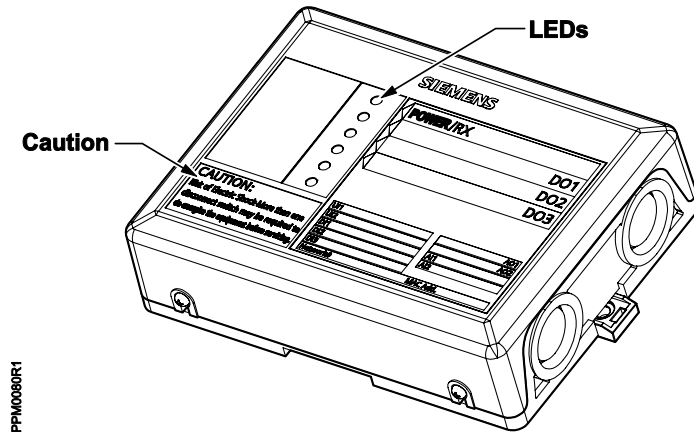


## Product Overview

The Siemens Modbus Point Pickup Module (PPM) are expansion I/O devices that communicate on a Modbus RTU network, allowing for the incorporation of a cluster of remote points into the Building Automation Station over the Modbus network.

The PPM family leverages the Modbus RTU network to extend the reach of any Modbus compatible Building Controllers application program.

Each Universal Input can be configured for analog or digital input. Input/Output type is configured by writing to specific configuration registers.

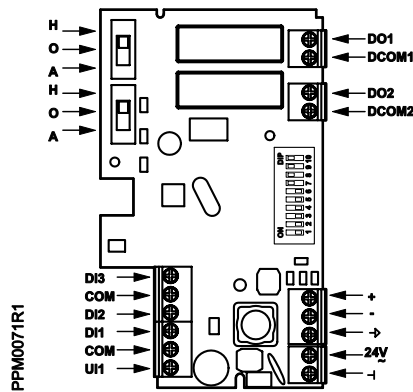


Modbus Point Pickup Module (PPM).

## Order information

Order number	ASN	Product description
S55664-J111	PPM-1U32.MPR	Remote I/O expansion module, AC 24 V power supply, 1 universal input, 3 digital inputs and 2 relay digital outputs, Modbus interface

## Board Diagrams



6 Point Digital controller board.

# Specifications

## Dimensions and Weight

Dimensions	6.1 in x 4.5 x 1.5 in (154 mm x 114.4 mm x 40 mm)
Weight	0.85 lb Max. including box

## Communication

Communications Remote Local	Modbus RTU 9600 to 38400 baud set via DIP switch
-----------------------------	---

## Electrical

Power Requirements Operating Range Power Consumption	Input power range of AC 19.2 V to AC 28.8 V (50 or 60 Hz) 4 VA to 7 VA
---	--

Universal Inputs (UI1)	1...10 K $\Omega$ Type II NTC Thermistor or dry contact
------------------------	---

Digital Outputs (DO1, DO2)	2- Form A NO (Normally Open) Relays AC 24...240 V 5 A resistive, 2 A General Purpose, 5(2)
----------------------------	--

Digital Inputs (DI1, DI2, DI3)	3- Dry contact
--------------------------------	----------------

## Environment

Temperature Monitoring Accuracy	$\pm 1.0$ °F over a range of -13...165 °F (-25...74°C)
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Storage Temperature	-40... 158 °F (-40...70 °C)
---------------------	-----------------------------

Operating Temperature	32...122 °F (0...50 °C) 5...93% RH (non-cond.)
-----------------------	--

## Standard

Product safety	Automatic electrical controls: EN 60730-1:[2009]
Electromagnetic compatibility	Immunity in the industrial sector: EN 61000-6-2:[2005] Emissions in the domestic sector: EN 61000-6-3:[2007]
EU Conformity (CE)	A5W90001079 *)

\*) The documents can be downloaded from <http://siemens.com/bt/download>.

