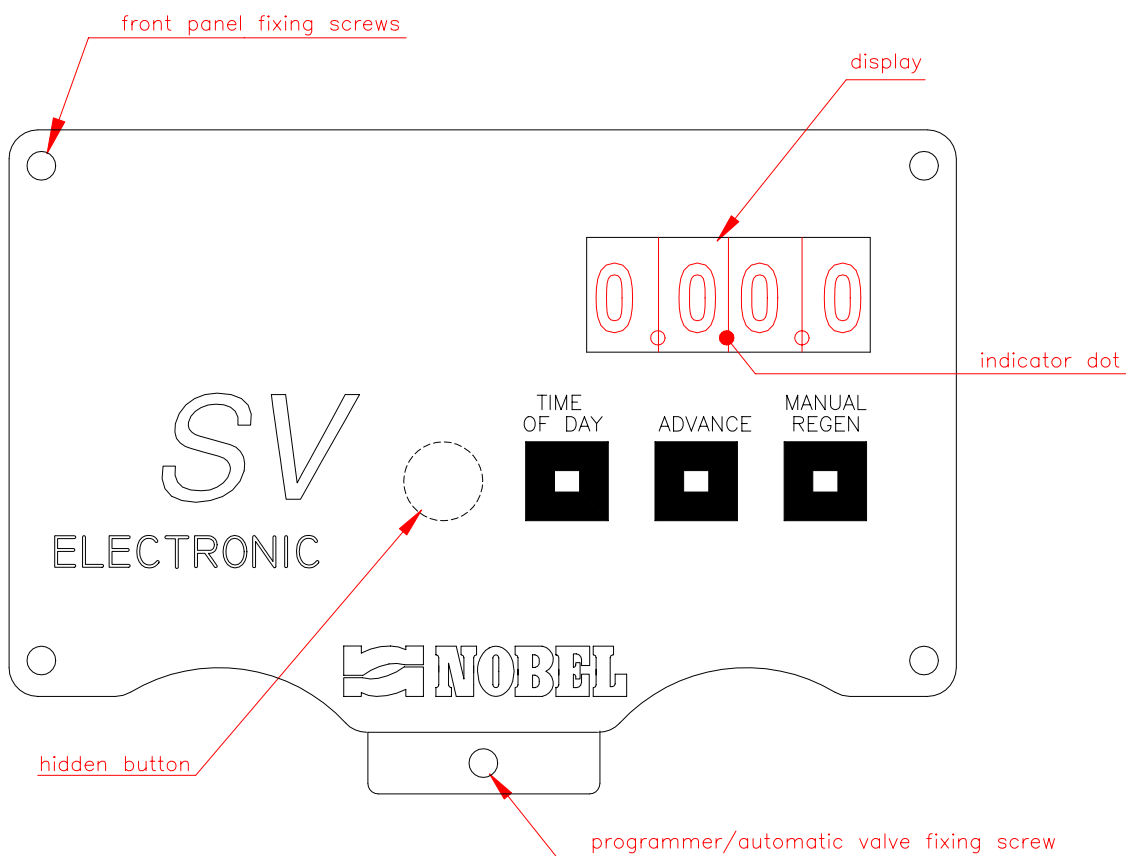# ELECTRONIC PROGRAMMER **SV** TYPE

FOR AUTOMATIC SOFTENERS
SERIES: AC/SV
AS/SV

CAUTION !

Switch off the power supply and remove the electrical wiring before to open or any operation inside the programmer.

1. General information

1.1. How to store, delivery and instal

	t = ºC	t = ºF	humidity rel.	notes
• closed rooms	0÷45	32÷113	5÷95% without condensate	
• open space	0÷45	32÷113	5÷95% without condensate	protect from sun-light and rain
• transport	0÷45	32÷113	5÷95% without condensate	protect from sun-light and rain
• installation	0÷45	32÷113	5÷95% without condensate	protect from sun-light and rain

1.2. Technical characteristics

Electrical supply	V ph/Hz W	230 1/50-60 10
Protection		IP20

2. Electrical wiring connection

- insert the power feeder of the programmer in a proper electrical socket; check the power supply meets the technical data.

