Developer`s Guide

Version 1.1

Using Telegrams (CoLa A/B)

LMS1xx/5xx

NAV310

LD-OEM15xx/LD-LRS36xx

1 Description

That document shows how to send telegrams via terminal program in ASCII (also in Hex) or Binary to the LMS1xx, NAV310 and LD series. It includes the descripitons for the commands how they work and some examples commands in ASCII, HEX and Binary for sending a telegram. Also the answers to expect from the LMS after sending a command are shown. The sensor always answers in the language he was talked to.
Two workflows for getting a data scan out of the device and setting the timestamp can be found here.

This document is for LMS1xx as well as for LMS5xx, NAV310 and the LD series and all parameters of the commands are listed but it is not a description of the differences of a LMS5xx LITE or PRO.
Also it is valid for the TiM and the JEF, please find the information which telegram is valid for which device directly in the header of each telegram.
That Guide doesn’t show the differences of all the parameters and options between the devices completely.

ATTENTION: Some commands may change during SICK development process. Please use always the least version of the developer´s guide.

2 Communication format

2.1 Binary Telegram (only LMS1xx, NAV310 and LD series)

The binary protocol is the basic protocol of the scanner. It has always a fix length and the content and byte length of the string fit to that document.
The binary protocol has a special framing so that the scanner is able to recognize it as the start of a binary telegram.
The string has to start with 4 STX symbols (for example: 02 02 02 02), that is followed by the length of the telegram in HEX (for example: 00 00 00 17).

Example:

Binary	**02 02 02 02 00 00 00 17** 73 4D 4E **20** 53 65 74 41 63 63 65 73 73 4D 6F 64 65 **20** 03 F4 72 47 44 **B3** **Header: 02 02 02 02; Length: 00 00 00 17**; **Checksum: B3**

The length could be created by counting every single letter (Hex value) of the command (without checksum and framing but with blanks) and convert the value into HEX.
After the length the command itself starts. All letters of the command convertet to HEX and that the parameters (mostly numbers) written directly behind the command in pairs of two.
All parameters of the command has to be in hex (for example: scan frequency 25Hz is 00009C4h (It is a 4 byte value).
Checksum is calculated with XOR.
Between the command and the parameters, there has to be a blank, but not between the parameters itself.

Example string:
sMN SetAccessMode 04 81BE23AA

Binary string:
02 02 02 02 00 00 00 17 73 4D 4E 20 53 65 74 41 63 63 65 73 73 4D 6F 64 65 20 04 81 BE 23 AA 87

In the scandata telegram from the scanner, the range values could be used as they are, they don’t have to be convertet. Every value is 2 byte long.

The binary protocol could only be used at the host port of the scanner, and at the moment only with the LMS1xx.

2.2 ASCII Telegram

The ASCII telegram is an additional format and because of the ASCII signs a little better to understand.

The framing of the telegram is a STX at the start and an ETX at the end of each telegram.

The command is written in ASCII letters, followed by the parameters like defined in that document. Parameters could be transferred in hex or decimal format, but in decimal format they need a sign (for example: scan frequency 25Hz: 09C4h/+2500d)

Attention: leading zeros of each parameter and value will be deleted, so the byte length of a parameter may not fit to what is standing in that document. That also causes different string length in the scan data telegram.

For using with PLC’s the binary protocol is recommended.

2.3 Variable Types

Variable type	Length (byte)	Value range	Sign
Bool_1	1	0 or 1	No
Uint_8	1	0...255	No
Int_8	1	-128...+127	Yes
Uint_16	2	0...65.535	No
Int_16	2	-32.768...+32.767	Yes
Uint_32	4	0...4.294.967.295	No
Int_32	4	2.147.483.648...+2.147. 483.647	Yes
Enum_8	1		No
Enum_16	2		No
Float_32	4	$-10^{-44.85...}+10^{38.53}$	Yes
String	Context-dependent	Strings are not terminated in zeroes	

Data length is given always in Bytes!

2.4 Command Basics

Description	Value ASCII	Value Hex	Value Binary
Start of text	<STX>	02	02 02 02 02 + given length
End of text	<ETX>	03	Calculated checksum
Read by name	sRN	73 52 4E	
Write by name	sWN	73 57 4E	
Methode	sMN	73 4D 4E	
Event	sEN	73 45 4E	
Space	{SPC}	20	20

If there are values coming in two parts (for example the outputs in the measurement telegram documented as: 00 07, output will be 07 00; LSB first, than MSB)

2.5 Blanks

The position of the blanks in a string is different in ASCII and Binary format, so they are not listed in the tables, but they can be found in the example strings.

2.6 Login

You must be logged in before you are allowed to send any parametrisation commands. Request for a data telegram can be done without login.

3 Workflows

3.1 Parametrize the scan

1. Log in:	sMN SetAccessMode
2. Set Frequency and Resolution:	sMN mLMPsetscancfg
3. Configure scandata content:	sWN LMDscandatacfg
4. Configure scandata output:	sWN LMPoutputRange
5. Store Parameters:	sMN mEEwriteall
6. Log out:	sMN Run
7. Request Scan:	sRN LMDscandata / sEN LMDscandata

Get the exact description of that commands down in that document.

3.2 Set Timestamp/Data Angle

1. Log in:	sMN SetAccessMode
2. Sopas command	sMN LSPsetdatetime
3. Log out:	sMN Run

4 Log in to device

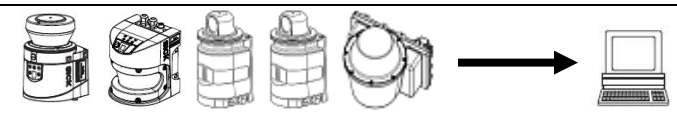
PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sMN SetAccessMode

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	User level	String	13	SetAccessMode	53 65 74 41 63 63 65 73 73 4D 6F 64 65
User level	select user level	Int_8	1	02 maintenance 03 authorised client 04 Service	02 maintenance 03 authorised client 04 Service
Password: main	“Hash” - value for the User level “Maintenance”	Uint_32	4	B21ACE26	B2 1A CE 26
Password: client	“Hash” - value for the User level “Authorised Client”	Uint_32	4	F4724744	F4 72 47 44
Password: servicelevel	“Hash” - value for the User level “Service”	Uint_32	4	81BE23AA	81 BE 23 AA

Example: sMN SetAccessMode 03 F4724744

ASCII	<STX>sMN{SPC}SetAccessMode{SPC}03{SPC}F4724744<ETX>
HEX	02 73 4D 4E 20 53 65 74 41 63 63 65 73 73 4D 6F 64 65 20 30 33 20 46 34 37 32 34 37 34 34 03
Binary	02 02 02 02 00 00 00 17 73 4D 4E 20 53 65 74 41 63 63 65 73 73 4D 6F 64 65 20 03 F4 72 47 44 B3



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sAN SetAccessMode

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	User level	String	13	SetAccessMode	53 65 74 41 63 63 65 73 73 4D 6F 64 65
Change user level	changed level	Bool_1	1	0 Error 1 Success	00 Error 01 Success

Example: sAN SetAccessMode

ASCII	<STX>sAN{SPC}SetAccessMode{SPC}1<ETX>
HEX	02 73 41 4E 20 53 65 74 41 63 63 65 73 73 4D 6F 64 65 20 31 03
Binary	02 02 02 02 00 00 00 13 73 41 4E 20 53 65 74 41 63 63 65 73 73 4D 6F 64 65 20 01 39

5 Basic settings

5.1 Set frequency and angular resolution

PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sMN mLMPsetscancfg

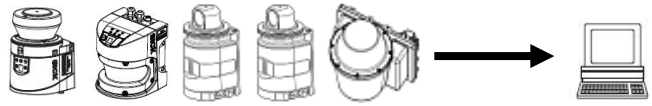
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Config of scan frequency and angular resolution	String	14	mLMPsetscancfg	6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67
Scan Frequency	Scan Frequency [1/100Hz]	Uint_32	4	LMS1xx: 25Hz: 9C4h (2500d) 50Hz: 1388h (5000d) LMS5xx: 25Hz: 9C4h (2500d) 35Hz: DACh (3500d) 50Hz: 1388h (5000d) 75Hz: 1A0Bh (7500d) 100Hz: 2710h (10000d) LD-OEM 5Hz …20Hz 1F4h…7D0h (500d…2000d) Default 320h = 8 Hz LD-LRS ..5Hz….15Hz 1F4h….5DCh (500d…..1500d) **Default 320h = 8 Hz**	25Hz: 00 00 09 C4 50Hz: 00 00 13 88 00 00 09 C4 00 00 0D AC 00 00 13 88 00 00 1A 0B 00 00 27 10 00 00 01 F4 – 00 00 07 D0 00 00 01 F4 – 00 00 05 DC
Value	Reserved	Int_16	2	(LMS) : 1 (LD Series) Indicated the number of sectors (1-4). The next value (angular resolution) will be transmitted 1-4 accordingly.	(LMS) 00 01 (LD Series) 00 01-0100

Angular resolution	Angle Resolution [1/10000°]	Uint_32	4	LMS1xx: 0,25°: 9C4h (2500d) 0,5° 1388h (5000d) LMS5xx: 0,1667°: 683h (1667d) 0,25°: 9C4h (2500d) 0,333°: D05h (3333d) 0,5°: : 1388h (5000d) 0,667°: 1A0Bh (6670d) 1°: 2710h (10000d) LD-OEM/ LRS 0,125° …1° def. 0,25° 4E2h…2710h 1250d…10000d **Default 09C4h =0,25°**	0,25°: 00 00 09 C4 0,5°: 00 00 13 88 00 00 06 83 00 00 09 C4 00 00 0D 05 00 00 13 88 00 00 1A 0B 00 00 27 10 00 00 04 E2 - 00 00 27 10
Start angle *	StartAngle [1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h –450000d..+2250000d LMS5xx: FFFF3CB0h..1C3A90h –50000d..+1850000d LDxxx1/NAV310 **0....3600000d** 00000000h ..0036EE80h **LDxxx0** **-900000d….2700000d**: **FFF24460h** ..**0041EB0d** (with up to 4 sectors)	FF F9 22 30 - 00 22 55 10
Stop angle *	Stop Angle [1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h –450000d..+2250000d LMS5xx: FFFF3CB0h..1C3A90h –50000d..+1850000d LDxxx1/NAV310 **0....3600000d** 00000000h ..0036EE80h **LDxxx0** **-900000d….2700000d**: **FFF24460h** ..**0041EB0d**	FF F9 22 30 - 00 22 55 10

Example: sMN mLMPsetscancfg +5000 +1 +5000 -450000 +2250000

ASCII	<STX>sMN{SPC}mLMPsetscancfg{SPC}+5000{SPC}+1{SPC}+5000{SPC}-450000{SPC}+2250000<ETX> alternatively: <STX>sMN{SPC}mLMPsetscancfg{SPC}1388{SPC}1{SPC}1388{SPC}FFF92230{SPC}225510<ETX>
HEX	02 73 4D 4E 20 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 20 2B 35 30 30 30 20 2B 31 20 2B 35 30 30 30 20 2D 34 35 30 30 30 30 20 2B 32 32 35 30 30 30 30 03
Binary	02 02 02 02 00 00 00 25 73 4D 4E 20 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 20 00 00 13 88 00 01 00 00 13 88 FF F9 22 30 00 22 55 10 21

*** ATTENTION: Scan angle can not be changed here, only in the data output !**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sMN mLMPsetscancfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	
Command	Info of scan frequency and angular resolution	String	14	mLMPsetscancfg	6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67
Status Code	accepted when value is 0	Enum_8	1	0 no Error 1 Frequency Error 2 Resolution Error 3 Res. and Scn. Error 4 Scanarea Error 5 other Errors	00 01 02 03 04 05
Scan Frequency	Scan Frequency [1/100Hz]	Uint_32	4	LMS1xx: 25Hz: 9C4h (2500d) 50Hz: 1388h (5000d) LMS5xx: 25Hz: 9C4h (2500d) 35Hz: DACh (3500d) 50Hz: 1388h (5000d) 75Hz: 1A0Bh (7500d) 100Hz: 2710h (10000d) LD-OEM 5Hz …20Hz 1F4h…7D0h (500d…2000d) Default 320h = 8 Hz LD-LRS ..5Hz….15Hz 1F4h….5DCh (500d…..1500d) **Default 320h = 8 Hz**	25Hz: 00 00 09 C4 50Hz: 00 00 13 88 00 00 09 C4 00 00 0D AC 00 00 13 88 00 00 1A 0B 00 00 27 10 ***00 00 01 F4 – 00 00 07 D0*** ***00 00 01 F4 –00 00 05 DC***

Value	Reserved	Int_16	2	(LMS) : 1 (LD Series) Indicated the number of sectors (1-4). The next value (angular resolution) will be transmitted 1-4 accordingly.	(LMS) 00 01 (LD Series) 00 01-0100
Angular resolution	Angle Resolution[1/10000°]	Uint_32	4	LMS1xx: 0,25°: 9C4h (2500d) 0,5° 1388h (5000d) LMS5xx: 0,1667°: 683h (1667d) 0,25°: 9C4h (2500d) 0,333°: D05h (3333d) 0,5°: : 1388h (5000d) 0,667°: 1A0Bh (6670d) 1°: 2710h (10000d) LD-OEM/ LRS 0,125° …1° def. 0,25° 4E2h…2710h 1250d…10000d **Default 09C4h =0,25°**	0,25°: 00 00 09 C4 0,5°: 00 00 13 88 00 00 06 83 00 00 09 C4 00 00 0D 05 00 00 13 88 00 00 1A 0B 00 00 27 10 00 00 04 E2 - 00 00 27 10

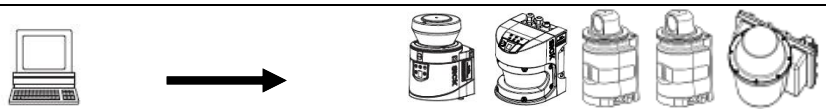
Start angle	StartAngle [1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h (–450000d..+2250000d) LMS5xx: FFFF3CB0h..1C3A90h (–50000d..+1850000d) LDxxx1/NAV310 **0....3600000d** 00000000h ..0036EE80h **LDxxx0 -900000d….2700000d**: **FFF24460h** ..**0041EB0d** (with up to 4 sectors	FF F9 22 30 - 00 22 55 10
Stop angle	Stop Angle [1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h (–450000d..+2250000d) LMS5xx: FFFF3CB0h..1C3A90h (–50000d..+1850000d) LDxxx1/NAV310 **0....3600000d** 00000000h ..0036EE80h **LDxxx0 -900000d….2700000d**: **FFF24460h** ..**0041EB0d**	FF F9 22 30 - 00 22 55 10

Example: sAN SetAccessMode 03 F4724744

ASCII	**<STX>**sAN**{SPC}**mLMPsetscancfg**{SPC}**0**{SPC}**1388**{SPC}**1**{SPC}**1388**{SPC}**FFF92230**{SPC}**225510**<ETX>**
HEX	**02** 73 41 4E **20** 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 **20** 30 **20** 31 33 38 38 **20** 31 **20** 31 33 38 38 **20** 46 46 46 39 32 32 33 30 **20** 32 32 35 35 31 30 **03**
Binary	**02 02 02 02** 00 00 00 26 73 41 4E **20** 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 **20** 00 00 00 13 88 00 01 00 00 13 88 FF F9 22 30 00 22 55 10 2D

Attention: Logout from the device (sMN Run) to get the new values active !

5.2 Get frequency and angular resolution



PC → LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sRN LMPscancfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Info of scan frequency and angular resolution	String	10	LMPscancfg	4C 4D 50 73 63 61 6E 63 66 67

Example: sRN LMPscancfg

ASCII	**<STX>**sRN{SPC}LMPscancfg**<ETX>**
HEX	**02** 73 52 4E **20** 4C 4D 50 73 63 61 6E 63 66 67 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 52 4E **20** 4C 4D 50 73 63 61 6E 63 66 67 **63**

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS → PC

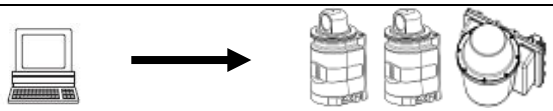
Telegram structure: sAN LMPscancfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Info of scan frequency and angular resolution	String	10	LMPscancfg	4C 4D 50 73 63 61 6E 63 66 67
Scan Frequency	Scan Frequency [1/100Hz]	Uint_32	4	LMS1xx: 25Hz: 9C4h (2500d) 50Hz: 1388h (5000d) LMS5xx: 25Hz: 9C4h (2500d) 35Hz: DACh (3500d) 50Hz: 1388h (5000d) 75Hz: 1A0Bh (7500d) 100Hz: 2710h (10000d LD-OEM 5Hz …20Hz 1F4h…7D0h (500d…2000d) Default 320h = 8 Hz LD-LRS ..5Hz….15Hz 1F4h….5DCh (500d…..1500d) **Default 320h = 8 Hz**)	25Hz: 00 00 09 C4 50Hz: 00 00 13 88 ***00 00 01 F4 – 00 00 07 D0*** ***00 00 01 F4 –00 00 05 DC***

Value	reserved	Int_16	2	(LMS) : 1 (LD Series) Indicated the number of sectors (1-4). The next value (angular resolution) will be transmitted 1-4 accordingly.	(LMS) 00 01 (LD Series) 00 01-0100
Angular resolution	Angle Resolution [1/10000°]	Uint_32	4	LMS1xx: 0,25°: 9C4h (2500d) 0,5° 1388h (5000d) LMS5xx: 0,1667°: 683h (1667d) 0,25°: 9C4h (2500d) 0,333°: D05h (3333d) 0,5°: : 1388h (5000d) 0,667°: 1A0Bh (6670d) 1°: 2710h (10000d) LD-OEM/ LRS 0,125° …1° def. 0,25° 4E2h…2710h 1250d…10000d **Default 09C4h =0,25°**	0,25°: 00 00 09 C4 0,5°: 00 00 13 88 00 00 04 E2 - 00 00 27 10
Start angle	StartAngle [1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h (–450000d..+2250000d) LMS5xx: FFFF3CB0h..1C3A90h (–50000d..+1850000d) LDxxx1/NAV310 **0....3600000d** 00000000h ..0036EE80h **LDxxx0** **-900000d….2700000d**: **FFF24460h** ..**0041EB0d** (with up to 4 sectors	FF F9 22 30 - 00 22 55 10
Stop angle	Stop Angle [1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h (–450000d..+2250000d) LMS5xx: FFFF3CB0h..1C3A90h (–50000d..+1850000d) LDxxx1/NAV310 **0....3600000d** 00000000h ..0036EE80h **LDxxx0** **-900000d….2700000d**: **FFF24460h** ..**0041EB0d**	FF F9 22 30 - 00 22 55 10

Example: sRA LMPscancfg	
ASCII	**<STX>**sRA**{SPC}**LMPscancfg**{SPC}**1388**{SPC}**1**{SPC}**1388**{SPC}**FFF92230**{SPC}**225510**<ETX>**
HEX	**02** 73 52 41 **20** 4C 4D 50 73 63 61 6E 63 66 67 **20** 31 33 38 38 **20** 31 **20** 31 33 38 38 **20** 46 46 46 39 32 32 33 30 **20** 32 32 35 35 31 30 **03**
Binary	**02 02 02 02 00 00 00 21** 73 52 41 **20** 4C 4D 50 73 63 61 6E 63 66 67 **20** 00 00 13 88 00 01 00 00 13 88 FF F9 22 30 00 22 55 10 **3E**

