

SPECIFICATION DATA

Churches • Schools • Auditoriums • Conference Rooms • Theaters

# FM 458 All Versions

## Large Area FM Assistive Listening Systems



Features the cutting-edge PPA T45 transmitter, multiple digital audio input options, and an OLED display with easy-to-manage menu navigation. Features three powerful microprocessors and the same high-quality audio and RF performance you've come to expect from Williams Sound. With an operating range of up to 1000 feet, it's ideal for large venues where superior coverage is essential. This complete turnkey solution includes four PPA R38 receivers, each featuring an OLED display, with on-screen channel selection and access to 17 pre-set wideband frequencies between 72-76 MHz, 8 or 17-channel mode, and a stereo headset jack.

**FM 458 NET D PRO System includes:**

- (1) PPA T45NET transmitter
- (4) PPA R38N receivers
- (4) EAR 022 Surround Earphones
- (2) NKL 001 Neckloops
- (4) BAT KT6 Dual Drop-in Charger Kits, each including (2) BAT 026-2 AA Rechargeable Batteries
- (1) ANT 005 Coaxial Antenna
- (1) ANT 025 Whip Antenna
- (1) IDP 008 Wall Plaque
- (1) RPK 005 Rack Panel Kit
- (1) TFP 048 Power Supply
- (1) WCA 013 Audio Cable
- Dante Input
- Network Control

**FM 458 NET D System includes:**

**Same as FM 458 NET D PRO except:**

- No ANT 005 Coaxial Antenna
- No BAT KT6 Charger Kit
- No RPK 005 Rack Panel Kit

**FM 458 PRO System includes:**

**Same as PPA 458 NET D PRO except:**

- No Network Control or Dante input

**FM 458 System includes:**

**Same as FM 458 NET D PRO except:**

- No BAT KT6 Charger Kit
- No ANT 005 Coaxial Antenna
- No RPK 005 Rack Panel Kit
- No Network Control or Dante Input

**12 or 24 Receiver Versions:**

Systems are available with additional receivers.

**These systems come with:**

- (12 or 24) EAR 022 Surround Earphones
- (3 or 6) NKL 001 Neckloops

**FM 457-12/24 include:**

- (12 or 24) BAT 001-2 AA Alkaline Batteries

**PRO (or higher) systems include:**

- (1) CHG 3512 12-bay charger
- (12 or 24) BAT 026-2 AA NiMH Rechargeable batteries.
- (1) ANT 005 Coaxial Antenna
- (1) RPK 005 Rack Panel Kit

# FM Listening System

## PPA T45NET and PPA T45 Transmitters

<b>Dimensions</b>	8.45" W x 8.25" D x 1.72"H (21.5 cm x 21 cm x 4.4 cm)
<b>Weight</b>	<b>Transmitter:</b> 3.0 lbs (1.36 kg)
	<b>Shipping Weight:</b> 4.50 lbs (2.04 kg) (Transmitter, Power Supply, Antenna and packaging)
<b>Color</b>	Black/Silver with black legends on the front, white legends on the back
<b>Rack Mount</b>	Standard 19" Rack, one EIA rack space high, 1/2 space wide 1–2 units can be mounted in a single rack space with optional RPK 005 (single) or RPK 006 (double) Rack Mount Kits
<b>Power Supply</b>	Desktop Style Transformer (TFP 048)
	Input: 100-240 VAC, 50/60 Hz. IEC Line Cord
	Output: 24 VDC, 750 mA, 18W. 2.5mm ID center positive barrel connector
	Approvals: UL, CUL, Energy Star V, CSA listed
<b>Power ON Indicator</b>	Push On/Push Off latching power button, backlit green indicates power ON, backlight off indicates power OFF, fading from bright to dark indicates Sleep Mode*
<b>Temperature Range</b>	Operating: +32° F to +104° F (0° C to 40° C)
	Storage: -4° F to +158° F (-20° C to 70° C)
<b>Menu Settings</b>	Audio Presets (Music, Voice, Hearing Assist, Custom), Frequency/Channel selection, Frequency/Channel mode, Audio Input Source (Microphone, Line, Phantom, Digital AES/EB, Digital S/PDIF), High Pass Filter, Low Pass Filter, Compression, RF Output Power, Screen Saver Delay, Test Tone (400 Hz), Headphone Volume, Headphone Source

