



# CERTIFICATE OF ACCREDITATION

## ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

### International Process Solutions

1300 Industrial Rd. Suite 22

San Carlos, CA 94070

has been assessed by ANAB  
and meets the requirements of international standard

### ISO/IEC 17025:2005

and national standard

### ANSI/NCSL Z540-1-1994

while demonstrating technical competence in the field of

## CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations to which this accreditation applies.

AC-1400

Certificate Number

  
ANAB Approval

Certificate Valid: 06/02/2016-06/22/2017  
Version No. 002 Issued: 06/02/2016



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).



# ANSI-ASQ National Accreditation Board

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005 AND ANSI/NCSL Z540-1-1994

### International Process Solutions

1300 Industrial Rd Suite 22 San Carlos, CA 94070

Thomas Main 650-595-7890, ext. 105  
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### CALIBRATION

Valid to: June 22, 2017 Certificate Number: AC-1400

#### I. Electromagnetic - DC/Low Frequency

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Voltage - Source	Up to 220 mV 220 mV to 2.2 V (2.2 to 11) V (11 to 22) V (22 to 220) V (220 V to 1 100) V	18 μV/V + 0.8 μV 16 μV/V + 1.2 μV 16 μV/V + 4 μV 16 μV/V + 8 μV 18 μV/V + 0.1 mV 22 μV/V + 0.6 mV	Fluke 5700A Series II	Manufacturer/ GIDEP/Customer Specific
DC Current - Source	Up to 220 μA 220 μA to 2.2 mA (2.2 to 22) mA (22 to 220) mA 220 mA to 2.2 A	0.12 mA/A + 10 nA 0.12 mA/A + 10 nA 0.12 mA/A + 0.1 μA 0.14 mA/A + 2.1 μA 0.21 mA/A + 0.14 mA		
AC Voltage - Source	<b>Up to 2.2 mV</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	2.2 mV/V + 5 μV 1.9 mV/V + 5 μV 2.7 mV/V + 5 μV 2.9 mV/V + 5 μV 3.4 mV/V + 8 μV 4.1 mV/V + 15 μV 5.2 mV/V + 30 μV 10 mV/V + 40 μV		



PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Source (cont.)	<b>(2.2 to 22) mV</b>			
	(10 to 20) Hz	1.2 mV/V + 6 μV		
	(20 to 40) Hz	0.49 mV/V + 6 μV		
	40 Hz to 20 kHz	0.26 mV/V + 6 μV		
	(20 to 50) kHz	0.84 V/V + 6 μV		
	(50 to 100) kHz	1.9 mV/V + 8 μV		
	(100 to 300) kHz	2.6 mV/V + 15 μV		
	(300 to 500) kHz	3.6 mV/V + 30 μV		
	500 kHz to 1 MHz	9.6 mV/V + 40 μV		
	<b>(22 to 220) mV</b>			
	(10 to 20) Hz	1.2 mV/V + 16 μV		
	(20 to 40) Hz	0.48 mV/V + 10 μV		
	40 Hz to 20 kHz	0.22 mV/V + 10 μV		
	(20 to 50) kHz	0.72 mV/V + 10 μV		
	(50 to 100) kHz	1.8 mV/V + 30 μV		
	(100 to 300) kHz	2.2 mV/V + 30 μV		
	(300 to 500) kHz	3.6 mV/V + 40 μV		
	500 kHz to 1 MHz	7.2 mV/V + 0.1 mV		
	<b>220 mV to 2.2 V</b>			
	(10 to 20) Hz	5.1 mV/V + 0.1 mV		
	(20 to 40) Hz	5 mV/V + 30 μV		
	40 Hz to 20 kHz	5 mV/V + 7 μV		
	(20 to 50) kHz	5 mV/V + 20 μV		
	(50 to 100) kHz	5 mV/V + 80 μV		
	(100 to 300) kHz	5.1 mV/V + 0.15 mV		
	(300 to 500) kHz	5.5 mV/V + 0.4 mV		
	500 kHz to 1 MHz	6.9 mV/V + 1 mV		
	<b>(2.2 to 22) V</b>			
(10 to 20) Hz	1.3 mV/V + 1 mV			
(20 to 40) Hz	0.58 mV/V + 0.3 mV			
40 Hz to 20 kHz	0.49 mV/V + 70 μV			
(20 to 50) kHz	0.54 mV/V + 0.2 mV			
(50 to 100) kHz	0.72 mV/V + 0.4 mV			
(100 to 300) kHz	1.3 mV/V + 1.7 mV			
(300 to 500) kHz	2.8 mV/V + 5 mV			
500 kHz to 1 MHz	6.1 mV/V + 9 mV			
<b>(22 to 220) V</b>				
(10 to 20) Hz	1.3 mV/V + 10 mV			
(20 to 40) Hz	0.58 mV/V + 3 mV			
40 Hz to 20 kHz	0.49 mV/V + 1 mV			
(20 to 50) kHz	0.68 mV/V + 4 mV			
(50 to 100) kHz	1.3 mV/V + 10 mV			
<b>2.2 V to 1.1 kV</b>				
(15 to 50) Hz	0.92 mV/V + 20 mV			
50 Hz to 1 kHz	0.18 mV/V + 4 mV			

