



CEILING
LIGHTING
AMBIENCE

WS4 METAL WALL CLADDING HOOK-ON SYSTEM

INSTALLATION MANUAL

GENERAL INFORMATION

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This installation manual refers to all metal ceilings and cladding elements manufactured by durlum. The different sections describe the corresponding products.

durlum is a leading German manufacturer of metal ceilings and cladding elements, mainly made of galvanised sheet steel, aluminium and expanded metal.

durlum distinguishes between the various ceiling/wall cladding systems; e.g. S1. "S" stands for the system, "1" for clamping. In this system, there are different nomenclatures that allow a further subdivision of the systems.

All durlum systems are based upon a modular design. This applies not only to the substructure but also to the ceiling/wall cladding parts that are suspended, locked into place or placed on the substructure.

Only use dowels/mountings for which a general building supervisory approval is available. Their minimum extraction force must be rated in accordance with the substructure in each case. The dowels/mountings must be installed as specified by the relevant manufacturer of those dowels/mountings. We recommend regular testing of tensile load samples to verify that the correct dowels/mountings are being installed.

durlum metal ceilings and cladding elements comply with the DIN EN 13964:2014-08 standard and are CE-certified.

durlum metal ceilings and cladding elements are dimensioned to carry the full weight of the system structure, plus a surface load amounting to 40N/m². Higher loads must be taken into account and/or suspended or attached separately in the construction, and the course of action taken must be adapted to the suit each situation. Usually, additional built-in components/attachments and loads must be suspended or mounted separately.

For special systems marketed by us and for which no general approvals are available, there are suitable static certificates available, and suitable designs compliant with DIN EN 13964:2014-08 have been constructed.

For ceiling systems/wall cladding systems that do not allow any tolerance compensation within a module, appropriate material expansion factors must be taken into account.

GUIDELINES

These installation instructions have been structured in accordance with the requirement of DIN EN 13964:2014-08. They describe proper installation.

Specifically, this means proper use of the building expansion joints and tolerances customary in the construction of buildings.

The description does not exempt the user from examining the structural conditions, implementing the building code regulations and observing the information given in the building permit prior to starting assembly. They have priority, but could not be included here.

durlum metal ceilings and cladding elements are, as a matter of principle, to be assembled by professional dry construction companies who are capable of assessing the overall conditions of the building, the metal ceiling and cladding surface area, and can take the necessary precautions for correct and structurally safe installation.

It is advisable always to draw up assembly diagrams/drawings, to establish the location where installation is to begin and to establish the required suspension/attachment points for the relevant ceiling/wall cladding system prior to starting installation.

If parts from different manufacturers are used to assemble the ceiling/wall cladding, the relevant installation company must obtain and provide the validation and compliance certificates required by standards such as DIN EN 13964:2014-08 or DIN 4103:1.

STRUCTURAL PREREQUISITES

Metal ceilings and cladding elements may usually be installed as soon as the building is swept clean and at the latest after all wet work in the interior has been completed and the building has been closed.

Liability for proper selection of the products and system conformity can only be assumed for the systems delivered by durlum.

Before installation work begins, the practical viability of suspension and attachment points must be checked to ensure that the structure of the building can cope with the loadings involved.

To prevent the parts from becoming dirty, gloves must be worn during installation work. If the ceiling/wall cladding products are delivered wrapped in a protective film, they must be protected from exposure to UV radiation [sunlight], the film must likewise have been removed from the goods no later than 4 weeks after delivery. The storage temperature must not exceed 30°C, since otherwise the adhesive on the panel may become hardened, and the protective film can no longer be removed.

When using suspension and attachment points on the walls, such as brackets or wall anchors, the load-carrying capacity of the wall in question must be checked.

If ceiling/wall cladding elements rest on brackets, possible wall movements must be taken into account.



The relevant products are described in the sales and marketing documents. They are acoustically effective, and can also be used simply as design elements.

Specifically, these products are:

- Acoustic ceilings
- Chilled ceilings
- CHARACTER products
- Wall claddings

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STORAGE

In most cases, durlum metal ceilings and cladding elements are supplied on pallets. It is advisable to leave the metal panels on their pallets for as long as possible. If the pallets have to be opened, durlum metal panels should always be positioned on their long sides, then it can be placed carefully against the wall. Never store it flat.

Storage must be carried out such that damage is excluded. For storage purposes, protect all durlum ceiling/wall panels from adverse weather conditions. They have to be stored at a constant temperature of between at least 10°C and at most 40°C.

