

# Kalibrier-Zertifikat Calibration Certificate

# MUSTER

Gegenstand Object	Linienschreiber
Hersteller Manufacturer	YOKOGAWA Deutschland GmbH
Typ Type description	Yokogawa
Serien Nr. Serial no.	12345
Inventar Nr. Inventory no.	---
Prüfmittel Nr. Test equipment no.	---
Equipment Nr. Equipment no.	12345678
Standort Location	---
Auftraggeber Customer	Mustermann GmbH
Kunden Nr. Customer ID no.	DE-12345 Musterhausen
Auftrags Nr. Order no.	654321

Hiermit bestätigen wir, dass das durchführende Kalibrierlabor ein Managementsystem nach ISO 9001:2008, sowie ISO/IEC 17025:2005 eingeführt hat. Die Urkunden finden Sie auf [www.testotis.de](http://www.testotis.de). Die für die Kalibrierung verwendeten Messeinrichtungen werden regelmäßig kalibriert und sind rückführbar auf die nationalen Normale der Physikalisch Technischen Bundesanstalt (PTB) Deutschlands oder auf andere nationale Normale. Wo keine nationalen Normale existieren, entspricht das Messverfahren den derzeit gültigen technischen Regeln und Normen. Die für diesen Vorgang angefertigte Dokumentation kann eingesehen werden. Alle erforderlichen Messdaten sind in diesem Kalibrier-Zertifikat aufgelistet.

Hereby we confirm that the performing calibration laboratory is working with a management system according to ISO 9001:2008 and ISO/IEC 17025:2005. Accreditation certificates can be found under [www.testotis.de](http://www.testotis.de). The measuring installations used for calibration are regularly calibrated and traceable to the national standards of the German Federal Physical Technical Institute (PTB) or other national standards. Should no national standards exist, the measuring procedure corresponds with the technical regulations and norms valid at the time of the measurement. The documents established for this procedure are available for viewing. All the necessary measured data can be found on the following page(s) of this calibration certificate.

Datum der Kalibrierung Date of calibration	25.01.2016
Datum der empfohlenen Rekalibrierung Date of the recommended re-calibration	31.01.2019

## Konformitätsaussage Conformity

- Messwert(e) innerhalb der zulässigen Abweichung<sup>1)</sup>. Measured value(s) within the allowed deviation<sup>1)</sup>.  
 Messwert(e) außerhalb der zulässigen Abweichung<sup>1)</sup>. Measured value(s) beyond the allowed deviation<sup>1)</sup>.

<sup>1)</sup> Die Messunsicherheit wurde nach GUM mit dem Erweiterungsfaktor k=2 berechnet und enthält die Unsicherheit des Verfahrens sowie die Unsicherheit des Prüflings. Die Konformitätsaussage erfolgte nach DIN EN ISO 14253-1 gemäß der Kalibrieranweisung QSA - TIS 7.5-02.

<sup>1)</sup> The measurement uncertainty was calculated according to the regulations of GUM with the coverage factor k=2 and contains the uncertainty of the measuring procedure and the uncertainty of the measuring system. The statement of conformity was made according to DIN EN ISO 14253-1 according to calibration instruction QSA - TIS 7.5-02.

Dieser Kalibrierschein darf nur vollständig weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift und Stempel haben keine Gültigkeit.

This calibration certificate may not be reproduced other than in full except with permission of the issuing laboratory. Calibration certificates without signature and seal are not valid.

V 4.52 / DE

Stempel Seal



Fachverantwortlicher Supervisor

*Max Mustermann*

Max Mustermann

Bearbeiter Technician

*Martina Musterfrau*

Martina Musterfrau



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## Messeinrichtung Measuring equipment

Referenz Reference	Rückführung Traceability	Rekal. Next cal.	Zertifikat-Nr. Certificate-no.	EQ-Nr. EQ-no.
Multifunktions Kalibrator Fluke Corporation 5522A	15070-01-01 2015-05	2016-05	E31191	12287317

Referenzzertifikate sind auf [www.primasonline.com](http://www.primasonline.com) abrufbar Reference certificates are available at [www.primasonline.com](http://www.primasonline.com)

