

Underground distribution systems

Future-proof solutions for the city of today and tomorrow

Our expertise for the networks of today and tomorrow

www.langmatz.de



▲ Plastic granulate

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Langmatz –

Our expertise for the networks of today and tomorrow

The specialist for technical system solutions

Langmatz technical system solutions are considered the gold standard of modern infrastructure in telecommunications and energy networks. Langmatz customers include energy providers, local councils, public utilities, and telecommunication companies.

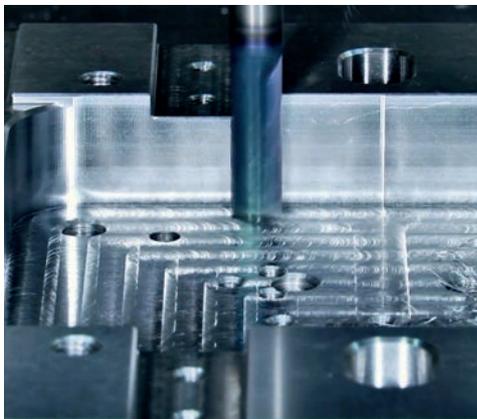
“Made in Germany” is our guiding principle. One of our greatest strengths is that we carry out all processes at our sites in Germany. From design and development supported by the latest 3D printing technology, prototype and mould making, to production and installation.

Our quality management system (QMS) forms the daily basis for meeting our challenging goals. As standards are often not enough for us, we have evolved extensive testing processes and integrated special testing methods into our quality processes. These include regular checks in our material and product testing laboratory, which is equipped with a special static load hydraulic press for manholes.

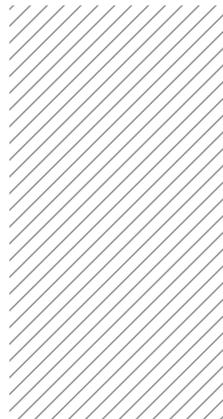
The core elements of our corporate strategy include qualified employees, national supply chains, and manufacturing in Germany with state-of-the-art production facilities.



▲ Injection moulding machines



▲ Mould and tool making



▲ Product and materials testing laboratory

Ongoing digitalisation requires technologically mature systems for the networked towns and cities of today. We are one of the most innovative companies in Germany and, as such, we are the perfect partner to implement your projects.

Your partner Langmatz – Individual system solutions from the German Alps

A fundamental structural transformation is taking place in towns, cities and rural areas. Digitalisation, climate protection and the energy and mobility transition require new concepts for a functional urban infrastructure in which people can enjoy life. This approach has given rise to the idea of the Smart City and the Smart Village – the vision of digitally networked environments.

Langmatz has looked into these requirements in detail and developed future-centric solutions for energy and data connectivity, as well as transport infrastructure. In doing so, we have placed great importance on ensuring that our systems boast a high level of security, can be integrated seamlessly into the townscape, and are particularly user-friendly.

We offer a broad-based portfolio of high-quality products for the many different requirements of the cities and towns of today and tomorrow:

- ▲ Polycarbonate manholes
- ▲ Underground distribution systems
- ▲ Outdoor cabinets and outdoor pedestals
- ▲ Building cable & pipe entry systems
- ▲ Fuse boxes
- ▲ Pedestrian signal requesting devices
- ▲ Radio ripple control receivers



Sites



Production plant I, Head Office Garmisch-Partenkirchen

- ▲ Board of Management
- ▲ Research and development
- ▲ Production
- ▲ Commercial management
- ▲ Sales & Marketing



Production plant II, Oberau

- ▲ Commercial management
- ▲ Materials management
- ▲ Installation
- ▲ Production
- ▲ Quality management
- ▲ Sales
- ▲ Langmatz Worlds 2 (Exhibition space)



Production plant III Garmisch-Partenkirchen

- ▲ Installation
- ▲ Production
- ▲ Quality management & static load hydraulic press
- ▲ Langmatz Worlds 1 (Exhibition space and conference room)

From development to production – Ultimate end-to-end quality assurance

We develop innovative high-quality products in collaboration with our customers. To achieve this, we rely on state-of-the-art technology in our development work, including the use of the latest 3D printers. Langmatz has also established integrated end-to-end quality assurance processes extending from development to production.

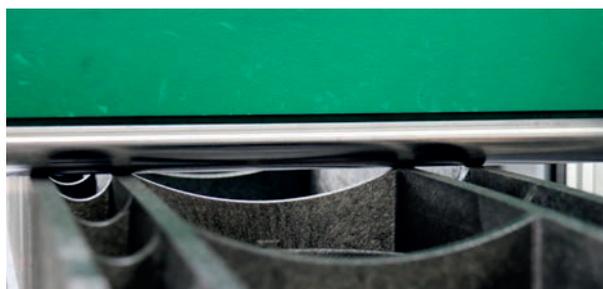
We therefore aim to continuously test our manholes to ensure that they meet all load classes. These complex tests are conducted in our Material and Product Test Laboratory, and start right from the development process. The findings acquired are incorporated into the production of every last element. Quality assurance of continuous manhole production is provided for by a daily, random 3-point bending test.



▲ Load class testing at Langmatz in Garmisch-Partenkirchen



▲ 3-point static load hydraulic press at Langmatz in Oberau

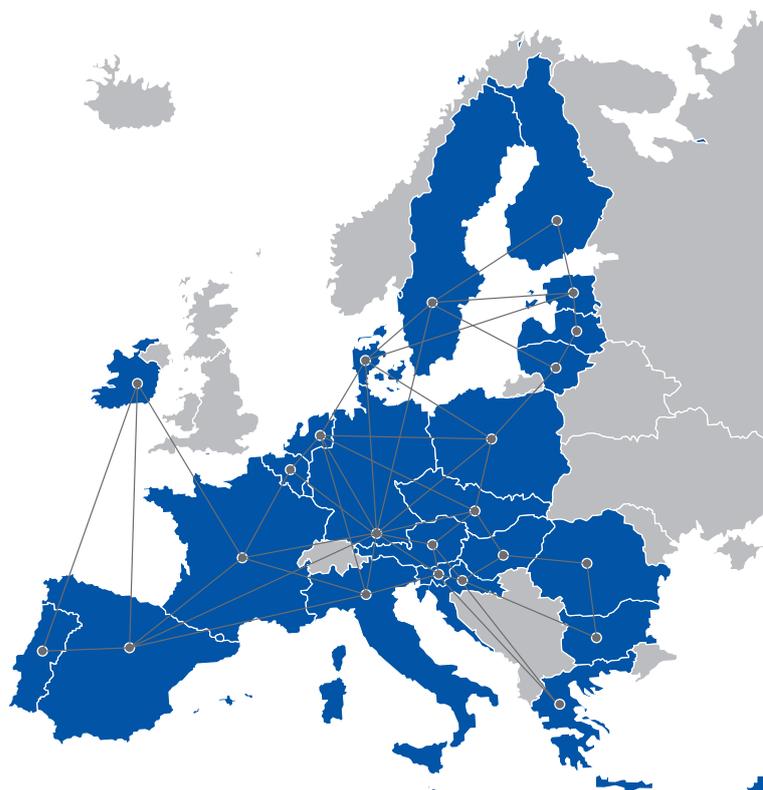


▲ Regular 3-point bending test every 2 hours

European approval for the complete Langmatz manhole system

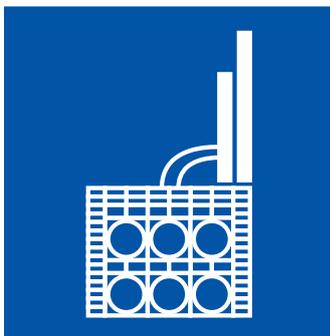
The requirements governing the construction principles, testing, labelling, and quality control of manhole covers are regulated in DIN EN 124. A General Technical Approval (AbZ) is all that is required for approval of a manhole in Germany.

By contrast, Langmatz polycarbonate manholes are unique: the entire manhole system has been tested, not just the cover. As our manholes comply with the load classes, we have an ETA (European Technical Assessment) which applies to all our polycarbonate manholes with cover as per DIN EN 124 (B 125 and D 400). This confirms that Langmatz has complied with all the test criteria. That is why our manholes also carry the coveted CE mark.



Our expertise for
the networks of today
and tomorrow

Langmatz underground distribution systems – The invisible solution for secure applications



Langmatz underground distribution systems are innovative systems for electricity, water and telecommunication lines buried underground and made flood-proof.

Regardless of whether required at one or more locations, a selection of different underground distribution systems can be combined to create secure optimised supply solutions suitable for the particular situation. In the age of modern future-centric urban design, Langmatz underground distribution systems guarantee a secure solution that blends in with the urban landscape.



▲ EK800 – Practical example – Köpenick Marktplatz square (Berlin)

▲ EK800 – Practical example – Lower Austria



▲ EK800 – Abu Dhabi – National Exhibition Centre

Langmatz underground distribution systems – Future-proof solutions for the city of today and tomorrow

Digitalisation, heritage conservation requirements, limited space and safety concerns mean that architects, spatial planners, and urban designers face a number of different challenges when installing overground distribution cabinets. Tailored to this growing market demand, Langmatz has also developed innovative solutions for the underground infrastructure of power and data networks for operating optical fibre, 5G small cells, e-charging infrastructure, and WLAN networks. The critical infrastructure is securely underground and accessible only to authorised personnel.

With this in mind, Langmatz underground distribution systems offer a future-proof solution for protecting sensitive distribution systems for electricity, water and telecommunications from unauthorised access, vandalism, and flooding.

Our solution can be used to implement infrastructure projects in harmony with the cityscape, regardless of adjacent buildings, safety concerns, and space restrictions.

The advantages of underground distribution systems at a glance:

Protection against vandalism

Vandalism is an ongoing problem for municipalities. Electricity and telecommunication control cabinets alone cost millions every year because of malicious vandalism or spraying with graffiti. Langmatz underground distribution systems that are securely installed underground offer optimum protection against vandalism. Various locking options protect them from unauthorised opening. In contrast, authorised persons can use gas springs in the cover to obtain quick and easy access in all weather conditions.



Heritage conservation

Langmatz underground distribution systems are the perfect alternative if heritage conservation regulations prevent the installation of overground distribution cabinets. In terms of contemporary urban planning and heritage conservation, they are designed to fit seamlessly into the existing cityscape, be inconspicuous, and reflect the specific character of the town. Our customers have a choice of cast iron, concrete, or paveable covers for the manhole.



Use of the surface area

There is generally heavier pedestrian traffic on market squares, in pedestrian zones, and old town areas. These inner-city areas are often used by locals and tourists to take a stroll, shop, and visit cafés and restaurants. Locations of this type naturally thrive on their charm and appearance, and so overground distribution cabinets can have a disruptive effect. Our underground distribution systems installed invisibly underground offer urban planners an elegant solution for preserving an evolved cityscape.



Increased on-site energy demand

Driven by advancing digitalisation, in recent years there has been a steadily increasing demand for electricity, and a growing use of telecommunication services. This increase is necessarily accompanied by a higher number of distribution points.



Safety

Digitalisation not only requires viable networks with high bandwidth. It is increasingly important to ensure the functionality of the internet, fixed and mobile networks, as well as the power supply for the population. Simply by laying sensitive technology underground, Langmatz modern underground distribution system solutions ensure maximum safety for critical infrastructure.



Flood protection

Langmatz underground distribution systems have the advantage of being buried in the ground in a flood-proof manner. The fixtures in the housings are fully protected against flooding and the ingress of water by a flood-proof compartment – up to a water column of one metre. To ensure this, Langmatz has integrated two-stage protection into the housings, based on the submersion hood principle.



