

FLUKE®

Calibration



5790B AC Measurement Standard

Extended Specifications

General Specifications

Warm-up Time	30 minutes
Relative Humidity	
Operating	45 % to 50 °C 75 % to 45 °C 95 % to 30 °C
Storage	<95 % non-condensing
Altitude	
Operating	3,050 meters (10,000 feet)
Non-Operating	12,200 meters (40,000 feet)
Temperature	
Operating	0 °C to 50 °C
Calibration	15 °C to 35 °C
Storage	-40 °C to 70 °C
Electromagnetic Compatibility (EMC)	
International	IEC 61326-1: Controlled Electromagnetic Environment CISPR 11: Group 1, Class A <i>Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself. Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances. Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object.</i>
Korea (KCC)	Class A Equipment (Industrial Broadcasting & Communication Equipment) <i>Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.</i>
USA (FCC)	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.
Surge	ANSI C62.41-1980, Category A
Reliability	MIL-T-2880D, paragraph 3.13.3
Size	
Height	17.8 cm (7 in) standard rackmount + 1.5 cm (0.6 in)
Width	43.2 cm (17 in)
Depth	63 cm (24.8 in)
Maximum Power Requirements	
5790B	95 VA
With Wideband Option	120 VA
Weight	
5790B	24 kg (53 lb)
With Wideband	24.5 kg (54 lb)
Line Power	50 Hz/60 Hz; 100 V - 120 V, 220 V - 240 V
Safety	IEC 61010-1: Overvoltage Category II, Pollution Degree 2 IEC 61010-2-030: Measurement 1000 V CAT O
Remote Interfaces	RS-232, IEEE-488
Confidence Level	99 % unless otherwise specified.
DC Zero Cal	Perform the dc zero calibration every 30 days. In addition, perform the dc zero calibration after powering up the unit the first time after unpacking following a shipment or if exposed to an environmental change of greater than 5 °C.

Resolution and Range Limits

Voltage Range	Autorange Limits ^[1]		Resolution	
	Upper	Lower	Filter Fast	Filter Med/Slow
2.2 mV	2.2 mV	600 µV	0.1 µV	0.1 µV
7 mV	7 mV	1.9 mV	0.1 µV	0.1 µV
22 mV	22 mV	6 mV	0.1 µV	0.1 µV
70 mV	70 mV	19 mV	0.1 µV	0.1 µV
220 mV	220 mV	60 mV	0.1 µV	0.1 µV
700 mV	700 mV	190 mV	1.0 µV	0.1 µV
2.2 V	2.2 V	600 mV	1.0 µV	0.1 µV
7 V	7 V	1.9 V	10 µV	1.0 µV
22 V	22 V	6 V	10 µV	1.0 µV
70 V	70 V	19 V	100 µV	10 µV
220 V	220 V	60 V	100 µV	10 µV
700 V	700 V	190 V	1.0 mV	100 µV
1000 V	1050 V	600 V	1.0 mV	100 µV

[1] In locked ranges, readings may be made approximately 1 % beyond the autorange limits.

Electrical Specifications

The Product specifications describe the Absolute Instrumental Uncertainty of the Product. The Product specifications include stability, temperature, and humidity; within specified limits, linearity, line and load regulation, and the reference standard measurement uncertainty. The Product specifications are provided at a 99 % confidence level, k=2.58, normally distributed, unless otherwise stated.

The relative specifications are provided for enhanced accuracy applications. To calculate an enhanced absolute specification from the relative specification, it is necessary to combine the uncertainty of your external standards with the pertinent relative specifications. Specifications are valid after allowing a warm-up period of 30 minutes, or twice the time the Product has been turned off.

AC Absolute Voltage

Voltage Range	Frequency Range	Absolute ±5 °C of Calibration Temperature			
		AC/DC Transfer Mode ± ppm 2 Years	Measurement Mode ± (ppm of Reading + µV)		
			90 Days	1 Year	2 Years
2.2 mV	10 Hz - 20 Hz		1700 + 1.3	1700 + 1.3	1700 + 1.3
	20 Hz - 40 Hz		740 + 1.3	740 + 1.3	740 + 1.3
	40 Hz - 20 kHz		420 + 1.3	420 + 1.3	420 + 1.3
	20 kHz - 50 kHz		810 + 2.0	810 + 2.0	820 + 2.0
	50 kHz - 100 kHz		1200 + 2.5	1200 + 2.5	1200 + 2.5
	100 kHz - 300 kHz		2300 + 4.0	2300 + 4.0	2300 + 4.0
	300 kHz - 500 kHz		2400 + 6.0	2400 + 8.0	2600 + 8.0
7 mV	500 kHz - 1 MHz		3200 + 6.0	3500 + 8.0	5000 + 8.0
	10 Hz - 20 Hz		850 + 1.3	850 + 1.3	850 + 1.3
	20 Hz - 40 Hz		370 + 1.3	370 + 1.3	370 + 1.3
	40 Hz - 20 kHz		210 + 1.3	210 + 1.3	210 + 1.3
	20 kHz - 50 kHz		400 + 2.0	400 + 2.0	410 + 2.0
	50 kHz - 100 kHz		600 + 2.5	600 + 2.5	610 + 2.5
	100 kHz - 300 kHz		1200 + 4.0	1200 + 4.0	1200 + 4.0
22 mV	300 kHz - 500 kHz		1300 + 6.0	1300 + 8.0	1400 + 8.0
	500 kHz - 1 MHz		2000 + 6.0	2300 + 8.0	3600 + 8.0
	10 Hz - 20 Hz		290 + 1.3	290 + 1.3	290 + 1.3
	20 Hz - 40 Hz		180 + 1.3	190 + 1.3	190 + 1.3
	40 Hz - 20 kHz		110 + 1.3	110 + 1.3	110 + 1.3
	20 kHz - 50 kHz		210 + 2.0	210 + 2.0	210 + 2.0
	50 kHz - 100 kHz		310 + 2.5	310 + 2.5	310 + 2.5
70 mV	100 kHz - 300 kHz		810 + 4.0	810 + 4.0	820 + 4.0
	300 kHz - 500 kHz		860 + 6.0	890 + 8.0	1000 + 8.0
	500 kHz - 1 MHz		1400 + 6.0	1700 + 8.0	2600 + 8.0
	10 Hz - 20 Hz ^[1]		240 + 1.5	240 + 1.5	240 + 1.5
	20 Hz - 40 Hz		120 + 1.5	120 + 1.5	130 + 1.5
	40 Hz - 20 kHz		64 + 1.5	65 + 1.5	69 + 1.5
	20 kHz - 50 kHz		120 + 2.0	130 + 2.0	130 + 2.0
70 mV	50 kHz - 100 kHz		260 + 2.5	260 + 2.5	260 + 2.5
	100 kHz - 300 kHz		510 + 4.0	510 + 4.0	530 + 4.0
	300 kHz - 500 kHz		660 + 6.0	670 + 8.0	680 + 8.0
	500 kHz - 1 MHz		1100 + 6.0	1100 + 8.0	1300 + 8.0

