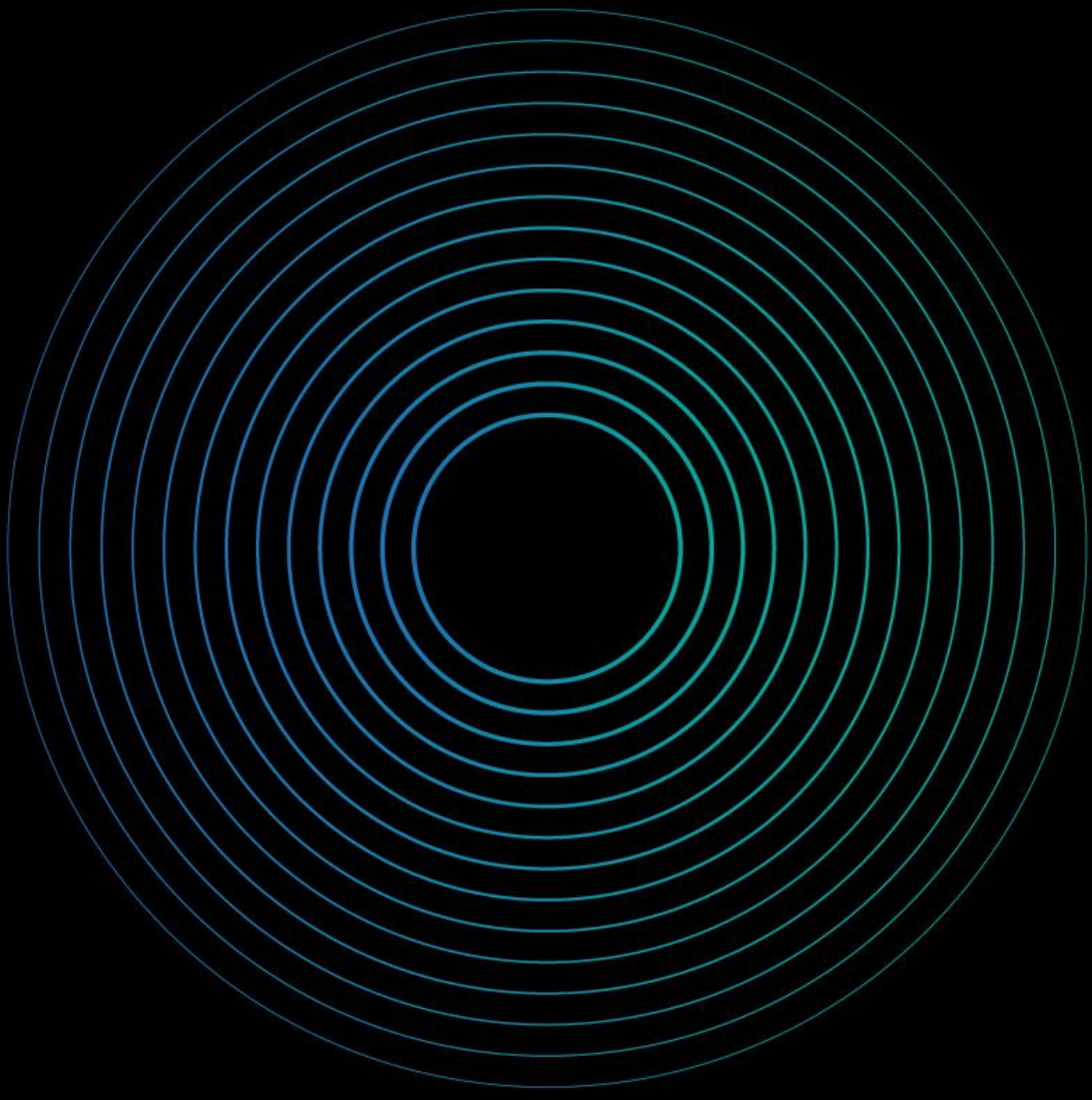
RNC Technologies

Operating Manual



PiezoTouch Plus

Date: November 24, **2024**
Approved by: **Roi Ben Chitrit**

Software version: **24.001**
Device: **PTX-XX-PDC**

Contents

Introduction

This operating manual is for the PiezoTouch Plus range of programmable switches and panels. Purpose of the manual is to explain to our partners how to change the functions and features to match their sanitary installation.

This software terminal is also intended for the product development process where our partners can identify the optimal settings for their PiezoTouch Plus application and communicate those via a text file to RNC Technologies.

