



## Steel Series XS

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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 XS based on Sonion’s E25SAX014G receiver delivers a Low 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
- Low Power class instruments
- Mild 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

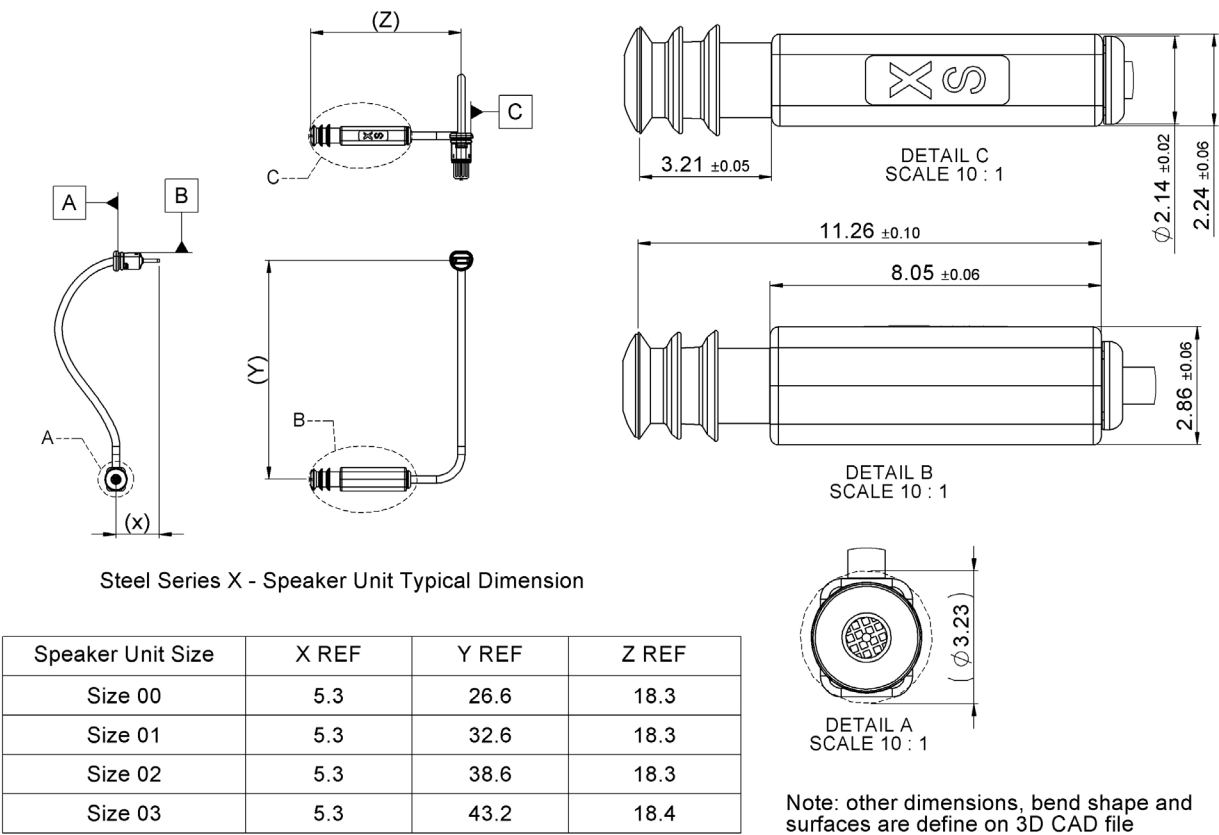
Ordering information

| Speaker unit size | Sonion PN    | Temperature range | Packaging |
|-------------------|--------------|-------------------|-----------|
| Size 00L          | 3072-3107259 | -10°C to 65°C     | Tray      |
| Size 01L          | 3072-3107260 | -10°C to 65°C     | Tray      |
| Size 02L          | 3072-3107261 | -10°C to 65°C     | Tray      |
| Size 03L          | 3072-3212433 | -10°C to 65°C     | Tray      |
| Size 00R          | 3072-3107262 | -10°C to 65°C     | Tray      |
| Size 01R          | 3072-3107263 | -10°C to 65°C     | Tray      |
| Size 02R          | 3072-3107264 | -10°C to 65°C     | Tray      |
| Size 03R          | 3072-3212434 | -10°C to 65°C     | Tray      |