220 mV	10 Hz - 20 Hz ^[1]	210	210 + 1.5	210 + 1.5	210 + 1.5
	20 Hz - 40 Hz	82	84 + 1.5	85 + 1.5	87 + 1.5
	40 Hz - 20 kHz	34	37 + 1.5	38 + 1.5	43 + 1.5
	20 kHz - 50 kHz	67	69 + 2.0	69 + 2.0	73 + 2.0
	50 kHz - 100 kHz		160 + 2.5	160 + 2.5	160 + 2.5
	100 kHz - 300 kHz		240 + 4.0	250 + 4.0	280 + 4.0
	300 kHz - 500 kHz		360 + 6.0	380 + 8.0	400 + 8.0
	500 kHz - 1 MHz		940 + 6.0	1000 + 8.0	1200 + 8.0
700 mV	10 Hz - 20 Hz ^[1]	210	210 + 1.5	210 + 1.5	210 + 1.5
	20 Hz - 40 Hz	73	75 + 1.5	76 + 1.5	78 + 1.5
	40 Hz - 20 kHz	27	31 + 1.5	33 + 1.5	38 + 1.5
	20 kHz - 50 kHz	47	50 + 2.0	51 + 2.0	56 + 2.0
	50 kHz - 100 kHz		79 + 2.5	79 + 2.5	84 + 2.5
	100 kHz - 300 kHz		160 + 4.0	180 + 4.0	210 + 4.0
	300 kHz - 500 kHz		300 + 6.0	300 + 8.0	340 + 8.0
	500 kHz - 1 MHz		900 + 6.0	960 + 8.0	1200 + 8.0
2.2 V	10 Hz - 20 Hz ^[2]	200	200	200	200
	20 Hz - 40 Hz	63	65	66	69
	40 Hz - 20 kHz	18	22	24	29
	20 kHz - 50 kHz	43	45	46	52
	50 kHz - 100 kHz		70	71	76
	100 kHz - 300 kHz		150	160	200
	300 kHz - 500 kHz		250	260	310
	500 kHz - 1 MHz		840	900	1200
7 V	10 Hz - 20 Hz ^[2]	200	200	200	200
	20 Hz - 40 Hz	63	66	67	70
	40 Hz - 20 kHz	18	22	24	29
	20 kHz - 50 kHz	44	46	48	53
	50 kHz - 100 kHz		80	81	88
	100 kHz - 300 kHz		180	190	220
	300 kHz - 500 kHz		380	400	470
	500 kHz - 1 MHz		1100	1200	1500
22 V	10 Hz - 20 Hz ^[2]	200	200	200	200
	20 Hz - 40 Hz	63	66	67	70
	40 Hz - 20 kHz	21	25	27	31
	20 kHz - 50 kHz	44	46	48	53
	50 kHz - 100 kHz		80	81	85
	100 kHz - 300 kHz		180	190	220
	300 kHz - 500 kHz		380	400	470
	500 kHz - 1 MHz		1100	1200	1500
70 V ^[3]	10 Hz - 20 Hz ^[2]	200	200	200	200
	20 Hz - 40 Hz	63	67	68	72
	40 Hz - 20 kHz	25	30	32	39
	20 kHz - 50 kHz	55	56	57	63
	50 kHz - 100 kHz		91	94	110
	100 kHz - 300 kHz		190	200	220
	300 kHz - 500 kHz		400	410	510
	500 kHz - 1 MHz		1100	1200	1500
220 V ^[3]	10 Hz - 20 Hz	200	200	200	200
	20 Hz - 40 Hz	63	67	68	72
	40 Hz - 20 kHz	23	29	31	38
	20 kHz - 50 kHz	63	67	69	77
	50 kHz - 100 kHz		96	98	110
	100 kHz - 300 kHz		210	210	260
	300 kHz - 500 kHz		440	500	700

700 V	10 Hz - 20 Hz ^[4]	200	200	200	200
	20 Hz - 40 Hz	92	96	99	110
	40 Hz - 20 kHz	36	39	41	47
	20 kHz - 50 kHz		120	130	150
	50 kHz - 100 kHz		400	500	850
1000 V	10 Hz - 20 Hz	200	200	200	200
	20 Hz - 40 Hz	92	96	99	110
	40 Hz - 20 kHz	33	37	38	44
	20 kHz - 50 kHz ^[5]		120	130	150
	50 kHz - 100 kHz ^[5]		400	500	850

[1] For 9.5 to 10 Hz, the specifications is $\pm(1000 \text{ ppm of reading} + 1.5 \mu\text{V})$

[2] For 9.5 to 10 Hz, the specifications is $\pm(1000 \text{ ppm of reading})$

[3] Inputs >100 kHz and with a V*Hz product >2.2E7 are typical.

