

Operation Instructions

Control KST6/3.1

Software V1.08

AQUA-SIMPLEX*pionier*
AQUA-SIMPLEX*solo*



General building inspectorate approvals

discharge class C - Z-55.3-76
discharge class D - Z-55.3-133

General

This microprocessor control is a product of high quality and reliability for controlling your sewage treatment system.


Notes:

Interventions with the switch parameters and time settings are only allowed and possible for trained technical personnel.

Readings of operating and switching data is simple and possible at any time. Readings only of the timing of connected equipment can be taken.

Alarm:

Every equipment unit is checked for power consumption. If no load is detected (i.e., no power is consumed), an alarm is triggered (audible, red LED lights). A fault message appears on the display screen.

Pressing the  key resets the audible alarm and any connected alarm device.

As soon as the water level in the sewage treatment system deviates from the target level in the control an alarm is triggered (audible, red LED lights). A fault message appears on the display screen.

These operation instructions contain important information for the operation of the sewage treatment system which if observed avoid risks and dangers and ensure a long lifecycle of your system.

These operation instructions do not take include regulations and provisions applicable at the site of installation of the system; this is the owner's responsibility, he is also responsible for the work done by installation personnel.

Fault alarm module with separate voltage supply:

To ensure the long-term function of the fault alarm module with separate voltage supply (mains power failure alarm), the batteries should be changed every 3 years.

Changing the batteries:

1. Disconnect the electricity supply and wait for 10 minutes.
2. Remove four screws at the control panel and slowly take off the cover.
Behind the control panel, you will see a black box (6.5x4cm) with a screw.
3. Remove the screw, take out the old batteries and install new batteries making sure of the same polarity.
4. Tighten all screws and restore the mains power supply.

Electrical connection



Disconnect the mains power supply of the system before starting to work at pumps or the control.

The electrical connection shall only be made by a trained electrician or a person instructed in electrical work within the meaning of DIN VDE 0105 part 1 / 07.83.

The mains voltage and frequency must be the same as the nameplate data. The mains power supply line must be protected by a residual current operated device (RCBO).

Special provisions of the local electricity supply company concerning RCBO, reactive current compensation, protective multiple grounding and equipotential bonding must be observed.

IMPORTANT

Selection of cable types (for any installation site) and laying of cables to the control unit are buyer's obligations.

