

# ituGraf®

## Installation Instructions



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Itula reserves the right to change the content of this document without prior notice.

27.8.2028

## Delivery

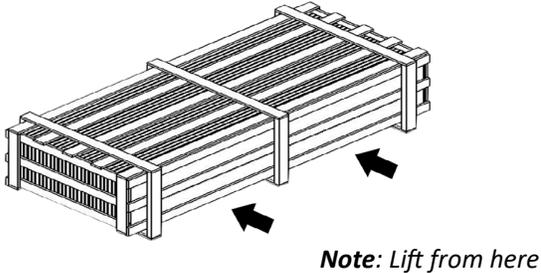
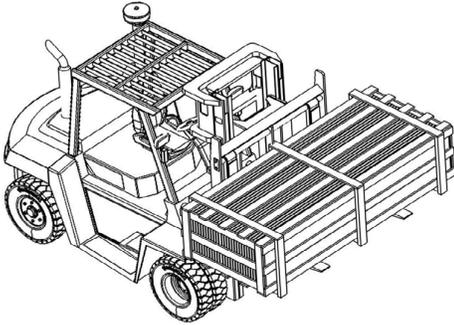
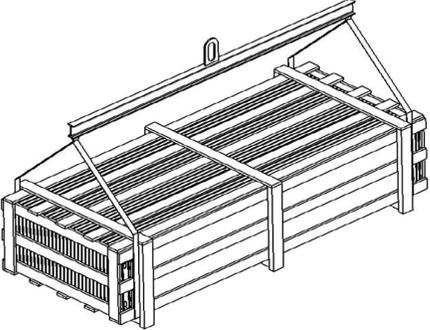
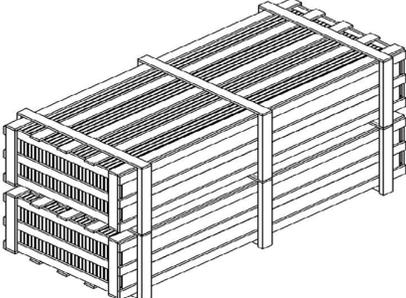
### Delivery inspection

When accepting the panels, always inspect the condition of the shipment to ensure there is no external damage and check the number of delivered packages/items and that the delivery corresponds to the dispatch list. Only sign the waybill after the inspection. Make a record of any damage to the shipment or package in the reservations section on the waybill and take a photo of the damage. If any mistakes have been made in the delivery, immediately inform your Itula contact person and send a picture and written description of the mistake.

**NOTE:** If the damage is not recorded in the reservations box, the claim may be rejected.

### Pallet Lifting Instructions

**NOTE:** It is the consignee's responsibility to take care of the unloading of the delivered goods and the condition of the unloading equipment. Always follow the manufacturer's instructions when unloading and handling radiant panels. If sufficient personnel and suitable equipment for unloading are not available at the work site, make the proper arrangements for the unloading with your Itula contact person. Itula is not responsible for any damages caused by failure to follow these instructions.

 <p><b>Note: Lift from here</b></p>	
<p>1. <i>Itula radiant panels are delivered in wooden transport boxes. Boxes should always be lifted to be unloaded, never pushed, or pulled. No other load must be placed on top of the boxes when they are being lifted. Do not remove the package label that indicates the products in the package.</i></p>	<p>2. <i>Radiant panels can be unloaded from a lorry using a forklift truck. To avoid damage, transport boxes must be moved one at a time. When lifting a box, place the forks of the forklift truck in the middle of the box. The forks must be longer than the depth of the box. Make sure that the transport box is balanced!</i></p>
	
<p>3. <i>If the radiant panels are unloaded from a lorry by crane, a beam must be used when lifting the load. The slings are placed around the box at the supports. To avoid damage, transport boxes must be lifted one at a time.</i></p>	<p>4. <i>Do not stack more than two transport boxes on top of each other. In this case, the box on the top must be exactly aligned with the lower box. The boxes must be placed on a flat surface.</i></p>

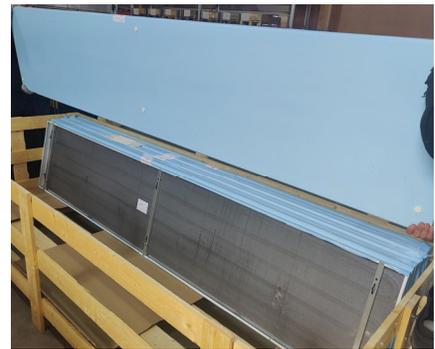
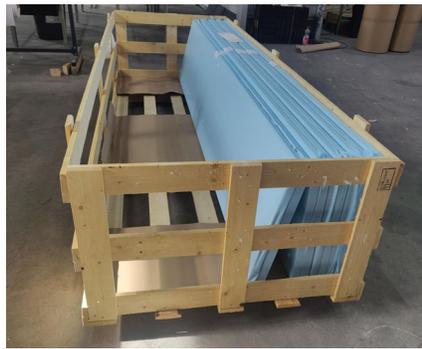
## Handling of Panels

### Storing and moving panels on work sites

The recipient is responsible for protecting the products against the elements and vandalism on the work site. If the panels are not needed right away, they should be stored in their packages in a dry location where they are protected against the elements. When panels are moved, care should be taken to make sure that the surface is not scratched. It is advisable to protect the radiant surface of the panel with material such as corrugated cardboard or cellular plastic. Once the panels have been removed from the shipping box, they should always be carried sideways.

### Unpacking the panels

Only unpack the panels just before installation. This will avoid unnecessary movement and unprotected storage on the site. Follow the unpacking procedure shown below.



1. Open the packaging screws and remove the cover of the package.
2. Place the panels so that the row of panels will not fall over when you lift the panels out of the box. Panels should always be placed so that the same surfaces face each other.
3. Lift the panels out of the box beginning with the one closest to the edge. The identification label on the side of the panel designates the position and product code.



4. Panels carried sideways. Never grab the panel by the piping connections.

**NOTE:** Be careful not to twist the panel during the handling!

## Installation Instructions



### General Instructions for Installation

During installation, use only material and equipment intended for construction work. Before you begin installing the panels, familiarize yourself with the HVAC plans and the intended locations of the panels.

### Hanging Options

#### Cable Wires

In freely hung and suspended ceiling integration installations, use adjustable cable wire mounting sets. You will find examples further in this document.

#### Threaded Rods

M8 size threaded rods (not in our delivery) can also be used to hang the panels.

#### Patented Surface Brackets

Panels can be easily affixed directly to the ceiling surface using our patented surface bracket. The panels must be hung straight, and the mounting sets must be aligned with each other to allow for thermal expansion and neat installation.

#### Mounting to recessed ceiling

The panels can be directly mounted into recessed ceiling see page 30 illustration for product type.

**NOTE:** *The designed water supply placement for panels can influence the ItuGraf panel type to be selected. See the installation type drawings on the pages 14-27 and the product type codification on page 33.*

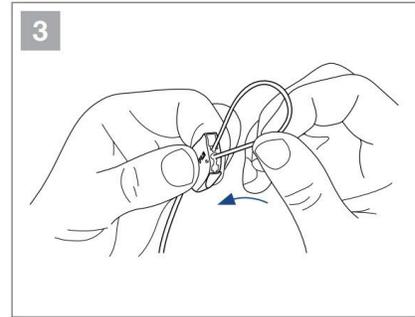
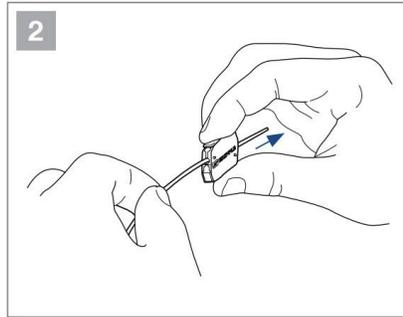
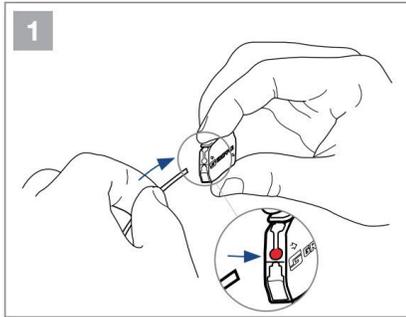
## Cable Wire Operating Instructions

Always operate the product within its stated safe working range which is visible in the packaging. The cable mounting sets can be used only for static load. Ensure that the installation cables are free of oil and paint and do not have any noticeable defects. Never join two cable ends together in line. The angle in which the cable is installed has an influence on the load bearing capability. Standard cables have supported weight value 15 kg at 0° installation angle.

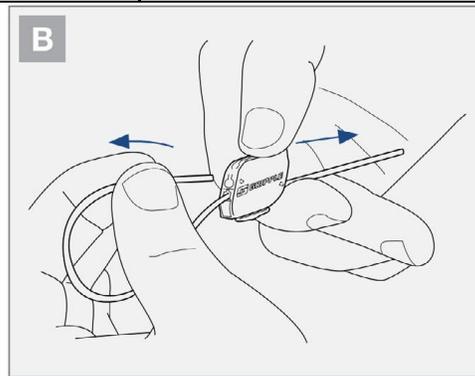
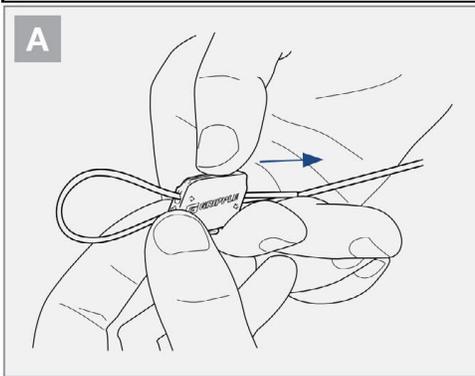
	Maximum working load limit (kg)				
	0°	15°	30°	45°	60°
HF Express No. 1	15 kg	14 kg	13 kg	11 kg	8 kg
HF Express No. 2	45 kg	43 kg	39 kg	32 kg	23 kg

1	2	3
Insert the cable into the middle hole.	Slide the locking system along the cable and loop around the load you want to suspend.	Then, insert the cable into the opposite middle hole to pre-form a loop.

