Manual Supplement

Manual Title:	525B Getting Started	Supplement Issue:	**1**
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This supplement contains information necessary to ensure the accuracy of the above manual.

FLUKE®

Change #1, 51061, 51464, 54684

On pages 10 through 15 replace the entire ***Specifications*** section with the following:

General Specifications

Warm up time ..... Twice the time since last warmed up, to a maximum of 30 minutes.
Settling time ..... Less than 5 seconds for all functions and ranges except as noted.
Standard interface ..... RS-232, IEEE-488 (GPIB)
Temperature performance
Operating ..... 0 °C to 50 °C
Calibration (tcal) ..... 18 °C to 28 °C
Storage ..... -20 °C to 70 °C
Electromagnetic compatibility ..... CE: Conforms to EN61326
Temperature coefficient ..... Temperature coefficient for temperatures outside tcal ± 5 °C is 10 % of the 90 day specification (or 1 year if applicable) per °C
Relative humidity
Operating ..... < 80 % to 30 °C, < 70 % to 40 °C, < 40 % to 50 °C
Storage ..... < 95 % noncondensing
Altitude
Operating ..... 3,050 m (10,000 ft) maximum
Nonoperating ..... 12,200 m (40,000 ft) maximum
Safety ..... EN 61010 Second, ANSI/ISA-S82.01-1994, CAN/CSA-C22.2 No. 1010.1-92, NRTL
Pollution Degree 2
Analog low isolation ..... 20 V
Line power
Line Voltage (selectable) ..... 100 V/120 V or 220 V/240 V
Line Frequency ..... 47 to 63 Hz
Line Voltage Variation ..... ± 10 % about line voltage setting
Power consumption ..... 15 VA maximum
Dimensions
Height ..... 13.3 cm (5.25 in) plus 1.5 cm (0.6 in) four feet on bottom
Width ..... ¾ standard rack width
Depth ..... 47.3 cm (18.6 in) overall
Weight (without options) ..... 4 kg (9 lb)

Electrical Specifications

DC Voltage Specifications, Output

Ranges[1]	Absolute Uncertainty, tcal ± 5 °C ± (ppm of output + µV)				Stability	Resolution	Maximum Burden[2]
	90 days		1 year		24 hours, ± 1 °C ± (ppm of output + µV)		
0 to 100.000 mV	25	3	30	3	5 + 2	1 µV	10 mA
0 to 1.00000 V	25	10	30	10	4 + 10	10 µV	10 mA
0 to 10.0000 V	25	100	30	100	4 + 100	100 µV	10 mA
0 to 100.000 V	25	1 mV	30	1 mV	5 + 1 mV	1 mV	1 mA
TC Output							

-10 to 75.000 mV	25	3	30	3	5 + 2	1 µV	10 Ω

Notes:

[1] All outputs are positive only.

[2] Remote sensing is not provided. Output resistance is < 1Ω.

Ranges	Noise	
	Bandwidth 0.1 to 10 Hz ± (ppm of output + µV p-p)	Bandwidth 10 Hz to 10 kHz (µV rms)
0 to 100.000 mV	1 µV	6 µV
0 to 1.00000 V	10 µV	60 µV
0 to 10.0000 V	100 µV	600 µV
0 to 100.000 V	10 ppm+1 mV	20 mV

DC Current Specifications, Output

Ranges[1]	Absolute Uncertainty tcal ± 5 °C ± (ppm of output + µA)				Resolution	Maximum Compliance Voltage	Maximum Inductive Load
	90 days		1 year				
0 to 100.000 mA	40	1	50	1	1 µA	12 V	100 mH

Note:

[1] All outputs are positive only.

Ranges	Noise	
	Bandwidth 0.1 to 10 Hz p-p	Bandwidth 10 Hz to 10 kHz rms
0 to 100.000 mA	2000 nA	20 µA

Resistance Specifications, Output

Ranges[1]	Absolute Uncertainty tcal ± 5°C, ± Ω		Resolution	Allowable Current[2]
	90 days	1 year		
5 to 400.00 Ω	0.012	0.015	0.001 Ω	1 to 3 mA
5 to 4.0000 kΩ	0.25	0.3	0.01 Ω	100 µA to 1 mA

Notes:

[1] Continuously variable from 0 to 4 kΩ.

[2] For currents lower than shown, the floor adder increases by Floor(new) = Floor(old) x Imin/Iactual.
For example, a 500 µA stimulus measuring 100 Ω has a floor uncertainty of 0.015 Ω x 1 mA/500 µA = 0.03 Ω.

