

DATA PRECISION

DP 100

5 1/2-Digit Multimeter

USER'S MANUAL

ANALOGIC ■

*The World Resource
for Precision Signal Technology*

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Refer to the WARRANTY for further details.

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Dear DP 100 User,

We appreciate your purchase of Analogic's Data Precision DP 100 Multimeter – 5 1/2 digits of world-class measurement capability. Properly used, the DP 100 delivers more measurement performance and versatility than other digital multimeters in its price range.

This user's manual has been designed as a tool to help you get the most from your DP 100. We hope that you will carefully read this manual and follow its recommended procedures so that you will be able to properly use and maintain this product. We welcome any suggestions you may have that could help us improve the DP 100 and this user's manual.

Analogic often modifies standard products to meet specific customer requirements. Please contact us if you have specialized OEM volume requirements.

Analogic is recognized as a world-class innovator and manufacturer of precision A/D converters, multimeters and calibrators, waveform analyzers and synthesizers, advanced medical systems, and digital signal processing equipment. We are committed to helping you fulfill your instrumentation goals.

We are pleased that you selected the DP 100 multimeter to meet your measurement needs. We hope that you will consider us again when you have a requirement for rugged, reliable, versatile, highly accurate yet economical measurement equipment.

Sincerely,

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WARRANTY

Analogic warrants only to the original purchaser that the DP 100 Digital Multimeter, hereinafter called the DMM, as purchased from an Analogic distributor or dealer, will conform to the written specifications as of the date of its manufacture, without recalibration for a period of one year from the date of purchase. Analogic warrants this DMM against faulty workmanship and defective materials for a period of two years from the date of purchase. If the DMM fails to conform to these warranties, Analogic, as its sole and exclusive liability hereunder, will repair or replace the DMM and/or its components within a reasonable period of time if the DMM is returned to Analogic's facility at Peabody, MA, within the warranty period as expressed above. These warranties are made upon the express condition that:

- a. The purchaser promptly notify Analogic in writing of any non-conformity with the above warranty including a detailed explanation of the alleged deficiencies.
- b. The DMM is returned to Analogic at the buyer's expense only after obtaining the proper authorization from Analogic.
- c. When the DMM is returned for repair, a copy of the original bill of sale or invoice is sent with the DMM.
- d. Analogic will not be liable for any incidental or consequential damages.
- e. In the opinion of Analogic upon inspection, the DMM has not been misused, altered, or damaged due to abnormal handling and/or operation.
- f. Repairs to the DMM and/or its components have not been made by anyone other than Analogic or one of its authorized repair agents.
- g. The DMM has not been modified, altered, or changed in any manner by anyone other than Analogic or one of its authorized repair agents.

THIS WARRANTY EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE.

No term, condition, understanding or agreement purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by an authorized officer of Analogic and the purchaser.

SAFETY PRECAUTIONS

The Analogic DP 100 digital multimeter has been designed to meet industry standards IEC Document 66E (Draft) Installation Category II, Pollution Degree I, ANSI/ISA-S82.01, VDE 0411/100 and CSA Bulletin 556B.

When using your DP 100, be sure to pay attention to the warnings, cautions, and notes that appear within this manual.

- WARNING** Describes a condition or action that is considered hazardous to the user.
- CAUTION** Describes a condition or action that may damage the DP 100.
- NOTE** Describes other essential information.

In addition, follow these common sense safety practices:

- a. Follow safety procedures for all equipment being used.
- b. Be careful when working around voltages above 60 Vdc or 25 Vac to avoid electrical shock.
- c. Select the appropriate functions and ranges on your DP 100.
- d. Inspect test leads frequently for cracked insulation and exposed conductors. Replace the test leads if these conditions exist.
- e. Always replace fuses with those having the specified current and voltage ratings.
- f. Always disconnect the high or live test lead first before disconnecting the ground lead.
- g. Remove test connections and the power cord before opening the DP 100's case for any reason.

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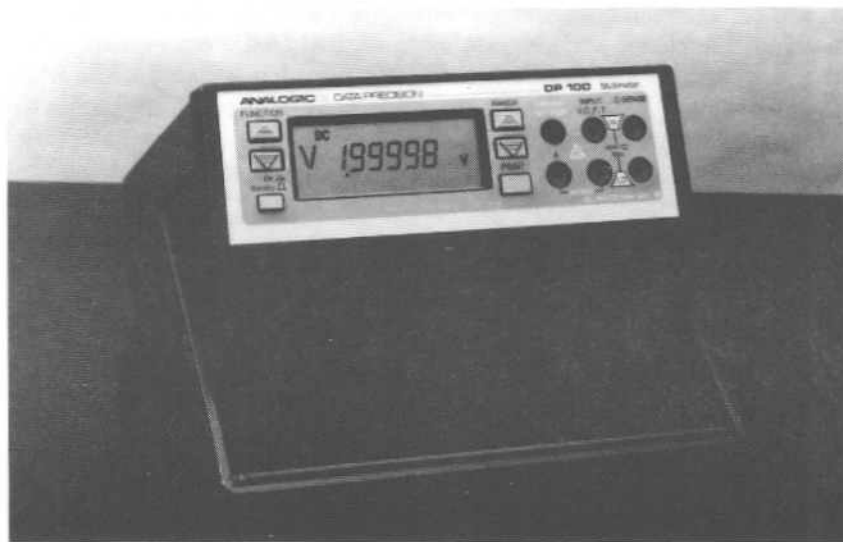
1. INTRODUCTION

1.1 THE DP 100 DIGITAL MULTIMETER

The Analogic Data Precision DP 100 is a 5 1/2-digit, battery- and line-operated, digital multimeter (DMM). Using state-of-the-art technology, its highly-integrated circuitry provides superior accuracy and performance. In addition to the usual resistance, voltage, and current capabilities, the DP 100 performs temperature and frequency measurements, and provides menu-controlled print, filter, and data communications functions.

