



950 & 990
communication
management systems





FEATURES

- Proven design with over 300 system installations
- Versatile and cost effective
- Modular for ease of expansion and installation
- Extremely reliable
- Interfaces to BISS Tech. standard handsets and consoles

950 Radio Management System

INTRODUCTION

From a small single channel installation through to large multi channel installations the BISS Technologies name has become synonymous with Communication Centre control and peripheral equipment. This brochure provides communication centre engineers, managers and consultants with a comprehensive range of solutions that they may tailor to their specific requirements.

All of the solutions interface with the largely successful and award winning 950 Radio Management product that BISS Technologies has supplied for many hundreds of solutions. This common interface enables a standard installation with the upgrade ability to greater size, power and performance where traffic efficiency and operational economy is a premium consideration.

Small to medium Communication Centre requirements are more than catered for with this solution. BISS recommend this product for systems up to 12 interface channels or links as a flexible multi operator interface. Local or remote cross-patching, local or remote operator control and local or remote channel control are all

offered as standard features to this system. There are few limitations to this solution, which explains why it is Australia's most popular Radio Management System.

OVERVIEW

The 950SR Sub-rack distributes the audio from the 6 available 950CI Channel Interface cards down the backplane bus for

selection and combining at each of the 950DS/DA or ES Selector cards. Other cards such as the 950LC Link Controller and the 950TM Tape Monitor cards also access this audio bus for their respective functions. Audio and data is then distributed to the connected operator positions.

Two 950SR Sub-racks may be paralleled to provide a 12 Channel system.



960 CONSOLES

Any of the BISS 960 Series of Consoles and Handsets can be incorporated into the 950 Radio Management System. A six-wire cable from each of the 950 SR Subracks in a system distributes the audio through the Channel Selectors to the operators handset or console. Power and data (PTT, mute and channel selection) pairs accompany the audio pair to the operator's position.

BISS have developed a large library of console formats from the basic 960CC with 960SC

Channel Selector to the 980AMC/ANI with 980SC12DA. BISS have designated the 960-console product in the extruded aluminum with the 980 format as panel mount conforming with 19" rack mounting.

The BISS TECHNOLOGIES Audio Management Unit has been incorporated into the 980AMC/ANI

and the 960AMC/ANI units. This product has achieved wide acceptance in the larger communication centres providing a complete operator interface for all audio sources.

The Audio Management Unit provides I/O for:

- Radio/Channel traffic
- Telephone access
- PA systems
- Auxiliary or turn-out interface
- Dual headsets
- Continuous and rapid recall loggers
- AM/FM radio (for the quiet times)
- TV (for the quiet times)

960/980SC & SC12 CHANNEL SELECTOR PANELS

(Introducing the 960PB Push Button Selector)

Many formats and versions of the channel selectors are now available. All provide individual three position switched audio

control of each channel. Up is audio deselected or off, middle position is audio monitored without PTT control and down is full control with both received audio and PTT selection enabled.

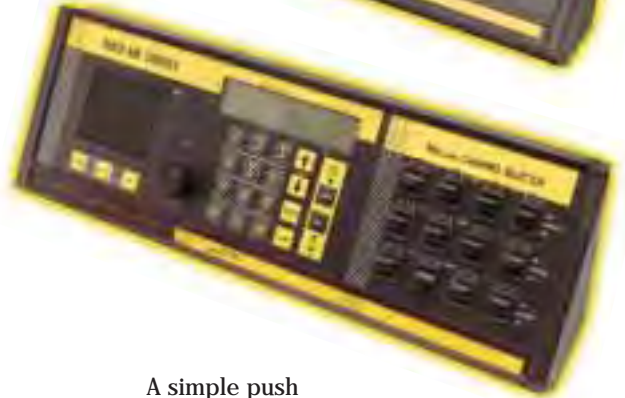
Each channel is fully independent allowing monitoring of any or indeed all channels from any or all operator positions.

Dual Audio

The above channel selection formats are available in Dual Audio. This provides separate speakers for the monitored and controlled audio, each with their own level adjustment. Operators of busy multi channel networks would find this feature very helpful.

960PB Push Button Selector

Providing an LED indication for each channels selected status, the 960PB would provide an ideal solution for low light environments.



A simple push button toggles the channel selection status through OFF, MONITOR & ON. A busy indication is also provided as with the standard selectors. All other operational and physical characteristics are the same as the standard selectors.

960/980LC & LC12 CHANNEL LINKING PANELS

The channel linking panels allow for the cross patching or linking of any of the installed channels to the system. The switches are the standard three position toggles, with the middle position denoting a non-linked state.