Resistance Specifications, Input

Ranges[1]	Absolute Uncertainty tcal ± 5°C, ± (ppm of output + Ω)				Resolution	Stimulus Current
	90 days		1 year			
0 to 400.00 Ω	20	0.0035	20	0.004	0.001 Ω	1 mA
0 to 4.00000 kΩ	20	0.035	20	0.04	0.01 Ω	0.1 mA

Note:

[1] 4-wire mode.

Thermocouple Specification, Output and Input

TC Type	Range (°C)	Absolute Uncertainty tcal ± 5 °C, ± (°C)[1]
		Output/Input

	Minimum	Maximum	90 days	1 year
B	600 °C 800 °C 1550 °C	800 °C 1550 °C 1820 °C	0.42 °C 0.40 °C 0.44 °C	0.46 °C 0.40 °C 0.45 °C
C	0 °C 150 °C 650 °C 1000 °C 1800 °C	150 °C 650 °C 1000 °C 1800 °C 2316 °C	0.25 °C 0.21 °C 0.23 °C 0.38 °C 0.63 °C	0.30 °C 0.26 °C 0.31 °C 0.50 °C 0.84 °C
E	-270 °C -100 °C -25 °C 650 °C	-100 °C -25 °C 650 °C 1820 °C	0.38 °C 0.16 °C 0.14 °C 0.16 °C	0.50 °C 0.18 °C 0.16 °C 0.21 °C
J	-210 °C -100 °C -30 °C 760 °C	-100 °C -30 °C 760 °C 1200 °C	0.20 °C 0.18 °C 0.14 °C 0.18 °C	0.27 °C 0.20 °C 0.17 °C 0.23 °C
K	-270 °C -100 °C -25 °C 120 °C 1000 °C	-100 °C -25 °C 120 °C 1000 °C 1372 °C	0.25 °C 0.19 °C 0.14 °C 0.19 °C 0.30 °C	0.33 °C 0.22 °C 0.16 °C 0.26 °C 0.40 °C
L	-200 °C -100 °C 800 °C	-100 °C 800 °C 900 °C	0.37 °C 0.26 °C 0.17 °C	0.37 °C 0.26 °C 0.17 °C
N	-270 °C -100 °C -25 °C 410 °C	-100 °C -25 °C 410 °C 1300 °C	0.33 °C 0.20 °C 0.16 °C 0.21 °C	0.40 °C 0.24 °C 0.19 °C 0.27 °C
R	-50 °C 250 °C 400 °C 1000 °C	250 °C 400 °C 1000 °C 1767 °C	0.58 °C 0.34 °C 0.31 °C 0.30 °C	0.58 °C 0.35 °C 0.33 °C 0.40 °C
S	-50 °C 250 °C 1000 °C 1400 °C	250 °C 1000 °C 1400 °C 1767 °C	0.56 °C 0.36 °C 0.30 °C 0.35 °C	0.56 °C 0.36 °C 0.37 °C 0.46 °C
T	-270 °C -150 °C 0 °C	-150 °C 0 °C 400 °C	0.51 °C 0.18 °C 0.13 °C	0.63 °C 0.24 °C 0.16 °C
U	-200 °C 0 °C	0 °C 600 °C	0.56 °C 0.27 °C	0.56 °C 0.27 °C
XK	-200 °C -100 °C 300 °C	-100 °C 300 °C 800 °C	0.22 °C 0.12 °C 0.19 °C	0.22 °C 0.13 °C 0.20 °C
BP	0 °C 200 °C 600 °C 800 °C 1600 °C 2000 °C	200 °C 600 °C 800 °C 1600 °C 2000 °C 2500 °C	0.42 °C 0.32 °C 0.39 °C 0.45 °C 0.57 °C 0.67 °C	0.42 °C 0.32 °C 0.40 °C 0.46 °C 0.58 °C 0.80 °C

Note:

[1] Does not include thermocouple wire error.

RTD and Thermistor Specification, Output

RTD Type	Range (°C)		Absolute Uncertainty tcal ± 5 °C, ± (°C)[1]	
	Minimum	Maximum	90 days	1 year
Pt 385, 100 Ω	-200 °C	800 °C	0.04 °C	0.05 °C
Pt 3926, 100 Ω	-200 °C	630 °C	0.04 °C	0.05 °C
Pt 3916, 100 Ω	-200 °C	630 °C	0.04 °C	0.05 °C

Pt 385, 200 Ω	-200 °C 400 °C	400 °C 630 °C	0.35 °C 0.42 °C	0.40 °C 0.50 °C
Pt 385, 500 Ω	-200 °C	630 °C	0.15 °C	0.17 °C
Pt 385, 1000 Ω	-200 °C	630 °C	0.07 °C	0.09 °C
Ni 120, 120 Ω	-80 ° C	260 °C	0.02 °C	0.02 °C
Cu 427, 10 Ω [2]	-100 °C	260 °C	0.30 °C	0.38 °C
YSI 400	15 °C	50 °C	0.005 °C	0.007 °C

Notes:

[1] 2-wire output.

