



### **ADVANCED DIGITAL NETWORKING:**

In today's high-pressure production environments, intercoms must provide the timely and reliable communications that are critical for coordinating complex, fast-paced events. Whether at work in a theater, concert hall, performance centre, touring show, convention hall, or broadcast facility, the intercom supplies a vital information link that keeps activities flowing smoothly.

#### The ASL Digital Intercom network

Advanced Intercom Matrixing (AIM<sup>™</sup>), the core technology within all systems, helps make ASL Digital Intercoms remarkably easy to install and operate. The ASL engineers created a proprietary network protocol ideally matched to "fail-safe" intercom applications. ASL Digital Intercom networks can be configured using star, daisychain or in-line topologies. System designers can choose the approach that is most efficient and cost-effective for the given application.

#### **Matrix Units**

Each compact (1U) matrix unit serves up to 40 users (beltpacks or speaker stations), and up to six units may be linked via Cat-5, COAX or fiber optic cable (using the equivalent link module) to expand capacity up to 240 user stations.

#### Straightforward, intuitive operation

The ASL Digital Intercom system is exceptionally functional and easy to use. Signal lights are easy to recognize, and offer adjustable brightness. Controls are large and clearly labeled. The DS 290 beltpacks have the unique iN-touch<sup>™</sup> "iPodlike" touch-sensitive volume controls. The "Audio Detect" function on speaker stations allows the operator to see which channels carry audio. In every respect, the ASL Digital Intercom controls and displays reflect thoughtful design as well as close consultation with long-time intercom users.

#### Person-to-Person and text (SMS) communication

In addition to conference communication (between users in user groups), ASL's networking technology allows direct person-to-person communication (like a telephone call) from any user station to any other user station, without tying up a channel. In addition, ASL Digital Intercom offers text messaging from a keypad speaker station to any other user station. This can prove extremely valuable when an operator is temporarily away from his or her station, or cannot immediately respond to a voice call.



Daisy Chain topology



Star topology



Line topology

# SIMPLE, FLEXIBLE, COST-EFFECTIVE

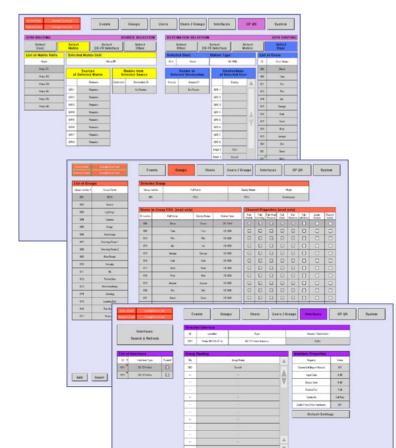
#### **Configuration Software**

ASL's proprietary configuration software ConfigurIT<sup>™</sup> makes it easy to configure the system for particular applications as well as to create multiple configuration presets for different event types or productions in rotation. The simple, easy-to-use graphical user interface (GUI) of the software makes system setup an efficient, streamlined process.

ConfigurIT<sup>™</sup> software is stored in non-volatile memory inside the DS 4002 M Master unit. The configuration is effective for both the master matrix and all connected slave matrix units. The software can be operated using a standard computer monitor with mouse only or mouse and keyboard; or a connected laptop computer. ConfigurIT<sup>™</sup> may be operated or edited ON LINE (in an active event) or OFF LINE.

The ConfigurIT operation tasks are clearly and intuitively divided into several different screens, each corresponding to various steps in the configuration process.

**The Event screen** is used to create, save, add or delete events. An event is active when selected and the administrator chooses to "Activate This Event." Event Configurations



#### Advantages at a Glance:

- Expandable and scalable From one matrix unit (40 user stations) to six matrix units (240 user stations)
- Digital audio throughout No noise, exceptional voice clarity
- Conference communication Up to 250 user groups possible
- Audio detect indicates audio in a user group
- Person-to-Person communication (PTP) Any user station can talk directly to any other user station without tying up a channel
- Text messaging Any keypad speaker station can send short text messages for display at any other user station

- The network recognizes each user according to its assigned unique ID number
- Simple, intuitive Configurion software no special training required
- Binaural (split ear) headset option
- All connections between user stations employ standard Cat-5 or Cat-6 cable (Note: ASL's propriety network protocols will not function on an existing active LAN)
- Auto-restore function All current operational settings are maintained following power interruptions



may be saved to a USB stick for later loading into other matrix units or as back up.

