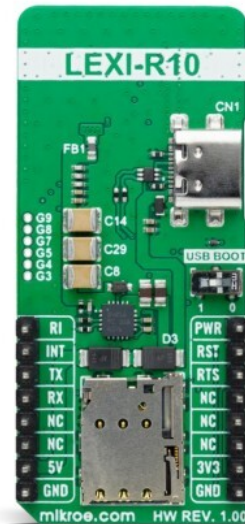


4G LTE 3 Click (for North America)



PID: MIKROE-6396

4G LTE 3 Click (for North America) is a compact add-on board for reliable LTE connectivity, offering medium data speeds and extensive network coverage. This board features the [LEXI-R10401D](#), a single-mode LTE Cat 1bis module from [u-blox](#) optimized for professional-grade applications in the American regions. The module supports various LTE FDD bands (2, 4, 5, 12, 13, 14, 66, and 71), features download speeds of up to 10Mbps and upload speeds of 5Mbps, and integrates an embedded Wi-Fi scan for indoor positioning with u-blox CellLocate® geolocation capabilities. It includes a UART interface for communication, USB Type C for power and firmware updates, and versatile control options like GPIO pins and visual indicators for network and power status. Ideal for applications like asset tracking, telematics, healthcare devices, and wearables, this board delivers efficient and robust connectivity for value-oriented IoT solutions.

For more information about **4G LTE 3 Click (for North America)** visit the official [product page](#).

How does it work?

4G LTE 3 Click (for North America) is based on the LEXI-R10401D, a single-mode LTE Cat 1bis module from u-blox, made for applications requiring reliable connectivity, medium data speeds, and extensive coverage in the American regions. The LEXI-R10401D module is designed to meet professional-grade standards, adhering to the u-blox qualification policy and the stringent AEC-Q104 standard. It supports various LTE FDD bands, including 2, 4, 5, 12, 13, 14, 66, and 71 ensuring broad compatibility and superior performance across multiple regional networks. Additionally, the module has regulatory certifications such as PTCRB, GCF, FCC, ISCED, AT&T, Verizon, and FirstNet, allowing deployment across supported markets. Beyond its LTE

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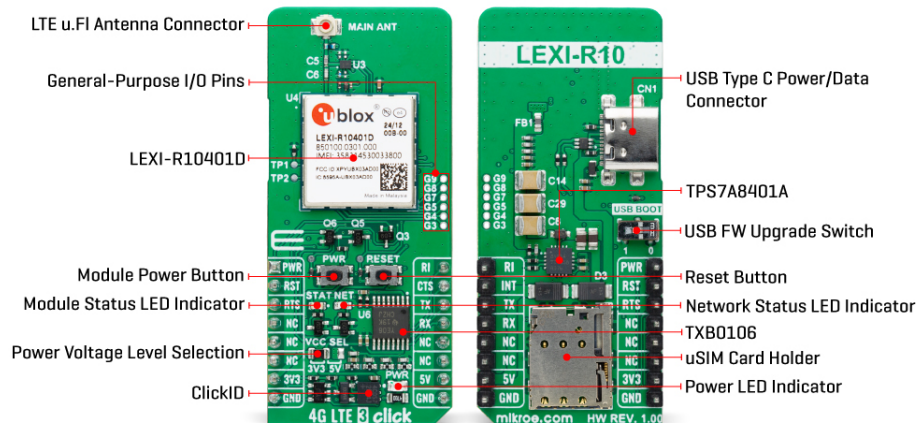


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ISO 9001: 2015 certification of quality management system (QMS).

functionality, the LEXI-R10401D integrates an embedded Wi-Fi scan, enabling the scanning of Wi-Fi hotspots for enhanced indoor positioning, and supports the u-blox CellLocate® service for advanced geolocation capabilities.



This compact and highly integrated module offers medium-capacity data connectivity, achieving download speeds of up to 10Mbps and upload speeds of 5Mbps, all while maintaining exceptionally low power consumption. These features make it an ideal choice for cost-sensitive applications that demand moderate data speeds and reliable coverage. Its versatile use cases include asset tracking, telematics, healthcare devices, and wearables, where efficient and robust connectivity is paramount.

Communication between the LEXI-R10401D and the host MCU is made through a UART interface, using standard UART RX and TX pins and hardware flow control pins (CTS/RTS/RI - Clear to Send/Ready to Send/Ring Indicator) for efficient data transfer. The module defaults to a communication speed of 115200bps, allowing for seamless data exchange over [AT commands](#).

This Click board™ also includes a USB Type C connector for power and data transfer, which is compliant with the USB 2.0 specification with a maximum 480Mbit/s data rate (peripheral only). In addition to this interface, the board also features a USB FW upgrade switch on the back of the board labeled USB BOOT to manage firmware upgrades. This switch has positions 0 for normal operation and 1 for firmware upgrades over USB, ensuring a straightforward upgrade process.

