

# TF JACKSON

Portable Buildings

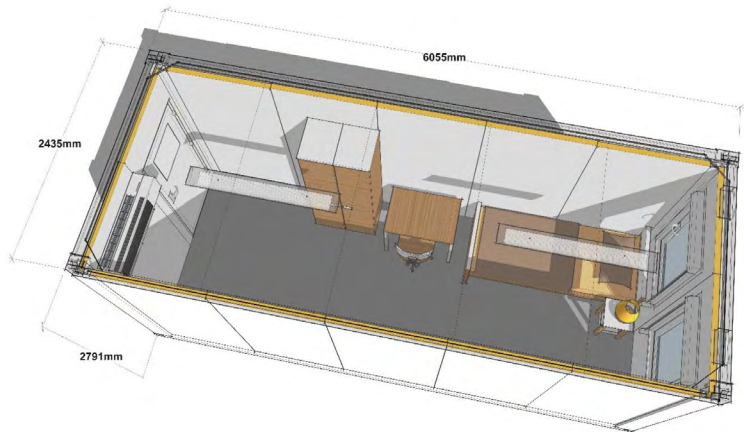
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## TECHNICAL SPECIFICATION



## Technical specifications:

### 20'x8'x9'6" MODULAR UNIT / ACCOMMODATION CONTAINER



The **modular flat pack** unit or container is designed as a light, solid construction system consisting of steel floor and roof frames and corner profiles.

## General Information



**Modular flat pack unit:** The modular flat pack unit or container is designed as a light, solid construction Multi House system consisting of steel floor and roof frames and corner profiles.



**Design Flexibility:** The system enables the compounding of individual containers in longitudinal and transverse directions without limits. It also enables compounding of containers in 2 floors in height (ground floor + first floor), or in 3 floors in height for warehousing of these containers (ground floor + 2 floor).



**Insulation:** Wainscots of the container are made of light insulation panels and offer pleasant climate in the interior due to their building and physical properties.

## 1.1 Dimensions

The mentioned dimensions and weights are valid for standard configuration and can vary depending on configuration and equipment.

Type	External			Internal (60)			Internal (100)			Weight 60 (approx)	Weight 100 (approx)
	L	W	H	L	W	H	L	W	H		
10'	2990	2435	2,790	2806	2251	2520	2726	2171	2520	1300	1500
20'	6055	2435	2790	5871	2251	2520	5791	2171	2520	2200	2600

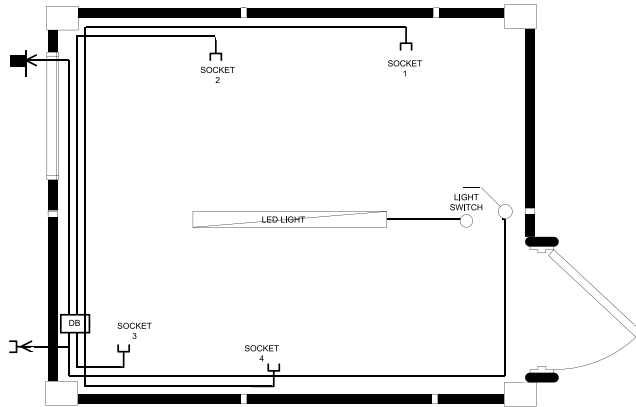
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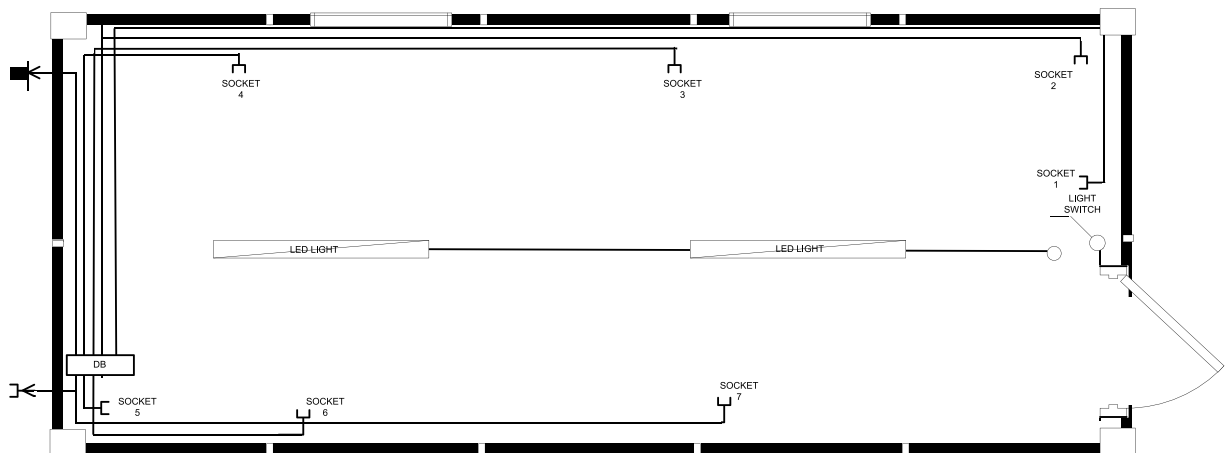
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## 1.2 Standard configuration

