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Lieferschein**DN-05749**

Versanddatum	25. Januar 2016
Zahlungsbeding.	30 Tage netto
Lieferbedingungen	Ex works
Kontakt	Herr Sebastian Rößler
Bestellnummer	DE151196

Belegdatum	22. Januar 2016
Ihr Zeichen	11/45098668/NB/15.12.2015
Verkäufer/ -in	Dr. Verena Dauben
Kundennummer	C10007

Nr.	Beschreibung	Anzahl	Einheit
DE15056112	Service und Kalibrierung Valeport Midas SVP SN: 31665	1	Stück



This document certifies that the instrument detailed below has been calibrated according to Valeport Limited's Standard Procedures, using equipment with calibrations traceable to UKAS or National Standards.

Calibration Certificate Number: 43730

Instrument Type: MIDAS SVP

Instrument Serial Number: 31665

Calibrated By: L.Bicknell

Date: 14/01/2016

Signed: 

Full details of the results from the calibration procedure applied to each fitted sensor are available, on request, via email. This summary certificate should be kept with the instrument.



Valeport Ltd | St Peter's Quay | Totnes | Devon | TQ9 5EW | UK
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The original manufacture warranty on your instrument has expired. However, we are pleased to provide you with our 12 month Service Warranty on your instrument, which is renewed each time you return the device for service.

Service Warranty Policy

The instrument detailed below is returned to you after Service with a Limited 12 Month Warranty against defects in materials and workmanship, valid from the date of despatch from Valeport's premises, with the following exclusions, exceptions and limitations:

- 1) Sensors supplied by other manufacturers (including pressure sensors) are only warranted according to the warranty period provided by the original manufacturer (typically 1 year), and are thus excluded from this Warranty.
 - 2) Consumable items (including, but not limited to: batteries, o-rings, zinc anodes and electrolytes) are not covered by warranty.
 - 3) Reasonable wear and tear (as judged by Valeport) is not covered by warranty.
 - 4) Valeport Limited shall be under no liability for any consequential loss or damage of any kind whatsoever.
 - 5) Correctly performed standard maintenance procedures as described in the operating manual will not invalidate the warranty. Failures caused by improper care and handling, or by unskilled or poor quality repair and maintenance attempts are not covered under warranty. Modifications to the original design will invalidate the warranty, insofar as it relates to the modified part.
 - 6) All warranty repairs must be performed by Valeport personnel or their authorized representatives.
 - 7) Valeport Limited is the sole judge of the cause of any failure, and the validity of any warranty claim. Please refer to the "Spirit of the Warranty" section below.
- Goods for warranty assessment should be adequately packed (preferably in the original packing) and returned freight pre-paid to Valeport, complete with a description of the nature of the problem. It is preferable that an RMA (Returns Number) is obtained from us in advance, to allow us to schedule the repair.
 - All warranty claims are assessed on a case-by-case basis. You will be informed as soon as possible as to the validity of the warranty claim.
 - In the event of a valid warranty claim, the goods will be repaired or replaced as appropriate at the sole discretion of Valeport Limited. The repaired / replacement instrument will be returned to you at our cost, using our choice of shipping method.
 - In the event of an invalid warranty claim, you will be informed of any repairs that are necessary, and if acceptable, the instrument will be repaired as if it had been returned for service, with appropriate costs and return freight charges payable by you.
 - Any repairs made under warranty shall have no effect on the duration of the warranty period, i.e. the warranty shall continue as if no fault had occurred.
 - Valeport may, at our discretion, opt to despatch a replacement part for fitting in the field, if it is deemed to be the most appropriate response. In such circumstances, the user will be required to return the faulty part to Valeport (at the user's cost) for assessment and confirmation that the failure is a valid warranty claim. Failure to return the faulty part, or if the fault is subsequently judged to fall outside the terms of the warranty, shall result in the user being invoiced for the replacement part and freight costs.

Spirit of the Warranty

This warranty is offered on the basis that Valeport fully expects the instrument to perform satisfactorily for many years. We have built a reputation on reliability, longevity and quality, and therefore the aim of this warranty is your satisfaction and peace of mind. The "rules" as detailed above are the framework within which we operate our warranty policy, and the minimum that you can expect from us in resolving any warranty issue. However, each case is considered on its own merit, and we may decide that in certain circumstances, alternative arrangements or solutions to a warranty issue are appropriate. Equally, we hope that our customers accept this warranty in the spirit in which it is given, and to respect that whilst our primary concern is always to try and ensure that any issues are resolved as quickly and as satisfactorily as possible, we do also have a responsibility to objectively assess the validity of any warranty claim, and to consider the interests of Valeport Limited in any actions taken.

