



# LMS511 /2XX UPGRADE CONSIDERATIONS

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**SICK**  
Sensor Intelligence.

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# LMS IN TRAFFIC APPLICATION

MOUNTING A LMS - PREPARE THE LITE JUNCTION BOX - SICK PN 2062346



Note the two socket cap screws protruding from the base of the junction box - Sick PN 2062346  
The closed lid of this IP67 rated box keeps these two mounting screws from being lost.

# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – LITE JUNCTION BOX WIRING FOR LITE LMS511 SCANNERS

### Serial Connection

Remove Wires from Terminals 2 or 10 or Terminals 1, 2, 10, 9 off of the LMS211 Hood Connector. A “Shield” to GND RS wire is connected, when there is a RS-232C serial interface.

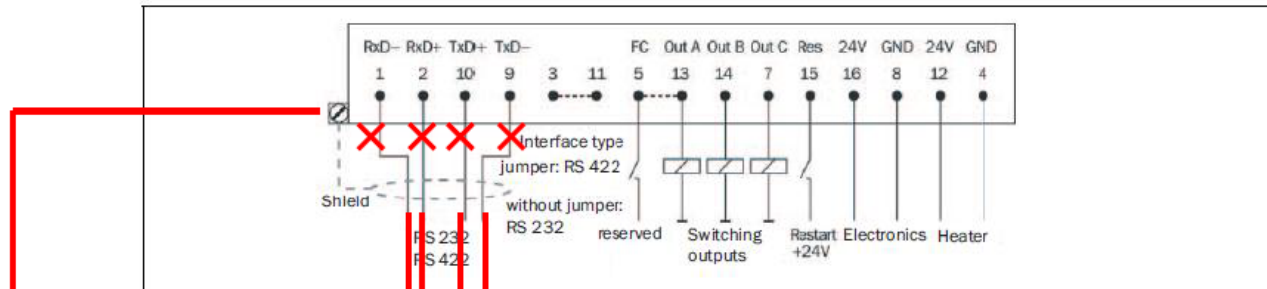


Fig. 7-6: LMS211/LMS221 (switching outputs): Connection diagram of the terminals

Pin	definition
01	RD- / RxD
02	TD- / TxD
03	RD+
04	TD+
05	GND RS
06	Sync IN
07	GND Sync IN
08	IN 1
09	GND IN 1
10	OUT 1
11	OUT 2
12	OUT 3
13	GND OUT 3
14	24 V OUT 1-3
15	24 V SYS
16	GND SYS
17	24 V HEAT
18	GND HEAT
19	-
20	-
21	-
22	-

# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – LITE JUNCTION BOX WIRING FOR LITE LMS511 SCANNERS

Output Connection Remove up to three wires associated with Out A , B, C off of the LMS211 Hood Connector

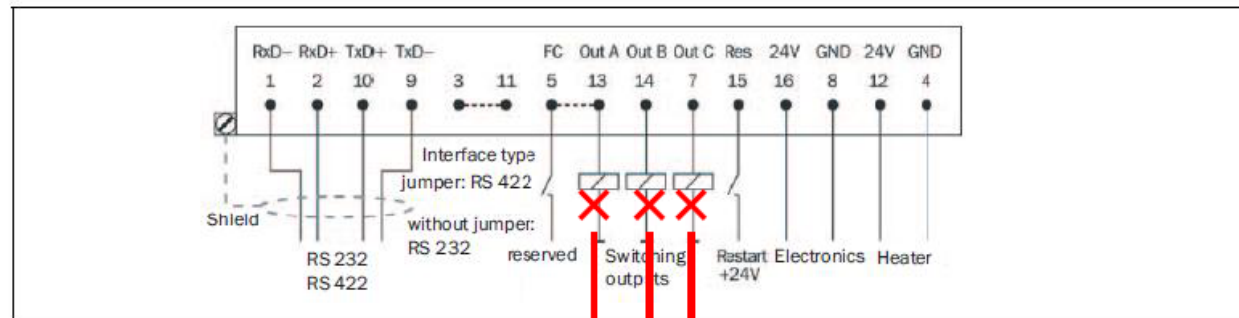


Fig. 7-6: LMS211/LMS221 (switching outputs): Connection diagram of the terminals

Pin definition	LMS5xx	LITE
01	RD- / RxD	
02	TD- / TxD	
03	RD+	
04	TD+	
05	GND RS	
06	Sync IN	
07	GND Sync IN	
08	IN 1	
09	GND IN 1	
10	OUT 1	
11	OUT 2	
12	OUT 3	
13	GND OUT 3	
14	24 V OUT 1-3	
15	24 V SYS	
16	GND SYS	
17	24 V HEAT	
18	GND HEAT	
19	-	
20	-	
21	-	
22	-	



# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – LITE JUNCTION BOX WIRING FOR LITE LMS511 SCANNERS

**Power Connection** Remove up to four power wires associated 24 V Electronics and GND Electronics, and 24 V Heater and GND Heater, off of the LMS211 Hood Connector

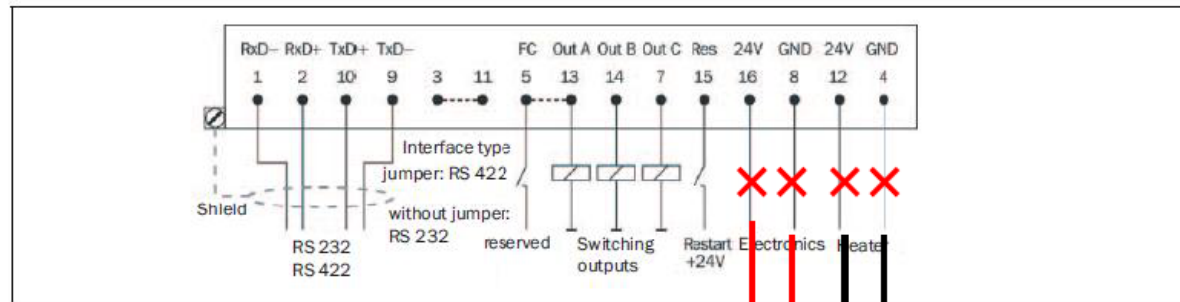


Fig. 7-6: LMS211/LMS221 (switching outputs): Connection diagram of the terminals

Pin	Definition
01	RD- / RxD
02	TD- / TxD
03	RD+
04	TD+
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06	Sync IN
07	GND Sync IN
08	IN 1
09	GND IN 1
10	OUT 1
11	OUT 2
12	OUT 3
13	GND OUT 3
14	24 V OUT 1-3
15	24 V SYS
16	GND SYS
17	24 V HEAT
18	GND HEAT
19	-
20	-
21	-
22	-

Jumpers between SYS 24 V and 24 V OUT 1-3 and GND SYS to GND OUT 3, enables LMS511 Outputs.

Heater power if equipped, follow the black path.

# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – PRO JUNCTION BOX WIRING - SICK PN 2063034

### Serial Connection

Remove Wires from Terminals 2 or 10 or Terminals 1, 2, 10, 9 off of the LMS211 Hood Connector. A “Shield” to GND RS wire is connected, when there is a RS-232C serial interface.