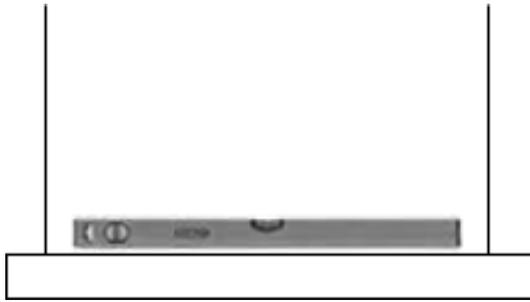
**Note:** Pre-adjust the cable length before loading the cable for easier installation



A	B
Release the load of the locking system and push the release button in the same direction of the wire entrance.	While the button is pressed, adjust the cable. When desired position is reached, release the button to come back to a working function. <b>Never try to adjust the locking system while load is still applied.</b>



## Panel Levelling



After the cables have been set into the designated fixing positions the panel can be lifted to the ceiling. Use a drywall lift with padded cross bars to lift the panel close installation height. The panels should always be levelled using a spirit level or similar instrument. Levelling the panels correctly and tightening the cables makes sure that the cables are equally loaded.

## Removing the protective wrapping from the panel

The radiant surface of the panel is covered with polyethylene protection film. Remove the film after installation when any work that might stain the surface has been completed. During integrated installations, remove the film from the panel edges during the installation stage. If the panels are used for construction site heating, the protective plastic must be removed before the heating is started.

**NOTE:** *The protection film is designed to protect the panel from stains and small scratches. The wrapping will not protect the panel against impacts, and it is not waterproof.*

**NOTE:** *Do not remove the identification label on the inside of the panel.*

**NOTE:** *Small residues of graphite might be present on the protective foil.*

## Cleaning the panels

Use a damp cloth to clean the metal surfaces of the panels. The pH of cleaning agents used with water must be between 5 and 9. The cleaning agent must not contain hydrogen peroxide, high concentrations of chlorine or phosphoric acid. Avoid using organic solvents and abrasives on surfaces. Follow the user instructions provided by the manufacturer of the cleaning agent and use the stated concentrations. The time in contact with the surface must not exceed 30 minutes. After cleaning, thoroughly wipe down the treated area to ensure that the cleaning agent is completely removed from the metal surface.

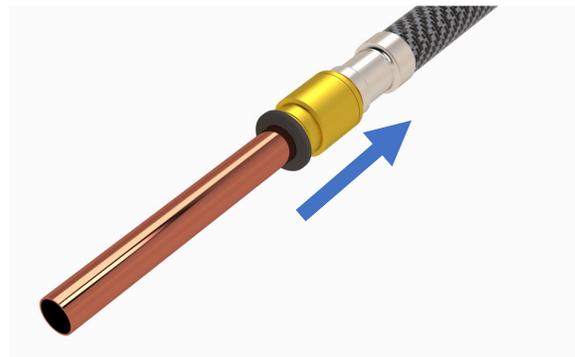
## Repackaging

Follow the correct order (shown in page 5) of packaging and use foamed plastic sheets to protect the panel surfaces during transportation. The panels are placed into box one by one, and foamed plastic is placed between the panels to protect the radiant surfaces. The radiant surfaces are placed against one another in the box. The smooth surfaces are placed against one another in the box. A sheet of plastic foam is placed between the panels so that it goes over the panel edge slightly. One box can hold a maximum of 25 panels side by side. Ensure that the panels cannot move inside the box using a material such as cardboard filler. Two people are needed to lift the panels into the box. Grab both ends of the panel and lower it carefully into the box.

## Water connections

ItuGraf panels are connected using push-fit fittings. Maximum operating pressure, temperature and flow rate according to the ItuGraf specification.

1. Make sure that the copper tube and the push-fit fitting are the same size. For the correct sealing of the push-fit fitting during connection, make sure that the copper tube is cylindrical, not ovalized, free from machining burrs or sharp edges.
2. Hold the copper tube firmly and push the push-fit fitting in place. During installation, make sure you have inserted the push-fit all the way down the copper tube. Perform the insertion manually, without the use of tools, whether they are dedicated or improvised.
3. In order to make sure that the push-fit fitting is correctly inserted in the copper tube, pull the copper tube without using the release collar.



### How to disconnect

1. Press the release collar toward the body of the push-fit fitting and keep it pressed while pulling the fitting out of the copper tube. Keep the copper tube firmly in place while disconnecting the push fit.



**NOTE:** Do not connect valves directly into the panel piping, but always use flexible hose in between.

## Water Quality

ItuGra recommends following the water quality requirements outlined in VDI 2035-2. To ensure a corrosion free closed system, the water circuit must be completely airtight. The system should also include aerators to continuously remove any accumulated air. To prevent corrosion, the water must be free of oxygen, and its pH value should remain within the range of 6–9. The water flow velocity must not exceed 0.8 m/s and should be kept as close to the intended design flow as possible. This helps maintain turbulent flow condition while minimizing noise. Additionally, in-line filters should be installed to remove dirt and other particles from the water.

## Pressure test

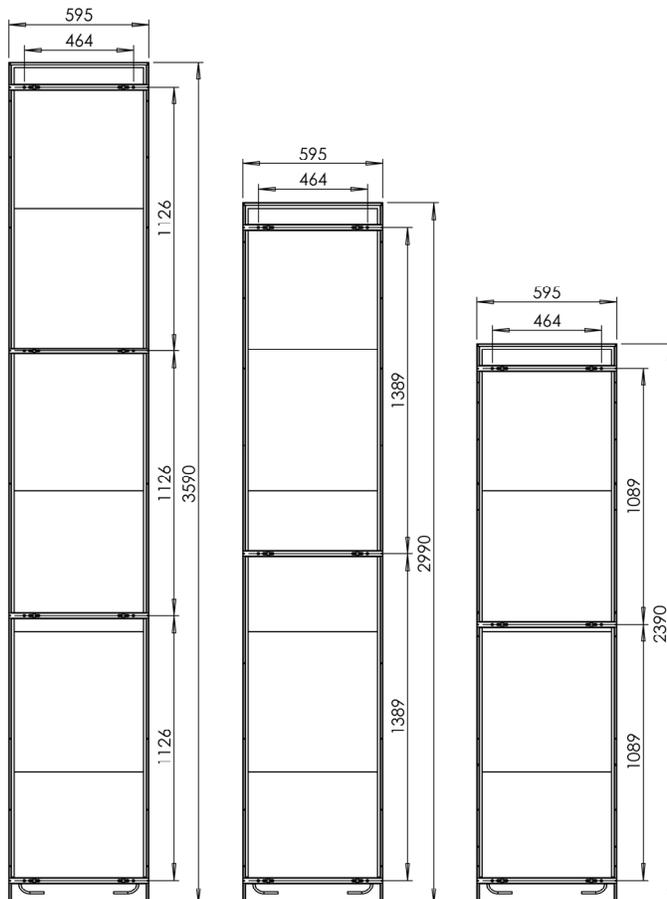
After the panels have been hung and levelled, they must be pressure tested in a controlled manner and the results documented. The water-circulating system must be tested first with air and then with water.

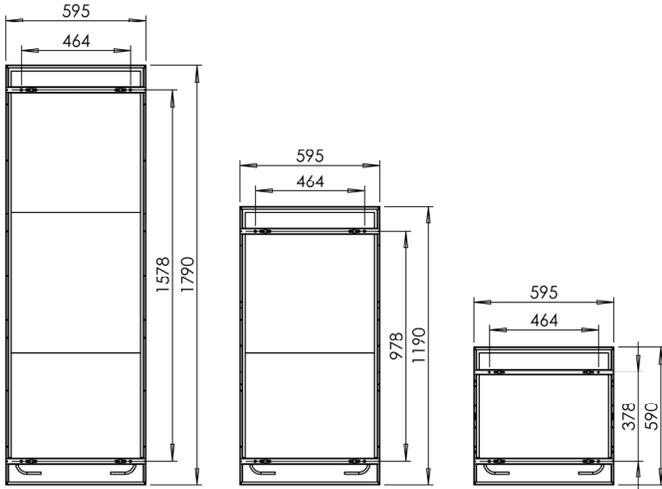
## Installing with Cable wires

### Fixing locations for ItuGraf panels

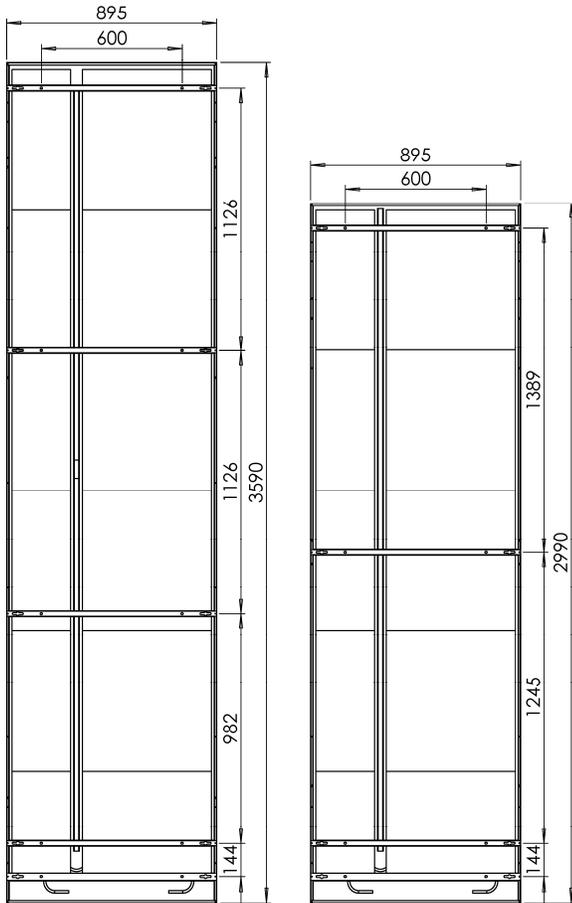
The following figures and tables show the number and positioning of the fixing points for panels with widths of 595 mm, 895 mm and 1190 mm. Wires or threaded rods can be used to fix the panels into the ceiling through holes located in the fixing points.

