EcoControl DO10

Desalination and Dosing Controller

Operation
13.85 m³

DO10

M
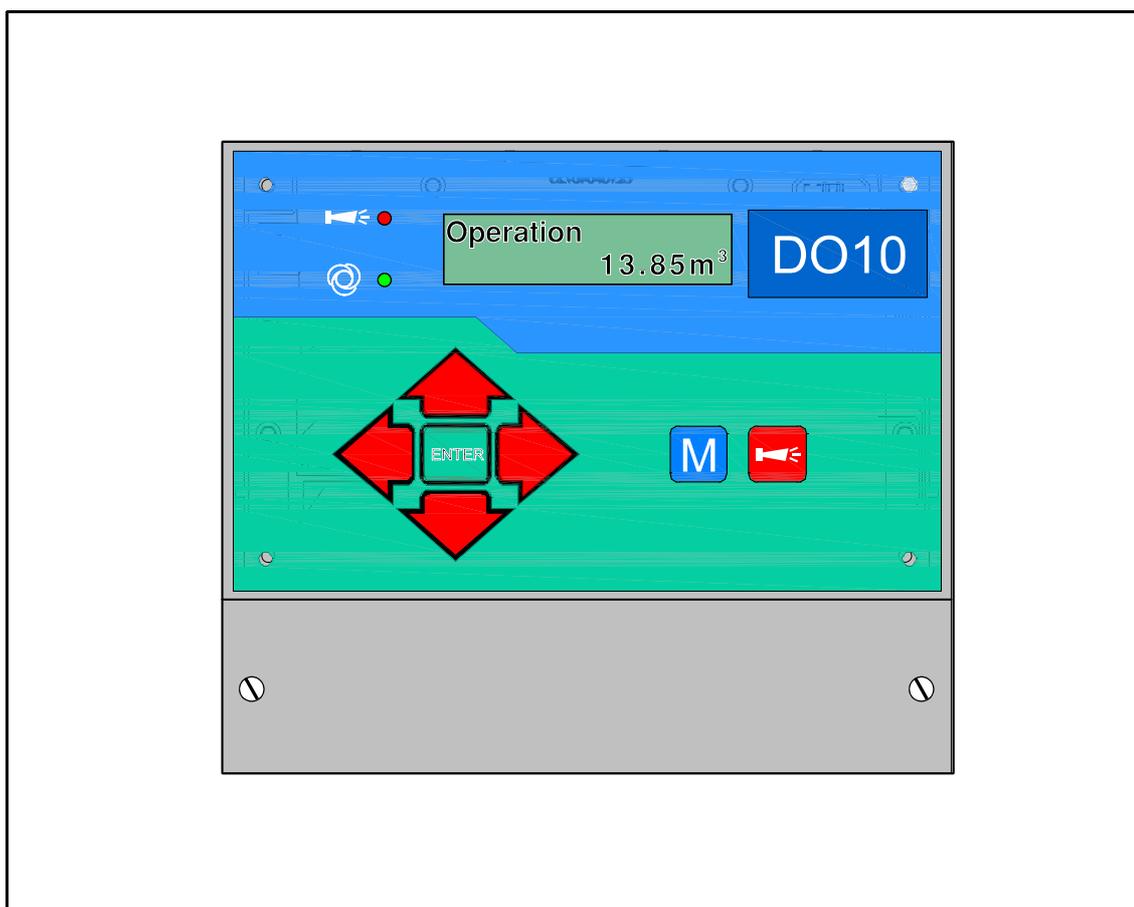
Operating Instructions

Table of Contents

General Notes

Introduction

These operating instructions describe the installation, operation and programming of EcoControl DO10.

We recommend that, whilst familiarising yourself with the operation of the unit aided by this manual, you have immediate access to the operable controller in order to perform the functions and combinations as described. As certain functions are interrelated, it is advisable to follow the instructions in the given order.

Should problems or questions arise which are not described in this manual and/or cannot be solved, our customer service is always at your disposal.

Try to identify the problem as accurately as possible and record the actions and conditions under which it occurred. This will enable us to offer you swift effective assistance.

Handling Notes

Quick, repeated switching on/off of the controller should be avoided. Wait at least 5 seconds before switching the unit either 'on' or 'off' at the main switch.

Only operate the controller in compliance with the ambient conditions (e.g. temperature, moisture) stated in the chapter entitled technical data. Especially protect the controller against moisture.

The controller should not come into contact with splash or condensation water.

The original seals attached during manufacture (trimmer fixing point, EPROM labels) must not be broken; otherwise all warranty claims will be withdrawn.

Before dismantling a defective controller, always write down the description of the error (failure effect). Repair work (irrespective of the guarantee period) is only possible after the unit has been dismantled and returned to us with a description of the error.

The allowed maximum electrical load capacity of the switching outputs and the total power rating of the plant must not be exceeded.

The controller should only be used for its specified intended purpose.

Safety notes

Always pay attention to the following safety notes:

The controller must be installed and operated in compliance with relevant standards (e.g. DIN, VDE, UVV), or in accordance with the regulations laid down by the individual country.

Some functions (e.g. manual desalination) allow direct manipulation of the plant (valves, pumps, etc.) without locking or monitoring. These functions should only be used by trained personnel.

If you observe malfunctioning of the controller, switch it off immediately and inform the service personnel.

Do not attempt to repair the controller yourself (loss of warranty rights), instead always contact authorised personnel. This is the only way that reliable and safe operation of the plant can be ensured.

