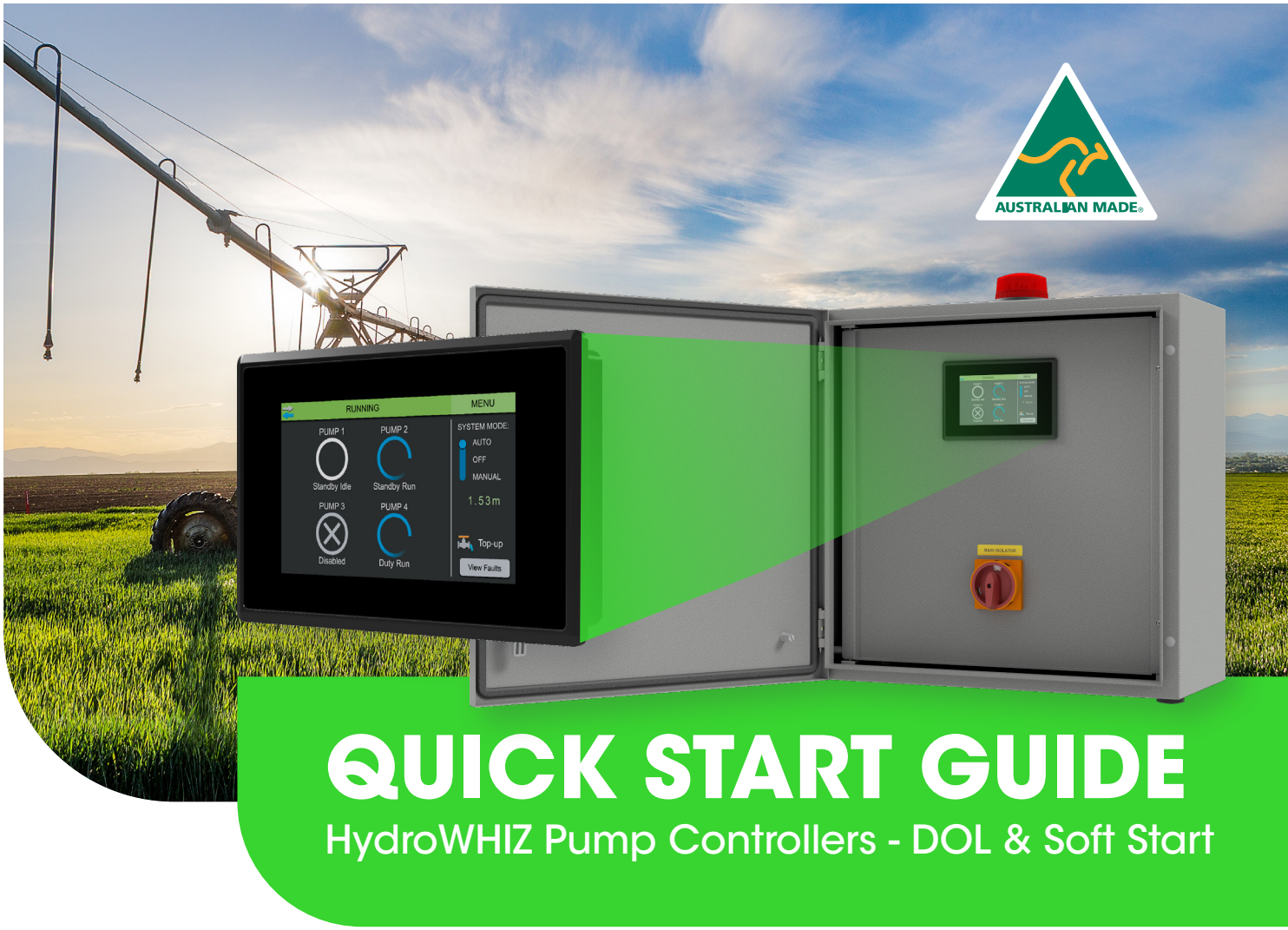
HydroWHIZ MULTIPUMP CONTROLLER

MATelec AUSTRALIA



QUICK START GUIDE

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 color 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 wide range of applications including water transfer, stormwater and sewage pump out, pressure boosting, hot water circulation and chiller supply, to name a few.

SAFETY

This control panel has been designed and built for applications that are Commercial and/or Industrial in nature, operation, function and location. If the control panel is to be used in Domestic/Residential applications, where specific Wiring Rules in respect of 'electrical supply' protection may apply, it is the responsibility of the installing electrician to ensure compliance with relevant standards.

- Prior to installation, ensure power supply is isolated.
- Power supply must be circuit breaker protected (qualified electrician to determine appropriate amp rating).
- Electrical connection to the panel must be carried out in accordance with the following pages.
- Additions or modifications to the control panel are not permitted and will void warranty.
- The controller is not intended for use by children or infirm persons without supervision.
- Repairs to the controller must only be carried out by a suitably qualified electrician.

