FT1 BT (Filtron Bluetooth)

Smart professional Backflushing controller for smart flushing.

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FT1 BT
USER MANUAL
&
INSTALLATION
INSTRUCTIONS

Smartphone application version: 1.0.881

Firmware : 1.25

User manual version: 1.2

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Content

Introduction

Talgil computing and control LTD thanks you for purchasing the modern professional backflush controller BTF-1 BLE called Filtron Bluetooth. The Filtron Bluetooth presents you with innovative styling, new technology design of hardware, flexibility, additions, professional properties, and a high level of reliability.

The Filtron Bluetooth offers an efficient and economical solution for managing filtration sites with a single station or single output command. Moreover, enables reading of external digital differential pressure meter or internal analog differential pressure meter which helps detection of differential pressure between the inlet and outlet and accordingly start a flush cycle.

In addition, the product arrives with an external START button which enables manual start or stop of flush cycles.

In comparison to the other, The Filtron Bluetooth does not have Keyboard and LCD therefore, the Flushing mode, Settings, and Preferences are executed by the **BLUEBITS** smartphone application.

Following the tradition of the well-known family of Tagil's back flush controllers, the Filtron Bluetooth is the first backflush controller that uses Bluetooth communication with smartphones. Therefore professional smartphone application has been developed. The application has a modern graphical design which grants the application high usability scale.

Before installation, please read this user manual carefully and follow the instructions.

Talgil Company wishes you successful work with the new backflush controller and on down the road.

General features (FT1-BLE brochure)

- **Operation output:** Operates one filter or start command. Operate 2 wire latch solenoid 12V DC.
- **Digital input:** Digital input for external digital DP device which produces dry contact.
- **Analog input:** Analog input for internal analog DP sensor.
- **Three operation modes**
  - **OFF:** Freeze the backflush controller.
  - **DP Only:** Start one flush cycle when there is high DP detection.
  - **TIME & DP:** Start one flush cycle when there is high DP detection. In addition, start one flush cycle by the time interval.
- **Operation screen:** Display the Flush mode, Time interval, Time interval lefts, Flush time, Flush state, DP set, Current DP, and Start/Stop Flush cycle.
- **Settings screen**
  - **DP Delay:** Delay for system stabilization before starting a flush cycle and after finishing due to the DP sensor.
  - **Max loop:** The maximum consequent flush cycles due to DP sensor that permitted to prevent Looping.
  - **Device name:** Option to set a friendly name to the controller.
  - **Pressure units:** Display the differential pressure units as Bar or PSI.
  - **Sound:** Enable sound that indicates normal processes or flush failure.
  - **Calibration:** For reading accuracy the analog differential pressure sensor.
- **Accumulations:** Enable flushes tracing by three flushes counters. Counter due to Time interval, due to High DP detection, and due to Manual starts.
- **Preferences:** Change the display to your preferred font size and your preferred language.
- **Start Button:** External button for manually Start/Stop of the flush cycle.
- **Low energy consumption:** 12V DC power supply or four 1.5V batteries size C.
- **Bluetooth communication:**
  Bluetooth communication. Up to 60 meters with a line of sight between the smartphone and the controller.

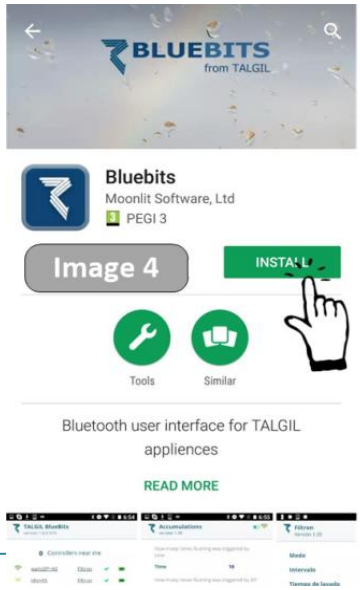
- **Smartphone application:**
  - Professional backflush application.
  - Support Android and iOS smartphone operating systems.
  - Display Low battery or looping warning.
  - High performance. Includes partition to Operation, Settings, Accumulations, and Preferences screens.
  - Modern graphical design. Grants to the application high usability scale.
  - Clear and user-friendly.
  - Display the Bluetooth reception, Controller name, Flush state, and battery voltage level.

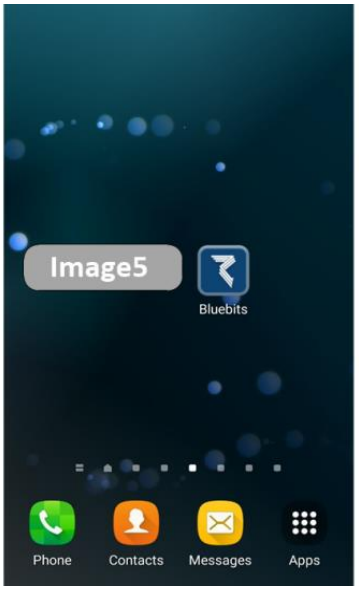
Installing the BlueBits app on a smartphone

As described in the introduction chapter, the Filtron Bluetooth does not have a keyboard and LCD. The **Flushing** definitions, **Settings,** and **User Preferences** have been executed by using the smartphone application called **BlueBits.** Therefore, first, download it from the appropriate app store and install it. Pay attention that there are two application versions. One for Android (On Google play) and the second for iOS (On Apple store) operating systems.

