

# SMART-BOX

## The versatile mute-box

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### Troubleshooting Guide

**MSI box does not react to Audio input.** Check if there is 5V supply in the 6 pin connector when the car engine is running and choose from the following points:

**No 5v in the 6 pin connector: please check the following:**

- ◆ **No power on RED Constant 12V wire:**
  1. Check that the bullet connectors on the supply wires are properly connected. The constant supply wires are the red and black wires.
  2. Check for a blown fuse on the Audio2Car harness or in the car fuse-box.
- ◆ **No power on BLUE Ignition wire and DIP Switch 1 is OFF:** Internal IGNIBOX circuitry is active and a switch On delay of 0-30 seconds after engine is started should be expected. If the switch On delay is unacceptable please connect the blue wire in the 24 pin connector to a real ignition source and set DIP switch 1 ON.
- ◆ **No power on BLUE Ignition wire and DIP Switch 1 is ON:** Ignition input in 24 pin connector is used to switch On and Off the carkit.
  1. Check that the bullet connectors on the supply wires are properly connected. The Ignition supply wires are the blue and black wires.
  2. Check for a blown fuse on the Audio2Car harness or in the cars fuse-box.
  3. The car may require an alternative ignition source. See installation step 3.

**5v in the 6 pin connector: please check the following:**

- ◆ **Audio source volume too low to be sensed by MSI box:**
  1. Turn up volume of Audio source.
  2. Set MSI box to high sensitivity by setting DIP switch 6 On.

**MSI box does not turn off** when the key is removed from the ignition barrel. Troubleshooting this issue depends on the state of DIP switch 1:

- ◆ **DIP switch 1 is OFF:** Internal IGNIBOX circuitry is active and a switch off delay of 0-4 minutes should be expected. Extended to 5-9 minutes if DIP switch 2 is ON. See installation step 3. If the switch off delay is unacceptable please connect the blue wire in the 24 pin connector to a real ignition source and set DIP switch 1 ON.
- ◆ **DIP switch 1 is ON:** Ignition input in 24 pin connector is used to switch On and Off the carkit. Please check if a real ignition source is connected to the blue wire in the 24 pin connector. There should be no voltage on the blue wire when there is no key in the ignition. See installation step 3.

**Not all speakers are muted.** The MSI box should always be the primary box (Box 1) on the Audio2Car cable. Please make sure the MSI box is connected to the 24 pin connector with the Green, White, Gray and Purple wires. For further troubleshooting please see the instruction sheet for the Audio2Car cable.

**No radio sound due to MSI box constantly muting.** The MSI box may constantly be sensing sound on the Audio input causing the box to mute constantly. Please check the following:

1. If DIP switch 6 is ON try setting it OFF to lower the sensitivity of the audio sense circuitry.
2. The cable connecting the Audio source may pick up too much noise. Please try another cable with better screen.
3. If the Audio source is powered from another source than the MSI box please make sure the supply is taken from the Audio2Car cable to avoid ground loop noise.

**Audio is chopped or falling out at high speaker output.** The chosen volume setting may be activating the amplifiers overload protection.

1. Turn down volume on Audio source
2. Select a lower base volume on the MSI box using DIP switch 7 & 8.

**Carkit music is chopped or falling out at low speaker output.**

1. Try increase volume of the Audio input to ensure activation of Audio sense.
2. Try increase audio sense sensibility by switching DIP switch 6 ON.

**Excessive noise when using Audio source.** Please check the following:

1. Check all connections between MSI box and Audio source. Any bad connection will give excessive noise.
2. Check volume setting on MSI box. Always select the lowest acceptable base volume on the MSI box.
3. The cable connecting the Audio source may pick up too much noise. Please try another cable with better screen.
4. If the Audio source is powered from another source than the MSI box please make sure the supply is taken from the Audio2Car cable to avoid ground loop noise or insert ground loop filter such as item nr. XA068.

