

VRI10-P

PROFIBUS PA REMOTE INDICATOR



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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".

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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.*

SYMBOLOLOGY



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 DEVICE DESCRIPTION

Profibus-PA remote indicator, VRI10-P, integrates the *Vivace Process Instruments* family of field devices and it is designed to indicate up to 10 values and status on its LCD from other Profibus-PA field devices in the same Profibus-PA segment where it is installed.

The transmitter is powered via bus by a voltage of 9 to 32 Vdc and uses the Profibus-PA communication protocol for setting and monitoring the 10 indications on its LCD.

The remote indicator works as a sniffer that captures data from the Profibus-PA bus and shows the cyclic values and status of other devices on its LCD according to their configured addresses.

It does not exchange cyclic messages on the bus as an active slave (it does not increase traffic on the bus). Using a Profibus PA configurator, Android platform or tools based on EDDL or FDT / DTM the user can easily configure the indicator

In addition, it is possible to configure the network address of the VRI10-P via local adjustment, using a magnetic screwdriver or via configuration tools.

1.1. BLOCK DIAGRAM

Component modularization for transmitter is described on the following block diagram.

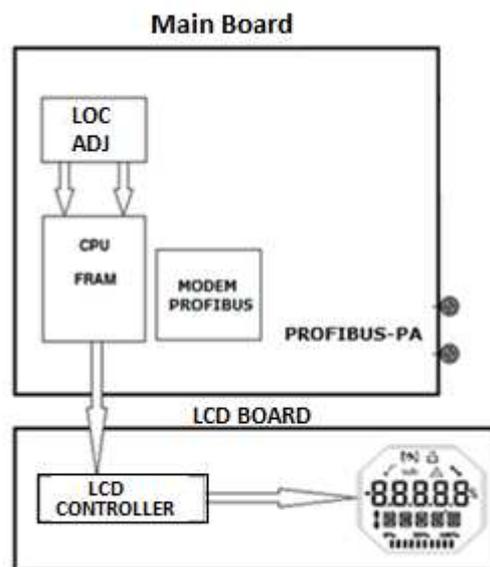


Figure 1.1 - VRI10-P block diagram.

The main board controls the main functions of the position transmitter. There are the Profibus-PA Modem and the microcontroller (CPU).

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

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

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

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.*

Every device installation process must be executed by qualified personnel, following the procedures demanded by safety rules. It is highly recommended to begin with transmitter mechanics installation on plant, by correctly positioning the magnet and appropriate bracket for transmitter. Only after that, the electrical installation must be performed, connecting the power supply and communication cables to the transmitter.

2.1. INSTALLATION CONDITIONS

Environment conditions must always be considered on transmitter installation, since its performance can be affected by bad conditions of temperature, vibration and humidity. Temperature can affect some electronics behavior. Thus, care must be taken when placing transmitter to avoid high temperatures exposure.

2.2. MECHANICAL ASSEMBLY

The transmitter’s housing is IP67 protected, being immune to water contact to electronic circuit and electrical connections, since cable gland or conduit for electrical connection is correctly assembled and sealed with non-hardening substance. Covers must also be tight to avoid humidity, since housing screws are not protected by painting.

The electronic circuit is protected by varnish but constant water or corrosion exposure may compromise this protection and damage the electronic components.

