### **Energy efficiency.** Electrical installation for energy-saving buildings.







### For energy-efficient buildings. Intelligent installation systems.

Today's **future-oriented building technology** must also satisfy some very strict building standards, in addition to the user's requirements with regards to the architecture and function. These define the energy standard, among other things. The objective here is to reduce energy consumption through greater efficiency.

Using proactive planning, intelligent technology and suitable materials, we can tap into previously unrealized energy-saving potential – completely in line with the EU directive regarding building efficiency as well as national regulations. The additional benefits of this include increased living comfort and work quality as well as saving potentials.

**Innovative KAISER products** support you with this, so that you can comply with the increased requirements of EU directives as well as national regulations, especially the German Buildings Energy Act (GEG, formerly EnEV). In this way, you can easily and reliably create the required air-tight building shell – for example, with **ECON®** technology, which is used in air-tight cavity wall boxes, flush-mounted installation boxes and installation housings.

We can also provide you with the right products for installation and fixing of **heat bridge-free electrical installations** in or on the facades of buildings. Of course, these products can also be installed at a later date. In addition, we also offer an internal insulation box for retrofitting internal insulation, which ensures air tightness and eliminates heat bridges, as well as preventing moisture damage.







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### Basics. Laws and technology.

Due to rising energy costs, **energy efficiency** is becoming increasingly important when assessing the value of a building. This applies equally to both new building projects and renovation projects (refurbishing). In addition, the requirements regarding overall energy efficiency in residential and non-residential buildings were increased by 25% on 1 January 2016. Consequently, heat insulation must now be improved by approx. 20%. Furthermore, the top floor ceiling in existing buildings must be insulated if the roof above it is not insulated, or if it does not comply with the minimum thermal insulation requirement.

**The Buildings Energy Act (GEG)** came into force on 1 November 2020. It combines the previous regulations (Energy Conservation Act (EnEG), Energy Conservation Ordinance (EnEV) and Renewable Energies Heat Act (EEWärmeG)).

**The air-tightness of buildings** is not only defined in the GEG, but also in DIN 4108-7.

**The "Energy Performance of Buildings Directive"** formulates requirements on a European level that have been included in national law by updating laws and ordinances in Germany. The previous amendments to the EnEV and the introduction of the GEG brought a further increase in the requirements relating to efficiency and sustainability.

In Austria, the EU directive has been national law since August 2007, and the 2007 "Energy Efficiency Action Plan" in Switzerland stipulates appropriate measures based on the EU directive.

**The energy certificate** is a central component of the GEG (formerly EnEV) and is mandatory for all buildings for sale as well as those being rented or leased. It also evaluates the energy losses through the building shell and creates more transparency for both buyers and tenants regarding the energy efficiency of a property.

In Germany, an energy certificate has been compulsory for residential buildings since January 2009, and for non-residential buildings since July 2009. In Austria, this has applied to new buildings since January 2008 and to existing ones since 2009. As Switzerland has based its regulations on EU directives, it introduced the cantonal building energy certificate (GEAK) in October 2009.





An air-tight building shell and heat bridge-free external insulation are important factors for meeting the requirements of the GEG (formerly EnEV) as regards new buildings and renovation work. DIN 18015-5 (airtight and thermal bridge-free electrical installation) defines the planning and implementation principles for air tightness penetration and for connections in this area as well as in and on the windproof layer.

**The energy efficiency of a building** is determined by the optimal usage of available energy sources and minimisation of energy losses. In addition to the heating and ventilation technology already in use, a generally wellinsulated building shell is the most important component for providing protection against heat losses.

The thermal building shell area is primarily formed by the exterior walls where 25% to 50% of the heat transmission losses occur. These are followed by 15% to 35% losses through roof areas and heat bridges, such as contact areas and leaks through the building shell. In order to prevent building damage, it is also necessary to maintain the air-tight building shell and to keep the external insulation free of heat bridges. This is especially true for electrical installations.

The low energy standard can decrease energy consumption to around 40% and even to around 8% in passive houses compared to existing stocks of houses with normal consumption. In order to achieve substantial savings by refurbishing/renovating buildings, the most important thing is to optimise heat insulation.



Average heating energy consumption shown for houses with a living space of 100 m <sup>2</sup>					
House type	"Normal house" (housing stock)	Low-energy house	Passive house	Zero heating energy house	Energy self- sufficient house (special case)
Energy use	187 kw h / m² a	73 kw h / m² a	15 kw h / m² a	8,3 kw h / m²a	0 kw h / m²a

More information on "electrical installation for energy-saving buildings" is available on the Internet or directly from KAISER (also see the last page of this catalogue) Technical assistance | Telephone: +49 (0)235 580 961





## Air-tight and heat bridge-free electrical installation.

A **heat-insulating**, **air-tight building shell** as specified by DIN 4108 is required in order to comply with the requirements of current regulations. In addition to the energy-related aspects, the air-tight building shell also provides an important protective function for the basic structure of a building. This is because if the warm air inside the construction comes into contact with colder surfaces, then condensation will form. This can result in moisture damage and even mould.

In lightweight or cavity wall constructions, moisture retardant foils or OSB panels often form the air-tight layer to walls or ceilings. This layer must not be damaged by any aspect of the electrical installation, such as installation boxes, cable penetrations or excessively hot equipment in close proximity. In particular, you must also ensure that only cable or conduit entries with appropriate retention as specified by DIN 60670-1 are used, because if not, strain on the cable during the installation of switches or sockets, for example, could cause leaks. In solid constructions, the plaster on the inside wall forms the air-tight barrier. Cavities and butt joints, which are cut for the electrical installation, as well as improperly performed penetrations are weak spots that can create a leak to the heated interior. For subsequent interior insulation work, the space required for switches and sockets may make it necessary to perform the installation up to the existing masonry. In such cases, moisture control must be taken into consideration along with air tightness and elimination of heat bridges.

