

D+H E



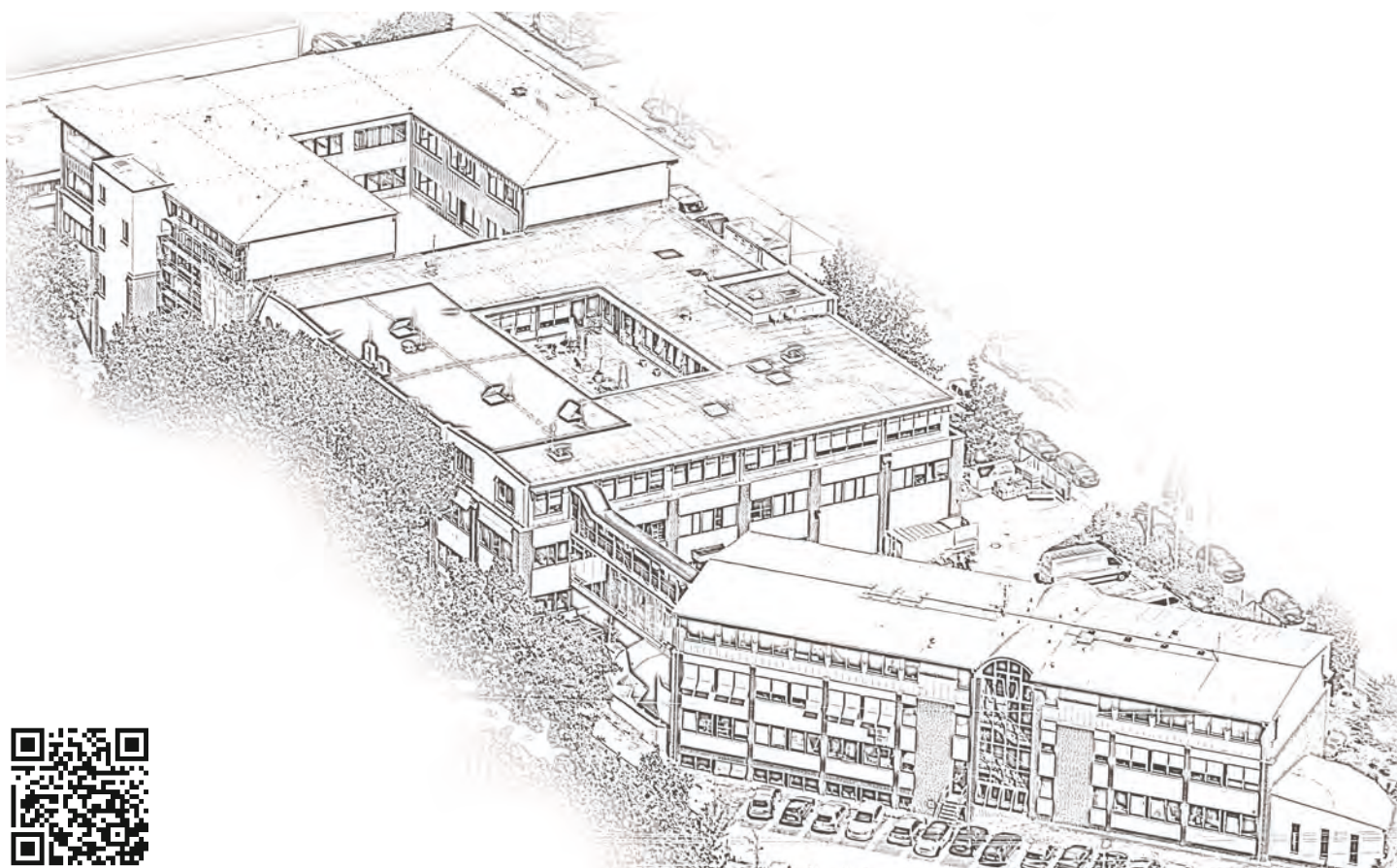
+ CONTROLLERS  
PERIPHERY

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# D+H company profile

## Innovations "Made in Germany"

D+H Mechatronic AG has been setting trends in the market for 50 years with high-precision SHEV and ventilation technologies. We are number 1 in Germany and also rank among the market leaders internationally as a driver in the industry for natural, motorised smoke and heat exhaust ventilation (SHEV) and as a premium supplier. Our family-owned company in Ammersbek near Hamburg uses state-of-the-art technologies to research, develop and produce quality products that are tested and certified. We inspire our customers with customised solutions that are made in Germany and with a high planning and installation reliability on site.



D+H headquarters in Ammersbek, Germany

Certification in accordance with:



- ISO 9001
- recognised products
- recognised systems

We are a member of:



**ZVEI:**

Expert Group for  
Electric Motor Driven  
Smoke and Heat Ventilation  
Systems

Quality 'Made in Germany'

# Planning and installation reliability worldwide

Along with the large D+H service and sales partner network, our customers, such as architects and planners, benefit worldwide from outstanding proximity to our customers and the great expertise of our partner companies. With over 100,000 objects implemented worldwide, we have a high degree of experience and skills in the area of SHEV and natural ventilation.

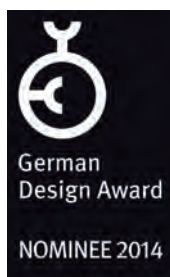


Well connected

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## Awards



# Your trust requires 5 stars

## Specialized expertise - The knowledge to turn ideas into reality

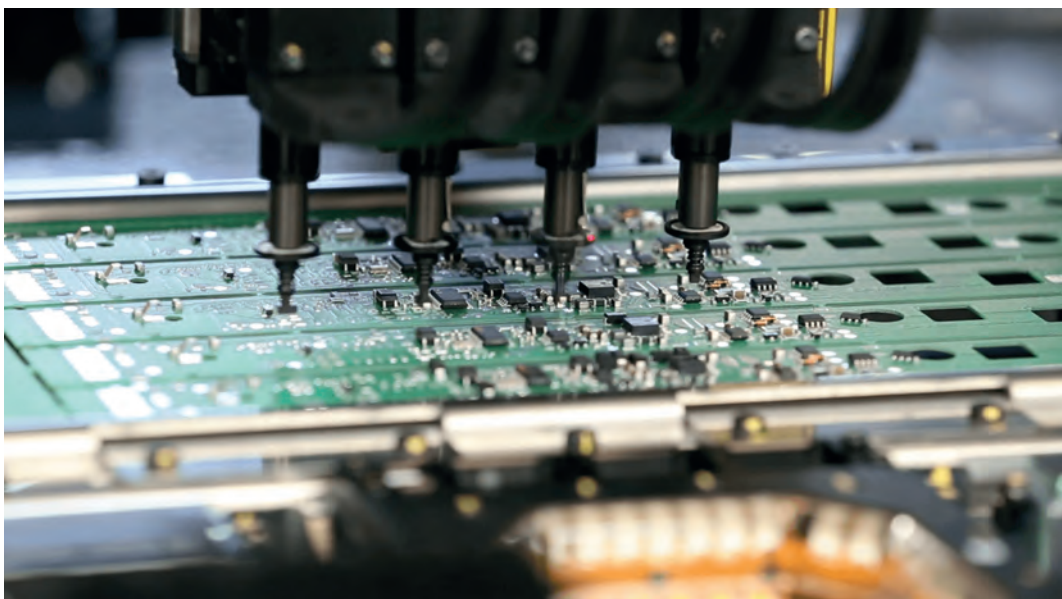
All we need is love and air to breathe. Yes, you read that correctly. We are as much in our element when it comes to the topic of breathing air as with our love for your product. We tackle the development stage of your ideas with 100 % of our passion and dedication. We are pushing forward and work with an eye for the future, without forgetting to look back on our half a century of experience. This is the source of the experience of a world market leader for smoke extraction and natural ventilation that is so valuable for your product development. Today, as yesterday, we meet every challenge with our unique industry expertise. This knowledge is attained through consistent market-, customer- and service-oriented actions. It serves a single purpose: developing and bringing your individual wishes to life

## Development - Where others stop, we keep going on

Our in-house research and development expertise not only extends from the first sketch through to the market-ready product. Your completed product simply becomes smarter than others due to the applied intelligence of our experienced engineers. Why? Our developers have mastered all disciplines needed for your product in order to surpass your wishes and demands. Whether mechanical or electronic systems, embedded software or front-end development - our developers have the most diverse skills of the specialists at D+H, using a perfected approach to drive forward and implement your idea. They take on development in all disciplines in order to make your product better than you could have imagined. Taking advantage of a high level of expertise and in close cooperation with Sales, Product Management, Purchasing and external cooperation partners, we devise, develop and test your innovation with the utmost care, dedication and faith in our abilities.

## Production - Capable of setting the pace

Equipping of a circuit board at 20000 components per hour - this is just one of many figures that excite our customers. On an approx. 5500 m<sup>2</sup> production floor, our state-of-the-art machinery aids about 90 qualified, specialised personnel in the production of your customised products in serial or single-item production. In addition to the automation of various parts of production, hand-made special solutions are also among our strengths. As a result, man and machine integrate the best performance from the production hall directly into your object. Short setup and throughput times, high production depth and a lean production system pave an especially flexible, fast and efficient path to our common goal in our collaboration: Your product.





## Technology “Made in Germany” - Creating products cherished by engineers

German engineering - the term implies real long-lasting technology, which even today sparks excitement internationally with respect to “Made in Germany” quality and the German production location. This seal of quality is always preceded by its excellent reputation. As a global premium provider, we naturally feel at home in international terrain. But just the same, we are a family-owned company that is focused on craftsmanship, tied to our region and we know where we come from. As such, your D+H technology will soon also be developed and produced in Ammersbek, in the Hamburg area. That’s as reliable as our products. You can also rely on the fact that, without exception, all components must successfully go through in-house stress tests multiple times. Therefore, they exhibit the highest levels of performance before leaving the doors of Ammersbek plant. Our technology is beloved by our customers for good reason.

## Quality - Delivering something you can trust

Believing that quality only involves the structure of the product is just incorrect. Quality extends far beyond the product itself. Beyond its high-quality processing and functionality. Quality is what the customer wants and beyond. We want to and can take credit for this added value only because our business is about nothing less than breathing air. In order to meet the most stringent demands for safety and comfort, we must do more than simply push the boundaries of what is technically feasible. The standard of quality in Germany, largely defined by D+H, is also deliberately and purposefully incorporated in European and global standards - for and in the interests of the customer and the safety of us all.

## What connects us

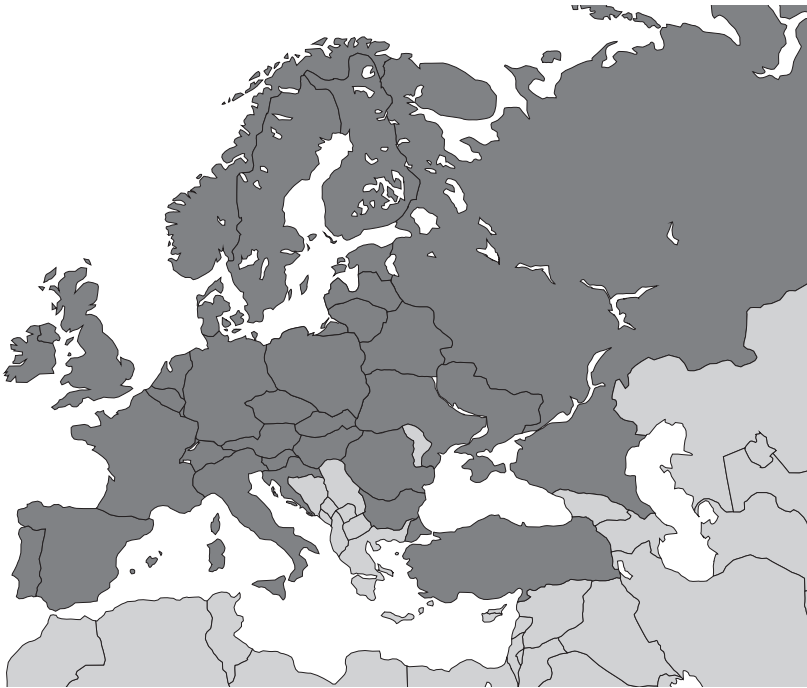
Each product begins with a unique benefit. And the right time to begin your discussion with us. D+H offers you product solutions that set the standards of tomorrow today. Our highly precise drive and control technologies for smoke extraction and natural ventilation bring pioneering innovations into hundreds of thousands of buildings, and with about 500 D+H Group employees worldwide, this ensures an optimal indoor climate and sufficient air in case of fire.

At D+H, you can count on powerful and intelligent drive and control products, a flexible and quick production system, extraordinarily high development expertise, personalised service and our most valuable and unifying product: our knowledge.

# D+H Service and sales network

Our network of approximately 130 qualified D+H service and sales partners in over 50 countries is one-of-a-kind. Thanks to this presence of selected specialist companies nearly everywhere, D+H achieves nearly unrivalled proximity to its customers right where they are - and meets the high quality requirements for skilled complete services in all parts of the world: for object-oriented planning and consulting, professional installation and maintenance as well as a reliable supply of spare parts.

## D+H Europe



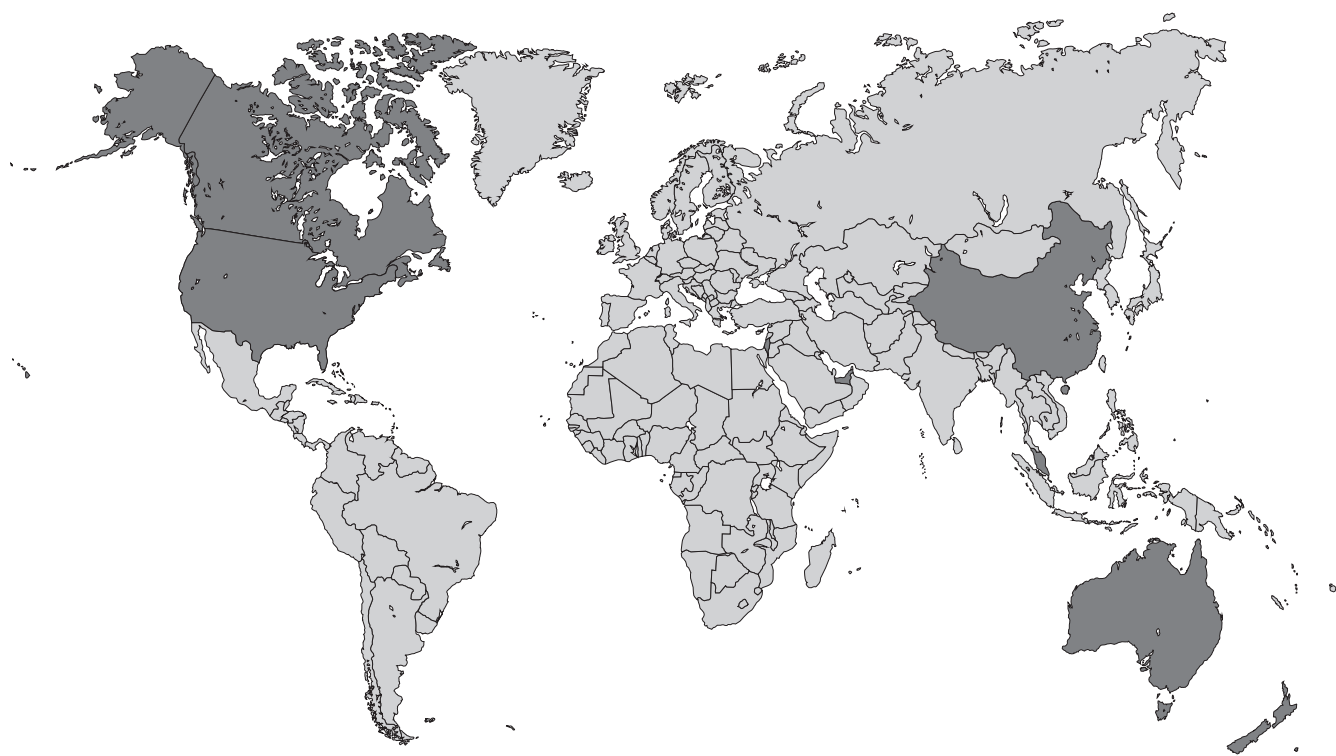
Austria  
Belarus  
Belgium  
Bulgaria  
Croatia  
The Czech Republic  
Denmark  
Estonia  
Finland  
France

Great Britain  
Hungary  
Ireland  
Italy  
Kazakhstan  
Latvia  
Lithuania  
Luxembourg  
The Netherlands  
Norway

Poland  
Portugal  
Romania  
Russia  
Sweden  
Slovakia  
Slovenia  
Spain  
Turkey  
Ukraine



## D+H around the world



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Canada  
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Hong Kong  
Israel  
Malaysia  
New Zealand

United Arab Emirates  
USA

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# Why SHEV?

## Smoke vent saves lives and protects property

If there is a building fire, the smoke formation and toxic combustion gases represent the greatest danger for people. If fire breaks out, 9 out of 10 people die due to poisoning from inhaling extremely toxic flue gases. A closed room is quickly completely filled with toxic smoke; people in the building are cut off from escape and emergency routes.

For this reason, fast and reliable smoke extraction gains considerable importance. Smoke and heat exhaust ventilators (SHEV) effectively conduct the smoke and fire gases out of the building and can thereby save lives. Controlled by fire-detecting sensors, they open areas in the upper wall or ceiling area, through which the rising hot combustion gases can escape. On the

other hand, a low-smoke layer forms in the lower area of a building, which enables people to escape the fire-affected area and the fire brigade to go directly to the fire source.

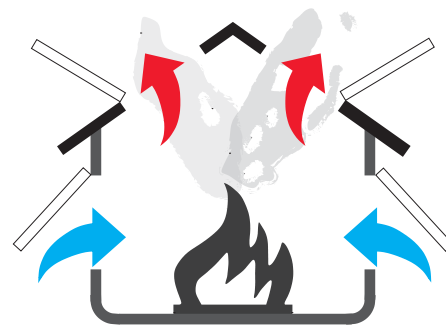
Property within this low-smoke layer is largely protected from smoke and soot. And the extraction of heat prevents the thermal load on the building structure from causing it to collapse.

## Comparison without / with SHEV



Without SHEV:

Toxic fire smoke and extreme heat accumulate in the building and endanger lives.



With SHEV:

Smoke and heat can escape through intake air openings in the lower wall area and exhaust air openings in the upper wall or ceiling area. The smoke is diverted in a stable smoke layer boundary above the area where there are people; escape and evacuation routes are kept free.



# Number 1 in Germany in the field of smoke and heat exhaust ventilation

D+H provides innovative standard and customised solutions for smoke and heat exhaust ventilation (SHEV) around the world. For over 45 years we have been developing products for your safety in the event of a fire. As one of the first companies to have developed natural SHEV and as the first manufacturer of certified electric SHEV, today we have more experience and skills than any other provider.

From extracting smoke from a stairwell to complex SHEV systems for large buildings: D+H provides you with a comprehensive programme of tested and certified products for smoke and heat exhaust ventilation.



**SHEV compact unit** with an integrated smoke vent and ventilation button: receives fire detector signals, evaluates the measurement results, controls the window drives and the ventilation function



**Fire detector** automatically detects a fire in enclosed rooms



**Control elements** enable triggering via buttons, with integrated ventilation function



**Chain and rack and pinion drives** open SHEV and ventilation flaps into any position with precision

# Risk Assessment and Protective Measures

Power-Operated Windows (in accordance with the Machinery Directive 2006/42/EG)

## Possible danger points at power-operated windows



- ① Risk of crushing and injury by shearing on main closing edge
- ② Drive (incomplete machine)
- ③ Risk of impact injury
- ④ Risk of crushing and injury by shearing on side closing edges
- ⑤ Danger point between side closing edge and reveal

## Task

Power-operated windows are façade or roofing elements that are equipped with a drive system. These elements are in extremely widespread use as components of smoke and heat exhaust systems (SHEV) and ventilation systems in all kinds of buildings, that are used for a huge variety of purposes. There are potential risks associated with power-operated windows, especially if they are controlled automatically. These risks must be countered by appropriate specifications, defined by the planner, and protective measures, implemented by the installers, operators or maintenance technicians. Ensuring that power-operated windows are safe starts with the risk assessment. This includes identifying possible dangers, putting in place suitable countermeasures and warning of residual risks. A risk assessment is performed at the planning stage, well before installation starts.

## Legal basis

Machinery Directive 2006/42/EG, issued by the European Parliament and the European Council on May 17th, 2006, defines a uniform level of protection within the European Economic Area, Switzerland and Turkey, intended to prevent accidents involving machines and incomplete machines when they are being brought into operation. The Appendix to product standard EN 14351-1 for windows and external doors refers to the Machinery Directive. A machine is a unit equipped with a drive system that does not consist of directly applied human force, and includes parts that are connected together, at least one of which is mobile. In this context, it is irrelevant whether this unit is already equipped with a connection cable, or has been connected to its own power supply. As defined in the Machinery Directive, the manufacturer of the machine is the agency that combines the drive or drive system with the window (e.g. the metal fabricator, window manufacturer or SHEV installer). The machine's manufacturer or their representative must ensure that a risk assessment is performed, to identify the health and safety requirements applicable to the machine. That manufacturer or representative accepts general liability for performing the risk assessment correctly, and applying the necessary protective measures, no matter on whose behalf they are acting. The results of the risk assessment must be taken into consideration when the machine is designed and manufactured.

## What do I need to do to meet the requirements of the Machinery Directive?

- » Carry out risk assessment
- » Determine protection class
- » Putting protective measures in place
- » Certificate of conformity
- » Apply CE label

## Assignment of protective measures

Protective measures are all the measures that reduce risk. Different protective measures are needed to minimise risk, depending on what risk is present. There are no standard protective measures for the use of power-operated windows in buildings. If power-operated windows are used in buildings, a building-specific risk analysis must always be performed to identify effective and cost-efficient solutions! Protective measures can be assigned to the protection classes shown in the table below.

**The required protection class is achieved by applying one of the measures identified there. However, that measure must be suitable for actual use involved. Measures can also be combined. Measures in a higher protection class also cover a lower protection class.**

## Examples of protective measures

<b>Protection class 0</b>	<ul style="list-style-type: none"> <li>No protective measures required</li> </ul>
<b>Protection class 1</b>	<ul style="list-style-type: none"> <li>Warning notices</li> </ul>
<b>Protection class 2</b>	<ul style="list-style-type: none"> <li>Access is made safe with constructional measures or</li> <li>Rounded, padded edges, closing force of 80 N to 150 N, no shearing effect or</li> <li>Audible warning signal or</li> <li>Warning lights or</li> <li>EMERGENCY-OFF switch on the window or</li> <li>Non-fixed devices in front of the window that prevent access to it</li> </ul>
<b>Protection class 3</b>	<ul style="list-style-type: none"> <li>Dead-man's control without higher-level central control system or</li> <li>Movement is stopped 25 mm before the end position over a period of 10 s. Triggering of an optical or audible signal. Further movement with signal up to end position or</li> <li>Slower sash movement, max. 5 mm/s or</li> <li>Access width less than 8 mm or</li> <li>Rounded, padded edges, low closing force (less than 80 N), no shearing effect</li> </ul>
<b>Protection class 4</b>	<ul style="list-style-type: none"> <li>Safety achieved by touch-activated safety equipment, e.g. safety edges, contact sensors or</li> <li>Safety achieved by a contactless active safety device, e.g. light barriers, light grid or</li> <li>Dead-man's control with authorised operation of each window without a higher-level central control system (e.g. key button) or</li> <li>Access width less than 4 mm or</li> <li>Access is prevented by constructional measures</li> </ul>



# Solutions from D+H

All protective measures can be implemented with D+H drives. A wide variety of protective measures can be achieved even with the standard version. Additional options can be fitted to cover an even greater range of protective measures. These options are available for many D+H drives.

### Warning notices:

Every D+H drive has a warning label that must be attached to the power-operated window.

### Closing force 80 N to 150 N:

The closing force of most D+H drives (apart from ZA, DXD and CDP drives) is limited at the factory to 150 N over the last 100 mm of travel. The running speed at this distance is also reduced to 5 mm/s. These parameters can be adjusted in the D+H software SCS.

### Audible warning signal (option -AS2):

The drive is fitted with a 2.3 kHz signal emitter. An audible signal is emitted for the duration of the stroke while a window is closing. Cycle timing: 0.5 s pause and 0.5 s signal. The volume and the cycle timing can be adjusted in the D+H software SCS.

### Warning lights:

A warning light can be connected either directly to the drive, or to the drive's clamping unit. It produces a visible warning signal during the entire closing process.

### Dead-man's control:

At the factory, all D+H control panels are set to be key-operated. In other words, the drives only run when the ventilation button is being pressed.

### Stops the movement and generates an audible warning signal (option -AS3):

The drive is fitted with a 2.3 kHz signal emitter. An audible signal sounds for 4 s before the window starts closing. The closing process starts after this. When the window is 25 mm away from its closed position, the drive stops for 11 s. At the start of this 11 s stopping time, an audible signal is emitted. This signal continues to sound until the window reaches its end position. The closing speed is reduced to 5 mm/s over this final 25 mm before the end position. The volume of the signal, and other parameters, can be adjusted in the D+H software SCS.

### Slower sash movement:

The running speed over the last 100 mm in the CLOSED direction is limited to 5 mm/s in all D+H drives. This running speed is set at the factory. The D+H software SCS has settings for reducing this speed over the entire range of travel. This option can also be supplied as a factory setting by requesting "option -LS".

### Safety provided by safety equipment (option -SKS):

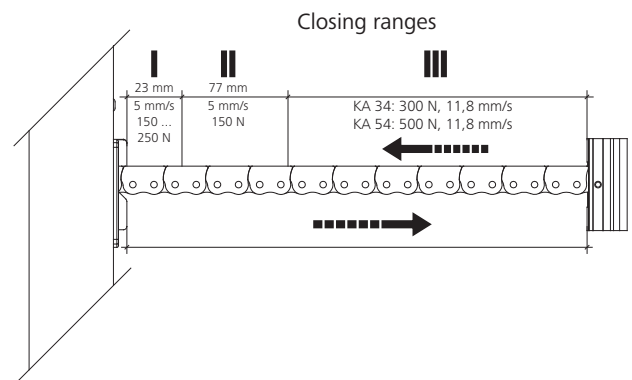
Touch-activated or contactless active safety devices can also be attached directly to the drives or drive groups on all D+H drives that use BSY+ technology. Alternatively, a closing edge protection module can be installed in front of the drive to which the safety device is connected.

### Dead-man's control with authorised operation:

All D+H drives can also be operated by key vent buttons, which also prevents them from being opened by unauthorised persons.

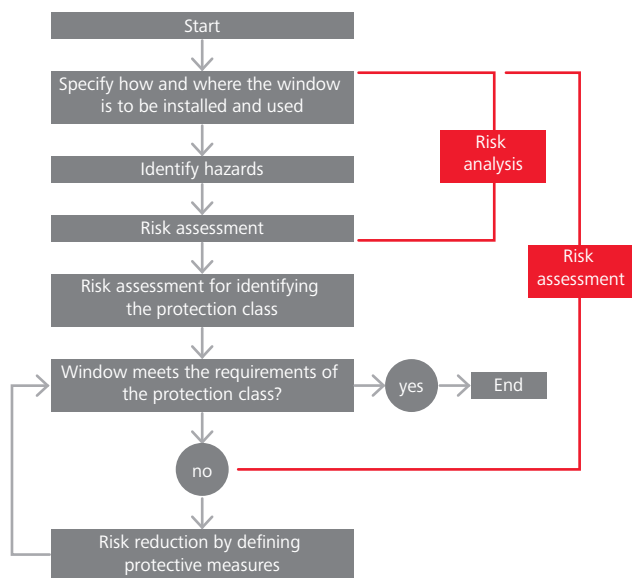


Security provided by the D+H presence detector

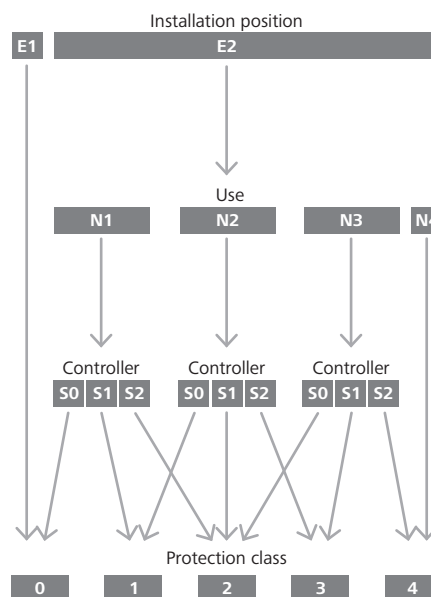


Running speeds and forces for KA 34 / KA 54

## Risk assessment



## Determining the protection class



## Risk assessment

Example installation	Risk Level	Risk Parameter
a) installation height of lower edge of sash is at least 2.5 m above the floor or fixed access level b) fixed objects installed in front of the window to prevent access c) window sills or ledges that prevent users from having free access to the window	-	E1
Installation height of lower edge of sash is less than 2.5 m above the floor or access level, and window is easily accessible	++	E2
Room use		
Rooms that are used for commercial purposes, whose users know how to use this window technology (e.g. office space, industrial halls)	-	N1
Living areas, whose users know how to use this window technology, or rooms whose users/visitors can judge the risks and react accordingly	o	N2
Rooms used regularly by people who are not familiar with how to use window technology safely and cannot receive training in how to do so (e.g. sales rooms, events rooms, etc.)	+	N3
Rooms used regularly by vulnerable people or people who are unable to assess the risks (e.g. nursery schools, schools, hospitals, etc.)	+++	N4
Control/operation		
Manual operation without self-locking mechanism (dead-man's control), where all windows can be clearly seen (e.g. use of a key vent switch)	--	S0
Manual operation with self-locking mechanism where all windows can be clearly seen	-	S1
Automatic operation (e.g. wind/rain controller, building management system) or manual operation without a clear view of all windows	++	S2

MEANING OF SYMBOLS: -- very low risk | - low risk | o average risk | + high risk | ++ higher risk | +++ very high risk

REFERENCES: Parts of the data sheet correspond to a publication issued by the ZVEI ("Zentralverband Elektrotechnik- und Elektronikindustrie e.V.", known in English as the German Electrical and Electronic Manufacturers' Association).

# Basic knowledge of CPS-M

## Introduction

The CPS-M is a modular SHEV system, which is used for the smoke and heat exhaust ventilation of a building in the event of a fire.

The CPS-M makes use of fire detectors or is operated by SHEV operation panels in order to activate motorised drives and open existing windows for natural smoke extraction.

## Components

Four different modules are used for the implementation of the individual tasks and to provide different interfaces ...

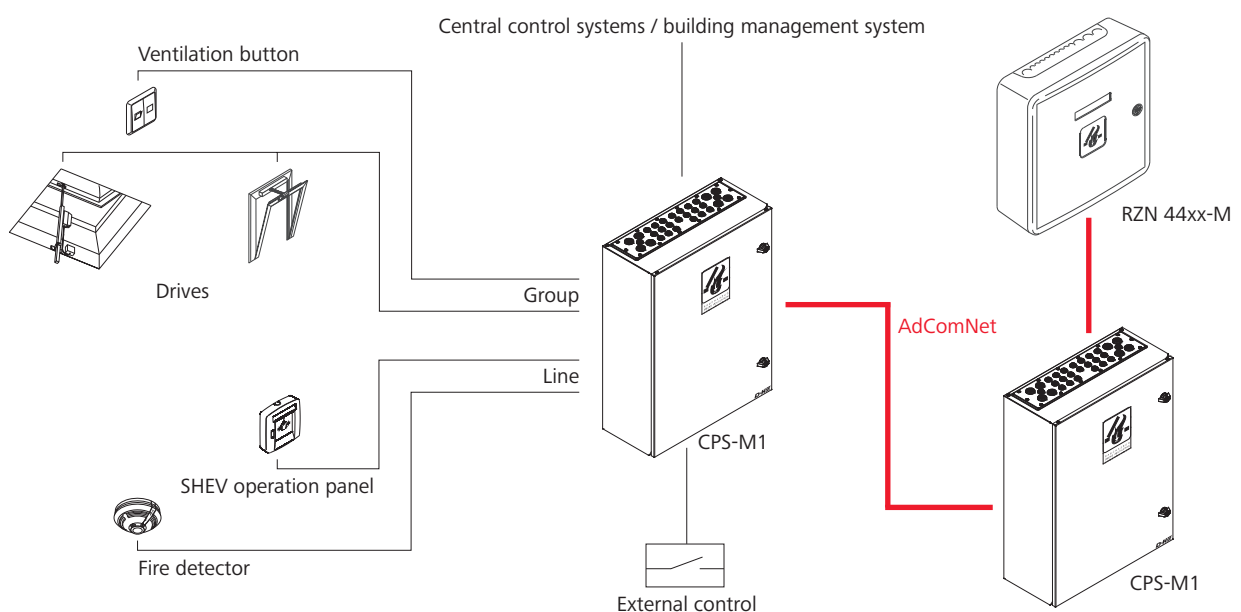
- The controller module is responsible for the internal communication of the control panel as well as for communication to other control panels and only one is required per control panel.
- The supply module is used to power the control panel via an external power pack and is also responsible for charging the emergency power battery. Depending on the overall performance of the system, the number of components required for a control panel can be scaled.
- The drives and ventilation buttons are connected to the actuator module. Depending on the number of drives and the separately assigned fire compartments, the number of actuator modules can be adjusted at any time.
- The fire detectors and the SHEV operation panels are connected to the trigger module. Here, the number of modules must also be adjusted to the quantity of fire detectors and SHEV control panels as well as the separately controlled fire compartments.

... which can be plugged into 3 different module sockets.

- The basic module socket serves as a connection for the controller module and the first supply module of each CPS-M control panel to other modules used by the control panel.
- The expansion module socket is used for the actuator module as well as for the trigger module, in order to expand the system piece-by-piece.
- The supply module socket takes over the task of integration for the supply module and handles the separation of individual control panel sections on the supply level.

While the modules themselves handle the individual tasks of the control panel, the module sockets are used for installation on the TS 35 top hat rail. In addition, the integrated connectors ensure power supply and communication. Other assemblies such as the temperature sensor or the bus termination module are required to ensure the safe operation of the control panel.

## Example of application





## Operation

When using SHEV, the CPS-M is operated via the mentioned SHEV operation panels in order to open windows in combination with D+H drives at the highest possible speed. Drives from other manufacturers can be connected and operated as well, although not in high speed mode.

Additionally, the CPS-M has a comfort ventilation function, with which windows can be used for natural ventilation purposes. Here, speed is optimised for a particularly low noise emission. Commercially available ventilation buttons are used for operation.

The touch panel in the CPS-M housing can also be used to display the status of the system and the individual statuses of the inputs and outputs, as well as to perform basic functions. The controlled operation of the system is also possible without a touch panel. In this case, the control panel is operated using interfacing buttons and control points.

## Module arrangement / defining a control panel section

For the most part, the modules can be arranged freely. Be aware of the load on the individual sections of the control panel. These sections are rearranged due to additional supply modules in combination with a power pack. The controller module and the first supply module are positioned first and based on the system design. Actuator and trigger modules can then be freely positioned. We recommend that you adhere to the path of lowest load and, if possible, place the utilised actuator modules at the respective supply modules of the control panel sections.

## Configuration

The assignment of the different fire compartments and the associated allocation of the actuator module group to the trigger module line as well as the assignment and use of the available digital inputs and outputs, for example as ventilation buttons, are configured via the SCS software tool.

In the SCS tool, different settings can also be selected for the individual modules with regard to behavioural patterns. In a network consisting of several control panels, a single point can be used to apply the configuration to all participants, including control panels or ACB (Advanced Communication Bus) drives.

## Functions

The functions of the individual modules are also set in the SCS tool. For example, in the case of the actuator module, the storage operation in the OPEN and CLOSED direction can be set separately for each motor output. The digital inputs and outputs can be integrated into SHEV or natural ventilation operations and equipped with functions. Depending on the link being used, different functions are available for selection.

## Actuator types

In the actuator module, the actuator type can also be selected. You can select between reverse-polarity drive and ACB drive.

In combination with ACB drives (and their bus technology), the CPS-M can interact with the drive and use its information for better and more secure operation. All ACB drives are monitored separately from the control panel via bus communication. This also enables cable monitoring to the drives and use of the terminal module is unnecessary.

In addition, when the reverse-polarity drive actuator type is selected, it is possible to activate a required stop-hold function required for drives of other manufacturers. This prevents unintentional movement of the drives under load when disconnected from a power supply.

NOTICE/INFORMATION: When the stop-hold function is used, cable monitoring in accordance with EN 12101-09 can not be guaranteed.

