



HI-TECH COMPANY

WIRELESS
COMMUNICATION



MIPOT design, manufacture and sell Wireless Communication Modules using different protocols for many IoT sectors and applications in the worldwide markets

Mipot have been active in the electronics industry since 1973. This has made us a reliable supplier over the years.

Mipot offer a full range of wireless modules, developed in accordance with the technical regulations and country-specific laws, targeting many markets around the globe.

During the development of the module we solve all the technical issues related to the radio frequency. The quality of our products, along with the detailed documentation and very qualified

and accessible technical support, enables a fast introduction of your products in the market.

Mipot offer the newest wireless technology solutions for Internet of Things (IoT) and Low Power Wide Area Network applications (LPWAN).

Mipot also serve the market by offering high-quality EMS and ODM service and it represents a one-stop-shop for all customers, offering not only product development but also mass production and all the services related to it, from the material procurement to the personalized logistics.

Applications

Using the technologies developed in our R&D during the last years now **we can cover different sectors of IoT markets**. The applications can be the standard RF modulation for the Home and Smart Building to the new smart lighting devices. **Our products and new projects have reached**

successfully the mass production stage in the sectors of Smart Agriculture, Smart Meetering, Waste Management Systems passing throw the Renewable Energy Systems. Here you have a full panoramic of these possible applications.



Smart Lighting

LIGHTING

80%



Healthcare Monitoring System



Smart Parking



Renewable Smart Energy System



Smart Asset Management in the utility market

Oil & Gas Sector



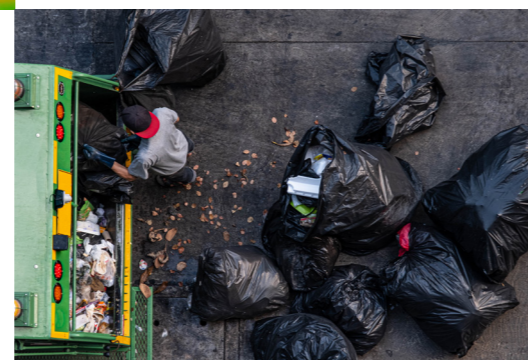
IIoT (Industrial Internet of Things)



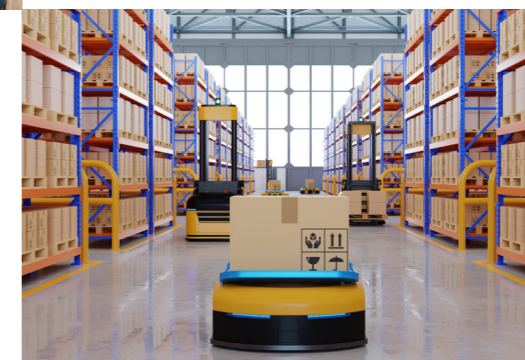
Smart Agriculture



Smart Metering (Gas + Water + Electric metering)



Waste Management



Smart Logistics

Smart Mobility & Smart Car



Smart Building Home Automation Smart Home



Fleet Tracking





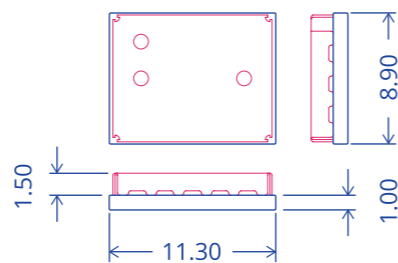
MIP SERIES

SINGLE CORE



TECHNICAL CHARACTERISTICS

- Micro on-board: ARM Cortex M4
- LoRaWAN® / LoRa® / wM-Bus
- LGA form factor with 52 pads
- 11.30 mm x 8.90 mm (Size)
- SubGHz frequencies (868 MHz ÷ 960 MHz)
- SPI, I2C, UART, LPUART (Peripheral Interfaces)
- Secure element (Optional)
- 40°C + 85°C (Temperature Range)
- Flash memory space: 128 kByte
- Sensitivity:
 - 115 dBm@wM-Bus
 - 135 dBm@LoRa®
- Output Power:
 - +14 dBm@868 MHz
 - + 20 dBm@915 MHz
- 50 Ω antenna pad
- Power Consumption:
 - 100 mA@+14 dBm
 - 140 mA@+20 dBm
- Power Down: 2.2 µA



All products have the same Form Factor & Pin-Out

PART NUMBER	COUNTRIES	PROTOCOLS	CERTIFICATIONS	DESCRIPTION
32001505AEU	Europe	wM-BUS	CE	MiP-Wm-1C128N-US – Single Core
32001505BEU	Europe	LoRaWAN®	LoRa Alliance®, CE	MiP-Lw-1C128N-US – Single Core
32001505BUS	USA, Canada	LoRaWAN®	LoRa Alliance®, FCC, IC	MiP-Lw-1C128N-US - Single Core
32001505CEU	Europe	LoRa® Mipot	CE	MiP-LoMi-1C128N-EU – Single Core
32001505DEU	Europe	LoRa® Modem	CE	MiP-LoMo-1C128N-EU – Single Core
32001505FEU	Europe	LoRaWAN®+ LoRa® Modem	LoRa Alliance®, CE	MiP-LwMo-1C128N-EU – Single Core

Harness the power of IoT

The Internet of Things (IoT) has transformed the way modern human lives.

Discover the main sectors in which it is possible to integrate the potential of a new MiP (Mipot IoT Protocols) wireless communication modules series in **LPWAN** low power wide area networks.

