Model ELNC
Electronic Large Numeral Counter

Featuring 6 digits of reset total and 8 digits of non-reset total, the ELNC is a battery powered indicator capable of accepting DC pulse and switch closure inputs. The ELNC has a low battery indicator and an exclusive memory saver circuit that maintains memory during battery changes. It is also field programmable and can be used with all FPP meters. The unit offers shock resistant electronics and is programmable in Gallons, Liters, Barrels and most other engineering units. A lightweight Anodized Aluminum NEMA 4 housing makes the ELNC perfect for your most demanding applications.

Features:

- **6-digit Reset Counter, 1" high Digits**
- **8-digit Non-reset totalizer, 3/8" high Digits**
- **Self Contained Battery Powered**
- **Lightweight, Corrosion Resistant Housing NEMA 4 Enclosure**
- **Shock Resistant Electronics**
- **Exclusive Memory Saver Circuit**
- **Field Programmable**
- **Registration Units in Gallons, Litres, Barrels & most other Engineering Units**
- **Programmable Decimal Point**
- **Low Battery Indicator**
- **Optional Pulse Output, 1 or 10 pulses per unit**
- **Optional Backlit Display**
- **Optional Rate of Flow Display**
- **Optional Amplified Pulse Output**

Specifications

Power:
- Supplied with (2) C size 3.6 V Lithium
- Batteries Saver Circuitry (change batteries without memory loss.)

Sleep Mode:
- If counter is not receiving pulses, the counter will enter a power saving mode to conserve the battery. In this mode, the display will be blank. The counter will power up when it receives a pulse, or when the reset button is pushed.

Display:
- 1" high, 6 digit reset total and/or reset (please specify rate of flow)
- 3/8" high, 8 digit non-reset total display (whole units only)
- Low temperature Liquid Crystal

Descriptors:
- Unit Icons are: "GALLONS","LITERS", "BARRELS" or blank
- Rate displayed in units per minute only
- Low battery warning displays "BAT"

Mounting Styles:
- Panel mount
- Meter mount NEMA 4 Enclosure

Environmental: -40°F to 158°F (-40°C to 70°C)

K-Factor:
- Range: 1.00-9999

Inputs:
- Reed Switch or Hall Effect* *12-24 VDC required
- 0-100 Hz Frequency
- 50/50 Duty Cycle

Battery Life Expectancy:
(without pulse output)

BATT SIZE	12 HRS/DAY	24 HRS/DAY
2 C	3.5 YEARS	2 YEARS

ELNC Programming Procedure

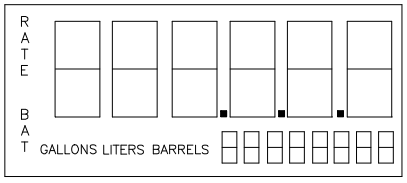
The ELNC is a scaling counter, and can be scaled to provide a readout in almost any engineering units required by your application. The programming sequence is a time based sequence, and all data is entered using the RESET button.

Hint: 1. When programming, the user has 5 seconds to change an icon or digit once it starts flashing. To avoid having to start over read the entire programming procedure and write out programming values for each screen before you start. 2. If the display is not visible, press RESET button before proceeding to step A.

The programming sequence is as follows:

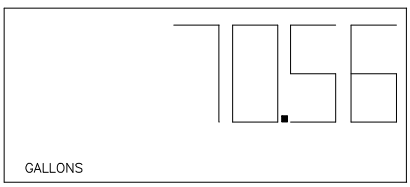
A. Enter Program Mode:

Enter the programming mode by depressing the program switch located on the back of the ELNC or passing a program magnet over the program label. When the program switch is pushed the counter display will appear as in figure at right with all segments and icons displayed. This is the indication that the ELNC is in the programming mode and also allows user to check that all segments of the display are functional.



B. Review Current Program:

Press the RESET button (this advances the display to the next screen) and the counter will display both the current pulse resolution, and the current units of measure. At this point, or at any point in the programming sequence, the programming can be aborted by activating the program switch. If aborted at this step the counter will maintain the existing program. See figure below.



Before proceeding to program, record desired program in the form provided below.