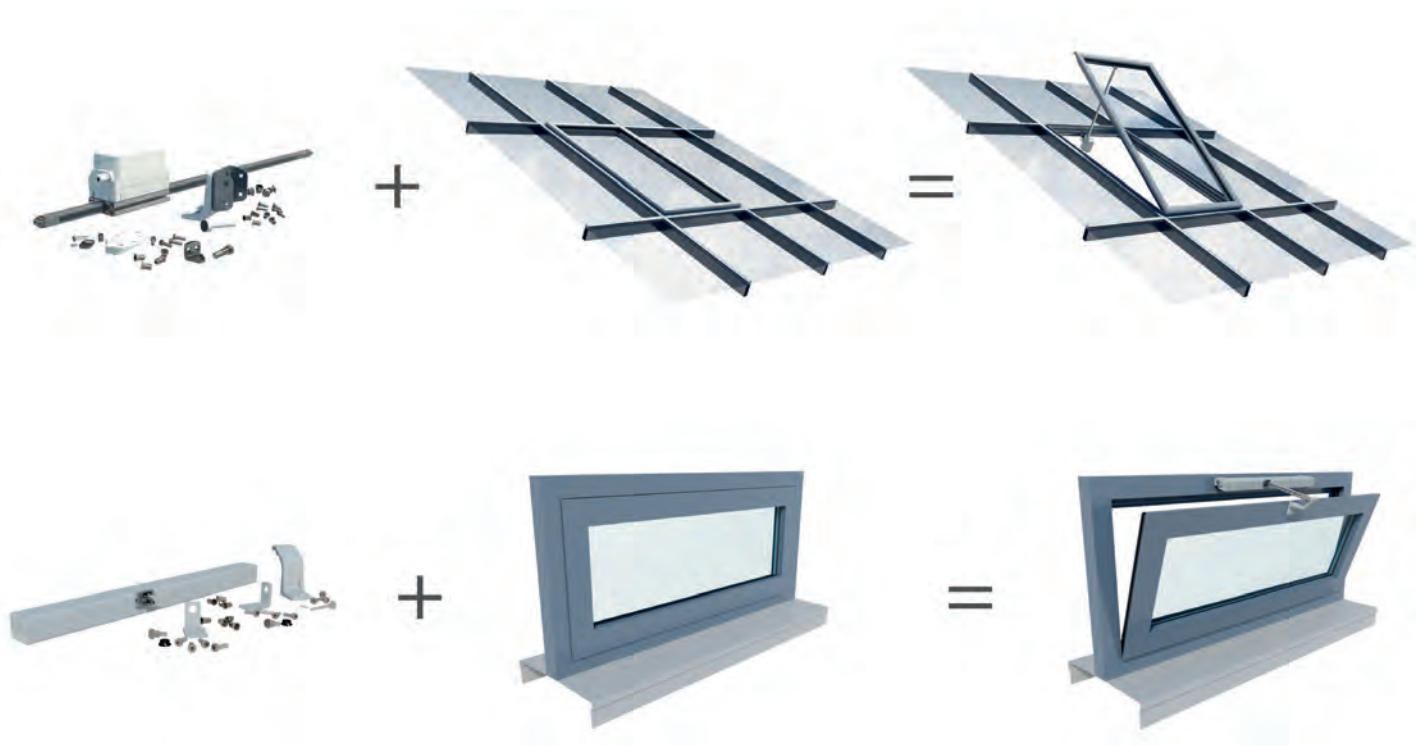
None of the drives available from D+H require the described stop-hold function.

# NSHEV made simple

## Application areas for EN 12101-2

Natural smoke and heat exhaust ventilators (NSHEV) are installed to divert hot flue gases in the event of a fire to ensure that there is a smoke-free area near the floor and in escape routes. Since September 2006, EN 12101-2 is to be used for all NSHEV. This standard defines the requirements and test methods for NSHEVs.

A NSHEV consists of the following components: a motorised drive with corresponding components (bracket, fittings), the filling (glass, panel) and the SHEV opening with corresponding components (profiles, seals, fittings) in the façade or roof.



An approved NSHEV has passed the following individual tests:

- » Opening time  $\leq 60$  s
- » Aerodynamically acting surface
- » Functional safety
- » Snow load
- » Wind load
- » Low ambient temperatures
- » Resistance to heat

The tested components must not be replaced with other components.

The tested NSHEV can be recognized by the CE marking:



RES RA 1472 1523 - ZA 24 V						
CE	SL1000	Aa 1.044	Av 1.885	B300-E	Re1000+Le10.000	WL1500 T(00)
	1368-CPR-C-7080		EN 12101-2:2003		22505-2	42/2018
D+H Mechatronic AG						<b>D+H</b>

## The path to the CE marking and certificate of constancy of performance of the NSHEV

The CE marking of SHEV products requires a defined testing process for the product and manufacturing plant. The required steps for issuing the certificate are:

1. Application to a notified testing centre of D+H
2. Testing according to the specified performance classes
3. Application for issuance of a certificate of constancy of performance
4. Setting up a Factory Production Control (FPC)
5. Receive of the certificate of constancy of performance

## D+H Euro SHEV manufacturer partnership

D+H Euro SHEV is a one-of-a-kind and optimum solution for manufacturing a NSHEV. The profile system is tested and certified for this purpose in connection with the D+H drive systems. The window manufacturer uses these system tests.

To manufacture NSHEVs in accordance with EN 12101-2, the D+H partners and the window manufacturers work together as follows:

1. The D+H partner calculates a NSHEV based on the respectively valid certificate of constancy of performance.
2. The window manufacturer produces the window, taking into consideration and adhering to these specifications as well as the respectively valid manufacturer guidelines and administrative regulations of the profile system in use.
3. The window manufacturer ensures there is an in-house Factory Production Control (FPC).
4. The window is installed in the object by the window manufacturer in accordance with the processing instructions of the profile system manufacturer.
5. The window manufacturer attaches the CE marking issued by the D+H partner on the NSHEV.
6. The D+H partner annually checks the processes displayed in the FPC in the plant of the window manufacturer and creates an audit report.

## Overview of advantages:

- » Maximum safety with renowned test institutes (VdS, MPA and IFI Aachen)
- » No additional costs for NSHEVs
- » Widest range of EN solutions on the market
- » Maximum planning security with Euro SHEV
- » NSHEV calculations with myCalc, specialised software
- » Creation of EN documents such as NSHEV specification, declaration of performance, CE label, EN test specification, EN instruction for use in 17 languages
- » Numerous certified specialist companies (Euro SHEV partners) are also near you



Conventional SHEV window

No additional costs for D+H products !



NSHEV in accordance with EN 12101-2

# Basic knowledge TSZ-200

## Introduction

The TSZ-200 is a control panel that was developed for controlling, monitoring and supplying power to alarm devices in systems for preventing the spread of smoke, heat and fire. It can also be used for automated smoke extraction and as a ventilation system in residential buildings. The power supply functions of the TSZ-200 comply with the standards EN 12101-10 and EN 54-4.

The TSZ-200 is planned according to customer specifications. The equipment and design options are based on the specific fire scenario.

## Components / Functions

The TSZ-200 can be used to supply power to devices designed for 24 V DC, 230 V AC and 400 V AC operation.

The controller handles extinguishing processes and ventilation functions that have been programmed based on a CFD simulation, fire scenarios or directives for implementing ventilation systems. The control panel operates with inverters that have a nominal power of up to 75 kW. This enables a soft start-up and infinitely variable adjustment of the fan speed. These features make use of advanced control algorithms, such as using the fan in reverse operation or variable fan speeds that are controlled by the reporting system. For less sophisticated systems, the control panel supports star-delta start-up switching or direct start-up.

There is also an option to equip the device with an emergency power supply. This type of system automatically responds to any power supply interruption and thus does not rely on the building's power supply system.

The TSZ-200 supports the Modbus RTU and Modbus TCP/IP protocols. This means that the status signals of the individual devices and the control signals for residential functions can be exchanged between control panels. In addition, this allows for communication with the central visualisation station and the building management system.

It is possible to use a joint LCD display (3.5" - 15" touchscreen) in order to show the operating status for multiple control units in the building. This display is required for expanded systems consisting of multiple TSZ-200 units. This makes it possible to visualise the entire system.

## Application

This TSZ-200 is normally used in large-scale buildings. Thanks to the control panel's modular structure, it can be used in a wide variety of facilities.

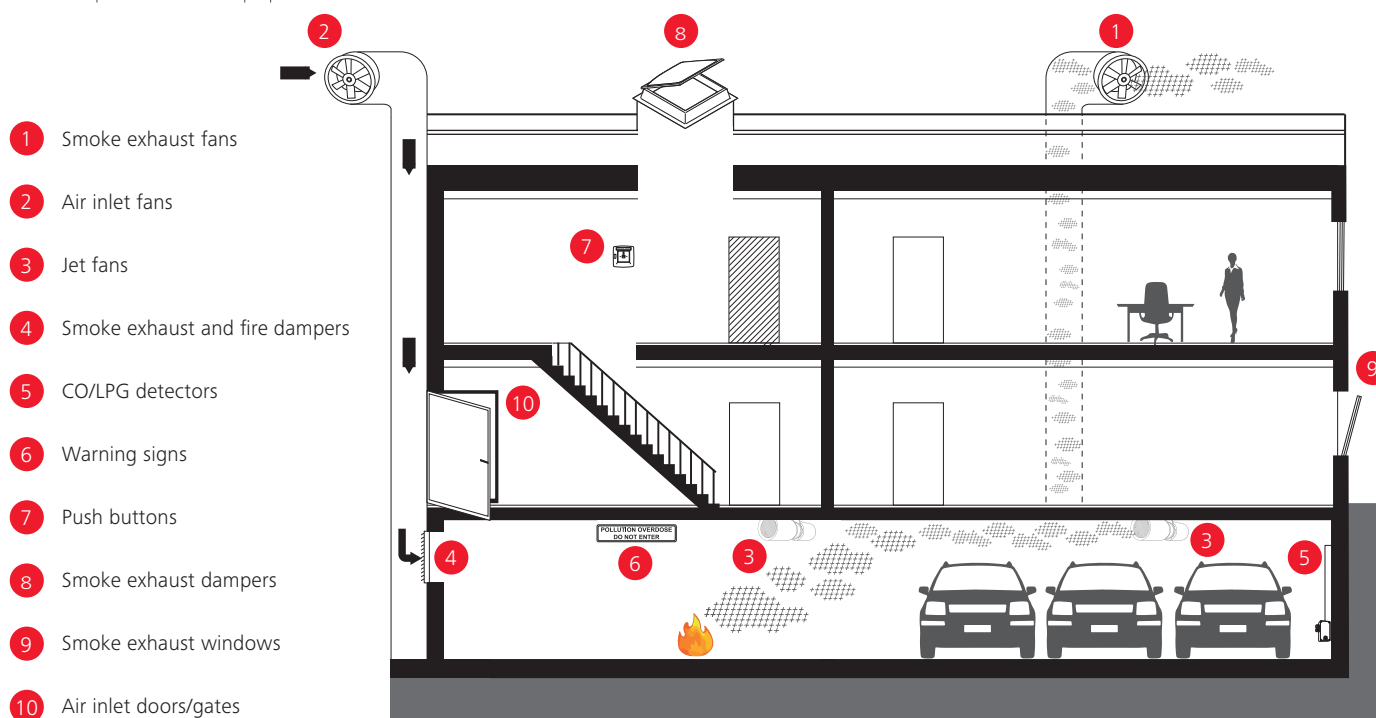
- » Underground car parks
- » Multi-storey car parks
- » Large-volume buildings
- » Street tunnels
- » Evacuation routes that run horizontally
- » Industrial and production plants
- » Shopping and logistics centres
- » Power plants and heating systems

## Possible system components

The following system components can be used in conjunction with the TSZ-200:

- » Fire extinguishing, supply air and residential room ventilators up to 75 kW (with different start modes)
- » 24 V DC or 230 V AC fire protection flaps
- » 24 V DC or 230 V AC control flaps
- » 24 V DC or 230 V AC linear or rotating electromechanical actuators
- » Fire detectors or manual smoke vent buttons (D+H)
- » Other components used in automatic ventilation system devices for fire and residential spaces

## Example of application



## Planning options

### Option 1: Natural smoke and heat exhaust ventilation

The TSZ-200 detects a fire and activates smoke redirection flaps and windows as well as ventilation flaps in the staircases.

### Option 2: Automated smoke vent system

Fire has been detected, for example, in an underground car park. The TSZ-200 activates the fans for smoke exhaust and ventilation as well as the jet fans. In addition, the control panel controls the supply air gate operation.

### Option 3: Ventilation application

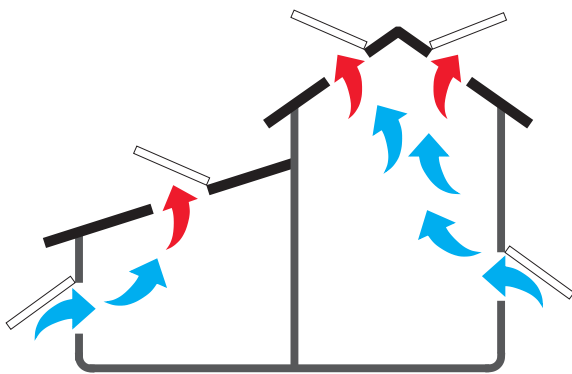
A liquid gas and carbon monoxide sensor reports increased gas concentration. The TSZ-200 activates the jet fans, switches the warning signs and opens the supply air gates.

# Ventilate: But how?

## Healthy climate - quite naturally

With controlled natural ventilation, you can control your indoor climate simply by using natural, freely available energy sources and thermal effects. This method is simple, inexpensive and effective. Opening the windows also creates a particularly healthy and comfortable indoor climate.

## Operating principle of controlled natural ventilation



The ventilation is controlled depending on the respective requirements regarding temperature, air hygiene and energy. Intelligent control systems evaluate the prevailing weather and room air conditions, such as the temperature, humidity and carbon dioxide content in the room, plus the outdoor temperature, wind velocity and precipitation.

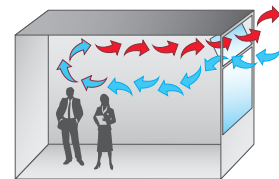
Motorized opening of windows generates a targeted exchange of warm, stale indoor air and fresh outdoor air by means of the difference between indoor and outdoor temperatures, the thermal lift in the room and the wind conditions surrounding the building.

## The three basic principles of controlled natural ventilation

Controlled natural ventilation can be achieved in various ways:

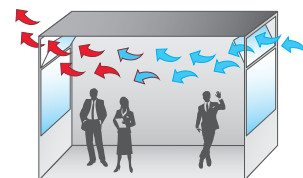
### Unilateral ventilation

In the case of unilateral ventilation, windows are to be opened on only one side of the room. The extent of the air exchange is limited, therefore this is used for smaller rooms that can fit a low number of people.



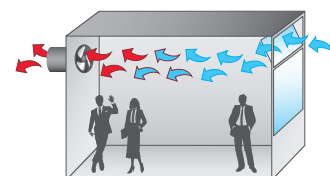
### Cross ventilation

Cross ventilation is achieved through windows in two or more outer surfaces by pressure differences at the façades caused by wind. It enables optimum air exchange even in larger rooms with greater depth.



### Hybrid ventilation

Hybrid ventilation refers to the combination of motorized windows and an exhaust fan. It is used where ventilation is required even under difficult climatic conditions.



## The state-of-the-art alternative to mechanical ventilation

With intelligent control systems and window drives from D+H, you can create a customised indoor atmosphere that is pleasant and comfortable. Fresh air enters the building as needed and stale air can escape.

- » Optimum air exchange and a healthy indoor climate, even outside of the usage times
- » Prevention of damage from humidity and mould formation by continuously dissipating the moisture
- » Cooling at night of the building's heated thermal masses as needed in the summer months
- » Prevention of overly dry and poor air, which frequently causes health problems in the case of mechanical ventilation (sick-building syndrome)

Controlled natural ventilation is an extremely environmentally friendly, healthy and inexpensive alternative to mechanical ventilation.

### Overview of advantages:

- » Lower investment costs, significantly lower costs for system technology
- » Lower costs for maintenance and repairs (maintenance-free technology)
- » Lower energy consumption (No active cooling and fans)
- » Shorter construction times thanks to fast installation and commissioning
- » Significantly lower space requirements (no distribution shafts and ducts)
- » Lower CO<sub>2</sub> emissions



# AdComNet - The reliable SHEV bus

## Convenience and reliability intelligently combined

AdComNet (Advanced Communication Network) is the bus technology from D+H, with which you can integrate decentralised standard SHEV control systems into smoke extraction and ventilation concepts which can be programmed easily and flexibly. The modularly designed network technology is the first VdS-certified bus system for SHEV on the market.

## A complex smoke vent scenario, controlled easily and reliably

With AdComNet the conventional control panels can be linked to enable complex scenarios for opening and closing windows or other ventilation equipment, depending on how the room is being used. Smoke vent example: If a fire breaks out on one storey, the closed windows on that storey open immediately and conduct the hazardous fire smoke out of the building. On the remaining storeys unaffected by the fire, AdComNet closes the open windows

to prevent toxic combustion gases from entering. The closed windows in the stairwell are also opened automatically, to keep this escape route free of smoke. By dividing the bus system into independent segments, the individual fire compartments remain functional even if there is a break in communication.

## AdComNet: modular and flexible

The modular and decentralised bus system has been designed as a long-term economical solution for all types of buildings in which not only SHEV systems, but also natural ventilation systems are used. Since the bus system is easy to reprogram if the room will be used differently, AdComNet is ideal for building types with sophisticated requirements for SHEV and ventilation, such as buildings with multiple storeys and fire compartments (office and administrative buildings, schools, places of assembly, production facilities etc.).

The system can be expanded or adapted at any time, either while it is being installed and set up, or during later conversions or retrofits. Smoke compartments, load and zone groups as well as the corresponding field devices can be reprogrammed without changing any cables. No need for laborious and expensive new installations and cabling.

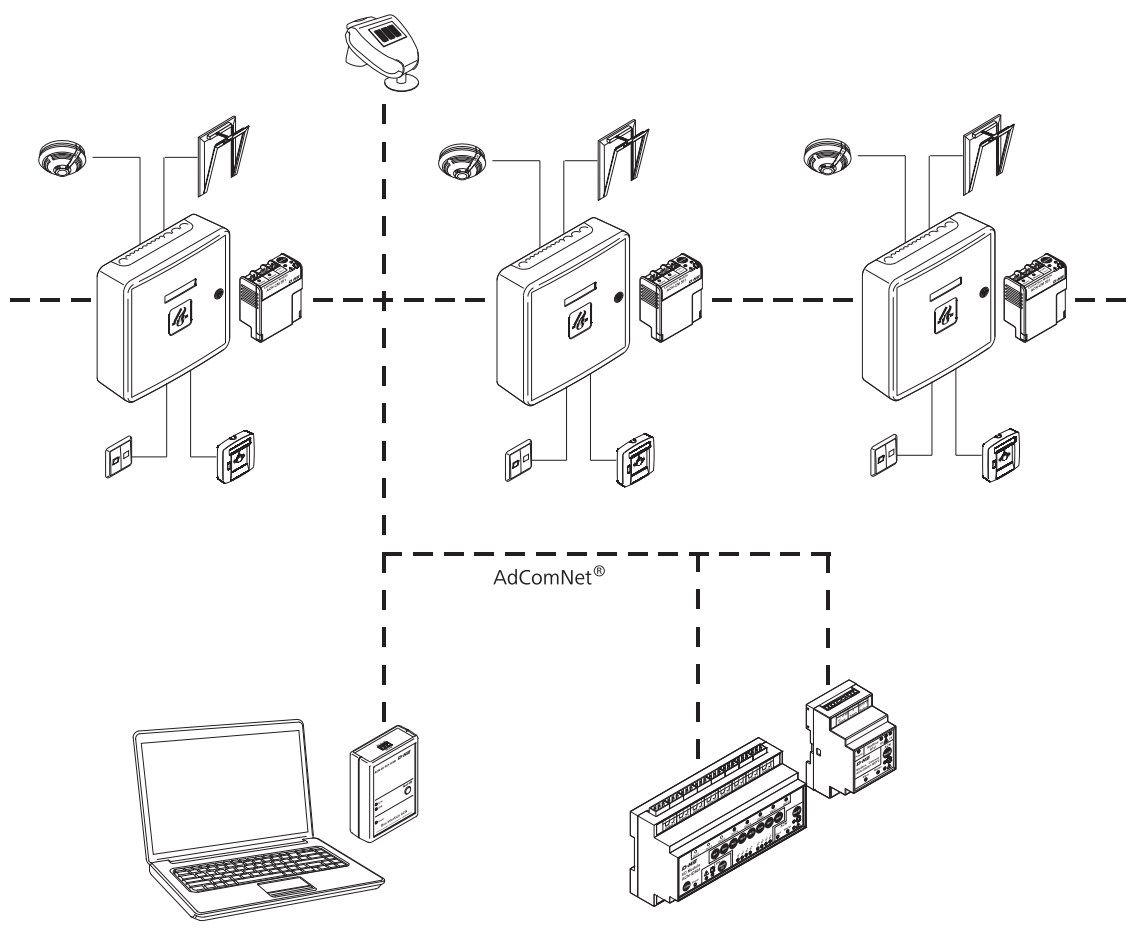
## Overview of advantages:

- » Large savings potential thanks to lower cabling effort, significant reduction of cable cross-sections and lengths
- » Only a tenth of the usual power consumption per node item, thanks to low-power technology
- » Cost savings when designing and dimensioning the SHEV controllers thanks to a reduced need for battery power and size
- » No special power supply required in the event of a mains outage; initial states are kept
- » No need for special system integrators





Example of application



- 1
- 2
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# Basic knowledge of ACB

## What is a bus system?

Generally, a bus is a system for data transfer between several nodes over a shared transfer path. Today, there are all different kinds of bus systems, such as in cars (CAN bus) or in smart homes (KNX, LON, BACnet etc.). In most cases, the most important nodes in a smoke extraction and ventilation network are a building technology system, the window drives and the control panels. Protocols are used as transmission paths in order to meet the requirements for system-internal, secure and stable communication. These protocols can be transported either by way of a radio signal or a cable. The individual devices can “talk to each other”, i.e. exchange information, by determining one of these protocols as the type of information exchange. Before the alarm has even gone off, the rolling shutters slowly move up. Sunlight falls into the

room. In the kitchen, the coffee brewer starts up automatically. At the same time, the heating adjusts to a comfortable temperature in the bathroom and the television in the living room jumps to the latest news. All of this may sound like luxury or like futuristic thinking, but this has long been the daily routine in many households thanks to modern bus systems. Even large building complexes such as schools, offices or hotels are regulated by what is referred to as a building management system (BMS). Such systems are becoming more and more automated these days. In these systems, all “smart” devices communicate with each other in order to offer the user maximum comfort and convenience and to provide benefits in terms of energy.



For the ACB  
planning manual

## Modbus: A common language among the transfer protocols

Over time, a wide variety of transmission systems have been developed by various manufacturers. On an international level, though, only some of these systems meet recognised standards. One of the protocols that meets international standards is Modbus RTU. It is an indispensable element in industrial communication, but it has also arrived on the scene in international markets in the "living" sector. Many applications and devices are equipped with a Modbus interface. Modbus is easy to integrate thanks to its relatively simple structure and is highly stable compared to other systems. Therefore, it is a language that is ideally suited for building management systems. Gateways,

as they are called (D+H gateway is the ACN-GW501-MRTU-0200), are used in buildings where other bus systems, such as BACnet or KNX, take over control of all technical functions. They translate the other information languages into the common Modbus protocol - in that respect, there is no language that Modbus cannot speak. You could say that Modbus is the English, that is, the universal language of transmission protocols. Based on the advantages of this system, D+H decided to structure their ACB technology around the open Modbus RTU protocol.

## The windows speak ACB

Using Advanced Communication Bus (ACB), the newly developed bus system by D+H, window drives can now also be integrated directly into existing building automation. This way, windows open and close fully automatically depending on the weather and ambient air conditions. Using building management systems (BMS), ACB drives can only be operated

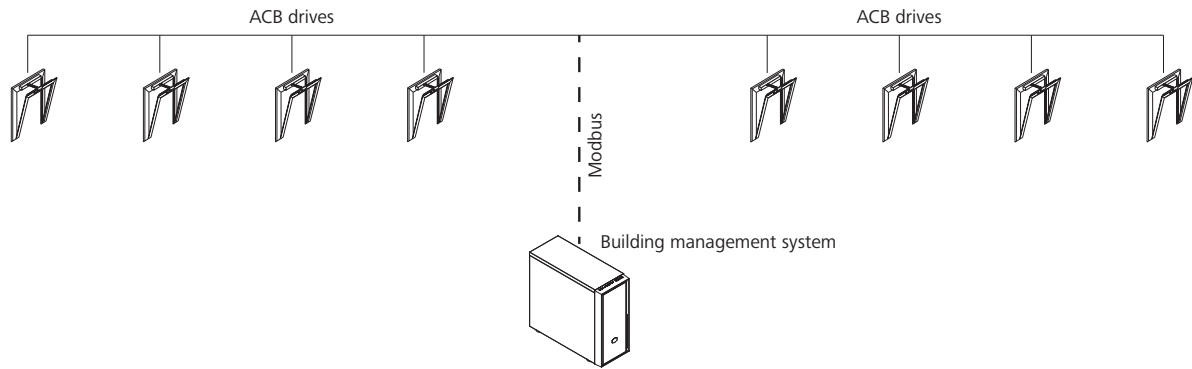
in ventilation mode. The use of smoke vent (SHEV) functions such as high-speed requires the integration into the D + H digital smoke vent control panel (CPS-M). ACB is based on the open Modbus RTU protocol, making integration into a BMS playfully simple.

## Correct and secure planning

For project planning, it is important right at the start to know how many windows and thus how many drives are required for the project. The number of Modbus slave drives per Modbus master is limited to 32 nodes. This ensures virtually delay-free drive communication. The reason for the limitation of the number of drives is the maximum cable length in the Modbus system of

200 m. Since each drive has connection power of approx. 2 m, this adds up to 64 m of cable length for 32 drives. This means that there is a length of 136 m remaining. However, at an average distance of 4 m between two windows, a further 128 m (4 m x 32 m) is added to that 64 m, which together comes out to a cable length of nearly 200 m.

# Added value of ACB drives



## Programming made easy

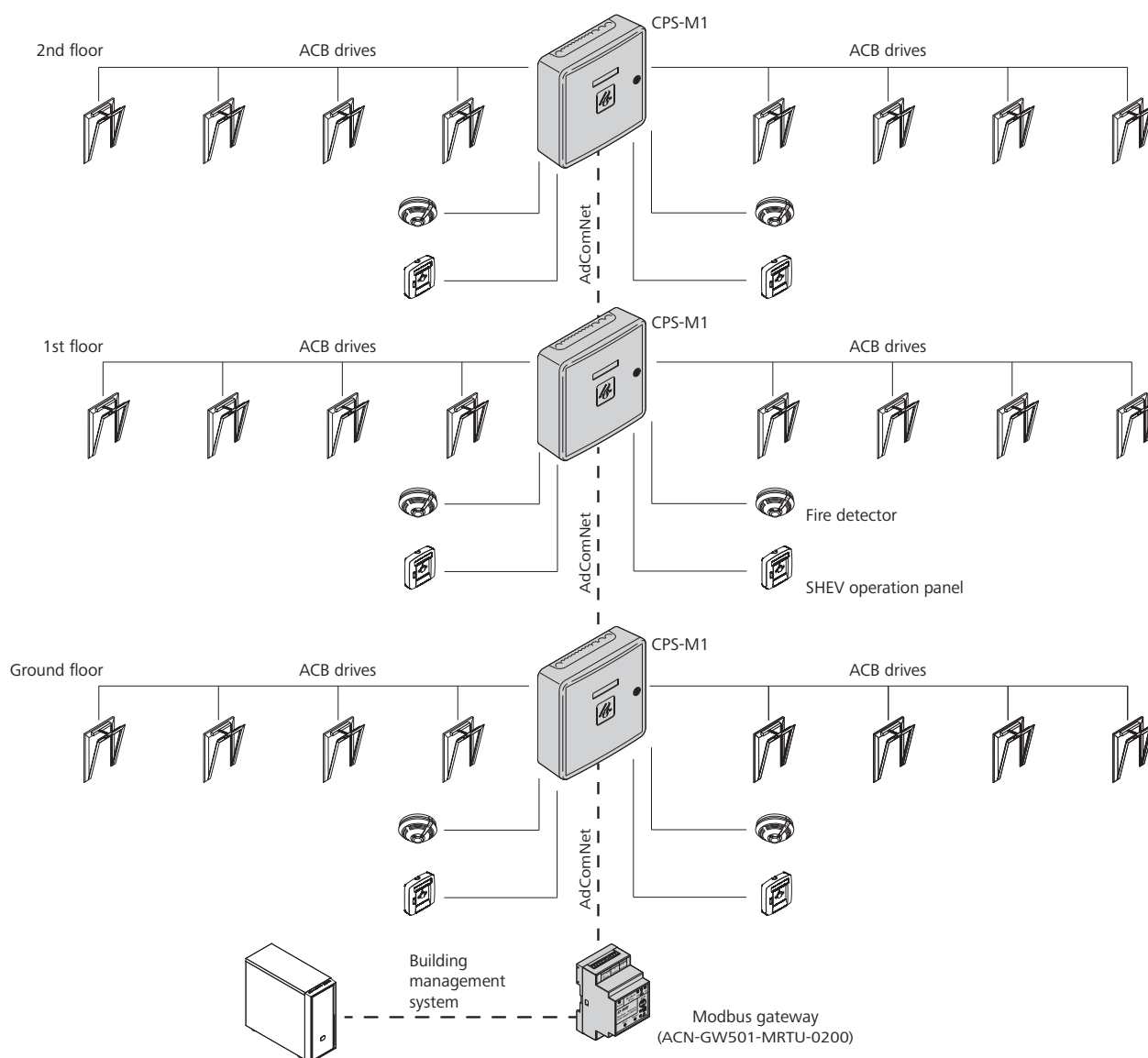
We have explained how ACB drives for ventilation purposes can be controlled directly by the building automation. But were you aware of just how precise this control can be? Control with perfect positioning is an aspect of the programming thanks to the building management system or the SCS software

from D+H, for example. In the summer, do you want the windows to open 10 percent of the way to create a small gap? Or would you rather have them open 80 percent of the way to let a strong breeze air the building out? You can find all details relating to programming in the D+H planning manual.

## Modbus RTU - Taking a look at the technology

The RTU after Modbus stands for Remote Terminal Unit. Why remote? This relates to the master/slave architecture of the Modbus RTU protocol. It works as follows: A device, such as the building management system, a computer or a touch display, takes over the master management function and sends instructions to the "remote" slave – for example, a D+H drive. This drive receives the signal and executes the instruction.

# Networking between CPS-M and ACB drives



## Live communication with the drive

- » Bi-directional bus communication between D+H controllers and D+H drives
- » Programmable using D+H controllers and D+H SCS Software using a PC or tablet with a Windows operating system
- » Multiple drives can be combined to form a drive group and can run synchronously
- » Highly accurate control allows the drive to be extended and retracted with precision down to the millimetre
- » The ACB can be used to read out all status messages such as the exact opening stroke or the OPEN and CLOSED status

# Approvals / Directives

## The CE marking, the European Union product passport

The Construction Product Directive (CPD) was implemented in 1989 to remove trade barriers within the European Union. It was intended to ensure an uniform system for testing, certifying and subsequently classifying construction products. The new Construction Product Regulation has been in effect since March 9, 2011. You can read more about it below.

By using the CE marking for its products, the manufacturer declares compliance with all product-relevant European directives.

For electro-mechanical components for smoke and heat exhaust ventilation, these are the Low Voltage Directive (2014/35/EU) and the EMC Directive (2014/30/EU). Specifically for drives, the manufacturer also declares compliance with the Machinery Directive (2006/42/EC).

For building products which are subject to a harmonised European standard (e.g. EN 12101-10), the manufacturer declares and verifies that the products meet with the product performance listed in the declaration of performance when attaching a CE marking.

## Difference between Construction Product Directive and Construction Product Regulation

The new Construction Product Regulation (CPR) took effect on March 9, 2011. Effective July 1, 2013, the old Construction Product Directive (CPD) has been fully replaced by the new Construction Product Regulation.

Due to its designation as a "regulation", the new CPR is already being implemented automatically within the national law of the respective countries without requiring an additional national legislative act. This is one of the main reasons why a construction product regulation was implemented.

In contrast to the old CPD, the manufacturer declares conformity of its product with all product-relevant European directives and conformity to their own issued declaration of performance since the mandatory enforcement of the CPR.

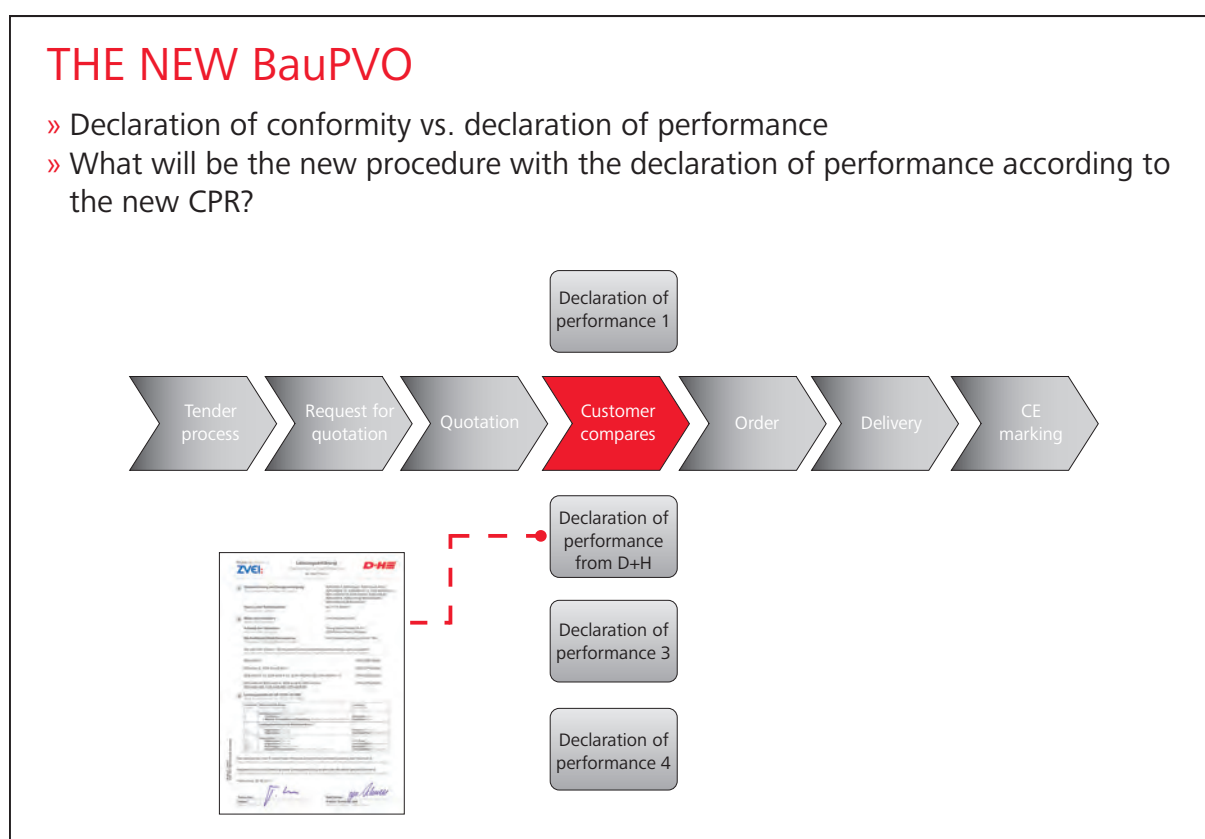
In contrast to the old CPD, a manufacturer must specify a performance value for only one essential feature in accordance with the new CPR. For all other essential features, manufacturers can declare n.p.d (no performance determined). Also, according to the CPR, manufacturers can choose which essential feature they provide information for.

Example: A NSHEV has the fundamental task of ensuring smoke extraction from hot combustion gases through an area measured in aerodynamically precise form. However, a manufacturer is not required to specify an aerodynamic free cross-section or to have it checked. Instead, the manufacturer could theoretically only declare a wind load class of 1,500 WL, for example. We consider it useful and necessary to check and specify all features. This is the only way to ensure comparability of product performance features as well as safe planning and implementation.

## “New” declaration of performance vs. “old” declaration of conformity

From the tendering and selection phase, the declaration of performance has a much higher significance than the declaration of conformity which had previously been submitted with the product.

One clear advantage of the declaration of performance is the fact that—similar to a refrigerator—the NSHEV’s performance behaviour is declared in advance, and does not have to be confirmed starting with delivery of the product. The following figure clearly shows that the declaration of performance starts having an effect on the customer’s selection early and is expected to be an essential supporting factor in the selection. Compared to the old declaration of conformity (which only comes into play during the final step in presentation), the new declaration of performance supports the selection and provides security.



Early impact of the declaration of performance according to the new CPR

## What must the planner keep in mind?

The planner should pay attention to the completely filled-in declaration of performance when selecting natural smoke and heat exhaust ventilators (NSHEV). It gives the planner and manager the chance to compare the climatic and functional requirements imposed on the NSHEV. A comparison is impossible without specifying numerical values and it is doubtful that a product tested in such a way really conforms to requirements.

In conclusion, the new Construction Product Regulation provides the clear advantage of better comparability based on the condition that all features must be demonstrated with numerical values. A product (such as a NSHEV) with a declaration of performance filled in completely with reasonable number values represents today’s standard of quality.

D+H, along with an international network of D+H subsidiaries and D+H sales and service partners, offers a wide range of natural smoke and heat exhaust ventilators (NSHEV) that have been fully tested in accordance with EN 12101-2 and meet all architectural requirements, even with asymmetrical NSHEVs.

