xylem
Let's Solve Water

User Guide

90022401_3.1

EcoTouch 6

Closed reactor systems

WEDECO
a xylem brand

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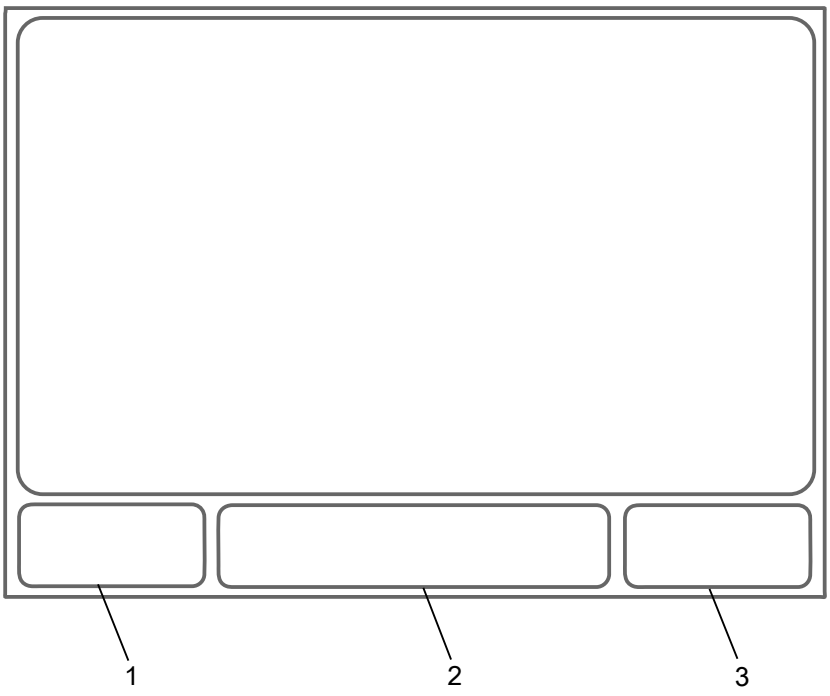
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1 User Interface

1.1 Navigation buttons

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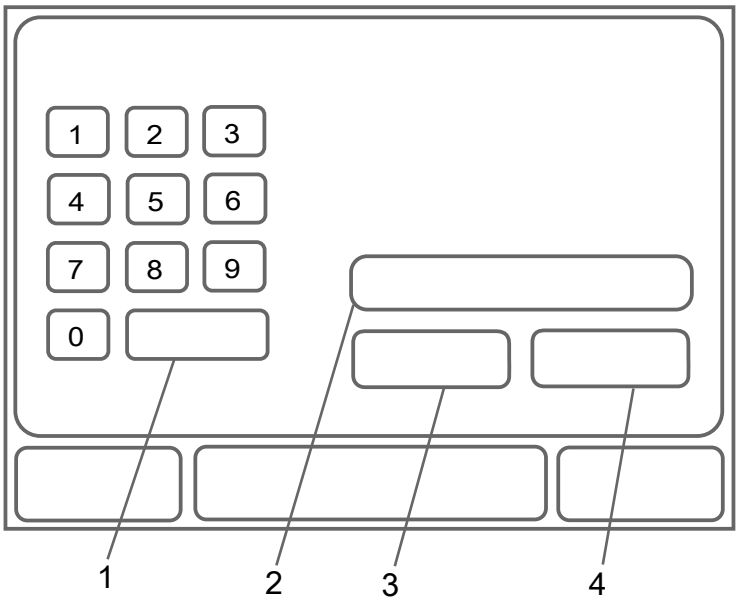
Position	Button	Description
1	**Menu**	Gives access to the **Menu** screen
2	Status message	Shows the status of the UV system One tap on the **Status** button shows the status message on the screen. Two taps on the **Status** button show the **Events** screen.
3	**Main**	Gives access to the **Main** screen

1.2 The Input screen

Input values

This screen allows numerical entry.

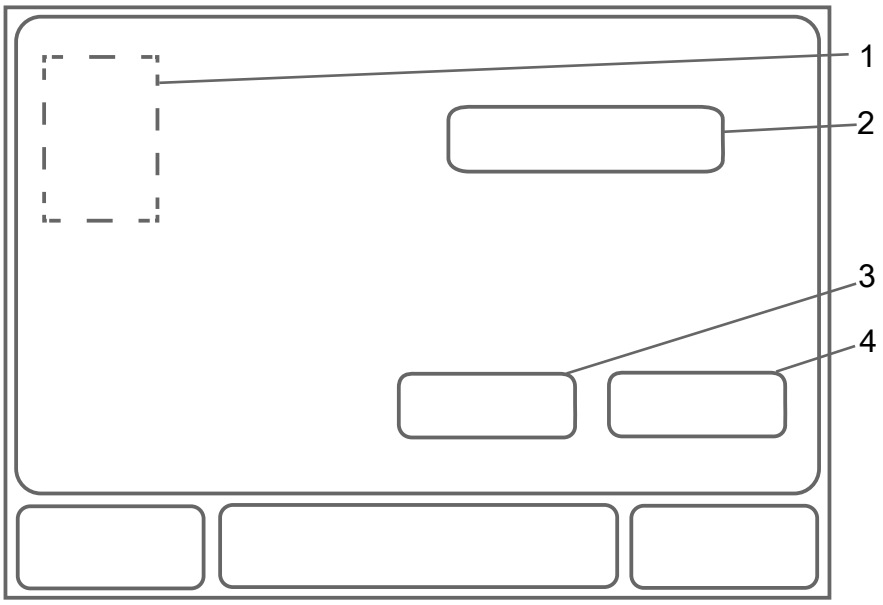
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Position	Button	Description
1	**Delete**	Deletes the entered character
2	Display	Shows the entered value
3	**Cancel**	Cancels the entered value The previous screen is shown.
4	**Enter**	Confirms the entered value

Parameter choices

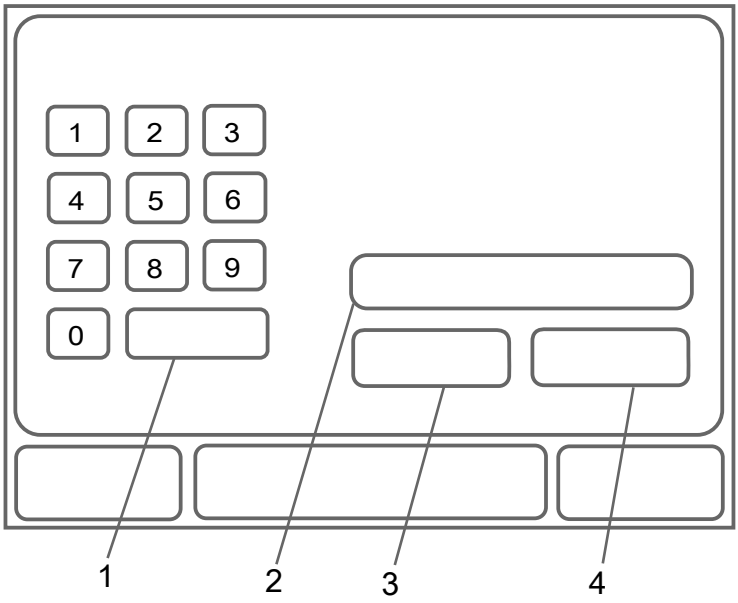
This screen allows selection from a list.



Position	Button	Description
1	Parameters settings	Allows the selection of the setting from the list
2	Display	Shows the selected setting
3	**Cancel**	Cancels the selected setting The previous screen is shown.

Position	Button	Description
4	**Enter**	Confirms the selected setting

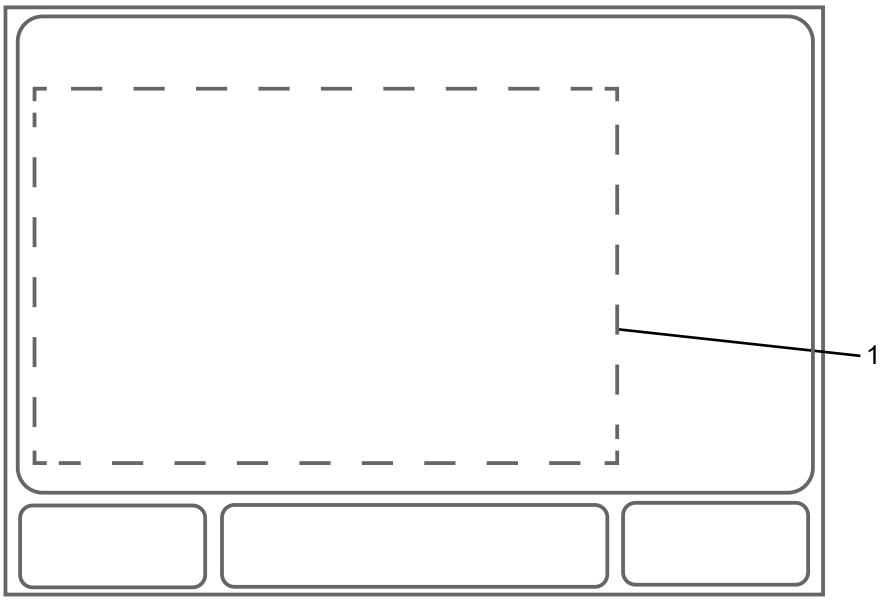
1.3 Password screen



Position	Button	Description
1	**Delete**	Deletes the entered character
2	Display	Shows the entered password
3	**Cancel**	Cancels the entered password The main screen is shown.
4	**Enter**	Confirms the entered password

The operator password 2000 allows the setting of certain parameters.

1.4 The Main screen



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Position	Parameter	Description	Unit
1	**Intensity**	Shows the UV intensity value	• **W/m²** • **mW/cm²**
	Dose or **RED** or **Val. RED** or **Logi** or **Val. Logi**	Shows the disinfection target value for the following disinfection methods: • PSS • UVDGM Only one parameter is visible according to the disinfection method.	• **J/m²** • **mJ/cm²**
	Power	Shows the lamp power value	%
	Flow	Shows the flow rate value	• **gpm** • **m³/h** • **L/s** • **MGD**
	UVT	Shows the UV transmittance value	%
	Operation hours	Shows the operating hours of the UV system	**h**
	Lamp Hours	Shows the operating hours of the lamp	**h**

A tap on the parameter shows the parameter details. For more information, see *The Status screen* on page 8.

