



## Single Pump Protection and Control Module

Single Phase

**BIA-nXt-SPC 1-22**

PN 811195

Three Phase

**BIA-nXt-SPC 3-40**

PN 811196

**BIA-nXt SPC 3-11**

PN 811197

**BIA-nXt SPC 3-15**

PN 811198

## Installation and Operation Manual



## A. Shortcuts

### Switching between AUTO and MANUAL:

PRESS and release the **MODE** button

### Switching to Manual if the controller is in LOCK MODE:

PRESS and HOLD the **MODE** button for 5 seconds

Lock parameter # 011 in the Expert Menu Pg 13

### Accumulated Run time:

Controller in manual state. Press and hold **STORE** then press **START**

### Error log:

- Switch to MANUAL mode
- Ensure no pumps are running.
- PRESS and HOLD the **STOP** button, then SHORT PRESS the **MODE** button
- Press **MODE** to scroll
- Press **STOP** to exit

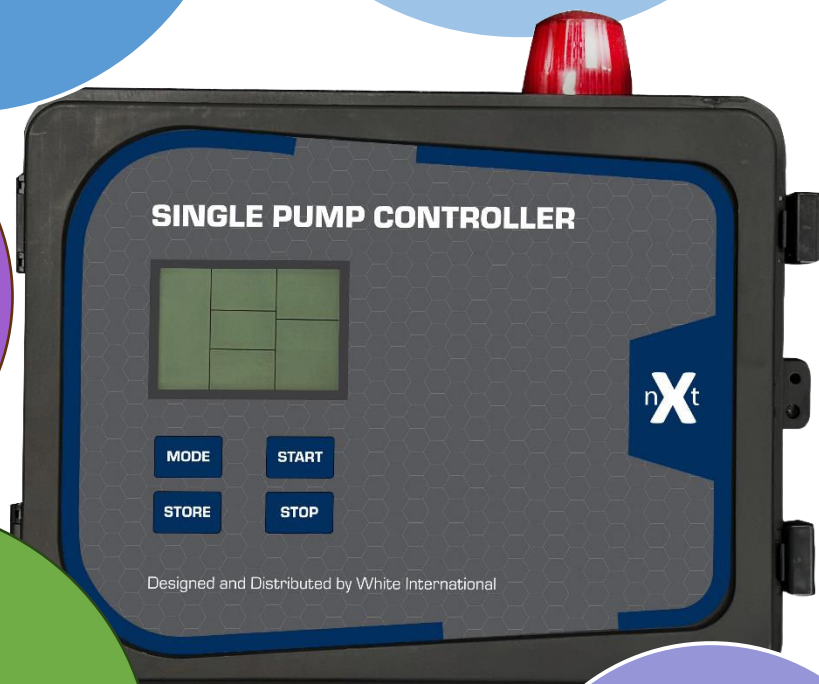
### Alarm Mute:

At any time press the **STOP** button to mute the alarm. It will now beep every 5 minutes.

Resets after 24Hrs

### Alarm Test:

Inside the controller on the display PCB is an **ALARM TEST** button



## B. Shortcuts cont

### Calibrating the controller to the pump

In manual mode, short press **START**. Allow the pump to run and the current draw to stabilise.

Once you are satisfied the pump is in its 'normal' operating range short press **STORE**. The controller should chirp.

The controller calibration value can be checked and adjusted from the User Menu  
**Parameter #015 in the User Menu Pg 14**

### To clear the calibration

With the pump stopped and the controller in manual mode, **PRESS** and **HOLD** the **STOP** button for 30 seconds

### USER programming menu

In manual mode, press and hold the **STORE** button for 5 sec.

**Page 14**

### EXPERT programming menu

In manual mode, press **STORE** + **MODE** buttons for 3 seconds

**Page 13**

### Programming:

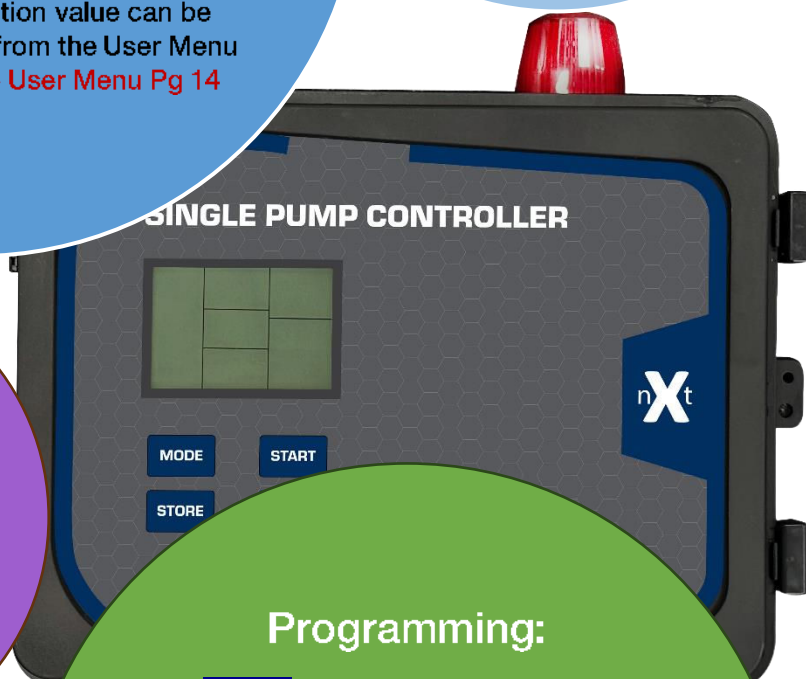
**STORE** advances to the next parameter

**START** increases a value

**STOP** decreases a value

Short press **MODE** to store a value and return to the main menu

Press **STORE** for 5 sec to save changes and exit the parameter menu



## 1. Introduction

Thank you for choosing a Bianco nXt-SPC (Single Pump Control and protection module).

The Bia nXt-SPC is a module intended to control and protect an individual pump. The user can select a control logic sequence to match their application and enjoy the benefits of superior control and protection for the pumps.

There are 3 primary control logic modes:

- 'Drainage' where control is concentrated at the source
- 'Boosting' which references pressure switching on the delivery side for control
- 'Transfer' which is a mix of source and destination control









nXt-SPC has 2 x passive dry contacts and is equipped with a RS485 modbus interface to connect to a BMS

The LCD screen displays the pump running state and provides the user a wealth of useful information.

The controller is easy to set up with an initial push button calibration and individual parameters can be fine-tuned.

A nXt-SPC controller is particularly useful where there is the need to control and protect pump installations managing the automatic operation through a variety of switching methods without the need to create a bespoke control solution.






## 2. Warnings and Cautions

	Read the manual carefully before starting
 	Prior to starting installation or maintenance the controller must be disconnected from the power supply.
	Any changes or modification to the wiring must be carried out by competent, skilled and suitably qualified personnel only.
	A qualified electrician should correctly size and install circuit breakers to protect the power supply. The fitment of additional surge protection is recommended as good practice.
	Never open the cover while controller is connected to electrical supply. Disconnect and allow the internal electronics to discharge before opening the cover
	This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
	Ensure the controller is a suitable size for the pump motor ( <b>see Section 6, Page 7: Technical Data</b> ). Size according to full load current amperage.

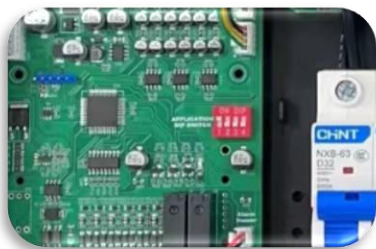
### 3. Contents

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### 4. ISO 7010 Symbols used in this manual

	Warning - Electrical safety
	Warning – Potential consequences of use outside of intended application(s). Includes environmental condition warnings.
	Mandatory warning
	Warning to disconnect power
	Read carefully

## 5. Modes of Operation



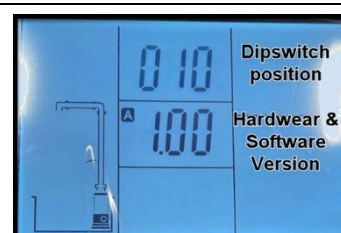
On the main PCB there is a 4 position 'Dip Switch'

To alter the control logic to suit an application, the installer must select the appropriate switch position.

