PANELO INSTALLATION GUIDE

1. Unloading and storing of panels

PLEASE NOTE! LIFTING OPERATIONS SAFETY

- Always wear a safety helmet and other personal protective equipment appropriate for the nature of the work when lifting and installing the panels.
- Never stand underneath a panel being lifted or in its immediate vicinity.
- Keep the travel path and danger zone of the lifted panel clear of people.
- When lifting and installing panels, all applicable lifting operation safety requirements must be followed, and appropriate lifting equipment and methods must be used.
- Before lifting, make sure that the lifting loops and lifting equipment are in proper condition and that the panel is securely attached.
- The movement of the lifted panel must be controlled safely, and uncontrolled rotation or swinging of the panel must be avoided.

Unloading of panels is carried out with the aid of a crane, and single-use lifting slings are attached to the panels at the factory. Lift the panels straight up and to the desired location. Panels may also be unloaded using a forklift, but extra caution must be taken. Panels must be lifted one at a time. Improper lifting can damage the panel.

Check to ensure you have enough space for unloading, storage, and crane placement. Stack the panels in such a way that they do not touch the ground. Allocate some wooden beams and veneer boards for unloading; placing under the stacks of panels, etc. If possible, store the panels according to the installation sequence. To cover the panels from direct rain, use, for example, a tarpaulin.

2. Foundation

The foundation must meet the requirements of the construction project.

a) Post Foundation:

A post foundation is necessary for floor panels. The gap between the ground and the floor panel must be at least 300 mm. Before installing the floor panels, ensure that:

- The entire area beneath the structure is free of topsoil and is covered with a geotextile fabric and either sand or gravel.
- The distance between the centers of the posts does not exceed 2.5 m.
- The difference between the diagonals does not exceed ± 0.3% of the length of the diagonal (for example, 3 cm for every 10 m measured).
- All posts have a concrete section of sufficient height for securing the floor panels (see construction joint).
- The difference in height of the top surface does not exceed ±3mm per 6 meters measured (see construction joint).
- Deviations are measured from the worst point. All requirements are to be met simultaneously.

b) Strip Foundation:

A strip foundation is required for floor panels. The gap between the ground and the floor panel must be at least 300 mm. Before installing the floor panels, ensure that:

- The entire area beneath the structure is free of topsoil and is covered with a geotextile fabric and either sand or gravel.
- The distances between the axes of the foundation do not exceed 3.0 m.
- The difference between the diagonals does not exceed ± 0.3% of the length of the diagonal (for example, 3 cm for every 10 m measured).
- The foundation has a concrete section of sufficient height for securing the floor panels (see construction joint).
- The difference in height of the top surface does not exceed ± 3 mm per 6 meters measured.
- Deviations are measured from the worst point. All requirements are to be met simultaneously.

c) Slab Foundation

For a slab foundation, floor panels are not used. The foundation must meet the requirements of the construction project. Wall panels are installed directly onto the slab foundation with the help of sill plates. Before installing the panels, ensure that:

- The geometry of the foundation corresponds to the plan for the sill plates of the wall elements.
- The difference between the diagonals may be a maximum of ± 0.3% of the length of the diagonal (for example, 3 cm for every 10 m measured).
- The difference in height of the foundation surface must not be greater than ± 3 mm per 6 meters measured.
- The foundation has a sufficient concrete section for securing the sill plate (see construction joint D2-1a).
- Deviations are measured from the worst point. All requirements are to be met simultaneously.

3. Installation of sole plate

- Before installing the sill plate, place bitumen roll material on the foundation to prevent moisture from seeping from the concrete to the sill plate.
- Secure the sill plate to the foundation according to static calculations and drawings.
- Check that the diagonals correspond to the plan for the sill plates.
- The difference between the diagonals may be a maximum of ± 0.2% of the length of the diagonal (for example, 2 cm for every 10 meters measured).

NOTE! ***The sill plate must always be wide enough to ensure that the panel sits fully on the sill plate throughout its entire thickness.***

4. Installation of PANELO floor panels

a) Secure the fasteners (angles, plates) to the side of the column or strip foundation as prescribed in the statics.
b) Attach the foam rubber joint seal (Ø 13-16mm) with clips to the bottom of both edges (shorter and longer sides) of the floor panel
c) Install the floor panels according to the assembly plan, leaving 10 mm wide joints between the panels
d) Connect the floor panels to each other and to the fasteners installed on the foundation as prescribed in the statics.
e) Fill all joints with assembly foam.

