

# Application Note

## Battery powered GaugerGSM

**Version 1.1**

**June 2011**

This document contains proprietary information that is the sole property of **Solid Applied Technologies Ltd.** The document is submitted to the recipient for his use only. By receiving this document; the recipient undertakes not to duplicate or to disclose, in part or the whole, any of the information contained herein; to any third party; without a-priory written permission from **Solid Applied Technologies Ltd.**

## Table of Contents

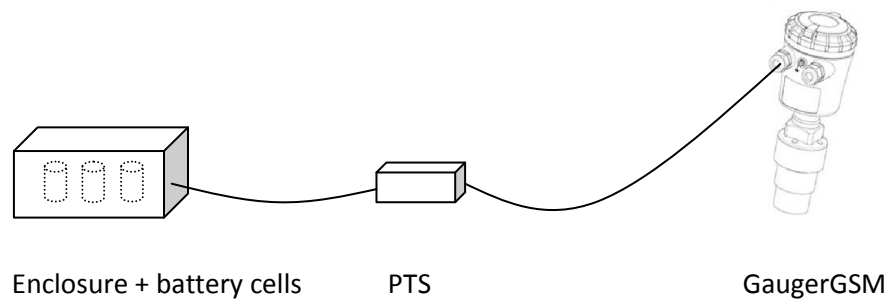
1. INTRODUCTION .....	3
2. COMPONENTS AND OPERATION .....	3
2.1 Connection diagram.....	3
2.2 Battery pack enclosure .....	3
2.3 Battery cells.....	3
2.4 Programmable Timer Switch (PTS) .....	4
2.5 GaugerGSM.....	4
3. OPERATIONAL ASPECTS .....	5
3.1 Battery lifetime .....	5
3.2 GaugerGSM alerts.....	5

## 1. INTRODUCTION

GaugerGSM is an ultrasonic level meter integrated with a GSM cellular modem. GaugerGSM is a solution for remote monitoring applications. The equipment can operate from an external battery pack. Battery based operations are required at remote sites where continuous electrical power is not available.

## 2. COMPONENTS AND OPERATION

### 2.1 Connection diagram



All wire connections are explained in the user manual of GaugerGSM.

### 2.2 Battery pack enclosure

SolidAT proposes battery pack enclosures (rated IP67) for three D-type batteries and for four D-type batteries. Part numbers are GAM-ACC-G-30 and GAM-ACC-G-40 respectively.

### 2.3 Battery cells

SolidAT recommends battery cells type Tadiran TL-5930 or compatible. These are 3.6VDC cells with capacity of 19AH. Three cells in series provide 10.8VDC and four cells 14.4VDC which are both compatible with GaugerGSM specification.

**Note:** Other batteries enclosures and cells may be used to power GaugerGSM as long as they fulfill the electrical specification of GaugerGSM (defined in the user manual of GaugerGSM).

## **2.4 Programmable Timer Switch (PTS)**

This device controls GaugerGSM along the following operational cycle:

- (1) PTS turns GaugerGSM ON.
- (2) GaugerGSM takes level and temperature measurement.
- (3) GaugerGSM transmits measurement result over the GSM network.
- (4) GaugerGSM instructs PTS to power OFF GaugerGSM and to turn it ON again after a sleeping time interval.
- (5) PTS turns GaugerGSM OFF.
- (6) PTS calculates sleeping time interval has elapsed.
- (7) PTS turns GaugerGSM ON.
- (8)...

Part number of PTS is GAM-ACC-B-02.

**Note 1:** During each cycle, GaugerGSM is ON for a period of 30 – 120 seconds, depending on ultrasonic measurement conditions and the availability of the cellular network.

**Note 2:** Sleeping time interval may be fixed or may depend on the measured level during that cycle. For additional details, see LPST command in the user manual of GaugerGSM.

**Note 3:** PTS is highly recommended to conserve battery power but is not a must and proper batteries may feed GaugerGSM directly.

## **2.5 GaugerGSM**

Part number of GaugerGSM model for battery based operations is GAM-xx-x8-TC-xV. “x” may be any applicable letter. This model may also operate with standard power supplies but does not support an external temperature sensor.

GaugerGSM must be configured using the LPST command (as described in the user manual of GaugerGSM).

### **3. OPERATIONAL ASPECTS**

#### ***3.1 Battery lifetime***

Battery life time depends on cell capacity, rated cell voltage, number of cells and sleeping time interval. Typical life time for a 4-cell solution with TL-5930 batteries is between 1 to 3 years. When operating continuously (without PTS), typical lifetime may be about one to two months.

#### ***3.2 GaugerGSM alerts***

Theft and refill alerts are not available in battery based operations. These alerts are based on continuous real-time operations. Periodic messages may include trigger level alerts if configured (see command TRGR in the user manual of GaugerGSM).