



# E-HOUSE



## Overview

AKA's E-houses are pre-manufactured stationary or modular enclosures that integrate high, medium and low voltage electrical, control and safety components, as well as auxiliary components. E-houses are designed to ensure the safety of critical and valuable technological processes and electrical equipment across different industries.

AKA's typical E-house is composed of:

- Metal insulated or uninsulated building or container for a particular environment;
- Low, medium and high voltage switchgears;
- Low and medium voltage transformers;
- Low and medium voltage motor control centers;
- Low and medium voltage Variable Frequency drives;
- Battery systems and related products;
- Cables, cable trays and accessories;
- Raised floor;
- Mechanical, electrical and control systems for the building, including lighting, heating, ventilation, air conditioning, fire protection, alarm system, CCTV system, access control systems, SCADA, etc.

AKA offers exceptional resources to fabricate E-houses within our 100,000 square foot manufacturing facility. AKA pre-manufactures E-houses in frame-built modules or within ISO containers to ensure easy delivery and handling at the destination. The modules are assembled in a controlled environment manufacturing facility. Each E-house is customized to suit different applications and environmental conditions.

## Features and Benefits

- Manufactured in controlled indoor facility;
- Tailored design, engineering and assembly, fit-out, and factory tested (including special seismic, thermal and acoustic requirements);
- Modularized execution for big projects with offered shipping and minimal site work;
- Mobile container for small-scale needs;
- Convenient transportation options (by truck, barge or combined);
- Installation and quality control on site;
- Full turnkey solution, installation and project management;
- Full factory testing and pre-commissioning prior to shipping;
- All internal components are fully tested and certified;
- Quality Management System ISO 9001:2015.

## Overview

Each module is tested at our facility where AKA conducts partial load tests. AKA has a proven track record of factory testing requiring minimal on-site commissioning. The finished AKA's E-houses are steel structures with corrugated siding on the exterior and steel sheet walls on

the interior. Each E-house contains the specified alarm equipment, HVAC, switchgear, lighting, cabling and all other necessary equipment.

## Guide Form Specifications

### Structure

Pre-engineered E-houses are self-supporting structures that are made in frame and panels design to provide maximum flexibility in erection, access and maintenance. The baseframe is made of heavy duty welded structural steel beams or bolted C-shaped profiles depending on load and requirements, with a typical height of 200 to 300mm. The envelope structural frame is made of lightweight structural studs and tracks. They are used for the floor and ceiling joists, for wind and axial load-bearing walls and curtain walls. Typical load bearing members 20 gauge cold-formed galvanized steel load-bearing studs and tracks. Thickness could be increased up to 12 gauge in accordance to requirements and yield strengths to obtain optimal performance.

### Doors

Standard E-house building structures include doors. Traditionally, E-houses feature two types of doors: for pedestrians (single door with size 32" x 84" with glass), and service purposes (double door with size 72" x 96" without glass). These external doors are made from 18 gauge steel, fully insulated with mineral wool insulation that have a RSI value 0.74 m<sup>2</sup>K/W. The doors are also UL fire-rated to help prevent the spread of fire. Doors include steel frames, weather stripping, SAA lever furniture (locksets, strikes), zinc plated hinges and anti-jimmy security features.

### Floors

Heavy duty load bearing internal flooring is made of steel 6 mm Flat plate with a non-skidding surface and reinforced in accordance to dead and live load of the full assembly (minimum uniform floor loading of 250 PSF is included here). All seams are continuously welded or tightly fitted depending on the construction. The floor surface is finished with non-skidding epoxy paint.

The floor is also insulated with fire resistant mineral wool insulation with R-value equal to R24.

The insulation layer is not exposed to the environment as it is covered with 24 gauge metal sheets and finished with epoxy paint. All cutouts in walls will be made as per customer specification.

### Internal Lighting

Lighting is an important element in E-houses, and should provide directed lighting and diminishing visual glare. Lighting fixtures could be supplied in a wide variety of styles for various functions. The standard E-house contains heavy duty lighting with fixtures mounted to the ceiling structure. Holders stand up to vibration in manufacturing and warehouse environments while reflectors direct light to maximize light distribution. Holders are suitable for fluorescent bulbs. Quantity and power consumption depends on lighting type and luminous flux for the room. Other lighting types such as Fluorescent LED can also be opted. This E-house uses LED lighting.