Safe access for authorised persons

Installed invisibly and safely underground, access at any time solely for authorised persons is another advantage of Langmatz's underground distribution system solutions. Gas springs guarantee quick access in all weather conditions, even when iced over. Different locking options provide perfect protection against unauthorised opening by third parties, depending on the required safety level.



Safe from environmental influences

Based on decades of experience in the production of manholes, we have developed an optimised polycarbonate (PC) for our underground distribution systems. This guarantees a particularly long service life and load-bearing capacity. These plastic housings are characterised by their high chemical resistance as well as very good resistance to extreme temperatures, UV radiation, and weathering. Additional steel (hot-dip galvanised) or stainless steel covers and frames ensure maximum stability.



Langmatz underground distribution systems – Applications and key features

Areas of application:



- ▲ **Energy distribution**
Safe distribution of electrical energy



- ▲ **Data connection/telecommunication**
Ideal for all information and data exchange



- ▲ **Fresh water and waste water**
Underground distribution systems with connection options for fresh water and waste water

Key product features:



- ▲ **Opening support for cover including submersion hood**
Can be operated by non-professionals by means of two stainless steel gas springs. Cover and submersion hood are connected



- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight



- ▲ **Solid cover**
Cover can be safely removed by mechanical lifting equipment



- ▲ **B 125 load class**
125 kN test force: equates to 12.5 tonne test load as per EN 124



- ▲ **D 400 load class**
400 kN test force: equates to 40 tonne test load as per EN 124



▲ **Arkadenhof Courtyard,
Vienna City Hall**

- 2x EK880 underground distribution systems
- Underground equipment compartment with 19-inch extension frame for audio technology in conjunction with power supply to the courtyard
- 160mm pipe inlets acting as transverse connectors for the two underground distribution systems
- Protection against water, unauthorised access and vandalism



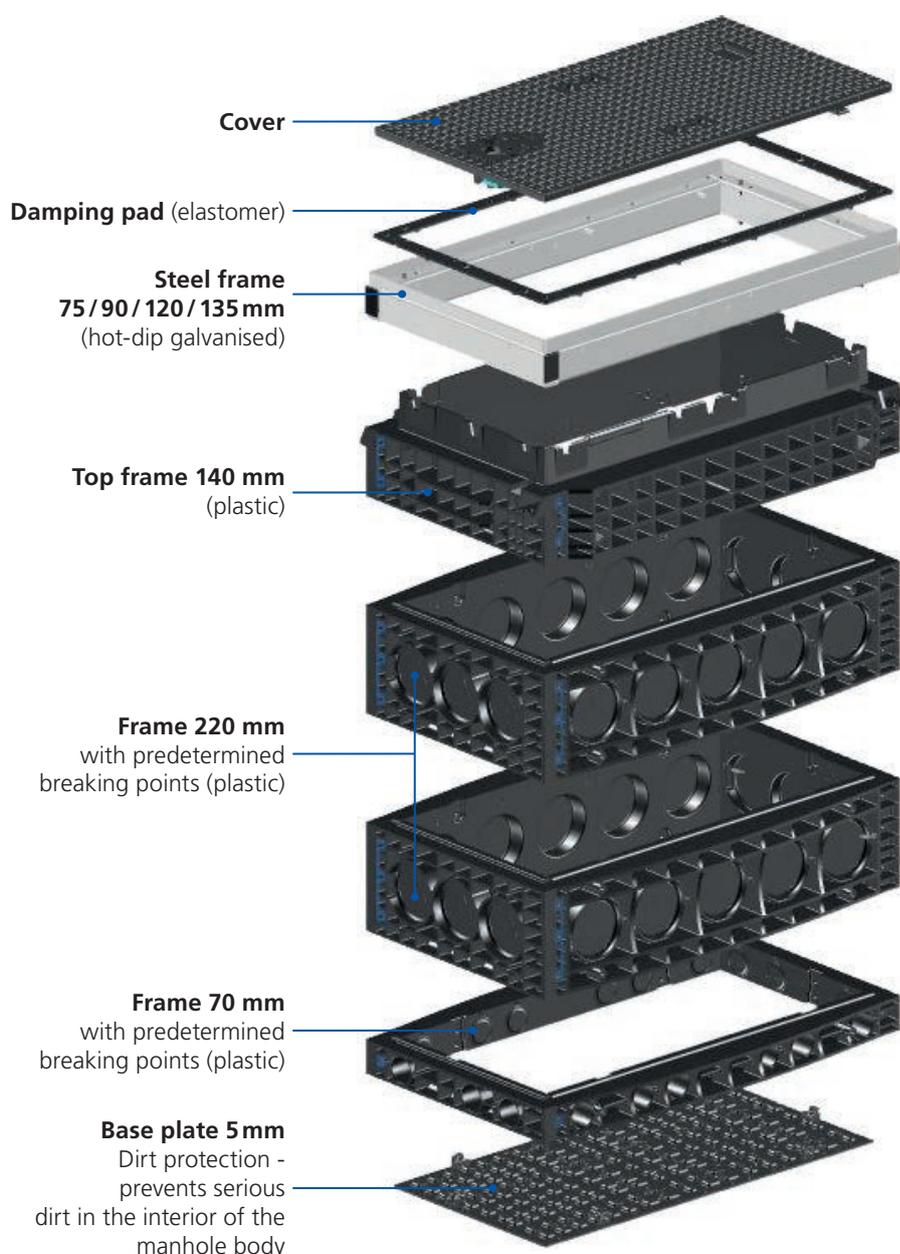
Langmatz polycarbonate manholes –

Unique construction, maximum flexibility & uncompromising quality

The structure of the body of the underground distribution system is based on the structure of the Langmatz small polycarbonate manhole. The QualityBox with its unique 3DribFrame technology ensures that the body can be in-

stalled very flexibly, thanks to its modular structure. The outstanding stability of the product ensures perfect structural integrity combined with very high load-bearing capacity – even beyond D 400.

Structure of the QualityBox



Quality
Box

by Langmatz

The Langmatz QualityBox boasts a host of impressive qualities, including its ease of assembly and individual dimensional adaptability.

3D-ribFrame
designed to resist

The advantages of the QualityBox at a glance:



▲ High-grade load-bearing polycarbonate elements

High-quality plastics and 3D ribFrame technology guarantee durability and load-bearing capacity of the entire construction up to D 400 and above.

- ▲ Modified polycarbonate (PC)
- ▲ Excellent temperature resistance
- ▲ Suitable for hot asphalt
- ▲ Maximum stability
- ▲ High chemical resistance
- ▲ Excellent UV and weather resistance
- ▲ Can be recycled several times



▲ Low inherent weight

The manholes can be quickly and cost-effectively installed, thanks to their low inherent weight.

- ▲ Ease of transport and simple handling
- ▲ Quick and inexpensive installation of the polycarbonate manholes
- ▲ No heavy equipment required for fitting and installation



▲ Modular design

Modular basic kits, supplied ready-to-install, provide for numerous manhole depths and connection positions for cable installations.

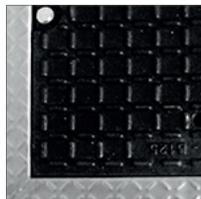
- ▲ One- or multi-section manhole cover
- ▲ Steel frame with elastomer contact surface
- ▲ Top frame with inner insulated shuttering walls
- ▲ Stable base plate



▲ Variable manhole covers

Load classes as per DIN EN 124 and versatile in the choice of manhole cover manufacturer.

- ▲ Class B 125
- ▲ Class D 400



▲ Cast-iron cover



▲ Steel cover, concrete-lined



▲ Steel cover, paveable

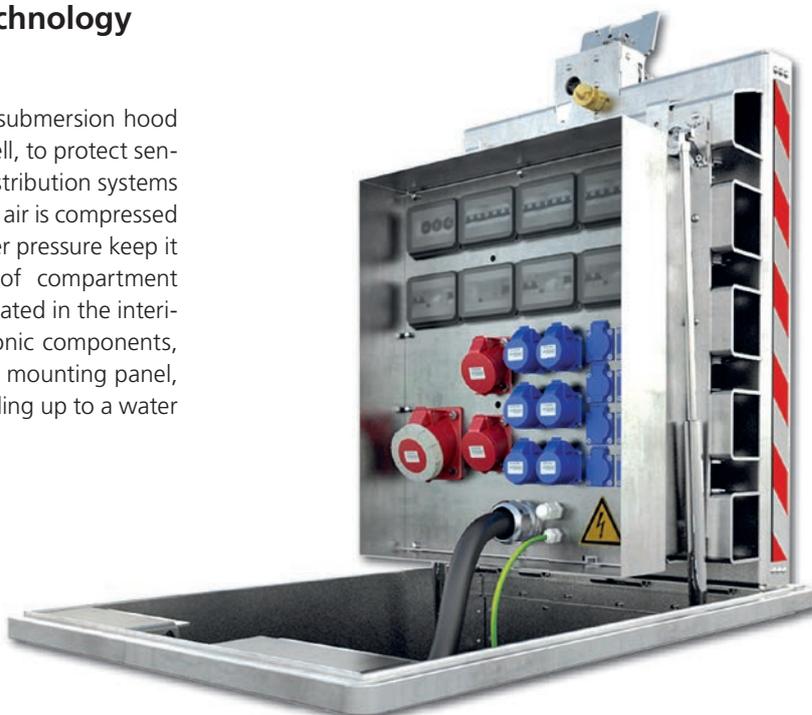


▲ Plastic cover

Innovative submersion hood principle – Effective protection of the equipment compartment

Protection of the integral technology from flooding and moisture

Our engineers developed the innovative submersion hood principle, based on the idea of a diving bell, to protect sensitive components in our underground distribution systems from the ingress of moisture. The trapped air is compressed in the submersion hood. The air and water pressure keep it balanced and create a fully flood-proof compartment when the cover is closed. The air accumulated in the interior of the submersion hood keeps electronic components, like socket and fuse combinations on the mounting panel, ideally protected from moisture and flooding up to a water column of one metre.

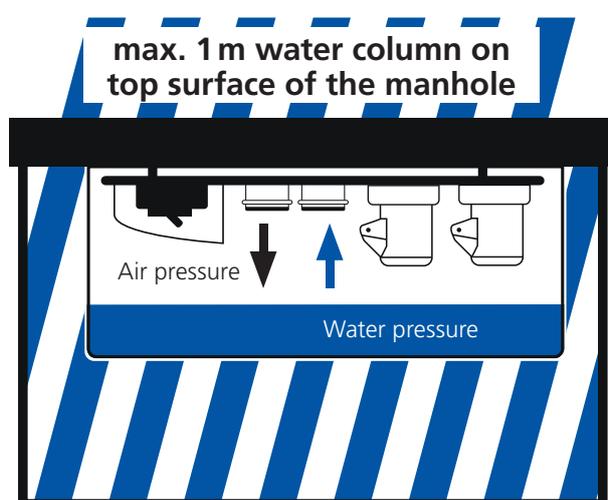


Optional submersion hood materials

Plastic (PP)

Stainless steel (V2A)

Schematic diagram: Protective effect of the submersion hood



Protection rating of the electrical distributor in the submersion hood (DIN EN 60 529)

The protection rating indicates the suitability of electrical operating equipment (e.g. devices, lights, and installation material) for various ambient conditions, and also details how people are protected against potential dangers when using it.

