THALES

> EVCS
EMERGENCY VOICE COMMUNICATIONS SWITCH

- Multiple radio and telephone capability

- Backup radio system

- FPGA logic design

- LCD keys for automatic configuration of function

- Cost effective alternative VCS for small airports

>> EVCS

THALES's Emergency Voice Communications Switch (EVCS) provides a voice communications capability for air traffic control centres and towers. The EVCS acts as a back-up solution for larger centres, but is also appropriate as a stand-alone voice switch for smaller centres and towers.

The EVCS is built up from modular components. Eight channel and 16 channel operator panels are available. There is no limit to the total number of radios and telephone lines connected to the system, and each operator can have access to any eight (or 16) of the total. Any particular radio or telephone line can be shared by any number of operators. The system includes management of main and standby radios, as normally used in ATC applications.

Standard operator access panels are fitted with soft-labelled LCD keys. The labels show the channel/frequency of the radio or the designation of the line connected to that key, and the status. Operator access panels with conventional push buttons are also available. A major feature of the EVCS is the use of Field Programmable Gate Array logic (FPGA) rather than an operating system with applications software. This results in an extremely reliable system, with a very fast cold-start time.

The operator access panels are available in various configurations: with/without loudspeaker, with different types of headset connector, with/without handset, with/without telephone dial pad. The panels can be supplied in red for emergency use or grey for stand-alone small system use. The audio circuits provide the flexibility to accommodate virtually any ATC-type headset, allowing the same headset to be used for the main VCS and for the EVCS.

When used as a back-up voice switch, the EVCS can be connected to dedicated emergency radios and telephone lines or a resource changeover unit can be included. The resource changeover unit is connected between the main VCS and the radios/lines. In the event of a failure of the main VCS, a subset of the radios and lines are switched from the main VCS to the EVCS. This allows the ATC operators to maintain a communications service.

The central equipment is fitted into standard 19-inch cabinets and the operator access panels can be up to 500m from the cabinet. The operator panels are normally powered from the central equipment cabinet. The EVCS can operate from a wide range of voltage supplies and typically operates from 48-volt float-charged batteries, which are included in the central cabinet. This ensures that the EVCS will continue to operate even during a power outage.
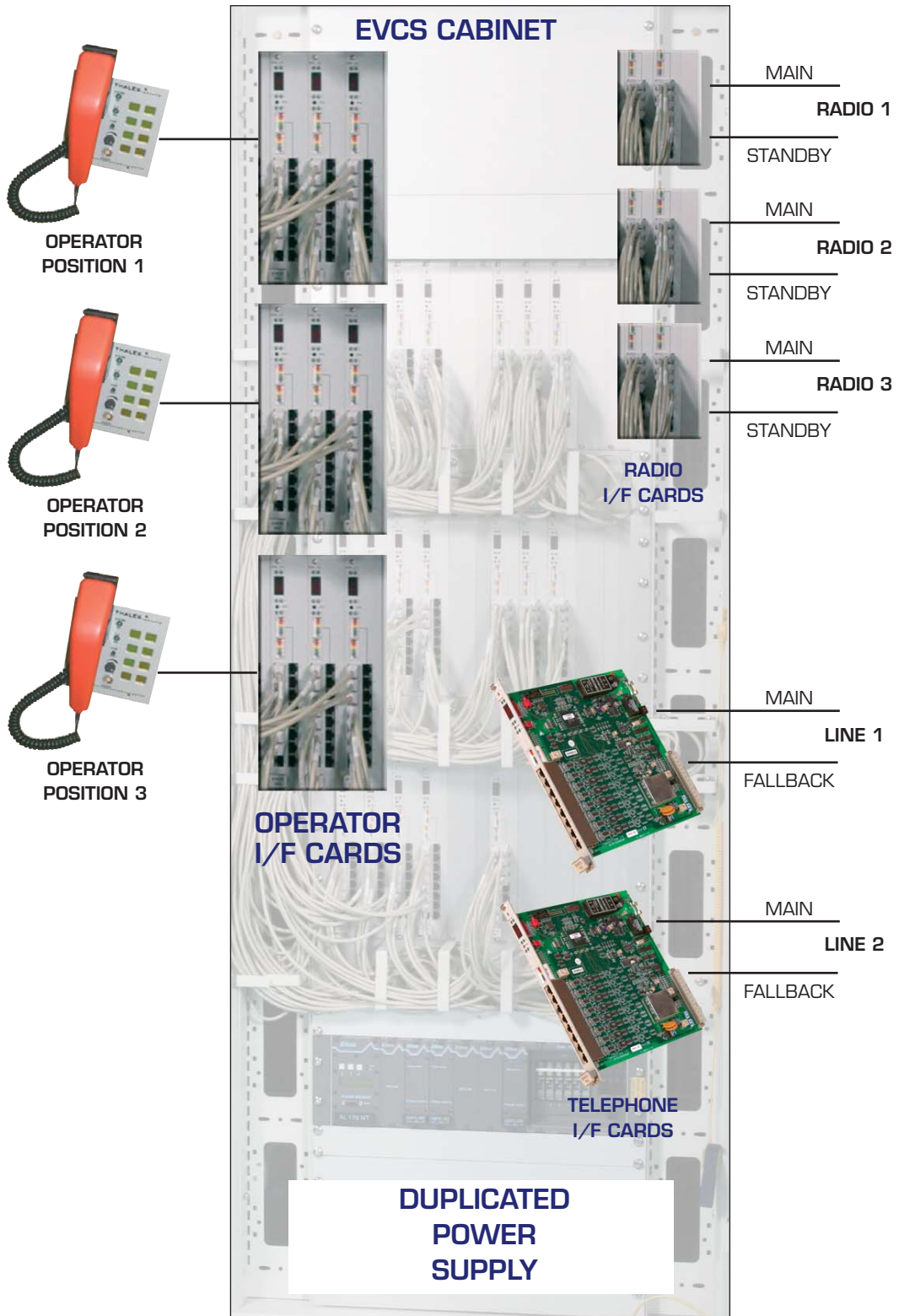
The central equipment consists of :

