Member of the BPW Group

MOUNTING INSTRUCTION

Lighting and plug connections

ERMAX®

CONTENTS

Venligst bemærk:

This document is to be used as a guidance. As each trailer, where the described products are being used, may vary in design and configuration, this guide does not legally commit ERMAX A/S to any claims resulting of mounting failures or as result of misuse. This document does not commit ERMAX A/S beyond our general sales and delivery conditions.

ERMAX® - YOUR PARTNER FOR COMPLETE LIGHTING SYSTEMS

ERMAX A/S

- develops, manufactures and distributes a wide range of products within lighting, junction boxes and cable systems for commercial vehicles and industrial applications.

A unique set-up with a combination of our factory in Denmark and licensed production with our own tools at a number of selected and exclusively certified partners worldwide, offers an extensive, highly competitive and qualitative range of products.

The Brand - ERMAX®

Founded in 1948 the Ermax® lighting technology has been manufactured for the automotive industry for almost 7 decades.

Ermax is the partner, when it comes to understanding and fulfilling the needs of lighting; with tail lights, warning lights, beacons, side markers or work lights – nowadays bulb, LED as well as in hybrid technologies. These lighting components are being offered within a complete solution concept of ADR approved cables and, where required, junction boxes as well as mounting hardware. All cable sets are configured with multiple connector types to ensure the best lifetime service ability.

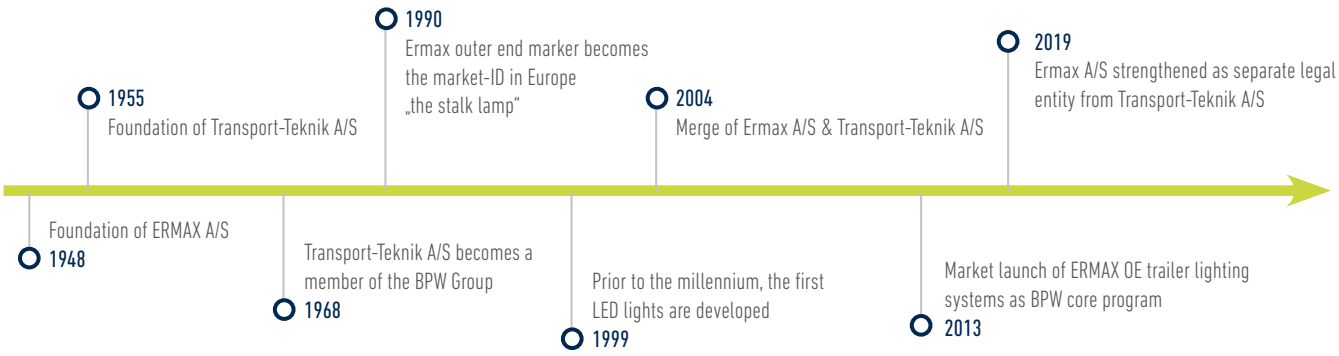
Why Ermax® Lighting Systems ?

Partnership through quality, reliability and competence.

Our competence in partnering with you, is our extensive experience in being an OEM partner with quality and on time delivery as daily focus to ensure expectations and execution match entirely with your requirements.

All our products hold the necessary certifications for E-marking, IP-predection, ADR-approval and design predections to ensure exclusive design and durability as well as non-violation of patents.

With reliable and planned processes you will reach your goal safely with us as partner.



ERMAX CABLE SYSTEMS FOR 24V

Directory and introduction to connections

Ermax connections consist of 2 poled, 7 poled and 15 poled connections and plug connections – connections which are all of high quality making it easy and simple to mount and maintain. These connections are used in Ermax cable- and lighting systems for trailer 24V and can be combined according to individual requirements from our customers.

All connections are re-moulded and tested according to IP69K and ADR approved.

2 poled Super Seal

2 poled Super Seal plug and socket make mounting of position lamps, side marking lamps, marking lamps and other2 poled components easy and simple.
100% waterproof.

- Easy and simple mounting
- Easy change when damage on the lamp

2 poled click-in

2 poled Click-in makes mounting of position lamps, side marking lamps, marking lamps and other 2 poled components easy and simple.

- Easy and simple mounting
- Fast positioning
- Time-consuming parts replacement

7 poled AMP 1.5

7 poled AMP 1.5 are used for connecting Ermax rear lamps to the cable system. The plug can be used when connecting other extra equipment as e.g. working lamps

- Rounded off pin-legs
- Extremely durable connection
- Standard plug connection - usual in the market

Lubrication of the connectors

The Ermax plug connections are designed to be used in dry conditon and without any use of grease. Should you wish to add lubricating grease before assembly, only DC 4 Electrical Compound may be used to maintain the warranty.

15 poled Ermax Bajoynet

15 poled Ermax bajoynet are used for connecting front box, main cable and rear cable and e.g. mounting of connection box.

- Rounded off pin-legs
- Extremely durable connection
- Standard plug connection - usual in the market

	Socket from the main cable	Side marker	Position lamp	License plate lamp	Out end marker lamp	Work lamp	Reverse lamp	Interior lighting	Tail lamp	Reversing light	Junction box	Central connection	Rear cable
2 poled Super Seal	✓	✓	✓	✓	✓	✓	✓	✓			✓		
2 poled Click-In		✓	✓	✓	✓	✓	✓						
7 poled AMP 1.5	✓								✓	✓	✓		
15 poled Ermax Bajoynet											✓	✓	✓