Legal Reminder

The PiezoTouch software terminal and PiezoTouch Plus touch solutions, including all know-how, technology, and intellectual property, are proprietary to RNC Group Ltd. The software terminal is provided solely for use as part of the solution purchased under a limited, non-transferable license. Tampering with, reverse engineering, unauthorized use of, or duplication of the software is strictly prohibited. Additional licensing terms may be introduced in the future.

Product Parts

The PiezoTouch Plus software terminal requires the following parts:

- Windows PC
- PiezoTouch Plus product with connector
- UART-USB converter & USB cable
- Power supply (not provided)
- Software terminal
    - https://rnctec.com/wp-content/uploads/2024/11/PiezoTouch-Plus-Software.zip
- Operating manual
    -

PiezoTouch Software Menu (not yet available)

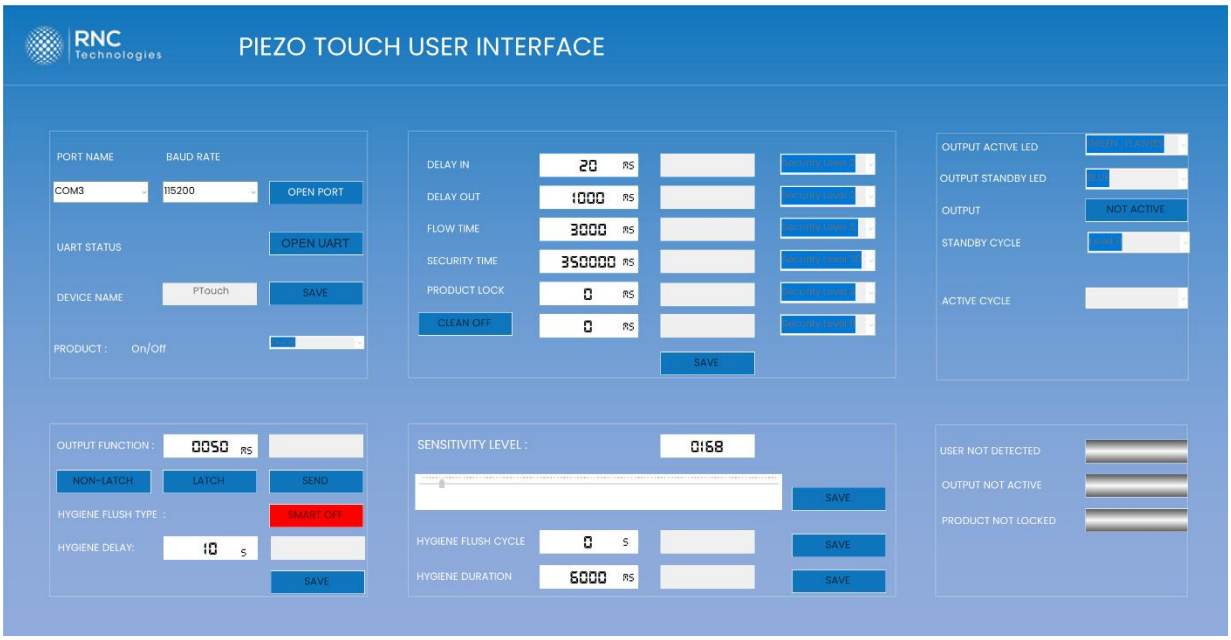
Menu Item	Submenu	Purpose
File	Save Settings Files	Save the current sensor settings to a filed stored locally.
	Read Settings Files	Restore previously stored sensor settings. When reading previous sensor settings, the product selection options are overwritten.
Help	Contact Us	Link to Contact Us section at RNC website.
	User Manual	Link to PiezoTouch software operating manual
Exit	-	Click to exit PiezoTouch software