## D+H is active

D+H has played a very active role in the development of national standards and directives as well as European and international (global) standards since 1996. We want to ensure that the level of safety that we have known and accepted here in Germany for decades becomes a part of European and global standards as well. One result is the establishment of European standards (e.g. EN 12101-10, power supplies for smoke and heat exhaust systems), which are then to be used as mandatory, harmonised standards in Germany as EN 12101-10. Another result is the creation of global standards, which are then published as ISO standards (e.g. ISO 21927-10; power supplies for SHEV). These standards may then be used worldwide although there is no requirement to do so.

## Overview of standards

### DIN EN

#### **DIN EN 60335-2-103**

Requirements and test methods for drives for windows

#### **DIN EN 12101-2**

Requirements and test methods for natural smoke and heat exhaust ventilators (NSHEV)

#### **Pr EN 12101-9**

Requirements and test methods for control panels (draft)

#### **DIN EN 12101-10**

Requirements and test methods for power supplies

#### **DIN 18232-9**

Significant features and their minimum values for natural smoke and heat exhaust ventilators in accordance with EN 12101-2, for energy supply systems in accordance with EN 12101-10 and for control panels in accordance with ISO 21927-9

### VdS

#### **VdS directive VdS 2580**

Requirements and test methods for electro-mechanical drives, for natural smoke extraction systems (NSE)

#### **VdS directive VdS 2581**

Requirements and test methods for electric control units for natural smoke extraction systems (NSE)

#### **VdS directive VdS 2592**

Requirements and test methods for electric manual control units for natural smoke extraction systems (NSE)

#### **VdS directive VdS 2593**

Requirements and test methods for electric energy supply systems for natural smoke extraction systems (NSE)

#### **VdS directive VdS 2594**

This standard regulates the interaction between the various products in accordance with the above-mentioned VdS directives. The result is a system approval for electric smoke and heat exhaust systems.

### ISO

#### **ISO 21927-2**

Requirements and test methods for natural smoke and heat exhaust ventilators (NSHEV)

#### **ISO 21927-9**

Requirements and test methods for control panels (draft)

#### **ISO 21927-10**

Requirements and test methods for power supplies

### UL

#### **UL 325**

This test standard defines, among other aspects, the requirements and test methods for electro-mechanical drives, which shall be used for ventilation purposes. The result of this test is a UR certificate.

### GOST

#### **GOST R 53325-2012**

DOMESTIC STANDARD OF THE RUSSION FEDERATION. General technical requirements and test methods for fire automatization including natural smoke protection systems.



## Test centres / test symbols

### Dekra

Approvals for the electric safety/security of products (drives and control panels) - particularly regarding Low Voltage Directive approvals for drives in accordance with the EN 60335-2-103 standard.

### VdS Schadenverhütung

Well-established as a test laboratory for fire protection technology in Europe.

Inspection of SHEV control panels in accordance with the standards listed below or VdS directives.

Named as a notified body by DIBt; inspections in accordance with EN 12101-2 European standards for natural smoke and heat exhaust ventilators and subsequent certification.

Inspection of electro-mechanical drives in accordance with the VdS directive VdS 2580.

### I.F.I.

I.F.I. is a Notified Body pursuant to the Construction Products Regulation for natural smoke and heat exhaust ventilators (NSHEV) in accordance with EN 12101-2.

### EN 12101-2

Drive tested in conjunction with NSHEV in accordance with EN 12101-2. See pages 16-17.

### Underwriters Laboratory UL

Underwriters Laboratories (abbreviated UL) is an independent organisation which inspects and certifies products in terms of their safety. UL inspects products, components, materials and systems to see whether they conform to US and Canadian market requirements.

### CNPP

The CNPP is a French test institution which conducts specific function checks for individual components or systems for SHEV facilities in accordance with French standards.

### AFNOR

The AFNOR is a French test institution which issues country-specific certificates on the basis of tests conducted by the CNPP for components or systems of SHEV systems in accordance with French standards.

### CNBOP

The CNBOP is a Polish test institution which conducts specific function checks for individual components or systems for SHEV systems in accordance with Polish standards and laws and which issues certificates based on these tests.

### CCCF

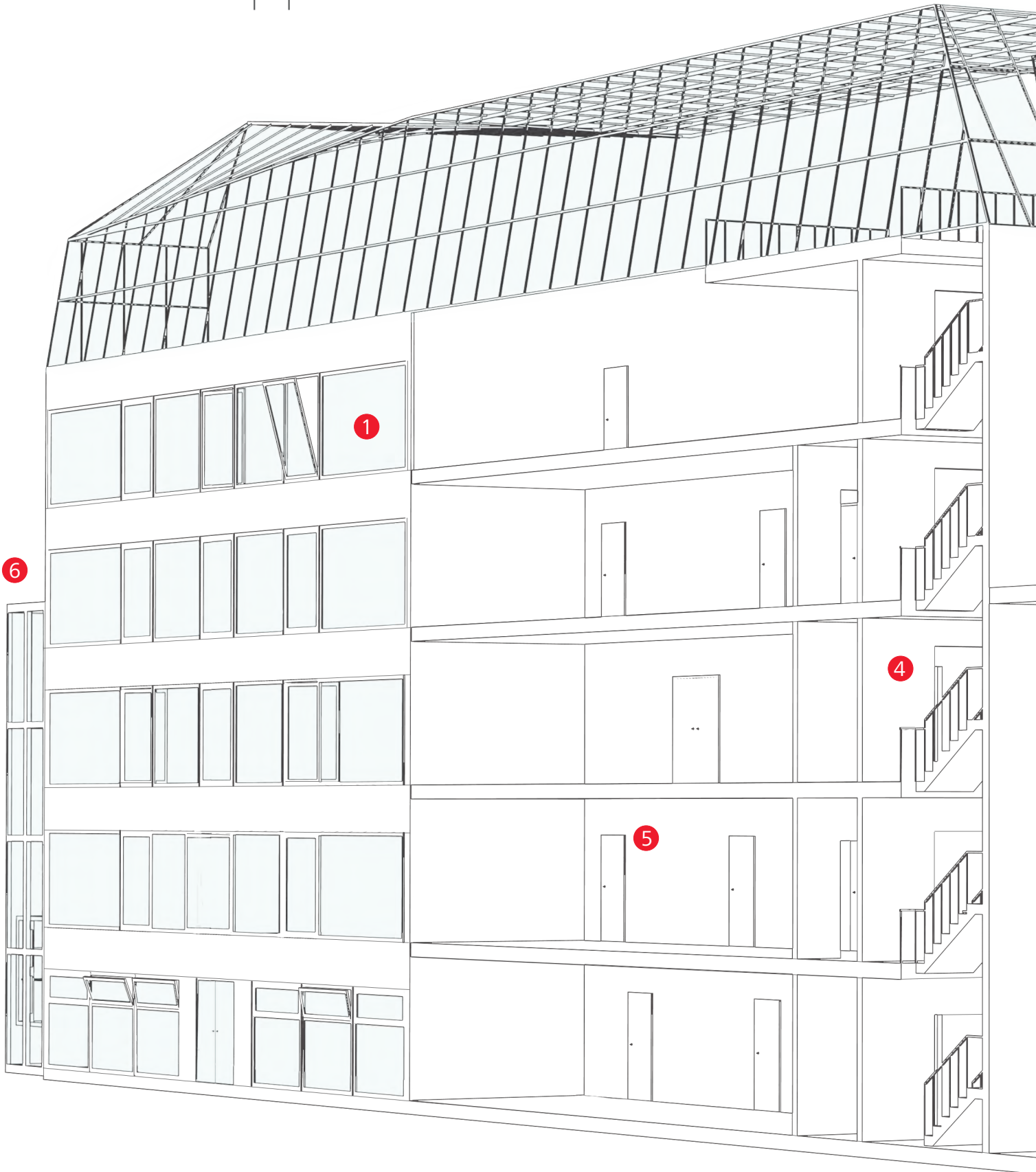
The CCCF is a Chinese test institution which issues country-specific certificates on the basis of tests conducted at accredited Chinese test institutions for components or systems for SHEV systems in accordance with Chinese standards and laws.

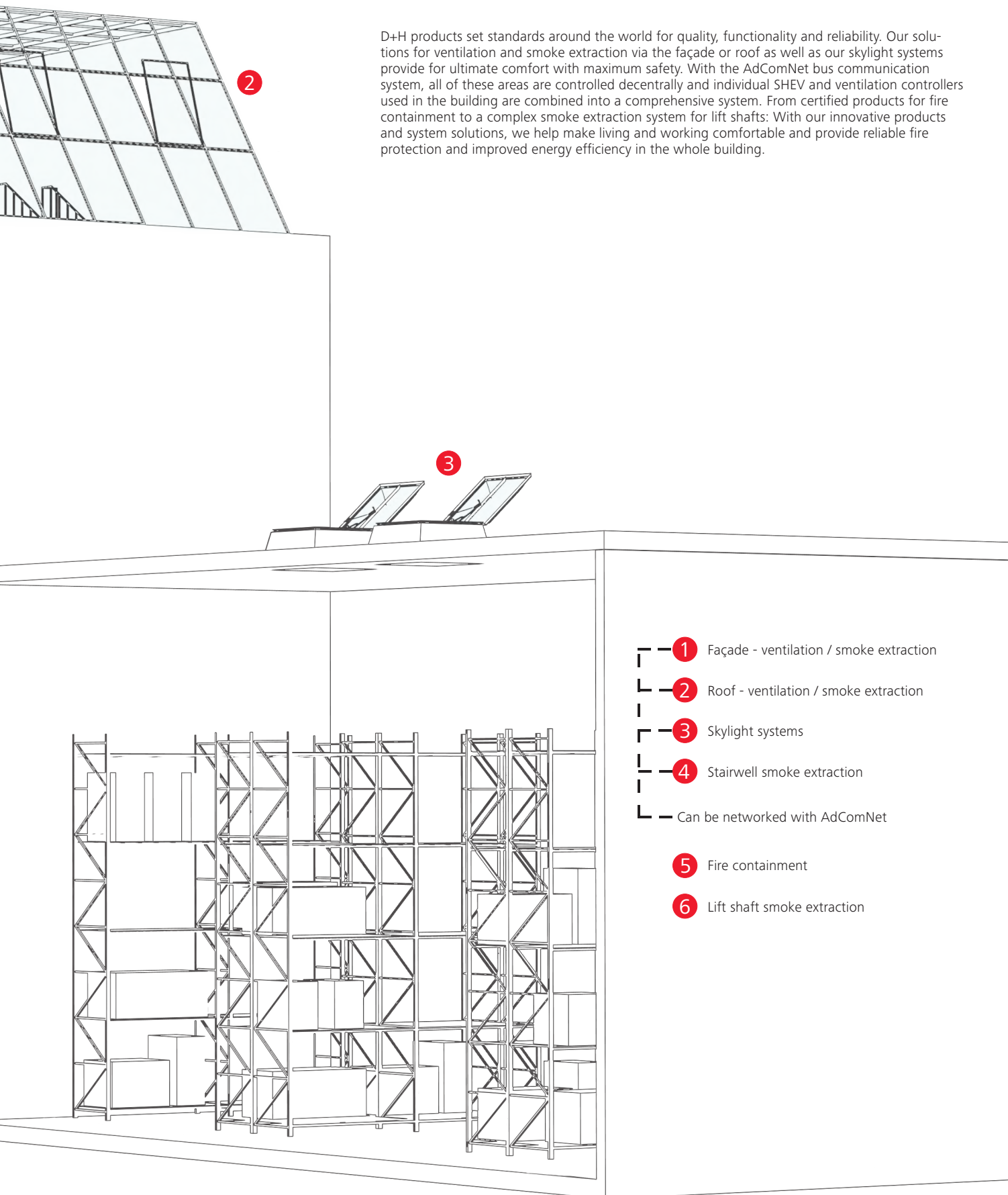
### OS POZHTEST FGBU VNIPO EMERCOM

The institute is part of the system of the state fire department of the Russian Ministry of Disaster Management. It is the most important fire related research institute in the Russian Federation.



# Possible applications





D+H products set standards around the world for quality, functionality and reliability. Our solutions for ventilation and smoke extraction via the façade or roof as well as our skylight systems provide for ultimate comfort with maximum safety. With the AdComNet bus communication system, all of these areas are controlled decentrally and individual SHEV and ventilation controllers used in the building are combined into a comprehensive system. From certified products for fire containment to a complex smoke extraction system for lift shafts: With our innovative products and system solutions, we help make living and working comfortable and provide reliable fire protection and improved energy efficiency in the whole building.

- 1 Façade - ventilation / smoke extraction
- 2 Roof - ventilation / smoke extraction
- 3 Skylight systems
- 4 Stairwell smoke extraction
- 5 Can be networked with AdComNet
- 6 Fire containment
- 7 Lift shaft smoke extraction

# Possible applications

## Façade - ventilation / smoke extraction

Convenience and flexibility done perfectly: Our window drives are suitable for virtually all window and façade solutions. Integrated in wood, aluminium or plastic profiles, our drives can be customised to meet the highest standards of architects, planners and processors. No matter whether the design is inward or outward opening or includes bottom, top or side-hung vents: D+H supports you during installation and supplies the necessary fastening materials.



Side-hung window, inward opening



Bottom-hung window, inward opening



Top-hung window, inward opening



Side-hung window, outward opening



Bottom-hung window, outward opening



Top-hung window, outward opening



Projected top-hung window, outward opening



Drawbridge application



Louvre window



Parallel opening window, inward opening (BDT)



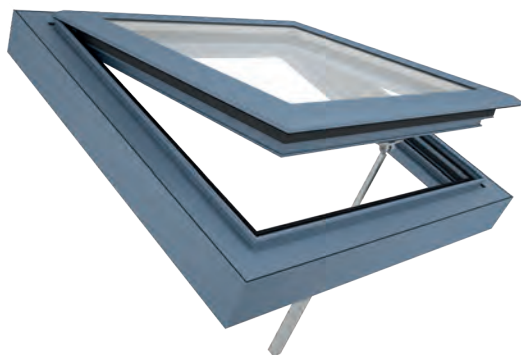
Parallel opening window, outward opening (CDC)



Trapezoidal application

## Roof + skylight systems - ventilation / smoke extraction

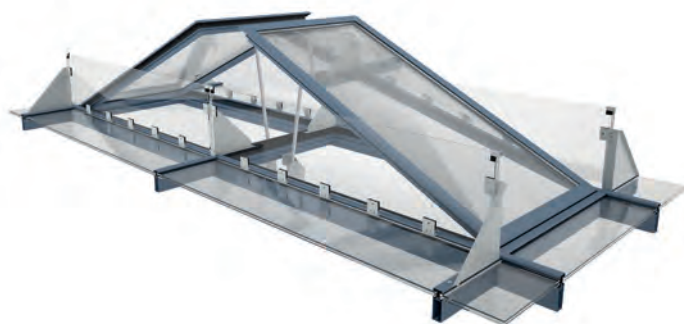
Efficient ventilation and safe smoke and heat exhaust ventilation in the roof area: Our slim and visually elegant high-performance drives from the CDP, ZA and DXD Series prove their worth in terms of design and function. Even the heaviest sashes open in a very short time. Our skylight systems also achieve outstandingly effective ventilation. These systems are fastened to U-brackets or pivot-point displacement brackets as well as to the SDS system, providing exceptionally large opening angles.



Roof window, outward opening

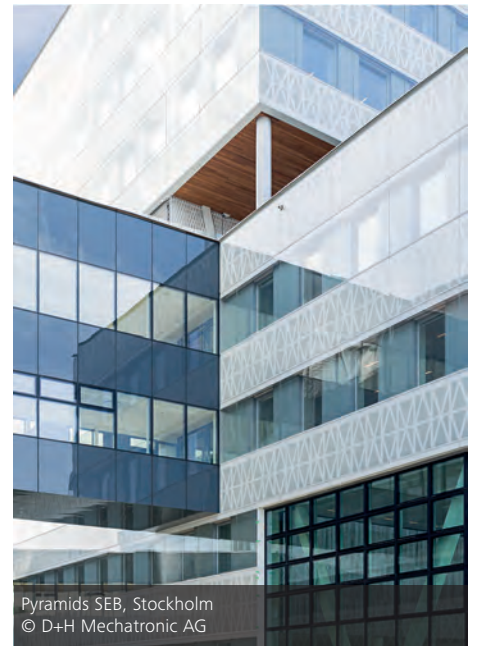


Skylight system



NSHEV with wind deflector

# References





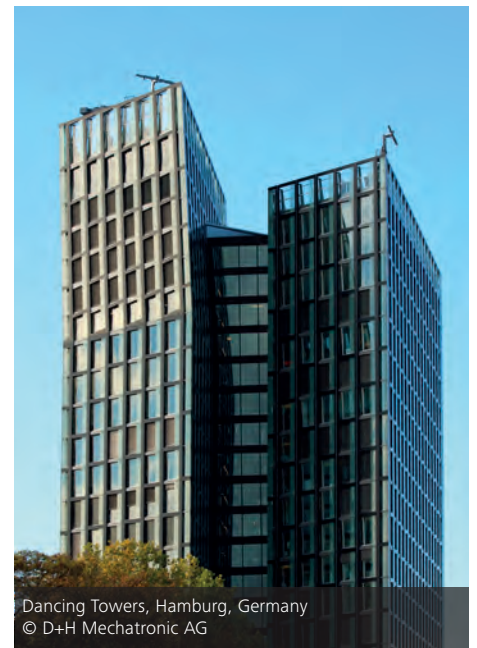
Leuphana University of Lüneburg  
© Libeskind



Médiathèque 56, Pontivy, France  
© AGORA-SODESI



PANEUM - Wunderkammer des Brotes, Asten  
© D+H Mechatronic AG



Dancing Towers, Hamburg, Germany  
© D+H Mechatronic AG



k29 Office Building, Vilnius  
© Evaldas Lasys

# SHEV controllers - modular





## CPS-M Series SHEV control panel - modular

Type	Output	Line	Group	Page
CPS-M1-020-0202	24 V DC / 20 A	2	2	42
CPS-M1-020-0204	24 V DC / 20 A	2	4	42
CPS-M1-020-0404	24 V DC / 20 A	4	4	42
CPS-M1-020-0606	24 V DC / 20 A	6	6	42

Type	Output	Line	Group	Page
CPS-M1-040-0204	24 V DC / 40 A	2	4	44
CPS-M1-040-0206	24 V DC / 40 A	2	6	44
CPS-M1-040-0606	24 V DC / 40 A	6	6	44

Type	Output	Line	Group	Page
CPS-M1-060-0206	24 V DC / 60 A	2	6	46
CPS-M1-060-0410	24 V DC / 60 A	4	10	46

Type	Output	Line	Group	Page
CPS-M1-080-0410	24 V DC / 80 A	4	10	48

Type	Output	Line / Group	Page
CPS-M1-5	24 V DC	Variable	50
NSV 401	230 V AC / 3200 VA		52
Module sets			54

# SHEV controllers - compact



### RZN-T Series SHEV control panel - compact

Type	Output	Line	Group	Page
RZN 4503-T	24 V DC / 3 A	1	1	58
RZN 4503-T Set	24 V DC / 3 A	1	1	60

### RZN-K Series SHEV control panel - compact

Type	Output	Line	Group	Page
RZN 4404-K V2	24 V DC / 4 A	1	1	62

### RZN-M Series SHEV control panel - compact

Type	Output	Line	Group	Page
RZN 4408-K	24 V DC / 8 A	1	2	64
RZN 4404-M	24 V DC / 4 A	2	2	66
RZN 4408-M	24 V DC / 8 A	2	3	68
RZN 4416-M	24 V DC / 16 A	2	3	70

### AdComNet

Type	Page
ACN-IO501	72
ACN-CM501	74
ACN-GW501-MRTU-0200	76

### RT Series SHEV operation panel

Type	Page
RT 45	78
RT 45-LT	80

### Signal emitter Alarm devices

Type	Supply	Volume	Page
CWSO-RR-S1	9 ... 29 V DC / 0.03 A	102.1 dB	91
FG 42	24 V DC / 0.03 A	93 dB	91
BL 41	24 V DC / 0.25 A		91

### Emergency power supply Batteries

Type	Page
Akku Typ 1 / 2 / 3 / 4 / 5 / 6 / 8	92





# CPS-M1-020



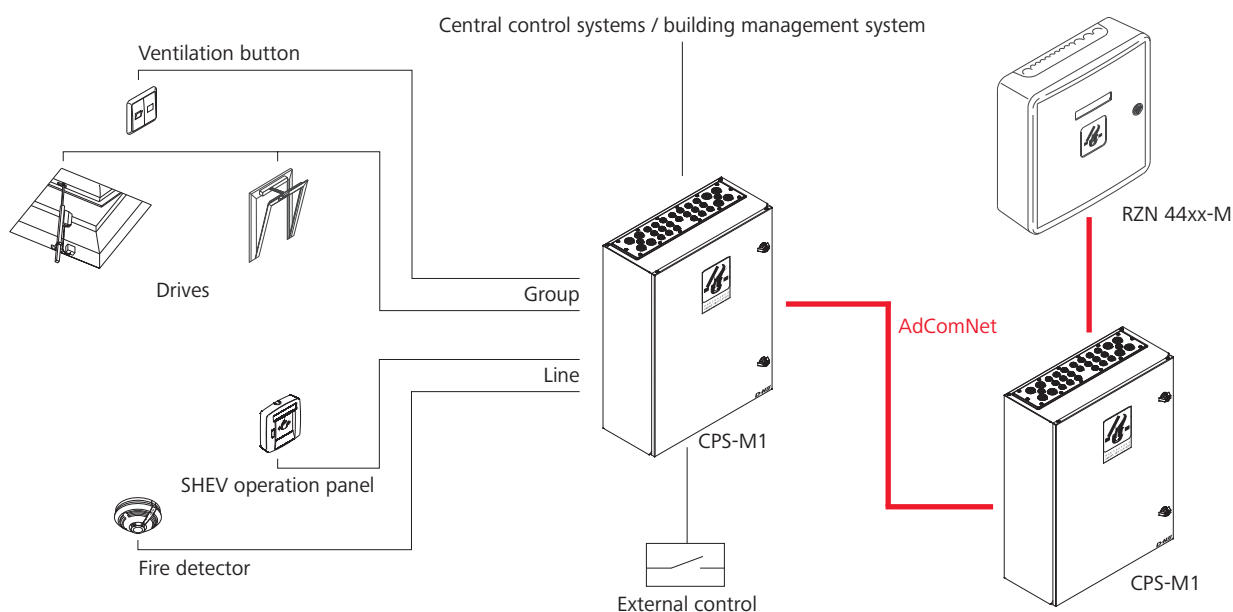
## Performance features

- » Power supply of connected drives with up to 20 A total current consumption
- » Approved by VdS in accordance with EN 12101-10
- » AdComNet bus system for seamless networking of the modules within the CPS-M and further D+H AdComNet components
- » Bidirectional communication with ACB compatible drives
- » Supply connection and communication using integrated plug connectors
- » Customisable, programmable control panel functions
- » Sleek menu guidance using a 3.5" Full Colour Touch Panel, through which the system states of the individual modules can be visually observed (optional)
- » Freely selectable line/group assignment
- » TMA trigger module: 2 independent lines to connect up to 10 SHEV operation panels each and 30 fire detectors
- » AM actuator module: 2 independent groups for connecting drives, each with a total maximum current of 10 A

## Accessories

Module sets	Battery	SHEV operation panels	Alarm devices	Sensor systems
				
starting on page 54	starting on page 92	starting on page 78	starting on page 90	starting on page 140

## Example of application



## Technical data

	CPS-M1-020
Supply	230 V AC / 50 Hz / 530 VA
Output	24 V DC / 20 A
Ripple	< 50 mVss
Mode of operation monitoring	Pulse operation
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 54
Temperature range	-5 °C ... +40 °C
Housing	Steel sheet
Colour	Light grey (~RAL 7035)
W x H x D	500 x 500 x 210 mm
Battery type	Typ 5 (2x)

Batteries must be ordered separately.

## Design

Type	Art. No.	Number of TMA	Number of AM	Line / Group	Weight
CPS-M1-020-0202	31.700.10	1	1	2 / 2	17.00 kg
CPS-M1-020-0204	31.700.15	1	2	2 / 4	17.10 kg
CPS-M1-020-0404	31.700.20	2	2	4 / 4	17.20 kg
CPS-M1-020-0606	31.700.25	3	3	6 / 6	17.60 kg

## Approvals / Certificates

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# CPS-M1-040



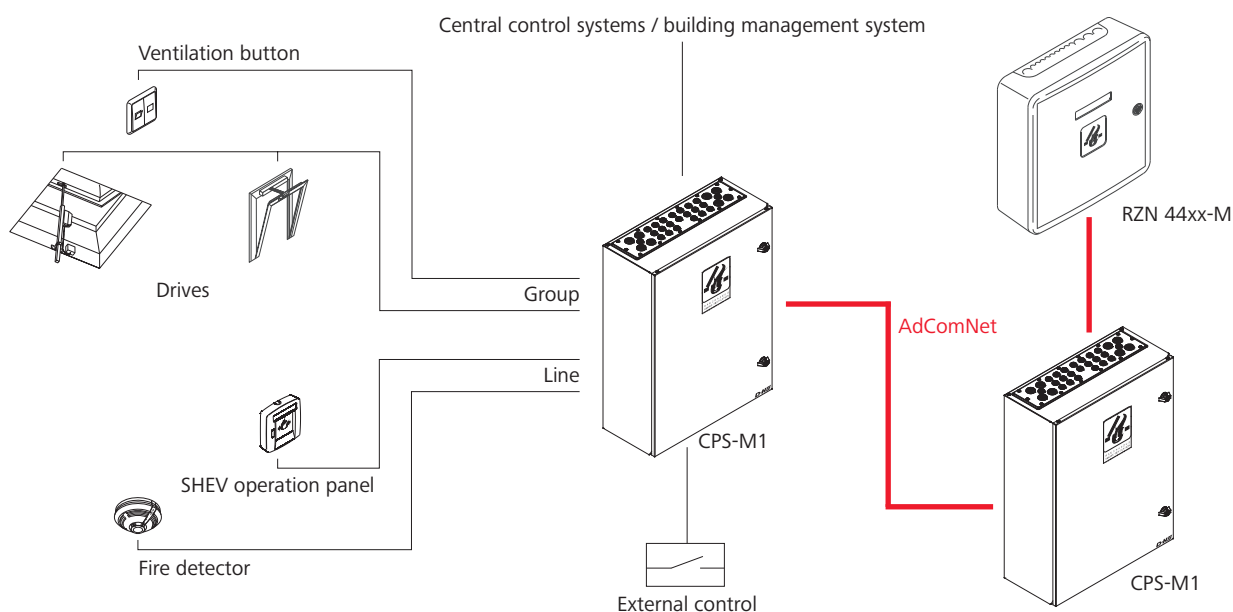
## Performance features

- » Power supply of connected drives with up to 40 A total current consumption
- » Approved by VdS in accordance with EN 12101-10
- » AdComNet bus system for seamless networking of the modules within the CPS-M and further D+H AdComNet components
- » Bidirectional communication with ACB compatible drives
- » Supply connection and communication using integrated plug connectors
- » Customisable, programmable control panel functions
- » Sleek menu guidance using a 3.5" Full Colour Touch Panel, through which the system states of the individual modules can be visually observed (optional)
- » Freely selectable line/group assignment
- » TMA trigger module: 2 independent lines to connect up to 10 SHEV operation panels each and 30 fire detectors
- » AM actuator module: 2 independent groups for connecting drives, each with a total maximum current of 10 A

## Accessories

Module sets	Battery	SHEV operation panels	Alarm devices	Sensor systems
				
starting on page 54	starting on page 92	starting on page 78	starting on page 90	starting on page 140

## Example of application



## Technical data

	CPS-M1-040
Supply	230 V AC / 50 Hz / 1040 VA
Output	24 V DC / 40 A
Ripple	< 50 mVss
Mode of operation monitoring	Pulse operation
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 54
Temperature range	-5 °C ... +40 °C
Housing	Steel sheet
Colour	Light grey (~ RAL 7035)
W x H x D	600 x 800 x 260 mm
Battery type	Typ 6 (2x)

Batteries must be ordered separately.

## Design

Type	Art. No.	Number of TMA	Number of AM	Line / Group	Weight
CPS-M1-040-0204	31.700.30	1	2	2 / 4	24.10 kg
CPS-M1-040-0206	31.700.35	1	3	2 / 6	24.20 kg
CPS-M1-040-0606	31.700.50	3	3	6 / 6	24.40 kg

## Approvals / Certificates

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# CPS-M1-060



## Performance features

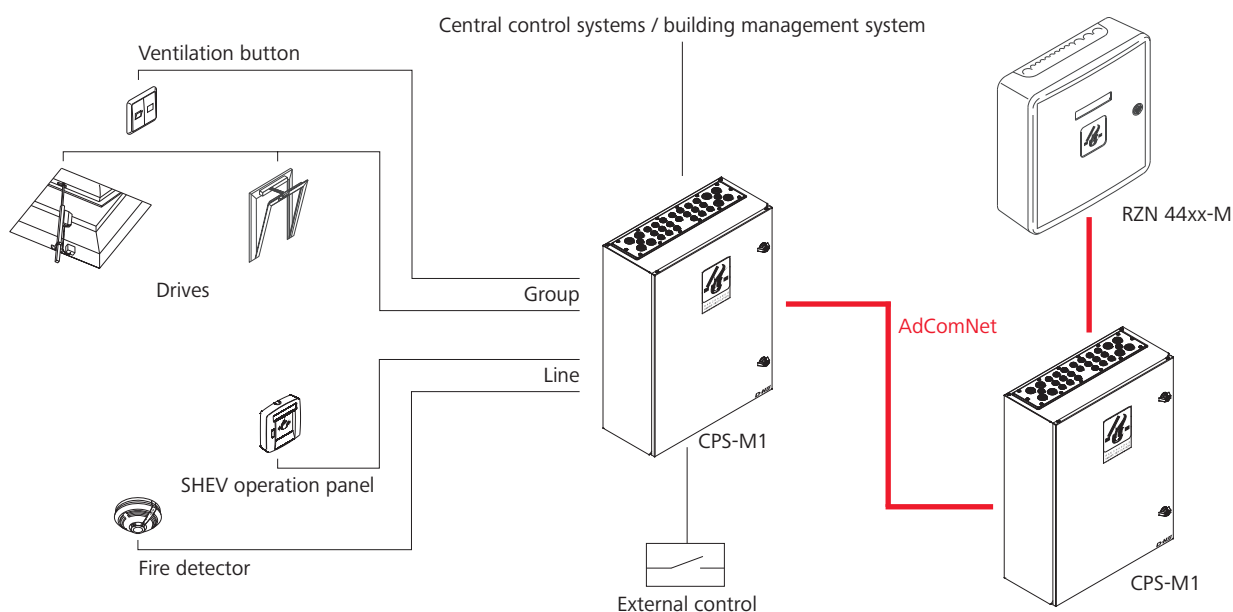
- » Power supply of connected drives with up to 60 A total current consumption
- » Approved by VdS in accordance with EN 12101-10
- » AdComNet bus system for seamless networking of the modules within the CPS-M and further D+H AdComNet components
- » Bidirectional communication with ACB compatible drives
- » Supply connection and communication using integrated plug connectors
- » Customisable, programmable control panel functions
- » Sleek menu guidance using a 3.5" Full Colour Touch Panel, through which the system states of the individual modules can be visually observed (optional)
- » Freely selectable line/group assignment
- » TMA trigger module: 2 independent lines to connect up to 10 SHEV operation panels each and 30 fire detectors
- » AM actuator module: 2 independent groups for connecting drives, each with a total maximum current of 10 A

## Accessories

Module sets	Battery	SHEV operation panels	Alarm devices	Sensor systems
				
starting on page 54	starting on page 92	starting on page 78	starting on page 90	starting on page 140



## Example of application



## Technical data

	CPS-M1-060
Supply	230 V AC / 50 Hz / 1570 VA
Output	24 V DC / 60 A
Ripple	< 50 mVss
Mode of operation monitoring	Pulse operation
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 54
Temperature range	-5 °C ... +40 °C
Housing	Steel sheet
Colour	Light grey (~ RAL 7035)
W x H x D	600 x 800 x 260 mm
Battery type	Typ 5 (2x) / Typ 6 (2x)

Batteries must be ordered separately.

## Design

Type	Art. No.	Number of TMA	Number of AM	Line / Group	Weight
CPS-M1-060-0206	31.700.55	1	3	2 / 6	26.20 kg
CPS-M1-060-0410	31.700.80	2	5	4 / 10	26.50 kg

## Approvals / Certificates

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0786-CPR-50680

# CPS-M1-080



## Performance features

- » Power supply of connected drives with up to 80 A total current consumption
- » Approved by VdS in accordance with EN 12101-10
- » AdComNet bus system for seamless networking of the modules within the CPS-M and further D+H AdComNet components
- » Bidirectional communication with ACB compatible drives
- » Supply connection and communication using integrated plug connectors
- » Customisable, programmable control panel functions
- » Sleek menu guidance using a 3.5" Full Colour Touch Panel, through which the system states of the individual modules can be visually observed (optional)
- » Freely selectable line/group assignment
- » TMA trigger module: 2 independent lines to connect up to 10 SHEV operation panels each and 30 fire detectors
- » AM actuator module: 2 independent groups for connecting drives, each with a total maximum current of 10 A

## Accessories

Module sets



starting on page 54

Battery



starting on page 92

SHEV operation panels



starting on page 78

Alarm devices



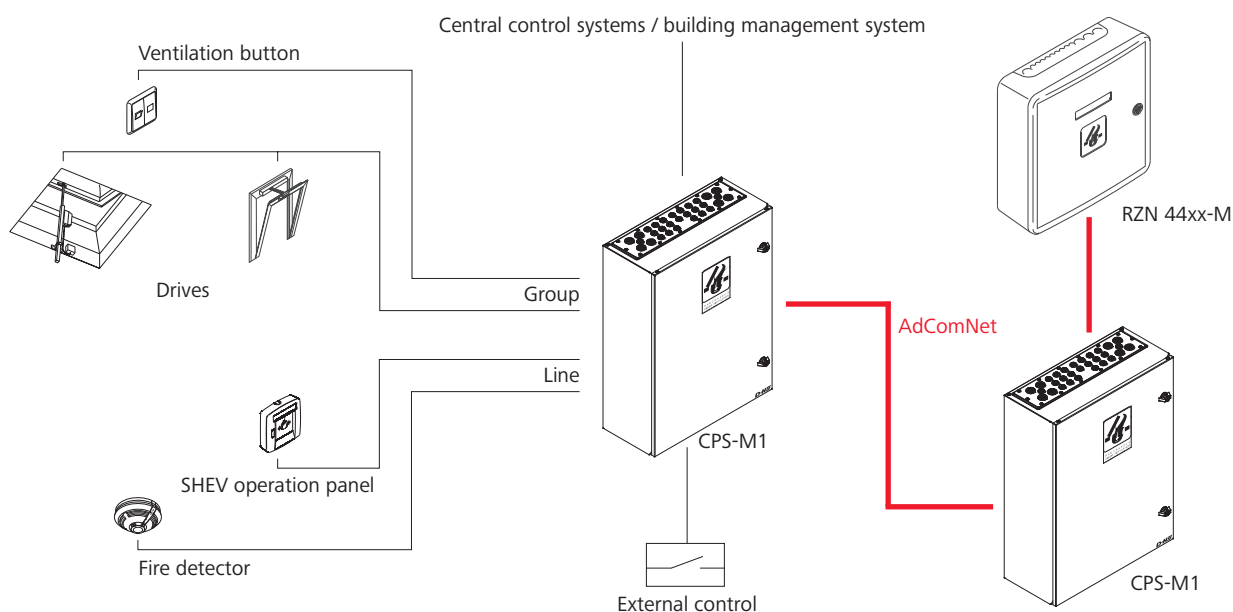
starting on page 90

Sensor systems



starting on page 140

## Example of application



## Technical data

	CPS-M1-080
Supply	230 V AC / 50 Hz / 2080 VA
Output	24 V DC / 80 A
Ripple	< 50 mVss
Mode of operation monitoring	Pulse operation
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 54
Temperature range	-5 °C ... +40 °C
Housing	Steel sheet
Colour	Light grey (~ RAL 7035)
W x H x D	800 x 1000 x 300 mm
Battery type	Typ 6 (4x)

Batteries must be ordered separately.

