

Kalibrierzertifikat / Calibration Certificate

Die BAUR GmbH bestätigt, dass das angeführte Gerät alle Spezifikationen erfüllt oder übertrifft, die in dem angegebenen Verfahren angegeben sind (sofern nicht anders angegeben). Es wurde mit Messnormalen kalibriert, die auf National Institute rückführbar sind.

BAUR GmbH certifies that the listed device meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to National Institutes of Standards.

Kal.-Zertifikat-
Nummer

Number of
Cal.-Certificate

20-1030

Gegenstand:	Digitalmultimeter		FOUND-LEFT	
Object:				
Hersteller:	Fluke			
Manufacturer:				
Typ:	289			
Type:				
Inventarnummer:	39830014	Seriennummer:	39830014	
Asset number:		Serial number:		
Auftraggeber:	Servis BAUR s.r.o.			
Customer:	Zampachova 2021/5a	CZ	61300	Brno Czech Republic
Auftragsnummer:	105 007 309			
Order number:				
Anzahl der Seiten des Kalibrierzertifikates:	7			
Number of pages of the certificate:				
Datum der Kalibrierung:	04. Februar 2020			
Date of calibration:				

Dieses Kalibrierzertifikat darf nur vollständig und unverändert weiterverarbeitet werden. Auszüge oder Änderungen sind unzulässig. Kalibrierzertifikate ohne Unterschrift und Stempel haben keine Gültigkeit.

This calibration certificate may not be reproduced other than in full. Calibration certificates without signature and seal are not valid.

Ort, Datum	Stempel	Zeichnungsberechtigter	Bearbeiter
Location, Date	Seal	Authorised person	Person responsible
Sulz, 04.02.2020		 Alfred Bechter	 Alfred Bechter

Kalibriergegenstand: **Digitalmultimeter**

20-1030

Object of calibration:

Kalibrierverfahren:

Calibration procedure:

Fluke 289: (1 year) CAL VER RS-232 /5520

Ort der Kalibrierung:

Location of calibration:

Sulz.

Umgebungsbedingungen:

Ambient conditions:

Umgebungstemperatur:

Ambient temperature:

25,5°C ± 2,0 °C

Rel. Luftfeuchtigkeit

Rel. Humidity:

34 % ± 15 %

Messunsicherheit: Angegeben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor $k = 2$ ergibt. Sie wurde gemäß DAR-4-EM-07 ermittelt. Der Wert der Messgröße liegt mit einer Wahrscheinlichkeit von 95% im zugeordneten Werteintervall.

Measurement uncertainty:

The uncertainty of measurement stated is the expanded uncertainty which is obtained from the standard uncertainty of measurement by multiplication by the expansion factor $k = 2$. It was determined in accordance with "Guide to the Expression of Uncertainty in Measurement". Normally, with a probability of approx. 95%, the value of the measured lies within the interval assigned.

Eingangsdatum:

Date of receipt:

16.01.2020

Kalibrierstatus:

Calibration status:

PASS

Zustand:

Condition:

FOUND-LEFT

Bemerkung:

Remark:

The device complies with the manufacturer's specifications.

Standards Used

<u>Ident.Nr.</u>	<u>Hersteller</u>	<u>Modell</u>	<u>Description</u>	<u>Cal Date</u>	<u>Due Date</u>
792-100	Fluke	5522A	Kalibrator	10.12.2019	10.12.2020

