



The 215PCM is a self-contained active subwoofer system with dual 15-inch drivers. It provides power amplification not only for itself, but also two channels for driving stereo full-range or mono bi-amp "top box" speakers as well. Thus, it serves as a core module for portable live sound reinforcement systems and is ideal for corporate/industrial events. The 215PCM can supply extreme SPL within the recommended bandpass of 35-150 Hz (-3 dB). The 215SB is a passive subwoofer system with no backpack electronics. The 215PSB is a powered subwoofer, but without the "top-box" electronics.

The power and processing electronics of the 215PCM are contained in a backpack mounted on the rear of the subwoofer enclosure. Powering the 215PCM and 215PSB is an integral 3000-watt amplifier (equivalent to a bridged-mono PL 230) for the subwoofer itself. For the 215PCM, the backpack also contains a two-channel amplifier equivalent to a PL 236 (725 W at 8 ohms; 1100 W at 4 ohms; 1850 W at 2 ohms) for the top boxes.

The subwoofer amp and the top-box amp each have the processing equivalent of a DSP-3. Both processing units have eight user-configurable and -selectable presets (using a personal computer and QSC's Signal Manager software).

The cabinet of the 215 enclosure is constructed of Compositite™ carbon fiber composite material, which is extremely stiff and strong. The high rigidity of the cabinet walls raises the enclosure's natural resonances to frequencies higher than the subwoofer's operating range, so the cabinet performs as an ideal enclosure.

A bonus of the Compositite material is its very light weight, which enhances the cabinet's portability. Strategically placed wheels and handles on the backpack provide easy single-person mobility.

Key Features

- **Highest output to size ratio available**
- **3000W powerplant for sub (215PCM and 215PSB) - 3600W, 2 channel powerplant for accompanying top enclosures (215PCM)**
- **User configurable DSP for both sub and top enclosures with eight storable presets for each (215PCM and 215PSB)**
- **Removable backpack houses processing and amplification for system (215PCM and 215PSB)**
- **Dual High power 15" drivers rated at 1400 watts each**
- **Diametrically opposed drivers for increased efficiency and output**
- **Cored Composite construction results in greater rigidity, increased output, reduced off axis resonances and lighter weight**
- **Weather and UV resistant durable enclosure**
- **Reinforced, integral suspension fly track for vertical or horizontal hanging**
- **QSCControl compatible for remote monitoring and control**
- **Integrated heavy-duty pole cups on top and side for pole mounting top boxes**

ISIS Series

215PCM / 215PSB / 215SB



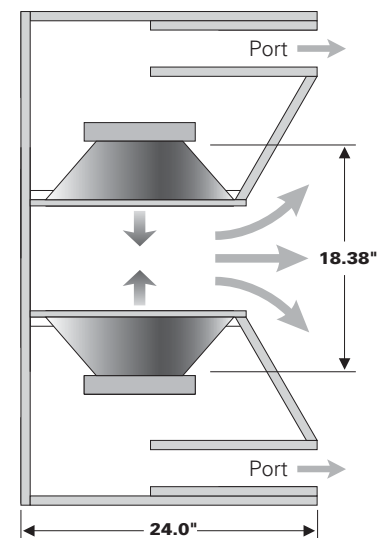
Of Lightweight Boxes, Diametric Drive, and Newton's Third Law of Motion

The cabinets of all 215 enclosures are constructed of Compositite™ carbon fiber and composite materials, which is extremely stiff and strong. The high rigidity of the cabinet walls raises the enclosure's natural resonances to frequencies higher than the subwoofer's operating range, so the cabinet acts more like an ideal enclosure.

Compositite construction significantly reduces the weight of the subwoofer, making it easier and more cost-effective to transport. The system is designed for single-person portability; by leaning the cabinet back onto its two casters and grasping the handles at the upper rear corners, one person can easily roll it across a floor or other flat surface.