## Design

Type	Art. No.	Number of TMA	Number of AM	Line / Group	Weight
CPS-M1-080-0410	31.701.00	2	5	4 / 10	58.50 kg

## Approvals / Certificates

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0786-CPR-50680

# CPS-M1-S



## Performance features

- » Variable modular technology for complex position requirements
- » Flexible system design thanks to the supporting rail assembly for all modules and additions
- » Supply connection and communication using integrated plug connectors
- » Components can be retrofitted in case of building modifications
- » Configurable SHEV and ventilation functions using D+H software SCS
- » 2x max. 10 A drive current for each actuator module
- » Connection of up to 30 fire detectors or 10 SHEV operation panels for each monitored line plug-in unit
- » AdComNet bus system for seamless networking of the modules within the CPS-M and further D+H AdComNet components
- » Flexible use of configurable, digital inputs and outputs
- » Stabilized output voltage thanks to power pack technology

## Accessories

Module sets

Batteries

SHEV operation panels

Alarm devices

Sensor systems



starting on page 54

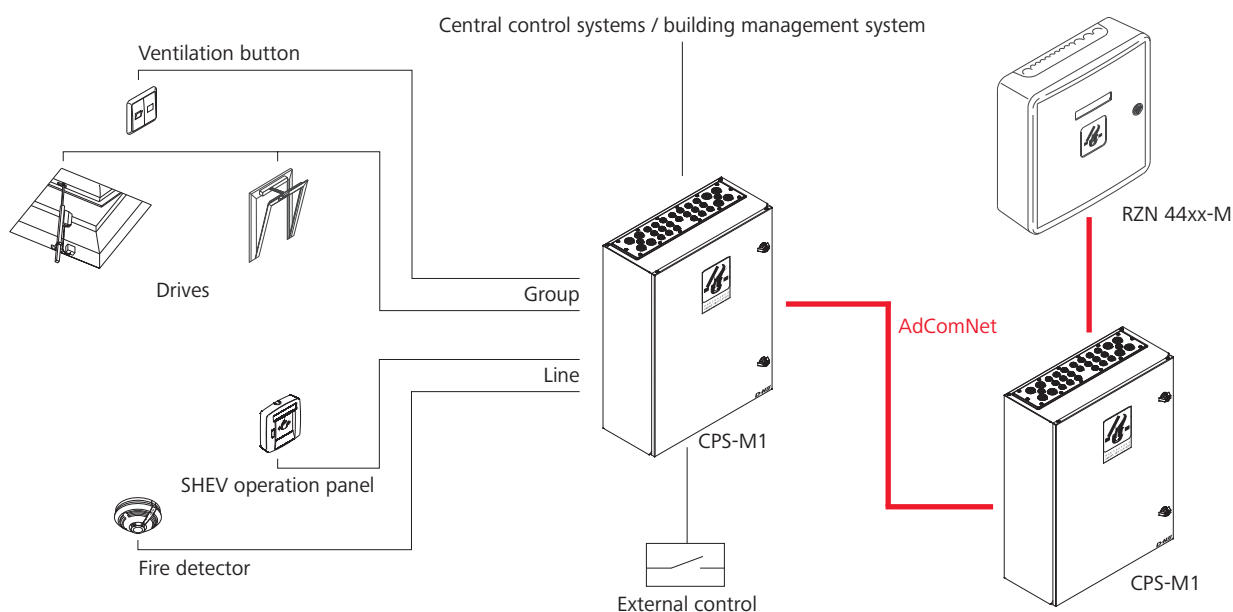
starting on page 92

starting on page 78

starting on page 90

starting on page 140

## Example of application



## Technical data

	CPS-M1-S
Supply	230 V AC / 50 Hz
Output	24 V DC
Ripple	< 50 mVss
Mode of operation monitoring	Pulse operation
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 54
Temperature range	-5 °C ... +40 °C
Housing	Steel sheet

Batteries must be ordered separately.

## Approvals / Certificates

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## Design

Type	Art. No.	Remark
CPS-M1-S	31.700.00	Variable equipment possible

# 230 V AC SHEV system



NSV 401



AM-MS 230

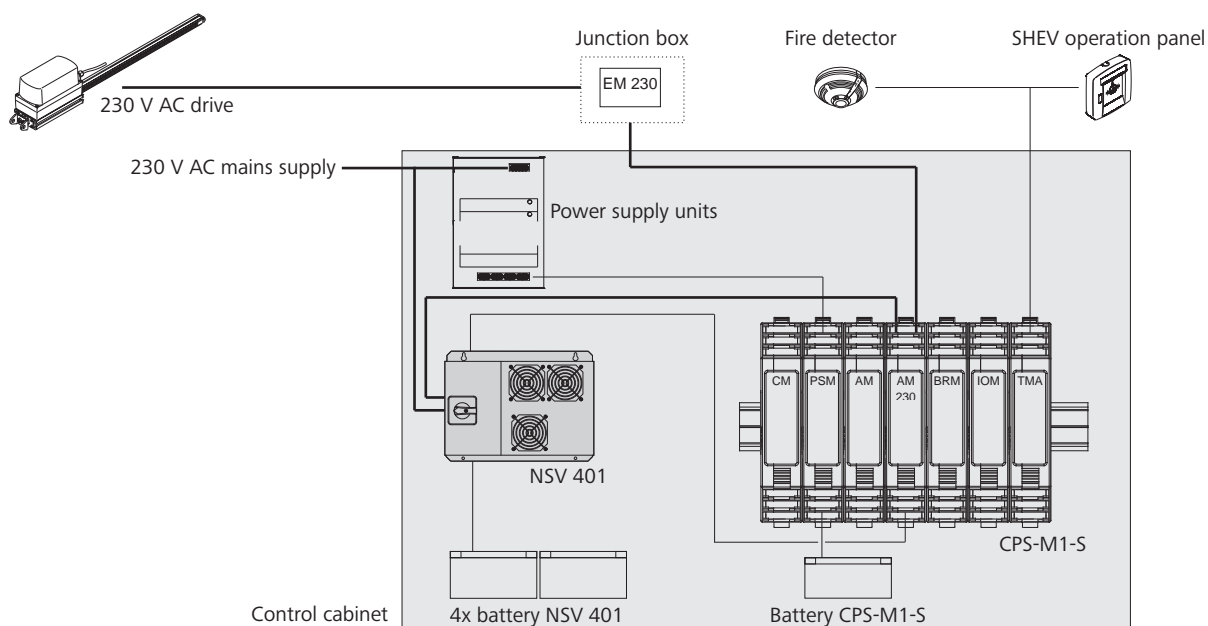
## Performance features

- » CPS-M1-S in conjunction with 230 V AC emergency power supply NSV
- » One-of-a-kind system with a consistent 230 V AC energy supply between controller and drives
- » More performance - less wiring expense
- » Ideal for long cable paths
- » Particularly for heavy duty applications in roof areas

## Accessories

Control panels	Module sets	AdComNet	SHEV operation panels	Sensor systems
starting on page 38	starting on page 54	starting on page 72	starting on page 78	starting on page 140

## Example of application



## Technical data

NSV 401	
Supply	230 V AC / +10 % ... -15 % / 50 Hz
High/low-voltage regulation	-13 % / +13 %
Max. output	3200 VA / 2000 W (14.6 A)
Mains operation	197 - 250 V AC
Support operation	230 V AC (sine $\pm 5$ %)
Ability to be overloaded	10 - 25 s / > 130 % 1.5 s
AC efficiency	> 95 %
Nominal battery voltage	48 V DC (nominal)
Recommended temperature range	+15 °C ... +25 °C
Cooling	Fan cooling
Noise level	< 45 dB
Battery type (NSV)	Typ 4 (4x) / Typ 5 (4x)

Batteries must be ordered separately.

## Design

Type	Art. No.	Weight	Remark
NSV 401	64.801.48	19.00 kg	
AM-MS 230	31.704.70		
CPS-M1-S	31.700.00		Variable equipment possible

# Module sets



## Performance features

- » Module sets for D+H CPS-M control panels
- » Basic equipment and additions including all relevant assemblies
- » For new installations and directly connecting to existing control panels
- » Function selection and assignment that can be programmed using the D+H software SCS

## Accessories

Batteries

SHEV operation panels

Alarm devices

Sensor systems



starting on page 92

starting on page 78

starting on page 90

starting on page 140



Type	Art. No.	Description
------	----------	-------------

CM-PSM-MS-TP-BTM-TCSU-CC 31.704.00



**Basic / expansion set**

- » Consisting of the CPS-M modules:
  - Controller module
  - Supply module
  - Basic module socket
  - 3.5" Touch Panel
  - Bus termination module
  - Temperature control sensor unit
  - 1 m and 2 m connecting cable
- » AdComNet bus system for seamless module networking within the CPS-M and further D+H AdComNet components
- » Makes it possible to provide the CPS-M with an initial source of load current up to 40 A and to charge a 26 Ah set of batteries
- » Can be expanded with connectors integrated into the module bases
- » Installation on 35 mm top hat rail

Type	Art. No.	Description
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CM-PSM-MS-BTM-TCSU-CC 31.704.40



**Basic / expansion set**

- » Consisting of the CPS-M modules:
  - Controller module
  - Supply module
  - Basic module socket
  - Bus termination module
  - Temperature control sensor unit
  - 1 m and 2 m connecting cable
- » AdComNet bus system for seamless module networking within the CPS-M and further D+H AdComNet components
- » Makes it possible to provide the CPS-M with an initial source of load current up to 40 A and to charge a 26 Ah set of batteries
- » Can be expanded with connectors integrated into the module bases
- » Installation on 35 mm top hat rail

Type	Art. No.	Description
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PSM-MS-TCSU-CC 31.704.10



**Supply expansion set**

- » Consisting of the CPS-M modules:
  - Supply module
  - Supply module socket
  - Temperature control sensor unit
  - 2 m connecting cable
- » Enables additional supply of an existing CPS-M controller with up to 40 A
- » Can be expanded with connectors integrated into the module bases
- » Installation on 35 mm top hat rail

## CPS-M Series SHEV control panel - modular

Type	Art. No.	Description
AM-MS	31.704.20	<p><b>Actuator module expansion set 24 V DC</b></p> <ul style="list-style-type: none"> <li>» Consisting of the CPS-M modules: <ul style="list-style-type: none"> <li>- Actuator module 24 V DC</li> <li>- Expansion module socket</li> </ul> </li> <li>» Can provide up to 2x 10 A and a total drive current of 20 A</li> <li>» Compatible with 24 V DC ACB drives</li> <li>» Electric fuse protection of the motor connections</li> <li>» Can be expanded with connectors integrated into the module bases</li> <li>» Installation on 35 mm top hat rail</li> </ul>



Type	Art. No.	Description
AM-MS 230	31.704.70	<p><b>Actuator module expansion set 230 V AC</b></p> <ul style="list-style-type: none"> <li>» Consisting of the CPS-M modules: <ul style="list-style-type: none"> <li>- Actuator module 230 V AC</li> <li>- Expansion module socket</li> <li>- Terminal module 230 V AC</li> </ul> </li> <li>» Can provide up to 1x 8 A total drive current</li> <li>» Compatible with 230 V AC ACB drives</li> <li>» All-insulated contacts in the 230 V AC area</li> <li>» Motor connection protected by a thermal fuse</li> <li>» Can be expanded with connectors integrated into the module bases</li> <li>» Installation on 35 mm top hat rail</li> </ul>



Type	Art. No.	Description
TMA-MS	31.704.30	<p><b>Trigger module expansion set</b></p> <ul style="list-style-type: none"> <li>» Consisting of the CPS-M modules: <ul style="list-style-type: none"> <li>- Analog trigger module</li> <li>- Expansion module socket</li> </ul> </li> <li>» Can integrate 2x 30 fire detectors and 10 SHEV operation panels into the control panel system</li> <li>» Can be expanded with connectors integrated into the module bases</li> <li>» Installation on 35 mm top hat rail</li> </ul>



Type	Art. No.	Description
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BRM-MS

31.704.60

**Bistable relay module expansion set**

- » Consisting of the CPS-M modules:
  - Bistable relay module
  - Expansion module socket
- » Displaying system states via 6 digital, bistable outputs (changeover contacts)
- » Can be expanded with connectors integrated into the module bases
- » Installation on 35 mm top hat rail



Type	Art. No.	Description
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IOM-MS

31.704.50

**I/O module expansion set**

- » Consisting of the CPS-M modules:
  - I/O module digital
  - Expansion module socket
- » Evaluation of signals via 12 digital inputs
- » Displaying system states via 12 digital outputs (non-isolated)
- » Can be expanded with connectors integrated into the module bases
- » Installation on 35 mm top hat rail



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# RZN 4503-T



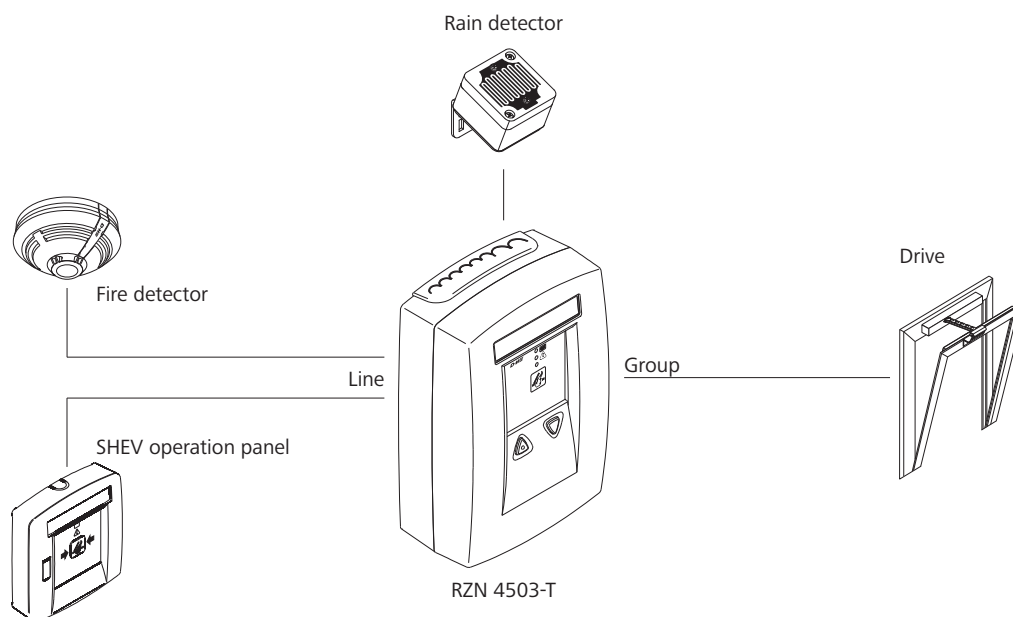
## Performance features

- » Compact SHEV control panel, specifically for stairwells
- » Up to 3 A total drive current
- » Stabilised output voltage
- » Integrated smoke extraction and ventilation button
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retriggering function and smoke detector remote reset
- » Integrated comfort functions for daily ventilation
- » 2 freely programmable and isolated signalling contacts
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Easy installation by separating installation plate and upper housing

## Accessories

Battery	SHEV operation panels	Sensor systems	Cable duct adapter	Emergency hammer
starting on page 92	starting on page 78	starting on page 140	Page 59	Page 59

## Example of application



## Technical data

	RZN 4503-T
Supply	230 V AC / 50 Hz / 100 VA
Stand-by power	< 5 W
Output	24 V DC / 3 A
Ripple	< 0,5 Vss
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 30
Temperature range	-5 °C ... +40 °C
Line / Group	1 / 1
Housing	Aluminium
Battery type	Typ 8 (1x)

Batteries must be ordered separately.

## Design

Type	Art. No.	Colour	W x H x D	Weight	Remark
RZN 4503-T	30.107.30	Orange (~ RAL 2011)	156 x 235 x 82 mm	1.90 kg	
RZN 4503-T/B	30.107.50	Blue (~ RAL 5009)	156 x 235 x 82 mm	1.90 kg	
RZN 4503-T/G	30.107.40	Grey (~ RAL 7035)	156 x 235 x 82 mm	1.90 kg	
RZN 4503-T/R	30.107.70	Red (~ RAL 3000)	156 x 235 x 82 mm	1.90 kg	
RZN 4503-T/Y	30.107.60	Yellow (~ RAL 1004)	156 x 235 x 82 mm	1.90 kg	
EH 401	30.110.25			0.09 kg	Emergency hammer
KK 4503	30.107.90	Grey (~ RAL 7035)		0.20 kg	Cable duct adapter

## Approvals / Certificates

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0786-CPD-50435

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# RZN 4503-T Set



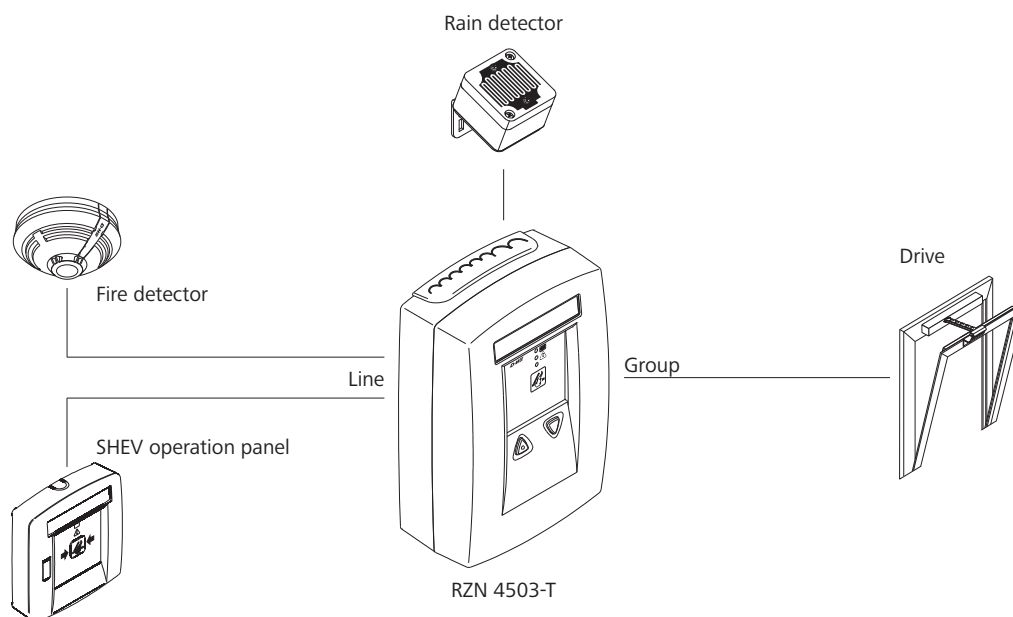
## Performance features

- » SHEV control panel set specifically for stairwells
- » Integrated smoke extraction and ventilation button
- » External SHEV operation panel, battery and fire detector included
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retriggering function and smoke detector remote reset
- » Integrated comfort functions for daily ventilation
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Easy installation by separating installation plate and upper housing

## Accessories

Battery	SHEV operation panels	Sensor systems	Cable duct adapter	Emergency hammer
				
starting on page 92	starting on page 78	starting on page 140	Page 61	Page 61

## Example of application



## Technical data

RZN 4503-T Set	
Supply	230 V AC / 50 Hz / 100 VA
Stand-by power	< 5 W
Output	24 V DC / 3 A
Ripple	< 0,5 V <sub>ss</sub>
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 30
Temperature range	-5 °C ... +40 °C
Line / Group	1 / 1
Housing	Aluminium
Colour	Orange (~ RAL 2011)
Battery type	Typ 8 (1x)

## Approvals / Certificates

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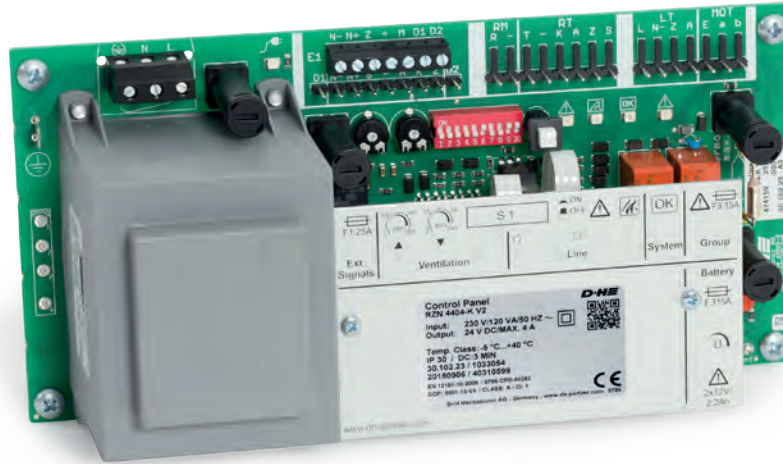


0786-CPD-50435

## Design

Type	Art. No.	W x H x D	Weight	Remark
RZN 4503-T Set	30.107.97	156 x 235 x 82 mm	3.80 kg	
EH 401	30.110.25		0.09 kg	Emergency hammer
KK 4503	30.107.90		0.20 kg	Cable duct adapter





# RZN 4404-K V2



## Performance features

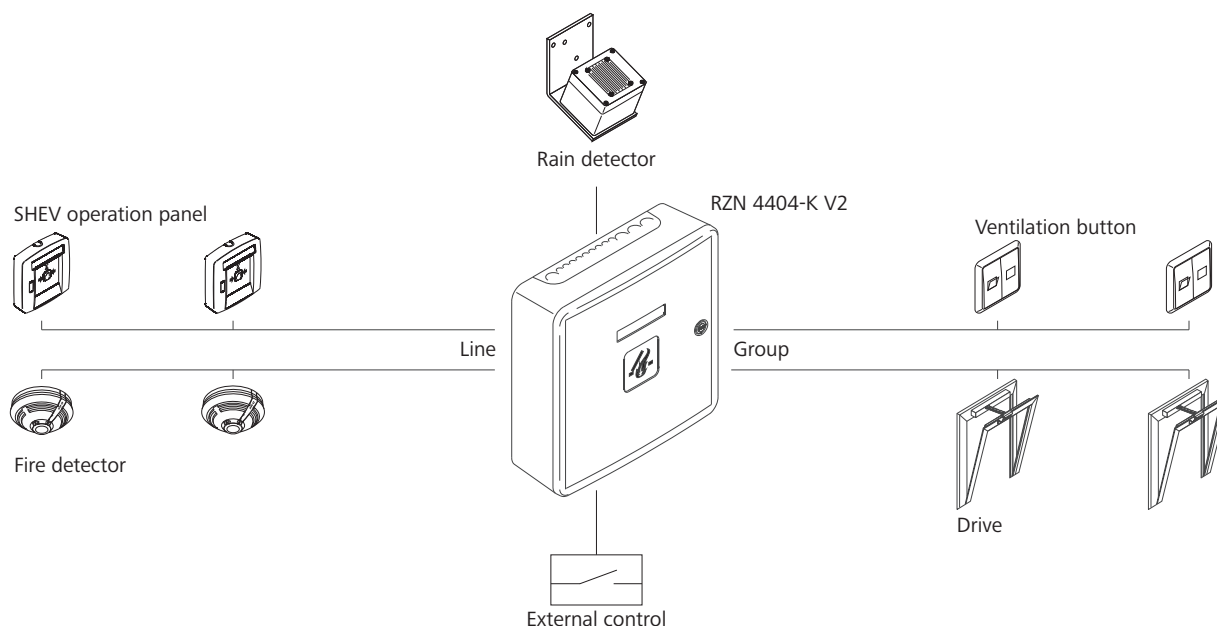
- » Compact SHEV control panel, specifically for stairwells
- » Up to 4 A total drive current
- » Stabilised output voltage
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retriggering function and smoke detector remote reset
- » Integrated comfort functions for daily ventilation
- » 1 slot for an additional module
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Min. 72 hr battery backup supply

## Accessories

Batteries	Sheet steel housing	Plastic housing	SHEV operation panels	Sensor systems
				
starting on page 92	Page 63	Page 63	starting on page 78	starting on page 140



## Example of application



## Technical data

	RZN 4404-K V2
Supply	230 V AC / 50 Hz / 120 VA
Stand-by power	5.8 W
Output	24 V DC / 4 A
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Temperature range	-5 °C ... +40 °C
Line / Group	1 / 1
Battery type	Typ 2 (2x)

Batteries must be ordered separately.

## Approvals / Certificates

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0786-CPD-50383

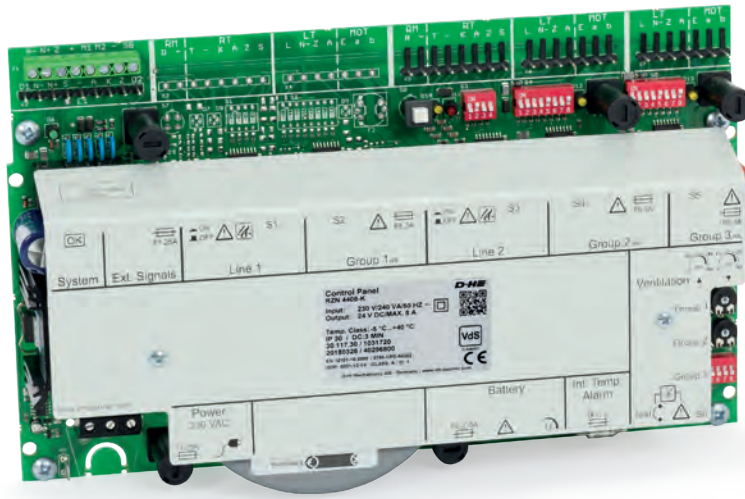
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## Design

Type	Art. No.	Type of protection	W x H x D	Weight	Remark
ZP-RZN 4404-K V2	30.102.23			2.00 kg	With alarm devices = Akku Typ 8 (2x)
RZN 44xx-K/M	30.104.70				Variable equipment possible
GEH-S-RWA	30.105.30	IP 54	400 x 300 x 120 mm	7.25 kg	Sheet steel housing
GEH-KST	63.600.81	IP 30	310 x 310 x 100 mm	1.40 kg	Plastic housing






# RZN 4408-K



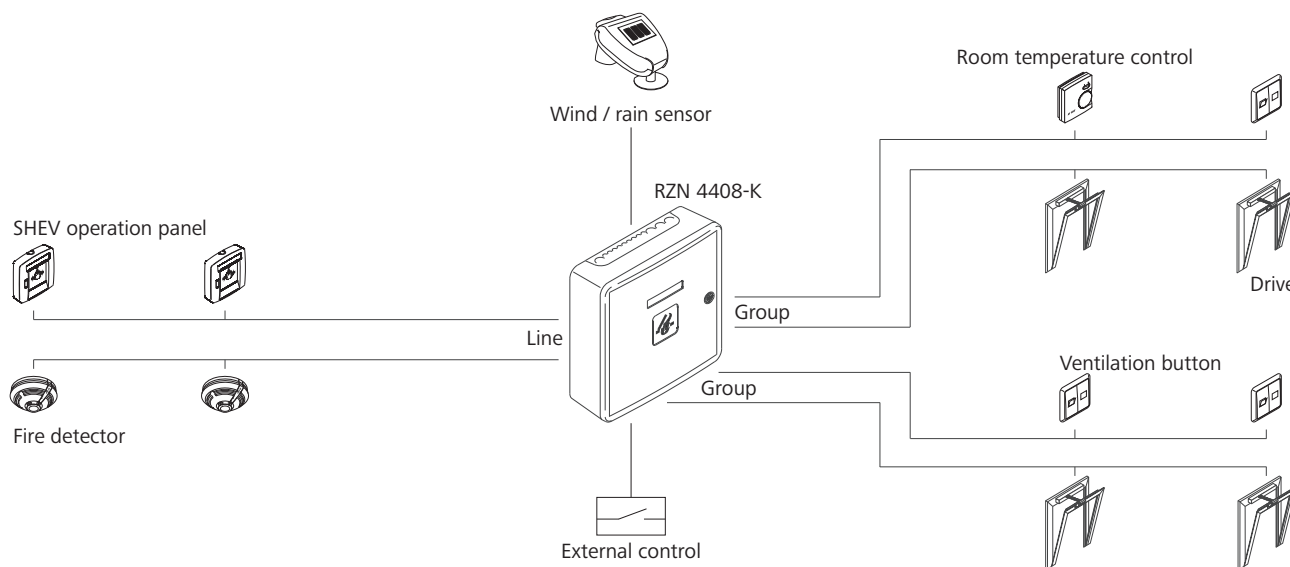
## Performance features

- » Compact SHEV control panel - AdComNet ready
- » Up to 8 A total drive current
- » Stabilised output voltage
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retrigging function and smoke detector remote reset
- » Option to combine SHEV / building alarm function
- » Integrated comfort functions for daily ventilation
- » 1 slot for an additional module
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Min. 72 hr battery backup supply

## Accessories

Batteries	Sheet steel housing	Plastic housing	SHEV operation panels	Sensor systems
				
starting on page 92	Page 65	Page 65	starting on page 78	starting on page 140

## Example of application



## Technical data

	RZN 4408-K
Supply	230 V AC / 50 Hz / 240 VA
Stand-by power	4.5 W
Output	24 V DC / 8 A
Ripple	< 2 V <sub>ss</sub>
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Temperature range	-5 °C ... +40 °C
Line / Group	1 / 2
Battery type	Typ 8 (2x)

Batteries must be ordered separately.

## Approvals / Certificates

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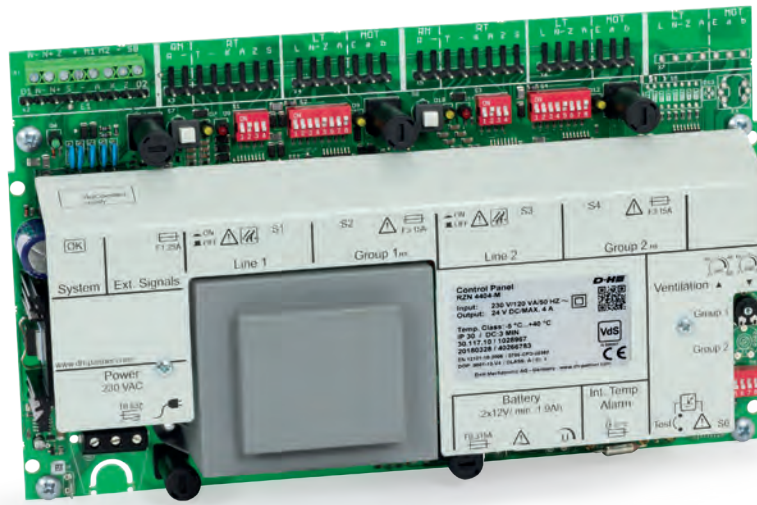
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## Design

Type	Art. No.	Type of protection	W x H x D	Weight	Remark
ZP-RZN 4408-K	30.117.30			2.90 kg	With alarm devices = Akku Typ 3 (2x)
RZN 44xx-K/M	30.104.70				Variable equipment possible
GEH-S-RWA	30.105.30	IP 54	400 x 300 x 120 mm	7.25 kg	Sheet steel housing
GEH-KST	63.600.81	IP 30	310 x 310 x 100 mm	1.40 kg	Plastic housing




# RZN 4404-M



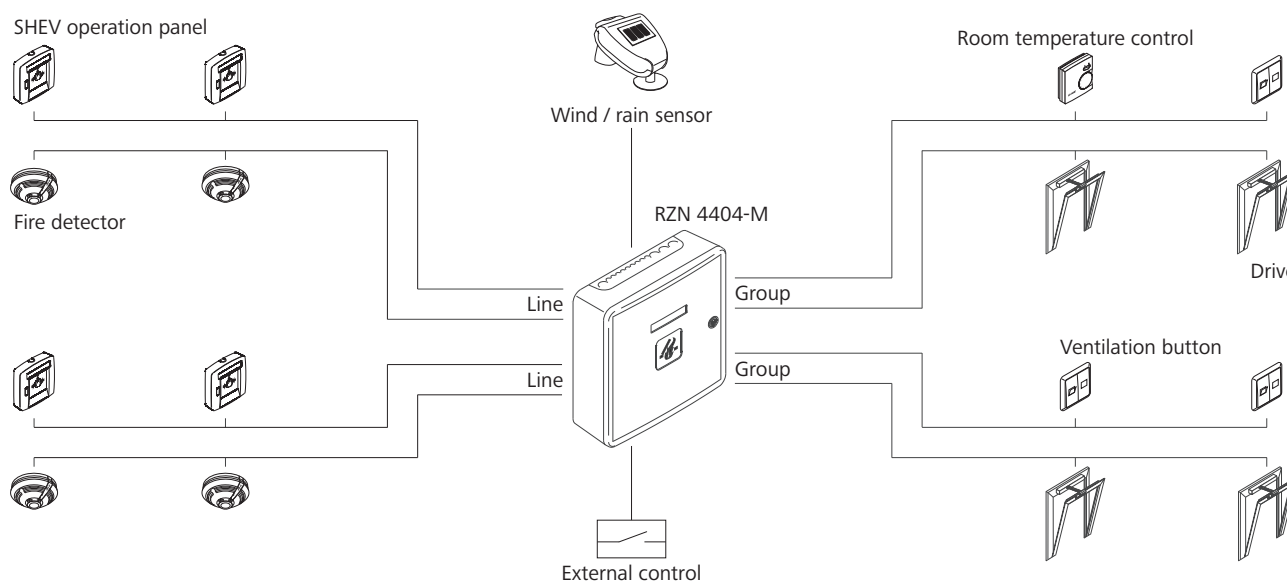
## Performance features

- » Compact SHEV control panel - AdComNet ready
- » Up to 4 A total drive current
- » Stabilised output voltage
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retriggering function and smoke detector remote reset
- » Option to combine SHEV / building alarm function
- » Integrated comfort functions for daily ventilation
- » 1 slot for an additional module
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Min. 72 hr battery backup supply

## Accessories

Batteries	Sheet steel housing	Plastic housing	SHEV operation panels	Sensor systems
				
starting on page 92	Page 67	Page 67	starting on page 78	starting on page 140

## Example of application



## Technical data

	RZN 4404-M
Supply	230 V AC / 50 Hz / 120 VA
Stand-by power	6.8 W
Output	24 V DC / 4 A
Ripple	< 2 V <sub>ss</sub>
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Temperature range	-5 °C ... +40 °C
Line / Group	2 / 2
Battery type	Typ 2 (2x)

Batteries must be ordered separately.

## Approvals / Certificates

Find out about permission details from your D+H Partner.



G 506001



0786-CPR-50382

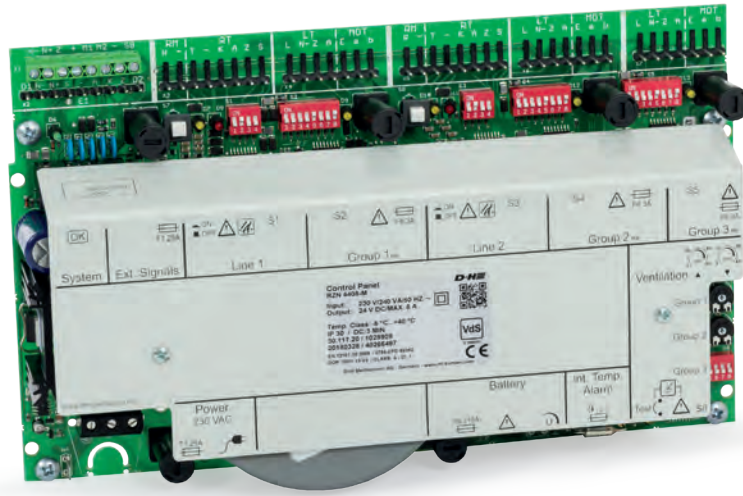
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## Design

Type	Art. No.	Type of protection	W x H x D	Weight	Remark
ZP-RZN 4404-M	30.117.10			2.70 kg	With alarm devices = Akku Typ 8 (2x)
RZN 44xx-K/M	30.104.70				Variable equipment possible
GEH-S-RWA	30.105.30	IP 54	400 x 300 x 120 mm	7.25 kg	Sheet steel housing
GEH-KST	63.600.81	IP 30	310 x 310 x 100 mm	1.40 kg	Plastic housing





# RZN 4408-M



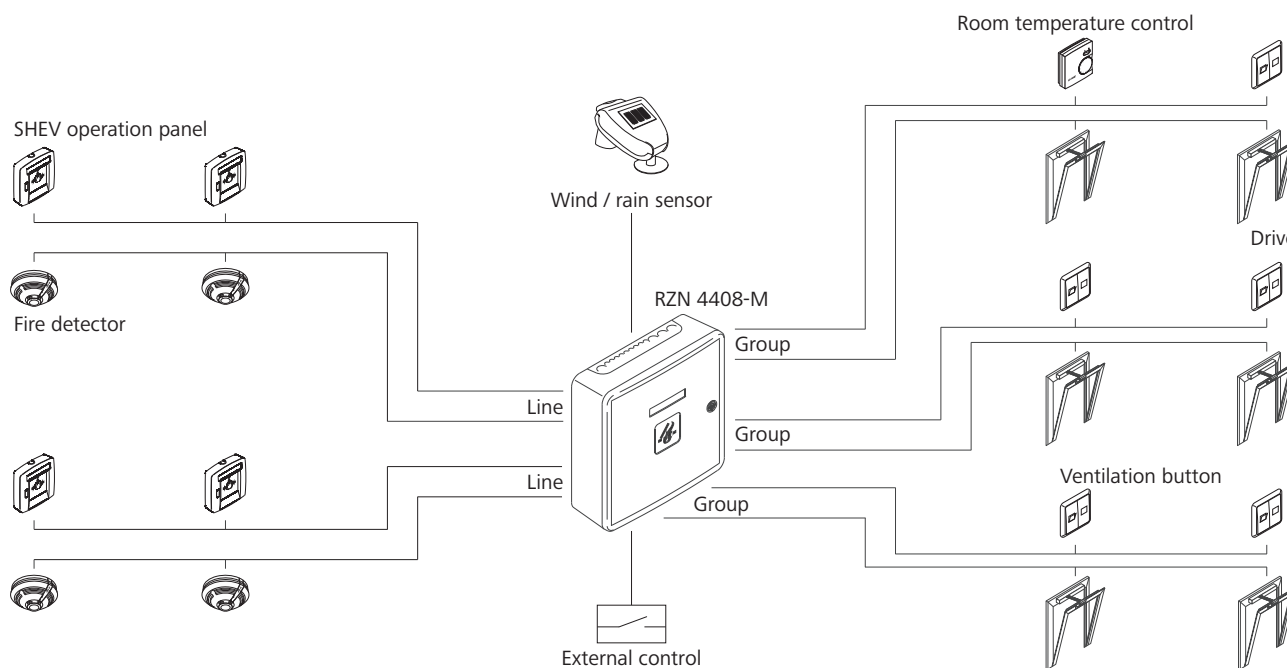
## Performance features

- » Compact SHEV control panel - AdComNet ready
- » Up to 8 A total drive current
- » Stabilised output voltage
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retriggering function and smoke detector remote reset
- » Option to combine SHEV / building alarm function
- » Integrated comfort functions for daily ventilation
- » 1 slot for an additional module
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Min. 72 hr battery backup supply

## Accessories

Batteries	Sheet steel housing	Plastic housing	SHEV operation panels	Sensor systems
				
starting on page 92	Page 69	Page 69	starting on page 78	starting on page 140

## Example of application



## Technical data

	RZN 4408-M
Supply	230 V AC / 50 Hz / 240 VA
Stand-by power	5 W
Output	24 V DC / 8 A
Ripple	< 2 V <sub>ss</sub>
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Temperature range	-5 °C ... +40 °C
Line / Group	2 / 3
Battery type	Typ 8 (2x)

Batteries must be ordered separately.

