DIGITAL FLOW-METER

Connection wiring

COLOUR	SIGNAL
WHITE	NEGATIVE supply
GREEN	NPN EXIT 100 pulses per litre
BROWN	POSITIVE supply
YELLOW	Serial Signal RS232

NOTE: for a correct sequential working it is necessary to connect the negative supply cable to the PC socket.

ATTENTION: the device IS NOT PROTECTED against the polarity inversion for the external feeding **(WHITE/BROWN cable, check carefully the connections).**

Additional functions to the standard device

WARNING:

➢**During its functioning with external battery 12-24V feeding the device deactivates the Stand-By mode.**

➢Some of the functions of this device are available with the external battery 12-24 V feeding only.

➢If the system is not in Stand-By mode but is already started through internal battery feeding, the flow-meter needs from 1 to 10 seconds to activate its functions with a external battery feeding.

Exit reply signal

This function is available with the external battery 12-24V feeding only and provides an exit signal proportional to the quantity of liquid instantly read by the instrument (100 pulses/litre).

The exit is a **NPN** open sewer type, pull-up of 10kOhm toward the feeding voltage included. See the below sheet with the working features.

RS232 sequential connection

This function is available with a 12-24V battery feeding only. If external, it allows a remote reading of the values measured by the flow-meter through the communication channel RS232.

A sequence of data is sent once a second (1Hz) divided in 4 data areas parted from spaces that finishes with a return (sequence ASCII: 13,10).

It follows the meaning of the 4 areas as they are sent:

➢**Unit:** Litres (L); Gallons (G); Fourths (F); Pints (P).
➢**Partial Count:** Hundredths of unit
➢**Total Count:** Hundredths of unit
➢**Liquid flow:** Tenth of unit per minute

The values are displayed according to the unit chosen and without the decimal point. The communication channel RS232 is set up as follows: Speed 9600 bps.; 1 Start Bit, 8 data bits, 1 Stop Bit.

The information formatting is: **<unit>**space**<partial>**space**<total>**space**<flow><ASCII(10)>.**

EX: L 3573993 3726720 9967:
(**L**=*litres*; **3573993** = *35739,93 litres partial*; **3726720** = *37267,20 litres total*; **9967** = *996,7 litres/min*).
L 3575663 3728389 9962
L 3577333 3730059 9967
L 3579003 3731729 9962

Electrical and operating features

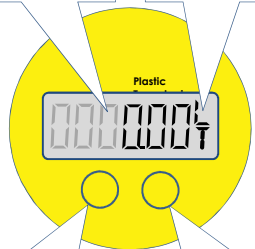| Value	Min.	Standard	Max.	Unit
Operational feeding voltage (external battery) *	3,5		30	Vo
Operational feeding voltage (internal battery)	2,2	3,3	4,5	V
Battery standard life time in Stand-by mode **		6		Years
Battery standard life time **		1		Years
Maximum power at the NPN exit (@V_{GS} 4,5V, max. 0,5 W)			2,7	A
Maximum power at the NPN exit			30	V
Maximum frequency of the pulses reading	300	400	600	Hz
Working temperature interval	-20		60	°C
Driver RS232 (TX) ***		9600		Bps

* With a battery 12-24 V feeding the RS232 communication functions and the NPN exit with 100 pulses/litre are activated.

** the battery life time can change according to its charge and/or to the instrument use. The standard use considers 3 daily working hours and the remaining in Stand-by mode.

*** 1 Hz repeat frequency of the sent data

DIGITAL FLOW-METER PROGRAMMING:
Quadrant functions
Instrument starting
Choose the instrument functions
Choose the unit of measurement
Reset of the partial meter
Adjustment factor
Numerator decimals
Battery replacement

FLOW-METER VERSION WITH EXIT REPLY SIGNAL - RS232 (OPTION):
Wiring connection
Additional functions to the standard model
Exit signal reply
RS232 sequential connection
Electric and working features

QUADRANT FUNCTIONS

Reading data | Set up data

Plastic

Select | Reset

INSTRUMENT STARTING

Push one of the two buttons **Select** or **Reset** to start the display.

Select | Reset | Select | Reset
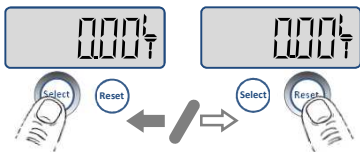
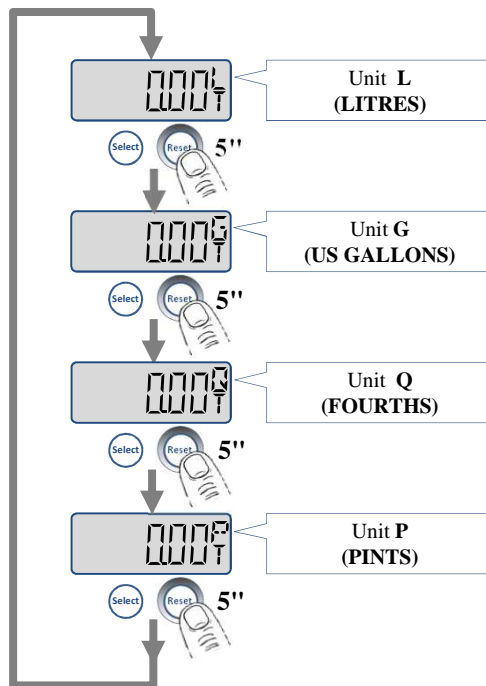**NB:** the display starts automatically with the liquid flow and stops automatically after about 25 seconds of inactivity.

