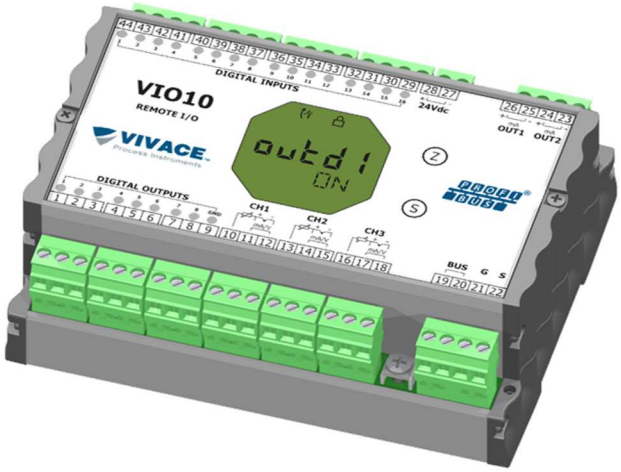
VIVACE™
Process Instruments
Exceeding Automation Limits

VIO10-P

PROFIBUS-PA REMOTE I/O



- ✓ **Profibus-PA Remote I/O**
  - 16 Discrete Inputs
  - 08 Discrete Inputs
  - 03 Channels for 2 or 3 wire temperature sensors or 4-20mA/0-5Vdc inputs
  - 2 Analog Outputs 4-20mA
- ✓ **5 Digit Digital Rotary LCD Display with Bargraph**
- ✓ **Reading of RTD, TC, Ohm and mV Sensors**
- ✓ **Profibus-PA Communication**
- ✓ **Address Change via software and locally**
- ✓ **Function Blocks**
  - 16 Discrete Input Blocks (DI)
  - 08 Discrete Output Blocks (DO)
  - 03 Input Blocks (AI)
  - 02 Output Blocks (AO)
- ✓ **Galvanic insulation, 1.5 kVAC**
- ✓ **Power without Polarity 12 mA Quiescent Current**
- ✓ **Operating Temperature -20 to 70 °C**
- ✓ **Local Adjustment via Magnetic key**
- ✓ **Configuration, Calibration, Monitoring and Diagnostics via EDDL and FDT / DTM**

DESCRIPTION

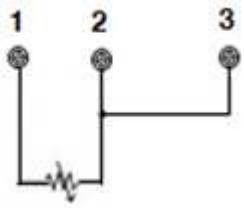
VIO10-P remote is a member of Vivace Process Instruments' family of Profibus-PA devices, designed for field installation or DIN rail paneling.

The remote is powered by a voltage of 9 to 32 Vdc and it has 16 discrete inputs and 8 discrete open collector outputs plus 3 inputs for two- or three-wire temperature sensors (various types of sensors such as thermocouples and RTDs, (0 - 5Vdc) or current (4 - 20mA) analog inputs, configured by the user. In addition, two analog outputs 4 - 20 mA, according to user settings.

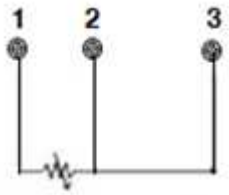
Through a Profibus-PA configurator, you can configure the parameters of the Profibus-PA remote, the input and output channels, and verify calibrations, diagnostics and monitors. In addition, it is possible to configure the VIO10-P via local adjustment using a magnetic key.

The VIO10-P is connected to the Profibus-DP network via a DP / PA coupler, using a pair of twisted and shielded wires. The Profibus-PA technology allows the interconnection of several devices in a single network, allowing the construction of large control systems. The VIO10-P works with the concept of functional blocks such as Input and Output Discrete, Input and Output Analog and Transducer Blocks.

