

EMIX

OPERATIONAL MANUAL

EMAC-8020

AUTOMATIC AMPLIFIER CHANGEOVER



Version 1.4

Product Overview

The **EMAC-8020** is a 1U rack-mounting unit that provides highly versatile six channels automatic changeover unit designed for standby amplifier to take over failed duty in an automated changeover system. Front panel control provides source selection, level, operating mode, resetting the fault indicator and etc.

Channel configuration is by one single press during first time installation after all the power amplifier and system are hooked up. Signal amplitude fault detection level follows the setting of the channel configuration. Detection on individual channels may be disabled, giving the option of disabling changes to the backup unit on failure of signal.

When operated in the automatically changeover mode, the EMAC-8020 will automatically select the first failed unit. The EMAC-8020 will not alternate between two failed amplifiers. If necessary, this function may be overridden with the manual source selection on the LCD panel. Manual source selections also facilitate periodic testing of the changeover function.



Features

- Cater for Six operating amplifiers and One standby amplifier
- Stackable units up to 24 duties with one standby amplifier, only applicable for single signal source system.
- The highest priority will be given to the highest priority unit and only depends on connection of standby amplifier.
- Simple local configuration and control. Settings depend on two buttons.
- Fault and operating mode direct displayed on LCD panel.
- Selectable between Manual operations or Auto operations.
- Controllable detection time on faulty amplifier.
- Compact 1U-high with 19" wide metal enclosure
- Built-in Microchip microcontroller for controlling the unit for primary features.

