Notes

•  “Made for iPhone” and “Made for iPad” mean that an electronic accessory has been designed to connect specifically to iPhone or iPad respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPhone or iPad may affect wireless performance. iPhone, iPad and Lightning are trademarks of Apple Inc., registered in the U.S. and other countries. iPad Air and iPad mini are trademarks of Apple Inc. App Store is a service mark of Apple Inc., registered in the U.S. and other countries. IOS is a trademark or registered trademark of Cisco in the U.S. and other countries and is used under license.
•  Android™ is a trademark of Google Inc.
•  Specification and design are subject to change without notice.
•  Photos are non-binding. The manufacturer and importer do not take responsibility for any printing errors.
•  Please see the Clarion website for iPod models that can be connected.
•  Smartphone compatibility may vary by model and operating system.
•  SHARC and the SHARC logo are registered trademarks of Analog Devices, Inc.

* Trigence Semiconductor’s Dnote technology is used for digital signal processing. Dnote is a registered trademark of Trigence Semiconductor, Inc.

For more information about Full Digital Sound

www.clarion.com

See your Clarion dealer for more information.
On the journey to the digital era where different styles of enjoying music abound, an unprecedented Full Digital Sound system that moves and excites the listener was born. This innovative stroke of Digital-to-Digital technology delivers the ultimate in fidelity to render sounds exactly as they were meant to be heard. Each breath of a vocalist, and each vibration of a musical instrument, is reproduced with extreme realism through high-transparency high-response sound.

Experience the yet unknown domains and new emotions that Clarion will open up through Full Digital Sound.
Clarion’s Full Digital Technology Revolutionizes the Realm of Car Audio

Digital-to-Digital from Source to Speakers, Clarion’s Revolution is Pure and Simple

Full Digital Sound achieves full digital signal transfer from the digital source to the speakers for direct input of high-resolution audio sources without sound degradation. Furthermore, since it efficiently converts digital signals to sound, the system is capable of delivering 4 times the power output of a conventional full digital system*, while achieving power consumption that’s only about 1/5th that of analogue systems**.

*3 As of September 2015, Clarion research.
*4 Compared to other Clarion references. (Conventional full digital systems were only sold in the Japanese market.)

- Conventional System
- Full Digital Sound System

System Connectivity

Clearly Reproducing All the Emotion in the Source

Versatility to Connect to Many External Audio Sources

In addition to offering connectivity with our centre unit, the system also supports connection with third party aftermarket centre units and external audio devices. And by simply connecting a smartphone or tablet via USB cable, playback of music on those devices also becomes possible.

Connectors: USB, Digital input (Optical), Digital input (Coaxial), RCA input, Speaker Level input

Revolutionary Technology

Creating the Sound of a New Era, Filled with Expectations

Clarion Develops the World’s First Dedicated Automotive Grade LSI Optimised for Full Digital Speaker Drive

Clarion developed the world’s first dedicated LSI for digital speakers to lead the way in automotive grade usage. It succeeded in offering higher output power compared to conventional LSI*** while maintaining high-quality performance in severe temperature conditions. Moreover, one-chip high-speed drive (24.5MHz) makes it possible to accommodate high-resolution audio sources.

*** As of September 2015, Clarion research.

Dedicated LSI for automotive grade usage built into speaker

Sound technology

Orchestrating Your Ideal Sound, Just like a Conductor

Intuitive Tuning using your Smartphone or Tablet

By installing an application on your smartphone or tablet, you can intuitively operate high-precision tuning, including Crossover, Time Alignment, and Equaliser. Even fine tuning can be done with a few simple steps.

Supports Playback of High-Resolution Audio Sources

You can use the USB host cable (OTG cable) to connect to a smartphone or tablet and enjoy playback of high-resolution audio content and other music files stored on your smartphone or tablet with digital-to-analogue quality. Full Digital Sound reproduces all the fine nuances and presence of high-resolution audio sources.

Enjoy playing and experiencing high-resolution audio files stored on your smartphone.
Clarion’s Full Digital Sound Brings the Uncompromising Sound of the Future to Everyone

The High Quality that Full Digital Sound system Delivers

Extremely High-Resolution

Development of the dedicated LSI for automotive grade enabled Clarion to combine direct digital signal input for 96kHz sampling with 256-times oversampling to achieve the world’s first* 24.5MHz high-output, high-velocity drive. This enables unprecedented high-resolution sound reproduction.

