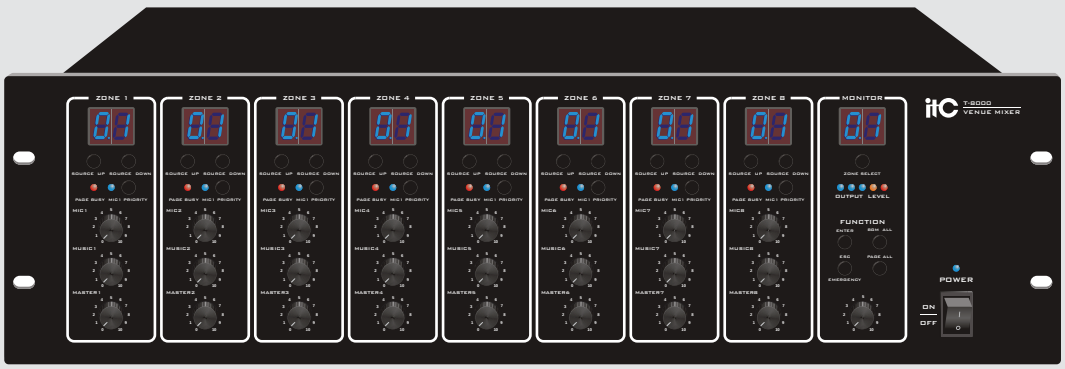
OPERATION MANUAL

T-8000
VENUE MIXER



Please follow the instructions in this manual to obtain the optimum results from this unit.
We also recommend that you keep this manual handy for future reference.

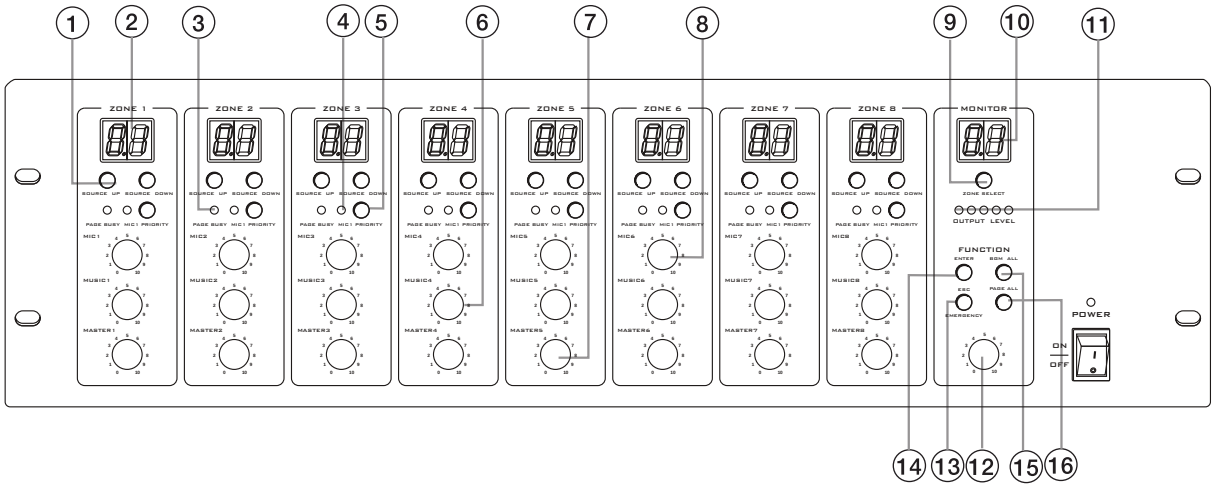
CONTENTS

1. INTRODUCTION

The matrix & paging controller family comprise an 8 channel and 4 channel ones which are cater for multi-zone ,paging andmulti-soucres selection system .They are complete solution for multi-zone, multi-functional venues like entertainment places, large hotel,sport or grm centers,shopping mall and airport ect.

T-8000 offer direct connection of up 8music source input ,8remote control panels.4 remote paging consoles and one microphone input,all of these inputs can be freely allocated into different 8 zone outp-uts simultaneously.

