ME-Link®
IoT/SMS MODULE

MATelec® AUSTRALIA

OPERATION MANUAL

Liquid Level Alarm

With SMS - FPC-12651-SMS

Introduction

MATelec Australia's Liquid Level Alarm with SMS features our 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 alarms from the Liquid Level Alarm. The ME-Link Module can also be used to control external devices with the two onboard relay outputs. Easy to set up SMS commands are used to configure the operation and alarms without the need for any additional software.

Safety

This Liquid Level Alarm 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, further consideration is required by the installer to ensure its suitability. It is the responsibility of the installing electrician to ensure compliance with relevant standards.

- Prior to installation, ensure power supply is isolated.
- 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 operation manual 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

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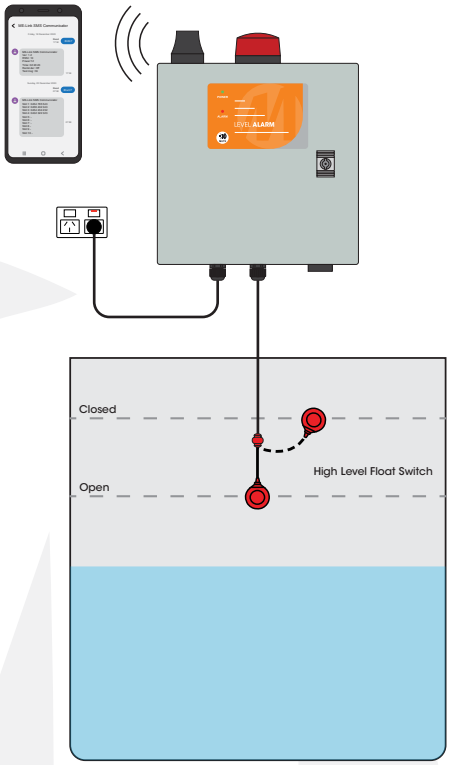
Functions & Fault Protection



Level Alarm

The level alarm is activated when the input receives a closed contact. The alarm indicator light and strobe will illuminate, the buzzer with sound, and the volt free relay output will change state. The buzzer can be muted by pressing the mute button on the keypad. The level alarm automatically resets when the input receives an open contact.

Auto Silencing Alarm

If not muted, the buzzer will automatically silence after 5 minutes and enter 'chirp' mode, sounding for 2 seconds every 5 minutes. This 'chirp' can be muted by pressing the mute button on the keypad. This feature can be disabled if a continuous alarm is required, by switching the jumper on the module to the 'continuous' position.

Alarm Test

Holding down the mute button on the keypad for 2 seconds will trigger the alarm test. The alarm indicator light and strobe will illuminate, the buzzer will sound and the volt free relay output will change state. The alarm test will remain active until the mute button is released.

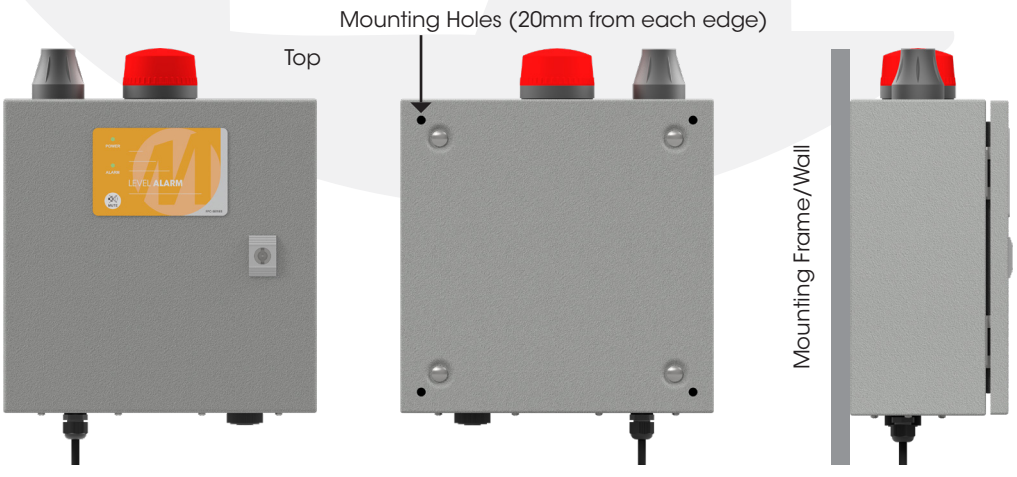
SMS Alarm Messaging

SMS messaging features include:

- SMS messaging for level alarm and power/battery supply status, and from up to 5 additional 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 systems 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'

Step 1 - Installation

- Liquid Level Alarm must be installed in a position where mobile reception is available.
- Liquid Level Alarm enclosure must be mounted in a vertical position.
- Ensure mounting method does not compromise enclosure weatherproof rating.
- 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.