To achieve its excellent price/performance ratio, the DP 100 employs a proprietary analog-to-digital (A/D) converter. This A/D converter uses a new patent-pending technique called Successively Summed Integration (SSI™) to provide high accuracy and resolution with a minimum number of parts.

This product stems from Analogic's tradition of offering technological and price/performance breakthroughs.



1.2 A FUNCTIONAL OVERVIEW

A simplified block diagram of the DP 100 is shown in Figure 1-1. Within the DP 100, all measurements and functions are performed under microprocessor control. Pressing the front panel pushbuttons causes the microprocessor to set up the appropriate circuit paths for a particular measurement. The input signal follows the established path and is converted to digital information. The microprocessor displays this information on the liquid crystal display (LCD) in a readable form. The RS-232 interface provides a means for external communications with the microprocessor.

The DP 100 has five input terminals: HI/LO for most signals, A for ac/dc current, and HI/LO SENSE for four-terminal resistance and temperature measurements. A fuse is in series with the current input (A) and a current shunt is connected between the fuse and the LO terminal. All five inputs are fed through a relay matrix under microprocessor control. The microprocessor switches the appropriate relays and sets up the correct signal path for the selected function. The microprocessor also positions the analog switches that further configure the signal path.

Except for frequency measurements, all input signals pass through an amplifier stage and an analog-to-digital (A/D) converter. The amplifier adjusts the input signal level so that it is compatible with the input range of the converter. Ac voltage and current signals are amplified and processed through a true rms-to-dc converter before they get to the A/D converter. For frequency measurements the input signal is applied to counter which is read by the microprocessor.

The A/D conversion process uses a unique microprocessor-controlled charge-balancing technique called Successively Summed Integration (SSI™). This highly-accurate converter sends digital data, which are proportional to the input signal, to the microprocessor.

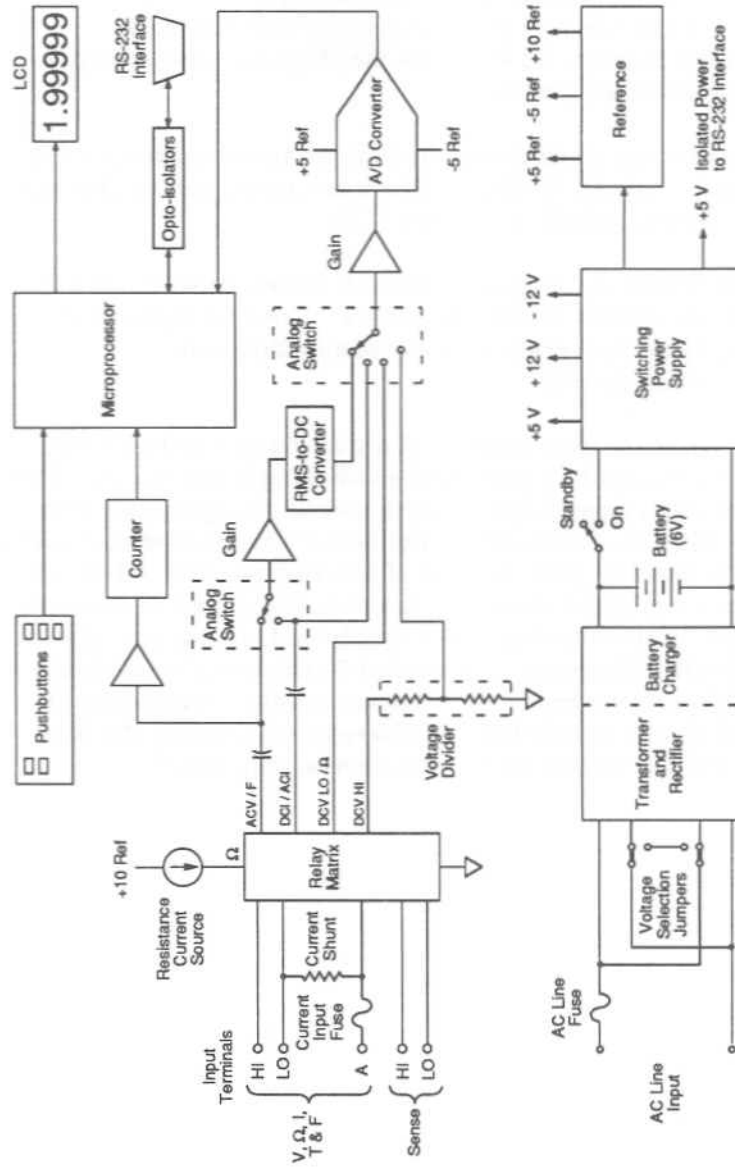


Figure 1-1. Block Diagram of the DP 100

The eight-bit microprocessor is the controlling device for all DP 100 functions. This device has one kilobyte of memory to hold calibration information, 32 kilobytes for program storage, and 8 kilobytes of scratchpad memory.