## Guide Form Specifications

### External Walls

The walls are made of a double skin insulated sandwich structure (external layer/insulation/internal layer). The external layer is made of special ribbed, fully galvanized steel 24 gauge sheets. This material is excellent for external wall applications, as they can withstand wind speeds and other weather external loads. Insulation is made of fire resistant mineral wool material with an R-value equal to R24.

The internal layer is made of 24 gauge galvanized steel panels, and typically finished in a white color.

External and internal layers could be finished as per customer requirements. All cutouts in walls will be made as per customer specification.

### Exit Lights

Exit lights are LED illuminated exit signs and work as emergency lighting simultaneously. LED technology is energy and size efficient (more light in a smaller package), uses less energy, and has a lifespan of up to 50 times longer than standard incandescent and halogen lamps. These highly-efficient exit signs and emergency lights also use maintenance free Ni-Cad batteries. These batteries are smaller, last longer, and are more tolerant of deep discharge issues than traditional sealed lead acid batteries.

Battery powered emergency exit signs are hard-wired with an internal battery backup system that allows the unit to operate for at least 90 minutes in the event of a power failure.

### Roof

The roof is a fire resistant, heavy duty sandwich structure. The external layer consists of fully galvanized and mechanically interlocking structural steel, 24 gauge thick panels with ribs that demonstrate all weather performance in areas of extreme wind, rain and heavy snow. It is engineered specifically for low slope roof applications common to industrial and institutional buildings. It will also be coated with epoxy powder paint.

Rainwater is discharged at each corner via a perimeter galvanized steel gutter system.

Additional rainwater pipes can be included if required.

The intermediate (insulation) layer contains insulation made from mineral wool with R-value equal to R38.

The internal layer (ceiling) is made of flat galvanized steel sheets, 24 gauge, and coated with epoxy paint.

### Ventilation

The E-house applies a mechanical supply and exhaust ventilation option to have total control under air flows inside the building. This has the same advantages as other mechanical ventilation systems, but creates a more flexible and controllable environment inside the E-house.

This is essential in case of precise air and thermal management. Mechanical ventilation systems are reliable for delivering the desired air flow rate, regardless of the impacts of variable wind and ambient temperature. A filtration system is used to remove dust and undesirable particles. This system can be used in various applications, and in combination with air-conditioning units for thermal management.

## Technical Data

### AKA's Typical E-House Technical Specifications

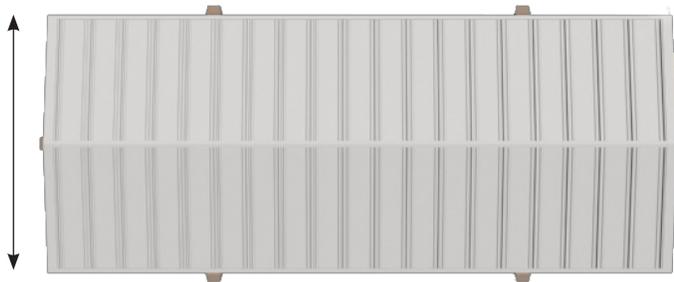
<b>External dimensions (L x W x H1 (H))</b>	7.7724 m x 4.115 m x 3.6528 m (3.59 m)
<b>Internal dimensions (length/width/height(hip height))</b>	7.39 m x 3.73 m x 3.07 m (3.3 m)
<b>Internal volume</b>	88.12 m <sup>3</sup>
<b>Floor surface</b>	27.56 m <sup>2</sup>
<b>Net weight (estimated)</b>	5942.15 kg
<b>Gross weight (estimated)</b>	10,793.15 kg
<b>Heat Load (Watts)</b>	9,626 Watts
<b>Standards</b>	Can be built to applicable NEMA®, IEEE®, ANSI, UL® and IEC standards and requirements.



Front View ( 1 / 65 )



Side View ( 1 / 65 )



Top View ( 1 / 65 )



ISO View ( 1 / 75 )

Not to be used for installation purposes.



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