SM30
Sound Management System

User Manual

LBB 1280

Philips
Communication &
Security Systems

PHILIPS

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1 INTRODUCTION

The SM30 sound management system provides an ideal solution for public address distribution systems, requiring a compact and flexible set-up with ease of operation. Being controlled by a microprocessor, the system is particularly flexible, specific functions being easily made and changed by non technical personnel. In order to meet differing application needs a variety of plug-in modules are available, and a wide range of system configurations are possible. The total public address distribution system comprises:

- One Control Centre, containing a microprocessor and plug-in modules.
- SM30 Call stations.
- Power amplifiers which feed loudspeakers located in geographical and/or functional zones where people must be reached with background music, announcements, pre-recorded messages, and alarm signals.

A maximum of 6 Call Stations may be used, their functions being programmed from a keyboard and display unit built into the Control Centre. The system is designed to handle calls and music simultaneously, so that if a call is made to a particular zone or combination of zones, music playing in other zones will not be interrupted. A system of priorities has been developed to cope with conflict situations, for example a person attempting to make a call when another call is being made by someone with a higher priority, the new call will not be switched through.

Control Centre

At the heart of each SM30 system is the Control Centre. This is a self contained unit, housing the microprocessor which controls SM30, and 12 slots which hold the plug-in modules.

On the front panel of the Control Centre are programming keys and associated LEDs, an alpha-numeric LCD display, and keys for controlling the functions of the music source inputs. The programming keys enable the installer to program SM30 to suit the overall system configuration, and the user's specific needs. To allow the operator to control the music sources, four Music Function Keys are provided on the front panel.

These keys allow the operator to select the music source; alter the music volume level up or down; and mute the music signal.

Programming

The displays and the programming menus are presented in the selected language. In the normal 'run' mode of the system, the LCD display indicates the name of the current music source (e.g. "TUNER", or "MUSIC OFF"), plus the current music volume level. In the 'programming' mode, the display will enable the installer/user to see:

- Program selections while scrolling through the programming menus.
- Function selections within a program.
- The number of the current Call Station; Function Key; Microphone; Control Inputs; etc., being programmed.
- Call priority status.
- Attention or Alarm signal number.
- Pre-recorded message number.
- Loudspeaker Zone call; Control Relay; and music routing.
- Alternative Function Key functions.
- Alternative Music Input text.
- Current program status (e.g. CLEARING MEMORY PLEASE WAIT).
- 'Error' indications.
- Language selection.
- Alarm interruption.
- Power-on delay.

SM30 plug-in modules
All of the interconnections between individual modules in the Control Centre take place automatically when they are plugged into the interconnection board of the Control Centre, so that no complex inter-wiring is required. Owing to the unique construction of the housing, the modules slide in and out quickly and easily. These features make SM30 simple and inexpensive to install and maintain.
All switching and routing of the system is carried out by software, so that hard-wiring problems are kept to a minimum. This means that though SM30 comprises a great amount of features, making it a comprehensive Public Address Centre, the unit itself is uncluttered and simple to assemble and use.

Call Station
The Call Station is the primary input to the system, allowing the operator to route and broadcast calls, announcements and music. Each Call Station includes:

- An electret condenser microphone.
- A Numeric Keypad, allowing individual selection of up to 18 loudspeaker zones by typing in the zone number. Each Call Station can be programmed with a priority status, attention tone and pre-recorded message. These become operational whenever the keypad is used to route a call.
- Zone Selection Indicator.
  Each zone has its own LED which is illuminated when the zone is selected. When the call is completed the LEDs will be extinguished.
- 4 Function Keys.
  Programmable with: priority; alarm and attention tones; pre-recorded messages; routing to loudspeaker zones; and Control Relay activation.
- Alternative functions.
  These include music volume up/down; music source selection; music mute; and independent Control Relay switching or toggling.

Using the Function Keys to make a call is done in the same way as using the Key-pad. The main difference being that instead of the operator selecting the zones using the Numeric Keypad, the Function Keys route the call to a pre-programmed selection of zones.
This of course saves a great amount of time when an operator has to frequently call the same selection of zones, or when an “ALL CALL” must be made in emergencies.

Signal generator
Built into the SM30 Control Centre is a signal generator, programmed with attention tones and alarm signals. These can be programmed, via the User Menu, to precede a call or pre-recorded message, or to be activated independently.

Background music
Background music sources, such as a background music player, a radio tuner, a compact disc player, a cassette deck, etc. are connected and pre-adjusted.

Emergency Power Supply +48 VDC
In situations where the mains power supply is unreliable, and SM30 is used for security/evacuation purposes, an emergency power supply may be used. This will be switched on automatically whenever the mains power fails.

Block diagram
The block diagram of a SM30 system is shown in fig.1.

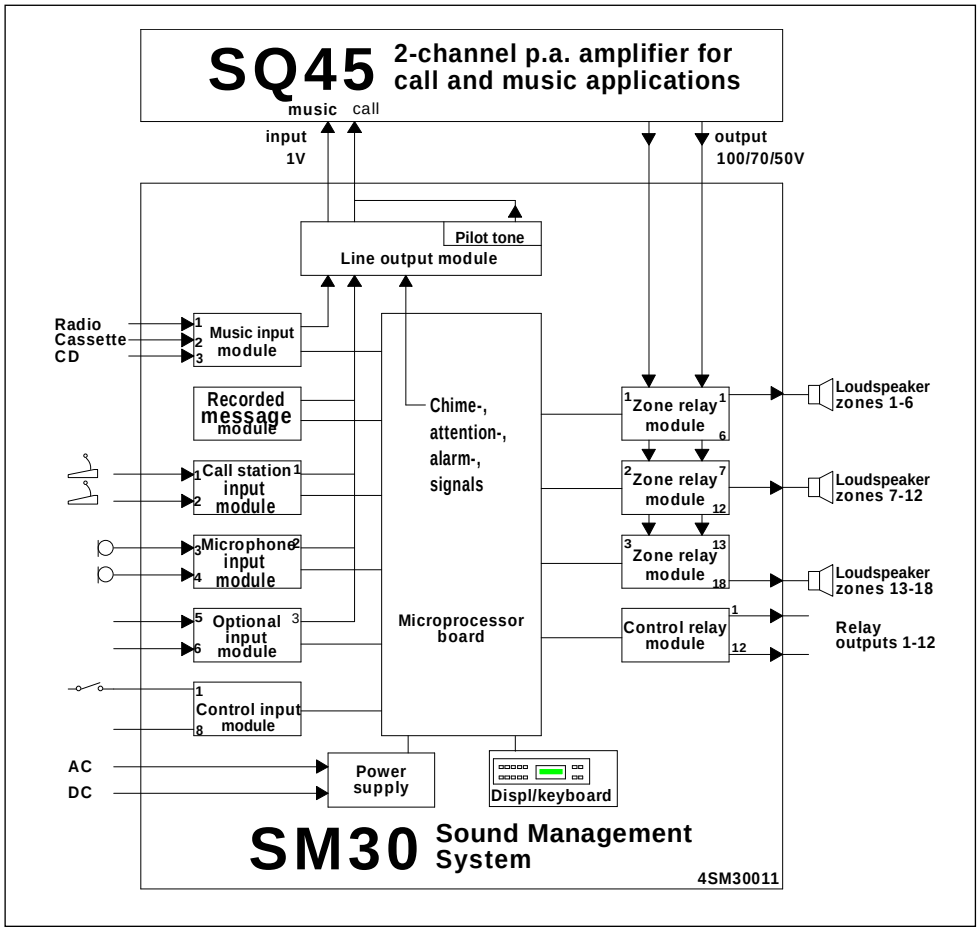


Fig. 1 - Block diagram

2 SYSTEM OPERATION

SM30 Sound Management System presents the operator with a logical, comprehensive, and easy to use method of routing and broadcasting calls, announcements, pre-recorded messages, and music.
SM30 is easy to use and logical in its operation, but it is perhaps helpful to understand, in principle, how the system works.

A Typical Operation
Herewith a typical series of actions, initiated by the person ("the operator") making an announcement, a paging call, etc., and carried out by the system.

1 The operator selects in which loudspeaker zones the call must be broadcast. This is done by simply typing in the number of each desired zone using the Numeric Keypad of the Call Station. The Zone Routing Indicator LEDs for these zones will illuminate.
2 The microprocessor, which is continuously monitoring the system, sees which key is pressed. First it looks to see whether another call is currently being broadcast. If so, the processor activates a flashing 'BUSY' LED on the call station.
3 When the 'PRESS TO TALK' key is pressed, the processor checks which priority rating each Call Station, Function Key, microphone, etc., has been given, and if the original caller has a lower priority than the one being made, its call will be muted and overridden by the new caller. If the call being made has the same, or a lower priority than the original caller, the new call will be ignored, and the 'BUSY' led will be constantly illuminated to advise the operator that the call has been aborted. Pressing the 'REDIAL' key will automatically reselect the zones which were last selected, eliminating the need to type them in again.
4 If all is clear, the processor mutes any music signal which may be broadcast in the zone(s). Music routed to any other zones will not be affected.
5 The processor checks which attention tone has been programmed to precede an announcement originating from the Call Station, then it switches on the built-in signal generator; selects a tone; and feeds it out to the amplifier input.
6 If a message, recorded on the Recorded Message Module, has been programmed to precede a call, it will be broadcast after the attention signal, and before the call. Meanwhile the processor energises a flashing green 'WAIT/TALK' LED in order to tell the user that the call is going through, but that they will have to wait until the attention signal, or recorded message, has finished.
7 The output signal of the amplifier is then input into the SM30 Control Centre, via its Zone Relay Module (a processor controlled routing/switching matrix), which routes it out again to the selected loudspeaker zones.
8 When the announcement is completed and the 'PRESS TO TALK' key is released, the system returns to its idle mode, with the processor continually monitoring the system, until another call is made. If music was playing in the zone(s) it will return at its original volume level.

Activation of Control Relays
Generating a call could also activate a relay, or set of relays, which can be used to switch on (or off) external equipment.

Volume Control Override Relays
It is important that announcements and/or alarm signals come through at full volume, regardless of the volume settings of individual loudspeakers. The processor can be programmed to switch in a series of relays mounted on the Control Relay Card, which correspond to the loudspeaker zones selected. These in turn activate individual volume control override relays in the loudspeaker enclosures.

Using the Function Keys to Make a Call
Using the four Function Keys (mounted on the Call Station) to make a call is done in the same way as using the Keypad.
The main difference being that instead of the operator selecting the zones using the Numeric Keypad, the Function Keys route the call to a pre-programmed selection of zones.
This of course saves a great amount of time when an operator has to frequently call the same selection of zones, or when an "ALL CALL" must be made in emergencies.
The Function Keys can also be used to select and broadcast an alarm or attention tone, or activate a pre-recorded message, without any microphone generated call being made.
Whenever the function key is pressed its Function Key LED illuminates, along with any Zone Selection Indicators activated by the routing of the Function Key. When the call is completed the LEDs are extinguished.

Microphone and Control Input Calls
Calls, signals and/or pre-recorded messages, can also be activated by means of a microphone switch connected to the Microphone Input Module, and a remote switch wired to the Control Input Module (The last of course without a "live" call).

Power on delay
In order to conserve power for battery operated systems, the amplifier can be switched on only when a call is made.
It causes a time delay (programmable from 2-9 seconds) between pressing an activation key and the actual activation moment of the call. Relay 3 of the Control Relay Module is dedicated to switching the power to the amplifier(s).

Alarm interrupt
In order to conform with certain European military requirements an alarm call generated by a contact on a Control Input Module can be interrupted by a call with a higher priority. After releasing the relevant call key, the alarm signal will return for the programmed duration. Selection of the non-interrupted or interrupted mode is programmable in the "CTL ALARM MODE" program of the Installer Mode.

3 ATTENTION AND ALARM SIGNALS

Built into the SM30 Control Centre is a signal generator, programmed with more than 40 attention tones and alarm signals. These can be programmed, via the User Menu, to proceed a call or pre-recorded message, or to be activated independently. As noted in the list below, some of these signals are terminated when the Call Station key, Control Input Relay, etc. is released. Other signals stop after about 1 minute, or when the Call Station activation key is pressed again. In order to confirm with STANAG (Standard Nato Agreement) requirements, an alarm signal can be interrupted by a call with higher priority. After releasing the call key, the alarm signal will return for the programmed duration. Along with the list below, chapter 6 (Call

Station) details the way in which each type of call, when activated via the Call Station, can be terminated.

Signal description

Signal numbers from 1 up to 12 are attention or chime tones. The tone is quit as soon as the activating key is released.
Signal numbers from 18 up to 50 are alarm signals.
Alarm tones continue, even though the activating key is released. An alarm tone stops at the end of the signal duration or after activating the relevant key again.
Signal numbers from 81 up to 87 are identical to 1 up to 7.
These signals are meant for time signalling purposes. However, they will always finish their cycle, even if the activating key is released.

Attention Chime Tones

1 1-tone chime, frequency 554 Hz.
2 2-tone chime, frequencies 554 and 440 Hz.
3 3-tone chime, frequencies 392, 523 and 659 Hz.
4 3-tone chime, frequencies 659, 523 and 392 Hz.
5 4-tone chime, frequencies 554, 440, 493 and 330 Hz.
6 4-tone chime, frequencies 659, 523, 392 and 330 Hz.
7 4-tone chime, frequencies 196, 262, 330 and 392 Hz.
8 Upsweeping signal, from 700 up to 880 Hz in 400 msec, followed by 400 msec silence and repeating.
Signal duration 5 seconds.
9 Alternating signal, frequencies 650 and 850 Hz. Signal duration 5 seconds.
10 Up and down sweeping signal, frequencies 500 and 600 Hz with sweeptime of 500 msec. Signal duration 5 seconds.
11 Single tone, frequency 1000 Hz, 300 msec on, 200 msec off and repeating. Signal duration 5 sec.
12 Slow whoop, sweeping from 500 up to 1200 Hz in 3.5 seconds, followed by 500 msec silence. This procedure will be repeated twice.

Alarm Tones

18 Single tone, frequency 440 Hz.
Signal duration 60 seconds.
19 Single tone, frequency 440 Hz. Lasts until second activation.
20 Sweeping signal, from 1200 Hz down to 500 Hz and repeating.
Signal duration 60 seconds.
21 As signal number 20, lasts until second activation.
22 Alternating signal, frequencies 440 and 554 Hz.
Signal duration 60 seconds.
23 As signal 22, lasts until second activation.
24 Sweeping signal, from 100 up to 420 Hz in 5 seconds, holding that frequency for 60 seconds, sweeping down to 100 Hz in 5 seconds and ending.
25 Sweeping signal, from 100 up to 420 Hz in 3 seconds, holding that frequency for 10 seconds, sweeping down to 300 Hz in 3 seconds, holding that frequency for 10 seconds, repeating complete cycle until 1 minute passed and ending.
26 STANAG all clear.
Sweeping signal, from 1000 Hz down to 650 Hz in 3 seconds, followed by 2 seconds silence and repeating.
Signal duration 60 seconds.
27 As signal 26, lasts until second activation.
28 Sweeping signal, from 700 up to 880 Hz in 400 msec, followed by 400 msec silence and repeating. Signal duration 60 seconds.
29 As signal 28, lasts until second activation.

30 Alternating signal, frequencies of 650 and 850 Hz, every frequency lasts 500 msec. Signal duration 60 seconds.
31 As signal 30, lasts until second activation.
32 STANAG crash alarm.
Sweeping signal, from 500 up to 600 Hz in 500 msec, sweeping down to 500 Hz in 500 msec and repeating. Signal duration 60 seconds.
33 As signal 32, lasts until second activation.
34 STANAG fire alarm. Single tone, frequency 1000 Hz, 300 msec on and 200 msec off and repeating. Signal duration 60 seconds.
35 As signal 34, lasts until second activation.
36 STANAG air raid (red alert).Sweeping signal, from 900 up to 1000 Hz in 2.5 seconds, sweeping down to 900 Hz in 2.5 seconds and repeating. Signal duration 60 seconds.
37 As signal 36, lasts until second activation.
38 Single tone, frequency 1000 Hz.
Signal duration 60 seconds.
39 As signal 38, lasts until second activation.
40 Character 'F' in morse, frequency 1000 Hz.
Signal duration 60 seconds.
41 As signal 40, lasts until second activation.
42 Slow whoop, sweeping from 500 up to 1200 Hz in 3.5 seconds, followed by 500 msec silence and repeating. Signal duration 60 seconds or until second activation.
43 As signal 42, lasts until second activation.
44 STANAG NBC alarm (black alert). Sweeping signal, from 900 up to 1000 Hz in 2.5 seconds, sweeping down to 900 Hz in 2.5 seconds and repeating. Signal duration 60 seconds or until second activation.
45 As signal 44, lasts until second activation.
46 STANAG mortar attack alarm.
Sweeping signal, from 2000 down to 1700 Hz in 300 msec and repeating. Signal duration 60 seconds or until second activation.
47 As signal 46, lasts until second activation.
48 Muster alarm (ships).
Single signal, frequency 650 Hz, seven times 1 second on, 1 second off, followed by continuous signal. Signal duration 60 seconds or until second activation.
49 As signal 48, lasts until second activation.
50 Ship alarm.
Single tone, frequency 800 Hz, seven times 1 second on and 1 second off followed by 2 seconds on and 1 second off, and repeating until the next activation.
51 Catastrophe alarm.
Single tone, frequency 440Hz, 7 seconds on, followed by 19 times 3 seconds off and 4 seconds on. Signal duration 140 seconds.
52 General warning
Single tone, frequency 440 Hz, signal duration 140 seconds.
53 Fire Alarm
Frequency 440 Hz; 25 seconds on followed by 10 seconds off and repeating.
54 Important Message
(Swedish standard SS081711)
Single tone, frequency 600Hz, 6 times 6 seconds on, 12 seconds off. Signal duration 96 seconds.
55 All Clear (Swedish standard SS081711)
Single tone, frequency 600 Hz, signal duration 30 seconds.
56 Immediate Danger (Swedish standard SS031711)
Single tone of 600 Hz, 200 ms off. Signal duration 60 seconds.
99 Dummy
Empty signal of 0.5 seconds, intended to precede a message from the recorded message module. This message should not be terminated if the activating key is released before the end of the message.

Time signals

81 1-tone chime, frequency 554 Hz.
82 2-tone chime, frequencies 554 and 440 Hz.
83 3-tone chime, frequencies 392, 523 and 659 Hz.
84 3-tone chime, frequencies 659, 523 and 392 Hz.
85 4-tone chime, frequencies 554, 440, 493 and 330 Hz.
86 4-tone chime, frequencies 659, 523, 392 and 330 Hz.
87 4-tone chime, frequencies 196, 262, 330 and 392 Hz.

4 CONTROL CENTRE LBB 1280

At the heart of each SM30 sound management system is the Control Centre. This is a self contained unit, housing the microprocessor which controls SM30, and 12 slots which hold the plug-in modules. On the front panel of the Control Centre are programming keys and associated LEDs, an alpha-numeric LCD display, and keys for controlling the functions of the music source inputs. The versatile construction allows the Control Centre to be mounted free-standing on a table top, or with other equipment, in a 19" rack. All of the interconnections between individual modules take place automatically when they are plugged into the interconnection board of the Control Centre, so that no complex inter wiring is required. Thanks to the unique construction of the housing, the modules slide in and out quickly and easily. These features make SM30 simple and inexpensive to install and maintain. All switching and routing of the system is carried out by software, so that hardwiring problems are kept to a minimum. This means that though SM30 comprises a great amount of features, making it a comprehensive Public Address Centre, the unit itself is uncluttered and simple to assemble and use.

4.1 Front panel controls

ON/OFF Power Switch (fig.4.1A)
This rocker switch switches mains power to the SM30 Control Centre.

WARNING: When opening the SM30 housing or installing new modules, the mains lead and the 48 V DC battery plug must be removed. It is not sufficient to switch off the ON/OFF switch.

Programming Keys (fig.4.1C)
Ten programming keys are provided on the front panel. These keys, marked with logical symbols, enable the installer to program SM30 to suit the overall system configuration, and the user's specific needs. For details, see chapter 14 (Programming).

◁ and ▷ (fig.4.1G)
The single arrow keys are used to scroll through the main menu, in order to move to a different program, and also to move the cursor during zone routing.

⩓ and ⩔ (fig.4.1H)
The double up and down arrow keys are used to select 'tens' during selection of an attention or alarm signal number.

⩒ and ⩖ (fig.4.1I)
The single up and down arrow keys are used to scroll through selections within an actual program, and to select digits 1 to 9 during selection of an attention or alarm signal number.