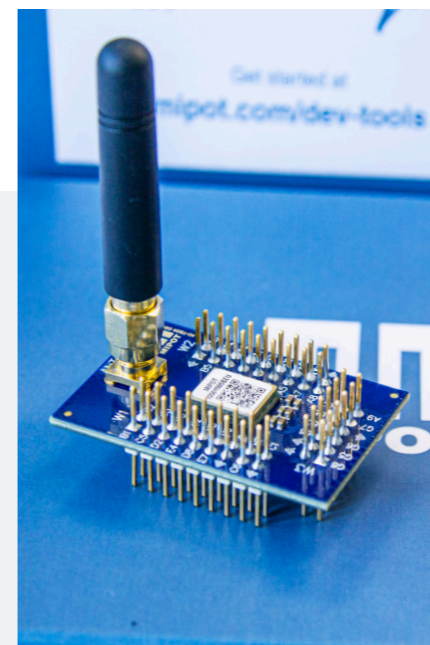
- Smart Metering (Gas + Water + Electric metering)
- Smart Cities
- Smart Parking
- Smart Lighting
- Building management (Smart Building, Home Automation, Smart Home)
- Smart Logistics
- Waste Management
- Renewable Smart Energy System
- Smart Asset Management in the utility market
- IIoT (Industrial Internet of Things)
- Smart Agriculture
- Fleet Tracking
- Smart Mobility & Smart Car
- Oil & Gas Sector
- Healthcare Monitoring System

LoRa Alliance Member

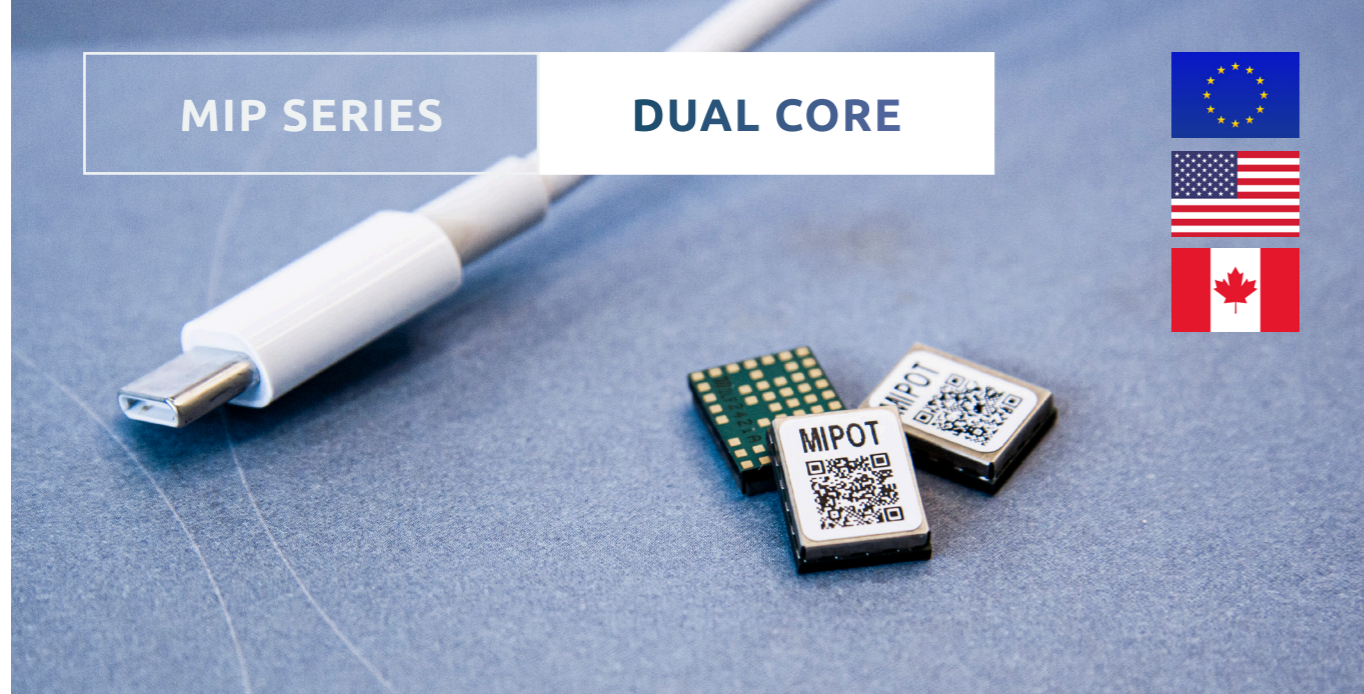
Developer Kits for single core

The DevKits are a series of single boards for the development and test of MiP series

Equipped with 3 pin strip connectors, the kit allows easy interfacing with all LGA pads on the MiP module via jump wires or a perfboard. The developer can use the Devkit both in **host-based mode**, connecting his own controller to the board, or **as a stand-alone product** exploiting the full potential of the MiP Series modules. The package includes a development board with SMA connector, a **monopole antenna** for 868 MHz and 915 MHz frequency bands and a reference sheet.



PRODUCT CODE	COUNTRIES	DESCRIPTION
30001505AEU	Europe	Developer Kit 32001505AEU
30001505BEU	Europe	Developer Kit 32001505BEU
30001505BUS	USA, Canada	Developer Kit 32001505BUS
30001505CEU	Europe	Developer Kit 32001505CEU
30001505DEU	Europe	Developer Kit 32001505DEU
30001505FEU	Europe	Developer Kit 32001505FEU

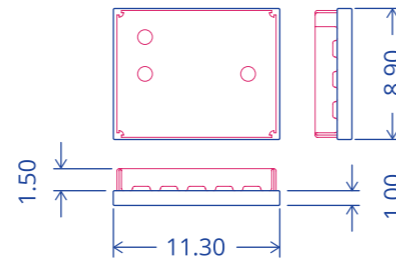


WORLDWIDE CHIP SOLUTION

- Worldwide frequency range**
SubGHz Frequencies,
868 MHz ÷ 960 MHz
- Supported international networks**
Public: LoRaWAN®, Sigfox
Private: LoRa® Modem, LoRa® Mipot, wM-Bus, Mioty

