

Bogen NQ-SER20P2

Integrated Power Amplifier BT Speech Enhancement Receiver Installation and Use Guide

The Bogen NQ-SER20P2 is Bogen's Nyquist network POE+ powered BT receiver, plenum rated, self-amplified, wireless Bluetooth speech enhancement system. The NQ-SER20P2 contains a mono Class D amplifier that can direct drive up to 4 8-ohm speakers wired series-parallel (See Figure 1). The NQ-SER20P2 can connect via BT to two rechargeable microphones, the (NQ-SEPMIC) is the teacher microphone, the (NQ-SEHMIC) is a handheld student microphone. Pairing these two BT microphones with the NQ-SER20P2 receiver is accomplished via a CAN Bus connected NFC pairing point (NQ-SEPAIR).

Designed to operate over a 10/100 Ethernet network, the NQ-SER20P2 is IEEE 802.3at compliant and is powered using Power-Over-Ethernet (PoE+) or the Bogen PI5660W POE injector. The NQ-SER20P2 has a balanced audio line out to drive auxiliary power amplifiers, and a balanced audio line input for line level signals from outside sources. The NQ-SER20P2 accessories include a secure lockable charging station, the NQ-SECSTAT, and an optional ceiling mounted state of the art MEMS microphone (NQ-SERTMIC) to enable clear intelligible talkback from the classroom. Talkback is also available through the NQ-SEPMIC teacher microphone.

The NQ-SER20P2 allows DHCP deployment for easy installation. You can let your Nyquist server automatically discover and configure your NQ-SER20P2, or you can manually configure it through the NQ-SER20P2's web-based user interface (web UI). The web UI also allows easy updating of firmware and setting parameters for Digital Signal Processing (DSP). For more information about the web UI, refer to the Nyquist NQ-SER20P2 Configuration Manual.

Notice

Every effort was made to ensure that the information in this manual was complete and accurate at the time of printing; however, all information is subject to change.

This equipment is not suitable for use in locations where children are likely to be present.

Equipment is intended for use only in a restricted access area.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Avertissement: pour réduire le risque d'incendie ou de choc électrique, ne pas exposer cet appareil sous la pluie et l'humidité.

The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on apparatus.

L'appareil ne doit pas être exposé aux écoulements ou aux éclaboussures et aucun objet ne contenant de liquide, the ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, tablecloths, curtains, etc.

- il convient que l'aération ne soit pas gênée par l'obstruction des ouvertures d'aéra

No naked flame sources, such as lighted candles, should be placed on the apparatus.

- il convient de ne pas placer sur l'appareil de sources de flammes nues, telles que des bougies allumées

The use of apparatus in moderate climates.

- si l'appareil est destiné à être utilisé sous un climat tempéré.

Important Safety Information

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Always comply with the following basic safety precautions when installing and using the unit:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Clean only with dry cloth.
6. DO NOT install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
7. Only use attachments/accessories that are specified by the manufacturer.
8. Unplug this apparatus during lightning storms or when unused for long periods of time.
9. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Installation

To install the NQ-SER20P2 amplifier/receiver:

1. Attach the desired analog speakers to the NQ-GA20P2 using the pluggable connector provided, where +/- terminals connect to the +/- speaker wires. (See Figure 1.) If applicable, at this time connect the audio line level output to auxiliary audio power amplifiers. The audio line level inputs can be connected to low level audio sources.

NOTE* Combined impedance of connected loudspeakers cannot be below 8 ohms.

