DAYTECH

ACORN Modular IoT SmartNode | Wireless Mesh Sensors & Controls

The IoT Platform that gives you the power!

INTRODUCING DAYTECH

At DAYTECH, we research and develop, manufacture and integrate, state of the art electronic and software systems for Industrial Automation and Control. We specialise in developing Wireless Mesh Networks, Rugged Edge Computing, Cellular M2M, Smart Microprocessor Wireless Sensor and Control Technology, Off-Grid battery powered systems, together with Full-Stack IoT software and Edge Intelligence.

It get's complicated and can be expensive to build advanced, interoperable IoT systems. That's why we developed the **ACORN IoT Smart-Node©** and **ControlMesh©** platforms, to be rugged, cost effective and easy to use, so that you can specialise in what you do best and reduce time and cost to take your automation and control system to the next level!

MODULAR | INTELLIGENT | RUGGED
Building Blocks for Easy IoT

DAYTECH ACORN MODULAR IOT TECHNOLOGY

The modular hardware is designed from the ground up to be easily connected to the internet for remote monitoring or control – collectively known as 'Internet of Things'. Our platform empowers you, through an easy to use modular "building blocks" approach, similar to the concept of Lego. The ACORN IoT SmartNode© and ControlMesh© Platform, might be fun to use, however, being industrial grade it's far from a toy.

"Build your own IoT system – create your own Apps!"
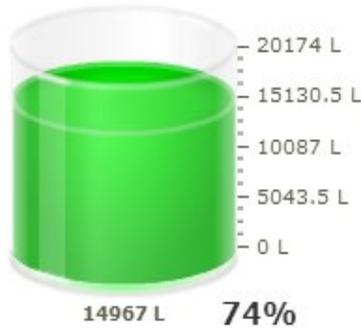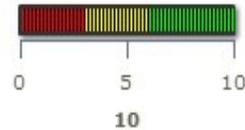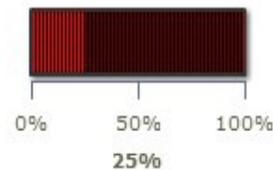
We have been developing technology for the **Industrial IOT boom** for over 8 years and have invested heavily in R&D, allowing you to leverage the digital revolution and merge your physical and digital worlds.

The end to end platform allows you to build incredible automation systems, with IoT capability including apps for your company or customers, remote access, monitoring and control, sophisticated wireless star and mesh networks (including LoRa and Zigbee), WiFi, Ethernet, Serial RS232/485 and cellular 3G/4G gateways, with minimal learning curve and low barriers to entry.
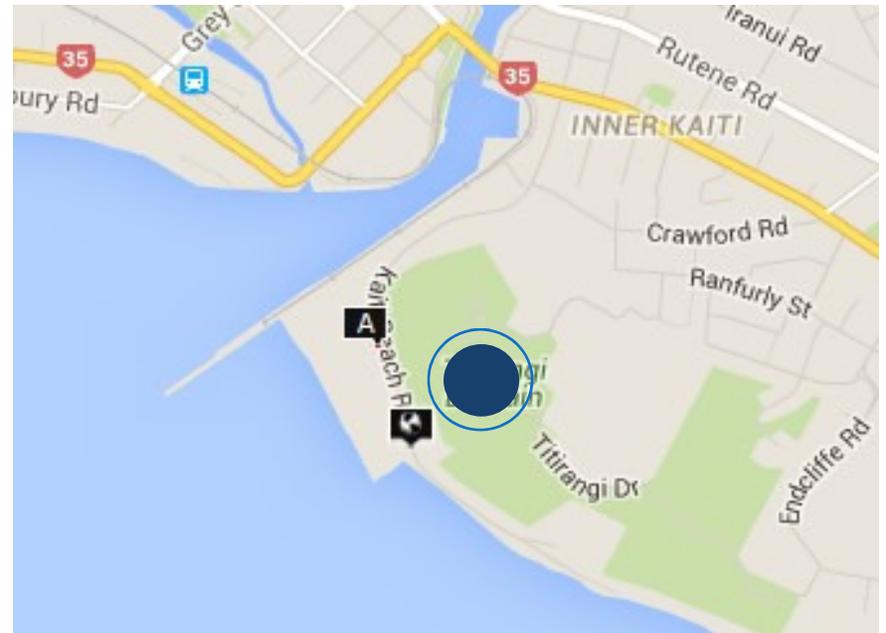
DAYTECH
ACORN Modular IoT Platform | Wireless Mesh Sensors & Controls
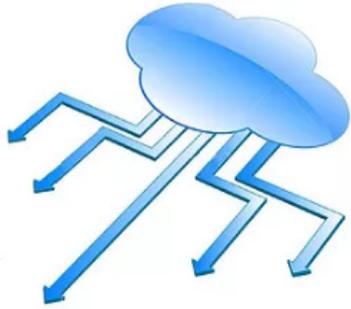
IoT - MONITOR & CONTROL

