3P Technik UK
WATER MANAGEMENT

CONTROLLER CATALOGUE

2025

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3P Technik UK
WATER MANAGEMENT

STORMWATER TREATMENT
RAINWATER HARVESTING
PUMPS & CONTROLLERS
GARDEN TANKS

Dear Customer,

3P Technik UK design and build electronic water controllers here in the UK from our site in Cardigan, Wales. Our controllers are convenient and flexible, providing solutions for nearly any pumped water system. Additionally, we create custom controllers for industrial processes, level control, irrigation projects and, of course, rainwater harvesting.

We specialise in controllers that manage the movement, storage, processing and delivery of mains or recycled water.

Our class-leading RainForce Controllers are advanced Rainwater System Controllers, built to ensure the availability of water by managing pumps and mains water, providing a high level of protection to system components while offering maximum control over pressure and mains water backup settings. The software is written in-house, on a swappable chip, and mounted on our own PCB for which we provide a full repair/exchange service. This gives you total assurance as to our after sales support.

Our new TCA7000 (Page 12) is the most advanced domestic top-up controller on the market.

Our Level and Pressure Controller ranges are diverse. Our range covers controlling multiple pumps and valves from a single panel to supply break tanks to leakage detection alarms, to smart stormwater attenuation control and flood early warning systems complete with GSM alerts to mobile phone and battery backup.

All our Water Level Controllers work with any pump range and are of use in many liquid transfer applications. They are ideal deployed with above-ground tanks, or where one tank needs to feed another tank, or to balance tank levels. The fault tracking and site level configurability are outstanding.

The ability to control multiple tank levels makes their use with below-ground water storage systems particularly useful. With many of our Controllers, there is no need for man entry to adjust float switches and fill/drain levels inside water tanks and chambers.

Our in-house technical design team can provide a pump control system to suit your client's needs. Email your design specification or telephone and ask to speak to our technical team. In addition to our electronic Controllers, we can customise float switches, cable lengths and pipe and hose lengths to suit your requirements.

We are happy to supply our controllers on an OEM basis too.

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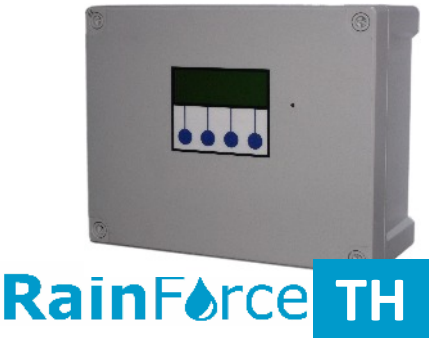
Index

Rainwater Commercial Controllers.....4
Rainwater Direct Controllers.....6
Rainwater Indirect Controllers.....9
Rainwater Top-up Controllers.....12
Pressure Controllers.....15
Level Controllers.....19
Hybrid Controllers (Level & Pressure).....22
Level Display / Alarms.....25
OEM & Bespoke Design.....28
Pressure Sensors.....29
Accessories.....31
PUMP AND CONTROLLER PROTECTION GLOSSARY.....34
TABLES AND CONVERSION DATA.....35
INGRESS PROTECTION (IP) RATINGS.....36
SYSTEM DESIGN NOTES.....37
PRESSURE LOSS NOMOGRAM.....38
GENERAL SALES CONDITIONS.....39

Rainwater Commercial Controllers

RainForce - TH/TS Series

For Rainwater Systems with Break Tank



Splashproof IP65

Single Phase 230Vac

Features

- Automatic Rainwater and Mains Water Control
- Adjustable Pressure
- Intuitive Menu System
- Advanced Fault Tracking
- Works with almost all pumps
- Adjustable pressure control (10bar max)
- Duty Standby/Duty Assist with alternation
- Modular ‘hot swap’ of pumps and solenoids
- Automatic Tank Level Calibration
- Multiple pump model support at 230Vac 50Hz or any supply voltage/phase via contactors
- BMS Switched output
- Optional BMS serial output
- Advanced Fault Tracking
- Fault Warning LED
- Auto hunt for redundant spare pump during pump failure in single pump mode
- Swappable MCU chip (software)
- Solenoid valve isolation on fault - reducing fire risk from overheat.
- System Overpressure Alarm - protects pipework and attached appliances (UV system,
- etc) from overpressure due to faulty installation or incorrect pressure setting.
- Overvoltage protection
- Brownout protection
- Watchdog timer
- Fused Outputs

Description

The 3P RainForce TH series commercial rainwater controller performs all the functions you would expect of a commercial system such as adjustable pressure, duty standby/assist and BMS output.

Pressure control is achieved by modulation of the pumps which are run as required to maintain pressure within a specified range, avoiding the loss of efficiency associated with variable speed systems when running at low demand.

Easy Installation

Suitable for wall mounting or for integration in skid or cabinet built systems. The TH/TS Series control panel also functions as a direct replacement for control units in several European built rainwater harvesting units (call us for compatibility advice).

No water ever needs to go through the control panel, which can be situated near the pumps or remotely.

Smart Software

Any electric pumps, solenoids, motorised valves, etc can be used. Single or 3 Phase[1], RainForce does not need to ‘know’ the pumps it uses.

Optional hardware (contactors) allows pumps of any power up to the limit of your electrical supply.

Downtime minimised

Pumps can be replaced with other makes and models at any time and don’t need to be matched. Downtime due to reprogramming or lead times for a specific pump are eliminated.

Versions

4 Versions of the TH series are available:

500TS - Suction from rainwater tank with tank level sensing by float switch.

A break tank contains mains water only and switch over between mains and rainwater is performed by motorised valves. A single or twin pump set after the break tank tank supplies water under pressure to the point of use.

500TH - Hybrid type system with tank level sensing by float switch.

A break tank is served by both mains water from a solenoid and rainwater via a submerged pump. The break tank contains mains water, rainwater, or both depending on availability and demand. A single or twin pump set after the break tank tank supplies water under pressure to the point of use.

Rainwater Commercial Controllers

RainForce - TH/TS Series

For Rainwater Systems with Break Tank

600TS - Suction from rainwater tank with precise tank level sensing by pressure sensor.
A break tank contains mains water only and switch over between mains and rainwater is performed by motorised valves. A single or twin pump set after the break tank tank supplies water under pressure to the point of use.

600TH - Hybrid type system with precise tank level sensing by pressure sensor.
A break tank is served by both mains water from a solenoid and rainwater via a submerged pump. The break tank contains mains water, rainwater, or both depending on availability and demand. A single or twin pump set after the break tank tank supplies water under pressure to the point of use.

600TS and 600TH allow adjustment of minimum tank level from the control panel without the need to enter the rainwater tank.

Intuitive Menu

All RainForce systems have intuitive menu driven settings. There are no hidden menus, and almost everything is adjustable, including pump cut-in and cut-out pressures, overpressure alarm, and pump failure pressure. Safe default settings (3 bar) will operate straight away in single pump mode with auto tank level calibration[2].

Advanced Fault Tracking

Advanced Fault Tracking stores fault codes in memory until you choose to erase them, allowing easy identification of intermittent and historical faults. Fault history is maintained in the event of power loss.

Robust Software

Clever design of the circuit board makes RainForce the most robust unit on the market today. It includes overvoltage and brownout protection, immediate recovery from power failures without losing any settings. Additionally, it has an automatic reboot feature, individually fused outputs, and an oversized power supply dedicated to the electronics. The removable MCU chip allows for easy software upgrades, and the unit also supports automatic pump failover and can search for spare pumps, even if not initially configured for twin pump use.

Hot-swap for Maximum Uptime

Modular connector design and tolerant software allows pumps to be 'hot-swapped' without switching off the Controller or remaining pump.

Also Required

Like all variable pressure systems, a pressure vessel is required for correct operation.

Adjustable Settings

- Pump cut-in/cut-out pressure (for each pump)
- System Overpressure Alarm
- Pump failure pressure
- Pump Mode (Pump1,Pump2,Twin pump assist/standby)
- Minimum Rainwater Level (dry run prevention)
- Fault code display
- Fault code erase
- Input test diagnostic screen
- Output test diagnostic screen
- Manual Stop - with BMS activation
- Restore Factory Default Settings

Technical Support

Designed, programmed, built and assembled in the UK. With UK based technical support , rapid spares availability, and spare parts supply from UK stocks. Full repair/recon service to component level.

OEM Solutions

3P RainForce is supplied either as a panel only, or can be offered as a kit, comprising of the panel, pumps, cables, solenoid, pressure vessel, hose kits, etc. It is offered only to professional installers and OEM partners who will commission the system before use to ensure the installation has been completed correctly and all accessories are functional.

We work with our customers to provide specific product bundles, with panel and software branded to your requirements.

[1] 3 Phase via optional connection kit.
[2] 600TS/TH only

Rainwater Direct Controllers

RainForce - T Series

Advanced Direct/Top-up Rainwater Controller

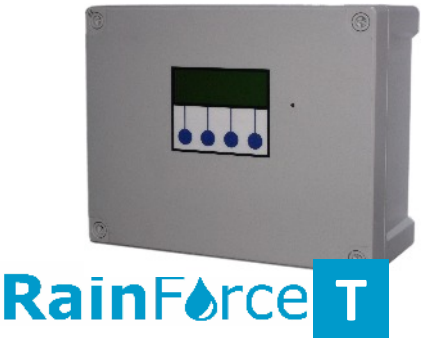
Features

- Adjustable pressure control (10bar max)
- Pressure vessel fault detection
- Periodic pump test and anti-seize function
- Mains top-up from 1 minute (min) to 48 hours (max)
- Duty Standby/Duty Assist with alternation
- Modular 'hot swap' of pumps, sensors and solenoids
- Automatic Tank Level Calibration
- Multiple pump model support at 230Vac 50Hz or any supply voltage/phase via contactors/overloads
- BMS Switched output
- Optional BMS serial output
- Advanced Fault Tracking
- Fault Warning LED
- Auto hunt for redundant spare pump during pump failure in single pump mode
- Swappable MCU chip (software)
- Solenoid valve isolation on fault - reducing fire risk from overheat.
- System Overpressure Alarm - protects pipework and attached appliances (UV system, etc) from overpressure due to faulty installation or incorrect pressure setting.
- Automatic failover for analogue sensors
- Overvoltage protection
- Brownout protection
- Watchdog timer
- Fused Outputs

Description

The 3P RainForce T direct rainwater controller performs all the functions you would expect of a commercial system such as adjustable pressure start and stop points for each pump, duty standby/assist with alternation, fully adjustable mains water top-up control, fault handling and logging, and BMS output, whilst remaining extremely compact.