○ (fig.4.1J)
Deselects (turns off) a zone during Function Key; Microphone; Control Input; and Music Source routing.

| (fig.4.1.N)
Selects (turns on) a zone during Function Key; Microphone; Control Input; and Music Source routing.

⏱ (fig.4.1K)
BREAK will always return to the next higher programming level.

⏚ (fig.4.1O)
ENTER will confirm your selection, storing the information in the memory of the system after the complete programming sequence of e.g keypad is completed.

LEDS (fig.4.1B)
Illuminated LEDs indicate which keys can be used at the current stage of programming.

Alpha-Numeric LCD Display (fig.4.1D)
In the normal 'Run' mode of the system, the back-lit LCD display indicates the name of the current music source (e.g. "TUNER", or "MUSIC OFF"), plus the current music volume level.

LED (fig.4.1F)
A single LED is illuminated in 'Run' mode, indicating that the Music Function keys can be used.

Music Function Keys (fig.4.1E)
The current music source and the music volume level can be seen on the bottom line in the display.

Four keys are provided for use while the system is in its normal 'Run' mode. These allow the operator to select the music source; alter the volume level; and mute the music signal.

The keys are marked as follows:

±	Music Volume up (fig.4.1L)
-	Music Volume down (fig.4.1P)
0123	Music source Select (fig.4.1M)
♫	Music Mute (fig.4.1Q)

When either 'Music Volume up' or 'Music Volume down' is pushed, the music volume changes in steps of '3' over a range of '00' to '99' (Each step of 3 represents 2 dB, with '99' equalling 0 dBV).

Any, or all of the four music control functions can also be activated via the:

- Function Keys on the Call Stations,
- Control inputs 1-4 on the Control Input Module.

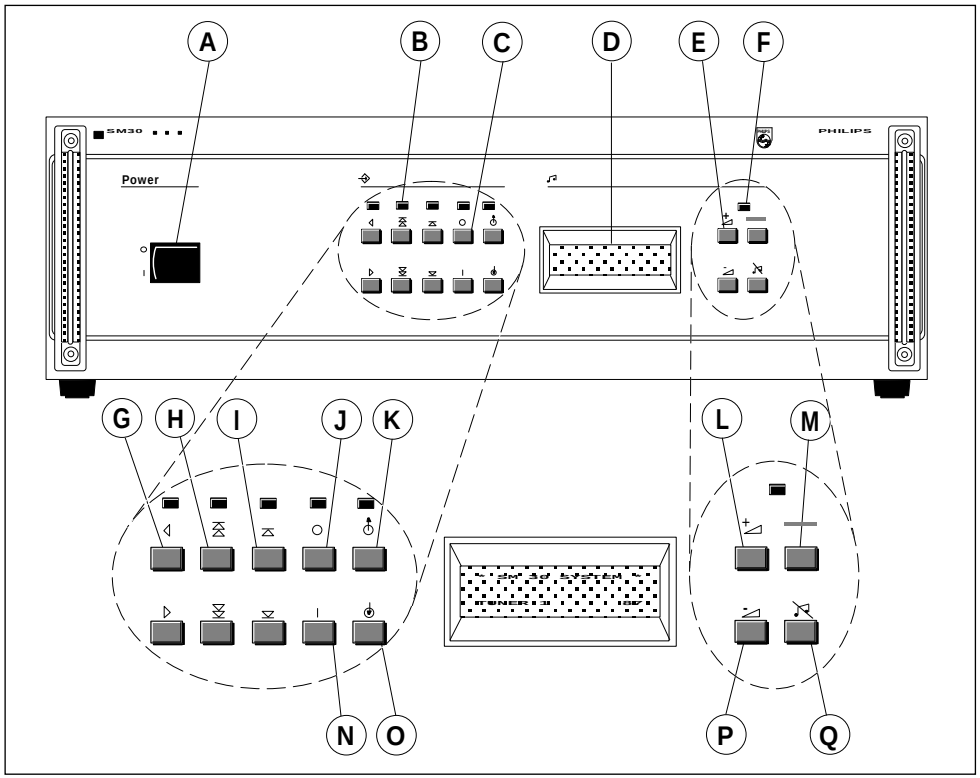


Fig. 4.1 - Front panel controls

4.2 SM30 basic modules

On delivery the rear panel of the SM30 Control Centre (fig.5.1) contains the Line Output Module and the Power Supply Module, as well as the removable blank module panels. (The last only in LBB 1280/30). Both modules are essential components, without which the SM30 system will not function.

Line Output Module
As its name implies, the Line Output Module terminates line level audio signals for the 'Call' output (fig.4.2D) and 'Music' output (fig.4.2A).
These feed the inputs of their respective amplifiers. Both signals are terminated on 5-pole 180° DIN sockets, see fig.4.2 for wiring details. For amplifier surveillance purposes, it is possible to activate the built-in pilot tone generator by means of a switch (fig.4.2E) and to adjust the volume level (fig.4.2F).
The module is fitted on the frontpanel with two potentiometers; Alarm Volume Control (fig.4.2C) and Attention Tone Volume Control (fig.4.2B).
These allow the installer to set the output volume of the internal signal generator to the desired level for each of the two types of signal tone.
The output volume level of the Call signal has no preset (setting is done on both the Microphone Input Module and the Call Station Input Module).

Power Supply Module
This module contains the terminations for both the mains power and emergency +48 VDC supply. The mains power socket (fig.4.3A) is of the standard "Europlug" type, and has a mains fuse holder built in. To remove the mains fuse (fig.4.3B), first remove the mains power cable (cord) from the socket, and carefully insert a medium sized screwdriver under the small lip of the fuse cover (nearest the socket pins), and gently twist the screwdriver to lever the fuse holder out. A 'Mate-N-Lok' emergency supply socket (fig.4.3D) is provided to allow a +48 VDC supply to be connected.
An Earth terminal (fig.4.3C) is mounted on the Power Supply Module to allow an extra earth (ground) wire to be connected for use with the Emergency Power Supply, or when the mains power earth is inadequate.

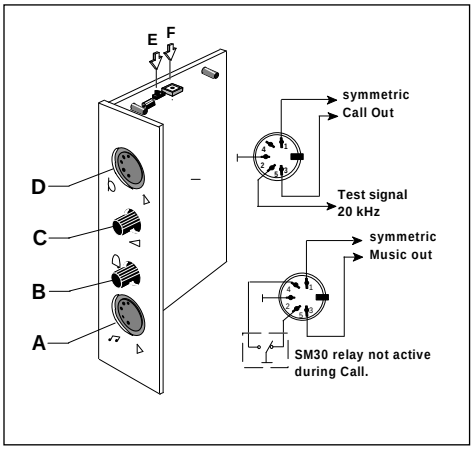


Fig. 4.2

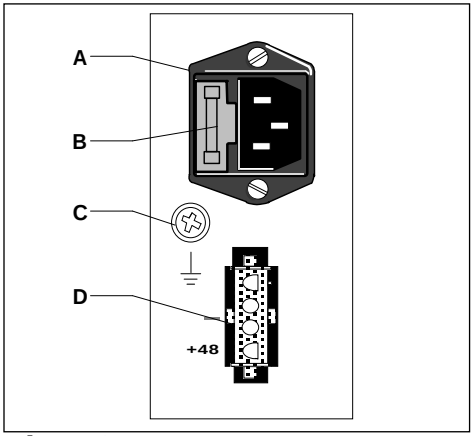
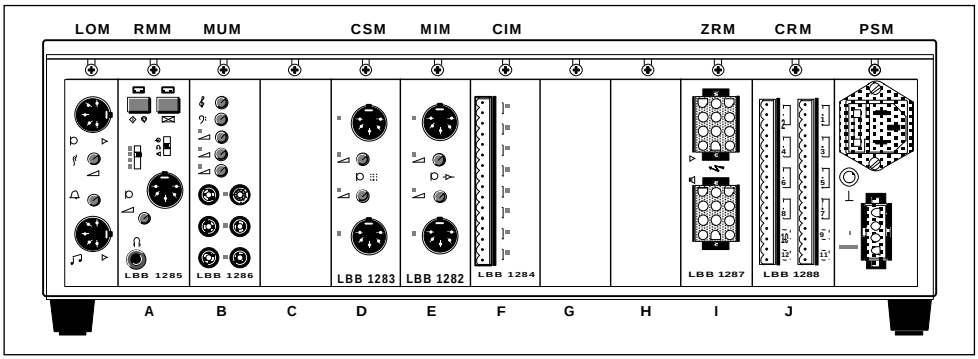


Fig. 4.3

5. SETTING UP THE HARDWARE

5.1 General

The SM30 Control Centre is delivered with only the Line Output Module (LOM) and the Power Supply Module (PSM) mounted in their slots. All other modules must be fitted into their respective slots as indicated in fig.5.1. A survey of configurations with the maximal number of input modules is given in the table.



Line Output Module X
Music and call output signal to amplifier

LBB 1285/00 Recorded Message Module A
4 messages = 29,5 sec

LBB 1286/10 Music Input Module B
3 music sources

LBB 1282/00 Microphone Input Module C D E
2 microphones max. 3 modules = 6 microphones

LBB 1283/00 Call Station Input Module C D E
2 Call Stations max. 3 modules = 6 Call Stations

LBB 1284/00 Contact Input Module D E F
8 contacts max. 3 modules = 24 contacts

LBB 1287/00 Zone Relay Module G H I
6 loudspeaker zones max. 3 modules = 18 zones

LBB 1288/00 Control Relay Module J
12 relays, only 9 or 10 relays free to programme

Power Supply Module X
220 V mains supply +48 V battery supply

Maximal configuration of input modules

CSM pos	Call Station numb.	MIM pos	Microphone numb.	CIM pos	Contact numb.
-	-	-	-	F,E,D,	1/8, 9/16, 17/24
-	-	C	5/6	F,E,D,	1/8, 9/16, 17/24
-	-	D,C	3/4, 5/6	F,E	1/8, 9/16
-	-	E,D,C	1/2, 3/4, 5/6	F	1/8
C	5/6	-	-	F,E,D	1/8, 9/16, 17/24
C	5/6	D	3/4	F,E	1/8, 9/16
C	5/6	E,D	1/2, 3/4	F	1/8
D,C	3/4, 5/6	-	-	F,E	1/8, 9/16
D,C	3/4, 5/6	E	1/2	F	1/8
E,D,C,	1/2, 3/4, 5/6	-	-	F	1/8

Fig. 5.1

5.2 Opening the housing

WARNING: Before attempting to open the housing, the mains lead and the 48 V DC battery plug should be disconnected. It is not sufficient to merely switch off the ON/OFF switch on the front panel.

Access to the inside of the Control Centre is gained by removing the cover. This is done by removing the four 'cross-head' screws located in the sides of the unit. The cover is then simply lifted off the housing. When the cover is removed, a 'retaining bar' (fig.5.2A) will be seen spanning the top of the housing. This should now be removed by loosening (not removing) the screws located in its ends.
To access the screw heads, the screwdriver must be inserted through the holes in the sides of the housing (fig.5.2B). With the screws loosened a little, the bar can be slid vertically out of the screw slots.

Removing Module Blank Panels
The module blank panels are removed in a similar way, by loosening the cross-head screws a little and sliding the panels vertically out of their keyhole slots.

Mounting the Modules
Before inserting the modules, read their respective chapters to make sure that there are no jumpers that need to be set in order to carry out the desired function(s). The modules are located, as illustrated in fig.5.1, by aligning the front plate screw with the keyhole slot (fig.5.2C); the key at the bottom of the front plate (fig.5.2D) with the slot in the bottom of the housing; and the multi connector (fig.5.2E) with the socket mounted on the mother board. The module is then gently pushed into place by putting pressure on the top of the circuit board. If it does not slot easily into place do not attempt to force it. Check that it is properly aligned and try again. When the modules are inserted, and properly seated in their connectors, tighten their front plate screws.

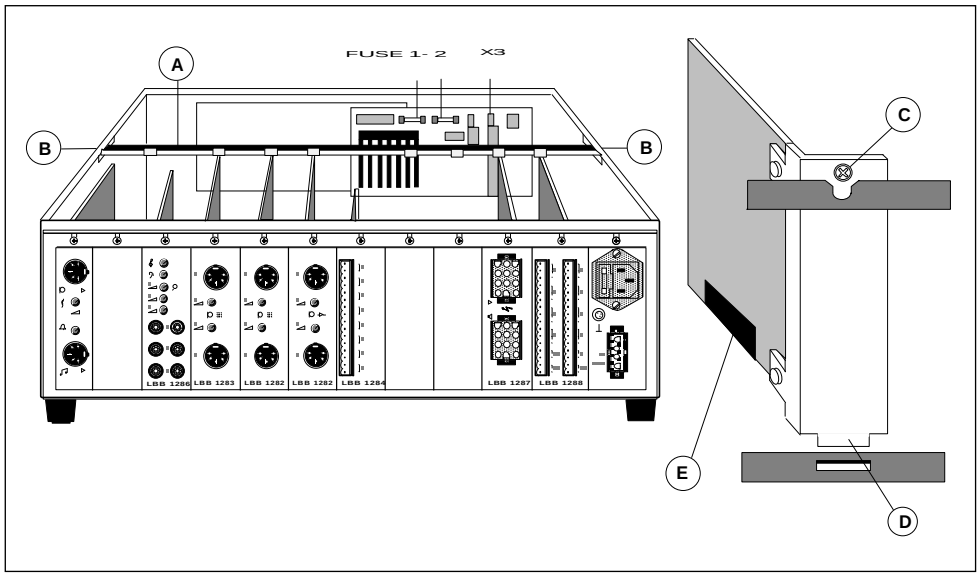


Fig. 5.2 - Top view

The retaining bar (fig.5.2A) can now be replaced by sliding it down in its slots as far as possible, and tightening the screws in its ends (fig.5.2B).

5.3 Voltage Setting

The system is delivered with the mains transformer wired for 220 Volts AC.
Before attempting to switch on the unit ensure that the voltage is set correctly for your mains supply.
To change the voltage, unplug the long (grey coloured) screw connector block (fig. 5.2X3), and rewire it for the appropriate voltage, shown in the circuit diagram (fig.5.3). Push the connector block firmly back into place. The cover of the Control Centre can now be replaced, and the screws reinserted in the side panels.

48 Volt Emergency Power Supply
In situations where the mains power supply is unreliable, and SM30 is used for security/evacuation purposes, an emergency power supply may be used. This can be switched in automatically whenever the mains power fails.

A 4-pole 'Mate-N-Lok' socket (fig.4.3D) is provided on the Power Supply Module on the back panel, to allow a +48 VDC supply to be connected. The terminations for the supply are clearly marked alongside the Mate-N-Lok socket. The emergency supply plug should be wired accordingly.

Earth Terminal (ground)
An Earth Terminal (fig.4.3C) is mounted on the Power Supply Module to allow an extra earth (ground) wire to be connected.
This should be used when the Emergency Power Supply is used alone, or when the mains power earth is inadequate.
If audible interference is present in the system, caused by an inadequate, or contaminated earth (e.g. due to heavy equipment using the same common earth), a separate "clean" earth may be connected to the Earth Terminal.

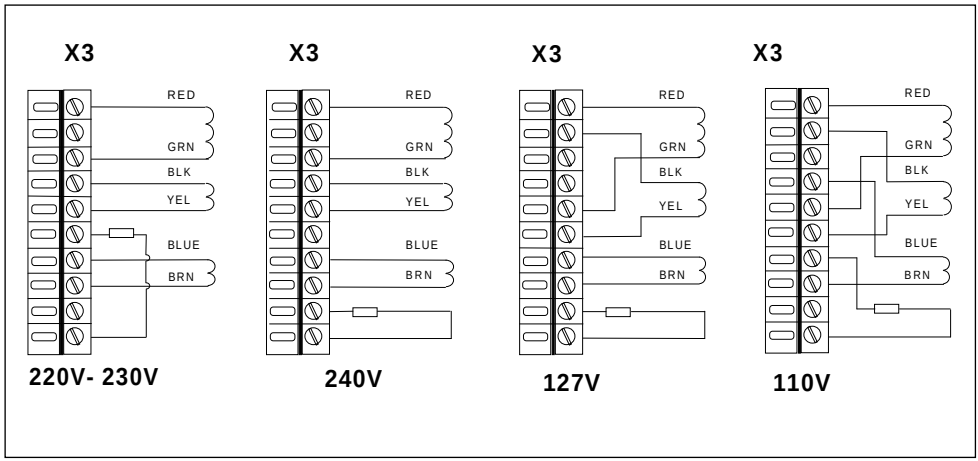


Fig. 5.2 - Top view

5.4 Mounting in a 19” rack

The SM30 Control Centre is available in two versions:
LBB 1280/30 for table top use including the cover.
LBB 1280/40 for 19” rack mounting, without cover but including the mounting brackets.

Removing Feet

WARNING: Before attempting to open the housing, the mains lead and the 48 V DC battery plug should be disconnected. It is not sufficient to merely switch off the ON/OFF switch on the front panel.

The feet of the Control Centre may be removed for rack mounting if space is limited. To remove the feet simply unscrew the cross-headed screw which is recessed in the centre of each foot.
If rack space is not limited however, it is preferable to leave the feet in position and to mount a narrow blank rack panel beneath the unit. If the Control Centre then has to be removed for servicing, the feet will protect the surface of furniture from being scratched by metal components of SM30.

Calculating Required Rack Space
To simplify ordering of modular units and panels to fit into standard 19” rack units, Philips have chosen a standard height ‘HE’ equal to 44.55 mm (1.75 inches). Each SM30 Control Centre, for instance, is 3 HE high, requiring 133.65 mm of rack space. The use of the HE unit eases the problem of calculating the number of equipment housings, blank panels, etc. that will fit into a rack.

General Rules
Certain rules should be observed when planning the equipment layout in a rack:
1 To ensure that the SM30 display is clearly visible, and the controls are easy to operate, the Control Centre should be mounted at a height which makes it easily accessible (head, or shoulder height if possible).
2 Cassette front loaders, tuner scales, and other frequently used equipment, should be mounted at a height which makes their front panels clearly visible to the operator.

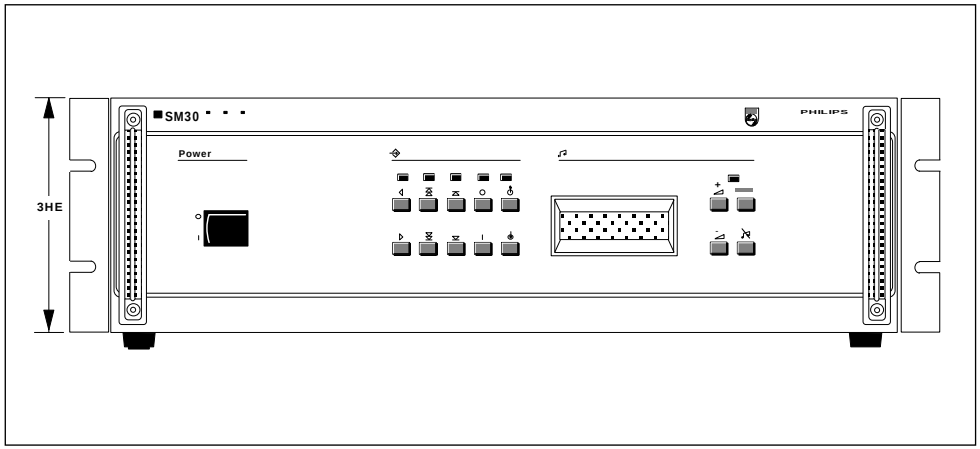


Fig. 5.4 - Rack mounting

3 It is always preferable to mount power amplifiers, which generate a certain amount of heat, above heat sensitive equipment, like SM30.If however, power amplifiers must be mounted beneath the Control Centre, a heat shield should be installed above them. This is necessary to deflect the hot air currents, which could otherwise cause instability in the SM30 microprocessor controlled units.

5.5 Connecting amplifiers

The SM30 system is intended for use with 2 separate amplifiers, or two separate channels of a multi channel amplifier. One channel will handle the 'call' signal, and the other channel will amplify the 'music' signal. This allows the music signal to continue, uninterrupted, when a call is made to other loudspeaker zones. It is possible to use only 1 amplifier channel for both the 'calls' and 'music' signal. This has the disadvantage however, that any music playing will be interrupted whenever a call is made, regardless of the zone(s) to which the call is routed. Though the SM30 system will work with any line level input amplifier, the amplifiers from the Philips SQ45 range have been specifically designed to take the greatest advantage of the functions of SM30.