In order to install the **BlueBits** application, go to your smartphone browser and on the Applications store search text box, enter the application name. The application name is "**Bluebits**". When the application appears on the screen, tap on **Install** button as described in Image 4.

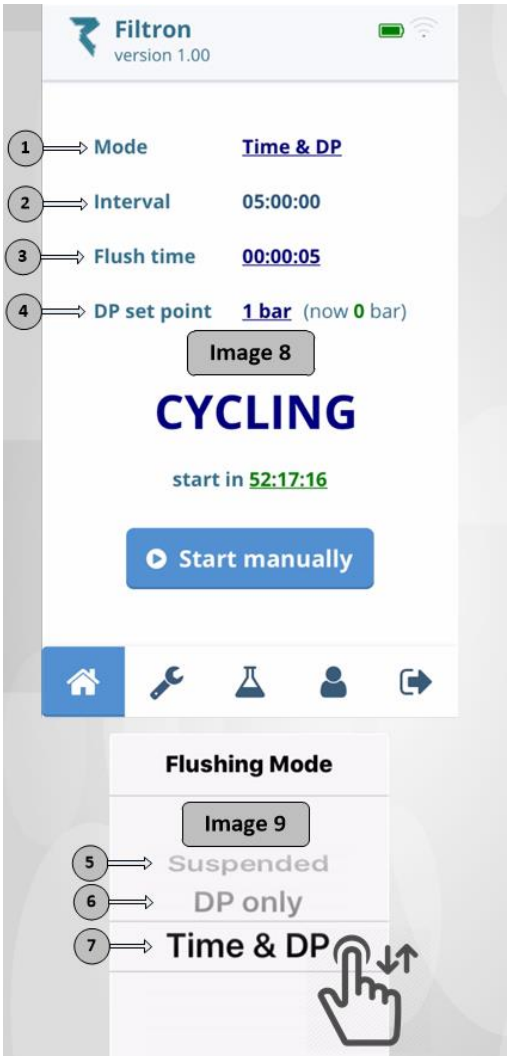
After the installation, it is recommended to create a shortcut on Home screen as shown in Image 5. When the user taps on the app shortcut, a welcome screen appears (Image 6). Then, a **Scanning** process of the controllers in the vicinity will start. The results of the controllers in the vicinity will appear on **Scanning screen** as described in Image 7. More details about **Scanning screen** appear on next pages. In order to connect to your controller, tap on your preferred controller which appears on **Scanning result list.**





Planning Backflushing

Planning Backflush executed on **OPERATION SCREEN** (Or Home screen) and includes four steps. The steps are described in image 8.



1. **Flushing mode:** There are three **Flushing modes**. To change the **Flushing mode**, tap on the **Flushing mode** button (Pointer 1). After tapping on it, three **Flushing modes** will appear on the screen. Image number 9 describes three options:

1.1 Suspended- No flushing will take place.

1.2 DP only:

- **External DP-** Flushing will be triggered by receiving a signal from an external digital DP device that measures high DP pressure.
- **Internal DP-** Flushing will be triggered by measuring **ACTUAL DP** which equal to or high than **DP SET**.

1.3 Time & DP- Flushing will be triggered by measuring **ACTUAL DP** which equal to or high than **DP SET** or by time interval. Whichever comes first.

2. **INTERVAL** (Pointer 2)- In case that the **FLUSHING MODE** is **TIME & DP**, it is necessary to define the **INTERVAL.** The **INTERVAL** defines the time duration passed between one flush cycle to the next start of the flush cycle. The **INTERVAL** range is 5 minutes up to 120 hours with one minute of the time interval.

3. **Flush time** (Pointer 3)-Defines the flushing time duration. The **FLUSH TIME** range is 1-60 seconds.

4. **DP SETPOINT** (Pointer 4)-Defines the DP value which every Analog DP measurement that equal to or higher than the **DP SET** will trigger one flush cycle due to DP. The **DP SETPOINT** appears when an analog DP sensor is connected to the controller. When there is no analog DP, When a close contact has been detected at the digital DP inputs (External DP), the application will display **DP ON.** Otherwise, the application will display **DP OFF**.

Description of Backflushing Process

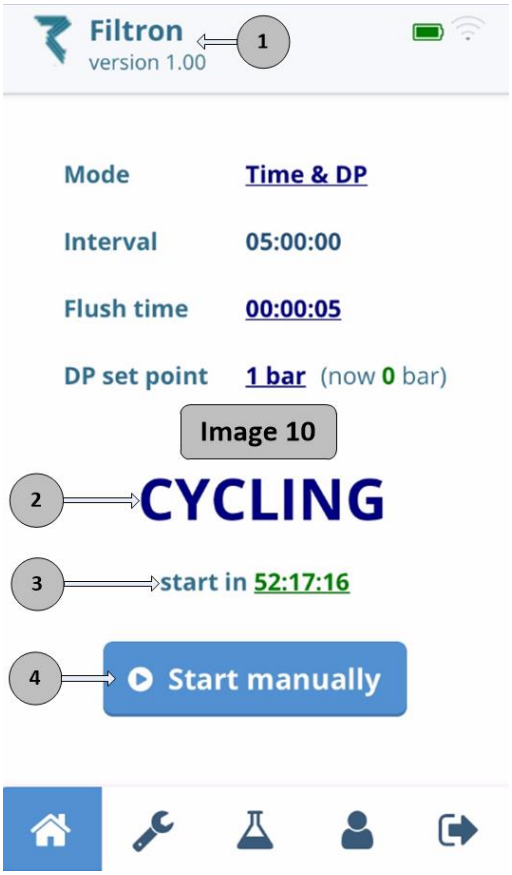


Image 10

During the connection to the backflush controller, the **OPERATION screen** displays the **controller type**, **Firmware**, **Backflushing status**, **Interval left,** and **navigation buttons**. Image 10 describes these issues.

