System 20 PRO Digital Wireless System

Wireless Systems

Features

- **Digital 24-bit/48 kHz wireless operation for ultimate sound quality and dependable performance**
- **Plug-and-play operation in the 2.4 GHz range – completely free from TV interference**
- **User can switch between Standard mode (10 channels) and HD mode (20 channels) to minimize latency or maximize channel count, respectively**
- **Receiver units can be docked in the chassis or mounted remotely (up to 328 feet away) via Ethernet cable for added versatility**
- **Up to five chassis can be linked and used simultaneously**
- **Each receiver channel can be paired with up to four transmitters, allowing users to instantly switch between different transmitter configurations**
- **Chassis' System ID Display shows RF signal level, system ID, transmitter battery level, and system link status**
- **Each half-rack receiver chassis comes with a short and a long rack ear, and two long ears can be combined as a joining plate to secure two chassis in a full rack space**
- **Compatible with Audio-Technica's Wireless Manager software for centralized management of system settings and operations**
- **Auto-lock function prevents unintended operations like displaying the settings or channel select screen**
- **AES128 encryption for security**
- **Compatible with Syslog protocol**
- **Ability to configure, monitor, and save device settings as projects in Wireless Manager**
- **Transmitters and receivers include OLED screens for optimal readout of key settings and alerts**
- **Water- and sweat-resistant cW-style connector on body-pack transmitter provides secure connection to lavalier mics, headworn mics, and cables with cW-style locking 4-pin connector**
- **Charging terminals on body-pack and handheld transmitters work with ATW-CHG3a and ATW-CHG3Na charging docks to recharge NiMH batteries**
- **Supports mixed output for situations with limited input channels**

Description

With the System 20 PRO, Audio-Technica reimagines 2.4 GHz wireless microphone systems yet again, offering a self-managing, plug-and-play 2.4 GHz system that's scalable to 20 channels and delivers dependable, high-quality audio regardless of where the system is set up. Designed for hassle-free deployment, the system overcomes many challenges of conventional wireless microphones, such as frequency coordination, complex intermodulation calculations, and remote antenna cabling.

The ATW-R1440 half-rack receiver chassis houses a receiver unit that can be paired with up to four transmitters. The receiver unit can remain docked in the chassis or be mounted remotely (up to 328 feet away) via Ethernet cable. Up to five chassis can be linked using the included RJ12 cable, creating a stable, multichannel system with two selectable operation modes: Standard mode (10 channels) to minimize latency or HD mode (20 channels) to maximize channel count. The front of the receiver chassis is equipped with a display that shows the operation mode, chassis link and network statuses, and indicators for each paired transmitter. An auto-lock function prevents unintended operations, such as displaying the settings or channel select screen. Each half-rack receiver chassis comes with a short and a long rack ear; two long ears can be combined as a joining plate to secure two chassis in a full rack space.

The ATW-RU14 receiver unit features four detachable antennas that screw onto the face of the unit via SMA connectors. The rear of the unit is equipped with a ¼" camera thread that can be used to mount the unit remotely to a tripod or other device. An RJ45 connector, also on the rear of the unit, allows a remotely mounted receiver unit to be connected to the chassis with a LAN cable (Cat5e or higher). A green LED status indicator, located between the mounting socket and the RJ45 connector, blinks slowly when the receiver unit is not paired with a transmitter, blinks quickly during the pairing process, and illuminates solidly green once the receiver unit is paired with a transmitter. A holder (with cover and mounting screws) is supplied for each receiver unit, providing a convenient means to mount the unit remotely.

The ATW-T1401 body-pack transmitter is equipped with two built-in antennas. It is powered by two AA batteries, accessible via a flip-open battery compartment cover, and is compatible with NiMH batteries, which can be recharged in an ATW-CHG3a or ATW-CHG3Na charging station (sold separately). On the top of the unit is a water- and sweat-resistant 4-pin HRS-type locking input connector for use with a variety of Audio-Technica microphones (the transmitter supplies DC bias voltage to power condenser microphones). A slide-to-mute switch, also located on the top of the unit, enables the transmitter to be quickly muted. The power button, located on the side of the unit, is used to turn the transmitter on/off and to pair it with a receiver unit. The transmitter's ID and gain and battery levels can be viewed on the OLED display situated on the front of the unit. Above the OLED display is a multicolor (green/red/yellow) LED indicator that displays the transmitter's pairing and mute status, as well as battery power.

