



Instructions manual



PREFACE

Thank you for choosing the TR3420 transmitter from Tecfluid S.A.

This instruction manual allows the installation, configuration and programming of the electronic transmitter TR3420. It is recommended to read it before using the equipment.

WARNINGS

- This document shall not be copied or disclosed in whole or in any part by any means, without the written permission of Tecfluid S.A.
- Tecfluid S.A. reserve the right to make changes as deemed necessary at any time and without notice, in order to improve the quality and safety, with no obligation to update this manual.
- Make sure this manual goes to the end user.
- Keep this manual in a place where you can find it when you need it.
- In case of loss, ask for a new manual or download it directly from our website www.tecfluid.com Downloads section.
- Any deviation from the procedures described in this instruction manual, may cause user safety risks, damage of the unit or cause errors in the equipment performance.
- Do not modify the equipment without permission. Tecfluid S.A. are not responsible for any problems caused by a change not allowed. If you need to modify the equipment for any reason, please contact us in advance.

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1 INTRODUCTION

The level transmitter TR3420 is a resistance/current converter that adapts to the level resistive sensors series LE and LT (reed chain).

Likewise, it can be connected to other lineal resistive sensors.

The variation of the internal resistance of the sensor, as the float changes its position, is converted into a current signal from 4 to 20 mA.

2 RECEPTION

The level transmitters series TR3420 are supplied ready for installation and operation.

Likewise, they are packaged for protection during transportation and storage.

3 ELECTRICAL CONNECTION

If a transmitter without enclosure has been acquired, skip to point 3.1.

If the transmitter is supplied in an aluminium enclosure, unscrew the cover to access the inside of the equipment. In the case of having a plastic enclosure, the 4 screws of the top cover must be unscrewed.

For the electrical connection, the transmitter TR3420 has a screw terminal block.

For the electrical installation it is recommended to use multiple conductor cables with individual cable sections in the order of 0.25 to 0.5 mm² in order to make it easier to connect.

Before starting the installation, check that the cable glands are the right size for the cables to be used, this will guarantee the instrument will stay watertight. The cable gland used in the aluminium enclosure is for cables with outside diameters between 5 mm and 12 mm, while the cable gland used in the plastic enclosure is valid for hose diameters from 6 to 10 mm.

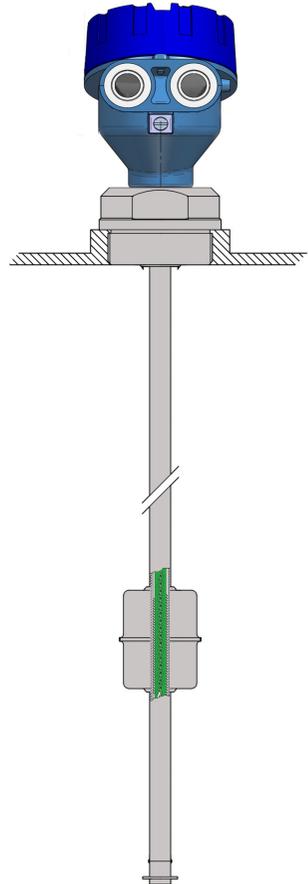
Peel the outside insulation to free the inner cables. Pass the cables through the cable glands and screw down in the corresponding positions of the terminal strip as indicated in the following point.

Once the wiring is finished make sure that the cables are well gripped by the cable glands to maintain the degree of protection.

3.1 Terminals



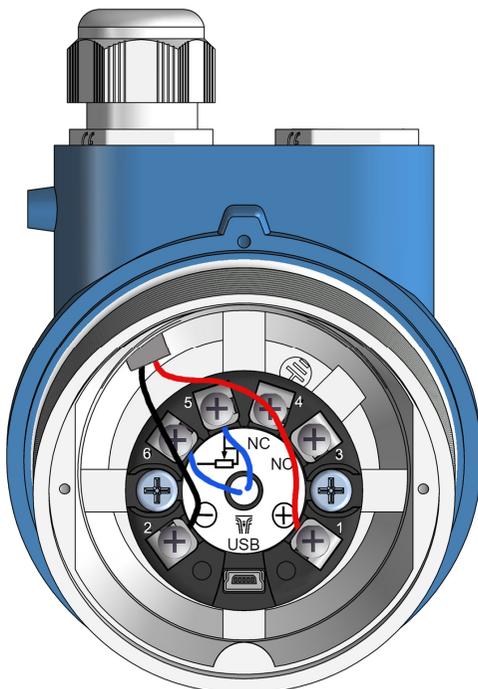
Before installing the equipment, check that the supply voltage available in the installation is compatible with the one marked on the label of the instrument.