Messergebnis / Test Results

20-1030

<u>Messbereich</u>	<u>Referenzwert</u>	<u>Messwert</u> <u>Prüfling</u>	<u>Deviation</u>	<u>Toleranz</u>	<u>Error in %</u>	<u>relative</u> <u>Mess-</u> <u>unsicherheit</u>	<u>Status</u>
IDENTIFICATION							
Serial Number	: 39830014						
Firmware Level	: V1.16						
Calibration Number	: 1						
FACTORY DEFAULT							Pass
POWER LED TEST							Pass
BACKLIGHT TEST							Pass
CURRENT TERMINAL SENSING TEST							Pass
KEYPAD TEST							Pass
LCD TEST							Pass
TEMPERATURE							
0.0 °C	0.00 °C	0.0 °C	0.00 °C	1.00 °C	0%	6.8e-002 °C	Pass
100.0 °C	100.00 °C	100.0 °C	0.00 °C	2.00 °C	0%	6.8e-002 °C	Pass
1000.0 °C	1000.00 °C	1000.1 °C	0.10 °C	11.00 °C	0.909%	1.0e-001 °C	Pass
DC MILLIVOLTS							
50 mV Range							
0.000 mV	0.0000 mV	0.000 mV	0.0000 mV	0.0200 mV	0%	4.8e-007 V	Pass
0.025 mV	0.0250 mV	0.026 mV	0.0010 mV	0.0200125 mV	5%	4.8e-007 V	Pass
-0.025 mV	-0.0250 mV	-0.025 mV	0.0000 mV	0.0200125 mV	0%	4.8e-007 V	Pass
50.000 mV	50.0000 mV	49.998 mV	-0.0020 mV	0.0450 mV	4.44%	8.3e-007 V	Pass
500 mV Range							
500.00 mV	500.000 mV	499.97 mV	-0.030 mV	0.145 mV	20.7%	4.1e-006 V	Pass
-250.00 mV	-250.000 mV	-250.00 mV	0.000 mV	0.0825 mV	0%	3.7e-006 V	Pass
DC/AC							
50.00 mV	50.000 mV	49.99 mV	-0.010 mV	0.0325 mV	30.8%	3.0e-006 V	Pass
AC/DC							
250.00 mV @ 35 kHz	250.000 mV	249.18 mV	-0.820 mV	12.900 mV	6.36%	3.7e-005 V	Pass
OHMS							

Messergebnis / Test Results

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Messbereich	Referenzwert	Messwert Prüfling	Deviation	Toleranz	Error in %	relative Mess- unsicherheit	Status
500 Ohm Range							
0.00 Ohm	0.000 Ω	-0.01 Ω	-0.010 Ω	0.100 Ω	10%	2.9e-003 Ohm	Pass
0.20 Ohm	0.200 Ω	0.20 Ω	0.000 Ω	0.1001 Ω	0%	2.9e-003 Ohm	Pass
500.00 Ohm	500.000 Ω	499.97 Ω	-0.030 Ω	0.350 Ω	8.57%	6.8e-003 Ohm	Pass
5 kOhm Range							
5.0000 kOhm	5.00000 k Ω	4.9997 k Ω	-0.00030 k Ω	0.00270 k Ω	11.1%	6.8e-002 Ohm	Pass
50 kOhm Range							
50.000 kOhm	50.0000 k Ω	50.001 k Ω	0.0010 k Ω	0.0270 k Ω	3.7%	6.8e-001 Ohm	Pass
500 kOhm Range							
500.00 kOhm	500.000 k Ω	500.11 k Ω	0.110 k Ω	0.400 k Ω	27.5%	7.6e+000 Ohm	Pass
5 MOhm Range							
5.0000 MOhm	5.00000 MΩ	5.0021 MΩ	0.00210 MΩ	0.00790 MΩ	26.6%	2.7e+002 Ohm	Pass
30 MOhm Range							
30.000 MOhm	30.0000 MΩ	30.040 MΩ	0.0400 MΩ	0.4540 MΩ	8.81%	3.9e+003 Ohm	Pass
500 MOhm Range							
300.0 MOhm	300.00 MΩ	302.9 MΩ	2.90 MΩ	24.20 MΩ	12%	3.9e+005 Ohm	Pass
AC MILLIVOLTS							
50 mV Range							
5.000 mV @ 20 Hz	5.0000 mV	4.989 mV	-0.0110 mV	0.1350 mV	8.15%	3.9e-006 V	Pass
50.000 mV @ 65 kHz	50.0000 mV	49.033 mV	-0.9670 mV	1.7900 mV	54%	2.8e-005 V	Pass
500 mV Range							
50.00 mV @ 100 kHz	50.000 mV	49.38 mV	-0.620 mV	2.150 mV	28.8%	2.8e-005 V	Pass
250.00 mV @ 65 kHz	250.000 mV	248.29 mV	-1.710 mV	9.150 mV	18.7%	9.0e-005 V	Pass
500.00 mV @ 45 Hz	500.000 mV	500.00 mV	0.000 mV	1.750 mV	0%	5.2e-005 V	Pass
Frequency							
45.000 Hz @ 500 mV	45.0000 Hz	45.000 Hz	0.0000 Hz	0.0140 Hz	0%	2.9e-004 Hz	Pass
950.00 kHz @ 600 mV	950.000 kHz	949.99 kHz	-0.010 kHz	0.0975 k Hz	10.3%	3.0e+000 Hz	Pass
AC VOLTS							
5 V Range							
0.1000 V @ 60 Hz	0.10000 V	0.0988 V	-0.00120 V	0.00480 V	25%	3.0e-005 V	Pass

