue

ORIX Rentec Corporation

General Manager Quality Assurance Department : Ryoetsu Nakagawa

Ryoetsu Nakagawa

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RESULT OF CALIBRATION



ORIX

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Calibration Date : 08-Apr-2022
Model No. : 123
Customer ID No. : LHQ-02
Serial No. : DM6753120
Certificate Number : KJ-P0283933-20220408-00-N-0

【Calibration Equipments Used】

Description			Manufacturer			
Model No.	Serial No.	Asset No.	Cal. Lab.	Cal. Date	Cal. Due. Date	
1	CALIBRATOR		FLUKE			
	5522A	4712901	45371854	ORIX Rentec	10-May-2021	30-Apr-2022
	Certificate Number(Issue No) : SK-45371854-20210510-00-N-0					
2	CALIBRATOR		FLUKE			
	5700A	9705610	41328667	ORIX Rentec M • S • C	13-Aug-2021	30-Jun-2022
	Certificate Number(Issue No) : 21S0083					

【Calibration Item】

1. VERTICAL AXIS SENSITIVITY

Range	Test Point	Accuracy	Tolerance		CH-A	CH-B	Judge
			Lower Limit	Upper Limit			
5 mV/div	20 mV	±(1 %+0.05 div)	-2.2 %	2.2 %	0.2 %	0.2 %	Pass
10 mV/div	50 mV	±(1 %+0.05 div)	-2.0 %	2.0 %	0.0 %	0.1 %	Pass
20 mV/div	0.1 V	±(1 %+0.05 div)	-2.0 %	2.0 %	0.0 %	0.1 %	Pass
50 mV/div	0.2 V	±(1 %+0.05 div)	-2.2 %	2.2 %	-0.5 %	-0.2 %	Pass
0.1 V/div	0.5 V	±(1 %+0.05 div)	-2.0 %	2.0 %	-0.2 %	0.0 %	Pass
0.2 V/div	1 V	±(1 %+0.05 div)	-2.0 %	2.0 %	0.0 %	-0.2 %	Pass
0.5 V/div	2 V	±(1 %+0.05 div)	-2.2 %	2.2 %	-0.5 %	-0.2 %	Pass
1 V/div	5 V	±(1 %+0.05 div)	-2.0 %	2.0 %	0.0 %	-0.3 %	Pass
2 V/div	10 V	±(1 %+0.05 div)	-2.0 %	2.0 %	0.0 %	-0.2 %	Pass
5 V/div	20 V	±(1 %+0.05 div)	-2.2 %	2.2 %	-0.3 %	-0.6 %	Pass
10 V/div	50 V	±(1 %+0.05 div)	-2.0 %	2.0 %	-0.1 %	0.0 %	Pass
20 V/div	100 V	±(1 %+0.05 div)	-2.0 %	2.0 %	0.1 %	0.0 %	Pass
50 V/div	200 V	±(1 %+0.05 div)	-2.2 %	2.2 %	0.0 %	-0.1 %	Pass
100 V/div	200 V	±(1 %+0.05 div)	-3.5 %	3.5 %	0.0 %	-0.2 %	Pass

2. SWEEP TIME

Test Condition	Test Point	Accuracy	Judge
Equivalent Sampling	20 ns/div ~ 500 ns/div	±(0.4 %+0.04 div)	Pass
Real Time Sampling	1 μs/div ~ 5 s/div	±(0.1 %+0.04 div)	Pass

3. TRIGGER SENSITIVITY

Condition Range : ≥10mV/div			
Channel	Frequency	Accuracy	Judge
CH-A	5 MHz	≤0.5 div	Pass

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RESULT OF CALIBRATION



ORIX

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Calibration Date : 08-Apr-2022
Model No. : 123
Customer ID No. : LHQ-02
Serial No. : DM6753120
Certificate Number : KJ-P0283933-20220408-00-N-0

3. TRIGGER SENSITIVITY

Condition Range : $\geq 10\text{mV/div}$

Channel	Frequency	Accuracy	Judge
CH-A	25 MHz	$\leq 1.5 \text{ div}$	Pass
CH-A	40 MHz	$\leq 4.0 \text{ div}$	Pass
CH-B	5 MHz	$\leq 0.5 \text{ div}$	Pass
CH-B	25 MHz	$\leq 1.5 \text{ div}$	Pass
CH-B	40 MHz	$\leq 4.0 \text{ div}$	Pass