### 10' x 8' Unit



### 20' x 8' Unit



### 20' x 8' Unit Stairs



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## 1.3 Insulation

Component	Insulating material	Thickness / Size	U-value(W/m <sup>2</sup> K)
Roof	Mineral wool 50K	50	0.88
	Ceiling: MW sandwich panel 90K	50	0.85
Panel-60	MW sandwich panel 90K	60	0.63
	MW sandwich panel 90K	100	0.4
Floor	Mineral wool 50K	100	0.45
Window	PVC t&s with ALU RS	800*1100	1.9
	Fixed window	900*2120	1.9
Door	ALU	830*2035	1.0

## 1.4 Load bearing capacity

Component	Payload (kg/m <sup>2</sup> )	Wind load (km/h)	Certificate
ROOF	210		Rina No.11-932-18254-1A
FLOOR	450		
PANEL	110	135	
	Weight		
UNIT STACK	10500kg		

## Roof

In order to check the bending of cross beams under load, a chord was fixed across the ceiling panel, and the distance measured between the chord itself, and the ceiling surface at the centre-point.

Ceiling bending (average) = 77.4mm-75.6mm = 1.8mm

**So there was no major plastic deformation of the floor under the load of 231.6 kg/m<sup>2</sup> (see below for details\*\*)**

**Calculation:**

Roof loading area = length x width = 5.91 x 2.3 = 13.6m<sup>2</sup>

\* So for 2100 kg payload means 2100 kg / 13.6m<sup>2</sup> = 154.4 kg/m<sup>2</sup> (1.51 KN/m<sup>2</sup>)

\*\* So for 3150 kg payload means 3150 kg / 13.6m<sup>2</sup> = 231.6 kg/m<sup>2</sup> (2.27 KN/m<sup>2</sup>)

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## Floor

In order to check the bending of cross beams under load, a chord was fixed across the floor panel, and the distance measured between the chord itself, and the floor surface at the centre-point.

Side rail bending (average) = 8.13mm-7.75mm = 0.38mm

**So there was no major plastic deformation of the floor under the load of 505.2.6 kg/m<sup>2</sup> (see below for details\*\*)**

### Calculation:

Floor loading area = cement board length x cement board width = 5.91 x 2.3 = 13.6m<sup>2</sup>

\* 5000 kg total payload equals 5000 kg / 13.6m<sup>2</sup> = 367.6 kg/m<sup>2</sup> (3.61 KN/m<sup>2</sup>)

\*\* 7000 kg total payload equals 7000 kg / 13.6m<sup>2</sup> = 514.7 kg/m<sup>2</sup> (5.05 KN/m<sup>2</sup>)

## Panel

In order to check the bending of cross beams under load, a chord was fixed between the bottom and top rails. The distance was then measured between the chord itself, and the panel surface at the centre-point.