- | | | | |
|---------------------------------------|----------------|----------------|----------------|
| ▲ EK410 flex and EK410 connect | - Closed: IP48 | ▲ EK600 | - Closed: IP58 |
| - open: IP44 | | - open: IP54 | |
| ▲ EK601 | - Closed: IP58 | ▲ EK800 | - Closed: IP58 |
| - open: IP44 | | - open: IP54 | |
| ▲ EK510 flex and EK510 connect | - Closed: IP48 | ▲ EK890 | - Closed: IP48 |
| - open: IP44 | | - open: IP44 | |
| ▲ EK368 | - Closed: IP58 | ▲ EK880 | - Closed: IP48 |
| | | - open: IP44 | |

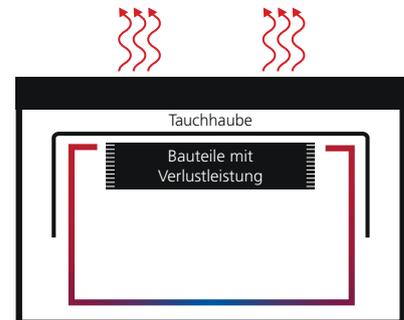
Underground heat dissipation – Systems at a glance

Passive heat management

With purely passive heat dissipation, no additional components/equipment are fitted to regulate the internal temperature.

The heat of components beyond the limit of the system is simply dissipated by the following measures:

- ▲ Thermal conduction
- ▲ Free convection
- ▲ Thermal radiation



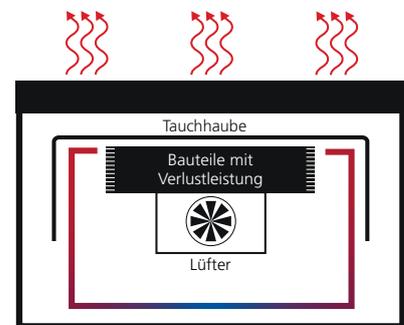
▲ Passive heat management with a sealed manhole system

Air circulation

Fans are fitted for heat dissipation through air circulation, and they keep the internal temperature consistent.

Heat is dissipated from the components by:

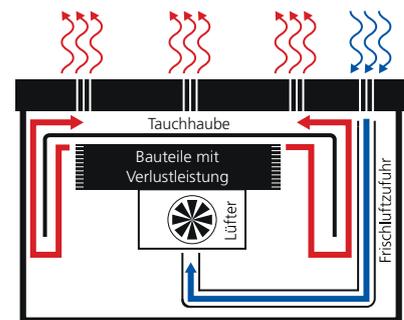
- ▲ Thermal conduction
- ▲ Forced convection
- ▲ Thermal radiation



▲ Air circulation with a sealed manhole system

Active heat management/StreamTec

With active heat dissipation, high power losses can be dissipated by means of fans. The system is open to the outside. The heat above the limit of the system is dissipated from the components mainly by the transfer of air masses. Fresh air is also drawn in from outside through the pipework system and also circulates around the active modules.



▲ Active heat management with an open manhole system

Examples of infrastructure components with underground heat dissipation

- ▲ Energy distribution and energy control
- ▲ Charging infrastructure
- ▲ Mobile communications technology (LTE, 5G)
- ▲ Optical fibre distribution
- ▲ Audio and lighting control

Langmatz underground distribution systems – Clear dimensions at a glance

Designation	EK410 flex/EK410 connect
Clear dimensions	250 x 400 mm (WxL)
External dimensions	360 x 545 x 435 mm (WxLxH)
Load class	flex: 125 kN or 12.5 t/connect: B 125
Cover material	flex: Plastic connect: chequered stud plate
Submersion hood material	Plastic, stainless steel (V2A)



Designation	EK601
Clear dimensions	400 x 400 mm (WxL)
External dimensions	537 x 537 x 610/654 mm (WxLxH) (depending on equipment)
Load class	Up to D 400 (40 t, 400 kN) as per DIN EN 124
Cover material	cast iron, concrete
Submersion hood material	Stainless steel (V2A)



Designation	EK510 flex/EK510 connect
Clear dimensions	400 x 650 mm (WxL)
External dimensions	618 x 790 x 510 mm (WxLxH)
Load class	flex: 125 kN or 12.5 t/connect: B 125
Cover material	flex: Plastic connect: chequered stud plate
Submersion hood material	Plastic



Designation	EK368
Clear dimensions	400 x 650 mm (WxL)
External dimensions	550 x 790 x 600/650/700/805 mm (WxLxH) (depending on equipment)
Load class	Up to D 400 (40 t, 400 kN) as per DIN EN 124
Cover material	Paveable, concrete, cast iron, plastic
Submersion hood material	Stainless steel (V2A)



Designation	EK600
Clear dimensions	400 x 650 mm (WxL)
External dimensions	683 x 887 x 640/860/1080 mm (WxLxH) (depending on equipment)
Load class	Up to D 400 (40 t, 400 kN) as per DIN EN 124
Cover material	Paveable, concrete-lined Tray depth 65 mm
Submersion hood material	Stainless steel (V2A)



Designation	EK800
Clear dimensions	550 x 800 mm (WxL)
External dimensions	825 x 1050 x 625/845/1065 mm (WxLxH) (depending on equipment)
Load class	Up to D 400 (40 t, 400 kN) as per DIN EN 124
Cover material	Paveable, concrete-lined Tray depth 65 mm
Submersion hood material	Stainless steel (V2A)



Designation	EK890
Clear dimensions	650 x 1165 mm (WxL)
External dimensions	841 x 1326 x 970 mm (WxLxH)
Load class	Up to D 400 (40 t, 400 kN) as per DIN EN 124
Cover material	Paveable, concrete
Submersion hood material	Stainless steel (V2A)

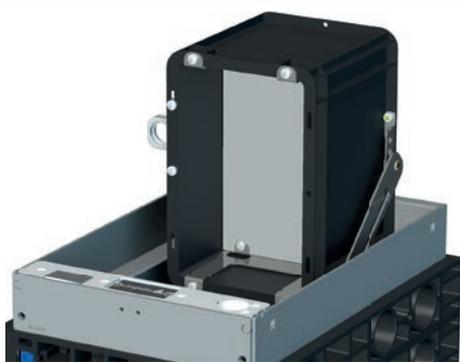


Designation	EK880
Clear dimensions	800 x 1400 mm (WxL)
External dimensions	1100 x 1590 x 1200 mm (WxLxH)
Load class	Up to D 400 (40 t, 400 kN) as per DIN EN 124
Cover material	Paveable, concrete, cast iron
Submersion hood material	Stainless steel (V2A)



Langmatz underground distribution systems –

With heat management for individualised extension

Type of heat management	EK410 flex	EK601
	Maximum installation space for submersion hood* (W x L x D mm)	
	147 x 224 x 105 mm	190 x 190 x 115 mm
Passive heat management No additional components fitted		
	20 watts - Max. power loss (at 38°C)	20 watts - Max. power loss (at 38°C)

*Depending on the water column from the upper edge of the manhole

Overview of heat dissipation systems	EK510 flex	EK368
	Maximum installation space for submersion hood* (W x L x D mm)	
	277 x 479 x 140 mm	320 x 420 x 180 mm
Passive heat management No additional components fitted		
	25 watts - Max. power loss (at 38°C)	40 watts - Max. power loss (at 38°C)

*Depending on the water column from the upper edge of the manhole

Overview of heat dissipation systems

EK890	EK880
Maximum installation space for submersion hood* (W x L x D mm)	
490x723x200 mm	600x983x250 mm

Passive heat management
No additional components fitted

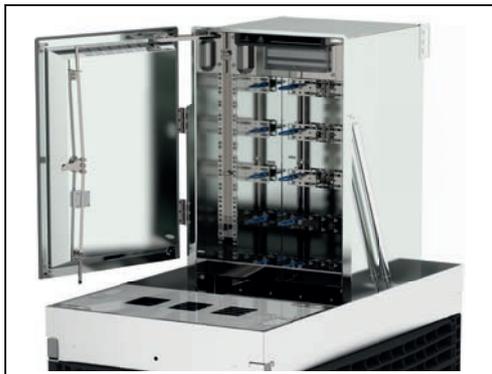


75 watts - Max. power loss (at 38°C)



100 watts - Max. power loss (at 38°C)

Air circulation
Installed fans regulate the internal temperature

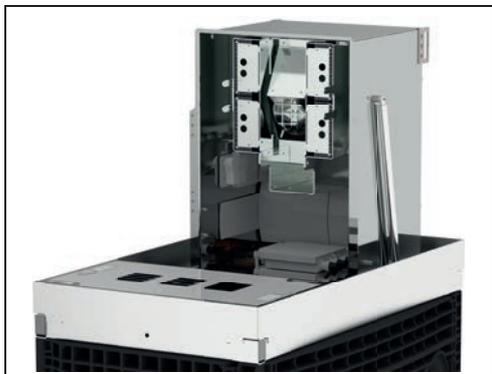


180 watts - Max. power loss (at 38°C)



240 watts - Max. power loss (at 38°C)

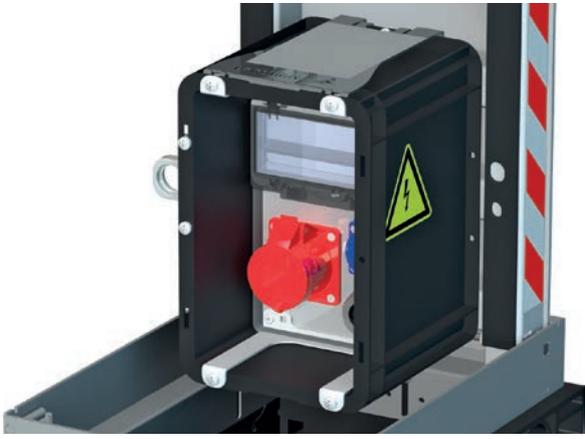
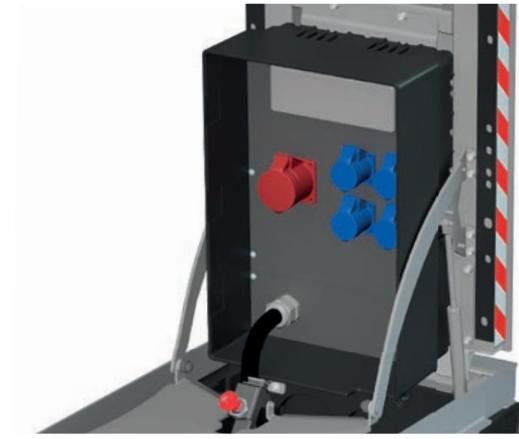
Active heat management
Installed fans and an open cover regulate the internal temperature



500 watts - Max. power loss (at 38°C)

*Depending on the water column from the upper edge of the manhole

Langmatz underground distribution systems – Connection-ready construction

EK410 connect			EK510 connect		
Examples of electrical installation kits/data connection/fresh water and waste water connections					
Schuko	CEE 16 A	CEE 32 A	Schuko	CEE 16 A	CEE 32 A
4	0	0	4	1	0
1	1	0	4	0	1
1	0	1	0	1	1
No fresh water, waste water, or data connection is possible			No fresh water, waste water, or data connection is possible		
					

EK600			EK800		
Examples of electrical installation kits/data connection/fresh water and waste water connections					
Schuko	CEE 16 A/32	CEE 63 A	Schuko	CEE 16 A/32	CEE 63 A
8	1	0	16	6	0
0	3	0	6	6	0
4	1	1	8	2	2
Fresh water, waste water, and data connection			Fresh water, waste water, and data connection		
					