Software Terminal

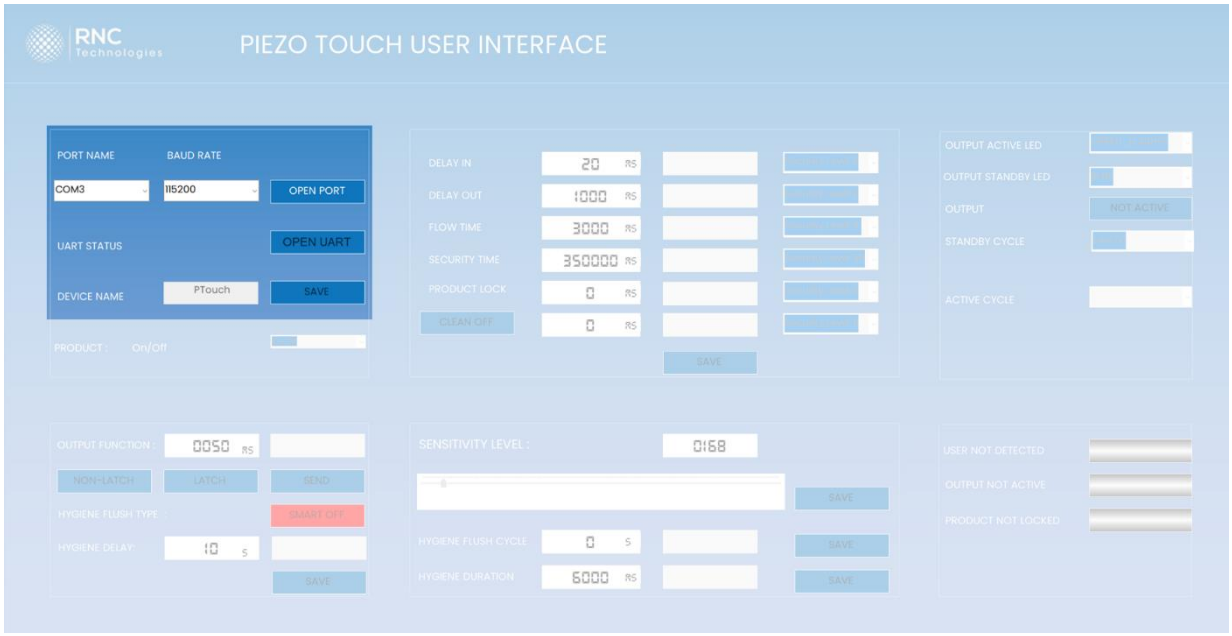
The PiezoTouch Plus solutions can be supplied with a software terminal. This application manages the connectivity and communication between the PiezoTouch Plus solution and a Windows computer.

The application is designed for use with Windows operating systems only.

The software terminal has six main sections which will be discussed and explained in the next paragraphs. Connecting and setting up the device is explained in the chapter Device Set Up – Step by Step.

