660 & 960

Remotely Programmable
Speech &
Digital Communicators

Installation & Programming
Guide

Contents

INTRODUCTION

The 660/960 units are auto dialling communicators.

The 660 is designed to be used with ANY alarm control panel. The 960 is designed to plug on to Scantronic Professional control panels, and any other manufacturer's control panel with the standard plug-on footprint.

The -00 versions will communicate with alarm receiving equipment using Scancom Fast format and can also play back voice messages to a normal telephone using speech format. The communicators can replay one main message and up to four secondary messages.

The -01 versions will communicate in Scancom Fast format but have no speech capability.

The communicators are designed for telephone lines that may be shared by other equipment (for example a FAX or answer phone). When triggered, the communicator seizes the line and disconnects any other equipment while it operates. The communicator releases the line when it has completed transmission.

The communicators can be programmed from a DTMF telephone, either locally or remotely over the PSTN.

Application

The 660/960 Communicators are suitable for connection to the following types of telephone line:

(a) Direct exchange lines (PSTN) supporting DTMF (tone) or Loop Disconnect (pulse) dialling.
(b) PABX exchanges (with or without secondary proceed indication).
(c) RBS (Relevant Branch Systems) - please refer to BS 6789 Section 6.1, Clause 2.4.

THE 660/960 COMMUNICATORS ARE NOT SUITABLE AS EXTENSIONS TO A PAYPHONE.

Maintenance

There are no user serviceable parts inside the 660/960 Speech Communicators. The user must not attempt to gain access to the units.

Compatible PABXs

The 660/960 Communicators may be used with compatible PABXs. Correct operation in all circumstances is not guaranteed. Refer any difficulty to the supplier.

Specification

	660UK-00	960UK-00
Weight	110gm	160gm
Dimensions	W=12cm, H=8.5cm, D=2.6cm	17cm 8.5cm 2.6cm
Power (12.0V± 3.0Vdc)	10mA quiescent, 75mA active.	1mA quiescent 70mA active
Power (5V± 0.25Vdc)	N/A N/A	9mA quiescent 50mA active
Low Battery	10.8 +/- 0.5V	
Outputs	Open Collector from 12V	Relay Changeover, contacts 2A at 100mA switch 24Vdc
Temperature Storage	-20C to 70 C	
Temperature Operation	-10C to 55C	

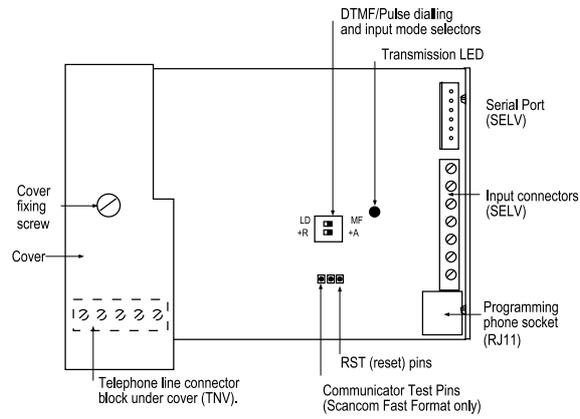Humidity, Storage and operation, 0 to 95%, non condensing.

Operation

The following description gives the sequence of events that both the Speech Communicators follow when triggered.

1. An external device applies the appropriate trigger signal to one of the input pins ST1 to ST4 (see "Physical Layout"). The signal may be either +ve applied or +ve removed depending on the setting of the Input Mode DIP switch on the board.
2. The communicator seizes the telephone line, and waits for dial tone.
3. The communicator dials the first programmed telephone number when it receives dial tone.
4. The called party's phone rings.
5. If the called party answers within 40 seconds, the communicator plays the main message, followed by the secondary message assigned to the triggered input pin. The communicator repeats both main and secondary messages up to 10 times. The called party can acknowledge the messages by pressing '5' on a DTMF telephone, if that option is programmed on the communicator (see "Called Party Controls").
6. If the called party does not answer within 40 seconds, or is engaged, then the communicator drops the line and waits for 5 seconds. Then, depending on programming:
    EITHER the communicator calls the first programmed number again (up to 15 times).
    OR the communicator repeats the calling sequence for the next programmed number.
7. If the communicator delivers its messages to the first programmed number successfully then, depending on programming, the communicator:
    EITHER repeats the calling sequence for any remaining programmed numbers.
    OR drops the line and shuts down (if 'any telephone number acknowledge' option is programmed, see "Advanced Programming").