▲ Practical example – EK600

EK410 flex – Underground distribution systems



Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Locking mechanism and cable outlet flush with the ground**
No risk of tripping; secure cable routing with shear protection
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs
- ▲ **Locking mechanism requires a special key**
Protection against unauthorised access – Security
- ▲ **Positive opening function**
Access also when iced over; dirt-resistant
- ▲ **Cover/lid**
Plastic cover and submersion hood permit the transmission of radio waves

Submersion hood extension variants

- ▲ **Mounting panel**
- Customised extension options are possible for the submersion hood



▲ Example: Empty mounting panel



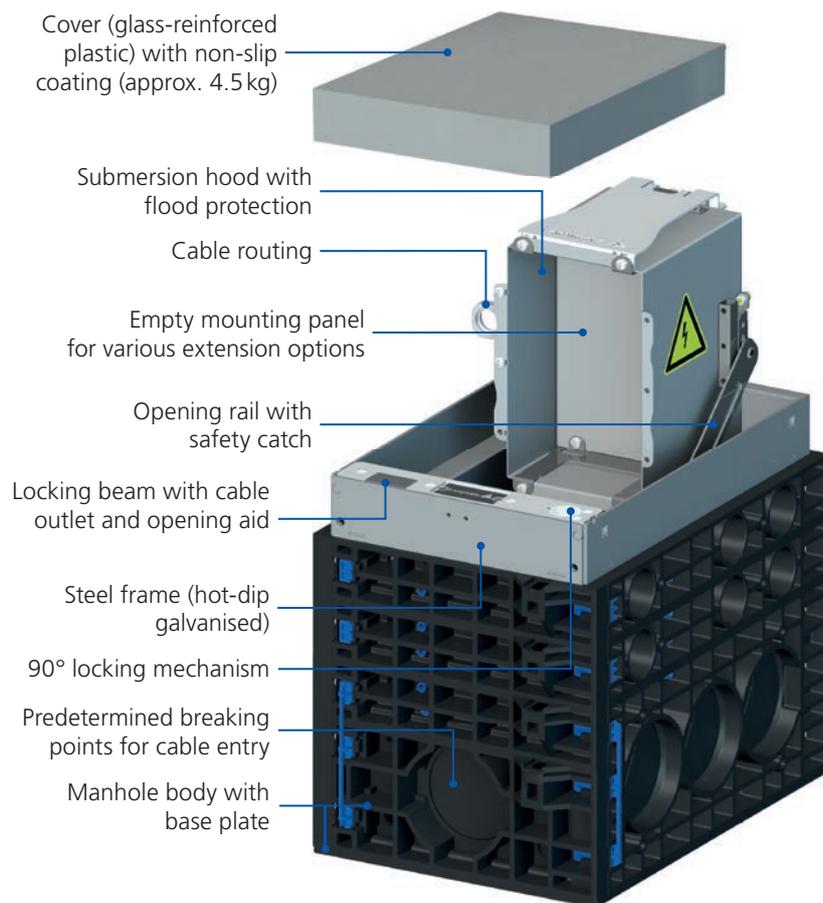
▲ EK410 flex - stainless steel (V2A) submersion hood



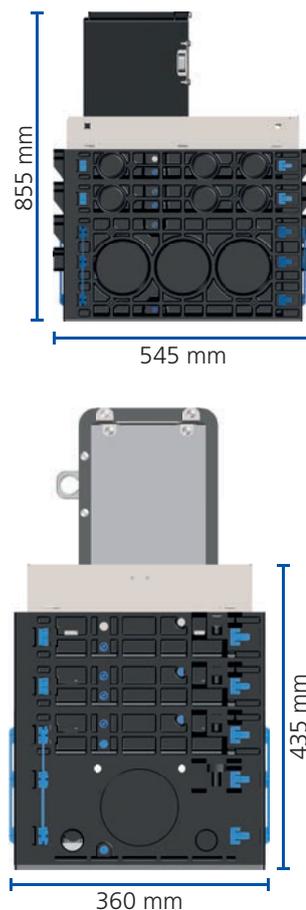
▲ EK410 flex - with plastic cover

▲ EK410 flex - plastic submersion hood

Construction



Dimensions



Technical data

Designation	EK410 flex
Clear dimensions	250 x 400 mm (WxD) - other heights available
External dimensions	360x545x435 mm/opens to 855 mm (WxLxH)
Total weight	Approx. 29 kg
Cover weight	Approx. 4.5 kg
Max. load class	125kN or 12.5 tonnes
Protection rating	Closed: IP48/open: IP 44 (as per DIN EN 60529)
Maximum installation space for submersion hood	147x224x105 mm (WxLxD), max. installation depth of electrical components 45 mm for a 1 m water column
Cover material	Cover: plastic (glass-reinforced plastic) with non-slip coating Steel frame: Steel (hot-dip galvanised)
Submersion hood material	Polypropylene (PP) or stainless steel (V2A)
Mounting panel material	Polycarbonate (PC)
Body material	Polycarbonate (PC)

EK410 connect – Underground distribution systems



Product features – Body

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- ▲ **Modular manhole structure**
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- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs
- ▲ **Locking mechanism requires a special key**
Protection against unauthorised access – Security
- ▲ **Positive opening function**
Access also when iced over; dirt-resistant
- ▲ **Sockets with electrical circuit-breaker and PRCD**
High safety standards and accident prevention in accordance with VDE regulations

Submersion hood extension variants

- ▲ **Socket versions**
 - 16 A/230 V Schuko/16 A/400 V Schuko
 - 16 A/400 V CEE/32 A/400 V CEE
- ▲ **Circuit-breaker/RCD switch**
 - Circuit-breaker B-16 A 1-phase
 - Circuit-breaker C-16 A 3-phase
 - FI/RCD 40 A Type A
- ▲ **Mounting panel**
 - Customised extension options are possible for the submersion hood

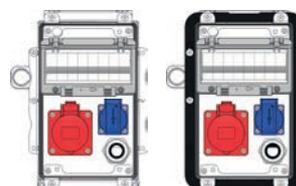


▲ EK410 connect - with plastic submersion hood



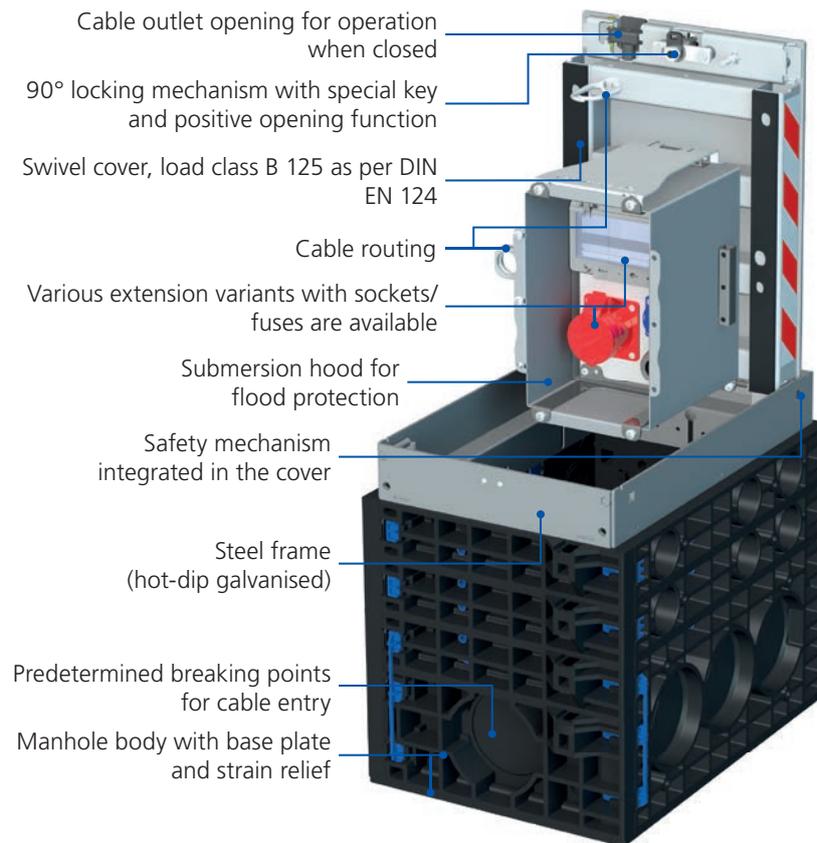
▲ EK410 connect - with steel cover

▲ EK410 connect - stainless steel (V2A) submersion hood



▲ Examples of socket variants

Construction



Dimensions



Technical data

Designation	EK410 connect
Clear dimensions	250 x 400 mm (WxD)
External dimensions	360x545x435 mm/opens to 855 mm (WxLxH)
Total weight	Approx. 35 kg
Cover weight	Approx. 10 kg
Max. load class	B 125 (12.5 tonnes, 125 kN) as per DIN EN 124
Max. protection	40 A
Protection rating	Closed: IP48/open: IP 44 (as per DIN EN 60529)
Maximum installation space for submersion hood	147x224x105 mm (WxLxD), max. installation depth of electrical components 45 mm for a 1 m water column
Cover material	Cover: steel (hot-dip galvanised) in chequered stud plate look Steel frame: Steel (hot-dip galvanised)
Submersion hood material	Polypropylene (PP) or stainless steel (V2A)
Mounting panel material	Polycarbonate (PC)
Body material	Polycarbonate (PC)

EK601 – Underground distribution system



Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and simple to use
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (removable)**
Ideal for areas at risk of flooding
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Locking mechanism requires a special key**
Protection against unauthorised access – Security
- ▲ **Solid cover**
Cover/lid can be safely removed by mechanical lifting equipment
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs

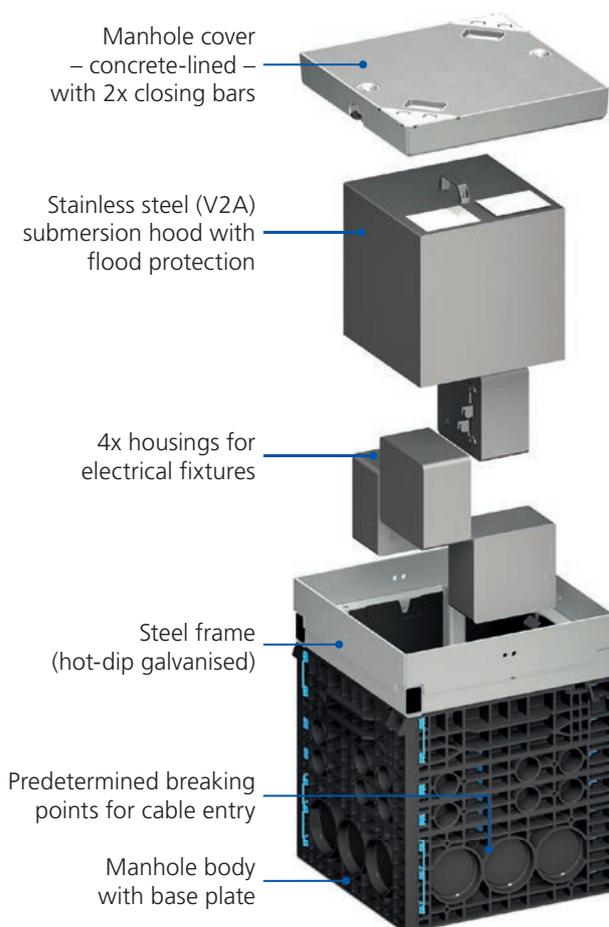
Submersion hood extension variants

- ▲ **Installation housing**
- Individualised extension options are possible in the installation housings (4x)