Front View and Rear View

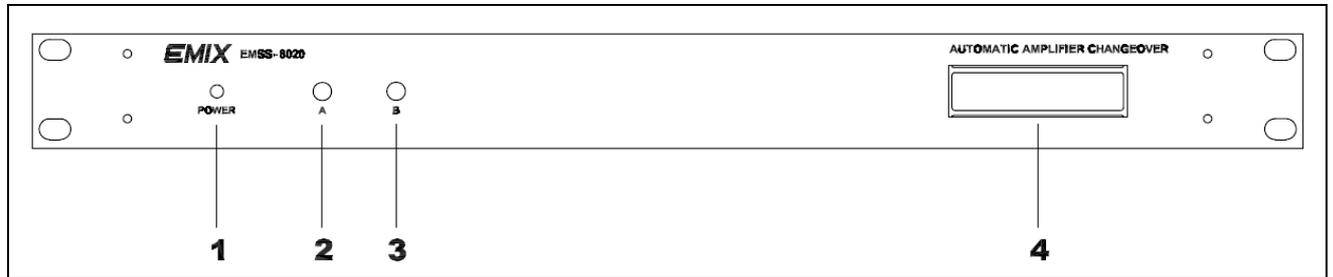


Figure 1.1 Front view of the Automatic Amplifier Changeover EMAC-8020

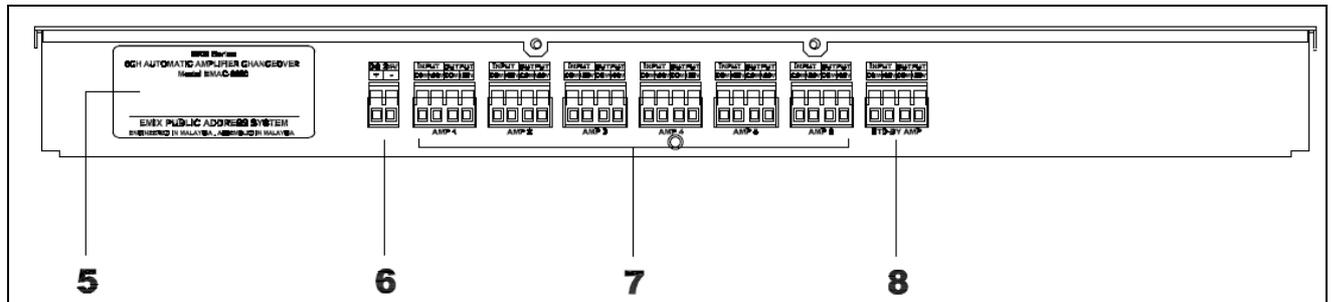


Figure 1.2: Rear view of the Automatic Amplifier Changeover EMAC-8020

Front Panel and Rear Panel Indication

EMAC-8020 Automatic Amplifier Changeover

3.1.0 Front Panel Indicator

- 1 **Power LED** – Indicates power is applied to the unit.
- 2 **A** – Button A. }
- 3 **B** – Button B. } To select functions, change settings and manual amplifier
- 4 **LCD Display** – Display the status of the unit and the connected amplifiers input sound level.

3.2.0 Rear Panel connection

- 5 **Serial number** – Indicates the EMAC-8020's serial numbers.
- 6 **Power Inlet** – Power terminal connection for the EMAC-8020 using 24VDC \pm 10% power supply. When connecting the power inlet, ensure the polarity is correct.
- 7 **AMP 1 to AMP 6**
 Duty Amplifier connection port – Connects up to Six amplifiers for each unit.
- 8 **STD-AMP**
 Standby Amplifier connection port – Connect your standby amplifier to this port for amplifier standby purpose. Two or more units of EMAC-8020 are connectable to serve more than six duty amplifiers. Use the output connection for cascading this unit to another unit. Please refer to cascading connection diagram.

