Wireless Water Level Monitoring

USER MANUAL

Features

The most advanced and accurate wireless water level monitoring system available.

- Up to 9 tank monitoring from one Display Unit
- Full colour, high resolution, super bright 2.8" touchscreen display
- Ultra long range wireless connectivity with upgrade options for even greater performance
- Extremely easy to operate and install
- Wall Mount or Desktop Touchscreen Display options for full flexibility
- "One Glance" Display unit graphics designed for the ultimate in simple, user friendly operation
- "Time to Empty" indication based on your actual water usage. Just like a trip computer in your car, the system will tell you how long you have until your tank water supply will run out!
- The system will learn and memorise your household/commercial water usage and assist you with the smart and efficient management of your water
- "ALERT" features for low days remaining and low tank level
- "ALERT" feature for abnormal usage warns of system leaks or any unusual water usage detected. The system will alert you if a water source/outlet has been left running or there is a system leak within only 4 hours!
- Different fluids such as Molasses and Urea can be monitored by simply setting the Specific Gravity (SG) of the fluid you are measuring
- Wireless Pump Controller available with user settable run period (on/off) and automatic stop feature

- Solar powered Tank Unit means minimal maintenance and zero ongoing running cost (AC mains powered Tank Unit also available for sites such as underground tanks)
- Filter replacement timer with onscreen filter replacement alert
- Wireless reception strength indicator
- Automatic system calibration of "full tank" (100%) level
- The system can be customised easily to different types of water tanks, including setting an offset for the position of the water outlet on your tank!
- On screen graphic display feature showing tank level trends over the preceding 30 days
- High quality construction including marine grade (316) Stainless Steel sensor and ultra-high UV resistant plastic
- One year full replacement warranty

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Contents

Congratulations on purchasing the world's most advanced wireless water monitoring system. The system will revolutionise the way you use water and will provide a stylish yet functional addition to your home or farm.

The system is perfect for both domestic households and rugged farm or industrial applications and has been designed to withstand the harshest environments. The product is made from the highest quality materials and is sold to you with a one year full replacement warranty. This system represents world leading innovation and design and the product is proudly manufactured in New Zealand.

The water monitoring system takes another huge step forward in fluid management technology. The system boasts unmatched wireless performance to easily conquer even the toughest of installations. Nine separate tanks can be accurately monitored through only one Display Unit and different fluids such as Urea and Molasses can be measured.

Please take the time to read through this manual carefully. The correct installation of the product is essential and will ensure maximum performance and reliable long term operation.

This system will always provide you with basic tank level information, but the system does have the capability to support more advanced applications. These include an estimated "Time to Empty" indication, historical usage feature, wireless pump control and a series of alerts, including if the system detects a leak or any abnormal usage. These features will allow you to change and manage your water usage to become more economical and maximise your efficiency. If coupled with the Wireless Pump Controller, the system can provide a complete solution to your water management requirements.

Enjoy our product and enjoy the peace of mind that the wireless water monitoring system will provide.

Installation Instructions

The Wireless Water Monitoring System is very simple to install. It is important that the instructions are followed in sequence step by step as illustrated below to guarantee the correct function of the product. Not following these instructions could cause the product to function incorrectly.

Step 1:

Plug the sensor cable into the Tank Unit. The sensor cable should be locked into position by turning the "thumb lock" on the connector body. Turn the connector thumb lock clockwise until it clicks firmly into the locked position. It is important that the connector is locked as this provides the required weather proofing.

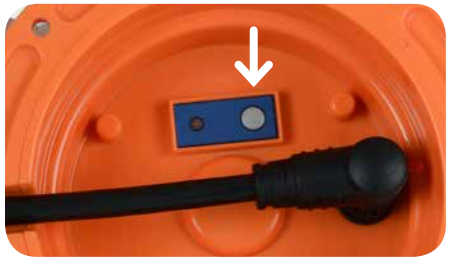
The Display Unit should now be "powered up". Plug in the Desktop Display Unit power adaptor to an AC mains power supply and connect the cable to the rear of the unit. If you have a Wall Mount version, wire/terminate the Wall Mount Display Unit power adaptor to an AC mains power supply. It is recommended that the Wall Mount Display power supply is installed by a certified electrician. The Desktop Display Unit can be plugged directly into any NZ/AUST/USA/CAN standard power outlet.

Desktop version only: If you have purchased a Desktop Display Unit; attach the supplied antenna onto the gold antenna connector by screwing it until finger tight. The antenna connector has a gold plated thread and is located next to the Micro-USB connector on the Desktop Display Unit.