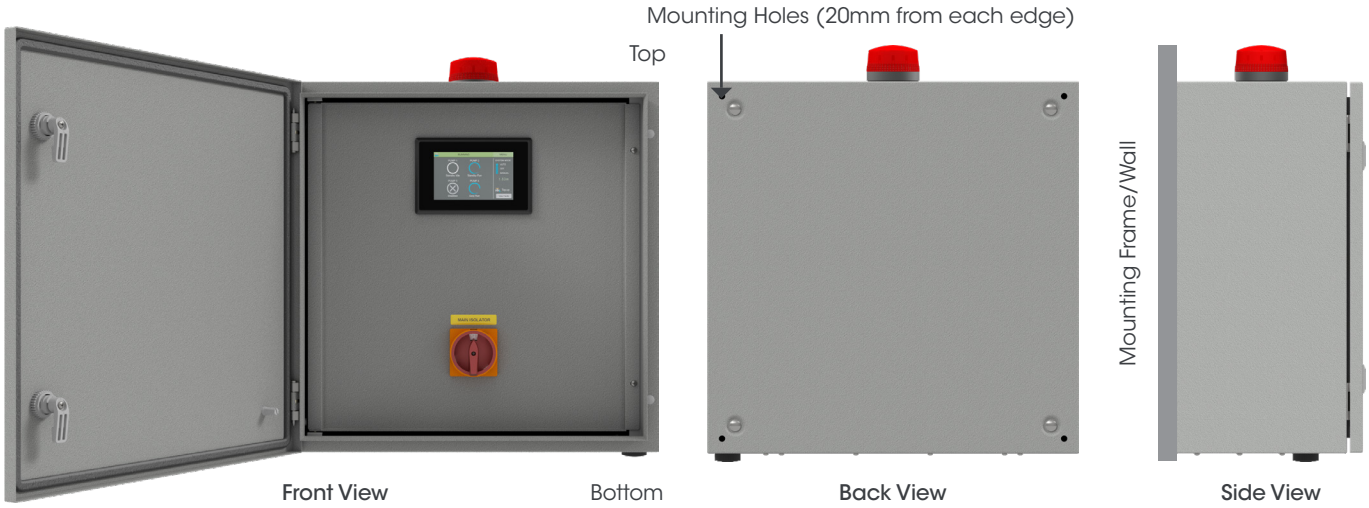
This quick start guide makes use of the following symbols to indicate warnings that must be paid specific attention to:

Damage to equipment or personal harm may occur if this instruction is not followed

Electrical risk (electrocution hazard) may occur if this instruction is not followed

INSTALLATION

- Controller enclosure must be mounted in a vertical position.
- Ensure mounting method does not compromise enclosure weatherproof rating.
- Ensure access to main isolator is not restricted.
- Ensure cables/conduits entering the panel have mechanical protection and that the penetrations are sealed and do not compromise the weatherproof rating of the enclosure.
- If required, install buzzer through hole on underside of enclosure and tighten lock ring.



CONNECTIONS

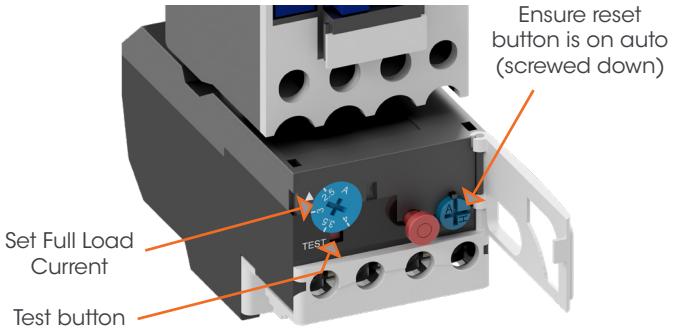
Warning: All electrical connections must be carried out by a suitably qualified and registered electrician

Follow the relevant controller's **Inner Door Label** on the inside of the enclosure door for power, pump and sensor connections to the din rail mount terminals.

THERMAL OVERLOAD SETUP

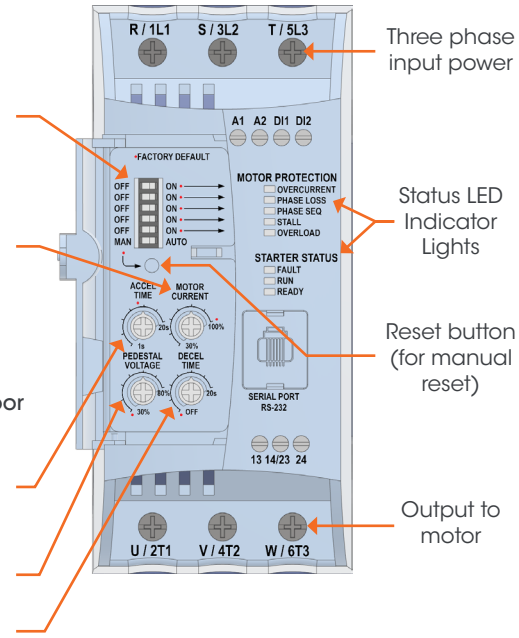
- Ensure power is isolated before opening the enclosure to set the thermal overloads.
- The full load current (FLC) is written on the name plate of the pump and is required to be set on the thermal overload for the pump or motor's protection. If this value is set too high then there is potential that the pumps may be damaged. If set too low the pump will go into fault prematurely during normal operation.
- The auto reset button should be left in auto (screwed down) so that the controller can latch and reset the faults from the HMI screen without the need to access the live parts.

