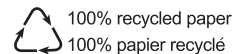




UR-220S / 220D Series

Professional UHF Wireless Microphones



Installation and Operation

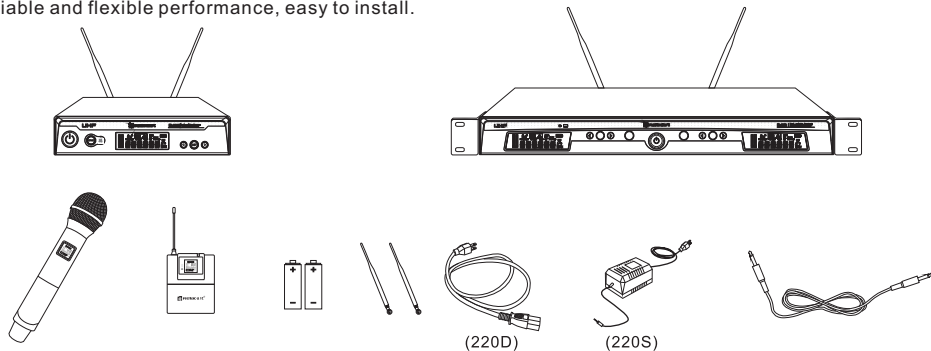
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Thank you for choosing a RELACART professional wireless microphone system. You have joined thousands of other satisfied customers. Our years of professional experience of design and manufacturing to ensure our products' quality, performance and reliability.

01 Introduction

- ①EIA-standard metal 1/2 - rack receiver chassis, antenna diversity.
- ②The Handheld Transmitter offers durable, ergonomic metal bodies, soft-touch controls.
- ③Bright and easy-to-read LCD display shows RF/AF, diversity strengths; transmitter battery level; meanwhile, can set up selective channel, frequency, mute and other working status.
- ④Press the "AFS" (Auto Frequency Selection) button 3S and the receiver will auto-scan and lock on to an open, interference-free frequency
- ⑤Press [IR] button to upload automatically the receiver frequency to the transmitter.
- ⑥PLL (Phase Lock Loop frequency control) design ensures transmission reliability, "NoiseLock" squelch effectively blocks stray RF.
- ⑦Each channel 32 selectable frequencies, dual-channel total 768 selectable frequencies.
- ⑧Battery life is up to 15 hours.
- ⑨Designed for use on professional tours, concert halls and houses of worship. Stable functions, reliable and flexible performance, easy to install.



02 Receiver Installation and Connections

Installation:

- ①For better operation the receiver should be at least 3ft. (1m) above the ground and at least 3ft. away from a wall or metal surface to minimize reflections.
- ②Attached a pair of UHF antennas to the antenna input jacks, the antenna are normally positioned in the shape of a "V" (both 45° from vertical) for best reception.
- ③Keep antennas away from noise sources such as computer, digital equipment, motors, automobiles and neon lights, as well as away from large metal objects.
- ④Keep open space between the receiver and transmitter for better reception.
- ⑤The transmitter should be at least 3ft. from the receiver.

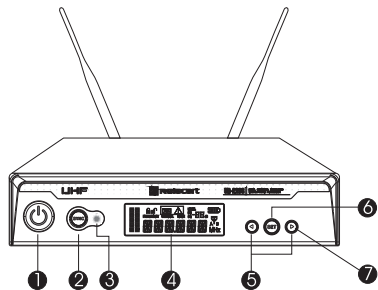
Connections:

- ①The switching power supply is designed to operate properly from any AC power source 100-240V, 50/60Hz without user adjustment. Simply connect the receiver to a standard AC power outlet, using only an IEC-type input cordset approved for the country use. Power to the unit is controlled by the front panel power switch.
- ②There are two audio outputs on the rear panel: an XLR microphone output and a 1/4" (6.3mm) phone jack instrument output. The two isolated audio outputs permit simultaneous feeds to two different inputs. Use the appropriate shielded audio cable for connections between the receiver and the input(s) of the mixer or other equipment.