After selecting the desired switch position, **cycle the controller power to apply the setting.**

Binary	Switch position	Control logic - Applications
000		'Drainage' Mode where the control inputs (generally level floats or probes) are located at the source. <b>(default)</b>
010		'Drainage' Mode where the level control input is managed by a flexible float on the pump. No bridge – terminals #5 and #7
111		'Pressure Boosting' Mode. Main control via (N/C) pressure switch. Supports run / no run level protection at the source via floats or probes.
101		'Transfer' Mode. Main control via control inputs (floats or probes) at destination or by a pressure switch on the delivery line. Supports run / no run level protection at the source.
0*		OTA/OTB terminal enabled <b>(default)</b>
1*		Enables the connection of a PT00 temperature sensor (i.e. pump over-temp sensor) A separate PT100 temperature sensor expansion module is required
011*		'Drainage' Mode with overflow alarm through a 4-20mA level transmitter.
001*		'Pressure Boosting' Mode controlled via a 4-20mA pressure transmitter. Supports run / no run level protection at the source via floats or probes.
100*		'Transfer Mode' with 4-20mA level transmitter at the destination. Supports run / no run level protection at the sources via floats or probes.

When first powered on the nXt-SPC will display the current dipswitch operating mode (binary code), the hardware and the software version.



## 6. Technical Specifications

Controller Modes	Automatic or Manual pump operation. Liquid level control via float switch, electrode probes OR 4-20mA level transducer. Pressure control via pressure switch or 4-20mA transducer
<b>Protection functions:</b> (three phase only:	Dry run (Underload), Overload, Pump Stalled, Transient surge, Under voltage, Over voltage, Phase reversal, Phase Imbalance) Open phase protection Repeated start, Short circuit, Over temperature Over temperature requires an optional relay
Input Voltage	Single phase 230V +10% -6% Three phase 415V +10% -6%
Rated output power	SPC 1-22 nominal 0.37 to 2.2 kW P2 power (max 16A input) SPC 3-40 nominal 0.37 to 4 kW P2 power (max 12A input) SPC 3-11 nominal 2.2 to 11 kW P2 power (max 25A input) SPC 3-15 nominal 7.5 to 15 kW P2 power (max 32A input)
Minimum working current	SPC 1-22 = 1 amp SPC 3-40 = 1 amp SPC 3-11 = 5 amp SPC 3-15 = 10 amp
Working temp	-25 to +55 deg C 20% to 90% relative humidity, non-condensing
Controller size	342mm wide, 253mm tall, 130 deep. IP54
Trip response times (set)	Open phase – Less than 2 sec Short circuit – less than 0.1 sec
Trip Voltage (User adjustable)	Over voltage: Default = 276V Default = 437V Under voltage: Default = 192V Default = 304V
Trip response times (User adjustable)	Dry run (Under-load) 5 sec Under Voltage Less than 5 sec Over voltage Less than 5 sec
Recovery times (User adjustable)	Dry run (Under-load) 45 min default Overload 4 min default Under Voltage 4 min default Over voltage 4 min default
RS485 Technical interface	RS485 Bus Interface: asynchronous semi duplex 1200,2400,4800,9600 bps (default 9600bps) MODBUS protocol (RTU)
Alarms	Visual and audible alarm. Supports external alarm connection



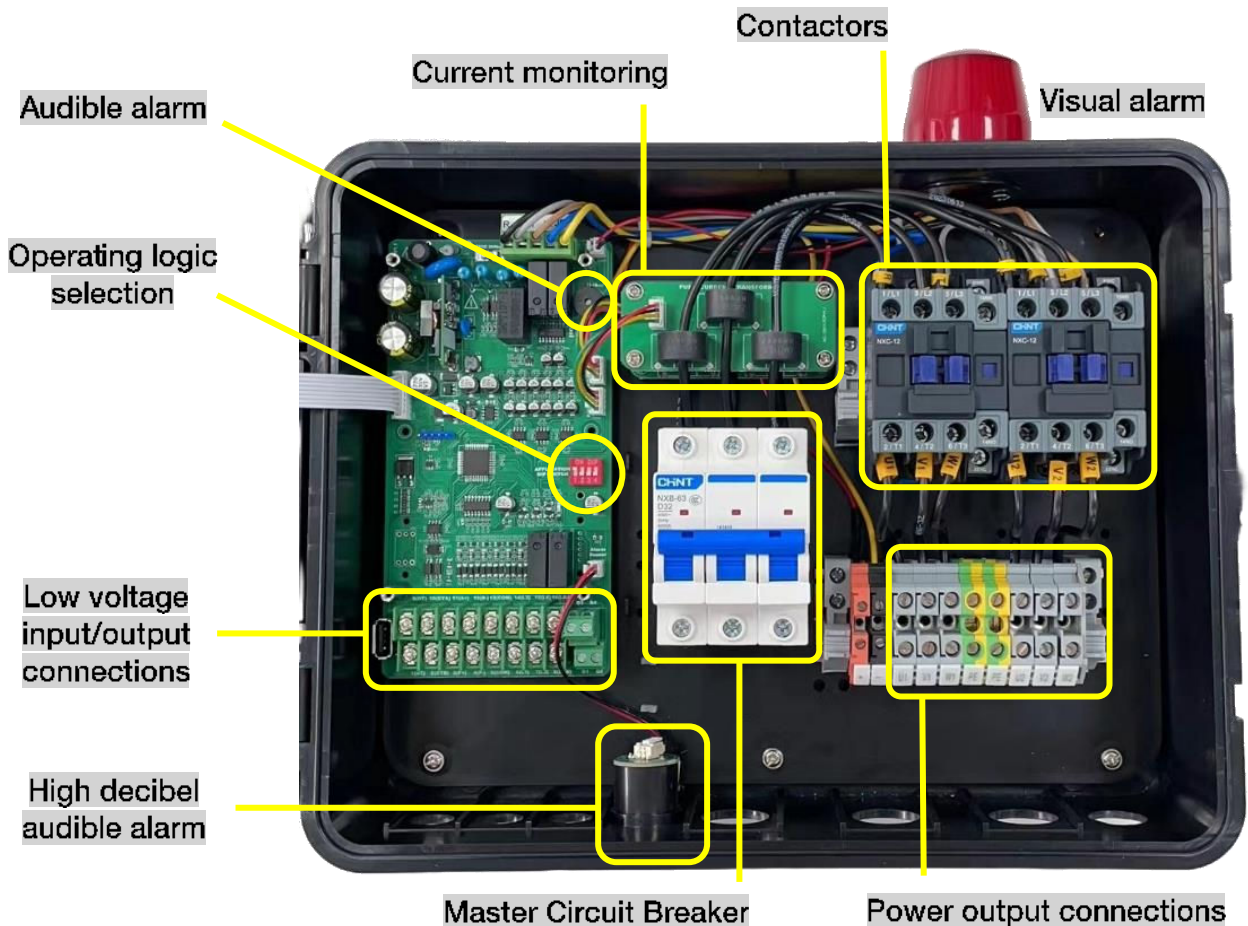
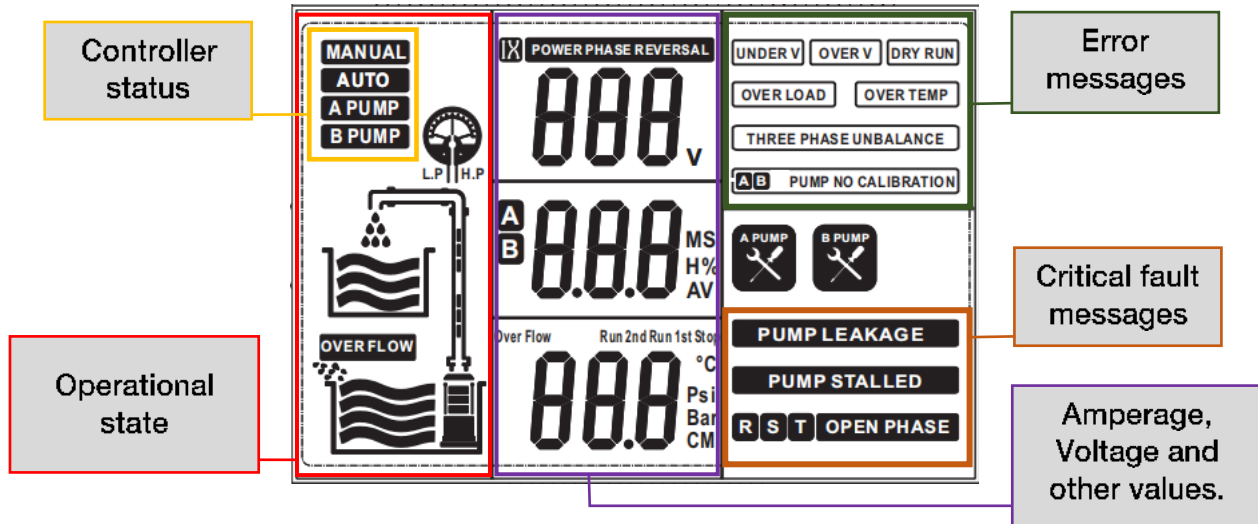
To avoid 'nuisance' alarming, many of the default protection parameters have values with a wide tolerance. The installer is encouraged to optimise the settings to achieve optimum results



## 7. Display

The SPC display provides a real time indication of the operational mode and the current state of the controller, including real-time voltage/current and any error messages.

