

## Product Description

The PO1001 and PO1002 modules are part of the Ponto Series and each has 16 opto isolated digital inputs. The modules work with sensors type 1 (switches) and are designed for the control and supervision of processes.

The picture shows the product assembled in a base for digital IOs with spring type terminal blocks. The main features are:

- High density of IOs with feeding and return for each individual input.
- Hot swap, no interference on panel cabling.
- Field cabling is directly connected to the base, thus eliminating need for intermediary terminal blocks.
- Remote and local diagnosis, with indication for no communication with CPU and failure on external power supply.
- Protection of all inputs through one fuse assembled in the base PO6103 or PO6153.
- Automatic addressing.
- Automatic verification of module type by the bus head.
- Input status signalization by LED.
- A input can interrupt the CPU for immediate processing.
- Identification tag.



## Ordering Information

### Product Packaging

The product package contains:

- Module PO1001 or PO1002
- Installation Guide

### Product Code

Please use following product code when ordering the product:

Code	Description
PO1001	16 DI 110 VAC Opto
PO1002	16 DI 220 VAC Opto

### Related Products

Depending on your system requirements, the following products might be ordered along with the PO1112. Please check with your sales representative if you have any questions.

Code	Description
PO6003	Digital IO Base - Spring
PO6053	Digital IO Base VAC – Screw
PO6103	Digital IO Base VAC – Spring with fuse
PO6153	Digital IO Base VAC – Screw with fuse
PO8510	10 Sheets with 14 labels of 16 tags for printer
PO8522	Lock for assembling in the TS35 rail
PO8523	Spring Terminal Block Tool
PO8520	16 Fuses 3 A 250 VAC ( spare part)

## Features

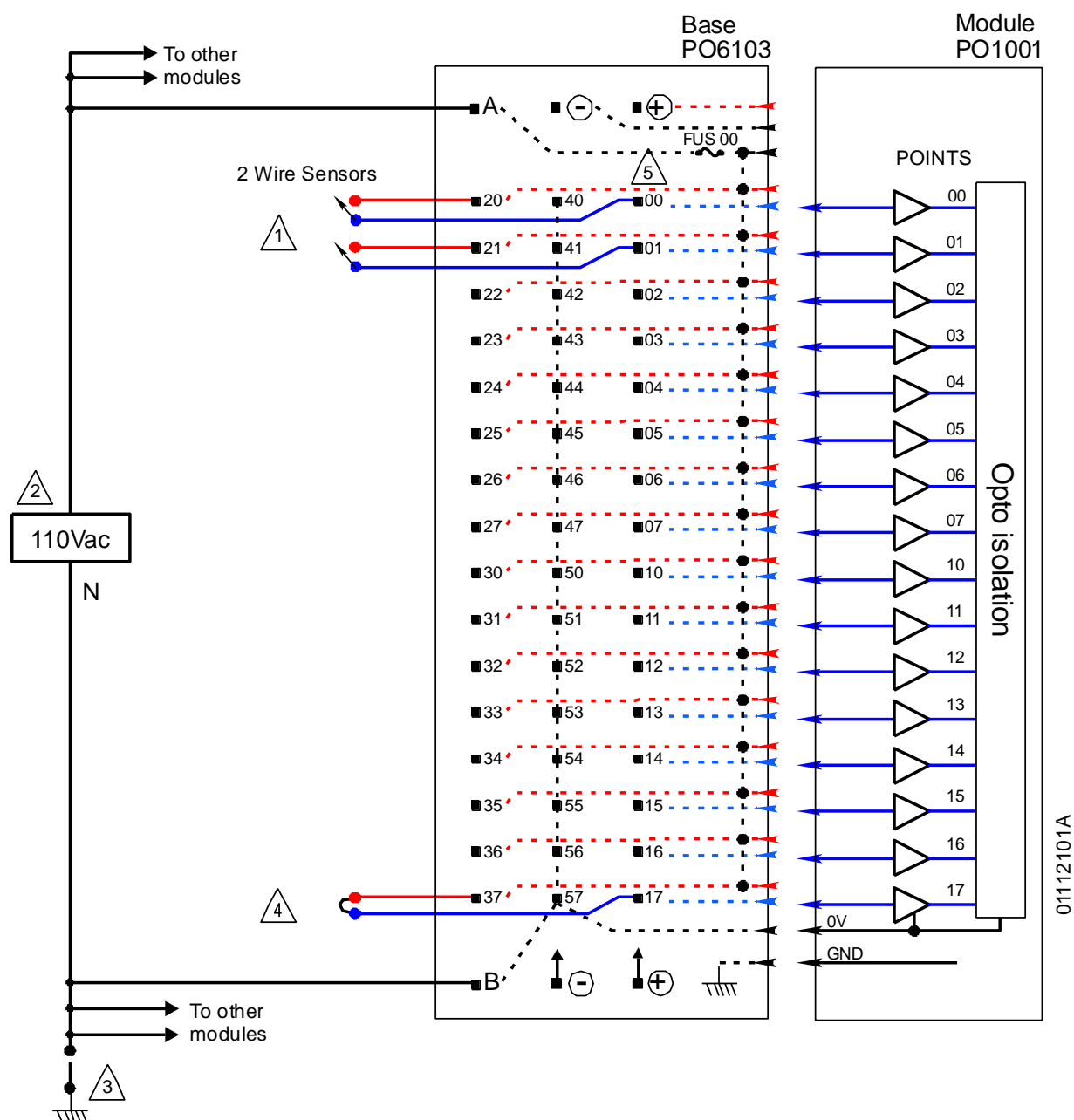
	PO1001
<b>Module type</b>	16 isolated digital inputs with common
<b>Input voltage</b>	110 VAC 79 to 140 VAC for 1 status 0 to 20 VAC for 0 status
<b>Input current</b>	3 mA for 110 VAC
<b>Input type</b>	Type 1, for switches
<b>Input impedance</b>	35 Kohm @ 60Hz
<b>Terminal block configuration</b>	1 terminal block per inputs and 1 terminal block for feeding each input
<b>Transition time</b>	0 - 1 : 2 ms (typical) 1 - 0 : 15 ms (typical)
<b>Status indication</b>	One LED per input
<b>Diagnosis indication</b>	One multifunctional LED with indication for Ok, non accessed module and no external power supply.
<b>Configurable parameters</b>	Diagnosis of missing AC voltage.
<b>Hot swap</b>	Yes.
<b>Protection</b>	One 3A fuse for protection of power for all inputs.
<b>External power supply</b>	110 VAC to power all inputs. Phase on terminal block 'A' and ground on 'B'.
<b>Isolation</b>	
<b>Inputs to ground</b>	1500 VAC per 1 minute, 250 VAC continuous
<b>Inputs to logic circuits</b>	1500 VAC per 1 minute, 250 VAC continuous
<b>Among inputs</b>	No isolation
<b>Bus current consumption</b>	83 mA
<b>Power</b>	2.7 W with all inputs on (nominal) 3.8 W with all inputs on (maximum) 0.6 W with all inputs off
<b>Maximum operating temperature</b>	60 °C
<b>Dimensions</b>	99 x 49 x 81 mm
<b>Norms</b>	IEC 61131
<b>Compatible base</b>	PO6003 - Digital IO Base - Spring PO6053 - Digital Base VAC – Screw PO6103 - Digital IO Base VAC – Spring with fuse PO6153 - Digital IO Base VAC – Screw with fuse