Besides,

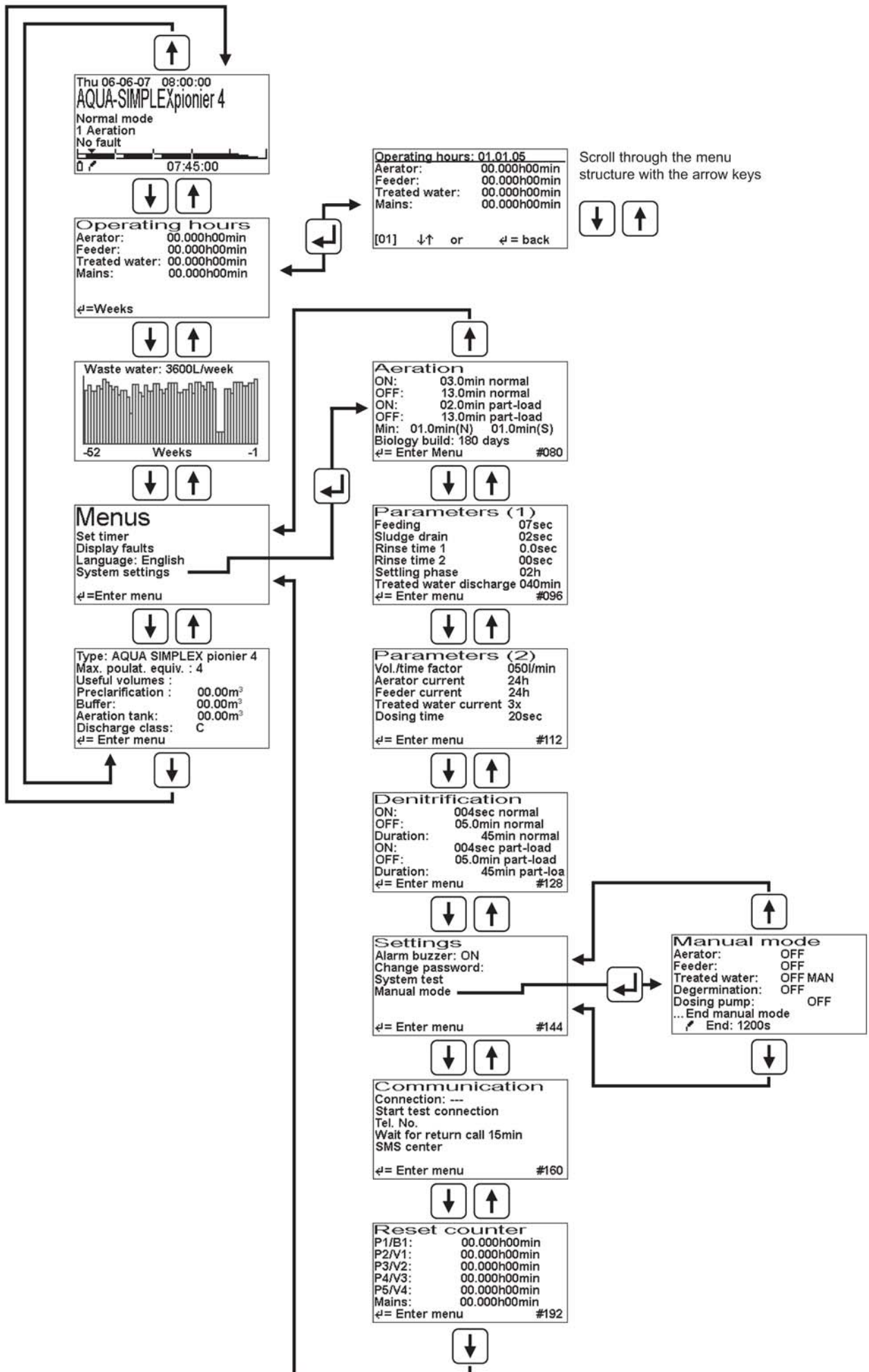
the buyer should also take care of the voltage drop and length of line.

The current carrying capacity of the outputs should be observed.

Password protection

To avoid unauthorized access to the control, the password for the system sector should be entered.

Menu structure of AQUA-SIMPLEXpionier



General operation

Keys:



Next menu item up / Increments number / Changes state



Selects a menu item for entry, executes a function or completes an input.
Silences the audible alarm and switches off the alarm device.



Next menu item down / Decrements number / Changes state

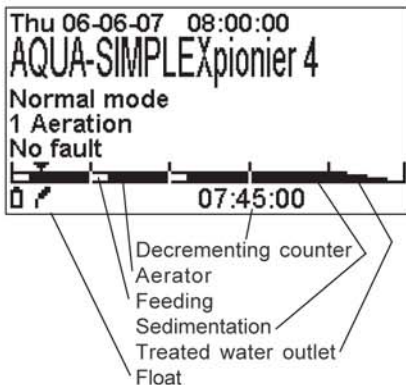
Changing the password:

If a menu screen is selected with a key \uparrow \downarrow , pressing the \leftarrow key opens the menu in which parameters can be edited.

For example, if you want to enter the system control, press \uparrow twice in the status screen and confirm with \leftarrow . After confirming, the first line in the menu is shown in inverted color, you can select system control with the \downarrow key and confirm with \leftarrow .

This navigation applies to all following menus.

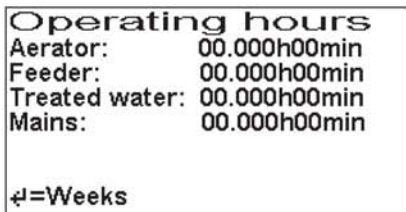
Menus



Status screen:

This screen contains an overview of the whole sewage treatment system with all major displays.