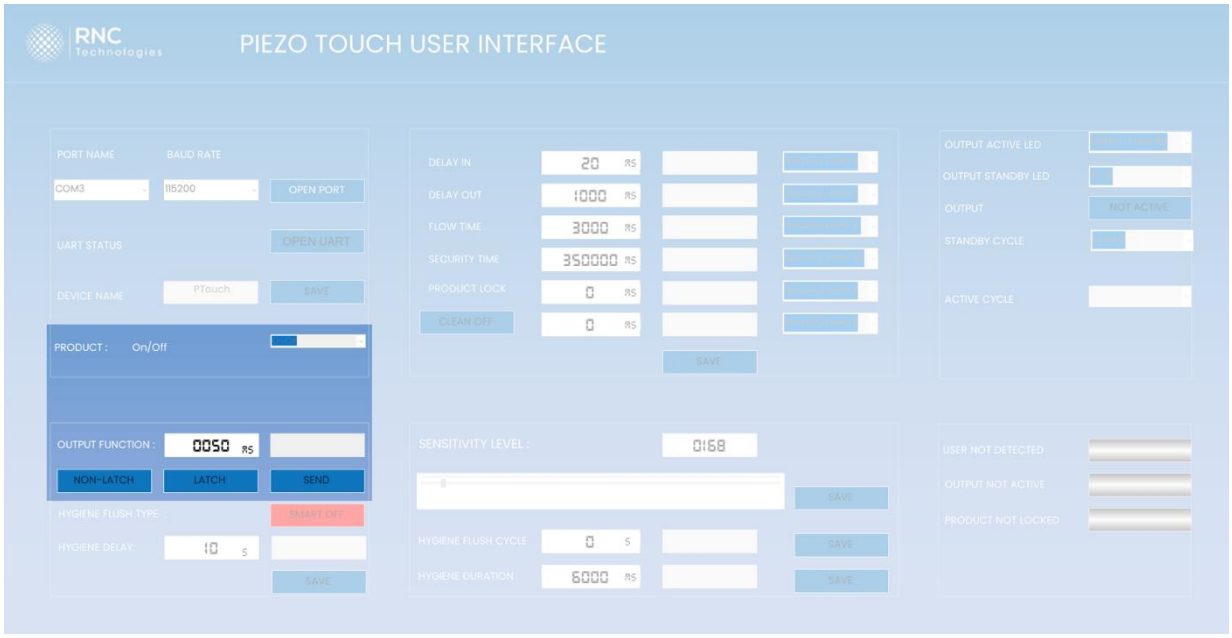


Connection Setup



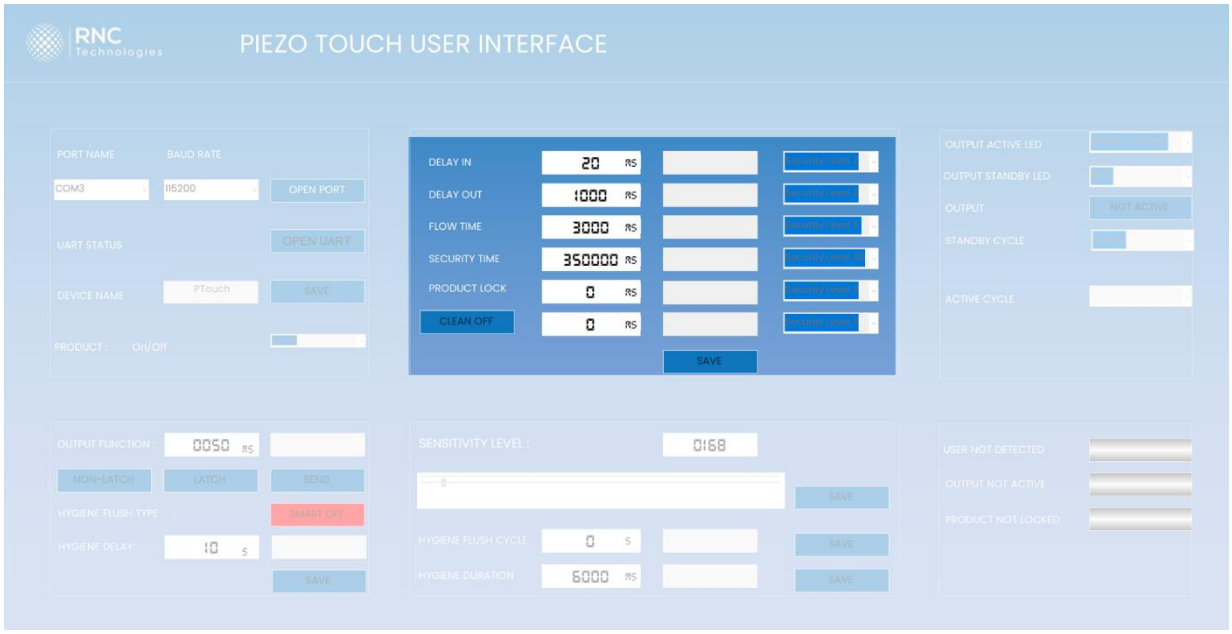
Connection Functions	Description	Purpose
Port Name	Selector for the USB port that the computer uses to connect to the PiezoTouch Plus solution.	The computer might have multiple ports in use. This selector helps select the correct port for the connection.
Baud Rate	Selector for the baud rate that is needed to connect the PiezoTouch Plus solution to the computer.	The baud rate determines the speed of the connection between the computer and the product. Only in cases of using devices like a remote control, a low baud rate is selected.
Connect UART	Activation of the UART communication protocol between the computer and the PiezoTouch Plus solution.	UART protocol is used to transfer data between the computer and the PiezoTouch Plus solution.
Device Name	Name of PiezoTouch Plus solution.	Product is provided with specific name. This can be changed in the connection set up.

Product & Output Selection



Product Selection Options	Description	Purpose
Select Product	Selector for the specific product functionality.	Each product type has a specific program to operate the product. Functionality fields are used differently between the different product types. Annex I contains the default settings for the generic product.
Valve Selection	Selector for the type of output.	Valve selection determines whether the output is for a latching or non-latching solenoid valve.
Pulse Time	Pulse time for opening and closing the latching solenoid valve.	This value is only active when the latching solenoid valve option is selected. This value should be changed according to the recommended pulse time by your valve supplier.

