CoLa2 Terminal Instruction for SOPAS ET

SOPAS ET

1. About

This document describes how to communicate with a device on CoLa2 using the SOPAS ET terminal. Note that the SOPAS ET terminal is primarily used for testing purposes or to transmit single messages. Please use the easiest configuration to setup your device to avoid unwanted issues. Preferred configuration ways could be:

- SOPASair (Web interface)
- SOPAS ET (device window)
- ROS Driver
- Other user Programs

The commands in this document are based on the SICK Telegram Listing. Please make sure that you are always using the newest version of the listing which can be found in the “Literature” section of your device on the SICK homepage.

2. Material

2.1 Software

- Current SOPAS ET version

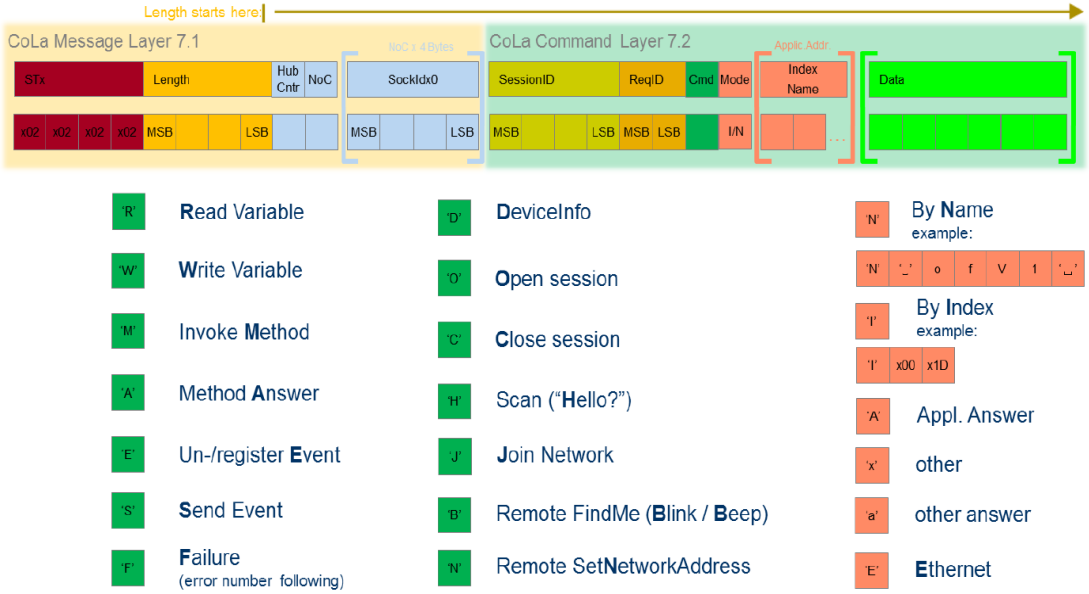
2.2 Hardware

- Computer
- Ethernet Cable
- Power Supply
- Device of choice supporting CoLa2

3. Short Protocol Description

This section should describe the overall structure of the CoLa 2 protocol. Not that this document assumes that your computer is directly connected to your device. This description sets a focus on CoLa 2 protocol and ignores the other OSI Layer (1-6).

NOTE | Please check the CoLa 2.X Specification for a full protocol description and in case there are multiple hops between your device under test and your computer.



The picture above shows the structure of a CoLa 2.0 telegram. If The computer is directly connected to the device, the fields "HubCntr" and "NoC" are set to all zeros and the field "SockIdx0" is not present.

SessionID is constant over a connection between two devices.

ReqID is transmitted with a request and associated with a corresponding response message. This number can be selected multiple times during the session and can be chosen randomly.

Cmd is equal to the description in the "Telegram Listing" but does not start with an "s" anymore.

Mode is equal to the description in the "Telegram Listing".

Index Name is equal to the description in the "Telegram Listing".

