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AgustaWestland Products

SERVICE BULLETIN

N° 139-719

DATE: May 31, 2022

REV. : /

TITLE

ATA 93 – OPLS LASER SENSOR UNIT FIRMWARE UPDATE

REVISION LOG

First Issue

An appropriate entry should be made in the aircraft log book upon accomplishment.
If ownership of aircraft has changed, please, forward to new owner.

1. PLANNING INFORMATION

A. EFFECTIVITY

AW139 helicopters S/N 31964, 31966 and 31970 Laser Sensor Units P/N 91-119 with serial number showed in Table 1 below and that have not been remarked with a terminal "-A" in their SN.

N°	P/N	Serial Number	Manuf. Year	Firmware
1	91-119	**21502**	2021	V2.00
2	91-119	**21503**	2021	V2.00
3	91-119	**21504**	2021	V2.00
4	91-119	**21511**	2021	V2.00
5	91-119	**21512**	2021	V2.00
6	91-119	**21513**	2021	V2.00
7	91-119	**21514**	2021	V2.00
8	91-119	**21517**	2021	V2.00

Table 1

B. COMPLIANCE

Within and not later than 100 flight hours or 3 months whichever occurs first after the issue of this Service Bulletin

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to provide the necessary instruction on how to update the Firmware of the Laser Sensor Units (LSU) P/N 91-119 of Object Proximity Lidar System (OPLS) kit P/N 4G9360F00211.

E. DESCRIPTION

A new LSU Firmware version V2.00.1 is released to improve the sensor performance and eliminate minor bugs found in units equipped with version V2.00.

This Service Bulletin gives the necessary instructions to update the Firmware of Laser Senor Unit P/N 91-119. Removal of the component is not required.

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before

applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives.

If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

G. MANPOWER

To comply with this Service Bulletin half (0,5) MMH for each LSU updated are deemed necessary.

MMH are based on hands-on time and can change with personnel and facilities available. MMH are not comprehensive of the overall hours necessary to get access to work areas and to remove all the equipment that interferes with the application of the prescribed instructions.

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

1) PUBLICATIONS

Following Data Modules refer to AMP:

DATA MODULE		DESCRIPTION	PART
DM01	39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance.	-
DM02	39-A-06-41-00-00A-010A-A	Access doors and panels – General data.	-

2) ACRONYMS & ABBREVIATIONS

AMP	Aircraft Maintenance Publication
DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
LH	Leonardo Helicopters
LSU	Laser Sensor Unit

MMH	Maintenance Man Hours
OPLS	Object Proximity Lidar System
P/N	Part Number
S/N	Serial Number

3) ANNEX

Annex A	Aerosystems SB-91-119-001 First Issue

J. PUBLICATIONS AFFECTED

N.A.

K. SOFTWARE ACCOMPLISHMENT SUMMARY

LSU Firmware V2.00.1 (refer to the Required materials section of Annex A).

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

Refer to the Required materials section of Annex A “Aerosystems SB-91-119-001 First Issue”.

2) CONSUMABLES

N.A.

3) LOGISTIC MATRIX

N.A.

B. SPECIAL TOOLS

Refer to the Tools section of Annex A “Aerosystems SB-91-119-001 First Issue”.

C. INDUSTRY SUPPORT INFORMATION

Warranty: Owners/Operators who comply with the instructions of this Service Bulletin no later than the applicable date in the “Compliance” section will be eligible to receive REQUIRED MATERIALS on free of charge basis, except for Consumable Materials and Special Tools. NOTE: Customers who fail to comply with the instructions in this Service Bulletin before the compliance date are not eligible for the aforementioned special policy. Please Issue relevant MMIR form to your Warranty Administration Dpt.

3. ACCOMPLISHMENT INSTRUCTIONS

1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. Check that at least one the serial numbers of Laser Sensor Units P/N 91-119 installed on the helicopter is present in Table 1 of the “A. Effectivity” paragraph.
3. In accordance with AMP DM 39-A-06-41-00-00A-010A-A remove all external panels, internal panels and internal liners as required to gain access to the Ethernet Cable connection of LSU P/N 91-119.
4. With reference to Annex A, section “Compliance Instructions”, perform the required instructions to update the Firmware of LSU P/N 91-119.
5. Repeat step 4 for the other affected LSU installed on the helicopter.
6. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
7. Send the attached compliance form to the following mail box:

   engineering.support.lhd@leonardo.com

   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

ANNEX A

AEROSYSTEMS SERVICE BULLETIN

SB-91-119-001 FIRST ISSUE

UPDATE OF LASER SENSOR UNIT FIRMWARE

SERVICE BULLETIN

SB-91-119-001 First Issue
May 12, 2022

FIRMWARE UPDATE OF LASER SENSOR UNIT
PN 91-119

AEROSYSTEMS S.r.l.
Precision Aerospace Components
Via San Gottardo 4, 21021 Angera (VA) Italy

AEROSYSTEMS	SERVICE BULLETIN Standard	SB-91-119-001 First Issue May 12, 2022

SUBJECT:
Firmware Update of Laser Sensor Unit PN 91-119 installed on Leonardo Helicopters OPLS System.

The OPLS is a feature to help the pilot in the avoidance of the rotor blades collision against short range obstacles. It gives an aid for hovering in small spaces, informing the pilots and the crew about the distance of an obstacle, near the helicopter, like rocks, trees and buildings. The system makes use of different laser scanners (Lidars) to draw a continuum, invisible disk all around the helicopter, at main rotor height. All obstacles that the disk intercepts are immediately notified to the pilots and crew through the cockpit displays and the intercommunication audio system.

The three laser sensor units are installed on the top of the fuselage, around the main rotor hub:

The Number 1 laser sensor	FORWARD	IP 192.168.1.10
The Number 2 laser sensor	LEFT	IP 192.168.2.10
The Number 3 laser sensor	RIGHT	IP 192.168.3.10

Each laser sensor unit finds and communicate the obstacle position to the central processor unit.

REASON:
Possible unexpected rebooting of the unit due to ARP requests. This document describes all changes made in the PN 91-119 LSU (Sick PN LMS151-10100) Firmware since Version 2.00.
The only and most important change is the patch for the correction of the ARP flooding issue.

BUG-FIXES:
With a rare/unusual usage of the Ethernet communication, sending many ARP requests within very short time, LSU Sensors PN 91-119 with V2.00 firmware (only this version) may show unexpected rebooting during the operation. During the unexpected rebooting time, Ethernet communication is not possible.

Firmware V2.00.1 has been prepared to replace V2.00. Inside V2.00.1, the above issue is solved.

HELICOPTERS AFFECTED:
Laser Sensor Units PN 91-119, installed on Leonardo helicopters and/or on stock.

UNITS SERIAL NUMBERS AFFECTED:

The following Laser Sensor Units PN 91-119 were delivered with the V2.00 Firmware and needs to be update to the V2.00.1 Firmware. The Serial Numbers (highlighted in grey) of the units are marked on its external labels.