Functionality Fields

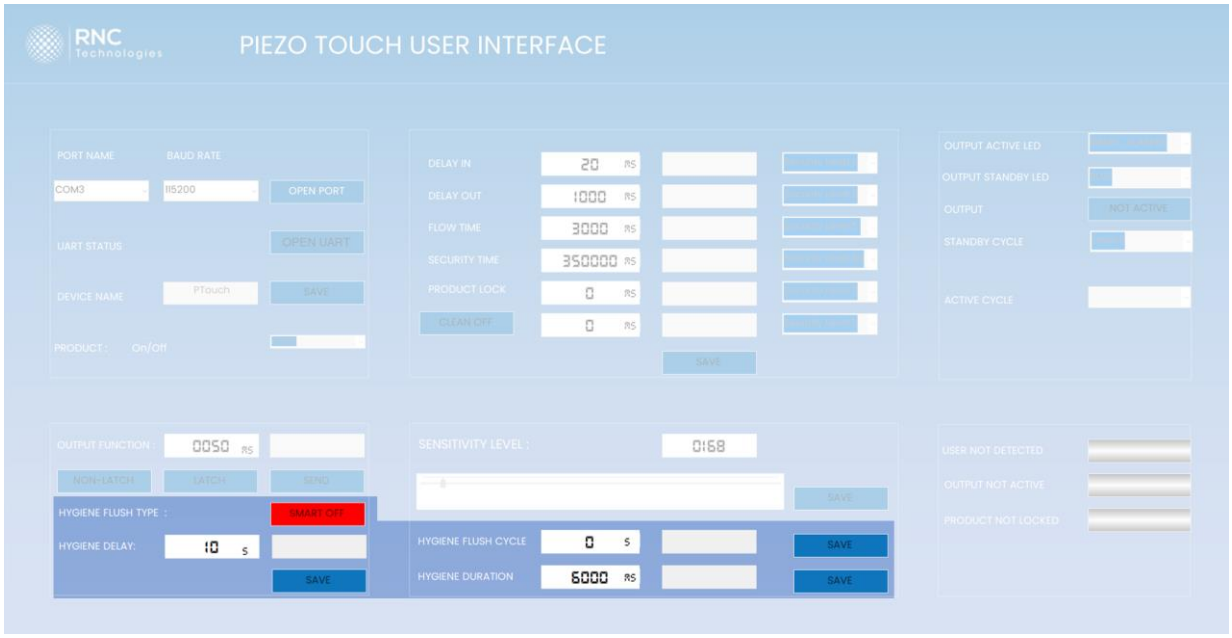


The table below shows the definition of the standard product functions that are available in the PiezoTouch Plus solutions. These functions cover the main programming requirements for sanitary installations. Additional functionality is available upon request.

Sensor Functions	Description	Purpose
Delay In	Timer that detects the initial presence of a user. Once the timing cycle has finished, the piezo operation will be activated.	Delay In is used to mitigate unintended activation or when the solution is installed in a place with unusual vibrations. Increasing this value will reduce those occurrences but will make the touch seem less sensitive.
Delay Out	Timer that delays the activation of the output following a user press. Once the timing cycle has finished, the output will be activated.	Delay Out is used to avoid immediate activation in specific applications, like toilets. It is rarely used with other PiezoTouch Plus solutions.
Flow Time	Timer that operates the output for a specified amount of time.	Flow Time is used to operate the output of the valve for a specific amount of time.
Security Time	Timer that determines the maximum amount of time the output can be active.	Security time is used to prevent long, unintentional operation of the output. For example, caused by an electronics failure.

Product Lock Time	Timer that decides on the waiting period between the activation of the PiezoTouch Plus solution output.	Lock Time is used in situations where users are only allowed to use the product in certain time intervals
Clean Lock Time	Timer that determines the amount of time that the output is locked, unrelated to activation by a user.	Clean Lock Time is used by maintenance personnel to shut off the PiezoTouch Plus solution for a certain amount of time, allowing uninterrupted maintenance or cleaning of a product.