Any channels switched in the up position (Group 1) are linked together and similarly any channels switched in the down position (Group 2) are linked together. Thus two independent paths or groups are available. The Group 1 selection allows for the inter-rack linking of channels over a 12-channel configuration.



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950DS DUAL SELECTOR, 950DA DUAL AUDIO SELECTOR & 950ES EXTENDED SELECTOR CARDS

950DS

This card provides the power, audio and logic distribution for two operator positions within the sub-rack that it resides. Balanced audio and a unique data protocol enable operator consoles to be located up to 100 metres from the sub-rack via a 3 pair cable. Foreground and background audio can be presented from this card with level differential.

For a 12 Channel system, a 950DS card will be required in each sub-rack for the operator to access all the channels.

950DA

Providing separate foreground and background audio this card provides all standard features of the 950DS card. A small PCB addition to this card enables an operator position to have independent control of both audio sources. The 950DA card provides the power, audio and logic distribution for a single operator position within the sub-rack that it resides.

950ES

The 950ES Extended Selector card enables the remote location of an operator position. Your Radio Management System may be fully controlled from another city altogether.

Utilising the BISS Austel Approved 900 Series interface products, 2 pair of landlines provide the full monitoring and control of the 950SR. A 12-channel system also interfaces via 2 landline pairs.

950CI CHANNEL INTERFACE CARD

Balanced audio lines in 2 or 4-wire configuration together with isolated mute and PTT controls allow direct connection to radio or channel equipment from the 950SR. Transmit and receive level adjustment is available from the front panel. Mute and PTT LED indication is also provided to assist in commissioning and maintenance.

An additional output is provided for connection to a 920 Remote Control Interface if landline control is required. The channel interface card may be connected to radio, link, landline, PSTN interconnect or other devices compatible with the above formats.

Each 950SR has the capacity for up to six channel interfaces cards.

950LC LINK CONTROLLER CARD

Connecting to the 960LC Link Selector Panel this card enables the cross patching or linking of channels connected to the system. Two independent links can be established, each with multiple channels. For a 12-channel configuration an audio path between racks provides for a crosspatch across all 12 channels.

All facilities and delays are field programmable via an RS232 port and PC software supplied with the link controller.

950TM TAPE MONITOR CARD

Mixed transmit and receive channel audio output levels can be individually adjusted for recording to a multi track tape recorder. Audio output is via 600-ohm transformers with isolated control lines for the pause start control. These are driven by the PTT and mute lines of the system.

A selector switch enables TX or RX audio to be selected and displayed via a level meter for adjustment. A monitor jack allows technical personnel to check the



selected audio via an oscilloscope or audio amplifier. This has proven extremely useful for system setup and commissioning.

This card if installed utilises one of the available 950DS card slots per subrack.

950DT DTMF DECODER CARD

Used in conjunction with the 950LC card, mobiles with DTMF capabilities can remotely channel link without the supervision or intervention of an operator. 'All link,' 'All clear' and Supervisory acknowledge tones provide efficient linking access. Systems fitted with PSTN interconnect products may access the system

via the 950CI card. This would provide mobile operators with the ability to perform their own telephone calls.

This card if installed utilises one of the available 950DS card slots per subrack.

950SR SUBRACK

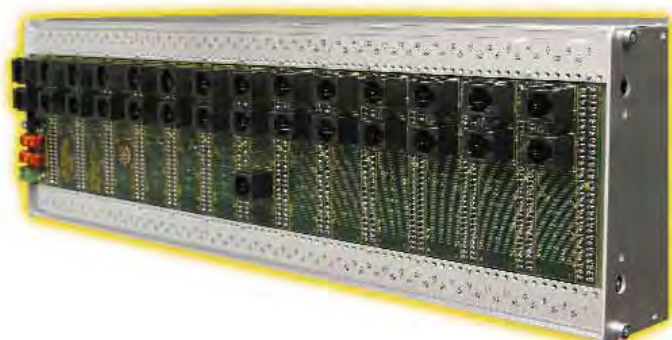
The sub-rack is a 19" format, 3U housing capable of containing 14 card modules. Six card modules are allocated to the 950CI Channel Interface cards, one card module is allocated for the 950CL Channel Linking feature and the remaining seven card modules are allocated to the selector cards or other facility cards.

The 950SR Subrack provides the power supply input for the system. A rear mounted phoenix terminal block allows for the 12VDC input. This powers the subrack and all operator positions not in the extended configuration.

