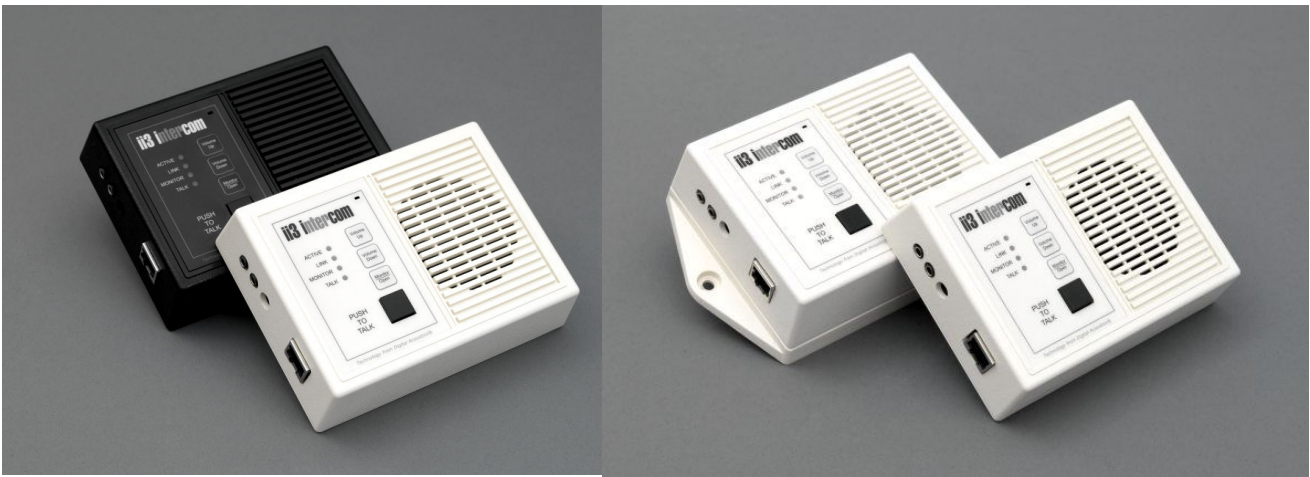# ii3 IP Intercom

Users' Guide

Model ED series
Model ES series

DIGITAL ACOUSTICS

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OVERVIEW

Digital Acoustics IP (Internet Protocol) Intercom modules provide a functional audio equivalent to the basic "push to talk" (PTT) intercom. Features include:

- Talk to/from any station to host PC server
- High quality, clear transmit and playback audio
- Simple operation utilizes push buttons for commands
- Fixed and automatic and DHCP compliant IP assignment
- Integrated 2-port switch option available
- PoE (802.3af) option available
- Hands-free listen mode at stations
- Highly scaleable and seamless expansion
- Field upgradeable OS using internal *Flash* memory
- TalkMaster™ host software access and controls ii3 clients

The ED desktop series includes the following models:
- **EDB-110/220** - Externally powered black PVC desktop
- **EDBx-110/220** - Externally powered w/2-Port switch black PVC desktop
- **EDB-PoE** - PoE powered black PVC desktop
- **EDBx-PoE** - PoE powered w/2-port switch black PVC desktop
- **EDW-110/220** - Externally powered white PVC desktop
- **EDWx-110/220** - Externally powered w/2-Port switch white PVC desktop
- **EDW-PoE** - PoE powered white PVC desktop
- **EDWx-PoE**- PoE powered w/2-port switch white PVC desktop

