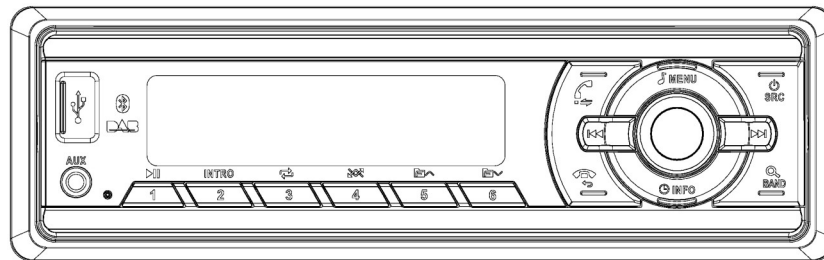
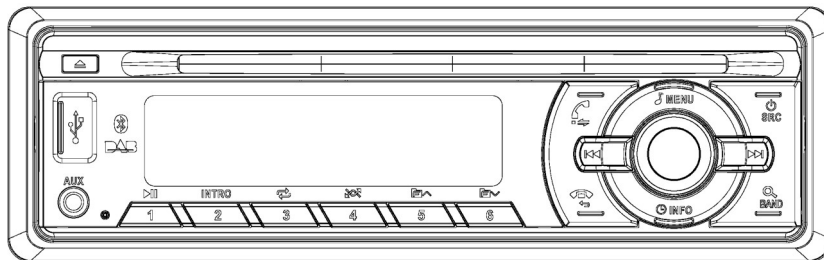


# User Instruction Manual

AM FM DAB receiver, USB, BT audio media player, four channel audio amplifier, fixed front panel.

CD and, non-CD (Deckless) Models



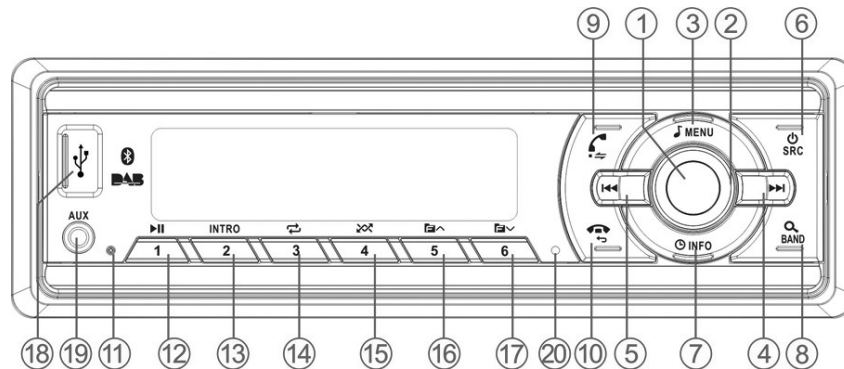
Applicable models:  
RM180x Series Head Units  
RM190x Series Head Units

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## Front Panel Layout



Item	Button Name
1	Mute / Select (center switch)
2	Volume Control / Rotary browse
3	Menu
4	Up >>I / Next
5	Down I<< / Previous
6	Source / Power
7	INFO (information) / Clock
8	Band / Browse
9	Call Pick Up / Transfer / Re-dial
10	Call Hang Up / Return
11	Reset
12	Preset 1 (Play / Pause)
13	Preset 2 (INTRO)
14	Preset 3 (RPT - Repeat)
15	Preset 4 (RDM - Random Play)
16	Preset 5 (Folder - Next)
17	Preset 6 (Folder - Previous)
18	USB Door
19	AUX-IN
20	Built-In Mic (if fitted)

CD Models have an additional Eject Button and CD slot.

## General Operation

### Buttons to navigate through Menus

In the menu system certain controls have some common functions to help you move through the menus:

- 1) Volume control center switch = select
- 2) Volume control rotary = "choose"
- 3) Hang Up = return or move up a menu level

### Powering On/Off

To switch the unit on, press power button. To turn the unit off, press and hold the power button down for 2 seconds.

