Models 5100V/5180V

Specification sheet

TECHNICAL SPECIFICATION (Recorder)

Board types and hardware options

Six-channel universal input

Model 5180V:	Six boards (36 channels) max.
Model 5100V:	Two boards (12 channels) max.

Three Change-over relay output board

Model 5180V:	Four boards (12 outputs) max.
Model 5100V:	Two boards (six 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
	Floppy 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)
	Floppy 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 safety

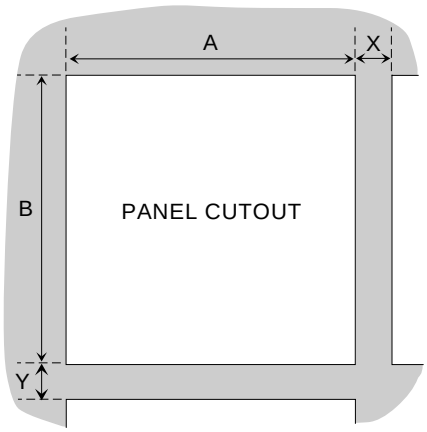
(BS EN61010)	Installation cat. II; Pollution degree 2

Physical (Model 5100V)

Panel mounting	DIN43700
Bezel size	144 x 144 mm.
Panel cutout dimensions	138x138 (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:	± 45 ˚

Physical (Model 5180V)

Panel mounting	DIN43700
Bezel size	288 x 288 mm
Panel cutout dimensions	281x281 (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 ˚



Model	A x B	Minimum recommended spacing Side clamps	Top/bottom clamps
5100	138 x 138 (-0.0 + 1) mm	X = 15 mm Y = 10 mm	X = 10 mm Y = 15 mm
5180	281 x 281 (-0.0 + 1) mm	X = 25 mm Y = 12.5 mm	X = 12.5 mm Y = 25 mm

Operator interface

Type	Colour TFT LCD with 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)

INSTALLATION CATEGORY II
The rated impulse voltage for equipment on nominal 230V mains is 2500V.
POLLUTION DEGREE 2
Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation shall be expected.

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) >60 ms
Input type mix	Freely configurable.
Maximum number of inputs	6 per board
Input ranges	See Table1 and Table 3 below.
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.
Isolation (dc to 65 Hz; BS EN61010)	Installation cat II; Pollution 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	>10 MΩ at 500 V dc
Input impedance	38mV, 150 mV, 1 V ranges: >10 MΩ; 10 V range: 68.8 kΩ
Over voltage protection	50 Volts peak (150V with attenuator)
Open circuit detection	± 57 nA max.
Recognition time	500 msec
Minimum break resistance	10 MΩ

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	1.4µV	0.085% input + 0.073% range	80ppm of input per deg C
-30 mV	150mV	5.5µV	0.084% input + 0.053% range	80ppm of input per deg C
-0.2 Volt	1 Volt	37µV	0.084% input + 0.037% range	80ppm of input per deg C
-2 Volts	10 Volts	370µV	0.275% input + 0.040% range	272ppm of input per deg C

Table 1 DC performance

Input board specification (Cont.)

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 channel
Additional error:	0.01 ˚C (typ.) 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	-270 to + 1000	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)	0 to 150 Ω, 0 to 600 Ω, 0 to 6k Ω
Influence of lead resistance	Error = negligible; Mismatch = 1 Ω/Ω
Temperature scale	ITS90
Accuracy and resolution	See table 3

Low Range	High Range	Resolution	Maximum error (Instrument at 20˚C)	Worst case temperature performance
0Ω	150Ω	5mΩ	0.045% input + 0.110% range	35ppm of input per deg C
0Ω	600Ω	22mΩ	0.045% input + 0.065% range	35ppm of input per deg C
0Ω	6kΩ	148mΩ	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	0.01 ˚C
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

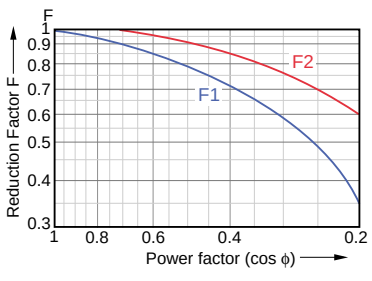
Maximum switching power*		500VA or 60W
Maximum breaking current*		2 Amps within above power ratings
Maximum contact voltage*		250V within above power ratings
Isolation†	Contact to contact:	300V RMS or dc (double insulation)
	Contact to ground:	300V RMS or dc (basic insulation)
Estimated life*		30,000,000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

* With resistive loads. With inductive loads, derate according to the graph, in which:

Contact life = resistive life x F1 or F2 where

F1 = measured on representative examples and

F2 = typical values according to experience.



†All isolation figures are: DC to 65Hz; BS EN61010 Installation category II; Pollution degree 2

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