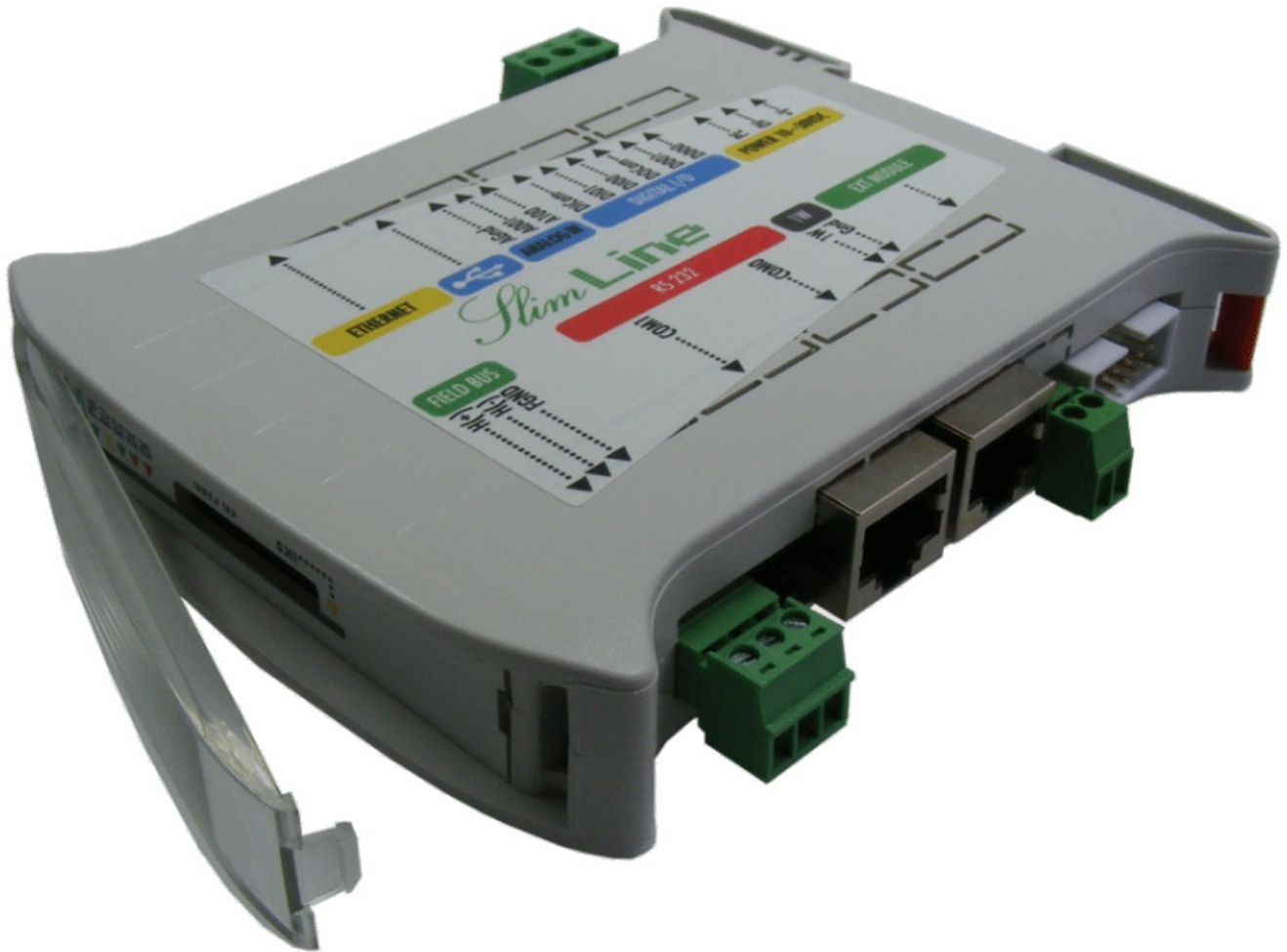


Elsist SlimLine Cortex M7 CPU Module User Manual

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Elsist SlimLine Cortex M7 CPU Module