## Approvals / Certificates

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## Design

Type	Art. No.	Type of protection	W x H x D	Weight	Remark
ZP-RZN 4408-M	30.117.20			2.90 kg	With alarm devices = Akku Typ 3 (2x)
RZN 44xx-K/M	30.104.70				Variable equipment possible
GEH-S-RWA	30.105.30	IP 54	400 x 300 x 120 mm	7.25 kg	Sheet steel housing
GEH-KST	63.600.81	IP 30	310 x 310 x 100 mm	1.40 kg	Plastic housing

# RZN 4416-M



## Performance features

- » Compact SHEV control panel - AdComNet ready
- » Up to 16 A total drive current
- » Stabilised output voltage
- » Switchable SHEV safety functions: Fault equal to alarm, SHEV retriggering function and smoke detector remote reset
- » Option to combine SHEV / building alarm function
- » Integrated comfort functions for daily ventilation
- » 1 slot for an additional module
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Connection of up to 8 SHEV operation panels and 14 fire detectors per line (Only detectors permitted by D+H may be used)
- » Reasonable dual SHEV system as an alternative to individual machines, e.g. for 2 staircases
- » Min. 72 hr battery backup supply

## Accessories

Batteries



starting on page 92

SHEV operation panels



starting on page 78

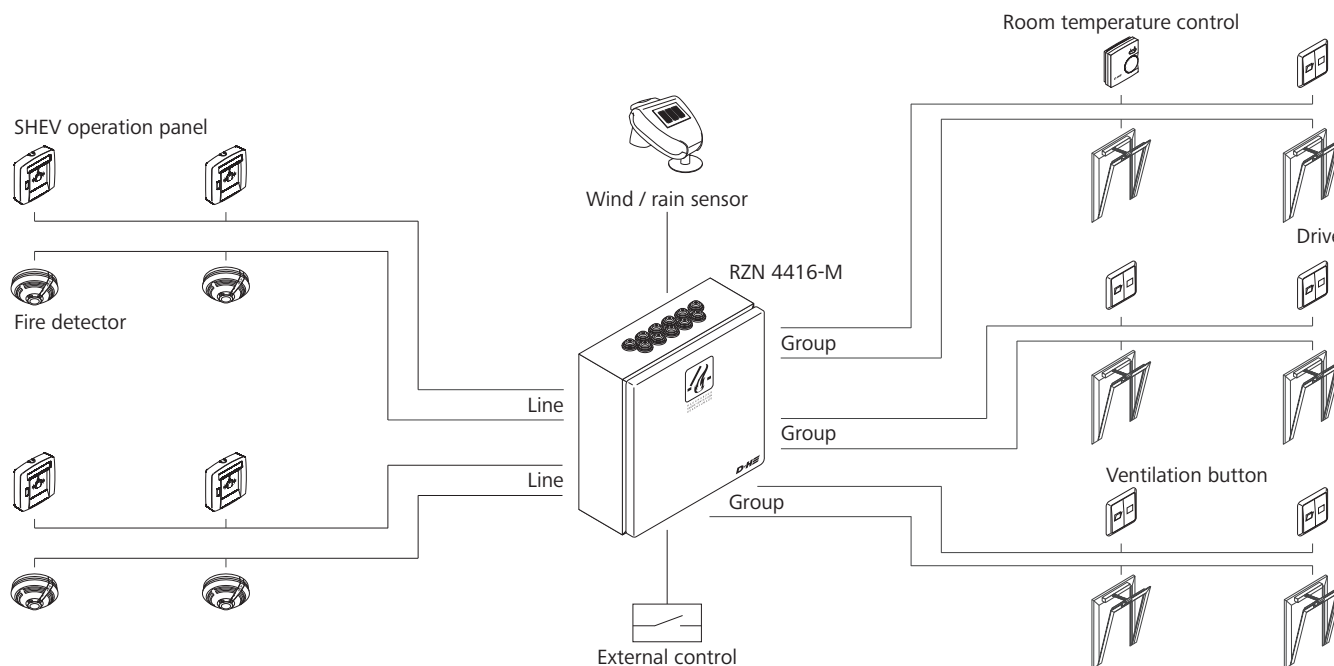
Sensor systems



starting on page 140



## Example of application



## Technical data

	RZN 4416-M
Supply	230 V AC / 50 Hz / 500 VA
Stand-by power	13.6 W
Output	24 V DC / 16 A
Ripple	< 2 V <sub>ss</sub>
Mode of operation monitoring	Continuous duty
Mode of operation Alarm / Ventilation	Short-time duty 30 % duty cycle
Type of protection	IP 54
Temperature range	-5 °C ... +40 °C
Line / Group	2 / 3
Housing	Steel sheet
Colour	Light grey (~ RAL 7035)
Battery type	Typ 3 (2x)

Batteries must be ordered separately.

## Design

Type	Art. No.	W x H x D	Weight	Remark
RZN 4416-M	30.109.02	500 x 500 x 210 mm	25.00 kg	With alarm devices = Akku Typ 4 (2x)
RZN 44xx-K/M	30.104.70			Variable equipment possible

## Approvals / Certificates

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# ACN-IO501



## Performance features

- » 8 user-configurable inputs (alarm, fault, LT)
- » 8 user-configurable outputs (alarm, fault, OPEN signal)
- » 1 line for the connection of fire detectors and SHEV operation panels
- » Ability to connect to other fields such as fire alarm system / building management system / weather sensor system
- » LED display of input and output states
- » Pre-configured functions for simple integration into the AdComNet network
- » Functions within and outside of the segment remain intact, even if other segments have a defect
- » Manual signal triggering of inputs using integrated buttons
- » Power supply possible via SHEV control panel
- » Additional battery capacity of 1.2 Ah required

## Accessories

Connection module



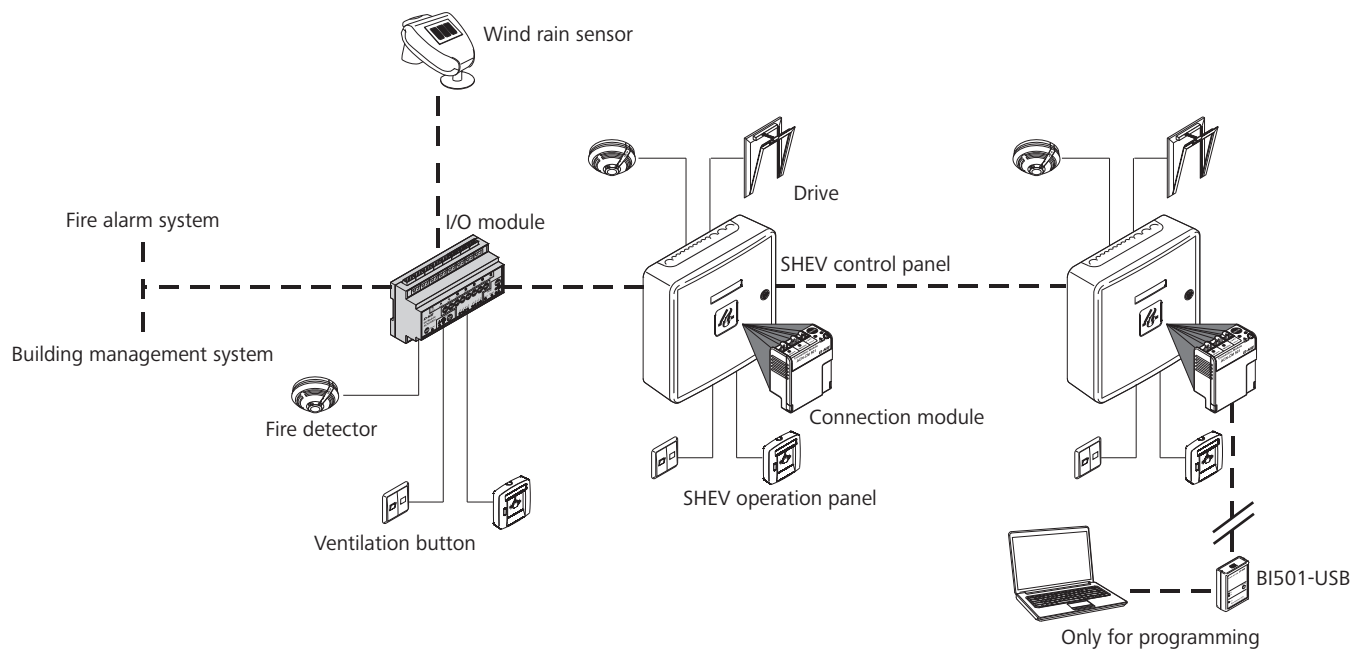
starting on page 74

Modbus gateway



starting on page 76

## Example of application



## Approvals / Certificates

Find out about permission details from your D+H Partner.



0786-CPD-50596

## Design

Type	Art. No.	W x H x D	Weight
ACN-IO501	30.553.80	157 x 115 x 59 mm	0.37 kg

# ACN-CM501



## Performance features

- » Bus coupler for connecting the SHEV control panels to the AdComNet network
- » For decentralised networking of SHEV control panels and forwarding of SHEV and ventilation commands via AdComNet
- » Functions within and outside of the segment remain intact, even if other segments have a defect
- » Very low current consumption - approx. 2 mA
- » Supply voltage from controller
- » No increased battery capacity for controller required

## Accessories

I/O module



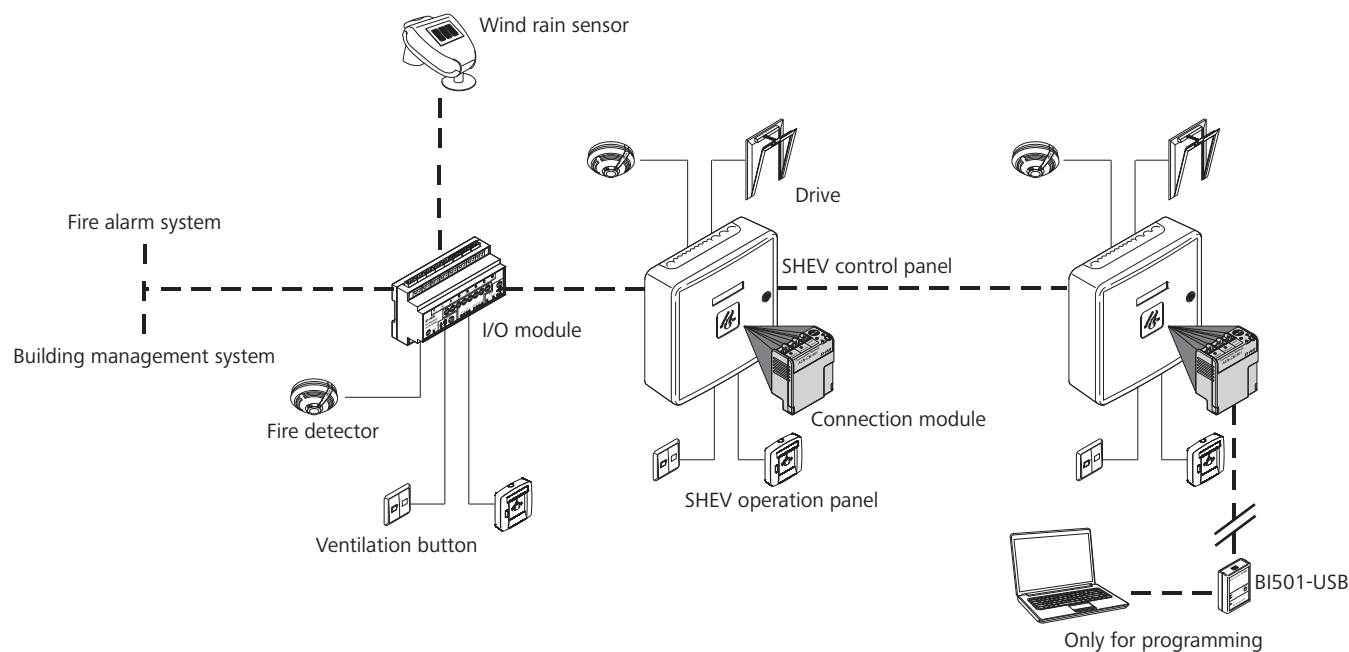
starting on page 72

Modbus gateway



starting on page 76

## Example of application



## Suitable SHEV control panels

Type	Art. No.	starting on page
ZP-RZN 4408-K	30.117.30	64
ZP-RZN 4404-M	30.117.10	66
ZP-RZN 4408-M	30.117.20	68
RZN 4416-M	30.109.02	70

## Design

Type	Art. No.	W x H x D	Weight
ACN-CM501	30.553.60	53 x 59 x 27 mm	0.05 kg

# ACN-GW501-MRTU-0200



## Performance features

- » Universal gateway for connecting AdComNet to a Modbus network
- » 200 user-configurable Modbus inputs (alarm, fault, LT)
- » 200 user-configurable Modbus outputs (alarm, fault, OPEN signal)
- » Ability to connect to other fields such as building management system or touch panel via Modbus
- » In case of defect in another segment, the functions within and below the segment stay intact
- » Power supply possible via SHEV control panel
- » Simple integration into the AdComNet network
- » Additional battery capacity of 1.2 Ah required

## Accessories

Connection module



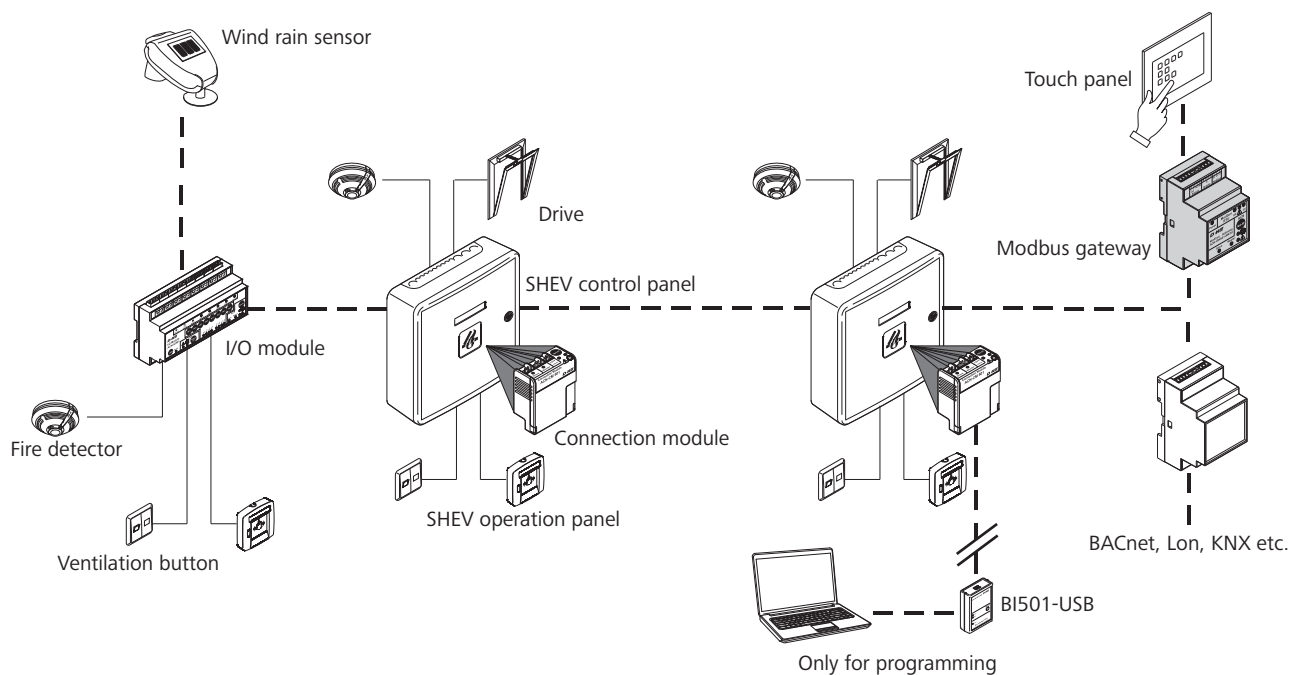
starting on page 74

I/O module



starting on page 72

## Example of application



## Design

Type	Art. No.	W x H x D	Weight
ACN-GW501-MRTU-0200	30.554.20	86 x 58 x 52 mm	0.12 kg





# RT 45



## Performance features

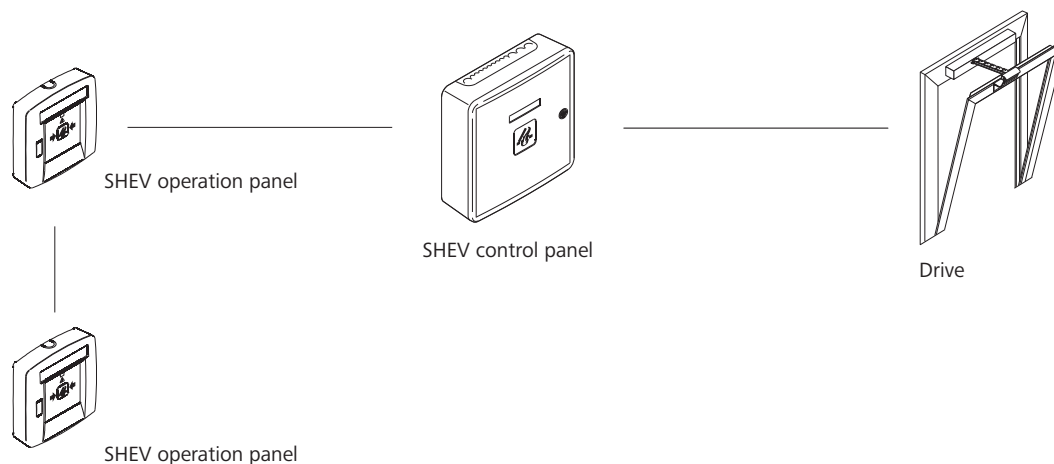
- » For 24 V DC D+H smoke vent control panels
- » Can be used as main or auxiliary control panel
- » For manually triggering a SHEV system in case of fire
- » Function: SHEV OPEN, SHEV Reset
- » Display: Operational standby, alarm triggered and fault
- » Integrated ventilation button, optional
- » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages
- » Available in 5 powder-coated colours

## Accessories

RT housing	RT operation unit	RT flush-mounted frame	RT flush-mounted socket
			
starting on page 81	starting on page 84	starting on page 87	Page 89



## Example of application



## Technical data

	RT 45
Input voltage	18 ... 28 V DC
Type of protection	IP 40
Temperature range	-5 °C ... +40 °C
Housing	Die-cast aluminium
W x H x D	129 x 138 x 39 mm
Weight	0.31 kg

## Approvals / Certificates

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G 510003

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## Design

Type	Art. No.	Colour	Remark
RT 45	65.403.23	Orange (~ RAL 2011)	Complete SHEV operation panel
RT 45/B	65.403.26	Blue (~ RAL 5009)	Complete SHEV operation panel
RT 45/G	65.403.24	Grey (~ RAL 7035)	Complete SHEV operation panel
RT 45/R	65.403.25	Red (~ RAL 3000)	Complete SHEV operation panel
RT 45/Y	65.403.27	Yellow (~ RAL 1004)	Complete SHEV operation panel

# RT 45-LT



## Performance features

- » For 24 V DC D+H smoke vent control panels
- » Can be used as main or auxiliary control panel
- » For manually triggering a SHEV system in case of fire
- » Modular design for individual versions
- » Available in 5 powder-coated colours

## Approvals / Certificates

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G 510003

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Type	Art. No.	Description	Technical data
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RT GEH02-ALU

65.403.33

**RT housing**

» Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages

Housing	Die-cast aluminium
Colour	Orange (~ RAL 2011)
W x H x D	129 x 138 x 39 mm
Weight	0.26 kg



Type	Art. No.	Description	Technical data
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RT GEH02-ALU/B

65.403.36

**RT housing**

» Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages

Housing	Die-cast aluminium
Colour	Blue (~ RAL 5009)
W x H x D	129 x 138 x 39 mm
Weight	0.26 kg



Type	Art. No.	Description	Technical data
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RT GEH02-ALU/G

65.403.34


**RT housing**


» Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages


Housing	Die-cast aluminium
Colour	Grey (~ RAL 7035)
W x H x D	129 x 138 x 39 mm
Weight	0.26 kg



## RT Series SHEV operation panel

Type	Art. No.	Description	Technical data	
RT GEH02-ALU/R	65.403.35	<b>RT housing</b> » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages	Housing	Die-cast aluminium
			Colour	Red (~ RAL 3000)
			W x H x D	129 x 138 x 39 mm
			Weight	0.26 kg

Type	Art. No.	Description	Technical data	
RT GEH02-ALU/Y	65.403.37	<b>RT housing</b> » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages	Housing	Die-cast aluminium
			Colour	Yellow (~ RAL 1004)
			W x H x D	129 x 138 x 39 mm
			Weight	0.26 kg

Type	Art. No.	Description	Technical data	
RT GEH02-LT-ALU	65.403.38	<b>RT housing</b> » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages » With cut-out for ventilation button operation unit	Housing	Die-cast aluminium
			Colour	Orange (~ RAL 2011)
			W x H x D	129 x 138 x 39 mm
			Weight	0.26 kg

Type	Art. No.	Description	Technical data
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RT GEH02-LT-ALU/B

65.403.41

**RT housing**

- » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages
- » With cut-out for ventilation button operation unit

Housing	Die-cast aluminium
Colour	Blue (~ RAL 5009)
W x H x D	129 x 138 x 39 mm
Weight	0.26 kg



Type	Art. No.	Description	Technical data
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RT GEH02-LT-ALU/G

65.403.39

**RT housing**

- » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages
- » With cut-out for ventilation button operation unit

Housing	Die-cast aluminium
Colour	Grey (~ RAL 7035)
W x H x D	129 x 138 x 39 mm
Weight	0.26 kg



Type	Art. No.	Description	Technical data
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RT GEH02-LT-ALU/R

65.403.40

**RT housing**

- » Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages
- » With cut-out for ventilation button operation unit

Housing	Die-cast aluminium
Colour	Red (~ RAL 3000)
W x H x D	129 x 138 x 39 mm
Weight	0.26 kg



# RT Series SHEV operation panel

Type	Art. No.	Description	Technical data								
RT GEH02-LT-ALU/Y	65.403.42	<b>RT housing</b> <ul style="list-style-type: none"> <li>» Lockable surface-mounted aluminium die-cast housing with break-type glass, keys and designation labels in 32 languages</li> <li>» With cut-out for ventilation button operation unit</li> </ul>	<table border="1"> <tr> <td>Housing</td> <td>Die-cast aluminium</td> </tr> <tr> <td>Colour</td> <td>Yellow (~ RAL 1004)</td> </tr> <tr> <td>W x H x D</td> <td>129 x 138 x 39 mm</td> </tr> <tr> <td>Weight</td> <td>0.26 kg</td> </tr> </table>	Housing	Die-cast aluminium	Colour	Yellow (~ RAL 1004)	W x H x D	129 x 138 x 39 mm	Weight	0.26 kg
Housing	Die-cast aluminium										
Colour	Yellow (~ RAL 1004)										
W x H x D	129 x 138 x 39 mm										
Weight	0.26 kg										



Type	Art. No.	Description	Technical data								
RT BE45-1	66.103.04	<b>RT operation unit</b> <ul style="list-style-type: none"> <li>» Can be used as main or auxiliary control panel</li> <li>» Function: SHEV OPEN, SHEV Reset</li> <li>» Display: Operational standby, alarm triggered and fault</li> </ul>	<table border="1"> <tr> <td>Input voltage</td> <td>18 ... 28 V DC</td> </tr> <tr> <td>Temperature range</td> <td>-5 °C ... +40 °C</td> </tr> <tr> <td>W x H</td> <td>105 x 115 mm</td> </tr> <tr> <td>Weight</td> <td>0.05 kg</td> </tr> </table>	Input voltage	18 ... 28 V DC	Temperature range	-5 °C ... +40 °C	W x H	105 x 115 mm	Weight	0.05 kg
Input voltage	18 ... 28 V DC										
Temperature range	-5 °C ... +40 °C										
W x H	105 x 115 mm										
Weight	0.05 kg										



Type	Art. No.	Description	Technical data								
RT BE45-1-LT	66.103.05	<b>RT operation unit with ventilation button</b> <ul style="list-style-type: none"> <li>» Can be used as main or auxiliary control panel</li> <li>» Function: SHEV OPEN, SHEV Reset</li> <li>» Function: Ventilation OPEN, Ventilation CLOSED</li> <li>» Display: Operational standby, alarm triggered, fault and ventilation ON</li> </ul>	<table border="1"> <tr> <td>Input voltage</td> <td>18 ... 28 V DC</td> </tr> <tr> <td>Temperature range</td> <td>-5 °C ... +40 °C</td> </tr> <tr> <td>W x H</td> <td>105 x 115 mm</td> </tr> <tr> <td>Weight</td> <td>0.05 kg</td> </tr> </table>	Input voltage	18 ... 28 V DC	Temperature range	-5 °C ... +40 °C	W x H	105 x 115 mm	Weight	0.05 kg
Input voltage	18 ... 28 V DC										
Temperature range	-5 °C ... +40 °C										
W x H	105 x 115 mm										
Weight	0.05 kg										



Type	Art. No.	Description	Technical data
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RT BE45-2      30.451.60



**RT operation unit**

- » For SHEV triggering 2 separate fire/smoke compartments
- » Common earth can be disconnected via DIP switch
- » Functions per SHEV area: OPEN / CLOSED (sealed CLOSED button)
- » Displays per SHEV area: Alarm, inspection and fault indication

Input voltage	18 ... 28 V DC
Temperature range	-5 °C ... +40 °C
W x H	105 x 115 mm
Weight	0.08 kg

Type	Art. No.	Description	Technical data
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RT BE45-3      30.451.70



**RT operation unit**

- » For SHEV triggering 3 separate fire/smoke compartments
- » Common earth can be disconnected via DIP switch
- » Functions per SHEV area: OPEN / CLOSED (sealed CLOSED button)
- » Displays per SHEV area: Alarm, inspection and fault indication

Input voltage	18 ... 28 V DC
Temperature range	-5 °C ... +40 °C
W x H	105 x 115 mm
Weight	0.08 kg

Type	Art. No.	Description	Technical data
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RT BE42-ST      30.435.12



**RT operation unit**

- » Acoustic signal operational standby ON / OFF
- » Function: SHEV OPEN, SHEV Reset
- » Display: Operational standby, alarm triggered and fault
- » Indicator diode blinks for SHEV alarm if acoustic signal is not operational

Input voltage	18 ... 28 V DC
Loudness	75 dB
Temperature range	-5 °C ... +40 °C
W x H	105 x 115 mm
Weight	0.09 kg

# RT Series SHEV operation panel

Type	Art. No.	Description	Technical data								
RT BE42-Z	30.435.62	<b>RT operation unit</b> <ul style="list-style-type: none"> <li>» Can be used only in conjunction with standard SHEV operation panel and UM 41 transfer module</li> <li>» For 2-wire cables</li> <li>» Function: SHEV OPEN</li> <li>» Display: Operational standby and alarm triggered</li> <li>» With indicator</li> </ul>	<table border="1"> <tr> <td>Input voltage</td> <td>18 ... 28 V DC</td> </tr> <tr> <td>Temperature range</td> <td>-5 °C ... +40 °C</td> </tr> <tr> <td>W x H</td> <td>105 x 115 mm</td> </tr> <tr> <td>Weight</td> <td>0.05 kg</td> </tr> </table>	Input voltage	18 ... 28 V DC	Temperature range	-5 °C ... +40 °C	W x H	105 x 115 mm	Weight	0.05 kg
Input voltage	18 ... 28 V DC										
Temperature range	-5 °C ... +40 °C										
W x H	105 x 115 mm										
Weight	0.05 kg										



Type	Art. No.	Description	Technical data								
RT BE42-Z-K	30.435.64	<b>RT operation unit</b> <ul style="list-style-type: none"> <li>» Can be used only in conjunction with standard SHEV operation panel and UM 41 transfer module</li> <li>» For 2-wire cables</li> <li>» Function: SHEV OPEN</li> <li>» Display: Operational standby and alarm triggered</li> <li>» Without indicator</li> </ul>	<table border="1"> <tr> <td>Input voltage</td> <td>18 ... 28 V DC</td> </tr> <tr> <td>Temperature range</td> <td>-5 °C ... +40 °C</td> </tr> <tr> <td>W x H</td> <td>105 x 115</td> </tr> <tr> <td>Weight</td> <td>0.05 kg</td> </tr> </table>	Input voltage	18 ... 28 V DC	Temperature range	-5 °C ... +40 °C	W x H	105 x 115	Weight	0.05 kg
Input voltage	18 ... 28 V DC										
Temperature range	-5 °C ... +40 °C										
W x H	105 x 115										
Weight	0.05 kg										



Type	Art. No.	Description	Description				
RT LT45	66.103.06	<b>RT ventilation button operation unit</b> <ul style="list-style-type: none"> <li>» Function: Ventilation OPEN, Ventilation CLOSED</li> </ul>	<table border="1"> <tr> <td>W x H</td> <td>88 x 25 mm</td> </tr> <tr> <td>Weight</td> <td>0.02 kg</td> </tr> </table>	W x H	88 x 25 mm	Weight	0.02 kg
W x H	88 x 25 mm						
Weight	0.02 kg						





Type	Art. No.	Description	Technical data
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RT UPR 02

68.104.43

**RT flush-mounted frame**

» Cover frames for flush-mounted installation of the RT 45/-LT

Material	Aluminium
Colour	Orange (~ RAL 2011)
W x H	170 x 180 mm
Weight	0.13 kg



Type	Art. No.	Description	Technical data
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RT UPR 02/A

68.104.52

**RT flush-mounted frame**

» Cover frames for flush-mounted installation of the RT 45/-LT

Material	Aluminium
Colour	Silver
W x H	170 x 180 mm
Weight	0.13 kg



Type	Art. No.	Description	Technical data
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RT UPR 02/B

68.104.46

**RT flush-mounted frame**

» Cover frames for flush-mounted installation of the RT 45/-LT

Material	Aluminium
Colour	Blue (~ RAL 5009)
W x H	170 x 180 mm
Weight	0.13 kg



# RT Series SHEV operation panel

Type	Art. No.	Description	Technical data
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RT UPR 02/G

68.104.44

**RT flush-mounted frame**

» Cover frames for flush-mounted installation of the RT 45/-LT

Material	Aluminium
Colour	Grey (~ RAL 7035)
W x H	170 x 180 mm
Weight	0.13 kg



Type	Art. No.	Description	Technical data
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RT UPR 02/R

68.104.45

**RT flush-mounted frame**

» Cover frames for flush-mounted installation of the RT 45/-LT

Material	Aluminium
Colour	Red (~ RAL 3000)
W x H	170 x 180 mm
Weight	0.13 kg



Type	Art. No.	Description	Technical data
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RT UPR 02/Y

68.104.47

**RT flush-mounted frame**

» Cover frames for flush-mounted installation of the RT 45/-LT

Material	Aluminium
Colour	Yellow (~ RAL 1004)
W x H	170 x 180 mm
Weight	0.13 kg



Type	Art. No.	Description	Technical data
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RT UPD 02

66.103.77

**RT flush-mounted socket**

- » For flush-mounted installation of a RT 45/-LT in hollow, stone and concrete walls

Material	Plastic
Colour	Orange
W x H x D	220 x 155 x 50 mm
Weight	0.12 kg



# CWSO / FG / BL



## Performance features

- » Visual and acoustic alarm devices
- » Optimised for use with D+H SHEV control panels
- » VdS approval (CWSO-RR-S1)

Type	Art. No.	Description	Technical data												
CWSO-RR-S1	30.301.55	<b>Signal emitter</b> <ul style="list-style-type: none"> <li>» 32 different sounds can be programmed</li> <li>» Acoustic signal emitter in accordance with EN 54-3</li> <li>» VdS approval number: G 215015</li> <li>» Optional connection for activating a second sound</li> <li>» Synchronous sound output</li> <li>» Volume can be set in 2 levels on the device</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>9 ... 29 V DC / 0.03 A</td> </tr> <tr> <td>Loudness</td> <td>102.1 dB</td> </tr> <tr> <td>Type of protection</td> <td>IP 21C</td> </tr> <tr> <td>Colour</td> <td>Red (~ RAL 3020)</td> </tr> <tr> <td>Diameter</td> <td>100 mm</td> </tr> <tr> <td>Weight</td> <td>0.19 kg</td> </tr> </table>	Supply	9 ... 29 V DC / 0.03 A	Loudness	102.1 dB	Type of protection	IP 21C	Colour	Red (~ RAL 3020)	Diameter	100 mm	Weight	0.19 kg
Supply	9 ... 29 V DC / 0.03 A														
Loudness	102.1 dB														
Type of protection	IP 21C														
Colour	Red (~ RAL 3020)														
Diameter	100 mm														
Weight	0.19 kg														



Type	Art. No.	Description	Technical data												
FG 42	30.901.60	<b>Fire bell</b> <ul style="list-style-type: none"> <li>» Fire bell for the acoustic alarm</li> <li>» Max. 8x FG 42 to 2 ampere control panels</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>24 V DC / 0.03 A</td> </tr> <tr> <td>Loudness</td> <td>93 dB</td> </tr> <tr> <td>Type of protection</td> <td>IP 52</td> </tr> <tr> <td>Colour</td> <td>Red (~ RAL 3000)</td> </tr> <tr> <td>Diameter</td> <td>150 mm</td> </tr> <tr> <td>Weight</td> <td>0.75 kg</td> </tr> </table>	Supply	24 V DC / 0.03 A	Loudness	93 dB	Type of protection	IP 52	Colour	Red (~ RAL 3000)	Diameter	150 mm	Weight	0.75 kg
Supply	24 V DC / 0.03 A														
Loudness	93 dB														
Type of protection	IP 52														
Colour	Red (~ RAL 3000)														
Diameter	150 mm														
Weight	0.75 kg														



Type	Art. No.	Description	Technical data										
BL 41	30.901.00	<b>Flashing light</b> <ul style="list-style-type: none"> <li>» Flashing lights, grey with orange-coloured flash head</li> <li>» Suitable for outdoor installation</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>24 V DC / 0.25 A</td> </tr> <tr> <td>Type of protection</td> <td>IP 54</td> </tr> <tr> <td>Colour</td> <td>Orange</td> </tr> <tr> <td>Diameter</td> <td>89 mm</td> </tr> <tr> <td>Weight</td> <td>0.25 kg</td> </tr> </table>	Supply	24 V DC / 0.25 A	Type of protection	IP 54	Colour	Orange	Diameter	89 mm	Weight	0.25 kg
Supply	24 V DC / 0.25 A												
Type of protection	IP 54												
Colour	Orange												
Diameter	89 mm												
Weight	0.25 kg												





# Akku Typ 1 / 2 / 3 / 4 / 5 / 6 / 8





## Performance features


- » For providing 72 hours of emergency power to D+H control panels
- » Approved by VdS


Type	Art. No.						
Akku Typ 1	70.200.04						
	<table border="1"> <tr> <td>Battery capacity</td> <td>1.2 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>97 x 53 x 43 mm</td> </tr> <tr> <td>Weight</td> <td>0.55 kg</td> </tr> </table>	Battery capacity	1.2 Ah ±15 %	W x H x D	97 x 53 x 43 mm	Weight	0.55 kg
Battery capacity	1.2 Ah ±15 %						
W x H x D	97 x 53 x 43 mm						
Weight	0.55 kg						


Type	Art. No.						
Akku Typ 2	70.200.01						
	<table border="1"> <tr> <td>Battery capacity</td> <td>2.2 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>178 x 66 x 34 mm</td> </tr> <tr> <td>Weight</td> <td>1.06 kg</td> </tr> </table>	Battery capacity	2.2 Ah ±15 %	W x H x D	178 x 66 x 34 mm	Weight	1.06 kg
Battery capacity	2.2 Ah ±15 %						
W x H x D	178 x 66 x 34 mm						
Weight	1.06 kg						

Type	Art. No.						
Akku Typ 3	70.200.02						
	<table border="1"> <tr> <td>Battery capacity</td> <td>7 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>151 x 102 x 65 mm</td> </tr> <tr> <td>Weight</td> <td>2.47 kg</td> </tr> </table>	Battery capacity	7 Ah ±15 %	W x H x D	151 x 102 x 65 mm	Weight	2.47 kg
Battery capacity	7 Ah ±15 %						
W x H x D	151 x 102 x 65 mm						
Weight	2.47 kg						

