SPECIFICATIONS

IRR-30P	**2-channel receiver w/power amplifier**	
	Sub-carrier frequencies	2.06MHz & 2.56MHz
	Type	Super heterodyne – crystal controlled
	Modulation	FM
	Signal-to-Noise	>75dB A weighted
	Reception sensitivity	>25dBµV
	Line Input impedance	32k Ohms ±15%
	Line Output adjustment	−∞ ~ +10dBu
	Audio Output	5W x 4 @ 4 ohms
	Power requirement	15V DC @ 2.7A (use model BC-30)
	Size	8.03" W x 9.19" D x 1.73" H (204 x 233 x 44mm)
	Weight	2.86lb (1.3kg)
IRH-15c	**2-channel handheld transmitter**	
	Sub-carrier frequencies	2.06MHz & 2.56MHz switchable
	Modulation	FM
	Microphone element type	Uni-directional dynamic
	Frequency Response	50-8kHz ±3dB
	Battery type	2-"AA" alkaline(1.5V x 2) 2-"AA" rechargeable Ni-MH (1.2V x 2)
	Battery life	> 6 hours w/alkaline batteries
	Size	9.65" x ~1.375" (245 x ~35mm)
	Weight	9.1oz (258g) w/alkaline batteries)
IRN-10	**2-channel chest-worn transmitter**	
	Sub-carrier frequencies	2.06MHz & 2.56MHz switchable
	Modulation	FM
	Microphone element type	Uni-directional electret x 2
	Frequency response	50-9kHz ±3dB
	Ext Mic input impedance	2.2k ohms
	Ext Mic input jack	Φ 3.5mm
	Ext. Mic Voltage/Current	3.5VDC @ 1mA (to power electret mic element)
	Mic gain adjustment	+6dB ~ −10dB
	Battery type	2-"AA" Alkaline (1.5V x 2) 2-"AA" rechargeable Ni-MH (1.2V x 2)
	Battery life	> 8hours w/alkaline batteries
	Size	3.15" H x 2.75" W x 1.06" D (80 x 70 x 27mm)
	Weight	4.3oz (120g) -w/alkaline batteries
IRD-60	**Dome sensor**	
	Output	F Connector
	Power	powered by receiver (24V @ 15mA)
	Cable requirement	RG59 - 75 ohms coaxial
	Size	3.94" x 1.18"(100x30mm)
	Weight	6.00oz (170g) w/mounting bracket