TECHNICAL CHARACTERISTICS

- Micro on-board:** ARM Cortex M4 and M0+
- LoRaWAN® / LoRa® / wM-Bus**
- LGA form factor with 52 pads**
- 11.30 mm x 8.90 mm (Size)**
- SubGHz frequencies (868 MHz ÷ 960 MHz)**
- SPI, I2C, UART, LPUART (Peripheral Interfaces)**
- Secure element (Optional)**
- 40°C + 85°C (Temperature Range)**
- Flash memory space: 256 kByte**
- Sensitivity:**
- 115 dBm@wM-Bus
- 135 dBm@LoRa®
- Output Power:**
+14 dBm@868 MHz
+ 20 dBm@915 MHz
- 50 Ω antenna pad**
- Power consumption:**
100 mA@+14 dBm
140 mA@+20 dBm
- Power Down 2.2 µA**



All products have the same Form Factor & Pin-Out

PART NUMBER	COUNTRIES	PROTOCOLS	CERTIFICATIONS	DESCRIPTION
32001506AEU	Europe	wM-Bus	CE	MiP-Wm-2C256N-EU – Dual Core
32001506BEU	Europe	LoRaWAN®	LoRa Alliance®, CE	MiP-Lw-2C256N-EU – Dual Core
32001506BUS	USA, Canada	LoRaWAN®	LoRa Alliance®, FCC, IC	MiP-Lw-2C256N-US – Dual Core
32001506CEU	Europe	LoRa® Mipot	CE	MiP-LoMi-2C256N-EU – Dual Core
32001506DEU	Europe	LoRa® Modem	CE	MiP-LoMo-2C256N-EU – Dual Core
32001506FEU	Europe	LoRaWAN® + LoRa® Modem	LoRa Alliance®, CE	MiP-LwMo-2C256N-EU – Dual Core
32001514HW	Europe	None	None	Hardware Dual Core

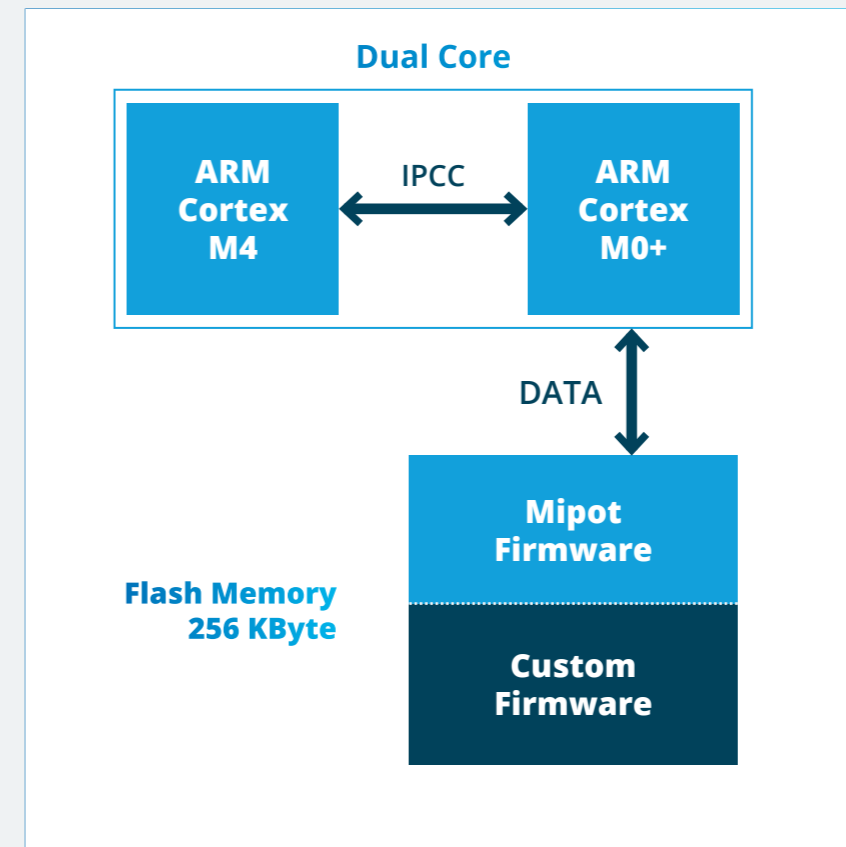
Dual Core Plus

- HIGH RADIO PERFORMANCE**
Top radio performance for Europe (+14 dBm) and USA (+20 dBm)
- LPWAN PROTOCOLS**
wM-Bus, LoRaWAN®, LoRa® Mipot, LoRa® Modem, Sigfox, Mioty
- BUILT-IN-UP-TO-DATE IoT STACKS**
- MULTI-PROTOCOLS IN ONE SINGLE CHIP**
More protocols in one single MiP wireless module like: LoRaWAN® + LoRa® Modem, wM-Bus + LoRaWAN®
- SECURE ELEMENT**
Optional hardware secure element on demand
- WORLD WIDE SUBGHZ FREQUENCY BANDS**



Free memory space for custom firmware upload Dual Core CPU to increase the performance

