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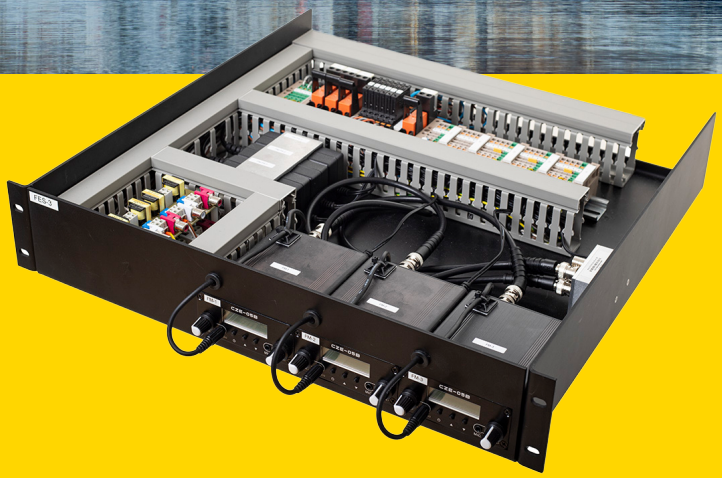

Factory Entertainment System, FES-3

Technical Manual

Contents

1. Basic Information

1.1. About this Document

The scope of this document is to describe the operation, installation and maintenance procedures for the FES-3 unit and a matching whip antenna.

1.2. Publication Log

Rev.	Date	Author	Comments
0.1	02.01.2024	Arild Skoli /Christine Vallestad	

1.3. Related Documentation

For further information, refer to the following documentation:

Doc.no.	Documentation
A100K12258	Factory Entertainment System, FES-3 Technical Manual
	Factory Entertainment System - Block Diagram
	Factory Entertainment System - Connection Diagram
	Factory Entertainment System - Wiring & Layout

2. System Overview

2.1. General

The system basically consists of a 19”/2U Rack mounted unit containing interfaces to:

- 3 different Entertainment Sources
- 3 different FM Radio Transmitters
- 1 PA/Alarm interface (to a PAGA system) with a failsafe Entertainment Override functionality
- Hearing protective FM Receivers with headband (pn M2RX7A2-01)

The main purpose of the FES-3 is to provide up to 3 different entertainment sources to factory workers wearing hearing protective earphones by means of wireless FM radio receivers. And at the same time also transmitting, over the same FM bands, the ships mandatory PAGA messages.

