



ProcessLogix Pulse Input Module

Catalog no. 1757-PIM

This document tells you how to install the 1757-PIM (Pulse Input Module) into the ProcessLogix™ System. For more specific information regarding the placement of the 1757-PIM in non-redundant and redundant configurations, refer to the ProcessLogix System Planning Guide in Knowledge Builder.

What is the Pulse Input Module?

The 1757-PIM (Pulse Input Module) is a new addition to the ProcessLogix Rack I/O family.

The 1757-PIM is a single-wide I/O module that serves as the interface board between the ProcessLogix controller and field transducers that provide pulse inputs. Typically the 1757-PIM might be used to accept pulse inputs from:

- tachometers, to determine required speeds of rotation for motors, fans and pumps
- flowmeters, to determine totalized process flows such as inputs to batch dosing operations

The 1757-PIM provides up to eight input channels and two output channels. Each of the eight channels has a 32-bit counter to perform pulse counting and frequency calculation for signals up to 100 KHz. Six of the eight channels also have a second 32-bit timer counter for pulse period and pulse width measurements. The remaining channels provide pulse counting and frequency calculations and have associated outputs that can be used for fast cut-off applications. The 1757-PIM provides channel-to-channel and terminal-to-backplane isolation.

The 1757-PIM uses the standard 36-pin terminal block and interfaces directly to single-ended devices. The threshold level for each channel is software configurable and selections are either LOW (approx. 3.25V typical) or HIGH (approx. 8.80V typical) for a high-level voltage level. The 1757-PIM interfaces directly to 5 to 24V signal values.

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations.

ATTENTION



Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss

Attention statements help you to:

- identify a hazard
- avoid a hazard
- recognize the consequences

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

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Installing the Module

Follow the procedure below to install the module.

Making Field Wiring Connections

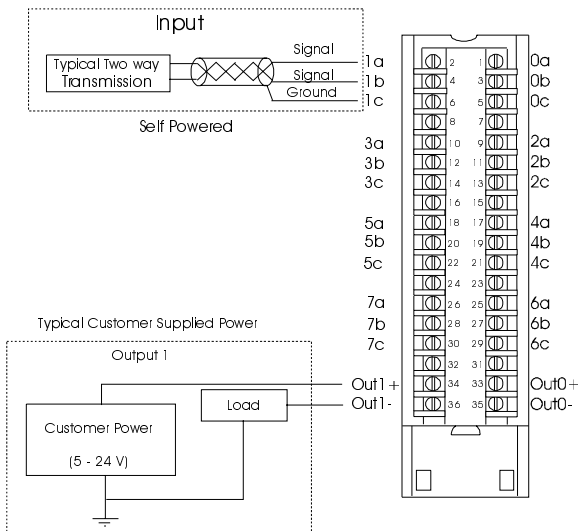
Refer to the following pinout/wiring diagram to wire the module.

ATTENTION



This input module permits the field-side input device (switch) to be located on either the hot or neutral side of the source, unless the module's shorting bar has been installed. In this case, the input device must be installed on the hot side of the source.

Figure 1 Pinouts and Wiring Example



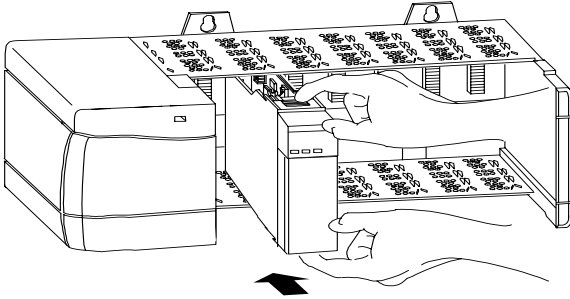
This diagram illustrates how the eight transmitters will interface to the 36 Positions Terminal Block. For instance, Transmitter 0 will be connected to Pins 1, 3 and 5 where:

- Pin 1 is the Signal
- Pin 3 is the Signal Common
- Pin 5 is the Chassis Ground Shield Connection

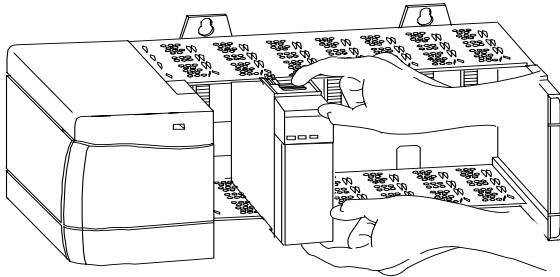
The Output Channel 0 will connect to Pins 33 and 35 and Output Channel 1 will connect to Pins 34 and 36.