Type	Art. No.						
Akku Typ 4	70.200.00						
	<table border="1"> <tr> <td>Battery capacity</td> <td>12 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>151 x 100 x 99 mm</td> </tr> <tr> <td>Weight</td> <td>4.07 kg</td> </tr> </table>	Battery capacity	12 Ah ±15 %	W x H x D	151 x 100 x 99 mm	Weight	4.07 kg
Battery capacity	12 Ah ±15 %						
W x H x D	151 x 100 x 99 mm						
Weight	4.07 kg						

Type	Art. No.						
Akku Typ 5	70.200.05						
	<table border="1"> <tr> <td>Battery capacity</td> <td>18 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>181 x 167 x 76 mm</td> </tr> <tr> <td>Weight</td> <td>5.60 kg</td> </tr> </table>	Battery capacity	18 Ah ±15 %	W x H x D	181 x 167 x 76 mm	Weight	5.60 kg
Battery capacity	18 Ah ±15 %						
W x H x D	181 x 167 x 76 mm						
Weight	5.60 kg						

Type	Art. No.						
Akku Typ 6	70.200.03						
	<table border="1"> <tr> <td>Battery capacity</td> <td>26 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>166 x 125 x 175 mm</td> </tr> <tr> <td>Weight</td> <td>9.42 kg</td> </tr> </table>	Battery capacity	26 Ah ±15 %	W x H x D	166 x 125 x 175 mm	Weight	9.42 kg
Battery capacity	26 Ah ±15 %						
W x H x D	166 x 125 x 175 mm						
Weight	9.42 kg						

Type	Art. No.						
Akku Typ 8	70.200.12						
	<table border="1"> <tr> <td>Battery capacity</td> <td>3.4 Ah ±15 %</td> </tr> <tr> <td>W x H x D</td> <td>134 x 66 x 67 mm</td> </tr> <tr> <td>Weight</td> <td>1.40 kg</td> </tr> </table>	Battery capacity	3.4 Ah ±15 %	W x H x D	134 x 66 x 67 mm	Weight	1.40 kg
Battery capacity	3.4 Ah ±15 %						
W x H x D	134 x 66 x 67 mm						
Weight	1.40 kg						

# TSZ-200





TSZ-200 Series

Type	Page
TSZ-200	96

# TSZ-200



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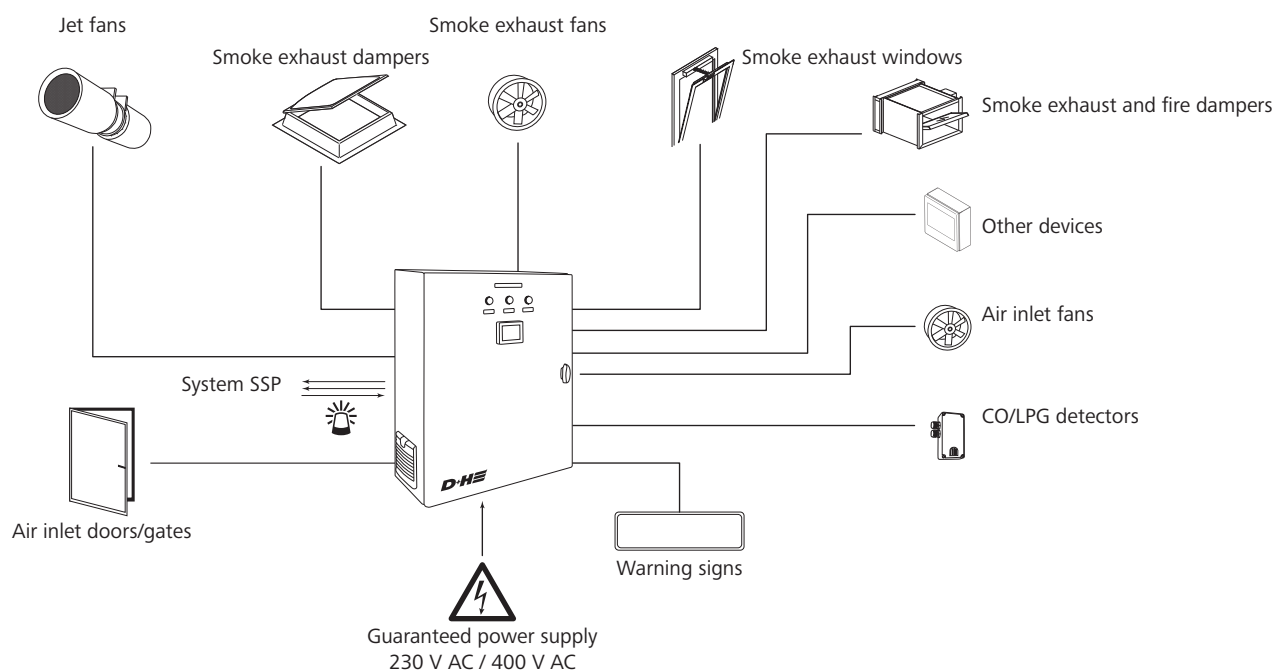
## Performance features

- » Modular control panel and power supply unit for fire ventilation systems
- » Application in large-area buildings and staircases
- » Custom designed to individual orders
- » Accessories and operating methods depend on the assumed fire scenario
- » Ensures the safe and smooth start of fans in variants (direct, star-delta or inverter-controlled)
- » Detects the closing or opening of fire dampers and controls timeout for their opening/closing
- » Signals the operating status with LEDs on the door panel and LCD display (option)
- » Monitors the connection of peripherals
- » Allows the tracking of the event history and the testing of the correct implementation of operating scenarios

## TSZ-200 works with following:

- » Fire fans, air inlet fans and residential ventilation fans up to 75 kW (with different starting modes)
- » 24 V DC or 230 V AC fire dampers
- » 24 V DC or 230 V AC throttles
- » 24 V DC or 230 V AC linear or rotary electromechanical actuators
- » Fire detectors and manual smoke exhaust push buttons (D+H)
- » Other equipment used in automatic devices of fire and residential comfort systems in buildings

## Example of application



## Technical data

	TSZ-200
Type of protection	IP 54
Main supply / supply voltage	400 / 230 V AC
Max. mains current consumption	630 A
Range of operating temperatures	-25 °C ... +55 °C (verified by CNBOP laboratory -5 °C ... +75 °C)
Detection circuits	Open – monitored
Type of detection circuits	
Number of detection circuits	Max. 64 pcs (depending on the facility)
Max. number of elements in a detection circuit	10 pcs (detectors, push buttons)
Monitored signal lines	Yes (the number depends on the facility)
Elements of signal lines	Optical / acoustic signal emitter
Type and number of devices	Depending on the current consumption by individual device and the facility's requirements (fans, fire dampers, ventilation flaps, actuators and other devices)
Relay outputs	Max. 8 pcs.
Internal modules	M251, M258, M241, M221 control unit modules 3,5" ... 15" touch screens Inverter up to 75 kW Power supply block compliant with accordance to EN 12101-10 and EN 54-4 standards
Dimensions (W x H x D)	Min. 300 x 600 x 600 mm, max. 800 x 1200 x 2000 mm

## Design

Type	Art. No.
TSZ-200	D0.020.00

# CNV controllers



### VMC Series CNV-motor controller

Type	Output	Ventilation group	Page
VMC-M1-5-MTCP-4-2,5-5	230 V AC / 10 A	4	100
VMC-M1-1-MTCP-4-10-1	24 V DC / 25 A	4	102

### VCM Series CNV control panel

Type	Output	Ventilation group	Page
VCM 05U	24 V DC / 0.5 A	1	104

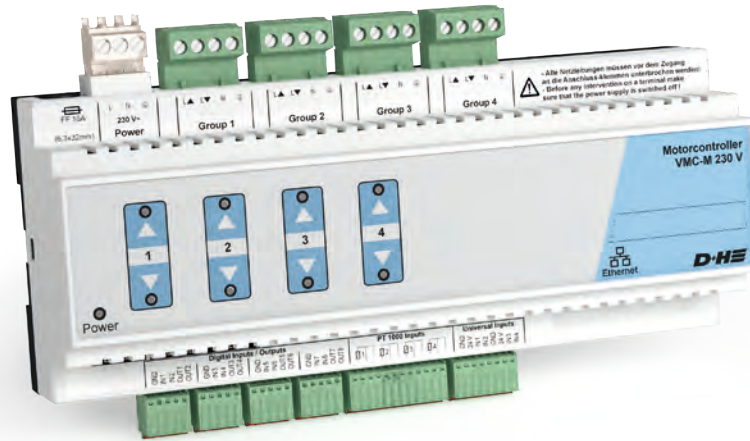
### GVL Series CNV control panel

Type	Output	Ventilation group	Page
GVL 8301-K V2	24 V DC / 1 A	1	106
GVL 8304-K	24 V DC / 4 A	1	108
GVL 8401-K-RC V2	24 V DC / 1 A	2	110
GVL 8408-M	24 V DC / 8 A	5	112

### WRZ Series CNV control panel

Type	Output	Page
WRZ	230 V AC	114
WRZ 8000	230 V AC	116

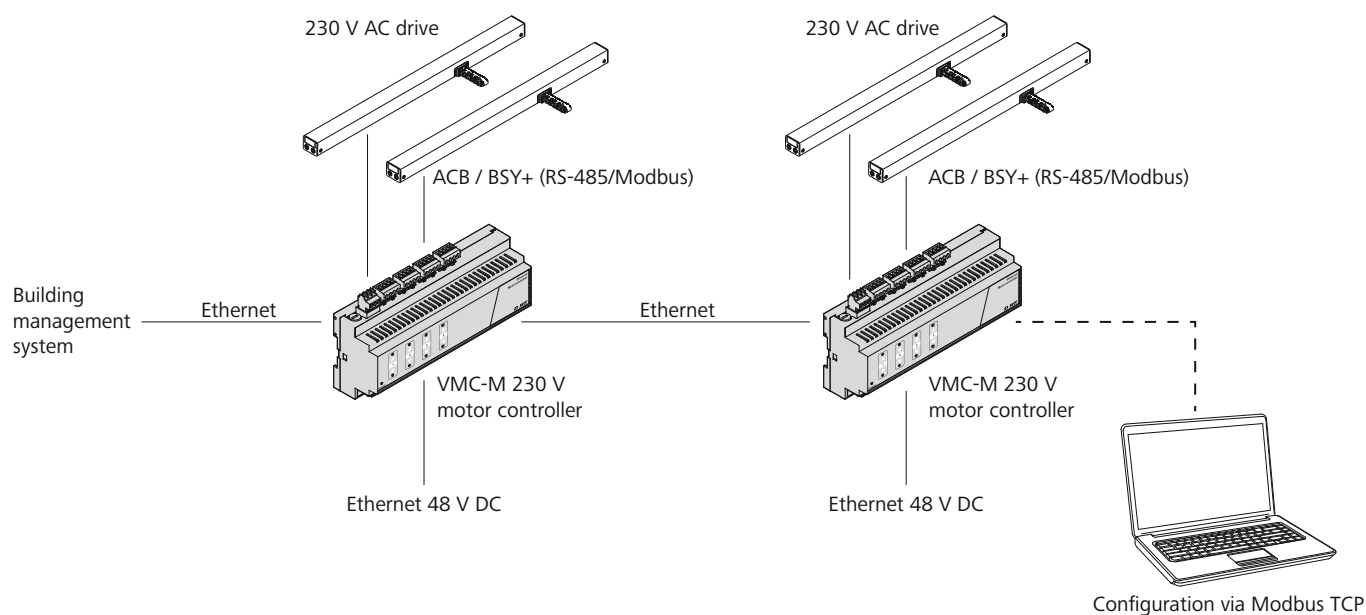
# VMC-M1-5-MTCP-4-2,5-5



## Performance features

- » Connection of 230 V AC drives
- » Can provide up to 4x 2.5 A and a total drive current of 10 A
- » Bus communication via Modbus TCP protocol to building management system is possible
- » Activation / control through PT1000 sensors, 0-10 V applications and conventional buttons is possible
- » Intended for installation on TS 35 top hat rail
- » Direct operation by buttons on the front is possible
- » Has an internal load and temperature shut down
- » 2x Ethernet port including switch for connecting service computers, the building management system and other VMC motor controllers
- » 1x Ethernet port including switch for connecting compatible control devices (48 V DC)

## Example of application



## Technical data

### VMC-M1-5-MTCP-4-2,5-5

Supply	230 V AC / $\pm 10\%$ / 50 Hz
Rated input current	10 A
Stand-by power	5 W
Output	24 V DC / 230 V AC / 10 A
Mode of operation	Short-time duty 30 % duty cycle
Operating temperature	0 °C ... +50 °C
Type of protection	IP 20
Protection Class	I
W x H x D	210 x 125 x 58 mm

## Approvals / Certificates

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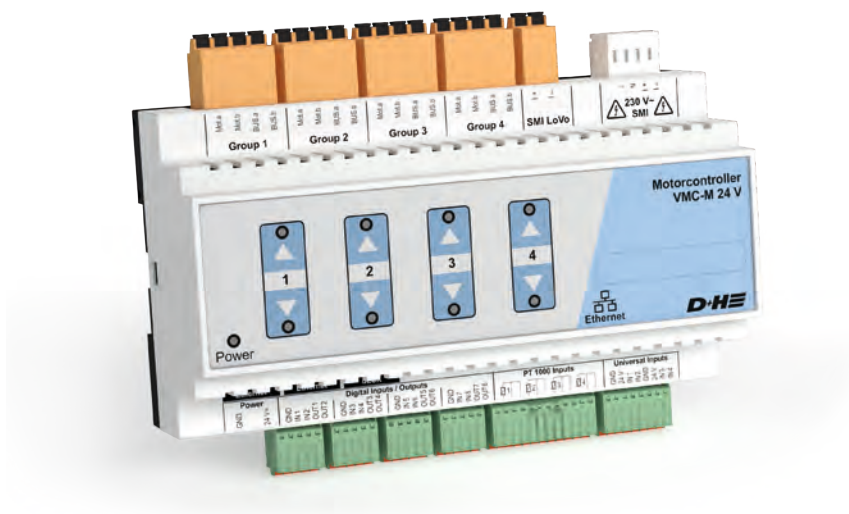


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## Design

Type	Art. No.
VMC-M1-5-MTCP-4-2,5-5	30.207.40

# VMC-M1-1-MTCP-4-10-1



## Performance features

- » Connection of 24 V DC pole-changing, BSY+, ACB, SMI-LoVo and 230 V AC SMI-drives
- » Can provide up to 4x 10 A and a total drive current of 25 A
- » Bus communication via Modbus TCP protocol to building management system is possible
- » Activation / control through PT1000 sensors, 0-10 V applications and conventional buttons is possible
- » Intended for installation on TS 35 top hat rail
- » Direct operation by buttons on the front is possible
- » Has an internal load and temperature shut down
- » 2x Ethernet port including switch for connecting service computers, the building management system and other VMC motor controllers
- » 1x Ethernet port including switch for connecting compatible control devices (48 V DC)

## Accessories

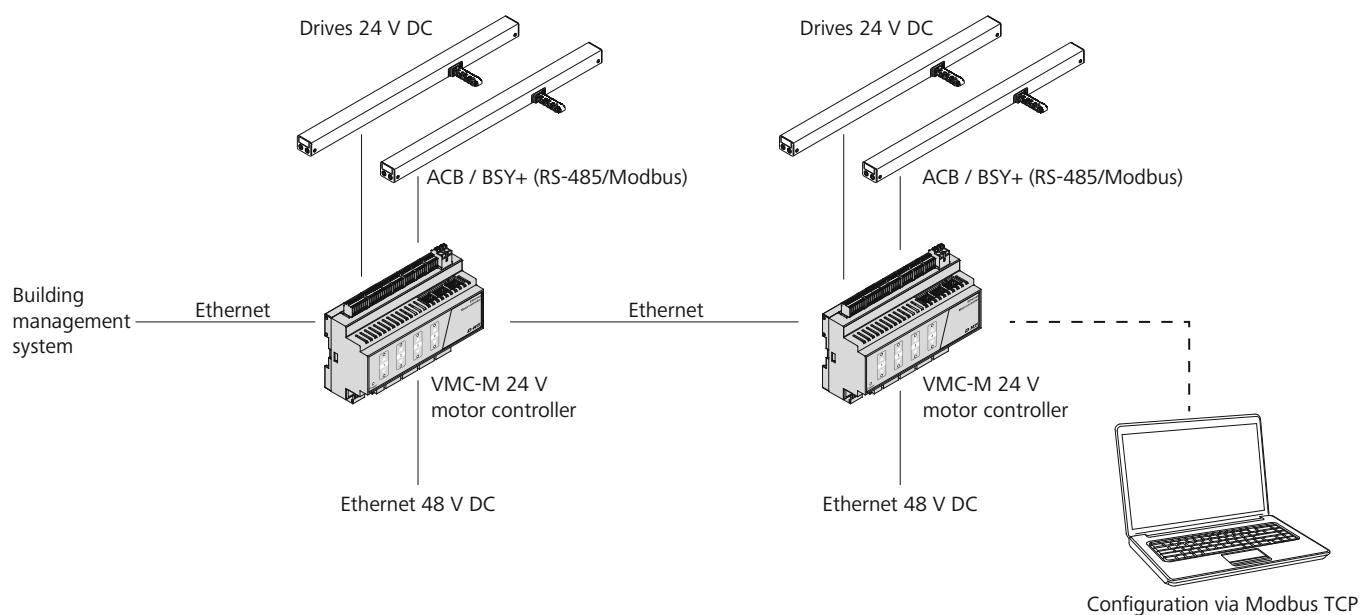
Power supply units



starting on page 120



## Example of application



## Technical data

### VMC-M1-1-MTCP-4-10-1

Supply	24 V DC / 25 A
Stand-by power	3.6 W
Output	24 V DC / 25 A
Mode of operation	Short-time duty 30 % duty cycle
Operating temperature	0 °C ... +50 °C
Type of protection	IP 20
Protection Class	II
W x H x D	157 x 125 x 58 mm

## Approvals / Certificates

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5014068.17001

## Design

Type	Art. No.
VMC-M1-1-MTCP-4-10-1	30.207.30

# VCM 05U



## Performance features

- » Compact ventilation control panel
- » Up to 0.5 A total drive current
- » 1 ventilation group
- » Ventilation safety function (storage operation OPEN / CLOSED)
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Flush-mounted installation in deep switch box Ø 58 mm

## Accessories

Operation elements

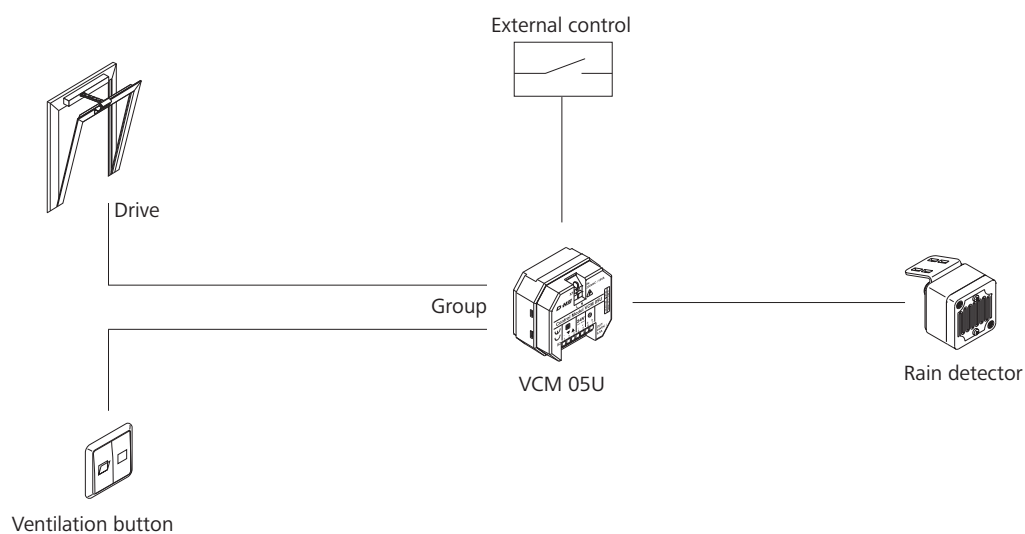
Weather sensors



starting on page 152

starting on page 146

## Example of application



## Technical data

	VCM 05U
Supply	230 V AC / 50 Hz / 15 VA
Output	24 V DC / 0.5 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 30
Temperature range	0 °C ... +50 °C
Housing	Plastic
Colour	Light grey (~ RAL 7035)
W x H x D	50 x 48 x 28 mm
Weight	0.13 kg

## Design

Type	Art. No.
VCM 05U	30.241.40

# GVL 8301-K V2



## Performance features

- » Compact ventilation control panel
- » For controlling 24 V DC window drives
- » Up to 1 A total drive current
- » 1 ventilation group
- » Input for external controller, e.g. timer
- » Ventilation safety function (storage operation OPEN / CLOSED)
- » Ability to connect drives with TMS function
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Surface-mounted plastic housing

## Accessories

Operation elements

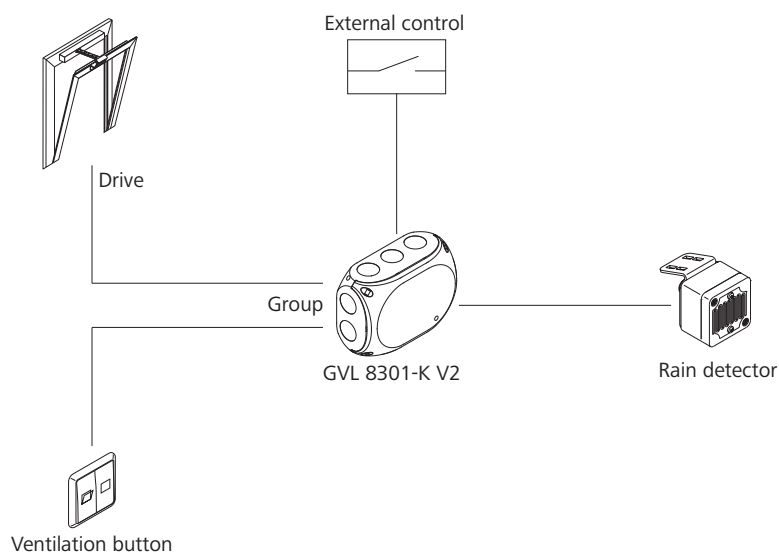
Weather sensors



starting on page 152

starting on page 146

## Example of application



## Technical data

### GVL 8301-K V2

Supply	230 V AC / 50 Hz / 30 VA
Stand-by power	4.3 W
Output	24 V DC / 1 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 66
Temperature range	-5 °C ... +40 °C
Housing	Polycarbonate
Colour	Light grey (~ RAL 7035)
W x H x D	139 x 180 x 77 mm
Weight	0.85 kg

## Design

Type	Art. No.
GVL 8301-K V2	30.242.00

# GVL 8304-K



## Performance features

- » Compact ventilation control panel
- » For controlling 24 V DC window drives
- » Up to 4 A total drive current
- » 1 ventilation group
- » Input for external controller, e.g. timer
- » Configurable ventilation safety function (storage operation OPEN / CLOSED)
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Surface-mounted plastic housing

## Accessories

Operation elements

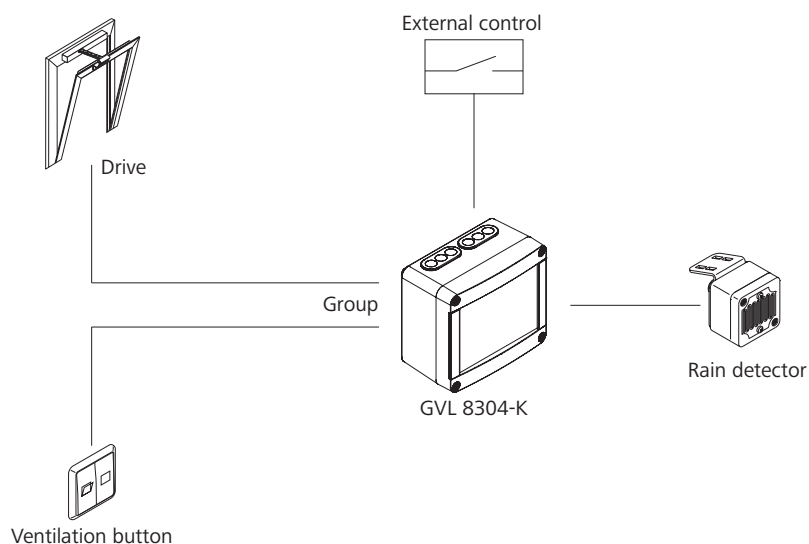
Weather sensors



starting on page 152

starting on page 146

## Example of application



## Technical data

GVL 8304-K	
Supply	230 V AC / 50 Hz / 120 VA
Stand-by power	4.3 W
Output	24 V DC / 4 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 50
Temperature range	-5 °C ... +40 °C
Housing	Plastic
Colour	Light grey (~ RAL 7035)
W x H x D	172 x 151 x 95 mm
Weight	2.00 kg

## Approvals / Certificates

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## Design

Type	Art. No.
GVL 8304-K	30.202.10

# GVL 8401-K-RC V2



## Performance features

- » Compact ventilation control panels with an integrated wireless receiver for controlling 24 V DC window drives
- » Up to 1 A total drive current
- » 2 ventilation groups
- » Optional individual and/or control circuit (OPEN / CLOSED)
- » Configurable ventilation safety function (storage operation OPEN / CLOSED)
- » Freely programmable group assignment for central inputs (weather, time, etc.)
- » Operation via wireless remote control (Multiple control panels can be controlled with one remote control)
- » 868 MHz radio frequency, permitted throughout the EU
- » High level of security against external control - 24 bit address code and transmitting code change at each button press (hopping code)

## Accessories

Operation elements

Weather sensors

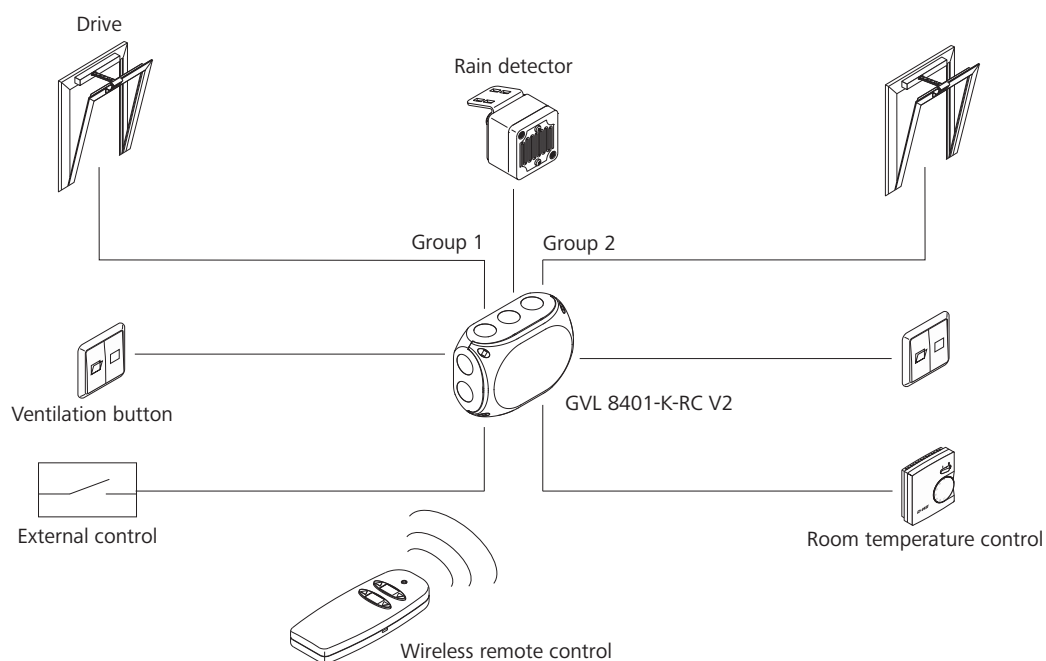


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## Example of application



## Technical data

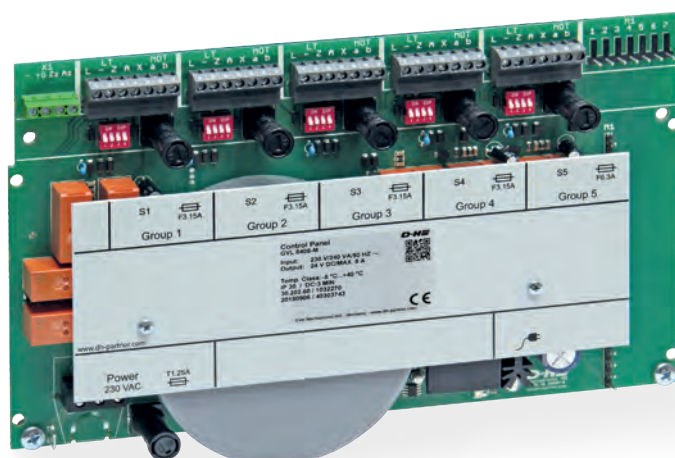
### GVL 8401-K-RC V2

Supply	230 V AC / 50 Hz / 56 VA
Stand-by power	< 1 W
Output	24 V DC / 1 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 66
Temperature range	-5 °C ... +40 °C
Housing	Polycarbonate
Colour	Light grey (~ RAL 7035)
W x H x D	139 x 180 x 77 mm
Weight	0.97 kg

## Design

Type	Art. No.
GVL 8401-K-RC V2	30.241.90

# GVL 8408-M



## Performance features

- » Expandable ventilation control panel
- » For controlling 24 V DC window drives
- » Up to 8 A total drive current
- » Stabilised output voltage
- » 5 ventilation groups (with optional GME 83, can be expanded to 6 groups)
- » Input for external controller, e.g. timer
- » Configurable ventilation safety function (storage operation OPEN / CLOSED)
- » Weather automation for individual groups can be switched on / off
- » Comfort ventilation functions using additional modules

## Accessories

Plastic housing



Page 113

Modules



starting on page 130

Operation elements



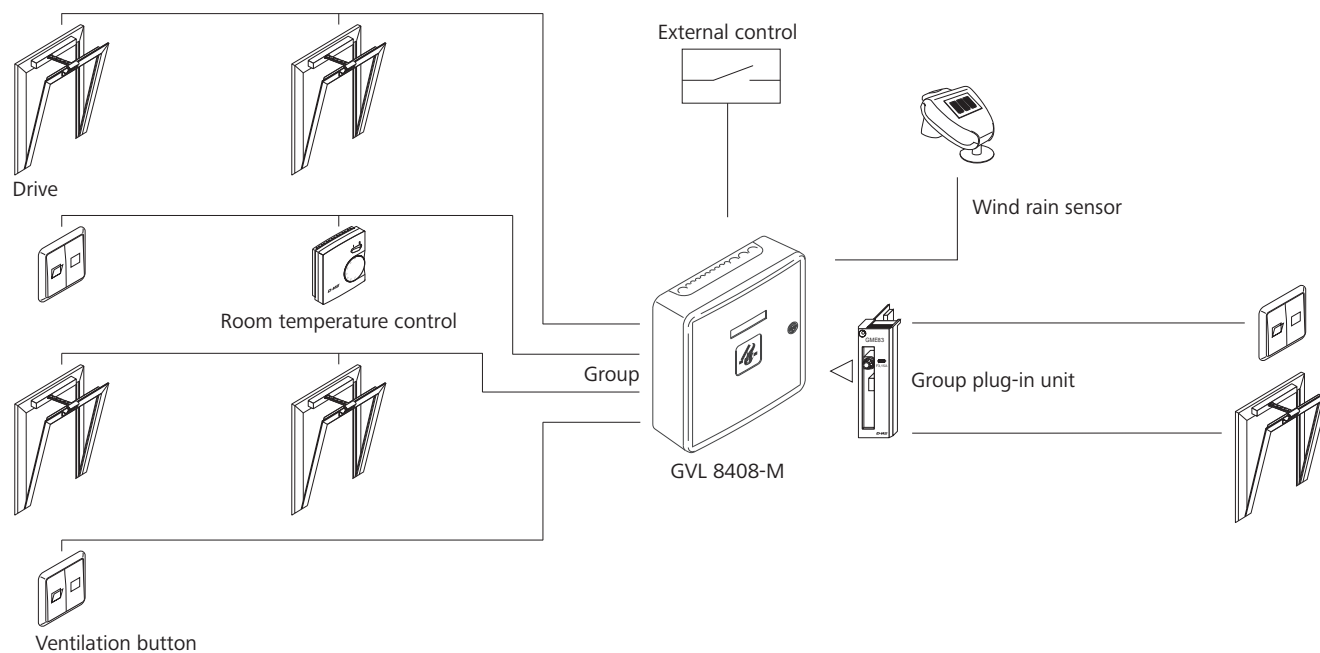
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Weather sensors



starting on page 146

## Example of application



## Technical data

GVL 8408-M	
Supply	230 V AC / 50 Hz / 240 VA
Stand-by power	2.5 W
Output	24 V DC / 8 A
Mode of operation	Short-time duty 20 % duty cycle
Temperature range	-5 °C ... +40 °C

## Approvals / Certificates

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## Design

Type	Art. No.	Type of protection	Colour	W x H x D	Weight	Remark
ZP-GVL 8408-M	30.202.60				5.60 kg	
GEH-KST	63.600.81	IP 30	White (~ RAL 9016)	310 x 310 x 100 mm	1.40 kg	Plastic housing
GVL 83xx-E	30.208.00					Variable equipment possible

# WRZ



## Performance features

- » Compact ventilation control panel
- » For activating 230 V AC ventilation drives
- » For controlling up to 20 ventilation groups in conjunction with cut-off relay modules
- » Input for external controller, e.g. timer
- » Central weather monitoring function (central CLOSED) in conjunction with multiple TRL 8
- » LED displays for wind and rain
- » Adjustable switch point of the wind strength (4 or 6 Bft.)
- » Exceeding wind switching threshold and automatic mode ON / OFF
- » Optional connection to rain detectors or wind / rain sensors without an additional module
- » Surface-mounted plastic housing

## Accessories

Modules



starting on page 130

Operation elements



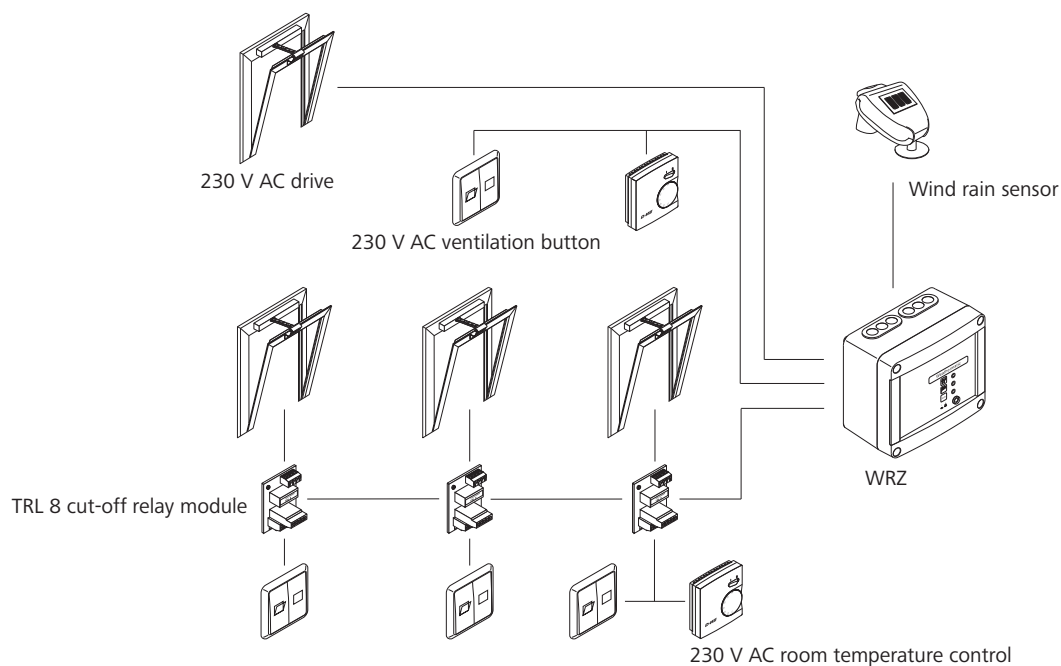
starting on page 152

Weather sensors



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## Example of application



## Technical data

	WRZ
Supply	230 V AC / 50 Hz / 30 VA
Stand-by power	2.4 W
Output	230 V AC
Switching contact	Floating changeover contact
Type of protection	IP 50
Temperature range	-5 °C ... +40 °C
Housing	Plastic
Colour	Light grey (~ RAL 7035)
W x H x D	172 x 151 x 95 mm
Weight	1.65 kg

## Design

Type	Art. No.
WRZ	30.203.00

# WRZ 8000



## Performance features

- » Compact ventilation control panel
- » For activating 230 V AC ventilation drives
- » For controlling up to 20 ventilation groups in conjunction with cut-off relay modules
- » Input for external controller, e.g. timer
- » Central weather monitoring function (central CLOSED) in conjunction with multiple TRL 8
- » LED displays for wind and rain
- » Continuous configuration of the wind strength switch point (2 - 8 Bft.) and signal retention time (1 - 15 minutes)
- » Exceeding wind switching threshold and automatic mode ON / OFF
- » Bargraph display for wind strength (Beaufort) and LED for wind signal save function
- » Surface-mounted plastic housing

