VCI10-UP
PROFIBUS-PA USB COMMUNICATION INTERFACE

VIVACE™
Process Instruments

PROFI BUS®

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NOTE

We have reviewed this document carefully to be in accordance with hardware and software versions described here. However, due to development dynamics and version upgrades, the possibility of technical deviations CAN NOT be discarded. We cannot accept any responsibility for the full compliance of this material.

Vivace reserves the right to, without notice, make modifications and improvements of any kind in its products without incurring in any circumstances, the obligation to make those same modifications to products sold previously.

The information in this manual are frequently updated. Therefore, when using a new product, please check the latest version of its manual on the Internet through the website www.vivaceinstruments.com where it can be downloaded.

You   are very important to us. We will always be grateful for any suggestions of improvements as well as new ideas, which can be sent to the email: contact@vivaceinstruments.com, preferably with the "Suggestions" in the subject.

SUMMARY

WARNING

It is extremely important that all safety instructions, it is extremely important that all the safety, installation and operation instructions in this manual are followed faithfully. The manufacturer is not liable for damage or malfunction caused by improper use of this equipment.

The rules and good practice relating to installation should be strictly followed, ensuring correct grounding, noise insulation, good quality of cables and connections in order to provide the best performance and durability to the equipment.

Special attention must be considered in relation to installations in hazardous areas, where applicable.

SAFETY PROCEDURE

- *Designate only qualified and trained people, familiar with the process and equipment;*
- *Install equipment only in area compatible with its operation. Use proper connections and protections;*
- *Use the proper safety equipment for any handling equipment in the field;*
- *Turn the power of the area before installing the equipment.*

SYMBOLOGY

Caution – indicates risk or source of error

Important information

General or Specific Risk

Risk of Electrical Shock

GENERAL INFORMATION

Vivace Process Instruments ensures the operation of the equipment, according to the descriptions contained in this manual, as well as technical characteristics, not guaranteeing their full performance in particular applications.

The operator of this equipment is responsible for observing all aspects of safety and prevention of accidents applicable during the execution of the tasks in this manual.

Failures that might occur in the system, causing damage to property or injury to persons, shall additionally be prevented by external means to a safe outlet for the system

This equipment must be used only for the purposes and methods proposed in this manual.

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1 INTRODUCTION

VCI10-UP is an electronic device that connects a maintenance or online asset management workstation (desktop, notebook, for example) with a USB port (Universal Serial Bus) to the industrial communication IEC-61158-2 (PROFIBUS-PA type) bus, creating anefficient man x machine interface (HMI) for transmitters, sensors, actuators, converters and other equipment compactible withPROFIBUS-PA technology.

Simple to use, VCI 10-UP becomes an excellent alternative for engineering, maintenance and instrumentation staff once itexpedites the replacement, parameterization and diagnosis tasks of PROFIBUS PA devices. For such integration to be possible, PROFIBUS-PA devices must be acquired with their respective electronic file management type DTM (Device Type Manager). It is a technology internationally recognized by IEC 62453 and ISA103 standards. The majority of industrial instrumentation vendors provide their DTM files. These files shall be added to the electronic libraries of frame application tools FDT (Field Device Tool).

VCI10-UP, in addition to allowing easy parameterization and calibration of PROFIBUS-PA equipment with FDT/DTM tools (eg PACTware, FieldCare, FieldMate etc.) also works as a message (frames) analyzer, using the PA-SNIFFER® tool.

This equipment has been designed with the latest technology available, thus ensuring reliability, high performance and robustness for operations to which it is intended.

For further questions about this product that are not in this manual, please contact Vivace Process Instruments through the site www.vivaceinstruments.com.