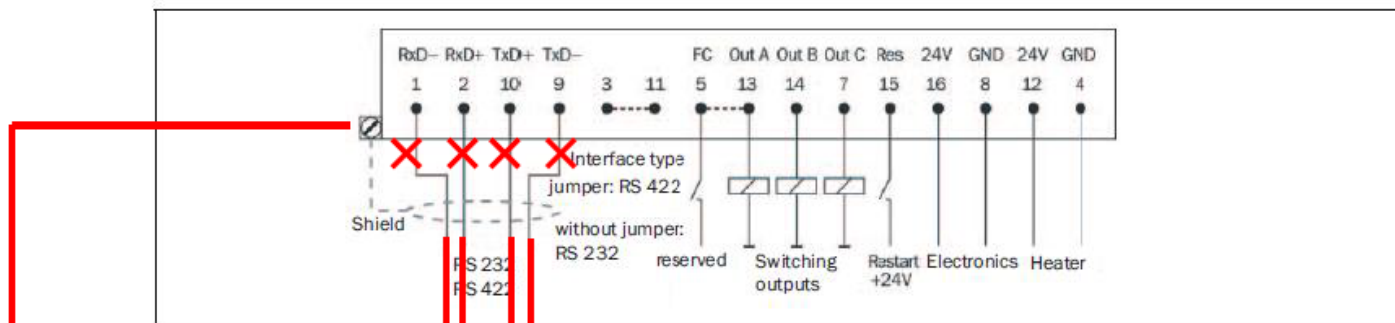


Fig. 7-6: LMS211/LMS221 (switching outputs): Connection diagram of the terminals

Pin definition	LMS5xx	PRO
01	RD- / RxD	
02	TD- / TxD	
03	RD+	
04	TD+	
05	GND RS	
06	IN 1	
07	IN 2	
08	IN 3	
09	IN 4 / Sync IN	
10	GND IN 1/2/3/4	
11	OUT 1	
12	OUT 2	
13	OUT 3	
14	OUT 4	
15	OUT 5	
16	OUT 6 / Sync OUT	
17	GND OUT 3-6	
18	24 V OUT 1-6	
19	24 V SYS	
20	GND SYS	
21	24 V HEAT	
22	GND HEAT	

# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – PRO JUNCTION BOX WIRING- SICK PN 2063034

Output Connection Remove up to three wires associated with Out A , B, C off of the LMS211 Hood Connector

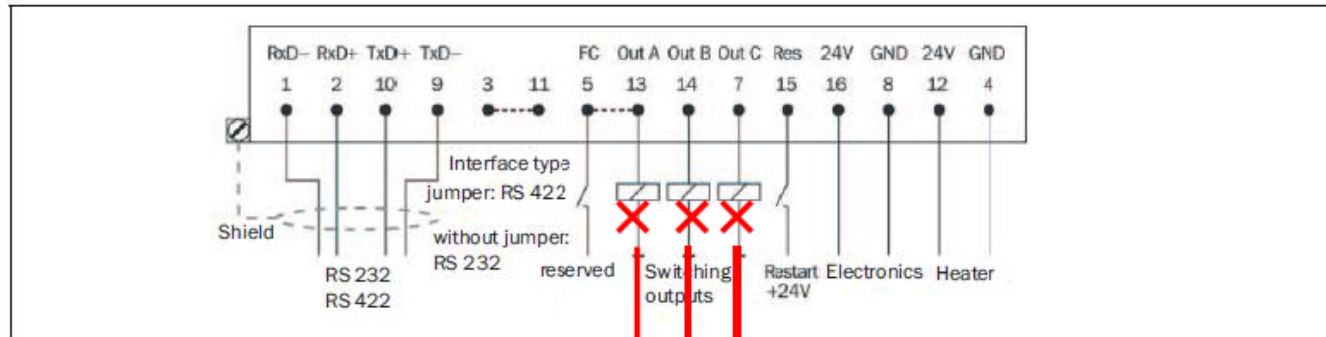


Fig. 7-6: LMS211/LMS221 (switching outputs): Connection diagram of the terminals

Pin definition LMS5xx PRO
01 RD- / RxD
02 TD- / TxD
03 RD+
04 TD+
05 GND RS
06 IN 1
07 IN 2
08 IN 3
09 IN 4 / Sync IN
10 GND IN 1/2/3/4
11 OUT 1
12 OUT 2
13 OUT 3
14 OUT 4
15 OUT 5
16 OUT 6 / Sync OUT
17 GND OUT 3-6
18 24 V OUT 1-6
19 24 V SYS
20 GND SYS
21 24 V HEAT
22 GND HEAT





# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – PRO JUNCTION BOX WIRING- SICK PN 2063034

**Power Connection** Remove up to four power wires associated 24 V Electronics and GND Electronics, and 24 V Heater and GND Heater, off of the LMS211 Hood Connector

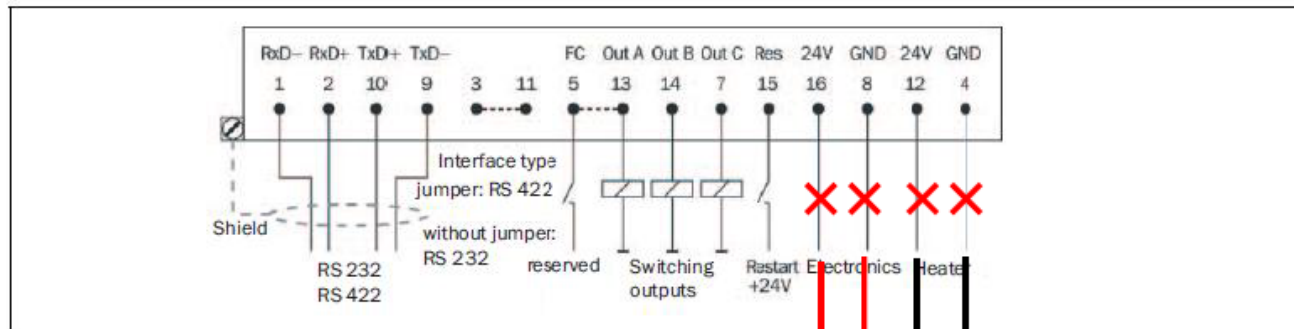


Fig. 7-6: LMS211/LMS221 (switching outputs): Connection diagram of the terminals

Pin	definition
01	RD- / RxD
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05	GND RS
06	IN 1
07	IN 2
08	IN 3
09	IN 4 / Sync IN
10	GND IN 1/2/3/4
11	OUT 1
12	OUT 2
13	OUT 3
14	OUT 4
15	OUT 5
16	OUT 6 / Sync OUT
17	GND OUT 3-6
18	24V OUT 1-6
19	24V SYS
20	GND SYS
21	24V HEAT
22	GND HEAT

Jumpers between SYS 24 V and 24 V OUT 1-6 and GND SYS to GND OUT 3-6, enables LMS511 Outputs.

Heater power if equipped, follow the black path.