After protective equipment (safety fuse) has been triggered, attempt, at first, to eliminate the cause of malfunctioning (e. g. motor valve stuck) before reactivating the protective equipment. Frequent triggering is always due to an error which, in certain circumstances, may also cause damage to the controller.

Non-observance of these notes can result in damage to the controller as well as the plant and may result in a loss of warranty.

Installation and commissioning

Installation and commissioning should only be carried out by authorised personnel!

The connecting cables to the sensors should be kept as short as possible and **clear** of power cables. Close proximity to strong electromagnetic radiators can lead to display interferences; in this case, separate interference suppression measures should be carried out.

After installation, program the unit with the plant-specific features and data (e.g. switch functions, desalination times, etc.). The data is permanently stored (also during voltage loss).

General Description
View of the unit

Mains switch   >
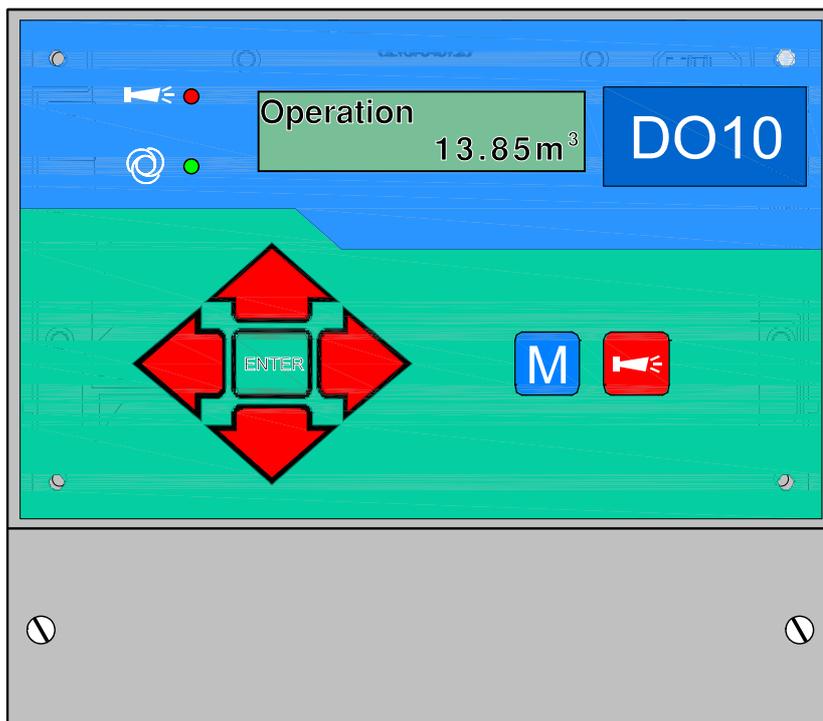
Terminal box

Internal view
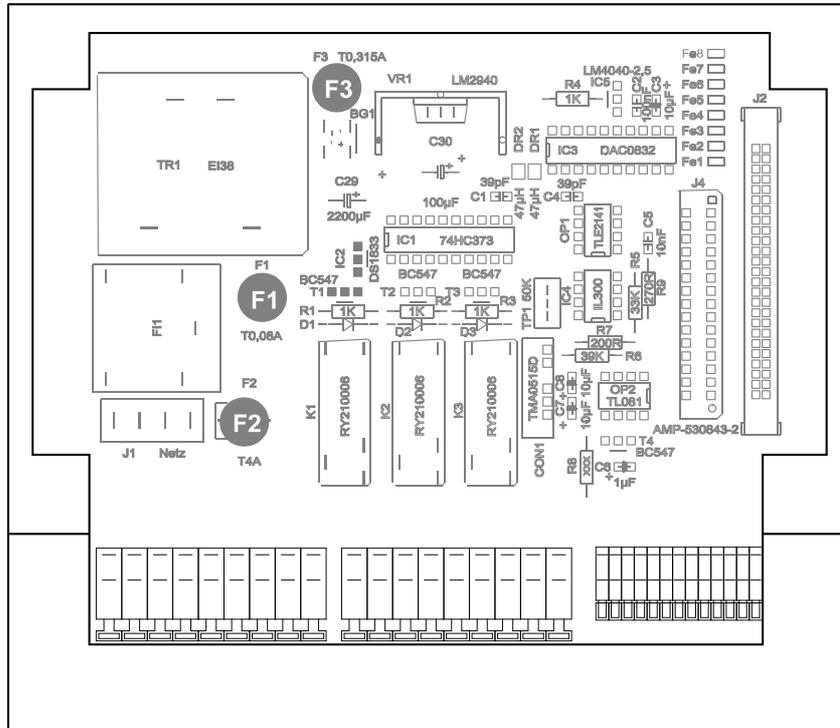
F1: Fuse M0.08A
F2: Fuse T4A (visible type fuse 20 x 5)
F3: Fuse M0.2A

