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1. Health and Safety

These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can become acquainted with the functioning of the equipment and the relevant warnings.

To ensure that the equipment described is safe both for personnel and property it should be installed, inspected, and maintained by or under the supervision of qualified persons (Electrician)

Covers must be kept locked. Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated. Ensure that you are familiar with the safe working areas and accesses. Ensure that the working area is adequately lit.

The power supply to the equipment should be isolated at the main RCD before lifting the blower cover.

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Always keep proper footing and balance. Avoid any sharp edges.

Regard should be taken of IEE Wiring Regulations, Codes of Practice, Statutory Requirements, and any specific instructions issued by the supplier of these details.

Earthing - All equipment must be earth bonded in accordance with the latest IEE Wiring Regulations. For clarity this has not been shown.

We reserve the right to alter these details without prior notice.

2. Declaration of Conformity

This product meets all the essential safety requirements of the relevant European Directives.

The full text of the Declaration of Conformity can be provided upon request.

3. Technical Data

Characteristic	Data
Dimensions	114mm (L) x 240mm (W) x 182mm (H)
Weight	Approx. 2.1kg (depending on configuration)
Ambient Temperature	-20°C to +50°C
Ingress Protection (IP) Classification	IP53
Functions, sequence program, alarms, GSM-communication, display messages (also multi-lingual)	Sequence program is designed and adapted by means of an Excel spread sheet
Display	Illuminated (backlit) alphanumeric LCD.
Signal Inputs	Up to 3 x digital inputs Pressure sensor 0-400mbar
Data Interface	RS-232 (using adapter-cable)
Electrical Output	Up to 4 relays 230V / 300VA
Power supply during mains failure	2 x NiMH rechargeable batteries (size AA) optionally mignon batteries
Compressed Air Inlet	¾" fittings
Compressed Air Outlet	½" fittings
Maximum Pressure	450mbar
Power Supply	230VAC, 12W max.

4. General description

The BioTec+ control Panel is used to control and monitor the Kingspan Klargester BioTec+ SBR (Sequencing Batch Reactor) Domestic Wastewater Treatment Units. The control panel is equipped with only two 230V relay outputs:

- I. Blower: Output 1 (Prewired in factory)
- II. Submersible pump: Output 2 to be wired on site(activated if digital input 2 is open (remove bridge).

4.1 Valve Outputs

The valves are counted from left to right:

Valve 1 (1/2" Hose tail) : Diffuser (Aeration) – Green Band

Valve 2 (1/2" Hose tail): Airlift (Clearwater removal) – Yellow Band

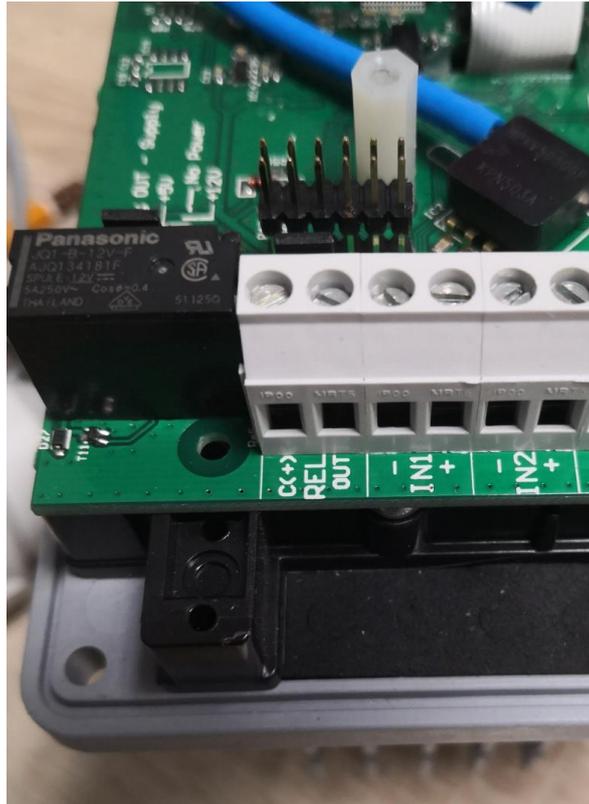
Valve 3 (3/4" Hose tail): Blower inlet



4.2 Digital Inputs

The panel contains **two digital inputs**

- I. **Digital input 1** (IN1 on PCB): Will be used for high-level alarm detection via a float switch.
- II. **Digital input 2** (IN2 on PCB): Will be used to activate the submersible pump for pumped outlet tank. As factory setting, the digital input is bridged (activated, closed) by a wire, if the submersible pump shall be used instead, the bridge can simply be removed / disconnected (=DI2 open / disconnected).
- III. **Relay Output +5VDC** (REL OUT on PCB): Volt free contact which can be used for low voltage devices such as the panel beacon or for the SmartServ Pro.