Installing the Module in the Chassis

1. Position the module at any slot in the chassis except for slot 0.
2. Align the module's circuit board with the top and bottom chassis guides.



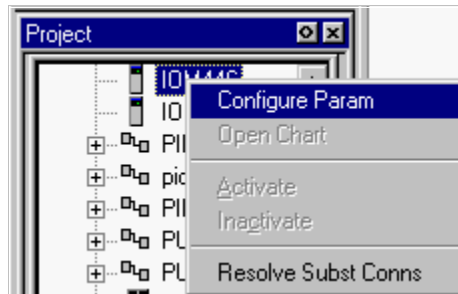
3. Slide the module into the chassis until the module tabs click into position



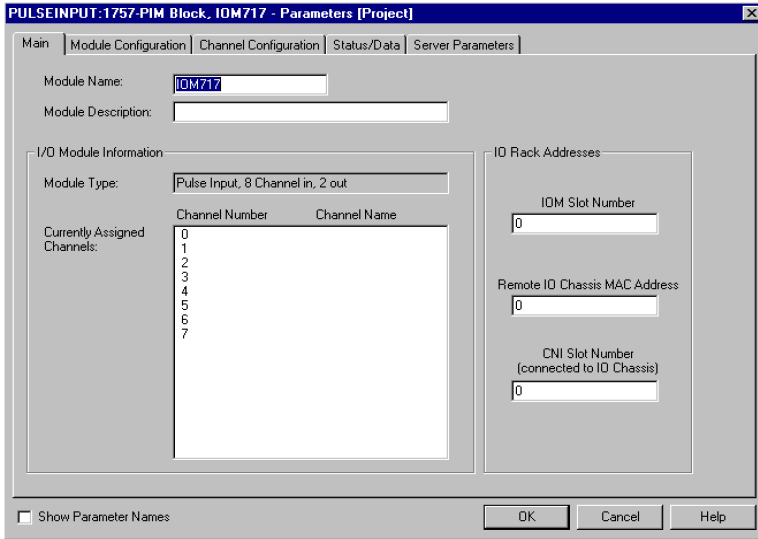
Configuring the Module

You can customize the 1757-PIM by changing its name, description, slot location, MAC address, as well as Module, Channel, Status/Data and Server configuration parameters. Perform the following steps to customize the 1757-PIM.

1. Access Control Builder.
2. Add a new 1757-PIM from the library.
 - a. Open the Library and Project tree views.
 - b. In the Library tree view, click on the 1757-PIM icon and drag it to the Project tree window.
3. Right-click on the desired IOM instance on the Project tree window.



4. Click on Configure Param. You see the Main, Module Configuration, Channel Configuration, Status/Data and Server Parameters configuration tabs.
5. Under the Main tab (see figure below), enter a Module Name that is more meaningful to you than its default IOMxxx (xxx represents a pre-assigned number).

