

## ACE100



The Adaptable Communication Engine for High Integrity Voice and Alarm Broadcast Systems. ACE combines the very latest information technology with the most recent advances in processing hardware to assure security and reliability of operation in the most critical demanding applications.

ACE is fully reconfigurable either locally or remotely allowing system operational parameters to be programmed to client specification via Windows colour graphic suite ACEWINner, embedded automatic surveillance routines verify the security of all critical paths to provide the operator with an early warning of system deterioration.

ACE provides highest intelligibility and clarity of speech and audibility of critical life saving alarm tones by incorporation of sophisticated signal processing algorithms and a full 20KHz audio bandwidth. Using ASIC/surface mount technology, ACE integrates embedded advanced digital signal processing to realise minimal hardware which enables exceedingly high levels of reliability and system availability.

Ultimate operational integrity is maintained by a distributed processing architecture which is supervised by a comprehensive surveillance sub system. Diagnostic routines issue external status to hard copy print-out in addition to distribution to optional intelligent ACET LCD displays and local or remote P.C. monitor screens.

Moreover, ACE is so flexible and re-configurable that it can be extended in capacity to facilitate virtually all operator requirements without recourse to wiring changes.

These can be improved and or amended by ACEWINner windows configuration suite as the site grows and operating requirements change.

### // ACE TERMINAL MICROPHONE ACCESS UNITS (ACET)

Two basic ACET types are available:

- Bulkhead mount harsh service locations
- Ergonomic sheltered / internal area locations

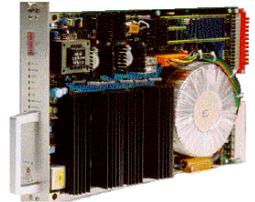


These provide man / machine interface to the host ACE100 node. High quality hypercardioid noise cancelling microphones are standard on all ACET terminals, even hazardous area certified units.

Sophisticated data transmission techniques minimise field cable requirements ensuring that critical MTBF / MTTR are enhanced and installation and maintenance costs are drastically reduced.

### // AMPLIFIERS

The ACE node system management operates in conjunction with a range of miniature high efficiency intelligent AMPIID audio power amplifiers offering industry standard 50, 100, 150, 200, 250, 300 watts RMS power output on a compact Eurocard (Higher single ended output powers are available by bridging two AMPIID amplifiers which presents twice the audio O/P). AMPIID provides full 70/100 volt loudspeaker line supervision and with SALS (Spector Addressable loudspeaker systems) address of individual loudspeaker devices.



### // ACE NODE

The core of an ACE System is an ACE 100 Node. This carries Audio routing matrix which facilitates connection of up to 48 input sources to up to 48 broadcast zone outputs. Simultaneous speech and alarm / message paths are permissible within the matrix.

The node can be fitted with up to two Sound Palette cards which can each provide up to 8 minutes of secure high definition stored speech as well as a menu of warning alarm tone signals.

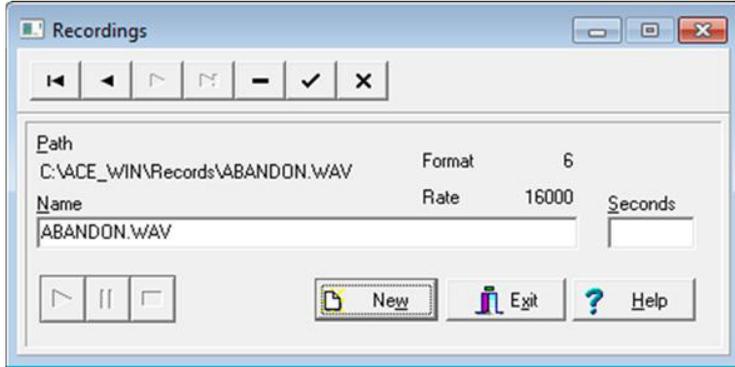
Messages and alarm tone files are transferred from the system configuration P.C. where they can be trimmed and edited to download to the target system.

Connection to the node is executed by ACE "Hubs", (Audio Hub, Agile Data Hub, PIO, Non agile Data Hub, Ace Node switchover) these provide the interface connection point for the outside world field cables.

## // DESCRIPTION OF ACE INFRASTRUCTURE

ACE100 was designed to meet the requirements of medium to large scale high integrity Public Address and Voice Alarm systems. It builds on past experience and introduces novel design features to remove the size barrier.

