# 1. POWER

+ Power (11-15 VDC): connection terminal for AF M12.14 bit power supply positive pole. The jack accepts a stripped cable up to 15mm/0.6" with maximum section of 4 AWG (Ø 5,1mm / 0.2"). For better power transfer we recommend using cables with the largest possible cross-section and with the same cross-section as the cable connected to the negative pole and the use of the Ferrules provided in the box.

- Power (Ground): connection terminal for the negative power supply pole of the amplifier. Connect here the negative battery cable or a cable connected to the vehicle chassis. The socket will take a stripped cable up to 15mm/0.6" with a maximum section of 4 AWG (Ø 5,1mm / 0.2"). For better power transfer, we recommend using cables with the largest possible section and with the same section as the cable connected to the positive pole the use of the Ferrules provided in the box. In order to correctly connect the ground (-), use a screw that is already present on the metal part of the vehicle; If necessary, remove any paint residue or grease, using a tester to make sure there is continuity between the negative terminal (-) on the battery and the mounting point. If possible, connect all of the grounds

on the audio components to the same grounding point. This helps reduce most of the interference than can occur in audio reproduction.

WARNING: make sure the connection polarity is as indicated on the terminals. A misconnection may result in damage to the AF M12.14 bit. After applying power, wait at least 10 seconds before turning the AF M12.14 bit on.

Multiple power supply connection
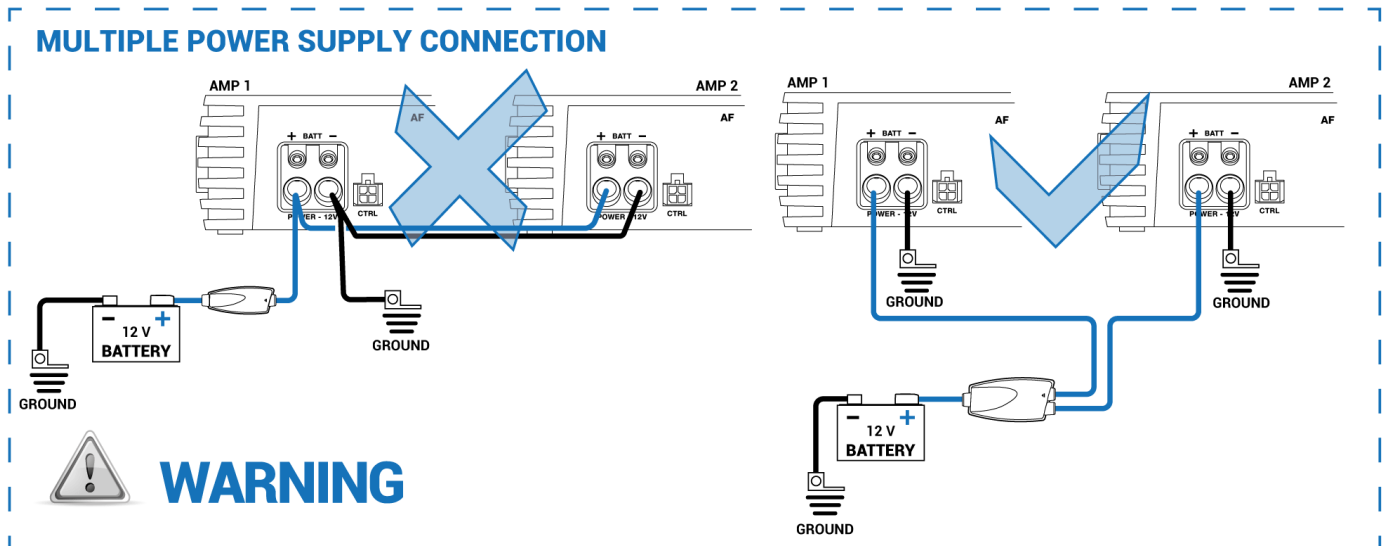
How to turn on the AF M12.14 bit

The AF M12.14 bit is turned on when the FORZA logo is blue. It can be turned on/off with the following modes:

1. by REMOTE IN: connect the REMOTE IN terminal of the CTRL cable with the Remote Out signal of an after-market source.

2. by SPEAKER IN: connect the high level signal of an OEM source to the terminals IN1 - IN2 of the SPEAKER IN connector and set the switch ART to ON position. In this way the AUTO TURN ON (ART) function will be activated to turn on the amplifier when it detects high level signal. Set the switch ART to OFF state to deactivate this function.

3. by DRC AC: press the DRC AC knob (turn on). With a long pressure the DRC AC will turn off the amplifier. In this case there is no need for other connections to turn on the device.

Note: if the amplifier has been turned on by REMOTE IN signal, it can be turned off only by the same REMOTE IN signal. Instead, if the device was turned on by DRC AC, it can be turned off by either DRC AC or REMOTE IN.
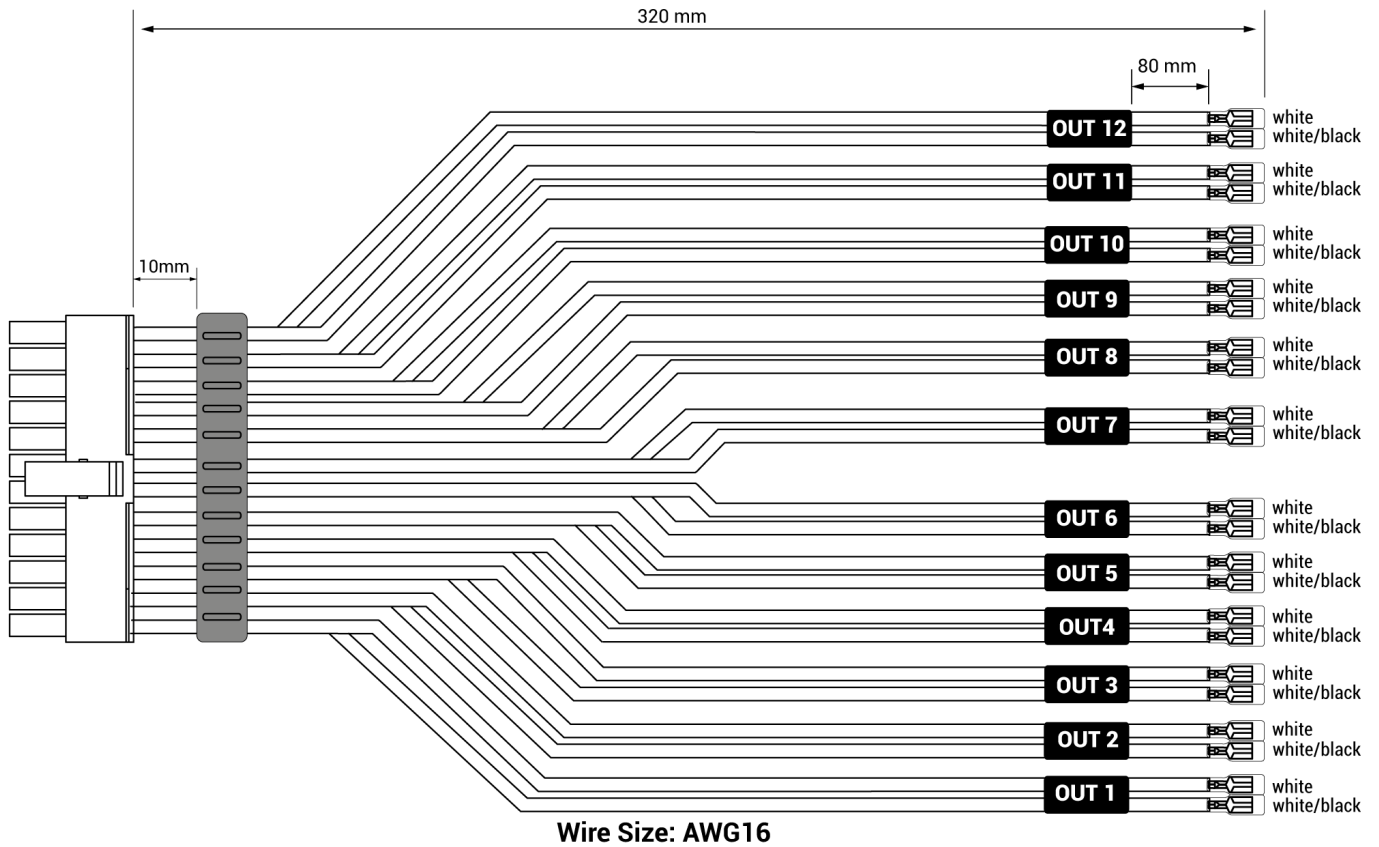
2. CTRL (REM IN-OUT / CONTROLS)

terminals to turn on and control the AF M12.14 bit:

- Remote IN: input to turn on AF M12.14 bit remotely through the audio signal source Remote Out. REM IN can be connected to the ignition switch terminal (ACC). The voltage must be between 7 and 14.5 VDC. If using a source with amplified outputs such as BTL, AF M12.14 bit can be automatically turned on, so it will not be necessary to connect the REM IN terminal.

- Remote OUT: output to turn on other devices/amplifiers connected after the AF M12.14 bit. From the time it is turned on, it takes 12 seconds to supply the signal to the REM OUT output, but it will be possible to set this delay via software. The 200 mA output current capability can also drive an automotive relay.

- CONTROL 1: Terminal programmable on the bitDrive software to activate one command among source change, memory change, volume change, enable/disable Final tuning EQ. This command is activated once the the terminal is connected to a +12 V signal. Please, read the section 4.16 TRIGGER for more informations.

