# Cadillac Manual
## - Escalade 2016~
## - CTS 2014~

- MODEL : ML-PAS-190402

- DATE : 2020.04.06

# Index

# 1. Main Spec.

1. Input Spec. (MULTI VIDEO INTERFACE)
   - 1 x Digital RGB Input (Navigation System output)
   - 1 x Analog RGB Input (Navigation System output)
   - 1 x CVBS(REAR CAMERA) Input. (Rear camera source)
   - 1 x CVBS(FRONT CAMERA) Input. (Front camera source)
   - 1 x LVDS Input. (Car Command System)

2. Output Spec.
   - 1 x LVDS Output (LCD Operation)
   - 1 x Vertual Analog Touch (Navigation System source)
   - 1 x Uart Digital Touch (Navigation System source)
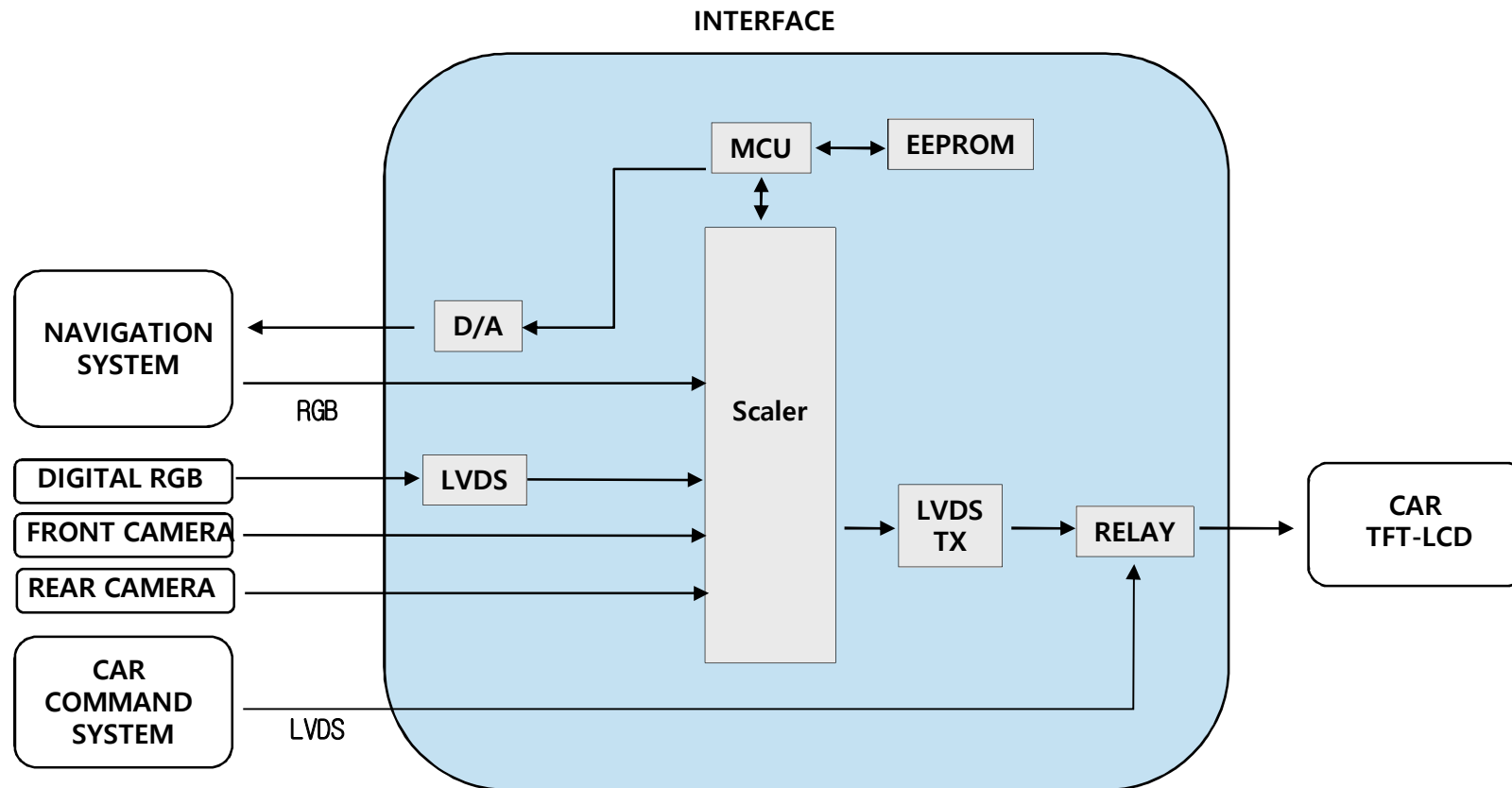
3. Power Spec.
   - Input Power : 8VDC ~ 24VDC
   - Consumption Power : 12Watt, Max
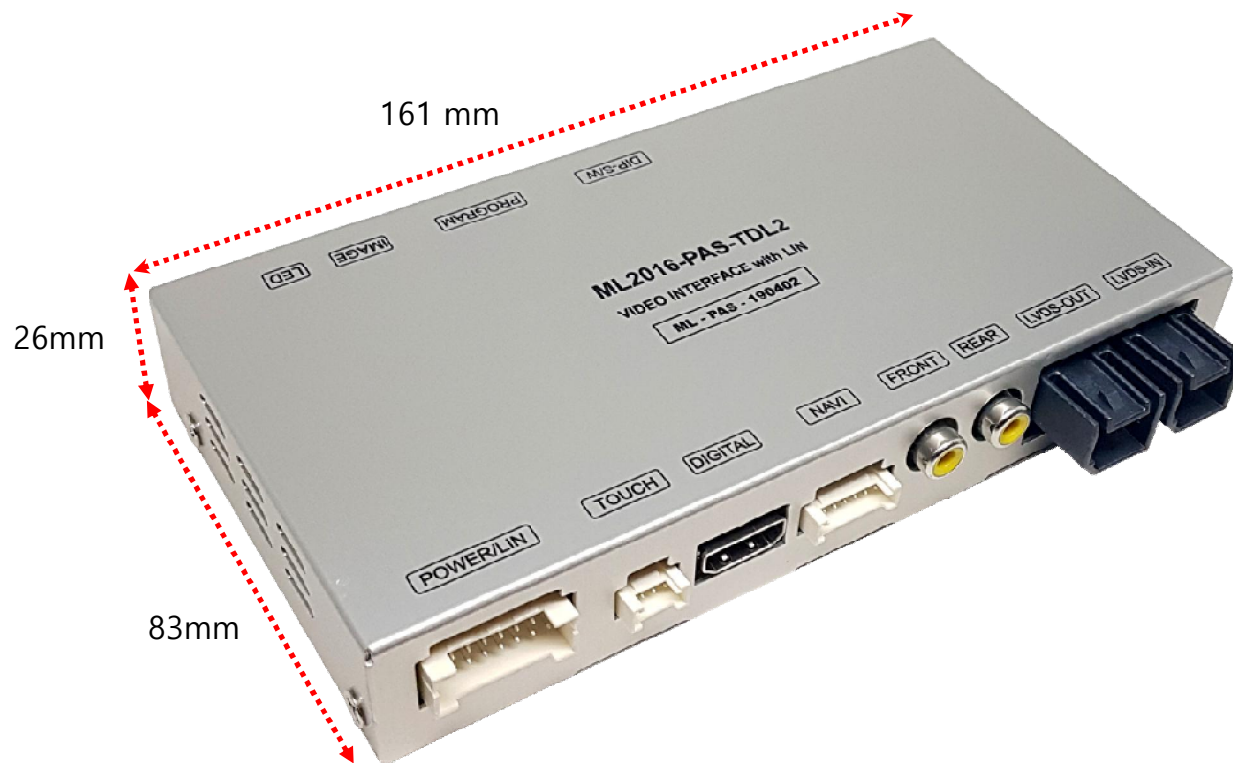
4. Switch Input mode
   - Possible to select CAR model while switching mode by DIP S/W
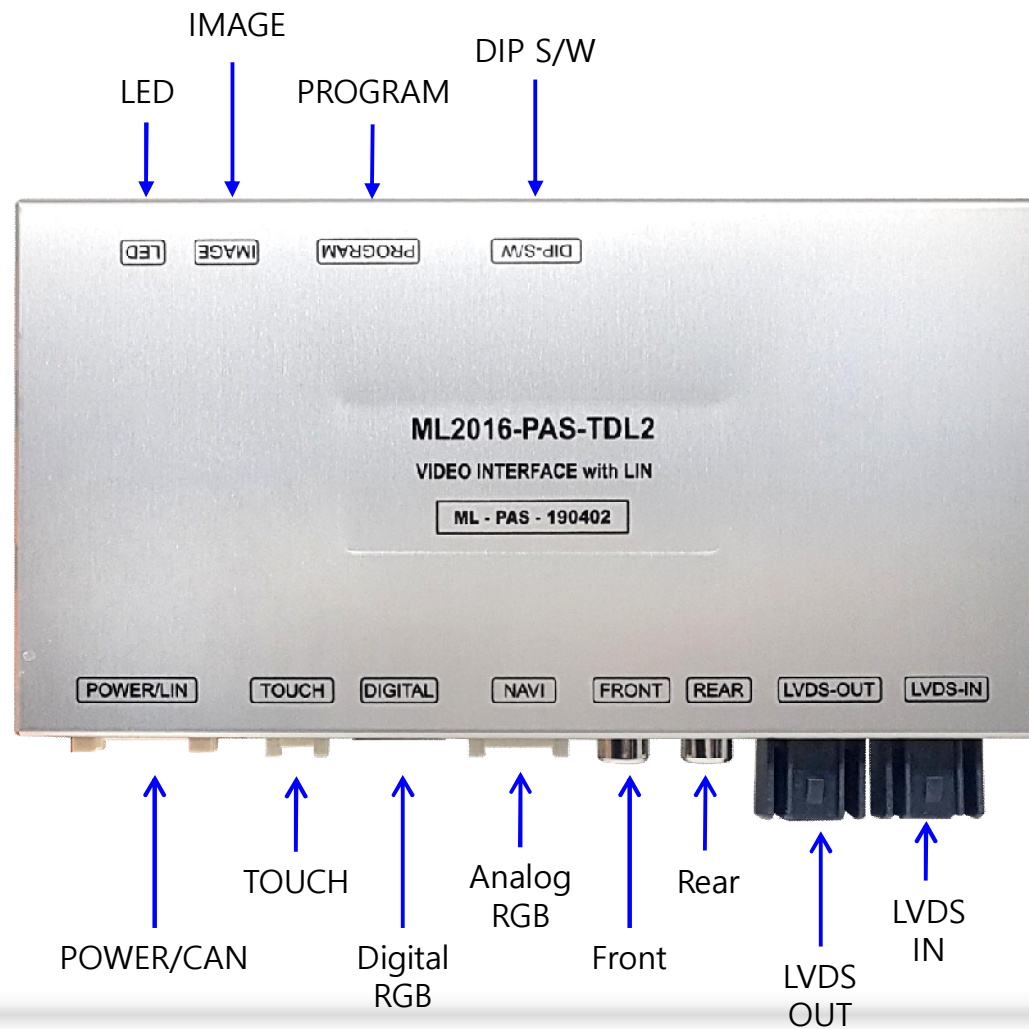   - By button on the Commander in the car via CAN

