



FEATURES

- 3-4 YEARS ON A SINGLE AA SIZE BATTERY
- STABLE READING WITH PULSES DOWN TO ONE PULSE EVERY 5 MINUTES
- PULSE INPUT FOR UP TO 50 Hz
- 7 DIGIT RATE AND 7 DIGIT TOTAL WITH PROGRAMMABLE DECIMAL PLACES
- KFACTORS FROM 0.001 TO 9,999,999
- MILLILITERS, LITERS, GALLONS, CUBIC FEET, CUBIC METERS, ACRE FEET
- SEPARATE VOLUME UNITS FOR RATE AND TOTAL
- PER SECOND, PER MINUTE, PER HOUR, PER DAY
- PROGRAMMABLE SLEEP MODE FOR THE DISPLAY TO SAVE POWER
- SETTINGS LOCK/UNLOCK FOR SECURITY
- HIGH CONTRAST IN THE ENTIRE TEMPERATURE RANGE
- BATTERY LOW INDICATOR
- SIMPLE PROGRAMMING, SMALL SIZE

APPLICATIONS

- FLOW RATE AND TOTAL MEASUREMENT
- IRRIGATION

1. DESCRIPTION

NFC107 is a micro power battery powered flow computer totalizer with an outstanding combination of excellent features, extremely long battery life and pulse input for up to 50 Hz. It accepts open drain/collector npn, reed switch, dry contact, waves and logical signals.

NFC107 has a version in one inch wider enclosure – NFC107E and another in DIN 72x72 mm panel mount enclosure.

The NFC107 software implements a special design for register flow meters which produce very low frequency pulses. Special proprietary algorithms allow NFC107 to accept low frequency pulses like one pulse every 5 minutes and still have a stable reading. In the same time the flow reading can be cleared in half second by external “no flow” switch.

NFC107 is the perfect solution for flow measurement and control applications that require high accuracy and reliability, small size, industrial grade performance and low maintenance.



2. ABSOLUTE MAXIMUM RATINGS *

Operating temperature	-20 °C to +70 °C The electronics system is industrial (-40 °C to +85 °C) and higher grade . The Liquid Crystal Display (LCD) limits the temperature range.
Input voltage (“S” to “-”)	5 VDC

*** NOTICE: Stresses above those ratings may cause permanent damage to the device.**

3. CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
Input					
Input frequency				50	Hz

3.1. BUTTONS

There are three buttons: **SET** , **UP**  and **RIGHT**  :

- **SET** is used to enter and exit menus and confirm options chosen
- **UP** is used to change the data
- **RIGHT** is used to move the cursor (blinking digit or icon) to the right

Additional button functions:

There are two types of buttons accepted by the NFC107 flow computer:

- Short is when the button is pressed and released in less than 0.5 second
- Long is when it is kept pressed for more than 5 seconds
- All other durations are ignored

NOTE: The UP button will not change the value if the settings are locked.

3.2. INPUTS

NFC107 has two inputs:

- Pulse input from flow sensors. It accepts open drain/collector npn sensors, reed switches, dry contacts, different types of waves and logical signals.
- “NO FLOW” switch input. This input is used to immediately clear the rate reading. It can, for an instance, be connected to a pressure switch in the pipe or to a pump's pressure switch which closes when the pump stops and its pressure drops.

3.3. OUTPUT

NFC107 has no outputs.

3.4. DISPLAY

The liquid crystal display (LCD) has 7 digits with 1, 2 or 3 decimal places and multiple icons.



It shows rate, total and all the variables and options that can be set or programmed. The rate and the totals have programmable auto, none, 1, 2 or 3 decimal places.

When the display shows rate, a “**RATE**” icon is displayed. If it shows total, a “**TOTAL**” icon will be displayed.

When input pulses are present, an “**INP**” (input) icon will be displayed.
If the total on the LCD is allowed to be reset, a “**RESET**” icon will be displayed.

3.4.1. Volume and time units

- NFC107 flow computer has milliliters (**mL**), liters (**L**), gallons (**G**), cubic feet (**CF**), cubic meters (**M³**) and acre feet (**AF**) PER second (**S**), minute (**M**), hour (**H**) and day (**D**). It has separate volume units for rate and total, so for an instance the rate can be in GPM, but the total in AF.

3.4.2. Normal mode

Automatically after replacing the battery or exiting a menu, NFC107 enters the normal mode. Normal mode displays:

- Rate
- Total which reset can be enabled or disabled. It is stored in a non-volatile memory every 50 seconds or immediately when cleared.

If the total is allowed to be reset, the **RESET** icon is shown. Reset the total with long **RIGHT** button.