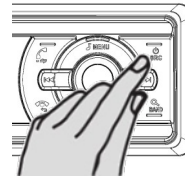
In a similar manner, many of the buttons on the front panel have two modes of activation: "Short press" and "Long press" to directly select different functions.

### The 'Volume' Knob

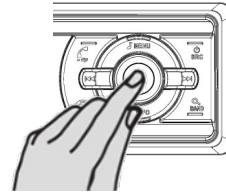
Audio volume is adjusted when the rotary knob is turned, and MUTE is toggled on/off when the knob is pressed.

In the SYSTEM or AUDIO menus volume adjustment is temporarily disabled, and the rotation of the knob adjusts the value of the menu item. In this mode pressing the volume knob will select the item you have chosen. The menu list may also be cycled through with the >>| and |<< buttons.

Example, short press (push and let go) the MENU button to access the AUDIO menu – EQ, Loudness, bass, treble, balance, and fader.



TURN for Volume adjustment /  
PRESS to MUTE



TURN to choose /  
PRESS to select

### Radio Operating Region

When the radio is first powered up or after a reset it will ask you to select the geographical radio operating region, use the rotary control to choose your region and press the knob to select.

This can also be set using the Radio Mode menu – all menus are context sensitive i.e. radio only functions can only be accessed in radio mode.

#### REGIONS AVAILABLE

EUROPE / ASIA / MID-EAST / AUST  
(tralia) / USA / LATIN (America) /  
JAPAN / RUSSIA

### Button Functions

The function of some controls depends on context. For example, the "1" button is used to recall (short press) or store (long press) radio station preset 1. However, when playing media (USB, CD or BT), pressing this button will toggle play / pause.



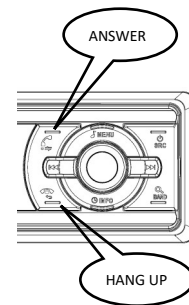
## Bluetooth Operation

### General Operation

When paired to a mobile phone, Bluetooth-enabled radio models, allow the user to perform handsfree calling on the radio. The radio has "Answer" and "Hang-Up" buttons to accept or reject an incoming call.

When no call is active the "Answer" button can be used re-dial the last number - pressing once asks if you want to re-dial, pressing again dials the number, pressing the "Hang-Up" button cancels the request.

An external microphone is fitted in a position close to the operator.



### Bluetooth Profiles

Bluetooth enabled units can wirelessly link to Bluetooth devices such as mobile phones. The modes of Bluetooth connection are referred to as "profiles". This radio supports the following profiles:

- 1) A2DP: Advanced Audio Distribution Profile – Playing (Streaming) music using Bluetooth. Devices that have A2DP functionality can stream music into the radio to be played through the vehicles loudspeaker system.
- 2) AVRCP: In addition, if supported by the device, the AVRCP profile (Remote Control Profile), allowing functions like 'next track' and 'previous track' to be controlled from the radio.
- 3) HFP: Handsfree Profile – Making or receiving telephone calls using Bluetooth.
- 4) SSP: Secure Simple Pairing - this method is based on a random number generator and the user does not need to enter a PIN number on the phone.

### Pairing

To use the Bluetooth handsfree function, a mobile phone needs to be "paired" to the radio. To "pair" the mobile phone with the radio, ensure that the radio is turned on. On the mobile phone, search for Bluetooth devices and select the radio name. Check for a successful pairing notification on the mobile phone.

Once paired, most mobile phones are capable of automatically reconnecting to the radio the next time the radio is turned on (e.g. on re-entry to the vehicle).

To disconnect a Bluetooth device temporarily use the "DISCONNECT" menu function. To permanently remove a pairing, use the "UNPAIR" menu function.

## Radio AM/FM

### Searching for Radio Stations

Use the >>| and |<< buttons to search radio station: short press to automatically seek the next available frequency (jump to the next seek stop).

Long press the BAND button will start an "auto store" sequence to scan the whole band and store the strongest stations found.