N°	ID	PN SICK	SN SICK	PN Aerosystems	Aerosystems Serial Number	SICK MFG Date	MFG Year	Firmware	N° ATR (BC N°)	DATE ATR
1	507	LMS151-10100	2121 0064	91-119	21502	May 2021	2021	V2.00	03646	15/06/2021
2	508	LMS151-10100	2121 0067	91-119	21503	May 2021	2021	V2.00	03647	15/06/2021
3	509	LMS151-10100	2120 0218	91-119	21504	May 2021	2021	V2.00	03648	15/06/2021
4	510	LMS151-10100	2120 0024	91-119	21505	May 2021	2021	V2.00	03649	15/06/2021
5	511	LMS151-10100	2121 0066	91-119	21506	May 2021	2021	V2.00	03650	15/06/2021
6	512	LMS151-10100	2120 0021	91-119	21507	May 2021	2021	V2.00	03651	15/06/2021
7	513	LMS151-10100	2121 0062	91-119	21508	May 2021	2021	V2.00	03652	15/06/2021
8	514	LMS151-10100	2120 0023	91-119	21509	May 2021	2021	V2.00	03653	15/06/2021
9	515	LMS151-10100	2121 0054	91-119	21510	May 2021	2021	V2.00	03654	15/06/2021
10	516	LMS151-10100	2121 0070	91-119	21511	May 2021	2021	V2.00	03655	15/06/2021
11	517	LMS151-10100	2121 0069	91-119	21512	May 2021	2021	V2.00	03656	15/06/2021
12	518	LMS151-10100	2121 0060	91-119	21513	May 2021	2021	V2.00	03657	15/06/2021
13	519	LMS151-10100	2121 0063	91-119	21514	May 2021	2021	V2.00	03658	15/06/2021
14	520	LMS151-10100	2121 0056	91-119	21515	May 2021	2021	V2.00	03659	15/06/2021
15	521	LMS151-10100	2121 0065	91-119	21516	May 2021	2021	V2.00	03660	15/06/2021
16	522	LMS151-10100	2121 057	91-119	21517	May 2021	2021	V2.00	03661	15/06/2021
17	523	LMS151-10100	2121 0059	91-119	21518	May 2021	2021	V2.00	03662	15/06/2021
18	524	LMS151-10100	2121 068	91-119	21519	May 2021	2021	V2.00	03663	15/06/2021
19	525	LMS151-10100	2131 0126	91-119	21520	August 2021	2021	V2.00	03921	10/09/2021
20	526	LMS151-10100	2131 0109	91-119	21521	August 2021	2021	V2.00	03922	10/09/2021
21	527	LMS151-10100	2131 0108	91-119	21522	August 2021	2021	V2.00	03923	10/09/2021
22	528	LMS151-10100	2131 0097	91-119	21523	August 2021	2021	V2.00	03924	10/09/2021
23	529	LMS151-10100	2131 0103	91-119	21524	August 2021	2021	V2.00	03925	10/09/2021
24	530	LMS151-10100	2131 0098	91-119	21525	August 2021	2021	V2.00	03926	10/09/2021
25	531	LMS151-10100	2131 0113	91-119	21526	August 2021	2021	V2.00	03927	10/09/2021
26	532	LMS151-10100	2131 0115	91-119	21527	August 2021	2021	V2.00	03928	10/09/2021
27	533	LMS151-10100	2131 0099	91-119	21528	August 2021	2021	V2.00	03929	10/09/2021
28	534	LMS151-10100	2126 0008	91-119	21529	June 2021	2021	V2.00	03930	10/09/2021
29	535	LMS151-10100	2131 0102	91-119	21530	August 2021	2021	V2.00	03931	10/09/2021
30	536	LMS151-10100	2131 0110	91-119	21531	August 2021	2021	V2.00	03932	10/09/2021
31	537	LMS151-10100	2136 0893	91-119	21532	October 2021	2021	V2.00	04148	19/10/2021
32	538	LMS151-10100	2137 0261	91-119	21533	October 2021	2021	V2.00	04149	19/10/2021
33	539	LMS151-10100	2137 0266	91-119	21534	Updated Firmware at Vergiate Plant – April 29, 2022 HC AW139 SN 31975				
34	540	LMS151-10100	2137 0259	91-119	21535					
35	541	LMS151-10100	2137 0264	91-119	21536					
36	542	LMS151-10100	2137 0265	91-119	21537	October 2021	2021	V2.00	04153	19/10/2021
37	543	LMS151-10100	2138 0234	91-119	21538	October 2021	2021	V2.00	04154	19/10/2021
38	544	LMS151-10100	2138 0233	91-119	21539	October 2021	2021	V2.00	04155	19/10/2021
39	545	LMS151-10100	2138 0231	91-119	21540	October 2021	2021	V2.00	04156	19/10/2021
40	546	LMS151-10100	2138 0237	91-119	21541	October 2021	2021	V2.00	04157	19/10/2021
41	547	LMS151-10100	2135 0110	91-119	21542	October 2021	2021	V2.00	04158	19/10/2021
42	548	LMS151-10100	2135 0107	91-119	21543	October 2021	2021	V2.00	04159	19/10/2021

DESCRIPTION:
This Service Bulletin provides the necessary instructions to easily Update the PN 91-119 Firmware.

REQUIRED MANPOWER:
The manpower estimated for firmware upgrade and check-out is less than 30 minutes per sensor.

REQUIRED MATERIALS:
The following materials are necessary for compliance with this Bulletin:

Part Number / Code	Denomination	Qty
Firmware V2.00.1	lms100_v2001-12112021 (2).spk	1
Download Link: http://www.aerosystems.it/downloads/lsu-firmware-update/		

TOOLS:
The following tools are necessary for compliance with this Bulletin:

Part Number	Denomination	Qty
SOPAS ET Version 2022.1	Type: SOPAS ET Name: SOPAS Engineering Tool Version: 2022.1 *Provided by Sick at the following Link:* *https://www.sick.com/it/en/p/p367244*	1
PC Personal Computer	System Requirements Windws 10, Windows 7 (32 bit/64 bit), Windows 8 (32 bit/64 bit), Pentium 1GHZ, RAM 1 GB (With Ethernet Port)	1
1615000	Ethernet Data Cable *Provided by Aerosystems.*	1
LSU Label Kit	LSU Label Kit (Adhesive "A" Label) *Provided by Aerosystems.*	1

SPECIAL TOOLS:
No special tools are required.

WEIGHT AND BALANCE CHANGES:
None.

COMPLIANCE TIME:
Refer to OEM instructions.

PROCEDURE:

If the Unit was identified by Serial Number and needs to be updated to new Firmware, check the installation:

Sensors installed on the aircraft	Follow the Compliance Instructions below.
Sensors not installed on the aircraft.	Send back the unit to Aerosystems.

COMPLIANCE INSTRUCTIONS:

1) Before to start any activity:
   - Download and Install the Software SOPAS ET Engineering Tool on the PC.
   - Download the Firmware File V2.00.1 and save it on the PC Desktop.

2) Prepare the helicopter for a safe maintenance, disconnect any power supply, refer to AMP for applicable procedures.

3) Check if the Serial Number of the units is enclosed in the table at page 3. If the Serial Number is showed in the table, follow subsequent steps in order to update the firmware.

4) Temporary disconnect the Ethernet Cable only from the Laser Sensor Unit to be updated, refer to AMP for applicable procedures (see the following figure).

