FT1 DC & LCD

Talgil computing and control
Naaman center,
Haifa-Aco road
TEL: 972-4-9506050
Fax: 972-4-8775949
Email:talgil33@netvision.net.il
September 2016

FT1 DC & LCD

USER MANUAL

VERSION 1.0

FT1 DC & LCD

Installation instructions

&

User manual

Controller version 01.00.₀₂

October 2016

Table of content

Introduction

Talgil Computing & Control LTD thanks you for purchasing the professional Filter backflush controller "FT1 with LCD & DP".

The FT1 with LCD & DP presents you with innovative styling, new hardware design, flexibility, professional properties, user friendly interface and high level of reliability.
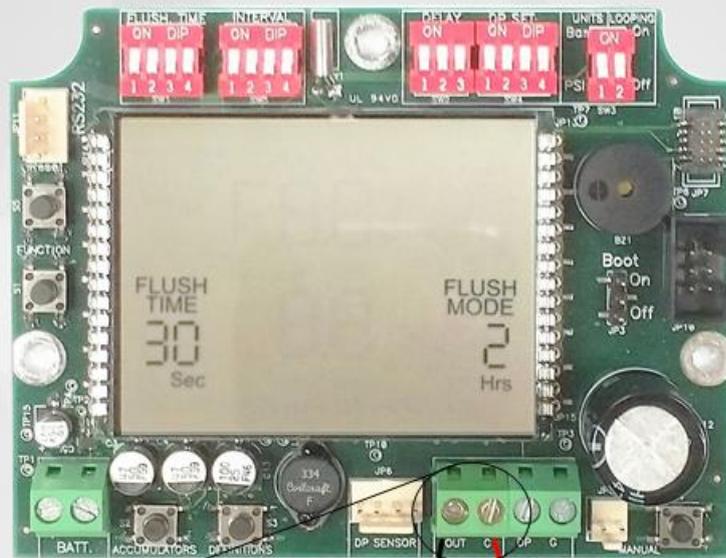
The FT1 with LCD & DP is suitable for gravel filter, disc filter and screen filter.

Talgil Computing & Control LTD wishes you successful work with your new Filter backflush controller and on down the road.

List of features

- **One output:** One output for single automatic filter station. The output operates 2 wire 12V DC latching solenoid.
- **One digital DP input:** Reads a dry contact from external DP device
- **One analog DP input:** Reads an analog DP sensor from an internal electronic DP device.
- **Three operation mode:** No flushing, DP only, Time interval and DP.
- **DP SET:** The differential pressure value that will cause a Backflush.
- **DP ACTUAL:** Current analog DP reading on real time.
- **DP delay:** A delay that takes place when DP ACTUAL is higher than DP SET, its purpose to prevent unnecessary back-flushes.
- **Looping:** A parameter which protects the filtration station from unwanted continuous flushes
- **Calibration:** Feature for calibration of the analog DP reading.
- **Manual start:** Enables manual start or stop of the flushing cycle.
- **Three Accumulation types:** DP, Time and Manual flushing.
- **Units:** Two differential pressure units: Bar or PSI.
- **Graphical LCD:** For convenience, Equipped with large graphical LCD.
- **Buzzer:** Provides information about normal process and failures.
- **Energy:** Low energy consumption (20uA). The FT1 uses 4 alkaline batteries 1.5 Volts size C Or 12V DC power supply.
- **Small and compact hardware and package.**

Figure 1- FT1 DC & LCD - OUTPUT WIRING

Figure 2- FT1 DC & LCD – INPUTS- DIGITAL EXTERNAL DP DEVICE.