**Air-tight electrical installation products for cavity wall or flushmounting installations** are the only correct way of maintaining air tightness in this case. The planning and implementation rules for an airtight and heat bridge-free electrical installation are specified in DIN 18015-5.

**For installation through, in or on the air tightness layer**, KAISER provides suitable solutions for cavity wall and flush-mounting installations as well as for retrofitting the internal insulation.



### **ECON® technology.** Air-tight installation in cavity walls and masonry.

**Guaranteed air-tight installation** as per DIN 18015-5 in lightweight or solid construction is made possible thanks to KAISER products with **ECON®** technology.

**The elasticity of the sealing membrane** ensures that it wraps itself tightly around the cable or conduit during penetration. This safely prevents uncontrolled air flows and heat losses as well as building damage due to formation of condensation.

The toolless cable and conduit entry makes installation much easier and reduces the amount of work required - an economic advantage of **ECON®** technology.

**The integrated cable retention** of the new clamp technology meets all the requirements for cavity wall boxes specified by DIN VDE 0100-520 and DIN EN 60670-1 and guarantees certified safety.

**Products with ECON®** technology are air-tight and ensure that unwanted ventilation heat losses are avoided. This is why **ECON®** plays such an important role in meeting the requirements of the EU directive regarding energy efficiency as well as its implementation in national law, such as for the German Energy Act for Buildings (GEG, formerly EnEV). **Guaranteed air-tight and easy-to-install ECON®** technology is KAISER's standard for intelligent building installation work. You will find this technology in various KAISER cavity wall and flush-mounting boxes, installation boxes for composite thermal insulation systems as well as in installation housings for air-tight electrical installation in the insulation level.

KAISER TECHNOLOGY. For your future.









### Installation without heat bridges. Secure accessory fixing in or on the exterior wall insulation.

The quality of the exterior wall insulation primarily depends on the uniformity of the insulation and the prevention of heat bridges. Building extensions, such as balconies, or external installations, such as sockets, outdoor switches and luminaires, motion detectors, intercoms or letter boxes, are a particular risk.



In addition to **considerable heat losses**, heat bridges can also cause **building damage as a result of condensation** or even mould, which is harmful to health.

The purpose of mechanically secure and heat bridge-free fixing to the insulated facade is to create a stable fit, while at the same time avoiding any damage to the insulation layer. This is why KAISER offers a comprehensive programme for secure and optimal energy-saving fitting of electrical devices and components, as well as for retrofitting in or on the insulated facade.



KAISER solutions for insulated exterior walls ensure **heat bridge-free** installation.



1 Wood fibre insulation | 2 Foam glass | 3 Mineral foam | 4 EPS



**Composite thermal insulation systems (WDVS)** are multi-layer facade constructions that are mostly used for building insulation nowadays. KAISER products have been specially developed for composite thermal insulation systems as well as other standard commercial systems. They create an optimal, permanent fit in these facades, without having any effect on the insulation.

**Thermographic images** can very quickly make heat bridges visible on existing facades. A colour chart shows the surface temperature. The yellow and red areas show where a lot of heat is being lost. The external thermographic image above shows good insulation with heat bridge-free external installation. In the interior images, the cold spots – the blue and dark colours - show the weak spots in the building's insulation.



#### Construction of an organic composite thermal insulation system



1 Masonry | 2 Bonding | 3 Insulating board | 4 Reinforcement plaster 5 Reinforcement fabric | 6 Reinforcement plaster | 7 Exterior plaster

**Heat bridges** are the weak spots in the building shell. The heat loss here is much greater than in the surrounding component. The thicker the heat insulation of the component, the more significant the heat bridges.

KAISER is an active member of the Export Initiative for Energy Efficiency under the German Federal Ministry for Economics and Technology, thus demonstrating that the company is a manufacturer of energy-efficient products within the sector for increasing energy efficiency across international markets.







## Verification. Air tightness and lack of heat bridges.

**The Building Energy Act (GEG, formerly EnEV)** came into force in Germany in 2020 and replaced the previously applicable laws/ordinances, the EnEV, EnEG and EEWärmeG. The GEG defines minimum standards for new and existing buildings in terms of insulation and quality of systems technology.

Both the German Energy Act for Buildings and the DIN 4108 series of standards require a permanently air-tight building shell in order to prevent energy losses as well as the flow-through and transfer of room air moisture. Leaks due to the through-flow can result in condensation, formation of mould, and even building damage. The planning and implementation rules for air tightness and heat bridge-free electrical installation are defined in DIN 18015-5.







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When assessing the air tightness of a building, a differential pressure process is often used (e.g. the blower door method). When it is necessary to localise any leaks, thermographic images help as well as the use of anemometers. Heat bridges must be avoided when fixing external installations in or to the facade.

To ensure **air tightness**, air-tight electrical installation products are subjected to a differential pressure test in accordance with DIN 4108-2 with the cable or conduit entry used as intended. They must not exceed the permitted air permeability.

When internal insulation is retrofitted, convection is also tested in addition to air tightness.

For electrical installation products that are suitable for fixing in or to a facade, heat bridge calculations are carried out, which verify that there will be no heat bridges.

KAISER'S air-tight and heat bridge-free electrical installation products are comprehensively tested and are verified to comply with the requirements specified by DIN 18015-5 for air-tight and heat bridge-free electrical installations.



