OS3015

Instruction manual for reverse osmosis plants

Instruction manual

Software versie 2.00

Contents

General description

The OS3015 operating control is used to fully automatically monitor and control very simple water treatment systems, which operate according to the reverse osmosis principle.

The basic values that have been programmed into the operating control can be changed at any moment and are not erased in case of a power failure.

The control has four switching steps, namely "PRODUCTION", "STAND-BY", “RINSE” and “INTERVAL RINSE”.

"Production" step

The start of the production depends on the number of programmed level switches and the position of these switches (inputs FU and EM).

In the "Production" step of the reverse osmosis system first the inlet valve is opened. After an adjustable delay time of 1 - 999 seconds the high-pressure pump is activated.
The following values are monitored:

- Low water pressure input
- Exceeded pressure input
- Tank high-level input
- Tank low-level input
- Stop

A built-in working hours counter registers the duration of the "PRODUCTION" step from one minute to 65.000 hours.

"Stand by" step

No water flows during the "Stand by" step. The input valve is closed and the high-pressure pump is switched off.

The following values are monitored:

- Tank high-level input
- Tank low-level input

"Rinse" step

The step "Rinse" will be activated (if programmed in step 10.1) after finishing the step "Production".
The concentrate valve will be opened always. The inlet valve and high pressure pump can be programmed. The high pressure pump can be switched on with a programmable delay.

The following values are monitored:

- Low water pressure input (only when inlet valve is opened)
- Exceeded pressure input
- Tank high-level input
- Tank low-level input
- Stop

"Interval Rinse" step

The step "Interval Rinse" will be activated (if programmed in step 11.1) when there is no water production for a programmable time.
The concentrate valve will be opened always. The inlet valve and high pressure pump can be programmed. The high pressure pump can be switched on with a programmable delay.

The following values are monitored:

- Low water pressure input (only when inlet valve is opened)
- Exceeded pressure input
- Tank high-level input
- Tank low-level input
- Stop

Measuring and function display

First LCD line
The first line of the LCD display shows the actual phase of the system: "Production", "Stand-by", “Rinse” and “Int.Rinse”.
If the system has been switched off on account of an alarm situation during one of the above phases, then this is indicated by the additional text “Alarm”
(eg “Rinse Alarm”).

Second LCD line
Depending on the current phase of the system, the second line of the LCD display shows operating values.

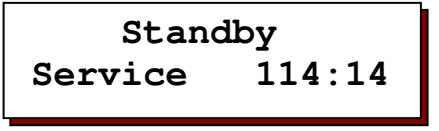
Second LCD line for the "Production" step

The second line of the LCD display shows the following information during the "Production" step:
At the beginning, the delay time is displayed in seconds, until the high-pressure pump is enabled, for instance "Delay 10s".

Also the values of the production hours are displayed.

Service 114:14 (hours:minutes)

Second LCD line for the "Standby" step



The second line of the LCD display shows the following information during the "Standby" step:

Also the values of the production hours are displayed.

Service 114:14 (hours:minutes)

Second LCD line for the "Rinse" step

The second line of the LCD display shows the following information during the "Rinse" step:
At the beginning, the delay time is displayed in seconds, until the high-pressure pump is enabled, for instance "Delay 10s".
During the rinse, the remaining rinse time will be displayed.

Also the values of the production hours are displayed.

Service 114:14 (hours:minutes)

Second LCD line for the "Interval rinse" step

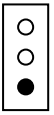
The second line of the LCD display shows the following information during the "Interval Rinse" step:
At the beginning, the delay time is displayed in seconds, until the high-pressure pump is enabled, for instance "Delay 10s".
During the rinse, the remaining rinse time will be displayed.

Also the values of the production hours are displayed.

Service 114:14 (hours:minutes)

Info display

The information key can be used to retrieve various information. When you press the information key, the first information is displayed.
You can obtain further information by pressing the key again.