2. FRONT PANEL LAYOUT



1	Select Source	9	Monitor Zone Select
2	Zone LED Display	10	Monitor LED Display
3	Page Busy	11	Monitor Zone Output Level
4	MIC Priority Indicator	12	Monitor Volume
5	MIC Priority Button	13	ESC
6	Music Volume	14	ENTER
7	Master Volume	15	BGM ALL
8	MIC Volume	16	Page All

FRONT PANEL LAYOUT

1. Source Select

The source select button (1) is used to select the source for the zone. Each zone has a separate source selection button. There are 9 selectable sources: Line sources 1 through 8 and a local Microphone source.A different local source (remote in wall mixer or source select/volume control)can beconnected to each zone. A zone cannot select the local source connected to another zone.Pressing the source select button will cycle through all zones in sequence:1, 2, 3, 4, 5, 6,7, 8, L,and OF.To select a required source, press the source select button (1). Once the display shows the desired source, press the ENTER (14) buttonto confirm and the change to the selected source.

Note:

The source will only change after the ENTER (14) button is pressed. If the ENTER(14) button is not pressed,the source selection will return to previous setting after 10 seconds.When the system is used in conjunction with remote control panels,the zone source select button will be disabled when a remote controlpanel is connected to a zone .In this instance, the source selection can only be controlled via the remote control panel in the event power is lost,the last source selection settings are automatically saved and the unit will return to its previously configured source selections when powered back on.

2. Zone LED Display

The Single Digit Zone LED Display will display the selected source number: lines 1-8 and local input shown as L.

3. Page Busy

The Zone Page Busy indicator LED (3) will illuminate amber to indicate a paging microphone is paging to this zone.

4. MIC1 Priority Indicator

The MIC1 Priority Indicator LED (4) will illuminate blue indicating the Zone MIC1 priority paging func -tion is enabled.

5. MICl Priority Button

The MIC1 Priority button (5) will enable/disable the MIC1priority paging function.When enabled, MIC1will override zones 1-8and all local inputs, if a signal is present on the MIC1 input.When dis -abled,MIC1 will mix with lines 1-8 and local inputs if required.This Microphone input has been designed to give global priority over all other inputs if enabled via the front panel. The MIC1 priority setting is not saved when the T-8000 is switched off, and will return to its default state on powered back on. The default state of the MIC1 Priority is disabled.

6. Music Volume

The Music Volume control knob (6) controls the selected source (zones 1-8 and local input) input level. If the system is used with Remote Control Panels, the Music Volume knob will be disabled for zones where a remote control panel is connected. Source Music Volume level will be controlled at the remote control panel only.

7. Master Volume

The Master Volume control knob (7) will control the combined MIC1 and Source Output Volume Level, if the MIC1 input has been enabled for a zone. The Master Volume control knob will not control the Paging Console Public Address Volume Level,or the Line 8 Source Input Volume Level when the Line 8 Source Input Priority Function is enabled. This function has been designedasa global BGM input if required.

8. MIC1 Volume

The MIC1 Volume control knob (8) will control the MIC1 input level if this global mic has been configured to operate within the zone.ITC Commercial Series T-8000 User Manual.

9. Monitor ZONE SELECT

The ZONE SELECT button (9) is used to select one of the 8 zones to be monitored.Pressing the zone select button will cycle through allzones in sequence as follows:1,2,3,4, 5,6, 7, 8, and OFF. A zone can be selected pressing the ZONE SELECT button.Once the display shows the desired zone, press the ENTER button to confirm and change to the selected zone.

Note:

The zone will only change after the ENTER button is pressed, otherwise the source selection will be returned to its previous setting after 10 seconds. The monitor zone function enables the audio output from a zone to be monitored through a small speaker on the front panel.This is particularly useful when controlling the audio in a remote zone or testing the system.

10. Monitor Zone LED Display

The Single Digit Monitor Zone LED Display (10) will display the selected zone numbers,1-8.

11. Monitor Zone Output Level

The 5 LED Monitor Zone Output Level Meter(11) will provide visual indication of the audio signal level for a selected zone.

12. Monitor Volume

The Monitor Volume control knob (12) will control the in-built Monitor Speaker volume level.

13. ESC

The ESC button (13) is used to cancel the selection of source select,monitor zone select and BGM function buttons.

14. ENTER

The ENTER button (14) is used to confirm selection of source select,monitor zone select and BGM function buttons.