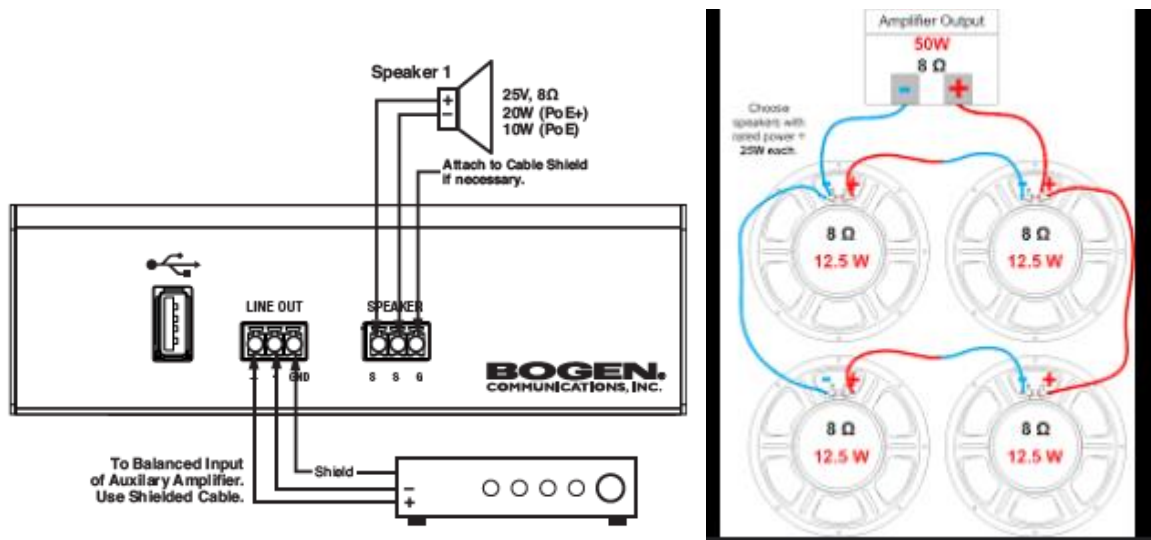


Figure 1: NQ-SER20P2 Audio Connectivity (Sub SER20P2 image & Spkr Dwg)

4 8-Ohm speakers wired series/parallel to create an 8-ohm load.

Something like the above but redrawn by illustrator

Also consider using the Bogen ceiling speaker coverage calculator image here:

2. Connect a Cat5/6 type cable into the module's Ethernet port and ensure the other end of the cable is correctly connected to your network via Power-Over-Ethernet (PoE+) Switch, or the Bogen PI5660W POE injector. (See Figures 2 & 3).

NOTE: Do not power the NQ-SER20P2 yet. NQ-SERPAIR must be connected to NQ-SER20P2 before applying power to the NQ-SER20P2 receiver. At this time connect the (2) screw-on BT antennas, one to each antenna connector on each end of the NQ-SER20P2 and align them vertically.

Figure 2: Rear BT Antenna connection point

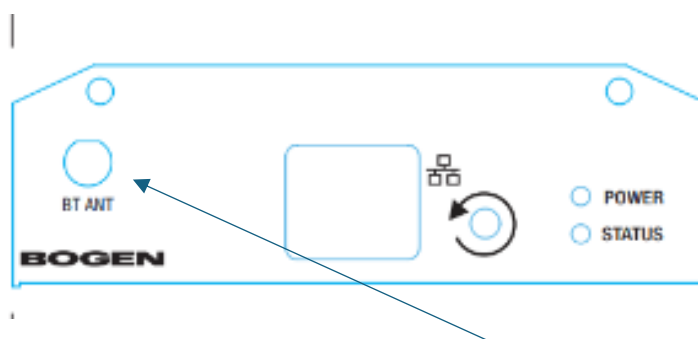
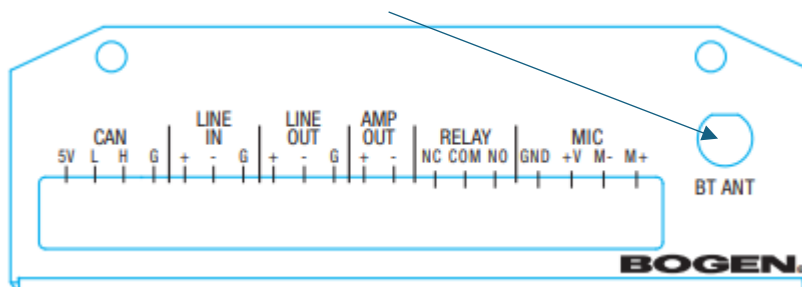


Figure 3 NQ-SER20P2 front Antenna connector:

3. To enable pairing the NQ-SEPMIC & NQ-SEHMIC Bluetooth microphones with the NQ-SER20P2 receiver, the NFC Pair point (NQ-SERPAIR) must be installed. To connect the NQ-SERPAIR to the NQ-SER20P2 use a 4-conductor wire. Connect 5V, CAN H (H), CAN L (L), GND (G) from the NQ-SER20P2 to the matching terminals on the NQ-SERPAIR (see Figure 4 & Figure 5 for connectivity).