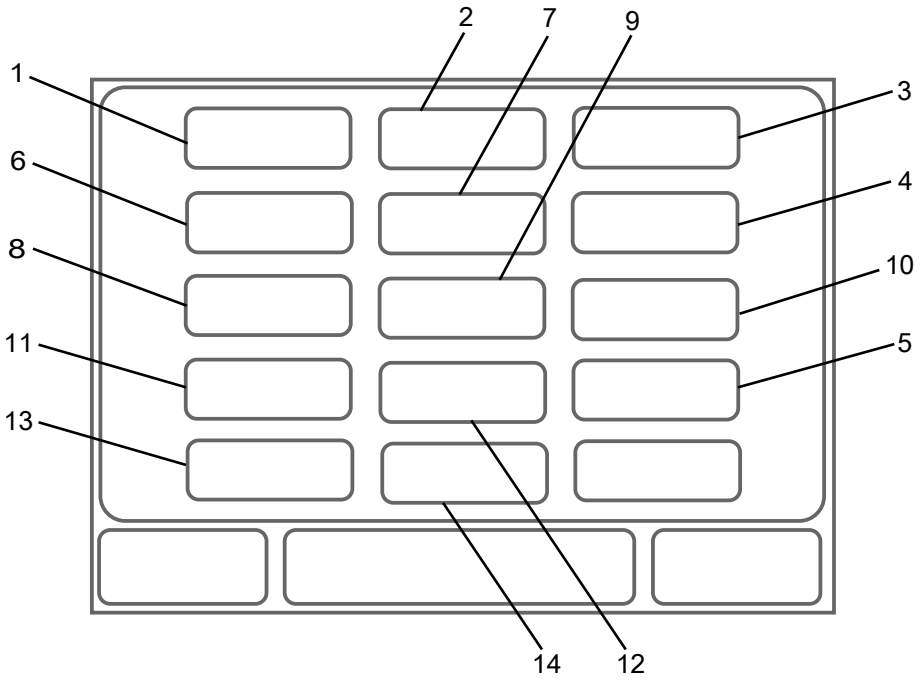
A tap on the **Intensity** parameter shows the UV intensity of each UV sensor. It shows maximum of 6 UV sensors according to the model of the UV system.

1.5 The Menu screen

If the menu screen is accessed, first the password screen appears. For more information, see *Password screen* on page 5.

Access without a password allows no changes of parameters.

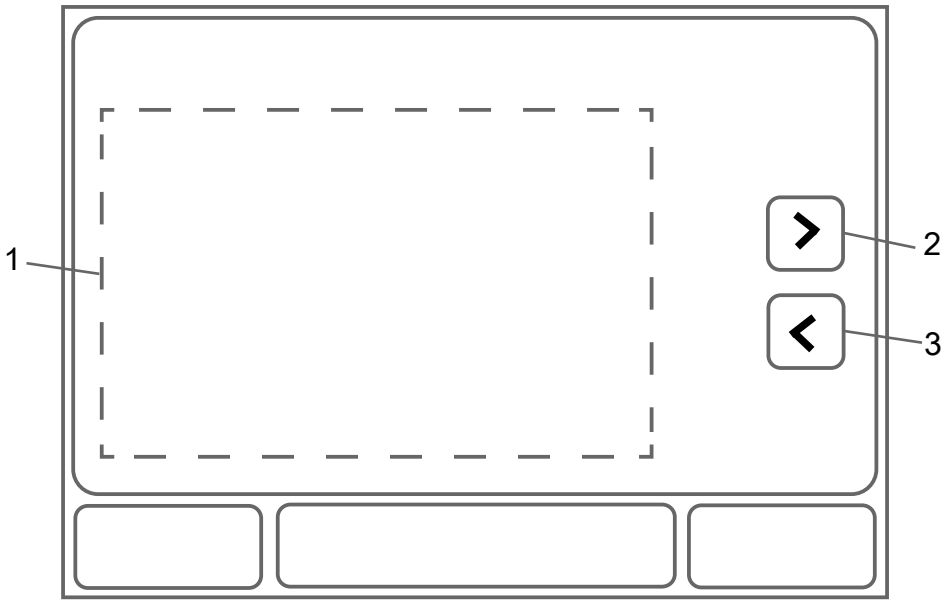
Access with the operator password 2000 allows the setting of certain parameters.



Position	Button	Screen type	Description
1	**Status**	Status	Gives access to the **Status** screen that shows the status of the UV system
2	**Ballasts**	Status	Gives access to the **Ballasts** screen that shows the status of the ballasts
3	**Lamps**	Status	Gives access to the **Lamps** screen that shows the status of the lamps
4	**Events**	Status	Gives access to the **Events** screen that shows the following information: • A list of the last 100 warnings, alarms, or events • Date and timestamp of the start time and the end time
5	**Info**	Status	Gives access to the **Info** screen that shows the software information
6	**S-Hold**	Function	Gives access to the **S-Hold** screen that allows the user to check the UV sensor by using an external reference sensor
7	**Full Power**	Function	Gives access to the **Full Power** screen to set the UV system at full power mode
8	**System**	Setting	Gives access to the **System** screen that shows the system parameters of the UV system
9	**Timings**	Setting	Gives access to the **Timings** screen that shows the time parameters of the UV system
10	**Limits**	Setting	Gives access to the **Limits** screen that shows the limit parameters of the UV system
11	**I/O**	Setting	Gives access to the **I/O** screen that shows the I/O settings of the UV system
12	**Network**	Setting	Gives access to the **Network** screen that allows the user to configure the network This screen is shown when a fieldbus communication is enabled.
13	**Wiper**	Setting	Gives access to the **Wiper** screen that shows the wiper parameters of the UV system This screen is shown when a wiper is enabled. This screen is not active for PureTube.
14	**Cleaning**	Function	Gives access to the **Cleaning** screen to allow the user to start the CIP process This screen is shown when a CIP function is enabled.

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1.5.1 The Status screen

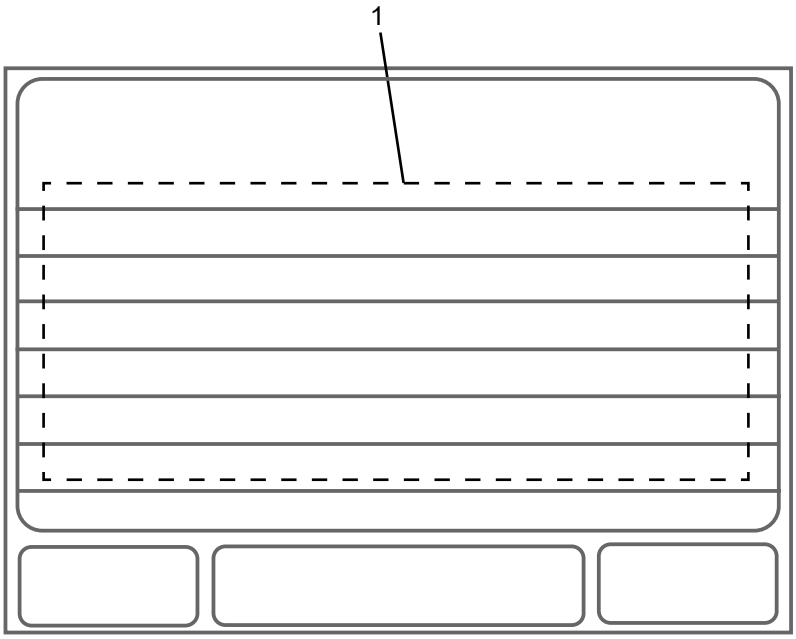


Position	Parameter	Description	Unit
1	**Type**	Shows the name of the UV system model	-
	Serial Number	Shows the serial number of the UV system	
	Operation hours	Shows the total hours of operation of the UV system	**h**
	ON/OFF cycles	Shows the number of times that the UV system is turned on and off	-
	Lamp Hours	Shows the total hours of operation of the UV lamps	**h**
	Alarm Limit	Shows the UV intensity limit when the alarm is triggered	**W/m²**
	Warning Limit	Shows the UV intensity limit when the warning is triggered	**W/m²**
	Target Value	Shows the target value of the UV dose	-
	Min Design Flow	Shows the minimum value of the design flow	**m³/h**
	Max Design Flow	Shows the maximum value of the design flow	**m³/h**
	Min UVT	Shows the minimum value of the UV transmittance	%

Position	Button	Description
2		Shows the next page
3		Shows the previous page

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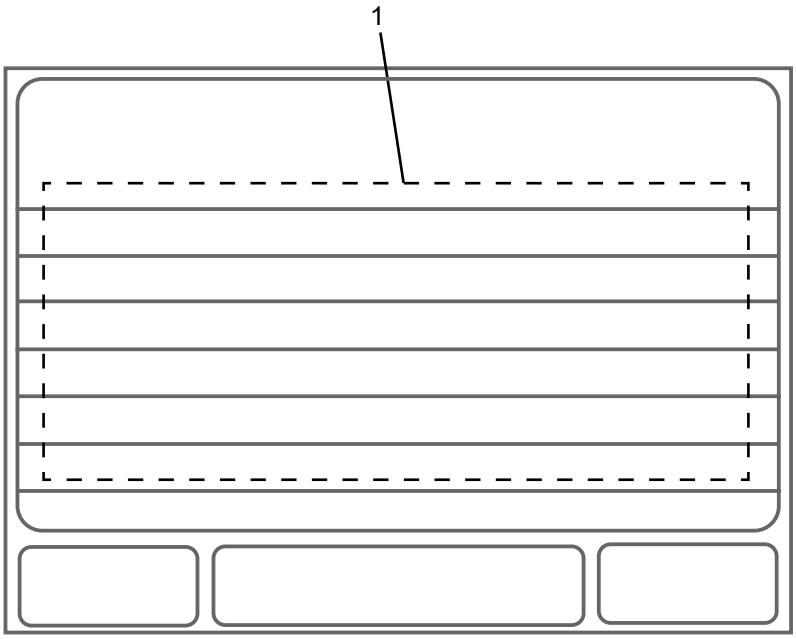
1.5.2 The Ballasts screen



Position	Parameter	Description	Unit
1	**Ballast**	Shows the ballast numbers from **B1** to **B6**	-
	□□	Shows the lamp status • Black = The lamp is turned off. • Green = The lamp is turned on. • Blank line = The lamp is unavailable.	-
	UZK (V)	Shows the ballast voltage	V
	I (A)	Shows the ballast current	A
	T (C)	Shows the ballast temperature	ºC
	PWM (%)	Shows the pulse width modulation	%
	Info	Shows the service information of the ballast	-
	Status	Shows the service status of the ballast	-

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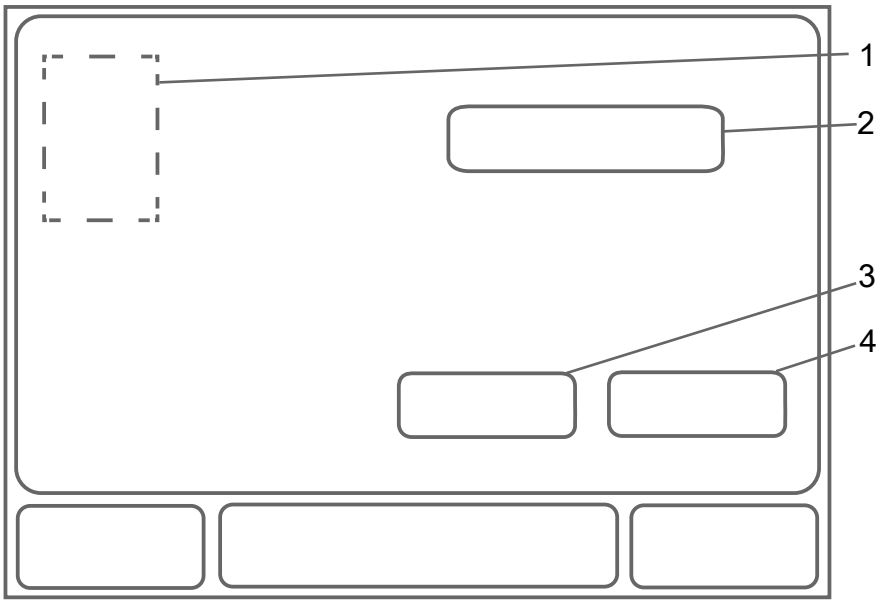
1.5.3 The Lamps screen



