HydroWHIZ PUMP CONTROLLERS

DOL & SOFT START

MATelec Australia's HydroWHIZ Controller has been designed with ease of use at the core of the system design. Building on the wealth of the pump control features in the Advanced controller, the HydroWHIZ brings these features into a new age with a colour touch screen interface and a streamlined setup process. In a world where information is power the HydroWHIZ has extensive time and date stamped alarms, logged data, trend graphs and diagnostic pages to provide the user with all the information required for optimisation and preventative maintenance. Featuring the flexibility of level, pressure and temperature system modes with a wide range of functions and protections, the HydroWHIZ controller is ideal for a vast range of applications including water transfer, stormwater and sewage pump out, pressure boosting, hot water circulation and chiller supply, to name a few.

HARDWARE FEATURES

Enclosure:
• IP56 rated, powder coated mild steel enclosure with inner door and removable gland plate

Protection:
• Pad-lockable mains power isolator switch
• Circuit breaker protected low voltage control and input circuitry
• Individual pump isolation
• Contactor and thermal overload protection of pump motors
• Din rail mounted terminal connections

Control & interface:
• HydroWHIZ colour touch screen HMI (See interface features)
• HydroWHIZ PCB control module
• Visual (strobe) and mutable audible (buzzer) alarms
• Soft starter per pump with adjustable soft start & stop (Soft Start version)

Inputs:
• Single phase (230Vac) or three phase (400Vac) power supply
• Analog 4-20mA input for level, pressure or temperature transducer
• Up to 8x digital 24Vdc inputs for low, stop, start, standby start and high float switches, pressure switches or thermostats, system enable/disable input and a low flow switch
• Thermal switch inputs per pump (three phase only)

Outputs:
• 1-6 pump outputs
• BMS volt free output for common fault
• Analog 0-10V output (mirrors analog input)
• Output for solenoid valve available on request
• Modbus RTU Serial RS485 connections for SCADA

COMMON APPLICATIONS

• Water transfer
• Tank fill
• Sewage pump out
• Stormwater pump out
• Pressure boosting
• Hot water recirculation
• Chiller supply

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FUNCTIONS

- **Multi pump control -** Control of up to 6 pumps in any number of duty, duty assist and standby pump configurations
- **Pump limiting -** For limiting max flow or power requirements
- **Duty sharing and alternation -** Adjustable duty change period and bumpless transfer
- **Pump staging and destaging -** Additional pumps are staged into operation to maintain setpoint and destaged when no longer required
- **Staggered pump start and stop -** Prevents excessive current draw and reduce water surge or hammer
- **Manual control -** Manual modes for system and pumps with 10 minute timeout to revert back to auto mode
- **System types -** Level, pressure or temperature control
- **Control directions -** For emptying or filling a tank, boosting or dropping pressure and heating or cooling temperature
- **Level control mode -** Controlled by 4-20mA hydrostatic level transducer and/or low, duty stop, duty stand, standby starts and high level float switches, submerged in a tank or pit
- **Tank top up valve control -** Tops up tank with mains water when normal inflow of rain or treated water into tank does not keep up with demand (specific to level mode, available upon request)
- **Maintain minimum level -** Ensures minimum tank level is maintained (specific to level mode, empty direction)
- **Pressure control mode -** Controlled by 4-20mA pressure transducer and/or low, duty start, standby starts and high pressure switches
- **Jacking pump control -** Pump 1 will always be the first to wake from sleep and main pumps will start if unable to keep up with demand (specific to pressure mode)
- **Mains bypass valve control -** Switches to mains water to bypass supply tank when pumping system is out of water or in fault condition (specific to pressure mode, available on /RMC variation)
- **Temperature control mode -** Controlled by 4-20mA temperature transducer and/or low, duty start, standby starts and high temperature thermostats
- **Sleep modes -** Sleep can be enabled to allow pumps to sleep when setpoint is reached, or disabled so one pump is always running to circulate water (Specific to temperature mode)