## Accessories

Modules



starting on page 130

Operation elements



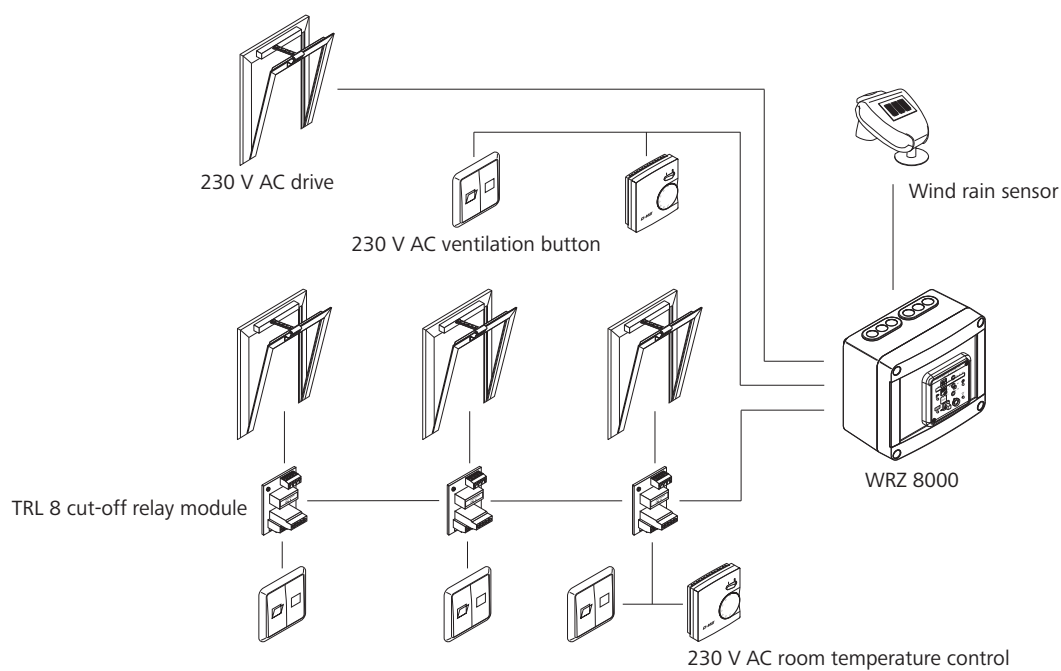
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Weather sensors



starting on page 146

## Example of application



## Technical data

### WRZ 8000

Supply	230 V AC / 50 Hz / 30 VA
Stand-by power	3.1 W
Output	230 V AC
Switching contact	Floating changeover contact
Type of protection	IP 50
Temperature range	-5 °C ... +40 °C
Housing	Plastic
Colour	Light grey (~ RAL 7035)
W x H x D	172 x 151 x 95 mm
Weight	1.70 kg

## Design

Type	Art. No.
WRZ 8000	30.203.30

# Power supply units





### PS Series Power supply unit

Type	Output	Page
PS-S1-24-20	24 V DC / 20 A	120
PS-S1-24-40	24 V DC / 40 A	120

### PS-V Series CNV power supply unit

Type	Output	Page
PS-VE1	24 V DC / 1 A	122
PS-VE4	24 V DC / 4 A	124

### SNT Series CNV power supply unit

Type	Output	Page
SNT 1-U	24 V DC / 1 A	126
SNT 2	24 V DC / 2 A	128

# PS-S1-24-20 / PS-S1-24-40



## Performance features

- » Power pack for the CPS-M power supplies
- » Additional input voltage range
- » Short-circuit resistant
- » Reverse-voltage protected
- » Installation on 35 mm top hat rail

## Technical data

	PS-S1-24-20	PS-S1-24-40
Supply	230 V AC / 50 Hz	
Performance	480 W / 530 VA	960 W / 1040 VA
Output	24 V DC / 20 A	24 V DC / 40 A
Ripple	< 50 mVss	
Type of protection	IP 20	
Air humidity*	5 ... 95 %	
Temperature range	-25 °C ... +60 °C	
Housing	Metal	
W x H x D	90 x 130 x 150 mm	140 x 130 x 150 mm
Weight	2.80 kg	3.90 kg

\* no condensation

## Design

Type	Art. No.
PS-S1-24-20	64.801.98
PS-S1-24-40	64.801.99

# PS-VE1



## Performance features

- » External compact power supply unit, 230 V AC
- » For controlling 24 V DC drives
- » Up to 1 A total drive current
- » Activation, e.g. using 230 V AC ventilation button
- » Surface-mounted design

## Accessories

Operation elements

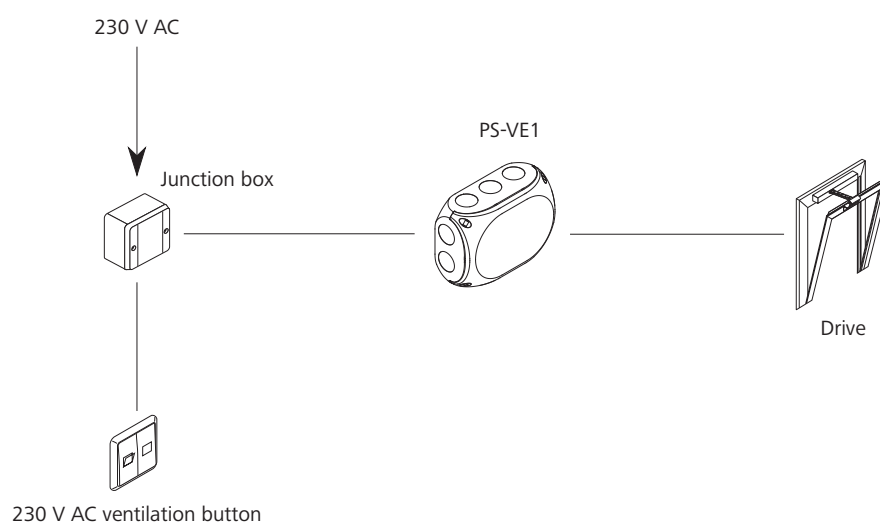
Weather sensors



starting on page 152

starting on page 146

## Example of application



## Technical data

	PS-VE1
Supply	230 V AC / 50 Hz / 36 VA
Output	24 V DC / 1 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 66
Temperature range	0 °C ... +60 °C
Housing	Polycarbonate
Colour	Light grey (~ RAL 7035)
W x H x D	130 x 180 x 77 mm
Weight	0.80 kg

## Design

Type	Art. No.
PS-VE1	30.242.10

# PS-VE4



## Performance features

- » External compact power supply unit, 230 V AC
- » For controlling 24 V DC drives
- » For controlling 24 V DC BSY+ drives
- » BSY+ bus signals can be looped through
- » Up to 4 A total drive current
- » Activation, e.g. using 230 V AC ventilation button
- » Surface-mounted design

## Accessories

Operation elements

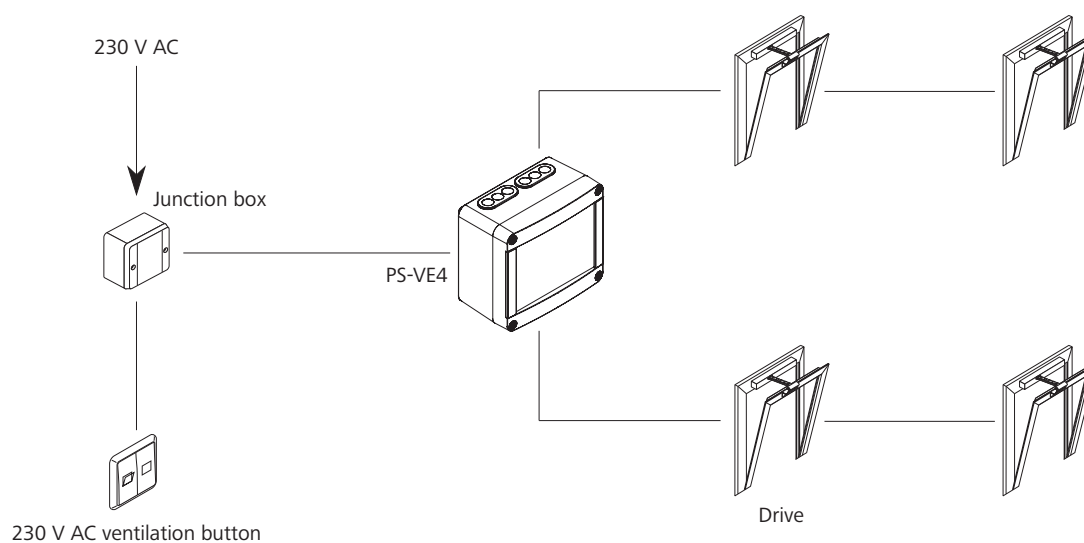
Weather sensors



starting on page 152

starting on page 146

## Example of application



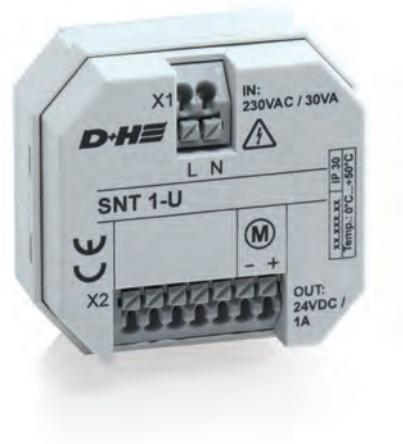
## Technical data

	PS-VE4
Supply	230 V AC / 50 Hz / 147 VA
Output	24 V DC / 4 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 50
Temperature range	0 °C ... +60 °C
Housing	Plastic
Colour	Light grey (~ RAL 7035)
W x H x D	172 x 151 x 95 mm
Weight	2.30 kg

## Design

Type	Art. No.
PS-VE4	30.242.20

# SNT 1-U



## Performance features

- » External ventilation power supply unit, 230 V AC
- » For BDT 010 power supply
- » Option for connecting to a maximum of one BDT 010
- » Up to 1 A total drive current
- » Activation, e.g. using 230 V AC ventilation button
- » For installing in 55 mm flush-mounted socket (not included)

## Accessories

Operation elements



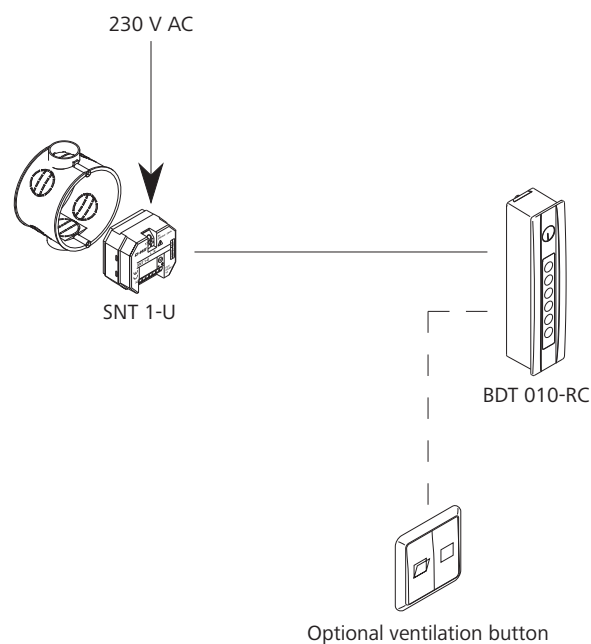
starting on page 152

BDT





## Example of application



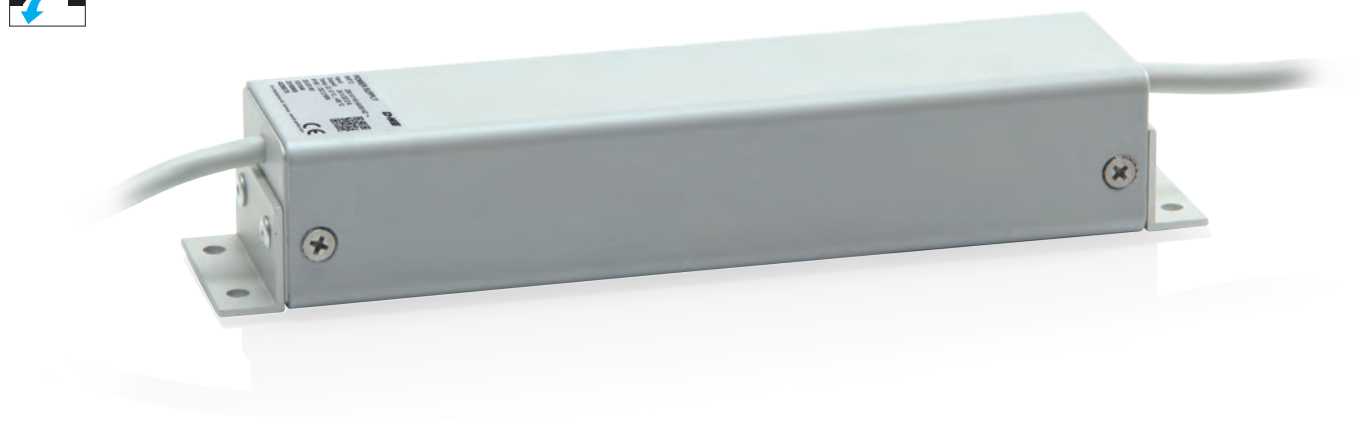
## Technical data

	SNT 1-U
Supply	230 V AC / 50 Hz / 30 VA
Output	24 V DC / 1 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 30
Temperature range	0 °C ... +50 °C
Housing	Plastic
Colour	Light grey (~ RAL 7035)
W x H x D	50 x 48 x 28 mm
Weight	0.13 kg

## Design

Type	Art. No.
SNT 1-U	20.032.40

# SNT 2



## Performance features

- » External ventilation power supply unit, 230 V AC
- » For controlling 24 V DC drives
- » Up to 2 A total drive current
- » Activation, e.g. using 230 V AC ventilation button
- » Surface-mounted design

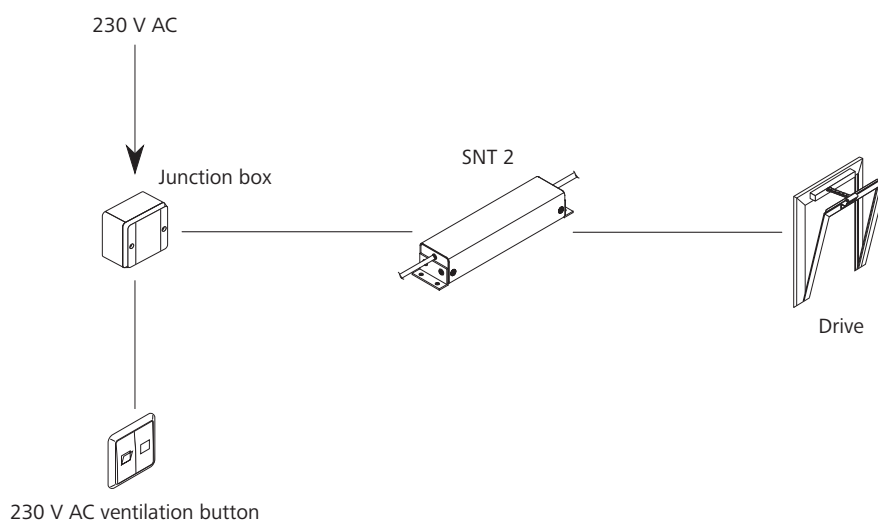
## Accessories

Operation elements



starting on page 152

## Example of application



## Technical data

	SNT 2
Supply	230 V AC / 50 Hz / 110 VA
Output	24 V DC / 2 A
Mode of operation	Short-time duty 20 % duty cycle
Type of protection	IP 50
Temperature range	0 °C ... +60 °C
Housing	Aluminium
Colour	Silver (~ RAL 9006)
W x H x D	232 x 50 x 40 mm
Weight	0.80 kg

## Approvals / Certificates

Article also available with the following permissions under other article numbers. Technical data may deviate. Find out about permission details from your D+H Partner.



## Design

Type	Art. No.
SNT 2	20.031.60

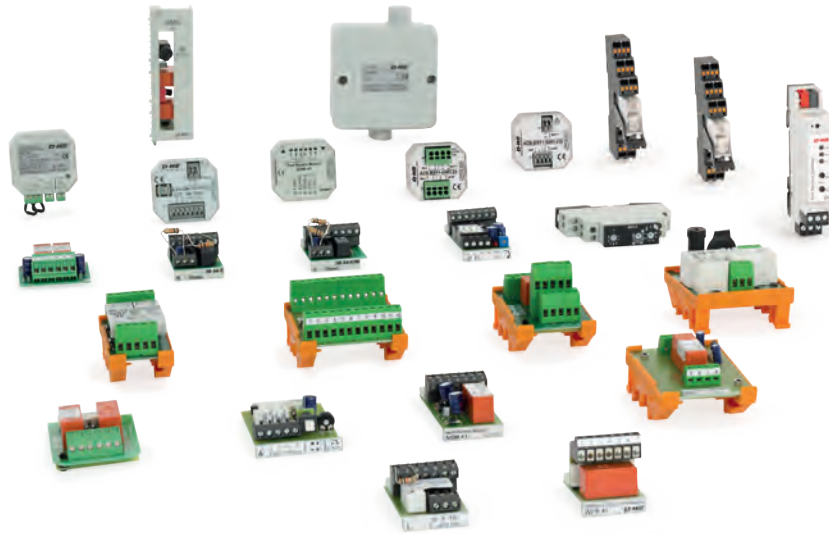
# Modules



## Modules

Type	Page
Expansion modules	132

# Expansion modules



## Performance features

- » For D+H RZN and GVL control panels
- » Various SHEV and ventilation functions
- » Various designs
- » Easy installation
- » Can be retrofit easily

Type	Art. No.	Description
------	----------	-------------

ACB-BSY+-GW1-24 30.555.10



**ACB gateway on BSY+ 24 V DC**

- » Interface module between building management system or D+H control panel (CPS-M1) and a 24 V DC BSY+ drive group
- » Expands the drive functions, for example, to include functions of precise position control and virtual group formation
- » Enables the use of real drive positions, for example, for OPEN and CLOSED signals
- » Fault message of the individual BSY+ group
- » No special drive notification or configuration required
- » For installing on-site junction box

Type	Art. No.	Description
------	----------	-------------

ACB-BSY+-GW1-230 30.555.20



**ACB gateway on BSY+ 230 V AC**

- » Interface module between building management system or D+H control panel (CPS-M1) and a 230 V AC BSY+ drive group
- » Expands the drive functions, for example, to include functions of precise position control and virtual group formation
- » Enables the use of real drive positions, for example, for OPEN and CLOSED signals
- » Fault message of the individual BSY+ group
- » No special drive notification or configuration required
- » Galvanic isolation between the input signal and output signal
- » For installing on-site junction box

Type	Art. No.	Description
------	----------	-------------

AM 44-Z 30.524.90



**Alarm cut-off module + time-limit**

- » Supply of external alarm devices such as sirens, fire bells and flashing lights
- » For installation on E1 / E2 central slot
- » Options of manual alarm cut-off via optional collective signal panel or automatic via the preset time
- » Configurable alarm time limit from 0.5 to 4 minutes

Type	Art. No.	Description
------	----------	-------------

AT 41 30.551.70



**Drive delay module**

- » Delays the start-up of the window drives to prevent faults when opening the sash or to prevent restrictions of the SHEV cross section due to on-site motor-operated exterior shading
- » For installation on LT / MOT central slot
- » Retracts the sun shading in case of an alarm and subsequently opens the SHEV sash in a time-delayed manner
- » Only use in conjunction with D+H drives with BRV message

# Modules

Type	Art. No.	Description
------	----------	-------------

BSY-GW 024-010-U      30.554.90



**0 to 10 V DC gateway on BSY+**

- » Interface module between the building management system (BMS) and a BSY+ drive group in conjunction with a D+H control panel
- » Simple plug-and-play commissioning
- » No special drive notification or configuration required
- » Galvanic isolation between the input signal and output signal
- » Simple integration into new and existing systems
- » For installing on-site junction box

Type	Art. No.	Description
------	----------	-------------

CR-1      30.550.90



**Cut-off relay**

- » E.g. for remote signalling a fault or an alarm
- » Connection via spring terminal
- » Version in 24 V DC coil voltage
- » 2 isolated changeover contacts, max. 230 V AC / 5 A
- » Top hat rail design

Type	Art. No.	Description
------	----------	-------------

CR-5      30.550.95



**Cut-off relay**

- » E.g. for remote signalling a fault or an alarm
- » Connection via spring terminal
- » Version in 230 V AC coil voltage
- » 2 isolated changeover contacts, max. 230 V AC / 5 A
- » Top hat rail design

Type	Art. No.	Description
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DM 41      30.551.00



**Diode matrix**

- » Made of 12 individual LEDs or resistors that can be wired independently
- » Top hat rail design



Type	Art. No.	Description
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ERM 44      30.552.50



- End relay module**
- » For isolated OPEN or CLOSED signal of a drive or a drive group
  - » Activation via BSY+ line, BRV message or TMS output (only for CDC)
  - » Contact load capacity: max. 60 V DC / 1 A
  - » Installing in a junction box, for example (not included)

Type	Art. No.	Description
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FS 41      30.550.60



- Sequence control module**
- » For consistent opening and closing of motor-operated, overlapping window sashes
  - » Delays the start-up of a sash side in the OPEN / CLOSED direction to guarantee safe opening/closing
  - » Switching capacity 24 V DC / max 50 W (2 A) per sash
  - » For installing on the control panel or on-site junction box

Type	Art. No.	Description
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GME 83      30.600.00



- Group module**
- » For GVL 8408-M ventilation control panel
  - » For expanding the control panel to up to 6 ventilation groups, optional

Type	Art. No.	Description
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GSV 45      30.554.10



- Group hub**
- » For dividing the drive connection wires of a group into 2 sections for each 3 wires
  - » Option of parallel connection of up to 4x GSV 45 on one group
  - » Installing in a junction box, for example (not included)
  - » Top hat rail design

# Modules

Type	Art. No.	Description
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IM 44-E 30.552.80



**Pulse module**

- » For alarm triggering and resetting the SHEV system (RZN-E) when using pulse control
- » For converting continuous switch signals to pulse switching signals, e.g. in conjunction with pulse solenoid valves
- » For installation on RM / RT central slot

Type	Art. No.	Description
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IM 44-K/M 30.552.70



**Pulse module**

- » For alarm triggering and resetting the SHEV system (RZN-K/RZN-M) when using pulse control
- » For converting continuous switch signals to pulse switching signals, e.g. in conjunction with pulse solenoid valves
- » For installation on RM / RT central slot

Type	Art. No.	Description
------	----------	-------------

IM 80 30.550.40



**Pulse module**

- » For converting continuous switch signals to pulse switching signals, e.g. in conjunction with pulse solenoid valves
- » Top hat rail design

Type	Art. No.	Description
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KNX Modbus RTU Gateway 70.602.18



**Gateway KNX to Modbus/ACN**

- » Compact KNX/Modbus gateway with 250 freely configurable channels (KNX data points)
- » Can be used as Modbus master or slave
- » Connection to other fields such as BMS via KNX possible)
- » Assignment between KNX objects and Modbus registers directly in the ETS (no additional tool required)
- » Easy import of the project image of the CPS-M1 from the SCS into the ETS software
- » The ACN-GW501-MRTU-0200 Gateway is required for a connection to the CPS-M1

Type	Art. No.	Description
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MFR 5 64.801.39



- Time module**
- » For implementing priority controls (e.g. time functions such as switch-on delay, return delay)
  - » Wide-range input: 12 ... 240 V AC / DC
  - » Maximum switching capacity: 2000 VA (8 A / 250 V AC)
  - » 1 isolated changeover contact
  - » Top hat rail design

Type	Art. No.	Description
------	----------	-------------

NSM 41 30.550.70



- Zero switching module**
- » Delay of changeovers of a drive group via zero position
  - » Downstream electronic load cut-offs (24 V DC) are reset before changing running direction

Type	Art. No.	Description
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SSM 45 30.553.20



- Closing edge safety module**
- » For securing the main and side closing edges of a window in conjunction with (a maximum of 2) contact tubes
  - » Automatic reversing mode
  - » Burglary protection, automatic deactivation of the safety edge after 3 min
  - » Cable monitoring for short circuit and recess
  - » Installing in a junction box, for example (not included)

Type	Art. No.	Description
------	----------	-------------

TR 42 30.525.80



- Cut-off relay module**
- » E.g. for remote signalling a fault or an alarm
  - » For installation on E1 / E2 central slot
  - » 2 isolated changeover contacts, max. 230 V AC / 5 A

# Modules

Type	Art. No.	Description
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TR 44-AP

30.552.40

**230 V AC cut-off relay module**

- » For controlling 230 V AC D+H drives on 24 V DC groups in D+H SHEV and ventilation control panels
- » Surface-mounted design
- » Maximum switching capacity: 720 VA
- » W x H x D: 87 x 87 x 53 mm



Type	Art. No.	Description
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TR 44-K

30.552.30

**230 V AC cut-off relay module**

- » For controlling 230 V AC D+H drives on 24 V DC groups in D+H SHEV and ventilation control panels
- » Maximum switching capacity: 720 VA
- » Top hat rail design



Type	Art. No.	Description
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TRL 8

30.500.30

**230 V AC cut-off relay module**

- » For controlling a 230 V AC ventilation group via isolated double changeover contact 230 V AC / 5 A
- » For combining multiple ventilation groups
- » For central closing function in conjunction with WRZ and WRZ 8000
- » Top hat rail design



Type	Art. No.	Description
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UM 41-Z

30.526.10

**Transfer module**

- » Application in conjunction with RT BE42-Z and RT BE42-Z-K
- » Pluggable on line space (RM / RT)



Type	Art. No.	Description
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WFR 41                      30.526.80



**Weather stepping relay**

- » Interface module for D+H wind and rain detectors
- » For installation on E1 / E2 central slot
- » With isolated changeover contact for relaying the weather CLOSED signal to other control panels

# Sensor systems



## Sensor systems Fire detectors

Type	Supply	Trigger type	Page
SD-O 371	8 ... 28 V DC	Optical beam smoke detector	143
FD-T 271	8 ... 28 V DC	Thermal differential detector	143
TH 4/70	24 V DC	Thermal detector	143
THE 4/70	24 V DC	Thermal detector	144

## Sensor systems Weather sensors

Type	Supply	Function	Page
VRS 10	24 V DC / 0.05 A	Rain detector	147
REM 42	24 V DC / 0.2 A	Rain detector	147
REM 801-RC	24 V DC	Wireless rain detector	147
REM 230	230 V AC / 50 Hz / 5 VA	Rain detector	148
WRS-S	12 ... 35 V UC	Wind rain sensor	148

## Sensor systems Presence detector as entrapment protection

Type	Supply	Page
PD-C180i/16 DH	12 ... 36 V UC	150

# SD-O / FD-T / TH / THE



## Performance features

- » Fire detector using the scattered light principle (SD) or principle of thermal differential (FD)
- » Extended operating time up to 8 years, thanks to electronic compensation for long-term effects of dirt or ageing
- » VdS approval (SD-O 371 / FD-T 271)
- » Thermal maximum detector for monitoring electrical cables
- » Optimised for use with D+H SHEV control panels

## Approvals / Certificates

Find out about permission details from your D+H Partner.



G 213066



G 213069



Type	Art. No.	Description	Technical data																
SD-O 371	70.300.22	<b>Optical beam smoke detector</b> <ul style="list-style-type: none"> <li>» Optical fire detector works on the scattered light principle</li> <li>» Automatic self-monitoring of function and state</li> <li>» Individual display for alarm</li> <li>» Resting value tracking</li> <li>» Easy installation using removable base</li> <li>» VdS approval number: G 213066</li> </ul>	<table border="1"> <tr> <td>Nominal voltage</td> <td>24 V DC</td> </tr> <tr> <td>Monitoring area</td> <td>110 m<sup>2</sup></td> </tr> <tr> <td>Monitoring height</td> <td>12 m</td> </tr> <tr> <td>Type of protection</td> <td>IP 40</td> </tr> <tr> <td>Temperature range</td> <td>-20 °C ... +72 °C</td> </tr> <tr> <td>Colour</td> <td>White (~ RAL 9010)</td> </tr> <tr> <td>Diameter</td> <td>117 mm</td> </tr> <tr> <td>Weight</td> <td>0.11 kg</td> </tr> </table>	Nominal voltage	24 V DC	Monitoring area	110 m <sup>2</sup>	Monitoring height	12 m	Type of protection	IP 40	Temperature range	-20 °C ... +72 °C	Colour	White (~ RAL 9010)	Diameter	117 mm	Weight	0.11 kg
Nominal voltage	24 V DC																		
Monitoring area	110 m <sup>2</sup>																		
Monitoring height	12 m																		
Type of protection	IP 40																		
Temperature range	-20 °C ... +72 °C																		
Colour	White (~ RAL 9010)																		
Diameter	117 mm																		
Weight	0.11 kg																		



Type	Art. No.	Description	Technical data																
FD-T 271	70.300.21	<b>Thermal differential detector</b> <ul style="list-style-type: none"> <li>» Automatic self-monitoring of function and state</li> <li>» Individual display for alarm</li> <li>» Easy installation using removable base</li> <li>» VdS approval number: G 213069</li> </ul>	<table border="1"> <tr> <td>Nominal voltage</td> <td>24 V DC</td> </tr> <tr> <td>Monitoring area</td> <td>30 m<sup>2</sup></td> </tr> <tr> <td>Monitoring height</td> <td>7.5 m</td> </tr> <tr> <td>Type of protection</td> <td>IP 40</td> </tr> <tr> <td>Temperature range</td> <td>-20 °C ... +50 °C</td> </tr> <tr> <td>Colour</td> <td>White (~ RAL 9010)</td> </tr> <tr> <td>Diameter</td> <td>117 mm</td> </tr> <tr> <td>Weight</td> <td>0.11 kg</td> </tr> </table>	Nominal voltage	24 V DC	Monitoring area	30 m <sup>2</sup>	Monitoring height	7.5 m	Type of protection	IP 40	Temperature range	-20 °C ... +50 °C	Colour	White (~ RAL 9010)	Diameter	117 mm	Weight	0.11 kg
Nominal voltage	24 V DC																		
Monitoring area	30 m <sup>2</sup>																		
Monitoring height	7.5 m																		
Type of protection	IP 40																		
Temperature range	-20 °C ... +50 °C																		
Colour	White (~ RAL 9010)																		
Diameter	117 mm																		
Weight	0.11 kg																		



Type	Art. No.	Description	Technical data						
TH 4/70	30.900.40	<b>Thermal detector</b> <ul style="list-style-type: none"> <li>» Trigger temperature approx. 70 °C</li> <li>» Surface-mounted design</li> </ul>	<table border="1"> <tr> <td>Input voltage</td> <td>24 V DC</td> </tr> <tr> <td>Diameter</td> <td>75 mm</td> </tr> <tr> <td>Weight</td> <td>0.05 kg</td> </tr> </table>	Input voltage	24 V DC	Diameter	75 mm	Weight	0.05 kg
Input voltage	24 V DC								
Diameter	75 mm								
Weight	0.05 kg								



## Sensor systems Fire detectors

Type	Art. No.	Description	Technical data						
THE 4/70	30.900.30	<b>Thermal detector</b> <ul style="list-style-type: none"> <li>» Trigger temperature approx. 70 °C</li> <li>» Installing in a junction box, for example (not included)</li> </ul>	<table border="1"> <tr> <td>Input voltage</td> <td>24 V DC</td> </tr> <tr> <td>Diameter</td> <td>11 mm</td> </tr> <tr> <td>Weight</td> <td>0.02 kg</td> </tr> </table>	Input voltage	24 V DC	Diameter	11 mm	Weight	0.02 kg
Input voltage	24 V DC								
Diameter	11 mm								
Weight	0.02 kg								



Type	Art. No.	Description	Technical data		
BWS	70.300.05	<b>Ball guard</b> <ul style="list-style-type: none"> <li>» For SD-O 371 and FD-T 271 fire detectors</li> </ul>	<table border="1"> <tr> <td>Weight</td> <td>0.10 kg</td> </tr> </table>	Weight	0.10 kg
Weight	0.10 kg				



Type	Art. No.	Description	Technical data		
MW 2	31.100.45	<b>Installation bracket for SD-O 371</b> <ul style="list-style-type: none"> <li>» For wall installation of the SD-O 371</li> </ul>	<table border="1"> <tr> <td>Weight</td> <td>0.10 kg</td> </tr> </table>	Weight	0.10 kg
Weight	0.10 kg				



Type	Art. No.	Description	Technical data
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DC 588	70.300.25	<b>Detector cover cap</b>	Diameter <u>120 mm</u>
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- » For protecting against dirt



Type	Art. No.	Description	Technical data
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PDB IP 43	70.300.26	<b>IP 43 protection for detector socket</b>	Diameter <u>115 mm</u> Weight <u>0.04 kg</u>
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- » For installation in humid and dusty environments
- » Increased protection to IP 43
- » Simple fastening thanks to adhesive strip



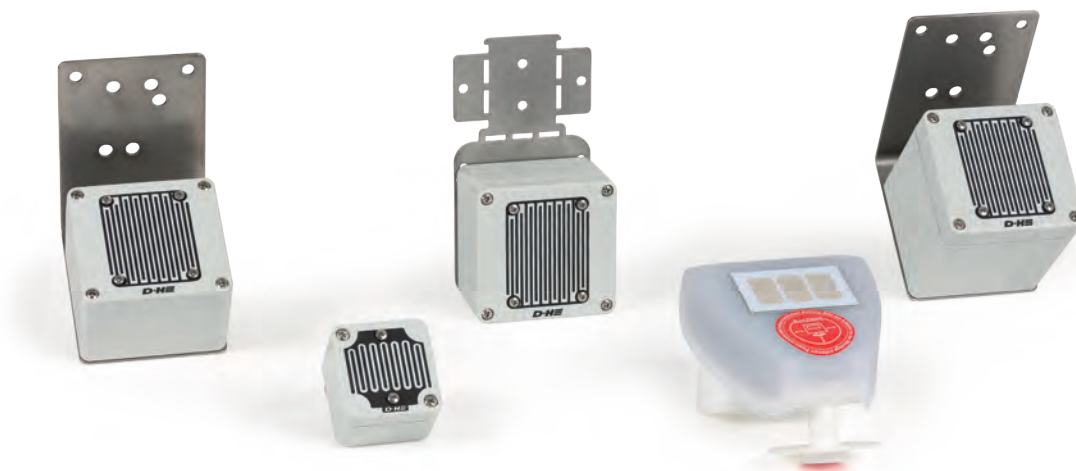
Type	Art. No.	Description	Technical data
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LP 576	70.300.27	<b>Designation field for detector socket</b>	Weight <u>0.10 kg</u>
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- » For fastening in the side opening on the detector socket



# VRS / REM / WRS



## Performance features

- » Suitable for connecting to all D+H SHEV and ventilation control panels
- » Also available with radio signal (REM 801-RC)
- » Flexible installation
- » Integrated wind signal emitter (optional)

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

VRS 10 30.300.90

**Rain detector**

- » For rain monitoring of ventilation flaps in conjunction with 24 V DC SHEV and ventilation control panels
- » Rain signal is stored for approx. 2 minutes (rain hold time)
- » Rain sensor in compact design, 24 V DC
- » Heated sensor area

Supply	24 V DC / 0.05 A
Type of protection	IP 65
Temperature range	-20 °C ... +60 °C
Housing	Polycarbonate
Colour	Grey (~ RAL 7035)
W x H x D	50 x 70 x 66 mm
Weight	0.40 kg



Type	Art. No.	Description	Technical data
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REM 42 30.301.00

**Rain detector**

- » For rain monitoring of ventilation flaps in conjunction with 24 V DC drives and D+H control panels
- » Rain signal is stored for approx. 2 minutes (rain hold time)
- » Heated sensor area

Supply	24 V DC / 0.2 A
Type of protection	IP 65
Temperature range	-20 °C ... +60 °C
Housing	Polycarbonate
Colour	Grey (~ RAL 7035)
W x H x D	85 x 150 x 110 mm
Weight	0.50 kg



Type	Art. No.	Description	Technical data
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REM 801-RC 30.302.20

**Wireless rain detector**

- » Presence monitoring in wireless operation
- » Signal output via radio or switching contact
- » Integrated test function for controlling the reception quality
- » Rain signal is stored for approx. 5 minutes (rain hold time)
- » Heated sensor area (not possible in battery operation)

Input voltage	24 V DC
Type of protection	IP 33
Temperature range	-20 °C ... +60 °C
Transmitter range	Max. 100 m free field
Radio frequency	868.3 MHz / FSK
Housing	Polycarbonate
Colour	Grey (~ RAL 7035)
W x H x D	80 x 82 x 55 mm
Weight	0.50 kg



Type	Art. No.	Description	Technical data														
REM 230	30.300.20	<b>Rain detector</b> <ul style="list-style-type: none"> <li>» For rain monitoring of ventilation flaps in conjunction with 230 V AC drives</li> <li>» Rain signal is stored for approx. 2 minutes (rain hold time)</li> <li>» Switching contact: Changeover contact 230 V AC, max. 5 A</li> <li>» Heated sensor area</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>230 V AC / 50 Hz / 5 VA</td> </tr> <tr> <td>Type of protection</td> <td>IP 65</td> </tr> <tr> <td>Temperature range</td> <td>-20 °C ... +60 °C</td> </tr> <tr> <td>Housing</td> <td>Polycarbonate</td> </tr> <tr> <td>Colour</td> <td>Grey (~ RAL 7035)</td> </tr> <tr> <td>W x H x D</td> <td>85 x 150 x 120 mm</td> </tr> <tr> <td>Weight</td> <td>1.30 kg</td> </tr> </table>	Supply	230 V AC / 50 Hz / 5 VA	Type of protection	IP 65	Temperature range	-20 °C ... +60 °C	Housing	Polycarbonate	Colour	Grey (~ RAL 7035)	W x H x D	85 x 150 x 120 mm	Weight	1.30 kg
Supply	230 V AC / 50 Hz / 5 VA																
Type of protection	IP 65																
Temperature range	-20 °C ... +60 °C																
Housing	Polycarbonate																
Colour	Grey (~ RAL 7035)																
W x H x D	85 x 150 x 120 mm																
Weight	1.30 kg																



