

To reduce the Faxbak / Internet document file sizes, the DR4311/4312 Recorder configuration procedures have been separated into four documents. They are:

<b>Document #</b>	<b>Description</b>
9710	Configuration Overview and Hardware Settings for Models DR4311 / DR4312
9711	Configuration of Recorder and Totalizer functions for Models DR4311 / DR4312
9712	Configuration of Control and Alarm Functions for Models DR4311 / DR4312
9713	Configuration of FM Limit Control for Models DR4311 / DR4312

You need only request those documents which are pertinent to your application.

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## **Configuration Overview and Hardware Settings for Models DR4311 and DR4312, Recorders With Display**

### **Overview**

#### **Introduction**

The display and keypad on the DR4311 and DR4312 models are used for setting up recording and output options in Set Up (configuration) mode, as well as for displaying real-time values during normal operation. (Instructions for using the user interface are in 4.2.)

When the recorder is in configuration mode, setup parameters are displayed, grouped by function. Designate site-specific values by selecting them from a list of choices, or entering them as numeric values.

If your recorder is equipped with two pens, function parameters are configured separately for each pen, and stored on the printed circuit assembly (PCA) associated with that pen. The PCA on the right (when facing recorder) is for pen 1 (purple); the PCA on the left is for pen 2 (red).

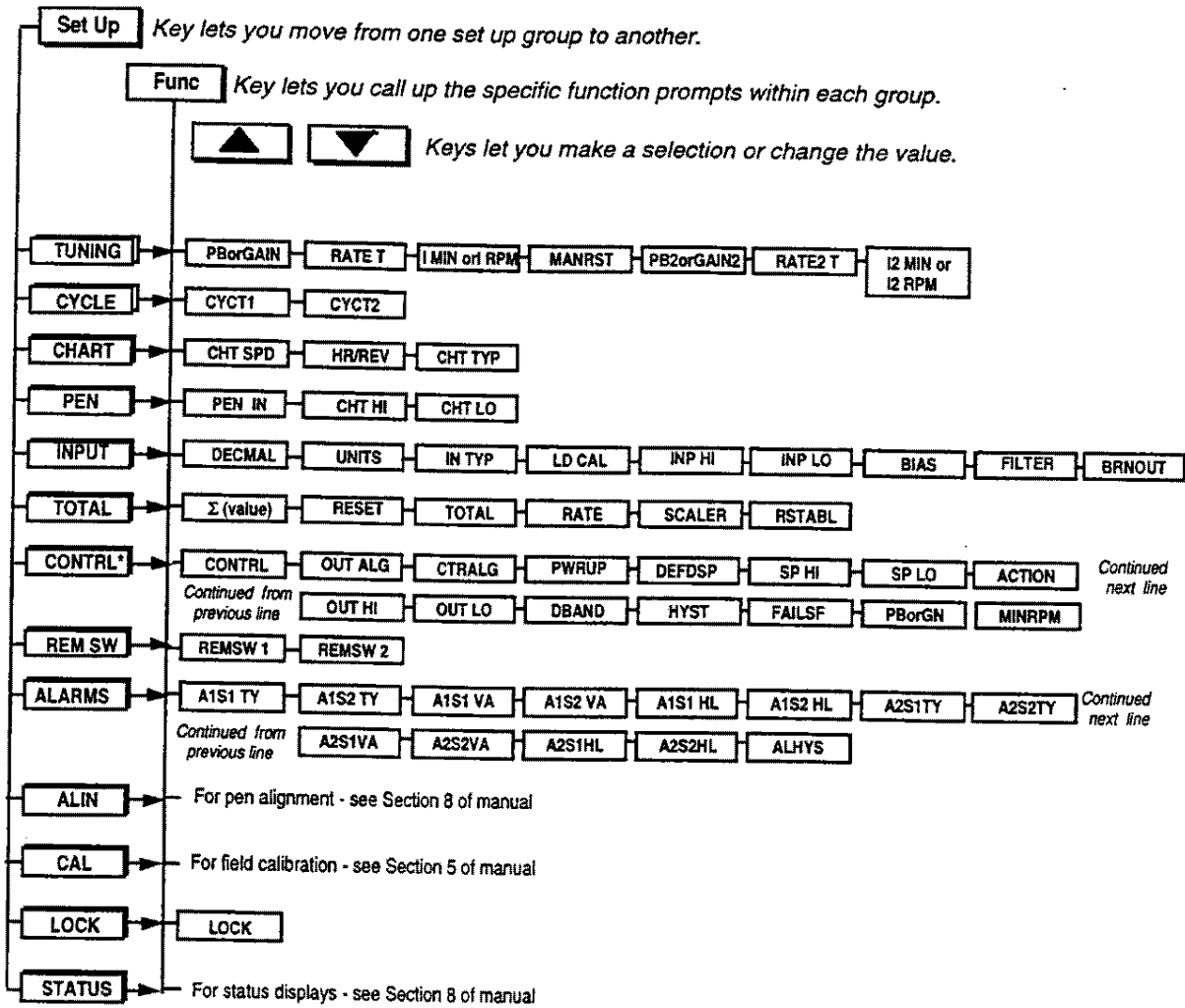
If the hardware supports optional relay outputs for each pen, parameters are available for configuring control and/or alarms using these outputs. If an optional relay is used, then it can be wired for Normally Open and Normally Closed action.

