VAP10
ANALOG TO PROFIBUS-PA CONVERTER

VIVACE™
Process Instruments

PROFI BUS ®

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NOTE

We have reviewed this manual with great care to maintain compliance with the hardware and software versions described herein. However, due to the dynamic development and version upgrades, the possibility of technical deviations cannot be ruled out. We cannot accept any responsibility for the full compliance of this material.

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

You customer is very important for us. We will always be grateful for any suggestions for improvements as well as new ideas, which can be sent to the e-mail: contato@vivaceinstruments.com preferably with the title "Suggestions".

SUMMARY

WARNING

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

It is recommended to strictly following the rules and good practice relating to installation, ensuring correct grounding, noise insulation and good quality 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 PROCEDURES

- *Appoint only skilled people, trained with process and equipment;*
- *Install equipment only in operation compatible areas, with the proper connections and protections;*
- *Use proper safety equipment for any handling device in field;*
- *Turn area power off before equipment installation.*

SYMBOLOGY

 Caution - indicates risk or error source

 Important Information

 General or Specific Risk

 Electric Shock Danger

GENERAL INFORMATION

Vivace Process Instruments ensures the operation of this equipment, according to the descriptions contained in its manual, as well as technical characteristics, not guaranteeing its 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.

DATA SAVING

Whenever static data is changed via configuration, LCD will display ⚠ icon, which will be blinking until the save process is complete.

If user wishes to shut down the equipment, he must wait for the process to be finished.

If the equipment is shut down during saving process, a default will be performed, setting default values in device parameters and the user must subsequently check and configure those parameters according to his needs.

ERROR ON SAVING DATA

If a data execution or saving operation was incorrectly performed, message "BlkEr" will be displayed when the equipment is powered up.

In this case, user must perform factory initialization using two magnetic tool units as described below. Application-specific settings should be performed again after this procedure (except for the physical address and the "GSD Identifier Number Selector" parameter).

- With the equipment off, access "Z" and "S" holes of local adjustment, located under the equipment nameplate;
- Insert one of the tools inside "Z" hole and the other inside "S" hole;

- Energize the equipment and keep both magnetic tool units until icon ⚠ is displayed;

- Do not turn off power while icon ⚠ is displayed. If this happens, restart the procedure.

SIMATIC PDM CONFIGURATION

When using SIMATIC PDM tool for configuration/parameterization of this equipment, do not use "Download to Device" option. This function could incorrectly configure the equipment.

It is recommended for user to use "Download to PG/PC" option, to read the equipment parameters and then access the "Menu Device" option, where one can find specific menus for transducers, functional and LCD blocks, plus calibration, maintenance, factory etc. According to each menu, user will then be able to change the parameter or function as desired, in a fast and direct form.

1	EQUIPMENT DESCRIPTION

VAP10 is an analog converter that allows input of up to 3 channels of current or voltage for conversion into Profibus-PA protocol. User can configure each channel to operate with current or voltage, independently, guaranteeing great versatility of applications to VAP10.

Current inputs can be configured independently for 4 to 20 mA or 0 to 20 mA ranges, allowing the inverter to be connected to any HART/4-20 mA equipment, for example. For voltage input, the converter allows signals from 0 to 5 Vac.

For its configuration, VAP10 converter is locally adjustable via an intuitive magnetic key, with quick editing function and allows the use of any market tool available on EDDL, DTM or Android® software technology.

Prioritizing high performance and ruggedness, this converter is designed with the latest electronics and materials technologies, ensuring long-term reliability for systems of any scale.

1.1. BLOCK DIAGRAM

The modularization for converter components is described in the following block diagram.
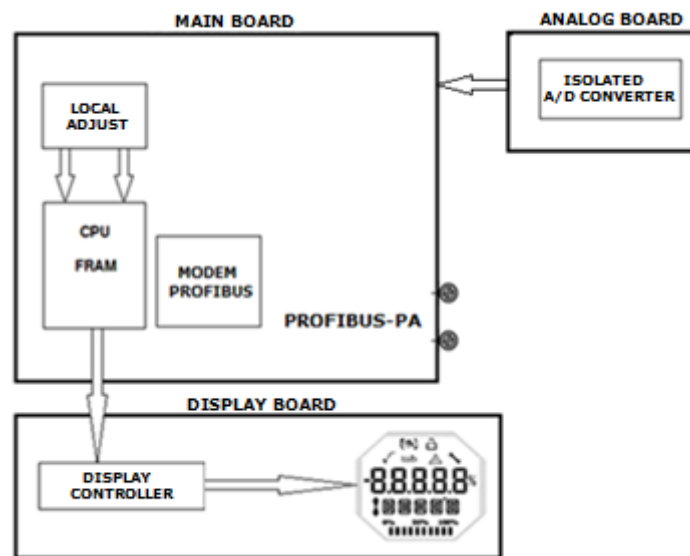
Figure 1.1 – Block diagram for VAP10.

The main board controls the main functions of the converter, the Profibus-PA Modem and the microcontroller (CPU). The analog board receives the signals from the input (terminal block) and converts them to a digital signal through CPU isolated A/D converter. These signals are sent to the CPU of the main board which performs all the logic of conversion and control of the settings through its firmware.

The CPU also receives the inputs of the local adjustment block (Hall type sensors) for the local configuration of the converter via magnetic switch.

The Modem Profibus block interfaces CPU with Profibus-PA signals of the communication network.

The display board has the controller block that interfaces LCD and CPU, adapting the messages to be displayed in the display.

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2   INSTALLATION

RECOMMENDATION

When taking the equipment to the installation location, transfer it in the original packaging. Unpack the equipment at the installation location to avoid damage during transportation.

RECOMMENDATION

Model and specification of equipment are indicated on identification plate, located at the top of the housing. Check if supplied specification and model correspond to application requirements.

STORAGE

The following precautions should be observed when storing the equipment, especially for a long period:

1) Select a storage area that meets the following conditions:
   a) No direct exposition to rain, water, snow or sunlight.
   b) No exposition to vibration and shocks.
   c) Normal temperature and humidity (around 20°C / 70°F, 65% RH).

   However, it can also be stored under the following temperature and humidity intervals:

   ● Ambient Temperature: -40°C to 85°C (without LCD)* or -30°C to 80°C (with LCD)
   ● Relative Humidity: 5% to 98% RH (@ 40°C)

(2) For equipment storage, use original factory package (or similar).

(3) If storing an already used Vivace equipment, dry every moist part and clean all connections that was in contact with the process. Keep covers and connections closed and properly protected for its specific application and requirements.

Only for general use. For explosion proof version, follow product certification requirements.

2.1. MECHANICAL ASSEMBLY

VAP10 converter is designed for installation in the field and therefore supports exposure to bad weather, having good performance with variations in temperature, humidity and vibration.

Its housing has an IP67 degree of protection, being immune to water entering its electronic circuit and terminal, provided that the cable gland or conduit of the electrical connection is correctly assembled and sealed with non-hardenable sealant. The covers should also be tightly closed to prevent moisture from entering because the threads of the housing are not protected by paint.

The electronic circuit is coated with a moisture-proof lacquer, but constant exposures to moisture or corrosive media can compromise its protection and damage the electronic components.