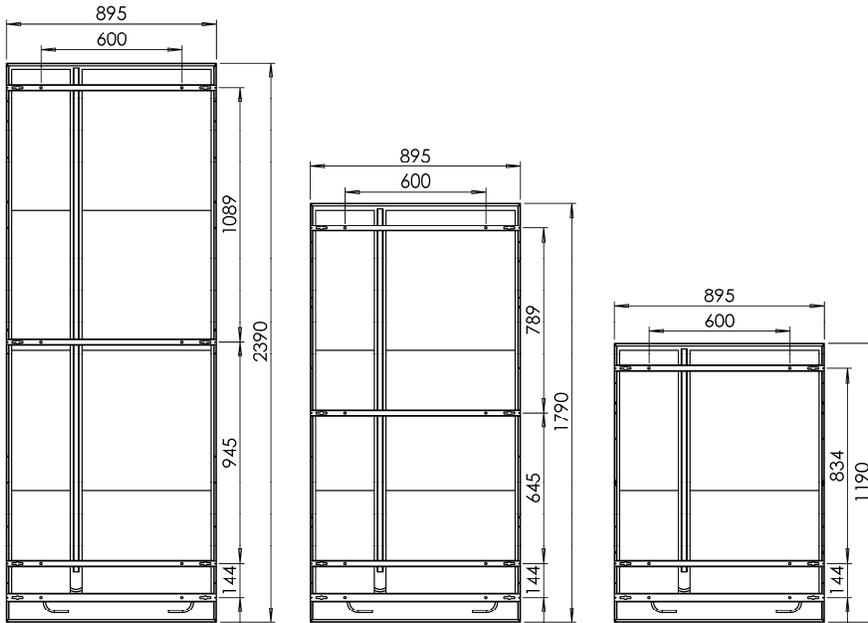
#### Panel width: 595 mm



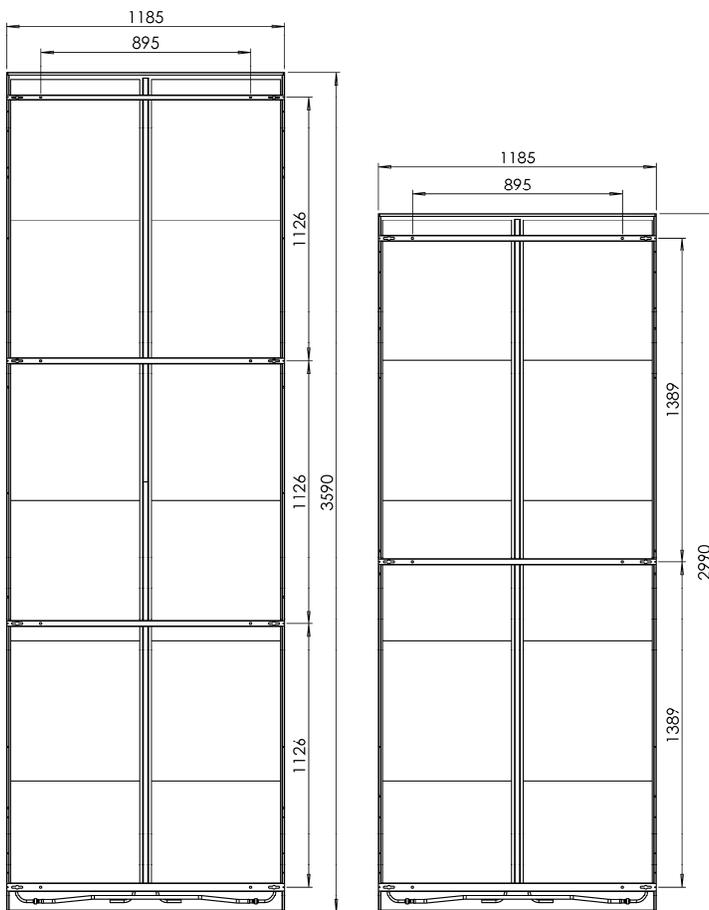


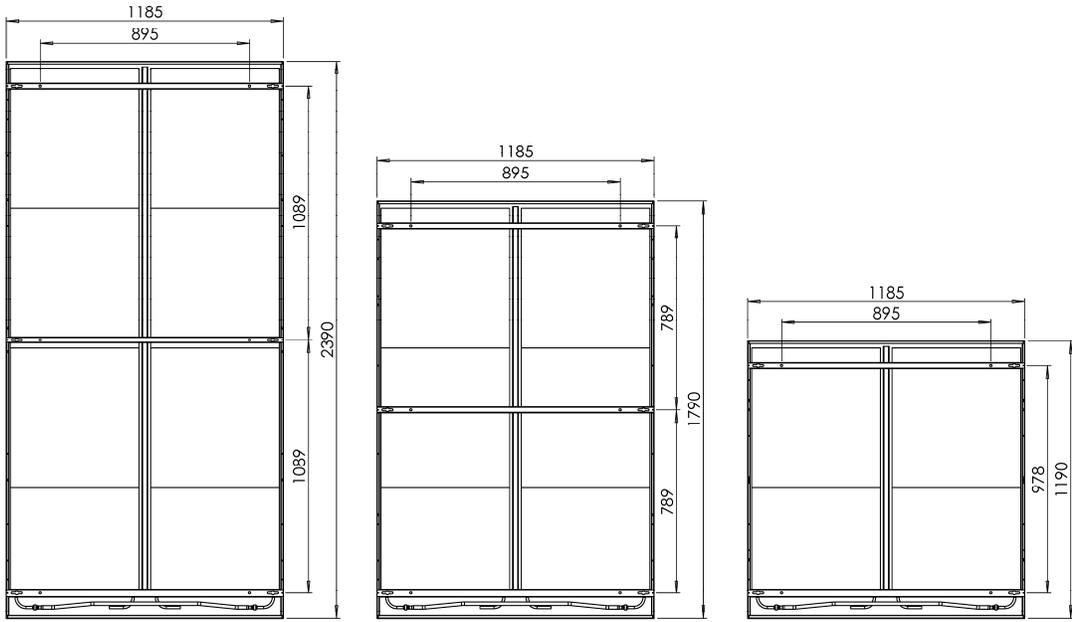
Panel width: 895 mm



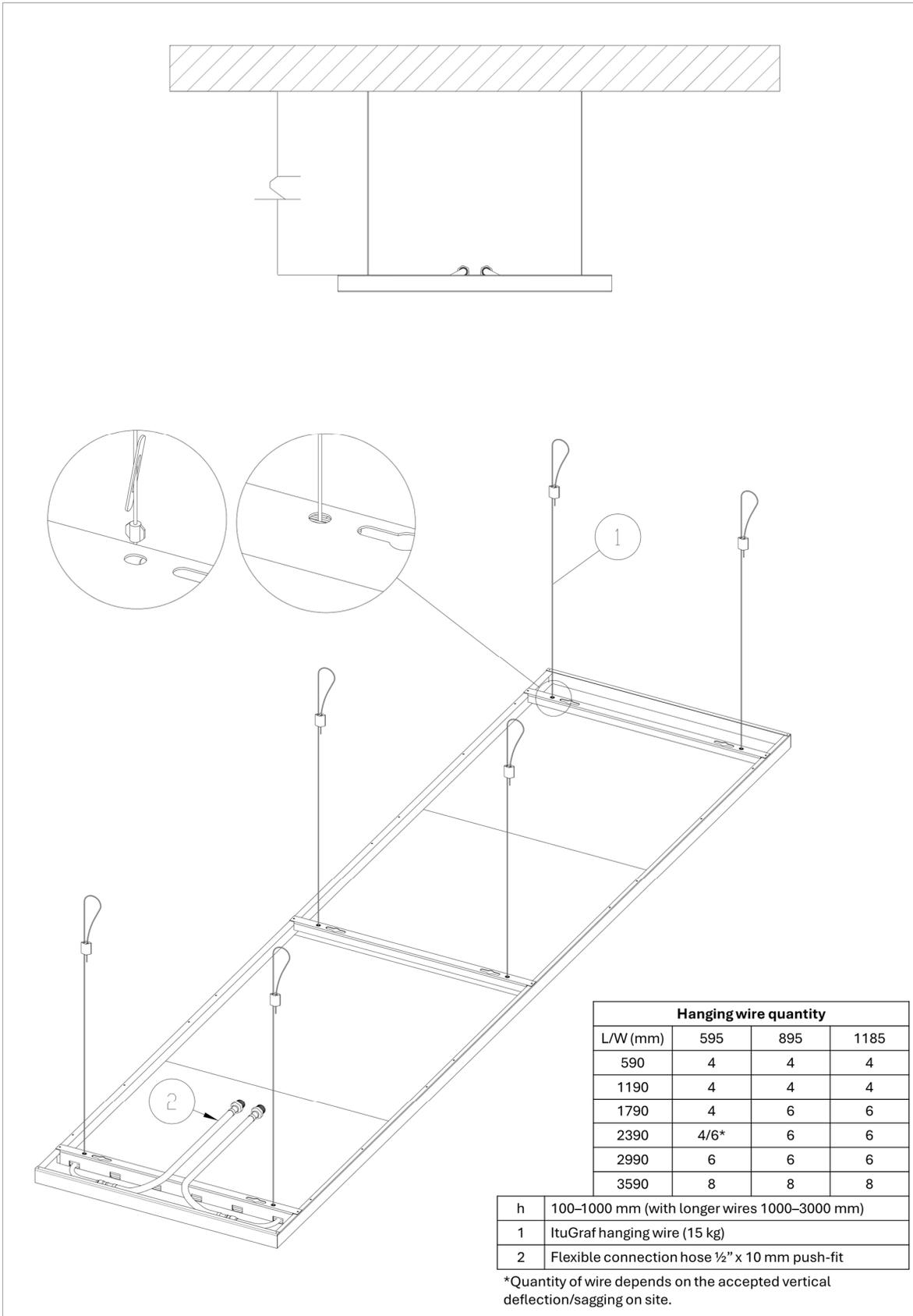


Panel width: 1185 mm





Free hanging, cable wires



Free hanging, cable wires with carabiner hooks

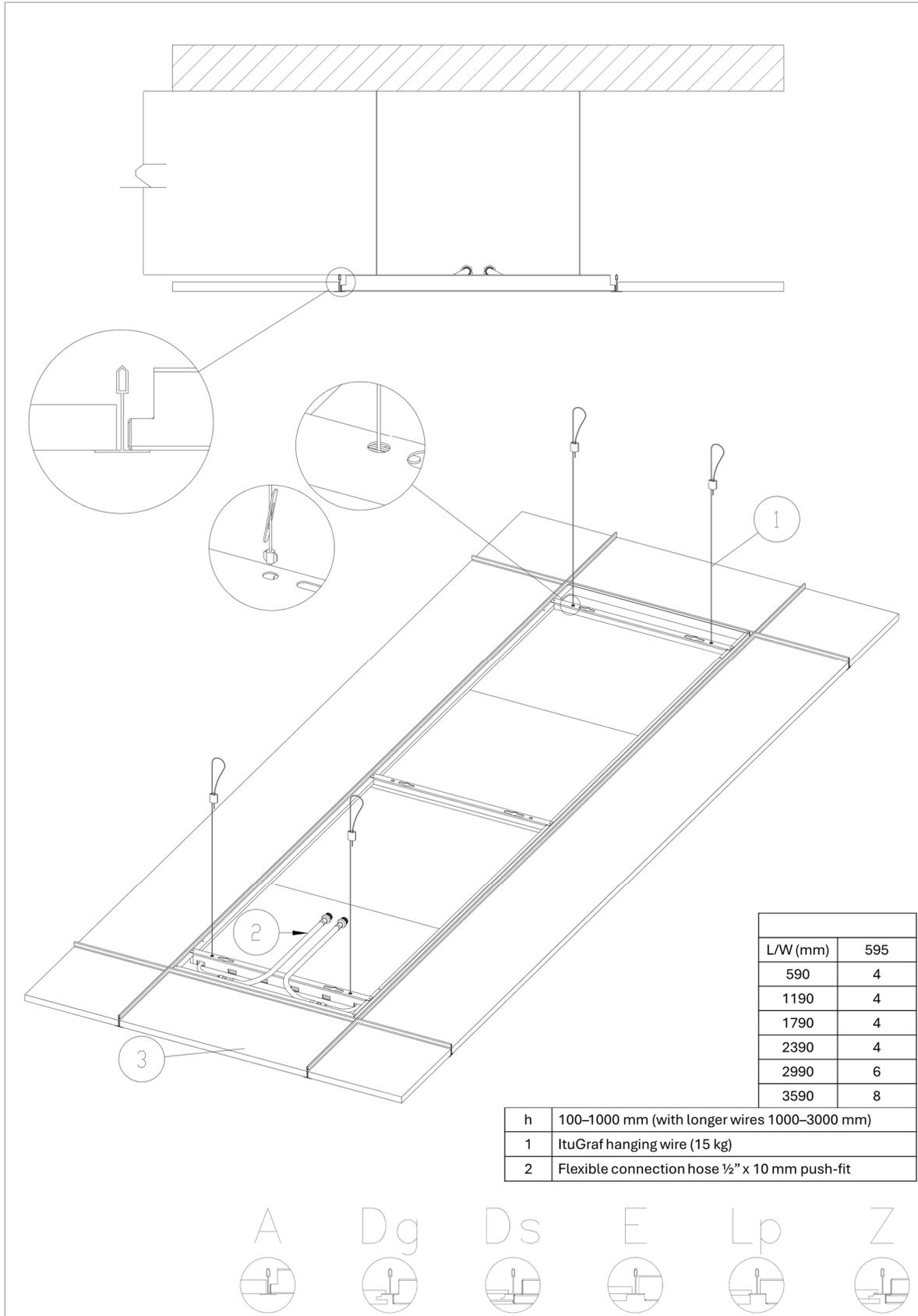
Select the length of the hose according to the opening angle of the panel. The hose length depends on the position of the water connection in relation to the panel. The hose must not be subjected to pulling when the panel is lowered