- CONTROL 2: Terminal programmable on the bitDrive software to activate one command among source change, memory change, volume change, enable/disable Final tuning EQ. This command is activated once the the terminal is connected to a +12 V signal. Please, read the section 4.16 TRIGGER for more informations.
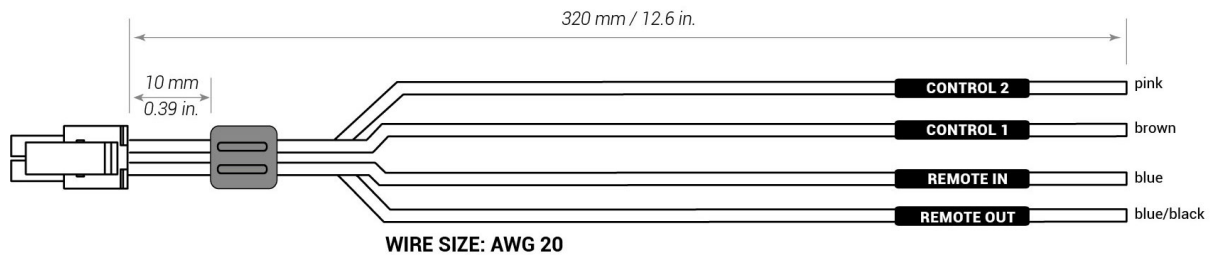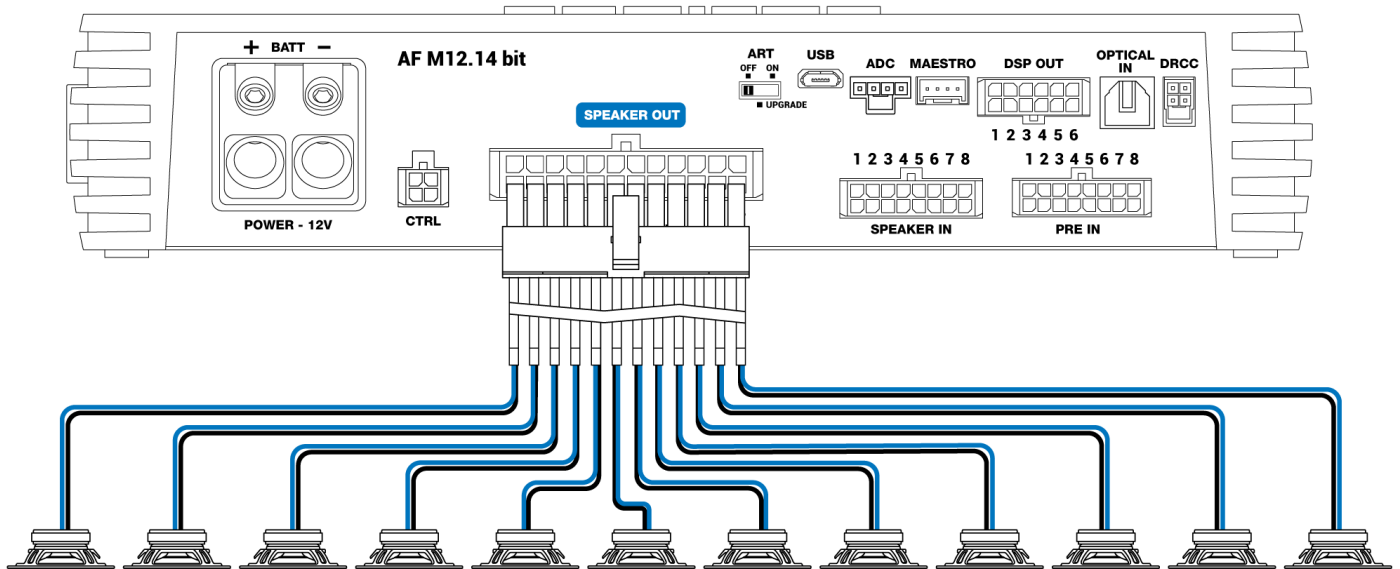

3. SPEAKER OUT

The **AF M12.14 bit** is supplied with a 24 multipolar connected, to which up to 12 SPK OUT channels can be connected 60 W x 12 @ 4Ω.

320 mm

80 mm

10mm

OUT 12	white / white/black
OUT 11	white / white/black
OUT 10	white / white/black
OUT 9	white / white/black
OUT 8	white / white/black
OUT 7	white / white/black
OUT 6	white / white/black
OUT 5	white / white/black
OUT4	white / white/black
OUT 3	white / white/black
OUT 2	white / white/black
OUT 1	white / white/black

Wire Size: AWG16

Example of SPK OUT channels connection

The output channels can be configured by software. Each channel features:

- a parametric equalizer with 15 poles;
- an electronic crossover with 68 frequency steps and Butterworth or Linkwitz-Riley filters with slopes from 6 to 24 dB;
- a time delay correction;
- phase inversion 0-180°;
- channel level control from 0 to -40 dB;

It is also possible to connect the outputs in Bridge mode to increase the power rating.

CH 1 ÷ CH 12 AMPLIFIED OUTPUT CHANNELS CONFIGURATION

| POWER CHANNEL CONFIG	
STEREO MODE	**BRIDGE MODE**
CH1 60 W @ 4 Ω / 90 W @ 2 Ω **CH2** 60 W @ 4 Ω / 90 W @ 2 Ω	**CH1+ / CH2-** 180 W @ 4 Ω
CH3 60 W @ 4 Ω / 90 W @ 2 Ω **CH4** 60 W @ 4 Ω / 90 W @ 2 Ω	**CH5+ / CH6-** 180 W @ 4 Ω
CH5 60 W @ 4 Ω / 90 W @ 2 Ω **CH6** 60 W @ 4 Ω / 90 W @ 2 Ω	**CH5+ / CH6-** 180 W @ 4 Ω
CH7 60 W @ 4 Ω / 90 W @ 2 Ω **CH8** 60 W @ 4 Ω / 90 W @ 2 Ω	**CH7+ / CH8-** 180 W @ 4 Ω
CH9 60 W @ 4 Ω / 90 W @ 2 Ω **CH10** 60 W @ 4 Ω / 90 W @ 2 Ω	**CH9+ / CH10-** 180 W @ 4 Ω
CH11 60 W @ 4 Ω / 90 W @ 2 Ω **CH12** 60 W @ 4 Ω / 90 W @ 2 Ω	**CH11+ / CH12-** 180 W @ 4 Ω

4. SPEAKER IN

Connector for high level input signals and device turn on by ART function.