### Manual Tuning

Long press, either >>| or |<< buttons to change to manual-seek mode – in this mode a short press of one of these seek buttons changes frequency one step whereas a long press will scroll until the button is released. The radio will revert to auto-seek mode if either button is not operated for 3 seconds.

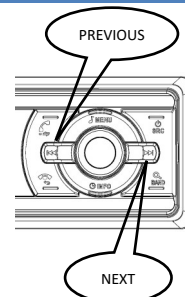
## Radio AM/FM - Continued

### Storing and Recalling Radio Stations

When listening to a radio station a long press on one of the radio preset buttons will store it permanently. The current displayed station will be saved. A stored radio station can be recalled by a short press of one of these buttons. The stored radio station can be updated by tuning to a different station and performing a long press.



*Long press:* Store your favorite radio stations using radio station presets.  
*Short press:* Recall the stored station.



### FM Radio

Radio Data System (RDS) is available in many countries. If an RDS broadcast is present, RDS functions such as AF and TA can be enabled or disabled. RDS is only available in the FM bands.

*RDS* (see also "Radio RDS Notes")

*AF:* Alternative Frequency

*TA:* Traffic Announcement

*TP:* Traffic Program

*PTY:* Program type

## Radio RDS Notes

When RDS (Radio Data System) is operating, the radio will show the station name e.g. "BBC R1" rather than the frequency. RDS is only available on the FM band. If RDS service is not available, the radio operates in conventional FM radio mode.

- AF:** Alternative Frequencies. When this feature is enabled, the radio can stay tuned to BBC R1 by automatically retuning the reception frequency when the first signal becomes weak such as when the vehicle has moved out of range, providing that a stronger signal on the alternative frequency is available. Channel switching to the same radio station is performed automatically. In fringe reception areas the user may switch off AF if silent frequency seek is experienced frequently. Choose the AF menu item and select OFF.
- TA:** Traffic Announcement. When switched on, if a traffic announcement is available the radio will automatically switch to the station broadcasting the announcement until it is complete. The TA menu item toggles between TA ON and TA OFF.
- TP:** Traffic Program – An indicator is displayed if the currently tuned station is a traffic announcement capable station.
- PTY:** Program type. RDS broadcasting services categorizes the type of programs for the listener. Examples are NEWS, AFFAIRS, INFO, SPORT, EDUCATION, DRAMA, CULTURE, SCIENCE, POP M, ROCK.

## Radio Preset Notes

FM has 3 bands, FM1, FM2 and FM3 bands each band has 6 radio presets. In total there are 18 FM radio presets for the user to store pre-tuned radio stations.

AM - MW has 1 band with 6 radio presets, as does AM - LW. There are 12 AM radio presets. DAB mode also has 3 "bands", DAB1, DAB2 and DAB3 each with 6 presets to store your favorite stations.

In total there are  $5 \times 6 = 30$  radio presets and 18 DAB presets available to the user. The radio does not require external power to retain the radio station preset memory, this is stored on an EEPROM device.

## Radio DAB/DAB+

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### **Digital Audio Broadcasting - DAB/DAB+ Mode**

DAB is a terrestrial digital transmission system. DAB stations bundle radio programs (“services”) into an ensemble, and each ensemble contains one or more radio services. The same service can sometimes be received on different frequencies.

### **DAB/DAB+**

To listen to DAB radio, press SRC to select “DAB/DAB+”.

When the DAB band is selected for the first time, an initial scan is needed and the radio will ask for confirmation to do this – press the volume control knob to start scanning. Allow the initial scan to finish. (If interrupted, the initial scan will be requested again the next time you

### **Tuning DAB Stations**

Enter the DAB system menu with a long press on the MENU button, select SCAN to perform a full scan of the DAB band.

To update the station list (usually because you have moved to a different geographical region) enter the DAB system menu and select PRUNE to clean up the stored list of DAB stations.

### **Selecting a DAB Station**

Method 1: Use the >> and << buttons to select the next (or previous) DAB station in the alphabetically sorted list of stations.