3, Receiver Controls and Functions

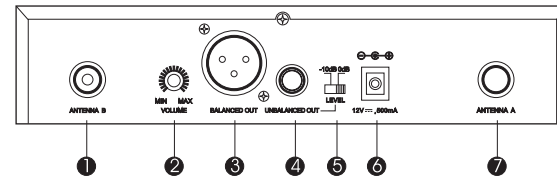
03 Receiver Controls and Functions

Figure A: UR-220S Receiver Front Panel



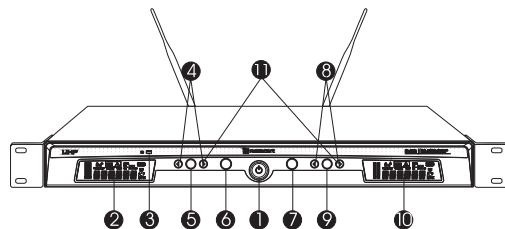
- ① Power Switch: Press power switch in 3 seconds and the receiver readouts will light.
- ② Infrared Data Transfer Button (SYNC): Press this button to transmit the channel data from receiver to transmitter.
- ③ Infrared Data Transfer Window (iR): Transmit channel data from the receiver to the transmitter, so that they are in the same frequency.
- ④ LCD Window: Liquid Crystal Display indicates control setting and operational readings. See “System setup” on page X for details.
- ⑤ UP / DOWN Buttons:
A, Press Up or Down arrow button, in conjunction with the Set button, to step through menus, select operating frequency and edit receiver function choices.
B, Press Up or Down arrow button 3 seconds and the receiver will auto-scan and lock on to an open, interference-free frequency.
- ⑥ SET Button: Use in conjunction with the Up / Down arrow buttons to step through menus, choose operating frequency and select receiver function options.

Figure B: UR-220S Receiver Rear Panel



- ① Antenna Input Jack: BNC type antenna connector for tuner “ B ” , attached the antenna directly.
- ② Volume Button: To adjust the volume.
- ③ Balanced Output Jack: XLR type connector. A standard 2 conductor shielded cable can be used to connect the receiver output to a balanced microphone level input on a mixer or integrated amplifier.
- ④ Unbalanced Mixed Output Jack: Unbalanced Mixed Output Jack: 1/4” (6.3mm) phone jack. Can be connected to an aux-level input of a mixer, guitar amp or tape recorder.
- ⑤ Unbalanced Mixed Output Attenuator: Two-position switch adjusts audio output level, with attenuation of 0dB, -10dB.
- ⑥ DC Power Output Jack: 12V / 700mA.
- ⑦ Antenna Input Jack: BNC type antenna connector for tuner “ A ” , attached the antenna directly.

Figure C: UR-220D Receiver Front Panel



- ① Power Switch: Press power switch in 3 seconds and the receiver readouts will light.
- ② A Channel LCD Window: Liquid Crystal Display indicates control setting and operational readings. See “System setup” on page X for details.
- ③ Infrared Data Transfer Window (iR): For both A and B channel. Transmit channel data from the receiver to the transmitter, so that they are in the same frequency.
- ④ A Channel UP / DOWN Buttons:
- A, Press Up or Down arrow button, in conjunction with the Set button, to step through menus, select operating frequency and edit receiver function choices.
- B, Press Up or Down arrow button 3 seconds and the receiver will auto-scan and lock on to an open, interference-free frequency.

⑤ A Channel SET Button: Use in conjunction with the Up / Down arrow buttons to step through menus, choose operating frequency and select receiver function options.

⑥ A Channel Infrared Data Transfer Button (SYNC): Press this button to transmit A channel data from receiver to transmitter.

⑦ B Channel Infrared Data Transfer Button (SYNC): Press this button to transmit B channel data from receiver to transmitter.

⑧ B Channel UP / DOWN Buttons:

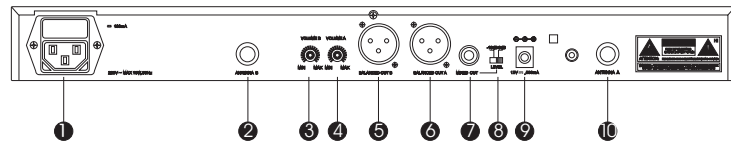
A, Press Up or Down arrow button, in conjunction with the Set button, to step through menus, select operating frequency and edit receiver function choices.

B, Press Up or Down arrow button 3 seconds and the receiver will auto-scan and lock on to an open, interference-free frequency.

⑨ B Channel LCD Window: Liquid Crystal Display indicates control setting and operational readings. See “System setup” on page X for details.