5. PANELO wall assembly

For floor or ceiling panels:

- Mark the floor or ceiling panels, indicating the lengths of the wall panels, adding a 10 mm joint gap to each panel.
- Attach the PU seal to the floor or ceiling panels with clips, following the wall panel installation plan.

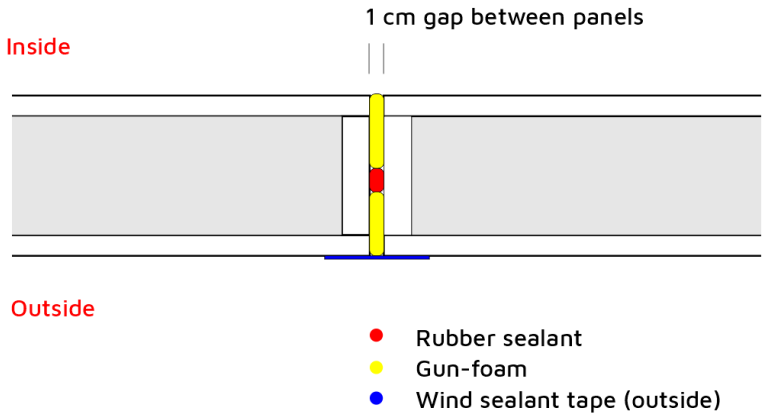
For the base timber:

- Mark the lengths of the panels on the side of the base timber (see the figure below)
- Attach the PU- seal to the floor or ceiling panels with clips, according to the wall panel plan.

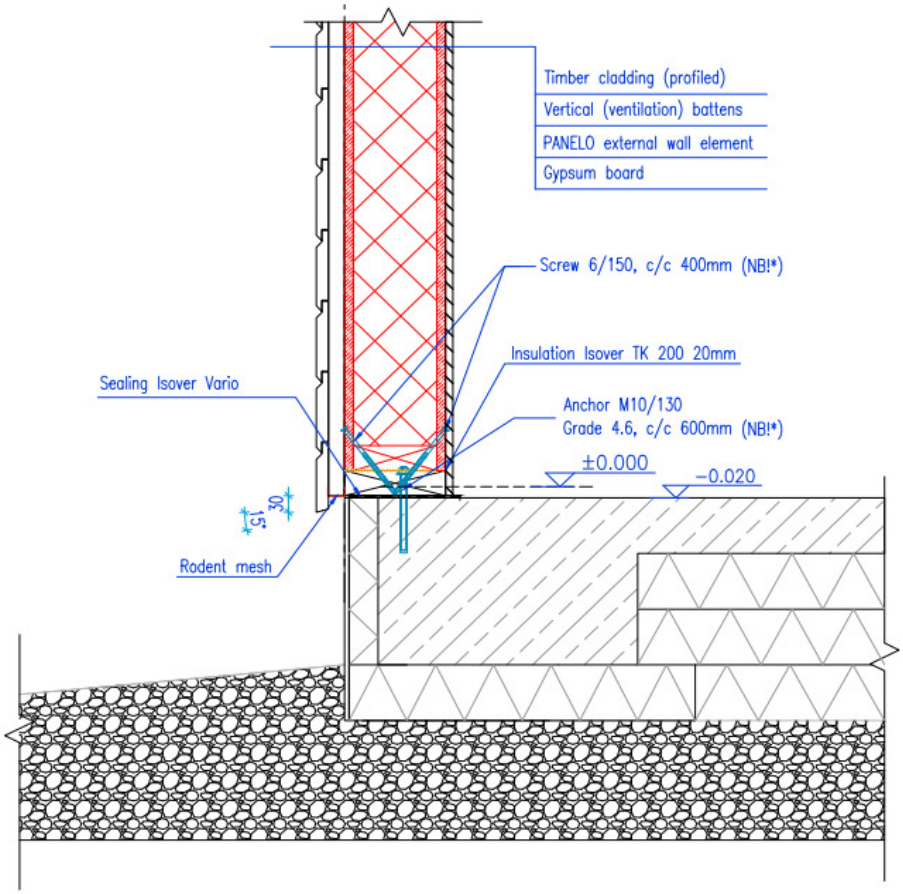
a) Attach 2 spacer blocks (10 mm) to one vertical edge of the wall panel (with a spacing of 1/3 of the panel's height).
b) Attach the foam rubber joint seal (Ø 13-16 mm) with clips to the same vertical edge of the wall panel (in the middle of the panel's thickness).
c) Place the wall panel in its designated location according to the wall plan. All panels are marked. On the exterior side of the external wall panels is the PANELO trademark.
d) Ensure that the length of the panel does not exceed the marks shown on the base timber or floor panels. If the length of the panel exceeds the respective mark, the thickness of the vertical joint must be reduced.
e) Use aids to secure the panel's verticality.
f) Attach the panels to each other and to the floor or base timber as prescribed in the statics.
g) Fill all joints with assembly foam throughout the entire length, height, and thickness of the panel.
h) Cut off the foam that protrudes beyond the panel's surface and apply a tape intended for that purpose to the joint (for EW-panels on the exterior surface).