AZDEN
CORPORATION

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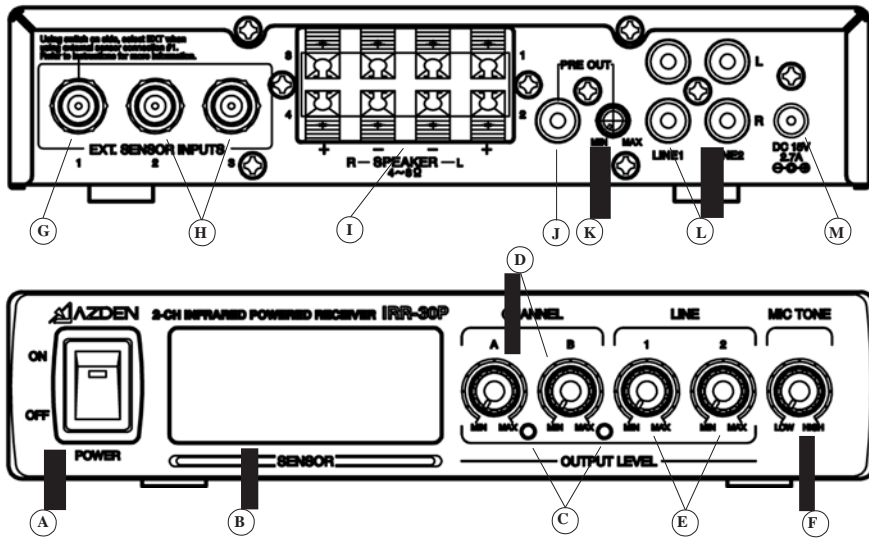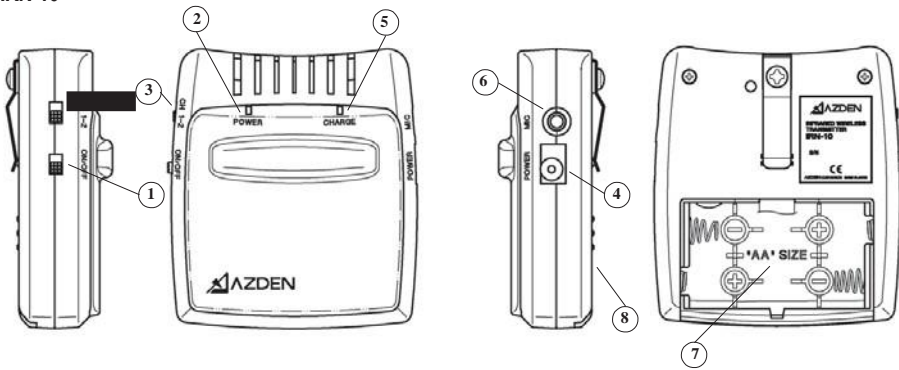phone – 973.810.3070 • fax – 973.810.3076 • email – sales@azdencorp.com
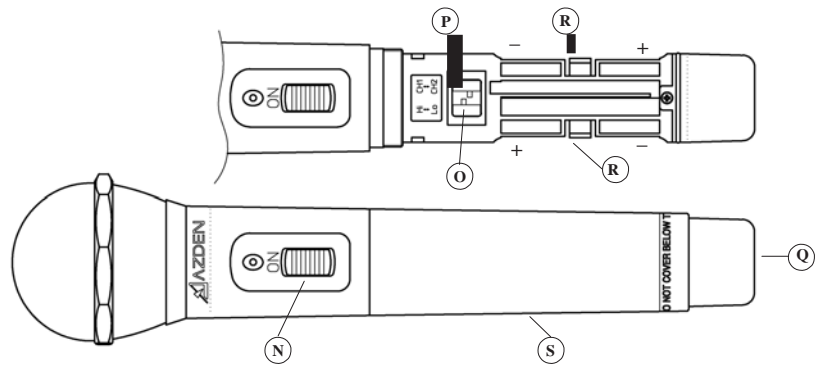
User's Guide

INFRARED CLASSROOM SYSTEM
IRR-30P RECEIVER • IRN-10 MIC/TRANSMITTER
IRH-15c MIC/TRANSMITTER • IRD-60 EXTERNAL SENSOR

AZDEN
QUALITY YOU CAN HEAR

IRR-30P

IRN-10

IRH-15c

INTRODUCTION

Thank you for selecting the Azden INFRA**RED** system as your wireless classroom solution. We are confident that it will perform beyond your expectations. For over 50 years Azden Corporation has been creating technologically advanced products. By taking advantage of the latest in CAD design and SMT production techniques, Azden's engineers are able to produce products that exceed the published specifications and perform well beyond the warranty period.

Azden INFRA**RED** represents a breakthrough in wireless. Instead of the normal radio waves that other wireless systems use, Azden INFRA**RED** uses invisible light beams in the infrared range. INFRA**RED**'s enhanced performance assures you of the finest in audio clarity and reliability. The specially selected high-frequencies provide you with trouble free performance, even in fluorescently lit classrooms.

Infrared (IR) wireless microphone systems are the best solution for classrooms. In today's RF saturated world a regular (VHF or UHF) microphone system risks interference from a variety of other devices and sources. Cell phones, radios, TV, PA systems, police and emergency service systems, etc., can all interfere with VHF and UHF - but not with IR. Furthermore, infrared is perfect for classroom audio since, unlike the other systems, IR is short-range and cannot penetrate walls. This means that your school can have as many classrooms as desired with individual audio systems, without fear of interference. Since the Azden system is dual-channel, a teacher can have one microphone and a second person can also have a microphone. In addition, since each classroom system is on the same pair of channels, teachers can go from room to room without having to switch microphones.

