

# Models 5100V/5180V

## Specification sheet

### TECHNICAL SPECIFICATION (Recorder)

#### Board types and hardware options

Six-channel universal input

Model 5180V: Four boards (24 channels) max.

Model 5100V: One board (6 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: No constraint on mounting angle

#### 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

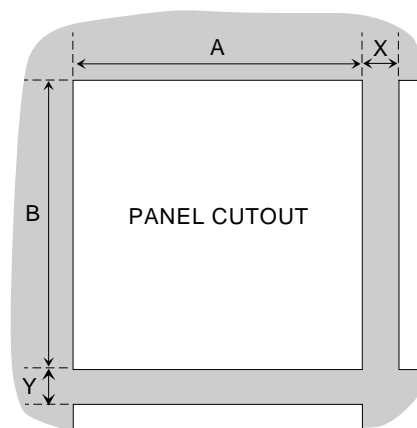
7.5 kg

Panel mounting angle

Recorders with hard disk: Vertical panel only

Recorders with floppy disk: ± 15 °

Other 5180V recorders: No constraint on mounting angle



Model	A x B (-0.0 + 1) mm	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: 1/4VGA (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 10Mbps 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
Sample rate	125msec (each input with full complement of channels)
Archive rate	125msec (max) to internal flash memory/ disk/PC card

### 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

### 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.

## Input board specification (Cont.)

### Thermocouple data

Temperature scale	ITS 90
Bias current	0.05 nA
Cold junction types	Off, internal, external, remote
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
Types and ranges	See table 2

T/C Type	Overall range (°C)	Standard	Max linearisation error
B	0 to + 1820	IEC 584.1	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	IEC 584.1	0.03°C
G2	0 to + 2315	Hoskins	0.07°C
J	- 210 to + 1200	IEC 584.1	0.02°C
K	- 270 to + 1372	IEC 584.1	0.04°C
L	- 200 to + 900	DIN43700:1985 (To IPTS68)	0.20°C
N	- 270 to + 1300	IEC 584.1	0.04°C
R	- 50 to + 1768	IEC 584.1	0.04°C
S	- 50 to + 1768	IEC 584.1	0.04°C
T	- 270 to + 400	IEC 584.1	0.02°C
U	- 200 to + 600	DIN 43710:1985	0.08°C
Ni/NiMo	0 to + 1406	Ipsen	0.14°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