Controller Type and Firmware (Pointer 1) **-** The BlueBits app supports several controllers, therefore, the app displays the controller type and firmware.

Backflushing status (Pointer 2) **-** Indicates the current backflushing status. The statuses are: **Suspended**, **Idle**, **Wait for DP**, **Flushing**, **Settling**, **Looping**, **Cycling,** and **Low battery**.

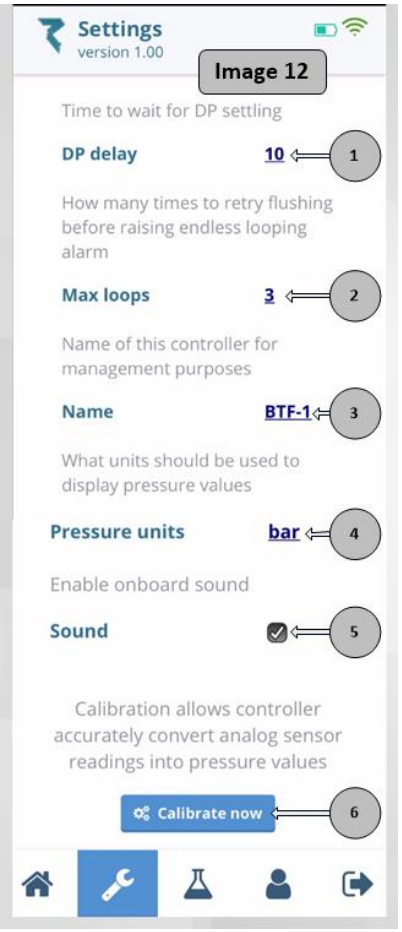
Left time (Pointer 3)-Displays the left time to the next backflushing. For example, on image 10 the backflushing status is **CYCLING**. The left time for the next backflushing is 52:17:16. This value is editable. The user can change the left time value by tapping on the **left time** button.

OPERATION BUTTON (Pointer 4) - There is a **START/STOP** button. The operation button enables a manual start or stop of the flush cycle.

NAVIGATION BUTTONS (Image 11)- The navigation buttons have been designed to grant quick access to another screen. The buttons are **Operation**, **Settings**, **Accumulations**, **Preferences,** and **Logout**.

Image 11

Adjusting the controller to the Backflushing enviroment



After planning the backflushing, it is recommended to adjust the controller to the backflushing environment. To make the controller more compatible with the backflush vicinity, the user should define the system constant which appears on the SETTINGS screen (Image 12). To edit a parameter, tap the value (Pointers 1-6). Here is an explanation about the Settings screen.

1. **DP DELAY** (Pointer 1) - Defines the time delay for DP sensor reading stabilization before the filtration process and after ending the filtration process. The range is 0 -60 seconds.

2. **MAX LOOP** (Pointer 2) - Defines the maximum continuous backflush number triggered by detecting high DP. If the DP device still required continuing with flushing, the controller status will change to **LOOPING**. In this case, the DP device signal will be ignored by the controller, and backflushing will not trigger by the DP sensor. It will trigger only by the time interval. The range is 0 up to 10. “0” means that there is no **Looping** detection.

3. **DEVICE NAME** (Pointer 3) – Grant a friendly name to the controller. Supports several languages. The **Device name** is limited to 16 characters.

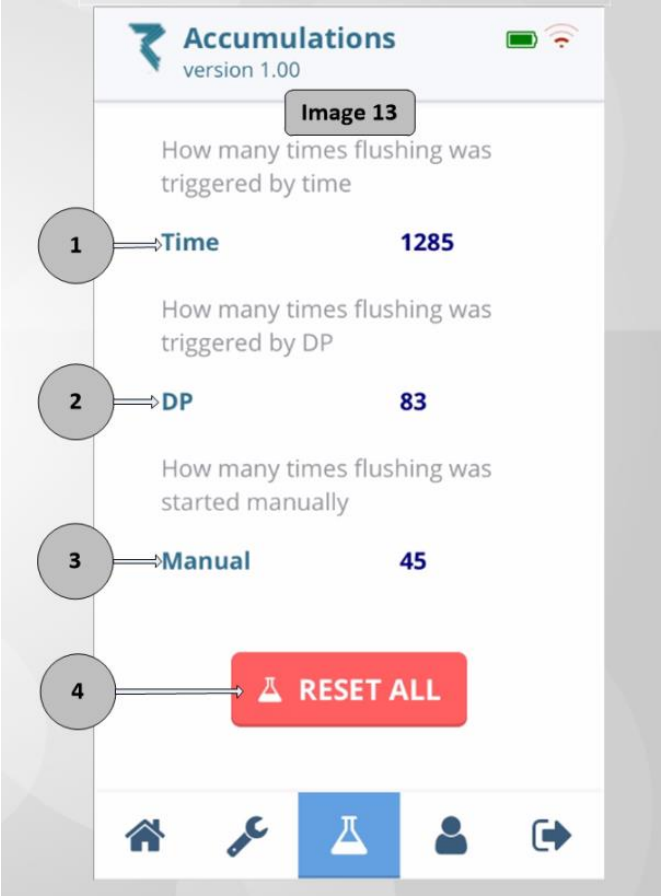
4. **PRESSURE UNITS** (Pointer 4) - If there is an analog DP sensor, there is an option to define the preferred **DP SET** units and current measured DP units. The options are **PSI** or **BAR**.

