



Calibration Services  
 9290 SW Nimbus Ave  
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 USA



Calibration Cert #2527.01

# Calibration Report

## Accredited Calibration

### Report Number: XXXXXXXXX-XXXXXX-X

**Model:** APx516                      **Data Type:** AS SHIPPED, NEW                      **Program:**  
**Serial Number:** XXXXXXXXX                      **Date of Cal:** 10-Apr-2026                      APxCalibration.exe 24.01

Internal Module Status and Data			
AP Name	Description	Serial No.	Revision
BVEL	Main Board	XXXXX	101
BAES	DIO module	XXXXX	204

#### Explanatory notes to the last three columns of the calibration report

**"MU"** - The column labeled "MU" lists the expanded measurement uncertainties derived from equipment specifications, repeatability data, and other significant sources. These are stated at a minimum confidence of 95% using a coverage factor k=2 (except as appropriate) following the recommendations in ISO/IEC 98-3 *Guide to the expression of uncertainty in measurement (GUM:1995)*, BIPM JCGM 100:2008, and NIST Technical Note 1297.

**"TUR"** - The column labeled "TUR" lists the test uncertainty ratio calculated by dividing the lesser of the lower and upper reading tolerances by the 95% expanded measurement uncertainty. An entry of "na" indicates [1] the specified limits are one-sided, or [2] the performance characteristic is not accredited.

**"Result"** - The column labeled "Result" lists color-coded assessments that the observed characteristic is within its specified limits of performance. There are three possible indications:

**pass** -- The READING is within the specified upper and lower limits reduced by guard-bands equal to the 95% expanded measurement uncertainty. The probability or risk of false acceptance is very low, typically <0.2%.

**uncertain** -- The READING is within the specified upper and lower limits, but it is close to one of the limits by an amount that is less than the 95% expanded measurement uncertainty. The probability or risk of false acceptance is elevated.

**>> FAIL <<** -- The READING is outside of the specified limit range.

Accredited measurements listed in the following pages correlate to Audio Precision's Scope of Accreditation as noted:

- note 1 - Frequency Measurement
- note 2 - AC Voltage Measurement
- note 3 - AC Flatness Measurement
- note 4 - Resistance Measurement
- note 5 - DC Voltage Measurement
- note 6 - AC Voltage Source and AC Flatness Source for testing AC Measurement Equipment
- note 7 - DC Voltage Source for testing DC Measurement Equipment

This report is valid only when accompanied by a signed Certificate of Calibration.