[2] Based on MINCO Application Aid No. 18.

RTD and Thermistor Specification, Input

RTD Type	Range (°C)		Absolute Uncertainty tcal ± 5 °C, ± (°C)[1]	
	Minimum	Maximum	90 days	1 year
Pt 385, 100 Ω	-200 °C -80 °C 100 °C 300 °C 400 °C 630 °C	-80 °C 100 °C 300 °C 400 °C 630 °C 800 °C	0.012 °C 0.018 °C 0.022 °C 0.025 °C 0.031 °C 0.037 °C	0.013 °C 0.020 °C 0.024 °C 0.026 °C 0.033 °C 0.038 °C
Pt 3926, 100 Ω	-200 °C -80 °C 0 °C 100 °C 300 °C 400 °C	-80 °C 0 °C 100 °C 300 °C 400 °C 630 °C	0.012 °C 0.014 °C 0.016 °C 0.021 °C 0.024 °C 0.030 °C	0.013 °C 0.015 °C 0.017 °C 0.022 °C 0.026 °C 0.032 °C
Pt 3916, 100 Ω	-200 °C -190 °C -80 °C 0 °C 100 °C 300 °C 400 °C 600 °C	-190 °C -80 °C 0 °C 100 °C 300 °C 400 °C 600 °C 630 °C	0.009 °C 0.012 °C 0.014 °C 0.016 °C 0.021 °C 0.024 °C 0.030 °C 0.031 °C	0.013 °C 0.015 °C 0.015 °C 0.017 °C 0.022 °C 0.026 °C 0.031 °C 0.033 °C
Pt 385, 200 Ω	-200 °C -80 °C 0 °C 100 °C 260 °C 300 °C 400 °C	-80 °C 0 °C 100 °C 260 °C 300 °C 400 °C 630 °C	0.047 °C 0.050 °C 0.053 °C 0.054 °C 0.062 °C 0.064 °C 0.079 °C	0.053 °C 0.056 °C 0.060 °C 0.060 °C 0.069 °C 0.071 °C 0.088 °C
Pt 385, 500 Ω	-200 °C 0 °C 100 °C 300 °C 400 °C	0 °C 100 °C 300 °C 400 °C 630 °C	0.023 °C 0.026 °C 0.031 °C 0.035 °C 0.041 °C	0.025 °C 0.028 °C 0.034 °C 0.038 °C 0.045 °C
Pt 385, 1000 Ω	-200 °C 0 °C 100 °C 300 °C 400 °C	0 °C 100 °C 300 °C 400 °C 630 °C	0.014 °C 0.017 °C 0.022 °C 0.024 °C 0.031 °C	0.015 °C 0.018 °C 0.024 °C 0.026 °C 0.033 °C
PtNi 385, 120 Ω (Ni120)	-80 °C	260 °C	0.008 °C	0.009 °C
Cu 427, 10 Ω [2]	-100 °C	260 °C	0.097 °C	0.110 °C
YSI 400	15 °C	50 °C	0.005 °C	0.007 °C
SPRT	-200 °C	660 °C	0.05 °C	0.06 °C

Notes:

[1] 4-wire mode. Uncertainties listed do not include probe uncertainties.

[2] Based on MINCO Application Aid No. 18.

Pressure Measurement

The Calibrator can accept either the Fluke 700 or 525A-P series pressure modules. Pressure modules plug directly into the front panel Lemo connector with the Calibrator firmware autodetecting the type and value of the module you are attaching.

Range ..... Determined by pressure module

Accuracy/Resolution ..... Determined by pressure module

Units

PSI	pounds per square inch
inH2O4°C	inches of water at 4 degrees Celsius
inH2O20°C	inches of water at 20 degrees Celsius
cmH2O4°C	centimeters of water at 4 degrees Celsius
cmH2O20°C	centimeters of water at 20 degrees Celsius
BAR	bars
mBAR	millibars
KPAL	kilopascals
inHG 0°C	inches of mercury at 0 degrees Celsius
mmHG 0°C	millimeters of mercury at 0 degrees Celsius
Kg/cm2	kilograms per square centimeter