Pressure control is achieved by activation of the pumps at fixed speed which are run as required to maintain pressure within a specified range, avoiding the loss of efficiency associated with variable speed systems when running at full flow.



Splashproof IP65

Single Phase 230Vac

2 Modes of operation are available, *Auto Mode* adds mains water to the rainwater tank as necessary. *Rain Mode* uses only available rainwater without mains water top-up.

Flexible

Unlike suction based systems which typically need adaptation for UK use in above ground plant rooms (an extra in-tank pump) RainForce T Series can operate with pumps in any location. Submersible pumps let you take advantage of maximum pumping efficiency whilst reducing the overall component count of the system. Pumps can also be installed above ground, with an optional booster pump if required to meet specification.

Modular

The installation is completely modular, no water ever needs to go through the control panel. The panel, pumps, pressure vessel, solenoid and sensors can be installed in any suitable location, either locally or distant to each other.

Smart Software

Any electric pumps, solenoids, motorised valves, etc can be used. Single or 3 Phase[1], RainForce does not need to 'know' the pumps it uses.

Optional hardware (contactors) allows pumps of any power up to the limit of your electrical supply.
Pumps can be replaced with other makes and models at any time and don't need to be matched in performance or power consumption.

Downtime or long lead times due to reprogramming or customisation for a specific choice of pump are eliminated.

Rainwater Direct Controllers

RainForce - T Series

Advanced Direct/Top-up Rainwater Controller

Versions

200T - Tank level sensing by float switch
A standard float switch operated at low voltage (+15Vdc) for enhanced durability detects water in the rainwater tank, with top-up and pump isolation controlled by float switch height. (Usually needs someone to enter the tank to install).

300T - Tank level sensing by pressure transmitter
A precise pressure transmitter is used to determine the exact level of stored rainwater. No other float switches or probes are needed for top-up activation or pump protection, which are all software controlled. This provides the user with the added flexibility of being able to select pump shut-off and top-up levels from the panel, with no need to access the tank.

Economical

Top-up duration over the selected minimum level can be as little as 1 minute, for precise control of mains water usage.

Overfilling of the rainwater tank with mains water is unlikely, as top-up is prevented at 90% full regardless of the top-up duration set by the user. Wastage of mains water is prevented.

Intuitive Menu

All RainForce systems have intuitive menu driven settings. There are no hidden menus, and almost everything is adjustable, including pump cut-in and cut-out pressures, overpressure alarm, pump failure pressure, top-up level, overfill duration, time-out alarm, etc. Safe default settings (3 bar) will operate straight away in single pump mode with auto tank level calibration[2].

Advanced Fault Tracking

RainForce incorporates Advanced Fault Tracking. Fault codes are stored in memory until you choose to erase them, allowing easy identification of intermittent and historical faults.

[1] 3 Phase via optional connection kit.
[2] 300T only

Robust Software

Clever design of the circuit board makes RainForce the most robust unit on the market today. It includes overvoltage and brownout protection, immediate recovery from power failures without losing any settings. Additionally, it has an automatic reboot feature, individually fused outputs, and an oversized power supply dedicated to the electronics.

The removable MCU chip allows for easy software upgrades, and the unit also supports automatic pump failover and can search for spare pumps, even if not initially configured for twin pump use.

Hot-swap for Maximum Uptime

Modular connector design and tolerant software allows pumps to be 'hot-swapped' without switching off the Controller or remaining pump.

Also Required

Like all variable pressure systems, a pressure vessel is required for correct operation.

Adjustable Settings

- Pump cut-in/cut-out pressure (for each pump)
- System Overpressure Alarm
- Pump failure pressure
- Pump Mode (Pump1,Pump2,Twin pump
- assist/standby)
- Minimum Rainwater Level (dry run prevention)
- Top-up level
- Top-up overfill delay
- Top-up timeout alarm
- Pump restart delay
- Fault code display
- Fault code erase
- Input test diagnostic screen
- Output test diagnostic screen
- Manual Stop - with BMS activation
- Restore Factory Default Settings

Technical Support

Designed, programmed, built and assembled in the UK. With full UK based technical support , rapid spares availability, and spare parts supply from UK stocks. Full repair/recon service to board level.

Rainwater Direct Controllers

TCS5JB Series

Level Control / Mains Water Top-up

Features

- Easy to install and maintain
- No user intervention required
- Fast efficient operation
- Minimal space needed for installation
- For use with automatic pumps

Description

The TCS5JB Top-up Switch maintains the level of water in a water tank by topping up the tank when the level becomes low, with a measured amount of mains water.

The water level in the tank is sensed via a float switch. If low, mains water is added via a solenoid valve feeding back to the rainwater tank.

The type A-A air-gap (½" version pictured) ensures compliance with UK water regulations. Versions 3/4" and above require an air gap to be formed during installation

Available with optional pump isolation versions for both direct pressurised, and indirect (header tank) systems. For dry-run protection.

Supplied with electrical connectors for ease of installation.

The 2m version can be used for header tank systems.

The 24v low voltage options, TCS5JBL and TCS5JBLA, are suitable for irrigation applications.

Rainwater Indirect Controllers

RainForce - H Series

Advanced Header Tank Rainwater Controller

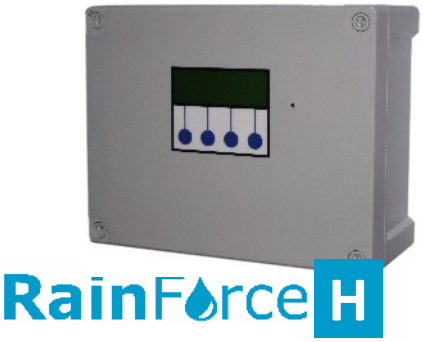
Features

- 3 Modes or operation, Automatic, Mains Only, and Rainwater Only
- 2 Top-up strategies, Eco and Max
- Duty Standby/Duty Assist with alternation
- Modular 'hot swap' of pumps and solenoids
- Automatic Tank Level Calibration
- Single or Multiple pump control
- Single phase (3 phase via additional connection kit)
- BMS Switched output
- Optional BMS serial output
- Advanced Fault Tracking
- Fault Warning LED
- Auto hunt for redundant spare pump during pump failure in single pump mode
- Swappable MCU chip (software)
- Solenoid valve isolation on fault - reducing fire risk from overheat.
- Overvoltage protection
- Brownout protection
- Watchdog timer
- Fused Outputs

Description

The 3P RainForce is an automatic pump controller with cold water mains top-up and advanced fault tracking. 3P UK software designed for maximum efficiency and pump uptime.

The RainForce H series commercial Rainwater Controller performs all the functions you would expect of a commercial indirect system such as multiple pump control, duty standby, BMS output, whilst remaining extremely compact. Header tank level control control is achieved by software with the emphasis on providing maximum availability of water without the efficiency losses associated with ball cocks, or the reliability problems of a float switch based system.



Splashproof IP65

Single Phase 230Vac

Unlike many other systems which are often continental direct pressure systems feeding a ball cock, RainForce H Series are designed specifically for commercial header tanks. Filling the header tank without flow restriction guarantees maximum efficiency.

Smart Software

Smart software employs a maximum availability strategy, adapting to the supply conditions and increasing the level of mains water top-up when rainwater is unavailable. In addition, Top-up Assist mode activates all pumps (if possible) and mains water if the water in the header tank falls to a critical level. No water ever needs to go through the Control Panel. Operation of the pumps and solenoid can be remote or not.

Plug and Play

RainForce does not need to 'know' the pumps it uses. Any electric pumps, solenoids, motorised valves, etc can be used. Single or 3 Phase (with optional contractor unit). Optional hardware (contactors) allows pumps of any power up to the limit of your electrical supply.

Hot-swap for Maximum Uptime

Pumps can be replaced with other makes and models at any time and don't need to be matched. Downtime due to reprogramming or lead times for sourcing a specific pump are eliminated. Our software allows pumps to be 'hot-swapped' without switching off the Controller or remaining pump.

CODE	Product Level Control	POWER HANDLING		INPUTS	
		Outputs	Control Panel Power Consumption	Analogue 4-20mA	Digital
RF200H	Float Switch	2 x 10A Pumps 1 x 10A Top-up Solenoid 1 x 10A Drain Solenoid	7w	2 x unused	1 x Tank Sensor 4 x Header Tank Sensors
RF300H	Pressure Sensor			1 x Pressure Sensor 1 x Unused	4 x Header Tank Sensors 1 x unused

Rainwater Indirect Controllers

RainForce H Series

Advanced Header Tank Rainwater Controller

Advanced Fault Tracking

The 3P RainForce incorporates Advanced Fault Tracking. Fault codes are stored in memory until you choose to erase them, allowing easy identification of intermittent and historical faults.

Models

2 Versions are available:

200H - Tank level sensing by float switch. A standard float switch operated at low voltage (+15Vdc) for enhanced durability detects water in the rainwater tank, with top-up and pump isolation controlled by float switch height. (Usually needs someone to enter the tank to install).

300H - Tank level sensing by pressure transmitter
A precise pressure transmitter is used to determine the exact level of stored rainwater, and displaying an automatically calibrated reading in % to the user. No other float switches or probes are needed for pump protection. This provides the user with the added flexibility of being able to select the minimum water level from the panel, with no need to access the tank.

Intuitive Menu

All RainForce systems have intuitive menu driven settings. There are no hidden menus, and almost everything is adjustable, including minimum level, operation mode, etc. Safe default settings will operate straight away in single pump mode with auto tank level calibration (300H only).

Robust Software

Clever design of the circuit board makes RainForce the most robust unit on the market today, with overvoltage and brownout protection, immediate recovery from power failures with no loss of setting and auto reboot, individually fused outputs, oversized power supply to electronics, removable MCU chip (software) for easy upgrades, automatic failover of pumps, and automatic search for spare pumps even if not configured for twin pump use.

Adjustable Settings

- Operation Mode, Auto/Mains/Rain
- Top-up Mode, Eco/Max
- Pump Mode (Pump 1, Pump 2, Twin Pumps - Simultaneous, Twin Pumps - Duty Standby/Assist with alternation.
- Minimum Rainwater Level (dry run prevention)
- Fault code display
- Fault code erase
- Input test diagnostic screen
- Output test diagnostic screen
- Manual Stop - with BMS activation
- Restore Factory Default Settings

Technical Support

Designed, programmed, built and assembled in the UK, with full UK based technical support, rapid spares availability, and spare parts supply from UK stocks. Full repair/recon service to board level.