Example:

CoLa A	ASCII	<STX>sRN{SPC}DeviceIdent<ETX>
	Hex	02 73 52 4E 20 44 65 76 69 63 65 49 64 65 6E 74 03
CoLA B	Binary	02 02 02 02 00 00 00 0F 73 52 4E 20 44 65 76 69 63 65 49 64 65 6E 74 25
CoLA 2	Binary	02 02 02 02 00 00 00 16 00 00 XX XX XX XX ZZ ZZ 52 4E 20 44 65 76 69 63 65 49 64 65 6E 74

This example shows a DeviceIdent request with the additional fields for CoLa 2. The session and request dependent fields: SessionID are set to XX XX XX XX and the ReqID to ZZ ZZ**.**

4. Preperation

Connect your device to a power source and establish an Ethernet connection between your computer and the device. Ensure that the computers Ethernet adapter is within the same subnet as the one of your CoLA 2 device.

Enable or set the CoLa 2 Port of your device (e.g. port **2122** for LRS4xxx and most other devices).

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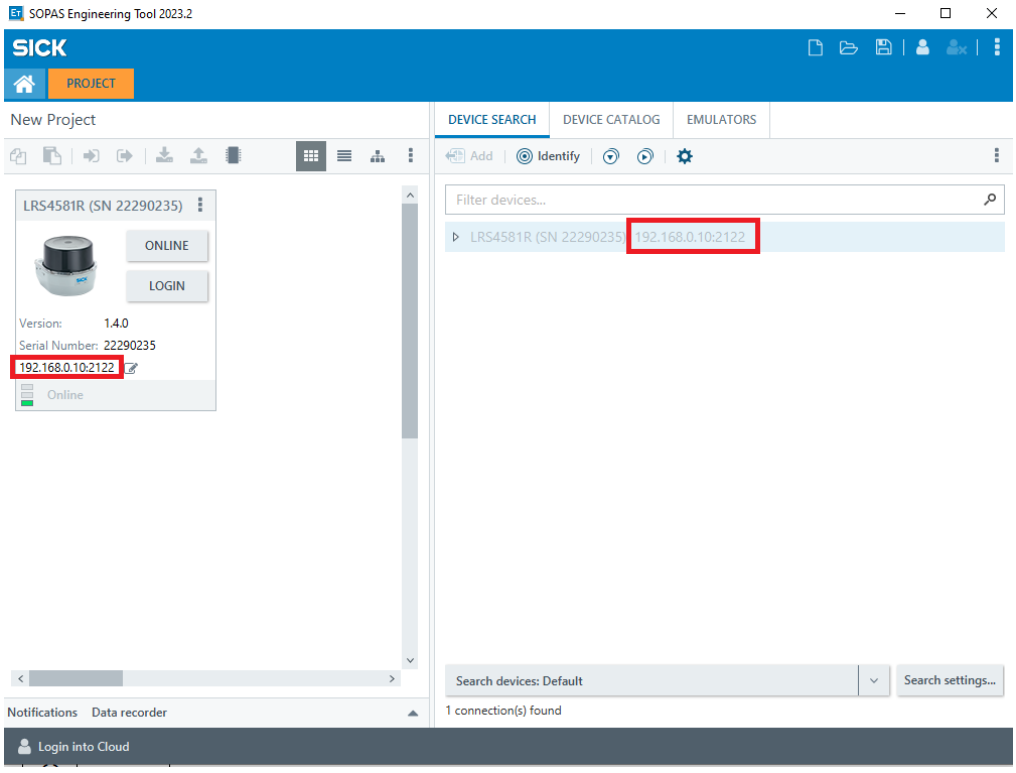
NOTE | Depending on your device you can find the CoLa 2 port in

- the operating instruction of the device (download at www.sick.com)
- SOPASair in the Connection options of the Configuration tab
- SOPAS ET device window