5.3 Set Measurement Sectors



PC NAV310/LD-OEM/LD-LRS

Telegram structure: sMN mLMPsetscancfg

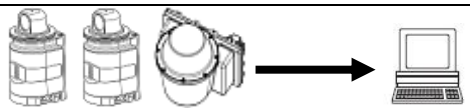
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Define Measurment Sectors	String	14	mLMPsetscancfg	6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67
Scan Frequency	Scan Frequency [1/100Hz]	Uint_32	4	LD-OEM 5Hz …20Hz 1F4h…7D0h (500d…2000d) Default 320h = 8 Hz LD-LRS ..5Hz….15Hz 1F4h….5DCh (500d…..1500d) **Default 320h = 8 Hz**)	***00 00 01 F4 – 00 00 07 D0*** ***00 00 01 F4 –00 00 05 DC*** **03 20**
Number of Sectors		Int 16	2	1..4 **Default 1**	01
Angle Resolution [1/10000°]		Uint_32	4	,125° …1° def. 0,25° 4E2h…2710h 1250d…10000d **Default 09C4h =0,25°**	00 00 04 E2 - 00 00 27 10 **09 C4**
Start angle of sector		Int_32	4	**-3600000....3600000d** FFC91180h ..0036EE80h **Default: -3600000d**	FF C9 11 80h ..00 36 EE 80h **FF C9 11 80h**
Stop angle of sector		Int_32	4	**-3600000....3600000d** FFC91180h ..0036EE80h **Default: 3600000d**	FF C9 11 80h ..00 36 EE 80h **00 36 EE 80h**

Example: 1 Sector 360° 0,25° 8 Hz

sMN mLMPsetscancfg 0320 01 09C4 00000000 0036EE80 09C4 00000000 000000 09C4 000000 0000000 09C4 000000 000000

(all 4 sector are listed by resolution (must be equal for all sectors) + start of sector + stop of sector)

ASCII	**<STX>**sMN**{SPC}** mLMPsetscancfg **{SPC}**0320**{SPC}**01**{SPC}**09C4**{SPC}**00000000**{SPC}**0036EE80 **{SPC}**09C4**{SPC}** 00000000 **{SPC}**00000000**{SPC}**09C4**{SPC}**00000000**{SPC}**00000000**{SPC}**09C4**{SPC}** 00000000 **{SPC}**00000000 **<ETX>**
HEX	**02** 73 4D 4E **20** 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 **20** 30 33 32 30 **20** 30 31 **20** 30 39 43 34 **20** 30 30 30 30 30 30 30 30 **20** 30 30 33 36 45 45 38 30 **20** 30 39 43 34 **20** 30 30 30 30 30 30 30 30 **20** 30 30 30 30 30 30 **20** 30 39 43 34 **20** 30 30 30 30 30 30 **20** 30 30 30 30 30 30 30 **20** 30 39 43 34 **20** 30 30 30 30 30 30 30 **20** 30 30 30 30 30 30 **<ETX>**
Binary	**02 02 02 02 00 00 10 6D** 73 4D 4E **20** 43 4C 48 57 47 61 74 69 6E 67 **20** 00 **20** 0320 **20** 01 **20** 09C4 **20** 00000000 **20** 0036EE80 **20** 09C4 **20** 00000000 **20** 00000000 **20** 09C4 **20** 00000000 **20** 00000000 **20** 09C4 **20** 00000000 **20** 00000000 **4E**



NAV310/LD-OEM/LD-LRS PC

Telegram structure: sAN mLMPsetscancfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Define Measurement Sectors	String	14	mLMPsetscancfg	6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67
Error		Enum_8	1	0= No Error 1= Frequency error 2= Resolution error 3= Freq.+ Resol. Error 4= Range error 5= General error	0
Scan Frequency	Scan Frequency [1/100Hz]	Uint_32	4	LD-OEM 5Hz …20Hz 1F4h…7D0h (500d…2000d) Default 320h = 8 Hz LD-LRS ..5Hz….15Hz 1F4h….5DCh (500d…..1500d) **Default 320h = 8 Hz**)	***00 00 01 F4 – 00 00 07 D0*** ***00 00 01 F4 –00 00 05 DC*** **03 20**
Number of Sectors		Int 16	2	1..4 **Default 1**	01
Angle Resolution [1/10000°]		Uint_32	4	,125° …1° def. 0,25° 4E2h…2710h 1250d…10000d **Default 09C4h =0,25°**	00 00 04 E2 - 00 00 27 10 **09 C4**
Start angle of sector		Int_32	4	**-3600000....3600000d** FFC91180h ..0036EE80h **Default: -3600000d**	FF C9 11 80h ..00 36 EE 80h **FF C9 11 80h**
Stop angle of sector		Int_32	4	**-3600000....3600000d** FFC91180h ..0036EE80h **Default: 3600000d**	FF C9 11 80h ..00 36 EE 80h **00 36 EE 80h**

Example: sAN mLMPsetscancfg

ASCII	<STX>sAN{SPC}mLMPsetscancfg{SPC}0{SPC}0320{SPC}01{SPC}09C4{SPC}00000000{SPC}0036EE80{SPC}09C4{SPC}00000000{SPC}00000000{SPC}09C4{SPC}00000000{SPC}00000000{SPC}09C4{SPC}00000000 {SPC}00000000 <ETX>
HEX	02 73 41 4E 20 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 20 30 20 30 33 32 30 20 30 31 20 30 39 43 34 20 30 30 30 30 30 30 30 30 20 30 30 33 36 45 45 38 30 20 30 39 43 34 20 30 30 30 30 30 30 30 30 20 30 30 30 30 30 30 30 20 30 39 43 34 20 30 30 30 30 30 30 20 30 30 30 30 30 30 30 20 30 39 43 34 20 30 30 30 30 30 30 20 30 30 30 30 30 30 30 20 30 39 43 34 20 30 30 30 30 30 30 20 30 30 30 30 30 30 <ETX>
Binary	02 02 02 02 00 00 00 6F 73 41 4E 20 6D 4C 4D 50 73 65 74 73 63 61 6E 63 66 67 20 00 20 0320 20 01 20 09C4 20 00000000 20 0036EE80 20 09C4 20 00000000 20 00000000 20 09C4 20 00000000 20 00000000 20 09C4 20 00000000 20 00000000 52

5.3.1 Sequence to configure the sectors and get measurement scans

Example : Resolution 10Hz; 0,125°; Sector 1 : 0° - 44°, Sector 2 : 45 – 180°

Default : Resolution 10Hz; 0,125°; Sector: 1: 0° - 44°, Sector 2 : 67,5° – 112,5°

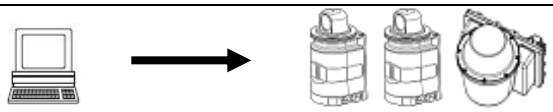
Attention : Sector 1 must be always 0° - 44° !
Sector 2 may be changed within 45 – 180°

1. sMN LMCstopmeas : *Stop measurements*
   sAN LMCstopmeas 0
2. sMN SetAccessMode 03 F4724744
   sAN SetAccessMode 1
3. sMN mLMPsetscancfg 03E8 02 04E2 00000000 0006B6C0 04E2 0006DDD6
   001B7740 04E2
   000000 0000000 04E2 000000 000000
   sAN mLMPsetscancfg 0 3E8 2 4E2 0 6B6C0 4E2 6DDD6 1B7740 4E2 0 0 4E2 0 0
4. sMN Run : *Closing parametrization*
   sAN Run 1
5. sMN SetAccessMode 03 F4724744
   sAN SetAccessMode 1
6. sMN LMCstartmeas : *Start measurement*
   sAN LMCstartmeas 0
7. sEN LMDscandata 1 : *Register Event for permanent scan output*
   sEA LMDscandata 1

…..Profiles coming…….

8. sMN LMCstopmeas : *Stop measurements*
   sAN LMCstopmeas 0
9. sEN LMDscandata 0 : *Unregister Event for permanent scan output*
   sEN LMDscandata 0

5.4 Scan Configurations



PC NAV310/LD-OEM/LD-LRS

Telegram structure: sMN mCLsetscancfglist

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Define Interlase Mode	String	17	mCLsetscancfglist	6D 43 4C 73 65 74 73 63 61 6E 63 66 67 6C 69 73 74
Mode	Scan Configuration	Enum:8	1	**1,2,3..**	

Example: Scan Configuration 1

sMN mCLsetscancfglist 1

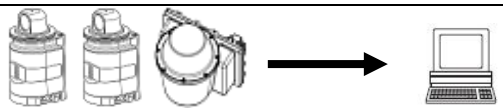
ASCII	**<STX>**sMN**{SPC}** mCLsetscancfglist {SPC} 1 **<ETX**
HEX	**02** 73 4D 4E **20** 6D 43 4C 73 65 74 73 63 61 6E 63 66 67 6C 69 73 74 **20** 31 **03**
Binary	**02 02 02 02 00 00 00 17 20** 73 4D 4E **20** 6D 43 4C 73 65 74 73 63 61 6E 63 66 67 6C 69 73 74 **20** 01 **0F**

Mode	Inter-laced	Scan Freq.	Result. Scan Freq.	Reso-lution	Total Resol.	Field of view	Sector	LRS 3601 3611	OEM 1501	NAV 310	LRS 3600	OEM 1500
1	0x	8 Hz	8 Hz	0,25°	0,25°	360°	0…360°	x	x	x	(x)	(x)
2	0x	15 Hz	15 Hz	0,5°	0,5°	360°	0…360°	x	x	x	(x)	(x)
3	0x	10 Hz	10 Hz	0,25°	0,25°	300°	30..330°	x	x	x	x	x
4	0x	5 Hz	5 Hz	0,125°	0,125°	300°	30..330°	x	x	x	x	x
5	0x	6 Hz	6 Hz	0,1875°	0.1875°	360°	0…360°	x	x	x	(x)	(x)
6	0x	8 Hz	8 Hz	0,25°	0,25°	359,5°	0,25…359,25°				x	x
8	0x	15 Hz	15 Hz	0,375°	0,375°	300°	30..330°	x	x	x	x	x
9	0x	15 Hz	15 Hz	0,5°	0,5°	359°	0,5…359,5°				x	x
21	0x	20 Hz	20 Hz	0,5°	0,5°	300°	30..330°		x	x		x
22	0x	20 Hz	20 Hz	0,75°	0,75°	360°	0..360°		x	x		(x)
42	4x	16 Hz	4 Hz	0,5°	0,125°	300°	30..330°		x			(x)
44	4x	10 Hz	2,5 Hz	0,25°	0,0625°	300°	30..330°	x	x		(x)	(x)

(x): Only at raw data scan (Field application)

The interlace mode allows to archive a higher angular resolution by combining scans with lower resolution. The individual scans ares shifted to each other.

The command *mCLsetscancfglist* select combinations of scan resolution, scan frequency and resolution. If the scan area will not match to the application then an adjustment is possible be the command 5.3 Set Measurement Sectors “mLMPsetscancfg”.



NAV310 /LD-OEM/LD-LRS PC

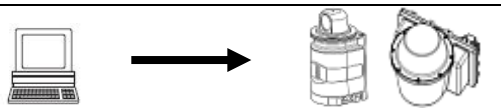
Telegram structure: sAN mCLsetscancfglist

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Define Interlase Mode	String	17	mCLsetscancfglist	6D 43 4C 73 65 74 73 63 61 6E 63 66 67 6C 69 73 74
eScanConfig-Error	Wrong Setting	Enum_8	1	0 = Ok 1 = Error Frequency 2 = Error Resolution 3 = Err. Res. + Freq. 4 = Err Scan field 5 = Error	

Example: sAN mCLsetscancfglist Ok

ASCII	**<STX>** sAN **20** mCLsetscancfglist **20** 0**<ETX>**
HEX	**02** 73 52 4E **20** 6D 43 4C 73 65 74 73 63 61 6E 63 66 67 6C 69 73 74 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 17** 73 52 4E **20** 6D 65 74 53 63 61 6E 43 6F 6E 66 69 67 4C 69 73 74 **20 00 10**

5.5 Application Activation / Deactivation



Only for LD-OEM 1500 and LD-LRS 3600

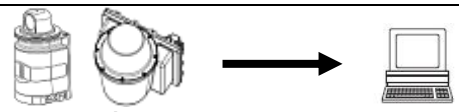
Telegram structure: sWN CLApplication

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Define Interlase Mode	String	13	CLApplication	43 4C 41 70 70 6C 69 63 61 74 69 6F 6E
Mode	Application	Enum_16	2	00= Scan only 11= Fieldapplication	**00 00** **00 01**

Example: Activate the field application

sWN CLApplication 11

ASCII	**<STX>**sWN**{SPC}** CLApplication {SPC} 00 11 **<ETX**
HEX	**02** 73 57 4E **20** 43 4C 41 70 70 6C 69 63 61 74 69 6F 6E **20** 30 30 20 31 31 **03**
Binary	**02 02 02 02 00 00 00 17** 73 57 4E **20** 43 4C 41 70 70 6C 69 63 61 74 69 6F 6E **20** 30 30 20 31 31 **1F**



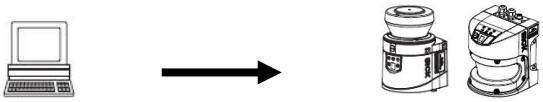
Telegram structure: sWA CLApplication

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 41 4E
Command	Define Interlase Mode	String	13	CLApplication	43 4C 41 70 70 6C 69 63 61 74 69 6F 6E

Example: sWA CLApplication correct and accepted

ASCII	**<STX>** sWA **20** CLApplication**<ETX>**
HEX	**02** 73 52 4E **20** 43 4C 41 70 70 6C 69 63 61 74 69 6F 6E **03**
Binary	**02 02 02 02 00 00 00 11** 73 52 4E **20** 43 4C 41 70 70 6C 69 63 61 74 69 6F 6E **1A**

5.6 Get the status of the LMS



Telegram structure: sRN LCMstate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Status of LMS	String	11	LCMstate	4C 43 4D 73 74 61 74 65

Example: sRN LCMstate

ASCII	**<STX>**sRN**{SPC}**LCMstate**<ETX>**
HEX	**02** 73 52 4E **20** 4C 43 4D 73 74 61 74 65 **03**
Binary	**02 02 02 02 00 00 00 0C** 73 52 4E **20** 4C 43 4D 73 74 61 74 65 **7A**

Telegram structure: sAN LCMstate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Status of LMS	String	8	LCMstate	4C 43 4D 73 74 61 74 65
Status Code		Enum_8	1	0 no Error 1 pollution warning 2 pollution error 3 fatal error	00 no Error 01 pollution warning 02 pollution error 03 fatal error

Example: sRA LCMstate

ASCII	**<STX>**sRA**{SPC}**LCMstate**{SPC}**0**<ETX>**
HEX	**02** 73 52 41 **20** 4C 43 4D 73 74 61 74 65 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 52 41 **20** 4C 43 4D 73 74 61 74 65 **20** 00 **55**

6 Measurement output telegram

6.1 Configure the data content for the scan

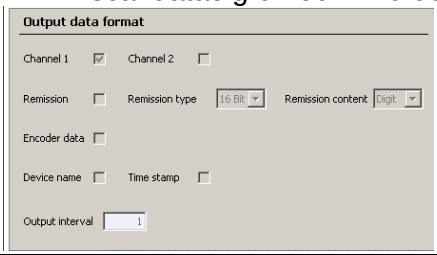
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sWN LMDscandatacfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Configure Scandata	String	14	LMDscandatacfg	4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67
Data channel	Defines the Telegram content	Uint_8	2 x 1	LMS1xx: Output channel 1: 01 00 Output channel 2: 02 00 Output channel 1+2: 03 00 10 reserved FF reserved LMS5xx: Set via Echo Filter Set this value to 0 LD-OEM /LRS Output channel 1: 01 00	 Output channel 1: 01 00 Output channel 2: 02 00 Output channel 1+2: 03 00 10 reserved FF reserved LMS5xx: Set via Echo Filter Set this value to 0 Output channel 1: 01 00
Remission	Remission data output	Bool_1	1	0 no 1 yes	00 no 01 yes
Resolution	Resolution of Remission Data (LMS5xxV1.10 only 8bit)	Enum_8	1	0: 8 Bit 1: 16 Bit	00: 8 Bit 01: 16 Bit
Unit	Unit of Remission Data	Enum_8	1	0 Digits	00 Digits
Encoder	Encoder Data	Uint_8	2 x 1	00 00 no Encoder 01 00 Channel 1 02 00 reserved FF 00 reserved LD-OEM / LRS 00 00 no Encoder	00 00 no Encoder 01 00 Channel 1 02 00 reserved FF 00 reserved 00 00 no Encoder
Position	Position Values	Bool_1	1	0 no 1 yes	00 no 01 yes
Device Name	Sends the device name	Bool_1	1	0 no 1 yes	00 no 01 yes
Comment	Saved comment	Bool_1	1	0 no 1 yes	00 no 01 yes
Time	Sends time information	Bool_1	1	0 no 1 yes	00 no 01 yes

Output rate	Sends the output rate	Uint_16	2	+1 all Scans +2 each 2.nd Scan 50000 each 50000 nd. Scan LD-OEM / LRS 1 … 200 00 001h- 00 c8h Default 1 = all	00 01 all Scans 00 02 each 2.nd Scan 50000 each 50000 nd. Scan 00 001h- 00 c8h

Example 1: Only Output channel 1 and each Telegram (all Scans)
Command: sWN LMDscandatacfg 01 00 1 1 0 00 00 0 0 0 0 0 1



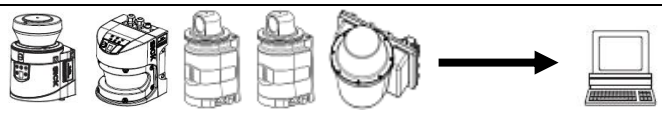
ASCII	<STX>sWN{SPC}LMDscandatacfg{SPC}01{SPC}00{SPC}1{SPC}1{SPC}0{SPC}00{SPC}00{SPC}0{SPC}0{SPC}0{SPC}0{SPC}+1<ETX>
HEX	02 73 57 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 20 30 31 20 30 30 20 31 20 31 20 30 20 30 30 20 30 30 20 30 20 30 20 30 20 30 20 30 20 2B 31 03
Binary	02 02 02 02 00 00 00 20 73 57 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 20 01 00 01 01 00 00 00 00 00 00 00 00 01 43

Example 2: Output Channel 1, Remission RSSI1, no Encoder, every 10th scan
Command: sWN LMDscandatacfg 01 00 1 1 0 00 00 0 0 0 0 1

ASCII	<STX>sWN{SPC}LMDscandatacfg{SPC}01{SPC}00{SPC}1{SPC}1{SPC}0{SPC}00{SPC}00{SPC}0{SPC}0{SPC}0{SPC}0{SPC}+10<ETX>
HEX	02 73 57 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 20 30 31 20 30 30 20 30 20 31 20 30 20 30 30 20 30 30 20 30 20 30 20 30 20 30 20 30 20 2B 31 03
Binary	02 02 02 02 00 00 00 20 73 57 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 20 01 00 00 01 00 00 00 00 00 00 00 00 10 52

Example 3: Output channel 2, Encoder active, each 10th. Telegram
Command: sWN LMDscandatacfg 02 00 0 1 0 01 00 0 0 0 0 +10

ASCII	<STX>sWN{SPC}LMDscandatacfg{SPC}02{SPC}00{SPC}0{SPC}1{SPC}0{SPC}01{SPC}00{SPC}0{SPC}0{SPC}0{SPC}0{SPC}+10<ETX>
HEX	02 73 57 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 20 30 32 20 30 30 20 30 20 31 20 30 20 30 31 20 30 30 20 30 20 30 20 30 20 30 20 30 20 2B 31 30 03
Binary	02 02 02 02 00 00 00 20 73 57 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 20 02 00 00 01 00 01 00 00 00 00 00 00 10 50