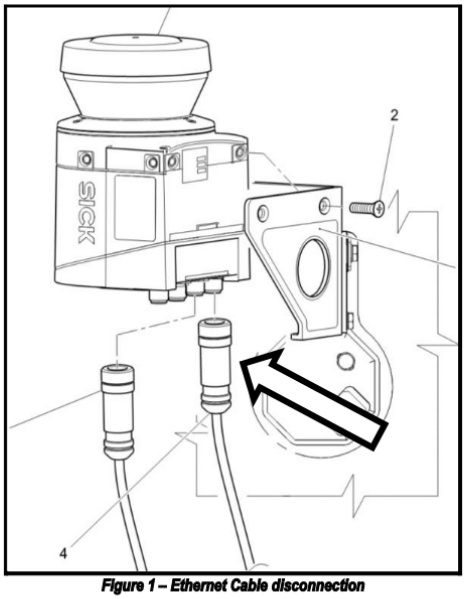


Figure 1 – Ethernet Cable disconnection

5) Connect the tool PN 1615000 Ethernet Data Cable to the LSU Laser Sensor Unit PN 91-119 and to the Personal Computer with previously installed Software named SOPAS ET.

   Note: the computer must be closer as possible to the aircraft in order to easily reach the sensor with the ethernet cable.

6) Power the Aircraft OLPS System in order to keep the unit constant powered during all the procedure.

   NOTE: Be sure that the Power Supply of the unit is constant during all the time of the Firmware Update procedure.

7) Turn on the PC and start the SOPAS ET Software.

Figure 2 – SOPAS ET Starting

8) The software will start automatically and start a Device Search in order to detect any unit connected to the Ethernet cable.

9) When a device will be discovered, the SOPAS will show the unit connected, as showed in the following figure, on the left window.

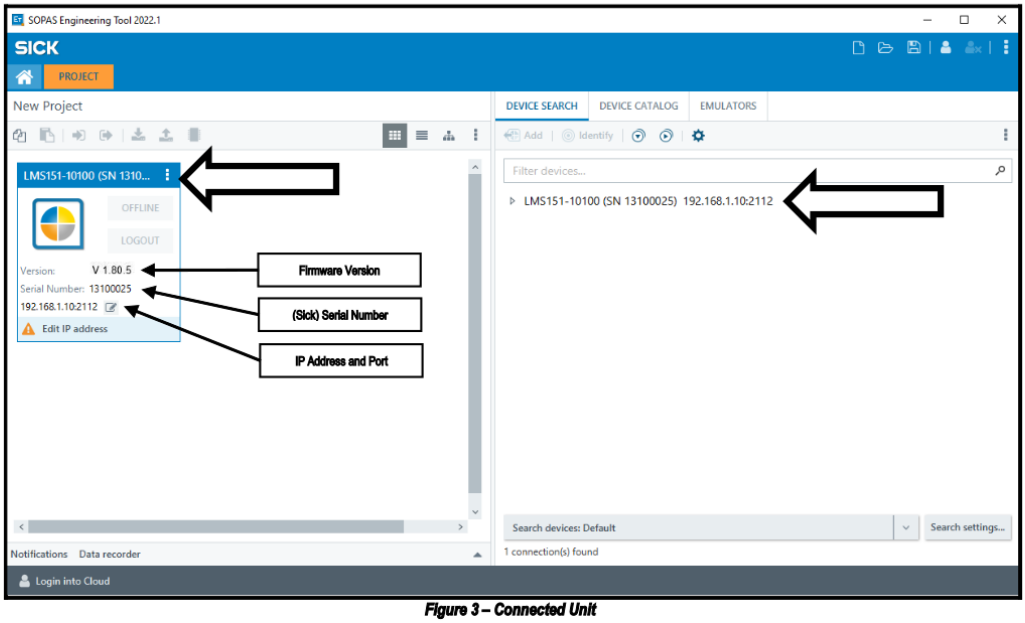


Figure 3 – Connected Unit

10) At this point the unit shows the IP Address that needs to be RESET in order to communicate with the sensor. Click on "EDIT IP ADDRESS",

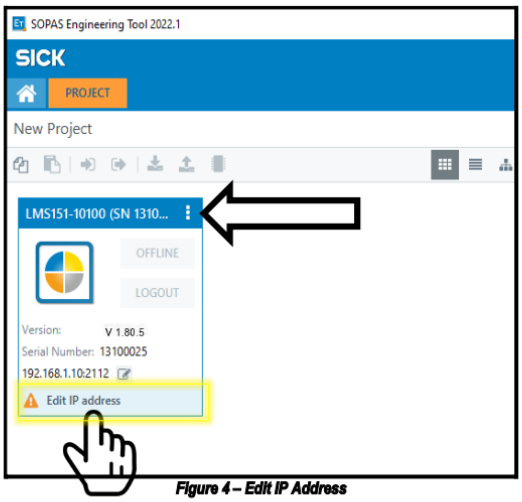


Figure 4 – Edit IP Address

11) The software will show a new window called: "TCP/IP SETTINGS".

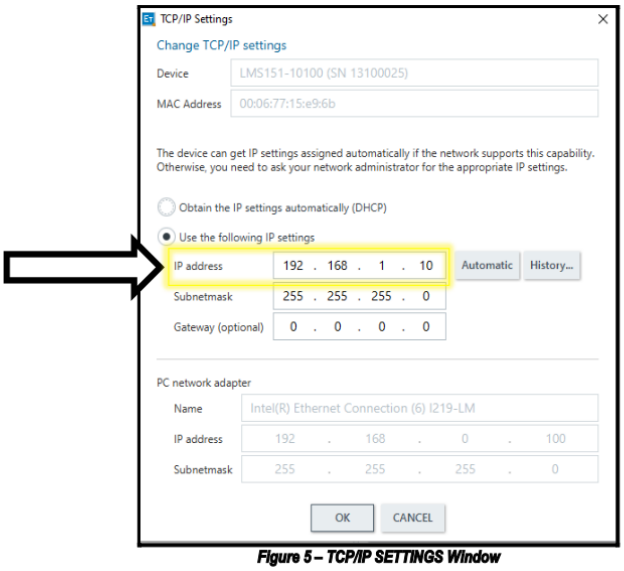


Figure 5 – TCP/IP SETTINGS Window

12) Change the IP address to the default IP **192.168.0.1** as showed in the following figure:

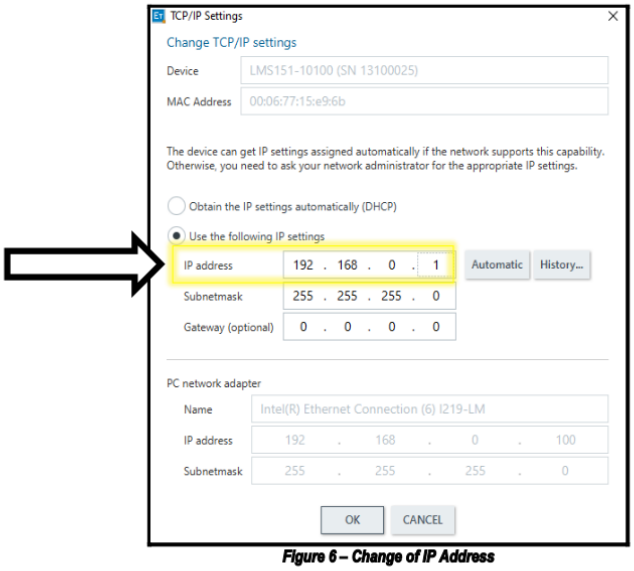


Figure 6 – Change of IP Address

13) Check the inserted IP as showed in the following figure and click "OK".

