

ATEQ VT620

Version 1.0



www.ateq-tpms.com

Reference: UM-JS1AI1-01-10-EN

REVISION OF USER MANUAL VT620

We continuously work on improving our products. This is why the information contained in this user manual, the tool and its technical specifications may be modified without notice.

Edition/Revision	Reference	Date (wk/yr)	Chapters updated
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1. SAFETY RECOMMENDATIONS

1.1 Electromagnetic field emission device

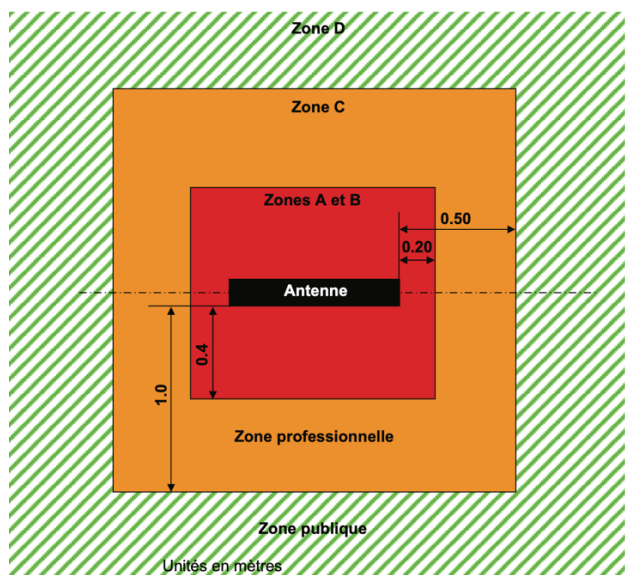


This device emits electromagnetic fields. Its use and access to it must be regulated.

No electromagnetic field is produced when the device is not transmitting. So there is no exposure during this period. Access (exposure zones) need only to be limited during the transmission period.

It is imperative that exposure zones around the device antenna are defined. There are four such zones:

- Zone A: access prohibited, except by special arrangement.
 - Zone B: strictly limited access.
 - Zone C: limited access (work area).
 - Zone D: free access (public zone).
- Public zone: ≤ 5 A/m (zone D)
 - Work zone: ≤ 25 A/m (Zone C)



1.2 Standards and references

Installation must be carried out according to industry regulations and standard AFNOR UTE C99-111 (October 2002).

1.3 Safety

In the device menu, "Safety" mode prevents the starting of any cycle by pressing "Start cycle" on the front. You are advised to leave this function activated.

Please note that ATEQ will not be held liable for any accident connected with the misuse of the measuring instrument or with a failure to comply with the safety regulations in force when installing the device.

1.4 Definition of the VT620 unit and its antenna

The purpose of this device is to activate the TPMS/TMS sensors mounted in the wheels in order to recover and record their data.

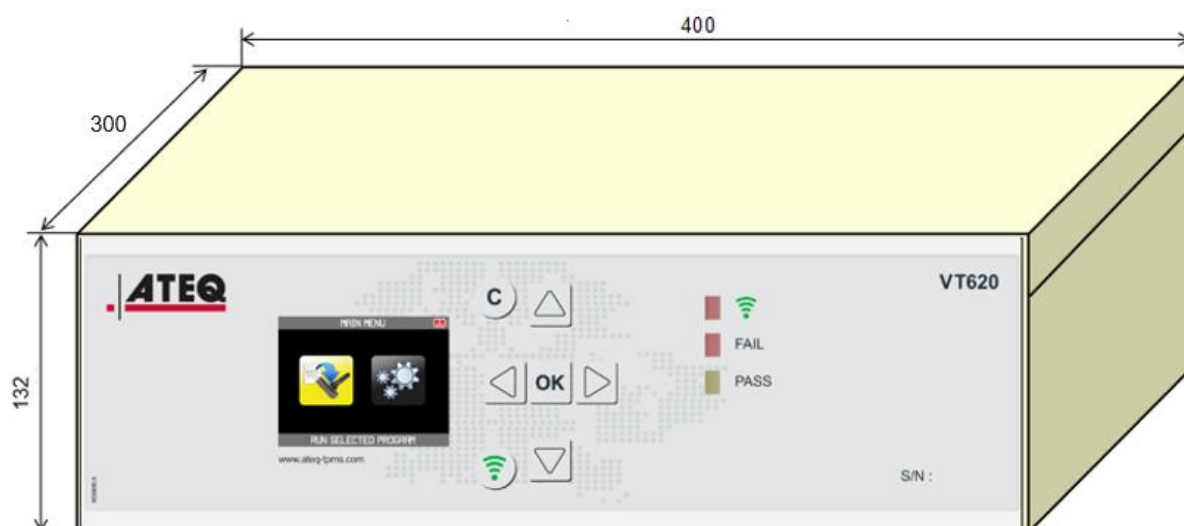
- The VT620 can also program TPMS/TMS sensors.
- The device interacts with the sensors without contact.

2. TECHNICAL SPECIFICATIONS VT620

2.1.1.VT620 device specifications

	VT620
Dimensions H x L x D (mm):	400 x 300 x 132
Power supply	90V-230V DC stabilized (+/- 0.5 V) 2.5 A min.
Weight (kg):	Approx. 2.5
Temperature	
operation	+10°C to +45°C
storage	0°C to +60°C

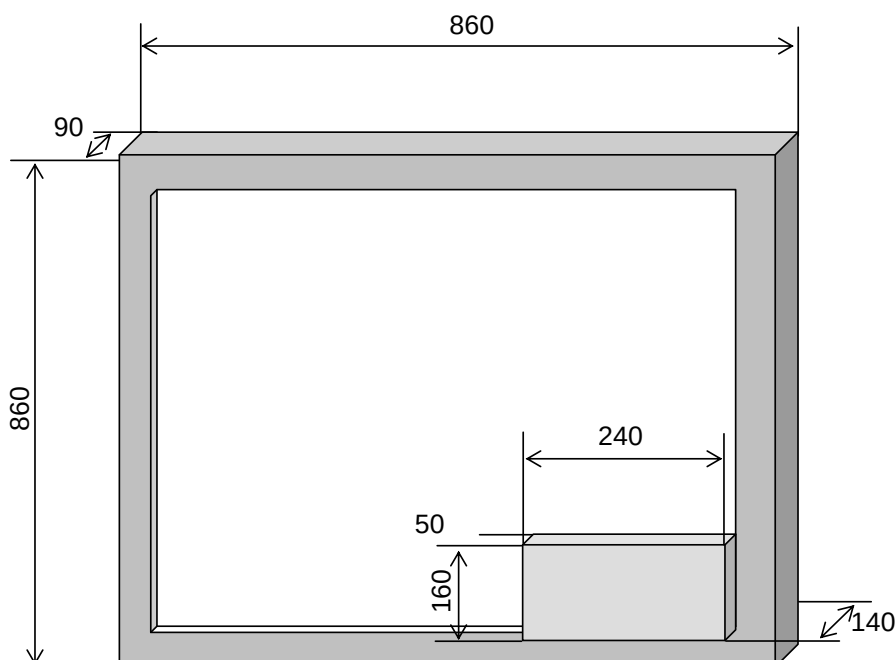
2.1.2.Dimensions



2.2. Technical specifications of the universal antenna

2.2.1. Specifications

	ANTENNA
Dimensions H x L x D (mm):	860 x 860 x 140 (overall)
Weight (kg)	Approx. 12
Temperature operation	+10°C to +45°C
storage	0°C to +60°C



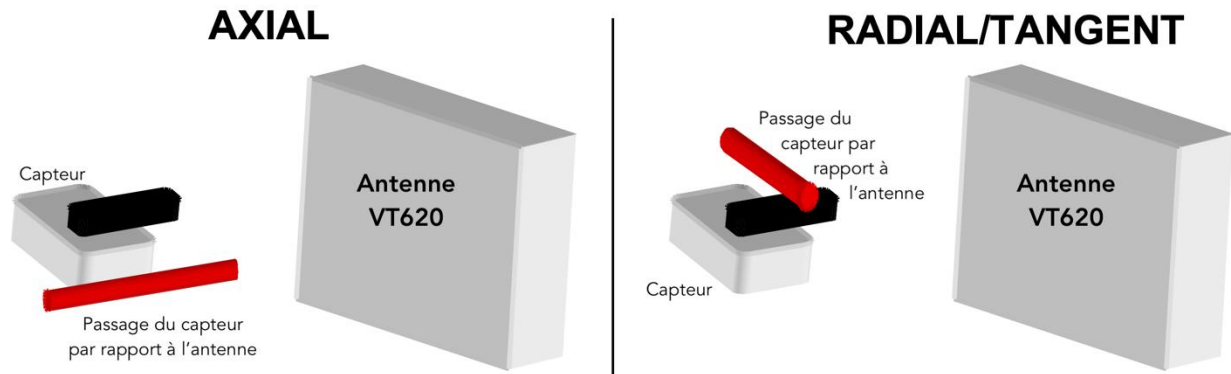
2.2.2. Antennas

The universal antenna comprises three different types of transmitting antennas and one receiving antenna.