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sWA LMDscandatacfg

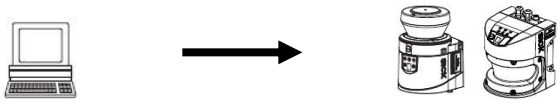
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 4E
Command	Scandata Configuration	String	14	LMDscandatacfg	4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67

Example 1, 2, 3: sWA LMDscandatacfg

ASCII	<STX>sWA{SPC}LMDscandatacfg<ETX>
HEX	02 73 57 41 20 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 03

Binary	**02 02 02 02 00 00 00 13** 73 57 41 **20** 4C 4D 44 73 63 61 6E 64 61 74 61 63 66 67 **20 4D**

6.2 Configure measurement angle of the scandata for output



PC **LMS 1xx/5xx**

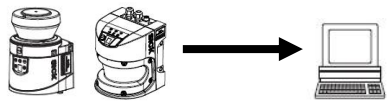
Telegram structure: sWN LMPoutputRange

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Change output angle range	String	14	LMPoutputRange	4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65
Status Code	Length	Int_16	2	1	00 01
Angle Resolution *	[1/10000°]	Uint_32	4	LMS1xx: 0,25°: 9C4h (2500d) 0,5°: 1388h (5000d) LMS5xx: 0,1667°: 683h (1667d) 0,25°: 9C4h (2500d) 0,333°: D05h (3333d) 0,5°: : 1388h (5000d) 0,667°: 1A0Bh (6670d) 1°: 2710h (10000d)	0,25°: 00 00 09 C4 0,5°: 00 00 13 88
StartAngle	[1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h (–450000d..+2250000d) LMS5xx: FFFF3CB0h..1C3A90h (–50000d..+1850000d)	FF F9 22 30 ... 00 22 55 10
Stop Angle	[1/10000°]	Int_32	4	LMS1xx: FFF92230h..225510h (–450000d..+2250000d) LMS5xx: FFFF3CB0h..1C3A90h (–50000d..+1850000d))	FF F9 22 30 ... 00 22 55 10

Example: sWN LMPoutputRange 50Hz 0° - 90°	
ASCII	**<STX>**sWN**{SPC}**LMPoutputRange**{SPC}**1**{SPC}**1388**{SPC}**0**{SPC}**DBBA0**<ETX>**
HEX	**02** 73 57 4E **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **20** 31 **20** 31 33 38 38 **20** 30 **20** 44 42 42 41 30 **03**
Binary	**02 02 02 02 00 00 00 21** 73 57 4E **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **20** 00 01 00 00 13 88 00 00 00 00 00 0D BB A0 **F7**

- **ATTENTION: Angle resolution can not be changed here, it is taken automatically from the basic scan settings !**
  The angular resolution is not exactly 0.1667 degree, and this value should not be used for calculations. What is means is that the ang. resolution is 0.1666666666... or 1°/6 (six shots per degree). When used for calculations a customer should recover the real value, e.g. by `double AngRes = 2.0 / round(2.0 / GivenAngRes);`

  This is how we handle is internally as well.

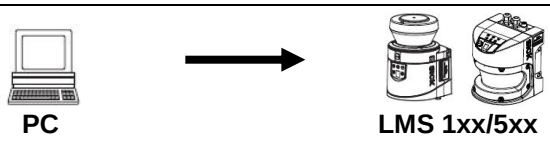


LMS 1xx/5xx **PC**

Telegram structure: sWA LMPoutputRange					
Telegram	**Description**	**Variable**	**Length**	**Values ASCII**	**Values Binary**
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Store parameters	String	14	LMPoutputRange	4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65

Example: sWA LMPoutputRange	
ASCII	**<STX>**sWA**{SPC}**LMPoutputRange**<ETX>**
HEX	**02** 73 57 41 **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **30**
Binary	**02 02 02 02 00 00 00 13** 73 57 41 **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **20 74**

6.2.1 Ask for actual output range

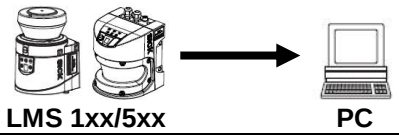


Telegram structure: sRN LMPoutputRange

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Output range	String	14	LMPoutputRange	4C 4D 44 73 63 61 6E 64 61 74 61

Example: sRN LMPoutputRange

ASCII	**<STX>**sRN**{SPC}**LMPoutputRange**<ETX>**
HEX	**02** 73 52 4E **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 52 4E **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **5E**



Telegram structure: sRA LMPoutputRange

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Output range	String	11	LMDscandata	4C 4D 44 73 63 61 6E 64 61 74 61

Example: sRA LMPoutputRange

ASCII	**<STX>**sRA**{SPC}**LMPoutputRange**{SPC}**1**{SPC}**1388**{SPC}**FFF92230**{SPC}**225510**<ETX>**
HEX	**02** 73 52 41 **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **20** 31 **20** 31 33 38 38 **20** 46 46 46 39 32 32 33 30 **20** 32 32 35 35 31 30 **03**
Binary	**02 02 02 02 00 00 00 21** 73 52 41 **20** 4C 4D 50 6F 75 74 70 75 74 52 61 6E 67 65 **20** 00 01 00 00 13 88 FF F9 22 30 00 22 55 10 **98**

6.3 Polling one Telegram

Output of measured values of one scan.

Sends the last valid scan data back from the memory of the LMS. Also if the measurement is not running, the last measurement is available.

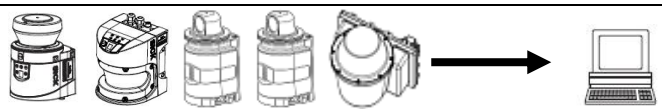
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sRN LMDscandata

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Only one Telegram	String	11	LMDscandata	4C 4D 44 73 63 61 6E 64 61 74 61

Example: sRN LMDscandata

ASCII	**<STX>**sRN**{SPC}**LMDscandata**<ETX>**
HEX	**02** 73 52 4E **20** 4C 4D 44 73 63 61 6E 64 61 74 61 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 52 4E **20** 4C 4D 44 73 63 61 6E 64 61 74 61 **05**



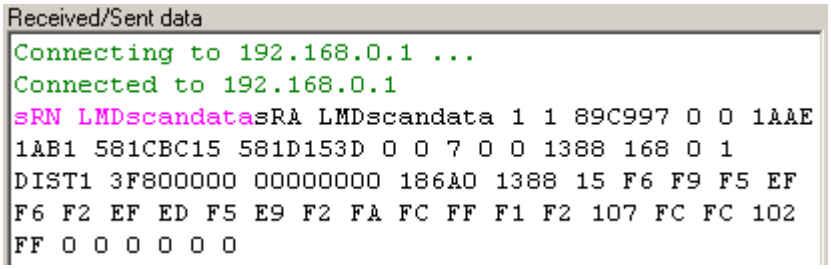
LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sRS LMDscandata

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Find complete telemgram structure of the Answer under topic “Send data permanent”					

Example: sRN LMDscandata

ASCII	→ No ASCII Answer possible
HEX	Find complete telemgram structure of the Answer under topic “Send data permanent”
Binary	Find complete telemgram structure of the Answer under topic “Send data permanent”



6.4 Send data permanent

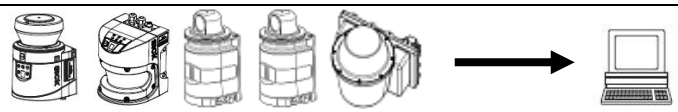
PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sEN LMDscandata

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sEN	73 45 4E
Command	Data Telegram	String	11	LMDscandata	4C 4D 44 73 63 61 6E 64 61 74 61
Mesurement	Start/Stop	Enum_8	1	0 Stop 1 Start	01

Example: sEN LMDscandata

ASCII	<STX>sEN{SPC}LMDscandata{SPC}1<ETX>
HEX	02 73 45 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 20 31 03
Binary	02 02 02 02 00 00 00 11 73 45 4E 20 4C 4D 44 73 63 61 6E 64 61 74 61 20 01 33



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sEA LMDscandata

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sEA	73 45 41
Command	Data Telegram	String	11	LMDscandata	4C 4D 44 73 63 61 6E 64 61 74 61
Mesurement	Start/Stop	Enum_8	1	0 Stop 1 Start	01

Example: sEA LMDscandata

ASCII	<STX>sEA{SPC}LMDscandata{SPC}1<ETX>
HEX	02 73 45 41 20 4C 4D 44 73 63 61 6E 64 61 74 61 20 31 03
Binary	02 02 02 02 00 00 00 11 73 45 41 20 4C 4D 44 73 63 61 6E 64 61 74 61 20 01 33

The answer to the telegram will be followed by the scandata:

(Attention: leading zeros of a value will not be displayed in ASCII)

Telegram Stream

Telegram structure: sRA LMDscandata / sSN LMDscandata

Telegram		Description	Variable	Length	Values ASCII	Values Binary
Command Type		Sopas by name	String	3	sRA sSN	73 52 41 73 53 4E
Command		Data Telegram	String	11	LMDscandata	4C 4D 44 73 63 61 6E 64 61 74 61
Version Number		For detecting format changes by the version. Version is always 1 up to now	Uint_16	2	0000h - FFFFh	
Device	Device Number	defined with Sopas	Uint_16	2	0000h - FFFFh	
	Serial Number	defined in Factory	Uint_32	4	00000000h - FFFFFFFFh	
	Device Status		Uint_8	2 x 1	00 00 OK 00 01 Error 00 02 Pollution Warning 00 04 Pollution Error	
Status Info	Telegram Counter	Counter starting with first measured value after reaching the highest number	Uint_16	2	0000h - FFFFh	
	Scan Counter	Counter starting with first measured value after reaching the highest number	Uint_16	2	0000h - FFFFh	
	Time since start up	Counting the time since power up the device; starting with 0. In the output telegram this is the time at the zero index (-14°) before the measurement itself starts.	Uint_32	4	00000000h - FFFFFFFFh	
	Time of transmission	Time in µs when the complete scan is transmittied to the buffer for data output; starting with 0 at scanner bootup.	Uint_32	4	00000000h - FFFFFFFFh	
	Status of digital Inputs	Low byte represents Input 1	Uint_8	2 x 1	00 00 all Inputs low 00 03 all input high	
	Status of digital outputs	Low byte represents Output 1	Uint_8	2 x 1	00 00 all Outputs low 00 07 all Output high	
	Reserved		Uint_16	2		

Frequencys	Scan frequency	Output in 1/100Hz	Uint_32	4	LMS1xx: 25Hz: 9C4h (2500d) 50Hz: 1388h (5000d) LMS5xx: 25Hz: 9C4h (2500d) 35Hz: DACh (3500d) 50Hz: 1388h (5000d) 75Hz: 1A0Bh (7500d) 100Hz: 2710h (10000d) NAV310/LD-OEM 5Hz …20Hz 1F4h…7D0h (500d…2000d) Default 320h = 8 Hz LD-LRS ..5Hz….15Hz 1F4h….5DCh (500d…..1500d) **Default 320h = 8 Hz**)
	Measure-ment frequency in Hz	Inverse of the time between two measurement shots (in 100Hz) example: 50Hz, 0,5° Resolution → 720 shots/20ms → 36 kHz	Uint_32	4	00000000h - FFFFFFFFh
Amount of Encoder			Enum_16	2	0..3 if 0, than next two values are missing.
	Encoder Position	Info in Ticks	Uint_16	2	LMS1xx: 0000h - 3FFFh LMS5xx: 0000h – FFFFh
	Encoder Speed	Ticks/mm	Uint_16	2	0000h - FFFFh

Amount of 16 Bit Channels		Amount of 16 Bit channels, giving out the Messured Data	Enum_16	2	LMS1xx: 1..2 Outputchannels LMS5xx: 0 or 5 Outputchannels NAV310/LD-OEM/LRS: Depending on amount of sectors and selection of output of Distance or Distance + Remiision RSSI For Example (2 Sectors): If 2 channels: Sectors 1 + 2 contain Dist1 If 4: channels Sectors 1 + 2 contain Dist + RSSI1	
Outputchannel 1..4 (16 bit)	Content	Defines the Content of the Output channel	String	5	LMS1xx: DIST1: radial Values of first pulse in mm RSSI1:Energy Values of first pulse DIST2: radial Values of 2nd pulse in mm RSSI2:Energy Values of 2nd pulse LMS5xx: DIST1 DIST2 DIST3 DIST4 DIST5 No RSSI Values NAV310/LD-OEM/LRS DIST1: radial Values of first pulse in mm RSSI1:Energy Values of first pulse	44 49 53 54 31 52 53 53 49 31 44 49 53 54 32 52 53 53 49 32 44 49 53 54 31 52 53 53 49 31
	Scale factor	Scale factor or of the measurement values (in LMS5xx depends on the angular resolution)	Float_32	4	3F800000h = factor x1 40000000h = factor x2 (values have to be scaled by factor two) NAV310 /LD-OEM /LD-LRS : 4080000h = factor x 4	
	Scale factor offset	LMS = 0	Float_32	4	00000000h - FFFFFFFFh	
	Start angle	Output format : 1/10.000°	Uint_32	4	LMS1xx: -450.000 +2250.000 LMS5xx: -50.000 +1850.000 NAV310/LD-OEM/LRS **-3600000....3600000d** FFFC91180h ..0036EE80h	
	Steps	Output format : 1/10.000°	Uint_16	2	LMS1xx: 1000 10.000 LMS5xx: 1667..10.000 NAV310/LD-OEM/LRS: 10.000	

	Amount of Data	Defines the number of items om measured output	Uint_16	2	0000h – FFFFh	
	Data_1 Data_n	Data stream starting Data_1 to Data_n	Uint_16	2	0000h - 4E20 (LMS100) C350 (LMS150) FDE8 (LMS 1xx without limit) NAV310/LD-OEM/LRS 0000h -0992h	

For NAV310/LD-OEM/LRS:

The array "Outputchannel 16 bit " has various dimensions "Amount of 16 Bit Channels", depending on the amount of sectors and if RSSI (output of remission values) is selected as *on* or *off*:

If RSSI was *not* selected (by LMDscandatacfg); there are 2 channels with the contents
Channel 1: First sector (Test target), content: DIST1
Channel 2: Second sector (Main profile data), content: DIST1

If RSSI was selected (by LMDscandatacfg); there are 4 channels with the contents
Channel 1: First sector (Test target), content: DIST1
Channel 2: First sector (Test target), content: RSSI1
Channel 3: Second sector (Main profile data), content: DIST1
Channel 4: Second sector (Main profile data), content: RSSI1

The number behind DIST and RSSI is the order number of the pulse.

As the NAV310/LD-OEM/LRS scanner are working with a single pulse measurement, it is always "1".

".

Amount of 8 Bit Channels		Amount of 8 Bit channels, giving out the Measured Data	Enum_16	2	LMS1xx: 1..2 Outputchannels LMS5xx: 1 or 5 Outputchannels NAV310/LD-OEM/LRS: 0 Outputchannels	
Outputchannel 1..4 (8 bit)	Content	Defines the Content of the Output channel	String	5	LMS1xx: DIST1 RSSI1 DIST2 RSSI2 LMS5xx: DIST1 DIST2 DIST3 DIST4 DIST5 No RSSI Values	44 49 53 54 31 52 53 53 49 31 44 49 53 54 32 52 53 53 49 32
	Scale factor	Scale factor or of the measurement values (in LMS5xx depends on the angular resolution)	Real	4	3F800000h = factor x1 40000000h = factor x2 (values have to be scaled by factor two)	
	Scale factor offset	LMS = 0	Real	4	00000000h - FFFFFFFFh	
	Start angle	Output format : 1/10.000°	Int_32	4	LMS1xx: -450.000 +2250.000 LMS5xx: -50.000 +1850.000	
	Steps	Output format : 1/10.000°	Uint_16	2	LMS1xx: 1000 10.000 LMS5xx: 1667..10.000	
	Amount of Data		Uint_16	2	0000h – FFFFh	
	Data_1 Data_n	Data stream starting Data_1 to Data_n	Uint_8	1	00h – FFh	
Position		Output of Position data	Enum_16	2	0 no position Data 1 Position Data	00 00 no position Data 00 01 Position Data
Position Information	X Position	X- Coordinate	Real	4	00000000h - FFFFFFFFh	
	Y Position	Y- Coordinate	Real	4	00000000h - FFFFFFFFh	
	Z Position	Z- Coordinate	Real	4	00000000h - FFFFFFFFh	
	X Rotation	X- Rotation in the Coordinat system	Real	4	00000000h - FFFFFFFFh	
	Y Rotation	Y - Rotation in the Coordinate system	Real	4	00000000h - FFFFFFFFh	
	Z Rotation	Z - Rotation in the Coordinate system	Real	4	00000000h - FFFFFFFFh	
	Rotations Type	kind of Rotation	Enum_8	1	0 no rotation 1 pitch 2 rollin 3 free	00 no rotation 01 pitch 02 rollin 03 free
	Transmits the Name of device	enum 8	Uint 8	1	0 no Name 1 Name	00 no Name 01 Name

Name		Device Name	Enum_16	2	0 no name 1 name	00 00 no name 00 01 name
	Length	Length of Name	Uint_8	1	0h - Fh	00 – 0F
	Name	Device Name	String	2	0 ... 16 Chars (20h..FFh)	
Comment		Comment	Enum_16	2	0 no Comment 1 comment	00 00 no Comment 00 01 comment
	Length	Length of comment	Uint_8	1	0h - Fh	00 – 0F
	Comment	Transmits a comment	String	2	0 ... 16 Chars (20h..FFh)	
Time		transmits a time stamp	Enum_16	2	0 no time 1 time	00 00 no time 00 01 time
Time Info	Year		Uint_16	2	0000h ... 270Fh	
	Month	1 to 12	Uint_8	1	00h ... 0Ch	
	Day	Day of Month 1 to 31	Uint_8	1	00h ... 1Fh	
	Hour	0 to 23	Uint_8	1	00h ... 17h	
	Minute	0 to 59	Uint_8	1	00h ... 3Bh	
	Second	0 to 59	Uint_8	1	00h ... 3Bh	
	µ seconds	0 to 999.999	Unit_32	4	00000000h - 000F423Fh	
Event Info		Give out event info	Enum_16	2	0 no Info 1 transmit info	00 00 no Info 00 01 transmit info
Event Information	Type	Fast digital input	String	4	FDIN	FDIN
	Encoder Position	Position of encoder when event happened	Uint_32	4	00000000h - FFFFFFFFh	
	Time of Event	Time (µs) of encoder when event happened	Uint_32	4	00000000h - FFFFFFFFh	
	Angle of Event	Angle of encoder when event happened	Int_32	4	0...3.600.000	

Attention: The grey written parts are not given out by the sensor.

Example for data amount LMS5xx:

With ASCII protocol (Cola A) a distance value needs 5 Byte and a remission value 3 Byte. shotrate is max. 54 kHz, for example configuration 75Hz 0.5°

- 5 + 3 Byte / Echo
- 5 Echo / Spot
- 190° / 0.5° + 1 Spot / Scan
- 75 Scan / s
- = 1.1 MB/s (without Overhead)
- = 1.2 MB/s (Brutto, incl. Header)

Means in that configuration a 10 MBit connection is not enough. With a 100MBit Hub, 3 - 4 scanner can be used, with a 1GBit Hub accordingly more.