# 2. Block Diagram

INTERFACE

NAVIGATION SYSTEM

RGB

DIGITAL RGB

FRONT CAMERA

REAR CAMERA

CAR COMMAND SYSTEM

LVDS

MCU ↔ EEPROM

D/A

Scaler

LVDS

LVDS TX

RELAY

CAR TFT-LCD

# 3. Dimension

**161mm * 83mm * 26mm**



161 mm

26mm

83mm

ML2016-PAS-TDL2
VIDEO INTERFACE with LIN
ML - PAS - 190402

LED  IMAGE  PROGRAM  DIP-SW

NAVI  FRONT  REAR  LVDS-OUT  LVDS-IN

POWER/LIN  TOUCH  DIGITAL

* This can change under manufacturer's circumstance

# 4. External Appearance

# 4. External Appearance



DIP S/W
IMAGE
PROGRAM
LED

POWER/CAN
TOUCH
Digital RGB
Analog RGB
Front
Rear
LVDS OUT
LVDS IN
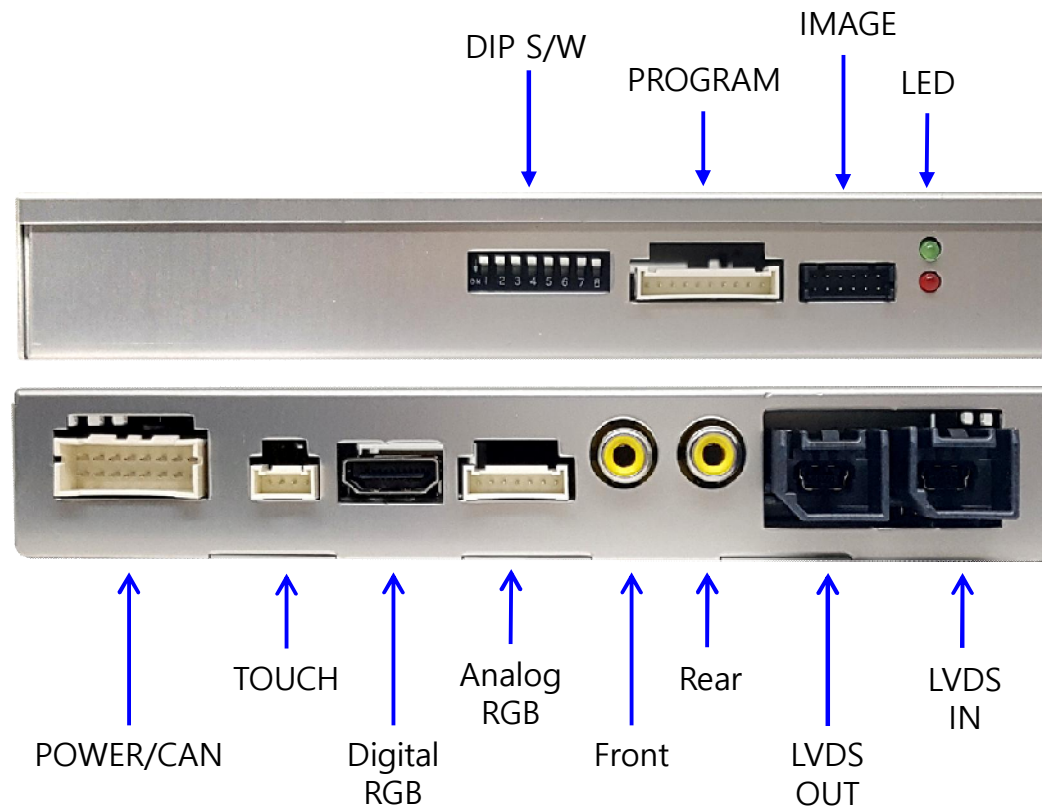
# 5. Connector Pin Assignment
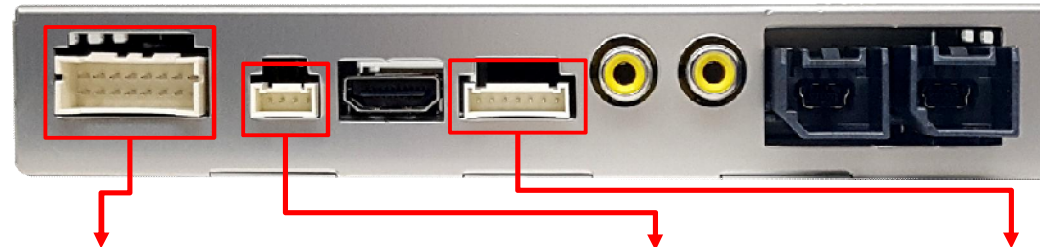


**\*POWER Connect**
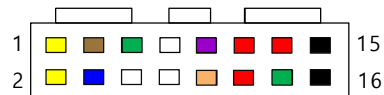
| | 1 | | | | | | 15 |
| --- | --- | --- | --- | --- | --- | --- | --- |

1. Battery (Yellow)
2. Battery (Yellow)
3. Rear-DET (Brown)
4. Front-DET (Blue)
5. LIN-IN (Green)
6. N.C
7. LIN-OUT (White)
8. N.C

9. LIN (Purple)
10. SWC (Orange)
11. ACC (Red)
12. Rear-VCC (Red)
13. Front-VCC (Red)
14. Mode (Green)
15. GND (Black)
16. GND (Black)