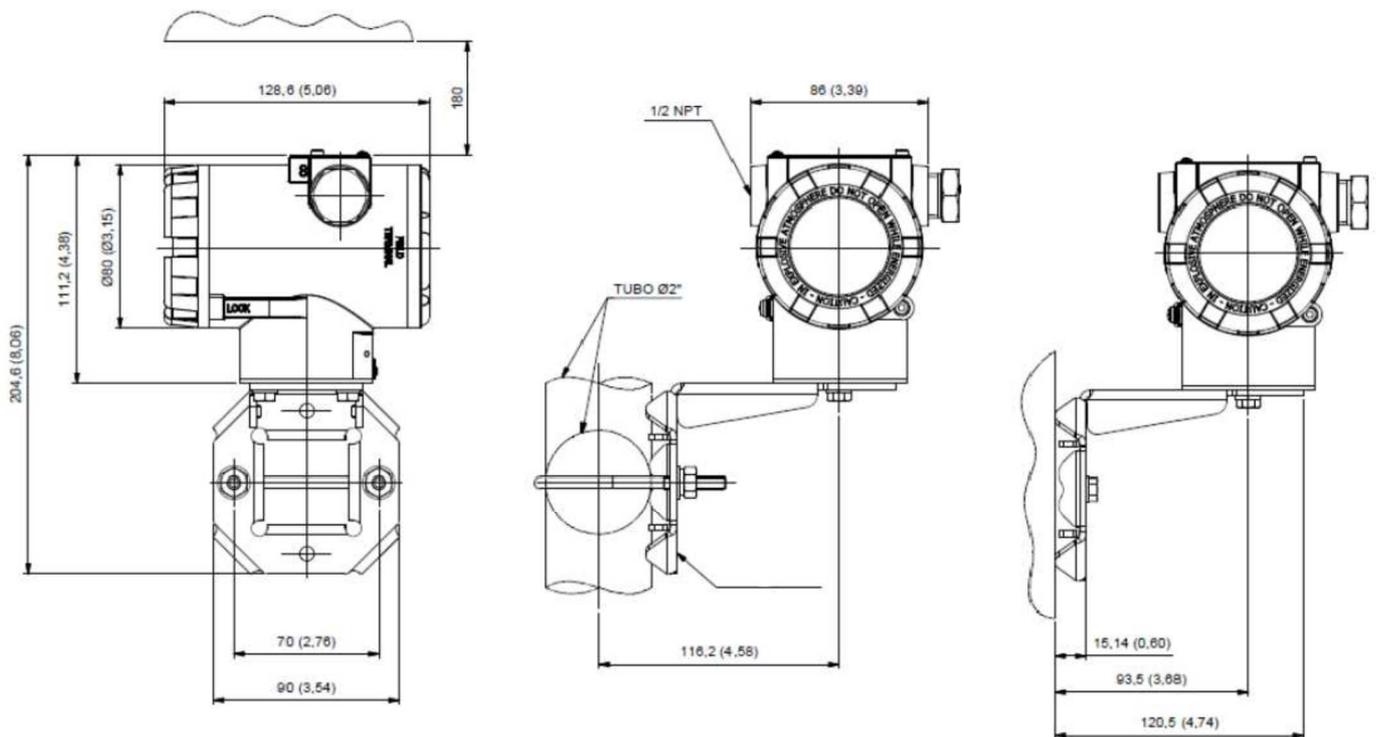


Figure 2.1 – Dimensional and mounting drawings for VRI10-P.

Figure 2.1 shows the dimensional drawing and mounting positions for VRI10-P on standard bracket. Magnets dimensional drawings can be found on section 2.4.

To avoid the risk of involuntary loss of VRI10-P covers due to vibration, for instance, it can be locked by screw, as shown on figure 2.2.

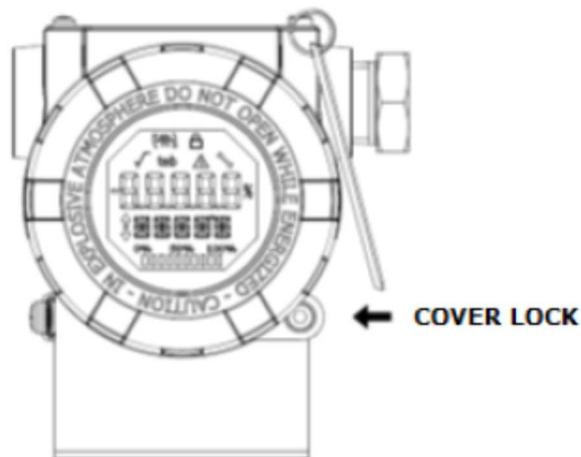


Figure 2.2 – Front cover lock.

VRI10-P 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.

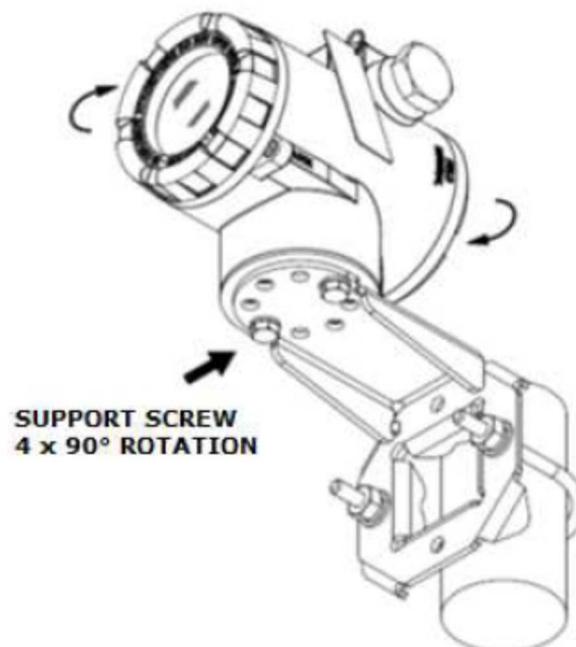


Figure 2.3 – VRI10-P bracket fixation and housing 4 x 90° rotation.

VRI10-P liquid crystal display can also be rotated 4 x 90° so indication will be adequate for user visualization. Figure 2.4 illustrates rotation possibilities for VRI10-P LCD.

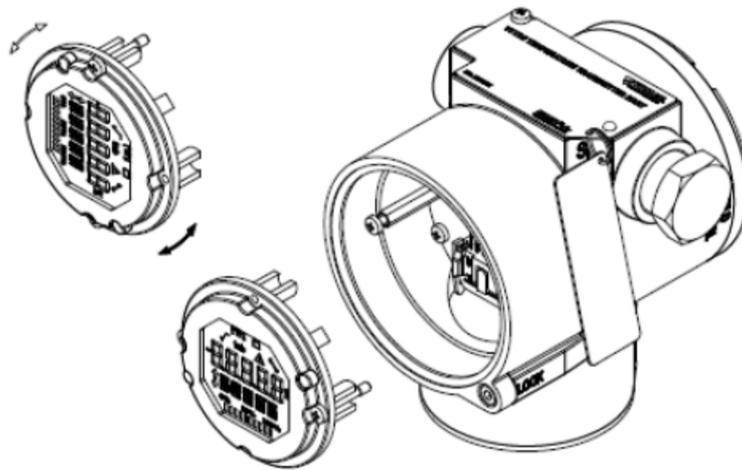


Figure 2.4 – 4 x 90° LCD rotation.

2.3. ELECTRICAL CONNECTION

To access the terminal block user must remove VR110-P rear cover. First, loose cover lock screw (see figure 2.5) by turning it clockwise.