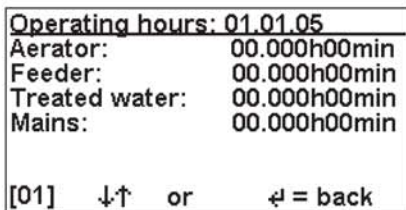
- Line 1: Date and time
- Line 2: Sewage treatment system type
- Line 3: Operating mode (normal mode/ part-load mode)
- Line 4: Treatment phase
- Line 5: Fault display
- Line 6: Graphic display of the treatment phase
- Line 7: Float state
- Line 7: Time to treated water discharge



Operating hours:

This screen displays the operating hours during the present week.

- Aerator: Operating hours of the **motorized aerator**
- Feeder: Operating hours of the **feeder pump**
- Treated water: Operating hours of the **treated water pump**
- Mains: Operating hours of the **control**



Pressing \leftarrow opens the 52-week log. Here you can scroll through the operation log with keys \uparrow \downarrow .

Note: Hours of operation, although logged, must be copied in the handwritten log. Alternatively, data can also be printed from the PC via RS232 interface and added to the operation log.

Menus

Menu

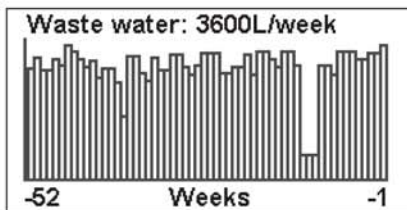
Set timer
Display faults
Language: English
System settings

↵=Enter menu

Menu:

Here you can edit the displayed functions.

- 1 Set timer
- 2 Display faults
- 3 Select language
- 4 System settings



Flow:

The value in the display, e.g., 3600l, is the highest flow rate in the chart.

For automatic calculation of data set the delivery rate of the treated water pump in the system settings screen (System settings / Parameter 2 / Vol/time factor).

The display indicates only a trend of the capacity utilization of the system, whether the connected population equivalent is actually obtained.

Type: AQUA SIMPLEX pionier 4
Max. poulat. equiv. : 4
Useful volumes :
Preclarification : 00.00m³
Buffer: 00.00m³
Aeration tank: 00.00m³
Discharge class: C
↵= Enter menu

Nameplate:

Here you can enter features of the sewage treatment system.

To edit entries, go to system settings (see menu description above). You will be prompted to enter a password to be able to define parameters in the settings screen. The password you enter enables you to make entries in the nameplate for 10 minutes.

System settings

Aeration

ON: 03.0min normal
OFF: 13.0min normal
ON: 02.0min part-load
OFF: 13.0min part-load
Min: 01.0min(N) 01.0min(S)
Biology build: 180 days
↵= Enter Menu #080

Aeration:

Here you define the time for aeration of the aerator pump and the biological specification.

The aeration settings are made in the factory for the size of the sewage treatment system.

The biological specification defines the deactivation of sludge return.

If the control is used with a new sewage treatment system, this setting should be 180 days.

If the control is used with a sewage treatment system whose biology is fully developed, the setting should be changed to 0 days.

Parameters (1)

Feeding 07sec
Sludge drain 02sec
Rinse time 1 0.0sec
Rinse time 2 00sec
Settling phase 02h
Treated water discharge 040min
↵= Enter menu #096

Parameter 1:

Feeding: This value specifies the time for which the feeder pump runs to fill the pipeline between preclarification and the biological reactor to achieve automatic compensation of the water levels in both tanks.

Sludge drain: Time for which sludge is drained.

Rinse times 1 and 2: This function is only important for sewage treatment systems delivered before 2001.

Settling phase: The settling phase setting should be 2 hours to allow the clear water zone to establish in the biological reactor.

Treated water discharge: This is the maximum time which the treated water pump should be allowed for pumping the water to seepage or the ditch. In normal conditions, the float switch responds before the maximum treated water time is up and after this changes to the next treatment phase. If a fault occurs or the system is overloaded and the maximum feed time is up, an audible alarm is sounded so that the fault can be set right.