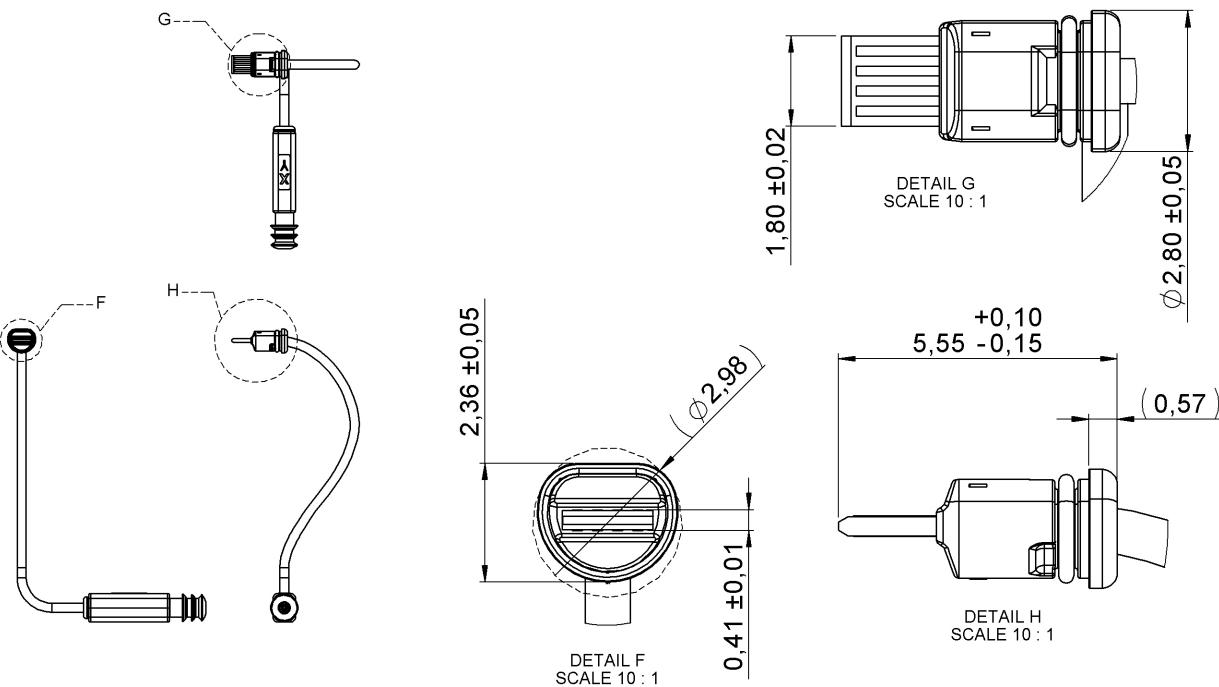
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Mechanical description