Only the icons relevant to the selected operational mode will display.



*Image representative only (3 phase, dual pump model). Specific models will vary*



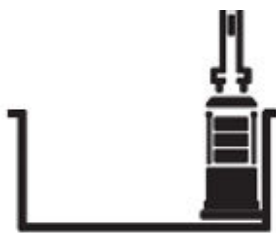


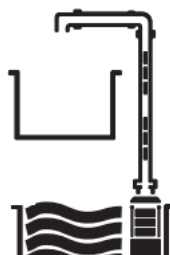
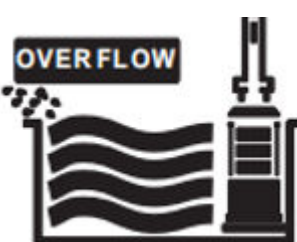

## 7. Display con't

The nXt-SPC controller operates according to the pre-programmed logic for each 'mode'.

Changing the Dip Switches inside the controller then **cycling the power** will activate the selected logic mode.

Examples of common applications are detailed later in this manual but with an understanding of how the controller responds to various inputs in each of the modes the controller can be used for application other than what is suggested.

The appearance of the front display changes according to each mode and provides a visual indication to the state of the input signals.

	Lack of source water		High pressure Low pressure
	Source water full		Destination low
	Overflow		Destination full

Avoid installing the SPC where it could experience the following conditions:

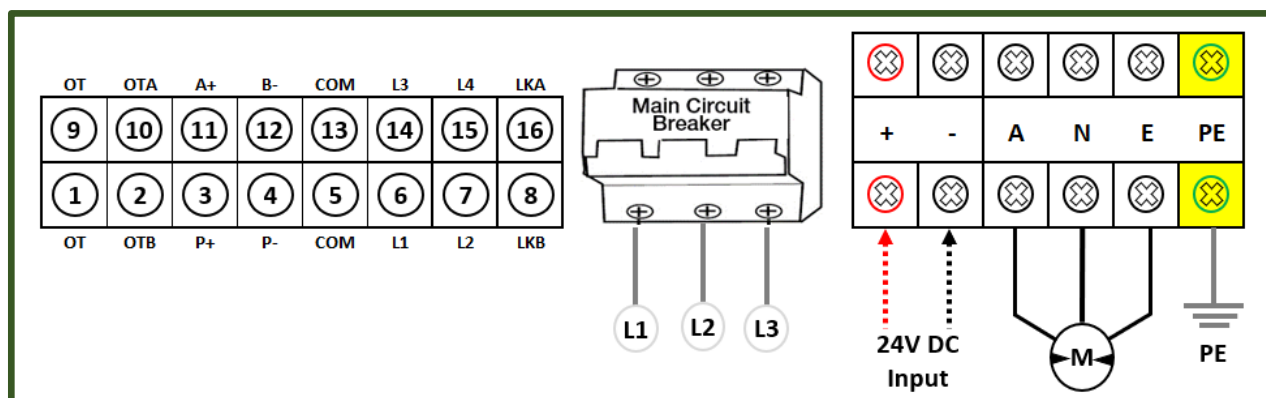
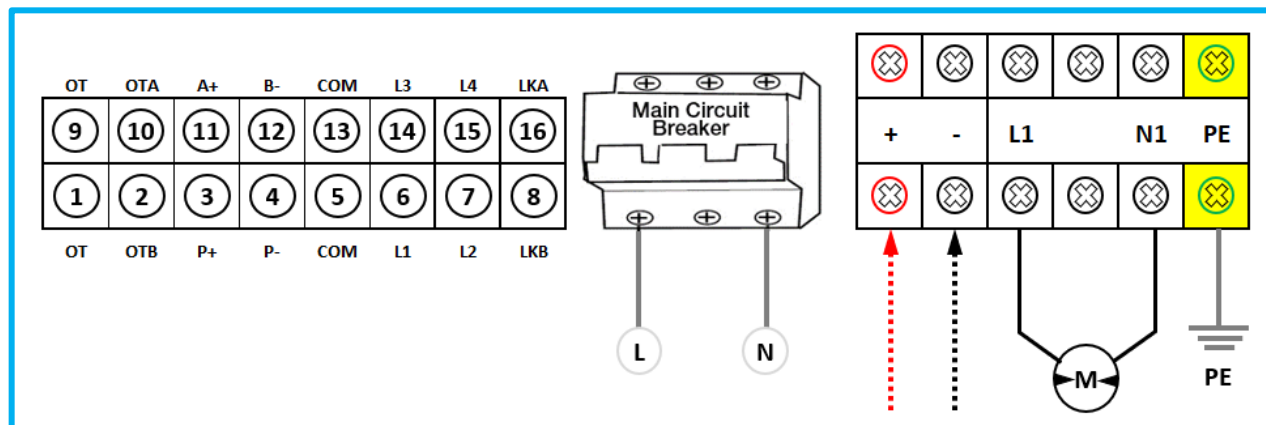
- Where there is significant vibration and/or mechanical shock.
- Where it could be exposed to corrosive liquids or gasses, or to flammable materials, solvents etc.
- Extreme heat and cold. Operating range -25°C - 55°C.
- Protect the controller from rain, moisture, humidity or dust

## 8. Electrical Connections

Always use an electrical outlet that is protected by Residual Current Device (RCD) Safety Switch with a trip current of 30mA or less. A Safety switch is required by Australian/New Zealand Standard AU/NZS 60335.1-2011.



All high voltage wiring must be connected by a suitably qualified technician.



It is the responsibility of the installing electrical technician to ensure that the cable cross section (mm<sup>2</sup>) meets the requirements of AS/NZS 3008; taking into consideration the cable type, the cable length, the current draw and other relevant factors.

If in doubt online resources exist i.e. Cable Size Calculator AS/NZS 3008 or seek advice from an electrical engineer or other suitably qualified person(s)

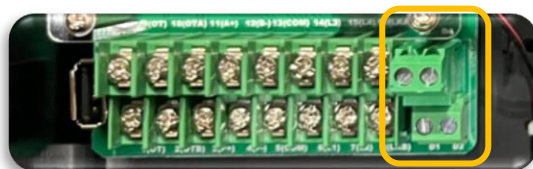
### Output Terminals



The nXt DPC has two 'Dry Contact' terminals.

D1, D2 activate in the event of a critical fault

D3, D4 activate briefly whenever the controller is changed between its Automatic and Manual state (which requires physical intervention)



## 8. Electrical Connections cont

### Pump over temperature protection sensor wiring terminal

Terminal	Definition
9(OT) + 10(OTA) <i>See Pg 6. Dip switch to 0*</i>	Pump over-temp protection sensor. Set to 0* is a N/O circuit, bridged unless connected. Standard thermals will open to peak signal and stop pump on overheat
9(OT) + 10(OTA) <i>See Pg 6. Dip switch to 1*</i>	PT100 connection. Set to 1* the circuit looks for the variable signal from a PT100 sub-board

### Pump moisture protection sensor wiring terminal

Terminal	Definition
13(COM) + 16(LKA)	Pump leakage protection sensor

### Dry contact (passive contact) point wiring terminal

Terminal	Definition
D1 + D2	Dry contact point for pump failure indication N/O circuit. Activates when there is a critical fault
D3 + D4	Dry contact for auto/manual status indication N/C circuit

### 4-20mA transmitter wiring – Modes 011 Drainage, 001 Boosting and 100 Transfer

Terminal	Definition
3(P+) + 4(P-)	4-20mA level/pressure transmitter

### RS485 communication terminal

Terminal	Definition
11(A+) + 12(B-)	RS 485

### Full factory reset

- Turn off power to the control panel,
- Press and hold the **STOP** button and reapply power
- When the display shows 099, release the **STOP** button.