This device uses input registers to read front panel pushbutton data and the counter output. Output registers are used to control the relay matrix, the analog switches, and the LCD.

The RS-232 interface communicates with the microprocessor via optical isolator circuits and level shifters. The opto-isolators allow the floating meter to operate with a ground-referenced communications facility.

The power supply section consists of a transformer and rectifier, battery charger, a battery pack, and a switching power supply. The transformer has a dual primary which can be configured for 100-120 Vac or 220-240 Vac. A fuse limits the line current in case of a circuit failure. The battery pack consists of five rechargeable sub-C cells. These cells are charged whenever the charging circuit is connected to the ac line. The switching power supply feeds 5-volt, and ± 12 -volt power to the DP 100 circuits. An isolated 5-volt output is supplied to the RS-232 interface circuit. Other power supply circuits generate ± 5 -volt and 10-volt signals used as reference voltages by the A/D converter and the resistance current source, respectively.

1.3 ABOUT THIS MANUAL

This manual is divided into six sections and four appendices:

Section 1, INTRODUCTION, introduces you to the DP 100 Multimeter and describes the contents of this manual.

Section 2, PREPARING FOR OPERATION, describes how to unpack the DP 100 and explains the front and rear panel controls and connectors.

Section 3, FRONT PANEL OPERATION, explains how to use the measurement functions, ranges, and auxiliary functions.

Section 4, APPLICATIONS, explains measurement techniques and sources of error in order to help you use the DP 100 more effectively.

Section 5, OPERATING WITH THE RS-232 INTERFACE, explains how to use the RS-232 interface with a computer, CRT terminal, or printer.

Section 6, MAINTENANCE, describes some simple maintenance procedures to help maintain the DP 100 in good working order.

Appendix A, SPECIFICATIONS, provides a detailed listing of DP 100 specifications.

Appendix B, ACCESSORIES, describes several accessories for the DP 100 and how to order them.

Appendix C, ASCII CODES, provides a complete decimal list of ASCII codes.

Appendix D, ANALOGIC SALES AND SERVICE, lists the authorized Analogic sales and service offices.

2. PREPARING FOR OPERATION

2.1 INTRODUCTION

This section includes unpacking instructions, a discussion on power requirements, and a description of the instrument's front and rear panels.

2.2 UNPACKING INSTRUCTIONS

The shipping carton contains:

- DP 100 Multimeter
- Test Leads
- This Manual
- AC line Cord

To unpack the DP 100:

- (1) Place the shipping carton on a flat surface and open the top of the carton.
- (2) Remove the ac line cord and any other loose items from the shipping carton.
- (3) Grasp the foam packing material on both sides of the DP 100 and carefully pull the instrument, together with its packing material, out of the shipping carton.
- (4) **SET ALL SHIPPING MATERIALS ASIDE.** You will use them if you need to ship your DP 100 for service or repair.

2.3 INSPECTION

After unpacking your DP 100 Multimeter, inspect it carefully for any damage or missing items. If anything is missing or damaged, contact your place of purchase immediately.

NOTE

The battery pack may need charging before the DP 100 can operate on battery power. Perform initial operation using ac line power. See Section 2.5, POWER REQUIREMENTS.

2.4 USE OF THE HANDLE

You can position the handle to meet your particular application needs. Figure 2-1 shows the various handle positions.

To adjust the handle position:

- (1) Pull the ends of the handle out on each side of the unit and rotate the handle to the desired position.
- (2) Release the handle, then rotate it until it locks in place.