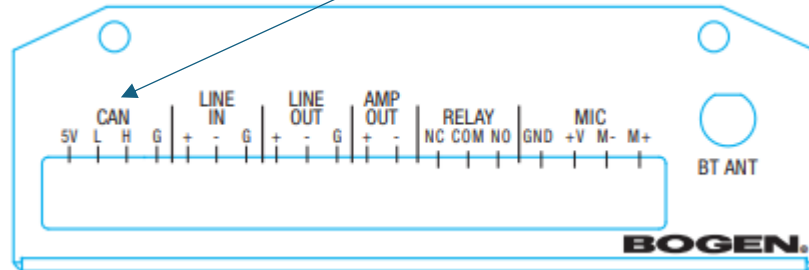


Figure 4: NQ-SER20P2 rear panel CAN connection

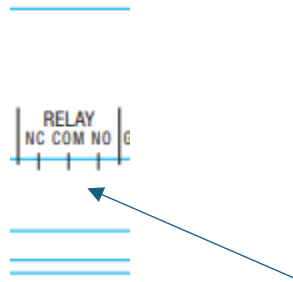


Figure 5: Relay Connections

4. The NQ-SER20P2 includes a Form C SPDT-type dry contact relay for controlling third-party devices. Relay rating is maximum voltage of 24VDC @ 2.0 A. (See Figure 5).

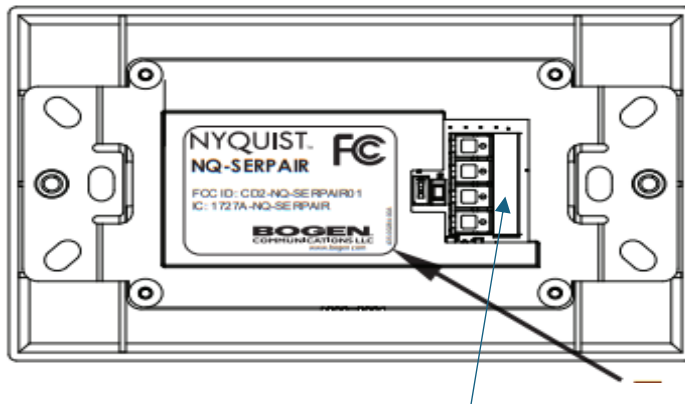
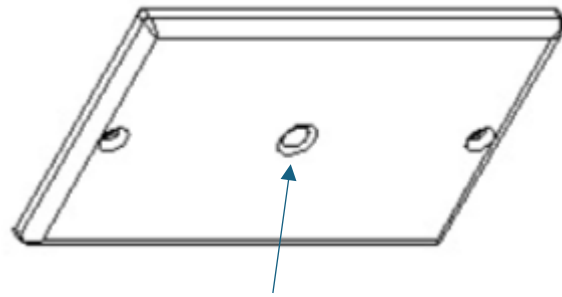


Figure 6: NQ-SERPAIR rear panel CAN NFC connection



NQ-SERPAIR LED Indicator

Figure 7: NQ-SERPAIR Wall Plate

5. Once the NQ-SER20P2 and NQ-SERPAIR CAN bus lines are connected, typically with UTP (unshielded twisted pair wire) the type of wire (is up to installer judgement) then power on the NQ-SER20P2 and we can then pair the two BT microphones (NQ-SEPMIC & NQ-SEHMIC) to the NQ-SER20P2. (See Figures 6 & 7).

6. Next step is to power the BT microphones one at a time (See Figure 8) and once the microphone's power LED is illuminated, to bring the microphone within 3 centimeters / 1.5" of the NQ-SERPAIR NFC pairing point. Upon hearing a "Beep" and seeing a "Green" LED from the NQ-SERPAIR NFC wall plate, these indicate successful pairing. (probably need a troubleshooting guide).

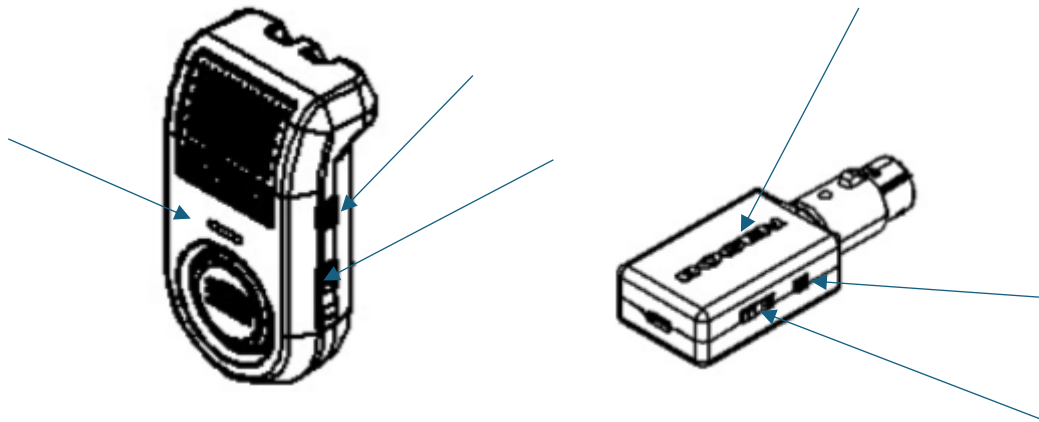


Figure 8: Microphone power button/power LED(s) / Volume Up/Down

buttons:

7. The NQ-SERPMIC and the NQ-SEHMIC are charged via the USB C connector on the bottom of the device from the included USB C 5V power brick. (See Figure 9).