Schematic Diagram / connection diagram

Six channels automatic amplifier changeover circuit diagram

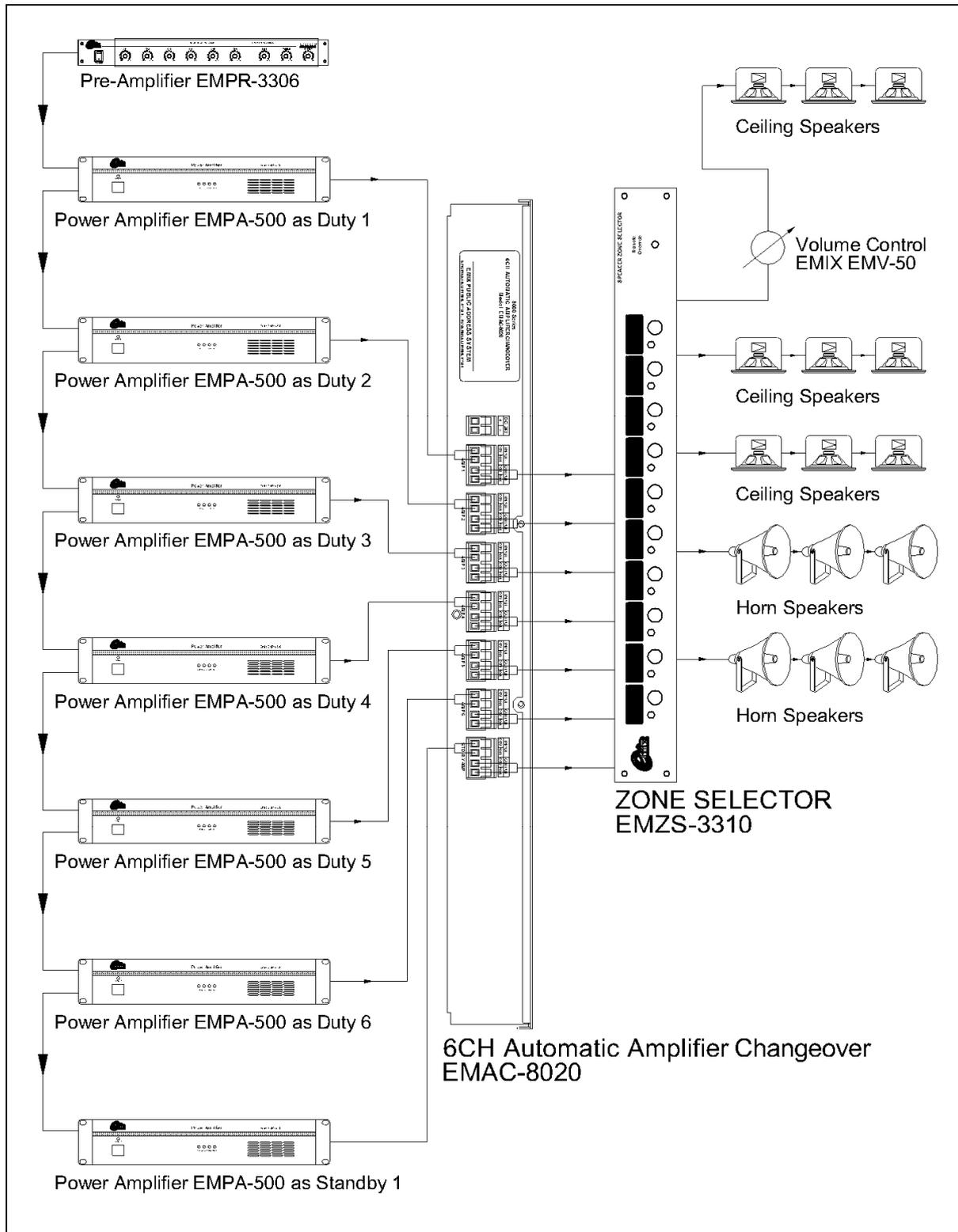


Figure 1.3 General connections of an automatic amplifier changeover EMAC-8020.