Physical Layout

Note: See "Safety Notice" for an explanation of the terms "SELV" and "TNV".

660

DTMF/Pulse dialling
and input mode selectors

Transmission LED

Serial Port
(SELV)

Cover
fixing
screw

Input connectors
(SELV)

Cover

LD
+R

MF
+A

Programming
phone socket
(RJ11)

Telephone line connector
block under cover (TNV).

RST (reset) pins

Communicator Test Pins
(Scancom Fast Format only)

960

Line monitor
selector
(jumper fitted
= OFF)

DTMF/Pulse dialling
and input mode selectors

Rear of plug-on
connectors (SELV)

Cover

960

Cover fixing
screws

Rear of plug-on
connectors (SELV)

LD
+R

MF
+A

MON
OFF

Transmission LED

RST (reset) pins

Telephone line connector
block under cover (TNV).

Communicator Test Pins
(Scancom Fast Format only)

Spare input channel 8 (SELV)

+12V and 0V output (SELV)

Programming phone
socket (RJ11)

INSTALLATION

Installing the Communicators

The 660/960 Communicators are approved as 'Host Independent Modems'. They must be mounted inside another (Host) unit so that they are inaccessible without the use of a tool. For example, the communicators may be fitted in a Scantronic (or any other manufacturers) Alarm Control Panel or a locked room or other enclosure.

CAUTION: Before starting installation remove all power from the host control panel. Read "Safety Notice" on page 18.

660

1. Remove the backing from the self adhesive pads on the back of the communicator. Locate the communicator in a convenient position within the control panel. Press firmly to fix.
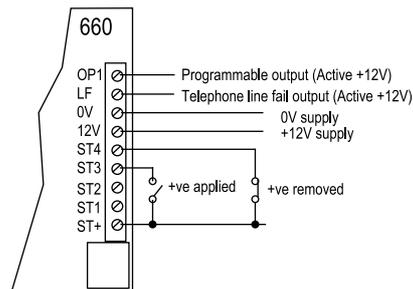
2. Connect the 12V +ve and -ve supply from the Aux DC output on the control panel (see diagram).

660	
OP1 ⊘	Programmable output (Active +12V)
LF ⊘	Telephone line fail output (Active +12V)
0V ⊘	0V supply
12V ⊘	+12V supply
ST4 ⊘	
ST3 ⊘	
ST2 ⊘	+ve applied +ve removed
ST1 ⊘	
ST+ ⊘	

3. Connect the inputs required. For guidance: ST1 - Fire, ST2 - PA (Panic), ST3 - Burg (intruder), ST4 - Spare.

NOTE: Connect input triggers as closed circuit (removed in alarm) if the communicator is housed in a separate enclosure from the control panel.

4. Set the input mode selector DIP switch to positive applied or positive removed as required.

960

1. Locate the communicator on the pins (see specific control panel installation instructions for correct communicator location).

2. Connect the 12V +ve and -ve supply from the Aux DC output on the control panel (see diagram).

960

ST8 12V 0V NO C NC

programmable output

+ve removed

+ve applied

+12V supply
0V supply
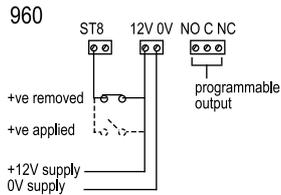
3. Connect any external trigger device required to ST 8 (Spare).