Installation of ceiling/wall panels must not start until all after completion of all work that produces dust [swept clean].

durlum products are certified in accordance with ISO 9001 for development, production, sales and also for service. Nonetheless, it is recommended as a matter of principle to inspect the metal ceilings directly after receipt of delivery, and to report complaints immediately [as a rule immediately after delivery or within 3 days].

STANDARDS AND REGULATIONS

The relevant regulations applicable at the installation site must be determined by the assembly company in question. The metal ceilings and cladding elements marketed by durlum comply with DIN EN 13964:2014-08. This standard also regulates the classification of fire protection.

APPLICATION

The application of durlum metal ceilings and cladding elements is restricted, unless agreed upon otherwise, to interiors, so that, pursuant to DIN EN 13964:2014-08, class of use A, corrosion protection class A, has been defined here as standard.

Should it become necessary to adjust the metal ceiling panels and cladding elements to the building by cutting them, we recommend protecting the cutting edges from corrosion by means of paint in order to maintain the corrosion protection class A.

QUALITY STANDARD

Material properties, dimensions, tolerances and colour deviations are governed by the TAIM Directives [Technical Association of Industrial Metal Ceiling Manufacturers].

INSTALLATION SEQUENCE

1. Create a wall layout plan [view] or use the one from the architect.
2. Check the wall layout plan [view] against the structural properties of the building.
3. Prepare a bill of materials, including a suitable work plan and retrieval/order of the materials required.
4. Establish the requisite mounting points. Consult the detailed descriptions of the individual wall cladding systems for information about the spacing of mounting and attachment points.
5. Establish which generally approved dowel/mounting is suitable. Inspect the raw ceiling and the walls. Mark out and drill holes for dowels/mountings. Install dowels/mountings in accordance with the stipulations of the dowel/mountings manufacturer, where required perform extraction tests using a device recommended by the dowel/mountings manufacturer, if provision is made for this.
6. Wall-mount support profiles for the wall panels in accordance with the detailed descriptions for the individual wall cladding systems. Ensure horizontal and flush alignment of these support profiles during installation. If required, specifically if there are irregularities in the substrate, align the support profiles accordingly and chock them properly with materials that comply with local requirements and applicable standards. Max. spacing of 625mm between attachments for the support profiles. Check transmission of force into the wall.
7. Apply the same procedure when mounting the base/finisher profiles to the wall [where these are included in the design concept]. Max. spacing of 625mm between attachments for the base and finisher profiles. Check transmission of force into the wall.
8. As a rule, in the horizontal configuration, arrangement of the panels should be from the centre of the wall to compensate for and to halve the tolerances of the room/panels. In the vertical configuration, always observe the specified cutting check. Always conduct a precise definition in conjunction with the wall layout drawing [view].
9. The wall panels are often provided with a joint tape [e.g. 5mm wide], to make for easier tolerance compensation. The installation company must fit this joint tape to the appropriate sides of the wall panels. If a joint tape is used, the joints must also be re-aligned from time to time

because the joint tape also has tolerances.

