

# How to Convert Old Half-LED Taillight to Facelift Full-LED Taillight

## What You Need

Full LED Taillights, left & right (Facelift, 2019+) (MB Part#: A205 906 5003, A 205 906 4903)

10 Pin Taillight Connector (2 EA) (15 EA pins of 1.8mm x 1.8mm x 13.7mm outside, 0.63mm x 0.63mm inside)

Dupont connector female pins (2 EA) (1.8mm x 1.8mm x 16mm outside, 1.2mm x 0.6mm inside)

Crimping Molex Tool

20 or 22 AWG Stranded TXL Wire (10ft x 4 EA)

Friction Tape (Harness Tape)

Tools: 8mm deep socket, T40 star bit, flat head precision screw driver set, utility knife.

Software: Windows 10 x64 Notebook, J2534 PassThru or SD C4, Xentry 2021.x~, DTS Monaco 8.x~

## What You Need Details

Full-LED Taillights (Facelift, 2019~): Genuine OEM lights are available at online Mercedes dealerships for about \$440 including tax and shipping. EU version (amber turn signal) will cost more in the US.

10 Pin Taillight Female Connectors: It's a TE(Tyco) AMP connector. It's a kind of Dupont connector.

4-2177198-1 for Exterior Housing (or 3-2177198-1; you can remove the tab, or 3-929171-1 with no tab). (2 EA)



(3-2177198-1. You need to remove the tab)

1-968562-2 for Inside Frame of the taillight connector. (2 EA) (or MB Part#: A 002 545 49 40)



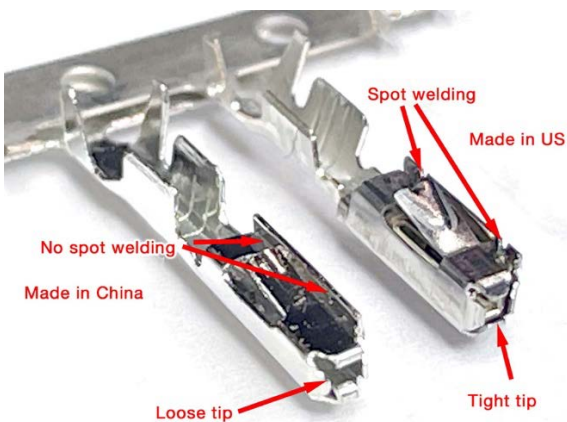
(Inside frame of the taillight connector)

5-963715-6 (inside 0.63mm x 0.63mm, outside 1.8mm x 1.8mm x 13.7mm, silver contact) for Taillight pins. (15EA)



(Pin for the Taillight and the Rear SAM HL & HR)

These parts are available at electronic components distributors in the US, or on a few online markets.



**Rear SAM's Connector Pins:** Rear SAM's HL & HR pins are the same with the taillight pins, but Rear SAM's HD pins are different; 1.8mm x 1.8mm x 16mm outside, 1.2mm x 0.6mm inside, #20~#24 AWG (US vehicle only). ROW vehicles need only HL & HR pins (4EA total).

5-963715-6 for HL, HR pins. (Same pins with the taillight connector) (2 EA for US, 4 EA for Non-US)

7-1452665-1 (inside 1.2mm x 0.6mm, outside 1.8mm x 1.8mm x 16mm, tin contact) for HD pins. (2 EA for US Only)



(Pin for the Rear SAM HD Connector)

**Crimping Molex Tool:** You need a crimping tool for AWG 20, 22, 24, or 0.35mm<sup>2</sup> and 0.5mm<sup>2</sup>.

**20~22 AWG Stranded TXL Wire:** TXL wire (XLPE Cross-link jacket, thin wall, temperature range -40°C ~ 125°C) is a minimum requirement.

MB OEM spec is ACW wire, 22 AWG, 3A 36W, outside diameter 1.3mm, conductor size 0.35mm<sup>2</sup>, temperature range -40°C ~ 150°C (Example: ACW0219-0.35). On the MB WIS wiring diagram, it's 20 AWG (2014~2018) & 22 AWG (2019~) but MB installed 22 AWG wires in the real vehicles (2014~2021).

