

12/4/90

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**DESCRIPTION OF OPTION:**

This option provides two different functions. The first function allows the unit to compensate for fixed delays in variable speed machines. For example, if a solenoid takes 50 mSecs. to actuate and the machine's motor is running at 2 RPM, the error would be equal to 0.6 degrees. However, if the machine sped up to 25 RPM, the error would be 7.5 degrees. This error could cause serious problems with the operation with the machine if the delay is not compensated for.

The Automatic Advance function is available on Limits 1 - 8 and only one delay [or sum of several delays] can be compensated for. The Auto Advance is calculated as follow:

$$\{AAC\} = \{DELAY1\} * \{RPM/60,000\} * \{S.F.\}$$

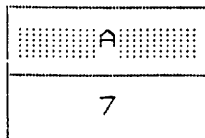
{AAC} = Total Number of Counts Advanced.  
DELAY1 = Fixed delay of System.  
Maximum Value of 255 mSecs.  
RPM = Revolutions per Minute. 2000 Max.  
S.F. = Scale Factor.

Note: The Advance is calculated and updated every 500 mSecs. This is the tachometer update rate.

The second function gives the user 28 additional programs to bring the total number of programs to 32. Inputs on the iPLC1 are available that allows the user to select the running program from a remote location.

**PROGRAMMING ADDITIONS AND CHANGES:**

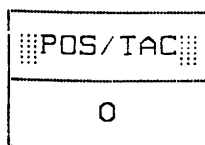
The following Keys are used to program and access the Auto Advance function.



**[A] KEY:** This key is used to display and program the fixed delay.  
(255 mSecs. MAX.)

IPLC1 - 39 Rev. 0  
AUTOMATIC ADVANCE WITH ADDITIONAL PROGRAMS  
Page 2 of 6

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**[POS/TAC] KEY:** This key is used to display the Count advance. If this key is pressed while the unit is displaying the Position and Tach, the display will change to display the Counts Advance and Tach.

**PROGRAMMING EXAMPLE:**

You want to compensate for a system delay of 45 mSec. and you want to program the Advance Function on Limit 07.

**NOTE:** Only LIMITS 1 - 8 can be Programmed with the Auto Advance Function.

PRESS	DISPLAY	COMMENTS
<hr/>		
*		Must be in Program Mode. See Section 12.1 of the Users Manual.
[A]	"DELAY1 xxx"	DELAY1 display. xxx = 3 digit #.
[0,4,5], [ENTER]	"DELAY1 045"	45 mSec. Delay programmed in.
<hr/>		
[LS]	"LS01"	Limit Switch display.
[0,7], [ENTER]	"LS07" "07-xxx-yyy"	Limit Switch 7. xxx & yyy are present limits.
[FUNCTION], [A], [ENTER]	"07-xxx^yyy"	Function LED on. "^" is the notation to show that the Limit is Auto Advanced.

1] The total number of available dual setpoints per program is decreased. Each limit has one dual setpoint permanently assigned to it. Thirty [30] additional dual setpoints are available and can be assigned to any limit.

2] In order to safeguard against un-expected operations, the remote input or the keyboard input can not be used to select the running program while the other input is active.

IPLC1 - 39 Rev. 0  
AUTOMATIC ADVANCE WITH ADDITIONAL PROGRAMS  
Page 3 of 6

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- a) When any remote input is active, the keyboard can not be used to change the running program. All remote inputs must be inactive before the keyboard can change the running program. All other functions that are available from the keyboard are still accessible including Program Mode.
  - b) The remote inputs are disabled and the program number can not be changed if the unit is in Program Mode.
- 3) Power Up Sequence:
- a) If any remote input is active during power up, the controller will load the program that is selected by the state of the remote inputs as the running program.
  - b) If all of the remote inputs are inactive on power-up, the controller will load the program that was last selected by a keyboard input as the running program.