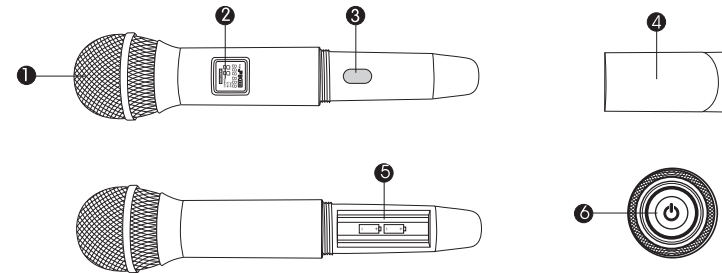
04 Transmitter Controls and Functions

Figure D: UR-220D Receiver Rear Panel



- ① AC Power Input: IEC type connector for 100-240V, 50/60Hz without user adjustment.
- ② Antenna Input Jack: BNC type antenna connector for tuner "B", attached the antenna directly.
- ③ B Channel Volume Button: To adjust the volume.
- ④ A Channel Volume Button: To adjust the volume.
- ⑤ B Channel Balanced Output Jack: XLR type connector. A standard 2 conductor shielded cable can be used to connect the receiver output to a balanced microphone level input on a mixer or integrated amplifier.
- ⑥ A Channel Balanced Output Jack: XLR type connector. A standard 2 conductor shielded cable can be used to connect the receiver output to a balanced microphone level input on a mixer or integrated amplifier.
- ⑦ Unbalanced Mixed Output Jack: Unbalanced Mixed Output Jack: 1/4" (6.3mm) phone jack for both A and B channel. Can be connected to an aux-level input of a mixer, guitar amp or tape recorder.
- ⑧ Unbalanced Mixed Output Attenuator: Two-position switch adjusts audio output level, with attenuation of 0dB, -10dB.
- ⑨ DC Power Output Jack: 12V / 700mA.
- ⑩ Antenna Input Jack: BNC type antenna connector for tuner "A", attached the antenna directly.

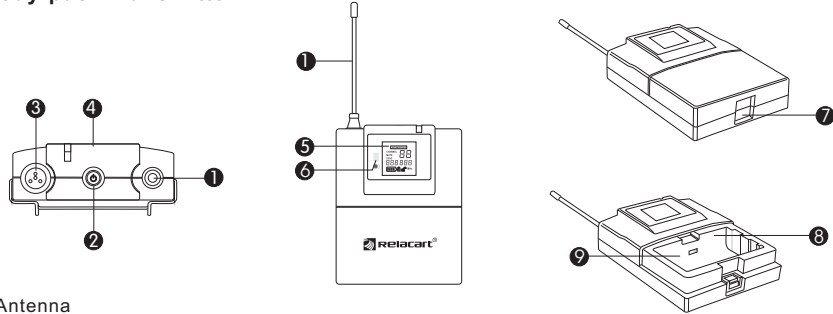
Handheld Microphone



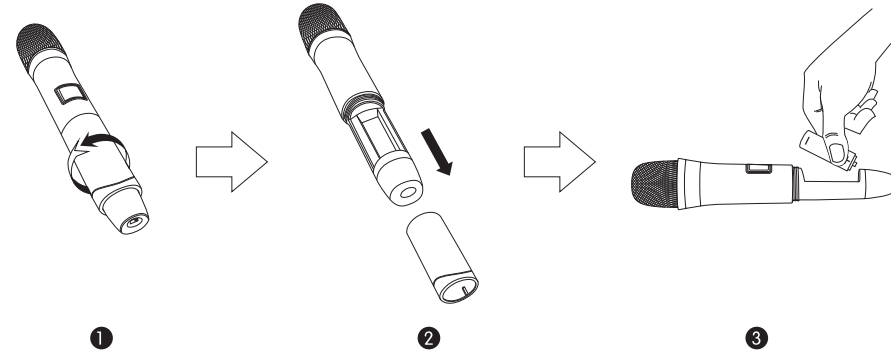
- ① Microphone Head: The microphone head is separate to change other microphone head if needed.
- ② LCD Window: Liquid crystal display indicates operational frequency and battery condition. The transmitter's "fuel gauge" battery indicator displays a maximum of 4 bar segments. When it leaves 1 bar segment, the batteries should be replaced immediately to ensure continued operation.
- ③ Infrared Data Receiving Window (IR): Use to receive the channel data from the receiver.
- ④ Battery Cover: Unscrew it can reveal the battery compartment.
- ⑤ Battery Compartment: Insert 2 fresh 1.5V AA batteries. (Alkaline type is recommended, always replace both batteries.) Observe correct polarity as marked inside the battery compartment.
- ⑥ Power Button.