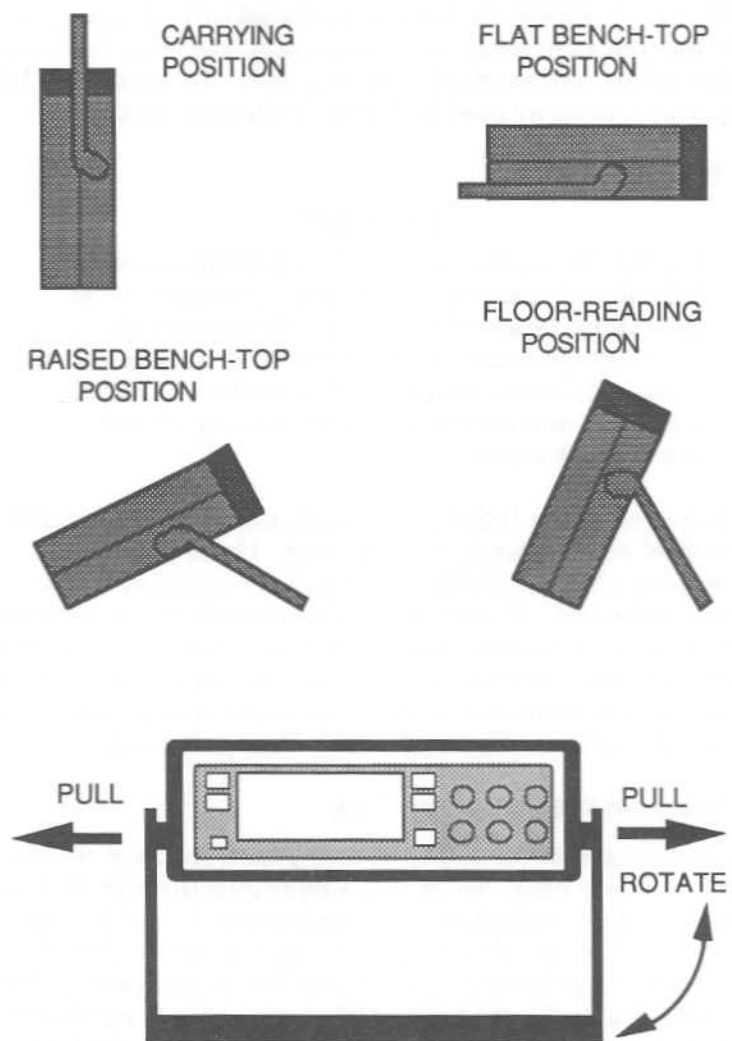


Figure 2-1. DP 100 Handle Positions

2.5 POWER REQUIREMENTS

The DP 100 can operate on ac line or internal battery power. To operate the unit right away, you can connect it to an ac line source using the ac line cord supplied with your unit. To use the DP 100 on battery power, you may need to charge the battery pack first.

2.5.1 Using the AC Line

CAUTION

The DP 100 can be configured for 100/120-volt or 220/240-volt operation. Make sure you know the ac line configuration of your unit before connecting it to an ac voltage source. If a 120-volt unit is connected to a 240-volt source, the internal power fuse will blow. A 240-volt unit cannot charge the battery if connected to a 120-volt source.

Units delivered in the U.S.A and Canada are wired for 100/120 volts and provided with a standard power cord. Units delivered elsewhere are wired for 220/240 volts and are equipped with a European-style cord. If your national receptacle is not compatible with either style, obtain the appropriate power cord to connect to the DP 100's rear panel IEC power connector. Either version of the DP 100 may easily be converted to the other input voltage range. Refer to Section 6.6, Converting the AC Line Voltage Wiring.

2.5.2 Using the Internal Battery Pack

Before operating your DP 100 by battery power, you may need to charge the battery pack. To do this, simply plug the unit into an ac line source as described above. It takes between 12 and 16 hours to fully charge a discharged battery. You can use the DP 100 while the batteries are being charged without any loss in accuracy or damage to the unit. For prolonged battery life, normal charging should be conducted at an average temperature of 18°C to 28°C. Prolonged

storage may temporarily reduce the capacity of the battery. Completely normal operation will be regained within one to three charge/discharge cycles.

2.6 FRONT PANEL CONTROLS AND INPUT TERMINALS

The DP 100 front panel (Figure 2-2) consists of operating controls, a liquid crystal display (LCD), input terminals, and a fuse to protect the current input circuit.

2.6.1 Operating Controls

The DP 100 operating controls are located on either side of the display. The power switch (On/Standby) and FUNCTION selection pushbuttons are to the left of the display; the RANGE selection and PRINT/ENTER pushbuttons are to the right. These pushbuttons are arranged to provide simple, rapid changing of functions and ranges, as well as easy access to the auxiliary functions. The functions of these controls are described in Table 2-1. For more information, see Section 3, FRONT PANEL OPERATION.

2.6.2 LCD Display

The front panel LCD tells you the magnitude and units measured and the state of the DP 100 at any time. All functional elements and annunciators of the display are shown in Figure 2-3. The meaning or function of each annunciator is described in Table 2-2.

2.6.3 Input Terminals

The DP 100 input terminals (Figure 2-4) are located on the right side of the front panel. The maximum HI-to-LO input voltage for any function or range (except current) is 450 volts dc or ac rms. The maximum voltage that can be applied between any terminal and ground is 500 volts dc or ac rms. Table 2-3 tells you which terminals to use for various measurements. For more information, see Section 4.0, APPLICATIONS.

