

## REMOTE FLOWMETER SOLAR PANEL & BATTERY MANAGEMENT GUIDE

### APPLICABLE PRODUCTS

This bulletin applies to Aquamonix IR2020, IR2060, and IR2030 flow meters fitted with i500 Transmitters and optional ENVOY RTU (Remote Telemetry Unit).

### BACKGROUND

Aquamonix flow meters are designed as low power units for remote operation via a small solar panel and sealed 12v battery. The flow meters operate in a sleep / wake mode to preserve power. If optional RTU devices are integrated they generally operate from the same solar/power supply.

### POWER USAGE

During typical sleep / wake power consumption is:

Status	Condition	Time Period	Current Draw	Duty Cycle
<b>Meter ON</b>	Wake	typically 30sec	Approx. 160mA	10% duty
<b>Meter OFF</b>	Sleep	typically 300sec	Approx. 10mA	90% duty
<b>RTU</b>	Approx. 50mA for 10minutes every hour			15% duty

### SOLAR POWER SYSTEM

The solar and battery system is designed to reliably power the metering stations through all likely conditions and include conservative design safety factors. The solar panels can tolerate some partial shading, however sites may be compromised if heavy shading impacts on the solar charging during the middle of the day – particularly during winter months when sun angle is the lowest.

The basis for the solar design is:

- Sun exposure for at least 4 hours per day (10am-2pm)
- Solar panel aimed toward north and elevated by 30°- 60°
- 50% solar capacity to allow for dust, fouling and partial shading
- 50% design safety factor to account for charging after sunless period
- 30% loss in battery capacity due to temperature cycling
- 7 sunless days operation with 50% reserve battery capacity

**A typical system would comprise a 10 watt solar panel and 7 Ah battery.**

The solar input will be 18-20 volts during the day. Battery voltage will rise to 13-14 V during the day, and drop to around 12.5 V at night.

At shaded sites where solar power is impacted it may be necessary to consider options to improve solar capacity or reduce loading (refer Technical Bulletin No 31).



*The average lifespan of the battery is approximately 3-5 years with a low replacement cost. The solar panel has an expected lifespan of approximately 10 years with options for various models and panel sizes.*