2 POLED PLUGS

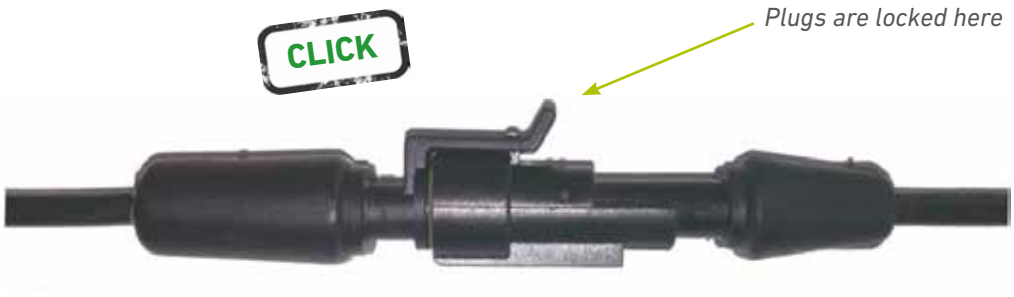
Super Seal, 2-poled plug and socket

Mounting of plugs

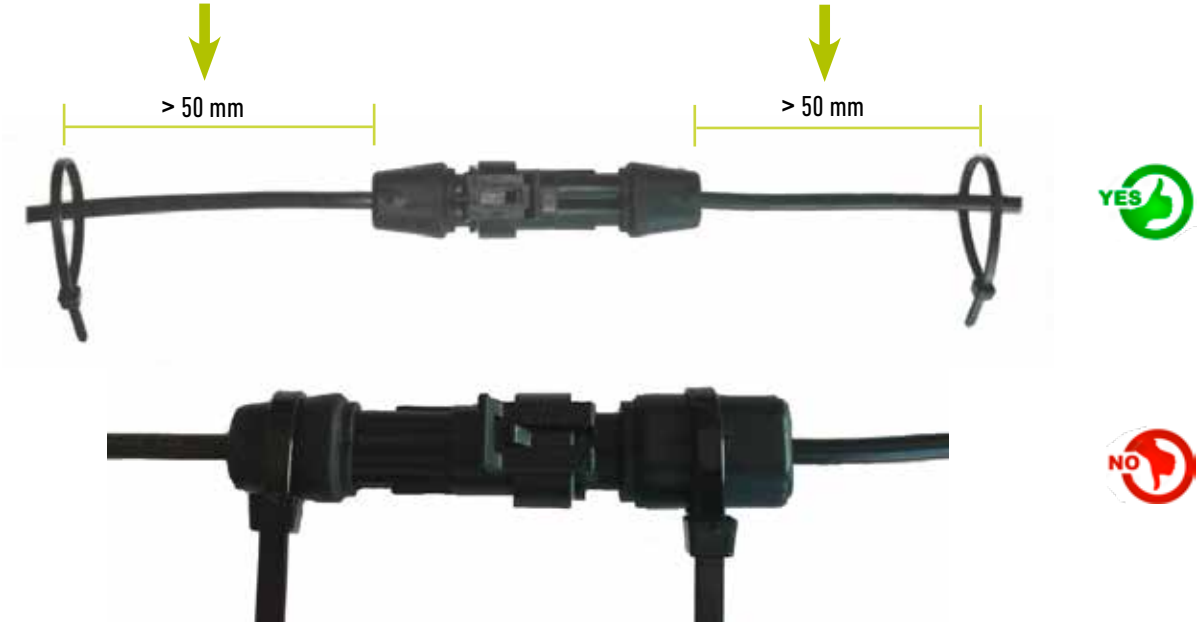
1. Place the plugs so that the locks at plug and socket are opposite each other.

2. Press plug and socket against each other.

3. Connect the plugs so that plug and socket are totally connected. None of the 3 ”yellow lips” must be visible after mounting, otherwise the plug is not 100% tight. When hearing a “click” and the “yellow lips” are not visible, the connection is made correctly.



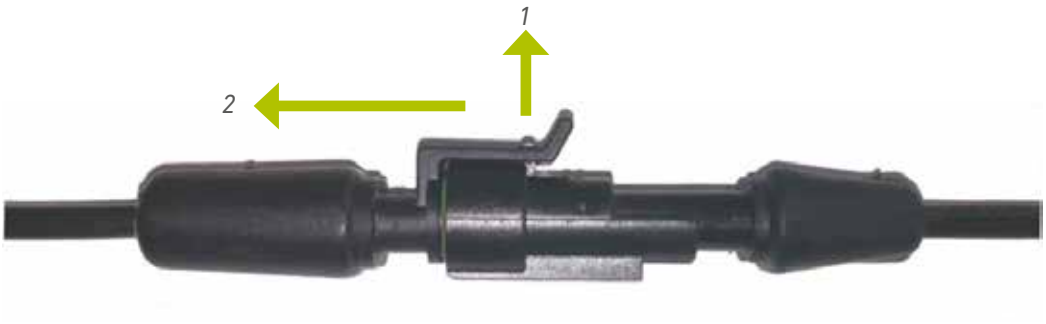
4. Cable ties can be used for binding, but must be straped min. 50 mm away from the plug.



5. Make a loop (R ≥ 10 x Ø) at both ends for draining of water/moisture from the cable. Avoid to bend the cable sharply at the plug.

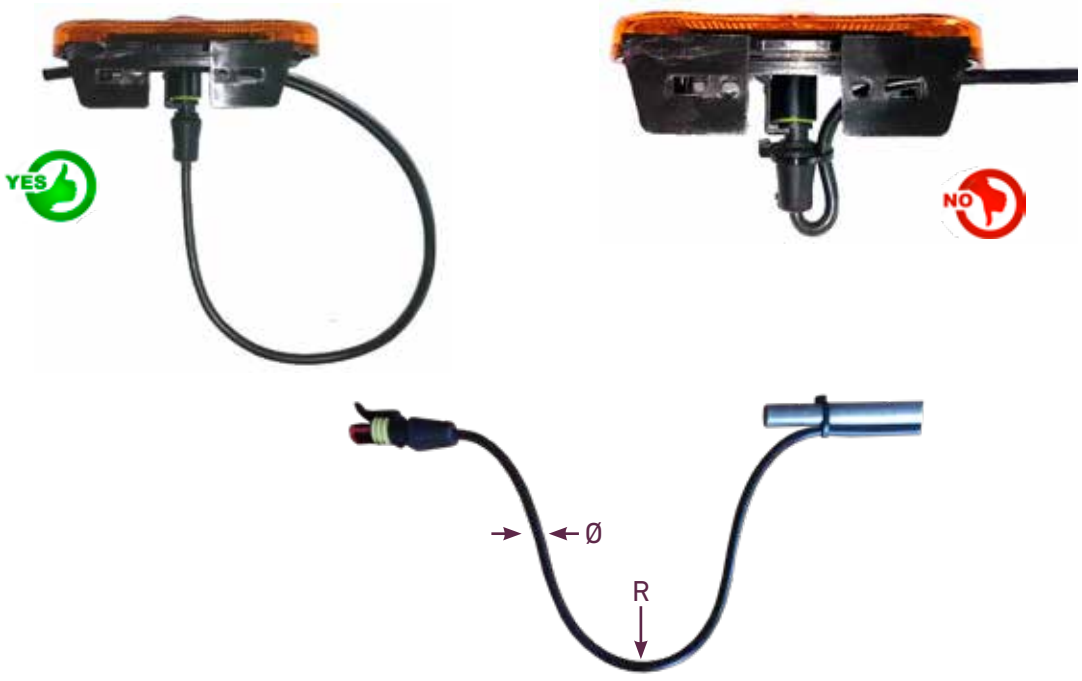
Dismounting of plugs

1. In order to dismount plug and socket from each other follow step 1 and 2 shown at the drawing.



2-poled Super Seal plug connection with a sidemarker lamp

Make sure that the cable is streched appr. 5 cm from the plug/socket before a bend is made.
Make a loop (R ≥ 10 x Ø) at both ends for draining of water/moisture from the cable.