1.1. IDENTIFICATION

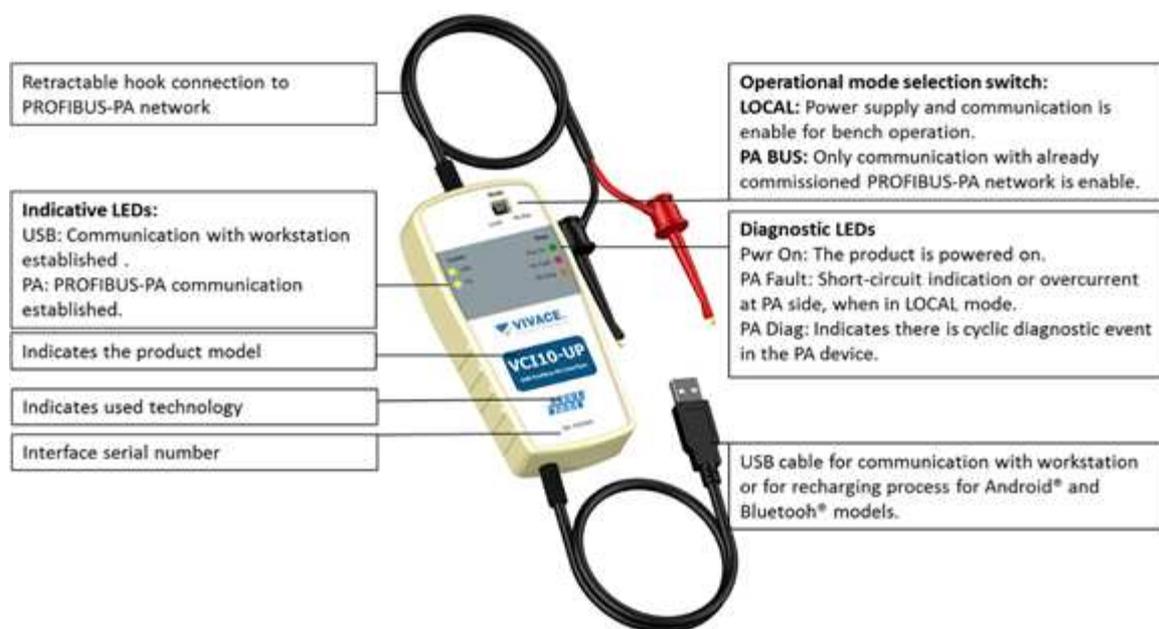The VCI10-UP has a fixed identification label on its front specifying the equipment model.

Figure1.1 - VCI10-UP identification label.

1.2. INSTALLATION

⚠️ Before starting the upgrade of electronic devices make sure the quality of electrical installations is always in accordance with the provisions of NBR-5410: 2008, HD 384 (Harmonized) or IEC 364 (International).

VCI10-UP has an integrated type-A USB cable which will be connected to the workstation USB port, as soon as the Windows ™ driver has been installed. The other end is formed by another integrated cable with two retractable hooks that will be connected to the PROFIBUS-PA bus.

⚠️ When in "Local" mode, observe the polarity of the retractable hooks, since not all PROFIBUS-PA instruments have protection against reverse polarity.

Figure 1.2: Indication of connections VCI10-UP, USB (bottom) and the retractable hooks (above).

1.3. SUPPLIED ITEMS

The supply scope VCI10-UP includes:

- Hardware: VCI10-UP Interface.
- Carrying case

2 SOFTWARE INSTALLATION

(!) For this step, user must have administrator rights to successfully perform the installation of the necessary software components.

Since VCI10-UP is connected to the computer's USB port, Windows® automatically prompt for USB communication driver installation. It will create a virtual COM serial port in the device manager.
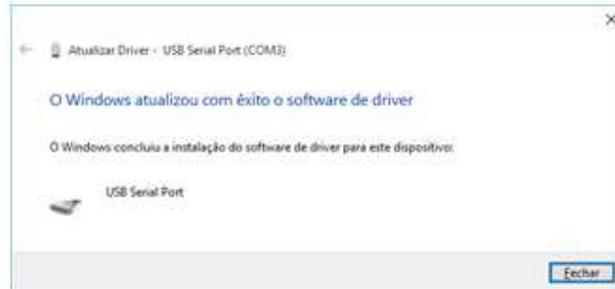

Figure2.1: Successful installation confirmation.