The ATW-T1402 handheld microphone transmitter uses a specially designed dynamic hypercardioid capsule to maintain sonic consistency with wired counterparts. The ergonomically designed handle unscrews and slides off to reveal the battery compartment. The power button, which is also used to pair the transmitter with a receiver unit, is located at the end of the microphone to maintain a clean, uncluttered appearance. The slide-to-mute switch is conveniently located on the body of the mic for easy operation by the user's thumb. A rugged steel head case protects the capsule while providing relief from wind-induced noise. Like the body-pack transmitter, the handheld transmitter is equipped with a multicolor pairing/mute/battery indicator light and an OLED display that shows the transmitter's ID and gain and battery levels. The transmitter operates on two AA batteries. When NiMH batteries are used, the transmitter can be recharged in an ATW-CHG3a or ATW-CHG3Na charging station (sold separately).

The ATW-T1406 boundary microphone transmitter is equipped with a cardioid condenser element and features a talk switch that can be set to various modes (toggle mute/unmute, touch-to-talk, or touch-to-mute) or be disabled so the transmitter remains unmuted. Two multicolor LED indicators – one on the rear of the unit, one outlining the talk switch – display the mute status, as well as the pairing and battery statuses. An OLED display (showing the transmitter's ID and gain and battery levels) and the power/pairing button are located on the bottom of the unit. The transmitter is powered by a built-in lithium-ion battery that provides approximately 12 hours of use on a full charge. A USB-C to USB-A charging cable is included, along with a USB power adapter.

The ATW-T1407 desk stand transmitter is equipped with a 3-pin XLR-F gooseneck microphone connector that is compatible with quick-mount gooseneck microphones (sold separately). Otherwise, it is very similar to the boundary microphone transmitter with a programmable talk switch (toggle mute/unmute, touch-to-talk, touch-to-mute, disabled), two multicolor pairing/mute/battery indicator lights, and OLED display and power/pairing button on the bottom of the unit. And like the ATW-T1406, the ATW-T1407 is powered by a built-in lithium-ion battery and comes with a USB-C to USB-A charging cable and USB power adapter.

Optionally, the setup and management of the System 20 PRO can be controlled via Audio-Technica's Wireless Manager software, which is capable of managing multiple UHF, 2.4 GHz and DECT wireless systems from a single screen. In addition, AES128 encryption comes standard, providing security and reliable operation. The transmitters included in each system are paired and ready to use out of the box, and offer all-day operation on a full charge.

Architect's and Engineer's Specifications

The 2.4 GHz wireless microphone system shall operate in the ISM band: 2.402 GHz to 2.480 GHz. The transmission shall be 24-bit digital audio with a total system latency of 2.8 ms (in Standard mode 10-channel) or 6.7 ms (in HD mode 20-channel). The system shall support a 24-bit/48k digital audio stream. The wireless microphone system shall be capable of automatic frequency selection and assign transmitter operating frequencies without user intervention and actively avoid interference without interrupting the audio signal. The system shall transmit and receive two frequencies, one as a primary transmission with the digital audio data and the second a transmission with the same digital audio data but on a separate, time-shifted frequency for error correction. The system shall also utilize two antennas on each receiver unit and transmitter.