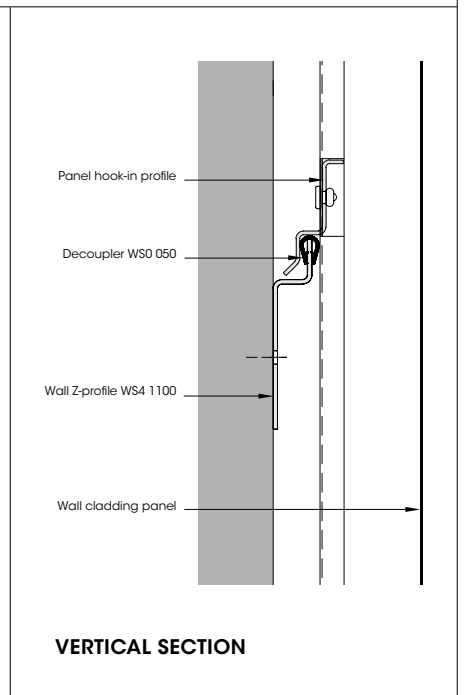
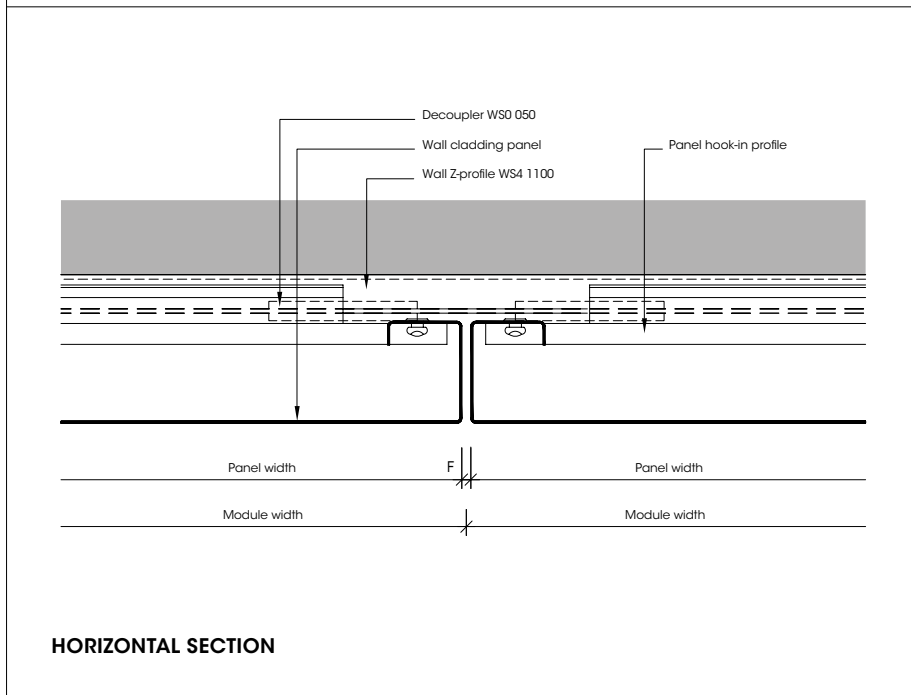
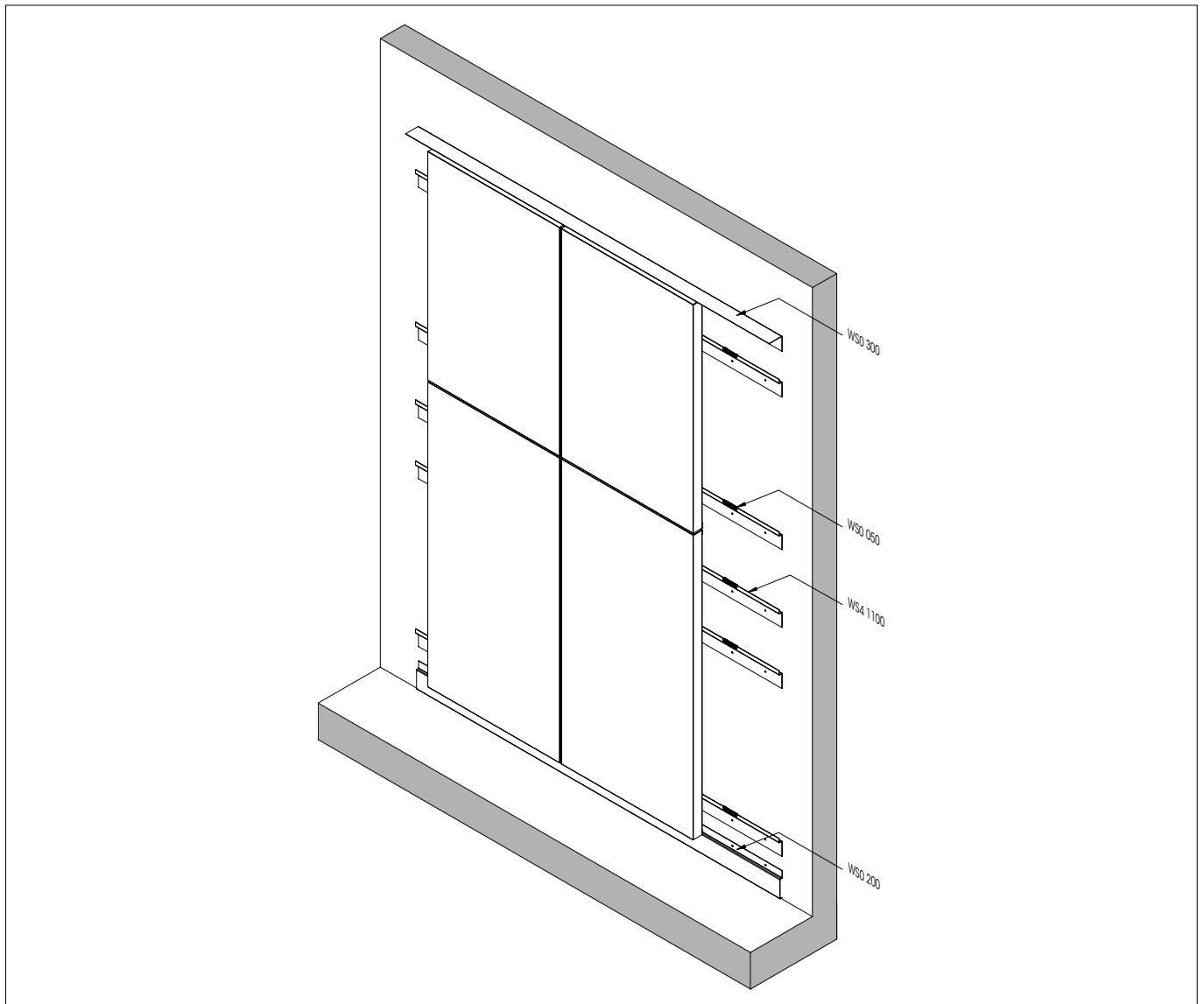
However, owing to the high production precision, it is also possible to connect the panels without a joint tape by using butt joints or by providing them with rubber spacer naps.

