FCL COMPONENTS

FCL Components

IoT Solutions

FCL Components IoT Solutions
Ecosystem

Asset Tracking

Track assets
Maintain stock levels
Set boundaries
User patterns
Info add-on asset profiles

Sensor Management

Monitoring of:
Temperature
Humidity
Illuminance
CO2 monitoring
Barometric
3-axis acceleration
Sound levels

Indoor Navigation

Guide visitors
Monitor traffic
User patterns
Offer alternative routes
Offer added information

Smart Lighting

Grouping
Daylight compensation
Color and intensity
Set lighting scenes
Occupancy

Lighting as network structure

Ecosystem Partners

FCL Components' IoT Solutions are developed in cooperation with ecosystem partners.

Our ecosystem partners are specialists in their own field.

Together with these partners, we provide complete solutions from hardware to software that can suit specific needs with various applications.

FCL Components' wireless modules can be integrated to enable devices to be part of a Wirepas Mesh network, and instantly become part of the FCL Components ecosystem.

Overview
IoT Connectivity

How to establish a future proof IoT Solution

FCL Components' IoT Solution is based on the cutting-edge mesh technology called Wirepas Mesh which is developed by a Finnish company Wirepas.

Whether it is an Anchor (used as position reference), a Tag (used for tracking assets) or Sensors (CO_2 or temperature), each FCL Components device communicates with others and forms the network in a smart way.

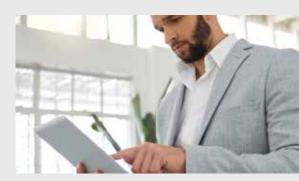**Adaptable and resilient network**

The devices constitute the network.
The network is decentralized, requiring no central supervision, self-optimizing, and self-healing. If one device fails, an alternative route ensures the data transmission. If there is interference, alternative communication channels are selected automatically.

There is no limit to the number of anchors, tags, and sensors.

Key benefits

- Future-proof and inherently scalable with no limitation on the network size
- Affordable and simple installation, requiring virtually zero wiring
- Extremely low interference with other wireless networks
- Autonomy in the network, no human supervision required
- Self-healing, When a the connection is interrupted, the devices automatically search for another available route, users do not need to intervene

Benefits

- Future proof and scalable

- Affordable and simple installation

- Extremely low interference

- Autonomy in the network

- Self-Healing

Asset Tracking
Manage assets, it's simple and effective

The FCL Components Asset Tracking solution enables live monitoring of thousands of assets in smart buildings across a whole host of industries, from healthcare and manufacturing to hospitality and corporate spaces.

FCL Components mesh-based asset tracking works by employing tags, anchors, and gateways to show the real-time location of assets and related analytics such as a heat map.

Due to low power consumption, the devices can be battery operated and require less cabling, making them easy to install.

Benefits

- Highly scalable

- Self-healing

- No single point of failure

- Extremely low interference

- Low cost

- Long battery life

Ultra Slim Asset Tag

Part number	FWM8BLZ08T
Description	FCL Components Ultra Slim Mesh Asset Tag
Size	52.8 x 35.9 x 5.8mm
Operating conditions	-30 to +70 °C
Features	IP67 Push button
Power supply	CR3032 Li coin battery
Qualifications	FCC / ISED / CE / Radio Act

USB Dongle Asset Tag

Part number	FWM8BLZ09T
Description	FCL Components 2.4GHz USB Dongle Mesh Asset Tag
Size	17.8 x 14.2 x 6.6mm
Operating conditions	-30 to +60 °C
Features	Powered through USB
Power supply	USB type-A
Qualifications	Radio Act / FCC / ISED / CE / UKCA

Endurance Line Asset Tag

Part number	FWM8BLZ08T
Description	FCL Components 2.4GHz Mesh Asset Tag
Size	76.5 x 74.2 x 29.0mm
Operating conditions	-30 to +60 °C
Features	IP65 with AA battery, long battery life
Power supply	4 AA batteries or USB-C
Qualifications	FCC / ISED / CE / Radio Act

Asset Tag

Part number	FWM8BLZ07P
Description	FCL Components 2.4GHz Mesh Asset Tag
Size	40 x 31 x 12mm
Operating conditions	-30 to +60 °C
Power supply	CR2450 Li coin battery
Qualifications	FCC / ISED / CE / Radio Act

Endurance Line Anchor

Part number	FWM8BLZ08A
Description	FCL Components Endurance Line Mesh Anchor Tag
Size / weight	76.5 x 74.2 x 29.0mm
Features	IP65 Long battery life
Power supply	4 AA batteries or USB-C
Qualifications	FCC / ISED / CE / Radio Act

Gateway

Part number	KS/FWM8GWZ01
Description	FCL Components standard Gateway
Size	12.5 x 8 x 2.8mm
Features	Ethernet, Wi-Fi
Power supply	AC adaptor
Qualifications	CE / FCC / CSE