Input switch positions

```
     Input
LP- FU- EM-
```

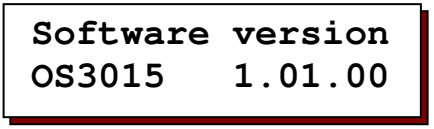
Here the current switch positions of the input functions are displayed.
LP = low water pressure FU = high-level switch
EP = exceeded pressure EM = low-level switch
ST = stop

Output switch positions

```
    Output
IV- PU- AL-
```

Here the current switch positions for the IV, PU and AL / CV outputs are displayed.
IV = Inlet valve
PU = High pressure pump
AL = Alarm
CV = Concentrate valve

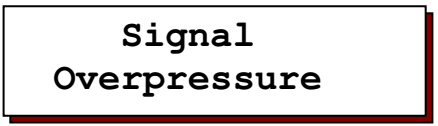
Software version



The factory regularly updates the software. Changes are made as necessary to adapt the product to the latest insights and requirements. Displayed is the number of the built-in version.

Alarms

Exceeded pressure



The "excess pressure" input has been activated. The system is switched off and automatically switched on again after a programmed delay time.
Possible cause: set value for the system was changed, soiled membrane.

Low water pressure

The "Low pre-pressure" input has been activated.
The system is switched off and automatically switched on again after a programmed delay time.
The message disappears as soon as the "low pre-pressure" signal has been cancelled.
Possible cause: no water pressure

Stop

The "Stop" input has been activated.
The system is switched off and switched on again when the signal at the input has been cancelled.
The message disappears as soon as the "low pre-pressure" signal is cancelled.

Input functions

The ‘Low water pressure’ (LP) and ‘Tank full’ (FU) inputs are standard available.
The third IN input depends on the programming :
- ‘Tank empty’ for two level switches
- ‘Exceeded pressure’ for one level switch
- ‘Stop’ for one level switch

Low water pressure

The ‘Low water pressure’ (LP) input is used to prevent the pump from running dry.
In step 6.1 you can program the delay before the system is switched off. The LCD display shows the message ’Low water pressure’ and in step 7.1 you can set whether the alarm relay must be activated for this message.
The system switches on again automatically after the delay programmed in step 6.3.

The input function is active when the contact is open.

Tank full / Tank empty

The input functions ‘Tank full’ (FU) and ‘Tank empty’ (EM) are used for automatically filling a storage tank.
In step 5.1 you can select whether one or two level switches are used.
If you only use one level switch, then the ‘IN’ input is used for excess pressure safety.
Replenishing takes place after :
- a programmable delay when programmed for one level switch
- a fixed one-second delay when programmed for two level switches

The FU input function is active when the contact is open.
The EM input function is active when the contact is closed.

Exceeded pressure

The ‘Exceeded pressure’ (EP) input function can only be used if only one level switch is used.
In step 6.2 you can program the delay before the system is switched off. The LCD display shows the message ’Exceeded pressure’ and in step 7.1 you can set whether the alarm relay must be activated for this message.
The system switches on again automatically after the delay programmed in step 6.3.

Stop

The ‘Stop’ (ST) input function can only be used if only one level switch is used.
In step 6.3 you can program the delay before the system is switched off. The LCD display shows the message ’Stop’ and in step 7.1 you can set whether the alarm relay must be activated for this message.

The system switches on again automatically when the input is no longer active.

Output functions

The output functions ‘Inlet valve’ (IV) and ’High-pressure pump’ (PU) are standard available.
The output functions ‘Alarm’ (AL) and ’Concentrate valve’ (CV) can be selected for the third relay output (terminals 9,10 and 11).

Inlet valve

The input valve is opened as soon as the ‘Production’ step, “Rinse” step (if programmed) or “Int.Rinse” step (if programmed) is activated.
The maximum current load on this output is 8A (fused).

High-pressure pump

The high-pressure pump is activated after the input valve has been opened with a delay time programmed in step 8.1.
The maximum current load on this output is 8A (fused).

Alarm

The alarm relay can be activated for certain events like:

- low water pressure
- exceeded pressure
- stop

You can program whether or not the alarm relay must be energised in case of malfunction.