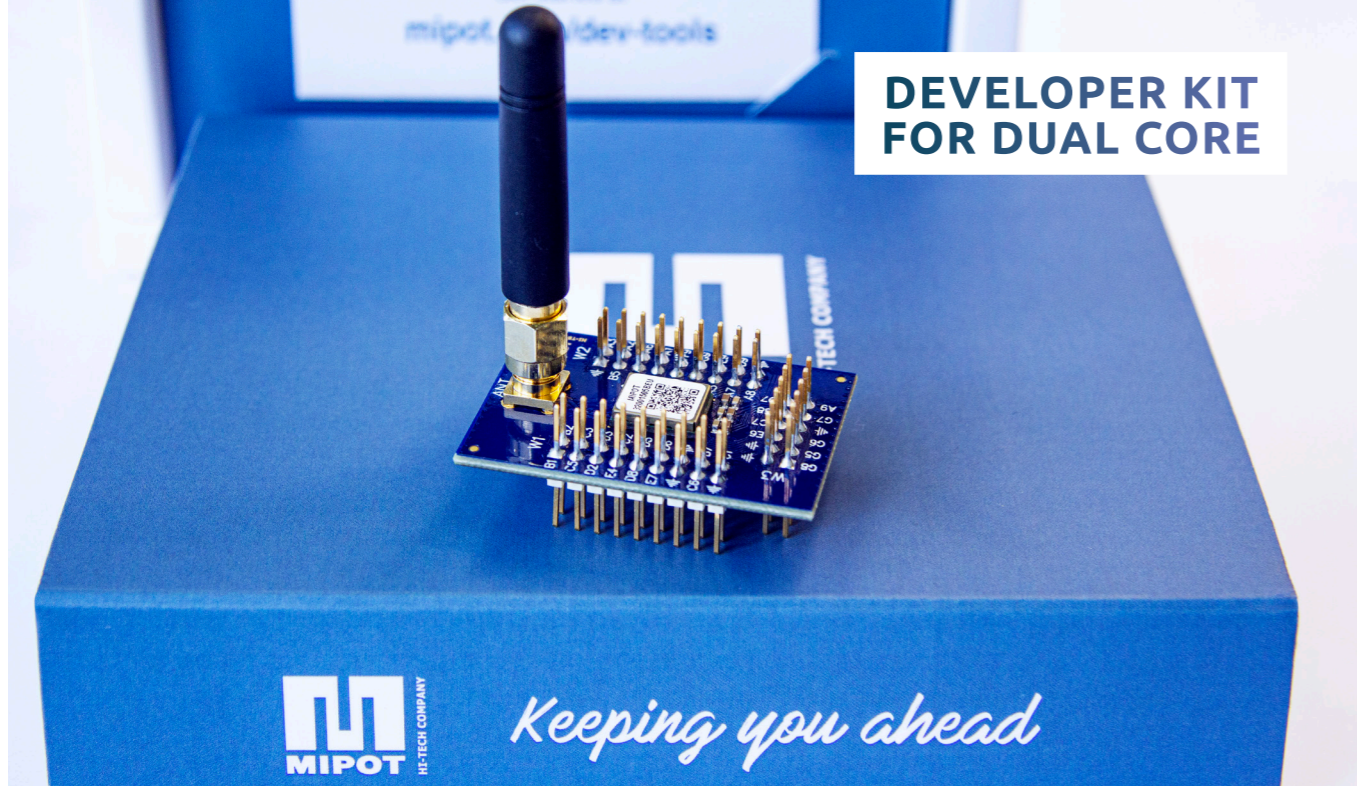
Dual Core Structure



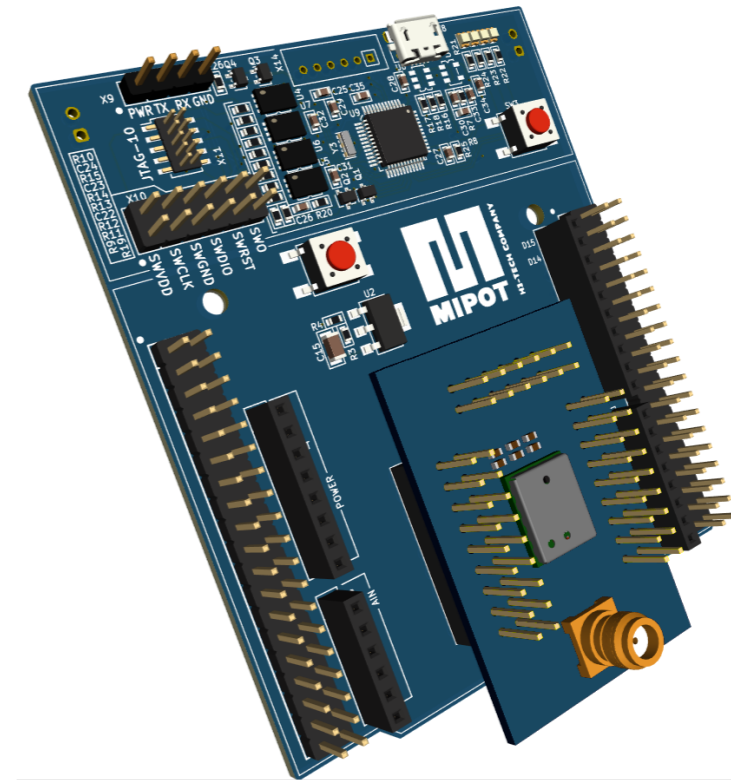
Advantages

- Dual Core ARM Cortex M4 + ARM Cortex M0+ inside the same hardware
- Reduction of PCB layers in your electronic board
- Possibility to use the internal micro controller to drive the full electronic board
- Cost reduction of your BOM
- Size reduction of final electronic board