## Umgebungsbedingungen Ambient conditions

Temperatur Temperature (23 ± 3) °C  
Relative Luftfeuchte Relative Humidity (40 ± 20) %

## Messverfahren Measuring procedure

Die Kalibrierung erfolgt nach Kalibrieranweisung QSA - TIS 7.5-67 - in Abstimmung nach VDI/VDE/DGQ/DKD 2622  
The calibration is performed according to the QSA - TIS 7.5-67 procedure- in accordance with VDI/VDE/DGQ/DKD 2622

Prüfprozedur Procedure F:yokogawa:LR8100:tis:5520A / Rev.:2.0

## Messergebnisse Measuring results

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## Besondere Bemerkungen Special remarks

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<b>Ch 1-6</b>						
<b>Gleichspannung DC voltage</b>						
10 mV	0.0000 mV		0.000 mV	±0.005 mV	0% pass	1.2 µV
10 mV	0.0000 mV		-0.001 mV	±0.005 mV	20% pass	1.2 µV
10 mV	0.0000 mV		0.001 mV	±0.005 mV	20% pass	1.2 µV
10 mV	0.0000 mV		0.000 mV	±0.005 mV	0% pass	1.2 µV
10 mV	0.0000 mV		-0.001 mV	±0.005 mV	20% pass	1.2 µV
10 mV	0.0000 mV		0.000 mV	±0.005 mV	0% pass	1.2 µV
10 mV	9.0000 mV		8.994 mV	±0.0085 mV	71% pass	210 · 10 <sup>-6</sup>
10 mV	9.0000 mV		8.992 mV	±0.0085 mV	94% pass	210 · 10 <sup>-6</sup>
10 mV	9.0000 mV		8.995 mV	±0.0085 mV	59% pass	210 · 10 <sup>-6</sup>
10 mV	9.0000 mV		8.994 mV	±0.0085 mV	71% pass	210 · 10 <sup>-6</sup>
10 mV	9.0000 mV		8.993 mV	±0.0085 mV	82% pass	210 · 10 <sup>-6</sup>
10 mV	9.0000 mV		8.992 mV	±0.0085 mV	94% pass	210 · 10 <sup>-6</sup>
20 mV	19.0000 mV		18.990 mV	±0.0165 mV	61% pass	76 · 10 <sup>-6</sup>
20 mV	19.0000 mV		18.986 mV	±0.0165 mV	85% pass	76 · 10 <sup>-6</sup>
20 mV	19.0000 mV		18.991 mV	±0.0165 mV	55% pass	76 · 10 <sup>-6</sup>
20 mV	19.0000 mV		18.990 mV	±0.0165 mV	61% pass	76 · 10 <sup>-6</sup>
20 mV	19.0000 mV		18.988 mV	±0.0165 mV	73% pass	76 · 10 <sup>-6</sup>
20 mV	19.0000 mV		18.988 mV	±0.0165 mV	73% pass	76 · 10 <sup>-6</sup>
50 mV	45.000 mV		44.98 mV	±0.037 mV	53% pass	134 · 10 <sup>-6</sup>
50 mV	45.000 mV		44.97 mV	±0.037 mV	80% pass	134 · 10 <sup>-6</sup>
50 mV	45.000 mV		44.98 mV	±0.037 mV	53% pass	134 · 10 <sup>-6</sup>
50 mV	45.000 mV		44.98 mV	±0.037 mV	53% pass	134 · 10 <sup>-6</sup>
50 mV	45.000 mV		44.98 mV	±0.037 mV	53% pass	134 · 10 <sup>-6</sup>
50 mV	45.000 mV		44.97 mV	±0.037 mV	80% pass	134 · 10 <sup>-6</sup>
100 mV	90.000 mV		89.96 mV	±0.075 mV	53% pass	71 · 10 <sup>-6</sup>
100 mV	90.000 mV		89.94 mV	±0.075 mV	80% pass	71 · 10 <sup>-6</sup>
100 mV	90.000 mV		89.96 mV	±0.075 mV	53% pass	71 · 10 <sup>-6</sup>
100 mV	90.000 mV		89.95 mV	±0.075 mV	67% pass	71 · 10 <sup>-6</sup>
100 mV	90.000 mV		89.96 mV	±0.075 mV	53% pass	71 · 10 <sup>-6</sup>
100 mV	90.000 mV		89.96 mV	±0.075 mV	53% pass	71 · 10 <sup>-6</sup>
200 mV	190.000 mV		189.92 mV	±0.155 mV	52% pass	43 · 10 <sup>-6</sup>
200 mV	190.000 mV		189.88 mV	±0.155 mV	77% pass	43 · 10 <sup>-6</sup>
200 mV	190.000 mV		189.91 mV	±0.155 mV	58% pass	43 · 10 <sup>-6</sup>
200 mV	190.000 mV		189.92 mV	±0.155 mV	52% pass	43 · 10 <sup>-6</sup>
200 mV	190.000 mV		189.91 mV	±0.155 mV	58% pass	43 · 10 <sup>-6</sup>
200 mV	190.000 mV		189.92 mV	±0.155 mV	52% pass	43 · 10 <sup>-6</sup>



