

EA015

MULTI FUNCTION WORKSTATION ADAPTER



SPECIFICATIONS

Warm Up Time	Double the time since last used up to 20 minutes maximum	
Standard Interface	Transmille Adapter Interface (9 Pin Female 'D' Type connector)	
Temperature Performance	Storage : -5°C to +60°C Operation : 0°C to +50°C	
Relative Humidity	Operation : <80% to 30°C, <70% to 40°C, <40% to 50°C Storage : <95%, non-condensing	
Altitude	Operation : 3000m (10,000ft) Maximum Transit : 12000m (40,000ft) Maximum	
Connections	Thermocouple Simulation	1x Neutral (copper) industry standard Thermocouple socket [with temp. sensor]
	Continuity Resistance	1x Red Safety Socket
	Insulation Resistance Common	1x Red Safety Socket 1x Black Safety Socket
	Voltage Measurement	1x Blue Safety Socket
	Current Measurement	1x Blue Safety Socket
	Voltage Output	1x Red Safety Socket
	Low Current Output	1x Red Safety Socket
	High Current Output Common	1x Yellow Safety Socket 1x Black Safety Socket
	Voltage [+] (from calibrator)	1x White Safety Socket
	Voltage [-] (from calibrator)	1x Black Safety Socket
	Current [+] (from calibrator)	1x Red Safety Socket
	Current [-] (from calibrator)	1x Black Safety Socket
	High Current [+] (from calibrator)	1x Yellow Safety Socket
	High Current [-] (from calibrator)	1x Blue Safety Socket
	15V Input (from supplied adapter)	1x Jack socket
	2 Turn Coil Input	1x Yellow Safety Terminal
	10 Turn Coil Input	1x Yellow Safety Terminal
	50 Turn Coil Input	1x Yellow Safety Terminal
	Coil Common Input	1x Blue Safety Terminal
Indicators	Thermocouple Simulation	Red LED Indicator
	Continuity Resistance	Red LED Indicator
	Insulation Resistance	Red LED Indicator
	Voltage Measurement	Red LED Indicator
	Current Measurement	Red LED Indicator
	Voltage Output	Red LED Indicator
	Low Current Output	Red LED Indicator
	High Current Output	Red LED Indicator
	Optical Tachometer Output	Red LED 8mm 20° Spread Ultra bright LED mounted on front panel
Dimensions	28.8cm x 33.5cm x 15cm	
Warranty Period	1 Year (Parts & Labour)	
Recommended Service Interval	1 Year	
Supplied Connections	1x Adapter Connection Lead 1x Workstation Leadset (for connection of calibrator outputs)	

Range	Resolution	180 Day Rel. %	1 Year Rel. %
240 to 60,000 RPM	6 RPM	0.0029	0.0030

Specifications apply at TCal \pm 5°C

Outside this range an allowance of 0.18 x 1 Year Spec. per °C should be added.

Thermocouple Type	Range Simulation	90 Day ¹ Rel. (°C)	180 Day ¹ Rel. (°C)	1 Year ¹ Rel. (°C)	2 Year ¹ Rel. (°C)
J	-210°C to -100°C	0.18	0.21	0.23	0.32
	-100°C to -30°C	0.09	0.10	0.11	0.15
	-30°C to 150°C	0.07	0.08	0.09	0.13
	150°C to 760°C	0.11	0.13	0.14	0.20
	760°C to 1200°C	0.15	0.17	0.19	0.27
K	-200°C to -100°C	0.22	0.24	0.27	0.38
	-100°C to -25°C	0.12	0.14	0.15	0.21
	-25°C to 120°C	0.09	0.10	0.11	0.15
	-120°C to -1000°C	0.16	0.18	0.20	0.28
	1000°C to 1370°C	0.21	0.23	0.26	0.36
T	-250°C to -150°C	0.48	0.54	0.60	0.84
	-150°C to 0°C	0.08	0.09	0.10	0.14
	0°C to 120°C	0.07	0.08	0.09	0.13
	-120°C to 400°C	0.09	0.10	0.11	0.15
R	-0°C to 250°C	0.64	0.72	0.80	1.12
	250°C to 1000°C	0.35	0.40	0.44	0.62
	1000°C to 1760°C	0.41	0.46	0.51	0.71
S	0°C to 250°C	0.64	0.72	0.80	1.12
	250°C to 1000°C	0.35	0.40	0.44	0.62
	1000°C to 1760°C	0.41	0.46	0.51	0.71
B	600°C to 800°C	0.58	0.66	0.73	1.02
	800°C to 1000°C	0.52	0.59	0.65	0.91
	1000°C to 1550°C	0.43	0.49	0.54	0.76
	1550°C to 1820°C	0.44	0.50	0.55	0.77

Note 1 : Does not include cold junction compensation errors

Cold Junction Compensation Error = $\pm 0.2^{\circ}\text{C}$

All thermocouple measurement specifications assume correct compensation cable is being used

Specifications apply between 17°C and 27°C.