Product dimensions in mm - Drw. no.: 0300048990



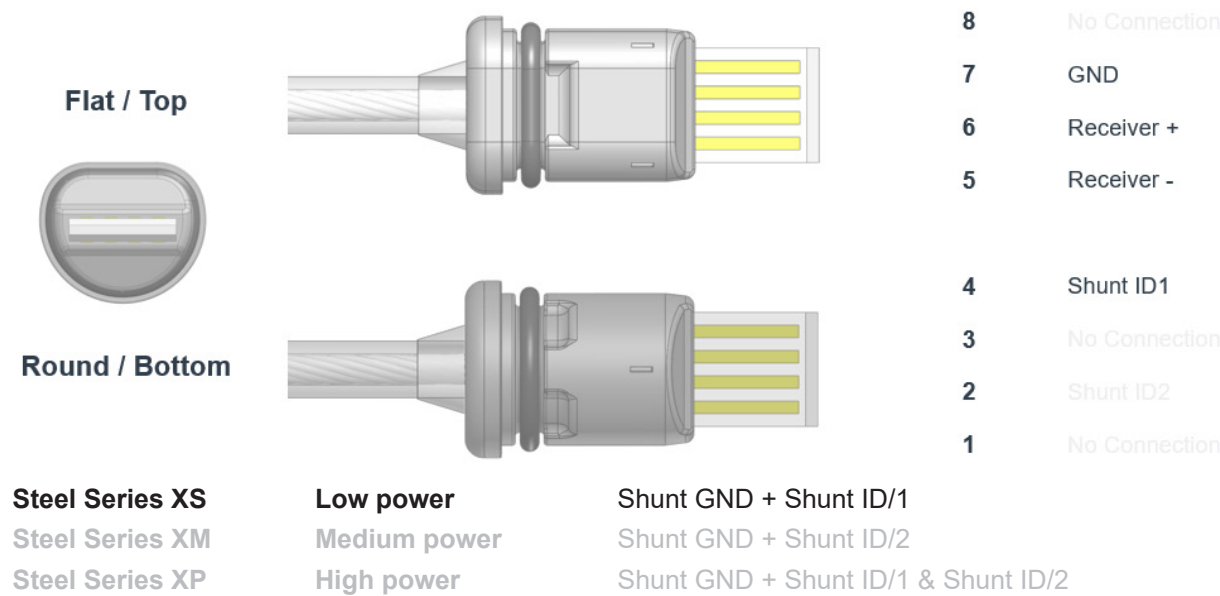
Plug dimensions in mm [inch] - Drw. no.: 0300048990



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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 E25SAX014G                                                                               |
| Plug and Socket           | Sonion CS98 connector system                                                                    |
| Plug material             | Grilon TSG-15 FA                                                                                |
| PCB                       | Ceramic HBS2 (Al2O3, 96.5%) with solder mask and surface.<br>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,<br>Pebax 7233 SP 01 with fiber                  |
| Speaker unit housing      |                                                                                                 |
| Housing cans              | AISI 316L                                                                                       |
| Plastic insert            | PA6, Ultramid A3EG6, transparent                                                                |
| Spout                     | AISI 316LPX                                                                                     |
| Adhesive                  |                                                                                                 |
| Adhesive                  | Loctite M-121 HP                                                                                |
| Lacquer                   | SMD adhesive PD 205 Ajet                                                                        |
| Sportslock (not included) |                                                                                                 |
| Sportslock                | Pebax 7233 SP 01                                                                                |
| Wax protection system     |                                                                                                 |
| Wax guard                 | CeruSTOP™ wax protection                                                                        |
| Dome (not included)       |                                                                                                 |
| Spout interface           | Designed for UniTip domes                                                                       |

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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

- 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 0.190 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.