Please note the following:

- Do not hit the plugs with a hammer or any other hard object
- Avoid to pull the cable
- Avoid as far as possible to drop the cables af the floor
- Avoid that the plugs get in contact with water, dirt, grease ect. before mounting

2 POLET CLICK-IN SYSTEM

Overview plugs and accessories

Click-In Connector

Make sure that the sealing around the two terminals are not damaged before mounting.

Click-In jacket

Flat cable - 2 poled Click-In

Click-In plate grip – folded position

Click-In angle – open position

Adjustment of the distance

Mounting of plug

1. Place the cable in the Click-in connector.

2. Mount the Click-in jacket.

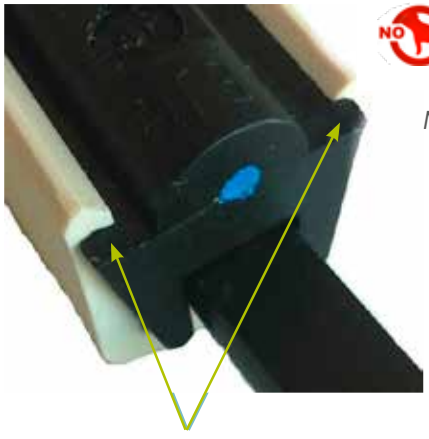
3. The Click-in angle must only be used to press the jacket into position. Make sure that the Click-in jacket is placed under the plate grip, and that the angle presses the jacket straightly otherwise the jacket will be placed wryly. When you hear a “click” the jacket is mounted correctly.

4. When the Click-in jacket graps both sides of the underside of the Click-in the connector is mounted correctly.

Click-In jacket mounted correctly

Click-In jacket mounted correctly

Click-In jacket mounted correctly



OK

NOT RIGHT

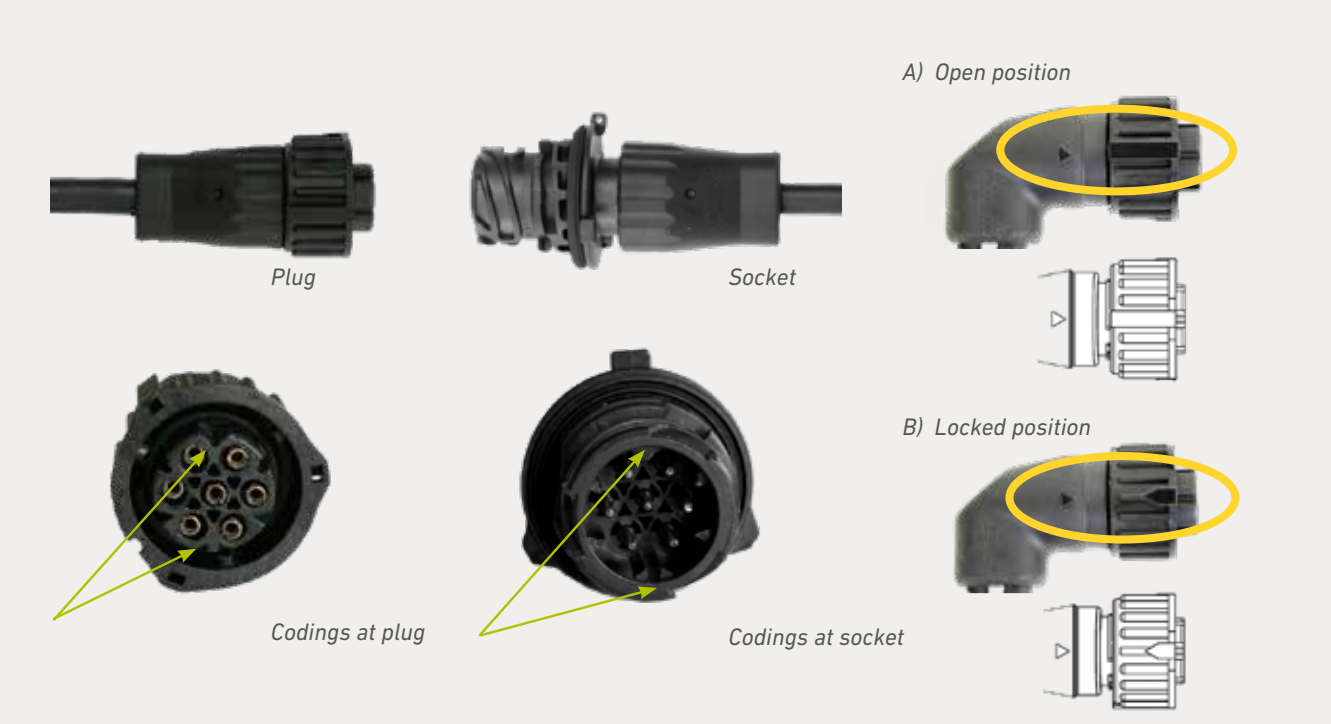
NOT RIGHT

OK

Click-In jacket mounted correctly in one side and wrongly in the other side

7 POLED AMP 1.5 PLUG AND SOCKET

Overview



Mounting of plugs

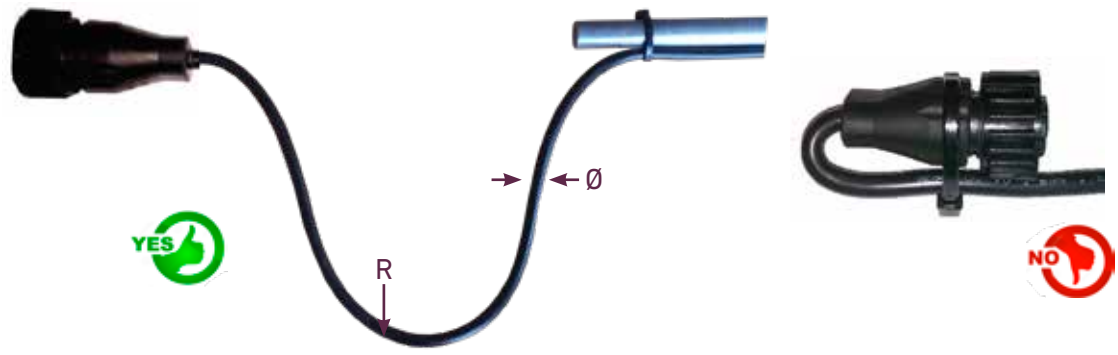
1. Before the plugs are assembled please make sure that the union at the female socket are visible and in open position (the union cannot be turned). Make sure that the codings at the female and male sockets are opposite each other.

2. Press the plugs together so that the codings at the plug and the socket meet each other.

3. Turn the union at the plug together with pressing the plugs in each other. When clicking it is made correctly. The bajoynetring must be mounted and turned with your fingers without any use of tools. Please make sure that the locked position markings are exactly opposite each other.

4. Cable ties to be used / tightened min. 50 mm away from the plug in order to avoid to twists. Cable binders must not be used at the plugs

5. Make a loop (R ≥ 10 x Ø) at both ends for draining the cable for water/damp. Avoid to bend the cable sharply at the plug.



