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“Moving innovation”

Company Update

Staff - 135

Auckland – North-West and South-West Traffic Signals Maintenance.
Field services / ITS Maintenance - Central , West , North and Rail

Hamilton Signals Maintenance Contract

Whangarei – Streetlighting and Traffic Signals and VMS Maintenance Contract. A push to increase CCTV coverage on signals

Tauranga – Civil and Water Infrastructure, Streetlighting and Signals / VMS / CCTV projects. Bay Park flood lighting.

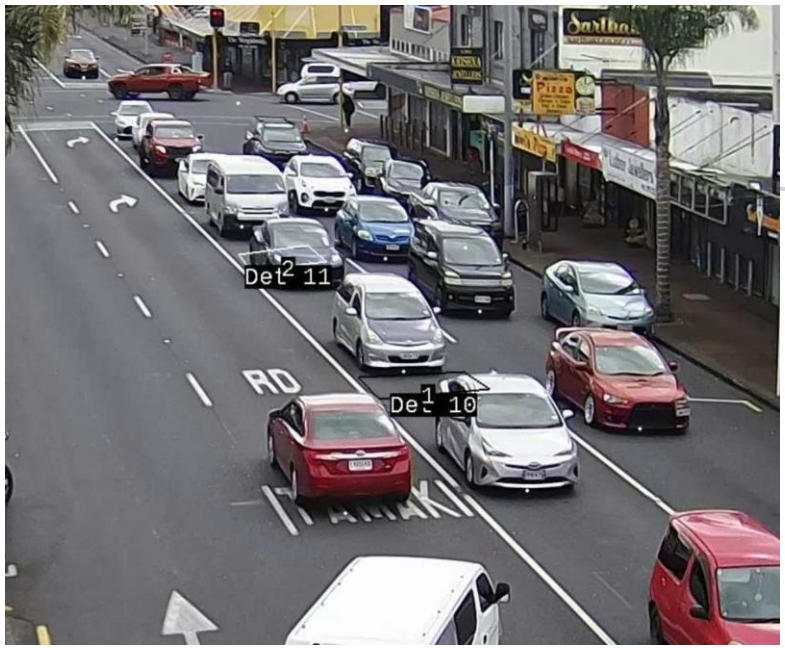
Wellington – CCTV Enterprise Level Systems

Auckland Transport

TIBC – Technology, Innovation and Behavior Change

Advanced Queue detection x 27 sites.
FLIR Thermicam and Traficam AI
Each with a minimum of 2 detectors. 54 Units deployed to date.
Focusing on right turn lanes at 40 and 80 meters.

Remote access for live configuration and monitoring.



Auckland Transport

TIBC – Technology, Innovation and Behaviour Change

Pedestrian Occupancy Detection

Pedestrian Occupancy Detection – 15 sites with over 30 detectors

AGD 645 cameras and 326 radars - 645 cameras being the preferred option.

Detection is measured on the percentage of the zone that is occupied and has adjustable LOW , MEDIUM and HIGH thresholds.

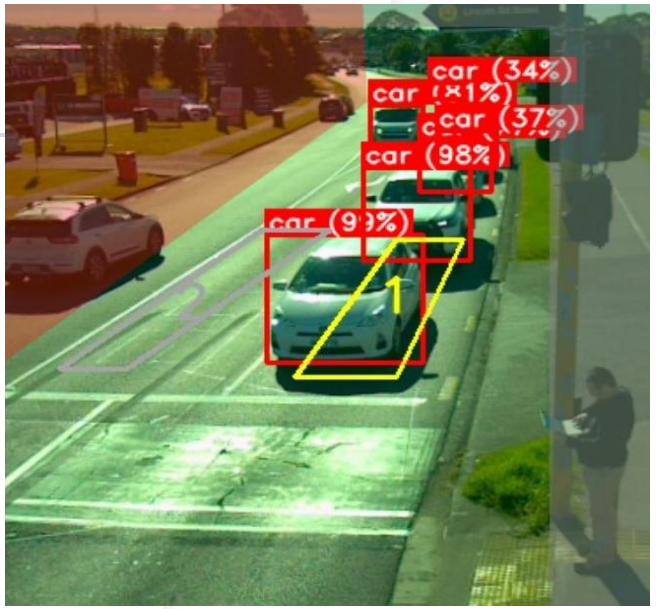
Auckland Transport

Stop line Detection Trials

Stop line Detection Trials – 2 sites with multiple approaches.

