

PLEASE RETAIN THIS INSTALLATION GUIDE FOR FUTURE REFERENCE



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## IMPORTANT SAFETY INFORMATION

### **The installation of the IMC Geyser Guard Solution must be installed by a qualified Electrician and Plumber.**

- ⚠ Ensure that the electricity is switched off at the mains
- ⚠ Ensure that the water supply is switched off.
- ⚠ Do NOT use a power supply greater than 20 Amps.
- ⚠ The recommended pipe size for the valve 1/2".
- ⚠ Do NOT install the units so that they are exposed to the elements.
- ⚠ Do NOT modify the units in any form whatsoever.
- ⚠ The units must be secured and fitted correctly.
- ⚠ Do NOT use inferior materials in respect to wiring and or plumbing that do not meet electrical and plumbing standards.
- ⚠ Keep your simcard safe at all times as all costs associated with the simcard are for the purchasers account.

## GLOSSARY OF SYMBOLS FOUND IN THIS MANUAL



CAUTION



INFORMATION



DANGER



TIP

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Thank for purchasing the Geyser Guard.

All our Geyser Guard components have been manufactured to the highest quality with the necessary approvals.


This product has been comprehensively tested for all know safety situations.


The products primary function is to ensure that should a water leak be detected by the sensor the water supply and electricity to the geyser will be switched off.


The secondary function is to allow you to schedule hot water intervals and if used correctly save on electricity.

## WARRANTY

The product carries a one-year warrant from the date of purchase. Always keep your till slip or invoice as proof of purchase, without it your warranty cannot be validated.

 The system contains a simcard which when registered will provide a date of registration, which may not co-inside with the date of purchase. In addition, the simcard is not locked to the device and therefore cannot be used to validate the device.

 The warranty does not cover any claims for loss or damage caused by the device.

 **DO NOT** modify any parts in any form whatsoever, as it may damage the product and void your warranty

The manufacture or supplier will not be liable to replace the goods under the following terms of warranty.

- The fault has been caused or is due to misuse, negligence and/or contrary to the instructions or where the fault has been caused by power and or water surges.
- Incorrect voltage been used as indicated on the device and or in this instruction manual.
- Exposed to the elements without weather proof housing.



*To save electricity and go green is to ensure that the minimum amount of hot water is used. The water after a bath and or shower should be cold and remain cold until hot water is required again.*

## ABOUT GEYSER GUARD

Geyser Guard is a risk management and peak power load shedding system.

### **RISK MANAGEMENT:**

Burst geysers are a common problem and often the greatest loss experienced is the consequential damage of the water flooding. The system will save insurance companies and the consumer from unnecessary costs and privacy invasion.

When a water leak is detected by the Geyser Guard's water sensor, the system will shut off the mains water supply as well as the power to the geyser

Geyser Guard can be linked to a back end 24/7 monitoring centre where all water leak alarms will be received and remedial actions taken.

### **POWER MANAGEMENT**

The WEB and Smartphone Application for Android and IOS allows the consumer to set and manage the hot water heating on their geyser. Proper management will result in reduced energy consumption.

### **ACTUALS**

The consumer is able to switch their geyser ON or OFF remotely via the web or smartphone application.

Geyser Guard allows the user (or management company to offer the customer) a simple, easy to install - stable system, which will not only ensures water leak prevention, but allow the client to have hot water on demand at all times, without the need to leave the geyser on for unnecessary periods.

Water safety, risk prevention and power management which takes a plumber 45min to install.

## TOOLS / CONSUMABLES REQUIRED

- Make sure that the correct power source is used (see Technical Specification sheet)
- Make sure that a separate electric isolator/switch is connected to the Geyser.
- Make sure that the water pipe is 1/2" to allow for the fitting of the valve
- Make sure that the valve and has enough clearance
- Make sure that the sensor is in reach of the drip tray once connected to the control unit.
- Make sure that once the connectors are connected that they are tight and cannot come loose.
- Make sure that the control unit is mounted in a weather proof area
- The control unit does not require to be earthed, however the geyser/thermostat should be earthed.
- 20 Amp 2 core cabling may be required.
- 32 Spanner
- 34 Spanner
- Small Flat Screw Driver
- Small Philip's Screw Driver
- Large Flat Screw Driver
- Large Philip's Screwdriver
- Waterpump Pliers
- Hacksaw
- Half round Medium File
- Side Cutters
- Mount spacer for Valve
- Plumbing Tape / Hemp
- Terminal Joining Blocks
- $\frac{3}{4}$  " M to  $\frac{1}{2}$  " M Reducers (only if the water supply pipe is  $\frac{1}{2}$  ")
- Active GSM simcard (normally supplied, but may vary on location and country)

## GEYSER GUARD ITEMS

### THE CONTROL UNIT



Fig 1.0 (Top View, open box)

The Control Unit requires 220V AC input from the mains supply. The existing 220V AC to the thermostat must be redirected to the Control unit.