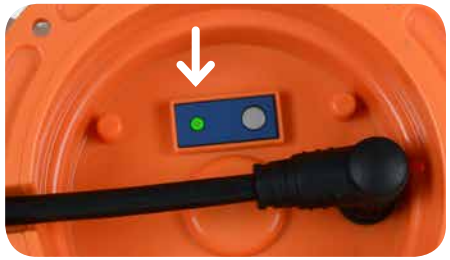
Desktop Display Unit

Wall Mount Display Unit

After the Display Unit "powers up" it will automatically show the **TANK -> ADD** menu on the screen. If this screen is not shown it can also be accessed manually by pressing the **MENU** button on the main screen and then **TANK -> ADD**



Confirm the display screen is showing **"Waiting"**, then press and hold the circular push button on the bottom of the Tank Unit as shown below. Once the LED light next to the button is illuminated **GREEN**, release the Tank Unit button:



When the Tank Unit is successfully connected to the system, the LED light next to the button will illuminate **GREEN** for 3 seconds, the LCD module will beep and the message **"Tank Added"** will be displayed on the Display Unit:

If additional **Tank Units** need to be connected to the system (the system can monitor up to nine different tanks) repeat the above procedure prior to proceeding to Step 2.

Your Tank Unit is now connected to the system. **Do not** put the sensor in your tank, please proceed to **Step 2** to continue the installation process.

Step 2:

The system initially needs to know the approximate height of your water tank before installation. Set the tank height of your water tank through the MENU screen. After touching the **MENU** button on the main screen, go to the **TANK -> SETTINGS -> HEIGHT** menu.

TANK -> SETTINGS -> HEIGHT

The system has a default tank height of 2.4 metres. This can be customised to your exact tank height through this menu. Once your tank becomes 100% full the system will automatically calibrate to a revised 100% level (maximum tank level) for your actual tank height. If the tank height menu is re-visited the height shown will reflect the highest water level that your tank has ever reached. This may not be the number you initially entered, however this is normal operation and a good sign that the system is operating accurately and displaying a true 100% (tank full) level.

Installation Instructions

If the tank height has changed do not change it back to the original setting entered during installation. When the tank height is changed manually, touch the up/down buttons for customized setting, Touch and hold down the up/down button for faster setting.

RECOMMENDED PROCEDURE: Gallagher strongly recommends physically measuring your tank height. The correct height to measure is the height from the base of the water tank to the overflow outlet. Once this height is known, reduce by around 20cm and enter the figure into the **TANK -> SETTINGS -> HEIGHT** menu screen. For example if your tank is 2.2m high, enter 2.0m into the **TANK -> SETTINGS -> HEIGHT** screen. If the exact height is not known, enter an approximate height which is on the lower side of the approximation, this will allow the system to calibrate more accurately.

CAUTION: If the tank height is set incorrectly it is possible that the system will not perform accurately. Gallagher strongly recommends that the tank height be set slightly lower than the actual height of your tank. The system will then automatically calibrate to a precise 100% level when your tank fills to its maximum level. This technique will provide the most accurate ongoing performance.

Step 3:

Take the Tank Unit and the sensor cable to your tank and lower the Level Sensor to the bottom. Please ensure that the sensor is located at the very base of the tank and away from the water outflow (draw-off position) on your tank.

Level Sensor Sensor Cable Bending Technique

RECOMMENDED PROCEDURE: If the sensor cable is required to exit beneath the Tank Unit at 90 degrees (directly underneath the module), manually bend/shape the cable prior to connecting the sensor cable to the Tank Unit. If the cable is bent/shaped once connected to the tank module the waterproof connector may be damaged. Refer to the photograph above for the correct technique.

RECOMMENDED PROCEDURE: Gallagher recommends to physically position the sensor away from the main outflow pipe. This step is not essential however will result in optimum system performance.

The Tank Unit should be positioned on top of the tank for maximum exposure to sunlight. This will assist in ensuring the Tank Unit battery remains healthy and sufficiently charged. This is not required if you have purchased an AC mains powered Tank Unit (for underground type tanks).

Included with the system are four 10mm x 25mm stainless steel screws. These are used to mount the Tank Unit to the top of your tank. The Tank Unit does not need to be screwed to your tank but Gallagher recommends this as part of a good installation. Glue can be used as an alternative for fixing the Tank Unit to the tank. If using glue DO NOT cover up the venting grooves (refer to recommended procedure below).

Attach the black Multi Directional antenna to the top of the Tank Unit. The antenna should be gently screwed into position on the gold threaded connector located on the top of the Tank Unit (next to the solar panel). Tighten the antenna until it is finger tight, there is no requirement to over-tighten the antenna nut.

