Exhibit information, product brochures and other materials will be available for download.
http://www.alps.com/e/ceatec2017

Find and get your hands on the electronic components you need right away!


ALPS ELECTRIC CO., LTD.
1-7 Yagisawa-cho, Katsushika-ku, Tokyo, 141-8538 Japan
Right by your side as a partner in IoT business creation

IoT Business Creation

Partnership with leading cloud business operators
Support for gateways of a variety of manufacturers

IoT Smart Module
Sensor Network Module (Function Expansion Type)

Sensor Network Module
Battery-powered mode
Solar-powered mode
USB receiver module (main unit)

Environmental Sensing Module

Communication modules based on sophisticated RF technology
- Bluetooth® Modules
- 920MHz Data Communication Module
- Circuitry Software Analysis Evaluation
- Development of highly reliable, high-value products

Sensors spanning a number of different fields
- Pressure Sensors
- Temperature & Humidity Sensor
- Geomagnetic Sensors
- FC Board Mount Type Current Sensors
- Force Sensors
- Seismic Sensor
- Rotary Position Sensors
- Material MEMS ASIC
- Sensor variety

Cloud
Gateway
Connectivity
Sensor

1. Detect abnormal vibrations, temperatures in equipment
2. Detect entry into dangerous zones
3. Manage equipment with location information
4. Detect temperature, humidity and pressure of clean rooms, etc.

Quick, low-cost establishment
Ready-to-go built-in software

M2M controller
CONPROSYS®

Workers Monitoring System

Worker Monitoring System

Detect abnormal vibrations, temperatures in equipment
Detect entry into dangerous zones
Manage equipment with location information
Quick, low-cost establishment

IoT System for Factories

Partner
Open innovation with 550 companies so far

CONPRO Co., Ltd.
Enabling IoT using existing M2M controllers with easy Sensor Network Module connection
Remote monitoring of equipment and the surrounds made simple

**IoT Smart Modules**

**Sensor Network Module (Function Expansion Type)**

- Bluetooth®
- 5-Axis Sensor (Accelerometer, Gyro, Earthquake, Temperature, Humidity)
- Vehicle Sensor (Engine, Tire, Speed)
- Power Sensor (Current, Voltage, Power)
- Event Sensor (Smoke, Fire, Gas)
- Environmental Sensor (Temperature, Humidity, Gas, Water, Sunlight, Sound)

**Environment Sensing Module**

- 920MHz data communication
- Bluetooth®
- Sensor: Temperature, Humidity, Air Quality, Light, Noise, Water Level, Soil Moisture, Gas Detection, etc.
- Cloud: Data storage, analysis, and visualization
- Gateway: Data transmission to the cloud

**IoT FastKit®**

An IoT solution from ALSI, realized using Alps Electric’s Sensor Network Module

- Sensor settings can be changed online!
- USB receiver module (main unit)

**Introducing a new "fast kit" for term-based rental, allowing quick and easy progression to the proof of concept phase**

**IoT Smart Modules**

**Pressure Sensors**

- Surface Mount Type
  - Low noise and low power consumption achieved with a high-performance ASIC
  - Added the waterproof function to low noise and low power consumption
- Waterproof Surface Mount Type
  - High durability to withstand water pressure at a depth of 80m

**Force Sensors**

- Compact Surface Mount Type
  - High sensitivity with 0.01N resolution
  - Industry-smallest class (Base on Alps research as of September, 2017)
- Shock-resistant Unit Type
  - Withstands shocks of up to 200N

**Geomagnetic Sensors**

- 3-Axis Geomagnetic Sensor
  - Both high signal-to-noise and low power consumption achieved with a high-sensitivity magnetic element
- 6-Axis (Geomag+Accel) Sensor
  - Cryo function realized along with low power consumption using temperate control calculation software support

**Magnetic Angle Sensors**

- Compact Size
  -High angle precision realized with low signal distortion
  -Support for high-temperature operation and redundancy

**Seismic Sensor**

- Compact Size
  -Significant downsizing compared to mechanical seismic sensors

**Temperature & Humidity Sensor**

- Compact Size
  -Good temperature dependence for 0-100%RH
  -with use of a capacitive sensor element

**Rotary Position Sensors**

- Compact Size
  -Hollow-shaft type rotary position sensor
  -High durability (10 million cycles)
  -achieved using a specular resistive element

**Water Depth Sensor**

- Compact Size
  -Added the waterproof function to low noise and low power consumption
  -High durability to withstand water pressure at a depth of 80m

**Seismic Sensor**

- Compact Size
  -Significant downsizing compared to mechanical seismic sensors

**High angle precision realized**

**Support for high-temperature operation and redundancy**

**Hollow-shaft type rotary position sensor**

**Good temperature dependence for 0-100%RH with use of a capacitive sensor element**

**Added the waterproof function to low noise and low power consumption**

**High durability to withstand water pressure at a depth of 80m**

**High sensitivity with 0.01N resolution**

**Industry-smallest class**

*a Base on Alps research as of September, 2017*
Reliable and user-friendly linking of devices, people and vehicles

Aspherical Glass Lenses & Microlens Array
- Ultra-Narrow Micro Glass Lenses
- Microlens Array
- Achieves NA 0.5 despite the narrow width
- For 4-channel ROSAs

V2X (Vehicle to X) Communication Modules
- 760MHz Module for Japan
- 5.9GHz Module for Outside Japan
- Supports single and dual (diversity for both transmission and reception) antenna
- ETSI and WAVE protocol stack + security chip package also possible

LTE Data Communication Module
- LTE+GNSS Module
- Multimode for 2G/3G/LTE (Cat4, 150Mbps)
- Module with integrated GNSS functionality available

GNSS Module
- DR processing is completed within the module using a built-in DR algorithm
- Sensors (gyroscope/acceleration) used for positioning by dead reckoning

Realistic and diverse force feedback

HAPTIC™ Trigger
- Provides real feedback with the precision actuator and the accurate sensor

HAPTIC™ GlidePoint™
- Detects finger position with a capacitive sensor, detects pushing force and provides tactile feedback to the finger using actuator control
- Diverse and realistic vibrational sensations with two response points
- Fast response time under 1ms

HAPTIC™ Reactor
- Hybrid Tough Type
- Hybrid Super Tough Type
- More distant display content
- Uniformity of operating feel
- Smartphone-like operability
- High sensitivity together with noise immunity allow light, reliable operation

Hybrid Tough Type
- Short stroke variations that go well with touch operation
- TACT Switch™ / Encoders
- Enabling reliable operation with a wide range of control sensations
- HAPTIC™ Reactor

Hybrid Super Tough Type
- Capacitive Input Touchpad
- Capacitive Input

Zero Border Touch Panel (F1 Sensor)
- Capacitive Input

Curved Type Touch Panel (F2 Sensor)
- Capacitive Input