Position	Parameter	Description
1	**Lamp**	Shows the lamp numbers from **L1** to **L6**
	☐	Shows the lamp status • Black = The lamp is turned off. • Green = The lamp is turned on. • Blank line = The lamp is unavailable.
	Hours	Shows the total hours of operation of the lamp A tap on the parameter value allows the change. This change needs the operator password. For more information, see *Password screen* on page 5.
	ON/OFF Cycles	Shows the number of times that the lamps are turned on and off A tap on the parameter value allows the change. This change needs the operator password. For more information, see *Password screen* on page 5.
	Message	Shows the service information of the lamp

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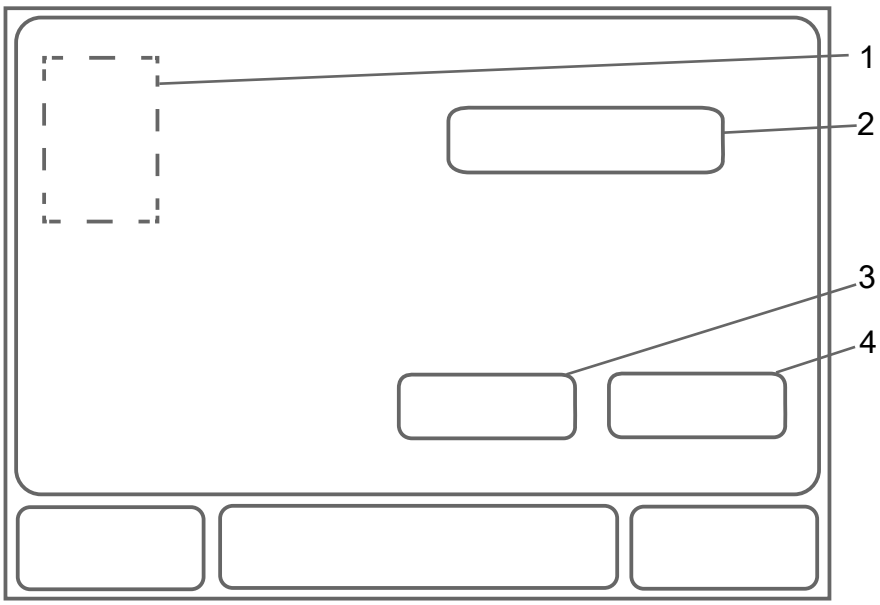
1.5.4 The S-Hold screen



Position	Setting	Description
1	**No**	Does not start the **S-Hold** function
	Yes	Starts the **S-Hold** function to check the reference sensor in 4 minutes The **Status** button shows the time that is left for this check. During this check, the UV intensity value does not change on the **Main** screen.
2	Display	Shows the selected setting

Position	Button	Description
3	**Cancel**	Cancels the selected setting
4	**Enter**	Confirms the selected setting

1.5.5 The Full Power screen

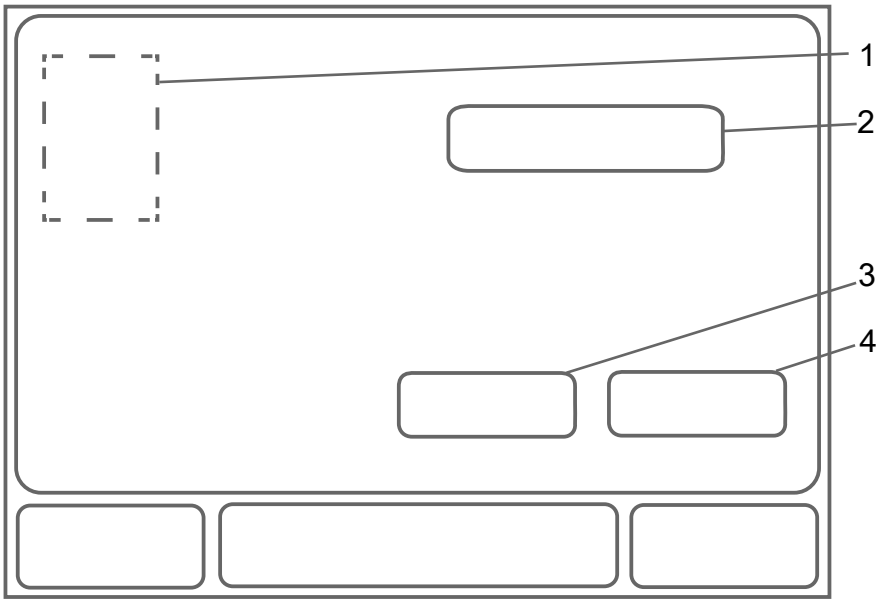


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Position	Setting	Description
1	**No**	Does not start the **Full Power** function
	Yes	Starts the **Full Power** function The system is manually set to full power. When the system turns off, this setting is reset.
	Input	Allows the remote control of the **Full Power** function by using the digital input The digital input is connected to the I/O board.
	PLC	Allows the remote control of the **Full Power** function by using the PLC The PLC is connected to the fieldbus. This setting is visible when the fieldbus communication is enabled.
2	Display	Shows the selected setting

Position	Button	Description
3	**Cancel**	Cancels the selected setting
4	**Enter**	Confirms the selected setting

1.5.6 The Cleaning screen

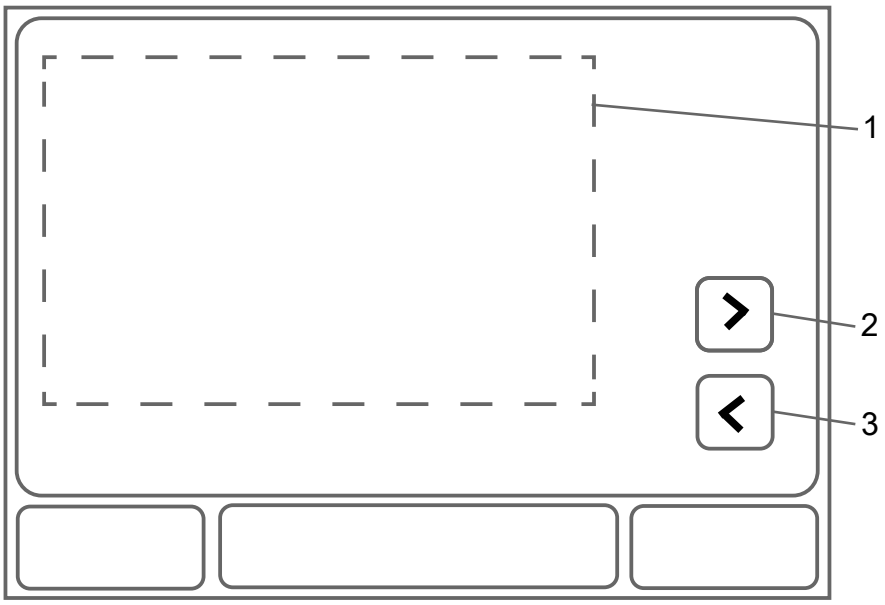


Position	Setting	Description
1	**No**	Does not start the CIP (clean-in-place) function
	Yes	Starts the CIP function The system is manually set to the clean-in-place procedure. When the system turns off, this setting is reset.
	Input	Allows the remote control of the CIP function by using the digital input The digital input is connected to the I/O board.
	PLC	Allows the remote control of the CIP function by using the PLC The PLC is connected to the fieldbus. This setting is visible when the fieldbus communication is enabled.
2	Display	Shows the selected setting

Position	Button	Description
3	**Cancel**	Cancels the selected setting
4	**Enter**	Confirms the selected setting

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1.5.7 The Events screen



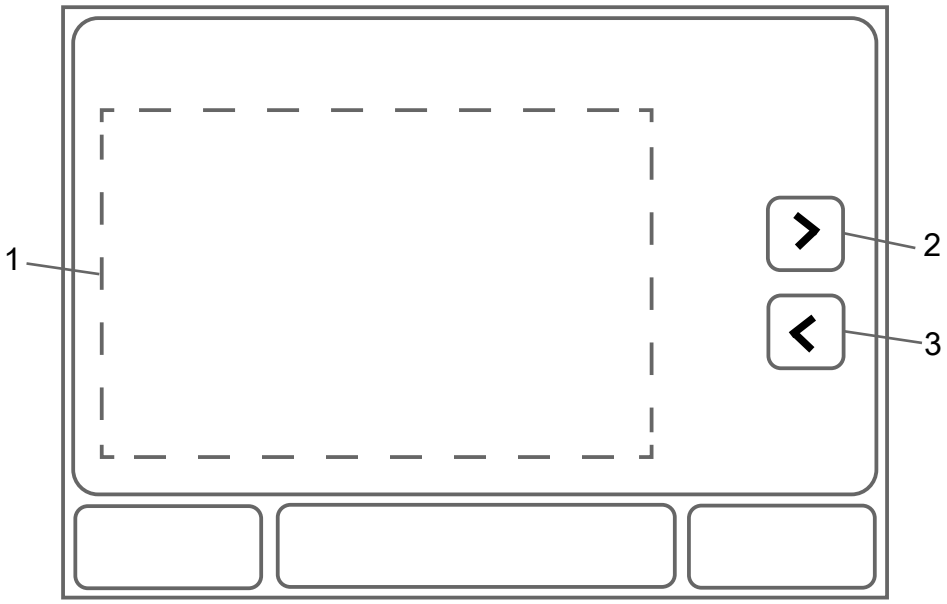
Position	Parameter	Description
1	Warnings, alarms, or events	Shows a list of the last 100 warnings, alarms, or events with the following information: • Date and timestamp of the start time and the end time

Position	Button	Description
2		Shows the next page
3		Shows the previous page

1.5.8 The System Setting screen

Access with the operator password 2000 allows the setting of certain parameters. For more information, see *Password screen* on page 5.