	THREE PHASE		
CAT.NO.	JM3550		
SPEC.	35F84W7		
FRAME	56J	SER.	F1295
H.P.	1 1/2T		E
VOLTS	208-230/460		
AMPS	7.6/2.3		
HZ	50		



SOFT STARTER SETUP (WEG SSW05)

The soft starter is rated for 10 starts per hour with 6s acceleration time, 4x FLC at 40°C. Care must be taken to limit pump starts to within the manufacturer's specification. Going beyond these limits will reduce the acceptable number of starts per hour.



- **Setting the protection dipswitches -** The soft starter protections are not required, because an external overload is in use to protect the pump motors. All dipswitches should be left in the OFF position to ensure that the soft starter is only providing soft start and stop. If turned on, the protections may cause nuicance tripping and pump faults.
- **Setting the Motor Current -** Although an external overload is in use it is recommended to set this correctly. This value is a ratio of the soft starter max current and the driven motor full load current. The soft starter max current should be written on the access door. If not, check the sticker on the side of the soft starter.

  Calculation example:

  Soft starter max current: 30A, motor FLC: 25A

  $I_{motor} / I_{soft\ starter}$ = 25A/30A = 0.833, x100 = 83.3%

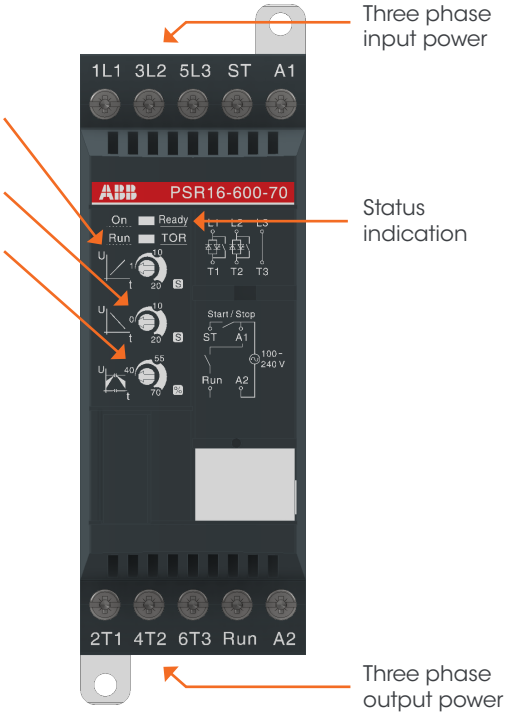
  Motor current setting = 88% (set approx 5% above actual value).

Max SS Amps on Access door

- **Setting the Acceleration Ramp Time -** Set the acceleration ramp time for the motor to reach full speed. Exceeding 6 seconds will reduce the acceptable number of starts per hour.
- **Setting the Stating/Pedestal Voltage -** For high starting current motors, set the starting/pedestal voltage high enough to get motor rotation started.
- **Setting the Deceleration Ramp -** If required, adjust deceleration to reduce water hammer. This will reduce the acceptable number of starts per hour.

SOFT STARTER SETUP (ABB PSR)

The soft starter is rated for 10 starts per hour with 6s acceleration time, 4x FLC at 40°C. Care must be taken to limit pump starts to within the manufacturer's specification. Going beyond these limits will reduce the acceptable number of starts per hour.



- **Setting the Start Ramp Time -** Set the acceleration ramp time for the motor to reach full speed. Exceeding 6 seconds will reduce the acceptable number of starts per hour.
- **Setting the Stop Ramp Time -** If required, adjust deceleration to reduce water hammer. This will reduce the acceptable number of starts per hour.
- **Setting the Initial Voltage -** For high starting current motors, set the initial voltage high enough to get motor rotation started.

POWERUP

When safe to do so, switch on electrical supply to panel. Check correct supply voltage before turning on the main isolator.