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500 mV	450.00 mV		449.9 mV	±0.42 mV	24% pass	130 · 10 <sup>-6</sup>
500 mV	450.00 mV		449.9 mV	±0.42 mV	24% pass	130 · 10 <sup>-6</sup>
500 mV	450.00 mV		449.9 mV	±0.42 mV	24% pass	130 · 10 <sup>-6</sup>
500 mV	450.00 mV		449.9 mV	±0.42 mV	24% pass	130 · 10 <sup>-6</sup>
500 mV	450.00 mV		449.9 mV	±0.42 mV	24% pass	130 · 10 <sup>-6</sup>
500 mV	450.00 mV		449.9 mV	±0.42 mV	24% pass	130 · 10 <sup>-6</sup>
1 V	0.90000 V		0.9000 V	±0.00075 V	0% pass	65 · 10 <sup>-6</sup>
1 V	0.90000 V		0.8998 V	±0.00075 V	27% pass	65 · 10 <sup>-6</sup>
1 V	0.90000 V		0.8999 V	±0.00075 V	13% pass	65 · 10 <sup>-6</sup>
1 V	0.90000 V		0.8999 V	±0.00075 V	13% pass	65 · 10 <sup>-6</sup>
1 V	0.90000 V		0.8999 V	±0.00075 V	13% pass	65 · 10 <sup>-6</sup>
1 V	0.90000 V		0.8999 V	±0.00075 V	13% pass	65 · 10 <sup>-6</sup>
2 V	1.90000 V		1.8998 V	±0.00155 V	13% pass	32 · 10 <sup>-6</sup>
2 V	1.90000 V		1.8996 V	±0.00155 V	26% pass	32 · 10 <sup>-6</sup>
2 V	1.90000 V		1.9000 V	±0.00155 V	0% pass	32 · 10 <sup>-6</sup>
2 V	1.90000 V		1.9000 V	±0.00155 V	0% pass	32 · 10 <sup>-6</sup>
2 V	1.90000 V		1.8999 V	±0.00155 V	6% pass	32 · 10 <sup>-6</sup>
2 V	1.90000 V		1.8999 V	±0.00155 V	6% pass	32 · 10 <sup>-6</sup>
5 V	4.5000 V		4.500 V	±0.0042 V	0% pass	130 · 10 <sup>-6</sup>
5 V	4.5000 V		4.499 V	±0.0042 V	24% pass	130 · 10 <sup>-6</sup>
5 V	4.5000 V		4.500 V	±0.0042 V	0% pass	130 · 10 <sup>-6</sup>
5 V	4.5000 V		4.499 V	±0.0042 V	24% pass	130 · 10 <sup>-6</sup>
5 V	4.5000 V		4.500 V	±0.0042 V	0% pass	130 · 10 <sup>-6</sup>
5 V	4.5000 V		4.500 V	±0.0042 V	0% pass	130 · 10 <sup>-6</sup>
10 V	1.0000 V		0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	1.0000 V		0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	1.0000 V		1.000 V	±0.0035 V	0% pass	578 · 10 <sup>-6</sup>
10 V	1.0000 V		0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	1.0000 V		0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	1.0000 V		0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	-1.0000 V		-0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	-1.0000 V		-0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	-1.0000 V		-0.999 V	±0.0035 V	29% pass	578 · 10 <sup>-6</sup>
10 V	-1.0000 V		-1.000 V	±0.0035 V	0% pass	578 · 10 <sup>-6</sup>
10 V	-1.0000 V		-1.000 V	±0.0035 V	0% pass	578 · 10 <sup>-6</sup>
10 V	-1.0000 V		-1.000 V	±0.0035 V	0% pass	578 · 10 <sup>-6</sup>
10 V	5.0000 V		4.999 V	±0.0055 V	18% pass	117 · 10 <sup>-6</sup>
10 V	5.0000 V		4.999 V	±0.0055 V	18% pass	117 · 10 <sup>-6</sup>
10 V	5.0000 V		4.999 V	±0.0055 V	18% pass	117 · 10 <sup>-6</sup>
10 V	5.0000 V		4.999 V	±0.0055 V	18% pass	117 · 10 <sup>-6</sup>
10 V	5.0000 V		4.999 V	±0.0055 V	18% pass	117 · 10 <sup>-6</sup>