### RF Section

<b>Operating Frequencies</b>	72.1-75.9 MHz , 17 wideband channels (selectable)
<b>Frequency Accuracy</b>	± 2 ppm stability, 0-50° C
<b>Deviation</b>	± 75 kHz maximum
<b>Pre-Emphasis</b>	75 µsec
<b>RF Field Strength</b>	Does not exceed 80 mV/m at 3 m
<b>Compatible Antennas</b>	ANT 005, ANT 021, ANT 024, or ANT 025
<b>Transmission Range</b>	Up to 1000 ft (304 m) with ANT 005 coaxial antenna mounted on rear chassis connector
<b>*RF Time-out (Sleep Mode)</b>	Menu selectable - 30 Min, 4 Hours, or Always On; timer starts when audio is below the -21dB VU level and no buttons are pressed
<b>RF Power</b>	Menu selectable - Full, Medium, Low, Off
<b>RF Outputs</b>	(1x) #10-32 stud connector in center of unit (pcb mounted) (1x) F-connector on rear chassis
<b>RF Transmit Indicator</b>	1 Green LED, indicates RF "On Air"

### Audio Section

<b>Audio Processor Functions</b>	DSP based; Compression: 1:1, 1.5:1 or 2:1; High Pass and Low Pass Filter Frequency control
<b>Frequency Response</b>	31 – 16000 Hz, ±3 dB ("Music" Audio Preset)
<b>Signal-to-Noise Ratio</b>	≥74 dB Transmitted RF
<b>Total Harmonic Distortion</b>	Less than 0.25% @ 1 kHz (RF output)
<b>Common Mode Rejection</b>	>57 dB @ 1 kHz, Mic or Line

# FM Listening System

## PPA T45NET & PPA T45 Transmitters

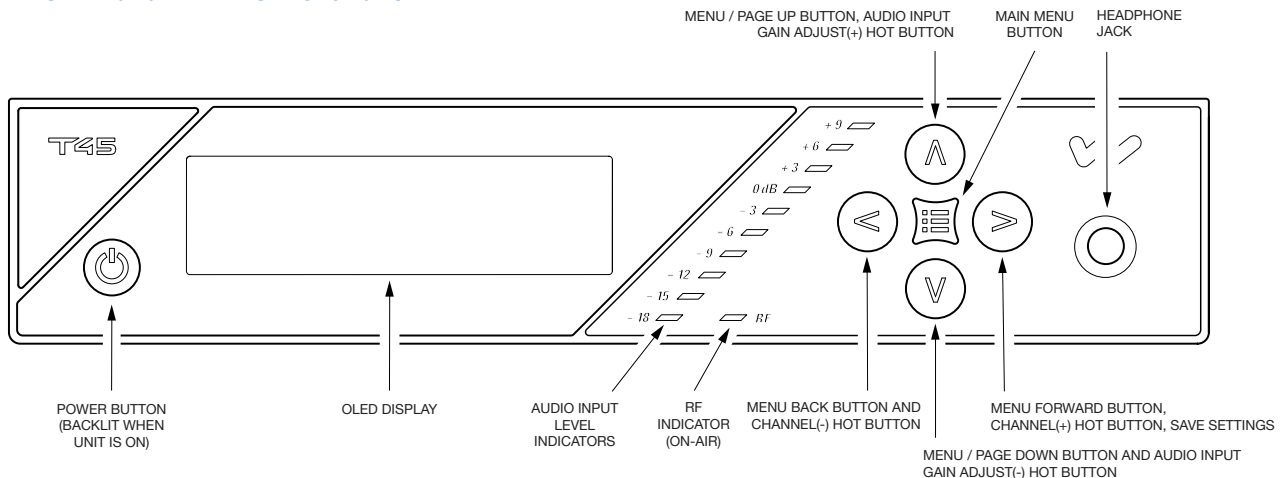
<b>Audio Inputs</b>	(1x) Combination 3-pin XLR, 1/4" (TRS) jack for Mic or Line Level Analog Audio, Balanced or Unbalanced Line Level, or Microphone with Selectable Phantom Power (1x) XLR for Digital Audio, AES3/EBU, supported sample rates 44.1 kHz and 48 kHz (1x) RCA for Digital Audio, S/PDIF, supported sample rates 44.1 kHz and 48 kHz
<b>Audio Input Gain Adjust</b>	In menu, adjustable to 0 to -50 dB, in 1dB steps
<b>Phantom Power</b>	14.4 VDC applied through 2.2 k $\Omega$ resistors to analog combo jack: Pin 2 and Pin 3 on XLR jack, or tip and ring on 1/4" TRS jack
<b>Audio Level Indicators</b>	10-LED array that reads -18 to +9 dB at 3 dB intervals. 7 Green, 2 Amber, and 1 red LED. Green LEDs indicate normal operating audio level peaks, Amber LEDs indicate close to overload peaks, Red LED indicates overload peaks