System settings

Parameters (2)

Vol./time factor 050l/min
Aerator current 24h
Feeder current 24h
Treated water current 3x
Dosing time 20sec

⇐ Enter menu #112

Parameter 2:

Vol./time factor: Shows the delivered volume of the treated water pump in liters/minute for calculation of the flow rate of the sewage treatment system. The treated water pump type „KD-180 Outlet“ has a setting option for 50 l/min.

Aerator current:

This is the current monitor for the aerator/feeder/treated water pumps. If one pump fails, this function triggers an audible alarm.

Current is monitored by different measurements:

- 3x - 3 failed attempts to start one of the pumps (standard).
- 24h - the pump (aerator, feeder or treated water) must run once in 24 hours.
- Off - Deactivation of current monitoring function.

Dosing time (optional):

If a P elimination is set in the system, the run time of the dosing pump for the precipitating chemical is set here.

Denitrification

ON: 004sec normal
OFF: 05.0min normal
Duration: 45min normal
ON: 004sec part-load
OFF: 05.0min part-load
Duration: 45min part-load
⇐ Enter menu #128

Denitrification (optional):

This function is only active if the treated water is to be denitrified. The D module (denitrification module) can be activated by a software update at any time because there is no need for replacing or changing the mechanical or electrical components of the sewage treatment system.

On: This is the run time of the aerator (stirring phase). The aerator should not run for a long time because denitrification proceeds only in anaerobic (low-oxygen) state in the biological reactor.

Off: Rest phase in the sewage treatment system

Duration: This is the duration of the denitrification phase.

Settings

Alarm buzzer: ON
Change password:
System test
Manual mode

⇐ Enter menu #144

Settings:

Alarm buzzer: The alarm buzzer can be deactivated if necessary. However, it should not be deactivated because if a fault occurs in the system, that fault would not be signaled and therefore go unnoticed.

Change password: The password „0000“ can be changed here to prevent unauthorized use of the system.

System test: The system test makes start-up of the sewage treatment system. This function will be described in detail further down.

Manual mode: In manual mode, the user can activate each relay separately (see Manual mode menu).

Communication

Connection: ---
Start test connection
Tel. No.
Wait for return call 15min
SMS center

⇐ Enter menu #160

Communication:

These functions are only active if a GSM modem or in a/b modem is connected to the interface.

System settings

Reset counter
P1/B1: 00.000h00min
P2/V1: 00.000h00min
P3/V2: 00.000h00min
P4/V3: 00.000h00min
P5/V4: 00.000h00min
Mains: 00.000h00min
↵ = Enter menu #192

Reset counter:

The operating hours counter can only be reset by Kordes.

Manual mode

Manual mode
Aerator: OFF
Feeder: OFF
Treated water: OFF MAN
Degermination: OFF
Dosing pump: OFF
... End manual mode
↵ End: 1200s

Manual mode:

The present state of all pump outlets is displayed in manual mode (On/Off).

To change the state, press the ↑ ↓ keys to scroll to the required unit and press the ↵ key to change the state.

The treated water pump has several functions. These functions can be activated with the ↵ key (if the respective unit is preselected)

„MAN OFF“ : Manual mode (pump OFF)

„AUTO ON“ : The treated water pump runs until the float cuts out

„AUTO OFF“ : The water level HWmin is obtained.

„MAN ON“ : The pump can be activated without involving the float.

Pressing the ↵ key once more returns the pump to „MAN OFF“ state.