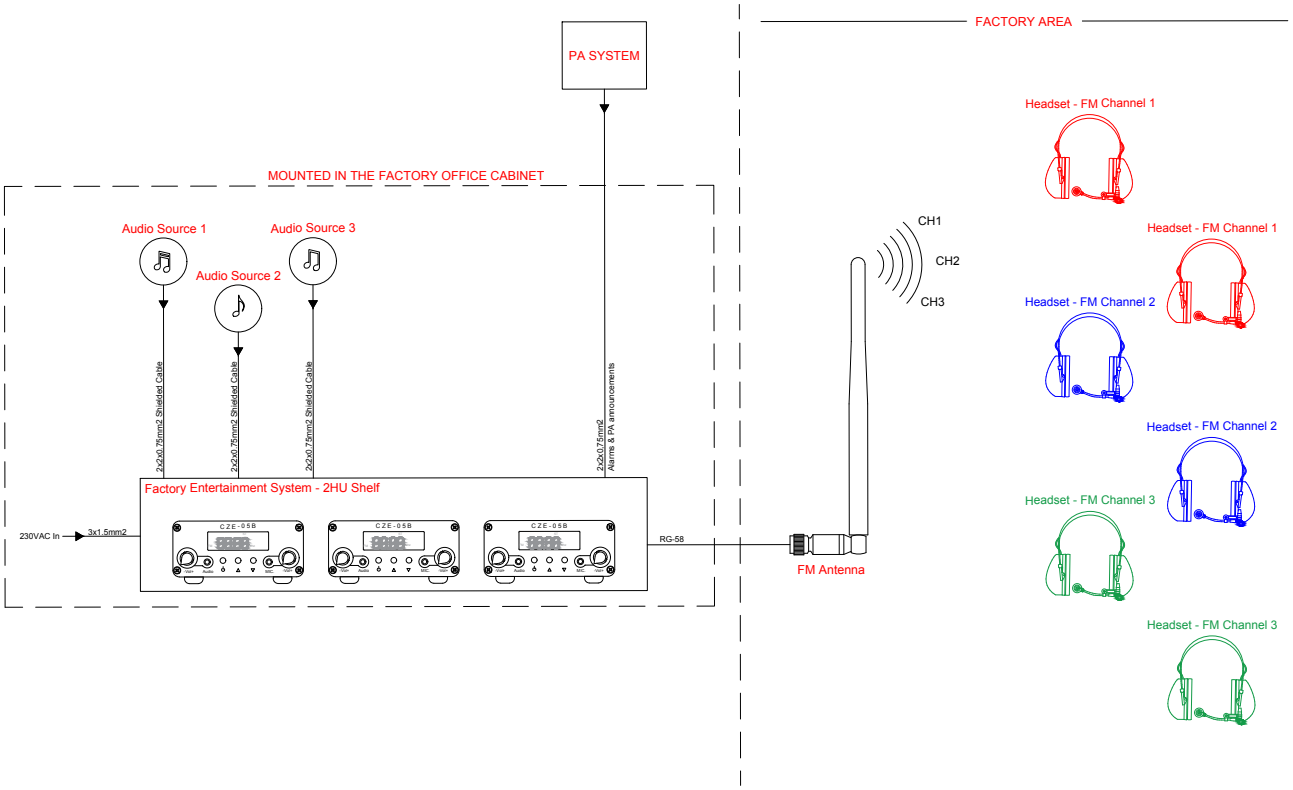

Figure 1 System Block diagram

3. System Functions

3.1. Radio Transmitter Controls

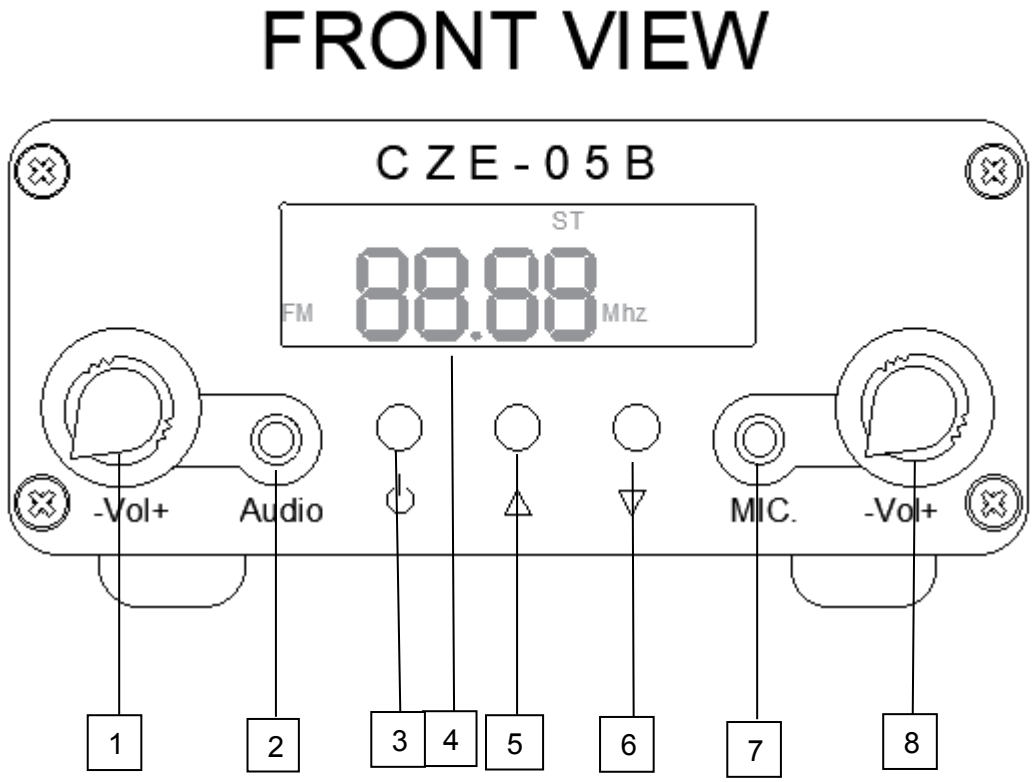

Figure 2 Radio front layout

1	Line in (Audio) Level adjustment (Preset to correct level – DO NOT ADJUST)
2	Line in Audio Jack (DO NOT CHANGE TO OTHER SOURCES)
3	Power ON
4	Display
5	Transmit Frequency Increase (Step 100 kHz)
6	Transmit Frequency Decrease (Step 100 kHz)
7	Microphone in Audio Jack (NOT TO BE USED)
8	Microphone in (Audio) Level Adjustment (NOT TO BE USED)

3.2. FM Settings

The FES-3 is equipped with 3 different FM transmitters; FM1, FM2 and FM3. They are all accessible from front of the unit:

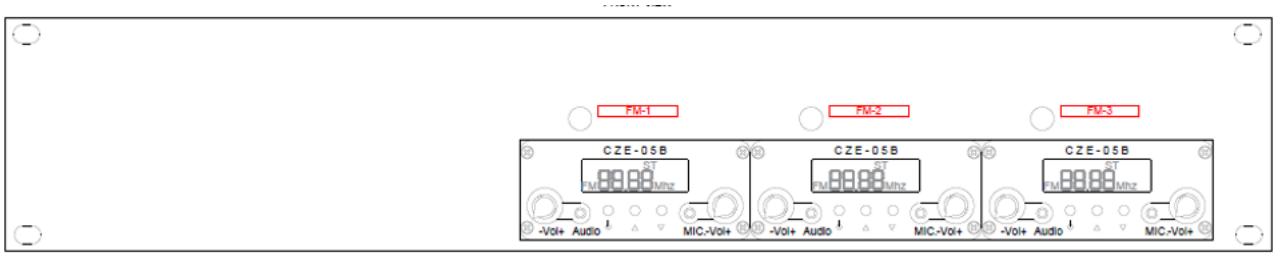

Figure 3 FES-3 Front layout

Each of the radio transmitters can be set to a frequency between 76 and 108MHz. The 3 different radios must be set to frequencies different to each other. The recommendation is to set them at least 5 MHz apart from each other to avoid interference.
The frequencies are set by the frequency increase (5) and frequency decrease (6) buttons described in chapter **3.1 Radio transmitter controls.**

3.3. PAGA Override

The system is equipped with a PAGA Override functionality. The PAGA is connected in a fail-safe manner. I.e. if the switching circuit somehow fails to switch the PAGA will by default be transmitted on all FM channels. This source is connected to the ships PAGA system.

4. Installation Procedures

See related documents for installation details.
All external signal levels (Entertainment and PAGA) must be set to 0 dBm (0.775V). This will ensure correct listening levels on all sources without distortion.
The FES-3 unit is to be installed in a rack in an instrument room or similar (protected area)
The antenna must be installed within the factory area with an open space to the factory workers wearing hearing protective FM receivers.
PS: To avoid damage to the radios, the antenna must be installed and connected before powering up the system.

5. Start up and Operation

5.1. General

Connect the antenna before turning the system on.
Once the antenna is connected to the FES-3 and the system is powered up, the frequencies must be set up on all 3 radios. As mentioned in chapter **3.2 FM SETTINGS** the 3 radios must be set at least 5 MHz apart from each other.

Make sure all 3 entertainment sources contain proper audio signals and that no PAGA message is present. A portable FM radio can be used to verify this, as this might be easier to tune than the portable **Hearing protective FM Receivers**.

5.2. Important Operation When Leaving International Waters

In order not to interfere with national broadcasting it is important to shut down the system when leaving international waters. This can either be done by turning the circuit breakers for the system OFF or switching the radios in the system to OFF.

