

## DPR 250

### 250 MM DIGITAL STRIP CHART RECORDER

#### PRODUCT SPECIFICATION SHEET

43-DR-03-09 06/2003

### OVERVIEW

The DPR250 recorder offers the best price/performance of any 250mm (10"inch) wide chart recorder in the market today.

The recorder is able to monitor up to 64 analogue inputs or any combination of analogue inputs, digital inputs and outputs that total up to 80.

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.

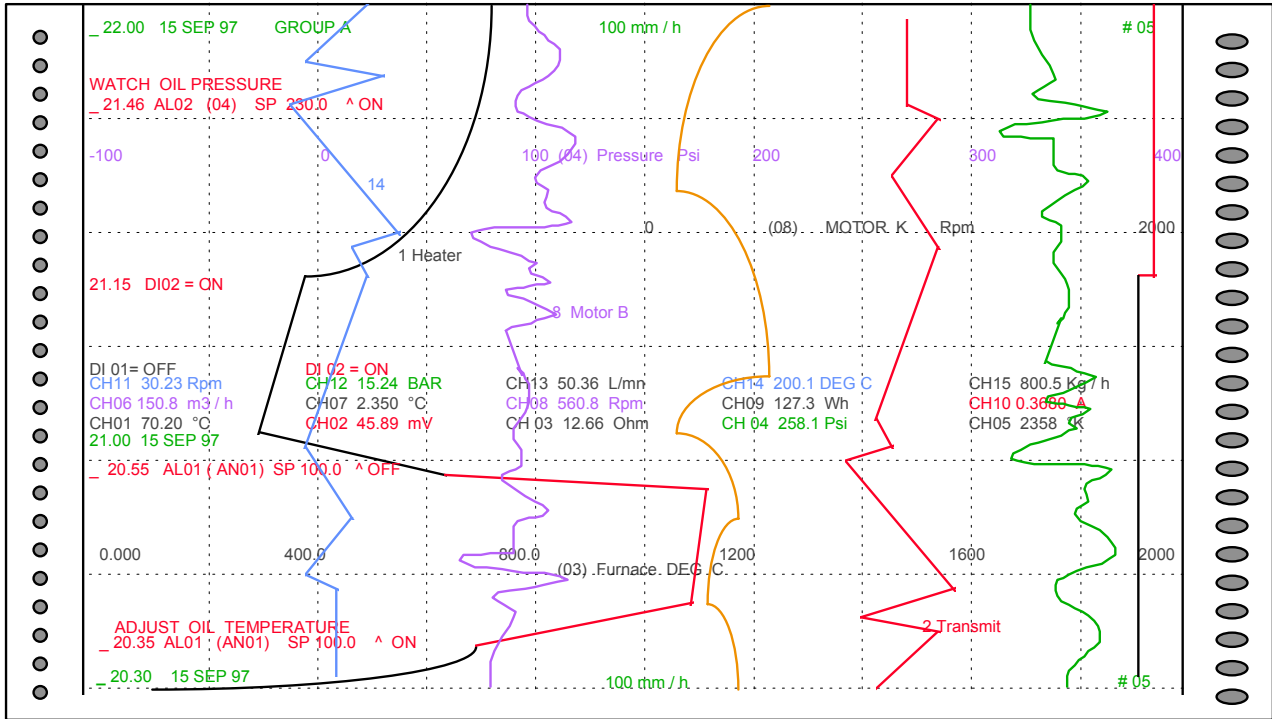
The DPR250 is especially suited to match the needs of chemical, pharmaceutical, power generation, metals processing, environmental monitoring, and other applications where the best chart resolution is required.



