

LTE Cat.1 2 Click (for EU)



PID: MIKROE-5906

LTE Cat.1 2 Click (EU) is a compact add-on board that provides your application with complete LTE and VoLTE with CSFB functionalities. This board features the [ELS62-E](#), a single antenna LTE cat.1bis module from [Thales](#). The module offers a 3GPP Rel.13 compliant protocol, digital audio interface, dual UICC/U/SIM card interface, and more. Besides, it also has a u.FI connector to connect an appropriate antenna, which MIKROE offers. This Click board™ makes the perfect solution for the development of communication devices, both for home and industrial applications, remote device actions, and more.

LTE Cat.1 2 Click (EU) 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.1 2 Click (EU) is based on the ELS62-E, a single antenna LTE Cat. 1bis module from Thales. The module supports GSM, GPRS, and EDGE in frequencies of 900 and 1800MHz. It also supports the LTE band in 800, 850, 1800, and 2100MHz frequencies. The module allows you to use SMS as a point-to-point MT and MO, cell broadcast, text, and PDU mode and allows you to use SIM card storage. The SIM card socket is placed below the board. It can achieve a download speed of 10.2Mbps and an upload speed of 5.2Mbps. The ELS62-E also comes with a USB C connector that supports a USB 2.0 standard and is high-speed (480Mbps) and full-speed compliant (12Mbps). The connector is intended for a firmware update of the modem.

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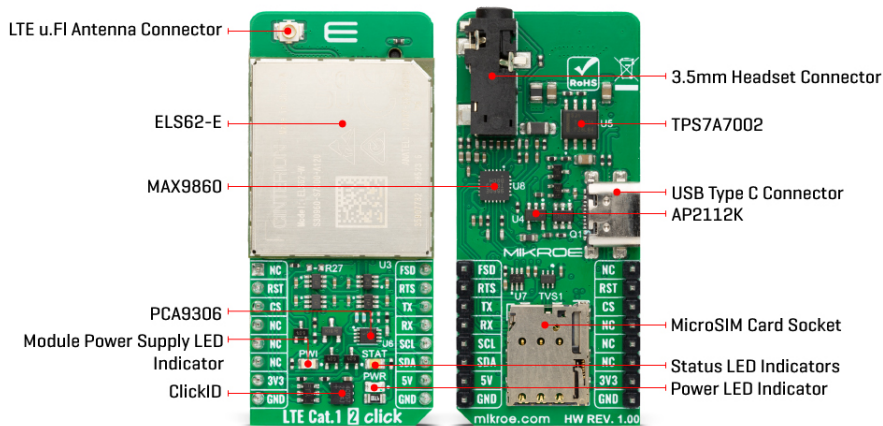
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ISO 27001: 2013 certification of informational security management system.
 ISO 14001: 2015 certification of environmental management system.
 OHSAS 18001: 2008 certification of occupational health and safety management system.



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



The ELS62-E supports a digital audio interface (DAI) employed as a pulse code modulation interface (PCM). The PCM interfaces the MAX9860, a 16-bit mono audio voice codec from Analog Devices. It supports a low-noise microphone input, mono amplifier, automatic microphone gain control and noise gate, and more. The audio codec can output 30mW into a 32Ω earpiece with a microphone connected over the 3.5mm audio jack.

As the module uses several different voltages, there is an AP2112K, an LDO from Diodes Incorporated, which supplies the module with the needed 1.8V. There is also a TPS7A7002, an LDO from Texas Instruments, for the required supply of 4.2V. For logic-level translation, this Click™ board uses four SN74LVC1T450 transceivers and one PCA9306 transceiver, all from Texas Instruments. The yellow STAT LED indicates different operating modes of the module, while the blue PWR LED indicates the module's 1.8V power supply.

LTE Cat.1 2 Click EU uses a standard UART interface to communicate with the host MCU with commonly used UART RX and TX pins. It also allows you to use a UART control flow pins RTS and CTS (CTS on pin CS). The UART of the modem can operate at fixed bit rates from 300bps up to 921600bps. Besides the library we provide, you can use an AT set of commands to control the module. The fast shutdown option is left disabled. You can enable it over the R27 resistor and use it over the FSD pin. The audio codec uses a standard 2-wire I2C interface to communicate with the host MCU. It allows you to use the volume control, shutdown mode, and more.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. Also, it comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Specifications

Type	4G LTE,GSM/LTE
Applications	Can be used for the development of communication devices, both for home and industrial applications, remote device actions, and more
On-board modules	ELS62-E - single antenna LTE Cat. 1bis module from Thales

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Key Features	Support GSM, GPRS, EGPRS, LTE frequency bands, point-to-point MT and MO, cell broadcast, text and PDU mode, SIM card plus SMS location storage, AT commands, USB firmware upgrade, audio DAI interface, UICC, SIM, USIM interface, and more
Interface	I2C,UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V,5V

Pinout diagram

This table shows how the pinout on LTE Cat.1 2 Click (for EU) corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	FSD	Fast Shutdown
ID SEL	RST	2	RST	INT	15	RTS	UART RTS
UART CTS / ID COMM	CS	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	STAT	-	Status LED Indicator
LD3	PWI	-	Module Power Supply LED Indicator

LTE Cat.1 2 Click (for EU) electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	5	-	V
Operating Frequency Range	700	-	2100	MHz
Download Speed	-	-	10.2	Mbps
Upload Speed	-	-	5.2	Mbps

Software Support

We provide a library for the LTE Cat.1 2 Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development boards](#).

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Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Library Description

This library contains API for LTE Cat.1 2 Click driver.

Key functions

- ltecat12_max9860_cfg LTE Cat.1 2 MAX9860 configuration function.
- ltecat12_send_cmd LTE Cat.1 2 send command function.
- ltecat12_send_sms_pdu LTE Cat.1 2 send SMS in PDU mode.

Example Description

Application example shows device capability of connecting to the network and sending SMS, TCP/UDP messages or calling the selected number 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.LTECat12

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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[ClickID](#)

Downloads

[PCA9306 datasheet](#)

[TPS7A7002 datasheet](#)

[AP2112 datasheet](#)

[MAX9860 datasheet](#)

[LTE Cat.1 2 Click \(for EU\) example on Libstock](#)

[LTE Cat.1 2 Click \(for EU\) click 2D and 3D files](#)

[LTE Cat.1 2 click schematic](#)

[ELS62-E datasheet](#)

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