In the real world, the ability to use multiple systems in the same location without frequency interference will prove to be a tremendous benefit to you. Using infrared means that the audio generated in your classroom stays in your classroom. Your discussions cannot be overheard on other systems in other classrooms.

Designed by professionals - for professionals, Azden INFRA**RED** will provide you with years of worry-free, high-quality performance.

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TROUBLESHOOTING

The single most important thing to ALWAYS check when trouble arises are the batteries. Make sure they are fresh and the *POWER* LED is glowing brightly.

SYMPTOM	CAUSE
No **POWER** LED	a. Receiver switch is set to **OFF** - change to **ON**
	b. External 15VDC power source is not connected or is malfunctioning
	c. Dead or very weak battery in transmitter
No audio from **IRN-10**	a. Make sure the volume on the receiver is turned up for the appropriate channel and the **IRN-10** is powered **ON**
	b. If two transmitters are being used, make sure they are set to different frequency channels
	c. Make sure the batteries are fresh or fully charged and installed correctly
No audio from **IRH-15c**	a. Make sure the volume on the receiver is turned up for the appropriate channel and the **IRH-15c** is powered **ON**
	b. If two transmitters are being used, make sure they are set to different frequency channels
	c. Make sure the batteries are fresh or fully charged and installed correctly
Intermittent audio	a. Make sure there is a clear path between the transmitter and the receiving sensor. Best results are obtained when the receiving sensors are mounted high - above everyone's head
Limited working range	a. Install extra external sensors
	b. If using **IRH-15c** set the Power Mode to **Hi**

IRD-60 SENSOR

The **IRD-60** is an externally-mounted IR sensor. Its purpose is to receive the IR signal from the **IRN-10** and/or the **IRH-15c** and send it to the input of the **IRR-30P** for amplification. The ideal location of the **IRD-60** is the center of the ceiling in the room. A cable (RG-59 75 ohm coaxial cable fitted with "F" connectors) is then run from the **IRD-60** to the back of the **IRR-30P**. The sensor comes with a mounting-bracket that can be used for mounting to either a solid or drop ceiling (tiles).

Drop Ceiling Mount:

To mount to a drop-ceiling tile, detach the bracket (**9**) from the back of the **IRD-60** by removing the screws (**10**). Next, after removing the ceiling tile from the ceiling grid, determine the position on the tile p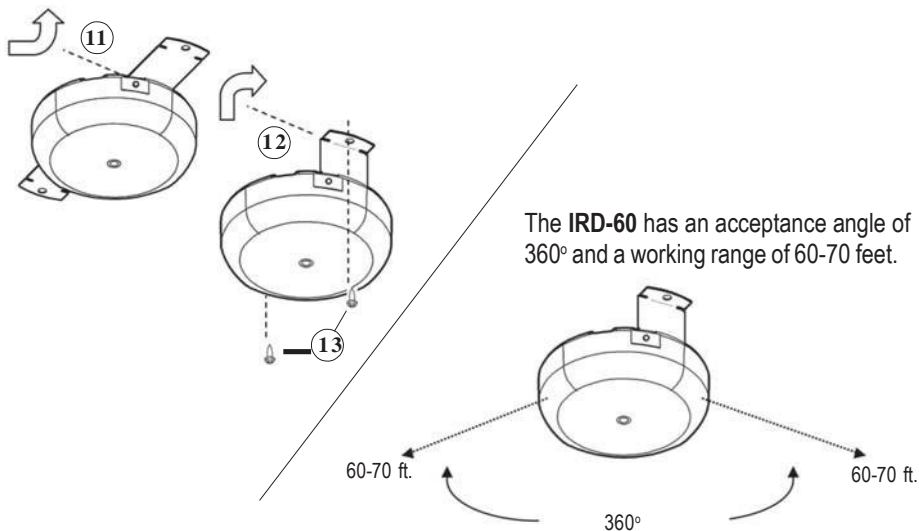anel for the sensor and make a 1 inch hole through the tile (this is for the cable that will be attached). Then sandwich the tile between the sensor (on the front side) and the bracket (on the back side). Use the two mounting screws to attach. Last, attach the cable and replace the tile.
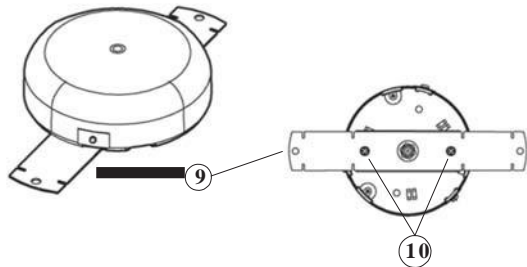
When mounting to a solid ceiling, first bend the mounting bracket UP at a 90° angle (**11**). Next, bend the ends of the bracket to a 90° angle (**12**). After attaching the cable to the back of the **IRD-60**, use the appropriate screws (**13**) to attach the bracket to the ceiling.