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Position	Parameter	Access with password	Description	Selection	Default	Unit
1	**Type**	No	Sets the type of UV system	Exact type of UV system	According to UV system	-
	Lamp Power	No	Sets the ballast power value for the fixed power mode	50–100	100	%
	Number of Lamps	No	Sets the number of lamps in the UV system	1–60	According to UV system	-
	Serial Number	No	Shows the serial number of the UV system	-	According to UV system	-
	Wiper	No	Shows the wiper type	• **Wiper M63** • **No**	According to UV system	-
	Date/Time	Yes	Sets the date and time in this format: • yyyy-mm-dd hh:mm:ss	-	-	-
	Language	Yes	Sets the preferred language	• **English** • **German** • **French** • **Italian** • **Spanish** • **Portuguese** • **Swedish** • **Norwegian** • **Finnish** • **Polish** • **Hungarian** • **Slovenian** • **Czech** • **Croatian**	According to UV system	-
	Unit Flow	Yes	Sets the unit of the flow rate	• **gpm** • **m³/h** • **L/s** • **MGD**	See the order specification	-

Position	Parameter	Access with password	Description	Selection	Default	Unit
	Unit UV Intensity	Yes	Sets the unit of the UV intensity	• **W/m²** • **mW/cm²**	W/m²	-
	Unit UV Dose	Yes	Sets the unit of the UV dose	• **J/m²** • **mJ/cm²**	See the order specification	-
	Disinfection Method	No	Sets the type of disinfection method	• **DVGW** • **ÖVGW** • **PSS** • **UVDGM** • **NWRI** • **None**	According to UV system	-
	Variable Power	No	Selects the setting of the variable power	• **Yes** = The UV lamp power changes from 50% to 100% according to the intensity setpoint or dose setpoint • **No** = The UV lamp power is fixed at 100%. • **PLC** = The PLC sends the set power signal to the UV system.	See the order specification	-
	Flowmeter	Yes	Selects the source of the flow signal	• **Setting** = The flow signal is not supplied. For more information, see the **Design Flow** parameter. • **Input** = The flowmeter sends the 20 mA flow signal to the UV system. • **PLC** = The PLC sends the flow signal to the UV system.	**Setting**	-
	UVT Meter	Yes	Selects the source of the UVT signal	• **Setting** = The UV transmittance monitor is not supplied. The design UVT is used to calculate the UV transmittance. • **Input** = The UV transmittance monitor sends the 20 mA flow signal to the UV system. • **PLC** = The PLC sends the UV transmittance signal to the UV system.	**Setting**	-

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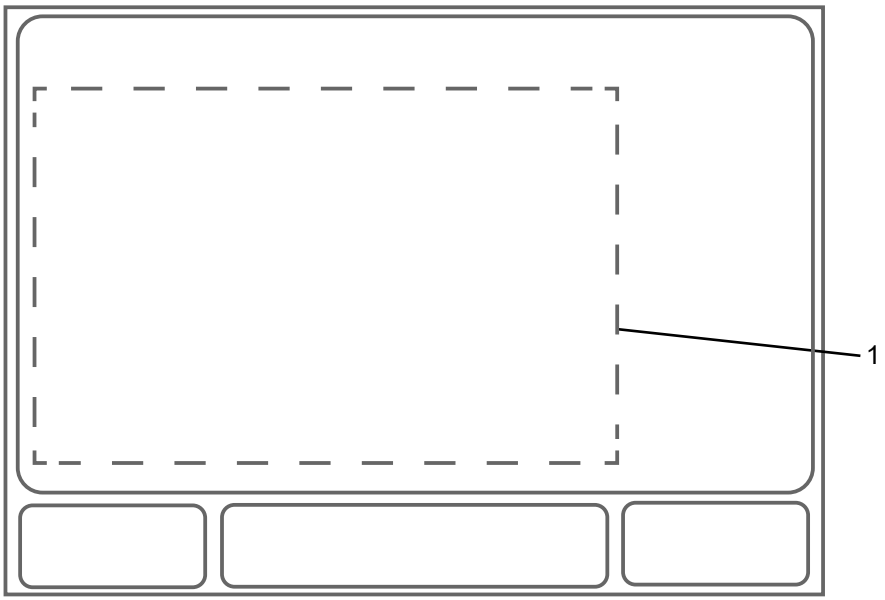
Position	Parameter	Access with password	Description	Selection	Default	Unit
	Design Flow	No	If there is no flow signal and the **Flowmeter** parameter is selected to **Setting**, this parameter sets the flow rate. This parameter is applicable for the UV systems that use the **PSS** disinfection method.	0–6499.9 m³/h 0–28 618.2 gpm	See the order specification	**m³/h** **gpm**
	Design UVT	No	If there is no UVT signal and the **UVT Meter** parameter is selected to **Setting**, this parameter sets the design UVT. This parameter is applicable for the UV systems that use the **PSS** disinfection method.	0–100	See the order specification	%
	Design Dose **Design RED** **Val. Design RED** **Design Logi** **Val. Design Logi**	No	Sets the minimum value of the UV dose The **Design Dose** parameter is applicable for UV systems that use these disinfection methods: • **PSS** • **UVDGM** • **NWRI** The other parameters are applicable for the UV systems that use the **UVDGM** disinfection method.	0–64999.0 J/m² 0–6499.99 mJ/cm²	See the order specification	**J/m²** **mJ/cm²**
	Fieldbus	Yes	Stets the fieldbus status	• **Yes** = The fieldbus network is enabled. • **No** = The fieldbus network is disabled.	No	-
	Power Ramp Rate	No	Sets the ramp rate of the power that increases or decreases	0–999	10	s
	Deadband	No	Sets the deadband of UV intensity or UV dose, which determines when the power must be increased or decreased	0.5–5.0	0.5	%
	Alarm delay	No	Sets the time delay of the UV intensity alarm after the control reaches 100% power. During this time UV alarms are suppressed	0–999	30	s
	UV Offset	No	Sets the safety factor that is added to the minimum value of the design UV intensity or UV dose The**UV Offset** makes sure that the target UV intensity/ UV dose and the received UV intensity/ UV dose are always above the minimum design UV intensity/UV dose.	1–50	20	%

Position	Parameter	Access with password	Description	Selection	Default	Unit
	Organism	No	Selects the setting of organism for which the UV sensitivity value is calculated automatically. If the setting is **None**, the UV sensitivity value is typed manually. This parameter is applicable for UV systems that use the **UVDGM** disinfection method.	• **None** • **MS2** • **T1** • **T7** • **Crypto** • **Giardia** • **Adeno**	See the order specification	-
	UV Sensitivity	No	Sets the value of the UV sensitivity This parameter is applicable for UV systems that use the **UVDGM** disinfection method.	20–999.9 J/m² 2–99.99 mJ/cm²	20	**J/m²** **mJ/cm²**
	UVDGM Control Type	No	Sets the target value that controls the lamp power This parameter is applicable for UV systems that use the **UVDGM** disinfection method.	• **RED** • **Val. RED** • **Logi** • **Val. Logi**	-	-
	UVT cap	No	limits the incoming UVT value for the UVDGM calculation, 0 = switched off It has no effect on the displayed UVT value. This parameter is applicable for UV systems that use the **UVDGM** disinfection method.	0–100	0.0	%
	Lamp Offset	Yes	Sets the offset number that is added to the lamp numbers If the SCADA system transfers the offset value, a higher-level PLC allocates the numbers of the lamps.	0–999	0	-
	Protective Dimming	No	If the UV intensity in the UV reactor is more than the maximum value, the lamp power decreases. If **Protective Dimming** is enabled, the functions, **100% on alarm** and **Full Power Mode**, are disabled.	• **Yes** • **No**	**No**	-
	Prot. Dimm. Intensity	No	Sets the maximum value of the UV intensity for this parameter	0–2999 W/m² 0–299.9 mW/cm² If the value is 0.0, this setting is not active.	0.0	**W/m²** **mW/cm²**
	Lamp Lifetime	No	Sets the lamp lifetime to trigger a warning This warning informs about the lamp expiry.	0–99999 If the value is 0 h, this setting is not active.	0	h
	Reset the Lamp Data	Yes	Shows the reset status of the lamp hours	• **Yes** = The lamp hours are reset to 0. • **No** = The lamp hours are not reset.	**No**	

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Position	Parameter	Access with password	Description	Selection	Default	Unit
	Wiper Ring Lifetime	No	Sets the wiper lifetime to trigger a warning This warning informs about the wiper expiry.	0–99999 If the value is 0 h, this setting is not active.	10000	-
	Opti Detect	No	Shows the Opti Detect status	• **Yes** = The Opti Detect is enabled. • **No** = The Opti Detect is disabled.	See the order specification	-
	Unit temperature	Yes	Sets the unit of the temperature	• **K** • **°F** • **°C**	**°C**	-

1.5.9 The Timings Setting screen



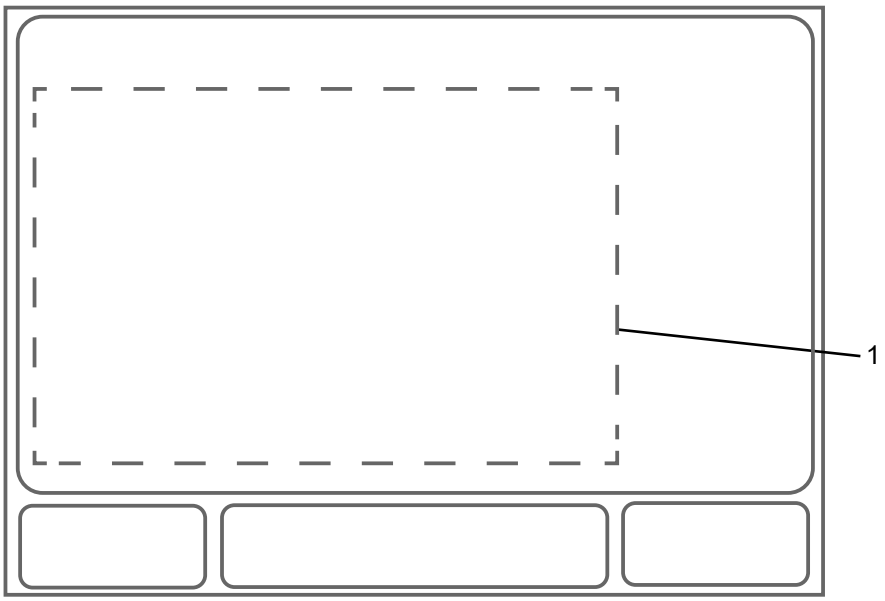
Access with the operator password 2000 allows the setting of certain parameters. For more information, see *Password screen* on page 5.