NOTE: Inputs 1 to 4 are fixed triggers via the plug on pins. 1 = Fire, 2 = PA (panic), 3 = Burg (intruder), and 4 = Open/Close. The line monitor output is connected internally to the control panel via the plug on pins.

4. Ensure the input mode selector DIP switch is set to +A (positive applied).

Connecting to the Telephone Network

5. Use three core cable type 1/05 Cx1308. Strip back 5mm or each core.

1/05 Cw1308   5mm
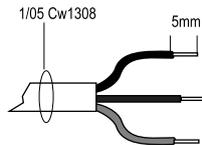
6. Connect two cores to the terminals A and B on the PCB. Connect the cable from the A and B terminals to the corresponding terminals on the BT master box.

A B   B1 A1

1/05 Cw1308

NTE 5   5
         2
         3
              (If 'C' leg required)

BT Master Socket   Extension Telephone Socket
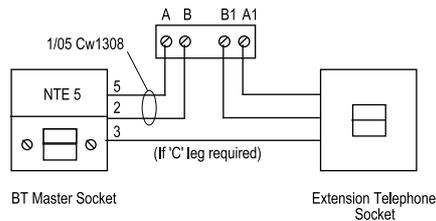
7. If other apparatus (for example a telephone) shares the telephone line with the 660 or 960, connect the main apparatus to the connections marked A1 and B1. The 660 and 960 will introduce

a voltage drop of 20mV between the main apparatus and the PSTN at a current of 40mA d.c.

WARNING: Do not connect more than one such series apparatus between a main apparatus (e.g. a telephone) and the PSTN.

8. Feed the cables through the entries in the plastic enclosure.
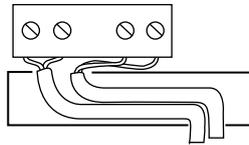

660 and 960

9. Set the DTMF/Pulse DIP-switch to LD (loop dialling) or MF (multi frequency) as required.

10. Apply power to the host control panel.

11. Plug in phone and program the communicator, see "Simple Programming" on the next page. In UK only use the RJ11 to RJ45 adapter supplied.

12. Test the communicator:

If using digital communications only then short the Communicator Test Pins momentarily to generate a test call.

If using speech reporting use commands 80 to 84, see "Simple Programming" page 10.

NOTE: For both communicators, after the initial installation you can change the settings (but not the speech messages) from a remote location if you enable Auto-Answer. See "Advanced Programming" on page11 for more information on changing the settings and on enabling remote programming.

SIMPLE PROGRAMMING

Notes:

(a) You must ensure that all telephone numbers are entered correctly. The unit stores numbers in a non-volatile memory, which retains the numbers in the event of prolonged power cuts.

(b) Do not enter duplicate telephone numbers.

(c) Do not enter the telephone numbers of emergency services for example 999.

To Program 660/960:

1. Plug a telephone into the socket on the communicator pcb. Use the RJ45/R11 adaptor in the UK.
2. Set the phone to tone dialling.
3. Lift the telephone handset.
   The Transmission LED turns ON.
4. Enter the security code **(factory default 7890)**
   The communicator gives a double beep.
5. Enter the command number
   The communicator gives a single high beep.
6. Enter one or more digits to set the value you want, and # to finish the command.
   The communicator gives a short double bleep when it accepts the command (or a long single bleep if it rejects a command).
7. If you make a mistake while entering a command, enter *0 to abort the command.

Storing Telephone Numbers (Commands 01 - 04)

The communicators can store four telephone numbers, each up to 32 digits long. The numbers can include codes for inserting four second pauses or 'dial tone wait'. If no code is used, then the unit defaults to 'dial tone wait' (*2). To store telephone numbers dial:

01 n...n #   Telephone number 1
02 n...n #   Telephone number 2
03 n...n #   Telephone number 3
04 n...n #   Telephone number 4

When entering the numbers use :

*1   Four second pause
*2   Dial tone wait
**   The character '*' itself
*#   The character # itself

For example, to program telephone number 1 with the following number, including a 4 second pause, enter:

01 *1 01594 543343 **#**

Recording Speech Messages - 00 Versions (Commands 60 - 64)

The communicators can store five speech messages. The main message can be up to eight seconds long. The four secondary messages can be up to three seconds long each. Each of the secondary messages is triggered by one of the inputs. You must store at least one secondary message. To store speech messages:

1. Dial one of the following codes for the message you want to record:

60 #   Main message

61 #   Input 1 message (default Fire input)

62 #   Input 2 message (default PA input)

63 #   Input 3 message (default Burg input)

64 #   Input 4 message

2. Press # to start recording.
3. Speak the message into the telephone handpiece.
4. Press # again to stop recording.

For example, to record the main message enter:

60 # # "This is the main message" **#**

Note: You can also reassign inputs to different messages, see "Advanced Programming - Channel Swap (Command 39)".

Replaying Speech Messages - 00 Versions (Command 70)

To replay the messages use the following command codes:

70 #   Replay main message.

71 - 74 #   Replay secondary message 1 to 4.

75 #   Replay all messages

Testing Telephone Numbers and Messages (Command 80)

To test that the messages are being sent to the correct phone numbers use:

80 #   Test ALL telephone numbers

81 - 84 #   Test telephone numbers 1 to 4

Programming Security Code (Command 91)

You can set up a security code to prevent unauthorised changes to the programming. The code can be 4, 5 or 6 digits long. To create a security code use:

91 n...n #   Security code n...n (default 7890)

To clear the security code

1. Remove all power.
2. Short RST pins together with a screwdriver blade.

3. Apply power.
   The communicator restores the security code to 7890.
4. Remove short from RST-pins.

Listen-In Security Code (Command 92)

You can program a separate security code to allow authorised listening in through an attached audio verification unit (AVU). To create a listen-in security code use:

92 n...n #   Listen in security code n...n

In addition, make sure OP1 is programmed as Remote Control Enabled using command 47 1 8 # (see "Advanced Programming - Output 1 (Command 47)").

Listening-In Procedure with AVU

1. Dial in to the communicator.
   The communicator Auto-answers.
2. Enter the listen-in security code.
   The communicator plays a speech message.
3. Press 1 to shut off the speech message.
   The communicator actives the AVU.

See instructions accompanying the AVU for more details on controling the AVU.

Exit Programming (Command 99)

To leave programming use:

99 #   Quit programming mode.

Note: Replacing the handset also quits programming mode.

CALLED PARTY CONTROLS

If the 660 or 960 is programmed to send speech messages, then anyone with a phone can received them. If the called party also has a DTMF tone keypad then they can respond to incoming calls as follows:

Press 5 to acknowledge the call.

> The communicator ends the call and continues with its call pattern. (If you want to change how the communicator acts after receiving an acknowledgement, see "Advanced Programming - Call Acknowledge (Commands 40 - 41)").

Press 3 to replay the message again.

> The communicator replays the message from the beginning.

Advanced Programming Options only

Press 1 to stop the message and trigger OP1.

> This may be used in conjunction with an audio verification unit, where OP1 is programmed as comms successful (see Command 47 1 4 #).

Press 0 to activate the programmable output.

> (See Command 47 8 #.)

ADVANCED PROGRAMMING

Enabling Advanced Programming

To enable the advanced programming commands use:

98 1 #   Enable advanced programming.
98 0 #   Disable advanced programming.

Changing Factory Defaults

When delivered from the factory, the communicators have no telephone numbers, account numbers or messages. To enter telephone numbers, record messages, and change the security code, use the command codes shown in 'Codes For Simple Programming'. The communicators have the following settings as factory default:

Function	Setting	Command Code
Format (-00 versions)	= Speech.	20-24
Format (-01 versions)	= Scancom.	20-24
Call Acknowledge	= Required, from any number.	40,41
Line Fail Monitor	= Active (24 hour + ring detect).	-
Line Fail O/P	= Active.	44
Test Calls	= Disabled.	49
Auto-Answer	= 15 rings (remote programming enabled).	46
One Ring Answer	= On	45
Call Clearing	= Off.	42
Call progress	= On.	43
Restoral reporting	= Off.	36
DTMF/Pulse switch	= DTMF (tone dialling).	
Input Mode switch	= + A (+ve applied).	
960 only:		
Line monitor jumper	= Line monitor function OFF (jumper ON).	
Channel 4 open/close	= Disabled.	37

Reload factory defaults

0 * * #   (Does not affect stored speech messages.)