- Transmitting antenna Axial LF (CW – Continuous Wave),
- Transmitting antenna Axial LF (Modulated),
- Transmitting antenna Radial (Tangent).
- Receiving antenna RF (315 & 433 MHz)

➤ The Axial antenna is recommended when the antenna of the TPMS sensor in the wheel is oriented perpendicular to the antenna pane of the VT620.

- The Radial antenna is recommended when the antenna of the TPMS sensor in the wheel is oriented parallel to the antenna pane of the VT620.



2.2.3. Radio frequencies used

- The transmission and activation frequency is: 125 kHz (LF).
- The current reception frequencies are: 433 and 315 MHz (RF) and their derivatives.

Other frequencies are also available on request.

3. DEVICE DESCRIPTION

3.1. Kit contents



- VT620 device
- Mains power cable
- User manual

Optional

- Communication gateways:
 - Profibus
 - Profinet
 - Devicenet

Accessories

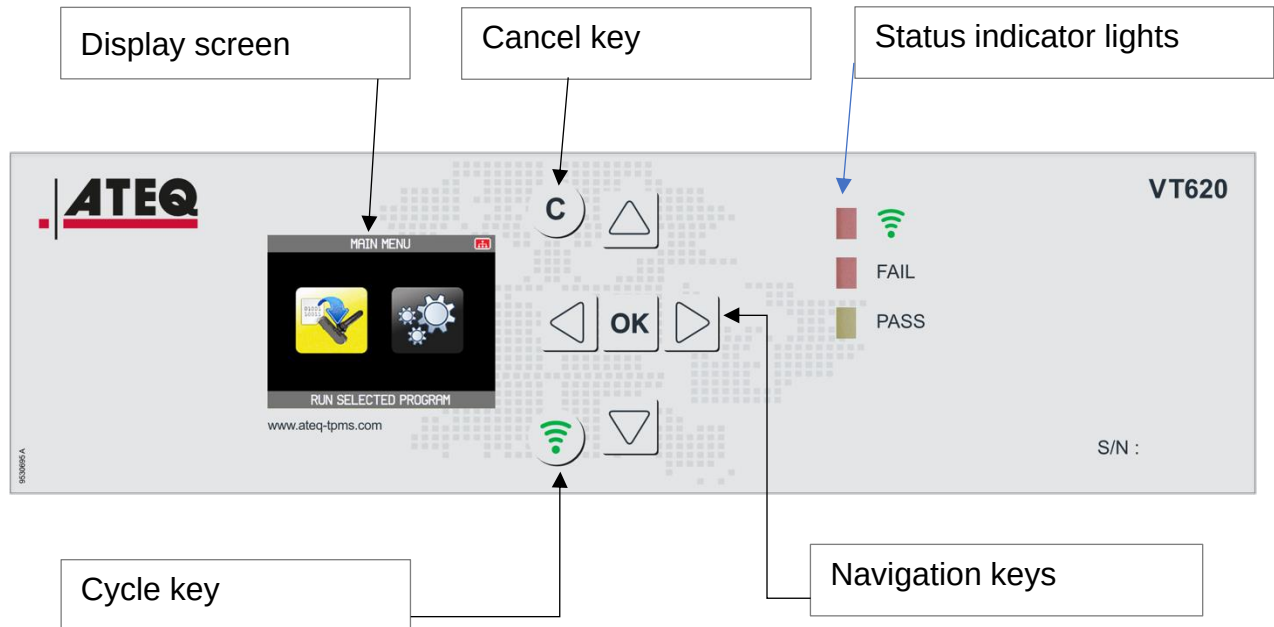
- Universal programming antenna
- Mini antenna

3.2. Description of the VT620

The ATEQ VT620 unit is made of molded plastic.
The top cover is attached to the main body by six screws.

4. USER INTERFACE

4.1. Overview of VT620 front panel



4.2. Overview of keypad functions

4.2.1. Control keys

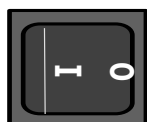
Keys	Functions
	• Scroll up • Increase a number
	• Scroll down • Decrease a number
	• Scroll left
	• Scroll right

	• OK/Enter • Opens the SETTINGS menu by pressing for three seconds.
	• C for CANCEL • Back to previous menu • Back to previous function • Exit with no change • Stop current cycle
	• Start a measurement cycle

4.3. Overview of the VT620 back panel



4.3.1. On/Off switch



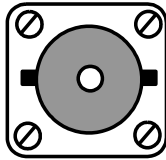
- **I:** On
- **O:** Off

4.3.2. Power supply



- The **ATEQ VT620** operates at a voltage between 84V and 260V AC.

4.3.3. Reception antenna ports (J1 & J2)



- Two BNC co-axial ports (315 MHz and 433 MHz)
- **J1** is the 315 MHz antenna port
- **J2** is the 433 MHz antenna port

4.3.4.USB port (J3)

The USB port connects the VT620 to a PC in order to carry out software updates.

4.3.5.RJ45 port (J4)

If the Profinet or Profibus option has been added, the RJ45 port connects the VT620 to the factory PLC.

4.3.6.Transmission antenna link port (J5)



- Note: A 5 m cable is supplied with the antenna.

4.4. Display screen and indicator lights

4.4.1.LCD display

	• LCD display for monitoring the current cycle and adjusting the device settings.
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4.4.2.Indicator lights

   FAIL  PASS	• TRANSMISSION indicator → Flashes when LF transmission is in progress.
   FAIL  PASS	• PASS indicator → Lights up when a sensor has responded.
   FAIL  PASS	• FAIL indicator → Lights up when no sensor is detected. The sensor has a set time to respond (the time is set by the selected program). If the VT620 has received no response after this time, the message "COM ERROR. PLEASE TRY AGAIN" is displayed. Action: Check that the selected program is compatible with the sensor you want to read.

5. INSTALLATION RECOMMENDATIONS

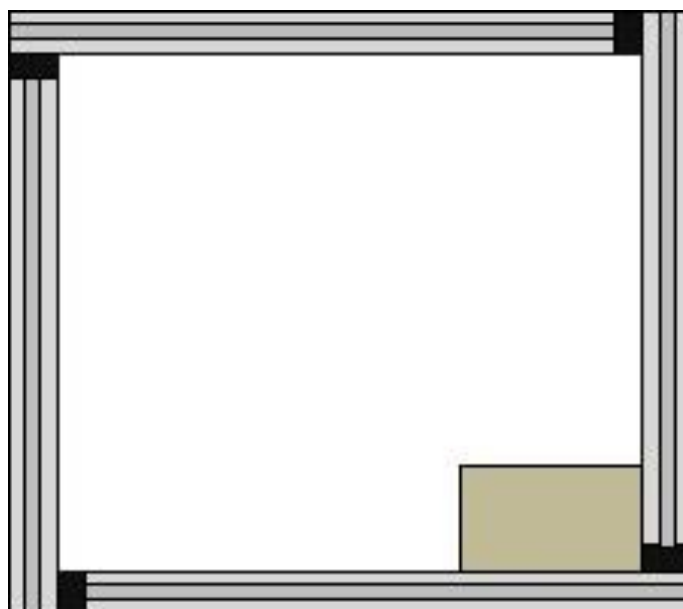
Installing the ATEQ universal antenna in an industrial environment requires certain precautions to be taken. The electromagnetic field generated by this antenna (125 kHz) may be weakened or modified by external factors that can impair its operation.

The main precautions to be taken relate to fixing the device and the environment near the antenna.

For correct operation of the TPMS installation, avoid placing the VT620 and its antenna near equipment that can generate electrical or electromagnetic disturbance (motors, electronic drives, PLCs, PCs, etc.).

5.1. Fixing the antenna

The antenna structure is made from industrial aluminum profiles. These profiles are joined together by plastic blocks acting as insulation.



The insulation placed between each upright has to be maintained regardless of the fixing method. The antenna must not be fixed directly onto metal uprights or profiles. The uprights must not be electrically connected to each other. To fix the antenna without short-circuiting the uprights, use the plastic insulating brackets supplied.

5.2. Antenna environment

The proximity of metal components affects the electromagnetic field generated by the antenna. If possible, do not install metal components in the antenna field, i.e. less than 40 cm from either side of the antenna.