The **Groups screen** is used to create and name user groups. Check boxes allow the administrator to read/check channel properties of users in the group.

On the **Users screen**, the system administrator may create users and define station function properties. Unique user IDs are assigned to a person ("Jack Jones"), a job title ("Lighting Director"), or a physical location ("Lighting Booth"). Each user is then assigned a station type: 2-channel beltpack, 16-channel speaker station, 8-channel speaker station, etc. The channels of a user station can be assigned to the user groups created in the Groups screen.

The **Users/Groups screen** presents a graphical matrix wherein Group/User assignments may be created or modified for the event.

The **Interface screen**, **GPIO screen** and **System Screen**, provide specific detailed information – in clear graphical format – on installed interfaces, GPIO routes, network configuration, System software, equipment, and DSP engine.

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### **DS 4002 MATRIX UNIT**

### **DS 1642 SPEAKER STATION**

#### DS 4002 M Master

A single DS 4002 M Master Matrix (19"/1U) is the centerpiece of a basic ASL Digital Intercom system for as many as 40 users. The user stations are connected via five Intercom Line connectors on the rear panel. Each Intercom Line contains the data for a maximum of eight user stations. The Intercom Line connectors also supply +48 VDC over the Cat-5 cable; this power is available to beltpacks and smaller speaker stations that do not have their own power supplies.

An ASL Digital Intercom system can be expanded to as many as 240 users by linking up to six DS 4002 M (Master) matrix units or one DS 4002 M (Master) to five DS 4000 S (Slave) matrix units. Matrix units may be connected via a high speed data ring, using the optional Cat-5, Coax or Fiber Optic link modules.

Each matrix unit also accommodates up to two interface modules. For more information on these modules, see section "Interfaces". Two standard Sub-D connectors provide access to programmable GPIO connections (in total 8x GP Input + 8x GP Output).

#### DS 4002 S Slave

The lower-cost DS 4002 S Slave is designed for use in conjunction with at least one DS 4002 M Master Matrix units. The DS 4002 S performs the same functions as the DS 4002 M in the intercom network. However, the USB, PC and Ethernet connections required for external control and programming functions are removed.

#### For more information about the DS 4002 M and the DS 4002 S, view the referring quick guides. Go to www.asl-inter.com/support

### DS 4002 M Features:

#### General:

- One master matrix unit supports systems for up to 40 users
- Dual switch-mode power supplies for redundancy
- Up to 240 users by linking six matrix units Front panel:

#### ront panel:

- USB connector (for keyboard or mouse)
- RJ-45 connector (to Mac or PC computer)
- LED indicators for String On and Overload

### Rear panel:

- Five intercom lines ("strings") configurable as star, line or daisy-chain
- To each string maximum 8 user stations may be connected
- Ethernet (RJ 45) connector for networked control connection
- VGA and two additional USB connectors
- GPIO connections (8x In + 8x Out)
- Matrix Link slot
- Interface slots (2) for interface modules

The DS 1642 16-channel Speaker Station (19"/1U) provides comprehensive and exceptionally flexible communication facilities for users at key command locations. Housed in a compact 1U frame, the DS 1642 enables instant TALK and LISTEN access to 16 separate user groups.

#### Operating the DS 1642 Speaker Station

In normal operation, a rotary knob serves as a volume control for the intercom signal; when pushing and turning the volume knob it controls the PGM volume. In menu mode, the knob serves as a rotary encoder. In conjunction with the keypad, the encoder enables selection of "soft key" functions as well as selection from among many other mode, status and parameter adjustments. The keypad also facilitates PTP communication (including a "speed dial" function) and sending of text messages.