Direct comparison between Loops, FLIR and AGD 650 detection.

Results to be announced shortly.



The Future of Detection

To date current technologies, use single point detection.
The future of detection looks like it will be based around fluid movement tracking with smarter controller and systems algorithms to suit.

Deep learning and AI

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24GHz (TIMOS) Sensor, powered by NVIDIA, with AI edge computing.

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TIMOS

The Ultimate Edge Computing
All-in-One Solution to Revolutionize Smart Traffic

The Ultimate Edge Computing All-in-One Solution to Revolutionize Smart Traffic Infrastructure

300m

Long Detection Range

8 lanes

Wide Detection Range

1.2 kph

Velocity Resolution

2.0°

Angular Resolution

~320 kph

Velocity Detection

~100°

Field of View Azimuth

~30°

Field of View Elevation

~256

Objects Detectable Simultaneously

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Unexpected
Events
Detection

BRINGING NEW POSSIBILITIES FOR TRAFFIC MONITORING AND INSIGHT

Advanced Detection Information

The TIMOS uses the vehicle location, speed, class information to perform advanced detection on specified spots and to detect events occurring on the road that enable convenient traffic policies.

Presence Detection

Average Speed

Queue Length

Time to Lane Crossing

Event Trigger Information

TIMOS accurately detects many events occurring on the road that enable convenient and advanced construction of traffic policies and more.

Incoming Vehicle Detection

Queue Length Alarm

Speed Violation

Vehicle Class Detection

Wrong-Way Driving

Stopped Vehicle

Lane Change

Jaywalking

Vehicle Class Detection

DATA SETUP

TIMOS allows for data integration into most systems in the form of a KAFKA producer and MQTT .

The MQTT data is sent in DAQ format to minimize network load and is then parsed to JSON on the client end.
By doing this data can be sent via IOT very efficiently.

The specific data fields can be set by the user by simply selecting or deselecting the boxes at setup..

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Smart Stud Technology

SOLAR STUD ADVANTAGES

The CSLI Solar Road Marker Stud represents a significant advancement in road safety and sustainable infrastructure.

Its innovative design, energy efficiency, and cost-effectiveness make it a promising solution for addressing the challenges of modern transportation networks

•Energy Efficiency: By harnessing solar energy, these markers are a sustainable alternative to traditional road markers, reducing reliance on an induction cable cut into the road surface.

•Improved Visibility: The high-intensity LEDs ensure that road markers are highly visible, enhancing safety for drivers, cyclists, and pedestrians.

Cost savings from not needing to saw cut and laying cables to less labor and Traffic Management.

SOLAR STUD SPESIFICATIONS

Smart Stud

NZTA M29: Classification: Solar powered, 1 direction, Flashing, Yellow/Amber 591nm
Construction: Cast Aluminium housing with polycarbonate lens incorporating anti-skid ridges IP68
Dimensions: D 160mm x H 53mm, extends 8mm above pavement surface
Radio Frequency: 915MHz – 927.5MHz ISM, AES128 encrypted, RCM certified
Range: 100m from base station in built up area
Force Withstand: 6kN @ 3mm deflection
Autonomy >4 Weeks with no solar input, paired with base station with LEDs off
Endurance >4 days with no solar input, continuous flash from fully charged (50%duty)
Battery Li-Ion 3.7V 4000mAH
Operational temperature '-15 °C to +50 °C

Base Station

Construction: Polycarbonate Instrument Box IP67
Dimensions: (L) 60mm (W) 60mm (H) 120 mm
Radio Frequency: 915MHz – 927.5MHz ISM, AES128 encrypted, RCM certified
Range: 100m from stud in built up area
Power Supply: 12V ~ 24V AC/DC
Operational Temperature -15 °C to +50 °C
Control of up to 250 Studs in 3 independent zones
Simple logic interface
USB and R232 serial interfaces

Advanced Features

Individual stud telemetry is monitored and reported back to base station.