Industrial grade IoT - Internet of Things Technology - software development, rapid prototyping, product engineering, AI/ML intelligent edge computing, smart gateways, nodes and sensors, Ready for Industry 4.0!
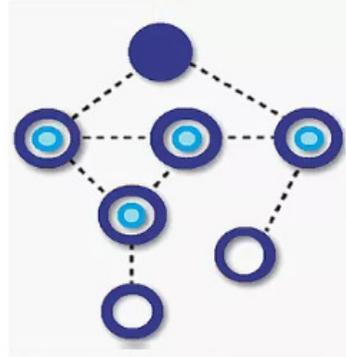
WIRELESS SENSOR NETWORKS

Zigbee, LoRa, WiFi - Industrial grade Wireless Sensor Networks - intelligent mesh networks, RTOS hardened ACORN SmartNode, product design & engineering, remote sensor monitoring and control.

SENSORS AND ACTUATORS

Industrial grade sensors and actuators for control and monitoring, product engineering, industrial automation and IoT applications. Smart programmable sensors and controls.

M2M COMMUNICATIONS

Industrial grade M2M Technology - gateways, WiFi, LoRa, Zigbee, 3G/4G cellular modems, remote access and control, communications systems integration. Modular and expandable systems.
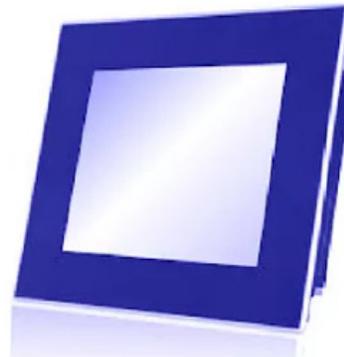
INDUSTRIAL COMPUTERS & HMI

Industrial grade fanless PCs, touchscreens and Human Machine Interfaces, edge computers, AI/ML at the edge, remote control, GUI software systems development & integration.

SOLAR AND BATTERY POWER

Industrial grade solar and battery powered systems - packaged solutions, product engineering, remote monitoring and off-grid powered equipment.

Industrial IoT - ACORN SmartNode - "Modular Building Blocks for Easy IoT"

Daytech have developed a range of modular hardware and software technology products that offer robust, precise, sophisticated monitoring and automatic control. These innovative Industrial IoT solutions are suitable for a wide range of process and environmental applications. Depending upon your needs, we can deliver standardised, configurable hardware/software, that you can install, configure and maintain in house, or a custom engineered solution, with your companies branding on the apps, dashboards and GUIs, involving rapid prototyping through to high volume manufacture.
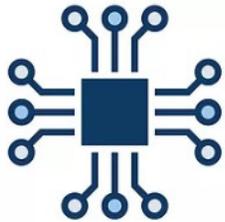
"THE MUSCLE" - HARDENED REAL TIME OPERATING SYSTEM (RTOS) MCU

The *ACORN IoT SmartNode* range of wireless sensor network, edge computing and gateway nodes, forms a highly inter-operable and modular platform, powered by an advanced ARM Cortex M4 IoT-Core MCU, with hardened RTOS for industrial control, with plugin modules for LoRa, LoRaWAN, Zigbee 2.4GHz, Zigbee 900MHz, 3G/4G, WiFi, Bluetooth and soon onto the market - NBIoT. The ACORN comes with 6 industrial IO onboard and has expansion modules allowing up to 36 IO in one unit and 1000s of distributed IO, meaning you can replace an RTU or DCS/PLC systems with state of the art IoT hardware.

"THE BRAIN" - POWERFUL & INTEGRATED SINGLE BOARD COMPUTER / GATEWAY

The ACORN IoT SmartNode has a plug-in slot for a single board computer, that fits within the weatherproof housing, allowing you to program sophisticated control applications, gateway to cloud and remote servers, run sophisticated AI/ML algorithms for control or edge processing and many more feature. You Can run DAYTECH's version of Node-Red for drag and drop "flow programming" app development! This also allows you to access, program, configure and control your applications locally via WiFi/Bluetooth with the GUI from your PC/Smartphone/Tablet, or remotely via 3G/4G (plug-in required) with VPN or cloud integrated solutions.

"THE COMMUNICATION SKILLS" - RS232/485, CAN BUS, MODBUS, UART, I2C, SPI

The ACORN IoT SmartNode can not only walk the walk, it can talk the talk! For fully inter-operable IIoT solutions, you need the flexibility to communicate with a myriad of devices and other platforms. We've packed the ACORN full of communications ability, not only wireless protocols such as WiFi/Bluetooth/Zigbee/LoRa, Cellular 3G/4G but also comes standard with RS232/485, CAN Bus, UART, I2C and SPI. We can factory configure GPS, SDI-12, MODBUS-RTU, MODBUS-TCP or a plethora of other protocols, set us a challenge!

