FRAMING & SYSTEMS

BY T.I. DYNAMIC FACADES

t.i. dynamic facades

be different. be recognised. be innovative

Sub Frame

TI-DF1

At the heart & soul of all facades is the structure that fixes the panel back to the building. Our TI-DF1 System is our basic sub frame assembly consisting of single/double helping hand brackets and vertical L/T profiles. These materials are available in aluminium to suit your projects requirements.

All brackets have built in support to grasp the vertical profiles without the need for an additional clip. Each bracket has pre-punched holes to accommodate both steel and concrete backing structures.

The TI-DF1 system can accommodate all of the products available on the TI Dynamic Facades portfolio (with the exception of GRC) & other cladding types too!

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WHAT IS A RAINSCREEN

A rainscreen is an exterior cladding system designed to protect a building from rain and other environmental elements while allowing the structure to "breathe" through a controlled ventilation system. It is a layered construction method that separates the outer cladding from the building's internal structure, creating an air cavity between them. This system helps manage moisture, enhance insulation, and improve the overall performance of the building envelope.

CLADDING (OUTER LAYER)

The visible exterior part of the rainscreen system. It can be made from various materials like metal, wood, stone, or composite panels.

The cladding's primary function is to shed most of the rainwater and protect the building from the direct impact of environmental conditions like wind, rain, and UV rays.

AIR CAVITY

Between the outer cladding and the building's inner layers, there is an air gap that allows for ventilation. This gap is typically 30-50 mm wide and enables airflow, preventing moisture buildup.

WATER-RESISTANT BARRIER (WRB)

This is a secondary line of defense. The WRB is usually a waterproof membrane installed on the building's primary structure. It helps stop any water that may pass through the outer cladding from penetrating further into the building.

INSULATION

In most rainscreen systems, insulation is added between the cladding and the building's structure to improve energy efficiency by reducing heat loss.

VENTILATION

The air gap in the rainscreen system allows continuous airflow, which helps to dry out any moisture that may have seeped through the cladding. This ventilation reduces the risk of mold, mildew, and structural damage.

DRAINAGE

Rainscreen systems are designed with drainage pathways to allow water that penetrates the cladding to escape efficiently, minimising water intrusion into the building envelope.

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MAIN BENEFITS OF A RAINSCREEN SYSTEM

MOISTURE MANAGEMENT

By creating an air gap and using a water-resistant barrier, a rainscreen system efficiently prevents water from reaching the building's internal structure. Any water that gets past the cladding can evaporate or drain out through the system.

IMPROVED DURABILITY

Because the building is protected from water infiltration and condensation, the materials used in the construction last longer, reducing the risk of structural damage or degradation.

THERMAL EFFICIENCY

Rainscreen systems often incorporate insulation within the cavity, improving the building's energy performance by reducing heat loss and thermal bridging.

AESTHETIC FLEXIBILITY

Rainscreen cladding systems allow architects and designers to use a wide variety of materials for the outer layer, providing freedom in achieving different aesthetic goals for building exteriors.

ACOUSTIC PERFORMANCE

The additional layers and air gap also help in soundproofing, reducing noise transmission from outside into the building.

SUSTAINABILITY

Many rainscreen systems are made from sustainable or recyclable materials, contributing to lower environmental impacts and higher energy efficiency.

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THE PURPOSE OF SUB FRAME

The subframe in a rainscreen cladding system serves as the structural support for the exterior cladding panels. It acts as an intermediary between the building's primary structure and the cladding materials, ensuring that the cladding is securely attached while also facilitating the system's overall performance. The subframe plays a critical role in maintaining the integrity of the rainscreen system by creating a gap between the cladding and the building structure, which allows for ventilation, drainage, and insulation.

SUPPORTING THE CLADDING PANELS

The subframe provides a sturdy structure onto which the exterior cladding panels are attached. This ensures that the panels are securely fixed to the building and can withstand external forces such as wind loads, thermal expansion, and weather impacts.