NOTE! **Ventilated facade is intended for the external surface of external wall panels.**

WALL PANEL CONNECTIONS - SEALING (view from top)

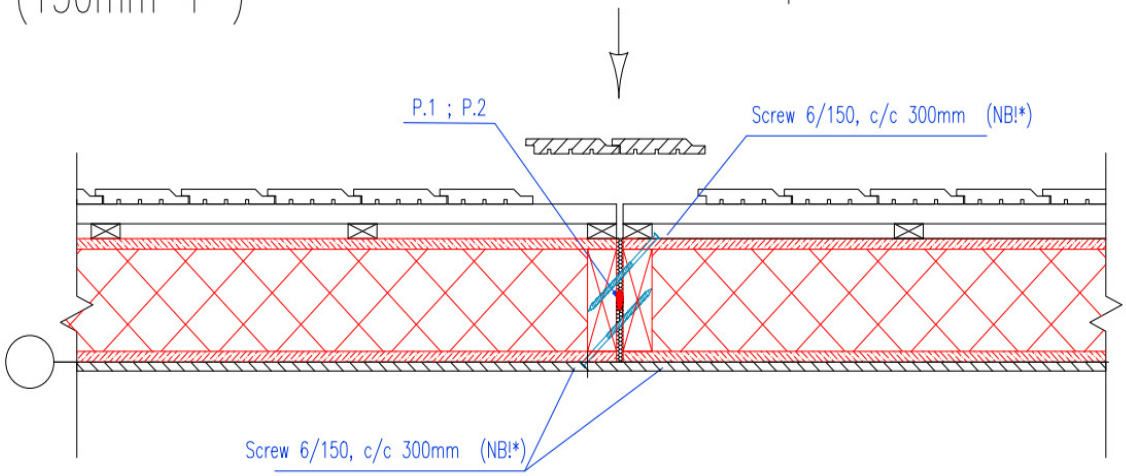


D2–1a. External wall (175mm) to foundation connection



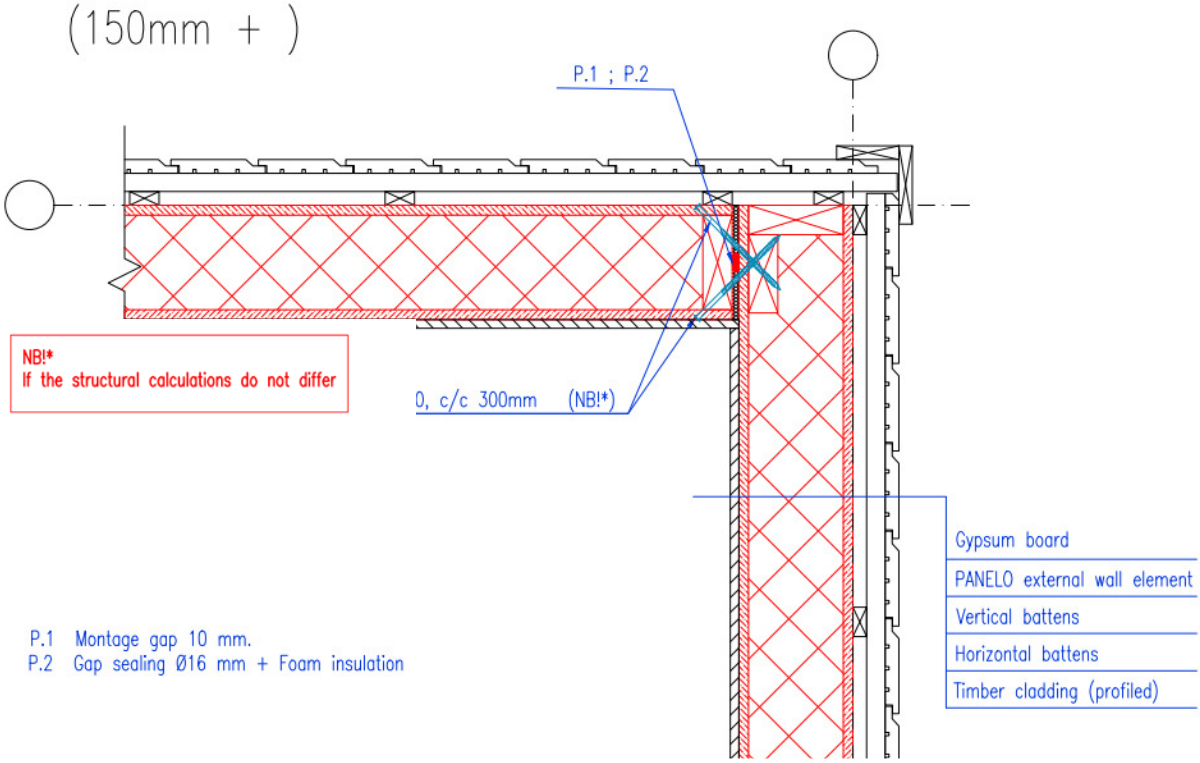
NB!*
If the structural calculations do not differ