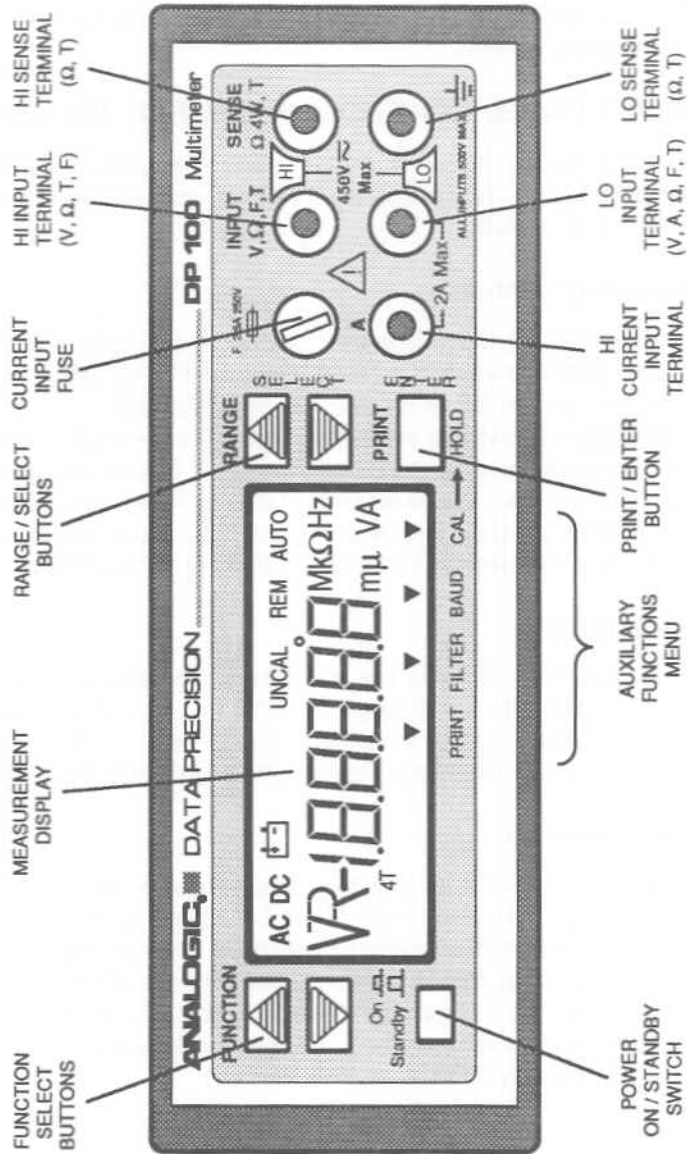


Figure 2-2. Front Panel Layout

Table 2-1. Front Panel Controls

Control	Function
On/Standby	<p>On - Applies battery power to the DP 100.</p> <p>Standby - No battery power is used.</p> <p>However, if the unit is plugged into an ac source while in On or Standby, the internal battery charger will work.</p>
FUNCTION	<p>Selects the measurement functions. These up/down pushbuttons select measurement functions in either direction.</p> <p>In this manual these pushbuttons are referred to as the FUNCTION ▲ and FUNCTION ▼ pushbuttons.</p>
RANGE/ SELECT	<p>Selects a range for the present measurement function. These up/down pushbuttons also select auxiliary function parameters.</p> <p>In this manual these pushbuttons are referred to as the RANGE ▲ and RANGE ▼ pushbuttons.</p>
PRINT/ ENTER	<p>Sends a measurement to the printer via the RS-232 interface in the print-on-demand mode (PRINT function).</p> <p>Selects one of the four auxiliary functions.</p> <p>Enters selected auxiliary function parameters into memory.</p>

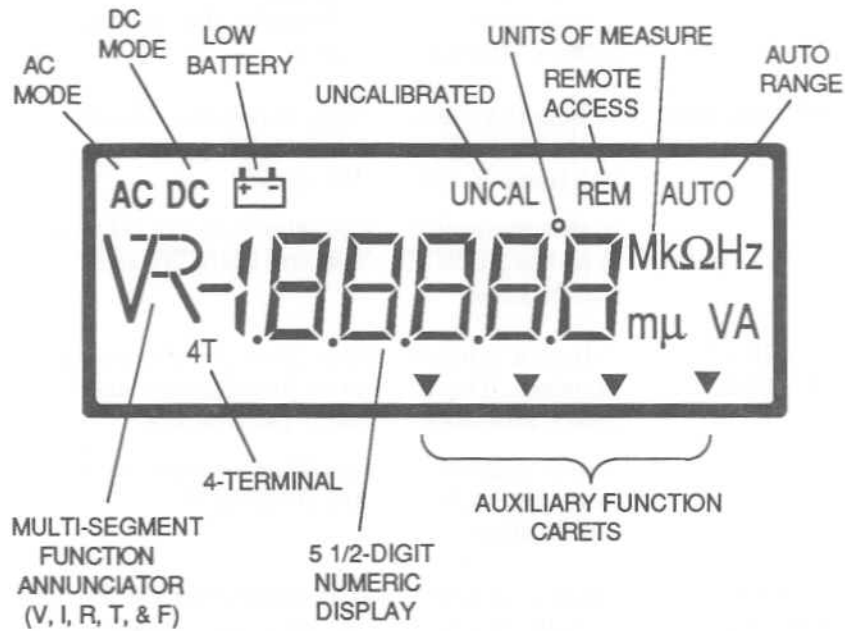



Figure 2-3. Display Annunciators

Table 2-2. Annunciator Indications

Annunciator	Indication
AC	AC voltage or current measurement mode.
DC	DC voltage or current measurement mode.
	Less than approximately 1/3 of total battery charge remaining.
UNCAL	Calibration constants have been corrupted.
REM	Flashing = RS-232 interface in use. Steady = Front panel locked out.
AUTO	Auto-ranging mode.
VR	Selected measurement function. The appropriate elements illuminate to form the letters V (voltage), I (current), R (resistance), T (temperature), and F (frequency).
MkΩHz m μ VA	Units of measure. The appropriate annunciators illuminate to display the units of measure for the active measurement.
4T	4-terminal resistance or temperature measurement function.
▼	Selected auxiliary function. The illuminated caret points to the selected auxiliary function.