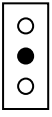
Concentrate valve

The concentrate valve is only opened during the rinse functions.

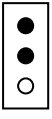
Display and modification of set points

When the system is put into operation, the operational data of the reverse osmosis system can be controlled by entering basic values.
You can change these values at any time and they are not erased in case of a power failure.

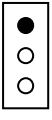
To prevent unwanted changes in the programme, you must keep the key depressed for four seconds before the system allows you to make changes
With the same key you can then browse through the programming.



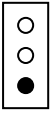
You leave the programming mode automatically about two minutes after the last keystroke or by pressing the key combination as shown.



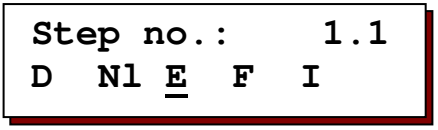
With the upper key you can move the cursor.



By pressing the lower key you can change numeric values within the given range that you have first marked with the cursor.
For questions with a choice, you can also use this key to switch between '-' en '|'.

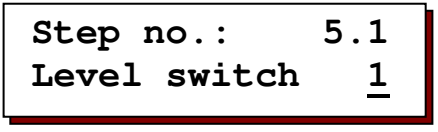


1. Language



In this step you can set the language.

5. Level switches



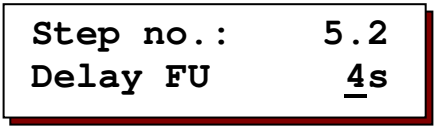
The storage tank is replenished via level switches.

Level switch = 1 :
The storage tank is replenished immediately when the water level falls below the full level. There is always a maximum volume available.

The ‘IN” input can then be used for an excess pressure safety.

Level switch = 2 :
Alternatively, the system can be filled via two level switches. In that case the system is switched on when the low level is reached and switched off again when the high level is reached.
Advantage: the system is switched on and off less frequently.

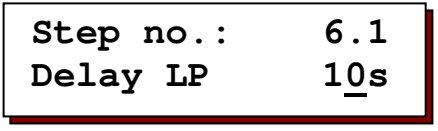
The ‘IN’ input is used for connecting the low-level switch.



The switch-on delay for the high level switch can be programmed from 0 to 99 seconds.
This step is only available when programmed for one level switch.

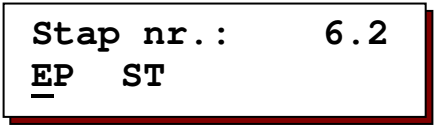
6. Input functions

Delay for the 'Low water pressure' input function



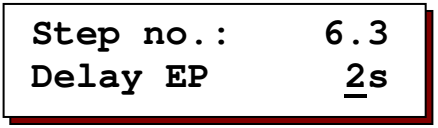
The delay for the low water pressure message can be programmed between 0 and 999 seconds.

Selecting the input function for input IN



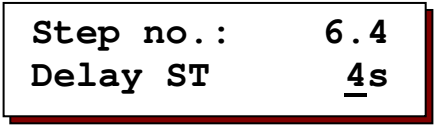
Select your choice of input function for input IN.(EP= Exceeded pressure, ST=Stop)

Delay for the 'Exceeded pressure' input function



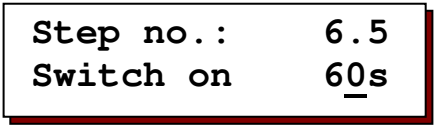
The delay for the exceeded pressure message can be programmed between 0 and 999 seconds.
This step is skipped if two level switches have been programmed.

Delay for the 'Stop' input function



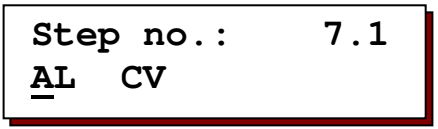
The delay for the stop message can be programmed between 0 and 999 seconds.
This step is skipped if two level switches have been programmed.