6.4.1 Example and Interpretation of one Telegram

Example: Telegram LMS1xx, LMS5xx similar with corresponding values (10° - 20° Data range)

ASCII

```
sRA LMDscandata 1 1 89A27F 0 0 343 347 27477BA9 2747813B 0 0 7 0 0
1388 168 0 1 DIST1 3F800000 00000000 186A0 1388 15 8A1 8A5 8AB 8AC
8A6 8AC 8B6 8C8 8C2 8C9 8CB 8C4 8E4 8E1 8EB 8E0 8F5 908 8FC 907 906
0 0 0 0 0 0
```

All Values are separated with a 20hex {SPC}

BINARY

```
02 02 02 02 00 00 00 83 73 52 41 20 4C 4D 44 73 63 61 6E 64 61 74 61 20 00 01 00 01
00 89 A2 7F 00 00 C8 C8 C8 CC 15 58 86 D8 15 58 8C 5A 00 00 07 00 00 00 00 00 13 88
00 00 01 68 00 00 00 01 44 49 53 54 31 3F 80 00 00 00 00 00 00 00 01 86 A0 13 88 00
15 08 93 08 95 08 AF 08 B3 08 B0 08 A4 08 B0 08 BF 08 B9 08 BA 08 D0 08 D3 08 CF 08
DE 08 EB 08 E3 08 FE 08 EC 09 03 08 FD 08 FD 00 00 00 00 00 00 00 00 00 00 00 00 2B
```

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram		Values ASCII	Values Binary	Variable	Length	Possible Values
Frame/Header		02: STX	02 02 02 02			
Length			00 00 00 83			
Command Type		sRA{SPC}	73 52 41 20	String	3	sRA/ sSN
Command		LMDscandata{SPC}	4C 4D 44 73 63 61 6E 64 61 74 61 20	String	11	LMDscandata
Version Number		1{SPC}	00 01	Uint_16	2	0000h FFFFh
Device Info	Device Number	1{SPC}	00 01	Uint_16	2	0000h FFFFh
	Serial Number	89A27F{SPC} Dec: 9020031	00 89 A2 7F	Uint_32	4	00000000h FFFFFFFFh
	Device Status	0{SPC} 0{SPC}	00 00	Uint_8	2 x 1	00 00 OK 00 01 Error 00 02 Pollution Warning 00 04 Pollution Error
Status Information	Telegramm counter	343{SPC} Dec:835	C8 C8	Uint_16	2	0000h FFFFh
	Scan Counter	347{SPC} Dec:839	C8 CC	Uint_16	2	0000h FFFFh
	Time since start up µsek	27477BA9{SPC} Dec: 658996137	15 58 86 D8	Uint_32	4	00000000h FFFFFFFFh
	Time of transmission µsek	2747813B{SPC} Dec: 568997563	15 58 8C 5A	Uint_32	4	00000000h FFFFFFFFh

	Status of digital Inputs	0{SPC}0{SPC} input 1 & 2 low	00 00	Uint_8	2 x 1	00 00 all Inputs low 00 03 all input high
	Status of digital outputs	7{SPC}0{SPC} 0111 – all internal outputs high external outputs here not set!	07 00	Uint_8	2 x 1	00 00 all Outputs low 00 07 all Output high
	Reserved	0{SPC}	00 00	Uint_16	2	
Frequenc	Scan Frequency	1388{SPC} Dec: 5000 -> 50Hz	00 00 13 88	Uint_32	4	2500 25hz 50 Hz: 1388h (5000d)
	Measurement frequency	168{SPC}	00 00 01 68	Uint_32	4	00000000h FFFFFFFFh
Amount of Encoder		0{SPC} No encoder data	00 00	Enum_16	2	1 ..3
Position	Encoder Position	not generated, not existing because amount is 0	not generated, not existing because amount is 0	Uint_16	2	0000h 3FFFh
	Encoder Speed	not generated, not existing because amount is 0	not generated, not existing because amount is 0	Uint_16	2	0000h FFFFh
Amount of 16 Bit Channels		1{SPC}	00 01	Enum_16	2	1 ..4 Outputchannels
Outputchannel 1..4 (16 bit)	Content	DIST1{SPC}	44 49 53 54 31	String	5	DIST1: radial Values of first pulse RSSI1:Energy Values of first pulse DIST2: radial Values of 2nd pulse RSSI2:Energy Values of 2nd pulse
	Scale Factor	3F800000{SPC} Floating Point: Value = 1	3F 80 00 00	Real	4	3F800000h = factor x1 40000000h = factor x2 (values have to be scaled by factor two)
	Scale Factor offset	00000000{SPC} Floating Point: Value = 0	00 00 00 00	Real	4	00000000h FFFFFFFFh
	Start angle	186A0 {SPC} Dec: 100000	00 01 86 A0	Int_32	4	-450.000 +2250.000
	Steps	1388{SPC} Dec:5000	13 88	Uint_16	2	1000 10.000
	Amount of Data	15{SPC} Dec: 21 Measurement points	00 15	Uint_16	2	0000h FFFFh
	Data_1 Data_2 ...Data-n	Min 16h = 22mm Max. 4E20h = 20000mm	Min. 00 16h = 22mm Max. 4E 20h = 20000mm	Uint_16	2	0000h FFFFh
Amount of 8 Bit Channels		0{SPC} No 8 Bit Data	00 00 No 8 Bit Data	Enum_16	2	1...4Outputchannels
Outputchannel 1..4 (8 bit)	Content			String	5	DIST1 RSSI1 DIST2 RSSI2
	Scale factor			Real	4	3F800000h = factor x1 40000000h = factor x2 (values have to be scaled by factor two)
	Scale factor offset			Real	4	00000000h FFFFFFFFh
	Start angle			Int_32	4	-450.000 + 2250.000

	Steps			Uint_16	2	1000 10.000
	Amount of Data			Uint_16	2	0000h FFFFh
	Data_1 Data_n			Uint_8	1	00h FFh
Position		0{SPC} No position data	00 00 No position data	Enum_16	2	0 no position Data 1 Position Data
Position Information	X Position			Real	4	00000000h FFFFFFFFh
	Y Position			Real	4	00000000h FFFFFFFFh
	Z Position			Real	4	00000000h FFFFFFFFh
	X Rotation			Real	4	00000000h FFFFFFFFh
	Y Rotation			Real	4	00000000h FFFFFFFFh
	Z Rotation			Real	4	00000000h FFFFFFFFh
	Rotations Type			Enum_8	1	0 no rotation 1 pitch 2 rollin 3 free
	Transmits the Name of device			Uint_8		0 no Name 1 Name
Name		0{SPC} No device Name	00 00 No device Name	Enum_16	2	0 no name 1 name
Name info	Length of name			Enum_8	1	0h- Fh
	Name			String	2	0 ... 16 Chars (20h..FFh)
Comment		0{SPC} No comment	00 00 No comment	Enum_16	2	0 no Comment 1 comment
Comment	Length of comment			Enum_8	1	0h- Fh
	comment			String	2	0 ... 16 Chars (20h..FFh)
Time		0{SPC} No time transmitted	00 00 No time transmitted	Enum_16	2	0 no time 1 time
Time Info	Year			Uint_16	2	0000h 270Fh
	Month			Uint_8	1	00h 0Ch
	Day			Uint_8	1	00h 1Fh
	Hour			Uint_8	1	00h 17h
	Minute			Uint_8	1	00h 3Bh
	Second			Uint_8	1	00h 3Bh
	µ seconds			Unit_32	4	00000000h 000F423Fh
Event Info		0{SPC} No event info avaliable	00 00 No event info avaliable	Enum 16	2	0 no Info 1 transmit info
Event	Type			String	4	FDIN
	Encoder Position			Uint_32	4	00000000h FFFFFFFFh
	Time of Event			Uint_32	4	00000000h FFFFFFFFh
	Angle of Event			Int_32	4	-450000 +2250000
Frame		ETX: 03	Checksum: 2B			

7 Timestamp

7.1 Set timestamp

The data format in the telegram is: +2009 +7 +22 +12 +0 +0 +0

Represents: (year month day hour minute second microsecond) always with blank in between. If plus is used up-front the data its interpreted as an integer decimal number, without the plus it's the scanner reads the data as hex format. Answers come always in ASCII format.

Attention: It is no real time clock inside the LMS, so if the device is turned off, the time is not running on, so after rebooting the device, time is not actual any more and has to be set again.

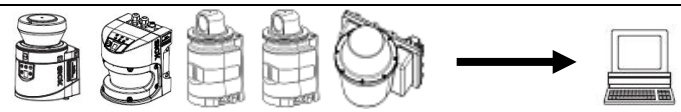
Time can be saved permanent anyway, for example for analyzing the „OFF“- time of the sensor.

PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sMN LSPsetdatetime

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Set timestamp	String	14	LSPsetdatetime	4C 53 50 73 65 74 64 61 74 65 74 69 6D 65
Year		Uint_16	2	+0000d...+9999d 0000h... FFFFh	00 00h ...FF FFh
Month		Uint_8	1	+00d ... +99d 00h ... FFh	00h ... FFh
Day		Uint_8	1	+00d ... +99d 00h ... FFh	00h ... FFh
Hour		Uint_8	1	+00d ... +99d 00h ... FFh	00h ... FFh
Minute		Uint_8	1	+00d ... +99d 00h ... FFh	00h ... FFh
Second		Uint_8	1	+00d ... +99d 00h ... FFh	00h ... FFh
Microsecond		Uint_32	4	+00000000d ... +99999999d 00000000h ... FFFFFFFFh	00 00 00 00h... FF FF FF FFh

Example 1: sMN LSPsetdatetime	
ASCII	<STX>sMN{SPC}LSPsetdatetime{SPC}7D9{SPC}2{SPC}11{SPC}10{SPC}22{SPC}0{SPC}0<ETX>
HEX	02 73 4D 4E 20 4C 53 50 73 65 74 64 61 74 65 74 69 6D 65 20 37 44 39 20 32 20 31 31 20 31 30 20 32 32 20 30 20 30 03
Binary	02 02 02 02 00 00 00 1E 73 4D 4E 20 4C 53 50 73 65 74 64 61 74 65 74 69 6D 65 20 07 D9 02 11 10 22 00 00 00 00 00 A3
Example 2: sMN LSPsetdatetime	
ASCII	<STX>sMN{SPC}LSPsetdatetime{SPC}+2010{SPC}+01{SPC}+26{SPC}+10{SPC}+35{SPC}0{SPC}0<ETX>
HEX	02 73 4D 4E 20 4C 53 50 73 65 74 64 61 74 65 74 69 6D 65 20 2B 32 30 31 30 20 2B 30 31 20 2B 32 36 20 2B 31 30 20 2B 33 35 20 2B 30 30 20 2B 30 30 30 30 03
Binary	02 02 02 02 00 00 00 1E 73 4D 4E 20 4C 53 50 73 65 74 64 61 74 65 74 69 6D 65 20 07 DA 01 1A 0A 23 00 00 00 00 00 A3



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

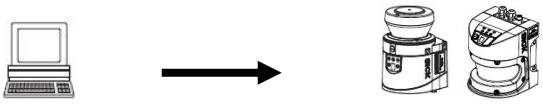
Telegram structure: sAN LSPsetdatetime

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Set timestamp	String	14	LSPsetdatetime	4C 53 50 73 65 74 64 61 74 65 74 69 6D 65
Status Code		Enum_8	1	1 = Success	01 = Success

Example 1, 2: sAN LSPsetdatetime	
ASCII	<STX>sAN{SPC}LSPsetdatetime{SPC}1<ETX>
HEX	02 73 41 4E 20 4C 53 50 73 65 74 64 61 74 65 74 69 6D 65 20 31 03
Binary	02 02 02 02 00 00 00 14 73 41 4E 20 4C 53 50 73 65 74 64 61 74 65 74 69 6D 65 20 01 51

Activate time stamp in the output string format or on Sopas page "data processing"

7.2 Ask timestamp and device status

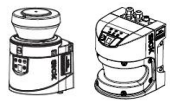


Telegram structure: sRN STlms

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Request	String	3	sRN	73 52 4E
Command	Ask for time and status	String	5	STlms	53 54 6C 6D 73

Example: sRN STlms

ASCII	**<STX>**sRN**{SPC}**STlms**<ETX>**
HEX	**02** 73 52 4E **20** 53 54 6C 6D 73 **03**
Binary	**02 02 02 02 00 00 00 09** 73 52 4E **20** 53 54 6C 6D 73 **3A**



LMS 1xx/5xx → PC

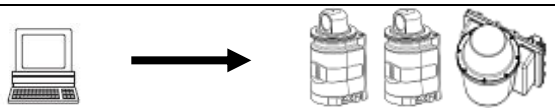
Telegram structure: sRA STlms

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Status and time	String	5	STlms	53 54 6C 6D 73
Status Code		Enum_16	2	Status 0 = undefined 1 = initialisation 2 = configuration 3 = lower case 4 = rotating 5 = in preparation 6 = ready 7 = measurement active 8 .. 11 = reserved	Status 00 00 = undefined 00 01 = initialisation 00 02 = configuration 00 03 = lower case 00 04 = rotating 00 05 = in preparation 00 06 = ready 00 07 = measurement active 00 08 .. 00 11 = reserved
Op. Temp. Range		Uint_8	1		00h..FFh
...		Uint_16	2		00 00h..FF FFh
Time	HH HH	Uint_16	2	00d..99d	30 30h..39 39h
	:	Uint_8	1	:	3A
	MM MM	Uint_16	2	00d..99d	30 30h..39 39h
	:	Uint_8	1	:	3A
	SS SS	Uint_16	2	00d..99d	30 30h..39 39h
...		Uint_16	2		
Date	DD DD	Uint_16	2	00d..99d	30 30h..39 39h
	.	Uint_8	1	.	2E
	MM MM	Uint_16	2	00d..99d	30 30h..39 39h
	.	Uint_8	1	.	2E
	JJ JJ JJ JJ	Uint_32	4	0000d..9999d	30 30 30 30h..39 39 39 39h
LED1		Uint_16	2	0 = inactive 1 = active	00 00 = inactive 00 01 = active
LED2		Uint_16	2	0 = inactive 1 = active	00 00 = inactive 00 01 = active
LED3		Uint_16	2	0 = inactive 1 = active	00 00 = inactive 00 01 = active

Example: sRA STlms

ASCII	**<STX>**sRA**{SPC}**STlms**{SPC}**7**{SPC}**0**{SPC}**8**{SPC}**16:36:54**{SPC}**8**{SPC}**17.03.2030**{SPC}**0**{SPC}**0**{SPC}**0**<ETX>**
HEX	Not available
Binary	**02 02 02 02 00 00 00 2F** 73 52 41 **20** 53 54 6C 6D 73 20 00 07 00 00 08 31 36 3A 33 36 3A 35 34 00 0A 31 37 2E 30 33 2E 32 30 33 30 00 00 00 00 00 00 00 00 00 00 00 00 **17**

7.3 Ask Device Time



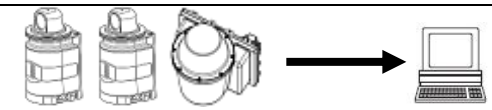
PC NAV310/LD-OEM/LD-LRS

Telegram structure: sRN DeviceTime

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Request	String	3	sRN	73 52 4E
Command	Ask for timer	String	5	DeviceTime	44 65 76 69 63 65 54 69 6D 65

Example: sRN DeviceTime

ASCII	**<STX>**sRN**{SPC}** DeviceTime **<ETX>**
HEX	**02** 73 52 4E **20** 44 65 76 69 63 65 54 69 6D 65 **03**
Binary	**02 02 02 02 00 00 00 0E** 44 65 76 69 63 65 54 69 6D 65 **42**



NAV310/LD-OEM/LD-LRS PC

Telegram structure: sRA DeviceTime

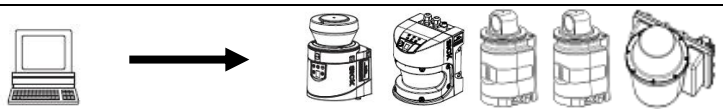
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Status and time	String	5	DeviceTime	44 65 76 69 63 65 54 69 6D 65
	Time	Uint_32	4	0000d..9999d	30 30 30 30h..39 39 39 39h

Example: sRA DeviceTime 0

ASCII	**<STX>**sRA**{SPC}** DeviceTime **{SPC}** 0 **<ETX>**
HEX	**<STX>**73 52 41 **20** 44 65 76 69 63 65 54 69 6D 65 **20** 00 **<ETX>**
Binary	**02 02 02 02 00 00 00 10** 73 52 41 **20** 44 65 76 69 63 65 54 69 6D 65 00 00 **20** 00 **6D**

Command to request the actual time of the internal clock (ms).
The timer is 32 counter with a resolution of 1 msec.

8 Save parameters permanent



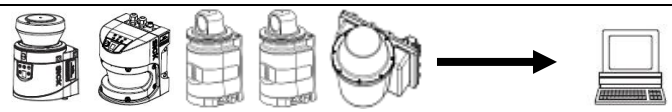
PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sMN mEEwriteall

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	store Parameters permanent	String	11	mEEwriteall	6D 45 45 77 72 69 74 65 61 6C 6C

Example: sMN mEEwriteall

ASCII	**<STX>**sMN**{SPC}**mEEwriteall**<ETX>**
HEX	**02** 73 4D 4E **20** 6D 45 45 77 72 69 74 65 61 6C 6C **03**
Binary	**02 02 02 02 00 00 00 0F** 73 4D 4E **20** 6D 45 45 77 72 69 74 65 61 6C 6C **21**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

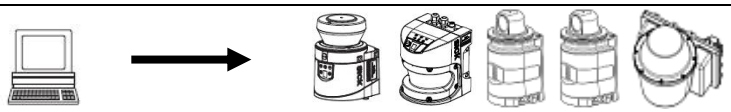
Telegram structure: sAN mEEwriteall

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Store parameters	String	11	mEEwriteall	6D 45 45 77 72 69 74 65 61 6C 6C
Status Code	accepted when value is 1	Enum_8	1	0 Error 1 Success	00 Error 01 Success

Example: sAN mEEwriteall

ASCII	**<STX>**sAN**{SPC}** mEEwriteall**{SPC}**1**<ETX>**
HEX	**02** 73 41 4E **20** 6D 45 45 77 72 69 74 65 61 6C 6C **20** 31 **03**
Binary	**02 02 02 02 00 00 00 11** 73 41 4E **20** 6D 45 45 77 72 69 74 65 61 6C 6C **20** 01 **0C**

9 Set to run



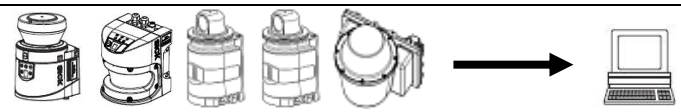
PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sMN Run

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Request (SOPAS method by name)	String	3	sMN	73 4D 4E
Command	Start the device	String	3	Run	52 75 6E

Example: sMN Run

ASCII	**<STX>**sMN**{SPC}**Run**<ETX>**
HEX	**02** 73 4D 4E **20** 52 75 6E **03**
Binary	**02 02 02 02 00 00 00 07** 73 4D 4E **20** 52 75 6E **19**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sAN Run

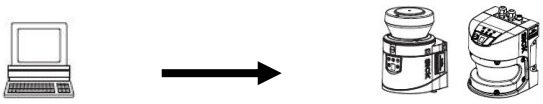
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Start the device	String	3	Run	52 75 6E
Status Code	The command has been accepted if the status code 1 is returned	Bool_1	1	1 Success 0 Error	01 Success 00 Error

Example: sAN Run

ASCII	**<STX>**sAN**{SPC}**Run**{SPC}**1**<ETX>**
HEX	**02** 73 41 4E **20** 52 75 6E **20** 31 **03**
Binary	**02 02 02 02 00 00 00 09** 73 41 4E **20** 52 75 6E **20** 01 **34**