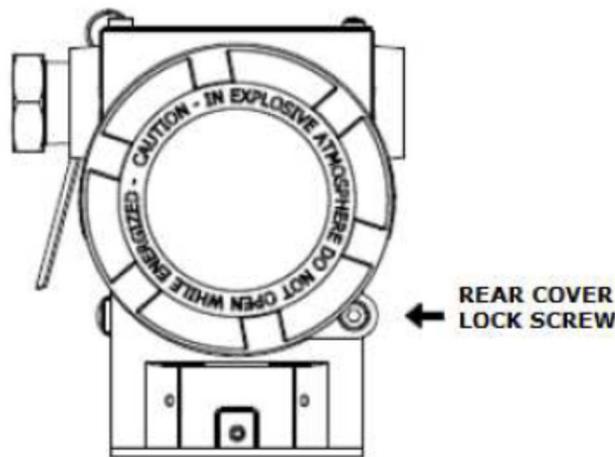


Figure 2.5 – Rear cover lock.

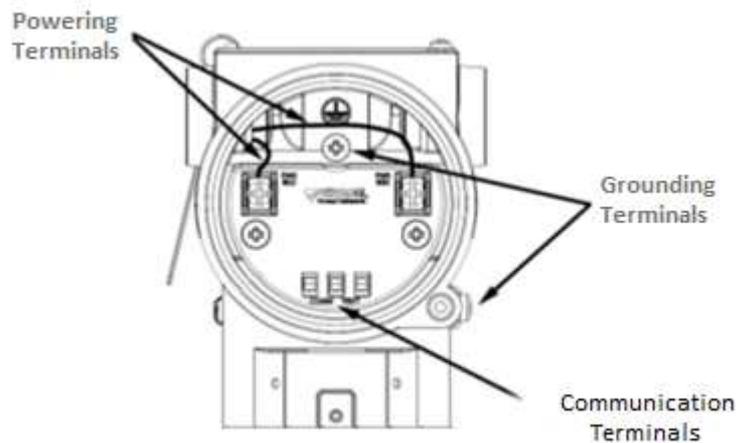


Figure 2.6 – VR110-P connections and terminal description.

Figure 2.6 shows power supply (PWR BUS), grounding (internal and external) and PROFIBUS communication terminals for VRI10-P. For powering the device, it is recommended to use a 18 AWG twisted pair cable with shield (Capacitance < 30pF).

Table 2.1 describes VRI10-P terminal functions.

Terminal Description
Power Terminals - PWR BUS 9-32 VDC (No polarity)
Grounding Terminals 1 internal and 1 external
Communication Terminals – PROFIBUS-PA communication with configurator

Table 2.1 – VRI10-P terminal description.

NOTE	
	All cables used for connecting VRI10-P with PROFIBUS-PA network must be shielded to avoid interference or noise.

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.

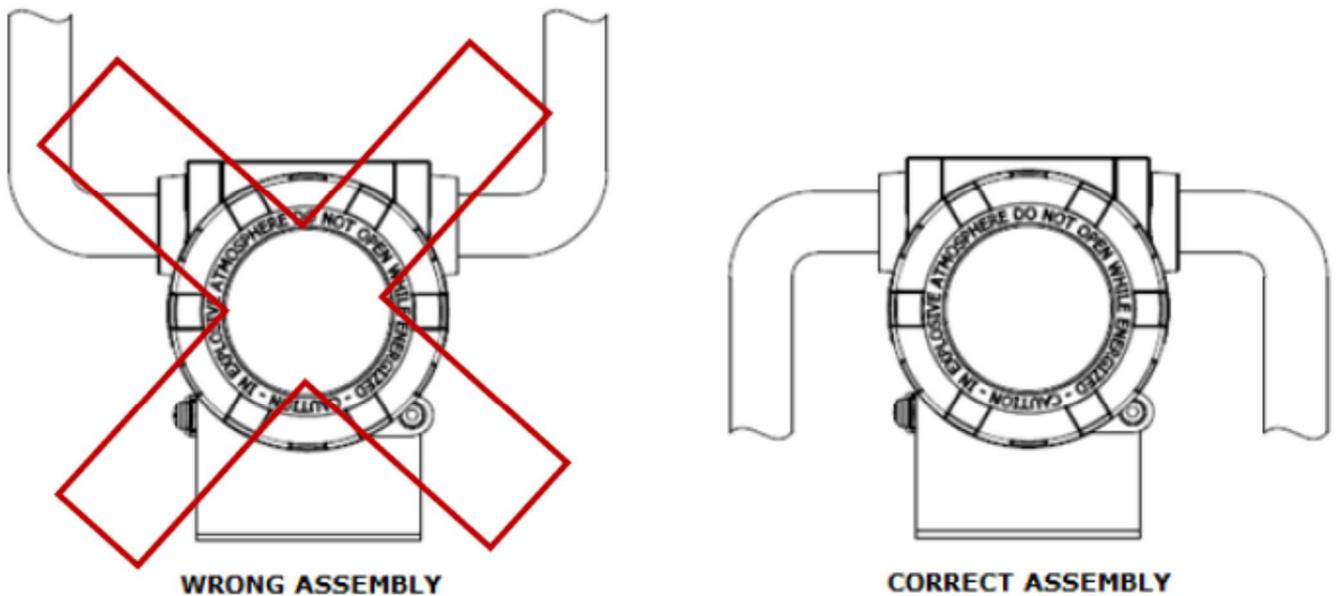


Figure 2.7 – Conduit installation.

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.

2.4. BUS CONNECTION

Figure 2.8 illustrates the installation of a number of Profibus network elements and the connection of Profibus PA devices to the Profibus network.

