



MICRO PRECISION CALIBRATION PTE LTD
BLOCK 5008 ANG MO KIO AVENUE 5 #07-04
TECHPLACE II SINGAPORE 569874
65 67484384



Certificate of Calibration

Date: February 21, 2019

Cert No. 551220082829067

Customer:

GES SINGAPORE PTE LTD
28 MARSILING LANE
SINGAPORE 739152

Work Order #: SG-11010042

MPC Control #: 1CA64E1
Asset ID: 97022
Gage Type: MULTIFUNCTION I/O MODULE
Manufacturer: NATIONAL INSTRUMENTS
Model Number: PXI-6229
Size: 32 AI (16-Bit, 250 kS/s), 4 AO, 48 DIO
Temp/RH: 24.2°C / 42 %
Location: Calibration performed at Customer's facility

Serial Number: 1CA64E1
Department: N/A
Performed By: DIVIEERNRAJ CHANDRAN
Received Condition: IN TOLERANCE
Returned Condition: IN TOLERANCE
Cal. Date: February 21, 2019
Cal. Interval: 12 MONTHS
Cal. Due Date: February 21, 2020

Calibration Notes:

- Performance test passed.
- Refer attachment (1 Page).

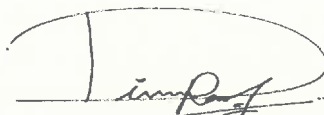
Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
CJ6455	MULTIMETER	34401A	US36052770	HEWLETT PACKARD	Oct 17, 2019	551220081632867
DH3876	MULTI-FUNCTION CALIBRATOR	5700A/NAF	6020913	FLUKE	Apr 3, 2019	512200813349236
CA8201	225MHZ UNIVERSAL COUNTER	53132A	MY40004745	AGILENT	May 4, 2019	551220081351492

Procedures Used in this Event

Procedure Name	Description
NI DAQ B/E/M/S/X SERIES	Multifunction and Simultaneous Multifunction DAQ Devices with NI-DAQmx, NI DAQ B/E/M/S/X SERIES Cali

Calibrating Technician:


DIVIEERNRAJ CHANDRAN

QC Approval:


JULES PHILIPPE AGPANGAN

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA's Publication and NIST Technical Note 1297, 1994 Edition. Services rendered comply with ISO/IEC 17025:2017, ANSI/NCSL Z540-1-1994, ANSI/NCSL Z540.3-2006, MPC Quality Manual, MPC CSD and with customer purchase order instructions.

Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. The information on this report, pertains only to the instrument identified.

All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. This report may not be reproduced in part or in a whole without the prior written approval of the issuing MPC lab.



National Instruments PXI-6229 Multifunction I/O Module

Procedure: **NI DAQ B/E/M/S/X SERIES**
ID Number: **1CA64E1**
Asset Number: **97022**

Order Number: **SG-11010042**
Serial Number: **1CA64E1**
Calibration Date: **February 21, 2019**