The receiver chassis shall be all-metal and capable of housing a removable receiver unit. The receiver chassis shall have a display on its front panel that shows the operation mode, chassis link and network statuses, and RF signal strength, audio level, and battery level for each paired transmitter, among other indicators. The rear panel shall have RJ12 Link IN/OUT connectors (an RJ12 cable shall be included with each system) to link one receiver chassis to another (up to five chassis total). When using more than one chassis, they are to be linked with the RJ12 cable for optimum frequency coordination and system timing. The rear panel shall also be equipped with four balanced 3-pin XLR-M output connectors and an RJ45 network port for connecting to a computer. Channel four can be configured as a mix of all outputs. The receiver chassis shall be able to be powered by 12–18V DC at 500 mA. Four half-wave antennas per receiver unit shall be located on the front of the unit and shall incorporate SMA-type connectors. To facilitate extending the antennas, the receiver unit may be removed from the chassis and mounted on a tripod or other device with a ¼"-20 threaded bolt or slipped into the included holder for mounting on a wall or other structure. The receiver unit shall be connected with standard Category 5e or better structured cable via a RJ45 with a maximum cable length of 100 m (328 ft). Each receiver unit shall require a separate cable home run to the receiver chassis to carry proprietary digital audio information and power. The receiver chassis can be rack-mounted alone in a full rack space by using the included short and long rack ears, or two chassis can be joined and mounted in a full rack space by using two long rack ears. The receiver's design shall provide totally silent audio output mute when the wireless transmitter is turned off or signal is lost. The wireless receiver chassis and supplied metal rack-mounting ears shall be industrial black.

The frequency-agile 2.4 GHz wireless body-pack transmitter shall have microphone and line level inputs and transmit in the 2.402 GHz to 2.480 GHz ISM frequency band. The transmitting frequency shall be determined by the paired receiver and automatically changed based on the monitoring of the spectrum by the receiver. The body-pack shall provide DC voltage to power microphones requiring DC bias. The body-pack transmitter shall have a reversible clothing clip allowing for up or down cable entry. The transmitter shall have a 4-pin locking input connector. A multicolor (green/red/yellow) LED indicator shall illuminate and flash in various ways to show the transmitter's pairing and mute status and indicate when battery power is low. An OLED display shall show the transmitter's ID and gain and battery levels. The body-pack transmitter shall support a 24-bit/48 kHz digital audio stream. The body-pack shall pair with a receiver unit using a unique identification number. Each body-pack transmitter shall have two antennas that both transmit and receive signals. The transmitter shall operate on two AA batteries (alkaline, NiMH, or lithium).

The frequency-agile 2.4 GHz wireless handheld transmitter shall utilize a dynamic hypercardioid element and transmit in the 2.402 GHz to 2.480 GHz ISM frequency band. The transmitting frequency shall be determined by the paired receiver and automatically changed based on the monitoring of the spectrum by the receiver. The transmitter shall support a 24-bit/48 kHz digital audio stream. The capsule shall incorporate internal shock mounting and have a two-stage integral pop filter. A multicolor (green/red/yellow) LED indicator shall illuminate and flash in various ways to show the transmitter's pairing and mute status and indicate when battery power is low. An OLED display shall show the transmitter's ID and gain and battery levels. The handheld transmitter shall pair with a receiver unit using a unique identification number. Each handheld transmitter shall have two antennas that both transmit and receive signals. The transmitter shall operate on two AA batteries (alkaline, NiMH, or lithium). The transmitter shall be supplied with a heavy-duty stand clamp and ⅜" to ⅝" thread adapter.

The frequency-agile 2.4 GHz wireless boundary microphone transmitter shall utilize a cardioid condenser element and transmit in the 2.402 GHz to 2.480 GHz ISM frequency band. The transmitting frequency shall be determined by the paired receiver and automatically changed based on the monitoring of the spectrum by the receiver. The transmitter shall support a 24-bit/48 kHz digital audio stream. The transmitter shall have a talk switch that can be set to various modes (toggle mute/unmute, touch-to-talk, or touch-to-mute) or be disabled so the transmitter remains unmuted. Two multicolor LED indicators – one on the rear of the unit, one outlining the talk switch – shall display the mute status, as well as the pairing and battery statuses. An OLED display (showing the transmitter's ID and gain and battery levels) and a power/pairing button shall be located on the bottom of the unit. The boundary microphone transmitter shall pair with a receiver unit using a unique identification number. Each boundary microphone transmitter shall have two antennas that both transmit and receive signals. The transmitter shall be powered by a built-in lithium-ion battery and come with a USB-C to USB-A charging cable and USB power adapter.