USB Dongle Anchor

Part number	FWM8BLZ09P
Description	FCL Components 2.4GHz USB Dongle Mesh Asset Tag
Size	17.8 x 14.2 x 6.6mm
Operating conditions	-30 to +60 °C
Features	Powered through USB
Power supply	USB type-A
Qualifications	Radio Act / FCC / ISED / CE / UKCA

Gateway 4G

Part number	KS/FWM8GWZ01-4G
Description	FCL Components Gateway 4G
Size	12.5 x 8 x 2.8mm
Features	Ethernet, Wi-Fi, LTE
Power supply	AC adaptor
Qualifications	CE / FCC / CSE

Environment Monitoring
Healthy, comfortable, optimized buildings

FCL Components' environment sensors yield accurate measures of ambient conditions. FCL Components' environment sensors monitor; CO_2, temperature, humidity, barometric pressure, illuminance, noise and acceleration.

These conditions can be monitored to automatically control heating, ventilation, and air conditioning (HVAC), for maximum comfort, healthy and safe environments.

Benefits

- Highly scalable

- Self-Healing

- Low cost

- Various sensors

- Long battery life

Endurance Line Sensor

Part number	FWM8BLZ08Y
Description	FCL Components Endurance Line Mesh Sensor Unit
Size	76.5 x 74.2 x 29.0mm
Operating conditions	-30 to +60 °C
Features	IP65 Long battery life
Power supply	4 AA batteries or USB-C
Qualifications	FCC / ISED / CE / Radio Act

Small Sensor

Part number	FWM8BLZ07Y
Description	FCL Components Small Mesh Sensor Unit
Size / weight	40 x 31 x 12mm
Operating conditions	-30 to +60 °C
Features	IP65/ Long battery life
Power supply	CR2450 Li coin battery
Qualifications	FCC / ISED / CE / Radio Act

Endurance Line Sensor with CO_2 sensor

Part number	FWM8BLZ08C
Description	FCL Components Endurance Line Mesh Sensor Unit With CO2 Sensor
Size	76.5 x 74.2 x 29.0mm
Operating conditions	-30 to +60 °C
Features	IP65 Long battery life
Power supply	USB-C
Qualifications	FCC / ISED / CE / Radio Act

Environment Monitoring Sensor data

FCL Components sensors in combination with anchors and the gateway form a mesh network. The network allows for unlimited expansions with additional devices without requiring additional programming.

FCL Components Mesh Sensors are able to monitor:
- Temperature
- Humidity
- Illuminance
- Barometric pressure
- 3-axis acceleration
- Sound levels

FCL Components' CO_2 sensor additionally monitors CO_2 levels.

Endurance Line Anchor

Part number	FWM8BLZ08A
Description	FCL Components Endurance Line Mesh Anchor Tag
Size / weight	76.5 x 74.2 x 29.0mm
Features	IP65 Long battery life
Power supply	4 AA batteries or USB-C
Qualifications	FCC / ISED / CE / Radio Act

Gateway

Part number	KS/FWM8GWZ01
Description	FCL Components standard Gateway
Size	12.5 x 8 x 2.8mm
Features	Ethernet, Wi-Fi
Power supply	AC adaptor
Qualifications	CE / FCC / CSE

USB Dongle Anchor

Part number	FWM8BLZ09P
Description	FCL Components 2.4GHz USB dongle Mesh Asset Tag
Size / weight	17.8 x 14.2 x 6.6mm
Operating conditions	-30 to +60 °C
Features	Powered through USB
Power supply	USB type-A
Qualifications	Radio Act / FCC / ISED / CE / UKCA

Gateway 4G

Part number	KS/FWM8GWZ01-4G
Description	FCL Components Gateway 4G
Size	12.5 x 8 x 2.8mm
Features	Ethernet, Wi-Fi, LTE
Power supply	AC adaptor
Qualifications	CE / FCC / CSE

Indoor Navigation
Guide visitors and monitor indoor traffic

Indoor navigation helps to guide visitors through complex buildings, find the location of their appointment, gate or platform while providing operators insight in visitor traffic flows.

The mesh network formed for asset tracking or environment monitoring can be utilized for indoor navigation without requiring any additional hardware.

Our ecosystem partner's navigation application helps to guide visitors through the building on their smart devices.

Benefits

- Highly scalable

- Long battery life

- Easy add-on to the other FCL Components IoT solutions

Endurance Line Anchor

Part number	FWM8BLZ08A
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Size / weight	76.5 x 74.2 x 29.0mm
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USB Dongle Anchor

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Qualifications	Radio Act / FCC / ISED / CE / UKCA

FCL Components' USB dongles are used as anchor or tag by simply sliding the dongle into a USB port.

