VIRTUAL ANALOG DP SENSOR
USER MANUAL

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CONTROL SYSTEMS

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1 INTRODUCTION:

Starting with version 4.100, the Dream 2 controller supports Virtual Analog sensors.

A Virtual Analog sensor is an Analog sensor that is not connected to the controller (No physical wiring to the Interface 4 Ana or RTU).

The Virtual Analog sensor returns calculated values based on formula.

The formula can include one or several Analog sensors.

This quick user manual explains how to add a virtual sensor and how to use it as a Virtual Analog DP sensor for Filter site.

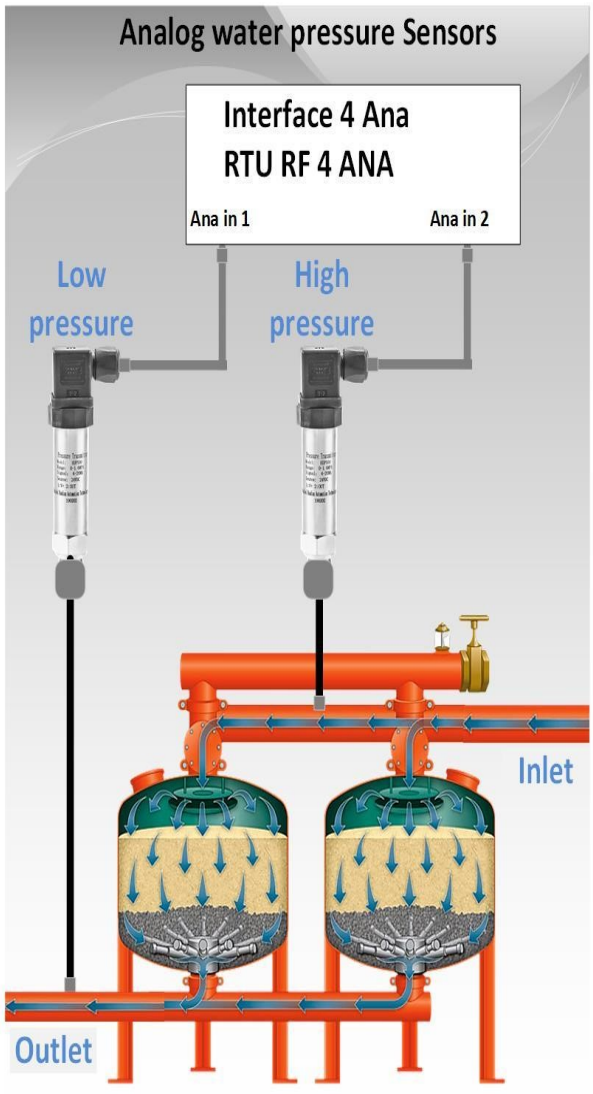


Image 1- Analog water pressure sensors.

2 ADDING A VIRTUAL SENSOR TO THE DREAM 2 IMAGE.

To add a Virtual analog sensor to the Dream 2 image, use the **Image Maker** to add regular Analog sensors. The type of the sensors (Regular or Virtual) is being defined in **Utilities** screen.

1. To add a Virtual analog sensor to the Dream 2 image, start the DreamConsole PC software. Go to **Tools->Target tool->Image maker**.
2. Skip to Step 9 called **Other objects.**
3. In **Other objects** screen, add Analog sensors as needed.

For example, Figure 1 shows 3 Analog sensors. 2 real Analog sensors + 1 virtual Analog sensor.