Hanging wire quantity			
L/W (mm)	595	895	1185
590	4	4	4
1190	4	4	4
1790	4	6	6
2390	4/6*	6	6
2990	6	6	6
3590	8	8	8

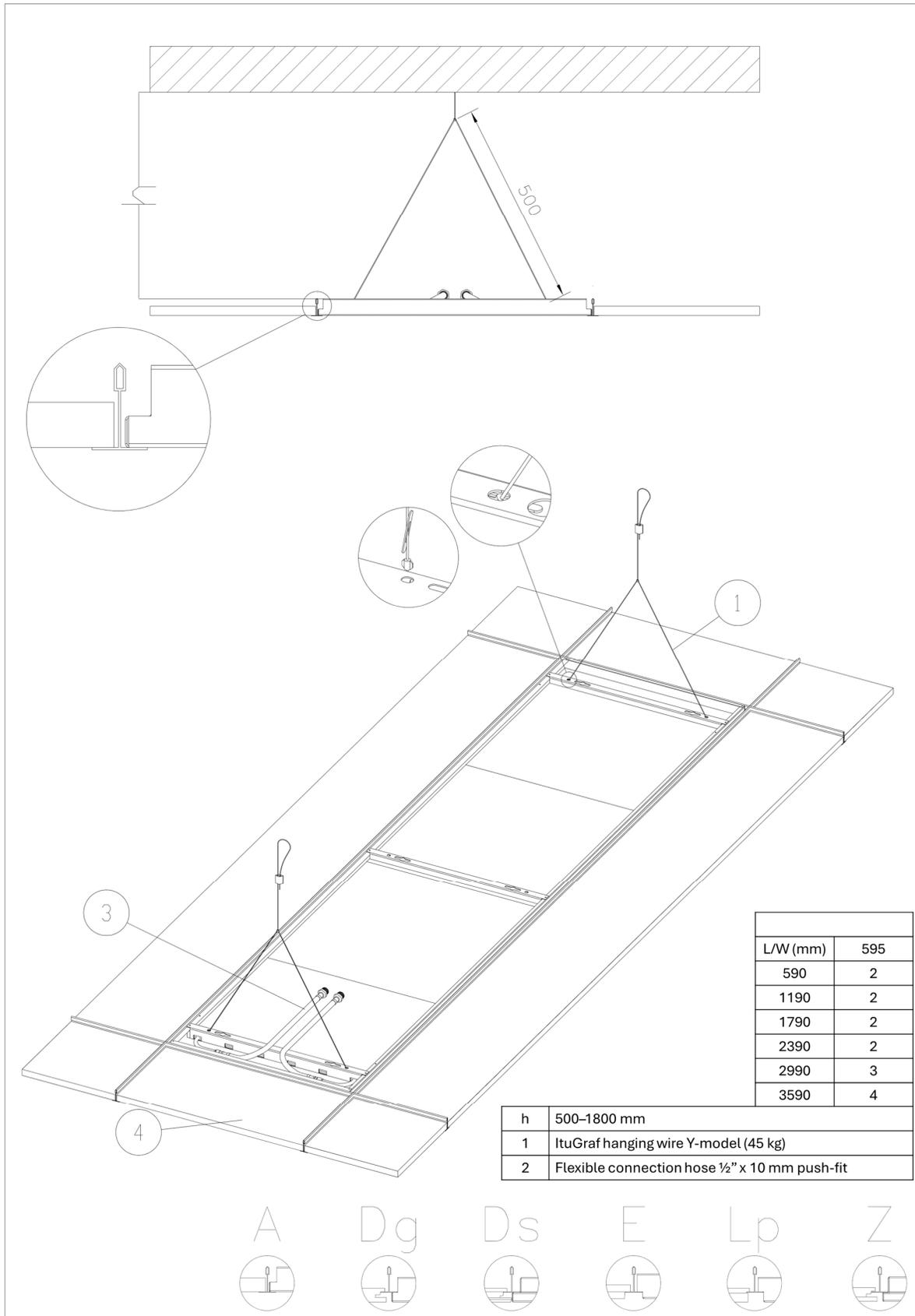
h	100-1000 mm
1	ItuGraf hanging wire (15 kg)
2	Flexible connection hose ½" x 10 mm push-fit

\*Quantity of wire depends on the accepted vertical deflection/sagging on site.

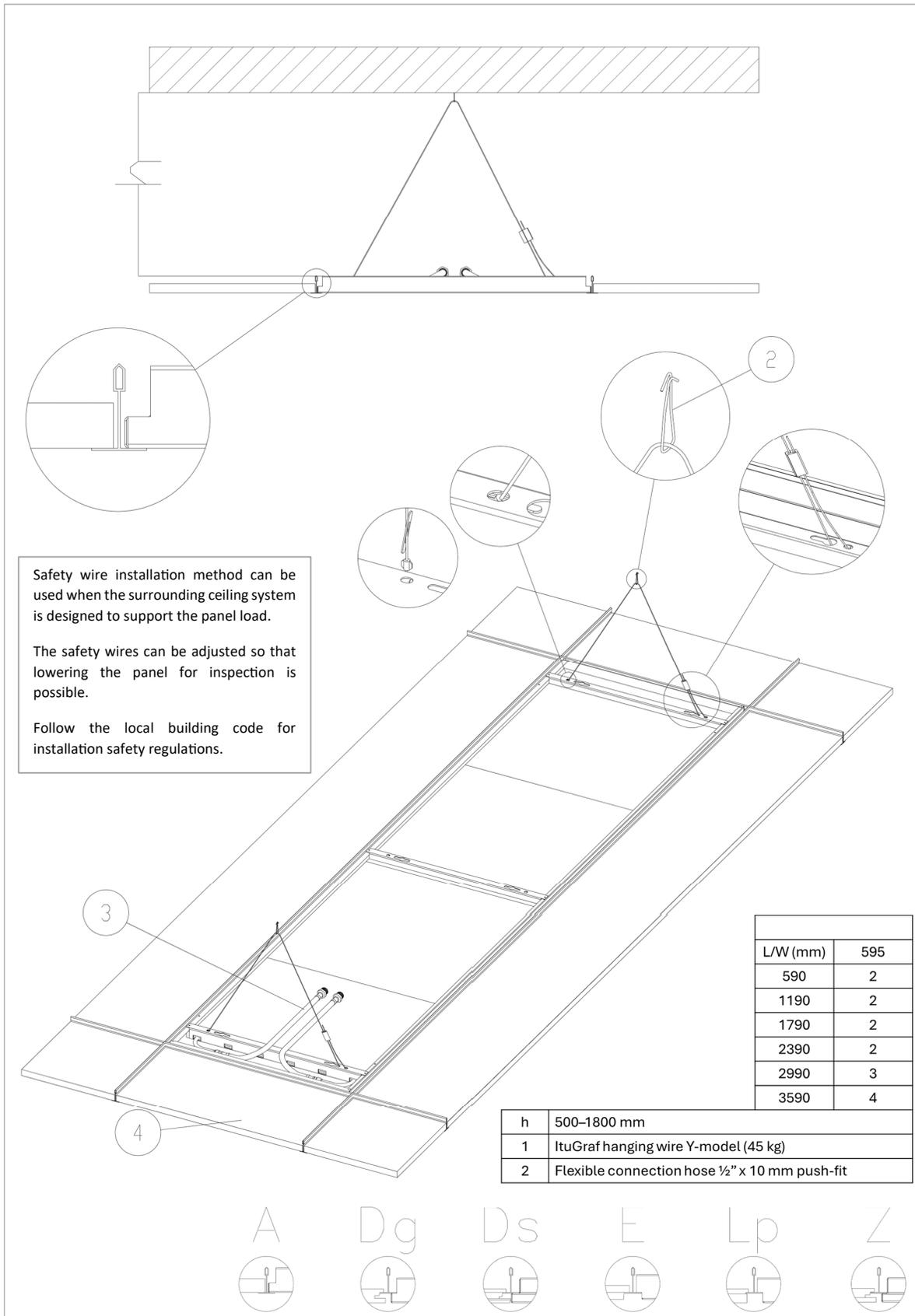
Closed ceiling, cable wires



Closed ceiling, 2000 mm Y-model cable wires (1500 mm + 2x500 mm)