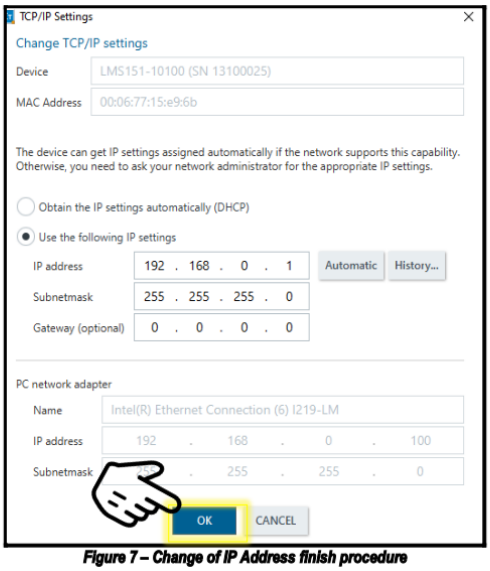


Figure 7 – Change of IP Address finish procedure

14) Wait about 15 seconds until the Change of IP Setting Procedure has finished.

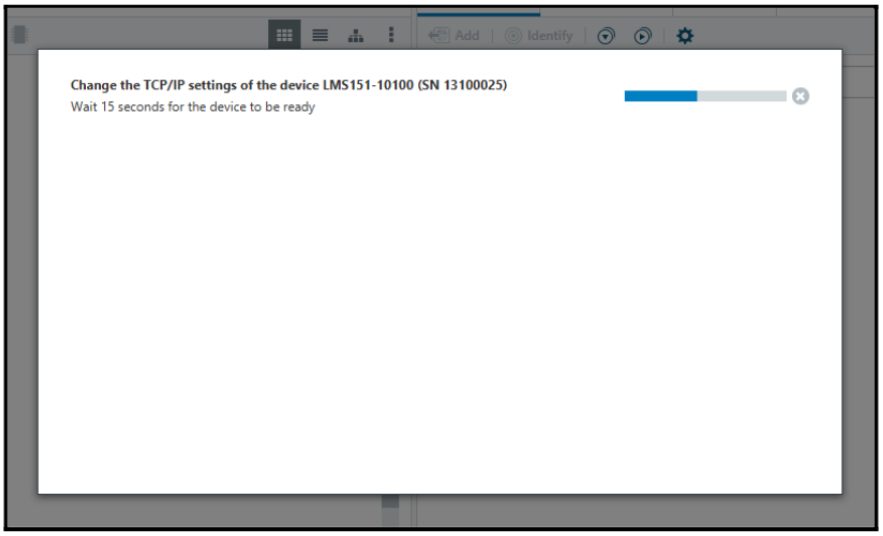


Figure 8 – Change of IP Address end procedure

15) Close the SOPAS ET.

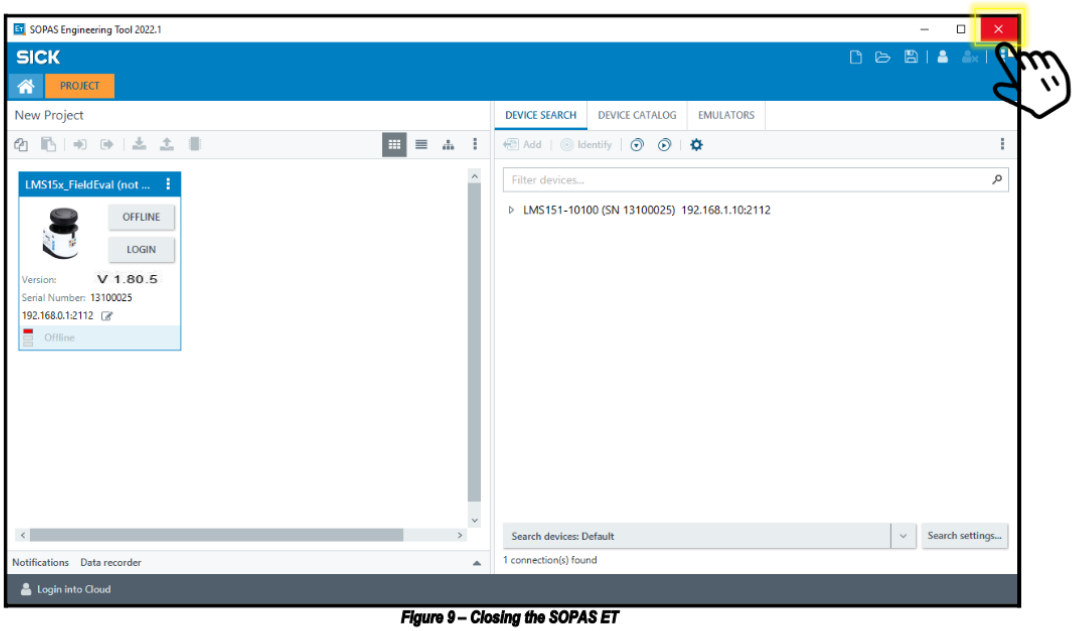


Figure 9 – Closing the SOPAS ET

16) It is not required/necessary to Save Changes, click "NO" as showed in the following figure:

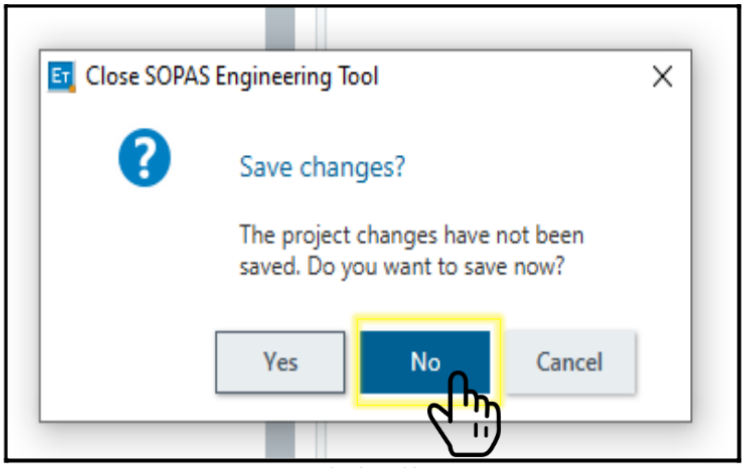


Figure 10 – Save of Changes

17) Start again the SOPAS ET that will search for units and shows the Sensor connected.
Click on the Sensor connected to Port n° 2111 as showed in the following figure:

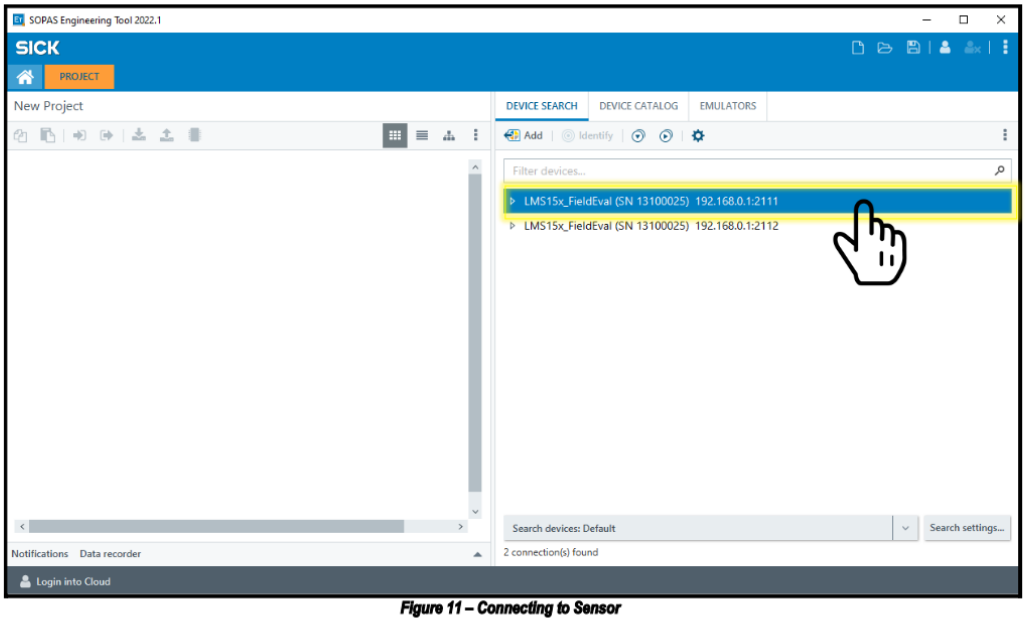


Figure 11 – Connecting to Sensor

18) Open the Drop-Down Menu by clicking on the "three-dot button" and click on "LOGIN".

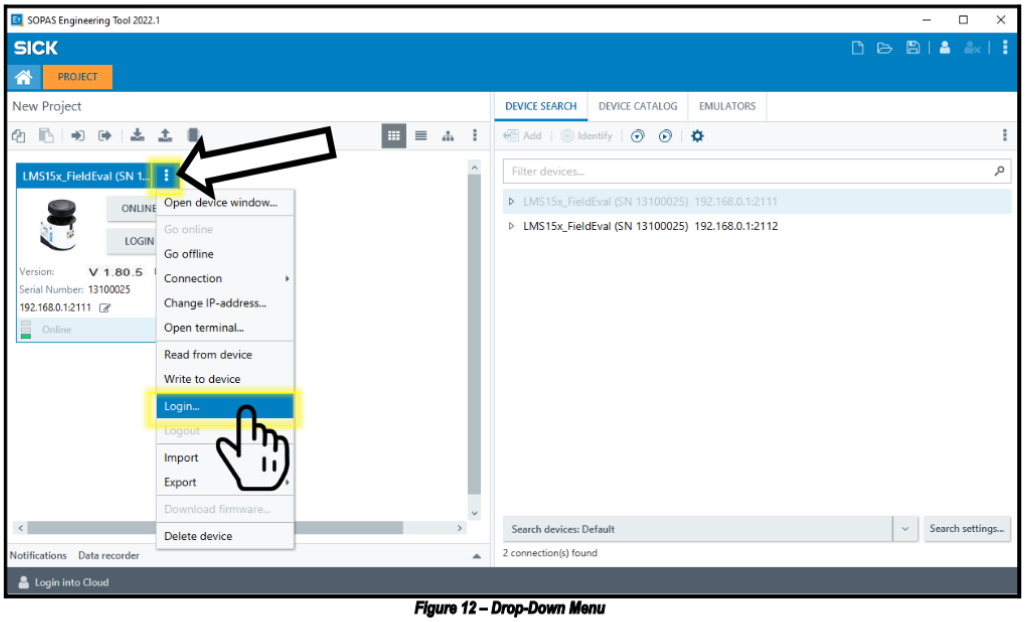


Figure 12 – Drop-Down Menu

19) LOGIN as showed in the following figure, with the following Username and Password:

- with the User level: **Service**
- with the Password: **servicelevel** (*all attached characters and lowercase without spaces).*

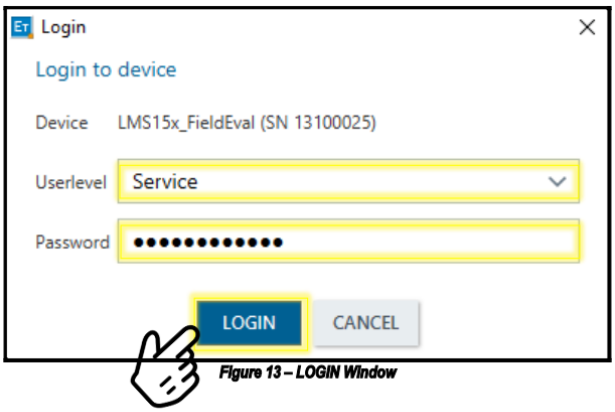


Figure 13 – LOGIN Window

20) Open the Drop-Down, select "Download Firmware", as showed in the following figure:

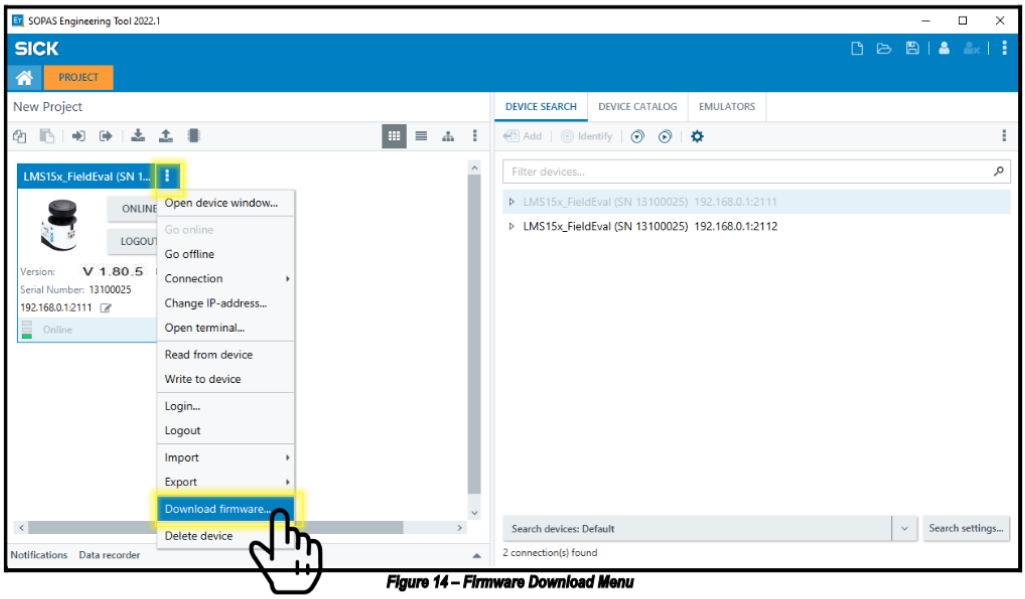


Figure 14 – Firmware Download Menu

21) Browse the Firmware Update File, previously saved on the PC Desktop

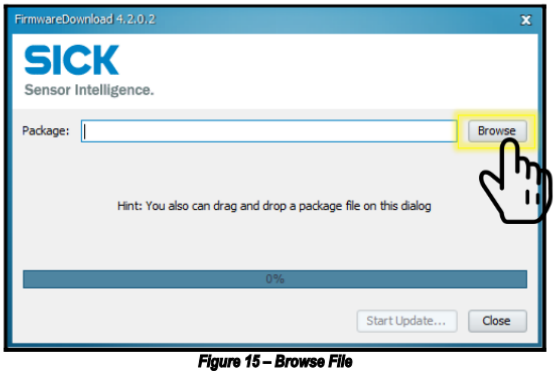


Figure 15 – Browse File

22) Select the provided Firmware Update File *.SPK, previously saved on the PC Desktop then click "OPEN".