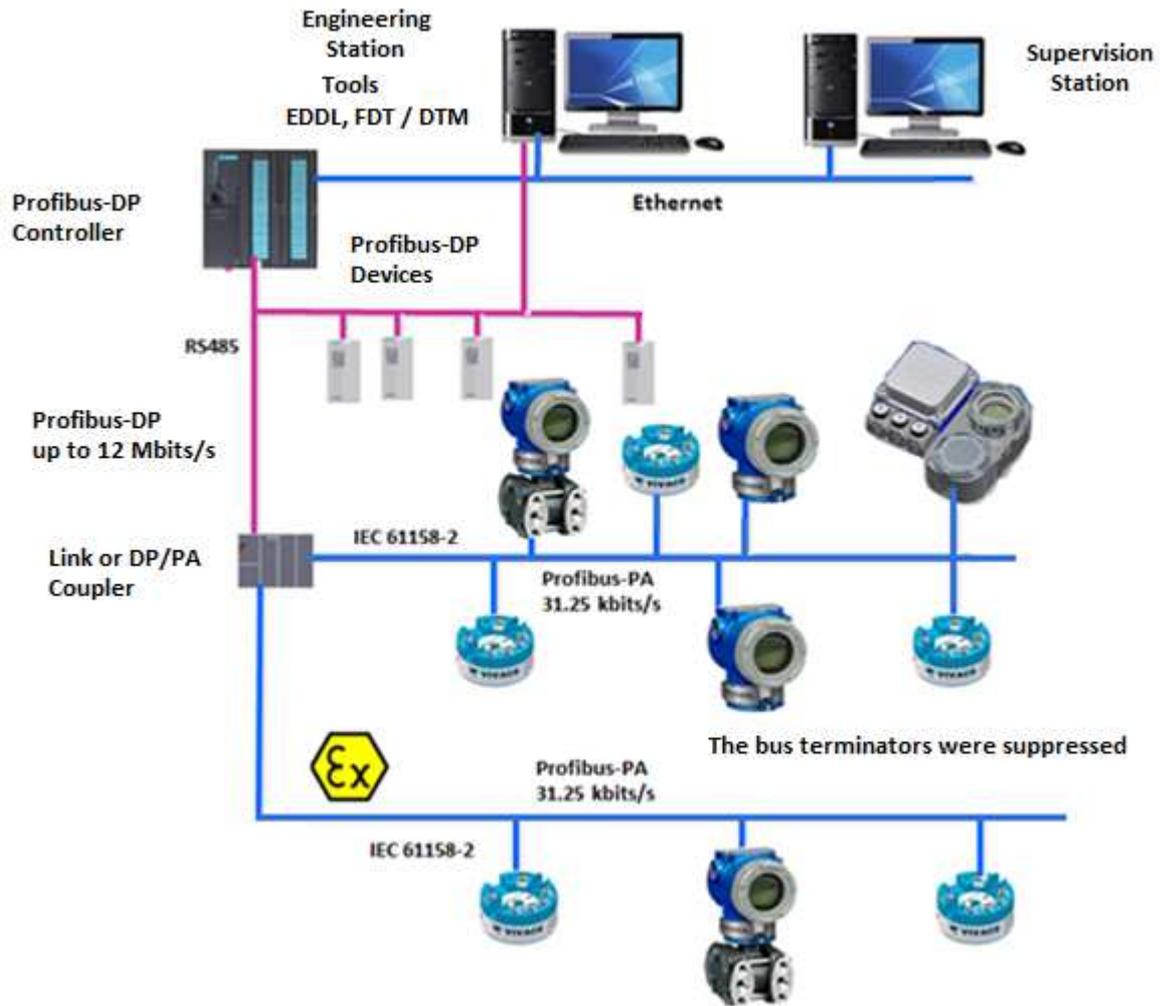


Figure 2.8 - Connecting a Profibus-PA device to bus.

3 CONFIGURATION

The indicator can be configured by any Profibus-PA compatible programmer. Vivace offers the interfaces VCI10 (USB and Bluetooth) as a solution for configuring and monitoring any Profibus-PA device. The physical address of VRI10-P can be configured by local adjust using Vivace magnetic screwdriver or via software tools.

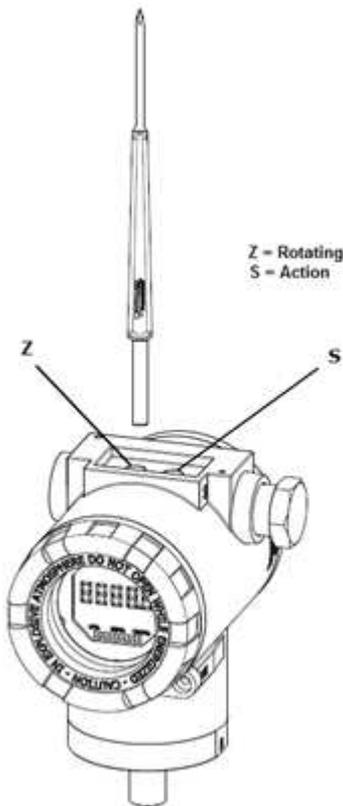
3.1 LOCAL CONFIGURATION

Transmitter'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 ADJUST" message is shown on display, and then remove it for 3 seconds. Insert the magnetic screwdriver into Z orifice again, so user can set the device address 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.

The icon  allows user to configure the device address by inserting the magnetic screwdriver into *Span* orifice (S). The LCD will enter on edition mode and it will start blinking 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 each 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.

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 alphanumeric 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

VRI10-P has two jumpers on its main board to protect data writing (WP1) and enabling/disabling local adjust (ADJL1). Figure 3.2 presents those jumpers.