Method 2: PREFERRED - Long press the BAND/BROWSE button to select the BROWSE feature – this will allow you to use the rotary volume control knob to scroll through the DAB station list – press the volume knob to select the station name you want.

### **Storing and Recalling DAB Stations**

To store a favorite station, depress and hold down one of user preset buttons 1 – 6 until a beep is heard. To recall any one of your preferred station, briefly press the desired user preset button.

## Radio DAB/DAB+ Notes

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When there is no reception, “NO STATION FOUND” scrolling text is shown on the display. Use “seek up” ( ) or “seek down” ( ) button to search for the next available DAB radio broadcast.

When reception is lost for approximately 15 seconds, “NO SIGNAL” is displayed.

DAB is a digital system and as such it either works and clear audio is heard or it does not work and the audio is muted. This is unlike a traditional FM broadcast that becomes increasingly noisy but may still be intelligible.

## Media USB / CD-ROM

One single media can easily fit thousands of songs (audio tracks). These tracks are often referred to as MP3 and WMA. We use (computer) filenames as track titles. Tracks can be put into folders and sub-folders.

For media carriers such as USB sticks, the unit can play files inside sub-folders.

Avoid having too many levels of depth in the sub-folders.

Do not carry too many audio files on a media to avoid difficulty in finding the desirable song / track.

With media, both the hardware and software get updated at a relatively fast pace. The unit is shipped with the latest media compatibility; newer USB sticks and/or new file formats may not be compatible with this unit.

Listed below are the alternative functions of various keys on the front panel for media playback.

>>| Next track (short press), fast forward (press and hold down)

|<< Previous track (short press), rewind (press and hold down)

>|| Play and Pause playback.

Repeat play mode. RPT TRK repeats the current track when it has reached the end. RPT FLD repeats playing of all the tracks in the current folder. RPT ALL repeats all the tracks in the media.

INTRO Intro-play, INT indicator will be shown on the LCD display. When in this mode, the radio will play the beginning 10 seconds of each track (intro) then skip to the next track, and again, play only the beginning 10 seconds. When the listener finds a desirable track, press the INTRO button again to cancel intro-play.

RDM Random-play, RDM ALL randomly plays from all tracks, RDM FLD plays tracks randomly from the current folder. RDM OFF plays tracks in the order they appear in the folder.

FLV / FLA Previous folder and next folder.

There is a BROWSE feature that allows the user to cycle through the available media by folder, then filename to choose a song – press the BAND button to select this mode – the rotating the volume knob scrolls through the track list and pressing the volume knob selects the desired choice.



## Reset - Software / Hardware

Soft Reset – MENU – RESET: If the user is not sure if settings on the radio had been altered inadvertently, restoring the factory default settings may help. Upon a reset, factory default settings will be reloaded overwriting current data, and the user should notice that all preset values will be set to default (lost). For example, the user may need to re-scan for radio stations and store them into the presets.

Hard Reset - A hardware reset button is located on the front panel (see "Front Panel Layout") and can be activated by a paper clip or pen – this is only necessary if the radio refuses to react to any button input.



## Power Off Timer

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This radio has a power-off-timer enhancement feature. The setting for this is in the system menu, accessed by long pressing the MENU button in any mode. Settings are OFF, AUTO, 30 min, 60 min and 90 min. "OFF" is the factory default value where the radio powers off immediately when the ignition key is switched off. This is the same as conventional radios.

AUTO mode will switch off the radio with the ignition, but you can turn the radio back on (or off) for a 30-minute period

30, 60 or 90 minutes will keep the radio playing for this time after the ignition is switched off. Turning the radio off manually will cancel the timer and the radio will not switch on until the ignition is also turned on.

This count-down timer is shown on the display using the small secondary line of characters.

In the last 5 minutes of the count-down time the main display will warn the user that the radio is about to shut down.