Wire Type	Spec (60°C)	Spec (75°C)	Temp (°C)	Outside Dia.	Wire Size	Insulation	Note
20 AWG GXL	5A	11A	-40 ~ 125	2.1mm	0.5mm <sup>2</sup>	0.29mm	
20 AWG TXL	5A	11A	-40 ~ 125	1.8mm	0.5mm <sup>2</sup>	0.20mm	I chose
20 AWG ACW	5A	11A	-40 ~ 150	1.5mm	0.5mm <sup>2</sup>	0.22mm	Manual (~2018)
22 AWG TXL	3A	7A	-40 ~ 125	1.6mm	0.35mm <sup>2</sup>	0.20mm	You may try
22 AWG ACW	3A	7A	-40 ~ 150	1.3mm	0.35mm <sup>2</sup>	0.20mm	MB installed

2019+ Taillight power consumption was measured as follows; Therefore, 22 AWG wire will be enough.

Lights	Pin #	Current (A)	Note
Brake 1	4	0.36	Upper brake light
Brake 3	6	0.09	Bottom outside brake light
Brake HGB	5	0.10	Bottom inside HGB light
Tail Light	2	0.41	Running light

Backup	7	0.25	Reverse light
Fog Light	8	-	Fog light at driver side

**Wire Color:** Choose any colors you like. It's not possible to match the colors with the WIS wiring diagram. Why? 4 new wire colors are Green/Blue (2EA), Black/Green(1EA), Grey/Yellow(1EA) but Green/Blue is already assigned to the rear fog light. Three other existing wire colors also don't match with the WIS wiring diagram for the Full-LED taillight.

**Where to Buy the Wire:** It's not easy to buy short length of ACW wires. TXL/GXL is available from a few retailers. Verify if it's made in USA. For example (just an example, not a recommendation),

<https://www.ebay.com/itm/293617948256> (20AWG TXL, 10 fixed color x 10ft)

<https://www.ebay.com/itm/292612752113> (22AWG TXL, 8 fixed color x 25ft)

The distance from the rear SAM to the taillight is about 9ft.

Don't buy Chinese junk such as tinned copper wires with no copper, CCA wires, silicone or PVC jacket wires. PVC jacket wires start to melt at 80°C. Silicone wires can be stripped with a fingernail. CCA wires are garbage. Tinned copper wires are good but Chinese tinned wires don't contain copper.

**Friction Tape (aka Harness Tape):** High temperature (-40°C~150°C, -40°F~302°F), flame retardant grade C is recommended. Tesa's 51036 meets the spec. For example, <https://www.amazon.com/dp/B0112MLN2Q>

## Installation

1. Crimp the 4 new wires with two types of female pins.
2. Disconnect the Power, HD, HR, HL connectors from the rear SAM.
3. Disassemble the rear SAM connectors (HR, HL, HD(US vehicles only)).
4. Insert the 4 new wires into the rear SAM connectors (Ref: pin assignment table)
5. (US only – optional amber turn signal. You can skip) Move 2 pins, HL-18 → HL-3, and HR-10 → HR-12
6. Assemble the rear SAM connectors.
7. Plug the connectors to the rear SAM module.
8. Route the 4 new wires to the taillight.
9. Cut the old taillight plug off. (Take a picture to remember the wire colors).
10. Crimp the wires with female pins (1.8mm x 1.8mm x 13.7mm outside, 0.63mm x 0.63mm inside).
11. Assemble the pins + black frame + purple type D housing (or blue type C housing with tab removed).
12. Install the new LED taillights.
13. Do offline variant coding with DTS Monaco (or online SCN coding if you have a genuine Xentry tool & account).
14. Connect the 10-pin taillight plugs to the taillights.

## Variant Coding

**Online SCN Coding:** If you have an online SCN account, add 380 (O is not zero but “O”scar) into online VeDoc system and do online SCN coding to EZS, Instrument Cluster, and Rear SAM. However, only dealerships or a few of independent shops can do it as it requires a genuine diagnostics tool and an online subscription account (\$\$\$\$). Or you can hire someone just to add 380 to the online VeDoc (\$\$) and do offline variant coding.

**Offline Variant Coding:** If you don’t have an online SCN account, you can do it with DTS Monaco or Vediamo. The offline variant coding, however, can be erased when the rear SAM is re-flashed at dealerships as MB’s server in German don’t know the change history. Don’t worry about it too much as it hardly ever happen.