STUD Telemetry includes

Solar Voltage, Battery voltage, Battery Charging Rate, Temperature, and Ambient Light Level

BASE Telemetry includes

Supply voltage, Individual Input State and Ambient Light Level

All of the telemetry is available via the dedicated serial port in the controller.
An additional USB port allows for programming of the controller and adding
or removing studs from the system.

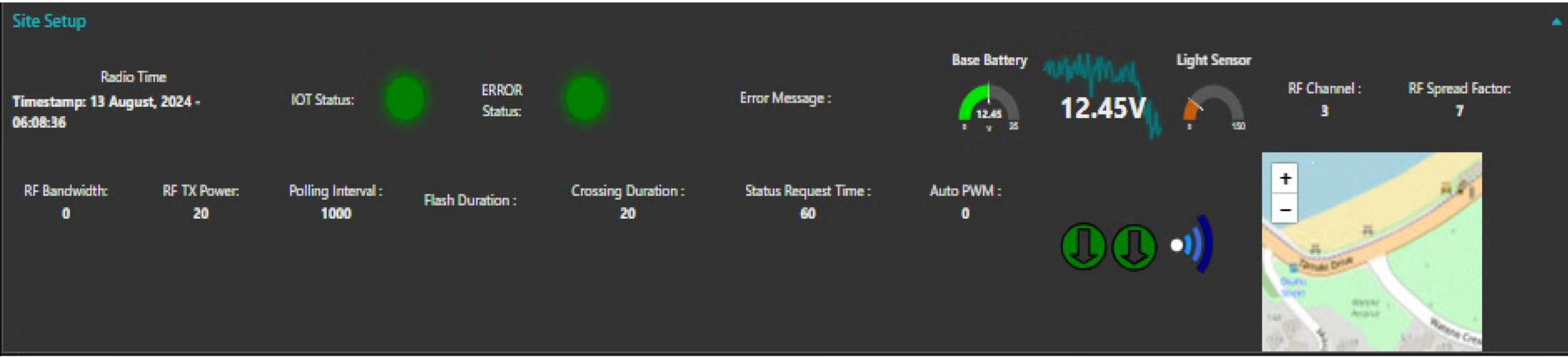
By monitoring the ambient light level of both the studs and the base station the system can be programmed to either dim individual studs at night or have the base control all the stud dimming at the same time.

OPTIONAL SYSTEM DASHBOARD VIA IOT

We have a produced an end to end solution to monitor, store and display the health and metrics of the entire stud site in a browser dashboard.