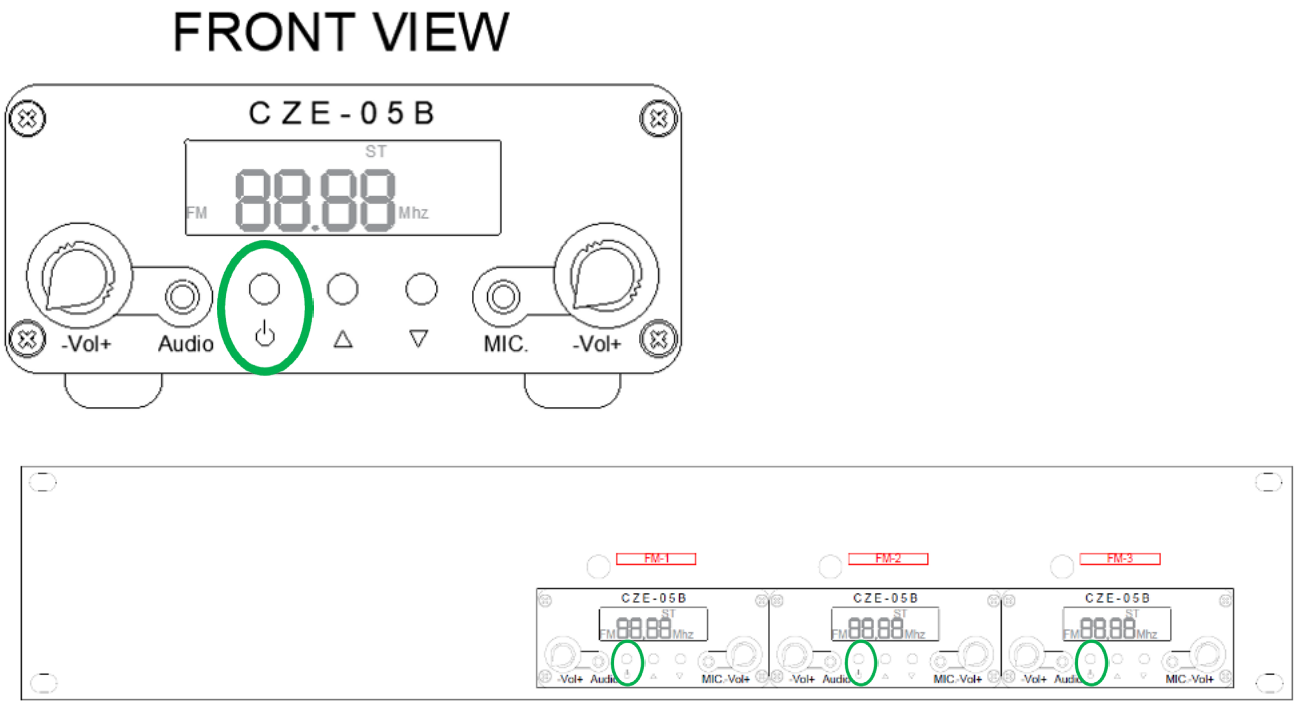

Figure 4 Location of the ON/OFF buttons

5.3. Headset Preparation and Usage

Figure 5 M2RX7A2-01 Headset

- **Inserting batteries**

Use a screwdriver or the like to open the cover by turning it anticlockwise.
Insert the 1.5 V AA batteries. Check that the battery polarity (+/–) is correct before closing the cover (see diagram on battery cover). Warning! Do not try to charge the included alkaline batteries as this may damage the headset. The batteries may also explode. Always switch off the unit before you remove or insert new batteries.
Warning! Performance may deteriorate with battery usage.

- **Switching the headset on and off**

Turn the radio volume control knob (A:9)

- **Adjusting the radio volume**

Turn the radio volume control knob (A:9) Note that this volume will be the same for both Entertainment and PAGA. It is not possible to differentiate between these on the headsets. It is however possible to reduce the volume input levels on the entertainment sources according to the related procedures of this equipment. Do not adjust the volume of the PAGA source as this is correctly adjusted from the factory.

- **Searching for radio stations**

Turn the channel search control knob (A:10) to the wanted audio entertainment source frequency.

- **Adjusting the level-dependent function (surround)**

Turn the level-dependent function control knob (A:11).