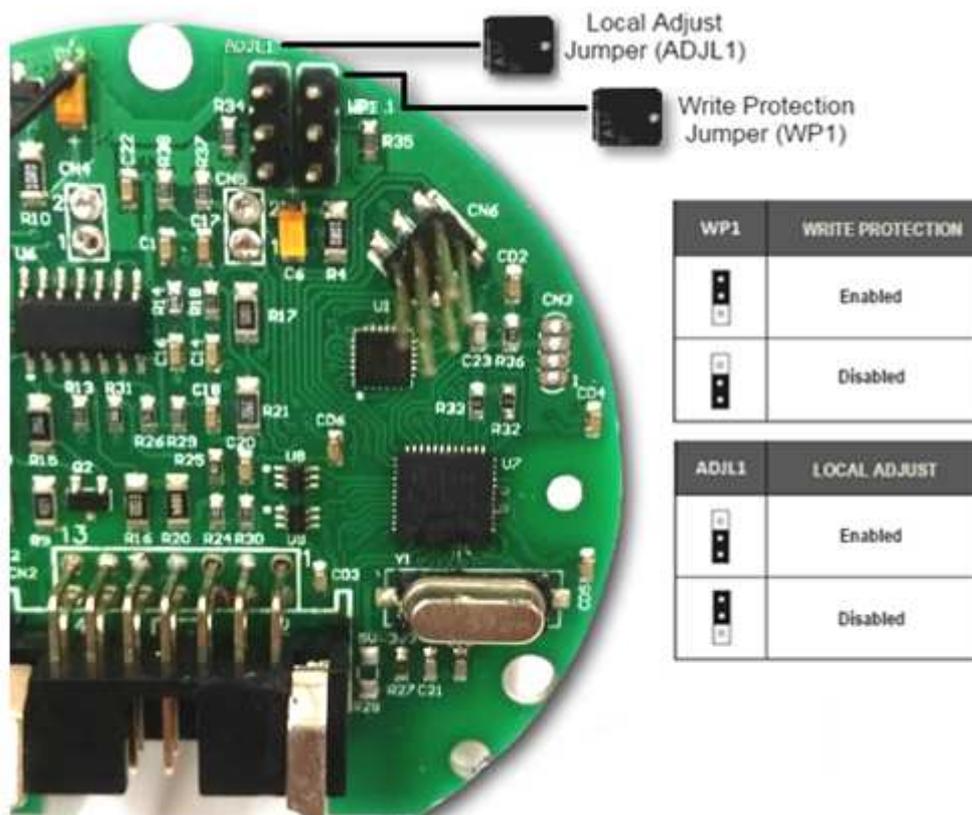


Figure 3.2 – Jumpers WP1 (write protection) and ADJL1 (local adjust) on VRI10-P main board.

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
	Characterization table enabled
	Diagnostic occurrence
	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.

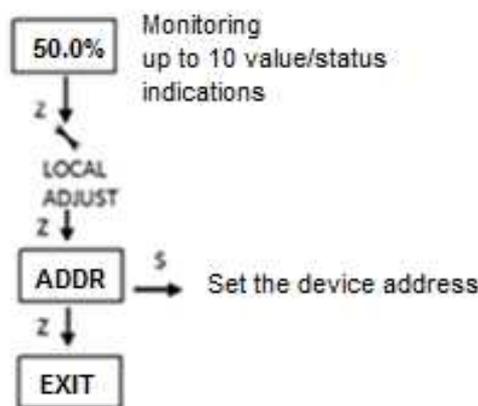


Figure 3.4 – Local adjust configuration tree.

3.5 PROFIBUS-PA CONFIGURATOR

The configuration of the transmitter can be carried out by means of a PROFIBUS-PA compatible programmer. Vivace offers the interfaces of the VCI10-P line (USB and Bluetooth) as a solution for identification, configuration and monitoring of the Profibus-PA line equipment.

Figure 3.5 shows the connection scheme for configuring the VRI10-P using the Vivace VCI10-UP USB interface, which powers the device in local mode, with a personal computer that has PACTware configurator software.



Figure 3.5 – VRI10-P configuration diagram with VCI10-UP

3.6 PROFIBUS-PA CONFIGURATOR PROGRAMMING TREE

The configuration tree is a tree-shaped structure with the menus for all software resources available, as shown on figure 3.6.

For online configuration of the transmitter, check it is correctly installed, powered by the adequate voltage.

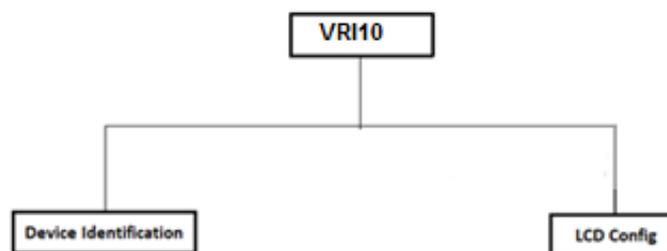


Figure 3.6 – VRI10-P programming tree.

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

LCD Config – Allows the configuration of LCD for up to 10 indications

- **Device Address** - it is the Profibus-PA device address that the VRI10-P will read the value of the parameter to be monitored. This device must be installed in the same segment as the VRI10-P.
- **LCD Enable:** Enables / disables the respective LCD. When a LCD is disabled during the monitoring process, the VRI10-P will indicate the next LCD enabled.
- **Data Type:** the data type of monitored parameters that can be float-status, float, unsigned char (8 bits), unsigned int (16 bits), unsigned long int (32 bits), char (8 bits), int (16 bits) And long int (32 bits). When it is a float-status type and the status value is bad or uncertain, it will indicate this status at the alphanumeric field, alternating it with the mnemonic.
- **Cyclic Frame Offset:** it is the offset from where the VRI10-P will read the parameter in the cyclic frame. Please see below details for this parameter.
- **Mnemonic:** The user can set the tag for the monitored parameter using up to 16 characters, and above 5 characters, the mnemonic will rotate on the LCD.
- **Decima Point Number:** it selects the decimal point number for the monitored parameter when it is float-status or float types.
- **Alpha Num:** It allows the value to be also shown at the mnemonic field when this value is greater than 99999.
- **Bargraph** - In this menu, the bargraph is enable or disabled for monitored parameter.
- **EU100%:** it is the corresponding value of 100% for the monitored value to working with the bargraph.
- **EU0%:** it is the corresponding value of 0% for the monitored value to working with the bargraph.