5. **SOUND** (Pointer 5) – During the communication between the smartphone and the controller, the controller makes a sound. Moreover, it makes special sound when there is **LOOPING** or **Low battery voltage.** In order to enable the sound, check the **Sound** checkbox.

6. **CALIBRATION** (Pointer 6) - In order to make the analog sensor reading more accuracy, the user should perform analog sensor calibration. Disconnect the pipes from the analog sensor and tap on **CALIBRATION** button. A “**Calibration successful**” message will appear at the end of the calibration process.

Backflush Tracking.

To track backflush cycles and perform statistical analysis, the controller manages three backflush accumulations. Image 13 describes the **ACCUMULATIONS** screen which organizes the accumulation results. Here is an explanation for accumulation types:



1. **ACCUMULATION TIME** (Pointer 1) – The number of Backflush cycles which was triggered by **TIME INTERVAL**.

2. **ACCUMULATION DP** (Pointer 2) – The number of Backflush cycles which was triggered by detecting high differential pressure between the inlet and outlet from the external digital DP or internal analog DP device.

3. **ACCUMULATION MANUAL** (Pointer 3) - The number of Backflush cycles which was triggered Manually.

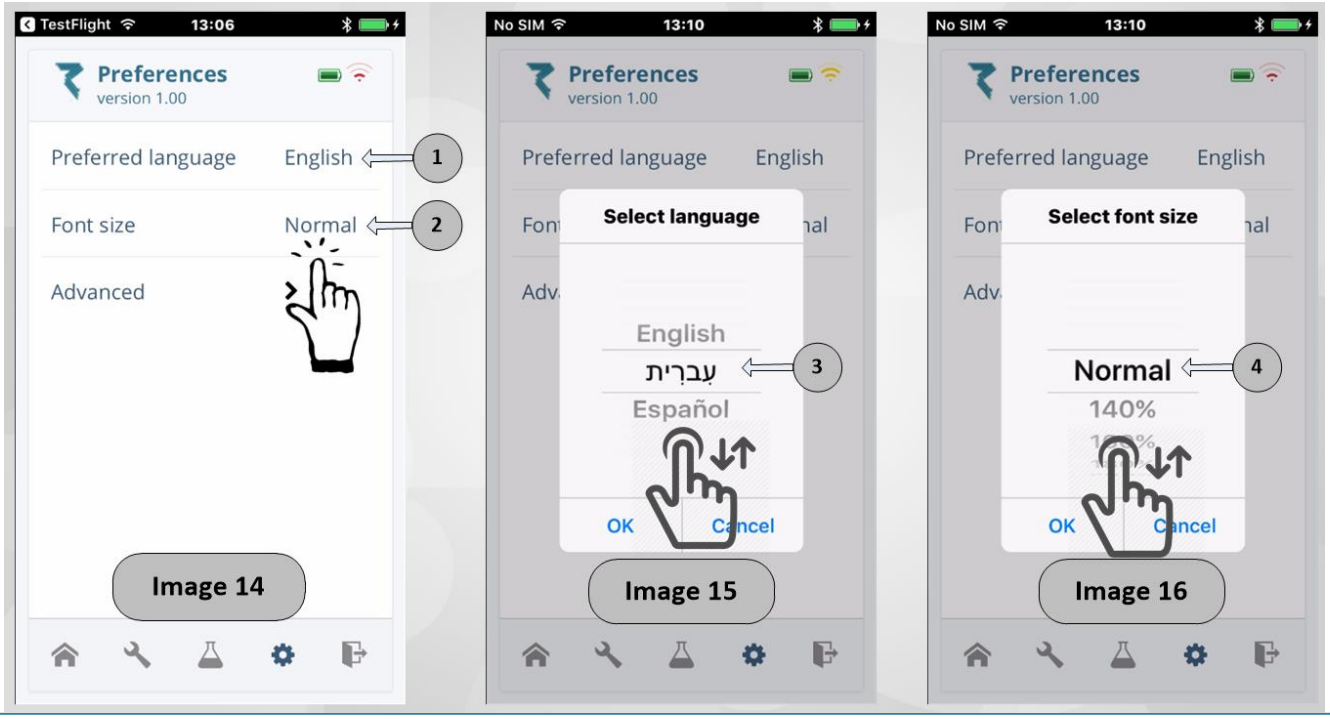
4. **RESET ACCUMULATION** (Pointer 4)- To reset the accumulations, tap on the **RESET ALL** button. After clearing the accumulations, all the accumulations will reset to zero.

User and smartphone application compatibility

For the user's convenience, there is an option to change the application **Language** and the **Font size**. The application suitability has been executed on the **PREFERENCES** screen. **PREFERENCES** screen described on Image 14. The relevant issues are described here below.