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
<b>ANALOG GENERATOR CHARACTERISTICS</b>							
<b>[1] Sine Frequency Accuracy (Hz) - note 1</b>							
	10 kHz	9999.9700	10000.0002	10000.0300	0.0064	4.7	pass
<b>[2] Sine Amplitude Accuracy, 1 kHz (Volts, mVolts) - note 2</b>							
Channel 1	7.200 V	7.1587	7.2009	7.2416	0.0014	≥10	pass
	4.000 V	3.9770	4.0013	4.0231	0.0008	≥10	pass
	2.000 V	1.98852	2.00046	2.01155	0.0006	≥10	pass
	1.000 V	0.99426	1.00059	1.00577	0.00030	≥10	pass
	300 mV	298.28	300.23	301.73	0.44731	3.9	pass
	12 mV	11.931	12.015	12.069	0.005	≥10	pass
Channel 2	7.200 V	7.1587	7.2007	7.2416	0.0014	≥10	pass
	4.000 V	3.9770	4.0016	4.0231	0.0008	≥10	pass
	2.000 V	1.98852	2.00046	2.01155	0.0006	≥10	pass
	1.000 V	0.99426	1.00074	1.00577	0.00030	≥10	pass
	300 mV	298.28	300.22	301.73	0.44731	3.9	pass
	12 mV	11.931	12.014	12.069	0.005	≥10	pass
<b>[3] Sine Flatness, 1.15 Vrms (dB) - note 3</b>							
Channel 1	10 Hz	-0.0080	-0.0001	0.0080	0.0015	5.3	pass
	20 Hz	-0.0080	-0.0003	0.0080	0.0015	5.3	pass
	20 kHz	-0.0080	-0.0023	0.0080	0.0019	4.2	pass
	50 kHz	-0.0300	0.0132	0.0300	0.0035	8.6	pass
	80 kHz	-0.1000	0.0356	0.1000	0.0072	≥10	pass
Channel 2	10 Hz	-0.0080	-0.0001	0.0080	0.0015	5.3	pass
	20 Hz	-0.0080	-0.0003	0.0080	0.0015	5.3	pass
	20 kHz	-0.0080	-0.0024	0.0080	0.0019	4.2	pass
	50 kHz	-0.0300	0.0077	0.0300	0.0035	8.6	pass
	80 kHz	-0.1000	-0.0017	0.1000	0.0072	≥10	pass
<b>[4] DC Offset (mV), Unbal - note 5</b>							
Channel 1	7.2 V	-18.10	-1.61	18.10	0.023	≥10	pass
	1.000 V	-2.600	-0.280	2.600	0.023	≥10	pass
	100 mV	-0.350	-0.028	0.350	0.023	≥10	pass
	10 mV	-0.125	-0.027	0.125	0.023	5.4	pass
Channel 2	7.2 V	-18.10	1.00	18.10	0.023	≥10	pass
	1.000 V	-2.600	0.199	2.600	0.023	≥10	pass
	100 mV	-0.350	0.020	0.350	0.023	≥10	pass
	10 mV	-0.125	0.020	0.125	0.023	5.4	pass
<b>[5] Source Resistance Accuracy (Ω) - note 4</b>							
Channel 1 Unbalanced	50 Ω	49.000	50.400	51.000	0.060	≥10	pass
	600 Ω	594.00	599.10	606.00	0.28	≥10	pass
Channel 1 Balanced	100 Ω	99.00	100.63	101.00	0.0500	≥10	pass
	600 Ω	594.00	599.51	606.00	0.30	≥10	pass
Channel 2 Unbalanced	50 Ω	49.000	50.389	51.000	0.060	≥10	pass
	600 Ω	594.00	599.02	606.00	0.28	≥10	pass
Channel 2 Balanced	100 Ω	99.00	100.65	101.00	0.0500	≥10	pass
	600 Ω	594.00	599.55	606.00	0.30	≥10	pass