Rainwater Indirect Controllers

TDSR Series

Accurate Solenoid Fill Control for Small Tank Systems with Overfill Alert

Features

- Compact And Reliable
- Precise Level Control of Small Tanks even with High Fill Rates
- Safe 24v Sensor Voltage
- Alert & Shut-Off On Overfill to Prevent Spillage
- Designed for OEM Integration
- 230VAC Output for Solenoid, Pump or Motorised Valve
- Optional Audible Alarm
- Single or Dual Output Versions Available
- Ideal for Category 5 Booster Tanks and Header Tank Systems
- Stable Operation in Tanks with Turbulence/Wave Motion

Description

The TDSR Series of 3P Controllers are designed to control the rapid filling of a small tank accurately.

With a failsafe shut-off/alert function and at minimal cost, it is ideal for use in Booster Sets, Break Tank and Header Tank systems.

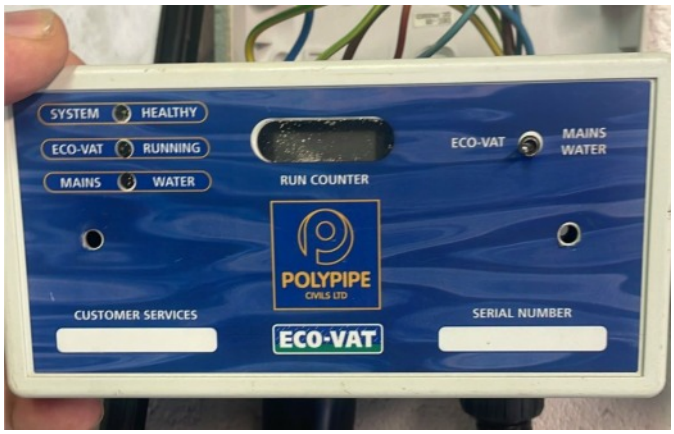
Customisable Installation

The TDSR Controllers allow for a variety of sensors to be fitted within the tank, giving the user installer maximum flexibility. Reed switch sensors are most often used and fitted through the wall of the tank. The start and stop levels of the fill function are then fixed permanently and accurate to typically 20mm or less.

TCS11JB Series

Compatible with ECO-VAT (Polypipe)

Polypipe ECO-VAT Replacement



(Above) The EcoVat Rainwater Harvester Controller by Polypipe. Now discontinued but we can recondition them or supply a superior replacement.

Description

Now long discontinued by its manufacturer, the ECO-VAT, Rainwater Harvester Controller (see photo above) are still present in many UK rainwater systems, both commercial and domestic.

The old compact control units were installed for rainwater harvesting systems using direct pressure and header tank systems, operating both a single rainwater pump and mains top-up solenoid.

Upgrade to the TCS11JB Series

The 3P TSC Series of controllers for Rainwater Harvesting Systems have the same functionality as the proprietary controllers and also address the common faults associated with those units.

Reconditioning and Repair

We can fix the old EcoVat Controllers, we recondition the circuit board to also avoid common issues which occur with this unit over time.

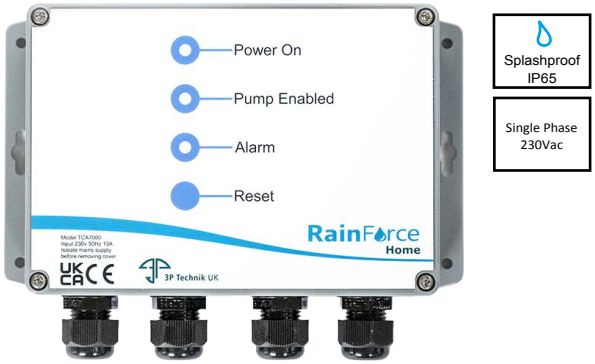
For installers and service agents, repairing an existing unit eliminates the need to re-plumb or re-engineer the whole layout, which saves time and expense while ensuring minimal disruption for the client.

Rainwater Top-up Controllers

TCA7000 - Rainforce Home

NEW!

Electronic Mains Cold Water Top-up Controller



Features

- Microprocessor Controlled
- For use with automatic pressure controlled pumps, or with separate pump pressure switch
- 20 metre Probe Cable, up to 100m Available
- Solenoid valve 1/2" BSP, optional up to 2" BSP
- Float switch option instead of sensor probe
- Solid State Level Sensing (Conductivity)
- Limits Top-up Duration to Prevent Accidental Wastage
- Optional Pump Isolation During Top-up
- 15 Modes to suit all tank sizes
- Self-test mode for faster install/commissioning
- Adjustable top-up overfill delay
- Adjustable top-up timeout alarm
- Automatic Anti-Blocking System (ABS) to avoid solenoid valve

Description

The Level Probe is suspended in the rainwater tank at the required minimum level. When the water surface falls below this level a solenoid valve supplies mains water to the tank until the probe is immersed again. A top-up overfill delay can be set to ensure a fixed amount of additional water is added to avoid frequent activation.

TCA7000 provides an optional pump power connection. If the pump is connected this way TCA7000 will switch it off at low water level to prevent the possibility of dry-running as well as starting the top-up cycle. Any single phase pump of up to 10 amps can be connected to the front socket of the controller. The pump will re-activate when the probe becomes immersed, while also enforcing a maximum of 20 restarts per hour to optimise motor cooling.

Unlike electromechanical systems, microprocessor control within the TCA7000 provides multiple settings for optimal supply of water with safeguards against over-run in the event of a component or tank failure.

Settings

- Top-up overfill duration 0-240 minutes
- Time-out alarm duration 30-240 minutes + disable

An Anti-Blocking action is performed after every 3 days of solenoid valve inactivity. This reduces the likelihood of the solenoid valve becoming seized due to limescale or other factors.

If the top-up cycle exceeds the selected top-up timeout alarm, an alarm will show and the unit will halt operation until reset. This is vital to meet both water company requirements and avoid undue costs.

Includes 3P Tundish with unique integrated overflow to meet the requirements of BS EN13076.

Simple Installation

Position the level probe in the tank at the appropriate height. Connect the mains water via the flexible braided hose to feed gravity-feed into the tank through the solenoid valve and Tundish.

Connect the Control Unit to mains power and optionally wire in an automatic (pressure controlled) pump to the control panel. The pump can be powered separately if you don't wish the TCA7000 to inhibit it's operation.

Select operating mode according to the table shown in the manual using the internal switch block.

Included:

- TCA7000 Control Unit
- Level Probe - 20m cable (other lengths available).
- Solenoid Valve - with 30cm braided hose and isolating valve (1/2" F BSP).
- 3P Tundish with overflow c/w wall mounting bracket, and elbow.

Rainwater Top-up Controllers

TCA6000F

Industrial Mains cold Water Top-up Controller

Features

- For use with automatic pressure controlled pumps, or pumps controlled by a separate pump pressure switch
- 20 metre Float Switch Cable (can be extended)
- Epoxy Coated Steel Enclosure
- Safe 24VDC Float Switch Voltage
- Up to 100m Cables Available
- Accepts various solenoid or motorized valves up to 2A.
- Limits Top-up Duration to Prevent Accidental Wastage
- Non-voltage BMS relay (NO & NC) up to 10A
- Adjustable top-up level/duration by float switch adjustment
- Anti-Stagnation/Anti-Blocking at up to 7 day intervals
- Adjustable top-up timeout alarm up to 24hr
- Replaceable Relay & Timer Modules (Fully Maintainable)
- Complies Fully With UK Water Regulations

Description

The TCA6000F is an automatic mains water top-up for rainwater tanks with leak detection feature, anti-stagnation/anti blockage, and non-voltage BMS fault output.

TCA6000F ensures a minimum level of water in a rainwater harvesting tank, in order to ensure continued availability of water to connected outlets and appliances, and to prevent the rainwater pump from running dry.

Easy to Install

The float switch is suspended in the rainwater tank with the counterweight set to provide the required top-up level and start/stop differential.

When the water surface falls below the minimum level and the float switch faces downward, a solenoid valve supplies mains water to the tank until the float switch tilts upwards.

Easy to Maintain

An Anti-Stagnation or Anti-Blocking action can be configured to run at an interval of up to 7 days, either to briefly open the solenoid reducing the likelihood of the solenoid valve becoming seized due to lime scale or other factors, or for a longer duration to refresh the entire tank where concerns about stagnation may be present.

Economical

If the top-up cycle exceeds the selected top-up timeout alarm (up to 24hr), an alarm will show and the unit will halt operation until reset. This meets both water company requirements and avoids undue costs.

Flexible upgrades

A non-voltage BMS connection consists of common, normally closed and normally open terminals, suitable for connection to BMS systems, external beacons, or GSM/Radio alert systems.

Items Included:

• Control Unit
• Float Switch - 20m cable (with counterweight).

Required Items:

• Solenoid valve - Normally closed. Any size. We can specify and supply as necessary.

Rainwater Top-up Controllers

RainControl

DIN Rail Mounted Mains Water Top-Up Controller with Level Display

Features

- DIN Rail Mounted
- Ideal for OEM Systems and Panel Building
- Customisable Operating Parameters
- Accurate LCD Level Display and Mains Cold Water Top-up/Back-up Function
- Level Measurement by Submerged Pressure Sensor, No Moving Parts

Description

Mac3 RainControl is a DIN rail mounted unit, that measures a rainwater tank level using a submerged pressure sensor (supplied separately) and either tops up with a measured amount of mains water (direct systems with submerged pump), or opens a 3 way motorized valve (indoor break tank & pump systems) when required.

When a low level threshold is reached, RainControl opens a solenoid or motorised valve to supply mains water until a high level threshold is reached. After this, RainControl de-activates the output and reverts to level display mode.

An anti-blocking timer function allows the valve to be scheduled to open periodically regardless of the tank level, in order to prevent jamming.

All of the thresholds for high and low water levels can be set by the installer, calibrating the unit to whatever installation the unit is connected to.

Pressure Controllers

PF Series

Multiple Booster Pump Controller

Features

- Adjustable pressure control (10bar max) Duty Standby/Duty Assist with alternation
- Modular 'hot swap' of pumps and solenoids
- Automatic Tank Level Calibration
- Multiple pump model support at 230Vac 50Hz or any supply voltage/phase via contactors/overloads
- BMS Switched output
- Optional BMS serial output
- Advanced Fault Tracking
- Fault Warning LED
- Auto hunt for redundant spare pump during pump failure in single pump mode
- Swappable MCU chip (software)
- System Overpressure Alarm - protects pipework and attached appliances (UV system, etc) from overpressure due to faulty installation or incorrect pressure setting.
- Overvoltage protection
- Brownout protection
- Watchdog timer
- Fused Outputs

Description

Pressure control of multiple pumps from a single Control Panel and pressure sensor. Fixed speed variable pressure pump control with adjustable start and stop pressures per pump, and intuitive menu driven options.

The pump pressure sensor is separate from the Control Panel allowing installation either close to the pumps as in a chassis mounted pump set, or for use with submerged pump sets for maximum performance, silent operation and reduced space requirements.