Devices featuring a USB port such as Wi-Fi routers are commonly available throughout buildings and can function as a power source for an anchor.

The anchor is powered over USB and does not require any batteries.

Gateway

Part number	KS/FWM8GWZ01
Description	FCL Components standard Gateway
Size	12.5 x 8 x 2.8mm
Features	Ethernet, Wi-Fi
Power supply	AC adaptor
Qualifications	CE / FCC / CSE

Gateway 4G

Part number	KS/FWM8GWZ01-4G
Description	FCL Components Gateway 4G
Size	12.5 x 8 x 2.8mm
Features	Ethernet, Wi-Fi, LTE
Power supply	AC adaptor
Qualifications	CE / FCC / CSE

Smart Lighting
Healthy and comfortable buildings

Smart Lighting helps to develop comfortable and sustainable spaces while improving productivity by implementing lighting schemes for designated areas, daylight compensation and occupancy sensing.

FCL Components' ecosystem partners' lighting solutions feature integrated FCL Components' mesh modules that function as mains powered anchors, and create the low latency mesh network. Allowing easy add-on of sensors and tags for asset tracking and environment monitoring.

Benefits

- Energy saving

- Daylight compensation

- Occupancy sensor

- Easy add on; Asset tracking, Environment monitoring, Indoor navigation

Make your devices **IoT ready** and instantly become part of the FCL Components **ecosystem** using FCL Components Mesh Modules
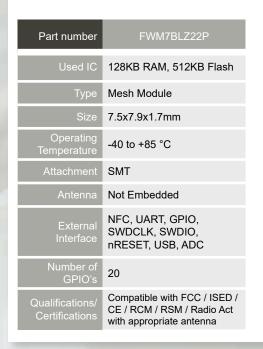
Mesh Module

Part number	FWM7BLZ23W
Used IC	256KB RAM, 1MB Flash
Type	Mesh Module
Size	15.7x9.8x1.7mm
Operating Temperature	-40 to +85 °C
Attachment	SMT
Antenna	Pattern Antenna
External Interface	NFC, UART, GPIO, I2S, PDM, SWDCLK, SWDIO, nRESET, QSPI, TWI, ADC
Number of GPIO's	30
Qualifications/ Certifications	Radio Act / FCC / ISED / CE / UKCA

Mesh Module

Part number	FWM7BLZ20W
Used IC	64KB RAM, 512KB Flash
Type	Mesh Module
Size	15.7x9.8x1.7mm
Operating Temperature	-40 to +85 °C
Attachment	SMT
Antenna	Pattern Antenna
External Interface	NFC, UART, GPIO, SWDCLK, SWDIO, nRESET, SPI, TWI, ADC
Number of GPIO's	30
Qualifications/ Certifications	Radio Act / FCC / ISED / CE / UKCA

Mesh Module Tag

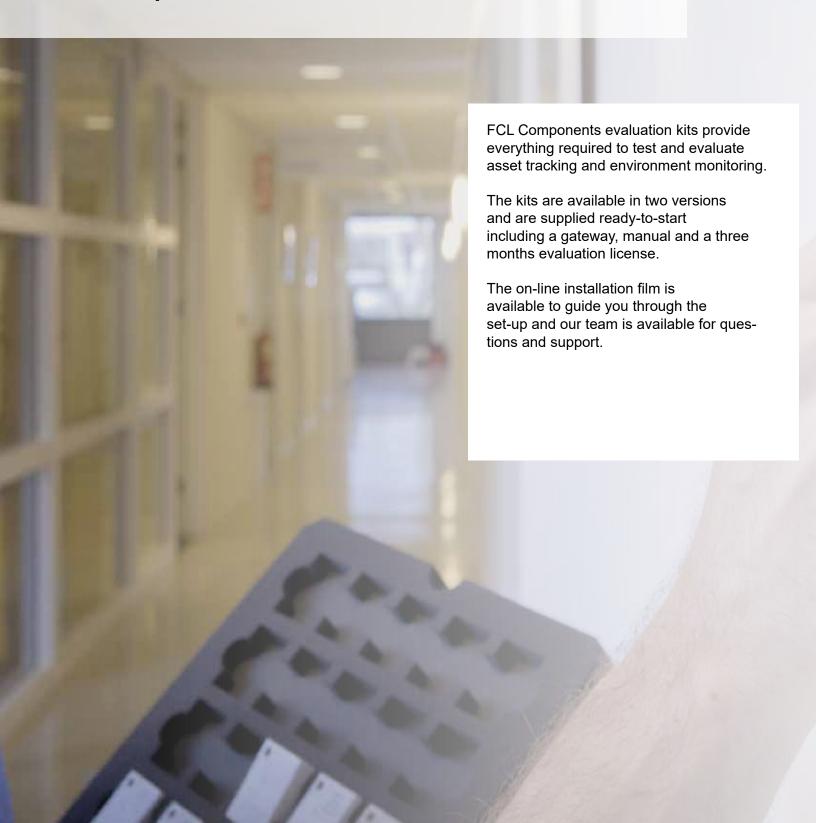| Part number	FWM7BLZ22T
Used IC	128KB RAM, 512KB Flash
Type	Mesh Module
Size	7.5x7.9x1.7mm
Operating Temperature	-40 to +85 °C
Attachment	SMT
Antenna	Not Embedded
External Interface	NFC, UART, GPIO, SWDCLK, SWDIO, nRESET, USB, ADC
Number of GPIO's	20
Qualifications/ Certifications	Compatible with FCC / ISED / CE / RCM / RSM / Radio Act with appropriate antenna