# LMS IN TRAFFIC APPLICATION

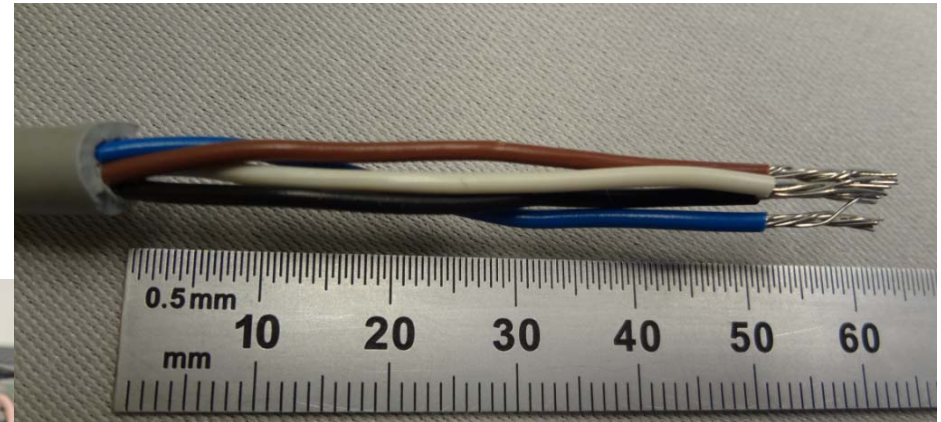
MOUNTING A LMS - TERMINATE THIS LITE JUNCTION BOX - SICK PN 2062346

Communications Cable



I / O Cable

Power Cable

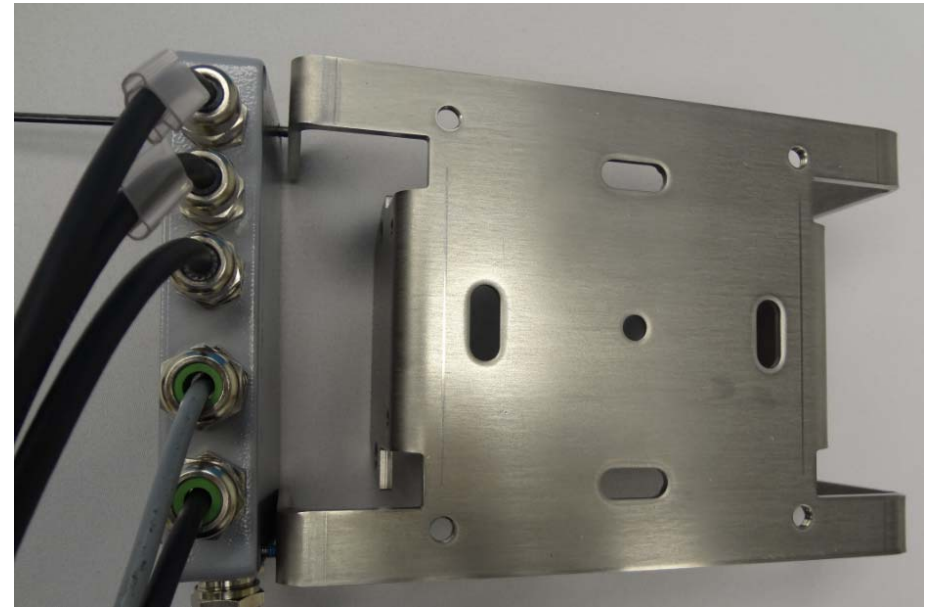


Wire Dressing

# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS - MOUNT THE SICK PN 2062346 LITE JUNCTION BOX

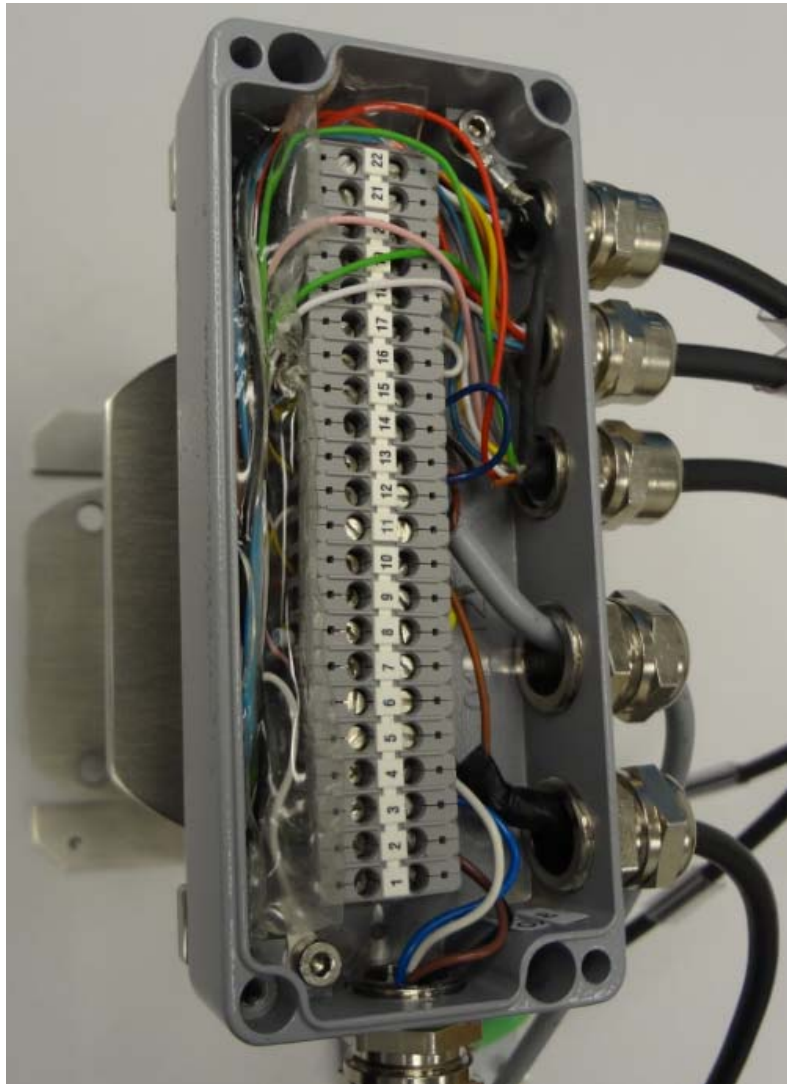
Use 3 mm allen wrench to attach junction box to LMS wing bracket Sick PN 2059271



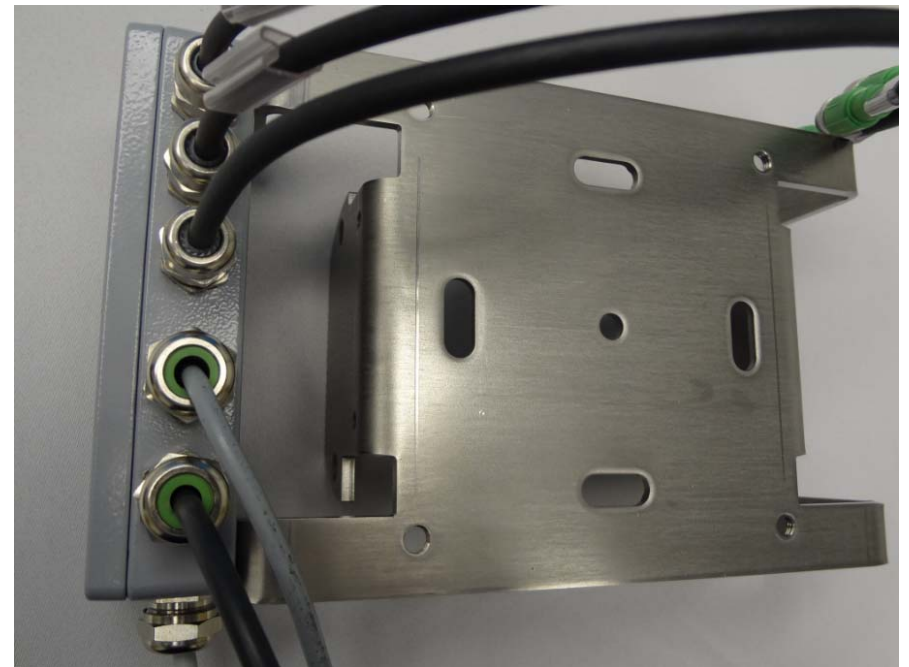


# LMS IN TRAFFIC APPLICATION

MOUNTING A LMS - MOUNT THE SICK PN 2062346 LITE JUNCTION BOX



Lite junction box attached to LMS wing bracket  
Sick PN 2059271



# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – WEATHER PROTECTION HOOD / LMS511 ASSEMBLY