In Figure 2.1 are the dimensional design and the forms of assembly for VAP10.
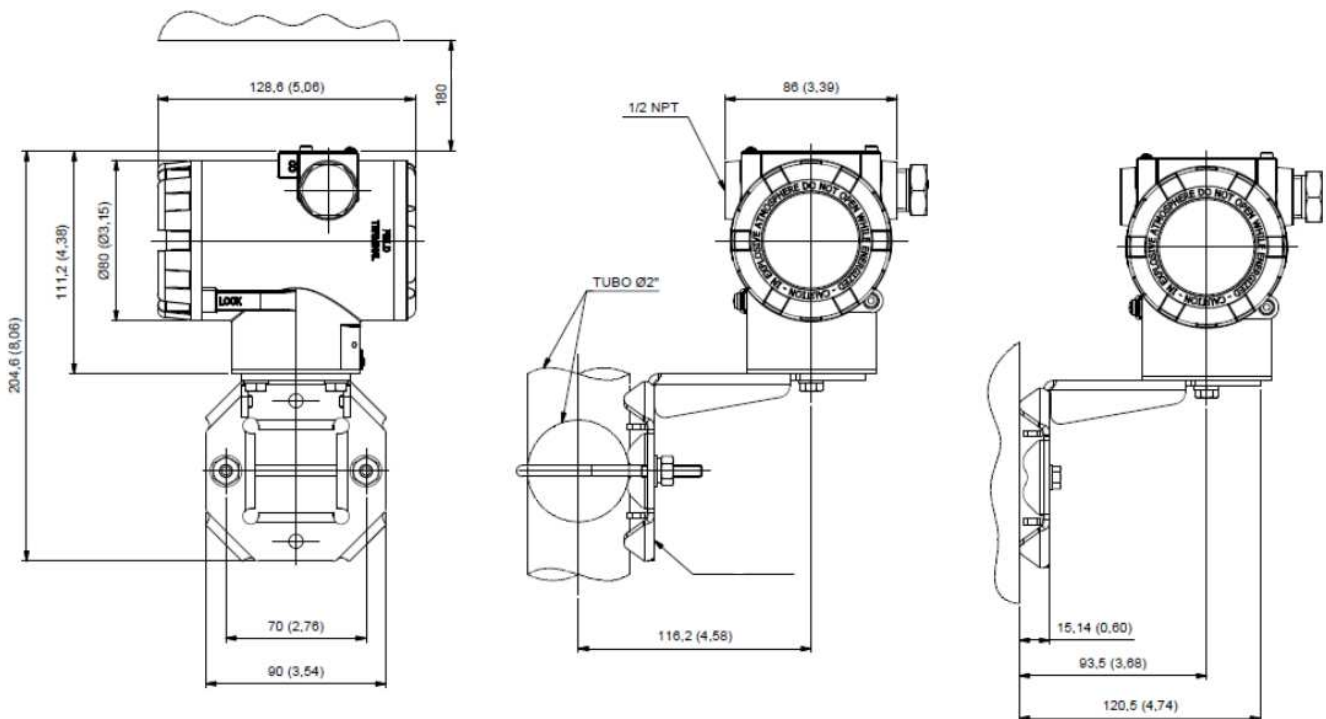
Figure 2.1 – Dimensional drawing and assembly scheme for VAP10.

To avoid the risk of involuntary loss of VAP10 covers due to vibration, for instance, it can be locked by screw, as shown on figure 2.2.

VAP10 is a field device, so it can be installed through a mounting bracket on a 2" tube attached with a U clip. The transmitter can also be attached with the same mounting bracket to a wall or panel.

For best LCD positioning device enables 4 x 90° housing rotation, as shown on figure 2.3.

Figure 2.2 – Front cover lock.
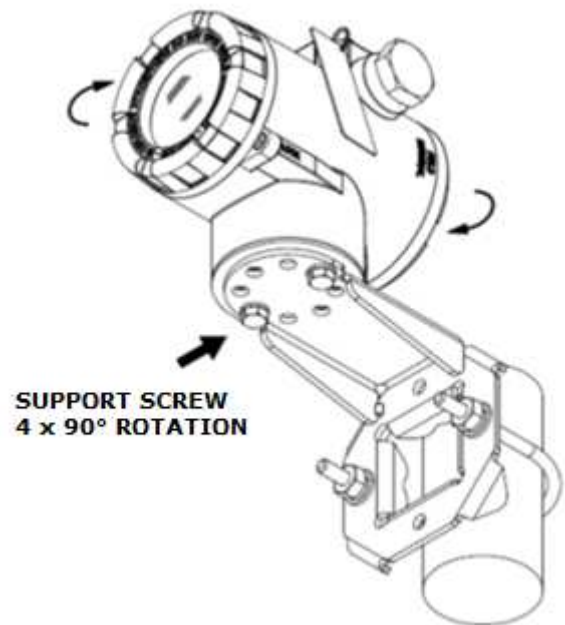
Figure 2.3 – Housing positioning.

VAP10 liquid crystal display can be rotate 4 x 90° so indication will be adequate for user visualization.
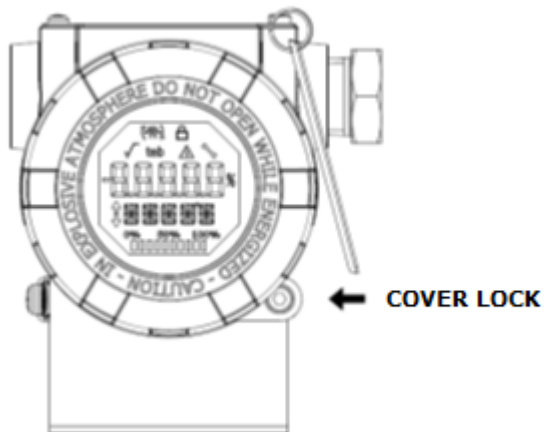
Figure 2.4 illustrates rotation possibilities for VAP10 LCD.
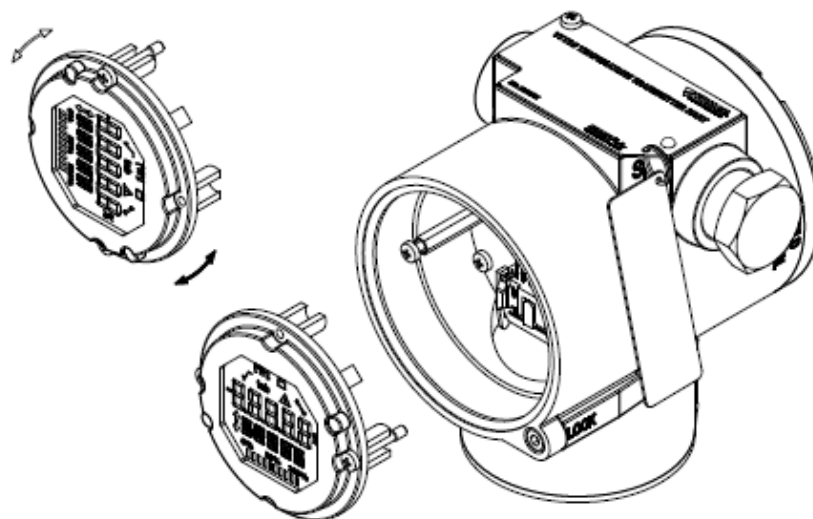
Figure 2.4 –4 x 90° LCD rotation.

2.2. ELECTRICAL CONNECTION

In order to access the terminal block user must remove VAP10 rear cover. First, loose cover lock screw (see figure 2.5) by turning it clockwise.
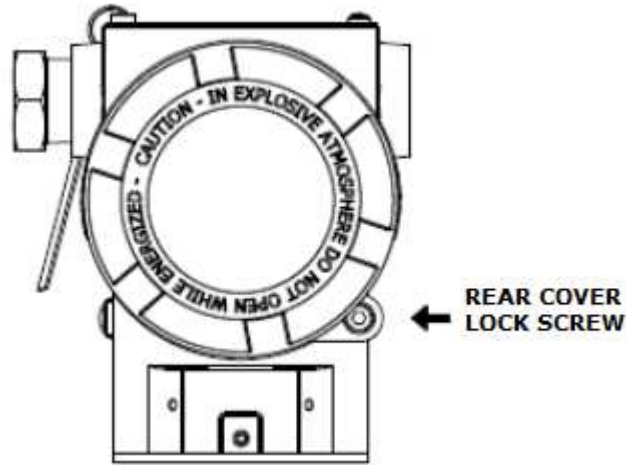
Figure 2.5 – Rear cover lock.