Splashproof IP65

Single Phase 230Vac

Monitoring of the supply tank/break tank via either float switch or analogue level sensor. Level sensor models have accurate level display and minimum level adjustment from the Control Panel.

Advanced Fault Tracking logs faults as they occur. Fault codes are stored in memory until you choose to erase them, allowing easy identification of intermittent and historical Faults.

Clever design of the circuit board provides the most robust unit on the market today, with overvoltage and brownout protection, immediate recovery from power failures with no loss of setting and auto reboot, individually fused outputs, oversized power supply to electronics, removable MCU chip (software) for easy upgrades, automatic failover of pumps, and automatic search for spare pumps even if not configured for twin pump use.

Modular connector design and tolerant software allows pumps to be 'hot-swapped' without switching off the Controller or remaining pump.

Designed, programmed, built and assembled in the UK. With full UK based technical support , rapid spares availability, and spare parts supply from UK stocks, with full repair/recon service to component level.

CODE	Pumps Controlled	Supply Tank Control	POWER HANDLING	
			Pump outlets	Control Panel Power Consumption
PF120P	2	Float Switch	2 x 10A	7w
PF130P	3		3 X 10A	
PF140P	4		4 X 10A	
PF320P	2	Level Sensor	2 X 10A	
PF330P	3		3 X 10A	
PF340P	4		4 X 10A	

Pressure Controllers

RCPM Series

Timeout / Leakage Detection Alarm

Features

- Visible and Audible Alarm
- Auto Pump Shut-off Option
- Adjustable Timer Settings
- BMS Output Option
- Works with Almost All Pumps
- Designed and Built in the UK

Description

The RCPM Series Display Panels provide a visual and audible alarm in the event of a pump run-time exceeding a pre-set limit, typically indicating a suspected leak or over-use due to an outlet being left open, faulty control system, or disconnected pipework.

As standard, the visual indicators include a green light indicating that the pump is live, and a red light with audible alarm indicating excessive run-time.

The pump timer is installed between a single phase 230vac pump and its controller.

The panels can also be wired into some automatic pumps wherever it is possible to obtain a return live from the pump's common motor pole. In the case of automatic pumps by using this alarm it is possible to gain advance warning of unintended over-running due to poor installation, limiting the potential for damage to the pump itself.

Options available for outputs into Building Management Systems (BMS) and to auto-shut off the pump when the alarm is triggered.

Installation

The control panel must be installed in a sheltered location. It can be mounted in outside as long as it is protected from the weather for example in a barn or covered area.

Four recesses (one in each corner of the panel) allow the control panel to be easily attached to a wall or suitable support without compromising its ingress protection rating.

Suitable circuit protection must be installed including a suitable earth, overcurrent protection, and residual current protection at 30mA, ideally on it's own circuit, but always in accordance with BS7671 and applicable regulations.

Splashproof IP65

Single Phase 230Vac

CODE	ALARM		BMS	PUMP AUTO SHUT-OFF
	LIGHT	BUZZER		
RCPM1	✓	✓		
RCPM1B	✓	✓	✓	
RCPM1BR	✓	✓	✓	✓
RCPM1R	✓	✓		✓

Adjustable Timer Settings

The maximum time duration achievable is 24 hours, and minimum is 0.1 seconds.

We would generally recommend a setting of between 20 minutes and 2 hours depending on expected usage, although commercial and industrial installations may expect longer periods of continuous use and so require a longer delay.

Included Components

- Alarm Panel
- Attached mains cable
- Installation & Operation Manual

Not included:

- Wall/Panel fixings.
- 4 core flex (if used with automatic pumps with in-built pressure controller)

Pressure Controllers

E-Power

Compact Water-Cooled Inverter

Designed for residential systems, the E-Power is ideal for Booster Pump Sets. Available in two variations, E-Power Std (without CANbus), and E-Power Adv (with CANbus).

For clean water only. Simple on-pipe installation with easy to read LED panel. Can be installed vertically or horizontally.

Varies pump speed to match demand with a programmable restart pressure. Ideal for booster pump sets.

E-Power is constructed around a stainless steel pipe and pressure sensor without non-return valve or any other flow obstruction resulting in increased system efficiency and superior reliability due to excellent self-cooling characteristics.

The Advanced model with CANbus can be linked with other E-power units to ensure continued operation in the event of any single controller failure.

Pressure	0.3 to 8 bar (operating), 12 bar (max system)
Max Pump Power	1.1Kw (Single Phase), 2.2Kw (Three Phase)
Power Supply	230Vac / 117Vac
Temperature	0°C to +50°C (operating)
Dimensions | Weight	330 x 330 x 150mm | 2Kg
Working Position	In-line, Vertical or Horizontal
IP Rating	IP65
Materials	PA6FV
Inlet, Outlet Fitting	1¼" (31.75mm) BSPT Male Stainless Steel

PresSystem

Water-Cooled Advanced Electronic Pressure Switch

Easy to use digital display control panel

Single phase, fixed speed pressure control with adjustable pressure. Pump controller which is installed on clean-water pipe work and replaces the need for traditional pressure boosting system that uses a pressure switch and expansion tank.

By using single speed, variable pressure control, the PresSystem ensures pump efficiency by reducing the time a pump is run to maintain pressure in the system with no flow loss. Variable pressure is achieved by allowing the user to set both the start and stop pressure of the pump. This also avoids the need to run the pump to the end of it's pressure curve producing substantial efficiency gains and reduced run time.

Dry Run Protection via either a Float Switch (not included - see page * for options) or built in with the CosPhi model.

Pressure	1.5 to 8 bar (operating), 20 bar (max system)
Max Flow	120l/min
Power Supply	230Vac / 117Vac
Temperature	5°C to +50°C (operating), 1°C to +40°C (water)
Dimensions | Weight	170 x 230 x 82mm | 600g
Working Position	In-line, Vertical or Horizontal
IP Rating	IP50
Level Sensing	Float switch or CosPhi model
Materials	Body: Polypropylene (PP), Pipe: Stainless 304
Inlet, Outlet Fitting	1" BSPT Male

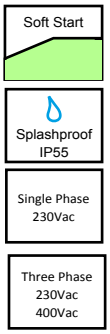
Pressure Controllers

Inverter Drive

Single / 3-Phase Inverters with External Sensors

Features

- Single and 3 phase models
- Can connect up to 8 together for large pump groups
- Can control a secondary fixed speed pump
- External sensors
- 2 x 4-20mA inputs, 2 x 4-20mA or 0-10v (selectable)



Description

Highly versatile variable frequency drives, designed to control and protect commercial pumping systems by varying on changing pump speed.

Can be connected to any manual pump on the market, and will manage the operation of the pump to maintain a constant desired physical dimension (such as pressure, flow, temperature or other). The pumping system runs only at the speed necessary to meet user's requirements, ensuring energy savings and extending the life of the system.

Also provides motor protection and monitoring , such as:

- Protection against overload and dry running
- Integrated soft start and soft stop functions, extending the life of the system and reducing peak absorption
- Not suitable for use with automatic pumps

CODE	Power			
	Input	Output	Output Current	Typical Motor Power P2
INV209	~1 x 230vac	~1 x vin ~3 x vin	~1 9A ~3 7A	~1 1.1kw ~3 1.5kw
INV214	~1 x 230vac	~1 x vin ~3 x vin	~1 9A ~3 11A	~1 1.1kw ~3 3kw
INV406	~3 x 380-460vac	~3 x vin	6A	2.2kw
INV409	~3 x 380-460vac	~3 x vin	9A	4kw
INV414	~3 x 380-460vac	~3 x vin	14A	5.5kw
INV418	~3 x 380-460vac	~3 x vin	18A	7.5kw
INV425	~3 x 380-460vac	~3 x vin	25A	11kw
INV430	~3 x 380-460vac	~3 x vin	30A	15kw

Level Controllers

TC Series

Single / Twin Tank Level Controller

Features

- Modular 'hot swap' of pumps and solenoids
- No need for tank level calibration
- Multiple pump model support at 230Vac 50Hz or any supply voltage/phase via contactors/overloads
- IP68 available on request
- BMS Switched output
- Optional BMS serial output
- Advanced Fault Tracking
- Fault Warning LED
- Auto failover to redundant spare pump/valve can be set using spare output
- Swappable MCU chip (software)
- High and Low Level alarms, linked to BMS output.
- Overvoltage & Brownout protection
- Watchdog timer
- Fused Outputs

Description

The 3P TC Series of tank Controllers maintain and monitor the level of water in a storage tank. A precise level sensing probe detects the exact height of water present in the tank. The Controller then uses any of four mains voltage outputs which can be connected to pumps, solenoids, motorised valves or any other type of filling or draining device to maintain the level between defined limits.

Each pump or valve connected to the Controller is assigned high and low switch levels, and configured to drain or fill the tank. Additionally, each output can be linked to any of 5 switch inputs, which must be closed for the output to operate. This is in addition to the minimum and maximum levels that the output must operate within and is useful in cases where water is to be transferred from point to point. Filling a tanker for example could be conditional on sufficient water in the main supply tank, and also depend on a shut-off or level switch on the tanker or filling hose.

Smart Attenuation

A pumped stormwater attenuation system could be linked to a rain sensor to stop emptying the tank when rainfall is detected.

Reliability

Level sensing is achieved via a single pressure sensor installed on the base of the tank. This reads the actual water depth and the Control Panel then shows the exact level and operates accordingly, thereby removing the reliability issues associated with float switch based systems.

Safety

All level settings are set from the Control Panel. There is no need to enter the tank to fit and adjust float switches. High and low level alarms are also set from the control panel, and a switched BMS output (volt free contact) is provided, which can be also used to activate sirens/strobes.

Advanced Fault Tracking

Advanced Fault Tracking detects and logs faults in memory until you choose to erase them, allowing easy identification of intermittent and historical faults.

Auto Reboot

Overvoltage and brownout protection as standard with immediate recovery from power failures with no loss of settings and auto reboot.

Hot-swap for Maximum Uptime

Individually fused outputs, oversized power supply to electronics, removable MCU chip (software) for easy upgrades. Modular connector design and tolerant software allows pumps and sensors to be 'hot-swapped' without switching off the Controller or remaining pump.

CODE	Product Level Control	POWER HANDLING		INPUTS	
		230v Outputs	Control Panel Power Consumption	Analogue 4-20mA	Digital
TC340	Quad Output Tank Controller	4 X 10A	7w	2	5
RCPT06S10	Additional Level Sensor for 2nd Tank Use				

Level Controllers

Sensopress

DIN Mounted Level Control

Features

- DIN Rail Mounted
- Measures Level by Pressure Sensing
- LCD Showing Current Parameters
- Change all Level Settings from the Control Panel
- Available with 1 or 4 Outputs
- Suitable for use in Clean Water or Liquid Food Products

Description

Mac3 Sensopress is a programmable, DIN rail mounted level controller and is ideal for integration with OEM and panel built products.