The ES surface mount series includes the following models:
- **ESB-110/220** - Externally powered black PVC wall mount
- **ESBx-110/220** - Externally powered w/2-Port switch black PVC wall mount
- **ESB-PoE** - PoE powered black PVC wall mount
- **ESBx-PoE** - PoE powered w/2-port switch black PVC wall mount
- **ESW-110/220** - Externally powered white PVC wall mount
- **ESWx-110/220** - Externally powered w/2-Port switch white PVC wall mount
- **ESW-PoE** - PoE powered white PVC wall mount
- **ESWx-PoE**- PoE powered w/2-port switch white PVC wall mount
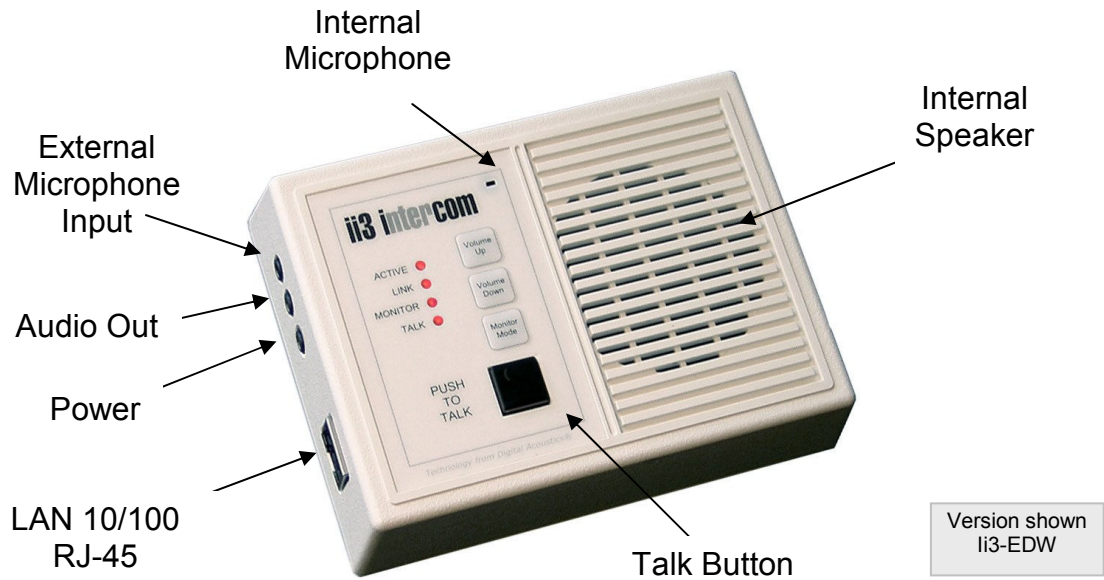
SPECIFICATIONS

Items	Specification
Hardware Protocols	TCP, UDP, IP, ARP, ICMP, Ethernet MAC
Network Interface	10/100 Base-T Ethernet (Auto detection)
Command protocols	Proprietary
Audio Rate	64kbs
Audio Resolution	PCM-8bit and uLAW-16 bit 8bit
Audio Sample Rate	8 kHz (Voice band)
Audio Buffers	4KB TX and RX
Internal Amplifier	2w Max @ 4 ohms
Microphone sensitivity	-42db integrated electret
Microphone AGC	37db with limiting and automatic leveling
PHY Interface	RealTek RTL8201BL single-port PHYceiver
Temperature	0'C ~ 70'C (Operating) -40~85'C (Storage)
Humidity	10~90%
Power	**Without integrated 2-port switch**: 7.5-9 VDC external power supply or 5 VDC through header pins (500MA min)
	Optional integrated 2-port switch: 5VDC (750mA min)
	Optional PoE (Power over Ethernet 802.3af standard) 7watts
Connector types	Power 2.1 mm (positive center) Audio 3.5 mm
Size	135mm x 102mm x 37mm
Weight	7.5oz (213 grams)

INTERFACE CONNECTIONS

Internal
Microphone

Internal
Speaker

External
Microphone
Input

Audio Out

Power

LAN 10/100
RJ-45

Talk Button

Version shown
Ii3-EDW

INTERFACE CONNECTION DETAIL

EXTERNAL CONNECTIONS

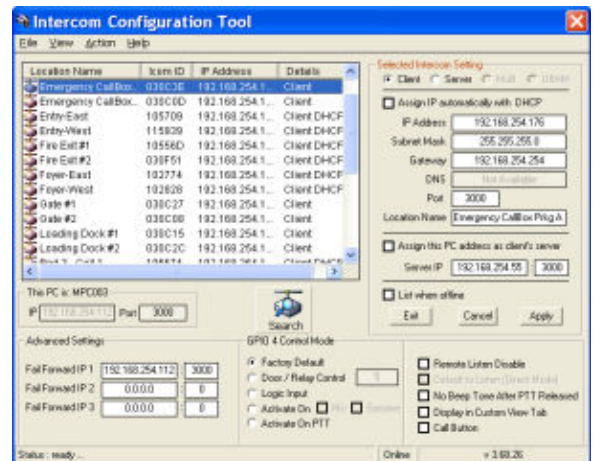| LAN 10/100	RJ-45	TCP, UDP, IP, ARP, ICMP, 10/100 Base-T Ethernet (Auto detection) MAC
MIC INPUT JACK	3.5MM	External Microphone Input. Use of this jack automatically disconnects the onboard electret microphone. See following section for recommended microphone specifications
AUDIO OUT JACK	3.5MM	External audio out jack. Capable of driving headphones or external amplifier. Use of this jack interrupts connection to onboard speaker.
POWER JACK	2.1 MM	Models **without integrated 2-port switch** use unregulated DC input 7.5VDC to 9VC 500ma. POSITIVE TIP polarity
		Models **with integrated 2-port switch** use regulated DC 5.0VDC 750ma. . POSITIVE TIP polarity
		Do not use concurrently with optional **PoE** supply

