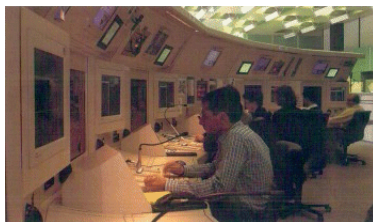## RADIO TELEPHONE CONSOLE RTC-340

SCOPE

BISS TECHNOLOGIES offers communication solutions to a Aeronautical Traffic Control Centers and professional organizations that need a dedicated radio telephone system to manage traffic, coordinate operations and distribute information.

A central communications control center can be as simple as one operator managing day-to-day operations with field personnel through a single radio telephone dispatch console.

The scope and complexity of the operation, BISS TECHNOLOGIES can configure a system that precisely meets the user's capability and capacity requirements using a few dispatch consoles in common-parallel or singular operation.

Users

- Aeronautical Traffic Control Centers (ACC)
- Airports Control Centers (TWR)
- SAR
- Electrical and Chemical industry
- Oil and gas industry
- Ambulance
- Fire departments
- Emergency service
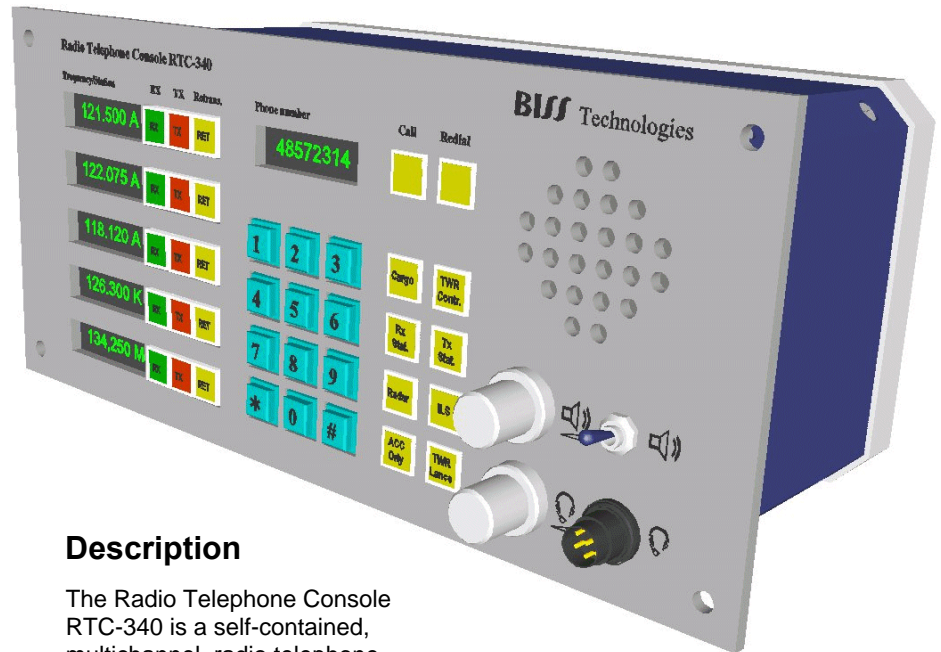
Description

The Radio Telephone Console RTC-340 is a self-contained, multichannel, radio telephone console which is available in both desktop or rackmount styles. It provides dispatchers with an efficient means of monitoring and dispatching for a system comprised from 5 radio channels, 8 Local Battery Lines and one Dial out/Ring in line.

The Model RTC-340 Radio Telephone Console offers a cost-effective high-performance solution for a wide range of users. It is specifically designed for the high reliability mainly for Aeronautical Traffic Control Centers, Airports Control Centers, SAR, Electrical, Chemical, Oil and Gas industries.

The radio channels can be controlled and monitored from up to ten console operator positions in common or singular operation. Two different styles of console positions are available and may be mixed in the same system: rackmount and desktop consoles.

Features and benefits

- Control of up to 5 MAIN radio channels from a single operator position
- Control of up to 8 local battery lines from a single operator position
- One Dial out/Ring in line with DTMF or pulse dial programable configured
- Simple channel expansion using up to 10 consoles in common or singular operation (up to 50 Main, 80 LB lines and 10 lines to PBX) all functions of the single unit remain available
- Compact, flat design, integration into a desk or 19" rack
- Retransmission on selected channels for collapsed areas
- Compatibility with all kinds of radio base stations (programable configured)

BISS TECHNOLOGIES
Voice communication

INDICATION

Each radio channel can indicate the number of frequency, station or freq/station by configuration via PC console management.