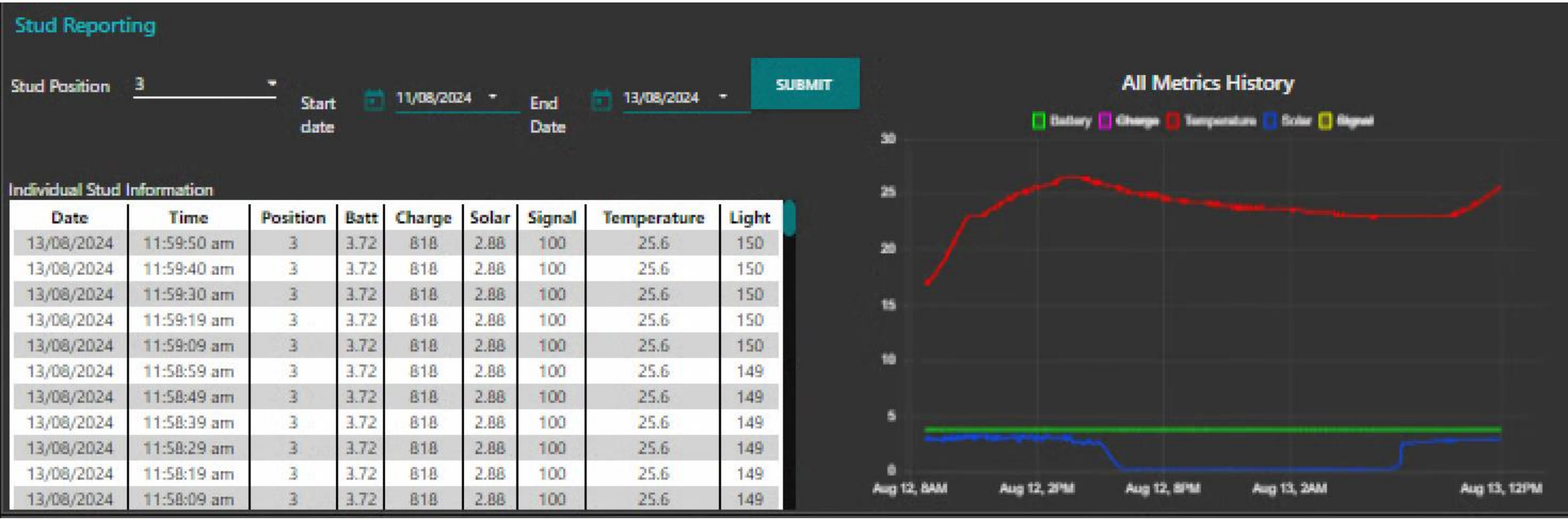
This solution is undergoing live testing and will be available as an option in the near future. Here are some of the key features from the monitoring portal.

The first section provides a live overview of the controller state and setup



OPTIONAL SYSTEM DASHBOARD VIA IOT

The next sections allow for quarrying specific data from the studs and controller.



Individual Stud Information

Date	Time	Position	Batt	Charge	Solar	Signal	Temperature	Light
13/08/2024	11:59:50 am	3	3.72	818	2.88	100	25.6	150
13/08/2024	11:59:40 am	3	3.72	818	2.88	100	25.6	150
13/08/2024	11:59:30 am	3	3.72	818	2.88	100	25.6	150
13/08/2024	11:59:19 am	3	3.72	818	2.88	100	25.6	150
13/08/2024	11:59:09 am	3	3.72	818	2.88	100	25.6	150
13/08/2024	11:58:59 am	3	3.72	818	2.88	100	25.6	149
13/08/2024	11:58:49 am	3	3.72	818	2.88	100	25.6	149
13/08/2024	11:58:39 am	3	3.72	818	2.88	100	25.6	149
13/08/2024	11:58:29 am	3	3.72	818	2.88	100	25.6	149
13/08/2024	11:58:19 am	3	3.72	818	2.88	100	25.6	149
13/08/2024	11:58:09 am	3	3.72	818	2.88	100	25.6	149

OPTIONAL SYSTEM DASHBOARD VIA IOT

Input Reporting

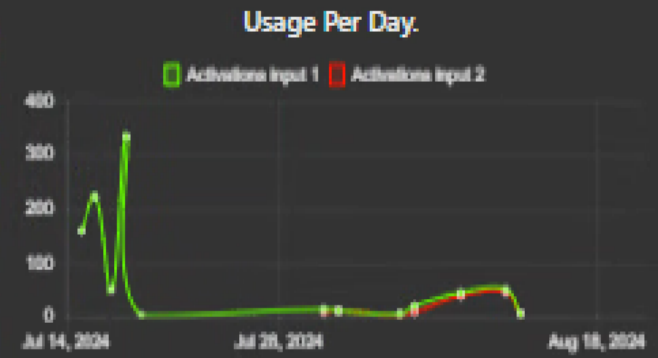
Input Number 1 | Start date 11/08/2024 | End Date 13/08/2024 | SUBMIT

Detailed Activation history.

