

Introduction

This release note contains information on an added Model 2303 feature, which allows the current limit to control the external relay circuit. This feature applies only to the Models 2303 and 2303B. It does not apply to the Model 2303-PJ. Section 2 of the Model 2303 User's Manual provides information on current limits, and Section 5 describes relay control.

Firmware revision level

This release note applies to Model 2303 and 2303B units with firmware revision A06 or later. The firmware revision level is displayed as part of the power-up cycle, and you can display the revision by using the FIRMWARE REVISION selection in the MAIN MENU (manual Section 1), or with the *IDN? query via remote (manual Section 8).

Overview

As shown in Figure 1 and Figure 2, the relay output responds to the current limit mode in two modes (limit relay and trip relay). With the limit relay mode (Figure 1), the relay output turns ON (ONE) when the current limit is reached, and the relay output turns OFF (ZERO) when the unit is not in current limit. With the trip relay mode (Figure 2), the relay output turns ON and the power supply output turns OFF when the current limit is tripped, and the unit must be manually reset to turn the relay output OFF and the power supply output back ON. If the condition that caused the trip has not be corrected, the output will trip again.

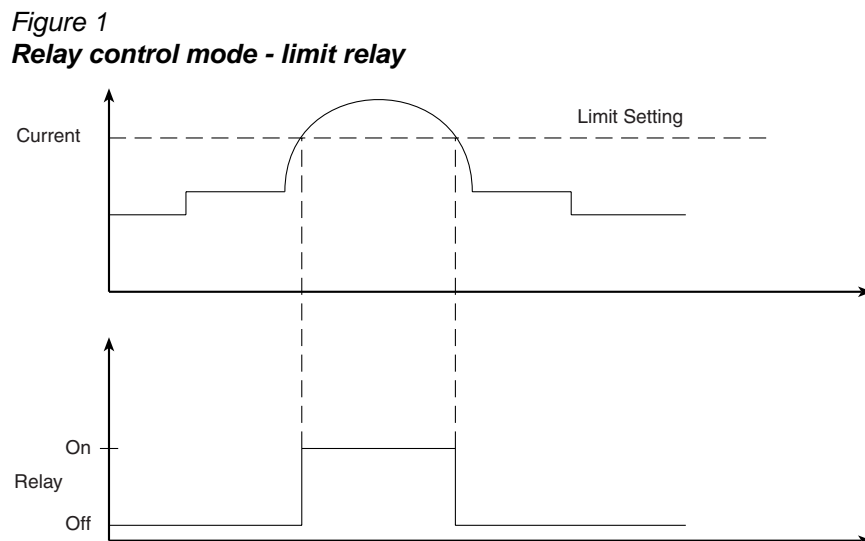
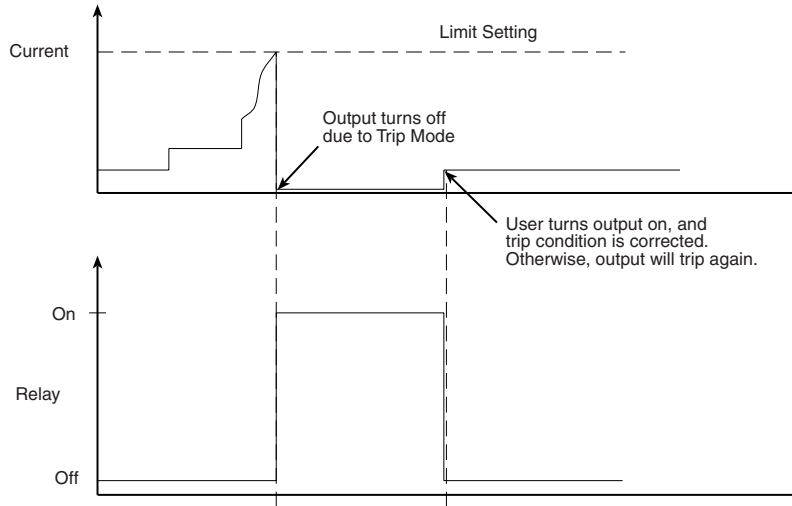


Figure 2
Relay control mode - trip relay



Front panel operation

Use the CURRENT LIM MODE submenu located in the MAIN MENU to select the current limit mode, then choose the desired mode summarized in Table 1 below. Note that the LIMIT RELAY and TRIP RELAY selections have been added to support the current limit relay control modes.

Table 1
Front panel limit selections

Submenu Choice*	Current Limit Effect	Output State	Relay State
LIMIT	Current will be limited.	Remains ON	Not affected.
TRIP	Current will trip.	Goes OFF	Not affected.
LIMIT RELAY	Current will be limited.	Remains ON	Tracks current limit state.
TRIP RELAY	Current will trip.	Goes OFF	Tracks current limit state.

* Added menu choices in firmware revision A06 and later to set current limit relay control mode in **bold**.

As discussed in manual Section 5, you can also use the OUTPUT RELAY submenu to set the relay state to ONE (relay closed) and ZERO (relay open). With current limit mode set to LIMIT or TRIP, the relay state operates independently based on the menu choice selected. However, with LIMIT RELAY and TRIP RELAY, the menu choices may be used to override the relay state and cause the relay state not to track the current limit state. For LIMIT RELAY, this condition may exist only momentarily while the limiting condition still exists. TRIP RELAY allows you to clear the relay tracking while correcting the tripping condition. Once corrected and the output state is turned ON, tracking will resume.

GPIB operation

As shown in Table 2, the “SOURce:CURRent[:LIMit]:TYPE” command includes new parameters to support current limit relay control. In addition to previous LIMit and TRIP parameters, LIMRELAY (or LIMITRELAY) selects the limit relay control mode, while TRIPRELAY selects the trip relay control mode.

For example, this command selects the trip relay control mode:

```
SOUR:CURR:TYPE TRIPRELAY
```

Table 2
GPIB limit relay control parameters

Parameter Choice*	Current Limit Effect	Output State	Relay State
LIMit	Current will be limited.	Remains ON	Not affected.
TRIP	Current will trip.	Goes OFF	Not affected.
LIMRELAY or LIMITRELAY	Current will be limited.	Remains ON	Tracks current limit state.
TRIPRELAY	Current will trip.	Goes OFF	Tracks current limit state.

* Added “SOURce:CURRent[:LIMit]:TYPE” parameters in firmware A06 and later to support current limit relay control in **bold**.

Note that you can also use the OUTPut:RELAy command to set the relay state (see manual Section 5). The parameter choices are ONE and ZERO. With the current limit mode set to LIMit or TRIP, the relay state operates independently based on the command parameter. However, with LIMRELAY (or LIMITRELAY) and TRIPRELAY, the command parameters may be used to override the relay state and cause the relay state not to track the current limit state. For LIMRELAY, this condition may occur only momentarily while the limiting condition still exists. With TRIPRELAY, this condition allows you to clear the relay tracking while correcting the tripping condition. Once corrected, and the output state is turned ON, tracking will resume.

Operating notes

When the current limit relay control mode is selected, the relay may oscillate or not have sufficient time to pull in if the current value is fluctuating around the set current limit, depending on how rapidly the current is fluctuating around the current limit point.