



Steel Series XP

Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

Description

The Steel Series X designed by Sonion is a ready-to-use RIC platform with stainless steel speakers and Sonion’s future-proof CS98 connector system with embedded power class identification.

The Steel Series XP based on Sonion’s E90DZX009G receiver delivers a High Power RIC solution and is available in 4 sizes, left (blue) and right (red) with a pre-assembled wax guard. The Steel Series X is compatible with UniTip domes.



Applications

- Receiver In Canal (RIC) Hearing Aids and Hearables
- High Power class instruments
- Severe hearing loss

Features

- Complete RIC solution
- State-of-the-art miniature receiver housing
- Power class identification
- Future proof CS98 plug/socket with 8 terminals
- Halogen Free
- REACH & RoHS Compliant

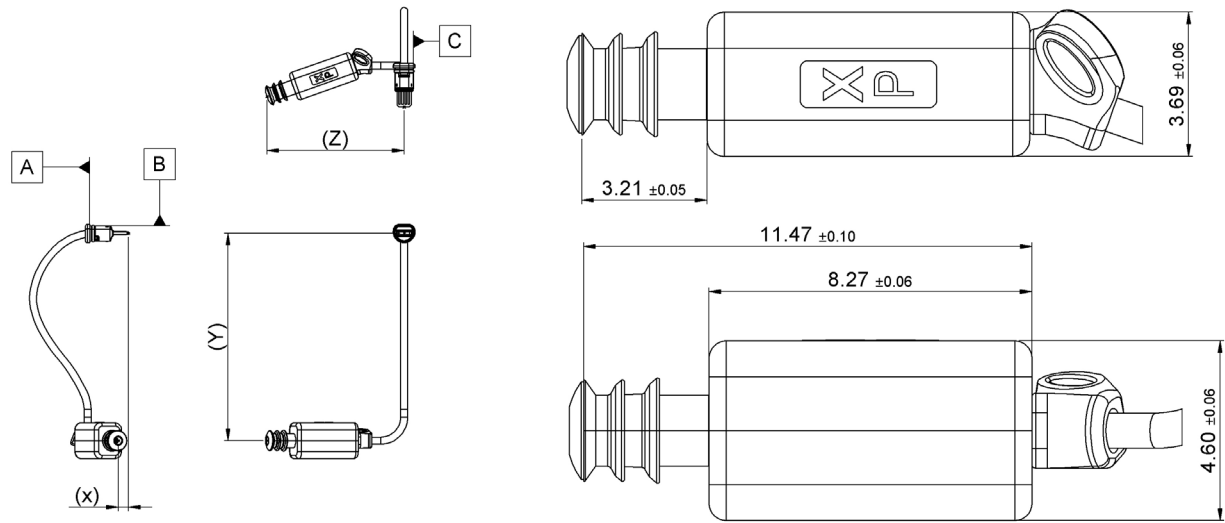
Ordering information

Speaker unit size	Sonion PN	Temperature range	Packaging
Size 00L	3074-3212444	-10°C to 65°C	Tray
Size 01L	3074-3212445	-10°C to 65°C	Tray
Size 02L	3074-3212446	-10°C to 65°C	Tray
Size 03L	3074-3212447	-10°C to 65°C	Tray
Size 00R	3074-3212448	-10°C to 65°C	Tray
Size 01R	3074-3212449	-10°C to 65°C	Tray
Size 02R	3074-3212450	-10°C to 65°C	Tray
Size 03R	3074-3212451	-10°C to 65°C	Tray

Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

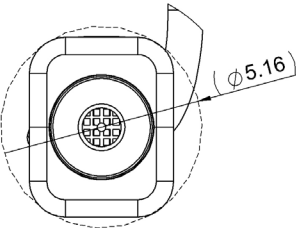
Mechanical description

Product dimensions in mm - Drw. no.: 0300053779



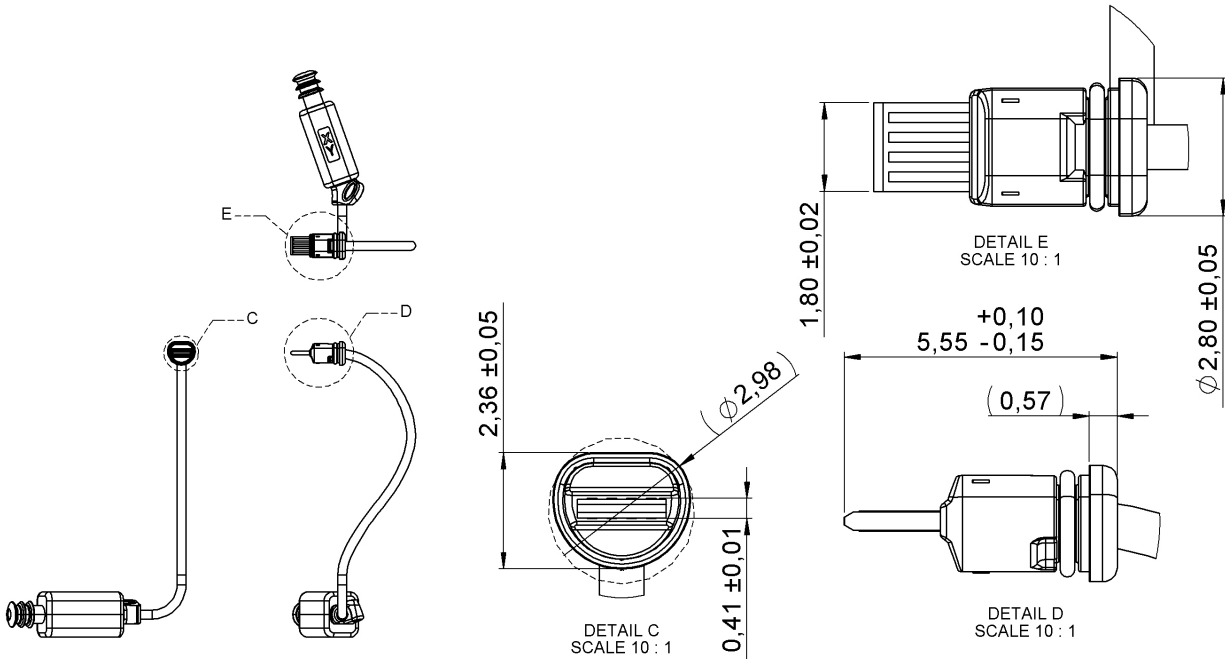
Steel Series X - Speaker unit typical dimension

Speaker Unit Size	X REF	Y REF	Z REF
Size 00	17.6	26.6	1.3
Size 01	17.6	32.6	1.3
Size 02	17.6	38.6	1.4
Size 03	17.6	43.2	1.4



Note: other dimensions, bendshape and surfaces are defined on 3D CAD file

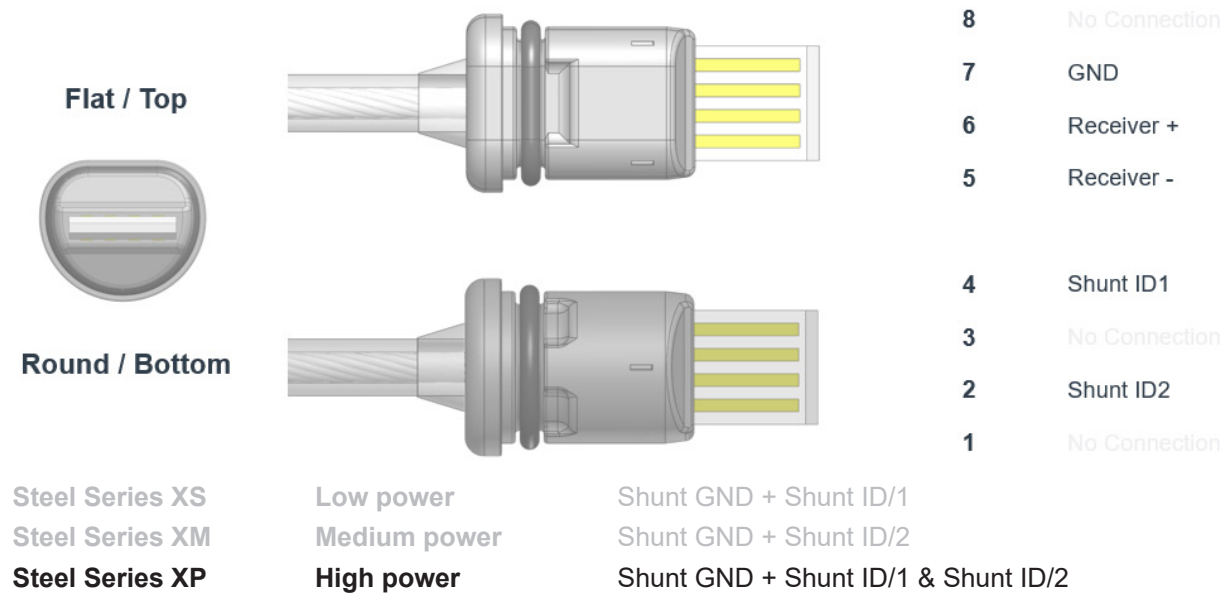
Plug dimensions in mm [inch] - Drw. no.: 0300053779



Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

Pin assignment and Power rating ID

The power level of the Steel Series X speaker units can be detected via shunt scheme as shown below.



Material specifications

Receiver	Sonion E90DZX009G
Plug and Socket	Sonion CS98 connector system
Plug material	Grilon TSG-15 FA
PCB	Ceramic HBS2 (Al2O3, 96.5%) with solder mask and surface. Treatment / layer: 2µ Ni + 3µ AuCo
Sealing ring	Silpuran 8060/50 (black)
Cable	
Extruded cable	Cable 8x7x0.025 [mm], XHTW/Ag50 HF litz OD 0.9, Pebax 7233 SP 01 with fiber
Speaker unit housing	
Housing cans	AISI 316L
Plastic insert	PA6, Ultradid A3EG6, transparent
Spout	AISI 316LPX
Adhesive	
Adhesive	Loctite M-121 HP
Lacquer	SMD adhesive PD 205 Ajet
Sportslock (not included)	
Sportslock	Borealis - BC612WG PP
Wax protection system	
Wax guard	CeruSTOP™ wax protection
Dome (not included)	
Spout interface	Designed for UniTip domes

Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

Mechanical specifications

- Complete speaker unit
Pull force: spout to plug > 20 N
 - Receiver housing
Separation force > 25 N
 - Tube to receiver housing
Push force: cable to receiver housing > 10 N
 - Spout
Pull force (inline) > 25 N
Push force (perpendicular) > 20 N
 - Plug and receiver
Wiggle test: plug and receiver side 2500 cycles in line to axis @ twist ± 90°, speed 75°/sec, weight 50g
 - UniTip dome
Retention force > 4 N
- See the CS98 Connector System datasheet for further mechanical specifications pertaining to plug and socket.

Absolute Maximum Ratings

Exposure to stress beyond the below Absolute Maximum Ratings can induce permanent damage to the device.

Table with 6 columns: Parameters, Min, Typ, Max, Unit, Comments. Rows include Supply voltage (VDD), Temperature range - biased, Temperature range - storage, Humidity - storage, and Storage ambient barometric range.

Environmental standard

- This product meets the following standards:
- REACH All materials comply with REACH regulation (EC) no. 1907/2006
 - RoHS All materials comply with RoHS Directive 2011/65/EU (including amendment 2015/863)
 - Biocompatible All skin contact materials comply with ISO 10993-5 (cytotoxicity)
 - Halogen free IEC 61249-2

Electro-acoustical specifications

Acoustic loading: UniTip spout sealed to 711 IEC coupler. Constant voltage drive of 0.150 V rms (eq. with 0.35 mVA @ 500 Hz) with <1 Ohm source impedance. Environmental conditions: 23°C (73.4° F), 50% RH. All acoustical data is measured with wax protection system in place.