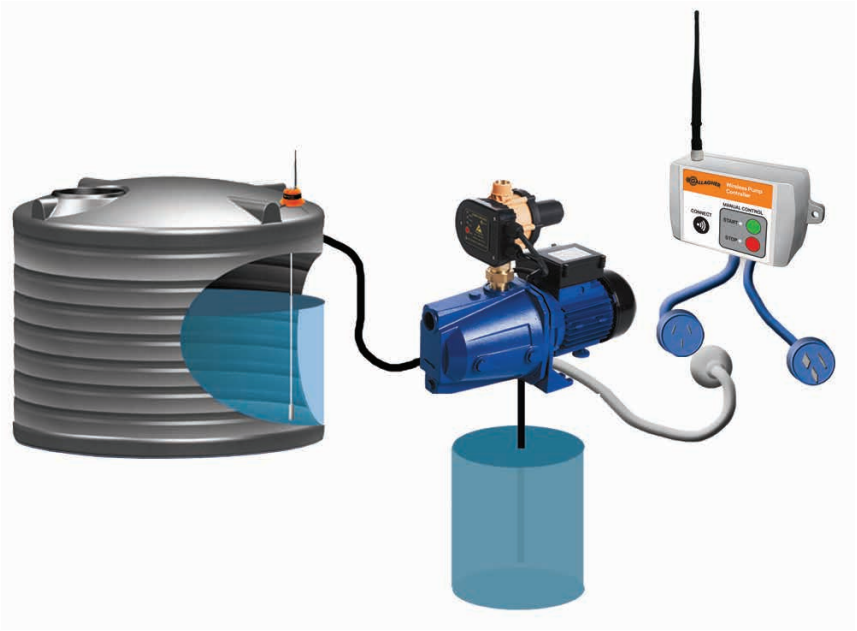
RECOMMENDED PROCEDURE: When mounting the Tank Unit ensure that the three venting grooves around the base of the unit are set to allow water to drain away freely from underneath. If water is allowed to accumulate/flood around the black sensor connector this could cause the unit to operate intermittently or possibly fail.

Installation Instructions

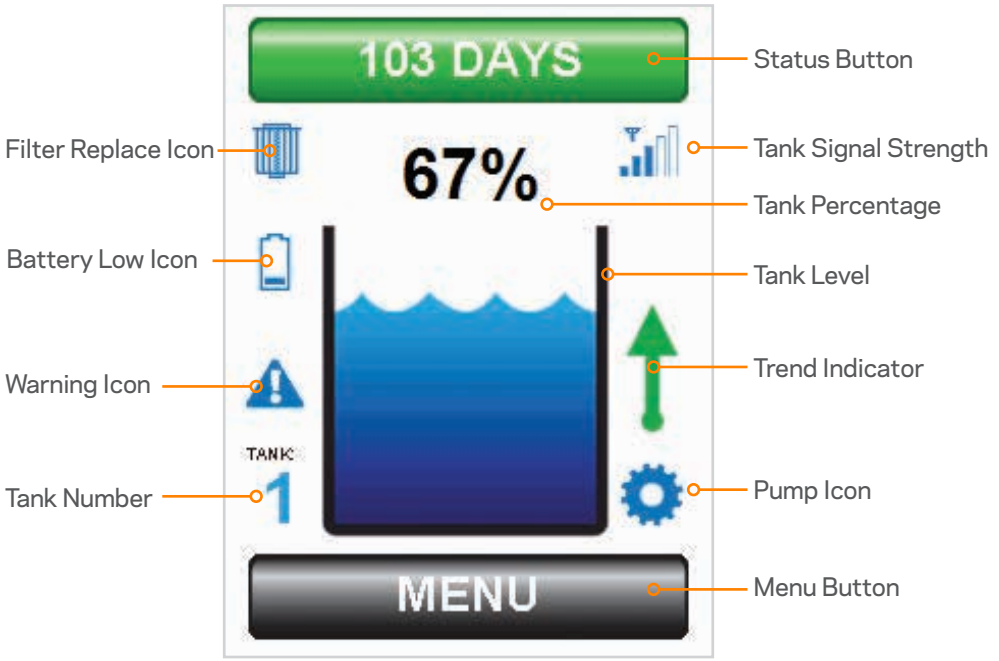
Installing the Wireless Pump Controller

The system has been designed to be "set and forget", meaning it can be set to turn the pump on when the tank level gets low, and off once the tank has been filled. Manual pump control can be activated via the Wireless Pump Controller keypad, or directly via the Touchscreen Display.

Simply plug your pump into the pump controller, connect the pump controller to the AC mains power supply and it is up and running. Pump operation is also indicated on the Display Unit by an animated pump icon (see page 22 for how to add a Wireless Pump Controller to a Touchscreen Display).



MAIN SCREEN
- Definitions



Menu Button

Touch this button to access the full set of system menus that are available.

Main Screen Definitions

Status Button

This button displays the estimated "time to empty" that is available before your water supply will run out (based on your current water usage and rainfall). If for example you were getting low on water and subsequently became more efficient with your water usage, the estimated "time to empty" would increase. The maximum "time to empty" is displayed as 200+ days. When your wireless water monitoring system is first installed the status button will default to 200+ days, once your water usage has been learned and stored into memory by the system the time to empty will update to a new value.