### MAIN FEATURES

- 250 mm (10 inch) chart width.
- 0.05% accuracy full scale on a wide choice of inputs 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 board (mV, mA, V).
- Fast scanning of inputs (20/sec.)
- Fluorescent display of 2 row of 16 digits, adjustable brightness.
- Roll or fan fold chart capability using the same cassette.  
Fully documented chart with trace color assignment, thin or thick trace, alarm in red tagging, zooming, zoning, trend, tabular, messages.
- Channel groups available.
- I/O capability : up to 64 analogue inputs, up to 48 output relays, up to 48 digital inputs, up to 8 retransmitted signals.
- Advanced math package
- Full configurability through the front keys, front PC jack or communication link.
- 2 chart speeds fully configurable from 1 to 5000 mm/h (0.04 to 200 inch/hr).
- Up to 64 messages of 64 characters
- Firmware upgradable by PC (Flash memory).
- Input calibration traceability per channel, or per group of channels.
- Up to 2 custom-input characterizations available.
- Up to 64 alarm set points freely assignable on analogue inputs, maths, communication.
- Up to 48 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 retransmitted signals.
- Universal communication: ASCII in RS232, 422/485. MODBUS RTU in RS422/485. ETHERNET/MODBUS RTU Interface.
- Metal door/case, IP55 protection.

### Trend printing mode



The trend printing mode offers a large flexibility of 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	DI02 = ON	CH07 2350.0 °C BURNER	CH08 560.0 Rpm MOTOR B	CH09 127.3 Wh POWER
CH04 258.1 PSI PRESSURE	CH05 2358 °K FURNACE	CH01 70.20 °C HEATER	CH02 45.90 mV TRANSMIT	CH06 150.8 M3/h FLOW
23.50 15 SEP 97				CH03 12.70 OHM COIL
DI01= OFF	DI02 = OFF	CH07 2350.0 °C BURNER	CH08 560.0 Rpm MOTOR B	CH09 127.3 Wh POWER
CH04 258.1 PSI PRESSURE	CH05 2358 °K FURNACE	CH01 70.20 °C HEATER	CH02 45.90 mV TRANSMIT	CH06 150.8 M3/h FLOW
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• **Easy to install ... easy to use ...**

**easy to maintain :** The DPR250 with its modular design and rugged construction, simplifies maintenance. Many parts are common with the DPR180 thus reducing spare parts inventory. It's 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.

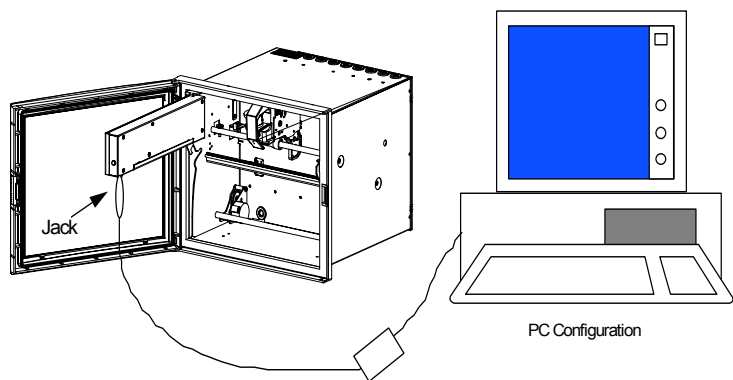
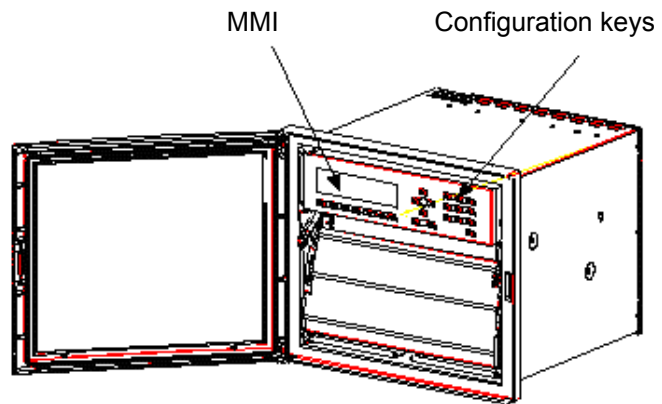
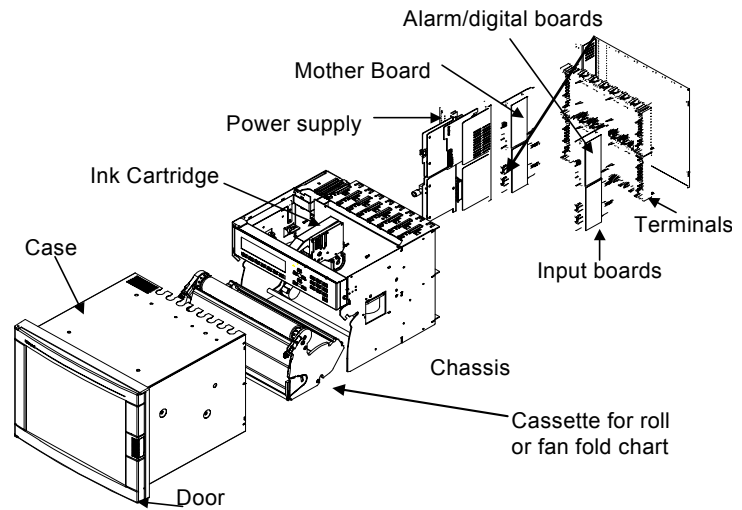
• **Universal power supply module :** the universal switching mode power supply simplifies installation of the recorder by accepting voltages from 100 to 240 Vac/dc, 50/60 Hz.

