
DLR334 Series

TWO RELAYS AND SETPOINTS OPTION

OPERATION/INSTALLATION MANUAL

DLR334 SERIES**ADDENDUM 1****TWO RELAYS AND SETPOINTS OPTION****OPERATION/INSTALLATION MANUAL****TABLE OF CONTENTS**

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1	GENERAL INTRODUCTION	1
2	SETPOINTS (TRIP POINTS) DESCRIPTION	1
3	TRIP POINT SPECIFICATIONS	1
4	RELAY WIRING	2
5	LOGIC OUTPUT 2	
6	TRIP POINT SETUP	3
7	FRONT PANEL TRIP STATUS INDICATION	4
8	FRONT PANEL TRIP POINT MONITOR AND ENTRY 5	
9	SERIAL I/O	6
APPENDIX A	EXAMPLES	A1
APPENDIX B	BOARD INSTALLATION	B1

ADDENDUM 1

TWO RELAYS AND SETPOINTS OPTION FOR DLR334

1. GENERAL INTRODUCTION

The Analog / Relay / RPM Option board (KKY8924-) can be obtained as a Relay board (KKY8924-1) used with the Two Relays And Setpoint Option. The Option offers two form C relays that are used in conjunction with dual setpoints (trip points) or trip bands. The DLR334 does not support the RPM Option on the KKY8924 board. The option is supported by the DLR334 program KDG-1 version 13 or greater.

2. SETPOINTS (TRIP POINTS) DESCRIPTION

The Setpoint Option is a dual single trip point or a dual band trip performed in the meter's CPU on the processed pressure data. The "Option" provides relay contact closures on the KKY8924-board as well as a visual indication whenever a recorded data value is in or out of a preset trip point or band as set by the configuration. The configurable hysteresis settings are included which can be used to decrease drop-out threshold levels thus minimizing noise effects. Each limit hysteresis can be configured for either ascending or descending hysteresis application.

The trip point type of set point is defined as a single trip point with its associated hysteresis that produces an output when the pressure value is above or below this trip point. The trip is activated at the center of the trip value.

The trip band is defined by two trip points with individual hysteresis and polarity settings selected in the Trip Pt setup that produces an output when the pressure is inside or outside the band.

All settings related to the trip points are configured by the operator in the 1/0 menu under "Trip Pts?" and are stored in the non-volatile memory. When enabled by the setup, the trip points can be modified from the front panel in the "run" mode. The recalled trip points in the "run" mode are expressed in the current selected units. *The trip point values are entered in the base mode units while in the "run" mode.*

If a faster response is required for the trip point, set the filter, "FILTR 1" parameter in the "SETUP CONFIG" menu to a lower number.

3. TRIP POINT SPECIFICATIONS:

- ◆ *Number of trip points/bands:* Two
- ◆ *Trip point range:* 0 to \pm 100% of full scale capacity.
- ◆ *Data Select:* Pressure

- ◆ *Trip point settability:* Set in display (engineering) units with resolution of the base unit configuration. In "run" mode set in base.
- ◆ *Trip point Hysteresis:* Set in display (engineering) units with resolution of the base unit configuration to a maximum setting of full scale.
- ◆ *Output Relay:* Arrangement: Form C contact closure.
MaxSwitchingVoltage: 100VDC,220VAC
Max Current:
AC (resistive load) 120vac: 1 A
AC (resistive load) 220vac: 1/2 A
DC (resistive load): 1/2 A
- ◆ *Output Logic:* Trip 1 on OUT 1 and Trip 2 on OUT 2. A logic "O" is output "on" (energized).
- ◆ *Output Activation select:* If set for "**Under**" the output relay is "**ON**" (energized) when the data is below (under) the Trip point or in the Trip Band, if band type selected. If set for "**Over**" the output relay is "**ON**" when the data is at or above (over) the Trip point or out of the Trip Band.
- ◆ *Power-up reset Protection:* All relays are held "off" until the CPU re-establishes proper operating conditions caused by power interruptions.
- ◆ *Indicators:* Can be set in configuration for two types of display indications. If set for "TRIP PTS", the display will indicate the active outputs by "TRIP 1 ", "TRIP 2", or TRIP 1 & 2". If set for "ACCEPT" the alpha display will indicate "LOW", "ACCEPT" and "HIGH" for trip band 1.
- ◆ *Serial I/O:* All Trip point parameters can be recalled or entered via the Serial Full Duplex.

