

## DPR 180

### 180 MM DIGITAL STRIP CHART RECORDER

43-DR-03-11 06/2003

### PRODUCT SPECIFICATION SHEET

#### OVERVIEW

The DPR180 recorder offers the best price/performance in the market today of any 180mm (7 inch) wide chart recorder.

The recorder is able to monitor up to 24 analogue inputs and up to 36 digital inputs.

It produces clear, fully documented charts at any speed, and in different formats, providing the best, most flexible presentation of the process data.

The large, bright display, with fluorescent chart illumination, provides easy viewing of the data and chart. The flexible product configuration in 5 languages makes it easy to set up and use.

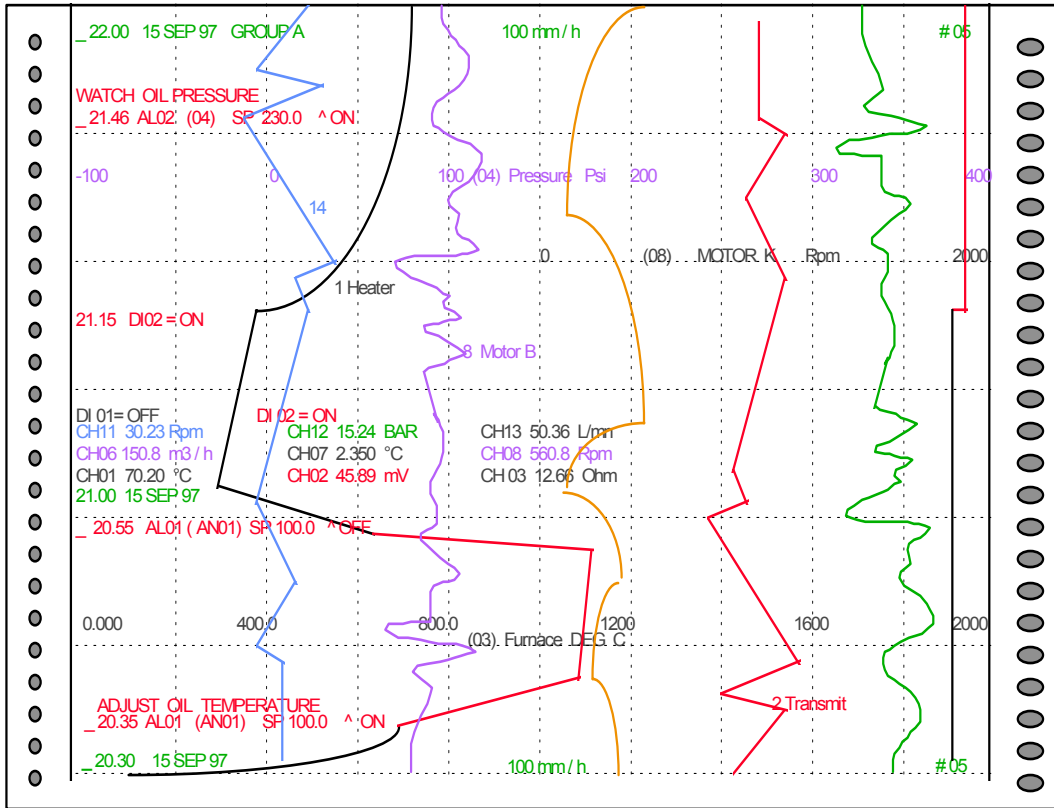
The DPR180 is especially suited to match the needs of chemical, pharmaceutical, power generation, metals processing, environmental monitoring, and other applications where the best chart resolution is required.