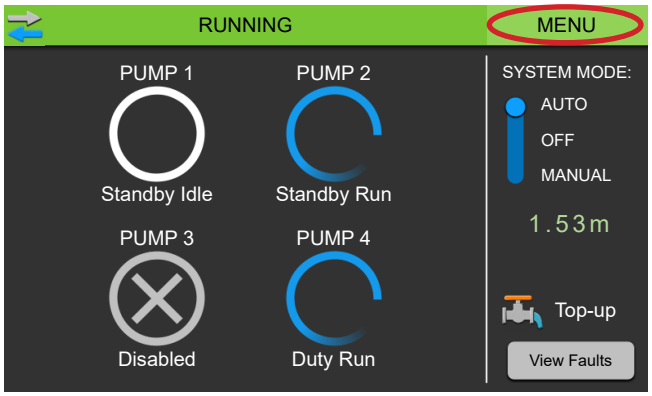
HydroWHIZ MULTIPUMP CONTROLLER

ATelec AUSTRALIA

SETUP

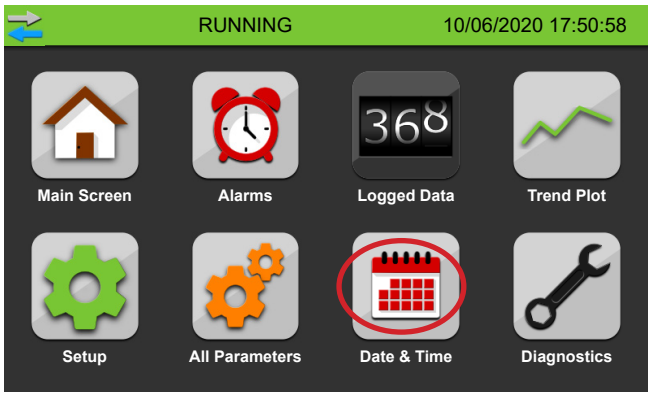
1 - MAIN SCREEN

The Main screen is the default screen on the HydroWHIZ HMI. Tap on the Menu button to access the Menu screen.



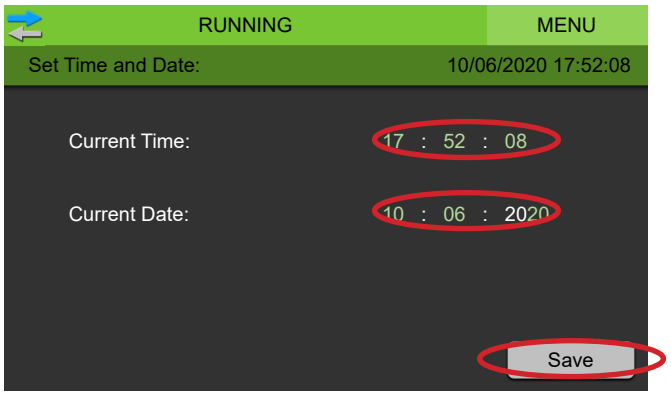
2 - MENU SCREEN

The Menu screen provides access to other screens within the HydroWHIZ HMI. Tap on the Date & Time icon to configure the controller's current date and time.



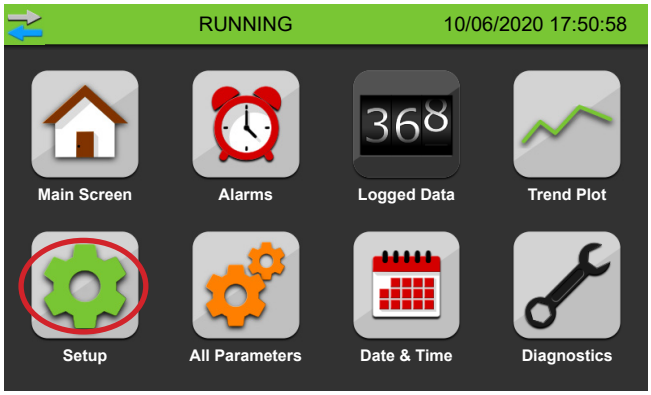
3 - SET DATE & TIME

Tap on the date and time to configure them, then press save to apply to the controller. This will automatically return to menu.



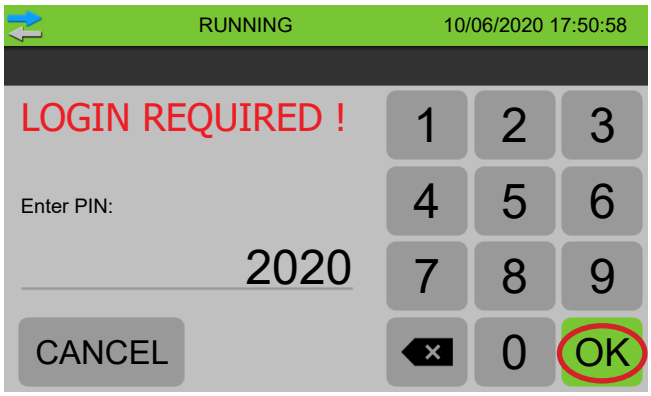
4 - MENU SCREEN

Tap on the Setup icon on the Menu screen to access begin the controller Setup process. This will bring up the Login screen.



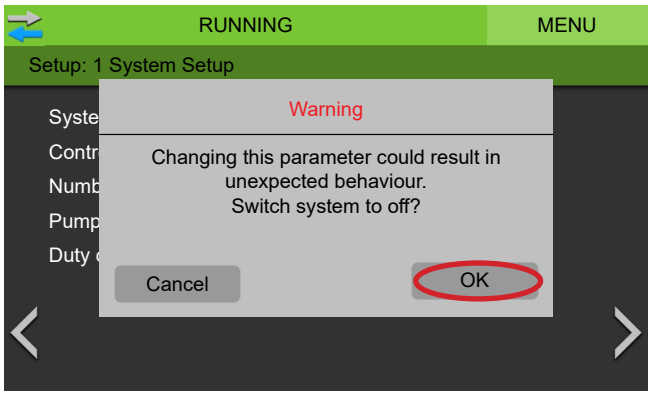
5 - LOGIN

Login is required to access the Setup screen. Enter the default PIN (2020) then press OK to login in and continue to the Setup screen.



6 - WARNING

If the system mode is in auto, tapping on a setting will bring up a Warning screen. Press OK to turn the system off for configuration.