Hygiene Flush Functionality

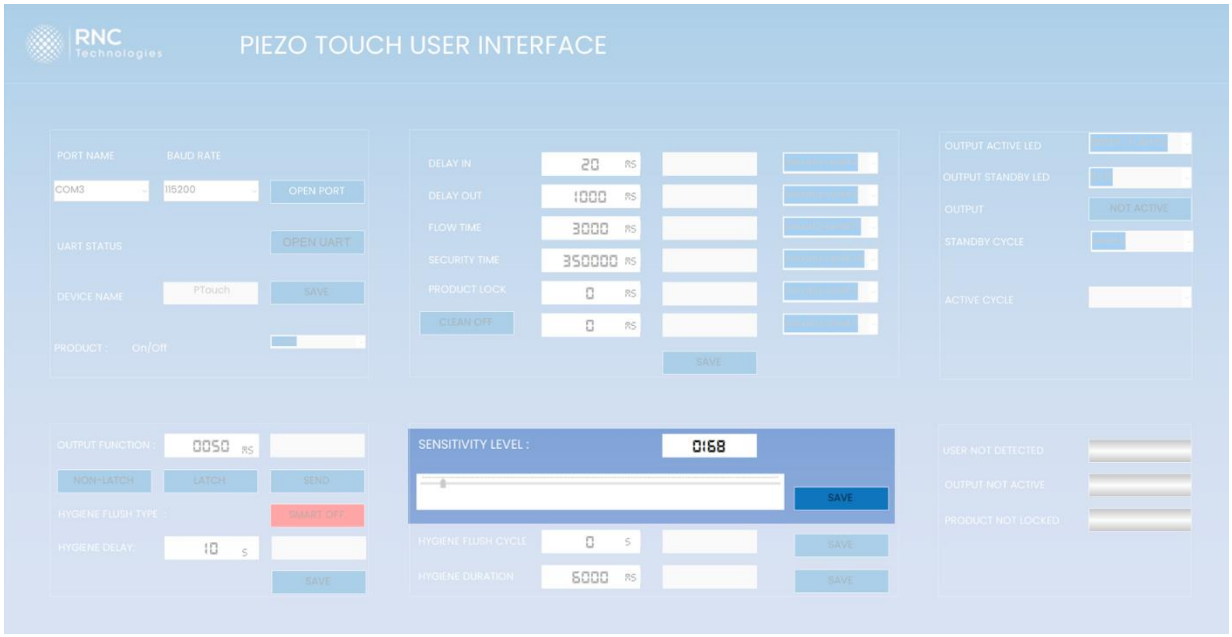


The table below shows the definition of the options for the hygiene flush functionality for the PiezoTouch Plus solutions.

Sensor Functions	Description	Purpose
Hygiene Flush Cycle	Timer that activates a hygiene flush at certain intervals.	The Hygiene Flush Cycle activates the output when the set time has reached zero. The timer is then reset and will start counting down again for the next flush. To switch off the hygiene flush cycle, the value needs to be set to zero.
Hygiene Flush Duration	Timer that determines the duration of the hygiene flush.	Hygiene Flush Duration activates the time the solenoid valve is opened when the Hygiene Flush Cycle is started.
Hygiene Flush Type	Selector for the standard or smart operation of the Hygiene Flush.	Hygiene Flush Type has the options Standard or Smart, which is selected by clicking the button. The Standard type will activate the cycle independent of user interaction. The Smart type will reset the Hygiene Flush Cycle timer after a user operation. With the Smart type selected, the cycle will activate the specified cycle time from last user operation.

Hygiene Flush Delay	Timer that delays the start of the Hygiene Flush Cycle following power connection.	Hygiene Flush Delay is used to avoid cycles starting, for example, 24 hours from installation. As most installations are performed in the day, the hygiene flush cycles can confuse users or maintenance personnel. By setting the delay time, the cycle will start only when the delay time counter has reached zero. Example: installation at 2:00 PM with a delay of 12 hours will start the cycle at 02:00 AM. Reconnecting the power supply will restart the delay timer. This timer will only run once, from reconnecting power supply.

Touch Sensitivity



Sensor Range	Description	Purpose
Sensitivity Level	Sets the touch sensitivity of the PiezoTouch Plus solution.	Used to change the force needed by a user to activate the PiezoTouch Plus solution. It is not recommended to set the range close to zero nor to the maximum level.