### The energy-efficient house.





#### In masonry:

ECON® 10 one-gang box
 ECON® 15 one-gang junction box

#### In lightweight walls:

- **2** O-range ECON<sup>®</sup> 63 one-gang box
- **3** O-range ECON<sup>®</sup> 3 one-gang junction box
- O-range ECON<sup>®</sup> Data
   one-gang connection box
- 5 120-mm O-range ECON® junction box
- 6 ThermoX<sup>®</sup> LED installation housing
- Multi air-tight ECON<sup>®</sup> sleeve

#### Heat bridge-free installation:

- 8 ECON<sup>®</sup> Styro55 one-gang junction box ECON<sup>®</sup> Iso + one-gang junction box
- **9** Mini equipment carrier
- 10 Telescope equipment carrier
- **1** Universal equipment carrier with combination insert
- 12 ThermoX<sup>®</sup> Iso + installation housing





## Air-tight cavity wall installation with **ECON® technology**.



Products with **ECON® technology** are air-tight and ensure that there are no unwanted ventilation heat losses. This is why **ECON®** plays such an important role in meeting the requirements of the EU directive regarding energy efficiency as well as its implementation in national law, such as the German Energy Act for Buildings (GEG, formerly EnEV). In addition, KAISER's range of **ECON®** products can also be used for installation under clean not busines and busines and busines and busines and busines.

room and hygiene conditions in which the uncontrolled exchange of air and bacteria must be prevented. Comprehensive blower door tests, which were carried out by an independent institute, confirmed the air tightness of the cavity wall boxes with **ECON® technology**.

- Elastic sealing membrane for guaranteed air-tightness
- Toolless cable and conduit entry
- Integrated stress relief in accordance with DIN EN 60670
- Air-tight combinations with support connectors
- Device screws with plus-minus drive
- Innovative opening tab

**90° conduit entry:** conduit entry offset by up to 90°; ideal for the installation of opposing boxes!





- 1 The ECON® technology elastic sealing membrane fits itself around the conduit or cable during piercing.
- This prevents uncontrolled air flows.
- **2** Easy opening of the conduit entry using a pre-defined opening tab...
- 3 ... without tearing the membrane.
- 4 Permanently air-tight conduit entry up to conduit size M25.
- 5 Even under tensile load, cable and conduit entries are guaranteed to remain air-tight.
- 6 The marking of the entry openings makes it easier to select the correct opening size.
- 7 The support connector ensures air-tight combination of the cavity wall boxes and is inserted via the removable metal plates without the use of tools.

#### **O**-range ECON®

**New brand name:** the product families of cavity wall boxes for standard electrical installation and air-tight electrical installation have been integrated into the new **O-range**<sup>®</sup> brand name. The circular "O" symbolises the installation opening for the box in the cavity wall, while "range" stands for the range currently consisting of a total of 12 cavity wall boxes. Their striking new colour sets them apart from the competition, indicating at first glance that a brand-name-quality box built in accordance with the latest installation standard is fitted in the wall.

**Innovative technical improvements:** ultimately, the next generation of cavity wall boxes is also a pioneer in technical terms, ensuring that electrical installation work now takes place even more quickly and easily. **O-range ECON®** cavity wall boxes for air-tight electrical installation have innovative opening tabs. They ensure toolless, defined opening of the conduit membrane and guarantee continuous air tightness after conduit entry, which is possible up to 90°. In addition, all **ECON®** boxes are now equipped with conduit entries up to M25, including the one-gang boxes. The one-gang junction box has two additional cable entries, so it is now even more flexible than before.





O-range ECON® 63 halogen-free one-gang box Art. No. 9263-78



O-range ECON<sup>®</sup> 64 one-gang junction box Art. No. 9264-22



O-range ECON® 64 halogen-free one-gang junction box Art. No. 9264-78





aloger free



## Orange ECON<sup>®</sup> multi-boxes.



KAISER's new **O-range ECON® 2 / 3 / 4 one-gang junction boxes** offer the perfect foundation and ease-of-use for the installation of all common installation accessories in multi-box combinations.

They enable the use of pre-wired installation accessories and ensure maximum flexibility when it comes to device fixing.

When using different electrical circuits and/or supply and communication connections within a combination, the individual installation accessory locations can be separated easily and standardised using a bridge.

- Convenient installation of pre-wired accessories without spatial separation
- Maximum flexibility for accessory fixing
- Standardised separation of individual installation openings using a bridge
- Complete assembly and installation with just a screwdriver
- Can be combined with all O-range® programme applications



Knock-out edge on the bridge for front throughwiring when using a bridge





- 1 O-range ECON<sup>®</sup> 2 / 3 / 4 one-gang junction boxes make it easy to use switch/socket combinations without pre-wiring through the support connector due to their large installation opening without a central bridge.
- **2** The individual accessory installation locations can be easily separated in a standardised manner due to the use of a bridge. Two additional screw domes ensure maximum flexibility for accessory fixing.
- **3** Standardised, combined 71 mm dual spacing is possible for all O-range<sup>®</sup> programme applications, also without support connectors.





O-range ECON<sup>®</sup> 2 halogen-free one-gang junction box Art. No. 9252-78



O-range ECON® 3 one-gang junction box Art. No. 9253-22



O-range ECON<sup>®</sup> 3 halogen-free one-gang junction box Art. No. 9253-78











### O range ECON<sup>®</sup> Conduit one-gang junction box, 120-mm diameter junction box.

airtight

## Air-tight **conduit one-gang junction box** with **ECON® technology** especially for installation with electrical installation conduits. The box is VDE-certified and suitable for energy-efficient electrical installation as per the GEG (formerly EnEV). Four entries are optimal for continuous conduit installation, e.g. in prefabricated house construction or with data networks. Extremely easy fitting thanks to toolless conduit entry per opening tab.

- Installation in a 68-mm diameter cut hole
- Elastic sealing membrane for guaranteed air-tightness
- Toolless cable and conduit entry
- Air-tight and fully-insulated, can be combined with support connectors

Air-tight **120-mm junction box** with **ECON® technology** for energyefficient electrical installation as per the GEG (formerly EnEV). Extremely easy fitting thanks to toolless cable and conduit entry. The sealing membranes guarantee permanent air-tightness and at the same time retention of the cable or conduit. The large box volume provides plenty of installation space for various cable connections.