## 9. Modbus

Main technical data	
Physical interface	RS485 Bus Interface: asynchronous semi duplex
Data format	1 start bit, 8 data bit, 1 stop bit, no verify 1 start bit, 8 data bit, 2 stop bit, no verify Default: 1 start bit, 8 data bit, 1 stop bit, no verify
Baud rate	1200,2400,4800,9600 bps (default 9600bps)
Communication address	Setting range of controller address: 1-126. 127: broadcast address, host computer broadcasting, slave machine response forbidden
Protocol type	MODBUS protocol (RTU)
Rated input voltage for SC	AC 240V/50Hz, single phase
Main installation data	
Wire communication distance	1200 m max by shield twisted pair cable (STP)for RS485 & CAN 5000 m max by STP and RS485 extender
STP	STP-120U one pair 20AWG for RS485 & CAN

## 10. Parameter Calibration



The pump must be able to pump water to enable correct calibration. Calibrated without water, overload and pump stalled errors may occur later. Calibration can be performed automatically as explained on Page 3 OR by accessing the User parameter menu #015 and manually inputting the desired value

When a new pump is installed, or an existing pump reinstalled after maintenance, erase the former calibration and a perform a fresh calibration.



To access parameter settings the controller should be in **Manual Mode** and the pump should NOT be running.

User Menu – Press the **STORE** button

Expert Menu – Press the **STORE** and **MODE** buttons for **5 seconds**

To enter a parameter, press the **STORE** button to advance to the next parameter and display the current value.

To change the value, press the **START** or **STOP** buttons respectively to increase or decrease the value.

To store the value and return to the main menu press **MODE** button.

To store all changes and exit the parameter menu hold the **MODE** button for **5 sec**

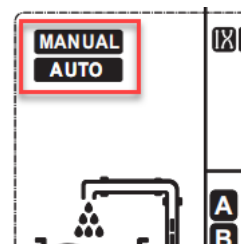
## 11. Program Parameters

### Controller unlocked

Press **MODE** to switch between AUTO and MANUAL mode

### Controller locked (Parameter 011 active)

Press and hold **MODE** to switch to MANUAL mode



The controller operating mode will be displayed in the top left corner of the display

### EXPERT MENU – Parameters 001 - 012

ITEM	DEFAULT	OPERATION
001	3 sec	<b>Pump stall delay time before applying protection</b> To make provision for inrush current on pump start. Range 0 - 60
002	OFF	<b>Repeated start protection.</b> Options ON/OFF
003	ON	<b>Over-temp protection.</b> Related to terminal connection 9 and 10. Dip switch #4 in the up position
004	OFF ON	<b>Phase Reversal Protection</b> - not applicable to single phase model When using the nXt DPC in conjunction with a VFD set to OFF
005	OFF ON	<b>Open Phase Protection</b>
006	96 hour	<b>Anti Seize Protection:</b> Cycle time. Range 1 – 254 hr
007	OFF	<b>Boosting mode only - Start delay time</b> Range Off or 1 – 254 sec
008	OFF	<b>Boosting mode only - Stop delay time</b> Range Off or 1 – 254 sec
009	OFF	<b>Boosting mode only - Maximum run time</b> Off or 1 – 254 min
010	OFF	<b>Fault Alarm audio setting</b> When a fault occurs and activates the alarm, after the time specified in parameter #013 & #016 the continuous alarm will switch to chirp mode (lasts 1sec) at 5-minute intervals. Range: 00 – 24 hrs
011	OFF	<b>Button lock function</b> Off / On
012	00	<b>Parity check</b> 00 = None 01 = Odd parity 02 = Even parity

## 11a.Program Parameters cont

### USER MENU – Parameters 015 - 029

ITEM	DEFAULT	OPERATION
013	01	<b>Controller ID</b> (RS485 Comms) Range 00 – 254 sec
014	<b>04</b>	<b>RS485 Speed</b> 01 = 1200 02 = 2400 03 = 4800 04 = 9600
015	<b>Controller Dependant</b>	<b>Rated output</b> i.e., maximum pump calibration value
016	75%	<b>Trip response ratio – Dry run (underload) protection</b> Range: Off – 95%
017	130%	<b>Trip response ratio – Over-load protection</b> Range: Off – 170%
018	180%	<b>Trip response ratio – Pump stalled / locked rotor protection</b> Range: Off – 195%
019	<b>20%</b>	<b>Trip response ratio – Phase imbalance</b> 3 phase only Single phase, default is Off Range: Off – 50%
020	<b>192V 332V</b>	<b>Trip voltage – Under Voltage Protection</b>
021	<b>276V 477V</b>	<b>Trip voltage – Over Voltage Protection</b>
022	5 sec	<b>Trip response time – Dry run Protection</b> Range 1 – 553 sec
023	45 min	<b>Recovery time – Dry run Protection</b> Range 1 – 60 min
024	4 min	<b>Recovery time – Overload protection</b> Range 1 – 254 min
025	4 min	<b>Recovery time – Under/Over Voltage</b> Range 00 – 60 min
<b>4-20mA Input Mode 011 / 001 / 100 See Section 5 – Modes of Operation</b>		
026	Mode Dependant	<b>Sensor range</b> Drainage/Transfer 0-200cm, Boosting 0 – 25 bar
027	Mode Dependant	<b>Pump stop setting</b>
028	Mode Dependant	<b>Start pump setting</b>
029	Mode Dependant	<b>Overflow/Over pressure setting</b>

If a replacement pump is installed, the previous calibration should be removed and a new calibration performed.





nXt-SPC controllers are a cost effective, reliable means to provide better control and protection without the need for costly bespoke switchboards

The following quick guides provide information regarding common applications.

The pumps illustrated in the following quick guides are all of a submersible type but the nXt-SPC controller is not limited to this type of pump.

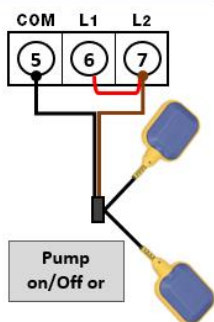


With an understanding of how the controller responds to various inputs in each of the modes the controller can be used for applications beyond what is suggested.

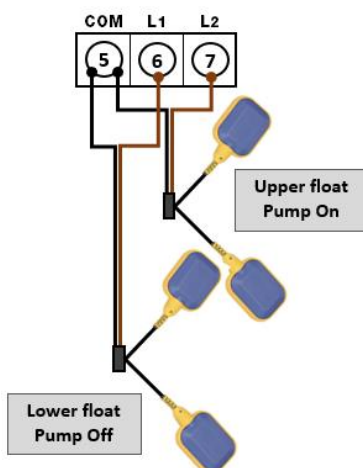
For example, the controller can be connected in series with a VFD controlled pump to provide additional control inputs or to utilise the nXt-SPC controller delay times.

For even greater flexibility in your installation the nXt-SPC controller can be used as a 'module' in a more complex control environment.

Source control - Single float



Source control - dual float



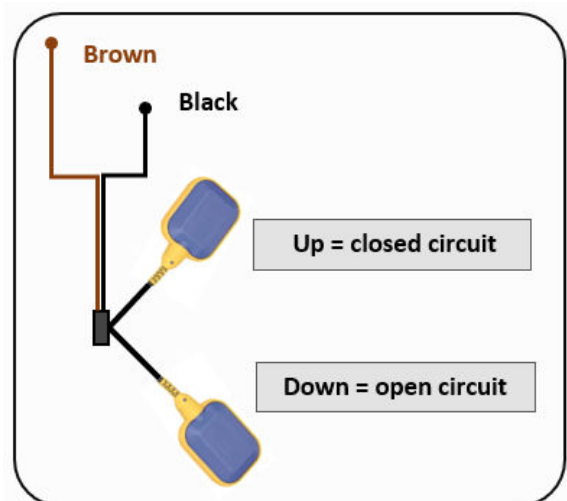
## Floats

3 wire' floats allow for NO or NC wiring.