Automatic Amplifier Changeover Cascading Schematic Diagram

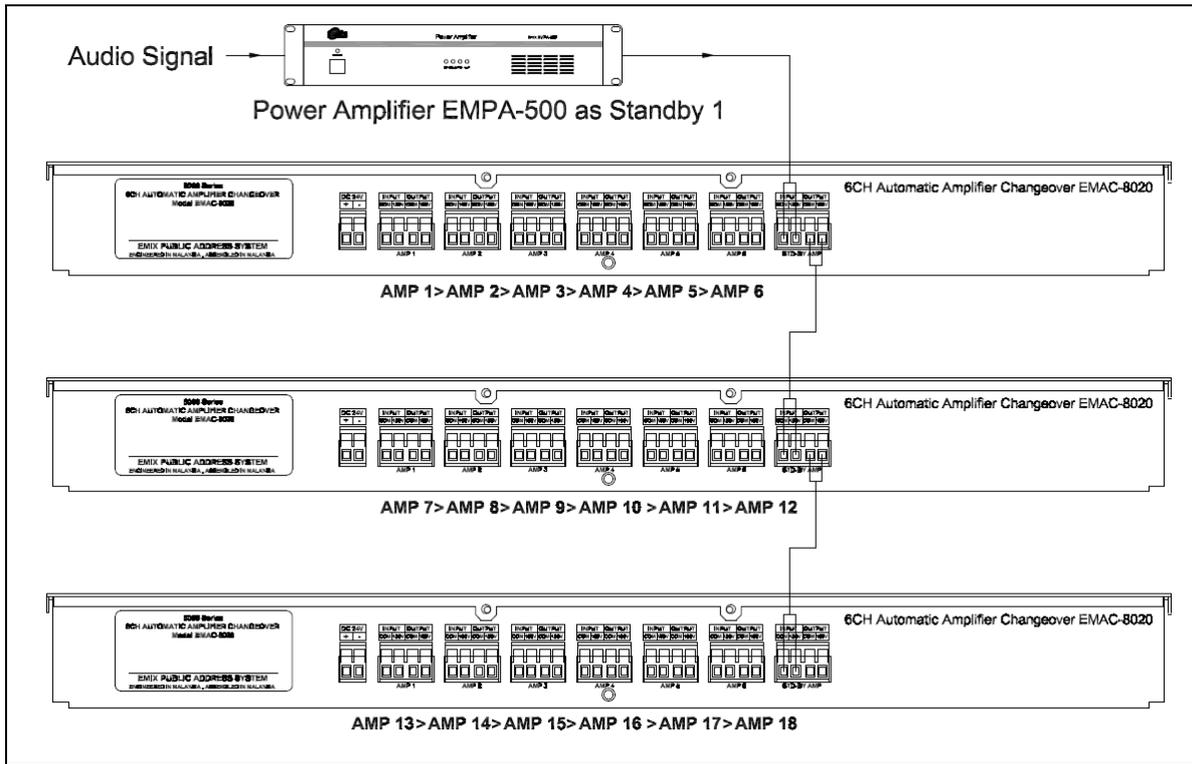


Figure 1.4.1: Cascading connection of EMAC-8020 with one source signal.

Automatic Amplifier Changeover Cascading Schematic Diagram

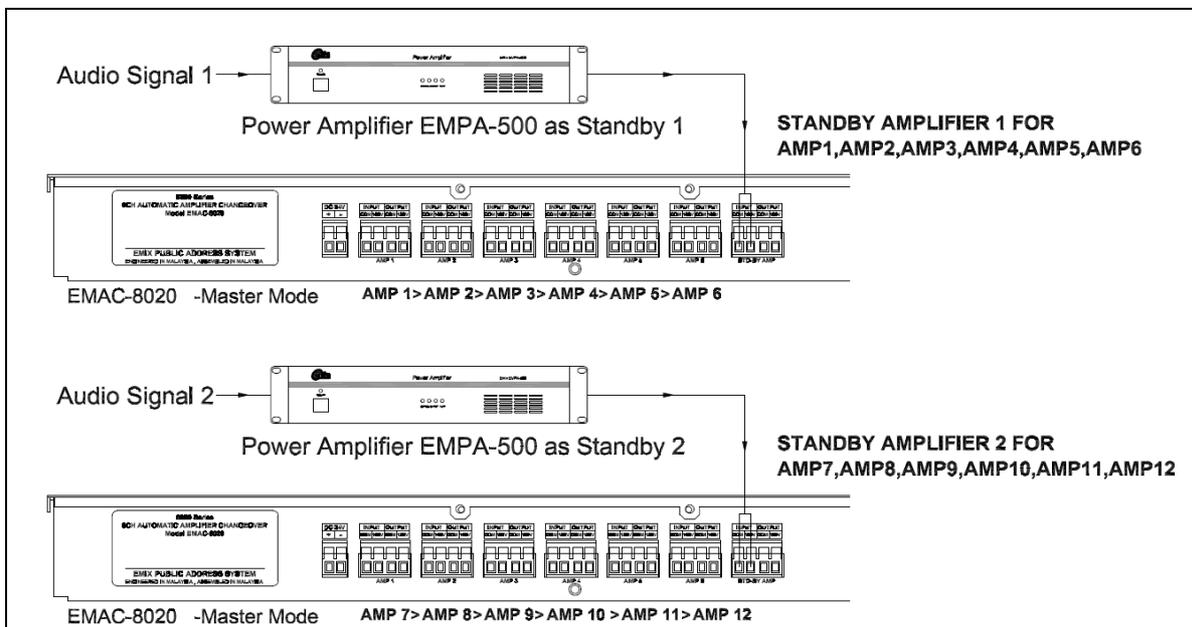


Figure 1.4.2: Cascading connection of EMAC-8020 with more than one source signal.

LCD Panel Description

Below is the normal condition of LCD display on Automatic Amplifier Changeover unit.