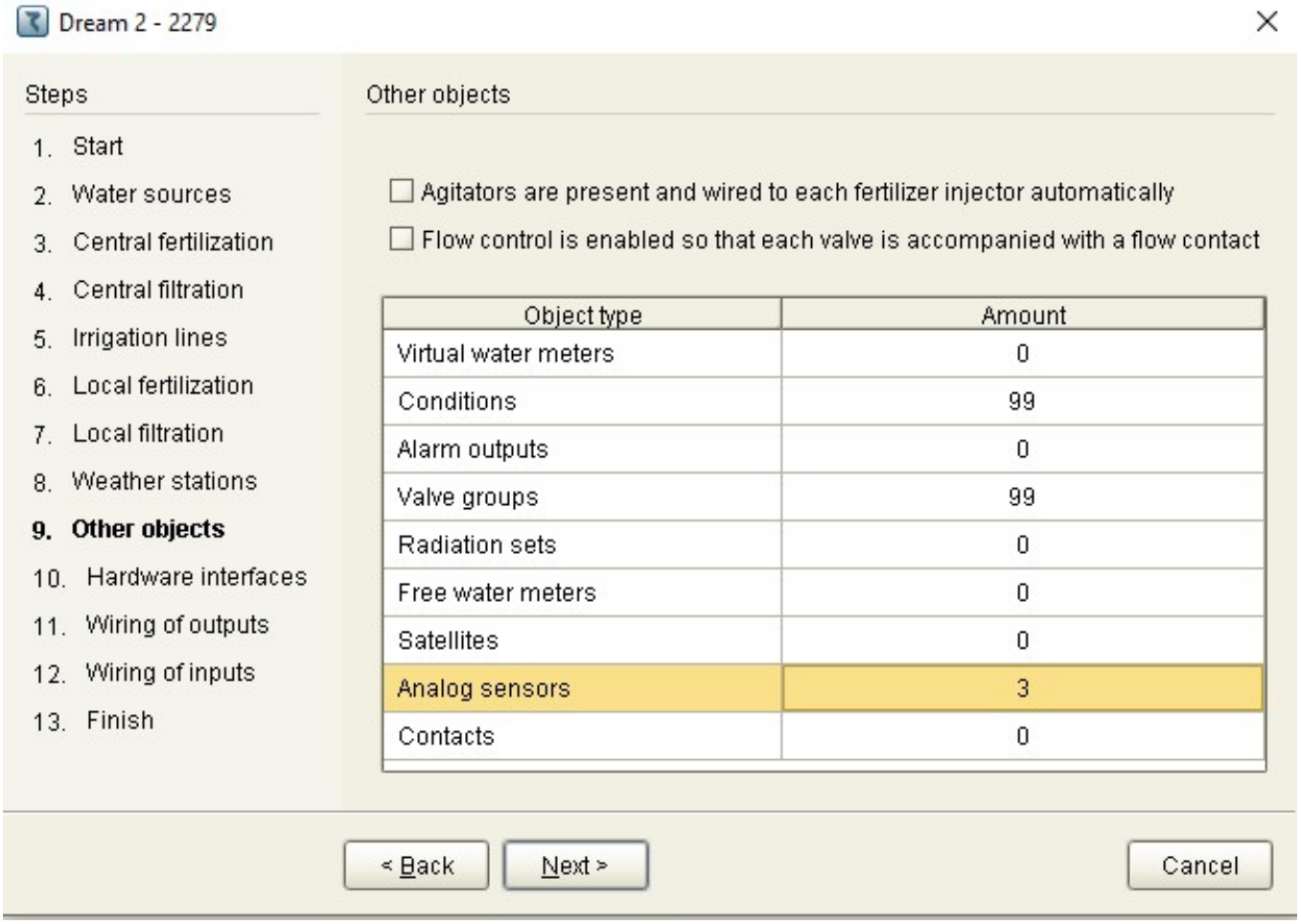


Figure 1- Other Objects screen shows 3 Analog sensors. 2 real sensors + 1 Virtual sensor.

3 DEFINITION OF ANALOG DP SENSOR FOR BACKFLUSHING

1. In Step 12 called **Wiring of Inputs**, do not set the Interface address, RTU, and Input number for the virtual sensor.
2. Select the DP sensor that belongs to the Filter site.
3. On **Sensor** column, select the Virtual Analog sensor.

For example, Analog sensors 1 and 2 are real Analog Water pressure sensors.

Analog sensor 3 is Virtual Analog sensor.
Sensor 3 is being used as Virtual DP sensor for **Line 1 filter site DP sensor**.