950XC SUBRACK EXTENSION

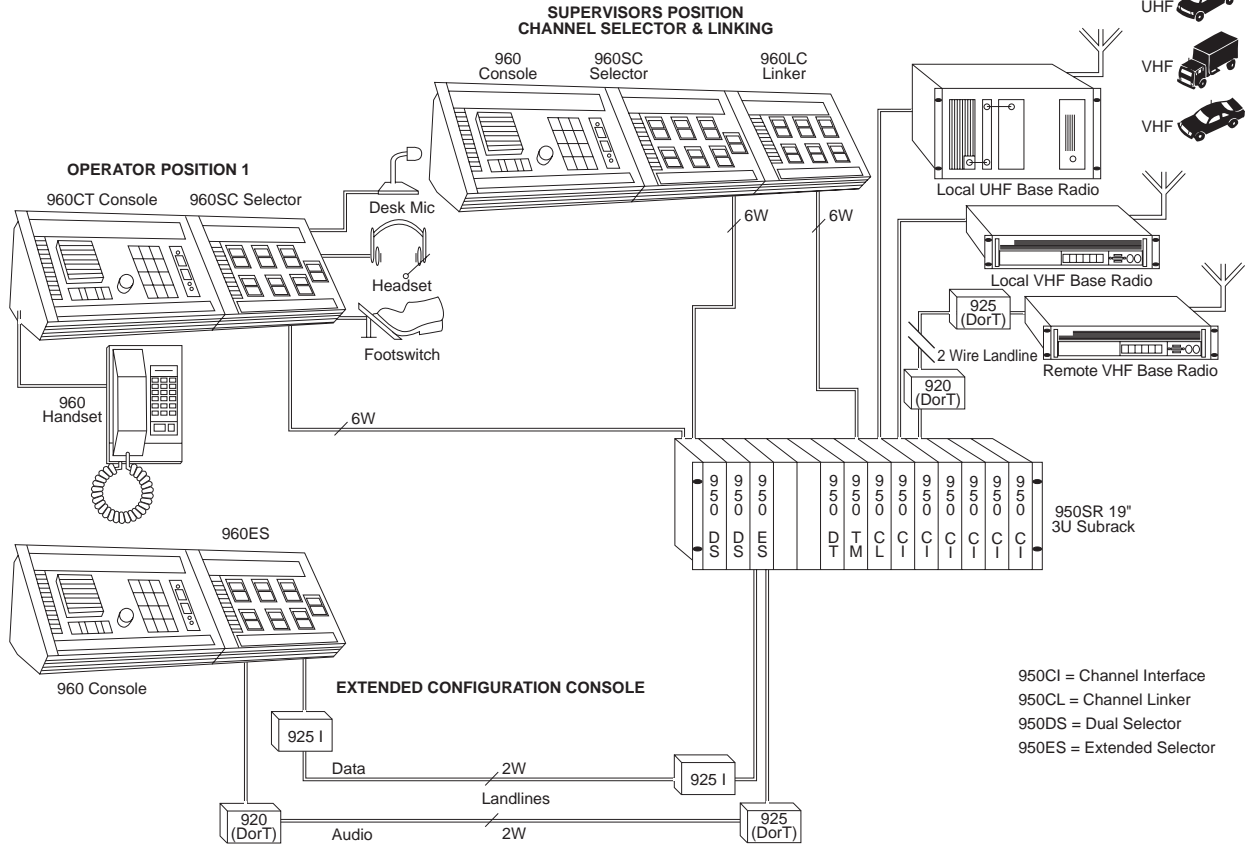
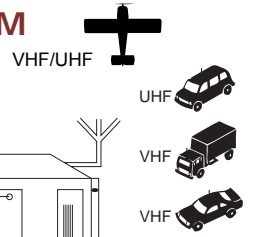
This cable harness and connector assembly allows the backplane of a 950SR Subrack to be extended to a second subrack when the seven

selector card modules have been fully configured. Additional operator positions that may be required beyond a single subrack capability can then be populated through the second 950SR subrack.