Description of the display and operating features
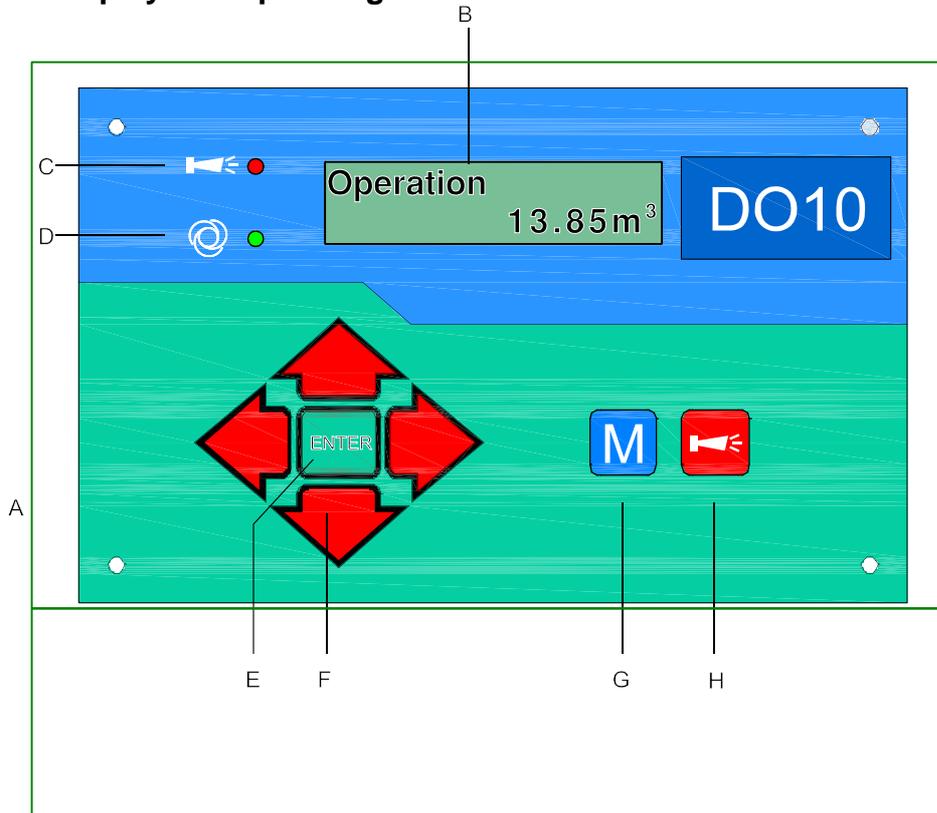
A On/Off switch
Only the surface-mounted variant is equipped with an On/Off switch. Use this switch to switch the unit on or off.

B LC Display
Two lines with 16 characters, backlit.

C LED "Alarm"
Indicates an error message. The LED flashes if the output AL has not been activated.

D LED "Desalination"
Indicates a current desalination.

E "ENTER" key
Confirm inputs and trigger functions via the ENTER key.

F Arrow keys
Use these keys to operate the menu drive in the display and to enter values and programming data.

G "M" key
Call the menu and return to the submenu levels

H "Fault OFF" key
Deletes the alarm signal at the output AL (Alarm), a fault display can only be deleted once the fault has been eliminated.

Operating Displays

Each status change is stored in the status history (e.g. manual or automatic desalination).

```
Operation
          2.73m³
```

Plant is in operation with 2.73m^3 additional water consumption (supply quantity).

```
Operation          *
          2.74m³
```

Plant is in operation with 2.74m^3 additional water consumption (supply quantity).
* = Dosing output is switched for the programmed time.

```
Draining
            145m
```

Draining has been activated, remaining time 145 minutes.

```
Desalination
 mm:ss      1:28
```

Desalination has been activated, remaining time 1 minute and 28 sceonds. LED desalination is also lit.

The * for an active dosing output can also be displayed.

Error Messages

In addition to the displayed error messages, the red LED "Alarm" lights up or flashes.
Alternate display of all error messages and operating displays.
Each occurred error is stored in the error history.
If the output AL/EV is programmed as the input valve EV ("draining" function),
there is no alarm contact available !

Error message "Voltage loss"

```
Voltage loss
```

Message each time the unit is switched on, unit was without voltage.

After switching on or after voltage recovery, the controller starts with the basic status "operation". Desalination carried out prior to the voltage loss is not continued.

Check the plant for possible negative results of the voltage loss (e.g. drainage of the circuit due to an open motor valve).

All stored values, such as the water volumeter, remain even during a voltage loss. The real-time clock is battery buffered and thus keeps on running.

Confirm the fault display via the "Alarm" key.

Error message "Des.val.OPEN"

```
Desal.monitor.
Des.val. OPEN !
```

You have activated desalination monitoring, desalination has been completed but water still flows through the desalination valve after the programmed test time (desalination monitoring). Triggering of desalination monitoring via contact at the FC (flow controller) input. Depending on the programming, the alarm relay is switched in addition to the display.

Adjust the test time to the closing or opening time of the valve when using motor valves.

Determine and eliminate the error and confirm the error message via the "Alarm" key.

Error message "Des.val.CLOSED"

```
Desal.monitor.
Des.val. CLOSED !
```

You have activated desalination monitoring, desalination has been started but still **no** water flows through the desalination valve after the programmed test time (desalination monitoring). Triggering of desalination monitoring via contact at the FW (flow controller) input. Depending on the programming, the alarm relay is switched in addition to the display.

Adjust the test time to the closing or opening time of the valve when using motor valves.

Determine and eliminate the error and confirm the error message via the "Alarm" key.