"THE POWER" - MAINS 230VAC, 12VDC, 24VDC, EXPANDABLE BATTERIES, SOLAR

The ACORN IoT SmartNode can be powered from 230VAC with a plugpack, or directly to DC with a wide range 12-28VDC input range. It has an onboard solar battery charging IC for sophisticated and safe solar power charging or up to 2 x Lithium Ion 3Ah battery packs per node, for seriously long life remote operation. The node features 12VDC outputs and 24VDC optional output to power, control and monitor sensors and actuators, wireless and from battery/solar power. Intelligent sleep modes allow you to expand battery life and shut down individual modular units of the node as required.
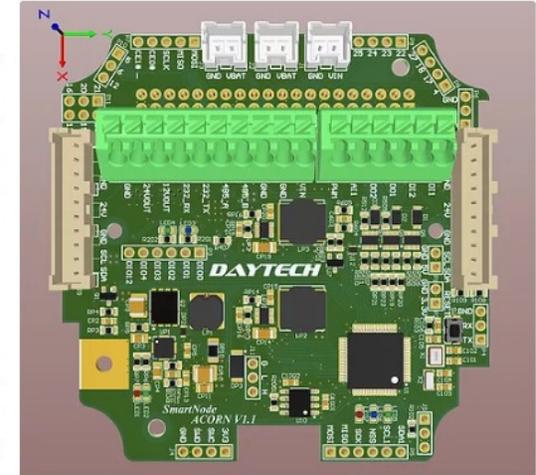
DAYTECH

ACORN Modular IoT Platform | Wireless Mesh Sensors & Controls

DAYTECH SMART SENSOR TECHNOLOGY + COIN

Go wireless and control your process and equipment directly from DAYTECH smart sensors.

SMART TRANSMITTERS
Smart sensor technology for temperature, level and pressure measurement and Switching in liquid and gas applications

+

Wireless smart temperature and pressure – complete with digital display setup for switching at setpoints for remote wireless control.

THERMAL FLOW SWITCHES
Presision thermal dispersion flow switches for water and oil flow detection.

+

Wireless flow switch – complete with sensitivity control for switching flow at setpoints for remote wireless control.

+

Wireless level sensor – point to point for control and switching pumps, motors or valves wirelessly for tanks, dams or bore level control.

You're only limited by your imagination – the possibilities are endless!

DAYTECH
ACORN Modular IoT Platform | Wireless Mesh Sensors & Controls

Examples of Possibilities of Custom Data Display (Available upon request): | Example of a Daytech applications (Remote Diesel Tank Level Monitoring IoT):

≡ Sensor 1

Temperature

26
25
24
23
13:25:23   18:00:00   21:41:

C

23.96
0   30

Pressure

951
950

948
947
13:25:23   18:00:00   21:41:

mbar

948.99
900   1100

Humidity

37
36
34
32
30
29
13:25:23   18:00:00   21:41:

%Rh

36.48
0   100

RSSI

-1
-20
-40
-60
-67
13:25:23   18:00:00   21:41:

dB

**-12**
-125   0
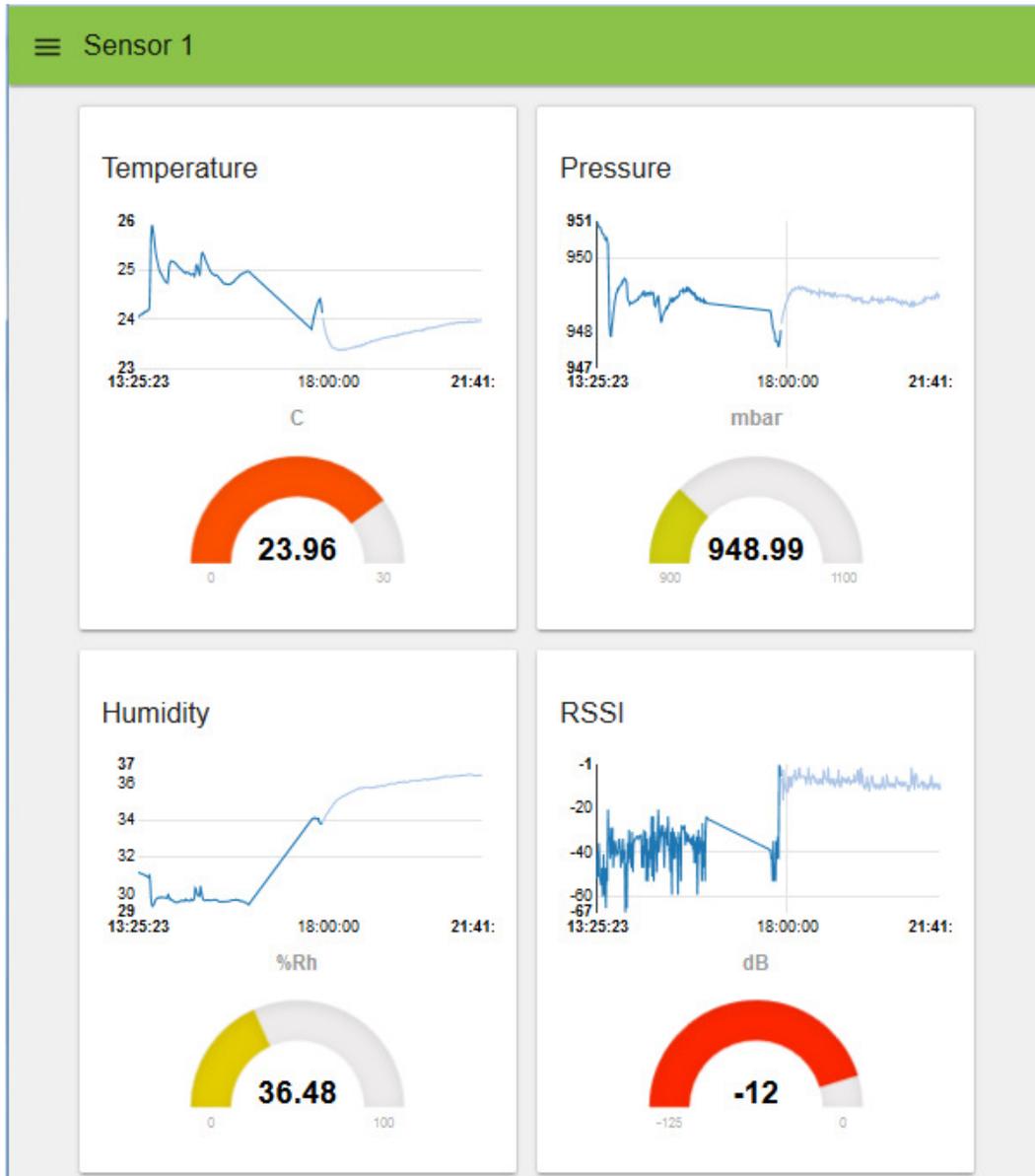
The ACORN IoT SmartNode Platform allows you to build your own sophisticated dashboards, control and monitoring apps via DAYTECH's version of Node-Red drag and drop "flow programming" tool. You can digitally wire your systems choosing from 100s of different plug-ins!

DAYTECH
ACORN Modular IoT Platform | Wireless Mesh Sensors & Controls

DAYTECH - ACORN IoT Node AND CONTROLMESH - NETWORK TOPOLOGY

3G Cellular - Remote

Web Client

Client /M2M / SCADA

Configuration

M2M HMI Remote

Tablet

Dashboards / HMI

Client Laptop

Client SmartPhone

ACORN IoT SmartNode Modular IoT Platform at the Edge - ARM Cortex M4 CORE "The MUSCLE"
Plugin Computing and Gateway Module "The BRAIN" - Single Board Computer (Hardened Raspberry Pi or other options)

FLOW PROGRAMMING TOOL

INPUT

OUTPUT

DATA FLOW

Branch

Text

3G

3G/4G Cellular Module

Web Server

SQL Database

Zigbee 802.15.4 Module

LoRaWAN Module

I2C, UART, SPI Peripherals - Hardwired

RS232 / RS485 Serial Module - To PLC / Device

RS232 / RS485 Serial Module - MODBUS

Ethernet Onboard SBC

WiFi onboard SBC

Zigbee PAN Mesh Network - On Site

Zigbee 802.15.4 Module

Zigbee 802.15.4 Module

Zigbee 802.15.4 Module

Zigbee 802.15.4 Module

Zigbee 802.15.4 Module

LoRaWAN - Star Network - On Site

LoRaWAN Module

Customer LoRaWAN gateway

LoRaWAN Module

LoRaWAN Module

WiFi and Ethernet LAN Networks - Local

Client /M2M / SCADA

Client

Client

Client

Client

Dashboards / HMI

Web Client

Configuration

Cloud Services - AWS / Azure / IBM Watson

Web service

DNS

Dashboards / HMI

Secure Server

Cloud Dashboards - Remote

Client

Web Client

Client

Dashboards / HMI

Tablet

The Most Inter-operable & Powerful Industrial IoT Platform - Start Your Journey Today!!

FOR MORE INFORMATION VISIT: www.daytech.io

DAYTECH
ACORN Modular IoT Platform | Wireless Mesh Sensors & Controls