4. To finish, skip to Step 13 called **Finish**, and deploy the new image to the Dream 2.

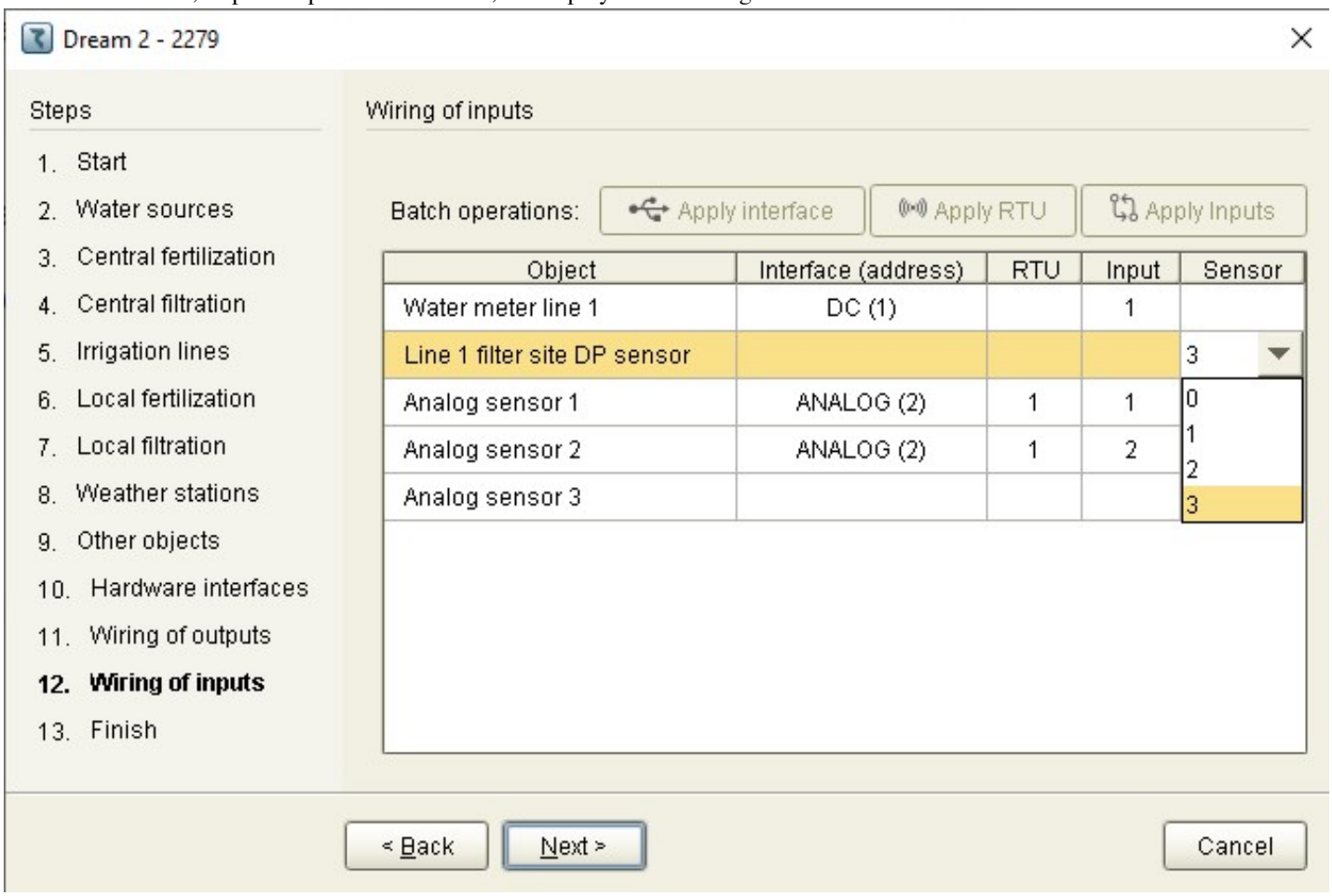


Figure 2- Wiring of Inputs. Analog sensor 3 is being used as Analog DP sensor.