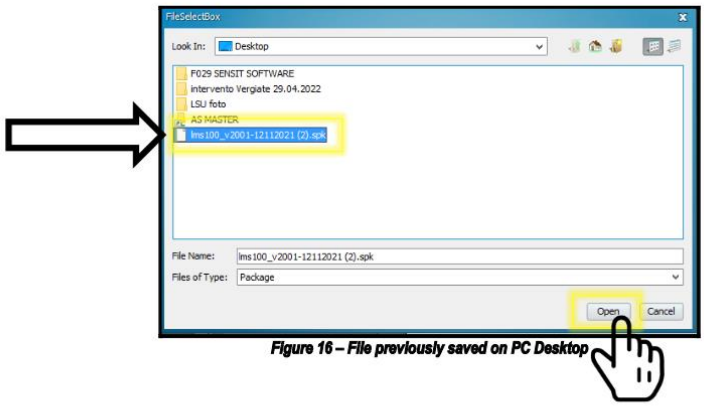


Figure 16 – File previously saved on PC Desktop

23) Now click on "START UPDATE"

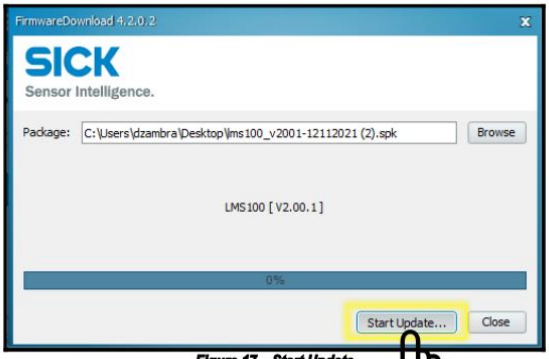


Figure 17 – Start Update

24) Re-insert the User Credentials with the following Username and Password:

- with the User level: **Service**
- with the Password: **servicelevel** (*all attached characters and lowercase without spaces).*

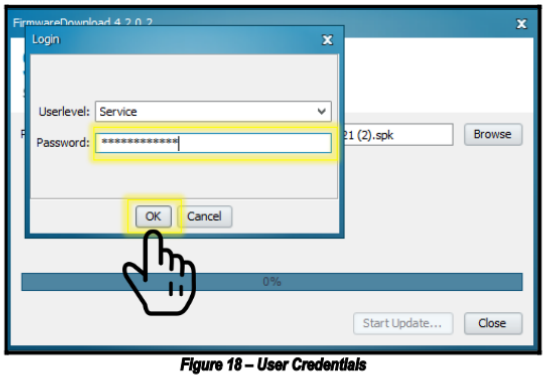


Figure 18 – User Credentials

25) Wait until the end of the procedure, as showed in the following figure:

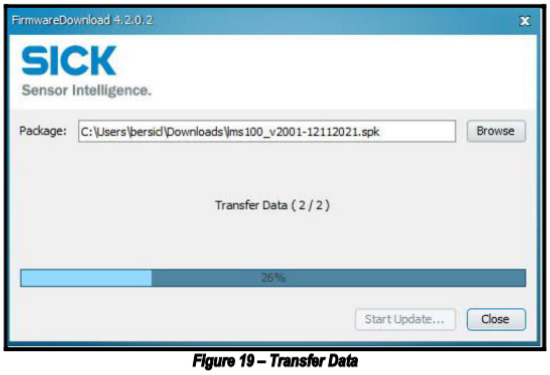


Figure 19 – Transfer Data

26) At the end of the procedure, a Pop-Up window shows the Result of the Download, this means that the Firmware is correctly installed on the unit. Click "OK".

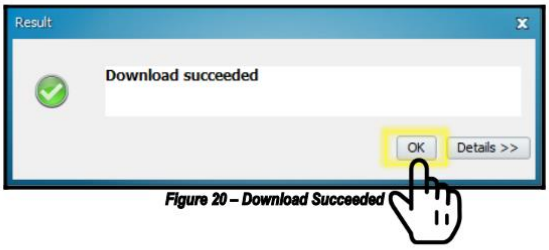


Figure 20 – Download Succeeded

27) Click on "CLOSE" to close the window as showed in the following figure:

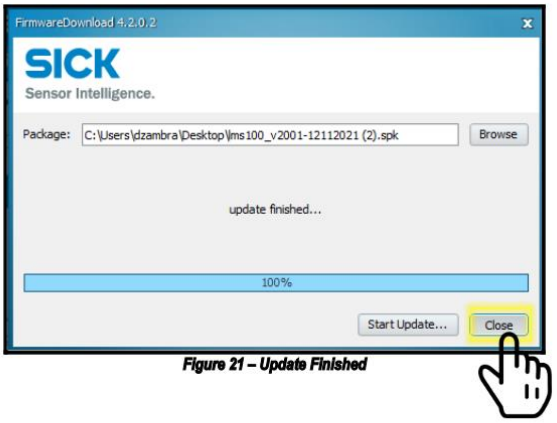


Figure 21 – Update Finished

28) Leave Flagged the "Update device object in SopasET project" to maintain the same parameters saved into the unit before the firmware update, as showed in the following figure.

29) Click "FINISH".

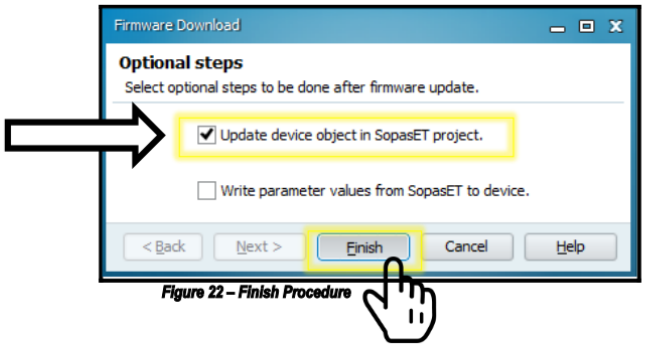
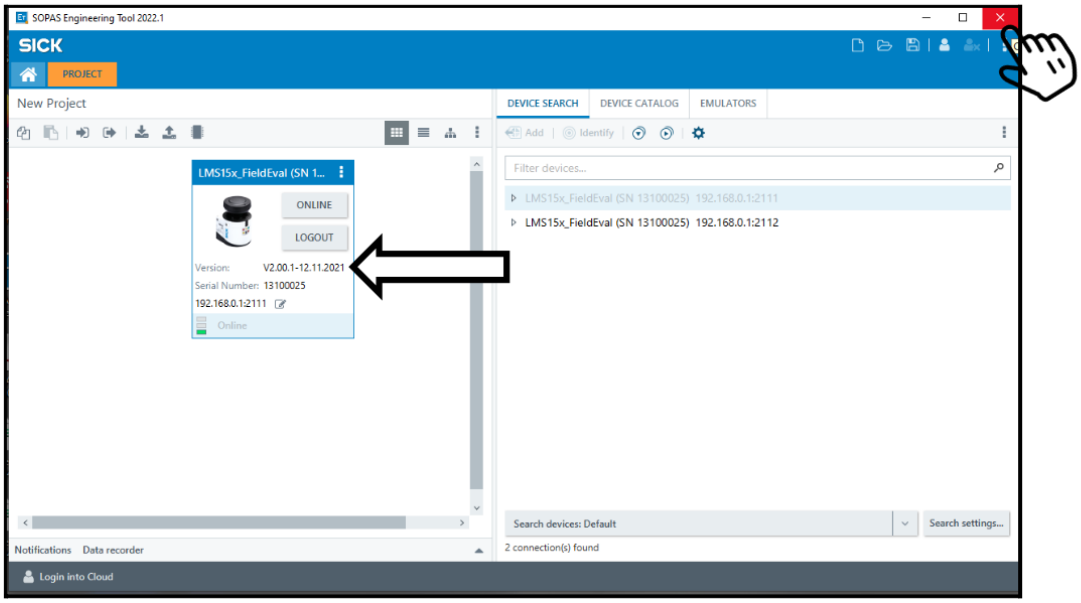


Figure 22 – Finish Procedure

30) Check that the Sensor showed in the Left Window has the Firmware Updated then Close the SOPAS ET.