7 poled AMP 1.5 plug connection mounted at a rear lamp

Avoid to make a bend at the cable when mounting. As alternative make sure that the cable is streched app. 5 cm from the plug/socket before making a bend / loop.

Make a loop (R ≥ 10 x Ø) at both ends for draining the cable for water/damp.

15 poled Ermax bajoynet plug og socket

Overview

Plug

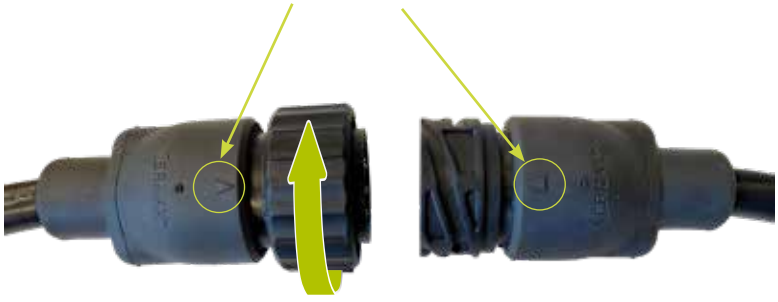
Socket

Codings at plug

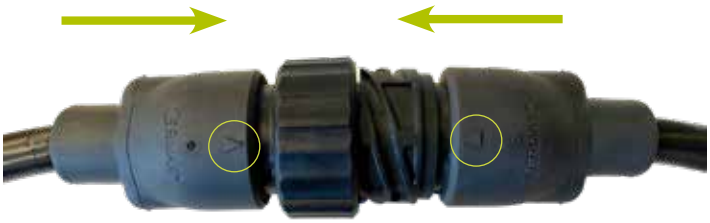
Codings at socket

Mounting of plugs

1. Before the plugs are connected make sure that the union at the socket is visible and in locked position (the union cannot be turned). Make sure that the codings at the plug and the socket are right opposite each other (the triangles must point towards each other).



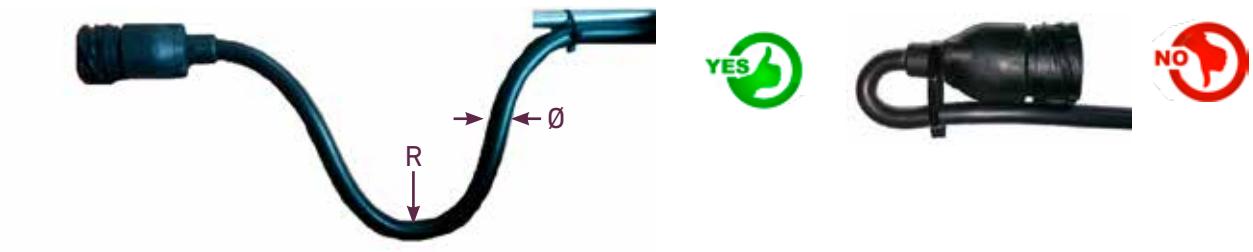
2. Connect the plugs so that the plug and socket click.



3. Turn the union at the socket and at the same time press the plugs together. When clicking with the plug the mounting is made correctly. The bajoynetring must be mounted and turned with your fingers without any use of tools.

4. The cable ties must be used / tightened min. 50 mm away from the plug in order to avoid to twist the cable. Cable binders must not be used at the plugs

5. Make a loop (R ≥ 10 x Ø) at both ends for draining the cable for water/damp.
Avoid to make a bend at the cable when mounting.



Please note the following:

- Do not hit the plugs with a hammer or any other hard object
- Avoid to pull the cable
- Avoid as far as possible to drop the cables af the floor
- Avoid that the plugs get in contact with water, dirt, grease ect. before mounting

Frontbox

Overview

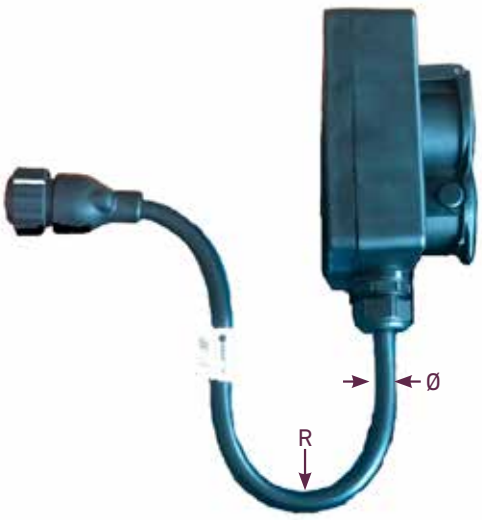
Important when mounting the frontbox

1. Make sure that the lid is tightened and properly at place (figure 1). When mounting the lid make sure that the lid is fixed correctly with the box in the fold before tightning. The lid must be tightened equally crosswise from the centre to both sides.

2. Make sure to make a fold (R ≥ 10 x Ø) for draining the cable for water / moisture (figure 2).

Figure 1

Figure 2



3. When mounting other cables than those which are mounted when delivered, correct fixing of the couplings is important. For sufficient fixing and tightness the dimension of the rubber nipple must be correct. By drawing in the cable the fixing and tightness are controlled – adjust afterwards.

4. Follow the instructions at terminal board in order to mount the cables correctly.

TAIL LIGHTS & CONNECTIONS

TM10

Reverse light (Right)
Stop light (Left)
Max 120W

Position light - **Max 120W**

Maximum Tightening torque is 7 Nm.

TM11

Reverse light (Right)
Stop light (Left)
Max 60W

SIMAC
Max 8W

Position light
Max 30W

Position light
Max 60W

Pay attention to the following:

- If the rear Super-Seal connections are not used, they must always be sealed with a rubber plug. Article number 099 110 028
- Please make sure that the 7-pin AMP connector is correctly mounted and locked. It is described in the 7-pin AMP connector section.

Maximum tightening torque tail lights

Taillights	Bolt Ø	Max. torque	Cover
 TM10 LED  TM11 LED	M8	**7 Nm**	 098 296 710
 TM2 GL  TM2 Hybrid  TM1 LED  TM15 LED	M8	**7 Nm**	 098 296 710
 TM4 LED  TM6 LED	M6	**2,5 Nm**	
 TM13	M5	**2,5 Nm**	
 TM12 LED 5-poled Socket	M6	**2,5 Nm**	 098 296 705
 TM12 LED 7-poled Socket	M8	**7 Nm**	

When LED tail lights are used on a vehicle, it is often necessary to add an LED control unit in front of the lights, in order for the vehicle to recognize the lights properly.