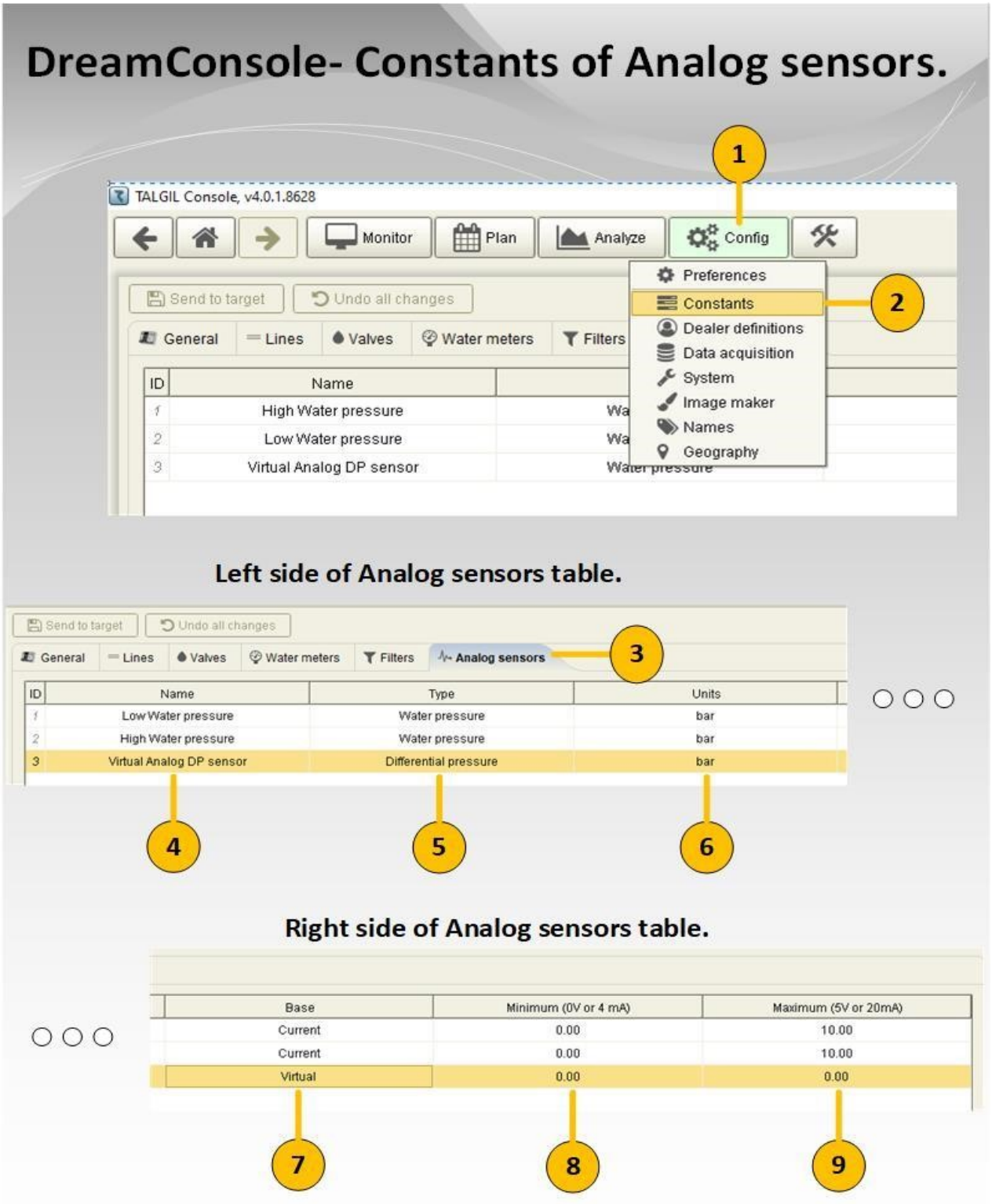


Image 2- Constants of Analog sensors.

4 CONSTANTS OF ANALOG SENSOR

1. In the **DreamConsole** PC Software, go to **Config** (Pointer 1 image 2).

2. Under **Config** menu, select **Constants** (2).

3. Click the **Analog sensors** tab (3).

4. Grant a **Name** for the Virtual Analog sensor (4)**.**

5. Select the appropriate sensor **Type** (5).

6. Select the **Units** of the Virtual sensor (6).

7. The **BASE** of Virtual sensor should be **Virtual** (7).

8. **Minimum** and **Maximum** range should be **0 (Zero)** (8,9).

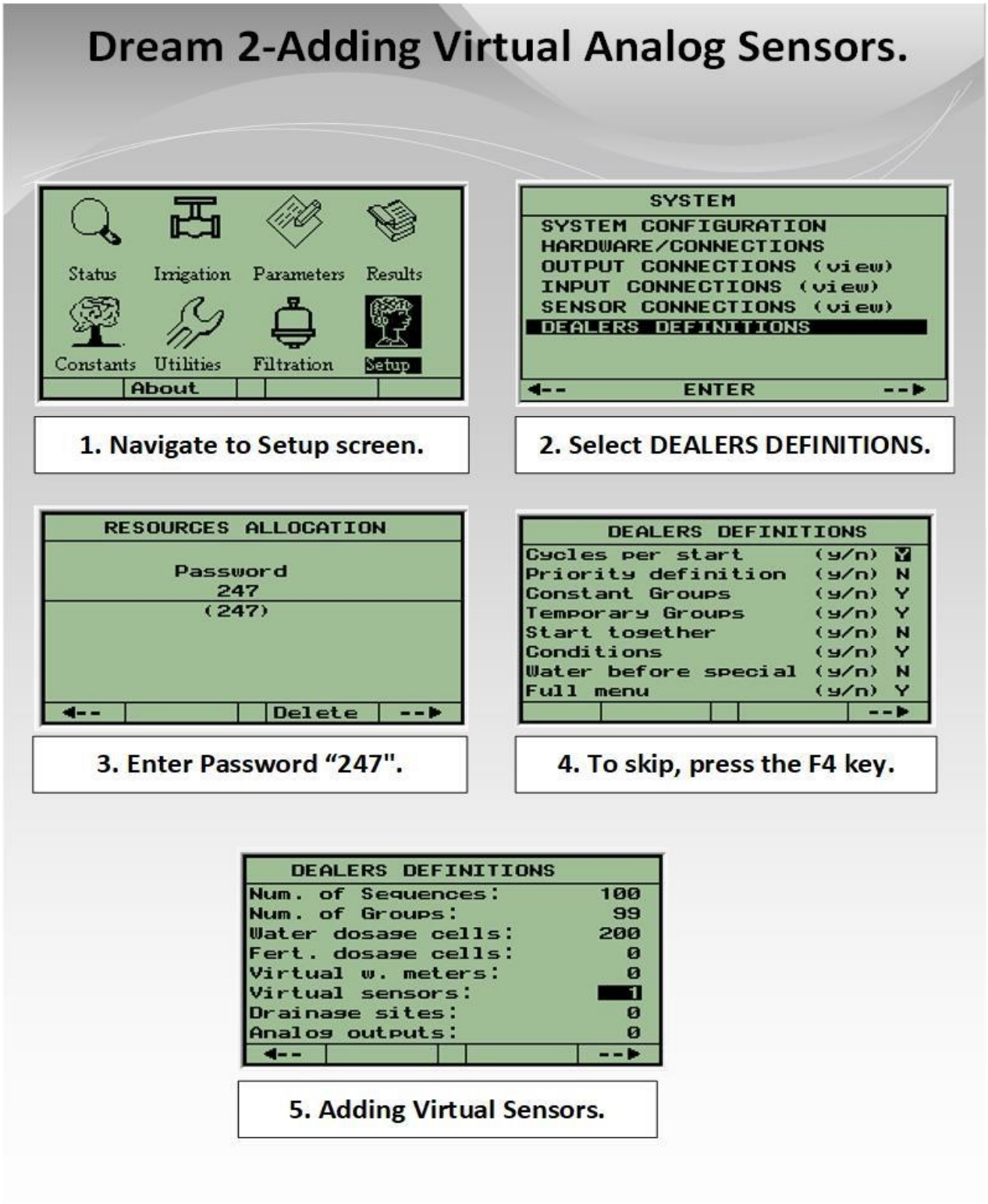


Image 3 – Adding Virtual Sensors via the MMI.