#### Function buttons ("Soft Keys"):

The eight "soft" function keys are accessed in two layers (using the shift key), with current functions shown in the adjacent display. Functions available are:







DS 4002 M Matrix Unit (Rear View)



DS 4002 M Matrix Unit



CALL TO, CALL TO TALK, TALK TO ALL, SPEAKER ON/ OFF, REMOTE TALK MUTE SEND, REMOTE TALK MUTE SEND PER GROUP, REMOTE SPEAKER MUTE SEND, REMOTE BUZZER MUTE SEND, BUZZER ON/OFF, STOP PTP RECEIVE, MIC DIRECT OUT (Stage Announce).

#### DS 1642 Features:

#### Front panel:

- 16 separate TALK and LISTEN buttons
- OLED displays
- Audio Detect per channel
- SOLO button
- MIC ON button
- Person-to-Person (PTP) call button
- Eight programmable function buttons in two layers
- Keypad
- Integral Loudspeaker (1.5" x 2.5")

#### Rear panel:

- Ethercon connectors (2) for Intercom IN and LINK
- Two GPIO Sub-D connectors (in total 8x GP input and 8x GP Output)
- Two XLR-F connectors for program input
- One XLR-M for audio output (stage announce)
- External Speaker 1/4" jack connector

For more information, view the DS 1642 quick guide. Go to www.asl-inter.com/support

DS 1642 Speaker Station with gooseneck mic

DS 1642 Speaker Station (Rear View)

## **TABLETOP SPEAKER STATIONS AND PAGING SPEAKER**

ASL Digital Tabletop Speaker Stations provide comprehensive, flexible and user-friendly communications in a smartly styled, 3U angled surface-mount cabinet. The units are locally powered by a 48 V DC adaptor, supplied by ASL.

Tabletop Speaker Stations are available in 5 versions: the **DS 230** ( 2 channels), **DS 830** (8 channels), the **DS 1630** (16 channels), the **DS 2430** (24 channels) and the **DS 3230** (32 channels). All Tabletop Speaker Stations include Wall mount strips.

#### **Operating a Tabletop Speaker Station**

In normal operation, the rotary knob on the front panel serves as local intercom volume control; pushing the knob while turning controls the PGM (program) volume. In menu mode, the knob serves as a rotary encoder. In conjunction with the keypad, the encoder selects the "soft key" functions and also enables selection of many other mode, status and parameter adjustments. The keypad also facilitates PTP communications (including a "speed dial" ) and the sending of text messages.

#### Function buttons ("Soft Keys"):

Tabletop Speaker Stations may be tailored to specific user needs using the eight "soft" function keys. Selected functions are accessed in two layers (using the shift key), with current functions shown in the adjacent display. For available functions, see the DS 1642 Speaker Station.

#### Key features on Tabletop Speaker Stations:

- Separate TALK and LISTEN buttons for each channel
- CALL button on each channel (DS 230 only)
- SOLO button (not on DS 230)
- MIC ON button (not on DS 230)
- Person-to-Person (PTP) call button
- Eight programmable function buttons ("soft keys") in two layers (not on DS 230)
- Adjustable button illumination
- Send Text messages enabled (not on DS 230)
- Audio Detect per channel
- GPIO connections: 4x GP Input + 4x GP Output (not on DS 230)
- Program input (not on DS 230)
- Integral loudspeaker (1.5" x 2.5")
- External speaker jack connector
- 3U rack-mount kits available for each of the versions

For more information, view the DS 830 quick guide. Go to www.asl-inter.com/support

#### **DS 230 Speaker Station**

A 2-channel Tabletop Speaker Station for full duplex communications in a smartly styled, 3U angled surface-mount cabinet. The unit is locally powered by a 48 V DC adaptor, supplied by ASL, or via the intercom line ("string"). The DS 230 has the same features as the multi-channel tabletop Speaker Stations, except for a SOLO button, a MIC ON button, a keypad, function buttons, GPIO connectors, a program audio input and a stage announce output. However, the unit has a separate CALL button for each channel. A 3U rack mount kit is available.

### For more information, view the DS 230 quick guide. Go to www.asl-inter.com/support

#### DS 130L Paging Speaker

A 1-channel Speaker Station for "Listen Only" purposes, to be installed in areas where a show-relay/ paging system is required. The unit is powered via the intercom line ("string") and contains volume override circuitry. It has a volume control and LED indicators for string power and volume override. The DS 130L can be used as a tabletop or as a wall mount station. A wall mount kit is available consisting of a wall mount plate end a lid over the rear panel (to keep out dust and to hamper unauthorized access). The DS 130L connects to the intercom network via secure Ethercon connectors (IN and LINK) on the rear panel. Also on the rear panel are three 10-position rotary switches to define the user ID number.