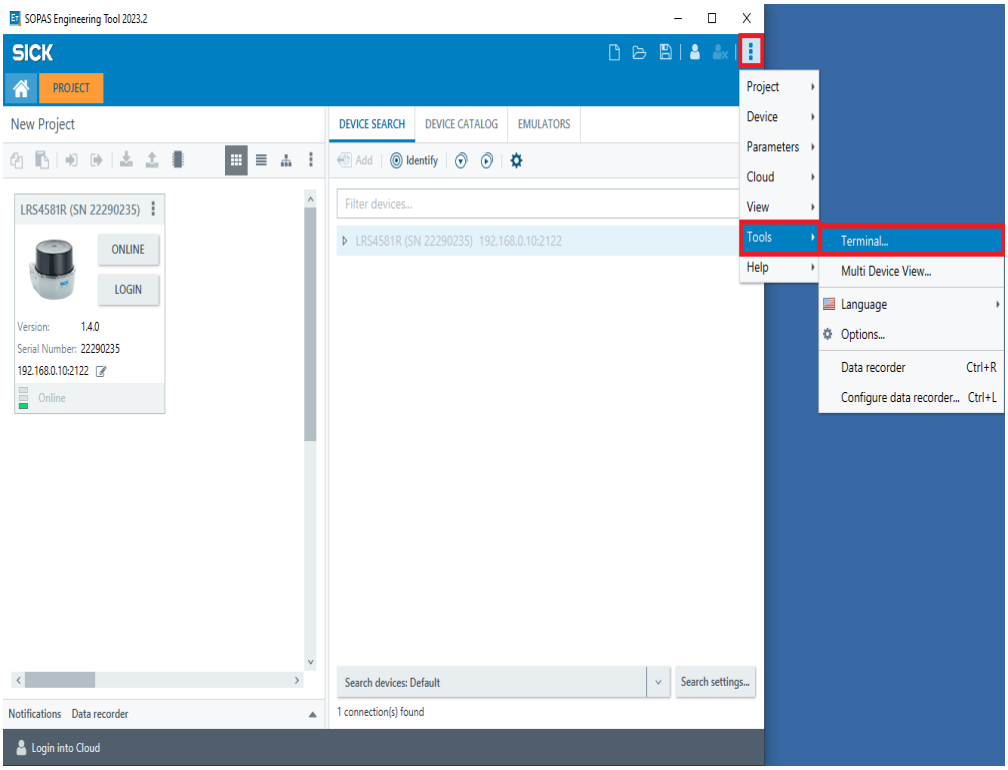
5. Transmit and Receive Data

I. Start SOPAS ET and perform a device search.

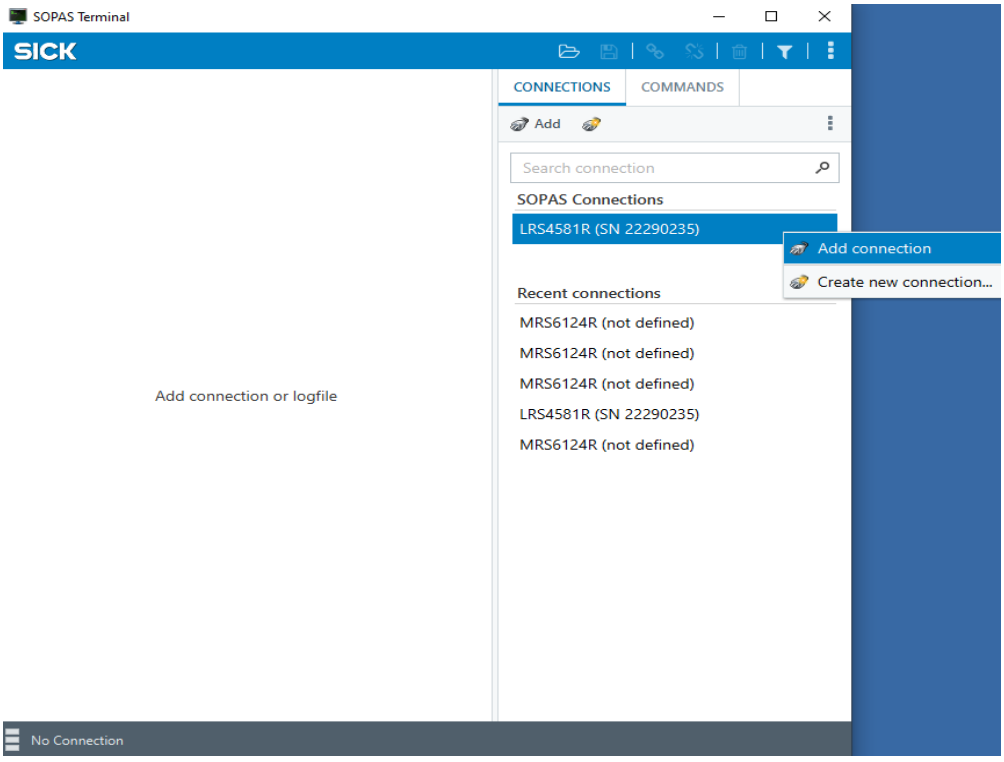
II. Select the device you want to communicate with and select its CoLa 2 port **2122**.