Two Channel System (fig.5.5.1)
Connections of SM30 to two amplifiers, or two channels of a Philips SQ45 amplifier:

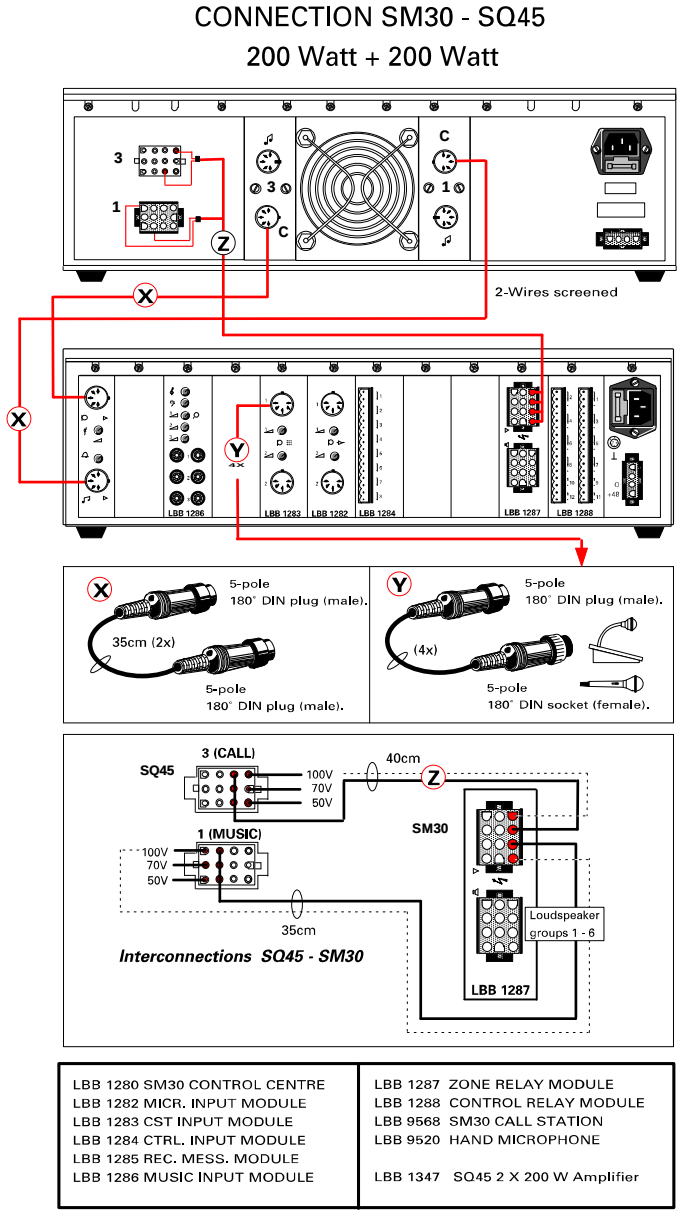
1 Connect both the 'Call' and 'Music' outputs of the Line Output Module, to the separate 'Call' inputs of the SQ45 amplifier(s).
2 Connect the outputs of the amplifiers (with two core loudspeaker cable) to their respective 'Call' and 'Music' inputs on the 'Mate-N-Lok' connector on the Zone Relay Module of the SM30.

One Channel System (fig.5.5.2)
When using a single amplifier system, the following steps must be taken:

1 The 'Call' and 'Music' outputs of the Line Output Module should be connected to their respective 'Call' and 'Music' inputs on the SQ45 amplifier. The relay on the Line Output Module will switch the active input of the SQ45 amplifier from music to call.
See the relevant SQ45 amplifier Instructions For Use for details of this function.
2 The output of the amplifier has to be connected to the 'Call' input on the 'Mate-N-Lok' on the SM30 Zone Relay Module.
3 Refer to Installer Program step 9 to program this function.

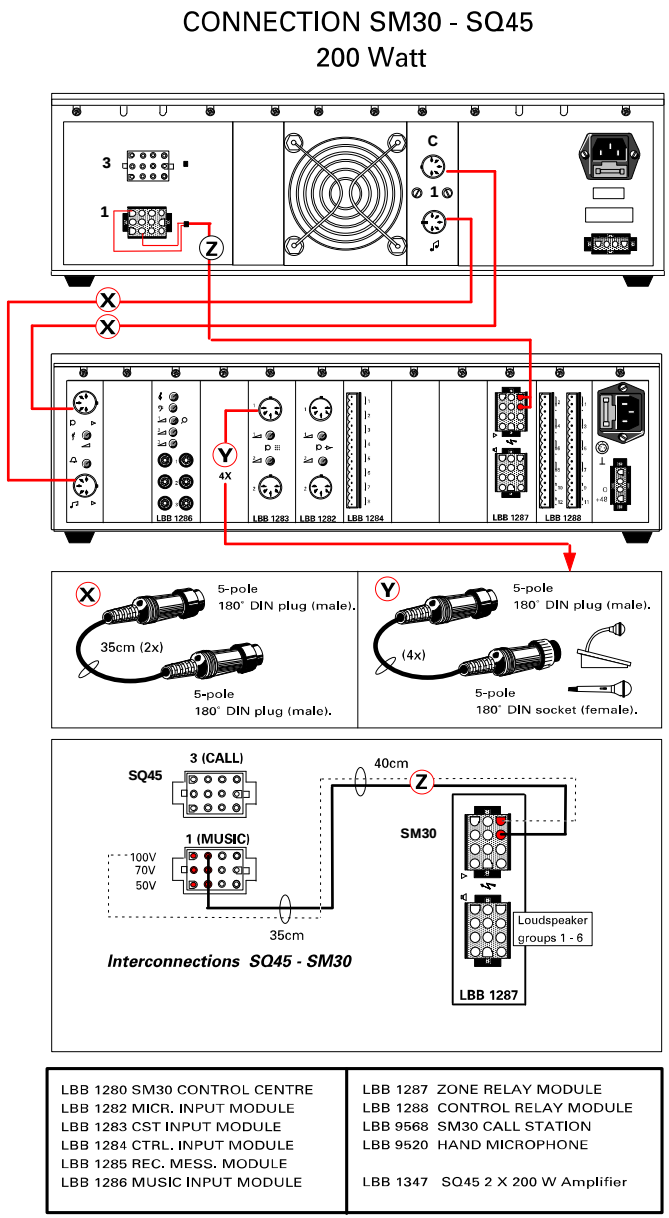
As previously stated, zones with music will be interrupted for as long as a call to any other zone(s) lasts.

Rack Mounting
If the amplifier(s) and SM30 are mounted in a rack unit, and an 'earth loop' occurs (evident by a 50 or 60 Hz hum through the loudspeakers) follow the Instructions For Use given with the SQ45 amplifier for details of earthing the units.



LBB 1280 SM30 CONTROL CENTRE	LBB 1287 ZONE RELAY MODULE
LBB 1282 MICR. INPUT MODULE	LBB 1288 CONTROL RELAY MODULE
LBB 1283 CST INPUT MODULE	LBB 9568 SM30 CALL STATION
LBB 1284 CTRL. INPUT MODULE	LBB 9520 HAND MICROPHONE
LBB 1285 REC. MESS. MODULE	
LBB 1286 MUSIC INPUT MODULE	LBB 1347 SQ45 2 X 200 W Amplifier

Fig. 5.5.1 - Two channel system



LBB 1280 SM30 CONTROL CENTRE	LBB 1287 ZONE RELAY MODULE
LBB 1282 MICR. INPUT MODULE	LBB 1288 CONTROL RELAY MODULE
LBB 1283 CST INPUT MODULE	LBB 9568 SM30 CALL STATION
LBB 1284 CTRL. INPUT MODULE	LBB 9520 HAND MICROPHONE
LBB 1285 REC. MESS. MODULE	
LBB 1286 MUSIC INPUT MODULE	LBB 1347 SQ45 2 X 200 W Amplifier

Fig. 5.5.2 - One channel system

6 CALL STATION (CST) LBB 9568

The SM30 Call Station presents the operator with a logical, comprehensive, and easy to use method of routing and broadcasting calls, announcements, and music. Since each Call Station Input Module will accept two Call Stations, SM30 will accept up to 6 Call Stations in total.

Electret condenser microphone
The high quality phantom powered microphone with built-in bass rolloff filter (fig.6.1L) gives clear voice reproduction, even in difficult acoustic environments.

Built-in Compressor
Helps to keep the audio output level of the Call Station constant, even in situations where the operator's speech volume level changes radically. The amount of compression is dependent on the Microphone pre-amplifier gain setting: the higher the gain setting, the greater the amount of compression, and therefore the greater the effect on the microphone signal (see paragraph 6.3).

Balanced Line Level output
Allows Call Stations to be located up to 1000 metres from the Control Centre.

6.1 Operating controls

Numeric Keypad (fig.6.1J)
Allowing individual selection of up to 18 loudspeaker zones by typing in the zone number. Each Call Station can be programmed with a priority status, attention tone and pre-recorded message. These become operational whenever the keypad is used to route a call. (See chapter 14 for programming details).

Redial function (fig.6.1I)
Repeats the last zone selection.

Zone Selection Indicator (fig.6.1B)
Each zone has its own LED which is illuminated when the zone is selected. When the call is completed the LEDs will be extinguished.

Function Keys (fig.6.1K)
The 4 function keys are to be programmed with priority; alarm and attention tones; pre-recorded messages; routing to loudspeaker zones; and Control Relay activation. The alternative functions of these keys include: music volume up/down; music source selection; music mute; and independent Control Relay switching or toggling (see chapter 14 for programming details). Using the Function Keys to make a call is done in the same way as using the Keypad. The main difference being that instead of the operator selecting the zones using the Numeric Keypad, the Function Keys route the call to a pre-programmed selection of zones. This of course saves a great amount of time when an operator has to frequently call the same selection of zones, or when an "ALL CALL" must be made in emergencies. Each Function Key may be programmed to carry out a totally different task.
Key F1 can be programmed to route a low priority call, preceded by an attention tone, to several, frequently used, loudspeaker zones.
Key F2 could be programmed to route an alarm tone, followed by a pre-recorded evacuation message, to all loudspeaker zones (an "ALL CALL").
Key F3 could be used to mute the music signal.
Key F4 could be used to toggle a Control Relay on and off, switching a warning lamp, illuminated notice, etc..

NOTE: If a Function Key and the Keypad are both selected to activate a call, the last selection will always have precedence, cancelling any other selection.

During Installer programming a program is available to prevent the user of the Call Station from addressing specific zones selected via the keypad (see program 14.3.12).

Function Key LED (fig.6.1A)
Whenever a Function Key is pressed the LED illuminates, together with any Zone Selection Indicators activated by the routing of the Function Key. When the call is completed the LEDs will be extinguished.

'Press-To-Talk' Key (fig.6.1H)
Activates a call after the zones have been pre-selected using the Key Pad or Function Key. The way in which a call is executed, and how the 'Press-To-Talk Key' is used, depends on the type of signal and/or message with which the Key Pad, Function Key, or Microphone is programmed.

- Call without signal or message:
  Will stop when the 'Press-To-Talk' Key is released.
- Call with attention signal and/or non-repeating message:
  Will stop when the 'Press-To-Talk' Key is released.
- Call with attention signal and repeating pre-recorded message:
  The message and/or signal cycle will continue after the 'Press-To-Talk' Key is released. The cycle can be stopped by pressing the 'Press-To-Talk' Key a second time.
  If this is done during the attention signal, the call stops immediately.
  If the message is playing, the call will stop at the end of the message.
- Call with alarm signal:
  The alarm signal will continue after release of the 'Press-To-Talk' Key.
  It can be stopped by pressing the 'Press-To-Talk' Key a second time.

Busy and wait/talk LEDs
(fig.6.1F and 6.1G)
Advise the operator whether a call may be activated, the status of the call, and whether any other calls are active.
The red 'BUSY' LED flashing means that another call is in progress.
The red 'BUSY' LED illuminated constantly indicates that the call has been blocked by another call with a higher priority.
In its 'WAIT' state, the green LED flashes, indicating that the call is accepted, and the attention tone or pre-recorded message is being broadcast.
The green LED illuminates constantly ('TALK') when the tone or message finishes and the processor switches on the microphone for the call to proceed.

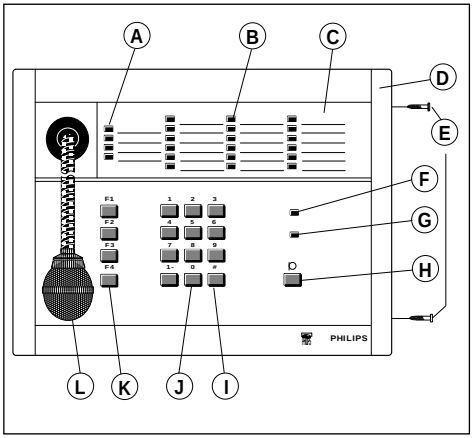


Fig. 6.1 - Call Station

6.2 Installation

Loudspeaker Zone Template
A paper template is provided, on which the names of the loudspeaker zones can be written. The template has a detachable blank section at the bottom, allowing it to be used in a typewriter.
To mount the template in the Call Station, first remove the right hand side cheek (fig.6.1D), by unscrewing the two screws in its side (fig.6.1E), and the one screw located in the bottom. The plastic template cover (fig.6.1C) can now be slid out. Place the (type) written template in position over the zone LEDs (having first torn off its blank perforated panel), and carefully slide the plastic template cover back in place.

Connection to Control Centre
Between the Call Station and the Call Station Input Module (see chapter 7.1) the following cabling is needed::
- a shielded twisted pair for audio and power transport;
- a twisted pair for data transport.

When the copper diameter of each wire is not less than 0.75 mm2 the length of the cable can be up to 1000 meters for proper functioning.

6.3 Adjustments

Microphone Pre-amplifier Gain Preset
With the right hand side cheek of the Call Station removed, the microphone preamplifier's gain can be preset. Turning the potentiometer (fig.6.2B) to the right increases the amount of gain. To obtain nominal 1 Volt output level, the gain can be preset from 84 to 114 dB SPL.

NOTE: The Call Station Input Modules also have input gain presets. The Microphone Preamplifier Gain Preset should only be used for setting the amount of compression, not for lining up the Call Station output with the rest of the SM30 System. See 'Built-in Compressor' earlier in this chapter.

LED Intensity Preset
With the right hand side cheek removed, it is possible to gain access to the LED intensity preset.
To compensate for various local lighting conditions, the illumination intensity of the LEDs can be adjusted. Turning the potentiometer (fig.6.2A) to the right increases the intensity.
With the template and its cover in position, and the microphone volume and LED intensity adjusted, replace the right hand side cheek.

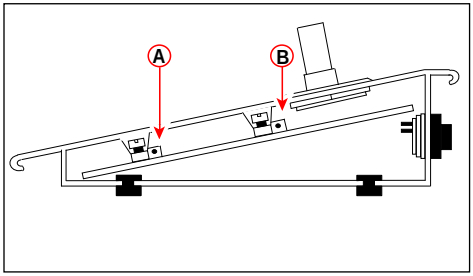


Fig. 6.2 - CST adjustments

6.4 Using the Call Station

Using the Keypad to make a Call
1 To route a call to one or more loudspeaker zones, simply type in the number of each desired zone using the numeric keypad. Numbers '1' to '9' allow single digit numbers to be entered, number '1-' is for tens, and '0' is the second digit in the number 10. For instance, to route a call to zones 7, 10, and 15, type in: 7, then 1-, then 0; then

1-, then 5. As stated earlier, the Zone Routing Indicator LEDs for these zones will be illuminated.

2 If the red 'BUSY' LED is flashing, this means that another call is in progress. If the other call has lower priority than your call, pressing your 'PRESS TO TALK' key will abort the other call.
If the other call has a higher priority, your call will not be accepted and you will have no affect on the other call.

3 If neither the 'BUSY' or 'WAIT/TALK' LEDs are illuminated, press and hold down the 'PRESS TO TALK' key.

4 If an attention tone has been programmed to precede a call, the green 'WAIT/TALK' LED will flash until the tone has finished. When the LED stops flashing, the microphone is activated and then you may begin to speak.
If your call is interrupted by a call with a higher priority, the red 'BUSY' LED will illuminate to tell you that your call is no longer being heard.
The call should then be aborted and tried again when no LEDs are illuminated.
Pressing the 'REDIAL' key will automatically reselect the zones which were last selected, eliminating the need to type them in again.

5 When the call is finished, release the 'PRESS TO TALK' key, and the system will return to its idle mode, ready for the next call.

Using the Function Key to make a Call

Using the Function Key to make a call is done in the same way as using the Keypad. The main difference being that instead of the operator selecting the zones using the Numeric Keypad, the Function Keys route the call to a pre-programmed selection of zones.

This of course saves a great amount of time when an operator has to frequently call the same selection of zones, or when an "ALL CALL" must be made in emergencies. As previously described, whenever the function key is pressed its Function Key LED illuminates, along with any Zone Selection Indicators activated by the routing of the Function Key. When the call is completed the LEDs are extinguished.

7 CALL STATION INPUT MODULE (CSM) LBB 1283

Each Call Station Input Module allows two SM30 Call Stations to be connected to the Control Centre. SM30 will accept up to 3 Call Station Input Modules and/or Microphone Input Modules in total.

7.1 Installation

Mounting in the Control Centre
The Call Station Input Modules must be located in the Control Centre slots E, D, and/or C, as indicated in fig. 5.1.
The number designated to a Call Station by the microprocessor is dependent on the slot in which the module is located.
If, for instance, only one Call Station Input Module is used in a system, and that module is located in slot E, then the two Call Stations plugged into the module would be numbered 1 and 2.
If the same module were plugged into slot D, then the Call Stations would be numbered 3 and 4.
If plugged into slot C, the Call Stations would be numbered 5 and 6.
This regardless of the fact that they are the only Call Stations in the system.

Connection of Call Stations
The design of SM30 allows a single cable, up to 1000 metres long, to be used to connect a Call Station to one of the Input Module's sockets. This cable has two screened wires, plus two twisted wires. The screened wires carry the audio signal and Call Station phantom powering, and the twisted wires carry the control signal.
Terminate the cable at the side of the Call Station with a lockable 5-pole 180° female DIN socket, and at the side of the Input Module with a lockable 5-pole 180° male DIN plug.
The DIN connections, viewed from the solder side of the cable plugs, are illustrated in fig.7.

7.2 Adjustments

Volume Level Controls
The 2 front panel controls are input volume level controls, used for "lining up" the volume level of the Call Station microphone with the rest of the SM30 signal sources (microphones, attention signals, background music players, etc.).
Since the strength of each person's voice differs, set each volume level "by ear" so that a clear, comfortable listening level, which is in balance with the other amplified signals, is attained.

REMARK: Reducing the gain by means of the module volume level controls means that it is no longer possible to get the full volume level output from the connected SQ45 amplifiers.

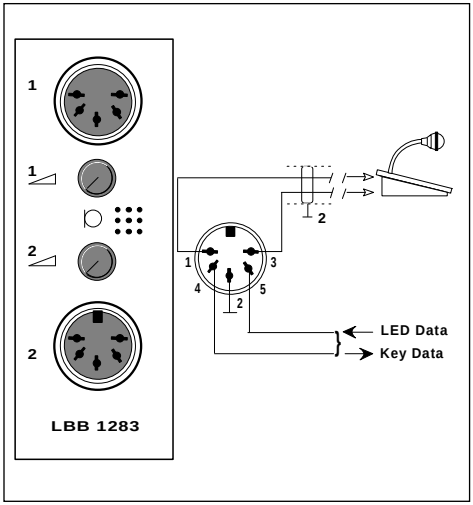


Fig. 7 - CSM

8 MICROPHONE INPUT MODULE (MIM) LBB 1282

Each Microphone Input Module allows two electret microphones or two dynamic microphones to be connected to the SM30 Control Centre.
SM30 will accept up to 3 Microphone Input Modules and/or Call Station Input Modules in total.

8.1 Operation

Remote Switching Function
SM30 makes use of the remote switching facility of certain Philips electret microphones and dynamic microphones. This switch is used to activate calls originating from the microphone, including all of the programmed functions available (priority, routing, attention signals, etc.) (See chapter 14 for programming details).

Line Input Facility
By changing a switch, mounted on the circuit board of the module (one double switch block for each channel), it is possible to connect a line level input source, instead of a microphone. In its up position, switch 1 on the switch block is set for Microphone (the default). In its down position, it is set for Line Level Input. It is possible to distribute this line source by means of contacts on the Contact Input Module 1.

Bass Cut Facility
In noisy environments the operator often has to speak very close to the microphone, which exaggerates the bass frequencies of the microphone.
A bass-cut facility is available to reduce the bass, helping the call to be clearly heard.
On delivery, the bass-cut is active. By changing switch 2, located on the same switch block as the Line Input switch, the Bass Cut can be de-activated.
In its up position, switch 2 on the switch block is set for Bass Cut (the default).
In its down position, it is set for Flat response.