## Safety wire installation (ceiling system supports panel load)

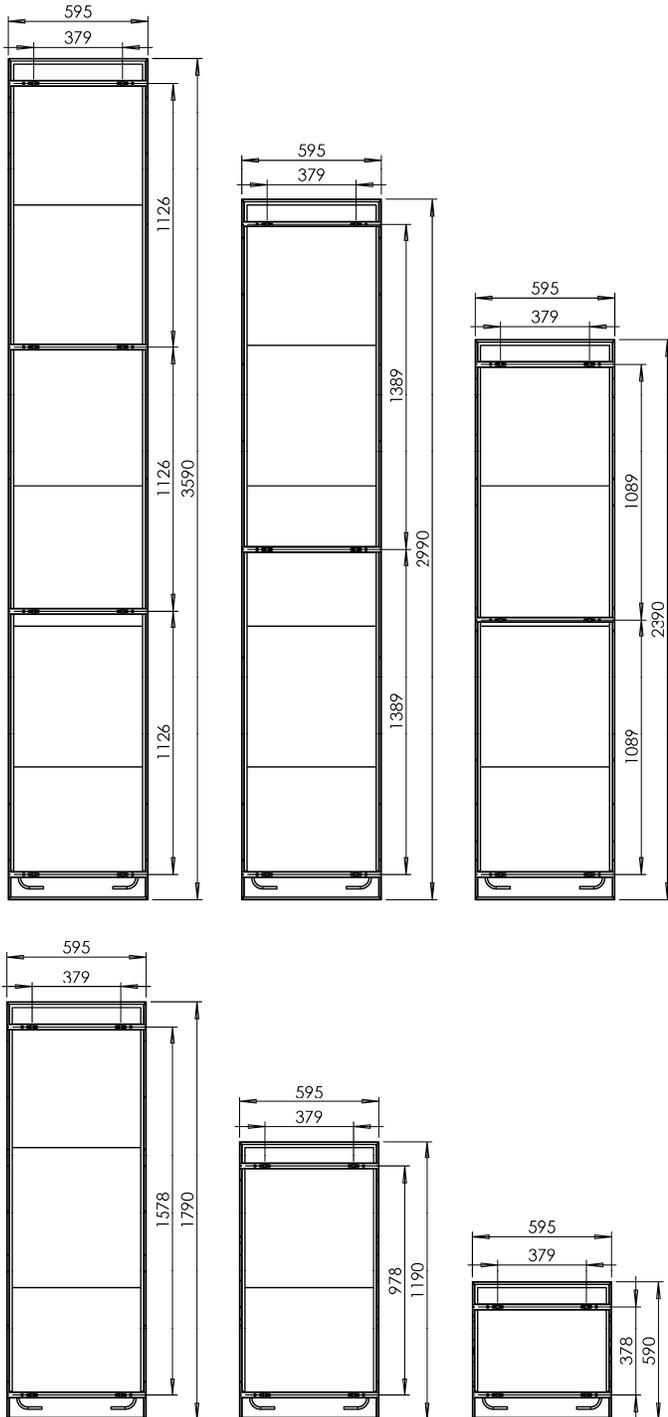


## Installing with threaded rods

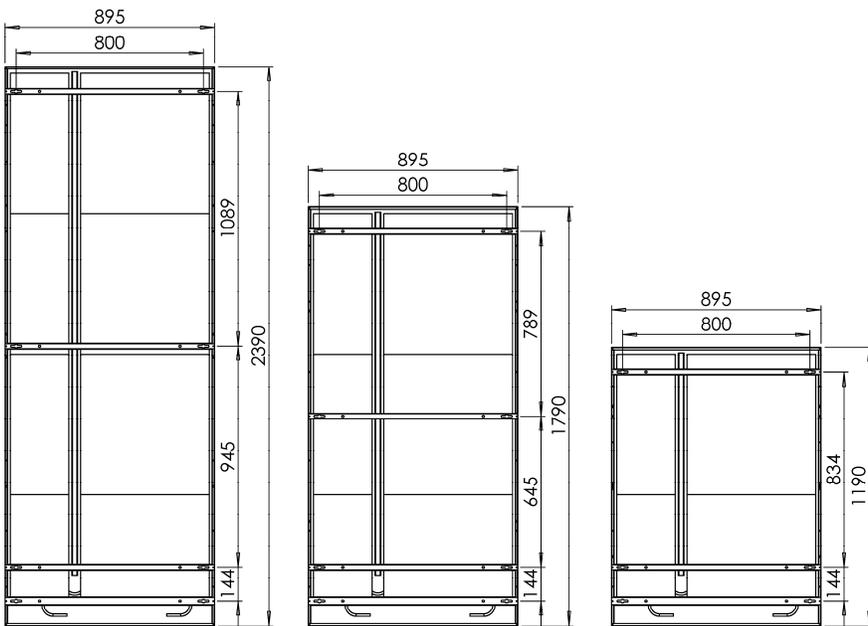
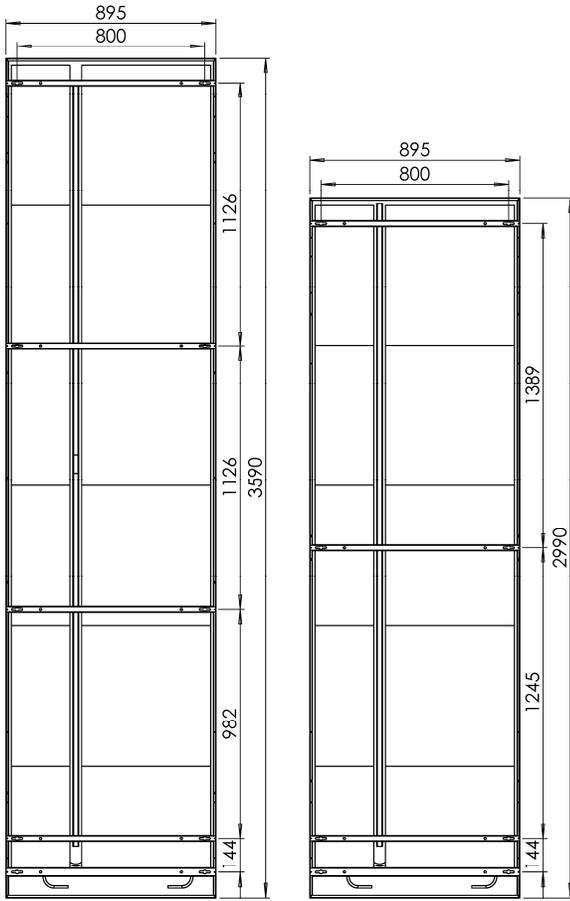
### Fixing points when installing with threaded rods

The following figures and tables show the number and positioning of the fixing points for panels with widths of 595 mm, 895 mm and 1190 mm. Threaded rods can be used to fix the panels into the ceiling through holes located in the fixing cross bar.

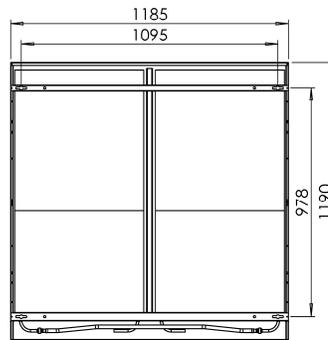
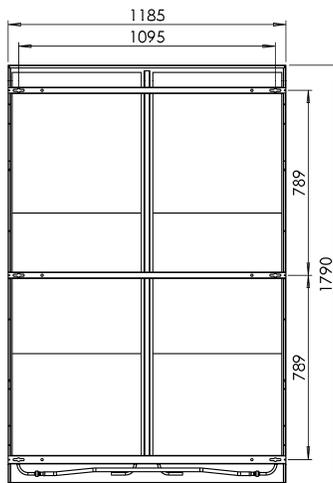
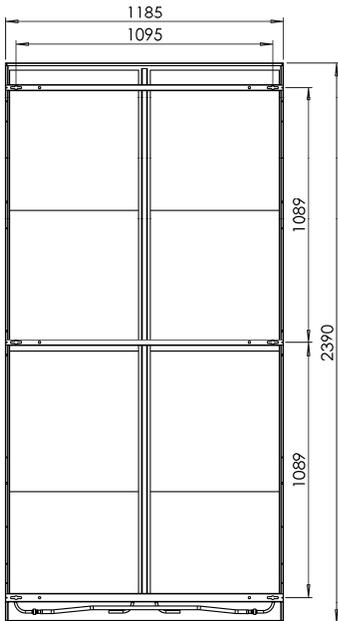
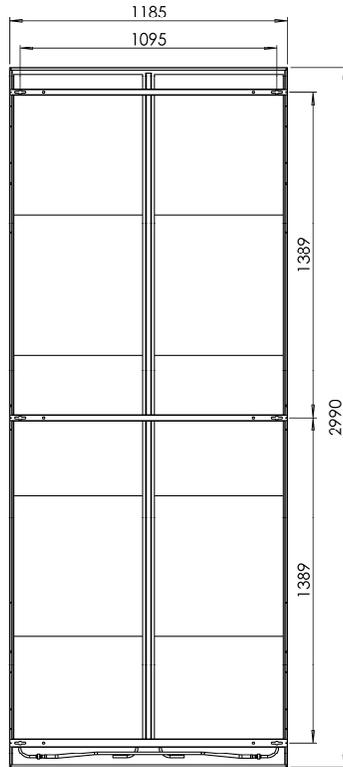
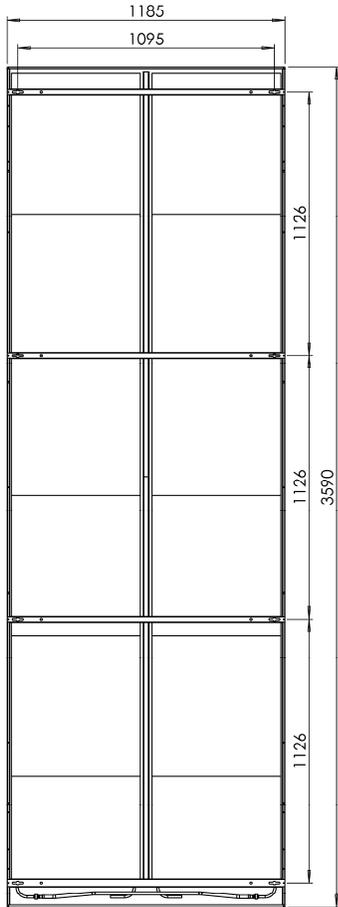
#### Panel width: 595mm



Panel width: 895mm



Panel width: 1185mm



## Illustrations of installation with threaded Rods

The diagram illustrates the installation of a rectangular panel into a suspended ceiling using threaded rods. It includes a cross-section of the ceiling installation, a perspective view of the panel with callouts 1-4, and a table for M8 threaded rod quantities.