*Used as multi-drive D-class driven for automotive grade use

<table>
<thead>
<tr>
<th>Drive system</th>
<th>Operating Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-class power amplifier</td>
<td>0.2~0.8MHz</td>
</tr>
<tr>
<td>Full Digital Sound</td>
<td>24.5MHz</td>
</tr>
</tbody>
</table>

The waveform has higher resolution and is more faithful to the original source wave than a D-class power amplifier.

Multi-Drive System

The dedicated LSI for automotive grade separates the source digital signal into multiple signals, which are used to independently drive an equal number of voice coils. Combining the wave forms enables subtle reproduction of sound expressions.

Drive system

- D-class power amplifier: 0.2~0.8MHz
- Full Digital Sound: 24.5MHz

Multi-drive type D-class driver

All Speaker Units Driven by Dedicated LSI for Automotive Grade

Each full digital speaker unit offers superior separation because it is driven independently by internal*2 dedicated LSIs for automotive grade.

- The tweeter driver that dedicated LSI for automotive grade is built into the sound processor.

Newly Developed 6-Layer Multi-Voice Coil Goes beyond Conventional Speaker Conceptions

The system incorporates advanced digital signal processing technology (Drivex*) to transmit multiple digital signals directly to the voice coil, as well as a 6-layer multi-voice coil to achieve a precise cone stroke. By consolidating 6 different vibrational forces, the speaker delivers high-powered, high-quality sound even while minimising power consumption to save-energy.

High-Resolution, High-Response Driving Delivers Sharp, Crisp Sound

The Full Digital Sound system makes extremely high-response reproduction possible by applying only the necessary voltage to the necessary voice coil.
Clarion’s Original High-Purity Transmission and Energy Saving Technologies Take Full Digital Sound to the Next Generation

96kHz Sampling Frequency for High Quality from Sources Ranging from High-Resolution to Analogue

For direct full digital reproduction of high-resolution audio files stored on your high-resolution smartphone (Android™ or tablet), connect using the USB host cable (OTG cable). Other types of digital sources such as CDs will be upconverted to 96kHz/24bit. Analogue sources will be converted to high-resolution digital audio data. Everything from audio processing to the digital transmission of signals to the speakers takes place at high-resolution 96kHz/24bit.

Employs SHARC® High-Precision DSP

32-bit floating point processing enables the DSP to FR1 filter to achieve a very accurate Equaliser.

Digital Signal Transmission Reduces Alternator Noise

The Full Digital Sound system incorporates a high-speed, response-regulated power supply as well as single-point grounding in order to eliminate the ground loop and dramatically reduce the alternator noise that had been a major challenge for conventional audio systems. Doing this has enabled the creation of an exceptional listening environment.

Full Digital Sound for High-Efficiency and Energy Saving

Full Digital Sound assures high sound quality by incorporating a high-speed, response-regulated power supply that eliminates those adverse effects.

Power Amplifier-Less Design Using Original Driving Method

Unlike conventional systems that require either a power amplifier inside the centre unit or an external power amplifier, our full digital system does not require any power amplifier, enabling the development of lightweight, simplified systems.

Energy Saving, Compact Design

Electricity is efficiently converted into the power necessary to drive the speakers and output sound. This greatly reduces the energy that until now had been inefficiently wasted as heat. What’s more, low output level efficiency is improved compared to common digital power amplifiers. This makes it possible to dramatically improve energy efficiency and create systems without heat sinks, contributing to further miniaturisation and weight reduction.

Made to Resist Power Fluctuations

The Full Digital Sound system is able to accommodate sudden fluctuations of sound pressure because each speaker has its own high-speed, response-regulated power supply. As a result, system stability is always maintained without having to rely on an external capacitor.

The Versatility of Full Digital Sound

Power Digital Line Carrier System for Easy System Creation through to the Subwoofer

Power and digital signals are transmitted together using the speaker harness of your car as-is. This is the world’s first™ highly reliable system to piggyback a digital signal at low amplitude in order to maintain compliance with vehicle standards regulating unwanted radiation emissions.

Power Amplifier-Less Design Using Original Driving Method

Using a dedicated LSI, Direct Power Digital Line Carrier System with high-speed, response-regulated power supply to Z3(Sound Processor) as low as 0W. This makes it possible to dramatically improve energy efficiency and create systems without heat sinks, contributing to further miniaturisation and weight reduction.

