NAV-TV

INTERFACING THE FUTURE

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ZEN AUDIO

M650-GM

GM IO4/IO5/IO6 MOST50 to RCA, SPDIF & TosLink sound processor

NTV-KIT838

MOST®

IMPORTANT NOTE: Many GM vehicles have poor chassis grounding. BEFORE connecting this interface, check the GROUND to the amplifier using a digital multimeter. If resistance (compared to vehicle battery negative) is greater than 1 OHM, run amp ground directly to battery or find a better ground source. Warranty will be VOID for the M650 if damage is caused due to faulty ground(s).

Overview

NAV-TV's M650-GM processor seamlessly converts GM's MOST-50 audio bus to low level (6 channel) RCA, S/PDIF or TosLink outputs. Adding an aftermarket amplifier to the OE IO5/IO6 system has never been so easy or seamless. This plug & play kit integrates with various OEM data networks to retain OnStar, door chimes, volume control, full fade and balance (analog only), treble, mid-range, bass control & Bluetooth voice calls with no external speaker (true OEM integration). *NOTE: the OEM amplifier must stay connected in the vehicle to maintain complete OE functionality at this time.*

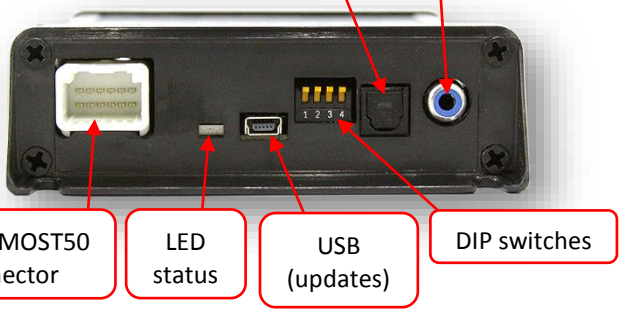
Kit Content

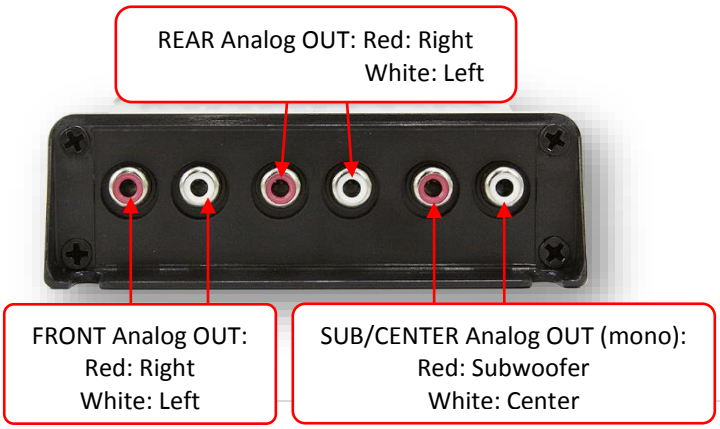
USB Cable (updates)
NTV-CAB009

Plug & Play T-Harness
NTV-HAR310

M650-GM
Interface
NTV-ASY264

M650-GM overview





M650-GM Compatibility
(IO4, IO5 IO6 radio only)

Year(s)	Make	Model
2013-2018	Cadillac	ATS, XTS
2014-2018	Cadillac	ELR, CTS(V), SRX,
2015-2020	Cadillac	Escalade
2016-2018	Cadillac	CT6, XT5, XT4
2014-2018	Chevrolet	Corvette, Impala, Silverado
2015-2018	Chevrolet	Colorado, Suburban, Tahoe
2016-2018	Chevrolet	Camaro, Volt
2014-2018	GMC	Sierra, Yukon
2015-2018	GMC	Canyon

