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Flow Meter Liter/Gallon Counter Totalizer with 4 Alarms

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Contents

1 Introduction

JDH flow meter is a system with the following main characteristics:

- ✓ Designed to work with turbine flow sensors with Hall sensor and square pulse output signal. It is recommended for use with "Sea" brand sensors. It is directly compatible with models that measure 0.6-3LPM, 1-30LPM (DN15), 1-60LPM (DN20), 1-120LPM (DN32), 5-150LPM (DN40) and 10-300LPM (DN50). Although in any case, it can be adjusted to measure other ranges.
- ✓ The main screen shows the count of the total number of liters and the instantaneous flow.
- ✓ It allows configuring up to 4 thresholds that optionally activate an audible alarm and / or a dry contact.
- ✓ The alarms are activated either by Flow or by Volume. If it is by volume, a countdown is kept, decreasing by the liters/gallons supplied.
- ✓ The values can be displayed in Liters or in Gallons (US) and it is multi-language, and can be used in English, Spanish, French, German and Chinese
- ✓ Friendly and intuitive touch user interface. Multilanguage to facilitate the use of any operator.
- ✓ All counts, settings, alarms and configurations are saved in non-volatile memory and will be restored upon power cycles.

2 Installation guidelines

The most important consideration about the turbine sensors installation, is that they are designed to be installed in a vertical section of pipe, in such a way that the liquid flows from bottom to top, covering the whole traversal area of the sensor as it flows. For better results, flow should not contain air or gas bubbles or solid particles that may interfere with the turbine spinning.

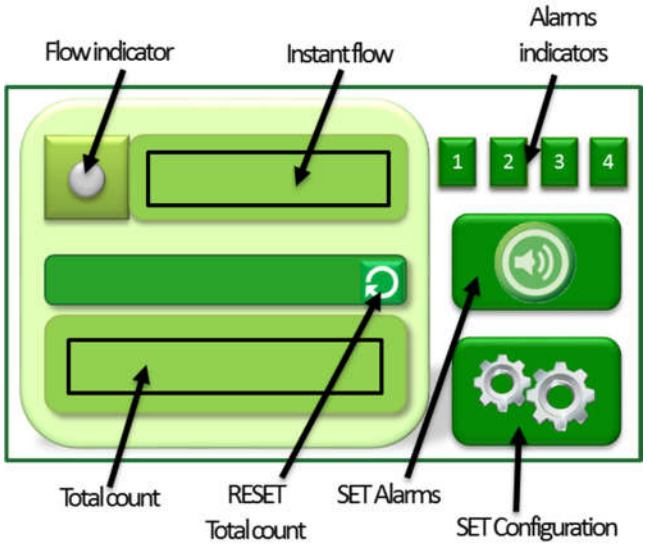
3 Graphical User Interface

The system can be configured through a graphical touch screen. Most of its usage is easy and intuitive.

3.1 Main screen

The main screen shows the total count and the instant flow. It also shows four indicators, each one corresponding to the alarms and two buttons to access the Alarms menu and the Configuration menu.

The total count can be Reset to ZEROs, for this, you must press the RESET Total count button and then confirm using the password.



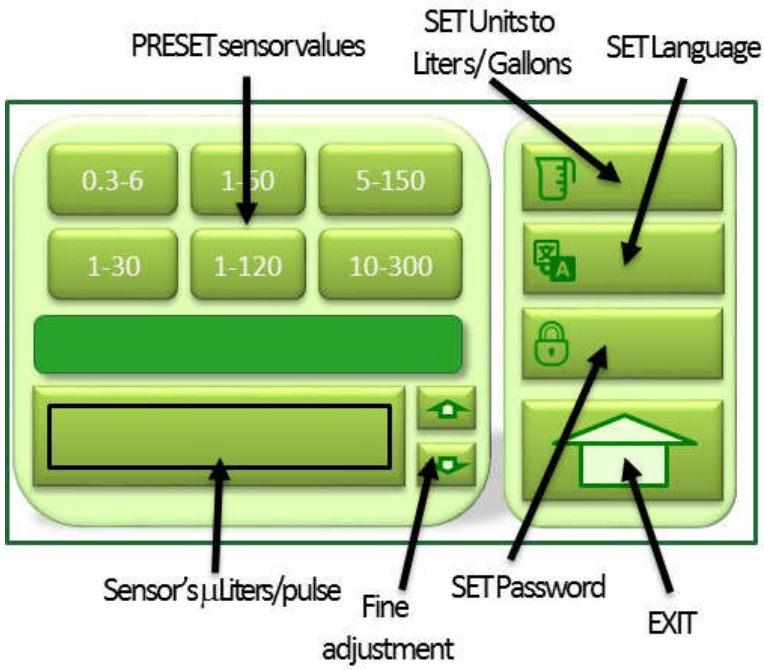
3.2 Password protection

All Configurations and Alarms settings are protected by a 4-digit password. By factory default, the password is "1234". You should change it to a safer number and memorize or write it down somewhere you can keep safe. This password, all settings/alarms and total count are saved in internal non-volatile memory and will prevail even after power off.