Telephone line can indicate the call number or programable defined users or stations on the displays.

Button functions are clearly labeled and color coded on the key's surface to provide easy function association.

Buttons are highlighted LEDs for operations:
- Transmitter on air (PTT is indicated by blinking red Button TX)
- Radio signal received from Receiver (squelch is indicated by blinking green Button RX)
- Radio channel is selected for Transmitter (red Button TX is continuously highlighting)
- Radio channel is selected for Receiver (green Button RX is continuously highlighting)
- Radio channel is shared in Retransmission (yelow Button RET is continuous*l*y highlighting)
- CALL connection to phone line
- REDIAL
- "LB Buttons" connection to LB lines

BASIC SYSTEM OPERATION

The Model RTC-340 is a cross point switch - analogous to a small PABX or Telephone Central Office - which decodes the caller commands and automatically connects the telephone line needed to complete the call. The RTC-340 is configurable to meet system needs by specifying the desired number of telephone lines, local battery lines, radio lines and other Dispatch Stations.

Telephone line can be end-to-end, 4-wire E&M or CO Trunk. Each RTC-340 typically supports a mixture of radio lines, telephone lines and local battery lines.

Mobiles calling to the RTC-340 can use a variety of signaling formats including DTMF, FFSK, and Selective Tone Signaling (5-tone). Mixed systems are possible with some mobiles using one format and some another.

DESIGNED FOR RELIABILITY

Depending upon the application requirements, the Series 300 can be configured for "no single point of failure" or full redundant operation.
For particularly critical pplications, the Series 300 Consoles can be configured for full redundant operation. Through the use

automatically switched standby Console, two common controllers may be paralleled: a primary operational unit, and a "hot-standby" unit. The completely separate and isolated hot-standby unit is protected in the event that a lightning-induced transient causes the primary unit to fail. When this occurs, the standby unit is automatically brought on-line operation.

RADIO INTERFACE COMPATIBILITY

The Series 300 is compatible with virtually all manufacturers' base radio stations, control stations, and repeaters utilizing local or EIA standard tone control protocols. Operating position types can be "mixed or matched", and radios and/or operating positions are easily remoted.

A great variety of radios is available from most frequent manufactures such as:
- Park Air System ([1])
- Telerad ([1])
- Jotron ([1])
- R&S Series 200 and 400 ([1])
- Marconi ([1/2])
- Becker ([1/2])
- OTE ([1])
- Motorola ([2])
- Kenwood ([2])

([1]): "radio" may be a TX/RX or separate transmitter plus receiver.
([2]): DTMF-controlled radio
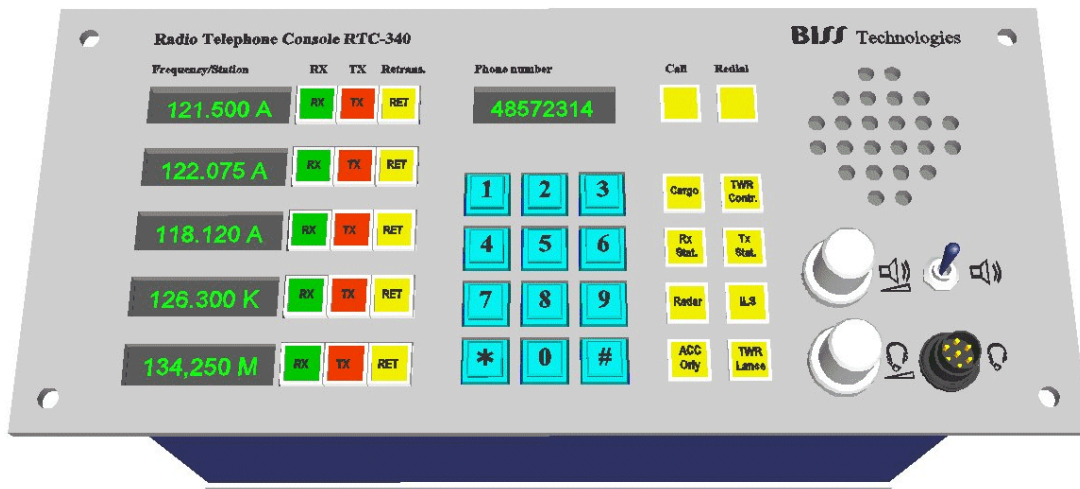
RADIO CHANNEL INTERFACE

The radio interface can be configured for 2, 4 or 6 - wire E&M or PTT/COR control. An option is available for remote control using EIA standard tone sequences.
Radio channels can be simplex, half or full duplex base stations or repeaters with E&M or tone remote control.