CREATING AN AIR GAP

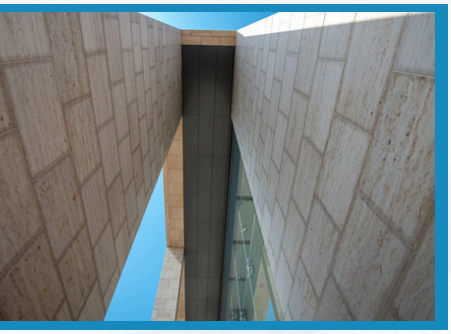
One of the most important functions of the subframe is to create the necessary air cavity between the cladding and the building's structure. This cavity is essential for allowing air to circulate behind the cladding, helping to dry out moisture and prevent condensation from accumulating.

ALLOWING FOR VENTILATION AND MOISTURE CONTROL

The air gap facilitated by the subframe enables ventilation in the rainscreen system. This airflow helps to regulate temperature and allows any moisture that penetrates the cladding to evaporate or drain away, preventing water from entering the building structure and causing damage.

PROVIDING A FRAMEWORK FOR INSULATION

The subframe often works in tandem with insulation layers placed between the cladding and the building. This helps to improve the building's thermal performance, minimising heat loss and improving energy efficiency. The subframe supports these insulation layers, holding them in place while maintaining the air cavity.



THE PURPOSE OF SUB FRAME CONTINUED

ENSURING STRUCTURAL ALIGNMENT

The subframe system helps ensure that the cladding panels are aligned correctly, maintaining a smooth and aesthetically pleasing exterior finish. It allows for adjustments during installation to accommodate any imperfections in the building's primary structure.

REDUCING THERMAL BRIDGING

By creating a separation between the cladding and the primary building structure, the subframe helps to minimize thermal bridging (heat transfer through building components). This improves the overall thermal efficiency of the building, reducing heat loss and contributing to energy savings.

FLEXIBILITY FOR DESIGN AND MATERIAL CHOICES

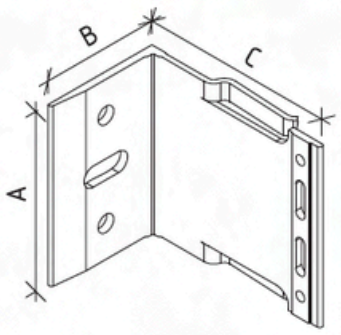
The subframe provides flexibility for the selection of various types of cladding materials (e.g., metal, stone, wood, composite panels), allowing architects and designers to use a range of finishes to achieve the desired aesthetic for the building.

The subframe in a rainscreen system is crucial for supporting the exterior cladding while ensuring proper ventilation, moisture management, and thermal efficiency. It acts as the backbone of the rainscreen system, helping to improve the building's durability, insulation, and overall performance.

BRACKETS

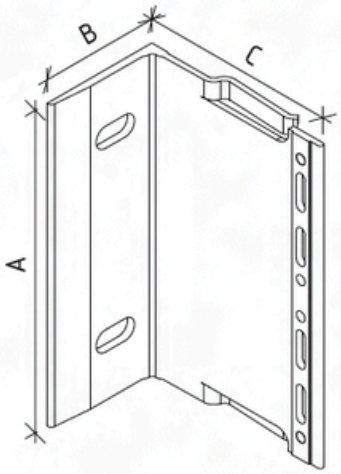
Fixing brackets					Suitable Thermo pads
Code	Type	A (mm)	B (mm)	C (mm)	Type
ET710008.00	single	80	60	40	ET730031.00 single
ET710010.00	single	80	60	75	
ET710011.00	single	90	60	100	ET730033.00 double
ET710013.00	single	90	60	125	
ET710012.00	single	90	60	150	
ET710014.00	single	90	60	180	
ET710015.00	single	90	60	210	
ET710016.00	single	90	60	240	
ET710038.00	single	90	60	270	