Hardware switches must be set to match the input type, and to specify input state in case of input failure.

### 4.3.2 Configuration Prompts

#### Diagram: prompt hierarchy

Figure 4-2 is an overview of the hierarchy of set up groups and their associated function prompts. Read the diagram from left to right. (Some prompts may not be displayed, depending on the configuration and lock status of the recorder.)



\* For Limit Control Prompts, See Table 4-16.

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Figure 4-2 Prompt Hierarchy

### 4.3.3 How to Get Started

#### Read the configuration tips

Read subsection 4.3.4 "*Configuration Tips*". These tips will help you configure your recorder quickly and easily.

#### Set the hardware switches

Refer to subsection 4.3.5 "*Switch Settings*" for required hardware switch settings on the printed circuit assembly associated with each pen. The hardware switches should be set before specifying values for function parameters.

#### Install recorder

Connect the recorder to AC power as described in Section 2 so that you will be able to configure the unit using the display.

#### Become familiar with the configuration procedure

Read subsection 4.3.6 "*Configuration Procedure*" to learn how to access the set up groups, and the function parameters within each of these groups (shown in the prompt hierarchy in Figure 4-2).

#### Assign application-specific values to the set up parameters

The set up groups and function parameters are listed in this section in the order of their appearance on the display. The list includes the name of the prompt, the range of setting or selections available, the definition of each parameter, and the factory setting. It allows you to quickly find a parameter and determine the appropriate value or selection for your application.

#### Complete configuration record sheet

Subsection 4.3.17 contains a "*Configuration Record Sheet*". It is good practice to record your instrument's configuration for future reference.

## 4.3.4 Configuration Tips

### Introduction

Table 4-3 contains tips that will help you enter the configuration data more quickly. If you can not change configuration parameters, check the status of the "LOCK" parameter (see subsection 4.3.16).

**Table 4-3 Configuration Tips**

Function	Tip
<b>Displaying Groups</b>	Use the <b>[SET UP]</b> key to display the set up groups. The group titles are listed in this section in the order that they appear in the recorder.
<b>Displaying Functions</b>	Use the <b>[FUNC]</b> key to display the individual function parameters under each group. The prompts are listed in the order of their appearance in each group.
<b>Scrolling</b>	To get to a set up group prompt more quickly, hold the <b>[SET UP]</b> key in. To get to a function prompt more quickly, hold the <b>[FUNC]</b> key in. The display will scroll through the parameters.
<b>Changing values quickly</b>	<p>When changing the value of a parameter, you can adjust a more significant digit in the upper display by holding in one key <b>[▲]</b> or <b>[▼]</b>, and pressing the other <b>[▲]</b> or <b>[▼]</b> at the same time.</p> <ul style="list-style-type: none"> <li>• The adjustment will move one digit to the left.</li> <li>• Press the key again and you will move one more digit to the left.</li> </ul>
<b>Exiting SET UP mode</b>	To exit Set Up mode, press the <b>[DISP]</b> key. This returns the display to the same state it was in immediately preceding entry into the Set Up mode.
<b>Timing out from Set Up mode</b>	If you are in Set Up (configuration) mode and do not press any keys for one minute, the recorder will time out and revert to the mode and display that was being used prior to entry into Set Up mode.

## 4.3.5 Switch Settings

### 4.3.5.1 Introduction

#### Significance of hardware switches in models with display

**SW6 input switches:** The display and keypad are used to configure the software on each pen channel's printed circuit assembly (PCA). In addition, the input hardware switches 1, 3, 4, 5 and 6 in SW6 must be set to match the input type as described in subsection 4.3.5.2. This is required so that the recorder hardware will provide an appropriate value to the recorder software.

**SW6 burnout switch 2:** This burnout switch should be set to specify whether the input used by the recorder for the channel should be sent over range or under range if the input to the recorder fails while the "BRNOUT" parameter value is "NONE". Alternatively, if the "BRNOUT" parameter has a value of "UP" or "DOWN" switch 2 should be set to match. Details are provided in subsection 4.3.5.3.