31) At this point it is necessary to connect the Sensor again in order to SET the IP Address to the original installation value.

32) Start the SOPAS ET Software.

Figure 23 – SOPAS ET Starting

33) The software will start automatically and start a Device Search in order to detect any unit connected to the Ethernet cable.

34) When a device will be discovered, the SOPAS will show the unit connected, as showed in the following figure, on the left window.

35) At this point the unit shows the IP Address that needs to be RESET in order to communicate with the sensor. Click on the small edit icon in order to "EDIT IP ADDRESS",

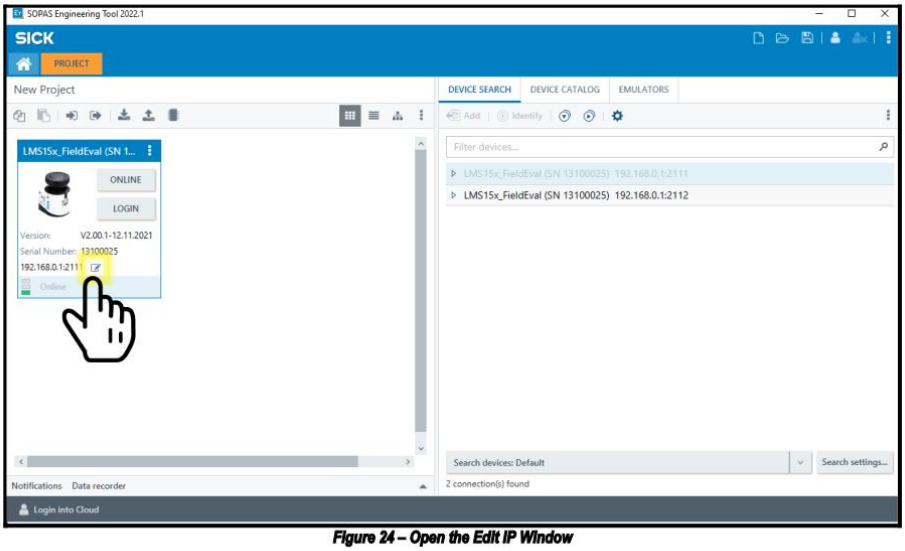


Figure 24 – Open the Edit IP Window

36) The software will show a window called: "TCP/IP SETTINGS".
37) The IP Address is the default IP **192.168.0.1** as showed in the following figure:

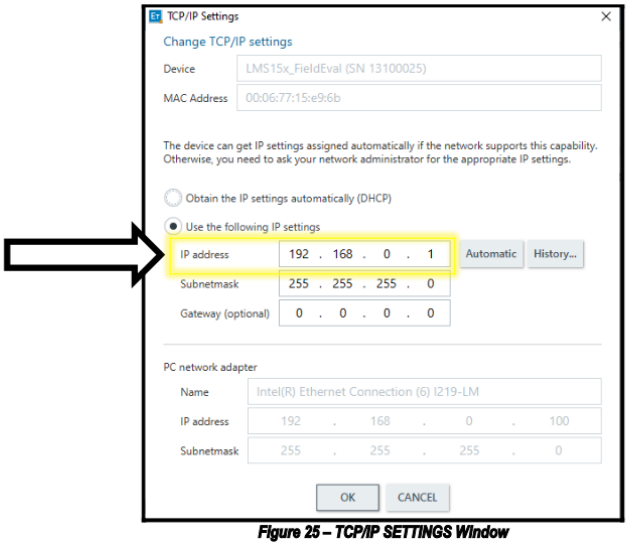


Figure 25 – TCP/IP SETTINGS Window

38) SET the IP Address to the original installation value.**192.168.1.10** then click "OK" as showed in the following figure.

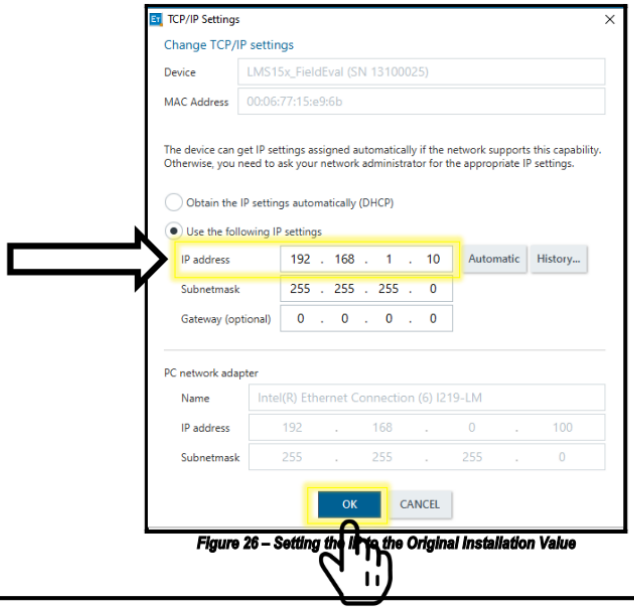


Figure 26 – Setting the IP to the Original Installation Value

39) The software will show a Warning Message, to continue anyway click "YES".

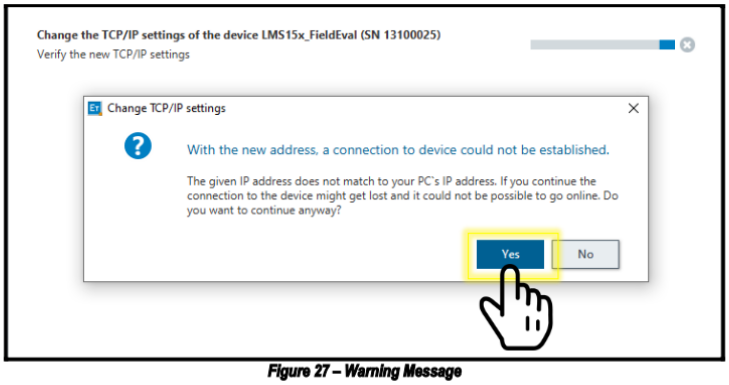


Figure 27 – Warning Message

40) The software will show a Warning Message, to continue in order to update the IP configuration click "YES".