The **AF M12.14 bit** is provided with a 16 poles multipolar connector to which up to a maximum of 8 high-level input channels can be connected. This port allows using the amplifier automatic turn on function (ART) by high-level input signal *(See point 12. ART – UPGRADE)*. This input accepts signals coming from an amplified source with a voltage level between 2.2 and 22 V RMS. It is also possible to increase the number of high-level inputs with the F4IN accessory. This board adds 4 input channels, such that the amplifier can manage 12 input channels in total*(See point 15. SLOT FOR ADDITIONAL MODULES)*.
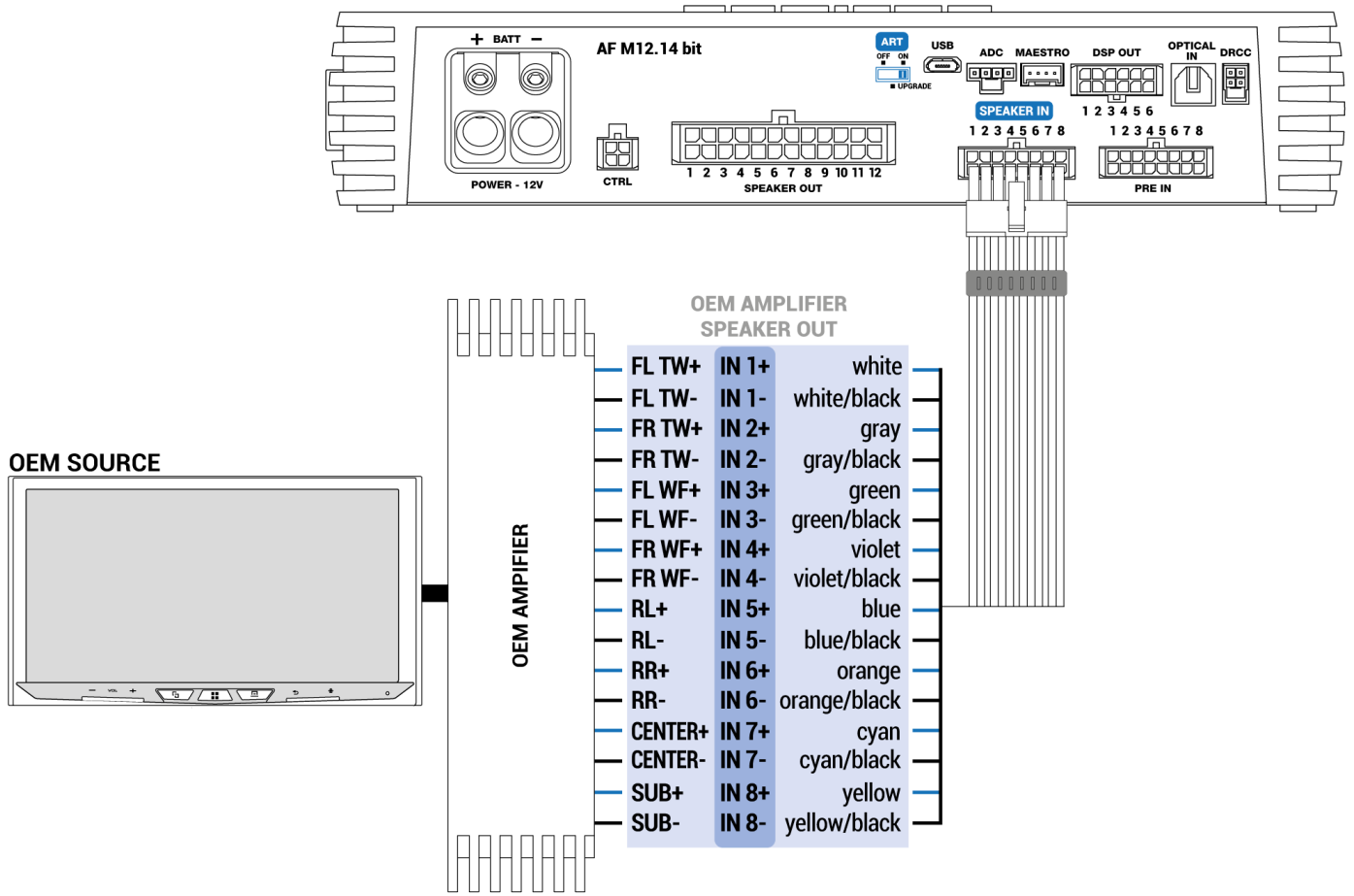
WIRE SIZE: AWG 16
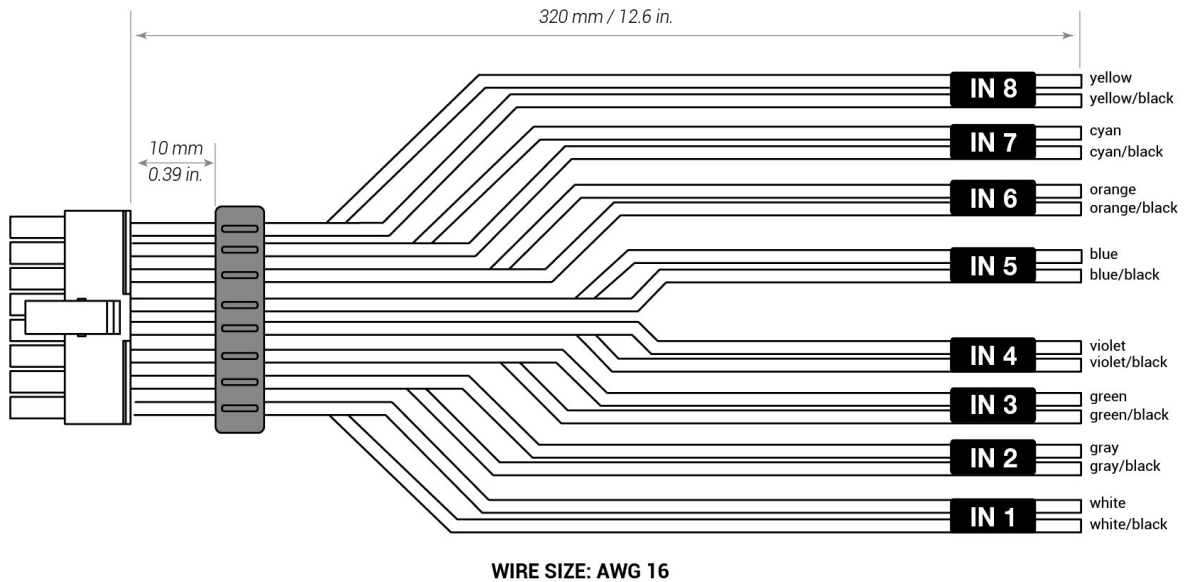
The channels CH1 and CH2 feature the AUTO TURN ON (ART) function for automatic turn on/off of the amplifier thanks to the connection to the source high-level signals. This function can be enabled or disabled via the ART switch on the amplifier front panel.
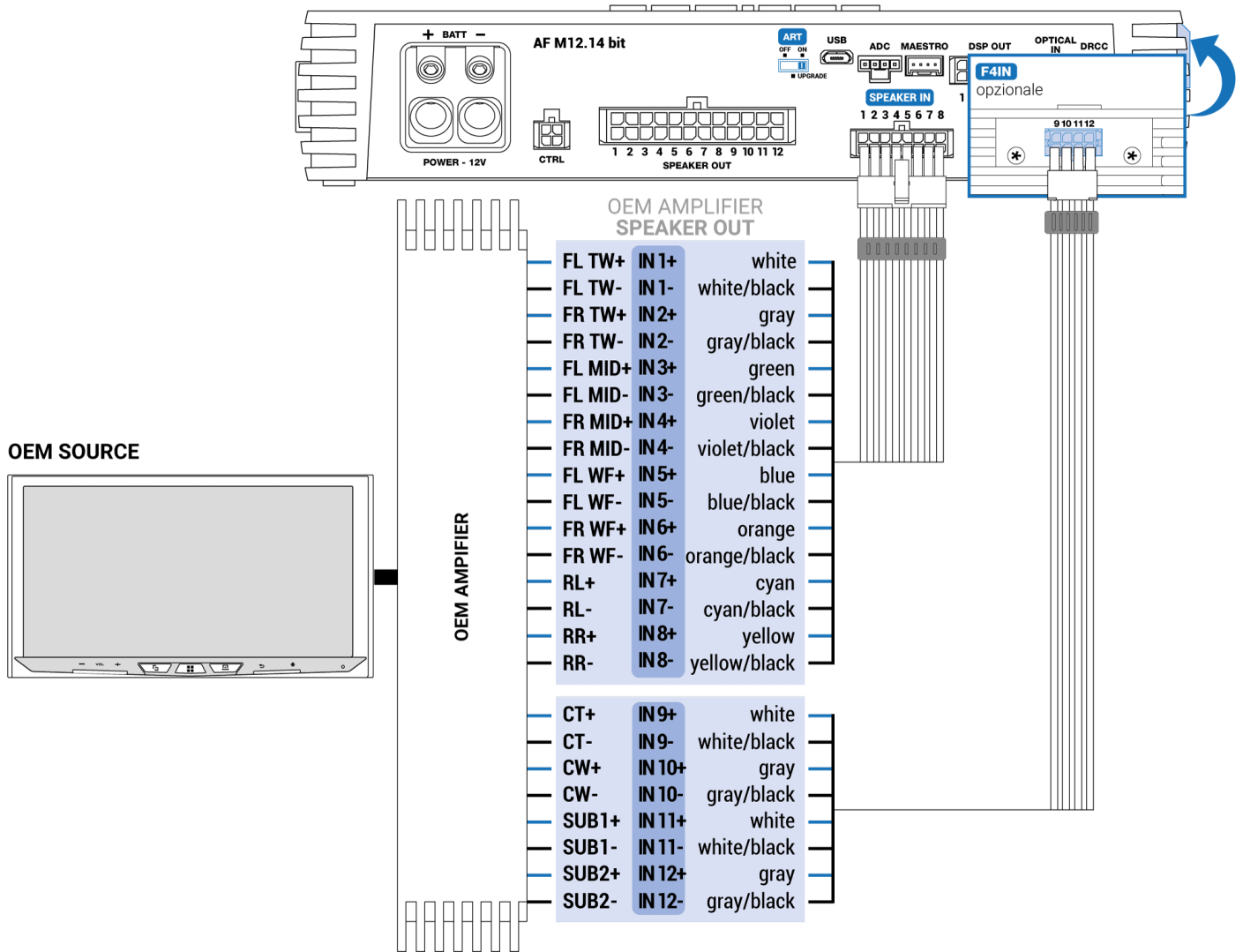
Example 1. SPEAKER IN: 2 WAY FRONT + REAR
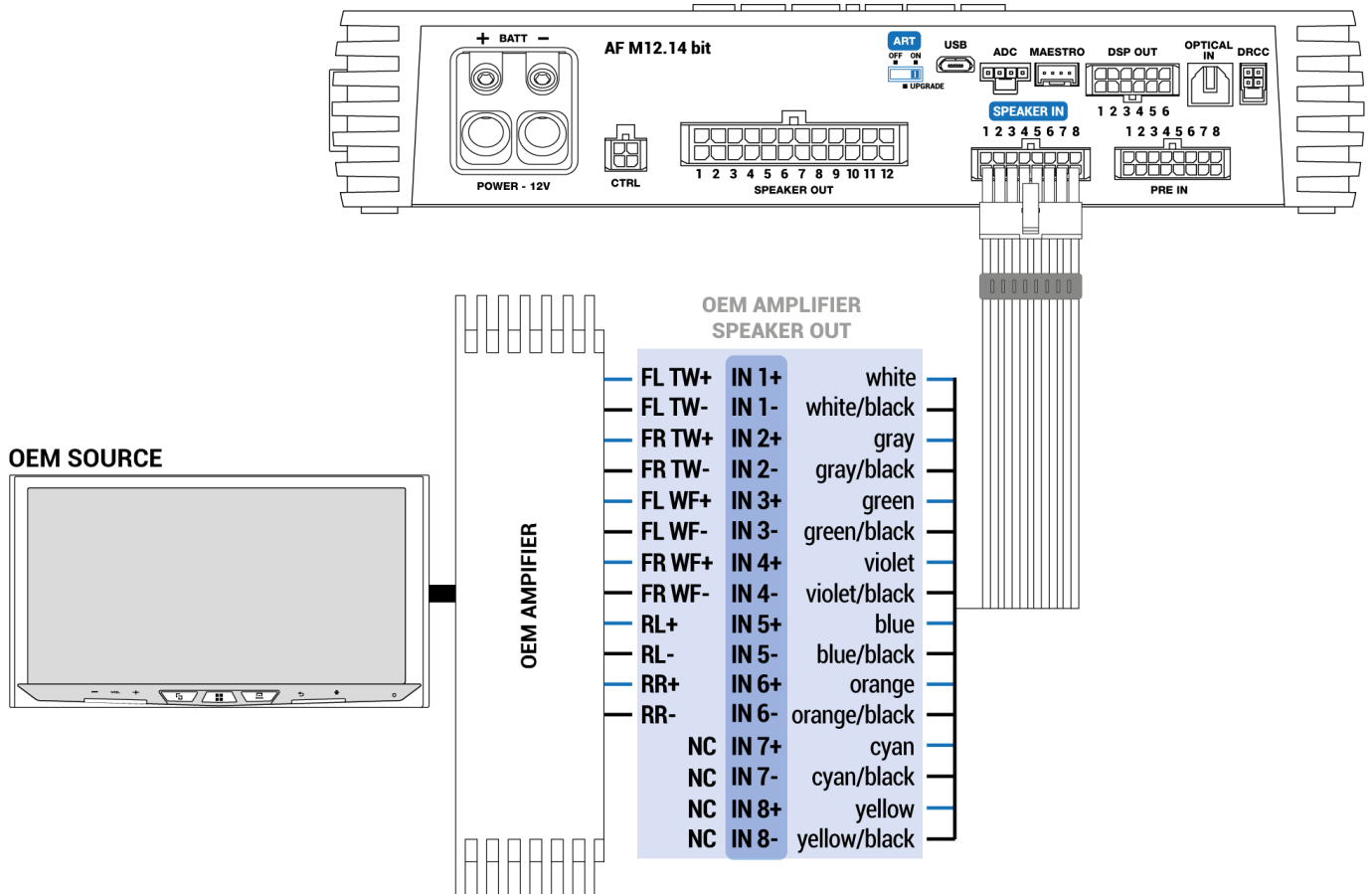
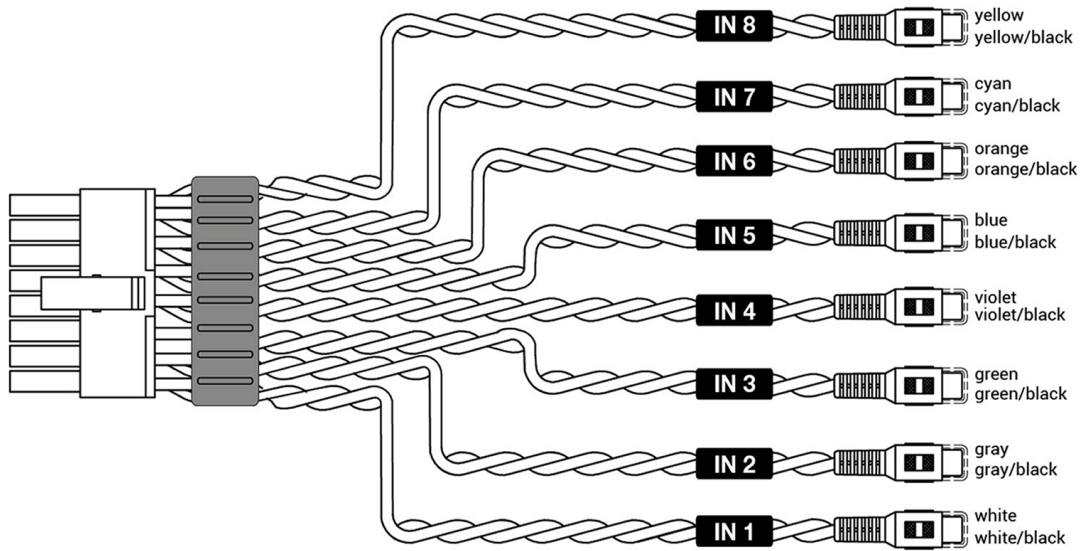**Example 2. SPEAKER IN:** 2 WAY FRONT + REAR + CENTER + SUB