#### MAIN FEATURES

- 180 mm (7 inch) chart width.
- 0.05% accuracy full scale. Applicable on a wide choice of actuations and ranges.
- Each input span is adjustable within the selected range, with up to 2 ranges per input.
- Universal (T/C, RTD, mV, mA, V), or linear input (mV, mA, V).
- Fast input scanning (20/sec.)
- Fluorescent display of 2 row of 16 digits, with adjustable brightness.
- Roll or fan fold chart with same cassette. Fully documented chart with trace color assign, thin/thick trace, alarm in red tagging, zooming, zoning, trend, tabular, messages.
- Channel groups available.
- I/O capability : up to 24 analogue inputs, up to 36 output relays, up to 36 digital inputs, up to 8 retransmitted signals.
- Advanced math package
- Fully configurable through the front keys, front PC jack or communication link.
- 2 chart speeds configurable from 1 to 5000 mm/h (0.04 to 200 inch/hr).
- Up to 48 customer messages of 50 characters each.
- Firmware upgradable by PC (Flash memory).
- Input calibration traceable per channel, or channel group.
- Up to 2 custom-input characterizations available.
- Up to 48 alarm set points freely assignable on analogue inputs, maths, communication.
- Up to 36 internal output relays assignable on analogue inputs, maths, events, logic inputs.
- Configurable Periodic chart documentation.
- Periodic report.
- Universal power supply : 100 to 240 Vac/dc.
- PC application software (LPCS) for trending, monitoring, archiving, configuration.
- Up to 8 retransmitting outputs (4 to 20 mA).
- Universal comm. output: ASCII in RS232, 422/485. MODBUS RTU in RS422/485. ETHERNET/MODBUS RTU Interface,
- Metal door/case, IP55 rated

### Trend printing mode



The trend printing mode offers a highly flexible documentation which includes :  
 Date and Time, Alarm reporting with : Time, Alarm SP, Channel #, Set Point value, Alarm, Chart certification,  
 Chart Speed with engineering unit , User defined message, Range subdivision, Recorder identification, Red  
 on alarm, Chart range, Channel reference with tag name (Configurable), Thick channel trace, Process value,  
 Channel tag name, Zone format, Channel reference, Engineering Unit, Tabular print out.

### Tabular printing mode

DI01= OFF : CH07 2350.0 °C BURNER CH04 258.1 PSI PRESSURE CH01 70.20 °C HEATER 23.50 15 SEP 97	DI02= ON	CH08 560.0 Rpm : MOTOR B CH05 2358 °K FURNACE CH02 45.90 mV TRANSMIT	CH09 127.3 Wh POWER CH06 150.8 M3/h FLOW CH03 12.70 OHM COIL
DI01= OFF : CH07 2350.0 °C BURNER CH04 258.1 PSI PRESSURE CH01 70.20 °C HEATER 23.40 15 SEP 97	DI02= OFF	CH08 560.0 Rpm : MOTOR B CH05 2358 °K FURNACE CH02 45.90 mV TRANSMIT	CH09 127.3 Wh POWER CH06 150.8 M3/h FLOW CH03 12.70 OHM COIL
DI01= OFF : CH07 2350.0 °C BURNER CH04 258.1 PSI PRESSURE CH01 70.20 °C HEATER 23.30 15 SEP 97	DI02= ON	CH08 560.0 Rpm : MOTOR B CH05 2358 °K FURNACE CH02 45.90 mV TRANSMIT	CH09 127.3 Wh POWER CH06 150.8 M3/h FLOW CH03 12.70 OHM COIL

- **Easy to install ... easy to use ... easy to maintain** : The DPR180 with its modular design and rugged construction, simplifies maintenance. Many of the electronic assemblies and mechanical parts are common with the DPR250 thus reducing spare parts inventory. Its operator - friendly configuration keys, the sophisticated display, easy product configuration and customized charts insure accurate monitoring and recording of the process.

- **Easy access** : the access to the chart, and the ink cartridge is very easy. The simple, modular construction of plug-in modules, along with the low cost and extra long life of consumables, further reduces the maintenance cost.