FAULT PROTECTION

- **Protection modes -** Apply to most protections, and include alarm (alarm only), lockout (alarm and pump shut-down) and inhibit (pump shutdown only, no alarm)
- **High and low level, pressure or temperature protection -** Alarm and/or shutdown on high and low level, pressure or temperature depending on the system type, low pressure protection features automatic restart attempts
- **Auxiliary tank level protection -** Pump shut-down on supply low or destination tank full (using system enable input)
- **Pump anti-seize protection -** Runs pumps periodically during low use to prevent seizing
- **Maximum run protection -** Activates after pumps run continuously for 30 mins, protecting the system in the event of a burst pipe, with automatic restart attempts
- **Pump cycle protection -** Activates if system goes to sleep but wakes up within 5 seconds, 10 times in a row, due to a faulty non-return valve or similar fault preventing the system from maintaining pressure
- **No flow protection -** Activates if a pump is running but there is no flow for 30 seconds (if using flow switch instead of low level float), with automatic restart attempts
- **Feedback signal fault protection -** Shuts down all pumps in the event of a transducer failing
- **Pump overload protection -** Shuts down pump/s on overload, with automatic duty alternation
- **Pump thermal switch protection -** For three phase pumps

INTERFACE FEATURES

- Main screen with system status, auto/off/manual modes
- Pump screens with status, logged data and auto/off/manual control
- Alarms screens with mute/reset, date & time stamped historical faults
- Logged data with system event & fault counts, pump starts, run hours
- Analog feedback value trend graph
- Streamlined, user friendly system setup process
- System diagnostics for easy fault finding, factory reset

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HydroWHIZ DOL & SOFT START RANGE

Code	No of Pumps	Phase / Voltage	Overload Rating Options	Soft Starter Rating Options	Enclosure Size
FPC-63141	1	1 Phase / 230Vac	-AA to -E	N/A	400x400x250mm +
FPC-63143	1	3 Phase / 400Vac	-AA to -E	-S4.0 to -S90	400x400x250mm +
FPC-63241	2	1 Phase / 230Vac	-AA to -E	N/A	400x400x250mm +
FPC-63243	2	3 Phase / 400Vac	-AA to -E	-S4.0 to -S90	400x400x250mm +
FPC-63341	3	1 Phase / 230Vac	-AA to -E	N/A	400x400x250mm +
FPC-63343	3	3 Phase / 400Vac	-AA to -E	-S4.0 to -S90	400x400x250mm +
FPC-63441	4	1 Phase / 230Vac	-AA to -E	N/A	500x500x300mm +
FPC-63443	4	3 Phase / 400Vac	-AA to -E	-S4.0 to -S90	500x500x300mm +

Note: Enclosure sizes will increase for soft starters and high overload ratings, and optional additions

Additional panels for up to 6 pumps available

OVERLOAD RATING GUIDE

Code Suffix	Amp Rating
-AA	1.6 - 2.5 Amp
-A	2.5 - 4 Amp
-B	4 - 6 Amp
-BB	5.5 - 8 Amp
-C	7 - 10 Amp
-D	9 - 13 Amp
-E	12 - 18 Amp

Additional overload ratings available on request

For FLCs greater than 18 Amps, soft starters are recommended

SOFT STARTER GUIDE

Code Suffix	kW Rating
-S4.0	4.0 kW
-S5.5	5.5 kW
-S7.5	7.5 kW
-S11	11 kW
-S15	15 kW
-S22	22 kW
-S30	30 kW
-S37	37 kW
-S45	45 kW
-S55	55 kW
-S75	75 kW
-S90	90 kW

Additional kW ratings up to 160kW available on request

ADDITIONAL OPTIONS

- **/BMS -** With BMS volt free outputs for power on, high level, individual pump run, individual pump fault and common fault
- **/SMS -** With ME-Link Module for SMS alarm/status messaging
- **/CS -** With pump current sensing for high or low pump current protection
- **/RMC -** With rain/mains changeover control module and 12Vdc pulse latching solenoid valve
- **/GEN -** With generator input socket and manual changeover switch
- **/ATS -** With automatic generator changeover
- Output for normally closed tank top up valve
- Individual pump RCD protection
- 316 stainless steel enclosure
- Free standing enclosure with plinth
- Separate compartments for power authority meters
- Battery backup high level alarm
- Conductivity relays and probe inputs
- Modbus TCP gateway with ethernet port