Terminal Block Identification

Functions (IN = input, OUT = output)

No.	Terminal	Type	Function	Comment
	PE	IN	Mains protective earth	
	N L	IN	Mains, N = Neutral Mains, L = Live	Mains input 230 - 240 V AC
	n l	OUT	3x Neutral, switched 3x Live, switched	Mains voltage, max. 4 A
10 11 12	AV	OUT	Desalination valve, c - contact Desalination valve, nc - normally closed Desalination valve, no -normally open	Volt-free relay output max. load 240 V AC, 4 A
13 14 15	DO	OUT	Dosing output, c - contact Dosing output, nc - normally closed Dosing output, no - normally open	Volt-free relay output max. load 240 V AC, 4 A
16 17 18	AL/EV	OUT	Output alarm/input valve, c - contact Output AL/EV, nc - normally closed (*) Output AL/EV, no - normally open (*)	Volt-free relay output max. load 240 V AC, 4 A
19 20	- -	-	- -	not used !
21 22	WM (+) WM (-)	IN	Water meter input Common load for water meter input	Connect volt-free contact water meter!
23 24 25	- - RS232 - Gnd	-	- - -	not used !
26 27	LL (-) LL (+)	IN	-Empty message dosing container -Common load for empty-message input	Connect volt-free switching contact!
28 29	FC (-) FC (+)	IN	-Common load for empty-message input -Flow message desalination valve	Connect volt-free switching contact (flow-controller)!
30 31	RS232 - TxD RS232 - RxD	OUT/ IN	- -	not used !

(*) please observe description of the alarm output AL/EV !
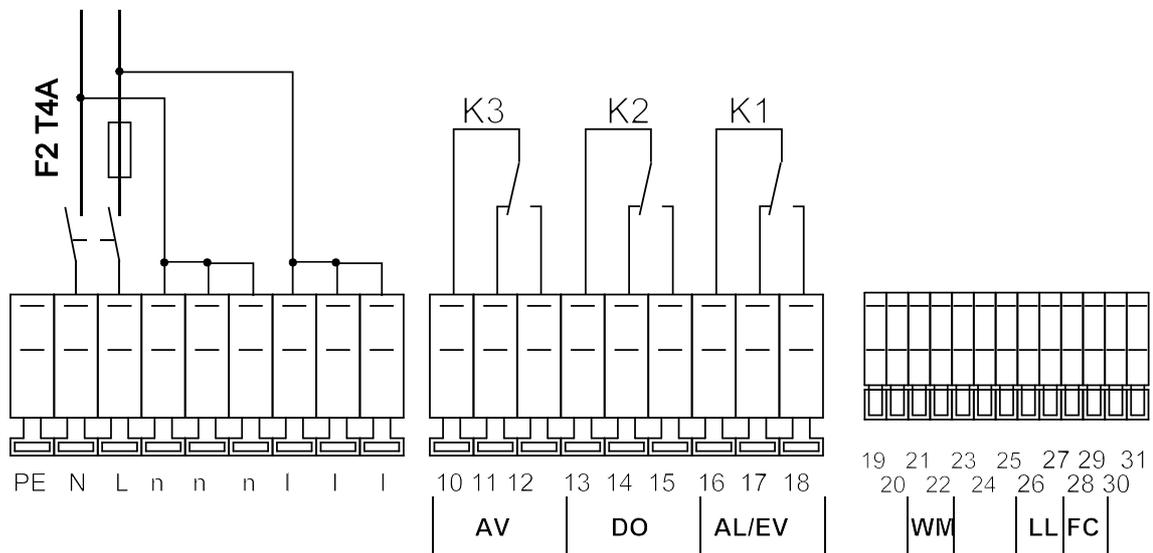
Description of the Relay Outputs

Please ensure that the outputs are volt-free.

AV desalination valve
Connect the desalination valve (solenoid or motor valve) to this relay output.

The idle position of the relay is the same in the case of a currentless controller and in the operating position: Contact to terminals 10-11.

Set the time for desalination under menu option
"M" ° BASIC PROGRAM ° PROGRAM VALUES ° DESALINATION ° Desalination time.

DO   dosing output
Connect a dosing pump at this relay output (solenoid or motor dosing pump).

The idle position of the relay is the same in the case of a currentless controller and in the operating position: Contact to terminals 13-14.

Set the time for the dosing impulse under menu option
"M" ° BASIC PROGRAM ° PROGRAM VALUES ° DOSING ° Impulse Duration.
Set the impulse ratio, for which quantity of water dosing should be carried out, under menu option
"M" ° BASIC PROGRAM ° PROGRAM VALUES ° DOSING ° Litre/Impulse.

Example:
A one second impulse should be provided per 50 litres:
Litre/Impulse = 50.0, Impulse = 1.0sec

Alternatively, the output can emit a certain number of impulses with a settable impulse pause and duration for the measured quantity of water.
Set the number of impulses under menu option
"M" ° BASIC PROGRAM ° PROGRAM VALUES ° DOSING ° No. of Impulses.

Example:
4 one second impulses with a 3 second pause should be provided per 50 litres.
Litre/Impulse = 50.0, Impulse duration = 1.0sec, Impulse pause = 3.0sec, No. of impulses = 4

Note!
The impulse ratio in litres/impulse should not be less than the basic number of the water meter.

EV input valve
This output is not available if you have programmed the "Draining" function !
Connect the input valve (solenoid or motor valve) for shutting off the supply to this relay output.

Set the time (time and weekday) and the duration for draining the system under the menu option
"M" ° BASIC PROGRAM ° PROGRAM VALUES ° OUTPUT AL/EV.

AL error message output ("Alarm")
This output is not available, if you have programmed the "Draining" function !
Output "AL" is a volt-free change-over relay contact. During trouble-free operation, the contact between terminals 16 - 18 is closed and the one between terminals 16 - 17 is open. During voltage loss or if an error occurs, the contact between terminals 16 - 17 is closed and the one between terminals 16 - 18 is open.
Output "AL" remains activated (terminals 16 - 17 closed) until the error ceases or until it is confirmed via the "Alarm" key.
- An error is displayed via the red LED "Error message" and on the display.
- The error message signal at output "AL" is deleted after confirming the error via the "Alarm" key.
- The error display can only be deleted once the error has been eliminated.