CURRENT PROGRAM

UNITS OF MEASURE: _____

SCALE FACTOR D.P.: _____

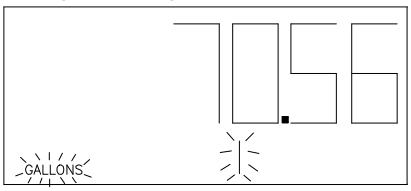
SCALE FACTOR: _____

RESET TOTAL D.P.: _____

Step 1: Select the Unit of Measure: Gallons, Liters, blank, Barrels, blank

Depress the RESET button to advance the counter to the program screen. The display will appear as below (1), with the number 1 flashing in the bottom center, and the current unit of measure flashing (if no unit is displayed, the counter is programmed to the blank position, indicating a unit of measure other than that available from the standard icon selection.)

(1) Select Units of Measure: Gallons, Liters, blank, Barrels, blank



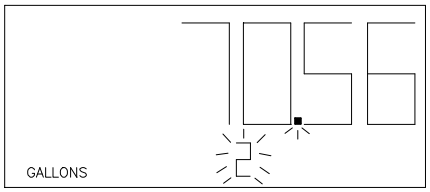
The displayed unit of measure will flash for approximately 5 sec.

To select a new unit of measure depress the RESET button and advance through the options (while the units of measure are flashing) until the desired unit is selected. The selected unit and the number 1 will continue to flash for 5 seconds. After 5 seconds, the display will stop flashing, indicating your selection has been entered.

In any program step, only the flashing portion of the screen display can be changed.

ELNC Programming Procedure continued...

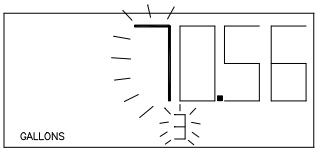
2. SELECT THE SCALE FACTOR DECIMAL POINT: WHOLE, 1/10, 1/100 UNITS

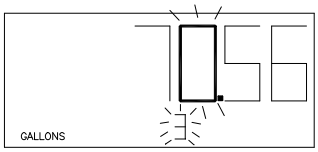


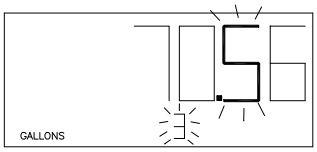
Depress the RESET button to advance the counter to the next screen. The display will appear as at right (2) with the number 2 in the lower middle, and the decimal point in the upper display flashing. Depress the RESET button to move the decimal point the the desired position for the scale factor you have selected. After approximately 5 seconds, the decimal point and the number 2 will stop flashing, indicating your selection has been entered. ***Note: If no decimal is flashing, the scale factor is in whole units.***

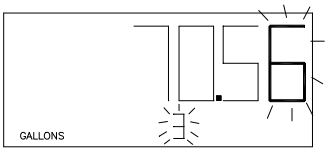
3. SELECT THE SCALING FACTOR:

Depress the RESET button to advance the counter to the next screen. The display will appear as at right (3) with the number 3 in the lower middle and the first digit of the current factor flashing. Depress the reset button to advance the first digit to the desired setting. After the desired setting is selected, the first digit will stop flashing after approximately 5 sec. and the second digit will begin to flash. This indicates that the first digit has been entered, and that the second digit is ready for selection. Repeat the process until the complete scale factor has been entered. Approximately 5 sec. After the last digit has been selected, the display will stop flashing, indicating the scale factor has been entered.





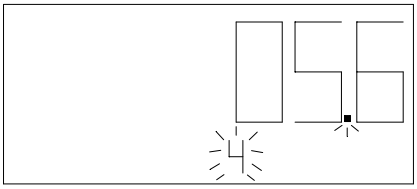




4. SELECT THE RESET TOTAL DECIMAL POINT: WHOLE, 1/10, 1/100, 1/1000 UNITS

Depress the RESET button to advance the counter to the next screen. The display will appear as above right (4) with the number 4 flashing in the lower left corner and Reset totalizer decimal point flashing in the current position. If the decimal is not flashing, the current location is WHOLE units and decimal is not seen.

Depress the RESET button to move the decimal point to the desired location. Approximately 5 sec. after the decimal location has been selected, the display will stop flashing, indicating the decimal point location has been entered.