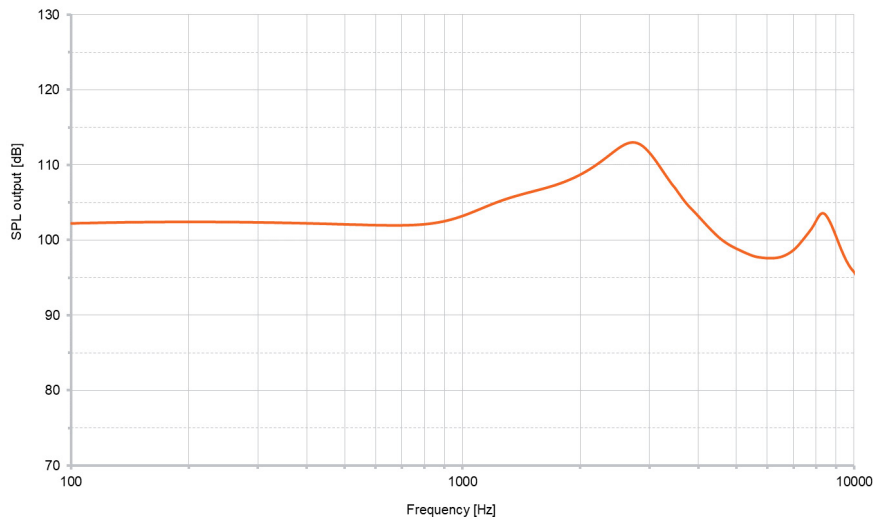
| Acoustic parameters             |            | Min   | Typ   | Max   | Unit | Comments    |
|---------------------------------|------------|-------|-------|-------|------|-------------|
| Sensitivity                     | @ 200 Hz   | 99    | 102   | 105   | dB   |             |
|                                 | @ 500 Hz   | 99    | 102   | 105   | dB   |             |
|                                 | @ 1000 Hz  | 100.5 | 103.5 | 106.5 | dB   |             |
| Peak 1                          | frequency  | 2500  | 2800  | 3100  | Hz   |             |
|                                 | output     | 109.5 | 112.5 | 115.5 | dB   |             |
| Valley 1                        | frequency  | 5600  | 6100  | 6600  | Hz   |             |
|                                 | output     | 93.5  | 96.5  |       | dB   |             |
| Peak 2                          | frequency  | 7750  | 8350  | 8950  | Hz   |             |
|                                 | output     | 100.5 | 103.5 | 106.5 | dB   |             |
| THD                             | @ 1/3 peak |       |       | 5     | %    |             |
|                                 | @ 1/2 peak |       |       | 5     | %    |             |
| Maximum output @ peak frequency |            | 122.5 | 125.5 |       | dB   | @ 0.92 Vrms |

| Electric parameters   | Min       | Typ | Max | Unit | Comments |
|-----------------------|-----------|-----|-----|------|----------|
| Impedance @ 1000 Hz   | 98        | 123 | 148 | Ohm  |          |
| Impedance @ 500 Hz    | 83        | 104 | 125 | Ohm  |          |
| DC resistance @ 20°C  | 85        | 100 | 115 | Ohm  |          |
| DC bias current range | zero bias |     |     |      |          |

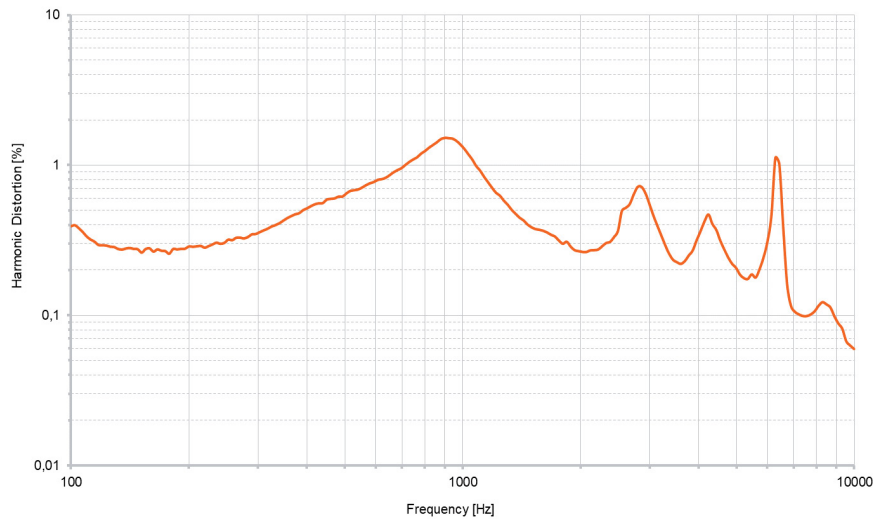
| Additional parameters                      | Min   | Typ | Max | Unit | Comments                                              |
|--------------------------------------------|-------|-----|-----|------|-------------------------------------------------------|
| Shock resistance (receiver specifications) | 14000 |     |     | 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.