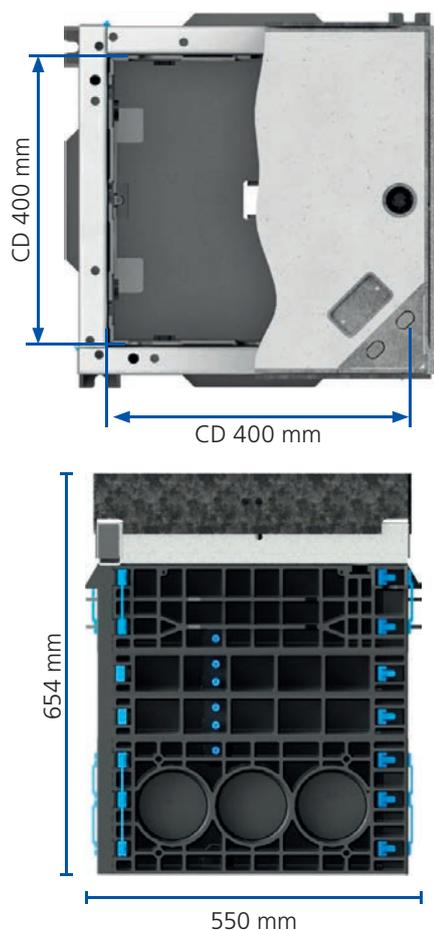


▲ EK601 - Cross-sectional model revealing the fixtures

Construction



Dimensions



Technical data

Designation	EK601
Clear dimensions	400 x 400 mm (WxD)
External dimensions	537x537x654 mm (WxLxH)
Total weight	Approx. 125 kg
Cover weight	Approx. 55 kg
Max. load class	D 400 (40 tonnes, 400 kN) as per DIN EN 124
Passive heat dissipation	4 x 10W
Protection rating	Closed: IP 58 (as per DIN EN 60529)
Maximum installation space for submersion hood	190 x 190 x 115 mm (WxLxD)
Cover material	Cover: cast iron, concrete Steel frame: Steel (hot-dip galvanised)
Submersion hood material	Stainless steel (V2A)
Housing material	Polycarbonate (PC)
Body material	Polycarbonate (PC)

EK510 flex – Underground distribution systems



Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Locking mechanism and cable outlet flush with the ground**
No risk of tripping; secure cable routing with shear protection
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs
- ▲ **Positive opening function**
Access also when iced over; dirt-resistant
- ▲ **Cover/lid**
Plastic cover and submersion hood permit the transmission of radio waves

Submersion hood extension variants

- ▲ **Mounting panel**
- Customised extension options are possible for the submersion hood



▲ Example: Empty mounting panel

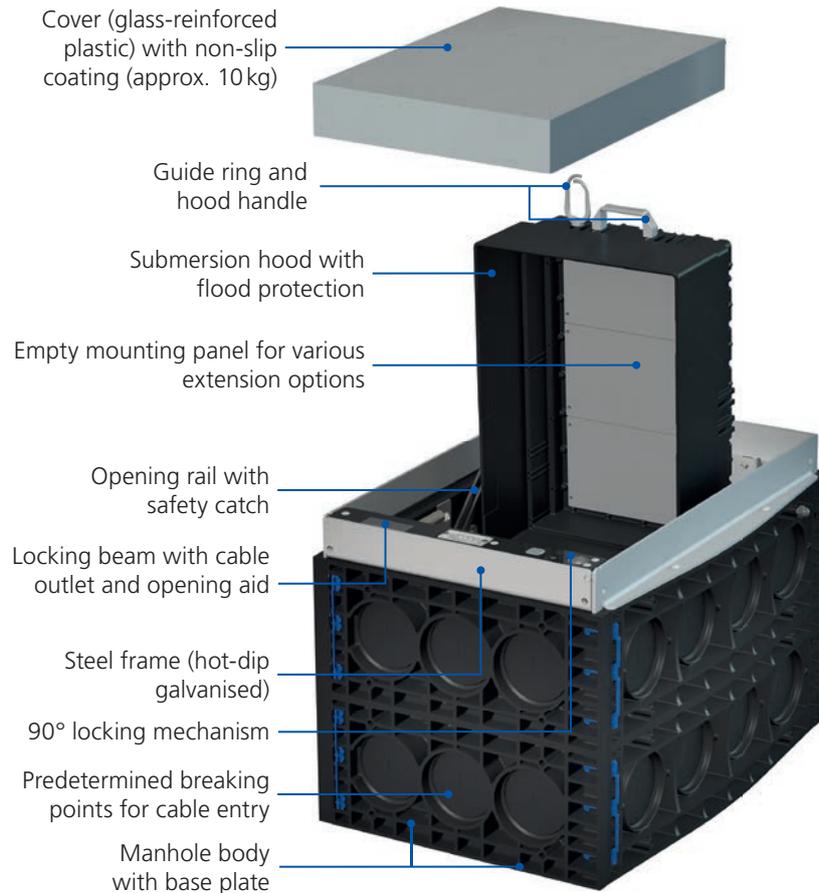


▲ EK510 flex - open

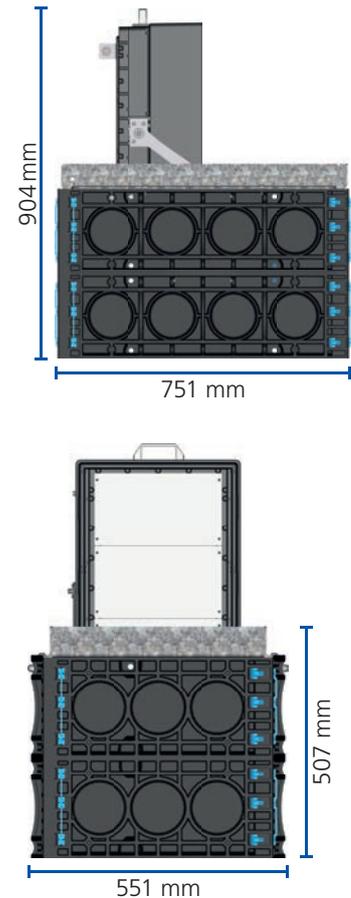


▲ EK510 flex - closed with plastic cover

Construction



Dimensions



Technical data

Designation	EK510 flex
Clear dimensions	400 x 650 mm (WxD)
External dimensions	550 x 765 x 510 mm/opens to 910 mm (WxLxH)
Total weight	Approx. 53 kg
Cover weight	Approx. 10 kg
Max. load class	125 kN or 12.5 tonnes
Protection rating	Closed: IP48/open: IP 44 (as per DIN EN 60529)
Maximum installation space for submersion hood	277 x 479 x 207 mm (WxLxD), max. installation depth of electrical components 136 mm for a 1 m water column
Cover material	Cover: plastic (glass-reinforced plastic) with non-slip coating Steel frame: Steel (hot-dip galvanised)
Submersion hood material	Polycarbonate (PC)
Mounting panel material	Polycarbonate (PC)
Body material	Polycarbonate (PC)

EK510 connect – Underground distribution systems



Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Locking mechanism and cable outlet flush with the ground**
No risk of tripping; secure cable routing with shear protection
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **Lock accessible only with a special construction key**
Protection against unauthorised access – Security
- ▲ **Opening support for cover and submersion hood**
Can be operated by non-professionals by means of two stainless steel gas springs. Cover and submersion hood are connected
- ▲ **Step protection/trip guard**
Prevents people from falling in when the cover is open
- ▲ **Positive opening function**
Access also when iced over; dirt-resistant
- ▲ **Sockets with electrical circuit-breaker and PRCD**
High safety standards and accident prevention in accordance with VDE regulations



▲ EK510 connect - submersion hood without extension

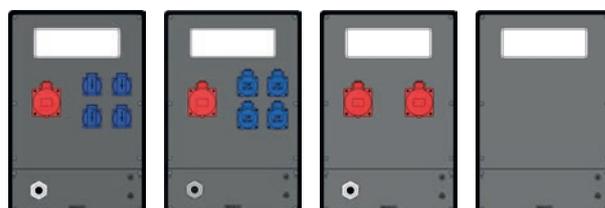


▲ EK510 connect - with chequered stud plate cover

▲ EK510 connect - submersion hood without extension

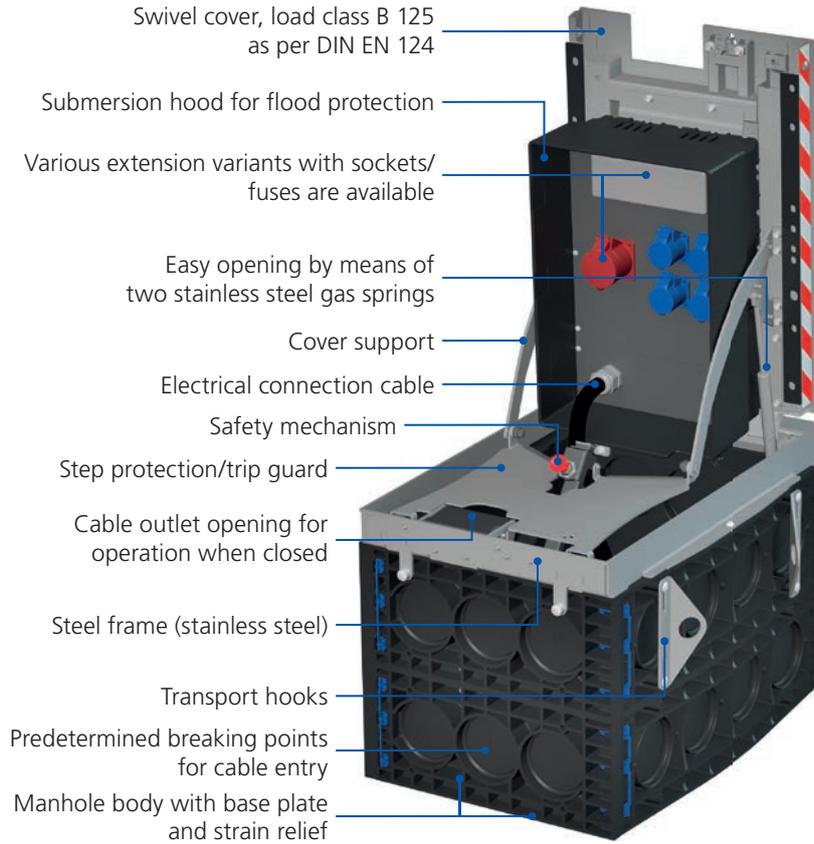
Submersion hood extension variants

- ▲ **Socket versions**
 - 16 A/230 V Schuko/16 A/400 V Schuko
 - 16 A/400 V CEE/32 A/400 V CEE
- ▲ **Circuit-breaker/RCD switch**
 - Circuit-breaker B-16 A 1-phase
 - Circuit-breaker C-16 A/32 A 3-phase
 - FI/RCD 63 A Type A
- ▲ **Mounting panel**
 - Customised extension options are possible for the submersion hood