• **Local configuration :** A user friendly program with local language prompts (English, French, German, Italian or Spanish) permits a 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 high (0.33"). This allows for flexible displaying 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 charts and ink cartridge as the DPR3000, thus providing for common consumables.



• **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 initiates service diagnostics as well as being able to upgrade the recorders product firmware. The PC Configuration software allows the creation of a custom characterization of up to 50 points for special ranges.

# DPR 250 FUNCTIONAL SPECIFICATIONS

## Technical data

DPR250

<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>Number of inputs</i>	From 4 up to 64 in groups of 4. Note. Above 32 inputs could limit the total number of alarm outputs or digital inputs.
	<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, 32 ch = 1.6 sec, 64 ch = 3.3 sec.
	<i>Input impedance</i> <i>Stray rejection</i>	10 MOhms for T/C and mV inputs; > 1 MOhm for V input 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>	250 mm (10") width
	<i>Traces</i>	Up to 32 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 32 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 logic triggers
	<i>Pen carriage speed</i>	1.95 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 (0.04") up to 5000 mm/hr (200")
	<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 (optional)</b>	<i>Number of inputs</i>	Up to 48 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 48 event traces are configurable in color and position from 0 to 100% of the chart
<b>Alarms</b>	<i>Set points</i>	Up to 64 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 48 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 64 freely assignable messages of 64 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 Actuation</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 (optional)</b>		Many functions are available such as : Basic math, SqRt, Fo, totalization, mass flows, 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, or to the communication link, or used to generate a current output signal
<b>Communication (optional)</b>	<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/IP 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>Retransmitting signals (optional)</b>	<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 = 400 Ohms These can be configured for : analogue traces, math calculations, PV's from the communication link. The zero and span are configurable.

<b>PCMCIA (optional)</b>	<i>Actions</i>	Archiving of PV traces, alarms and events with file names. File size is 24Mbytes max., Logging time selectable from 1 sec up to 30 minutes.	
	<i>PC Analysis</i>	The SDA (Software Data Analysis) or TrendManager Pro provides an easy and powerful way to analyse trend, alarm and event files as well as to export the spreadsheet format (CSV).	
<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 240 Vac/dc, (24 Vac/dc on request). Power consumption = 100 VA max	
<b>Packaging</b>	<i>Weight</i>	22 Kg max. (48 lbs)	
	<i>Front bezel</i>	310 x 387 mm (12.2 x 15.24 inches)	
	<i>Panel cutout</i>	278 x 348 mm (10.9 x 13.70 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 Input/gnd; alarm relay/gnd Input/line; Line/gnd; Logic/gnd</i>	<p>Continuous operation at 280 Vac or 400 Vdc (except for RTD)</p> <p>Test voltage 2.1 kV dc for 1 minute</p> <p>Test voltage 3.25 kV dc for 1 minute</p> <p>Test voltage 3.25 kV dc for 1 minute</p> <p>Test voltage 3.25 kV dc for 1 minute</p> <p>Test voltage 3.25 kV dc for 1 minute</p> <p>Test voltage 500 Vdc for 1 minute</p>	
<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</b>		Frequency 10 to 60 Hz, amplitude 0.07 mm, 60 to 150 Hz acceleration 1 g	
<b>Accuracy</b>	<i>Reference conditions</i>	<p>Temperature = 23°C ± 2°C (73°F ± 3°F)</p> <p>Humidity = 65% RH ± 5%</p> <p>Line voltage = Nominal ± 1%</p> <p>Source resistance = 0 Ohm</p> <p>Series mode and common mode = 0 V</p> <p>Frequency = Nominal ± 1%</p>	
	<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 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 per Ohm in each wire balanced eads 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