For more information, view the DS 130L quick guide. Go to www.asl-inter.com/support



DS 130L Paging Speaker Tabletop





### **DS 290 BELTPACK**

The DS 290 2-channel beltpack offers all the features expected in any high-quality 2-channel unit: separate TALK and CALL buttons, separate volume controls, MENU button, PTP button, separate activity indicators, and a factory option for use with binaural headsets.

The DS 290's ability to receive text messages can prove critical when essential information must be given before users are at their stations, or when audible interruptions are not possible. Also, the Person-to-Person (PTP) call capability allows critical or unexpected point-to-point communications to go through without interrupting communications on a regular group channel.

To adjust headset levels on the separate channels, the DS 290 uses dual iN-touch "iPod-like" volume controls instead of standard potentiometers. With no external or moving parts, the iN-touch controls eliminate frustrating problems with lost or broken knobs or "scratchy" potentiometers.

#### Advantages at a Glance

- "iPod-like" touch-sensitive volume control, per channel
- CALL and TALK button per channel
- Person-to- person (PTP) call button
- Text message (receive)
- Bright, high-contrast OLED display

#### For more information, view the DS 290 quick guide. Go to www.asl-inter.com/support



In normal operating mode, the bright OLED display shows group names and Listen volumes as bars. When text messages are received, message content is displayed. Pressing the PTP button initiates a PTP call, and both the display and the TALK and CALL buttons switch over to PTP call mode. Pressing the MENU button puts display and buttons into MENU mode for selection and adjustment of options.

The DS 290 connects to the intercom network via secure Ethercon connectors (IN and LINK) on the bottom panel. An XLR-4 connector (XLR-5 when binaural) is provided for the headset, and a separate 2.5 mm micro jack allows connection of a mini headset or a "listen only" earpiece.







### **INTERFACES**

Several Interfaces are available that afford maximum flexibility in system configuration, and also maintain seamless compatibility with existing communication and auxiliary systems. The interface modules slide into the rear panel of a DS 4002 matrix unit or a DS 700 interface box.





#### DS 71

Partyline Interface Module linking a digital conference group to one party line channel (2-wire analog) NOTE: The analog partyline needs its own power supply).



#### DS 74

IFB/Paging Interface Module sending audio from a digital IFB or Paging group to an analog audio system. The DS 74 also has an audio input which can be routed directly to the output. The Control Out of the DS 74 is for activating (triggering) third. party systems.



**DS 77A** Aux In / Monitor Out Interface Module sending /receiving analog audio to/from different digital groups. The input of a DS 77A can also be routed directly to the output.



DS 72 intercom. (i.e. Motorola)



DS 75 IFB/Paging Interface Module sending audio from a digital IFB or Paging group to an analog party line system. The DS 75 also has an audio input which can be routed to the output.



DS 78 connectors.



DS 700 19"/1U Interface Box with built-in power supply for maximum 4 interface modules.



4-Wire Interface Module linking a digital conference group to one analog 4-wire intercom line or to 'walkie talkie'



DS 73A Audio In/Out Interface Module sending /receiving analog audio to/from one or several digital groups.





DS76A Telephone Interface Module for communication to and from an analog telephone line.



GPIO Interface Module offering 8 GP inputs and 8 GP outputs on 2 Sub-D



**DS 79/TR** Emergency Interface Module allowing authority announcements to all user stations. The audio input is transformer balanced. The DS 79/TR is to be installed in a DS 4002 matrix unit, not in a DS 700 interface box.

DS 700 Interface box



For more information, view the referring quick guides. Go to www.asl-inter.com/support

### **MATRIX LINK MODULES & POWER SUPPLIES**

### **ACCESSORIES**

fixed installation applications.