- Installation in a 120-mm diameter cut hole
- Elastic sealing membrane for guaranteed air-tightness
- Toolless cable and conduit entry

O-range ECON<sup>®</sup> conduit one-gang junction box Art. No 9266-22





Art. No. 9266-77



O-range ECON® 120-mm diameter junction box Art. No. 9273-91



O-range ECON® halogen-free 120-mm diameter junction box Art. No. 9273-77





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### Plug - Align - Clamp - Ready! •range ECON<sup>®</sup> Fix.

With the new **O-range ECON® Fix one-gang junction box**, installation is significantly faster and easier thanks to the lug-free clamping ribs for fastening in various wall material combinations, such as OSB panels, board plywood or solid wood, plasterboards or even in facing masonry. Circumferential sealing lamellas on two levels guarantee that the airtight level is maintained. The applied centring bars enable precise, convenient mounting of the one-gang junction box in the installation opening without tilting. PLUG - ALIGN - CLAMP - READY!

- Clamping rib fastening for different wall constructions, e.g. solid wood
- Circumferential sealing lamellas on 2 levels to maintain the airtight level
- 4 screw domes for maximum flexibility when it comes to accessory fitting
- Toolless cable and conduit entry
- Device screws with plus-minus drive

Universally applicable from 10 mm material thickness for:

- **1** Board plywood / solid wood
- 2 Plasterboards\*
- 3 OSB with plasterboard
- **4** Facing masonry

O-range ECON<sup>®</sup> Fix Art. No. 9264-12





O-range ECON<sup>®</sup> Fix, halogen-free Art. No. 9264-72 Setting tool Art. No. 1090-12







\* The O-range® product range with lug fixing is the right solution for installation in wall structures made exclusively of gypsum plasterboard (GKB) according to DIN 18180 or cement-bonded mineral fibreboards according to DIN EN 12467.





### Air-tight installation with additional installation space. • range ECON<sup>®</sup> Flex electronics box.

The air-tight **electronics box** with **ECON**<sup>®</sup> technology is ideal for modernising or extending existing systems due to its rapid assembly. The flexible tunnel makes it easy to install, and creates space for electronic components, cable reserves and terminals.

- Additional sideway terminal compartment for communications and network technology
- Elastic sealing membranes for guaranteed air tightness
- Toolless cable and conduit entry
- Integrated cable retention
- Air-tight, fully-insulated, and can be combined with support connectors

In addition to this system's guaranteed air tightness, toolless cable and conduit entry and the integrated cable retention are just some of the clear advantages that make everyday installation work using **ECON® technology** efficient and safe. And details such as the opening tab for conduits or the support connectors for an insulated, air-tight combination with **ECON®** cavity wall boxes make these user-friendly solutions for the installer.





### Protective and convenient handling of data cables. • range ECON<sup>®</sup> Data.

The **O-range ECON® Data one-gang junction box** offers unprecedented ease of installation for connecting and installing communication and network connection boxes. The innovative cable entries for data and network cables are positioned so that the bend radii specified by the cable manufacturer can be maintained and cable kinks prevented in order to ensure optimal data transmission.

The new O-range ECON® Data always provides optimal cable routing, regardless of whether you are connecting a network connection box or installing a keystone module.

- Innovative cable entries prevent cable kinks
- 4 screw domes for maximum flexibility when it comes to accessory fitting
- Toolless cable and conduit entries
- Can be combined with all
- O-range<sup>®</sup> programme applications

The excess length of cables required for proper connection of the network box can be easily guided back into the cavity in the lightweight wall during accessory installation.

O-range ECON<sup>®</sup> Data

Art No 9280-22



O-range ECON<sup>®</sup> Data, halogen-free Art. No. 9280-78







alogen free



### Air-tight cavity wall installation. The KAISER installation system.

airtight

The **comprehensive KAISER installation system** with accessories and tools enables you to perform professional, air-tight installations in buildings as per the GEG (formerly EnEV), offering the perfect solution for a wide range of tasks. Here you will find many tried-and-tested products, ranging from one-gang boxes to electronics boxes and wall light connection boxes.

In addition to the air-tight products with KAISER **ECON® technology**, which can be opened without the use of tools, we also offer an additional, air-tight installation system.

Using the practical **KAISER universal** opening cutter, you can easily make an opening for conduits or cables for **air-tight installation products** without a sealing membrane. This opening is so exact that air flows are prevented. In addition, the exact fit also ensures professional retention of the cables or conduits.



Energy efficiency | Air-tight cavity wall installation



### Air-tight retrofitting. Sealing insert and sealing foil.

airtight

The sealing insert makes it extremely easy to convert conventional onegang boxes into air-tight boxes. The inserts for flush-mounting or cavity wall boxes can be retrofitted at any time – without the need to remove the existing boxes.

The **sealing insert** is simply inserted into the available one-gang boxes or one-gang junction boxes. The individual leads are fed through the base from the rear and the insert is pushed into the box with the connected installation accessory.

- For all one-gang boxes and one-gang junction boxes
- Easy retrofitting
- No disassembly of the old boxes
- Permanently elastic plastic

**KAISER sealing foil** creates a retrofitted, air-tight closure between the edge of the box and the boarding. Untidy or oversized installation openings and broken edges can quickly be sealed airtight.