NOTE: There is no way to recover a LOST password, so please make sure you choose a number you can remember in the future!

3.3 Sensor configuration

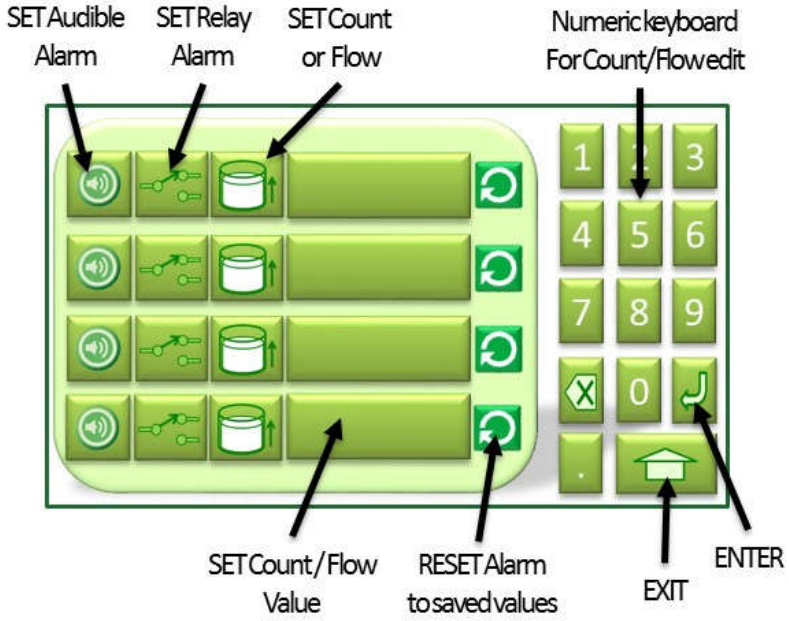
The system requires you to input the corresponding value of μLiters/pulse according to the flow sensor in your installation. The buttons at the top of the screen correspond to the most common sensors that we have available for sale in our shop. You can fine-adjust the value through empirical calibration, it may vary according to your system topology or the density of the liquid.



3.4 Alarms configuration

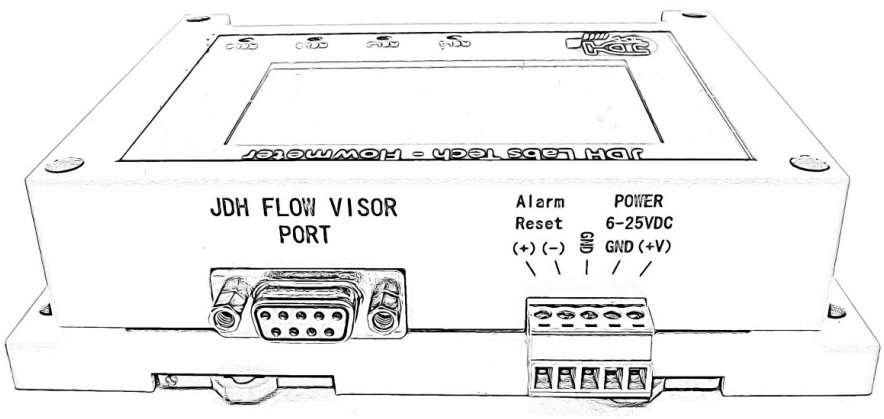
Each alarm can be set to activate based on a countdown of liters/gallons or by a flow threshold. You can set the countdown or the threshold in the Alarms menu

Optionally, you can set the audible alarm or the Relay activation, or both to work whenever the flow threshold or countdown is reached.



4 Connections

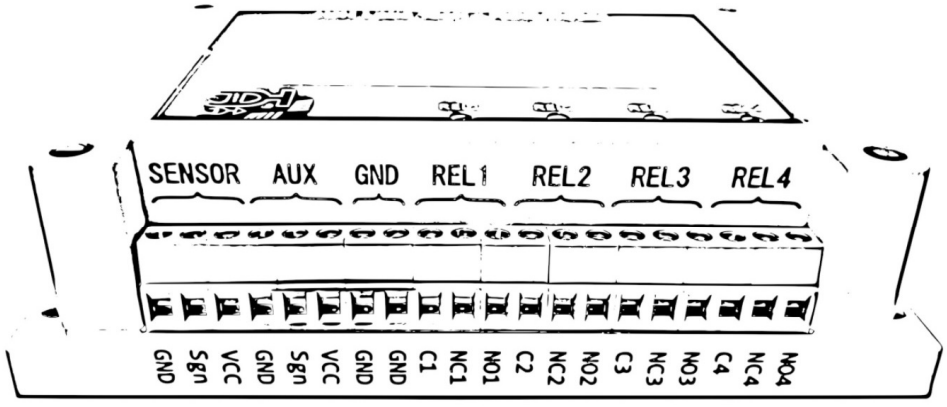
The flow meter has the following connections on the top connector…



