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Find the *Electro Cam PL-1746-C02-R1* at our website: ***Click HERE***

Electro Cam PL-1746 Module for the Allen-Bradley SLC 500 PLC
Quick Start & Set Up

4/29/04

What the Card Does

PLS - Programmable Limit Switch

The PL-1746 Card turns outputs on and off based on machine position determined by the rotation of the resolver. All 32 outputs are available to the SLC-500 backplane and can be used in ladder logic. Most models also provide additional high speed real world outputs. Outputs can also be gated by inputs from sensors or photo eyes.

Use it as a Resolver Card for machine position in Ladder logic

While the PL-1746 provides outputs based on its own internal high speed logic, it also supplies real time machine position to the SLC-500 backplane. The position can be used in ladder logic for position dependant functions.

Wiring the Card

1. Wire 24 Volts DC to the Power input connector on the front of the card.
2. Wire the resolver to the resolver input connector on the front of the card.
3. Wire the PL-6400-24-001 keypad / Display (optional - not required for operation).

Installing the PL-1746 in the SLC-500 PLC

1. After performing a "Read I/O" in Rockwell software, the card type will be automatically set to "OTHER" and the ID Code will be set to 13235.
2. In "advanced Config" you must set the "MO Length" to 16320
3. In "advanced Config" you must set the "M1 Length" to 16380

DIP Switch Settings

This is set at the factory and normally will not need to be changed unless special functions are required. The DIP Switch is located on the back of the card. See the manual for settings if needed.

Monitoring the Error Registers

It is recommended to monitor the following error registers in the PL-1746.

(1) *Programming Errors*: It is recommended to monitor the "Any Error Bit" I:S.7/15. This will let you know a programming error has occurred while writing to the M0 files. Bits 0 through 14 in the Module Status register I:S.7 will signify what type of error it is. Clear these errors by toggling the Clear Error bit O:S.0/8 from a "0" to a "1". **Note: Errors in this register must be cleared or no further programming will be accepted on some models.** .

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2. *Hardware Errors:* (PL-1746-C02 / C03 models only)
   It is recommended to monitor the "Any Fault Bit" I:S.5/15. This will let you know a hardware error has occurred. Bits 0 through 14 in the Hardware Status / Error Register: I:S.5 will signify what type of error it is. After correcting the fault, the user must clear the errors by toggling the Clear Error bit O:S.0/8 from a "0" to a "1"

How To Program PL-1746 Settings

ALL settings such as "Machine Zero" and "Setpoint ON/OFF positions" are retained in permanent memory and can be programmed via two different methods:
1. Through the optional Electro Cam Keypad - model PS-6400-24-001.
2. Through the M0 files in the SLC-500

Programming Settings Via M0 Files

Writing a value to the M0 files is typically done by a move command. Once the value is written to an M0 file, it resides in permanent memory within the PL-1746 card. **Note:** Setup parameters only need to be written to the M0 files once upon initial programming. Writing to the M0 files every ladder scan will cause faults and possibly damage the memory.

Programming the PL-1746 to turn on outputs based on position

The four steps below are all that is needed to get the PL-1746 operating in a basic programmable limit switch setup. More advanced features can then be added as needed.

1. *Set the Direction of Increasing Rotation:* Verify that the PL-1746 position counts in an increasing direction when the machine is in motion. If not, you will need to change the Direction Of Rotation setting through the PS-6400 keypad or in M0:S.34. In this M0 file, a value of "0" = Counter Clockwise. A value of "1" = Clockwise.

2. *Set the Scale Factor:* This will determine the number of counts per revolution of the resolver. The factory default is 360 which gives position in degrees. A higher scale factor (4096 max) allows ON/OFF positions to be programmed more accurately. This can be set either through the PL-6400 keypad "Scale Factor" menu or in M0:S.32

3. *Synchronize the PL-1746 with mechanical machine position:* Stop the machine in a known position such as zero. Enter this value in the "Machine Position" setting either through the PS-6400 keypad or in M0:S.24.

4. *Program the ON / OFF setpoints:* This will determine the positions where the outputs will turn on and off. Each output or channel can be set to have multiple ON/OFF pulses within each machine cycle. Programming can be done either through the "Pulses" menu in the PL-6400 keypad or through the "Pulse Edit" M0 files. Refer to the "Pulse Edit" section and "Output Pulse Programming" Apendix-1 in the PL-1746 manual.

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Where to read PL-1746 outputs in the ladder

All 32 PL-1746 outputs are available in two 16 bit words. Each output is represented by a single bit that will reflect that outputs ON/OFF status by a "1" or "0" respectively.
I:S.0 Outputs 0 through 15
I:S.1 Outputs 16 through 31

Add advanced features for even more precise control of output devices

Motion Anding
Select outputs to turn on only when machine speed is within user specified speed ranges. A common use of this feature is to disable glue valves when the machine stops.

Speed Compensation
Select outputs to be advanced in proportion to machine speed to compensate for devices with fixed response times. This prevents "drift" of such devices as glue guns as machine speed increases and insures accuracy over the full range of machine speeds.

Timed Outputs
Select a time value in milliseconds for the ON duration of an output rather than a position range. This feature is useful for devices that require a fixed time to perform a task regardless of machine speed. Note: You will still need to program an ON and OFF setpoint to use this feature.

Input logic / Groups and Modes
Gate specified outputs with sensor inputs for "product present" requirements. Glue control is a typical application where outputs are disabled until product is sensed. Outputs can be divided into groups and each group can be triggered by one of six available inputs.

Refer to the PL-1746 Programming and Installation Manual for more programming details.

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