CHOOSE THE INSTRUMENT FUNCTIONS

Push the button **Select** progressively in order to choose the function to control.

Select | Reset → **P** = Partial Count

Select | Reset → **T** = Total Count

Select | Reset → **F** = Flow reader
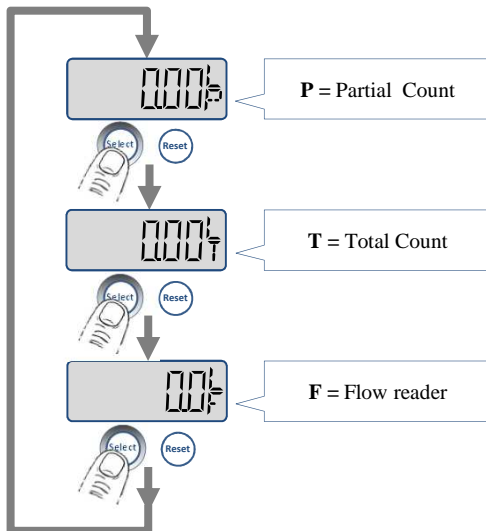
CHOOSE THE UNIT OF MEASUREMENT

From **T** function, press **Reset** for at least 5" as to select the unit of measurement, if, within the foreseen time, the unit has not changed or the unit is not that requested release the button and press again.

Select | Reset 5" → Unit **L** (LITRES)

Select | Reset 5" → Unit **G** (US GALLONS)

Select | Reset 5" → Unit **Q** (FOURTHS)

Select | Reset 5" → Unit **P** (PINTS)

Select | Reset 5"

NB: the quantity of liquid supplied is automatically converted into different unit of measurement.

RESET OF THE PARTIAL METER

If you want, at the end of each supply or before each **"TEST / DOSAGE TEST"** from **P** function only, press **Reset** as to reset the meter.

Select | Reset → Select | Reset
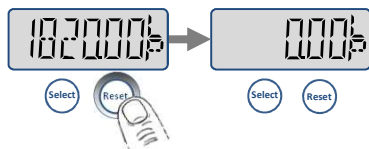
ADJUSTMENT FACTOR

Follow the instructions of the **"DOSING TEST"** from the **MANUAL OF USE AND MAINTENANCE OF THE DIGITAL FLOW-METER** as to find out the value Vr, Vn and calculate the Nfc by using the following formula:

$$Nfc = \frac{Vr \times Fc}{Vn}$$

Nfc = new adjustment factor
Vr = real quantity of liquid supplied in the graduated tank
Fc = adjustment factor
Vn = nominal value of the quantity of liquid supplied shown by the display.

NB: the new adjustment factor has to be included between $500 \div 1500$ points, beyond these values repeat carefully all the **"DOSING TEST"** procedure.
If the value is not within the range contact the supplier as to get the calibration procedure.

From **T** function, press simultaneously both buttons **Select** and **Reset** for at least 5 seconds in order to see the displayed **Adjustment factor**, indicated with **C** letter.

T function (Total count)

5" Select | Reset 5"

C function (Adjustment factor)
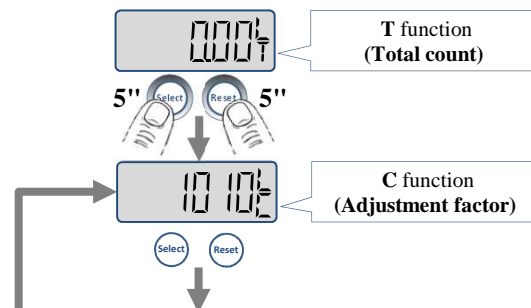
Select | Reset

Find and note the adjustment factor Fc in order to calculate the Nfc.

$$ES: (Nfc) \quad \frac{(Vr)\, 26 \times (Fc)\, 1010}{(Vn)\, 25} = 1050$$

In order to insert the found value (Nfc), press more times **Select** to increase or **Reset** per decrease.

C factor (Adjustment factor)

+ Select | Reset −
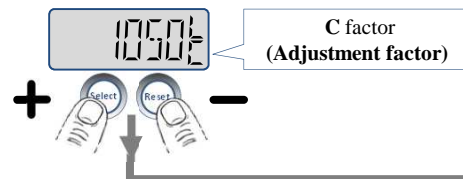
Press **Reset** for at least 5 seconds as to store the Nfc, leave this function for that of the partial count **P**.

Select | Reset 5" → **C** = Adjustment factor

Select | Reset → **P** = Partial count
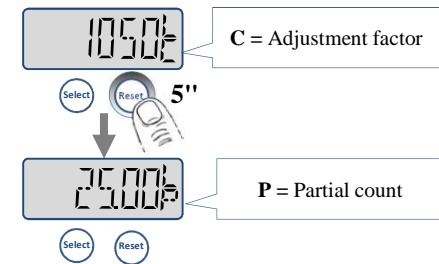
WARNING

➢ It is advisable to repeat the dosing test after the Nfc entry.

➢ It is advisable to do periodically, at least in seasons change, dosing tests in the real use conditions, see the MANUAL OF USE AND MAINTENANCE.

NUMERATOR DECIMALS

The numerator has two decimals that increase through the **Partial** or the **Total** count and become tens, when 999999 units are exceeded the meter is automatically reset.

BATTERY REPLACEMENT

If on the display starts to light the **B** letter alternatively to **P, T** or **F** letter (**Partial – Total – Flow reader**) the battery has to be replaced, this doesn't involve the parameter loss. Follow the **MANUAL OF USE AND MAINTENANCE** instructions for the battery replacement.