The following errors activate output "AL" and are displayed if the plant has been equipped with the appropriate contacts:

AL error message output ("Alarm"), continued

Statuses which **always** trigger an error message:
```
Voltage loss
```

Programming-dependent error messges:
```
Dosing medium container empty
Desalination valve remains open
Desalination valve remains closed
```

Description of the Signal Inputs

Note
Only connect the signal inputs "WM", "LL" and "FC" to **volt-free** contacts!

WM contact water meter
For registering additional water (quantity of supplied fresh water).

Set the basic number in the menu option *"M"* ° `Basic program` ° `Program value` ° `Water meter.`

Function	Type / Basic Number	Functions
WM – Contact water meter	0.1 - 999,999 Litre/Impulse	– Triggering of desalination once the start volume is reached (additional quantity of water since last desalination) – Additional quantity of water – Quantity of desalination water – Total quantity of additional water – Quantity of evaporation water

FC monitoring input desalination valve (flow controller)
Monitors whether the desalination valve is closed and no water flows through it after completion of desalination AND whether the desalination valve is open and water flows through it after commencing desalination, connect a flow controller to the "FC" input.
Activate the control function, enter the desired effect of the contact (active as normally closed or normally open) and set the time from which a test should be carried out under menu option *"M"* ° `Basic program` ° `Program values` ° `Functions` ° `Desalination Monitoring`
.

An operational error is monitored by the controller and, depending on the programming, evaluated.

Function	Test Time	Type of Contact	Type of Contact Connection	Action
FC – Mesage contact from the flow controller for desalination monitoringl	0 - 99 sec.	Normally closed	Contact without flow	– Error message – Entry in the error list – Continuous alarm if programmed
		Normally open	Contact for flow	

LL dosing medium container empty
Connect a float switch or similar device here to monitor the dosing medium container.

Enter the desired effect of the contact (active as normally closed or normally open) and set the delay time used for testing in menu *"M"* ° `Basic Program` ° `Program Values` ° `Functions` ° `Fct. Empty`
If, in addition to the error message in the display, the alarm relay should also switch during an empty message, program the alarm function.
Also enter a delay time to ensure evaluation for bouncing contacts.

Function	Type of Contact	Test Time	Action
LL – Level transmitters input: Dosing medium container EMPTY	programmable normally closed/normally open	programmable 00 - 99 seconds	– Error message – Entry in error list – Continious alarm if programmed

Programming

Menu start
Call the menu via the "M" key.

Menu selection / Selection
The current line position is displayed as a heading in CAPITAL LETTERS. Activate the selected/displayed menu option via the "ENTER" key, i.e. you "jump" into a submenu. Call the next menu option via the "DOWN" arrow key: "Scroll" through the menu this way.

Input
Inputs are only possible in the BASIC PROGRAM menu and in some SERVICE menu options.
Select a programming step via the "DOWN" and "UP" arrow keys and activate the input function via the "ENTER" key.
When entering digits, the digit/position to be changed flashes.
Change to the next or previous digit (now flashing) via the "Right" and "Left" arrow keys.
Change the value or selection via the "UP" and "DOWN" arrow keys.
Selection functions are marked with a **T** if selection is possible.
Terminate the input function via the "ENTER" key.

Change to the higher-order menu via the "M" key.

"M"

```
MENU
Service
Information
Basic program
```

End menu
Return to the higher-order menu via the "M" key. After returning from the highest menu level, the unit is once again in the display function. The controller returns to the normal operating display (automatic menu end) after 2 minutes if **no** key is pressed in the menu.

Information Menu

"M" ° `Information`

Request the current settings without entering a password in the information menu.
The information menu is still displayed even if an incorrect password has been entered.
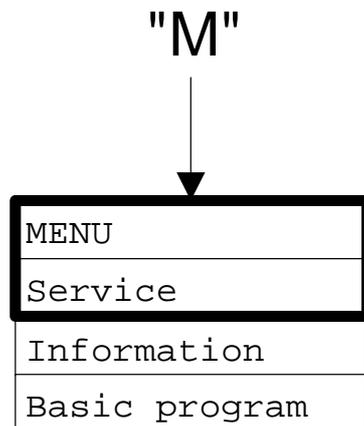
Programming

"M" ° `Basic program`

Enter password

The programming menu is protected by a 3-digit password (number between 000 and 999) in order to prevent unauthorised programming intervention.

Enter the password under *"M"* ° `Basic program` ° `Password input` and confirm the input via the "ENTER" key.

You are now in the menu **BASIC PROGRAM**

```
BASIC PROGRAM
Password input
```

```
PASSWORD INPUT
Password 000
```

Change password

As soon as you are in the basic program you can enter your individual password in the submenu "Extras".

Description of Functions and Programming

Switching on and voltage loss

After switching on the unit and after each voltage loss, the plant automatically returns to the initial position (desalination off, no dosing).

Operation

The water meter impulses are continuously added up and, depending on the programming, the dosing output is switched. Desalination is triggered once the additional quantity of water required to trigger desalination (start volume) has been reached.

Desalination

Automatic desalination

The water meter impulses are added up. After reaching the preset quantity of water (start volume in litres = sum of impulses x basic number of the water meter), the desalination valve AV (relay K1) is switched for the set switching time (desalination time).