The frequency-agile 2.4 GHz wireless desk stand transmitter shall have a 3-pin XLR-F gooseneck microphone connector capable of supplying 24 V DC phantom power. It shall be compatible with quick-mount gooseneck microphones (sold separately) and transmit in the 2.402 GHz to 2.480 GHz ISM frequency band. The transmitting frequency shall be determined by the paired receiver and automatically changed based on the monitoring of the spectrum by the receiver. The transmitter shall support a 24-bit/48 kHz digital audio stream. The transmitter shall have a talk switch that can be set to various modes (toggle mute/unmute, touch-to-talk, or touch-to-mute) or be disabled so the transmitter remains unmuted. Two multicolor LED indicators – one on the rear of the unit, one outlining the talk switch – shall display the mute status, as well as the pairing and battery statuses. An OLED display (showing the transmitter's ID and gain and battery levels) and a power/pairing button shall be located on the bottom of the unit. The desk stand transmitter shall pair with a receiver unit using a unique identification number. Each desk stand transmitter shall have two antennas that both transmit and receive signals. The transmitter shall be powered by a built-in lithium-ion battery and come with a USB-C to USB-A charging cable and USB power adapter.

The transmitters included in each system shall be paired and ready to use out of the box and offer all-day operation on a full charge. Each system shall also accept additional transmitters, with up to four transmitters (any mix of body-pack, handheld, boundary, or desk stand) pairing with a single receiver unit. Any mix of up to four transmitters shall also pair with a single channel (the active transmitter being that which was turned on first).

Setup and management of the 2.4 GHz wireless microphone system shall be controlled via the receiver chassis front panel controls or proprietary wireless manager software capable of managing multiple UHF, 2.4 GHz and DECT wireless systems from a single screen.

The system's firmware shall be updated using the wireless manager software, the receiver chassis' RJ45 connection, and a transmitter's USB-C connection.

The system shall have AES128 encryption to ensure secure, reliable operation.

The wireless system shall be an Audio-Technica (note to specifier: choose one):
ATW-1421 – Dual Body-Pack System
ATW-1421/L – Dual Lavalier Microphone System
ATW-1422 – Dual Handheld Microphone System
ATW-1423 – Dual (Handheld and Body-Pack) System
ATW-1423/L – Dual (Handheld and Lavalier Microphone) System
ATW-1426 – Dual Boundary Microphone System
ATW-1427 – Dual Desk Stand Transmitter System

System 20 PRO

Specifications

Overall system	
Operating Frequencies	2,402 to 2,480 MHz
Dynamic Range	120 dB (A-weighted), typical
Total Harmonic Distortion	<0.05% typical
Operating Range	60 m (200') *Open range environment with no interfering signals*
Operating Temperature Range	0 to 40°C (32 to 104°F)
Frequency Response	20 Hz to 20 kHz *Depending on microphone type*
Audio Sampling	Standard: 24-bit/48 kHz HD mode: 24-bit/48 kHz
Latency	Standard: 2.8 ms HD mode: 6.7 ms
Encryption System	AES128
Maximum Simultaneous Use	Standard: 10 channels HD mode: 20 channels *Depending on the region and environment*

ATW-RC14 Receiver Chassis	
External Receiver Unit Port	RJ45
NETWORK Port	RJ45: Fast Ethernet
LINK IN/OUT Port	RJ12
Output Level	LINE maximum: +22 dBu (+20 dBV) LINE unity: –20 dBu (–22 dBV) MIC maximum: –12 dBu (–10 dBV) MIC unity: –50 dBu (–52 dBV)
Power Consumption	3.7 W
Power Supply	12 V DC, 0.5 A (AC adapter)
Dimensions	209.8 mm (8.3") W × 165.6 mm (6.5") D × 42.5 mm (1.7") H
Weight	740 g (26 oz)
Included Accessories	AC adapter, AC adapter blade, short rack-mount adapter, long rack-mount adapter, fixing screw × 5, link cable (30 cm [12"]), leg × 4