Product Type Functionality

Product Type	Flow Chart	Remarks
On/Off	**User presses PiezoTouch Plus solution** -> Delay In starts counting -> Delay In cycle finishes -> Security Time starts counting -> Solenoid valve opens **User presses again** -> Delay In starts counting -> Delay In cycle finishes -> Security Time resets -> Solenoid valve closes **User does not press again** -> Security Time cycle finishes -> Solenoid valve closes -> All values will be reset for next activation	Touching the PiezoTouch Plus solution activates the solenoid valve. 2nd touch stops the solenoid valve. Lock Time: default value for on/off is zero seconds. Security Time: the maximum run time for on/off activation Flow Time: this field is not used for on/off Delay Out: this field is not used for on/off
Programmed	**User presses PiezoTouch Plus solution** -> Delay In starts counting -> Delay In cycle finishes -> Flow Time starts counting -> Solenoid valve opens -> Flow Time cycle finishes -> Solenoid valve closes -> All values will be reset for next activation	Touching the PiezoTouch Plus solution activates the solenoid valve for the full duration of the Flow Time. Lock Time: default value for on/off is zero seconds. Flow Time: the set run time for programmed activation Security Time: maximum run time in case of failure Delay Out: this field is not used for programmed
Programmed On/Off	**User presses PiezoTouch Plus solution** -> Delay In starts counting -> Delay In cycle finishes -> Flow Time starts counting -> Security Time starts counting -> Solenoid valve opens **User presses again 1st** -> Flow Time gets paused -> Security Time continues counting **User does not press again 1st** -> Security Time cycle finishes -> Solenoid valve closes -> All values will be reset for next activation **User presses again 2nd** -> Flow Time resumes -> Security Time continues counting **User does not press again** -> Flow Time cycle finishes -> Solenoid valve closes -> All values will be reset for next activation	Touching the PiezoTouch Plus solution activates the solenoid valve. The user can stop and resume the water flow by pressing again. The user must consume the Flow Time within the Security Time duration. Lock Time: default value for on/off is zero seconds. Security Time: the maximum run time for programmed on/off activation Flow Time: the set run time for programmed on/off activation Delay Out: this field is not used for programmed on/off

Electrical Specification & Output

The PiezoTouch Plus solution is operated by a 6V-24V DC power supply. The solution has a maximum current of 1A. The product will provide an output of 12V with a set pulse length for latching solenoid valves (opening & closing pulse). For non-latching solenoid valves, the product provides a continuous 6V-24V pulse.

Device Set Up – Step by Step

The following paragraphs provide a step-by-step explanation on connecting the PiezoTouch Plus solution, reading the data, and making changes to the product functions.

Connecting Device

Initial Set Up

1. Connect power supply to PiezoTouch Plus solution
2. PiezoTouch Plus solution is now operational with default settings
3. Install PiezoTouch Plus software
4. Connect PiezoTouch Plus solution to computer with USB cable
5. Open PiezoTouch Plus software

The PiezoTouch Plus solution is functional when connected to a power supply.

Software Terminal

The PiezoTouch Plus solution can communicate with a dedicated software terminal. The software can be downloaded from the following webpage: www.rnctec.com/evbt
The software terminal allows viewing and changing field settings and monitor product output.

Connection Set up

For the PiezoTouch Plus solution to communicate with the software terminal on the computer, the following two steps need to be completed successfully.

Connect Port

1. Select the appropriate port from the dropdown menu named Port Name.
2. Select the appropriate baud rate from the dropdown menu named Baud Rate (115200 recommended)
3. Click on the Open button to activate the connection.
    a. The color of the Open button changes to green if the connection is successful.
    b. An error message will pop-up if there is a problem with the connection.

Connect UART

1. If the port connection is successfully connected, the UART connection will automatically open. If the UART status button does not turn green, then click on the Open button to enable the UART communication protocol with the PiezoTouch Plus solution.
    a. The color of the Open button changes to green if the connection is successful.
    b. An error message will pop-up if there is a problem with the connection.

Product Type

The PiezoTouch Plus solution has several product types programmed into its memory. Each product type will make use of different product workflows. It is important to choose the correct product type.

Product Selection

1. Choose the appropriate product type from the drop-down menu.
2. If the selection is successful, the current sensor function values in the Sensor Function window will be updated

Valve Selection

1. Select the appropriate output by clicking on the latch button or non-latch button.
2. The button representing the selected output value will turn green
3. For latching solenoid valves, enter the required pulse time in the Output Function field and click Send (check manufacturer's product data sheet

Reading & Changing Field Settings

Current Values

The current values of the different product functions are shown within the respective columns. The values are shown within a timer format. This timer will be activated when the product is activated. Each time value cycle will start according to the workflow of the specific product type.
In the timer field within the Current Value column, the resolution of the current field value is shown. The value is either S (seconds) or MS (milliseconds).

Changing Field Values

The values of the sensor functions can be changed by entering a value in the appropriate white input field next to the data column. By clicking on the Save button, the new field value is uploaded to the product.
If the new value is uploaded successfully, the new function is displayed within the data column.

Touch Sensitivity

The current touch sensitivity is displayed as in a numerical value in the box above the slider.
The sensitivity can be adjusted by dragging the slider indicator to a new position. Press the Save button to upload the new values to the product.
If the new values are uploaded successfully, the new values will appear in the box above the slider.

Hygiene Flush

Hygiene Flush Cycle

Enter a value in the white box and press Save to set the cycle time of the hygiene flush. The product will activate a hygiene flush when the timer reaches zero, after which it resets the cycle time for the next hygiene flush cycle.