Sensopress measures the level of liquid in a tank or reservoir using a high accurate pressure sensor which detects the weight of fluid above it. Pumps and valves can be controlled to fill, empty or maintain levels by Sensopress based on the reading of a single sensor with no mechanical movement.

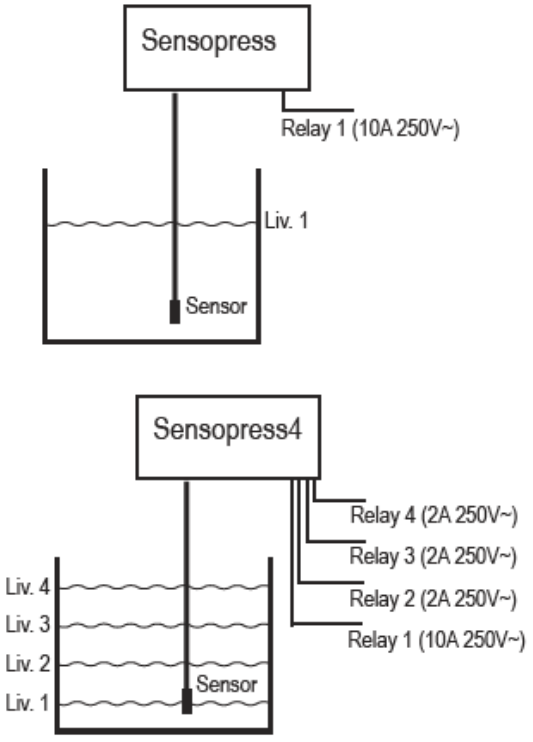
Sensopress avoids the need for technicians to accurately set floats or sensors at various heights within the tank in order to operate pumps and valves at the right levels. All levels and functions can be precisely set from the control panel.

The sensor (supplied separately) is suitable for clean water and liquid food products. However, Sensopress can function with any liquid using either an alternative probe and can be manually calibrated to accept probes of different ranges.

Sensopress is available in single channel and multi-channel models. The single channel model is supplied with a single output for controlling one external appliance, whereas the multi-channel is supplied with 4 outputs.

Each output channel operates independently and may overlap in range.

The sensor (supplied separately) can be submerged directly or mounted into a threaded port.



S1Kit and S4Kit

Sensopress is also available as a wall mounted kit, including a waterproof enclosure, level sensor, fused terminal blocks, and cable glands.

Level Controllers

TCS9 Series

Time Controlled Tank Level Switch

Splashproof IP65

Single Phase 230Vac

Features

- Works with float switches and level switches
- Timed operation with 7 day scheduling
- High load capacity 20A
- Manual over-ride of timer function
- Control of Pumps, Solenoids and Motorised Valves

Description

Provides scheduled level control to fill or drain a tank to a pre-set level only within a specified time window.

Designed for use where available water pressure, noise limits or usage restrictions require the scheduling of operation.

Modular assembly with easily replaceable parts.

Also available with a secondary over-ride float switch to initiate emergency level top-up or drain regardless of timing.

Float switch length does not contribute to voltage drop and does not affect maximum connectable load.

- Supplied with or without 2m float switch
- Max 20A output load 1~230vac
- Daily and Weekly Timing Programs
- LCD Display and push button programming
- 3 way manual override, on - off - auto
- Waterproof front cover
- Minimum time interval 1 minute
- Double Pole Output Switching

CODE	FLOAT SWITCH	PUMP OUTPUT
TCS9JB	None	10A @ 230vac
TCS9JB1	2m	

We supply float switches and sensors for use with this product in various lengths and types.

5000500

Pneumatic Tank Gauge Universal

Features

- Accurate large display
- Easy to use and install
- Range 0 to 2.5m deep
- Wall mountable
- No batteries or other power supply required
- Maintenance Free

Description

The 3P Pneumatic Gauge measures the stored water level in your rainwater tank remotely, giving an accurate analogue reading in a convenient location on it's large easy to read dial.

The gauge works pneumatically, measuring the liquid pressure near the bottom of the rainwater storage tank and displaying a filled percentage on the gauge dial. The 3P Pneumatic Gauge can be set to measure a range of between 0 and 2.5 meters.

With a proper air-tight installation of the measuring line the 3P Pneumatic Gauge's dial will continue to show the last reading over a long period of time.

Wall Mountable Dial
The 3P Pneumatic Gauge's dial comes with wall fixing screws for installation in a convenient place up to 50 metres from the tank. 10 meters of Pneumatic Line are included, this can be extended using a longer Pneumatic Line and coupler (not supplied).

Reference Pointer
The 3P Pneumatic Gauge includes a reference pointer which can be adjusted manually. This serves as a reference marker for consumption control and monitoring purposes.

To read the current level, use the lever (bottom right of dial casing), therefore creating a vacuum in the Pneumatic Line. The fill level is displayed as a percentage on the dial.

Hybrid Controllers (Level & Pressure)

PC3 Series

Direct On-Line Pump Controller 400VAC with Optional Remote Control

Splashproof IP65

Three Phase 230Vac 400Vac

Features

- **Undercurrent Protection** - Detects reduced current caused by dry-running and shuts the system down to prevent damage.
- **Scheduling Timer** - Program the control panel to operate only at preset times during a 7 day cycle.
- **GSM Control** - Enable/Inhibit the system and receive fault alerts via text message.
- **1km VHF Radio Remote Panel** - Duplicates display panel lights and optionally relocates the control switch to the remote panel. Operates via a radio link with a maximum range of 1km.
- **16km VHF Radio Remote Panel** - As 1km radio but with increased range to 16km.
- Hand/Off Auto Operating Modes
- Indicators for Power-On, Pump Running and Fault
- Thermal Overload Protection
- Overvoltage Protection
- Undervoltage Protection
- Phase Loss Protection
- Incorrect Phase Rotation Protection
- Undercurrent Dry Run Protection (Optional)
- Safe 24 volt operation of external float switches and front panel controls/lamps.
- Strong fully earthed steel enclosure
- IP65 Ingress Protection

Typical Applications

- Dewatering
- Sewage Pumping
- Filling Agricultural Tanks/Troughs
- Tank Transfer
- Industrial Processes

Description

A 3 Phase 400v Direct On-Line pump controller with on-demand activation from 2 inputs (float switch or pressure switch),manual override and long range remote operation options for commercial and industrial environments.

Suitable for drainage, tank transfer, drawing water from boreholes, streams and watercourses, and pressure boosting applications. Controls a single three-phase pump at 400vac via Direct-On Line (DOL) starting. Dual pump and star-delta versions are also available.

Thermal overload protection provides standard protection against seizure and motor failure.

Voltage and phase monitoring provide enhanced protection for generators and temporary/remote installations . Optional undercurrent protection provides dry run protection in situations where a float switch or other level switch is not possible.

Low voltage sensor operation accommodates various level switch types including floats, reed switches, vibrating fork, optical, ultrasonic and other electronic types with switching capacity of 1A@24v or greater. All devices on the front panel are run at 24v for enhanced operator safety.

Operating modes

- Hand - Forces the pump to run
- Off - Operation inhibited
- Auto - Runs the pump automatically as needed

Pump protection

- Thermal Overload
- Overvoltage
- Undervoltage
- Phase Loss
- Incorrect Phase Rotation
- Undercurrent (Optional)

We supply float switches and sensors for use with this product in various lengths and types.

Hybrid Controllers (Level & Pressure)

PC3 Series

Direct On-Line Pump Controller 400VAC with Optional Remote Control

Optional Remote Control

The optional GSM control module allows the pump set to be enabled/disabled via mobile phone and alerts up to 5 mobile phones if a fault occurs. The optional remote control panel connected by VHF radio link provides a wireless remote control panel at ranges of up to 16km with duplication of lights and relocation of the control switch to the remote panel. Remote panels are built to order and may control up to 64 PC3S systems from a single panel.

Additional Options

- Undercurrent Protection - Detects reduced current caused by dry-running and shuts the system down to prevent damage.
- Scheduling Timer - Program the control panel to operate only at preset times during a 7 day cycle.

Radio Remote Display Panel
(display only shown without control switch)

CODE	Pumps	Output Current (Amps)	Inputs (Switches,Floats etc)	Pump Protection		
				Thermal Overload	Overvoltage	Undervoltage
PC3S04	1	2.8 - 4	2	Yes	Yes	Yes
PC3S063		4 - 6.3				
PC3S08		5.6 - 8				
PC3S10		7 - 10				
PC3S125		8 - 12.5				
PC3S150		10 - 15				
PC3S170		11 - 17				
PC3S230		15 - 23				
PC3S320		22 - 32				

Additional Options	Suffix				
CODE	Undercurrent Monitoring (Dry Run Detection)	Scheduling Timer (7 Day Scheduling)	GSM Activation/Alarm By Mobile Phone	Radio (Remote Control Panel) 1 km Range	Radio (Remote Control Panel) 16 km Range
PC3Sxxx	C	T	GSM	R1	R16

We supply float switches and sensors for use with this product in various lengths and types.

Hybrid Controllers (Level & Pressure)

Quadri

Direct On-Line Pump Controller with adjustable parameter for use with 1 or 2 pumps

Features

- Automatic or Manual Operation
- LCD Information Display
- Adjustable Parameters
- High Quality Components
- Durable ABS Construction
- Pump Balancing, shares the work between two pumps (2 pump model only)
- Motor Protection (CosPhi model only)
- Flexible: For Boosting, Storage and
- Sewage Pump Control
- IP55 Rated

Splashproof IP55

Three Phase 230Vac 400Vac

2 Pump Model

Description

The Quadri is a direct on-line starter and pump controller for use with Single and three phase systems.

Models available to control one or two pumps.

The two pump model is able to balance the load between them for Boosting, Storage or Sewage pump systems. The Quadri uses float switches / level probes and/or pressure switches to determine if single or both pumps are required.

Functions in either an automatic or manual configuration.

Automatic configuration allows the Quadri to test the connected hardware, determine the correct input / output levels, and then operates within them.

The Quadri can run in three modes:

- Boosting
- Storage
- Sewage

Boosting allows the Quadri to function with a pressure boosting system, using both probes and pressure switches to monitor and run pumps when a pressure or level drop is detected.

Storage allows the Quadri to monitor the levels in two tanks, and function as a level controller.

Sewage allows the Quadri to use float switches to determine levels inside a tank and pump according to the parameters set by the installer.