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10 V	5.0000 V		4.998 V	±0.0055 V	36% pass	117 · 10 <sup>-6</sup>
10 V	9.0000 V		8.999 V	±0.0075 V	13% pass	67 · 10 <sup>-6</sup>
10 V	9.0000 V		8.997 V	±0.0075 V	40% pass	67 · 10 <sup>-6</sup>
10 V	9.0000 V		9.000 V	±0.0075 V	0% pass	67 · 10 <sup>-6</sup>
10 V	9.0000 V		8.999 V	±0.0075 V	13% pass	67 · 10 <sup>-6</sup>
10 V	9.0000 V		8.999 V	±0.0075 V	13% pass	67 · 10 <sup>-6</sup>
10 V	9.0000 V		8.996 V	±0.0075 V	53% pass	67 · 10 <sup>-6</sup>
10 V	-9.0000 V		-8.998 V	±0.0075 V	27% pass	67 · 10 <sup>-6</sup>
10 V	-9.0000 V		-8.997 V	±0.0075 V	40% pass	67 · 10 <sup>-6</sup>
10 V	-9.0000 V		-9.000 V	±0.0075 V	0% pass	67 · 10 <sup>-6</sup>
10 V	-9.0000 V		-8.999 V	±0.0075 V	13% pass	67 · 10 <sup>-6</sup>
10 V	-9.0000 V		-9.000 V	±0.0075 V	0% pass	67 · 10 <sup>-6</sup>
10 V	-9.0000 V		-8.997 V	±0.0075 V	40% pass	67 · 10 <sup>-6</sup>
20 V	20.0000 V		19.998 V	±0.016 V	13% pass	35 · 10 <sup>-6</sup>
20 V	20.0000 V		19.995 V	±0.016 V	31% pass	35 · 10 <sup>-6</sup>
20 V	20.0000 V		20.000 V	±0.016 V	0% pass	35 · 10 <sup>-6</sup>
20 V	20.0000 V		19.998 V	±0.016 V	13% pass	35 · 10 <sup>-6</sup>
20 V	20.0000 V		19.997 V	±0.016 V	19% pass	35 · 10 <sup>-6</sup>
20 V	20.0000 V		19.994 V	±0.016 V	38% pass	35 · 10 <sup>-6</sup>
50 V	45.000 V		44.99 V	±0.042 V	24% pass	130 · 10 <sup>-6</sup>
50 V	45.000 V		44.98 V	±0.042 V	47% pass	130 · 10 <sup>-6</sup>
50 V	45.000 V		45.00 V	±0.042 V	0% pass	130 · 10 <sup>-6</sup>
50 V	45.000 V		44.99 V	±0.042 V	24% pass	130 · 10 <sup>-6</sup>
50 V	45.000 V		45.00 V	±0.042 V	0% pass	130 · 10 <sup>-6</sup>
50 V	45.000 V		44.98 V	±0.042 V	47% pass	130 · 10 <sup>-6</sup>
100 V	90.000 V		89.99 V	±0.075 V	13% pass	67 · 10 <sup>-6</sup>
100 V	90.000 V		89.97 V	±0.075 V	40% pass	67 · 10 <sup>-6</sup>
100 V	90.000 V		89.99 V	±0.075 V	13% pass	67 · 10 <sup>-6</sup>
100 V	90.000 V		89.98 V	±0.075 V	27% pass	67 · 10 <sup>-6</sup>
100 V	90.000 V		89.98 V	±0.075 V	27% pass	67 · 10 <sup>-6</sup>
100 V	90.000 V		89.97 V	±0.075 V	40% pass	67 · 10 <sup>-6</sup>
200 V	190.000 V		189.97 V	±0.155 V	19% pass	36 · 10 <sup>-6</sup>
200 V	190.000 V		189.95 V	±0.155 V	32% pass	36 · 10 <sup>-6</sup>
200 V	190.000 V		190.00 V	±0.155 V	0% pass	36 · 10 <sup>-6</sup>
200 V	190.000 V		189.98 V	±0.155 V	13% pass	36 · 10 <sup>-6</sup>
200 V	190.000 V		189.99 V	±0.155 V	6% pass	36 · 10 <sup>-6</sup>
200 V	190.000 V		189.95 V	±0.155 V	32% pass	36 · 10 <sup>-6</sup>