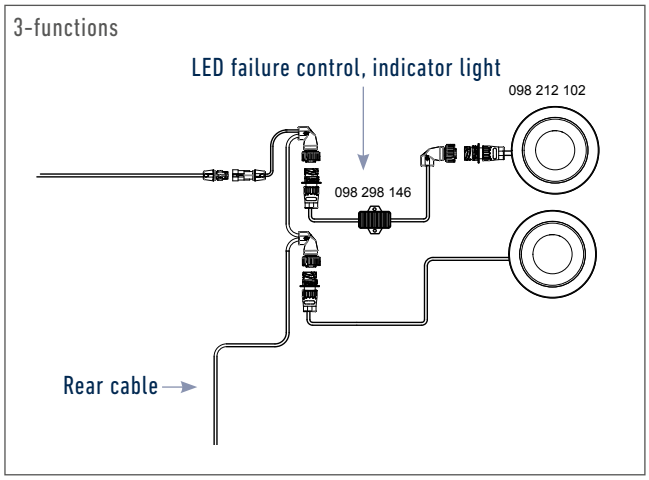
The insert of ohmic resistances is not permitted, as it disables the legally required control function in the vehicle.

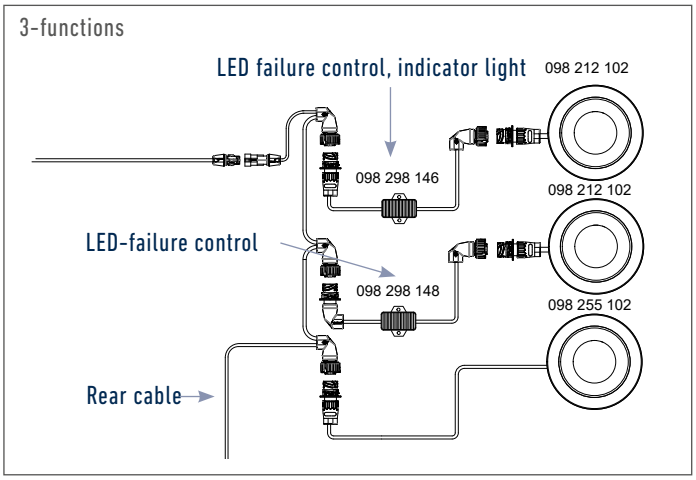
It is recommended to use one of the proposed solutions with ERMAX LED control unit. There is no guarantee that the LED control units can work with lights from other manufacturers.

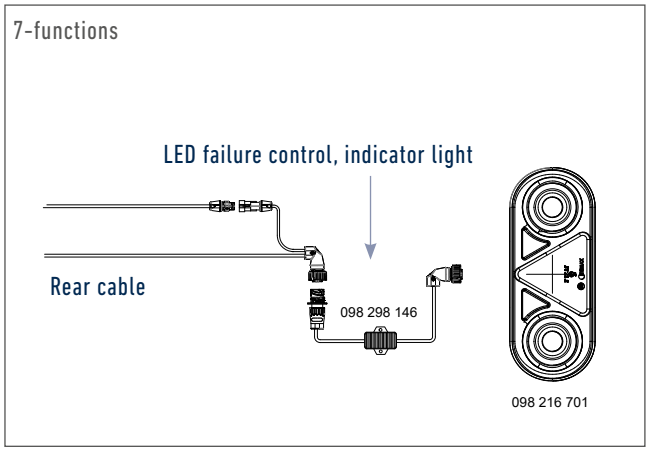
Depending on which vehicle the lights/trailers are to be connected to, it is up to the installer to clarify how many light functions require LED control.

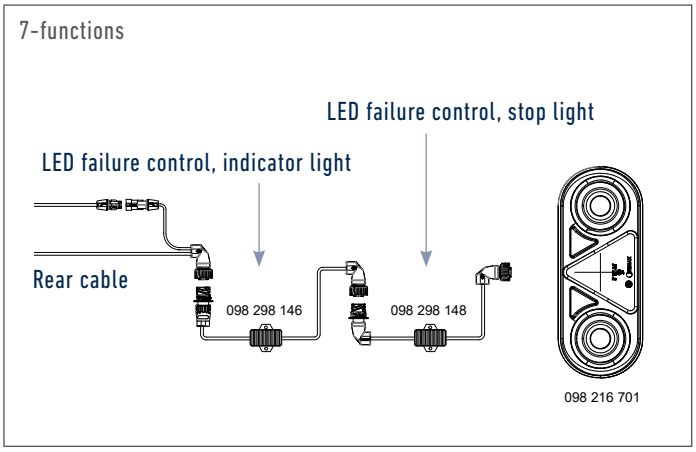
If TM11 or TM12 are used, these lights can be ordered with built-in LED control. For other ERMAX lights with 7-pin AMP connector, the LED control unit 098 298 146 for indicators and 098 298 148 for brake light can be used and inserted as shown in the examples.

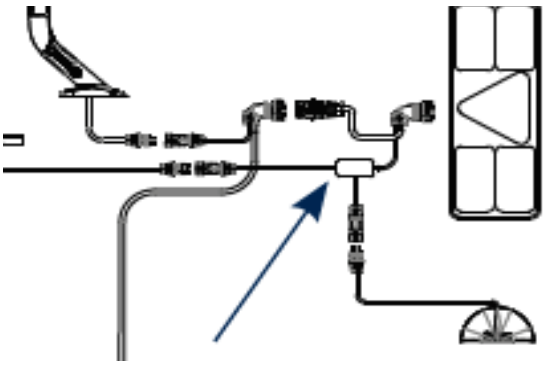
Please note that the LED control unit must have the AMP connector facing in the direction of the tail light as shown in the drawings. If it is connected the other way around, it is without function.