Example 3. SPEAKER IN (12Ch): 3 WAY FRONT + REAR + 2 WAY CENTER + SUB STEREO

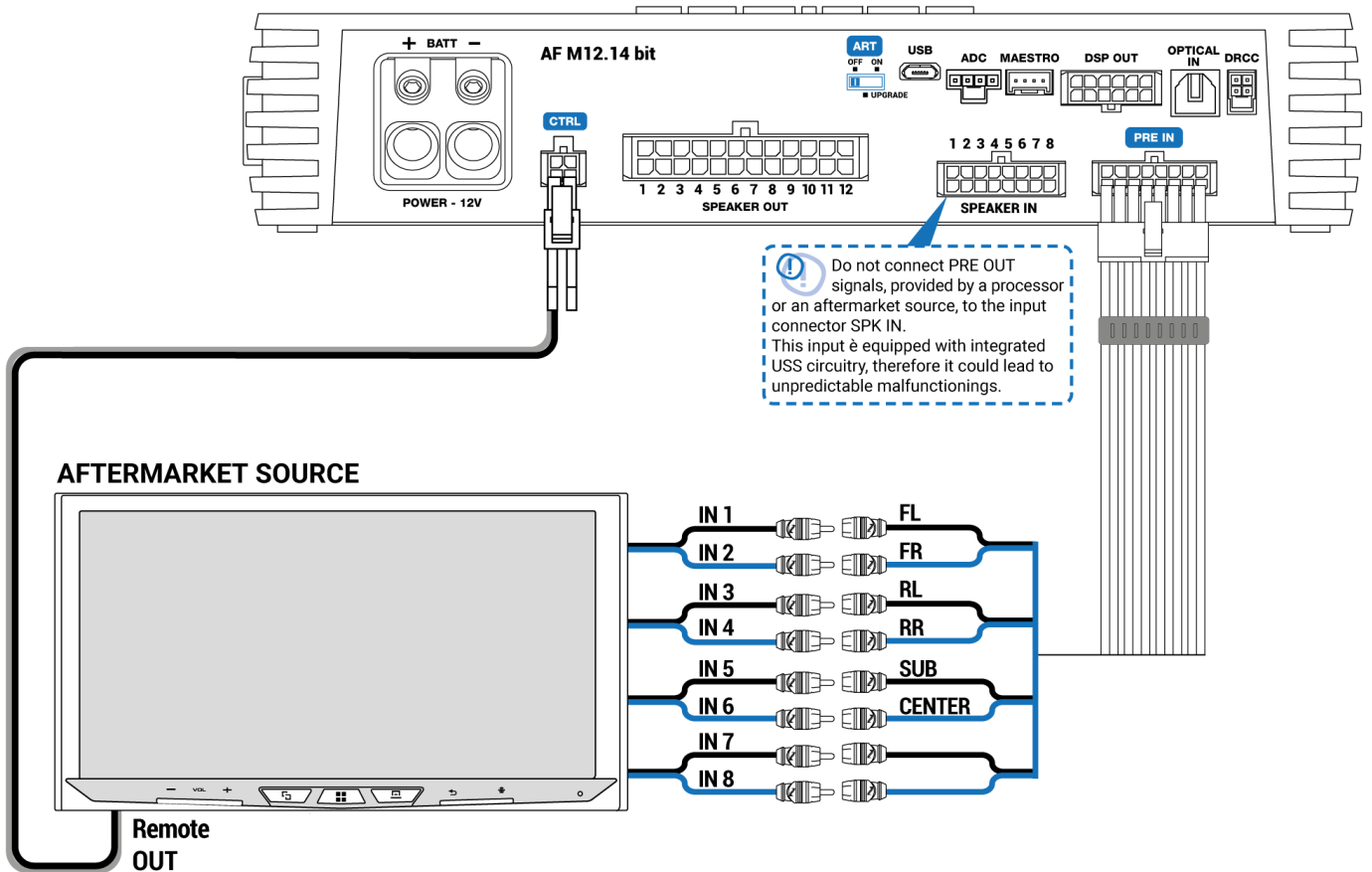| OEM AMPLIFIER SPEAKER OUT		
FL TW+	IN 1+	white
FL TW-	IN 1-	white/black
FR TW+	IN 2+	gray
FR TW-	IN 2-	gray/black
FL MID+	IN 3+	green
FL MID-	IN 3-	green/black
FR MID+	IN 4+	violet
FR MID-	IN 4-	violet/black
FL WF+	IN 5+	blue
FL WF-	IN 5-	blue/black
FR WF+	IN 6+	orange
FR WF-	IN 6-	orange/black
RL+	IN 7+	cyan
RL-	IN 7-	cyan/black
RR+	IN 8+	yellow
RR-	IN 8-	yellow/black
CT+	IN 9+	white
CT-	IN 9-	white/black
CW+	IN 10+	gray
CW-	IN 10-	gray/black
SUB1+	IN 11+	white
SUB1-	IN 11-	white/black
SUB2+	IN 12+	gray
SUB2-	IN 12-	gray/black

5. PRE IN

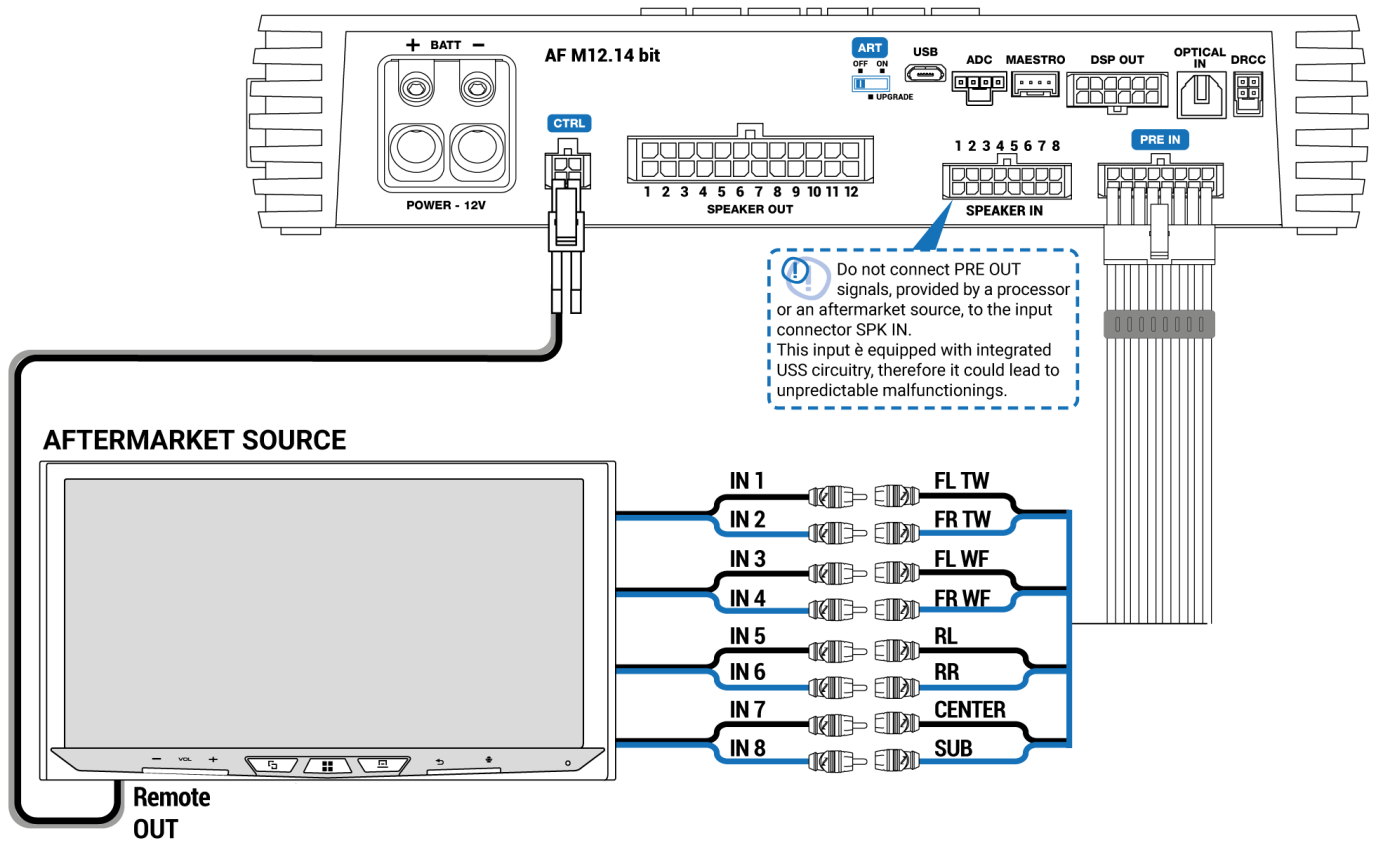Connector for low level input signals.

AF M12.14 bit is provided with a cable featuring RCA connectors that can connect up to a maximum of 8 low level input channels. This input accepts signals from a pre-amplified source, the signal to be applied must have a level between 0.6 and 6 V RMS. These input channels can be customized in different ways through the use of the PC Software.

IN 8	yellow / yellow/black
IN 7	cyan / cyan/black
IN 6	orange / orange/black
IN 5	blue / blue/black
IN 4	violet / violet/black
IN 3	green / green/black
IN 2	gray / gray/black
IN 1	white / white/black

Example 1. PRE IN: FRONT + REAR + CENTER + SUB

Do not connect PRE OUT signals, provided by a processor or an aftermarket source, to the input connector SPK IN.
This input è equipped with integrated USS circuitry, therefore it could lead to unpredictable malfunctionings.

Example 2. PRE IN: 2 WAY FRONT + REAR + CENTER + SUB

6. DRCC

Connector for the **DRC AC**(optional) to the **AF M12.14 bit. The DRC AC allows the control of the main device functions. For more details please read the section 4.18 DRC AC of the bit Drive manual**.

Turn on the AF M12.14 bit by DRC AC

Turn on the AF M12.14 bit with a pressure on the DRC AC knob. Turn off with a long pressure of the knob. In this case no other connections are needed.

Note: if the amplifier has been turned on by REMOTE IN signal, it can be turned off only by the same REMOTE IN signal. Instead, if the device was turned on by DRC AC, it can be turned off by either DRC AC or REMOTE IN.

7. OPTICAL IN

Input optical digital S-PDIF.

The **AF M12.14 bit** accepts at its input PCM signals up to 192 kHz / 24 bit sampling frequency rate. So DOLBY DIGITAL (AC3) multi-channel signals coming from audio/video sources (such as the audioof a film in DVD) or DTS can not be reproduced. Connect a fiber optic cable with a TOSLINK connector. This

input can be selected using the external control DRCC or by activating it using the control terminal *(see sec. 7.3.2)* appropriately configured. An additional digital input, optical S-PDIF or electrical S-PDIF can be added to AF M12.14 bit, using the F2O expansion module, bringing the available digital inputs to two (see point 15. ADDITIONAL MODULES).