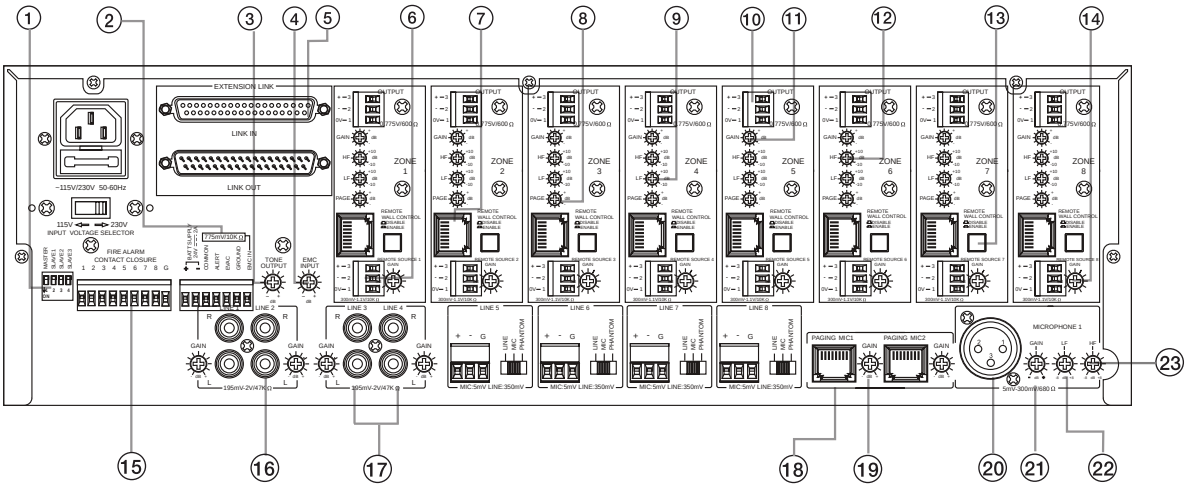
15. BGM ALL

The BGM ALL button (15) is used to select the same source for all 8 zones simultaneously.To confirm the BGM ALL selection,press ENTER.

Note:

The BGM ALL selection will only be confirmed after the ENTER button is pressed ,otherwise the source selection will be return to previous setting after 10 seconds.In the event power is lost, the BGM ALL selection settings will be saved and the unit will return to the previous BGM ALL setting when powe red back on.

3. REAR PANEL LAYOUT



1	Dip Switches	9	LF Bass	17	Line Inputs
2	EVAC / Fire System Interface	10	Output	18	Paging Console Inputs
3	Tone Output	11	Gain	19	Paging MIC Gain
4	EMC Input	12	HF	20	MIC 1 Input
5	Extension Link	13	Enable/Disable Switch	21	MIC 1 Gain
6	Remote Source	14	Remote Source Gain	22	MIC 1 Bass
7	Remote Control Input	15	Fire Alarm	23	MIC 1 H
8	Page	16	Line Gain		

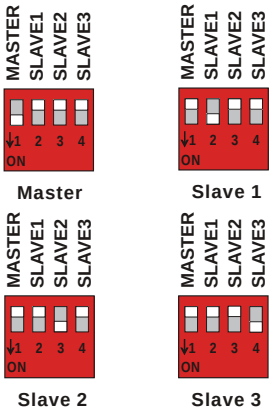
1. Dip Switches

Dip switches set the Matrix system address. If the system is to be expanded, each ITC unit must be defined as Master, Slave1, 2 or 3.

If you are expanding the system, only line in puts 1-8 ,MIC 1 and 2 x Remote Paging Consoles of the Master Matrix are enabled .All Slave Matrix units connected to the Master will use the Master Matrix inputs.

For the avoidance of doubt, if a Matrix unit is confi -gured as a slave, the slave Matrix Inputs 1 - 8, MIC 1 and remote paging consoles inputs will be disabled. However, the optional wall plates can be used to operate these additional zones.

Dip switch settings are as follows for configuring the T-8000 as a Master or Slave:



2. EVAC / Fire System Interface (7 Way Pheonix Connector)

PIN 1- [+24V DC 24V] Power supply input.(Battery Back Up or UPS)PIN 2- [GROUND DC 24V] Power Supply input .(Battery Back Up or UPS) PIN3 - [COMMON],Which is Common for ALERT & EVAC

PIN 4 - [ALERT DRY CONTACT]

The built-inalertvoice message will be broadcast to all 8 zones after triggered by dry contact bet -ween ALERT and COMMON.

PIN 5 - [EVAC DRY CONTACT]

The built-in EVACvoice message will be broad -casted to all 8 zones after being triggered by dry contact between EVAC and COMMON.

PIN 6 - [EMC IN]

An optional external voice alarm message may be broadcasted to all 8 zones of the system,when an alarm signalis detected from an external voice messagegenerator. Fire alarm, alert,EVAC and EMC in are of equivalent priority

3. Tone Output

The Tone Output Volume Control will adjust the output level of the FIRE ALARM, ALERT, EVAC voice messaging.