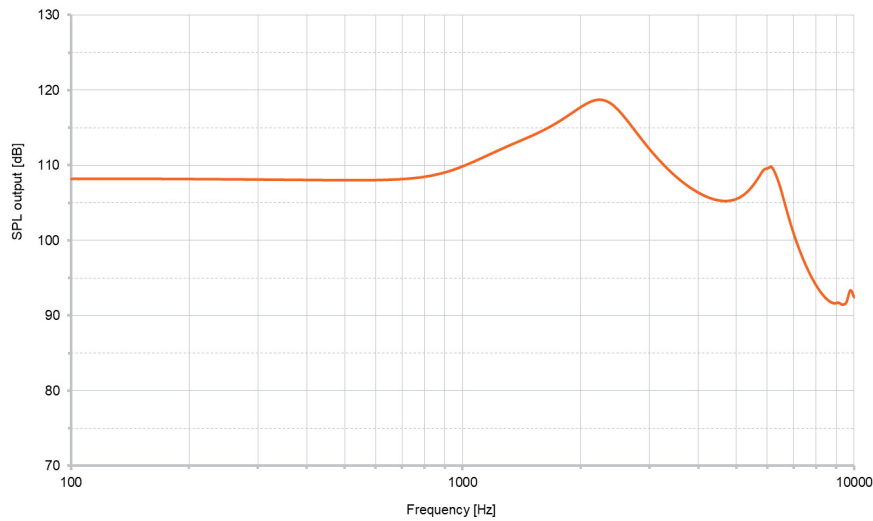
Acoustic parameters		Min	Typ	Max	Unit	Comments
Sensitivity	@ 200 Hz	105	108	111	dB	
	@ 500 Hz	105	108	111	dB	
	@ 1000 Hz	106.5	109.5	112.5	dB	
Peak 1	frequency	1950	2250	2550	Hz	
	output	115.5	118.5	121.5	dB	
Valley 1	frequency	4150	4650	5150	Hz	
	output	102	105		dB	
Peak 2	frequency	5500	6000	6500	Hz	
	output	107	110	113	dB	
THD	@ 1/3 peak			5	%	
	@ 1/2 peak			5	%	
Maximum output @ peak frequency		129	132		dB	@ 0.92 Vrms

Electric parameters		Min	Typ	Max	Unit	Comments
Impedance @ 1000 Hz		59	74	89	Ohm	
Impedance @ 500 Hz		50	63	76	Ohm	
DC resistance @ 20°C		50	59	68	Ohm	
DC bias current range		zero bias				

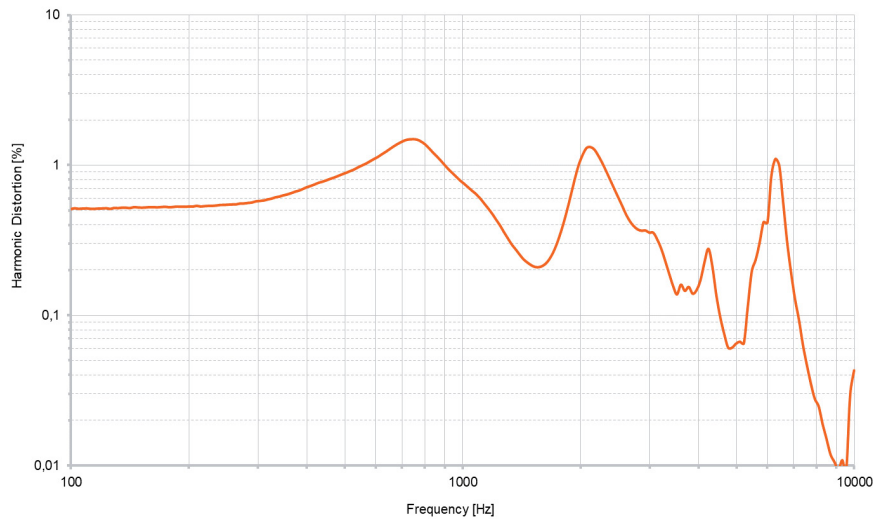
Additional parameters		Min	Typ	Max	Unit	Comments
Shock resistance (receiver specifications)		12000			g	90% survival rate with THD @ 1/2 peak frequency < 10%
Storage temperature range		-40		60	°C	
Storage humidity		10		95	%RH	

A positive voltage applied to the negative terminal (-) will result in an increase in pressure at the sound outlet.