5 ADDING VIRTUAL ANALOG SENSOR VIA THE MMI

Second option to add **Virtual Analog Sensors** is using the MMI (Directly from the Dream 2 controller).

1. To add **Virtual Analog sensor** to the Dream 2 controller, navigate to **Setup screen (Image 3 pointer 1)** and press the **Enter** key.

2. Select **DEALERS DEFINITIONS (2)** and press the **Enter** key.

3. Enter the password **247 (3)** then press the **Enter** key.

4. To skip to the screen that contain the **Virtual sensors**, press the **F4 (->)** key.

5. Add Virtual sensors ass needed (5).

6. To exit, press the **F4 (->)** key.

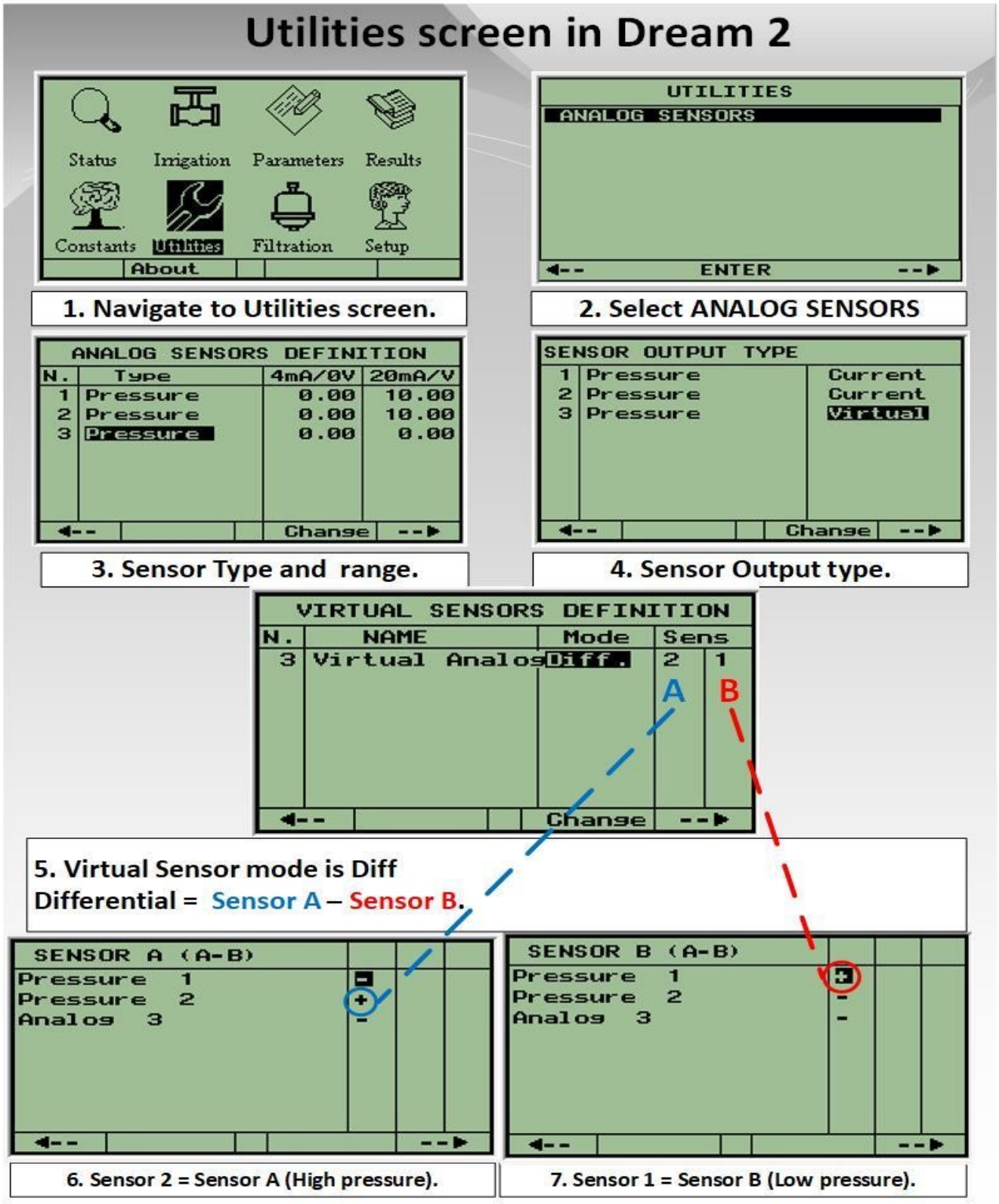


Image 4 - Utilities screen in the Dream 2. Mode of Virtual Analog sensors.