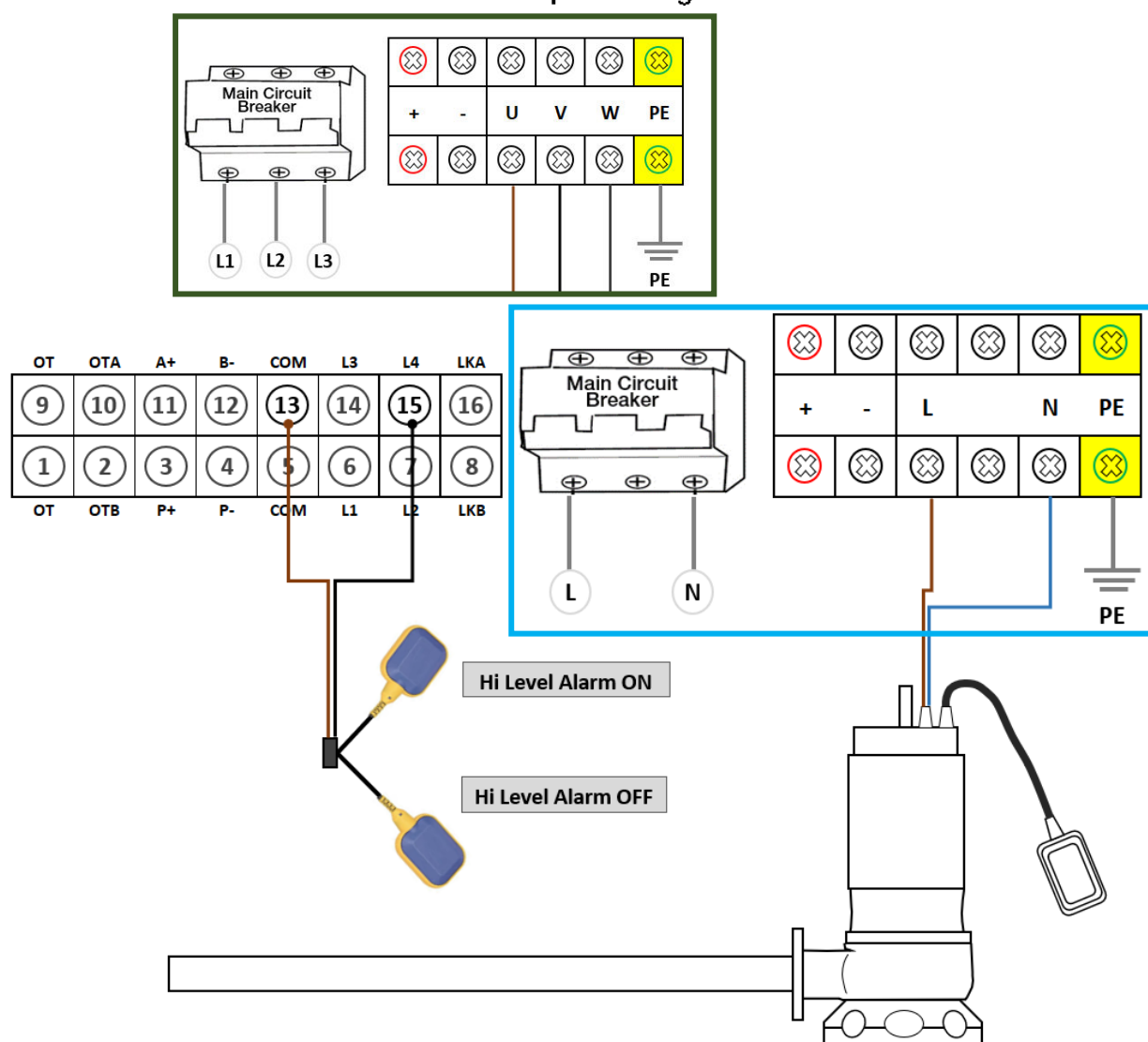
Connecting to the controller using the black and brown wires the circuit is closed when the float is up, open circuit when the float is down.

For greater differential, dual floats can be attached on the source inputs 5, 6 and 7.

When using a single float on the source input terminals #6 and #7 need to be bridged



A float connected to the controller can provide high level alarm function



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## 13. Quick guide: Drainage Mode, floats connected to control

**This is the default mode as supplied**



**Set the dip switches on the main PCB and cycle the master circuit breaker**

A pump with its own float can be used in this configuration so long as the operational level of **Pump Stop Switch #1** is HIGHER than the float attached the pump.

### Switched input - bridge terminals 6 and 7.

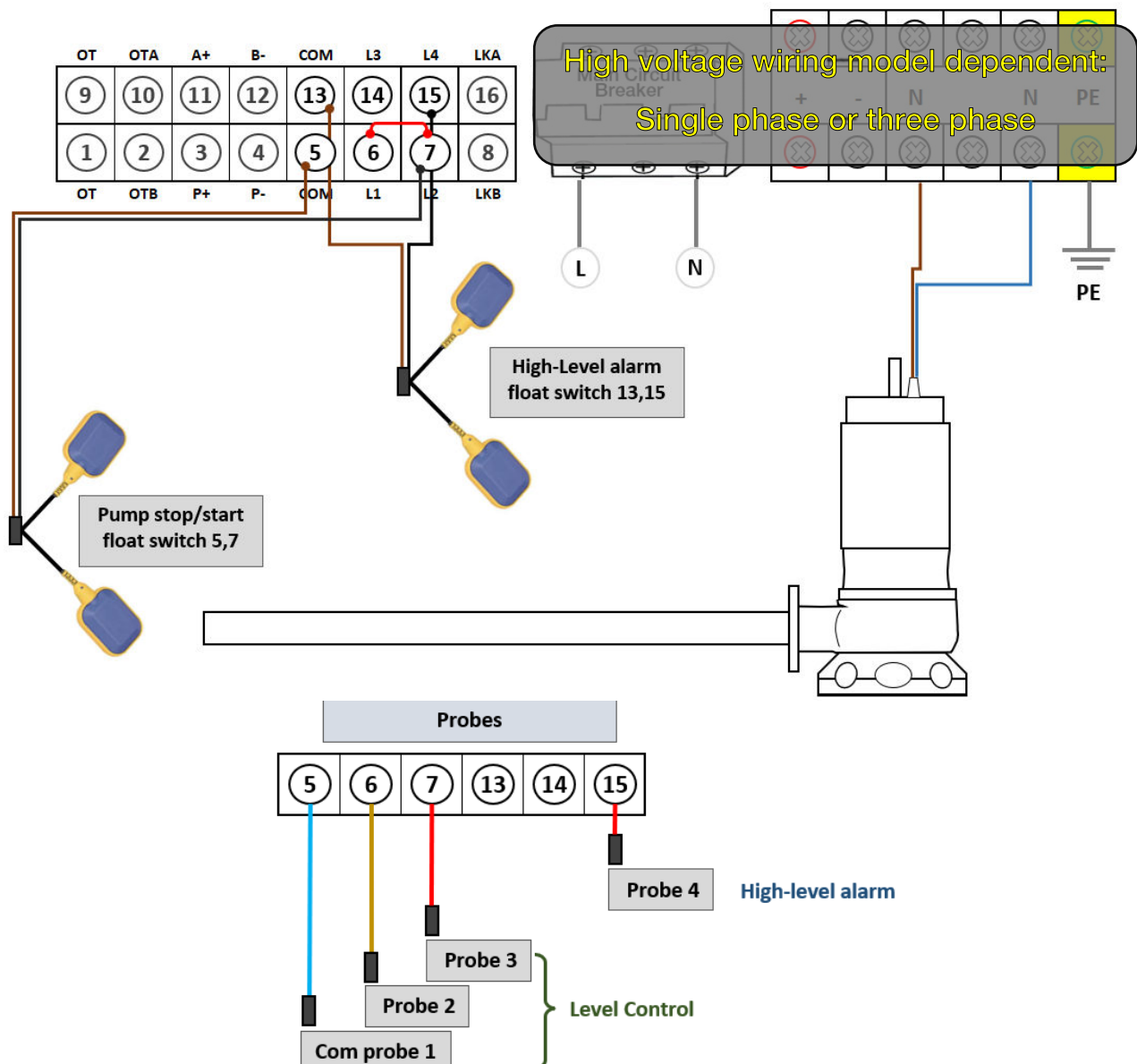
Pump switches on when the Pump Stop/Start switch is in the On (Up) position

Pump runs until the Pump Stop/Start switch is in the Off (Down) position

High-Level alarm triggers when the High-Level alarm switch is in the On (Up) position.

The alarm will turn off when the Hi Level alarm switch returns to the Off (Down) position.