**NOTE:** Threaded rod cannot be used to install the panels in suspended ceiling.

**NOTE:** Number of used fixing points depends on the accepted vertical deflection/sagging on site.

M8 threaded rod quantity			
L/W (mm)	595	895	1185
590	2	2	2
1190	2	2	2
1790	2	2	2
2390	2	3	3
2990	2	3	3
3590	3	4	4

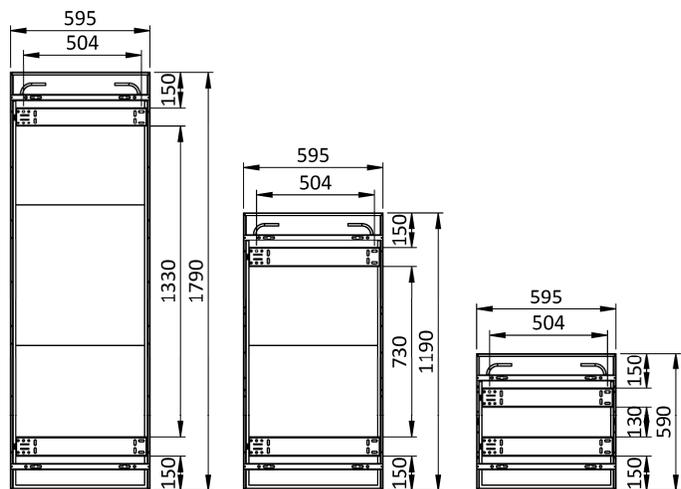
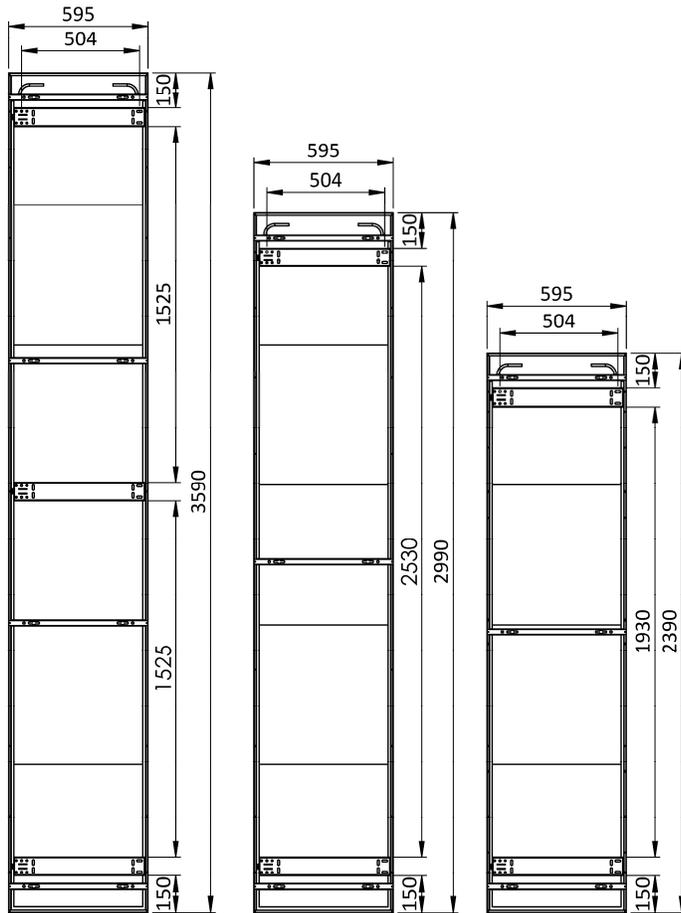
h	100-n mm
1	M8 threaded rod (not in our delivery)
2	M8 lock nut (not in our delivery)
3	M8 wing nut (not in our delivery)
4	Flexible connection hose ½" x 10 mm push-fit

## Installing with patented surface bracket

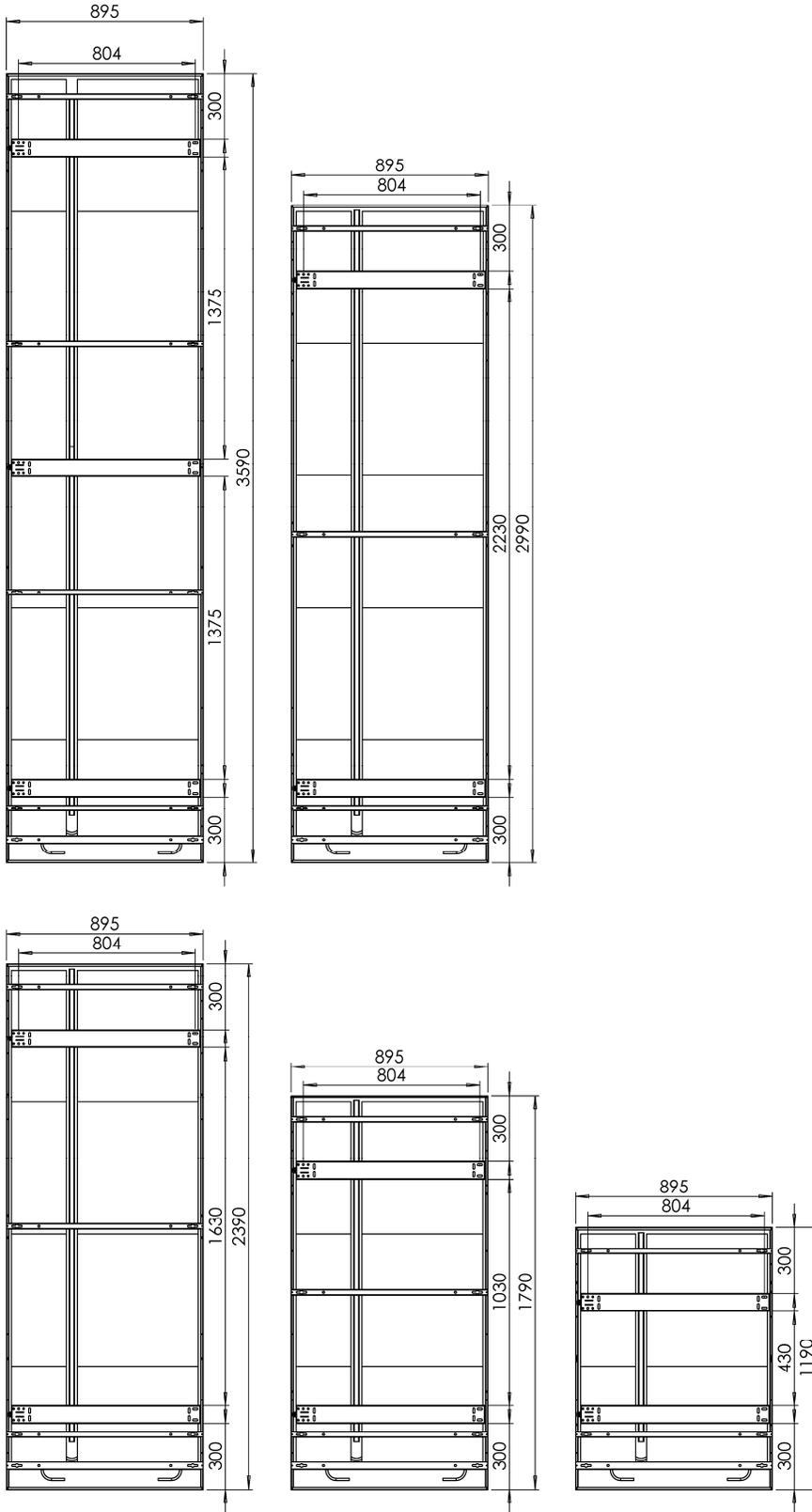
### Mounting locations for surface brackets

The following figures and tables show the number and mounting locations for surface bracket when installing panels with widths of 595 mm, 895 mm and 1190 mm.

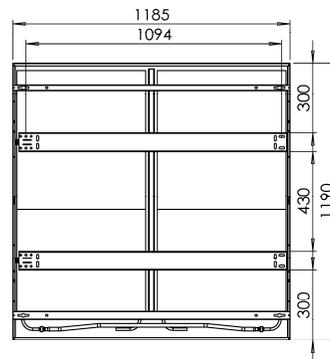
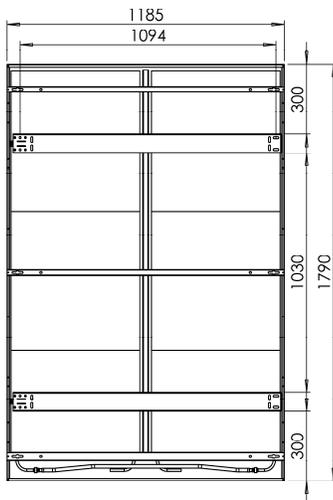
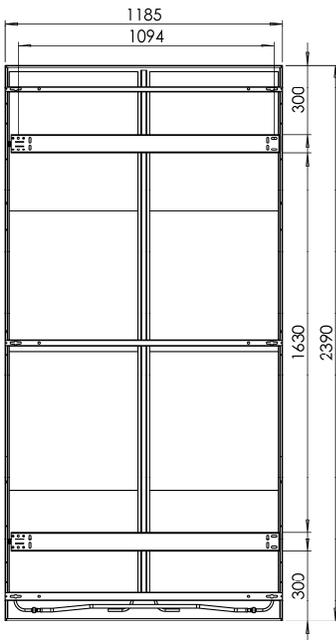
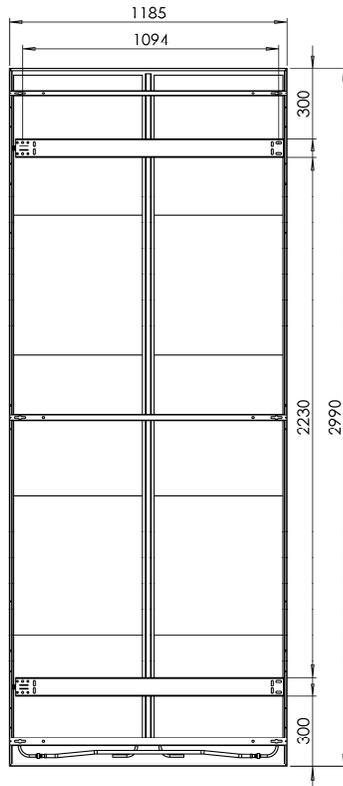
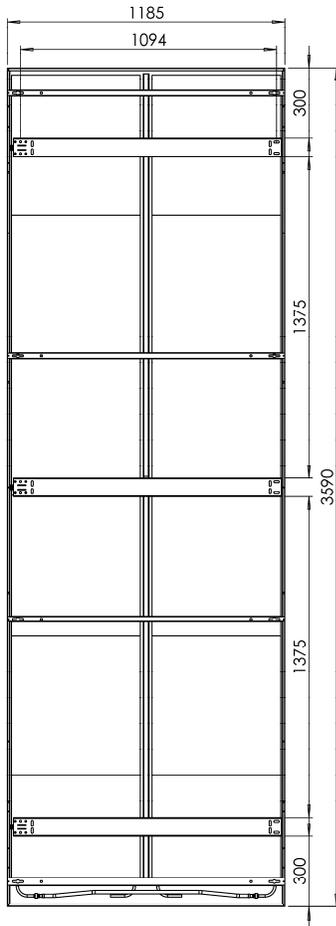
#### Panel width: 595 mm