The **IRD-60** has an acceptance angle of 360° and a working range of 60-70 feet.

60-70 ft.   60-70 ft.

360°

IRR-30P RECEIVER *(see illustration on page i)*

I. Receiver Front Panel:

A. **POWER** Switch - turns the receiver **ON** and **OFF**. When **ON** the LED will glow red.

B. Receiving **SENSOR** - internal receiving infrared sensors.

C. **CHANNEL** 1/2 Indicator - corresponding LED glows green when receiving **CHANNEL** 1 or 2.

D. **CHANNEL** 1/2 Volume - adjusts the output volume for **CHANNEL** 1 or 2.

E. **LINE** 1/ 2 Volume - adjusts the output volume for **LINE** 1 or 2.

F. **MIC TONE** - adjusts the system's high frequency tone

II. Receiver Rear Panel:

G. **EXT. SENSOR INPUT #1** - set the switch on the side of the receiver to **EXT** to use this connector. This disengages the front panel **SENSOR** (**B**). Set the switch to **INT** if not using this connector.

H. **EXT. SENSOR INPUT #2/3** - attaching external sensors here extends the receiver's potential working distance.

I. **SPEAKER** - the 4 ceiling or wall-mounted speakers are attached here. Carfully follow the **+** and **–** markings.

J. **PRE OUT** - this is a mono "Line-Level" output. Its level can be adjusted independently.

K. **PRE OUT** Volume Adjustment - used to adjust the volume from the **PRE OUT** jack.

L. **LINE 1** and **LINE 2** Inputs - any external audio source with a standard "Line-Level" output such as a CD player, VCR or DVD player can be attached here.

M. **DC 15V** - this is the power input. Plug the small, round connector of the AC-DC adapter (**BC-30**) in to power receiver (15VDC @ 2.7A - center positive). Plug the twin-blade end of the adaptor into a powered 110VAC wall jack.

III. Mounting the Receiver:

As infrared operates "line-of-sight" and can be interrupted by solid objects, it is strongly suggested that the receiver (or external sensors) be mounted or placed in a location that puts the receiving sensors above the audience's heads or any other obstacles.

IV. Overall System Setup:

In general, the **IRR-30P** receiver is installed near the front of the room facing towards the back and about five feet above the floor. Four ceiling speakers (if there is a drop ceiling grid) or four wall-mounted speakers are installed and wire is run from each of the speakers to one of the **SPEAKER** terminals on the back of the receiver. A single **IRD-60** ceiling-mount external sensor is installed in the center of the ceiling and a cable is attched from it to one of the **EXTERNAL SENSOR** connections on the rear of the **IRR-30P**. The teacher wears the **IRN-10** and sets it to **CHANNEL 1.** The **IRH-15c**, set to **CHANNEL 2**, is used as a pass around mic for students. If a DVD player, CD player or video tape player is used, its audio can be attached to either **LINE 1** or **LINE 2** on the back of the **IRR-30P**.