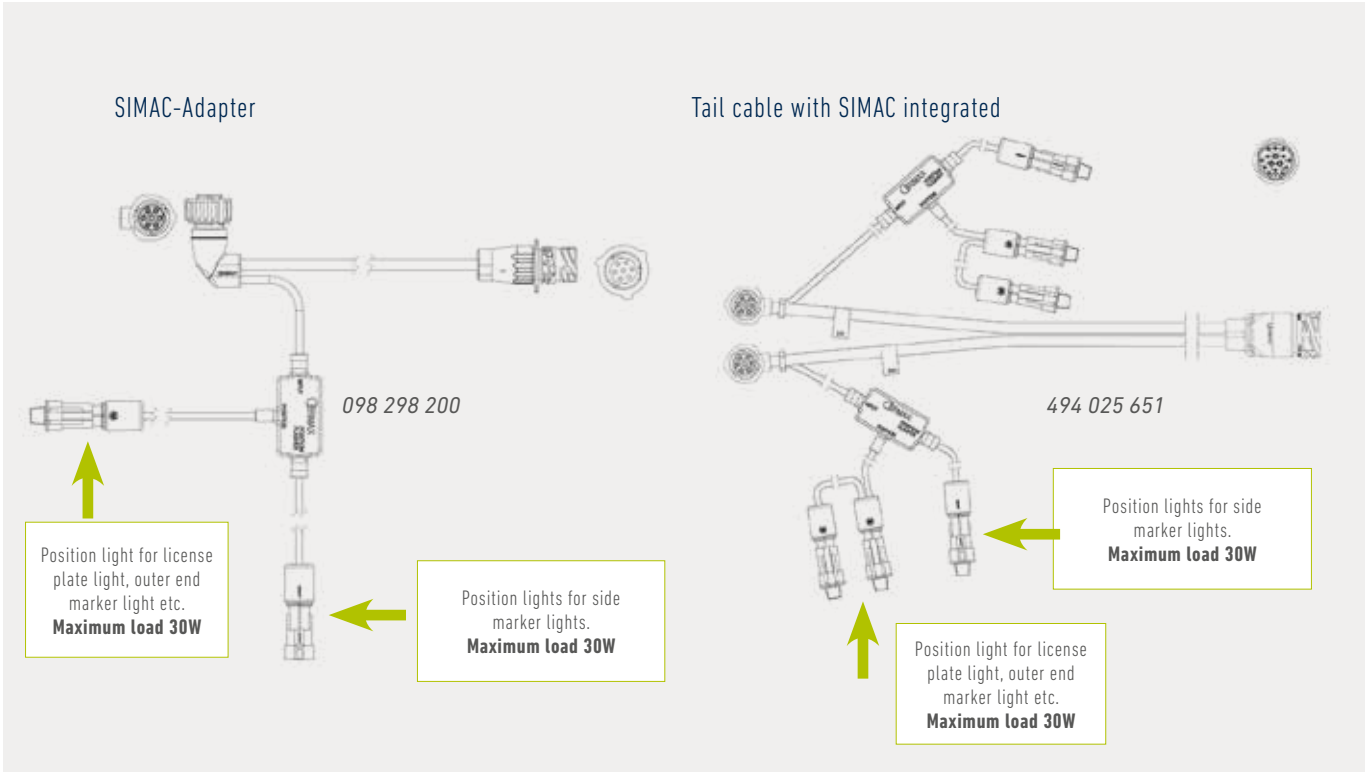




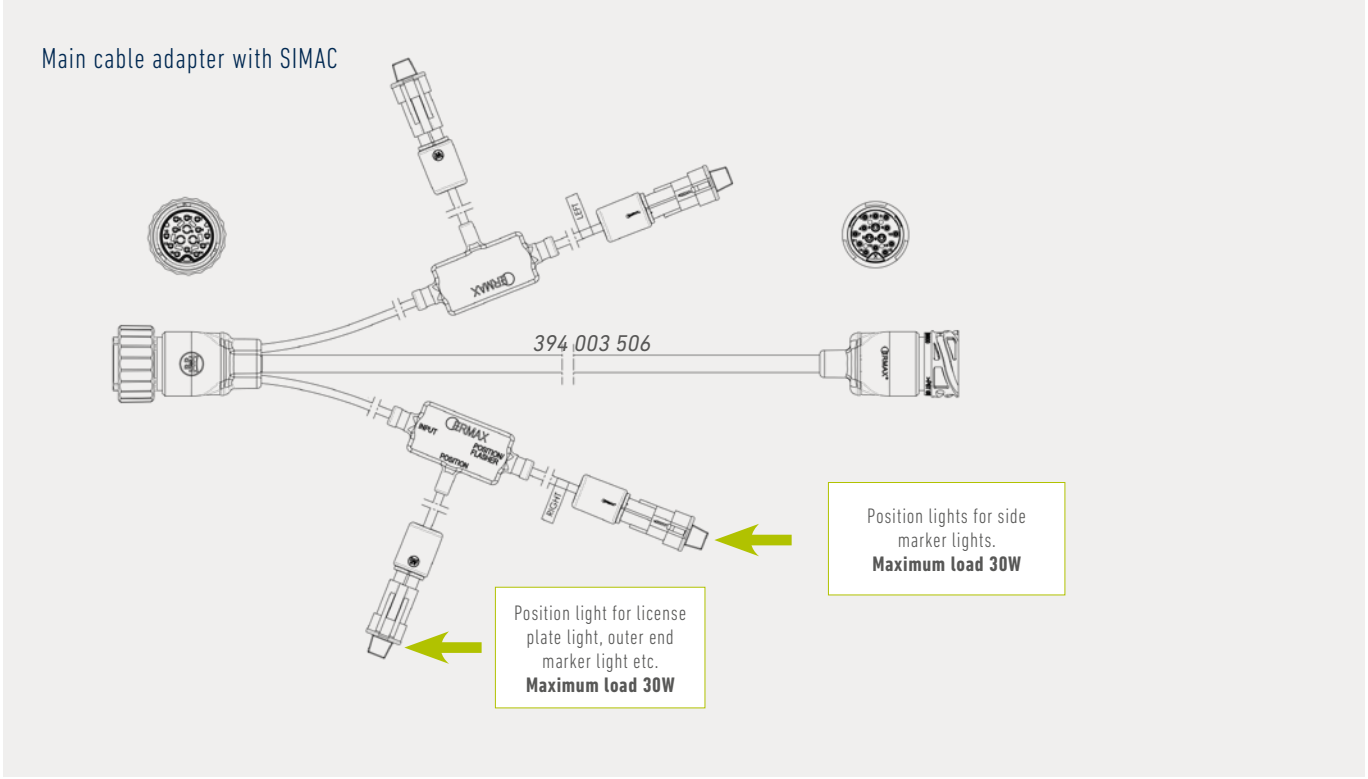
If a system should be built with both SIMAC and LED control, it is important that the LED control box is placed closest to the tail light, means between the tail light and the SIMAC module.
If the LED control box is placed before the SIMAC module and the tail light, correct monitoring of the light is not possible.