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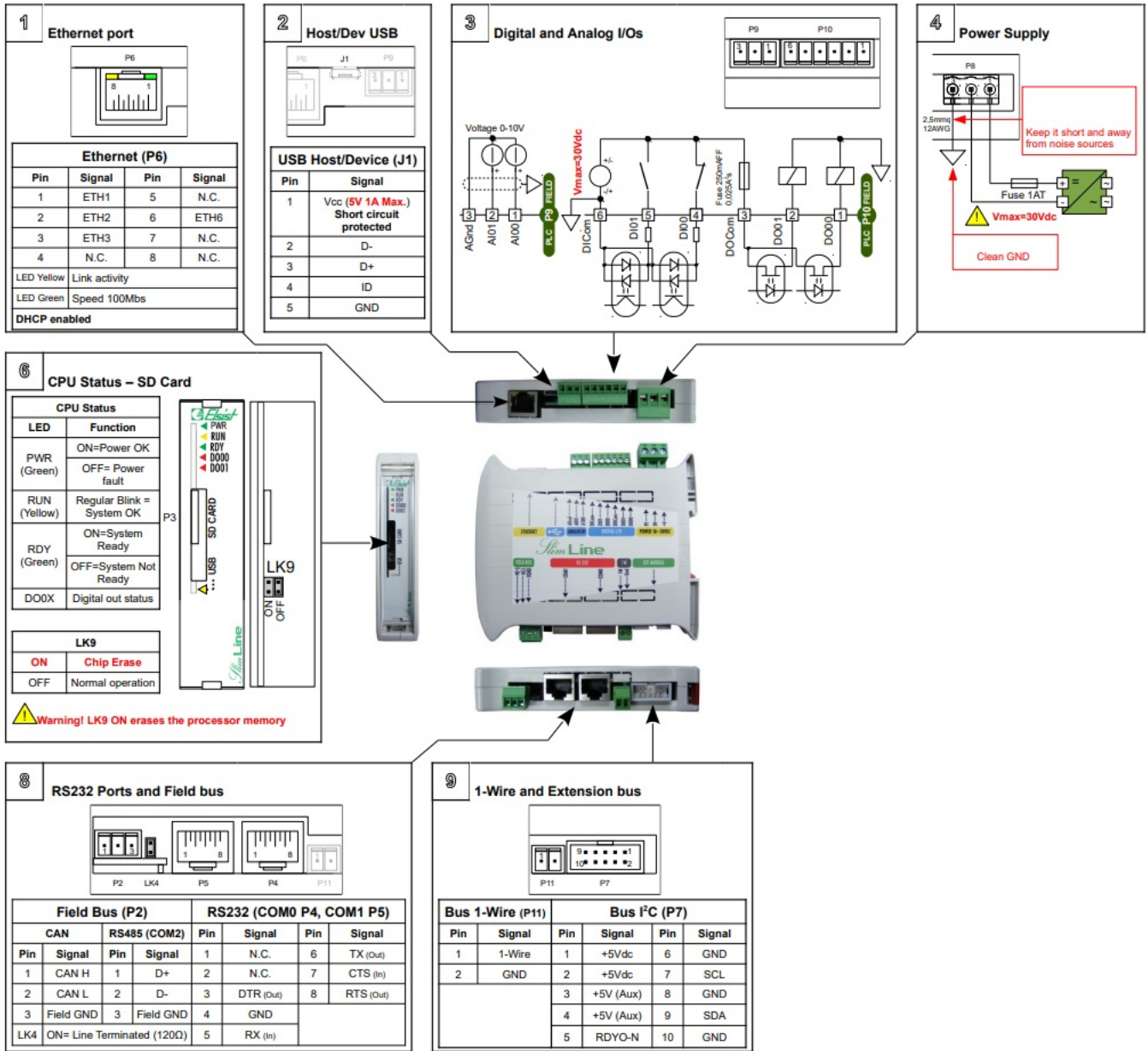
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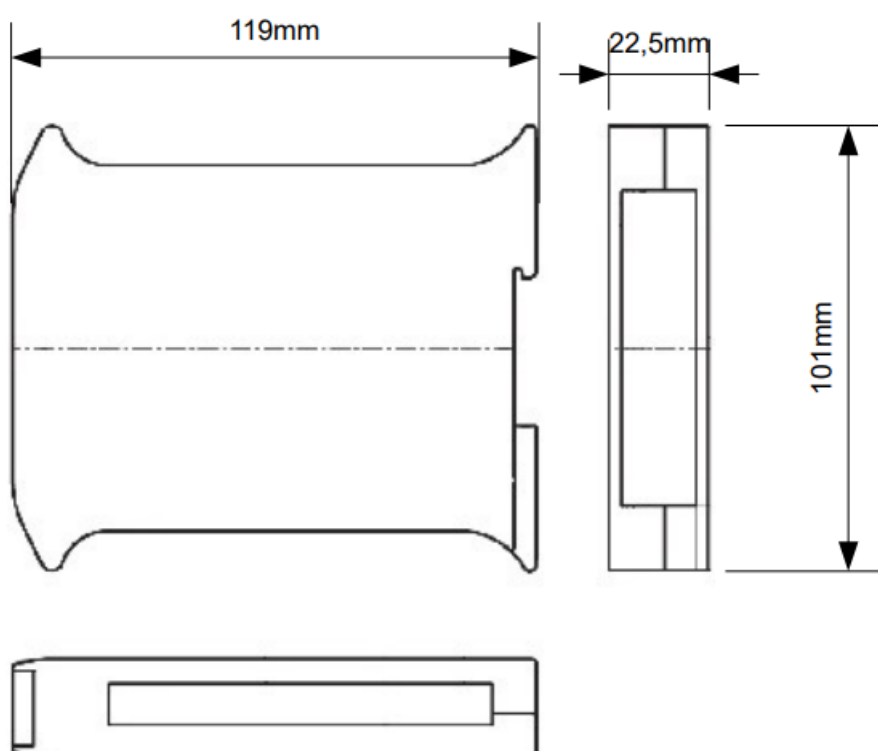
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Product identification