4. RELAY WIRING:

RELAY CONNECTIONS on OPTION BOARD			
	FUNCTION	BOARD MARKING	RELAY BLOCK POSITION
RELAY 1	OUT 1 N.C.	OUT 1 N.C	TB3-1
	OUT 1 N.O.	OUT 1 N.O.	TB3-2
	OUT 1 COM	OUT 1 COM	TB3-3
RELAY 2	OUT 2 N.C.	OUT 2 N.C.	TB3-4
	OUT 2 N.O.	OUT 2 N.O.	TB3-5

5. LOGIC OUTPUT:

The logic output is available on the I/O terminal block TB2 on the CPU assembly.

Trip 1: TB2-2

Trip 2: TB2-3

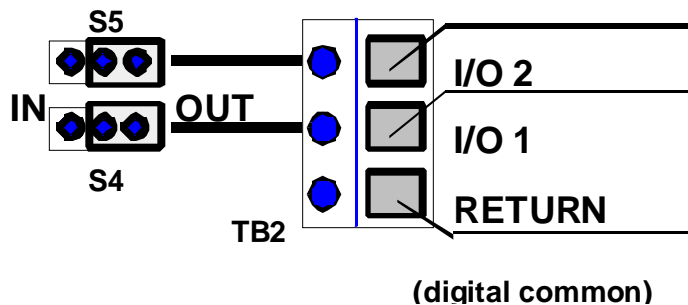
The I/O must be selected by jumper plugs P4 and P5 for OUT on the CPU assembly.

P4 set for OUT at S4

P5 set for OUT at S5

A trip "ON" condition "relay energized" is a logic "0"

Jumper plugs shown on **S4**
and **S5** are configured as
OUTPUTS.



6. TRIP POINT SETUP

SELECTING TRIP PT SETUP:

1. MAIN SETUP: Close rocker switch 1 only.
 - Press the ↓ "NO" key until the "SETUP I/O ?" is selected and then press ↑ "YES" key.
 - In the SETUP I/O press the ↓ "NO" key until the "SETUP TRIP PT ?" is selected and then press ↑ "YES" key.
2. SET-UP I/O (direct): Close rocker switch 3 only.
 - Indicator is placed directly into the I/O set up mode.
 - In the SETUP I/O press the ↓ "NO" key until the "SETUP TRIP PT ?" is selected and then press ↑ "YES" key.

Numeric Data Entry

- Each press of the ⇐ right or left ⇒ key moves the position of the digit to be changed. This position is marked by the flashing of the selected digit.
- The selected digit is then incremented or decremented using the up ↑ / down ↓

keys.

- After entering the desired value press the “**ENTER**” key to accept this value. Step to the next set up using the down ↓ key.

TRIP PT MENU TABLE

- The Lower Trip Band value (TRIP1.L and TRIP2.L) and associated parameters (HYST1.L and HYST2.L) do not appear in the menu when the “TRIP PT” Type is selected. The Lower value is automatically set for minus full range in this mode
- The parameters in **BOLD** letters are the default values.

