Sol Chip Comm™ SCC-LoRa

Bi-Directional Long-Range Wireless Solar/Hydro Tag

Enabling Autonomous and Maintenance-Free Operation of Wireless Actuators and Sensors

SCC-LoRa is an ultra-compact maintenance-free solar-powered wireless tag. SCC-LoRa powers, controls, and wirelessly connects to the cloud a wide variety of actuators and sensors.

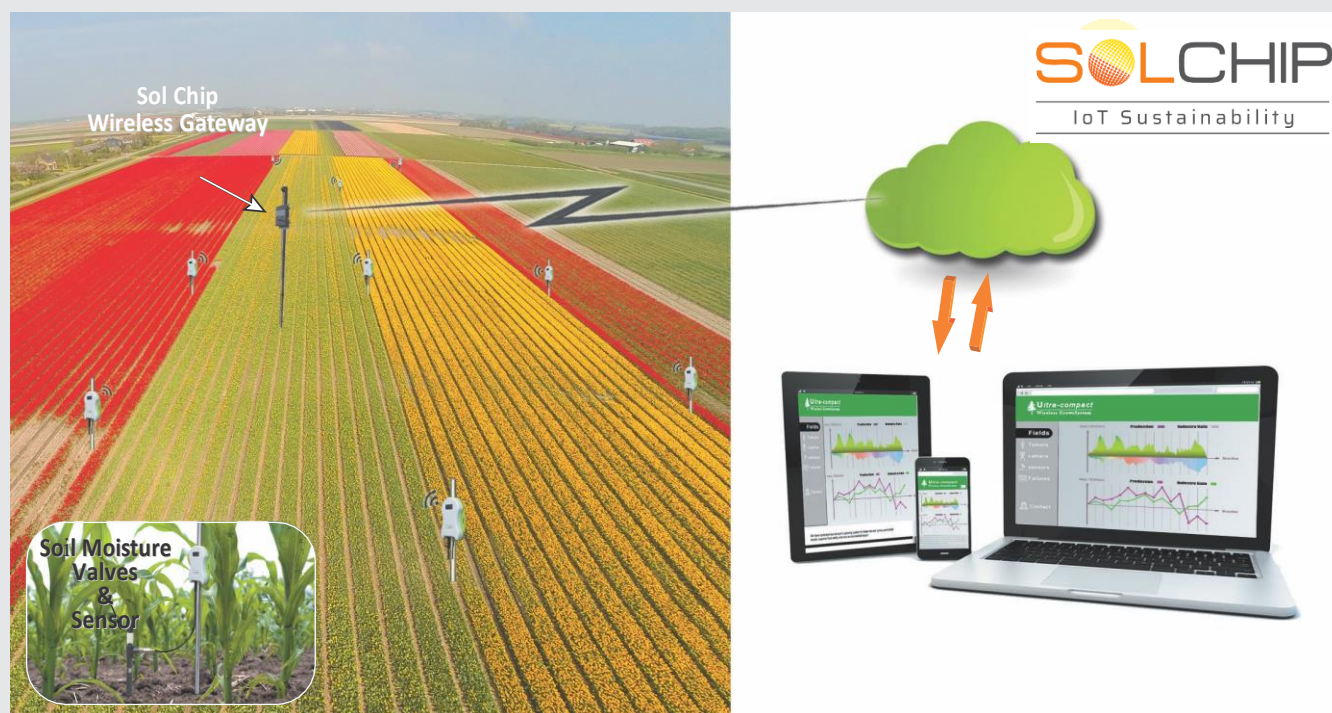### The SCC-LoRa Wireless Solar Tag offers Many Advantages:

- Autonomous operation of your actuators and sensors – no batteries, no wires
- Solar-powered by Sol Chip's LightBattery™ unique technology with internal energy storage
- Multiple operations per day
- 10 years 24/7 continuous and maintenance free operation
- Small size (13x9x6 cm)
- Simple out of the box installation and re-installation. No need for tooling, network technician, etc.
- All-weather outdoor deployment
- Hundreds of SCC-LoRa tags, wirelessly connected to a single Gateway via license-free 915/868/433MHz radio
- Radio range up to 15Km
- Automatic actuators activation and control
- Automatic, periodical upload of sensors data to the cloud

The Ultimate Solution for IoT Applications that Require Operation of Autonomous Sensors and Actuators Outdoor Wireless Networks such as in:

- **Precision Agriculture and farming** – Irrigation and Fertigation valves control, sensors such as: Soil moisture, air humidity and temperature, nutrients level, light radiation, water level, wind speed and direction, rain gauge etc. – open fields and greenhouses
- **Smart Grid** – power grid monitoring, water infrastructure monitoring, water valves control etc
- **Smart Cities** – Smart parking and vehicle management, smart waste bin sensors, occupancy sensors, smart lighting etc.
- **Asset Positioning and Tracking** – heavy machinery and construction equipment, airport equipment, containers etc.
- **Industrial** – Radiation and leak detection, smart sensors technologies, valve control etc.
- **Surveillance** – security and safety sensors: movement, volume, displacement, etc.
- **Environmental Monitoring** – gas sensors, fire sensors, air monitoring and pollution monitoring, pollen, floods detectors
- **Oil and Gas** – pipe monitoring against corrosion, welding defects, and theft, valve control etc.

"Sol Chip's SCC-LoRa Wireless Solar Tags: Enabling efficient implementation of endless IoT applications by wirelessly connecting a single gateway to hundreds of actuators and sensors for up to 15Km range"

Features and Specifications

Energy

- Sol Chip's patented LightBattery™ technology, including our Saturn harvesting circuitry
- Specialized rechargeable battery (for thousands of cycles)

Non-Stop Operation

- Day and night all year round for at least 10 years
- Tolerate no-light condition for at least 20 days
- Multiple actuators operations per day
- Multiple sensor readings and multiple transmissions per day

Zero Maintenance

- No need to replace battery or service the device in any other way for at least 10 years

Actuators Interfaces

- 3 DC latch valves
- 2 Open Drain Control outputs

Sensors Interfaces

- 4 analog DC level (0-5V operation)
- 2 pulse counter (i.e. flow meter, rain gouge, etc.) - **or** 2 status input

Mechanical and Environmental

- Wall, stern and pole mountable plastic enclosure
- LightBattery™ chip
- Dimensions: 13x9x6 cm
- Weight: 160-gram
- Ingress protection: IP67
- Temperature range: -40° to 65°C or -20° to 85°C

Tag – Gateway Wireless Communication

- Standard LoRaWAN radio protocol
- Star topology: hundreds of tags connect to a single wireless gateway
- 915/868/433MHz ISM band
- External antenna
- Up to 15Km range

Field Controlled Features

- Reset/activate by a magnet (Reed switch) for immediate activation (very useful during installation)

Gateway Backhaul Options
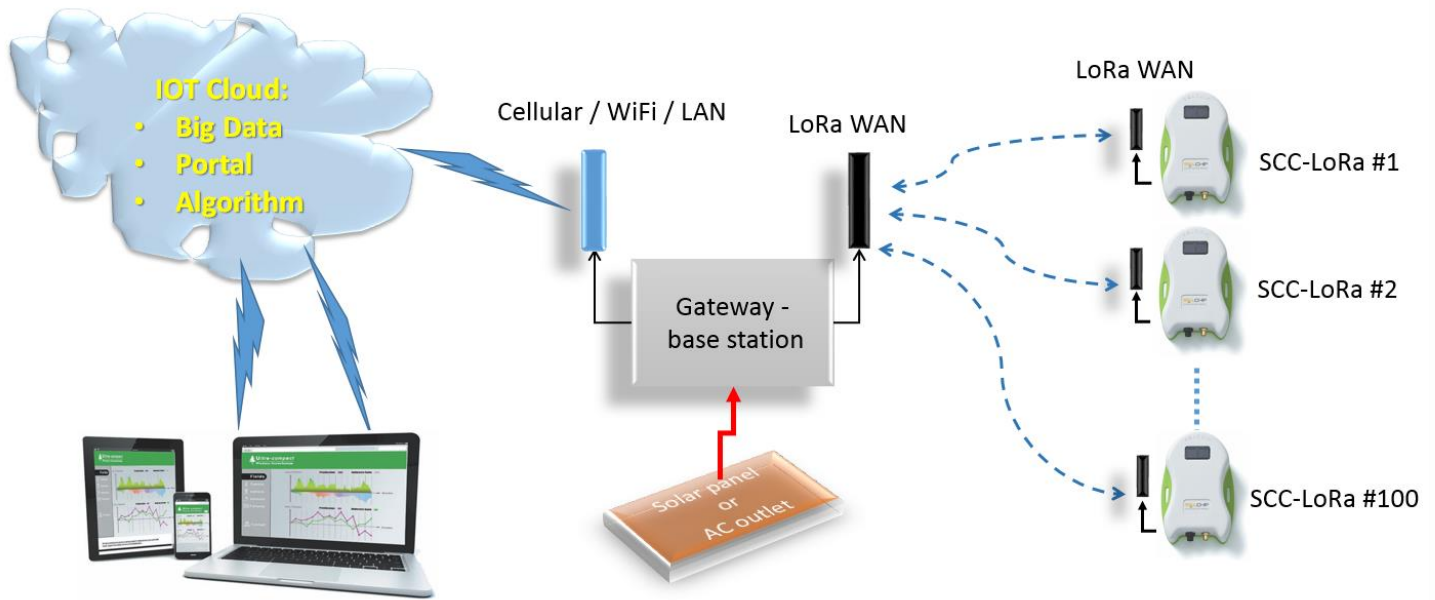
- GPRS/3G/LTE/Ethernet/Wi-Fi