1. Add 380 (O as “O”scar) in the EZS (EZS222, 05 Variantenkodeung Schreiben) with DTS Monaco. I, however, couldn’t find a location for it in the EZS as it’s not a standard variant but a specific code only for a retrofit. That’s fine. Let’s skip this step.

2. WIS manual states Instrument Cluster also needs to be coded, but there was no variant related to the rear taillights. That’s fine. Let’s skip this step.

3. Change the rear SAM’s variants. Don’t panic. Follow the step-by-step instruction, then you can do it with easy. Remember, **backup** the current variant data before going forward.

## Offline Variant Coding

Steps:

0. Run DTS Monaco, create a project, add BC\_R222.smr-d, create a workspace (do it offline in advance).
1. Connector the notebook PC to the vehicle using either a PassThru device or a SD C4.
2. Turn the vehicle on (Don’t run the engine) (Off → Acc → On → Engine Run). (*Turn off A/C to save battery*)
3. Run DTS Monaco and open the workspace you have created.
4. Click on “Configuration” / “Execution Mode” and choose “Variant Coding” on the tab.
5. Select “BC\_R222” for the rear SAM (BC\_R222 is the name of the W205’s rear SAM control unit).
6. Press “Connect” if not connected automatically.
7. Click on “Save...” to **backup** the current data. (For example, save to “BC\_R222\_before.sgde”).
8. Find the parameters (see below), change it, click on “Do Coding”.
9. After having done all, reset BC\_R222 (“BC\_R222” / “Ecu Reset” / “hard reset” on the “Diagnostic Services” tab)
10. Check if the taillights work as you want.
11. Turn the vehicle off. Done.

## Activate Bottom Brake Lights (Brake 3 and Brake HGB)

### [095] OLC Bremslicht HW Schreiben (OLC Brake Light HW Settings)

Freigabe_BSL3_BL_li	off → on	(Enable left-bottom-outside brake light hardware)
Freigabe_BSL3_BL_re	off → on	(Enable right-bottom-outside brake light hardware)

### [096] OLC Bremslicht Schreiben (OLC Brake Light Settings)

PLSM_HW_BL3_links	off → on	(Activate left-bottom-outside brake light circuit)
PLSM_HW_BL3_rechts	off → on	(Activate right-bottom-outside brake light circuit)
PLSM_Ueff_BL3	0.0 → 13.0	(Bottom outside brake light voltage)
PLSM_Ueff_BL3_Nacht_Adapt	0.0 → 13.0	(Bottom outside brake light adaptive voltage at night)
PLSM_Ueff_BL3_Nacht	0.0 → 13.0	(Bottom outside brake light voltage at night)
PLSM_Ueff_HGB_innen_BL	0.0 → 13.0	(Bottom inside brake light voltage)
PLSM_Ueff_HGB_in_BL_Nacht_Ad	0.0 → 13.0	(Bottom inside brake light adaptive voltage at night)
PLSM_Ueff_HGB_innen_BL_Nacht	0.0 → 13.0	(Bottom inside brake light voltage at night)
PLSM_Ueff_HGB_innen_SL_HD_o	0.000 → 13.000	(BL voltage when trunk open while taillight on)

## Adjust Rear Fog Light (NSL)

### [092] OLC Nebelschlusslicht HW Schreiben (OLC Rear Fog Light HW Settings)

Ueff_NS_Li	11100 → 13100	(Fog light voltage)
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### [096] OLC Bremslicht Schreiben (OLC Brake Light Settings)

PLSM_Deakt_BLbeiNSL	BRKLG1 → BRKLG3	(Turn off brake light X when rear fog light is on) (Why? Fog light ↔ brake light needs 10cm distance)
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## Change Reverse/Backup Light (RFL) to LED

