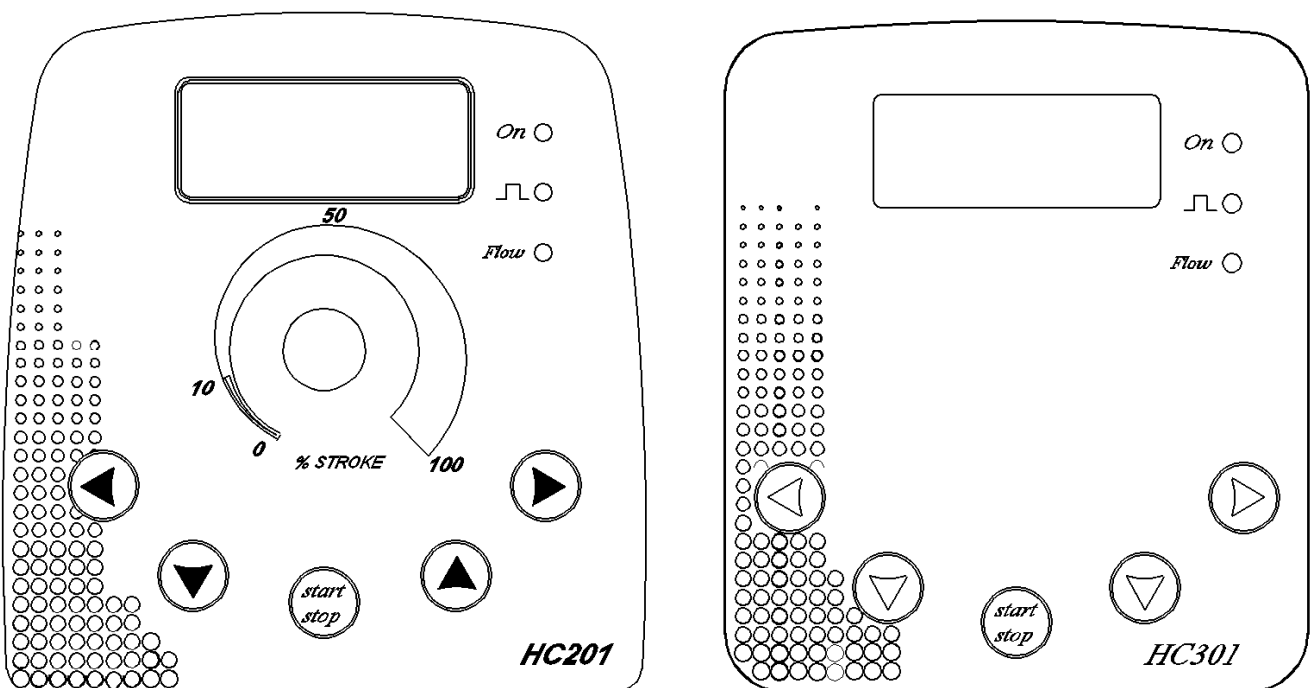


PROGRAMMING INSTRUCTIONS FOR DOSING PUMP

HC 201 – HC 301



1. HC201-HC301 ENGLISH

The HC201-HC301 dosing pump is a complete and versatile thanks to an advanced microprocessor electronics. It is suitable to all plants through the following functions:

- ◆ Manual (imp/min, imp/h, imp/day)
- ◆ Proportional to an external signal in current 0/4-20mA
- ◆ Proportional to a digital impulse with the possibility to multiply or divide the impulse received 1-999
- ◆ Temporised through an inner timer that can be programmed every day and every week
- ◆ Function of auto-learning, it checks the correspondence between impulse and passage of liquid (only with additional sensor)
- ◆ Repetition of the alarm signal through relays NC/NO
- ◆ Direct or reverse remote controlled to pilot the pump from a remote contact

Upper in the right part of the frontal panel there are:

1. N° 3 LED whose colours are: GREEN (switched on pump signal that becomes ORANGE when the pump is switched off from an external signal: ex level probe); RED (it indicates every single impulse); ORANGE that indicates lack of flow if the respective sensor is connected in delivery
2. N° 5 buttons to scroll the menu of the pump, the START/STOP button allows to stop and reactivate the pump during the change of the programmes.

2. PROGRAMMING

The functions of this pump are the following:

2.1 Manual

This function allows the pump to work in a constant way with a digital frequency regulation.