Note that the operating system automatically converts the driver not recognized on a USB COM port (X), where X is the virtual port number, which may vary depending on the use of the computer.
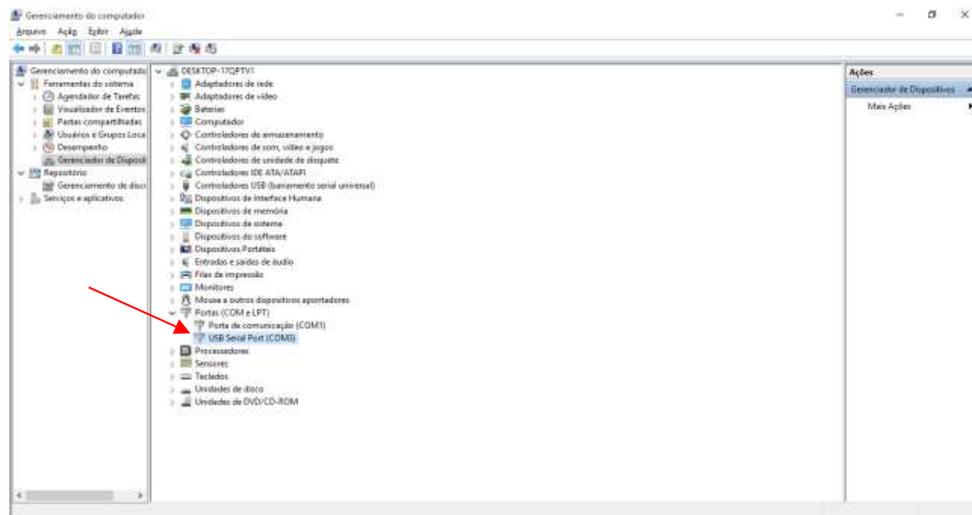
Figure2.2: Automatic creation of the USB Serial Port.

⚠ **Attention!** DTM files are distributed by device manufacturers. Vivace only provides DTM files

2.1. PA SNIFFER®

PA-SNIFFER® is a powerful tool from VIVACE, provided free of charge to the user and which allows a complete analysis of PROFIBUS-PA frames, identifying the different types of messages, services, diagnostics, communication errors, checksum errors, messages without replies, retransmissions, Live List, communication state machine status of each device of the live list, statistics by address, quick lookup services, etc.

When clicking on a captured frame, a decoded frame format will be displayed for analysis at different layers of the protocol. In addition, you can associate with GSD files and tags according to your PROFIBUS network, monitor the cyclic values and export them to an Excel spreadsheet.

3   MECHANICAL DIMENSIONS

Figure 3.1: Mechanical Dimensions of VCI10-UP.

4 OPERATION

5.1. LOCAL MODE – Master Configuration

Physically, VCI10-UP has two operating modes. The first, called LOCAL serves for bench use or when there is no power neither impedance control to provide to the instrument.