#### **Matrix Link Modules**

Matrix Units are linked by so-called Matrix Link Modules, to be installed in the link slot at the rear panel of each matrix unit. There are 3 different models:



DS 52

COAX Matrix Link Module allowing to form a high speed data ring to link matrix units. Distance between two matrix units: up to 120 or 200 meters (depending on Coax cable make).

#### **Power Supplies**

ASL Intercom offers the following power supply units:

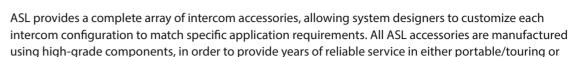


**DS 84** Power Injector, to boost the Out" line of a DS 88 Hub.





DS 54 Cat-5 Matrix Link Module allowing high speed data ring data to link matrix units. Distance between two matrix units: up to 2 meters.









DS 56 Fiber Optic String Extender A set of two boxes (DS 56A and DS 56B) to extend an intercom line ("string") with fiber optic cable (max. 2000 meters).

DS 80 Wall Box (socket)



HS-1/D Headset Lightweight, half open, single muff headset with dynamic microphone, cable and XLR-4 connector.



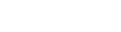
Lightweight, half open, double muff headset with dynamic microphone, cable and XLR-4 connector.



Gooseneck Electret Microphone, 30 cm, LED ring, jack connector

GML 45 E





Gooseneck Electret Microphone, 45 cm, LED ring, jack connector



48V DC power on an "Intercom

. .

AC

group 2



DS 85 Booster Power Supply / Data Repeater with built-in power supply, mains connector, Intercom In and Intercom Out connectors (Ethercon).

#### DS 8200 (See image below)

www.asl-inter.com/support

19"/1U power supply to optimize the redundancy of an ASL digital intercom system. The DS 8200 is capable of powering two DS 4002 matrix units.



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AC

group 1



DS 88 Intercom Hub



#### DS 88

Intercom HUB, 19"/1U, with built-in power supply, mains connector, 1 x Intercom In and 8 x Intercom out connectors (Ethercon) for Star wiring topology.

Surface or flush mount, electronic circuitry, Intercom Out connector (Ethercon), Intercom In and Intercom Link Out connectors (LSA strips).