The pump continues to run until the Pump Stop/Start switch is in the Off (Down) position



## 14. Quick guide: Transfer – source/destination control



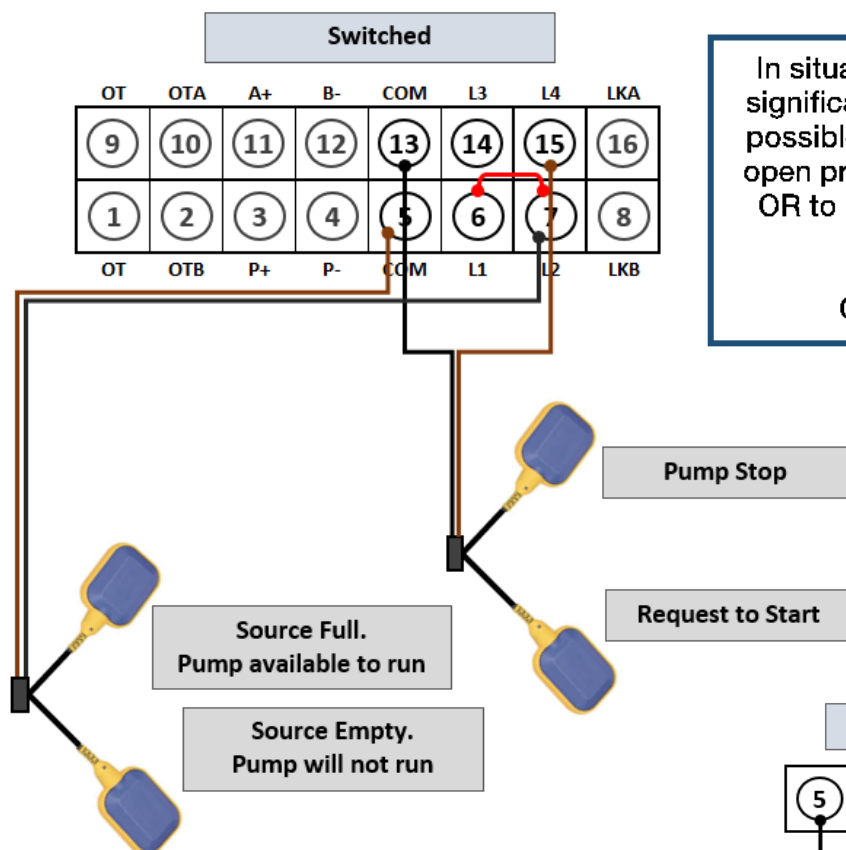
**Set the dip switches on the main PCB and cycle the master circuit breaker**

**Switched input:**

**Bridge terminals 6 and 7**

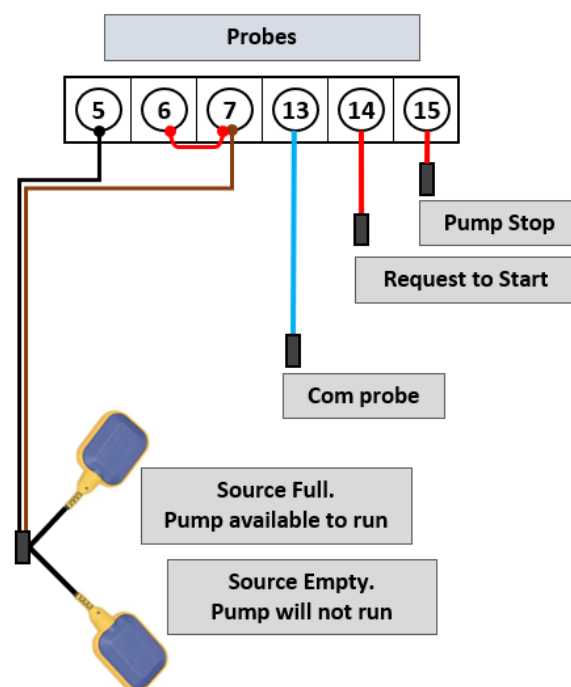
Pump On/Off operation is requested by a float in the down (low level = ON) position at destination or a pressure switch in the delivery line dropping to cut-in pressure

A float switch or probes at the source controls whether the pump will run or not depending on the liquid level.



In situations where the destination is a significant distance from the source it is possible to control by fitting a normally-open pressure switch to the delivery line OR to use a remote wireless sensor to trigger a switched input.

Connect across 13 and 15



## 15. Quick guide: Pressure Boosting – switched input

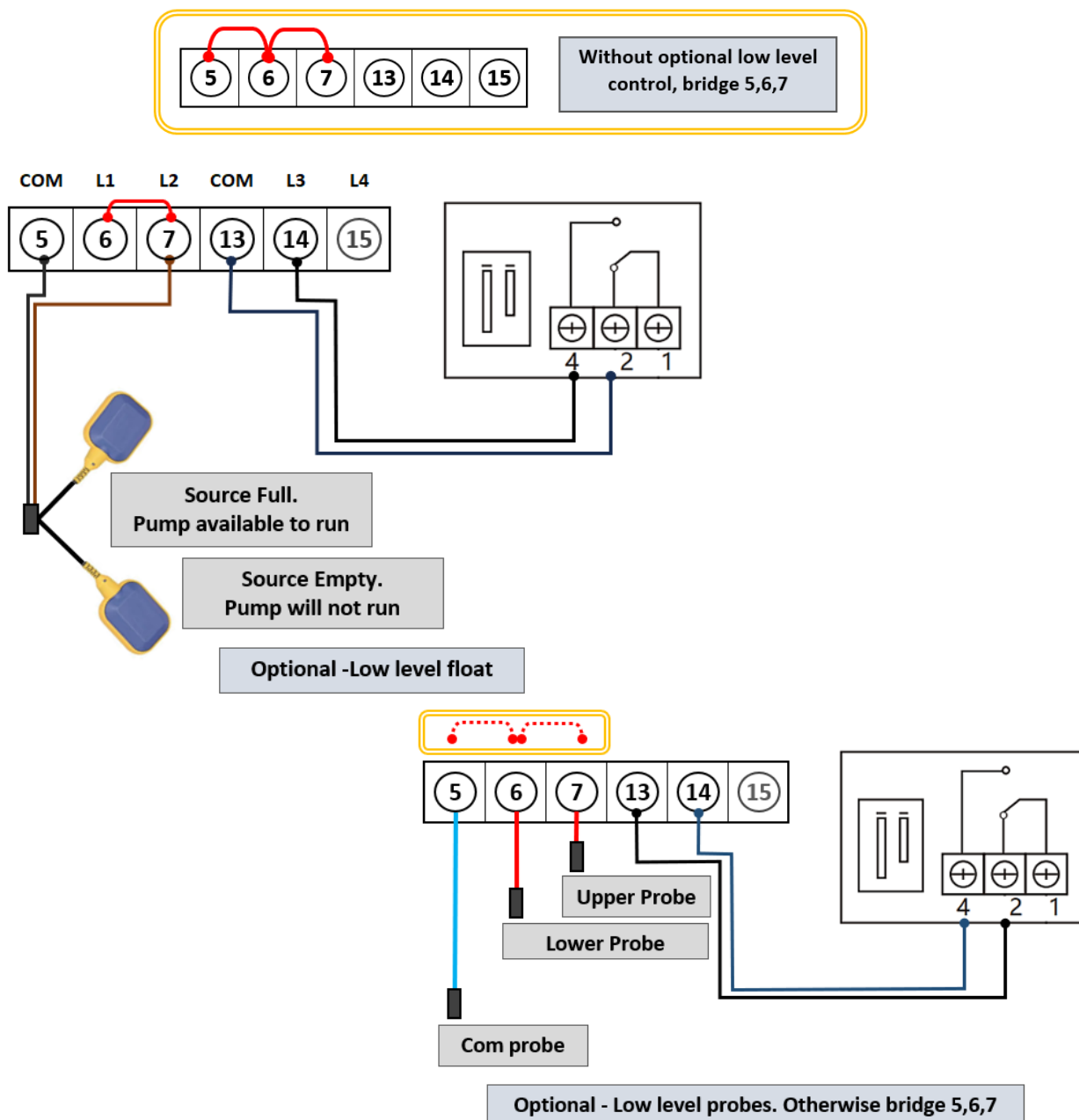


**Set the dip switches on the main PCB and cycle the master circuit breaker**

**Switched input:**

Pump On/Off operation is controlled via a pressure switch on the delivery line.