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
<b>ANALOG ANALYZER CHARACTERISTICS</b>							
<b>[6] Input Termination Accuracy (<math>\Omega</math>) - note 4</b>							
Channel 1	600 $\Omega$	594.00	<b>599.44</b>	606.00	0.30	$\geq 10$	pass
Channel 2	600 $\Omega$	594.00	<b>599.54</b>	606.00	0.30	$\geq 10$	pass
<b>[7] DC Measurement Accuracy (Volts, mVolts) - note 7</b>							
Channel 1	+120 V	119.080	<b>119.966</b>	120.920	0.020	$\geq 10$	pass
	+80 V	79.360	<b>79.981</b>	80.640	0.009	$\geq 10$	pass
	+25 V	24.800	<b>24.996</b>	25.200	0.00089	$\geq 10$	pass
	+8.0 V	7.9360	<b>7.9982</b>	8.0640	0.00013	$\geq 10$	pass
	+2.5 V	2.4800	<b>2.4985</b>	2.5200	0.00004	$\geq 10$	pass
	+800 mV	793.40	<b>799.64</b>	806.60	0.849	7.8	pass
	+250 mV	247.25	<b>249.96</b>	252.75	0.152	$\geq 10$	pass
	0 mV	-1.000	<b>0.173</b>	1.000	0.023	$\geq 10$	pass
	-250 mV	-252.75	<b>-249.62</b>	-247.25	0.152	$\geq 10$	pass
	-800 mV	-806.60	<b>-799.17</b>	-793.40	0.849	7.8	pass
	-2.5 V	-2.5200	<b>-2.4978</b>	-2.4800	0.00004	$\geq 10$	pass
	-8 V	-8.0640	<b>-7.9964</b>	-7.9360	0.00013	$\geq 10$	pass
	-25 V	-25.200	<b>-24.987</b>	-24.800	0.00089	$\geq 10$	pass
	-80 V	-80.640	<b>-79.962</b>	-79.360	0.009	$\geq 10$	pass
-120 V	-120.920	<b>-119.946</b>	-119.080	0.020	$\geq 10$	pass	
Channel 2	+120 V	119.080	<b>119.955</b>	120.920	0.020	$\geq 10$	pass
	+80 V	79.360	<b>79.974</b>	80.640	0.009	$\geq 10$	pass
	+25 V	24.800	<b>24.992</b>	25.200	0.00089	$\geq 10$	pass
	+8.0 V	7.9360	<b>7.9974</b>	8.0640	0.00013	$\geq 10$	pass
	+2.5 V	2.4800	<b>2.4984</b>	2.5200	0.00004	$\geq 10$	pass
	+800 mV	793.40	<b>799.44</b>	806.60	0.849	7.8	pass
	+250 mV	247.25	<b>249.78</b>	252.75	0.152	$\geq 10$	pass
	0 mV	-1.000	<b>-0.027</b>	1.000	0.023	$\geq 10$	pass
	-250 mV	-252.75	<b>-249.83</b>	-247.25	0.152	$\geq 10$	pass
	-800 mV	-806.60	<b>-799.44</b>	-793.40	0.849	7.8	pass
	-2.5 V	-2.5200	<b>-2.4982</b>	-2.4800	0.00004	$\geq 10$	pass
	-8 V	-8.0640	<b>-7.9966</b>	-7.9360	0.00013	$\geq 10$	pass
	-25 V	-25.200	<b>-24.988</b>	-24.800	0.00089	$\geq 10$	pass
	-80 V	-80.640	<b>-79.964</b>	-79.360	0.009	$\geq 10$	pass
-120V	-120.920	<b>-119.944</b>	-119.080	0.020	$\geq 10$	pass	
<b>[8] Input Common Mode Rejection (mV) - non-accredited</b>							
Channel 1 (5V CM signal)	2.5V range, 200 Hz	0	<b>0.012</b>	0.500	0.058	n/a	pass
	2.5V range, 5 kHz	0	<b>0.022</b>	0.500	0.071	n/a	pass
	2.5V range, 20 kHz	0	<b>0.09</b>	1.58	0.18	n/a	pass
	8V range, 20 kHz	0	<b>0.48</b>	15.81	0.22	n/a	pass
	80V range, 20 kHz	0	<b>3.30</b>	28.12	0.29	n/a	pass
Channel 2 (5V CM signal)	2.5V range, 200 Hz	0	<b>0.020</b>	0.500	0.058	n/a	pass
	2.5V range, 5 kHz	0	<b>0.066</b>	0.500	0.071	n/a	pass
	2.5V range, 20 kHz	0	<b>0.26</b>	1.58	0.18	n/a	pass
	8V range, 20 kHz	0	<b>1.26</b>	15.81	0.22	n/a	pass
	80V range, 20 kHz	0	<b>0.40</b>	28.12	0.29	n/a	pass