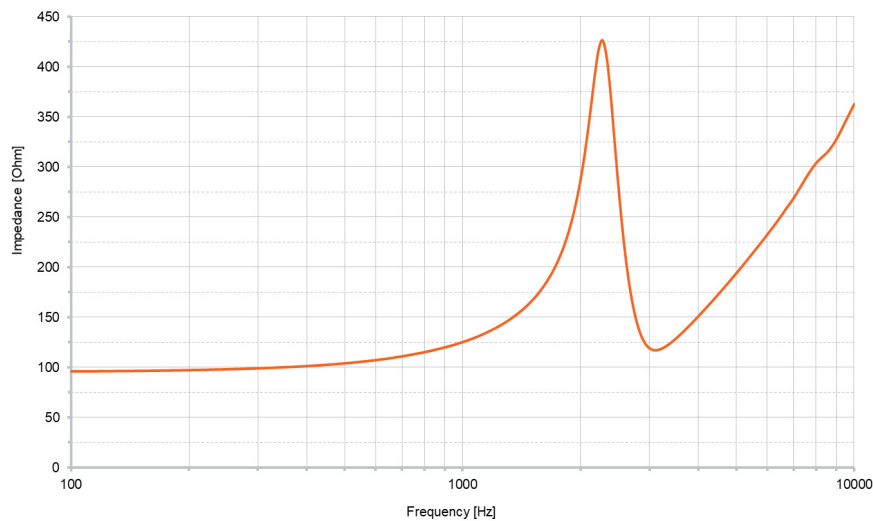
Response curve, typical



THD vs Frequency, typical



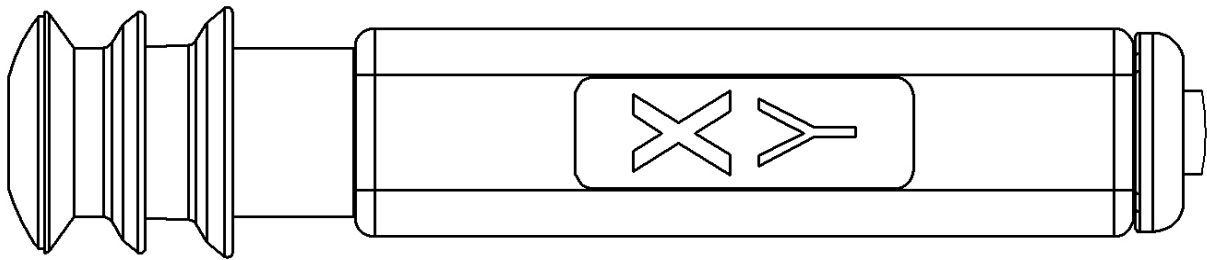
Impedance curve, typical



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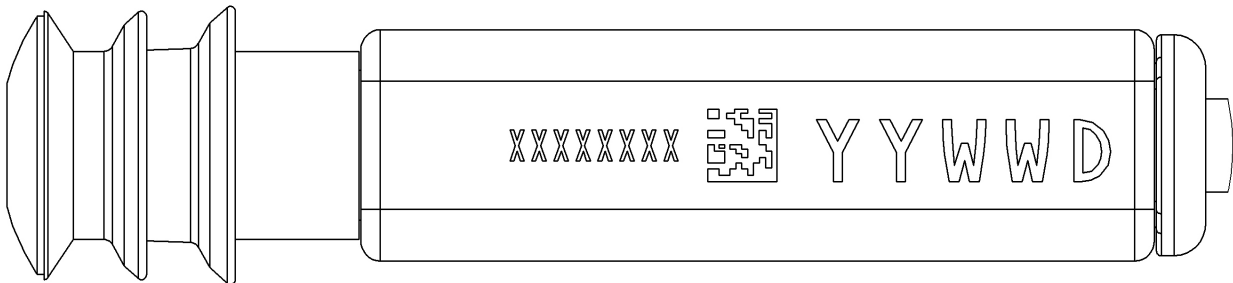
Traceability