Figure 3- FT1 DC & LCD – INPUTS- ANALOG INTERNAL DP DEVICE.
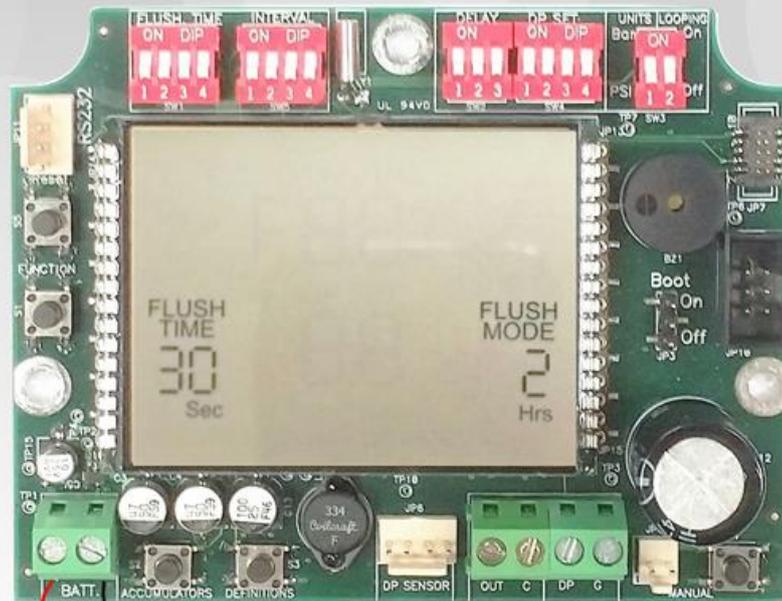
Figure 4- FT1 DC & LCD – 6V DC POWER SUPPLY.

Figure 5- FT1 DC & LCD – 12V DC POWER SUPPLY.

FT1 DC & LCD :HARDWARE DESCRIPTION.

1. RS232 SOCKET.
2. RESET BUTTON.
3. FUNCTION BUTTON.
4. LCD SOCKET.
5. CPU.
6. BUZZER.
7. BOOT JUMPER.
8. PROGRAMMING SOCKET.
9. FLUSE TIME DIP SWITCH BLOCK.
10. INTERVAL DIP SWITCH BLOCK.
11. DP DELAY DIP SWITCH BLOCK.
12. DP SET DIP SWITCH BLOCK.
13. UNITS/LOOPING DIP SWITCH BLOCK.
14. LCD.
15. POWER SUPPLY TERMINAL BLOCK.
16. ACCUMULATIONS BUTTON.
17. DEFINITIONS BUTTON.
18. INTERNAL ANALOG DP SOCKET.
19. OUTPUT TERMINAL BLOCK.
20. INPUT FOR DIGITAL EXTERNAL
      DP TERMINAL BLOCK.
21. MANUAL START/STOP
        BUTTON.

Figure 6- FT1 DC & LCD – HARDWARE DESCRIPTION.

PROGRAMING THE FT1 & LCD

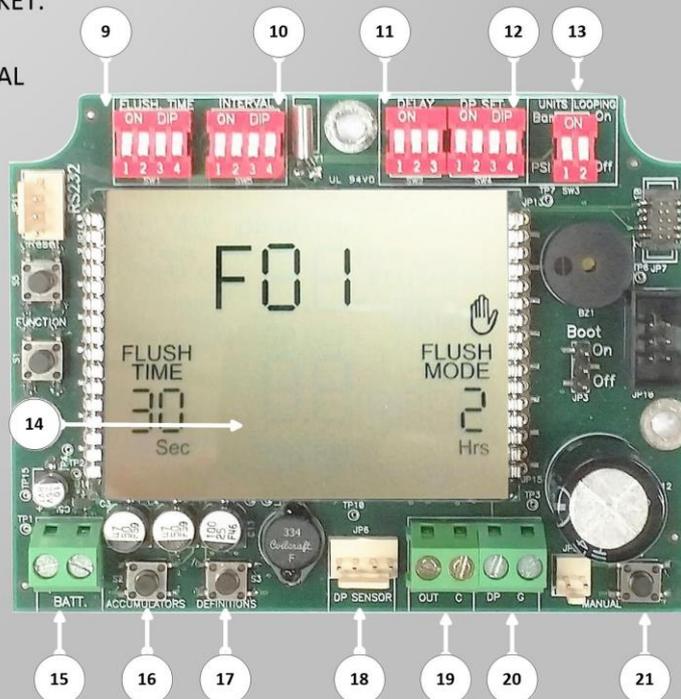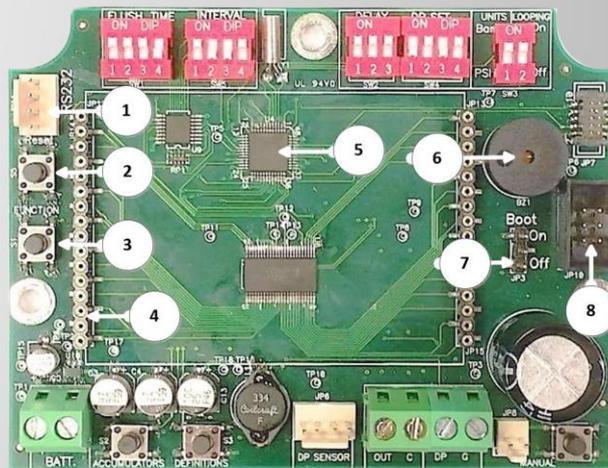In this chapter you will receive an explanation on the programing of the FT1 with LCD & DP controller.