Programming: push the START/STOP button to put the pump in pause and to enter in programming mode. Through the arrow ◀ ▶ scroll the menu until you can see MANUAL. Through the arrow ▼ enter inside the menu MANUAL and choose: IMP/MIN to program the pump with X impulses per minutes (max 120); IMP/DAY to program X impulses per day (max 48) or IMP/HOU to program X impulses per hour. Through the arrows ◀ ▶ set the number of the impulses. Press the ▲ or ▼ arrow to escape and START/STOP button to recommence dosing with the new setting, the display visualizes the option you have selected. (see fig. A)

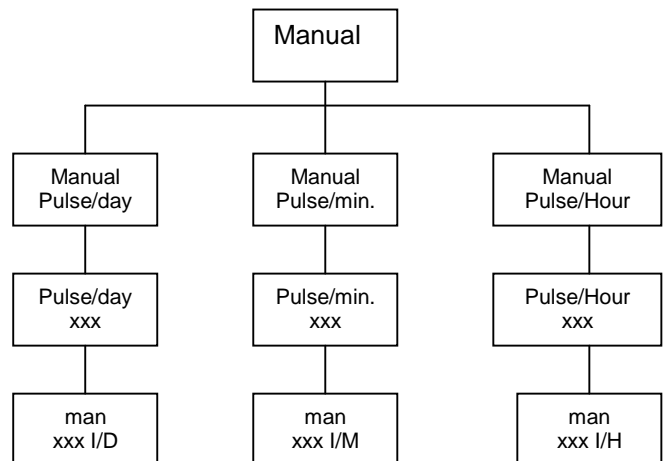


Fig. A

2.2 Proportional to external impulses

This function allows the pump to work in a proportional way to the impulses received.

Programming “1xN 1xN(M) 1/N”: Push the START/STOP button to put the pump in pause and programming mode. Through the arrow ◀ ▶ scroll the menu until you can see 1xN 1xN(M) 1/N. Through the arrow ▼ set the function desired.

1xN Function: (this function multiplies the impulses received from an external digital signal, ex: water meter. The pump ignores the arrival of the impulses while working).

Programming: to activate the 1xN function it can go, through the arrow into the corresponding menu and through the arrows ◀ ▶ choose the number of impulses the pump has to realise per every one received. By pressing again the arrow ▼ you can program through ◀ ▶ the working frequency. Press the ▼ or ▲ arrow to escape and the START/STOP button to start dosing with the new settings, the display visualizes the option you have selected (see Fig. B).

1xN (M) function: this function adds to 1xN the MEMORY function as follows:

- **impulse frequency > max frequency pump:** “the impulses received during work are memorized and used in a sequence way as long as their exhaustion”.

- **impulse frequency < max frequency pump:** “between the impulse received and the following one the pump distributes uniformly the pumps to avoid dead times”.

Programming: to activate the 1xN(M) function it can go into the under-menu to act 1xN(M) function and through the arrows ◀ ▶ choose the number of impulses made by the pump for every impulse received. By pressing again the arrow ▼ you can program through ◀ ▶ the working frequency. Press the ▼ or ▲ arrow to escape and the START/STOP button to recommence dosing with the new settings, the display visualizes the option you have selected (see Fig. B).

1/N Function: (this function divides the impulses received from an external digital signal, ex: water meter, impulse transmitters).

Programming: through the arrows ▼ it can go into the menu to activate 1/N function, and through the arrows ◀ ▶ choose the number of impulse the pump has to receive to realize one pump. Press the ▼ or ▲ arrow to escape and the START/STOP button to recommence dosing with the new settings, the display visualizes the option you have selected (see Fig. B).

2.3 Proportional dosing from milliAmp (mA) current signals

This function enables the operator to program 2x set points with respective stroking speeds across the whole of the milliamp input signal or a selected band within the signal range.

Programming: push the button START/STOP to put the pump in pause and enter the programming mode. With the arrows ◀ ▶ button scroll through the menu until mA is displayed.

Press the ▼ arrow to display the mA set point N°1 (it is standard set to 4.0 mA). With the ◀ ▶ arrows increase or decrease the milliamp value required.

Press the ▼ arrow to display the mA set point N°2 (it is standard set to 20.0 mA), with the ◀ ▶ arrows increase or decrease the milliamp value required.