**\*Touch Connect**

① ② ③ ④
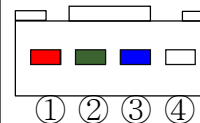
① Y-
② X-
③ Y+
④ X+

**\*NAVI Connect**

① ② ③ ④ ⑤ ⑥ ⑦
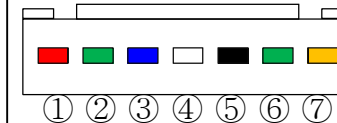
① R DATA (Red)
② G DATA (Green)
③ B DATA (Blue)
④ SYNC (White)
⑤ GND (Black)
⑥ DVB-T IR (Green)
⑦ DVD IR (Orange)
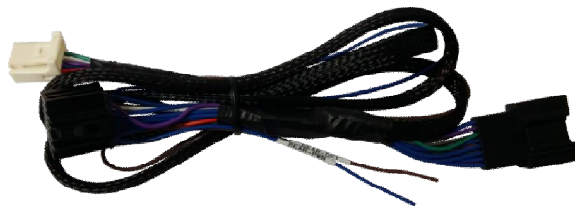
# 6. Product Composition



Interface 1 EA

OSD Board 1 EA

LVDS Cable 1 EA

Power Cable 1 EA

RGB NAVI Cable(7pin) 1 EA

Touch convertor Cable(KD-900) 1 EA

# 6. Product Composition Option

**\* CarPlay Set Sales(option)**



Interface 1 EA

AUX Cable 1 EA

HDMI Cable 1 EA

Power Cable (500mm) 1 EA

ACC Board 1 EA

Microphone 1 EA

# 7. DIP S/W Setting

**\* ON : DOWN , OFF : UP**

| PIN | FUNCTION | DIP S/W Selection |
|-----|----------|-------------------|
| 1 | NAVI | ON : Not Used<br>OFF : Used |
| 2 | AV1 (DVB-T) | ON : Skipping Video<br>OFF : Display |
| 3 | AV2 (DVD) | ON : Skipping Video<br>OFF : Display |
| 4 | N.C | |
| 5 | N.C | |
| 6 | CAR type SEL | Right Picture |
| 7 | | |
| 8 | | |

**\* DIP S/W Example**



ESCALADE 2016~
CTS 2014~

# 8. Mode Change

* 화면 전환 방법





- You can select between two methods when changing the screen by pressing HOME button.

  - Double : Press Home button twice quickly.
  - Long : Press and hold Home button.
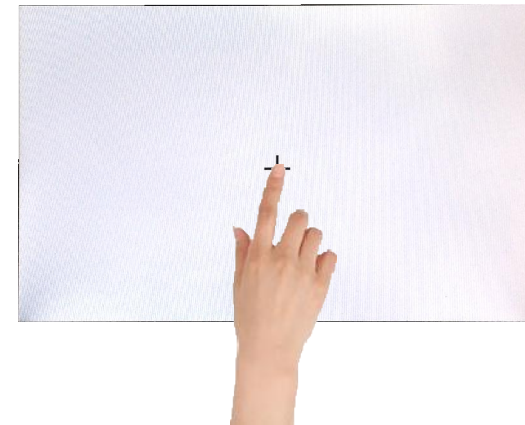
# 9. Touch Control

**Touch control - Calibration**



Press and hold for more than 11 seconds on NAVI, DVB-T, DVD screen.
(Note that it only works the first time after switching screens)

**OR**



OSD menu -> Utility -> Calibration



+ Touch according to the shape coordinates.

# 9. Touch Control
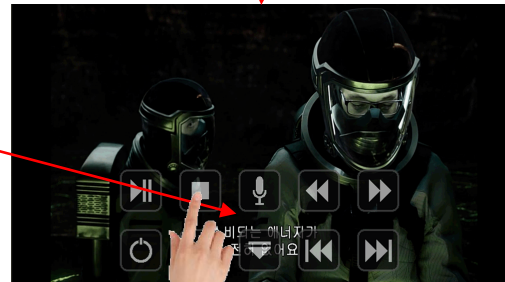
DVB-T/DVD Control

DVB-T

DVD

Press Touch(Anywhere)

Press Icon

# 10. OSD(On Screen Display) Control

**OSD Control Board**

| MENU | When there is no OSD screen, pressing OSD ON<br>When OSD screen is displayed, press OSD EXITT |
|------|------------------------------------------------------------------------------------------------|
| SEL  | Item Selection, Value Selection |
| UP   | Item up<br>Increase selected value |
| DOWN | Item down<br>Decrease selected value |

Mode State

First Menu   Second Menu   Third Menu

15

# 10. OSD(On Screen Display) Control

**OSD Option**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| Option | NAVI COM | HMS<br>FINE<br>: | Set up manufacturer of woodworking device for UART Touch use |
| | | OFF | Disable feature |
| | RearCam-Type | OEM | Original Camera |
| | | ExtDevice | Equipped with external camera |
| | RearCam-Power | ON | + 12V continuous supply |
| | | AUTO | + 12V supply only in Rear camera mode |
| | | OFF | + 12V off |
| | RearCam-Det | PDC | Detected by CAN<br>- It is operated by parking sensor |
| | | GEAR | Detected by CAN<br>- It works on reverse signal. |
| | | WIRE | Detected by Rear-Det Wire |
| | FrontCam-Type | OEM | Original Camera |
| | | ExtDevice | Equipped with external camera |