Outside this range an allowance of 0.18 x 1 Year Spec. per °C should be added.

All specifications apply for 3000A Firmware Version 12.2.3 onwards

Thermocouple Type	Range Simulation	90 Day ¹ Rel. (°C)	180 Day ¹ Rel. (°C)	1 Year ¹ Rel. (°C)	2 Year ¹ Rel. (°C)
N	-200°C to -100°C	0.34	0.38	0.42	0.59
	-100°C to -25°C	0.16	0.18	0.20	0.28
	-25°C to 120°C	0.13	0.14	0.16	0.22
	120°C to 410°C	0.12	0.14	0.15	0.21
	410°C to 1300°C	0.19	0.22	0.24	0.34
E	-250°C to -100°C	0.40	0.45	0.50	0.70
	-100°C to -25°C	0.08	0.09	0.10	0.14
	-25°C to 350°C	0.07	0.08	0.09	0.13
	350°C to 650°C	0.10	0.11	0.12	0.17
	650°C to 1000°C	0.12	0.14	0.15	0.21
L	-200°C to -100°C	0.27	0.31	0.34	0.48
	-100°C to 800°C	0.26	0.30	0.33	0.46
	800°C to 900°C	0.27	0.31	0.34	0.48
U	-200°C to 0°C	0.34	0.38	0.42	0.59
	0°C to 600°C	0.24	0.27	0.30	0.42
C	0°C to 150°C	0.25	0.28	0.31	0.43
	150°C to 650°C	0.22	0.24	0.27	0.38
	650°C to 1000°C	0.26	0.29	0.32	0.45
	1000°C to 1800°C	0.38	0.42	0.47	0.66
	1800°C to 2316°C	0.54	0.61	0.68	0.95

Note 1 : Does not include cold junction compensation errors

Cold Junction Compensation Error = $\pm 0.2^{\circ}\text{C}$

All thermocouple measurement specifications assume correct compensation cable is being used

Specifications apply between 17°C and 27°C.

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Insulation Resistance		
Range	Resolution	1 Year Rel. %
0 Ohms to 5 MOhms	10 kOhm	0.200
5.01 MOhms to 2 GOhms	10 kOhm	3.000

Insulation Test Voltage Measurement		
Ranges	Resolution	1 Year Rel. % ± mV
50V	10mV	0.5 ± 20
100V		
250V		
500V		
1000V		

Continuity Resistance		
Ranges	Resolution	1 Year Rel. % ± mOhms
1.9 Ohms	1 mOhm	0.2 ± 50
10 Ohms	10 mOhm	
19 Ohms	10 mOhm	
190 Ohms	100 mOhm	
1 kOhm	1 Ohm	

Specifications apply at TCal ± 5°C

Outside this range an allowance of 0.18 x 1 Year Spec. per °C should be added.

Voltage Measurement				
Ranges	Resolution	1 Year Rel.		
		%	±	mV
100mV	10uV	0.02	±	0.02
1V	10uV	0.02	±	0.2
30V	100uV	0.02	±	1

Current Measurement				
Ranges	Resolution	1 Year Rel.		
		%	±	uA
30mA	1uA	0.03	±	5

Specifications apply at TCal $\pm 5^{\circ}\text{C}$

Outside this range an allowance of 0.18 x 1 Year Spec. per $^{\circ}\text{C}$ should be added.

2 Turn Coil Accuracy (Input 0 to 30A : Freq. DC - 30Hz to 60Hz : Effective Output 0 to 60A)								
	90 Day Rel.		180 Day Rel.		1 Year Rel.		2 Year Rel.	
	%	A	%	A	%	A	%	A
Effective accuracy - Coil only (wound clamps)	0.35	+ 0.008	0.35	+ 0.008	0.35	+ 0.008	0.35	+ 0.008
Effective accuracy - Coil only (hall effect clamps)	0.48	+ 0.07	0.48	+ 0.07	0.48	+ 0.07	0.48	+ 0.07
Total uncertainty with 3050 (All clamps)	0.51	+ 0.09	0.51	+ 0.09	0.52	+ 0.09	0.56	+ 0.10
Total uncertainty with 3041 (wound clamps)	0.36	+ 0.028	0.36	+ 0.028	0.36	+ 0.028	0.38	+ 0.036
Total uncertainty with 3041 (hall effect clamps)	0.49	+ 0.090	0.49	+ 0.090	0.49	+ 0.090	0.50	+ 0.098
Total uncertainty with 3010 calibrator (wound clamps)	0.36	+ 0.010	0.36	+ 0.010	0.36	+ 0.010	0.37	+ 0.010
Total uncertainty with 3010 (hall effect clamps)	0.48	+ 0.072	0.49	+ 0.072	0.49	+ 0.072	0.49	+ 0.072