III. Open the Terminal in SOPAS ET

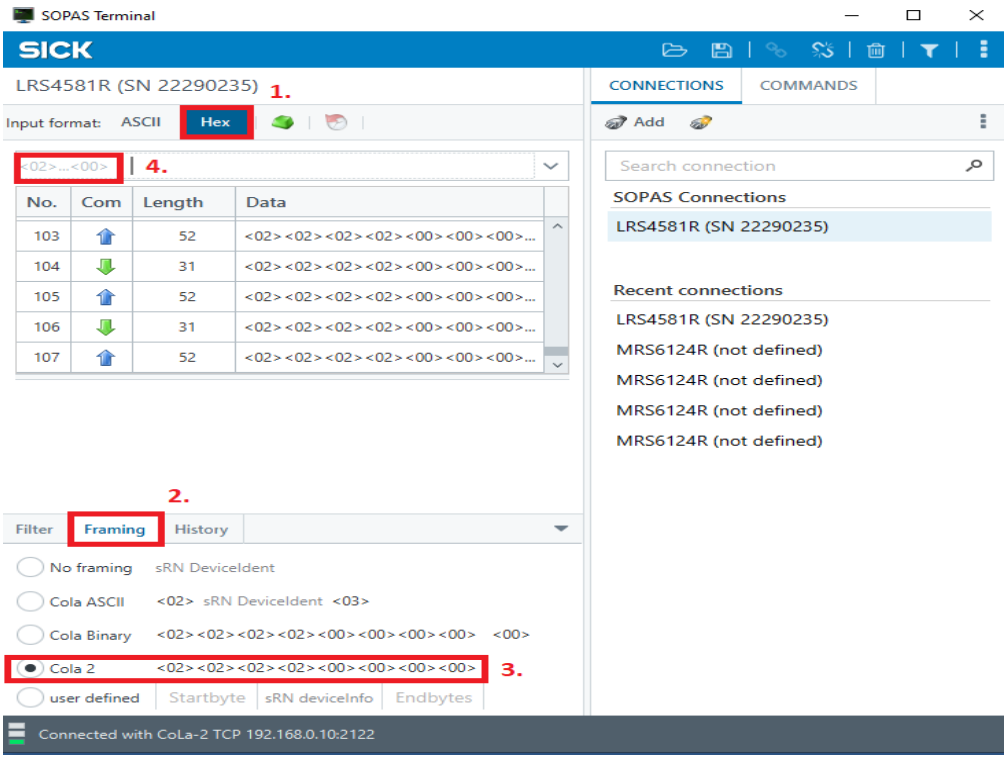


IV. A new window will open. Select the device you want to connect with and select “Add connection”.



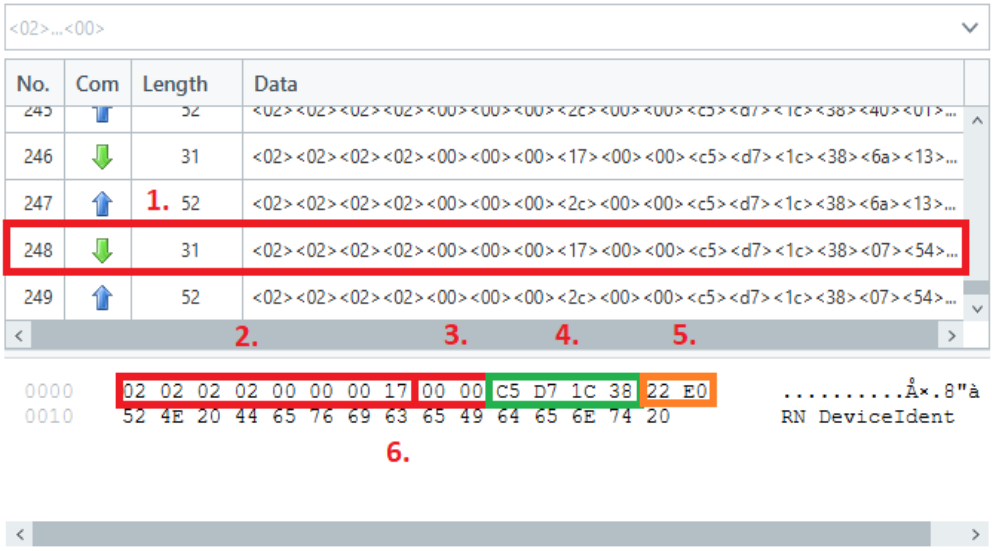
V. Set “Input format” to “Hex” (1) and activate input assistance (green button next to “Hex”

VI. Change the Framing (2) to CoLa2 (3). The Framing on top should change accordingly (4)



VII. SOPAS will automatically start to send DeviceIdent messages. This is necessary to read out the SessionID.

VIII. Select one of the transmitted DeviceIdent messages (one with the green arrow) (1)



IX. After selecting the message, it`s contend will be shown in the bottom area.

X. The Frame is structured as follows.

02 02 02 02	STX	(2)
00 00 00 17	Length	(2)
00	HubCntr	(3)
00	NoC	(3)
C5 D7 1C 38	SessionID	(4)
22 E0	ReqID	(5)
52	Cmd	(6)
4E	Mode	(6)
20	Blank Space	(6)
44 65 76 69 63 65 49 64 65 6E 74	Data	(6)

XI. Open a raw text editor of your choice e.g. Notepad or Notepad++ (Do not use Word or similar) or enter it directly in the terminal window.

XII. Copy the SessionID to a raw text editor of your choice.

XIII. Construct your frames as follows.

The STX and Length (2) is automatically set if CoLa 2 framing is selected as described in the previous step.

00 00	HubCntr and NoC are set to all zeros (3)
XX XX XX XX	SessionID (4) of your connection, use this for all frames during this connection. You can extract the ID from step X.