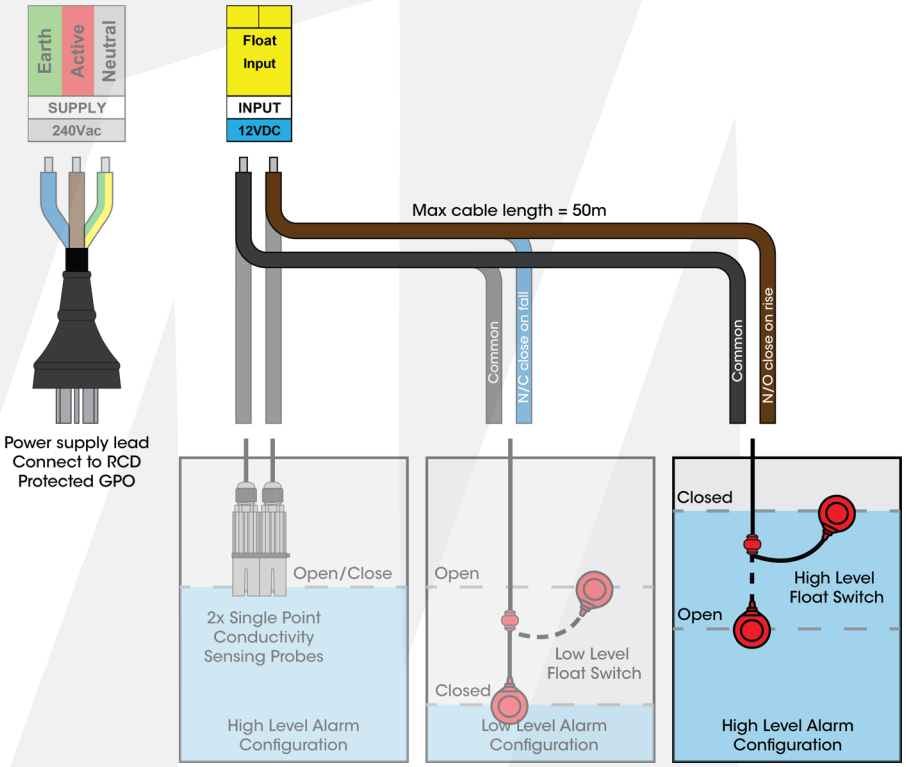


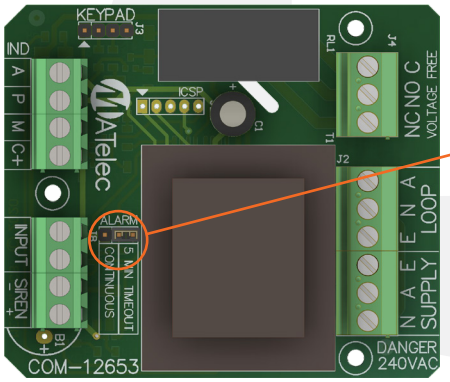
Step 2 - Connections

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

2.1 - Terminal Connections

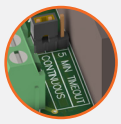
- For a high level alarm, connect **brown** and **black** float switch wires (close on rise configuration) to input terminals.
- For a low level alarm, connect **blue** and **black** float switch wires (close on fall configuration) to input terminals.
- For a high level alarm using conductivity probes, connect 2 probes to input terminals. **Note -** Reliable probe operation may be hindered by the water/liquid quality.Test the probes in the liquid in which they are to be submersed before use.





2.2 - Alarm Jumper Position

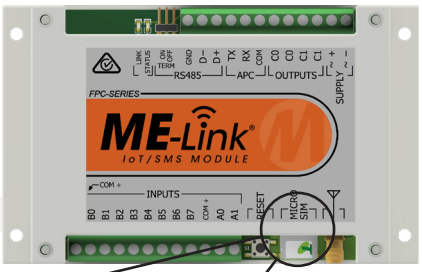
If this jumper is left on the '5 Min Timeout' position, the buzzer will automatically silence after 5 minutes



If a continuously sounding alarm is required, switch this jumper to the 'Continuous' position.