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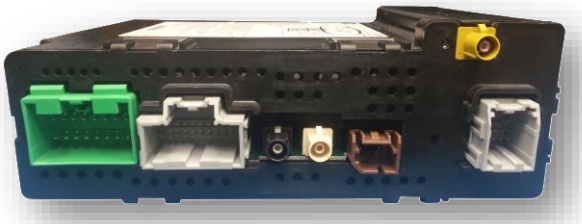
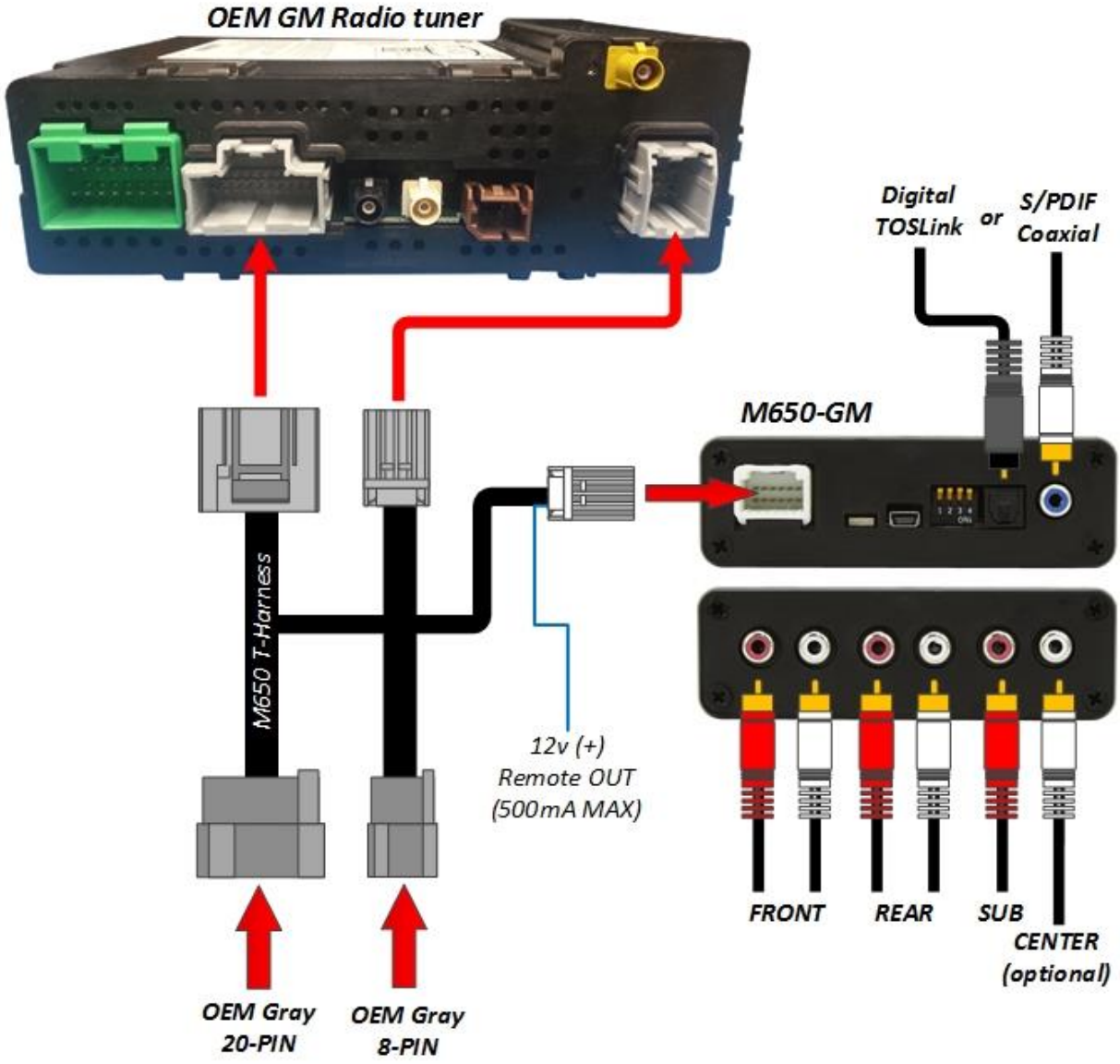
M650-GM Installation

*Proper connection for the M650-GM requires gaining access to the OEM **radio tuner module.** Known locations are listed on the chart below:*

Vehicle	Radio Tuner Location
Cadillac ATS/CTS/XT5/XTS/SRX	Passenger kick (high)
Cadillac CT6	Trunk, passenger side (vertically)
Cadillac ELR	Trunk, passenger side (floor)
Chevy Impala/Camaro	Passenger kick (high)
Chevy Corvette	Passenger footwell
ALL Trucks/SUVs	Behind Screen



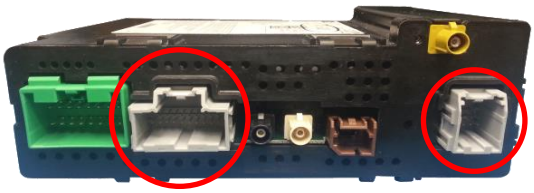
IO5/IO6 OEM GM radio tuner



M650-GM Installation

1. Use the chart on page 3 to locate the OEM radio tuner. Remove all panels/dash pieces to access the plugs on the OEM radio tuner.

2. Using the provided ***T-Harness***, connect between the proper connectors (gray 20-pin & gray 8-pin) at the OEM radio tuner and OEM harness' from the vehicle.



