UF3020

Instruction manual for ultra filtration plants
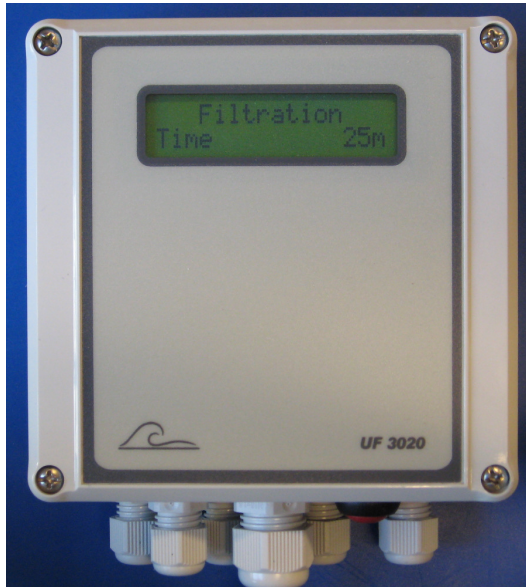
Instruction manual

Contents

General description

The UF3020 operating control is used to fully automatically monitor and control very simple ultra filtration water treatment systems.

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 seven switching steps, namely "Standby", "Filtration", "Pre flush", "Flush1", "Backwash", "Flush2" and "Alarm".

The steps "Pre flush", "Flush1" and "Flush2" are programmable to be switched off and on.

The state of the outputs during a step is programmable for each step.

"Standby" step

During standby the low level (RW tank) and high level (CW tank) will be checked.
When both are not activated the installation will switch to "Pre flush" (if activated
in step 2.1) and then to "Filtration".
When the push button will be pressed the controller will start a flush.

All outputs free programmable.

The following values are monitored:
- Low level, raw water tank
- High level, clean water tank

"Filtration" step

During filtration the low level (RW tank) and high level (CW tank) will be checked.
When one or both are activated the installation will switch to standby.
When the push button will be pressed the controller will start a flush.
After a programmed interval time the installation will switch to "Flush1" (if activated
In step 2.1).

All outputs free programmable.

The following values are monitored:
- Overpressure
- Low level, raw water tank
- High level, clean water tank
- Push button

"Pre flush" step

This step has to be activated in step 2.1 (PFL).

The step "Pre flush" will be activated after switching power on (when program step 4.1 is programmed for 'PFL') or when the installation will go to the "Filtration" step after "Standby".
After a programmed time the installation will go into "Filtration".

All outputs free programmable.

The following values are monitored:
- Overpressure

"Flush 1" step

This step has to be activated in step 2.1 (FL1).

The installation will switch to "Flush 1" after the "Filtration" time has passed.
You can also start "Flush 1" manually by pressing the push button during "Standby" or "Filtration".
After a programmed time the installation will switch to "Backwash".

All outputs free programmable.

The following values are monitored:
- Overpressure

"Backwash" step

The installation will switch to "Backwash" after the "Flush 1" time has passed.
After a programmed time the installation will switch to "Flush 2",

All outputs free programmable.

The following values are monitored:
-   Overpressure

"Flush 2" step

This step has to be activated in step 2.1 (FL2).

The installation will switch to "Flush 2" after the "Back wash" time has passed.
After a programmed time the installation will switch to "Filtration" or "Standby"
(depending on the state of the level switches).

All outputs free programmable.

The following values are monitored:
-   Overpressure

"Alarm" step

The installation will switch to "Alarm" when there is a overpressure situation or when program step 4.1 is programmed "AL".

During alarm the over pressure switch and the button will be checked.
When pressing the button and the pressure is ok the installation will proceed the process step that was interrupted. The interval time for the flush and back wash steps will also proceed and not be reset.

All outputs will be deactivated.

The following values are monitored:
- Overpressure
- Push button

Function display

First LCD line
The first line of the LCD display shows the actual phase of the system: "Standby",
"Filtration", "Pre flush", "Flush1", "Backwash", "Flush2", "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 "Standby" step

```
        Standby
  RW empty/CW low
```
Raw water tank empty and clean water tank not full.

```
        Standby
  RW high /CW full
```
Raw water tank not empty and clean water tank full.

```
        Standby
  RW empty/CW full
```
Raw water tank empty and clean water tank full.