DEVELOPER KIT FOR DUAL CORE



EVALUATION KIT



Carrier board

COMING SOON

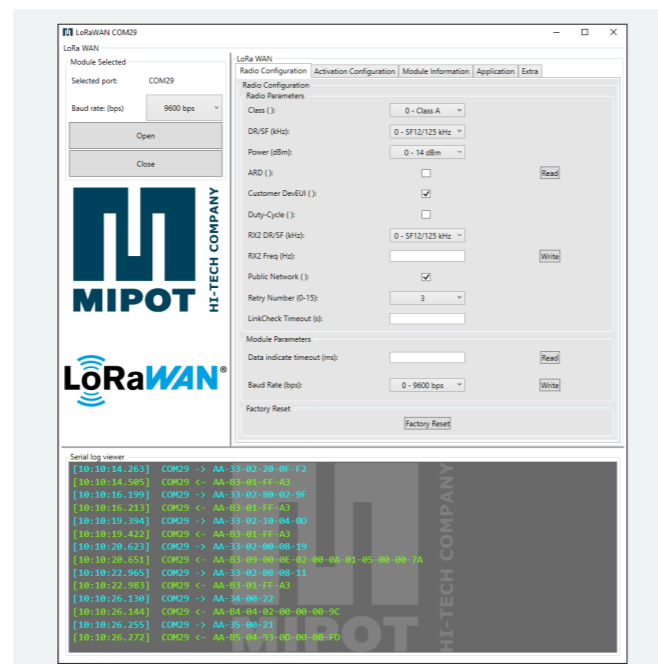
PRODUCT CODE	COUNTRIES	DESCRIPTION
30001506AEU	Europe	Developer Kit 32001506AEU - wM-Bus
30001506BEU	Europe	Developer Kit 32001506BEU - LoRaWAN®
30001506BUS	USA, Canada	Developer Kit 32001506BEU - LoRaWAN®
30001506CEU	Europe	Developer Kit 32001506CEU - LoRa® Mipot
30001506DEU	Europe	Developer Kit 32001506DEU - LoRa® Modem
30001506FEU	Europe	Developer Kit 32001506FEU - LoRaWAN® + LoRa® Modem
30001514HW	Europe	Developer Kit 32001514HW Dual Core

Dev kits software interface

With the Developer Kit we provide a free software to interact with the device. This software is really easy to install on your laptop or PC.

MAIN FEATURES

- Easy access to MiP module features
- Communication management from/to the MiP module series
- One GUI for all MiP module family serving multiple connected modules
- Real Time log viewer
- Quick schematic and Command Reference tool



MAIN FEATURES

- Arduino compatible System
- USB-C Connection with your laptop or PC
- Enviromental Sensors on board
- Compatible with all MiP Series Developer Kits
- Free of charge Software to interact with our Evaluation Kits

Protocol based transceivers

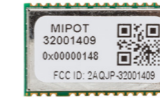
This line of wireless communication modules integrates LoRaWAN®, LoRa®, wM-Bus protocols and IEEE 802.15.4 standard



LoRaWAN® compliant wireless protocol module



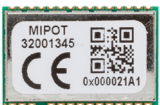
32001353



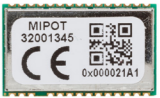
32001409

The Mipot LoRaWAN® transceivers integrate the LoRaWAN® protocol operating in the 868 MHz or 915 MHz SRD Bands. They are optimized for **long range, low consumption** applications, suitable for **Low Power Wide Area Networks (LPWAN)**. Based on **LoRa® RF Technology and LoRaWAN® protocol** they provide **ultra-long range spread spectrum communication and high interference immunity**. The transceivers are dedicated for battery operated devices and allow a **low-cost** secure two-way communication for the IoT.

LoRa® MIPOT NETWORK wireless protocol module



32001345



32001345M

The LoRa® MIPOT NETWORK transceiver is a **LoRa® Technology-based** transceiver operating in the 868 MHz SRD Band. It's optimized for **long range, low consumption** applications, suitable for **low power networks**. In addition to its **unparalleled range**, spread spectrum modulation also allows **great immunity** to interferers.

wM-BUS wireless transceiver

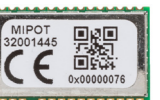


32001324



The Mipot Wireless M-Bus transceiver operates in the 868 MHz SRD Band. Thanks to its **small LCC form factor and low power consumption** this module allows the implementation of **highly integrated low power** (battery operated) solutions for water, gas, heat or electricity metering applications, both on meter or concentrator devices.

IEEE 802.15.4 standard 2.4 GHz Transceiver



32001445

IEEE 802.15.4

The 32001445 is a **2.4 GHz transceiver** that implements a physical layer of the IEEE 802.15.4 standard, optimized for **ultra-low consumption** applications, suitable for **low power networks**. Its spread spectrum modulation assures great immunity to interferers. This module works as a **RF modem**, allowing the implementation of **point-to-point communication** or more complex **custom networks**.










IOT SECTORS



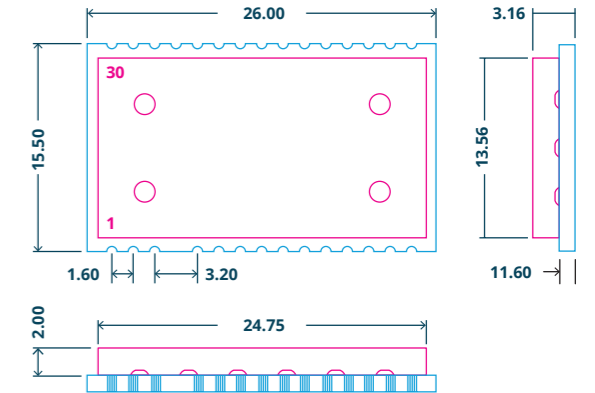
IEEE 802.15.4

LoRa Alliance Member

TECHNICAL CHARACTERISTICS

-  LoRaWAN® / LoRa® / wM-Bus / IEEE 802.15.4 - 2,4 GHz
-  26,00 mm x 15.50 mm (Size)
-  European 868 MHz or USA 915 MHz frequencies
-  UART (Peripheral Interfaces)
-  - 40°C + 85°C (Temperature Range)
-  - 115 dBm@wM-Bus
- 135 dBm@LoRa®
-  +14 dBm@868 MHz
+ 20 dBm@915 MHz
-  50 Ω antenna pad
-  Power consumption:
100 mA@+14 dBm
140 mA@+20 dBm