### Calculation of equivalent wind speed:

The wind pressure can be approximated by: Pressure =  $\frac{1}{2} \times (\text{density of air}) \times (\text{wind speed})^2$  (shape factor)

Wind speed =  $\sqrt{((\text{pressure}) / (\frac{1}{2} \times (\text{density of air}) \times (\text{wind speed})^2 (\text{shape factor})))}$

- The density of air is about 1.25 kg/m<sup>3</sup>
- The shape factor  $\mu_z$  (drag coefficient) depends on the shape of the body. It has the order of magnitude 1 and is dimensionless; a standard value is  $\mu_z = 1.17$
- The wind speed must be expressed in m/s. In that case the pressure has units kg/m/s<sup>2</sup>, i.e. N/m<sup>2</sup>
- Panel loading area = length x width (panel width reduced of the measurement area of 0.1m on each side) = (2.47 x (1.14 - 0.1 x 2)) = 2.32m<sup>2</sup>

\* So for 275 kg payload means 275 kg / 2.32m<sup>2</sup> = 118.4kg/m<sup>2</sup> (1161.8 N/m<sup>2</sup>) we have:

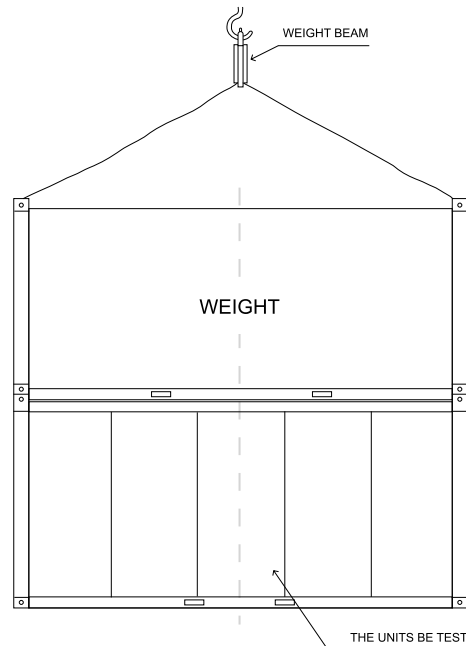
Wind speed =  $\sqrt{((1161.8) / (\frac{1}{2} \times (1.25) \times (1.17)))} = 118\text{m/s} = 143.6 \text{ km/h}$

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## Stack



Loading	A1	A2	B1	B2	C1	C2	D1	D2
Before loading (0kg)	9	9	8	9	10	9	9	7
After weight removal (0kg)	9	9	8	8.5	10	8.5	8	7.5
Bending	0	0	0	0.5	0	0.5	1	0.5

## 1.5 Fire resistant load-bearing capacity

Component	Specifications	Testing standards	Result
MW sandwich panel	T=100mm	EN 13501-2	EI 60
Floor	T=140mm	EN 13501-2	REI 60
Roof	T=200mm	EN 13501-2	REI 45



## 2 CONTAINER DESIGN

### 2.1 Frame construction

Component	Specifications
Floor frame	From cold rolled, welded steel profiles, four container corners welded
Floor edge beam	4mm(SPHC)
Floor cross beam	C-shaped steel 100*50*20 T=2.2
Fork lift pockets	Size:340*90mm T=3mm Q235B
Corner post	Main material 3mm steel plate Q235B, 18mm connector
Roof frame	From cold rolled, welded steel profiles, four container corners welded
Roof edge beam	3mm(SS400)
Roof cross beam	Rectangular tube 50*30*1.5 and C-shaped steel 100*50*20 T=2.2
Roof Mask	1.6 mm thick corrugated "ISO" Roof, CORTEN made

### 2.2 Floor

**Insulating material:** Mineral wool ,Density 50kg/m<sup>3</sup>

**Insulation thickness:** 100mm

**Subfloor:** 0.5mm color steel or galvanized sheet

**Floor plates:** 18mm cement fiber board, asbestos free

**PVC floor:** 2mm

**EN13501 fire resistance bearing test:** The load is 250kg/m<sup>2</sup> and the fire resistance is 60 minutes.

### 2.3 Roof

**Roof:** 1.5 mm thick corrugated "ISO" Roof, CORTEN made

**Insulation:** Mineral wool slabs (Density 50kg/m<sup>3</sup>, thickness: 50mm) + ceiling made of 50mm MW sandwich panel (Density 90kg/m<sup>3</sup> (total roof insulation thickness 100mm).

