MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

LTE Cat.1 2 Click (for Europe)

PID: MIKROE-5906

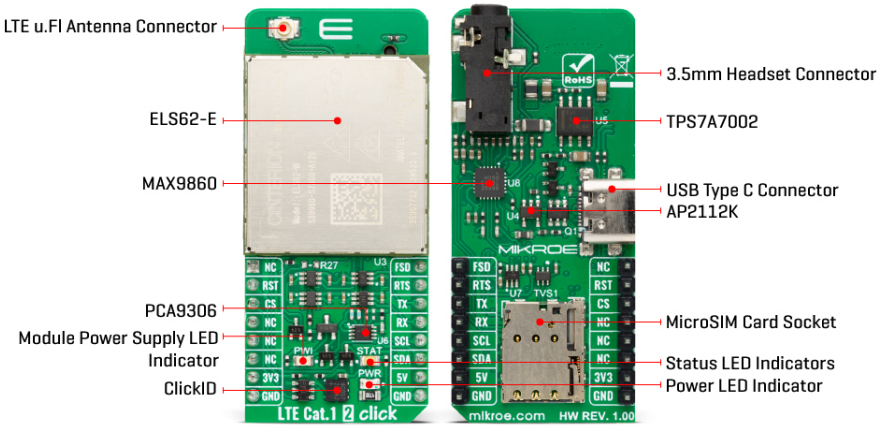
LTE Cat.1 2 Click (EU) is a compact add-on board that provides your application with complete LTE and VoLTE with CSFB functionalities. This board features the ELS62-E, a single antenna LTE cat.1bis module from Telit Cinterion. The module offers a 3GPP Rel.13 compliant protocol, digital audio interface, dual UICC/U/SIM card interface, and more. Besides, it also has a u.Fl 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 Telit Cinterion. 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.

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com



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 PWI 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,LTE Cat 1 bis
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 Telit Cinterion

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

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	mikroBUS				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

LTE Cat.1 2 Click 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

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

featuring a mikroBUS™ socket.

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.

Key Functions

- ltecat12_cfg_setup Config Object Initialization function.
- ltecat12_init Initialization function.
- 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.

Application Init

Sets the device configuration for sending SMS, TCP/UDP messages or calling the selected number.

Application Task

Depending on the selected demo example, it sends an SMS message (in PDU or TXT mode) or a TCP/UDP message or calls the selected number.

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

Click board™ Catalog

ClickID

Downloads

TPS7A7002 datasheet

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

AP2112 datasheet

MAX9860 datasheet

LTE Cat.1 2 Click (for EU) click 2D and 3D files v100

LTE Cat.1 2 click schematic v100

ELS62-E datasheet

LTE Cat.1 2 Click (for Europe) example package

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Mikroe:

MIKROE-5906