3. Commissioning

- The programmer is usually supplied already fixed to the control valve of the softener, held by the special rear brackets and screwed on the front of the programmer.
- Flow sensor (connected with programmer) is usually plugged in the proper socket on the body valve, linked to the internal turbine; if it were not so, provide to plug it in just by hand, with no tools.

NOBEL®

CALOR SRL Str. Progresul nr. 30-40, sect. 5, Bucuresti   tel: 021.411.44.44, fax: 021.411.36.14   www.calorserv.ro - ofertare@calor.ro

4.   Description

The programmer works at 12 V ac (10 VA) power and it is normally supplied complete of built-in transformer in order to be connected directly to the main supply (230 V 50/60 Hz).

The programmer keeps in memory permanently all last entered data, even when the power supply is off.

The purpose of the battery included in the electronic card is only to keep in memory the temporary data (current time of day, supplied volume of water, time of phases of the running regeneration), in case of power failure. A new buffer battery can keep the memory for approx one month; its efficiency decreases in the time, when it is aged.

The display shows normally current time of day.
During the regeneration cycle, the display shows, alternately :

- the time of rotation of the motor (seconds counting-down) during the passage between two following phases
- the time of the single phase of the regeneration cycle (minutes counting-down) : 1C BACKWASH = 2C BRINE DRAWING = 3C SLOW RINSE = 4C FAST RINSE

Close to the left of the button "TIME OF DAY" is available a HIDDEN button (see the first page of this manual); it is useful for programming as described in the sequel.

The button "MANUAL REGEN", simulates an end-cycle, then it starts the regeneration.

CAUTION
- The pushing of the button "MANUAL REGEN", while a regeneration is running already, concludes the running phase and skips the system to the following one.

Note: All buttons must be pressed for a time from 0.6 and 1.2 seconds.

4.1.   Memory re-set

Remove the frontal panel (fixed with 4 screws at the corners), to access to the electronic card. Besides the 4 main (protruding) buttons already mentioned, another button (flat) is available, on the right and lower side of the card. By pushing this button the memory is totally re-set.

4.2.   End-cycle

The *SV* programmer allows to handle the operating cycle according to both time and volume. The volume of water supplied is measured by mean of a pulse sender (turbine) integrated in the body of the automatic valve (S132/SV type).

The end cycle is scheduled as follows :

- regeneration starts after that the pre-set volume of water has been supplied, but only at a pre-set time of day
- regeneration starts at a pre-set day and time of day, adjustable in a range of 14 days and 24 hours per day (max. 1 regeneration per day). The regeneration starts also if the pre-set volume has not been reached.
  Since it is not possible to exclude time programming, the end cycle (and then the regeneration) will start at least every 14 days (minimum allowed set).

4.3.   Volume visualization, ratio reader/water meter

The integrated pulse sender turbine sends 14 pulses for liter of water supplied.

The pulses are received by the programmer, that drives the same pulses according to a programmed ratio (ratio reader/water meter).

The driven pulses are shown on the display as single units, the real meaning (value) of which depends on the programmed ratio.

Hence, if **value 14 is programmed as ratio**, the programmer will increase one unit after that received 14 pulses, therefore **every liter. It means that the value the display shows are liters.**

Since four digits are available on the display, the max. allowable visualization is 9999 liters.

To dispose of bigger settings it will be necessary to increase the value of the programmed ratio (ratio reader/water meter); in this way it is possible to count and visualize multiple of liters.

For instance if the **value 28 is programmed as ratio**, the programmer will increase one unit after that received 28 pulses, therefore **every 2 liters**. **It means the value of the display shows are double liters** (with maximum 19998 liters)**.**

To program the ratio reader/water meter see chapter "***Programming***".

4.4.   Volume of end-cycle

The programmer allows to set the volume of end-cycle and a "*reserve volume*" as well. The meaning of the *"reserve volume"* is that the programmer subtracts this value from the volume of end-cycle and the results is the volume scheduled in order to start regeneration.