7.1 HOW TO SELECT THE OPTICAL IN INPUT
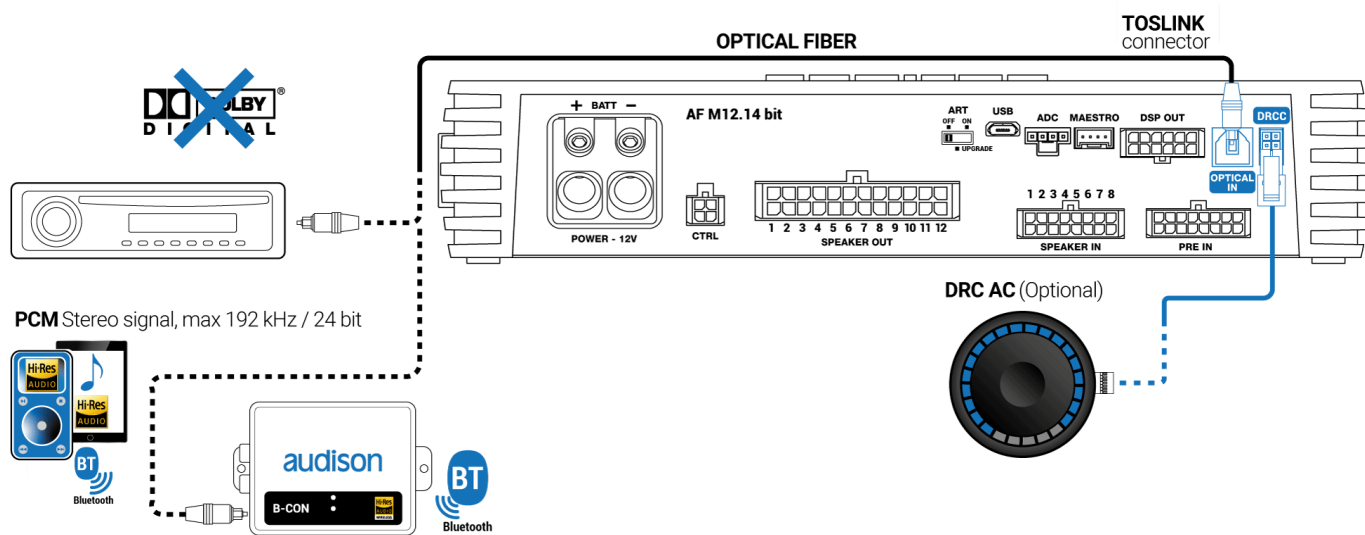
WARNING: the digital input accepts PCM stereo signals up to 192kHz/24bit, therefore it is not possible to play multichannel signals DOLBY DIGITAL (AC3) from audio/video sources (like for example the audio of a DVD movie or DTS). The output of these devices must be configured in STEREO mode to be played.

How to select the OPTICAL IN input:

1. With the DRC AC
2. With one of the *CONTROL* terminals properly set by software *(see sect. 7.3.2)*. this command is active with a +12V signal to the chosen terminal.
3. By PC Software.
4. With the ADC port connected to a compatible device (for example a B-CON).
5. With the Maestro port connected to a compatible device.

It is possible to add another digital input to the M12.14 bit, optical S-PDIF or Coaxial, by inserting the accessory extension card F2O (see point 15. ADDITIONAL MODULES).

8. DSP OUT

The AF M12.14 bit features a DSP OUT pre-amplified output, to which the supplied DSP OUT multipolar cable or the AF LINK accessory cable can be connected to have 2 additional channels configurable on the bitDrive software.

- **Examples 1:** by inserting the AF LINK cable the AF 12.14 bit DSP OUT can be connected to an Audison AF D amplifier (models without DSP), to extend the audio system up to 14 outputs.
- **Example 2:** if another amplifier with PRE-IN inputs and different from the Audison AF line is used, the supplied DSP OUT cable can be soldered with RCA male connectors.

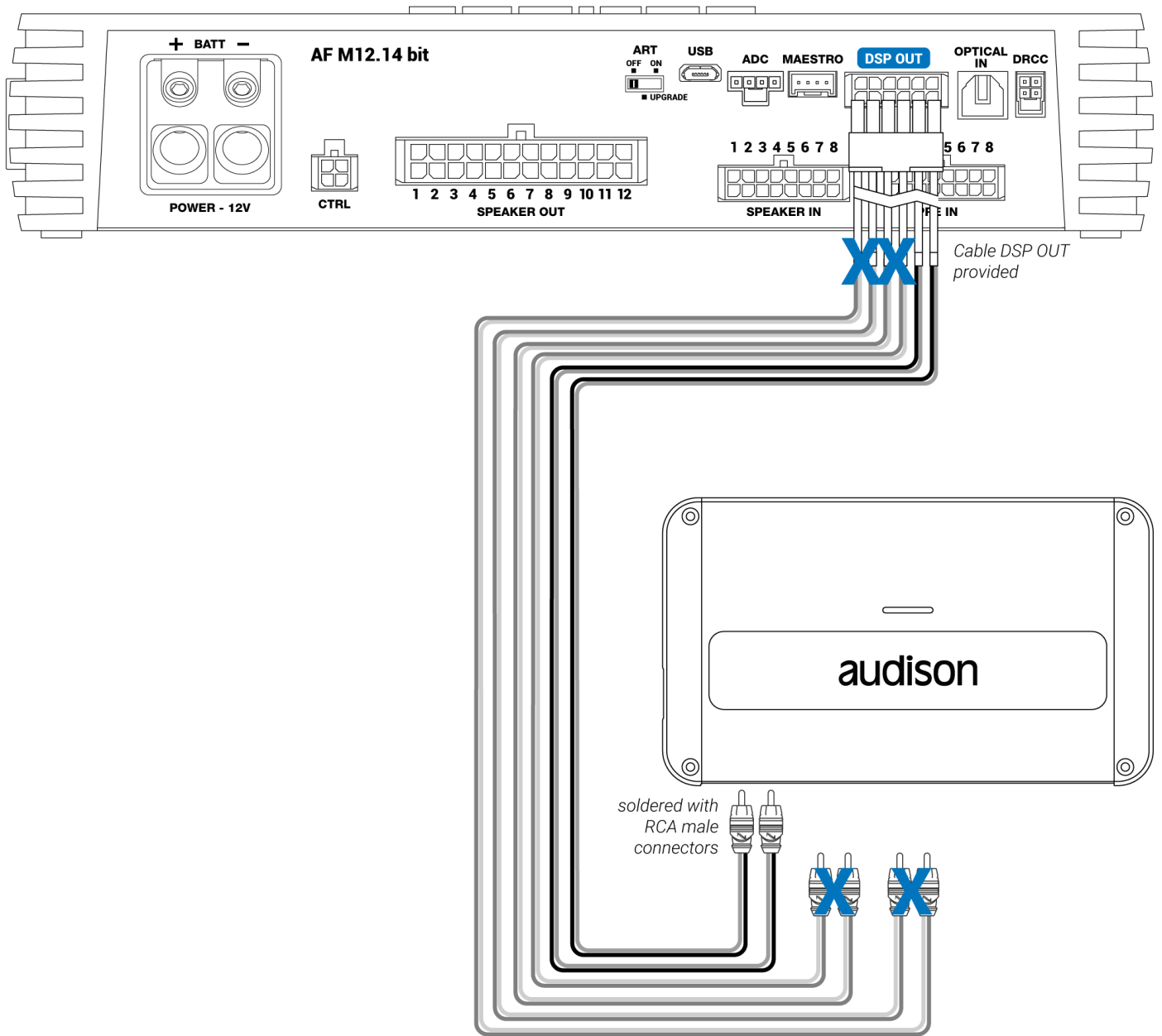- **WARNING: It is recommended to check the input signal levels to be compatible with the DSP OUT output levels.**