Sealing insert

Art. No. 1040-01



Sealing foil

Art. No. 9060-41





## Air-tight installation compartment III IED for built-in LED luminaires. ThermoX<sup>®</sup> LED installation housing.

**ThermoX® LED** installation housing for air-tight installation of rigid and swivelling built-in LED luminaires in different ceiling constructions. The housing protects the surrounding material (vapour barrier foil, insulation, etc.) against high operating temperatures and acts as an air-tight seal. This prevents not only the uncontrolled exchange of air but also any long-term damage that may thus be caused, such as mould growth in the ceiling insulation.

- For air-tight installation in insulated hollow ceilings
- Retrofitting from below
- Toolless installation of the housing
- Guarantees air-tight installation
- Rear surface structure ensures optimal heat management
- Permanent, secure fit of the luminaire in the housing

#### Air-tightness quality certificate

Guaranteed air-tight housing for energy-efficient electrical installation of luminaires. The appropriate certificate can be obtained from us or downloaded from our website.





- 1 Guaranteed air tightness even with expanded fixing springs, thanks to flexible expanding pockets.
- 2 The swivel pocket permits targeted alignment of the built-in downlight.
- 3 Flat housings enable use in low ceiling constructions, e.g. wooden slat sub-constructions.
- 4 Temperature profile for LED installation spotlights: the rear surface structure minimises pressure on the vapour barrier and ensures optimal heat dissipation.

The **ThermoX® LED** installation housing also provides other advantages. Its completely airtight design ensures that neither dust nor dirt from the intermediate ceiling can penetrate and affect the function of the heat sink. Maximum operating life is achieved due to thermal separation between the light and the operating device.







#### Air-tight installation compartment airtight for built-in halogen and LED luminaires. ThermoX<sup>®</sup> installation housing.

The intelligent housing system provides protection against the latent risk of fire caused by the extreme heat from halogen lamps but also from heat sinks from LED lamps in intermediate ceilings and roofs. The housing particularly protects the vapour barrier foil, which is an essential element of the air-tight building shell. In addition, it prevents common dust edges around the built-in luminaires.

The ThermoX® housing is ideal for installing built-in luminaires in wood panel and tiled ceilings and in seamless suspended ceilings made of plasterboard, mineral fibreboard, MDF and chipboard with crossbattening and overlying insulation. Whether for installation in new buildings or for retrofitting in existing ones, the housing can be used with both LV and HV luminaires. Optional decorative coverings conceal the housing in the event of retrofitting, and improve the aesthetic.

- Preservation of the airtight layer and fire prevention
- Ceiling exits (CE) up to 86-mm diameter
- Installation possible either from above or from below
- Retrofitting is also possible

ThermoX<sup>®</sup> housing for LV and HV luminaires Art. No. 9300-01/02/03



ThermoX<sup>®</sup> decorative coverings Art. No. 9301-











ThermoX<sup>®</sup> universal-housing with

mineral fibreboard

Art. No. 9300-22



### Air-tight installation within the insulation level. EnoX<sup>®</sup> installation housing.



The **EnoX®** installation housing is used in lightweight walls and ceilings, which form part of an air-tight building shell as per GEG (formerly EnEV). The housing provides a flexible installation space that is integrated into the insulation level. This prevents uncontrolled air exchange and allows luminaires, loudspeakers, displays or electronic components (e.g. actuators, power packs) to be installed in an air-tight way and protected against dust.

The **ECON® technology's** toolless entry and integrated cable retention guarantee fast, safe and secure installation.

- No additional installation level is necessary
- For ceilings and walls in renovated and new buildings
- Thermally protected 300 x 200 x 55 mm installation space
- ECON<sup>®</sup> technology for air-tight and toolless entry



**Installation** takes place in or on the rafters, directly onto OSB panels in both ceilings and walls. Simply screw the housing in the same way as with cavity wall boxes. The connection to the moisture retardant foil is made air-tight again using the **EnoX® sealing frame**. After fitting the boarding, you have an insulated and thermally protected installation space for luminaires, loudspeakers, displays and much more.









## For air-tight conduit and cable entry.

**KAISER air-tight sleeves** are ageing-resistant and can be used in a wide temperature range. Their extremely powerful adhesion ensures a good fit on many surfaces, and also permanent air tightness. The cable or conduit is fed through the elastic sealing plug, which adapts itself precisely to the relevant diameter.

- Large contact area with cables and conduits
- Sealing even when cables are severely kinked
- Guaranteed air-tight feed-throughs (especially in the attic)
- Extremely powerful adhesion
- 10 variants for different cable and conduit diameters
- Suitable for moisture retardant foils, sarking membranes, OSB panels\*

\*If fibreboard is used, we recommend an initial coat of primer.



Thanks to their anti-kink sleeve, **ECON® multi air-tight sleeves** for cables and conduits ensure reliable sealing for one to six cables up to a diameter of 11 mm or conduits up to a 25-mm diameter. Permanent and reliable sealing is ensured even in the presence of sharp angles in the installation level.

- Flexible sealing for 1 to 6 cables or conduits
- Elastic sealing membrane for guaranteed air tightness
- Anti-kink sleeve also permanently seals heavily kinked cables
- Completely toolless installation
- Unused feed-throughs can be used as reserves for future installations





Conduit sleeves Art. No. 9059-...



ECON<sup>®</sup> multi-cable sleeves Art. No. 9059-61



ECON<sup>®</sup> multi-conduit sleeves Art. No. 9059-62









### Outdoor air-tight feed-throughs. Aluminium / fleece butyl sealing sleeves.



These highly-elastic sleeves with maximum adhesion are optimally suited for permanent, secure sealing of installation penetrations in masonry, concrete or wood materials.

**Sleeves with fleece butyl adhesive collars** can be plastered over, which makes an ideal "join" to the masonry. The tear-resistant **aluminium butyl adhesive collar** provides ageing-, weathering- and UV-resistant sealing with a smooth foil surface.

A pre-coating with **KAISER primer** optimises the adhesion for all sealing sleeves on absorbent surfaces.

