

## DOSSIER DE SOUS TRAITANCE OUTSOURCING REPORT N° FR162911188

Date d'intervention (Calibration Date) : 21/07/2016

Désignation (Designation) : 3501A1260KG

Marque (Manufacturer) : PCB

N° de série (Serial number) : 3680

Modèle (Model) : 3501A1260KG

Identification client (Customer ID) : **MET14/684**

### Détail de l'intervention (Detail of intervention)

Observations (remarks) : /

Sous-traitant : TRESCAL GMBH (ESSLINGEN)  
(Subcontractor)

Type d'intervention : Vérification  
(Type of calibration)

Numéro de document : 6608038662  
(Document number)

**Conforme (Pass)(\*)**

Ce document comprend (this document includes) : 6 page(s) dont 5 annexes


Date d'émission (Issue date) : 02/08/2016

Technicien

Laizier Paul

(\*) Les résultats pris en compte sont ceux établis par le sous-traitant

(\*) The results taken account are those established by the subcontractor



LA, METROLOGIE, AU, SERVICE, DE, VOTRE, PERFORMANCE

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# Trescal GmbH

Kalibrierlaboratorium für elektrische, mechanische und dimensionelle Größen  
Calibration laboratory for electrical, mechanical and dimensional measurand

## Kalibrierschein Calibration Certificate

Kalibrierscheinnummer  
Number of Calibration Certificate

6608038662

<b>Auftraggeber</b> Customer	<b>Trescal -THALES TAS- Toulouse</b> 26 rue Champollion F-31100 Toulouse Cedex	Die Kalibrierung erfolgt durch den Vergleich mit Normalen oder Messung auf Normalmeseinrichtungen, die auf die Nationalen Normale zurückgeführt sind, mit denen die physikalischen Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI) dargestellt werden. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.
<b>Auftragsnummer</b> Order No.	<b>ES 83619</b>	
<b>Gegenstand</b> Object	<b>Accelerationsensor</b>	
<b>Hersteller</b> Manufacturer	<b>PCB</b>	Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Dieser Kalibrierschein wurde elektronisch erstellt und ist ohne Unterschrift und Stempel gültig.
<b>Typ</b> Type	<b>3501A1260KG</b>	
<b>Fabrikat/Seriennummer</b> Serial number	<b>3680</b>	
<b>Nutzer-ID</b> User-ID	<b>3680</b>	The calibration is performed by comparison with standards or measurement on instruments that are traceable to National Standards which realize the units of measurement according to the International System of Units (SI). The user is obliged to have the object recalibrated at appropriate intervals.
<b>Inventarnummer</b> Stock number		
<b>Schlüsselnummer</b> Key number	<b>008040415700</b>	
<b>Standort</b> Location		This calibration certificate may not be reproduced other than in full except with the permission of the issuing laboratory. This calibration certificates is produced with and electronic system. This calibration certifact without signature and seal are valid.
<b>Prüfauftragsnummer</b> Test Order No.	<b>6608038662</b>	
<b>Datum der Kalibrierung</b> Date of calibration	<b>21.07.2016</b>	
<b>Seitenanzahl des Kalibrierscheins</b> Number of pages of the certificate	<b>5</b>	

State of reception: The measured values were within the range of the specification

Statement: Equipment may be used without exception

<b>Ausstellungsdatum</b> Print Date	<b>Sachbearbeiter</b> Person in charge	<b>Leiter des Kalibrierlabor</b> Head of the calibration laboratory
21.07.2016	Dietz	Markovic

Trescal GmbH Tel (0711) 553651-0	Limburgstraße 6 Fax (0711) 553651-51	D-73734 Esslingen
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Barcode



008040415700

The calibration device is an **Accelerationsensor**.

The calibration is based on a compare between calibration device and the standard.

Verwendete Normale <i>Standards used</i>	Hersteller <i>Manufacturer</i>	Typ <i>Type</i>	Serien/Inv.-Nr. <i>Serial/ Inv. No.</i>	Kalibriert am <i>Calibration at</i>	Kalibrierschein-Nr. <i>Calibration Cert. No.</i>
Shock calibrator	Endevco	2925	AB92	28.01.2015	0113 D-K-15183-01-00 2015-01
Acceleration standard	Endevco	2270	10355	19.01.2015	0111 D-K-15183-01-00 2015-01
Amplifier	Spektra GmbH	SRS 35	200427	26.01.2015	WK Spektra GmbH 15-0150
Scope	National Instruments	NI 5114	-	28.01.2015	0113 D-K-15183-01-00 2015-01

Used software	CS18 Schockkal	Version	1.2
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During the calibration the following conditions was actual:

Umgebungsbedingungen <i>Environmental conditions</i>	Temperatur <i>Temperature</i>	<b>20,4 °C</b>	Rel. Feuchte <i>Rel. Humidity</i>	<b>65 %</b>	Luftdruck <i>Air Pressure</i>	<b>976 hPa</b>
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Sensor:	Manufacturer	<b>PCB</b>	Typ	<b>3501A1260KG</b>
	Serial-Nr.	<b>3680</b>		

### 3. Technical details of the connecting cable:

Manufacturer:

Typ:

Length: **m**

Capacity: **pF**

Connector: **Microdot**

### 4. Sensitivity was calculated at following values

(Gravitational acceleration  $g_n = 9,80665 \text{ m/s}^2$ )

Acceleration peak in g: **830,6**

Pulse duration  $t_{l, 10\%}$  : **0,513 ms**

### 5. Measured voltage: **- V**

### 6. Amplifier

#### 6.1. Charge amplifier of the standard

Channel of standard: **1**

Amplified factor: **16**

#### 6.2. Amplifier calibration device

Channel of calibration device: **2**

Amplified factor: **16**

Current: **- mA**

Bridge voltage: **10,002 V**

Eingangswiderstand: **2980,5  $\Omega$**

Ausgangswiderstand: **3051,04  $\Omega$**

### 8. Scope

Channel from standard: **1**

Channel from calibration device: **2**

Measuring range channel 1: **10 V**

Measuring range channel 2: **10 V**

Frequency of measure: **2,9 MHz**

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Sensor:	Manufacturer	<b>PCB</b>	Typ <b>3501A1260KG</b>
	Serial-Nr.	<b>3680</b>	

## 5. Results of measurement

The calibrated value is sensitivity.  
Following results were measured:

### Sensitivity

Average value (from 5 values): **0,002634 mV/g**

Standard deviation in %: **0,00131**

Calibration Nr.	Shock amplitude in g	Sensitivity S in mV/g	Pulse duration in ms
1	819,1	0,002636	0,513
2	822,0	0,002628	0,514
3	825,3	0,002638	0,516
4	830,6	0,002622	0,512
5	829,3	0,002643	0,520

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Sensor:	Manufacturer	PCB	Typ 3501A1260KG
	Serial-Nr.	3680	

## 6. Uncertainty of measurement

The uncertainty of measurement is: 5,0 %.

The uncertainty of the used normals, is the standard deviation with (k=2) and P=95%.

## 7. Statement of conformity

The statement of conformity is in following to the DIN EN ISO 14253-1 according to Trescal-KUNO variant D.

## 8. Remarks