Touch this button also to see the system status and any notifications. By touching this icon you will be taken into the system status screen. When the status button is **"GREEN"** the status of the system is normal. The status screen will show the text "Normal Operation".

When the status button is **"RED"** the system has detected an abnormal condition or fault that should be checked. For example there could be a leak in your water tank plumbing, a toilet constantly flushing or simply a tap left on, stock watering trough running over etc. This would cause an abnormal usage for your system and subsequently turn the status button **"RED"**. By pressing the status button further information on the alert will be shown on the STATUS screen.

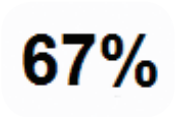
The button will also turn **"RED"** when time to empty becomes critically low or when there is a fault in the system.

Tank Number

The tank number shows which tank is currently displayed on the screen. If only one tank is connected to the system, this number will default to 1. If more than one tank is connected, the tank number icon will show the number of the tank that is currently displayed. Touch the tank number to select which tank you would like displayed. It is also possible to select other tanks by pressing the tank level icon (see below). Please note that this function is only applicable if you have more than one water tank connected to the system. A maximum of nine tanks can be connected to a single Display Unit.

Main Screen Definitions

Tank Percentage

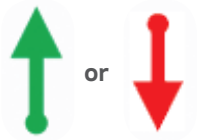


This percentage figure is an accurate representation of how full your tank is referenced to the maximum recorded level of 100%. Touch the tank percentage icon on the screen to enter the **HISTORY** screen. This screen shows a graph of the tank level for the preceding 30 days (also see **HISTORY** in the menu section).

Tank Level

A simple "one glance" indication showing the current level of water in your tank. This indication represents the last measured level of water in the selected tank (see "tank number"). The water level in this icon will rise and fall as the level in your tank changes. Touching the tank level icon on the screen will scroll through other tanks that are connected to your system.

Trend Indicator



A simple "one glance" indication showing if the level of water in the tank is increasing or decreasing. If the trend indicator is not displayed, this means that there has been no change in tank level for the last 12 hours.

Touching and holding the **MENU** button for 2 seconds will reset the trend indicator for the currently displayed tank.

Tank Signal Strength

The tank signal strength indicator displays the signal strength being received from the Tank Unit in the form of a rising "bar graph". If very low, or if no signal is shown, consider moving the Tank Unit or Display Unit, or fitting a Directional Long Range Antenna (available as an accessory). If one bar is shown this is normally adequate for reliable reception. Please contact Gallagher or your local retailer for further installation assistance on maximizing reception performance.

Main Screen Definitions

Battery Low Icon

Indicates that the Li-Ion rechargeable battery in the Tank Unit has a low state of charge. If multiple tanks are connected to the system, touch the battery low icon or the status button to display which tank has a low battery level. Make sure that the Tank Unit solar panel is not obstructed from direct sunlight. Even if the Tank Unit battery has run flat, it will recharge when moved/returned to a position with exposure to direct sunlight (recharging a "flat" Tank Unit takes approximately 24hrs).

Filter Replace Icon

This icon is displayed when the period of time set for filter replacement has expired. The period of time for filter replacement can be set by the user through the **TANK -> SETTINGS -> FILTER** menu screen. To find out which tank filter needs to be replaced, touch the "filter replace" icon or the **STATUS** button.

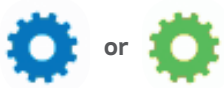
To clear the filter timer warning indication reset the relevant tank filter timer that has expired.

Warning Icon

When the warning icon is displayed, there is a problem that needs to be resolved urgently. Touch the warning icon or the **STATUS** button to see what is causing the problem. Possible causes are:

- Battery too low
- Tank Unit unexpectedly disconnected from system

Pump Icon



The pump icon is displayed when a Wireless Pump Controller has been connected to the system. When the green pump icon is rotating this shows that the pump controller is in operation. Touch the pump icon to control the pump (also see **PUMP -> CONTROL** in the menu section). A pump can be added to the system by the user through the **PUMP -> ADD** menu screen.

Main Screen Definitions

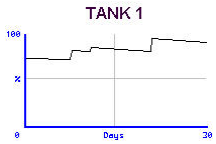
Selection Icon

The selection icons confirm if a user selectable option in the system is ON or OFF. These icons are self explanatory confirming if the user setting is ON (green tick) or OFF (red cross).

UP/DOWN Arrow Icon

Used to increase or decrease the value of the selection. If the button is pressed and held the number selection will increase or decrease at a faster rate of change.

Tank History Graph



The tank history graph can be accessed by pressing the "Tank Percentage" icon on the main screen, or through the **HISTORY** button in the menu screen. This function displays the water level in the selected tank for the preceding 30 days in a graphical format. Touch the graph to scroll through any additional tanks connected to the system.