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OPTIONAL VARIATION - WITH BMS

Add **/BMS** to standard code, after overload/soft starter rating (Eg - FPC-63X41-B/BMS)
Additional hardware features:
* BMS volt free outputs for power on, high level, individual pump run, individual pump fault and common fault

OPTIONAL VARIATION - WITH RAIN/MAINS CHANGEOVER

Add **/RMC** to standard code, after overload/soft starter rating (Eg - FPC-63X41-B/RMC)
The HydroWHIZ with RMC is designed for pressure pumping applications that require mains bypass, featuring an output for a pulse latching solenoid valve to maintain water supply when the pumping system is off or locked out due to a fault, the supply tank is low or on power failure.
Additional hardware features:
* Rain/mains control module with output for pulse latching mains bypass solenoid valve
* 25mm female/female 12Vdc pulse latching solenoid valve (other sizes available on request)

OPTIONAL VARIATION - WITH ME-Link SMS MODULE

Add **/SMS** to standard code, after overload/soft starter rating (Eg - FPC-63X41-B/SMS)
The HydroWHIZ with SMS features the newly designed ME-Link Module, which is a cellular CAT-M1 remote monitoring and control device utilising the 700Mhz frequency for 'best in class' signal strength. The ME-Link reports status information and active alarms from the HydroWHIZ, and can also be utilised to control external devices with the two onboard relay outputs. The ME-Link uses easy to set up SMS commands to configure the operation and alarms without the need for any additional software.

Additional functions:
* SMS messaging for high level, common fault, common pump fault and power/battery status, and from up to 2 additional digital inputs
* Easily programming with SMS commands
* Up to 10 phone numbers can receive messages
* Smart help responses on incorrect commands
* Once, repeat or sequential notification messaging
* Repeat or sequential messaging until user accepted
* Daily reminder messages for active alarms
* Remote control of system and or devices via the 2 relay outputs
* Periodic test messages to ensure ME-Link is connected and operating
* Temporary disabling of notifications for site servicing
* Logged data for 'last alarm', 'acknowledgment time and number'

Additional hardware features:
* ME-Link SMS Module (requires micro SIM card from CAT-M1 enabled network provider)
* Vandal resistant antenna (remote mount high gain antenna also available for low signal strength areas)
* Battery for backup to ME-Link on mains power failure
* 2x Additional 12Vdc inputs on ME-Link Module
* 2x Relay outputs on ME-Link module

OPTIONAL VARIATION - WITH CURRENT SENSING

Add **-CS** to standard code, and do not add overload rating (Eg - FPC-63X41-CS). Overload and current sensor rating will be chosen when ordering.
The Current Sensing variation of the HydroWHIZ utilises a current sensor to detect small variations in the pump running current, which can be used for pump protection or pump control. Ideal for high pressure sewer applications using positive displacement pumps, the high current protection shuts down the pump or system if current rises due to a blockage or excessive demand. For centrifugal pumps, the max run protection feature is better suited. Ideal for dewatering and bore pumping applications, where level switches/sensors may not be used, the low current/snore protection shuts down the pump or system on low current due to pumps running dry. These protections feature automatic restarts, with random delay periods to prevent multiple pumps from restarting simultaneously.
Additional hardware features:
* Current sensor for monitoring pump running amps
Additional functions:
* **High current protection -** Inhibits the running pump or entire system in the event of high current, with 5 automatic restart attempts after a random time period of 30 seconds to 30 minutes, before locking out the pump or system.
* **Snore protection -** Inhibits the running pump or entire system in the event of low pump current, with 5 automatic restart attempts after a random time period of 30 seconds to 30 minutes, before locking out the pump or system.
Note - The analog input for transducer, top up valve function not available on CS version