Always ensure that the joints are aligned.

If the design of a seam [with or without seam tape and/or spacer naps], always bear in mind that the spacings between support profiles may change.

10. If wall cladding panels end at the side or top with an end profile, ensure that minimum seam widths are provided between the wall panels and the end profile. This assures a professional standard of finish and ensures that the wall panels can be installed and removed without any problem. Observe the minimum system-dependent seam widths relating to end profiles at the sides/top.
11. Attachments or other loads are to be mounted separately. Common sense dictates that these parts should be integrated during the mounting process.
12. After completion and pre-acceptance of the wall cladding, the seam layout should be adjusted. Clean soiled ceiling panels to obtain a perfect visual standard of finish for the ceiling.

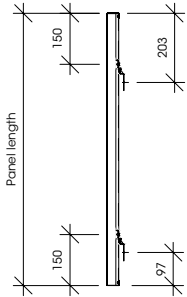
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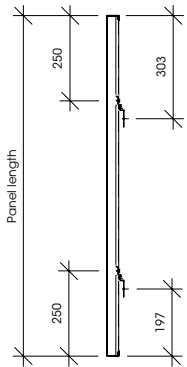
Panel type 1:

Panel length: 500 - 800 mm



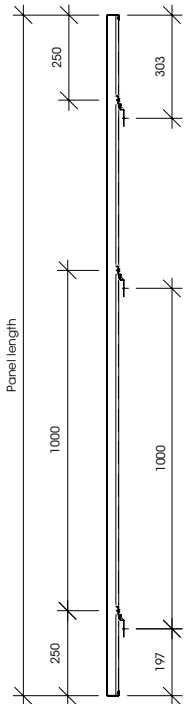
Panel type 2:

Panel length: 801 - 1800 mm

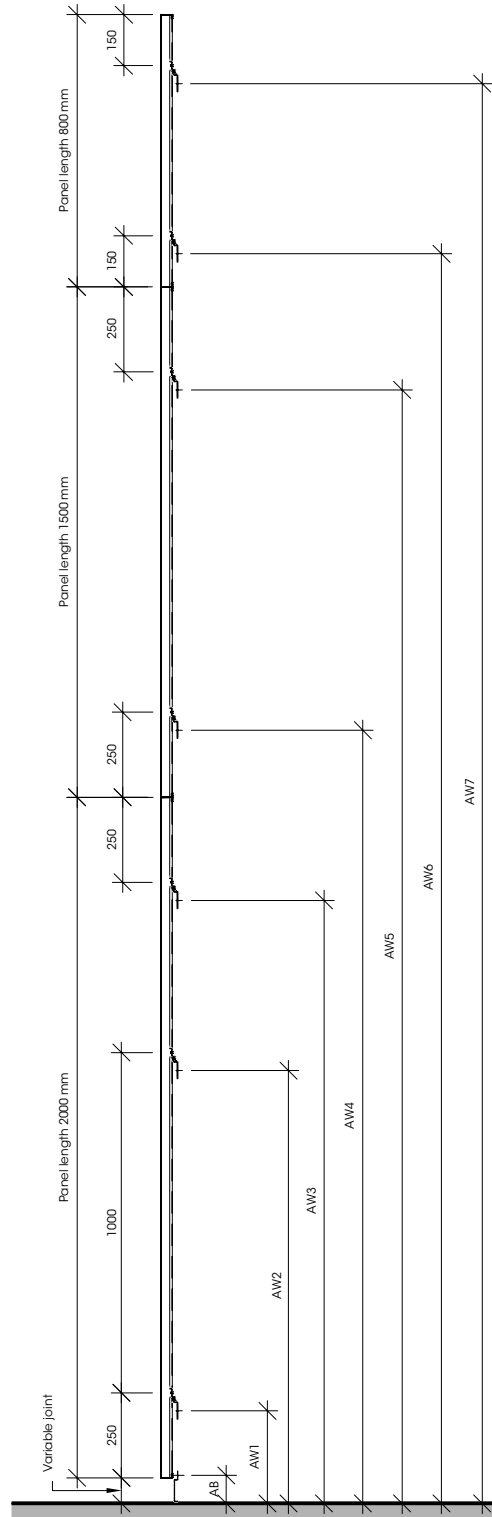


Panel type 3:

Panel length: 1801 - 3000 mm



Example:



Drilling points:

- AB: 82,5 mm
- AW1: BF + 197 mm
- AW2: BF + 1197 mm
- AW3: BF + PL1 - 303 mm
- AW4: BF + PL1 + 197 mm
- AW5: BF + PL1 + PL2 - 303 mm
- AW6: BF + PL1 + PL2 + 97 mm
- AW7: BF + PL1 + PL2 + PL3 - 203 mm

Abbreviations:

- BF: Floor joint
- PL: Panel length

Please note:

A joint between the panels is not shown. This must be taken into account at the respective point.

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ABBREVIATIONS

- AB: Distance between top edge of floor to axis of mounting points for the WS0 200 base profile.
- AW: Distance from top edge of floor to axis of mounting points for support profile [wall Z-profile WS4 1100].
- AH: Distances of mounting points for alignment of the support profile [wall Z-profile WS4 1100].
- AWX: Distance from bottom edge of wall panel to axis of mounting points on the lower support profile [wall Z-profile WS4 1100] of a wall panel.
- AWY: Distance from top edge of a wall panel to the axis of the mounting points for the upper support profile [wall Z-profile WS4 1100] of a wall panel.
- F: Seam between the wall panels [recommendation 5mm].

Floor seam: Top edge of floor to bottom edge of wall panel on the first/bottom row of wall panels.

Panel height 1: Panel height of the first/bottom row of wall cladding panels [assumption of uniform layout with crosswise seam = each row of panels is at the same height].

Panel height 2: Panel height of the second/upper row of wall cladding panels [assumption of uniform layout with crosswise seam = each row of panels is at the same height].

SPACINGS OF MOUNTING POINTS ETC.

The following recommendation in relation to the spacings between support profiles and the spacings between mounting points on those support profiles only applies to standard interior wall cladding panels without additional loads.

Spacing of base profile AB:

- AB = 82.5mm

This dimension includes a seam measuring 5mm between the top edge of the floor to the bottom edge of base profile WS0 200.

Spacing of support profiles AW:

The distance of the support profiles AW is done according to the information on page 5.

Spacing of mounting points AH:

The spacing of mounting points AH is based on the applicable panel height and the resultant number and arrangement of horizontally configured support profiles. Consequently, the standard makes no provision for vertical transverse reinforcement of support profiles for a load-bearing substrated [as described above]. However, if transverse reinforcement is required,

this must be manufactured and tested for suitability by the installation company involved, in accordance with local construction requirements and standards.

The wall, as a load-bearing substrate, must be capable of absorbing linear loads from individual rows of wall panels [standard wall panels with a max. height of 3000mm, arranged beside one another horizontally] of up to 650N per linear metre of wall cladding.

In this standard, the level of vertical force to be absorbed by the dowel/mounting at the mounting point measures up to 200N. Due account must be taken of the reciprocal interaction of forces caused by the net weight of the system construction as well as by any additional surface loads that may be applied, and the resultant transmission of forces to the support profile and ultimately to the mounting point. Due account must be taken of the shearing loads to which the dowel/mounting may be subjected. The installation company must assure proper dissipation of loads into the wall, the load-bearing substrate, and through this into the load-bearing components and/or the structure of the building.

The installation company is responsible for selecting appropriate dowels/mountings. Due account must be taken of the interaction between removal of load and the properties or load-bearing capacity of the substrate.

Select the following distances between AH mounting points:

- AH ≤ 625mm

Stress class in accordance with DIN EN 13964:2014-08:

Stress class A in acc. with Table 8

PLEASE NOTE

- Use only officially approved dowels/mountings.
- The fastening base must be structurally suitable. It must be able reliably to absorb and dissipate the forces introduced into the construction.