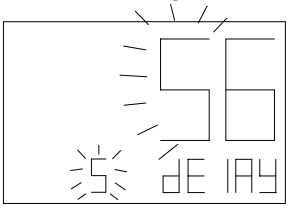


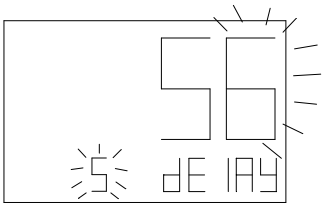
5. DISPLAY:

This allows the user to adjust the backlight ON TIME from 1 minute to 99 minutes. For counters with the backlight option, enter the amount of time desired to have the backlight illuminate the display.

6. REVIEW NEW PROGRAM:

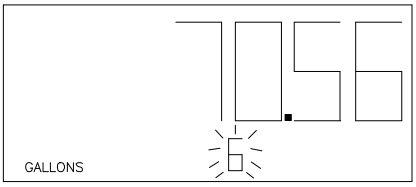
Depress the RESET button to advance the counter to the next screen. The display will show the current scale factor and the current units of measure, and the number 5 will be flashing in the lower left corner.



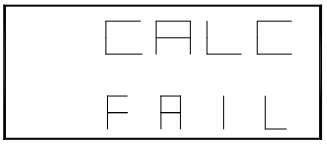


TO PLACE THE COUNTER IN SERVICE:

Depress the RESET button to place the counter in service. The RESET TOTALIZER will display zero and the decimal point location, and the NON-RESET TOTALIZER will display the current accumulated total recalculated using the new scale factor. Note: The Non-reset Total can only by returned to zero by removing power from the unit and allowing the battery saver circuit to discharge. This requires approximately 5 min.



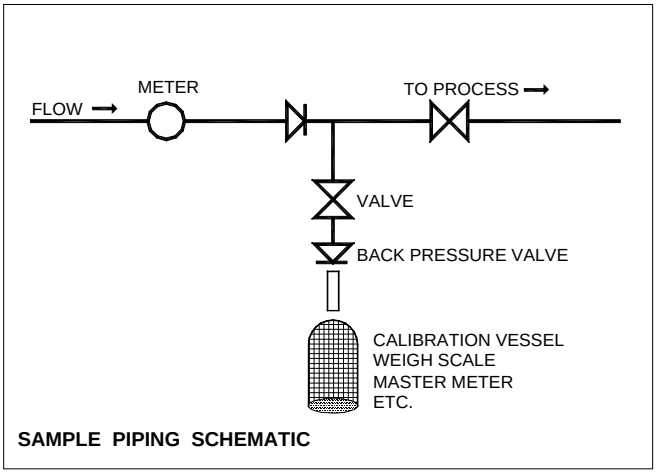
NOTE: IF ELNC DOES NOT FUNCTION AS INDICATED, OR IF AN INVALID SCALE FACTOR HAS BEEN ENTERED, THE DISPLAY WILL INDICATE "CALC FAIL." IF THIS HAPPENS, RE-INITIALIZE BY REMOVING BATTERIES, AND SHORT CIRCUIT FROM POSITIVE TO NEGATIVE ON BATTERY HOLDER (TO REMOVE ALL ENERGY FROM UNIT.) REINSTALL BATTERIES. THIS REINITIALIZES HE PROGRAM. AFTER THIS PROCEDURE, THE ELNC DISPLAY SHOULD INDICATE "CALC" AND SHOULD FLASH, THEN UNIT IS READY FOR PROGRAM MODE. PROCEED TO STEP 1 IN PROGRAMMING.



ELNC Calibration Procedure

All FPP meters with ELNC electronic counters are programmed at the factory with the nominal K-factor (number of pulses per unit of volume through the meter) for the number of magnets or targets installed in the meter supplied with the counter. The K-factor is stamped on the meter cover along with the meter Model No. and Serial No. To improve the system accuracy, the meter should be calibrated in the system in which it is installed using the fluid to be measured.

To calibrate the meter, some standard must be used (Ceraphin calibration can, weigh scale, master meter, etc.) Adown stream valve is required to block the flow of product to your system, and a sample valve is required to allow a measured sample to flow into the test can or onto the weigh scale. A valve to maintain back pressure on the meter is recommended to simulate actual metering conditions. A sample piping schematic is shown below.