Automatic switch-on



Here you can program a delay between 1 and 999 seconds for the automatic switching on of the system after failure as a result of low water pressure or exceeded pressure.

7. Selection of output functions

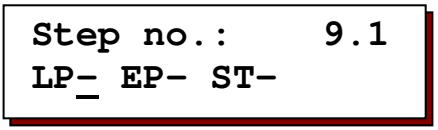


Select the output function for relay output 3 (terminals 9, 10 and 11).
AL = Alarm
CV = Concentrate valve
When the function ‘CV’ is selected, the alarm function will not be available.

8. High-pressure pump delay

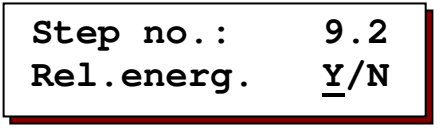
To prevent water shock on switching on, in the ‘Decrease’ step first the input valve is opened and after the delay time (0-999 sec.) the high-pressure pump is activated.

9. Alarm



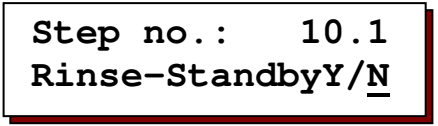
In this step you can program for which events the alarm relay must be activated.
("-" = not activated, "|"= activated).

LP = Low water pressure
EP = Exceeded pressure
ST = Stop

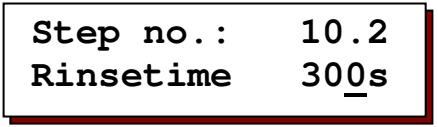


Here you can program whether the alarm relay must be enabled (Yes) or not (No) in case of malfunction.

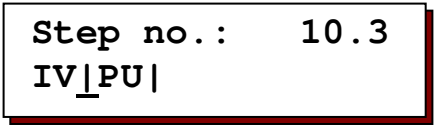
10. Rinse after production



Program whether the function “rinse after production” has to be activated.

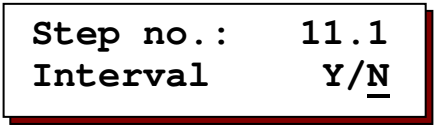


Set a rinse time of 1 – 9999 seconds.



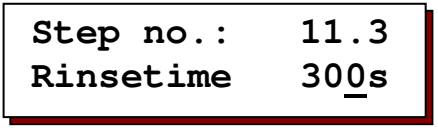
Program whether inlet valve has to be opened (“|”) or closed (“-“) and high pressure pump has to be activated (“|”) or not activated (“-“) during the rinse cycle.
IV = Inlet valve
PU| = High pressure pump

11. Interval rinse



Program whether the function “rinse after production” has to be activated.

Set the time lapse between the last production or rinse phase and switch over to this rinse function. A distance of between 1 and 999 hours can be programmed.