Date	Time	Input
13/08/2024	7:52:31 am	1
13/08/2024	7:52:21 am	1
13/08/2024	7:52:10 am	1
13/08/2024	7:52:00 am	1
13/08/2024	7:51:40 am	1
13/08/2024	7:51:30 am	1
12/08/2024	3:20:01 pm	1
12/08/2024	3:19:51 pm	1
12/08/2024	3:19:41 pm	1
12/08/2024	3:19:31 pm	1
12/08/2024	3:19:11 pm	1
12/08/2024	3:19:01 pm	1
12/08/2024	3:18:30 pm	1

Total Counts From Database

Date	Input	Count
15/07/2024	1	160
16/07/2024	1	222
17/07/2024	1	52
18/07/2024	1	334
19/07/2024	1	2
31/07/2024	1	16
31/07/2024	2	8
1/08/2024	1	12
1/08/2024	2	12
5/08/2024	1	6
5/08/2024	2	2
6/08/2024	1	22
6/08/2024	2	10

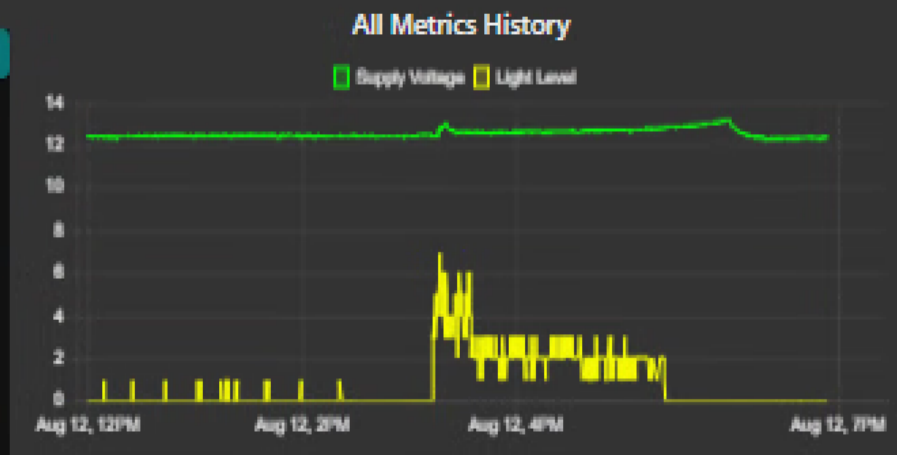


Base Station Reporting

Start date 12/08/2024 | End Date 13/08/2024 | SUBMIT

Base Station Power Information

Date	Time	Light Level	Supply Voltage
13/08/2024	11:59:50 am	2	12.55
13/08/2024	11:59:40 am	3	12.54
13/08/2024	11:59:30 am	3	12.52
13/08/2024	11:59:19 am	3	12.54
13/08/2024	11:59:09 am	3	12.56
13/08/2024	11:58:59 am	3	12.54
13/08/2024	11:58:49 am	4	12.57
13/08/2024	11:58:39 am	3	12.54
13/08/2024	11:58:29 am	3	12.55
13/08/2024	11:58:19 am	4	12.57
13/08/2024	11:58:08 am	3	12.58



