

# Kalibrierzertifikat / Calibration Certificate

Kal.-Zertifikat-  
Nummer  
Number of  
Cal.-Certificate

**22-1076**

Die BAUR GmbH bestätigt, dass das angeführte Gerät alle Spezifikationen erfüllt oder übertrifft, die in dem angegebenen Verfahren spezifiziert sind (sofern nicht anders vermerkt). 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.

Gegenstand / Object:	<b>Digitalmultimeter</b>	<b>FOUND-LEFT</b>
Hersteller / Manufacturer:	<b>Fluke</b>	
Typ / Type:	<b>87 III</b>	
Inventar-Nr. / Asset nr.:	<b>75090042</b>	
Serien-Nr. / Serial number:	<b>75090042</b>	
Auftraggeber / Customer:	<b>Servis BAUR s.r.o.</b> Zampachova 2021/5a 61300 Brno Czech Republic	
Auftrags-Nr. / Order:	<b>105009067</b>	
Kalibrierdatum / Date of calibration:	<b>23. Februar 2022</b>	
Anzahl der Seiten / Number of pages:	<b>7</b>	

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.

**Sulz**  
**23.02.2022**



*F. Hüllhorst*

**Fabian Hüllhorst**

*Julian Bildstein*

**Julian Bildstein**

Ort, Datum  
Location, Date

Stempel  
Seal

Zeichnungsberechtigter  
Authorised person

Bearbeiter  
Person responsible

## Prüfbedingungen / Test conditions

**22-1076**

Kalibriergegenstand / Object of calibration: **FLUKE 87 III**  
 Kalibrierverfahren / Calibration procedure: **Fluke 87 III: (1 year) CAL VER /5520**  
 Kalibrierort / Location of calibration: **Sulz**  
 Temperatur / Temperature: **23,0°C ± 2,0 °C**  
 Rel. Luftfeuchtigkeit / Rel. Humidity: **32 % ± 15 %**

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.

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: **21.02.2022**  
 Zustand / Condition: **FOUND-LEFT**  
 Kalibrierstatus / Calibration status: **PASS**  
 Bemerkung / Remark:

## Standards Used

<u>Ident.-No.</u>	<u>Manufacturer</u>	<u>Modell</u>	<u>Descriptor</u>	<u>Cert.-No.</u>	<u>Cal Date</u>	<u>Due Date</u>
792-200	Fluke	5522A	MULTI-PRODUCT CALIBRATOR	21-207	05.07.2021	05.07.2022

**Messergebnis / Test Results**
**22-1076**

<u>Messbereich</u>	<u>UUT</u>	<u>Referenzsystem</u>	<u>Abweichung</u>	<u>Toleranz</u>	<u>Fehler in %</u>	<u>MU</u>	<u>Status</u>
<b>BASIC OPERABILITY TEST</b>							
1 kOhm Input Resistor							Pass
mA $\mu$ A Input Fuse							Pass
A Input Fuse							Pass
<b>DISPLAY TEST</b>							
							Pass
<b>ROTARY SWITCH TESTS</b>							
VAC position							Pass
VDC position							Pass
mVDC position							Pass
Ohms position							Pass
Diode position							Pass
mA A position							Pass
$\mu$ A position							Pass
<b>DC MILLIVOLT TEST</b>							
<b>400 mV Range</b>							
350.0 mV	349.9 mV	350.00 mV	-0.10 mV	0.50 mV	20 %	2.9e-005 V	Pass
<b>DC VOLTAGE TESTS</b>							
<b>4 V Range</b>							
3.500 V	3.500 V	3.5000 V	0.0000 V	0.0030 V	0 %	2.9e-004 V	Pass
<b>40 V Range</b>							
35.00 V	35.00 V	35.000 V	0.000 V	0.030 V	0 %	2.9e-003 V	Pass
-35.00 V	-34.90 V	-35.000 V	0.100 V	0.030 V	333 %	2.9e-003 V	Fail
-35.00 V	-34.97 V	-35.000 V	0.030 V	0.030 V	100 %	2.9e-003 V	Pass In
<b>400 V Range</b>							
350.0 V	350.2 V	350.00 V	0.20 V	0.30 V	66.7 %	2.9e-002 V	Pass
<b>1000 V Range</b>							
1000 V	1001 V	1000.0 V	0.7 V	2.0 V	35 %	2.9e-001 V	Pass