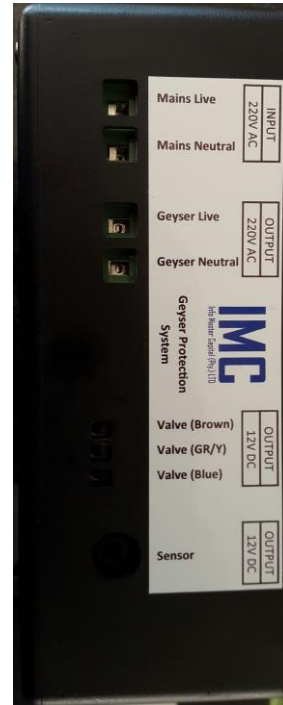


Fig 1.1 (Front View)

### THE WATER VALVE



Fig 2.0 (Angled View)



Fig 3.0 (Pack of mounting screws)

### THE WATER LEAK SENSOR



Fig 4.0 (Top View)

## INSTALLATION INSTRUCTIONS



*Please note that this is a guideline and that the Geyser Guard is to be fitted by a qualified electrician and plumber. We therefore do not accept any liability for any loss or damage as a result of the product installation as we are not in control of the installation or the environment. We do not accept any liability whatsoever if the installation guide does not exact as we cannot cater for all environments. By installing this product, you hereby agreed to the term and accept that these instructions are a guideline.*

- Step 1: If the simcard is not already preinstalled, place an active simcard in the simcard slot.
- Step 2: Switch off the electricity
- Step 3: Locate the master water flow valve and switch off the water supply to the geyser.
- Step 4: Open the hot water taps to release pressure from the geyser for approximately 1 minute.



*Please ensure that valve cable can reach the control unit before cutting or attaching the valve. **Do NOT** over tighten the valve fittings as this could damage the valve mechanism inside the valve.*

- Step 5: Choose a location within 1.5m of the Control unit on the mains water supply pipe on the upstream side of the reducing valve Cut a 30 cm section out of this cold water inlet pipe to the Geyser.
- Step 6: Attach the valve and position the Actuator. Make sure that it is fitted correctly and tight using the necessary plumbing tools and insulation (i.e. hemp or tape).
- Step 7: Turn open the master flow valve slowly. Close the hot water taps and inspect your installation. Make sure that there are no leaks.



*Please ensure that the electricity supply is **OFF**. Failure to switch the mains off is dangerous and you might get an electric shock which could result in serious or fatal injuries.*



Step 8: Find a suitable location to mount the control unit. It should be at least 1m away from the Geyser and within range of the main power supply cable to the Geyser. The unit should be fixed either to a wall or a wooden rafter with the two mounting screws supplied. The Connector outlets are to be facing down.

The unit has two eyehole slots at the back of the unit which allows for easy installation/hanging. The unit can be slid onto the screws and therefor can be mounted / removed easily.



*The control unit is designed to be mounted indoors. Do **NOT** fit in an area that is exposed to rain or outside weather conditions.*

## The Valve

Step 9: Screw in the three (3) wires from the valve into the control unit. (the wires are colour coded and therefore must be connected correctly in order for the valve to work).



The wire should be run in a route to cause least obstruction to any person working around the geyser. Spare wire should be coiled up and cable tied together to ensure a neat installation.



*The valve is a normally closed driven value. The valve requires 12v DC to drive it open or closed. If the mains power goes on or off the valve remains in its last state.*

## The Sensor

Step 10: The sensor should be placed, with circuit facing upwards, at the outlet of the drip tray underneath the Geyser.



*Should there be no drip tray, the sensor should be fixed underneath the geyser*

- *If the geyser is vertical underneath the centre*
- *If the geyser is horizontal, then underneath the geyser at the lower end of the installation.*

Once the suitable position is found a cable tie should be used to fix the sensor such that it cannot be removed easily.

Plug the stereo jack into the control box.

The wire should be run in a route to cause least obstruction to any person working around the geyser. Spare wire should be coiled up and cable tied together to ensure a neat installation.

## The Control Unit

Step 11: There may be enough loose wire from the isolator/switch to the thermostat. If there is, cut the wire so that the wires from both the thermostat and isolator/switch can reach the control unit easily. Connect the wires from the isolator/switch to the control unit **INPUT** slots Make sure that the wires are connected correctly. (Live to Live and Neutral to Neutral).