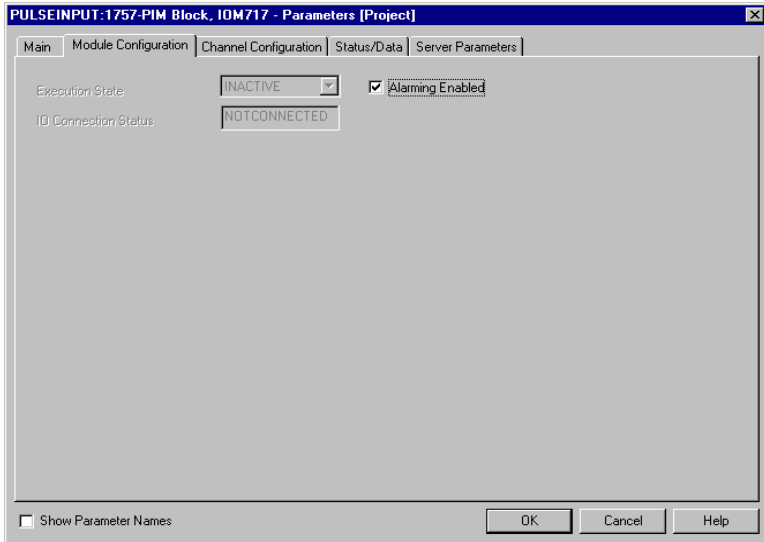


6. If desired, enter a Module Description to explain the function of the 1757-PIM (such as Test Strategy PIM). This is not a required field.
7. Enter appropriate values for IOM Slot Number, Remote IO Chassis MAC Address and CNI Slot Number. If necessary, press F1 to access on-line help for assistance during this step.
8. Use the following procedures to configure parameters on the remaining tabs for the 1757-PIM, or click OK to accept only the changes made so far and return to the Project tree.
9. Under the Module Configuration tab (see figure below), enter desired values for configuration parameters. If necessary, press F1 to access on-line help for assistance during this step.

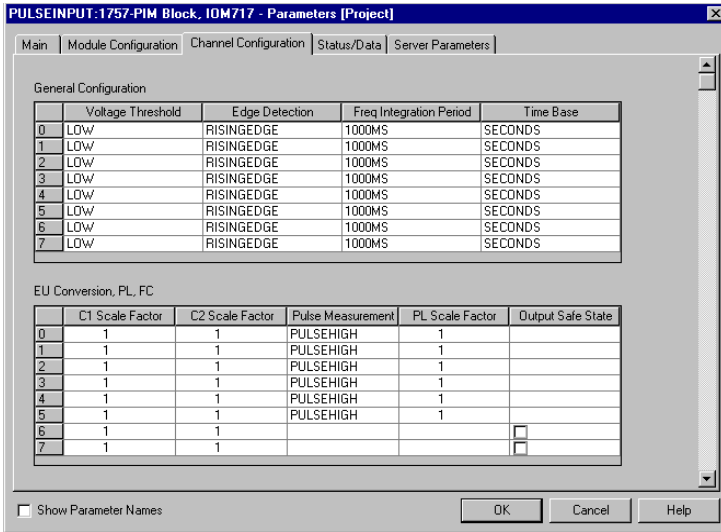
TIP



The only available choice is whether or not to select the Alarming Enabled checkbox. Once the module has been loaded and activated, additional parameters (such as Execution State) may be configured on the Monitoring Tree window.



10. Continue with the following procedures to configure parameters on the remaining tabs for the 1757-PIM, or click OK to accept only the changes made so far and return to the Project tree.
11. Under the Channel Configuration tab (see figure below), enter desired values for configuration parameters. If necessary, press F1 to access on-line help for assistance during this step.



12. Continue with the following procedures to configure parameters on the remaining tabs for the 1757-PIM, or click OK to accept only the changes made so far and return to the Project tree.

13. Under the Status/Data tab (see figure below), enter desired values for configuration parameters. If necessary, press F1 to access on-line help for assistance during this step.

PULSEINPUT:1757-PIM Block, IOM717 - Parameters [Project]

Main | Module Configuration | Channel Configuration | Status/Data | Server Parameters

Pulse Counting/Frequency

	Process Value	Accumulated Value	Raw Accumulated Value	Reset Counter Flag
0	NaN	NaN	0	<input type="checkbox"/>
1	NaN	NaN	0	<input type="checkbox"/>
2	NaN	NaN	0	<input type="checkbox"/>
3	NaN	NaN	0	<input type="checkbox"/>
4	NaN	NaN	0	<input type="checkbox"/>
5	NaN	NaN	0	<input type="checkbox"/>
6	NaN	NaN	0	<input type="checkbox"/>
7	NaN	NaN	0	<input type="checkbox"/>