	PO1002
<b>Module type</b>	16 isolated digital inputs with common
<b>Input voltage</b>	220 VAC 164 to 242 VAC for 1 status 0 to 102 VAC for 0 status
<b>Input current</b>	3.3 mA for 220 VAC
<b>Input type</b>	Type 1, for switches
<b>Input impedance</b>	65 Kohm @ 60Hz
<b>Terminal block configuration</b>	1 terminal block per inputs and 1 terminal block for feeding each input
<b>Transition time</b>	0 - 1 : 2 ms (typical) 1 - 0 : 15 ms (typical)
<b>Status indication</b>	One LED per input
<b>Diagnosis indication</b>	One multifunctional LED with indication for Ok, non accessed module and no external power supply.
<b>Configurable parameters</b>	Diagnosis of missing AC voltage.
<b>Hot swap</b>	Yes.
<b>Protection</b>	One 3A fuse for protection of power for all inputs.
<b>External power supply</b>	220 VAC to power all inputs. Phase on terminal block 'A' and ground on 'B'.
<b>Isolation</b> Inputs to ground Inputs to logic circuits Among inputs	1500 VAC per 1 minute, 250 VAC continuous 1500 VAC per 1 minute, 250 VAC continuous No isolation
<b>Bus current consumption</b>	83 mA
<b>Power</b>	3.8 W with all inputs on (nominal) 4.6 W with all inputs on (maximum) 0.6 W with all inputs off
<b>Maximum operating temperature</b>	60 °C
<b>Dimensions</b>	99 x 49 x 81 mm
<b>Norms</b>	IEC 61131
<b>Compatible base</b>	PO6003 - Digital IO Base - Spring PO6053 - Digital Base VAC – Screw PO6103 - Digital IO Base VAC – Spring with fuse PO6153 - Digital IO Base VAC – Screw with fuse

## Installation

### Electrical Installation

The following diagram shows the cabling for 2 sensors on the PO1001 module installed on the PO6103 base. The same configuration applies to the PO1002.