[4] Typical specification, as determined by sourcing with the Fluke 5205A Precision Power Amplifier.

[5] Inputs >30 kHz and >750 V are typical, as determined by sourcing with the Fluke 5205A Precision Power Amplifier.

Note: The Product is to be used in controlled environments. For disturbances on the mains power supply of >0.5 Vrms from 10 MHz to 40 MHz, add 5 ppm to the 2.2 V range.

AC Relative Voltage

Voltage Range	Frequency Range	Relative Uncertainty $\pm 5^\circ\text{C}$ of Calibration Temperature			
		AC/DC Transfer Mode \pm ppm 2 Years	Measurement Mode \pm (ppm of Reading + μV)		
			90 Days	1 Year	2 Years
2.2 mV	10 Hz - 20 Hz		100 + 1.3	110 + 1.3	110 + 1.3
	20 Hz - 40 Hz		54 + 1.3	64 + 1.3	68 + 1.3
	40 Hz - 20 kHz		44 + 1.3	57 + 1.3	61 + 1.3
	20 kHz - 50 kHz		57 + 2.0	67 + 2.0	110 + 2.0
	50 kHz - 100 kHz		79 + 2.5	86 + 2.5	120 + 2.5
	100 kHz - 300 kHz		190 + 4.0	230 + 4.0	390 + 4.0
	300 kHz - 500 kHz		590 + 6.0	720 + 8.0	1200 + 8.0
	500 kHz - 1 MHz		2200 + 6.0	2600 + 8.0	4400 + 8.0
7 mV	10 Hz - 20 Hz		80 + 1.3	83 + 1.3	86 + 1.3
	20 Hz - 40 Hz		33 + 1.3	39 + 1.3	45 + 1.3
	40 Hz - 20 kHz		29 + 1.3	36 + 1.3	42 + 1.3
	20 kHz - 50 kHz		40 + 2.0	44 + 2.0	63 + 2.0
	50 kHz - 100 kHz		53 + 2.5	57 + 2.5	72 + 2.5
	100 kHz - 300 kHz		110 + 4.0	130 + 4.0	210 + 4.0
	300 kHz - 500 kHz		370 + 6.0	450 + 8.0	740 + 8.0
	500 kHz - 1 MHz		1600 + 6.0	2000 + 8.0	3400 + 8.0
22 mV	10 Hz - 20 Hz		69 + 1.3	72 + 1.3	75 + 1.3
	20 Hz - 40 Hz		34 + 1.3	40 + 1.3	46 + 1.3
	40 Hz - 20 kHz		30 + 1.3	36 + 1.3	43 + 1.3
	20 kHz - 50 kHz		40 + 2.0	45 + 2.0	64 + 2.0
	50 kHz - 100 kHz		53 + 2.5	57 + 2.5	73 + 2.5
	100 kHz - 300 kHz		97 + 4.0	110 + 4.0	160 + 4.0
	300 kHz - 500 kHz		310 + 6.0	380 + 8.0	610 + 8.0
	500 kHz - 1 MHz		1200 + 6.0	1500 + 8.0	2500 + 8.0
70 mV	10 Hz - 20 Hz		60 + 1.5	61 + 1.5	62 + 1.5
	20 Hz - 40 Hz		27 + 1.5	30 + 1.5	37 + 1.5
	40 Hz - 20 kHz		22 + 1.5	25 + 1.5	34 + 1.5
	20 kHz - 50 kHz		34 + 2.0	36 + 2.0	44 + 2.0
	50 kHz - 100 kHz		53 + 2.5	54 + 2.5	62 + 2.5
	100 kHz - 300 kHz		110 + 4.0	120 + 4.0	170 + 4.0
	300 kHz - 500 kHz		270 + 6.0	290 + 8.0	320 + 8.0
	500 kHz - 1 MHz		910 + 6.0	970 + 8.0	1200 + 8.0
220 mV	10 Hz - 20 Hz	55	60 + 1.5	61 + 1.5	62 + 1.5
	20 Hz - 40 Hz	20	27 + 1.5	29 + 1.5	35 + 1.5
	40 Hz - 20 kHz	17	22 + 1.5	24 + 1.5	31 + 1.5
	20 kHz - 50 kHz	17	22 + 2.0	24 + 2.0	33 + 2.0
	50 kHz - 100 kHz		51 + 2.5	52 + 2.5	59 + 2.5
	100 kHz - 300 kHz		100 + 4.0	120 + 4.0	170 + 4.0
	300 kHz - 500 kHz		260 + 6.0	290 + 8.0	310 + 8.0
	500 kHz - 1 MHz		890 + 6.0	950 + 8.0	1200 + 8.0