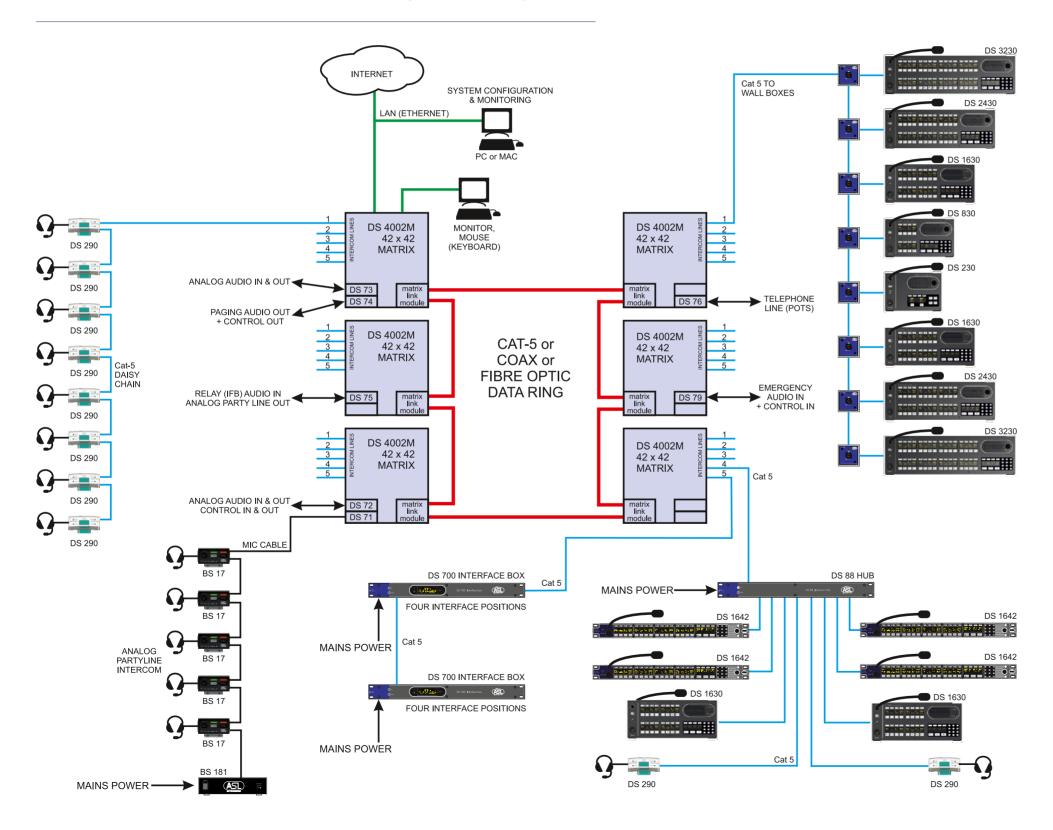


HR-2/E Headset Double muff, closed headset with noise canceling electret microphone (left or right-side use), cable and XLR-4 connector.

### **SYSTEM OVERVIEW**

#### Typical ASL Digital Intercom System

The system illustrated here is a 252 x 252 matrix accommodating up to 240 user stations plus 12 interface modules inside the interface slots of the six DS 4002 M (master) matrix units. A more cost effective setup would be one DS 4002 M (master) matrix unit and five DS 4002 S (slave) matrix units. Additional interfaces may be incorporated by connecting one or several DS 700's (19" rack-mount frames, each for 4 interface modules) to the intercom lines. Each additional interface module occupies one user station position.





#### System Components

System components listed below allow for the design and configuration of ASL Digital Intercom systems for a broad range of applications, including live event and broadcast production as well as commercial and industrial uses.

| DS 4002 M    | Master Matrix Unit (19"/1U)                      |
|--------------|--|
| DS 4002 S    | Slave Matrix Unit (19"/1U)                       |
| DS 290       | 2-ch Intercom Beltpack                           |
| DS 130L      | 1-ch Paging Speaker                              |
|              | (listen only)                                    |
| DS 230       | 2-ch Tabletop Speaker                            |
|              | Station, 3U (19" flares                          |
| 56.000       | optional)  |
| DS 830       | 8-ch Tabletop Speaker<br>Station, 3U (19" flares |
|              | optional)  |
| DS 1630      | 16-ch Tabletop Speaker                           |
| 231030       | Station, 3U (19" flares                          |
|              | optional)  |
| DS 2430      | 24-ch Tabletop Speaker                           |
|              | Station, 3U (19" flares                          |
|              | optional)  |
| DS 3230      | 32-ch Tabletop Speaker                           |
|              | Station, 3U (19" flares                          |
| DS 1642      | optional)  |
| DS 1042      | 16-ch Speaker Station<br>(19"/1U)                |
| DS 52        | Coax Matrix Link Module                          |
| DS 53        | Fiber Optic Matrix Link                          |
|              | Module   |
| DS 54        | Cat-5 Matrix Link Module                         |
| DS 56        | Fiber Optic String<br>Extender                   |
| DS 71        | Party Line Interface                             |
| DS 72        | 4-wire Interface                                 |
| DS 73A       | Analog Audio In/Out                              |
|              | Interface  |
| DS 74        | IFB/Paging Interface to                          |
|              | analog audio systems                             |
| DS 75        | IFB/Paging Interface to party                    |
|              | line systems                                     |
| DS 76A       | Analog (Pots)Telephone                           |
|              | Interface  |
| DS 77A       | Analog Aux In / Monitor Out<br>Interface         |
| DS 78        | GPIO Interface (8x GPI + 8x                      |
|              | GPO)   |
| DS 79/TR     | Emergency Interface                              |
| DS 700       | Interface box                                    |
| DS 80        | Wall box   |
| DS 84        | Power Injector                                   |
| DS 85        | Booster Power Supply / Data                      |
| <b>BG</b> 44 | Repeater   |
| DS 88        | 8-outlet HUB (19"/1U)                            |
| DS 8200      | Power Supply (19"/1U)                            |

### SOME HELPFUL ANALOGIES FOR UNDERSTANDING ASL DIGITAL

## "HAVEN'T I DONE THIS BEFORE?"

Long-time users of analog intercoms could feel overwhelmed when first exposed to ASL Digital's extended feature set and extraordinary flexibility. It all seems, well, a bit much. Have no fear. Once you get started, you'll find it all falls into place. Basically: "Been there, done that."