## Disposal



The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

## Communication (RS-485 Port)

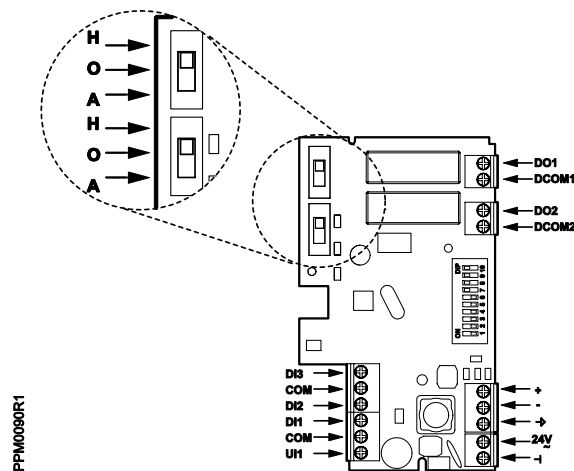
The RS-485 port provides a path for commands and information transmitted between field panels or other Modbus devices. This port provides communications over an RS-485 Modbus RTU network. The communication speed is set during startup via dip switch.

The RS-485 port provides half-duplex, asynchronous serial RS-485 communications over shielded twisted pair cable. The communication terminations (+ – ↕) are shown on the inside unit cover.

The PPM can reside on any Modbus building controller's sub network. Up to 255 Modbus devices can be supported on a Modbus RTU network.

## HOA (Hand-Off-Auto)

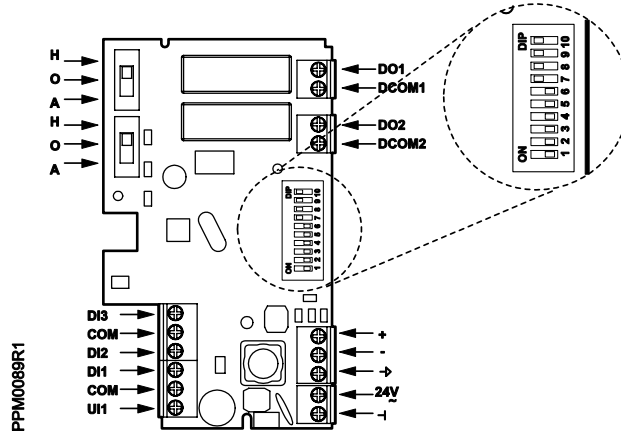
These switches can be used for commissioning. In the **H** position, the digital output is ON, in the **O** position the digital output is OFF. For system control the switch must be set to the **A** position.



*Hand-Off\_Auto Switches*

## DIP Switch Settings

DIP Switches 1 through 8 are used to set the Slave address. Switches 9 and 10 are used to set the communication speed (baud rate). For more information on DIP switch address settings see the *Modbus Point Pickup Module Installation and Startup (140-1139)*.



DIP Switches.

## Baud Rate Settings

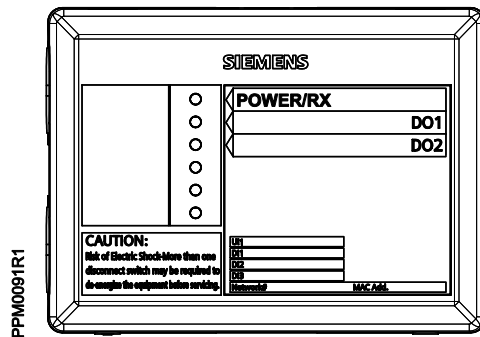
Use DIP Switches 9 and 10 to set the device's communication speed (baud rate).

Baud Rate	Switch 9	Switch 10
9600	OFF	OFF
19200	OFF	ON
38400	ON	OFF

## Status LEDs

The controller has up to four Light Emitting Diode (LED) indicators, depending on the device. A POWER/RX LED solid ON indicates that the device is powered, but no communication. A flashing LED indicates that the device is successfully transmitting packets across the network.