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 - S describes the Steel Series XS speaker unit

Product information (Laser coding)

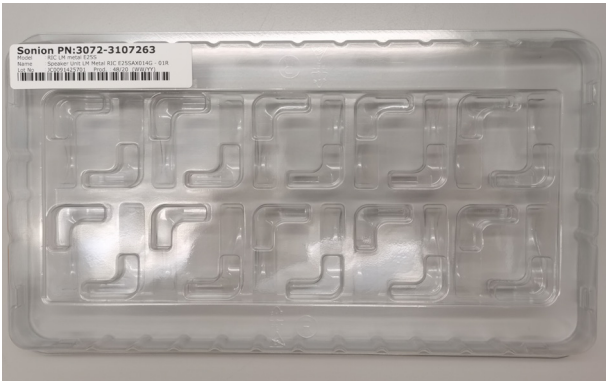
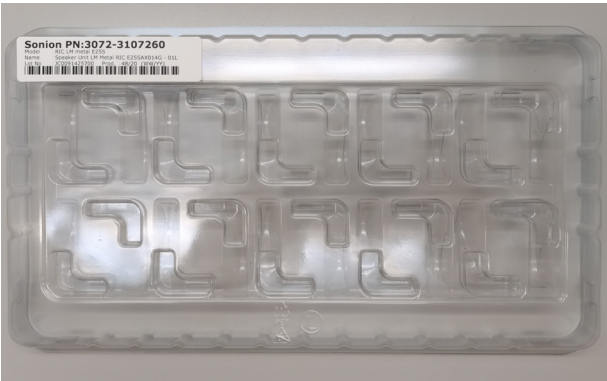


- Batch code
- YYWWDD
- Batch production date: Year (YY) - Week (WW) - Day (1-7, Sunday = 7)
- Unique coding
- XXXXXXXX
- Serial numbers (8 alphanumerics) unique to each speaker unit
- Data matrix
- Record of the unique identification number for direct read-out

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.



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Packaging traceability

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

Label

|           |                         |
|-----------|-------------------------|
| Sonion PN | Sonion part number      |
| Model     | Product name            |
| Lot No    | Production lot number   |
| Prod      | Production date (WW/YY) |



Accessories

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

Connector socket

|                   |                                                                                     |
|-------------------|-------------------------------------------------------------------------------------|
| CS98 socket (SMD) | Ordered and delivered separately in ToR - MoQ = 100pcs<br>Part number: 9976-3201315 |
|-------------------|-------------------------------------------------------------------------------------|

Ear domes

|                  |                                                                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Unitip domes     | Ordered and delivered separately in box of 10pcs, each box with a label describing ear dome type and size.<br>Larger lot size available on request. |
| Open 5mm short   | Part number: 9972-3104381                                                                                                                           |
| Open 7mm short   | Part number: 9972-3104383                                                                                                                           |
| Open 10mm short  | Part number: 9972-3104385                                                                                                                           |
| Tulip 12mm short | Part number: 9972-3104387                                                                                                                           |
| Power small      | Part number: 9972-3107100                                                                                                                           |
| Power medium     | Part number: 9972-3107101                                                                                                                           |
| Power large      | Part number: 9972-3107102                                                                                                                           |



Wax protection system

|           |                                                                                            |
|-----------|--------------------------------------------------------------------------------------------|
| CeruSTOP™ | Extra parts ordered separately - delivered in package of 8pcs<br>Part number: 9974-3107880 |
|-----------|--------------------------------------------------------------------------------------------|

Sportslock

|               |                                                                                |
|---------------|--------------------------------------------------------------------------------|
| XS sportslock | Ordered and delivered separately in lot of 100pcs<br>Part number: 9973-3213696 |
|---------------|--------------------------------------------------------------------------------|

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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.

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