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TECHNICAL SPECIFICATION (Recorder)

Board types and hardware options

Six-channel universal input

Model 5180V:	Eight boards (48 channels) max.
Model 5100V:	Three boards (18 channels) max.

Three Change-over relay output board

Model 5180V:	Nine boards (27 outputs) max.
Model 5100V:	Four boards (12 outputs) max.

3.5 inch floppy disk, or PC Card (ATA flash or hard disk).

Environmental Performance

Temperature limits	PC Card Option:	Operation: 0 to 50°C; Storage: -25 to 70°C
	Floopy disk drive option:	Operation: 5 to 40°C; Storage: -20 to 50°C
Humidity limits	Pc Card option:	Operation: 8% to 85% RH; Storage: 8% to 90% (both non-condensing)
	Floopy disk drive option:	Operation 20% to 80% RH; Storage: 8% to 80% (both non-condensing)
Protection	Bezel and display	IP65
Shock		BS EN61010
Vibration (10 to 150 Hz)		2g peak
Altitude		<2000 metres.

Electromagnetic compatibility (EMC)

Emissions	BS EN50081-2
Immunity	BS EN50082-2

Electrical saftey

(BS EN61010) Installation cat. II; Pollution degree 2

Physical (Model 5100V)

Panel mounting		DIN43700
Bezel size		144 x 144 mm.
Panel cutout dimensions		138 x 138 (both - 0 + 1 mm)
Depth behind bezel rear face		248 mm
Weight		3 kg
Panel mounting angle		
	Recorders with hard disk:	Vertical panel only
	Recorders with floppy disk:	±15°
	Other 5100V recorders:	±

Physical (Model 5180V)

Panel mounting		DIN43700
Bezel size		144 x 288 mm
Panel cutout dimensions		281 x 281 (both - 0 + 1 mm)
Depth behind bezel rear face		305 mm
Weight		7.5 kg
Panel mounting angle		
	Recorders with hard disk :	Vertical panel only
	Recorders with floppy disk:	±15°
	Other 5180V recorders:	±45°

Operator interface

Type		Colour TFT LCD witih cold cathode backlighting. Fitted with resistive, analogue, toughened touch-panel
Size and resolution		
	Model 5100V:	1/4 VGA (320 x 240 pixels)
	Model 5180V:	SVGA (800 x 600 pixels)

Power requirements

Line voltage	47 to 63 Hz	85 to 265V
Power (Max)		60VA (Inrush current 36A)
Fuse type		None

Ethernet communications

Electrical standard	10Mbs Ethernet. 10BaseT.
Transport protocol	TCP/IP. Provision for File Transfer Protocol (FTP)

Technical Specification (Input board)

General

Input types		dc Volts, dc millivolts, dc milliamps (with shunt), Thermocouple, 2/3 - wire RTD Contact closure (not chan. 1) >60ms
Input type mix		Freely configurable.
Maximum number of inputs		6 per board
Termination		Edge connector / terminal block
Noise rejection (48 to 62 Hz)		Common mode: >140dB (channel to channel and channel to ground Series mode: >60dB.
Maximum common mode voltage		250 Volts continuous
Maximum series mode voltage		45 mV at lowest range; 12 Volts peak at highest range.
Insolation (dc to 65 Hz; BS EN61010)		Installation cat II; Polution degree 2
	Channel to channel:	300V RMS or dc (double insulation)
	Channel to common electronics:	300V RMS or dc (double insulation)
	Channel to ground:	300V RMS or dc (basic insulation)
Dielectric strength (BS EN61010)		(1 minute type tests)
	Channel to channel	2300 Vac
	Channel to ground	1350 Vac
Insulation resistance		>10MW at 500 V dc
Input impedance		38mV, 150 mV, 1 V rnages: >10MW; 10V range: 68.8 kW
Over voltage protection		50 Volts peak (150V with attenuator)
Open cirucit detection		±57 nA max.
	Recognition time	500 msec
	Minimum break resistance	10 MW