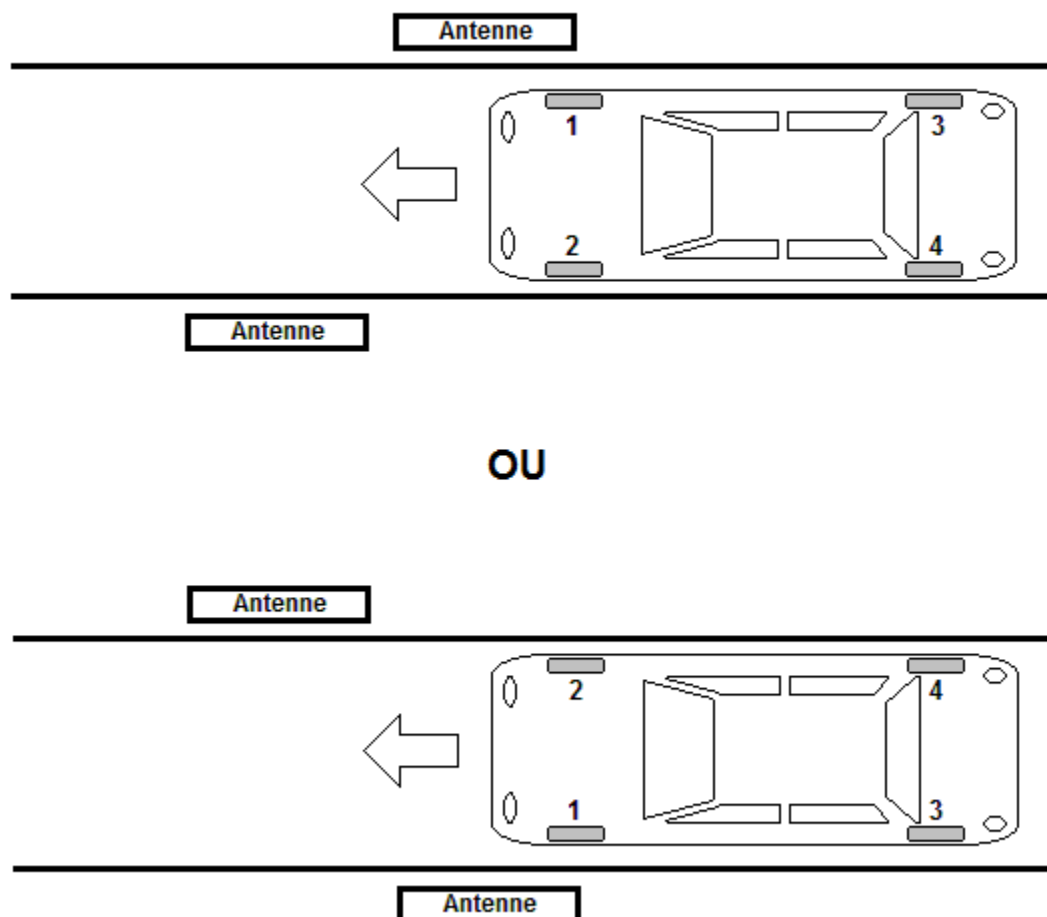
If there are no metal components nearby, the field generated by the antenna will be the same on both sides of the antenna.

5.3. Positioning the antennas

5.3.1. For automobile production

A VT620 instrument and an antenna are required on each side of the vehicle.

The operation entails activating each wheel of the vehicle. The following two configurations show the order of passing:



Wheel 1	front right	OR	front left
Wheel 2	front left		front right
Wheel 3	rear right		rear left
Wheel 4	rear left		rear right

5.3.1.1. Typical vehicle sequence

- new vehicle detection,
- vehicle identification,
- wheel 1 detection,
- wheel 1 cycle start,
- wheel 1 ID reception,
- wheel 2 detection,
- wheel 2 cycle start,
- wheel 2 ID reception,
- wheel 3 detection,

- wheel 3 cycle start,
- wheel 3 ID reception,
- wheel 4 detection,
- wheel 4 cycle start,
- wheel 4 ID reception,
- vehicle end-of-passage detection,
- sending IDs to factory network.

Note: Case of line stop just after cycle start:

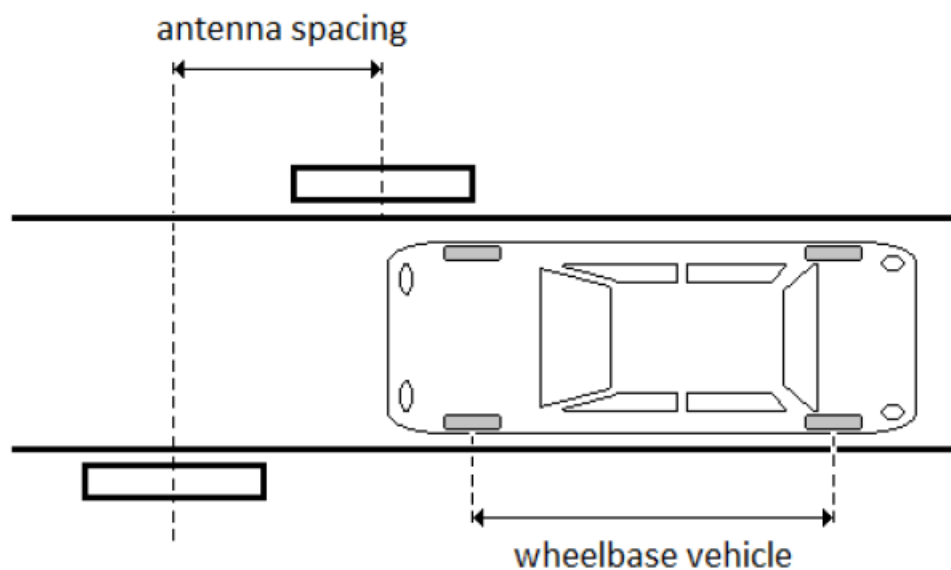
- the valve was activated > OK,

the valve cannot be activated because the wheel was not exposed long enough in front of the antenna > when the line restarts, the cycle start should be repeated until the sensor is activated.

5.3.1.2. Determining the antenna spacing

The antenna spacing is calculated as follows:

$$\text{Antenna spacing} = \frac{\text{Vehicle wheelbase}}{2}$$



Using this calculation means the exposure time to LF radiation for each of the four wheels will be the same.

Note: If vehicles with different wheelbases are produced on the same line, an intermediate value should be used.

5.3.1.3. Distance between antenna and vehicle wheel

The recommended distance between the antenna and the vehicle wheel is 15 cm to 30 cm. Increasing this distance also increases the risk of activating sensors in another wheel of the vehicle at the same time.

The antenna should be installed at ground level – at the same height as the wheel – and the space in between antenna and vehicle must remain completely free.

5.3.1.4. Automation

The installation must be controlled by a PLC connected to a wheel passage detection system and to a vehicle identification system.

The PLC should be used to manage:

- photocells,
- choice of read/write program,
- vehicle identification,
- cycle start actions,
- collection of cycle results,
- sending read results to the factory network,
- information confirming that the line is running.

5.3.2. For wheel production plants

5.3.2.1. Distance between antenna and wheel

For a wheel conveyor system, the antenna is installed horizontally above the wheel. The ideal distance between antenna and wheel is 20 cm. If tires of different width are produced on the same line, an intermediate value should be used.

5.3.2.2. Automation

The installation must be controlled by a PLC connected to a wheel passage detection system.

The PLC should be used to manage:

- photocells,
- choice of read/write program,
- cycle start actions,
- collection of cycle results,
- sending read results to the factory network.

5.4. Positioning the ATEQ VT620

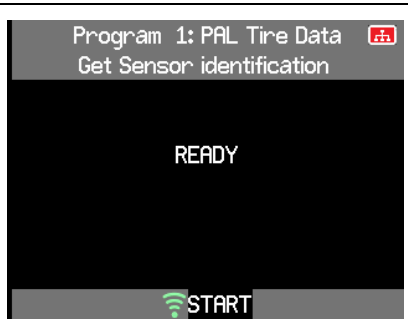
The standard link cable between the VT620 and antenna is 5 meters long. This length allows the device to be moved away from the antenna. The VT620 unit must not be installed in the antenna field.

If the antenna is installed in a zone with controlled access, the VT620 unit must be installed outside this zone for easy access to the settings.

6. STARTING AND ADJUSTING

6.1. Starting the ATEQ VT620

Connect the device to the mains with 84 ~ 240V AC. Power up the device. When the unit is powered up, the following screens are displayed:

	When unit is turned on, the ATEQ screen is displayed for a few seconds.
	Then the software version screen is displayed for a few seconds.
	Finally, the READY screen is displayed.