6 MODE OF THE VIRTUAL ANALOG SENSOR

To set the **Mode** of Virtual Analog sensors, define the formula that is being used to calculate the current value of the Virtual sensor. For now, the **Mode** of Virtual Analog sensor can be defined in the Dream 2 MMI (The DreamConsole and Dream Spot do not support this **Mode**).

7. To define the Virtual Analog sensor **Mode**, on **Menu** screen, move the cursor to **Utilities** screen (Image 4 pointer 1) and press the **Enter** key.

8. Move the cursor to **ANALOG SENSORS** and press the **ENTER** KEY.

9. In the **ANALOG SENSORS DEFINITION** screen, select the appropriate sensor **Type** and set the **Minimum** and **Maximum** range to **0** (**zero**). To skip to the next screen, press the **F4** (->) key.

10. The Virtual sensor **Output type** should be **Virtual.** To skip to the next screen, press the **F4** (->) key.

11. To calculate the differential pressure of two Analog pressure sensors where

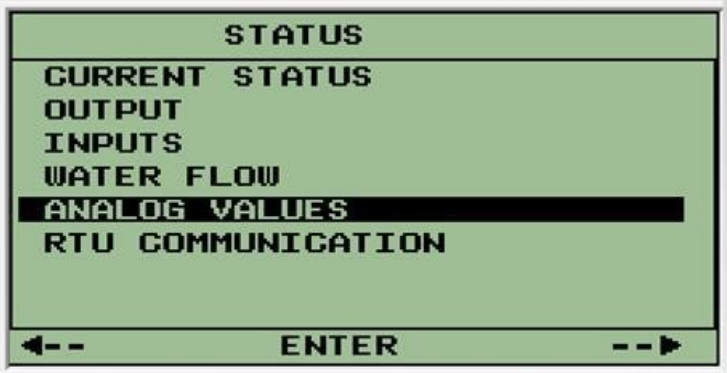
    Sensor **A** is **High** pressure (Inlet) and Sensor **B** is **Low** pressure (Outlet), select the **Diff** mode (Differential). The formula is: **Diff (A,B) = Sensor A – Sensor B.**

12. To select the Sensor to be used in column **A**, move the cursor to left **Sens** column. Press **Change (F3)** and select the appropriate sensor from the Sensors list. To select a Sensor, move the cursor to the desired sensor and press **F2 (+).** To exit, press the **F1 (<-)** key.

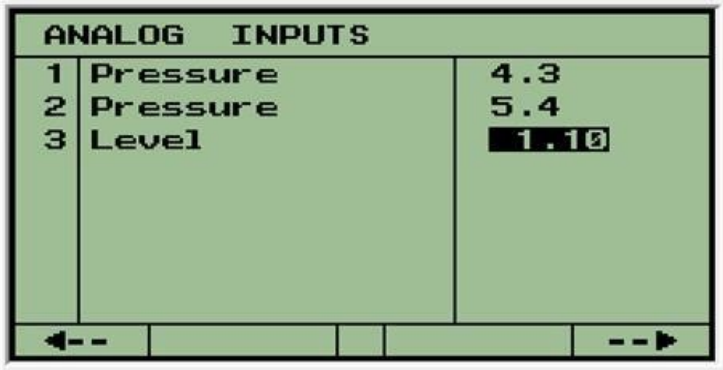
13. To select the Sensor to be used in column **B**, move the cursor to right **Sens** column. Press **Change (F3)** and select the appropriate sensor from the Sensors list. To select a Sensor, move the cursor to the desired sensor and press **F2 (+).** To exit, press the **F1 (<-)** key.

Dream 2-Monitoring Analog Sensors.