Position	Parameter	Access with password	Description	Selection	Default	Unit
1	**Warm-up Time**	Yes	Sets the time delay for the warm-up period	0–999	360	s
	Shutdown Delay	Yes	Sets the time delay to start the shutdown process for the parameters, **Enable Flow** or **Alarm = stop**	0–999	180	s
	Duration, ON	Yes	Sets the time for the Intermittent flushing output to stay on The Intermittent flushing output is applicable during the **Overtemp. Reactor** alarm.	0–999	5	s
	Duration, OFF	Yes	Sets the time for the Intermittent flushing output to stay off The Intermittent flushing output is applicable during the **Overtemp. Reactor** alarm.	0–999	20	s

Position	Parameter	Access with password	Description	Selection	Default	Unit
	Delay Overtemp.	No	Sets the time delay for the following alarms: • **Overtemp. Reactor** • **Overtemp. Ballast** • **Overtemp. Cabinet**	0–999	30	s
	Alarm Suppression	Yes	Sets the time delay after **Warm-up Time** to suppress the alarms	0–999	5	s

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1.5.10 The Limits screen



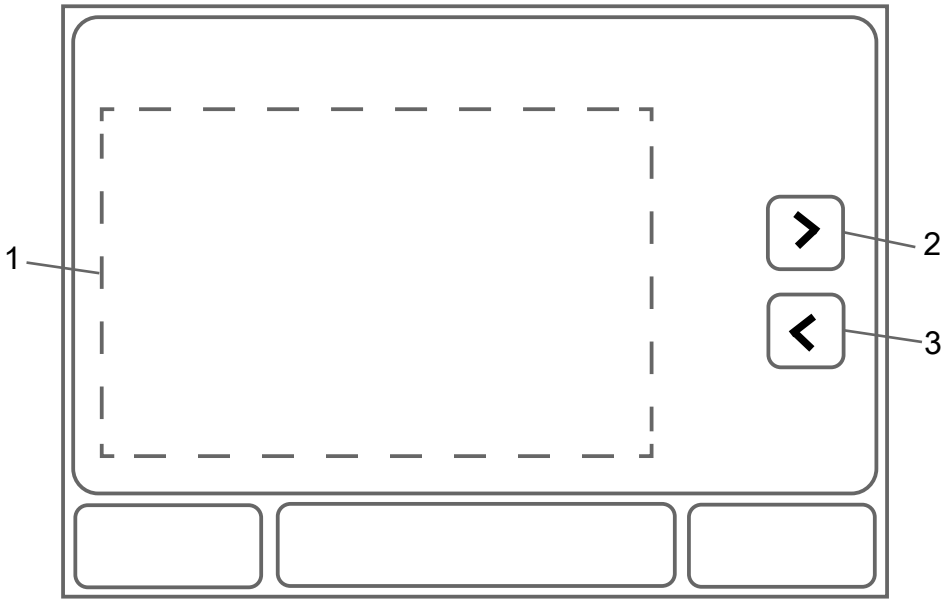
Access with the operator password 2000 allows the setting of certain parameters. For more information, see *Password screen* on page 5.

Position	Parameter	Access with password	Description	Selection	Default value	Unit
1	**Alarm = stop**	Yes	• **Yes**: If there is an alarm, the UV controller turns off the UV lamps. • **No**: If there is an alarm, the UV lamps stay on.	• **Yes** • **No**	**No**	-
	UV Intensity Alarm	No	Accepts a setpoint of the UV intensity If the UV intensity is lower than this value, an alarm is triggered. If no disinfection method is selected, this parameter is used.	0–2999.9	See the order specification	**W/m²** **mW/cm²**
	UV Intensity Warning	No	Accepts a setpoint of the UV intensity If the UV intensity is lower than this value, a warning is triggered. If there is no disinfection method selected, this parameter is used.	0–2999.9	See the order specification	**W/m²** **mW/cm²**
	Min Design Flow	No	Accepts a setpoint of the minimum design flow If the design flow is lower than this value, an alarm is triggered.	0–4999.9	See the order specification	**m³/h** **gpm**

EN

Position	Parameter	Access with password	Description	Selection	Default value	Unit
	Max Design Flow	No	Accepts a setpoint of the maximum design flow If the design flow is higher than this value, an alarm is triggered.	0–4999.9	See the order specification	**m³/h** **gpm**
	Enable Flow	Yes	• **Yes**: If there is an alarm, the UV controller de-energizes the **Enable Flow** output. • **No**: If there is an alarm, the **Enable Flow** output stays energized.	• **Yes** • **No**	**Yes**	-
	Min. Design, UVT	No	Accepts a setpoint of the minimum design UVT If the current UVT is lower than this value, a warning is triggered.	0–100	See the order specification	%
	Temp. alarm limit	No	Accepts a setpoint of the maximum reactor temperature If the current temperature is higher than this value, an alarm is triggered.	-50–200	45	°C
	Temp. warning limit	No	Accepts a setpoint of the maximum reactor temperature If the current temperature is higher than this value, a warning is triggered.	-50–200	35	°C

1.5.11 The I/O Setting screen



Access with the operator password 2000 allows the setting of certain parameters. For more information, see *Password screen* on page 5.

The measurement devices must be scaled.

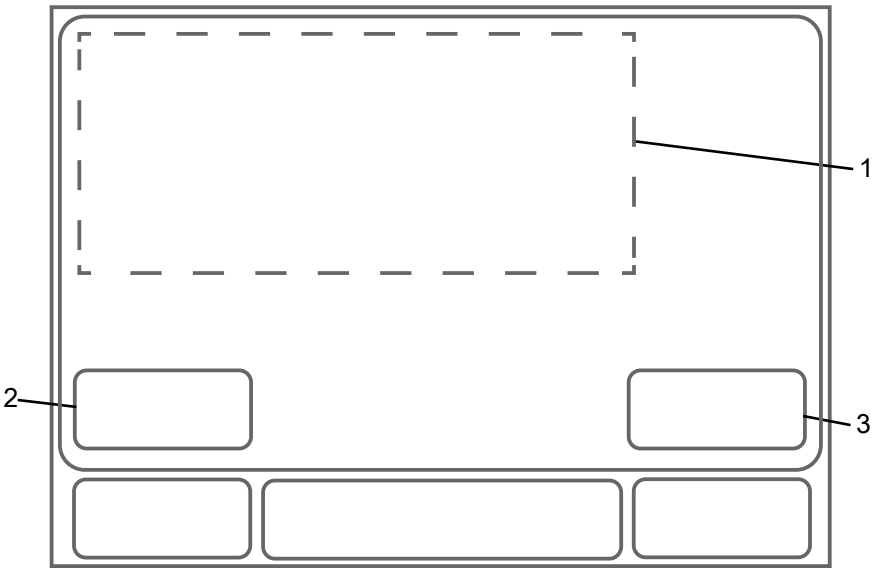
EN

Position	Parameter	Access with password	Description	Selection	Default	Unit
	UV Sensor Type	No	Allows the selection of the UV sensor type	**SO20101**, **SO13599**, **SO12511**, **SO13001**, **SO10510**, **SO20101EXi**, or **SO20206**	See the order specification	-
	Remote ON	Yes	Shows how the UV system is turned on and off	• **No** = The UV system turns on when the main isolator is turned on. • **Input** = The UV system turns on from a remote contact closure. • **PLC** = The UV system turns from a PLC. This parameter is shown when the fieldbus communication is enabled. • **Avensor** = The UV system turns on from **Avensor**	See the order specification	-
	Analog I/O logic	Yes	Gives acces to the sub-screens **Analog input logic** and **Analog output logic** Allows the setting of the parameters of the following functions: • **Flow** • **Water Temperature** • **Power Consumption** • **UVT** • **Intensity** • **Dose**	-	-	-
	SCADA Range Dose	Yes	Sets the range of values of the dose values that are transmitted through SCADA	0–6499.9 or 0–64999	0–6499.9	**J/m²**
	Avensor Mode	Yes	Allows the selection of the **Avensor Mode**	• **OFF** • **Monitor only** • **Monitor & Control**	**OFF**	-

1.5.12 The Network screen

This screen is shown when the fieldbus communication is enabled.

EN

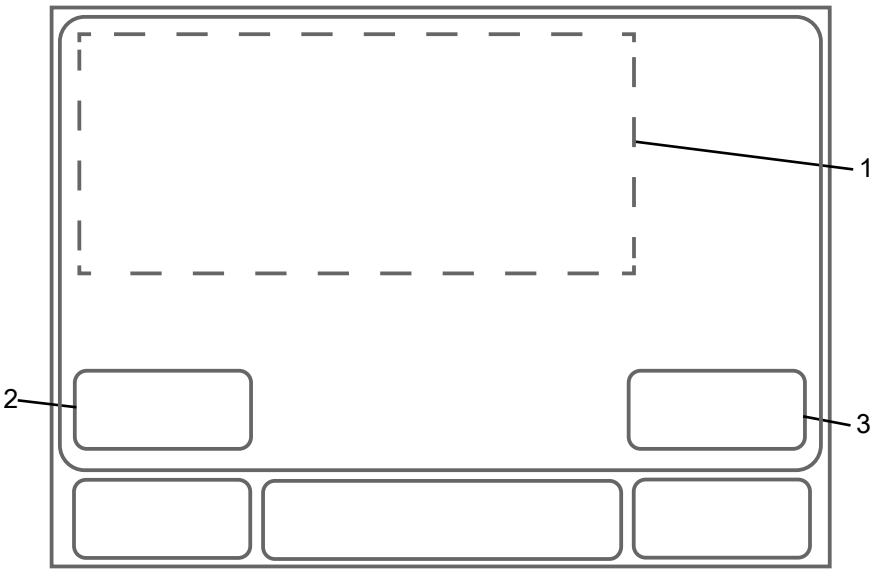


Position	Parameter	Setting	Description
1	Comm. Module Type:	• Profibus • EtherNet/IP, 2-port • EtherNet/IP, 1-port • Modbus TCP • Unknown	Sets the communication type
	Module Status:	PROCESS ACTIVE	Shows that the network channel for the process data is active and error free
		WAIT PROCESS DATA	Shows that the network channel waits for the process data and the communication is about to start
		HARDWARE RESET	Shows that the bus coupler is reset
		IDLE	Shows that the network interface is idle
	Link Status:	ACTIVE	Shows that the communication between the SCADA system and EcoTouch is ok
		NOT ACTIVE	Shows that the communication between the SCADA system and EcoTouch is not ok The EcoTouch does not receive the heartbeat counter in this status.
	EcoTouch Heartbeat:	-	Sets the heartbeat counter value This value allows the communication between EcoTouch and the SCADA system for the monitoring purposes. This value must change continuously.
	Network Heartbeat:	-	Sets the heartbeat counter value This value allows the communication between the SCADA system and EcoTouch for the monitoring purposes. This value must change continuously.