4.3 Pressure Sensor

The control panel is equipped with an analogue 0-500mBar pressure sensor which measures the pressure inside the valve chamber. Thus, it monitors the pressure at all valves. The pressure monitoring can be used for:

- Blower monitoring (Low pressure alarm)
- Valve monitoring (High pressure alarm)
- Water level (High level alarm)
- Deactivation of Clearwater Airlift

5. General Operation

The control panel is operated by pushing the ↑, ↓ and OK buttons. The default login for the Service Menu is 1111.

5.1 System Operation

With the system is installed, the only input required on the panel, is to set the time. Once set, the panel will synchronize the cycles from midnight.

The system runs two cycles per day. Each cycle = 9hours aeration/1hour settlement/1hour clearwater removal/1hour denitrification. Note during aeration the blower cycles on and off.

The airlift pump out (gravity) uses pressure differential seen by the panel to activate high level and low level to switch off after pumping out.

The submersible pump out (IPS) is controlled by the panel, the float on the pump prevents dry running. Note during holiday periods, the system will run as normal, but pump out will not operate as the pump float will be in the down position.

Should the system overflow, the panel will activate 1hour settling mode, after which the system will pump out.

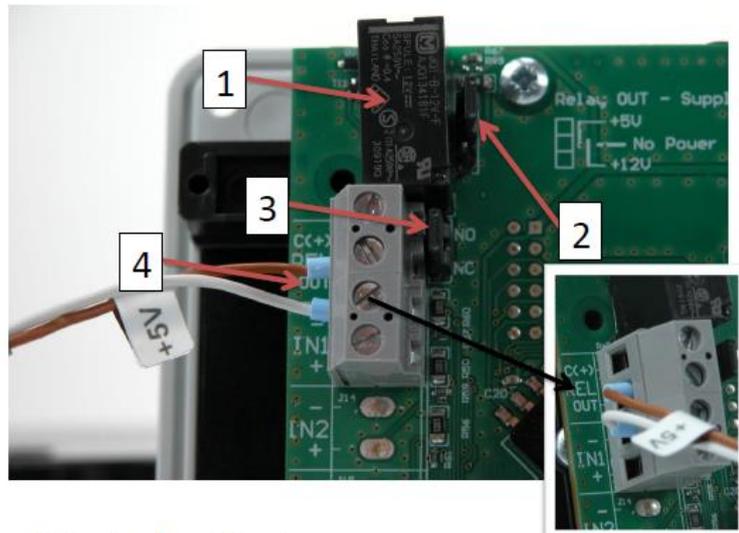
6. Installation

6.1 Wiring Diagram



Please check with Kingspan Water & Energy for the latest base of the drawing		Lit Number:		Tolerance (unless stated):	
Issue	Date	Drawn By	Approved By	Thickness:	Surface Area: m ²
A	09/07/2024	D. Al-Jadiri	D. Al-Jadiri	Weight:	Material:
All Dimensions in mm			Scale: Do Not Scale	Drawing: 1014183	
Third Angle Projection			BioTec+ DTP Control Panel Wiring		
Kingspan Water & Energy reserves the right to alter the details of this drawing without prior notice. This drawing is copyright and may not be reproduced or used without the written permission of Kingspan Water & Energy					

6.2 Beacon (Optional) Connection



1. Low voltage / volt free contact
2. Jumper voltage. Set relay voltage to jumper up: +5VDC Beacon.
3. Jumper NC: Relay closed without power supply. At mains failure (= without power supply) and alarms the relay is closed ->. Beacon is supplied (=ON)
4. Screw type terminals for Beacon cables
Beacon (external 5VDC via cable)
 - 5VDC
 - NC
 - Brown cable – REL OUT
 - White Cable - IN

6.4 Gravity Tank

- I. Wire the mains into the isolator in the blower housing.
- II. Turn the control panel on, it will prompt user to set the RTC (Real Time Clock), which is the current time. When the RTC is set and you want to change it, simply navigate from the status screen (the default screen with "BioTec+") with the arrow keys to the menu point "Set clock".

6.5 Pumped Outlet Tank

- I. Wire the mains into the isolator in the blower housing.
- II. Wire the pump and HLA (High Level Alarm) into the control panel.
- III. Turn the control panel on, it will prompt user to set the RTC (Real Time Clock), which is the current time. When the RTC is set and you want to change it, simply navigate from the status screen (the default screen with "BioTec+") with the arrow keys to the menu point "Set clock".