4. FREQUENCY RESPONSE

Condition DC Coupling, Reference 50kHz 6div

Range	Frequency	Accuracy	CH-A	CH-B	Judge
5 mV/div	20 MHz	$\geq 4.2 \text{ div}$	5.0 div	5.2 div	Pass

5. DC VOLTAGE MEASUREMENT (ZERO)

Accuracy $\pm$ (% of reading + digits)

Condition Short

Range	Accuracy	Lower Limit	Tolerance Upper Limit	CH-A	CH-B	Judge
500 mV	$\pm (0.5+5)$	-0.5 mV	0.5 mV	-0.1 mV	0.0 mV	Pass
5 V	$\pm (0.5+5)$	-0.005 V	0.005 V	0.000 V	0.000 V	Pass
50 V	$\pm (0.5+5)$	-0.05 V	0.05 V	0.00 V	0.00 V	Pass
500 V	$\pm (0.5+5)$	-0.5 V	0.5 V	0.0 V	0.0 V	Pass
1.25 kV	$\pm (0.5+5)$	-0.005 kV	0.005 kV	0.000 kV	0.000 kV	Pass

6. DC VOLTAGE MEASUREMENT

Accuracy $\pm$ (% of reading + digits)

Range	Input	Accuracy	Lower Limit	Tolerance Upper Limit	CH-A	CH-B	Judge
500 mV	400 mV	$\pm (0.5+5)$	397.5 mV	402.5 mV	400.6 mV	400.7 mV	Pass
500 mV	-400 mV	$\pm (0.5+5)$	-402.5 mV	-397.5 mV	-400.7 mV	-400.0 mV	Pass
5 V	4.9 V	$\pm (0.5+5)$	4.871 V	4.929 V	4.902 V	4.908 V	Pass
5 V	4 V	$\pm (0.5+5)$	3.975 V	4.025 V	4.002 V	4.009 V	Pass
5 V	3 V	$\pm (0.5+5)$	2.980 V	3.020 V	3.001 V	3.007 V	Pass
5 V	2 V	$\pm (0.5+5)$	1.985 V	2.015 V	2.001 V	2.006 V	Pass
5 V	1 V	$\pm (0.5+5)$	0.990 V	1.010 V	1.002 V	1.003 V	Pass
5 V	-1 V	$\pm (0.5+5)$	-1.010 V	-0.990 V	-1.004 V	-1.001 V	Pass
5 V	-2 V	$\pm (0.5+5)$	-2.015 V	-1.985 V	-2.005 V	-1.998 V	Pass
5 V	-3 V	$\pm (0.5+5)$	-3.020 V	-2.980 V	-3.005 V	-2.998 V	Pass
5 V	-4 V	$\pm (0.5+5)$	-4.025 V	-3.975 V	-4.002 V	-3.996 V	Pass
5 V	-4.9 V	$\pm (0.5+5)$	-4.929 V	-4.871 V	-4.904 V	-4.899 V	Pass
50 V	40 V	$\pm (0.5+5)$	39.75 V	40.25 V	40.02 V	40.07 V	Pass

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RESULT OF CALIBRATION



ORIX

オリックス・レンテック株式会社



Calibration Date : 08-Apr-2022
Model No. : 123
Customer ID No. : LHQ-02
Serial No. : DM6753120
Certificate Number : KJ-P0283933-20220408-00-N-0

6. DC VOLTAGE MEASUREMENT

Accuracy $\pm$ (% of reading + digits)

Range	Input	Accuracy	Tolerance		CH-A	CH-B	Judge
			Lower Limit	Upper Limit			
50 V	-40 V	$\pm (0.5+5)$	-40.25 V	-39.75 V	-40.03 V	-39.95 V	Pass
500 V	400 V	$\pm (0.5+5)$	397.5 V	402.5 V	400.1 V	400.4 V	Pass
500 V	-400 V	$\pm (0.5+5)$	-402.5 V	-397.5 V	-399.8 V	-399.4 V	Pass
1.25 kV	0.6 kV	$\pm (0.5+5)$	0.592 kV	0.608 kV	0.601 kV	0.601 kV	Pass
1.25 kV	-0.6 kV	$\pm (0.5+5)$	-0.608 kV	-0.592 kV	-0.601 kV	-0.599 kV	Pass

7. AC VOLTAGE MEASUREMENT

Accuracy $\pm$ (% of reading + digits)