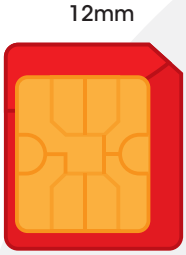
Step 3 - Setup

3.1 - SIM Card Installation

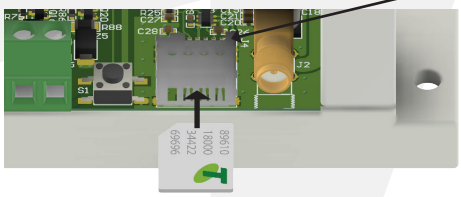


The SMS alarm sender takes a Micro SIM card which must be from a network operator who offers the CAT-M1 700Mhz frequency. At the time of printing all SIM cards that use the Telstra network will be compatible. Other network providers will be compatible when they support CAT-M1 modules.

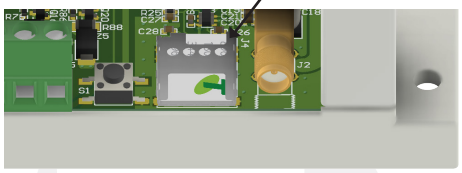
1. Ensure power to the panel is OFF.
2. Firstly, ensure that the SIM card is activated with credit and ready to send text messages. Also, ensure that the SIM PIN is disabled.
3. Insert the SIM card with the chip gold plate facing down and the missing corner to be inserted in first. See pictures below.
4. The SIM needs to be pushed in firmly. Ensure that it fits properly in the SIM holder.



Micro SIM card required



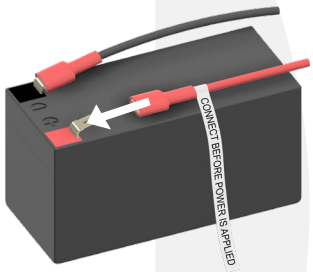
Install SIM card with gold chip facing down and missing corner first



Ensure SIM card is pressed in firmly and fits properly in the SIM holder

3.2 - Enable Battery Backup

To have the SMS alarm sender operating when power fails, the internal battery must be connected. With power isolated, connect the loose wire near the battery labelled 'CONNECT BEFORE POWER IS APPLIED'. See image to the right.
If power is to be isolated for more than 7 days ensure this wire is disconnected to prevent the battery going flat.



3.3 - Testing Mobile Connection

The SMS alarm sender is tested and programmed by sending SMS messages to the SIM card's phone number.

1. Check the SMS controller's indicator lights to ensure that power is on and sim card is connected to mobile network. If there is no reply, check the indicator lights status table below:

Link	Status	Description	Function	Cause
☀	○	Green Flashing, Red Off	Network connected	N/A
☀	☀	Green Flashing, Red 1 Flash	Network connected, sending SMS	N/A
○	●	Green Off, Red Solid	Hardware fault	Contact supplier for further assistance
○	☀	Green Off, Red 1 Flash	Connecting, searching for mobile network	Wait for network connection search to finish
○	☀☀	Green Off, Red 2 Flashes	Network connection failed	Check the SIM card is activate and has credit
○	☀☀☀	Green Off, Red 3 Flashes	Network not found/ Poor signal strength	Check antenna connection and mobile signal at device.
○	☀☀☀☀	Green Off, Red 4 Flashes	Network connection denied	Check SIM is Telstra compatible and SIM is active and has credit (Only Telstra networks are currently valid)
○	☀☀☀☀☀	Green Off, Red 5 Flashes	SMS failed to send	Check that SIM is still installed, active and has credit
○	☀☀☀☀☀☀	Green Off, Red 6 Flashes	SIM card not detected	Install or reinstall Micro SIM card and check installation orientation
○	☀☀☀☀☀☀☀	Green Off, Red 7 Flashes	SIM Pin is enabled	Disable the SIM pin before retrying connection

2. To test the system is operating correctly, send ***#title?*** to the phone number of the SIM card. This will send a reply from the SMS controller to show it is ready for programming. If there is no reply within 1 minute see the status lights above.

3.4 - Mains Powerup

Close and secure enclosure door, connect the power lead into RCD protected GPO and switch on mains power.

Step 4 - SMS Programming

User Commands

SMS commands are sent to the phone number of the SIM card installed. This phone number should be supplied with the SIM card. Commands sent ending with '?' are a query of the command setting, commands sent without this are used to configure the setting. The symbols < > are used to reference user information to be sent in the commands, and should not be send in the command message.

4.1 - Set the SMS alarm sender title

#title <new title>

Use this command to add the SMS alarm sender title (max 50 characters).
Example SMS command: *#title ME-Link SMS Alarm Sender*
The title will be set to 'ME-Link SMS Alarm Sender'. This will be sent with each alarm message sent from the SMS alarm sender.

#title?

Use this command to enquire the current SMS alarm sender title.