Menu:

```
DESALINATION
Desal.time
Start volume
```

- The desalination time can be programmed between 0 and 99 minutes and 59 seconds (as mm:ss).
- Due to the start of desalination the volume memory for the quantity of start water is reset to 0 litres.
- During current desalination, the lamp "Desalination" lights up, the message "Desalination" is shown on the display and the remaining running time is displayed in the bottom line in minutes and seconds (mm:ss).
- The water meter impulses are also registered and processed **during** current desalination (metering and dosing).
- During drainage and subsequent refilling of the system, desalination and metering of the water meter impulses are disabled/locked.

```
DESAL.TIME
mm:ss       02:30
```

```
START VOLUME
         02000 l
```
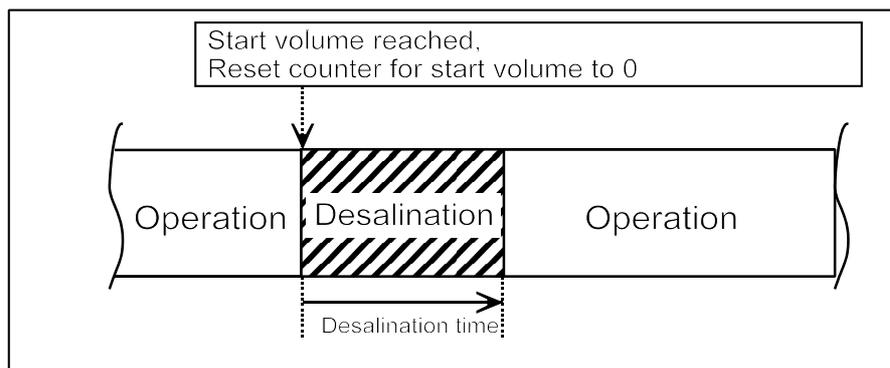
Manual desalination / TEST

For simulation, commissioning or testing purposes it is possible to manually open the desalination valve:

1.   Select the option "Manual desalination" in the menu "Service" and open the desalination valve via the "ENTER" key. The display "Des. val. OPEN" is shown until you exit the manual function via the "ENTER" or "M" key and thus close the desalination valve.

2.   Select the option "Auto desalination" in the menu "Service" und start automatic desalination via the "ENTER" key. The display "Desalination" appears and the desalination valve remains open for the period programmed under "Desalination time". The menu is automatically exited after starting desalination and the operating display for the current desalination appears.

In both cases the following occurs:
– The volume memory for the quantity of water is set to 0.
– The water meter impulses are still processed for dosing even **during** manual desalination, however, they are **not** added up for the following desalination.

Termination of desalination

You can cancel/stop desalination at any time by pressing the "ENTER" key in the operating display (not in the menu !) for 5 seconds; the valve will then close **immediately (!)**.

Dosing

You can use the dosing valve or solenoid or motor dosing pumps. Select the controller according to the requirements.

Menu:

```
DOSING
Litre/Impulse
Imp.duration
Impulse pause
No.of impulses
```

Single impulse

For the single impulse: The dosing output (relay K2) is switched for the set time (duration of dosing impulse) once the programmed quantity of water has been reached. Program the duration of the impulse between 0.2 and 9 seconds and 1 as the number of impulses.

Multiple impulses

For multiple impulses: Impulses for the set time (duration of impulse) with the programmed pauses are emitted once the programmed quantity of water has been reached. Program the duration of the impulse between 0.2 and 9 seconds, the impulse pause between 0.2 and 9 seconds and the number of impulses between 2 and 9.

Example of dosing:

as a single impulse
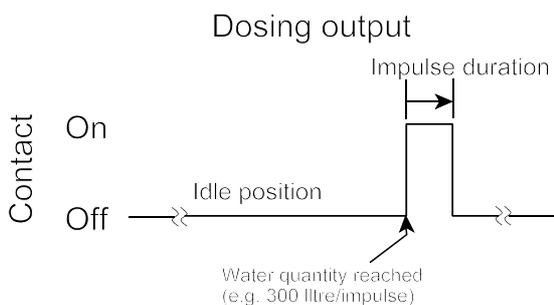
as multiple impulses (4 four-second impulses and a 10-second pause:
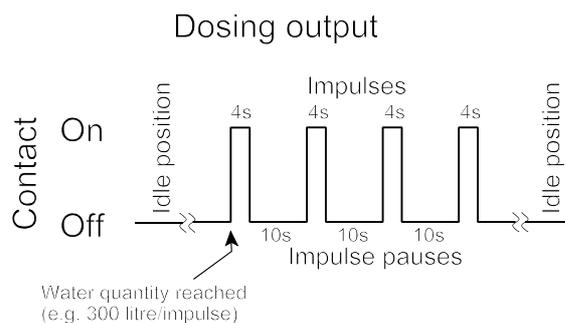
Dosing impulses are displayed via the asterisk which lights up on the display.

⚠ The water meter impulses should not occur quicker than the dosing impulses are processed.

Water meter

Set the number of impulses for the contact water meter in the menu:

```
WATER METER
L/Imp. 100.000
```

Call the recorded quantities in the "Service" menu, e.g.:

"M" ° Service ° Operating Info ° WM Desalination: 43 m³
"M" ° Service ° Operating Info ° WM Total: 363 m³
"M" ° Service ° Operating Info ° WM Additional Water: 160 m³

Functions

Funct. empty (LL input)
The "LL" input is designed as a level transmitter input for the "EMPTY" level of the dosing medium container.
Program the desired effect of the contact, the delay and the alarm function.

If the input is active after the test time "Delay", an error message occurs.

If you have activated "Alarm" but no draining function, the output AL switches in addition to the error message.

```
FCT. EMPTY
Norm.closed    -
Norm.open      *
Delay        10s
Alarm          *
```

Desalination monitoring (FC input)
The "FC" input is designed to monitor the desalination valve.