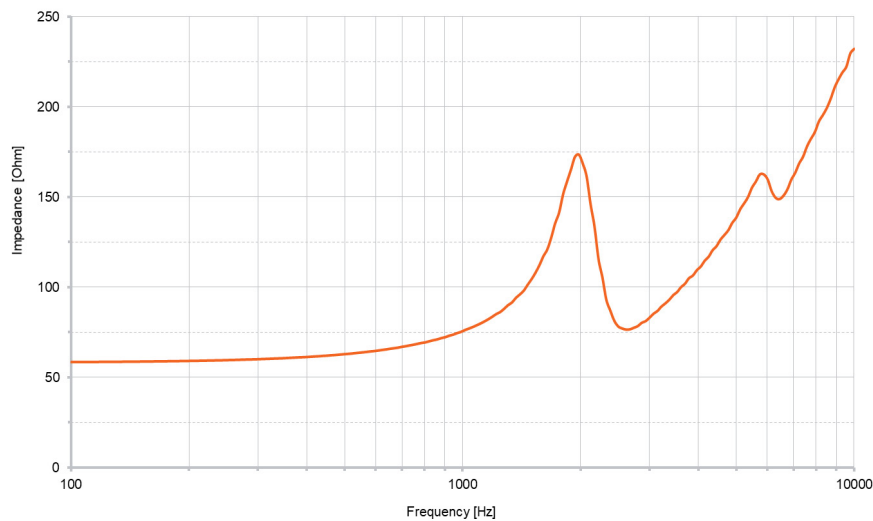
Response curve, typical



THD vs Frequency, typical



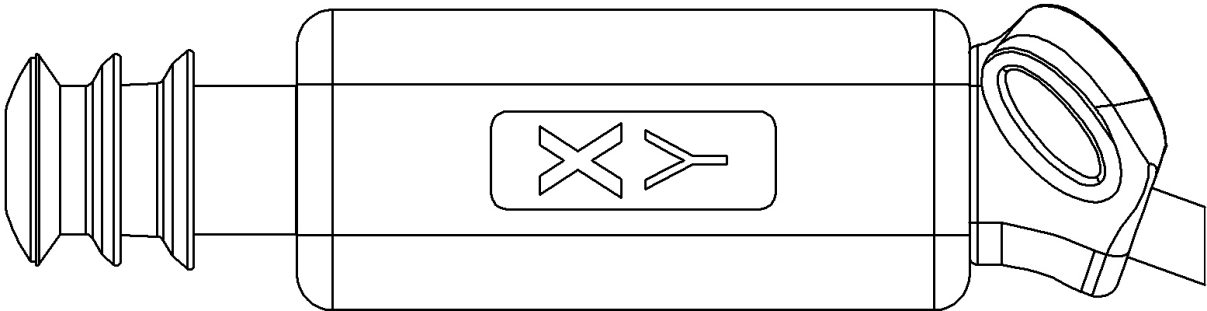
Impedance, typical



Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

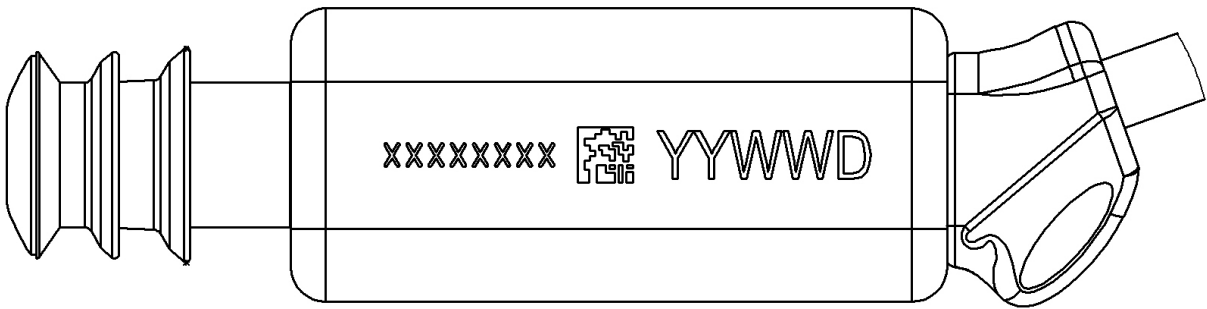
Traceability

Power rating and sizes (Tampon printing)



