

Application Note

AN-VTC-09

## ***Programming the output relay***

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- **General:**

Optidrive VTC has an internal relay which can be programmed to open / close depending upon certain 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 status of the drive. There are 6 settings that can be chosen. These are described below:

- **Parameters:**

### **P2-13 Relay output function select**

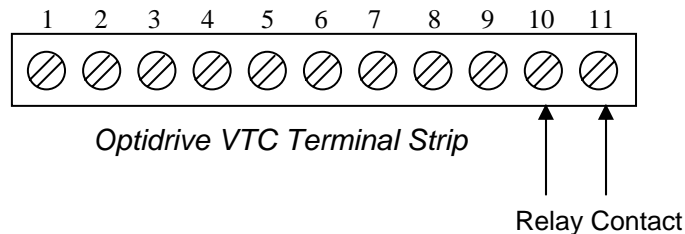
The condition under which the output relay closes is programmed using this parameter.

The following options can be selected:

- 0: Drive enabled
- 1: Drive healthy
- 2: Drive at target speed
- 3: Motor speed > zero
- 4: Motor speed > limit (defined in P2-14)
- 5: Motor current > limit (defined in P2-14)
- 6: 2<sup>nd</sup> Analog input > limit (defined in P2-14)

The factory default setting is P2-13 = 1. The contacts close when the drive is healthy.

The relay contacts are on terminals 10 and 11 of the drive, as shown below.



Note : If P2-13 has been changed to a new value, the limit value in parameter P2-14 will be automatically reset to 100%. It is therefore necessary to set the limit parameter to the chosen value after changing the value of P2-13.

## **P2-14 Relay output control limit**

### **P2-14h Relay output control high limit**

### **P2-14L Relay output control low limit**

This parameter is only used when P2-13 is set to 4, 5 or 6.

Parameter P2-14 combines both the high and low limits, entered as separate values into P2-14. The first value in this parameter gives the high limit (with a character 'h' on the LH side of the display), and the second value in this parameter gives the low limit (with a character 'L' on the LH side of the drive display).

The upper limit is the level at which the relay output changes state, the low limit is the level at which the relay output changes back again.

The two limits therefore define a hysteresis band.

If user sets P2-14h less than P2-14L, the value in P2-14L will be set equal to P2-14h automatically.

If the user changes the setting of P2-13, then the parameter values in P2-14 will be automatically reset to 100% (h) and 100% (L). The value of parameter P2-14 must therefore be redefined each time that Parameter P2-13 is changed.

## **P2-15 Relay output mode select**

This parameter allows the relay to be programmed to operate in N.O. (normally open) or N.C. (normally closed) mode:

- 0: Normally Open (N.O.)
- 1: Normally Closed (N.C.)

The default setting for this parameter is 0.

If this parameter value is set to 1, then all the relay actions that described in parameter P2-13 will be inverted. For example, if we set P2-15=1 (N.C.) and P2-13=1, if the drive trips, the contacts will close. If the drive is healthy, the contacts will open.

Note that when the drive is powered down, the contacts are always open.

### **• Examples :**

- To start other equipment (or other Optidrive Plus drives) as soon as the first Optidrive Plus is enabled, set P2-13 = 0 and connect the relay contacts to the enable input of the other equipment.
- To release a mechanical motor brake when the speed of the drive is > 2.5Hz (assume P1-01 = 50Hz), set P2-13 = 4 and the limit value in P2-14h = 5%, then connect brake supply via the relay contacts. The contacts close when the frequency output is > 2.5Hz, releasing the mechanical brake. Setting P2-14L = 2% will result in the brake re-engaging when the drive is decelerating and the speed less than 1Hz.

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