## Available ranges

DPR250

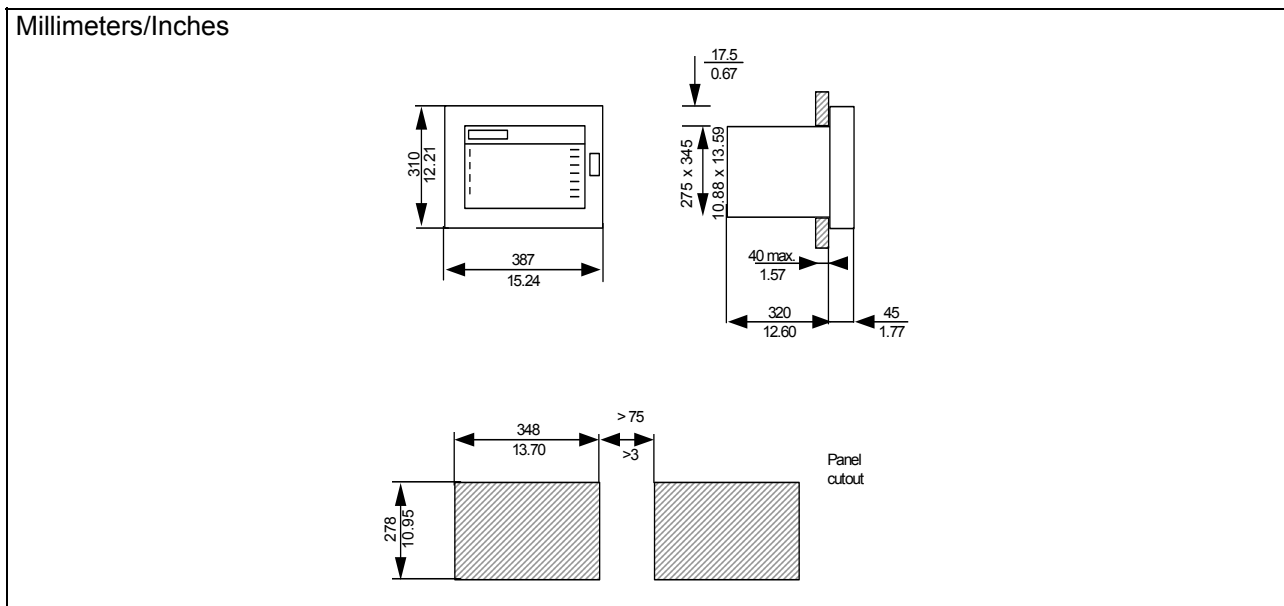
Linear	RTD/Ohms		Thermocouples		
<b>mV</b> 0 to 10 mV -10, 0, +10 mV 0, 20 mV -20, 0, +20 mV 0, 50 mV -50, 0, +50mV 10, 50 mV 0, 100 mV -100, 0, +100mV 0, 500 mV -500, 0, +500mV	<b>Pt 100 at 0°C</b> -50, 0, 150°C -58, 0, 302°F 0, 100°C** 32, 212°F** 0, 200°C 32, 392°F 0, 400°C 32, 752°F -200, 0, 800°C -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>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>Ni 508 ohms</b> -80, 0, 150°C -112, 0, 302°F	<b>Cu 10 Ohms</b> -20, 0, 250°C** -4, 0, 482°F	<b>R</b> -20, 0, 1760°C R -4, 0, 3200°F	<b>W5-W26</b> <b>Ref. range</b> -20, 0, 2320°C      400, 2300°C -4, 0, 4208°F      750, 4200°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>B</b> 40, 1820°C      400, 1820°C B 104, 3308°F      752, 3308°F			