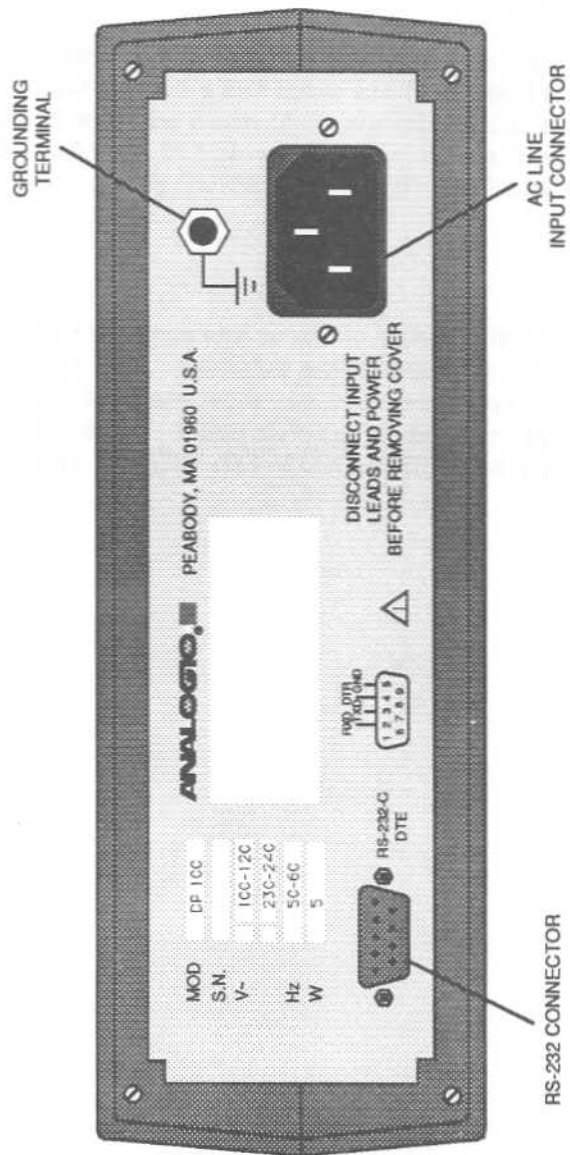


Figure 2-5. Rear Panel Layout

3. FRONT PANEL OPERATION

3.1 INTRODUCTION

This section tells you how to operate the DP 100 using the front panel controls. This information includes switching the unit on, selecting a measurement function and range, and using each of the four auxiliary functions (PRINT, FILTER, BAUD, and CAL). For more information about measurement applications, see Section 4, APPLICATIONS.

3.2 SWITCHING ON THE DP 100

Whenever you switch on the DP 100, it performs a self-test before the measurement functions are enabled. This test checks the instrument's circuitry, A/D converter, and reference. All liquid crystal display (LCD) elements are illuminated during this test. Any detected errors are indicated by an error code on the display (a number preceded by the letter E).

To switch on the DP 100 on, set the On/Standby switch to On. The instrument should cycle through these four events:

- (1) The DP 100 performs a self test during which the LCD displays all annunciators for about two seconds.

NOTE

If an error occurs, refer to Section 6.3, TROUBLE-SHOOTING, in Section 6, MAINTENANCE.

- (2) The LCD displays the instrument identification:
dp 100
- (3) The LCD displays the the software revision code:
- X . X -
- (4) The DP 100 activates the dc voltage measurement function and AUTO ranging.

3.3 SELECTING A MEASUREMENT FUNCTION

The DP 100 has eight measurement functions which are selected in a cyclical fashion using the FUNCTION ▲ or ▼ pushbuttons. See Figure 3-1.

From the start-up function (dc voltage), pressing the FUNCTION ▲ pushbutton steps you into each function in the clockwise direction around the loop. Pressing the FUNCTION ▼ pushbutton steps into each function in the counter-clockwise direction. As the DP 100 enters each function, the function is identified by a front panel annunciator.

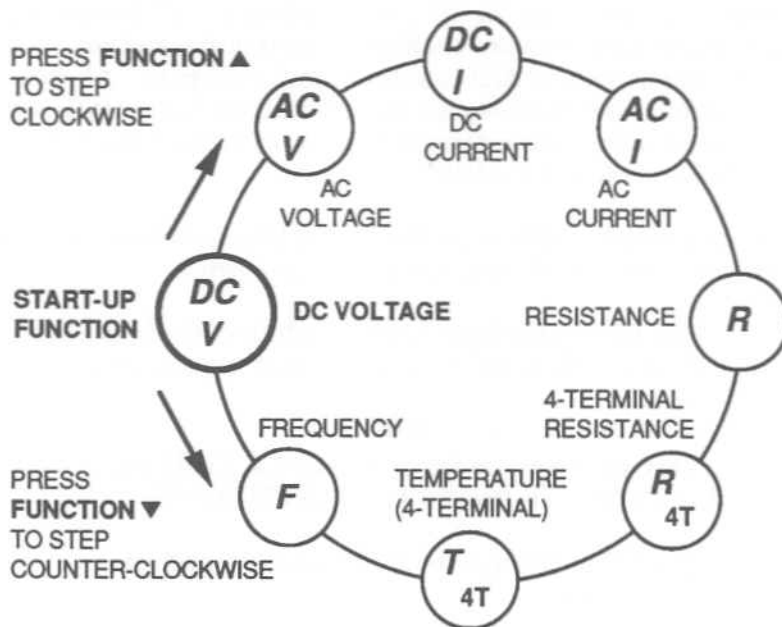


Figure 3-1. Measurement Function Selection

3.4 SELECTING A MEASUREMENT RANGE

A measurement range can be selected in either of two ways. You can let the DP 100 seek its own range in the AUTO ranging mode or you can manually select a range yourself. If the DP 100 receives an input which is higher than the selected range, the LCD will display OL (overload condition).