- AF LINK cable

WIRE SIZE: AWG 20

Example 1

Example 2

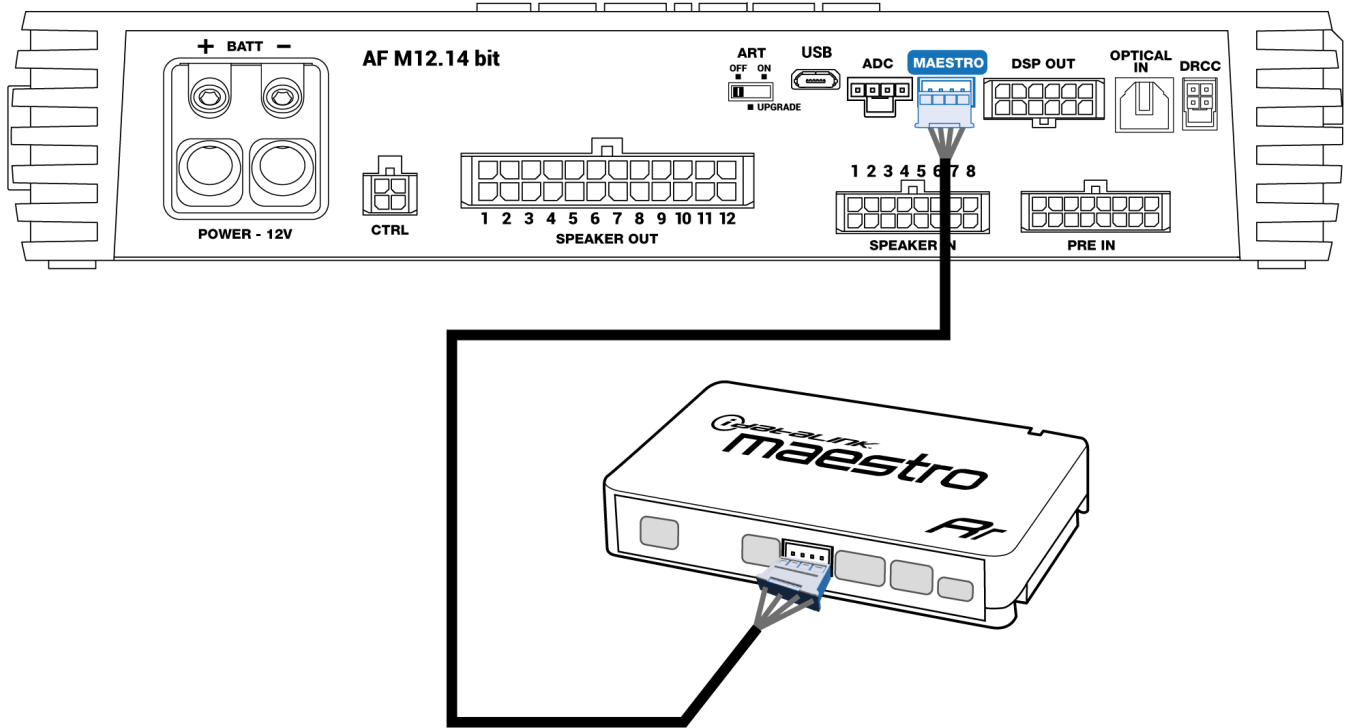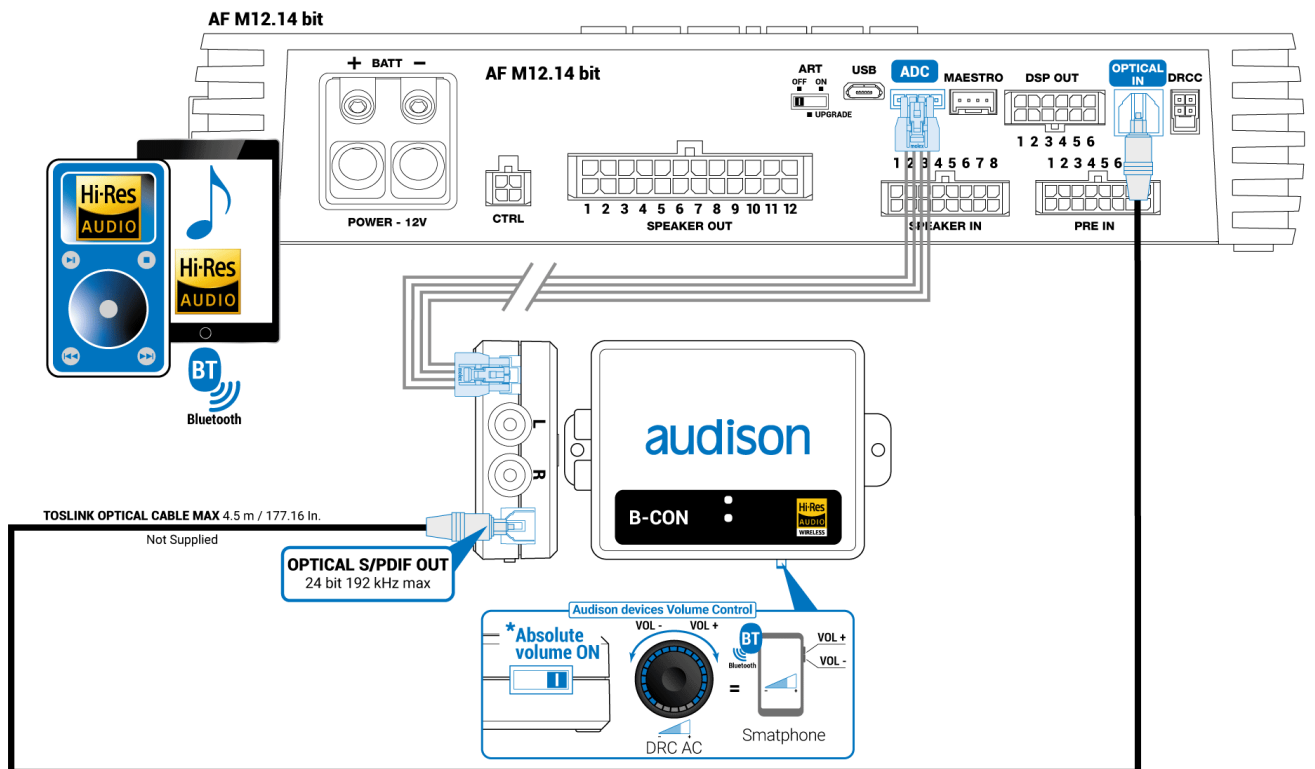*Cable DSP OUT provided*

soldered with RCA male connectors
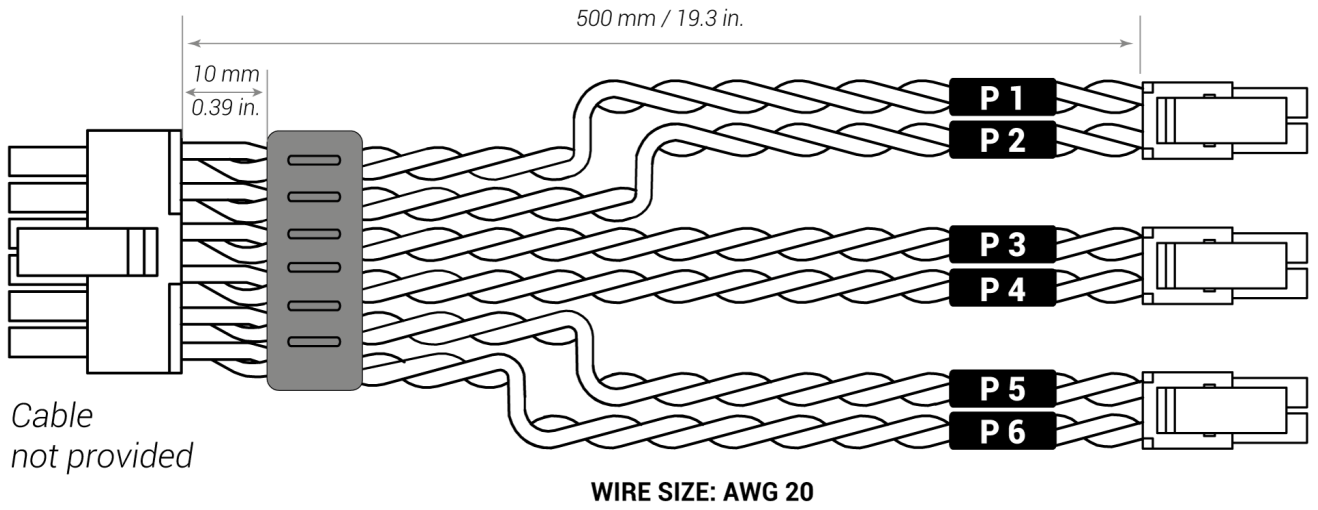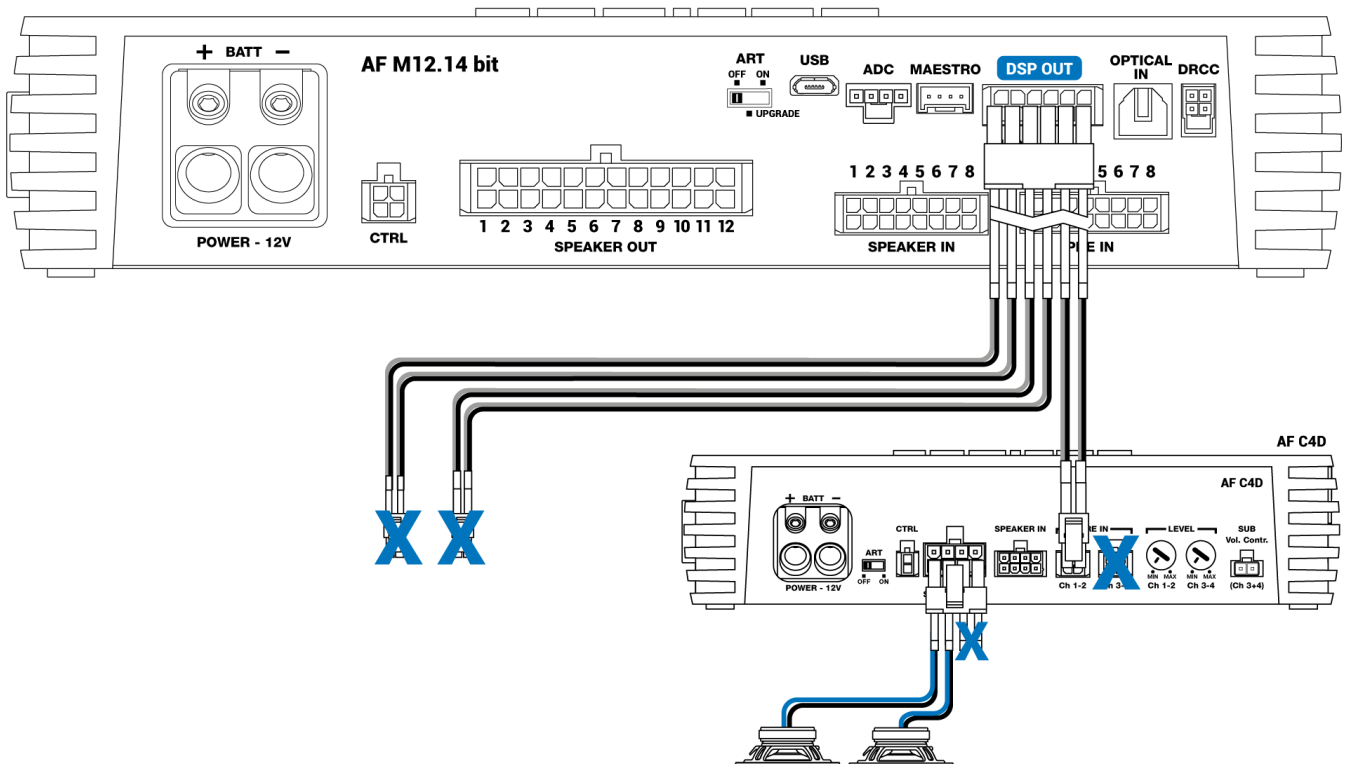
9. MAESTRO