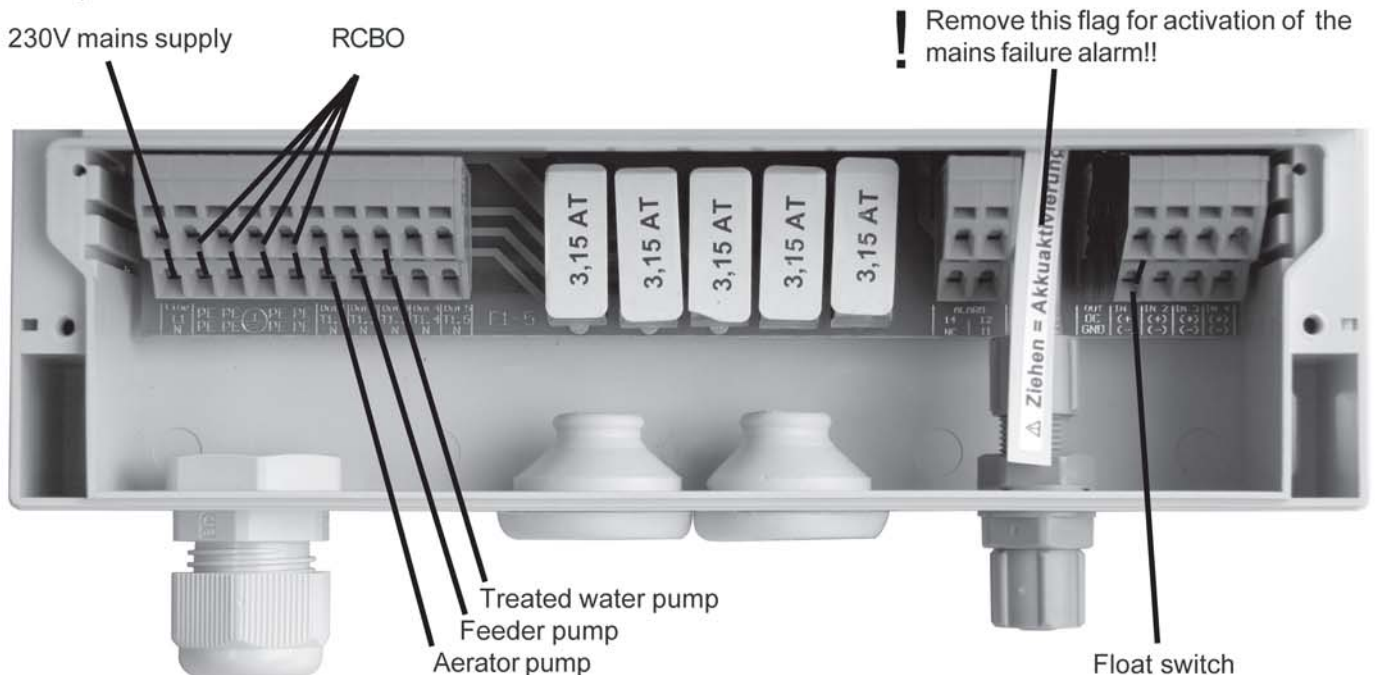
System test

For activating the system test, press the ↑ ↓ keys to scroll to standard test mode and press ↵ to deactivate the function.

Standard: This test checks the sequence of the connected units at the junction box. The standard test always follows this order: aerator pump, feeder pump, treated water pump, 40 seconds break. During the break, the float can be tested for function by changing the switching state with a tool. If the changed state is detected by the control, this is indicated by brief activation of the aerator pump. At the end of the break, the test starts again at the aerator pump and runs until it is exited by pressing the ↵ key or leaves the module automatically after 5 minutes.

Connection space

There is no need for connecting a cable in the connection space of the AQUA-SIMPLEX*panionier* system. Integrated in the control is a 7-pin socket in which the junction box of the sewage treatment system can be plugged directly