The programming process is performed by setting the **Dip switches** blocks.

Each dip switch block is in charge of one or two functions. The dip switch block name appears above the block. The settings are described on figure 7.

	FLUSHING TIME					INTERVAL					DP DELAY					DP SET POINT							
	SW1			FLUSH TIME	SW5				INTERVAL	SW2			DP DELAY	SW4				DP SET POINT		SW3		UNITS	LOOPING
	1	2	3	4		1	2	3	4		1	2	3		1	2	3	4	Bar	Psi	1	2		
0	0 0 0 0	5 sec	0 0 0 0	OFF	0 0 0	0 sec	0 0 0 0	Not active	0 0	Psi	Off
1	1 0 0 0	8 sec	1 0 0 0	DP only	1 0 0	5 sec	1 0 0 0	0.1	1	1 0	Bar	Off
2	0 1 0 0	10 sec	0 1 0 0	5 min	0 1 0	10 sec	0 1 0 0	0.2	2	0 1	Psi	On
3	1 1 0 0	12 sec	1 1 0 0	10 min	1 1 0	15 sec	1 1 0 0	0.3	3	1 1	Bar	On
4	0 0 1 0	16 sec	0 0 1 0	15 min	0 0 1	20 sec	0 0 1 0	0.4	4			
5	1 0 1 0	20 sec	1 0 1 0	20 min	1 0 1	25 sec	1 0 1 0	0.5	5			
6	0 1 1 0	25 sec	0 1 1 0	30 min	0 1 1	30 sec	0 1 1 0	0.6	6			
7	1 1 1 0	30 sec	1 1 1 0	45 min	1 1 1	35 sec	1 1 1 0	0.7	7			
8	0 0 0 1	45 sec	0 0 0 1	1 hour			0 0 0 1	0.8	8			
9	1 0 0 1	1 min	1 0 0 1	2 hours			1 0 0 1	0.9	9			
10	0 1 0 1	1.5 min	0 1 0 1	4 hours			0 1 0 1	1.0	10			
11	1 1 0 1	2 min	1 1 0 1	8 hours			1 1 0 1	1.0	11			
12	0 0 1 1	3 min	0 0 1 1	12 hours			0 0 1 1	1.0	12			
13	1 0 1 1	4 min	1 0 1 1	18 hours			1 0 1 1	1.0	13			
14	0 1 1 1	5 min	0 1 1 1	24 hours			0 1 1 1	1.0	14			
15	1 1 1 1	6 min	1 1 1 1	72 hours			1 1 1 1	1.0	15			

A filter must be installed on the HIGH PRESSURE (red) tube

FILTRON FT1 & LCD

Figure 7 – The label on the FT1 cover - dip switch status and its meaning.

FLUSHING TIME:

The **FLUSH TIME** indicates the time duration for back flushing the filter.

The **FLUSH TIME** value appears on the left bottom corner of the LCD on the opening screen.

On Figure 8 the **FLUSH TIME** is **30 seconds**.

Figure 8 - FLUSH TIME LCD display.

Possible **FLUSH TIME** values:

5,8,10,12,16,20,25,30 and 45 seconds

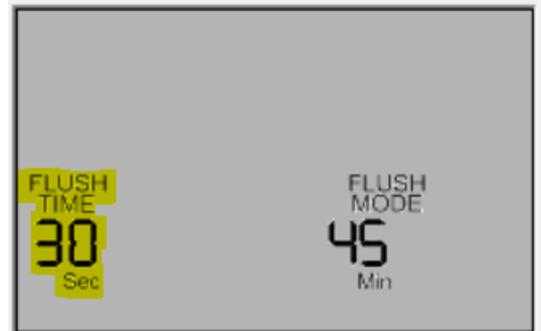1,1.5,2,3,4,5 and 6 minutes

The dip switch settings on Figure 8 are:

INTERVAL:

The **INTERVAL** indicates the time duration between backflush cycles.

The **INTERVAL** appears value on the right bottom corner of the LCD on the opening screen.