4. EMC Input

The EMC INPUT Volume control will adjust the output level of the EMC voice messaging.Fire alarm,ALERT, EVAC and EMC in are of equivalent priority.

5. Extension Link (DB37 Connector)

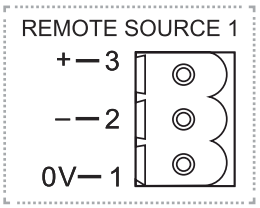
The extension link connectors enable 8 zone Matrix units to be connected together to form a larger system. Up to four 8 Zone Matrix units can be connected to make a 32 zone system.

The Matrix can be linked with a DB37 Cable.This will enable the Line I-8 Sources,MIC1 input,Paging Consoles I & 2 , and Communication Data of the master unit to be shared with any Slave Matrix Units connected to the system.

DB37			DB37
1	LINE 1+	1	
2	LINE 1-	2	
3	LINE 2+	3	
4	LINE 2-	4	
5	LINE 3+	5	
6	LINE 3-	6	
7	LINE 4+	7	
8	LINE 4-	8	
9	LINE 5+	9	
10	LINE 5-	10	
11	LINE 6+	11	
12	LINE 6-	12	
13	LINE 7+	13	
14	LINE 7-	14	
15	LINE 8+	15	
16	LINE 8-	16	
17	MIC +	17	
18	MIC -	18	
19	PAGE 1+	19	
20	PAGE 1-	20	
21	PAGE 2+	21	
22	PAGE 2-	22	
23	PAGE 3+	23	
24	PAGE 3-	24	
25	PAGE 4+	25	
26	PAGE 4-	26	
27	GND	27	
28	B	28	
29	A	29	
30	GND	30	
31		31	
32		32	
33		33	
34		34	
35		35	
36		36	
37		37	
38		38	

6. Remote Source

Each zone can have a remote line level source connected. The remote source input connector is shown here.



This has been designed to be used if you don't wish to use a local in wall mixer. This could be for example,a Radio MIC.

On selecting this input via the front panel controls, select "L". Please note that this input cannot be distributed to other zones.

Local zone source level has three adjustments, namely:

a. Gain control for the local source Input on the rear of the Matrix
b. A Music level control on the Matrix front panel or the remote wall control
c. A Master level control on the Matrix front panel.

Please Note:
The input signal is set at 300mV-1 .lv/1 OK Ohm

7. Remote Control Panel Input

Each of the eight zones can have a remote control panel connected . The Remote control Panel will enable the source and volume to be controlled from a remote location. Each zonehas its own RJ45 input connector allowing for a Remote Control Panel to be connected for control over each zone.

Local Source Connections are as follows:

1. A remote wall panel can be connected to the Matrix, with only one remote wall controller able to be connected per zone.

2. The remote wall panel will be selectable on the system.Therefore,selectable sources will be L (local) as well as source line1 to 8.

T-8000B assignment order is as below:

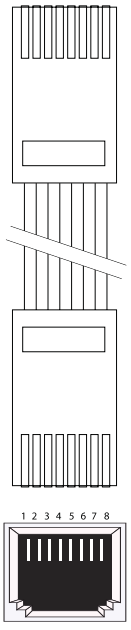
（1）RS485B
（2）RS485A
（3）NC
（4）GND
（5）DC+24V
（6）DC+24V
（7）AUDIO IN +
（8）AUDIO IN -

1	2	3	4	5	6	7	8
B	A	NC	GND	+24V	+24V	AUDIO IN +	AUDIO IN +

T-8000C assignment order is as below:

（1）RS485B
（2）RS485A
（3）NC
（4）GND
（5）DC+24V
（6）DC+24V
（7）NC
（8）NC

1	2	3	4	5	6	7	8
B	A	NC	GND	+24V	+24V	NC	



T-8000D assignment order is as below:

（1）NC
（2）NC
（3）MUTE
（4）GND
（5）DC+24V
（6）DC+24V
（7）AUDIO IN +
（8）AUDIO IN -

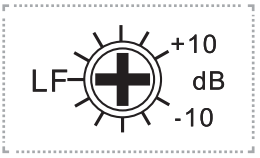
1	2	3	4	5	6	7	8
NC		MUTE	GND	+24V	+24V	AUDIO IN +	AUDIO IN +

8. Page

The Zone Page Output Volume Control will adjust the output paging level for the Zone.Every Zone has a Page Output Volume Control which enables the paging level of each zone to be set independently of other zones.

