16 DO 24 Vdc Transist. Opto Module PO2020

Doc. Code: CE109400 Revision: D

Product Description

The PO2020 module is part of the Ponto Series and has 16 digital transistor outputs with common point.

The picture shows the product installed in a base with spring terminal blocks.

The module main features are:

- High density of I/O points
- Short circuit protection and temperature overload
- Hot swap with no interference on the panel cabling
- Field cabling connected to the base, thus eliminating intermediary terminal blocks for field signals
- Remote and local diagnosis
- Automatic addressing.
- Automatic verification of module type by the bus head.
- Open loop indication and/or short circuit point

Ordering Information

Included Items

The product packing comes with:

- PO2020 Module
- Installation guide

Product Code

Use the following when ordering the product:

Code	Description
PO2020	16 DO 24Vdc / 2A transistor opto module

Related Products

Depending on your system requirements, the following products might be ordered along with the PO2020 module.

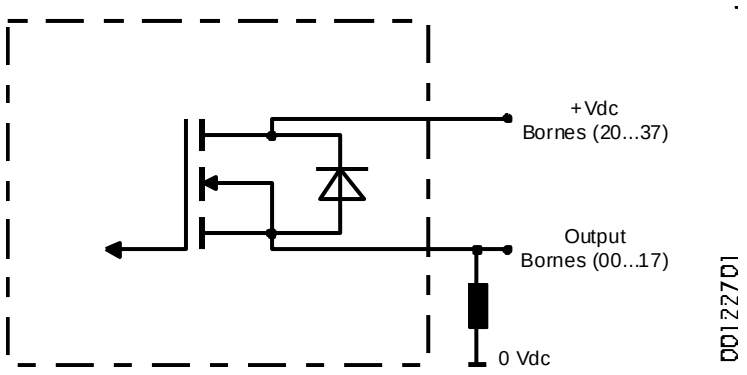
Code	Description
PO6002	Spring digital I/O base single power line
PO8522	End bracket for rail
PO8523	Spring terminal tool

Features

	PO2020
Module type	16 digital transistor outputs
Maximum current by point	1 A (see notes)
Operation voltage	11 to 30 Vdc
Maximum current	12 A @ 25 °C 8 A @ 60 °C
Output type	Transistor - source.
Maximum output impedance	200 mΩ
Minimum load for switching	0,5 mA
Output delay time	400us
Maximum frequency of switching	500 Hz
Status indication	One LED by output point
Diagnosis indication	One multifunctional LED with module OK indication, not accessing module, external power supply missing, output open load or short circuit.
Configurable parameters	Short circuit and no load output indication.
Hot swap	Yes
Protections	Overload current and short circuit, overload temperature, power supply polarity inversion and inductive load demagnetization
Isolation **Inputs to ground** **Inputs to logic circuit**	 1500 Vac, 1 minute, 250 Vac continuos 1500 Vac, 1 minute, 250 Vac continuos
Bus current consumption	83 mA
Power dissipation	2,9 W with maximum current on output points.
Maximum operating temperature	60 °C
Dimensions	100 x 52 x 84 mm
Standards	IEC 61131-2:2003, clauses 8 and 11
Bases	PO6002

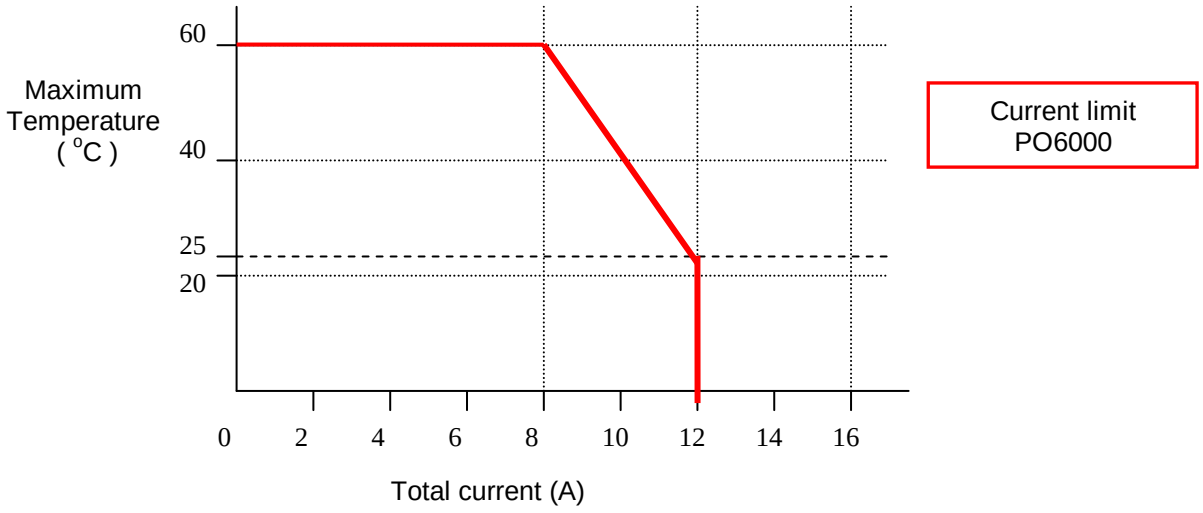
Maximum current by point: the user can activated a load with 2 A, putting two outputs in parallel.