Press the ▼ arrow to display the frequency at set point N°1 (it is standard set to 0 imp/min) and with ◀ ▶ arrows increase or decrease the stroking rate required.

Press the ▼ arrow to display the frequency at set point N°2 (it is standard set to 120 imp/min) and with ◀ ▶ arrows increase or decrease the stroking rate required.

Press the ▼ arrow to display over mA set point N°1 and with ◀ ▶ arrows select either STOP or CONTINUE. This will either permit or inhibit dosing if the set point is passed.

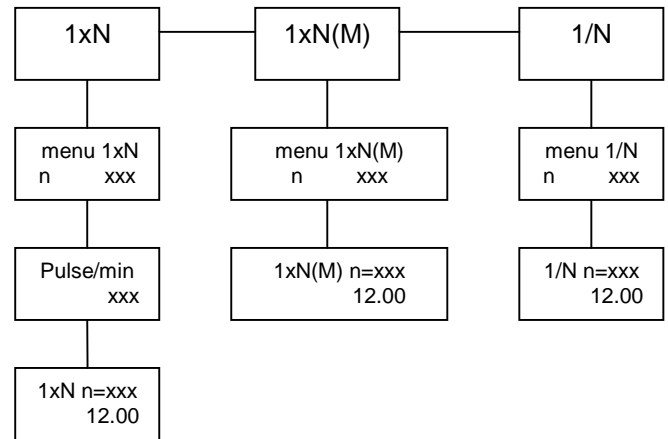


Fig. B

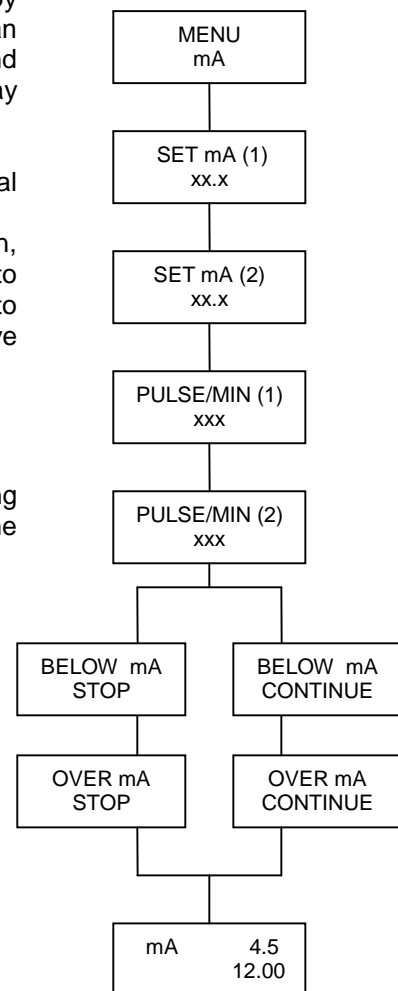


Fig C

Press the ▼ arrow to display over mA set point N°2 and with ◀ ▶ arrows select either STOP or CONTINUE. This will either permit or inhibit dosing if the set point is passed. Then press the ▼ or ▲ arrow to escape and the START button to recommence dosing. The mA will then be displayed along with the input mA signal strength. (Fig. C)

2.4 Proportional in PPM (parts per millions)

This function allows to set in a direct way the PPM value desired in relation with the impulses received from a water meter. Considering the passing water, the solution concentration to dose and the solution quantity each impulse, it is necessary to set the number of PPM of the product in the water.

Programming: push the button START/STOP to put the pump in pause and enter the programming mode. With the arrows ◀ ▶ run the menu till appears PPM.

- With the arrow ▼ you can enter the menu [L-I CONT] (defined standard 1.00) though ◀ ▶ it is possible to set freely the liters per impulse supplied from the water meter connected to the pump with reference to the following table.