Highly configurable. All operational parameters can be viewed in the LED interface and edited on the potentiometers on the circuit board.

Contact us to discuss your requirements.

CosPhi Versions

The Quadri CosPhi controls one pump and has built in dry-run protection.

The Quadri CosPhi units utilise self-learning CosPhi monitoring for dry-run protection to protect the pump, along with adjustable current protection. This allows Quadri CosPhi to be used in areas where a float switch cannot be reliably deployed, such as deep wells. There is no requirement for level probes.

Quadri CosPhi can be used with a float switch for drainage and tank filling applications, or with a pressure switch for direct pressure systems. The input is provided for float/pressure switches which activate the pump when required.
If there is a fault, the pump will be shut off and an error displayed. The backlit LCD, displays all relevant information.

Level Display / Alarms

RCALM Series

Tank Level Warning Display Kit

Features

- Visible and/or Audible Alarm
- Low or High Level Warning (RCALM 1 and 2)
- Adjustable Level Warning
- Reliable Level Indication (RCALM3)
- Works with almost all pumps

Description

The 3P RCALM Series Display Panels provide a highly effective low water level warning for liquid tanks. Alternatively float switch wiring can be reversed on the RCALM 1 and 2 Series panels to provide a high level warning instead.

Fluid compatibility will depend upon the float switches used (not supplied)

Choose from a visible (light), or audible (repeating buzzer) alert or both.

Options available for outputs into Building Management Systems (BMS).

24vdc or 230vac options also available.

There are three versions of the RCALM series with further options available in each type:

RCALM1
- Low/High level warning (amber light)

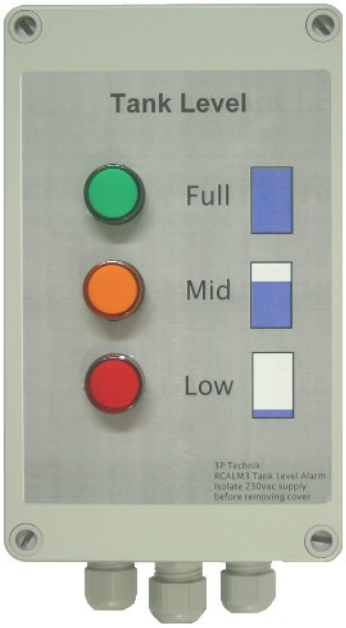
RCALM2
- Power status (green light)
- Low/High level warning (amber light/buzzer)

RCALM3
- Full tank (green light)
- Mid water level (amber light)
- Low water level (red light/buzzer)

Included Components
- Control panel
- Attached mains cable
- Installation & Operation Manual

Required Components (not included)
- RCALM1 - Float switch
- RCALM2 - Double acting float switch
- RCALM3 - 2 x Float switch, of which at least 1 must be double acting

We supply float switches and sensors for use with this product in various lengths and types.



Splashproof IP65

Single Phase 230Vac

RCALM3

CODE	LIGHT(S)	BUZZER	BMS	FLOAT SWITCH
RCALM1	1	✓	✓	230vac
RCALM1L		✓	✓	24vdc
RCALM1Q			✓	230vac
RCALM1LQ			✓	24vdc
RCALM1B		✓		230vac
RCALM1LB		✓		24vdc
RCALM1QB				230vac
RCALM1LQB				24vdc
RCALM2	2	✓	✓	230vac
RCALM2L		✓	✓	24vdc
RCALM2Q			✓	230vac
RCALM2LQ			✓	24vdc
RCALM2B		✓		230vac
RCALM2LB		✓		24vdc
RCALM2QB				230vac
RCALM2LQB				24vdc
RCALM3	3	✓	✓	230vac
RCALM3L		✓	✓	24vdc
RCALM3Q			✓	230vac
RCALM3LQ			✓	24vdc
RCALM3B		✓		230vac
RCALM3LB		✓		24vdc
RCALM3QB				230vac
RCALM3LQB				24vdc

Level Display / Alarms

RKIT Series

Flood Warning System with Capacitive Sensor

Features

- High reliability with no moving parts
- Visual and audible alert
- Designed to provide early warning of potential flooding
- Text message alert option available
- Radio link available for remote sensor installation up to 16km
- 80db audible buzzer
- Low standby current 2.3w
- 230vac, 110-230vac, and 24vdc versions available

Description

The RKIT Flood Level Warning Kit provides a visible and audible high level alert using a capacitive water sensor.

A power switch enables or disables the system and a green power lamp confirms that the system is active.

Upon the sensor becoming immersed in water a flashing red warning light alerts the user to a potential flood event and is accompanied by a repeating buzzer.

Early flood warning

The capacitive sensor can be mounted onto any outdoor structure such as an outside wall or steps, or a point near a water course to provide an early warning of a potential flood event. Early warning is intended to maximise the time available to install flood defences, activate drainage pump systems, move vehicles and objects of value.

No Moving Parts

The sensor is encapsulated in plastic with no moving parts and will survive all weather and long term immersion. Water detection is achieved by sensing the capacitance of a body of water surrounding the sensor, which can only be triggered by immersion and will not false alarm in rain or when splashed.

Versions

The standard 230VAC versions are suited to most most permanent buildings while the 110VAC versions are intended for use on temporary worksites and are ideal for monitoring excavations.

An extra-low-voltage 12-24VDC version is intended for marine and portable use and incorporates a 5 second time delay before triggering the alarm, making it suitable for moving water in bilges and compartments.

Remote Options

Remote warning options are available on request including VHF radio link up to 16km range or cellular GSM text alert.

Mains powered RKIT installations should be supplied by a power located situated above the warning level of the sensor. A green Power-On light indicates a valid power supply.

CODE	CABLE LENGTH	OPERATING VOLTAGE	MAXIMUM CABLE LENGTH
RKIT1	10m	230VAC	1000m
RKIT2	40cm		
RKIT3	10m	110-230VAC	100m
RKIT4	40cm		
RKIT5	10m	12-24VDC	
RKIT6	40cm		

Level Display / Alarms

Macnivel

Battery Powered Tank Level Display

Features

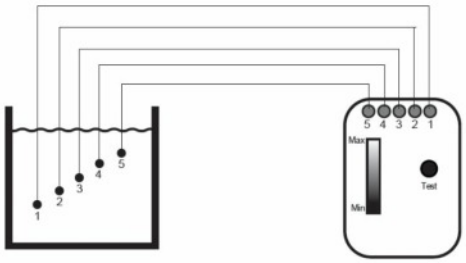
- Battery operated
- Lightweight
- One button operation
- Suitable for any tank size
- Easy to read
- Comes with Wall Mounting bracket

Description

This lightweight and simple to use conductive water level indicator is a simple way to read water tank levels. The information from the probe cable is displayed on a bright LED bar, which instantly gives a reliable level reading.

Operating from an enclosed 9v battery, there is no need to run mains power to the installation. MacNivel can be wall mounted on the supplied bracket in any indoor location.

Level sensing is achieved with any multicore cable (5 cores required), which is then cut to length exposing the ends of the wires at 5 different levels within the water tank.



MacNivel is suitable for any conductive liquid which will not damage the sensing wires in the tank. Examples include:

- Rainwater
- Grey Water
- Groundwater
- Floodwater

Unsuitable for oils, fuels and purified water.

A probe cable can be supplied (not included as standard) with the indicator, and can be cut to length to suit your applications. The maximum length of cable that can be used is 30m.

OEM & Bespoke Design

3P RCMFP1 Electronic Controllers

OEM Direct Multi-function Electronic Controller

A multi-function electronic controller designed to work with almost any pumps or control valves for boosting, filling, de-watering, rainwater harvesting and complex level control applications.

Supplied with various software and sensor configurations the RCMFP1 control unit is a common-platform control solution used in the following 3P products.

- P Series Booster Pump Controller
- TC340 Single/Twin Tank Level Controller
- RF200T/RF300T Advanced Direct Rainwater Controller
- H Series Advanced Header Tank Rainwater Controller
- TH/TS Series Hybrid Direct Pressure Rainwater Controller
- BPM Series Pressure Boosting Sets
- DTC200 Batch Dosing/Mixing Tank Controller
- BT2 Fire Suppression Controller

This product, when configured with TH/TS series software in also functions as a direct aftermarket replacement for the control panel in many popular European commercial rainwater systems such as SP100, SP50, Aqua-Control, ACU, and some others.

When supplied un-configured, RCMFP1 can be rapidly deployed as a pressure set controller, level controller, or direct, indirect or hybrid rainwater controller by installing the appropriate software chip and external sensors, allowing multiple solutions to be provided from limited stock.

Fault tracking and BMS outputs provide required functionality for commercial projects, while embedded design and microcontroller architecture reduce complexity and increase resilience when compared to electro-mechanical (panel built) or PLC based alternatives.

Both hardware and software are designed to be tolerant of power interruptions, non-function or over-current failure of attached pumps and other devices, and sensor faults and disconnections (where possible) and will continue normal or limited operation in the event of a fault.

Our PCB is designed to control equipment in outdoor locations which may experience transient high voltage and current or wiring faults, and will in most cases will continue to operate when an output or input is destroyed, as long as the system still retains sufficient functionality to continue.

Software can be modified or changed upon request and installed easily.

Our controllers need minimal configuration and where possible operate immediately upon installation with basic default settings. Pump groups do not need to be matched and their electrical parameters do not need to be pre-programmed. Devices with high voltage, high current or multiple phases can be controlled using contactors, with no current-sensing limitations.

Our software is developed by ourselves and supplied on a replaceable chip. Our PCB is also our own design, for which we offer full repair/exchange facilities, providing total assurance as to our after sales support.

Available to Trade Customers, call us on 01239 623506 or email sales@3ptechnik.co.uk.

Bespoke Design

Along with our electronic Controllers, we can customise float switches, cable lengths and pipe and hose lengths to suit your requirements.

Our parent company 3P Technik UK holds compact pressure booster sets to supply water under pressure to single or multiple points of use. They are available in variable or fixed speed options. Both are quiet and reliable solutions for domestic and light commercial pressure boosting.

If you don’t find the item you need please call 01239 623506 or email sales@3ptechnik.co.uk.

Pressure Sensors

Submersible Pressure Sensors

RCPT06S10

Description

6m Submersible pressure sensor. A precise analogue pressure sensor suitable for measuring the level of water and other liquids in storage tanks, requires a controller which accepts 4-20mA sensor input in the range 0-0.6 bar. Supplied with an ABS nose cone and 10m of cable for submerged use.