Server Controlled Features

- Periodical sensor reading at configurable rate
- Periodical sensors data upload to the cloud at configurable rate
- Periodical communication with actuators at configurable rate for on/off activation
- Weekly Irrigation program
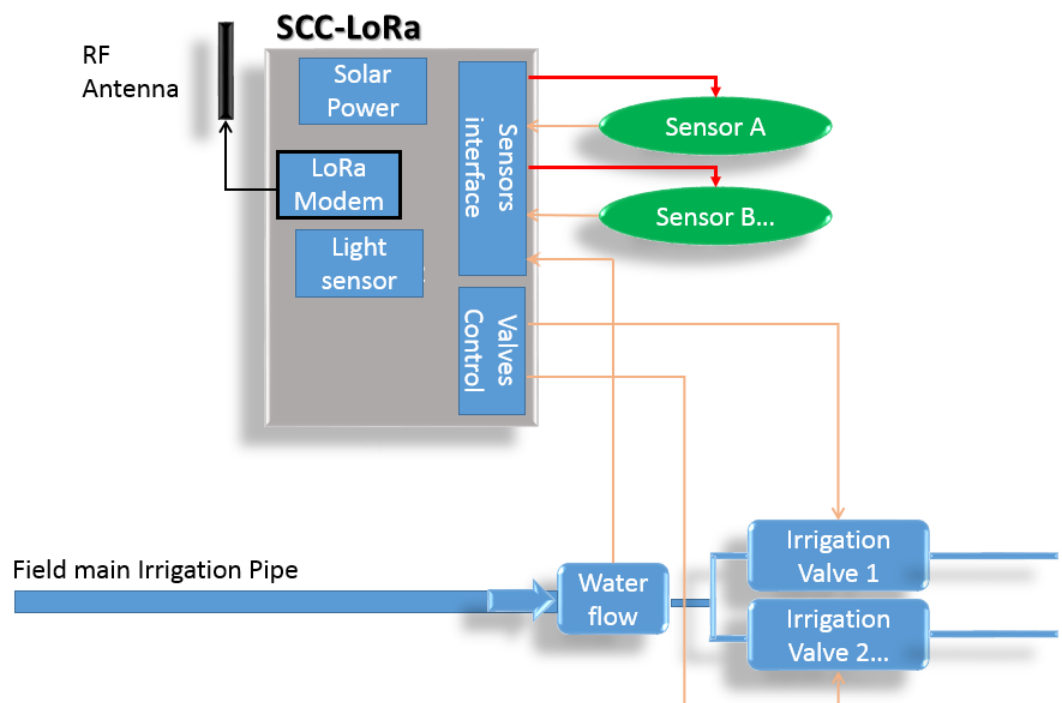- Battery and RF level monitoring

Web Support

- Web application, pre-integrated with the Sol Chip Comm™ system are available
- The Web application provides real-time and historical sensor data, alerts, graphs, statistics, analysis, control of actuators and actionable recommendation

www.dz-design.net

IOT Cloud:
- Big Data
- Portal
- Algorithm

Cellular / WiFi / LAN

LoRa WAN

LoRa WAN

SCC-LoRa #1

SCC-LoRa #2

SCC-LoRa #100

Gateway - base station

Solar panel or AC outlet

Typical Installation

Typical SCC-LoRa unit (illustration)

RF Antenna

SCC-LoRa

Solar Power

LoRa Modem

Light sensor

Sensors interface

Valves Control

Sensor A

Sensor B...

Field main Irrigation Pipe

Water flow

Irrigation Valve 1

Irrigation Valve 2...

To learn more visit www.sol-chip.com

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IoT Sustainability