MENU SCREEN
- Settings

MENU

Touch the MENU button on the main screen to access all menu options in the system.

TANK -> ADD

Use to connect a Tank Unit to the system. Ensure that prior to adding a Tank Unit the Level Sensor is out of the tank and free of water. Press and hold the tank module button (on the underside of the unit) until the LED light is illuminated green for 3 seconds. Release the button and confirm on the Display Unit that the Tank Unit has been added. The Level Sensor can be lowered into the tank after this step. Tank Unit installation is then complete. If a Tank Unit already connected to the system is added again in error, the message "Tank # already bound" will be displayed (where # is the tank number).

TANK -> REMOVE

Use to remove a Tank Unit from the system. When the **REMOVE** button is pressed you will have the option to remove any one of up to nine tanks connected to the system. Once a Tank Unit is removed it will need to be re-connected using the **TANK -> ADD** function. In the unlikely event that a Tank Unit needs to be reconnected or replaced, it will need to be removed first by using this process.

TANK -> MOVE

Use to move/swap a tank from a system allocated tank number to another tank number. For example if three tanks are connected to the system, Tank 3 could be swapped with Tank 1. This process reallocates the tank numbers as selected by the user. Tank 3 would become Tank 1 and vice versa. If this function is used and a WirelessPump Controller is connected to the system, please ensure that the pump settings are checked carefully to ensure the pump functions as desired.

TANK -> SETTINGS -> HEIGHT

A tank height above 2.4m is detected automatically. Once the tank is full the system will automatically re-calibrate to 100% (maximum tank level) for your installation. When the tank height is changed manually, touch the up/down buttons for customized setting, touch and hold down the up/down button for faster setting. The maximum tank height that can be set is 6.4m, the minimum height is 0.2m (20cm). Each individual tank connected to the system can have a different height set if desired.

CAUTION: If the tank height is set too high then it is possible that the system will read incorrectly. Gallagher strongly recommends that the tank height be set lower than the actual height of your tank. The system will then automatically calibrate 100%. This technique will provide the most accurate performance.

TANK -> SETTINGS -> OUTFLOW

Allows the setting of the water tank outflow pipe height. The outflow height is the height above the base of the tank where water is drawn off for supply. Water below this level is effectively unusable. Setting the outflow height will re-calibrate the system to represent a more accurate 0% indication. The system is supplied with a default outflow pipe height setting of 0.1m (100mm) from the base of the tank.

TANK -> SETTINGS -> DENSITY

The density of the fluid being measured in a particular tank can be modified. Select the tank number you wish to set and then use the up and down arrow keys to set the density. For example molasses can be measured by setting a density of between 1.2 and 1.4. The system will allow a range of Specific Gravities (SG) from 0.5 through to 2.0. The default factory density setting is 1.0 (water).

TANK -> SETTINGS -> FILTER

This useful feature will remind you when a tank filter needs to be replaced. Just select the number of months for replacement and touch SET. The filter replace icon will be displayed when the timer expires. To disable the filter timer, select 0 months and touch SET. Touch and hold down the up/down button for faster setting. The maximum time that can be set on the filter timer is 60 months (5 years) and can be set in 1 month increments. The default setting is 12 months (with the timer disabled).

PUMP -> ADD

Use to connect a Wireless Pump Controller (WPC) to the network. Once the WPC is installed and connected to AC mains power press and hold the WPC "Connect" button. The LED light will illuminate green for 3 seconds. Release the button and confirm on the Display Unit that the WPC has been added to the system with the onscreen comment **"Pump added"**.

PUMP -> REMOVE

Use to remove a Wireless Pump Controller (WPC) connected to the system. Once a WPC is removed it will need to be re-connected using the **PUMP -> ADD** function. In the unlikely event that a WPC needs to be reconnected or replaced, it will need to be removed first by using this process.

Menu Screen

PUMP -> CONTROL

Use to manually control the Wireless Pump Controller on/off function. Touch the ON button to start the pump running for the user set time period (see **PUMP -> SETTINGS -> RUN-TIME**). If the runtime is set to 0:00 (zero) the pump will run continuously. Touch the **OFF** button to manually stop the pump.

If the source for the pump is a tank (see **PUMP -> SETTINGS -> SOURCE**), the pump will start automatically when the destination tank level reaches the level set in the **PUMP -> SETTINGS -> LEVELS -> START** menu. The factory default SOURCE stop level is 10%. This will prevent the pump running a tank dry.
The stop level can be set between 0% and 100% in 5% increments. If the destination start level is set to 0% the pump will never start automatically (auto start disable).

If the pump destination is a tank (see **PUMP -> SETTINGS -> LEVELS**), then the pump will stop automatically when the destination tank level reaches the level set in the **PUMP -> SETTINGS -> LEVELS -> DEST**. menu. The factory default DEST. stop level is 90%. The stop level can be set between 0% and 100% in 5% increments. If the destination start level is set to 0% the pump will never start automatically (auto start disable).