Position	Button	Description
2	**Config**	Gives access to the **Network Configuration** screen For more information, see *The Network Configuration screen* on page 23.
3	**N-Reset**	Resets the network communication module

EN

1.5.12.1 The Network Configuration screen



Profibus

Position	Parameter	Description
1	**Profibus Address**	Sets the profibus address of the profibus module

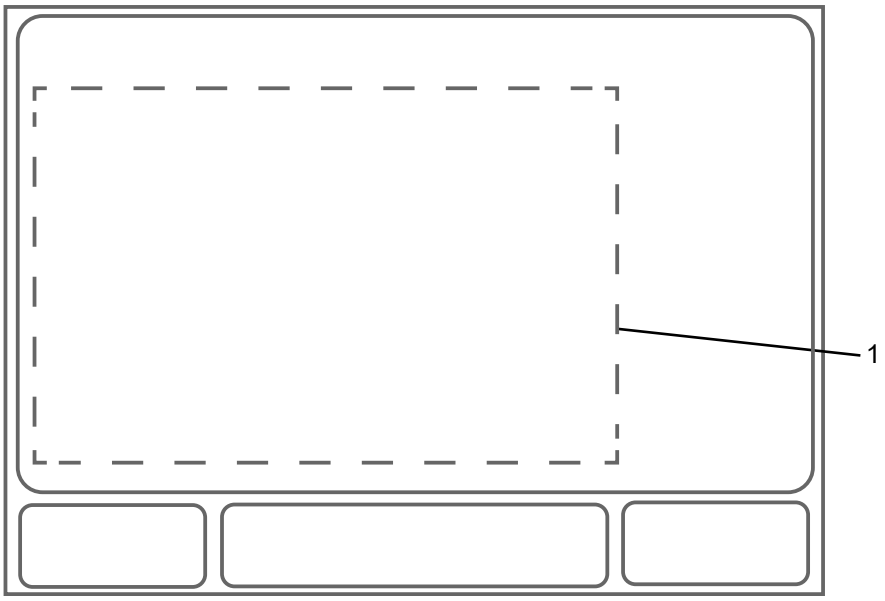
EtherNet/IP or Modbus TCP

Position	Parameter	Description
1	**IP Address**	Sets the IP address of the communication type
	Subnet Mask	Sets the subnet mask value
	Def. Gateway	Sets the default gateway value
	DHCP Enabled	• **Yes**: Enables the DHCP for UDP/IP networks • **No**: Disables the DHCP for UDP/IP networks
	Heartbeat Interval	Default: 8 s The EcoTouch sends heartbeat changes at this interval. The EcoTouch accepts double the interval from the PLC.

Position	Button	Description
2	**Write**	Transfers the inputs to the bus coupler
3	**Read**	Shows the inputs that are stored in the bus coupler

EN

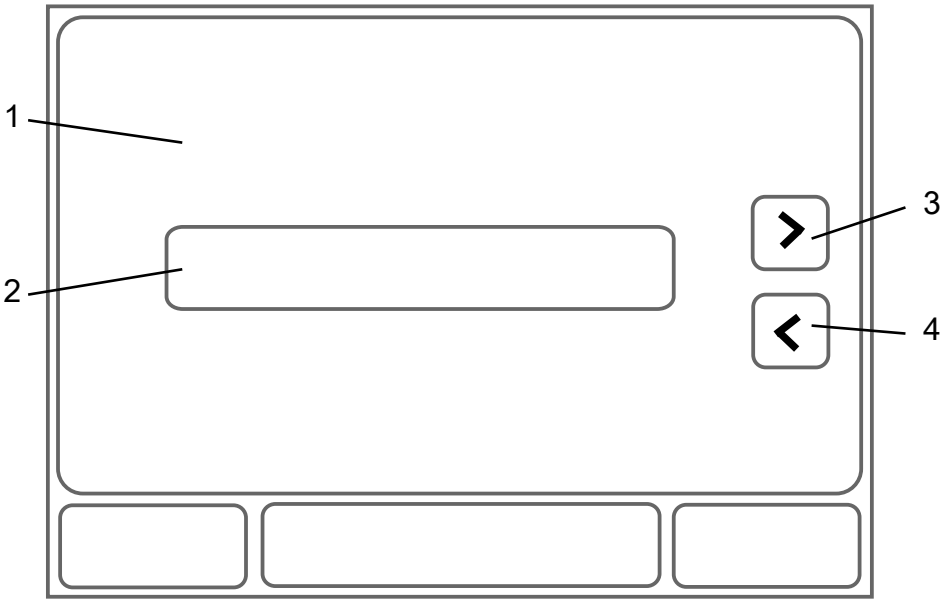
1.5.13 The Info screen



Position	Parameter	Description
1	**Hardware**	Shows the version of the EcoTouch device
	Firmware Version	Shows the version of the firmware
	Text File Version	Shows the version of the text file
	Status	Shows the status of the firmware
	UID	Shows the unique identification number

1.5.14 The Wiper Control screen

This screen is shown when a wiper is enabled.



Access with the operator password 2000 allows the setting of certain parameters. For more information, see *Password screen* on page 5.

Position	Parameter	Access with password	Description	Selection	Default	Unit
1	**Wiper Status**	-	Shows the status of the wiper and the percentage of the performed wiping cycle	-	-	%
	Wiping Cycles	-	Shows the number of wiping cycles	-	-	-
	Wiping Interval	Yes	Sets the wiping interval in hours	0.5–24	6	h
	Wipings per cycle	Yes	Sets the number of wipings per wiping cycle	1–5	2	-
	Wiper end position A	No	Shows the end position of the wiper on one side	0–9999.9	According to the UV system	mm
	Wiper end position B	No	Shows the end position of the wiper on the other side	0–9999.9	According to the UV system	mm
	Wiper rest position	No	Shows the position of the wiper when not in use	0–9999.9	According to the UV system	mm
	Sensor position	No	Shows the position of the UV sensor	0–9999.9	According to the UV system	mm
	Sensor width	No	Shows the range when the wiper moves across the field of the UV sensor	0–200	According to the UV system	mm
	Current limit	No	Shows the maximum limit of the current	0–9.9	According to the UV system	A
	Wiper spindle Pitch	No	Shows the pitch per spindle turn	1.0–9.9	According to the UV system	mm / turn
	Motor rotation direct.	No	Shows the rotation direction of the wiper motor	Left Right	According to the UV system	-

Position	Button	Description
2	**Manual wipe**	• Starts the wiper manually • Press and hold >3 s: starts the reference run For more information, see *Wiper*.
	Stop Wiper	• Stops the wiper
	Start Wiper	• Restarts the automatic wiper function • Press and hold >3 s: moves the wiper to the service position This position is required for maintenance work.
	Exit service	• Exits the service position, and drives to rest position After maintenance work, the wiper must return to normal operation.
3		Shows the next page
4		Shows the previous page

1.6 Status messages

The **Status** button shows the following status messages:

Message	Description
Standby	The UV system waits for the remote contact closure from the customer. This status is shown when the **Remote ON** setting is set to **Input** or **PLC**.
Startup	The UV system goes through a startup sequence of 10 s.

EN

Message	Description
Warmup	The UV system goes through a warm-up period. During this period, the UV lamps are set to 100% power. The alarms and warnings are suppressed.
System OK	After the warm-up period ends, the UV system goes into the **System OK** status. During this status, the UV system monitors the alarms and warnings. If the **Variable Power** setting is set to **Yes**, the UV controller can change the lamp power.
Shutdown	This status is shown when the shutdown sequence is ended. The UV lamps are turned off.
Alarm	The UV system generates an alarm for major issues in the UV disinfection process. The operator must attend to the alarms immediately. For more information, see *Troubleshooting* on page 30.
Warning	The UV system generates a warning for minor issues in the UV disinfection process. The operator is not required to attend to the warnings immediately. For more information, see *Troubleshooting* on page 30.
Sensor Hold	The **Sensor Hold** function is active.

2 Operation

2.1 Precautions

EN

Before starting work, make sure that the safety instructions have been read and understood.



CAUTION: Ultraviolet (UV) Light Hazard

UV light can burn the eyes and the skin. Never operate the UV lamps outside the UV system. Use personal protective equipment.



CAUTION: Thermal Hazard

The surfaces or parts of the unit may become hot during operation. Allow surfaces to cool before starting work, or wear heat-protective clothing.

To prevent accidental contacts, supply protective barriers around the unit when the temperature of the medium is more than 45°C (113°F).

NOTICE:

This equipment is not intended for use in residential environments. It might not provide adequate protection to radio reception in residential environments.

NOTICE:

UV lamps and quartz sleeves are fragile. These parts must be handled carefully.

NOTICE:

The UV system shall not be turned ON/OFF more than four times on an average 24 operating hour period.

2.2 Commissioning

The commissioning procedure must be followed for the water treatment plant.

Personal protective equipment

Personal protective equipment (PPE) must cover the entire body. The PPE and safety guidelines must always be followed.

NOTICE:

The following personal protective equipment is needed:

- Protective gloves
- Safety footwear
- Safety goggles or face shield for UV protection



2.3 Adjust the site flowmeter

1. Check the maximum flow rate of the flowmeter.
2. Type the correct value of the flow rate for the 20 mA output.

For more information, see *The I/O Setting screen* on page 20.

3. Check that the values of the flowmeter and the HMI are the same at different flow rates.

2.4 The startup of the UV system

EN

The UV system must not be turned on or off more than four times on an average operating period of 24 hours.

Depending on the **Remote ON** setting, the UV system is started in one of the following modes:

Remote ON = No	The main isolator must be turned on to start the UV system.
Remote ON = Input	The contact closure must be energized to start the UV system remotely.
Remote ON = PLC	The PLC must be used to start the UV system. This setting is applicable when the fieldbus communication is enabled.

For more information about the settings, see *The I/O Setting screen* on page 20.

2.4.1 Start the UV system

1. Turn on the main isolator.

   The UV controller goes through a startup sequence that is shown at the bottom of the screen.

   The status LED lights up green.
2. Select the **Remote ON** setting.

   If the setting is **Remote ON = No**, the sequence starts automatically.

2.4.2 The startup process of the UV system

After the UV system is started, it goes through the following startup sequence:

1. The electronic ballasts are activated and the UV lamps turn on to 100%.
2. The warm-up is shown at the bottom of the screen. During this period, alarms and warnings are not monitored.
3. After the warm-up period, the UV system starts to monitor the alarms and the warnings.
4. The output relay of the **Enable Flow** is energized.
5. If the **Variable Power** is **Yes**, the UV system changes power according to the dose-pacing algorithm.

   If the **Variable Power** is **No**, the UV lamp power stays at 100%.
6. If there is a wiper, the UV controller energizes the output relay of the wiper.

   The wiper starts with a reference run and then runs at the set interval.

2.5 Stop the UV system

Depending on the **Remote ON** setting, the UV system is stopped in one of the following modes:

Remote ON = Input	The contact closure must be de-energized to stop the UV system remotely.
Remote ON = PLC	The bit in the communication protocol must be disabled. The PLC must be used to stop the UV system. This setting is applicable when the fieldbus communication is enabled.
Remote ON = No	The main isolator must be turned off.

2.5.1 The shutdown process of the UV system

1. The output of the enable flow is de-energized.

Remote ON = No	The UV lamps turn off immediately.
Remote ON = Input	After the time delay, the UV lamps turn off.
Remote ON = No timer starts	The timer of the **Shutdown Delay** starts.
Remote ON = PLC	After the time delay, the UV lamps turn off.

   When the shutdown process is started, the status LED lights up red.
2. If there is a wiper, the output relay of enable wiper is de-energized.

2.6 Shut down the UV system

All the electrical and the hydraulic connections must be disconnected.

1. Depressurize the UV system.
   For more information, see *Isolate the UV reactor*.
2. Shut down the UV system for transport, storage, or disposal.
   For more information, see *Isolate the UV reactor* and *Cleaning of the UV reactor*.
3. Disassemble the UV system.

2.7 Dispose of the UV system

1. Return the parts of the UV system to the following locations:

Part	Location
UV lamps	Collection point
UV reactor	Recycle point

2. Dispose of the electrical components in accordance with the local regulations.

3 Troubleshooting

EN

3.1 Precautions

Before starting work, make sure that the safety instructions have been read and understood.