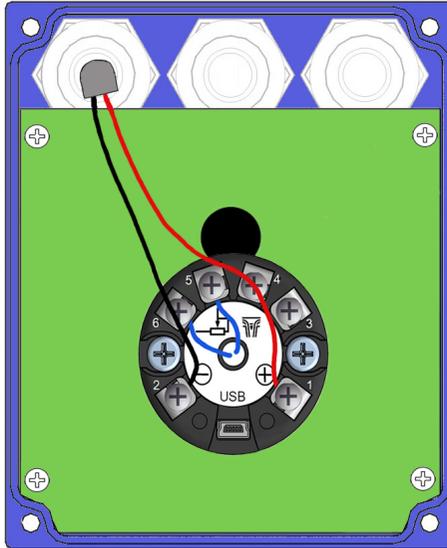


For the electrical connection, the XT5 has a screw terminal strip.
 To help in the connection of the equipment, the description of the terminals is marked on the center label of the transmitter.



<u>Terminal</u>	<u>Function</u>
1	Power supply and current loop (+)
2	Power supply and current loop (-)
3	No connected
4	No connected
5	Resistance input
6	Resistance input





4 OPERATION

If the transmitter TR3420 is delivered associated to a level meter, it is always already programmed so that the analog output indicates 4 mA when the float is in the lowest level, and 20 mA when it is in the highest level.

If this adjustment has to be changed, the associated Tecfluid S.A. Winsmeter TR software will be necessary.

5 ASSOCIATED SOFTWARE WINSMETER TR

Calibration and programming of the device can be done by means of the device associated software Winsmeter TR, which allows working in a more comfortable and intuitive way.

Such software can be downloaded from the "Downloads" section of the Tecfluid S.A. www.tecfluid.com/downloads

5.1 USB cable connection and software installation

Extract the files from the winsmeter TR.zip to a new system folder.

Execute the Setup.exe file and follow the steps for the installation.

In order to connect the converter to a computer an USB cable is required. This cable is type A at one end and mini USB type B at the other, and it is readily available on the market.

The ends of the cables can be seen in the picture.



The USB connector is located at one end of the transmitter.

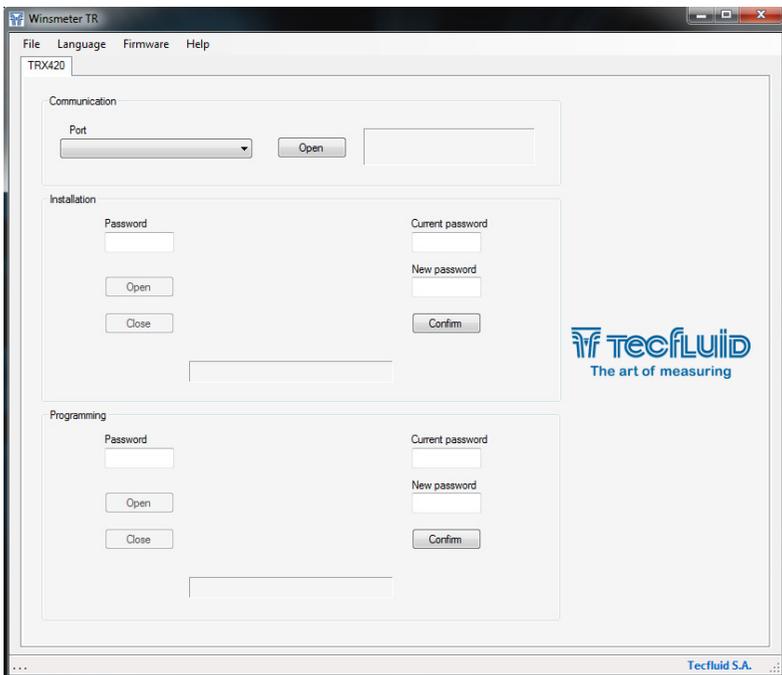


Mini USB type B connector

Connect the USB cable at one end to the TR3420 transmitter and at the other to the computer where the software is installed.