This weather hood Sick PN 2063050, is able to spring apart to permit the LMS511 scanner to slip inside.

4 x 5 mm allen socket cap screws and nuts for locking the hood closed

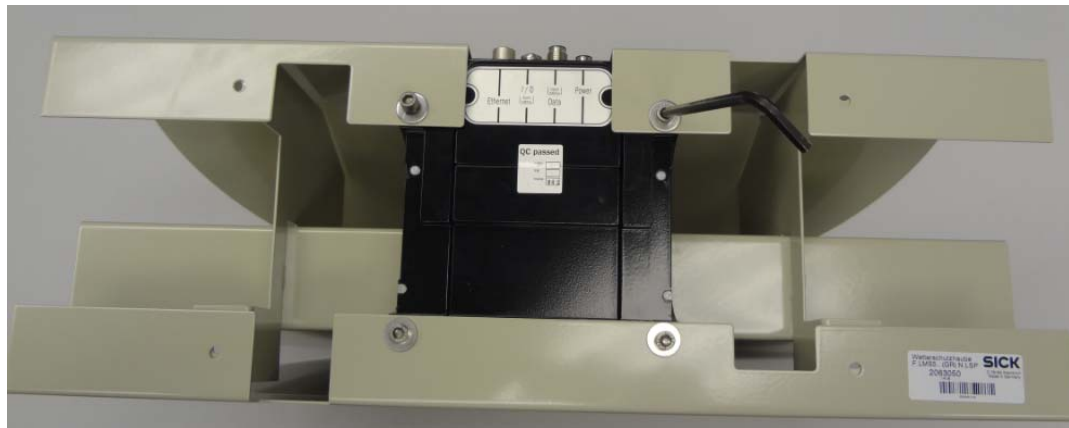


4 x 5 mm allen socket cap screws for securing the LMS511 scanner.

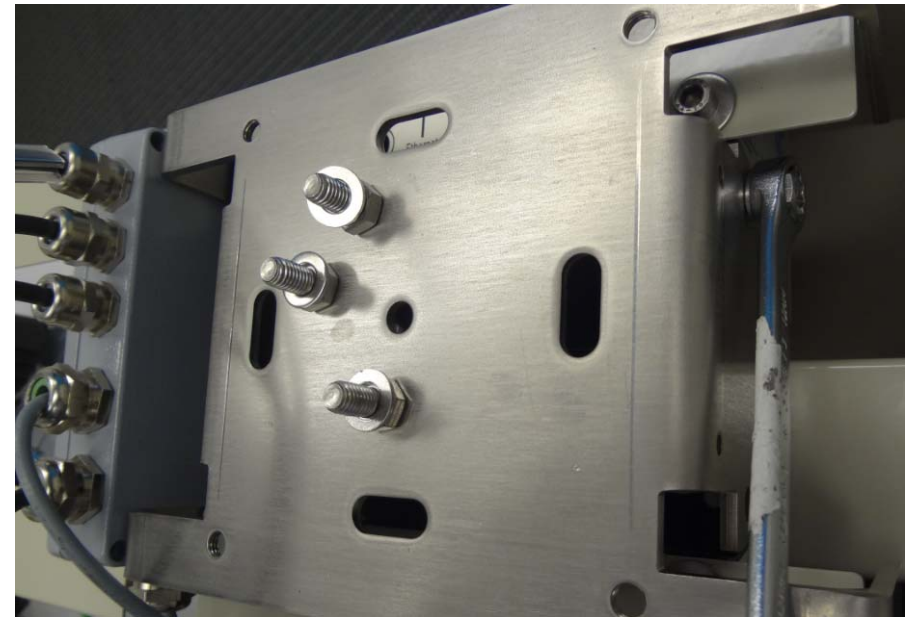
# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS - WEATHER PROTECTION HOOD / LMS511 ASSEMBLY

Secure the LMS511 to the hood with a 5 mm allen wrench, all four socket cap screws.



Then slide in the wing / junction box assembly onto the rear of the LMS511. Attach all four bolts - two on each side of the assembly with a 13 mm wrench.



# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS - WEATHER PROTECTION HOOD / LMS511 ASSEMBLY

Lock the hood spring action by securing with a 5 mm allen wrench and 10 mm wrench, all four socket cap screws and nuts.



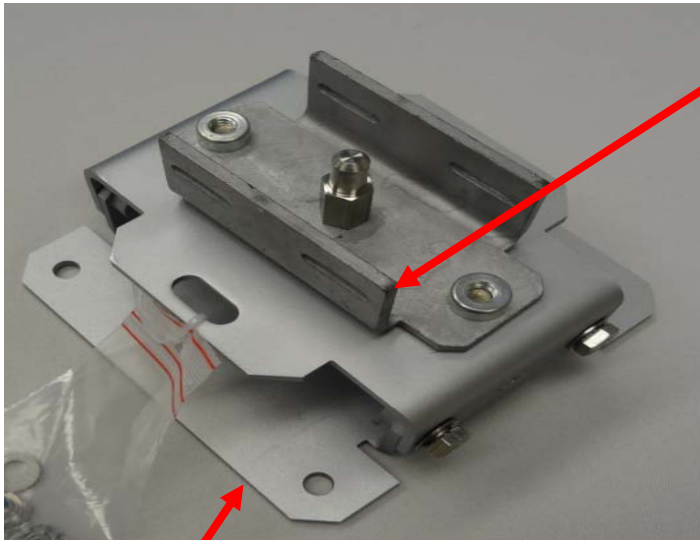
Wing bracket, junction box, and LMS511 are now completely assembled into the hood assembly. The hood is also locked shut.