### [087] OLC Ruckfahrlicht HW Schreiben (OLC Reverse Light HW Settings)

LED_bulb_RFL li	Bulb → LED	(left reverse light to LED)
Chiplogik OL RFL li	High → Low	(selection of chip logic OL threshold)
LED_bulb_RFL re	Bulb → LED	(right reverse light to LED)
Chiplogik OL RFL re	High → Low	(selection of chip logic OL threshold)
SC_Schwelle_RFL li	6670 → 2320	(Left SC threshold)
OL_Schwelle_RFL li	37 → 13	(Left OL threshold)
SC_Schwelle_RFL re	6910 → 2320	(Right SC threshold)
OL_Schwelle_RFL re	37 → 13	(Right OL threshold)

## Parking Light (HGB) / Side Marker (SM)

### [085] OLC Standlicht HW Write (OLC Parking Light HW Settings)

Freigabe_SM hi links	enable → disable	(no side marker since US 2019~ taillight, All EU/ROW)
Freigabe_SM hi rechts	enable → disable	(no side marker since US 2019~ taillight, All EU/ROW)
Freigabe_HGB innen links	disable → enable	(use bottom inside brake light - left)
Freigabe_HGB innen rechts	disable → enable	(use bottom inside brake light - right)

### [086] OLC Standlicht Write (OLC Parking Light Settings)

PLSM_HW_SM_hi_re	on → off	(no side marker since US 2019~ taillight, All EU/ROW)
PLSM_HW_SM_hi_li	on → off	(no side marker since US 2019~ taillight, All EU/ROW)
PLSM_HW_SM_hi_beiLDS_STL	on → off	(control background when parking light required)
PLSM_HW_HGB_innen_re	off → on	(use bottom inside brake light – right)
PLSM_HW_HGB_innen_li	off → on	(use bottom inside brake light – left)
PLSM_HW_HGB_l_beiLDS_STL	off → <b>off</b>	(control background when parking light required)
PLSM_Ueff_HGB_innen_SL	0.0 → 13.1	(bottom inside brake light - regulated voltage)
PLSM_Ueff_HGB_innen_SL_Adapt	0.0 → 13.1	(bottom inside brake light - adaptive voltage)

### [026] OLC Fehlercode freigabe Write (OLC Error Code Release Settings)

*(You may disable error check routines that you don't want to use)*

## Change Turn Signal (FRA) to LED

### [097] OLC Blinker HW Schreiben (OLC Turn Signal HW Settings)

LED_bulb_FRA hinten links	Bulb → LED	(left turn signal bulb/LED)
Chiplogik OL Schwellen Blinker hinten links	High → Low	(selection of chip logic for left turn signal bulb/LED)
LED_bulb_FRA hinten rechts	Bulb → LED	(right turn signal bulb/LED)
Chiplogik OL Schwellen Blinker hinten rechts	High → Low	(selection of chip logic for right turn signal bulb/LED)
SC_Schwelle_FRA hinten links	8290 → 2320	(left SC threshold)
OL_Schwelle_FRA hinten links	37 → 13	(left OL threshold)
SC_Schwelle_FRA hinten rechts	8290 → 2320	(right SC threshold)
OL_Schwelle_FRA hinten rechts	37 → 13	(right OL threshold)

### [098] OLC Blinker Schreiben (OLC Turn Signal Settings) *(Only for US version tail light - to blink red brake lights)*

PLSM_AusgangFRAhinten	BRKLT1 → <b>BRKLT1</b>	(Blink brake 1 → Blink brake 1 & 3)
PLSM_FRA_DiagPin	on → <b>off</b>	(Check turn signal circuit. Red signal: off, Amber: on)

## (Optional) Change Red Turn Signal → Amber

You need to install EU/ROW version taillights for amber turn signal. US taillights have no amber LED (it's empty).

### [097] OLC Blinker HW Schreiben (OLC Turn Signal HW Settings)

Freigabe_FRA hinten links	disable → enable	(Red turn signal: disable, Amber signal: enable)
Freigabe_FRA hinten rechts	disable → enable	(Red turn signal: disable, Amber signal: enable)

### [098] OLC Blinker Schreiben (OLC Turn Signal Settings)

PLSM_HW_FRA_HL	off → on	(Enable left amber turn light circuit)
PLSM_HW_FRA_HR	off → on	(Enable right amber turn light circuit)
PLSM_FRA_DiagPin	off → on	(Check turn signal circuit)
PLSM_AusgangFRAhinten	BRKLGT1 → TURNLGT	(Blink Red Brake Light → Blink Amber Turn Signal)
PLSM_Ueff_FRA_Nacht_hinten	13.1 → 12.1	(Night voltage. Or 13.1)
PLSM_Ueff_FRA_Nacht_Adapt_hi	13.1 → 11.0	(Adaptive night voltage. Or 13.1)