LBL052E000

Code: **MPS054**00**Serial Nr: **00348**

MPS054***0

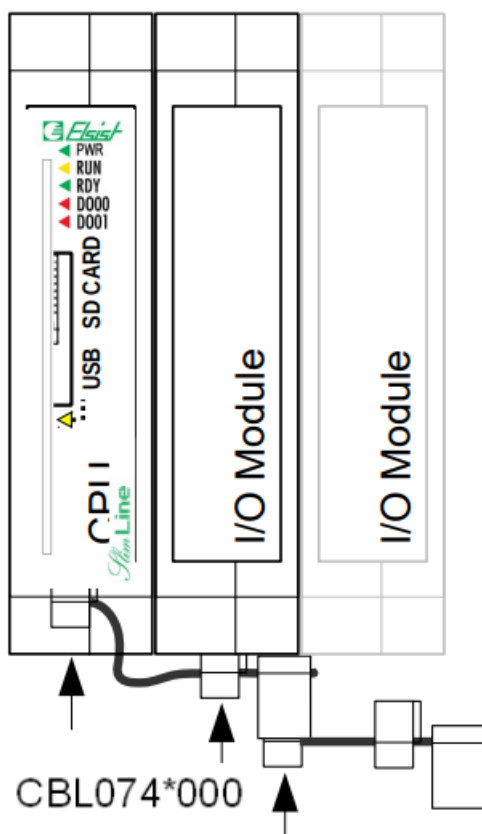
Module release

Lite version = 0
RS485 version = 1
CAN version = 2

Basic version = 0
Extended version = 1

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Extension modules connection



Connections

The SlimLine Cortex M7 (LogicLab) CPU module is provided of extractable TB to connect Power, I/Os and Field bus, IDC connector to connect the extension modules, RJ45 connectors for RS232 COM ports and the Ethernet

port, and one microUSB-AB connector

Power supply (Fig. 3)

The module can be powered with a DC source within the range 10-30Vdc. The power connection must be done according to the **Fig. 2**.