3.4.1 AUTO Ranging Mode

Whenever you switch the DP 100 on or select a new measurement function, the DP 100 automatically begins measuring in the AUTO ranging mode. Table 3-1 lists the available ranges of each function, from the highest range to the lowest. In the AUTO ranging mode, the DP 100 will automatically up-range when the input exceeds full scale and automatically down-range when the input drops to 9% of full scale. However, in the dc voltage measurement function, the DP 100 will only AUTO range down to the 200-mV range. The 20-mV dc range must be selected manually. Pressing either RANGE pushbutton while in the AUTO ranging mode changes the DP 100 to the manual ranging mode. Table 3-2 explains how the RANGE pushbuttons move you in and out of the AUTO ranging mode.

NOTE

Changing the measurement function returns the DP 100 to the AUTO ranging mode.

Table 3-1. Measurement Function Range Selection

DC V	AC V	AC/DC I	R/R(4T)	F	T
<i>AUTO Range</i>					
450 V	450 V	2 A	20 M Ω †	25 MHz	°F
200 V	200V	200 mA	2 M Ω	20 MHz	°C
20 V	20 V		200 k Ω	2 MHz	
2 V	2 V		20 k Ω	200 kHz	
200 mV	200 mV		2 k Ω		
20 mV*			200 Ω		
<i>AUTO Range</i>					

* Not within scope of AUTO range.

† Two-terminal only.

Table 3-2. RANGE Pushbutton Functions

If Present Range Is	⇒ Press	
AUTO ranging	RANGE ▲	⇒ To lock into next higher range, if available. Otherwise locks into present range. See Table 3-1.
AUTO ranging	RANGE ▼	⇒ To lock into present range found by AUTO ranging.
Highest Range	RANGE ▲	⇒ To go into AUTO ranging.
Lowest Range	RANGE ▼	⇒ To go into AUTO ranging.

3.4.2 Manual Ranging Mode.

In the manual ranging mode, measurement ranges are selected using the RANGE/SELECT ▲ and ▼ pushbuttons located to the right of the front panel display. These pushbuttons allow you to select a higher (less sensitive) or lower (more sensitive) range as listed in Table 3-1. Pressing RANGE ▲ steps you through the ranges in the upward direction, while pressing RANGE ▼ steps you in the downward direction. The RANGE ▲ and RANGE ▼ pushbuttons allow you to return to the AUTO ranging mode as explained in Table 3-2.

3.5 SELECTING AN AUXILIARY FUNCTION

The four auxiliary functions (PRINT, FILTER, BAUD, CAL) prepare the DP 100 for periodic printing, digital filtering (sample averaging), serial data communications at various rates, and calibration. The auxiliary function menu is printed on the DP 100 front panel under the lower right half of the LCD.

The PRINT/ENTER pushbutton is used to enter the auxiliary function menu, examine the current status of each function, and make changes to function parameters. You select auxiliary functions from the menu by pressing the PRINT/ENTER pushbutton the correct number of times to illuminate the appropriate

LCD caret located above the desired function (see Figure 3-2). After selecting a function, you can choose any of the function parameters listed in Table 3-3 using the RANGE/SELECT ▲ or ▼ pushbuttons. Pressing RANGE ▲ steps you through the list of parameters from bottom-to-top, while pressing RANGE ▼ steps you from top-to-bottom. The following instructions will help you select a function and enter the available parameters.

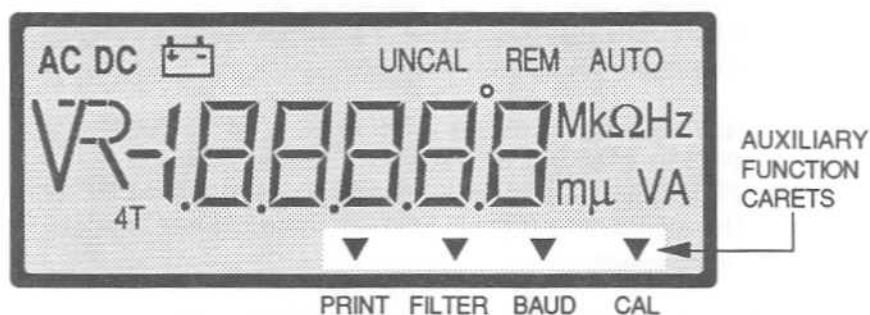


Figure 3-2. Auxiliary Function Menu

Table 3-3. Auxiliary Function Parameters

PRINT (seconds)	FILTER (# of samples)	BAUD (data rate)	CAL (calibration)
600	16	9600	See
60	8	1200	Section 6.8
30	4	300	for the CAL
10	2	9600E	auxiliary
5	OFF	1200E	function.
2		300E	
1			
Pd (Print on demand)			
OFF			

3.5.1 Entering the Auxiliary Function Menu

- (1) Press and HOLD the PRINT/ENTER pushbutton until the PRINT caret illuminates.

You have selected the PRINT auxiliary function. The currently selected PRINT parameter is displayed.

- (2) To select other auxiliary functions, press the PRINT/ENTER pushbutton the correct number of times to illuminate the appropriate caret.