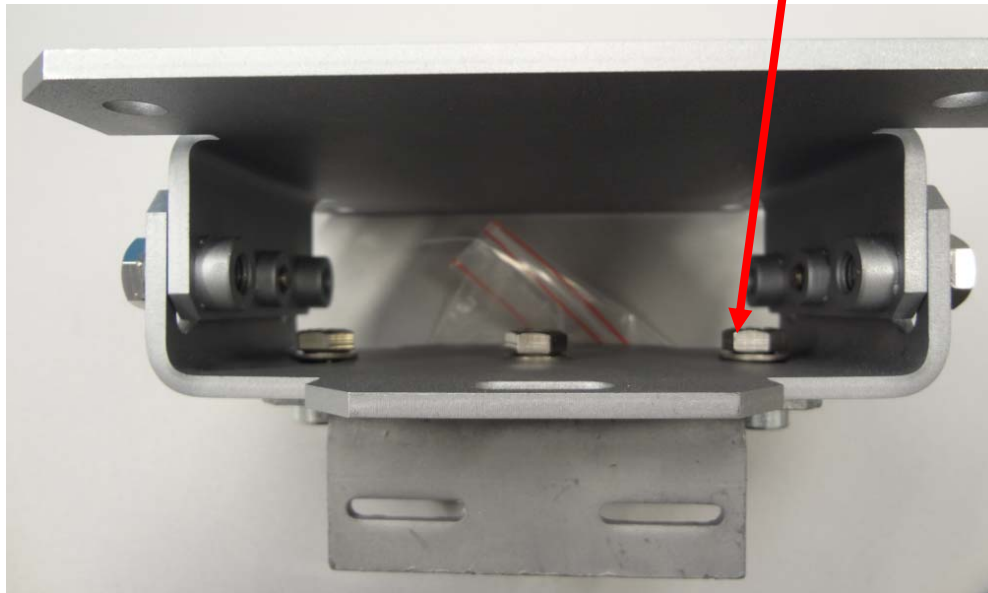
# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS - SWIVEL BRACKET / MAST BRACKET ASSEMBLY



Sick PN 2018304 Attach the swivel bracket (using a 13 mm wrench) - Sick PN 2018303, to the mast bracket - Sick PN 2018304. Secure the center post first, since this is the most finger clearance to stage the screw for the post. A total of three screws are needed.

Sick PN 2018303





# LMS IN PORT APPLICATIONS

## MOUNTING A LMS – MAST ATTACHMENT

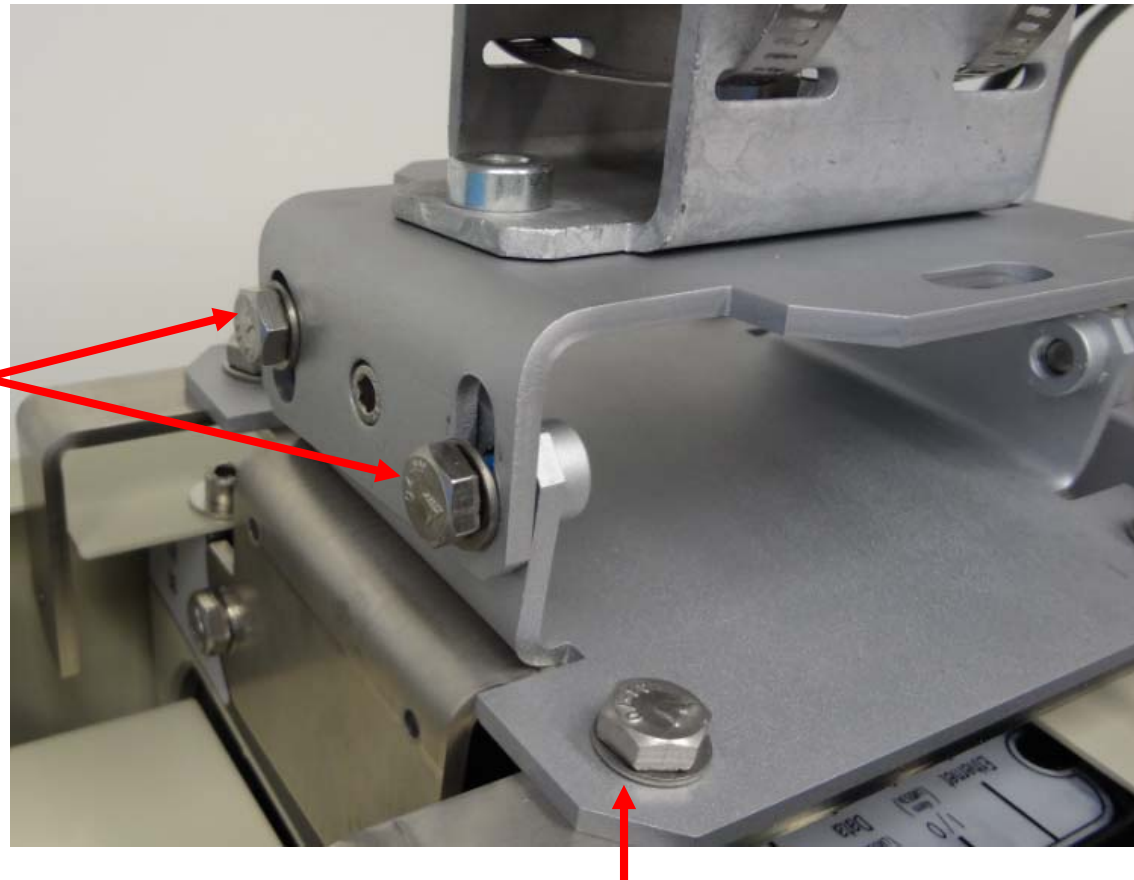
Thread through the two slots of the mast bracket, two large diameter hose clamps.  
Tighten the hose clamps to the mast.



# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS – MAST ATTACHMENT

The scanner pivot angle can be fine tuned by releasing and then securing these two bolts on each side of the swivel bracket



Secure the swivel and mast attachment bracket combination, to the weather hood / LMS511 assembly, using four bolts and a 13 mm wrench.