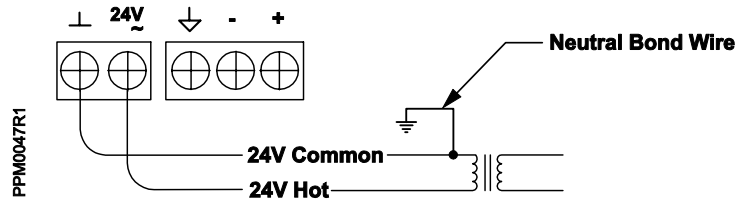
Controller LEDs		
LED Type	Label	Indication
DO	DO1, DO2, DO3	Indicates the ON/OFF status of the associated DO. A glowing LED indicates that the DO is energized. Module has two and three DOs respectively.
Power/Receive	POWER/RX	Indicates the power and communication status of the device. Solid ON indicates device is powered, no communication. OFF indicates unit not powered. Flashing indicates device is successfully transmitting packets on the network.



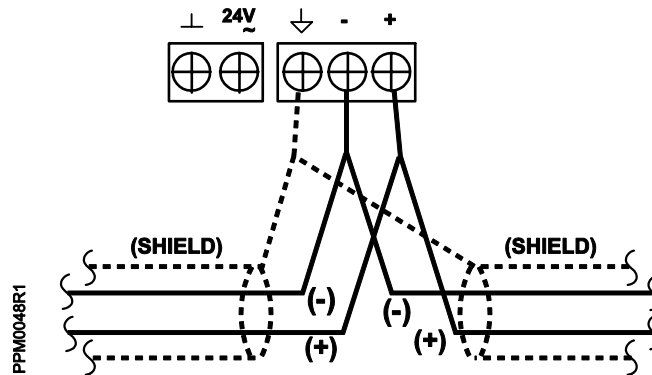
PPM0091R1  
6 Point Digital PPM with Two Digital Outputs.

## Wiring

See the *Wiring Guidelines Manual* (125-3002) for additional wiring information.

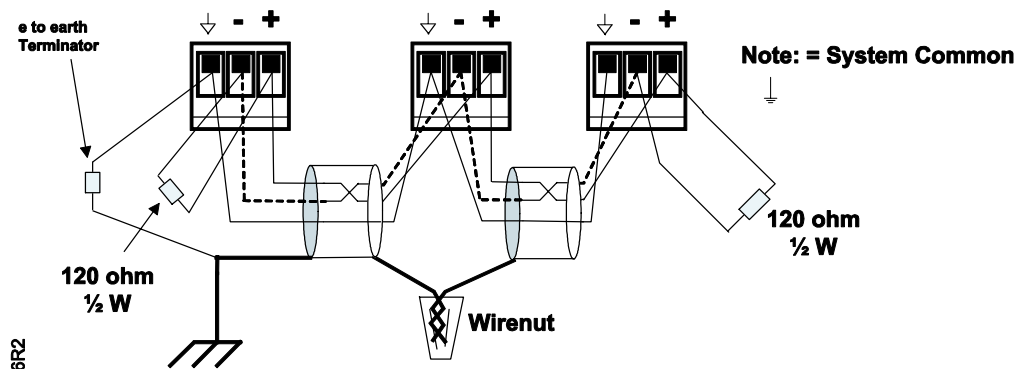


Power Wiring.



2-wire network interface.

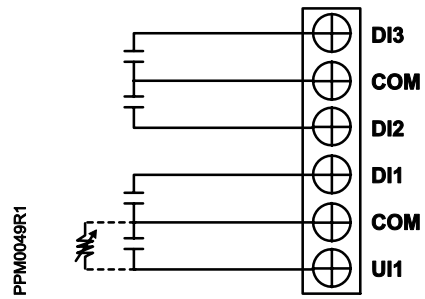
### 3-Wire Network Interface



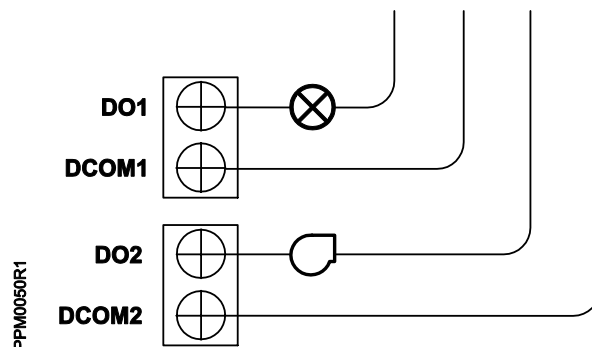
**NOTE:** When wiring a 3-wire system to a 2-wire system see the *Wiring Guidelines Manual* (125-3002) for detailed information.