Update/archive rates

Input/Relay-output sample rate	8 Hz
Display update	1 Hz
Archive sample-value	Latest value at archive time
Trend/Display value	Latest value at display update time

DC Input ranges

Shunt	Externally mounted resistor modules
Additional error due to shunt	0.1% of input
Additional error due to attenuator	0.2% of input
Performance	See table 1

Low Range	High Range	Resolution	Maximum Error (Instrument at 20°C)	Worst case temperature performance
-8 mV	38mV	1.4mV	0.085% input + 0.073% range	80ppm of input der deg C
-30mV	150mV	5.5mV	0.084% input + 0.053% range	80ppm of input per deg C
-0.2 Volt	1 Volt	37mV	0.084% input + 0.037% range	80ppm of input per deg C
-2 Volts	10 Volts	370mV	0.275% input + 0.040% range	272ppm of input per deg C

Table 1 DC performance

Thermocouple data

Temperature scale	ITS 90
Bias current	0.05 nA
Cold junction types	Off, internal, external
CJ error	1°C max with inst. at 25°C
CJ rejection ratio	50:1 minimum
Remote CJ	Via any user-defined channel
Upscale / downscale drive	High, low or none selectable for each thermocouple channell
Additional error:	0.01 °C(type.) if high or low selected
Types and ranges	See table 2

T/C Type	Overall range (°C)	Standard	Maximum linearisation error
B	0 to + 1820	IEC584.1	0 to 400°C: 1.7°C 400 to 1820°C: 0.03°C
C	0 to + 2300	Hoskins	0.12°C
D	0 to 2495	Hoskins	0.08°C
E	0 to 2495	IEC584.1	0.03°C
G2	0 to 2315	Hoskins	0.07°C
J	-210 to + 1200	IEC584.1	0.02°C
K	-270 to + 1372	IEC584.1	0.04°C
L	-200 to + 900	DIN43700:1985 (To IPTS68)	0.20°C
N	-270 to + 1372	IEC584.1	0.04°C
R	-50 to + 1768	IEC584.1	0.04°C
S	-50 to + 1768	IEC584.1	0.04°C
T	-270 to + 400	IEC584.1	0.02°C
U	-200 to + 600	DIN43710:1985	0.04°C
NiMoNiCo	-50 to + 1410	ASTM E1751-95	0.06°C
Platinel	0 to + 1370	Engelhard	0.02°C

Table 2 Thermocouple types and ranges

Resistance inputs

Ranges (including lead resistance)	0to 150W, 0 to 600W, 0 to 6kW
Influence of lead resistance	Error=negligible; Mismatch=1W/W
Temperature Scale	ITS90
Accuracy and resolution	See table 3

Low Range	High Range	Resolution	Maximum error (Instrument at 20°C)	Worst case temperature performance
0W	150W	5mW	0.045% input + 0.110% range	35ppm of input per deg C
0W	600W	22mW	0.045% input + 0.065% range	35ppm of input per deg C
0W	6kW	148mW	0.049% input + 0.035% range	35ppm of input per deg C

Table 3 Resistance ranges - accuracy and resolution

RTD Type	Overall range (°C)	Standard	Max linearisation error
Cu10	-20 to + 400	General Electric Co.	0.02°C
JPT100	-220 to + 630	JIS C1604:1989	0.01°C
Ni100	-60 to + 250	DIN43760:1987	0.01°C
Ni120	-50 to + 170	DIN43760:1987	0.01°C
Pt100	-200 to + 850	IEC 751	0.0

Pt100A	-200 to + 600	Eurotherm Recorders SA	0.09°C
Pt1000	-200 to + 850	IEC 751	0.01°C

Table 4 RTD types and ranges

Relay outputs

Maximum switching power*		500VA or 60W
Maximum breaking current*		2 Amps within above power ratings
Maximum contact voltage*		250V within above power ratings
Isolation	Contact to contact:	300V RMS or dc (double insulation)
	Contact to ground:	300V RMS or dc (basic insulation)
Estimated life*		30,000,000 operations

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