On Figure 9 the **INTERVAL** is **4 hours**.

Figure 9 - INTERVAL LCD display.

Possible **INTERVAL** values:

OFF- No flushing

DP - Flush only according to DP

5, 10,15,20,25,30,35,40 and 45 minutes

1,2,4,8,12,18,24 and 72 hours

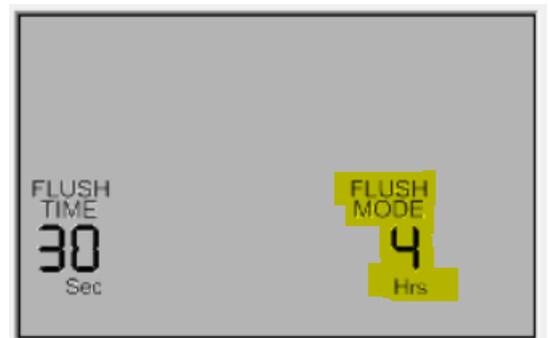The dip switch settings on Figure 9 are:

DP DELAY:

The **DP DELAY** indicates the time duration in which the actual differential pressure (DP ACTUAL) has to be higher than the defined value to flush (DP SET).

The **DP DELAY** value appears on the Upper left corner of the LCD on the definition screen or on the main screen when it is active.

On Figure 10 the **DP DELAY** is **30 seconds**.

Figure 10- DP DELAY display

Possible **DP DELAY** values:

0, 5, 10, 15, 20, 25, 30 and 35 seconds

The dip switch settings on Figure 10 are:

DP SET and DP ACTUAL

The **DP SET** indicates the differential pressure value in which we want the controller to backflush.

The **DP ACTUAL** indicates the actual differential pressure present as measured by the analog sensor.

Both **DP SET & ACTUAL** only appear if the internal analog DP sensor is present. They appear in the center of the opening screen.

Figure 11 - DP ACTUAL and DP SET POINT

On Figure 11 the **DP SET** is **1 Bar** and **DP ACTUAL** is **0.7 Bar**

Possible **DP SET** values:

0.0- No DP SET, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 and 1.0 Bar
0- No DP SET, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 ,11 ,12 , 13, 14 and 15 psi

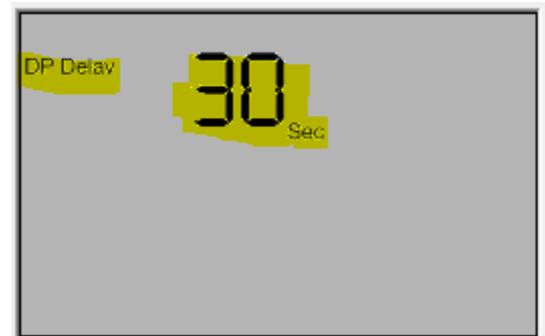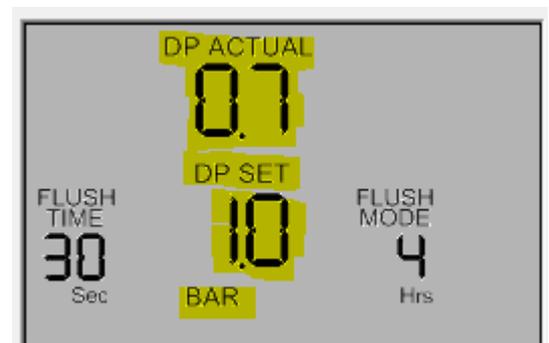The dip switch settings on Figure 11 (DP SET) are:

UNITS:

The **UNITS** parameter indicates the differential pressure value units
Possible **UNITS** values - PSI or Bar.
In order to use Bar pressure units, turn On the **UNITS** micro switch (Figure 12).
In order to use PSI pressure units, turn Off the **UNITS** micro switch (Figure 13).

Figure 12- Using Bar

Figure 13- Using PSI

LOOPING:

The **LOOPING** parameter determines whether the controller will react to continuous back flushing situation or not. Looping alarm is raised after 3 consecutive back flushes caused by DP. Upon entering a looping controller ignore the DP sensor and flush only by time, until problem is solved or a hard reset.
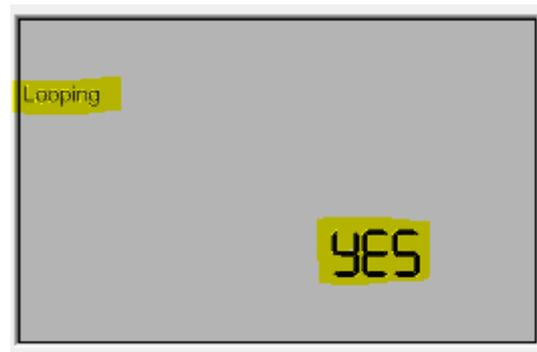

Figure 14 - Looping

The **LOOPING** value appears on the Upper left corner of the LCD on the definition screen or on the main screen when looping alarm is active.

