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LTE Cat.4 3 Click - Data

PID: MIKROE-5991

LTE Cat.4 3 Click is a compact add-on board representing a multi-band and multi-mode solution, offering universal connectivity and reliable performance. This board features the LARA-L6004D-01B, an LTE Cat 4 module in the smallest form factor from u-blox. The module supports an LTE Cat 4 FDD and an LTE Cat 4 TDD radio access technology (RAT), with a 3G UMTS/HSPA and 2G GSM/GPRS/EGPRS fallback. It is an ideal solution for global and multi-regional coverage. This Click board™ makes the perfect solution for the development of asset tracking, telematics, remote monitoring, alarm panels, video surveillance, and more.

LTE Cat.4 3 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the mikroBUS™ standard. It comes with the mikroSDK open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this Click board™ apart is the groundbreaking ClickID feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

LTE Cat.4 3 Click is based on the LARA-L6004D-01B, an LTE Cat 4 module in the smallest form factor from u-blox. This data-only module supports DualStack IPv4/IPv6, FOAT/uFOTA, LwM2M, jamming detection, and more. It operates as a four-band device in a frequency range of 700MHz up to 2600MHz. There are two SMA antenna connectors to which you should connect the appropriate antennas that MIKROE offers. The ANT1 antenna is a primary one that supports both TX and RX, while the ANT2 one only supports RX for the LTE Down-Link MIMO 2x2 and 3G RX diversity configuration.

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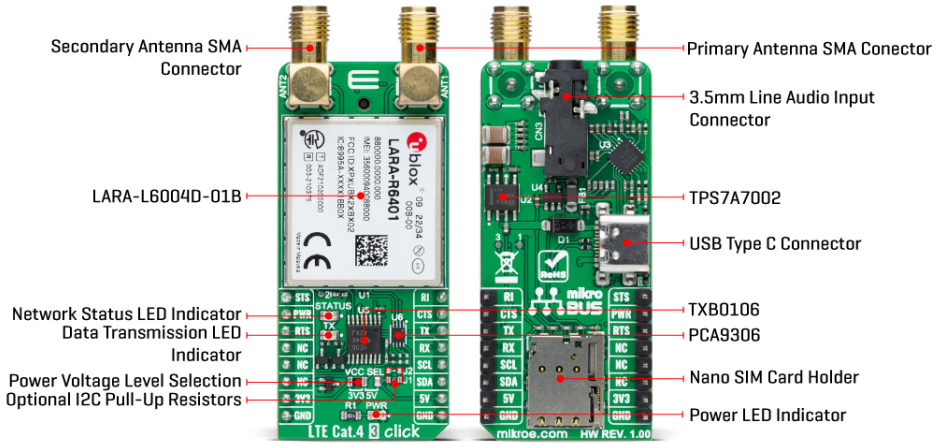

The LTE Cat.4 3 Click is equipped with a nano SIM card holder for both 1.8V and 3.0V SIM types. The module also includes a USB high-speed 2.0-compliant interface with a minimum 480Mbps data rate. The module itself acts as a USB device and can be connected to any compatible USB host. It provides a virtual serial port over USB for AT commands and communication, a virtual serial port over USB for diagnostic logs, and more.

LTE Cat.4 3 Click uses a standard 2-wire UART interface to communicate with the host MCU, with commonly used UART RX and TX supporting up to 3000000bps (115200 is the default). The hardware flow control functionality is also available over the RTS and CTS pins. The data transmission is also visualized over the TX LED. Besides the library we provide, you can also use a set of AT commands to communicate with the module. The network status is available over the STS pin and the STATUS LED. The module can be powered off through the software, AT commands, or over the PWR pin. The module uses the TXB0106 and the PCA9306, bidirectional translators from Texas Instruments, for logic-level translation. The I2C interface is also available for communication with the host MCU with optional pull-up resistors.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. 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	3G UMTS,GSM+GPS,LTE IoT
Applications	Can be used for the development of asset tracking, telematics, remote monitoring, alarm panels, video surveillance, and more
On-board modules	LARA-L6004D-01B - LTE Cat 4 module in the smallest form factor from u-blox
Key Features	Multi-bend and multi-mode module, supports LTE Cat 4 FDD, LTE Cat 4 TDD radio access technology (RTA), 3G UMTS/HSPA, 2G GSM/GPRS/EGPRS, data-only communication, wide operating frequency range, long list of security features, FOAT, DNS, PPP, and more
Interface	I2C,UART,USB

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Feature	No ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on LTE Cat.4 3 Click - Data corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Network Status	**STS**	1	AN	PWM	16	**RI**	Ring Indicator
Module Power-On	**PWR**	2	RST	INT	15	**CTS**	UART CTS
UART RTS	**RTS**	3	CS	RX	14	**TX**	UART TX
	NC	4	SCK	TX	13	**RX**	UART RX
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	6	MOSI	SDA	11	**SDA**	I2C Data
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	TX	-	Data Transmission LED Indicator
LD3	STATUS	-	Network Status LED Indicator
JP1	VCC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

LTE Cat.4 3 Click - Data electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating Frequency Range	700	-	2600	MHz
LTE Cat 4 Download Data Rate	-	-	150	Mbps
LTE Cat 4 Upload Data Rate	-	-	50	Mbps
Output Power	-	-	33.5	dBm

Software Support

We provide a library for the LTE Cat.4 3 Click as well as a demo application (example), developed using MIKROE compilers. The demo can run on all the main MIKROE development boards.

Package can be downloaded/installed directly from NECTO Studio Package

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Manager(recommended), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for LTE Cat.4 3 Click driver.

Key functions

- ltecat43_set_power_state This function sets a desired power state by toggling PWR pin with a specific time for high state.
- ltecat43_set_sim_apn This function sets APN for sim card.
- ltecat43_send_sms_text This function sends text message to a phone number.

Example Description

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

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.LTECat43

Additional notes and informations

Depending on the development board you are using, you may need USB UART click, USB UART 2 Click or RS232 Click to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the LibStock and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

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Click Boards™

Downloads

TXB0106 datasheet

PCA9306 datasheet

TPS7A7002 datasheet

LTE Cat.4 3 Click - Data example on Libstock

LARA-L6004D-01B datasheet

LTE Cat.4 3 Click - Data schematic

LTE Cat.4 3 Click - Data 2D and 3D files