ZZ ZZ	ReqID (5) as a random number. We suggest a number you can use to identify and verify the message e.g. FF FF.

Cmd, Mode, Blank Space and Data (6) is equal to the Telegram Listing except without “s” in front of the Cmd.

XIV. After setting up the frame, you can now copy the frame to the SOPAS ET Terminal and transmit it. The device will send you a response in case all fields were set properly.

6. Example Frames

To copy the example frames to your running SOPAS ET Terminal ensure that the “Input format” is set to “Hex” the hex input assistance is enabled (button next to “Hex”).

Open a plain data Text editor such as Windows Notepad or Notepad++ and copy the frame to this editor. This step will ensure that the hex input assistance interpret the numbers as converted hex numbers instead of an ASCII character. You can now copy the frame to the Terminal. Ensure that no additional numbers were added by the assistance and remove them otherwise. Use the Key combination “Crtl” + “v” to past the frame to the Terminal window and press “Send” to transmit the message.

Ensure that you properly logged in before you try to change a setting which requires a certain user level.

NOTE | Make sure that you adapt the SessionID and RequestID of each frame before transmission. Adjustable fields are marked as XX (SessionID) or ZZ (RequestID)

DeviceIdent

0000XXXXXXXXZZZZ524E2044657669636549646 56E7420

StartMeasurement - LMCstartmeas

0000XXXXXXXXZZZZ4D4E204C4D4373746D72746D656173

StopMeasurement - LMCstopmeas

0000XXXXXXXXZZZZ4D4E204C4D4373746F706D656173