APPLICATION LANGUAGE -To change the application **Language**, tap on the **LANGUAGE** button (Pointer 1). Then, a new window will appear and will display the languages which the application supports (Image 15). Select your preferred language by rolling up or down and tap on the **OK** button. The application supports the next languages: English, Hebrew, and Spanish.

FONT SIZE -To change the **font size**, tap on the **FONT SIZE** button (Pointer 2). Then, a new window that displays all the **FONT SIZE** options will appear. Select your preferred **FONT SIZE** by rolling up or down as described in Image 16. The options are: Regular, 140%, 160%, 180% and 200%.



Scanning results list description

The application executes a scanning process that discovers controllers in the vicinity. The scanning results appear on the **SCANNING** screen. The results include a
list of controllers in the vicinity and special symbols that describe the **Receiving signal strength, Controller name, Controller type, Controller state,** and **Batteries voltage level**. This feature gives the advantage of organizing all the controllers in the vicinity and displays them and their statuses on one screen.

The **SCANNING RESULTS** described in figure 17.

The description of every symbol appears in figure 18.

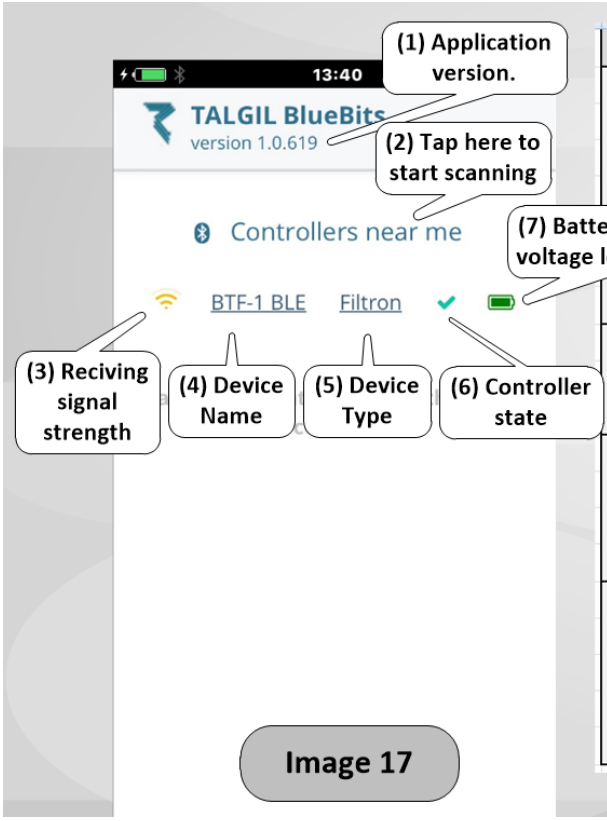


Image 17

SYMBOL NAME	DESCRIPTION	ICON	COLOR
Reciving signal strength	Full reception		Green.
	Medium reception		Yellow.
	Low reception		Blue.
Device name	Frendly name	BTF-1 BLE	
Device type	Controller type	Filtron	
Controller state	Normal state		Green
	Warning		Blue
	Failure		Red
Batteries voltage level	Normal voltage		Green
	Medium voltage		Greenish
	Low voltage		Yellow
	Very low voltage		Red

Image 18

Outstanding system alarms

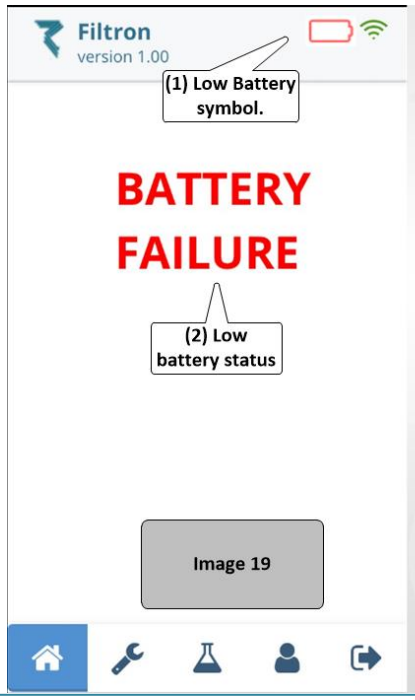
The Filtron Bluetooth announces failures during the backflushing process. The information about failures appears on the **Scanning screen** and the **Operation screen.** The controller informs about **Low battery voltage** and **Looping.**

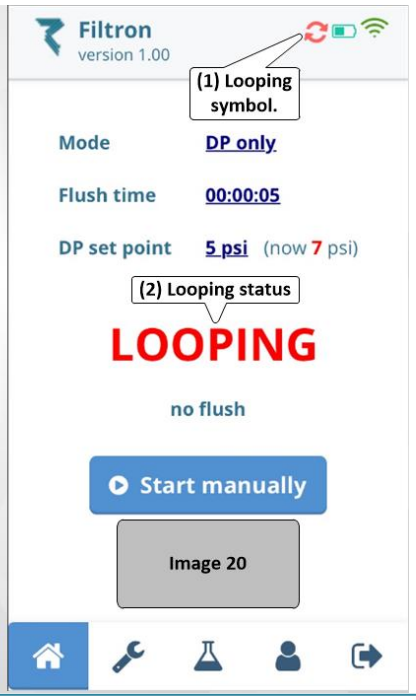
Low Battery Detection-(Image 19) When a **Very low battery voltage** has been detected, the **Low battery** symbol will appear at the upper right corner (Image 19 pointer 1). In addition, the application will display a **BATTERY FAILURE** status and will freeze the controller activity. The **Low battery alarm** is accompanied by a special sound every 20 seconds. To avoid backflush planning, the application will not allow access to the planning screen. The controller will exit from this state when the user will repair the batteries.