Panel width: 895 mm



Panel width: 1185 mm



## Installation in a hollow-core slab building

Possibilities for mounting

Patented surface bracket quantity			
L/W (mm)	595	895	1185
590	2	-	-
1190	2	2	2
1790	2	2	2
2390	2	2	2
2990	2	2	2
3590	3	3	3

**NOTE:** Panel needs to have edge height minimum of 35mm.

1	Patented surface bracket
2	*Flexible connection hose ½" x 10 mm push-fit
3	Screws and washers (not in our delivery)

\*Flexible hoses need to be insulated to avoid noise due to expansion and/or pressure shocks.

## Installation in a cast-in-place building

NOTE: Add an "Armaflex" insulation piece

Possibilities for mounting

1

2

3

4

5

Patented surface bracket quantity			
L/W (mm)	595	895	1185
590	2	-	-
1190	2	2	2
1790	2	2	2
2390	2	2	2
2990	2	2	2
3590	3	3	3

1	Patented surface bracket
2	*Flexible connection hose ½" x 10 mm push-fit
3	ItuGraf concrete casting box
4	Main pipes in concrete (16 mm pipe in 23/28 mm insulated conduit)
5	Screws and washers (not in our delivery)

\*Flexible hoses need to be insulated to avoid noise due to expansion and/or pressure shocks.

**NOTE: Panel needs to have edge height minimum of 45mm.**

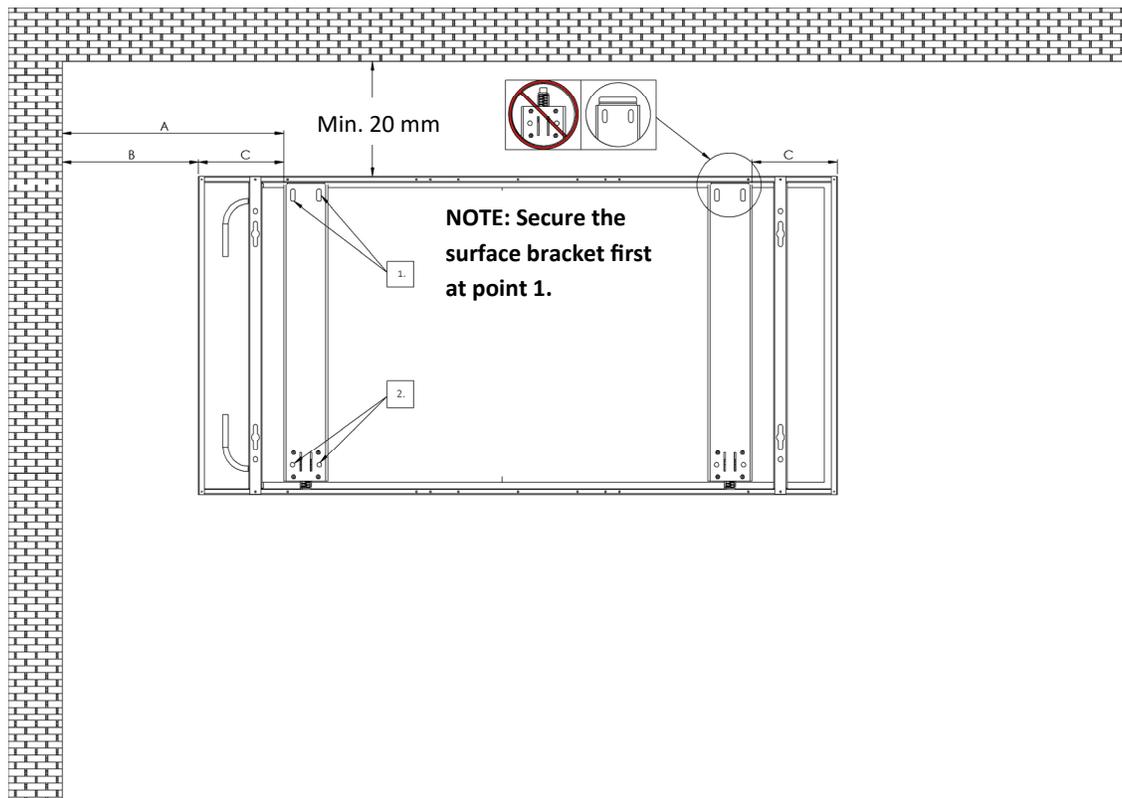
## Surface bracket installation phases

1. Measure the positions of the brackets according to the panel placement design and fix them to the ceiling. When installing a panel next to a wall or window, install the bracket so that the side with the spring faces away from the wall/window. The minimum distance between a bracket and wall is 20 mm. The surface brackets contain multiple hole placements so that drilling into hard concrete reinforcement could be avoided. Use the closest hole placements to bracket ends whenever possible to minimize bending.
2. Use drywall board hoist to lift the panel close to the brackets. Lift one side of the panel up and align it with the spring holder. Make sure before doing so that the installation side is facing the intended direction.
3. Push the side of the panel slowly against the spring so that it compresses.
4. Lift the other side of the panel against the ceiling and release the spring loading. Both sides of the panel should now be supported by the bracket. Take care not to scratch the ceiling with the panel during installation.
5. After installation, you can slightly slide the panel vertically along the panel's long side to adjust the position of its end.

**NOTE:** The larger panels might require two persons for installation. The ceiling needs to be straight so that twisting and bending does not occur in the larger panel sizes (length over 2390 mm).

**NOTE:** Prepare the water connections before lifting the panels in place.

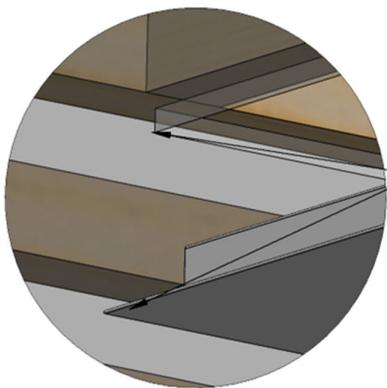
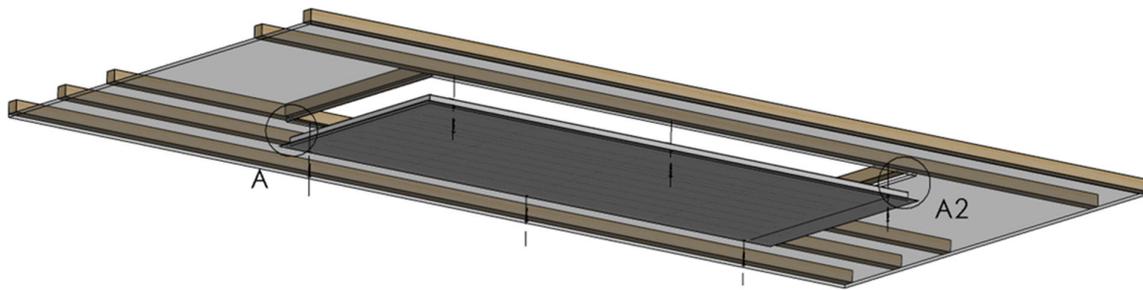
**NOTE:** The panel type needs to be according to the water connection. See pages 26-27 for panel types.



<b>Symbol</b>	<b>Meaning</b>	<b>Value (mm)</b>
<b>A</b>	Distance between bracket and wall	B+C
<b>B</b>	Distance between panel end and wall	>0
<b>C</b>	Distance between bracket and panel end	

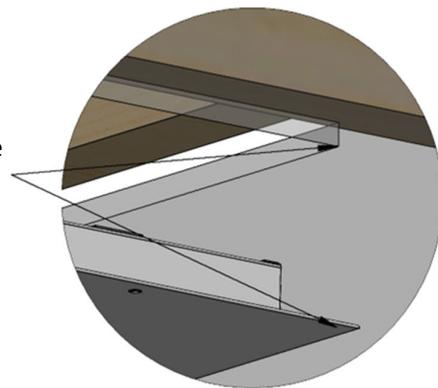
<b>Length (mm)</b>	<b>Number of surface brackets Width 595 mm</b>	<b>Distance from the end of panel (mm) C = width 595mm</b>	<b>Number of surface brackets Width 895 mm</b>	<b>Distance from the end of panel (mm) C = width 895mm</b>	<b>Number of surface brackets Width 1190 mm</b>	<b>Distance from the end of panel (mm) C = width1190mm</b>
<b>590</b>	2	150	-	-	-	-
<b>1190</b>	2	150	2	300	2	300
<b>1790</b>	2	150	2	300	2	300
<b>2390</b>	2	150	2	300	2	300
<b>2990</b>	2	150	2	300	2	300
<b>3590</b>	3	150	3	300	3	300

## Installation of the ItuGraf panel recessed into the ceiling surface



A

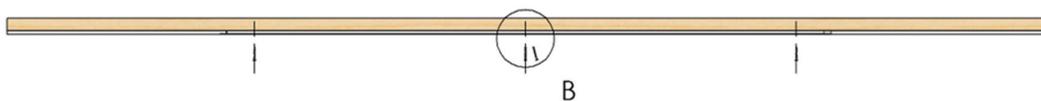
1. Align the frame of the panel with the area of the framing. Remove the protective film from the edges of the panel.