6.2. Menu tree

6.2.1. Settings menu

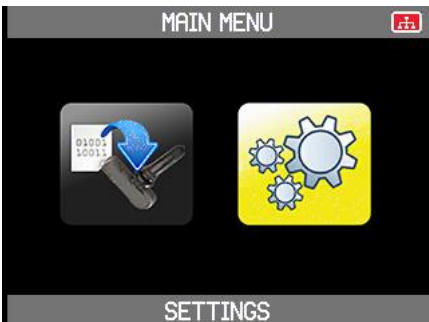
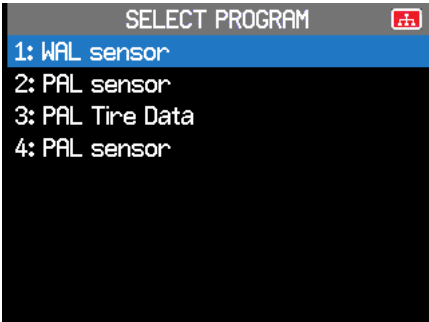
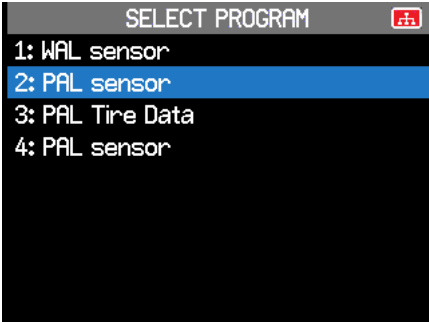
Press the OK key for three seconds to access the Settings menu. This menu is for starting a cycle, changing the settings of the VT620, and creating, editing or deleting cycle programs. Here is the Settings menu tree.

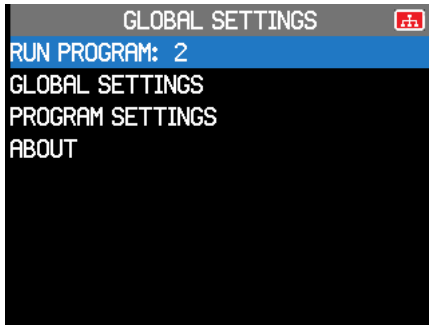
Submenu 1	Submenu 2	Submenu 3	Submenu 4	Submenu 5
SELECT PROGRAM	>	1: PAL Tire Data 2: WAL Sensor		
GLOBAL SETTINGS	>	UNITS	>	PSI/°F PSI/°C kPa/°C kPa/°F bar/°F bar/°C
		FORMAT	>	AUTO DECIMAL HEXADECIMAL
		LANGUAGE	>	ENGLISH DEUTSCH FRANÇAIS ITALIANO ESPAÑOL
		MODBUS	>	01 02 03
		BAUD RATE	>	9600 19200 38400 57600 115200 128000 256000
PROGRAM SETTINGS	>	Select Program	>	Sensor PAL Tire Data PAL Sensor WAL Sensor
		Trigger	>	Get All Sensor Data Get learn mode Get ID

Submenu 1	Submenu 2	Submenu 3	Submenu 4	Submenu 5
PROGRAM SETTINGS	>	Select Program	>	Frequency
PROGRAM SETTINGS	>	Select Program	>	Auto detection
PROGRAM SETTINGS	>	Select Program	>	315 MHz
PROGRAM SETTINGS	>	Select Program	>	314.9 MHz
PROGRAM SETTINGS	>	Select Program	>	314.85 MHz
PROGRAM SETTINGS	>	Select Program	>	433.92 MHz
PROGRAM SETTINGS	>	Select Program	>	434.42 MHz
PROGRAM SETTINGS	>	Select Program	>	LF Settings
PROGRAM SETTINGS	>	Select Program	>	Antenna
PROGRAM SETTINGS	>	Select Program	>	Axial LF (CW)
PROGRAM SETTINGS	>	Select Program	>	AXIAL LF (Modulated)
PROGRAM SETTINGS	>	Select Program	>	Radial
PROGRAM SETTINGS	>	Select Program	>	LF Voltage
PROGRAM SETTINGS	>	Select Program	>	Default
PROGRAM SETTINGS	>	Select Program	>	4V
PROGRAM SETTINGS	>	Select Program	>	5V
PROGRAM SETTINGS	>	Select Program	>	6V
PROGRAM SETTINGS	>	Select Program	>	
PROGRAM SETTINGS	>	Select Program	>	22V
PROGRAM SETTINGS	>	Select Program	>	LF power
PROGRAM SETTINGS	>	Select Program	>	Default
PROGRAM SETTINGS	>	Select Program	>	1%
PROGRAM SETTINGS	>	Select Program	>	2%
PROGRAM SETTINGS	>	Select Program	>	3%
PROGRAM SETTINGS	>	Select Program	>	
PROGRAM SETTINGS	>	Select Program	>	100%
PROGRAM SETTINGS	>	Select Program	>	Discard ID
PROGRAM SETTINGS	>	Select Program	>	YES
PROGRAM SETTINGS	>	Select Program	>	NO
PROGRAM SETTINGS	>	Select Program	>	Attenuation
PROGRAM SETTINGS	>	Select Program	>	0 dB
PROGRAM SETTINGS	>	Select Program	>	-6 dB
PROGRAM SETTINGS	>	Select Program	>	-12 dB
PROGRAM SETTINGS	>	Select Program	>	-18 dB
PROGRAM SETTINGS	>	Select Program	>	Gain Control
PROGRAM SETTINGS	>	Select Program	>	YES
PROGRAM SETTINGS	>	Select Program	>	NO
PROGRAM SETTINGS	>	Select Program	>	Erase Program
ABOUT	>	Serial Num.	>	Software Version
ABOUT	>	Bootloader Version	>	Version

7. USING THE VT620

7.1. Selecting a program

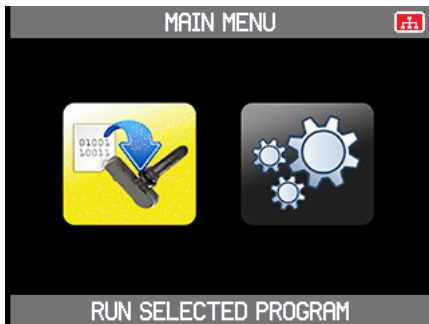
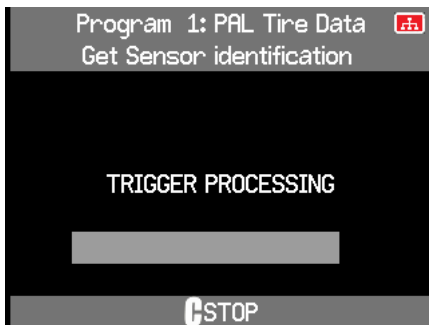
From the main menu, press the right arrow to select the Settings menu, then press OK.		
The Global Settings screen is displayed. Use the up or down arrows to select Run Program. Press OK.		
The list of available programs is displayed. Please note: the programs available vary according to the configuration of the VT620.		
Use the up or down arrows to select your desired program.		

Press OK to confirm your choice. The Global Settings screen is displayed. RUN PROGRAM shows the number of the program selected.		
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7.2. Starting a cycle program

The activation cycle includes three phases:

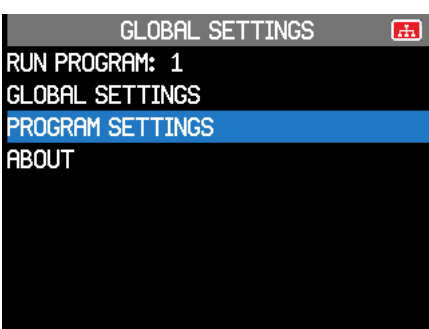
- **START:** starting a test cycle;
- **SENSOR ACTIVATION:** the VT620 sends data to the sensor and then switches to receiving mode to receive the sensor's response;
- **END:** the cycle stops automatically as soon as the response from the sensor is obtained or according to the time-out set by the selected program. The data sent by the sensor (ID, pressure, temperature) is displayed.

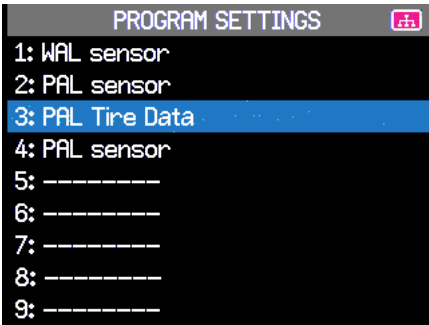
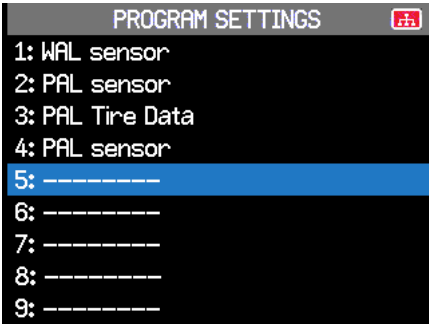
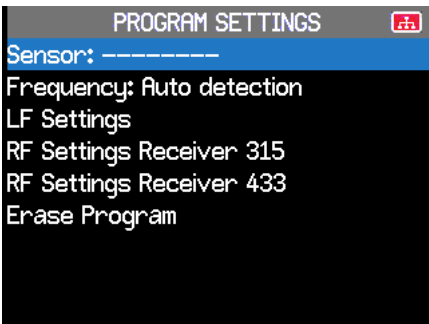
From the main menu, press the left arrow to select the RUN SELECTED PROGRAM menu.		
Press OK. The READY screen is displayed.		
Press the Transmit key. The cycle program starts and the TRIGGER PROCESSING screen is displayed.		