NQ-SEPMIC USB C

NQ-SEHMIC USB C



Figure 9

8. The NQ-SER20P2 system includes a Secure charging station called the NQ-SECSTAT. The NQ-SECSTAT includes a cradle mounted USB C charging port and is designed to cradle the NQ-SEPMIC in a secure manner. The NQ-SECSTAT includes a locking key latch that will prevent tampering with the NQ-SEPMIC during charging. The NQ-SECSTAT also includes a “Kensington”™ locking system to allow securing the NQ-SECSTAT charging station to a location physically. See figures 9 & 10:

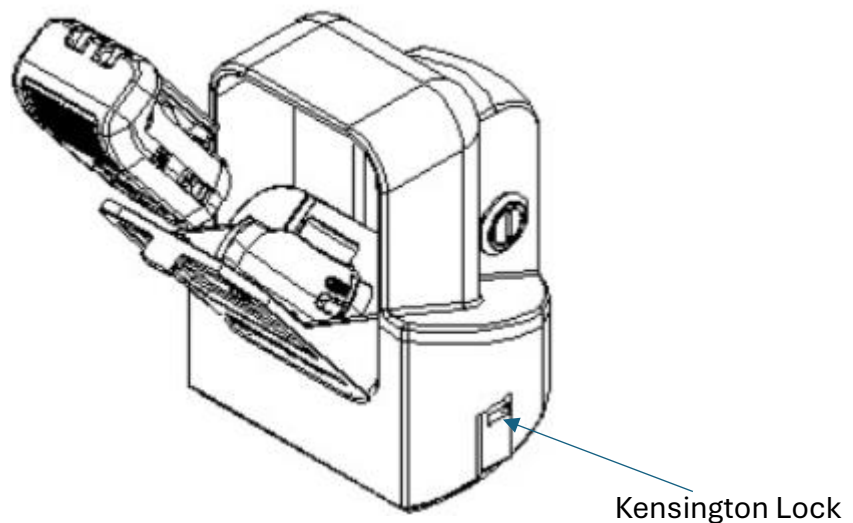


Figure 10

NQ-SEPMIC mounting into the NQ-SECSTAT charging station

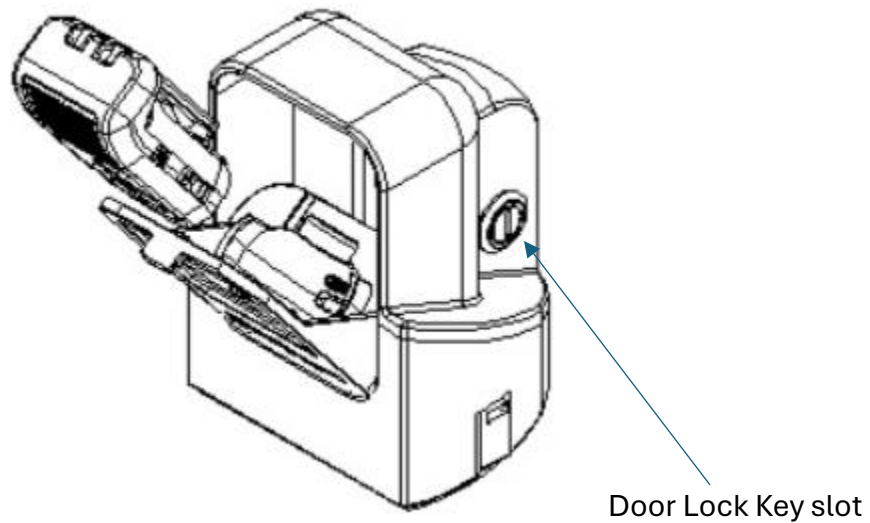


Figure 11

NQ-SEPMIC mounting into the NQ-SECSTAT charging station

9. Installing Overhead Talkback Microphone (NQ-SERTM). The NQ-SERTM talkback microphone is installed into the ceiling (Plenum rated).