D3–4. External wall to wall connection (150mm +)



NB!*
If the structural calculations do not differ

D3–3. External wall corner connection (150mm +)



P.1 Montage gap 10 mm.
P.2 Gap sealing Ø16 mm + Foam insulation

NOTE! **Ventilated facade is intended for the external surface of external wall panels.**

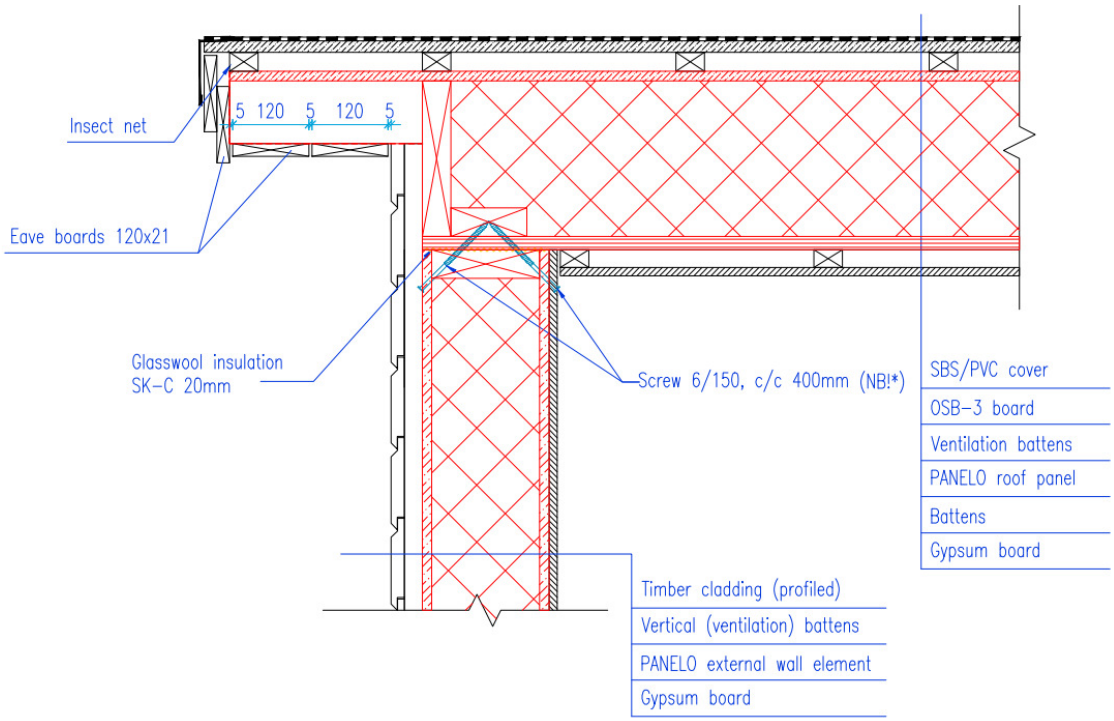
NOTE!