CONFIGURATION AND IP ADDRESSES

TalkMaster™ LE software is included with the purchase of any ii3 IP Intercom.
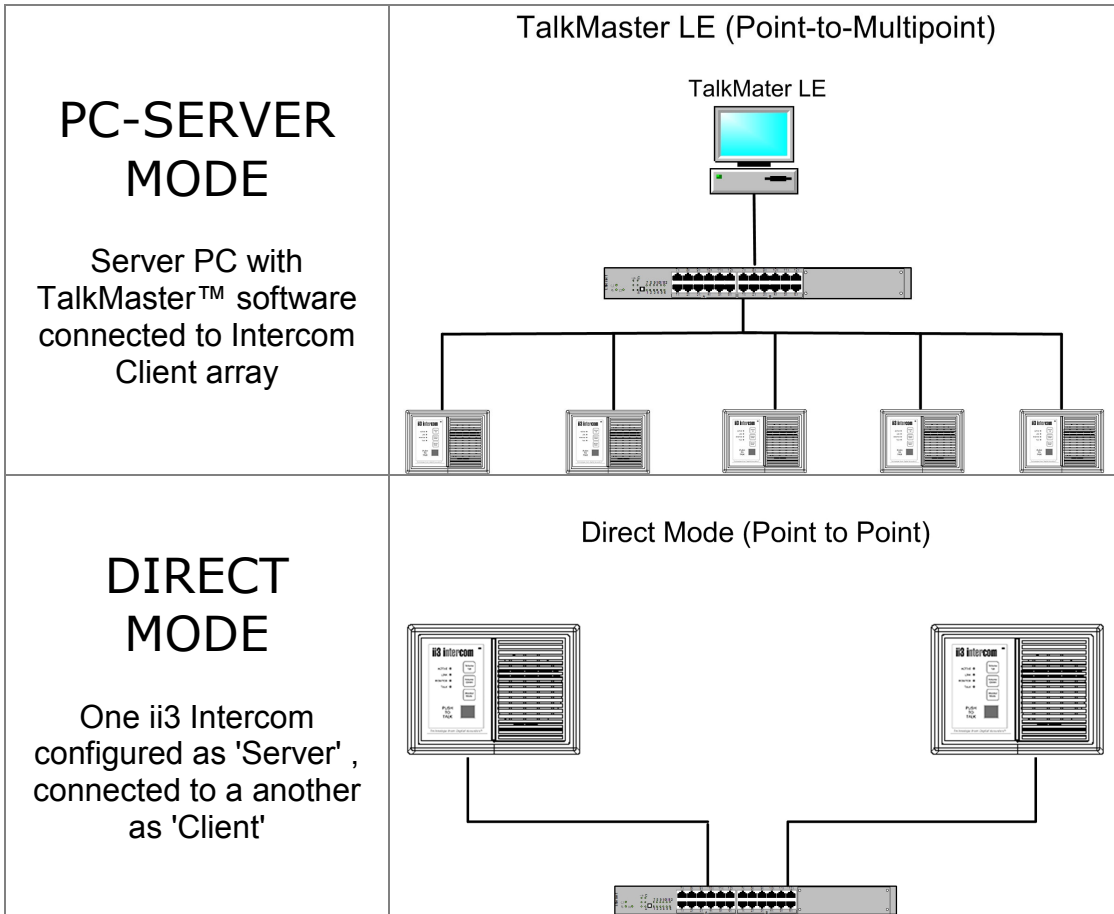Access www.digitalacoustics.com/ii3 for downloads and more information.

Quick reference:
1. Install and start TalkMaster™ software
2. To configure your intercoms, select menu option Admin → Enable Admin (default password is: admin)
3. Select menu option Admin → Configure Intercoms
4. Select and assign intercom's IP address, Subnet and Gateway
5. Assign a Location Name to the Intercom
6. Assign the Server IP address the Intercom will connect to
7. Click **Apply**
8. Click **Exit**

Refer to the TalkMaster User Guide for more information on setup and configuration options!