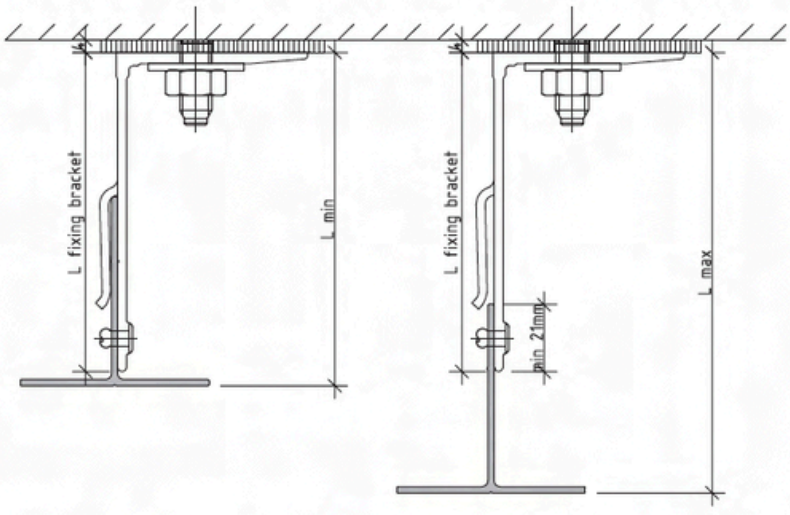
Single fixing bracket



Fixing brackets					Suitable Thermo pads
Code	Type	A (mm)	B (mm)	C (mm)	Type
ET710001.00	double	160	60	40	ET730032.00 single
ET710002.00	double	160	60	75	
ET710003.00	double	160	60	100	ET730034.00 double
ET710004.00	double	160	60	125	
ET710005.00	double	160	60	150	
ET710006.00	double	160	60	180	
ET710007.00	double	160	60	210	
ET710017.00	double	160	60	240	
ET710039.00	double	160	60	270	