700 mV	10 Hz - 20 Hz	55	60 + 1.5	61 + 1.5	62 + 1.5
	20 Hz - 40 Hz	20	27 + 1.5	29 + 1.5	34 + 1.5
	40 Hz - 20 kHz	15	22 + 1.5	24 + 1.5	31 + 1.5
	20 kHz - 50 kHz	15	22 + 2.0	24 + 2.0	33 + 2.0
	50 kHz - 100 kHz		51 + 2.5	52 + 2.5	59 + 2.5
	100 kHz - 300 kHz		100 + 4.0	120 + 4.0	170 + 4.0
	300 kHz - 500 kHz		260 + 6.0	270 + 8.0	310 + 8.0
	500 kHz - 1 MHz		890 + 6.0	950 + 8.0	1200 + 8.0
2.2 V	10 Hz - 20 Hz	55	60	61	62
	20 Hz - 40 Hz	19	26	28	34
	40 Hz - 20 kHz	15	20	22	27
	20 kHz - 50 kHz	15	21	23	33
	50 kHz - 100 kHz		49	50	57
	100 kHz - 300 kHz		92	110	160
	300 kHz - 500 kHz		220	230	280
	500 kHz - 1 MHz		830	890	1200
7 V	10 Hz - 20 Hz	55	60	61	62
	20 Hz - 40 Hz	19	27	29	36
	40 Hz - 20 kHz	15	20	22	27
	20 kHz - 50 kHz	18	23	26	35
	50 kHz - 100 kHz		62	64	73
	100 kHz - 300 kHz		140	150	180
	300 kHz - 500 kHz		360	380	450
	500 kHz - 1 MHz		1100	1200	1500
22 V	10 Hz - 20 Hz	55	60	61	62
	20 Hz - 40 Hz	19	28	30	37
	40 Hz - 20 kHz	15	20	22	27
	20 kHz - 50 kHz	18	23	26	35
	50 kHz - 100 kHz		62	64	69
	100 kHz - 300 kHz		140	150	180
	300 kHz - 500 kHz		360	380	450
	500 kHz - 1 MHz		1100	1200	1500
70 V ^[1]	10 Hz - 20 Hz	55	60	62	63
	20 Hz - 40 Hz	19	29	31	39
	40 Hz - 20 kHz	15	23	25	34
	20 kHz - 50 kHz	22	25	27	39
	50 kHz - 100 kHz		64	68	85
	100 kHz - 300 kHz		140	150	180
	300 kHz - 500 kHz		370	390	490
	500 kHz - 1 MHz		1100	1200	1500
220 V ^[1]	10 Hz - 20 Hz	55	61	62	64
	20 Hz - 40 Hz	19	30	32	40
	40 Hz - 20 kHz	15	23	25	34
	20 kHz - 50 kHz	24	30	34	49
	50 kHz - 100 kHz		66	69	83
	100 kHz - 300 kHz		160	170	220
	300 kHz - 500 kHz		410	480	680
700 V	10 Hz - 20 Hz ^[2]	55	62	63	65
	20 Hz - 40 Hz	19	31	33	41
	40 Hz - 20 kHz	19	24	25	31
	20 kHz - 50 kHz		100	110	140
	50 kHz - 100 kHz		390	500	850
1000 V	10 Hz - 20 Hz ^[2]	55	62	63	65
	20 Hz - 40 Hz	19	31	33	41
	40 Hz - 20 kHz	19	24	25	31
	20 kHz - 50 kHz ^[3]		100	110	140
	50 kHz - 100 kHz ^[3]		390	500	850

[1] Inputs >100 kHz and with a V*Hz product >2.2E7 are typical.

[2] Typical specification, as determined by sourcing with the Fluke 5205A Precision Power Amplifier.

[3] Inputs >30 kHz and >750 V are typical, as determined by sourcing with the Fluke 5205A Precision Power Amplifier.

AC Non-sine Absolute Voltage

Range ^[1]	Frequency Range	1-Year Absolute, tcal ±5 °C, ±(% of output)
2.2 mV	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
7 mV	10 kHz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
22 mV	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
70 mV	10 Hz - 45 Hz	0.1
	45 kHz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
220 mV	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
700 mV	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
2.2 V ^[2]	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
7 V	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
22 V ^[2]	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5
70 V	10 Hz - 45 Hz	0.1
	45 Hz - 1 kHz	0.1
	1 kHz - 20 kHz	0.17
	20 kHz - 100 kHz	0.5

[1] Specifications apply for non-sinusoidal inputs with crest factor <3.0 and with harmonic content band-limited to <1 MHz.
 [2] Crest factor limited to <2.3 for signals greater than 75 % of full scale RMS.

DC Absolute Voltage

Voltage Range	Absolute ± 5 °C of Calibration Temperature		
	Measurement Mode \pm (ppm of Reading + μ V)		
	90 Days	1 Year	2 Years
220 mV	37 + 1.5	38 + 1.5	43 + 1.5
700 mV	31 + 1.5	33 + 1.5	38 + 1.5
2.2 V	22	24	29
7 V	22	24	29
22 V	25	27	31
70 V	30	32	39
220 V	29	31	38
700 V	39	41	47
1000 V	37	38	44

Note: DC specification valid only when dc input signal is averaged with an equal and opposite dc input signal to eliminate dc offset errors. The use of Input 1 for dc inputs is not recommended due to the inherent thermal EMFs in a "N" connector. See Operators Manual for details.