TYPICAL SYSTEM CONFIGURATIONS

## PC-SERVER MODE Server PC with TalkMaster™ software connected to Intercom Client array	**TalkMaster LE (Point-to-Multipoint)** TalkMater LE
## DIRECT MODE One ii3 Intercom configured as 'Server' , connected to a another as 'Client'	**Direct Mode (Point to Point)**

INTEGRATED SWITCHES

Talk	Push to Talk. Turns on local microphone.
Monitor/Open	- In 'Client' mode, **Monitor** sets 'Talk' ON, as if the Talk button is being held down for hands free speaking. - In 'Server' mode quickly pressing **Monitor** turns on *listen mode* on by turning the Client Intercom's microphone on. Press **Talk** to talk to the Client Intercom. Quickly pressing **Monitor** a second time turns off remote listening - In 'Server' mode (Direct Mode), pressing and holding this button activates the GPIO4 or the relay (dry contact) on the "Client Intercom"
Volume Up Volume Down	Sets volume locally (also set via TalkMaster). There are 7 (seven) volume level settings.

LED INDICATORS

The four LEDs marked Active, Link, Monitor/Open and Talk can provide the following diagnostic information:

Operational Mode	Active	Link	Monitor/ Open	Talk
Normal operational mode. TalkMaster is active. Intercom can communicate.	ON	ON	-	-
LAN connection is inactive. The RJ45 may be unplugged, or the cable may be defective.	FLASH	OFF	-	-
Intercom has not been configured yet or has been configured for DHCP, but no DHCP Server is available. To turn off DHCP, power cycle the Intercom while holding down the + and - buttons (Volume up and Volume down)	FLASH	ON	-	ON
TalkMaster™ Server software is not running or not set to communicate.	FLASH	ON	-	-
TalkMaster software at the server has "Searched" for intercoms in the Configuration Mode utility setup	FAST FLASH	ON	-	-
Receiving audio. The server software (TalkMaster™) / PC microphone is on.	ON	ON	-	FLASH
Sending audio. Talk button is pressed or server has engaged "listen" mode.	ON	ON	-	ON
Intercom is in "Server" mode, waiting for a client to request connection (Active LED flash alternates 1sec fast - 1sec slow)	DUAL FLASH	-	-	-
Local "Monitor" button has been depressed. Microphone is set to constant "Talk" mode for monitoring	ON	ON	ON	ON

EXTERNAL MICROPHONE SELECTION

ii3 supports high quality *voiceband* audio. Integrated AGC amplifiers support a wide range of microphone inputs and low cost electret microphones ($3usd) will have similar intelligibility as expensive "professional" microphones ($10-$50usd). Microphones mounted externally should be in a vibration and moisture free environment.
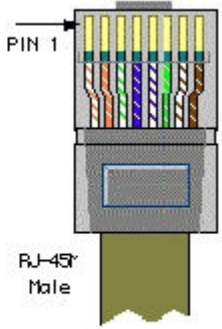
EXTERNAL SPEAKER CONNECTIONS

A 3.5mm **Audio Out** jack is provided for headphones, external speaker or an amplifier. When connecting speakers to the Audio Out jack, user an external amplifier or powered speakers

NETWORK WIRING USING CAT5

Ii3 series products connect to network hubs and switches using standard *Straight Through* wiring, similar to PC connections and do not support mdi auto-detection. No special connections or cabling changes are needed under normal operating environments.

Crossover Cable Connections
Use a Crossover cable ONLY when using 2 ii3 intercoms in DIRECT CONNECTION (Server/Client) or when using a PC to single ii3 intercom WITHOUT a hub/switch interconnect.

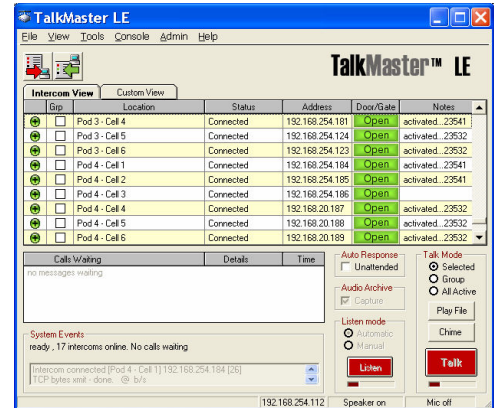| Crossover Cable		PIN 1	Straight Through Cable	
RJ-45 PIN	RJ-45 PIN		RJ-45 PIN	RJ-45 PIN
1 Rx+	3 Tx+		1 Tx+	1 Rc+
2 Rc-	6 Tx-	RJ-45 Male	2 Tx-	2 Rc-
3 Tx+	1 Rc+		3 Rc+	3 Tx+
6 Tx-	2 Rc-		6 Rc-	6 Tx-