Program the desired effect of the contact, the test time and the alarm function.
The desired effect relates to an active flow controller (for flow through).

```
DESAL.MONITOR.
active         -
Norm.closed    -
Norm.open      *
Test time    30s
Alarm          -
```

Diagram of desalination monitoring:
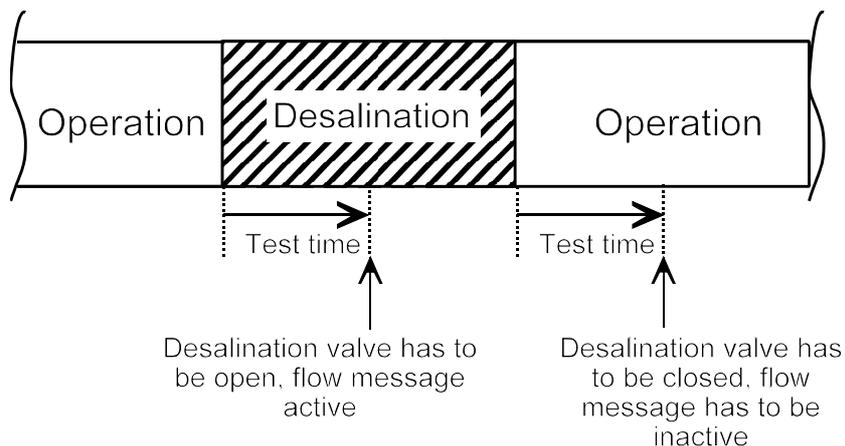
Output AL/EV ("draining" function)

Program the function EV to activate the "Draining" function:

The input valve is closed and the desalination valve opened for the programmed period at the start time (time) on the respective weekday or daily. This drains the system. The message "Draining" and the remaining time appear on the display.
The desalination valve closes, the input valve opens and the system is filled after the draining period. After a set filling time of one hour, the desalination lock is released.

```
OUTPUT AL/EV
Function EV     -
Duration      54h
Start time 18:00
Daily           -
Monday          -
Tuesday         -
Wednesday       -
Thursday        -
Friday          *
Saturday        -
Sunday          -
```

Extras

Language
Selection of the desired display language:

At present these four "standard" languages available. However, other languages are available if desired by customers.

```
LANGUAGE
German          *
English
French
Italian
```

Password
Changing the entered password:

```
PASSWORD
New:          000
```

SERVICE menu
Request and change current settings and statuses of the unit in the service menu.

Manual desalination

Open the desalination valve via the "ENTER" key:

```
MAN.DESALINAT.
Start (ENTER)
```

The display "Des. val. OPEN" appears and the "Desalination" lamp lights up.
The volume memory for the quantity of water is reset to 0.
The water meter impulses are still processed for dosing even **during** manual desalination, however, they are **not** added up for the following desalination.
Press the "ENTER" or "M" key again to close the desalination valve and to exit the manual function.

```
MAN.DESALINAT.
Des.valve open
```

Auto desalination

Press the "ENTER" key to start desalination with the programmed desalinaton time:

```
AUTO DESALINAT.
Start (ENTER)
```

The menu is exited, the operating display "Desalination" appears and the "Desalination" lamp lights up.
The volume memory for the quantity of water is reset to 0.
The water meter impulses are still processed for dosing even **during** manual desalination, however, they are **not** added up for the following desalination.

Press the "ENTER" key for 5 seconds to terminate desalination.

Manual impulses

Release the function via the "ENTER" key:

```
MANUAL IMPULSES
Start (ENTER)
```

Subsequently simulate water meter impulses via the "UP" key. The number of manually entered impulses is displayed:

Caution!
The water meter impulses are also processed for the volume memory and for dosing.

```
MANUAL IMPULSES
Impulses:       2
```

Operating info
You can request the current counter statuses here.

```
OPERATING INFO
Desalinations
Operating hours
WM total
WM desalination
WM add. water
```

Desalination
Displays the number of desalinations since the last counter reset.

Reset
In this menu you have to reset the regeneration meter to the initial value via the "Reset (ENTER) "key.

Operating hours
The unit records the operating hours of the plant/controller.

```
OP.HRS.     125h
Reset? (Enter)
```

Reset
You can reset the current operating time to 0 hours:
"M" ° Service ° Operating Hours ° Reset

Water quantities
The unit records the following water quantities:

```
WM TOT. 412.3m³
Reset? (Enter)
```

WM total
The total quantity of supplied water since the last reset.
The counter restarts at 0 if 99999.9m³ is exceeded.

WM desalination
The quantity of suppled water during desalination since the last reset.
The counter restarts at 0 if 99999.9m³ is exceeded.

```
WM DES.    1.1m³
Reset? (Enter)
```

WM additional water
The difference between the total quantity of water and the quantity of water during desalination

```
WM ADD.: 12.3m³
Reset? (Enter)
```

Time / Date
Please observe that the integrated clock only continues to run if the unit is switched on. Correct, if necessary, the time and date after a longer period of voltage loss or if the plant has been switched off.
Anzeige: *"M"* ° Service ° Time Date
The display shows the date and time of the controller.

```
TIME        DATE
10:23  21.01.05
```

Set: Press the "ENTER" key under menu *"M"* ° Service ° Time Date.
Set and change the time and date by selecting the desired position via the arrow keys. Press the "ENTER" key to save the setting and to return to the display function.