- ✓ JDH FLOW VISOR PORT This is an standard DB9 connector to interface with an external PC running JDH FlowVisor software

- ✓ Alarm Reset (+) Positive input for Reset signal +5VDC to +24VDC (See section 4.1 for details)
- ✓ Alarm Reset (-)Reference input of the Alarm Reset signal (0V)
- ✓ GND System Reference Ground
- ✓ POWER Power Supply input +5VDC to +25VDC
- ✓ POWER GND Power Supply input ground reference

The bottom connector has the following connections



- ✓ SENSOR GND 0V Supply connection output for flow sensor (conect to BLACK cable)
- ✓ SENSOR Sgn Pulsed Signal connection input for flow sensor (conect to YELLOW cable)
- ✓ SENSOR VCC Supply connection input for flow sensor (conect to RED cable)
- ✓ AUX GND Not implemented – do not connect
- ✓ AUX Sgn Not implemented – do not connect
- ✓ AUX VCC Not implemented – do not connect
- ✓ GND Spare GND connection output
- ✓ GND Spare GND connection output
- ✓ RELx Cx Relay Common pin
- ✓ RELx NCx Relay Normally Closed pin
- ✓ RELx NOx Relay Normally Open pin

4.1 Alarm Reset

The Alarm Reset input is designed to Reset all the Countdown Alarms to the configured setting at any given time. It is activated by an isolated voltage (independent from system ground) from 5VDC to 24VDC held for at least 8 to 10 seconds, afterwards the Alarms will get reset. Pay attention to the polarity of the signal, the positive voltage must be connected to the (+) pin and the negative reference to the (-) pin.

4.2 JDH FlowVisor Port

The JDH Flow Meter is compatible with the JDH FlowVisor software. The software can be installed in Windows or Linux systems. It is designed to help users visualize graphically the flow, the counts and the alarms in a customizable dashboard. It is a multilanguage, multiplatform software with a friendly user interface, designed to run even on a pocket PC or embedded computer running Linux, like Raspberry Pi

You can find more details about it in our shop www.jdhlabstech.com

4.3 Sensor

The flow meter is compatible with any pulsed signal sensor. You only need to configure the μLiter/pulse accordingly. In our shop, we offer a wide range of options of sensors, from 6mm hose port small sensor to threaded pipes, from 1/2" inch (DN15), to 3" inches (DN80) pipes. We mostly support sensors for water and liquids with similar density. Copper-made, Aluminum-made and recently introducing steel-made sensors.

Please visit our shop for more details www.jdhlabstech.com

4.4 Relays

The alarmas are associated with 4 SPDT relays. The relay outputs offer the three connections of each relay, which allows users to develop any sort of applications. You must know that the Relays are

energized by default when there the alarm is off (continuity from C to NO). When alarmed, the relays will turn off (continuity from C to NC). The general specifications of the relays are as follows…

- Maximum load
  - Resistive: 0.40 A at 125 VAC, 2 A at 30 VDC
  - Inductive (power factor = 0.4) (L / R = 7 ms): 0.20 A at 125 VAC, 1 A at 30 VDC
- Maximum load current: 3A
- Maximum operating voltage: 250 VAC, 220VDC
- Maximum switching capacity:
  - Resistive: 50VA, 60W
  - Inductive (power factor = 0.4) (L / R = 7 ms): 25VA, 30W

5 Use cases

5.1 Tank filling monitoring

The most common application for this liter counter is to monitor the filling of a tank. In this case, the user just needs to configure the countdown to the tank capacity. Start filling the tank as soon as the alarm is reset.