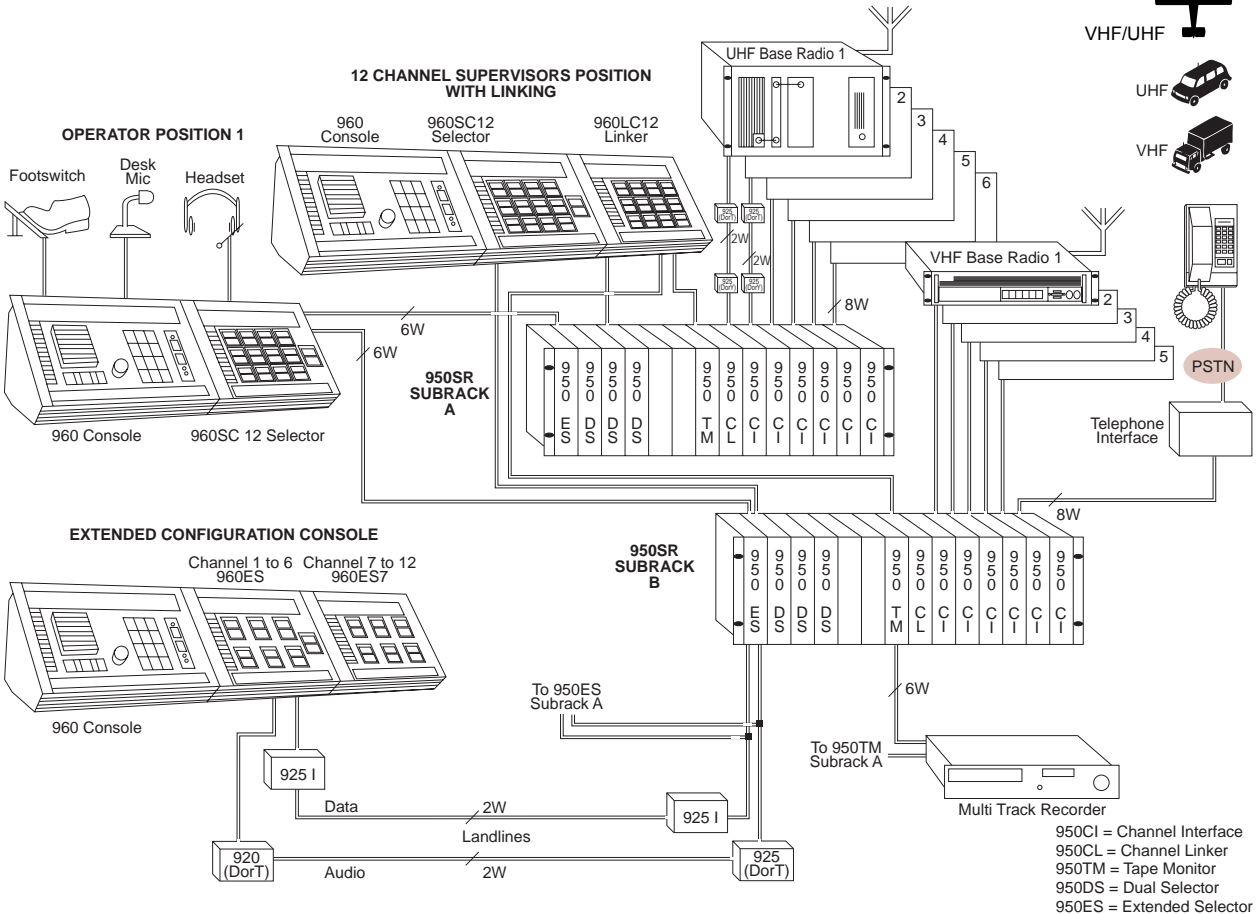
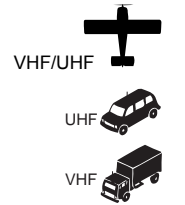


“ The company’s future is reliant on its innovative spirit and the willingness to create solutions. ”