Sir Isaac Newton's third law of motion states that to every action, there is an equal and opposite reaction. This reality presents a challenge for subwoofer cabinets. Subwoofer cones have significantly higher mass than those of other types of speaker driver, and the low frequencies they reproduce require large displacements. Thus, the forces that move the cone forward and backward also make the enclosure move the opposite way in reaction. The enclosure's vibrations tend to turn its walls into radiating surfaces and its supporting feet into walking appendages. The inertia of a heavy box naturally resists opposing motion. However, a lightweight enclosure like the

215's has relatively little inertia, so instead it uses two identical and diametrically opposed 15-inch drivers to ensure inertial stability. The drivers face each other and move equally but in opposite directions. The net effect is that the driver forces counterbalance, minimizing vibration in the cabinet.



The movement of the two separate drivers counteract, reducing enclosure vibration.

ISIS Series 215PCM / 215PSB / 215SB Specifications

System Specifications

Description	215PCM: Comprised of the 215SB Subwoofer Cabinet with a "backpack" containing two QSC DSP-3 24-bit Signal Processors, 1 vibration damped QSC PL230 3000 Watt amplifier and 1 vibration damped QSC PL236 3600 Watt amplifier. All interconnections for the audio signals and AC power are complete inside the backpack. <i>NOTE:</i> Regular production PL230 and 236 amplifiers are not recommended replacements for the amplifiers in your 215PCM. See owners manual.
Frequency Range	Recommended Bandpass: 35 - 150 Hz (± 3 dB) Frequency Response: 36 - 360 Hz (-3 dB) Usable Frequency Range: 29 - 440 Hz (-10 dB)
Maximum Output	Calculated Peak Output ¹ : 141 dB SPL Measured Continuous Output ² : 131 dB SPL
Impedance	4 ohms (nom.) 3.7 ohms (min.) 23.3 ohms (max.)
Power Handling	1300 W RMS, 2 hours (AES) 1000 W RMS, 8 hours (IEC) 800 W RMS, 100 hours (IEC)
Sensitivity	101 dB half-space, 95 dB full space, 35 - 100 Hz, 1W, 1m
Nominal Coverage	Omnidirectional (100 Hz)
Transducers	Two 15-inch (394 mm) high efficiency subwoofer drivers. 4-inch (102 mm) voice coil, copper on fiberglass former. High excursion, multi-vented voice coil construction.
On-board Power	Subwoofer: One vibration damped QSC PL230 amplifier in bridge mode, 3000 Watts at 4 ohms Top Boxes: One vibration damped QSC PL236 amplifier, 2-Ch.'s, 1300 Watts per Ch. at 4 ohms/Ch.
On-board Processing	Two QSC DSP-3 24-bit, 48 kHz Digital Signal Processors. (One Processor per amplifier)
Connectors	Neutrik NL4MP Standard Bridge Mono Wiring Pin 1 += Positive Input Signal Pin 1 - = Negative Input Signal AC Power - NEMA L5-30 receptacle CH1/CH2 Input - female XLR, Input 3 (discrete mono) - female XLR Parallel Out (discrete mono) - male XLR wired directly in parallel with Input 3 connector Output to Top Boxes - two Speakon NL4MP receptacles: CH1 wired for 4-wire biamp use CH2 wired for 2-wire (right channel) normal use Both Processors feature: Post-Processor audio outs (3-wire, detachable terminal block connectors), one for each channel. RS-232 port for Processor configuration using PC/laptop and QSC Signal Manager software. DataPort ties to QSC Control systems to support network Processor configuration and remote control of monitoring.
Controls	AC Power switch and MODE switch (Combination Mode/Discrete Mode)
Operating Modes	Combination Mode: Inputs are wired to both the Subwoofer Processor and the Top Box Processor inputs. Cross feeds CH3 (sub) with CH1 and CH2 for system applications. Discrete Mode: Use all three inputs. Top Box Processor inputs are from CH1 and CH2 Input connectors. Subwoofer Processor input is from Input 3 connector, input is connected ONLY to Processor Input 1.
Signal Routing	Signal Routing is dependant on MODE Switch position and Processor configuration.
Other Features	Built-in heavy-duty casters and handles. Durable rubber anti-skid feet on two sides of cabinet. Weather-resistant enclosure.
Enclosure Type	High efficiency horn-ported box hybrid, tuned to 35 Hz. Material: Compositelite™ cored construction.
Weight	215PCM: 230 pounds (104.3 kg) 215SB: 175 pounds (79.4 kg)
Overall Dimensions	215PCM 40" W x 26" H x 30" D, nominal (102 x 66 x 76 mm). Refer to drawing for details. 215SB 40" W x 26" H x 25" D, nominal (102 x 66 x 64 mm). Refer to drawing for details.
Pole Cups	Three 2-inch diameter, 6-inch deep, aluminum. Refer to drawing.
Flying Points	Four 16-inch "L-track" rails at corners. Refer to drawing.
Power Requirements	120 VAC, 50/60 Hz, NEMA L5-30 connector (230 V. model available)
Current Consumption @ 120 VAC, typical, pink noise	Idle 2A Subwoofer 1/8 power, Top Box idle 11A Subwoofer 1/8 power, Top Box 1/8 power 8 ohms each channel 19A Subwoofer 1/8 power, Top Box 1/8 power 4 ohms each channel 23A Subwoofer 1/8 power, Top Box 1/8 power 2 ohms each channel 28A <i>NOTE:</i> 1/8 power is representative of current draw with typical music program material with occasional clipping.