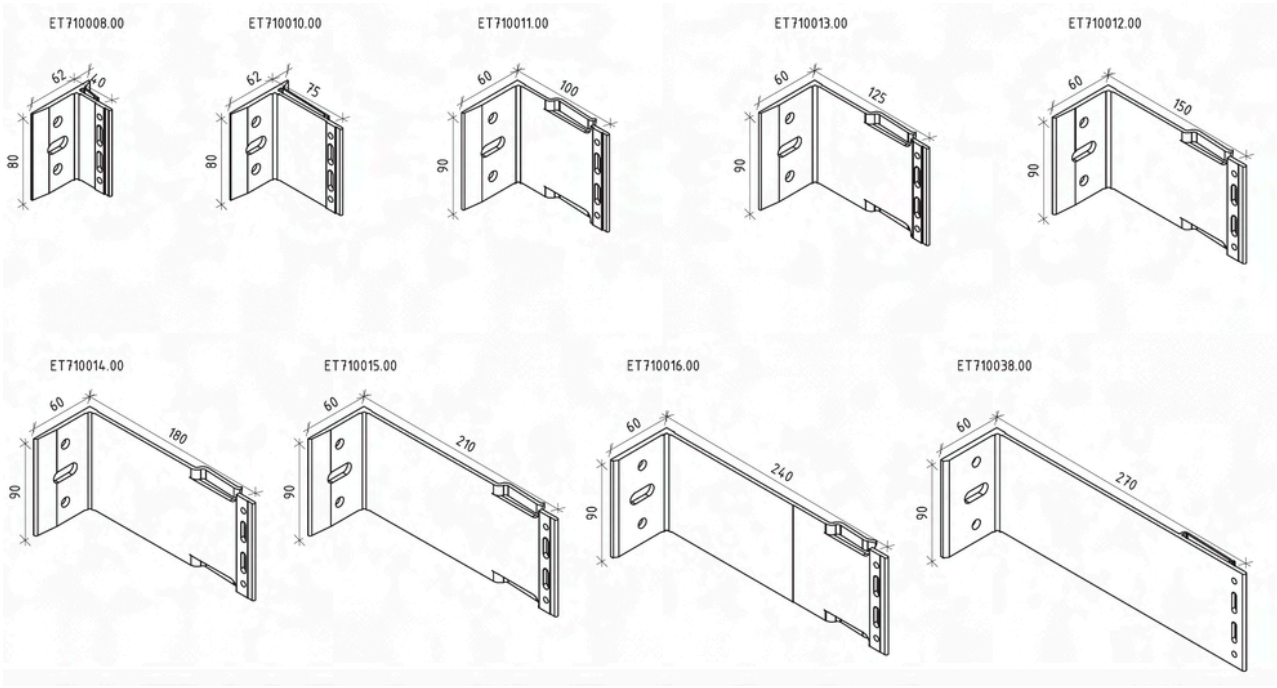
Double fixing bracket

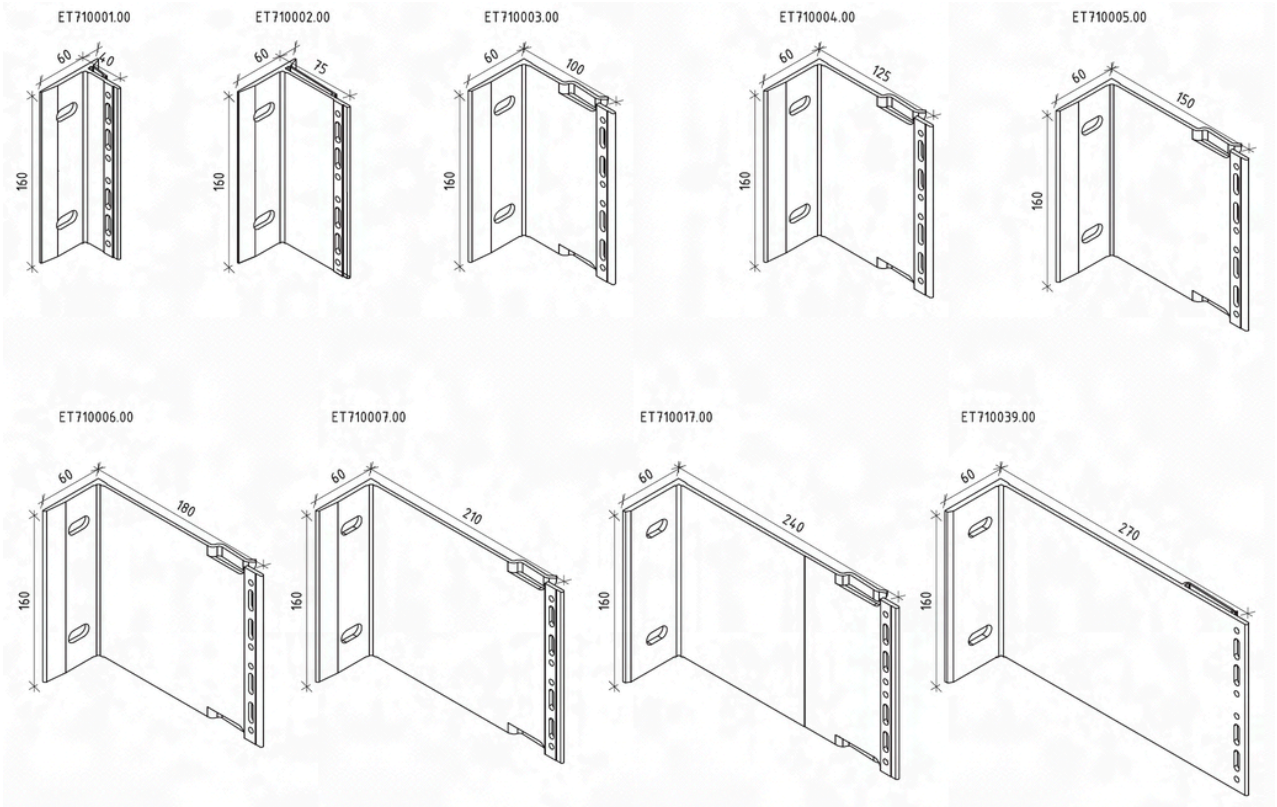




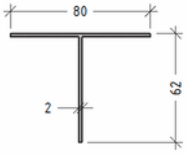
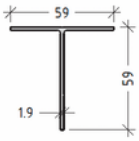
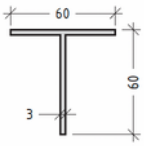
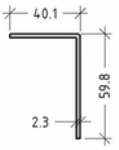
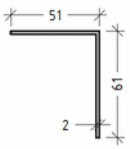
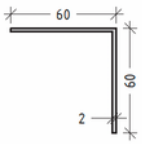
Product Features