Input Levels (Bal or Unbal)  (at Audio Input Gain = 0dB)	Nominal (1st Amber LED)	Overload Warning  (Displayed on Screen)	Absolute Maximum Ratings**
Microphone	-55 dBV (1.7 mV RMS)	-15 dBV (180 mV RMS)	+20dBV (10.0 V RMS)
Line	-25 dBV (55 mV RMS)	+16 dBV (6.3 V RMS)	+20 dBV (10.0 V RMS)

<b>Headphone Output</b>	1/4" TRS stereo jack, mono signal, 15.7 mW, maximum in 33 $\Omega$ (level adjustable in menu 0 to -40 dB in 2 dB steps)
<b>Line Output</b>	RCA jack (black), -10 dBV (.32 VRMS); Output impedance 100 $\Omega$
<b>Ethernet</b>	RJ-45 on back of unit (PPA T45NET only) supports CAT5e cable lengths up to 328 feet (100 meters); 10/100 Base-T IEEE 802.3 compliant, unique MAC address
<b>Approvals</b>	FCC, RoHS2, WEEE, Industry Canada
<b>Warranty</b>	Lifetime PLUS Limited Warranty (90 Days on most accessories)

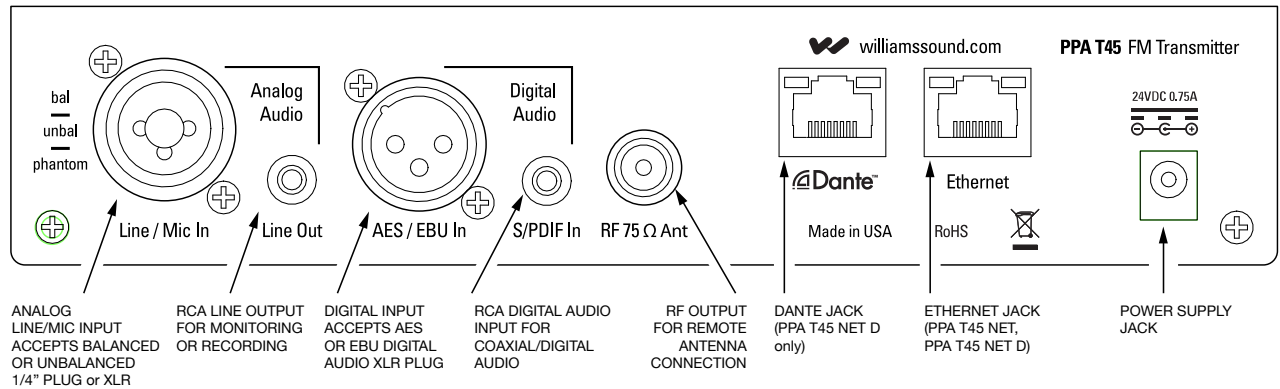
**NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.**