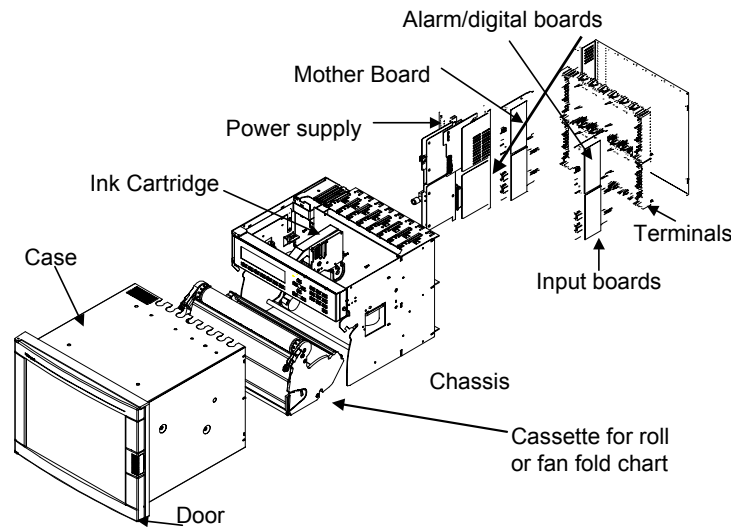
- **Universal power supply module** : the universal switching mode power supply simplifies installation of the recorder by accepting voltages from 100 to 230 V ac/dc, 50/60 Hz.

- **Local configuration** : A user friendly program with local language prompts (English, French, German, Italian or Spanish) permits full configuration of the recorder using the front keys. A multilevel password protects against unauthorized changes of product configuration.

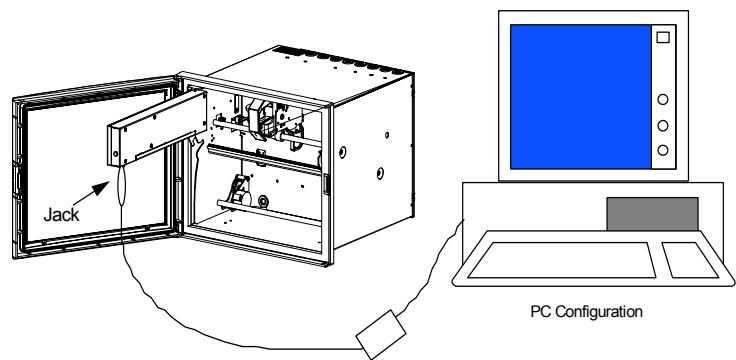
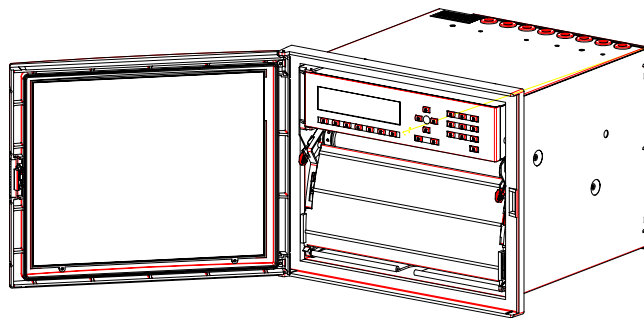
- **Digital Display** : The Vacuum fluorescent dot matrix display, is 2 lines of 16 digits, 8.5 mm (0.33") high. This allows for display flexibility and provides clear operator information. Display illumination is configurable to allow for improved viewing based on customer requirements.

- **Chart illumination** : The chart illumination makes traces and current printed values immediately visible, even from a distance and in any ambient light condition.

- **Two paper types** : Either chart roll or fan fold paper can be installed into the common chart cassette. The large capacity cassette holds 35 meters (115ft) of chart paper, reducing the maintenance time required between chart changes. Uses the same ink cartridge as the DPR250, thus providing for common consumables.



MMI Configuration keys



PC Configuration

**PC configuration** : By using the front communication jack, the recorder can be configured from a personal computer, using an optional PC interface module. In addition to configuration, the PC interface provides the ability to upload, download, modify, store the recorder configuration and initiate service diagnostics as well as being able to upgrade the recorder's product firmware. The PC Configuration software allows the creation of a custom characterization of up to 50 points for special ranges.