**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

DPR250



## 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.

### ASIA PACIFIC

**Control Products  
Asia Pacific Headquarters**  
Phone: +(65) 6355-2828  
Fax: +(65) 6445-3033

**Australia**  
Honeywell Limited  
Phone: +(61) 2-9370-4500  
FAX: +(61) 2-9370-4525  
Toll Free 1300-36-39-36  
Toll Free Fax: 1300-36-04-70

**China – PRC - Beijing**  
Honeywell China Inc.  
Phone: +(86-10) 8458-3280  
Fax: +(86-10) 8458-3102

**China – PRC - Shanghai**  
Honeywell China Inc.  
Phone: (86-21) 6237-0237  
Fax: (86-21) 6237-1237

**China - Hong Kong S.A.R.**  
Honeywell Ltd.  
Phone: +(852) 2953-6412  
Fax: +(852) 2953-6767

**China – PRC - Chengdu**  
Honeywell China Inc.  
Phone: +(86-28) 6786-348  
Fax: +(86-28) 6787-061

**China – PRC - Guangzhou**  
Honeywell China Inc.  
Phone: +(86-20) 3879-1169  
Fax: +(86-20) 3879-1269

**China – PRC - Shenzhen**  
Honeywell China Inc.  
Phone: +(86) 755-518-1226  
Fax: +(86) 755-518-1221

**Indonesia**  
Honeywell Indonesia Pte Ltd.  
Phone: +(62) 21-535-8833  
FAX: +(62) 21-5367 1008

**India**  
TATA Honeywell Ltd.  
Phone: +(91) 20 687 0445/0446  
Fax: +(91) 20 681 2243/ 687 5992

**Japan**  
Honeywell Inc  
Phone: +(81) 3 5440 1425  
Fax: +(81) 3 5440 1368

**South Korea**  
Honeywell Korea Co Ltd  
Phone: +(822) 799-6167  
Fax: +(822) 792-9013

**Malaysia**  
Honeywell Engineering  
Sdn Bhd  
Phone: +(60-3) 7958-4988  
Fax: +(60-3) 7958-8922

**New Zealand**  
Honeywell Limited  
Phone: +(64-9) 623-5050  
Fax: +(64-9) 623-5060  
Toll Free (0800) 202-088

**Philippines**  
Honeywell Systems  
(Philippines) Inc.  
Phone: +(63-2) 636-1661 /1662  
Fax: +(63-2) 638-4013

**Singapore**  
Honeywell South East  
Asia  
Phone: +(65) 6355-2828  
Fax: +(65) 6445-3033

**Thailand**  
Honeywell Systems  
(Thailand) Ltd.  
Phone: +(662) 693-3099  
FAX: +(662) 693-3085

**Taiwan R.O.C.**  
Honeywell Taiwan Ltd.  
Phone: +(886-2) 2245-1000  
FAX: +(886-2) 2245-3242

### EUROPE

**Austria**  
Honeywell Austria GmbH  
Phone: +43 (316)400123  
FAX: +43 (316)40017

**Belgium**  
Honeywell SA/NV  
Phone:  
+31(0)205656999  
FAX: +31(0)165330746

**Bulgaria**  
Honeywell EOOD  
Phone: +(359) 2 79 40 27  
FAX: +(359) 2 79 40 90

**Czech Republic**  
Honeywell spol. s.r.o.  
Phone: +420-54324-5014  
FAX: +420-54324-5011

**Denmark**  
Honeywell A/S  
Phone: +(45) 39 55 55 55  
FAX: +(45) 39 55 55 58

**Finland**  
Honeywell OY  
Phone: +358 (3) 2727625  
FAX: +358 (3) 2728600

**France**  
Honeywell SA  
Phone: +33 (0)1 60198075  
FAX: +33 (0)1 60198201

**Germany**  
Honeywell AG  
Phone: +49 (69)8064336  
FAX: +49 (69)806497336

**Hungary**  
Honeywell Kft.  
Phone: +36-1-451 4335  
FAX: +36-1-451 4343

**Italy**  
Honeywell S.p.A.  
Phone: +39 02 9214 6503  
FAX: +39 0292146377

**The Netherlands**  
Honeywell B.V.  