ⓘ ***Note! When this function is switched off you will not hear any surround sound.***

ⓘ ***Warning - performance may deteriorate with battery usage. The typical period of continuous use that can be expected from the ear-muff battery is 100 hours***

ⓘ ***Warning! The audibility of warning signals at a specific workplace may be impaired while using the entertainment facility Warning! If these recommendations are not followed it may lead to a loss of attenuation, which can in turn lead to hearing damage.***

ⓘ ***Warning! The output of the electrical audio circuit of this hearing protector may exceed the daily limit sound level. Warning! The output of the level-dependent circuit of this hearing protector may exceed the external sound level.***

- **MAINTENANCE/CLEANING**

Remove the ear cushions and attenuation cushions if you have been wearing the hearing protector for a long time or if moisture has formed inside the cups. Clean and disinfect the cups, headband and ear cushions regularly with soap and warm water. Allow the hearing protector to dry before you use it again.

ⓘ ***Do not immerse the hearing protector in water!***
ⓘ ***Make sure the cleaning agents used are known not to be harmful to the wearer.***

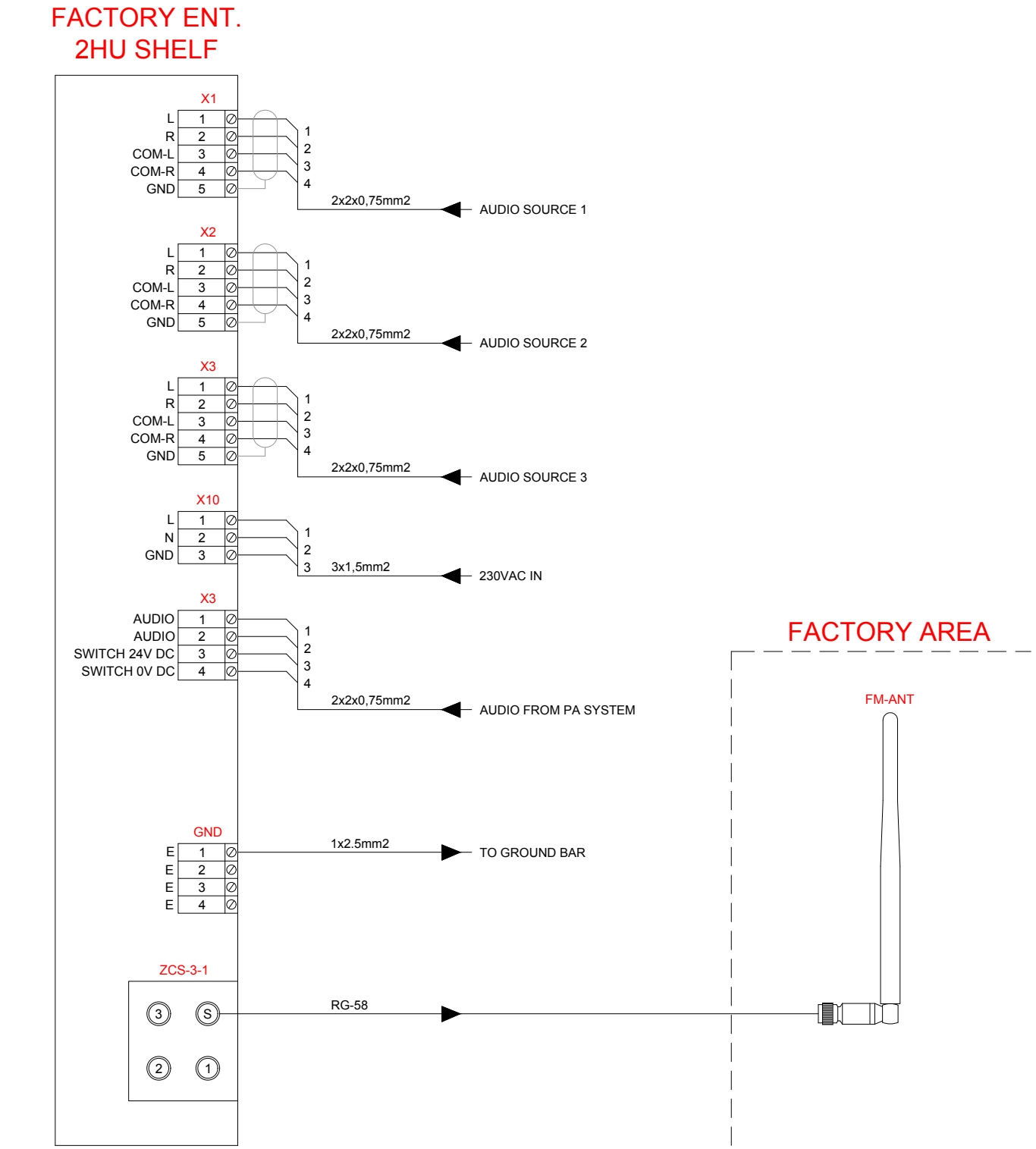

Figure 6 FES-3 External connections

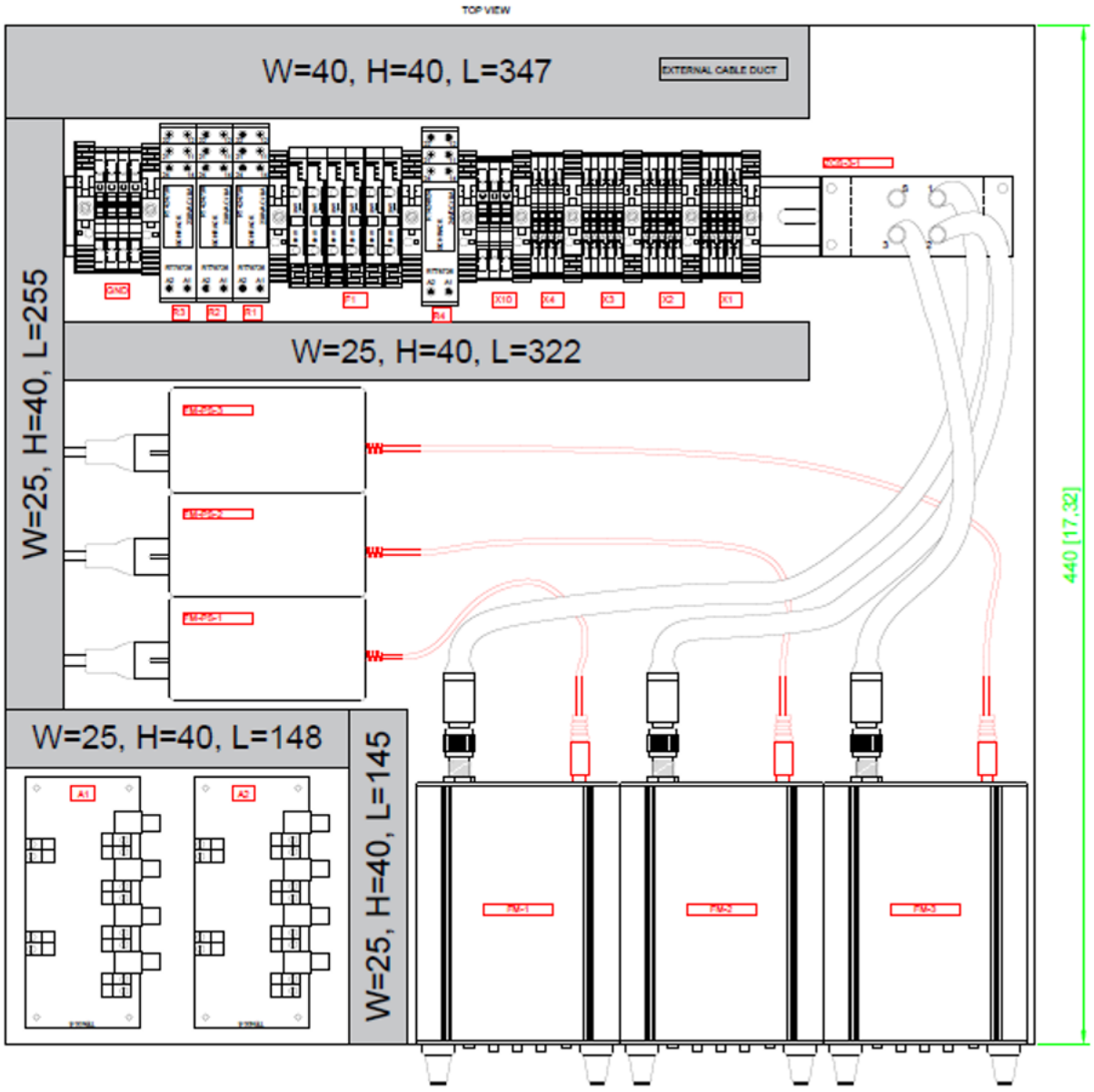

Figure 7 FES-3 Top view

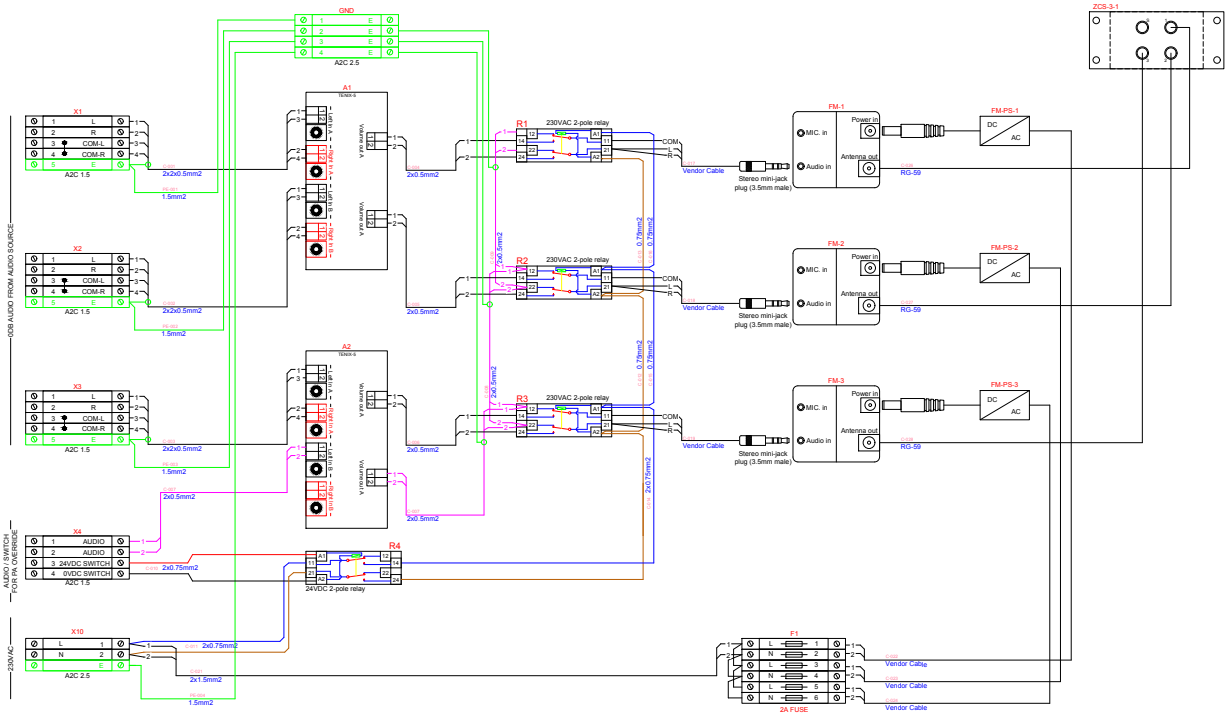

Figure 8 FES-3 Internal connections

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The WEEE Directive does not legislate that Zenitel, as a 'producer', shall collect 'end of life' WEEE.

This 'end of life' WEEE should be recycled appropriately by the owner who should use proper treatment and recycling measures. It should not be disposed to landfill.

Many electrical items that we throw away can be repaired or recycled. Recycling items helps to save our natural finite resources and also reduces the environmental and health risks associated with sending electrical goods to landfill.

Under the WEEE Regulations, all new electrical goods should now be marked with the crossed-out wheeled bin symbol shown.

Goods are marked with this symbol to show that they were produced after 13th August 2005, and should be disposed of separately from normal household waste so that they can be recycled.