*If there is not enough wire, unscrew the wire from the thermostat and connect it to the control unit **INPUT** slots. Take new wire from the control unit **OUTPUT** to the thermostat.*

Step 12: Connect the wires from the thermostat to the control unit **OUTPUT** slots Make sure that the wires are connected correctly. (Live to Live, Neutral to Neutral).

Step 13: Make sure all connections are tightly secured, and correctly connected.

## Geyser Guard Installation Guide

Step 14: Switch ON the mains

Step 15: Ensure that the control unit has power.







*Please ensure that the electricity supply is **OFF** when troubleshooting power issues.*

With the cover off, there are 5 LED Lights on the lower right hand side of the device. The LED's from left to right indicate: -

Table 1.0 of LED's from LEFT to RIGHT (looking from the front, wires coming out towards you)

No.	Colour of LED	Description	Indication
1.	BLUE LED	System	• OFF                      There is no power on the system
			• Solid ON                System On and communicating with server
			• Slow 3 sec Flash      Successful registration with server
2.	RED LED	Sensor	• OFF                      Sensor is connected and not triggered
			• ON                         Sensor is connected and is triggered
			• Steady Flash            Sensor not connected
3.	RED LED	Valve Closed	• OFF                      Valve is not closed
			• ON                         Valve is closed
4.	GREEN LED	Valve OPEN	• OFF                      Valve is not Open
			• ON                         Valve is Open
			• Steady Flash            Valve is not connected
5.	RED LED	Geyser Isolation	• ON                        Power supplied to Geyser
			• OFF                       The control box has isolated the geyser power

## First Power Up

-  On the first power up the device will follow the following sequence.
-  **BLUE LED** will shine solid
-  Once the **BLUE LED** starts flashing, it means the system has registered with the server
-  The LED's should show the following

	Represents	Colour	Status
1	System communication	<b>BLUE</b>	Flashing every 3 seconds
2	Sensor	<b>RED</b>	OFF
3	Valve Closed	<b>RED</b>	OFF
4	Valve Open	<b>GREEN</b>	ON
5	Geyser On	<b>RED</b>	ON



*Please ensure that the electricity supply is **OFF** when troubleshooting power issues.*

- Step 16: Use the tester to check if the thermostat is getting the 220V AC. If not check the connections. Please switch off the mains when troubleshooting power issues.
- Step 17: Open the hot water tap to determine that the water pressure is normal. If the water pressure is lower than normal, it could be due the value being in the closed position.

## TESTING INSTRUCTIONS

### HARDWARE TESTING

When testing the functionality of the Geyser Guard, ensure the following before proceeding.

- i The Control unit is powered on and that the BLUE LED system light is flashing once every 3 (three) secs.
- i The Control unit does not have any hardware errors. The Blue LED should be ON, but the others will be off at this stage. A steady flash indicates that an external device has not been connected.

### LEAK TEST

Pour a few drops of water directly on the Water Sensor. You should hear the relays clicking on the board and the valve should initiate (Close)

Once the alarm sequence has completed the LEDs should be in the following state:

1	System	BLUE	Flashing Once every 3 seconds
2	Sensor	RED	ON
3	Valve Closed	RED	ON
4	Valve open	GREEN	OFF
5	Geyser	RED	OFF



To reset the system, dry the sensor and press the reset button.

Once the system has been reset the LEDs should be in the following state:

1	System	BLUE	Flashing Once every 3 seconds
2	Sensor	RED	OFF
3	Valve Closed	RED	OFF
4	Valve open	GREEN	ON
5	Geyser	RED	ON

## SOFTWARE TESTING



*The MSISDN number of the simcard (if applicable) will be attached to the packaging.*

Step 1: SMS the command **info** to the control units MSISDN.



Fig 4.0

- GESYER : OFF - the Geysers is not drawing power at that moment (i.e. Geysers is at the right temperature)
- ON: - the Geysers is drawing power (i.e. heating the water)
- RELAY : OFF - - The control unit is **NOT** on a heat cycle.
- ON: - The control unit is allowing the thermostat to draw power. (i.e. on a heat cycle)
- SENSOR : OK - - The sensor is working.
- FAULTY: - The sensor is **NOT** connected correctly, faulty or **NOT** installed.
- VALVE : OPEN - - The valve is allowing water to go through.
- CLOSED: - The valve has closed the water supply.
- FAULTY: - The valve is not working.

## Geysers Guard Installation Guide

Step 2: Open the hot water tap.