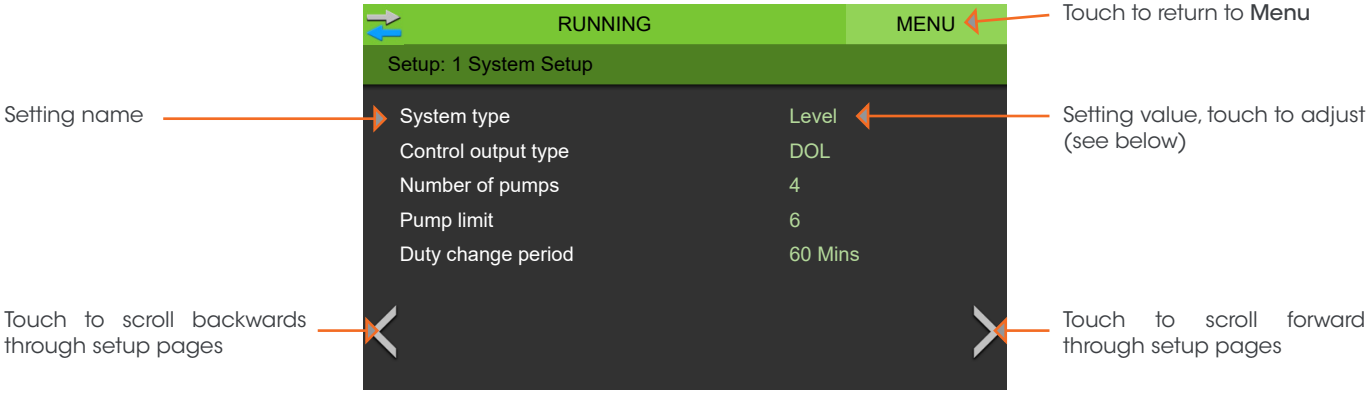
SETUP

The Setup Screen is where the controller is configured for operation. To access the Setup from the Main screen, tap on the menu in the top-right corner, then tap the Setup icon. Login is required to access this screen.

If the system mode is in auto, tapping on a setting will bring up a warning screen. Press OK to turn the system off to prevent any unexpected behaviour while the system is configured.

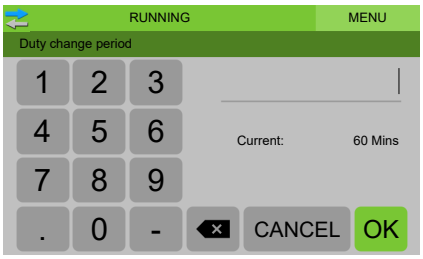
After the setup is complete the system mode needs to be changed back to auto on the main screen.

SETUP SCREEN OPERATION



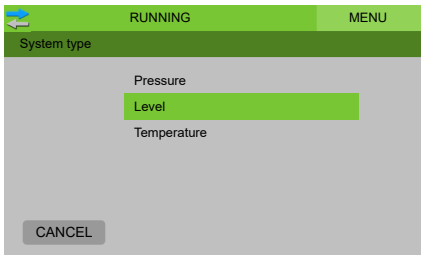
Setting Adjustment - Value

If a value setting, such as *Duty change period*, is pressed on, the keyboard screen will appear and the desired value can be entered or the process cancelled.



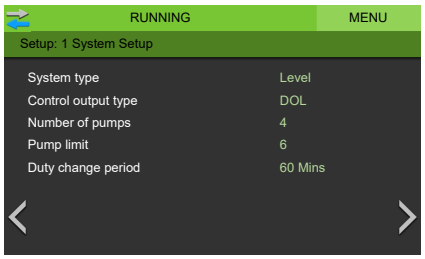
Setting Adjustment - Selection

If a selection setting, such as *System type*, is pressed on, a drop down list of all the available options for the setting will appear and the desired option can be selected or the process cancelled.



7 - SYSTEM SETUP

The main setup for the system and pump control method.

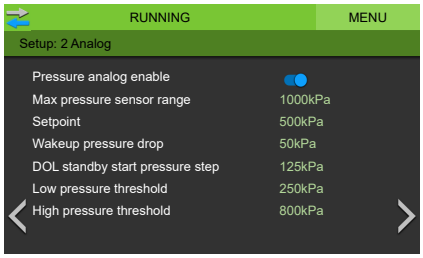


System type	Sets default system settings for the pressure, level or temperature system types.
Control output type	Sets default system settings for the DOL, Soft start or VSD controlled pumps. This setting is factory set and does not require adjustment.
Number of pumps	Total number of pumps connected which configures the display and pump selection. This setting is factory set and does not require adjustment.
Pump limit	Maximum number pumps to be running at the same time. Used to limit max flow or max power requirements.
Duty change period	Duty pump running time before initiating a duty change to the next pump.

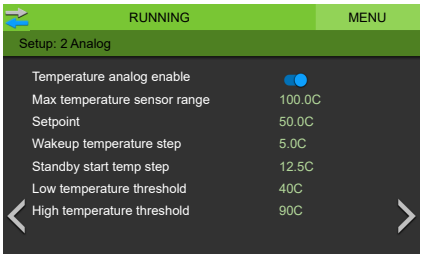
8 - ANALOG

The analog setup if using the analog input for a transducer. If the analog input is not required, ensure it is disabled and skip this page.