TELEPHONE INTERFACE

The telephone Interface is available with a choice of three configuration interfaces:
- the end-to end configuration provides connection to the PSTN, a PABX, or a CENTREX system,
- the 4-Wire E&M configuration is used for connection to certain PABXs,
- the CO trunk interface with the Ringer Option acts as a Central Office line to a local telephone switch or a directly connected standard elephone set.

The interface can be configured by a jumpers on PCB.

Alternatively, the Model RTC-340 can be configured as an ordinary telephone instrument and connected via a PABX or the PSTN.

SIGNALING FORMATS

All systems equipped for DTMF signaling. Options are available for FFSK and Selective Tone Signaling (5-tone).

MFC R2 signaling for ATC will be available in 2Q/2005.

CALLING FEATURES

- Individual/Selective Calls
- Telephone Interconnect
- Redial

INTER-SWITCH CHANNEL LINE

Internal channel lines are used to interconnect two or more Model serie 300 into large, multiswitch positions. Internal channel lines use interface modules equipped with parametrics amplifiers and are interconnected by 8-wire audio microwave or leased line circuits.

CONSOLE MONITORING

The RTC-340 Radio Telephone Consoles has built-in automatic test for each radio and telephone channel. The result from test and parameters settings is available via management port for connection to Central Monitoring Equipment CME. Management port is V.11/RS422 (1200, 2400, 9600 Baud) and can be connected up to 100 Consoles series 300.

The RTC-340 provides a memory buffer containing detailed records of the last 400 calls. Each record includes the call originator, the call destination, system resources used, whether the call was successful and how long it lasted. This information is available via the monitoring system CME. Such information is invaluable not only for troubleshooting, but also to analyze system loading, response and performance. For complete records of all calls, the system serial port can be connected to recording devices such as a PC or a printer.

BUILT-IN TEST

Built-in test for convenient fault location:
· SBIT: start built-in test (automatically, after switch-on)
· CBIT: continuous built-in test (incl. radio)
· IBIT: initiated built-in test

OUTPUT TO RECORDER

RTC-340 Radio Telephone Consoles has one recorder output merged all lines with audio summation 0 dBm level, 600 ohm single ended. All of channels are sumarized to one output.

RETRANSMISSION

The operator may select multiple radio channels simultaneously so that one dispatch may be broadcasted to several channels at once. Group-Selects may be invoked to select predetermined groups of channels.

INDIVIDUAL CHANNEL VOLUME

Each channel's volume may be set independently of others, allowing the operator to prioritize listening
based on volume level. A digital display shows volume percentage, allowing accurate settings even without audio present. Minimum audio levels can be programmed to avoid missed calls.

BUSY

Whenever another console is transmitting on the channel, the channel's "BUSY" indicator illuminates. This makes it easy for the operator to distinguish parallel console transmissions from field activity.

TRANSMIT

The operator may transmit over the selected channel simply by pressing the "TX" button or by pressing the optional foot-operated transmit switch.

OPTIONS

Desk Microphone -The omnidirectional dynamic desk microphone has its own transmit and monitor bars.

Telephone Radio Headset Interface

-The telephone radio headset interface allows one common headset to be used for parallel working consoles serie 300, with a volume control for each.

When controller is calling, the telephone set indicates that it is connected to a line (off- hook), the common headset is switched to the telephone and the console's "select" speaker becomes live. If the operator transmits on the Radio Console, the headset is momentarily switched back to the radio console. When the telephone is disconnected from the line, the headset reverts back to the console and the console's "select" speaker becomes muted. Requires off-hook contact closure from telephone.

Footswitch -Footswitches are available for controlling selected channel transmit and monitor, allowing hands-free operation.

Microphone/Headset Options

A wide range of microphone and headset options are available. Each type is compatible with the desktop, and rackmount consoles. Options include consolemounted gooseneck microphone, desktop microphone with PTT bar, headset jack with volume control, secondary training headset jack, and PTT handset with cradle. Any console may be equipped with two of the options; one gooseneck or desk microphone, and one headset or handset.