A2

**NOTE:** Make the water connections before the panels are fixed to the ceiling.

View from side



B

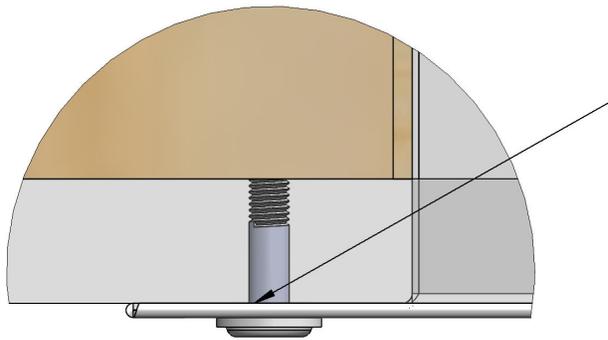
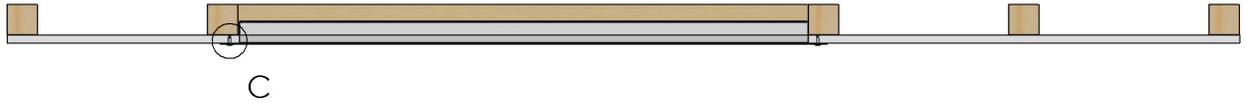


B

2. Install the screws through the 7mm holes located on the bottom of the panel. Make sure to fasten the screws in straight and do not use excessive force when fastening into the framing. Use screws that fit through the 7mm holes, for example **Essve Wood Screw W 6,0X80 EZP White RAL9010** or similar.

**NOTE:** Be aware that use of excessive force or fastening the screws in an angle might damage the surface of installed panel.

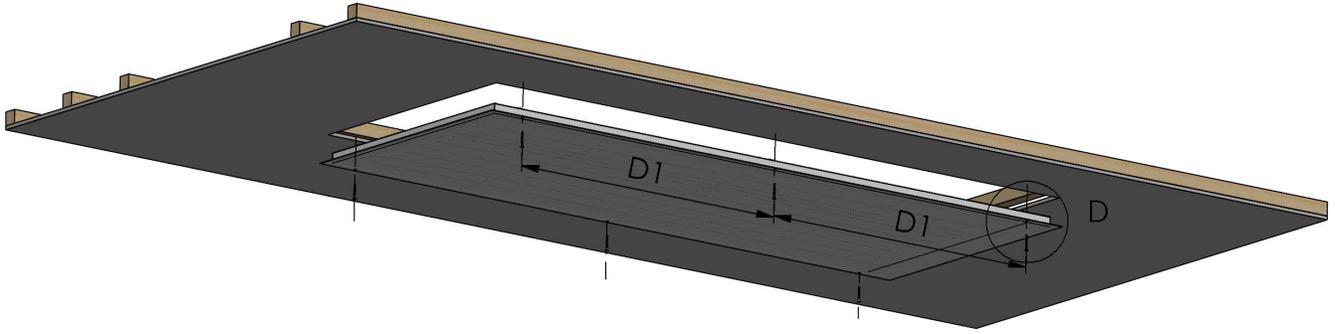
View from front



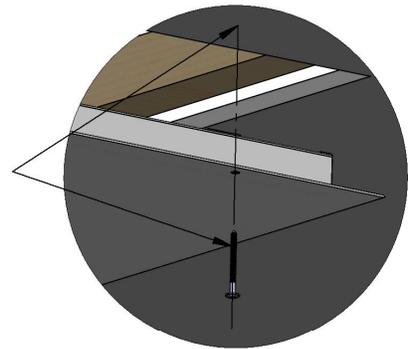
3. After installation make sure that the installed panel is firmly in place and isn't loose.

4. Remove the rest of the protective film that covers the panel.

C  
DETAIL C  
SCALE 3 : 2



Use 6mm screws to fasten panel in to the wooden beams without the use of excessive force.



D

Panel dimensions (Length x Width)	Area to be cut for panel	Distance between screws (D1)
2950mm x 955mm	2900mm x 900mm	1339mm
2350mm x 955mm	2300mm x 900mm	1039mm
1850mm x 955mm	1800mm x 900mm	789mm
1250mm x 955mm	1200mm x 900mm	978mm
2950mm x 655mm	2900mm x 600mm	1339mm
2350mm x 655mm	2300mm x 600mm	1039mm
1850mm x 655mm	1800mm x 600mm	1578mm
1250mm x 655mm	1200mm x 600mm	978mm

# Legend for the Panel Product Codes

ItuGraf product codes are formed as shown below.

**IG 35 - 595 - 2990 - 1 B - V - I2**

- Panel height or ceiling model**
- 25
  - 35
  - 45
  - A\*
  - E\*
  - LP\*
  - DS\*
  - DG\*
  - Z\*

- Panel width**
- 595 (25 / 35 / 45)
  - 895 (35 / 45)
  - 1190 (35 / 45, V)
  - 1185 (35 / 45, P)
  - 595 (A)
  - 590 (E)
  - 590 (LP)
  - 599 (DS)
  - 592 (DG)
  - 592 (Z)

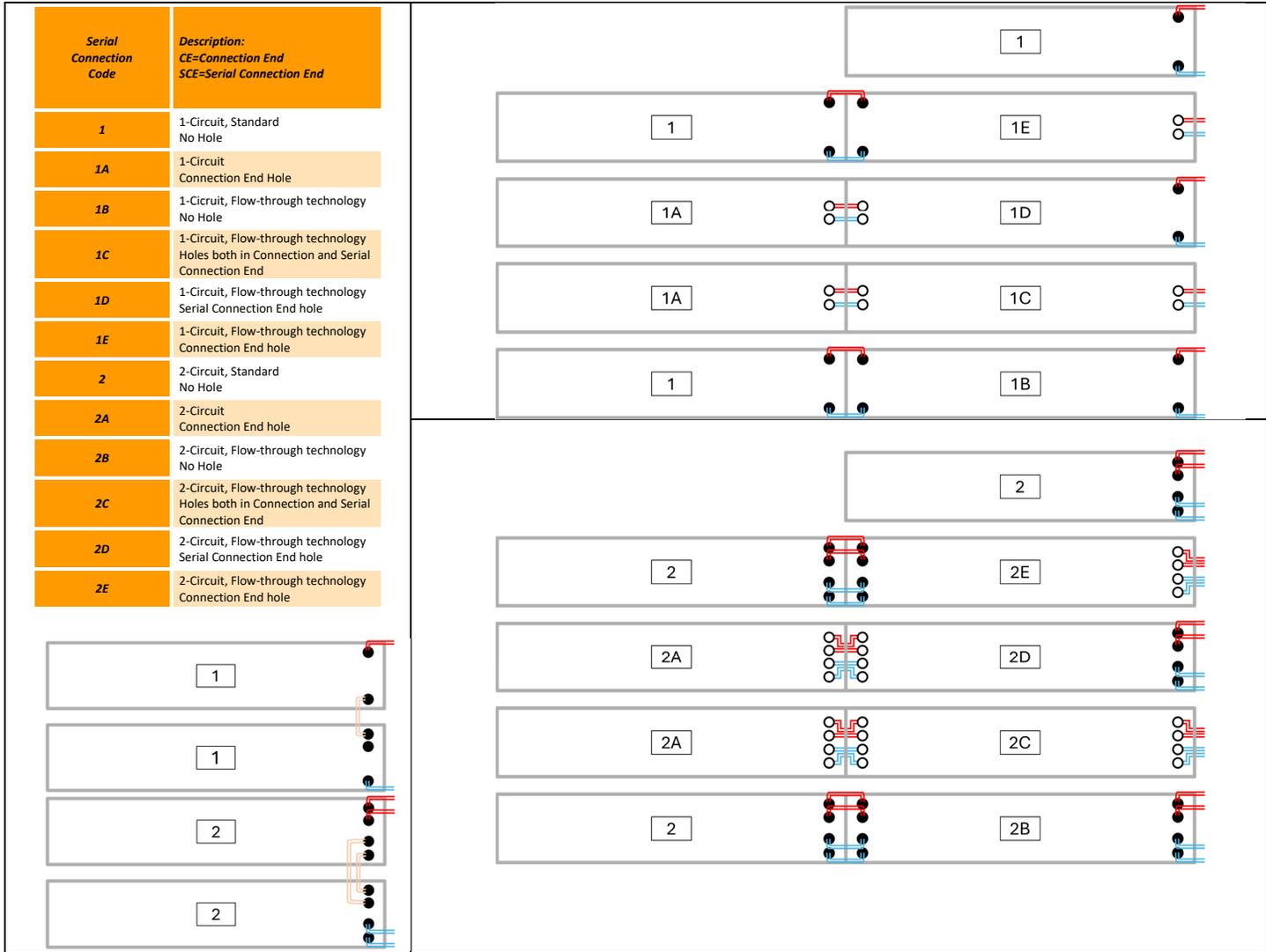
- Panel length**
- 590
  - 1190
  - 1790
  - 2390
  - 2990
  - 3590
  - \*2990 (A)
  - \*2975 (E)
  - \*2975 (LP)
  - \*2999 (DS)
  - \*2975 (DG)
  - \*2999 (Z)

- Circuit**
- 1
  - 2
  - 0 (Dummy panel)

- Surface type and color**
- V (Smooth, standard color)
  - VE (Smooth, special color)
  - P (Standard perforation, standard color, no end cover)
  - PT (Standard perforation, standard color, end cover)
  - PE (Standard perforation, special color, end cover)
  - PTE (Standard perforation, special color, no end cover)
  - PA (Area perforation, standard color)
  - PAE (Area perforation, special color)
  - X (Special perforation, standard color)
  - XE (Special perforation, special color)

- Serial connection code**
- 1/2 (Standard, no hole)
  - A (CE\* Hole)
  - B (Flow-through panel, no hole)
  - C (Flow-through panel, holes in both CE\* and SCE\*)
  - D (Flow-through panel SCE\* Hole)
  - E (Flow-through panel, CE\* Hole)
- \*CE=Connection End  
\*SCE=Serial Connection End

- Insulation**
- I2 (Factory fitted insulation, aluminium top)
  - I4 (Factory fitted insulation, for better acoustics)
  - " " (Left empty means without insulation)



## Examples of Controls for Various Panel Connections

Below are presented the most typical connections for ItuGraf panels.