6.6 Manual System Check

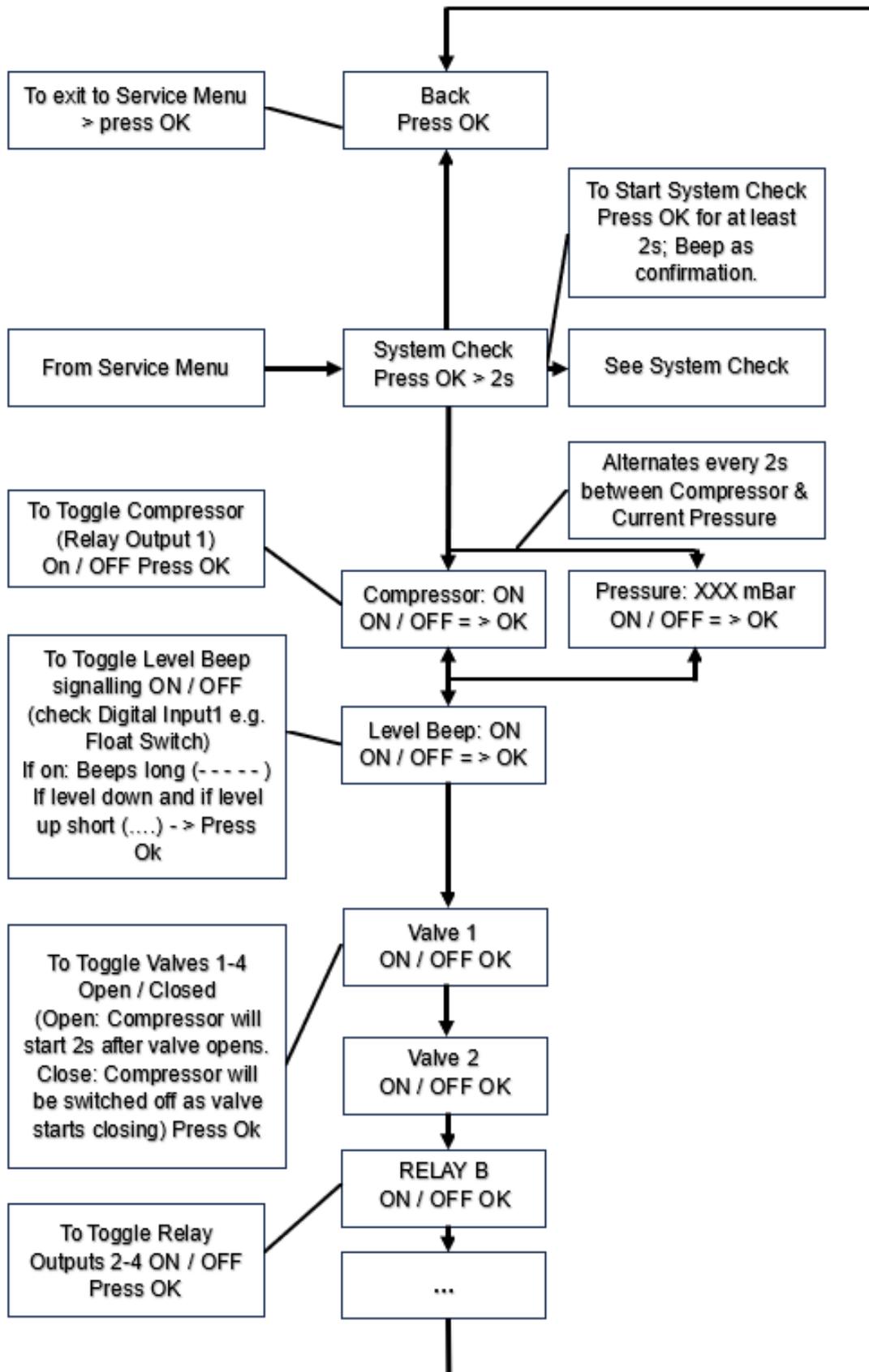
The BioTec+ panel allows manual operation of blower (aeration and clearwater removal) and submersible pump. By holding the system check option for 2 secs, this will only check the valves only.

Using the up/down arrows, select manual operation of each of the valves and electrical outputs and press ok, then select each operation by pressing ok, then ok to switch on to test and **ensure its switched back off when complete.**

There, the installer can check:

- I. Blower + aeration
- II. Blower + Clearwater airlift (Gravity system)
- III. Submersible pump (IPS system)
- IV. Status / function of the float switch on digital input 1("Level Beep")

Manual Check of the Valves and Electric Outputs



8. Alarms

In the event of an alarm the red LED left of the LCD starts flashing, the buzzer beeps and an alarm message is displayed in the first row of the LCD

Pressing the <OK> button acknowledges the alarm. That means, the buzzer and the flashing red LED are switched off.

Any alarm can be deleted/reset by entering 9999 as PIN in the service menu.

Possible alarms and their reasons and messages are:

- I. Mains Failure: The alarm is not active without batteries (2 x AA rechargeable batteries)
- II. No Battery Alarm.
- III. Low Battery Alarm: Alarm starts if battery voltage is low.

Battery Replacement

Batteries are accessible through the battery lid; it is to be unscrewed as shown below:



- IV. Fuse Error: For fuse replacement refer to wiring diagram 1014183 for fuse details. Fuse replacement may only be carried out by a qualified electrician since there are live components 230V under the cover. The mains must be disconnected before removing control panel cover.
- V. High Level Alarm.
- VI. Pressure High Alarm: This could be an indicator of either blockage in the air system or of a valve.
- VII. Pressure Low Alarm: This is an indicator that the blower needs service.

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