The 4G LTE 3 Click includes several additional functionalities that enhance its usability and control. The PWR button allows users to easily power the module ON or OFF, while the RESET button provides a quick way to reset the module. These functions can also be controlled digitally via the mikroBUS™ pins PWR and RST, offering greater flexibility. The board also includes an unsoldered header with six GPIO pins, allowing for further customization. Moreover, this board also has dedicated test points for diagnostic purposes, TP1 and TP2, if the host MCU uses the USB and main UART interfaces and two visual indicators to provide real-time status updates.

The first red NET LED indicates the current network status of the module. The device has successfully registered on the network when the LED blinks slowly. If the LED blinks at a normal pace, the device has not yet registered to a network. A fast blinking pattern signals data transmission. When the LED is completely OFF, it indicates that the device is either powered

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OFF or in Power Saving Mode (PSM). The second yellow STAT LED indicates the module's power status, which stays off when the module is OFF and turns ON when the module is powered on or firmware ready.

The board features one u.FI connector for the main LTE antenna that MIKROE offers, like the [LTE Flat Rotation Antenna](#) combined with an [IPEX-SMA cable](#) for flexible and efficient connectivity. The board also has a micro SIM card holder that supports both 1.8V and 3.0V uSIM cards, allowing users to select the most appropriate service provider for their particular use case.


This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. Since the LEXI-R10401D module operates at 3.8V, a logic-level translator, the [TXB0106](#) is also used for proper operation and an accurate signal-level translation. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	4G LTE,GSM/LTE,LTE Cat 1 bis
Applications	Ideal for applications like asset tracking, telematics, healthcare devices, and wearables
On-board modules	LEXI-R10401D - single-mode LTE Cat 1bis module from u-blox
Key Features	Professional grade LTE Cat 1bis module, various LTE FDD bands, embedded Wi-Fi scan, geolocation service, UART and USB interfaces, firmware upgrade, additional control options, uSIM card support, regulatory certifications (AT&T, Verizon, and FirstNet), and more
Interface	UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V,External

Pinout diagram

This table shows how the pinout on 4G LTE 3 Click (for North America) corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Module Power-ON	PWR	1	AN	PWM	16	RI	Ring Indicator
Reset / ID SEL	RST	2	RST	INT	15	CTS	UART CTS
UART RTS / ID COMM	RTS	3	CS	RX	14	TX	UART TX
	NC	4	SCK	TX	13	RX	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	

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Power Supply	3.3V	7	3.3V	5V	10	5V	Power Supply
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	NET	-	Network Activity Status LED Indicator
LD3	STAT	-	Module Operational Status LED Indicator
JP1	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
T1	PWR	-	Module Power-ON Button
T2	RESET	-	Module Reset Button
SW1	USB BOOT	Right	USB FW Upgrade Switch 0/1: Left position 0, Right position 1

4G LTE 3 Click (for North America) electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
LTE Frequency Range	600	-	1900	MHz
LTE Output Power	-	-	+23	dBm
LTE RX Sensitivity	-95	-	-106	dBm

Software Support

[4G LTE 3 Click \(for North America\)](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

Example Description

Application example shows device capability of connecting to the network and sending SMS or TCP/UDP messages using standard "AT" commands.

Key Functions

- c4glte3na_cfg_setup Config Object Initialization function.
- c4glte3na_init Initialization function.
- c4glte3na_set_sim_apn This function sets APN for sim card.
- c4glte3na_send_sms_text This function sends text message to a phone number.
- c4glte3na_cmd_run This function sends a specified command to the Click module.

Application Init

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Initializes the driver and logger.

Application Task

Application task is split in few stages:

- C4GLTE3NA_POWER_UP:

Powers up the device, performs a factory reset and reads system information.

- C4GLTE3NA_CONFIG_CONNECTION:

Sets configuration to device to be able to connect to the network.

- C4GLTE3NA_CHECK_CONNECTION:

Waits for the network registration indicated via CEREK command and then checks the signal quality report.

- C4GLTE3NA_CONFIG_EXAMPLE:

Configures device for the selected example.

- C4GLTE3NA_EXAMPLE:

Depending on the selected demo example, it sends an SMS message (in PDU or TXT mode) or TCP/UDP message. By default, the TCP/UDP example is selected.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

Resources

[mikroBUS™](#)

[mikroSDK](#)

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[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[LEXI-R10 datasheet](#)

[LEXI-R10 AT commands](#)

[4G LTE 3 Click \(for North America\) example package](#)

[4G LTE 3 Click \(for North America\) 2D and 3D files v100](#)

[4G LTE 3 Click \(for North America\) schematic v100](#)

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