## ~~(Optional - US) Turn Signal Brake 1 → Brake 1 & 3~~

~~If you want to blink Brake light 3 (bottom outside brake light) in addition to the Brake light 1 (upper brake light), (Note: This doesn't work as intended)~~

### ~~[098] OLC Blinker Schreiben (OLC Turn Signal Settings)~~

~~PLSM\_AusgangFRAhinten — BRKLGT1 → **BRKLGT13** — (Allocation of HW outputs for rear turn signals)~~

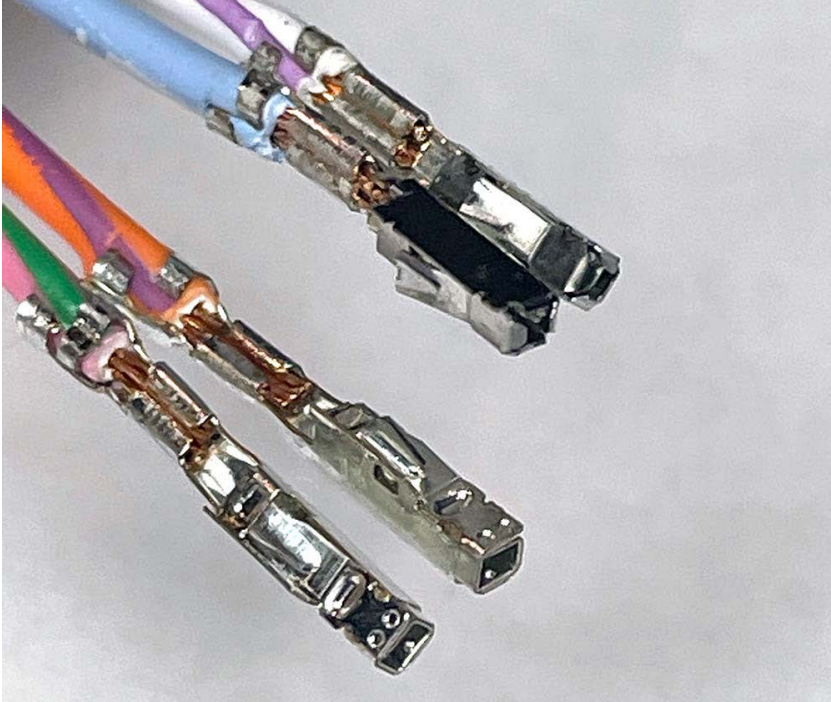
### ~~[099] OLC Allgemein Schreiben (OLC General Settings)~~

~~PLSM\_Frsatz\_FRAaufBSL — BRKLGT1 → **BRKLGT13** — (Release of the light for turn signals on brake light)~~