ATW-RU14 Receiver Unit	
Modulation Mode	GFSK
RF Output Power	10 mW EIRP
RF Sensitivity	–90 dBm, typical
Antenna	1/2 wave dipole antenna, true diversity
External Connection Port	RJ45
Power Supply	12 V DC (RC14)
Operating Temperature Range	0 to 40°C (32 to 104°F)
Dimensions	86.0 mm (3.4") W × 70.2 mm (2.8") × D 18.7 mm (0.74") H
Weight	77 g (2.7 oz)
Included Accessories	Unit holder, holder cover, wood screw × 2, antenna × 4

ATW-T1401 Body-Pack Transmitter	
Modulation mode	GFSK
RF Output Power	10 mW EIRP
RF Sensitivity	–90 dBm, typica
Antenna	True diversity
Input Connection	Four pin locking connector  Pin 1: GND Pin 2: INST INPUT Pin 3: MIC INPUT Pin 4: DC BIAS +10 V
Battery	3 V DC (two 1.5 V AA)
Operating Temperature Range	5 to 40°C (41 to 104°F)
Battery life	Approx. 15 hours (alkaline) Approx. 14 hours 30 minutes (Ni-MH) Approx. 29 hours (lithium) *The time may vary depending on usage conditions.*
Dimensions	63.7 mm (2.5") W × 22.7 mm (0.89") D × 107.4 mm (4.2") H
Weight (without batteries)	80 g (2.8 oz)

ATW-T1402 Handheld Microphone Transmitter	
Modulation Mode	GFSK
RF Output Power	10 mW EIRP
RF Sensitivity	–90 dBm, typical
Antenna	True diversity
Microphone Type	Dynamic
Microphone Polar Pattern	Hypercardioid
Battery	3 V DC (two 1.5 V AA)
Operating Temperature Range	5 to 40°C (41 to 104°F)
Battery Life	Approx. 18 hours (alkaline) Approx. 16 hours 30 minutes (Ni-MH) Approx. 35 hours (lithium) *The time may vary depending on usage conditions.*
Dimensions	265.0 mm (10") × 53.7 mm (2.1")
Weight (without batteries)	300 g (11 oz)
Included Accessories	Mic holder AT8456a, converting thread adapter (⅜ - ⅝)

ATW-T1406 Boundary Microphone Transmitter	
Modulation Mode	GFSK
RF Output Power	10 mW EIRP
RF Sensitivity	–90 dBm, typical
Antenna	True diversity
Maximum Input Sound Pressure Level	139 dB SPL
Microphone Type	Condenser
Microphone Polar Pattern	Cardioid
Built-in Battery	3.7V lithium-ion battery (5.5Wh, 1460mAh)
Battery Life	Approx. 12 hours *This varies depending on usage conditions.*
Charging Time	Approx. 3 hours and 10 minutes *This varies depending on usage conditions*
USB Charging Port	USB Type-C (USB 2.0)
Operating Temperature Range	5 to 40°C (41 to 104°F)
Dimensions	90.5 mm (3.6") W × 129.4 mm (5.1") D × 31.9 mm (1.3") H
Weight (including battery)	510 g (18 oz)
Included Accessories	USB power supply adapter, USB power supply adapter blade, USB cable (1.5 m [4.9'])

ATW-T1407 Desk Stand Transmitter	
Modulation Mode	GFSK
RF Output Power	10 mW EIRP
RF Sensitivity	–90 dBm, typical
Antenna	True diversity
Microphone	Gooseneck microphone supported
Phantom Power Supply	DC24V
Built-in Battery	3.7V lithium-ion battery (5.5Wh, 1460mAh)
Battery Life	When using a gooseneck microphone with no LED: Approx. 12 hours When using a gooseneck microphone with an LED: Approx. 8 hours *This varies depending on usage conditions.*
Charging Time	Approx. 3 hours and 10 minutes *This varies depending on usage conditions*
USB Charging Port	USB Type-C (USB 2.0)
Operating Temperature Range	5 to 40°C (41 to 104°F)
Dimensions	90.5 mm (3.6") W × 129.4 mm (5.1") D × 47.6 mm (1.9") H
Weight (including battery)	490 g (17 oz)
Included Accessories	USB power supply adapter, USB power supply adapter blade, USB cable (1.5 m [4.9'])

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