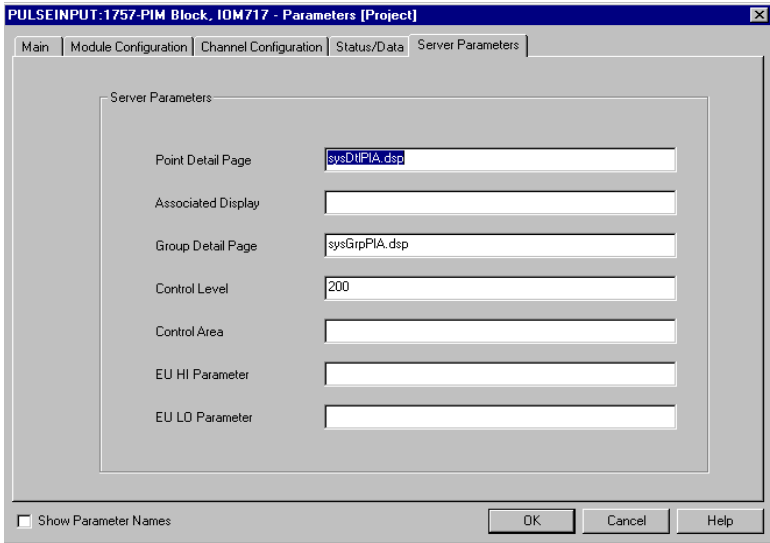
Pulse Length/Fast Cutoff

	Pulse Length	Target Value	TV Processing	Output State	Bad Output Status
0	NaN				
1	NaN				
2	NaN				
3	NaN				
4	NaN				
5	NaN				
6		NaN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		NaN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Show Parameter Names

OK Cancel Help

14. Continue with the following procedures to configure parameters on the remaining tabs for the 1757-PIM, or click OK to accept only the changes made so far and return to the Project tree.
15. Under the Server Parameters tab (see figure below), enter the appropriate information such as filenames for desired display templates (Point Detail Page, Group Detail Page and Associated Displays), along with values for appropriate parameters such as for Control Level, Control Area, and EU HI/EU LO parameters. If necessary, press F1 to access on-line help for assistance during this step.




16. Click OK on the configuration form to accept all configuration selections made on each configuration tab and to return to the Project tree.


For Technical Assistance

For technical assistance, call Rockwell Automation Technical Support at (440) 646-6800.

Specifications

Parameter	Specification
Input Channel Characteristics:	
Number of Input Channels:	Up to 8 input channels are capable of pulse counting <ul style="list-style-type: none"> • 6 channels are also capable of frequency and pulse width calculation • 2 channels have associated outputs and frequency calculation
Input Configuration:	Single-ended
Input Voltage Range:	5 to 24 Vdc selectable between high input range (logic high threshold at approx. 8.80V typical and low input range (logic high threshold at approx. 3.25V typical)
Input Required Current:	12.5mA Max. (for high input range 6mA typical; for low input range 2mA typical)
Hysteresis Minimum:	Low Input Range: 550mV, minimum High Input Range: 900mV
Frequency Range:	100KHz Maximum
Isolation Voltage:	Terminal Block to Backplane: 1500V Channel-to-Channel: 1500V
Accumulated Value Size:	32 bits
Output Channels:	Up to 2 output channels are available Output current is capable of 500mA with an external power supply
Isolation Voltage:	Terminal Block to Backplane: 1500V Channel-to-Channel: 1500V
Environmental Conditions:	
Operating/Storage Temperature:	0 to 60°C (32 to 140°F) with no fans ⁽¹⁾
Transportation Band Temperature:	-40 to 85°C (-40 to 185°F)
Relative Humidity:	5 to 95% non-condensing up to 40°C (104°F) 5 to 55% non-condensing above 40°C (104°F)

Parameter	Specification
Vibration: Operating/Storage Vibration (3 axes): Transportation Band Vibration (3 axes):	<ul style="list-style-type: none"> • Frequency: 10-60Hz • Acceleration: 0.5g Max. • Displacement: 0.1 inches (0.254cm) <ul style="list-style-type: none"> • Frequency: 0-60Hz • Acceleration: 1g Max. • Displacement: 0.1 inches (0.254cm)
Mechanical Shock: Operating/Storage Shock: Transportation Shock:	<ul style="list-style-type: none"> • Acceleration: 5g Max. • Duration: 30ms Max. <ul style="list-style-type: none"> • Acceleration: 20g Max. • Duration: 30ms Max.
Barometric Pressure: Operating/Storage Altitude: Transportation Band Altitude:	-300 to +3000m (-984 to 9843 ft.) Any
Corrosives: With enclosure: Enclosure external temperature limits:	G2 standard, G3 option (ISA S71.04) TBD
CE Mark  Standard Compliance:	Yes
Electromagnetic Interference:	15V/m, SAMA Standard PMC 33.3-1978 Class 2 or same as CE Mark (whichever is more severe)
Electrostatic Discharge:	Same as CE Mark, IEC801-2, plus 15kV to enclosure, controller surfaces and min. 10kV to all field wires.
Surge Protection:	Same as CE Mark, IEC801-4 and 5 or IEEE SWC 472-1989 (whichever is more severe)

Parameter	Specification
Certifications:	
FM, CSA	Yes
Unclassified Areas	Mounting and interfacing
FM Class 1, Div. 2	Mounting – maintenance requires a hot work permit
C-tick 	Yes

⁽¹⁾ A value of 70°C (158°F) is the maximum “component ambient” temperature when the air temperature below the chassis is 0° to 60°C (32 to 140°F).