05 Transmitter Battery Installation:

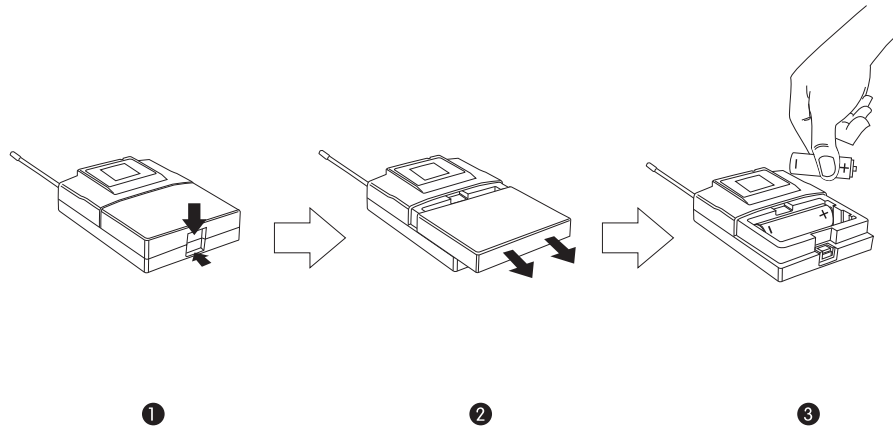
Body-pack Transmitter



- ① Antenna
- ② Power Button
- ③ Mute Button: When the transmitter is muted, it produces RF with no audio signal modulation; when the transmitter is un-muted, it produces both RF and audio.
- ④ Audio Input Jack: To connect 4-pin mini-XLR connector.
- ⑤ LCD Window: Liquid crystal display indicates operational frequency, channel and battery condition. The transmitter's "fuel gauge" battery indicator displays a maximum of 4 bar segments. When it leaves 1 bar segment, the batteries should be replaced immediately to ensure continued operation.
- ⑥ Infrared Data Receiving Window (iR): Use to receive the channel data from the receiver.
- ⑦ Battery Door Switch: Open the battery door by sliding the switch.
- ⑧ Battery Compartment: Insert 2 fresh 1.5V AA batteries. (Alkaline type is recommended, always replace both batteries.) Observe correct polarity as marked inside the battery compartment.
- ⑨ AF / GT Audio Input Switch: Connect an audio input device (microphone or guitar cable) to the audio input jack on the top of the body-pack transmitter. Choose AF for microphone input, then GT for guitar cable to connect with guitar or other instruments.



06 System Setup



Receiver Setup

① Turn down the AF level of the associated mixer or amplifier, and make sure that any UR transmitters are turned off.

② Turn on the receiver, the LCD displays the preset data.

③ To change the frequency by manual or "AFS" (Auto Frequency Scan).

a, Touch ◀ / ▶ button once to select a new frequency.

b, Press and hold ◀ / ▶ button 3 seconds and the receiver will auto-scan and lock on to an open, interference-free frequency.

④ To enter the menu mode: Press and hold the Set button 3 seconds to enter the edit mode, touch ◀ / ▶ button once to select and set SQELCH, DISPLAY or LOCK.

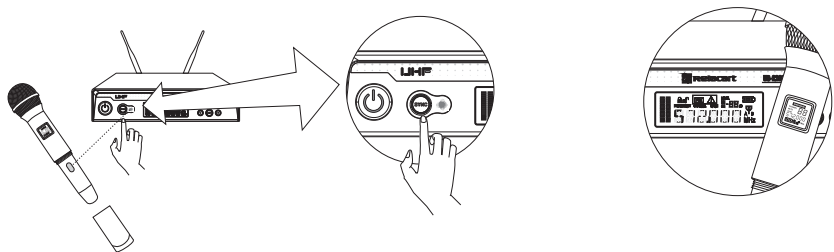
A, SQELCH: Selecting "SQELCH", then touch SET Button to enter edit mode, the small data flashes to indicate edit, touch ◀ / ▶ button to scroll through the available choice for the function. The squelch level is adjustable in ten 5dB steps, providing a 50dB range. Press SET Button to confirm the desired choice, then LCD return to its previously displayed contents. (If interference is a problem, first consider trying a different frequency, either manually or scanning.)

B, DISPLAY: Selecting "DISPLAY", then touch SET Button to enter edit mode, touch ◀ arrow button, "FREQUENCY" flashes, if stopping on "FREQUENCY", the LCD will display the operational frequency; touch ▶ arrow button, "CHANNEL" flashes, if stopping on "CHANNEL", the LCD will display the operational channel. Press SET Button to confirm the desired choice, then LCD return to its previously displayed contents.