CAUTION: Ultraviolet (UV) Light Hazard

UV light can burn the eyes and the skin. Never operate the UV lamps outside the UV system. Use personal protective equipment.



CAUTION: Thermal Hazard

The surfaces or parts of the unit may become hot during operation. Allow surfaces to cool before starting work, or wear heat-protective clothing.

To prevent accidental contacts, supply protective barriers around the unit when the temperature of the medium is more than 45°C (113°F).

NOTICE:

This equipment is not intended for use in residential environments. It might not provide adequate protection to radio reception in residential environments.

NOTICE:

UV lamps and quartz sleeves are fragile. These parts must be handled carefully.

NOTICE:

The UV system shall not be turned ON/OFF more than four times on an average 24 operating hour period.

Personal protective equipment

Personal protective equipment (PPE) must cover the entire body. The PPE and safety guidelines must always be followed.

NOTICE:

The following personal protective equipment is needed:

- Protective gloves
- Safety footwear
- Safety goggles or face shield for UV protection



EN

3.2 Display failure

Symptom and cause	UV system action	Remedy
No display indication on the EcoTouch	–	1. Shut down the UV system. For more information, see *Stop the UV system* on page 28. 2. Stop the water flow. 3. Discard the off-specification water according to the local regulations. For more information, contact the local sales and service representative.

3.3 Leakage

The leakage can occur at different components.

- Proximity switch
- Sensor tub
- Spindle bearing
- Headpiece of the UV lamp
- Flange plate
- Valves
- Broken quartz sleeves

3.3.1 Fix the leakage

1. Check visually and find the component that causes the leak.
   Do not remove any components.
2. If a broken UV lamp or quartz sleeves is the causes, follow the instruction *Broken UV lamps or quartz sleeves*.
3. If another component is the cause, isolate and depressurize the UV reactor. For more information, see*Isolate the UV reactor*. If necessary, drain the UV reactor.
4. Remove the applicable component.
5. Check the component.
   – For valves that are fixed with a thread lock adhesive: The sealing surface must be clean and free of oil and grease.
   – For components that are equipped with seals: Check if the seal is defective. If applicable, replace the seal.
6. Install the component. If applicable, use thread lock adhesive.
7. If applicable, fill water in the UV reactor and drain the air from the UV reactor.
8. Check the reactor for leaks.
9. Turn on the UV system. For more information, see *The startup of the UV system* on page 28.

3.4 Warning

During the UV disinfection process, the UV system generates warnings for issues, that have little effect on the UV disinfection process. But, the operator must attend to these warnings.

The status LED lights up yellow.

3.4.1 A/C Unit Failure

Symptom	UV system action	Remedy
The air conditioner fails.	The warning automatically resets after the cause of failure is fixed.	Check the air conditioner.

EN

3.4.2 Design Flow Rate high

Symptom	UV system action	Remedy
The water flow rate is higher than the design flow rate.	The warning automatically resets after the cause of failure is fixed. For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28.	1. Decrease the water flow rate. 2. Check these items: – Flowmeter or signal calibration – **Design Flow** in the **System** setting screen

3.4.3 Disinf. Out of Spec.

This alarm message is only for **UVDGM**.

Symptom and cause	UV system action	Remedy
The UV disinfection is out of specification. Causes: • **Flow Rate High** • **Failure Lamp** • **UV Low** • **Logi Low** • **UVT Low** • **Comm. Failure I/O-Board** • **Comm. Failure Rack** • **Comm. Failure Ballast** • **Signal Failure Flow** • **Signal Failure UVT**	The UV system generates the off-specification signal.	1. Stop the water flow. 2. Discard the off-specification water according to the local regulations.

3.4.4 Lamp Lifetime has expired

Symptom	UV system action	Remedy
The UV lamp hours are more than the Xylem warranty.	–	Replace the UV lamps.

3.4.5 Overtemp. water

Symptom and cause	UV system action	Remedy
The temperature in the UV reactor is too high. Causes: • The flow rate is too low. • The water temperature is too high.	–	1. Check that the UV reactor is filled with water. 2. Increase the water flow rate. 3. Check the water temperature. If applicable, decrease the water temperature.

3.4.6 Signal Failure Temp.

This warning message is optional.

Symptom and cause	UV system action	Remedy
The current is more than 20.5 mA or less than 3.5 mA. Causes: • The cable is defective or damaged. • The temperature sensor is not connected correctly. • The communication to the PLC is not continuous.	The warning automatically resets after the cause of failure is fixed.	1. Check these items: – Cables and connectors – Temperature sensor or signal calibration 2. Check that the current range is between 4 mA to 20 mA. 3. If applicable, check that the status of the fieldbus communication link is **ACTIVE**. For more information, see *The Network screen* on page 21.

3.4.7 Signal Failure Power

This warning message is optional.

Symptom and cause	UV system action	Remedy
The current is more than 20.5 mA or less than 3.5 mA. Causes: • The cable is defective or damaged. • The energy meter is not connected correctly. • The communication to the PLC is not continuous.	The warning automatically resets after the cause of failure is fixed.	1. Check these items: – Cables and connectors – Energy meter 2. Check that the current range is between 4 mA to 20 mA. 3. If applicable, check that the status of the fieldbus communication link is **ACTIVE**. For more information, see *The Network screen* on page 21.

3.4.8 UV Low

Symptom and cause	UV system action	Remedy
For and **ÖVGW**: The UV intensity is less than the low warning limit. For **PSS**, **NWRI**, and **UVDGM**: The UV dose is less than the minimum design dose and half of the offset dose parameter. The UV disinfection is less than the warning limit and more than the disinfection target. Causes: • The UV lamps are near the end-of-lamp life. • The quartz sleeves are not clean. • The UV transmittance of water is out of specification. • The UV sensor transmits a too low reading.	The warning automatically resets after the cause of failure is fixed.	1. Check these settings of the UV lamp: – **Lamp Hours** If the lamps exceed the maximum operating hours, replace the UV lamps. – **ON/OFF cycles** For more information, see *The Lamps screen* on page 10. – If the UV lamps are defective or damaged, replace them. 2. Clean the UV sensor and the quartz sleeves. 3. Check the UV sensor reading.

3.4.9 UV is being adjusted

Symptom	UV system action	Remedy
The UV disinfection is less than the alarm limit. And at the same time the UV output is readjusted to achieve the disinfection target.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%.	Discard the off-specification water according to the local regulations.

EN

3.4.10 UV Sensor Intensity Deviation

This alarm is only for systems with multiple UV sensors.

Symptom	UV system action	Remedy
The deviation of the measured UV intensities between the UV sensors is too high. Causes: • The nearby UV lamps are near the end-of-lamp life. • The UV lamps failed • The quartz sleeves are not clean. • The UV sensor is near the end-of life. • The UV sensor failed	The warning automatically resets after the cause of failure is fixed.	• Replace the UV lamps nearby the affected UV sensor. • Clean the UV sensor and the quartz sleeves. • Do reference check of affected UV sensor. • Replace the affected UV sensor.

3.4.11 UVT is below the design limit

Symptom and cause	UV system action	Remedy
The UV transmittance is below the warning limit design UVT. Causes: • The UV transmittance of water is out of specification. • The 4–20 mA signal is defective. • The **UVT Meter** is defective.	The warning automatically resets after the cause of failure is fixed.	1. Check the transmittance with a reference transmittance meter. 2. Check the settings. 3. Check the 4–20 mA signal.

3.4.12 Wiper communication failure

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The communication to the wiper motor is not continuous. Causes: • The emergency stop of the wiper is pressed. • The cables are defective or damaged. • The connectors are not connected.	• The UV system stops the wiper. • The warning automatically resets after the cause of failure is fixed.	• If the emergency stop is pressed, reset it. • If cables or connectors are not connected, connect them. For more information, contact the local sales and service representative.

3.4.13 Wiper is not ready

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The wiper does not work. Causes: • The wiper is in startup procedure. • The wiper is not ready to operate.	The warning automatically resets after the cause of failure is fixed.	Start the wiper again: 1. Press the emergency stop of the wiper. 2. After 1 minute, reset the emergency stop. For more information, contact the local sales and service representative.

3.4.14 Wiper is overloaded

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The wiper motor stops. Cause: • The current is more than the limit because of an overload.	• The UV system tries to start the wiper again after 5 seconds. • The warning automatically resets after the cause of failure is fixed.	• If the wiper mechanism is blocked, remove the blockage. • Check if the wiper operates smoothly. For more information, contact the local sales and service representative.

3.4.15 Wiper is stuck

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The wiper does not move. The position measurement shows no movement of the wiper. Causes: • The wipers are blocked. • The position measurement does not work.	• The UV system stops the wiper. • The warning automatically resets after the cause of failure is fixed.	If the wiper mechanism is blocked, remove the blockage. For more information, contact the local sales and service representative.

3.4.16 Wiper Ring Lifetime has expired

Symptom	UV system action	Remedy
The number of wipings are more than the Xylem guarantee.	–	Replace the wiper rings.

3.4.17 Wiper, no power supply

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The power supply of the wiper does not supply 24 V. Causes: • There is no mains voltage. • The cables are defective or are not connected. • The fuse on the I/O board is defective. • The power supply unit fails.	The warning automatically resets after the cause of failure is fixed.	• If there is no mains voltage, repair or recover it. • If cables or connectors are defective or are not connected, repair and connect them. • If the fuse on the I/O board is defective, replace it. • If the power supply unit fails, start it again: 1. Disconnect the power supply unit from the voltage. 2. After 1 minute, reconnect the power supply unit. For more information, contact the local sales and service representative.

3.4.18 Wiper, overtemperature

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The temperature of the wiper motor is too high. Causes: • Insufficient cooling of the wiper motor • The motor is defective.	• The UV system stops the wiper. • The warning automatically resets after the cause of failure is fixed.	Check the ambient conditions. For more information, see *Ambient condition*. For more information, contact the local sales and service representative.

3.4.19 Wiper, time-out

This warning message is only for systems that have wiper motor.

Symptom and cause	UV system action	Remedy
The wiper fails. Causes: • The wiper motor did not respond to the command of the EcoTouch in a specified time.	• The UV system stops the wiper. • The warning automatically resets after the cause of failure is fixed.	For more information, contact the local sales and service representative.

EN

3.5 Alarm

During the UV disinfection process, the UV system generates alarms for the major issues. The operator must attend to these alarms immediately.

The status LED lights up red.

If an alarm occurs, the UV system has the option to switch off automatically. For this option, the limit parameter **Alarm = stop** must be set to **Yes**. For more information, see *The Limits screen* on page 19.

3.5.1 Comm. Failure Ballast

Symptom and cause	UV system action	Remedy
The communication to the electronic ballast is not continuous. Cause: • The I/O board and electronic ballast are defective or damaged.	For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28.	1. If cables or connectors are not connected, connect them. 2. Stop the water flow. 3. Discard the off-specification water according to the local regulations. For more information, contact the local sales and service representative.