8.2 Installation

Mounting in the Control Centre
The Microphone Input Modules must be located in the Control Centre slots E, D, and/or C, as indicated in fig.5.1.
The number designated to a Microphone by the microprocessor is dependent on the slot in which the module is located.
If, for instance, only one Microphone Input Module is used in a system, and that module is located in slot E, then the two Microphones plugged into the module would be numbered 1 and 2.
If the same module were plugged into slot D, then the Microphones would be numbered 3 and 4.
If plugged into slot C, the Microphones would be numbered 5 and 6.
This regardless of the fact that they are the only Microphones in the system.

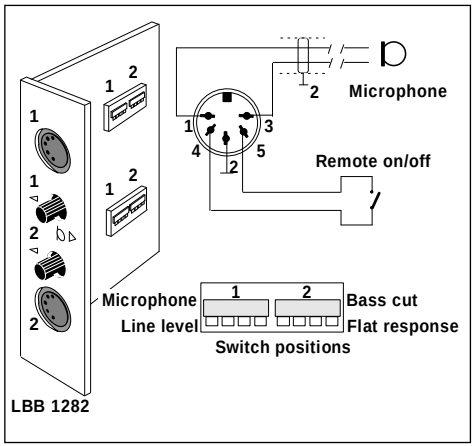


Fig. 8 - MIM

Connection of Microphones
The design of SM30 allows a single cable to be used to connect a Microphone to one of the sockets of the Microphone Input Module.
This cable has two screened wires, plus two unscreened wires.
The screened wires carry the audio signal and phantom powering, and the unscreened wires are connected to the remote switch of the microphone. Terminate the cable at side of the microphone with a lockable 5-pole 180° DIN female socket, and at the side of the Input Module with a lockable 5-pole 180° DIN male socket.
The DIN connections, viewed from the solder side of the cable plugs, are illustrated in fig.8.

8.3 Adjustments

Gain Control Potentiometers
The 2 front panel controls are input gain controls, used for "lining up" the volume level of the microphone with the rest of the SM30 signal sources (Call Stations, attention signals, pre-recorded messages, background music players, etc.). Because the strength of each person's voice differs, set each gain control "by ear" so that a clear, comfortable listening level is attained, which is in balance with the other amplified signals.

9 CONTROL INPUT MODULE (CIM) LBB 1284

Each Control Input Module allows eight remote switches to be connected to the Control Centre. Up to 3 Control Input Modules can be located in the SM30 Control Centre allowing a total of 24 remote switches to be used, but resulting in less of Call Station Input Modules and Microphone Input Modules. When a remote switch closes the normally open circuit, the Control Input circuit senses this, and the SM30 microprocessor carries out a series of actions.

9.1 Operation

All Control Inputs
Each Control Input can be programmed to carry out SM30 switching functions, including:
- Activation of one of the SM30 attention or alarm signals.
- Activation of a pre-recorded message.
- Routing of the above listed signals to loudspeaker zones, after giving the call a programmed priority status.

Inputs 1 to 8 of first CIM (fig.5.1F).
Apart from the above listed functions, inputs 1-4 may be given an alternative function. This allows remote control of the Music Function Keys, located on the front panel of the SM30 Control Centre:

Input 1 Music volume up activation
Input 2 Music volume down activation
Input 3 Music mute on/off
Input 4 Music source selection
Input 5-8 Apart from the normal switching functions, inputs 5-8 may be programmed to activate Control Relays, which can be used to start

remote equipment, activate signalling/warning lamps, etc..

Input 1-8 Apart from the normal functions, inputs 1-8 can be programmed to distribute an external audio source connected to a Microphone Input Module to zone 1-36 preceded with an attention signal and/or pre-recorded message. in that case relay 4 of the Control Relay Module of the basic frame is used to start the audio source.

Direct routing

Control inputs 1-6, 1-12, or 1-18 can be programmed to route a call or music directly to loudspeaker zones 1-6, 1-12, or 1-18.

9.2 Installation

Mounting in the Control Centre

The Control Input Modules must be located in the Control Centre slots F, E, and/or D, as indicated in fig.5.1.

The numbers designated to Control Inputs by the microprocessor are dependent on the slot in which their module is located. If only one Control Input Module is used in the system, that module should be located in slot F, then the eight Control Inputs are numbered 1 to 8.

If another module were plugged into slot E instead of F, then the Control Inputs are numbered 9 to 16. Accordingly, slot D will carry inputs numbered 17 to 24.

Note should be taken of the paragraphs referring to Inputs 1-4 and Inputs 5-8 when planning the location of the Control Input Module(s) in the Control Centre.

Wiring control inputs

Each Control Input Module is supplied with a plug-in, 16 terminal, screw connector block.

The remote switch wires are connected to the screw terminals, which are marked in pairs 1 to 8.

The great advantage of the connector block is that if, for some reason, the SM30 Control Centre has to be removed, the block has simply to be unplugged and the wires remain intact.

This avoids the tedious and risky business of rewiring the blocks in their original configurations.

9.3 Programming

Control inputs can be programmed for different facilities:

- normal Call activation (see installer programming par.14.7 menu 8 ‘Store Hardware’);
- remote music control or Control Relay switching (see user programming par.14.3 menu 3 ‘Control Inputs’);
- direct zone routing (see installer programming par.14.7 menu 13 ‘Direct Routing’).

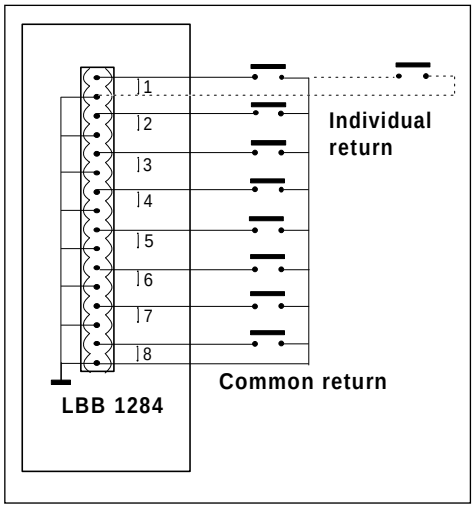


Fig. 9 - CIM

10 RECORDED MESSAGE MODULE (RMM) LBB 1285

A unique feature of SM30 is its Recorded Message Module, which allows up to 4 individual messages to be recorded, and played back as desired.
The recording is digitally stored in memory chips, ensuring that the quality will not deteriorate for as long as the message is in memory. Messages will remain in memory so long as the power is turned on. If SM30 is switched off, a backup battery will enable the messages to remain intact for up to 30 days. The maximum total recording time is 65 seconds, and up to 4 messages of varying durations may be recorded, so long as the sum of the durations does not exceed the maximum recording time. SM30 can be programmed so that a message is played back either alone, or preceding a call (following an attention signal, if desired). Playback can be activated by a Control Input; a microphone remote switch; or a Call Station Keypad or Function Key.

Automatic Gain Control
A limiter ensures that, even though the microphone signal fluctuates severely, the message is recorded at a fairly constant level. This, however, is not an overload protection device. The operator should speak at about 30 cm from the microphone, with a normal speaking voice, to ensure that the input is not overloaded.

Headphone Monitoring
A headphone socket (fig.10A) allows the recorded messages to be monitored, both during and after recording, without them having to be amplified via the system. This is especially useful, during a recording session, for checking that a recording is being, or has been, successfully made.

10.1 Installation

Mounting in the Control Centre
The SM30 Control Centre provides space for one Recorded Message Module, which must be located in slot A (see fig.5.1).

Microphone Input
The microphone input (fig.10I), terminated with a 5-pole 180° DIN socket, provides phantom powering, so that either a Philips electret microphone or a dynamic microphone may be used to record the messages. (See fig.8 for Microphone Input plug wiring details).

10.2 Adjustments

Output Volume Control
A volume control potentiometer (fig.10B) on the front panel allows the output volume level to be “lined up” with other SM30 signal sources (attention signals, microphones, music sources, etc.). Turning the control clockwise increases the volume level; anti-clockwise decreases the level.

10.3 Recording messages

Clearing the Memory
On delivery of the unit the memory of the module must be cleared, before any messages can be recorded, as following:

- Slide the Message Selection switch (fig.10C) to position ‘1’.
- Move the Function switch (fig.10H) to the top position ‘record’.
- Now press the (erase) button (fig.10G). Both the green Message Present LED (fig.10E) and the red Record LED (fig.10F) will illuminate for as long as the button is pushed.

When recording for the first time, or when the memory of the module has been cleared, it is important to record messages in

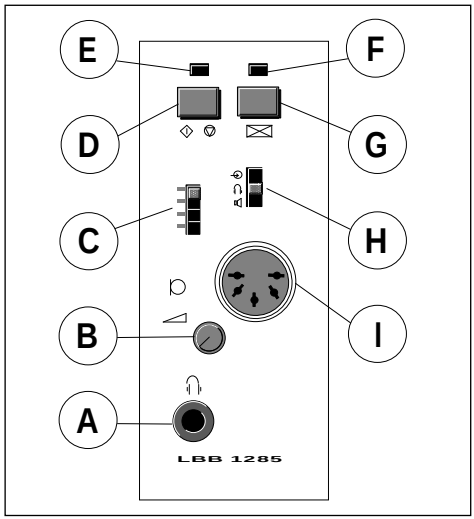


Fig. 10 - RMM

numerical order, commencing with message 1.

Recording a Message

- To record the first message, slide the Message Selection switch to position '1'.
- Next move the Function switch to the top position 'record'.
- To commence recording, press the Start/Stop button (fig.10D). The red Record LED will now illuminate and begin to speak into the microphone.
- Immediately after the message has been spoken, push the Start/Stop button once more to stop the recording. The green Message Present LED will now illuminate to advise that a message is present at that position.
- The message can now be checked by moving the Function switch to its middle (monitor) position and listening through a set of headphones.
  When the message is being replayed, either through headphones, or through the system, the green Message Present LED will flash.
- If the recording is satisfactory, either move the Message Selection slide switch to position '2', and follow the above steps to record the second message.

With the Function switch in its lowest (system) position, the recording is ready to be played back via the system when desired.

Recording over an Existing Message
When a message is recorded, its time duration is stored in memory. When a new message is recorded over an existing one, the new message will automatically be the same length as the original. The red Recording LED will illuminate for the original duration of the message, and extinguish at the end of that time, indicating that the recording is finished. The recording cannot be terminated by the Start/Stop switch when recording over an existing message.

REMARK: If the new message is too long, it will be cut off before it is finished. If it is too short, there will be a silence at the end of the message, for the remaining time, before the system can continue with its next function.

If this is unworkable, the messages which are currently in memory should be erased, and all of the messages should be re-recorded. (See paragraph 'Clearing Memory').

Safety Features
With the Function switch in its lowest (system) position, the Message Select switch and the Start/Stop button and Erase button will be inoperative.
The Erase button will only become operative when the Message Select switch is in position '1', and the Function switch is in the top (record) position.

The Function switch must be in its lowest (system) position for messages to be replayed through the system.
When the Function switch is in its top (record) or middle (monitor) position, SM30 will not be able to use the Recorded Message function, and the messages already recorded will not be accessible to the user. An ERROR warning will be seen on the display of the Control Centre, indicating that the Message Module is not in its 'system' mode.
If the Function switch is in the top (record) position, and the Message Selection switch is moved to a position where a message is already recorded, the green Message Present LED illuminates to warn that a message is present at that position.

Remote Location Recording
Because the Record and Monitor functions are independent of the SM30 microprocessor, the unit may be taken out of the Control Centre, and transported to a remote location.
There, with the aid of suitable power supplies of +5 V and +35 V, the module may be used to record the messages in a more suitable/convenient recording environment. Refer to the service documentation of SM30 how to make the connections.

11 MUSIC INPUT MODULE (MUM) LBB 1286/10

The ability of SM30 to play music, which is uninterrupted, even though the system is handling a call routed to other loudspeaker zones, is an important feature of the system. To make best use of this feature, Philips have developed the Music Input Module. The module enables 3 independent music sources to be connected to the Control Centre.

11.1 Installation

Mounting in the Control Centre
One Music Input Module may be installed in the Control Centre.
This module must be located in slot B as illustrated in fig.5.1.

Music Source Inputs
The module provides 3 sets of double cinch sockets (fig.11A) for connection of the music sources. The double sockets allow stereo signal sources to be connected, using standard double cinch/ cinch Hi-Fi cables. The stereo signal is mixed to mono in the module. A mono signal (e.g. from a radio tuner) should simply be plugged into either one of the two sockets.

11.2 Adjustments

Individual Input Volume Controls
Three potentiometers (fig.11B) corresponding to the three inputs, give the user/installer the capability of setting the input volume levels of each source independently.
Adjust the source signal levels so that when the operator selects a different source, no great change in music volume level occurs.

Output Treble and Bass Tone Controls
Treble and Bass potentiometers (fig.11C and D) provide tone control facilities for the output of the module.
In the vertical (12 o'clock) position, the signal is unaffected. Turning the control clockwise increases the level of the relevant treble or bass frequency range by up to 10 dB. Turning it anticlockwise decreases the frequency range volume level by up to 10 dB.

Front panel controls of Control Centre (fig.4.1E)
To allow the operator to control the music sources, four Music Function Keys are provided on the front panel of the SM30 Control Centre. These keys allow the operator to select the music source; alter the music volume level up or down; and mute the music signal. When either the 'Music Volume up' or 'Music Volume down' key on the Control Centre is pushed, the output volume of the Music Input Module changes in steps of '3' over a range of '00' to '99'.

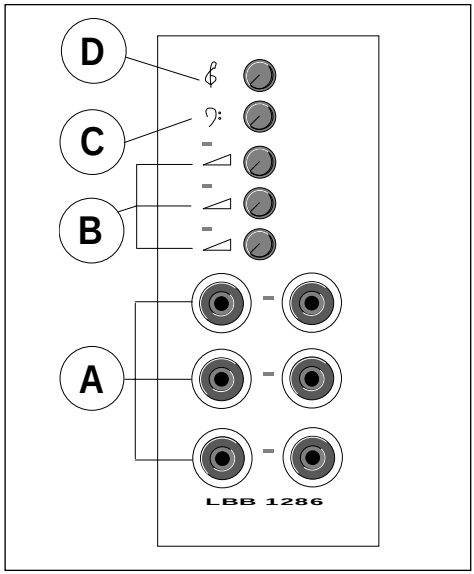


Fig. 11 - MUM

Each step of 3 represents 2 dB, with '99' equalling 0 dBV. Any, or all of these four functions can also be remote controlled via the Function Keys on the Call Station.

11.3 Programming

Software routing to zones
For details of routing the music signal to specific loudspeaker zones see user programming 14.3.1 step 19 'F-key music routing' and menu 4 'Music routing' and installer programming 14.7 menu 13 'Direct routing'.

Display music source status
The current music source and the output volume level can be seen on the bottom line in the display when SM30 is in its normal 'run' mode. See installer programming 14.7.6 'Music Input text' to alternate the names for sources 2 and 3 for showing on the display.

12 ZONE RELAY MODULE (ZRM) LBB 1287

The SM30 system is intended for use with 2 separate amplifiers, or two separate channels of a multi channel amplifier. One channel will handle the 'Call' signal, and the other channel will amplify the 'Music' signal. This allows the music signal to continue, uninterrupted, when a call is made to other loudspeaker zones.
Both the Call and Music signals are processed via SM30, and are available on the output on the Line Output Module. The signals are then amplified by their separate power amplifiers, and the amplified signals return to SM30, via the inputs of the Zone Relay Module.
The SM30 software uses the relays of the Zone Relay Modules to route the separate signals to their relevant loudspeaker zones. Each Zone Relay Module is capable of routing the amplified Call and Music signals to 6 separate loudspeaker zones. Up to 3 units may be installed in the Control Centre, giving SM30 the capacity to route the signals to 18 loudspeaker zones.

12.1 Installation

Mounting in the Control Centre
Up to three Zone Relay Modules can be installed in the Control Centre, in slots G, H, & I, as illustrated in fig.5.1.
The numbers designated to Loudspeaker Zones by the microprocessor are dependent on the slot in which the Zone Relay Module is located. If, for instance, only one Zone Relay Module is used in a system, and that module is located in slot I, then the six loudspeaker zones would be numbered 1-6. If the same module were plugged into slot H, instead of I, then the loudspeaker zones would be numbered 7-12, regardless of the fact that they are the only loudspeaker zone outputs in the system. This should be taken into consideration when planning the location of the Zone Relay Module(s) in the Control Centre.

Terminations
The module is fitted with 2 'Mate-N-Lok connectors. All wiring is done in the plugs provided with the module, which means that the wiring itself remains intact if SM30 is ever removed for servicing, etc.. The top connector (fig.12.1B) is the input connector. The outputs of the amplifiers are plugged into the right row of the sockets.
The centre row of 4 sockets are used for linking the module to the next Zone Relay Module. The bottom connector (fig.12.1A) feeds the routed outputs to the 6 loudspeaker zones. Fig.12.2 and fig.12.3 show how to connect the Mate-N-Lok connectors and illustrates several possibilities for configuring amplifier connections, some of which are briefly described below.

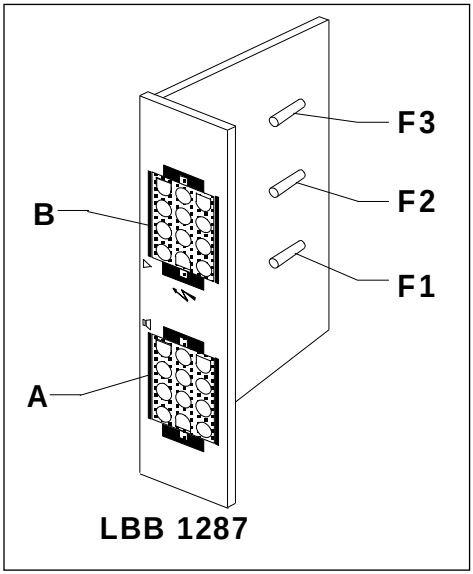


Fig. 12.1 - ZRM

12.2 Coupling Zone Relay Modules

When more than 1 Zone Relay Module is used in a system, the inputs of the modules may be linked together (fig.12.2), so that the same amplifier(s) can feed up to 18 loudspeaker zones. This is done by making short linking wires, fitted with Mate-N-Lok connector pins at each end. One end is pushed into one of the centre row of termination sockets in the first 'Input' Mate-N-Lok connector plug (I).
The other end is pushed into the corresponding right row of termination sockets in the second 'Input' Mate-N-Lok connector plug (H), and if applicable also connected to the third 'input' Mate-N-Lok connector plug (G).

12.3 Multiple Amplifier Configurations

In large systems, comprising many loudspeakers, it may be necessary, because the large amount of amplifier power required exceeds the power available, to use extra power amplifiers. This can be done in one of several different ways:

- Unlinked multiple modules.

Separate amplifiers may be used to feed each Zone Relay Module. This enables each amplifier to be dedicated to 6 specific zones.

- Module input splitting (fig.12.3).

The Zone Relay Module provides the possibility of connecting more amplifiers to a single module, so that each amplifier feeds fewer loudspeaker zones. Three miniature fuses, link the centre and left rows of sockets of each of the Call, Music, and (common) Ground sockets of the amplifier input connector (fig.12.1).
If one of the fuses is removed, the amplifier connected to the corresponding (right) socket will only feed sockets 1-4 of the LS output connector.
Another amplifier, connected to the corresponding left socket, will then feed only sockets 5 and 6 of the LS output connector.