3-wire interface.

## I/O Configuration Diagrams



*AI/DI wiring*



*DO wiring*

## Key functions

Application 0 and 5 are designed in device, which can be configured remotely by communication command, then kept in Flash memory. Default application is application 0.

Universal input can be configured as either NTC 10K analog input or potential free digital input. Default configuration is digital input.

### Application 0

Application 0 mainly extends the quantity of inputs and outputs remotely. The status of universal input, digital inputs and digital outputs can be read by central device through communication.

Digital outputs can also be overridden remotely.

### Application 5

This application is to realize simple logic relationship between digital inputs and outputs. Central device can program this logic by communication.

A truth table shows the status of two digital outputs responding to various combinations of 3 digital inputs. 1 represents for short circuit of digital input or energy of digital output. 0 represents for open circuit of digital input or dis-energy of digital output.

As one optional feature, delay time between two outputs, ranged from 0 seconds to 10 minutes, is also programmed by Modbus command. And the operation principle of delay time varies accordingly to target operation of digital outputs.

In case both DO1 and DO2 should be set to 0 accordingly to truth table, DO2 will be set to 0 at first, DO1 will be set to 0 after absolute delay time. Otherwise, DO2's operation will be behind of DO1's operation with absolute delay time per truth table.

Once the logic is programmed to device successfully, Module will operate automatically per programmed logic. Central device can only read the status of all inputs and outputs.

Logic	DI1	DI2	DI3	DO1	DO2
Case 1	0	0	0	0 or 1	0 or 1
Case 2	0	0	1	0 or 1	0 or 1
Case 3	0	1	0	0 or 1	0 or 1
Case 4	0	1	1	0 or 1	0 or 1
Case 5	1	0	0	0 or 1	0 or 1
Case 6	1	0	1	0 or 1	0 or 1
Case 7	1	1	0	0 or 1	0 or 1
Case 8	1	1	1	0 or 1	0 or 1



## Communication objects

Parameter Name	Address (Decimal)	R/W	Length	Description
DO MEM_value	00001	R/W	2	DO status per command
DO REG_value	00003	R	2	DO actual status with delay time
DI value	10001	R	1	DI1, DI2, DI3 status LSB is DI1.
UI configuration	40101	R/W	1	UI configuration --5 (DI) --6 (R_NTC10K)
App No. selection	40112	R/W	1	--255 (0 x 00FF) (app 0) --510 (0 x 01FE)(app 1) --765 (0 x 02FD)(app 2) --1020 (0 x 03FC) (app 3) --1275 (0 x 04FB)(app 4)
App No. 5 program	40112	R/W	2	DATA1: App No. 5 selection -1530 (0 x 05FA) (app 5)  DATA2*: App No. 5 program Each bit of this word map the value of DO1 and DO2 per truth table. MSB is the DO2 status in case 8, and LSB is the DO1 status in case 1.
Delay time (T)	40114	R/W	1	The delay time between DO1 and DO2 operation.
FW version	40301	R	1	Actual FW version of device
UI_AI value	30001	R	1	NTC10K value ( resolution is 0.1 °C)
Device type	30030	R	1	The device type of PPM-1U32.MPR is fixed to 101
Application No.	30056	R	1	Actual application number

### NOTE:

The register number is using the PLC (base 1) address notation. Tools like Modbus Poll call this "PLC addressing". Modbus actually uses base 0 addressing on the wire, so Modbus request transmitted on the wire need to be subtracted one from the address in this table.

For example, register address 1, is actually address 0 in the Modbus command; register address 301 is actually address 300 in the Modbus command.

Issued by  
Siemens Industry, Inc.  
Building Technologies Division

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Document ID	140-1138	140-1138(AA)
Edition	2017-12-05	