# DPR 180 FUNCTIONAL SPECIFICATIONS

## Technical data

DPR180

<b>Technology</b>		Microprocessor-based (32 bits), with non volatile memory. Flash memory for product software upgrade, or specials, via the front jack.
<b>Analogue inputs</b>	<i>No. of inputs</i>	From 4 up to 24 in groups of 4.
	<i>Input boards</i>	2 types : 4 linear inputs per board : mV, V, mA 4 universal inputs per board : mV, V, mA, T/C, RTD, Ohms
	<i>Signal source</i>	Thermocouple with cold junction compensation, or with remote compensation temperature configurable between 0 to 80°C (32 to 176°F) Line resistance up to 1000 Ohms for T/C, mV, mA, V RTD Pt100 Ohms, 3 wire connections, 40 Ohms balanced max.
	<i>Basic math functions</i>	Square root extraction or channel differential are standard.
	<i>Filter</i>	Digital filter configurable per input from 0 to 99 sec.
	<i>Field calibration</i>	Channel calibration 0 to 100% span (or calibration of a group of identical channels) can be made to certify sensor loop.
	<i>Burnout</i>	T/C, mV, V (except following ranges) configurable to upscale, downscale or none Volt : -500, 0, 500 mV ; -1, 0, 1V ; -2, 0, 2V ; -5, 0, 5V ; 0, 10V ; -10, 0, 10V : Inherent to Zero volt. RTD : inherent upscale ; mA : inherent downscale.
	<i>Scanning time</i>	2 channels = 105 msec, 4 ch = 210 msec, 8 ch = 420 msec, 12 ch = 630 msec, 16 ch = 840 msec, 20 ch = 1 sec, 24 ch = 1.2 sec
	<i>Input impedance</i>	10 MOhms for T/C and mV inputs; > 1 MOhm for V input
	<i>Stray rejection</i>	Series mode > 60 dB. Common mode at 120 Vac > 130 dB
<b>Display</b>	<i>Fluorescent display</i>	2 rows of 16 digits, 8.5 mm (.33 inch) high, matrix display. Can display 1 or 2 PV values (5 digits) per line, engineering units (5 digits), alarm status, tag name, math, speed, event messages etc.
	<i>Brightness</i>	The display brightness is configurable
<b>Record</b>	<i>Chart</i>	180 mm (7.09") width
	<i>Traces</i>	Up to 24 traces, configurable in 6 colors, thin or thick traces, plus digital traces
	<i>Trace assignment</i>	Traces are configurable on analogue inputs, math, communication or digital inputs
	<i>Scaling</i>	Per input, up to 2 analogue scales can be configured to be printed on the chart, with engineering units, channel reference and tag name. Each input can be configured independently. The scale can be linear, with up to 10 sub-divisions
	<i>Print mode</i>	<b>Trend</b> : Up to 24 traces, with periodic chart documentation configurable in time, from 1 minute to 24 hours with date, time, scales, digital PV print-out over traces or on blank paper, with channel reference, digital traces, alarm messages and customer message. <b>Tabular</b> : Tabular print-out configurable in time from 1 to 1440 minutes with channel number, tag name, digital PV value, engineering unit, alarm status.
	<i>Zoning</i>	Each input can be scaled between 0 to 100% of the chart (minimum zone = 20%).
	<i>Printing group</i>	Up to 2 groups of channels can be defined, with printing selection by : Alarm, logic inputs or keypad
	<i>Pen carriage speed</i>	1.4 second full scale
<b>Chart length</b>		Roll or fan fold chart 35 meters (115 ft)
<b>Chart speed</b>		1 or 2 chart speed, fully configurable, selected by : Logic input, alarm communication, front key.
	<i>Speed setting</i>	Speeds 1 and 2 are configurable from 1 up to 5000 mm/hr (0.04 to 200 in/hr)
	<i>Resolution</i>	Chart resolution is 0.19 mm (0.0075")
<b>Product configuration</b>	<i>Access</i>	The configuration can be accessed using front keys, PC configurator, or ASCII communication with LPCS software.
	<i>Protection</i>	2 password levels protect the unit configuration from unauthorized access. Level 1 = limited access, Level 2 = full protection.
	<i>Front keyboard</i>	Configurable and alphanumeric keys allow the operator to change the recorder operation
	<i>PC configuration</i>	Through the front jack, the unit can be configured from a PC using a Honeywell PC interface. This provides the facility to copy the product configuration, modify, store, download or upload the configuration, access service diagnostics, and also to upgrade the recorder firmware.