Power on the electronic transmitter.

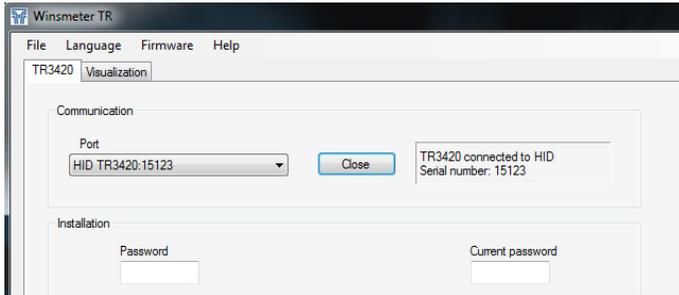
Execute the program Winsmeter TR following the sequence Start – Programs – Tecfluid S.A. - WinsmeterTR.



5.2 Port connection

In the "Port" section, choose the appropriate port for the converter. This will appear with the name of the port followed by TR3420 and its serial number. Then click "Open".

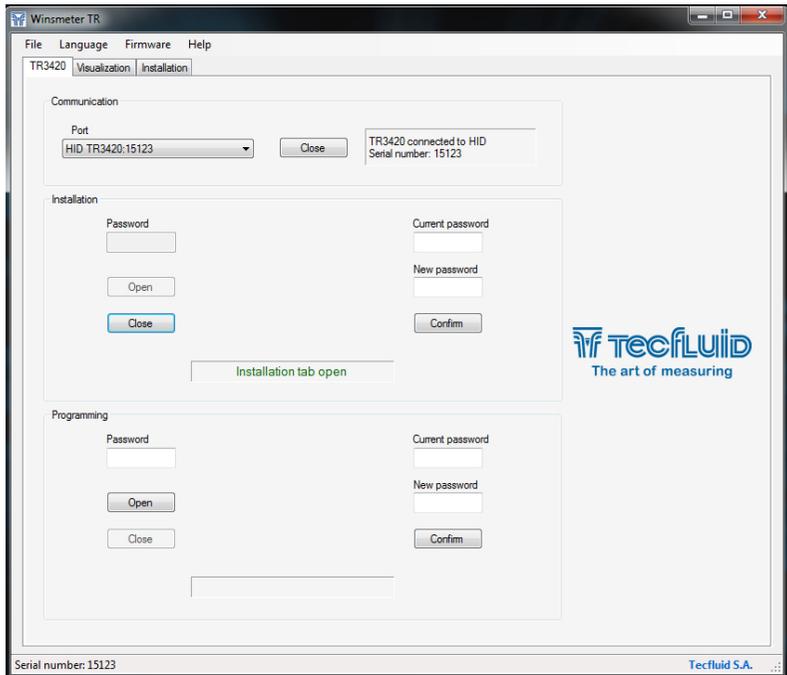
Once the port is open, the button "Open" in the "Installation" and "Programming" sections is activated.



5.3 Access to installation

To get access to "Install" tab, a password must be entered.

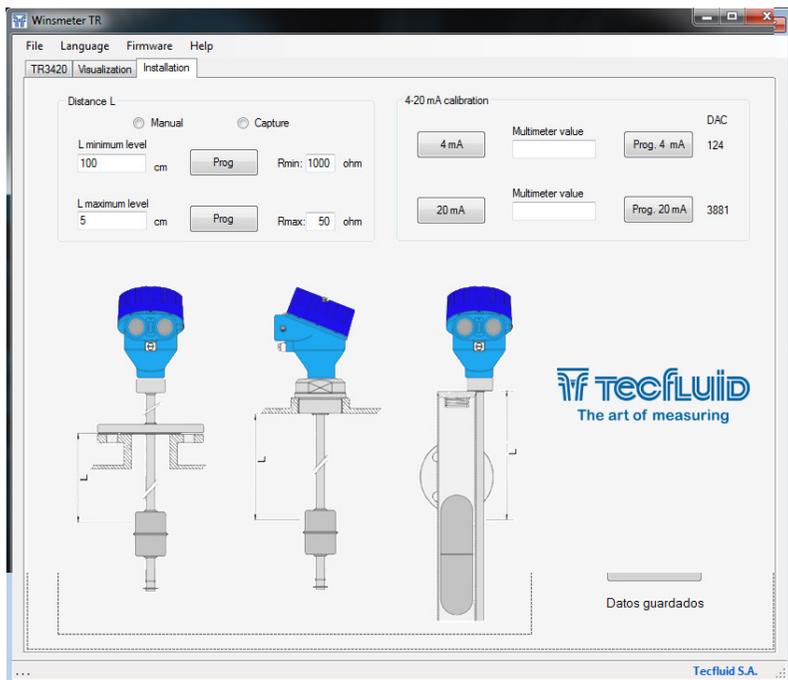
The default password is **install**, and it can be changed using the boxes on the right of the "Installation" section.



