



Optidrive Applications Support Library

Application Note	AN-ODE-3-009
Title	Programming the Drive User Relay
Related Products	Optidrive E2
Level 1	1 – Fundamental - No previous experience necessary 2 – Basic – Some Basic drives knowledge recommended 3 – Advanced – Some Basic drives knowledge required 4 – Expert – Good experience in topic of subject matter recommended

Overview

The Optidrive E3 has an internal relay which can be programmed to open or close depending upon certain operating conditions within the drive. Other devices and controllers can then be integrated with the drive so that an action can be performed based upon the operating status of the drive.

This application note provides an overview of the parameter settings for the relay.

Parameters

P-18 User Relay Output Function Select

The condition under which the output relay closes is programmed using this parameter.

When the relay is activated the normally open contact (T11) closes to the common contact (T10).

The following options can be selected:

P-18	Function	Explanation
0	Drive Enabled	The relay contacts close when the drive enable signal is present and the drive has gone to an enabled state (i.e. no trip or fault present).
1	Drive Healthy	The relay contacts close when the drive is powered up and no fault exists. If the power is removed, or the drive trips, the relay contacts will open.
2	Motor At Target Speed	The relay contacts close when the drive output frequency matches the requested set-point frequency.
3	Drive tripped	The relay contacts are open when the drive is powered up and no fault exists. If the drive trips the relay contacts will close.
4	Output Frequency \geq limit	The relay contacts close when the output frequency of the drive is greater than the limit programmed in P-19 and reopens when the output frequency falls below the level programmed in P-19.
5	Motor Current \geq limit	The relay contacts close when the output current of the drive is greater than the limit programmed in P-19 and reopens when the output current falls below the level programmed in P-19.
6	Output Frequency $<$ limit	The relay contacts close when the output frequency of the drive is below the limit programmed in P-19 and reopens when the output frequency goes above the level programmed in P-19.
7	Motor Current $<$ limit	The relay contacts close when the output current of the drive is below the limit programmed in P-19 and reopens when the output current goes above the level programmed in P-19.

P-18	Function	Explanation
8	Analog Input 2 > Limit	The relay contacts close when the signal level applied to analog input 2 (as displayed in P00-02) exceeds the level programmed in P-19, and reopens when it is equal to or less than this threshold. This may be useful in PI control pumping applications, where the output relay can provide a "High Pressure" alarm if the feedback signal exceeds a limit.
9	Drive Ready to Run	The drive is ready to run, defined as <ul style="list-style-type: none"> - Mains power is applied - No trip is present

P-19 Relay Adjustable Threshold Limit

This parameter is used to define the closing and opening level (limit) for the output relay where the switching point is a variable or adjustable value. The parameters are active when P-18 (User Relay Output Function Select) is set to a value between 4 and 7. The adjustable threshold parameter is set as a percentage of the function selected in P-18. The percentage values set relate to the following drive values:

P-18	Function	P-19 Settings
4	Output Frequency \geq limit	P-19 is set as a percentage of P-01 (Motor Maximum Speed).
5	Motor Current \geq limit	P-19 is set as a percentage of P-08 (Motor Rated Current).
6	Output Frequency < limit	P-19 is set as a percentage of P-01 (Motor Maximum Speed).
7	Motor Current < limit	P-19 is set as a percentage of P-08 (Motor Rated Current).

Example

If P-18 is set to '4' (Output Frequency \geq limit) then P-19 is set as a percentage of P-01 (Motor Maximum Speed). Assuming P-01 = 50Hz, P-19 = 50.0%, then relay contacts will close when the output frequency is equal or above 25.0Hz, and reopens when the output frequency is less than 25.0 Hz.

Relay Specifications

Terminal	Short Name	Long Name	Contact Rating
10	RL-C	Relay Output Common	Relay contacts, 250V AC, 30V DC, 5A
11	RL-NO	Relay Output NO	Relay contacts, 250V AC, 30V DC, 5A

Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	KB	30/10/15