

7 TECHNICAL DATA / SPECIFICATIONS

7.1 ANALOG DATA

7.1.1 Method of measurement

Σ - Δ -conversion. Integration time: 20.00ms +/-2 μ s for 50Hz mains.
16.67ms +/-2 μ s for 60Hz mains

7.1.2 Measurement interval

Programmable in 1s steps - min 1s
All channels are sampled with the same Δt
All channels sampled within the same second.

7.1.3 Inputs

8 differential inputs.
Impedance : Min 400k Ω between + and -
Min 5M Ω to ground reference
Overvoltage protection: 30V continuous at voltage input.
Max input current: 80mA continuous at shunt (current) input.
NOTE Current input shunts are 51 Ω resistors.

7.1.4 Ranges

Four voltage ranges and one current range are available on all channels
+/- 10V;
+/- 1V;
+/- 100mV;
+/- 50mV;
+/- 20mA; (*)

Each channel has an associated current shunt (51 Ω)
It is connected by jumpering "I" and "+" in the detachable screw terminal.
(*) NOTE : Max allowed current is 80mA

7.1.5 Divisions/Dynamic ranges

All ranges resolve to approximately +/- 30 000 divisions.
The ADC has a resolution of +/- 15 bits.

The smallest discernible input change is calculated by FS/30000.
The 10V range has an approximate resolution of 10/30000=0.3mV.

7.1.6 Resolution

10V	0.3mV
1V	30 μ V
100mV	4 μ V
50mV	2 μ V
20mA	1 μ A

Thermo emf 50mV FS:

T/C J	0.1°C
T/C K	0.1°C
T/C T	0.1°C
T/C S	0.3°C
T/C E	0.4°C

7.1.7 Accuracy

(at 25°C)

Voltage ranges	+/-0.02% of reading
20mA range	+/-0.06% of reading
"Cold Junction"	+/-0.5°C

7.1.8 Temperature Coefficient

Ambient temperature variations affect readings by max 50ppm/°C.

7.1.9 Noise

Maximum noise level at +/-15 bit resolution is +/-1 bit (=division)

Use averaging to filter noisy signals.

The "Math" section of the PC-logger software can, using simple formulas, apply digital filters to noisy signals.

7.1.10 Common mode

Common mode range at FS range 10V	min +/- 5V.
Common mode range all other ranges	min +/- 10V.
CMRR: (dc)	min 80dB

7.1.11 Constant Current Output

The constant current output supplies 0.500mA into loads of a maximum of 5k Ω .

Accuracy +/-0.2% at 25°C.

Tempco max 50ppm/°C

7.2 DIGITAL PORTS - COUNTERS

7.2.1 Digital Output

Output : 1; Paralleled by digital input no. 1)
Output type : Open collector with passive pull-up (100k Ω) to 5V
Max current : 100mA. (at 25°C +/-10°C)
Max voltage : 20V (at 25°C +/-10°C)

7.2.2 Pulse Inputs and Digital Inputs (at 25°C +/-10°C)

No of inputs : 3 (no.1 paralleled by digital output)
"Low" logic level : Max 0.8V
"Hi" logic level : Min 3.5V or open (internal pull-up)
Max input voltage : 20V
Max pulse freq. (*) : Min 65kHz at 5V in and 50% duty cycle
Max pulse freq. (*) : Min 30kHz at 10V in and 50% duty cycle
Max pulse freq. (*) : Min 20kHz at 15V in and 50% duty cycle
Min pulse width: Max 15 μ s
Max counter reading : 65.535

(*) With a passive sensor output (open collector, relay contacts, switch contacts etc.) the maximum input frequency is limited to 1000Hz by the 10nF capacitor on the input.

7.2.3 Auxiliary voltage output : V-Out

Voltage : 10-18V derived from connected mains adaptor
Current : Max 200mA with supplied mains adaptor.
: Max 1A other external power source.

Note: V-Out is active only when the PC-logger is "awake".

When off line recordings with long sampling intervals are in progress, the "2100" falls asleep between samplings. This means that power via V-Out is switched on a few seconds before the sample is taken and then switched off again as the "2100" goes back to sleep.

7.3 INTERNAL DATA STORAGE CAPACITY

The PC-logger 2100 can store in excess of 112 000 values (off-line).

The data RAM is backed up by a lithium battery that will retain data in case of power failure.

Lithium battery life is 10 years.

7.4 COMPUTER INTERFACE

Computer communication is in serial form.

The serial standard is a subset of RS-232.

Format : 8 bit ASCII, 1 Start bit, 1 Stop bit, No parity bit

Baud rate : 9600 Baud

7.5 POWER REQUIREMENTS

Voltage : 12-18V DC (*)

Current: ca 60mA (charging current 35 mA)

Current w/o charging batts. : ca 25mA

(Power via Vin or pin 3 of the TA3F connector. Voltage requirement in this case is 10V.)

NOTE! With the display back-light on, the current consumption increases by ca 130mA.

(*) At elevated input voltages (>15V) the temperature inside the "2100" rises. This affects measurement accuracy. (See also temperature coefficient).

7.5.1 Built-In NiCd-accumulators

Charging time: ca. 24 hours for full capacity.

Should be left on charge even when not to be used for longer periods

Capacity: At least 8 hours continuous operation with fully charged accumulators.

Ordinary alkaline batteries may be used instead of NiCad cells to achieve longer operating times without mains supply. To prevent cell leakage or worse, an explosion, a special battery holder that prevents charging current to be forced on the non-rechargeable cells must be used.

7.5.2 Mains Adapter

Voltage: 12-18V

Current: Min 250mA

7.6 MECHANICAL

Length : 247 mm

Height : 110 mm

Width: 36 mm

Weight : 1.1kg

We believe the information in this manual to be correct. Should there arise questions about the validity or meaning of information herein we appreciate if information about this could be forwarded to us.

Because development work continuously improves our products we reserve the right to make changes without any notice.

In consequence we cannot assume responsibility for any consequential or other damage resulting from the use of this instrument.