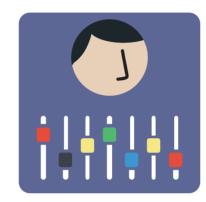
In other words, if you've used a cash point, done any banking online, joined a social networking web site, or programmed speed-dial numbers into your cell phone, you're already more than halfway home.

Let's begin with the ID number. It's much like your bank account number and your personal identification number (PIN) all rolled into one. Like a bank account, each number is unique in any ASL Digital system configuration. But in this case, thankfully, only three digits are involved. If you don't like the default number assigned by the system, you can pick any three digits you like. If you're doing the configuration, you can be 007 -- and absolutely no one else.



These unique ID numbers are all assigned in the USERS section of ASL Digital's user-friendly ConfigurIT<sup>™</sup> software. It's all quite straightforward. Simply assign the ID numbers as you desire to a particular person (John Smith, Stage Manager), or to a venue location (foyer, backstage), or to a particular speaker station or beltpack.

Create Your Own "Personality" Account After you assign each ID number, ConfigurIT<sup>™</sup> allows you to associate it with all the ideal settings for that station or user. These include groups, access permissions, user preferences, and everything else that will enable perfect communication for that person, or at that location.



In a sense, the ID number defines a "personality account" for each user. Your account goes wherever you go. Much like your PIN number accesses your bank accounts at any cash point, your ID number accesses your groups and preferences regardless of the speaker station or beltpack you are using at the moment. Simply enter your three digits, press the Menu button, and you're logged in!

Of course, your bank's cash point thankfully logs you out automatically when you leave. With your ASL Digital user station, however, you remain logged in until you log out, or until another user logs in to take your place by entering his ID number. Stay as long as you like, and leave whenever you please. No matter where you may wander (within the ASL digital system), the matrix faithfully follows your ID number. There are no wires to reconnect, and no port numbers to reassign. It's so simple anyone can master it.

Your ASL Digital ID number also serves as your unique address for both the person-to-person call function and text messaging. In this case, the ID number is more like a preset on your mobile phone. Three quick taps and you've a private connection.

#### **Make Your Friends List**

You create various user groups in, logically, the GROUPS section of ConfigurIT<sup>™</sup> software. This is much like an intimate social networking web site. Consider whom you want on your "friends" list. Some people, such as directors and stage managers, want to be "friends" with just about everybody. (It's in





their job description.) Others, like sound and lighting technicians, prefer to associate only with their own kind - though occasionally with directors and stage managers, when essential. To create these instant associations, give each user a name (shown in the display and in the USER section), double click on it and then choose which already-named group (audio, lighting, backstage) with which to associate which channel. In a few seconds, you can assign each user or station to any or all available groups. Of course, the user station hardware must be able to accommodate the number of groups assigned, so beltpack users are restricted to only two groups. But since every other user in the system could theoretically be in those two groups, they needn't feel lonely or neglected.







Rename, Save, Tweak and Save Again If you're involved in live performance or broadcast production, you're likely to be quite busy during the peak of the event season. (If you'd preferred a slower pace, you might have sought a career in horticulture.) Therefore, we assume you have little time for repetitive tasks.

Fortunately, with ASL Digital, you need to do nothing of the sort. The power and flexibility of ConfigurIT<sup>™</sup> software makes it easy to customize and adapt your preset user configurations.

For example, your theater might have different evening shows running in repertory, or perhaps have a children's program in the afternoon and a ballet performance in the evening. The intercom configurations may be similar for both shows, but with just a few important differences. Simply resave the configuration from one event under a new file name, make the necessary changes, and save it again. Two configurations for the price (almost, in time spent) of one!

If you're a rental company operator, you may choose a similar approach. First, in advance of the productions, you create a configuration for a "typical" or "average" event. Save it as a base setup, perhaps as "Template 1." For subsequent events you need only make specific additions, deletions or alternations as required.

With the time left over, you can relax and tend to the lovely hydrangeas and begonias you are cultivating in the lighting booth.



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