6 CHANNEL 950 RADIO MANAGEMENT SYSTEM

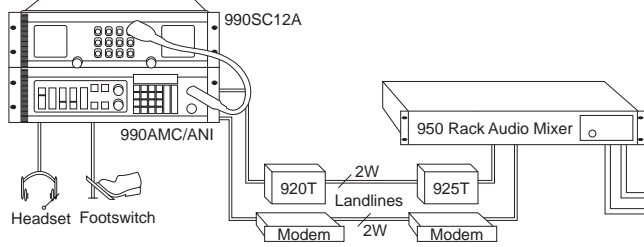


12 CHANNEL 950 RADIO MANAGEMENT SYSTEM

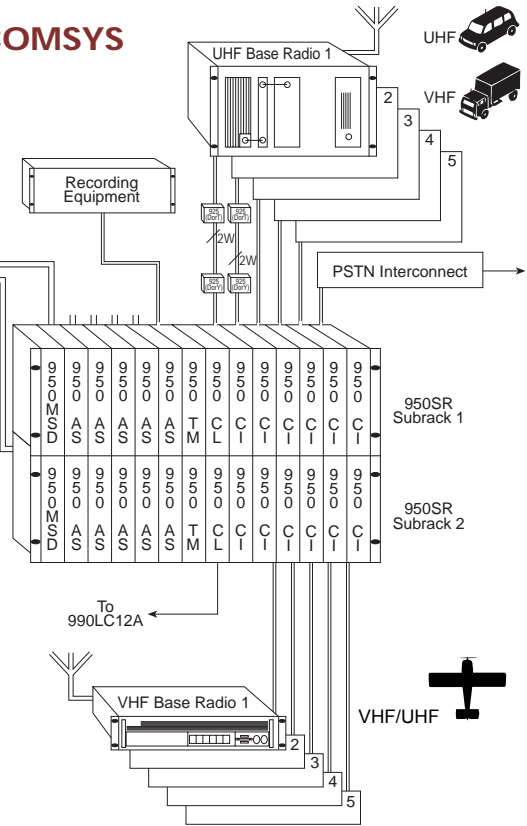
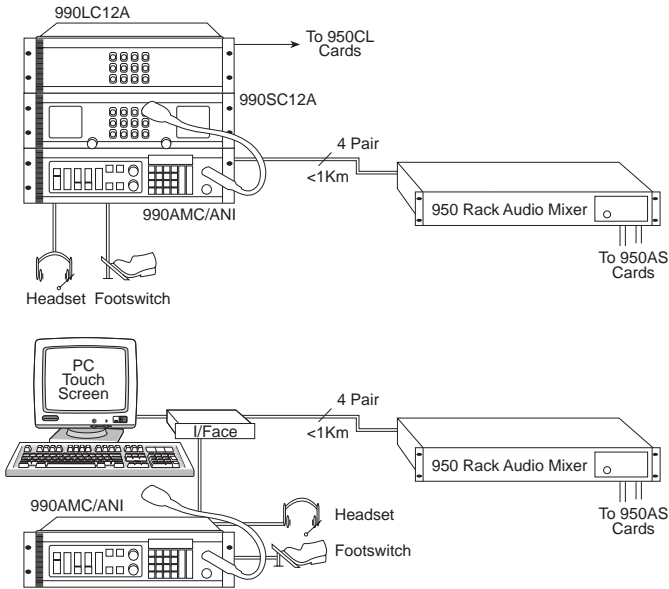


12 CHANNEL 990 COMSYS

EXTENDED CONSOLE



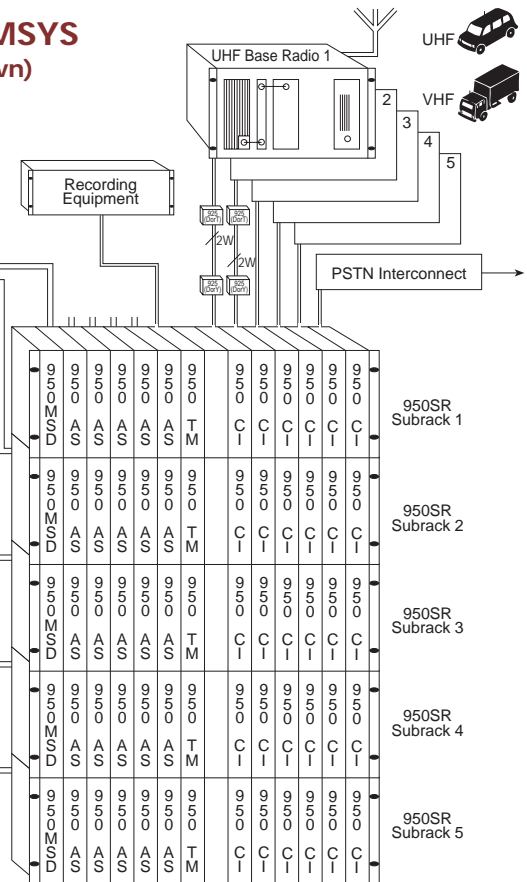
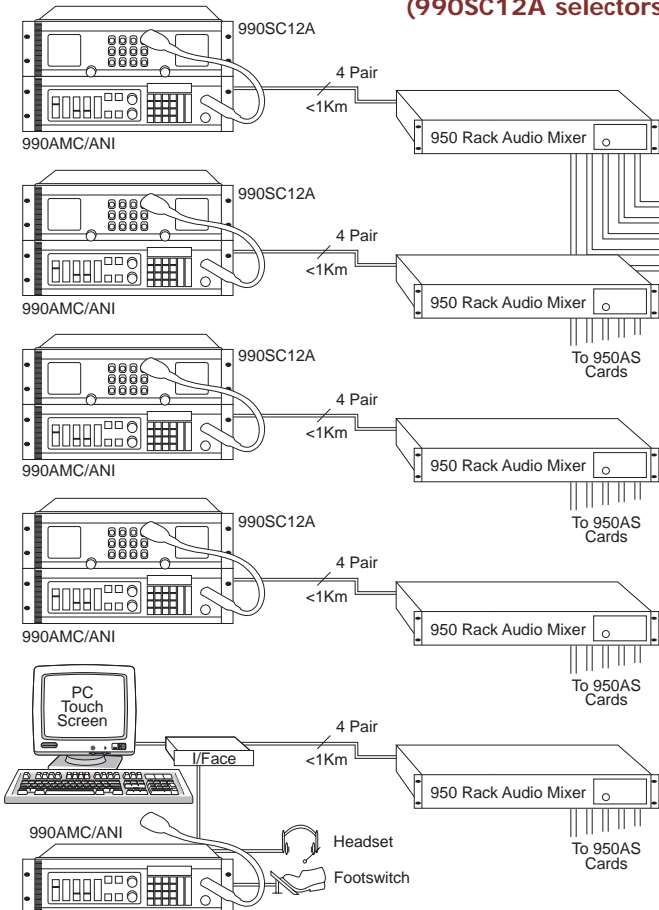
LOCAL CONSOLE