Condition Frequency : 50Hz

Range	Input	Accuracy	Tolerance		CH-A	CH-B	Judge
			Lower Limit	Upper Limit			
500 mV	400 mV	$\pm (1.0+10)$	395.0 mV	405.0 mV	400.2 mV	399.8 mV	Pass
5 V	4 V	$\pm (1.0+10)$	3.950 V	4.050 V	3.998 V	3.999 V	Pass
50 V	40 V	$\pm (1.0+10)$	39.50 V	40.50 V	39.98 V	39.96 V	Pass
500 V	400 V	$\pm (1.0+10)$	395.0 V	405.0 V	399.5 V	399.3 V	Pass
1.25 kV	0.6 kV	$\pm (1.0+10)$	0.584 kV	0.616 kV	0.600 kV	0.599 kV	Pass

8. AC VOLTAGE MEASUREMENT (FREQUENCY CHARACTERISTIC)

Accuracy $\pm$ (% of reading + digits)

Frequency/Range	Input	Accuracy	Tolerance		CH-A	CH-B	Judge
			Lower Limit	Upper Limit			
50 Hz / 500 mV	100 mV	$\pm (1.0+10)$	98.0 mV	102.0 mV	100.2 mV	100.1 mV	Pass
20 kHz / 500 mV	100 mV	$\pm (2.5+15)$	96.0 mV	104.0 mV	100.8 mV	100.3 mV	Pass
20 MHz / 500 mV	100 mV	$\pm (30+25)$	67.5 mV	132.5 mV	83.9 mV	88.1 mV	Pass
10 Hz / 5 V	1 V	$\pm (1.0+10)$	0.980 V	1.020 V	1.001 V	1.002 V	Pass
50 Hz / 5 V	1 V	$\pm (1.0+10)$	0.980 V	1.020 V	1.000 V	1.001 V	Pass
60 Hz / 5 V	1 V	$\pm (1.0+10)$	0.980 V	1.020 V	1.002 V	1.002 V	Pass
400 Hz / 5 V	1 V	$\pm (2.5+15)$	0.960 V	1.040 V	1.002 V	1.002 V	Pass
1 kHz / 5 V	1 V	$\pm (2.5+15)$	0.960 V	1.040 V	1.001 V	1.002 V	Pass
20 kHz / 5 V	1 V	$\pm (2.5+15)$	0.960 V	1.040 V	1.000 V	0.996 V	Pass
1 MHz / 5 V	1 V	$\pm (5.0+20)$	0.930 V	1.070 V	1.005 V	1.006 V	Pass
5 MHz / 5 V	1 V	$\pm (10+25)$	0.875 V	1.125 V	1.005 V	1.008 V	Pass
12 MHz / 5 V	1 V	$\pm (30+25)$	0.675 V	1.325 V	0.953 V	0.970 V	Pass
20 MHz / 5 V	1 V	$\pm (30+25)$	0.675 V	1.325 V	0.849 V	0.883 V	Pass
50 Hz / 50 V	10 V	$\pm (1.0+10)$	9.80 V	10.20 V	10.02 V	10.01 V	Pass
20 kHz / 50 V	10 V	$\pm (2.5+15)$	9.60 V	10.40 V	10.01 V	9.95 V	Pass
1 MHz / 50 V	10 V	$\pm (5.0+20)$	9.30 V	10.70 V	10.06 V	10.03 V	Pass
50 Hz / 500 V	100 V	$\pm (1.0+10)$	98.0 V	102.0 V	100.1 V	100.0 V	Pass
20 kHz / 500 V	100 V	$\pm (2.5+15)$	96.0 V	104.0 V	99.8 V	99.7 V	Pass

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RESULT OF CALIBRATION



ORIX

オリックス・レンテック株式会社



Calibration Date : 08-Apr-2022
Model No. : 123
Customer ID No. : LHQ-02
Serial No. : DM6753120
Certificate Number : KJ-P0283933-20220408-00-N-0

8. AC VOLTAGE MEASUREMENT (FREQUENCY CHARACTERISTIC)

Accuracy $\pm$ (% of reading + digits)

Frequency/Range	Input	Accuracy	Tolerance		CH-A	CH-B	Judge
			Lower Limit	Upper Limit			
200 kHz / 500 V	100 V	$\pm$ (5.0+20)	93.0 V	107.0 V	99.2 V	98.9 V	Pass
400 Hz / 1.25 kV	0.6 kV	$\pm$ (2.5+15)	0.570 kV	0.630 kV	0.600 kV	0.599 kV	Pass
1 kHz / 1.25 kV	0.6 kV	$\pm$ (2.5+15)	0.570 kV	0.630 kV	0.600 kV	0.599 kV	Pass