**EN13501 fire resistance bearing test:** The load is 150kg/m<sup>2</sup> and the fire resistance is 45 minutes.

## 2.4 Wall panel

**Wall thickness:** 100mm

**External clading:** Double sided 0.5mm color steel

**Insulating material:** Mineral wool , Density 100kg/m<sup>3</sup>

**EN13501 fire resistance test:** Fire resistance is 60 minutes (100mm panel)

## 2.5 Door

**Single fold:** 40mm thick

**Frame:** Pre-painted aluminum frame

**Steel sheets:** Hot galvanized and pre-painted steel sheets (inside and outside)

**Insulation:** Insulated with PL (polystyrene)

**Net opening dimensions:** 754 x 1985 mm; furnished with a handle lock with 3 keys

**Colour:** RAL 9010

External dimensions	Net opening
830*2035	754*1985

**Optional:**



Anti-theft door



Visible tempered glass

## 2.6 Windows

**Windows:** Made of PVC, Tilt and Swing, in white colour

**Dimension:** 800/1100 mm, glazed with double-layer glass in a thickness 5/9/5 mm

**Mechanism:** Tilt and Swing mechanism with ALU made rolling shutter

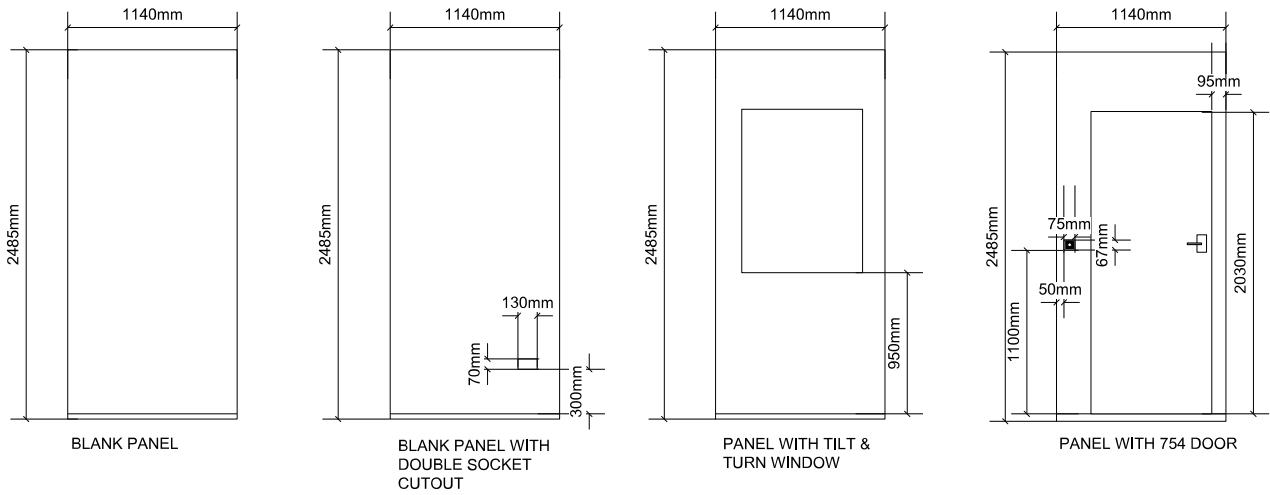
**Installation:** One window is installed into one wall panel



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## 3 CONTAINER DESIGN

### 3.1 Electrical specifications

Name	Specifications
Industrial socket	220V 3P 32A IP67
Frequency	50HZ
Protection	2P 63A 0.03A leakage protection
Circuit breaker	LIGHT: C6A 1P 1pc
	Socket: C16A 1P 4/7pcs
Light	LED (220V) IP65
Wire	RVV 3*1.5m2,3*2.5m2,3*6m2;
Light switch socket	1 x 10A One Gang

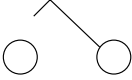
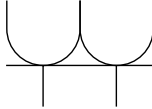
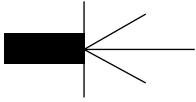
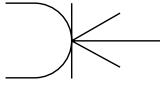
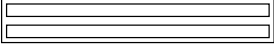
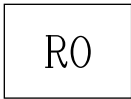
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## Earthing:

- Weld the connection block on one of the bottom short side beams and equip it with installation bolts before leaving the factory
- Customer on-site installation of grounding device

	Light switch		Double Socket
	Industrial socket(male)		Industrial socket(female)
	Light		Distribution Board

## 3.2 Heating and air conditioning

**Heating:** Individual heating through frost heaters, thermostatically controlled electric panel and/or fan heaters with safety switch for overheating.