# 10. OSD(On Screen Display) Control

**OSD Option**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| Option | FrontCam-Power | ON | + 12V continuous supply |
| | | AUTO | + 12V supply only in Front camera mode |
| | | OFF | + 12V off |
| | FrontCam-Det | CAN | Detected by CAN |
| | | WIRE | Detected by Front-Det Wire |
| | FrontCam-RcvOpt | ON | After RearCam shows FrontCam and returns to previous state |
| | | OFF | Disable feature |
| | B/T Call | ON | Switch to OEM screen when you call |
| | | OFF | Disable feature |
| | ChgMode Opt | Double | Press "HOME" button twice to switch screens |
| | | Long | Press and hold the "HOME" button to switch screens |

# 10. OSD(On Screen Display) Control

**OSD Option**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| Option | Key_Off | ON | Switch to OEM screen when key off |
| | | OFF | Disable feature |
| | Reset | Execute | Option Menu all Reset |

# 8. OSD(On Screen Display) Control

* Bluetooth  Screen switching method

| MENU | B/T Call | NAVI |
|---|---|---|
| Config | FrontCam-Det | ExtWire |
| Option | FrontCam-RcvOpt | [====  ] 0s |
| Image | AV Out | USER |
| Screen | B/T Call | On    Off |
| Parking | ChgMode Opt | Double |

| MENU | B/T Call | NAVI |
|---|---|---|
| Config | FrontCam-Det | ExtWire |
| Option | FrontCam-RcvOpt | [====  ] 0s |
| Image | AV Out | USER |
| Screen | B/T Call | On    Off |
| Parking | ChgMode Opt | Double |

Disable Bluetooth Phone                    Bluetooth Phone Usage

NAVI
AV1(DVB-T)
AV2(DVD)
OEM
NAVI
AV1(DVB-T)
AV2(DVD)

Call
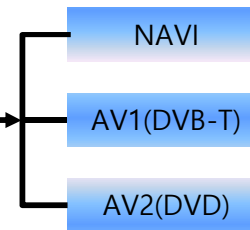
Ending

# 10. OSD(On Screen Display) Control

**OSD Option -> FrontCam-RcvOpt**
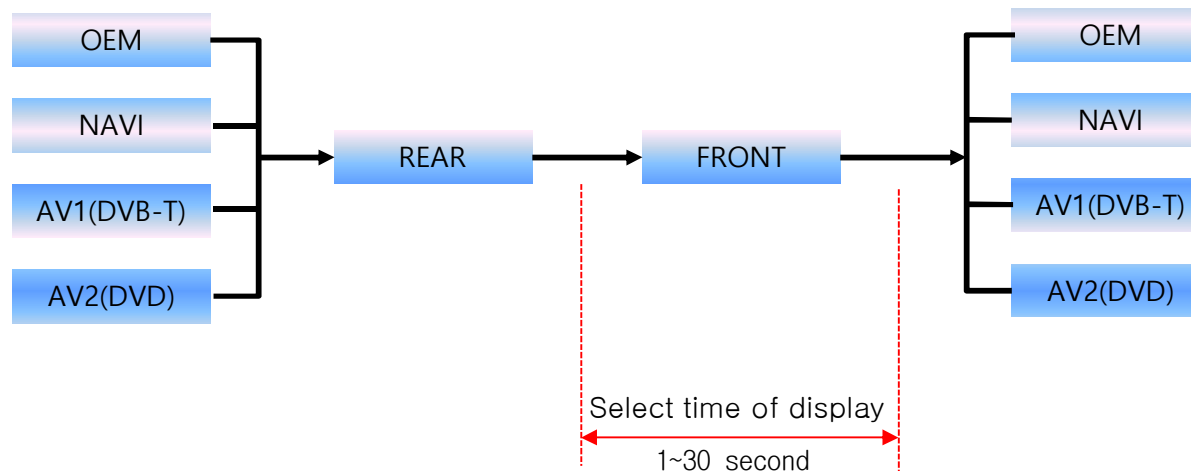
Front Camera Auto Mode

```
    0 second = FrontCam-RcvOpt menu OFF
1~30 second = FrontCam-RcvOpt menu ON & time control
```





OEM
NAVI
AV1(DVB-T)
AV2(DVD)

REAR → FRONT →

OEM
NAVI
AV1(DVB-T)
AV2(DVD)

Select time of display
1~30 second

# 10. OSD(On Screen Display) Control

NAVI-RGB menu

| First Menu | Second Menu | Third Menu | Action |
|---|---|---|---|
| Image | Brightness | | Adjust the value of brightness |
| | Contrast | | Adjust the value of contrast |
| | Color-RED | | Adjust the value of RED |
| | Color-GREEN | | Adjust the value of GREEN |
| | Color-BLUE | | Adjust the value of BLUE |
| | Reset | Excute | Option Menu all Reset |

DVD,DVB-T(DMB),NAVI-AV,REAR,FRONT menu

| First Menu | Second Menu | Third Menu | Action |
|---|---|---|---|
| Image | Brightness | | Adjust the value of brightness |
| | Contrast | | Adjust the value of contrast |
| | Saturation | | Adjust the value of Saturation |
| | Hue | | Adjust the value of Hue |
| | Sharpness | | Adjust the value of Sharpness |
| | Reset | Excute | Option Menu all Reset |



<< Brightness >>



<< Saturation >>



<< Contrast >>

# 10. OSD(On Screen Display) Control

**OSD – Screen Menu**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| Screen | Horizontal | | Output screen horizontal movement |
| | Vertical | | Output screen vertical movement |
| | Scale X Up | | Reduce / increase output screen width |
| | Scale X Down | | |
| | Scale Y Up | | Reduce / Increase Output Screen Height |
| | Scale Y Down | | |
| | Reset | | Screen menu all reset |

# 10. OSD(On Screen Display) Control

**OSD – Parking Menu**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| Parking | OPS Display | ON | Show OPS |
| | | OFF | Do not show OPS |
| | Warnings Lang | | Set warning text language |
| | Horizontal | | Moving a parking line horizontally |
| | Vertical | | Moving a parking line vertically |
| | Transparency | | Parking line transparency |
| | Reset | | Parking menu all reset |

# 9. OSD(On Screen Display) Control

**OSD Parking – OPS Display On / Off**



OPS-PDC ON Screen



OPS-PDC OFF Screen

* Even if you do not have a sensor, you can not see the parking sensor in the above figure even if you control the OSD board.