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
<b>ANALOG ANALYZER, continued</b>							
<b>[9] Level Meter AC Accuracy, 1 kHz (Volts, mVolts) - note 6</b>							
Channel 1	85 V	84.512	<b>84.971</b>	85.491	0.035	≥10	pass
	20 V	19.885	<b>19.993</b>	20.115	0.004	≥10	pass
	5 V	4.9713	<b>4.9982</b>	5.0289	0.0014	≥10	pass
	2 V	1.9885	<b>1.9986</b>	2.0115	0.0004	≥10	pass
	500 mV	497.13	<b>499.66</b>	502.89	0.29	9.9	pass
	200 mV	198.85	<b>199.84</b>	201.15	0.09	≥10	pass
	5 mV	4.9713	<b>4.9965</b>	5.0289	0.0018	≥10	pass
Channel 2	85 V	84.512	<b>84.967</b>	85.491	0.035	≥10	pass
	20 V	19.885	<b>19.992</b>	20.115	0.004	≥10	pass
	5 V	4.9713	<b>4.9981</b>	5.0289	0.0014	≥10	pass
	2 V	1.9885	<b>1.9987</b>	2.0115	0.0004	≥10	pass
	500 mV	497.13	<b>499.68</b>	502.89	0.29	9.9	pass
	200 mV	198.85	<b>199.85</b>	201.15	0.09	≥10	pass
	5 mV	4.9713	<b>4.9968</b>	5.0289	0.0018	≥10	pass
<b>[10] Level Meter AC Flatness, 1.15 Vrms (dB) - note 6</b>							
Channel 1	10 Hz	-0.0100	<b>-0.0014</b>	0.0100	0.0028	≥10	pass
	20 Hz	-0.0100	<b>-0.0005</b>	0.0100	0.0028	≥10	pass
	20 kHz	-0.0100	<b>-0.0016</b>	0.0100	0.0022	≥10	pass
	50 kHz	-0.0300	<b>0.0010</b>	0.0300	0.0029	≥10	pass
	80 kHz	-0.6000	<b>-0.4412</b>	0.1000	0.0058	≥10	pass
Channel 2	10 Hz	-0.0100	<b>-0.0014</b>	0.0100	0.0028	≥10	pass
	20 Hz	-0.0100	<b>-0.0005</b>	0.0100	0.0028	≥10	pass
	20 kHz	-0.0100	<b>-0.0016</b>	0.0100	0.0022	≥10	pass
	50 kHz	-0.0300	<b>0.0011</b>	0.0300	0.0029	≥10	pass
	80 kHz	-0.6000	<b>-0.4408</b>	0.1000	0.0058	≥10	pass

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
<b>ANALOG ANALYZER, continued</b>							
<b>[11] Phase Measurement Offset (Deg), DC Coupled - non-accredited, self-test</b>							
Ch1 - Ch 2	50Hz	-0.200	<b>0.000</b>	0.200	0.001	n/a	<b>pass</b>
	200Hz	-0.200	<b>0.000</b>	0.200	0.001	n/a	<b>pass</b>
	5kHz	-0.200	<b>-0.001</b>	0.200	0.001	n/a	<b>pass</b>
	20kHz	-0.800	<b>-0.004</b>	0.800	0.001	n/a	<b>pass</b>
	50kHz	-2.000	<b>-0.010</b>	2.000	0.001	n/a	<b>pass</b>
<b>[12] Frequency Measurement Accuracy (uHz/Hz) - note 1</b>							
	10 kHz	-3.00	<b>-0.03</b>	3.00	0.21	n/a	<b>pass</b>
<b>[13] Input Residual Crosstalk at 20 kHz (dB) - non-accredited</b>							
Ch2 into Ch 1		-999	<b>-130.2</b>	-120.0	4.00	n/a	<b>pass</b>
Ch 1 into Ch 2		-999	<b>-138.5</b>	-120.0	4.00	n/a	<b>pass</b>