Cat-5 Wiring reference

SOFTWARE SUPPORT

Talk Master™

ii3-TalkMaster™ software

- Control and detection for intercom stations
- Audio access for all ii3 intercoms with Master call to page all stations
- Program ii3 intercom internal OS/Flash memory
- Pop-up screens for identifying incoming station ID and audio
- Utilizes PC Multimedia microphone/speaker for access to intercoms
- Integrated UDP polling on to automatically detects all stations
- ActiveX control available for easy custom GUIs with sample program (C++)
- Windows® 98, Me, 2000, XP, Server 2003

TalkMaster™ software manuals and downloads are available at
www.digitalacoustics.com/ii3

If you require multiple concurrent consoles managing ii3 IP Intercoms, refer to www.digitalacoustics.com for information on TalkMaster Enterprise Edition software.

iTalk/X SDK development software

iTalk/X ActiveX

iTalk/X provides complete access to the functions used in TalkMaster™, making it easy to write TCP/IP server software for Digital Acoustics' ii3 Intercom Series. iTalk/X is available as an ActiveX control for Visual Basic and Visual C++ applications, or and other GUIs that support ActiveX.

	Location	Status	IP Address	Intercom ID	Notes
	Gate 201	Connected	192.168.0.100	101B02	
	Treatment plants	Connected	192.168.0.175	1019C0	Audio call listening
	Station 321	Connected	192.168.0.183	1019D3	
	Room 222	Connected	192.168.0.113	101B23	
	Gate 12	Connected	192.168.0.172	1019BA	

INTEGRATED 2-PORT SWITCH OPTION

An integrated 2-port switch is an option available on all models of the ED and ES series. The 2-port switch allows connection of an additional IP device from a single network drop.

Important – ii3 intercoms with the integrated 2 port switch are supplied with a regulated **5vdc (750mA)** power supply. Other intercoms in the ii3 series use 7.5vdc or 9vdc power supplies. Using the wrong power supply could damage the unit.

Connecting ii3 Intercoms
With integrated 2 port switch

- Connect a regulated **5vdc** power supply with 2.1mm plug, center tip positive, min 750mA

- Connect an Ethernet cable from a hub/switch into the RJ45 connector closest to the edge of the intercom.

- Connect an Ethernet cable to any other IP device using the RJ45 connector that is next to the power jack.[1]

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[1] If the upstream device is another hub/switch that does not have mdix capabilities, use a crossover cable

PoE Option

A PoE (Power over Ethernet - 802.3af compatible) option is available on all models in the ED and ES lines.

- Each ED or ES intercom will draw 7 Watts from your network switch or injector
- On models with the PoE and integrated 2-port switch options, PoE does not pass through to other devices connected to the 2nd port
- Do not plug power into the external power jack and connect the Intercom to a PoE power source at the same time

Troubleshooting

❑ Verify power connections. The "Active" or LD10 LED on should be on or flashing.

❑ Verify that the "Link" or LED is on solid. If not, a valid network connection is not present.

❑ ii3 Intercoms may operate across some firewalls or VPN's. They will need to be configured locally (for setup) and will need to be assigned to the STATIC IP addresses of the TalkMaster PC.

❑ If the intercoms have been configured for DHCP and no DHCP server is available, re-power the intercom while holding down the **Volume Up** and **Volume Down** buttons. Wait 15 seconds, then **Search** for the Intercoms again and assign a static IP address.

❑ If you cannot detect any intercoms using the TalkMaster Intercom Configuration Utility screen try directly connecting the PC (running TalkMaster) to the ii3 intercom *using a crossover cable* (disconnected from the network).

PC running TalkMaster	⟵ Crossover Cable ⟶	ii3 intercom

❑ To reset the Intercom's configuration back to factory defaults, re-power the intercom while holding down the **TALK** and **Volume Up** buttons. This will erase the Intercom's IP Address settings, Intercom Name and all options. Wait 15 seconds, then **Search** for the Intercoms again and re-configure the Intercom.

FIRMWARE OS UPGRADES

All ii3™ intercoms use internal *Flash* memory. Operating system (OS) and firmware may be upgraded to include new revisions or custom options. TalkMaster™ software is required to enable and program the Flash memory upgrade feature.

TECHNICAL SUPPORT

Information online   www.digitalacoustics.com/ii3
Email   esupport@digitalacoustics.com
Telephone   +1 (847) 604-9256 M-F 8-5 (Central Time Zone)

This document may contain advance information. Contact factory for technical specification before product design and/or use. Design and specifications are subject to change without notice.

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