- Large contact area with cables and conduits
- Permanently moisture-proof for use indoors and outdoors
- Water-sealing effect with non-pressurised water

Aluminium butyl sealing sleeves for cables Art. No. 9079-...



Aluminium butyl sealing sleeves for conduits Art. No. 9079-...



Fleece butyl sealing sleeves for cables Art. No. 9089-...



Fleece butyl sealing sleeves for conduits Art. No. 9089-...







### Permanent air-tight closing of electrical installation conduits. Sealing plugs.



**KAISER sealing plugs** are ideal for sealing all standard electrical installation conduits in installation boxes or cable exits. The long sealing plug with three sealing lips adapts itself to the installation conduit and guarantees an air-tight closure.

Along with energy efficiency, this sealing plug also offers advantages in other areas. It also prevents the proliferation of smoke (fire protection), noise (noise protection), dust and pathogens (hygiene).

- For empty conduit installations (air-tight version)
- Elastic sealing membrane for guaranteed air-tightness
- Bridges in the membrane prevent gaps between cables
- For all M16 M40 installation conduits, Pg 9 Pg 36, 3/4" and 5/8"

M16 sealing plug Art. No. 1040-16 M20 sealing plug Art. No. 1040-20









M32 sealing plug Art. No. 1040-32



M40 sealing plug Art. No. 1040-40







## Air-tight flush-mounting installation with **ECON® technology**.



Flush-mounting boxes with **ECON® technology** are ideal for use in masonry walls in which the interior plaster forms the air-tight closure on the room side. They ensure that no air flows resulting from sockets and switches take place between the cavities in the masonry and the interior of the residence, which guarantees an air-tight installation. **ECON® flush-mounting boxes** offer a variety of options for air-tight conduit and cable entries and can be either plastered or processed using **KLEMMFIX®**. The elasticity of the sealing membrane guarantees that the membrane wraps itself around the conduit or cable during penetration, so that air flows are eliminated.

**Toolless cable and conduit entries** using **ECON®** technology make installation work much easier and faster. When boxes are already plastered in, retrofitting cables and conduits is very easy.

NEW

- Air-tight design with sealing membranes
- Prevents leaks in external walls made of hollow chamber blocks
- Variable und toolless cable and conduit entries
- Torsion-proof, guaranteed standardised combination distance of 71 mm





The KLEMMFIX® system saves up to 50% installation time compared to the conventional installation of KAISER flush-mounting boxes with plaster. KLEMMFIX® fixes the box securely in the wall before plastering and holds it in position. No plaster, quick cement or similar is required. You no longer need to clean your tools after use. The possible health hazard caused by the use of chemicals is avoided. Storage conditions, such as frost, heat, shelf life, etc., do not have to be taken into account either.

For all common bricks, such as vertically perforated bricks with and without filling, solid bricks, lightweight concrete, cellular concrete and lime sand brick.

The ECON® electronics box provides a generously-sized accessory installation compartment and additional installation space for fitting small switch actuators, for example.

- 1 In the case of network connection boxes, maintaining the cable bending radii permits optimal data transfer. The matching separator wall allows standardised installation of bus and operating voltage in one box.
- 2 Thanks to the large installation opening without a central bridge, the two-gang junction box allows the use of wired devices and pre-wired block inserts, for example.
- 3 The ECON® technology's permanently elastic sealing membrane guarantees air-tight connection of cables. Even duplex cables can be installed securely and in an air-tight way without an installation conduit.
- 4 Installation conduits up to M25 can be inserted without tools and in an air-tight way through the membrane.







ECON<sup>®</sup> 15

**ECON®** one-gang box Art. No. 1555-21/1556-21

electronics box Art. No. 1068-21



ECON<sup>®</sup> two-gang junction box Art. No. 1656-21





**KLEMMFIX®** Art. No. 1159-03





### Installation in internal insulation systems. Internal insulation box.

**One-gang junction box for electrical installations in internal insulation systems.** For permanently secure and heat-bridge-free fixing of switches, sockets and other accessories in internally insulated exterior walls. For an optimal indoor climate with proven protection against moisture damage.

**The internal insulation box** is suitable for use in permeable insulation systems consisting of mineral or organic insulation material with different insulation thicknesses.

- Guaranteed thermal bridge-free installation
- Moisture regulating and insulating
- Prevents moisture-induced building damage
- Can be used in many insulation systems
- For insulation thicknesses from 30 to 100 mm
- Installation on masonry without the use of plaster

The internal insulation box provides the fitter with an easy-to-use solution for professional fitting of electrical installation systems in internal insulation systems. The easy installation and flexible application options are impressive. After installation, they are proven to play their part in the insulation system's function.



1 Fixing lug | 2 Snap-in connection for combinations | 3 Insulation thickness scale |
4 High-performance insulating components | 5 Sealing lips | 6 Moisture-controlling components |
7 Heat-conductive internal components



#### 1 Air tightness

The air-tight level is maintained, preventing any air flow behind the insulation system and convection.

#### 2 Heat insulation

The insulating components maintain the function of the insulation system, and no heat bridges can occur. Although heat enters the box, it does not enter the cold wall.

#### 3 Moisture control

Excess moisture inside the room (poor ventilation, many people in the room) is stored and released in a targeted manner. This function helps to prevent corrosion on device terminals.

#### 4 Heat conductivity

Thanks to the use of highly heat conductive plastic in the internal box, the room heat is conducted into the box. The increased surface temperature prevents condensation from forming.

#### **Proof of functionality**

The TU Dresden Institute of Building Climatology performed extensive component testing to verify the functionality of the **KAISER internal insulation box**.