**Mechanical Ventilation:** Mechanical ventilation options with electrical ventilators or on your request also available with air conditioning units.

**Manual Ventilation:** Regular ventilation of the rooms must be provided. A relative humidity of 60 % should not be exceeded in order to avoid condensation!

## 3.3 Possibilities of container mounting:

On a flat solid surface (asphalt, concrete)

On 'Point' foundations (concrete footings, min. dimensions 300mm x 300mm x 300mm – 6 pcs per 20' unit)

On 'Strip' foundation (concrete strip, min. width 300mm wide, around perimeter of container and middle of container) (See *diagram below*)

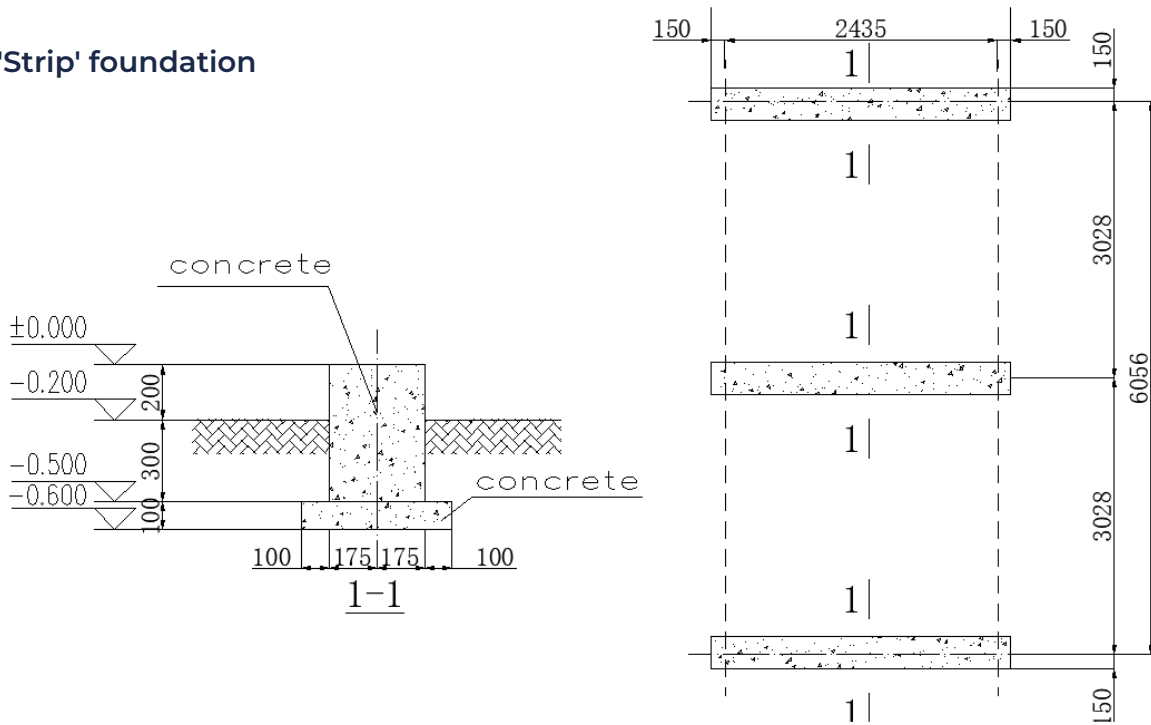
On 'Slab' foundation (concrete slab, minimum thickness 300mm on total floor area – m<sup>2</sup>)

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## 'Strip' foundation



## Certification

RINA Certified: Dimensions, Weight, Payload and Stacking are RINA Certified

Certificates: Certificates available for components

## Delivery

Standard delivery of assembled building on Arctic HIAB

Container units can be delivered in bundles (3 x 20' kits) 864mm ht. per kit

Container units can be delivered in bundles (4 x 20' kits) 648mm ht. per kit

Container units can be delivered inside 40' HC (6 x 20' units)

*PLEASE NOTE: Rights to technical changes are reserved.*

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