- To switch between rate and total on the display, use short **UP** button.

3.4.3. Menus

To enter the menus, use long **SET** button in normal mode. About 5 seconds after pressing (and holding pressed) the **SET** button, the first menu will appear on the LCD:

- In the “**Total volume units**” (**vU**) menu, use **UP** to choose the volume units for the total among **mL**, **L**, **G**, **CF**, **M³** and **AF**. While in this menu all the settings can be locked/unlocked. Use long **SET** to go to lock/unlock menu.
 - Then use short **UP** to lock/unlock the settings. Then use short **SET** to go back to “**Total volume units**” menu.
 - If the settings are locked, they can be viewed, but not changed.Press short **SET** to move to the “**rate volume unit menu**.”

- In the “**Rate volume units**” (**vU**) menu, use **UP** to choose the volume units for the flow rate among **mL**, **L**, **G**, **CF**, **M³** and **AF**. Press short **SET** to move to the “**time unit**” menu.
- Use **UP** to choose among **S**, **M**, **H** and **D**. Press short **SET** to move to the next menu.
- **KFACTOR** icon along with a blinking decimal point and the KFACTOR number is shown. The decimal places for the KFACTOR can be programmed using **UP** button. KFACTORs ranging from 0.001 to 9,999,999 can be entered this way. To move from the blinking decimal point away and start entering the KFACTOR digits use the **RIGHT** button. The main **KFACTOR** for the particular flow meter connected to the NFC101 can be entered. This is how many **pulses** the flow computer will receive **per total volume unit**.

NOTE: the computer will not accept zero for the KFACTOR.



Press short **SET** to move to the “Rate **decimal Places**” menu where (using short **UP**) auto, none, 1, 2 or 3 decimal places for the rate can be programmed.

- Press short **SET** to move to the “Total **decimal Places**” menu where (using short **UP**) auto, none, 1, 2 or 3 decimal places for all totals can be programmed.
- Press short **SET** to move to the “**delay**” menu and program the delay that will keep the display showing stable flow rate at the very low frequency of the input pulses. Generally the delay should be higher than the highest interval between two input pulses, expected.
- Press short **SET** to move to the **Total Reset enable/disable** menu. In this menu using **UP** button the total reset can be enabled or disabled.
If enabled and NFC107 is in normal mode displaying total, the **RESET** icon will also be displayed and long **RIGHT** will clear the total. Press short **SET** to move to the next menu.
- In the **SLEEP** menu, (using **UP** button) the sleep of the LCD feature can be enabled or disabled.
If this feature is enabled the NFC107 computer will turn off the LCD after not having any input pulse or button pressed for one minute, extending the battery life.

NOTE: Only the LCD is powered down during sleep. The computer is fully functioning and no input pulse or button press will be missed. The computer will turn the LCD on immediately after the first input pulse or button pressed.

If this feature is disabled, the LCD is always powered but the total consumption of the NFC107 computer will be higher and the battery life will be reduced.

Because the **SLEEP** menu is the last one, pressing long **SET** will move the computer to the **LOCK** menu. Use **UP** to lock the settings and press short **SET** to go back to **SLEEP** menu. General practice would be to unlock the settings at the first menu. Settings can be changed and locked again before exiting at the last menu (**SLEEP** menu). Press short **SET** to exit. After a couple of seconds during which all the setting are checked, validated and stored into the non-volatile memory, the computer will return to normal mode.

NOTE: The software time out feature will reset the computer and force it to the normal mode WITHOUT saving any changes made in any of the menus. The changes will only be saved after exiting the SLEEP menu by pressing short SET.

NOTE: Even in menu mode, the computer always continues to measure and calculate rate and total so no total will be lost. In some circumstances, such as changing the KFACTOR, the total accumulated will be invalidated. The user must take appropriate actions after changing the settings, such as resetting the total or other.