<b>Logic inputs</b> (optional)	<i>Number of inputs</i>	Up to 36 input contacts, organized in groups of 6 contacts per card Dry contacts (5 mA - 5 Vdc)
	<i>Actions</i>	Change speed 1 to speed 2, tab interval 1 to 2, digital print-out, print message, print inhibit, event traces, print math calculations. Change range, start/stop math operations Change print group, actuate a relay output Up to 20 event traces are configurable in color and position from 0 to 100% of the chart
<b>Alarms</b>	<i>Set points</i>	Up to 48 set points, freely assignable to analogue inputs, math or communication.
	<i>Alarm type</i>	High, low, change rate low, change rate high, change rate high-low or deviation with configurable alarm occurrence.
	<i>Actions</i>	Can trigger a message, print channel in red in alarm, print in alarm, change the range, change the speed/tabular, print digital PV's Start/stop the math, select the print group, actuate a relay output
	<i>Relay output (optional)</i>	Up to 36 internal relays : 2 A, 250 Vac on resistive load. 1 SPST contact output, normally closed contact (NC), configurable to normally open (NO). Configurable alarm relay acknowledgement.
<b>Alarm event</b>		The recorder can be configured to display events such as : 1 alarm, 1 channel in burnout, paper out, battery fail, communication interrupted
<b>Alphanumeric documentation</b>	<i>Messages</i>	Up to 48 freely assignable messages of 50 characters each Can be printed with or without date and time over the traces, by alarms, logic inputs, communication, when alarm is ON, OFF or ON/OFF.
	<i>Process Values</i>	Periodic digital print-out at time intervals configurable from 1 minute to 24 hours or through alarms, digital inputs, communication.
	<i>Tag name</i>	Each channel can have up to an 8 character name
	<i>Chart scales</i>	each can be configured from 0 to 9 subdivisions
	<i>Periodic reports</i>	startup time and period configurable Min, Max, average of selected channels or (math computation) are printed in alphanumeric. Report size max. = 20 lines.
<b>User-Defined Actuators</b>		Up to 50 breakpoints can be used to define a custom range/actuation. Up to 2 ranges can be defined using the PC Configurator. Polynomial characterization available as special.
<b>Mathematic package</b> (optional)		Many functions are available such as : Basic math, SqRt, Fo, mass flow totalization, energy consumption, averages, timers, min., max., carbon potential, alarm/logic pulse totalization, RH. The calculations are stored during power interruption.
	<i>Actions</i>	The results can be recorded as a trace, a tabular print-out, a periodic report, sent to the communication link, or used to generate a current output signal
<b>Communication</b> (optional)	<i>Protocols</i>	ASCII in RS232, 422/485. MODBUS RTU in RS422/485. ETHERNET/MODBUS RTU Interface, Interface configured with standard IP address and is utilized with 3 <sup>rd</sup> party software that provides TCP/Modbus driver and OPC capability.
	<i>PC supervision</i>	In ASCII communication, an application software package LPCS provides the following functions : Monitor the PV's, alarms, events status Archiving of data in ASCII files Send a message to the recorder Configure the recorder
<b>PCMCIA</b> (optional)	<i>Actions</i>	Archiving of PV traces, alarms and events with file names, file size is 24Mbytes max. Logging time selectable from 1 second up to 30 minutes.
	<i>PC Analysis</i>	The SDA (Software Data Analysis) or TrendManager Pro provides an easy and powerful way to analyze trend, alarm and event files as well as to export them in spreadsheet format (CSV).
<b>Retransmitting signals</b> (optional)	<i>Current output</i>	Up to 8 signals, 4 to 20 mA dc, can be generated by the recorder (Organized in blocks of 4 output signals) Max. Line impedance = 800 Ohms These can be configured for : analogue traces, math calculations, PV's from the communication link. The zero and span are configurable.