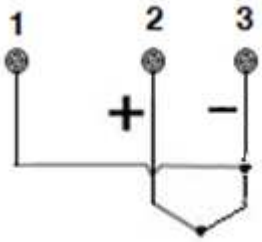
SENSOR CONNECTION – CH1 to CH3



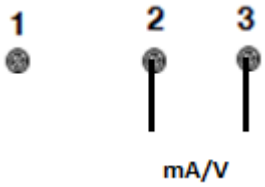
RTD or 2-wire resistive connection



RTD or 3-wire resistive connection

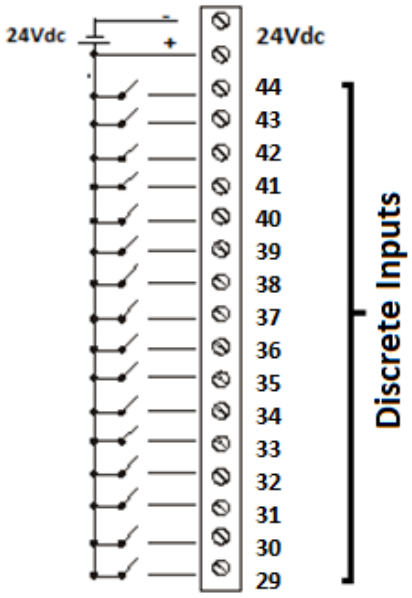


TC or mV connection.

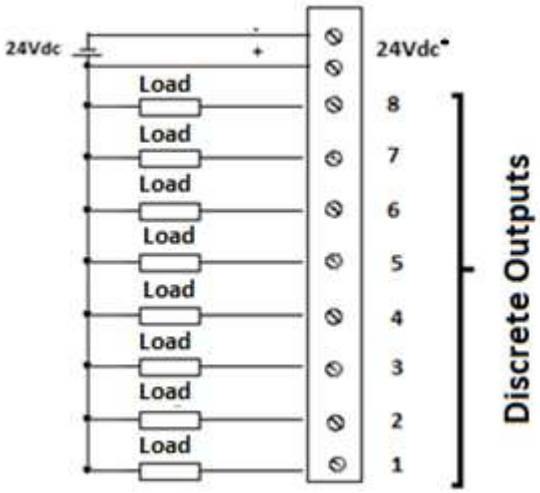


4-20 mA or 0-5 Vdc connection

CONNECTING DISCRETE INPUTS

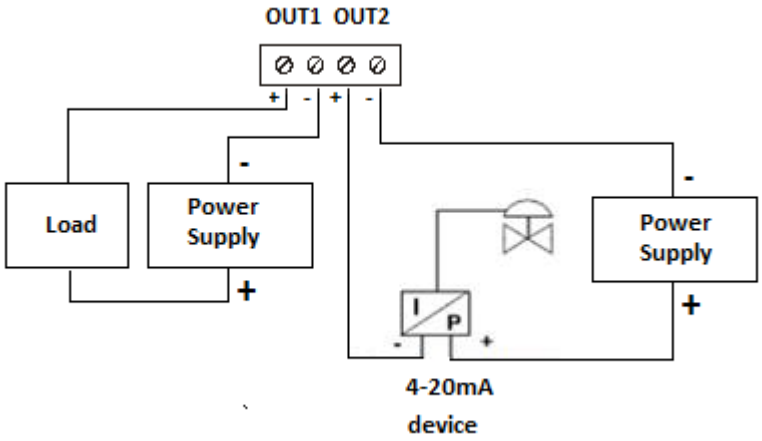


CONNECTING DISCRETE OUTPUTS



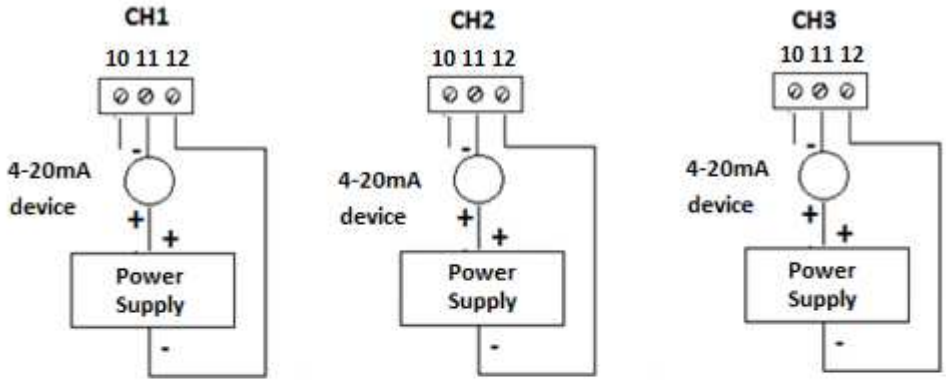
** When using 24 Vdc external power for digital outputs (DO1 to DO8), connect the source negative to terminal 9. If the same source is connected to terminals 27 and 28, it will not be necessary to connect terminal 9, since this connection is already made internally in the VIO10 circuit.*