**Messergebnis / Test Results**
**22-1076**

<u>Messbereich</u>	<u>UUT</u>	<u>Referenzsystem</u>	<u>Abweichung</u>	<u>Toleranz</u>	<u>Fehler in %</u>	<u>MU</u>	<u>Status</u>
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**AC VOLTAGE TESTS**
**400 mV Range**

350.0 mV @ 60 Hz	349.5 mV	350.00 mV	-0.50 mV	2.90 mV	17.2 %	5.2e-005 V	Pass
350.0 mV @ 1 kHz	350.3 mV	350.00 mV	0.30 mV	3.90 mV	7.69 %	5.2e-005 V	Pass
350.0 mV @ 5 kHz	349.5 mV	350.00 mV	-0.50 mV	7.40 mV	6.76 %	5.2e-005 V	Pass
350.0 mV @ 20 kHz	348.7 mV	350.00 mV	-1.30 mV	9.00 mV	14.4 %	5.7e-005 V	Pass

**4 V Range**

3.500 V @ 60 Hz	3.497 V	3.5000 V	-0.0030 V	0.0270 V	11.1 %	5.2e-004 V	Pass
3.500 V @ 1 kHz	3.502 V	3.5000 V	0.0020 V	0.0390 V	5.13 %	5.2e-004 V	Pass
3.500 V @ 5 kHz	3.495 V	3.5000 V	-0.0050 V	0.0740 V	6.76 %	5.2e-004 V	Pass
3.500 V @ 20 kHz	3.504 V	3.5000 V	0.0040 V	0.0900 V	4.44 %	6.3e-004 V	Pass

**40 V Range**

35.00 V @ 60 Hz	34.98 V	35.000 V	-0.020 V	0.270 V	7.41 %	4.4e-003 V	Pass
35.00 V @ 1 kHz	35.05 V	35.000 V	0.050 V	0.390 V	12.8 %	4.4e-003 V	Pass
35.00 V @ 5 kHz	34.92 V	35.000 V	-0.080 V	0.740 V	10.8 %	5.8e-003 V	Pass
35.00 V @ 20 kHz	34.83 V	35.000 V	-0.170 V	0.900 V	18.9 %	6.4e-003 V	Pass

**400 V Range**

350.0 V @ 60 Hz	349.6 V	350.00 V	-0.40 V	2.70 V	14.8 %	5.3e-002 V	Pass
350.0 V @ 1 kHz	350.4 V	350.00 V	0.40 V	3.90 V	10.3 %	5.3e-002 V	Pass
350.0 V @ 2.5 kHz	350.2 V	350.00 V	0.20 V	7.40 V	2.7 %	4.8e-002 V	Pass

**1000 V Range**

900 V @ 60 Hz	905 V	900.0 V	5.0 V	8.0 V	62.5 %	3.1e-001 V	Pass
900 V @ 1 kHz	906 V	900.0 V	6.0 V	13.0 V	46.2 %	3.1e-001 V	Pass

**1 ms MIN/MAX TESTS**

2.828 Vp @ 60 Hz	2.804 Vp	2.8280 Vp	-0.0240 Vp	0.1230 Vp	19.5 %	3.5e-004 Vp	Pass
-2.828 Vp @ 60 Hz	-2.876 Vp	-2.8280 Vp	-0.0480 Vp	0.1230 Vp	39 %	3.5e-004 Vp	Pass