**MSI box sound is in the wrong speakers or there is no MSI sound.** See the instruction sheet for the Audio2Car cable.

**Radio will not turn on or not work properly after installation.** See the instruction sheet for the Audio2Car cable.

UK/US

### Installation instruction

#### "MSI" SMART-BOX for the Audio2Car cable range Including IGNIBOX circuitry



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### Product description

#### "MSI" SMART-BOX for the Audio2Car cable range Including IGNIBOX circuitry

The SMART-BOX item no. "MSI" is the perfect solution for Speech and Music from several audio sources into the car speakers. It is compatible with the Audio2Car cable range. The build-in stereo amplifier enables Music output in maximum 4 speakers channels for accessories with only an Line-out for music playback. The "MSI" box also includes the artificial Ignition circuitry known from the Kram IGNIBOX.

**Speaker-function:** This is achieved by using the relays in the SMART-BOX, the radio sound is muted and the sound from the audio source is sent via the build-in amplifier through the cars speakers. This way you will achieve a perfect sound without interference from the car radio.

**Power supply of the SMART-BOX and SMART-BOX audio sources:** The SMART-BOX is supplied directly from the Audio2Car cable. The SMART-BOX includes a 5V 3A Accessory supply available in the 6 pin connector. The 5V accessory supply can be used to charge one or more audio sources such as Phones, Portable Navigation systems or MP3 players. If the chosen Audio2Car harness does not include an ignition source the "MSI" box build-in artificial ignition circuitry can be used to power ON and OFF the SMART-BOX and connected accessories. This way you can easily supply the SMART-BOX and connected Audio sources. This way cutting of the cars wiring loom is minimized.

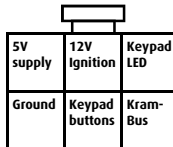
**Mute function:** The mute from the carkit is connected, through internal circuitry and protected FET, to the yellow mute wire in the Audio2Car cable.

**Audio inputs:** The "MSI" box has two 3,5mm jack audio inputs. A primary fast reacting input ideal for Navigation speech but can also be used for Music. A secondary input for use with Music sources. If Audio is present at both primary and secondary input the primary input has the highest priority and will therefore always be heard. Both inputs are connected via 3.5mm Jack connectors and are based on a balanced circuitry for improved noise rejection.

**Aux integration:** The SMART-BOX has no connection to the 4 pin AUX connector on the Audio2Car harness. If you do not want music to be played by the build-in amplifier then a separate Kram Aux solution should be used.

### Technical Specifications

<b>General Description:</b>	CE approved, Amplified mute-box with 5 DPDT relays, Protected, FET Mute output, Audio sense, IGNIBOX circuitry, Protected 5V accessory supply and holes for zip-ties.
<b>Amplifier Description:</b>	Highly efficient 2x15W Class D amplifier with 4 step volume control and overload protection. Two Low level balanced Jack input circuits with Audio sense.
<b>Voltage supply range:</b>	10-16V DC. Protected against reversed power supply. Value below are based on a 12V DC supply.
<b>Load dump protection:</b>	Load dump protected according to ISO 7637-2:1990 Pulse 5.
<b>Current usage:</b>	<2 mA (passive) / 25 mA (stand by) / 6,5 A (peak power) including 3 A supplied from 5V accessory supply.
<b>Max source current by Accessory output:</b>	3 Amp. Overload protected.
<b>Max sink current for Mute-output:</b>	700 mA. Short circuit protected.
<b>Minimum Fuse size:</b>	7 Amp for constant supply, 1 Amp for Ignition supply
<b>Maximum Fuse size:</b>	10 Amp for constant supply, 5 Amp for Ignition supply
<b>Maximum radio output pr. speaker:</b>	90 Watt RMS / 125 Watt music power @ 4 Ohm (3 Amp relays)
<b>IP class:</b>	IP51
<b>Size :</b>	L 130 x W 85 x H 9 mm
<b>Configuration chart for 6 connector:</b>	



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### Installation description

**1st: Install the Audio2Car cable** according to the Audio2Car instruction sheet.

**2nd: Connect the MSI box.** To the 24 pin connector on the Audio2Car cable with the green, white, gray, and purple speaker wires.