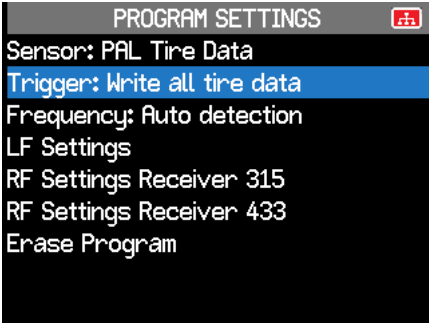
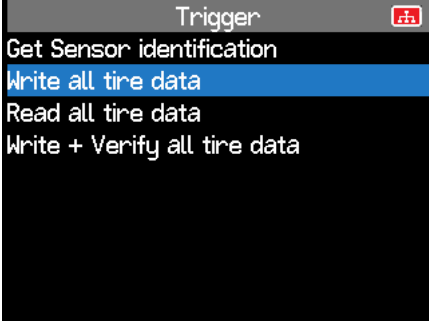
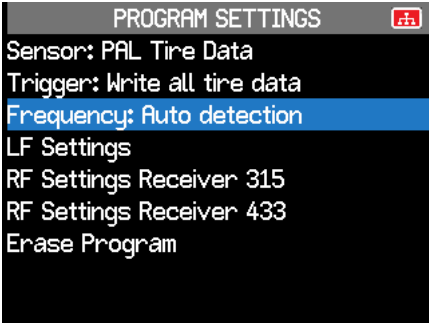
7.3. Stopping the current program

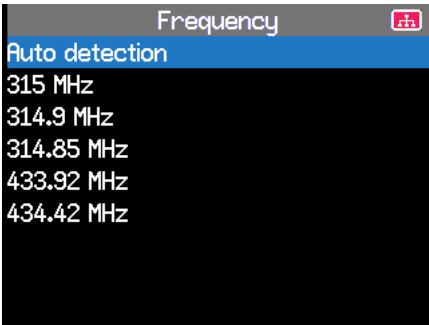
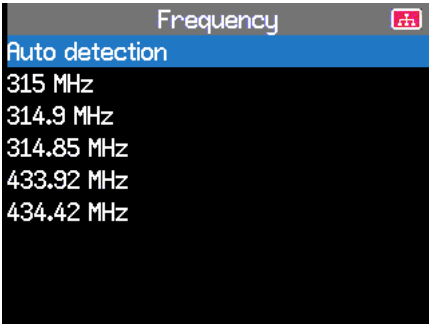
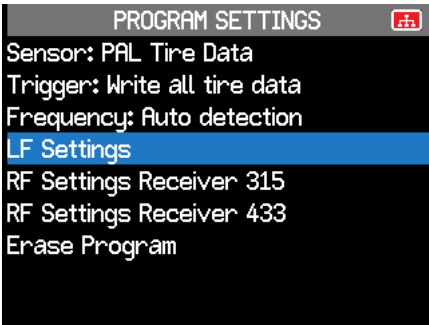
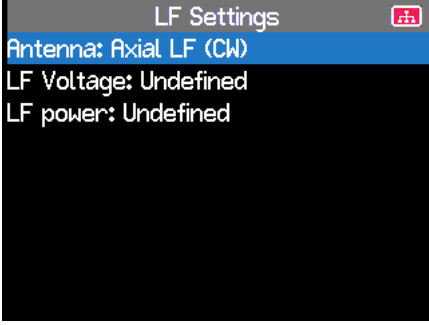
Press C to stop the current cycle program. The Ready screen shows that the VT620 is ready to start a new cycle program.		
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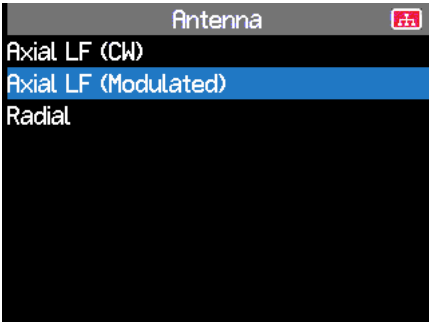
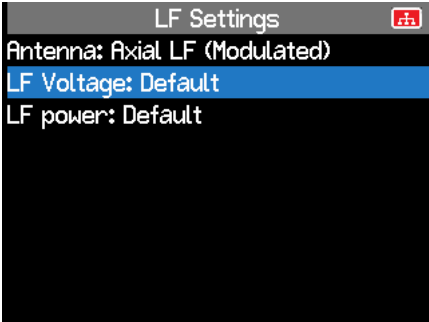
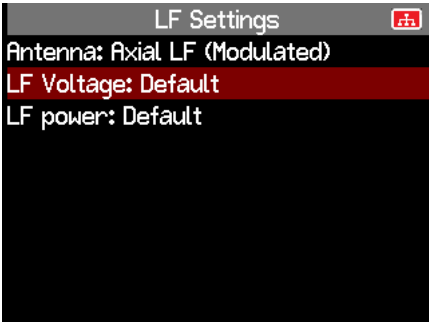
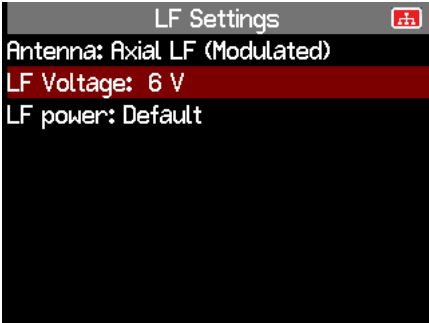
7.4. Creating a program

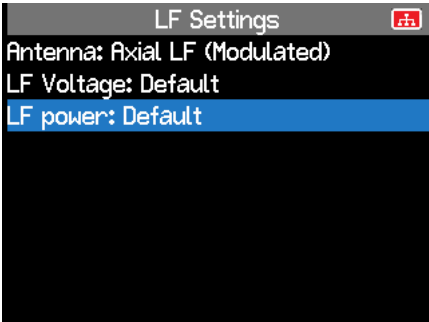
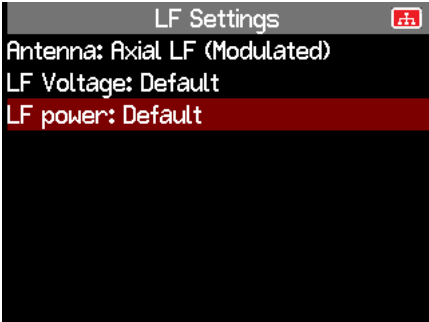
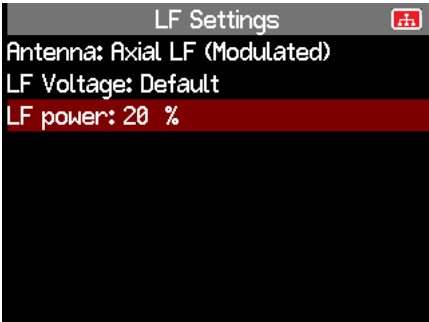
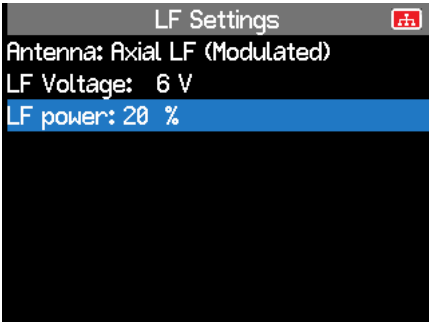
From the main menu, press the right arrow to select the Settings menu.		
Press OK to open the Global Settings menu.		
Use the up or down keys to select PROGRAM SETTING.		