10 Turn Coil Accuracy (Input 0 to 30A : Freq. DC - 30Hz to 60Hz : Effective Output 0 to 300A)								
	90 Day Rel.		180 Day Rel.		1 Year Rel.		2 Year Rel.	
	%	A	%	A	%	A	%	A
Effective accuracy - Coil only (wound clamps)	0.41	+ 0.01	0.41	+ 0.01	0.41	+ 0.01	0.41	+ 0.01
Effective accuracy - Coil only (hall effect clamps)	0.59	+ 0.11	0.59	+ 0.11	0.59	+ 0.11	0.59	+ 0.11
Total uncertainty with 3050 (All clamps)	0.61	+ 0.13	0.62	+ 0.13	0.62	+ 0.13	0.65	+ 0.14
Total uncertainty with 3041 (wound clamps)	0.42	+ 0.03	0.42	+ 0.03	0.42	+ 0.03	0.43	+ 0.04
Total uncertainty with 3041 (hall effect clamps)	0.60	+ 0.13	0.60	+ 0.13	0.60	+ 0.13	0.61	+ 0.14
Total uncertainty with 3010 calibrator (wound clamps)	0.41	+ 0.012	0.42	+ 0.012	0.42	+ 0.012	0.42	+ 0.012
Total uncertainty with 3010 (hall effect clamps)	0.59	+ 0.112	0.59	+ 0.112	0.60	+ 0.112	0.60	+ 0.112

50 Turn Coil Accuracy (Input 0 to 30A : Freq. DC - 30Hz to 60Hz : Effective Output 0 to 1500A)								
	90 Day Rel.		180 Day Rel.		1 Year Rel.		2 Year Rel.	
	%	A	%	A	%	A	%	A
Effective accuracy - Coil only (wound clamps)	0.24	+ 0.04	0.24	+ 0.04	0.24	+ 0.04	0.24	+ 0.04
Effective accuracy - Coil only (hall effect clamps)	0.45	+ 0.42	0.45	+ 0.42	0.45	+ 0.42	0.45	+ 0.42
Total uncertainty with 3050 (All clamps)	0.48	+ 0.44	0.48	+ 0.44	0.49	+ 0.44	0.53	+ 0.45
Total uncertainty with 3041 (wound clamps)	0.25	+ 0.06	0.26	+ 0.06	0.26	+ 0.06	0.28	+ 0.07
Total uncertainty with 3041 (hall effect clamps)	0.46	+ 0.44	0.46	+ 0.44	0.46	+ 0.44	0.47	+ 0.45
Total uncertainty with 3010 calibrator (wound clamps)	0.25	+ 0.042	0.25	+ 0.042	0.25	+ 0.042	0.26	+ 0.042
Total uncertainty with 3010 (hall effect clamps)	0.45	+ 0.42	0.46	+ 0.42	0.46	+ 0.42	0.46	+ 0.42

Accuracy is dependant on proper alignment of the clamp meter within the coil

Certain clamp meters have alignment marks which should be aligned with the centre of the coil.

Certain types of clamp meter may have additional errors, or be outside the range which can be driven by the 3041/3010A directly

**Uncertainty calculated as the square root of the square of coil accuracy + square of calibrator accuracy
using empirical data obtained for both wound & hall effect instruments from a wide range of manufacturers
Clamp coil adaptor is supplied complete with workstation incorporating alignment marks**

DC Resistance	
At Coil	0.14Ω
With Connection Leads	0.18Ω

Duty Cycle	
10A	Continuous
20A	2mins on ~ 5mins off
30A	30secs on ~ 5mins off

Inductance	
Coil Only	120uH
Coil with typical clamp meter on 50 Turn coil	200uH
Coil with typical clamp meter on 10 Turn coil	50uH
Coil with typical clamp meter on 2 Turn coil	5uH

Specifications apply at TCal ± 5°C

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