Output type: The PO2020 module uses transistor output source type mounted with PFET transistors. It has protection diode for inductive loads. The following picture shows an simplify diagram of each output.



Protections: The outputs are grouped by 4 channels. They are protected against overload or short circuit using a thermal device. The protection acts on the group that presents the failure, deactivating the outputs and sending a signal to the software.. If the user do not configure this option the module will try to retrieve the outputs again. This characteristic avoid the use of a fuse base..

Maximum operating temperature: The PO2020 module supports a temperature up to 60 ^{o}C, with a total current of 8 A. Bigger currents will limited the maximum operating temperature according the following graphic.



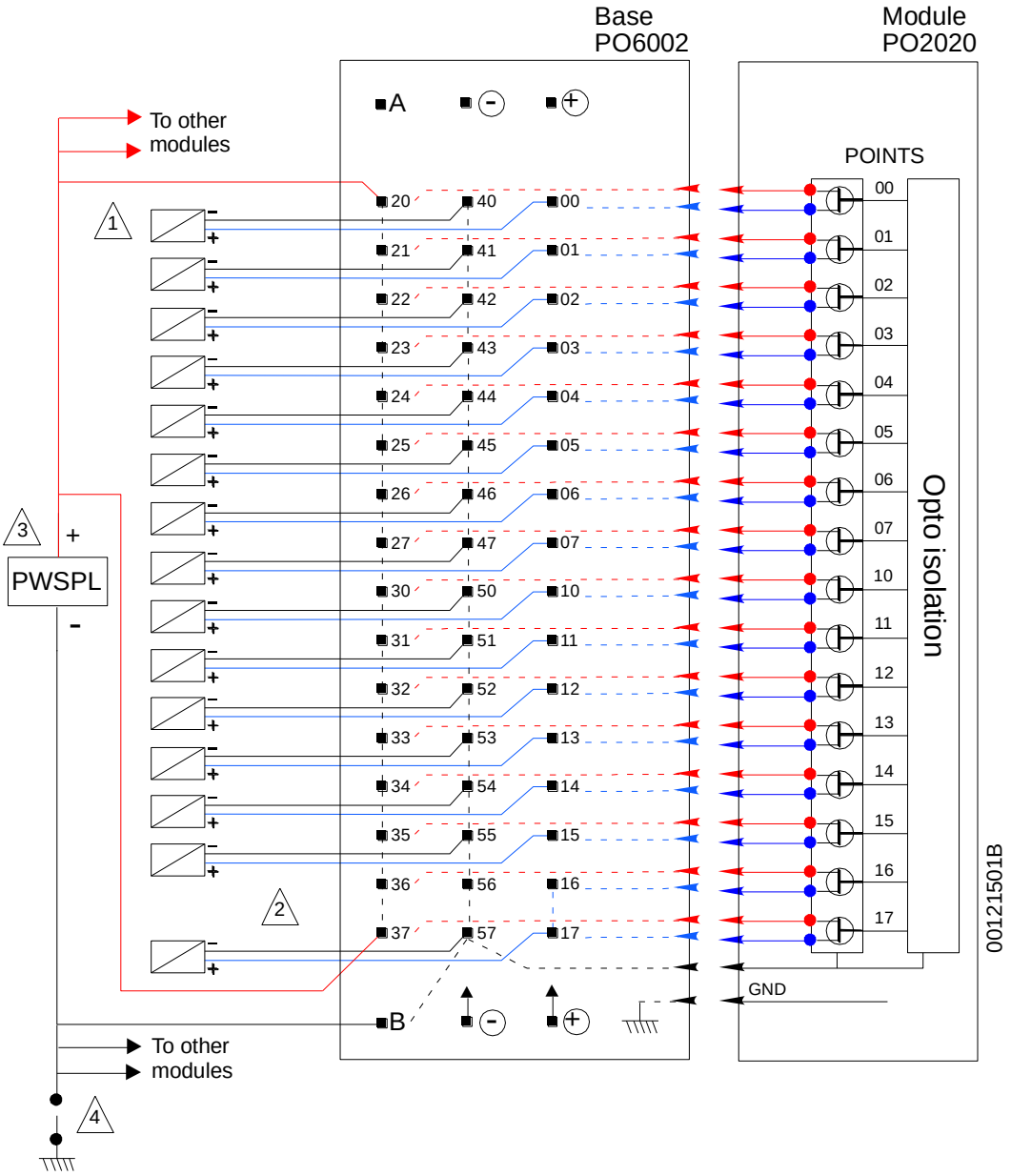
Power supply interruptions: Interruptions in power port are supported if not longer than 10 ms and if the module is powered with it's nominal 24 Vdc voltage or greater. Longer interruptions or in voltages lower than the nominal may cause modules reset. Outputs are powered directly by the external supply and will reflect the interruption.