- Milling or cutting wall panel boards for the installation of electrical installations is not allowed.
- The necessary electrical installation piping, along with boxes, is installed at the factory according to the electrical installation project.
- Subsequent electrical installations must be carried out only on the plane of the additional wall framing.

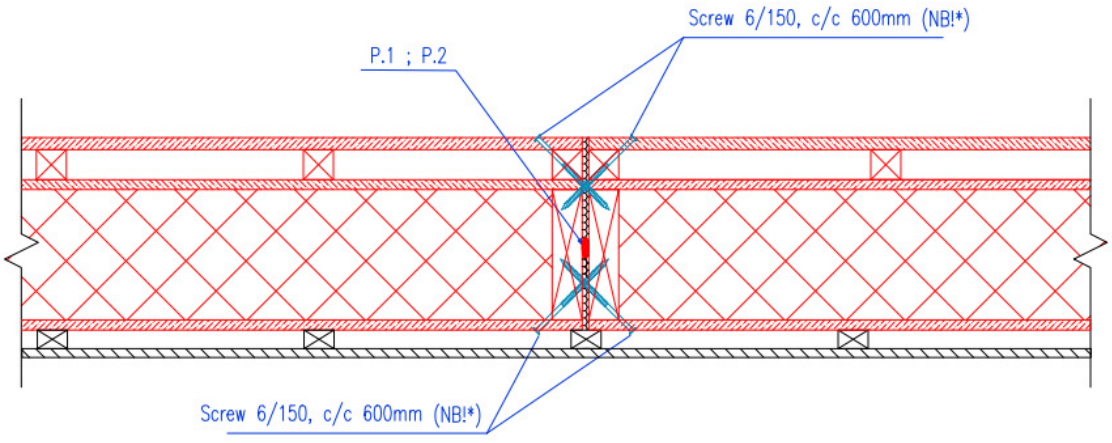
6. Installation of Ceiling and Roof Panels

a) Ensure that the top edge of the wall panels is level. If the difference in height between panels can be the most < 3 mm (level it by planing).
b) Place a flat PU sealing strip between the wall and roof panels (on the top edge of the wall panel).
c) Place the ceiling panels in their designated locations according to the plan, leaving 10 mm joints between the panels (using assembly blocks). All panels are marked. The PANELO trademark is on the upper surface of the ceiling panels.
d) Check that the panels do not extend beyond the outer surface of the EW walls. If this occurs, reduce the thickness of the joints.
e) Attach the panels to each other and to the wall panels, following the statics requirements.
f) Fill all joints with assembly foam, covering the entire length, height, and thickness of the panel.
g) Remove any hardened foam protruding beyond the panel's surface and, if necessary, affix tape suitable for the purpose to the joint.

D6–2. Roof / Gable wall eaves



NB!*
If the structural calculations do not differ



P.1 Montage gap 10 mm.
P.2 Gap sealing Ø16 mm + Foam insulation

PANELO team recommendations:

1. Install the panels according to the drawings – the panels are numbered.
2. We recommend using a professional installation team.
3. Always apply best construction practices and resolve conflicts in accordance with local building standards.
4. Do not cut or mill Panelo panels without prior approval from the manufacturer.
5. The building is designed with a ventilated facade.
6. Panels must be protected from water damage, and the building shell should be put to use within a reasonable period of time.
7. Before starting finishing works, the assembled building must be heatable and dry. The internal humidity level in the rooms should not exceed 50%, and the temperature should be above 18°C (64°F).

7. Tools & equipment needed for installation

1. Laser level for foundation and sole plate check, checking diagonals etc.	
2. Laser meter	
3. Cordless drills, 4 pcs per team; sufficient number of spear batteries	
4. Torx heads for screws (measure have to specify according to the project)	
5. Sharp knives for cutting lifting slings	

6. Gun foams and foam guns for it	
7. Stapler for rubber sealant between panels	
8. Sledge hammer to shift panels from side if needed	
9. Hammers	
10. Crowbars 2 or 3 different sizes	
11. Ladder min 3 m, 2 pcs	

12. Mobile scaffolding, 3 m wide	
13. Supporting poles, telescope for walls or timber beams (min length 5 m	
14. Chainsaw	
15. Saw