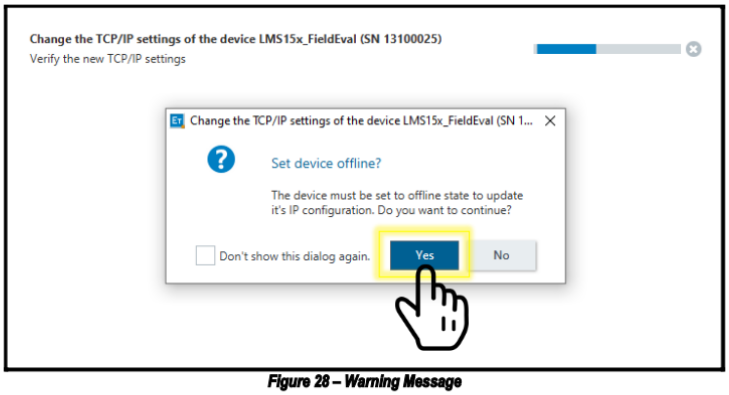


Figure 28 – Warning Message

41) The software will show another Warning Message, to continue click "OK"

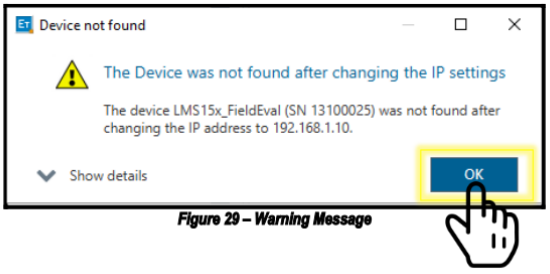


Figure 29 – Warning Message

42) Close the SOPAS ET. A pop-up window will appear to ask for Save Changes. Click "NO"

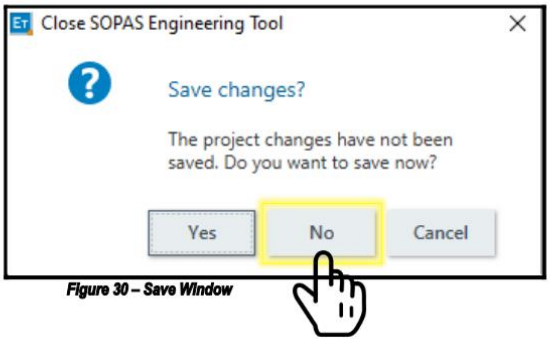


Figure 30 – Save Window

43) At this point it is necessary to check the Sensor again in order to verify the IP Address original installation value.

44) Start the SOPAS ET Software.

Figure 31 – SOPAS ET Starting

45) When the Sensor is connected, check the Firmware version, the Serial Number and the Original Installation IP Address.

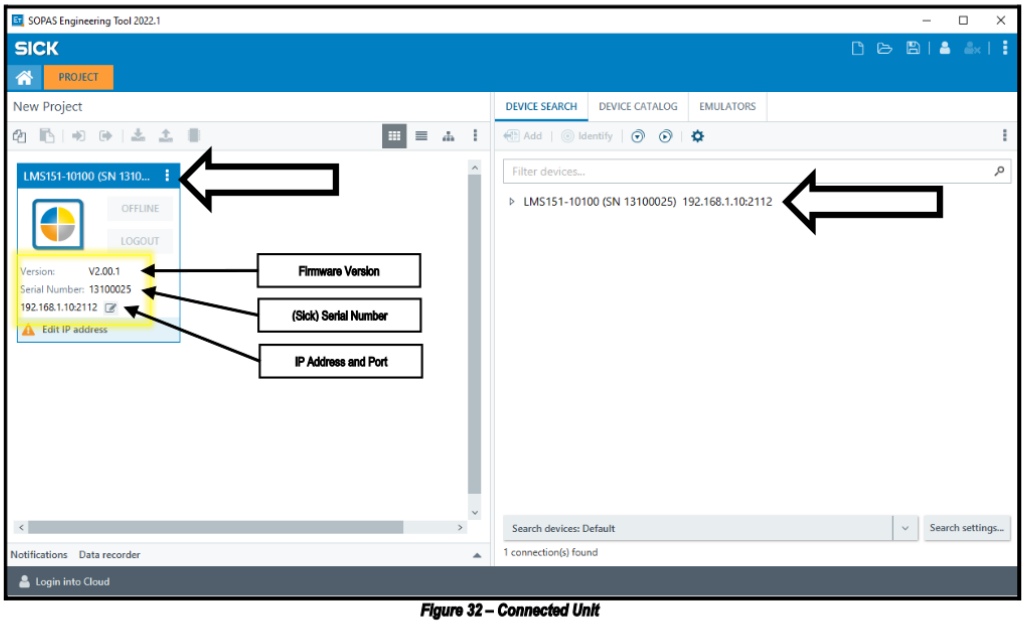


Figure 32 – Connected Unit

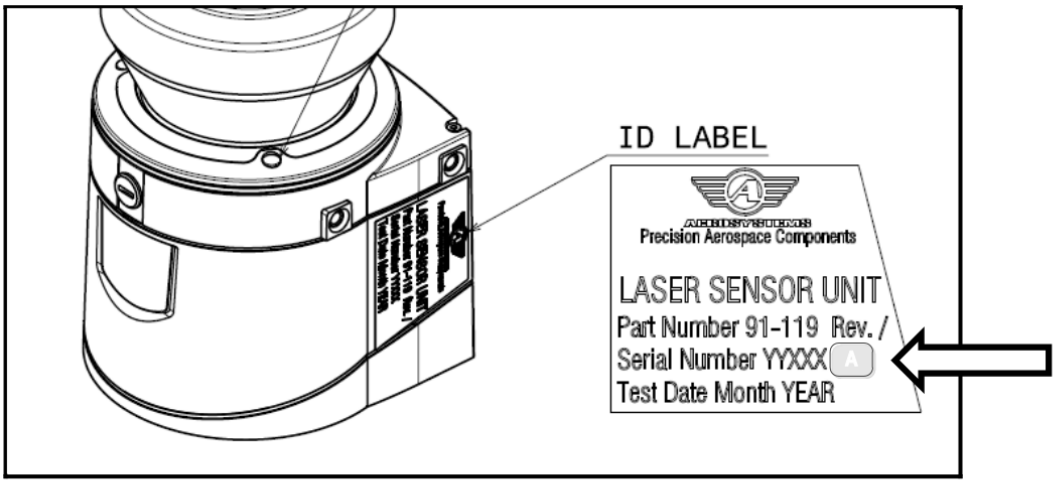
46) When the Sensor is connected, check the Firmware Version, the Serial Number and the Original Installation IP Address. If some data are not set correctly repeat the procedure.

47) Disconnect the tool PN 1615000 Ethernet Data Cable from the LSU Laser Sensor Unit PN 91-119.

48) Connect the aircraft Ethernet Cable (previously temporary disconnected) to the sensor.

49) Power the Aircraft OLPS System in order to check the Sensor Operation.

50) Identification of the Unit must be made by applying one small adhesive label marked with the Letter "A" to be attached closer/after to the Serial Number as showed in the following figure:



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	Number:	
	Revision:	

Customer Name and Address:	Telephone:
	Fax:
	B.T. Compliance Date:

Helicopter Model	S/N	Total Number	Total Hours	T.S.O.

Remarks:

Information:

We request your cooperation in filling this form, in order to keep out statistical data relevant to aircraft configuration up-to-date. The form should be filled in all its parts and sent to the above address or you can communicate the application also via Technical Bulletin Application Communication Section placed in Leonardo AW Customer Portal - MyCommunications Area. We thank you beforehand for the information given.