C, LOCK: Selecting "LOCK", then touch SET Button to enter edit mode, touch ◀ arrow button, it displays "ON", if stopping on "ON", the system enters lock mode, the user can not use any button for any control; touch ▶ arrow button, it displays "OFF", if stopping on "OFF", the user can do any control by any button. Press SET Button to confirm the desired choice, then LCD return to its previously displayed contents.

Transmitter Setup

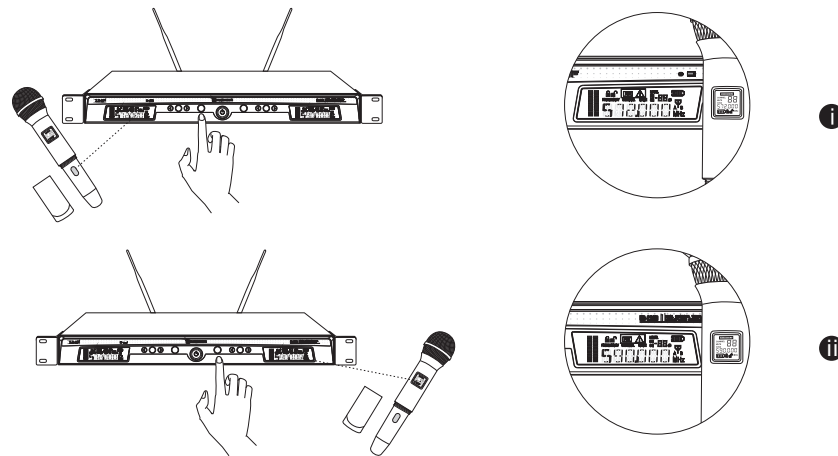
- ① Press and hold power button 3 seconds, the LCD window comes on.
- ② Frequency setup: To let the transmitter IR receiving window face to the receiver IR data transfer window, then press "SYNC" button, the transmitter will receive the frequency / channel data from the receiver, simultaneously the LCD displays the same frequency / channel as the receiver (Figure E).



(Figure E)

A, Turn on one transmitter, to let the transmitter IR receiving window face to the receiver IR data transfer window, then press A Channel's "SYNC" button, the transmitter will receive the frequency / channel data from A Channel, simultaneously the LCD displays the same frequency / channel as the receive A Channel.

B, Turn on the other transmitter, to let the transmitter IR receiving window face to the receiver IR data transfer window, then press B Channel's "SYNC" button, the transmitter will receive the frequency / channel data from B Channel, simultaneously the LCD displays the same frequency / channel as the receive B Channel.



07 Specifications

UR-220S / UR-220D Receiver

Main Frame Size: EIA STANDARD 1/2 U (UR-220S) / EIA STANDARD 1U (UR-220D)
Channels: Single Channel (UR-220S) / Dual Channel (UR-220D)
Frequency Stability: $\pm 0.005\%$, Phase Lock Loop frequency control
Carrier Frequency Range: UHF 618-936 MHz
Digital Equalizer: Preset Microphone Capsule Modeling
Modulation Mode: FM
Operating Range: 60M typical (in open space)
Oscillation: PLL synthesized
Sensitivity: 5dB μ V, S/N>60dB at 25 deviation
Band Width: 16MHz (UR-220S); 32MHz (UR-220D)
Max.Deviation Range: ± 45 KHz
S/N: >105dB
T.H.D.: <0.4%@1KHz
Frequency response: 80Hz~18KHz ± 3 dB
Power Supply: DC 12V / 1A (UR-220S) / 100-240V AC50/60 Hz, 10W(UR-220D)
Weight: 1.9KG (UR-220S); 4KG (UR-220D)
Dimension: 210 (W) X 43(H) X 206(D) – UR-220S / 421(W) X 43(H) X 206(D) – UR-220D
Output Connector: XLR balanced & 6.3 ϕ phone jack unbalanced

Handheld Microphone

Carrier Frequency Range: UHF 618-936 MHZ
Oscillation: PLL synthesized
Harmonic radiation: <-65dBm
Bandwidth: 32MHz
Max.Deviation Range: ± 45 KHz
Microphone Element: Cardioid Dynamic / Cardioid Condenser
RF Power Output: 8mW
Battery: AA X 2
Current Consumption: 90mA, typical
Battery Current / Life: Approximately 15 hours
Dimension: 52(Φ) X 252 (L)
Weight: 208g (w/o battery)