Once the password is written, press "Enter" or "Open", and the installation or programming tab will open. At the bottom of each section the text Installation tab open or Programming tab open will be displayed.

To enter the "Installation" window, just click the corresponding tab.

In the "Installation" window the parameters that adapts the converter to a sensor can be configured. The current output can be also calibrated.



5.4 Programming of resistance and distance L

At this point the transmitter can be adapted to a resistive sensor. To do this, there are two modes.

In manual mode it is not necessary to use the level meter. Simply enter the corresponding resistance values to the measurement range. It is recommended to enter also the distance "L" corresponding to each resistance (see drawing).

In capture mode resistance values are captured by the position of the float. Also it is recommended to enter the values of distance "L" between the reference and the floating point of the float (see drawing).

NOTE: In capture mode, the indicated resistance value is approximated and its purpose is to help ensure that programming was successful.

5.5 4-20 mA loop calibration

The TR3420 transmitter is delivered with the current output already calibrated. If you want to correct a derive of the 4 or 20 mA current values because they do not coincide with the ammeter used, it can be done by the following way:

To calibrate the 4 mA point, press the button "4 mA". The transmitter will fix the output to this value. Then enter the current value indicated in the multimeter and press the button "Prog. 4 mA". The transmitter will adjust its output and the multimeter will show 4 mA.

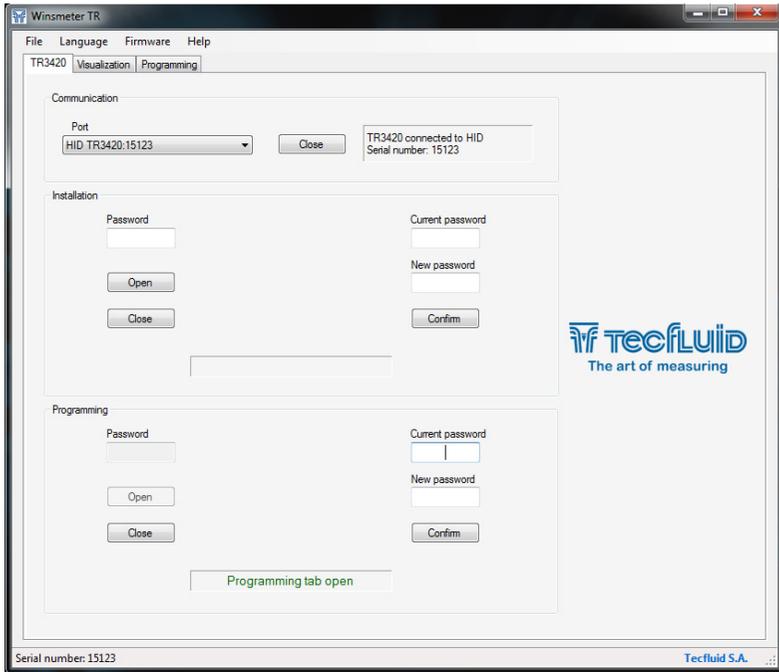
Follow the same steps for the 20 mA point.