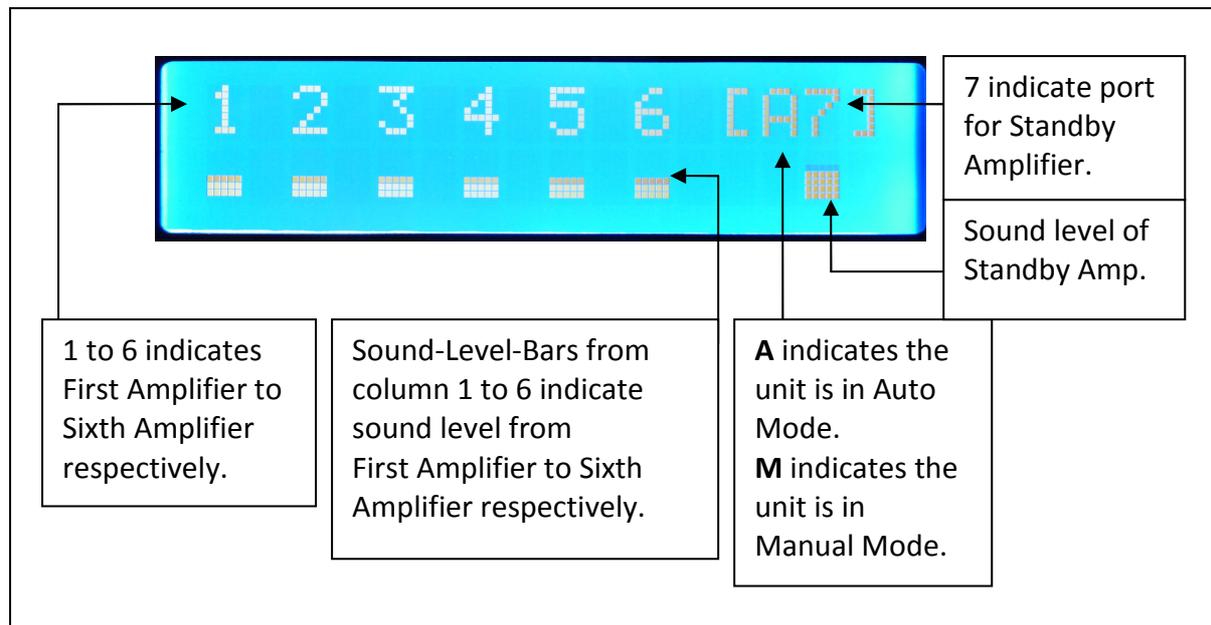


Figure 1.5.1: General indication of Automatic Amplifier Changeover on LCD display.