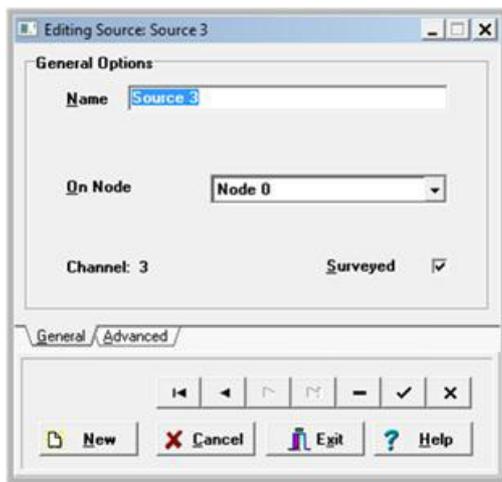
## // TYPICAL ACEWINNER WINDOW EDITING & RECORDING ALARM TONE OR MESSAGE FILES



## // TYPICAL ACEWINNER WINDOW FACILITATING ASSIGNMENT OF OPERATOR PUSHBUTTON ON AN ACET



Where there is more than one ACE100 node then this Window allows the engineer to declare which node port a source input is connected to.



An ACE100 system is made from Access Terminals, Audio processors, Amplifiers Loudspeakers and Fault Monitors which co-operate intelligently to provide high integrity service.

Life safety systems must continue to operate in degrading environments. One of ACE's strengths is its ability to continue service during disruption, failing gracefully rather than catastrophically. Full service returns automatically when possible.

There is no 'Central Processor' in an ACE100 system – all devices contribute to the overall operation of the system.

ACE100 systems have their functionality database downloaded using ACEWINner during installation or at any time thereafter. ACEWINner gives the user a view of the system configuration that is abstract, not physical. He defines what service he needs from the system but does not have to be involved in how the service is provided. This is important – not only does it let the user concentrate on the high-level requirement but it also allows the ACE100 system to choose the best fit for the usage of system resources. In particular, ACE100 stands out because of its open networking philosophy. Almost every part of the system may be monitored and controlled from almost any part of the installation and its network viewed and controlled from remote locations, even across geographical boundaries. This was done to make dramatic reductions in the cost of site visits. It is possible, for instance, to change the tapping of a loudspeaker on an oil rig using a PC in the company's office, rather than sending an engineer to the platform.

It is very important to grasp the difference between operational use and fault monitoring in a safety system. It is the duty of the fault monitoring process to keep the installation in a fit state for operational use. It is not the duty of operational use to expose system faults. When an emergency arises and the installation is used in anger, it should already be fit for use – any faults should have been detected and repaired earlier. Operational use in anger must not be impeded by faulty devices. Rather, the system should provide the best service it can at all times, even under duress. This has major implications in the algorithms used in Routing as distinct from those used in Fault monitoring. ACE100 incorporates this philosophy.

## // OPERATOR KEY FUNCTION TYPES

There are fifteen types of operator buttons which may be used on ACE100 access terminals at the time of writing. They are summarised in Table 2. The term 'destination' means audio output and/or control output.

Many Key Types have the option for Push-On-Push-Off or Momentary action. Alarm Selectors may also be declared to operate with only Fleeting stimuli. All Key Types can be Enabled or Disabled in ACEWINner without otherwise altering their configuration. New types may be added as required. Key types are declared in ACEWINner and implemented in the ACE Terminal, PIO, PACET and Telephone Interface programme code.

# Spector Lumenex

## Datasheet PM/0021

Every operator key is equipped with one amber Light-Emitting Diode (LED) which reflects the status of that key. The Pseudo ACET (PACET) has additional features but is otherwise compatible with the description.

### // OPERATOR KEY TYPES

<b>VOICE GROUP</b>	<b>ZONE SELECTOR</b>	Routes one audio source to any combination destinations. May operate independently or in conjunction with a PTT key. If configured to operate independently then may be allocated a pre-announce chime.
	<b>PUSH-TO-TALK</b>	Triggers the routing of any Zone Selectors which are pre-selected and which are configured to wait for the PTT. May be allocated a pre-announce chime.
<b>ALARM GROUP</b>	<b>ALARM SELECT</b>	Triggers playback of a pre-recorded message/alarm.
	<b>ALARM CANCEL</b>	Cancels a nominated alarm.
	<b>CANCEL ALL ALARMS</b>	Cancels all alarms.
	<b>ALARM TRIGGER</b>	Triggers playback of a pre-recorded message/alarm to any combination of destinations pre-selected by Uncommitted Selectors.



**// ACET/18/NK FITTED WITH EITHER SINGLE OR DUAL ACET602 PRE-AMPLIFIERS.  
19" CONSOLE MOUNT ACE OPERATOR MAN MACHINE INTERFACE.  
OPTIONAL ACET/18/NK/IS AVAILABLE FOR USE IN HAZARDOUS AREAS**



**// ACET 32 FITTED WITH A SINGLE ACET602 PRE-AMPLIFIER AND OPTIONAL LCD READOUT**



**// ACETS01 HARSH ENVIRONMENT ZONE 1 CERTIFIED ACET MAN MACHINE INTERFACE.  
AVAILABLE SINGLE OR TWIN KEY OPERATION**

For further information on any of our Spector Lumenex products  
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