(Example of settings: volume = m³ 5; *reserve volume* = m³ 1; the programmer will start the regeneration when the system has supplied 4 m³ of treated water (5-1=4)).

According to the above explanations, it is obvious that this feature can be significative only if the time-volume schedule is selected.

Indeed, according to this mode, regeneration will start only at the pre-set time of day and only **AFTER** that the pre-set volume of water has been already supplied.

However, after these information, and in order to make easier the programming and handling of the unit, it is suggested **NOT** to program the *reserve volume* but only the volume of end cycle. The programmed value could be lower than the real cycle of the softener in order to make, automatically, the same feature of the volume reserve.

To program the regeneration volume see chapter ***"Programming"***.

NOBEL®

CALOR SRL Str. Progresul nr. 30-40, sect. 5, Bucuresti   tel: 021.411.44.44, fax: 021.411.36.14   www.calorserv.ro - ofertare@calor.ro

5.   Programming

5.1.   How to set the time of day

- Push the button "TIME OF DAY", and then "ADVANCE" to modify the blinking digits
- First pressing allows to modify the minutes, the second one to modify hours
- Push once again "TIME OF DAY" to show the adjusted time of day

5.2.   How to set the time and day of regeneration and volume data

1. Push once the "HIDDEN" button; the light dot is shown between the 1st and 2nd digit of the display
2. By pushing now the button "ADVANCE", it is allowed to adjust the blinking numbers (two digits on the right side, minutes)
3. Push once again the "HIDDEN" button to skip to the adjustment of the blinking numbers on the left side, hours; the light dot still remains between the 1st and 2nd digit; use the button "ADVANCE" to modify the blinking digits.
4. Push again the "HIDDEN" button; the light dot appears between the 2nd and 3rd digit; the display shows notice "FF04", where the number 04 (or any other, between 1 and 14) indicates how often regeneration is scheduled.
5. By pushing the button "ADVANCE" the blinking digits (only numbers) can be modified; the allowable setting is between 1 and 14 (every day - every 14 days).
6. Push again the "HIDDEN" button; the light dot is shown between the 3rd and 4th digits of the display, allowing to adjust the volume of regeneration.
7. By pushing the button "ADVANCE" the blinking digits (3rd and 4th) can be modified
8. Push once again the "HIDDEN" button to skip to the adjustment of the blinking numbers on the left side; the light dot still remains between the 3st and 4th digit; use the button "ADVANCE" to modify the blinking digits.
9. Push once again the "HIDDEN" button; the light dot is shown on the right side of the 4th digit, allowing to adjust the reserve volume of regeneration
10. By pushing the button "ADVANCE" the blinking digits (3rd and 4th) can be modified
11. Push once again the "HIDDEN" button to skip to the adjustment of the blinking numbers on the left side; the light dot still remains at right side of the 4th digit; use the button "ADVANCE" to modify the blinking digits.
12. Push again the "HIDDEN" button; the display shows notice "AA14", where the number 14 (or any other, between 1 and 14) indicates the pre-set ratio reader-water meter.
13. By pushing the button "ADVANCE" the blinking digits can be modified
14. Push again the "HIDDEN" button; the display shows notice "End-", indicating the end of programming and saving in memory of entered data.
15. After approx 1 second the notice disappears and the display show again the current time of day.

   WARNING: whether not any button is pushed for 30" before to reach the visualization of notice "End-" the programming mode is interrupted AND ALL MODIFICATIONS ARE LOST.