Figure 2.6 shows the power terminals (PWR BUS) and the connection terminals of the VAP10 inputs for conversion, in addition to ground terminals (one internal and one external) and communication terminals. To power the equipment it is recommended to use Profibus-PA type AWG18 certified cables with shield (capacitance < 30 pF).
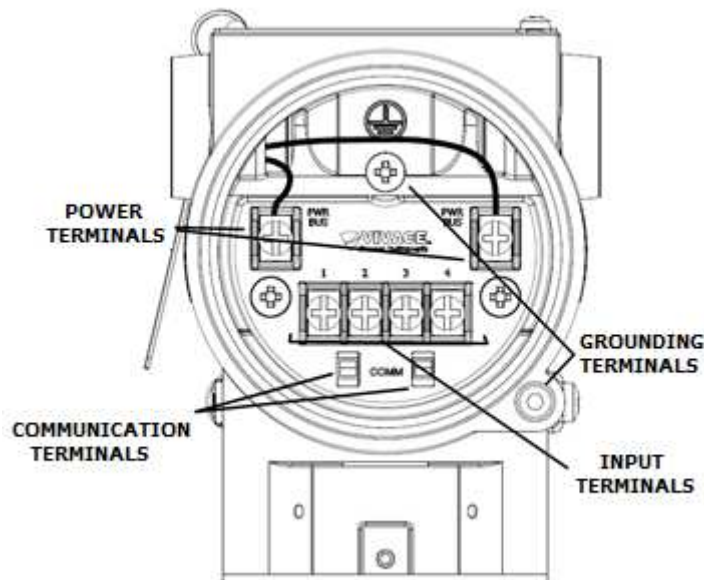
Figure 2.6 – Connections and terminal description for VAP10.

Table 2.1 shows terminal description for VAP10.

Terminal Description
Power Terminals - PWR BUS 9-32 Vdc not polarized
Grounding Terminals - 1 internal and 1 external
Communication Terminals – PROFIBUS-PA communication with configurator
Input Terminals – 1, 2 and 3 – current or voltage configurable inputs

Table 2.1 – Terminal description for VAP10.

| NOTE |
| --- |
| All cables used for connecting VAP10 with PROFIBUS-PA network must be shielded to avoid interference or noise. |

NOTE
It is extremely important to ground the equipment for complete eletromagnetic protection and also to ensure the correct performance of transmitter on Profibus-PA network.

Conduits used for power cables must be assembled in order to avoid water entrance in the device terminal block. Conduit screws must be sealed according to specific area required standards.

Non-used electrical connection must be sealed with appropriate cover.

Figure 2.7 shows the correct installation for conduit, in order to avoid the entrance of water or any corrosive material that may cause damage to the device.

WRONG ASSEMBLY   **CORRECT ASSEMBLY**

Figure 2.7 – Conduit assembly.

2.3. PROCESS CONNECTION

The following are possible connections of VAP10 in the process:

Figure 2.8 – VAP10 process connection.

2.4. PROFIBUS-PA NETWORK CONNECTION

Figure 2.9 illustrates the installation of a number of Profibus network elements and the connection of Profibus-PA devices to the Profibus network.

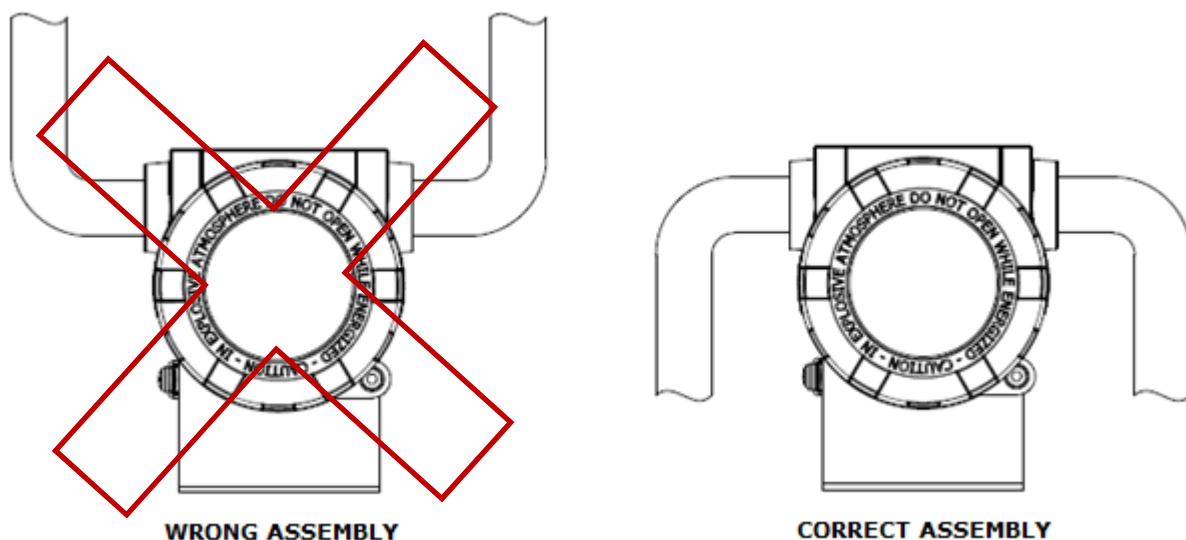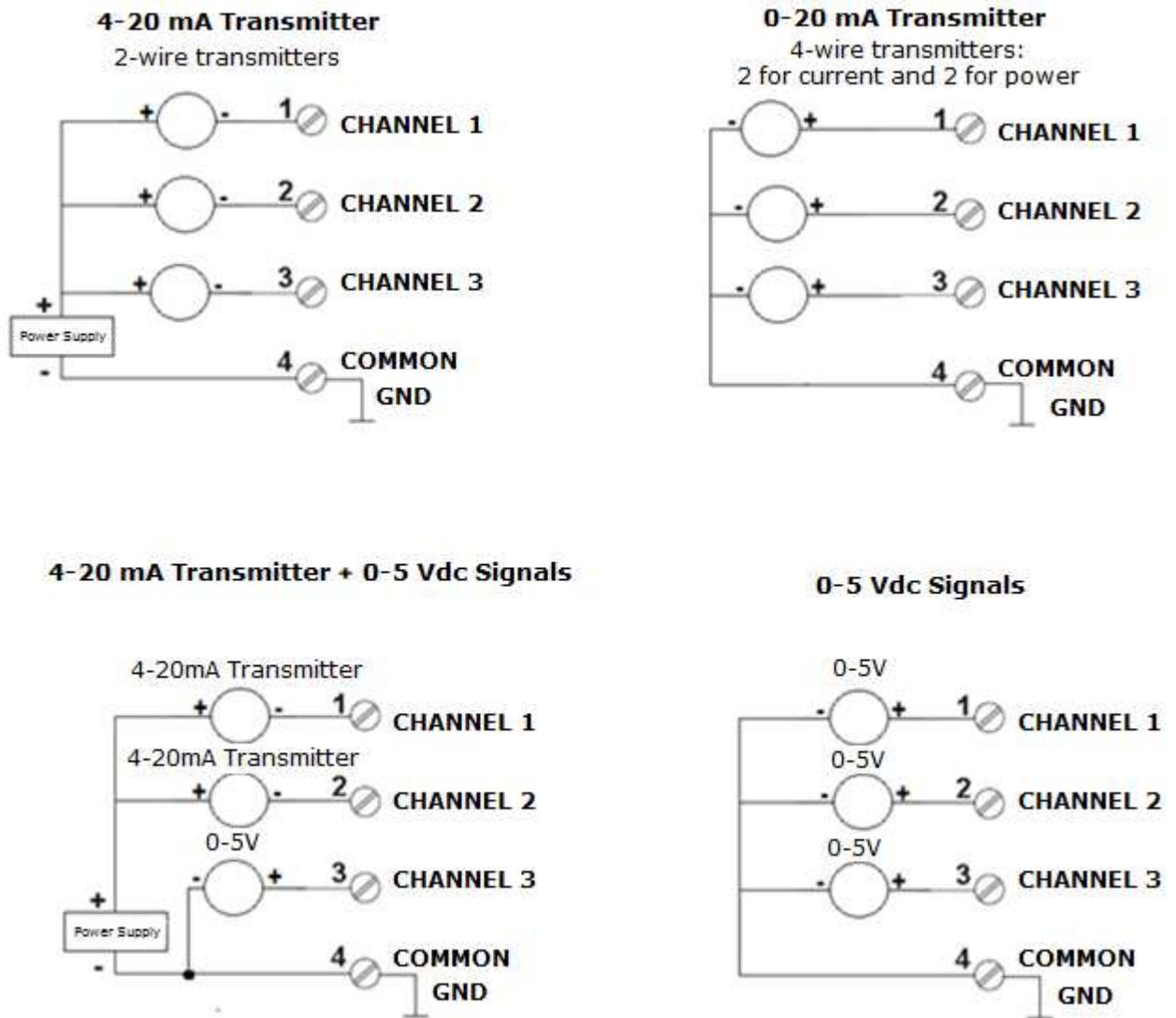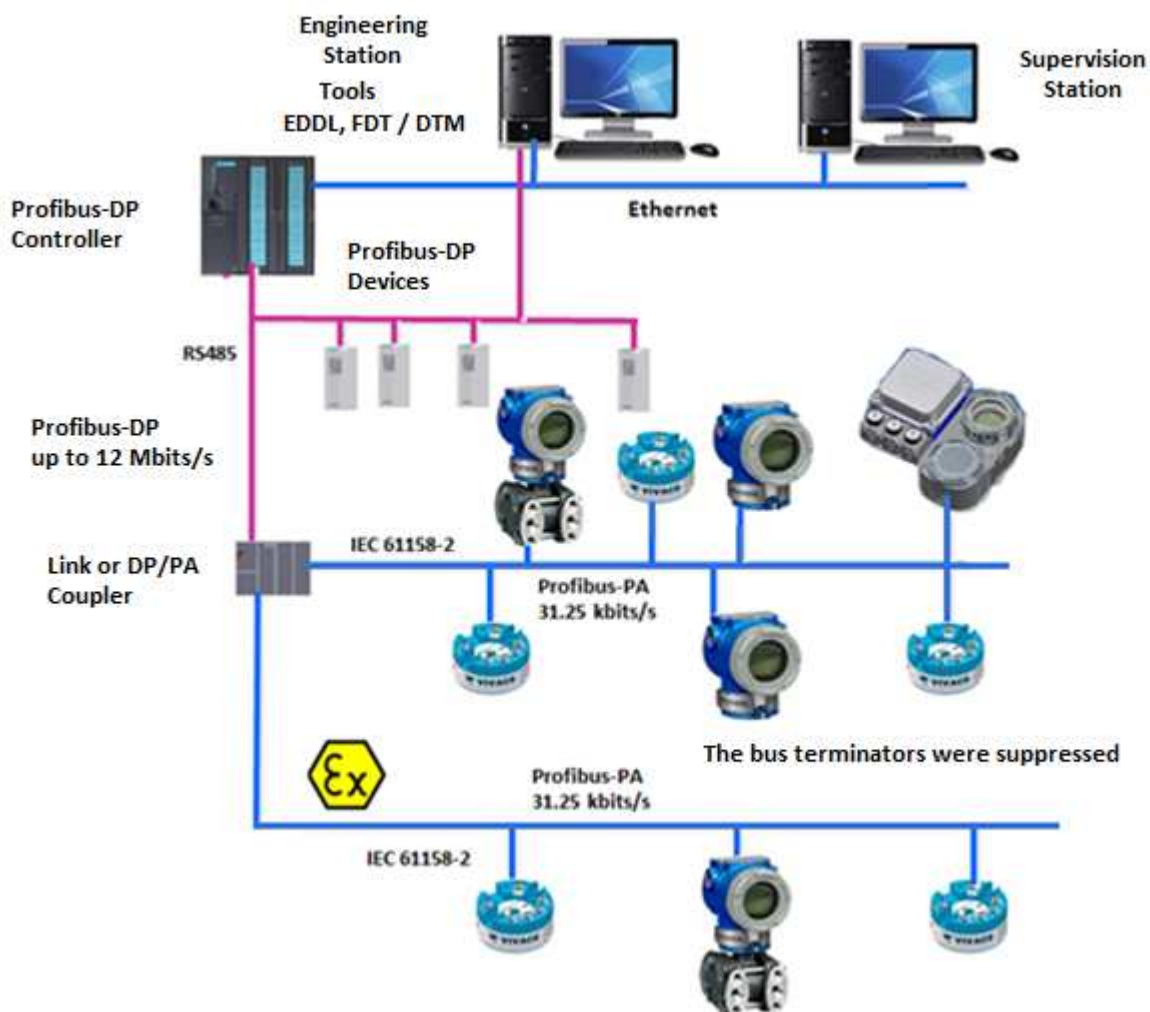Figure 2.9 – Connecting a Profibus-PA device to the bus.