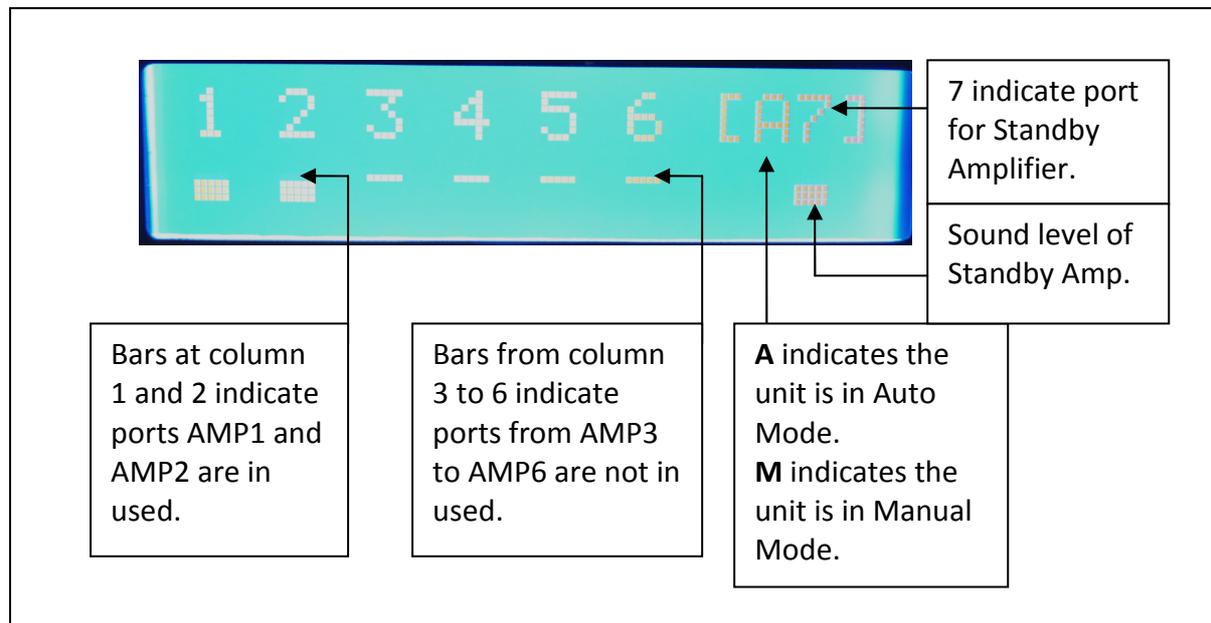


Figure 1.5.2: General indication of two duty amplifiers and one standby amplifier.

Operation

General operation of automatic amplifier changeover EMAC-8020

Ensure all connections are correct as indicated in the above drawing. Ensure that power supplied to the unit is at 24VDC in correct polarity. One standby amplifier must be connected to the STD-AMP at rear panel of the EMAC-8020. Duty amplifiers can be connected to the unit up to maximum six amplifiers per unit. Please refer to *Figure 1.3* for General connections of an automatic amplifier changeover EMAC-8020 unit. For systems that requires more than six duty amplifiers, please refer to *Figure 1.4* cascading connection for further information.

To activate the Learning Mode:

After the above connections have been done, the unit needs to go into learning mode. The unit has to detect how many amplifiers are connected to it.

For example, a system that have two duties and one standby amplifier connected to the unit. After the learning process, the unit will only detects two duty amplifiers and one standby amplifier connected to it and ignores other ports. The LCD panel will display two detected amplifiers and standby amplifier as shown at *Figure 1.5.2* above.

To activate Learning Mode: Make sure that the unit is **powered**. Then, press and hold simultaneously Button A and Button B for around 3 seconds then release. You will hear two beep sound and “Learning... OK” will be displayed at the LCD panel as shown below. Learning progress takes around 2 to 3 seconds.



Figure 1.6.1: Learning progress indications.

Please note that, all connected amplifiers including the standby amplifier must have audio signals to the EMAC-8020 with sufficient loudness. During the unit in learning process, if the signals are too low or no sound, the unit treats the amplifiers as not

available or faulty. To achieve higher sound signal for detection, insert a music source from a CD player. Adjust the volume until there is an indication on the Sound-level-bar at LCD display. You may refer *Figure 1.5.1* for more information on Sound-Level-Bar.

Please note that if the standby amplifier is not functioning while duty amplifiers are functioning, a siren will be heard.

Auto Mode and Manual Mode

There are two features in this EMAC-8020. One is Manual Mode and the other one is Auto Mode.

In Manual Mode this unit will not route the signal from the failed amplifier to the standby amplifier automatically. A user needs to press Button A to switch the standby amplifier to replace the failed amplifier manually.

In Auto Mode the unit will automatically switch the standby amplifier to replace the failed amplifier according to priority. An amplifier that is connected to AMP 1 at the rear panel of the unit has the highest priority to be replaced by the standby amplifier, followed by AMP 2, then AMP 3 and so on. Eg: AMP1 > AMP2 > AMP3 > AMP4 > AMP5 > AMP6. Please refer to *Figure 1.2* for connection details.

Example: If an amplifier at AMP 3 fails, after 15 seconds (Delay Setting by default), the standby amplifier will replace the failed amplifier and siren will be sounded.