5.2 Monitor flow in pipe to trigger water pumping

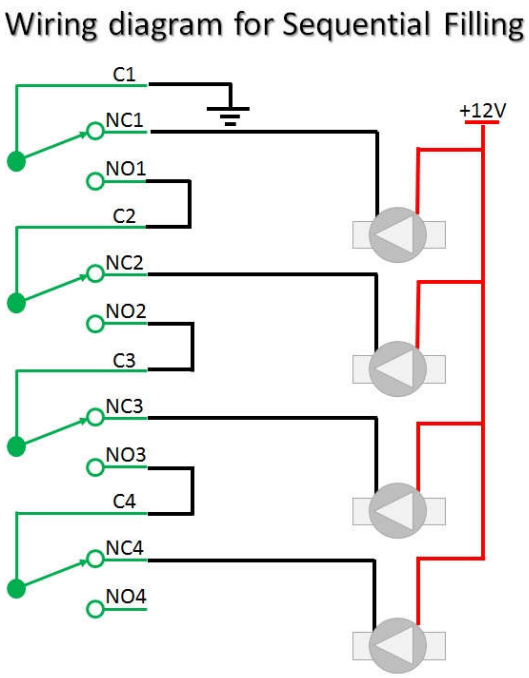
One of the most popular solutions of this flow meter is to monitor the presence of flow in a pipe, to immediately control a pump to fill a second tank as long as there is some flow in the pipe.

5.3 4-way Dispenser Automation

The application that we most suggest to advanced users is the tank filling automation. This solution will fill 4 tanks in a sequential manner, one by one. Each alarm shall be configured to the volume value plus the precedent tanks volumes. For a more clear description of this project, please watch the video we prepared for it…

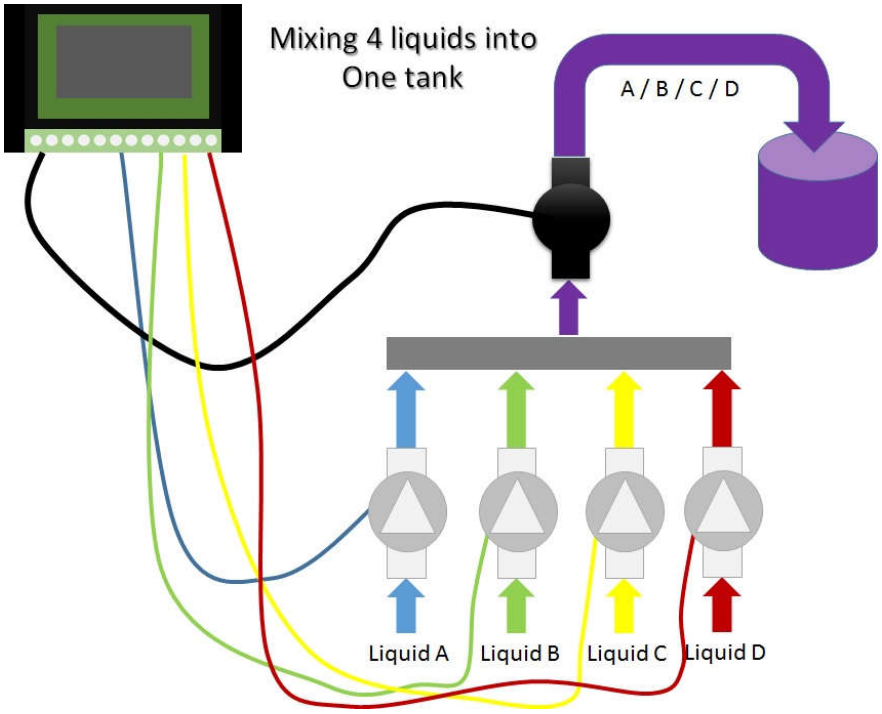
https://youtu.be/D-wpVMdwnQw

You can check the diagram below for more details about the hydraulic connections



5.4 4-Liquid Mixer

This application is a variation of the 4-way dispenser automation project. It's just that the hydraulic connections shall be made differently. The idea is to sequentially fill 4 different liquids to a single tank. Each alarm shall be configured with the desired volume plus the sum of the precedent liquids' volumes. Please see the diagram below for more details



6 Online Support and Shop catalog

6.1 Sensors catalog

Our catalog of sensors is growing constantly. Feel free to look for a sensor that better fits your application in the following link

https://jdhlabstech.com/jdhshop/en/sensors-and-transducers/flow-sensors-control/

6.2 JDH FlowVisor

JDH FlowVisor software is a program that can run in a PC, laptop or even in a single board computer like Raspberry Pi. It allows you to create your own visualization dashboard for your specific industrial application. You can see more details in the following link

https://jdhlabstech.com/jdhshop/en/sensors-and-transducers/flow-sensors-control/jdh-flow-visor-software-multi-platform-solution-for-flow-monitoring-windows-linux-mac.html

6.3 Serial port converters

If you don't have a serial port in your laptop or PC, you may need a Serial to USB cable or perhaps a Serial to WiFi or a Serial to Ethernet converter so you can access your Flow Meter data from any remote location. Please find more information at our shop: www.jdhlabstech.com

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