3	CONFIGURATION

The configuration of VAP10 can be done through a programmer compatible with Profibus-PA technology. Vivace offers the interfaces of VCI10-P line (USB,and Bluetooth) as a solution for configuration and monitoring of the Profibus-PA line equipment. User can also configure the VAP10 by local adjustment using a Vivace magnetic key.

3.1. LOCAL CONFIGURATION

Z = Rotating
S = Action

Equipment's local configuration is executed by using Vivace's magnetic screwdriver on Z and S orifices, located at housing superior side, under identification plate. Orifice Z starts local configuration and changes the field to be configured. Orifice S is responsible for changing and saving the new value on the selected field. Saving after LCD value changing is automatic.

Figure 3.1 shows orifices Z and S for local configuration, stamped on device housing, and their functions on magnetic screwdriver actuation.

Insert the magnetic screwdriver on *Zero* orifice (Z). 🔧 icon appears to indicate that device has recognized the screwdriver action. Keep the magnetic screwdriver inside until "LOCAL ADJST" message is shown on display, and then remove it for 3 seconds. Insert the magnetic screwdriver into Z orifice again, so user can navigate through local adjust parameters.

Table 3.1 indicates actions executed by magnetic screwdriver when inserted on Z and S orifices.
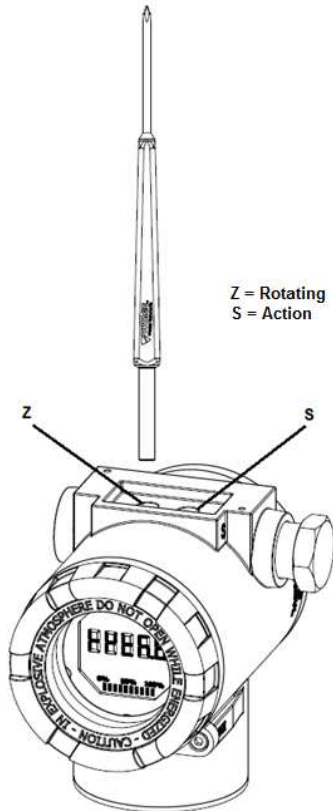
ORIFICE	ACTION
Z	Select configuration tree function
S	Act on selected function

Table 3.1 – Z and S orifices actions.

Figure 3.1 – Z and S orifices and magnetic screwdriver.

Some parameters show the icon ↕ to allow user configuration on it by inserting the magnetic screwdriver into *Span* orifice (S). In case the parameter has pre-defined values, those will be rotate on display, while the magnetic screwdriver remains into *Span* orifice (S).

If the parameter is numerical, this field will enter on edition mode and decimal point will start blinking, and shifting to left. When user removes magnetic screwdriver from S, the least significant digit (in the right) starts blinking, indicating it is ready for edition. By inserting the magnetic screwdriver into S, user is enabled to increase the digit value, from 0 to 9.

After the least significant digit edition, user should remove magnetic screwdriver from S in order to start the edition of the next digit (in the left). User will be able to edit each digit independently, until the most significant digit (5th digit on the left) is complete. After the 5th digit edition, user can also change the signal for the numerical value still on S orifice.

During each step of edition, user is able to return to the previous digit (to the right) by inserting the magnetic screwdriver into Z orifice, so corrections can be made. By removing the magnetic screwdriver at any time, user will see the digits blinking until the final step, where the edition mode will be finished, saving the numerical value configured by user.

If the configured value is not acceptable by that device parameter (invalid value), it will be returned to the last valid value before edition. Depending on the parameter, some values can be shown on numerical or alphanumerical fields, adjusting the best option view to user.