DC Relative Voltage

Voltage Range	Relative ± 5 °C of Calibration Temperature		
	Measurement Mode \pm (ppm of Reading + μ V)		
	90 Days	1 Year	2 Years
220 mV	22 + 1.5	24 + 1.5	31 + 1.5
700 mV	22 + 1.5	24 + 1.5	31 + 1.5
2.2 V	20	22	27
7 V	20	22	27
22 V	20	22	27
70 V	23	25	34
220 V	23	25	34
700 V	24	25	31
1000 V	24	25	31

Note: DC specification valid only when dc input signal is averaged with an equal and opposite dc input signal to eliminate dc offset errors. The use of Input 1 for dc inputs is not recommended due to the inherent thermal EMFs in a "N" connector. See Operators Manual for details.

Secondary Electrical Specifications

Secondary performance specifications and operating characteristics are included in uncertainty specifications. They are provided for special calibration requirements such as stability or linearity tests.

AC Secondary Performance

Voltage Range	Frequency Range	24 Hour AC Stability $\pm 1\text{ }^\circ\text{C}$ Slow Filter Peak-Peak $\pm \mu\text{V}$	Temperature Coefficient ^[1]		Input Resistance ^[2]
			10 $^\circ\text{C}$ to 40 $^\circ\text{C}$	0 $^\circ\text{C}$ to 10 $^\circ\text{C}$ 40 $^\circ\text{C}$ to 50 $^\circ\text{C}$	
			ppm / $^\circ\text{C}$		
2.2 mV	10 Hz - 20 Hz	0.4	50	50	10 M Ω
	20 Hz - 40 Hz	0.4	50	50	
	40 Hz - 20 kHz	0.4	50	50	
	20 kHz - 50 kHz	0.4	50	50	
	50 kHz - 100 kHz	0.8	75	75	
	100 kHz - 300 kHz	1.5	100	100	
	300 kHz - 500 kHz	3.0	150	150	
500 kHz - 1 MHz	4.5	200	200		
7 mV	10 Hz - 20 Hz	0.4	15	15	10 M Ω
	20 Hz - 40 Hz	0.4	15	15	
	40 Hz - 20 kHz	0.4	15	15	
	20 kHz - 50 kHz	0.4	15	15	
	50 kHz - 100 kHz	0.8	25	25	
	100 kHz - 300 kHz	1.5	60	60	
	300 kHz - 500 kHz	3.0	80	80	
500 kHz - 1 MHz	4.5	125	125		
22 mV	10 Hz - 20 Hz	0.4	5	5	10 M Ω
	20 Hz - 40 Hz	0.4	5	5	
	40 Hz - 20 kHz	0.4	5	5	
	20 kHz - 50 kHz	0.4	5	5	
	50 kHz - 100 kHz	0.8	8	8	
	100 kHz - 300 kHz	1.5	10	10	
	300 kHz - 500 kHz	3.0	40	40	
500 kHz - 1 MHz	4.5	100	100		
		\pm (ppm of Reading)			
70 mV	10 Hz - 20 Hz	18	5	5	10 M Ω
	20 Hz - 40 Hz	18	5	5	
	40 Hz - 20 kHz	18	5	5	
	20 kHz - 50 kHz	18	5	5	
	50 kHz - 100 kHz	24	8	8	
	100 kHz - 300 kHz	24	10	10	
	300 kHz - 500 kHz	48	30	30	
500 kHz - 1 MHz	150	75	75		
220 mV	10 Hz - 20 Hz	12	1.5	3.0	10 M Ω
	20 Hz - 40 Hz	8	1.5	3.0	
	40 Hz - 20 kHz	8	1.5	3.0	
	20 kHz - 50 kHz	8	2.0	3.0	
	50 kHz - 100 kHz	18	5.0	8.0	
	100 kHz - 300 kHz	24	10.0	10.0	
	300 kHz - 500 kHz	36	20.0	20.0	
500 kHz - 1 MHz	120	50.0	50.0		
700 mV	10 Hz - 20 Hz	8	1.5	3.0	10 M Ω
	20 Hz - 40 Hz	6	1.5	3.0	
	40 Hz - 20 kHz	6	1.5	3.0	
	20 kHz - 50 kHz	6	2.0	3.0	
	50 kHz - 100 kHz	12	5.0	8.0	
	100 kHz - 300 kHz	18	10.0	10.0	
	300 kHz - 500 kHz	36	20.0	20.0	
500 kHz - 1 MHz	96	50.0	50.0		
2.2 V	10 Hz - 20 Hz	8	1.5	3.0	10 M Ω
	20 Hz - 40 Hz	5	1.5	3.0	
	40 Hz - 20 kHz	5	1.5	3.0	
	20 kHz - 50 kHz	5	2.0	3.0	
	50 kHz - 100 kHz	10	5.0	8.0	
	100 kHz - 300 kHz	18	10.0	10.0	
	300 kHz - 500 kHz	30	20.0	20.0	
500 kHz - 1 MHz	90	50.0	50.0		