Case one: If the amplifier at AMP 1 fails, after 15 seconds (Delay Setting by default), the standby amplifier which was replacing the AMP 3 will switch to replace AMP 1 and the siren will be sounded too. This is because AMP 1 has the higher priority than AMP 3.

Case two: If the amplifier at AMP 5 fails, after 15 seconds (Delay Setting by default), the standby amplifier will **not** replace the AMP 5 and will continue replacing the AMP 3 and **no** siren will be sounded. It is because AMP 5 has a lower priority than AMP 3.

To stop the siren or turn off the siren, please refer to Siren Setting section. For more information regarding on Delay Setting please refer to Delay Setting section below.

To select the Auto Mode or Manual Mode:

To set the unit into either Auto Mode: Make sure that the unit is **powered**. Then, press and hold the Button A until you see “Auto Mode – Master” displayed on the LCD panel. During the process, the LCD panel shows Auto Mode, which indicates the unit is set to Auto Mode.



Figure 1.6.2: Unit is in Auto Mode.

To set the unit into Manual Mode: Make sure that the unit is **powered**. Then, press and hold the Button A until you hear a beep sound. During the process, the LCD panel shows Manual Mode, which indicates the unit is set to Manual Mode.



Figure 1.6.3: Unit is in Manual Mode.

Delay Setting

EMAC-8020 has a function called “Delay Setting”. When an amplifier fails, automatically the standby amplifier will be switched over to replace a failed amplifier automatically. This feature is only applicable in Auto Mode. Delay Setting is to delay the pick-up time by the standby amplifier together with a siren sound. By default, the Delay Setting value is 15 seconds.

Remark: It is strongly recommended that the Delay Setting value should **NOT** be lower than the default setting; because there is a few seconds of silence when changing one music track to another track.

To set the Delay Setting:

To set the delay setting: Put the unit to **power OFF** condition or switch off the supply to the unit. Then press and hold both Button A and Button B together, subsequently, **power up** the unit until the LCD panel shows “Delay Setting 15 sec” as indicated below.



Figure 1.6.4: Factory default setting of Delay Setting.

Next, release both the buttons. To change the Delay Setting value, please press Button A to your desired value.



Figure 1.6.5: Minimum value of Delay Setting – 1 second.



Figure 1.6.6: Maximum value of Delay Setting – 20 seconds.

Note that the range of the value is from 1 sec to 20 sec. Once you are done, press and hold Button A until the LCD indication goes back to normal.

Siren Setting

When a siren is sounded, this indicates the standby amplifier is replacing one of the failed amplifiers. Note that this only applies to Buzzer ON condition. To **stop** the siren sound, press Button B once. The LCD panel will indicate “Buzzer Stop” and the siren will stop after a beep sound.

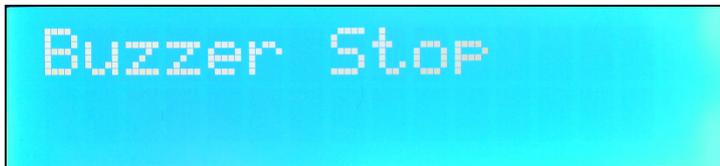


Figure 1.6.7: Buzzer Stop.

To select the Buzzer ON or OFF:

If you need to turn off the function of the siren, ensure that the unit is powered, press and hold the Button B until the LCD panel indicates “Buzzer OFF”.



Figure 1.6.8: Buzzer OFF.

If you need to turn on the function of the siren, ensure that the unit is powered, press and hold the Button B until the LCD panel indicates “Buzzer ON” and a beep is audible.

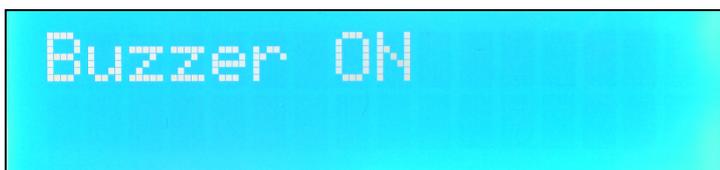


Figure 1.6.9: Buzzer ON.