Level Control



Pressure Control



Temperature Control

Level

Level analog enable	If enabled the analog input will be used in conjunction with the digital inputs for level control and alarms.
Max level sensor range	The maximum range of the analog level sensor used.
Setpoint stop level	Target *Setpoint stop level* to be reached by the system.
Wakeup level step	The analog level step from the *setpoint stop level* before the system will wake from sleep and start the duty pump. For example, in a level empty application, if the *setpoint stop level* = 0.5m and *wakeup level step* = 0.2m, the duty pump will start at 0.5m + 0.2m = 0.7m.
Standby start level step	The analog level steps from the *wakeup level step* at which the standby pumps start. Following on from the above example, if the *standby start level step* = 0.5m, the 1st standby pump will start at 0.5m + 0.2m + 0.5m = 1.2m. The 2nd standby pump will start after another 0.5m step, therefore at 1.7m, and so on for any additional standby pumps.
Low level threshold	When the analog goes below this threshold for 3 seconds the *Low level protection* will be activated.
High level threshold	When the analog goes above this threshold for 3 seconds the *High level protection* will be activated.

Pressure

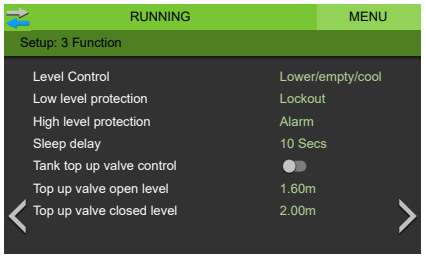
Pressure analog enable	If enabled the analog input will be used as well as the digital inputs for the pressure control and alarms.
Max pressure sensor range	The maximum range of the analog pressure sensor used.
Setpoint	Target *Setpoint* to be reached by the system.
Wakeup pressure drop	The analog pressure step below the *setpoint* before the system will wake from sleep and start the duty pump. For example, if the *setpoint* = 500kPa and the *wakeup pressure drop* = 50kPa, the duty pump will start at 500kPa - 50kPa = 450kPa.
DOL Standby start pressure step	The analog pressure steps below the *Wakeup pressure drop* at which the standby pumps start. Following on from the above example, if the *DOL standby start pressure step* = 100kPa, the 1st standby pump will start at 500kPa - 50kPa - 100kPa = 350kPa. The 2nd standby pump will start after another 100kPa drop, therefore at 250kPa.
Low pressure threshold	While a pump is running if the analog goes below this threshold for 30 seconds the *Low pressure protection* will be activated.
High pressure threshold	When the analog goes above this threshold for 3 seconds the *High pressure protection* will be activated.

Temperature

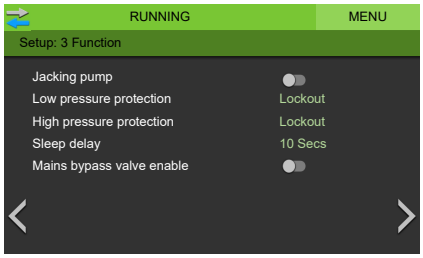
Temperature analog enable	If enabled the analog input will be used in conjunction with the digital inputs for the temperature control and alarms.
Max temperature sensor range	The maximum range of the analog level sensor used.
Setpoint	Target *Setpoint* to be reached by the system.
Wakeup temperature step	The analog temperature step from the *Setpoint* before the system will wake from sleep and start the duty pump.
Standby start temp step	The analog temperature steps from the *Wakeup temperature step* at which the standby pumps start.
Low temperature threshold	When the analog goes below this threshold for 3 seconds the *Low temperature protection* will be activated.
High temperature threshold	When the analog goes above this threshold for 3 seconds the *High temperature protection* will be activated.

9 - FUNCTION

The functional setup for the system.



Level Control



Pressure Control

Temperature Control

Level

Level control	Sets the control direction for the corresponding *System type*. Level = empty/fill
Low level protection	Alarm = Triggers alarm only, Lockout = Triggers an alarm and shuts down the pumps, Inhibit = Shuts down the pumps only. All modes will auto reset when condition clears.
High level protection	Alarm = Triggers alarm only, Lockout = Triggers an alarm and shuts down the pumps, Inhibit = Shuts down the pumps only. All modes will auto reset when condition clears.
Sleep delay	The delay once the analog *Setpoint* is reached and all pump start inputs are open before the pumps will go to sleep.
Tank top up valve enable	If enabled the valve output will be used for a normally closed tank top up valve using the *Tank top up valve open level* and *Tank top up valve closed level*. **Note -** This feature is available upon request. Not available on the CS version of the HydroWHIZ.
Top up valve open level	The analog level at which the valve output will be energised to open the valve. Must be below the *Tank top up valve closed level*.
Top up valve closed level	The analog level at which the valve output will be de-energised to close the valve. Must be above the *Tank top up valve open level*.