CONNECTION OF ANALOG INPUTS

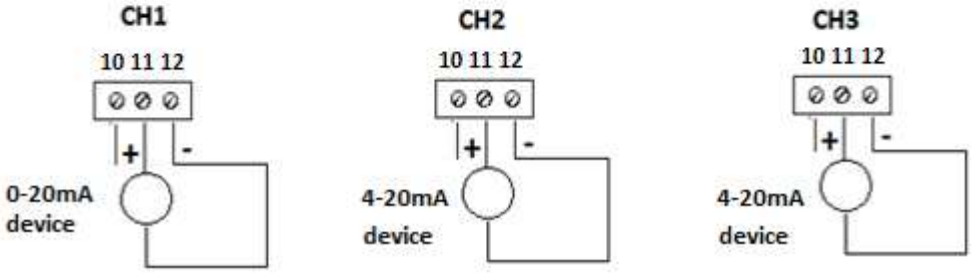


CONNECTION OF ANALOG INPUTS (CH1, CH2 and CH3)

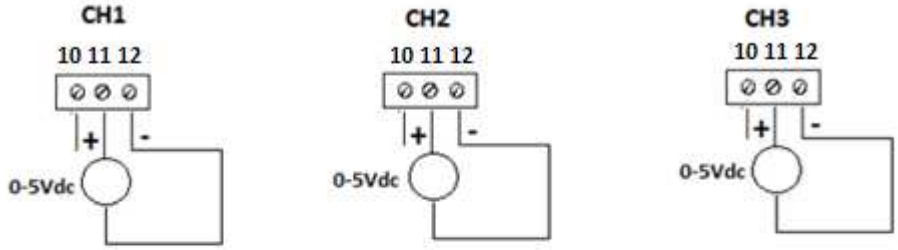
2 wires 4-20mA devices



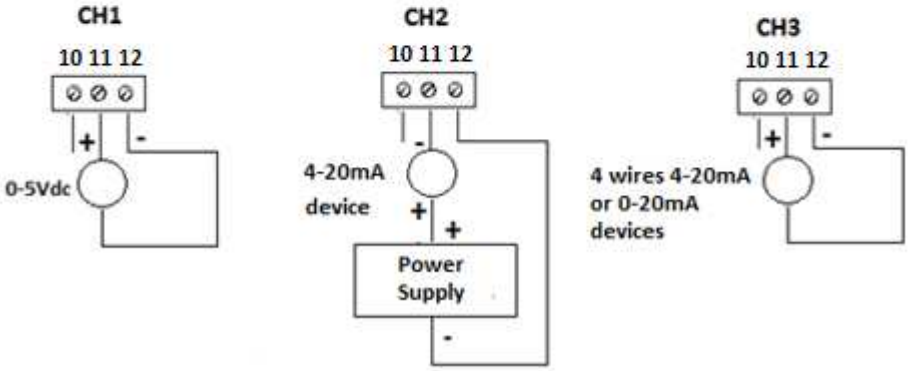
4 wires 4-20mA or 0-20mA devices



0-5Vdc Sensors



User Application



SENSOR TYPES

RTD – Temperature sensor based on resistance for 2 or 3-wire connection.

SENSOR OPTION	REFERENCE	INPUT RANGE (°C)	MINIMUM SPAN (°C)	ACCURACY (°C)
Pt100 (α=0.00385)	IEC751	-200 to 850	10	0.10
Pt200 (α=0.00385)	IEC751	-200 to 850	10	0.50
Pt500 (α=0.00385)	IEC751	-200 to 850	10	0.20
Pt1000 (α=0.00385)	IEC751	-200 to 300	10	0.20
Pt100 (α=0.003916)	JIS1604	-200 to 645	10	0.15
Pt200 (α=0.003916)	JIS1604	-200 to 645	10	0.70
Ni120	Edison Curve #7	-70 to 300	10	0.08
Cu10	Edison Copper Winding #15	-50 to 250	10	1.00

TC – Temperature sensor based on milivoltage for 2-wire connection.