Conventional system

Full Digital Sound system

Comparing power consumption

0W

2W

1W

0.6W

Power amplifier

Digital amplifier

Full Digital Sound

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Related to

Dedicated LSI for automotive grade

Dedicated LSI for automotive grade

Full Digital Sound system

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Digital transmission, impervious to the effects of noise, delivers the ultimate quality that even high-grade analogue cables aren’t able to provide. What’s more, the system is easily scalable and upgradable since no complicated wiring is necessary; connection requires only two cables.

* As of September 2012 (Clarion research)

* 1 Subwoofer requires separate power source connection.

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Creating a Clear Sound Worthy of the New Era

Full Digital Sound Processor

The black matte body features a hairline finish, plus clear material used in the centre. It accentuates the cool look that is befitting of full digital sound.

Sound Processor

- New dedicated LSI for automotive grade Clarion originally developed
- Omnipresent signal processing
- Tone function (Tone, Time Alignment, Equalizer)

Tweeter (Supplied with Z3)

- Dual-voice coil

Commander (Supplied with Z3)

- New dedicated LSI for automotive grade Clarion originally developed
- USB slot for direct input from mobile devices and high-resolution sources

Clear Sound Staging from Sturdy and Sophisticated Cabinet Design

Intelligent Tune

- Sound Processor: (Sound Processor / Tweeter / Commander)
- Sound Processor
- USB Slot for Direct Input from Mobile Devices and High-Resolution Sources

Compact Sound Processor Installable Just About Anywhere

- The compact chassis requires minimal utility space for easy installation under the seat and other tight locations.

Intuitive Interface for Fine Adjustment of Delicate Sounds

Large Volume Knob Like Home Audio Systems

The large volume knob offers the solid feel of a high-performance home audio system, and provides superior usability and smooth, intuitive control of volume and the other features. The body’s black colour and hairline finish contribute to the solid, quality-intensive form. What’s more, the contrast between the metallic texture of the volume knob and the hairline finished body orchestrates a stylish look that you’ll never get tired of.

Select the Acoustic Technology You Like

Sound Restorer enables high-quality reproduction of compressed audio, and Reverb Control helps to create a more natural surround sound experience. You can select advanced acoustic technologies like these according to the musical genre or media you are playing.

Tweeter

Beautifully Curved Design Expressing Subtle Tonality

Accented with a champagne gold line, the design taste matches up perfectly with the speaker units. Reproduction of crystal clear highs up to 40kHz and powerful vocals is made possible by this broad bandwidth tweeter. Combining it with the Z7 (speaker) in the front enables high-range reproduction of high-resolution audio sources. In addition to reproducing a lustrous high-range for richly resonating tones, it delivers a powerful mid-range full of presence as well as natural sounding vocals.

High-Response Dual Neodymium Magnets

By positioning two neodymium magnets, one above and one below the tweeter plate, the superior magnetic flux density of neodymium create a high-density magnetic gap to deliver quick response and stable driving.

2-Way Mountable for Installation on Dashboard or Door

The tweeter can be surface-mounted on the dashboard, or flush-mounted in the door by modifying the door trim.

Notes:

- Does not support audio play from USB memory.
- The tuning application supports iOS® and Android™.
Reproducing the Full Potential and Appeal of Full Digital Sound

Z7 Full Digital Speaker

Classic Black and Champagne Gold Set the Stage for Full Digital Sound

Classic black provides a dignified air, while champagne gold accentuates it with flair. The premium design stimulates pride of ownership, with a sense of power oozing from its stately looks.

Premium Badge to Spice Up your Space

This Z7 comes supplied with a premium Full Digital Sound badge that can be affixed anywhere in your car. Place it on the grille area of the installed speakers to show off your premium system.

Multi Power Supply Voice Coil Provides High-Quality Sound and Low Power Consumption

The multi power supply voice coil structure combines driving forces to increase responsiveness, reduce voltage and power consumption, and make a new level of high-power reproduction possible.

ACMI-PP Cone Accurately Accommodates Digital Sources

This hybrid PP cone features high-strength aramid fibres mixed with carbon and mica, and injection-moulded into optimum form. Taking advantage of the various characteristics of each type of fibre, this new material affords superior light weight and high rigidity, for reasonable internal loss enabling precision reproduction of digital signals.