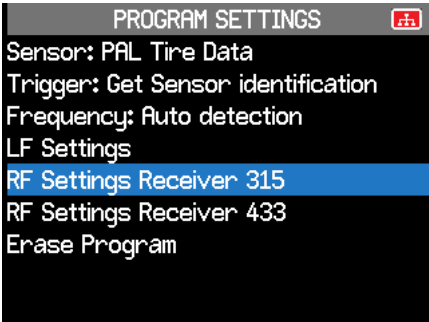
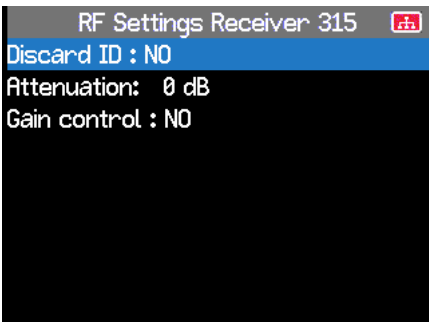
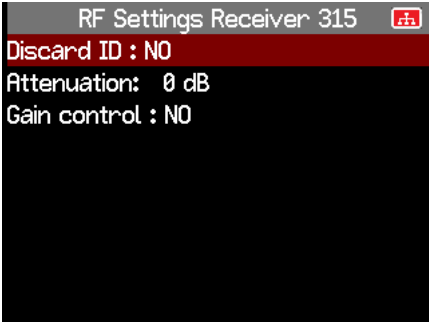
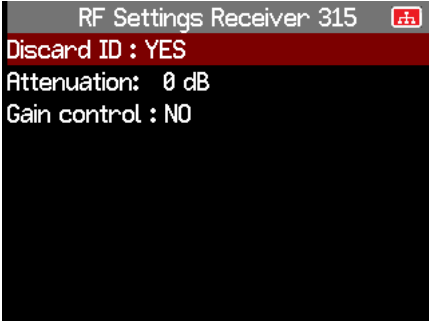
Press OK . The PROGRAM SETTINGS screen is displayed.		
Use the up or down arrows to select an empty line.	 	
Press OK to start creating the program.		
Press OK to display the Sensor screen.		
Use the up or down arrows to select a sensor type.	 	

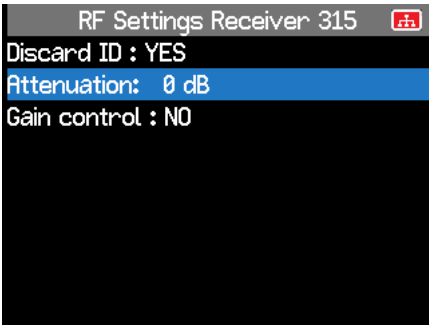
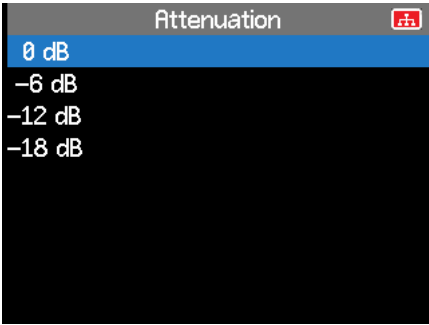
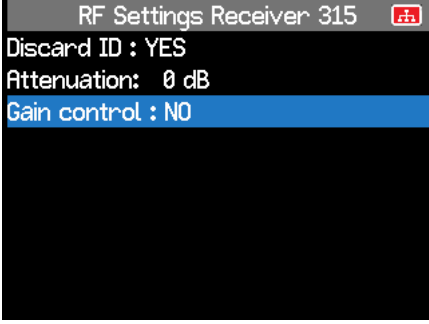
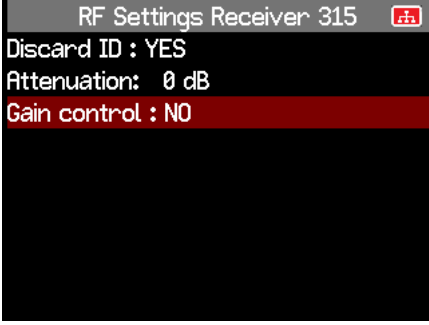
Press OK to confirm your selection of the sensor type.		
Use the up or down arrows to select Trigger, then press OK.	  	
Use the up and down arrows to select the activation mode, then press OK.	  	
Use the up or down arrows to select Frequency, then press OK.	  	

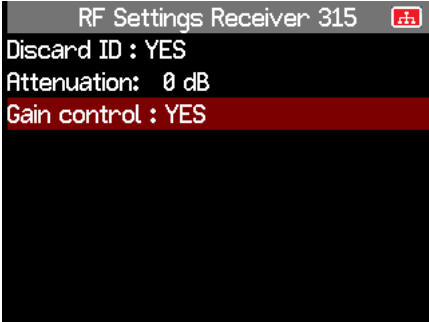
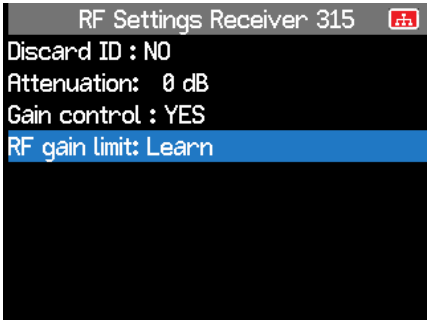
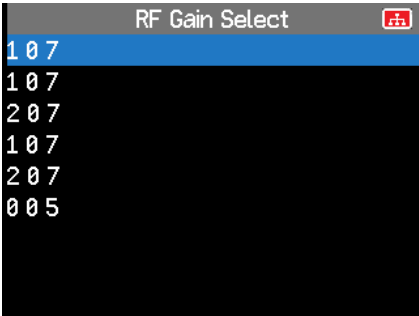
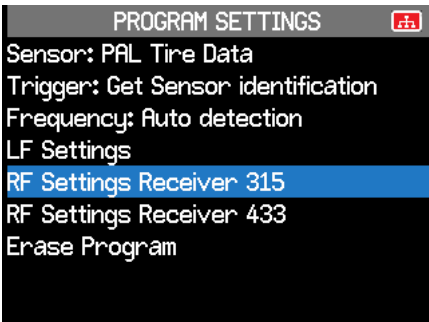
Use the up or down arrows to select Auto detection or to select an available frequency.	 	
Press OK to confirm the choice of frequency.		
Use the up or down arrows to select LF Settings, then press OK.	  	
Press OK again to adjust the antenna settings. The choice of antenna depends on the characteristics and the position of the sensor when the wheel is passing. Follow the recommendations of the approved installer.		

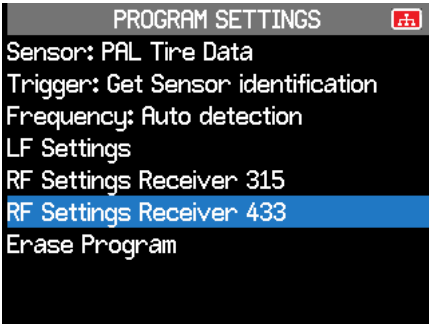
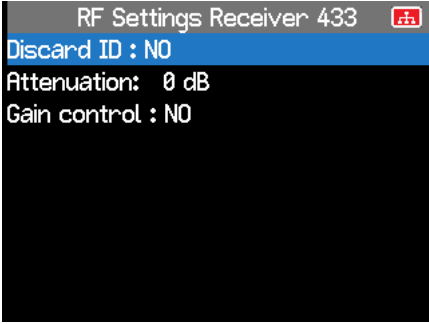
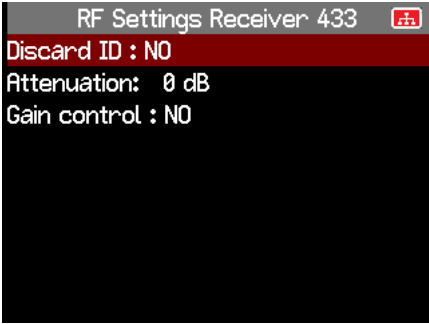
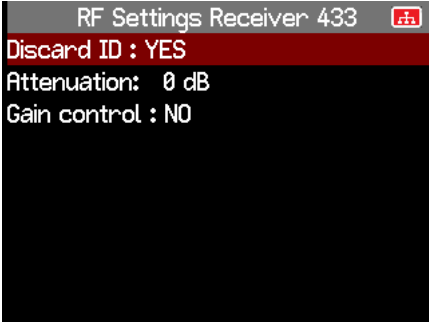
Use Up or Down to select an antenna type, then press OK to confirm your selection.		
Use Up or Down to select LF Voltage, then press OK.		
LF Voltage is displayed in red.		
Use Up or Down to select DEFAULT in order to choose the default voltage preset according to the sensor characteristics, or to select an available voltage. Press OK to confirm.		