# 10. OSD(On Screen Display) Control

**OSD Parking – Guide line On / Off**



Parking Line ON Screen



Parking Line OFF Screen

# 10. OSD(On Screen Display) Control

**OSD Parking – Change warning language**



| | |
|---|---|
| **English** | → Check entire surroundings! |
| **中文** | → 请注意车辆周围环境! |
| **한국어** | → 차량 주변을 전부 확인 |
| **台灣** | → 請注意車輛周圍環境! |
| **Россия** | → Следите за всем окружением автомобиля! |
| **日本** | → 周辺の安全を確認 |

# 10. OSD(On Screen Display) Control

**OSD Parking – Adjust position of parking guide line**



Possible to adjust the position of parking guide line
by Keypad in Horizontal / Vertical menu
※ Pressing this Horizontal / Vertical menu,
The OSD screen automatically disappears.
Please adjust from the parking line Screen.



Press "**UP**" button

Press "**MENU**" button



Press "**SEL**" button

Press "**DOWN**" button

# 10. OSD(On Screen Display) Control

**OSD – OSD Menu**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| OSD | Horizontal | *value* | OSD Menu Horizontal Shift |
| | Vertical | *value* | OSD menu vertical Shift |
| | Display Time | *value* | OSD Menu Display Time (in seconds) |
| | Transparency | *value* | OSD menu transparency |
| | Language | | OSD menu display language |
| | Reset | Execute | Initialize OSD settings |

# 10. OSD(On Screen Display) Control

* IR learning function



* In order to work with the IR learning function, a separate IR cable is required.



1. In DVB-T / DVD menu, select User in Sys (OSD list) or User (learned contents).
2. Select Learn from the OSD menu.



3. Before using IR learning function, select All-Clear to delete existing stored data.



4. Press the remote control button to be used in each ICON once in New Code, press once again in Cfm Code to confirm it is the same and save it.
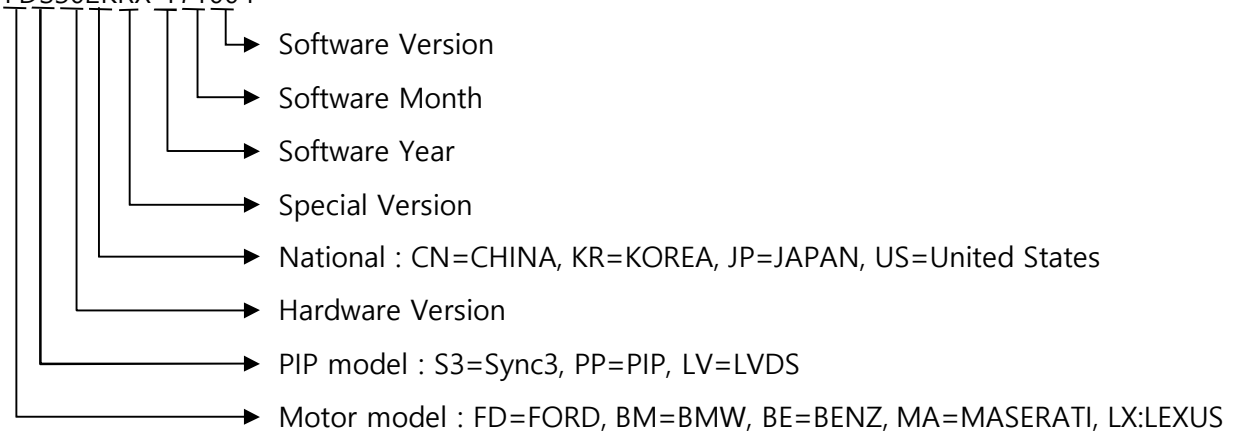
# 10. OSD(On Screen Display) Control

**OSD Utility**

| First Menu | Second Menu | Third Menu | Description |
|---|---|---|---|
| Utility | Factory Reset | Execute | Initialize all settings |
| | Calibration | Execute | Run Calibration mode |
| | Version | | FDS302KRX-171004 **(Check for future upgrades)** |



Last Source : FDS302KRX-171004

→ Software Version
→ Software Month
→ Software Year
→ Special Version
→ National : CN=CHINA, KR=KOREA, JP=JAPAN, US=United States
→ Hardware Version
→ PIP model : S3=Sync3, PP=PIP, LV=LVDS
→ Motor model : FD=FORD, BM=BMW, BE=BENZ, MA=MASERATI, LX:LEXUS