Looping--(Image 20) A **Looping** failure rises when the controller detects consecutive backflushing cycles that reach the maximum permitted continuous backflush number which is defined on the **SETTINGS** screen as **MAX LOOP**. When a **LOOPING** has been detected, the controller will not start the flush cycle due to a **DP** sensor. It will start the flush cycle due to **TIME INTERVAL** or **MANUAL** start**.** The **Looping** alarm is accompanied by a special sound every 20 seconds.

The controller will exit from **Looping** status when one of the following conditions met:

1. The **DP** sensor will change his state. In other words, the External digital DP sensor state will change to **OFF,** or **Analog Dp** sensor reading will reduce.
2. The user will press the **RESET** button.





Manual operation

For user convenience and system tests, there is an option to **Manual START** or **STOP** without using the smartphone application. To Manually Start/Stop a flush cycle, press the external **START** button installed on the right corner of the product (Image 21). If the controller is already flushing, press the button to **Manually STOP** the backflushing process.

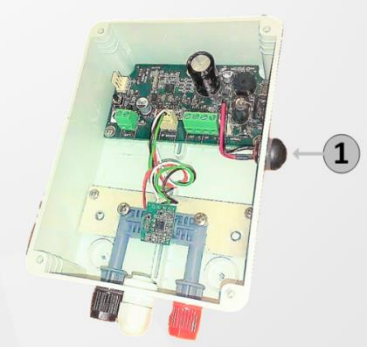


Image 21- Manual Start/Stop button.

Reset the controller

To reset the controller, remove the product cover and press the **RESET** button. After a Hardware **RESET**, the controller stops the backflush process, and the remaining **TIME INTERVAL** changes to the **TIME INTERVAL PLANED.** During the **RESET,** the controller will make a special sound.

Troubleshooting

Problem description	Suggested correction
The controller does not start backflush.	1. Check the Batteries voltage. 2. Set the **Flushing mode** to **DP** or **INTERVAL.** 3. Press the **START** button. The controller is supposed to start one flush cycle.
The Analog DP sensor reading is incorrect.	1. It is recommended to calibrate the DP sensor using the application on the **SETTINGS** screen. 2. Disconnect the pipes from the Analog DP sensor. The analog DP reading is supposed to change to zero.
The external digital DP sensor always **ON.**	1. Disconnect the pipes from the DP sensor. The digital DP state is supposed to change to **OFF.**
The filter does not stop flushing.	1. Make sure the filter is not clogged. 2. To avoid consecutive backflush, disconnect the pipes from the DP sensor. 3. To avoid back flushing due to DP, disconnect the DP sensor wires from the controller.

Image 22 – Trouble shooting table.