Digital Signal Processor Specifications

Type	User configurable, custom DSP with software for PC. Computer connection needed only for set up.
Signal Processing	Two QSC DSP-3 Processors, 24 bit, 48 kHz, one for each amplifier
Frequency Response at 3 dB below full scale input voltage	20 Hz - 10 kHz ± 0.3 dB (XLR inputs on 215PCM rear panel) 20 Hz - 20 kHz ± 0.7 dB (XLR inputs on 215PCM rear panel) 20 Hz - 20 kHz ± 0.2 dB (if using DataPort input on Processors)
Distortion	<0.01% THD+N @ +4 dBu out
Delay (throughput)	1.00 millisecond
Dynamic Range	>93 dB unweighted, 20 Hz - 20 kHz, 1.5V, 4V and 9V sensitivity >88 dB unweighted, 20 Hz - 20 kHz, 18V sensitivity

1 - Calculated maximum peak SPL at 1 meter distance, half-space, speaker operating at rated RMS power with 6 dB crest factor pink noise input, 35 - 100 Hertz.

2 - Measured maximum RMS SPL referenced to 1 meter distance, loudspeaker operating at rated RMS power with 6 dB crest factor pink noise input, 35 - 100 Hertz.
Measurements taken at 2 meters, half-space, after 15 minutes of full power operation.

ISIS Series 215PCM / 215PSB / 215SB Specifications

Amplifier Specifications

Output Power in watts		
Subwoofer Amplifier (PL230 type)	4 Ohms, 1 kHz, 1% THD	3000 Watts
Top Box Amplifier (PL236 type)		
FTC:	8 Ohms per channel (20 - 20 kHz, 0.03% THD) 4 Ohms per channel (20 - 20 kHz, 0.05% THD)	725 Watts 1100 Watts
EIA: 1 kHz @ 1% THD	8 Ohms per channel 4 Ohms per channel 2 Ohms per channel	800 Watts 1300 Watts 1850 Watts

Distortion (both amplifiers)	SMPTTE-IM Typical, 10 dB below rated power, 20 - 20 kHz Typical, full rated power, 5 kHz.	Less than 0.01% <0.015% <0.01%
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Frequency Response (both amplifiers, without processors, at 10 dB below rated output power)	20 Hz to 20 kHz, ± 0.2 dB, -3 dB points: 8 Hz and 100 kHz
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Damping Factor (both amplifiers)	Greater than 500
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Noise (unweighted, 20 - 20k Hz, both amplifiers)	-107 dB
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Voltage Gain	35 dB, Subwoofer Amplifier, 36 dB, Top Box Amplifier
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NOTE: Overall system gain is a function of Processor input and output sensitivity settings in software.