9. RESISTANCE MEASUREMENT

Accuracy $\pm$ (% of reading + digits)

Range	Input	Accuracy	Tolerance		CH-A	Judge
			Lower Limit	Upper Limit		
500 Ω	190 Ω	$\pm$ (0.6+5)	188.4 Ω	191.6 Ω	190.1 Ω	Pass
5 k Ω	1.9 k Ω	$\pm$ (0.6+5)	1.884 k Ω	1.916 k Ω	1.899 k Ω	Pass
50 k Ω	19 k Ω	$\pm$ (0.6+5)	18.84 k Ω	19.16 k Ω	19.00 k Ω	Pass
500 k Ω	190 k Ω	$\pm$ (0.6+5)	188.4 k Ω	191.6 k Ω	189.7 k Ω	Pass
5 M Ω	1.9 M Ω	$\pm$ (0.6+5)	1.884 M Ω	1.916 M Ω	1.898 M Ω	Pass
30 M Ω	19 M Ω	$\pm$ (0.6+5)	18.84 M Ω	19.16 M Ω	18.95 M Ω	Pass

10. FREQUENCY MEASUREMENT

Accuracy $\pm$ (% of reading + digits)

Frequency	Accuracy	Tolerance		CH-A	CH-B	Judge
		Lower Limit	Upper Limit			
5 kHz	$\pm$ (0.5+2)	4.973 kHz	5.027 kHz	4.998 kHz	4.999 kHz	Pass

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CERTIFICATE OF TRACEABILITY



ORIX

オリックス・レントεκ株式会社



Customer Name

LIGHTHOUSE Inc.

Division : Calibration Consignment Certificate Number : KJ-P0283933-20220408-00-N-0

Description : SCOPE METER

Model No. : 123

Manufacturer : FLUKE

Customer ID No. : LHQ-02

Serial No. : DM6753120

Calibration Date : 08-Apr-2022

Location of : Tokyo Technical Center

Calibration 3-25-3 Kanamori, Machida-City, Tokyo 194-8585

Conditions : Temperature 23 °C Humidity 53 %R. H. Calibrated by : 314321

Location of Issue : Tokyo Technical Center

3-25-3 Kanamori, Machida-City, Tokyo 194-8585

TEL : +81-42-799-0586 FAX : +81-42-799-6154

<https://www.orixrentec.jp/>

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Date of issue : 11-Apr-2022

Head of Issue

ORIX Rentec Corporation

General Manager Quality Assurance Department : Ryoetsu Nakagawa

Ryoetsu Nakagawa

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オリックス・レンタル株式会社



Calibration Date : 08-Apr-2022
Model No. : 123
Customer ID No. : LHQ-02
Serial No. : DM6753120
Certificate Number : KJ-P0283933-20220408-00-N-0

【Reference Standards】

	Description		Manufacturer			
	Model No.	Serial No.	Asset No.	Cal. Lab.	Cal. Date	Cal. Due. Date
1	DIGITAL MULTIMETER		Keysight Technologies			
	3458A	2823A11167	13884044	Keysight Technologies International	18-Aug-2020	28-Feb-2021
	Certificate Number(Issue No) : 202189-000					
2	DIGITAL MULTIMETER		Keysight Technologies			
	3458A	2823A15396	16174484	Keysight Technologies International	12-Sep-2017	31-Aug-2018
	Certificate Number(Issue No) : 172249-000					
3	CESIUM FREQUENCY STANDARD		Symmetricom			
	5071A	US45382292	36790228	Keysight Technologies International	05-Jan-2021	31-Dec-2021
	Certificate Number(Issue No) : 210368-000					
4	CALIBRATOR		FLUKE			
	5700A	9705610	41328667	ORIX Rentec M・S・C	13-Aug-2021	30-Jun-2022
	Certificate Number(Issue No) : 21S0083					
5	POWER SENSOR		Keysight Technologies			
	8482A	2652A14512	10724672	Keysight Technologies International	12-Mar-2020	28-Feb-2021
	Certificate Number(Issue No) : 201021-000					
6	POWER METER		Keysight Technologies			
	E4418B	MY41294770	25212580	Keysight Technologies	07-Jun-2019	30-Apr-2020
	Certificate Number(Issue No) : 19061129126854713/1-11291268547-1					

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