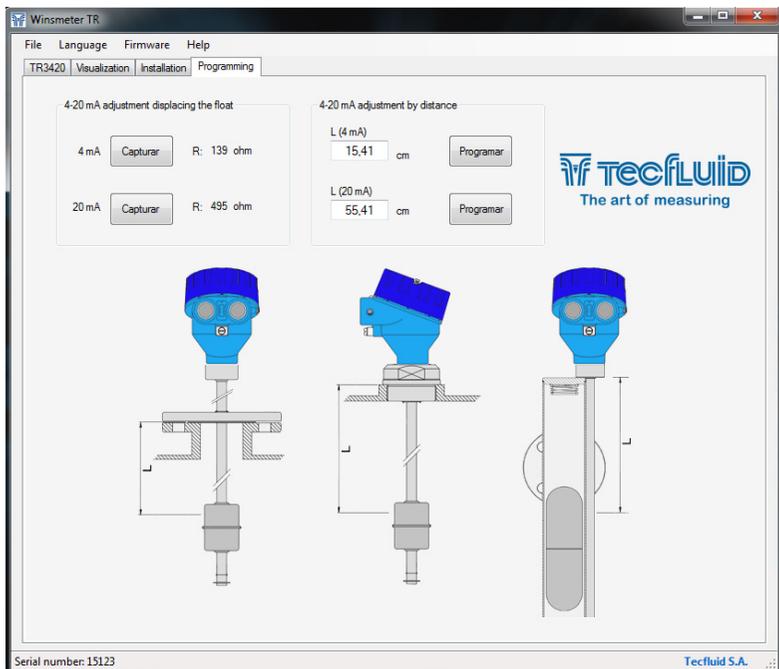
Before making a current calibration, be sure that the ammeter used for that is showing the real measure.

5.6 Access to programming

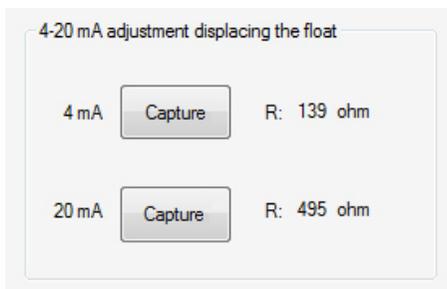
To get access to "Programming" tab, it is necessary to enter the password which by default is **program**. This can be changed using the boxes on the right of the "Programming" section.



To enter into the “programming” window, just click the corresponding tab.
 Changing the parameters in this screen, the range of the current loop can be defined.



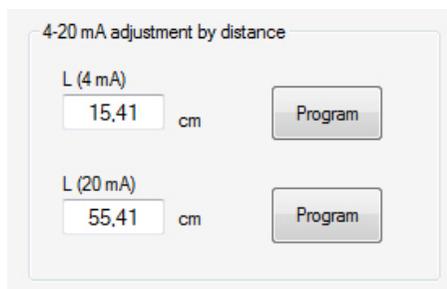
5.7 4-20 mA loop adjustment by moving the float



Move the float to the position where 4 mA are required. Press the corresponding button "Capture" on the computer screen.

Move the float to the position where 20 mA are required. Press the corresponding button "Capture" on the computer screen.

5.8 4-20 mA loop adjustment by distance



To make this adjustment, it is necessary to enter a distance L. For all the Tecfluid S.A. level meters, the distance L is defined as:

LE series

Level with flange: L = distance in centimetres between the floating level and the bottom of the flange.

Level with thread: L = distance in centimetres between the floating level and the bottom of the thread.

LT series

L = distance in centimetres between the floating level of the float and the bottom of the transmitter base.

Introduce the distance L, in centimetres, where 4 mA are required in "L (4 mA)" and press the red button.

Introduce the distance L, in centimetres, where 20 mA are required in "L (20 mA)" and press the green button.