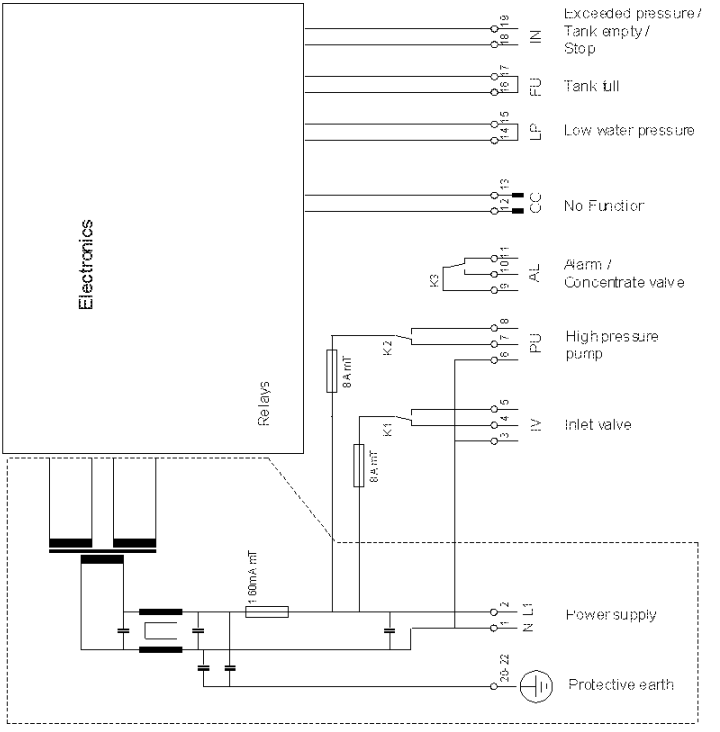


Set a rinse time of 1 – 9999 seconds.

Program whether inlet valve has to be opened (“|”) or closed (“-“) and high pressure pump has to be activated (“|”) or not activated (“-“) during the rinse cycle.

IV = Inlet valve
PU| = High pressure pump

Connection terminals OS3015



Installation and commissioning

General

Installation and commissioning of the control system may only be carried out by trained specialists who are familiar with these operating instructions and the applicable regulations on safe working practices and accident prevention. The instructions given in this manual must always be observed and followed.
To guarantee functional operation and safety, the instructions in this manual must be followed. The manufacturer accepts no liability for damage resulting from failure to follow the instructions.

Assembly

- Do not install under damp pipes. Fit shielding if necessary.
- Install device at eye level and easily accessible to the user.

Connection

- Before carrying out connection work, always ensure the control unit is first disconnected from the power supply. Make sure that the power supply remains disconnected during connection work.
- Make electrical connections. Observe local regulations.
  Connect supply voltage and ground to the terminals shown in the wiring diagram.
- Make sure that the ground connection is faultless.
- The front panel is connected to ground via a plug connection which must not become disconnected during operation.
- If possible, keep all extra low voltage cabling (digital inputs, measurements) separate from the power supply cable.

- It is not permitted to connect the potential-free relays with a combination of 230 VAC and extra low voltage.
- Some external relays, magnetic switches, solenoid valves, etc. can cause unwanted interference pulses when switched off.
  For this reason, it is recommended that the components mentioned should be equipped with a so-called RC network in advance.
  Ask the supplier of the mentioned components for the correct type of RC network.

Maintenance

The control system does not contain any user-serviceable parts. Unauthorised modifications and/or repairs to the control unit will void all warranty claims and the manufacturer's liability.

Commissioning

After installation and commissioning the control system may only be switched on if it is completely closed and all connections have been made correctly.

Technical data

Mains connection :	230V, 50-60 Hz, 160 mAT fuse 115V, 50-60 Hz, 315 mAT fuse 24V, 50-60 Hz, 1AT fuse
Power consumption :	4 VA
Inlet valve :	Voltage is equal to supply voltage, 8AT fuse
High-pressure pump :	Voltage is equal to supply voltage, 8AT fuse
Alarm output:	max. load 250V, 8A
Inputs :	loaded with 9V, 8mA
Protection class :	IP 65
Ambient temperature:	0 – 40 °C
Weight :	0,65 kg
Dimensions :	122 x 120 x 57 mm
Particulars :	Device protected against zero voltage

Declaration of conformity

Declaration of conformity of the product with the essential requirement of the EMC directive 89 / 336 / EEC.

Product description

Product name : Controller for reverse osmosis systems
Product type : OS3015
Manufacturer : EWS Equipment for Water treatment Systems International B.V.
Australiëlaan 12
NL-5232 BB 's-Hertogenbosch
The Netherlands

Product environment

This product is intended for use in residential en light industrial environments.
Emission standard : EN 61000-6-3
Immunity standard : EN 61000-6-2
Low voltage directive : 2006/95/EG

Report

Report number : EWS_OS3020_02

This declaration was issued by :

Date : 12-03-2020
Name : V. Naeber

Signature :

FIVE-YEAR CONTROLLER LIMITED WARRANTY

LIMITED WARRANTY

EWS International (hereafter EWS) warrants her products free from defects in material and workmanship under the following terms.
In this warranty, “Products” shall be taken to mean all devices that are supplied pursuant to the contract with exception of software.