- Operator Interface Card, 1 per operator
- Radio Interface Card, 1 per radio

  (1 card handles a main radio + a standby

  radio)

- Telephone Interface Card, 1 per line

  (1 card handles a line + a fallback line)

The schematic diagram shows a basic 3-operator, 3-radio, 2-line system.

The Radio Interface Card caters for the connection of a main radio plus a standby radio. The card can be configured for 4-wire audio with E & M signalling or for 4-wire audio with in-band tone signalling. The in-band tone signalling can be programmed to any frequency in the range 2kHz to 3kHz, the frequency can be different for the go and return pairs.

The Telephone Interface Card caters for the connection of a main telephone line plus a fallback telephone line. In the event of a failure of the main line, the alternative line will be chosen. The telephone interface is 2-wire, suitable and approved for connection to the Public Switched Telephone Network (PSTN). The telephone card includes automatic and short code dialling, initiated from one button on the Operator Access Panel and allows access to remote radios via the PSTN, enabling radios to be located at any distance from the EVCS and accessed and controlled by an EVCS operator.

EVCS CABINET

OPERATOR
POSITION 1

OPERATOR
POSITION 2

OPERATOR
POSITION 3

OPERATOR
I/F CARDS

MAIN

RADIO 1

STANDBY

MAIN

RADIO 2

STANDBY

MAIN

RADIO 3

STANDBY

RADIO
I/F CARDS

MAIN

LINE 1

FALLBACK

MAIN

LINE 2

FALLBACK

TELEPHONE
I/F CARDS

DUPLICATED
POWER
SUPPLY

>> EVCS

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The radios and telephone lines are allocated to the various operators by a manual patching arrangement at the central equipment cabinet. Each Operator Interface card is manually patched to the Radio or Telephone interfaces allocated to that operator. Each radio or telephone interface can be shared by any number of operators.

EVCS cards can be configured to provide a 'crash alarm' function. In this application, a single button on an Operator Access Panel will initiate a conference call to multiple pre- determined destinations (normally the fire service, emergency control authority, police, etc.)

EVCS cards plug into a 6U high, 19-inch card frame. Cards and operator panels are held in stock, which allows speedy configuriguration and delivery of systems to suit any particular requirement.

Outline specifications

Audio response:

300Hz to 3kHz ±2dB ref. 1kHz

Audio interfaces:

All audio interfaces 600ohm, balanced, transformer coupled.

Crosstalk:

>60dB between any paths

Sidetone:

local or off-air selectable, level 12dB below speech level

Go speech range:

adjustable over range -20dBm to +8dBm

Return speech range:

Adjustable over range -13dBm to +5dBm

Press to transmit delay:

<20ms.

Squelch delay:

<20ms for audio routing

Cold start time:

<4 sec for audio routing.

<30 sec for full configuration download when soft labelled LCD operator panel is used.

Recorder output: 0dBm or -10dBm selectable.

Loudspeaker:

Loudspeaker on operator panel, 1 watt, magnetically shielded.

Radio interface: 4-wire audio with E & M signalling.

Tone signalling on audio pairs, can be different on tx and rx pairs.

E-wire (incoming squelch lift) provides -30 volts, max. 5mA.

M-wire (outgoing tx key) dry contacts or ground connection. 100V, 60mA max.

Telephone interface:

EVCS acts as telephone subscriber.

Suitable for connection to PABX lines, PSTN lines. DTMF signalling.

AC 15 and ISDN interfaces available

Environmental:

Operating 0°C to +40°C, up to 3000 metres above sea level.

Power supplies:

85 - 300VAC single phase, 20 to 70VDC positive or negative ground.