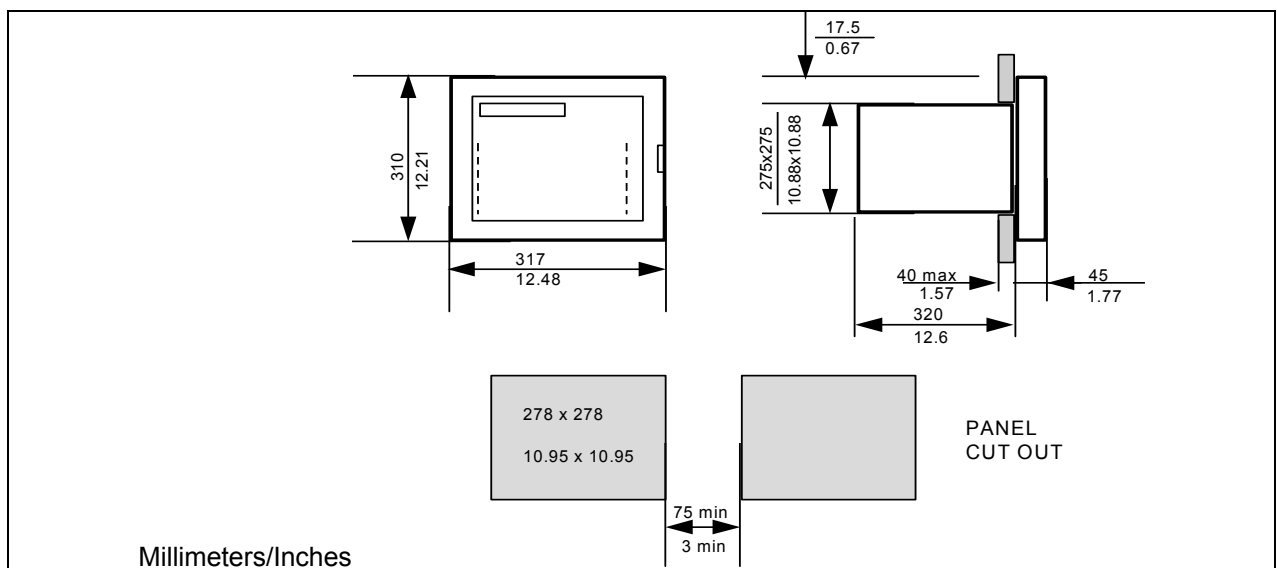
<b>Clock timer</b>	<i>Format</i>	Year, month, hour, minute can be set	
	<i>Power interruption</i>	Battery backed (10 years time, 3 years power off)	
	<i>Accuracy</i>	10 <sup>-5</sup> at reference conditions	
<b>Power supply</b>		100 to 230 Vac/dc, (24 Vac/dc on request). Consumption = 100 VA max	
<b>Packaging</b>	<i>Weight</i>	18 Kg max. (38 lbs)	
	<i>Front bezel</i>	310 x 317 mm (12.2 x 12.5 inches)	
	<i>Panel cutout</i>	278 x 278 mm (10.9 x 10.9 inches)	
	<i>Depth</i>	320 mm (12.6 inch) including the rear cover	
	<i>Front protection</i>	IP55	
	<i>Lock</i>	Latch, optional key DIN 43832-N	
	<i>Door</i>	Die cast aluminum : Dark gray or black (optional), door opens to 180°	
	<i>Mounting</i>	Panel mounting ± 30° from the horizontal	
	<i>Wiring</i>	Screw terminals : Terminal blocks plug on to the boards at the back of the recorder	
<b>Noise immunity</b>		<p>This product is in conformity with the protection requirements of the following European Council Directives:</p> <ul style="list-style-type: none"> <li>• 73/23/EEC, the Low Voltage Directive and 89/336/EEC, the EMC Directive. Conformity of this product with any other “CE Mark” Directive(s) shall not be assumed.</li> <li>• EMC Classification: EN 50081-2-1993 Electromagnetic Compatibility – General Emission Standard, Part 2: Industrial Environment.</li> <li>• EN 50082-2-1995 Electromagnetic Compatibility – General Immunity Standard, Part 2: Industrial Environment.</li> </ul>	
<b>Safety protection</b>		Complies with EN61010-1 and UL 3121 for process control instrumentation. Pollution Degree 2. Installation Category II	