950CI = Channel Interface
 950CL = Channel Linker
 950TM = Tape Monitor
 950AS = Advanced Selector
 950MSD = Multi Selcal Decoder

30 CHANNEL 990 COMSYS (990SC12A selectors shown)

CONSOLE POSITIONS





FEATURES

- Incorporates the audio management unit
- Client specific configurations can be tailored
- System expansion without additional cabling
- Channel identification with received Selcalls
- Automatic channel selection from queue transfers
- Last PTT function for missed calls

990 ComSys 990 ComSys 990 Co

Introduction

In recent years BISS have enhanced some of the features of the 950 Radio Management System to cater for greater capacity and flexibility of operation and operator interface. The BISS 990 ComSys has evolved from these requirements.

The small to large Communication Centres with an eye to future expansion, see this product as an ideal installation. have maintained the building block approach to the development to this product and hence initial installations may be readily expanded as their facility expands.

The BISS release of the 990 Comsys as a product offering features, characteristics and system capacity beyond our other solutions caters to the larger requirements from our existing installations. The backbone of the 950 Radio Management System has been maintained with additional flexibility for operator control/interface and enhanced operational features. Installations incorporating the

BISS 950 Radio Management System may readily expand to the 990 Comsys with the option of both 950 and 990 solutions running within the same system.

OVERVIEW

The entry level to this solution is again 6 Channels with a ready expansion capacity to thirty channels. Balanced audio and data over 4 pairs of cables enables operator positions to be located a kilometre from the 950SR matrix equipment and the 900 Series interfaces, again offering remote operation any number of kilometres away. As the system channel requirement expands no additional cabling is required to the existing operator positions.

The 950SR Subracks distribute the audio from their 6 available 950CI Channel Interface Cards

down the backplane bus for selection and combining at each of the 950AS Selector Cards. Other cards such as the 950LC Link Controller and the 950TM Tape Monitor Cards also access this audio bus for their respective functions. Audio and data is then distributed to the connected operator positions via the 950RAM Rack Audio Mixer.

The 990 ComSys allows for the rationalisation of customer communication centre installations with the flexibility to cater for the small or large centre requirements.



990AMC/ANI OPERATOR CONSOLE

Panel mounting or the 3 U, 19" format best describes this unit. Incorporating the popular and successful Audio Management Unit complete with selcal and ANI, this unit processes the complete communication centre audio sources to a single access point for the operator. Headsets, built in gooseneck microphone and foot PTT switches form part of the accessory array available to each operator position.

The Audio Management Unit provides I/O for:

- Radio/Channel traffic
- Telephone access
- PA systems
- Auxiliary or turn-out interface
- Dual headsets
- Continuous and rapid recall loggers
- AM/FM radio (for the quiet times)
- TV (for the quiet times)

These features are built into the Radio Management Console.

The ANI Display and selcal features of the 990 ComSys console contains:

- Selcal Position
- Last Selcal with channel



would allow each operator the ability to connect PSTN calls to the 990 Comsys via approved interconnection products. This would provide additional communication paths in the event of network failures or mobile access to the PSTN network in emergencies.

Multiple serial ports allow for the interface to CAD systems, clock synchronisation systems or other requirements.

990SC12A CHANNEL SELECTOR

As an initial control step to the radio network, channel access via the 12 Way channel selector is provided. Hundreds of installations have adopted this selector for its simplicity of use and versatility of control.

Each channel offers a three-way switch for:

- Up: channel off
- Mid position: monitor only
- Down position: both TX & RX access

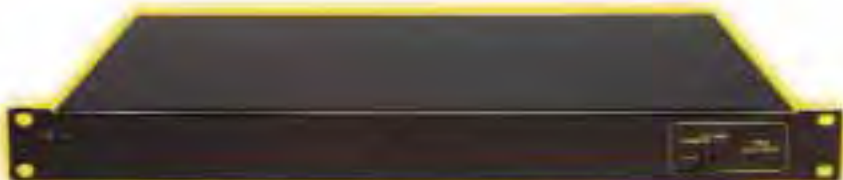
Any combination of channels may be selected by any or indeed all operator positions. This provides complete access to the network by all consoles regardless of other console selection.