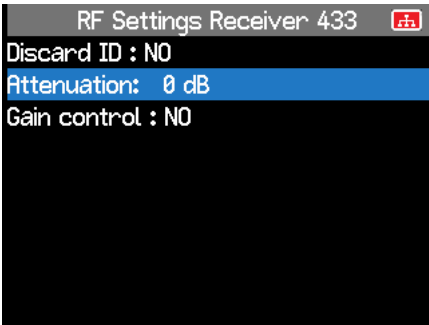
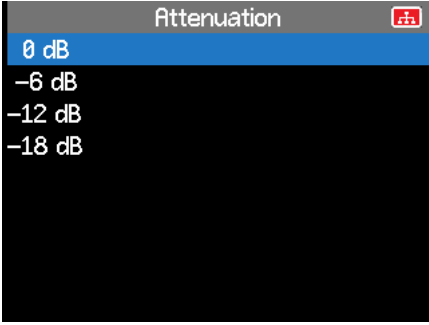
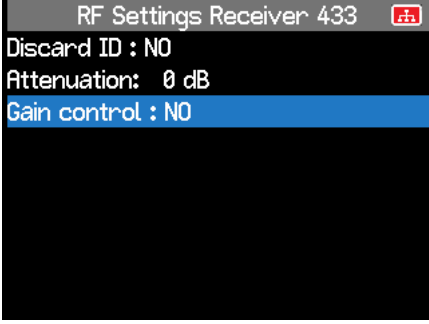
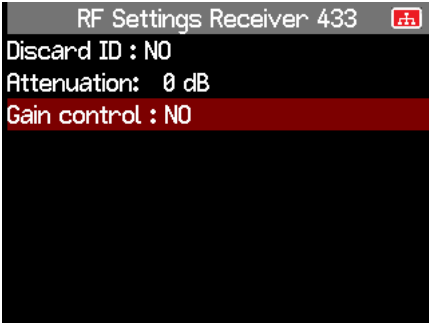
Use Up or Down to select LF power, then press OK.		
LF power is displayed in red.		
Use Up or Down to select DEFAULT in order to choose the default power or select a power percentage of between 1% and 100%. Press OK to confirm your choice. Note: The LF transmission power is preset according to sensor sensitivity. It can be adjusted to limit the transmission field around the antenna. You are advised to follow the settings recommended by the approved installer.		
Press C to return to PROGRAM SETTINGS.		

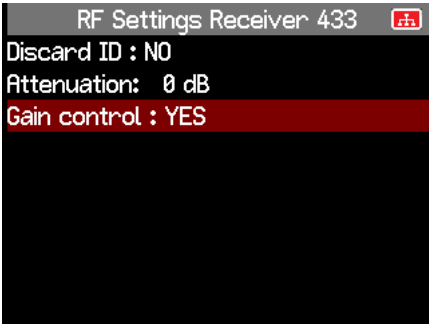
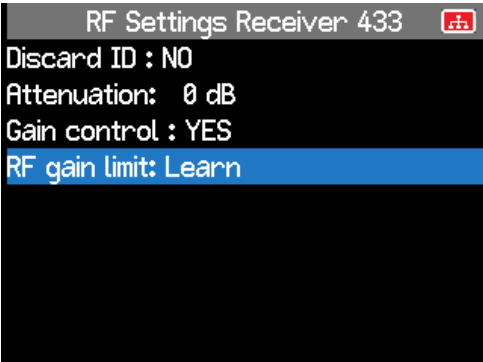
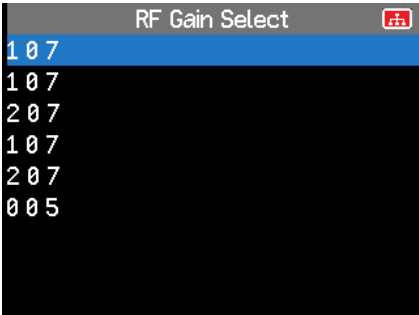
Use Up or Down to select RF Settings Receiver 315, then press OK.	  	
Use Up or Down to select Discard ID, then press OK. Note: Discard ID checks that the sensor being read is not the same as one that has previously been read. To do so, the unit analyses the last 32 readings.	  	
Discard ID is displayed in red.		
Use Up or Down to select YES or NO, then press C to return to the previous menu.	  	

Use Up or Down to select Attenuation, then press OK.	 	
Use Up or Down to select an attenuation value, then press OK to confirm your choice.	 	
Use Up or Down to select Gain Control, then press OK.	  	
Gain control is displayed in red.		

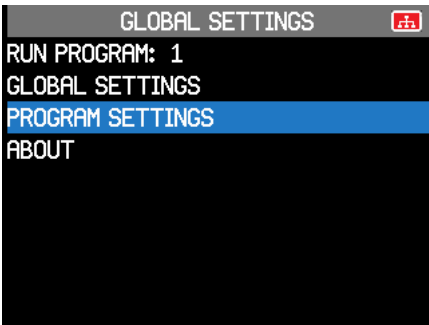
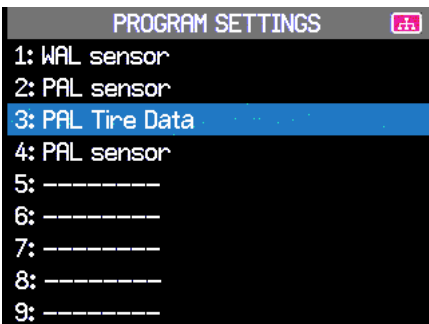
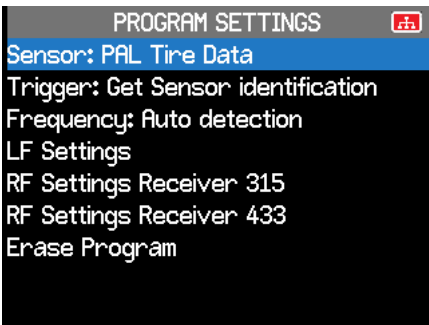
Use Up or Down to select YES or NO, then press OK to confirm. Press C if you wish to cancel and return to the previous menu.		
When the Gain control setting is YES, an extra menu appears: RF gain limit.		
Use Up or Down to select RF gain limit, then press OK to confirm. The unit then displays the last gain values made. Select one of the values in order to filter reception of the next readings to values that are below or equal to the value selected.		
Press C to return to PROGRAM SETTINGS.		

Use Up or Down to select RF Settings Receiver 433, then press OK.	  	
Use Up or Down to select Discard ID, then press OK.	  	
Discard ID is displayed in red.		
Use Up or Down to select YES or NO, then press C to return to the previous menu.	  	

Use Up or Down to select Attenuation, then press OK.	 	
Use Up or Down to select an attenuation value, then press OK to confirm your choice.	 	
Use Up or Down to select Gain Control, then press OK.	  	
Gain control is displayed in red.		

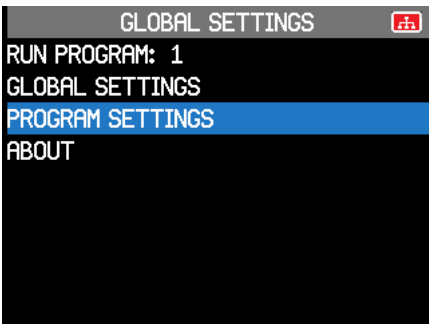
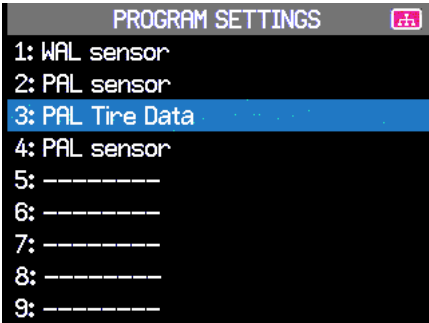
Use Up or Down to select YES or NO, then press C to return to the previous menu.		
When the Gain Control setting is YES, an extra menu appears: RF gain limit.		
Use Up or Down to select RF gain limit, then press OK to confirm. The unit then displays the last gain values made. Select one of the values in order to filter reception of the next readings to values that are below or equal to the value selected.		
Press C four times or hold this key down for three seconds to return to the main menu.		

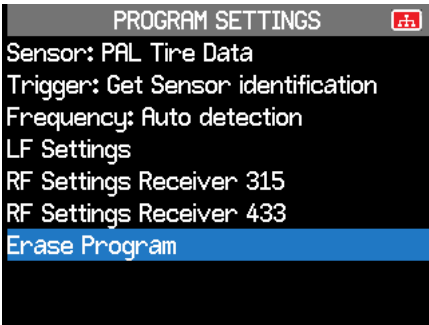
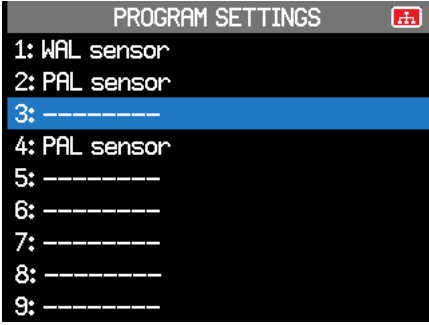
7.5. Editing a program

From the main menu, press the right arrow to select the Settings menu, then press OK.	 	
Use Up or Down to select PROGRAM SETTING, then press OK.	  	
Use Up or Down to select the program you want to edit, then press OK.	  	
The details of the selected program are displayed. All program settings can be edited.		