One of the most important things is that all this line of products have the same form factor and the same Pin-Out



PART NUMBER	COUNTRIES	PROTOCOLS	CERTIFICATIONS	DESCRIPTION
32001324	Europe	wM-Bus	CE	M-Bus protocol module – EU
32001345	Europe	LoRa®	CE	LoRa® Miprot protocol module – EU
32001345M	Europe	LoRa®	CE	LoRa® Modem protocol module – EU
32001353	Europe	LoRaWAN®	LoRa Alliance®, CE	LoRaWAN® protocol module – EU
32001409	USA	LoRaWAN®	FCC, LoRa Alliance®	LoRaWAN® protocol module – USA
32001445	World Wide	IEEE 802.15.4	CE	IEEE 802.15.4 standard module – EU



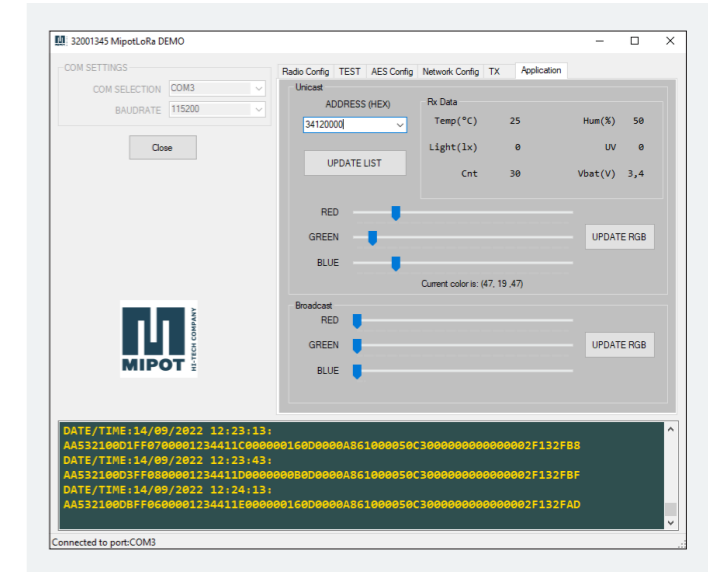
EVALUATION KIT

Eva kits software interface

With the Evaluation Kit we provide a free software to interact with the device. This software is really easy to install on your laptop or PC.

MAIN FEATURES

- Easily test the on-board RF module
- Smart application with environmental sensors
- Uplink/Downlink test with RGB LEDs
- Real Time log viewer



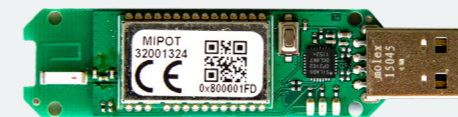
All features of the Wireless M-Bus and LoRa® modules can be tested with our dedicated Evaluation Kit. The board provides easy access to module pin-out, power supply pins and SMA antenna connector. Usage flexibility is given by several power supply modes.

To reduce the time to market and ease the user application SW development, the Evaluation Kit comes with a built-in microcontroller.

Access pins on the board allow SW development to be managed by an external microcontroller and custom SW development environment.

PRODUCT CODE	COUNTRIES	DESCRIPTION
33000151	Europe	Evaluation kit for the 32001324 - wM-Bus
33000158	Europe	Evaluation kit for the 32001345 - LoRa® Mipot
33000158M	Europe	Evaluation kit for the 32001345M - LoRa® Modem
33000159	Europe	Evaluation kit for the 32001353 - LoRaWAN®
33000162	USA	Evaluation kit for the 32001409 - LoRaWAN®
33000169	World Wide	Evaluation kit for the 32001445 - IEEE 802.15.4 standard

