Optidrive Applications Support Library

Application Note	AN-ODP-2-008
Title	**Selecting the Start / Restart Mode**
Related Products	**Optidrive P2**
Level **2**	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 P2 can be configured to interpret the drive enable signal in different ways when the drive first powers up. The Optidrive can be configured to automatically run following power up if the enable signal to the drive is already present. Alternatively the drive can be programmed to wait for a transition state from off to on following power up to ensure the drive does not automatically run.

The Optidrive P2, when operating in keypad mode, can also be configured to enable and run at different initial speeds, depending on the preferences of the application.

Additionally the parameter to configure the Start / Restart mode is also used to activate the auto trip reset function to define what actions to take in the event of a trip condition occurring on the drive.

All of the parameters and settings associated with these functions are discussed within this applications note.

Parameters

P2–36 Start Mode Select / Automatic Restart

P2-36 = EdgE-r (Edge run):

Drive in Terminal Mode: P1-12 = 0

The enable signal input (usually Digital input 1) is configured to be edge-triggered and requires the run signal to be re-applied *after* a trip or a power-up to start the drive. If the run input is closed prior to the mains power being applied to the Optidrive, and remains closed whilst the drive is powered up, the Optidrive P2 will not start.

"Edge-r" may be used where, for safety reasons, the drive should not start automatically on power up should the run switch already be in a closed state. In this case, the run switch must be opened and then re-closed before the drive will start. The same rule applies after clearing / re-setting a trip condition.

Drive in Keypad Mode: P1-12 = 1 or 2

The enable signal input must always by present in order for the drive to run. The drive will power up in a stop condition and the start button on the keypad will control drive start. Removal of the enable input will cause the drive to stop. Whilst the enable is present normal start/stop behaviour is controlled by the Start and Stop keys on the keypad.

P2-36 = AUto-0 (Auto-run, default):

Drive in Terminal Mode: P1-12 = 0

The enable signal input (usually Digital input 1) is configured to be automatically recognised and is not required to be re-asserted following a trip or a power-up in order to start the drive. If the run input is closed prior to the mains power being applied to the Optidrive P2, and remains closed whilst the drive is powered up, the Optidrive P2 will start.

"Auto-0" is normally used where access to the enable input is restricted and the drive needs to run as soon as mains power is applied. It must only be used where this form of start up presents no danger to personnel or equipment in the vicinity of any moving or electrical parts.

Drive in Keypad Mode: P1-12 = 1 or 2

The enable signal input must always by present in order for the drive to run. The drive will power up in a stop condition and the start button on the keypad will control drive start. Removal of the enable input will cause the drive to stop. Whilst the enable is present normal start/stop behaviour is controlled by the Start and Stop keys on the keypad.

P2-36 = AUto-1, AUto-2, AUto-3, AUto-4, AUto-5:

In this mode, the operation is similar to Auto-0, except that the user can define how many times the drive will **automatically** attempt to clear a trip and restart before permanently tripping and requiring a manual reset. The drive will make between 1 (Auto-1) and 5 (Auto-5) automatic attempts to clear the trip and restart.

The delay between restart attempts is set at 20 seconds.

The restart attempt counter (1..5) is reset by any of the following operation:

- Powering the drive down and back up again
- Pressing the reset (Stop) button on the drive keypad when the drive is tripped (displaying a trip message).
- Removing and re-applying the hardware enable signal.

P2–37 Keypad Mode Restart Speed

These values apply only when the drive is running in keypad mode, P1-12 = 1 or 2

P2-37 = 0: Minimum Speed

The Optidrive P2 will automatically run at the minimum programmed frequency (value entered into parameter P1-02) when started from the keypad, regardless of the speed it was previously running at prior to a stop or power off condition being applied. With minimum speed (P1-02) set to 0 the drive will always restart with a set point speed of 0.

P2-37 = 1: Previous Operating Speed

The Optidrive P2 will automatically run at the previous speed set point, prior to the stop condition being applied, when started from the keypad. This applies both to the drive being stopped and to the mains input power being removed (previous set-point is retained on power off). E.g. with the drive powered off whilst running at 20Hz, the next start after power on will cause the drive to run immediately up to 20Hz.

P2-37 = 2: Current Running Speed

This mode of operation is used where the drive has other speed references signals that can be selected by the user in addition to keypad operation. When set to 'current running speed' the drive will maintain its current operating speed when switching back into keypad mode.

For example, if the drive was running in preset speed mode at a speed of 35Hz and is switched from Preset speed mode into keypad mode then keypad mode operation would commence at 35Hz. If 'current running speed' was not selected (in P2-37) then the drive would revert to operating at the start-up speed defined by P2-37.

P2-37 = 3: Preset Speed 8

The Optidrive P2 will automatically run at the frequency programmed into preset speed 8 (value entered into parameter P2-08) when started from the keypad, regardless of the speed it was previously running at prior to a stop of power off condition being applied. With preset speed 8 (P2-08) set to 0 the drive will always restart with a set point speed of 0.

Appendix:

Revision History			
Version	Comments	Author	Date
1.00	Document Creation	JP	10/02/12