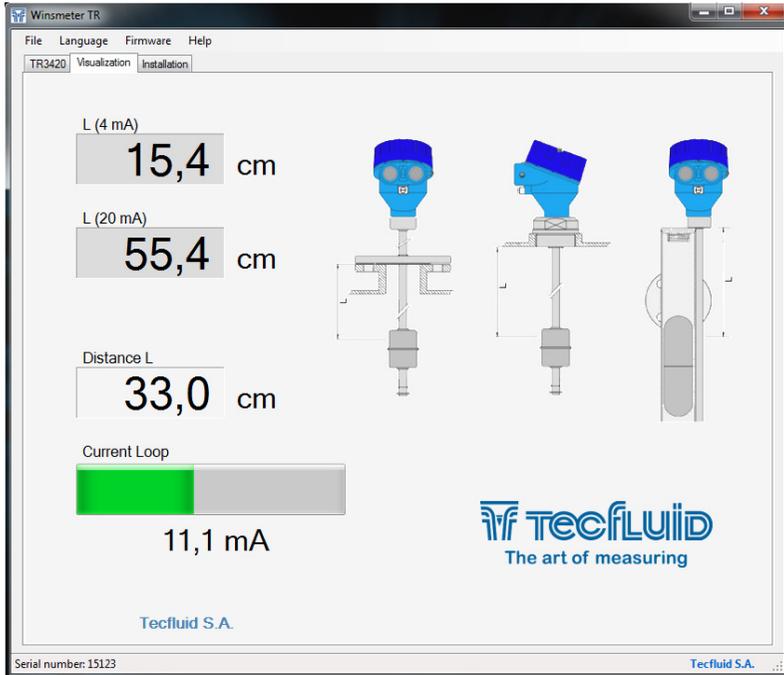
If the instrument is a by-pass level gauge Series LT, it is possible that the float can not be moved, since it is within the level.

If you want to change the 4-20 mA loop factory settings, it is recommend the 4-20 mA loop adjustment by distance, with the PC software.

5.9 Visualization

When the communication with the computer port is established (see section 5.2), the tab "Visualization" opens. This tab lets you view real-time level value, as well as the current value of the analog output.

It is an intuitive tool to verify that the instrument has been installed and programmed correctly.



If the device works properly, go to the tab "TR3420", close the port and then disconnect the level transmitter from the computer.

Check that the current loop indicates the corresponding current value.

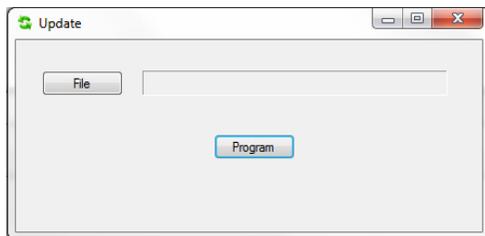
5.10 Firmware updates

New firmware updates can be published in the website. These updates contain improvements or bug fixes that make the equipment operates at best conditions.

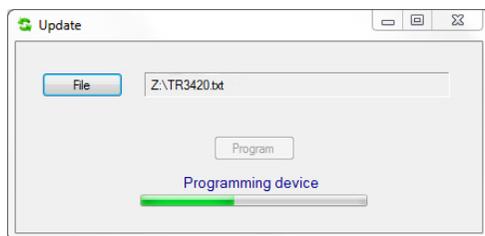
The updates can be downloaded from the following link of Tecfluid S.A. website:

www.tecfluid.com/download

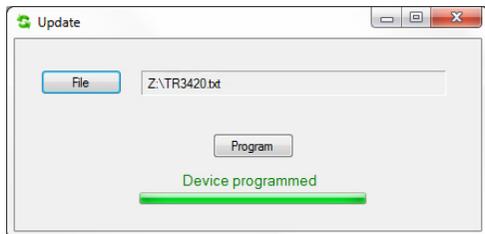
To update the device, go to menu “Firmware” - “Update”, and a screen with the button “File” will appear. Pressing this button the file explorer can be accessed. The downloaded file has to be searched there.



Once the file is selected, press the “Program” button. A message “Programming device” will appear.



The process takes about 20 seconds, after which the message “Device programmed” will appear.



From this moment, the transmitter TR3420 already has the new version of Firmware.



IMPORTANT:

The USB connection is used only for the configuration and commissioning of the device. In no case it is intended to be used continuously, as a normal mode of operation in an industrial environment.

6 MAINTENANCE

No special maintenance is required.

7 TECHNICAL CHARACTERISTICS

7.1 Power supply

2-wire system

Minimum voltage: 0.02 Z + 12 (Volt) (Z is the load in the current loop in Ohm).
The minimum value is 12 VDC for Z=0 Ohm.

Maximum voltage: 36 VDC

Consumption: maximum 0.8 W

7.2 Resistance input

Minimum resistance: 0 Ω

Maximum resistance: 5000 Ω

Resolution: 2 Ω

7.3 Output

Analog output: 4 - 20 mA, factory calibrated
Possibility of readjusting the current range.