3. ***Before connecting power to the M650-GM,*** adjust dip-switch settings for the desired options:

Position	DIP 1	DIP 2	DIP 3	DIP 4*
UP	*NO* time alignment	Full Scale output (0 dB)	*OEM BASS adjustment* controls overall BASS frequencies	Loudness OFF
DOWN	*Driver* time alignment (trucks only)	-12 dB output	*OEM BASS adjustment* controls SUB output directly	Loudness ON

**NOTE: After installation, if equipped, OEM 'BOSE Autopilot' mode is only retained with DS 4 in the UP (OFF) position. With DS 4 set to ON, Loudness will be controlled by the M650 only.*

4. If using analog RCAs to connect to the amplifier, connect FRONT, REAR, SUB/Center to RCA connectors as shown on page 2. *WARNING: Do not connect RCA cables to this interface until all amplifiers/external processors are properly grounded. Failure to do this may cause damage to the interface and VOID the warranty!*
5. If using S/PDIF for signal to the amplifier, connect to either TosLink or Coaxial connector shown on page 2. *NOTE: both Analog and Digital output sound simultaneously, regardless of which type is used.*
6. Use the provided ***blue wire*** (extend) for amplifier turn on. ***NOTE: this wire must be used for amp turn on, instead of ACC as the amplifier(s) must wake before ignition (for door chimes, etc).*** *This wire will output 12v (500mA MAX) whenever a door is unlocked (via remote) or opened (data-sensing). Make certain this wire will not short circuit anywhere as it will have power any time the vehicle network is active.*

Multi-Color LED Status Indication

LED Status	Indication
Solid Red	MOST Active *(only – missing GM-LAN)*
Solid Green	GM-LAN Active *(only – missing MOST50)*
Orange	**MOST & GM-LAN Active (normal operation)**
Violet or White	*MOST traffic commands…*
Blinking Red	*Peaking* (maximum digital signal level achieved)
Blinking Blue	PC Link with app (future use)
Blinking Green	USB update

M650-GM System Layout Options

***TYPE 1:** Signal directly to amp, no additional external processor*

NOTE: the OEM amplifier must stay connected in the vehicle to retain complete OE functionality

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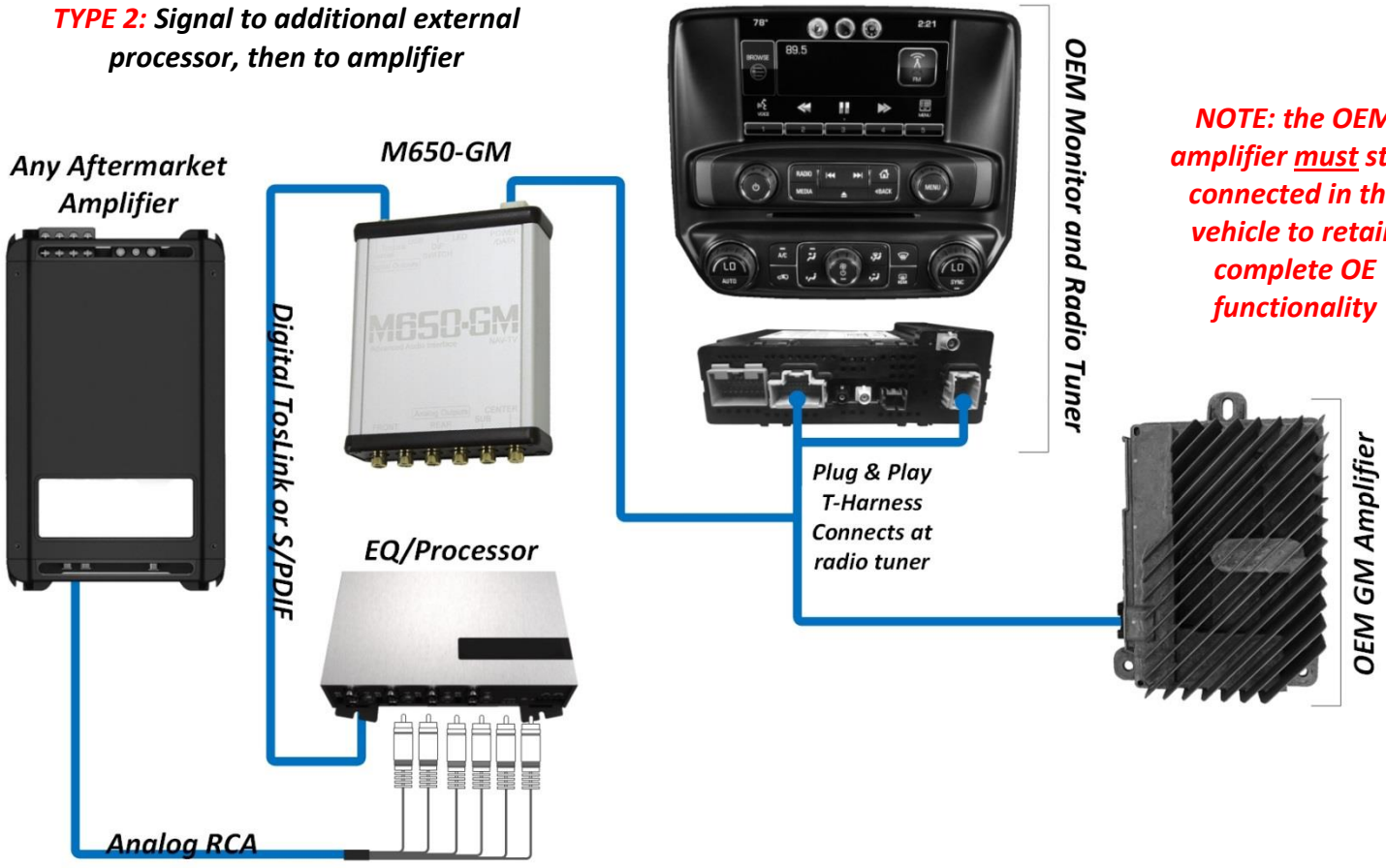
***TYPE 2:** Signal to additional external processor, then to amplifier*