Messergebnis / Test Results

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<u>Messbereich</u>	<u>Referenzwert</u>	<u>Messwert</u> <u>Prüfling</u>	<u>Deviation</u>	<u>Toleranz</u>	<u>Error in %</u>	<u>relative</u> <u>Mess-</u> <u>unsicherheit</u>	<u>Status</u>
0.5000 V @ 10 kHz	0.50000 V	0.4968 V	-0.00320 V	0.00550 V	58.2%	6.0e-005 V	Pass
3.0000 V @ 100 kHz	3.00000 V	2.9920 V	-0.00800 V	0.18400 V	4.35%	8.6e-004 V	Pass
Duty Cycle (5 Vpp Squarewave)							
15.00 % @ 50 kHz	15.000 %	23.23 %	8.230 %	13.600 %	60.5%	4.1e-002 %	Pass
50 V Range							
15.000 V @ 100 kHz	15.0000 V	14.921 V	-0.0790 V	0.5650 V	14%	5.9e-003 V	Pass
500 V Range							
Low Pass Filter On							
50.00 V @ 60 Hz	50.000 V	49.90 V	-0.100 V	1.400 V	7.14%	5.3e-003 V	Pass
0.00 V @ 1600 Hz	0.000 V	6.27 V	6.270 V	8.000 V	78.4%	3.1e-003 V	Pass
500.00 V @ 10 kHz	500.000 V	499.35 V	-0.650 V	2.250 V	28.9%	6.2e-002 V	Pass
1000 V Range							
1000.0 V @ 10 kHz	1000.00 V	998.6 V	-1.40 V	6.50 V	21.5%	1.2e-001 V	Pass
DC VOLTS							
5 V Range							
4.0000 V	4.00000 V	3.9998 V	-0.00020 V	0.00120 V	16.7%	3.9e-005 V	Pass
50 V Range							
-40.000 V	-40.0000 V	-39.998 V	0.0020 V	0.0120 V	16.7%	4.4e-004 V	Pass
500 V Range							
400.00 V	400.000 V	399.99 V	-0.010 V	0.140 V	7.14%	4.4e-003 V	Pass
1000 V Range							
600.0 V	600.00 V	600.0 V	0.00 V	0.38 V	0%	2.9e-002 V	Pass
DC/AC (5 V Range)							
0.2000 V	0.20000 V	0.2001 V	0.00010 V	0.00235 V	4.26%	2.9e-005 V	Pass
AC/DC (5 V Range)							
2.0000 V @ 5 kHz	2.00000 V	2.0001 V	0.00010 V	0.03600 V	0.278%	1.4e-004 V	Pass
ACV Peak (4 Vpp Squarewave, +1 V offset)							
2.000 V	2.0000 V	1.997 V	-0.0030 V	0.1370 V	2.19%	9.1e-003 V	Pass