TRIP POINT SELECT MENU		
PARAMETER ↑↓	CHOICES ←→	DESCRIPTION
TRIP	OFF ON	When OFF, front panel trip indication can not be selected and the Trip Menu is disabled. Trip Option enabled
DISPLAY	TRIP ACCEPT	Display indication for both trip point 1 and trip point 2. Applies to trip band 1 only (trip band 2 set to OFF).
RECALL	NONE VIEW MODIFY	Can not view trip point status from front panel. Can view trip point status from front panel only. Can view and modify trip point status from front .
TRIP 1	OFF ON	Trip 1 is disabled. Trip 1 is enabled.
TYPE 1	TRIP PT BAND	Trip 1 Point mode. High trip entry only. Trip 1 Band mode. High and low trip entry.
TRIP 1	UNDER OVER	Sets polarity of trip point 1 output to be active under (below) trip point or in band. Sets polarity of trip point 1 output to be active at and over (above) trip point or out of band .
TRIP1.H	±XXXXX0	Upper trip point 1 value
TRIP1.L	±XXXXX0	Lower trip point 1 value (applies to BAND type only)
HYST1.H	DESCEND ASCEND	Hysteresis upper trip point 1 applies to descending data. Hysteresis upper trip point 1 applies to ascending data.
HYST1.H	±XXXXX0	Hysteresis upper trip point 1 value.
HYST1.L	DESCEND ASCEND	Hysteresis lower trip point 1 applies to descending data. Hysteresis lower trip point 1 applies to ascending data.
HYST1.L	±XXXXX0	Hysteresis lower trip point 1 value.
TRIP 2	OFF ON	Trip 2 is disabled. Trip 2 is enabled.
TYPE 2	TRIP PT BAND	Trip 2 Point mode. High trip entry only. Trip 2 Band mode. High and low trip entry.
TRIP 2	UNDER OVER	Sets polarity of trip point 2 output to active under (below) trip point or in band. Sets polarity of trip point 2 output to active at and over (above) or out of band.
TRIP2.H	±XXXXX0	Upper trip point 2 value.
TRIP2.L	±XXXXX0	Lower trip point 2 value (applies to BAND type only).
HYST2.H	DESCEND ASCEND	Hysteresis upper trip point 2 applies to descending data. Hysteresis upper trip point 2 applies to ascending data.

HYST2.H	±XXXXX0	Hysteresis upper trip point 2 value.
HYST2.L	DESCEND ASCEND	Hysteresis lower trip point 2 applies to descending data. Hysteresis lower trip point 2 applies to ascending data.
HYST2.L	±XXXXX0	Hysteresis lower trip point 2 value.

7. FRONT PANEL TRIP STATUS INDICATION:

Display select: The Trip Status can be monitored in the run mode by using the “DISPLAY” key to step to the trip status display. The units will only be displayed momentarily when changed by the unit selection key.

Setup: Can be set in configuration for two types of display indications under the “DISPLAY” parameter for “TRIP” or “ACCEPT”.

- "TRIP" indication, the alpha display will indicate the trip out active status.
 - “TRIP” No Trip outputs active
 - “TRIP 1” Trip out 1 active
 - “TRIP 2” Trip out 2 active
 - “TRIP 1 & 2” Trip out 1 and 2 active

Note: Trip status is affected by the output polarity setting of “UNDER” or “OVER”.
- “ACCEPT” indication, the alpha display will indicate "LOW", "ACCEPT" and "HIGH" for trip band 1. This type of indication is only applicable to the “BAND” type Trip 1. Trip Band 2 should be set to “OFF”.
 - “LOW” Below Trip Band
 - “ACCEPT” In Trip Band
 - “High” Above Trip Band

Note: Trip status is NOT affected by the output polarity setting of “UNDER” or “OVER”.

8. FRONT PANEL TRIP POINT MONITOR AND ENTRY:

MENU SETUP: The trip points can be viewed or modified from the front panel when set in the “TRIP PT” menu.

- **View:** Enables the unit for front panel viewing by setting the "DISPLAY" parameter to "VIEW" in the "TRIP PT" Menu". With this setting the Trip Point Values can be recalled but not modified.
- **Modify:** Enables the unit for front panel viewing and entry by setting the

"DISPLAY" parameter to "MODIFY" in the "TRIP PT" Menu".

TRIP POINT VALUE RECALL: Recall the Trip Point values by pressing the "DISPLAY" key in the run mode until the trip point prompts (triP1.H, triP1.L, triP2.H or triP2.L) are indicated. The Trip Point values are expressed in the current selected pressure display units. Trip Point values are entered in Base Mode Units.

DISPLAY RECALLED TRIP VALUES			
Display Prompt	Trip Point Type	Trip Band Type	Remarks
TriP1.H	Trip point 1	Trip Band 1 High Trip	Not shown if "TRIP 1" set to "OFF" In "TRIP PT" menu.
TriP1.L	-na-	Trip Band 1 Low Trip	
TriP2.H	Trip Point 2	Trip Band 2 High Trip	Not shown if "TRIP 2" set to "OFF" In "TRIP PT" menu.
TriP2.L	-na-	Trip Band 2 Low Trip	

TO MODIFY A TRIP VALUE: Enter the trip value in the base mode units as described below. The unit will automatically switch to the base mode units following entry and prompt with the base units.