Voltage Range	Frequency Range	24 Hour AC Stability ± 1 °C Slow Filter Peak-Peak ± µV	Temperature Coefficient ^[1]		Input Resistance ^[2]
			10 °C to 40 °C	0 °C to 10 °C 40 °C to 50 °C	
			ppm / °C		
7 V	10 Hz - 20 Hz	8	1.5	3.0	50 kΩ
	20 Hz - 40 Hz	5	1.5	3.0	
	40 Hz - 20 kHz	5	1.5	3.0	
	20 kHz - 50 kHz	5	2.0	3.0	
	50 kHz - 100 kHz	10	5.0	8.0	
	100 kHz - 300 kHz	18	15.0	15.0	
	300 kHz - 500 kHz	30	30.0	30.0	
500 kHz - 1 MHz	90	65.0	65.0		
22 V	10 Hz - 20 Hz	8	1.5	3.0	50 kΩ
	20 Hz - 40 Hz	5	1.5	3.0	
	40 Hz - 20 kHz	5	1.5	3.0	
	20 kHz - 50 kHz	5	2.0	3.0	
	50 kHz - 100 kHz	10	5.0	8.0	
	100 kHz - 300 kHz	18	15.0	15.0	
	300 kHz - 500 kHz	30	30.0	30.0	
500 kHz - 1 MHz	90	65.0	65.0		
70 V ^[3]	10 Hz - 20 Hz	8	1.5	3.0	50 kΩ
	20 Hz - 40 Hz	5	1.5	3.0	
	40 Hz - 20 kHz	5	1.5	3.0	
	20 kHz - 50 kHz	5	2.0	3.0	
	50 kHz - 100 kHz	18	5.0	8.0	
	100 kHz - 300 kHz	36	15.0	15.0	
	300 kHz - 500 kHz	48	40.0	40.0	
500 kHz - 1 MHz	120	75.0	75.0		
220 V ^[3]	10 Hz - 20 Hz	8	1.5	3.0	50 kΩ
	20 Hz - 40 Hz	5	1.5	3.0	
	40 Hz - 20 kHz	5	1.5	3.0	
	20 kHz - 50 kHz	5	2.0	3.0	
	50 kHz - 100 kHz	18	5.0	8.0	
	100 kHz - 300 kHz	36	15.0	15.0	
	300 kHz - 500 kHz	48	40.0	40.0	
700 V	10 Hz - 20 Hz ^[4]	8	1.5	4.0	500 kΩ
	20 Hz - 40 Hz	5	1.5	4.0	
	40 Hz - 20 kHz	5	1.5	4.0	
	20 kHz - 50 kHz	18	5.0	7.0	
	50 kHz - 100 kHz	36	15.0	15.0	
1000 V	10 Hz - 20 Hz ^[4]	8	1.5	4.0	500 kΩ
	20 Hz - 40 Hz	5	1.5	4.0	
	40 Hz - 20 kHz	5	1.5	4.0	
	20 kHz - 50 kHz ^[5]	18	5.0	7.0	
	50 kHz - 100 kHz ^[5]	36	15.0	15.0	

[1] Add to uncertainty when more than 5 °C from calibration temperature.

[2] Input capacitance approximately 100 pF.

[3] Inputs with a V*Hz product >2.2 E7 are unspecified.

[4] Typical specification, as determined by sourcing with the Fluke 5205A Precision Power Amplifier.

[5] Inputs that are >30 kHz and >750 V are typical, as determined by sourcing with the Fluke 5205A Precision Power Amplifier.

DC Secondary Performance

Voltage Range	Temperature Coefficient ^[1]		Input Resistance ^[2]
	10 °C to 40 °C	0 °C to 10 °C 40 °C to 50 °C	
	ppm / °C		
220 mV	1.5	3.0	10 MΩ
700 mV	1.5	3.0	10 MΩ
2.2 V	1.5	3.0	10 MΩ
7 V	1.5	3.0	50 kΩ
22 V	1.5	3.0	50 kΩ
70 V	1.5	3.0	50 kΩ
220 V	1.5	3.0	50 kΩ
700 V	1.5	4.0	500 kΩ
1000 V	1.5	4.0	500 kΩ

[1] Add to uncertainty when more than 5 °C from calibration temperature.
 [2] Input capacitance approximately 100 pF.
 Note: DC specification valid only when dc input signal is averaged with an equal and opposite dc input signal to eliminate dc offset errors. The use of Input 1 for dc inputs is not recommended due to the inherent thermal EMFs in a "N" connector. See Operators Manual for details.

Operating Characteristics

Maximum Non-destructive Input.....	1200 V rms
Guard Isolation.....	10 V peak
Volt-Hertz Product	1 x 10 ⁸
Frequency Accuracy (from 0 °C to 50 °C)	
10 Hz - 120 Hz	100 ppm + 10 digits
Above 120 Hz	100 ppm + 2 digits
Frequency Resolution	1.00 Hz to 119.99 Hz
	0.1200 kHz to 1.1999 kHz
	1.200 kHz to 11.999 kHz
	12.00 kHz to 119.99 kHz
	0.1200 MHz to 1.0000 MHz
	1.0000 MHz to 1.1999 MHz (Wideband only)
	1.200 MHz to 11.999 MHz (Wideband only)
	12.00 MHz to 30.00 MHz (Wideband only)
	30.00 MHz to 50.00 MHz (Wideband 5790B/5 & 5790B/AF only)

Reading Rate

<40 Hz	2 seconds per reading
40 Hz.....	2 seconds decreasing linearly to 1 second at 200 Hz
>200 Hz	1 second per reading

Maximum Settling Time to Full Specifications (in range lock)

Filter Off	1 sample
dc	6 seconds
<200 Hz	8 seconds
>200 Hz	4 seconds
Filter Fast	4 averaged samples
dc	10 seconds
<200 Hz	16 seconds
>200 Hz	8 seconds
Filter Medium	16 averaged samples
dc	22 seconds
<200 Hz	32 seconds
>200 Hz	16 seconds
Filter Slow	32 averaged samples
dc	40 seconds
<200 Hz	64 seconds
>200 Hz	32 seconds

Filter Buffer Restart Limits:

Fine: Fast: 10 counts

Medium/Slow

<220 mV	10 counts
>220 mV	100 counts

Medium: Fast: 100 counts

Medium/Slow

<220 mV	100 counts
>220 mV	1000 counts

Course: Fast: 1000 counts

Medium/Slow

<220 mV	1000 counts
>220 mV	10000 counts

Specified for sinewave with THD less than 1 %

AUX Input Characteristics

The AUX input can be used with the Fluke A40/A40A Series Current Shunts to make relative ac current measurements. The 5790A-7001 A40/A40A Current Shunt Adapter and Cable are required. For optimal current measurements using shunts, see the Operators Manual.