The pump control menu can also be accessed by simply touching the pump icon on the main screen.

PUMP -> SETTINGS -> SOURCE

Use to set the source of water for the pump. This can be an "unlimited" source (ie, stream water, bore water) or a "limited" source (ie, another water tank connected to the system). Any one of the tanks connected to the system can be used as a source. When in this menu, press "**SELECT TANK**" to select the source tank, or "**NOT A TANK**" to select an unlimited water source. The system default source for the pump is Tank 1.

PUMP -> SETTINGS -> DEST.

Use to set the destination of water from the pump. This can be an "unmonitored" destination (ie, not a tank) or any one of the tanks connected to the system. Any one of the tanks connected to the system can be used as a destination. When in this menu, press "**SELECT TANK**" to select the destination tank, or "**NOT A TANK**" to select an unmonitored destination. The default setting is "**NOT A TANK**".

PUMP -> SETTINGS -> RUNTIME

PUMP → SETTINGS → RUNTIME

Useto set the maximum runtime of the pump in ten minute steps (see **PUMP -> CONTROL**). If the runtime is set to 0:00 (zero hours) the runtime feature is disabled (this means the pump will run continuously once manually turned on). The maximum runtime that can be set is 24:00 (24 hours). Touch and hold down the up/down button for faster setting. The runtime can be set in 10 minute increments. Once the runtime is set, return to the **PUMP -> CONTROL** menu and start the pump, it will then run for the specified time period.

PUMP -> SETTINGS -> LEVELS -> START

PUMP → SETTINGS → LEVELS → START

Set the level of the destination tank that the pump will be commanded to start. When fluid level is equal to, or below this level (in the selected destination tank) the Wireless Pump Controller will start the pump. Set this level to 0% if the pump is never required to start automatically (auto start disable). The default setting is 0%.

PUMP -> SETTINGS -> LEVELS -> SOURCE

PUMP → SETTINGS → LEVELS → SOURCE

Set the level of the source tank that the pump will stop. When fluid is equal to, or below this level (in the selected source tank) the Wireless Pump Controller will stop the pump. The default factory setting is 10%. The pump will not start again until the source tank level is 10% higher than the level set in this menu.

PUMP -> SETTINGS -> LEVELS -> DEST.

PUMP → SETTINGS → LEVELS → DEST.

Set the level of the destination tank that the pump will stop. When fluid level is equal to, or above this level (in the selected destination tank) the Wireless Pump Controller will stop the pump. The default factory setting is 90%.

PUMP -> SETTINGS -> LEVELS -> REPORT

PUMP → SETTINGS → LEVELS → REPORT

The pump report menu provides the user a detailed report of the entire Wireless Pump Controller (WPC) set-up. Gallagher recommends reviewing the report once all settings are made to ensure correct WPC operation.

Menu Screen

SETTINGS -> OPTIONS

SETTINGS → OPTIONS

DISPLAY DAYS REMAINING – Enables/disables the display of the days remaining feature on the main screens status button.
DISPLAY TREND INDICATOR – Enables/disables the display of the trend indicator feature on the main screen (displayed on the right hand side of the tank level icon).
ENABLE ABNORMAL USAGE ALERT – Enables/disables a warning feature that alerts the user if an abnormal amount of fluid has been used from any tank connected to the system. The alert is calculated by the system after it builds a database of the standard usage for your actual installation. An alert will be generated after approximately 4 hours of abnormal usage.
ENABLE TANK NOT RECEIVING ALERT – Enables a warning feature that alerts the user if communications with any Tank Unit on the network is lost

SETTINGS -> DISPLAY -> DIM LEVEL

SETTINGS → DISPLAY → DIM LEVEL

Use to set the brightness of the Display Unit after it has automatically dimmed. If the Display Unit screen is not touched for a period of one minute the screen will automatically dim to the set level. The **DIM LEVEL** screen will initially show the current brightness level selected for the dim mode. Dim level brightness can be adjusted by touching the up or down buttons and can be changed in increments of 10%. The brightness will adjust accordingly up and down. If the brightness is set to the maximum level of 100% the display will **not dim** after one minute. For all other brightness settings the screen will dim to the user set brightness level after a period of one minute. The default setting is a brightness of 100% (no automatic dimming).

SETTINGS -> USAGE -> RESET

SETTINGS → USAGE → RESET

Use to reset the memory of historical usage for a tank which is connected to the system. Should a tank have an abnormal usage that leaves it displaying an unusual days remaining result, then this function can be used to clear the usage back to display 200+ days. The system will automatically begin to re-calculate days remaining once usage data has been accumulated and stored into memory. Deleting the history cannot be reversed, so take care in using this function.