SOFTWARE PROGRAMING

A few of parameters and labels are programable setted. For onnection to Console serie 300 is required IBM compatible personnel computer and standart PC terminal software supplied with each system. Completed data are uploaded to internal console memory.
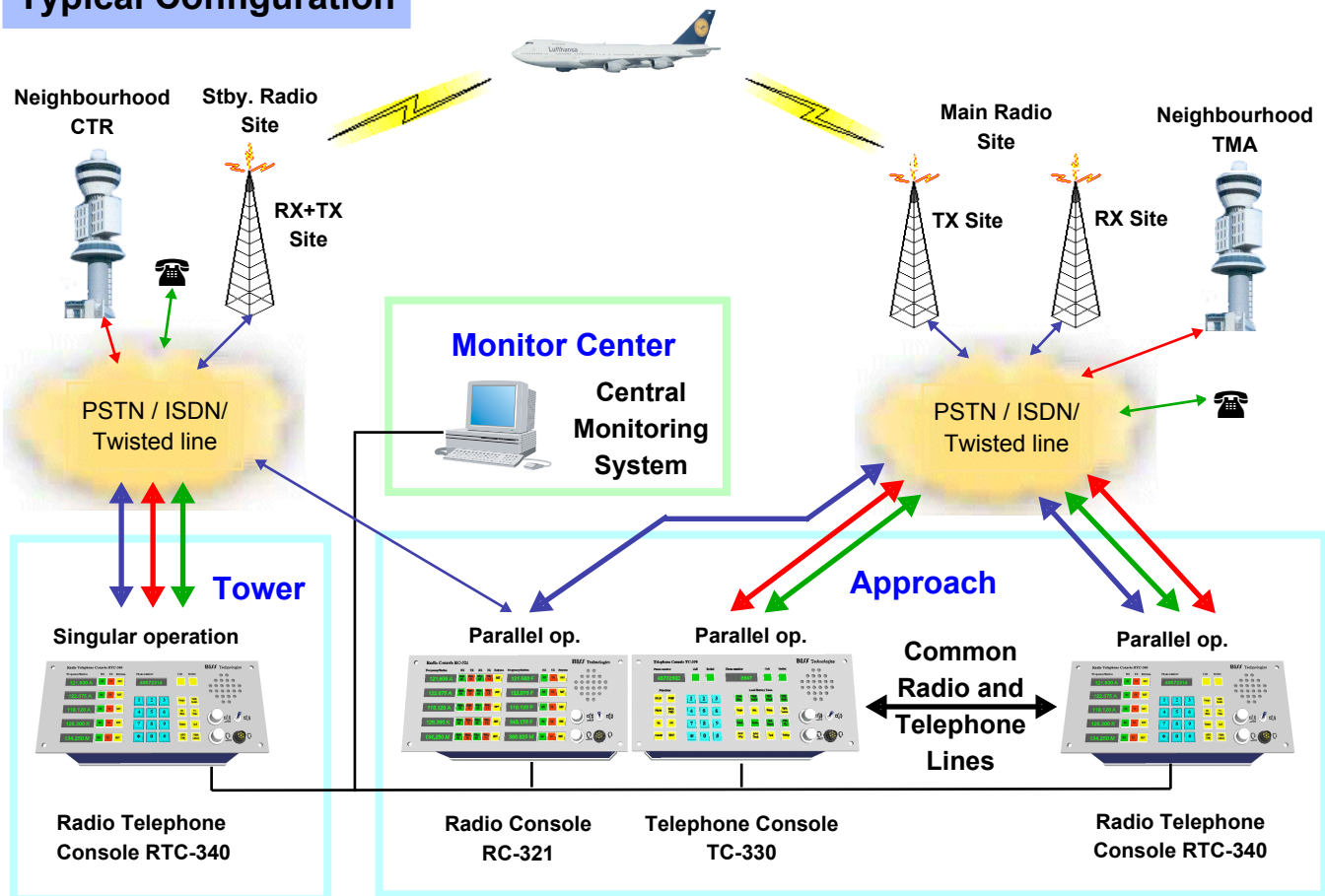
INSTALLATION AND MAINTENANCE

The Model RTC-340 is fully self-contained requiring no external electronics. It uses industry standard 25-pair cables and punchdown blocks for interfacing to radio, telephone and leased lines. Standard or lightning-protected connectorized punchdown blocks are available. External options, such as desk-mic and headset jack are also connectorized. All line adjustments, status LEDs and configuration switches are accessible through the rear panel without any disassembly.

Audio throughout the console remains analog and is not digitized. In addition to providing superior audio fidelity, this makes audio troubleshooting easier. The service manual contains full schematics, parts IDs, parts lists and theory of operation. Factory service, spare boards, and spare parts kits are available.

Typical Configuration

Neighbourhood CTR

Stby. Radio Site

RX+TX Site

Main Radio Site

TX Site   **RX Site**

Neighbourhood TMA

PSTN / ISDN/ Twisted line

Monitor Center

Central Monitoring System

PSTN / ISDN/ Twisted line

Tower

Singular operation

Radio Telephone Console RTC-340

Parallel op.