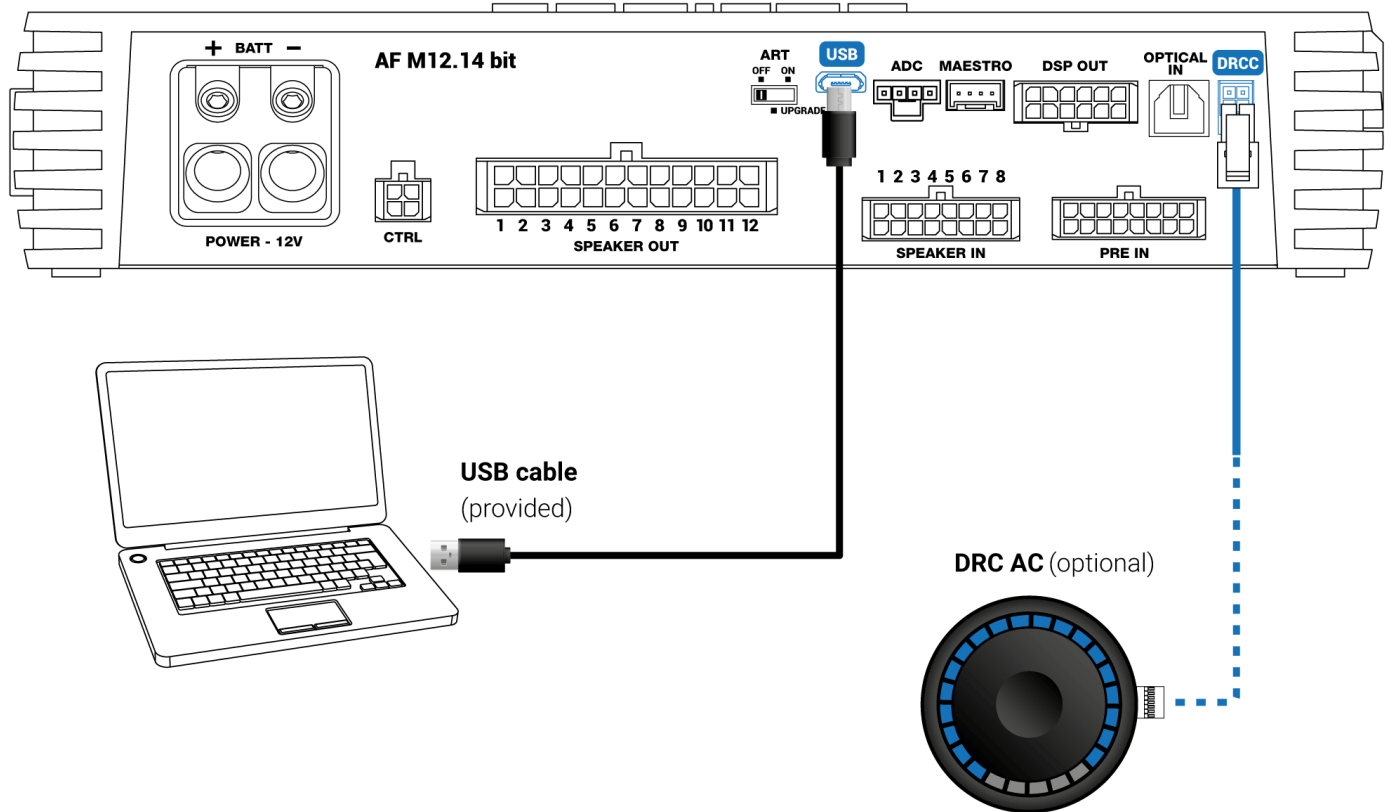Dedicated port for communication with Maestro AR devices.

10. ADC (Audison Data Control)

Port for serial communication with external compatible devices **(ex. B-CON)**.

11. USB

USB (micro) connection to connect the product to a PC in order to manage the functions using AF C8.14 bit software. The connection standard is USB 2.0/3.0 compatible.

USB cable
(provided)

DRC AC (optional)

12. ART (Automatic Turn ON) - UPGRADE

■ **Switch in ON position:** it allows to turn on the device from the MASTER "SPEAKER IN" input (ART ON function).
■ **Switch in OFF position:** it allows to disable the device turn on from the MASTER "SPEAKER IN" input (ART OFF function).
■ **Switch in UPGRADE position:** this mode allows to turn on the amplifier in recovery mode (Rescue Mode) in case it was stuck due to a wrong firmware upgrade process *(see sect. xxx)*.

WARNING: it is suggested to use this mode only in case of product in stuck state. In this mode the PC software is not accessible.

13. FUSE

2 Blade type protection fuse 30 A. In case you need to replace the product fuse, use only the same type and value as the original.
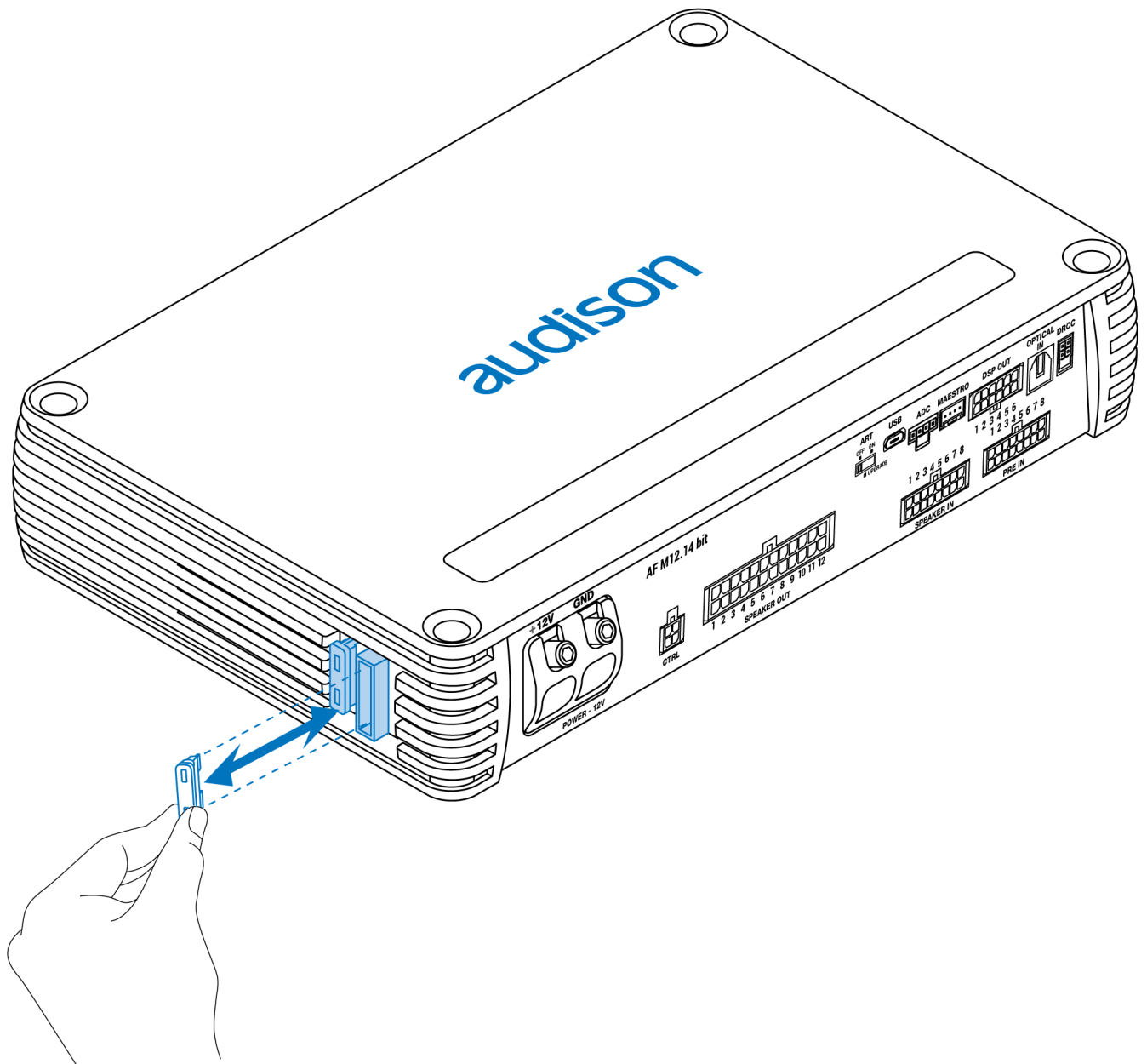
14. LOGO

AF M12.14 bit is provided with a built-in control that manages its status and protects the circuits and connections to the speakers. Any product malfunctions can be visually informed by the logo placed above the amplifier.

A BLUE logo means:

AF M12.14 bit is on.

Slow flashing BLUE logo means:

Product being switched ON/OFF (no audio signal on outputs).

Quick flashing BLUE logo means:

Product being switched ON/OFF (no audio signal on outputs).

RED logo on means:

Intervention of the DC protection. Contact the authorized technical assistance service.

RED flashing logo "1 Sec. ON / 1 Sec. OFF" means:

▪ AF M12.14 bit temperature reached 75° C and the thermal protection was triggered. It will start operating again at around 70° C.

RED flashing logo "½Sec. ON / ½Sec. OFF" means:

▪ Output overload. The red LED flashes when the output load goes below the minimum allowed capacity of about 2Ω impedance. The LED comes on without flashing, activating the protection. When listening to music, if the acoustic reproduction stops for a few seconds, check if the amplifier red LED is flashing. This means there was an overload. Turn the amplifier off and check the speakers and wirings. This protection is self-restoring.

▪ Speaker wiring anomaly. The red LED flashes when a terminal on the speaker goes in short-circuit with the vehicle chassis. When listening to music, if the acoustic reproduction stops for a few seconds, check to see if the red amplifier LED is flashing; this means there was a short circuit between a terminal on a speaker and the vehicle chassis. Turn off the amplifier and check the speakers and wiring. This protection is self-restoring.

RED flashing logo "¼Sec. ON / ¼ Sec. OFF" means:

▪ OVER VOLTAGE" protection activation, due to the fact that the battery voltage is higher than 17V. The product will turn off after 3 minutes.

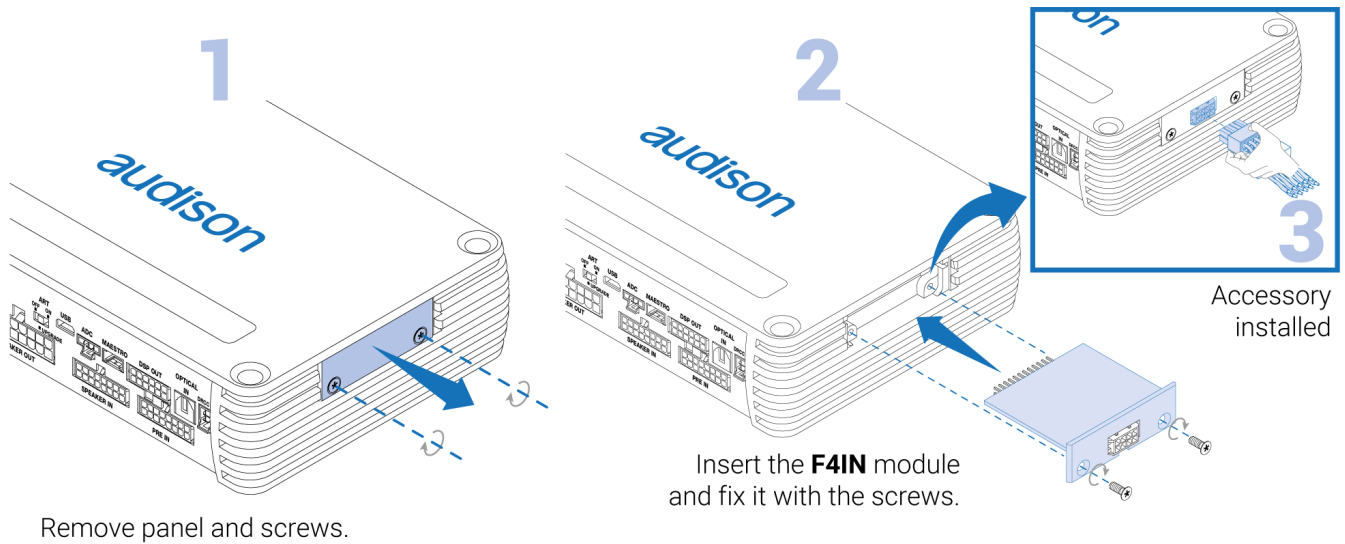**WARNING: check the state of charge of the car alternator.**