Auxiliary functions are selected from left to right: PRINT, FILTER, BAUD, CAL. Pressing the FUNCTION ▲ pushbutton at any time returns the DP 100 to the measurement mode without changing any function parameters.

3.5.2 Examining The Status of Auxiliary Functions

- (1) Press and HOLD the PRINT/ENTER pushbutton to enter the auxiliary function menu.
- (2) Use the PRINT/ENTER pushbutton to step through the auxiliary functions. As you select each auxiliary function, the unit displays one of the parameters listed in Table 3-3 for the PRINT, FILTER, and BAUD functions. The CAL function displays the calibration due date.
- (3) To change any of the auxiliary function parameters, refer to the following Sections:

3.5.3 Using the PRINT Function

3.5.4 Using the FILTER Function

3.5.5 Using the BAUD Function

3.5.6 Using the CAL Function

After changing a parameter, pressing PRINT/ENTER stores the new parameter in permanent memory.

3.5.3 Using the PRINT Function

PRINT is the first auxiliary function. This function enables you to print measurements on a printer via the RS-232 port. This feature allows you to program the DP 100 to "print on demand(Pd)", or to automatically print at a selected time interval. When selecting the PRINT function for the first time after switching the unit On, the display reads **OFF**, indicating that printing is disabled.

To use the PRINT function:

- (1) Press and HOLD the PRINT/ENTER pushbutton until the PRINT caret illuminates.
- (2) Press the RANGE/SELECT ▲ or ▼ pushbutton to display one of the available parameters (OFF, Pd, 1, 2, 5, 10, 30, 60, or 600 seconds).
- (3) Press the PRINT/ENTER pushbutton to store the displayed parameter in memory and return the DP 100 to the previous measurement function.

NOTE

Pressing the FUNCTION ▲ pushbutton instead of the PRINT/ENTER pushbutton returns the DP 100 to the measurement mode *without* changing the PRINT parameters.

- (4) Press PRINT/ENTER pushbutton *momentarily* to print on demand, or let the DP 100 print automatically according to the programmed interval. The PRINT caret flashes during printing.

If you press the PRINT/ENTER pushbutton and hold it for too long, you may end up selecting the auxiliary function menu. If this happens, press the FUNCTION ▲ pushbutton to return to the present measurement mode.

3.5.4 Using the FILTER Function

FILTER is the second auxiliary function. This function averages a number of successive readings and then displays the results on the LCD. When the FILTER mode is off, each reading is displayed. When the stored parameter is 2, 4, 8, or 16, that number of readings is averaged and then displayed. The display update rate will decrease when higher values are entered.

NOTE

The FILTER function is turned OFF when the measurement mode is changed. The FILTER function is not available when using the frequency measurement mode. If filtering is selected, the FILTER caret will remain illuminated after returning to normal operation.

To program the FILTER function:

- (1) Press and HOLD the PRINT/ENTER pushbutton until the PRINT caret illuminates.
- (2) Press the PRINT/ENTER pushbutton once more to select FILTER. The FILTER caret will illuminate and the PRINT caret will go off.
- (3) Press the RANGE/SELECT ▲ or ▼ pushbuttons to display one of the available parameters (OFF, 2, 4, 8, or 16 samples).

NOTE

Pressing the FUNCTION ▲ pushbutton instead of the PRINT/ENTER pushbutton returns the DP 100 to the measurement mode without changing the FILTER parameters.

- (3) Press PRINT/ENTER to store the displayed parameter in memory and return DP 100 to the previous measurement mode.

3.5.5 Using the BAUD Function

BAUD is the third auxiliary function. This auxiliary function allows you to set the RS-232 serial communications data rate (commonly known as baud rate) with or without echo. The data rate, which is stored in permanent memory, may be set to 300, 1200, or 9600 bits per second. The DP 100 communicates using 8 data bits, 2 stop bits, and no parity.

Character echoing is selected by entering the letter E after the data rate is entered. Echo is usually used when a terminal device is connected to the DP 100. With echo, any characters entering the DP 100 will be echoed back to the terminal. The non-echo mode is used primarily for communications between the DP 100 and a computer. The REM annunciator on the front panel display flashes whenever the DP 100 detects serial data input/output activity. The REM annunciator remains on when the front panel is disabled.

To program the BAUD function:

- (1) Press and HOLD the PRINT/ENTER pushbutton the PRINT caret is illuminated.
- (2) Press the PRINT/ENTER pushbutton twice to select the BAUD function.
- (3) Press the RANGE/SELECT ▲ or ▼ pushbuttons to display one of the available parameters (300E, 1200E, 9600E, 300, 1200, or 9600).

NOTE

Pressing the FUNCTION ▲ pushbutton instead of the PRINT/ENTER pushbutton returns the DP 100 to the measurement mode *without* changing the BAUD parameters.

- (3) Press the PRINT/ENTER pushbutton to store the displayed parameter into permanent memory and return the DP 100 to the previous measurement mode.

3.5.6 Using the CAL Function

Calibration (CAL) is the final auxiliary function. When the CAL caret is illuminated, the DP 100 displays the calibration due date. With this function, you can calibrate your DP 100 using the front panel controls or the RS-232 interface.

To use the CAL function, refer to Section 6.8, Calibration.