Enter the value 0 will de-activate the hygiene flush cycle.

Hygiene Flush Duration

Enter a value in the white box and press Save to set the duration of the hygiene flush. When the hygiene flush cycle activates, it will run for the duration set in this field.

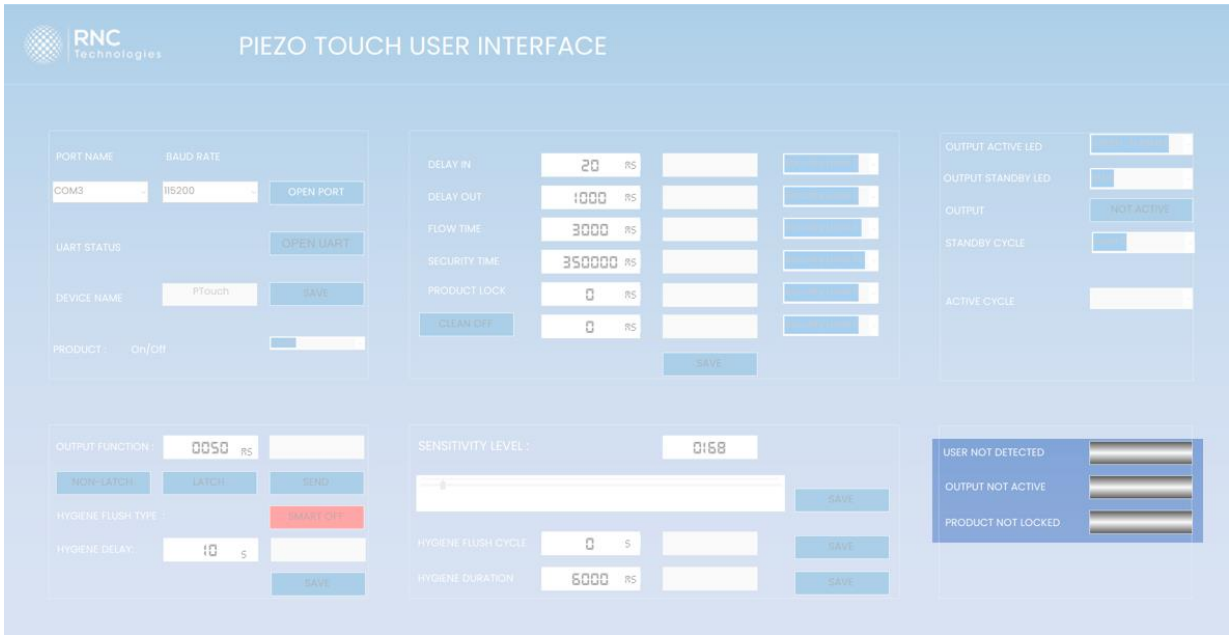
Hygiene Flush Type

The hygiene flush type determines whether the hygiene flush cycle is dependent on the last time of operation. When selecting Standard, the hygiene flush cycle will run independent of last user operation. When selecting Smart, the hygiene flush cycle will reset when the product is used and will activate the set cycle time after last product operation.

Hygiene Flush Delay

The hygiene flush delay sets the initial delay time for the hygiene flush cycle. The hygiene flush cycle will only start running after this delay timer has finished.
This delay is activated when the power is turned on. This delay will run only one time and will only run again when the power is disconnected and reconnected.
Set the required value in the white box and press Save.

Status Window



User Not Detected

This status field is not active with PiezoTouch Plus solutions.

Output Not Active

When output is activated, the status changes to green and text will show Output activated.

Product Not Locked

When the sensor is locked, the status will change to green, and text will show Product Locked.
Product lock is determined by Product Lock Time.

Annex I: Default Values

Function	**Time Value**	**Base Unit**
Delay In	20	milliseconds
Delay Out	0	milliseconds
Flow Time	60,000 (60 seconds)	milliseconds
Security Time	60,000 (60 seconds)	milliseconds
Product Lock Time	0	milliseconds
Clean Lock Time	0	milliseconds
Sensitivity Level	251	N/A
Hygiene Flush Cycle	259,200 (72 hours)	seconds
Hygiene Flush Duration	60,000 (60 seconds)	milliseconds
Hygiene Flush Type	Smart Off (standard)	N/A
Hygiene Flush Delay	43,200 (12 hours)	seconds
Output Function	50	Milliseconds
Valve Selector	Non-Latch	N/A