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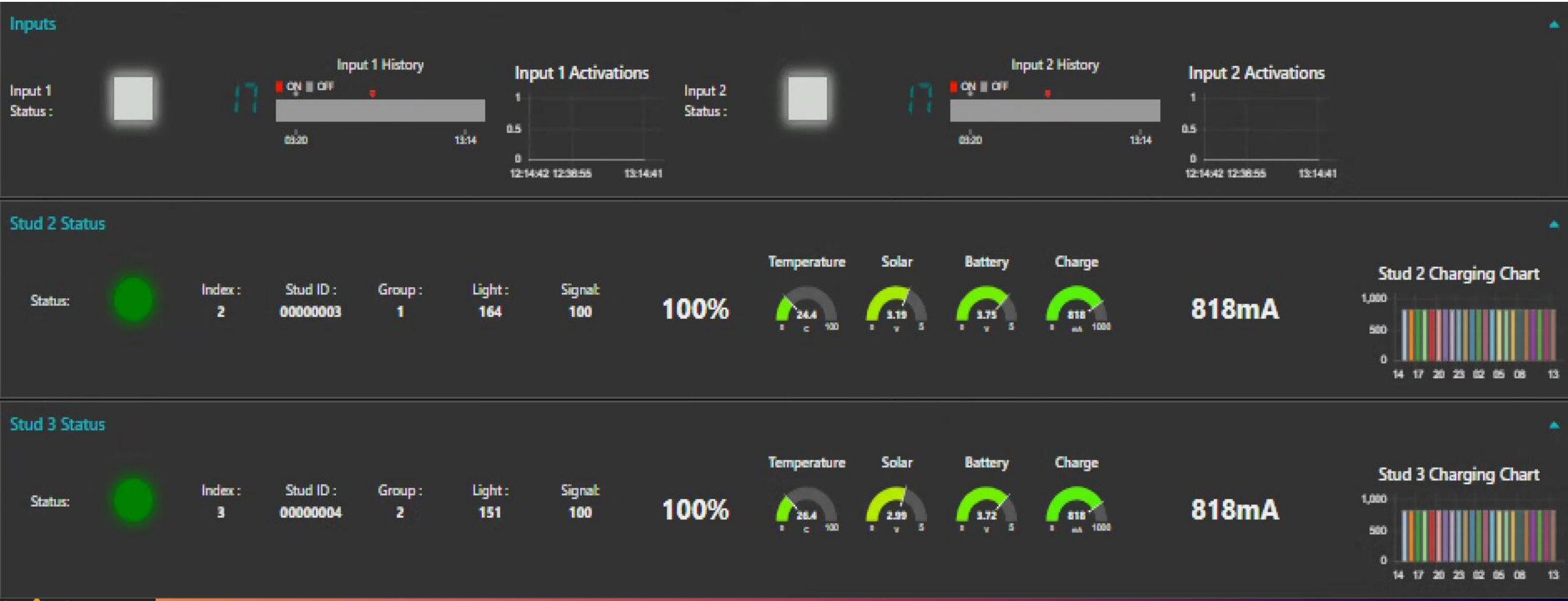
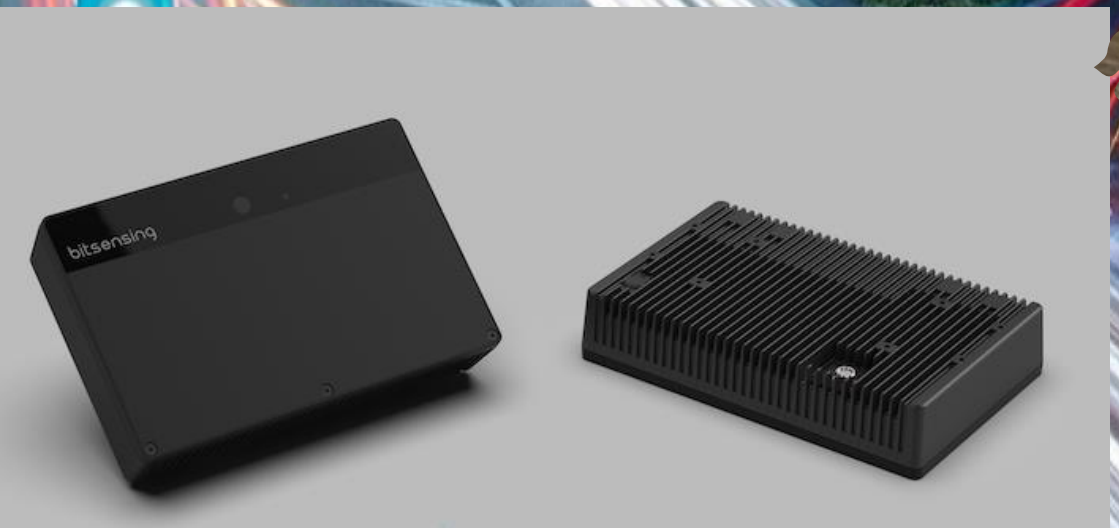
OPTIONAL SYSTEM DASHBOARD VIA IOT

Live Input and Stud status monitoring



THANK YOU

Please see us in the exhibition hall for more details on the products.



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