**SW1 configuration switches:** In a recorder model having a display and keypad all switches in SW1 will be ignored if the cable from the display and keypad assembly is plugged into J6 on the PCA associated with the pen channel. (SW1 switches are used to configure recorder models that do not have a display and keypad as described in Section 3.)

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### ATTENTION

If the display cable is disconnected after the software has been configured using the display and keypad, the recorder's behavior will depend on the settings of the SW1 switches. If all SW1 switches are in the OFF position when the cable is disconnected, the recorder will continue to use the software configuration entered with the display and keypad. However, if all SW1 switches are not OFF when the cable is disconnected, the recorder will use the configuration in Table 3-3 that matches the SW1 switch settings. (If the switch setting combination does not match any configuration in Table 3-3, the recorder will use configuration #1.)

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### Safety precautions

Exercise appropriate safety precautions when setting switches.



## WARNING—SHOCK HAZARD



SET THE SWITCHES DESCRIBED IN THIS SECTION WITH THE UNIT POWER DISCONNECTED. BE SURE TO AVOID TOUCHING POWER CONNECTIONS AT TB1. FAILURE TO OBSERVE THIS PRECAUTION CAN RESULT IN EXPOSURE TO A POTENTIALLY LETHAL SHOCK HAZARD. MORE THAN ONE SWITCH MAY BE REQUIRED TO DE-ENERGIZE UNIT.

### 4.3.5.2 Setting SW6 Input Switches

#### SW6 switches 1, 3, 4, 5, 6 define input type

In a recorder model having a display and keypad the input switches at SW6 must be set to match the type of input to be used. The location of SW6 is shown in Figure 4-3. The appropriate switch settings for the various input types are shown in Table 4-4.

Note that the setting of switch 2 in SW6 is not related to input type. It is used, along with the "BRNOUT" parameter in the input group, to specify the effects of an input failure as described in subsection 4.3.5.3.

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#### ATTENTION

The ON position for SW6 switches is toward the left side of the printed circuit assembly (when facing recorder.)

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Table 4-4 SW6 Input Switch Settings for Models Having Display and Keypad

Input Type	SW6 Input Switch Settings					
	1	2	3	4	5	6
0 to 1 V	off	★	off	ON	off	off
0 to 2 V	off	★	off	ON	off	off
0 to 5 V	off	★	off	ON	off	off
0 to 10 V	off	★	off	ON	off	off
1 to 5 V	off	★	off	ON	off	off
0 to 10 mV	off	★	off	off	ON	off
0 to 100 mV	off	★	off	off	ON	off
0 to 200 mV	ON	★	off	off	off	off
0 to 20 mA	off	★	off	ON	off	ON
4 to 20 mA	off	★	off	ON	off	ON
all thermocouples	off	★	off	off	ON	off
all RTDs	off	off	ON	off	ON	off

★ This switch is used to select whether the input value used by the recorder should be driven over range or under range in case of input failure. See subsection 4.3.5.3.

### 4.3.5.3 Setting SW6 Burnout Switch

#### Overview

What happens to the displayed input value when the input signal to the recorder fails depends on several factors: the input type, the setting of SW6 switch 2, and the value of the "BRNOUT" parameter in the input set up group.

#### SW6 switch 2 OFF for RTD

If the input to the pen channel is from an RTD, SW6 switch 2 must always be set to OFF.

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#### CAUTION

If SW6 switch 2 is ON for an RTD input, the recorder will not be able to process the input correctly, even when the input sensor is providing a valid input signal.

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#### SW6 switch 2 setting unimportant for Volt, mV, and mA inputs

It does not matter whether SW6 switch 2 is ON or OFF if the pen channel uses a Volt, mV, or mA input signal. In case of input failure, the displayed input value will show little change, regardless of the setting of SW6 switch 2 or the value assigned to the "BRNOUT" parameter. (However, the value of "BRNOUT" is still important to implementing your control strategy because the value of "BRNOUT" affects the output used in case of input failure. See subsection 4.3.11 for details.)

#### SW6 switch 2 setting determines displayed thermocouple input if BRNOUT = NONE

If the value of "BRNOUT" is "NONE" when a thermocouple input fails, then the setting of SW6 switch 2 determines whether the displayed input value will be under range or over range. The recorder can display 1% over or under range for thermocouples.

- If SW6 switch 2 is ON, the displayed value will be under range.
- If SW6 switch 2 is OFF, the displayed value will be over range.

If the pen is configured to trace the input value ("PENIN" pen set up parameter value is "INP"), then the pen will also be driven over or under range.

Note that the over range or under range input will have no effect on output. When "BRNOUT" = "NONE", the recorder uses the configured failsafe value as the output in case of input failure, rather than a calculated value based on input.