SIMAC - Sidemarker light control unit

Overview



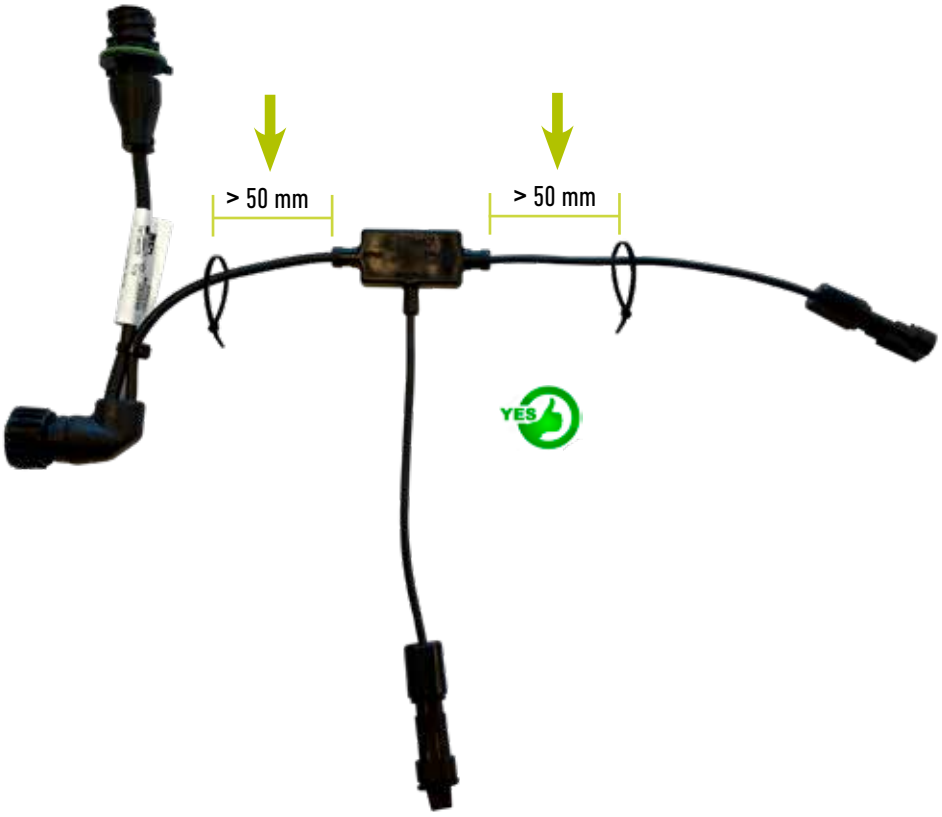
If no Super Seal socket is used, it must be sealed with blind plug 099110028.



Important when mounting the SIMAC

Cable ties can be used for strapping, but must be placed min. 50 mm away from the SIMAC-unit.

Tighting should be handled with care, and mobility ensured.



Cable ties around the SIMAC unit itself, must not occur.

Junction box

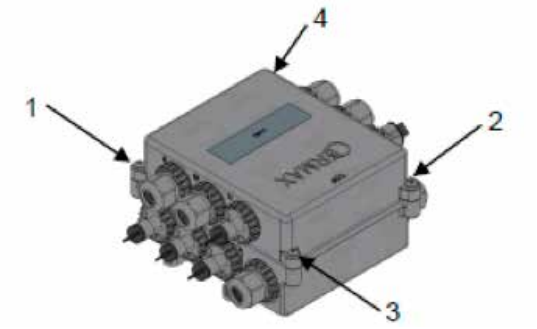
Overview

Important when mounting the junction box

1. By mounting the box, the mark “Top” must be pointing upwards, although it is permissible to turn the box / cover 180^0 during mounting.

2. Make sure there is enough space around the box, so that the cables will not bent sharply at the connectors. Make a fold to drain the cable for water to avoid moisture or condensation to run into the box. Make a fold for draining of the cable for water/moisture and arrange the cables according to the picture below:

3. The lid must be mounted correctly and make sure that all screws are fastened. When mounting the lid make sure the cover is fixed correctly with the box in the fold before turning on the tight.
   Make sure that no cables are stuck and the surface at the screw holes are tightened. The lid must be tightened crosswise of each other 1, 2, 3 and 4 with a torque of 1.5 Nm.



4. Connect only the number of cables per cable gland housing for which there are holes in the rubber grommets – see possibilities for rubber grommets below. If more than one cable are to be connected, a maximum, however, of 2 cables when using 099110210. When installed otherwise than described, the guarantee will no longer apply.

Rubber grommet

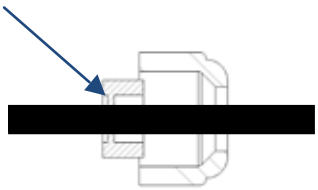
Ø16/Ø11-13mm
099110207

Ø16/Ø7-11mm
099110208

Ø16/Ø4-11mm
099110209

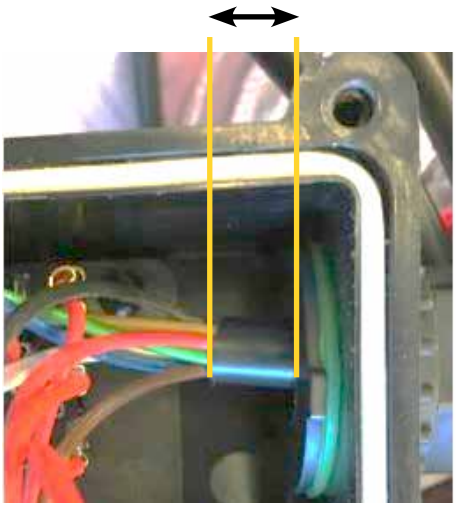
Ø16/2x-Ø5,5mm
099110210

Membrane

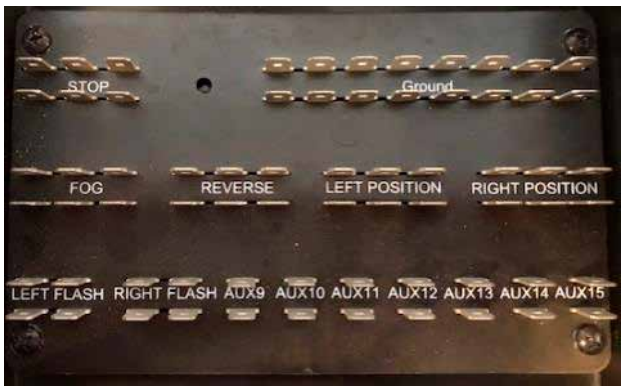


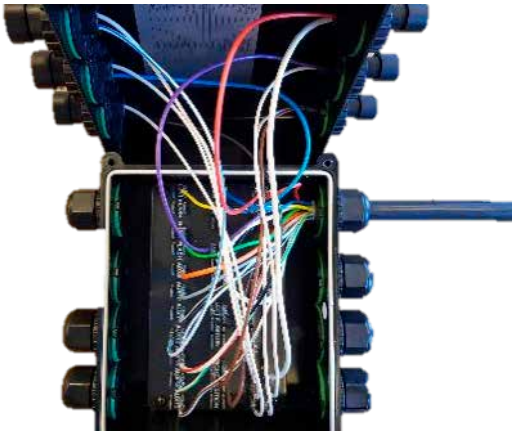
Pull the cables through the holes in the box so that the outer jacket sticks max. 5 mm into the box.