This feature extends listening time and allows the ignition key to be removed for safety reasons. It also prevents the battery from being drained if the radio is left turned on for an extended period. Exact availability of this feature depends on the type of the vehicle since both a switched ignition "ACC" wire and a permanent battery "B+" wire are used to control this function and must be connected to the radio.

## Tips

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This unit will not display non-English characters such as Ê and Ö. Non-displayable character may be shown as asterisk "\*\*".

Many RDS functions do not show an immediately apparent effect. For example, the user will only notice TP when a traffic announcement is being broadcast. If in doubt, the user is advised to use the default settings. Many functions on FM RDS permit the radio to automatically change tuning frequency.

## Wiring Notes

Connections to be made to the rear of the unit during installation.

Connector A pins:

A4. B+ or BATT +12V

When the radio is turned on, electric power is supplied to the internal electronics of the unit through this pin. Main consuming blocks such as audio power amplifier and backlights draw power from this pin. Ensure the connecting wire has minimum AWG14 wire gauge to carry the current.

A5. AUTO ANTENNA OUTPUT +12V

The voltage state on this output pin is a direct indicator of whether this unit is powered on or off. It can be used to control ancillary equipment such as an automatic electric antenna or an audio power amplifier. If connected properly, such ancillary equipment will power on automatically in sync with the radio.

A7. ACC or +12V IGNITION KEY INPUT

Normally connects to the ignition key circuit. By sensing the voltage on this pin, the unit is able to automatically power on and power off using the input from the ignition key switch.

A8. CHASSIS GROUND (EARTH)

All electric current from this pin is combined to complete the power supply circuit. Ensure the connecting wire has minimum AWG14 wire gauge to carry the current. The metal enclosure of this unit is grounded to this pin. The unit is only suitable for "negative earth" vehicles.

### **PINS A4 and A7 B+ (BATT) and ACC (IGNITION) CAN BE SWAPPED BY CHANGING THE POSITION OF THE FUSE - SEE DIAGRAM BELOW**

Connector B pins (loudspeakers pins):

B1. REAR RIGHT (+)

B2. REAR RIGHT (-)

B3. FRONT RIGHT (+)

B4. FRONT RIGHT (-)

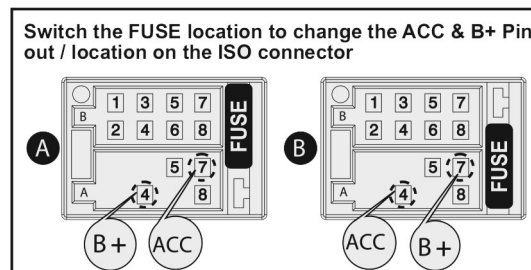
B5. FRONT LEFT (+)

B6. FRONT LEFT (-)

B7. REAR LEFT (+)

B8. REAR LEFT (-)

**IMPORTANT NOTE:** Always replace the fuse with the same type and rating. A blown fuse usually indicates a problem in the circuit. Do not rely completely on replacing the fuse to fix a problem. An over-rated fuse will compromise protection against over-current. Under-rated fuses can blow even if a fault condition does not exist.



## Mounting Notes

### **Fitting the Radio**

Fit the mounting cage (sleeve) into the vehicles' ISO / DIN slot and bend the fixing tangs to lock it in place.

Connect the wiring to the rear of the radio.

Slide the radio into the cage until it "clicks" into place on the locking clips.

Fit the bezel (trim ring) on the front of the radio.

Check correct operation of the radio.

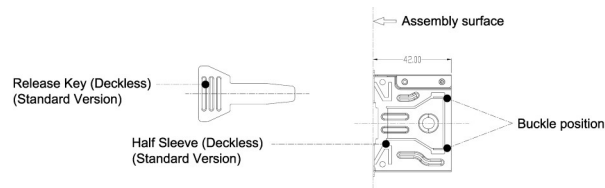
### **Removing the Radio**

Slide the Release Keys centrally along the two sides of the radio to release the locking clips.

Slide the radio out, keeping the Release Keys in place.