L/I CONT	0.1	0.25	0.5	1.00
Imp/lt	10	4	2	1

L/I CONT	25	50	100
Imp/100 lt	4	2	1

L/I CONT	1.5	5	10
Imp/10lt	4	2	1

L/I CONT	250	500	1.000
Imp/m³	4	2	1

- Pushing again the arrow ▼ you can enter the menu [CC/INJECTION] (defined standard to 0.01CC) through ◀ ▶ it is possible to set freely the quantity each injection. To set the exact value of the impulse flow of the pump, the procedure is the following:

- 1) Install the pump on the plant
- 2) Provide with a cylinder with the graded scale
- 3) Switch on the pump in the manual function and dose 10 injection (otherwise it can be used the 1xN function to avoid counting)
- 4) Draw attention to the quantity of the supplied product and divided the value in 10 parts (or N)
- 5) Set on the display the obtained value

- Pushing again the arrow ▼ you can enter the menu [SET PPM] (defined standard 1) through ◀ ▶ it is possible to set the value in ppm that you desire to maintain in the plant (0.1-20000)

Press the ▼ or ▲ arrow to escape and the START/STOP button to recommence dosing with the new settings, the display visualizes the option you have selected (see Fig. D).

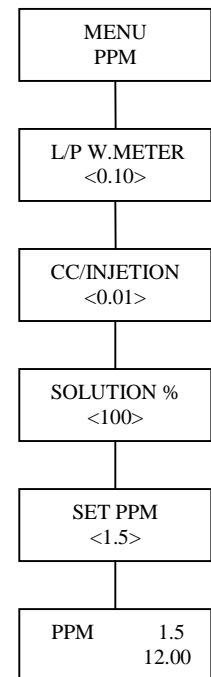


Fig. D

2.5 Alarm (to be used only with additional Injection sensor)

This is an auto-learning function that allows the pump, after giving a number of reference, to compare the number of electrical impulses with the ones of an injection sensor connected to the delivery; If this number is higher than the number set in (MAX DIFF), the pump emits a loud alarm signal (BUZZER) that can be repeated also is the distance through the a relays contact and it stops the pump.

Programming: push the button START/STOP to put the pump in pause and enter the programming mode. With the arrows ◀ ▶ button scroll through the menu until appears ALARM.

With the arrow ▼ go into the REF. IMP that allows, through ◀ ▶ to set the number of Sampling pulses (eg. 10).

By pressing the arrow ▼ again go into the menu MAX DIFF that allows, through ◀ ▶ to fix the maximum number of admissible failures (eg. 5 each 10 impulses), besides these the pump gives the alarms. Then press the ▼ or ▲ arrow to escape and the START button to recommence dosing with the new settings. (Fig. E)

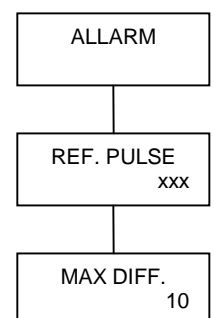


Fig. E

2.6 Level / Flow

This function allows to stop the pump at the closing or opening of a volt free switch contact (low level switch). Moreover it can enable or disable the flow sensor input.

Programming: push the button START/STOP to put the pump in pause and enter the programming mode. With the arrows ◀ ▶ button scroll through the menu until appears [LEV/FLOW]. By pressing the arrow ▼ again go into the menu LEVEL and with the arrows ◀ ▶ it is possible to choose the interpretation of low level alarm (normally open, normally closed). Pressing again the ▼ arrow you enter the sub-menu FLOW to enable or disable the signal coming from the flow sensor with the arrows ◀ ▶. Then press the ▼ or ▲ arrow to escape and the START button to recommence dosing with the new settings. (Fig. F)

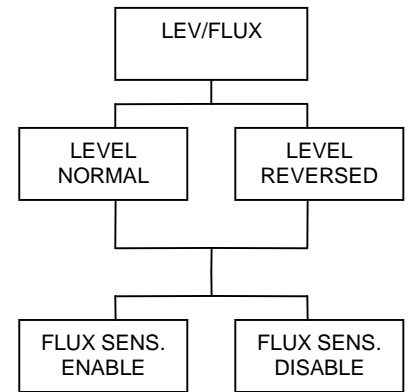


Fig. F

2.7 Buzzer (only for Alarm function)

This function allows to emit a sound in case of Alarm.

Programming: with the arrows ◀ ▶ scroll the menu until BUZZER displays. With the arrow ▼ go into the menu BUZZER; through ◀ ▶ select the desired function (active or inactive). Then press the ▲ ▼ to escape and then the START/STOP button to recommence dosing with the new settings. (Fig. G).