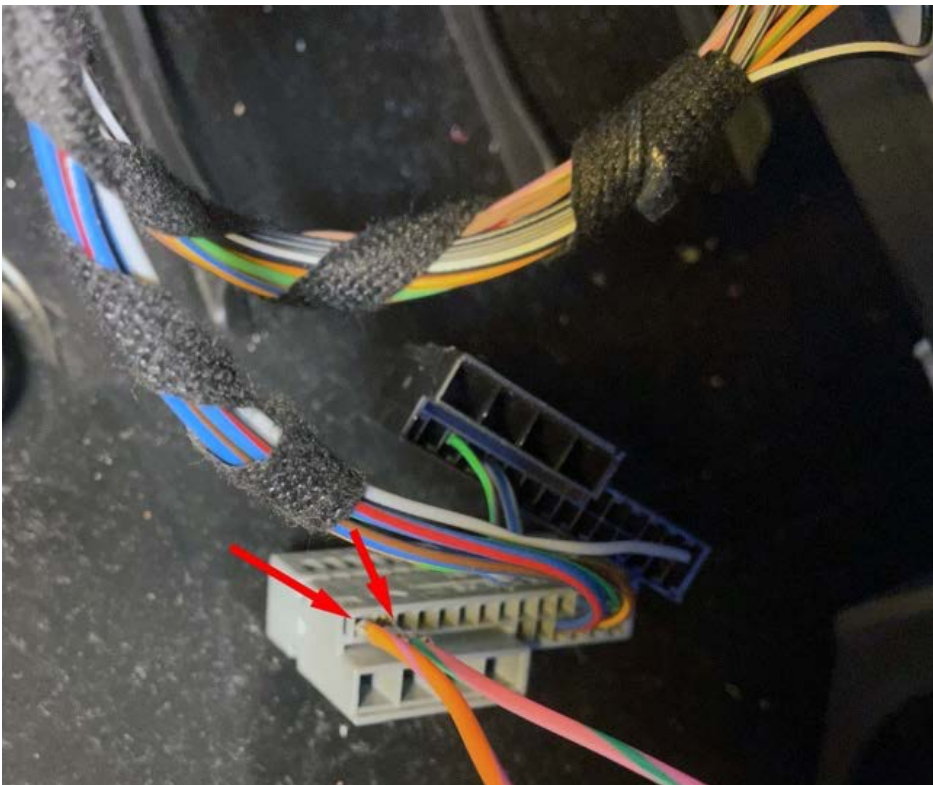


## Installation Photo

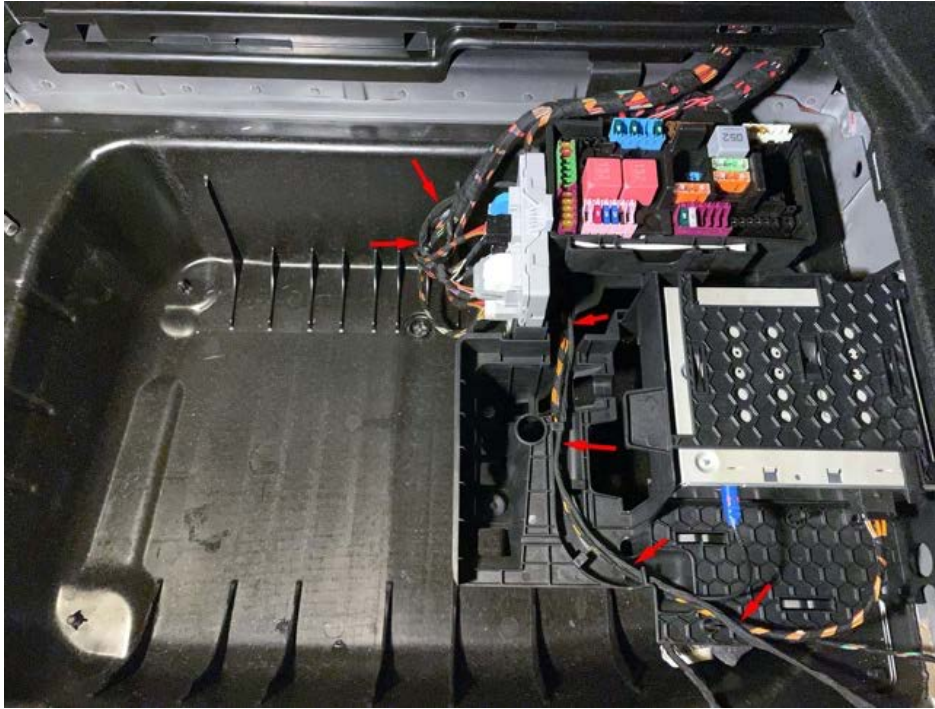
Prepare 4 wires.