<b>Electrical insulation</b>	<i>Input/input</i>	Continuous operation at 280 Vac or 400 Vdc (except for RTD)	
	<i>Input/logic/grd</i>	Test voltage 2.1 kV dc for 1 minute	
	<i>alarm relay/grd</i>	Test voltage 3,25kV dc for 1 minute	
	<i>Input/line;</i>	Test voltage 3,25kV dc for 1 minute	
	<i>Line/grd;</i>	Test voltage 3,25kV dc for 1 minute	
	<i>Cur output/grd</i>	Test voltage 3,25kV dc for 1 minute Test voltage 500 Vdc for 1 minute	
<b>Temperature</b>	<i>Ambient</i>	0 to 50°C (32 to 132°F), 0 to 40°C (32 to 104°F) for fan fold paper	
	<i>Storage</i>	-40 to 70°C (-40 to 160°F)	
<b>Humidity</b>	<i>Roll chart</i>	10 to 90% RH non-condensing	
	<i>Fan fold</i>	15 to 80% RH non-condensing	
<b>Vibrations Accuracy</b>		Frequency 10 to 60 Hz, amplitude 0.07 mm, 60 to 150 Hz acceleration 1g	
	<i>Reference conditions</i>	Temperature = 23°C ± 2°C (73°F ± 3°F) Humidity = 65% RH ± 5% Line voltage = Nominal ± 1% Source resistance = 0 Ohm Series mode and common mode = 0 V Frequency = Nominal ± 1%	
	<i>Accuracy</i>	Field calibration accuracy 0.05% of the selected range (IEC 873), Chart resolution : 0.18 mm (0.007”). Cold junction accuracy : ± 0.5°C (32.9°F)	
<b>Rated limits and associated drifts</b>	<b>Parameters</b>	<b>Rated limits</b>	<b>Influence on accuracy</b>
	<i>Temperature</i>	0 to 50°C (32 to 120°F)	0.15% per 10°C (50°F) of change (note A) Cold junction 0.3°C/10°C (32.5°F /50°F)
	<i>Supply voltage</i>	85 to 250 V	No influence
	<i>Source resistance</i>	T/C, mV	6 µV per 400 Ohms of line resistance max. = 1000 Ohms.
		RTD	0.1°C (33.8°F) per Ohm in each wire balanced leads. 40 Ohms max. (From 0 to 400 °C (32 to 752°F))
	<i>Humidity</i>	10 to 90% RH at 25°C	0.1% max
<i>Long-term stability</i>		0.1% per year	

