

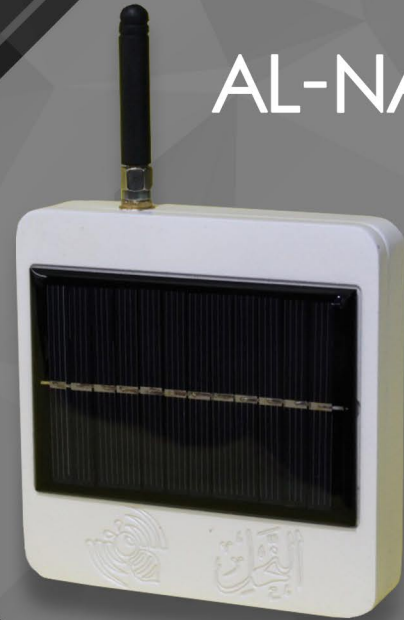
# encore

## Antenna Alignment Measurement System



**ThingsNET®**

AL-NAHL



- LoRaWAN Communication
- 4 Degrees of Freedom Measurement
- Mini Solar Panel + Li-ion Battery Cell

AI-Nahl is an Antenna Alignment Sensor that is an essential part of the Antenna Alignment Measurement System that when attached to an antenna, monitors its alignment in multiple dimensions: Azimuth, mechanical down-tilt, skew (lateral-tilt) and height. The AI-Nahl will detect and report any desired or undesired changes in any of the dimensions of the antenna alignment.

For reliability and ruggedness, the unit is enclosed in an aluminum weather proof housing. The unit is able to withstand the harshest of weather conditions and will give years of service. The unit is easily installed without any tools with a strong adhesive surface to the back of the GSM antenna.

AI-Nahl is based on the latest IoT LoRaWAN wireless communication interface and DxBus© protocol. AI-Nahl comes with an integrated Lithium Ion Battery for backup. Furthermore, it is equipped with a Mini solar panel that charges the battery regularly. LoRaWAN was specifically chosen as a communications interface because of its extremely low power consumption and long range. LoRaWAN is an extremely low power communications interface.

The data from each antenna is collected periodically and transmitted to the nearest LoRaWAN Hub Station that routes the sensor parameters via internet or intranet to the central AAMS Server. The AAMS Server holds all the data in a database that can be analyzed.

The AAMS is one of a kind system that is essential for GSM RF optimization and closing the optimization loop which is currently dependent on too many human interventions. These gap between the RF design and implementation is always a source of contention between the departments in a telecommunications operator. AAMS is designed to create a bridge between the departments and to provide an accurate picture of the implemented wireless network.

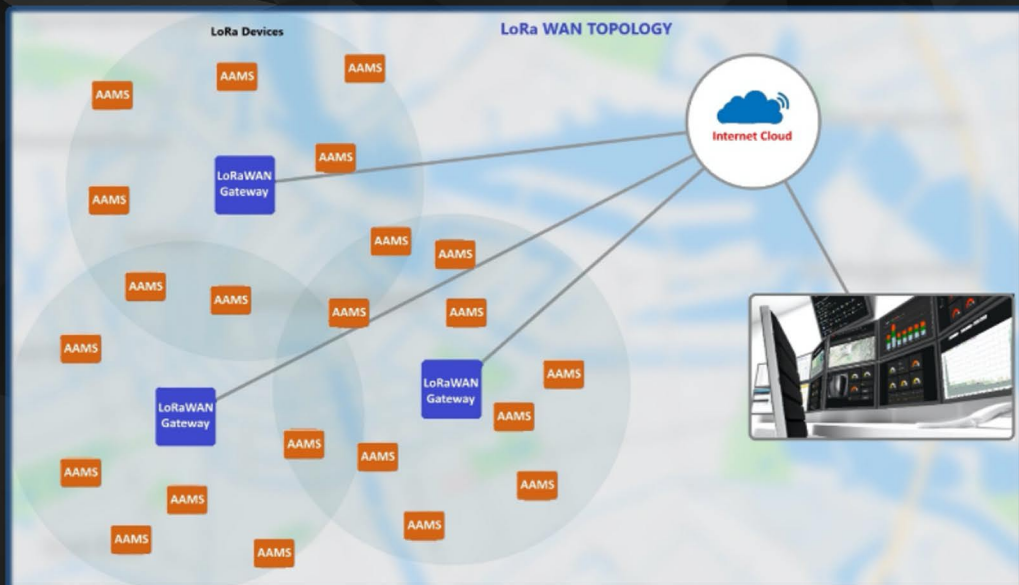
AAMS provides the automation needed in the system which would make RF design and optimization precise and would reflect directly on GSM user experience.

## Specifications

|                     |                                |                   |                               |
|---------------------|--------------------------------|-------------------|-------------------------------|
| Azimuth             | $\pm 1^\circ$                  | Operating Temp.   | -20°C ~ 85°C                  |
| Down-Tilt           | $\pm 0.5^\circ$                | Storage Temp.     | -40°C ~ 125°C                 |
| Lateral-Tilt (Skew) | $\pm 0.5^\circ$                | Relative Humidity | 0% ~ 90% (Non Condensing)     |
| Height              | $\pm 1.5\text{m}$              | Warm Up Time      | ~1 Minute                     |
| Enclosure Material  | Non-Magnetic Anodized Aluminum | Shock             | 15g in 3 Planes               |
| Fixing              | High Strength Adhesive Tape    | Vibration         | 10Hz ~ 55Hz, 0.15mm Amplitude |
| Dimension           | H: 100mm, W: 100mm, D: 26mm    |                   |                               |
| Weight              | 500g                           |                   |                               |
| Protection          | IP67                           |                   |                               |

- 6 DOF IMU core
- 3 Axis Magnetic compass
- Power Independent and Self Contained
- Built in transient protection
- State of art SMD technology
- LoRaWAN Communications Technology

Protocol      LoRaWAN + DxBus©





"*Encore ThingsNET* provides easy-to-use visibility and control options; which makes us capable of providing the most perfect corporate solutions by maximizing service efficiency. Our prized RMS is a complete IOT solution that brings together people, processes, data and things; to make networked connections more relevant and valuable than ever before!"



"*Encore StoreBOX* provides incomparable longevity and optimization statistics. The embedded microcomputer intelligence, along with our sophisticated proprietary algorithm that goes in each unit, makes us stand out from the rest of the herd. With extensive R&D, we unravel storage solutions that are better than anything out there!"



"*Encore PoweredON* is the energy centric platform of our organization. Our smart product designs offer fully featured devices with the most efficiently designed footprints. Mixing this up with our state-of-the-art proprietary algorithm and our relentless R&D towards innovating renewable energy systems, we provide the most optimal power solutions.



**Encore Solutions Pvt. Ltd.**

Plaza 44-I, Street 26, Business Bay,  
Sector F DHA Phase I,  
Islamabad, Pakistan



[info@encore.com.co](mailto:info@encore.com.co)



+92-300-5568248



+92-51-2318211



+92-51-2318210