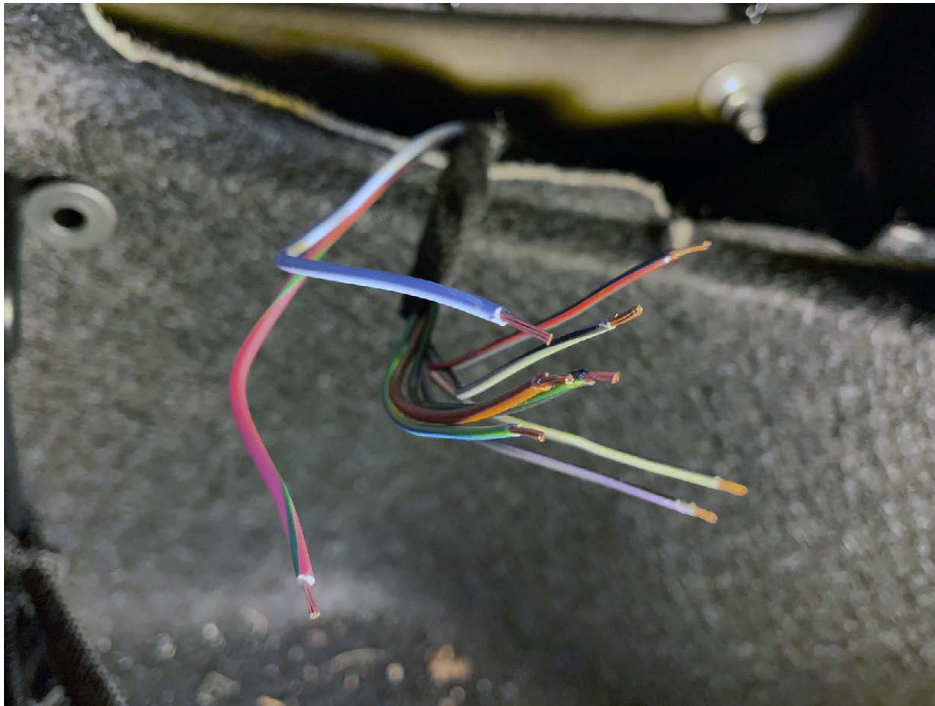
Insert them into HD, HL, HR of the rear SAM. (Photo below: HD connector)



Route the wires from the rear SAM to the taillight.

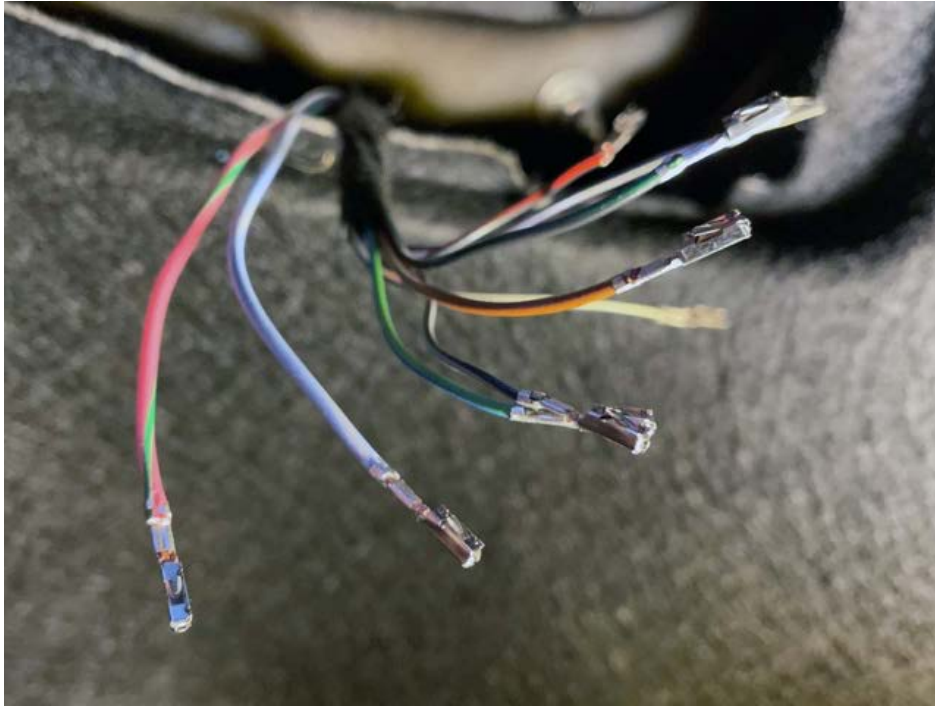


Cut the existing taillight connector off. Strip the end about 3.7~4.6mm.





Crimp the pins with a Molex crimping tool.



Assemble the connector (left side of the vehicle)



Assemble the connector (right side of the vehicle)



Taillight Installed (do the variant coding before connecting the plug)