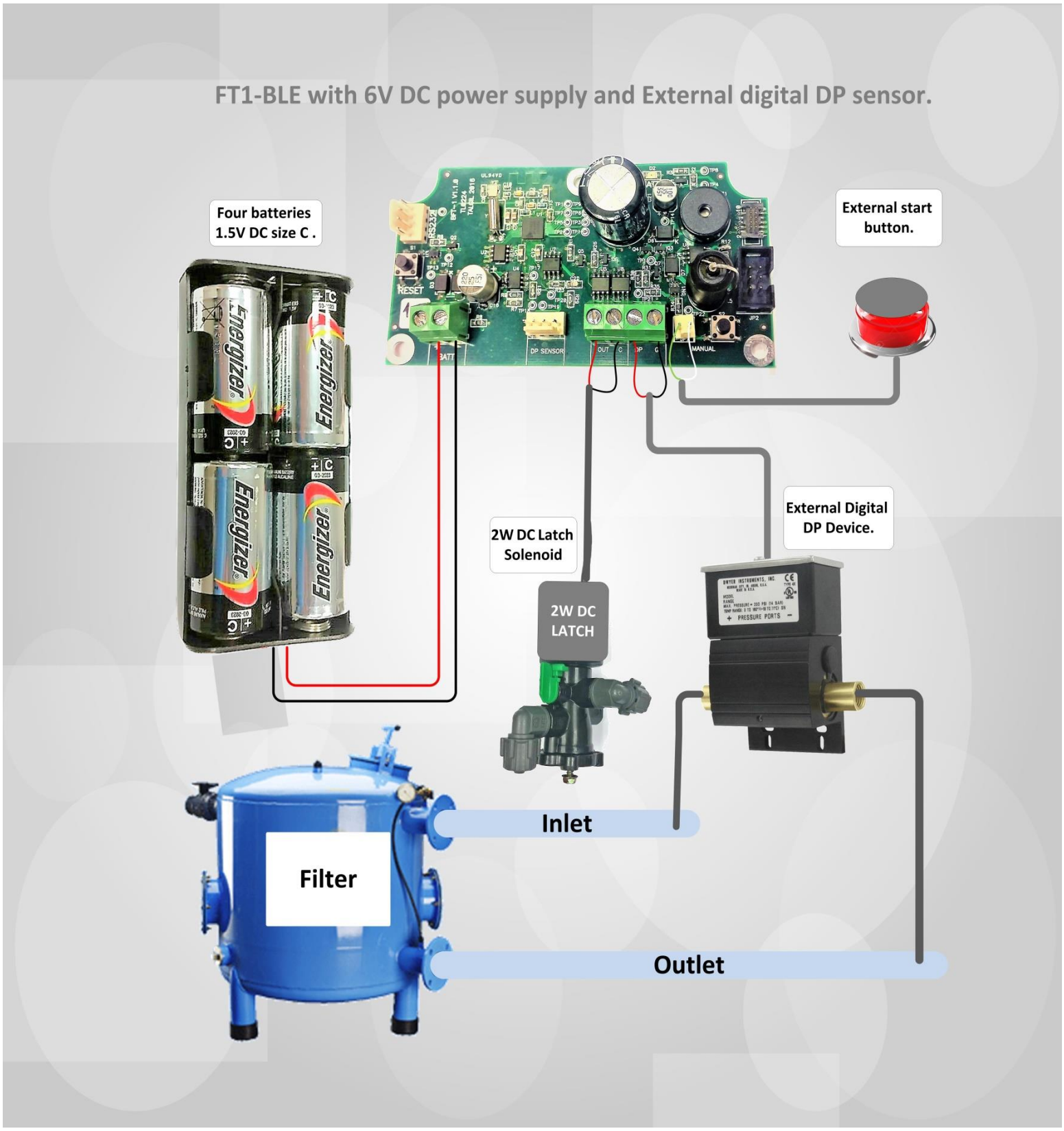


Image 23- FT1-BLE with 6V DC power supply and Build in Analog DP sensor

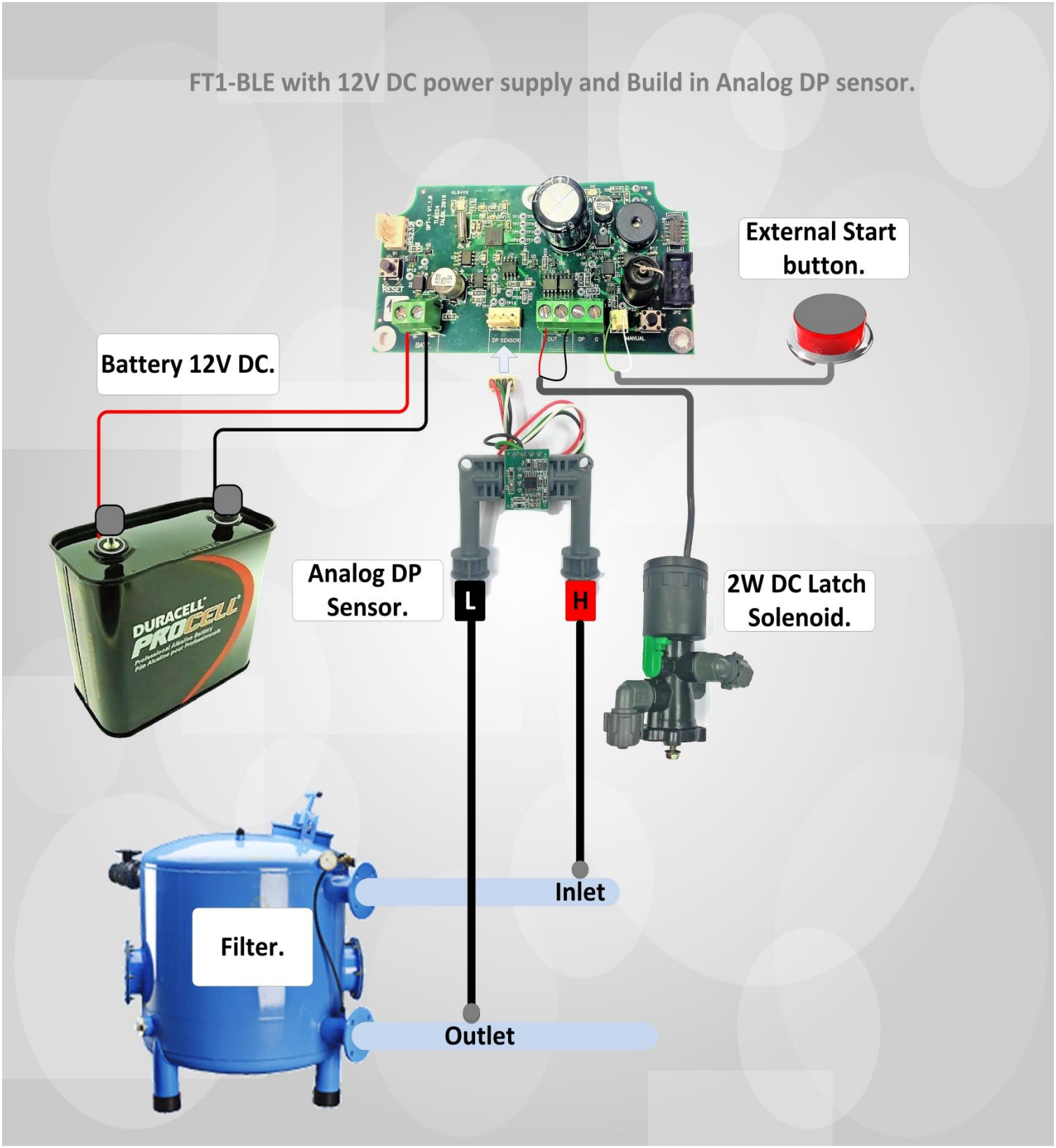
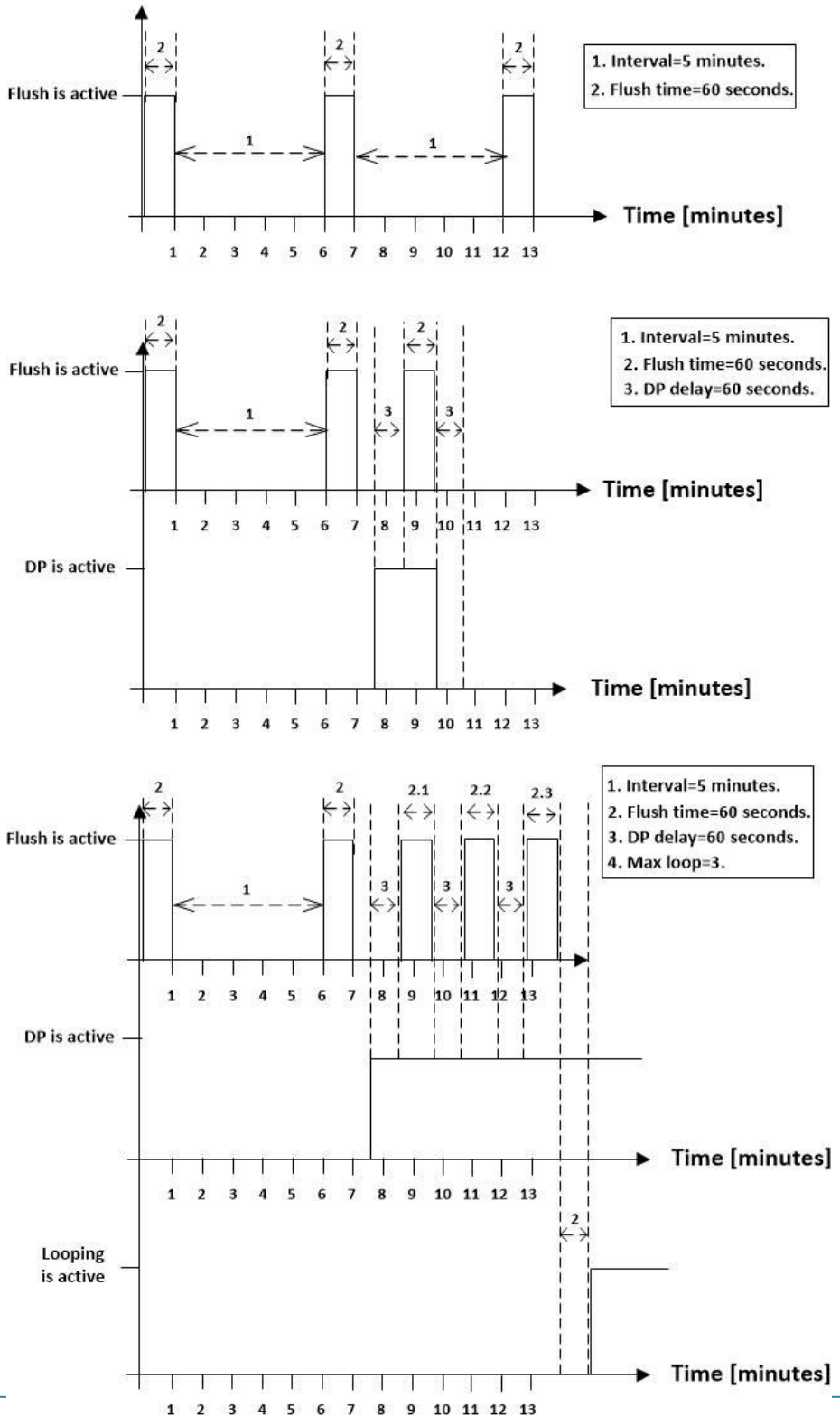


Image 24- FT1-BLE with 12V DC power supply and Build in Analog DP sensor.

Time Diagram

Flush mode= Time & DP



Technical details

Power supply options	Voltage
Four Alkaline batteries 1.5V size C.	**6V DC**
12V DC Alkaline battery.	**12V DC**
Rechargeable Battery 12V DC 3.3Ah with 5W Solar panel.	**12V DC**

Operation output: Operates 2 wires solenoid 12V DC latch.

Output signal type: 16 Volts, 90 milli seconds.

Digital input: Read an external digital DP sensor.

Analog input: Read a build-in analog DP sensor.

Remark: The controller support only one DP sensor. Analog or Digital but, not both of them together.

Operating Temperature and humidity: 0-60℃ , 0-90%.

Current consumption: Sleep mode 50 micro Ampere (Average).

During communication: 5 milliamperes.

During charge pump: 100 milliamperes.

Dimensions: Length: 55 mm. Width: 105 mm. Deep: 30 mm.

Revision History

The table below describes the changes which have been made to this document.

Date	Change	Description
17 September 17		Writing the user manual.