If no LCD monit is enabled and configured, the following message will appear on the LCD:



Figure 3.7 – LCD indication of No LCD Configuration.

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 VRI10-P using Vivace's VCI10-UHPinterface and PACTware®.

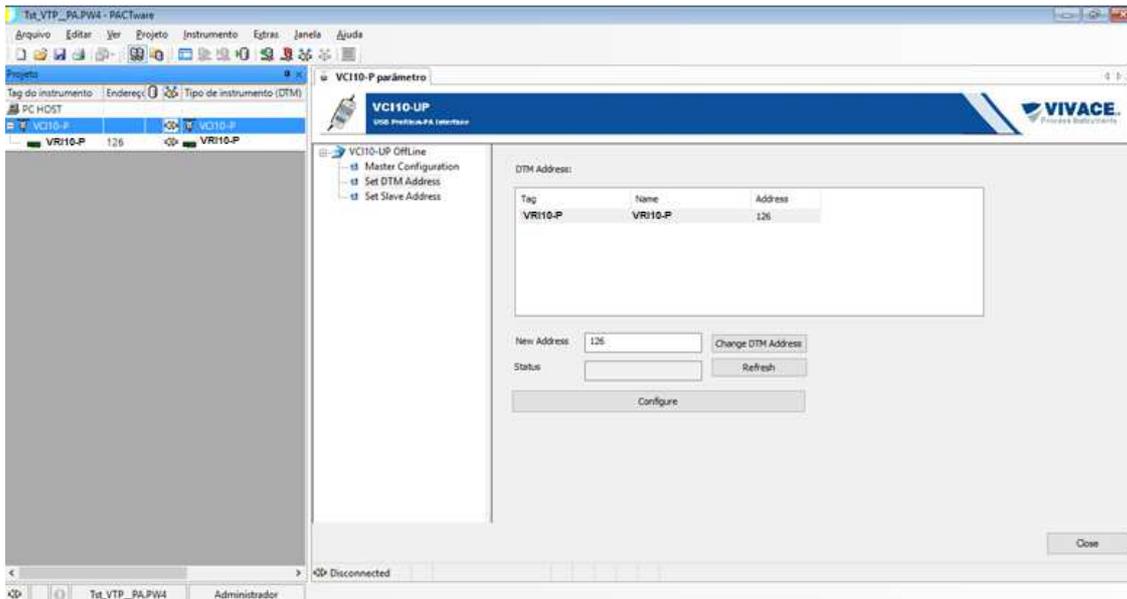


Figure 3.8 – Configuration screen of the communication interface in PACTware.

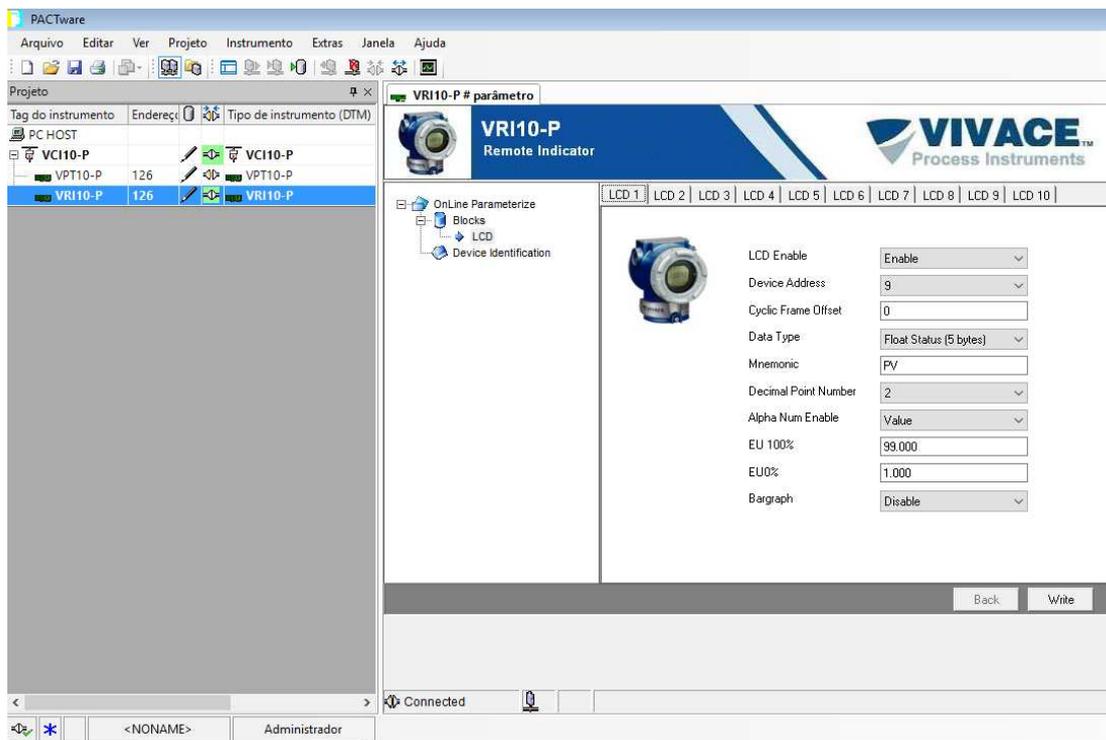


Figure 3.9 –Example of LCD configuration for VRI10-P.