Cascading the EMAC-8020 (more than one unit of EMAC-8020 is applied)

For installation with only one standby amplifier to serve more than six duty amplifiers, more than an EMAC-8020 is needed to serve the purpose. In other words, if there are two or more units of EMAC-8020 in a system; the priority depends on the standby amplifier connected to the unit. The **highest priority** is set to the unit which has a standby amplifier connected to the input of the STD-AMP port of the unit. Therefore, **it is strongly recommended that amplifiers with critical operations must be arranged and connect to this highest priority unit.**

For example, the amplifier for emergency paging should be connected to AMP 1 port of the unit. *Please refer to Figure 1.4 cascading connection diagrams above.*

Master and Slaves Setting

For situation where there are two or more units of EMAC-8020 in a system, Master and Slave Setting to units must to be performed. It is highly recommended that the **highest priority unit** must be **set to Master unit**. The subsequent units must be set to Slaves. Slave Mode is to avoid the slave unit triggering the siren when the standby amplifier signal is being used by the Master unit. *Please refer to Figure 1.4 cascading connection diagram above.*

To set Master or Slave:

To set the unit into Master: **Switch off** the supply to the unit. Then press and hold the Button A, subsequently, **power up** the unit, pressing the Button A until “Auto Mode – Master” is shown on the LCD panel as indicated below. Then you may release the button.

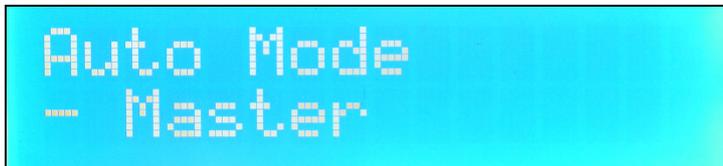


Figure 1.6.10: Unit is in Master Mode.

To set the unit into Slave: **Switch off** the supply to the unit. Then press and hold Button B, subsequently, power up the unit, while pressing the Button B until “Auto Mode –Slave” is shown on the LCD panel as indicated below. Then you may release the button.



Figure 1.6.11: Unit is in Slave Mode.

Two or more standby amplifier operations (Two or more signal sources)

In cases which require two or more signal sources in a system, the numbers of standby amplifiers are needed to take into consideration. For a system that has two signal sources, two standby amplifiers must be connected to two units of EMAC-8020. It is **not recommended** that a standby amplifier is connected parallel to two or more units of automatic amplifier changeover EMAC-8020. Please take note that, “Master” setting needs to be done to all the units that standby amplifiers are connected to. *Please refer to Figure 1.4.2 cascading connection above.*

Technical Specifications

Operating voltage	24VDC± 5%
Max. Power consumption	Operating: <300mW; Standby: <150mW
Zone load rating	500W per channel
Amplifier inputs	Six duty amplifiers/ One standby amplifier
LCD Status Display	Operating mode, sound level , duty amplifiers
Detection line	70V and 100V Line
Delay Setting	1 second to 20 seconds (15 seconds by default)
Priority Setting	Master or Slave
Frequency Response	20 Hz to 20 kHz (Less than -0.1dB)
Relay switch time	Less than 0.9 second
Switching mode	Available in automatic or manual changeover
Changeover Alert	Buzzer, Mute function available
Signal input/output	1:1
Dimension (W x H x D)	483 x 224 x 45mm (1U)
Gross Weight	3.6 kg
Net Weight	2.8 kg

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This warranty does not cover damages caused by misuse, neglect, accident of the products as well as using the product with power supply voltage other than shown on the product, or any other power supply source / adaptor not recommended by the manufacturer. This warranty does not cover damages caused by fire, earthquakes, floods, lightning and every cause not directly related to the unit.

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