SETTINGS -> FACTORY -> RESTORE

SETTINGS → USAGE → RESET

Use to restore the Display Unit keypad to the factory default settings.

CAUTION: All Tank Units connected to the system will be lost and will need to be re-connected to the system. The Tank Unit sensors must be completely removed from the tank, as per the Tank Unit connection procedure (**TANK -> ADD**).

Menu Screen

HISTORY

This function displays the water level in the selected tank for the preceding 30 days in a graphical format. Touch the graph to scroll through any additional tanks connected to the system. This screen can also be accessed by simply touching the tank percentage symbol on the main screen.

UP/DOWN ARROWS

Used to increase or decrease the value of the selection. If the button is pressed and held the number selection will increase or decrease at a faster rate of change.

CLEAN

Allows the Display Unit surface to be cleaned. It is best to clean the screen with a soft, slightly damp cloth (no chemical cleaners). The touchscreen "touch" function is disabled during this time to prevent unwanted button inputs. The screen clean mode will cancel in 30 seconds and normal touchscreen function will be restored. A count-down timer is displayed during this period for your convenience.

ABOUT

Displays the Gallagher logo and the software version number.

BACK

Pressing the "**BACK**" button will return the menu to the previous screen. Holding the "**BACK**" button for 3 seconds or more will automatically reset the display to the main screen.

MORE

Pressing the "**MORE**" button will display further menu options on additional pages of the menu screen.

TANK NUMBER

The tank number matrix is displayed any time the system requires the specific tank number to be selected prior to making a change to the system settings.

Appendix

Installation Notes:

- Ensure there are no large metal objects between the Display Unit and the Tank Unit antenna. This will assist with optimum wireless performance
- Hills, vegetation and buildings preventing line of sight from the Display Unit to the Tank Unit may require the use of longer range antennae: from the tank use the Directional Ultra Range Antenna; from the Display Unit to multiple tanks use the High Powered External Multi Directional Antenna.
- Ensure that the Tank Unit is in direct sunlight (unless using an AC mains powered Tank Unit)
- Ensure that the Tank Unit venting grooves are not blocked and water is not allowed to accumulate underneath the Tank Unit around the sensor connector
- The Level Sensor should be free of water and not submerged when initially connected to the system. If a Tank Unit needs to be re-connected to the system the Level Sensor needs to be removed from the tank and free of any water
- Position the Level Sensor on the bottom of the tank away from the water outlet pipe position
- For optimum wireless performance of the Wall Mount Touchscreen Display, position the Multi Directional Antenna away from the circuit board module and away from the power transformer and any AC mains wiring. Positioning the antenna vertically will also assist reception performance
- Gallagher recommends that the Wall Mount Touchscreen Display should be installed by a qualified/approved electrician
- When installing the Wall Mount Touchscreen Display do not over-tighten the two screws that hold the plastic chassis to the wall or flush box. Over tightening these screws could cause the unit to function incorrectly
- If the Wireless Pump Controller is mounted in a pump shed or closed/sealed structure, Gallagher recommends the use of an external antenna
- If using the optional Directional Long Range Antenna, the main shaft of the antenna should be mounted horizontally. Ensure that the antenna is mounted firmly on a strong pole so it is not affected by wind. The antenna should be pointed accurately in the direction of the Display Unit/Tank Unit antenna as appropriate
- If the sensor cable is required to exit beneath the Tank Unit at 90 degrees (directly underneath the module) please manually bend/shape the cable **prior** to connecting the sensor cable to the Tank Unit. If the cable is bent/shaped once connected to the Tank Unit the waterproof connector may be damaged.

Appendix

Operational Notes:

- Increased Tank Unit communication rates can be activated by momentarily pressing the Tank Unit button. This is helpful when wanting regular Tank Unit updates to check for optimum signal strength. Tank Unit update communications will be increased for a period of 30 minutes before returning to normal operation. Tank level communication reports are sent when the green LED flashes momentarily every 10 seconds
- If a red flashing light is noted on the Tank Unit, record the number of red flashes (1 through to 5) and contact Gallagher. Refer to the last page of this user manual for contact details
- Ensure that the Level Sensor once lowered into tank is resting at the bottom of the tank, away from the main water outflow point
- The Tank Unit can be powered down/turned off by unplugging the sensor cable
- If using the Directional Long Range Antenna on the Tank Unit, it should be positioned so as to point accurately towards the direction of the Display Unit antenna (and vice versa). This will assist in maximising the range and the reception reliability. The small "bars" on the antenna should be pointing vertically with the main antenna shaft pointing at the target horizontally.
- If the Tank Unit is installed in an elevated, exposed location there will be an increased risk of a lightning strike. Gallagher recommends installing a lightning rod near the Tank Unit which stands taller than any antenna (Multi Directional or Directional Long Range)
- If a Wireless Pump Controller status of **"Auto start blocked"** is displayed then the pump has been commanded to stop while the destination tank level is below the pump automatic start level and/or the runtime has expired. This is a safety feature to avoid the pump starting again after it has been commanded to stop, or in a situation where the destination tank is not filling as commanded. To cancel this safety feature start the pump manually through the menu screen (**PUMP -> CONTROL**). Once the pump is started manually the "**Auto start blocked**" status is cleared automatically. The "**Auto start blocked**" feature is also cleared automatically if the destination tank level reaches the automatic start level set