1. Navigate to Status screen.



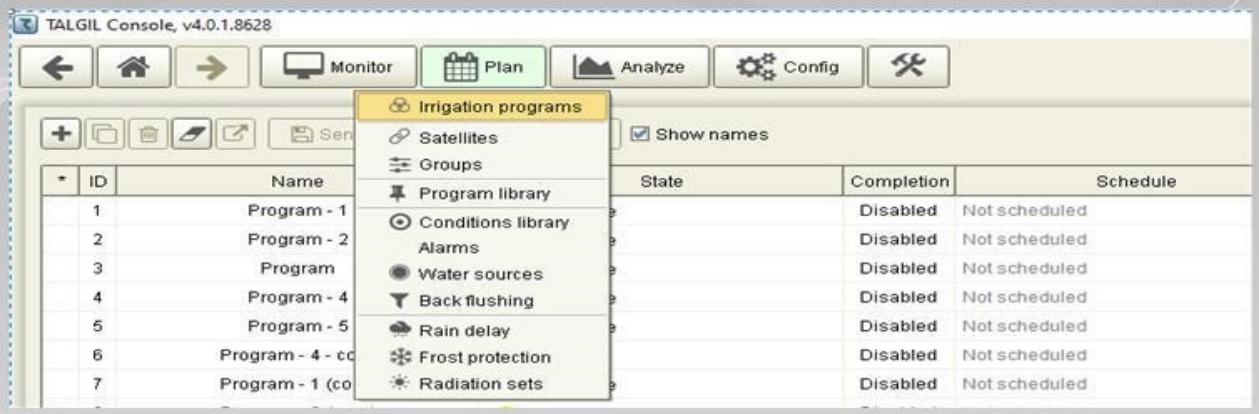
2. Scroll down to ANALOG VALUES



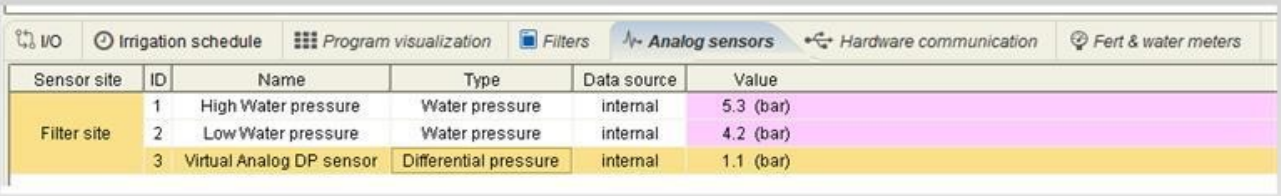
3. DP = 5.4 - 4.3 = 1.1

Image 5 – Monitoring Analog sensors in Status screen.

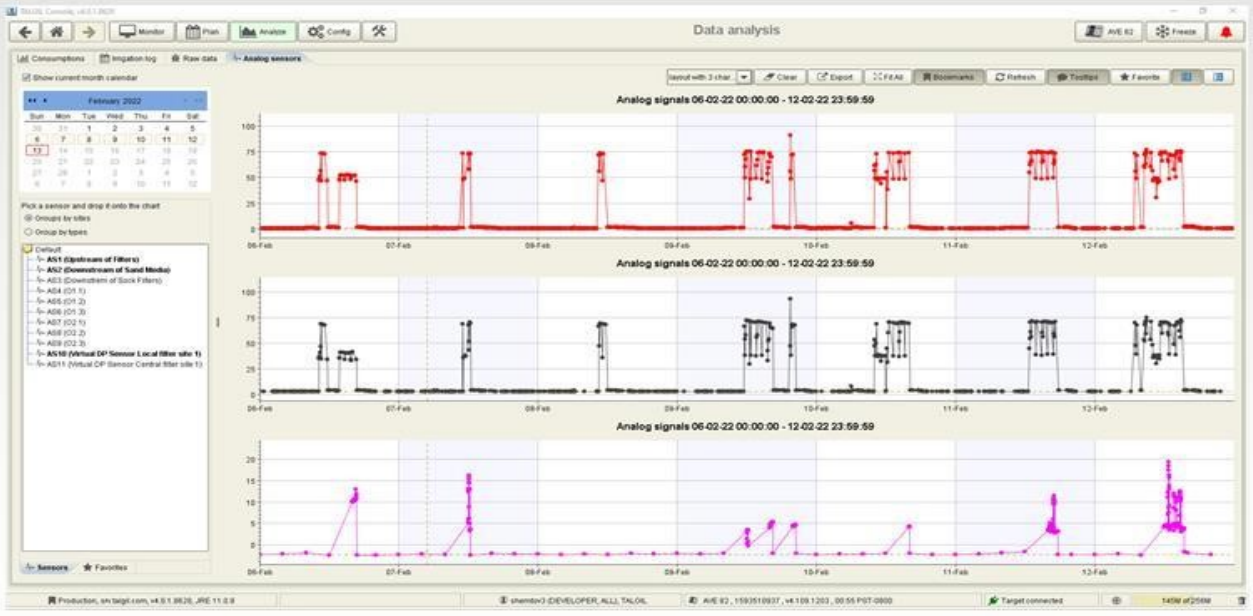
DreamConsole-Monitoring Analog Sensors.



1. DreamConsole-Plan->Irrigation programs



2. Lower layout- Analog Sensors tab.



32. Analyze- Analog Sensor graphs.

Image 6 – DreamConsole Monitoring Analog sensors in Analog Sensors screen.