Body-pack Transmitter

Carrier Frequency Range: UHF 618-936 MHZ
Oscillation: PLL synthesized
Harmonic radiation: <-65 dBm
Bandwidth: 32MHz
Max.Deviation Range: ± 45 KHz
Input Connector: 4-pin mini-XLR connector
RF Power Output: 90mW
Battery: AA X 2
Current Consumption: 90mA, typical
Battery Current / Life: Approximately 15 hours
Dimension: 84(H) X 66(W) X 23(D)
Weight: 165g (w/o battery)

APPENDIX A COMPATIBLE CHANNEL GROUPS

US/EURO Band B 678-694 MHz							
Group 1		Group 2		Group 3		Group 4	
Channel	Freq	Channel	Freq	Channel	Freq	Channel	Freq
1	678.500	9	678.900	17	679.300	25	679.700
2	682.700	10	680.100	18	680.500	26	680.900
3	684.400	11	681.500	19	681.900	27	682.300
4	688.300	12	683.100	20	683.500	28	683.900
5	688.800	13	684.900	21	685.300	29	685.700
6	690.700	14	686.925	22	687.325	30	687.725
7	691.400	15	689.325	23	689.725	31	690.125
8	693.500	16	692.075	24	692.475	32	692.875

APPENDIX A COMPATIBLE CHANNEL GROUPS

Euro Band E 850-665 MHz							
Group 1		Group 2		Group 3		Group 4	
Channel	Freq	Channel	Freq	Channel	Freq	Channel	Freq
1	850.400	9	850.800	17	851.200	25	850.000
2	851.600	10	852.000	18	852.400	26	854.200
3	853.000	11	853.400	19	853.800	27	855.900
4	854.600	12	855.000	20	855.400	28	859.800
5	856.400	13	856.800	21	857.200	29	860.300
6	858.425	14	858.825	22	859.225	30	863.100
7	860.825	15	861.225	23	861.625	31*	865.000
8*	863.575	16*	863.975	24	864.375	32	-

*Channels 8, 16 and 32 can be used as a group alone in the deregulated band.

ACCESSORIES AND PARTS

Accessories and Parts	Model #	Order #
R300-L System Uni Lapel	ULM18	F.01U.168.803
R300-E System Headworn Microphone	HM3	F.01U.168.804
Windscreen for ULM18	WS-18	F.01U.168.802
Windscreen for HM3	WS-H3	
Beltclip for BP-300	BC-300	F.01U.168.797
Guitar Cord	MAC-G3	F.01U.118.492
PL22 Dyanmic Mic Head	RCC-PL22	
Foam Windscreen for Handheld	379-1	F.01U.117.911
½ Wave Receiver Antenna A Band	CRA-A	F.01U.168.794
½ Wave Receiver Antenna B Band	CRA-B	F.01U.168.795
½ Wave Receiver Antenna E Band	CRA-E	F.01U.168.796
Single Receiver Rack Mount Kit	RMS-300	F.01U.168.792
Double Rack Mount Kit	RMD-300	F.01U.168.793
Front mount antenna cables (4)	FMC-K	F.01U.118.471
ANTENNA/PWR DISTRIBUTION (520-760 MHz) (A/B)	APD4+	F.01U.117.678
ANTENNA/PWR DISTRIBUTION (760-865 MHz) (E Band)	APD4+Euro	F.01U.117.679
TERMINATION PLUG FOR APD4+	TP-2	F.01U.086.103

APPENDIX A COMPATIBLE CHANNEL GROUPS

(Use only channels within the same group when using more than two R300 units in one room. If you need additional help call 1-800-392-3497 (US and Canada only).

US/EURO Band A618-634 MHz							
Group 1		Group 2		Group 3		Group 4	
Channel	Freq	Channel	Freq	Channel	Freq	Channel	Freq
1	618.500	9	618.900	17	619.300	25	619.700
2	622.700	10	620.100	18	620.500	26	620.900
3	624.400	11	621.500	19	621.900	27	622.300
4	628.300	12	623.100	20	623.500	28	623.900
5	628.800	13	624.900	21	625.300	29	625.700
6	630.700	14	626.925	22	627.325	30	627.725
7	631.400	15	629.325	23	629.725	31	630.125
8	633.500	16	632.075	24	632.475	32	632.875



USA acceptable band (FCC compliance): 618.500 MHz – 633.500 MHz

Canada acceptable band (IC compliance): 678.500 MHz – 693.500 MHz

Europe acceptable band (CE compliance): 850.000 MHz – 865.000 MHz

FCC NOTE:

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.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

IC NOTE

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