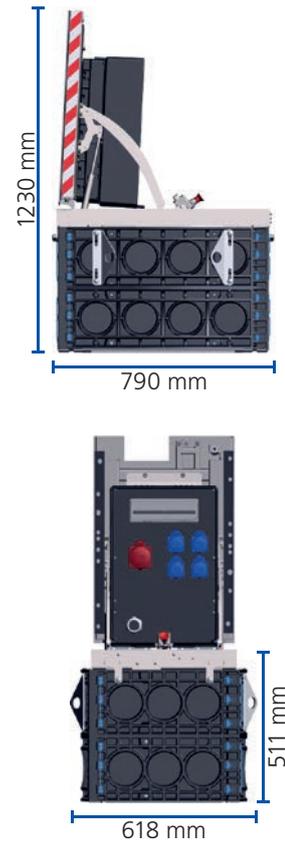


▲ Examples of socket variants

Construction



Dimensions



Technical data

Designation	EK510 connect
Clear dimensions	400 x 650 mm (WxD)
External dimensions	618 x 790 x 511 mm/opens to 1230 mm (WxLxH)
Total weight	Approx. 75 kg
Cover weight	Approx. 25 kg
Max. load class	B 125 (12.5 tonnes, 125 kN) as per DIN EN 124
Max. protection	63 A
Protection rating	Closed: IP48/open: IP 44 (as per DIN EN 60529)
Maximum installation space for submersion hood	339 x 402 x 207 mm (WxLxD), max. installation depth of electrical components 60 mm for a 1 m water column
Cover material	Cover: stainless steel (V2A) chequered stud plate look, Steel frame: Stainless steel (V2A)
Submersion hood material	Polycarbonate (PC)
Mounting panel material	Polycarbonate (PC)
Body material	Polycarbonate (PC)

EK368 –

Underground distribution systems



Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (removable)**
Ideal for areas at risk of flooding
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Locking mechanism requires a special key**
Protection against unauthorised access – Security
- ▲ **Solid cover**
Cover/lid can be safely removed by mechanical lifting equipment
- ▲ **Opening support for submersion hood**
Can be operated by non-professionals, using two stainless steel gas springs

Submersion hood extension variants

- ▲ **Installation housing**
- Individualised extension options are possible in the installation housings

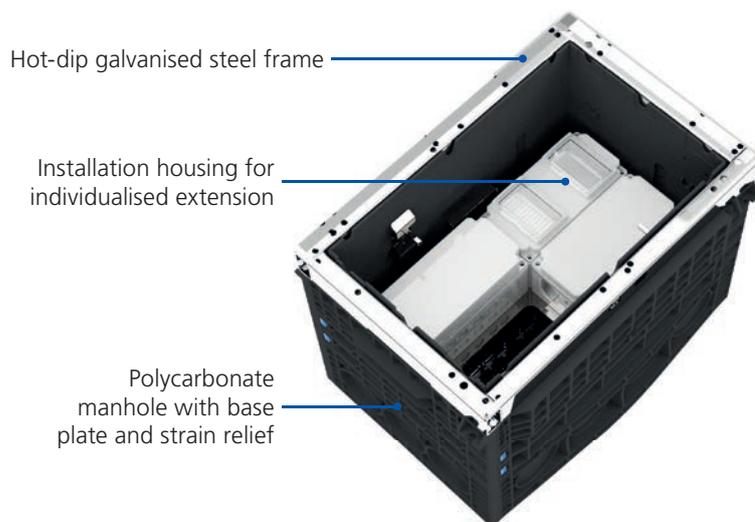


▲ EK601 - With view of the fixtures

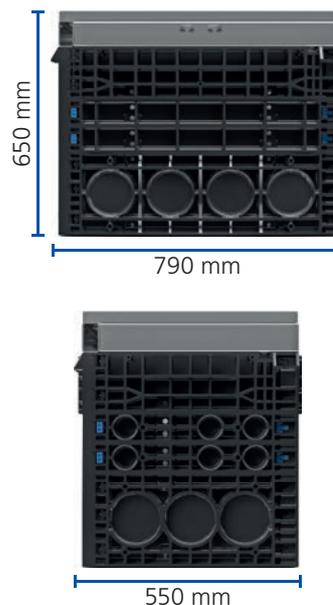


▲ EK601 - With view of the fixtures

Construction



Dimensions



Technical data

Designation	EK368
Clear dimensions	400 x 650 mm (WxD)
External dimensions	550 x 790 x 650 mm (W x L x H)
Total weight	Approx. 145 kg
Cover weight	Approx. 85 kg
Max. load class	D 400 (40 tonnes, 400 kN) as per DIN EN 124
Passive heat dissipation	4 x 10 W
Protection rating	Closed: IP 58 (as per DIN EN 60529)
Maximum installation space for submersion hood	320 x 420 x 180 mm (W x L x D)
Cover material	Cover: concrete-lined Steel frame: Steel (hot-dip galvanised)
Submersion hood material	Stainless steel (V2A)
Body material	Polycarbonate (PC)

EK600 – Underground distribution systems



Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Locking mechanism and cable outlet flush with the ground**
No risk of tripping; secure cable routing with shear protection
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Lock accessible only with a special construction key**
Protection against unauthorised access – Security
- ▲ **Opening support for cover and submersion hood**
Can be operated by non-professionals by means of two stainless steel gas springs. Cover and submersion hood are connected
- ▲ **Step protection/trip guard**
Prevents people from falling in when the cover is open
- ▲ **Positive opening function**
Access also when iced over; dirt-resistant
- ▲ **Sockets with electrical circuit-breaker and PRCD**
High safety standards and accident prevention in accordance with VDE regulations

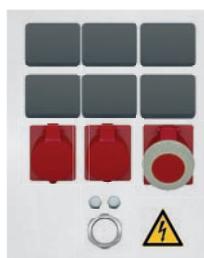


▲ EK600 – Submersion hood without extension

▲ EK600 – Submersion hood with extension

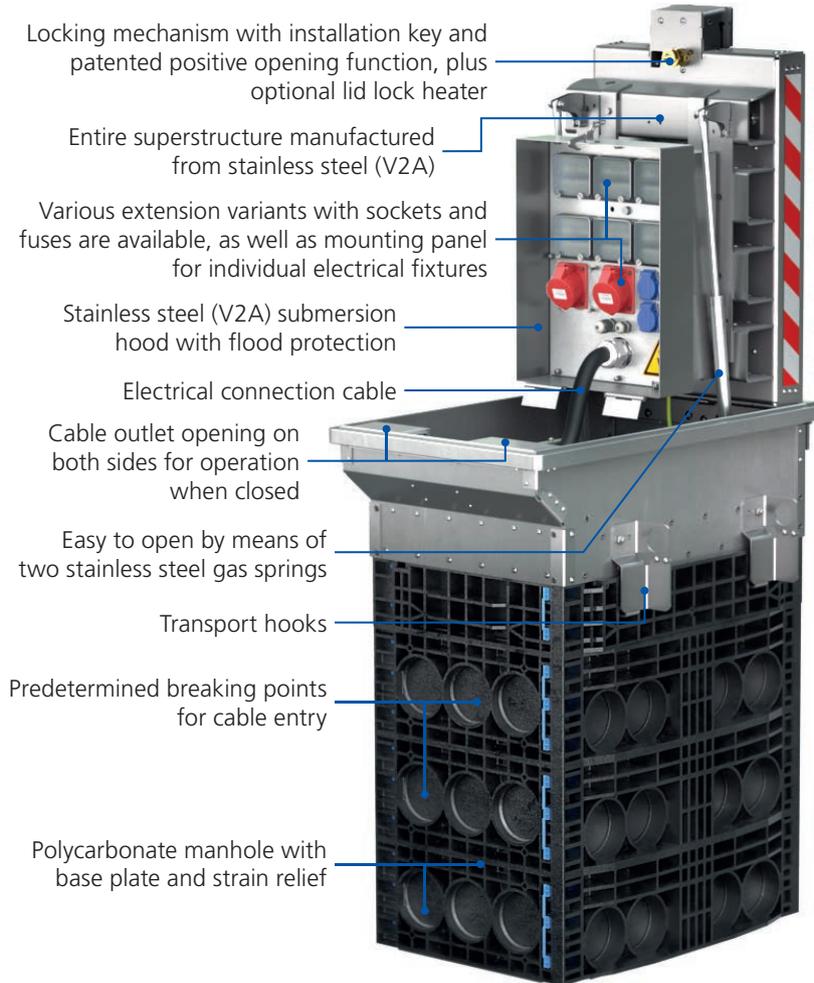
Submersion hood extension variants

- ▲ **Mounting panel**
- Individualised extension options are possible for the submersion hood
- ▲ **Modular socket variants**
- 16 A/230 V Schuko/16 A/400 V Schuko
- 16 A/400 V CEE/32 A/400 V CEE/63 A/400 V CEE
- ▲ **Fresh water connection**
- ▲ **Waste water connection**
- ▲ **Terminal housing for back-up fuse**
- ▲ **Data connection/telecommunication**
- ▲ **Compressed air**

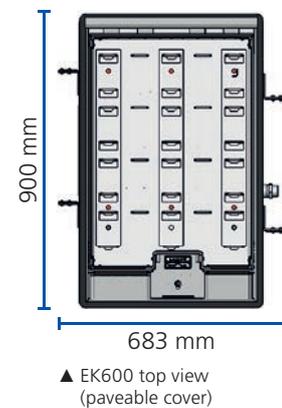
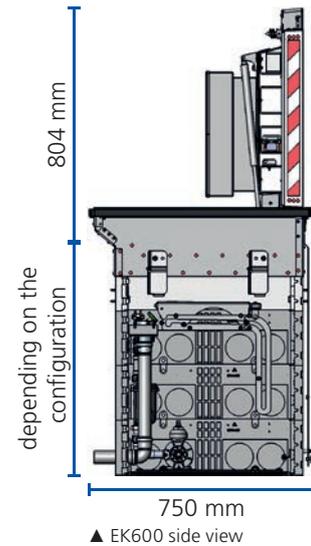


▲ Example of socket variants

Construction



Dimensions



Technical data

Designation	EK600
Clear dimensions	400 x 650 mm (WxD)
External dimensions	683 x 900 x 640/860/1080 mm depending on equipment (W x L x H)
Total weight	Approx. 245 kg (without paving, concrete)
Cover weight	Approx. 75 kg
Max. load class	D 400 (40 tonnes, 400 kN) as per DIN EN 124
Max. protection	100 A
Protection rating	Closed: IP58/open: IP 54 (as per DIN EN 60529)
Maximum installation space for submersion hood	277 x 479 x 64 mm (W x L x D), max. installation depth of electrical components 51 mm for a 1 m water column
Cover material	Cover: paveable, concrete-lined (tray depth 65 mm) Steel frame: Stainless steel (V2A)
Submersion hood material	Stainless steel (V2A)
Mounting panel material	Stainless steel (V2A)/polycarbonate (PC)
Body material	Polycarbonate (PC)