IRH-15c MICROPHONE/TRANSMITTER *(see illustration on page i)*

Batteries and Power Mode:
The **IRH-15c** uses two "AA" batteries. Batteries are placed in the battery compartment after unscrewing and removing the bottom portion of the microphone handle (**S**). The **IRH-15c** can use either 2 "AA" NiMH*, or Alkaline batteries. Place the two batteries into the transmitter as shown (**R**). OBSERVE PROPER POLARITY! Be sure to use FRESH "AA" Alkaline batteries or, in the case of "AA" rechargeable batteries, be sure that they are FULLY CHARGED (overnight) before use. Battery life depends on the type of battery and the position of the "Hi-Lo" power switch (**O**). Maximum battery life is achieved with the switch in the "Lo" position.

*See the section on "**Internal Charging**" for more battery information.
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Frequency Selection:
The **IRH-15c** can be set to transmit on either one of two preset frequencies. This allows two microphones to be used at the same time in the same room. While it does not matter which frequency is chosen for the **IRH-15c**, two transmitters cannot share the same frequency at the same time. To select the channel, slide the switch (**P**) as shown on the sticker inside the battery compartment to the desired position.

Using the IRH-15c Microphone/Transmitter:
After installing fresh batteries and choosing a frequency, simply turn the microphone/transmitter on by sliding the **ON/OFF** (**N**) switch up. The green Power LED above the switch will glow as will the green LED on the front panel of the **IRR-30P** receiver which corresponds to the chosen channel (**C**). Be sure to slide the Power Switch to **OFF** when not in use to preserve battery life. When talking, this microphone should be held close to the user's mouth, ideally just under the chin.

IRN-10 MICROPHONE/TRANSMITTER *(see illustration on page i)*

Batteries:
The **IRN-10** uses two "AA" batteries. Batteries are placed in the battery compartment after sliding the battery compartment door (**8**) down and away. The **IRN-10** can use either 2 "AA" NiMH*, or Alkaline batteries. Place the two batteries into the transmitter as shown (**7**). OB-SERVE PROPER POLARITY! Be sure to use FRESH "AA" Alkaline batteries or, in the case of "AA" rechargeable batteries, be sure that they are FULLY CHARGED (overnight) before use.

*See the section on "Internal Charging" for more battery information.

Frequency Selection:
The **IRN-10** can be set to transmit on either one of two preset frequencies. This is so that two microphones can be used at the same time in the same room. While it does not matter which frequency is chosen for the **IRN-10** microphone, two transmitters cannot share the same frequency at the same time. To select the channel, slide the switch (**3**) to the desired position.

Using the IRN-10 Microphone/Transmitter:
After installing fresh batteries and choosing a frequency, simply turn the microphone/transmitter on by sliding the **ON/OFF** (**1**) switch up. The green Power LED (**2**) will glow as will the green LED on the front panel of the **IRR-30P** receiver which corresponds to the chosen channel (**C**). Be sure to slide the Power Switch to **OFF** when not in use to preserve battery life. This microphone should be worn using the supplied lanyard and be postioned approximately six inches from the users mouth.

External Microphone Jack:
If an external microphone is desired, plug it into the mic input (**6**); the internal microphones will be automatically disabled.

INTERNAL CHARGING

The **IRN-10** and **IRH-15c** can all be used with rechargeable NiMH or regular Alkaline "AA" batteries. While regular rechargeable NiMH bateries can be charged after taking them out of the unit, Azden's **1HR-3U** batteries can be charged without removing them. Both the **IRN-10** and **IRH-15c** use a special safety interlock system that prevents the accidental attempt to charge non-rechargeable (Alkaline) batteries. The special NiMH batteries have a portion of their wrapping removed so that they can be identified as "rechargeable". Charging requires an AC/DC adaptor (Azden's **BC-29**). To charge, plug the charger adaptor into 110VAC outlet and plug the connector into the transmitter (**4**) on the IRN-10 and (**Q**) on the IRH-15c. Make sure the transmitter is in the **OFF** position. Allow a minimum of 12 hours to charge the batteries (overnight). The NiMH rechargeable batteries can operate either transmitter for 6-8 hours.