# 11. Install Manual

1. Installation LVDS connection



OEM POWER CABLE

Navigation

OEM LVDS CABLE

ML2016-PAS-TDL2
VIDEO INTERFACE with LIN
ML-PAS-190402

POWER.IN
TOUCH
DIGITAL
NAVI
FRONT
REAR
LVDS-OUT
LVDS-IN
LED
IMAGE
PROGRAM
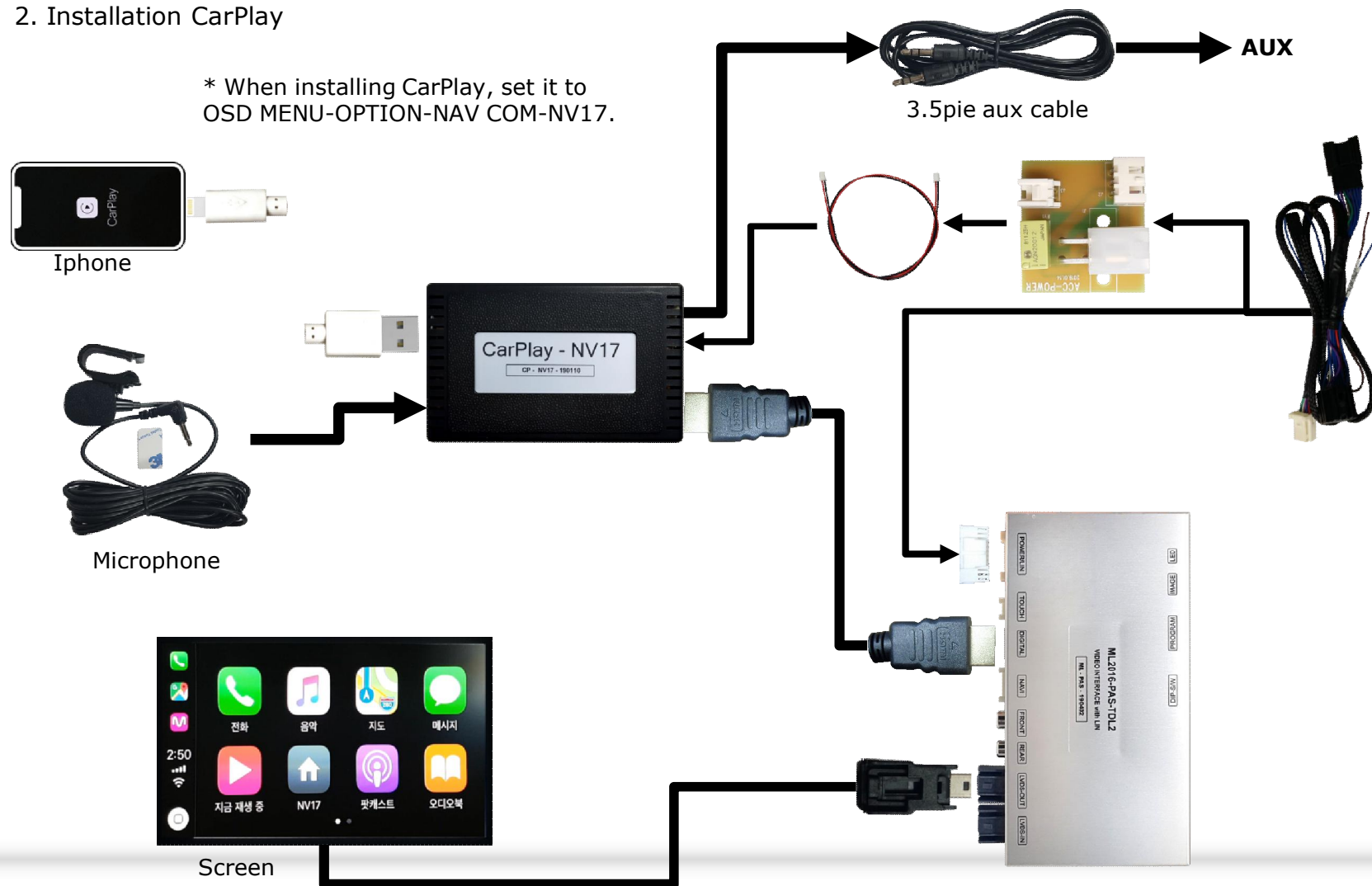AV
DIP-SW
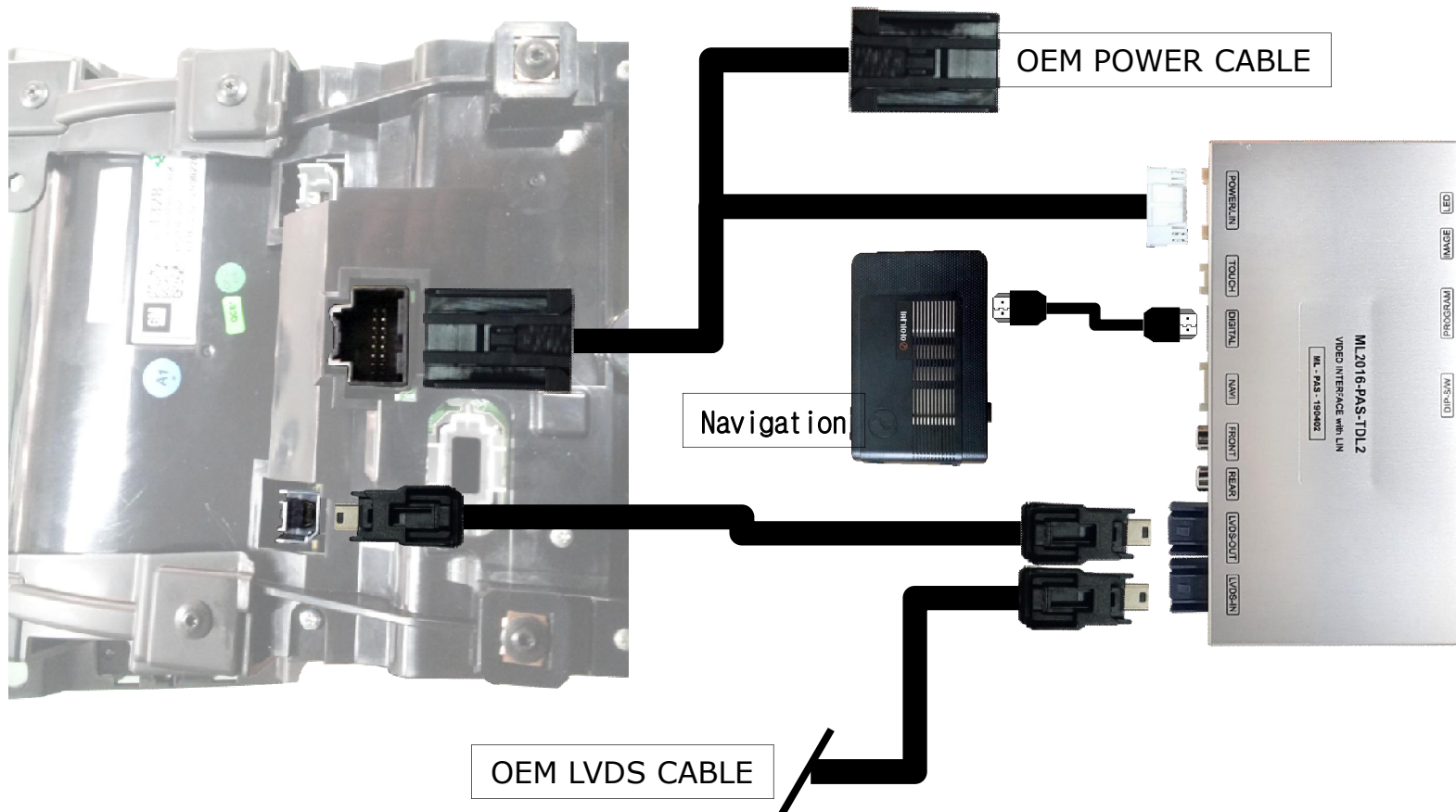
# 11. Install Manual