4.2 - Set the numbers to receive alarm messages

<slot> is the phone book slot from 1 to 10 which phone numbers can be added and deleted from.
<number> is the phone number assigned to the phone book slot that will receive the alarm messages.

#num add <slot> <number>

Use this command to add the phone numbers.
Example SMS Command: *#num add 3 0406446XXX*
The phone number 0406446XXX will be added to phone number slot 3.

#num del <slot>

Use this command to delete a phone number
Example SMS command: *#num del 3*
The phone number 0406446XXX is deleted from slot 3.

#num?

Use this command to request the phone number list. Empty slots are reported as ———.

4.3 - View input alarm messages that will be received

Each digital input will send a message when the input turns on (goes high) and when it turns off (goes low). Inputs 7 and 8 are pre-programmed for power fail and battery voltage low alarms. Inputs 1 is pre-programmed for level alarm common fault, which occurs on power failure or float input closure, so no user programming is required. The default on and off messages for each input are shown below under the ***#msg all on?*** and ***#msg all off?*** commands.
<input> is the digital input number from 1 to 8 that will trigger the SMS alarm messages.
<message> Is the text message you want to send to the phone number based on the input state.

#msg all on?

Use this command to request alarm messages for all inputs in ON state.
Example response:
Input on messages:
1: Level Alarm Common Fault
2: ———
3: ———
4: ———
5: ———
6: ———
7: ME-Link Mains Power Failure
8: ME-Link Voltage Healthy

#msg all off?

Use this command to request alarm messages for all inputs in OFF state.
Example response:
Input on messages:
1: Level Alarm Common Fault Cleared
2: ———
3: ———
4: ———
5: ———
6: ———
7: ME-Link Mains Power Restored
8: ME-Link Voltage Low

Step 4 - SMS Programming (Continued)

4.3 (Continued)

If you would like to edit the default input on and off messages, use the below commands:

#msg <input> on <message>

Use this command to set alarm on messages for specific inputs.
Example SMS command: *#msg 3 on High Pressure Fault*
The Input 3 on message will be set to 'High Pressure Fault'.

#msg <input> off <message>

Use this command to set alarm off messages for specific inputs.
Example SMS command: *#msg 3 off High Pressure Cleared*
The Input 3 off message will be set to 'High Pressure Cleared'.

4.4 - Additional Informative Commands

#info?

Use this command to request the status information of the device.
Example response:
<title>
Ver: <firmware revision>
RSSI: <signal strength>
Power: <supply voltage>
Time: <network current time>
Reminder: <on or off>
Test msg: <on or off>

#inputs?

Use this command to request status of all inputs.
Example response (input 1 only):

Input 1 OFF: ALARM ACTIVE	Input state as ON/OFF and corresponding alarm direction: 'Alarm Active' or 'Alarm Inactive'
Activated:	Alarm state: 'Last Active' if inactive or 'Activated' if active
Mon 07/12/2020 16:42	Time at which the alarm was last activated
Notified once	Alarm notification state: 'Notified Once', 'Not Recorded', 'Not Accepted Yet' or 'Accepted'

#reset

Use this command to reset all settings back to defaults, including the PIN.

Example SMS Command:	***#reset***
Response:	*Are you sure you want to factory reset? Enter #reset again within 1 minute to confirm*
SMS Command:	***#reset***
Response:	*Device has been reset back to factory defaults.*

#help?

Use this command to request help on what commands are available and get more detailed information about different commands.
Refer to the ME-Link Operation Manual for more detailed information on all the SMS commands.

Keypad Operation

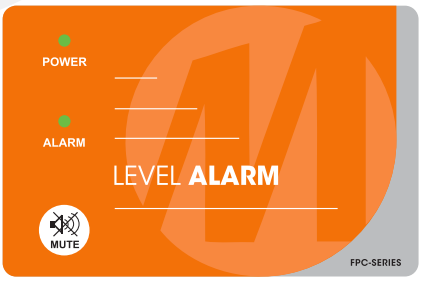
Indicator Lights

Solid - Power on

Solid - Alarm active

Push Buttons

Press for 1 sec - Mutes the buzzer
Press for 2 sec - Tests alarm indicator light, strobe & buzzer



Fault Diagnosis

Warning - Any remedy that requires access inside the enclosure must be carried out by a suitably qualified and registered electrician.