10 Filter

10.1 Particle Filter



Telegram structure: sWN LFPparticle

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set particle filter	String	11	LFPparticle	4C 46 50 70 61 72 74 69 63 6C 65
Status code		Bool_1	1	0 inactive 1 active	00 inactive 01 active
Threshold *	Particle threshold in mm	Uint_16	2	+500 (must be taken)	01 F4 (must be taken)

Example: sWN LFPparticle

ASCII	<STX>sWN{SPC}LFPparticle{SPC}1{SPC}+500<ETX>
HEX	02 73 57 4E 20 4C 46 50 70 61 72 74 69 63 6C 65 20 31 20 2B 35 30 30 03
Binary	02 02 02 02 00 00 00 13 73 57 4E 20 4C 46 50 70 61 72 74 69 63 6C 65 20 01 01 F4 D0

* Never change the threshold here, it is take by the device to handle the particles

Telegram structure: sWA LFPparticle

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	6	LCMcfg	4C 43 4D 63 66 67

Example: sWA LFPparticle

ASCII	<STX>sWA{SPC}LFPparticle<ETX>
HEX	02 73 57 41 20 4C 46 50 70 61 72 74 69 63 6C 65 03
Binary	02 02 02 02 00 00 00 10 73 57 41 20 4C 46 50 70 61 72 74 69 63 6C 65 20 2B

10.2 Mean Filter


PC


LMS 1xx

(only LMS1xx)

Telegram structure: sWN LFPmeanfilter

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set mean filter	String	13	LFPmeanfilter	4C 46 50 6D 65 61 6E 66 69 6C 74 65 72
Status code		Bool_5	1	0 inactive 1 active	00 inactive 01 active
Number of scans		Uint_16	2	+2...+100	00 02...00 64
		Enum_8	1	0	00

Example: sWN LFPmeanfilter

ASCII	**<STX>**sWN**{SPC}**LFPmeanfilter**{SPC}**1**{SPC}**+10**{SPC}**0**<ETX>**
HEX	**02** 73 57 4E **20** 4C 46 50 6D 65 61 6E 66 69 6C 74 65 72 **20** 31 **20** 2B 31 30 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 16** 73 57 4E **20** 4C 46 50 6D 65 61 6E 66 69 6C 74 65 72 **20** 01 00 64 00 **52**


LMS 1xx


PC

Telegram structure: sWA LFPmeanfilter

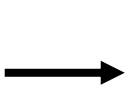
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	6	LCMcfg	4C 43 4D 63 66 67

Example: sWA LFPmeanfilter

ASCII	**<STX>**sWA**{SPC}**LFPmeanfilter**<ETX>**
HEX	**02** 73 57 41 **20** 4C 46 50 6D 65 61 6E 66 69 6C 74 65 72 **03**
Binary	**02 02 02 02 00 00 00 12** 73 57 41 **20** 4C 46 50 6D 65 61 6E 66 69 6C 74 65 72 **20 38**

10.3 Set n-Pulse to 1-Pulse Filter


PC


LMS 1xx

Only LMS1xx, for LMS5xx take the echo filter

Telegram structure: sWN LFPnto1filter

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set n-to-1 Filter	String	13	LFPnto1filter	4C 46 50 6E 74 6F 31 66 69 6C 74 65 72
Status code		Bool_1	1	0 inactive 1 active	00 inactive 01 active

Example: sWN LFPnto1filter

ASCII	**<STX>**sWN**{SPC}**LFPnto1filter**{SPC}**1**<ETX>**
HEX	**02** 73 57 4E **20** 4C 46 50 6E 74 6F 31 66 69 6C 74 65 72 **20** 31 **03**
Binary	**02 02 02 02 00 00 00 13** 73 57 4E **20** 4C 46 50 6E 74 6F 31 66 69 6C 74 65 72 **20** 01 **75**


LMS 1xx


PC

Telegram structure: sWA LFPnto1filter

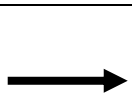
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Set n-to-1 Filter	String	13	LFPnto1filter	4C 46 50 6E 74 6F 31 66 69 6C 74 65 72

Example: sWA LFPnto1filter

ASCII	<STX>sWA**{SPC}**LFPnto1filter**<ETX>**
HEX	**02** 73 57 41 **20** 4C 46 50 6E 74 6F 31 66 69 6C 74 65 72 **03**
Binary	**02 02 02 02 00 00 00 12** 73 57 41 **20** 4C 46 50 6E 74 6F 31 66 69 6C 74 65 72 **20 7B**

10.4 Echo Filter


PC




LMS 5xx

Only LMS5xx, LMS1xx take the n-Pulse to 1-Pulse filter

Telegram structure: sWN FREchoFilter

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set echo Filter	String	12	FREchoFilter	46 52 45 63 68 6F 46 69 6C 74 65 72
Status code		Enum_8	1	0 = First Echo 1 = All Echos 2 = Last Echo	00 = First Echo 01 = All Echos 02 = Last Echo

Example: sWN FREchoFilter

ASCII	**<STX>**sWN**{SPC}**FREchoFilter**{SPC}**1**<ETX>**
HEX	**02** 73 57 4E **20** 46 52 45 63 68 6F 46 69 6C 74 65 72 **20** 31 **03**
Binary	Not available in V1.10 firmware


LMS 5xx


PC

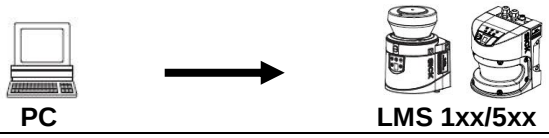
Telegram structure: sWA FREchoFilter

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Set echo Filter	String	12	FREchoFilter	46 52 45 63 68 6F 46 69 6C 74 65 72

Example: sWA FREchoFilter

ASCII	**<STX>**sWA**{SPC}**FREchoFilter **<ETX>**
HEX	**02** 73 57 41 **20** 46 52 45 63 68 6F 46 69 6C 74 65 72 **03**
Binary	Not available in V1.10 firmware

10.5 Fog Filter

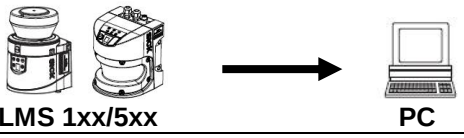


Telegram structure: sWN MSsuppmode

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Set fog filter	String	10	MSsuppmode	4D 53 73 75 70 70 6D 6F 64 65
Status code		Bool_1	1	0 Glitch 1 Fog	00 Glitch 01 Fog

Example: sWN MSsuppmode

ASCII	**<STX>**sWN**{SPC}**MSsuppmode**{SPC}**1**<ETX>**
HEX	**02** 73 57 4E **20** 4D 53 73 75 70 70 6D 6F 64 65 **20** 31 **03**
Binary	**02 02 02 02 00 00 00 10** 73 57 4E **20** 4D 53 73 75 70 70 6D 6F 64 65 **20** 01 **70**



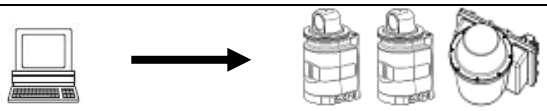
Telegram structure: sWA MSsuppmode

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	6	LCMcfg	4C 43 4D 63 66 67

Example: sWA MSsuppmode

ASCII	**<STX>**sWA**{SPC}**MSsuppmode**<ETX>**
HEX	**02** 73 57 41 **20** 4D 53 73 75 70 70 6D 6F 64 65 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 57 41 **20** 4D 53 73 75 70 70 6D 6F 64 65 **20 7E**

10.6 Digital Nearfield Filter Enable / Disable



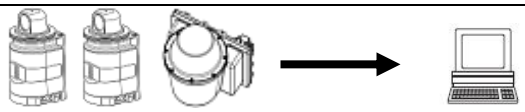
PC **NAV310/LD-OEM/LD-LRS**

Telegram structure: sWN CLNFDigFilterEn

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Activate Nearfield Filter	String	15	CLNFDigFilterEn	43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E
Status code		Bool_1	1	0 Not active 1 Active	

Example: sWN CLNFDigFilterEn

ASCII	**<STX>**sWN**{SPC}** CLNFDigFilterEn **{SPC}**1**<ETX>**
HEX	**02** 73 57 4E **20** 43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E **20** 31 **03**
Binary	**02 02 02 02 00 00 00 16** 73 57 4E **20** 43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E **20** 01 **51**



NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sWA CLNFDigFilterEn

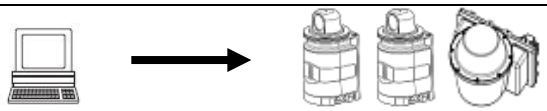
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	15	CLNFDigFilterEn	43 4C 4E 46 44 69 67 46 69 6C 74 65 72 45 6E

Example: sWA CLNFDigFilterEn enable

ASCII	**<STX>**sWA**{SPC}** CLNFDigFilterEn **<ETX>**
HEX	**02** 73 57 41 **20** 43 4C 4E 46 44 69 67 46 69 6C 74 65 72 45 6E **03**
Binary	**02 02 02 02 00 00 00 13** 73 57 41 **20** 43 4C 4E 46 44 69 67 46 69 6C 74 65 72 45 6E **03**

Activates or deactivated the Nearfield Filter of the LD series

10.7 Digital Nearfield Filter Hardware Gating



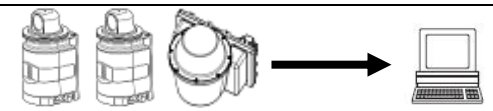
PC NAV310/LD-OEM/LD-LRS

Telegram structure: sWN CLHWGating

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set Sector Function	String	10	CLHWGating	43 4C 48 57 47 61 74 69 6E 67
Status code		Enum_8	1	0 Gating_OFF 3 Gating_2M 6 Gating:_5M	NAV310/LD-OEM/LRS LD-OEM/LD-LRS3X0X LD-LRS 3X1X

Example: sWN CLHWFilterSectEn 2m

ASCII	<STX>sWN{SPC} CLHWGating {SPC} 3<ETX>
HEX	02 73 57 4E 20 43 4C 48 57 47 61 74 69 6E 67 20 33 03
Binary	02 02 02 02 00 00 00 13 73 57 4E 20 43 4C 48 57 47 61 74 69 6E 67 20 03 4B



NAV310/LD-OEM/LD-LRS PC

Telegram structure: sWA CLHWGating

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	10	CLHWGating	43 4C 48 57 47 61 74 69 6E 67

Example: sWA CLHWGating 2m

ASCII	<STX>sWA{SPC} CLHWGating <ETX>
HEX	02 73 57 41 20 43 4C 48 57 47 61 74 69 6E 67 03
Binary	02 02 02 02 00 00 00 0E 73 57 41 20 43 4C 48 57 47 61 74 69 6E 67 67

Defines the range oft he nearfield hardware gating.

Device	Hardwaregating 2m	Hardwaregating 5 m
NAV310 / LD-OEM / LD-LRS	X	N/A
LD-LRS extended range	N/A	X

10.8 Digital Nearfield Filter Sector Selection

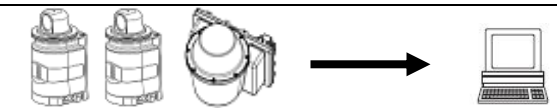
Telegram structure: sWN CLHWFilterSectEn

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set Sector Function	String	16	CLHWFilterSectEn	43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E
Status code		Bool_1	4	0 0 0 0 Active in non of the sectors 1 1 1 1 Active in all sectors	

Example: sWN CLHWFilterSectEn 1 0 0 0

Enable Nearfield Suppression for Sector 1, disable for sectors 2,3 and 4

ASCII	<STX>sWN{SPC} CLHWFilterSectEn{SPC} 1 {SPC} 0 {SPC} 0 {SPC} 0 <ETX>
HEX	02 73 57 4E 20 43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E 20 31 20 30 20 30 20 30 03
Binary	02 02 02 02 00 00 00 1C 73 57 4E 20 43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E 20 01 20 00 20 00 20 00 71

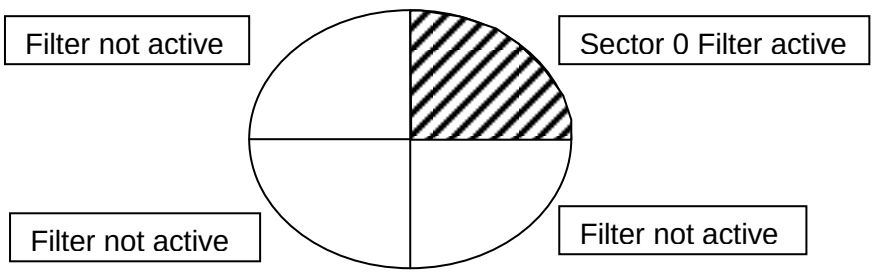


Telegram structure: sWA CLHWFilterSectEn

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	16	CLHWFilterSectEn	43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E

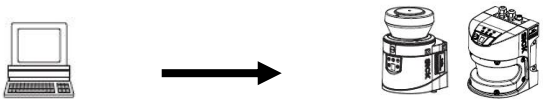
Example: sWA CLHWFilterSectEn enable 1 0 0 0

ASCII	<STX>sWA{SPC} CLHWFilterSectEn <ETX>
HEX	02 73 57 41 20 43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E 03
Binary	02 02 02 02 00 00 00 14 73 57 41 20 43 4C 48 57 46 69 6C 74 65 72 53 65 63 74 45 6E 7F



11 Encoder

11.1 Increment source



Telegram structure: sWN LICsrc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set increment source	String	6	LICsrc	4C 49 43 73 72 63
Increment source		Enum_8	1	0 = Fixed speed 1 = Encoder	00 = Fixed speed 01 = Encoder

Example: sWN LICsrc

ASCII	**<STX>**sWN{SPC}LICsrc**{SPC}**0**<ETX>**
HEX	**02** 73 57 4E **20** 4C 49 43 73 72 63 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 0C** 73 57 4E **20** 4C 49 43 73 72 63 **20** 01 **4F**

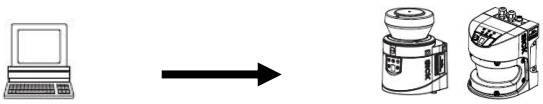
Telegram structure: sWA LICsrc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command		String	6	LICsrc	4C 49 43 73 72 63

Example: sWA LICsrc

ASCII	**<STX>**sWA**{SPC}**LICsrc**<ETX>**
HEX	**02** 73 57 41 **20** 4C 49 43 73 72 63 **03**
Binary	**02 02 02 02 00 00 00 0B** 73 57 41 **20** 4C 49 43 73 72 63 **41**

11.2 Encoder Settings



Telegram structure: sWN LICencset

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	string	3	sWN	73 57 4E
Command	Set encoder settings	string	9	LICencset	4C 49 43 65 6E 63 73 65 74
Encoder setting		Enum_8	1	0 = Off 1 = single Increment/INC1 2 = Direction recognition (phase) 3 = Direction recognition (level)	00 01 02 03

Example: sWN LICencset

ASCII	**<STX>**sWN**{SPC}**LICencset**{SPC}**0**<ETX>**
HEX	**02** 73 57 4E **20** 4C 49 43 65 6E 63 73 65 74 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 57 4E **20** 4C 49 43 65 6E 63 73 65 74 **20** 03 **25**

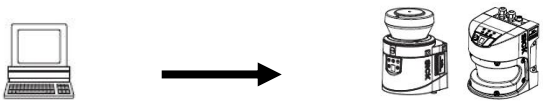
Telegram structure: sWA LICencset

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command		String	9	LICencset	4C 49 43 65 6E 63 73 65 74

Example: sWA LICencset

ASCII	**<STX>**sWA**{SPC}**LICencset**<ETX>**
HEX	**02** 73 57 41 **20** 4C 49 43 65 6E 63 73 65 74 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 57 41 **20** 4C 49 43 65 6E 63 73 65 74 **29**

11.3 Encoder resolution

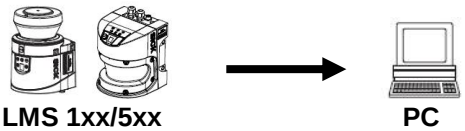


Telegram structure: sWN LICencres

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set encoder resolution	String	9	LICencres	4C 49 43 65 6E 63 72 65 73
Encoder resolution				+0.001..+2000	

Example: sWN LICencres

ASCII	**<STX>**sWN**{SPC}**LICencres**{SPC}**+1000**<ETX>**
HEX	**02** 73 57 4E **20** 4C 49 43 65 6E 63 72 65 73 **20** 2B 31 30 30 30 **03**
Binary	



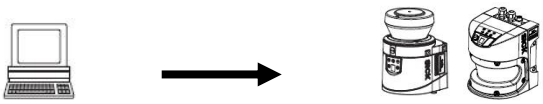
Telegram structure: sWN LICencres

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	encoder resolution	String	9	LICencres	4C 49 43 65 6E 63 72 65 73

Example: sWA LICencres

ASCII	**<STX>**sWA**{SPC}**LICencres**<ETX>**
HEX	**02** 73 57 41 **20** 4C 49 43 65 6E 63 72 65 73 **03**
Binary	

11.4 Fixed speed

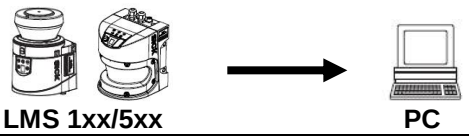


Telegram structure: sWN LICFixVel

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set fixed speed	String	8	LICFixVel	4C 49 43 46 69 78 56 65 6C
Fixed speed				+0.001..+10	

Example: sWN LICFixVel

ASCII	**<STX>**sWN**{SPC}**LICFixVel**{SPC}**+5**<ETX>**
HEX	**02** 73 57 4E **20** 4C 49 43 46 69 78 56 65 6C **20** 2B 35 **03**
Binary	



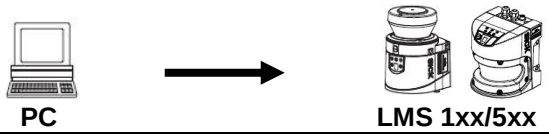
Telegram structure: sWN LICFixVel

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	fixed speed	String	8	LICFixVel	4C 49 43 46 69 78 56 65 6C

Example: sWA LICFixVel

ASCII	**<STX>**sWA**{SPC}**LICFixVel**<ETX>**
HEX	**02** 73 57 41 **20** 4C 49 43 46 69 78 56 65 6C **03**
Binary	

11.5 Ask speed threshold

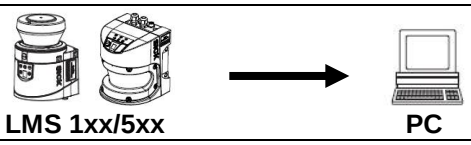


Telegram structure: sRN LICSpTh

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask speed threshold	String	7	LICSpTh	4C 49 43 53 70 54 68

Example: sRN LICSpTh

ASCII	**<STX>**sRN**{SPC}**LICSpTh**<ETX>**
HEX	**02** 73 52 4E **20** 4C 49 43 53 70 54 68 **03**
Binary	**02 02 02 02 00 00 00 0D** 73 52 4E **20** 4C 49 43 53 70 54 68 **16**



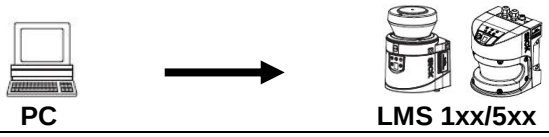
Telegram structure: sRA LICSpTh

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Ask speed threshold	String	7	LICSpTh	4C 49 43 53 70 54 68

Example: sRA LICSpTh

ASCII	**<STX>**sRA**{SPC}**LICSpTh**<ETX>**
HEX	**02** 73 52 41 **20** 4C 49 43 53 70 54 68 **03**
Binary	**02 02 02 02 00 00 00 0D** 73 52 41 **20** 4C 49 43 53 70 54 68 **20** 05 **3C**