Fluke 5700A Series II

Manufacturer/  
GIDEP/Customer  
Specific

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current - Source	<b>(9 to 220) µA</b> 10 to 20 Hz 20 to 40 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz <b>220 µA to 2.2 mA</b> 10 to 20 Hz 20 to 40 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz <b>(2.2 to 22) mA</b> 10 to 20 Hz 20 to 40 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz <b>(22 to 220) mA</b> 10 to 20 Hz 20 to 40 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz <b>22 mA to 2.2A</b> 20 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	1.6 mA/A + 30 nA 0.84 mA/A + 25 nA 0.32 mA/A + 20 nA 1.4 mA/A + 50 nA 3.6 mA/A + 0.1 µA  1.6 mA/A + 50 nA 0.84 mA/A + 40 nA 0.32 mA/A + 40 nA 1.4 mA/A + 0.5 µA 3.6 mA/A + 1 µA  1.6 mA/A + 0.5 µA 0.84 mA/A + 0.4 µA 0.32 mA/A + 0.4 µA 1.4 mA/A + 5 µA 3.6 mA/A + 10 µA  1.6 mA/A + 5 µA 0.84 mA/A + 4 µA 0.32 mA/A + 4 µA 1.4 mA/A + 50 µA 3.6 mA/A + 0.1 mA  6.1 mA/A + 40 µA 6.2 mA/A + 0.1 mA 21 mA/A + 0.2 mA	Fluke 5700A Series II	Manufacturer/ GIDEP/Customer Specific
Resistance - Source	1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	0.23 mΩ 0.42 mΩ 0.67 mΩ 1.3 mΩ 4 mΩ 7.6 mΩ 30 mΩ 57 mΩ 0.28 Ω 0.53 Ω 3.2 Ω 6.1 Ω 46 Ω 93 Ω 0.94 kΩ 2.1 kΩ 27 kΩ		

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Resistance - Source	100 Ω	1.1 mΩ	GE Sensing Calibration Module V2020	OEM and GIDEP- Sourced and Customer Specific Procedures
DC Voltage - Measure	(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	18 μV/V + 0.3 μV 18 μV/V + 0.3 μV 12 μV/V + 0.5 μV 17 μV/V + 30 μV 17 μV/V + 0.1 mV	HP 3458A Opt 002	
AC Voltage - Measure	<b>(1 to 10) mV</b> 1 Hz to 1 kHz (1 to 20) kHz (20 to 100) kHz (100 to 300) kHz 300 kHz to 1MHz (1 to 4) MHz <b>(10 to 100) mV</b> 1 Hz to 1 kHz (1 to 20) kHz (20 to 100) kHz (100 to 300) kHz 300 kHz to 1MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz <b>100 mV to 1V</b> 1 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz <b>(1 to 10) V</b> 10 Hz (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	4 μV/V + 1.1 μV 6 μV/V + 1.1 μV 0.1 mV/V + 1.1 μV 0.8 mV/V + 2 μV 0.24 mV/V + 5 μV 1.4 mV/V + 7 μV  0.16 mV/V + 2 μV 0.29 mV/V + 2 μV 1.6 mV/V + 2 μV 0.66 mV/V + 10 μV 4 mV/V + 50 μV 8 mV/V + 70 μV 8 mV/V + 80 μV 30 mV/V + 0.1 mV  0.16 mV/V + 20 μV 0.29 mV/V + 20 μV 0.61 mV/V + 20 μV 1.6 mV/V + 20 μV  0.19 mV/V + 0.4 mV 0.18 mV/V + 0.4 mV 0.16 mV/V + 0.4 mV 0.16 mV/V + 0.2 mV 0.29 mV/V + 0.2 mV 0.61 mV/V + 0.2 mV 1.6 mV/V + 0.2 mV 6 mV/V + 1 mV 20 mV/V + 1 mV 20 mV/V + 1 mV		