The power is signaled by the green LED "PWR".



WARNING! Values greater than the maximum allowed may damage the device seriously.

Ground connection (Fig. 2)

The device must be connected directly to Ground using the terminal block on the power supply connector (**Fig. 2**). The connection must be performed through a wire with section at least of 2.5mm², to a copper equipotential bar of adequate section.

To guarantee a good noise rejection, keep this connection as short as possible and take care to place it far away to the other cables.

Digital and Analog Inputs (Fig. 3)

The module is provided of 2 digital input and 2 analog input (If any) The digital inputs are galvanically insulated from the system and may be used as PNP or NPN as for your convenience. The digital Input DI00 may be used as a counter input with F_{max}=10KHz.

Analog inputs (where provided) aren't insulated from the system and accept voltage from 0 to +10Vdc.

The module accepts two common mode analog input or, alternatively, one in differential mode.



WARNING! To connect analog inputs use EXCLUSIVELY screened cables and be careful to place them away from noise sources.

Digital Outputs (Fig. 3)

The module is provided of 2 Optomofet static digital outputs, galvanically insulated from the system. The outputs may be used either as PNP or NPN as for your convenience.



WARNING! Shorts on the outputs may damage permanently the device. It's suitable to place an extra rapid fuse 250mAFF in series of the output common (i.e. Ferraz G084002P).

Extension bus and 1-wire bus (Fig. 9)

The communication bus with the extension modules uses the Fast I 2C™ interface and it's available on the IDC10 connector (P7).

The extension modules must be cascade connected through the special cables CBL045**00/CBL074*000.

The **Fig. 10** is an example of extension modules connection. Up to 16 extension modules may be connected to the CPU. (after checking the maximum current needed)



WARNING! Before to connect the extension modules to the system, be sure that it's powered off. Missing this rule may produce failures in the modules.

The device may be equipped with a 1-Wire™ bus (P11), through it you can acquire i-Button™ devices, such as TAG for personal identification, temperature sensors and other devices.

RS232 Serial ports (Fig. 8)

The device is provided of two serial ports DTE (Data Terminal Equipment). The connection between DTEs, such as Personal Computers, Operator Terminals etc., must be done through a Nullmodem cable of maximum cable length of 15 mt, according to EIA specifications.

These ports aren't galvanically insulated from the system, it is recommended to verify, before to connect together different devices, the difference of potential on the ground.



WARNING! An excess of difference of potential on ground loop may cause damages to the devices.

Field bus (Fig. 8)

The module may be provided of a RS485 or CAN field bus (see product identification **Fig. 7**), in both cases the bus is galvanically insulated from the system. To connect the field bus please see Figure on side.

Through the LK4 jumper may be connected or not the 120 Ohm termination resistor.

Ethernet port (Fig. 1)

The module is provided of an Ethernet 10/100-Base T(x) available on the RJ45 connector P6; the connection, shown in **Fig. 1**, is compatible with the standard Ethernet IEEE 802.3 100-Base T.

To connect the device in an Ethernet network can be used UTP Cat. 5 cable RJ45, connected to a switch, while to made a point to point connection it's enough to use an RJ45 patch cable alone. The device is Auto-MDIX, so no cross cable is needed to connect it to a PC directly.

On P6 are available two LED for Ethernet status signaling: The green LED signals, when on, that the network is running at 100Mb/s speed. The yellow LED signals the Ethernet link activity. The module is supplied with DHCP enabled and, in case of lack of a DHCP server, the IP address can be assigned with the [Toolly utility](#).