Activate the entry by pressing the **← (ZERO) key** when the trip value is recalled on the display. If currently in a converted unit display, the unit will automatically switch to the base units. The display will prompt with the base units.

To modify the points utilize the arrow keys as follows:

- Each press of the **← right or left ⇒ key** moves the position of the digit to be changed. The position is marked by the flashing of the selected digit.
- The selected digit is then incremented or decremented using **the up ↑ / down ↓ keys**.
- After entering the desired value press the **"ENTER"** key to accept this value. *The will switch to the base units, if not there already, and prompt with the base units.*
- The trip modification can be aborted during entry by pressing the **"CE"** key.

9. SERIAL I/O

All Trip point menu parameters can be recalled or entered via the Serial Full Duplex when in the setup mode. For full details of the trip point serial I/O refer to the DLR334 Duplex Serial Protocol document.

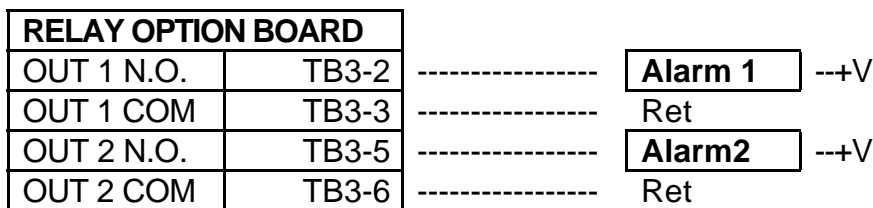
EXAMPLE 1(Dual Trip Point)

Require an alarm to be activated when the pressure exceeds 50 PSI and a second alarm to be activated when the pressure exceeds 75 PSI. The trip points must be able to be entered from the front panel in the “run” mode. Assume the base mode set for PSI. To eliminate output noise set the hysteresis for 0.1 PSI when descending.

In the TRIP PT menu set the following:

TRIP POINT SELECT MENU		
PARAMETER ↑↓	CHOICES ←→	DESCRIPTION
TRIP	ON	Trip Option enabled
DISPLAY	TRIP	Display indication for trip point as TRIP x when output active.
RECALL	MODIFY	Can view and modify trip point status from front panel.
TRIP 1	ON	Trip 1 is enabled.
TYPE 1	TRIP PT	Trip Point mode. High trip entry only.
TRIP 1	OVER	Sets polarity of trip point 1 output to be active over (above) trip point.
TRIP1.H	+ 50.00	Trip Point 1 value set for 50 PSI
HYST1.H	DESCEND	Hysteresis upper trip point 1 applies to descending data.
HYST1.H	+ 0.10	Hysteresis upper trip point 1 value of 0.01 PSI.
TRIP 2	ON	Trip 2 is enabled.
TYPE 2	TRIP PT	Trip Point mode. High trip entry only.
TRIP 2	OVER	Sets polarity of trip point 2 output to be active over (above) trip point.
TRIP2.H	+ 75.00	Trip point 2 value set for 75 PSI
HYST2.H	DESCEND	Hysteresis upper trip point 2 applies to descending data.
HYST2.H	+ 0.10	Hysteresis upper trip point 2 value set for 0.10 PSI.

Connect output as follows:



Results:

Alarm 1 will be active when pressure is above 50 PSI and will deactivate when the pressure goes below 49.90 PSI.

Alarm 2 will be active when pressure is above 75 PSI and will deactivate when the pressure goes below 74.90 PSI.

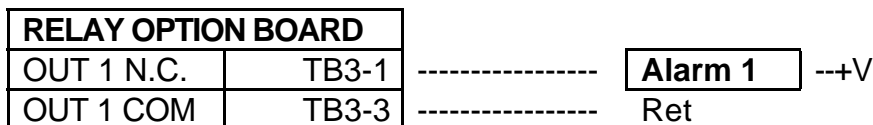
EXAMPLE 2 (Trip Band)

Require an alarm to be activated when the pressure falls out of an acceptance band of 25 PSI to 50 PSI. The trip points must be able to be entered from the front panel in the “run” mode. Assume the base mode set for PSI. To eliminate output noise set the hysteresis for 0.1 PSI . Require a front panel status display to indicate when the pressure is acceptable or high or low. For failsafe it is required that the alarm will sound if the indicator losses power.