5.3. How to set the frequency of power supply and the time of phases

This data are factory set before shipment. They can be modified as follows:

1. push several times the HIDDEN button, until the display shows "Pr--"
2. push once more the HIDDEN button
3. push once the button "TIME OF DAY"
4. the display now shows "Fr50", where 50 is the frequency (Hz) of the available power supply; push the button "ADVANCE" to modify the pre-set value (50 or 60 Hz) according to local available power supply
   WARNING : the setting of a wrong value of the electric frequency will affect the correct running of the regenerations of the unit
5. push again the HIDDEN button, the display shows notice "1Cxx", where 1C is the phase of backwash and xx is the pre-set time, in minutes, as duration of the phase; push the button "ADVANCE" to modify the pre-set value
6. push once again HIDDEN button to skip to the next phase
7. after the modification of the time of last phase 4C, push once again the HIDDEN button, the display will show notice "End-"; it means the end of programming and saving of entered data
8. after one seconds approx the display will show again the current time of day.

> ***WARNING:*** whether not any button is pushed for 30" before to reach the visualization of notice "End-" the programming mode is interrupted AND ALL MODIFICATIONS ARE LOST.

ALL FACTORY SET OF THE PROGRAMMER ARE LISTED IN THE LAST PAGE
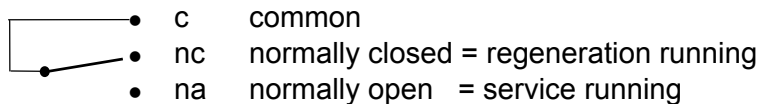
6.   Note

1. The display lights up after several seconds that the power supply has been switched on.

2. The regeneration starts at the scheduled time and day (setting FF....). If the time and/or day of regeneration is modified, the modification will be accepted by the programmer only at the midnight (00.00) immediately subsequent the modification.
   Example: assumed regeneration scheduled every day (FF01) and at 06.00 p.m. as time of regeneration. Assumed to modify, at 10.00 a.m. the time of regeneration, and the new one is 08.00 p.m.: the new setting will be accepted only the day after, while for the current day the regeneration will start at 06.00 according the previous schedule.
   Therefore, it is not possible to check the immediate automatic starting of a time scheduled regeneration, but it is required to wait for the day after. Whether a running test is performed, these information should be taken in consideration: if the programmer is really defected, the pushing of button "MANUAL REGEN" does not start the regeneration.

3. The light point between 2nd and 3rd digit blinks when the display shows the time of day. During the programming, it is not blinking and indicates, moving from one point to another, which is the value/mode on modification.

4. If the display blinks during visualization of current time of day, it is required to re-adjust the time of day.

5. In the case of high external electromagnetic interferences or after long period of power failure (for example during transport and/or storing), it can happen that the display will light up only partially or will not light up at all.
In this case it is required to reset totally the memory by pushing the special button on the electronic card , as explained at chaper 4.1 *"Memory re-set"*

7. Special programmer with free-voltage contact for remote alarm

One free voltage contacts (max. 1A 250V) can be available, upon request, inside the programmer. It can be used for a remote signal of the state of regeneration/service.

The terminals of the contacts are marked as follows :

- c common
- nc normally closed = regeneration running
- na normally open = service running

8. SV programmer : factory set

MODEL		start regeneration time	start regeneration day	RATIO READER/METER	END-CYCLE UNITS	reserve UNITS	PHASES MINUTES 1C	2C	3C	4C	liter per unit	end cycle unit	end cycle liters correspondence
AC	90/SV	0230	FF04	AA14	3000	0000	03	15	10	10	1	3000	3000
AC	150/SV	0230	FF04	AA14	5000	0000	03	15	15	10	1	5000	5000
AS	90/SV	0230	FF04	AA14	3000	0000	03	15	10	10	1	3000	3000
AS	150/SV	0230	FF04	AA14	5000	0000	03	15	15	10	1	5000	5000
AS	210/SV	0230	FF04	AA14	7000	0000	05	20	15	10	1	7000	7000
AS	300/SV	0230	FF04	AA14	9999	0000	05	20	20	15	1	9999	9999
AS	450/SV	0230	FF04	AA28	7500	0000	05	20	20	15	2	7500	15000
AS	600/SV	0230	FF04	AA28	9999	0000	05	25	20	15	2	9999	20000
AS	800/SV	0230	FF04	AA56	6500	0000	05	25	20	15	4	6500	26000

SV factory standard settings — *liters units correspondence*