The above channel selection format is available with Dual Audio. This provides separate speakers for the monitored and controlled audio, each with their own level adjustment. Operators of busy multi channel networks would find this feature very helpful.

- identification
- Selcal queue with channel identification
- Clock (24 hour)

Channel identification stored with each received selcal enhances the efficiency of radio traffic control. The information is displayed for the operator along side the call ID and calls transferred from the queue will be initiated exclusively on the channel they were received.

The keypad provides for full encoding of Selcals, scrolling UP and DOWN through the queue, a last PTT function for missed calls and a function key to toggle from selcal to DTMF. The DTMF function





990LC12A CHANNEL LINKER

As with the 950 Radio Management System, the 990LC12A Channel Linker allows for the cross patching or linking of any of the installed channels to the system. The switches are the standard three position toggles, with the middle position denoting a non-linked state.

Any channels switched in the up position (Group 1) are linked together and similarly any channels switched in the down position (Group 2) are linked together. Thus two independent paths or groups are available. The Group 1 selection allows for the inter-rack linking of channels over the 12-channel configuration.

TERMINAL OR PC CONTROL

A major advantage of the 990 ComSys inter-console cabling format of RS422 is it readily lends itself to other operator channel selection formats.

Adopted for its popularity in the larger installations, this provides the operator with a complete on screen view and access of the activity, status, selection and display of their particular station. Touch screen or mouse control can be configured for each operator interface.

950RAM RACK AUDIO MIXER

The 950RAM Rack Audio Mixer provides the audio and data combining for up to five 950SR subracks. Up to 30 channels can be configured to each 950RAM.

Each port of the unit can support one rack of 6 channels and its associated data port. One 950RAM unit is required per operator console within each block of 30 channels.

The output of the unit is a balanced foreground and a balanced background audio port with RS422 TX and RS422 RX. This communication format has been selected for its high immunity to induced noise and the performance over long distances.

Peripheral ports are available for direct connection to the BISS 900 Series landline units for the remote control feature.

950AS ADVANCED SELECTOR CARD

The 950AS Advanced Selector card provides the channel interface to the operator console via the 950RAM Rack Audio Mixer. All audio is presented to this card via the 950SR backplane. Only audio selected from the operator consoles selectors is distributed to that console. Data from the operators console selects the internal electronic switches that distribute the audio to that console.

The advanced selector card also incorporates the data stream to the operator console from the 950MSD Multi selcal Decoder card. The 950MSD as described later provides the selcal decoding of the system.

The advanced selector card is an intelligent card with its own processor. Specific applications may be tailored to each console that are particular to individual client requirements.

One 950AS Advanced Selector card is required per rack for each operator position. Autonomous operation of each operator position enhances the systems integrity and reliability.

950CI CHANNEL INTERFACE CARD

The channel interface card offered is the standard unit installed in all BISS Radio Management solutions. This card provides a flexible interface with 600-ohm TX and RX with E and M signaling or the connection to the BISS Austel approved interface for remote landline control. Level adjustment is provided and indication of channel activity is brought to the front of the card.

The channel interface card may be connected to radio, link, landline, PSTN interconnect or other devices compatible with the above formats.

950CL LINK CONTROLLER CARD

Connecting to the 990LC12A Link Selector Panel this card enables the crosspatching or linking of channels connected to the system. Two independent links can be established, each with multiple channels. For a 12-channel configuration an audio path between racks provides for a crosspatch across all 12 channels.

All facilities and delays are field programmable via an RS232 port and PC software supplied with the Link Controller.

950DT DTMF CARD

This card used in conjunction with the standard linker card, enables mobiles with DTMF keypads to automatically link themselves to any other channel on the system. If that channel has a PSTN inter-connect product connected, the mobile may then make a standard phone call.

The communication centre operator at all times maintains control and monitoring ability for system integrity.

950TM TAPE MONITOR CARD

The tape monitor card provides a 600 ohm output of the combined transmit or receive audio for each channel. The control signal provided may be used to turn on recording devices set for standby operation. One card per subrack provides monitoring of all system audio.

950MSD MULTI SELCAL DECODER CARD

Paralleling across the backplane audio bus this card provides the selcal decoding of the system. The interface at this point enables

multiple selcals to be received and processed simultaneously on a per channel basis without corruption.

Again an intelligent card, each 950MSD card per sub-rack communicates via a token passing hierarchy to continually update the operator console of received selcals. Heavily congested networks can be a nightmare of lost calls, however this solution ends that problem.

The system queue is a software feature and within reason may be set as required.