Analog Input Accuracy

Channel ai0

Negative Range/Positive Range	Nominal Value	Lower Limit	As Found	As Left	Error	Upper Limit	Result	Uncertainty($\pm$)
-0.2 V / 0.2 V	-0.1996000 V	-0.1997120 V	-0.1995951 V	-0.1995951 V	0.00245 %	-0.1994880 V	PASS	0.0000030 V
-0.2 V / 0.2 V	0.0000000 V	-0.0000700 V	0.0000024 V	0.0000024 V	0.00000 %	0.0000700 V	PASS	0.0000012 V
-0.2 V / 0.2 V	0.1996000 V	0.1994880 V	0.1995960 V	0.1995960 V	0.00200 %	0.1997120 V	PASS	0.0000030 V
-1 V / 1 V	-0.998000 V	-0.998359 V	-0.997956 V	-0.997956 V	0.00441 %	-0.997641 V	PASS	0.000010 V
-1 V / 1 V	0.000000 V	-0.000189 V	0.000003 V	0.000003 V	0.00000 %	0.000189 V	PASS	0.0000012 V
-1 V / 1 V	0.998000 V	0.997641 V	0.997986 V	0.997986 V	0.00140 %	0.998359 V	PASS	0.000010 V
-5 V / 5 V	-4.99000 V	-4.99161 V	-4.98979 V	-4.98979 V	0.00421 %	-4.98839 V	PASS	0.000034 V
-5 V / 5 V	0.00000 V	-0.00082 V	0.00001 V	0.00001 V	0.00001 %	0.00082 V	PASS	0.0000045 V
-5 V / 5 V	4.99000 V	4.98838 V	4.98993 V	4.98993 V	0.00140 %	4.99162 V	PASS	0.000034 V
-10 V / 10 V	-9.98000 V	-9.98310 V	-9.97956 V	-9.97956 V	0.00441 %	-9.97690 V	PASS	0.000064 V
-10 V / 10 V	0.00000 V	-0.00160 V	0.00003 V	0.00003 V	0.00003 %	0.00160 V	PASS	0.0000045 V
-10 V / 10 V	9.98000 V	9.97690 V	9.97987 V	9.97987 V	0.00130 %	9.98310 V	PASS	0.000064 V

Analog Output Accuracy

Negative Range /Positive Range /Channel	Nominal Value	Lower Limit	As Found	As Left	Error	Upper Limit	Result	Uncertainty($\pm$)
-10 V / 10 V / CH ao0	9.98000 V	9.97677 V	9.98001 V	9.98001 V	0.00010 %	9.98323 V	PASS	0.000064 V
-10 V / 10 V / CH ao0	0.00000 V	-0.00173 V	-0.00007 V	-0.00007 V	0.00007 %	0.00173 V	PASS	0.0000045 V
-10 V / 10 V / CH ao0	-9.98000 V	-9.98323 V	-9.98013 V	-9.98013 V	0.00130 %	-9.97677 V	PASS	0.000064 V
-10 V / 10 V / CH ao1	9.98000 V	9.97677 V	9.98000 V	9.98000 V	0.00000 %	9.98323 V	PASS	0.000064 V
-10 V / 10 V / CH ao1	0.00000 V	-0.00173 V	0.00012 V	0.00012 V	0.00012 %	0.00173 V	PASS	0.0000045 V
-10 V / 10 V / CH ao1	-9.98000 V	-9.98323 V	-9.98004 V	-9.98004 V	0.00040 %	-9.97677 V	PASS	0.000064 V
-10 V / 10 V / CH ao2	9.98000 V	9.97677 V	9.98017 V	9.98017 V	0.00170 %	9.98323 V	PASS	0.000064 V
-10 V / 10 V / CH ao2	0.00000 V	-0.00173 V	-0.00010 V	-0.00010 V	0.00010 %	0.00173 V	PASS	0.0000045 V
-10 V / 10 V / CH ao2	-9.98000 V	-9.98323 V	-9.98014 V	-9.98014 V	0.00140 %	-9.97677 V	PASS	0.000064 V
-10 V / 10 V / CH ao3	9.98000 V	9.97677 V	9.98018 V	9.98018 V	0.00180 %	9.98323 V	PASS	0.000064 V
-10 V / 10 V / CH ao3	0.00000 V	-0.00173 V	-0.00006 V	-0.00006 V	0.00006 %	0.00173 V	PASS	0.0000045 V
-10 V / 10 V / CH ao3	-9.98000 V	-9.98323 V	-9.98011 V	-9.98011 V	0.00110 %	-9.97677 V	PASS	0.000064 V

Counter Accuracy

Channel	Nominal Value	Lower Limit	As Found	As Left	Error	Upper Limit	Result	Uncertainty($\pm$)
ctr0	5.000000 MHz	4.999750 MHz	5.000250 MHz	5.000250 MHz	0.00500 %	5.000250 MHz	PASS	0.00000000043 MHz

Jeff 12-MAR-19
JASON AGOSTIN