## PPA T45NET and PPA T45 Front Panel

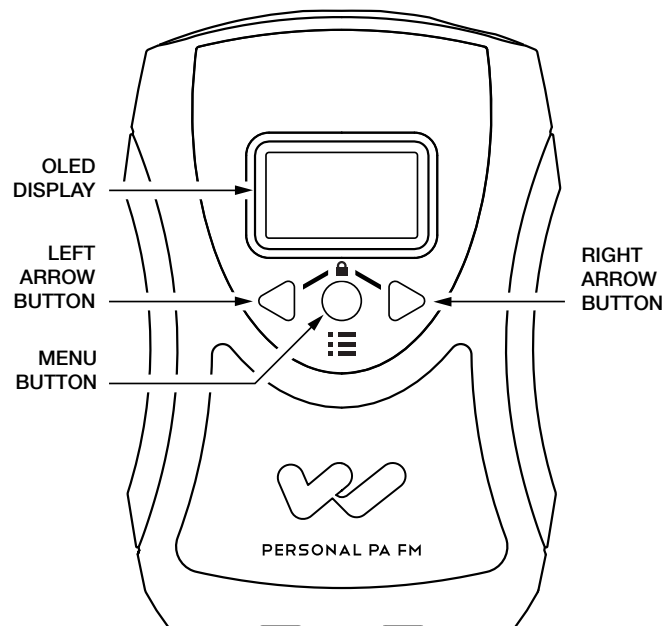
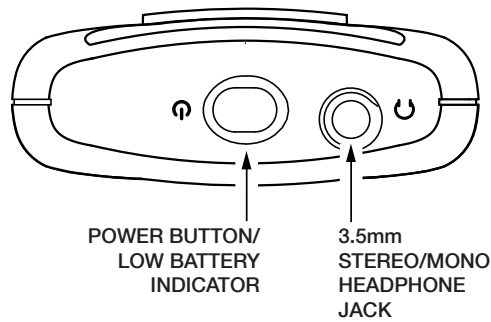


# FM Listening System

## PPA T45NET and PPA T45 Rear Panel



## PPA R38 Receiver



# FM Listening System

## PPA R38 Receiver

<b>Dimensions:</b>	4.1" x 2.85" x 1.38" (104 x 72 x 35mm)
<b>Weight:</b>	4.6oz (130g) with batteries. 2.6oz (73g) without batteries
<b>Color:</b>	Black/Silver. Black ABS Plastic case with Aluminum faceplate.
<b>Battery Type:</b>	(2) AA Alkaline or (2) AA NiMH Rechargeable
<b>Battery Life:</b>	(2) AA non-rechargeable alkaline batteries (BAT 001-2), approx. 50 hrs (2) AA rechargeable NiMH batteries (BAT 026-2), 1500mAh, approx. 32 hrs
<b>Current Consumption:</b>	47mA nominal at 2.4VDC
<b>Operating Temp. Range:</b>	32° – 122°F (0° to 50°C)
<b>Channels:</b>	17 Wideband, accessed via menu
<b>Operating Frequencies:</b>	72.1, 72.2, 72.3, 72.4, 72.5, 72.6, 72.7, 72.8, 72.9, 74.7, 75.3, 75.4, 75.5, 75.6, 75.7, 75.8, 75.9 MHz*
<b>FM Deviation:</b>	75 kHz
<b>De-Emphasis:</b>	75 µS
<b>Display Screen:</b>	1" OLED
<b>Power Indication:</b>	Power button, backlit green. Good battery strength - glows solid. Low battery - slow flashes. Error - fast flashes with 1 sec delay.
<b>Sensitivity:</b>	2 µV at 12 dB Sinad with squelch defeated
<b>Input Overload:</b>	100 mV
<b>Frequency Response:</b>	200 Hz – 15 kHz, ±3dB
<b>Modulation:</b>	FM, +/- 75 kHz peak deviation
<b>Signal-to-Noise Ratio:</b>	Minimum 65 dB @ 1.0V
<b>Receive Antenna:</b>	Integral with earphone/headphone cord
<b>Audio Output:</b>	35 mW max at 16 Ω
<b>Headphone Connector:</b>	3.5 mm stereo jack, mono output for stereo or mono earphones, headphones, or neckloops
<b>Power Save - Display Off/ Sleep Mode/Auto-Off:</b>	<b>Display Off:</b> 5, 30, or 60 seconds of no button pushes (adjustable in menu) <b>Sleep Mode:</b> 6 mins of no RF signal or button pushes; wakes up with RF Signal or any button push <b>Auto Off:</b> 2 hours of no RF signal or button pushes
<b>Soft Audio Turn-On:</b>	Upon Power ON or Channel Change, mutes audio, then ramps up 1 numeric step per 1/10th second until set volume is reached
<b>Approvals:</b>	FCC, Industry Canada, RoHS, WEEE
<b>Warranty:</b>	Lifetime PLUS Limited Warranty, 90 Days on most accessories.