Installation

ATTENTION:
ESD (Electro Static Discharge) sensitive device. Always touch a grounded metallic object before handling the device.

Electrical Installation

The PO2020 module uses the PO6002 according next diagram.
The +Vdc of the power supply must be connected on the base common terminals (20 a 37) and the 0V on terminal B.



Notes:

2 – In case of loads over 1 A it is possible to use two outputs in parallel configuration with a limit of 2 A.

3 – The power supply for the field devices must be connected to terminals 20 to 37 and terminal B of each base.

4 – The power supply of field devices 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.

6 – 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.

Module power supply:

The power supply must be connected top terminals 20 to 37 (+ Vdc) and point B (0 Vdc).

Module Point	00	01	02	03	04	05	06	07	10	11	12	13	14	15	16	17
Output Terminal	00	01	02	03	04	05	06	07	10	11	12	13	14	15	16	17
Commom Terminal	40	41	42	43	44	45	46	47	50	51	52	53	54	55	56	57

ATTENTION:

Atmospheric discharges (thunders) may cause damages to the modules although it's protections.

Additional protections should be used if module's power comes from a power supply located outside the cabinet where the module is installed, because it could be vulnerable to this kind of discharges.

If the field wiring of the output points is susceptible to this kind of discharge, surge suppressors should be used.

Mechanical Assembly

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

Please adjust the mechanical code on the assembly base to 2 on switch A and 0 on switch B.

Parameterization

The CPU or field network head defines via software the PO1000/PO1003 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 PO2020 module is defined by 1 byte.

Byte	Parameters
0	General

Byte 0 - General								Description
7	6	5	4	3	2	1	0	
				0	**0**	**0**	**1**	Number of parameters bytes (always 1)
			0					Always zero
		0						Diagnostic outputs disable
		1						Diagnostic outputs enable
0	**0**							Always zero

Diagnosis

Diagnosis Byte

The PO2020 module has one byte for module operating diagnosis.

Byte	Diagnosis
0	General

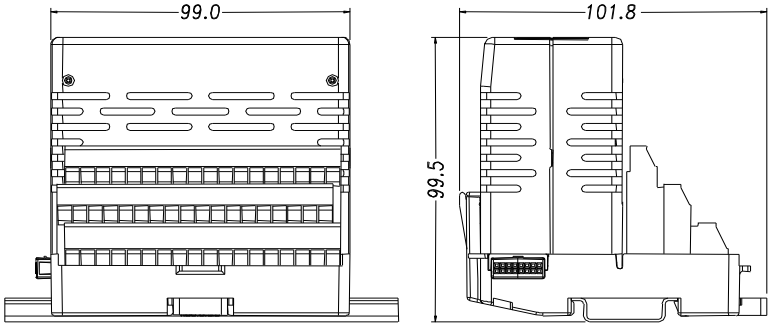
Byte 0 - General								PROFIBUS Code	Description
7	6	5	4	3	2	1	0		
			0	**0**	**0**	**0**	**0**	-	Always zero
		0						-	Outputs OK.
		1						01	No load or short circuit outputs
	0							-	External power supply OK
	1							02	External power supply low
0								-	Always zero

Diagnosis LED

DG LED	Meaning	Causes
ON	Normal operation	
Blinking 1X	Not accessed module or logic problem	- Position with wrong type module. - Module not declared. - Module damaged.
Blinking 3X	External DC voltage low	- External power supply with lower limit (under 17 Volts).
Blinking 4X	Output without load or shor circuited.	- Open loop output - Output shor circuit - Field device damaged

Physical Dimensions

Dimensions in mm.



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	User's Manual – Ponto Series
MAN/MT4100	Programming Manual – MT4100