USB Dongle

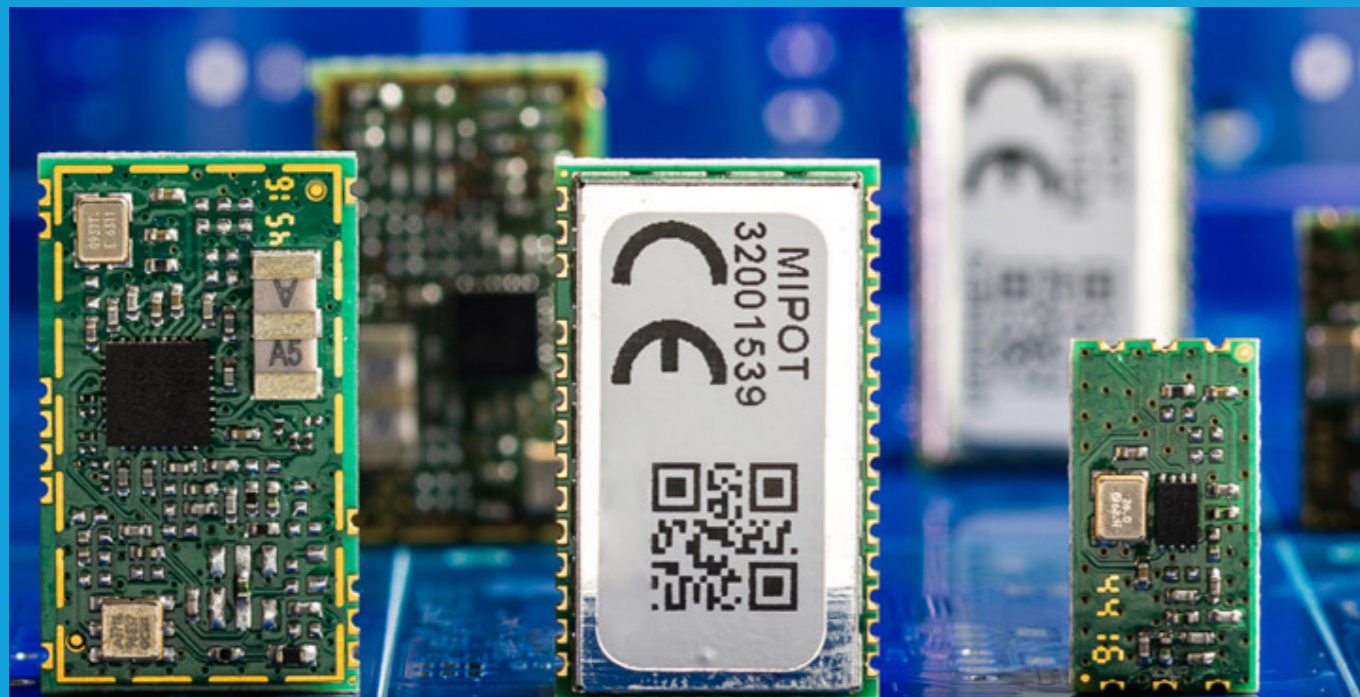


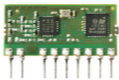
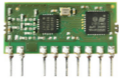
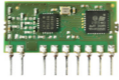






The USB Dongle comes with the module of choice and an integrated chip antenna. It can be used to connect your tablet or PC with the evaluation kit or the related wireless system associated using our configuration and test software.

PART NUMBER	TYPE	PROTOCOL	COUNTRIES	FREQ. (MHz)	DESCRIPTION
32001373	USB DRIVE	wM-Bus	Europe	868	ANT INT 32001324
32001374	USB DRIVE	wM-Bus	Europe	868	ANT EXT 32001324
32001388	USB DRIVE	LoRa® Mipot	Europe	868	ANT INT 32001345
32001388M	USB DRIVE	LoRa® Modem	Europe	868	ANT INT 32001345M

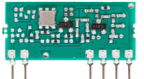


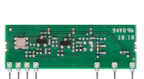
Wireless Transparent Modules

Mipot offers a wide portfolio of transmitter, receiver and transceiver RF modules suitable for all short and long range applications that meet the technical regulations and laws applicable in different regions and market segments: Home Automation, Alarm System, Industrial, Smart Metering, Thermoregulation, Lighting, Ambient assisted living, Renewable Energies.






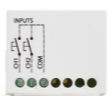


Transceivers		TYPE	MOD.	FREQ. (MHz)	VS (V)	DESCRIPTION
	32001534	THT	FSK	433,92	3	DUAL CHANNEL
	32001535	THT	FSK	868,30	3	DUAL CHANNEL
	32001536	THT	FSK	913,70	3	DUAL CHANNEL (US)
	32001537	THT	FSK	449,85	3	SINGLE CHANNEL (Japan)
	32001538	THT	FSK	447,875	3	DUAL CHANNEL (Korea)
	32001539	SMD	OOK	433,92	3	DUAL CHANNEL
	32001540	SMD	FSK	868,30	3	DUAL CHANNEL
	32001541	SMD	FSK	915	3	DUAL CHANNEL
	32001542	SMD	FSK	449.85	3	SINGLE CHANNEL

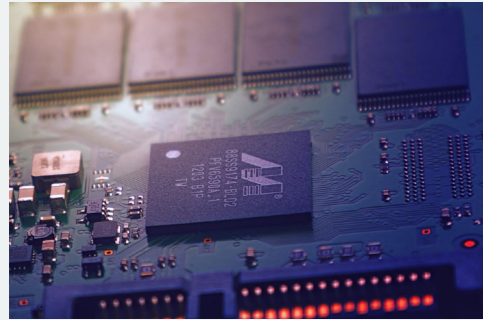
Receivers						
	TYPE	MOD.	FREQ. (MHz)	VS (V)	DESCRIPTION	
 32001366 32001366F	THT	FSK	433,92 868,30	3-5	SUPER HETERODYNE, WITH F-END, WITH ANTIGLITCH	
 32001368F	SMD	FSK	868,30	3-5	High performance SMD Super Heterodyne	
 32001414 32001415	THT	ASK	433,92	5	F.END-antiglitch-RSSI	
 32001520 32001520V3	THT	ASK	433,92	5 3	RX 434 MHz ASK 5V RX 434 MHz ASK 3V	
 32001522 32001522V3	THT	ASK	433,92	5 3	Mini RX 434 MHz ASK 5V Mini RX 434 MHz ASK 3V	
 32001548	SMD	ASK	433,92	5	RX SMD ASK 433.92MHZ 5V +F.END	
 32001252	THT	ASK	433,92	5	SUPER REGENERATIVE NARROW BAND SHIELDED	

Transmitters						
	TYPE	MOD.	FREQ. (MHz)	VS (V)	DESCRIPTION	
 32001151 32001151V3	THT	OOK	433,92	5 3	Compact SAW	
 32001371	SMD	OOK	433,92	3	PLL TRANSMITTER	
 32001372	SMD	FSK	868,30	3	PLL TRANSMITTER	
 32001387 32001387F	THT	OOK	433,92 868,30	5	SAW transmitter OOK SAW	
 32001387FV3 32001387V3	THT	OOK	868,30 433,92	3	OOK SAW SAW transmitter	



This is a set of products designed for home and building automation and consists in a series of receivers and remote controls for applications such as access control, temperature and lighting control, windows blinds and alarm systems.

Accessories						
	TYPE	FREQ. (MHz)	MOD.	VS (V)	DISTANCE (m) - free space -	
 32001034HCS	Receiver	434	ASK	12 / 24	150	
 33000145MIP	Receiver	434	OOK	100-250	150	
 33000148MIP	Receiver	434	OOK	100-250	150	
 32001320	Transmitter	434	OOK	3		
 32001369A	Remote controller	434	OOK	12		
 32001369	Remote controller	434	OOK	12		



EMS Electronic Manufacturing Services

With many years of experience in the EMS (Electronic Manufacturing Services) field, **we offer our services to many customers, from the multinational to small start-up** in different sectors as Industrial, Home & building automation, Internet of Things (IoT), Meetering and many more.