Account number (Command 10)

The communicators must be programmed to give an account number when reporting in Scancom Fast format. To create an account number use:

10 n..n#   Store account number n...n.
10 #   Clear account number.

Reporting Format (Command 20-24)

The communicators can report to each telephone number in one of the following formats:

2n 1 #   Tel. No. n using Scancom Fast format.
2n 2 #   Tel. No. n using Speech only.
2n 3 #   Tel. No. n using Pager format 2 (see note 1).
2n 5 #   Tel. No. n using Ring only (see note 2).
2n 8 #   Tel. No. n using Pager format 1 (see note 3).
2n 0 #   Tel. No. n using no format (see note 4).

For example:

20 1 #	Report to all Tel. Nos in Scancom Fast format.
21 1 #	Report to Tel. No. 1 in Scancom Fast format.
22 2 #	Report to Tel. No. 2 using Speech only.

Notes:
1.   Sends data contained in the phone number. To store the data enter two dial tone wait digits at the end of the telephone number and then enter the data digits. (See Commands 01 to 04.)
2.   Listens for ring tone and then ends the call (Command 43 must be enabled).
3.   Sends data contained in the account number. See Command 10 to program the account number.
4.   Dials telephone number and then hangs up. Insert dial pauses to set ringing time.

Input to Telephone Number Mapping (Command 30)

The communicators can be programmed to report the activity of any input to any of the four telephone numbers. The remap the inputs use:

30 n...n#	Report inputs n...n to all telephone numbers.
31-34 n...n#	Report inputs n...n to telephone numbers one to four.

For example:

31 123#	Reports inputs 1, 2 and 3 to telephone number 1.

Restoral Reporting - Scancom Format only (Command 36)

The communicators can signal restoral of the inputs to the inactive state when using the Scancom Fast format. To select restoral use:

36 n...n #	Report restoral of inputs n...n.
36 #	Disable restoral reporting.

For example:

36 134 #	Report restoral of inputs 1, 3 and 4.

Open/Close Report - Scancom Format only (Command 37)

The communicator can report whether the host panel is set (closed) or unset (open). To select the channel used for the report use command:

37 n...n #	Open/Close reporting on channels n...n.
37 #	Disable Open/Close reporting.

For example:

37 4 #	Report panel set and unset on channel 4.

Note (960 only) Selecting channel 4 for open/close will enable this channel for all telephone numbers. If you do not want to report channel 4 to certain telephone numbers (for example speech messages) then refer back to command 30 again to disable channel 4 for those telephone numbers.

Communications Successful Signalling (Command 38)

The communicators can use their programmable outputs (pin OP1 on the 660, NC/C/NO on the 960) to signal that they have successfully transmitted a message to the programmed telephone numbers (see 4714 #). You can select which inputs you wish the communicator to monitor in order to signal success. To select the input use:

38 n...n # Signal on OP1 (or NC/C/NO) only when inputs n...n have been successfully reported.

Channel Swap (Command 39)

Any input can be mapped to report on any channel. If the communicators are reporting in speech format then use this command to assign any input to any of the four speech messages. To reassign an input use:

39 n y # Make input n report on channel y

39 n 0 # Disable input n

For example:

39 4 8 # Input 4 on 660 reports on channel 8 (Scancom Fast format).

39 8 0 # ST 8 (on 960) disabled.

39 8 2 # ST 8 (on 960) reports message 2 in speech format.