Type	4-20mA 2-wire (requires vented cable)
Range	0-0.6 bar (0-6m of water)
Accuracy	0.5 %
Supply Voltage	10-30vdc
Process Connection	½ ” BSP
Material - Body	Stainless 304
Material - Diaphragm	Stainless 316L
Ingres Protection	IP68 (submersible)

Suitable for:

- Rainforce T Series
- Rainforce H Series
- Rainforce TH/TS
- Rainforce THV
- PF Series
- TC Series
- Spinflow SP50/SP100
- Polypipe Rainstream

RCPT1S20

Description

PRS Submersible Level Sensor. A precise analogue pressure sensor suitable for measuring the pressure of pumps and booster sets, requires a controller which accepts 4-20mA sensor input in the range 0-1 bar.

Type	4-20mA 3-wire
Range	0-1 bar (0-10m of water)
Accuracy	0.5 %
Supply Voltage	10-30vdc
Process Connection	¼” BSP
Material - Body	Stainless 304
Material - Diaphragm	Stainless 316L
Ingres Protection	IP68 (submersible)
Recommended accessory for submerged use	RCPTCONE25 Flexible Nose Cone

Suitable for:

- RainControl (Mac3)
- Sensopress (Mac3)

Pressure Sensors

Non-Submersible Pressure Sensors

PRE Series

Description

0-10 bar outdoor rated pressure sensor. A precise analogue pressure sensor suitable for measuring the pressure of pumps and booster sets, requires a controller which accepts 4-20mA sensor input in the range 0-10 bar.

This sensor is supplied with 3 or 20m of attached cable, is weatherproof and is suitable for outdoor use.

Type	4-20mA 3-wire
Range	0-10bar
Accuracy	0.50%
Supply Voltage	12-30vdc
Process Connection	¼" BSP
Material - Body	Stainless 304
Material - Diaphragm	Stainless 316L
Ingres Protection	IP67 (outdoor use)

Suitable for:

- Rainforce T Series
- Rainforce TH/TS
- Rainforce THV
- PF Series
- Mac3 Hydrocontroller
- Spinflow SP50/100
- Polypipe Rainstream

RCPT10

Description

0-10 bar indoor rated pressure sensor. A precise analogue pressure sensor suitable for measuring the pressure of pumps and booster sets, requires a controller which accepts 4-20mA sensor input in the range 0-10 bar.

Type	4-20mA 2-wire
Range	0-10bar
Accuracy	0.50%
Supply Voltage	8-30vdc
Process Connection	¼" BSP
Material - Body	Stainless 304
Material - Diaphragm	Stainless 316L
Ingres Protection	IP65 (indoor use)

Suitable for:

- Rainforce T Series
- Rainforce TH/TS
- Rainforce THV
- PF Series
- Mac3 Hydrocontroller
- Spinflow SP50/100
- Polypipe Rainstream

01PCP010C

Description

A mechanical pressure switch suitable for directly switching single phase pumps up to 250VAC 8A.

Voltage	Up to 250VAC
Current	Up to 8A AC3
Operating Temperature Range	-15°C to +40°C
On/Off Pressure Range	1.4 to 4.1bar (adjustable)

Accessories

Clean Water Float Valves

QuickStop Standard

QuickStop Adjustable

Features

- Rapid Valve Action
- High Flow Rate
- Sturdy Polycarbonate Construction
- Patented Valve Action
- Suitable for pump or gravity fed applications
- Easy to Install and Adjustable

Description

QuickStop valves are a high speed diaphragm type float valve, with an articulating arm, designed to replace traditional ballcocks in break tanks, header tanks and troughs.

The diaphragm mechanism ensures it will never half-close or dribble, protecting a water-cooled pump from overheating due to lack of flow.

The articulating arm then further ensures the valve stays closed until the water level drops around 3cm, preventing overheating of the pump motor due to excessively frequent starts.

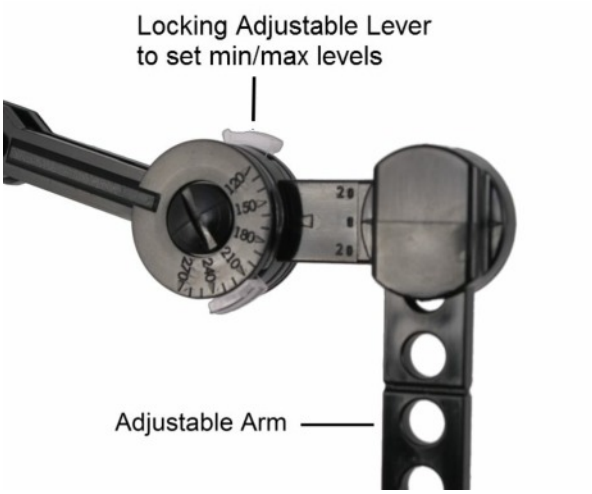
Specification

- Operating Pressure: 0.2 to 6 bar
- Max Pressure: 15 bar
- Bursting Pressure: >20 bar
- Operation: Continuous
- Operating Temperature: 0 to 50°C

Sizes available

BSP Connection: ½ ", ¾ ", 1" 1 ¼" and 1 ½".

QuickStop Adjustable valves (above) also feature an adjustable arm length for greater versatility.



This close-up of the Adjustable version shows the detail of the adjustment that can be made to the Quickstop. By using the clear plastic tabs, the installer can determine how far the float can move before the regulator activates. This simple adjustment requires no tools, and can be changed as often as required.

The arm can be adjusted by length and mounting angle to set where the float sits relative to the regulator. Altering this allows for precise control of when the regulator is opened or closed by the movement of the float.

The addition of a second adjustable joint to the actuator arm allows for greater control of the stop/start water level. After installation, the valve can be adjusted entirely by hand, without tools.
The Locking lever easily sets the minimum and maximum tank liquid levels and the length of the float arm can be simply adjusted, giving greater flexibility from 0 to 180°.

Accessories

Clean Water Float Switches

Mac3

The original Mac3. General purpose clean water float, with increased buoyancy and double housing. The dimensions give greater buoyancy.

Suitable for clean and waste water.

Double acting operation for emptying and filling.

Available in cable lengths from 2m to 20m with PVC or H07RN-F cable.

Key

General purpose clean water float switch.

Double acting operation for emptying and filling.

Is now also available recycled plastic.

Available in cable lengths from 2m to 20m with PVC or H07RN-F cable.

Small

The Small float switch from Mac3 has a breaking capacity with a micro-20A. Standard models are for emptying applications with versions suitable for filling available by special order.

Most popular with drainage pumps and widely used by pump manufacturers for direct mounting to their products.

Available in cable lengths from 2m to 20m with PVC or H07RN-F cable.

Counterweight

For use on float switch cables to provide a weighted point around which correct on/off operation will occur.

Removes the need to enter the tank and constrain the cable.

Accessories

Waste Water Float Switches

Mac5

For sewage and waste water. Designed with sufficient weight and correct shape to allow reliable movement through liquid slurry and waste water heavily contaminated with solids.

Double acting operation for emptying and filling.

Available in cable lengths from 2m to 20m with PVC or H07RN-F cable.

E-Fly

E-Fly float switch is specifically designed for sewage and turbulent water. Can also be used in turbulent water and waters with high levels of solids. Smaller than the Mac5 Sewage Float Switch.

Available in cable lengths from 2m to 20m with PVC or H07RN-F cable.

Compact Float Switches

Reka

At just 250mm long with no moving parts the Reka is particularly suitable for Header Tanks, Shallow Tanks and confined spaces where there is not enough space for the movement of a traditional Float Switch.

Suitable for Tank filling or maximum level control, high-level alarms or Flood Water detection.

Available in emptying mode as standard or by special order for filling operations. 230v and 12-24v available. Cable lengths from 40cm to 10m.

Agma W-EVO

The new Mac3 AgmaW EVO is a compact wastewater float switch alternative, designed to be fitted vertically to a submersible pump. Unlike the previous model (Agma W) the EVO operates at an angle of +/- 20° from vertical. When used for pump control, Agma W EVO activates a connected pump when the water levels are high enough for pump use, and deactivates the pump when the water level has decreased to the set minimum.

The magnetic float that moves vertically in response to the water level. The float activates a sealed microswitch (housed in the top blue section) which turns the pump on or off.

Available in PVC or H07RN-F cables at 25cm or 10m.

PUMP AND CONTROLLER PROTECTION GLOSSARY

Brownout Protection
Protection of logic circuits against temporary loss or dip in voltage, incorporated into a circuit during design.

Dry Run Protection
Detection of lack of flow, change in current, or lack of pressure to identify a pump running dry (sucking air), and shut it down before damage occurs.

Fused Output
An output from a controller with individual fusing to prevent the entire system from going offline in the event of a live short between phases or to ground. The selection of glass quickblow, passivated or HRC fuses depends on the connected device and it's intended usage. Fuses should always be replaced with the correct rating and type.

GFCI
Ground Fault Circuit Interruptor, performs the same function as RCD and often confused as being the same device. GFCIs typically also include active protection against disconnected neutral or CPC. Unlike passive RCDs, active GFCIs cannot be connected in series. Uncommon in the UK, usually rated at 10mA and installed per socket outlet and not at the consumer unit.

Leak Detection
Monitoring of either the frequency of start-ups or run duration to determine the likely presence of a pipe leak (Leak detection by duration rarely implemented as it causes false alarms in commercial applications).

Overcurrent Protection
A circuit breaker such as an MCB designed to protect the supply circuit against the connection of excess load.

Overvoltage/Undervoltage Protection
Protection against overvoltage is included on most electronic products by means of a metal oxide varistor at 275vac. Over/under voltage relays may be used as more accurate supplementary protection or to provide alarm or BMS functionality.

Phase Loss Protection
Detects the loss of a single phase which would result in poor running and excess heat generation in a pump.

RCBO
A single module combining overcurrent and residual current protection.

Residual Current Protection / Residual Current Device (RCD)
Detects phase current imbalance to identify loss of current from either phase to ground or protective earth. RCD will often not function correctly with small temporary power sources that use a floating earth, such as small generators and inverters, even if the test button works. Usually rated to trip at 30mA, but sometimes higher on some commercial installations, or as low at 10mA for garden use.

Phase Reversal Protection
Detects incorrect 3 phase wiring which would otherwise cause a pump motor to run backwards.

Thermal Overload Protection
Used on most 3 phase motor installations to shut down a pump if excess current is detected. Can be adjusted precisely for optimum protection.

Watchdog Timer
A software feature that monitors program program execution and resets if a problem occurs.