SAMPLE PIPING SCHEMATIC

To calibrate the meter proceed as follows:

1. Record the current K-factor in the electronic register. In the case of the ELNC, this can be found on the second screen after entering the Programming Sequence.

2. Reset the ELNC K-factor (FAC) to (1.0). This allows the electronic register to count and display each pulse it receives.

3. Flow through the meter a unit of volume into the calibration can, or onto the scale. Record the volume in the calibration can (or the reading on the scale,) and record the number of counts indicated on the register. (Ignore any decimals in this number.)

4. Calculate the new K-factor by dividing the volume in the calibration can (or weight on the scale) by the number of pulses indicated on the register.

5. Steps 3 and 4 should be repeated three to five times to assure a repeatable meter and good calibration.

6. Average the K-factors determined in steps 3 and 5. This becomes the meter K-factor.

7. Using the programming instructions, enter the new K-factor into the electronic register.

EXAMPLE

Calibration Standard: 2000 ml
Graduated cylinder

Meter: 538.0400.ELNC
Nominal Pulse Resolution—1350 PPG

Test 1:

Sample Collected:
1940 ml or
1940 ml/3785 = 0.513 Gal.

Register Counts:
(FAC=1) 692 pulses

Factor: 692 pulses / 0.513 Gal. = 1349 PPG

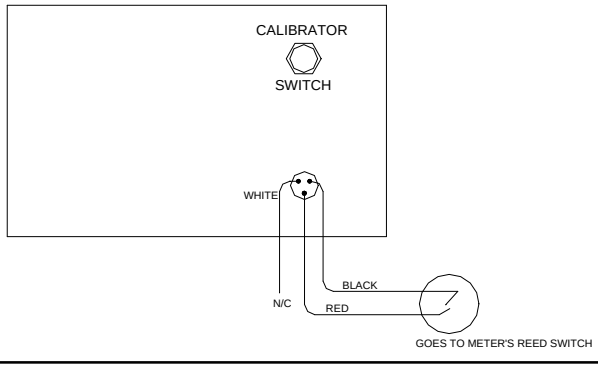
Test 2:

Sample Collected:
1850 ml or
1850 ml/3785 = 0.489 Gal.

Register Counts:
(FAC=1) 660 pulses

Factor: 660 pulses / 0.489 Gal. = 1350 PPG

Average K-factor = 1349 + 1351 / 2 = 1350 PPG



FPP METERS

Please have the following information available when you make inquiries, order replacement parts, or schedule service:

Your meter's serial number: _____

Your meter's model number: _____

Your full service Distributor: _____

Your full service Distributor's phone number: _____

Warranty

Tuthill Transfer Systems ("Manufacturer") warrants to each buyer of its FPP Meters products (the "Buyer") for a period of 12 months from date of invoice or sales receipt, but in no event more than 18 months from date of manufacture, that goods of its manufacture ("Goods") will be free from defects of material and workmanship. Manufacturer's sole obligation under the foregoing warranties will be limited to either, at Manufacturers' option, replacing or repairing defective Goods (subject to limitations hereinafter provided) or refunding the purchase price for such Goods theretofore paid by the Buyer, and Buyer's exclusive remedy for breach of any such warranties will be enforcement of such obligations of Manufacturer. If Manufacturer so requests the return of the Goods, the Goods will be redelivered to Manufacturer in accordance with Manufacturer's instructions F.O.B. Factory. The remedies contained herein shall constitute the sole recourse of the Buyer against Manufacturer for breach of warranty. IN NO EVENT SHALL MANUFACTURER'S LIABILITY ON ANY CLAIM FOR DAMAGES ARISING OUT OF THE MANUFACTURE SALE, DELIVERY OR USE OF THE GOODS EXCEED THE PURCHASE PRICE OF THE GOODS. The foregoing warranties will not extend to Goods subjected to misuse, neglect, accident or improper installation or maintenance, or which have been altered or repaired by anyone other than Manufacturer or its authorized representative. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. No person may vary the foregoing warranties and remedies except in writing signed by a duly authorized officer of Manufacturer. Warranties or remedies that differ from the foregoing shall not otherwise be binding on Manufacturer. The Buyer's acceptance of delivery of the Goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.

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