Second LCD line for the "Filtration" step

```
      Filtration              Filtration
Time          10m       Time          59s
```

The second line indicates the remaining time until "Flush 1" will start.
When the start is within 60 seconds the remaining time will be displayed in seconds.

Second LCD line for the "Pre flush" step

```
      Pre flush
Time          10s
```

The second line indicates the remaining time of "Flush 1".

Second LCD line for the "Flush 1" step

```
      Flush 1
Time          10s
```

The second line indicates the remaining time of "Flush 1".

Second LCD line for the "Backwash" step

```
      Back wash
Time            10s
```

The second line indicates the remaining time of "Backwash".

Second LCD line for the "Flush 2" step

```
      Flush 2
Time            10s
```

The second line indicates the remaining time of "Flush 2".

Second LCD line for the "Alarm" step

```
      Alarm
  Overpressure
```

```
      Alarm
  Supply failure
```

The second line indicates the cause of the alarm situation.
"Overpressure" : Overpressure situation during flushing or backwash.
"Supply failure" : Controller switched on and step 4.1 programmed at "AL".

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.
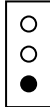
Input switch positions

```
     Input
 OP- LL- HL-
```

Here the current switch positions of the input functions are displayed
("-" input not activated, "|" input activated) :

  OP = over pressure switch
  LL = low level raw water tank
  HL = high level clean water tank
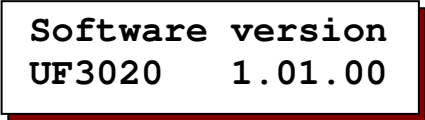
Output switch positions

```
 Output      ABC
             | |-
```

Here the current switch positions for the IV, PU and AL outputs are displayed.

  A = IV
  B = PU
  C = AL

Software version

```
Software version
UF3020    1.01.00
```

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.

Input functions

The 'Over pressure' (CC), 'Low level raw water tank' (LP) and 'High level clean water tank' (FU) inputs are standard available.

Overpressure

The 'Over pressure' (CC) input is used to prevent the installation from to high pressures.

In step 3.3 you can program the delay before the system is switched to "Alarm". You can leave the "Alarm" step by pressing the button when the when over pressure situation is solved.

The input function is active when the contact is open.

Low level raw water tank

The input function 'Low level raw water tank' (LP) is used for checking the level of water in the raw water tank.

The controller will respond immediately when the contact is opened and will switch into the step "Standby".

In step 3.1 you can program the delay for the installation to switch back the step "Filtration" (through the step "Pre flush", if programmed in step 2.1).

The controller is detecting low level when the contact is open.

High level clean water tank
The input function 'High level clean water tank' (FU) is used for checking the level of water in the clean water tank.
The controller will respond immediately when the contact is opened and will switch into the step "Standby".

In step 3.2 you can program the delay for the installation to switch back the step "Filtration" (through the step "Pre flush", if programmed in step 2.1).

The controller is detecting high level when the contact is open.

Output functions

The outputs are free programmable for each process step.

There are no special output functions available.

# **Display and modification of set points**

Attention
Changing settings may only be done by qualified electrical engineers.

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.
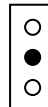
You leave the programming mode automatically about two minutes after the last keystroke or by pressing the key combination as shown.
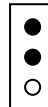
With the upper key you can move the cursor.
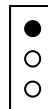
By pressing the lower key you can change numeric values within the given range that you have first marked with the cursor.
For questions with a choice, you can also use this key to switch between '-' en '|'.
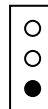
1. Language

```
Step no.:      1.1
D   Nl  E   F
```

In this step you can set the language.