3.5.2 Comm. Failure I/O-Board

Symptom and cause	UV system action	Remedy
The communication to the I/O board is not continuous. Causes: • The cable, I/O board, and EcoTouch are defective or damaged. • The connector is not connected correctly.	The UV lamps turn off after **Shutdown Delay**. For more information, see *The Timings Setting screen* on page 18.	1. If cables or connectors are not connected, connect them. 2. Discard the off-specification water according to the local regulations. For more information, contact the local sales and service representative.

3.5.3 Comm. Failure Rack

Symptom and cause	UV system action	Remedy
The communication to the electronic ballast rack is not continuous. Causes: • The cable, I/O board and EcoTouch are defective or damaged. • The connector is not connected correctly.	For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28.	1. If cables or connectors are not connected, connect them. 2. Discard the off-specification water according to the local regulations. 3. Stop the water flow. For more information, contact the local sales and service representative.

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3.5.4 Failure Lamp

Symptom and cause	UV system action	Remedy
The UV lamp fails. Causes: • The UV lamps failed • The electronic ballasts failed • The lamp cables and connectors are defective	The UV system increases the UV lamp power to 100%.	1. Check the UV lamps and the electronic ballasts. 2. Check the connection between the UV lamps and the electronic ballast. 3. If necessary, replace the UV lamps or the electronic ballasts. 4. Stop the water flow. 5. Discard the off-specification water according to the local regulations. 6. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

3.5.5 Flow Rate High

Symptom	UV system action	Remedy
The water flow rate for the UV system is more than the maximum flow limit.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%.	1. Decrease the water flow rate. 2. Check these items: – Flowmeter or signal calibration – System screen – Design flow 3. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28. 4. Discard the off-specification water according to the local regulations.

3.5.6 Flow Rate Low

Symptom	UV system action	Remedy
• The water flow rate has been below the lower alarm limit for more than 240 s. • The UV lamps are exposed to too much heat.	For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28.	1. Increase the water flow rate. 2. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

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3.5.7 Guide plate not in position

Symptom and cause	UV system action	Remedy
The LEDs of the proximity switch do not light up Causes: • The guide plate was not moved back to its normal position.	• If **Alarm = stop** is set to **Yes**: The UV lamps turn off after **Shutdown Delay**. For more information, see *The Timings Setting screen* on page 18 • If **Alarm = stop** is set to **No**: The UV system increases the UV lamp power to 100%. • The alarm automatically resets after the cause of failure is fixed.	Move the guide plate to its normal position. For more information, see *Move the guide plate to normal operation*.

3.5.8 Lamp cover open

Symptom and cause	UV system action	Remedy
Causes: • The lamp cover is not closed correctly.	• If the UV system is not in operation, it cannot start the startup sequence. • If the UV system is in operation, the UV lamps turn off. • The alarm automatically resets after the cause of failure is fixed.	1. Check that lamp cover. 2. Check cables and connectors. 3. Check the sealings of the lamp cover. For more information, see *Install the UV lamps: VLR22D, and VLR33D*. 4. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

3.5.9 Logi Low

This alarm message is only for UVDGM.

Symptom and cause	UV system action	Remedy
The calculated **Logi** is less than the minimum validated **Logi** limit. Causes: • The UV lamps are near the end-of-lamp life. • The UV lamps failed. • The quartz sleeves are not clean. • The UV transmittance of water is out of specification. • The UV sensor transmits a reading that is too low. • The flow rate is out of specification.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%. • The alarm automatically resets after the cause of failure is fixed.	1. Check these parameters of the UV lamps: – **Lamp Hours** If the lamps exceed the maximum operating hours, replace the UV lamps. – **ON/OFF cycles** For more information, see *The Lamps screen* on page 10. – If the UV lamps are defective or damaged, replace them. 2. Clean the UV sensor and the quartz sleeves. 3. Check the UV sensor reading. 4. Discard the off-specification water according to the local regulations. 5. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

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3.5.10 Overtemp. Ballast

Symptom and cause	UV system action	Remedy
The temperature in the electronic ballast is too high. Causes: • The fans of electronic ballast rack are not in operation. • The filters are not clean or blocked. • If available, the air conditioner failed.	The UV lamps turn off after **Shutdown Delay**. For more information, see *The Timings Setting screen* on page 18.	1. Check these items: – Fuse of the fans of the electronic ballast rack – Fans of the electronic ballast rack – If available, the air conditioner 2. Clean the filters.

3.5.11 Overtemp. Cabinet

This alarm message is optional.

Symptom and cause	UV system action	Remedy
The temperature in the control cabinet is more than 50°C (122°F). Causes: • The fans of electronic ballast rack are not in operation. • The filters are not clean or blocked. • The high temperature switch is open. • If available, the air conditioner failed.	The UV lamps turn off after **Shutdown Delay**. For more information about the shutdown delay time, see *The Timings Setting screen* on page 18.	1. Check these items: – Fuse of the fans of electronic ballast rack – Fans of the electronic ballast rack – If available, the air conditioner 2. Clean the filters.

3.5.12 Overtemp. Reactor

This alarm message is optional.

Symptom and cause	UV system action	Remedy
The temperature in the UV reactor is too high. Causes: • The flow rate is too low. • The water in the UV reactor is not sufficient.	• The UV lamps turn off after **Shutdown Delay**. For more information, see *The Timings Setting screen* on page 18. • The UV system generates the intermittent flush output to cool the UV reactor.	1. Increase the water flow rate. 2. Check that the UV reactor is filled with water. 3. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

3.5.13 Overtemp. water

Symptom and cause	UV system action	Remedy
The temperature in the UV reactor is too high. Causes: • The flow rate is too low. • The water temperature is too high.	• The UV lamps turn off after **Shutdown Delay**. For more information, see *The Timings Setting screen* on page 18. • The UV system generates the intermittent flush output to cool the UV reactor.	1. Check that the UV reactor is filled with water. 2. Increase the water flow rate. 3. Check the water temperature. If applicable, decrease the water temperature. 4. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

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3.5.14 Quartz Sleeve Breakage

This alarm is only applicable to UV systems with the OptiDetect system.

Symptom and cause	UV system action	Remedy
The quartz sleeve breakage is detected. Causes: • The quartz sleeve is broken. • The UV lamp is broken.	The UV lamps turn off after **Shutdown Delay**. For more information about the shutdown delay time, see *The Timings Setting screen* on page 18.	1. Stop the water flow. 2. Isolate and drain the UV reactor. For more information, see the installation, operation, and maintenance manual of the UV system. 3. Discard the off-specification water according to the local regulations. 4. Check the quartz sleeve and UV lamp. 5. Replace the UV lamp or the quartz sleeve. 6. Start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

3.5.15 Signal Failure Flow

Symptom and cause	UV system action	Remedy
The current is more than 20.5 mA or less than 3.5 mA. Causes: • The cable is defective or damaged. • The flowmeter is not connected correctly. • The communication to the PLC is not continuous.	• The UV system increases the UV lamp power to 100%. • The alarm automatically resets after the cause of failure is fixed.	1. Check these items: – Cables and connectors – Flowmeter or signal calibration 2. Check that the current range is between 4 mA to 20 mA. 3. If applicable, check that the status of the fieldbus communication link is **ACTIVE**. For more information, see *The Network screen* on page 21. 4. Discard the off-specification water according to the local regulations. 5. Stop the water flow.

3.5.16 Signal Failure UVT

Symptom and cause	UV system action	Remedy
The current is more than 20.5 mA or less than 3.5 mA. Causes: • The cable is defective or damaged. • The **UVT Meter** is not connected correctly. • The communication to the PLC is not continuous.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%. • The alarm automatically resets after the cause of failure is fixed.	1. Check these items: – Cables and connectors – Signal calibration – UVT meter in the photometer 2. Check that the current range is between 4 mA to 20 mA. 3. Discard the off-specification water according to the local regulations. 4. If applicable, check that the status of the fieldbus communication link is **ACTIVE**. For more information, see *The Network screen* on page 21.

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3.5.17 S/So Low

Symptom and cause	UV system action	Remedy
The **S/So** is less than the validated limit. Causes: • The UV lamps are near the end-of-lamp life. • The UV lamps failed. • The wiper rings are worn out. • The quartz sleeves are not clean. • The UV transmittance of water is out of specification. • The UV sensor transmits a too low reading.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%. For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28. • The alarm automatically resets after the cause of failure is fixed.	1. Check these parameters of the UV lamps: – **Lamp Hours** If the lamps exceed the maximum operating hours, replace the UV lamps. – **ON/OFF cycles** For more information, see *The Lamps screen* on page 10. – If the UV lamps are defective or damaged, replace them. 2. If applicable, replace the wiper rings 3. Clean the UV sensor and the quartz sleeves. 4. Check the UV sensor reading. 5. Discard the off-specification water in accordance with the local regulations. 6. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

3.5.18 UV Low

Symptom and cause	UV system action	Remedy
For **DVGW** and **ÖVGW**: The UV intensity is less than the low alarm limit. For **PSS**, **NWRI**, and **UVDGM**: The UV dose is less than the minimum design dose or the UV disinfection is less than the disinfection target. Causes: • The UV lamps are near the end-of-lamp life. • The UV lamps failed. • The quartz sleeves are not clean. • The UV transmittance of water is out of specification. • The UV sensor transmits a too low reading. • The flow rate is out of specification.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%. For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28. • The alarm automatically resets after the cause of failure is fixed.	1. Check these parameters of the UV lamps: – **Lamp Hours** If the lamps exceed the maximum operating hours, replace the UV lamps. – **ON/OFF cycles** For more information, see *The Lamps screen* on page 10. – If the UV lamps are defective or damaged, replace them. 2. Clean the UV sensor and the quartz sleeves. 3. Check the UV sensor reading. 4. Discard the off-specification water in accordance with the local regulations. 5. If applicable, start the UV system by using one of these methods: – Press the **Restart** button. – Turn on the **Remote ON** signal. For more information, see *The startup of the UV system* on page 28.

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3.5.19 UV Sensor Failure

Symptom and cause	UV system action	Remedy
An UV sensor fails. Causes: • The quartz sleeves are not clean. • The UV sensor failed. • The sensor cables and connectors are defective.	• The UV system generates an off-specification signal. • The UV system increases the UV lamp power to 100%.	1. Stop the water flow. 2. Clean the UV sensor and the quartz sleeves. 3. Replace the affected UV sensor. 4. Check cables and connectors. 5. Discard the off-specification water according to the local regulations.

3.5.20 UVT Low

Symptom and cause	UV system action	Remedy
The UV transmittance is less than the minimum design UVT. The UVT is less than the minimum validated limit. Causes: • The UV transmittance of water is out of specification. • The 4–20 mA signal is defective. • The **UVT Meter** is defective.	The UV system increases the UV lamp power to 100%. For more information about the water flow and the UV lamps, see *The startup of the UV system* on page 28 and *Stop the UV system* on page 28.	1. Check the transmittance with a reference transmittance meter. 2. Check the settings. 3. Check the 4–20 mA signal. 4. Discard the off-specification water according to the local regulations.

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