SMS the command **close valve** to the control units MSISDN.

The water flow pressure should drop after a few seconds

SMS the command **open valve** to the control units MSISDN.

The water flow pressure should restore to normal.



*Please ensure that the valve is in an open state. Failure to open the valve while the geyser is on can result in damage to the geyser, thermostat and may in extreme cases cause fire.*

Ensure that the water flow is normal.

**SMS Quick Reference guide**

COMMAND	DESCRIPTION
info	health of control unit
open valve	Opens the valve
close valve	Closes the valve
geyser,on	Heat the water
geyser,off	Switch off the geyser
reboot	Reboot the control unit if unresponsive due to the unit being in an off cycle to conserve energy consumption.

**Quick check sheet**

DESCRIPTION	PASS	FAIL
Control unit has power (unit lights on)		
Thermostat has power (Meter test)		
Unit responds to SMS commands		
<i>info</i> SMS command responds		
Sensor - OK		
Valve – ON or OFF		
Relay – ON or OFF		
<i>close valve</i> SMS Command reduces water flow		
<i>open valve</i> SMS command restores water flow		
There are no water leaks		

**CONGRATULATIONS AND THANK YOU FOR PURCHASING THE GEYSER GUARD**

If all the boxes in the quick check sheet has passed, your Geyser Guard has been installed correctly.



## PRODUCT SPECIFICATIONS

### HARDWARE AND SOFTWARE SPECIFICATION

#### GSM

Telit GL865-Dual Band  
 GPRS Class 10  
 GSM 900/1800 MHZ  
 ICASA Approved TA-2011/154

#### Smart Phone Application

Switch Geyser on and off  
 Set Geyser Timers  
 Graphs of Energy consumed  
 Table of energy day/week/month  
 Geyser Status

#### Power Profile

Input Power  
 220V AC (Max 286V)  
 Geyser Power Rating Switch  
 220V AC 20A  
 Output Control Power  
 12V DC 2VA  
 GSM and Control Circuit Power  
 Switch mode Power Supply 3.8V DC

#### Web Application

Information Available  
 Power consumed, day/week/month  
 Power Comparisons to previous  
 Geyser Status  
 Graphs of Power on cycles  
 Actions available  
 Switch Geyser on and off  
 Set timers for energy savings

#### Processor Control

ARM 32bit Cortex Processor  
 Real Time Clock

#### Inputs and Outputs

1 x Sensor INPUT  
 Water Sensor to pick up leaks  
 2 x Valve OUTPUT  
 Open and Close OUTPUT  
 1 x Reset Switch INPUT

#### Valve

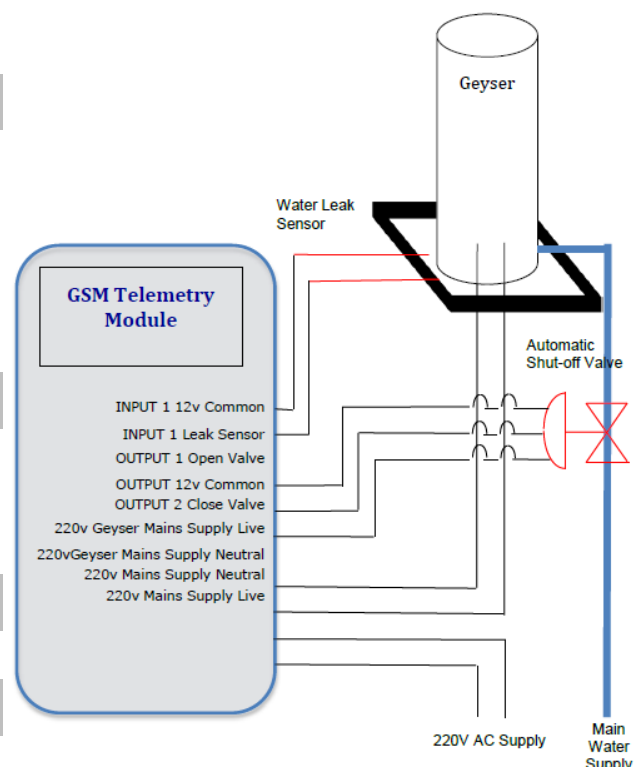
2 way actuated Ball Valve  
 12V DC Actuator  
 Fixed State Control

#### Sensor

5V DC Resistive sensor

#### LED Indicator Lights

Valve Open/Close | Sensor state



## **GEYSER GUARD REGISTRATION**

In order for the Website and or Mobile application (Android and IOS only) to work the Control unit must be registered.

Please fill in the registration form attached with the necessary particulars.





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