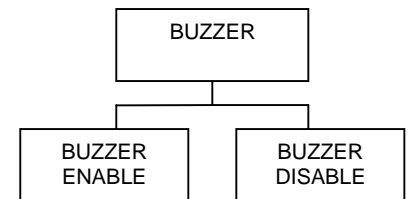


Fig. G

2.8 Clock

It is used to set the time and date.

Programming: with the arrows ◀ ▶ scroll the menu until CLOCK is displayed. With the arrow ▼ go into the menu:

- ◆ By pressing the ▼ arrow again you can go into the under-menu DATE XX-xx, that allows, through ◀ ▶ to change the hours.
- ◆ By pressing the ▼ arrow again you can go in the under-menu DATE xx-XX, that allows to change the minutes through the arrows ◀ ▶.
- ◆ By pressing the ▼ arrow again you can go into the under-menu DATE xx-xx that allows through ◀ ▶ to change the date by setting: day – month – year.

Then press the ▲ ▼ to escape and then the START/STOP button to recommence dosing with the new settings. (Fig. H).

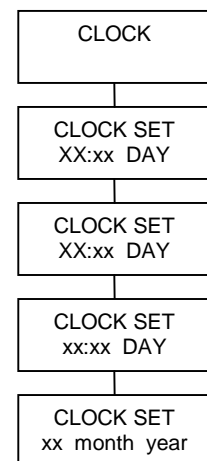


Fig. H

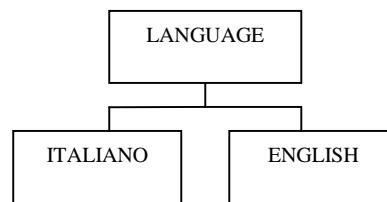
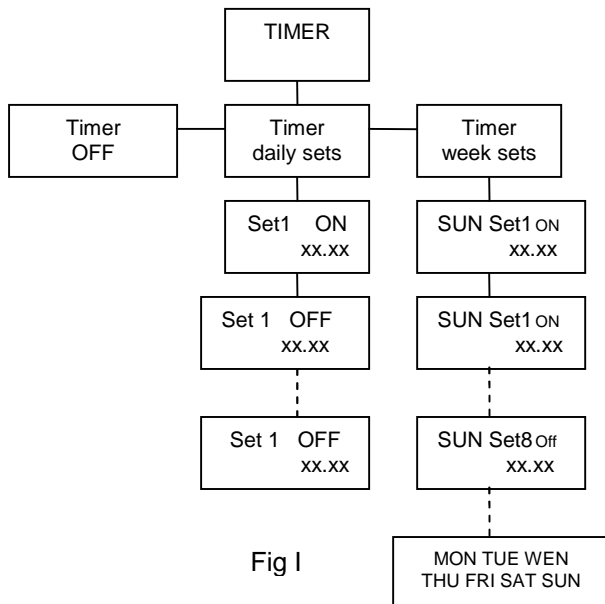
2.9 Timer

The pump has a timer control which permits up to 8 timed doses per day on a repetitive daily bases or alternatively on a 7-day cycle.

Programming: with the arrows ◀ ▶ scroll the menu until TIMER is displayed. With the arrow ▼ you can go into the menu TIMER. Through ◀ ▶ arrows it is possible to choose among TIMER OFF, DAILY SETS, WEEKLY SETS.

Daily sets: through the arrow ▼ go into the corresponding menu: SET 1 On and through ◀ ▶ it is possible to set the switching on hour of the pump, by pressing ▼ it is possible to set the minutes. With the ▼ you can reach SET 1 OFF and repeating the procedure it is possible to set the switching off time. It is possible to program a maximum of 8 daily interventions (ON/OFF) by repeating the operation above.

Weekly sets: through the arrow ▼ go into the menu WEEKLY TIMER [SUN SET 1 ON] and through ▼ it is possible to set the switching on time of the pump. By pressing ▼ again you reach SET 1 OFF and through ◀ ▶ you can set daily the extinction time of the pump. By pressing ▼ again it is possible to run over all set points of all days of the week until the one in which making the dosage has been reached. It is possible to program a maximum of 8 daily interventions for each day of the week by repeating the operation above. Then press the ▼ to escape and then the START/STOP button to recommence dosing with the new settings. The display will visualize, lower to the left, T.OFF or T.ON to indicate that the pump works in accordance with the timer (Fig I).