On Figure 14 the **LOOPING** is **Yes**.

Possible **LOOPING** values - Yes or No.

On Figure 15 **LOOPING** is set to **Yes**.

Figure 15- Using Looping

RESET BUTTON:

The **RESET** button enables resetting the controller. After performing reset function, all the data is saved except the left value of **INTERVAL (the number of intervals which was left before the reset).**

FUNCTION BUTTON:

The **FUNCTION** button has thee roles:

1. Preforming Calibration - For more details, see **CALIBRATION**.
2. Resetting the accumulations - For more details, see **ACCUMULATIONS**.
3. Showing **INTERVAL LEFT** – By continuously pressing it no the opening screen.

ACCUMULATORS BUTTON:

The **ACCUMULATORS** button navigating to the **ACCUMULATIONS** screens. For more details, see **ACCUMULATIONS**

DEFINITION BUTTON:

The DEFINITION BUTTON enables watching and editing the controller's definitions. The items are: DP DELAY, LOOPING, UNITS, Calibration and controller's version.

MANUAL BUTTON:

MANUAL button enables manual **START or STOP** of the flushing cycle. If the controller is between cycles, clicking on **MANUAL** button will manually start one backflush cycle. If the controller is already flushing, clicking on **MANUAL** button will manually stop the flush cycle.

CALIBRATION:

In order to calibrate the analog DP sensor, the controller has a special screen that enables performing **CALIBRATION**.

In order to get to the **CALIBRATION** screen, click on **DEFINITION** button four times.

The **CALIBRATION** screen exists only if there is an internal analog DP is connected.

Figure 16- CALIBRATION screen

To start the calibration process:
1. Disconnect the high and low DP pressure pipes from the DP sensor.
2. Click on **FUNCTION** button continuously until hearing the buzzer.
3. Sensor is calibrated. **DP ACTUAL** value should be 0

CONTROLLER VERSION:

The controller's version is the last screen of the **DEFINITIONS.** Click on the **DEFINITION BUTTON** until the controller's version appears.

Figure 17- Controller version screen

ACCUMULATIONS:

The controller has three different accumulation types:

ACCUMULATION DP- How many times the flushing function has been triggered by DP. This screen will appear after the first click on **ACCUMULATION** button. Figure 18 displays the **ACCUMULATION** DP screen.

ACCUMULATION TIME- How many times flushing has been triggered by TIME. This screen will appear after the second click on **ACCUMULATION** button. Figure 19 displays the **ACCUMULATION** TIME screen.

 ACCUMULATION MANUAL- How many times flushing has been triggered MANUALLY. This screen will appear after the third click on **ACCUMULATION** button. Figure 20 displays the **ACCUMULATION** MANUAL screen.

RESET THE ACCUMULATIONS:

In order to reset one of the accumulations, browse to the desired accumulation screen and click and hold the **FUNCTION BUTTON** for one second.

Figure 18 ACCUMULATIONS DP   Figure 19 ACCUMULATIONS TIME   Figure 20 ACCUMULATIONS MANUAL

Technical details

Power supply:

1. 6V supplied by 4 x 1.5 size "C" alkaline batteries.
2. 12V DC dry battery.
3. 12V DC power supply.

Inputs: Analog input for built in Talgil's analog DP sensor or dry contact pulse from external DP sensor.

Output: 12v DC latching solenoids.

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

Current consumption: Stand by: 20 uA.

Charge pump: 180mA.

Dimensions: Length: 10 cm. Width: 8 cm. Deep: 3 cm.

Revision and Signoff Sheet

Document History - To maintain a list of changes being made

Version	Date	Author	Description of Change
0.1	**October 7, 2016**	**Shemtov**	**Draft**
0.2	**October 20, 2016**	**Libi**	**Rewriting**
0.3	**October 20, 2016**	**Yosee**	**Rewriting**