With the magnetic screwdriver out of Z and S orifices, device will leave local adjust mode after some seconds and monitoring mode will be shown.

3.2. JUMPER CONFIGURATION FOR LOCAL ADJUST AND WRITE PROTECTION

VAP10 has two jumpers on its main board to protect data writing (WP1) and enabling/disabling local adjust (ADJL1). Figure 3.2 presents those jumpers.
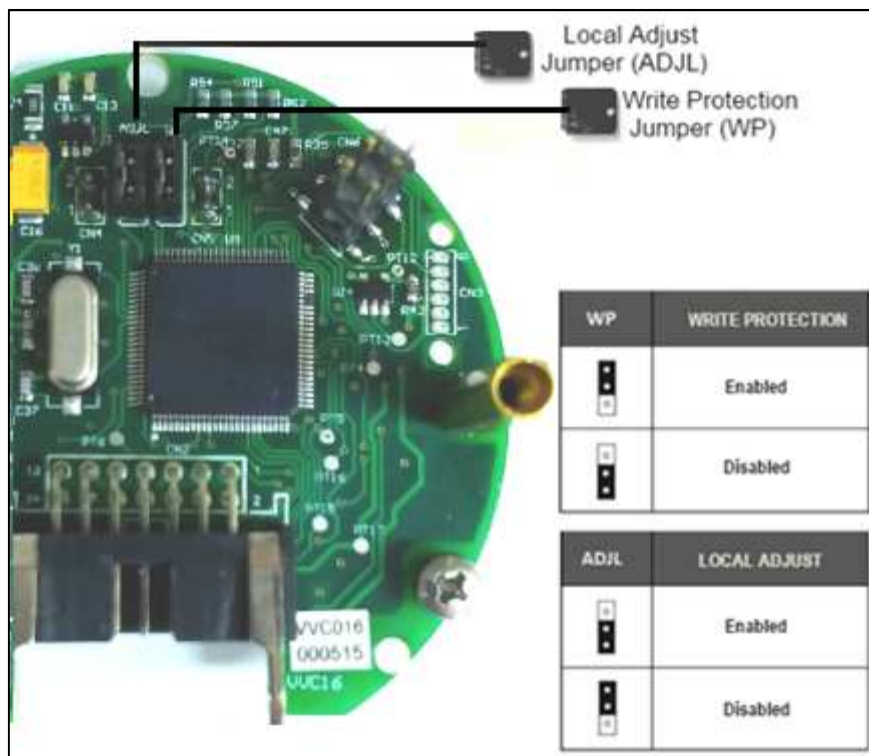

Figure 3.2 – Jumpers WP (write protection) and ADJL (local adjust) on VAP10 main board.

🛈 Default selection for these jumpers is Write Protection **DISABLED** and Local Adjust **ENABLED.**

3.3. LIQUID CRYSTAL DISPLAY (LCD)

Main information related to transmitter are indicated on its liquid crystal display (LCD). Figure 3.3 shows the LCD with all its indication fields. Numerical field has 5 digits and is used mainly for monitored variable indication. Alphanumerical field indicates which variable is being monitored, units or auxiliary messages. Each indication icon use is described on table 3.2.

Figure 3.3 – LCD fields and icons.

SYMBOL	DESCRIPTION
↻	Sending Communication
↺	Receiving communication
🔒	Write protection enabled
√	Square root function enabled
tab	Characterization table enabled
⚠	Diagnostic occurence
🔧	Recommended maintenance
↑	Increment values in the local adjust
↓	Decrement values in the local adjust
°	Degrees symbol for temperature units
▌▌▌▌▌▌▌▌	Bargraph to indicate the measured variable range

Table 3.2 – LCD icon description

3.4. LOCAL ADJUST CONFIGURATION TREE

Figure 3.4 shows available fields for local configuration and the sequence they are presented by magnetic screwdriver actuation on Z and S orifices.

ADDR – In this menu, the address of the equipment in the PA network is configured. Address 126 is the default value (factory default). User can configure the slave address from 0 to 126, usually master devices in Profibus-PA network are configured with addresses 0, 1 and 2, so we recommend configuring slave devices between 3 and 125.

GSDId – Here the "GSD Identification Number" is set as Profile Specific or Manufacturer Specific (factory default).

CHNL1, 2 e 3 – Here user can configure the units for channels 1, 2 and 3: Current or Voltage.

LCD1, 2 e 3 – Here user can configure what will be displayed on LCD1, 2 and 3: PV_1, PV_2, PV_3, OUT_1, OUT_2 or OUT_3.
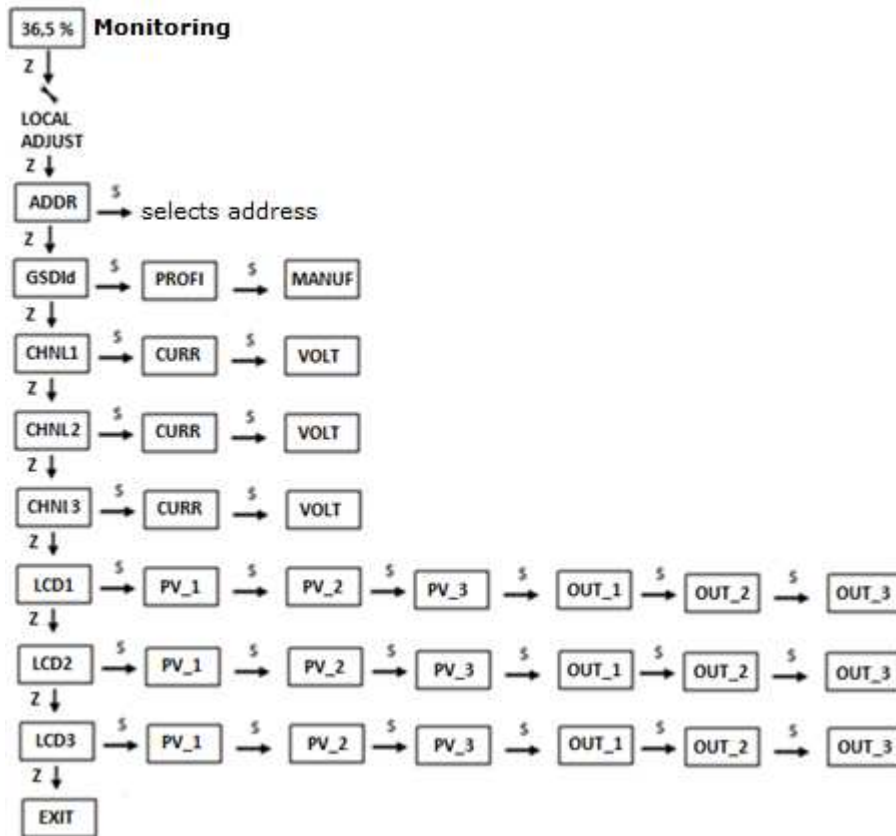
Figure 3.4 – Local adjustment programming tree for VAP10.

3.5. PROFIBUS PROGRAMMER

The configuration of the equipment can be done using a Profibus-PA compatible programmer. Vivace offers the interfaces of VCI10-P (USB and Bluetooth) line as a solution for identification, configuration and monitoring of Profibus-PA line equipment.

Figure 3.5 shows the wiring diagram for configuring VAP10 using Vivace VCI10-UP USB interface, which feeds the device in local mode, with a personal computer that has PACTware configurator software.

Figure 3.5 – Configuration diagram of VAP10 with VCI10-UP.