Matthew Quartley
Managing Director

Instrument Type Midas SVP

Serial Number(s) 31665.....

Pressure Test 100 Bar.....

Date of Despatch 15th January 2016.....



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VAT No: GB 430 4453 84 Registered in England No: 1950444



PCB	
Serial no.	45341
Part no.	0400507F
Firmware	04007116O
Module	21

Pressure sensor	
Type	Keller-PAA 10LX
Serial no.	42657
Tx Range	3000 dBarAbs
Set Tx Range	3000 dBarAbs

SERVICE			Calibration Equipment used	
Instrument	Type	Serial No		
DWT	Budenburg	580DXA/28894/162K/A8640		
Barometer	Fortin 54	4042		

Stage 1: Determine Local pressure conditions

Air temperature	20.8	°C
Grid reference (OSGB36)	280657 East, 059840 North	
Height above sea level	5	metres
Local Gravity	9.81125	M/sec²
Gravity std for barometer	9.80665	M/sec²
Atmospheric pressure	760.450	mmHg
	10.1089	dBar

As Received Calibration Check	#025;2;1	
(Based on counts measured during recalibration)		
Original Cal String	21;15;0.000000e+00;0.000000e+00;-1.680853e-15;1.000247e-04;1.523165e-01	
Original Coefficients	a0 1.523165e-01 a3 0.000000e+00	
	a1 1.000247e-04 a4 0.000000e+00	
	a2 -1.680853e-15 a5 0.000000e+00	
Corrective equation		
Polynomial Result	dBarA	Pressure Error (Calc - Actual)
	9.476	dBar
	609.686	%FS
	1209.932	0.155
	1810.188	0.240
	2410.546	0.205
	3010.478	0.049
		-0.229
		-0.008
		-0.021
		Pass/Fail
		Pass
		Pass
		Pass
		Pass
		Pass
		Fail

Stage 2: Observe Raw Data

Nominal Deadweight	List weights applied	Deadweight pressure	Atmospheric Pressure	Total pressure	Raw Output	Pressure Error (Measured - Actual)	Acceptable Error	Pass/Fail
dBar	(e.g. abf/gk)	dBar	dBar	dBar	Pascals dBar Equivalent	dBar %FS		
0		0.0000	10.109	10.109	93212 9.321	-0.788 -0.026	±0.01	Fail
600	AH	600.2797	10.109	610.389	609.4452 609.445	-0.943 -0.031	±0.01	Fail
1200	ABJ	1200.5657	10.109	1210.675	1209.7270 1209.727	-0.948 -0.032	±0.01	Fail
1800	ABHJL	1800.8429	10.109	1810.952	1810.1397 1810.140	-0.812 -0.027	±0.01	Fail
2400	ABCJK	2401.1184	10.109	2411.227	2410.7747 2410.775	-0.453 -0.015	±0.01	Fail
3000	ABCD	3001.3667	10.109	3011.476	3011.1058 3011.106	-0.370 -0.012	±0.01	Fail

The sensor is out of specification. We recommend at least a Straight Line calibration. Select required fit from the drop down menu.

Fit Applied: 3rd Order Polynomial

Stage 3: Enter Calibration Data

Calibration String: #024;2;1;15;0.000000E+00;0.000000E+00;8.081033E-23;-4.972516E-15;1.000626E-04;7.671549E-01
Ensure that User calibration is OFF (#020;2;1;1;-space>) or set to linear fit (#022;2;1;1;15;0;0;0;1;0)

Gain & Offset:

#035;2;1;1;10000;0

Stage 4: Post Calibration Check

Nominal Deadweight	List weights applied	Deadweight pressure	Atmospheric Pressure	Total pressure	Sensor Output	Pressure Error (Measured - Actual)	Acceptable Error	Pass/Fail
dBar	(e.g. abf/gk)	dBar	dBar	dBar	dBar	dBar %FS		
0		0.0000	10.109	10.109	10.081 10.081	-0.028 -0.001	±0.01	Pass
600	AH	600.2797	10.109	610.389	610.279 610.279	-0.110 -0.004	±0.01	Pass
1200	ABJ	1200.5657	10.109	1210.675	1210.634 1210.634	-0.041 -0.001	±0.01	Pass
1800	ABHJL	1800.8429	10.109	1810.952	1810.829 1810.829	-0.123 -0.004	±0.01	Pass
2400	ABCJK	2401.1184	10.109	2411.227	2411.213 2411.213	-0.014 0.000	±0.01	Pass
3000	ABCD	3001.3667	10.109	3011.476	3011.420 3011.420	-0.056 -0.002	±0.01	Pass

SERVICE	
Name	L.Bicknell
Date	14/01/2016
	PASSED
Signed	

PCB	Serial no.	45341
	Part no.	0400507F
	Firmware	040071160
	Thermistor Type	DS18B20
	Module	21

Temperature sensor	
Type	PRT
Serial no.	2751

Calibration Equipment used		
Instrument	Type	Serial No
Temp Bridge	Micro K	311063/1
PRT	909L	126

As Received Calibration Check
(Based on counts measured during recalibration)

Original Cal String (#025;21;2)	21;15;1.000000e+00;0.000000e+00;0.000000e+00;1.420722e-10;9.790295e-04;-2.193944e+01		
Original Coefficients	a0	-2.193944e+01	
	a1	9.790295e-04	
	a2	1.420722e-10	
Corrective equation			

Polynomial Result °C	Temperature Error °C	Pass/Fail
2.119	-0.064	Fail
17.686	-0.056	Fail
34.843	-0.064	Fail

PCB/Sensor calibration
Stage 1: Obtain Calibration data and Polynomial fit

Counts nnnn	Bath temp °C [90]	Polynomial fit for raw data Order >>>>		Calc Temp °C [90]	Polynomial calculations Error [Calc - Actual] °C [90]	Acceptable Error	Pass/Fail
		Parameter	Value				
24487	2.1832	a0	-2.183526E+01	2.183	0.000	±0.005	Pass
40239	17.742	a1	9.766854E-04	17.742	0.000	±0.005	Pass
57519	34.9075	a2	1.707118E-10	34.907	0.000	±0.005	Pass

Enter polynomial in cell G28 :

$y = 1.707118E-10x^2 + 9.766854E-04x - 2.183526E+01$

Stage 2: Enter calibration string:

#024;21;2;15;1;0;0;1.707118E-10;9.766854E-04;-2.183526E+01

Stage 3: Enter System Gain & Offset

#035;21;2;1000;-20000

Stage 4: Post Calibration Check

Reading	Bath temp	Error [Reading- Actual]	Acceptable Error	Pass/Fail
°C [90]	°C [90]	°C [90]		
2.183	2.183	0.000	±0.005	Pass

Name	L.Bicknell	
Date	13/01/2016	
PASSED		
Signed		

Instrument Serial Number	31665
Transducer Type, mm	100
Transducer Ser No	48274
PCB Part No	0400554B
PCB Ser No	46621
SV Firmware Version	04007149B0
FPGA Firmware Version	0650714C
Module Number	12

Calibration Equipment used		
Instrument	Type	Serial No
Temp Bridge	MICRO K	311063/1
PRT	909L	125

Stage 1: First order fit

Temp	SoS from Bilaniuk & Wong	Measured ToF	Coefficients	Calc SoS from coefficients	Error (Calc - True)	Acceptable Error	Pass/Fail
°C90	m/s	nsec*100		m/s	m/s	m/s	
2.1016	1412.722	14527379	3.811530E+05	1412.722	0.000	±0.001	Pass
15.8261	1468.805	13987239	5.003830E+06	1468.805	0.000	±0.001	Pass

Stage 2: Enter calibration string

#024;12;1;15;0;0;0;5.003830E+06;3.811530E+05

Stage 3: Check point

Temp	Actual SoS	Measured SoS	Error SoS Reading: Actual	Acceptable Error	Pass/Fail
°C90	m/s	m/s	m/s	m/s	
15.8255	1468.803	1468.802	-0.001	±0.005	Pass

Name:	L.Bicknell
Date:	11/01/2016
Signature:	

Calibration History:	Certificate	Date
	24905	14/01/2010
	43730	14/01/2016

14/01/2016 15:44