9. LF Bass

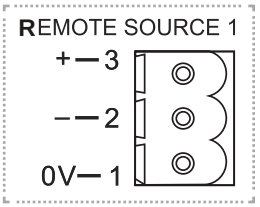
The Zone LF Bass of the Zone Output can be controlled by adjusting the LF Bass Level Control. This Level Control will provide adjustment of the 100Hz Audio Frequency by□ 10dB.



Every Zone has a LF Bass Level Control which enables the LF Bass Level of each zone to be set independently of other zones.

10. Output

Every Zone has an AUDIO OUTPUT connector; this should be connected to the Audio Amplifier for the designated Audio Zone.

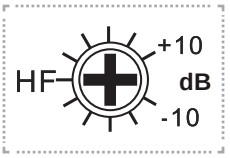


Zone Audio Output Connections are as labeled.

11. Gain

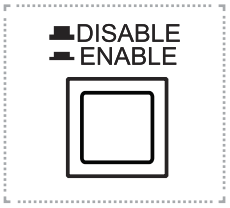
The Zone Gain control will set the maximum Source Output Volume Level for the Zone.This will ensure the user cannot adjust the Audio Level too highusing the Master,MIC1and Music Level ControlKnobs on the Front Panel. Gain will set the Maximum Output Volume of Line Source and MICI.It will have no control over the Paging Level.

12. HF



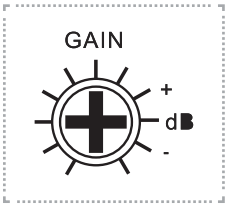
The Zone HF Treble of the Zone Output can be controlled by adjusting the HF Treble Level Control. This Level Control will provide adjustment of the 100Hz AudioFrequency by ±10dB.
Every Zone has a HF Treble Level Control which enables the HF Treble Level of each zone to be set independently of other zones.

13. Enable/Disable Switch



If a Zone Remote Wall Control Panel is to be used with the System, The R J45 Remote Control Panel Input needs to be enabled. The RJ45 Remote Control Panel Input is enabled/ disabled by pressing the Enable / Disable Switch. Every Zone has an RJ45 Remote Control Panel Input Enable / Disable Switch.
NOTE: Only Enable when a Zone Remote Wall Control Panel is connected.

14. Remote Source Gain

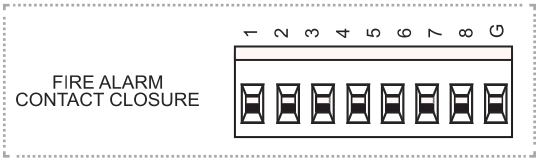


The Zone Local Source Input Signal Level can be adjusted from 190mV to 200mV using the Remote Source Gain con -trol. This will enable the signal level of all sources to be equali -zed therebyensuring Output Volume Level remains constant when switching from one source to another source. Every Zone Remote Source Input has a Gain Control.

15. Fire Alarm

There are Fire Alarm dry contacts for zones 1-8. When Dry Contact is detected the EMC Input will be open and take priority over all other inputs.

The EMC Input will only take priorityand broad -cast to zones where there is a Zone FireAlarm Dry Contact Closure.Each zone has aseparate Fire Alarm Dry Contact.Fire alarm, alert,EVAC and EMC in are of equivalent priority.



16. Line Gain

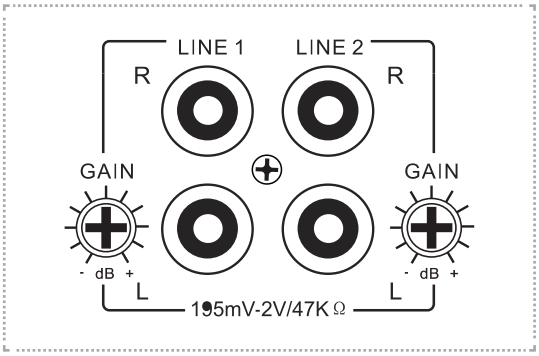
The System Line Source Input Signal Levels can be adjusted from 190mV to 200mV using the Line Source Input Gain control. This will enable the signal level of all sources to be equalized there by ensuring Output Volume Level remains constant when switching from one source to another source.

All system source inputs L(lines 1-8) have a separate Gain Control.

17. Line Inputs

The system has 4 Line Inputs,as well as 4 inputs selectable as mic or line with phantom power available.

Every Line Source Input has a dual RCA Phono Connect or, which will enable a Stereo Source Signal to be connected. Note, however, this is a Mono system and a StereoInput will be combined to give a Mono Output.