Phone: +31(0)205656999  
FAX: +31(0)165330746

**Norway**  
Honeywell A/S  
Phone: (45) 39 55 55 55

**Poland**  
Honeywell Sp. zo.o  
Phone: +48-22-6060900  
FAX: +48-22-6060901

**Portugal**  
Honeywell Portugal Lda  
Phone: +351 21 424 5000  
FAX: +351 21 424 50 99

**Romania**  
Honeywell Bucharest  
Phone: 40212110076  
FAX: +40 (40212103375)

**Commonwealth of Independent States (CIS)**  
Z.A.O. Honeywell  
Phone: +(7 095) 796 98 36  
FAX: +(7 095) 796 98 93

**Slovak Republic**  
Honeywell s.r.o.  
Phone: +421-2-58247 410  
FAX: +421-2-58247 415

**Spain**  
Honeywell S.A.  
Phone: +34 (0)91313 61 00  
FAX: +34 (0)91313 61 30

**Sweden**  
Honeywell AB  
Phone: +(46) 8 775 55 00  
FAX: +(46) 8 775 56 00

**Switzerland**  
Honeywell AG  
Phone: +41 18552448  
FAX: +(41) 1 855 24 45

**Turkey**  
Honeywell Turkey A.S.  
Phone: +90 216 575 6600  
FAX: +90 216 575 6637

**United Kingdom**  
Honeywell Control Systems  
Ltd  
Phone: +(44) 1698 481730  
FAX: +(44) 1698 481276

### MIDDLE EAST

**Abu Dhabi U A E**  
Middle East Headquarters  
Honeywell Middle East Ltd  
Phone: +971 2 4041220  
FAX: +971 2 4432536

**Sultanate of Oman**  
Honeywell & Co Oman LLC  
Phone: +968 701397  
FAX: +968 787351

**Egypt**  
Honeywell Egypt Ltd  
Phone: +202 4514460 /1/ 2/ 3/ 4/ 5/ 6  
FAX : +2024514467

**Saudia Arabia**  
Honeywell Turki Arabia  
Limited  
Phone: +966-3-341-0140  
Fax: +966-3-341-0216

**Kuwait**  
Honeywell Kuwait KSC  
Phone: +965 2421327

### AFRICA

**Mediterranean & African Distributors**  
Honeywell SpA  
Phone: +39 (02) 250 10 604  
FAX: +39 (02) 250 10 659

**South Africa (Republic of)**  
Honeywell Southern Africa  
Honeywell S.A. Pty. Ltd  
Phone: +27 11 6958000  
FAX +27 118051504

### NORTH AMERICA

**Canada**  
Honeywell LTD  
Phone: 1-800-737-3360  
FAX: 1-800-565-4130

**USA**  
Honeywell  
Control Products,  
International Headquarters  
Phone: 1-800-537-6945  
1-815-235-6847  
FAX: 1-815-235-6545  
E-mail: info.sc@honeywell.com

### LATIN AMERICA

**Argentina**  
Honeywell S.A.I.C.  
Phone: +(54-11) 4383-3637  
FAX: +(54-11) 4325-6470

**Brazil**  
Honeywell do Brasil & Cia  
Phone: +(55-11) 7266-1900  
FAX: +(55-11) 7266-1905

**Chile**  
Honeywell Chile, S.A.  
Phone: +(56-2) 233-0688  
FAX: +(56-2) 231-6679

**Columbia**  
Honeywell Columbia, S.A.  
Phone: +(57-1) 623-3239/3051  
FAX: +(57-1) 623-3395

**Ecuador**  
Honeywell S.A.  
Phone: +(593-2) 981-560/1  
FAX: +(593-2) 981-562

**Mexico**  
Honeywell S.A. de C.V.  
Phone: +(52) 55 5259-1966  
FAX: +(52) 55 5570-2985

**Peru**  
Honeywell Peru  
Phone: +(511) 445-2136/1891  
FAX: +(511) 348-3552

**Puerto Rico**  
Honeywell Inc.  
Phone: +(809) 792-7075  
FAX: +(809) 792-0053

**Trinidad**  
Honeywell Inc  
Phone: +(868) 624-3964  
FAX: +(868) 624-3969

**Venezuela**  
Honeywell CA  
Phone: +(58-2) 238-0211  
FAX: +(58-2) 238-3391