2. Installation CarPlay

* When installing CarPlay, set it to
  OSD MENU-OPTION-NAV COM-NV17.



AUX

3.5pie aux cable

Iphone

Microphone

CarPlay - NV17
CP - NV17 - 190110

ML2016-PAS-TDL2
VIDEO INTERFACE with LIN
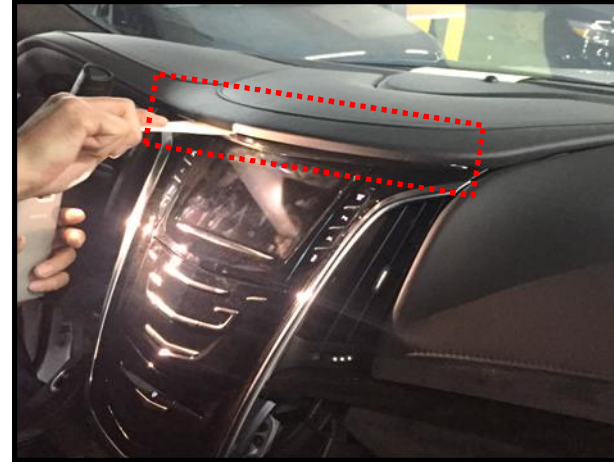ML - PAS - 190402
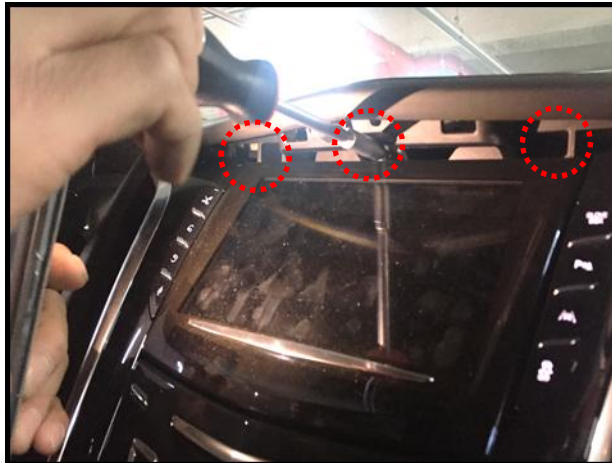
Screen

# 11. Install Manual



ⓐ
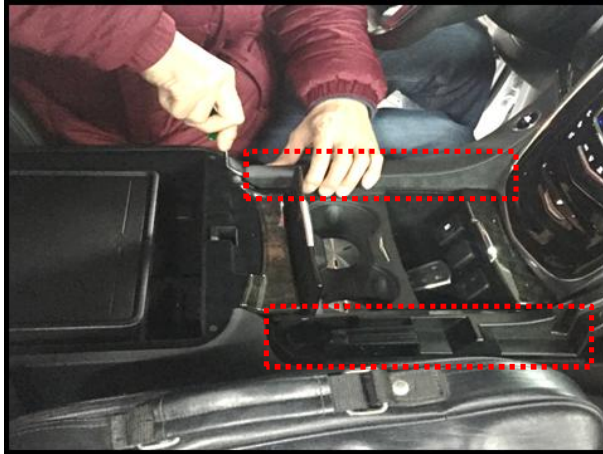
Back Cover 탈착



ⓑ



ⓒ

# 12. Q & A

1. Check the LED status first when interface failure..
 - If there is no abnormality after the power is applied, the green LED flashes in units of 1 second.
 - If the red LED flashes for 1 second, there is no.
 - If the red LED is on continuously, the interface itself is bad.
 - If nothing turns on, check that the power and CAN signals are properly connected

2. Q : When the screen turns black
    A : LVDS cable itself is bad or bad contact.

3. If you find any symptoms with these symptoms, please contact your distributor
 .