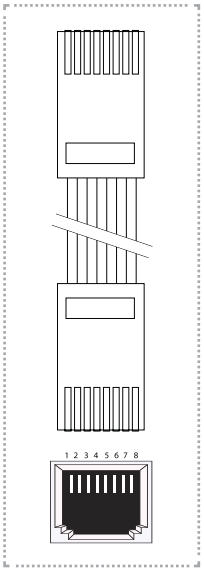
The Line Inputs have an impedance of 47 kohms.

1. Line 1-8 source inputs will be selectable using the Source Select control on the front of the Matrix. 2)
2. The selected source input number will be indicated on the Matrix zone display.
3. Any extension Matrix unit connected to the system will use sources line 1-8 from the master Matrix.
4. Only one set of input sources for lines1-8 can will be connected per system.

18. Paging Console Inputs

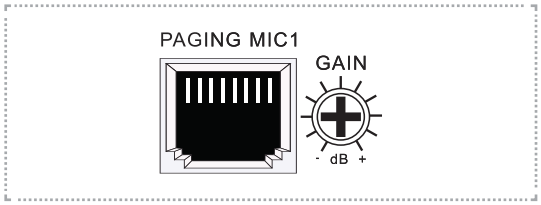
Up to two paging consoles can be connected to the system simul -taneously via the two paging con -sole Rj45 input ports.The paging consoles will have equal priority and will operate on a first come first served basis. The RJ45 pin assignment order is as below:

1. RS485 B
2. RS485 A
3. GND
4. + 24V (OUT)
5. GND
6. + 24V (OUT)
7. AUDIO IN+
8, AUDIO IN -



19. Paging MIC Gain

The Paging MIC Gain control will adjust the Paging MIC Input Signal Level. Each Paging MIC will have its own gain control.There by each Paging MIC can be set independently of the other Paging MICs.



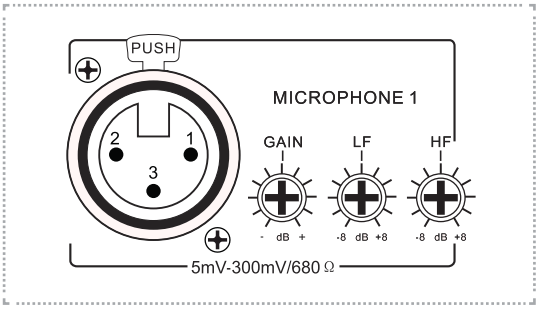
20. MIC1 Input

The balanced MIC1 input XLR type has an impedance of 600ohms. Each zone has aMIC1 Priority Button.

Each zone has a MIC1 priority button.When the MIC1 priority button is not enabled,MIC1 will be mixed with the line inputs on each zone (1-8 or L). When the MIC1 priority button is enabled,MIC1 will take priority over all line inputs (1 - 8 or L) as well the wall control panel for that zone.

MIC1 will have priority only on Zones where the MIC1 Priority Switch is enabled on the front panel. Zones where the MIC1 priority switch is not enabled, MIC1 will mix with the Source Selected for the Zone. The MIC1 level will be controlled by the MIC1 Level Adjustment Knob and the Master Level Adjustment Knob.

The MIC1 signal will be sent to any extension Matrix connected to the system.



21. MICl Gain

The MIC1 Gain controls the MIC1 range from 5mV to 300mV.

22. MICl Bass

The MIC1 Bass controls the MIC1 gain at 100hz (±10dB).

4. RS 485 COMMUNICATION PROTOCOL

RS 485 Communication Protocol

Baud Rate: 57600bps/S Parity
Check: Odd parity check
Data: 16 bytes
Accumulation = 2nd data byte
+3rd data byte + 4th data byte

T-8000 Inquiry Data

TheT-8000 sends inquiry data to2 remote paging consoles ,8 remote wall panels and extension Matrix. The new data will feedback to the Matrix when any new data has been checked.Any exten -sion T-8000 will only enquire to its own 8 remote wall panels only.