CAPACITANCE

Messergebnis / Test Results

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Messbereich	Referenzwert	Messwert Prüfling	Deviation	Toleranz	Error in %	relative Mess- unsicherheit	Status
10 nF Range							
5.00 nF	5.000 n F	5.06 n F	0.060 n F	0.100 n F	60%	9.2e-012 F	Pass
DIODE TEST							
3.5 kOhm							Pass
0.0 Ohm							Pass
LoOhm (50 Ohm)							
0.200 Ohm	0.2000 Ω	0.198 Ω	-0.0020 Ω	0.0203 Ω	9.85%	4.9e-004 Ohm	Pass
50.000 Ohm	50.0000 Ω	49.998 Ω	-0.0020 Ω	0.0950 Ω	2.11%	1.1e-003 Ohm	Pass
AC MICROAMPS							
500 µA Range							
500.00 µA @ 60 Hz	500.000 µ A	499.82 µ A	-0.180 µ A	3.200 µ A	5.63%	2.5e-007 A	Pass
500.00 µA @ 30 kHz	500.000 µ A	498.06 µ A	-1.940 µ A	7.150 µ A	27.1%	2.2e-006 A	Pass
5000 µA Range							
5000.0 µA @ 30 kHz	5000.00 µ A	4998.4 µ A	-1.60 µ A	71.50 µ A	2.24%	9.3e-006 A	Pass
DC MICROAMPS							
500 µA Range							
500.00 µA	500.000 µ A	499.96 µ A	-0.040 µ A	0.575 µ A	6.96%	3.9e-008 A	Pass
5000 µA Range							
5000.0 µA	5000.00 µ A	4999.7 µ A	-0.30 µ A	3.95 µ A	7.59%	2.9e-007 A	Pass
AC MILLIAMPS							
50 mA Range							
4.000 mA @ 20 Hz	4.0000 mA	3.980 mA	-0.0200 mA	0.0600 mA	33.3%	2.2e-006 A	Pass
30.000 mA @ 30 kHz	30.0000 mA	29.951 mA	-0.0490 mA	0.6250 mA	7.84%	4.8e-005 A	Pass
400 mA Range							
300.00 mA @ 30 kHz	300.000 mA	300.62 mA	0.620 mA	15.400 mA	4.03%	5.4e-004 A	Pass
400.00 mA @ 60 Hz	400.000 mA	399.99 mA	-0.010 mA	2.450 mA	0.408%	1.2e-004 A	Pass
DC MILLIAMPS							
50 mA Range							
0.100 mA	0.1000 mA	0.101 mA	0.0010 mA	0.01005 mA	9.95%	2.9e-007 A	Pass

Messergebnis / Test Results
20-1030

<u>Messbereich</u>	<u>Referenzwert</u>	<u>Messwert</u> <u>Prüfling</u>	<u>Deviation</u>	<u>Toleranz</u>	<u>Error in %</u>	<u>relative</u> <u>Mess-</u> <u>unsicherheit</u>	<u>Status</u>
50.000 mA	50.0000 mA	49.987 mA	-0.0130 mA	0.0350 mA	37.1%	2.9e-006 A	Pass
400 mA Range							
400.00 mA	400.000 mA	399.87 mA	-0.130 mA	0.620 mA	21%	4.7e-005 A	Pass
AC AMPS							
5 A Range							
5.0000 A @ 1 kHz	5.00000 A	4.9972 A	-0.00280 A	0.04200 A	6.67%	2.7e-003 A	Pass
10 A Range							
5.000 A @ 1 kHz	5.0000 A	4.999 A	-0.0010 A	0.0450 A	2.22%	2.7e-003 A	Pass
DC AMPS							
5 A Range							
5.0000 A	5.00000 A	4.9988 A	-0.00120 A	0.01600 A	7.5%	1.2e-003 A	Pass
10 A Range							
10.000 A	10.0000 A	9.997 A	-0.0030 A	0.0320 A	9.38%	2.2e-003 A	Pass
LoZ AC VOLTS							
120.0 V @ 60 Hz	120.00 V	120.3 V	0.30 V	6.40 V	4.69%	3.0e-002 V	Pass

End of Test Data