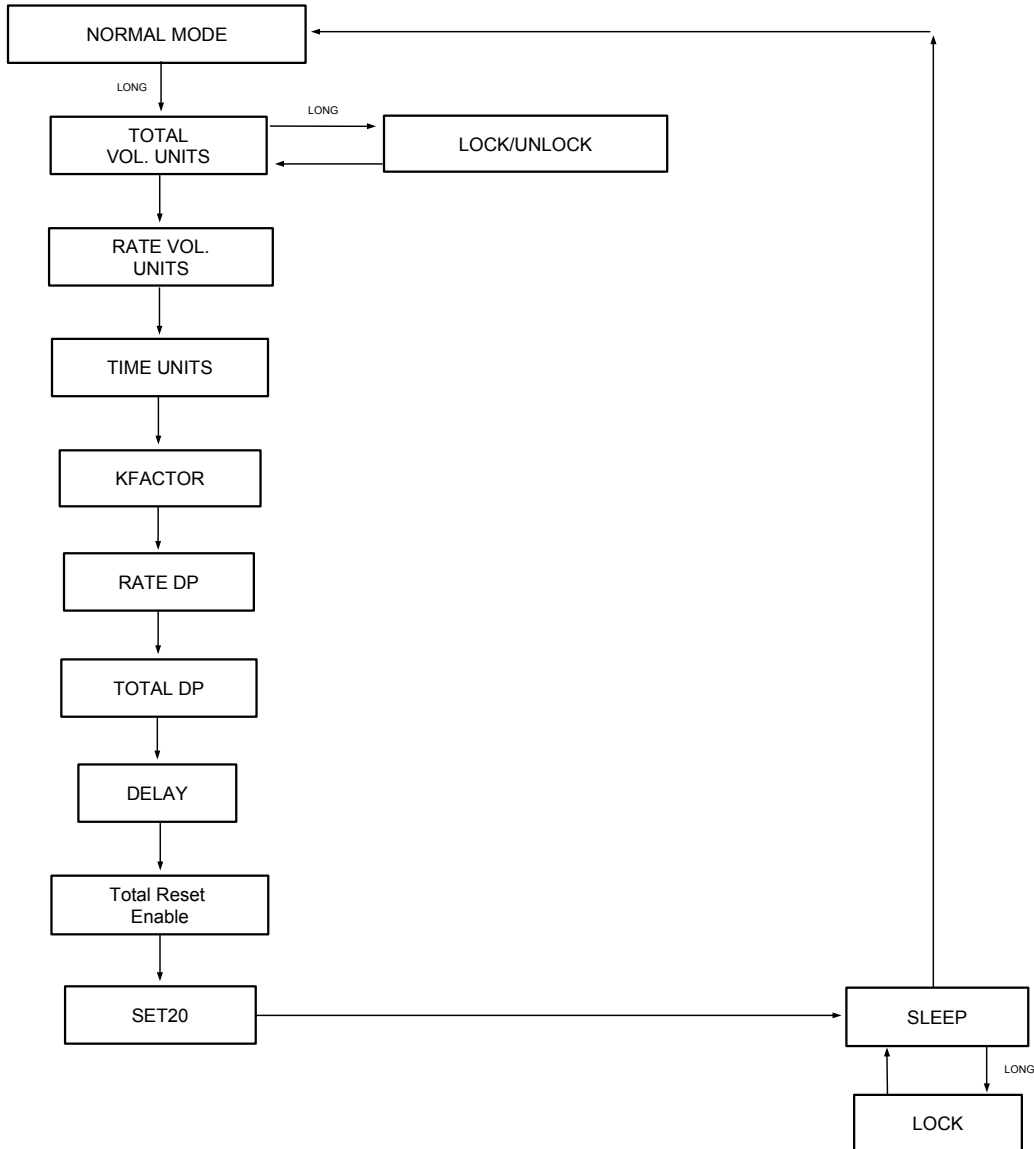
3.5. Checking the LCD

All the icons of the LCD can be checked by pressing and holding the **RIGHT** button while replacing the battery or after exiting the **SLEEP** menu. Releasing the button will allow the computer to return to normal mode.

**The total is stored in the non-volatile memory every 50 seconds.
Before removing the battery make sure that there was no flow for the last minute.
All important settings are stored in a non-volatile memory and will not be lost.**

4. MENU DIAGRAM

The menu diagram for NFC107 flow computer / totalizer is shown below.



5. APPLICATION

5.1. ELECTRICAL

5.1.1. Wiring the sensor

NFC107 accepts a variety of sensors. The signal (“+”) from the flow sensor must be connected to the “S” terminal, and the ground (“-”) of the sensor must be connected to the “-” terminal.

NOTE: For reed switches a small capacitor in parallel may be needed. Different reed switches and dry contacts have different bouncing time. Test and evaluate carefully to determine the right capacitor, if needed.

5.2. VERSIONS



WALL MOUNT NFC107



WALL MOUNT NFC107E



PANEL MOUNT
NFPC107

6. ORDERING

For ordering please use the following G Instruments part numbers:

<i>Description</i>	<i>G Instruments PN</i>
NFC107 flow computer with a "AA" size battery	30390
NFC107 flow computer with a "C" size battery	30396
NFC107E flow computer with a "AA" size battery	30397
NFC107E flow computer with a "C" size battery	30398
NFCP107 flow computer with a "AA" size battery	30391



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