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3.6. PROFIBUS-PA CONFIGURATOR PROGRAMMING TREE

The programming tree is a tree-shaped structure with a menu of all available software features, as shown in Figure 3.6

To configure converter online make sure that it is properly installed, with the proper power supply voltage, required for communication.
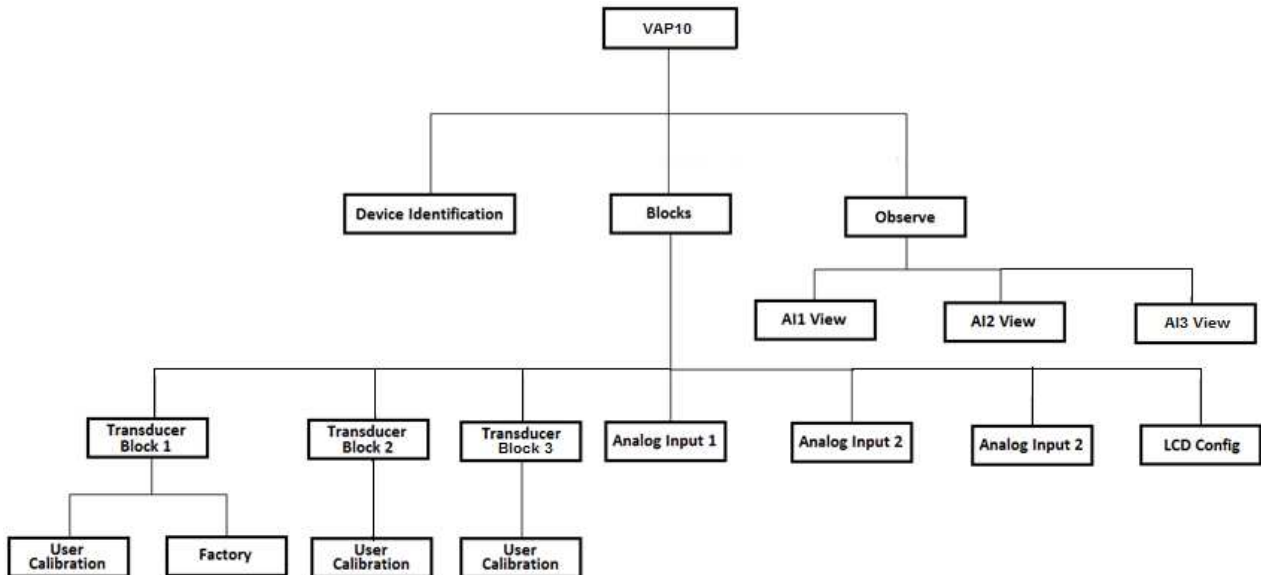
Figure 3.6 – Programming tree for VAP10.

Device Identification - The main device information can be accessed here, such as: Tag, Manufacturer ID, Device ID, Order Code and Firmware Version.

Transducer Block 1/2/3 - Here transducer block 1, 2 or 3 is configured, respectively.

- **Basic Settings -** In this menu the type of measurement (current or voltage) is set.

- **Scales -** Here the output scale (EU0% and EU100%) and the unit of measurement (mA or V) are configured.

- **Backup Restore -** This parameter allows you to restore factory calibration, last calibration, default data and sensor data, and back up the factory calibration, last calibration and sensor data.

  - **User Calibration -** In this menu, the lower and upper current setting is executed, and the value and current status are displayed.
 - **Factory -** In this menu the user can select the identification of the GSD file (Profile Specific or Manufacturer Specific) and perform the factory reset.

Analog Input 1/2 and 3 - Here the analog input block parameters 1, 2 and 3 are configured respectively.

- **Basic Settings -** In this menu the Operation Mode (automatic, manual or out of service), Output Scale (EU0% and EU100%), Unit (mA, V or %), Channel and Damping.

Damping is an electronic filter for the PV, which changes the response time of the equipment to smooth the variations in the output readings caused by rapid variations in the input. The damping value can be set between 0 and 60 seconds, and its appropriate value must be adjusted based on process response time, output signal stability and other system requirements. The default damping value is 0 seconds.

The value chosen for damping affects the response time of the equipment. When the value is set to zero, the damping function is disabled and the output of the equipment will react immediately to changes in the input of the equipment, so the response time will be as short as possible.

Increasing the value of damping leads to an increase in the response time of the equipment.

At the time the damping time constant is set, equipment output will go to 63% of input change and the equipment will continue to approach the input value according to the damping equation.

- **Alarm/Warning -** The upper and lower Warning and Alarms Limits are set in this menu. The Hysteresis limit is also set. The measuring unit selected in the "Basic Settings" is indicated in this menu, as well as checking the current alarm status. The standard graphic of the process variable boundaries is also shown.

- **Fail Safe -** In this menu the fault safety type and fault safety value are set and the unit of measurement selected in the "Basic Settings" is displayed.

- **Simulate -** In this menu the Simulation function is enabled or disabled, the current value is set, the unit selected in the "Basic Settings" and the status are displayed.

- **Mode Block -** This menu shows the Target Operation Mode (manual, automatic or out of service) and Real, the value of the output variable in the unit selected in "Basic Settings" and the status are set. The current alarm status is also checked.

LCD Config - Here the LCD display is configured for up to 3 variables: Monit 1, Monit 2 and Monit 3.

- **Monit x -** In these menus the Function Block (Physical, Transducer 1, Transducer 2, Transducer 3, Analog Input 1, Analog Input 2 or Analog Input 3), Relative Index (Target Mode, Primary Value or User Index) Structure Element, Mnemonic, decimal place number (1, 2, 3 or 4), the alphanumeric field is enabled or disabled and the value of the monitored parameter is displayed.

- **User Prmt -** In this menu the Function Block (Physical, Transducer 1, Transducer 2, Transducer 3, Analog Input 1, Analog Input 2 or Analog Input 3), Relative Index (User Index), Structure Element, Mnemonic, and number of decimal places (1, 2, 3 or 4).

- **LCD Switch -** This selects how many parameters to switch on the LCD (1, 2 or 3).

- **LCD Bargraph -** In this menu the bargraph of the display is enabled or disabled.

Observe - In this menu, the values and status of the parameters of the AI blocks (AI View 1, AI View 2 or AI View 3) are monitored.

3.7. FDT/DTM CONFIGURATION

FDT/DTM-based tool (Ex. PACTware®, FieldCare®) can be used for device information, configuration, monitoring, calibration and diagnosis with Profibus-PA technology. Vivace offers the DTM files for all of its devices (HART® and Profibus-PA).

PACTware® is property of *PACTware Consortium* and can be found on http://www.vega.com/en/home_br/Downloads.

The following figures exemplify DTM configuration screens for VAP10 using Vivace's VCI10-UP interface and PACTware®.
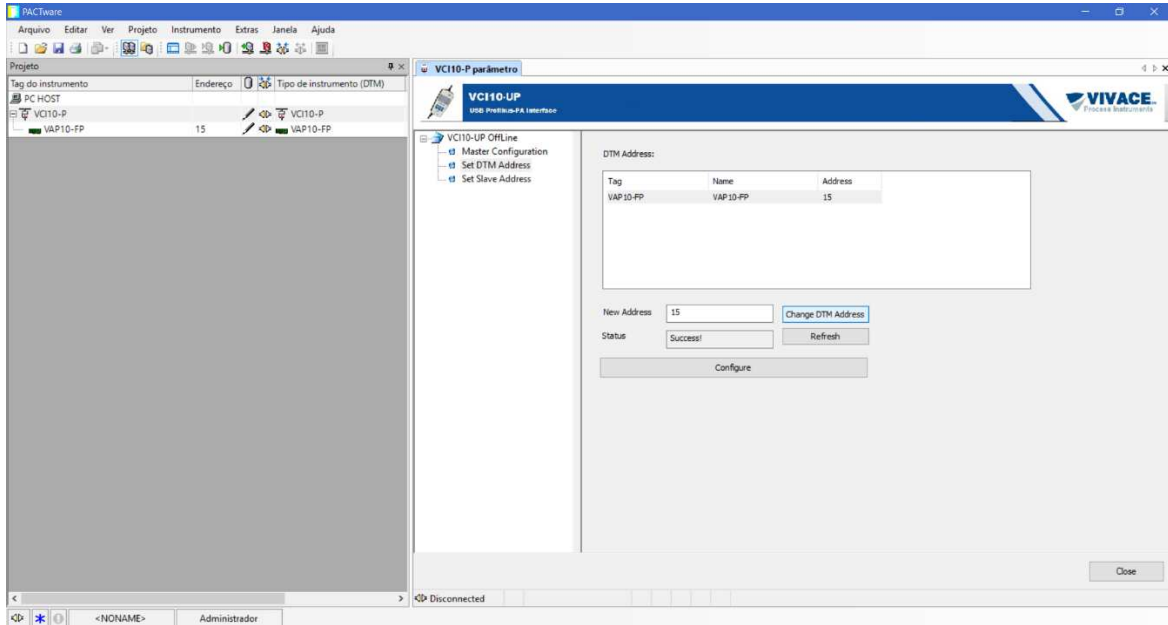