Large-diameter Strontium Magnet Supports the High-response Bass Line

The speakers incorporate a Strontium magnet that maintains higher magnetic coercivity than ordinary magnets. In combination with efficient magnetic flux circuitry, they are capable of reproducing highly responsive and dynamic bass sounds.

BASSLIZER Enables Reproduction of a Clear and Undistorted Low Range

The middle of each speaker cone is equipped with a reinforcement ring called the BASSLIZER to provide superior rigidity. Since this structure inhibits cone distortion, the speaker is able to resonate with superior linearity even at high volume levels. It reproduces low frequencies with high responsiveness, high clarity and low distortion.

Phase plug Improves the Directivity of Vocals

The phase plug moderates soundwave characteristics and enhances performance and directivity of the mid-range, thereby reproducing clear, lively vocals. Count on it to deliver immersive sound directly to the listener.

Z7 structure diagram

ACMI-PP Cone Accurately Accommodates Digital Sources

Multi Power Supply Voice Coil Provides High-Quality Sound and Low Power Consumption

Large-diameter Strontium Magnet Supports the High-response Bass Line

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Full Digital Speaker

Premium Badge to Spice Up your Space

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Deep Bass Powerfully Reproduces the Resonance of the Source

GAC-Composite Cone Delivers Powerful Sound by Capitalising on the Characteristics of Each Fibre

Clarion developed the new GAC-Composite cone by combining GAC (Glass/Aramid/Carbon) fibres in a lightweight and rigid pulp base material. Taking advantage of the various characteristics of each type of fibre, the new semi-oven cone affords high rigidity and optimal internal loss for reproduction of tight and powerful bass.

Thin Profile Design with Built-in Drive Circuit

Dedicated LSI for automotive grade Clarion originally developed is built into the drive circuit, which is incorporated into a thin-profile design that fits the woofer magnetic circuit within the frame. So while being extremely powerful, it maintains a compact size that does not overuse the car's utility space.

Drive circuit

Champagne gold is used as an accent, as it is for the speaker and tweeter, and the overall matte finish expresses the deep bass that resonates from the subwoofer. The centre cap has black finish expresses the deep bass that the speaker and tweeter, and the overall matte finish expresses the deep bass that resonates from the subwoofer.

Specifications

Sound processor

- Drive circuit
- Thin Profile Design with a Built-in Drive Circuit
- Dedicated LSI for automotive grade Clarion originally developed
- 6-layer multi-voice coil

Drive circuit

Sound processor

- Digital signal processor

- Intelligent Tuning application

- Commander Tuning application

- Speaker section

- Sound processor

- Storage box

- USB cable A (0.5m)

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This is the Era of Choosing System Upgrades

Today, it is easier than ever to enjoy sound just the way you like, thanks to smartphones, other high-quality devices and media that can play high-resolution audio. That is why users demand more flexibility and options in their sound system interfaces. Full Digital Sound was developed to meet the needs of this new age of digital audio. The Full Digital Sound processor and speakers are not only compatible with centre units that offer digital output; they also produce high-quality sound from smartphones connected to the centre unit, and are even compatible with some analogue devices, such as power amplifiers, analogue speakers, and subwoofers. If you are upgrading your system, Full Digital Sound gives you a ton of options.

**Supported accessories**

- Digital output (Optical)
- Digital output (Coaxial)
- RCA output / Speaker level output (Analogue)

**If you want to play music saved on an Android™ smartphone** (Music playback)

- USB host cable (OTG cable)
- USB
- Micro USB cable
- Micro USB
- USB cable A (Supplied with Z3)

*Cables sold separately

* To play high-resolution audio, your smartphone will require an application that can play high-resolution audio.

**Full system**

If you want to fully experience high-quality digital sound

Z3 + Z7 + Z7 + Z25W + Z25W

**Simple system**

If you want to casually enjoy high-quality digital sound

Z3 + Z7 + Z25W

**Digital + Analogue mixed system**

If you want to make use of existing analogue devices

Z3 + Z7 + Power amplifier + Analogue rear speaker / Analogue subwoofer

* RCA output to power amplifier limited to 2 channels.
* Speaker output may vary with power amplifier.