39 8 6 # ST 8 (on 960) reports on Channel 6 in Scancom Fast Format.

Call Acknowledge (Commands 40, 41)

The communicator can be programmed to require an acknowledgement from the called parties. The called party acknowledges the transmission by pressing '5' on the DTMF phone receiving the call. Program the type of acknowledgement as follows.

Speech Format:

40 0 # No acknowledge.

40 1 # Acknowledge required.

All Formats:

41 0 # Any called party acknowledge. The communicator stops its transmission sequence when any called party acknowledges it.

41 1 # All called parties acknowledge All called parties must acknowledge before the communicator stops its transmission sequence.

Call Clearing (Command 42)

This option allows the communicator to clear a call or to place a call on hold and then make an outgoing call on the same line. The facility is designed to prevent the communicator being jammed by an incoming call. To program call clearing use:

42 0 #	Switch call clearing OFF
42 1 #	Switch three way calling ON (UK).
42 2 #	Answer call and retry (EUR with exchanges using first party clear).

Notes:
1. Switch call clearing OFF if the facility is not enabled on the telephone line.
2. The BT Three-Way Calling facility may not be available in some telephone areas. Contact BT Sales for advice.
3. Do **not** use answer and retry unless exchange supports first party clear.

Call Progress (Command 43)

With this facility on, the communicators will check that they receive the correct progress tones from the telephone line as they make a call. The communicators will drop a call (without waiting for the normal timeout) if they receive, for example, an engaged tone.

| **43 0 #** | Call progress OFF |
| **43 1 #** | Call progress ON |

Line Fail Output (Command 44)

Both communicators have an LF pin which provides a Line Fail monitor. The LF-pin can be enabled or disabled by using the commands:

| **44 0 #** | Line fail monitor OFF. |
| **44 1#** | Line fail monitor ON. |

Note: For the 960 remove the jumper from the MON-OFF pins to enable Line Fail monitor.

One Ring Answer (Command 45)

If you have an answer- or fax machine which answers before the communicator you may still access the communicator by enabling the one ring answer function. To do this use commands:

| **45 0 #** | One ring function OFF |
| **45 1 #** | One ring function ON. |

Note that Remote Programming must be enabled using command 46.

To use one ring answer when it is enabled:

1. Ring once then hang up.
2. Ring after 10 seconds but before 90 seconds. The communicator will answer after the first ring of the second call.

Auto Answer (Command 46)

This facility allows an installer to program the communicator by dialling in through the telephone line. (Note that you cannot change the speech messages remotely.) When remote programming is ON, the communicator answers after a programmed number of rings (default 15), and waits to receive a valid security code. The communicator hangs up if it does not receive a valid security code within 30 seconds. See "One Ring Answer (Command 45)" for an alternative answering scheme.To enable remote programming use:

| **46 0 #** | Remote programming OFF. |
| **46 nn #** | Remote programming ON; Answer after nn rings (1 to 99). |

Output 1 (Command 47)

In addition to the line fail output the 660 communicator provides a programmable open collector transistor output from 12V through a screw terminal labelled OP1.

The 960 communicator provides a programmable output, through a single pole relay providing NO/NC-contacts on a three way terminal block.

The outputs can be programmed to show communications success or failure, or various telephone line states.

47 0 #	Output disabled.
47 2 #	Comms failure.
47 3 #	Comms and line failure.
47 1 4 #	Comms successful.
47 8 #	Remote control enabled - active high.
47 1 8 #	Remote control enabled - active low.
47 2 0 #	Incoming ringing.

Output Control (Command 48)

OP1 may be programmed as either latched or timed. When latched the output stays on until the communicator is reset remotely (for example by dialling 57 0 #) or by shorting together the RST pins. When timed the output stays on for between 1 and 99 seconds depending on programming.

| **48 0 #** | Output latched until reset. |
| **48 nn #** | Output ON-for nn seconds (nn can be from 1 to 99). |

Test Calls and Low Battery (Command 49)

Periodic test calls may be made in Scancom format every n hours. For example:

| **49 0 #** | No periodic test calls. |
| **49 nn #** | Test call every nn hours (nn can be 1 to 99). |

Low battery calls will be made in Scancom format automatically.