Figure 3.7 – Communication interface configuration screen on PACTware.
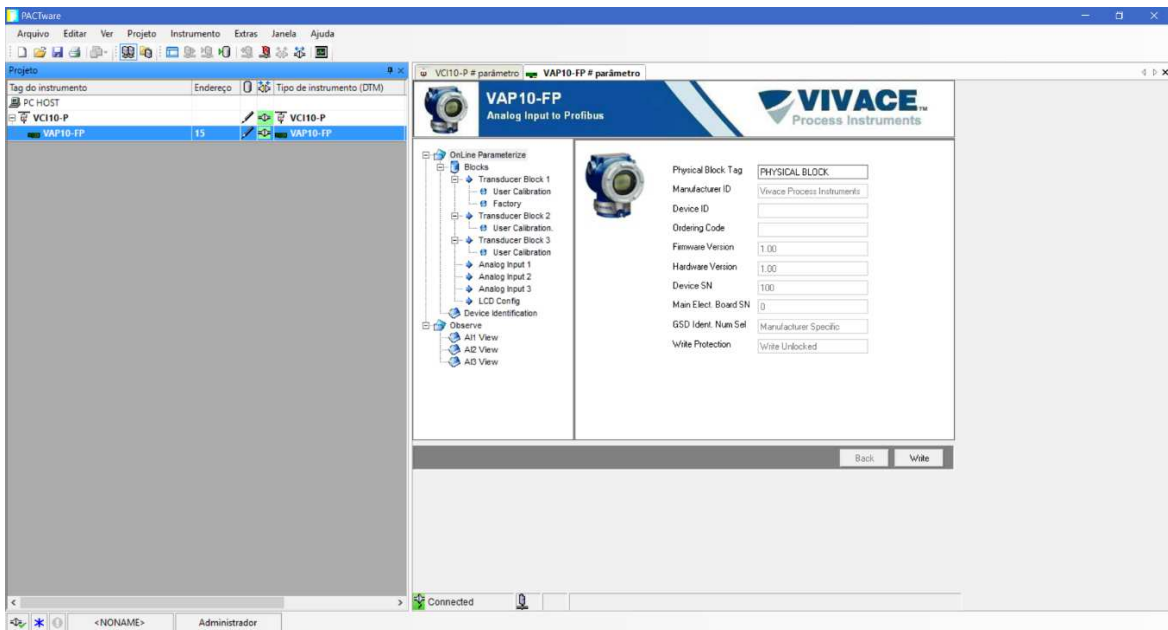

Figure 3.8 – Display screen of VAP10 information on PACTware.

3.8. CYCLIC CONFIGURATION

VAP10 has 3 functional blocks of analog input (03 AI - Analog Input Block). It also has the empty module (Empty Module) for applications where you want to configure only one block.

According to the type of application, the appropriate cyclic configuration must be performed, following the following cyclic order of the blocks: AI1, AI2 and AI3. When the user does not work with any channel of the VAP10 he must use the corresponding empty module, for example, suppose channel 2 is not used: AI1, Empty Module and AI3.

Most Profibus configurators use two directories where the GSD and BITMAP files from various manufacturers are located. The GSD and BITMAPS for Vivace equipment are available on its website (www.vivaceinstruments.com.br).

Follow the procedure below to integrate the VAP10 into a Profibus system (these steps apply to all Profibus-PA Vivace line devices).

• Copy the GSD file from VAP10 to the directory where all the GSD files of the Profibus configurator are located, usually called "GSD";
• Copy the BITMAP file from VAP10 to the directory where all the BMP files of the Profibus configurator are located, usually called "BMP";
• After choosing the PROFIBUS-DP master, set the communication rate. Do not forget that DP / PA couplers can have the following communication rates: 45.45 kbits / s (Siemens), 93.75 kbits (s) and 12 Mbit / s , SK3). The IM157 device link can have up to 12 Mbits / s;
• Add the VAP10 and specify its address on the bus;
• Choose the cyclic configuration via parameterization, according to the GSD file, which depends on the application, as seen previously. For each AI block, VAP10 provides the master with the value of the process variable in 5 bytes, the first four in the floating point format (IEEE-754) and the fifth byte forming the status that brings the quality information of this measurement.
• Some devices support the cyclic modules in the "long" and "short" formats. If there is a failure in the cyclic communication, check if by changing the chosen format, the communication is established successfully.
• If necessary activate the watchdog condition, which causes the equipment to assume a safe fault condition when it detects a loss of communication between the slave device and the Profibus-DP master.

Check byte swap condition (MSB with LSB inversion and, in some cases, nibble inversion), as for some systems it will be necessary on handling cyclic data.

VAP10 has the GSD identifier number equal to 0x0FB2 (Manufacturer Specific) and can still work with the value 0x9702 (Profile Specific).

The DD, the DTM and the GSD of VAP10 can be found on the website: www.vivaceinstruments.com.br

For further information on Profibus-PA technology, please refer to the Vivace web page for the installation, operation and configuration manual - Profibus-PA - blocks, parameters and structure.

Link DP/PA

In a Profibus-DP network it is common to have Link Devices DP/PA to increase the communication rate up to 12 Mbit/s and to increase the addressing capacity, since these devices are slaves in the Profibus-DP network and Profibus-PA network. Each Link Device may have connected several DP/PA couplers.

Siemens has a Link device DP/PA which is the IM157 model. This device works with DP/PA coupler at a communication rate of 31.25 kbits/s and in the Profibus-DP network from 9.6 kbits/s to 12 Mbits/s. The IM157 and each coupler must be supplied with 24 Vdc. The maximum number of field devices per link is limited to 30 or 64 devices, but this depends on the model and the number of bytes exchanged cyclically.

When using the Link Device it is necessary to verify that the cyclic modules for Vivace Process Instruments equipment are included in your GSD file.

If they are not, they should be included. To do so, access the Siemens website and download the GSD tool. This is a tool that allows you to extend the GSD file from Siemens links devices (IM157, IM53) by adding the modules of new Profibus-PA devices that are not in the GSD file. You must have the GSD of the link device and the Vivace device in the directory where the GSD Tool was installed and when running, choose the option to extend the GSD file of the link device, choose the link model and GSD of the device and run. After execution, note that a section has been created for the Vivace equipment with its cyclic modules.

| **4** | **MAINTENANCE** |

VAP10 converter, like all Vivace products, is rigorously evaluated and inspected before being sent to the customer. However, in the case of a malfunction, a diagnosis can be made to check whether the problem is located in the installation, in the configuration of the equipment or if there is a problem with the converter.