Input Sensitivity, Vrms (this is the amplifier input sensitivity, not the Processor input sensitivity)		
Subwoofer Amplifier	for rated power into 215SB Subwoofer	1.07 V
Top Box Amplifier	for rated power into 8 Ohms for rated power into 4 Ohms	1.23 V 1.07 V

Input Clipping, Vrms (both models)	10 V (if 0 dB gain in Processor signal path)
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Controls	Ch. 1 and Ch. 2 gain knobs accessible via adjustment opening in the cabinet.
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Cooling	Continuously variable speed fans, one intake vent, two exhaust vents.
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Amplifier Protection (both amps)	Full short circuit, open circuit, thermal, ultrasonic, and RF protection Stable into reactive or mismatched loads
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Load Protection (both amps)	Turn-on/turn-off muting, DC-fault power supply shutdown, clip limiting
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Output Circuit Type (both amps)	2-step Class-H
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QSC System Manager Connectivity

(applicable only to users employing QSC System Manager)

System Interface Compatibility	QSC DataPort amplifier network monitors
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Cable	QSC DPC-X DataPort cable, male-male (various lengths are available, contact QSC's Technical Services Department)
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DataPorts Used	2 (1 per Processor)
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Amplifier Status Monitor Features	
Clip Indicator	Senses channel clipping
Protect	Senses amplifier protect status
AC Power	Reports standby/operate mode

RS-232 Ports

(used for configuring each Processor's DSP chain)

Number of Ports	Two (one for each processor)
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Cable Type	Normal 9-pin serial cable, male-to-female
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Maximum Length	25 feet (7.6 meters)
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Communication Settings	Automatic (unless other software using port)
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DSP Capabilities

(freely configurable DSP "blocks" use as many of any block until DSP "resources" are consumed)

High-Pass Filter	Low-Pass Filter	High-Shelf Filter	Low-Shelf Filter	Limiter	Compressor	Delay
Polarity	Parametric EQ	Level Meter	2 to 1 Mixer	1 to 2 Splitter	Mute	Fader

Pink & White Noise Source

Variable Frequency Tone Source

Clip & Protect Indication available if operating the DSP real-time from PC

External Contact Closure Sensing (pin #9 of RS-232, operates with "Switched Gain" objects in Signal Manager software)

Specifications are subject to change without notice.

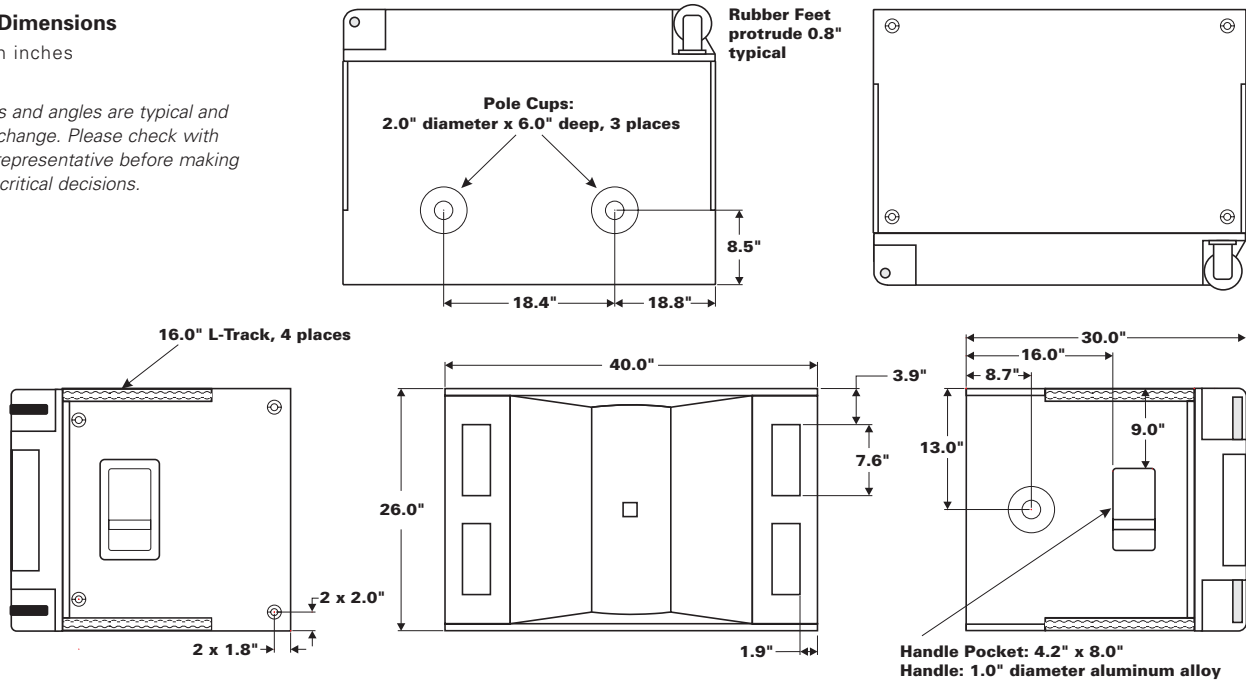
All specifications identical on 215PSB with the exception of any top box electronics or connectivity.