11.6 Encoder speed

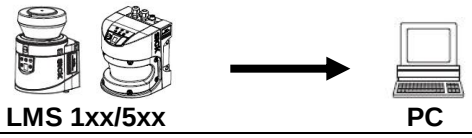


Telegram structure: sRN LICencsp

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask encoder speed	String	8	LICencsp	4C 49 43 65 6E 63 73 70
Encoder speed				00000000.. FFFFFFFF	00000000.. FFFFFFFF

Example: sRN LICencsp

ASCII	**<STX>**sRN**{SPC}**LICencsp**<ETX>**
HEX	**02** 73 52 4E **20** 4C 49 43 65 6E 63 73 70 **03**
Binary	**02 02 02 02 00 00 00 0C** 73 52 4E **20** 4C 49 43 65 6E 63 73 70 **62**



Telegram structure: sRA LICencsp

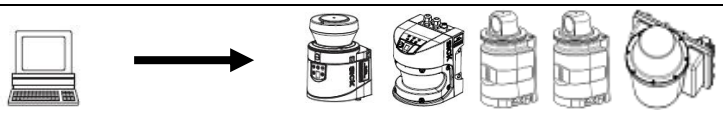
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Ask speed threshold	String	7	LICSpTh	4C 49 43 53 70 54 68

Example: sRA LICencsp

ASCII	**<STX>**sRA**{SPC}**LICencsp**{SPC}**00000000**<ETX>**
HEX	**02** 73 52 41 **20** 4C 49 43 65 6C 63 73 70 **20** 30 30 30 30 30 30 30 30 **03**
Binary	**02 02 02 02 00 00 00 11** 73 52 41 **20** 4C 49 43 65 6E 63 73 70 **20** 00 00 00 00 **4D**

12 Outputs

12.1 Ask state of the outputs



PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sRN LIDoutputstate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask output state	String	14	LIDoutputstate	4C 49 44 6F 75 74 70 75 74 73 74 61 74 65

Example: sRN LIDoutputstate

ASCII	**<STX>**sRN**{SPC}**LIDoutputstate**<ETX>**
HEX	**02** 73 52 4E **20** 4C 49 44 6F 75 74 70 75 74 73 74 61 74 65 **03**
Binary	**02 02 02 02 00 00 00 12** 73 52 4E **20** 4C 49 44 6F 75 74 70 75 74 73 74 61 74 65 **66**

LMS 1xx/5xx/NAV310LD-OEM/LD-LRS **PC**

Telegram structure: sRA LIDoutputstate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Outputstate	String	14	LIDoutputstate	4C 49 44 6F 75 74 70 75 74 73 74 61 74 65
Status Code		Uint_16	2	0	00 00
		Uint_32	4	0	00 00 00 00
State of the outputs and count value in hex. (Values of an example)	Out1 State	Enum_8	1	0..2	00 - 02
	Out1 Count	Uint_32	4	0	00 00 00 00
	Out2 State	Enum_8	1	0..2	00 – 02
	Out2 Count	Uint_32	4	0	00 00 00 00
	Out3 State	Enum_8	1	0..2	00 – 02
	Out3 Count	Uint_32	4	0	00 00 00 00
	Out4 State*	Enum_8	1	0..2	00 – 02
	Out4 Count*	Uint_32	4	0	00 00 00 00
	Out5 State*	Enum_8	1	0..2	00 – 02
	Out5 Count*	Uint_32	4	0	00 00 00 00
	Out6 State*	Enum_8	1	0..2	00 – 02
	Out6 Count*	Uint_32	4	0	00 00 00 00
	ext.Out1 State	Enum_8	1	0..2	00 – 02
	ext.Out1 Count	Uint_32	4	0	00 00 00 00
	ext.Out2 State	Enum_8	1	0..2	00 – 02
	ext.Out2 Count	Uint_32	4	0	00 00 00 00
	ext.Out3 State	Enum_8	1	0..2	00 – 02
	ext.Out3 Count	Uint_32	4	0	00 00 00 00
	ext.Out4 State	Enum_8	1	0..2	00 – 02

	ext.Out4 Count ext.Out5 State ext.Out5 Count ext.Out6 State ext.Out6 Count ext.Out7 State ext.Out7 Count ext.Out8 State ext.Out8 Count reserved	Uint_32 Enum_8 Uint_32 Enum_8 Uint_32 Enum_8 Uint_32 Enum_8 Uint_32 Uint_16	4 1 4 1 4 1 4 1 4 2	0 0..2 0 0..2 0 0..2 0 0..2 0 0 States: 0 = low 1 = High 2 = Tristate (undefined)	00 00 00 00 00 – 02 00 00 00 00 00 – 02 00 00 00 00 00 – 02 00 00 00 00 00 - 02 00 00 00 00 00 States: 00 = low 01 = High 02 = Tristate (undefined)

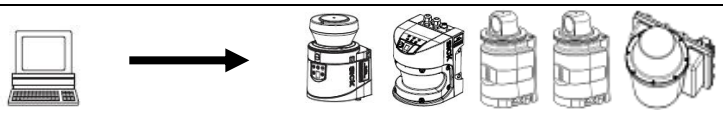
Example: sRA LIDoutputstate

ASCII	<STX>sRA{SPC}LIDoutputstate{SPC}0{SPC}0{SPC}1{SPC}7{SPC}1{SPC}D{SPC}1{SPC}0{SPC}1{SPC}7{SPC}1{SPC}0{SPC}1{SPC}0{SPC}1{SPC}14{SPC}1{SPC}0{SPC}1{SPC}0{SPC}1{SPC}0{SPC}1{SPC}35{SPC}0<ETX>
HEX	02 73 52 41 20 4C 49 44 6F 75 74 70 75 74 73 74 61 74 65 20 30 20 30 20 31 20 30 20 31 20 30 20 31 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 20 32 20 30 03
Binary	02 02 02 02 00 00 00 52 73 52 41 20 4C 49 44 6F 75 74 70 75 74 73 74 61 74 65 20 00 00 00 00 00 00 01 00 00 00 00 01 00 00 00 00 01 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 02 00 00 00 00 00 00 48

*only in LMS5xx, not avaliable in LMS1xx and not in the telegram there

For NAV310 only output 1 is available

12.2 Set output state



PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sMN mDOSetOutput

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Set output state	String	12	mDOSetOutput	6D 44 4F 53 65 74 4F 75 74 70 75 74
Output Number		Uint_8	1	1 - 3	1 - 3
Output State		Enum_8	1	0 = inactive 1 = active	00 = inactive 01 = active

Example: sMN mDOSetOutput

ASCII	<STX>sMN{SPC}mDOSetOutput{SPC}1{SPC}1<ETX>
HEX	02 73 4D 4E 20 6D 44 4F 53 65 74 4F 75 74 70 75 74 20 31 20 31 03
Binary	02 02 02 02 00 00 00 13 73 4D 4E 20 6D 44 4F 53 65 74 4F 75 74 70 75 74 20 01 01 69

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sAN mDOSetOutput

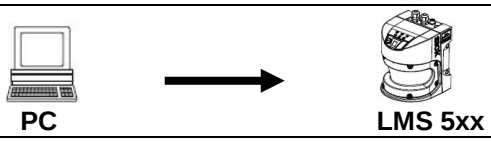
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Outputstate	String	12	mDOSetOutput	6D 44 4F 53 65 74 4F 75 74 70 75 74
Status Code		Bool_1		1 = Success 0 = Error	01 = Success 00 = Error

Example: sAN mDOSetOutput

ASCII	<STX>sAN{SPC}mDOSetOutput{SPC}1<ETX>
HEX	02 73 41 4E 20 6D 44 4F 53 65 74 4F 75 74 70 75 74 20 31 03
Binary	02 02 02 02 00 00 00 12 73 41 4E 20 6D 44 4F 53 65 74 4F 75 74 70 75 74 20 00 67

For NAV310 only output 1 is available

12.3 Change output 6/3 function



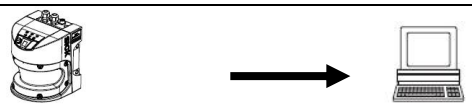
Telegram structure PRO: sWN DO6Fnc

Telegram structure LITE: sWN DO3Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Output function	String	6	DO6Fnc/DO3Fnc	44 4F 36 46 6E 63 / 44 4F 33 46 6E 63
Output State		Enum_8	1	0 = No Function 1 = Command 2 = Device Ready 3 = Application 4 = Applic/Dev.Ready 5 = Dev.Ready/Poll. 6 = Pollution 7 = Zeroindex(Mastersync)	

Example: sWN DO6Fnc → Out6 to master sync:

ASCII	**<STX>**sWN**{SPC}**DO6Fnc**{SPC}**7**<ETX>**
HEX	**02** 73 57 4E **20** 44 4F 36 46 6E 63 **20** 37 **03**
Binary	Not available with firmware V1.10



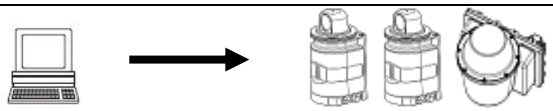
Telegram structure: sAN DO6Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Output function	String	12	DO6Fnc	44 4F 36 46 6E 63

Example: sAN DO6Fnc

ASCII	**<STX>**sWA**{SPC}**DO6Fnc**<ETX>**
HEX	**02** 73 57 41 **20** 44 4F 36 46 6E 63 **03**
Binary	Not available with firmware V1.10

12.4 Change output 1 function



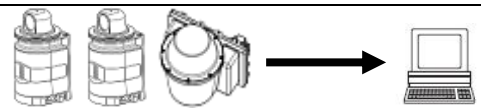
PC **NAV310 / LD-OEM/LD-LRS**

Telegram structure LD-OEM / LRS sWN DO1Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Output function	String	6	DO1Fnc	44 4F 31 46 6E 63
Output 1 Function		Enum_8	1	0 = No Function 1 = Command 2 = Device Ready 3 = Application Dev Ready 4 = Sync Pulse **5 = Sync Index (Defaul)t**	

Example: sWN DO1Fnc → Out1 to Device Ready:

ASCII	**<STX>**sWN**{SPC}**DO1Fnc**{SPC}2<ETX>**
HEX	**02** 73 57 4E **20** 44 4F 31 46 6E 63 **20** 32 **03**
Binary	**02 02 02 02 00 00 00 0C** 73 57 4E 20 44 4F 31 46 6E 63 **20** 02 **19**



NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sAN DO1Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Output function	String	6	DO1Fnc	44 4F 31 46 6E 63

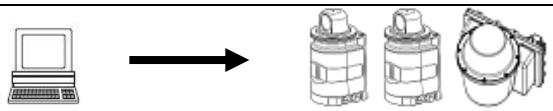
Example: sAN DO1Fnc

ASCII	**<STX>**sWA**{SPC}**DO1Fnc**<ETX>**
HEX	**02** 73 57 41 **20** 44 4F 31 46 6E 63 **03**
Binary	**02 02 02 02 00 00 00 0A** 73 57 4E 20 44 4F 31 46 6E 63 **34**

Functions

0 = No Function
1 = Command (Accessable by the SOPAS command “mHMISetLed”
2 = Device Ready (for field application)
3 = Application Dev Ready
4 = Sync Pulse (10 msec puls when timer register is readed “sRN STIms”
5 = Sync Index (Defaul) The output signal depend on the scanner head positon
(0° - 179° high (+24V) / 180° - 360° low (0V)

12.5 Change output 1 Logic



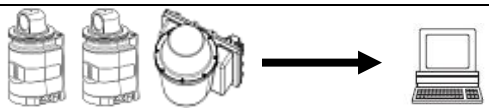
PC **NAV310/LD-OEM/LD-LRS**

Telegram structure LD-OEM / LRS sWN DO1Logic

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Output function	String	8	DO1Logic	44 4F 31 4C 6F 67 69 63
Output 1 Logic		Enum_8	1	**0 = Active_High Default** 1 = Active_Low	

Example: sWN DO1Logic →Active_High:

ASCII	**<STX>**sWN**{SPC}**DO1Logic**{SPC}**7**<ETX>**
HEX	**02** 73 57 4E **20** 44 4F 31 4C 6F 67 69 63 **20** 31 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 57 4E **20** 44 4F 31 4C 6F 67 69 63 **20** 01 **1F**



NAV310/LD-OEM/LD-LRS **PC**

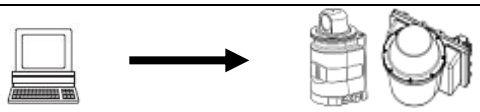
Telegram structure: sAN DO1Logic

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Output function	String	8	DO1Logic	44 4F 31 4C 6F 67 69 63

Example: sAN DO1Logic

ASCII	**<STX>**sWA**{SPC}**DO1Logic**<ETX>**
HEX	**02** 73 57 41 **20** 44 4F 31 4C 6F 67 69 63 **03**
Binary	**02 02 02 02 00 00 00 0C** 73 57 41 **20** 44 4F 31 4C 6F 67 69 63 **31**

12.6 Change output 2 function



Telegram structure LD-OEM / LRS sWN DO2Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Output function	String	6	DO2Fnc	44 4F 32 46 6E 63
Output 1 Function		Enum_8	1	0 = No Function 1 = Command 2 = Device Ready 3 = Application Dev Ready	

Example: sWN DO2Fnc → Out2 to Device Ready:

ASCII	<STX>sWN{SPC}DO2Fnc{SPC}7<ETX>
HEX	02 73 57 4E 20 44 4F 32 46 6E 63 20 32 03
Binary	02 02 02 02 00 00 00 0C 73 57 4E 20 44 4F 32 46 6E 63 20 02 1A

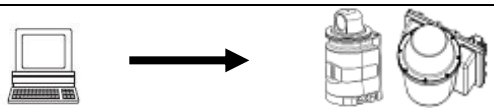
Telegram structure: sAN DO2Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Output function	String	6	DO2Fnc	44 4F 32 46 6E 63

Example: sAN DO1Fnc

ASCII	<STX>sWA{SPC}DO2Fnc<ETX>
HEX	02 73 57 41 20 44 4F 32 46 6E 63 03
Binary	02 02 02 02 00 00 00 0A 73 57 41 20 44 4F 32 46 6E 63 37

12.7 Change output 2 Logic

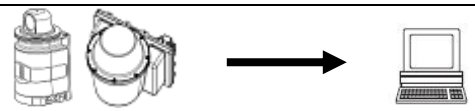


Telegram structure LD-OEM / LRS sWN DO2Logic

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Output function	String	8	DO1Logic	44 4F 32 4C 6F 67 69 63
Output 2 Function		Enum_8	1	**0 = Active_High Default** 1 = Active_Low	

Example: sWN DO2Logic →Active_High:

ASCII	**<STX>**sWN**{SPC}**DO2Logic**{SPC}**7**<ETX>**
HEX	**02** 73 57 4E **20** 44 4F 32 4C 6F 67 69 63 **20** 31 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 57 4E **20** 44 4F 32 4C 6F 67 69 63 **20** 01 **1C**



Telegram structure: sAN DO1Logic

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Output function	String	8	DO2Logic	44 4F 32 4C 6F 67 69 63

Example: sAN DO2Logic

ASCII	**<STX>**sWA**{SPC}**DO2Logic**<ETX>**
HEX	**02** 73 57 41 **20** 44 4F 32 4C 6F 67 69 63 **03**
Binary	**02 02 02 02 00 00 00 0C** 73 57 41 **20** 44 4F 32 4C 6F 67 69 63 **32**

12.8 Change Input 4 function


PC


LMS 5xx

Telegram structure: sWN DO6Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Intput function	String	10	DO3And4Fnc	44 4F 33 41 6E 64 34 46 6E 63
Output State		Enum_8	1	0 = No Function 1 = Encoder 2 = Slave Sync 3 = Digital Input	

Example: sWN In4 → In3+4 to Slave Sync

ASCII	**<STX>**sWN**{SPC}**DO3And4Fnc**{SPC}**2**<ETX>**
HEX	**02** 73 57 4E **20** 44 4F 33 41 6E 64 34 46 6E 63 **20** 02 **03**
Binary	Not available with firmware V1.10


LMS 5xx


PC

Telegram structure: sWA DO3And4Fnc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 41
Command	Output function	String	10	DO3And4Fnc	44 4F 33 41 6E 64 34 46 6E 63

Example: sWA DO3And4Fnc

ASCII	**<STX>**sWA**{SPC}**DO3And4Fnc**<ETX>**
HEX	**02** 73 57 41 **20** 44 4F 33 41 6E 64 34 46 6E 63 **03**
Binary	Not available with firmware V1.10

12.9 Reset output counter

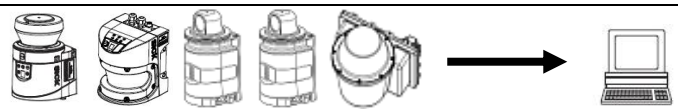
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sMN LIDrstoutpcnt

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Reset output counter	String	13	LIDrstoutpcnt	4C 49 44 72 73 74 6F 75 74 70 63 6E 74

Example: sMN LIDrstoutpcnt

ASCII	**<STX>**sMN**{SPC}**LIDrstoutpcnt**<ETX>**
HEX	**02** 73 4D 4E **20** 4C 49 44 72 73 74 6F 75 74 70 63 6E 74 **03**
Binary	**02 02 02 02 00 00 00 11** 73 4D 4E **20** 4C 49 44 72 73 74 6F 75 74 70 63 6E 74 **03**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sAN LIDrstoutpcnt

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Reset state	String	13	LIDrstoutpcnt	4C 49 44 72 73 74 6F 75 74 70 63 6E 74
Status Code		Bool_1	1	0 = Success	00 = Success

Example: sAN LIDrstoutpcnt

ASCII	**<STX>**sAN**{SPC}**LIDrstoutpcnt**{SPC}**0**<ETX>**
HEX	**02** 73 41 4E **20** 4C 49 44 72 73 74 6F 75 74 70 63 6E 74 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 13** 73 41 4E **20** 4C 49 44 72 73 74 6F 75 74 70 63 6E 74 **20** 00 **2F**

13 Other Commands

13.1 Device Ident

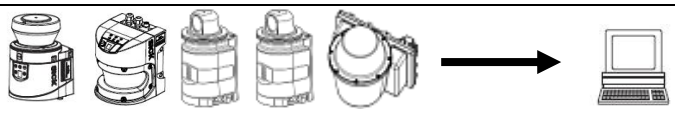
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sRN DeviceIdent/sRI 0

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3 3	sRN sRI	73 52 4E
Command	Ask Ident	String	11 1	DeviceIdent 0	44 65 76 69 63 65 49 64 65 6E 74

Example: sRN DeviceIdent

ASCII	**<STX>**sRN**{SPC}**DeviceIdent**<ETX>** or **<STX>**sRI**{SPC}**0**<ETX>**
HEX	**02** 73 52 4E **20** 44 65 76 69 63 65 49 64 65 6E 74 **03** or **02** 73 52 49 **20** 30 **03**
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**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sRA DeviceIdent

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Start the device	String	3	DeviceIdent	44 65 76 69 63 65 49 64 65 6E 74
Ident String	Ident informations	String		See examples	

Example: sRA DeviceIdent

ASCII	**<STX>**sRA**{SPC}**DeviceIdent 10 LMS10x_FieldEval 10 V1.36-21.10.2010**<ETX>**
HEX	Always ASCII answer
Binary	**02 02 02 02 00 00 00 34** 73 52 41 **20** 44 65 76 69 63 65 49 64 65 6E 74 **20** 00 10 4C 4D 53 31 30 78 5F 46 69 65 6C 64 45 76 61 6C 00 10 56 31 2E 33 36 2D 32 31 2E 31 30 2E 32 30 31 30 **62**