Frequently Asked Questions

What is the maximum wireless range of the system?
Up to 4km is the standard range, with 10km - 15km possible with the optional Directional Long Range Antenna

Do I need to change the batteries in the Tank Unit?
No. The battery is continuously recharged by the integrated solar panel. The Tank Unit will continue to operate for up to 3 months without any direct sunlight.

What happens if the system status indicates the battery is low on charge?
Move the Tank Unit to an area of direct sunlight. The unit will be recharged and operate again in approximately 24hrs. If your installation has little access to sunlight then consider using the optional AC mains powered Tank Unit

What is the maximum tank depth the system will work with?
6.4m is the standard maximum depth. However custom depth systems are available on request. Please contact Gallagher for more information.

Will the Wall Mount Touchscreen Display fit into a standard electrical flush box?
The Wall Mount Touchscreen Display is designed to fit easily into any standard Clipsal or PDL style flush box. Mounting accessories are provided with your Wall Mount starter pack. Alternatively a 50mm circular hole can be drilled and the Wall Mount Touchscreen Display can be mounted directly onto the wall surface.

Can the system measure water from more than one tank?
Yes. Up to nine tanks can be monitored from one Display Unit Each tank will need a Tank Unit installed. Please refer to the user manual for adding additional tanks to the system.

I have two tanks, but they are interconnected. Do I need two Tank Units?
No. If any tanks are interconnected then you will only need one Tank Unit on one of the tanks. The fluid level in interconnected tanks rises and falls proportionately and as the system works on a proportionate level basis, it will work correctly.

Will reception be reduced if trees or walls are in between the tank and the Display unit?
Any wireless system will have range and reception reduced by obstacles. Similar to the poor reception of radio stations in valleys and near power lines. Gallagher recommends minimising obstructions in the direct path of the wireless signal.

Will the battery in the Tank Unit run flat if it is cloudy?
No. The battery will re-charge at a slower rate in cloudy conditions but it will not run flat. Exposure to direct sunlight is of course recommended for maximum solar charging performance.

Can I install the unit myself?
Yes. The system is designed to be very easy to install. No technical skills are required. Gallagher does recommend reading this user manual prior to starting any installation. As with any domestic electrical outlet, the Wall Mount Touchscreen Display should only be connected to the AC mains power supply by a qualified electrician.

Frequently Asked Questions

What happens if there is a power cut or the power to the Display unit is interrupted?
Nothing. Once power is restored the Display unit will communicate with your tank and previous readings/data and history will be restored to the screen automatically.

How long does the system take to learn my water usage?
The system will start memorising and calculating your water usage from the moment you plug it in. The longer the system is running the more intuitive and "smart" the system will become.

When will the system detect a water leak?
The system will provide a user alert for abnormal usage after approximately 4 hours. The alert is based on the system detecting usage which is outside the "normal" range for a particular recorded tank history.

Does the Tank Unit need to be installed horizontally on the tank?
No, the Tank Unit can be installed on any angle. The Tank Unit can even be installed away from the tank if required using the optional sensor extension cables.

Does the Tank Unit have to be solar powered? What if my tank has no direct sunlight?
No, the Tank Unit can be AC mains powered if required. This is particularly useful for customers with underground tanks, or tanks with little or no exposure to direct sunlight. The AC mains powered Tank Unit is available for purchase through your local rural retailer.

Can I measure different liquids other than water with this system?
Yes. This system allows for different liquids to be measured. For example Urea and Molasses can be measured simply by setting the fluids Specific Gravity (SG) through the settings menu.

Can I set the Wireless Pump Controller to turn on and off at set tank levels?
Yes. The Wireless Pump Controller is designed to be "set and forget". Custom tank levels can be set so a pump can be turned on when a tank gets low and then turned off once filling is complete. The pump on/off levels can be set through the Display Unit menu.

I have very challenging terrain around my tanks, will this system still operate?
The system does feature very powerful wireless performance which enables reliable operation in most applications. If there are significant terrain or obstacle issues affecting reception these can normally be resolved with the use of the Directional Long Range Antenna and/or passive repeaters.

Warranty

Gallagher provides a full one year workmanship warranty on its products. The Gallagher replacement warranty is void if the product has been tampered with, opened or damaged outside the range of normal use (acts of God etc...).

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