

How to configure the *IM-pAC* drive to trip for a current overload.

Safety Warning

The current overload configuration will protect the index drive only and is not meant to be a means of protecting any personnel or tooling. Always make sure that no person is near the indexer and the indexer is clear of any obstructions before operating the drive while testing the configuration settings or during normal operation.

Overview

The *IM-pAC* drive is factory preset to constantly monitor the current seen by the motor and the drive will trip if the accumulated motor current values over time exceed a set value. *This is a calculation and does not require a wired motor thermistor input.*

The motor thermal constant parameter controls the drive trip and is set at a default value of 89. The 89 value will allow the motor to draw 1.65 times its rated amperage for a little over 40 seconds before the drive will trip. When the drive trips the drive healthy relay (T5 and T6 contacts) will open to signal the trip. You will wire your PLC input line through the drive healthy relay to signal the trip. When the drive is tripped the display will show [It.AC]

The overload configuration scheme for the *IM-pAC* uses a thermal constant parameter set to 1 (the minimum) and a symmetrical current value set for the application. Index drives 601RDM and 902RDM have been tested at IMC using a thermal constant of 1 and a symmetrical current constant of 165. The drives successfully tripped without any indexer damage for a jammed dwell or an obstruction encountered during the middle of the index.

For now based upon our test results we are limiting use of this overload configuration to applications under 1 horsepower demand.

The following steps describe how to view the torque required for you application and how to change the symmetrical current and motor constant values to protect your indexer from damage.

We are assuming that you have already entered in the correct parameter values for Pr 02, Pr 06, Pr 07, Pr 08 and Pr 09 from drawing C-86556 or your motor name plate.

We also assume you have placed the jumpers and wired your motor for the correct applied voltage. Remember the control voltage must be greater than or equal to the motor's voltage.

The instructions in this document are detailed and should be read carefully before proceeding. In addition we have included as a reference on the last page of this paper a page from the *IM-pAC* manual showing how to view and change parameters from the keypad.

Parameters Used

Parameter	Description
Pr 10	Security level – default is L1
Pr 88	Current magnitude – current demand for your application
Pr 4.07	Symmetrical current value – default is 165 percent
Pr 4.15	Motor thermal constant – default is 89

The key pad display should show [ih 0.0] and not [rd 0.0] when you start. You must put the control into inhibit mode by opening B2 and B4.

Step 1 – Changing the security level.

Press the M (memory) button on the key pad. The display will start to show the flashing parameter numbers on the left side and the non-flashing parameter values on the right side. Now, press the \wedge button to the right of the M button several times until the left parameter value changes to 10. If you happen to go passed parameters 10 then use the \vee key to return to parameter 10. Once you are at the flashing parameter 10, press the M key and the parameter value on the right L1 should start to flash.

Press the \wedge key 2 times until a value of L3 appears [10 L3].

Press the M key 2 times to return the display back to [ih 0.0].

Step 2 – How to map the motor thermal constant to Pr 61.

Press the M button on the key pad. Now, press the \vee button until the left parameter value changes to 71. If you happen to go passed parameter 71, then use the \wedge key to return to parameter 71. Once you are at the flashing parameter 71, press the M key and the parameter value on the right 0.0 should start to flash.

Press the \wedge key several times until a value of 4.15 appears [71 4.15].

Press the M key 2 times to return the display back to the [ih 0.0].

Step 3 – How to map the symmetrical current value to Pr 62.

Press the M button on the key pad. Now, press the \vee button until the left parameter value changes to 72. If you happen to go passed parameter 72, then use the \wedge key to return to parameter 72. Once you are at the flashing parameter 72, press the M key and the parameter value on the right 0.0 should start to flash.

Press the \wedge key several times until a value of 4.07 appears [72 4.07].

Press the M key 2 times to return the display back to [ih 0.0].

Step 4 – How to view the current magnitude for your application.

See the **Safety Warning** on the first page before continuing.

The key pad display should show [rd 0.0] when you start. If the display shows [ih 0.0] you must take the control out of inhibit mode by closing B2 and B4. Make sure you are set to run at your intended speed and load. You will now run the motor continuously in order to view and record the maximum current demand for your application. In order to run the motor continuously you must keep connection B2 and B5 closed. You can do this with a simple jumper. Once the motor and drive are running, press the M button on the key pad. Now, press the V button until the left parameter value changes to 88. If you happen to go passed parameter 88, then use the ^ key to return to parameter 88. The maximum value for parameter 88 is the maximum value for your application. You will use this amperage value in step 6 as part of a calculation for the symmetrical current value. Press the M key 2 times to return the display back to the [rd 0.0]. You can now remove the jumper between B2 and B5.