Inquiry Data To Paging Console

The T-8000 sends the inquiry data to remote paging consoles in the following format:

AA 10 00 00 AM (accumulation)
AA: data head
10: inquiry to the paging console
00: meaningless
AM: (accumulation = 2nd data byte
+ 3rd data byte + 4th data byte)

Feedback Data From PagingConsole

The feedback data from the remote paging console to the Matrix after got inquiry andready for paging format as:

AA 11 Matrix address code zone data AM
AA: data head
11 : zone paging command

Matrix address code:

01 : master matrix,
02 : extension matrix 1
03 : extension matrix 2
04 : extension matrix 3
3 zone data: the zone data is in 8 bytes
0 : no paging
1 : paging, ie: binary system
00000011 B : zone1 and zone 2 paging
00000100B : zone 3 paging
11111111 B : all 8 zone paging
AM: (accumulation = 2nd data byte
+ 3rd data byte + 4th data byte)

Status Data To Paging Console

After getting paging data from the remote paging console, the Matrix sends zone status data to the paging console in the following format:

hA 1 E Matrix address code zone data AM
AA: data head
1 E: Zone status feedback to paging console
Matrix address code=
01 : master
02: slave 1
03: slave 2
04: slave 3
3 zone data: the zone data is in 8 bytes,
0: no paging
1 :paging, ie: binary system
00000011 B:zonel and zone 2 busy
0000100B: zone 3 busy,
11111111 B: all 8 zone busy
AM: (accumulation = 2nd data byte
+ 3rd data byte + 4th data byte)

Inquiry Data To Remote Wall Plate

If the zone is not controlled by a remote wall plate , the inquiry data will not be sent to this zone.

The inquiry command which is from the Matrix to the remote wall plate is both inquiry and status data to update the wall plate status, ie:source input, zone volume.The inquiry data format is:

hA 20 line input volume AM
hA: data head
20: inquiry to wall plate
line input: source input
01 : line 1
02 : line 2
……
08 : line 8
09 : remote sources input
volume: volume level
00 : 0 level
01:1 level
AM: (accumulation = 2nd data byte
+ 3rd data byte + 4th data byte)

RS 485 COMMUNICATION PROTOCOL

Feedback Data From The Wall Plate

The feedback data from the wall plate to the Matrix delivered in the following format:

AA 21 line input volume AM
AA: data head
21 : feedback data from wall plate to Matrix line input: source input
01 : line 1
02 : line 2

……
08 : line 8
09 : remote sources input
volume: volume level
00 : 0 level
01:1 level
AM: (accumulation= 2nd data byte + 3rd data byte + 4th data byte)

Inquiry Data To Extension Matrix

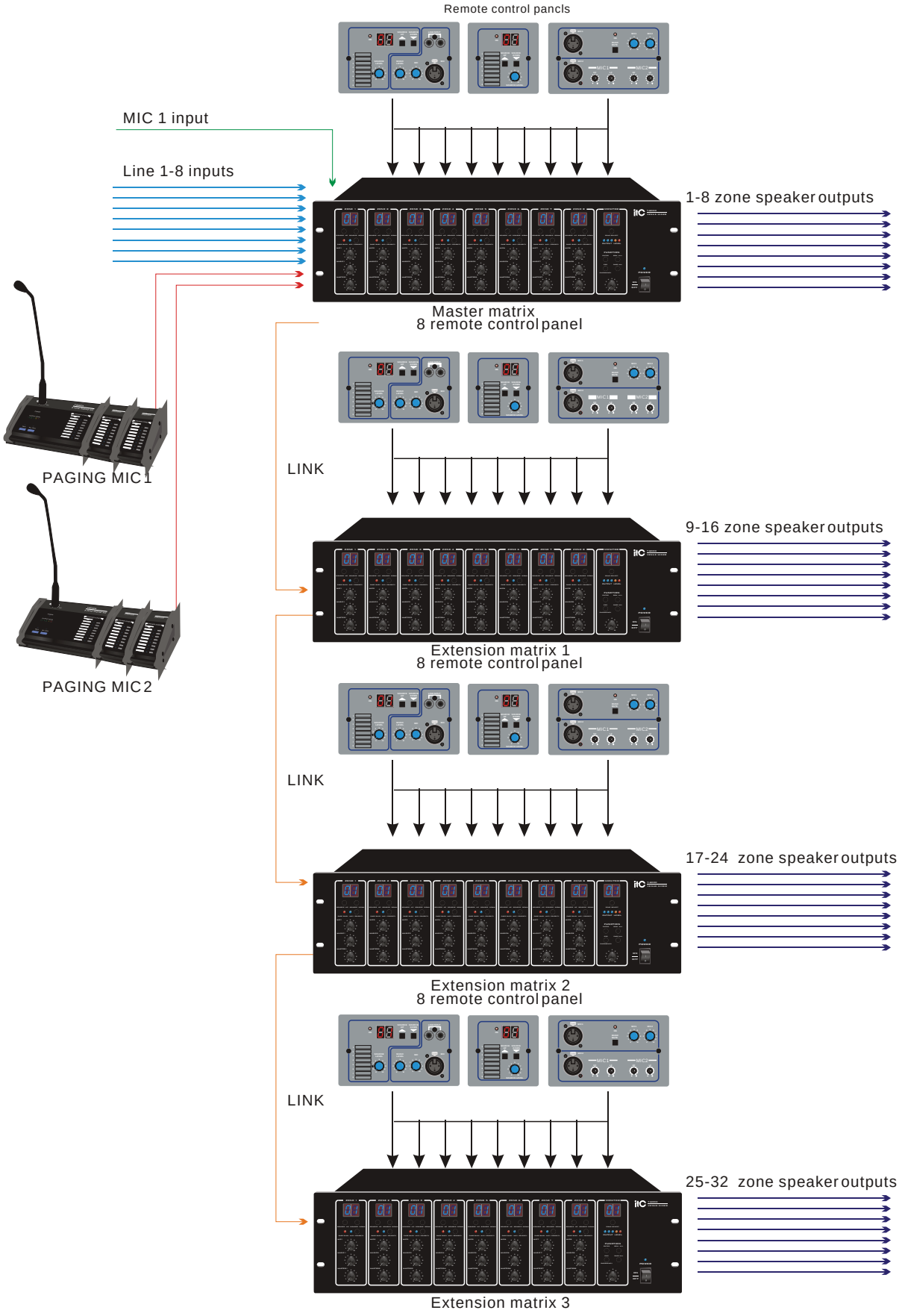
The Matrix inquiry data to the extension Matrix format as:

AA 30 00 00 AM

5. SPECIFICATIONS

Model	T-8000
LINE 1-4 input	195mV-2v/10kΩ
Line 5-7 input	MIC:5mV/600Ω,Line:350mV/10kΩ,phantom power:+48V
Microphone	5mV-280mV/600Ω
Remote Paging Station	300mV-1.1V/10kΩ
Remote Control Panel	300mV-1.1V/10kΩ
Tone Control	100Hz±10dB,10KHz±10dB
Outputs	0.775V/600Ω
Frequency Response	MIC:80Hz~18KHz(+1/-3dB),line:20Hz~20KHz(+1/-3dB)
EMC input	775mV/10KΩ
Microphone S/N Ratio	〉65dB
Line S/N Ratio	〉85dB
Crosstalk	〉65dB
THD	〈0.07%
Indicator	Power,Mic1,paging busy & monitor output
Priority	Mic1,voice alarm, local mic paging, remote zone paging, line 1-8
Communication Speed	4800bps
Communication port	RJ45
Communication Protocol	RS485
Power Consumption	20W
Power Supply	~110V/60Hz and~240V/50Hz& DC 24V
Dimensions	484x304x132mm
Weight	6kg

6. CONNECTION DIAGRAM



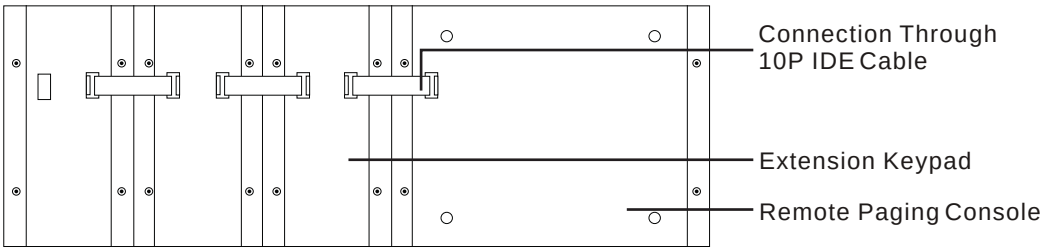
7.CONNECTION AND SETTING

Power Supply

The remote paging console is powered by the Matrix through the RJ45 communication port when the communication distance is < 50 meters. An extra DC 24V power input is equipped on the back part of the paging console to supply power when the communication distance is longer than 50 meters.

Connection Between Remote Paging Console & Extension Keypad

The IDE communication cable is used to provide connection between the remote paging console and the extension keypad as well as between two extension keypads.



Extension Keypad Dip Switch Setting

Extension Keypad 1

Extension Keypad 3

Extension Keypad 2

There are 4 address codes on both remote the paging console and the extension keypad which are used to identify these.

Please Note:

Only one address code switch of each dip switch can be placed in the downward position.If any of the dip switches are set at different addresses to those shown above, the console will not operate.

Extension keypad Remote paging Console Connection is made through the supplied 10P IDE cable. Once either two or three QTEP extension panels are connected, the operation of paging announcements is the same as described previously for individual zone paging or all call actions.