13.2 Device State

PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sRN SCdevicestate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask state	String	13	SCdevicestate	53 43 64 65 76 69 63 65 73 74 61 74 65

Example: sRN devicestate

ASCII	<STX>sRN{SPC}SCdevicestate<ETX>
HEX	02 73 52 4E 20 53 43 64 65 76 69 63 65 73 74 61 74 65 03
Binary	02 02 02 02 00 00 00 11 73 52 4E 20 53 43 64 65 76 69 63 65 73 74 61 74 65 30

LMS 1xx/5xx/LD-OEM/LD-LRS PC

Telegram structure: sRN devicestate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Ask state	String	13	SCdevicestate	53 43 64 65 76 69 63 65 73 74 61 74 65
Status Code		Enum_8	1	0 Busy 1 Ready 2 Error	00 Busy 01 Ready 02 Error

Example: sRN devicestate

ASCII	<STX>sRA{SPC}SCdevicestate{SPC}0<ETX>
HEX	02 73 52 41 20 53 43 64 65 76 69 63 65 73 74 61 74 65 20 00 03
Binary	02 02 02 02 00 00 00 13 73 52 41 20 53 43 64 65 76 69 63 65 73 74 61 74 65 20 00 1F

13.3 Device Name

13.3.1 Set Device Name

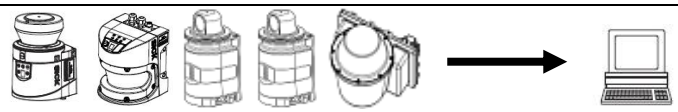
PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sWN LocationName

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set Device name	String	12	LocationName	4C 6F 63 61 74 69 6F 6E 4E 61 6D 65
Value	array of visible characters with preceeding current length	Uint_16	2	0000h - 0010h	00 00h – 00 10h
Value	Device Name	String	16		

Example: sWN LocationName D OutdoorDevice

ASCII	<STX>sWN{SPC}LocationName{SPC}D{SPC}OutdoorDevice<ETX>
HEX	02 73 57 4E 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 44 20 4F 75 74 64 6F 6F 72 44 65 76 69 63 65 03
Binary	02 02 02 02 00 00 00 20 73 57 4E 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 44 20 4F 75 74 64 6F 6F 72 44 65 76 69 63 65 71



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sWA LocationName

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Ask state	String	11	LocationName	4C 6F 63 61 74 69 6F 6E 4E 61 6D 65
Value	array of visible characters with preceeding current length	Uint_16	2	0000h - 0010h	00 00h – 00 10h
Value	Device Name	String	16		

Example: sWA LocationName D OutdoorDevice

ASCII	<STX>sWA{SPC}LocationName{SPC}D{SPC}OutdoorDevice<ETX>
HEX	02 73 57 41 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 44 20 4F 75 74 64 6F 6F 72 44 65 76 69 63 65 03
Binary	02 02 02 02 00 00 00 20 73 57 41 20 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 20 00 0D 4F 75 74 64 6F 6F 72 44 65 76 69 63 65 17

13.3.2 Ask Device Name

Telegram structure: sRN LocationName

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Set Device name	String	12	LocationName	4C 6F 63 61 74 69 6F 6E 4E 61 6D 65

Example: sRN LocationName

ASCII	<STX>sRN**{SPC}**LocationName**<ETX>**
HEX	**02** 73 52 4E **20** 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 **03**
Binary	**02 02 02 02 00 00 00 10** 73 52 4E **20** 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 **55**

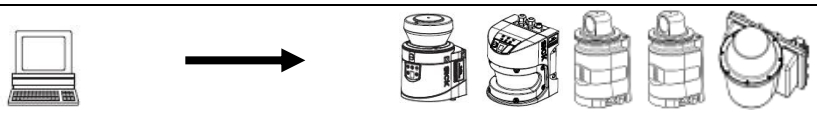
Telegram structure: sRA LocationName

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Set Device name	String	12	LocationName	4C 6F 63 61 74 69 6F 6E 4E 61 6D 65
Value	array of visible characters with preceeding current length	Uint_16	2	0000h - 0010h	00 00h – 00 10h
Value	Device Name	String	16		

Example: sRA LocationName

ASCII	**<STX>**sRA**{SPC}**LocationName**{SPC}**D**{SPC}**OutdoorDevice**<ETX>**
HEX	**02** 73 52 41 **20** 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 **20** 44 **20** 4F 75 74 64 6F 6F 72 44 65 76 69 63 65 **03**
Binary	**02 02 02 02 00 00 00 17** 73 52 41 **20** 4C 6F 63 61 74 69 6F 6E 4E 61 6D 65 **20** 00 0D 4F 75 74 64 6F 6F 72 44 65 76 69 63 65 **20**

13.4 Operating hours



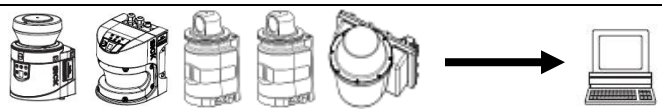
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sRN ODoprh

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask operating hours	String	6	ODoprh	4F 44 6F 70 72 68

Example: sRN ODoprh

ASCII	<STX>sRN**{SPC}**ODoprh**<ETX>**
HEX	**02** 73 52 4E **20** 4F 44 6F 70 72 68 **03**
Binary	**02 02 02 02 00 00 00 0A** 73 52 4E **20** 4F 44 6F 70 72 68 **41**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sRA ODoprh

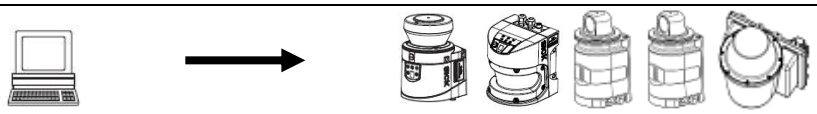
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Ask operating hours	String	6	ODoprh	4F 44 6F 70 72 68
Value	Operating hours in 1/10h	Uint_32	4	00000000h – FFFFFFFFh	00 00 00 00h – FF FF FF FFh

Example: sRA ODoprh

ASCII	**<STX>**sRA**{SPC}**ODoprh**{SPC}**2DC8B**<ETX>**
HEX	**02** 73 52 41 **20** 4F 44 6F 70 72 68 **20** 32 44 43 38 42 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 52 41 **20** 4F 44 6F 70 72 68 **20** 00 02 DC 8B **36**

Calculation of the value: 0x2DC8B (hex) → 187531 (dez) x 1h/10 = 18753.1 h

13.5 Power On Counter



PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sRN ODpwrc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask operating hours	String	6	ODpwrc	4F 44 70 77 72 63

Example: sRN ODpwrc

ASCII	<STX>sRN**{SPC}**ODpwrc**<ETX>**
HEX	**02** 73 52 4E **20** 4F 44 70 77 72 63 **03**
Binary	**02 02 02 02 00 00 00 0A** 73 52 4E **20** 4F 44 70 77 72 63 **52**

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sRA ODpwrc

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Ask operating hours	String	6	ODpwrc	4F 44 70 77 72 63
Value	Power on Counter	Uint_32	4	00000000h – FFFFFFFFh	00 00 00 00h – FF FF FF FFh

Example: sRA ODpwrc

ASCII	**<STX>**sRA**{SPC}**ODoprh**{SPC}**752D**<ETX>**
HEX	**02** 73 52 41 **20** 4F 44 70 77 72 63 **20** 752D **03**
Binary	**02 02 02 02 00 00 00 0F** 73 52 41 **20** 4F 44 70 77 72 63 **20** 00 00 00 58 **36**

13.6 IP-Address

PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sWN EIIpAddr

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set IP-address	String	8	EIIpAddr	45 49 49 50 41 64 64 72
IP-address	Set values in hex	Uint32	4	00 00 00 00h	

Example (192.168.0.1): sWN EIIpAddr

ASCII	<STX>sWN{SPC}EIIpAddr{SPC}C0{SPC}A8{SPC}0{SPC}1<ETX>
HEX	02 73 57 4E 20 45 49 49 70 41 64 64 72 20 43 30 20 41 38 20 30 20 31 03
Binary	02 02 02 02 00 00 00 11 73 57 4E 20 45 49 49 70 41 64 64 72 20 C0 A8 00 01 05

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sWA EIIpAddr

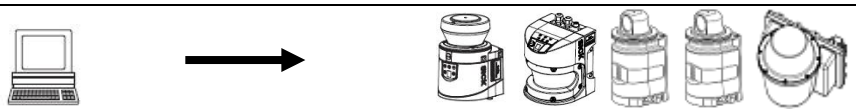
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Set IP-address	String	8	EIIpAddr	45 49 49 50 41 64 64 72

Example: sWA EIIpAddr

ASCII	<STX>sWA{SPC}EIIpAddr<ETX>
HEX	02 73 57 41 20 45 49 49 70 41 64 64 72 03
Binary	02 02 02 02 00 00 00 0D 73 57 41 20 45 49 49 70 41 64 64 72 20 63

13.7 IP- Gateway

Change oft the IP - Gateway

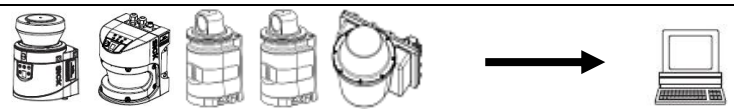


Telegram structure: sWN Elgate (Default 0.0.0.0)

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set Gateway	String	6	Elgate	45 49 67 61 74 65
Gateway address	Set values in hex	Uint32	4	00 00 00 00h	

Example (192.168.0.1): sWN Elgate

ASCII	<STX>sWN{SPC} Elgate {SPC}C0{SPC}A8{SPC}00{SPC}01<ETX>
HEX	02 73 57 4E 20 45 49 67 61 74 65 20 43 30 20 41 38 20 30 30 20 30 31 03
Binary	02 02 02 02 00 00 00 16 73 57 4E 20 45 49 67 61 74 65 20 43 30 20 41 38 20 30 30 20 30 31 5A



Telegram structure: sWA Elgate

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Set Gateway adress	String	6	Elgate	45 49 67 61 74 65

Example: sWA Elgate

ASCII	<STX>sWA{SPC} Elgate <ETX>
HEX	02 73 57 41 20 45 49 67 61 74 65 03
Binary	02 02 02 02 00 00 00 0A 73 57 41 20 45 49 67 61 74 65 5E

13.8 IP-Mask

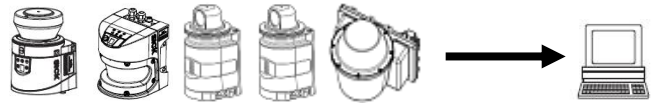
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sWN EImask

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set IP Mask	String	6	EImask	45 49 6D 61 73 6B
IP-Mask	Set values in hex	Uint32	4	00 00 00 00h	

Example (255.255.255.0): sWN EImask (Default 255, 255, 255, 0)

ASCII	**<STX>**sWN**{SPC}** EImask **{SPC}**<FF**{SPC}**FF**{SPC}** FF**{SPC}**00 **<ETX>**
HEX	**02** 73 57 4E **20** 45 49 6D 61 73 6B **20** 46 46 **20** 46 46 **20** 46 46 **20** 30 30 **03**
Binary	02 02 02 02 **00 00 00 16** 73 57 4E **20** 45 49 6D 61 73 6B **20** 46 46 **20** 46 46 **20** 46 46 **20** 30 30 **52**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

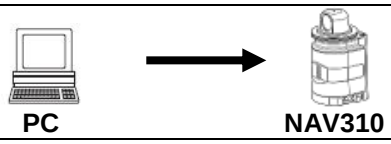
Telegram structure: sWA EImask

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Set IP-address	String	6	EImask	45 49 6D 61 73 6B

Example: sWA EImask

ASCII	**<STX>**sWA**{SPC}** EImask **<ETX>**
HEX	**02** 73 57 41 **20** 45 49 6D 61 73 6B **03**
Binary	**02 02 02 02 00 00 00 0A** 73 57 41 **20** 45 49 6D 61 73 6B **63**

13.9 Request Angle Compensation Sine (NAV310 only)

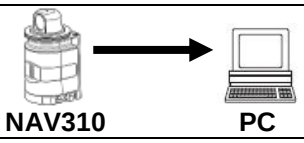


Telegram structure: sRN MCAngleCompSin

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Set IP-address	String	14	MCAngleCompSin	4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E

Request the angle compensation sine: sRN MCAngleCompSin

ASCII	**<STX>**sRN**{SPC}** 4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E **<ETX>**
HEX	**02** 73 52 4E **20** 4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E **03**
Binary	**02 02 02 02 00 00 00 12** 73 52 4E **20** 4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E **65**



Telegram structure: sRA MCAngleCompSin

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 41
Command	Angle Correction Sine	String	14	MCAngleCompSin	4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E
Amplitude	1/10000°	Int_16	2	-10000....10000	
Phase	1/10000°	Int_32	4	-3600000....3600000	
Offset	1/1000°	Int_16	2	-10000....10000	

Example: sRA MCAngleCompSin r

ASCII	**<STX>**sRA**{SPC}** MCAngleCompSin **<ETX>**
HEX	**02** 73 52 41 **20** 4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E **20** 30 **20** 30 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 18** 73 52 41 **20** 4D 43 41 6E 67 6C 65 43 6F 6D 70 53 69 6E **20** 00 **20** 00 **20** 00 **4A**

The values of the angular compensation could be retrieved form the memory of the NAV310 to improve to angular measurement accuracy.

The applied formula is :

AngleComp =
AngleRaw + (AngleCompAmp * sin(AngleRaw - AngleCompPhase) + AngleCompOffset

A example in the program language C:

angleRaw: Raw angle as float in degrees (0.000..359.999)
angleComp: Compensated angle as float in degrees (0.000..359.999)

AngleCompAmp
AngleCompPhase
AngleCompOffset: Compensation parameters as int in 1/1000 degrees

```
float compensateAngle(float angleRaw)
{
	float angleComp;

	angleRaw += ((float) AngleCompOffset)/1000.0;
	angleRaw += (((float) AngleCompAmp)/1000.0)
		* sin((DEGTORAD * (angle - ((float) AngleCompPhase)/1000.0)));
	return angleComp;
}
```

13.10 Set factory defaults

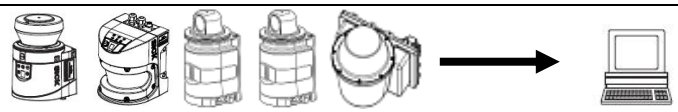
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sMN mSCloadfacdef

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	
Command	Load factory defaults	String	13	mSCloadfacdef	Binary not possible

Example: sMN mSCloadfacdef

ASCII	**<STX>**sMN**{SPC}**mSCloadfacdef**<ETX>**
HEX	**02** 73 4D 4E **20** 6D 53 43 6C 6F 61 64 66 61 63 64 65 66 **03**
Binary	Not possible



LMS 1xx/5xx/LD-OEM/LD-LRS **PC**

Telegram structure: sNA mSCloadfacdef

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	
Command	Load factory defaults	String	13	mSCloadfacdef	Binary not possible

Example: sAN mSCloadfacdef

ASCII	**<STX>**sAN**{SPC}**mSCloadfacdef**<ETX>**
HEX	**02** 73 41 4E **20** 6D 53 43 6C 6F 61 64 66 61 63 64 65 66 **03**
Binary	Not possible

13.11 Set Factory Application defaults

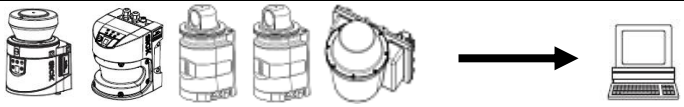
PC **LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS**

Telegram structure: sMN mSCloadappdef

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	
Command	Load Application defaults	String	13	mSCloadappdef	Binary not possible

Example: sMN mSCloadfacdef

ASCII	**<STX>**sMN**{SPC}**mSCloadfacdef**<ETX>**
HEX	**02** 73 4D 4E **20** 6D 53 43 6C 6F 61 64 61 70 70 64 65 66 **03**
Binary	Not possible



LMS 1xx/5xx/LD-OEM/LD-LRS **PC**

Telegram structure: sNA mSCloadfacdef

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	
Command	Load factory defaults	String	13	mSCloadappdef	Binary not possible

Example: sAN mSCloadappdef

ASCII	**<STX>**sAN**{SPC}** mSCloadappdef**<ETX>**
HEX	**02** 73 41 4E **20** 6D 53 43 6C 6F 61 64 66 61 63 64 65 66 **03**
Binary	Not possible

13.12 Reboot Device

PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sMN mSCreboot

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Reboot device	String	9	mSCreboot	6D 53 43 72 65 62 6F 6F 74

(includes saving all parameters)

Example: sMN mSCreboot

ASCII	**<STX>**sMN**{SPC}**mSCreboot**<ETX>**
HEX	**02** 73 4D 4E **20** 6D 53 43 72 65 62 6F 6F 74 **03**
Binary	**02 02 02 02 00 00 00 0D** 73 4D 4E **20** 6D 53 43 72 65 62 6F 6F 74 **2C**

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sAN mSCreboot

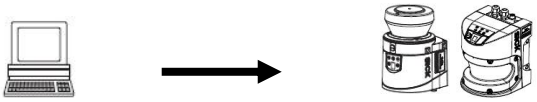
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Reboot device	String	9	mSCreboot	6D 53 43 72 65 62 6F 6F 74

Example: sAN mSCreboot

ASCII	**<STX>**sAN**{SPC}**mSCreboot**<ETX>**
HEX	**02** 73 41 4E **20** 6D 53 43 72 65 62 6F 6F 74 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 41 4E **20** 6D 53 43 72 65 62 6F 6F 74 **00**

13.13 Contamination Measurement

13.13.1 Set Contamination values



Telegram structure: sWN LCMcfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Contamination config	String	6	LCMcfg	4C 43 4D 63 66 67
Strategy		Enum_8	1	0 inactive 1 high avaliable 2 avaliable 3 sensitive 4 semi-sensitive	00 inactive 01 high avaliable 02 avaliable 03 sensitive 04 semi-sensitive
Response time		Uint_32	4	1...60	
Threshold warning		Uint_32	4	+0...+100	
Threshold error		Uint_32	4	+0...+100	

Example: sWN LCMcfg

ASCII	<STX>sWN{SPC}LCMcfg{SPC}1{SPC}+30{SPC}+65{SPC}+45<ETX>
HEX	02 73 57 4E 20 4C 43 4D 63 66 67 20 31 20 33 30 20 2B 36 35 20 2B 34 35 03
Binary	02 02 02 02 00 00 00 18 73 57 4E 20 4C 43 4D 63 66 67 20 01 00 00 00 1E 00 00 00 41 00 00 00 2D 39

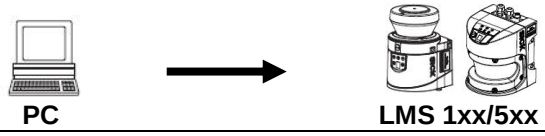
Telegram structure: sWA LCMcfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Cont. values	String	6	LCMcfg	4C 43 4D 63 66 67

Example: sWA LCMcfg

ASCII	<STX>sWA{SPC}LCMcfg<ETX>
HEX	02 73 57 41 20 4C 43 4D 63 66 67 03
Binary	02 02 02 02 00 00 00 0B 73 57 41 20 4C 43 4D 63 66 67 20 45

13.13.2 Ask for contamination settings

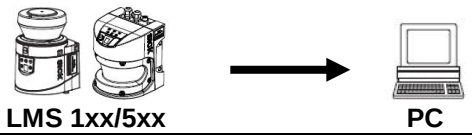


Telegram structure: sRN LCMcfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRN	73 52 4E
Command	Ask for settings	String	6	LCMcfg	4C 43 4D 63 66 67