**Cables sold separately**

* USB host cable (OTG cable)
* USB
* Micro USB cable
* Micro USB
* USB cable A (Supplied with Z3)
Intuitive Touch-Based Tuning via Smartphones and Tablets

Clarion’s new application offers an easy way to tune your car’s audio with a tablet or smartphone. Unlike conventional PC-based tuning software offered in the past, this application provides an intuitive, touch-based interface that makes it easy to fine-tune your sound with a high degree of accuracy.

Z-tune offers key tuning features such as Crossover, Time Alignment and Equaliser, all of which can be operated by touch. The application is also compatible with Intelligent Tune, which uses Clarion’s proprietary sound technology. Up to 4 tuning setups can be saved, allowing you to switch between them to suit your mood and your music.

< Main Features >
- Time Alignment
- Intelligent Tune (Sound Restorer / Virtual Bass / Tone Filter / Reverb Control)
- Crossover
- L/R independent 31-band Equaliser

Tune the Z3 Full Digital Sound Processor with one application.

<Z-tune>

FREE

Intuitive Touch-Based Tuning via Smartphones and Tablets

The application can be downloaded from the App Store™ and the Google Play™ Store. There is no need to bring your laptop with you.

<Z-tune>

Easy to download at any time

Download the application

The application can be downloaded from the App Store™ and the Google Play™ Store. There is no need to bring your laptop with you.

Download the application

After downloading, connect your device to the Z3 Sound Processor

* For more information on systems and device compatibility, visit the Clarion website.

* For more information on systems and device compatibility, visit the Clarion website.
Equalise your Onboard Sound to an Unprecedented Level of Detail with L/R Independent 31-band Equaliser

- Tune each channel using the built-in L/R independent 31-band Equaliser, which is equipped with a linear-phase FIR filter that removes phase distortion. Clarion's proprietary sound technology greatly reduces interference between bandwidths, allowing for intuitive sound equalisation that produces the exact balance you're looking for.

Set up everything simply by tapping and dragging. Adjustment of numerical values enables subtle control.

Double tap to zoom in for more precise fine-tuning.

Localyze your Sound with Ease and with Pinpoint Accuracy Using Time Alignment

- Each channel can be fine-tuned to 0.7 cm per step. A dedicated application offers a touch-based interface for localising your sound simply, and with pinpoint accuracy.

Set up everything simply by tapping and dragging.

Draw out the Maximum Potential of each Unit with Crossover

- Create an optimal crossover setup that best complements the system design and each speaker’s properties. A graphical setup screen combines touch and button-based interfaces to offer an intuitive and high-quality setup experience.
Drawing out the Best of Full Digital Sound with Intelligent Tune, Clarion’s Proprietary Sound Technology

Intelligent Tune was developed by Clarion to achieve the best sound possible in a car. It comes packed with a variety of features that reflect Clarion’s history of the continuous pursuit of ever better sounds.

**Virtual Bass Reproduces Dynamic Sound Full of Powerful Lows**
Using the psychology of sound perception, Clarion added overtones to enhance deep and low frequency sounds that cannot be reproduced with speakers alone. Even small speakers will produce a deep bass sound as if they were connected to a subwoofer.

**Converting Compressed Audio Source into High-Quality Sound with Sound Restorer**
High-frequency signals that are lost in CDs and when compressing sound into digital formats such as MP3 and AAC are reconstructed so that the sound is restored to almost its original form. Sound Restorer also expands the range to high-resolution levels to recreate the pure expression of the sound.

**Create the Sound You Want with Tone Filter**
Tone Filter allows you to control the aggressive sounds and reverb of instruments to produce a richer, more expressive sound. Vintage Mode lets your produce a deep, warm sound with valve amp emulation, while Vivid Mode creates a more colourful sound that emphasizes the beat.

**Produce a Rich, Natural Surround Sound with Reverberant Sound Control**
Reverb, which gives the sound its personality, is controlled using state-of-the-art reverberation separation to create a surround sound effect. Experience the dynamism and immediacy of a music venue in the comfort of your car.

You can set it using the Commander (Supplied with Z3) or the Z-tune application

Intelligent Tune can be set with the Commander, which is supplied with Z3, or with the Z-tune application, which can be downloaded to a smartphone or tablet.

**Setting with the Commander**
The display’s excellent readability makes it easy to see information during the day or at night.

**Setting with a tablet or smartphone**
Settings can be made using an intuitive touch-based interface.

**A new sound technology that processes signals by bandwidth**