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Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result	
<b>NON-ACCREDITED CHARACTERISTICS</b>								
<b>[14] Sine THD+N (dB) - non-accredited, self-test</b>								
Channel 1 <i>Balanced</i>	20 Hz, 14.4V, 20k BW	-999	<b>-107.1</b>	-100.0	1.000	n/a	pass	
	1 kHz, 14.4V, 20k BW	-999	<b>-107.3</b>	-100.0	1.000	n/a	pass	
	5 kHz, 14.4V, 20k BW	-999	<b>-107.3</b>	-100.0	1.000	n/a	pass	
	<i>Unbalanced</i>	20 kHz, 14.4V, 20k BW	-999	<b>-109.4</b>	-100.0	1.500	n/a	pass
		20 Hz, 2V, 20k BW	-999	<b>-110.4</b>	-100.0	1.000	n/a	pass
		1 kHz, 2V, 20k BW	-999	<b>-110.2</b>	-100.0	1.000	n/a	pass
		20 kHz, 2V, 20k BW	-999	<b>-111.1</b>	-100.0	1.500	n/a	pass
Channel 2 <i>Balanced</i>	20 Hz, 14.4V, 20k BW	-999	<b>-107.4</b>	-100.0	1.000	n/a	pass	
	1 kHz, 14.4V, 20k BW	-999	<b>-107.2</b>	-100.0	1.000	n/a	pass	
	5 kHz, 14.4V, 20k BW	-999	<b>-107.1</b>	-100.0	1.000	n/a	pass	
	<i>Unbalanced</i>	20 kHz, 14.4V, 20k BW	-999	<b>-108.8</b>	-100.0	1.500	n/a	pass
		20 Hz, 2V, 20k BW	-999	<b>-110.3</b>	-100.0	1.000	n/a	pass
		1 kHz, 2V, 20k BW	-999	<b>-110.1</b>	-100.0	1.000	n/a	pass
		20 kHz, 2V, 20k BW	-999	<b>-110.0</b>	-100.0	1.500	n/a	pass
<b>[15] Residual Crosstalk (dB), Output Related, 20kHz - non-accredited, self-test</b>								
<i>Unbalanced,</i> 7.2V, 20 kHz.	2 into 1	-999	<b>-136.4</b>	-120.0	2.00	n/a	pass	
	1 into 2	-999	<b>-137.3</b>	-120.0	2.00	n/a	pass	
<i>Balanced,</i> 14.4V, 20 kHz.	2 into 1	-999	<b>-141.1</b>	-120.0	4.00	n/a	pass	
	1 into 2	-999	<b>-161.7</b>	-120.0	4.00	n/a	pass	
<b>[16] Residual Noise (uVolts) - non-accredited, self-test</b>								
<i>Balanced Input,</i> <i>inputs shorted.</i>	Ch 1, 20 kHz BW	0	<b>1.13</b>	2.00	0.0600	n/a	pass	
	Ch 2, 20 kHz BW	0	<b>1.14</b>	2.00	0.0600	n/a	pass	
<b>[17] Residual SMPTE IMD (%), 4:1, 60Hz:7kHz - non-accredited, self-test</b>								
<i>Balanced,</i> 14.4 Vrms.	Ch 1	0%	<b>0.00092%</b>	0.00320%	0.00030%	n/a	pass	
	Ch 2	0%	<b>0.00094%</b>	0.00320%	0.00030%	n/a	pass	
<b>[18] Residual MOD IMD (%), 4:1, 60Hz:7kHz - non-accredited, self-test</b>								
<i>Balanced,</i> 14.4 Vrms.	Ch 1	0%	<b>0.00084%</b>	0.00320%	0.00020%	n/a	pass	
	Ch 2	0%	<b>0.00094%</b>	0.00320%	0.00020%	n/a	pass	
<b>[19] Residual DFD IMD (%), mean 19.5kHz, diff 1kHz - non-accredited, self-test</b>								
<i>Balanced,</i> 14.4 Vrms.	Ch 1	0%	<b>0.00016%</b>	0.00100%	0.00020%	n/a	pass	
	Ch 2	0%	<b>0.00016%</b>	0.00100%	0.00020%	n/a	pass	
<b>[20] Digital Output Amplitude Accuracy (Volts) - non-accredited, oscilloscope referenced</b>								
<i>Unbal, consumer</i>	0.5 Vpp	0.450	<b>0.497</b>	0.550	0.009	n/a	pass	
<i>Unbal, professional</i>	1.0 Vpp	0.900	<b>0.984</b>	1.100	0.016	n/a	pass	
<i>Balanced</i>	5.0 Vpp	4.500	<b>5.058</b>	5.500	0.077	n/a	pass	

END OF REPORT