Example: sRN LCMcfg

ASCII	**<STX>**sRN**{SPC}**LCMcfg**<ETX>**
HEX	**02** 73 57 4E **20** 4C 43 4D 63 66 67 **03**
Binary	**02 02 02 02 00 00 00 0A** 73 52 4E **20** 4C 43 4D 63 66 67 **6F**



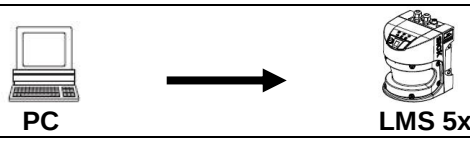
Telegram structure: sWA LCMcfg

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sRA	73 52 4E
Command	Ask for settings	String	6	LCMcfg	4C 43 4D 63 66 67
Strategy		Enum_8	1		00 inactive 01 high avaliable 02 avaliable 03 sensitive 04 semi-sensitive
Response time		Uint_16	2	1...60	00 00h..00 3Ch
Threshold warning		Uint_16	2	+0...+100	00 00h..00 64h
Threshold error		Uint_16	2	+0...+100	00 00h..00 64h

Example: sWA LCMcfg

ASCII	**<STX>**sRA**{SPC}**LCMcfg**{SPC}**1**{SPC}**1**{SPC}**46**{SPC}**1E**<ETX>**
HEX	**02** 73 57 41 **20** 4C 43 4D 63 66 67 **20** 31 **20** 31 **20** 34 36 **20** 31 45 **03**
Binary	**02 02 02 02 00 00 00 12** 73 52 41 20 4C 43 4D 63 66 67 **20** 01 00 01 00 46 00 1E **18**

13.14 Synchronisation Phase

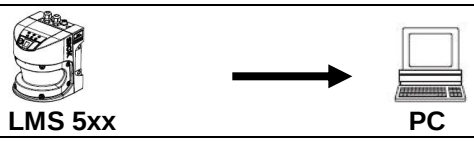


Telegram structure: sWN SYPhase

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	SWN	73 57 4E
Command	Set sync phase	String	7	SYPhase	53 59 50 68 61 73 65

Example: sWN SYPhase +90

ASCII	**<STX>**sWN**{SPC}**SYPhase**{SPC}**+90**<ETX>**
HEX	**02** 73 57 4E **20** 53 59 50 68 61 73 65 **20** 2B 39 30 **03**
Binary	Not available with firmware V1.10



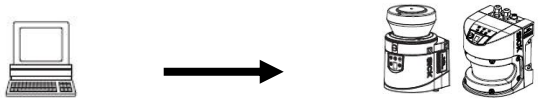
Telegram structure: sWA SYPhase

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Sync phase	String	7	SYPhase	53 59 50 68 61 73 65

Example: sWA SYPhase

ASCII	**<STX>**sWA**{SPC}**SYPhase**<ETX>**
HEX	**02** 73 57 41 **20** 53 59 50 68 61 73 65 **03**
Binary	Not available with firmware V1.10

13.15 Function Front Panel

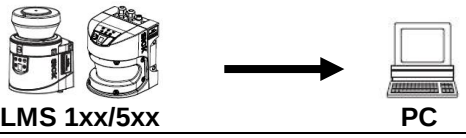


Telegram structure: sWN LMLfpFcn

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set function of the front panel	String	8	LMLfpFcn	4C 4D 4C 66 70 46 63 6E
Reserved		Bool	1	1	01
LED Function Q1/Q2		Enum_8	1	0 = No Function 1 = Application 2 = Command	00 = No Function 01 = Application 02 = Command
LED Function OK/Stop		Enum_8	1	0 = No Function 1 = Application 2 = Command	00 = No Function 01 = Application 02 = Command
Display Function		Enum_8	1	0 = Application 1 = Command	00 = Application 01 = Command

Example: sWN LMLfpFcn

ASCII	**<STX>**sWN**{SPC}**LMLfpFcn**{SPC}**1**{SPC}**1**{SPC}**0**{SPC}**1**<ETX>**
HEX	**02** 73 57 4E **20** 4C 4D 4C 66 70 46 63 6E **20** 31 **20** 31 **20** 30 **20** 31 **03**
Binary	***02 02 02 02 00 00 00 11*** *73 57 4E **20** 4C 4D 4C 66 70 46 63 6E **20** 01 01 00 01* ***7B***

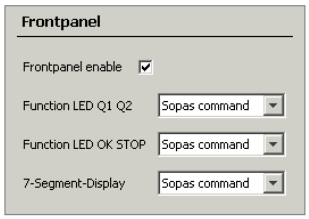


Telegram structure: sWN LMLfpFcn

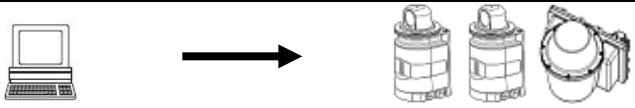
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	Front LED function	String	10	mLMLSetLed	4C 4D 4C 66 70 46 63 6E

Example: sWA LMLfpFcn

ASCII	**<STX>**sWA**{SPC}**LMLfpFcn**<ETX>**
HEX	**02** 73 57 41 **20** 4C 4D 4C 66 70 46 63 6E **03**
Binary	**02 02 02 02 00 00 00 0D** 73 57 41 **20** 4C 4D 4C 66 70 46 63 6E **20 75**



13.16 Set Function LED 1



PC **NAV310/LD-OEM/LD-LRS (**LED´s are not visible on LD-LRS)

Telegram structure: sWN HMIfpFcn_Y1

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set function of the front pane LED 1	String	11	HMIfpFcn_Y1	48 4D 49 66 70 46 63 6E 5F 59 31
LED Function Q1/Q2		Enum_8	1	0 = No Function Default 1 = Application 2 = Command	00 = No Function 01 = Application 02 = Command

Example: sWN HMIfpFcn_Y1 = Command

ASCII	**<STX>**sWN**{SPC}** HMIfpFcn_Y1**{SPC}** 2**<ETX>**
HEX	**02** 73 57 4E **20** 48 4D 49 66 70 46 63 6E 5F 59 31 **20** 32 **03**
Binary	***02 02 02 02 00 00 00 11*** *73 57 4E* ***20*** 48 4D 49 66 70 46 63 6E 5F 59 31 ***20*** *02 4E*

NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sAN HMIfpFcn_Y1

Telegram structure: sWN HMIfpFcn_Y1

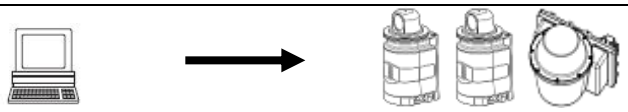
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	LED 1function	String	11	m HMIfpFcn_Y1	48 4D 49 66 70 46 63 6E 5F 59 31

Example: sWA LMLfpFcn

ASCII	**<STX>**sWA**{SPC}** HMIfpFcn_Y1**<ETX>**
HEX	**02** 73 57 41 **20** 48 4D 49 66 70 46 63 6E 5F 59 31 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 57 41 **20** 48 4D 49 66 70 46 63 6E 5F 59 31 **63**

This commands the LED 1 (amber) to a certain function. In case of (2 =command) the LED 1 could be activated by the telegram.

13.17 Set Function LED 2



PC **NAV310/LD-OEM/LD-LRS (**LED´s are not visible on LD-LRS)

Telegram structure: sWN HMIfpFcn_Y2

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWN	73 57 4E
Command	Set function of the front pane LED 1	String	11	HMIfpFcn_Y2	48 4D 49 66 70 46 63 6E 5F 59 32
LED Function Q1/Q2		Enum_8	1	0 = No Function Default 1 = Application 2 = Command	00 = No Function 01 = Application 02 = Command

Example: sWN HMIfpFcn_Y2 = Command

ASCII	**<STX>**sWN**{SPC}** HMIfpFcn_Y2**{SPC}** 2**<ETX>**
HEX	**02** 73 57 4E **20** 48 4D 49 66 70 46 63 6E 5F 59 32 **20** 32 **03**
Binary	***02 02 02 02 00 00 00 11*** *73 57 4E* ***20*** 48 4D 49 66 70 46 63 6E 5F 59 32 ***20*** *02* ***7D***

NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: sAN HMIfpFcn_Y2

Telegram structure: sWN HMIfpFcn_Y2

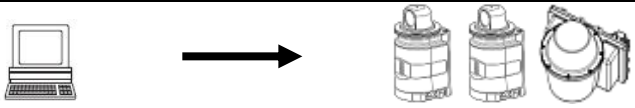
Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 57 41
Command	LED 1function	String	11	HMIfpFcn_Y2	48 4D 49 66 70 46 63 6E 5F 59 32

Example: sWA HMIfpFcn_Y2

ASCII	**<STX>**sWA**{SPC}** HMIfpFcn_Y2**<ETX>**
HEX	**02** 73 57 41 **20** 48 4D 49 66 70 46 63 6E 5F 59 32 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 57 41 **20** 48 4D 49 66 70 46 63 6E 5F 59 32 **60**

This commands the LED 2 (amber) to a certain function. In case of (2 =command) the LED 2 could be activated by the telegram.

13.18 Set LED 1 or 2



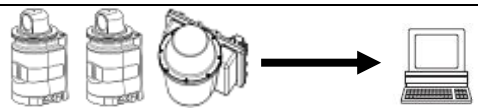
PC **NAV310/LD-OEM/LD-LR (**LED´s are not visible on LD-LRS)

Telegram structure: sMN mHMISetLed

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Set function of the front panel	String	10	mHMISetLed	6D 48 4D 49 53 65 74 4C 65 64
LED Number 1 / 2		Uint_8	1	3 = LED 1 4 = LED 2	3 = LED 1 4 = LED 2
LED Function OFF / ON		Uint_8	1	0 = off 1 = on	0 =off 1 = on

Example: sMN mHMISetLed 1 = on

ASCII	**<STX>**sMN**{SPC}** 6D 48 4D 49 53 65 74 4C 65 64 **{SPC} 3 {SPC}** 1 **<ETX>**
HEX	**02** 73 4D 4E **20** 6D 48 4D 49 53 65 74 4C 65 64 **20** 33 **20** 31 **03**
Binary	***02 02 02 02 00 00 00 12*** *73 4D 4E* ***20*** 6D 48 4D 49 53 65 74 4C 65 64 ***20*** 0***3 20*** *01* ***7C***



NAV310/LD-OEM/LD-LRS **PC**

Telegram structure: : sAN mHMISetLed success

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sWA	73 41 4E
Command	LED status	String	10	mHMISetLed	6D 48 4D 49 53 65 74 4C 65 64
Result		Bool	1	1 = success 0 = No success	

Example: sAN mHMISetLed

ASCII	**<STX>**sAN**{SPC}** mHMISetLed **{SPC} 1 <ETX>**
HEX	**02** 73 41 4E **20** 6D 48 4D 49 53 65 74 4C 65 64 **20** 31 **03**
Binary	**02 02 02 02 00 00 00 10** 73 41 4E **20** 6D 48 4D 49 53 65 74 4C 65 64 **20** 01 **53**

If the amber LED 1 / 2 are assigned to command, the this command may be used to switch the LED´s on and off

14 Standby Mode

PC LMS 1xx//NAV310/LD-OEM/LD-LRS

Telegram structure: sMN LMCstandby

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sMN	73 4D 4E
Command	Set device to Standby	String	10	LMCstandby	4C 4D 43 73 74 61 6E 64 62 79

Example: sMN LMCstandby

ASCII	**<STX>**sMN**{SPC}**LMCstandby**<ETX>**
HEX	**02** 73 4D 4E **20** 4C 4D 43 73 74 61 6E 64 62 79 **03**
Binary	**02 02 02 02 00 00 00 0E** 73 4D 4E **20** 4C 4D 43 73 74 61 6E 64 62 79 **65**

LMS 1xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sAN LMCstandby

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	String	3	sAN	73 41 4E
Command	Set device to Standby	String	10	LMCstandby	4C 4D 43 73 74 61 6E 64 62 79
Status Code	accepted when value is 0	Enum_8	1	0 no Error	00 no Error

Example: sAN LMCstandby

ASCII	**<STX>**sAN**{SPC}**LMCstandby**{SPC}**0**<ETX>**
HEX	**02** 73 41 4E **20** 4C 4D 43 73 74 61 6E 64 62 79 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 10** 73 41 4E **20** 4C 4D 43 73 74 61 6E 64 62 79 **20** 00 **49**

15 Start Measurement

PC LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sMN LMCstartmeas

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	string	3	sMN	73 4D 4E
Command	Start Measurement	string	12	LMCstartmeas	4C 4D 43 73 74 61 72 74 6D 65 61 73

Example: sMN LMCstartmeas

ASCII	<STX>sMN{SPC}LMCstartmeas<ETX>
HEX	02 73 4D 4E 20 4C 4D 43 73 74 61 72 74 6D 65 61 73 03
Binary	02 02 02 02 00 00 00 10 73 4D 4E 20 4C 4D 43 73 74 61 72 74 6D 65 61 73 68

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS PC

Telegram structure: sAN LMCstartmeas

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	string	3	sAN	73 41 4E
Command	Start Mesurement	string	12	LMCstartmeas	20 4C 4D 43 73 74 61 72 74 6D 65 61 73
Status Code	accepted when value is 0	Enum8	1	0 no Error 1 not allowed	00 no Error 01 not allowed

Example: sAN LMCstartmeas

ASCII	<STX>sAN{SPC}LMCstartmeas{SPC}0<ETX>
HEX	02 73 41 4E 20 4C 4D 43 73 74 61 72 74 6D 65 61 73 20 30 03
Binary	02 02 02 02 00 00 00 12 73 41 4E 20 4C 4D 43 73 74 61 72 74 6D 65 61 73 20 00 44

```
Connecting to 192.168.1.112 ...
TCP connection error :10061
Connecting to 192.168.1.112 ...
Connected to 192.168.1.112
sMN SetAccessMode 03 F4724744sAN SetAccessMode
1sMN LMCstartmeassAN LMCstartmeas 0
```

16 Stop Measurement

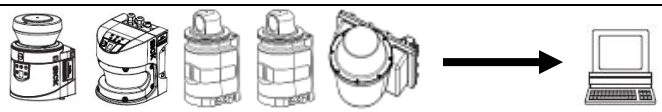
PC → LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS

Telegram structure: sMN LMCstopmeas

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	string	3	sMN	73 4D 4E
Command	Stop Mesurement	string	11	LMCstopmeas	4C 4D 43 73 74 6F 70 6D 65 61 73

Example: sMN LMCstopmeas

ASCII	**<STX>**sMN**{SPC}**LMCstopmeas**<ETX>**
HEX	**02** 73 4D 4E **20** 4C 4D 43 73 74 6F 70 6D 65 61 73 **03**
Binary	**02 02 02 02 00 00 00 0F** 73 4D 4E **20** 4C 4D 43 73 74 6F 70 6D 65 61 73 **10**



LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS → PC

Telegram structure: sAN LMCstopmeas

Telegram	Description	Variable	Length	Values ASCII	Values Binary
Command Type	Sopas by name	string	3	sAN	73 41 4E
Command	Stop Mesurement	string	11	LMCstopmeas	4C 4D 43 73 74 6F 70 6D 65 61 73
Status Code	accepted when value is 0	Enum8	1	0 no Error 1 not allowed	00 no Error 01 not allowed

Example: sAN LMCstopmeas

ASCII	**<STX>**sAN**{SPC}**LMCstopmeas**{SPC}**0**<ETX>**
HEX	**02** 73 41 4E **20** 4C 4D 43 73 74 6F 70 6D 65 61 73 **20** 30 **03**
Binary	**02 02 02 02 00 00 00 11** 73 41 4E **20** 4C 4D 43 73 74 6F 70 6D 65 61 73 **20** 00 **3C**

17 Sopas Error Codes

LMS 1xx/5xx/NAV310/LD-OEM/LD-LRS **PC**

sFA x

Name	Number	Explanation
Sopas_Ok	0	No error
Sopas_Error_METHODIN_ACCESSDENIED	1	Wrong userlevel, access to method not allowed.
Sopas_Error_METHODIN_UNKNOWNINDEX	2	Trying to access a method with an unknown Sopas index.
Sopas_Error_VARIABLE_UNKNOWNINDEX	3	Trying to access a variable with an unknown Sopas index
Sopas_Error_LOCALCONDITIONFAILED	4	Local condition violated, e.g. giving a value that exceeds the minimum or maximum allowed value for this variable
Sopas_Error_INVALID_DATA	5	Invalid data given for variable, this errorcode is deprecated (is not used anymore)
Sopas_Error_UNKNOWN_ERROR	6	An error with unknown reason occurred, this errorcode is deprecated
Sopas_Error_BUFFER_OVERFLOW	7	The communication buffer was too small for the amount of data that should be serialised
Sopas_Error_BUFFER_UNDERFLOW	8	More data was expected, the allocated buffer could not be filled.
Sopas_Error_ERROR_UNKNOWN_TYPE	9	The variable that shall be serialised has an unknown type. This can only happen when there are variables in the firmware of the device that do not exist in the released description of the device. This should never happen.
Sopas_Error_VARIABLE_WRITE_ACCESSDENIED	10	It is not allowed to write values to this variable. Probably the variable is defined as read-only
Sopas_Error_UNKNOWN_CMD_FOR_NAMESERVER	11	When using names instead of indices, a command was issued that the nameserver does not understand
Sopas_Error_UNKNOWN_COLA_COMMAND	12	The CoLa protocol specification does not define the given command, command is unknown
Sopas_Error_METHODIN_SERVER_BUSY	13	It is not possible to issue more than one command at a time to an SRT device.
Sopas_Error_FLEX_OUT_OF_BOUNDS	14	An array was accessed over its maximum length
Sopas_Error_EVENTREG_UNKNOWNINDEX	15	The event you wanted to register for does not exist, the index is unknown
Sopas_Error_COLA_A_VALUE_OVERFLOW	16	The value does not fit into the value field, it is

Name	Number	Explanation
		too large
Sopas_Error_COLA_A_INVALID_CHARACTER	17	Character is unknown, probably not alphanumeric
Sopas_Error_OSAI_NO_MESSAGE	18	Only when using SRTOS in the firmware and distributed variables this error can occur. It is an indication that no operating system message could be created. This happens when trying to GET a variable.
Sopas_Error_OSAI_NO_ANSWER_MESSAGE	19	This is the same as Sopas_Error_OSAI_NO_MESSAGE with the difference that it is thrown when trying to PUT a variable.
Sopas_Error_INTERNAL	20	Internal error in the firmware, probably a pointer to a parameter was null
Sopas_Error_HubAddressCorrupted	21	The Sopas Hubaddress is either too short or too long.
Sopas_Error_HubAddressDecoding	22	The Sopas Hubaddress is invalid, it can not be decoded (Syntax)
Sopas_Error_HubAddressAddressExceeded	23	Too many hubs in the address
Sopas_Error_HubAddressBlankExpected	24	When parsing a HubAddress an expected blank was not found. The HubAddress is not valid
Sopas_Error_AsyncMethodsAreSuppressed	25	An asynchronous method call was made although the device was built with “AsyncMethodsSuppressed”. This is an internal error that should never happen in a released device.
Sopas_Error_ComplexArraysNotSupported	26	Device was built with “ComplexArraysSuppressed” because the compiler does not allow recursions. But now a complex array was found. This is an internal error that should never happen in a released device.

18 Problems

Every answer of the LMS starts with a separat framed string:
<STX>sSI 2 1<ETX><STX>“Answer“<ETX>

It is an event from sopas, send command: <STX>sEN SCParmChngd 0<ETX> to deactivate that event