Remote Output Control (Command 57)

With this facility on (see Command 47 8 #), you can dial into the communicator and control the status of OP1 from the telephone keypad

57 0 #	Switch output OFF.
57 4 #	Output tell back pulse on 960.
57 8 #	Switch output ON (if programmed using command 47).

SAFETY NOTICE

WARNING: You must follow the recommendations below to ensure that the 660/960 Speech Communicators comply with the safety regulations to which they were approved.

The terminals of the 660UK and 960UK Speech Communicators are described as either Safety Extra-Low Voltage circuits (SELV) or Telecommunications Network Voltage (TNV), according to the definitions in the Safety Standard EN60 950.

Connect TNV terminals ONLY to the PSTN or other circuits designated as TNV circuits.. Connect SELV terminals ONLY to other circuits designated as SELV circuits.

The telephone line connection is a TNV port.

The following connection ports are SELV: ST1 to ST4 and all ST+, 12V +ve, 0V, OP, LF

The host panel, or other option cards in the host, may use or generate hazardous voltages (that is, voltages greater than 42.4V peak a.c. or 60Vdc.). When fitting the 660/960 Speech Communicators you must keep the following minimum creepage and clearance distances between the 660/960 cover and any other assemblies using or generating the voltages shown in the table below:

Voltage (rms or dc) used or generated by Host of other cards	Clearance	Creepage (mm)
Up to 50V	2.0	2.4 (3.8)
UP to 125V	2.6	3.0 (4.8)
Up to 250V	4.0	5.0 (8.0)
Up to 300V	4.0	6.4 (10.0)
Greater than 300V	Obtain advice from a competent telecommunications safety engineer before installing the equipment.	

The larger distance shown in brackets applies where the local environment within the host is subject to conductive pollution, or dry non-conductive pollution which could become conductive due to condensation.
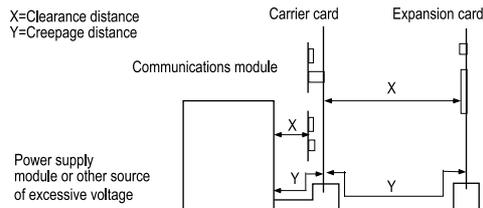
Regulatory Requirements

Ringer Equivalence Number

The Ringer Equivalence Number (REN) of 660UK-00 and 960UK-00 Speech Communicators is 1. As a guide to the number of items of apparatus which can be simultaneously connected to an exclusive line, the sum of the REN values should not exceed 4. A BT provided telephone is assumed to have a REN value of 1 unless otherwise marked.

Approval

The 660UK-00 and 960UK-00 Speech Communicators have been approved for the following usage:

(a) Automatic call initialisation.
(b) Operation in absence of proceed indication.
(c) Automatic dialling.
(d) Multiple repeat attempts.
(e) Modem.
(f) Serial Connection.
(g) Automatic answering.

Any other usage will invalidate any approval given to the apparatus if as a result the apparatus ceases to comply with the standards against which the approval was granted.

The approved apparatus are: 660UK-00 and 960UK-00

APPROVED for connection to the telecommunications systems specified in the instructions for use subject to the conditions set out in them.

Any other usage will invalidate any approval given to the apparatus if as a result the apparatus ceases to comply with the standards against which the approval was granted.

APPROVAL Nos:
660UK-00   S/1115/3/R/503463
960UK-00   S/1115/3/R/503464

Associated Telephones

Associated telephones must be approved for direct connection to the telecommunications network.

Power Requirements

It is a condition of approval that the power required by the host and the total of all adaptor cards installed within the host environment, together with any auxiliary apparatus, does not exceed the power specifications as stated in the Technical Reference Material of the host apparatus. See "Specification" for details of the power requirements.