3.8 CONFIGURING THE CYCLIC FRAME OFFSET PARAMETER

Cyclic Frame Offset is the offset from where the VRI10-P will read the parameter in the cyclic frame.

To better understanding the configuration of this parameter, here are some examples:

Temperature Transmitter with dual temperature measurements:

In this case, this device has 02 analog input blocks (AIs, data type float-status (DS33)) and it provides the following bytes in the cyclic frame:

D1 D2 D3 D4 D5 D6 D7 D8 D9 D10

For the first measurement: D1 D2 D3 D4 is the float value (IEEE764 format) and D5 the status. To set this measurement indication in the VRI10-P, the offset must be zero.

For the second measurement: D6 D7 D8 D9 is the float value (IEEE764 format) and D10 the status. To set this measurement indication in VRI10-P, the offset must be 5.

Flow and Totalization Transmitter:

In this case, this device has two function blocks, 01 analog input (AI, data type float-status (DS33)) for flow measurement and 01 Totalizer block (TOT, data type float -status (DS33)) for totalization and it provides the following bytes in the cyclic frame:

D1 D2 D3 D4 D5 D6 D7 D8 D9 D10

For flow measurement: D1 D2 D3 D4 is the float value (IEEE764 format) and D5 the status. To set this measurement indication in the VRI10-P, the offset must be zero.

For totalization measurement: D6 D7 D8 D9 is the float value (IEEE764 format) and D10 the status. To set this measurement indication in VRI10-P, the offset must be 5.

Multipoint Temperature Transmitter (8 sensors):

In this case, this device has 08 analog input blocks (AIs, data type float-status (DS33)) and it provides the following bytes in the cyclic frame:

D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40

For the first measurement: D1 D2 D3 D4 is the float value (IEEE764 format) and D5 the status. To set this measurement indication in the VRI10-P, the offset must be zero.

For the second measurement: D6 D7 D8 D9 is the float value (IEEE764 format) and D10 the status. To set this measurement in indication the VRI10-P, the offset must be 5.

For the third measurement: D11 D12 D13 D14 is the float value (IEEE764 format) and D15 the status. To configure this measurement in indication the VRI10-P, the offset must be 10.

And so on up to the eighth measurement: D36 D37 D38 D39 is the float value (IEEE764 format) and D40 status. To configure this measurement indication in the VRI10-P, the offset must be 35.

Once the VRI10-P does not exchange cyclic data with the Profibus-DP master, it does not have a GSD file.

It works as a sniffer that captures data from the Profibus-PA bus and shows on its LCD the cyclic values and status of other devices according to their configured addresses.

It does not exchange cyclic messages on the bus as an active slave (it does not increase traffic on the bus).

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.

The DD and the DTM files for the VRI10-P 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.

4 MAINTENANCE

VRI10-P as all Vivace devices, suffers several inspections before its shipping. However, some diagnostics are available in the case of malfunction to check problem cause (installation, configuration or on device itself).

4.1 ASSEMBLY AND DISASSEMBLY PROCEDURES

Figure 4.1 shows VRI10-P component details. Before disassembling the device, make sure it is powered off. Maintenance on electronic boards must not be executed, under penalty of equipment warranty loss.