Additional (optional) run/no run protection can be fitted at the source



**When the controller is set to Boosting Mode, Parameters 005 – 007 become available and can be employed to provide additional control.**

- Start delay time: **Parameter 007** – Default Off
- Stop delay time: **Parameter 008** – Default Off
- Maximum run time: **Parameter 009** – Default Off

## 16. Quick guide: Drainage Mode, 4-20mA level transmitter



**Set the dip switches on the main PCB and cycle the master circuit breaker**

A pump with its own float can be used in this configuration so long as the Parameter 027 is HIGHER than the level at which the pump float switches the pump off

### 4-20mA input.



Transmitter accuracy is a percentage of the sensor full range. Choose the 4-20mA level transmitter with a measuring range according to depth of source tank.

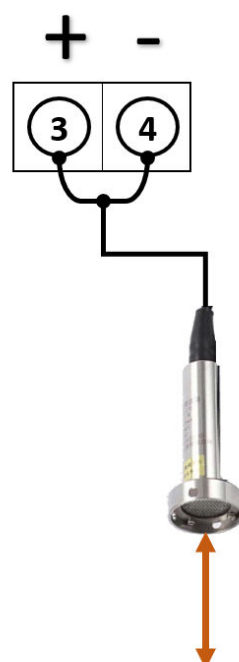
The installer must enter the correct values for 4 parameter settings

- |   |               |
|---|---------------|
| 1) Level transmitter full measuring range     | Parameter 026 |
| 2) Overflow alarm liquid level depth value    | Parameter 029 |
| 3) Pump cut-in/start liquid level depth value | Parameter 028 |
| 4) Pump cut-out/stop liquid level depth value | Parameter 027 |

Set to drainage mode, parameters 027 to 029 are in centimetres (cm)  
These are the control levels related to the source

**Example:**

Full measuring range:	200cm
Overflow alarm depth value:	150cm
Pump cut-in (start) depth value:	100cm
Pump cut-out (stop) depth value:	20cm



Ensure the sensor is at least 50mm above the bottom of the sump



## 17. Quick guide: Transfer – source/destination control 4-20mA



**Set the dip switches on the main PCB and cycle the master circuit breaker**

**4-20mA input.**



Transmitter accuracy is a percentage of the sensor full range. Choose the 4-20mA level transmitter with a measuring range according to depth of source tank.

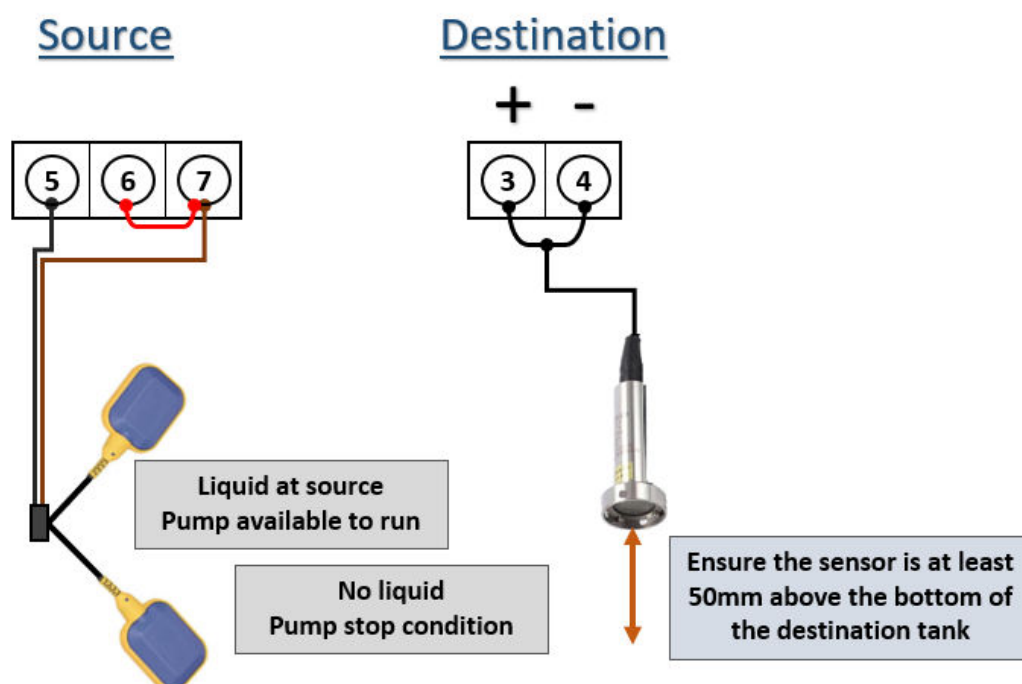
The installer must enter the correct values for 4 parameters

- |   |               |
|---|---------------|
| 1) Level transmitter full measuring range | Parameter 026 |
| 2) Overflow alarm liquid level depth      | Parameter 029 |
| 3) Pump cut-in/start liquid level depth   | Parameter 028 |
| 4) Pump cut-out/stop liquid level depth   | Parameter 027 |

<b>Example:</b>	Full measuring range:	200cm
	Overflow alarm depth:	150cm
	Pump cut-in (start) depth:	100cm
	pump cut-out (stop) depth:	20cm

Set to Transfer mode, parameters 027 to 029 are in centimetres (cm)  
These are the control levels related to the destination

The destination control (transducer) provides a request to start based on liquid level. The Source level control allows the pump to start only if there is sufficient liquid to have the source float in the up position



## 18. Quick guide: Pressure Boosting 4-20mA

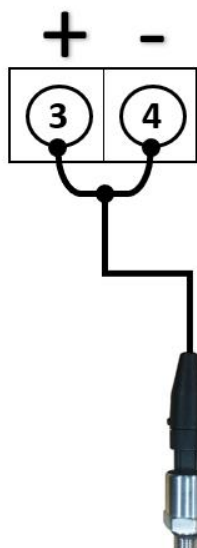


**Set the dip switches on the main PCB and cycle the master circuit breaker**

**4-20mA Pressure transducer:**

Pump On/Off operation is controlled via a 4-20mA transducer on the delivery line.

Additional (optional) run/no run protection can be fitted at the source



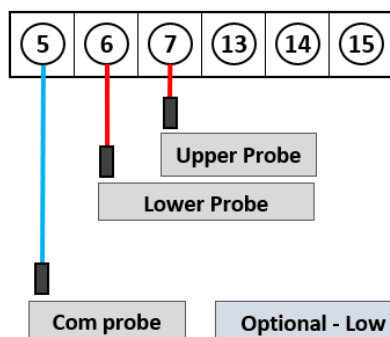
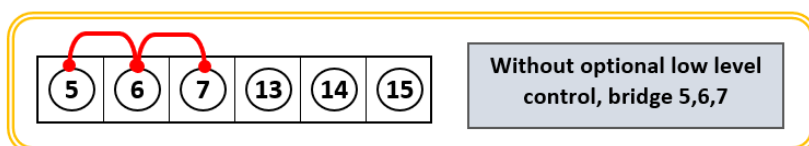
- |   |               |
|---|---------------|
| 1) Pressure transmitter full measuring range in bar | Parameter 026 |
| 2) Over pressure alarm value                        | Parameter 029 |
| 3) Pump cut-out (stop) pressure                     | Parameter 028 |
| 4) Pump cut-in (start) pressure                     | Parameter 027 |

Set to boosting mode, parameters 027 to 029 are in bar  
These are the control pressures in the delivery line

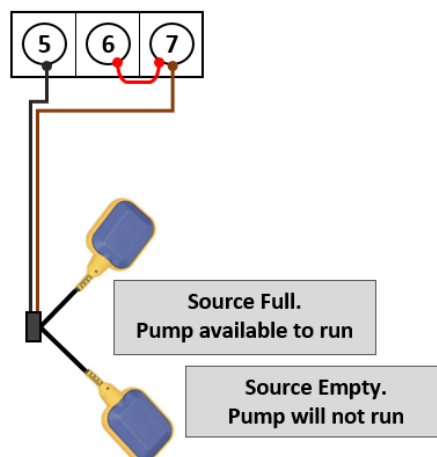
**Example:**

Full measuring range:	25 bar
Over pressure alarm value:	8 bar
Pump cut-in (start) pressure:	6 bar
Pump cut-out (stop) pressure:	4 bar