EK800 – Underground distribution systems

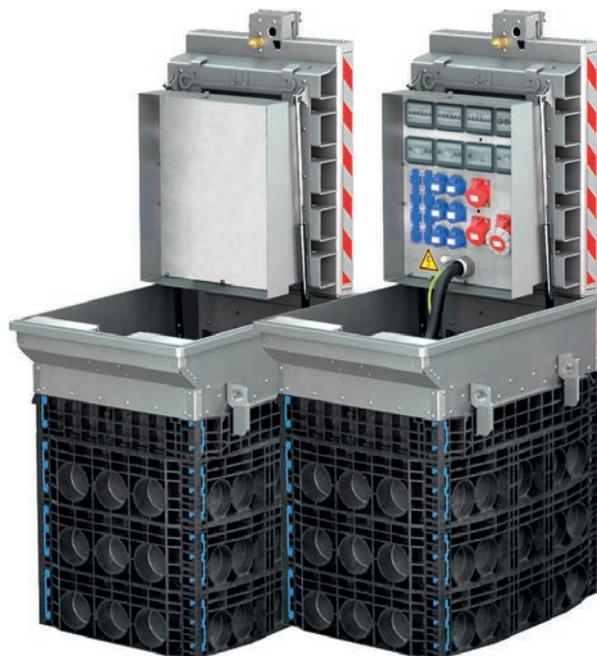


Product features – Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Locking mechanism and cable outlet flush with the ground**
No risk of tripping; secure cable routing with shear protection
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Lock accessible only with a special construction key**
Protection against unauthorised access – Security
- ▲ **Opening support for cover and submersion hood**
Can be operated by non-professionals by means of two stainless steel gas springs. Cover and submersion hood are connected
- ▲ **Step protection/trip guard**
Prevents people from falling in when the cover is open
- ▲ **Positive opening function**
Access also when iced over; dirt-resistant
- ▲ **Sockets with electrical circuit-breaker and PRCD**
High safety standards and accident prevention in accordance with VDE regulations

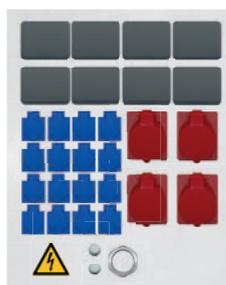


▲ EK800 – Submersion hood without extension

▲ EK800 – Submersion hood with extension

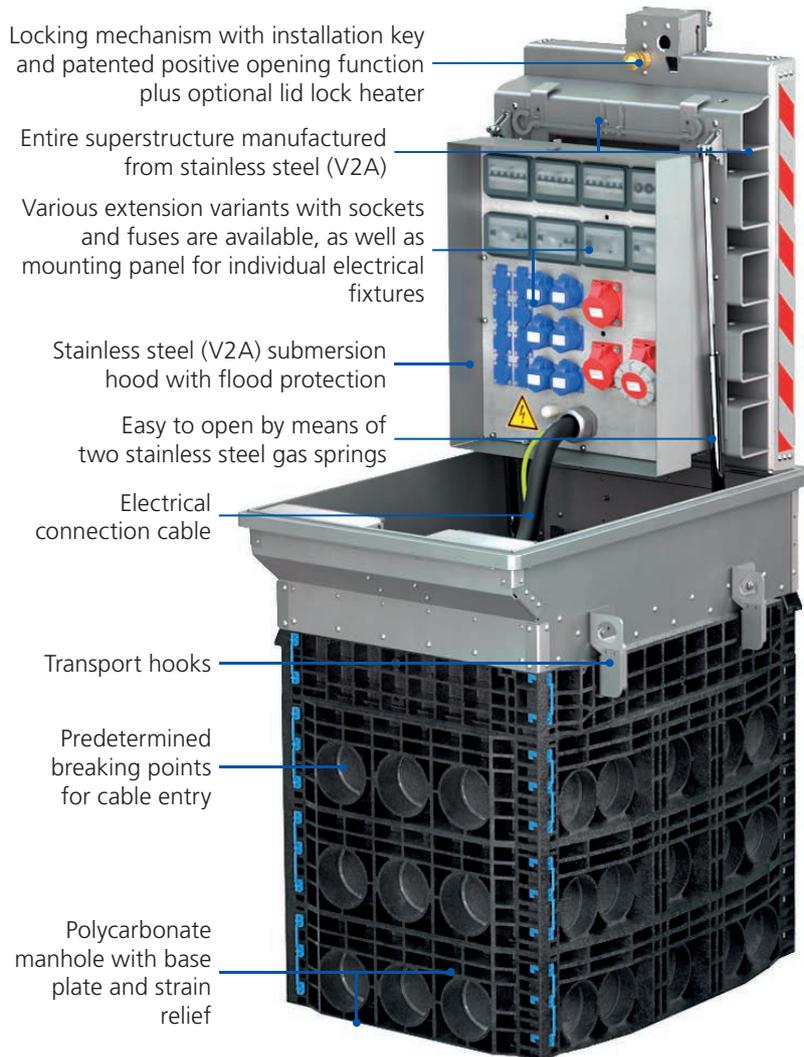
Submersion hood extension variants

- ▲ **Mounting panel**
- Individualised extension options are possible for the submersion hood
- ▲ **Modular socket variants**
- 16 A/230 V Schuko/16 A/400 V Schuko
- 16 A/400 V CEE/32 A/400 V CEE/63 A/400 V CEE
- ▲ **Fresh water connection**
- ▲ **Waste water connection**
- ▲ **Terminal housing for back-up fuse**
- ▲ **Data connection/telecommunication**
- ▲ **Compressed air**

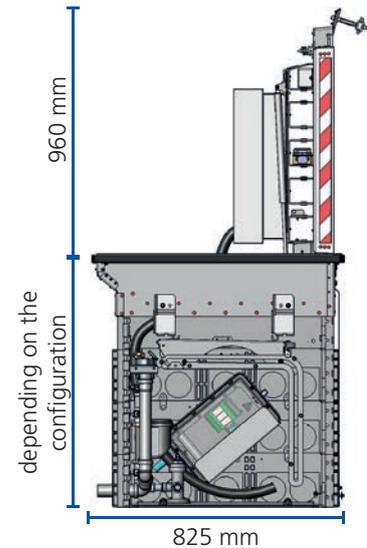


▲ Examples of socket variants

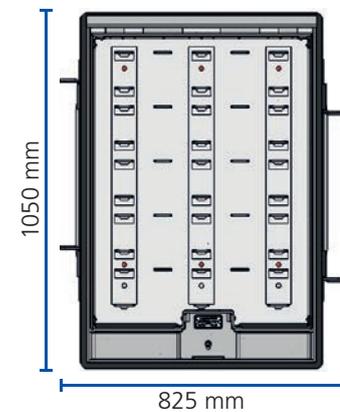
Construction



Dimensions



▲ EK800 side view



▲ EK800 top view (paveable cover)

Technical data

Designation	EK800
Clear dimensions	550 x 800 mm (WxD)
External dimensions	825 x 1050 x 625/845/1065 mm depending on equipment (W x L x H)
Total weight	Approx. 285 kg (without paving, concrete)
Cover weight	Approx. 90 kg
Max. load class	D 400 (40 tonnes, 400 kN) as per DIN EN 124
Max. protection	100 A
Protection rating	Closed: IP58/open: IP 54 (as per DIN EN 60529)
Maximum installation space for submersion hood	486 x 606 x 76 mm (WxLxD), max. installation depth of electrical components 62 mm for a 1 m water column
Cover material	Cover: paveable, concrete-lined (tray depth 65 mm) Steel frame: Stainless steel (V2A)
Submersion hood material	Stainless steel (V2A)
Mounting panel material	Stainless steel (V2A)/plastic (polycarbonate)
Body material	Polycarbonate (PC)

EK890 – With StreamTec heat management



Product features - Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Lock accessible only with a special construction key**
Protection against unauthorised access – Security
- ▲ **Solid cover**
Cover/lid can be safely removed by mechanical lifting equipment
- ▲ **Step protection/trip guard**
Prevents people from falling in when the cover is open
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs

Submersion hood extension variants

- ▲ Telecommunication equipment
- ▲ Prepared for a 19-inch frame
- ▲ Submersion hood including 19-inch frame is possible
- ▲ Mounting panel for individual configuration



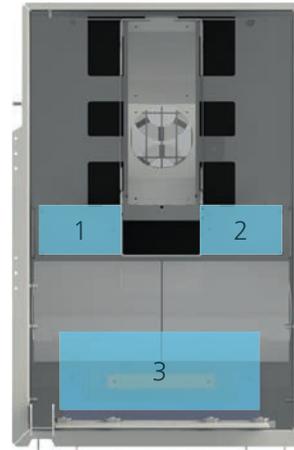
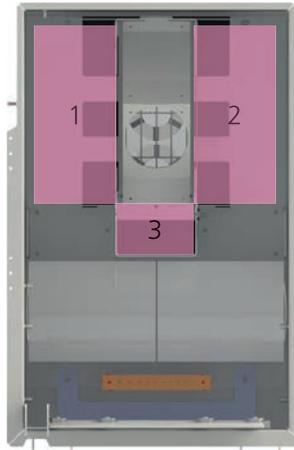
▲ EK890 underground distribution system with open cover and submersion hood

Functioning of StreamTec

When Langmatz polycarbonate manholes are used as underground distribution systems, the fixtures are generally protected against the ingress of water by a submersion hood concept. Under the product designation “EK890-StreamTec”, Langmatz offers a system with active heat management to cool underground systems to prevent active components from overheating.

With the help of pre-installed fans, this system dissipates high power losses and/or heat from the components through the exchange of air masses. The fans induct fresh air from outside through the system of pipes, and circulate it around the installed active modules. The heated air is subsequently discharged from the manhole via openings in the cover. A quick glance at the performance characteristics shows that systems with power losses of up to 500 watts at an ambient temperature of 38° C can be operated safely in the underground distribution system. The system is designed to be fully redundant and it can also emit an alarm signal to a control centre in the event of a fault.

Structure - Active and passive technology



EK890 installation space - active technology

Installation space 1 + 2

Height: 360 mm
Width: 160 mm
Depth: 350 mm

Installation space 3

Height: 70 mm
Width: 150 mm
Depth: 370 mm

EK890 installation space - passive technology

Installation space 1 + 2

Height: 100 mm
Width: 160 mm
Depth: 370 mm

Installation space 3

Height: 160 mm
Width: 400 mm
Depth: 260 mm

Technical data

Designation	EK890
Clear dimensions	650 x 1165 mm (WxD)
Overall external dimensions	841 x 1326 x 970 mm (W x L x H)
Total weight	Approx. 300 kg
Cover weight	Approx. 150 kg
Max. load class	D400 (40 tonnes, 400kN) as per DIN EN 124
Passive heat dissipation	75 W
Air circulation	180 W
Active heat dissipation	500 W
Protection rating	Closed: IP48/open: IP 44 (as per DIN EN 60529)
Cover material	Cover: 3-section; paveable, concrete-lined (tray depth 65 mm) Steel frame: Steel (hot-dip galvanised)
Submersion hood material	Stainless steel (V2A)
Body material	Polycarbonate (PC)

EK890 –

Underground distribution system with air circulation



Product features - Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

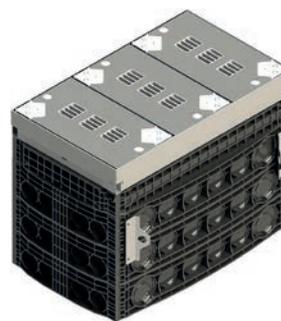
- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Lock accessible only with a special construction key**
Protection against unauthorised access – Security
- ▲ **Solid cover**
Cover/lid can be safely removed by mechanical lifting equipment
- ▲ **Step protection/trip guard**
Prevents people from falling in when the cover is open
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs

Submersion hood extension variants

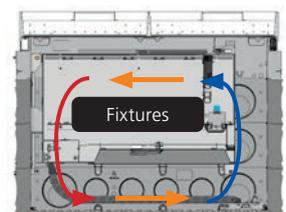
- ▲ Switch disconnecter fuse unit, max. 6 x NH2, 400 A, 3-pole
- ▲ Telecommunication equipment
- ▲ Accommodates 19-inch technology
- ▲ Mounting panel for individual configuration
- ▲ Further equipment on request