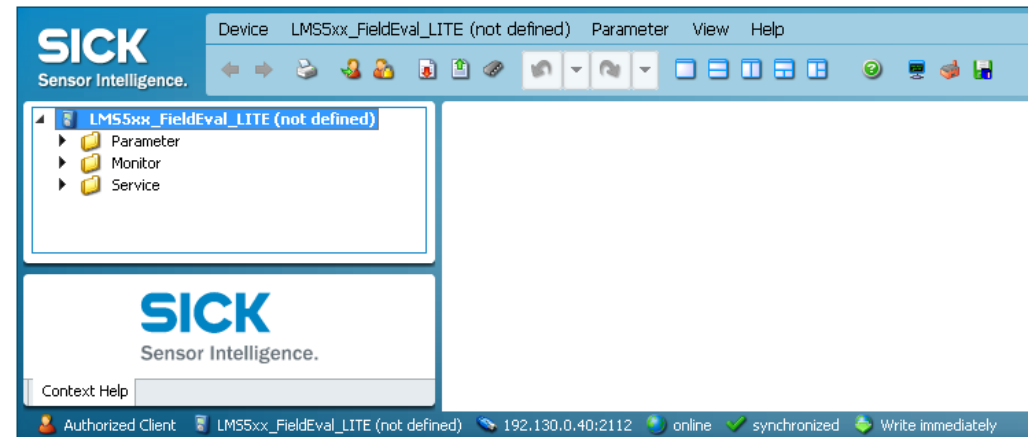
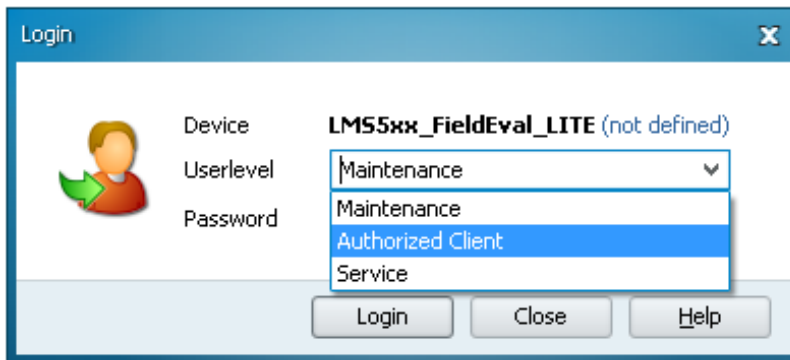
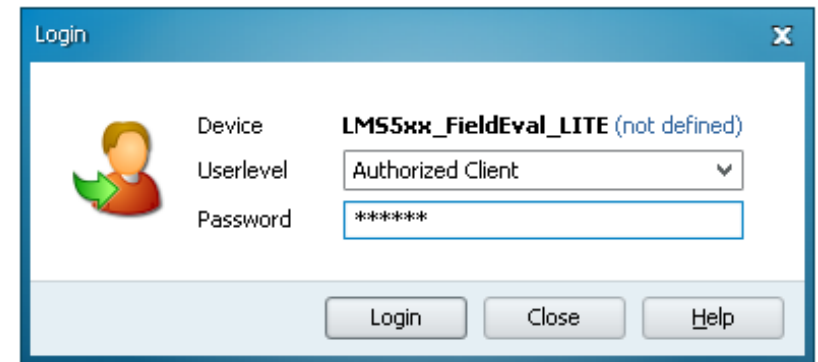
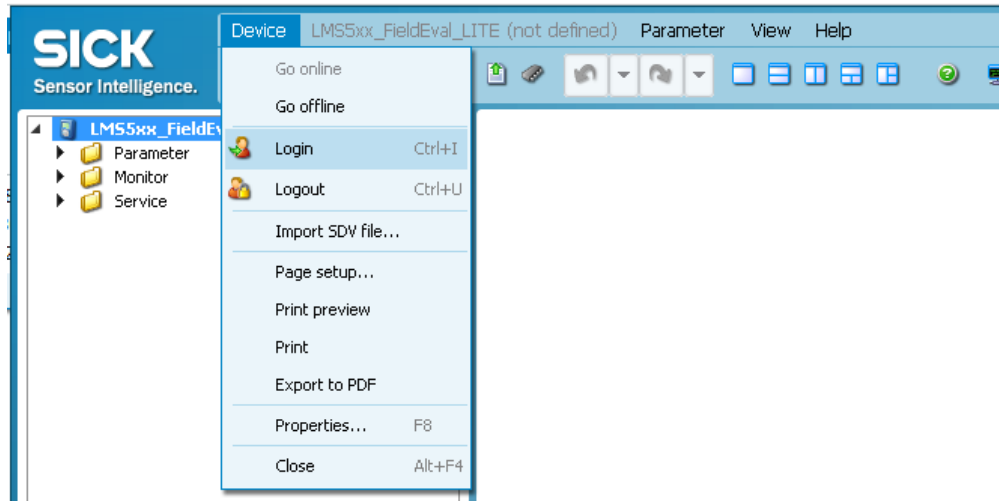
# LMS IN TRAFFIC APPLICATION

## MOUNTING A LMS - MAST ATTACHMENT



# LMS IN TRAFFIC - SOPAS CONFIGURATION

## SOPAS LOGIN AS AUTHORIZED CLIENT - FOR LMS511 TRAFFIC CONFIGURATION



# LMS IN TRAFFIC - SOPAS CONFIGURATION

## RECOMMENDED FILTER SETTINGS FOR TRAFFIC APPLICATIONS

The screenshot displays the configuration interface for the LMS5xx sensor. On the left, a tree view shows the configuration structure under 'LMS5xx\_FieldEval\_LITE (not defined)'. The 'Filter' option is selected. The main area shows the configuration for the 'General filter' and 'Fog filter'.

**General filter**

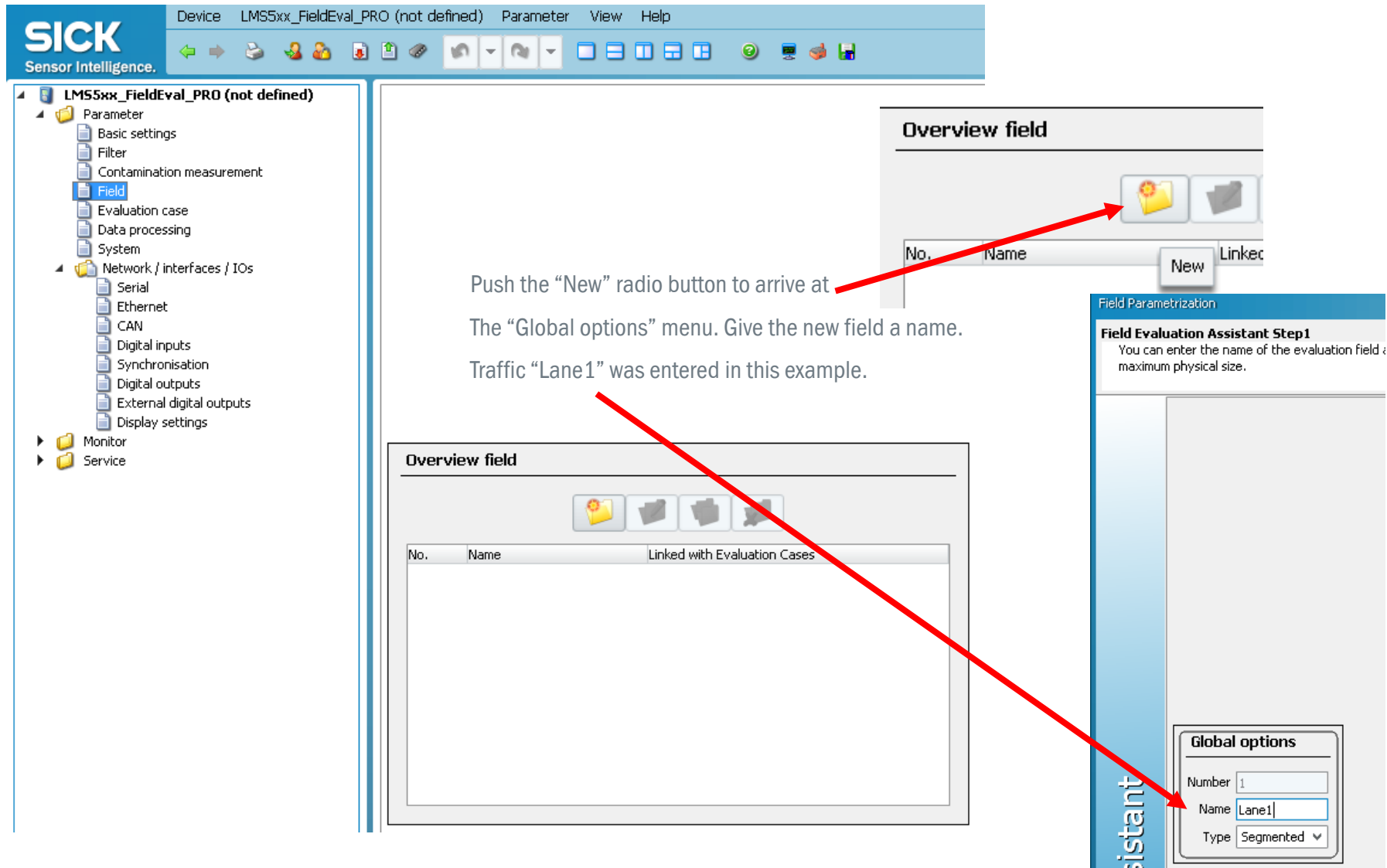
- Echo filter: First echo (dropdown)
- Particle filter enable:

**Fog filter**

- Fog filter enable:
- Sensitivity: A slider control with a sun icon on the left and a cloud icon on the right. The slider is positioned at the far left.
- Level: 1 (input field)

# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION



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Device LMS5xx\_FieldEval\_PRO (not defined) Parameter View Help

- Parameter
  - Basic settings
  - Filter
  - Contamination measurement
  - Field**
  - Evaluation case
  - Data processing
  - System
- Network / interfaces / IOs
  - Serial
  - Ethernet
  - CAN
  - Digital inputs
  - Synchronisation
  - Digital outputs
  - External digital outputs
  - Display settings
- Monitor
- Service

**Overview field**

Push the "New" radio button to arrive at the "Global options" menu. Give the new field a name. Traffic "Lane1" was entered in this example.

**Field Evaluation Assistant Step 1**  
You can enter the name of the evaluation field and its maximum physical size.

**Global options**

No.	Name	Linked with Evaluation Cases
-----	------	------------------------------

Number: 1  
Name: Lane1  
Type: Segmented

# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION

### Field Parametrization

#### Field Evaluation Assistant Step2

Defines the end points for an evaluation field. The end points represent the outer limit of the evaluation field.

**Field endpoint parameter**

Manual input  Name  No.

Manual input

TeachIn field contour

TeachIn reference contour

x (m)

y (m)

-80 -70 -60 -50 -40 -30 -20 -10

Select TeachIn reference contour

# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION

Field Parametrization

**Field Evaluation Assistant Step2**  
Defines the end points for an evaluation field. The end points represent the outer limit of the evaluation field.

**Field endpoint parameter**

TeachIn reference contour Name Lane1 No. 1

0.0°

TeachIn reference contour

First angle	72 °
Last angle	110 °
Positive distance	200 mm
Negative distance	100 mm

Start TeachIn Close

Positive distance - is the area above the road that will not be monitored to detect objects. First angle and last angle correspond to the positions of each edge of one lane, relative to the scanner position above the lane.

valuation Assistant



# LMS IN TRAFFIC - SOPAS CONFIGURATION


## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION

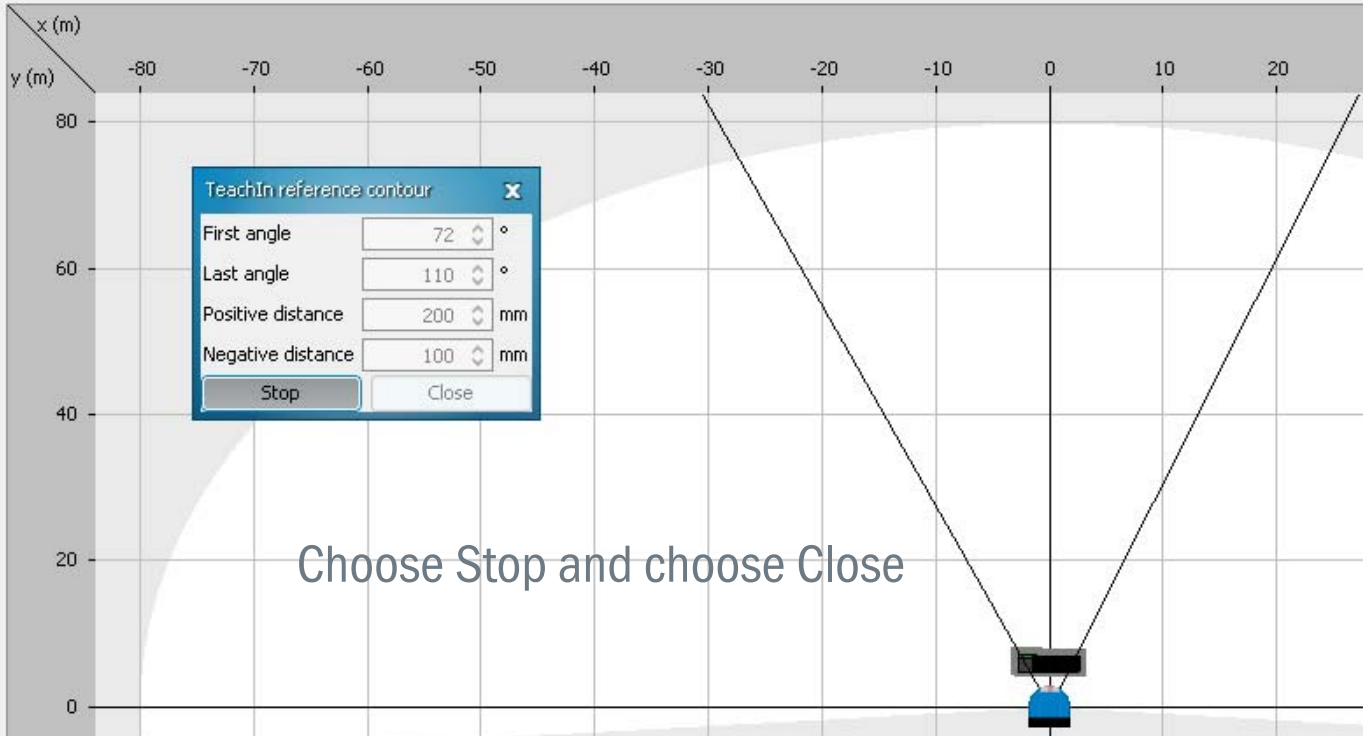
Field Parametrization

**Field Evaluation Assistant Step2**  
Defines the end points for an evaluation field. The end points represent the outer limit of the evaluation field.