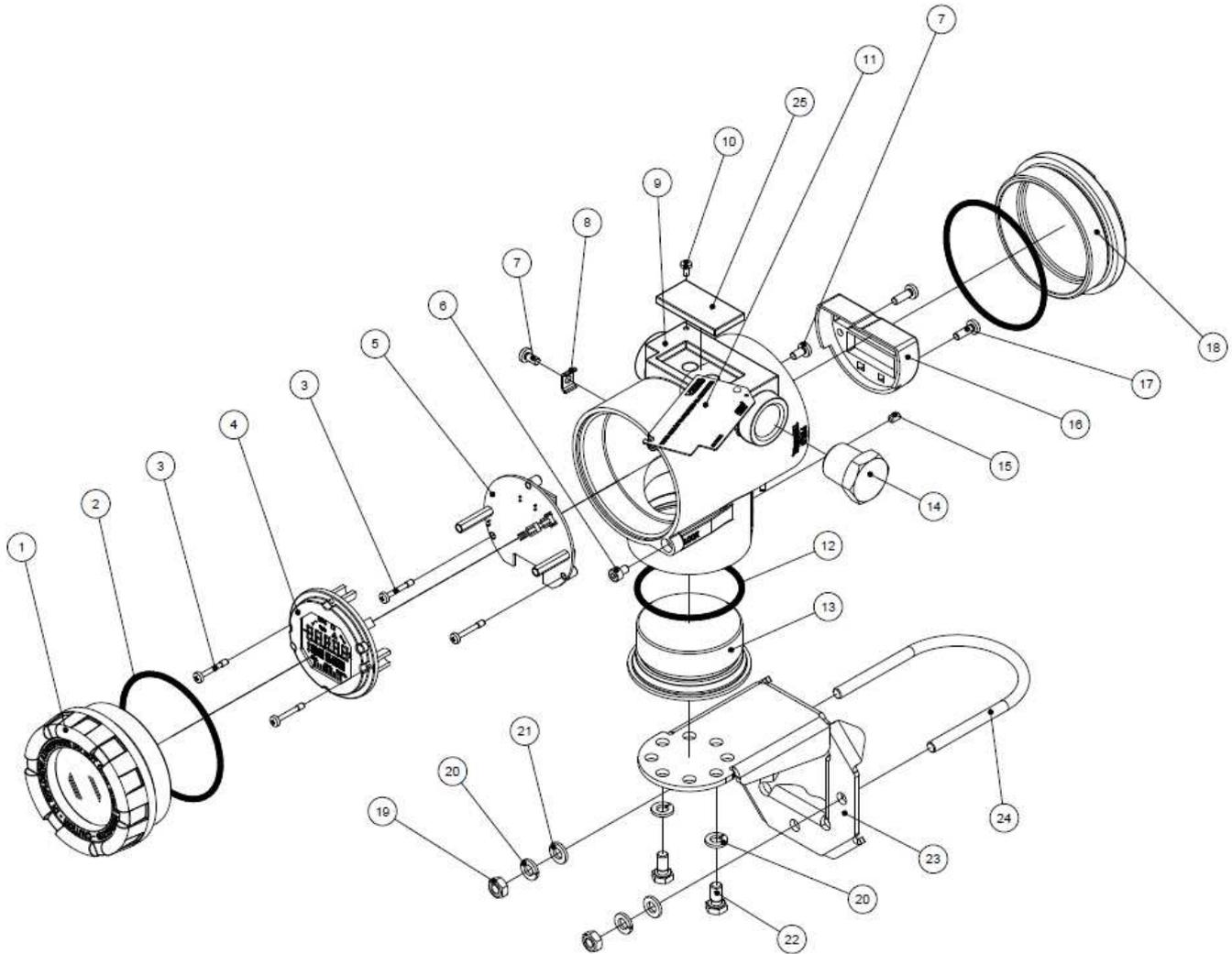


Figure 4.1 – VRI10-P exploded view.

4.2. SPARE PARTS

All the spare parts available for VRI10-P can be bought directly from *Vivace Process Instruments*. Those parts are listed on table 4.1.

SPARE PARTS LIST		
DESCRIPTION	FIG.4.1 REFERENCE	CODE
FRONT COVER (includes o'ring)	1	2-10002
REAR COVER (includes o'ring)	18	2-10003
INFERIOR COVER (includes o'ring)	13	2-10008
O'RING (tampas)	2	1-10001
INFERIOR COVER O'RING	12	1-10004
HOUSING WITH TERMINAL BLOCK AND FILTERS	9	2-10030
DISPLAY (includes screws)	4	2-10006
MAIN BOARD (includes screws and spacers)	5	2-10050
TERMINAL BLOCK COVER (includes screws)	16	2-10040
IDENTIFICATION PLATE	11	2-10051
MOUNTING SUPPORT (includes U clip and screws)	23	2-10009
Z/S PROTECTION COVER	25	2-10015
HOUSING PLUG	14	1-10005
EXTERNAL GROUND (includes screws)	8	2-10010
COVER LOCK SCREW	6	1-10006
IDENTIFICATION PLATE AND ANALOG BOARD SCREW	10	1-10007
HOUSING LOCK SCREW	15	1-10008
TERMINAL BLOCK COVER SCREW	17	1-10003
INTERNAL AND EXTERNAL GROUND SCREW	7	1-10009
DISPLAY AND MAIN BOARD SCREW	3	1-10002
MAGNETIC TOOL	-	3-10001

Table 4.1 – VRI10-P spare parts.

5 CERTIFICATION

VRI10-P is designed to meet national and international standards for explosion proof and intrinsic safety.

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

6 TECHNICAL CHARACTERISTICS

6.1 IDENTIFICATION

VRI10-P has an identification plate fixed on the superior side of its housing, specifying model, manufacturer and serial number, as shown on figure 6.1.



Figure 6.1 – VRI10-P identification plate.

6.2 TECHNICAL SPECIFICATION

The following table shows the technical specifications for VRI10-P:

Monitoring	Up to 10 LCD indications, user configurable
Supply Voltage / Quiescent Current	9 to 32 Vdc, without polarity / 12 mA
Communication protocol	Profibus PA, according to IEC 61158-2 (H1), voltage mode 31.25 Kbits/s, bus power. No cyclic data exchange
Certification in Hazardous Areas	Explosion-proof and Intrinsically Safe
Ambient Temperature Limits	- 40 to 85 ° C
Configuration	EDDL, FDT / DTM and Android® Tools
Indication	5-Digit LCD display, rotary, multifunctional and bargraph
Assembly	In the field, with support for 2 "tube.
Address setting on the Profibus-PA network	Via EDDL, DTM tools and via local adjustment.
Degree of Protection	IP67
Housing Material	Aluminum
Approximate weight without support	1.5 kg

Table 6.1 – VRI10-P technical specification.

6.3 ORDERING CODE

VRI10 Remote Indicator

Communication Protocol	I	4 – 20 mA
	P	PROFIBUS-PA
Channels	0	NOT APPLICABLE (ONLY PROFIBUS)
	1	ONE CHANNEL (ONLY 4 – 20 mA)
	2	TWO CHANNELS (ONLY 4 – 20 mA)
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:

VRI10	-	P	0	-	0	0	A	1	1	0
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*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

		FSAT Technical Analysis Solicitation Form	
		Company:	Unit/Department:
Standard Warranty: ()Yes ()No		Extended Warranty: ()Yes ()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 (°C)		Work Temperature (°C)	
Min:	Max:	Min:	Max:
Operation Time:		Fail Date:	
FAIL DESCRIPTION: (Here user should describe in detail the observed behaviour of product, frequency of fail occurrence and repeatability. Also, should inform operational system version and a quick description of control system architecture where the equipment was installed.			
ADDITIONAL OBSERVATION:			

