APPENDIX B

TECHNICAL SPECIFICATION

INPUT PERFORMANCE @20°C

Type	Nominal range[vii]	Resolution[vi]	Accuracy[i]
TC K	-270 to 1200°C	0.1°C	1°C
TC J	-210 to 760°C	0.1°C	1°C
TC T	-270 to 400°C	0.1°C	1°C
TC R	0 to 1750°C	0.5°C	2°C
TC S	0 to 1750°C	0.5°C	2°C
TC E	0 to 650°C	0.5°C	1°C
TC F	0 to 600°C	0.5°C	1°C
TC N	0 to 1300°C	0.5°C	1°C
TC B	1000 to 1800°C	0.5°C	3°C
Cold Junction	0 to 50°C[iii]	0.1°C	1°C[v]
Pt100	-200 to 800	0.05°C	0.1 +/- 0.1%[ii]
10volts	-10V to 10V	0.004%	0.02%
1-5volts	1V to 5V	0.008%	0.04%
1volt	-1V to 1V	0.004%	0.02%
100mV	-0.1V to 0.1V	0.004%	0.02%
4-20mA	4 to 20mA	0.004%	0.1%
0-20mA	0 to 20mA	0.004%	0.1%
0-10mA	0 to 10mA	0.004%	0.1%
Transmitter excitation voltage:			19V
Maximum transmitter excitation current:			25mA

ADDITIONAL INPUT SPECIFICATION

Input Type	Average[iv] Acquisition Rate	Input impedance (RTD current)	Thermal drift per °C
T/C	6.8Hz	1M ohm[ix]	0.001%
mV	8.9Hz	1M ohm[ix]	0.001%, 0.004%[x]
Volts	8.9Hz	2M ohm	0.002%, 0.011%[xi]
Current	8.9Hz	51 ohm	0.001%
Pt 1001.7Hz		(less than 1.1mA)	0.013°C
Cold junction	(see T/C)	NA	0.06°C

Isolation	Power Supply:	2500VAC	)
	Output Options:	500VAC	) see safety information
	Comms Interface:	500VAC	) on page 8

INPUT OVER-RANGE PROTECTION

Input Pin	Usual Function	Absolute Maximum Rating
1	0V	NA
2	RTD	30VAC[xii]
3	Volts	200VAC[xii]
4	Millivolts	200VAC[xii]
5	Curret	100mA

RELAY OUTPUT BOARD (OPTION 01 AND 02)

Maximum Rated Load	7A@250V	7A@30V
Maximum Power	1750VA	210W
Maximum Switching Voltage	380V	125V
Electrical Life	10^5 operations at rated load	
Mechanical Life	50 million operations	
Contact shunt capacitance	200pF	
This is due to the Varistor and causes a reactance of 15Mohms at 50Hz.		
Alarm detection delay	200mS	

CURRENT RETRANSMISSION BOARD (SOURCE AND SINK) OPTION 03 PERFORMANCE @20°C

Accuracy:	20uA	(0.1% of Max current)
Resolution:	2uA	(0.01% of the input range)
Response:	100ms for approx 63% of step change	
Minimum Current O/P:	0mA	
Maximum Current O/P:	21mA (approx)	
Thermal Drift:	900nA/ºC (0.0045% of Max current /ºC)	

Maximum loop impedance:	1000 ohms	(Source)
Output voltage drop @20mA:	3 Volts	(Source & Sink)
Maximum external loop power supply voltage:	30VDC	(Sink)
Minimum practical loop power supply voltage:	(R_{L*} 21mA)+3	(Sink)
	Where R_L is the Loop impedance	
Ripple Current:	Approx 5uA	

Isolation:	Input	500VAC	)
	Power Supply	2500VAC	) See safety information
	Comms I/F	500VAC	) on page 8

VOLTAGE OUTPUT BOARD (OPTION 04) PERFORMANCE @20°C

Range :	2-24 volts DC	
Accuracy:	24mV	(0.1% of Max voltage)
Maximum Current O/P:	50mA[xi]	
Thermal Drift:	1080uV/ °C (0.0045% of Max voltage /°C)	
Ripple:	Approx 6mV	
Fixed Voltage:	24V	
Programmable Voltages:	2,2.5,3,3.5,4,4.5,5,6,7,8,9,10,12,15,20	

Isolation:	Input	500VAC	(see safety
	Power Supply	2500VAC	(information
	Comms I/F	500VAC	(on page 8

RS485 COMMUNICATION OPTION

GENERAL

Configuration	Four wire, Half Duplex
Maximum fan-out	32 units[viii]
Baud Rate	9600
Data bits	8
Start bits	1
Stop bits	1
Parity	none
Maximum line length	4km
Protocol	based on ANSI X3.28

TRANSMITTER

Maximum differential output voltage	5v
Output voltage with 50ohm load	>1.5v

RECEIVER

Differential input threshold voltage	+/-200mV
Input receiver impedance	12kohms
Common mode range	-7v to +12v

ENVIRONMENTAL

Ambient operating temperature range	0 to 50°C
Ambient storage temperature range	-20 to 80°C
Relative Humidity	20% to 95% non condensing
EMI Emissions	BS EN50081-1
EMI Susceptibility	BS EN50082-1
Safety	BS EN61010-1
Power Supply	240VAC,110VAC,24VAC 50/60Hz
Power consumption	6.5Watts max
Max in-rush current	100mA @240VAC
Front panel sealing(with gasket)	IP65

PHYSICAL

Dimensions	48 x 96 x 140mm
Mounting	Panel cutout(91 to 92)mm x (43 to 44)mm
Terminals	All two part captive screw terminals
Weight	850g

(i) The accuracy values represent +/- spread from nominal. Unless otherwise stated '%' represents the percentage of full scale value.

(ii) '%' represents percentage of reading in stated units

(iii) Represents the valid thermistor temperature range used for measuring Cold junction temperature.
Slight internal warming from the unit means that temperature is 3 or 4°C above ambient.

(iv) Average taken over a 1 second time frame. Acquisition defined as complete refresh of electrical sensor value including readings to compensate for gain and offset errors.

(v) Cold junction accuracy includes thermal tracking error, temperature measurement error and linearisation error. This should be added to the individual thermocouple accuracy to get an overall accuracy value.

(vi) '%' represents percentage of full scale value.

(vii) Input is measured correctly within a small margin outside the normal range. This is 7% for bipolar (+/-) electrical inputs. Current inputs that go down to zero do not under-range otherwise all other sensor inputs have a 7% over/under-range margin.

(viii) This may be extended with suitable buffering

(ix) There is an internal 10M ohm pull down resistor to -2.5V. This is only significant for high source impedance mV inputs.

(x) 50mV and 100mV respectively.

(xi) 1V and 10V respectively.

(xii) With respect to Pin 1 or Pin 5.