Fault	Cause	Remedy
Level alarm (alarm indicator light solid)	Water in the tank/pit is at the alarm level.	Inspect the level in the tank/pit. If at the alarm level, mute the alarm until the level rises/falls and the alarm condition subsides.
	Float switch or probes installed incorrectly.	Ensure the float switch or probes are installed at the correct height in the tank/pit, adjust if required.
	Moisture ingress into cable joins.	Check for moisture in any cable joins, repair if needed.
	Float switch wired incorrectly.	Check the float switch wiring into the input: • If a high level alarm is required, ensure the float switch is wired as close on rise (black and brown wires for MATelec float switches). • If a low level alarm is required, ensure the float switch is wired as close on fall (black and blue wires for MATelec float switches).
	Float switch damaged or faulty.	Disconnect the float switch from the input. If the alarm clears, the float switch may be faulty. With the float in the open position, test for leakage/shorts across the across the wires. Replace the float switch if required.
	Probe wires damaged.	Disconnect the probes from the input. If the alarm clears, the probe wires may be damaged. With the probes out of the liquid, test for leakage/shorts across the across the wires. Replace if required.
	Probe interference.	Check for any objects touching the probe sensing points.
	Liquid level alarm keypad damaged.	If disconnecting the input did not clear the alarm, disconnect the keypad ribbon from the module. If the alarm clears, the keypad is damaged and should be replaced.
	Liquid level alarm module faulty.	If disconnecting the input and keypad from the module did not clear the alarm, the module is damaged and should be replaced.
Level alarm not activating	Water in the tank/pit is not at the alarm level.	Inspect the level in the tank/pit. If not at the alarm level, the unit is operating correctly.
	Float switch or probes installed incorrectly.	Ensure the float switch or probes are installed at the correct height in the tank/pit, adjust if required.
	Float switch wired incorrectly or damaged.	Check the float switch wiring into the input. • If a high level alarm is required, ensure the float switch is wired as close on rise (black and brown wires for MATelec float switches). • If a low level alarm is required, ensure the float switch is wired as close on fall (black and blue wires for MATelec float switches). • After checking the float is wired correctly, raise/lower the float to test. If the alarm still doesn't activate, the float switch/cable is damaged, replace if required.
	Conductivity probes dirty, liquid not conductive enough or cable length too long.	Lower probes into the liquid to test if alarm activates. If not, do the following: • Remove the probes from the tank/pit, clean any build up of material on the probes, then lower them down into the liquid and test if the alarm activates. • If not, remove the probes from the tank/pit, check cables for damage and test for continuity between the sensing point and cable termination. Replace if needed. • Probe cable lengths in excess of 50m can cause inconsistent operation. • The liquid in which the probes are submersed may not be conductive enough for the probes to operate reliably. Replace with a float switch or use the Liquid Level Alarm with conductivity relay (FPC-12665), which has sensitivity adjustment.
	Liquid level alarm module faulty.	If no other remedies were successful, bridge the input. If the alarm still does not activate, the module is damaged and should be replaced.
Alarm test not working	Liquid level alarm keypad damaged.	If the indicator light, strobe and buzzer fail to activate when the mute button is held down for 2 seconds, the keypad is damaged and should be replaced.
No power on indication	Liquid Level Alarm does not have power.	Connect and switch on the power supply to the panel. The power on indicator light will be illuminated when power is on.
	Keypad ribbon not connected.	Ensure the keypad ribbon is connected to the control module 'keypad' pins. If connected and still not working, the ribbon may be in the wrong orientation. Rotate the ribbon 180° on the module pins.
	Liquid level alarm keypad or module damaged.	Press the mute button on the keypad for 2 seconds (test this with the keypad ribbon connected to the module pins in both orientations). If the alarm activates, but the power on indicator does not, the keypad is damaged and needs replacing. If the alarm does not activate, the control module is damaged and needs replacing.
SMS issues	See '3.3 - Testing Mobile Connection' on page 4 for SMS fault diagnosis.	

User Settings

SIM Card Phone Number	
Number:	
SMS Alarm Sender title	
Title:	
Phone Numbers	
Slot 1:	
Slot 2:	
Slot 3:	
Slot 4:	
Slot 5:	
Slot 6:	
Slot 7:	
Slot 8:	
Slot 9:	
Slot 10:	
Digital Input Alarm Messages	
Input 1 On	Level Alarm Common Fault
Input 1 Off	Level Alarm Common Fault Cleared
Input 2 On	Unused
Input 2 Off	Unused
Input 3 On	Unused
Input 3 Off	Unused
Input 4 On	Unused
Input 4 Off	Unused
Input 5 On	Unused
Input 5 Off	Unused
Input 6 On	Unused
Input 6 Off	Unused
Input 7 On	ME-Link Mains Power Failure
Input 7 Off	ME-Link Mains Power Restored
Input 8 On	ME-Link Battery Voltage Healthy
Input 8 Off	ME-Link Battery Voltage Low