European Communities (EC) Directive Compliance

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet the Council Directive 89/336/EC Electromagnetic Compatibility (EMC) by applying the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2 EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 50082-2 EMC — Generic Immunity Standard, Part 2 — Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 - Equipment Requirements and Tests. For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the Allen-Bradley publication Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1.

This equipment is classified as open equipment and must be mounted in an enclosure during operation to provide safety protection.

CSA Hazardous Location Approval

CSA certifies products for general use as well as for use in hazardous locations. Actual CSA certification is indicated by the product label as shown below, and not by statements in any user documentation.

Example of the CSA certification product label:



CL I, DIV 2
GP A,B,C,D
TEMP



To comply with CSA certification for use in hazardous locations, the following information becomes a part of the product literature for this CSA-certified industrial control product.

- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only.
- The products having the appropriate CSA markings (that is, Class I, Division 2, Groups A, B, C, D) are certified for use in other equipment where the suitability of combination (that is, application or use) is determined by the CSA or the local inspection office having jurisdiction.

IMPORTANT

Due to the modular nature of a programmable control system, the product with the highest temperature rating determines the overall temperature code rating of a programmable control system in a Class I, Division 2, location. The temperature code rating is marked on the product label as shown.

Temperature code rating:



CL I, DIV 2
GP A,B,C,D
TEMP



Look for temperature code rating here.

The following warnings apply to products having CSA certification for use in hazardous locations.

Explosion hazard!

ATTENTION



- Substitution of components may impair suitability for Class I, Division 2.
- Do not replace components unless power has been switched off or the area is known to be non-hazardous.
- Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Do not disconnect connectors unless power has been switched off or the area is known to be non-hazardous. Secure any user-supplied connectors that mate to external circuits on this equipment by using screws, sliding latches, threaded connectors, or other means such that any connection can withstand a 15 Newton (3.4 lb.) separating force applied for a minimum of one minute.
- If the Product contains batteries, they must only be changed in an area known to be non-hazardous.

CSA logo is a registered trademark of the Canadian Standards Association.

Approbation d'utilisation dans des environnements dangereux par la CSA

La CSA certifie des produits pour une utilisation générale aussi bien que pour une utilisation en environnements dangereux. La certification CSA en vigueur est indiquée par l'étiquette produit et non par des indications dans la documentation utilisateur. Exemple d'étiquette de certification d'un produit par la CSA :



CL I, DIV 2
GP A,B,C,D
TEMP



Pour satisfaire à la certification CSA en environnements dangereux, les informations suivantes font partie intégrante de la documentation des produits de commande industrielle certifiés.

- Cet équipement ne convient qu'à une utilisation dans des environnements de Classe 1, Division 2, Groupes A, B, C, D ou non dangereux.
- Les produits portant le marquage CSA approprié (c'est-à-dire Classe 1, Division 2, Groupes A, B, C, D) sont certifiés pour une utilisation avec d'autres équipements, les combinaisons d'applications et d'utilisation étant déterminées par la CSA ou le bureau local d'inspection.

IMPORTANT

De par la nature modulaire des systèmes de commande programmables, le produit ayant le code de température le plus élevé détermine le code de température global du système dans un environnement de Classe I, Division 2. Le code de température est indiqué sur l'étiquette produit.

Code de température :



CL I, DIV 2
GP A,B,C,D
TEMP



Le code de température est indiqué ici.

Les avertissements suivants s'appliquent aux produits ayant la certification CSA pour une utilisation dans des environnements dangereux.

Risque d'explosion

ATTENTION



- La substitution de composants peut rendre ce matériel inadapté à une utilisation en environnement de Classe 1, Division 2.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de remplacer des composants.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs fournis par l'utilisateur pour se brancher aux circuits externes de cet appareil à l'aide de vis, loquets coulissants, connecteurs filetés ou autres, de sorte que les connexions résistent à une force de séparation de 15 Newtons (1,5 kg - 3,4 lb.) appliquée pendant au moins une minute.
- S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Notes:

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