Pressure

Jacking pump	If enabled jacking pump 1 will always be the first to wake from sleep. When it can't keep up with demand, one of the main pumps will start and the jacking pump will switch off after 10 seconds.
Low pressure protection	Alarm = Triggers alarm only, Lockout = Triggers an alarm and shuts down the pumps, Inhibit = Shuts down the pumps only and waits 60 seconds before auto restart. 5 failed restarts will active a lockout.
High pressure protection	Alarm = Triggers alarm only, Lockout = Triggers an alarm and shuts down the pumps, Inhibit = Shuts down the pumps only. All modes will auto reset when condition clears.
Sleep delay	The delay once the analog *Setpoint* is reached and/or all pump start inputs are open before the pumps will go to sleep.
Mains bypass valve enable	If enabled, the valve output will be used for a normally open mains bypass valve, energising it shut during normal operation and de-energising the valve open on digital low level, system off, disabled or lockout. **Note -** This feature is available as standard on the HydroWHIZ RMC version.

Temperature

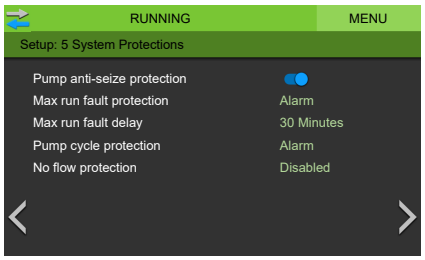
Temperature control	Sets the control direction for the corresponding *System type*. Temperature = cool/heat
Low temperature protection	Alarm = Triggers alarm only, Lockout = Triggers an alarm and shuts down the pumps, Inhibit = Shuts down the pumps only. All modes will auto reset when condition clears.
High temperature protection	Alarm = Triggers alarm only, Lockout = Triggers an alarm and shuts down the pumps, Inhibit = Shuts down the pumps only. All modes will auto reset when condition clears.
Sleep mode	None = System won't sleep, always at least 1 pump running, Setpoint based = System will go to sleep after the *sleep delay* when the analog *Setpoint* has been reached and/or all digital start inputs are open. Speed based = Not applicable in temperature operation.
Sleep delay	If *Sleep mode* = Setpoint based, this is the delay once the analog *Setpoint* is reached and/or all pump start inputs are open before the pumps will go to sleep.

10 - VSD

VSD setup is not required for DOL or Soft Start controllers.

11 - SYSTEM PROTECTIONS

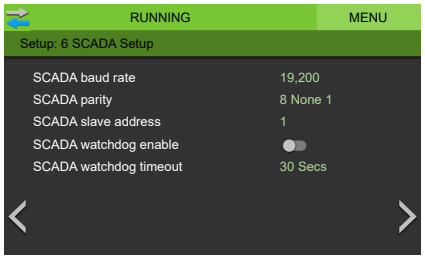
The optional additional system protections.



Pump anti-seize protection	If any pump has not run for 7 days, the pump will be run for 5 seconds to prevent seizing, as long as the system mode is in sleep, disabled or inhibit.
Max run fault protection	Alarm = Alarm only if a pump runs continuously for the *max run fault delay*. Pump = If a pump runs continuously for the *Max run fault delay* then the pump will inhibited, with 5 restart attempts before locking out the pump. System = If all available pumps are running continuously for the *Max run fault delay* then the system will be inhibited, with 5 restart attempts before locking out the system.
Max run fault delay	The delay period that the pumps run continuously for, before the *Max run fault protection* is activated.
Pump cycle protection	If the system goes to sleep but wakes up within 5 seconds 10 times within an hour, the fault will be activated. Alarm = Alarm only, Lockout = Alarm and pump shut down.
No flow protection	Alarm = Alarm only if a pump runs with no flow for 30 seconds. Pump = If a pump runs with no flow for 30 seconds then it will be inhibited and another pump brought into operation. System = If a pump runs with no flow for 30 seconds then the system will be inhibited. The controller will attempt to restart the inhibited pump or system after a 30 minute delay. If 5 consecutive restarts fail to achieve flow the pump or system will be locked out. **Note -** This function uses a 'close on flow' flow switch connected to the low level alarm input instead of a low level float switch.

12 - SCADA SETUP

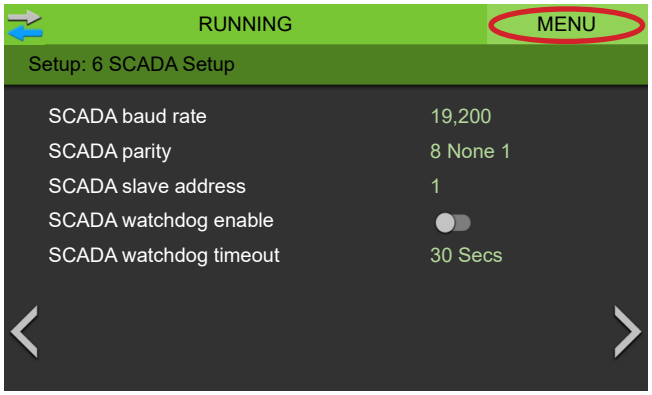
The SCADA setup for remote monitoring and control over the Modbus RS485 connection.