VALIDITY OF THE WARRANTY

Labour and parts are warranted for five years from the date of the first customer purchase.
This warranty is only valid for the first purchase customer.
Notwithstanding the warranty period of five years as mentioned above - while upholding the remaining provisions – a warranty period of three months applies to the supply of software.

COVER OF THE WARRANTY

Subject to the exceptions as laid down below, this warranty covers all defects in material or workmanship in the EWS products. The following are not covered by the warranty:

1) Any product or part not manufactured nor distributed by EWS. EWS will pass on warranty given by the actual manufacturer of products or parts that EWS uses in the product.
2) Any product, on which the serial number has been defaced, modified or removed.
3) Damage, deterioration or malfunction resulting from:
    a) Accident, misuse, neglect, fire, water, lightning or other acts of nature.
    b) Product modification or failure to follow instructions supplied by the products.
    c) Repair or attempted repair by anyone not authorized by EWS.
    d) Any shipment of the product (claims must be presented to the carrier)
    e) Removal or installation of the product
    f) Any other cause, which does not relate to a product defect.
    g) Cartons, equipment enclosures, cables or accessories uses in conjunction with the product.

FINANCIAL CONSEQUENTES

EWS will only pay for labour and material expenses for covered items, proceed from repairs and updates done by EWS at the EWS location. EWS will not pay for the following:

1) Removal or installations charges at customers and/or end user location.
2) Costs for initial technical adjustments (set-up), including adjustment of user controls or programming.
3) Shipping charges proceed from returning goods by the customer. (Shipping charges for returning goods to the customer are for the account of EWS).

All the costs which exceed the obligations of EWS under this Warranty, such as, but not limited to, travel and accommodation costs and costs for assembly and dismantling are for the account and risk of the customer.

WARRANTY SERVICE

In order to retain the right to have a defect remedied under this warranty, the customer is obliged to:

1) Submit complaints about immediately obvious errors related to the products delivered, in writing within eight days of the delivery of the products and submit complaints about shortcomings relating to the products delivered, which are not visible, within eight days of their being discovered.
2) Return defected products for account and risk of the customer. Costs for this shipment will not be reimbursed by EWS. The products may only be returned following express, written permission from EWS. Returning the products does not affect the obligation to pay the invoiced amounts.
3) Present the original dated invoice (or a copy) as proof of warranty coverage, which must be included in any [of the] return shipment of the product. Please include also in any mailing a contact name, company, address and a description of the problem(s).

LIMITATION OF IMPLIED WARRANTIES

Except where such disclaimers and exclusions are specifically prohibited by applicable law, the foregoing sets forth the only warranty applicable to the product, and such warranty is given expressly
and in lieu of all other warranties, express or implied, or merchantability and fitness for a particular
purpose and all such implied warranties which exceed or differ from the warranty set forth herein are
hereby disclaimed by EWS.

EXCLUSION OF DAMAGES

EWS' liability for any defective products is limited to the repair or replacement of the product at our option. Except where such limitations and exclusions are specifically prohibited by applicable law EWS shall not be liable for:

1) Damage to other property caused by defects in the EWS product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss or:
2) Any damages, whether incidental, [consequential or otherwise] special, indirect or consequential damages, injury to persons or property, or any other loss.

Under no circumstances whatsoever shall EWS be obliged to provide compensation beyond the direct damage incurred by customer up to an amount not exceeding the payment receivable from the insurer of EWS in connection with the damage.

APPLICABLE LAW AND DISPUTES

1) Dutch law shall govern all offers made by EWS and all agreements concluded between EWS and customer. This warranty explicitly excludes application of the Vienna Sales Convention (CISG).
2) All disputes which may arise between the parties shall be dealt with exclusively by the competent court of law in the Netherlands under whose jurisdiction EWS falls. However, EWS reserves the right to submit any disputes to the competent court in the customer's location.