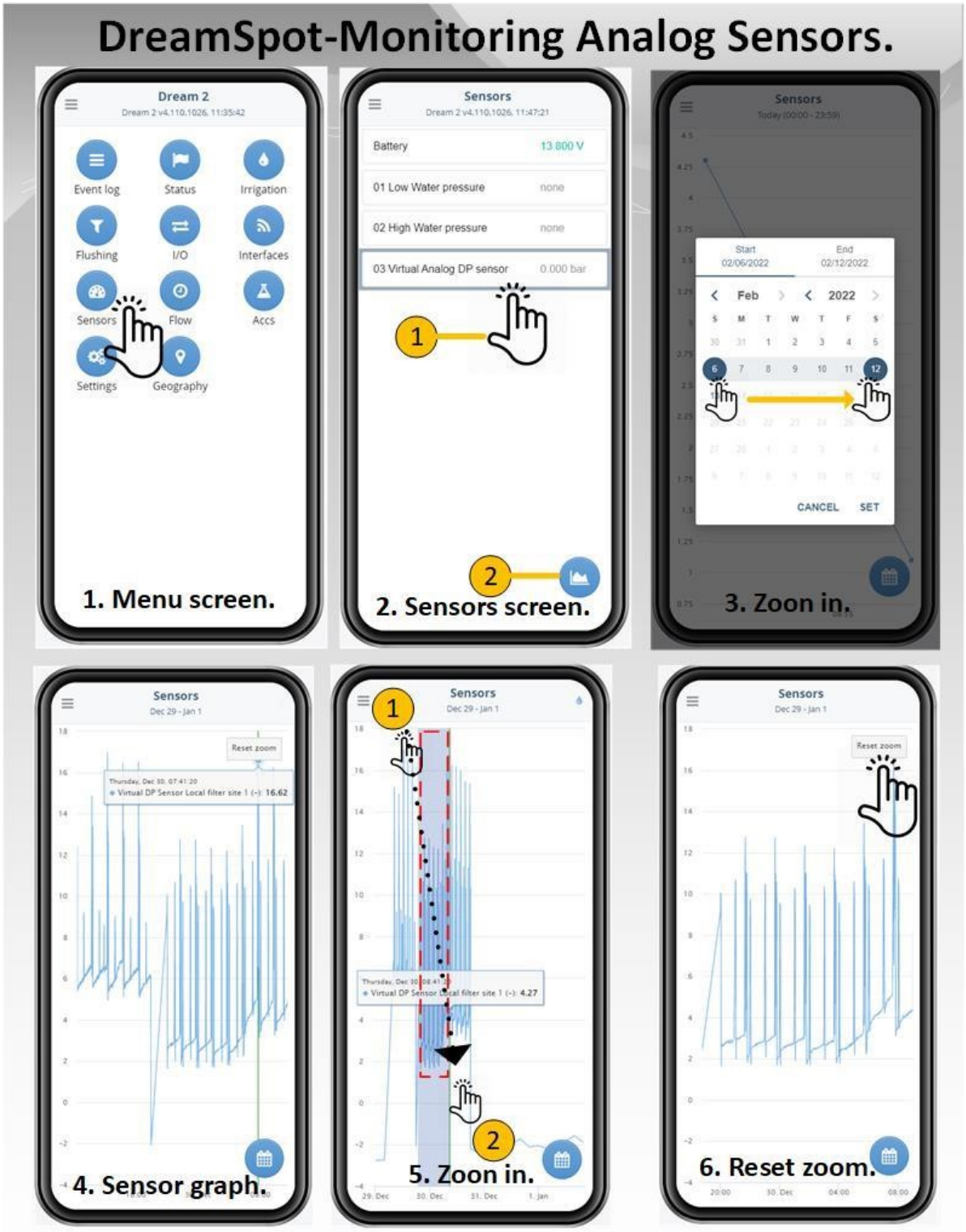


Image 7 – DreamSpot- Monitoring Analog sensors.

7 MONITORING ANALOG SENSORS

7.1 Monitoring Analog sensors on Dream 2

To monitor Analog sensors in the Dream 2, navigate to **Status** screen (Image 5 pointer 1).

Select **ANALOG VALUES** (2) and press the **Enter** key.

The current Analog values will appear on the screen (3).

7.2 Monitoring Analog sensors on DreamConsole

To monitor Analog sensors in the DreamConsole PC software, navigate to **Plan->Irrigation programs** screen (Image 6 pointer 1). Enable full layout to see the Lower layout screen.

Click the **Analog sensors** button. A table of Analog sensors and current values will appear (2). To Display the sensors graphs. go to **Analyze** screen, Select the **Analog** sensors tab. On the upper left corner, select days from the Calendar. Drag and drop sensors to the **Analog signals** window (3).

7.3 Monitoring Analog sensors on DreamSpot

To monitor Analog sensors in the DreamSpot app, navigate to **Sensors** screen (Image 7 pointer 1). A list of Analog sensors (Real and virtual) and their current values will appear. To
Display the sensor graph, Tap the desired sensor (2.1). Tap the calendar on the lower right (2.2) Select a range of days (Or one day) from the Calendar (3). The Sensor graph will appear on the screen (4). To Zoom in, select the area to focus on by creating a rectangular on the desired area on the graph (5).

8 REVISION

Document History - To maintain a list of changes being made

Document Version	Date	Author	Description of Change
V0.3	February 13, 2021	Shem Tov	Writing the quick user manual.

Table 1- Revision and history

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