SUBSTRUCTURE INSTALLATION

Installation of base profile [Base profile WS0 200]:

The general distance for mounting the base profile is max. 625mm. In cases where no base profile is needed, work on installation of the supporting profiles can begin immediately [from Point 8].

1. Establish spacing AB for the base profile [see above], level it up and mark it out.

2. Mark out the drill points.
3. Drill holes for dowels/mountings.
4. Cut the base profile to the required length [if needed].
5. Secure the base profile using dowels/mountings. Pay attention to the stipulations of the manufacturer of the dowels/mountings.
6. The base profiles must be installed with adjacent butt joints. A longitudinal connector is not needed for this.
7. Cleanly mitre cut the edges of the base profiles.

Support profile installation [Wand Z-profile WS4 1100]:

8. Determine the spacings of AW support profiles [see above, AW1, AW2, AW3, ...], level them out and mark them up.
9. Mark out the drill points.
10. Drill holes for dowels/mountings.
11. Cut carrier to required length [if needed].
12. Secure carrier with dowels/mountings. Pay attention to the stipulations of the manufacturer of dowels/mountings.
13. The carriers must be arranged with adjacent butt joints. A longitudinal connector is not needed for this.

Installation of the decoupler [Decoupler WS0 050]:

14. Pay attention to the wall layout drawing [view].
15. 2 decouplers for each carrier and panel width are provided for wall panels that measure up to 1000mm in width. For larger panel widths [max. standard panel width = 1250mm], 3 decouplers are provided. If necessary, this figure can be increased at any time. Order the quantities needed. Decouplers are packaged loose in 50mm lengths.
16. With a distance of approx. 100mm from the side edge of the wall panel, the outer decouplers are easy to plug onto the exposed top edge of wall Z-profile WS4 1100. The middle decoupler [if needed] should be positioned between the other two.

End profile installation [End profile WS0 300]:

The standard spacing for mounting end profiles is max. 625mm. If no end profile [to seal the side and/or top of a wall cladding panel] is needed, work can commence directly on installation of the wall panels.

17. Establish the spacing for the end profile, level it out and mark it up. Pay attention to the required minimum seams [see Point 10, mounting sequence].
18. Mark up the drilling points.
19. Drill holes for dowels/mountings.
20. Cut the end profile to the required length [if necessary].
21. Secure the end profile with dowels/

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mountings. Pay attention to the stipulations of the manufacturer of the dowels/mountings.

22. The end profiles should be positioned adjacent to one another with butt joints. No longitudinal connector is needed for this.
 23. Cleanly mitre cut the edges of the end profiles.
6. It is advisable to disassemble wall panels as a two-person job.

with the same panel height] or in vertical direction of installation [lower wall panels with the same panel width] up until the end of the row.

INSTALLATION OF WALL PANELS

1. Pay attention to the wall layout drawing [view] and to the defined start of installation in accordance with the sub-division of panels.
2. Wear clean cotton gloves.
3. Remove protective film from wall panels if fitted.
4. If needed, apply seam tape and/or spacer naps to the wall panel in accordance with the specifications on the wall layout drawing [view].
5. Check the position and quantity of decouplers installed previously. Adjust this if necessary.
6. Start with a bottom wall panel.
7. Position the wall panel over the panel hook-in profiles and lower it slowly with the rear attachment profiles facing the wall. Pull downwards gently until you are certain that the wall panel has been attached completely.
8. Next, continue with installation work, either in horizontal [bottom row of wall panels with the same height of panel] or in vertical direction of installation [superimposed wall panels of the same width] up to the end of the row.
9. For installation of wall panels in a horizontal direction, next install the row above [same height of panel]. For installation in a vertical direction, next install the adjacent row of wall panels [same width of panel]. Installation of other panels follows the same pattern.
10. It is advisable to install wall panels as a two-person job.
11. Wall panels can be aligned horizontally.
12. Check the perpendicularity and uniform width of the joint and adjust these if necessary.
13. It is not possible on-site to cut existing standard panels into other sizes of panel.

DISASSEMBLY OF WALL PANELS

1. Wear clean cotton gloves.
2. Disassembly of wall panels is performed in reverse order to installation.
3. Start with an upper wall panel.
4. Lift the wall panel slowly [approx. 15mm] and pull it forwards carefully.
5. Then disassembly can continue, either in horizontal [top row of wall panels

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