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PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Measure (Cont.)	<b>(10 to 100) V</b> 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz <b>100 V to 1 kV</b> 1 kHz <b>ANALOG, 1V</b> 50 kHz 1 MHz <b>ANALOG, 10V</b> 10 Hz (10 to 500) Hz 50 kHz 1 MHz	0.41 mV/V + 2 mV 0.41 mV/V + 2 mV 0.71 mV/V + 2 mV 2.4 mV/V + 2 mV 81 mV/V + 20 mV 0.3 mV/V + 4 mV 10 mV/V + 0.2 V 8 mV/V + 2 mV 0.41 mV/V + 1 mV 3.1 mV/V + 4 mV 0.1 V/V + 0.2 V	HP 3458A Opt 002	OEM and GIDEP- Sourced and Customer Specific Procedures
Frequency - Measure	1 Hz 10 MHz	1 mHz/Hz 0.23 μHz/Hz		
Resistance - Measure	<b>4 wire:</b> Up to 10 Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ <b>2 wire:</b> (10 to 100) MΩ	35 μΩ/Ω + 10 μΩ 27 μΩ/Ω + 0.1 mΩ 15 μΩ/Ω + 0.1 mΩ 15 μΩ/Ω + 1 mΩ 15 μΩ/Ω + 10 mΩ 21 μΩ/Ω + 1 Ω 55 μΩ/Ω + 20 Ω 0.15 mΩ/Ω + 20 Ω		
DC Current - Measure	100 μA 100 μA to 1mA (1 to 10) mA (10 to 100) mA 1 mA to 1 A	34 μA/A + 0.1 nA 30 μA/A + 1 nA 30 μA/A + 10 nA 39 μA/A + 0.1 μA 47 μA/A + 2 μA		
AC Current - Measure Up to 1 kHz	(5 to 100) μA 100 μA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	1.2 mA/A + 30 nA 0.63 mA/A + 0.2 μA 0.63 mA/A + 2 μA 0.63 mA/A + 20 μA 2 mA/A + 0.2 mA		



## II. Thermodynamic

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature	(-196 to 0) °C (0 to 300) °C	0.04 °C 0.05 °C	GE Sensing Intelligent Probe 5690L	IPS Method SOP CAL 0039
Relative Humidity	<b>Temperature 10 °C</b>		Thunder Scientific RH/Temp Chamber 2500	OEM Procedure, IPS Method SOP CAL 0030
	10 %RH	0.19 %RH		
	30 %RH	0.5 %RH		
	50 %RH	0.8 %RH		
	70 %RH	1.1 %RH		
	80 %RH	1.2 %RH		
	<b>Temperature 21.11 °C</b>			
	10 %RH	0.18 %RH		
	30 %RH	0.48 %RH		
	50 %RH	0.75 %RH		
	70 %RH	1 %RH		
	80 %RH	1.2 %RH		
	<b>Temperature 50 °C</b>			
	10 %RH	0.17 %RH		
	30 %RH	0.56 %RH		
50 %RH	0.66 %RH			
70 %RH	0.88 %RH			
80 %RH	0.99 %RH			

## III. Dimensional

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION & MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Outside Diameter (Pin and Plug Gages)	0.01 in to 0.25 in	25 µin	Mitutoyo Laser Scan Micrometer LSM-6100	GIDEP Procedure T.O. 33K6-4-121-1
	0.25 in to 1.0 in	76 µin	Measurement Heads	

*Notes:*

1. Calibration and Measurement Capabilities (CMC) (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage probability factor of approximately  $k=2$  including a "best existing device" for a specific category of calibration.
2. The actual measurement uncertainty of a specific calibration performed by the laboratory for the customer's device is generally greater than the CMC due to the behavior of the customer's device that is not usually as accurate as the best existing device used to establish the CMC.
3. This scope is formatted as part of a single document including the Certificate of Accreditation No. AC-1400.

  
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 Vice President