TABLES AND CONVERSION DATA

Reduction of capacity with temperature

Temperature °C	Head Loss mwc*
20	0.20
30	0.40
40	0.75
50	1.20
60	1.90
70	3.10
80	4.70
90	7.10
100	10.32

Reduction of capacity with altitude

Altitude (m)	Head Loss mwc*
0	0.00
500	0.60
1000	1.15
1500	1.70
2000	2.20
2500	2.65
3000	3.20
3500	3.60

*mwc – metres water column

Pressure Conversions

Bar	Metres water	Kilopascal kPa	Megapascal mPa	Pounds per square inch psi
1.000	10.200	100.000	0.100	14.504
0.098	1.000	9.804	0.010	1.422
0.010	0.102	1.000	0.001	0.145
10.000	101.998	1000.000	1.000	145.038
0.069	0.703	6.895	0.007	1.000

Volumetric Flow Rate

Litres/second l/s	Litres/minute l/m	Cubic metres per hour m^3/hr	Cubic feet per minute CFM	Gallons per minute (imperial) GPM
1	60	3.6	127.133	13.2
0.017	1	0.06	0.0353	0.22
0.278	16.667	1	0.5886	3.666
0.472	28.317	1.699	1	6.229
0.076	4.546	0.2728	0.1605	1

INGRESS PROTECTION (IP) RATINGS

1st Digit	Definition	Test Requirement	2nd Digit	Definition	Test Requirement
0	No Protection	None	0	No Protection	None
1	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part	>50 mm	1	Dripping water (vertically falling drops) shall have no harmful effect.	Test duration: 10 minutes Water equivalent to 1 mm rainfall per minute
2	Fingers or similar objects	>12.5 mm	2	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.	Test duration: 10 minutes Water equivalent to 3 mm rainfall per minute
3	Tools, thick wires, etc.	>2.5 mm	3	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.	Test duration: 5 minutes Water volume: 0.7 litres per minute Pressure: 50–150 kPa
4	Most wires, slender screws, ants etc.	>1 mm	4	Water splashing against the enclosure from any direction shall have no harmful effect.	Test duration: 5 minutes Water volume: 10 litres per minute Pressure: 50–150 kPa
5	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment.	Dust protected	5	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 12.5 litres per minute Pressure: 30 kPa at distance of 3 m
6	No ingress of dust; complete protection against contact (dust tight)	Dust tight	6	Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 100 litres per minute Pressure: 100 kPa at distance of 3 m
The declared IP rating of a product demonstrates compliance with the standards on this page. Please note the limited time duration of tests below IP68. The suitability of devices with protection level below IP68 for outdoor installation will vary depending on exposure and installed location. Devices and connections installed within tank turrets or in drainage systems (permanent condensing humidity) should be IP68 or higher, the same as for continuous immersion. All submerged devices may be immersed only within the limits stated by the manufacturer.			6K	Water projected in powerful jets (6.3 mm nozzle) against the enclosure from any direction, under elevated pressure, shall have no harmful effects.	Test duration: at least 3 minutes Water volume: 75 litres per minute Pressure: 1000 kPa at distance of 3 m
			7	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).	Test duration: 30 minutes Tested with the lowest point of the enclosure 1000 mm below the surface of the water, or the highest point 150 mm below the surface, whichever is deeper.
			8	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects.	Test duration: continuous immersion in water Depth specified by manufacturer, generally up to 3 m
			9K	Protected against close-range high pressure, high temperature spray downs.	Test duration: - Water volume: 14–16 litres per minute Pressure: [8000–10000 kPa / 80–100 Bar] at distance of 0.1–0.15 m Water temperature: 80 °C

SYSTEM DESIGN NOTES

PRESSURE LOSS IN PIPES

Pipe length, internal diameter, roughness of the pipe surface, number and type of fittings and orifices, and water temperature all cause friction between the flow medium and the pipe itself. The greater the friction, the more pressure is needed to overcome it in order to maintain the intended flow rate.

Precise calculation of friction loss is usually achieved via software, however in most circumstances an estimation of friction loss will suffice. The chart on the next page allows for estimation of friction losses in common pipe diameters. Simply place a ruler so that it intersects the pipe diameter and desired flow rate (the first 2 vertical scales), the flow velocity and pressure loss resulting will now be indicated where they intersect the ruler. You can now multiply the pressure loss in mbar by the length of pipe.

Note – remember to also add 0.1 bar of pressure loss per m of vertical lift. If the pump is drawing water from beneath by suction, this is much harder for a centifugal pump and reduces pump output capacity by roughly 0.5 bar per vertical metre of suction.

Efficiency of Pumps

Automatic pumps are designed to supply pressurised water directly to appliances. Remember that the pump will run at full power until there is no more demand for flow to the outlet. Ideally toilets and header tanks supplied by an automatic pump via a float valve (ballcock) should utilise the more modern diaphragm or 'quick stop' type valves. Old style brass float valves will result in the pump spending most of it's time pumping against an ever decreasing orifice, which is inherently inefficient.

Efficiency and longevity can both be greatly enhanced by the addition of a pressure vessel between the pump and the appliances it is supplying. The larger the vessel the greater the improvement in efficiency.

ELECTRICAL NOTES

Most of our pumps are supplied with a 1mm flex cable, at a length of 10m. If longer cables are to be used attention must be given to the necessary voltage drop calculations, and the correct cable chosen accordingly.

Electrical junctions, isolators, plugs, and fittings within a water tank, well or other wet area must be suitably protected against water ingress, even if non submerged. The humidity and vapour pressure inside a tank turret are constant, and far exceed the conditions faced by ordinary outdoor enclosures.

Float switches are intended to switch electrical loads near the appliance. Switching of loads over long cable runs can can be problematic due the the limited size of the cable supplying most float switches. It is therefore recommended that a relay or contactor be used to switch the load at the point of supply.

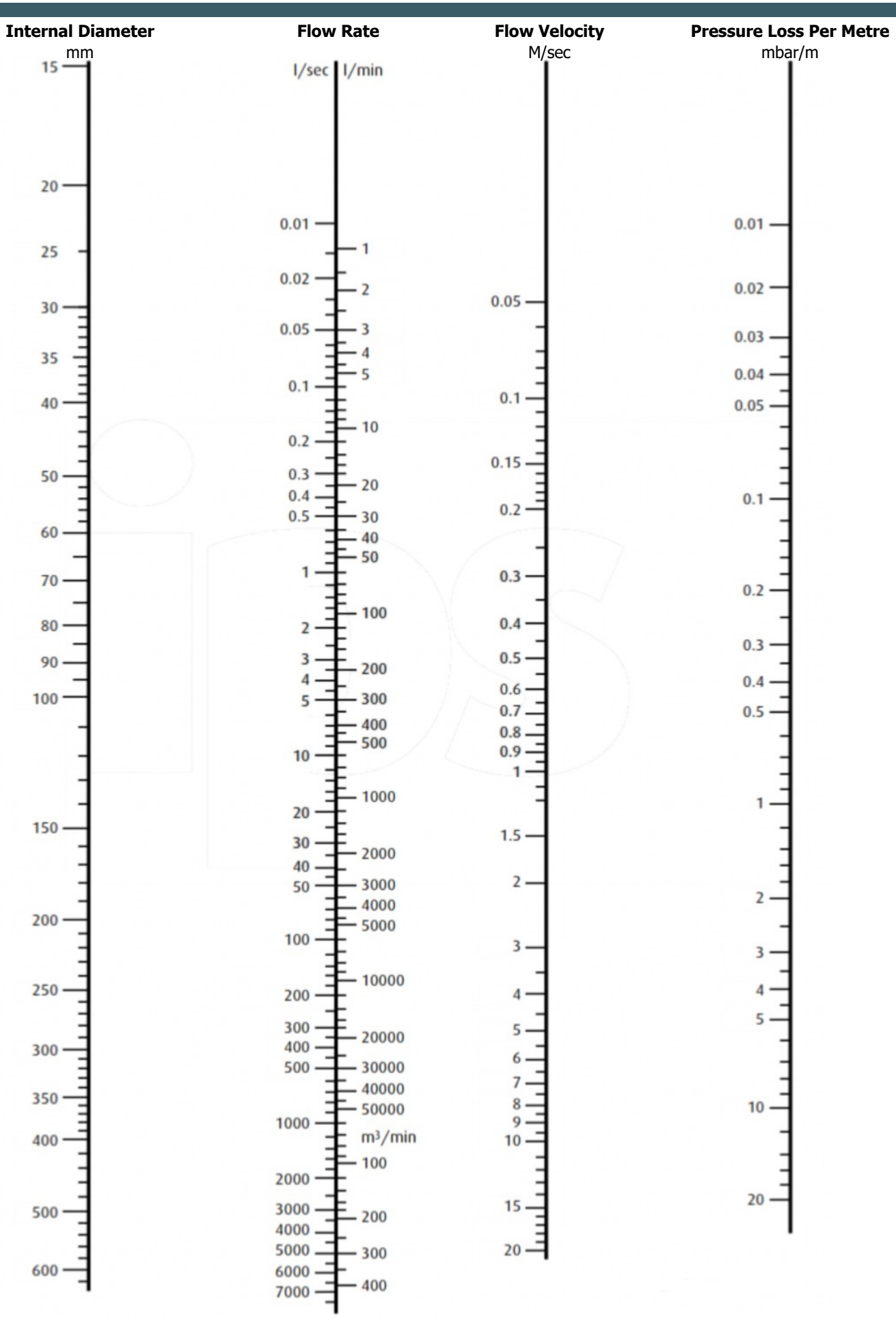
During startup, inrush current often exceeds 5x the rated current draw of the pump, designs for off grid use systems must take this into account. Additionally a typical power factor of 0.9 should be considered.

Incorrect phase rotation of 3 phase pumps will of course result in their running backwards.

Overcurrent and Residual Current Protection should be used to supply any pump system, ideally on a separate circuit. We recommend Type C overcurrent and 30mA residual current protection. An RCD trip is usually indicative of a phase to earth fault. Circuit protective conductors (earth) must be connected and verified throughout any pump installation (submerged plastic tanks are effectively insulated pools, with no natural fault path to ground).

Remember that outdoor tank and pump installations should be inspected with only correctly rated test equipment due to their position outside of the building envelope.

PRESSURE LOSS NOMOGRAM



General Sales Conditions

We recommend that any Controller and its installation should be fully tested after installation and be inspected and tested periodically thereafter.

Terms and Conditions of Trading:

Available on request.

Warranty:

All products are covered by a 12 month limited RTB (Return To Base) warranty against materials and manufacturing defects from the date of purchase.

The warranty does not cover malfunctioning due to a failure to properly install and / or commission the product in accordance with the installation instructions.

The warranty does not cover modification, physical damage or misuse, or operation outside of the products electrical or environmental limits. The warranty is limited to the repair, replacement or cost of replacement of the product at the discretion of 3P Technik UK Limited and does not cover inconvenience or consequential losses.

We do not guarantee continuity of operation of any product under any circumstances. For full details see 3P Technik UK Limited Terms and Conditions.

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