Interior insulation box Art. No. 1159-90







### Secure fit without a heat bridge. Equipment carrier.

The **telescope equipment carrier** and the **universal equipment carrier** make it possible to install various accessories, such as external luminaires and motion detectors, on the insulated facade. Both equipment carriers are fixed mechanically to the masonry, so that the weight of the accessories can be supported on a permanent basis.

The **universal equipment carrier** adapts easily to insulation thicknesses up to 360 mm with the use of extension elements. The **telescope equipment carrier** is infinitely adjustable to insulation thicknesses of 80-200 mm. The large-area, universal screw-on surfaces can be plastered over and are used for flexible accessory fixing.

- Secure mechanical fixing to the masonry
- Prevention of heat bridges
- Flexible adaptation to the insulation thickness
- Universal screw-on surface for accessory fixing

The telescope equipment carrier

is also suitable for ceiling installation, e.g. for safe, secure fixing of luminaires to the insulated cellar ceiling.





The choice of two front plates and the modular design for insulation thicknesses from 160 to 310 mm make the **system equipment carrier** a very versatile product. Because its individual elements can be combined as needed, it can be adapted to the insulation in increments of 10 mm, eliminating the need for time-consuming cutting to size. Fast, easy fixing using the screw dowels included in the scope of delivery permanently anchors the equipment carrier securely to many surfaces. Accessories can then be fitted as required to the large-area, universal screw-on surface.



1 Base element | 2 Intermediate elements | 3 Housing base | 4 Front plate | 5 Screw dowel





### Secure fit and stable base. One-gang boxes.

The **telescope equipment carrier** and the **universal equipment carrier** with a combination insert enable you to install various installation accessories, such as door communication, switches and sockets, to the insulated facade. Both equipment carriers are securely fixed mechanically to the masonry, so that the weight of the accessories can be supported on a permanent basis along with the pull-out forces.

The **universal equipment carrier with a combination insert** adapts easily to insulation thicknesses up to 360 mm with the use of extension elements. The **telescope switch box** is infinitely adjustable to insulation thicknesses of 80-200 mm. This can be done using the dimensions indicated on the carrier arm.

Both products are suitable for accessory combinations up to 3-way. The **universal equipment carrier with a combination insert** has a front panel with covers that can be removed for the relevant combination and then expanded at a later date. Optional **combination one-gang boxes** are also available for **telescope switch boxes** for expansion purposes.

- Secure mechanical fixing to the masonry
- Prevention of heat bridges
- Flexible adaptation to the insulation thickness
- Combinations up to 3-way are possible

**Telescope switch boxes** enable more installation options and can be easily connected for multiple combinations.







The **system equipment carrier with a multi-accessory insert** is suitable for insulation thicknesses from 160-310 mm. The modular construction and the assembly of the individual elements in 10 mm increments enable flexible adaptation to the insulation system.

Fast, easy fixing using the screw dowels included in the scope of delivery permanently anchors the equipment carrier securely to many surfaces.

The **multi-accessory insert** makes it possible to install individual accessories as well as accessory combinations from 2-way to 3-way inserts.

- Fast, mechanically-secure fixing to the masonry
- Modular adjustment to the insulation thickness
- Combinations up to 3-way are possible
- 2 product versions make many applications possible









**Combination onegang box** Art. No. 1159-62





1 Base element | 2 Intermediate elements | 3 Housing base | 4 Front plate | 5 Screw dowel



4

3



# For built-in LED luminaires and installation accessories in insulated ceilings.

The **ThermoX®** Iso + installation housing is the optimal solution for the installation of LED luminaires and installation accessories in external ceilings using the composite thermal insulation system (WDVS). It provides secure space for LED luminaires up to 8 Watt as well as the ballast device. The installation housing is suitable for all standard insulating materials, for example, wood fibre insulation, foam glass, mineral foam or expanded polystyrene (EPS).

Secure and thermal bridge-free installation of rigid and swivelling built-in LED luminaires in insulated ceilings. The housing protects the surrounding insulation material against the high operating temperatures of the LED luminaire and protects the LED luminaire itself against dirt.

The integrated insulation element reliably prevents heat bridges. The insulation thickness is adjustable from 100 mm to 160 mm in 10 mm increments simply by cutting off the housing. Depending on the insulation thickness, the installation depth for the LED luminaire or any other installation accessory varies between 70 mm and 130 mm. For insulation thicknesses from 170 mm to 350 mm, the extension element is simply installed behind the installation housing. The extension element can also be adjusted in 10 mm increments.

The front plate has a fixed installation diameter of 68 mm for knocking out or a universal useable area up to a diameter of 86 mm for cutting out.



BAKA Bundesverband Altbauerneuerung e. V. and the Munich Trade Fair under the auspices of the Federal Ministry

of the Interior, Building and Community recognised pioneering product ideas and system solutions specially for applications in existing buildings with the **"2019 BAKA Prize for Product Innovation"**.



1 The ThermoX<sup>®</sup> Iso + installation housing can be used individually or in a group. Many entry possibilities for conduits and cables.

- 2 The housing is suitable for insulation thicknesses of 100 160 mm even up to 350 mm with an extension element.
- **3** A heat bridge calculation by the Passivhaus Institute in Darmstadt shows that additional heat losses caused by heat bridges in new energyefficient buildings can be compensated. The installation housing is also suitable for use in passive houses.
- 4 Temperature profile: ThermoX<sup>®</sup> Iso + installation housing for external insulation (ambient temperature 25 °C) with 8 Watt LED illumination.

Fixed 68 mm installation diameter for knocking out or individual shape for cutting out up to a size of 86 mm in diameter.