BRACKETS





PROFILES

code	profile	weight length moment of inertia
E 97004 main profile grooved		646 g/m L=6.01 m Ix=8.67 cm^4 Iy=7.26 cm^4
E 97003 main profile		603 g/m L=6.01 m Ix=7.78 cm^4 Iy=3.25 cm^4
E 97301 main profile		951 g/m L=6.01 m Ix=12.54 cm^4 Iy=5.41 cm^4
E 97218 main profile grooved		567 g/m L=6.01 m Ix=2.96 cm^4 Iy=7.92 cm^4
4049 main profile		596 g/m L=6.01 m Ix=5.50 cm^4 Iy=8.52 cm^4
4218 main profile		640 g/m L=6.01 m Ix=8.56 cm^4 Iy=8.56 cm^4

ALUMINIUM AS MATERIAL

Key Role in Sustainability: Aluminium's properties make it ideal for sustainable construction and renovation, enhancing building energy efficiency, safety, and comfort.

Advantages:

- **Design Flexibility**: Allows for a vast range of shapes and multifunctional profiles through extrusion.
- **Long Service Life**: Resistant to corrosion and UV damage, ensuring lasting performance.
- **High Strength-to-Weight Ratio**: Lightweight yet strong, easy to handle on-site, and reduces transport-related strain.
- **High Reflectivity**: Helps manage light, reducing cooling needs in summer.
- **Fire Safety**: Non-combustible, meeting European fire standards, and does not emit harmful gases.
- **Environmental Safety**: Safe for indoor and outdoor environments, with no hazardous emissions.
- **Alloys & Production**: ETEM uses various alloys for custom properties and profiles, crafted via extrusion for durability and flexibility.

Finishes:

- **Powder Coating**: Durable finish in a range of colors, including wood-like textures.
- **Anodising**: Increases hardness and corrosion resistance, with colour options.

Maintenance & Recycling: Minimal maintenance required, with aluminum being fully recyclable, supporting eco-friendly practices throughout its lifecycle.

TI-DF1 SUPPORT

TI Dynamic Facades work in partnership with BEC Ltd to provide bracket and profile layout drawings complete with accompnaying static calculations. All design and engineering elements are back up by BEC Ltd's £2m PI insurance.

ON SITE SERVICES:

TI Dynamic Facades will attend site to provide on site installation training, regular check ups and any technical guidance required through the project life span.

Example of 3D model for a TI Total Stone project

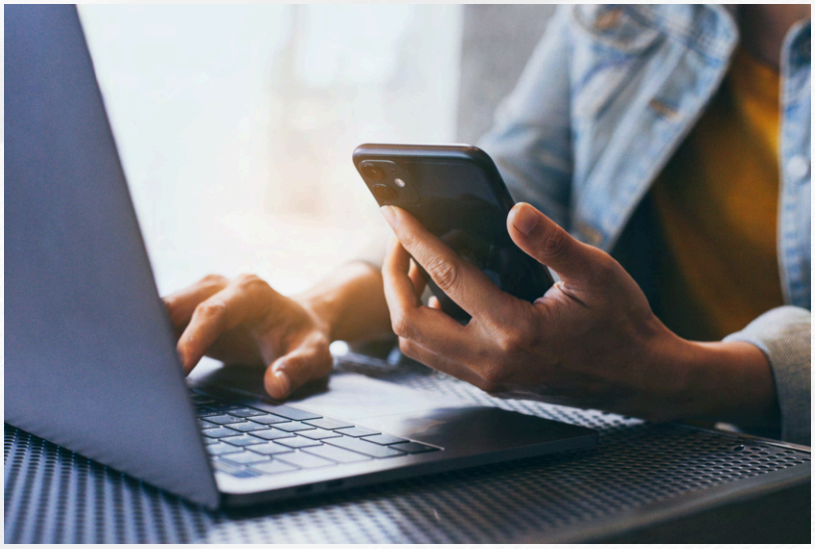
Compatible materials by others with TI-DF1 and accompanying systems:

Other Materials

- **Aluminium Panels**
- **Ceramic Tiles**
- **Fibre Cement Boards**
- **Glass**
- **HPL**
- **Stone**
- **Technical Stone**
- **Concrete**

TI Products

- **Aerolite**
- **Aerolite Monolith**
- **Total Stone**
- **Aerobrik**
- **UHPC**
- **Engineered Ston**
- **Favemanc Ventilated Facades**



GET IN TOUCH

We would love to speak with you.

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