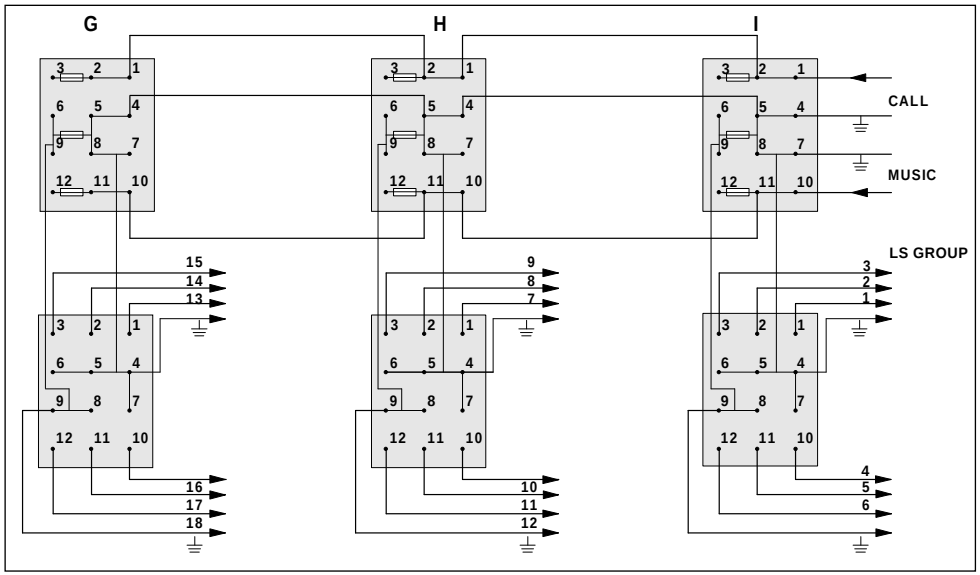


Fig. 12.2 - Coupling zones

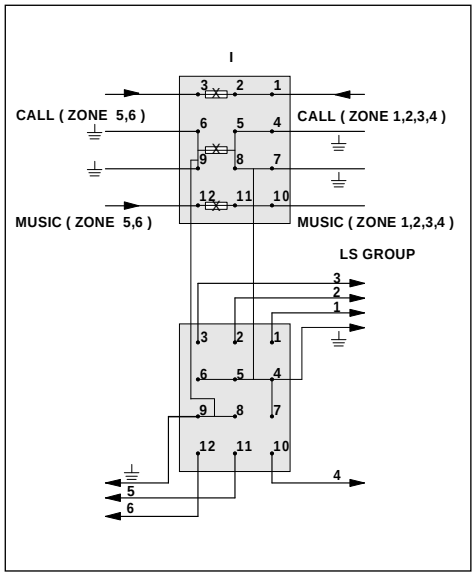


Fig. 12.3 - Input splitting

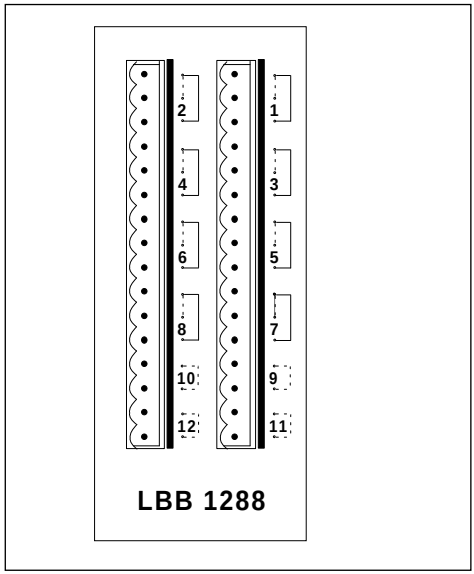


Fig. 13 - CRM

13 CONTROL RELAY MODULE (CRM) LBB 1288

The Control Relay module provides SM30 with a set of switching contacts, which can be opened or closed (dependent on the contact, and its terminations) as programmed by the installer or operator. Relays 1 to 8 have both make and break contacts. Relays 9 to 12 have make contacts. These contacts can be used to start remote equipment, such as cassette players, message loggers, etc.; to activate signalling/warning lamps; to release fire door relays; etc..

13.1 Operation

Relay 1 is reserved for the indication of microprocessor errors, and cannot be used for any other function.
Relay 2 is reserved for indication of all other internal errors (modules and Call Stations), and cannot be used for any other function.
Relay 3 is dedicated to the 'Delayed Power On' function, but may be used for other functions if Power On Delay is not required. The Delayed Power On function is intended for battery operated systems where, in order to conserve battery power, the SQ45 amplifier(s) is/are switched on only when a call is made. It causes a time delay (selectable from 2-9 seconds) between pressing the Call Station 'Press-To-Talk' key, the Microphone 'on' switch or switching-on of a Control Input and the actual activation of the call. Both sides of the normal 'open' contact of relay 3 are wired to the switch terminations on the SQ45 'DC Power' Mate-N-Lok connector(s). The software causes the relay contacts to close ('make'), switching on the DC power of SQ45. (See the SQ45 Instructions for Use for further details).
Relay 4 is dedicated in case an external audio source connected to an input of the

Microphone Input module should be started with contact 1-8 of the Control Input Module. See user programming 14.3 menu item 3.8 'Control inputs 1-8'.
Relays 3-12
Relays 3 (or 4 if power-on delay is used) to 12 can be activated by different sources, and may be used for a number of functions.

Remote Volume Control Overrides
The 'make' contacts of Relays 3 to 12 may be used to activate up to 10 loudspeaker volume control override relays. These relays, mounted in the loudspeaker enclosures, override the volume control setting of the actual loudspeaker itself. This means that regardless of the individual 'music' volume setting of each loudspeaker, all the loudspeakers in a particular zone will work at full volume when a Call is routed to it.

13.2 Installation

Mounting in the Control Centre
One Control Relay Module is used in SM30. This must be located in Control Centre slot J, as indicated in fig.5.1.

Wiring Control Relays
Each Control Relay Module is supplied with two plug-in, 16 terminal, screw connector blocks (fig.13). The wires to remote equipment are connected to the screw terminals, which are marked in threes 1 to 8 (make and break contacts), and in pairs 9 to 12 (make contact). The great advantage of the connector block is that if, for some reason, the SM30 Control Centre has to be removed, the blocks have simply to be unplugged and the wires remain intact. This avoids the tedious and risky business of rewiring the blocks in their original configurations.

13.3 Programming

Power-on delay
The Power-on delay function can be programmed with a time delay of 2-9 seconds (see installer programming 14.7 menu 5 'Power-on delay').

Coupling relays to zones
Each Control Relay is programmable, 'linked' or 'locked', to a specific Zone Relay, so that when a call is routed to a loudspeaker zone, the Control Relay linked to it will activate automatically (see installer programming 14.7 menu 11 'Override relays'). The display will show 'Z' for the relays involved.

Activation by Call Station and Function Keys
Relays 3 (or 4, if power on delay is used) to 12 may be programmed to be activated by Call Stations, and Function Keys on Call Stations. Activation by a Call Station happens whenever a call is made using Keypad of the Call Station Keypad (see user programming 14.3 menu 1.7). Activation by a Function Key happens whenever a pre-programmed Function Key (followed by the 'Press-To-Talk' key) is pressed (see user programming 14.3 menu 1.14).

Activation by Control Inputs
Relays 3 (or 4, if power on delay is used) to 12 may also be programmed to be activated by Control Input contacts (see user programming 14.3 menu 3.12). Control Input contacts 5 to 8 can be programmed to activate one, or a group of, Control Relay(s). This means that when the remote switch of a control input is closed, the programmed Control Relays become activated (see user programming 14.3 menu 3.7).
The display will show 'A' for the relays involved.

14.1 Summary SM30 User Programming

program step		selection
	User password	0 ▷ ⏻
1.1	CALL STATIONS	
1.2	- number	1-2, 3-4, 5-6
1.3	- Keypad	0-6, 7-12, 13-18
1.4	- priority number	1-9
1.5	- signal number	00-nn
1.6	- message number	0,1,2,3,4,1R,2R,3R,4R
1.7	- control relay number	4-12
1.8	- Function key number	1,2,3,4
1.9	- Call programming	
1.10	- priority number	1-9
1.11	- signal number	00-nn
1.12	- message number	0,1,2,3,4,1R,2R,3R,4R
1.13	- zone number	1-6, 7-12, 13-18
1.14	- control relay number	4-12
1.15	- Remote music up	on/off
1.16	- Remote music down	on/off
1.17	- Remote music mute	on/off
1.18	- Remote music select	on/off
1.19	- Remote relay switch	on/off
1.20	-control relay number	4-12
1.21	- Remote relay toggle	on/off
1.22	- control relay number	4-12
2.1	MICROPHONES	
2.2	- number	1-2, 3-4, 5-6
2.3	- priority number	1-9
2.4	- signal number	00-nn
2.5	- message number	0,1,2,3,4,1R,2R,3R,4R
2.6	- zone number	1-6, 7-12, 13-18
2.7	- control relay number	4-12
3.1	CONTROL INPUTS	
3.2	- number	1-8, 9-16, 17-24
3.3	- 1 music volume up	on/off
3.4	- 2 music volume down	on/off
3.5	- 3 music mute	on/off
3.6	- 4 music source select	on/off
3.7	- 5/8 remote relay switch	on/off
3.8	- 1/24 - priority number	1-9
3.9	- signal number	00-nn
3.10	- message number	0,1,2,3,4,1R,2R,3R,4R
3.11	- zone number	1-6, 7-12, 13-18
3.12	- relay number	4-12
4.1	MUSIC ROUTING	
4.2	- zone number	on/off

14.2 Introduction

14.2.1 General

Programming is carried out using the keys on the front panel of SM30 Control Centre. A password must be keyed in via the programming keys in order to enter a Programming mode.
Illuminated LEDs on the front panel indicate which keys can be used at the current stage of programming.

The left/right arrow keys are used to scroll through the main menu in order to move to a different program, and also to move the cursor during zone routing and relay assignment.
The double up/down arrow keys are used to select tens during attention and alarm signal programming.
The single up/down arrow keys are used to scroll through selections within an actual program, and to select digits 1 to 9 during attention and alarm signal programming.

Pressing BREAK will always return to the next higher programming level.
Pressing ENTER will confirm your selection, storing the information in the system's memory.

The main menu can always be recognised by "SELECT PROGRAM:" in the upper line of the display. Scrolling through the menu can be done with the left /right arrow keys.

This programming guide assumes that all possible modules and Call Stations are present in the system.

14.2.2 User Program

The User Program is a limited version (programming menus 1 up to 4) of the Installer Program, detachable at the rear of the book. This program is intended, as its name implies, to allow the user(s) of the system to alter priorities, routing, etc. as their needs change, without having to call in expert help. The program contains a variety of items which are dependent upon the system configuration.
Programs marked * in the program step list will only appear on the display if the relevant modules and/or Call Stations are present in the system. When a module is not present in the system the relevant program step will not be shown on the display.

If the system is in normal operation (in its 'Run' mode), the display will show:
* SM30 SYSTEM *
XXXXXXXXX YY

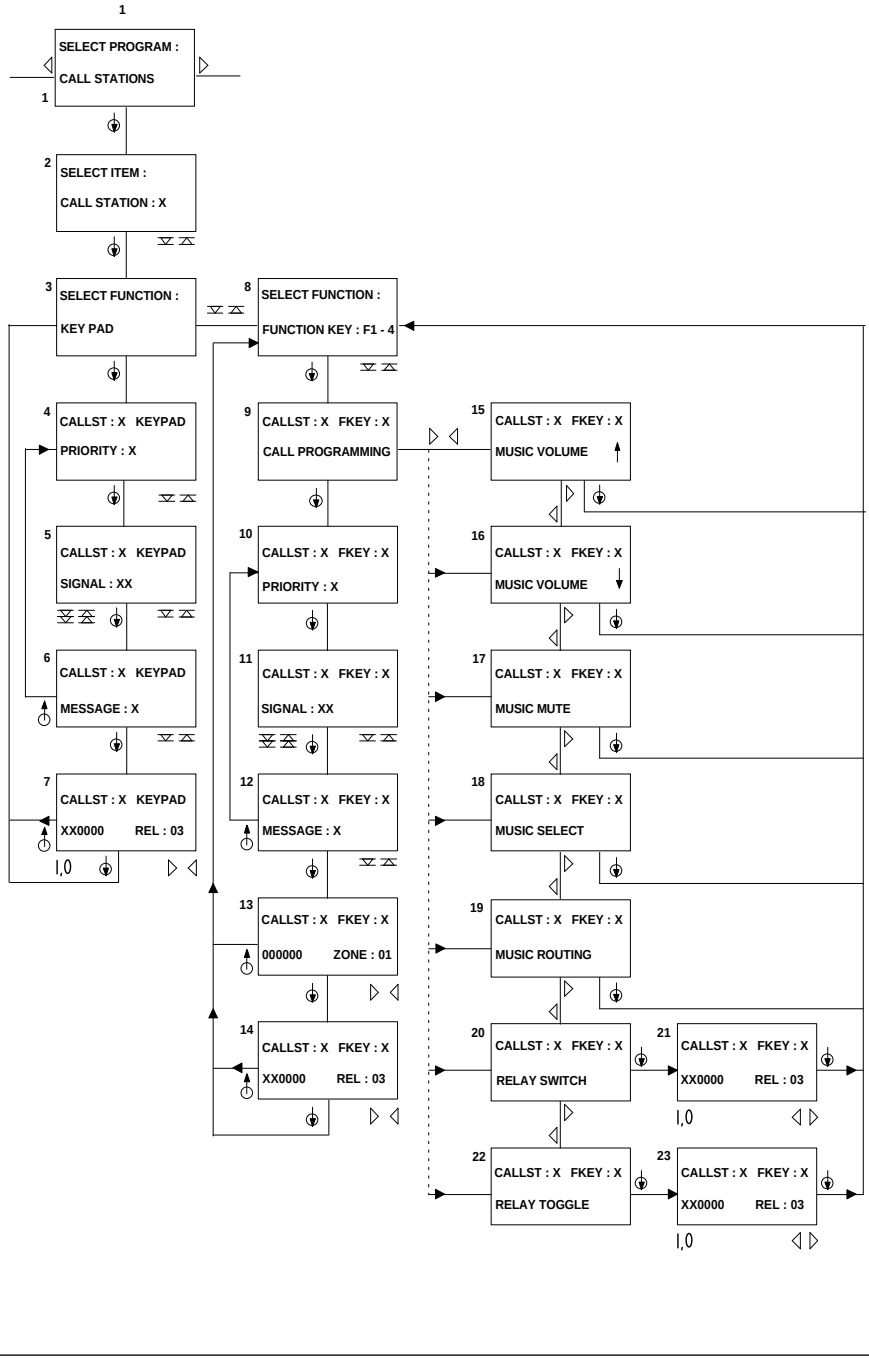
If the Music Input Module is present, the second display line shows XXXXXXXX as the current music source name, and YY as the current volume level (marked, in steps of 3, from 00 to 99).
If the Music Input Module is not present, the bottom line will be empty.

14.2.3 User Programming Mode

To enter the User Programming mode, type the correct password: O > ENTER
The display will show:
* SOFTWARE *
* VERSION x.xx *

After a few seconds the display shows:
SELECT PROGRAM:
CALL STATIONS

This is the first program step in the main menu.



Call Stations

14.3 User Programming

14.3.1 CALL STATIONS

1.1 Main menu selection

Select from the main menu by means of the left/right arrow keys:
CALL STATIONS

1.2 Call Station number selection

The cursor will be blinking below the number of the first Call Station found. The numbers of Call Stations not present will be skipped. Selection of another Call Station can be made using the up/down arrow keys.

1.3 Key Pad Selection

Default is selected the Key Pad of the Call Station. To program the Function Keys of the Call Station, select the function key: F1, F2, F3 or F4 by means of the up/down arrow keys, and continue with program step 1.8.

1.4 Priority level selection

The display will show the current priority. Changing the priority level can be done with the up/down arrow keys. Level 1 is the lowest; level 9 is the highest priority. (See chapter 'System Operation' for description of the priority function.)

1.5 Signal number selection

This is the attention or alarm signal that either precedes a call, or may be used alone. Signals are selectable using the up/down arrow keys. Double up/down arrows keys change the tens, and single arrow keys change the single numbers.
Signal number "00" means: no signal.
If the selected signal number does not exist, the display will show:
* NOT EXISTING *
SIGNAL : XX

Pressing any key will return to signal number selection.

1.6 Pre-recorded Message number selection

This display will be skipped if the Recorded Message Module is not present.
The message number can be selected using the up/down arrow keys.
The sequence of message number selection on the display is:
0, 1, 2, 3, 4, 1 REPEAT, 2 REPEAT, 3 REPEAT, 4 REPEAT.
"MESSAGE: 0" means: no message. Pressing BREAK will return to priority level selection.
See chapter 'Recorded Message Module' for a full explanation, and details of how to record messages.

1.7 Programming Control Relays

This display will be skipped if the Control Relay Module is not present in the system.
The current relay programming of Control relays 1-6 is shown. Shifting the cursor to the right, further than the last position, will display the current setting of relays 7-12.
The lower right of the display will show the relay number which is being indicated by the cursor. Moving the cursor to a different relay can be done with the left/right arrow keys. Relays which are already selected are indicated by 1, non-selected relays are indicated by 0. Selecting a relay can be done with the '|' key. Deselecting a relay can be done with the 'O' key.

Relay 1 (marked 'X') is reserved for the activation of error indicators, if a processor failure is detected, and cannot be programmed for any other function.
Relay 2 (marked 'X') is reserved for the activation of error indicators, if a Call Station or module failure is detected, and cannot be programmed for any other function.
Relay 3 is dedicated to the 'Delayed Power On' function explained in paragraph 5 'Programming Power On Delay', but may be used for other functions if 'Power On Delay' is not used. If it is used, the third position will be marked with an 'X' in the display.
Relay 4-6 (marked 'O') are not selected.
If Control Relays are to be used for alternative functions, refer to program step 1.15. Pressing BREAK will return to Key Pad selection.

1.8 Function Key number selection

Selection of the Function Key number can be made with the up/down arrow keys. The display sequence is:
KEYPAD, FUNCTION KEY: F1, F2, F3, F4

1.9 F-key programming selection

Each Function Key on a Call Station can be used for activation of one of two main purposes:
- Call Programming after pressing ENTER.
- Remote control of the Music and Control Relay functions to be selected by means of the left/right arrow keys (see program step 1.15 and 1.22).

1.10 F-key Priority selection

See program step 1.4.

1.11 F-key Signal number selection

See program step 1.5.

1.12 F-key Pre-recorded Message number selection

See program step 1.6.

1.13 F-key Call Routing to Zones

The current programmed call routing will be displayed.
The lower right of the display will show the zone number which is being indicated by the cursor.
Moving the cursor to a different zone can be done with the left/right arrow keys. Shifting the cursor to the right, further than the last position, will display the routing of zones 7-12, if Zone Relay Module 2 is present.
Shifting the cursor to the right again, further than the last position, will display the routing of zones 13-18, if Zone Relay Module 3 is present.
If only Zone Relay Modules 1 and 3 are present, the routing of zones 13-18 will be displayed instead of 7-12. On the display, zones which are already selected are indicated by 1, non-selected zones are indicated by 0.
Selecting a zone can be done with the '|' key. Deselecting a zone can be done with the 'O' key.

1.14 F-key programming Control Relays

See program step 1.7.

Programming of alternative Function Key
Each Function Key on a Call Station can be used for one of two main purposes.
Instead of selection of Call Programming (program step 1.9) , each Function Key can

also be programmed with one of six more functions. The 'music' functions are only available if the Music Input Module is present.
The 'relays' functions are only available if the Control Relay Module is present.
The Function Key LED on the Call Station indicates whether the relays are on or off.
Scroll with the up/down arrow keys to select the alternative function.

1.15 F-key Music volume up

Pressing the assigned Function Key on the Call Station increases the music volume level.

1.16 F-key Music volume down

Pressing the assigned Function Key on the Call Station decreases the music volume level.

1.17 F-key Music on/off

Pressing the assigned Function Key on the Call Station switches on/off the music.

1.18 F-key Music source select

Pressing the assigned Function Key on the Call Station allows selecting one of three music sources.

1.19 Music routing

This program step provides music routing programming of F-keys by means of the numeric keys on the Call Station.
After pressing the assigned F-key on the Call Station, the red and green LEDs illuminate to indicate that this F-key has been programmed as a music routing F-key. The zone LEDs show the zones that are currently broadcasting music. However, adding or deleting of zone numbers is possible by means of the numeric keypad of the Call Station. Pressing the F-key again will store the new zone selection into the memory while the previous selection will be erased.

1.20 F-key Relay switching selection

This function allows the selected relays to be active only while the Function Key is pressed.
Already assigned relays are indicated by 'A' and can not be used.
The function key LED indicates whether the relays are on or off.

1.21 Programming Control Relays

See program step 1.7

1.22 F-key Relay toggling selection

This function allows the selected relays to be switched on when the Function Key is pressed the first time, and switched off when the key is pressed a second time.
Already assigned relays are indicated by 'A' and can not be used.
The function key LED indicates whether the relays are on or off.

1.22 Programming Control Relays

See program step 1.7

2 MICROPHONES

2.1 Main menu selection

Select from the main menu by means of the left/right arrow keys:
MICROPHONES.

2.2 Microphone number selection

Pressing ENTER will show the number of the first microphone found in the system. The system can detect the presence of the Microphone Input Module, but not whether a microphone is connected to that Microphone Input Module. So it is, in principle, possible to program microphones on an Microphone Input Module even if those microphones are not present. Another microphone number can be selected using the up/down arrow keys.

2.3 Priority level selection

The display will show the current priority. Changing the priority level can be done with the up/down arrow keys.
Level 1 is the lowest; level 9 is the highest priority. See chapter 'System Operation' for description of the priority function.