2. Process step times

```
Step no.:      2.1
PFL-FL1-FL2-
```

In this program step you can activate or deactivate the steps "Pre flush", "Flush 1" and "Flush ".
PFL = "Pre flush"
FL1 = "Flush 1"
FL2 = "Flush 2"

If a step is not activated the corresponding steps will be skipped.

```
Step no.:      2.2
Standby        ---
```

In this program step you can program which outputs are activated during the step "Standby".

```
Step no.:      2.3
Pre flush      30s
```

In this program step you can program the "pre flush" time between 1 and 999 seconds.

```
Step no.:      2.4
Pre flush      ---
```

In this program step you can program which outputs are activated during the step "Pre flush".

```
Step no.:      2.5
Filtration     10m
```

In this program step you can program the filtration time between 1 and 999 minutes.

```
Step no.:      2.6
Filtration     ---
```

In this program step you can program which outputs are activated during the step "Filtration".

```
Step no.:      2.7
Flush 1        30s
```

In this program step you can program "flush 1" time between 1 and 999 seconds.

```
┌─────────────────────────────┐
│ Step no.:      2.8          │
│ Flush 1        ---          │
└─────────────────────────────┘
```

In this program step you can program which outputs are activated during the step "Flush 1".

```
┌─────────────────────────────┐
│ Step no.:      2.9          │
│ Back wash      15s          │
│                 _           │
└─────────────────────────────┘
```

In this program step you can program the time for step "Back wash" between 1 and 999 seconds.

```
┌─────────────────────────────┐
│ Step no.:      2.10         │
│ Back wash      ---          │
└─────────────────────────────┘
```

In this program step you can program which outputs are activated during the step "Back wash".

```
┌─────────────────────────────┐
│ Step no.:      2.11         │
│ Flush 2        30s          │
│                 _           │
└─────────────────────────────┘
```

In this program step you can program the "flush 2" time between 1 and 999 seconds.

```
┌─────────────────────────────┐
│ Step no.:      2.12         │
│ Flush 2        ---          │
└─────────────────────────────┘
```

In this program step you can program which outputs are activated during the step "Flush 2".

3. Input functions

```
Step no.:      3.1
Delay LL       1s
```

In this program step you can program the delay for the low level switch of the raw water tank, between 1 and 999 seconds.

```
Step no.:      3.2
Delay HL       1s
```

In this program step you can program the delay for the high level switch of the clean water tank, between 1 and 999 seconds.

```
Step no.:      3.3
Delay OP       1s
```

In this program step you can program the delay for the overpressure switch between 1 and 999 seconds.

4. Power up mode

```
Step no.:      4.1
PFL STB FLU AL
```

In this program step you program how the installation has to start after powering up.

PFL   = Starting in step "Pre flush"
          If this step is not activated in step 2.1, the installation will start up with
          the step "Filtration".
STB   = Starting in step "Standby"
FLU   = Starting in step "Flush 1" (so total flush will be made)
          If step Flush 1 is not activated in step 2.1, the installation will start up
          with the step "Back wash".
AL   = Starting in step "Alarm" with message "Supply failure".

Connection terminals UF3020

Terminals	Label	Description
18 19	IN	Push button
16 17	FU	High level, clean water tank
14 15	LP	Low level, raw water tank
12 13	CC	Overpressure switch
9 10 11	AL	Output 3 (C)
6 7 8	PU	Output 2 (B)
3 4 5	IV	Output 1 (A)
1 2	L1 N	Power supply
20-22		Protective earth
1 2	+ −	Power supply
20-22		Protective earth

Electronics

Relays

K3

K2   8A mT

K1   8A mT

24 VAC: 1A mT
115 VAC: 315mA mT
230 VAC: 160mA mT

24 VDC: 200mA mT

Only UF3020 24 VDC

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 :	230VAC, 50-60 Hz, 160 mAT fuse
	115VAC, 50-60 Hz, 315 mAT fuse
	24VAC, 50-60 Hz, 1AT fuse
	24VDC, , 200 mAT fuse
Power consumption :	4 VA
Output 1 (IV) :	Voltage is equal to supply voltage, 8AT fuse
Output 2 (PU) :	Voltage is equal to supply voltage, 8AT fuse
Output 3 (AL) :	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 ultra filtration system
Product type : UF3020
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.

EWS

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.