Switching times

P	Display text	Normal aeration mode			aeration part-load			Normal aeration denitrification			Aeration part-load denitrification			Feed intern. PC	Feed extern. PC	Sludge drain	Treated water discharge	Settle. phase-time	Dosing time	Clear rinse 1	Clear rinse 2
		on [min]	off [min]	min. [min]	on [min]	off [min]	min. [min]	on [s]	off [min]	durat. [min]	on [s]	off [min]	durat. [min]								
4	AQUA-SIMPLEXpionier 4	3	13	1	2	13	1	4	5	45	4	5	45	7	30	2	40	2	20	0	0
6	-	4	13	1	2	13	1	4	5	45	4	5	45	7	30	2	40	2	20	0	0
8	AQUA-SIMPLEXpionier 8	5	13	2	3	13	1	4	5	45	4	5	45	7	30	4	40	2	25	0	0
10	-	6	13	2	3	13	1	4	5	45	4	5	45	7	30	4	40	2	25	0	0
12	AQUA-SIMPLEXpionier 12	7	13	3	3	13	1	4	5	45	4	5	45	7	30	6	40	2	30	0	0
14	-	7	13	3	3	13	1	4	5	45	4	5	45	7	30	6	40	2	30	0	0
16	AQUA-SIMPLEXpionier 16	8	13	4	4	13	2	4	5	45	4	5	45	7	30	9	70	2	35	0	0
20	AQUA-SIMPLEXpionier 20	7	13	3	3	13	2	4	5	45	4	5	45		30	10	70	2	40	0	0
24	AQUA-SIMPLEXpionier 24	8	13	4	4	13	2	4	5	45	4	5	45		30	12	70	2	45	0	0
28	AQUA-SIMPLEXpionier 28	9	13	5	4	13	2	4	5	45	4	5	45		30	14	70	2	50	0	0
32	AQUA-SIMPLEXpionier 32	11	13	6	5	13	3	4	5	45	4	5	45		30	16	70	2	55	0	0
36	AQUA-SIMPLEXpionier 36	13	13	6	6	13	3	4	5	45	4	5	45		30	18	80	2	60	0	0
40	AQUA-SIMPLEXpionier 40	14	13	7	7	13	3	4	5	45	4	5	45		30	20	85	2	65	0	0
44	AQUA-SIMPLEXpionier 44	15	13	7	7	13	4	4	5	45	4	5	45		30	22	90	2	70	0	0
48	AQUA-SIMPLEXpionier 48	17	13	8	8	13	4	4	5	45	4	5	45		30	24	95	2	75	0	0
53	AQUA-SIMPLEXpionier 53	19	13	8	9	13	5	4	5	45	4	5	45		30	24	95	2	80	0	0

Technical data

Operating voltage:	230 V / 50 Hz ± 10%
Max. line-side fuse	B 16A
Miniature fuses:	5 x (20 x 5 mm, 3.15AT, 250V)
Ambient temperature:	-20°C to + 60°C
Outputs:	5 x 230 V / 3.15 A (compressor/ valves) 1 x consumer outlet 230 V / 315mA 1 x floating contact element 230V / 8A
Connection terminals:	1.5 mm ² fine-strand or single-wire
Cable inlet:	Supply 1 x PG 13.5 compression gland Other 2 x PG 21 compression gland 1 x PG 13.5 closing plug 2 x PG 11 input prepared
Housing dimensions:	H x W x D in mm = 200 x 240 x 115
Housing material:	Polystyrene, impact-resistant
Type of protection:	IP 54 (with cap for RS232)

The dimensions are for the actual housing size. Sufficient additional space should be provided for the feeding lines.

Fault messages

Display	Possible cause	Remedy
IP1_3x o. IP1_24h (aerator pump without current intake)	1. Aerator pump defective 2. Fuse blown	Change aerator Change fuse
IP2_3x o. IP1_24h (feeder pump without current intake)	1. Feeder pump defective 2. Fuse blown	Change feeder pump Change fuse
IP3_3x (treated water pump without Strom aufgenommen)	1. Treated water pump defective 2. Fuse blown	Change treated waterpump Change fuse
HW (high water)	1. Foreign water inflow 2. Backwater in discharge canal 3. Power failure 4. Float defective 5. Treated water pump clogged	Locate inflow and block it maybe needed only once Ensure permanent power supply Change float Clear block

If the above does not help to restore good operation of the system, contact our customer service.

Manufacturer's statement

This is to certify conformity with the EC directives concerning CE labeling

Device type: KST6/3.1
Electronic control unit for automatic operation of a fully biological small sewage treatment system according to DIN 4261-2

Directives: EMC directive 89/33/EEC
Low voltage directive 73/23/EEC

Applied norms: VDE 0839 parts 1,1, 81,2, 82,2, 83,2
EN 50081-1/2
EN 50082-1/2
EN60204-1