Fitted to  
delivery line



OR

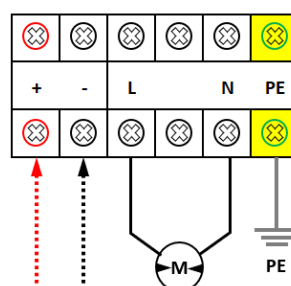
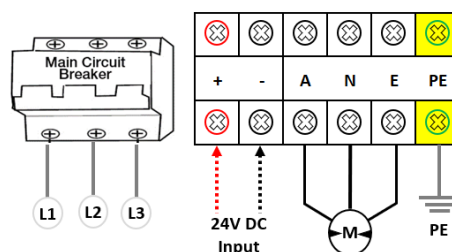
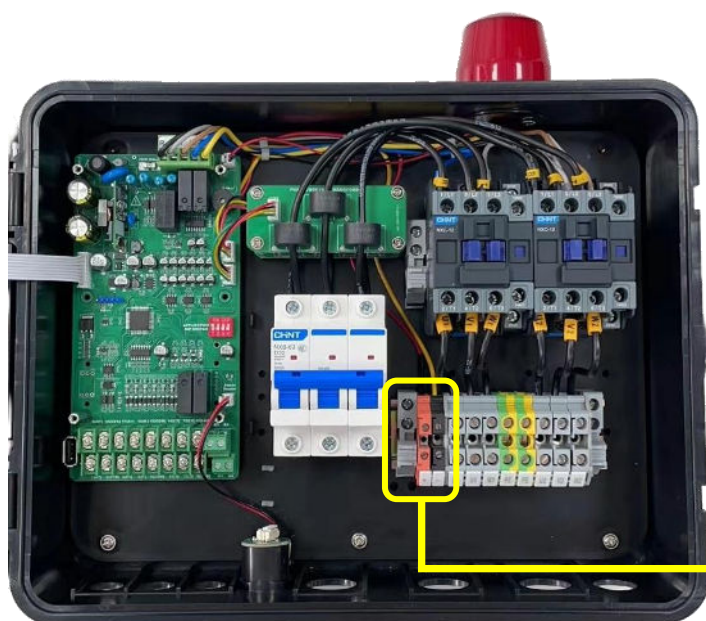


## 19. Backup power supply

In some regions battery backup for the high-level alarm is mandated.

Connecting a 24v battery pack will maintain the alarm and control circuit in case of a mains power failure.

When mains power falls, the unit will display in input voltage (24V) and the Under-Voltage warning message will display on the screen. The pump will not attempt to run, the backup power supply is only to ensure the Hi-Level alarm is able to function for as long as the backup battery maintains its output



Connect 24V backup battery if desired

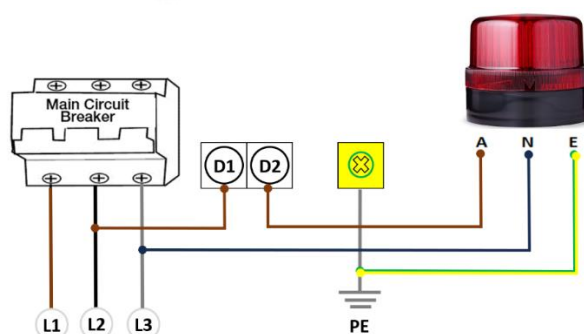
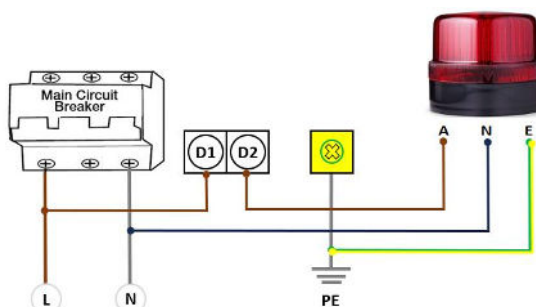
## External Alarm

A 230V external, remote alarm can be fitted and wired thus.

Alarm test:



Located on the rear of the display PCB is an alarm test button.



## 20. Fault Messages

Fault Message	Possible Cause	Potential Solutions
UNDER V	The actual running voltage is lower than the calibrated voltage <b>parameter 022</b> . The pump is in an under-voltage protection state	The controller will attempt to restart the pump every 5 minutes until line voltage is restored to normal  If this fault occurs repeatedly, report low line voltage to the power supply company
OVER V	The actual running voltage is higher than the calibrated <b>voltage parameter 023</b> . The pump is in over-voltage protection state	The controller will attempt to restart the pump every 5 minutes until line voltage is restored to normal  If this fault occurs repeatedly, report high line voltage to the power supply company
PUMP STALLED	The pump motor running amperage has exceeded the normal (calibrated) running amperage by more than <b>parameter 020</b> (default value 175%) This could be due to physical jamming or a mechanical issue. If the pump stalled error occurs repeatedly at commissioning check the controller rating is matched to the pump	Pump Stalled is a 'critical error' and will not automatically reset. Isolate the power supply and inspect the pump for anything which has caused the sudden increase in load
OVER LOAD	Pump motor running amperage exceeds the normal (calibrated) running amperage by more than <b>parameter 017</b> (default value 135%)	Isolate the power supply and inspect the pump for anything which is causing the pump to draw more amperage than the initial calibration value
UNDER LOAD	Pump motor running amperage is less than the normal (calibrated) running amperage by more than <b>parameter 016</b> (default value 75%)	Under-load is sometimes referred to as Dry-run protection as a pump motor will draw less current when there is no load.
OPEN PHASE	The power supply has lost a phase.	Check fuses and wiring.
PHASE IMBALANCE	Three phase model only The incoming voltage (ampere) between three phases (R/S/T) differs by more than $\pm 15\%$	The controller will attempt to restart the pump every 4 minutes until the voltage (amperage) between three phases is restored to normal
POWER PHASE REVERSAL	Three phase model only Sequence of the incoming wiring (R/S/T) is incorrect	Change the sequence of the wiring
PUMP NO CALIBRATION	Calibration not complete	Check the calibration <b>Parameter 015</b>

## 21. Warranties – Terms and Conditions

This warranty is given in addition to the consumer guarantees found within the Australian Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 NZ for goods purchased in New Zealand:



1) White International Pty Ltd / White International NZ Ltd (White International) warrant that all products distributed are free from defects in workmanship and materials, for their provided warranty period as indicated on the top or opposite side of this document. Subject to the conditions of the warranty, White International will repair any defective products free of charge at the premises of our authorised service agents throughout Australia and New Zealand if a defect in the product appears during the warranty period. If you believe that you have purchased a defective product and wish to make a claim under this warranty, contact us on our Sales Hotline on 1300 783 601, or send your claim to our postal address or fax line below and we will advise you as to how next to proceed. You will be required to supply a copy of your proof of purchase to make a claim under this warranty.

2) This warranty excludes transportation costs to and from White International or its appointed service agents and excludes defects due to non-compliance with installation instructions, neglect or misuse, inadequate protection against the elements, low voltage or use or operation for purposes other than those for which they were designed. For further information regarding the suitability of your intended application contact us on our Sales Hotline on 1300 783 601. If you make an invalid claim under this warranty, the original product will be sent back to you unrepaid.

3) This warranty refers only to products sold after the 1st January 2012, and is not transferable to another product type and only applies to the original owner, purchaser or end user, and is in addition to the consumer guarantees found within the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand.

4) Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. **2 YEAR WARRANTY**

5) To the fullest extent permitted by law, White International excludes its liability for all other conditions or warranties which would or might otherwise be implied at law. To the fullest extent permitted by law, White International's liability under this warranty and any other conditions, guarantees or warranties at law that cannot be excluded, including those in the Competition and Consumer Act 2010 (Cth), is expressly limited to: (a) in the case of products, the replacement of the product or the supply of equivalent product, the payment of the cost of replacing the product or of acquiring an equivalent product or the repair of the product or payment of the cost of having the product repaired, is at the discretion of White International or a 3rd party tribunal elected under the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand; and

6) To the fullest extent permitted by law, this warranty supersedes all other warranties attached to the product or its packaging.

7) In the case of services, supplying the services again or the payment of the cost of having the services supplied again, is at the discretion of White International or a 3rd party tribunal elected under the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand. 8) Our warranty commences from the date of purchase of the above-mentioned pumps. Proof of purchase is required before consideration under warranty is given.

*Record your date of purchase in the space below and retain this copy for your records.*

**Date of Purchase .....****Model Purchased .....**



**[www.whiteint.com.au](http://www.whiteint.com.au)**

**1300 783 601**

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