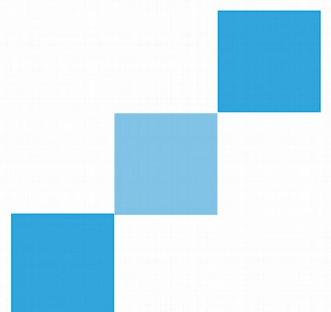


# Pulse metering adapter with GPRS

This document defines the product specification of Pulse metering adapter with GPRS.



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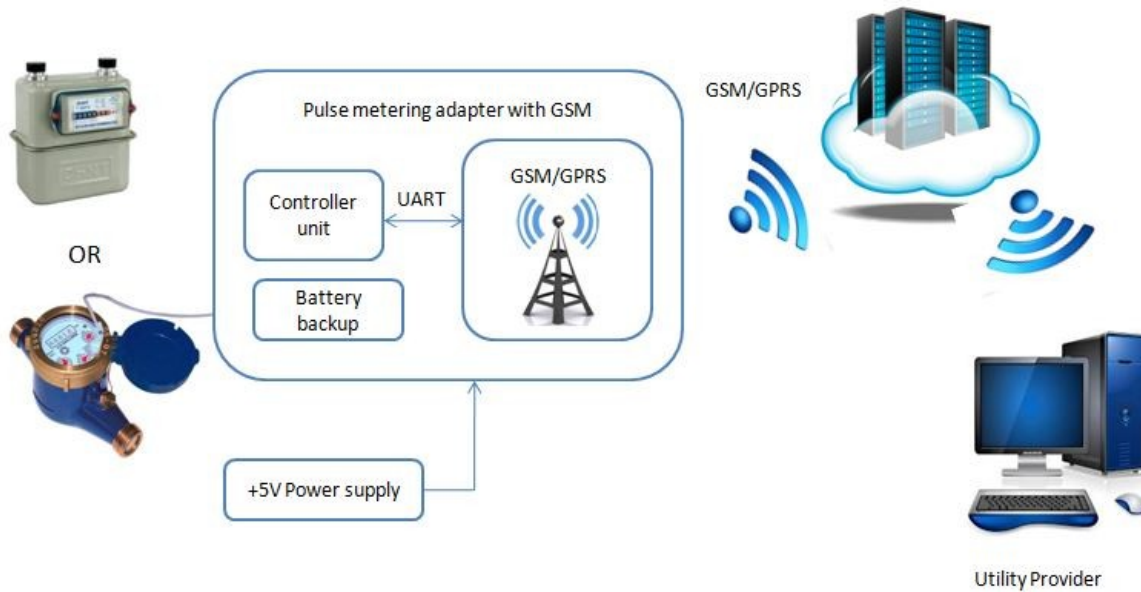
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## ABBREVIATION:

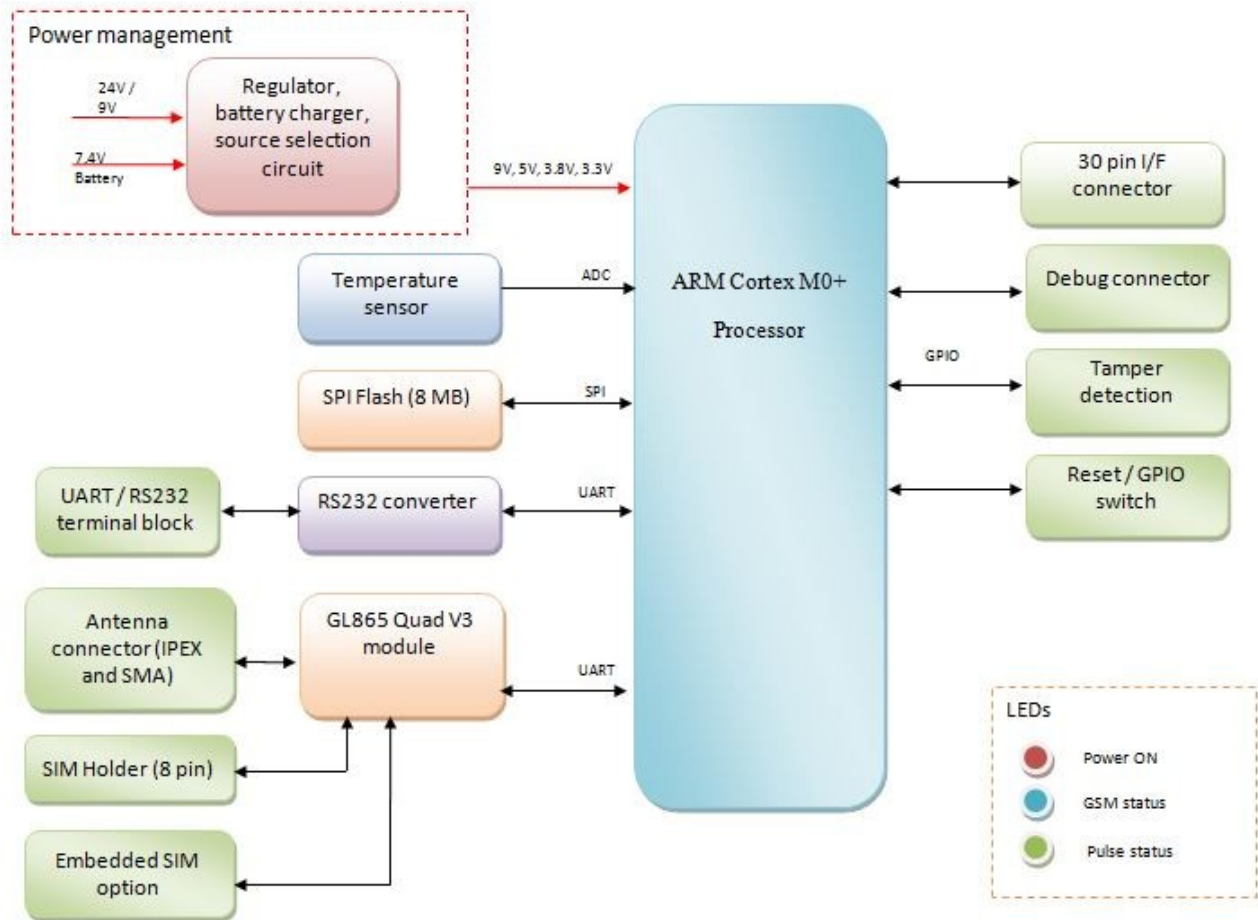
HTTP	HYPER TEXT TRANSFER PROTOCOL
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS
GPRS	GENERAL PACKET RADIO SERVICE
SMS	SHORT MESSAGE SERVICE
UART	UNIVERSAL ASYNCHRONOUS RECEIVER TRANSMITTER
SPI	SERIAL PERIPHERAL INTERFACE
I2C	INTER INTEGRATED CHIP
I2S	INTER INTEGRATED SOUND
JTAG	JOINT TEST ACTION GROUP
TCP/IP	TRANSMISSION CONTROL PROTOCOL/ INTERNET PROTOCOL

## 1 Introduction

This document provides broadly the technical details of Pulse metering adapter with GPRS. This metering adapter collects the data from mechanical water meter, gas meter or any pulse generating device and sends it to the server using 2G interface. The device also has an external flash memory which stores the data whenever there is no connectivity to the server.



## 1.1 Block Diagram



## 2 Specification

### 2.1 Power Supply

#### 2.1.1 Adapter

Parameters	Minimum	Typical	Maximum
Voltage		9/24V	
Current		2A	

#### 2.1.2 Battery

Parameters	Minimum	Typical	Maximum
Voltage		7.4V	8.2V
Capacity		1100mAh	

### 2.2 Processing Unit

#### 2.2.1 Controller

Parameters	Specification
Microcontroller	ARM Cortex M0+
Operating Speed (Max.)	48 MHz
MCU Memory	RAM: 32 Kilo Byte ROM : 256 kilo Byte