Max. 5 mm, Min.1 mm



5. Follow the instructions on the terminal board in order to mount the cables correctly.



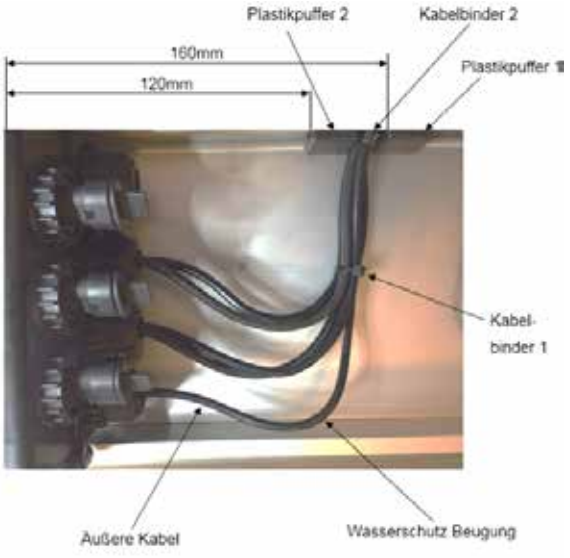


6. When replacing a box on the rear bumper provided by Ermax, the following must be done:

Rear bumper mounted with TM5 tail lights:

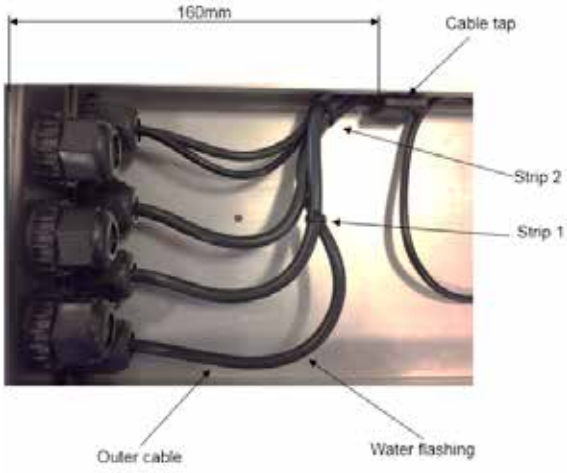
a. The outer cable must be 200 mm from the cable gland to cable tie 1.
b. Distance from cable tie 1 to cable tie 2 must be 60 mm.
c. Cable tap 1 must be placed 160 mm from the box.
d. Cable tap 2 must be placed 120 mm from the box.

Cables must be in tension between the 2 cable taps.



Rear bumper mounted with TM7 tail lights:

a. The outer cable must be 170 mm from the cable gland to cable tie 1.
b. Distance from cable tie 1 to cable tie 2 must be 60 mm.
c. Cable tap must be placed 160 mm from the box.



Fault Finding

Most frequently occuring errors

Control of the electrical system should always take place from the front towards the rear of the vehicle.

In case of complete power failure, check the following:

- The fuses of the vehicle
- The connectors between the trailer and front vehicle are mounted correctly and locked
- Connection cable for damage and breakages

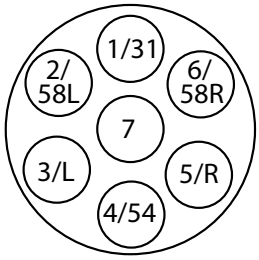
In case of partial power failure, check the following:

- The fuses of the vehicle
- The connectors between the trailer and front vehicle are mounted correctly and locked
- The lamp connection cable is not damaged
- Connector is mounted correctly and locked by the lamp in question or assembly
- No water in the connector
- The pins are not verdigrised
- The voltage at the connector between the frame and the relevant feature is 24V
- Overview of contact coating in the individual connectors are available on the previous page

CONTACT ALLOCATION PLUGS

CERMAX®

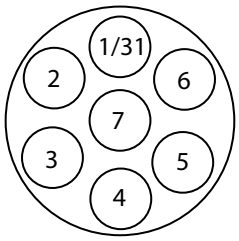
Pin configuration Type N 24V, 7 poled ISO 1185



	Colour	Description
1 / 31	White	Ground
2 / 58L	Black	Position light left [1]
3 / L	Yellow	Direction indicator left
4 / 54	Red	Stop light
5 / R	Green	Direction indicator right
6 / 58R	Brown	Position light right [1]
7	Blue	Aux2 / Stop control for trailer

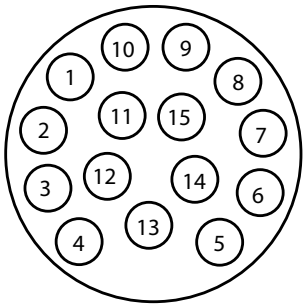
[1] The license plate must be connected so that no lights of this illumination have common connection with contact 2 and 6

Pin configuration Type S 24V, 7 poled ISO 3731



	Colour	Description
1 / 31	White	Ground for Pin 9-15 (ISO 12098)
2	Black	No allocation (CANH, Data communication)
3	Yellow	Reverse light
4	Red	Permanent power supply (+)
5	Green	No allocation (CANL, Data communication)
6	Brown	Aux3 / lift axle
7	Blue	Rear fog light

Pin configuration 24V, 15 poled ISO 12098



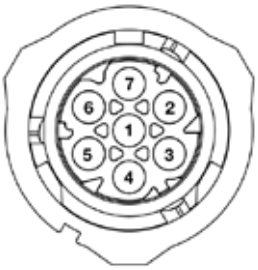
	Colour	Description
1	Yellow	Direction indicator left
2	Green	Direction indicator right
3	Blue	Rear fog light
4	White	Ground
5	Black	Position light left [1]
6	Brown	Position light right [1]
7	Red	Stop light
8	Pink	Reverse light
9	Amber	Permanent power supply (+)
10	Grey	Aux1 / Brake-wear sensor
11	White/Black	Aux2 / Stop control for trailers
12	White/Blue	Aux3 / lift axle
13	White/Red	Ground for Pin 9-15 (ISO 12098)
14	White/Green	CANH / Data communication
15	White/Brown	CANL / Data communication

[1] The license plate illumination must be connected so that no lights of this illumination have a common connection with contract nr. 5 and nr. 7

Pin configuration Ermax 15 poled bayonet plug

	Colour	Description
1	Black	Position light left
2	Yellow	Direction indicator left
3	Red	Stop light
4	White/Green	CANH / Data communication
5	White	Ground
6	Pink	Reverse light
7	White/ Black	Aux2 / Stop control for trailers
8	White/Red	Ground for Pin 9-15 (ISO 12098)
9	amber	Permanent power supply (+)
10	Blue	Rear fog light
11	Grey	Aux1 / Brake-wear sensor
12	White/Brown	CANL / Data communication
13	Brown	Position light right
14	White/Blue	Aux3 / lift axle
15	Green	Direction indicator right

Pin configuration 7 poled AMP plug



	Colour	Description
1	White	Ground
2	Green	Position light
3	Brown	Reverse light
4	Yellow	Indicator
5	Red	Stop light
6	Blue	Rear fog light
7	-	-

Pin configuration Deutsch (DT2) plug 2 poled

	Colour	Description
1	Blue	Permanent power supply (+)
2	Brown	Ground (-)

Pin configuration Super Seal plug 2 poled

	Colour	Description
1	Brown	Ground (-)
2	Blue	Permanent power supply (+)

Brands of the BPW Group:

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