The Figure 4.1 shows the switch position for the operating mode "Local". Figure 4.2 shows the schematic for this assembly operation mode.
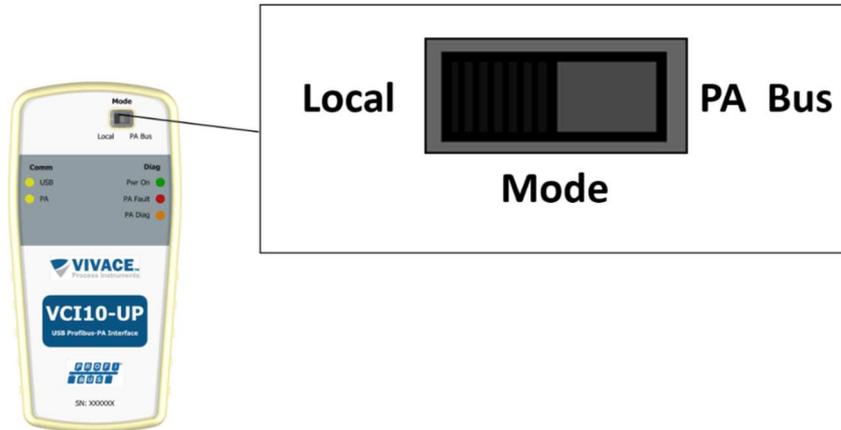
Figure4.1: Selection switch position for "Local" mode operation.
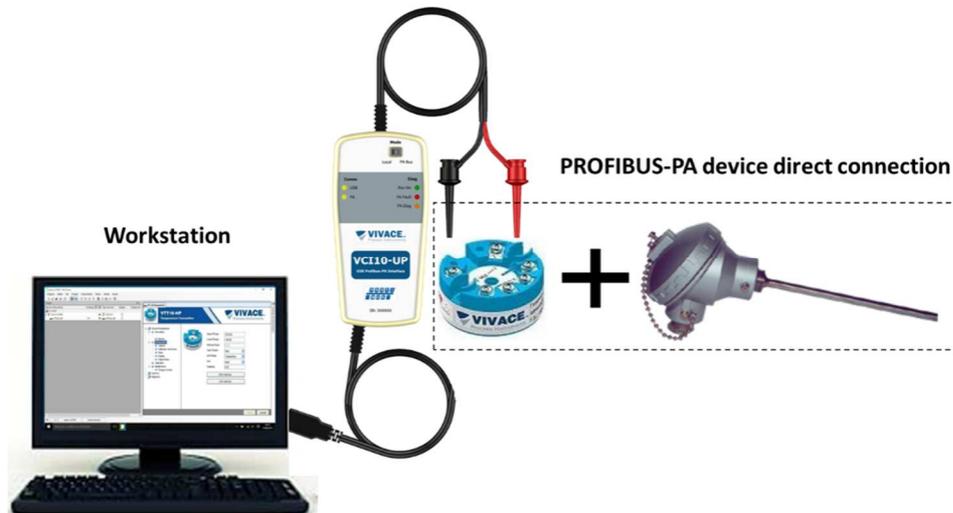
Figure4.2: Connection schematic when using the operating mode "Local".

⚠ Never connect the VCI10-UP interface to a running PROFIBUS-PA network when in "Local" mode. This procedure may lead to communication loss with the master / controller.

5.2. "PA BUS" CONNECTION MODE

In the second operation mode, VCI10-UP can operate in parallel to the PROFIBUS running networks. In this case, the interface switch must be in the "PA Bus" position.
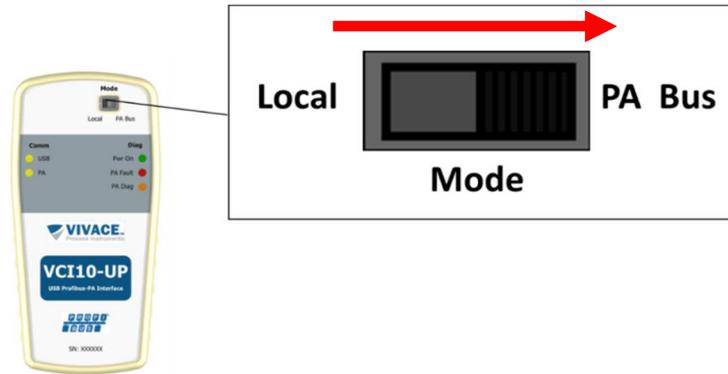
Figure 4.3: Selection of "PA BUS" mode.

⚠ **Caution:** When connecting the VCI10-UP in parallel with the control system, pay attention in the switch position. It must be in "PA Bus" position. Failure to observe this rule may cause network communication interruption