15. ADDITIONAL MODULES

AF M12.14 bit includes 2 additional optional accessories (F4IN / F2O) to be inserted individually in the appropriate housing on the right side of the product by removing the screws and the panel.
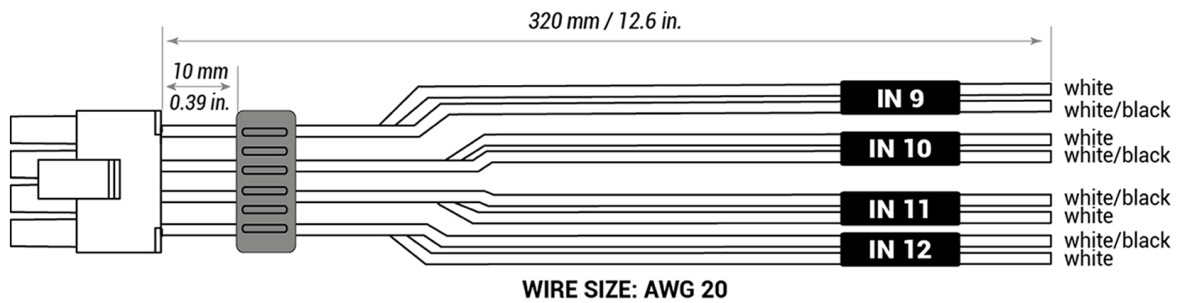
IMPORTANT: follow these steps for a proper installation of the F4IN or F2O accessory board:

1. **Turn off the amplifier;**
2. **Insert the F4IN or F2O board in the slot;**
3. **Turn on the amplifier and open the bit Drive software;**
4. **Warning: if the amplifier already has a setup saved in its memory that was created befre inserting the accessory board, this setup will not be compatible with the new hardware configuration and it could not be loaded. If a new setup similar to that is going to be created, save the setup in the PC to check it later on in Offline mode;**
5. **Open the Settings menu and select the Reset device command to detect correctly the additional channels of the accessory board (read <u>sect. 2.2</u> of the bit Drive manual for more informations).**

▪ **F4IN (Forza 4 Input):** it allows to add 4 analog high level input channels (SPK IN), to get a total of 12 high level inputs of the AF M12.14 bit. Connect the **Speaker IN 4CH cable** (included with this module) as shown in image 3.

Remove panel and screws.

Insert the **F4IN** module
and fix it with the screws.
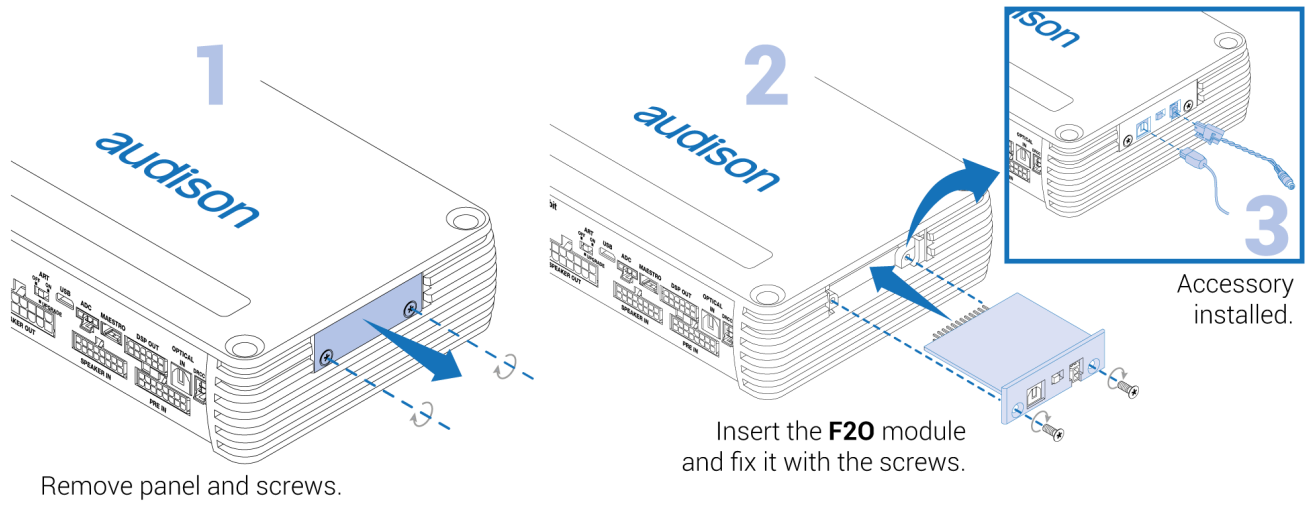
Accessory
installed

- Speaker IN 4CH input cable:

IMPORTANT: with respect to the native 8 SPK IN inputs, the sensitivity scale of the F4IN inputs is 3.2 ÷ 32 VRMS, in order to allow the integration in advanced OEM systems that deliver higher voltages. In the bit Drive software the F4IN input channels will always be #9,#10,#11,#12. Please refer to the following table for a correct sensitivity calibration of each F4IN channel.

bit Drive input sensitivity [VRMS]	F4IN applied sensitivity [VRMS]
22	32
21,3	31
20,5	29,8
19,8	28,8
19,1	27,8
18,3	26,6
17,6	25,6
16,9	24,6

16,1	23,4
15,4	22,4
14,7	21,4
13,9	20,2
13,2	19,2
12,5	18,2
11,7	17
11	16
10,3	15
9,5	13,8
8,8	12,8
8,1	11,8
7,3	10,6
6,6	9,6
5,9	8,6
5,1	7,4
4,4	6,4
3,7	5,4
3,3	4,8
2,9	4,2
2,6	3,8
2,2	3,2

■ **F2O (Forza 2 Optical):** Adds a second digital S-PDIF coaxial or optical input (192 kHz/24 bit max.), selectable by the dedicated switch. **COAXIAL input cable** (included with this module) as shown in image 3.
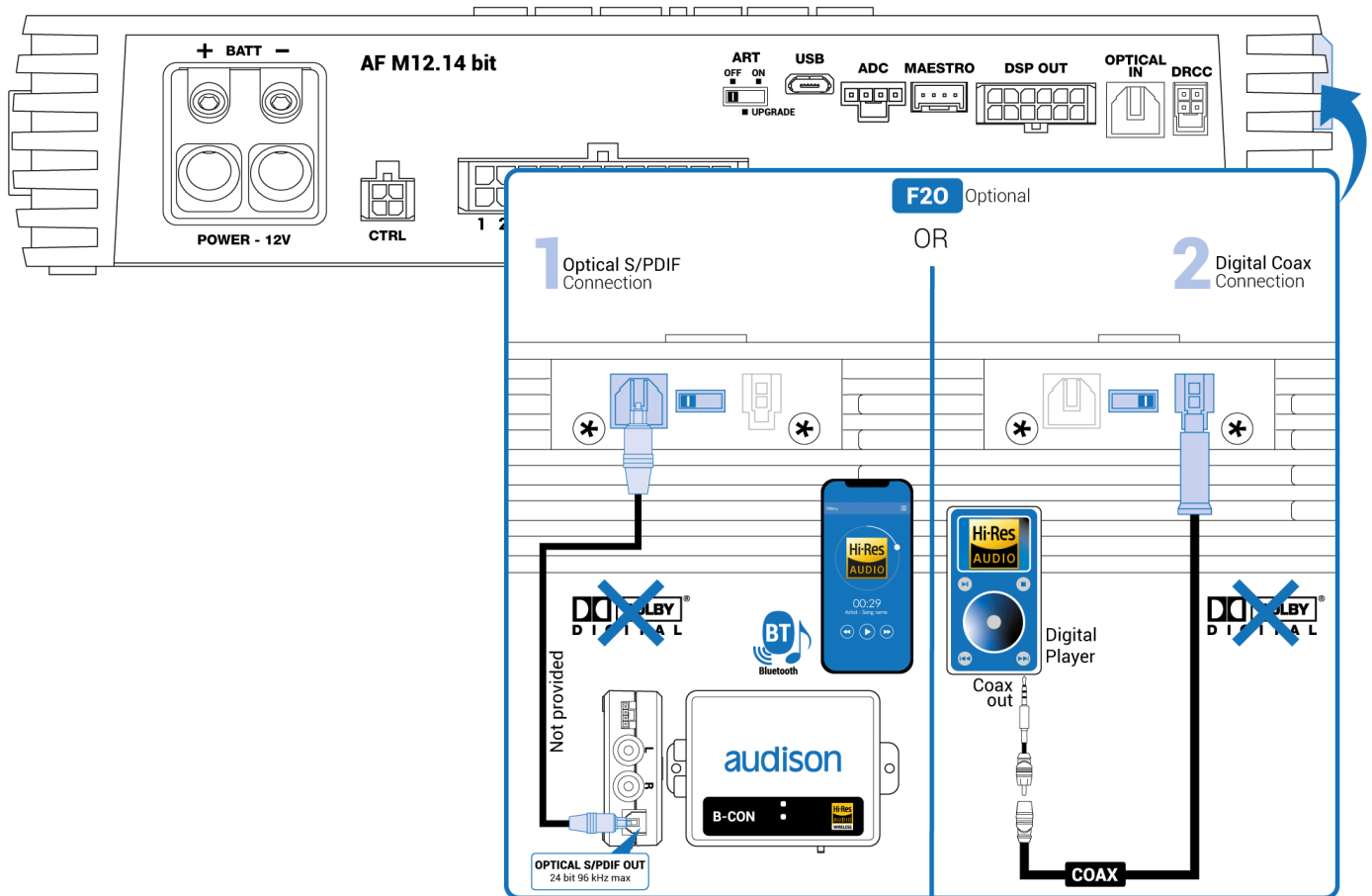
1 Remove panel and screws.

2 Insert the **F2O** module and fix it with the screws.

3 Accessory installed.

IMPORTANT NOTE: the Absolute Volume function is not available on this module. Therefore, in case of use of a B-CON or accessories compatible with that function, it is recommended to use the main optical input of the AF M12.14 bit *(see point 7 OPTICAL IN)*.

- COAXIAL input cable:

to **F2O**

150 mm / 5.9 in.

10 mm
0.39 in.

COAX

to digital **COAX** input (75 Ω)

white
white/black

WIRE SIZE: AWG 20

Example of F2O use

WARNING: the digital input accepts PCM stereo signals up to 192kHz/24bit, therefore it is not possible to play multichannel signals DOLBY DIGITAL (AC3) from audio/video sources (like for example the audio of a DVD movie or DTS). The output of these devices must be configured in STEREO mode to be played.