WARNING! The module is supplied with Admin user credentials: User "Admin" e password "Admin". It is strongly recommended to change them before installation.

USB Host/Device port (Fig. 2)

The module may be equipped of a microUSB-AB port able to be used as host or device mode.

Slot SD Card (Fig. 6)

The module is provided of a slot mini-SD Card. The card may be used for archive functions or for data history functions during normal running. The card must be ordered separately.

Status signaling (Fig. 6)

The device is provided of some LEDs to signal its status:

- PWR (Green LED)
Indicates that device is powered
- RUN (Yellow LED)
Regularly blinking indicates that the system is running,
- RDY (Green LED)
When light indicates that the system is ready and it manages the I/O modules according to the user program.
When it's off it resets the output status on extension modules eventually connected to the system.
- DO0x (Red LEDs)
When light indicate that the corresponding digital output is activated.

I²C™ is a trade mark of NXP Semiconductors

Technical Specifications					
Device Code	MPS054*000	MPS054*100	MPS054*110	MPS054*200	MPS054*210
Power Supply	10-30Vdc 1,4W (1)	10-30Vdc 1,7W (1)			
Power to exp. bus	5Vdc 2.6A max.				
Processor	RISC 32bit Cortex M7 300MHz, 2MB FlashEPROM, 384 kB SRAM				
Program memory	131 kB user program (2) (Option 2 62kB)	262 kB user program (2)	131 kB user program (2) (Option 262kB)	262 kB user program (2)	
	FlashEPROM Min. data retention 10Years				
Mass memory	398 kBytes FlashEPROM of 4MBytes available for user data(2)				
Data backup memory	6kBytes FRAM of 32kBytes available for user data(2)				

Data memory	12kB SRAM of 384kB available for user data (2) (Option 20 kB)	20kB SRAM of 384kB available for user data (2)	12kB SRAM of 384kB available for user data (2) (Option 20 kB)	20kB SRAM of 384kB available for user data (2)
SD-Card Slot	Yes, micro SD (card is optional)			
Real Time Clock	Yes, Backup Timekeeping optional	Yes, Backup Timekeeping 5 years	Yes, Backup Timekeeping optional	Yes, Backup Timekeeping 5 years
	SNTP and daylight saving time supported			
USB I/F	none	1 x micro-USB AB (Host/device mode supported)	none	1 x micro-USB AB (Host/device mode supported)
Digital Input	2 Optoisolated PNP/NPN 5-30Vdc, 5mA@24V (DI00 can be used as a counter input with Fmax=10kHz)			
Analog Input	none	2*0-10Vdc common mode or 1 differential mode (12bit resolution)	none	2*0-10Vdc common mode or 1 differential mode (12bit resolution)
Digital Output	2 OptoMOS 0.25A@40Vdc/ac, Vmin 0V, ON state resistance 10hm max TOn 0,75mS max, TOff 0,2mS max			
Ethernet I/F	RJ45 10/100base-T(x) Auto-MDIX			
Field bus	none	Insulated Fail Safe High impedance RS485	Insulated CAN Bus 2.0B compatible, ISO11898-1	
Expansion bus	I2C™ High-Speed			
1-Wire bus	none	Yes	none	Yes

RS232 I/F	2 * DTE on RJ45 connectors
Status indicators	Power, RUN, READY, USB, Digital Output Status
Environment	Operating temperature: from -20 to +70°C
	Storage temperature: from -40° to +80°C
	Relative Humidity: Max. 90%
Dimensions and weight	Dimensions: 22.5 mm L x 101 mm W x 120 mm H
	Weight: 150g
Approvals	CE, RoHS
Notes	(1) Worst case (2) Firmware depending

Half-Duplex connection (RS485 only)

- The maximum distance between the first and the last device does not exceed 4000 feet (RS485).
- The termination resistor must be always connected on the first and on the last device.
- The cable must be shielded and twisted paired.