▲ Underground distribution system EK 890 open

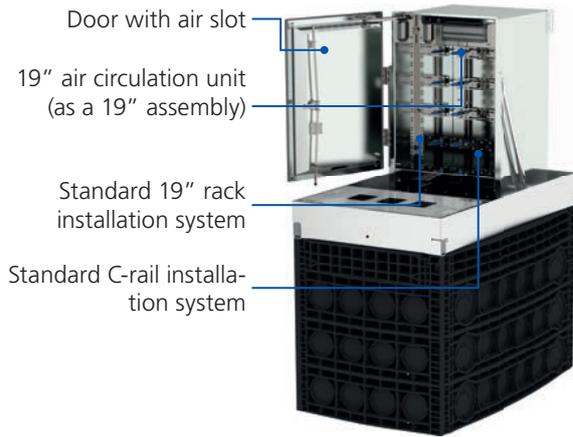


▲ Underground distribution system EK 890 closed

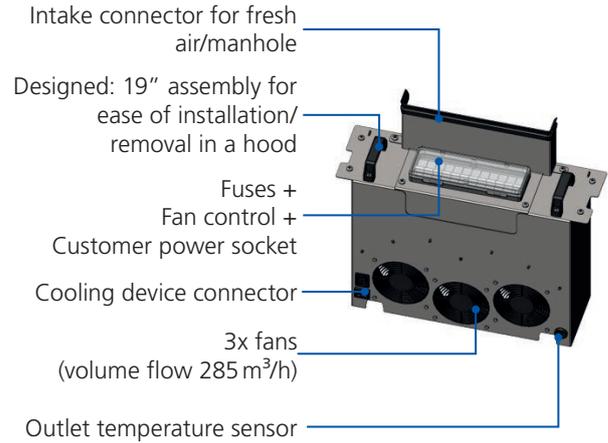


▲ Fixtures with max. power loss of ~ 180 W

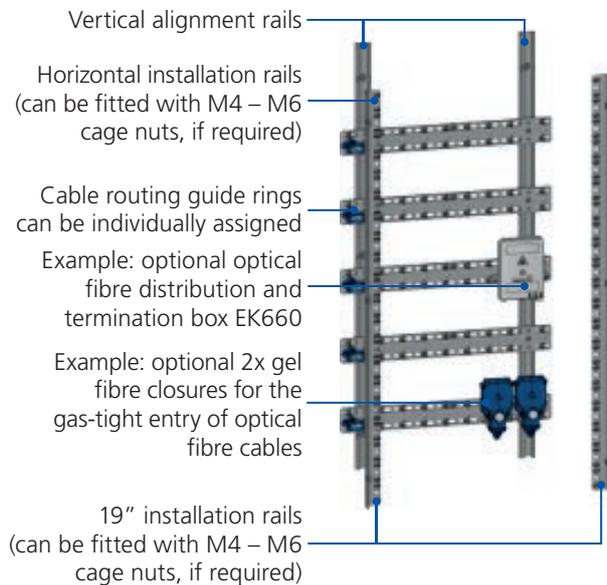
Design/construction



19" air circulation unit

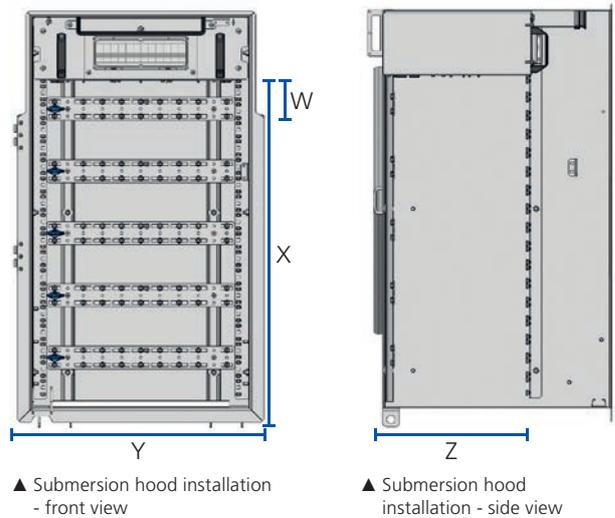


Standard extension



Dimensions/installation dimensions of submersion hood

- ▲ 19" rack
 - 16 rack units (1.75" = 44.45 mm = W)
- ▲ C-rail installation requirement
 - 740 x 500 x 320 mm (X x Y x Z)



Technical data

Designation	EK890		
Clear dimensions	650x1165 mm (LxW)		
Overall external dimensions	841 x 1326 x 970 mm (W x L x H)		
Total weight	Approx. 300 kg	Cover weight	Approx. 150 kg
Max. load class	D400 (40 tonnes, 400 kN) as per DIN EN 124		
Air circulation	180 W		
Protection rating	Closed: IP 48 (as per DIN EN 60529)		
Cover material	3-section; paveable, concrete-lined (tray depth 65 mm)		
Frame material	Steel (hot-dip galvanised)		
Body material	Polycarbonate (PC)		
Submersion hood material	Stainless steel (V2A)		

EK880 –

With swivelling equipment compartment for power and telecommunication



Product features - Body

- ▲ **Innovative manhole structure with 3D ribFrame**
Modular, resistant, and durable system solution that can be adapted to the specific location
- ▲ **Modular manhole structure**
Flexible, adapts to the respective situation, and easy to handle
- ▲ **Modified polycarbonate (PC)**
Hard-wearing, certified groundwater compatibility, UV-resistant

Product features – Cover

- ▲ **Submersion hood (swivelling)**
Ideal for areas at risk of flooding
- ▲ **Cover/submersion hood safety catch**
Enhanced accident prevention and safe operation of the equipment compartment
- ▲ **A range of different manhole covers is available**
Variable surface material, design and structure can be adapted; blends into the cityscape
- ▲ **Locking mechanism requires a special key**
Protection against unauthorised access – Security
- ▲ **Solid cover**
Cover/lid can be safely removed by mechanical lifting equipment
- ▲ **Step protection/trip guard**
Prevents people from falling in when the cover is open
- ▲ **Opening support for submersion hood**
Ease of opening due to low submersion hood weight or by two stainless steel gas springs
- ▲ **4-section triangular or rectangular swivelling cast-iron cover**
 - Can be operated without heavy lifting equipment
 - Self-stopping cover with ~115° opening angle
 - 3-section cover, paveable or concrete-lined with galvanised steel frame
 - Height-adjustable
 - Various locking heads are available
 - Optionally available with step protection
- ▲ **Single-walled stainless steel housing with the following door versions:**
 - Sealed front
 - With ventilation grille

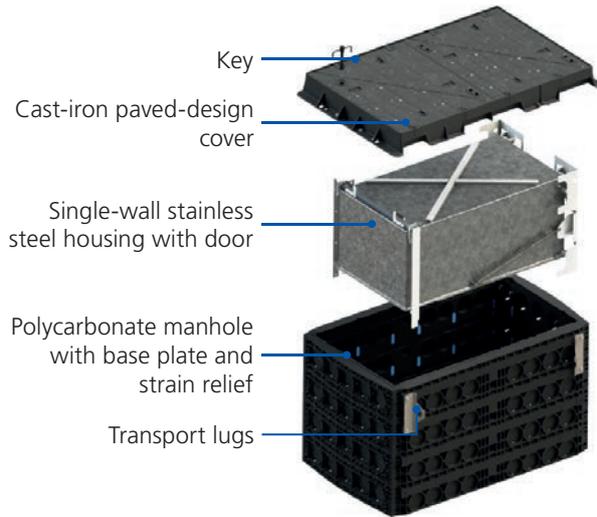


▲ EK880 underground distribution system with open submersion hood

Submersion hood extension variants

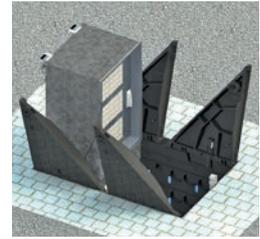
- ▲ Switch disconnecter fuse units, max. 6x NH2, 400 A, three-pole
- ▲ Telecommunication equipment
- ▲ Accommodates 19-inch technology
- ▲ Mounting panel for individual configuration
- ▲ Further equipment on request

Construction



Commissioning the equipment compartment

- ▲ Four-section cast-iron cover, fully opened
- ▲ Submersion hood can be swivelled upwards. Smooth opening by means of gas springs.
- ▲ Access to the equipment compartment/submersion hood. Folded open and locked in place
- ▲ Two sections of the cast-iron cover can be used as a service platform for safe and simple working
- ▲ Unimpeded access to the installed components and cable connections



Extension in form of an underground grid connection for charging infrastructure

- ▲ Space-saving solution for charging columns
- ▲ No annoying connection cabinet in the vicinity of the charging column
- ▲ Standard power utility equipment compartment lock using a half-cylinder profile
- ▲ Main fuse can be implemented as an low-voltage HRC isolator or service connection box
- ▲ Suitable for direct measurement up to 63 A
- ▲ Outlets and fuses for multiple charging columns
- ▲ Other operating equipment, for example for the load management of charging columns, can be built into the equipment compartment



▲ EK880 - Example of a charging infrastructure

Technical data

Designation	EK880		
Clear dimensions	800 x 1400 mm (WxD)		
Overall external dimensions	1240 x 1580 x 715 mm (W x L x H)		
Height above soil with opened hood	Approx. 1200 mm	Cover opening angle	~ 115°
Total weight	Approx. 300 kg	Cover weight	Approx. 150 kg
Max. load class	D400 (40 tonnes, 400 kN) as per DIN EN 124		
Passive heat dissipation	100 W	Air circulation	240 W
Protection rating	Closed: IP48/open: IP 44 (as per DIN EN 60529)		
Maximum installation space for submersion hood	600x983x250 mm (WxLxD), max. installation depth of electrical components 62 mm for a 1 m water column		
Cover material	Cover: concrete cover, paveable, cast-iron paved-design cover		
Submersion hood material	Stainless steel (V2A)		
Body material	Polycarbonate (PC)		

Awards



2009
German Materials Efficiency Prize
"From vehicle roof to manhole"



2010
Environmental Prize
"From vehicle roof to manhole"



2011
Bavarian Founder Award
"Succession" category



2012
Intertraffic Innovation Award
"Charging at the light pole"



2013
WPC Innovation Award
"Product Development & Product Design" category



2015
In the Top 3 - GreenTec Awards,
"Recycling & Resources" category



2019
Inno4wood Innovation Award



2021
Top Employer German SMEs 2021



2022
F.A.Z Institute



**Our expertise for
the networks of today
and tomorrow**

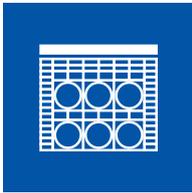
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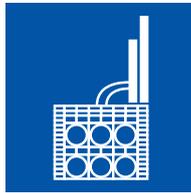
We will gladly send you further detailed product information for your planning.

Please contact your local Langmatz representative or our head office.
Data sheets and other information can be found on our website:

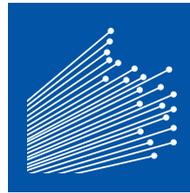
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Polycarbonate manholes



Underground distribution systems



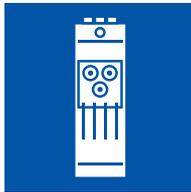
FTTx solutions for optical fibre networks



Outdoor cabinets and outdoor pedestals



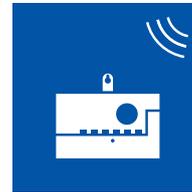
Building cable & pipe entry systems



Fuse boxes



Pedestrian signal requesting devices



Radio ripple control receivers

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