**Field endpoint parameter**

TeachIn reference contour ▾ Name Lane1 No. 1

 0.0°



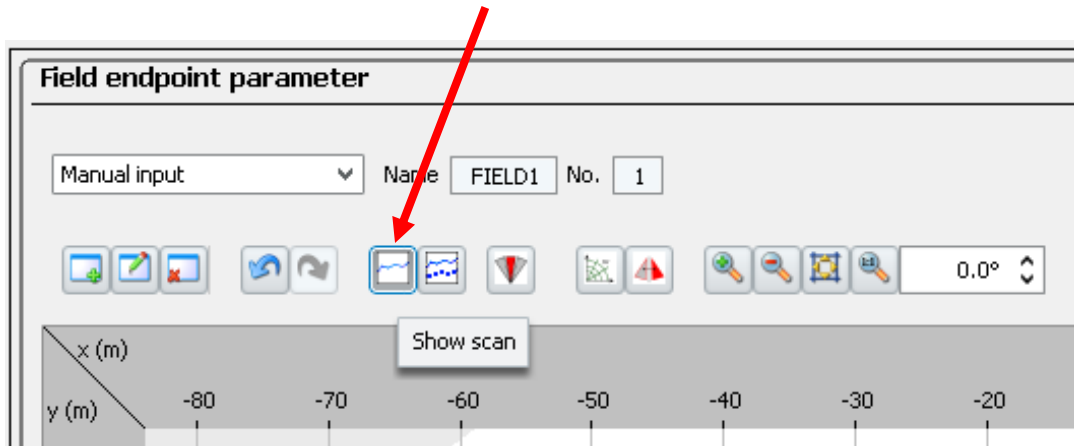
valuation Assistant

Choose Stop and choose Close

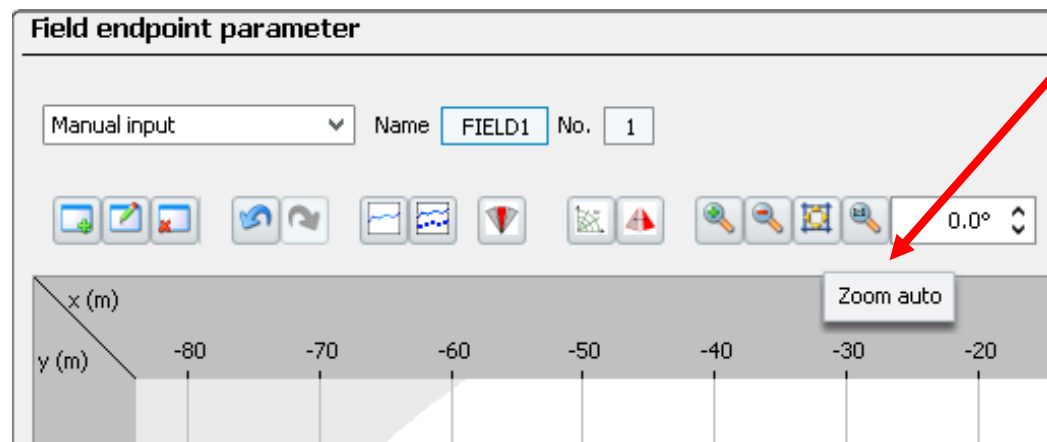
# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION

For visualizing the contour field,  
push the “Show scan” button



For visualizing the contour field,  
also push the “Zoom auto” button



# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION

One Road Lane

Field Parametrization

Field Evaluation Assistant Step2  
Defines the end points for an evaluation field. The end points represent the outer limit of the evaluation field.

Field endpoint parameter

Manual input Name Lane1 No. 1

Detection area is within the blue boundaries.

The scanner in blue is above the road peering down to the road surface.

TeachIn reference contour

First angle	72
Last angle	110
Positive distance	200 mm
Negative distance	100 mm
Start TeachIn	Close

Coordinate

X [m]	-1.056
Y [m]	0.641
d [m]	1.235
$\beta$ [°]	148.748

Field Points segmented

X [m]	Y [m]
1.935	5.956
1.907	5.958
1.853	5.969
1.824	5.967
1.795	5.966
1.743	5.979
1.713	5.975
1.685	5.975
1.631	5.982
1.603	5.981
1.574	5.980
1.521	5.988
1.492	5.985
1.464	5.983
1.411	5.994
1.383	5.992
1.356	5.991
1.302	5.998
1.275	5.998
1.248	5.998
1.194	6.002
1.167	6.002
1.139	6.001

# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE CONTOUR FIELD FOR VEHICLE DETECTION

Zooming-in on the road surface, one can see the blue trace which is the laser beam tracing the road

Field Parametrization

**Field Evaluation Assistant Step2**  
Defines the end points for an evaluation field. The end points represent the outer limit of the evaluation field.

Field endpoint parameter

Manual input Name Lane1 No. 1

0.0°

In the positive distance area that is above the pavement, animals that are less than 200 mm tall cannot be detected.

X [m]	Y [m]
1.935	5.956
1.907	5.958
1.853	5.969
1.824	5.967
1.795	5.966
1.743	5.979
1.713	5.975
1.685	5.975
1.631	5.982
1.603	5.981
1.574	5.980
1.521	5.988
1.492	5.985
1.464	5.983
1.411	5.994
1.383	5.992
1.356	5.991
1.302	5.998
1.275	5.998
1.248	5.998
1.194	6.002
1.167	6.002
1.120	6.001

Coordinate

X -0.174 m  
Y 5.221 m  
d 5.224 m  
 $\beta$  91.904°

Field Points segmented

< Back Next > Finish Cancel

# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE - VEHICLE DETECTION OUTPUT ANNUNCIATION

EvalCase Parametrization

**Field Evaluation Assistant Step1**  
The evaluation strategy defines how the evaluation field is evaluated. Choose the physical output.

**Global options**

Name: Evaluation Case Lane 1

**Input**

Input 1: Not Relevant

**Evaluation area**

Field name: Lane 1      Number: 1

**Evaluation strategy**

Strategy: Contour      Obstruction protection:  Inactive  Active

Response time: 50 ms

Blanking size: 200 mm

**Evaluation result**

Output No.: Output1

eld Evaluation Assistant

These are recommended settings for the scanner to issue an output every time a vehicle is detected:

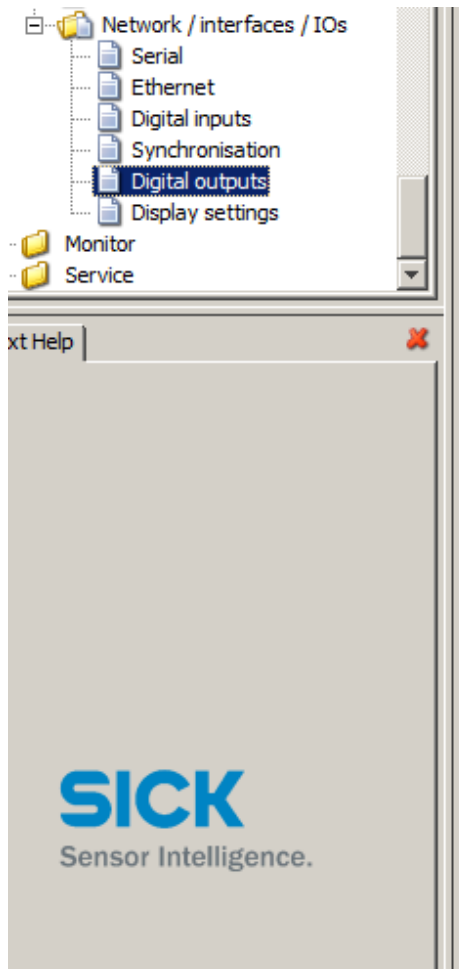
Response time - When the time elapse is 50 ms after vehicle detection, Output1 becomes active.

Blanking size - All vehicles have to be greater than or equal to 200 mm across.

We choose Output1 to toggle when a vehicle is detected.

# LMS IN TRAFFIC - SOPAS CONFIGURATION

## CREATING A LANE - VEHICLE DETECTION OUTPUT ANNUNCIATION



**Output 1**

Output 1  Logic

Restart

**Output 2**

Output 2  Logic

Restart

**Output 3**

Output 3  Logic

Restart

These are recommended settings for the scanner to issue an output every time a vehicle is detected:

Output1 becomes active, when it drops from 24 VDC to almost 0 VDC.

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