**FREQUENCY TESTS**
**19.999 kHz Range**

19.000 kHz @ 150 mV	18.999 kHz	19.0000 kHz	-0.0010 kHz	0.0020 kHz	50 %	2.9e-001 Hz	Pass
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## Messergebnis / Test Results

22-1076

<u>Messbereich</u>	<u>UUT</u>	<u>Referenzsystem</u>	<u>Abweichung</u>	<u>Toleranz</u>	<u>Fehler in %</u>	<u>MU</u>	<u>Status</u>
<b>199.99 kHz Range</b>							
190.00 kHz @ 150 mV	189.99 kHz	190.000 kHz	-0.010 kHz	0.020 kHz	50 %	2.9e+000 Hz	Pass

### FREQUENCY SENSITIVITY and TRIGGER LEVEL

#### 4 VAC Range

Reading triggered

Pass

#### 4 VDC Range

Reading triggered

Pass

Reading not triggered

Pass

#### 40 VDC Range

Reading triggered

Pass

Reading not triggered

Pass

### RESISTANCE TESTS

#### 400 Ohm Range

190.0 Ohm	190.0 $\Omega$	190.00 $\Omega$	0.00 $\Omega$	0.60 $\Omega$	0 %	2.9e-002 $\Omega$	Pass
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#### 40 kOhm Range

19.00 kOhm	19.00 k $\Omega$	19.000 k $\Omega$	0.000 k $\Omega$	0.050 k $\Omega$	0 %	2.9e+000 $\Omega$	Pass
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#### 4 MOhm Range

1.900 MOhm	1.901 M $\Omega$	1.9000 M $\Omega$	0.0010 M $\Omega$	0.0120 M $\Omega$	8.33 %	2.9e+002 $\Omega$	Pass
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#### 40 MOhm Range

19.00 MOhm	19.00 M $\Omega$	19.000 M $\Omega$	0.000 M $\Omega$	0.220 M $\Omega$	0 %	4.0e+003 $\Omega$	Pass
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### CONDUCTANCE TEST

#### 40 nS Range

10.00 nS	10.00 nS	10.000 nS	0.000 nS	0.200 nS	0 %	3.5e-012 S	Pass
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### CAPACITANCE TESTS

#### 5.00 $\mu$ F Range

## Messergebnis / Test Results

**22-1076**

<u>Messbereich</u>	<u>UUT</u>	<u>Referenzsystem</u>	<u>Abweichung</u>	<u>Toleranz</u>	<u>Fehler in %</u>	<u>MU</u>	<u>Status</u>
1.00 $\mu\text{F}$	0.99 $\mu\text{F}$	1.000 $\mu\text{F}$	-0.010 $\mu\text{F}$	0.050 $\mu\text{F}$	20 %	3.2e-009 F	Pass
<b>0.500 <math>\mu\text{F}</math> Range</b>							
0.470 $\mu\text{F}$	0.469 $\mu\text{F}$	0.4700 $\mu\text{F}$	-0.0010 $\mu\text{F}$	0.0080 $\mu\text{F}$	12.5 %	8.9e-010 F	Pass
<b>0.0500 <math>\mu\text{F}</math> Range</b>							
0.0470 $\mu\text{F}$	0.0472 $\mu\text{F}$	0.04700 $\mu\text{F}$	0.00020 $\mu\text{F}$	0.00080 $\mu\text{F}$	25 %	8.9e-011 F	Pass
<b>5.00 nF Range</b>							
4.70 nF	4.68 nF	4.700 nF	-0.020 nF	0.080 nF	25 %	8.9e-012 F	Pass
<b>DC MICROAMP TESTS</b>							
<b>400 <math>\mu\text{A}</math> Range</b>							
350.0 $\mu\text{A}$	349.6 $\mu\text{A}$	350.00 $\mu\text{A}$	-0.40 $\mu\text{A}$	1.10 $\mu\text{A}$	36.4 %	4.4e-008 A	Pass
<b>4000 <math>\mu\text{A}</math> Range</b>							
3500 $\mu\text{A}$	3495 $\mu\text{A}$	3500.0 $\mu\text{A}$	-5.0 $\mu\text{A}$	9.0 $\mu\text{A}$	55.6 %	3.7e-007 A	Pass
<b>DC MILLIAMP TESTS</b>							
<b>40 mA Range</b>							
35.00 mA	34.98 mA	35.000 mA	-0.020 mA	0.110 mA	18.2 %	3.7e-006 A	Pass
<b>400 mA Range</b>							
350.0 mA	349.8 mA	350.00 mA	-0.20 mA	0.90 mA	22.2 %	5.1e-005 A	Pass
<b>DC AMP TESTS</b>							
<b>4000 mA Range</b>							
3500 mA	3496 mA	3500.0 mA	-4.0 mA	11.0 mA	36.4 %	9.2e-004 A	Pass
<b>10 A Range</b>							
10.00 A	10.00 A	10.000 A	0.000 A	0.040 A	0 %	3.6e-003 A	Pass
<b>AC MICROAMP TESTS</b>							
<b>400 <math>\mu\text{A}</math> Range</b>							