When you have finished editing a program, press C several times to return to the main menu.		
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7.6. Deleting a program

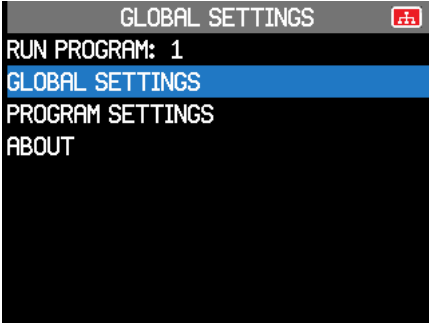
From the main menu, press the right arrow to select the Settings menu, then press OK .	 	
Use Up or Down to select PROGRAM SETTING , then press OK .	  	
Use Up or Down to select the program you want to delete, then press OK .	  	

Use Up or Down to select Erase Program.		
Press OK. The program is deleted. The list of remaining programs is displayed.		
Press C several times to return to the main menu.		

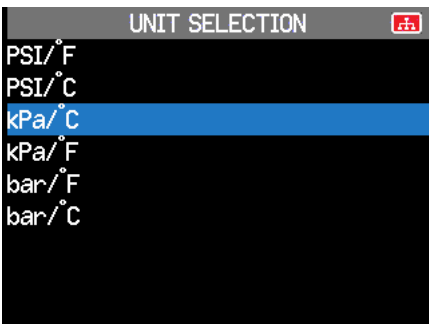
8. GLOBAL SETTINGS MENU

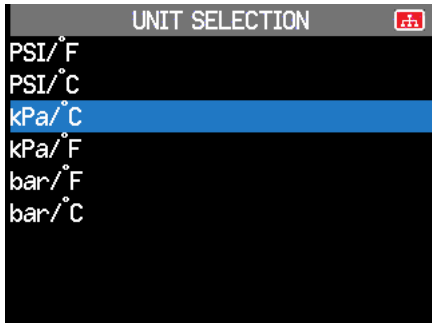
The **GLOBAL SETTINGS** menu is for configuring the device. It is used to set up the operation of the VT620 and to store interface display options.

8.1. Opening the GLOBAL SETTINGS menu

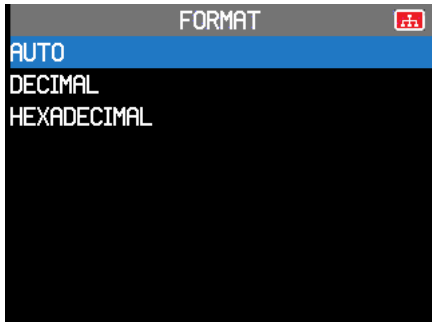
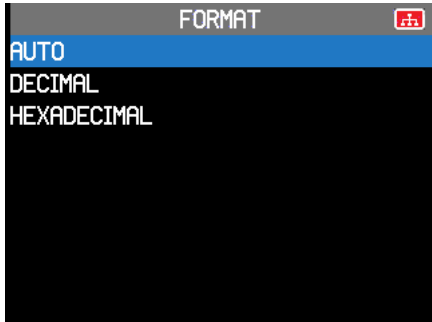
From the main menu, select the settings menu icon, then press OK .		
Use Up or Down to select GLOBAL SETTINGS , then press OK .	 	

8.2. Choosing the pressure and temperature units

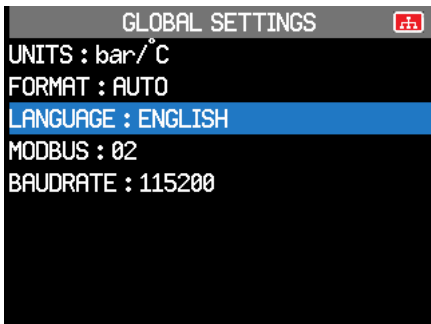
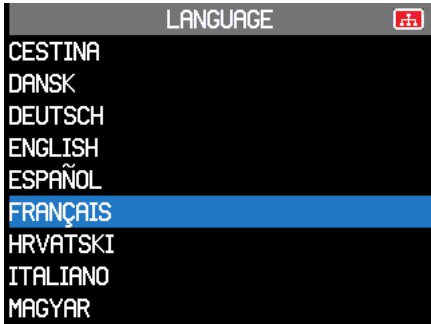
In GLOBAL SETTINGS , select UNITS , then press OK .		
Use Up or Down to choose a pressure unit and a temperature unit. The pressure units are: • PSI, • kPa, • bar. The temperature units are: • °F • °C	 	

Press OK to confirm the choice of pressure unit and temperature unit.		
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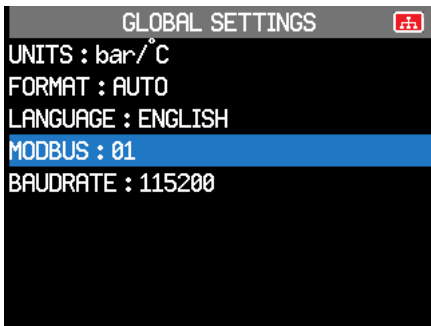
8.3. Choosing the ID display format

From the GLOBAL SETTINGS menu select FORMAT , then press OK .		
Use Up or Down to select the format. The formats are: • AUTO: the ID is displayed as received by the VT620, • DECIMAL: the ID is always displayed in decimal even if it is received in hexadecimal, • HEXADECIMAL: the ID is always displayed in hexadecimal even if it is received in decimal.	 	
Press OK to confirm the format choice.		

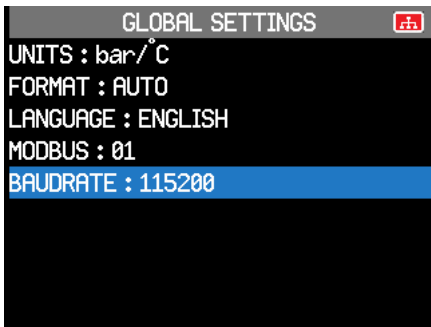
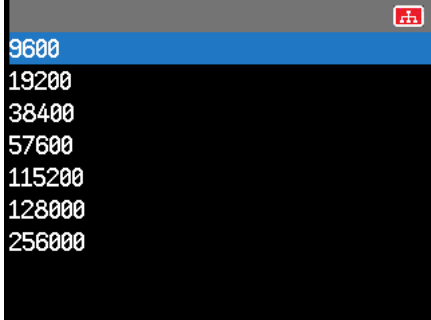
8.4. Choosing the device language

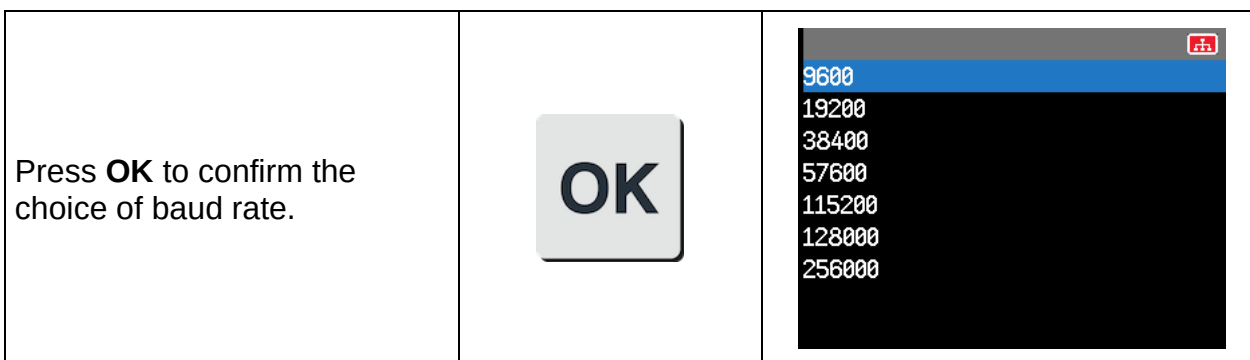
From the GLOBAL SETTINGS menu select LANGUAGE , then press OK .		
Use Up or Down to select the language you require.	 	
Press OK to confirm the language choice.		

8.5. Adjusting the MODBUS setting

From the GLOBAL SETTINGS menu select MODBUS , then press OK .		
MODBUS is displayed in red. Use Up or Down to choose the MODBUS address, then press OK .	 	

8.6. Setting the baud rate

From the GLOBAL SETTINGS menu select BAUD RATE , then press OK .		
Use Up or Down to select the baud rate you require.	 	



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FCC Caution:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