In this mode the VCI10-UP does not provide power or impedance control for the PROFIBUS-PA bus and acts as a secondary master on the network. Its Class 2 master roles in the PROFIBUS-DP bus provide acyclic access to diagnostic tools and also Token passing. The system architecture is shown in next figure.
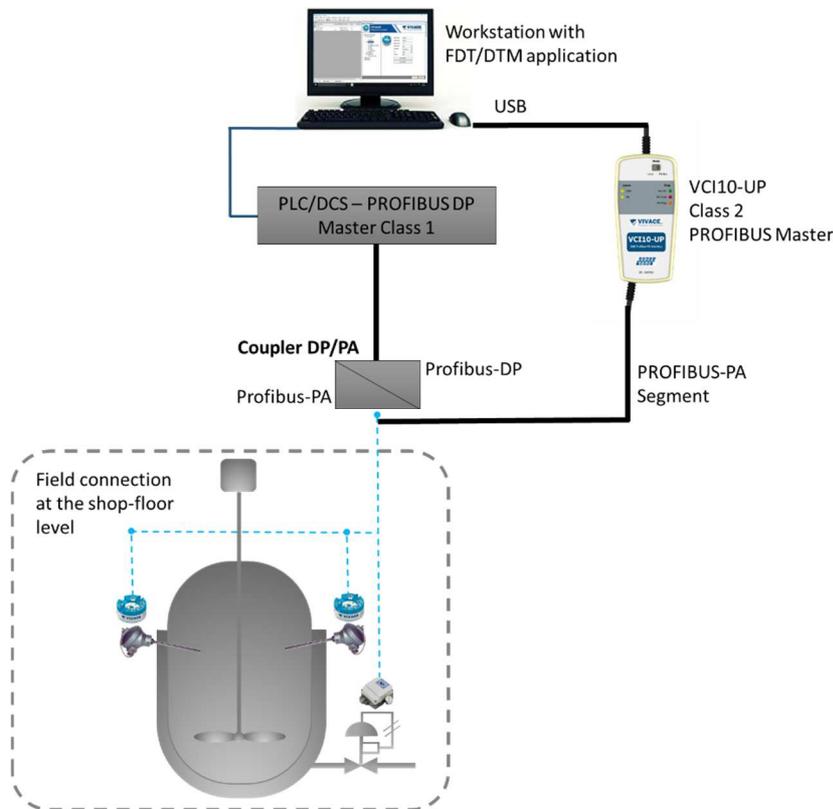
Figure4.4: Schematic of VCI10-UP installation in parallel to a PROFIBUS architecture.

⚠ In some control systems, it may be necessary to increase by 10% the "Slot Time" parameter in cyclic configuration master controller Class 1.

⚠️ Do not confuse "Slot Time" parameter in master controller Class 1 cyclic configuration with "Slot Time" parameter in VCI10-UP communication DTM configuration.

⚠️ For systems operating with Siemens LINK DP/PA, note that this device usesoccupies in the PROFIBUS network and should not conflict with VCI10-UP address in theDTMconfiguration.

In this operation mode change the initial setting of the "Mode" field to "NETWORK" and then click "Configure".
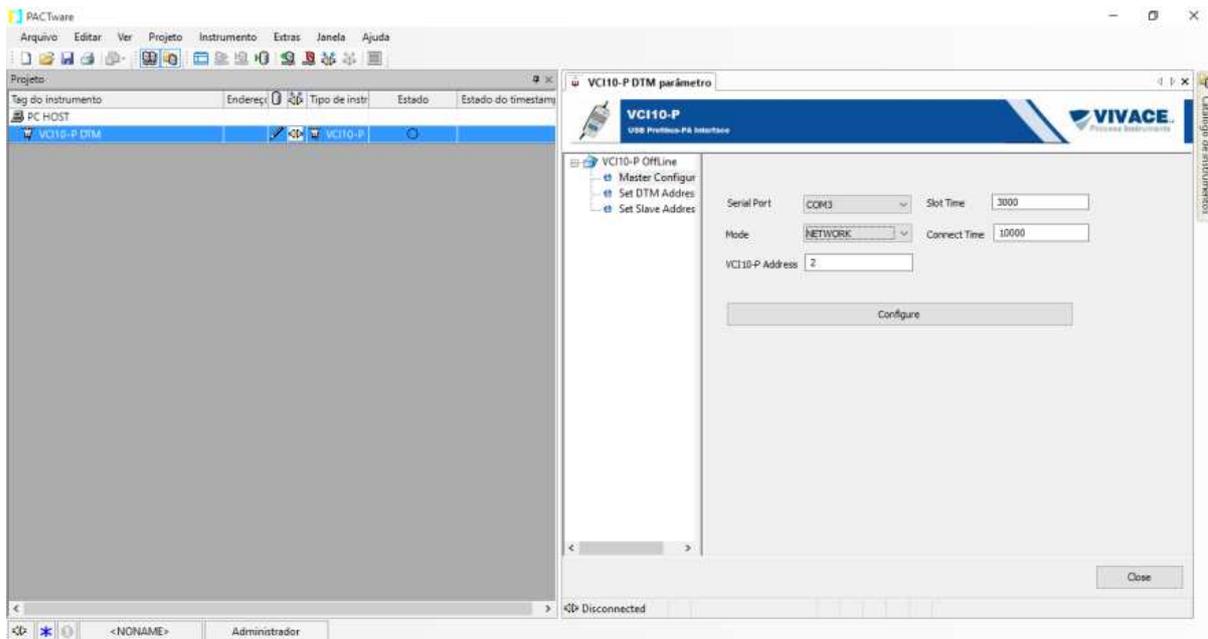
Figure4.5: Initial settings for the "PA Bus" operation mode