Radio Console RC-321

Parallel op.

Telephone Console TC-330

Approach

Common Radio and Telephone Lines

Parallel op.

Radio Telephone Console RTC-340

Setting parameters:
- Line level for each channel
- Volume
- DTMF/FFSK/5tone signaling
- Telephone type interface
- Radio type interface for base station with signaling
- Name for each channel on display or frequency
- Muting
- Connection with nehxt consoles

The console is shipped from the factory programmed and labeled to customer specifications, with a diskette containing the Console Programming System and the factory programming files. CPS runs under WIN95-XP with an RS-232 serial port.

Configurations can also be uploaded from a console to a PC for storage or modification.

EXPANSION AND PARALLEL OPERATION

Model RC-321 Radio Console can be expanded in parallel operation with all of Consoles series 300.

Example:
1) 2 x RTC-340 + RC-321 + TC-330 by the picture

2) 2 x RTC-340 + 2 x RC-321

3) 3 x RTC-340 + 4 x RC-321 + 3 x TC 330

SPECIFICATION

TELCO ELECTRICAL SPECIFICATIONS

Configurations End-to-end loop and ground start with overdial, 4-Wire E&M Type 1 or Type 5, CO Trunk compatible with telephone sets
Input DTMF (0-9, *, #, A-D).
FCC Part 68 Approved
Inter Switch Tie lines
Type Four wire audio
Rx Audio -20 to +10 dBm peak voice into 600 ohms
Tx Audio -10 dBm nominal peak voice, adjustable -40 to -6 dBm into 600 ohms
E-Lead -12 to -50 VDC active ground
M-Lead Relay closure to ground

TRANSMIT ELECTRICAL SPECIFICATIONS

Tx Audio -10 dBm nominal peak voice, adjustable -40 to +10 dBm
Output Impedance Transmit: 600 ohm balanced
Distortion <2% at full output.
Hum, Cross-Talk all -50 dB at full output
Microphone Input -65 dBm for full output
Aux. Mic Input -20 dBm for full output
Frequency Response -3 to +1dB from 200-3500 Hz
COR: Noise detector, VOX detector or voltage change.
M-Lead Relay closure to ground
Local Control PTT normally open relay contact rated 1.0 A at 24 VAC/DC

RECEIVE ELECTRICAL SPECIFICATIONS

Rx Audio -20 to +10 dBm peak voice into 600 ohms
Rx Sensitivity -20 dBm max. adjustable
Frequency Response -3 to 1 dB from 200-3500
Distortion <2%
Audio Outputs 5 watts into 4 ohms
Mute Programmable from 0 to -20 dB or full mute
"All-mute" time programmable
Input SQ like open collector
E-Lead -12 to -50 VDC active ground
Input DTMF (0-9, *, #, A-D).

RADIO INTERFACE

Number of inputs/outputs:
- 5 channels in format MAIN/STBY (10 radios)
- 5 channels in format SINGLE (5 radios)

Expandable to next 9 dispatch consoles RC-321 by cascading in common or singular operation

Distance to radio max. 5000 m
Channel Interface Tx/Rx Audio pair (for 2w/4w or 6w/8w)

E&M Control Tx control via PTT relay, external -48V required

PHYSICAL SPECIFICATIONS

Size: [cm]
Desktop 13,2 high x 30,0 wide x 12,0 deep
Rackmount 13,2 high x 48,3 w x 12,0 deep
Weight: 2,5 kg

ENVIRONMENTAL

Temperature 0 degC to +65 degC

POWER SUPPLY

Optional power supplies from 12 VDC (fused and filtered) to 24 VDC.
Approximately 20 watts.
When required E&M signalization -48 VDC is required (DC/DC converter is optional).

OTHER ELECTRICAL SPECIFICATIONS

Busy out
Supv control / main-stby
Recorder Out
Local Control PTT normally open relay contact

Busy Channel detected via display indication
Management RS-232 (1200, 2400, 9600 Baud)
Interconsoles Port RS-232 (1200, 2400, 9600 Baud)
Recorder Outputs 1 per console (Tx/Rx audio summation) 0 dBm level, 600 ohm single ended
Approvals FCC part 15, FCC part 68

Global Distribution **BISS Technologies** is continuously widening its distribution on an international basis. Our products are currently being exported to United States, Canada, United Arab Emirates and Europe. If you are located outside France and are interested in purchasing BISS Technologies products or distributing BISS Technologies products in your region, contact:

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Voice communication