- Speaker unit side
- Tampon printing colored red (right) or blue (left)
- Speaker unit size
- Tampon printing digit X (0-3)
- Power rating
- Tampon printing letter Y - P describes the Steel Series XP speaker unit

Product information (Laser coding)

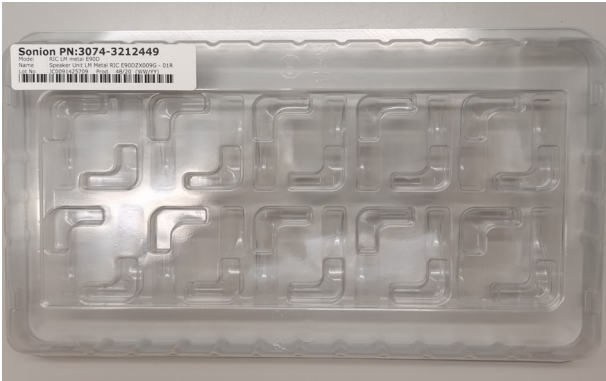


- Batch code
- YYWWDD
- Batch production date: Year (YY) - Week (WW) - Day (1-7, Sunday = 7)
- Unique coding
- XXXXXXXX
- Serial numbers (8 alphanumeric) unique to each speaker unit
- Data matrix
- Record of the unique identification number for direct read-out

Packaging and accessories

Packaging

The Steel Series RIC modules are delivered by default in tray (left / right) of 300 mm x 165 mm x 25 mm (20pcs / tray) [11.81 in x 6.50 in x 0.98 in]. Each Steel Series RIC module is delivered with CeruSTOP™ wax protection system.



Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

Packaging traceability

A sticker label on each tray describes the product size, side and power rating.

Label

Table with 2 columns: Label, Description. Rows include Sonion PN (Sonion part number), Model (Product name), Lot No (Production lot number), and Prod (Production date (WW/YY)).



Accessories

The Steel Series X speaker unit will be able to accommodate the following parts:

Connector socket

Table with 2 columns: Part, Description. Row: CS98 socket (SMD) - Ordered and delivered separately in ToR - MoQ = 100pcs, Part number: 9976-3201315.

Ear domes

Table with 2 columns: Part, Description. Rows include Unitip domes, Open 5mm short, Open 7mm short, Open 10mm short, Tulip 12mm short, Power small, Power medium, and Power large, each with a corresponding part number.



Wax protection system

Table with 2 columns: Part, Description. Row: CeruSTOP™ - Extra parts ordered separately - delivered in package of 8pcs, Part number: 9974-3107880.

Sportslock

Table with 2 columns: Part, Description. Row: XP sportslock - Ordered and delivered separately in lot of 100pcs, Part number: 9973-3107212.

Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.

Legal disclaimer

Sonion believes that the information in this document is correct and reliable, however nothing herein can be construed to imply representation or warranty as to its accuracy, currency or completeness, nor is it intended to form the basis of any contract. The information in this datasheet is subject to change without notice. Contact Sonion for the latest version of this document.

Sonion's products and services are provided subject to the Sonion Terms & Conditions see <https://www.sonion.com/about/sonion-terms-and-conditions/>.

Sonion® and all other trademarks, logos and product names are the property of Sonion or a third-party company.

Note that receivers or Receivers In Canal series of this type can produce very high sound pressure levels. Special attention should be paid when such devices are applied in ear products in order to prevent possible hearing damage.

Sonion reserves the right to make changes at any time. All information provided in this document is subject to the legal disclaimer.