Mesh Module Anchor

Part number	FWM7BLZ22P
Used IC	128KB RAM, 512KB Flash
Type	Mesh Module
Size	7.5x7.9x1.7mm
Operating Temperature	-40 to +85 °C
Attachment	SMT
Antenna	Not Embedded
External Interface	NFC, UART, GPIO, SWDCLK, SWDIO, nRESET, USB, ADC
Number of GPIO's	20
Qualifications/ Certifications	Compatible with FCC / ISED / CE / RCM / RSM / Radio Act with appropriate antenna

Mesh Module Sink

Part number	FW7BZ22W
Used IC	128KB RAM, 512KB Flash
Type	Mesh Module
Size	7.5x7.9x1.7mm
Operating Temperature	-40 to +85 °C
Attachment	SMT
Antenna	Not Embedded
Host I/F	USB, UART
External Interface	NFC, GPIO, ADC, SWDCLK, SWDIO, nRESET
Number of GPIO's	20
Qualifications/ Certifications	Compatible with FCC / ISED / CE / RCM / RSM / Radio Act with appropriate antenna

Test and experience Asset Tracking and Environment Monitoring

FCL Components' IoT Solution Evaluation Kits

FCL Components evaluation kits provide everything required to test and evaluate asset tracking and environment monitoring.

The kits are available in two versions and are supplied ready-to-start including a gateway, manual and a three months evaluation license.

The on-line installation film is available to guide you through the set-up and our team is available for questions and support.

FCL Components Evaluation Kit

Part number	FWM-WMKIT
Description	FCL Components Evaluation Kit
Size	255 x 332 x 76 mm
Power supply	Nodes:battery Gateway:AC adaptor
Qualifications	Nodes:FCC/ISED/CE/Radio ACT Gateway:CE/FCC/CSA
Content	5x WM8BLZ07Y Mesh sensors, incl. temperature, humidity, barometric pressure, accelerometer, luminance and sound level sensors 5x FWM8BLZ07P Mesh asset tags 20x FWM8BLZ07P Mesh anchor nodes for location awareness 1x FWM8GWZ01 Wi-Fi Ethernet gateway with two mesh sinks to connect the mesh network to the cloud service 1x Concise manual explaining the usage and installation of the included hardware and software package The kit launches with a three-month software evaluation license

FCL Components Evaluation Kit 4G

Part number	FWM-WMKIT-4G
Description	FCL Components Evaluation Kit with 4G
Size	255 x 332 x 76 mm
Power Supply	Nodes:battery Gateway:AC adaptor
Qualifications	Nodes:FCC/ISED/CE/Radio ACT Gateway:CE/FCC/CSA
	5x WM8BLZ07Y Mesh sensors, incl. temperature, humidity, barometric pressure, accelerometer, luminance and sound level sensors 5x FWM8BLZ07P Mesh asset tags 20x FWM8BLZ07P Mesh Anchors for location awareness 1x FWM8GWZ01 LTE Wi-Fi Ethernet gateway with two mesh sinks to connect the mesh network to the cloud service 1x Concise manual explaining the usage and installation of the included hardware and software package The kit launches with a three-month software evaluation license

About us

With over 100 years of experience in design and development, FCL Components' customer centric approach has resulted in high quality products fully adapted to customer and market requirements

We collaborate with in-house specialists and have a team of experts supporting customers around the globe.

Our overall product portfolio covers IoT solutions, wireles modules, touch panels, printers and relays.

FCL Components' design team is strongly focussed on the development of IoT Mesh based devices which already cover a wide range of industries such as healthcare, retail, logistics and various public and private smart buildings.

Through our solutions we hope to contribute to a healthy and sustainable future.

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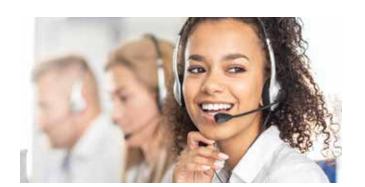**Asia Pacific**
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