Linear	RTD/Ohms		Thermocouples		
<b>mV</b> 0 to 10 mV -10, 0, +10 mV 0, 20 mV -20, 0, +20 mV 0, 50 mV -50, 0, +50mV 10, 50 mV 0, 100 mV -100, 0,+100mV 0, 500 mV -500, 0, +500mV	<b>Pt 100 at 0°C</b> -50, 0, 150°C -58, 0, 302°F 0, 100°C** 32, 212°F** 0, 200°C 32, 392°F 0, 400°C 32, 752°F -200, 0, 800°C -328, 0, 1472°F	<b>J I S</b> -50, 0, 150°C -58, 0, 302°F 0, 100°C** 32, 212°F** 0, 200°C 32, 392°F 0, 400°C 32, 752°F -200, 0, 500°C -328, 0, 932°F	<b>J</b> -50, 0, 150°C J -58, 0, 302°F J 0, 400°C J 32, 752°F J -200, 0, 870°C J -328, 0, 1598°F  <b>L</b> -50, 0, 150°C L -58, 0, 302°F L 0, 400°C L 32, 752°F L -200, 0, 870°C L -328, 0, 1598°F	<b>S</b> 0, 1600°C S 32, 2912°F S -20, 0, 1760°C S -4, 0, 3200°F  <b>N</b> 0, 400°C N 32, 752°F N 0, 800°C N 32, 1472°F N 0, 1200°C N 32, 2192°F N -200, 0, 1300°C N -328, 0, 2372°F	<b>U</b> -50, 0, 150°C U -58, 0, 302°F U 0, 150°C U 32, 302°F U 50, 150°C U 122, 302°F U -200, 0, 400°C U -328, 0, 752°F  <b>NiMo</b> 0, 1400°C NiMo 32, 2552°F <b>MoCo</b> 0, 1400°C MoCo 32, 2552°F
	<b>Ni 50 ohms</b> -80, 0, 320°C -112, 0, 608°F	<b>Ref. range</b> 0, 320°C 32, 608°F	<b>K</b> 0, 400°C K 32, 752°F K 0, 800°C K 32, 1472°F K 0, 1200°C K 32, 2192°F K -200, 0, 1370°C K -328, 0, 2498°F	<b>T</b> -50, 0, 150°C T -58, 0, 302°F T 0, 150°C T 32, 302°F T 50, 150°C T 122, 302°F T -200, 0, 400°C T -328, 0, 752°F	<b>W-W26</b> <b>Ref. range</b> -20, 0, 2320°C      400, 2300°C -4, 0, 4208°F      750, 4200°F
	<b>Ni 508 ohms</b> -80, 0, 150°C -112, 0, 302°F				<b>W5-W26</b> <b>Ref. range</b> -20, 0, 2320°C      400, 2300°C -4, 0, 4208°F      750, 4200°F
	<b>Cu 10 Ohms</b> -20, 0, 250°C** -4, 0, 482°F				<b>PR 20-40</b> <b>Ref. range</b> 0, 1800°C      600, 1800°C 32, 3272°F      1110, 3300°F
	<b>Ohms</b> 0, 200 ohms 0, 2000 ohms		<b>R</b> -20, 0, 1760°C R -4, 0, 3200°F		<b>B 40, 1820°C</b> <b>Ref. range</b> 400, 1820°C <b>B 104, 3308°F</b> 752, 3308°F
	<b>Volt</b> 0, 1 V 0, 2 V -2, 0, +2V 0, 5 V -5, 0, +5 V 1,5 V 0, 10 V -10, 0, +10 V				
	<b>mA</b> 0, 20 mA 4, 20 mA				

Notes :

1. Ranges with \*\* have an accuracy of 0.25%.
2. For non linear temperature transmitter, the transmitter range MUST be identical to the input range of the recorder.
3. The mA inputs has to be connected on a 250 Ohms input across the input terminals.
4. 0.5% per 10°C on Cu 10 ohms; 0.3% per 10°C on Pt100 < 200°C
5. The Reference range is the same as the stated range unless noted.

Dimensions



## Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

## Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty work-manship. Contact your local sales office of warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. **The foregoing is Buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.** Specifications may change without notice. The information we supply is believed to be accurate and reliable as of printing. However, we assume no responsibility for its use. While we provide application assistance personally, through our literature and the Honeywell website, it is up to the customer to determine the suitability of the product in the application.

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