5   TECHNICAL SPECIFICATIONS

Power Supply	5 Vdc (USB 1.1 and 2.0)
Output Voltage	19.5 Vdc (with load @ 20 mA); 21 Vdc (open circuit)
Communication Protocol	IEC 61158-2; 31.25 kbits/s
Hazardous Area Certification	Not Intrinsically Safe
Operational Temperature	0 to 50°C @10-90 RH (non-condensing)
FDT/DTM Compatibility	Yes
Operational System Compatibility	Win XP, Win 7, Win 8, Win 8.1 and Win 10 (32 / 64 bits)
Host and Profibus-PA Connection	USB Standard for HOST (1.0 m) and retractable hooks for PA side (1.0 m)
Electrical Insulation	Galvanic between USB and Profibus-PA
Dimension / Weight	135 x 65 x 25 mm / 70 g

⚠ **Attention!** This equipment is not certified for classified areas!

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6   ORDERING CODE

VCI10   *Communication Interface*

Communication Type	U	USB	
	A	ANDROID	
	B	BLUETOOTH	

Communication Protocol	H	HART	
	P	PROFIBUS	

Configuration Accessory	0	NO ACCESSORY	
	1	REGULAR TABLET	
	2	INDUSTRIAL TABLET	

Ordering Code Example:

VCI10	- U	P - 0

7 WARRANTY

8.1. GENERAL CONDITIONS

Vivace ensures its equipment from any defect on manufacturing or component quality. Problems caused by misuse, improper installation or exposure to extreme conditions are not covered by this warranty. The user can repair some equipment by replacing spare parts, but it is strongly recommended to forward it to Vivace for diagnosis and maintenance in cases of doubt or impossibility of correction by the user.

For details about the product warranty, see the general term warranty on the Vivace website: www.vivaceinstruments.com.

8.2. WARRANTY PERIOD

Vivace ensures the ideal operating conditions of their equipment by a period of two years, with full customer support regarding to installation, operation and maintenance for the best use of the equipment.

It is important to note that even after the warranty period expires, Vivace assistance team is ready to assist the customer with the best support service, offering the best solutions for the installed system.

APPENDIX

VIVACE Process Instruments	FSAT **Technical Analysis Solicitation Form**

Company:	Unit/Department:	Shipping Invoice nº:
Standard Warranty: ( )Yes ( )No	Extended Warranty: ( )Yes ( )No	Buying Invoice nº:

COMMERCIAL CONTACT	
Complete Name:	Position:
Phone and Extension:	Fax:
e-mail:	

TECHNICAL CONTACT	
Complete Name:	Position:
Phone and Extension:	Fax:
e-mail:	

EQUIPMENT DATA	
Model:	Serial Num.:

PROCESS INFORMATION

Environment Temperature (ºC)		Work Temperature (ºC)	
Min:	Max:	Min:	Max:
Operation Time:		Fail Date:	

FAIL DESCRIPTION: Here user should describe in detail the observed behaviour of product, frequency of fail occurence and repeatability. Also, should inform operational system version and a quick description of control system architecture where the equipment was installed.

ADDITIONAL OBSERVATION:

contato@vivaceinstruments.com.br
www.vivaceinstruments.com.br