4.1. ASSEMBLY AND DISASSEMBLY PROCEDURES

Figure 4.1 shows in detail all components of the VAP10. Before disassembling the equipment, it must be switched off. Maintenance should not be carried out on the electronic boards under penalty of loss of warranty of the equipment.
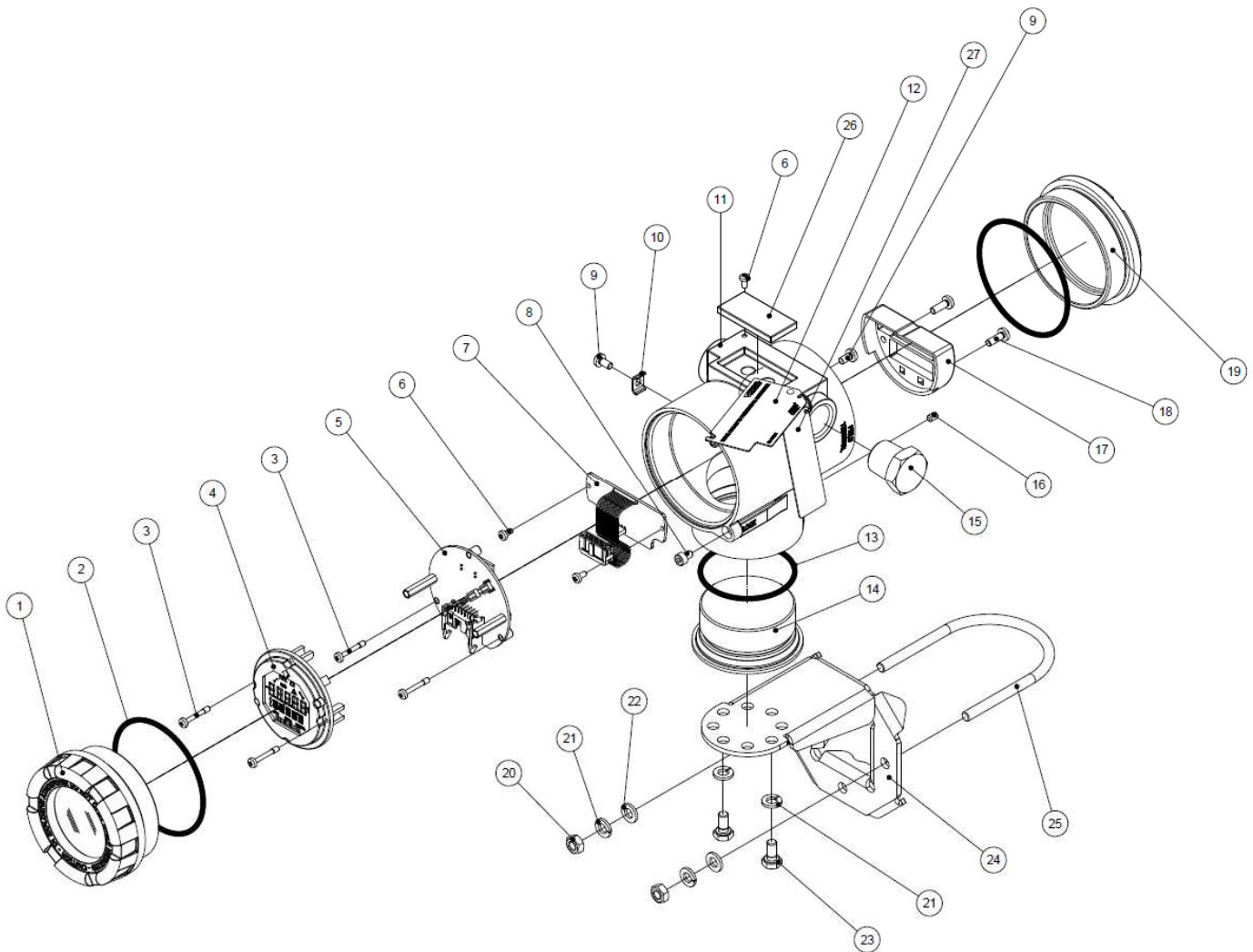

Figure 4.1 – Exploded view of VAP10.

4.2. SPARE PARTS

The list of spare parts of the VAP10 that can be purchased directly from Vivace Process Instruments are listed in Table 4.1.

VAP10 – SPARE PARTS		
DESCRIPTION	**REFERENCE FIG.4.1**	**CODE**
FRONT COVER (includes o'ring)	1	2-10002
REAR COVER (includes o'ring)	19	2-10003
O'RING (cover)	2	1-10001
HOUSING WITH TERMINAL BLOCK	11	2-10011
DISPLAY (includes screws)	4	2-10006
MAIN BOARD (includes screws and spacers)	5	2-10012
ANALOG BOARD (includes screws)	7	2-10013
TERMINAL BLOCK COVER (includes screws)	17	2-10014
HOUSING INFERIOR COVER (includes o'ring)	14	2-10008
INFERIOR COVER O'RING	13	1-10004
MOUNTING SUPPORT (includes U clip and screws)	24	2-10009
HOUSING PLUG	15	1-10005
EXTERNAL GROUND (includes screws)	10	2-10010
COVER LOCK SCREW	8	1-10006
IDENTIFICATION PLATE AND ANALOG BOARD SCREW	6	1-10007
HOUSING LOCK SCREW	16	1-10008
TERMINAL BLOCK COVER SCREW	18	1-10003
DISPLAY AND MAIN BOARD SCREW	3	1-10002
MAGNETIC TOOL	-	3-10001

Table 4.1 – Spare parts list for VAP10.

5   CERTIFICATION

VAP10 is designed to meet national and international standards for explosion proof and intrinsic safety.

The transmitter is certified by INMETRO for intrinsic safety and explosion proof – dust ignition (Ex tb) and flame (Ex db).

6   TECHNICAL CHARACTERISTICS

6.1. IDENTIFICATION

VAP10 has an identification plate affixed to the top of the housing, specifying the model and serial number, as shown in Figure 6.1.
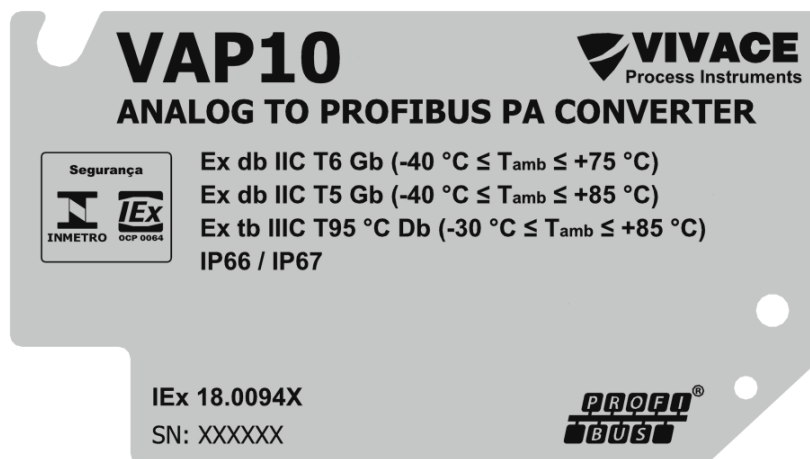
Figure 6.1 – Identificação plate for VAP10.

6.2. TECHNICAL SPECIFICATION

In the table below are the technical specifications of VAP10:

Accuracy	± 0.1% of Calibrated Span
Power Supply/Current Output	9 to 32 Vcc (non-polarized) / 12 mA
Communication Protocol	Profibus-PA – IEC61158-2
Input Configuration (3 channels)	Independent: 0-20 mA, 4-20 mA, 0-5 V
Electrical Isolation	Galvanic Isolation, 1.5 kVac
Classified Areas	Explosion Proof and Intrinsically Safe
Environment Temperature Limits	- 40 to 85°C
Configuration	Local, EDDL/FDT/DTM Tools and Android®
Display	5-digit, rotative, multifunctional LCD
Protection Degree	IP67
Housing Material	Aluminum
Weight	600 g

Table 6.1 – Technical specification for VAP10.

VIVACE
Process Instruments

6.3. ORDERING CODE

VAP10 *Analog to Profibus PA Converter*

Certification Type	0	NO CERTIFICATION				
	1	INTRINSICALLY SAFE				
	2	EXPLOSION PROOF				

Certification Body		0	NO CERTIFICATION			
		1	INMETRO			

Housing Material			A	ALUMINUM		

Electrical Connection				1	½ – 14 NPT	

Painting					1	BLUE – RAL 5005

Mounting Bracket						0	NO BRACKET
						1	SS 304 BRACKET

Ordering Code Example:

VAP10	-	0	0	A	1	1	0

*Explosion Proof Certification Ex tb (dust ignition) and Ex db (flame)

7   WARRANTY

7.1 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 Vivace website: www.vivaceinstruments.com.br.

7.2 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 warranty period expires, *Vivace* assistance team is ready to assist 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:

VIVACE Process Instruments

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