Once the radio is out disconnect all the wiring and remove the radio completely.

If necessary bend the fixing tangs inward to remove the mounting cage as well.



### **Fitting the External Microphone**

The Bluetooth radio models may be supplied with an external microphone this will be either a panel mounted unit with a M8 stud or a visor clip.

#### **Panel mounted M8 stud:**

Find a suitable location as close to the front of the user as possible.

Drill a 8.5 to 9mm hole for the mounting stud, run the cable through this and route it to the radio.

Fit the star washer and the M8 nut to hold the microphone in place.



#### **Visor mounted:**

Find a suitable location as close to the front of the user as possible.

Clip, or use an adhesive pad to mount the microphone, and route the cable to the rear of the radio.



When routing the cable back to the radio be careful of sharp edges and pinch points that may damage the cable.

Make sure the cable and microphone do not interfere with any control operation or compromise the users view.

## Technical

<b>TUNER (FM)</b>		<b>TUNER (AM)</b>	
Frequency range	See World Bands below	Frequency range	See World Bands below
Channel step	See World Bands below	Channel step	See World Bands below
Sensitivity	<= 10 dB $\mu$ V	Sensitivity	<= 40 dB $\mu$ V
Stereo separation	>= 30 dB		
SNR	>= 50 dB	SNR	>= 40 dB
Auto Stop Sens. LOC on	38 dB $\mu$ V +/- 6dB (LO)	Auto Stop Sens. LOC on	55 dB $\mu$ V +/- 6dB (LO)
Auto Stop Sens. LOC off	18 dB $\mu$ V +/- 6dB (DX)	Auto Stop Sens. LOC off	33 dB $\mu$ V +/- 6dB (DX)
<b>TUNER (DAB/DAB+)</b>		<b>AUDIO</b>	
Frequency range	VHF Band III 174 - 240MHz	Audio Power	40W max. / Channel, 4 Ohms @ 10% THD
Sensitivity	<= 12 dB $\mu$ V	Speaker Impedance	4 to 8 Ohm
SNR	>= 65 dB	Line Output Level	1.7V nominal
Scan Sensitivity	<= 12 dB $\mu$ V	Line Output SNR	>= 70 dB
<b>MEDIA (USB, CD)</b>		<b>GENERAL</b>	
Stereo separation	>= 50 dB	Power Supply	12V DC (9 to 18V)
SNR	>= 65 dB	Fuse Rating	15A
Media Codecs	WAV, FLAC, MP3, WMA	Permanent Memory	EEPROM
		Mounting	DIN / ISO Cage

World Bands	FM Frequency [MHz]			AM Frequency [kHz]		
	Start	End	Step [kHz]	Start	End	Step [kHz]
EUROPE	87.5	108.0	50	522	1620	9
USA	87.5	107.9	200	530	1710	10
JAPAN	76.0	90.0	100	522	1629	9
M-EAST	87.5	108.0	100	531	1602	9
LATIN	87.5	108.0	100	520	1620	10
AUS-TLIA	87.5	108.0	100	522	1710	9
ASIA	87.5	108.0	100	531	1602	9

**FCC Statement**

- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
  - This device may not cause harmful interference, and
  - This device must accept any interference received, including interference that may cause undesired operation.
- any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



**Instructions on Disposal and Environmental Protection**

Do not dispose of this product in the usual household garbage at the end of its lifecycle; hand it over at a collection point for the recycling of electrical and electronic appliances. The symbol on the product, the instructions for use or the packing will inform about the methods for disposal.

The materials are recyclable as mentioned in this marking. By recycling, material recycling or other forms of re-utilization of old appliances, you are making an important contribution to protecting our environment.

Please inquire at the community administration for the authorized disposal location.

**Industry Canada (IC) Warning**

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- This device may not cause interference, and
- This device must accept any interference, including interference that may cause undesired operation of the device.

**CD Player Models contain a CLASS 1 LASER PRODUCT**

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

**FCC Radiation Exposure Statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body