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M650-GM Technical Specifications	
Hardware & Software	
Current HW version:	Version 2.0
Current SW version:	M650-1-2-32-6-20-18.enc
Compatible SW (update) OS:	Windows 7 (64 bit), 8, 10
INPUT	
Digital Input (MOST 50)	MOST 50 Plug & Play
OUTPUT	
Digital Outputs:	TOS link (1) and S/PDIF Coaxial (1)
Digital Outputs supported:	24bit/48kHz
Frequency Response (digital):	18Hz – 24kHz
Analog Outputs:	6 channels (RCA)
Output Voltage *Peak:*	3v (peak to peak, with EQ flat) or 6v (selectable)
Output Voltage *RMS:*	2.1v
Analog Output Type:	Single-Ended
S/N Ratio (analog):	112dB
Frequency Response (analog):	18Hz – 24kHz
THD+N @ -1dBFS	-93dB
DAC	192kHz 32bit
DSP	128bit/Channel Floating Point
Delay (Time Alignment)	Selectable (driver only, pickup only)
Power Supply	
Current Consumption Stand-by	<1 mA
Current Consumption Operational	350 mA MAX
Operational Voltage	7V – 20V DC
Amp Turn-On Output	Automatic
Amp Turn-On Voltage	V-batt
Amp Turn-On Current Limitation	500mA
Other	
Dimensions:	4”x5”x1 3/8”
Weight:	10 oz
Country of Origin:	USA

- *Before beginning tuning process (especially with external EQ/Processors), set all HU settings for each source to flat.*
- ***Tuning tips:***
    1. Before beginning tuning process (especially with external EQ/Processors), set Bass & Treble on the head unit for each source to flat (0).
    2. *Begin with amplifier/EQ gains all the way* ***down.***
    3. *With dynamic music playing, adjust the radio volume to maximum.*
    4. *Adjust the amplifier/EQ gains to desired maximum level.*
- *All doors should be closed during tuning and vehicle should be in Park (gear) to avoid alerts from door chimes/front or rear sensors, etc.*

M650-GM Pin Out

Pin #	Description	Color
1	MOST RX (-)	White/Purple
2	MOST RX (+)	Purple
3	*--Empty--*	--
4	GM-LAN	Green
5	MOST Wake Up	Pink
6	Ground (-)	Black
7	MOST TX (+)	Orange
8	MOST TX (-)	White/Orange
9	*--Empty--*	--
10	*--Not Used--*	White/Blue
11	Remote OUT	Blue
12	12v Batt (+)	Yellow

NTV-HAR310
Wire Side

FAQ

- If you're having shutdown/startup issues with the M650, perform the following steps and correction:
    1. Disconnect all RCA cables from the M650
    2. Using a multi-meter, check the resistance *compared to vehicle batt ground (-)* at PIN 6 on the M650. This may require running a temporary wire to the battery ground.
    3. If the resistance is any higher than 1 OHM, cut the ground wire free (black, PIN 6) from the M650 and extend this dedicated ground wire to either the battery ground or your amplifier ground *(which should test under 1 OHM as well).*
    4. Retest for proper startup/shutdown while monitoring closely.
- For installations with this M650 processor, make certain that any added amplifier's *ground* resistance (reference vehicle battery ground) ***does not exceed 1 ohm.***
- If you've installed a third-party DSP (receiving signal from the M650, before the amplifier) and you're having issues with *audio bleeding from one channel to another, echoing Bluetooth phone calls or any other signal processing issues,* ***rule out the M650 first by temporarily bypassing the third-party DSP and running signal directly from the M650 to the amplifier(s) and verify the problem still exists before calling technical support.***