2.9 Language

It allows to select the programming language of the pump.

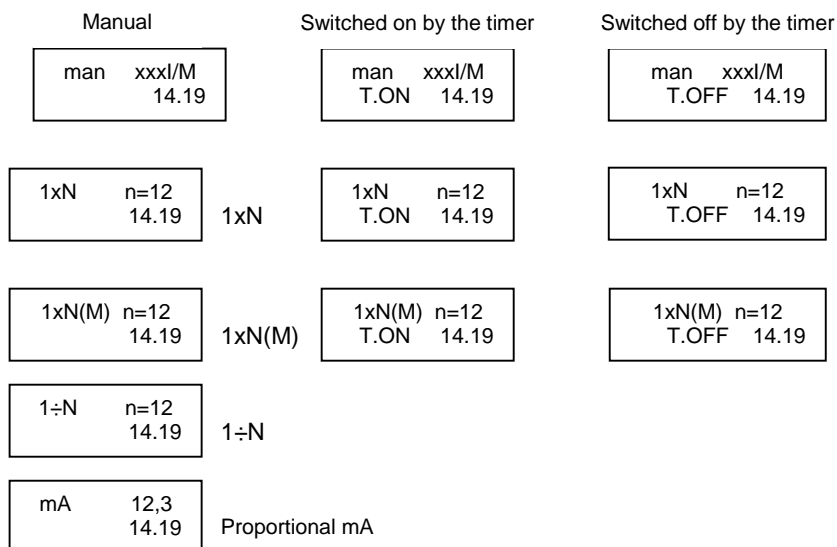
Programming: with the arrows ◀▶ scroll the menu until LANGUAGE appears. With the arrow ▼ you can go into the under-menu LANGUAGE; through ▶◀ it is possible to choose between ITALIANO or ENGLISH. (Fig. L)

SPECIAL NOTE

The ancillary functions (as opposed to the control functions) CLOCK, TIMER, BUZZER, ALARM, LEVEL/FLOW, LANGUAGE, can all work simultaneously with the control function and have to be programmed after these.

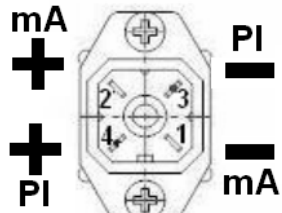
DISPLAY VISUALIZATION

The display will confirm which function are activated and the pump's status at any time. Please see the typical examples below.

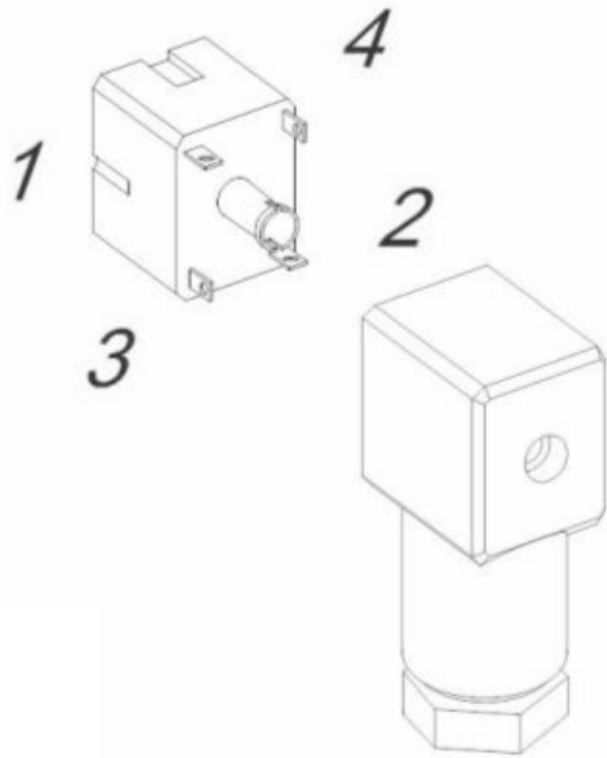




level
3-4



PI-mA
PI 3-4
mA 1-2



The pulse input is suitable for :

- ◆ Relay input without voltage
- ◆ Digital input Type NPN with maximum voltage < 1 V (the polarity must be respected 3 -, 4 +)

Warning!! A different connection from the ones already described will damage the pump circuit.