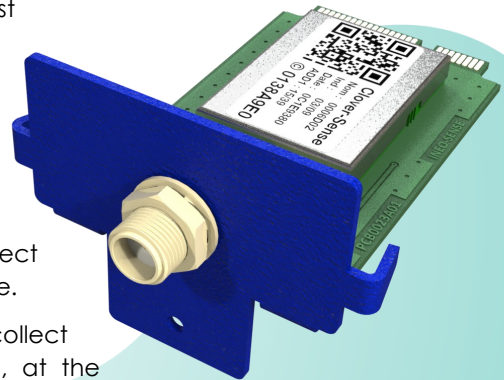# INS-mCard

Combine LoraWAN and Clover-Net in a single Gateway

MultiConnect® Conduit™ is the industry's most configurable, manageable, and scalable LoRa gateway of all industrial IoT applications supporting thousands of LoRaWAN devices.

This Gateway offers 2 slots at the rear to extend its communication capabilities. One of the slots typically hosts a Multitech® LoRaWAN™ mCard™, and the second one is used to connect an INS-mCard Clover-Net designed by Ineo-Sense.

This configuration allows the same Gateway to collect thousands of LoRaWAN enabled devices and, at the same time, to benefit from Clover-Net advantages for Clover-Net capable devices, like immediate device access, Ultra-Low-Power 2-way communication, on-demand inventories, multicast and even Fast broadcasted collection by cadenced answers (up to 3 devices per second).

Plug-&-Play

Easily upgrade your Multitech® Conduit™ by plugging the INS-mCard Clover-Net and loading the Ineo-Sense package. This does not alter the existing Multitech features and configuration tools that allow to build efficient solutions in a few clicks. Clover-Net communications handled are strictly the same as for the INS-Gate, based on MQTT protocol for a maximum of flexibility.

Clover-Net add-ons

This configuration completes the solution services by offering all Clover-Net advantages like Ultra-Low-Power 2-way communications, On-the-Fly Inventories, device OTA firmware update, automatic time synchronization, Clover-Net Auto-answer, data buffering (no data loss), immediate device access, fast data collection and more.

Exemple of usage with Multitech Conduit gateway

An hybrid network without compromise

Manage more than 2,500 LoRaWAN devices collection in addition to Clover-Net added-values in the same time. Clover-Net management does not affect the LoRaWAN features delivered by the gateway.

Reap benefit from the unequalled Ineo-Sense devices and keep your architecture opened to any third-party devices to match perfectly the needs.

Extended connectivity

This flexible platform offers many connectivity options like Ethernet, Wifi or even 3G/4G to the cloud. These channels can be used to transmit data of both LoRaWAN and Clover-Net devices in different ways:

- LoraWAN packet forwarder to a distant Network Server
- LoRaWAN embedded Network Server and direct Application Server connection or MQTT transport
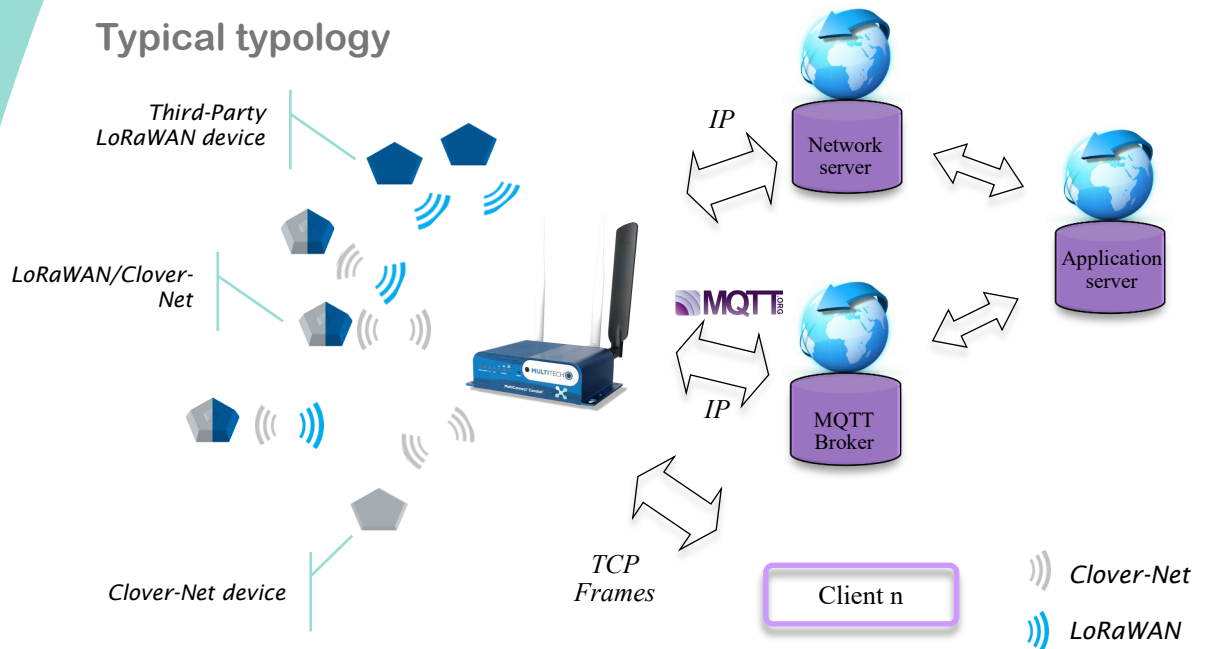
Main characteristics

- Plug-and-Play Gateway upgrade
- Full compability with Multitech Conduit gateway
- Save Multitech configuration tools usage
- Combine LoRaWAN and Clover without any limitation
- Benefit from Conduit connectivity options

Clover-Net added values

Iimmediate device access
- Ultra-Low-Power 2-way communication
- On-demand inventories
- Fast broadcasted collection by cadenced answers (up to 3 devices per second)

Typical typology

Third-Party LoRaWAN device

LoRaWAN/Clover-Net

Clover-Net device

IP

Network server

MQTT

IP

MQTT Broker

Application server

TCP Frames

Client n

Clover-Net

LoRaWAN

Order references

Order #	Description
INS-MCA-ST-4XX-000	INS-Mcard - 433 Clover-Net
INS-MCA-ST-X89-000	INS-Mcard - 868-915 Clover-Net

Antenna not included

LoRaWAN™

Clover-Net

MQTT ORG

Clover-Net generic features

- Transmission range up to 5,000m line of sight, up 500m indoor.
- Real-time 2-way communications: Scheduled transmission, automatic alarms and on-demand reading.
- Robust against physical and electronic interferences.
- Fast event reactivity, huge coexistence ability.
- Low cost for mass deployment
- Auto RTC propagation

- Native triband compatibility (433, 868 and 915Mhz)
- CE & EN 300-220 & FCC 15-247 compliant
- Uses Multi-channel frequencies to avoid collision.
- Dedicated alarm frequency channel.
- Data Encryption by AES 128 with dynamic key mixt
- Includes Full networks services (Broadcast, Repeater, Mesh, …)