2.4 Signal number selection

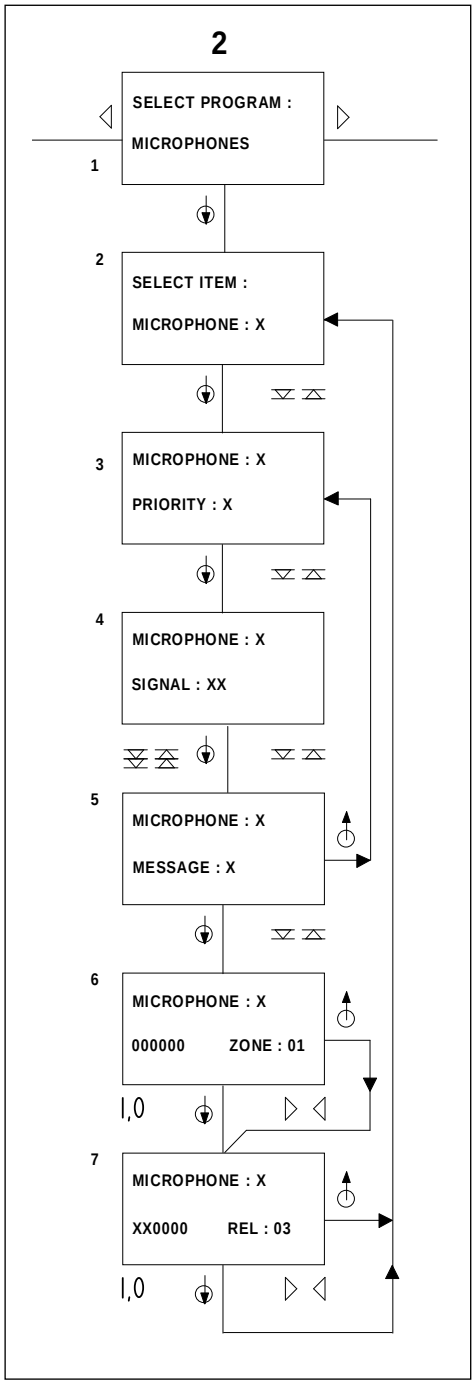
This is the attention or alarm signal that either precedes a call, or may be used alone. Signals are selectable using the up/down arrow keys. Double up/down arrow keys change the tens, and single up/down arrow keys change the single numbers. Signal number "00" means: no signal. If the selected signal number does not exist the display shows:
* NOT EXISTING *
SIGNAL: XX

2.5 Pre-recorded message number selection

This display will be skipped if the Re-corded Message Module is not present.
Message number can be selected using the up/down arrow keys.
The sequence of message number selection on the display is:
0, 1, 2, 3, 4, 1 REPEAT, 2 REPEAT, 3 REPEAT, 4 REPEAT.
"MESSAGE: 0" means: no message.
Pressing BREAK will return to 'priority level selection'.
See chapter 'Recorded Message Module' for a full explanation, and details of how to record messages.

2.6 Call Routing to Zones

The current programmed call routing will be displayed. On the display, zones which are already selected are indicated by 1, non-selected zones are indicated by 0.
The lower right of the display will show the zone number which is being indicated by the cursor.
Moving the cursor to a different zone can be done with the left/right arrow keys. Shifting the cursor to the right, further than the last position, will display the routing of zones 7-12, if Zone Relay Module 2 is present.
Shifting the cursor to the right again, further than the last position, will display the routing of zones 13-18, if Zone Relay Module 3 is present.
If only Zone Relay Modules 1 and 3 are present, the routing of zones 13-18 will be displayed instead of 7-12.
Selecting a zone can be done with the '|' key. Deselecting a zone can be done with the 'O' key. Pressing BREAK will continue with programming the control relays.



Microphones

2.7 Programming Control Relays

This display will be skipped if the Control Relay Module is not present in the system. The current setting of Control relays 1-6 is shown. Shifting the cursor to the right, further than the last position, will display the current setting of relays 7-12. Selecting a zone can be done with the '|' key. Deselecting a zone can be done with the 'O' key. Relay 1 (marked 'X') is reserved for the activation of internal system error indicators and cannot be programmed for any other function. Relay 2 (marked 'X') is reserved for the activation of Call Station error indicators and cannot be programmed for any other function. Relay 3 is dedicated to the 'Delayed Power On' function, but may be used for other functions if Power On Delay is not used. If it is used, the third position will be marked with an 'X' in the display.

Programming next microphone
When programming of the first microphone is completed, pressing ENTER returns to the next microphone number to be programmed.

14.3.3 CONTROL INPUTS

3.1 Main menu selection

Select from the main menu by means of the left/right arrow keys: CONTROL INPUTS.

3.2 Control input number selection

Pressing ENTER will show the number of the first free input. The number displayed is dependent on the Control Input Module being present in the system. Inputs assigned to Direct Zone Routing will be skipped. Numbers of modules not present will be skipped. Inputs 1-8 of Control Input Module 1 can have one of two functions: remote music control or normal call activation. All other inputs available on Control Input Module 2 and 3, can only be used for normal call activation. Use the up/down arrow keys to select a Control Input number.

3.3 Control input 1

Enables remote control of music volume up. Pressing the '|' key selects music volume up activation, pressing the 'O' key continues normal call activation (program step 3.8).

3.4 Control input 2

Enables remote control of music volume down. Pressing the '|' key selects music volume up activation, pressing the 'O' key continues normal call activation (program step 3.8).

3.5 Control input 3

Enables remote control of music mute. Pressing the '|' key selects music volume up activation, pressing the 'O' key continues normal call activation (program step 3.8).

3.6 Control input 4

Enables remote select of music source. Pressing the '|' key selects music volume up activation, entering 'O' continues normal call activation (program step 3.8).

3.7 Control input 5-8

Enables Control Relay switching selection. Pressing the '|' key selects Control Relay switching 'on' and pressing ENTER continues programming Control Relays (program step 3.12). Pressing the 'O' key continues with normal call activation.

3.8 Control input 1-8

Enables the distribution of an external audio source connected to microphone/line input x (1 - 6) to one or more loudspeaker zones with priority, attention signal followed eventually by a pre-recorded message. Relay 4 of the Control Relay Module (LBB 1288/00) is reserved to start (and to stop) the audio source.
A contact, connected to pins 4 and 5 of the relevant microphone/line connector (5-pole DIN), starts and stops the action (4 - 5 closed starts the action and 4 - 5 open stops the action).

3.9 Priority level selection input 1-24

See program step 1.4.

3.10 Signal number selection

See program step 1.5.

3.11 Pre-recorded Message number selection

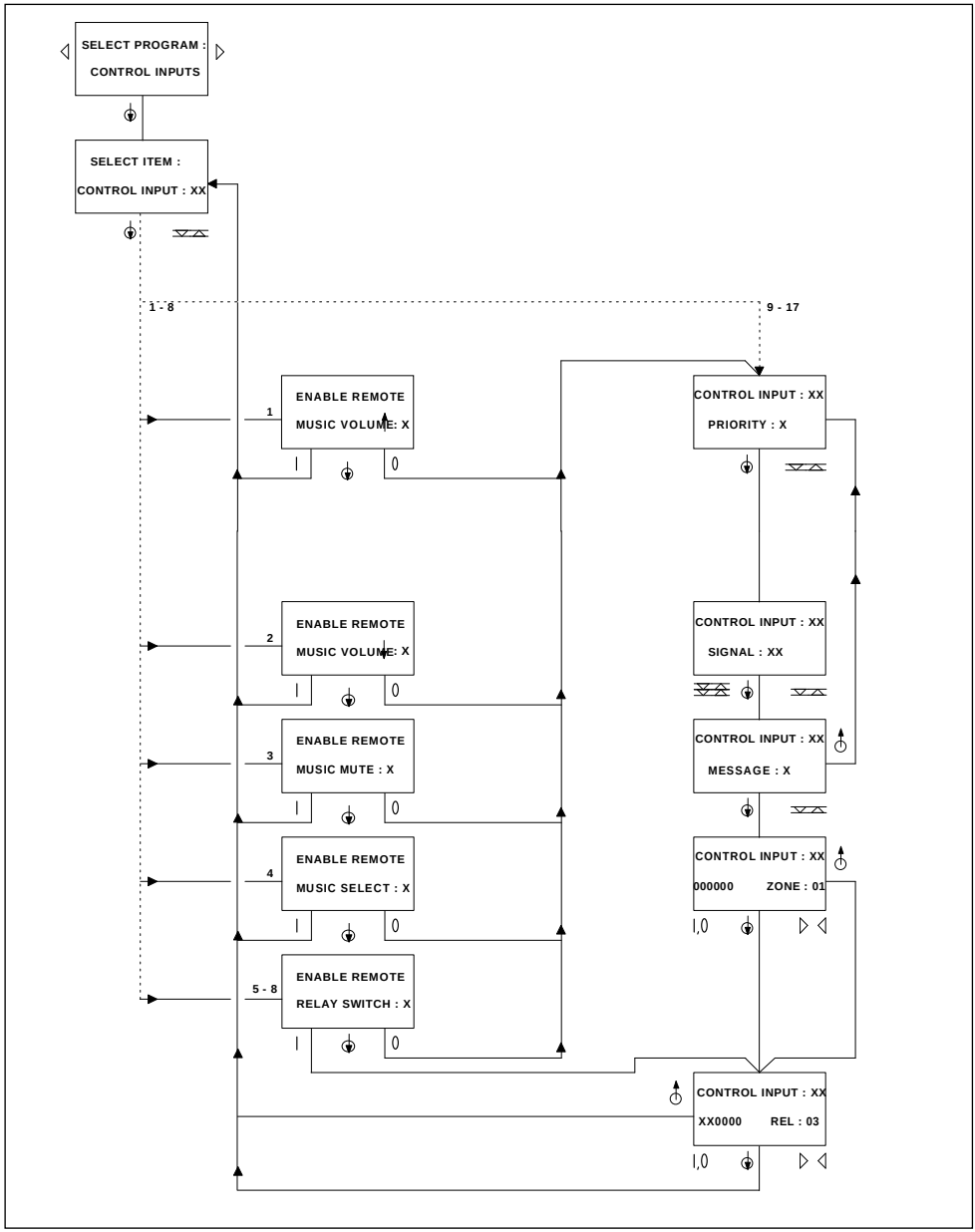
See program step 1.6.

3.12 Call routing to Zones

See program step 1.13.

3.13 Programming Control Relays

See program step 1.7.



Control Inputs

GENERAL
The specification relates to a Control Centre with corresponding modules.

MICROPROCESSOR HARDWARE

-	EEPROM data storage time	: > 10 years

RECORDED MESSAGE MODULE

-	data retention	: > 30 days
-	audio bandwidth	: 320 - 6000 Hz
-	max. total recording time	: 65 seconds
-	max. number of messages	: 4
-	microphone phantom power supply voltage	: 12 V DC

AUDIO OUTPUTS

Music input to music output

-	gain:	
	control range	: > 60 dB (2 dB steps)
	mute	: > 80 dB
-	input level	: > 150 mV
-	output level symmetrical:	
	nominal	: 0 dBV
	maximum	: +12 dBV
-	amplifier output distortion:	
	THD at nominal level	: 0.1%
	THD at max.output	: 0.3%
-	amplifier S/N output at nominal level	: > 80 dB (flat)

Call Station or Microphone input to call output

-	output level symmetrical:	
	nominal	: 0 dBV
	maximum	: +12 dBV
-	Microphone Input Module:	
	input level	: > 1.5 mV
	frequency response	: 50 - 15000 Hz (± 2 dB)
	signal-to-noise ratio	: 68 dB (flat)
-	Call Station:	
	input level	: > 84 db (SPL)
	frequency response	: 440 - 12500 Hz (± 3 dB)
	signal-to-noise ratio	: 58 dB (flat)
-	amplifier output distortion:	
	THD at nominal level	: 0.1%
	THD at max.output	: 0.3%

Music and call Output Impedance

-	at 1 kHz	: < 50 Ω

Click suppression in combination for any module

-	for audio switching	: > 60 dB
-	for power on/off switching	: > 30 dB
-	mute by on/off switch	: > 80 dB

Pilot tone 20 kHz sinus asymmetrical

-	volume preset at least	: 0.05 - 1 V
-	mute by on/off switch	: > 80 dB

CRM Output relays

-	A.C. switching	: 32 V @ 2 Amps
-	D.C. switching	: 48 V @ 2 Amps

MAINS SUPPLY

-	voltage setting at delivery	: 220-230 V
-	mains voltage selection range	: 110 V, 127 V, 220-230 V or 240 V
-	maximum voltage deviation:	
	for all selected ranges	: +10 /-10%
	however at 230 V mains	: + 6 /-10%
-	mains frequency	: 50 - 60 Hz
-	power consumption at mains voltage	: < 90 VA
-	mains fuse: at 220/240 Volt	: T2.5 A
-	at 110/127 Volt	T5 A
-	mains transformer:	
	temperature switch self restoring type	: +125 °C

EMERGENCY SUPPLY

The unit can be supplied from an external DC voltage

-	V DC nominal	: 48 V @ current: < 1.2 A
	V DC minimum	: 42 V @ current: < 1.2 A
	V DC maximum	: 58 V @ current: < 1.2 A
-	fuse in 48 V DC line on PCB located in housing	
-	polarity protection against reverse connection	

MECHANICAL DATA

-	dimensions:	
	19” rack mounting	: 483 x 310 x 132 mm
	desktop use	: 440 x 310 x 132 mm
-	weight LBB 1280	: 8.8 kg (unpacked)

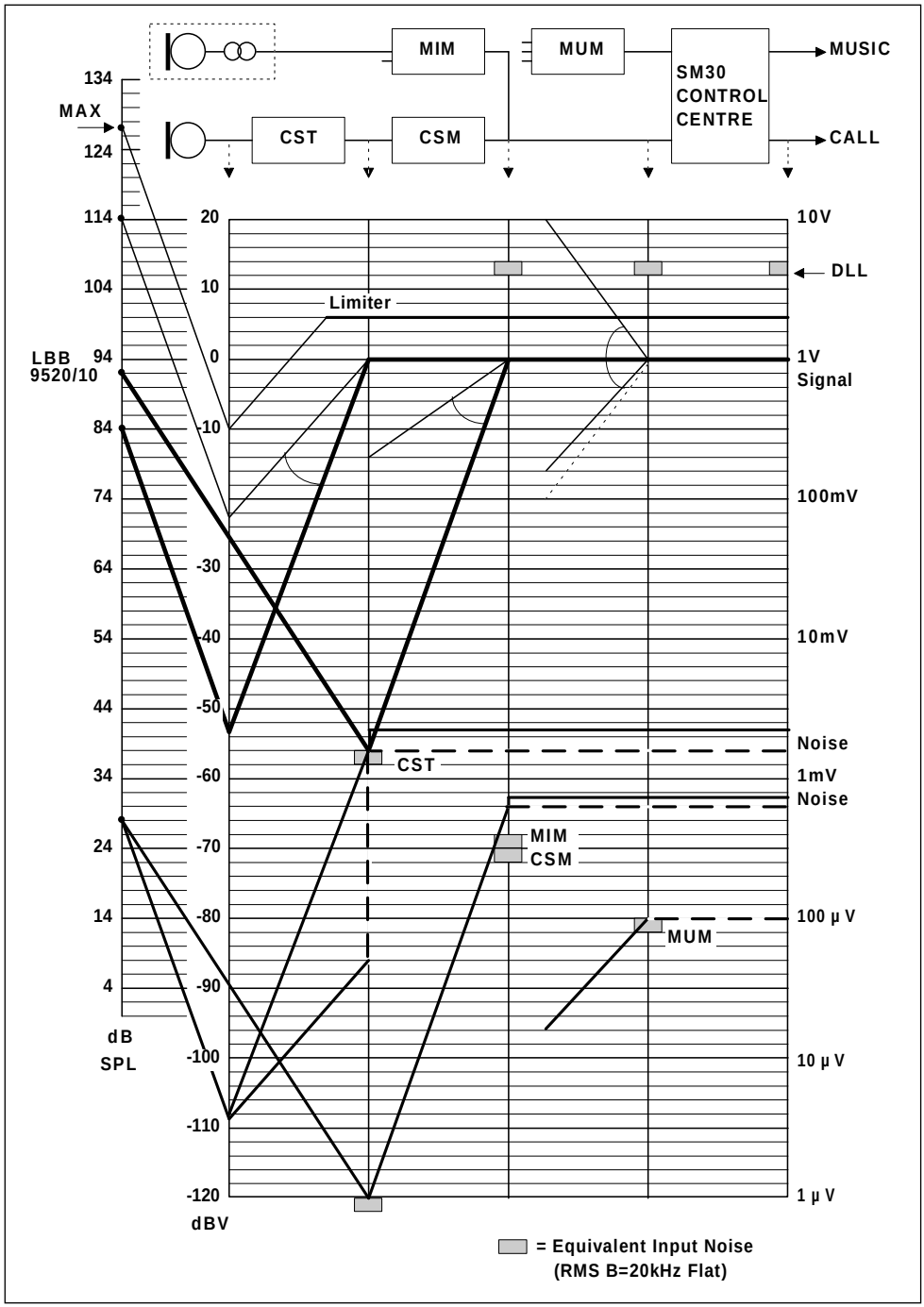
ENVIRONMENTAL REQUIREMENTS

Rated range of use

-	ambient temperature	: -10 to +45 °C
-	relative humidity	: 15 - 90%

Climatic conditions during transporting handling and storage

-	according to	: UN-D 1639/01
-	temperature	: -40 to +70 °C
-	relative humidity	: 5 - 95%



Audio signal level diagram

14.3.4 MUSIC ROUTING

4.1 Main menu selection

Select from the main menu by means of the left/right arrow keys:
MUSIC ROUTING.

4.2 Zone selection

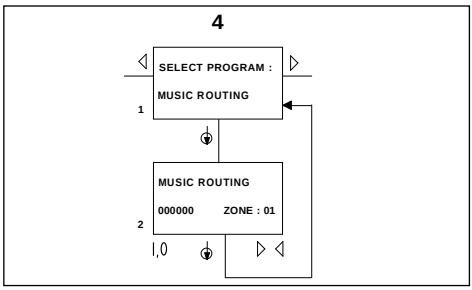
The current music routing will be displayed. Zones which are already selected are indicated on the display by 1, not selected zones are indicated by a 0.
The lower right of the display shows the number of the zone indicated by the cursor position. Moving the cursor to another zone can be done with the left/right arrow keys. Shifting the cursor to the right, further than the last position, will display the routing of zones 7-12, if Zone Relay Module 2 is present. Shifting the cursor to the right again, further than the last position, will display the routing of zones 13-18, if Zone Relay Module 3 is present. If only Zone Relay Modules 1 and 3 are present, the routing of zones 13-18 will be displayed instead of 7-12. Selecting a zone can be done with the '|' key, deselecting a zone can be done with the 'O' key.

Return to 'RUN' mode
User Programming is now completed. Pressing BREAK will exit the user programming mode, and return to the normal 'RUN' mode.