Step 5 – How to change the motor thermal constant Pr 61.

Press the M button on the key pad. Now, press the V button several times until the left parameter value changes to 61. If you happen to go passed parameter 61, then use the ^ key to return to parameter 61. Once you are at the flashing parameter 61, press the M key and the parameter value on the right 89 should start to flash. Press the V key several times until a value of 1 appears [61 1]. Press the M key 2 times to return the display back to the [ih 0.0].

Step 6 – How to change the symmetrical current value Pr 62.

The new symmetrical current value is calculated by the following method. Take the value of the maximum current value observed from step 4 and divide it by the motor rated current value (Pr 06 or the name plate value) and then multiply it by 100. e.g. $XXX = 0.94 / 1.14 \times 100 = 83$

This means we would like the drive to fault at 83 percent of the motor rated current. We may want to add a few percent to this to avoid some nuisance trips so we will round this up to 100.

Note: Never exceed a value of 165 for the symmetrical current or raise the value of Pr 06 above the name plate value for the applied voltage.

Press the M button on the key pad. Now, press the V button several until the left parameter value changes to 62. If you happen to go passed parameter 62, then use the ^ key to return to parameter 62. Once you are at the flashing parameter 62, press the M key and the parameter value on the right 0.0 should start to flash. Press the ^ key several times until the value of XXX appears [62 XXX.0]. (For our revised calculated example we would have entered 100 [62 100.0].) Press the M key 2 times to return the display back to the [ih 0.0]. The drive has now been configured to trip during a current overload. You can take the drive out of the inhibit state by closing connections B2 and B4.

How to manually recover from an overload.

See the **Safety Warning** on the first page before starting this step.

You must put the control into inhibit mode by opening B2 and B4.

You must recover from the overload condition by returning the indexer to a dwell position at a reduced speed. You can reduce the motor speed by either changing Pr 18 or turning the speed pot down if you have one wired.

Press the button on the key pad with the red circle.

Put the control out of inhibit mode by closing B2 and B4. If the index drive does not start, then send a start signal. Once you are in a dwell position reset the motor preset value back to its original value or return the speed pot back to its normal setting.

Introduction	Parameter x.xx	Parameter description format	Keypad and display	Serial communications	CT Modbus RTU	PLC Ladder programming	CT Soft	Menu 0	Advanced parameter descriptions
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4 Keypad and display

The keypad and display are used for the following:

- Displaying the operating status of the drive
- Displaying a fault or trip code
- Reading and changing parameter values
- Stopping, starting and resetting the drive

Figure 4-1 Keypad and display



4.1 Programming keys

The **MODE** key is used to change the mode of operation of the drive.

The **UP** and **DOWN** keys are used to select parameters and edit their values. In keypad mode, they are used to increase and decrease the speed of the motor.

4.2 Control keys

The **START** key is used to start the drive in keypad mode.

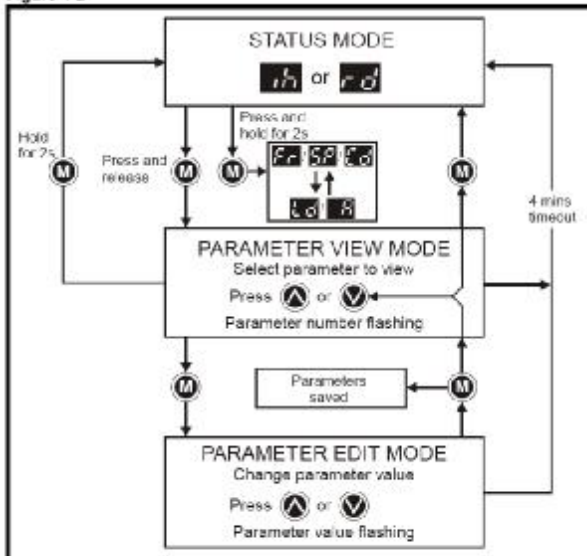
The **STOP/RESET** key is used to stop and reset the drive in keypad mode. It can also be used to reset the drive in terminal mode.

4.3 Selecting and changing parameters

NOTE

This procedure is written from the first power up of the drive and assumes no terminals have been connected, no parameters have been changed and no security has been set.

Figure 4-2



When in Status mode, pressing and holding the **MODE** key for 2 seconds will change the display from displaying a speed indication to displaying