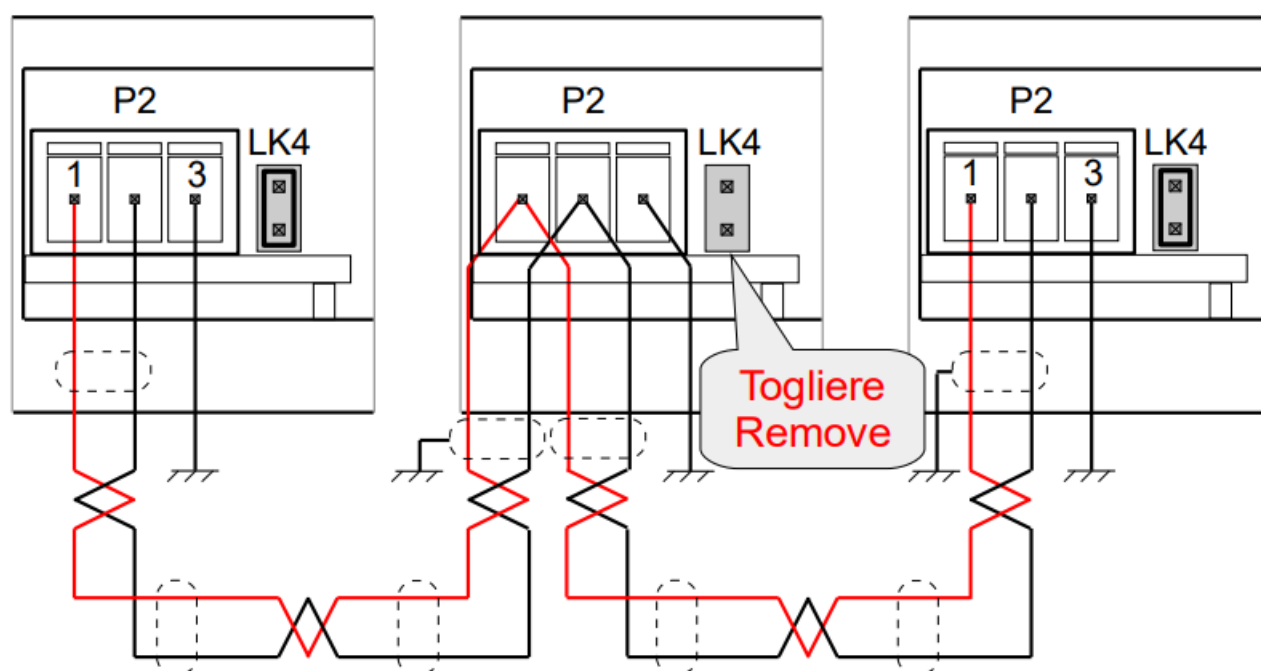
Technical notes for CAN connection

The technical specification for CAN bus are given by the ISO 11898 Standard. The maximum bus speed is 1Mbit/s for a cable length of 130ft. In the table below are listed the allowed speed function of cable length.

Max speed function of bus length (CAN)

Bus Length	Transmission speed	Bus Length	Transmission speed
100 meters (330 ft)	500 kbit/s	500 meters (1600 ft)	125 kbit/s
200 meters (650 ft)	250 kbit/s	6 kilometers (20000 ft)	10 kbit/s

Drawing connection

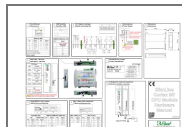


Customer Support

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Documents / Resources



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SlimLine Cortex M7 CPU Module, SlimLine, SlimLine CPU Module, Cortex M7 CPU Module, M7 CPU Module, Cortex CPU Module, CPU Module, CPU, Module

References

- [Elsist sistemi in elettronica dal 1983 - Home page](#)
- [Elsist sistemi in elettronica dal 1983 - Home page](#)
- [Toolly - Elsist](#)
- [Toolly - Elsist](#)

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