**ThermoX® Iso + installation housing** Art. No. 1159-70



1 Insulation element, 2 ThermoX<sup>®</sup> Iso +, 3 Front plate (Art. No. 1159-70)

Extension element Art. No. 1159-71



**4** Extension element (Art No. 1159-71)



**Combination** Art. No. 1159-70 + Art. No. 1159-71





**5** ThermoX<sup>®</sup> Iso + with extension element







### One-gang junction box for wood fibre insulation materials. ECON<sup>®</sup> Iso +

The **ECON® Iso + one-gang junction box** is the solution for electrical installation work in wood fibre insulation boards. Four swivels, specially designed for use in solid heat insulation and plaster base boards, ensure secure anchoring – also for retrofitting!

The **ECON® technology** elastic sealing membrane guarantees air tightness and allow toolless insertion of conduits and cables. This means that switches, sockets, intercoms and much more can be installed permanently and securely as well as heat bridge-free.

- Air-tight and heat bridge-free electrical installation in accordance with the GEG
- Suitable for pressure-resistant insulation panels of 60 mm thickness and higher
- 4 swivels for secure mechanical anchoring
- Combinations are also possible

**Ecological wall insulation in old and new buildings** in both wood and solid constructions. **ECON® Iso +** is suitable for mounting in pressure-resistant wood fibre insulation boards with a medium gross density of 110 - 180 kg/m<sup>3</sup>.

Verified. The heat bridge calculation and the proof of air tightness verify the suitability of ECON® Iso +.



3 time award winner in 2019:

B+B Bauen im Bestand Produkt des Jahres 2019 Sieger in der Kategorie Energetische Sanlerung







- **1** Mounting in unplastered insulation panels use a mounting frame.
- **2** Mounting in plastered insulation panels is possible even with an existing cable.
- **3** The membrane that seals the swivel guarantees air tightness.
- 4 Plenty of entry options using ECON® technology for conduits and cables.
- 5 Plenty of installation space and four attachment points for user-friendly mounting of the installation accessories.



ECON<sup>®</sup> Iso + one-gang junction box Art. No. 1159-55









### Secure anchoring without a heat bridge. ECON<sup>®</sup> Styro55.

**The ECON® Styro55 one-gang junction box** makes possible the retrofitting of accessories, such as sockets and switches, in organic composite thermal insulation systems (WDVS). The process is fast, secure and free from heat bridges. The box is easily and quickly inserted and fixed into position.

- For retrofitting in insulated facades
- Cutter system prevents damage to cables
- Guaranteed heat bridge-free installation
- 4 swivels for secure anchoring
- No moisture penetration

Using the **KAISER hardened metal cutter 180** (diameter: 68 mm) and the centering aid, the composite thermal insulation system is opened exactly and only as deep enough as is required. There is no damage to existing cables.

**ECON®** technology with its toolless, air-tight entry prevents cold draughts from getting into the masonry when cables are fed in directly.

The box is fixed into position by the **KAISER setting tool** after being pressed into the composite thermal insulation system. The swivels cut themselves firmly into the insulation material, which ensures a permanently secure fit for the box.







### Flush fit without a heat bridge. Mini equipment carrier.

**The mini equipment carrier** is ideal for the secure, wall-flush fixing of accessories, such as luminaires, cameras, motion detectors, letter boxes and many other systems, which need to be fitted to installed composite thermal insulation systems.

- For retrofitting in insulated facades
- 4 swivels for secure anchoring
- Exact, flush alignment of accessories
- Guaranteed heat bridge-free installation
- No moisture penetration

**The mini equipment carrier** consists of two parts and can be firmly anchored quickly and easily into the composite thermal insulation system. It is suitable for medium density wood fibre insulation boards, mineral foam boards, foam glass and expanded polystyrene insulation materials. The special screw-on surface ensures precise alignment – a major advantage compared to conventional fixing elements, especially in the case of multiple fixings.



The KAISER hardened metal cutter (diameter: 20 mm) makes an exact opening in the composite thermal insulation system. The anchor sleeve is knocked in and then the attachment core is pressed in. The swivels anchor themselves in the insulation material and provide a secure fit for the mini equipment carrier.





### Energy-efficient electrical installation. At a glance.



sleeves for cables

9079- | Pg. 30

Aluminium butyl sealing

sleeves for conduits

9079-|Pg. 30

Fleece butyl sealing

sleeves for cables

9089- | Pg. 30

Fleece butyl sealing

sleeves for conduits

9089- | Pg. 30

Primer 9000-02 | Pg. 30



Further information about our range of tools is available on the Internet or directly from KAISER (also see the last page of this catalogue). Technical assistance | Telephone: +49 (0) 235 580 961

**KAISER** 47

## **Systems and solutions** for professional electrical installation work.

KAISER has been developing and producing systems and products as the basis for professional installation work since 1904. Planners and fitters all over the world use our practice-oriented solutions for their daily work in all installation areas.



#### **Energy efficiency.**

Innovative KAISER products help you to ensure compliance with the requirements of EU Directives and national regulations, such as the German Energy Act for Buildings (GEG, formerly EnEV).



#### Fire protection.

KAISER fire-protection systems provide reliable solutions for electrical installations in fire-protection walls and ceilings.



#### Radiation protection.

The use of the new radiation protection boxes allows the radiation protection of the wall to be maintained without additional shielding measures.



#### Construction.

KAISER has matching product system solutions for safe, durable and practical use in redevelopment, renovation and modernisation projects.



#### Sound insulation.

KAISER's innovative sound insulation boxes ensure compliance with the construction requirements for sound insulation walls, as well as for built-in installations.



#### Concrete construction.

Complete systems for on-site mixed concrete and precast concrete. Fully optimised to professional electrical installation work.

#### Technical information and advice

All further information on products, system solutions and communication media can be found on our website: **www.kaiser-elektro.de** 

For any additional questions or information, please do not hesitate to contact our technical support team who will be happy to assist you: +49(0) 235 580 961 · technik@kaiser-elektro.de

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