SCADA baud rate	The speed of the modbus communications.
SCADA parity	The bit format of the modbus packets.
SCADA slave address	The slave ID of the device. Each device on the one serial link must have a different device number.
SCADA watchdog enable	If enabled modbus register 3817 must be successful written =1 less than every *SCADA watchdog period* otherwise a SCADA watchdog alarm will be activated and the pumps shutdown. This is used as a 'Keep alive' function.
SCADA watchdog period	The delay after the last successful modbus command before the SCADA watchdog alarm would be activated.

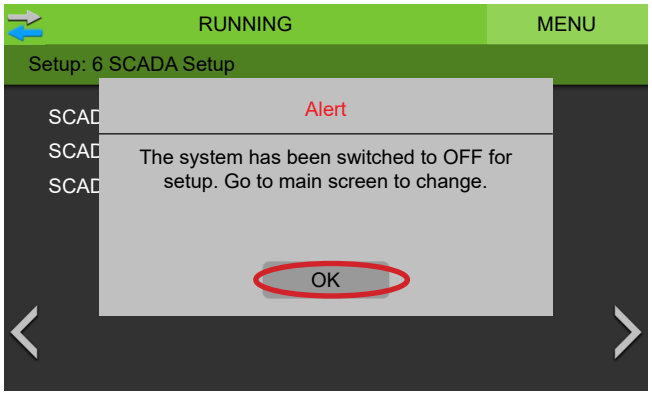
13 - RETURN TO MENU

Once all the Setup screens have been completed, tap to return to the Menu screen.



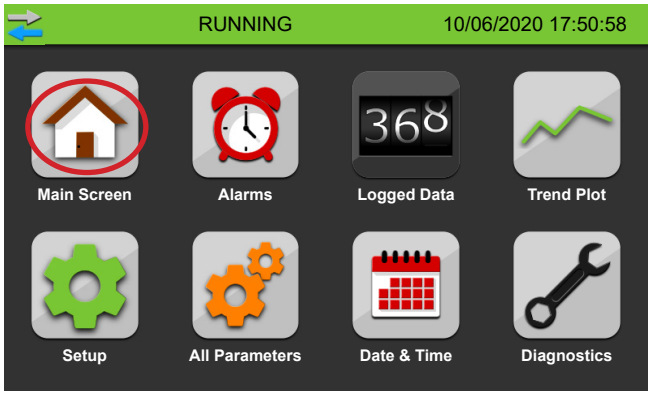
14 - WARNING

After pressing on Menu, a warning screen will appear stating that the system must be placed back in auto mode. Press OK to continue to Menu.



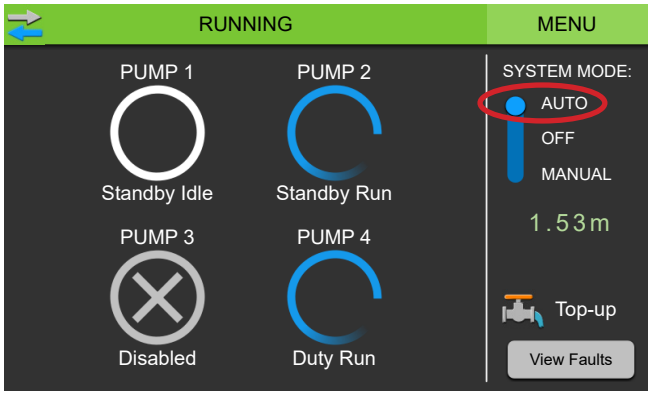
15 - MENU

Once back on the Menu screen tap on the Main screen icon, where the System Mode needs to be changed.



16 - MAIN SCREEN

Once back on the Main screen, change the System Mode to Auto by tapping on the toggle. The controller will now begin normal operation.



QUICK START COMPLETE

The controller is now configured and has begun operation. For more information on the operation of the HydroWHIZ DOL controller see the **HydroWHIZ DOL Operation Manual.**

HydroWHIZ MULTIPUMP CONTROLLER

ATelec AUSTRALIA

USER SETTING

Setting	User Value	Setting	User Value	Setting	User Value
1 - System Setup					
System type					
Control output type					
Number of pumps					
Pump limit					
Duty change period					
2 - Analog					
Level		**Pressure**		**Temperature**	
Level analog enable		Pressure analog enable		Temperature analog enable	
Max level sensor range		Max level sensor range		Max temperature sensor range	
Setpoint		Setpoint		Setpoint	
Wakeup level step		Wakeup pressure drop		Wakeup temperature step	
Standby start level step		DOL Standby start pressure step		Standby start temp step	
Low level threshold		Low pressure threshold		Low temperature threshold	
High level threshold		High pressure threshold		High temperature threshold	
3 - Function					
Level		Pressure		Temperature	
Level control		Jacking pump		Temperature control	
Low level protection		Low pressure protection		Low temperature protection	
High level protection		High pressure protection		High temperature protection	
Sleep delay		Sleep delay		Sleep mode	
Tank top up valve enable		Mains bypass valve enable		Sleep delay	
Top up valve open level					
Top up valve closed level					
5 - System Protections					
Pump anti-seize protection					
Max run fault protection					
Max run fault delay					
Pump cycle protection					
No flow protection					
6 - SCADA					
SCADA baud rate					
SCADA parity					
SCADA slave address					
SCADA watchdog enable					
SCADA watchdog period					