This device complies to "RSS-Gen Issue 2 June 2007" for Industry Canada and FCC part 15.105(b) for the United States.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with ICES-003 class B. Test data is available from the manufacturer on request.

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# FM Listening System

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## Architectural / Engineering Specifications

### PPA T45NET and PPA T45

There shall be two models of the transmitter - one with Ethernet control capability and one without. The transmitter shall be a microprocessor-based unit. It may be configured through the on-screen menu. The model with Ethernet control will also be configurable over an Ethernet (10 base T) network accessible through common web based browsers. It shall have a transmitting range of up to 1000 feet. It shall have 17 wideband channels operating on 72.1–75.9 MHz. It shall be supplied with a top mount 39" whip antenna and external power supply.

**Front Panel:** The transmitter shall have an OLED screen displaying current settings and menu functions. Channel/frequency selection, audio input source, audio presets (Hearing Assist, Music, Voice and Custom), audio input level, high and low pass filter, compressor gain and RF output power shall be configurable via the menu or web browser. There shall be a 10 segment LED bar graph indicating audio input level and an RF "on air" LED. A 1/4" stereo headphone jack allows monitoring of the transmitted audio.

**Rear Panel:** The PPA T45 shall be powered by an external 24VDC power supply. It shall have a 75Ω F-connector on the rear for remote antenna applications and an RCA line level output. It shall have analog 1/4"/XLR combo microphone or line level input jack, XLR AES3 and S/PDIF RCA digital input jacks. The model with Ethernet control shall have an RJ-45 Ethernet jack.

The transmitter shall be compatible with all Williams Sound FM wideband 72-76 MHz receivers and have a lifetime limited warranty.

These transmitters shall be the Williams Sound model number PPA T45 and PPA T45NET.

### PPA R38 Receiver:

The receiver shall be encased in black, PC/ABS impact-resistant plastic with a hinged battery door. The receiver shall be a body-pack style and include a detachable belt-clip for hands-free operation. The receiver shall have a 3.5mm stereo jack to accommodate stereo or mono low impedance earphones, headphones and neckloops. The receiver shall have a power button that is backlit indicating power is on. The receiver shall receive 17 preset wideband channels between 72-76MHz. Channel selection shall be made in the menu. The receiver shall have channel-lock capability.

The receiver shall have a slide switch inside the battery compartment to select disposable Alkaline or NiMH rechargeable battery operation. It shall have charger contacts on the bottom of the receiver for use with Williams Sound drop-in chargers CHG 3512 and CHG 3502. The receiver shall operate up to 50 hours with two disposable AA Alkaline batteries (BAT 001-2) and up to 32 hours with two AA NiMH rechargeable batteries (BAT 026-2).

The receiver shall provide a maximum output of 35mW at 16Ω with an earbud type earphone. The systems audio frequency response shall be 200Hz to 15kHz ± 3dB and the signal to noise ratio shall be 65dB min. The receiver sensitivity shall be 2μV or better at 12dB Sinad with squelch defeated. The receiver shall accept up to ±75kHz FM deviation and have a 75 μS de-emphasis time constant.

The receiver shall have FCC, Industry Canada approvals and be compliant with RoHS and WEEE regulations. The receiver shall be covered by a Lifetime PLUS Limited Warranty, 90 Days on most accessories.

This receiver shall be the Williams Sound model PPA R38.

### Domestic Sales

Williams Sound  
10300 Valley View Rd.  
Eden Prairie, MN 55344  
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FAX: 952-943-2174  
Email: [info@williamssound.com](mailto:info@williamssound.com)  
Web: [www.williamssound.com](http://www.williamssound.com)

### International Sales

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Fax: +1 952 943 2174  
Email: [info-intl@williamssound.com](mailto:info-intl@williamssound.com)  
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