Temperatursimulation gemäß DIN EN IEC 60584 für TE Typ K Temperature simulation according to DIN EN IEC 60584 for Type-K thermocouple



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	-50.00 °C		-49.8 °C	±0.52 °C	38% pass	115 mK
	-50.00 °C		-50.1 °C	±0.52 °C	19% pass	115 mK
	-50.00 °C		-50.2 °C	±0.52 °C	38% pass	115 mK
	-50.00 °C		-49.8 °C	±0.52 °C	38% pass	115 mK
	-50.00 °C		-49.8 °C	±0.52 °C	38% pass	115 mK
	-50.00 °C		-50.0 °C	±0.52 °C	0% pass	115 mK
	0.00 °C		0.2 °C	±0.5 °C	40% pass	115 mK
	0.00 °C		0.0 °C	±0.5 °C	0% pass	115 mK
	0.00 °C		-0.2 °C	±0.5 °C	40% pass	115 mK
	0.00 °C		0.0 °C	±0.5 °C	0% pass	115 mK
	0.00 °C		0.0 °C	±0.5 °C	0% pass	115 mK
	0.00 °C		-0.1 °C	±0.5 °C	20% pass	115 mK
	100.00 °C		100.2 °C	±0.55 °C	36% pass	115 mK
	100.00 °C		99.9 °C	±0.55 °C	18% pass	115 mK
	100.00 °C		99.7 °C	±0.55 °C	55% pass	115 mK
	100.00 °C		100.0 °C	±0.55 °C	0% pass	115 mK
	100.00 °C		100.0 °C	±0.55 °C	0% pass	115 mK
	100.00 °C		99.9 °C	±0.55 °C	18% pass	115 mK
	500.00 °C		500.3 °C	±0.75 °C	40% pass	115 mK
	500.00 °C		499.9 °C	±0.75 °C	13% pass	115 mK
	500.00 °C		499.8 °C	±0.75 °C	27% pass	115 mK
	500.00 °C		500.1 °C	±0.75 °C	13% pass	115 mK
	500.00 °C		500.1 °C	±0.75 °C	13% pass	115 mK
	500.00 °C		499.9 °C	±0.75 °C	13% pass	115 mK
	1000.00 °C		1000.2 °C	±1 °C	20% pass	115 mK
	1000.00 °C		999.8 °C	±1 °C	20% pass	115 mK
	1000.00 °C		999.7 °C	±1 °C	30% pass	115 mK
	1000.00 °C		1000.2 °C	±1 °C	20% pass	115 mK
	1000.00 °C		1000.1 °C	±1 °C	10% pass	115 mK
	1000.00 °C		999.7 °C	±1 °C	30% pass	115 mK

zulässige Abweichung gemäß Herstellerangabe  
allowed deviation in accordance with manufacturer

Die dimensionslosen Anteile der Messunsicherheit U sind als relative Messunsicherheiten e bezogen auf den Messwert zu verstehen (U = e \* MW).

The non-dimensional fractions of the measuring uncertainty U are relative values e in relation to the indicated value (U = e \* i.v.).