Input Resistance.....	91 Ω ± 1 %
Operating Input Voltage	250 mV to 500 mV
Maximum Non-Destructive Input.....	50 V rms

Wideband Specifications (5790B/3, 5790B/5, and 5790B/AF)

Voltage Range ^[1]	Frequency Range	Flatness ^[2] 1 year ± 3 °C ± (% of Reading + μV)	Flatness ^[3] Temperature Coefficient ppm / °C	Absolute Uncertainty 0 °C to 50 °C ^[4] ± (% of Reading + μV)			Resolution
				90 Days	1 Year	2 Years	
2.2 mV	10 Hz - 30 Hz	0.10 + 0	75	0.5 + 1.2	0.6 + 1.5	0.8 + 2	0.1 μV
	30 Hz - 120 Hz	0.05 + 0	75	0.5 + 1.2	0.6 + 1.5	0.8 + 2	
	120 Hz - 1.2 kHz	0.05 + 0	75	0.5 + 1.2	0.6 + 1.5	0.8 + 2	
	1.2 kHz - 120 kHz	0.05 + 0	75	0.5 + 1.2	0.6 + 1.5	0.8 + 2	
	120 kHz - 500 kHz	0.07 + 1	75	0.5 + 1.2	0.6 + 1.5	0.8 + 2	
	500 kHz - 1.2 MHz	0.07 + 1	75				
	1.2 MHz - 2 MHz	0.07 + 1	100				
	2 MHz - 10 MHz	0.17 + 1	200				
	10 MHz - 20 MHz	0.30 + 1	200				
	20 MHz - 30 MHz	0.70 + 2	400				
30 MHz - 50 MHz ^[5]	1.00 + 2	400					
7 mV	10 Hz - 30 Hz	0.10 + 0	75	0.4 + 5	0.5 + 7	0.7 + 8	0.1 μV
	30 Hz - 120 Hz	0.05 + 0	75	0.4 + 5	0.5 + 7	0.7 + 8	
	120 Hz - 1.2 kHz	0.05 + 0	75	0.4 + 5	0.5 + 7	0.7 + 8	
	1.2 kHz - 120 kHz	0.05 + 0	75	0.4 + 5	0.5 + 7	0.7 + 8	
	120 kHz - 500 kHz	0.07 + 1	75	0.4 + 5	0.5 + 7	0.7 + 8	
	500 kHz - 1.2 MHz	0.07 + 1	75				
	1.2 MHz - 2 MHz	0.07 + 1	100				
	2 MHz - 10 MHz	0.1 + 1	200				
	10 MHz - 20 MHz	0.17 + 1	200				
	20 MHz - 30 MHz	0.37 + 1	300				
30 MHz - 50 MHz ^[5]	0.5 + 1	300					
22 mV	10 Hz - 30 Hz	0.10	75	0.4 + 10	0.5 + 13	0.7 + 16	0.1 μV
	30 Hz - 120 Hz	0.05	75	0.4 + 10	0.5 + 13	0.7 + 16	
	120 Hz - 1.2 kHz	0.05	75	0.4 + 10	0.5 + 13	0.7 + 16	
	1.2 kHz - 120 kHz	0.05	75	0.4 + 10	0.5 + 13	0.7 + 16	
	120 kHz - 500 kHz	0.07	75	0.4 + 10	0.5 + 13	0.7 + 16	
	500 kHz - 1.2 MHz	0.07	75				
	1.2 MHz - 2 MHz	0.07	75				
	2 MHz - 10 MHz	0.1	100				
	10 MHz - 20 MHz	0.17	100				
	20 MHz - 30 MHz	0.37	200				
30 MHz - 50 MHz ^[5]	0.6	200					
70 mV	10 Hz - 30 Hz	0.10	40	0.4 + 20	0.5 + 30	0.6 + 40	1.0 μV
	30 Hz - 120 Hz	0.05	40	0.4 + 20	0.5 + 30	0.6 + 40	
	120 Hz - 1.2 kHz	0.05	40	0.4 + 20	0.5 + 30	0.6 + 40	
	1.2 kHz - 120 kHz	0.05	40	0.4 + 20	0.5 + 30	0.6 + 40	
	120 kHz - 500 kHz	0.05	40	0.4 + 20	0.5 + 30	0.6 + 40	
	500 kHz - 1.2 MHz	0.05	40				
	1.2 MHz - 2 MHz	0.05	75				
	2 MHz - 10 MHz	0.1	100				
	10 MHz - 20 MHz	0.15	100				
	20 MHz - 30 MHz	0.35	200				
30 MHz - 50 MHz ^[5]	0.6	200					
220 mV	10 Hz - 30 Hz	0.10	40	0.3 + 60	0.4 + 80	0.5 + 100	1.0 μV
	30 Hz - 120 Hz	0.04	40	0.3 + 60	0.4 + 80	0.5 + 100	
	120 Hz - 1.2 kHz	0.04	40	0.3 + 60	0.4 + 80	0.5 + 100	
	1.2 kHz - 120 kHz	0.04	40	0.3 + 60	0.4 + 80	0.5 + 100	
	120 kHz - 500 kHz	0.04	40	0.3 + 60	0.4 + 80	0.5 + 100	
	500 kHz - 1.2 MHz	0.05	40				
	1.2 MHz - 2 MHz	0.05	75				
	2 MHz - 10 MHz	0.1	100				
	10 MHz - 20 MHz	0.15	100				
	20 MHz - 30 MHz	0.35	200				
30 MHz - 50 MHz ^[5]	0.6	200					