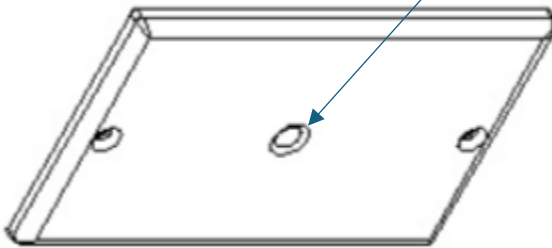


Figure 12

The NQ-SETMIC microphone is a balanced differential microphone with 4 connections, (+5V DC, GND, MIC+, and MIC-). These should be connected to the matching pins on the NQ-SER20P2 with suitable wiring. The installation location of the ceiling mount talk back microphone should be near the instructor's normal location in the classroom.

Viewing and Understanding LEDs

Two LEDs appear on the front of the module. One is labeled POWER and appears as solid red during initial power up, flashes green during a boot sequence and appears solid green when fully booted.

The STATUS LED uses the following indicators to provide information about the module:

Flashing red – No network connection found.

Solid blue – The module is in an uninitialized state and is not associated to a server. (The server may be in a discovery mode.)

Solid green – The module is registered to a Nyquist server and is in normal operation.

Flashing green – The module has an IP address but is not registered with the Nyquist server.

Solid red – The module needs to be rebooted or reset so that the Nyquist application can resume.

Flashing Blue – The module is updating.



Using the Reset Button



The Reset button allows you to restart the module or to reset the module's configuration settings to the factory default settings.

For more information about resetting configuration settings, refer to the *Nyquist NQ-SER20P2 Configuration Manual*.

Temperature Indicator

In addition to the LEDs that appear on the actual appliance, a separate temperature status indicator appears on the module's web-based user interface. For more information, refer to the *Nyquist NQ-SER20P2 Configuration Manual*.

Specifications:

SER20P2

BT Standard:

Profile: A2DP

Codecs:

Multipoint Support:

Typical Range:

Latency:

Frequency response: 300 Hz – 8 kHz

Power Amplifier: 25W into 8 Ohms

S/N >65 dB

Line level input: 2V maximum via 3 pins Phoenix Connector

Line level outputs: 2V maximum via 3 pins Phoenix Connector

Speaker output: 25W into 8 ohms (minimum impedance) via 2 pins Phoenix connector.

Dry Relay contacts: NO/COM/NC Maximum 24VDC @ 2.0 A via 3 pin Phoenix Connector.

Troubleshooting:

1. Noise or hum in SER20P2 or in auxiliary amplifier-consider chassis to chassis ground connection, typically in balanced line in/outs such as in the NQ-SER20P2 chassis ground is not connected to both pieces of equipment, typically at one appliance only, not to both.

RF Exposure

NOTE: User should maintain a 20cm / 8-inch clearance from the NQ-SERPAIR NFC pairing point to minimize RF exposure.

REMARQUE : l'utilisateur doit maintenir un espace libre de 20 cm par rapport au point d'appairage NFC du NQ-SERPAIR pour minimiser l'exposition aux RF.

Compliance

NOTE: This equipment has been tested and found to comply with the limits for a Class A 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 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.

“Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment”

“This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.”

“This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSS(s). Operation is subject to the following two conditions:

This device may not cause interference.

This device must accept any interference, including interference that may cause undesired operation of the device.”

“L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes:

L’appareil ne doit pas produire de brouillage;

L’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.”

“CAN ICES-3 (B)/NMB-3(B)”

Limited Warranty, Exclusion of Certain Damages

The NQ-SER20P2 is warranted to be free from defects in materials and workmanship for five (5) years from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective (as confirmed by Bogen upon inspection) during the warranty period will be repaired or replaced by Bogen, at Bogen’s option, with new or refurbished product, provided the product is shipped insured and prepaid to: Bogen Factory Service Department: 4570 Shelby Air Drive, Suite 11, Memphis, TN 38118, USA. Repaired or replacement product(s) will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

THE FOREGOING LIMITED WARRANTY IS BOGEN’S SOLE AND EXCLUSIVE WARRANTY

AND THE PURCHASER’S SOLE AND EXCLUSIVE REMEDY. BOGEN MAKES NO OTHER WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED TO THE MAXIMUM EXTENT ALLOWABLE BY LAW. Bogen’s liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the price of the product. IN NO EVENT SHALL BOGEN BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF DATA OR LOSS OF USE DAMAGES) ARISING OUT OF THE MANUFACTURE, SALE OR SUPPLYING OF PRODUCTS, EVEN IF BOGEN HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSSES. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.