In the TRIP PT menu set the following:

TRIP POINT SELECT MENU		
PARAMETER ↑ ↓	CHOICES ← →	DESCRIPTION
TRIP	ON	Trip Option enabled
DISPLAY	ACCEPT	Applies to trip band 1 only.
RECALL	MODIFY	Can view and modify trip point status from front panel .
TRIP 1	ON	Trip 1 is enabled.
TYPE	BAND	Trip Band mode. High and low trip entry.
TRIP 1	UNDER	Sets polarity of trip band 1 output to be active when in band .
TRIP1.H	+ 50.00	Trip band 1 upper value
TRIP1.L	+ 25.00	Trip band 1 lower value
HYST1.H	DESCEND	Hysteresis upper trip band 1 applies to descending data.
HYST1.H	+ 0.10	Hysteresis upper trip band 1 value.
HYST1.L	ASCEND	Hysteresis lower trip band 1 applies to ascending data.
HYST1.L	+ 0.10	Hysteresis lower trip band 1 value.
TRIP 2	OFF	Trip 2 is disabled.

Connect output as follows:



Results:

By using N.C. Connection the Alarm will sound if Indicator losses power.

When the pressure is between 25 and 50 PSI the display will say “ACCEPT” and the output alarm will be inactive.

When the pressure is over 50 PSI, the display will prompt with “HIGH” and the output alarm will be active. The alarm will be inactive when the pressure falls below 49.9 PSI.

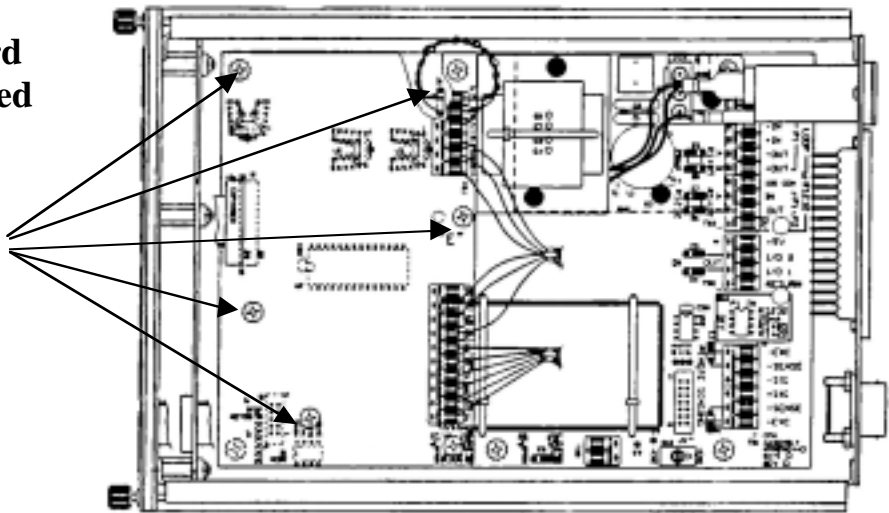
APPENDIX A - EXAMPLES

When the pressure is under 25 PSI, the display will prompt with “LOW” and the output alarm will be active. The alarm will be inactive when the pressure rises over 25.1 PSI.

INSTALLATION

The Relay Option Board (KKY8924-1) is mounted to the CPU bd. assy. on standoffs as shown.

(10) m/f _” standoffs (2per)
 (5) panhead screws



WIRING:

KKY8924-1 BOARD TO CPU BOARD WIRING:

- ◆ Connect the 20 conductor ribbon cable between **J5 EXPANDER** on the CPU assy. (**KKR8924-**) to **J1** on the Analog/Relay/RPM assy. (**KKY8924-1**).

** Be sure to connect the ribbon cable so that **pin 1** of **J5** connects to **pin 1** of **J1**.*

- ◆ The two wire red and black cable provides power to the analog assy. The single in-line plug of this cable plugs into **J6** on the CPU assy. (**KKR8924 -**) and the black and red wires are terminated at **TB2** on the assy.

	KKY8924-BOARD	WIRE COLOR	CPU BOARD
+V	TB4-4	Red wire	J6-1
COM	TB4-5	Black wire	J6-2
-V	TB4-6	White wire	J6-4