14.4 ERROR MESSAGES

During normal operation, all modules present in the system are continuously tested. If a module stops communicating with the processor, a message is sent to the display stating the faulty module type and the module number. If a Call Station stops communicating with the system, this is also displayed. If a Control Relay Module is present, an SM30 system fault will deactivate relay 1, providing the possibility to switch on a remote warning light, buzzer, etc..
** ERROR **
CALL STATION:XX
MUSIC INPUT MOD
LINE OUTPUT MOD
CST INPUT MOD XX
MIC INPUT MOD XX
ZONE REL. MOD XX
CTL RELAY MOD
REC MESSAGE MOD
CTL INPUT MOD XX

If more then 1 error occurs, the different messages will be displayed sequentially.
When the Recorded Message Module is installed, but the mode switch is not set in the 'SYS' position, the following message will be displayed:
** ERROR **
MESSAGE MODULE
SWITCH POSITION



Music Routing

SM30
Sound Management System

Supplement

Instructions for installation

LBB 1280

Philips
Communication &
Security Systems

PHILIPS

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14.7	Installer programming	3

14.5 Summary SM30 Installer Programming

Setup programming steps		selection
5.0	Installer password	| ◁ ⏻
7.1	LANGUAGE SELECT	
8.1	STORE HARDWARE	
1.1	CALL STATION	

Installer programming steps		selection
5.0	Installer password	
5.1	POWER-ON DELAY	
5.2	delay time	1-9 sec
6.1	MUSIC INPUT TEXT	
6.2	music input number	1,2,3
6.3	text selection	see text
7.1	LANGUAGE SELECT	
7.2	language selection	E,G, S, D, I, F
8.1	STORE HARDWARE	
8.2	busy storing	
9.1	AMPLIFIER CONFIGURATION	
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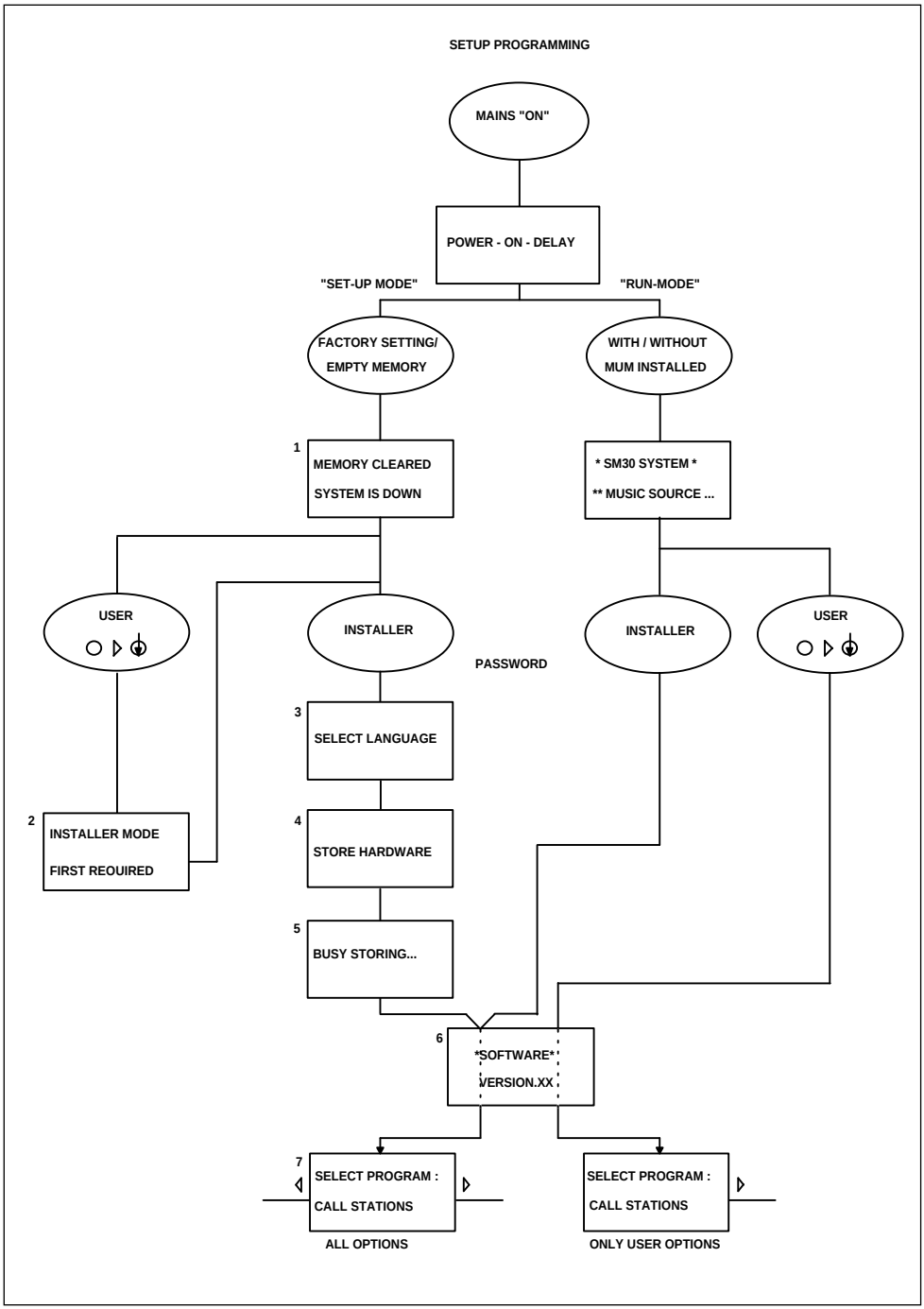
16.2	selection Call Station number	
16.3	activation flexible F-key	
17.1	EXTENDED CALL STATION PROGRAMMING	
17.2	selection Call Station input number	
17.3	confirmation	


SETUP PROGRAMMING
MAINS "ON"
POWER - ON - DELAY
"SET-UP MODE"
"RUN-MODE"
FACTORY SETTING/
EMPTY MEMORY
WITH / WITHOUT
MUM INSTALLED
1
MEMORY CLEARED
SYSTEM IS DOWN
* SM30 SYSTEM *
** MUSIC SOURCE ...
USER
INSTALLER
PASSWORD
INSTALLER
USER
3
SELECT LANGUAGE
2
INSTALLER MODE
FIRST REQUIRED
4
STORE HARDWARE
5
BUSY STORING...
6
SOFTWARE
VERSION.XX
7
SELECT PROGRAM :
CALL STATIONS
ALL OPTIONS
SELECT PROGRAM :
CALL STATIONS
ONLY USER OPTIONS

Setup

14.6 SETUP PROGRAMMING

If the memory is clear, the software must be able to recognise the hardware that is installed before programming can be undertaken.
This is done via the Setup Program, which stores the system hardware setup in memory, telling the processor which modules and Call Stations are present in the system.
Also the display language version has to be selected the first time.

1 System down
When an SM30 system is first delivered, the relevant modules have been installed, and the system is switched on, the LCD display on the front panel will show that the system is down.

2 Installer mode
If the memory has been cleared and the User Programming password is entered, the display will show that the installer mode is first required.
To enter the Setup Program, the Installer Program password must be typed.

3 Language selection
The display will show the current language. Select the desired language by scrolling through the menu using the up/down arrow keys.

4 Store hardware
After pressing ENTER, programming continues with storing the hardware configuration.

5 Busy storing
After pressing ENTER, the display will show busy storing for a short moment.

6 Display software version
When the hardware setup is stored, the setup is complete and programming will automatically continue with the first step of the Installer Programming. First the display will show the current software version.

7 Main menu
After a few seconds, the display will show the first step from the main menu.
The main menu can always be recognised by "SELECT PROGRAM:" in the upper line of the display. Scrolling through the menu can be done with the left/right arrow keys.
The SM30 system can be programmed now by the installer to suit the requirements of the user.

14.7 INSTALLER PROGRAMMING

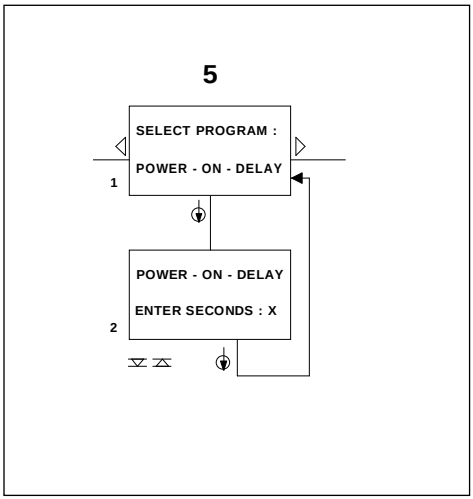
To enter the Installer Programming mode, type in the Installer password.
The display will show the Software Version x.xx, and after a few seconds the display is replaced by SELECT PROGRAM: CALL STATIONS

This is the first program step of the main menu. Refer to User Programming step numbers:

1 CALL STATIONS
2 MICROPHONES
3 CONTROL INPUTS
4 MUSIC SOURCES

14.7.5 POWER-ON DELAY

This program is intended for battery operated systems where, in order to conserve battery power, the amplifier is switched on only when a call is made.
It causes a time delay (selectable from 1-9 seconds) between pressing the Call Station 'Press-To-Talk' key, Microphone 'on' switch, or switching on of a Control Input, and actual activation of the call.
Relay 3 of the Control Relay Module is dedicated to switching the power to the amplifier(s), but if "0" seconds is selected, relay 3 is free to be programmed for any other function. (See program step 1.7.)



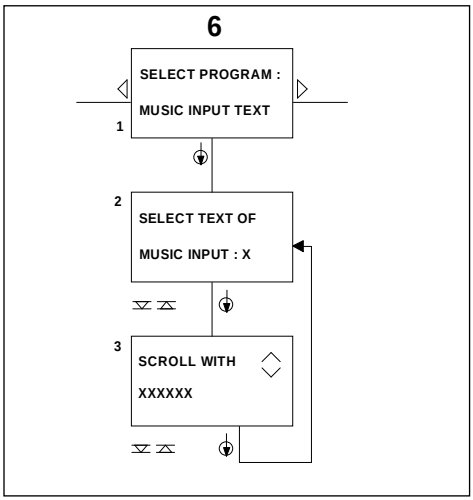
Power-on Delay

5.1 Main menu selection

Select from the main menu by means of the left/right arrow keys: POWER-ON DELAY.

5.2 Delay time

The delay time can be selected with the up and down arrow keys.
Pressing ENTER confirms the selection and returns to the main menu.



Music Input Text

14.7.6 ALTERNATIVE MUSIC INPUT TEXT

If the music input module is present, the second line of the display shows in the normal RUN mode the currently selected music source and the volume. The default text of the music source is:
MUSIC OFF, MUSIC INPUT 1, MUSIC INPUT 2, MUSIC INPUT 3.
Alternative text for music inputs 1,2 and 3 can be chosen.

6.1 Main menu selection

Select from the main menu by means of the left/right arrow keys: MUSIC INPUT TEXT.

6.2 Input number selection

Input number 1,2 or 3 can be selected with the up and down arrow keys.

6.3 Alternative text selection

The first alternative text “TUNER” will be displayed.
The new text can be selected using the up/down arrow keys. The possible texts variants are:

tuner	tuner 1	tuner 2
cd player	cd player 1	cd player 2
cassette	cassette 1	cassette 2
tape	tape 1	tape 2
bms	bms 1	bms 2
dat player	dat player 1	dat player 2

Pressing ENTER confirms the selection for that input.
The display will return to music input number selection.

14.7.7 SELECTING MENU LANGUAGE

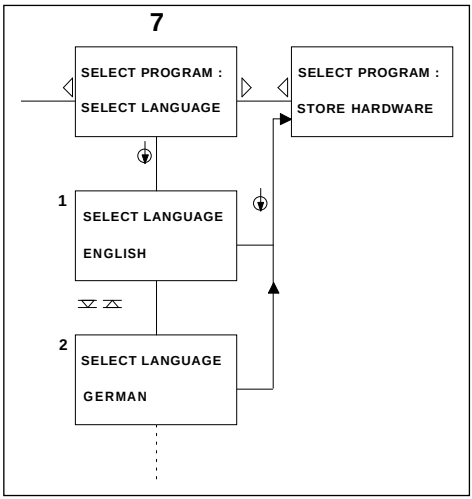
The Setup Program automatically starts with the Select Language menu, see chapter 14.5. If the memory has been already loaded, it is still possible to change the display language. Six menu and/or display languages are available: English, Italian, Spanish, French, Dutch and German.

7.1 Main menu selection

Select from the main menu by means of the left/right arrow keys:
SELECT LANGUAGE

7.2 language selection

The current setting will be displayed. The language option can be altered using the up/down arrow keys. Pressing ENTER continues programming with the menu “Store hardware”



Select Language

14.7.8 STORING HARDWARE CONFIGURATION

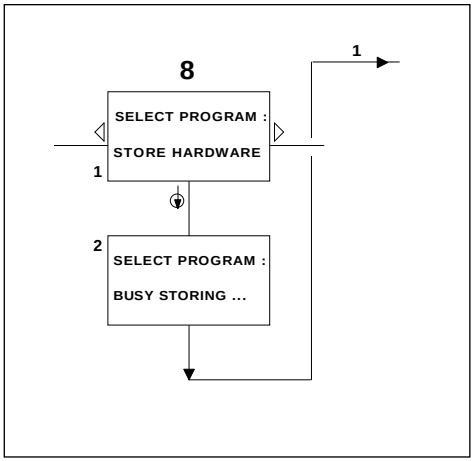
To enable the system to check that all modules are communicating with the processor, the hardware configuration has to be stored in the memory of the system. This must be done whenever a change is made in the hardware configuration and after the memory is cleared.
This is the only possible program option when entering the programming mode after clearing the memory.

8.1 Main menu selection

Select from the main menu by means of the left/right arrow keys:
STORE HARDWARE

8.2 Busy storing

After pressing ENTER, the display will show 'busy storing' for a short moment. Programming will automatically continue with the first step of the Installer Programming.



Store Hardware

14.7.9 SELECTING AMPLIFIER CONFIGURATION

The SM30 system is intended for use with 2 separate amplifier channels: a music channel and a call channel. It is possible however, to use only 1 amplifier channel for both calls and music.
In order for the system to function correctly, SM30 must know which option is chosen. See chapter 5, 'Connecting Amplifiers' for consequences of using 1 channel.

9.1 Main menu selection

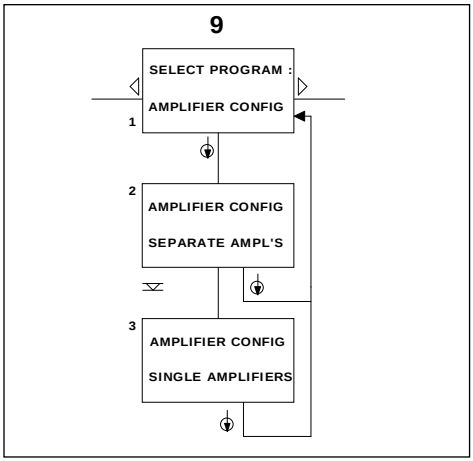
Select from the main menu by means of the left/right arrow keys: AMPLIFIER CONFIG.

9.2 Configuration display

The current setting will be displayed. If the memory has been cleared, the default option 'SEPARATE AMPS' is displayed.

9.3 Altering selection

The option can be altered using the up/down arrow keys.



Amplifier Configuration

14.7.10 REMOTE VOLUME CONTROL MUSIC

This program effects the operation of the music volume control, which is activated via the Call Station Function Keys and Control Inputs 1 and 2.
STEP mode means that at every push of the programmed Function Key or Control Input, in normal Run mode, the volume level will change 3 steps (approx. 2 dB) as indicated on the bottom line of the display.
REPEAT mode means that as long as the Function Key or Control Input is pushed, the volume level will continue to go up or down until it reaches its limit (marked '99' maximum and '00' minimum).

10.1 Main menu selection

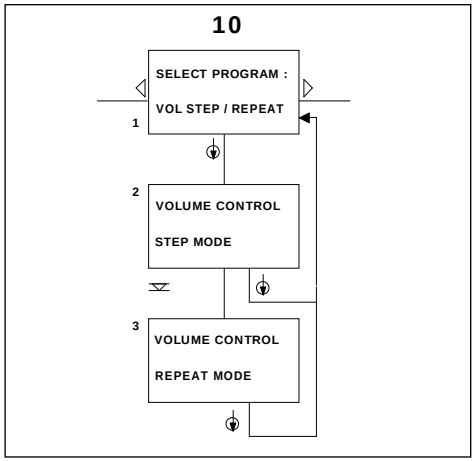
Select from the main menu by means of the left/right arrow keys: VOL STEP/REPEAT

10.2 Mode display

The current mode will be displayed.

10.3 Altering selection

Selecting STEP or REPEAT can be done with the up/down arrow keys.



Volume Step/Repeat

14.7.11 VOLUME CONTROL OVERRIDE RELAYS

With this function one or more Control Relays (1-12) can be coupled to Zone Relays (1-6, 7-12, 13-18) for volume override of the loudspeakers.

11.1 Main menu selection

Select from the main menu by means of the left/right arrow keys: OVERRIDE RELAYS

11.2 Zone selection

The display will be skipped if the Control Relay Module is not present in the system. The current setting of relays 1-6 is shown. Shifting the cursor to the right, further, further than the last position, will display the current setting of relays 7-12.
Moving the cursor to a different zone can be done with the up/down arrow keys.

11.3 Relay selection

Programming the Control Relays is done in the same way as described at programming step 1.7. However, designated override relays will be marked with the letter 'Z'. Pressing ENTER will increase the zone number.

12 ROUTING LIMITS CALL STATION

This program may be used to prevent selection of specific zones via the keypad on a Call Station. Disabled zones can not be selected anymore from the Call Station keypad, and will reacts as if those zones are not present. The Call Station zone LEDs will remain 'off'.

12.1 Main menu selection

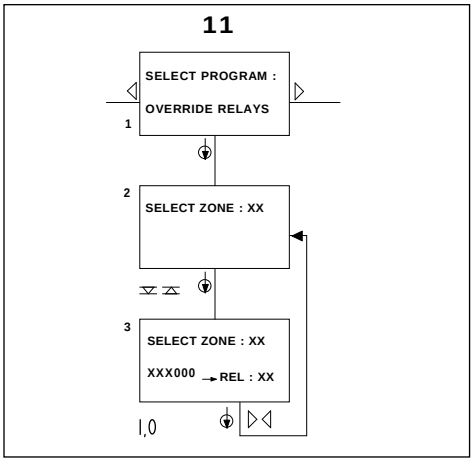
Select from the main menu by means of the left/right arrow keys: ROUTING LIMITS

12.2 Call Station selection

Selection of a Call Station can be made using the up/down arrow keys.

12.3 Zone selection

Shifting from one zone to another is accomplished by using the left/right arrow keys.
All zones are enabled by default. Each zone can be individually disabled using the '0' key and enabled using the '|' key.



Override Relays

13 DIRECT ROUTING

This program is used to directly activate the Zone Relay Module(s) e.g. via an external fire detection system.
Control inputs 1-6, 1-12 or 1-18 can be used to activate loudspeaker zones 1-6, 1-12 or 1-18.
This function is only available if the corresponding Zone Relay Modules and Control Input Modules are installed.

13.1 Main menu selection

Select from the main menu by means of the left/right arrow keys:
DIRECT ROUTING

13.2 Current zone display

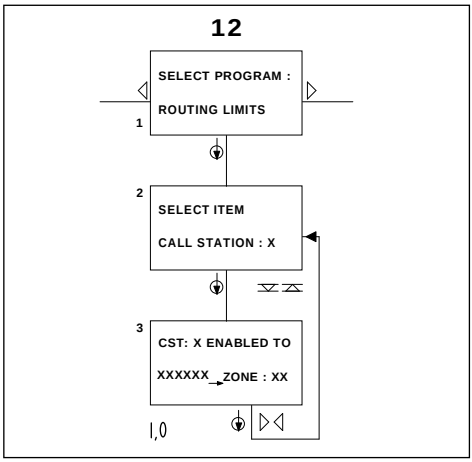
The display will show the current direct zone selection (ALARM or MUSIC zones). Press ENTER for confirmation.

13.3 Direct zone selection

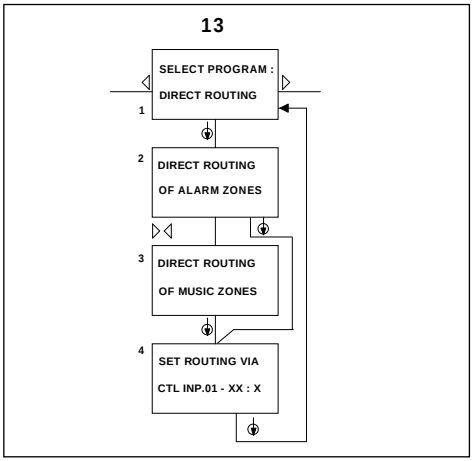
Alter the selection of the ALARM ZONES or MUSIC ZONES by means of the left/right arrow keys and press ENTER for confirmation.

13.4 Routing setting

The direct routing function can be enabled using the '|' key and disabled using the '0' key.
01-XX: will be the highest available input (01-06, 01-12 or 01-18).



Routing Limits



Direct Routing

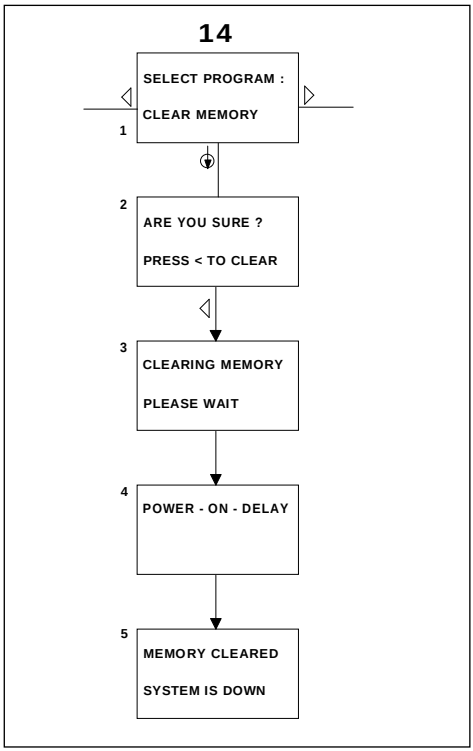
14.7.14 CLEARING MEMORY

14.1 Main menu selection

Select from the main menu by means of the left/right arrow keys: CLEAR MEMORY

14.2 Confirmation

Since this is a potentially hazardous program (it will erase all programming) after pressing ENTER the display will show: ARE YOU SURE ?
PRESS < TO CLEAR
Only the left arrow key will proceed with clearing; any other key will return to the main menu without clearing the memory.