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**22-1076**

<u>Messbereich</u>	<u>UUT</u>	<u>Referenzsystem</u>	<u>Abweichung</u>	<u>Toleranz</u>	<u>Fehler in %</u>	<u>MU</u>	<u>Status</u>
350.0 $\mu$ A @ 60 Hz	349.4 $\mu$ A	350.00 $\mu$ A	-0.60 $\mu$ A	3.70 $\mu$ A	16.2 %	2.0e-007 A	Pass
350.0 $\mu$ A @ 1 kHz	350.3 $\mu$ A	350.00 $\mu$ A	0.30 $\mu$ A	3.70 $\mu$ A	8.11 %	2.0e-007 A	Pass
<b>4000 <math>\mu</math>A Range</b>							
3500 $\mu$ A @ 60 Hz	3497 $\mu$ A	3500.0 $\mu$ A	-3.0 $\mu$ A	37.0 $\mu$ A	8.11 %	1.3e-006 A	Pass
3500 $\mu$ A @ 1 kHz	3504 $\mu$ A	3500.0 $\mu$ A	4.0 $\mu$ A	37.0 $\mu$ A	10.8 %	1.3e-006 A	Pass
<b>AC MILLIAMP TESTS</b>							
<b>40 mA Range</b>							
35.00 mA @ 60 Hz	34.97 mA	35.000 mA	-0.030 mA	0.370 mA	8.11 %	1.3e-005 A	Pass
35.00 mA @ 1 kHz	35.06 mA	35.000 mA	0.060 mA	0.370 mA	16.2 %	1.3e-005 A	Pass
<b>400 mA Range</b>							
350.0 mA @ 60 Hz	350.0 mA	350.00 mA	0.00 mA	3.70 mA	0 %	1.1e-004 A	Pass
350.0 mA @ 1 kHz	350.7 mA	350.00 mA	0.70 mA	3.70 mA	18.9 %	1.1e-004 A	Pass
<b>AC AMP TESTS</b>							
<b>4000 mA Range</b>							
3500 mA @ 60 Hz	3498 mA	3500.0 mA	-2.0 mA	37.0 mA	5.41 %	1.6e-003 A	Pass
3500 mA @ 1 kHz	3510 mA	3500.0 mA	10.0 mA	37.0 mA	27 %	2.2e-003 A	Pass
<b>10 A Range</b>							
10.00 A @ 60 Hz	10.08 A	10.000 A	0.080 A	0.120 A	66.7 %	4.2e-003 A	Pass
10.00 A @ 1 kHz	10.11 A	10.000 A	0.110 A	0.120 A	91.7 %	5.5e-003 A	Pass
<b>DIODE TEST</b>							
3.000 V	2.998 V	3.0000 V	-0.0020 V	0.0610 V	3.28 %	2.9e-004 V	Pass

**End of Test Data**