Error history
Open the error history via "display". The error history is a list of errors and statuses which have occurred during current operation.
An error is recorded with the time and date,
e.g.:   **Voltage loss**
               06:56   16.12.04

```
ERROR HISTORY
Display
Delete
```

The list is not deleted after voltage loss.
The buffer of the error history is deleted and recording restarted via "delete".

Please see the section "Error messages" for further information.

Diagnosis

The diagnosis menu displays the current statuses of the inputs and outputs. For test purposes (e.g. during commissioning), the output statuses can be manually manipulated via the "➖" and "•" keys. Please ensure that downstream plant parts cannot be damaged. Active statuses (switched relay, switched input) are displayed as "on", inactive statuses as "off", e.g.:

> **OUTPUT AV**   or   **INPUT FC**
>   **off**   **on**

```
DIAGNOSIS
Output
Input
```

```
OUTPUT
Output AV
Output DO
Output AL/EV
```

```
INPUT
Input empty
Input FC
Input WM
```

Software status

Call the current software status here:

```
SOFTWARE STATUS
84M001 25.12.04
```

Draining

Start the "Draining" function via the "ENTER" key.

The display "Draining" appears, the desalination valve opens and the input valve closes.

Manually terminate draining in the following menu option:

```
DRAINING
Start? (Enter)
```

```
DRAINING
End? (Enter)
```

Menu structure

ECO-Control DO10
Last update: 11.04.05

```
Operation
              12.32m³
```

```
Desalination
              12:03
```

M - key

M

```
MENU
Service
Information
Basic program
```

ENTER

```
SERVICE
Man.desalinat.
Auto desalinat.
Manual impulses
Operating info
Time      Date
Diagnosis
Error history
Software status
```

```
ERROR HISTORY
Display
Delete
```

```
SOFTWARE STATUS
84M001 25.12.04
```

```
BASIC PROGRAM
Password input
```

```
MAN.DESALINAT.
Start (ENTER)
```

```
MAN.DESALINAT.
Des.valve open
```

```
AUTO DESALINAT.
Start (ENTER)
```

```
Desalination
              12:03
```

```
MANUAL IMPULSES
Start (ENTER)
```

```
OPERATING INFO
Desalinations
Operating hours
WM total
WM desalination
WM add. water
```

```
NO.OF DES.    8
Reset? (Enter)
```

```
OP.HRS.    125h
Reset? (Enter)
```

```
WM TOT. 412.3m³
Reset? (Enter)
```

```
WM DES.   1.1m³
Reset? (Enter)
```

```
WM ADD.: 12.3m³
Reset? (Enter)
```

```
TIME      DATE
10:23   21.01.05
```

```
DIAGNOSIS
Output
Input
```

```
OUTPUT
Output AV
Output DO
Output AL/EV
```

```
INPUT
Input empty
Input FC
Input WM
```

ENTER

```
PROGRAM VALUES
Desalination
Dosing
Water meter
Functions
Extras
```

```
EXTRAS
Language
Password
```

```
PASSWORD
New:      000
```

```
LANGUAGE
German        *
English
French
Italian
```

ENTER

```
DESALINATION
Desal.time
Start volume
```

```
DESAL.TIME
mm:ss    02:30
```

```
START VOLUME
           02000 l
```

```
DOSING
Litre/Impulse
Imp.duration
Impulse pause
No.of impulses
```

```
LITRE/IMPULSE
         300.000
```

```
IMP.DURATION
         01.0sec
```

```
IMPULSE PAUSE
         01.0sec
```

```
NO.OF IMPULSES
               1
```

```
WATER METER
L/Imp. 100.000
```

```
FUNCTIONS
Fct. empty
Desal.monitor.
Output AL/EV
```

```
FCT. EMPTY
Norm.closed   -
Norm.open     *
Delay      10s
Alarm         *
```

```
DESAL.MONITOR.
active        -
Norm.closed   -
Norm.open     *
Test time  30s
Alarm         -
```

```
OUTPUT AL/EV
Function EV   -
Duration   54h
Start time18:00
Daily         -
Monday        -
Tuesday       -
Wednesday     -
Thursday      -
Friday        *
Saturday      -
Sunday        -
```

Technical appendix

Example of a simple circulating coolant

Cooling tower

Fresh water supply
(Additional water)

WM

Input valve EV

Circulation pump

Heat exchanger

FC

Desalination valve

Drain

WM: Water meter
FC: Flow controller

Dosing pump
(Hardness stabiliser)

Empty

Dosing medium container
(Hardness stabiliser)

Connection example

F1 T0.08mA

6V
3.2VA

F3
T0.315mA

EcoControl
DO10

F2 T4A

K3   K2   K1

PE N L n n n I I I 10 11 12 13 14 15 16 17 18   19 20 21 22 23 24 25 26 24 25 26 27 28
                              AV   DO   AL/EV   WM   LL   FC

Mains

Motor valve

Solenoid/Motor/
Dosing pump

Alarm message
or
Input valve

Contact water
meter

"Empty" contact
Dosing medium container

"Flow controller" desalination

Technical data

Power supply: 230 - 240 V or 24 V +/-10% 50 -6 0 Hz, safety fuse T4A

Power consumption without external load: max. 6 VA

Degree of protection: IP54

$C\hspace{-0.2em}\epsilon$

Protection class: I

Conformity: EN 50081-1, EN 50082-2, EN 61010-1

Ambient temperature: 10 - 45°C

Dimensions EcoControl DO10:   W x H x D = 175 x 165 x 135 mm

Weight: approx. 0.8 kg

We reserve the right to make changes in the interest of constantly improving our products!