#### SW6 switch 2 setting for thermocouple inputs should match BRNOUT if BRNOUT = UP OR DOWN

We recommend that, in the case of thermocouple inputs, SW6 switch 2 be set to OFF if "BRNOUT" = "UP" and ON if "BRNOUT" = "DOWN".

When the input failure first occurs, the displayed input for a thermocouple input will briefly be driven according to the hardware switch setting. However, as soon as the software recognizes that it has received an out-of-range input signal, the displayed input will be driven according to the value, "UP" or "DOWN", configured for "BRNOUT". The displayed value (over range or under range) as configured in "BRNOUT", will remain on the display until a valid input is restored.

If the switch and the set up parameter do not match, operator confusion may result. For example, in case of mismatch the displayed value could first go under range, then quickly go over range. However, except for the brief period before the software reacts to the out-of-range value, the effect of the mismatch is insignificant.

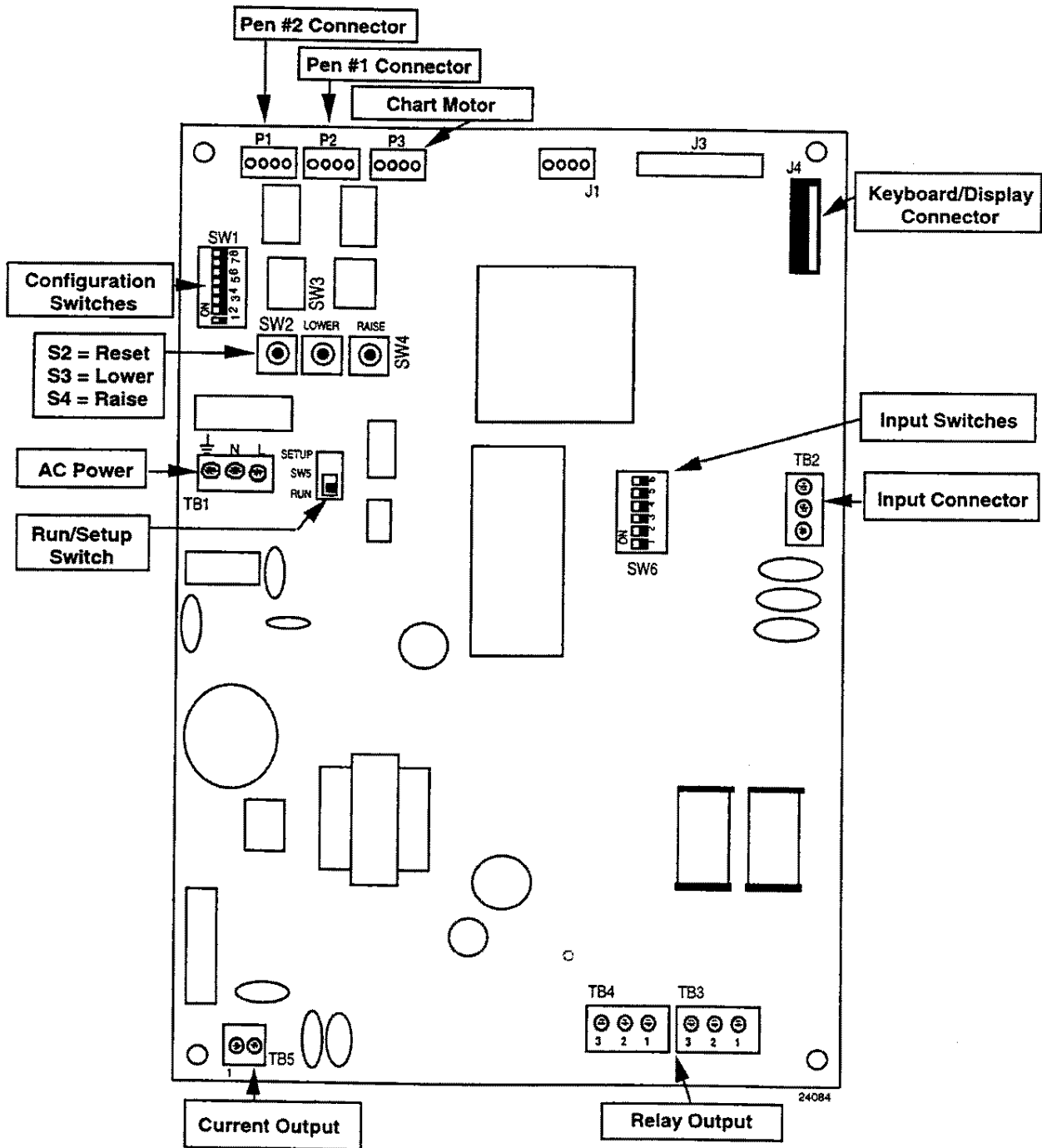


Figure 4-3 Location of Switches and Relays