Maximum load in the 4-20 loop: 1.1 k Ω (at 36 VDC supply voltage)

7.4 General characteristics

Housing ingress protection: IP67

Cable glands: M20 x 1.5

Ambient temperature: -20°C ...+85 °C

Resolution: 10 mm

Maximum distance: 6 m

7.5 Safety characteristics

Material conforms to the following directives:

2004/108/EC Electromagnetic compatibility.

2002/96/EC Waste electrical and electronic equipment



7.6 Minimum PC requirements for Winsmeter TR

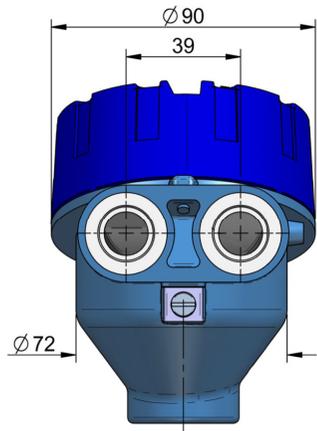
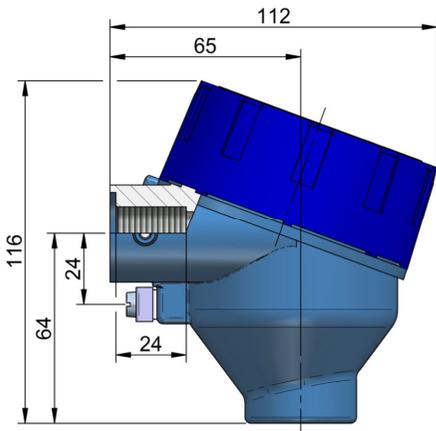
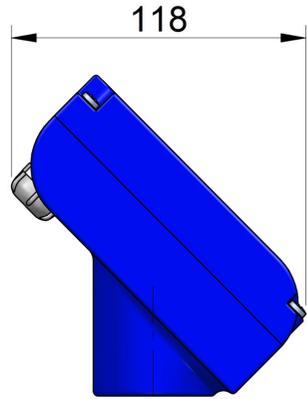
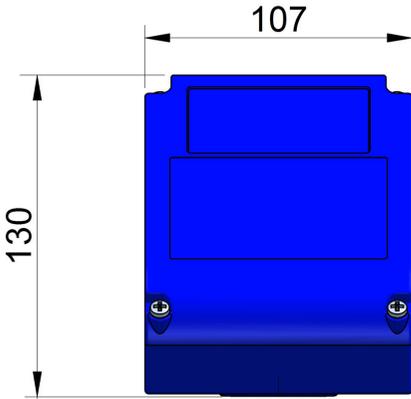
Operating system: Windows XP, Vista, 7 or 8

CPU: Pentium 3, 500 MHz

System memory (RAM): 256 MB

Hard disk: 40 MB of free space

8 DIMENSIONS



WARRANTY

Tecfluid S.A. guarantee all the products for a period of 24 months from their sale, against all faulty materials, manufacturing or performance. This warranty does not cover failures which might be imputed to misuse, use in an application different to that specified in the order, the result of service or modification carried out by personnel not authorized by Tecfluid S.A., wrong handling or accident.

This warranty is limited to cover the replacement or repair of the defective parts which have not damaged due to misuse, being excluded all responsibility due to any other damage or the effects of wear caused by the normal use of the devices.

Any consignment of devices for repair must observe a procedure which can be consulted in the website www.tecfluid.com, "After-Sales" section.

All materials sent to our factory must be correctly packaged, clean and completely exempt of any liquid, grease or toxic substances.

The devices sent for repair must enclose the corresponding form, which can be filled in via website from the same "After-Sales" section.

Warranty for repaired or replaced components applies 6 months from repair or replacement date. Anyway, the warranty period will last at least until the initial supply warranty period is over.

TRANSPORTATION

All consignments from the Buyer to the Seller's installations for their credit, repair or replacement must always be done at freight cost paid unless previous agreement.

The Seller will not accept any responsibility for possible damages caused on the devices during transportation.



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The technical data described in this manual is subject to modification without notification if the technical innovations in the manufacturing processes so require.