ISIS Series 215PCM / 215PSB / 215SB Frequency Response and Impedance / Enclosure Dimensions

Physical Dimensions

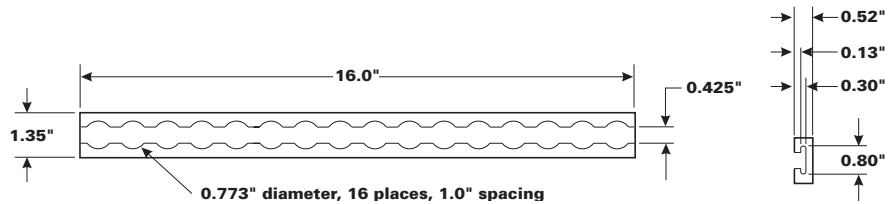
All units in inches

Dimensions and angles are typical and subject to change. Please check with your QSC representative before making dimension-critical decisions.



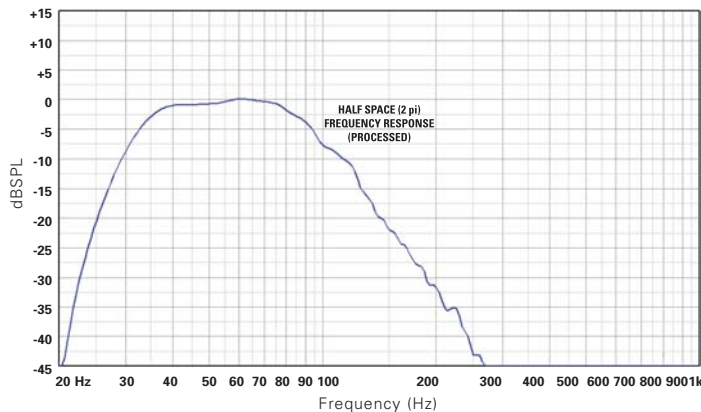
Flying Track Extrusion Detail

Material: Aluminum, high tensile aircraft alloy

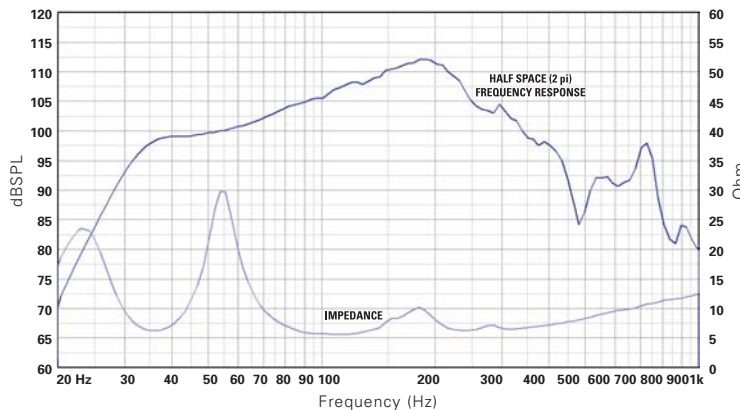


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Frequency Response with Recommended Processing



Unprocessed Frequency Response and Impedance SPL @ 1W, 1m



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ISIS Subwoofer Spec 1/19/04