**3rd: Check ignition source.**

- If the Audio2Car cable has a useable ignition source then set DIP switch 1 = On to disable IGNIBOX circuitry and go to step 6.
- If the Audio2Car cable does not have an ignition source then set DIP switch 1 = Off to activate IGNIBOX and go to step 4.

**4th: Make a function check. (Only when using IGNIBOX circuitry)** The MSI box should turn on within 5-30 sec. after the engine is started and should turn off 0-4 minutes after the engine is turned off and key is removed. Extended to 5-9 minutes if the dip switch 4 is set to On. See step 6. If the carkit does not turn ON please recheck connection of Constant 12v and ground supply.

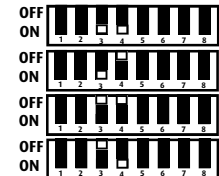
**5th: Choose switch off delay. (Only when using IGNIBOX circuitry)** The ignition switch off delay can be extended by setting dip switch 2 to On. An extended switch off delay is used for cars with automatic engine start/stop system, to avoid the IGNIBOX circuitry turning off the ignition source when the car is stopped at a red light with the engine turned off. When Dip switch 2 is switched On the switch off delay is extended by 5 minutes. (DIP switch 2 has similar function as Orange wire Loop on a standard IGNIBOX)

**6th: Connect the primary Audio source to the SMART-BOX** using the jack connector closest to the 6 pin connector. This input can handle navigation speech and music. Audio from the primary input overrules audio from the secondary input.

**7th: (Optional) Connect the secondary Audio source to the SMART-BOX** using the jack connector farthest from the 6 pin connector. This input can only handle music. Audio from the primary input overrules audio from the secondary input.

**8th: (Optional) Connect SMART-BOX Adaptor to input Audio source.** A 12V and 5V power source is available in the 6 pin connector for charging/powering accessories. Several SMART-BOX adaptors are available.

**9th: Choose appropriate dip switch settings.**  
The MSI box includes 8 dip switches to choose preferred function. Always choose the lowest volume setting of the MSI box where the Audio source can reach distortion to avoid excessive noise. Dip switch function can be seen at the bottom of the page. Speaker selection:  
Primary sound in left front speaker: DIP 3 = On, DIP 4 = On  
Primary sound in right front speaker: DIP 3 = On, DIP 4 = Off  
Primary sound in both front speakers: DIP 3 = Off, DIP 4 = Off  
Primary sound in both front and rear speakers: DIP 3 = Off, DIP 4 = On



**10th: Do a function check.** When the Audio source and Audio2Car cable is installed correctly Primary Audio should be heard in the selected speaker channels and music from the secondary source should be heard in 4 speaker channels. **For troubleshooting see troubleshooting guide on last page.**

### Function of DIP switches:

DIP 1 = IGNIBOX circuitry On/Off:	On: Ignition wire input is used	Off: IGNIBOX circuit is used
DIP 2 = IGNIBOX switch off delay Long / Short:	On: Long delay	Off: Short delay
DIP 3 = Primary input output mode:	On: Single speaker mode	Off: Multi speaker mode
DIP 4 in Single speaker mode = RHD / LHD:	On: Right hand drive	Off: Left hand drive
DIP 4 in Multi speaker mode = Rear Mute ON/OFF:	On: Rear speakers are muted	Off: Rear speaker are not muted
DIP 5 = Only relevant with Key-pad accessory:	On: Controls hook and volume	Off: Controls volume only
DIP 6 = Audio sensitivity for Audio inputs:	On: High sensitivity	Off: Low sensitivity
DIP 7 = Amplifier volume:	On: + 5 dB	Off: No dB is added
DIP 8 = Amplifier volume:	On: + 10 dB	Off: No dB is added

Always choose the lowest volume setting on MSI box where the Audio source can reach distortion to avoid excessive noise.