#### HARDWARE CONNECTIONS:

The remote program select function uses 7 inputs on the iPLC1-39. Inputs 1 through 6 are used to represent the program number in 1½ digit BCD format. Input 8 is used as a strobe to clock the BCD program data into the controller.

#### LOGIC LEVELS:

An input can have two different logic levels, a Logic "0" or a Logic "1". A logic 0 is an inputs normal "inactive" state. A Logic 1 is an inputs "active" state. Input Logic levels are defined as follows:

Logic "0"	0 to 1 Vdc.
Logic "1"	3 to 15 Vdc.

- Note:
- 1) All inputs are referenced to GND
  - 2) With Open Collector Sink and TTL output units, the internal +12Vdc unregulated supply can be used to supply a Logic "1" to the inputs.
  - 3) With Open Collector Sourcing Units, an external power supply must be used.

IPLC1 - 39 Rev. 0  
AUTOMATIC ADVANCE WITH ADDITIONAL PROGRAMS  
Page 4 of 6

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The following table lists the pinout assignments of the inputs and the internal +12 Volt supply on various AMCI products.

	J1 CONN.	IM1	RB1	MRB
INPUT 1	Pin 3	Pin 3	Pin 1 - TB7	Pin 1 - TB8
INPUT 2	Pin 1	Pin 1	Pin 2 - TB7	Pin 2 - TB8
INPUT 3	Pin 2	Pin 2	Pin 3 - TB7	Pin 3 - TB8
INPUT 4	Pin 4	Pin 4	Pin 4 - TB7	Pin 4 - TB8
INPUT 5	Pin 12	Pin 12	Pin 5 - TB7	Pin 5 - TB8
INPUT 6	Pin 10	Pin 10	Pin 6 - TB7	Pin 6 - TB8
INPUT 8	Pin 6	Pin 6	Pin 8 - TB7	Pin 8 - TB8
GND	Pin 16	Pin 16	Pin 9 - TB7	Pin 9 - TB8
+12 Vdc	Pin 14	Pin 14	Pin 10 - TB7	Pin 10 - TB8

**BCD INPUTS (1-6):**

As stated on the preceding page, Inputs 1 - 6 are used to represent the program number in  $1\frac{1}{2}$  digit BCD format. Input 1 is the Least Significant Bit [LSB]. Inputs 1 -4 form the Least Significant Digit [LSD] and can have a value between 0 and 9. Inputs 5 and 6 form a half digit BCD number. This is the Most Significant Digit [MSD] and can have a value between 0 and 3.

The following table lists the logic levels of the inputs and the program number that would be selected by each combination.

IPLC1 - 39 Rev. 0  
AUTOMATIC ADVANCE WITH ADDITIONAL PROGRAMS  
Page 5 of 6

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INPUT		PROGRAM
65	4321	#
00	0001	1
00	0010	2
00	0011	3
00	0100	4
00	0101	5
00	0110	6
00	0111	7
00	1000	8
00	1001	9
01	0000	10
01	0001	11
01	0010	12
01	1001	19
10	0000	20
10	0001	21
10	1001	29
11	0000	30
11	0001	31
11	0010	32