950SR SUBRACK

The sub-rack is a 19" format, 3U housing capable of containing 14 card modules. Six card modules are allocated to the 950CI Channel Interface cards, one card module is allocated for the 950CL Channel Linking feature and one card module is allocated to the 950MSD Multi Selcal Decoder card. The remaining six card modules are allocated to the advanced selector

capability can then be populated through the second 950SR subrack.

SUMMARY

The 990 ComSys product extends the BISS range of communication solutions from the small to the large regional centre requirements.

We have maintained the products modular development and ensured no critical areas within the system may compromise the entire function or its integrity. The system is readily expandable with off the shelf parts. Maintenance and service is well within the level of radio technical personnel, and importantly BISS are free with all technical details on the product for their clients.



950XC SUBRACK EXTENSION

This cable harness and connector assembly allows the backplane of a 950SR Subrack to be extended to a second subrack when the seven selector card modules have been fully configured. Additional operator positions that may be required beyond a single subrack

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950 Specifications

950SR 3U high 19" rack with depth of 160mm. Provision for up to 7 x 950DS/DA Selector cards, 6 x 950CI cards and 1 x 950CL card. Overvoltage protection: 18V transorb.

950DS Current consumption: 45mA. Protection for Selector socket: +20/-10V or +/- 20mA, whichever is less. Overload current protection: 1Amp fast blow fuse. 'Monitor' adjustment level: 0 to -20dB relative to 'ON'. Audio output S/N ratio: better than 55dB.

950CI Current consumption: 55mA. Protection via 'Radio' socket: galvanic isolation. Protection via '920' socket: +20/-10V or +/- 20mA, whichever is less. Tx level to 'Radio': -25 to 0dBm

into 600 Ohms. Rx level from 'Radio': -25dBm to +10dBm. PTT: voltage free contacts. RF mute & CTCSS mute: via individual bi-directional opto-coupler, requiring 2mA @ 12V. Connection to 920T/D: direct.

950TM Current consumption: 50mA. Tx / Rx audio output: -20dBm to 0dBm into 600 Ohms. Tape 'Record' control: darlington opto-coupler.

950CL Current consumption: <50mA. Programming interface: RS232C port. Audio signal to noise ratio: better than 60dB referenced to -9dBV input level. Processor validation: software & hardware watchdogs and low voltage sensor.

960C Standby current consumption: approx. 80mA.

Maximum current consumption: approx. 200mA. Maximum audio output: 1 Watt. Headset output level: 0V to 8Vp-p. Deskmic. and Headset audio in (dynamic or electret): -82dBV to -13dBV nominal level. Condenser mic. range: -16dB to +8dB from ref. Factory setting; 50% or 45cm nominal talking distance. Audio compressor range: 30dB.

960H Standby current consumption: approx. 60mA. Maximum current consumption: approx. 180mA. Maximum audio output: 0.5 Watt. Earphone adjustment range: 20dB. Handpiece mic. adjustment range: 23dB. 'Conference' mic. adjustment range: 21dB. Factory setting: 25% or 30cm nominal talking distance.

990 Specifications

990SR 3U high 19" rack with depth of 160mm. Provision for up to 6 x 950AS Selector cards, 1 x 950MSD card, 6 x 950CI cards and 1 x 950CL card. Overvoltage protection: 18V transorb.

990AS Current consumption: 22mA. Overload current protection: 1Amp slow blow fuse. Data communications: RS422. Maximum cable run to operator: 1km. 'Monitor' adjustment level: 0 to -20dB relative to 'ON'. Audio

output S/N ratio: better than 50dB.

990MSD Current consumption: 90mA. Selcal decode method: non-predictive. Data packet: contains both busy status and decoded selcal(s) information. Simultaneous selcal decode on multiple channels: via individual decode modules per channel.

990RAM 1U high 19" rack by 255mm deep. Current consumption: 40mA. Maximum 950SR's per system: 5. Data format: RS422. Audio properties:

balanced 600 Ohms.

990AMC/ANI & 990SC12A 2 x 3U high 19" rack by 220mm deep. Standby current consumption: approx. 600mA. Maximum current consumption: approx. 1500mA. Maximum audio output: 1 Watt x 2. Headset output level: soft limited to 4Vp-p. Headset audio in (dynamic or electret): -82dBV to -13dBV nominal level. Audio compressor range: 30dB. Radio/audio interfaces: balanced 600 ohms, as per 9412 AMU.



Head Office: BISS Technologies, 23 Moranud Plz. France.
Tel: +33 4 7251 2643
Fax: +33 4 7251 2644

Internet: www.bisstechnologies.com
Email: info@bisstechnologies.com

Qld Office: 301 Farchetau Drive, Solov QLD 4064. France.
Tel: +33 2 4165 5722
Fax: +33 2 4165 5723
Email: info@bisstechnologies.com



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