TB060 (Rev1) - Installing and Setting Up a Haas Indexer

Overview

This document describes the procedures for connecting a Haas (or similar) Indexer to an M-400 control with an RTK2 PLC, writing a custom M-Code for the indexing operation, and modifying the PLC program so the indexer will perform properly. These procedures assume that PLC output #11 will be used to signal the indexer to begin turning and PLC input #9 for the indexer to signal the PLC when it is finished. If you want to use a different input and/or output, you?ll need to change all relevant procedures. Also described are optional procedures for making an AUX key perform indexing.

Connecting the Indexer

1. Determine which two wires on the indexer signal the indexer to start indexing movement.
2. Connect one of these wires to OUT11 on RTK2A (H11-pin 9). If the magnetics box was pre-wired for an indexer, connect to terminal 14 on TB3 or as indicated on the kit schematic.
3. Connect the second of these wires to COM11 on RTK2A (H11-pin 10). If the magnetics box was pre-wired for an indexer, connect to terminal 15 on TB3 or as indicated on the kit schematic.
4. Determine which two wires on the indexer signal (by relay closure) when the indexing is completed.
5. Connect one of these wires to INP9 on RTK2B (H5-pin 9). If the magnetics box was pre-wired for an indexer, connect to terminal 12 on TB3 or as indicated on the kit schematic.
6. Connect the second of these wires to COM9 on RTK2B (H5-pin 10). If the magnetics box was pre-wired for an indexer, connect to terminal 13 on TB3 or as indicated on the kit schematic.

Writing the Macro for the Indexer

1. Using the CNC7 editor or some other text editor, create a file called CNC7.M12 with the following lines:

```
M94/6 ; Request INP38 to turn on
M103/10 ; Start program action timer with a ten second delay
M101/9 ; Wait for INP9 to close (indexer finished signal)
M104 ; Cancel program action timer
M95/6 ; Request INP38 to turn off
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2. A different user-definable input request may be used, but be sure to also change the corresponding M-function definition in the PLC source code, which will be discussed in the next section.
3. The delay time may also be changed if your indexer generally needs more or less time to complete moves by changing the number after the '/' on the second line. If you make the value too small, you may unintentionally cancel the program on some indexing moves.
4. If a different input was used on the RTK2B, then verify the correct number is placed after the '/' on the M101 (third) line.
5. Make sure to save this file to the CNC7 directory.

Changing the PLC program

1. The original PLC source file can be found in the C:\PLC directory.
2. Before editing the source file, rename the M400.SRC to M400BAK.SRC and M400.PLC to M400BAK.PLC

so you'll retain the original files.
3. Using a text editor, open the M400.SRC file for editing.

- a) In the INPUT DEFINITIONS section, insert the following lines:

  ; Added for Haas Indexing
  Indexer_Finished IS INP9 ; Indexer finished signal
- b) If there is also a statement utilizing INP9 for a clamp, place a ';' at the beginning of the line to ensure that line is not compiled.
- c) Also in the M94/M95 Mappings area, insert the following lines:

  ; Added for Haas Indexer
  M12 IS INP38 ; 1 = index M94/6 M95/6
- d) If there are any statements for a clamp which may conflict with the new definitions, place a ";" at the beginning of the lines.
- e) In the OUTPUT DEFINITIONS section insert the following lines:

  ; Added for Haas Indexer
  Indexer_Out IS OUT11 ; 1 = Start Indexing
- f) After the existing M-function programming in the PROGRAM section, insert the following lines:
  ; Added for Haas Indexer
  M12 = M12 AND CNC_program_running ; clear M12 if not running
  Indexer_out = M12
- g) If there are any statements for a clamp which may conflict with the new program statements, place a ";" at the beginning of the lines.
- h) If different inputs or outputs are used for any of the functions, verify all the preceding definitions and corresponding values get changed.
- i) Optional: To make an AUX key perform indexing when there are no programs running:

  1) The following line must be commented out of the PLC source file before compiling by placing a ";" at the beginning of the line:

  Aux_1_out = Aux_1_out XOR Aux_1_hit

  and replaced with the following lines:

  ; Added for AUX key support of Haas Indexer
  Aux_1_out = (Aux_1_hit XOR Aux_1_hit) AND Indexer_Finished

  2) And the second line added in step (3f) must be changed to:

  Indexer_Out = M12 OR (Aux_1_out AND / CNC_program_running)

  3) Save the new PLC source code.

  4) Next you must compile the new PLC program and copy it to the CNC7 directory using the following

commands:

PLCCOMP M400.SRC M400.PLC
COPY M400.PLC C:\CNC7\CNC7.PLC

Using the Indexer custom M-Code (M12)

- The M12 command may be used from the MDI screen, may be added directly to a G-Code program, or may be added within the conversational programming using the CODE command from the OTHER menu screen.
- When the M12 is issued during a program, the indexer will be signaled to begin turning and the program will wait for the signal from the indexer that it has completed moving. If it doesn't receive acknowledgement of completion within the allotted time (10 second default), it will cancel the program.
- The designated AUX key may be used to initiate indexing when there is no program running, it will reset and turn off the LED when the move is completed.

Document History

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