Notes:

- 1 – Sensors with 2 wires should have the power supply on the terminal blocks numbered from 20 to 37. The base fuses protects the sensor feeding.
- 2 – Power supply for the field sensors. The power supply must be connected to the A and B inputs for each base, as shown on the diagram. The power supply must guarantee an energy output within the module requirements.
- 3 – The power supply common point for the field sensors (0V) should be connected to the panel grounding. This connection is not mandatory, but it is highly recommended in order to reduce electrical interference in automation systems.
- 4 – This connection is required when the diagnosis of no voltage for field sensors are needed.
- 5– The power supply is protected by a 3 A fuse.

The PO1001 module installation is done through the PO6003 or PO6053 bases. The terminal blocks identification follow direct relation to the IOs and LEDs as shows below:

Module IO	00	01	02	03	04	05	06	07	10	11	12	13	14	15	16	17
Input terminal block	00	01	02	03	04	05	06	07	10	11	12	13	14	15	16	17
Power supply terminal block 110/220 VAC output	40	41	42	43	44	45	46	47	50	51	52	53	54	55	56	57

The 110/220 VAC power supply is connected to the terminal block 'A' (phase) and 'B' (ground).

## Mechanical Assembly

The mechanical assembly is described in the Ponto Series Utilization Manual.

Please adjust the mechanical code on the assembly base to 0 (zero) on switch A and 1 on switch B for the PO1001 and 0 (zero) on switch A and 2 on switch B for the PO1002.

## Parameterization

The CPU or field network head defines via software the PO1001/PO1002 parameterizations. Such parameterization may be set by the MasterTool when using Altus CPUs or by the software that configures the field bus master. For further information please consult Ponto Series Utilization Manual, MasterTool Utilization Manual and Manuals for the Interfaces and Field Network Heads. The parameterization is set through user-friendly menus. For reference purposes, following are the binary codes.

## Parameters Bytes

The module parameterization is defined in one byte.

Byte	Parameters
0	Module generics

The parameterization bits are described as follow:

Byte 0 – Module generics								Description
7	6	5	4	3	2	1	0	
							1	Number of parameters bytes ( always 1 )
	0	0	0	0	0	0		Always zero
0								Disable diagnosis of external AC power supply ( input 17).
1								Enable diagnosis of external AC power supply ( input 17)

## Diagnosis

### Diagnosis Bytes

The PO1001/PO1002 modules have one byte for module operating diagnosis.

Following the diagnosis bits are described:

Byte	Diagnosis
0	Module generics

Byte 0 – Module generics								Description
7	6	5	4	3	2	1	0	
0		0	0	0	0	0	0	Always zeros
	0							External AC voltage present.
	1							External AC voltage not present.

### Diagnosis LED

The diagnosis LED indicates the following situations:

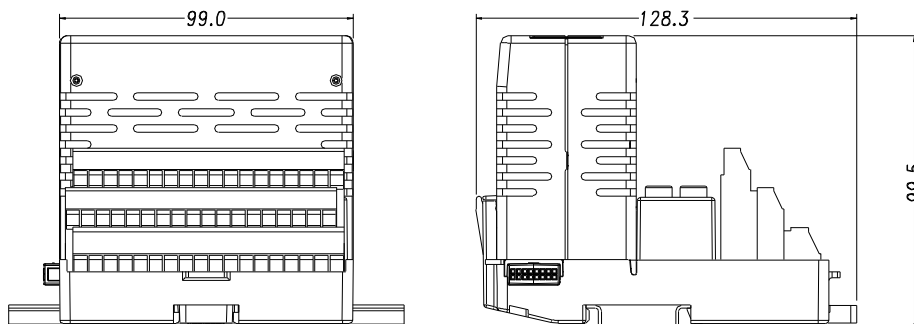
LED DG	Meaning	Causes
On	Normal operation	
Blinking 1X	Module non accessed by the head or failure on module logic	<ul style="list-style-type: none"> <li>- Wrong module type for position</li> <li>- Non declared module</li> <li>- Damaged module</li> </ul>
Blinking 3X	No external AC voltage	- The external module power supply is below 50 VAC for PO1001 or 100VAC for PO1002

## Physical Dimensions

Dimensions in mm considering the module assembled in its base.

Please consult the Ponto Series Utilization Manual IP20 - MU209000 for general panel dimensions.

Here is the PO1001 module assembled in a PO6103 or PO6153 base in DIN TS35 rails.



---

## Maintenance

The hot swap procedure is described in the Ponto Series Utilization Manual.

---

## Manuals

For further technical details, configuration, installation and programming of Ponto Series products please consult following documents:

Document Code	Description
MU209000	Ponto Series Utilization Manual
MU209100	Utilization Manual PO3045 - CPU
MU209503	Utilization Manual PO5063 – PROFIBUS Head
MU209010	Configuration Manual PROFIBUS Remote
MU229040	Utilization Manual MT6000 - MasterTool ProPonto

Also please consult the utilization manuals for the field network heads and compatible CPUs.