Clear Memory

14.3 Wait display

After pressing the ENTER key, the display will show that clearing memory is in advance.

14.4 Power-on delay

14.5 System down

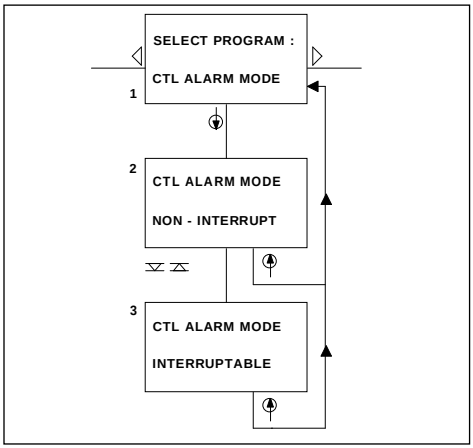
When the memory is cleared the display will show that the SM30 system is down. The installer programming password must be re-entered, and the setup program run, in order to continue.

14.7.15 ALARM MODE

Alarm signals activated by a control input can be interrupted by a Call Station with higher priority. When the overruling call ends, the alarm signal will return and continue till the end of the signal.

15.1 Main menu selection

Select from the main menu by means of the left/right arrow keys: CTL ALARM MODE



Control Alarm Mode

15.2 Current mode display

The display will show the current mode.

15.3 Mode selection

Selection of the non-interruptable or interruptable mode can be made using the up/down arrow keys.

14.7.16 FLEXIBLE F-KEY PROGRAMMING

This program step provides flexible programming of the F-keys (F1, F2, F3 or F4) of a Call Station.
After pressing the flexible programmed F-key on the Call Station, the pre-programmed zone selection can be temporarily changed by means of the numeric keypad on the Call Station. Pressing the F-key next time, the originally pre-programmed zones will be selected again.

Example:
F1-key: flexibly programmed, pre-programmed with message 1 routing to zones 1, 2 and 3.
F2-key: pre-programmed with message 2, routing to zones 4, 5 and 6.

If the F1-key is pressed, the zone LEDs 1, 2 and 3 will light to indicate the pre-programmed routing. If you want to route message 1 to other zones, adding or deleting of zone numbers is done by means of the numeric keys. Pressing the 'Press-To-Talk' key will broadcast the message 1 to the actually selected zones.
If the F2-key is pressed, the zone LEDs 4, 5 and 6 will light to indicate the pre-programmed routing, but no additional zone selection is possible. Pressing the 'Press-To-Talk' key will broadcast message 2 to zone 4, 5 and 6.

16.1 Main menu selection

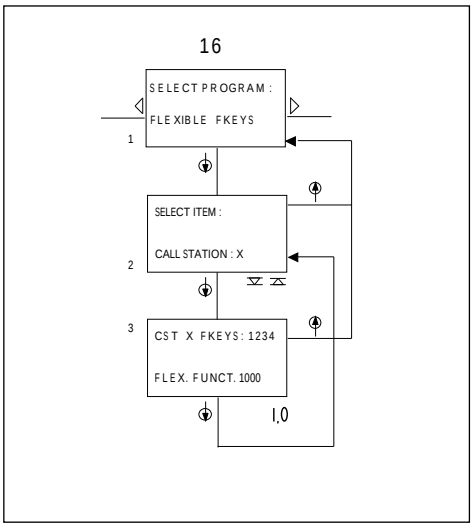
Select from the main menu by means of the left/right arrow keys:
FLEXIBLE KEYS

16.2 Selection Call Station number

Select the number of the Call Station by means of the up/down arrow keys.

16.3 Activation flexible F-key

Activate the flexible function of an F-key by means of the '|' key. If necessary, deactivate the flexible function by means of the 'O' key.



Flexible F-keys

14.7.17 EXTENDED CALL STATION PROGRAMMING

The SM30 system with more than 18 loudspeaker zones needs one Module Frame LBB 1291/40 and eventually one or more Extended Call Stations LBB 9568/36 (Call Station with 36 zone confirmation LEDs). An extended Call Station requires both inputs of the Call Station Input Module.

The Module Frame contains the extra Zone Relay Modules and eventually the extra Control Relay Module(s) and Control Input Module(s).

For detailed information of the Module Frame, see the Instructions for use packed with the Module Frame.

17.1 Main menu selection

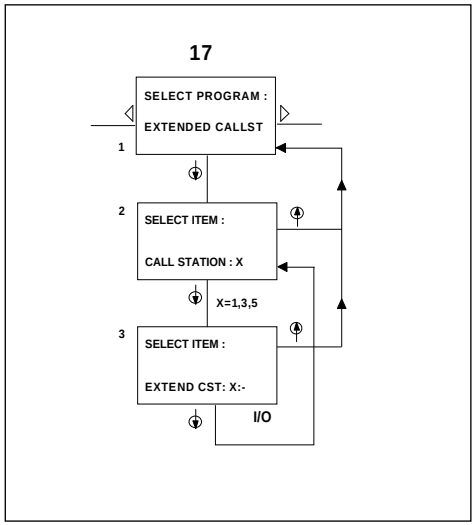
Select from the main menu by means of the left/right arrow keys:
EXTENDED CALL ST.

17.2 Selection Call Station input number

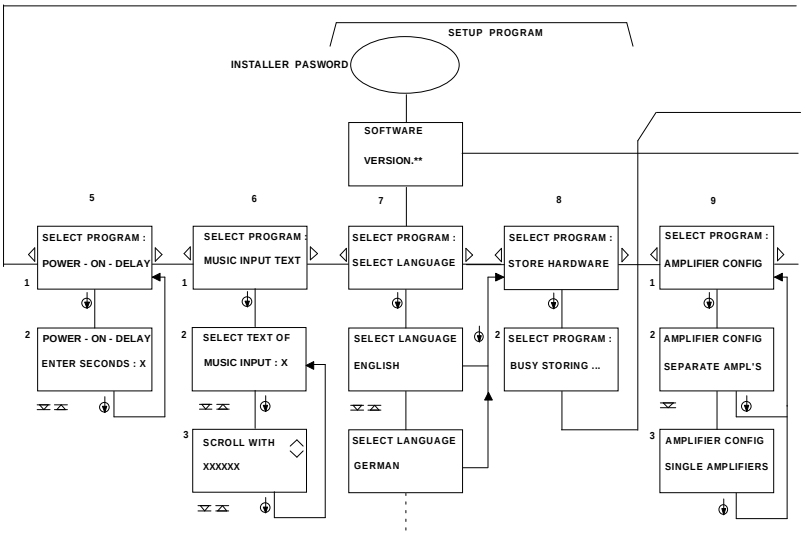
Select the Call Station input number (1, 3 or 5) by means of the up/down arrow keys.

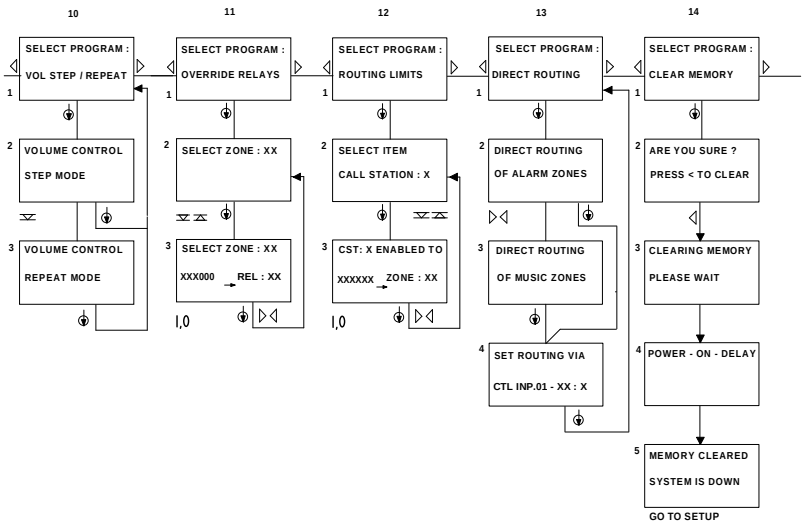
17.3 Confirmation

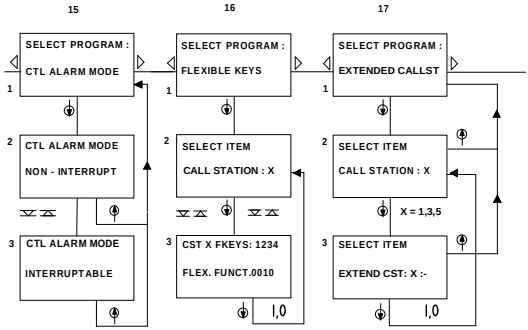
Confirm the used inputs for Extended Call Stations by means of the |/O keys.
CST input 1 coupled to input 2.
CST input 3 coupled to input 4.
CST input 5 coupled to input 6.

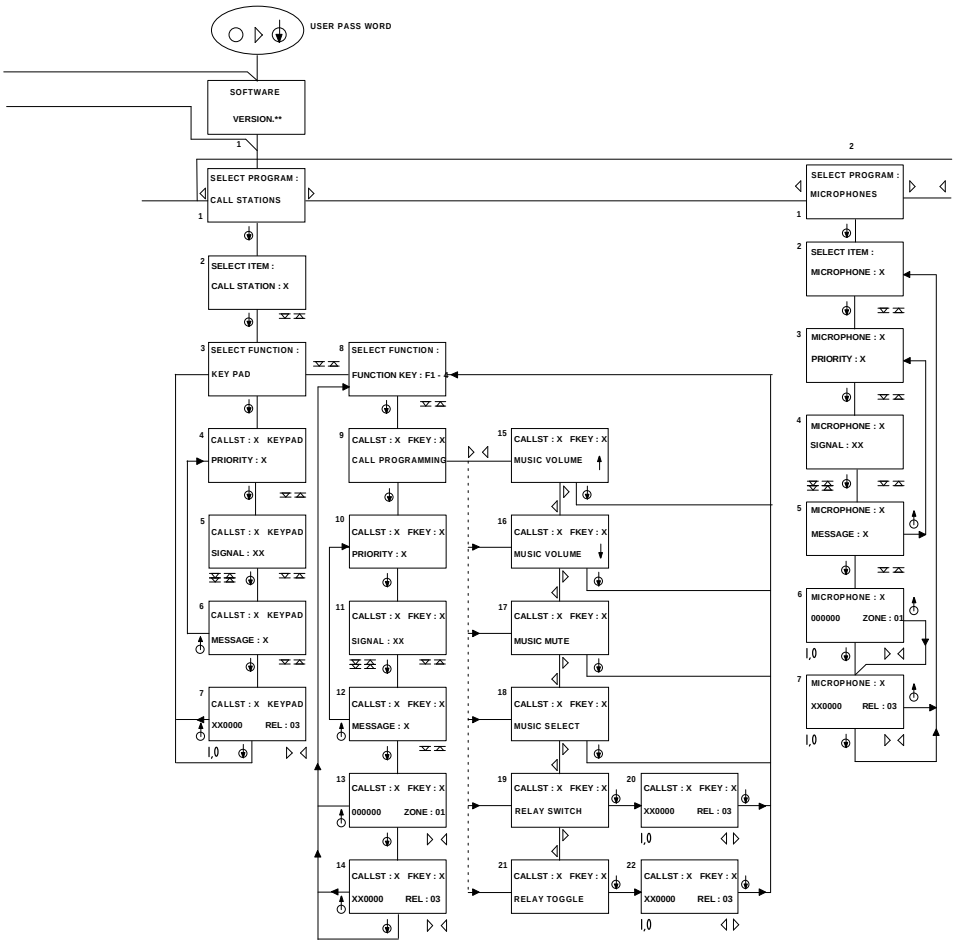


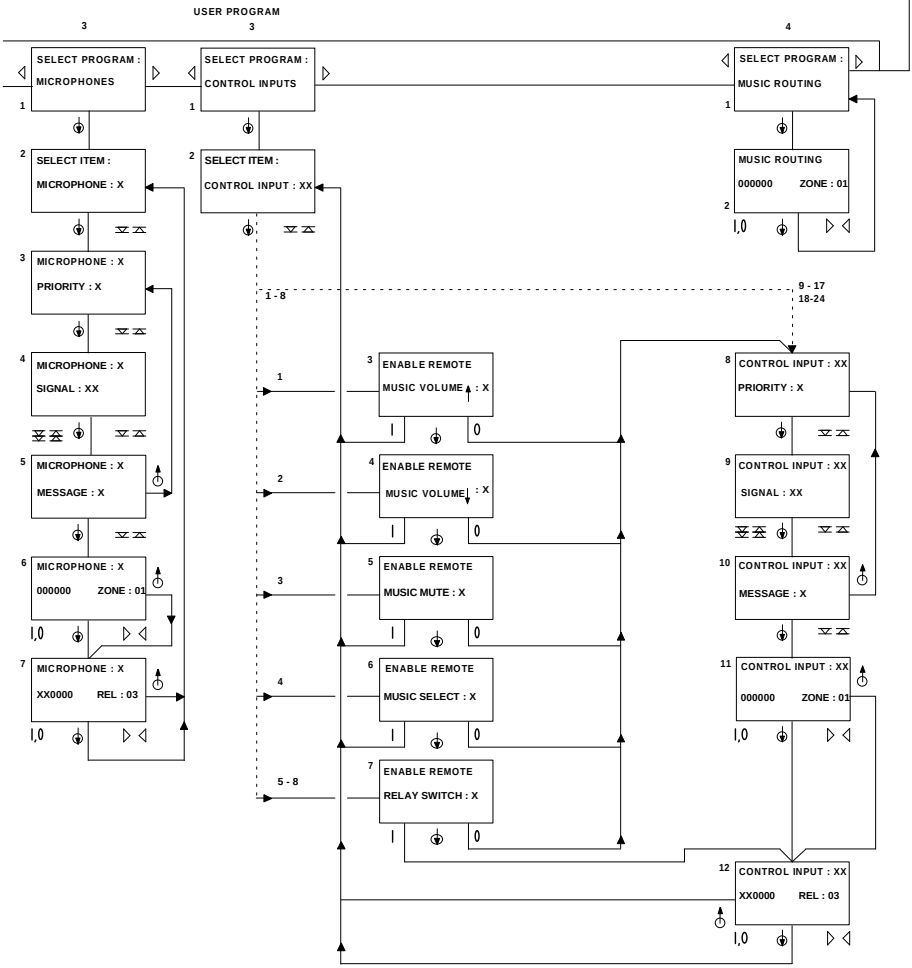
Extended Call Station


SETUP PROGRAM
INSTALLER PASWORD
SOFTWARE
VERSION.**
5
6
7
8
9
SELECT PROGRAM :
POWER - ON - DELAY
SELECT PROGRAM :
MUSIC INPUT TEXT
SELECT PROGRAM :
SELECT LANGUAGE
SELECT PROGRAM :
STORE HARDWARE
SELECT PROGRAM :
AMPLIFIER CONFIG
1
1
1
2
2
2
2
POWER - ON - DELAY
ENTER SECONDS : X
SELECT TEXT OF
MUSIC INPUT : X
SELECT LANGUAGE
ENGLISH
SELECT PROGRAM :
BUSY STORING ...
AMPLIFIER CONFIG
SEPARATE AMPL'S
3
3
SCROLL WITH
XXXXXX
SELECT LANGUAGE
GERMAN
AMPLIFIER CONFIG
SINGLE AMPLIFIERS


10
SELECT PROGRAM :
VOL STEP / REPEAT
1
2
VOLUME CONTROL
STEP MODE
3
VOLUME CONTROL
REPEAT MODE
11
SELECT PROGRAM :
OVERRIDE RELAYS
1
2
SELECT ZONE : XX
3
SELECT ZONE : XX
XXX000 REL : XX
I,0
12
SELECT PROGRAM :
ROUTING LIMITS
1
2
SELECT ITEM
CALL STATION : X
3
CST: X ENABLED TO
XXXXXX ZONE : XX
I,0
13
SELECT PROGRAM :
DIRECT ROUTING
1
2
DIRECT ROUTING
OF ALARM ZONES
3
DIRECT ROUTING
OF MUSIC ZONES
4
SET ROUTING VIA
CTL INP.01 - XX : X
14
SELECT PROGRAM :
CLEAR MEMORY
1
2
ARE YOU SURE ?
PRESS < TO CLEAR
3
CLEARING MEMORY
PLEASE WAIT
4
POWER - ON - DELAY
5
MEMORY CLEARED
SYSTEM IS DOWN
GO TO SETUP


15
16
17
SELECT PROGRAM :
CTL ALARM MODE
SELECT PROGRAM :
FLEXIBLE KEYS
SELECT PROGRAM :
EXTENDED CALLST
1
1
1
2
CTL ALARM MODE
NON - INTERRUPT
2
SELECT ITEM
CALL STATION : X
2
SELECT ITEM
CALL STATION : X
X = 1,3,5
3
CTL ALARM MODE
INTERRUPTABLE
3
CST X FKEYS: 1234
FLEX. FUNCT.0010
1,0
3
SELECT ITEM
EXTEND CST: X :-
1,0


USER PASS WORD
SOFTWARE
VERSION.**
1
SELECT PROGRAM :
CALL STATIONS
1
2
SELECT ITEM :
CALL STATION : X
3
SELECT FUNCTION :
KEY PAD
4
CALLST : X KEYPAD
PRIORITY : X
5
CALLST : X KEYPAD
SIGNAL : XX
6
CALLST : X KEYPAD
MESSAGE : X
7
CALLST : X KEYPAD
XX0000 REL : 03
I,0
8
SELECT FUNCTION :
FUNCTION KEY : F1 - 4
9
CALLST : X FKEY : X
CALL PROGRAMMING
10
CALLST : X FKEY : X
PRIORITY : X
11
CALLST : X FKEY : X
SIGNAL : XX
12
CALLST : X FKEY : X
MESSAGE : X
13
CALLST : X FKEY : X
000000 ZONE : 01
14
CALLST : X FKEY : X
XX0000 REL : 03
15
CALLST : X FKEY : X
MUSIC VOLUME
16
CALLST : X FKEY : X
MUSIC VOLUME
17
CALLST : X FKEY : X
MUSIC MUTE
18
CALLST : X FKEY : X
MUSIC SELECT
19
CALLST : X FKEY : X
RELAY SWITCH
20
CALLST : X FKEY : X
XX0000 REL : 03
I,0
21
CALLST : X FKEY : X
RELAY TOGGLE
22
CALLST : X FKEY : X
XX0000 REL : 03
I,0
2
SELECT PROGRAM :
MICROPHONES
1
2
SELECT ITEM :
MICROPHONE : X
3
MICROPHONE : X
PRIORITY : X
4
MICROPHONE : X
SIGNAL : XX
5
MICROPHONE : X
MESSAGE : X
6
MICROPHONE : X
000000 ZONE : 01
I,0
7
MICROPHONE : X
XX0000 REL : 03
I,0


USER PROGRAM
3
3
4
SELECT PROGRAM :
MICROPHONES
SELECT PROGRAM :
CONTROL INPUTS
SELECT PROGRAM :
MUSIC ROUTING
1
1
1
SELECT ITEM :
MICROPHONE : X
SELECT ITEM :
CONTROL INPUT : XX
MUSIC ROUTING
000000 ZONE : 01
2
2
2
I,0
MICROPHONE : X
PRIORITY : X
3
1 - 8
9 - 17
18-24
MICROPHONE : X
SIGNAL : XX
4
1
ENABLE REMOTE
MUSIC VOLUME : X
3
CONTROL INPUT : XX
PRIORITY : X
8
MICROPHONE : X
MESSAGE : X
5
2
ENABLE REMOTE
MUSIC VOLUME : X
4
CONTROL INPUT : XX
SIGNAL : XX
9
MICROPHONE : X
000000 ZONE : 01
6
3
ENABLE REMOTE
MUSIC MUTE : X
5
CONTROL INPUT : XX
MESSAGE : X
10
MICROPHONE : X
XX0000 REL : 03
7
4
ENABLE REMOTE
MUSIC SELECT : X
6
CONTROL INPUT : XX
000000 ZONE : 01
11
5 - 8
ENABLE REMOTE
RELAY SWITCH : X
7
CONTROL INPUT : XX
XX0000 REL : 03
12
I
0

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