Mipot is your technological partner that **guarantees reliability and competence** to turn your ideas into projects and products. We guarantee both low volumes with high-mix and high volumes with competitive costs.

- 1 COMPONENT PROCUREMENT**
Supplier management, Vendor Rating and Scouting
- 2 MATERIALS**
Incoming inspection, automatic component management
- 3 TRACEABILITY**
PCB laser marking. Batch traceability and single reel traceability with automatic warehouse system
- 4 SMD ASSEMBLY**
3 Yamaha lines, component size down to 009-005, 100% end of line TRI automatic AOI
- 5 THT ASSEMBLY**
Mounting, preforming, insertion THT components, wave and selective soldering, laser soldering
- 6 DEPANELING**
Automatic depaneling by laser, manual depaneling with rotary cutter and punch cutter

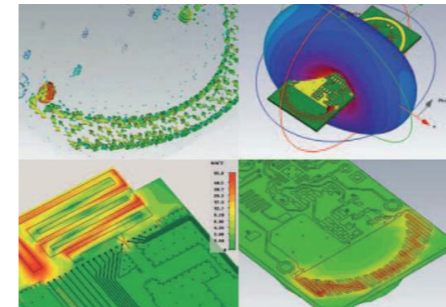
- 7 CONFORMAL COATING**
Selective, immersion, spray conformal coating
- 8 FUNCTIONAL TEST**
Automatic and Manual Test, Burn-In, customized Run-In Test
- 9 FULL SYSTEM ASSEMBLY**
Low and flexible volumes
- 10 QUALITY INSPECTION**
TRI automatic AOI Inspection, New X-Ray machine inspection, Standard Quality department Inspection for all the lots in production
- 11 PACKAGING AND GLOBAL DISTRIBUTION**
Packaging upon customer specifications & worldwide fast delivery and Scouting
- 12 AFTER SALES SUPPORT**
Product assurance, Maintance, problem solving and analysis



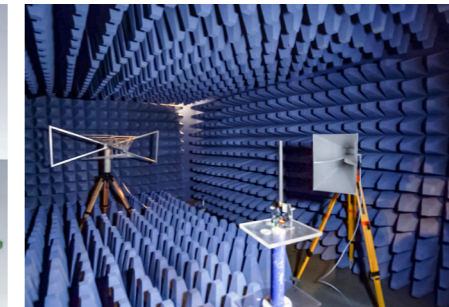
ODM Original Design Manufacturer

Mipot offers **high quality ODM** (Original Design Manufacturing) services for the **design, prototyping and mass production of electronic boards** for **Wireless communication devices and the integration of electronic systems.**

With our experienced and highly motivated technical staff **Mipot support the customer in all stages of product development**, starting from the specifications to the selection of the most appropriate components with the best performance and costs, passing to the engineering and manufacturing. Mipot offer the newest wireless technology solutions for Internet of Things (IoT), Machine to Machine (M2M) and other Low Power Wide Area Network applications (LPWAN) to be integrated in the customer product.



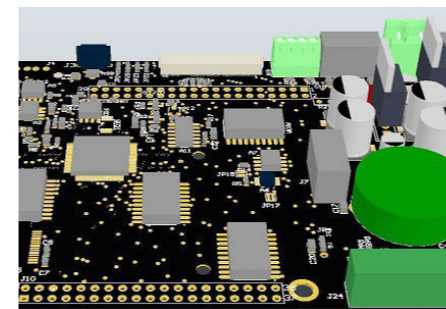
ANTENNA DESIGN
We offer PCB or stand alone antenna design using EM simulation suite and anechoic chamber for final measurements



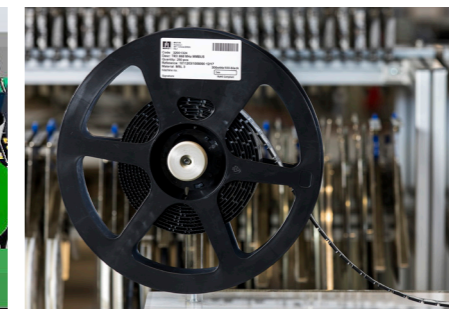
PRE-COMPLIANCE TEST
Mipot can provide a full service of pre-compliance tests of your device



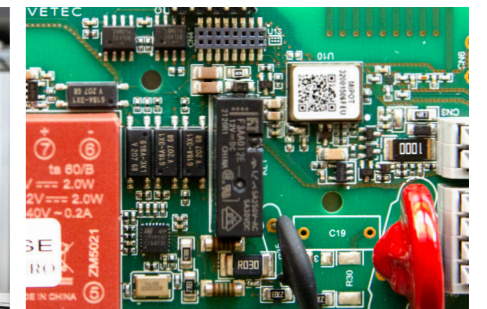
CERTIFICATION SUPPORT
We support our customers in the certification process of their products by managing relationships with external laboratories



CO-DESIGN & PROTOTYPING
Mipot offers its experience for co-design and rapid internal prototyping



SPECIAL PROCUREMENT
Our purchase department and R&D can provide this service for new design and new projects



WIRELESS SYSTEM INTEGRATION
Mipot has developed considerable knowledge in the field of wireless system integration

MIPOT S.p.A.

via Corona, 5
34071 Cormons
Gorizia - Italy



PHONE

+39 0481 630200

EMAIL

mipot@mipot.com

WEBSITE

www.mipot.com

MIP SERIES

www.mip.mipot.com