### 2.3 Memory and storage:

#### 2.3.1 Storage memory

TYPE	MEMORY CAPACITY
SPI FLASH	8 Mega Byte

## 2.4 Connector Specifications

### 2.4.1 Internal Connector

Signals	Quantity
UART	1
SPI	1
I2C	1
ADC	4
GPIO	8

### 2.4.2 External Connector

#### Debug Console Terminal Block:

PIN No	Specification
1	Rx
2	Tx
3	Ground

## 2.5 Indications & Switches

### 2.5.1 LED Indication

#### LED 1

- Power status indication for controller board(hardware configurable)
- colour : RED

#### LED 2

- GSM Communication status(Non Configurable – GSM module output)
- colour : BLUE

#### LED 3

- Meter status (software configurable). To indicate the if there is any pulse input
- Colour : GREEN

## 2.6 RF:

### 2.6.1 GSM

Parameters	Specifications
GSM MODULE	GL865-QUAD
Bands supported	Quad band 850/900/1800/1900 MHz
Output power	<ul style="list-style-type: none"> <li>Class 4 (2W @ 900MHz)</li> <li>Class 1 (1W @ 1900MHz)</li> </ul>
GPRS	<ul style="list-style-type: none"> <li>GPRS class 10</li> <li>Mobile station class B</li> <li>PBCCH support</li> <li>Coding schemes CS 1, 2, 3, 4</li> <li>USSD</li> </ul>
SMS	<ul style="list-style-type: none"> <li>Text or PDU mode</li> </ul>
Packet Data	<ul style="list-style-type: none"> <li>HTTP and HTTPS protocol</li> </ul>
RF	<ul style="list-style-type: none"> <li>- 108 dBm (typ.) @ 850/900 MHz</li> <li>107 dBm (typ.) @ 1800/1900 MHz</li> </ul>
SIM	Internal and Replaceable
SIM CARD HOLDER	8 PIN
Antenna	Supports SMA antenna
Future enhancement	<ul style="list-style-type: none"> <li>3G upgradable</li> <li>Embedded SIM (M2M SIM) – This option is provided in this hardware version and will be selectable using hardware .</li> </ul>

## 2.7 Sensors

Both the sensors will be PCB mounted.

### 2.7.1 Temperature Sensor

Parameters	Specification
Temperature Range	-50°C to 150 °C
Accuracy	-50°C to 150°C; VDD = 2.3 V to 5.5 V ;±0.4 °C
Supply Voltage	1.5V to 5.5 V
Part number	lmt84



## 2.8 Debug Support

### 2.8.1 System support:

- Windows – Connected to a desktop or laptop through UART (TTL 3.3 V)
- The diagnostics will be run from the desktop utility

### 2.8.2 Debugger interface

- JTAG
- SWD

### 2.8.3 IDE

- CodeWarrior

## 2.9 Configuration & Field Requirements

### 2.9.1 Configurable parameters

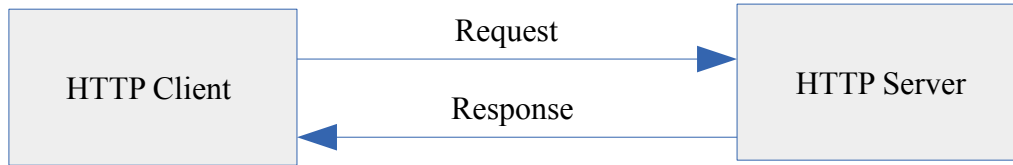
- Device ID
- IP
- PORT
- API (or URL)
- APN
- Periodicity
- Liters per pulse
- Date and time
- Mobile or SIM number
- Initial meter reading

Configuration of Pulse metering adapter for GPRS can be done by

- SMS
- Debug Console

## 2.9.2 GPRS Data

To receive commands from server the GSM modem interface controller should first request



REQ\_DATA

The request will be sent to the server in the form of POST request

DATA

JSON Format

## 2.9.3 Message format

```
{
  "meter_id":"123",
  "timestamp":"2016-08-02T10:00:00",
  "meter_reading":"000.000",
  "signal_strength":"18"
}
```

## 2.10 Certification Requirements:

- Not applicable

## 2.11 Environmental Requirements:

- Operating Ambient Temperature : 0°C to +55°C

## 2.12 Mechanical Requirements:

- Board Size : 53.98mm X 85mm