700 mV	10 Hz - 30 Hz	0.10	40	0.3 + 200	0.4 + 300	0.5 + 400	10.0 μV
	30 Hz - 120 Hz	0.03	40	0.3 + 200	0.4 + 300	0.5 + 400	
	120 Hz - 1.2 kHz	0.03	40	0.3 + 200	0.4 + 300	0.5 + 400	
	1.2 kHz - 120 kHz	0.03	40	0.3 + 200	0.4 + 300	0.5 + 400	
	120 kHz - 500 kHz	0.03	40	0.3 + 200	0.4 + 300	0.5 + 400	
	500 kHz - 1.2 MHz	0.05	40				
	1.2 MHz - 2 MHz	0.05	75				
	2 MHz - 10 MHz	0.1	100				
	10 MHz - 20 MHz	0.15	100				
	20 MHz - 30 MHz	0.35	200				
30 MHz - 50 MHz ^[5]	0.6	200					
2.2 V	10 Hz - 30 Hz	0.10	40	0.3 + 300	0.35 + 400	0.4 + 500	10.0 μV
	30 Hz - 120 Hz	0.03	40	0.3 + 300	0.35 + 400	0.4 + 500	
	120 Hz - 1.2 kHz	0.03	40	0.3 + 300	0.35 + 400	0.4 + 500	
	1.2 kHz - 120 kHz	0.03	40	0.3 + 300	0.35 + 400	0.4 + 500	
	120 kHz - 500 kHz	0.03	40	0.3 + 300	0.35 + 400	0.4 + 500	
	500 kHz - 1.2 MHz	0.05	40				
	1.2 MHz - 2 MHz	0.05	75				
	2 MHz - 10 MHz	0.1	100				
	10 MHz - 20 MHz	0.15	100				
	20 MHz - 30 MHz	0.35	200				
30 MHz - 50 MHz ^[5]	0.6	200					
7 V	10 Hz - 30 Hz	0.10	40	0.3 + 500	0.35 + 800	0.4 + 1000	100.0 μV
	30 Hz - 120 Hz	0.03	40	0.3 + 500	0.35 + 800	0.4 + 1000	
	120 Hz - 1.2 kHz	0.03	40	0.3 + 500	0.35 + 800	0.4 + 1000	
	1.2 kHz - 120 kHz	0.03	40	0.3 + 500	0.35 + 800	0.4 + 1000	
	120 kHz - 500 kHz	0.03	40	0.3 + 500	0.35 + 800	0.4 + 1000	
	500 kHz - 1.2 MHz	0.05	40				
	1.2 MHz - 2 MHz	0.05	75				
	2 MHz - 10 MHz	0.1	100				
	10 MHz - 20 MHz	0.15	100				
	20 MHz - 30 MHz	0.35	200				
30 MHz - 50 MHz ^{[5],[6]}	0.6	200					

[1] Range limits same as INPUT 1 or INPUT 2.

[2] Relative to 1 kHz, for 2-year specification multiply by 1.5.

[3] Add to flatness specifications when more than 3 °C from calibration temperature.

[4] At input connector.

[5] Applies to 5790B/5 & 5790B/AF only.

[6] Maximum amplitude is limited to 3.5 V.

Wideband Characteristics

Maximum Non-Destructive Input 200 V rms

Guard Isolation..... 0.5 V peak

Input Impedance

1 kHz 50 Ω (± 0.5 %)

VSWR < 1.05 typical

5790B/AF

The 5790B/AF absolute specification is ±0.23 % of voltage reading (1 year, 23 °C ±3 °C, 95 % confidence level (k=2), normally distributed). Specification applies to 50 MHz, 223.61 mV, referenced to the end of the provided serialized 0.91 meter (3 ft) cable. When using the cable and 50 MHz Cable Correction, other ranges and frequencies can be measured but the Product is only specified within ±4 % of frequency and amplitude stated.

Ordering information

Models

5790B	AC Measurement Standard
5790B/03	AC Measurement Standard +30 MHz Wideband Option
5790B/05	AC Measurement Standard + 50 MHz Wideband Option
5790B/AF	AC Measurement Standard + 50 MHz Wideband Option Cali- brated with WB cable

Accessories

5790B/5 WB Cable	Cable, 50 Ohm Wideband Cable for 50 MHz Measurements
A40B/Set	Complete set of A40B shunts, transit case and accessories
A40B-001MA	1 milliamp Current Shunt
A40B-010MA	10 milliamp Current Shunt
A40B-020MA	20 milliamp Current Shunt
A40B-050MA	50 milliamp Current Shunt
A40B-100mA	100 milliamp Current Shunt
A40B-200mA	200 milliamp Current Shunt
A40B-500mA	500 milliamp Current Shunt
A40B-1A	1 amp Current Shunt
A40B-2A	2 amp Current Shunt
A40B-5A	5 amp Current Shunt
A40B-10A	10 amp Current Shunt
A40B-20A	20 amp Current Shunt
A40B-50A	50 amp Current Shunt
A40B-100A	100 amp Current Shunt
A40B-LEAD/4MM	Cable N-Type connector to Dual Terminal Plugs
A40B-LEAD/N	Cable N-Type connector to N-Type Connector

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