**PROGRAM LOAD INPUT (8):**

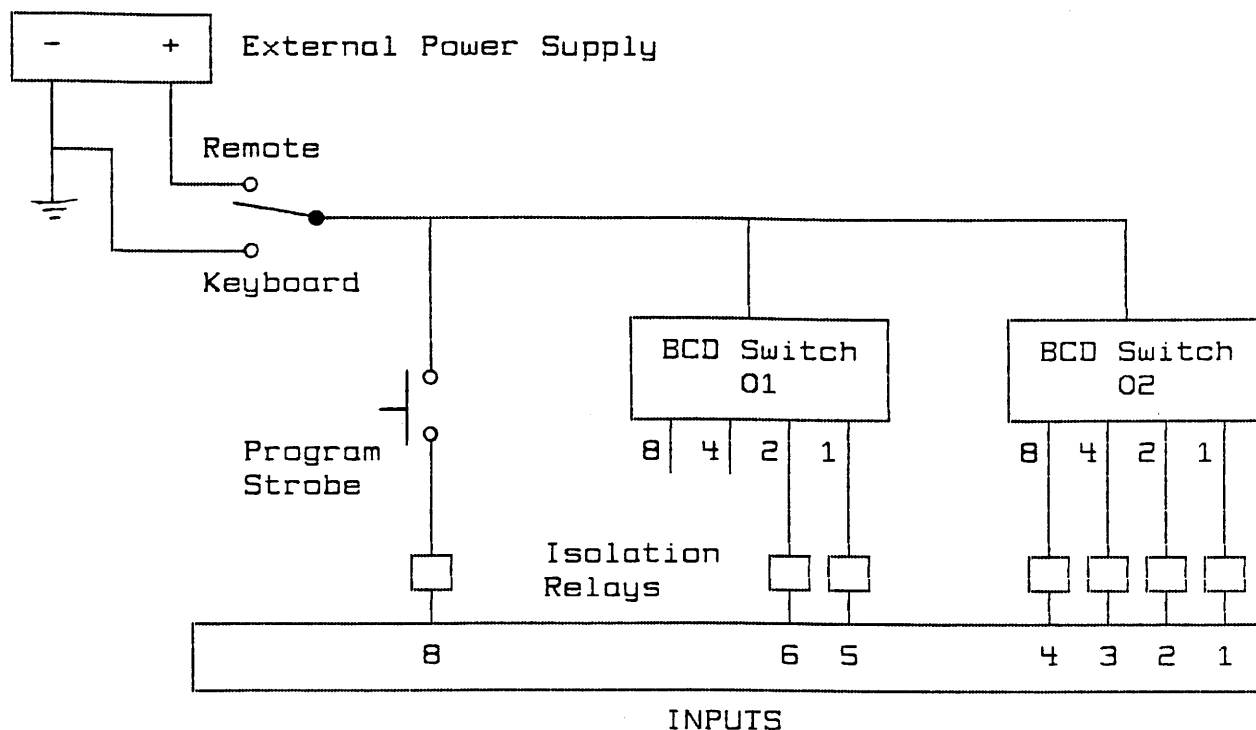
The program number selected by the remote inputs will not be loaded into the controllers memory until Input 8, "Program Load", is brought to a logic 1. Once Input 8 is brought to a logic 1, the controller will load and begin execution of the new program in under 250 mSecs. Note that input 8 is a "level" input. As long as input 8 is high, the unit will run the program defined by the other 6 inputs.

Steps should be taken to ensure that the BCD inputs can not be changed while Input 8 is high. If this is not done, the program may be changed before the operator is ready, possibly causing machine damage or personal injury.

IPLC1 - 39 Rev. 0  
 AUTOMATIC ADVANCE WITH ADDITIONAL PROGRAMS  
 Page 6 of 6

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**SET-UP EXAMPLE:**



**NOTES:**

- 1) Remote/Keyboard Switch. A SPDT Switch is used to determine which input device will be used.
- 2) Program Load Switch. This is a Normally Open, Momentary Contact Switch. When the switch is not pressed, input is at a Logic 0.
- 3) Isolation Relays. These should be used to isolate the controller from the external supply to guard against ground loops and noise coupling.

**MODEL NUMBER AND SOFTWARE CHECKSUM:**

This section of the additional instructions supplements SECTION 14.0] of the iPLC1 USERS MANUAL. The following keystrokes will display the model number and software checksum of an iPLC1 unit with an Option 39.

PRESS	DISPLAY	COMMENTS
[PROGRAM]	"PROGRAM xx"	xx = Number of running program.
[NEXT]	"IPLC1-39-1"	Model and Revision Number.
[NEXT]	"EPROM A3AB"	Checksum of Software.