SENSOR OPTION	REFERENCE	INPUT RANGES (°C)	MINIMUM SPAN(°C)	ACCURACY (°C)
Thermocouple B	IEC584	100 to 1820	25	0.75
Thermocouple E	IEC584	-50 to 1000	25	0.20
Thermocouple J	IEC584	-180 to 760	25	0.25
Thermocouple K	IEC584	-180 to 1372	25	0.25
Thermocouple N	IEC584	-200 to 1300	25	0.40
Thermocouple R	IEC584	0 to 1768	25	0.60
Thermocouple S	IEC584	0 to 1768	25	0.50
Thermocouple T	IEC584	-200 to 450	25	1.00
Thermocouple L	DIN43710	-200 to 900	25	0.35
Thermocouple U	DIN43710	-200 to 600	25	0.35
Thermocouple W3	ASTM E988-96	0 to 2000	25	0.70
Thermocouple W5	ASTM E988-96	0 to 2000	25	0.70
Thermocouple L	GOST R 8.585	-200 to 800	25	0.45

Ohm or mV – Linear resistive or milivoltage sensor for 2 or 3-wire connection.

SENSOR OPTION	INPUT RANGES	ACCURACY
mV Input	-10 mV to 100 mV	0.015 mV
Ohm Input	0 Ohm to 2000 Ohm	0.45 Ohm

TECHNICAL AND PHYSICAL SPECIFICATIONS

Accuracy	Temperature: According to Tables Above Inputs / Outputs: ± 0.1% Span calibrated
Supply Voltage / Quiescent Current Output Load Limit	9 to 32 Vcc, no polarity / 12 mA
Protocol of Communication / Function Block	Profibus-PA / 16 Discrete Input (DI) 08 Discrete Output (DO) 03 Analog Input (AI) 02 Analog Output (AO)
Certification in Hazardous Area	Intrinsically Safe (pending)
Ambient Temperature Limit	-20 to 70°C
Configuration	Remote configuration through tools based on EDDL or FDT / DTM. Local configuration via magnetic key.
Mounting	In field or panel, using DIN rail
Degree of Protection	IP20
Type of Electrical Insulation (between Profibus-PA bus, inputs and outputs)	Galvanic Isolation, 1,5 kVac
Housing Material	Aluminum / Plastic
Approximate weight	500 g
Discrete Inputs	16 Inputs Typical external power supply: 24 Vdc (18 to 30 Vdc, maximum consumption 120mA) Optical Isolation of 5,000 Vac. Level in ON state (True Logical) 15 - 30 Vdc. Level in OFF state (Logical False) 0 - 5 Vdc Typical Impedance 3.9 kΩ.
Discrete Outputs	8 Outputs: NPN transistors, open collector. They work with relays, solenoids and other DC loads with maximum current of 0.5 A per output. All outputs share the same ground and are isolated from each other, as well as from the Profibus-PA network. Typical external power supply 24 Vdc (18 to 30 Vdc, max. 40mA) - same source of inputs, 24Vdc Optical Isolation of 5,000 Vac Maximum switching voltage: 30 Vdc Maximum Saturation Voltage: 0.55 V at 0.5 A Maximum Output Current: 0.6 A Indication logic: ON when the transistor is on. Power-Up Condition: OFF Thermal Protection: Thermal Shutdown: 150-200 ° C; Thermal Hysteresis 10 at 25 ° C; Over current protection: 1.3 A at 24 Vdc maximum * With inductive loads use RC filters or diode in reverse mode as filter.

ORDERING CODE

VIO10 *Remote I/O Profibus-PA*

Communication Protocol	**P**	PROFIBUS

Certification Type	**0**	NO CERTIFICATION
	1	INTRINSICALLY SAFE
	2	EXPLOSION PROOF

Certification Body	**0**	NO CERTIFICATION
	1	CEPEL
	2	FM
	3	EXAM

Protection Housing	**0**	NO HOUSING
	1	IP67 HOUSING

Ordering Code Example:

VIO10-	P	-	0	0	0