Type	Art. No.	Description	Technical data												
WRS-S	70.602.17	<b>Wind rain sensor</b> <ul style="list-style-type: none"> <li>» Wind switching threshold via DIP switch configurable from 1 m/s to 30 m/s</li> <li>» Rain signal is stored for approx. 5 minutes (rain hold time)</li> <li>» Signal retention time of the wind signal for approx. 10 minutes</li> <li>» Heated sensor area</li> <li>» Incl. mast and wall mounting</li> </ul>	<table border="1"> <tr> <td>Operating voltage</td> <td>12 ... 35 V UC</td> </tr> <tr> <td>Type of protection</td> <td>IP 44</td> </tr> <tr> <td>Temperature range</td> <td>-30 °C ... +50 °C</td> </tr> <tr> <td>Housing</td> <td>Plastic</td> </tr> <tr> <td>W x H x D</td> <td>96 x 77 x 118 mm</td> </tr> <tr> <td>Weight</td> <td>0.18 kg</td> </tr> </table>	Operating voltage	12 ... 35 V UC	Type of protection	IP 44	Temperature range	-30 °C ... +50 °C	Housing	Plastic	W x H x D	96 x 77 x 118 mm	Weight	0.18 kg
Operating voltage	12 ... 35 V UC														
Type of protection	IP 44														
Temperature range	-30 °C ... +50 °C														
Housing	Plastic														
W x H x D	96 x 77 x 118 mm														
Weight	0.18 kg														



Type	Art. No.	Description	Technical data				
AMB	70.600.05	<b>Antenna mast mounting</b> <ul style="list-style-type: none"> <li>» Suitable for installation to an antenna mast for diameters of 42 to 60 mm</li> </ul>	<table border="1"> <tr> <td>Colour</td> <td>Silver</td> </tr> <tr> <td>Weight</td> <td>0.35 kg</td> </tr> </table>	Colour	Silver	Weight	0.35 kg
Colour	Silver						
Weight	0.35 kg						





# PD-C180i/16 DH



## Performance features

- » Entrapment protection for monitoring power-operated windows
- » Direct integration with D+H-drives using "closing edge protection" function or using the SSM 45 closing edge safety module
- » Noiseless switching
- » Isolated software-controlled switching output (normally open contact)
- » Compatible with brand-name switches



## Technical data

### PD-C180i/16 DH

Operating voltage	12 ... 36 V UC
Switching capacity	Max. 2 A
Type of protection	IP 20
Temperature range	0 °C ... +50 °C
Housing	Polycarbonate
Colour	White (~ RAL 9010)
W x H x D	70 x 70 x 63 mm
Weight	0.06 kg

## Design

Type	Art. No.
PD-C180i/16 DH	30.303.10



### LT Series Ventilation buttons

Type	Page
LT 84 / LS 84 / SLT 42	154

### RC Series Radio remote control

Type	Page
RCR 11-2/-4	161
RCT 003-11-U	161
RCM 024-11-U	162
RCM 230-11-U	162

### Controller Series Automatic controllers

Type	Page
RTR 231	165
ITR 79	165
TR 608	165

# LT 84 / LS 84 / SLT 42



## Performance features

- » For controlling ventilation drives
- » Self-explanatory symbols
- » Versions for flush-mounted and surface-mounted installation and for moisture-prone areas

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

LT 84-U 63.701.29

**Ventilation button**



- » For controlling a ventilation group
- » Ventilation OPEN / STOP / CLOSED via double button with 2 unlocked normally open contacts
- » For installing in 55 mm flush-mounted socket (not included)

Input voltage	24 V DC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.15 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

LT 84-U-SD 63.701.35

**Ventilation button**



- » For controlling a ventilation group
- » Ventilation OPEN / STOP / CLOSED via double button with 2 unlocked normally open contacts
- » With integrated LED readout OPEN
- » For installing in 55 mm flush-mounted socket (not included)

Input voltage	24 V DC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.15 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

LT 84-U-V 63.701.30

**Ventilation button**



- » For controlling a 230 V AC ventilation group
- » Ventilation OPEN / STOP / CLOSED via double button; buttons mechanically interlocked; STOP by releasing the button
- » For installing in 55 mm flush-mounted socket (not included)

Input voltage	230 V AC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.30 kg

# LT Series Ventilation buttons

Type	Art. No.	Description	Technical data
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LS 84-U-V

63.701.45

### Ventilation switch



- » For controlling a 230 V AC ventilation group
- » Ventilation OPEN / STOP / CLOSED via double button; buttons mechanically interlocked; STOP by repeated/renewed press of rocker switch back to starting position
- » For installing in 55 mm flush-mounted socket (not included)

Input voltage	230 V AC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.30 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

LT 84-U-W

63.701.31

### Ventilation switch



- » Automatic switch for weather/temperature ON / OFF
- » For installing in 55 mm flush-mounted socket (not included)

Input voltage	24 V DC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.30 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

SLT 42-U

30.401.10

### Key vent button



- » For manually opening and closing a ventilation group in conjunction with D+H SHEV or ventilation control panels
- » Function: Ventilation OPEN / CLOSED via key operated changeover contact
- » For installing in deep 55 mm flush-mounted sockets (not included)
- » Profile semi-cylinder not included in scope of supply

Input voltage	24 V DC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.15 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

SLT 42-U-SD

30.400.50

**Key vent button**



- » For manually opening and closing a ventilation group in conjunction with D+H SHEV or ventilation control panels
- » Function: Ventilation OPEN / CLOSED via key operated changeover contact
- » With integrated LED readout OPEN
- » For installing in deep 55 mm flush-mounted sockets (not included)
- » Profile semi-cylinder not included in scope of supply

Input voltage	24 V DC
Type of protection	IP 20
Housing	Plastic
Colour	White
W x H	80 x 80 mm
Weight	0.15 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

SLT 42-A

30.400.30

**Key vent button**



- » For manually opening and closing a ventilation group in conjunction with D+H SHEV or ventilation control panels
- » Function: Ventilation OPEN / CLOSED via key operated changeover contact
- » Profile semi-cylinder not included in scope of supply

Input voltage	24 V DC
Type of protection	IP 54
Housing	Aluminium
Colour	Light grey
W x H x D (max.)	70 x 90 x 65 mm
Weight	0.45 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

SLT 42-A-SD

30.400.40

**Key vent button**



- » For manually opening and closing a ventilation group in conjunction with D+H SHEV or ventilation control panels
- » Function: Ventilation OPEN / CLOSED via key operated changeover contact
- » With integrated LED readout OPEN
- » Profile semi-cylinder not included in scope of supply

Input voltage	24 V DC
Type of protection	IP 54
Housing	Aluminium
Colour	Light grey
W x H x D	70 x 90 x 65 mm
Weight	0.45 kg

# LT Series Ventilation buttons

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

LT 84-A 63.701.36

### Ventilation button

- » For controlling a ventilation group
- » Suitable for surface-mounted installation in moisture-prone areas
- » Ventilation OPEN / STOP / CLOSED via double button with 2 unlocked normally open contacts

Input voltage	24 V DC
Type of protection	IP 44
Housing	Plastic
Colour	Light grey
W x H x D	70 x 70 x 45 mm
Weight	0.20 kg



Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

AP-LT 63.701.33

### Surface-mounted housing, single

- » For holding one SLT, LT or LS for surface-mounted installation

Housing	Plastic
Colour	White
W x H x D	80 x 80 x 35 mm
Weight	0.10 kg



Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

AP2-LT 63.701.34

### Surface-mounted housing, double

- » For holding two SLT, LT or LS for surface-mounted installation

Housing	Plastic
Colour	White
W x H x D	150 x 80 x 35 mm
Weight	0.20 kg





Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

LT 84-R2

63.701.32

**Double frame**

- » For combining two SLT, LT or LS in flush-mounted installation

Material	Plastic
Colour	White
W x H	150 x 80 mm
Weight	0.10 kg



Type	Art. No.	Description	Technical data
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PHZ 28

70.600.53

**Profile semi-cylinder**

- » For key vent button (SLT)
- » Including 3 keys

Weight	0.15 kg
--------	---------



# RCR / RCT / RCM



## Performance features

- » Transmitter, receiver and wireless remote control for D+H radio system
- » Resistant to interference thanks to transmitting code change
- » Easy installation and commissioning
- » Compatible with all D+H radio drives and control panels

Type	Art. No.	Description	Technical data												
RCR 11-2	30.211.25	<b>Wireless remote control</b> <ul style="list-style-type: none"> <li>» Ventilation OPEN / STOP / CLOSED</li> <li>» 868 MHz radio frequency, permitted throughout the EU</li> <li>» High level of security against external control – 32 bit address code and transmitting code change at each button press (hopping code)</li> <li>» With 2 functional levels</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>2 x Lithium CR 2032</td> </tr> <tr> <td>Transmitting power</td> <td>Approx. 1 mW (e.r.p)</td> </tr> <tr> <td>Transmitter range</td> <td>Max. 100 m free field</td> </tr> <tr> <td>Housing</td> <td>ABS, POM</td> </tr> <tr> <td>W x H x D</td> <td>45 x 110 x 15 mm</td> </tr> <tr> <td>Weight</td> <td>0.10 kg</td> </tr> </table>	Supply	2 x Lithium CR 2032	Transmitting power	Approx. 1 mW (e.r.p)	Transmitter range	Max. 100 m free field	Housing	ABS, POM	W x H x D	45 x 110 x 15 mm	Weight	0.10 kg
Supply	2 x Lithium CR 2032														
Transmitting power	Approx. 1 mW (e.r.p)														
Transmitter range	Max. 100 m free field														
Housing	ABS, POM														
W x H x D	45 x 110 x 15 mm														
Weight	0.10 kg														




Type	Art. No.	Description	Technical data												
RCR 11-4	30.211.50	<b>Wireless remote control</b> <ul style="list-style-type: none"> <li>» Ventilation OPEN / STOP / CLOSED</li> <li>» 868 MHz radio frequency, permitted throughout the EU</li> <li>» High level of security against external control – 32 bit address code and transmitting code change at each button press (hopping code)</li> <li>» With 4 functional levels</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>2 x Lithium CR 2032</td> </tr> <tr> <td>Transmitting power</td> <td>Approx. 1 mW (e.r.p)</td> </tr> <tr> <td>Transmitter range</td> <td>Max. 100 m free field</td> </tr> <tr> <td>Housing</td> <td>ABS, POM</td> </tr> <tr> <td>W x H x D</td> <td>45 x 110 x 15 mm</td> </tr> <tr> <td>Weight</td> <td>0.10 kg</td> </tr> </table>	Supply	2 x Lithium CR 2032	Transmitting power	Approx. 1 mW (e.r.p)	Transmitter range	Max. 100 m free field	Housing	ABS, POM	W x H x D	45 x 110 x 15 mm	Weight	0.10 kg
Supply	2 x Lithium CR 2032														
Transmitting power	Approx. 1 mW (e.r.p)														
Transmitter range	Max. 100 m free field														
Housing	ABS, POM														
W x H x D	45 x 110 x 15 mm														
Weight	0.10 kg														




Type	Art. No.	Description	Technical data																
RCT 003-11-U	30.212.00	<b>Wireless transmission module</b> <ul style="list-style-type: none"> <li>» For controlling D+H radio products with standard flush-mounted keys or isolated contacts</li> <li>» Ventilation OPEN / STOP / CLOSED</li> <li>» For installing in standard flush-mounted socket (not included)</li> <li>» Possible to connect to a room temperature control</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>1 x Lithium CR 2450</td> </tr> <tr> <td>Transmitting power</td> <td>Approx. 4 mW (e.r.p)</td> </tr> <tr> <td>Transmitter range</td> <td>Max. 100 m free field</td> </tr> <tr> <td>Radio frequency</td> <td>868.3 MHz / FSK</td> </tr> <tr> <td>Housing</td> <td>Plastic</td> </tr> <tr> <td>Colour</td> <td>Grey</td> </tr> <tr> <td>W x H x D</td> <td>45 x 39 x 12 mm</td> </tr> <tr> <td>Weight</td> <td>0.10 kg</td> </tr> </table>	Supply	1 x Lithium CR 2450	Transmitting power	Approx. 4 mW (e.r.p)	Transmitter range	Max. 100 m free field	Radio frequency	868.3 MHz / FSK	Housing	Plastic	Colour	Grey	W x H x D	45 x 39 x 12 mm	Weight	0.10 kg
Supply	1 x Lithium CR 2450																		
Transmitting power	Approx. 4 mW (e.r.p)																		
Transmitter range	Max. 100 m free field																		
Radio frequency	868.3 MHz / FSK																		
Housing	Plastic																		
Colour	Grey																		
W x H x D	45 x 39 x 12 mm																		
Weight	0.10 kg																		



# RC Series Radio remote control

Type	Art. No.	Description	Technical data																
RCM 024-11-U	30.554.60	<b>Wireless receiving module</b>																	
		<ul style="list-style-type: none"> <li>» Wireless receiver with security encryption and code hopping principle</li> <li>» Up to 10 D+H wireless remote controls can be assigned</li> <li>» For installing in 55 mm flush-mounted socket (not included)</li> <li>» Ability to be controlled wirelessly via remote with secure 128 bit AES wireless encryption to protect against external control</li> <li>» For all 24 V DC D+H control panels</li> <li>» 2 group control outputs for connecting to the control panel ventilation button inputs</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>24 V DC / 0.03 A</td> </tr> <tr> <td>Type of protection</td> <td>IP 30</td> </tr> <tr> <td>Temperature range</td> <td>-5 °C ... +60 °C</td> </tr> <tr> <td>Radio frequency</td> <td>868.3 MHz / FSK</td> </tr> <tr> <td>Housing</td> <td>Plastic</td> </tr> <tr> <td>Colour</td> <td>Grey</td> </tr> <tr> <td>W x H x D</td> <td>50 x 48 x 19 mm</td> </tr> <tr> <td>Weight</td> <td>0.07 kg</td> </tr> </table>	Supply	24 V DC / 0.03 A	Type of protection	IP 30	Temperature range	-5 °C ... +60 °C	Radio frequency	868.3 MHz / FSK	Housing	Plastic	Colour	Grey	W x H x D	50 x 48 x 19 mm	Weight	0.07 kg
Supply	24 V DC / 0.03 A																		
Type of protection	IP 30																		
Temperature range	-5 °C ... +60 °C																		
Radio frequency	868.3 MHz / FSK																		
Housing	Plastic																		
Colour	Grey																		
W x H x D	50 x 48 x 19 mm																		
Weight	0.07 kg																		

Type	Art. No.	Description	Technical data																
RCM 230-11-U	30.554.50	<b>Wireless receiving module</b>																	
		<ul style="list-style-type: none"> <li>» Wireless receiver with security encryption and code hopping principle</li> <li>» Up to 10 D+H wireless remote controls can be assigned</li> <li>» For installing in 55 mm flush-mounted socket (not included)</li> <li>» Ability to be controlled wirelessly via remote with secure 128 bit AES wireless encryption to protect against external control</li> <li>» For direct control of 230 V AC drives</li> <li>» Switching capacity: max. 700 VA, 3 A, (resistive load)</li> </ul>	<table border="1"> <tr> <td>Supply</td> <td>230 V AC / 50 ... 60 Hz</td> </tr> <tr> <td>Type of protection</td> <td>IP 30</td> </tr> <tr> <td>Temperature range</td> <td>-5 °C ... +40 °C</td> </tr> <tr> <td>Radio frequency</td> <td>868.3 MHz / FSK</td> </tr> <tr> <td>Housing</td> <td>Plastic</td> </tr> <tr> <td>Colour</td> <td>Grey</td> </tr> <tr> <td>W x H x D</td> <td>50 x 48 x 24 mm</td> </tr> <tr> <td>Weight</td> <td>0.08 kg</td> </tr> </table>	Supply	230 V AC / 50 ... 60 Hz	Type of protection	IP 30	Temperature range	-5 °C ... +40 °C	Radio frequency	868.3 MHz / FSK	Housing	Plastic	Colour	Grey	W x H x D	50 x 48 x 24 mm	Weight	0.08 kg
Supply	230 V AC / 50 ... 60 Hz																		
Type of protection	IP 30																		
Temperature range	-5 °C ... +40 °C																		
Radio frequency	868.3 MHz / FSK																		
Housing	Plastic																		
Colour	Grey																		
W x H x D	50 x 48 x 24 mm																		
Weight	0.08 kg																		



# RTR / ITR / TR



## Performance features

- » For automatic regulating of ventilation controllers
- » Temperature or time-controlled automatic

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

RTR 231 30.902.20

**Room temperature control**

- » For automatically controlling ventilation flaps in conjunction with 230 V AC ventilation drives
- » Surface-mounted design
- » For 24 V DC and 230 V AC systems



Input voltage	230 V AC
Type of protection	IP 30
Temperature range	5 °C ... 30 °C
Housing	Plastic
Colour	White
W x H x D	78 x 83 x 28 mm
Weight	0.10 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

ITR 79 64.800.03

**Temperature regulator with external sensor**

- » With isolated toggle
- » Larger control panel housings are required for installation in compact or modular GVL-K, GVL-M or RZN-K, RZN-M control panels
- » Can be used on site using surface-mounted housing GEH-TR02
- » Adjustable operating range from -10 °C ... +40 °C, operating differential 0.5 ... 5 K
- » Optional with wall-mounted, external or suspended sensor



Input voltage	230 V AC
Housing	Plastic
Colour	Grey
W x H x D	35 x 86 x 61 mm
Weight	0.21 kg

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

TR 608 64.801.28

**1-channel timer**

- » Requirements-based programming option, e.g. end of workday CLOSED (Mon.-Thu. 6:00 p.m. CLOSED, Fri. 3:00 p.m. CLOSED)
- » Larger control panel housings are required for installation in compact or modular GVL-K, GVL-M or RZN-K, RZN-M control panels
- » Can be used on site using surface-mounted housing GEH-TR02



Input voltage	230 V AC
Housing	Plastic
Colour	Grey
W x H x D	17.9 x 65.5 x 85.5 mm
Weight	0.16 kg

# Controller Series Automatic controllers

Type	Art. No.	Description	Technical data
------	----------	-------------	----------------

GEH-TR02

63.600.88

**Surface-mounted housing for ITR and TR**

- » For surface-mounted installation of supporting rail modules
- » With viewing window

Housing	Plastic
Colour	Light grey
W x H x D	150 x 80 x 98 mm
Weight	0.20 kg









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# TERMS AND CONDITIONS OF SALE AND SUPPLY FOR BUSINESS TRANSACTIONS WITH CONTRACTORS

## I. General Provisions

1. A Contractor in terms of these Terms and Conditions is defined as any natural person or legal entity or private limited company having legal capacity from private or public law or a special estate under public law that has entered into a business relationship and acts in the exercise of a commercial or independent professional activity.
2. The conditions below shall apply for all business relationships and shall also be used with respect to business entities (referred to hereinafter as Buyer) as the foundation for all future business. The version currently valid at the time of conclusion of the contract is authoritative. The mutual written declarations shall be authoritative for the scope of the deliveries or services (hereinafter referred to together as Deliveries). However, the Buyer's General Terms and Conditions shall apply only insofar as D+H Mechatronic AG (referred to hereinafter as D+H) has expressly approved them in writing.

## II. Offer, Conclusion of Contract

1. D+H shall be bound by all offers for three months. The contractual relationship shall become effective upon the receipt at D+H of the offer countersigned by the Buyer. However, the Buyer shall be obligated to notify D+H immediately if the Buyer does not accept the order.
2. The transfer of the Buyer's rights and duties under the contract or the resale of Deliveries before its receipt requires written consent from D+H. Moreover, D+H might withdraw from the contract at any time by a respective written declaration.
3. D+H reserves the right to produce deviations from samples or earlier Deliveries due to manufacturing requirements in order to improve the product.

## III. Prices and Payment Conditions

1. The prices are based on Deliveries ex works plus the respective applicable statutory value-added tax.
2. If D+H is responsible for installation or assembly and nothing else is agreed upon, the Buyer shall, in addition to the arranged price, bear all required ancillary costs, such as travel costs, costs for transporting necessary tools and personal luggage, and per diem allowances or similar.
3. Payments shall be made to D+H within 8 days from the date of invoice, with 3% discount, or 30 days net, and free of transaction charges.
4. The Buyer may only set off such counterclaims that have been expressly acknowledged by D+H or which have been conclusively determined by a court, a right of retention may only be claimed if it is based on claims under the contract.
5. Each order will be processed with a minimum order value of 150.00 €. It is incumbent on the customer to observe this minimum value.

## IV. Retention of Title

1. The objects of the Deliveries (Retained Goods) shall remain the property of D+H until all claims from the business relationship owed by the Buyer are fulfilled. If the realizable value of all security rights to which D+H is entitled exceeds the amount of all secured claims by more than 10%, D+H shall release a corresponding part of the security rights at the request of the Buyer.
2. In the event that the Deliveries are sold, the Buyer shall assign to D+H all claims against the purchaser arising from the resale together with all ancillary rights, without the need for any further special declarations. The assignment shall also include any claims for payment of account balance. However, the assignment applies only to the amount that corresponds to the price of the Deliveries invoiced by D+H. Priority shall be given to satisfying the share of the claim assigned to D+H.
3. If the Buyer links the Deliveries to plots of land, the Buyer, without requiring additional special declarations, also assigns the claim that the Buyer is entitled to as compensation for this link in the amount that corresponds to the price of the Deliveries invoiced by D+H.
4. Unless cancelled, the Buyer shall be authorized to collect claims assigned to D+H in accordance with this paragraph IV. (Retention of Title). The Buyer shall immediately forward to D+H payments made on the assigned claims up to the amount of the secured claim. If there is a legitimate interest (such as in the event of any default of payment, suspension of payments, initiation of insolvency proceedings, etc.), D+H is authorized to revoke the Buyer's collection authorization. Furthermore, D+H may, following prior warning and adherence to a reasonable deadline, disclose the assignment for security, make use of the assigned claims, and require the Buyer to disclose the assignment for security to its purchasers. In this case, the Buyer must notify D+H about information required for enforcing its rights with respect to purchasers and issue the required documents.
5. For the duration of the retention of title, the Buyer shall be prohibited from pledging or assigning as security or the Deliveries. The Buyer must immediately notify D+H in the event of seizure, confiscation or other dispositions or interventions by third parties. The resale of Deliveries by resellers is only permitted in the normal course of business and on the condition that the reseller receives payment from its own purchaser in the amount of the equivalent value of the Deliveries or upon including the provision that the property is not transferred to the purchaser until the reseller has fulfilled its payment obligations.
6. If the Buyer breaches its obligations, in particular in

the event of default on payment, even without a set deadline, D+H shall be entitled to require the Buyer to surrender the Deliveries and/or—after setting a deadline, if required—withdraw from the contract. The Buyer is required to surrender the Deliveries. In the event that the Buyer is required to surrender the Deliveries, D+H shall not be required to give notice of cancellation unless expressly stated.

## V. Delivery; Delivery Periods; Delays

1. Unless a delivery time has been expressly agreed as binding, any indicated delivery time/delivery period shall be non-binding.
2. Adhering to indicated delivery times requires the timely receipt of all documents, necessary approvals and releases, particularly of plans, to be delivered by the Buyer and requires the Buyer to comply with the agreed payment terms and other obligations. If these requirements are not fulfilled in a timely manner, the delivery periods shall be extended accordingly as appropriate; this does not apply if D+H is responsible for the delay.
3. If failure to comply with delivery times is due to force majeure, e.g. mobilization, war, uprisings, sanctions and embargoes or the like (e.g. strikes, lockouts), the delivery times and periods shall be extended accordingly as appropriate. The same applies if the aforementioned events occur at a D+H supplier.
4. Six weeks after exceeding a non-binding delivery time, the Buyer can ask D+H in writing to deliver within an appropriate time period. Upon receipt of the request, D+H is in default.
5. After a notice of default pursuant to subsection 4., the Buyer is obligated, at the request of D+H, to explain within an appropriate time whether the Buyer wishes to withdraw from the contract due to the delivery delay, request compensation for damages instead of the service or demand the delivery.
6. Any Buyer's claims for damage compensation due to the delay of delivery and claims for damage compensation instead of service are excluded in all cases of delayed delivery, even after a delivery time set by Buyer has expired. This does not apply in cases of mandatory liability due to intentional acts, gross negligence or injuries to life, body or health; and this does not entail any changes to the burden of proof to the disadvantage of the Buyer. The Buyer, within the framework of statutory conditions, may only withdraw from the contract if D+H is responsible for the delivery delay.
7. If, after the notification of readiness for shipment, shipping or delivery is delayed by more than one month at the Buyer's request a storage charge in the amount of 4% of the price of the delivery objects can be charged to the Buyer for each month or partial month; however, this shall not exceed a total of 10%. The contracting parties have the right to provide evidence of higher or lower storage costs.
8. Partial Deliveries are permitted if reasonable for the Buyer.
9. D+H's obligation to deliver in time shall at all times be subject to timely and orderly receipt of the goods from D+H's suppliers. D+H shall inform the Buyer if the delivery is not available and, in the case of cancellation, in case of withdrawal to reimburse the respective consideration to the Buyer without undue delay.

## VI. Transfer of Risk

1. The risk, even in the case of a delivery free of charge, shall be borne by the Buyer as follows:
  - a) For Deliveries without installation or assembly: Once they have been shipped or picked up, but upon leaving the plant/warehouse at the latest. This applies regardless of whether the goods are shipped from the place of performance or who bears the freight costs. At the request and cost of the Buyer, Deliveries from D+H can be insured against common transportation risks.
  - b) For Deliveries with installation or assembly: On the day of acceptance at the Buyer's facility or, if so agreed, after a test run free of problems.
2. The risk shall be borne by the Buyer if the shipment, delivery, start or execution of the assembly or installation, acceptance into the Buyer's facility, or test run is delayed for reasons the Buyer is responsible for or if the Buyer is in default of acceptance for any other reason.

## VII. Assembly and Installation

- The following conditions shall apply for assembly and installation if nothing else has been agreed in writing.
1. The Buyer shall bear the costs for and provide the following in a timely manner:
    - a) All earthworks, construction works or other extra work by others, including the necessary specialists and auxiliary personnel, construction materials and tools,
    - b) The commodity goods and materials required for installation and commissioning (such as scaffolding, hoists, and other equipment), energy and water to the place of use, including connections, heat and lighting
    - c) sufficiently sized, suitable, dry and lockable spaces at the installation location for storing the machine parts, equipment, materials, tools, etc., and appropriate work and break rooms for installation personnel, including suitable sanitary facilities. Apart from this, the Buyer must comply with the measures for protecting property of D+H and installation personnel at the construction site that would be taken if the Buyer were protecting its own property,
    - d) Protective clothing and equipment that is required due

to special circumstances at the installation site.

2. Before beginning installation work and without being prompted, the Buyer must provide D+H and its installation personnel with the necessary information on the location of concealed power, gas and water lines/pipes and any similar installations, and the required structural data.
3. Before beginning assembly or installation, the provisions and objects required for commencing the work must be located at the assembly and installation site, and, prior to beginning of construction, all preliminary work must be sufficiently advanced for the assembly or installation to be started as agreed and carried out without interruption. The access roads and assembly or installation area must be levelled and clear.
4. If assembly, installation or commissioning is delayed for reasons D+H is not responsible for, the Buyer, in an appropriate amount, shall bear the cost for the waiting period and any additional travel required for D+H or installation personnel.
5. The Buyer must issue a receipt to D+H of the duration of the installation personnel's work time each week and immediately notify D+H upon completion of assembly, installation or commissioning.
6. After completion, if D+H requests the acceptance of delivery, the Buyer must provide this within two weeks. If the Buyer fails to do so, the acceptance shall be deemed to have been granted. Acceptance shall also be deemed to have been granted if the delivery has been put into use (if applicable, after completing an agreed test phase).

## VIII. Material Defects

1. If the information contained in brochures, advertisements, Internet sites and other quotation documents have not been expressly designated by D+H as binding, the figures or drawings contained therein are only approximate and non-binding.
2. The Buyer's rights regarding liability for defects require that the Buyer properly complies with its duty of inspection and duty to give notice of defects in accordance with para. 377 of the German Commercial Code (HGB). The Buyer must notify D+H immediately in writing for defect claims.
3. Rights regarding liability for defects shall not apply in the case of merely insignificant deviations from the agreed characteristics, in the case of merely an insignificant impairment of usability, in the case of natural wear and tear or damage resulting after the transfer of risk due to faulty or negligent treatment or storage, excessive handling, unsuitable production equipment and facilities, faulty construction work, unsuitable substructure (e.g. windows or walls), or such warranty claims that arise as a result of particular external influences which are not stipulated under the contract, and also in the case of software errors that cannot be reproduced. The Buyer may not refuse the acceptance of Deliveries due to insignificant defects.
4. Likewise, if the Buyer or third parties improperly make changes to, or perform repair work on the shipments, no defect claims may be asserted for these and the resulting consequences.
5. In the event of a material defect, D+H must always first be granted the opportunity to rectify the problem within a reasonable period. The Buyer must make the request for rectification in writing. D+H retains the right to choose between rectification of deficiencies or replacement.
6. If the Buyer fitted the deficient item into another thing or fixed it to another thing in accordance with its nature and use, D+H has the right and freedom to decide to carry out the removal of the deficient item and the fitting or fixing of the improved or replaced item by itself, or to have this done by other persons including the Buyer. In the notice of deficiency of the delivered item, D+H's attention is to be drawn to the fact that the delivered item has already been fitted or fixed.
7. The Buyer shall bear the expenses required for the purposes of rectification, insofar as they increase because the shipments were taken to a location other than the Buyer's branch office, unless this relocation corresponds to their proper use. Notwithstanding further claims from D+H, in the event of an unjustified defect complaint the Buyer must compensate D+H for the expenses for examining and—to the extent requested—eliminating the deficiency.
8. The Buyer shall have right of recourse against D+H only insofar as the Buyer has not reached agreements with his or her customer that go beyond the legally mandatory defect claims. Moreover, the Buyer's right of recourse against D+H is subject to the conditions set out in subsection 6.
9. The Buyer's claims to recourse due to reimbursement of mounting and dismounting expenses, which he has to bear in relation to his customer, shall only apply if the deficiency was in existence during the transfer of risk to the Buyer, if the Buyer complied with his obligation to inspect, notify and reject defects in accordance with section 377 of the German Commercial Ordinance (HGB), and if the Buyer has not made any agreements with his customer extending beyond the mandatory statutory claims relating to defects. The amount of recourse is limited to the total price of the deficient item charged by D+H.
10. If D+H rectifies the shipment, the rectification may be regarded as failed only after an unsuccessful second attempt.
11. If the rectification fails, the Buyer has the right to choose to reduce the purchase price or—if construction work is not

the object of the defect liability—cancel the contract. This does not affect the statutory cases for the dispensability of setting a time limit. Also unaffected is the right of the Buyer to demand damage compensation in accordance with the provisions set out here in paragraph XIII.

12. Return shipments of goods shall be accepted only after prior agreement.

## IX. Limitation Period

1. The limitation period for claims and rights due to defects in the shipments—regardless of the legal basis—shall be one year. However, this does not apply in the cases described by the German Civil Code (BGB) para. 438 sec. 1 no. 1 (defects in title in the case of immovable objects), para. 438 sec. 1 no. 2 (buildings, items for buildings), or para. 634a sec. 1 no. 2 (buildings or works whose outcome in this connection consists in the provision of planning and supervisory services) Cases exempted in the preceding sentence no. 2 are subject to a limitation period of three years. The contractor's right of recourse in accordance with para. 445a of the German Civil Code is also limited to one year. Paragraph 445 b section 2 of the German Civil Code shall also apply accordingly with the provision that the suspension of expiry shall end latest in three years' time after delivery or acceptance of the goods respectively.
2. The limitation periods according to subsection IX.1 also apply to all claims for damages against D+H that have a direct connection to the defect—regardless of the legal basis of the claim.
3. The limitation periods according to subsection IX.1 and subsection IX.2 apply, however, subject to the following conditions:
  - a) The limitation periods generally do not apply in the event of intent, or if a defect is fraudulently concealed, or insofar as D+H has provided a guarantee for the quality of the delivery item.
  - b) In addition, the limitation periods do not apply to claims for damages for a grossly negligent breach of duty, in the event of a culpable violation of significant contractual duties—that does not consist of the shipment of a defective object or the provision of a deficient service, in events of culpably caused loss of life, bodily injury or damage to health or to claims in accordance with the Product Liability Act. The limitation periods for claims for damages also apply to compensation for wasted expenditure.
  4. The limitation period for all claims begins with the delivery of goods or, in case of services to be delivered, with the acceptance of services.
  5. Unless otherwise expressly stipulated, the statutory provisions governing the beginning of the limitation period, the expiry suspension, the suspension and the restart of periods remain unaffected.
  6. The preceding provisions apply accordingly to claims for damages that are not associated with a defect; subsection IX.1 sentence 1 applies to the limitation period.
  7. The preceding provisions do not entail any changes to the burden of proof to the disadvantage of the Buyer.

## X. Software, Industrial Property Rights and Copyrights; Legal Defects

1. The Buyer has the simple, non-transferable right to use the standard software with the agreed performance features on the agreed devices in unmodified form. The Buyer is permitted to create a backup copy without an express agreement. The Buyer is not granted any further rights (e.g. editing or decompiling).
2. Without qualification D+H reserves its proprietary rights and copyright exploitation rights to cost estimates, drawings and other documents (hereinafter: Documents). The Documents may only be made accessible to third parties after prior approval by D+H and, if D+H is not awarded the order, are to be returned to D+H immediately upon request. Sentences 1 and 2 apply accordingly to Buyer's Documents; however, these are allowed to be made accessible to third parties to whom D+H has transferred shipments with permission.
3. Unless agreement is made otherwise, D+H shall be obligated to make the delivery only in the country of the delivery location, without industrial property rights and copyrights of a third party (hereinafter: Property Rights). Insofar as a third party makes warranted claims against the Buyer because shipments made by D+H and used in accordance with the contract violate property rights, D+H shall be liable to the Buyer within the period stipulated in paragraph IX as follows:
  - a) D+H shall, at its discretion and at its cost, either obtain usage rights for the shipments in question, modify the shipments so that the property rights are not violated, or exchange the shipments. If D+H is unable to do this with reasonable conditions, the Buyer has the legal right to withdraw from the contract or reduce the purchase price.
  - b) The duty of D+H to provide damage compensation is governed by paragraph XIII.
  - c) The obligations of D+H specified above exist only insofar as the Buyer immediately informs D+H in writing about the claims made by the third party. Buyer does not acknowledge a violation, and D+H reserves the right to all counteractions against third party claims and settlement negotiations. If the Buyer stops using the shipment to reduce damage or for other important reasons, Buyer is obligated to notify the third party that such cessation of use does not represent an



acknowledgement of any infringement of property rights.

4. Any claims from the Buyer shall be excluded if Buyer is responsible for the infringement of property rights.
5. Buyer claims are further excluded if the infringement of property rights is caused by the Buyer's special specifications, by an application that D+H could not foresee, or by the shipment being modified by the Buyer, or used in conjunction with products not delivered by D+H.
6. In the event of an infringement of property rights other than these, the provisions of paragraph VIII no. 5 to 9 shall apply accordingly for the Buyer's claims regulated in no. X.3 a).
7. If other legal defects exist, the provisions of paragraph VIII shall apply accordingly.
8. Any further claims or claims other than those expressly regulated in this paragraph X made by the Buyer against D+H and persons D+H employs to perform the contract due to a legal defect are excluded.

#### **XI. Confidentiality**

1. The parties agree that they and the respective associated companies shall treat the knowledge they have gained about each other in connection with negotiations and closing contracts with strict confidentiality. This obligation also extends beyond the term of the contract.
2. The parties are not permitted to make business and trade secrets or confidential information accessible to third parties.
3. If the Buyer violates this non-disclosure agreement and continues this violation despite a prior notice from D+H, the Buyer must pay D+H a contractual penalty in the amount of 10,000.00 euros. If the act of infringement continues, the Buyer must pay an additional contractual penalty in the amount of 5,000.00 euros for each additional month of violation. The right of D+H to assert claims for any further damages and to demand cessation of the prohibited behavior shall remain unaffected.

#### **XII. Impossibility; Contract Adaptation**

1. D+H shall be liable if shipment is impossible only in cases of willful acting or gross negligence by D+H or a representative or persons employed to perform the contract as well as in events of negligently caused loss of life, bodily injury or damage to health according to statutory provisions. Notwithstanding, the liability of D+H in cases of gross negligence shall be limited to the foreseeable damage specified in the contract, if none of the other exceptions listed in sentence 1 exist at the same time. Beyond the cases mentioned in sentence 1 and 2, the liability of D+H for damage compensation and compensation for wasted expenditure due to impossibility shall be limited to a total of 10% of the value of the shipment. Any further Buyer claims due to impossibility of shipment are excluded—even after expiration of a time set for D+H for the delivery. The right of the Buyer to withdraw from the contract in accordance with paragraph VIII., no. 11 remains unaffected. The preceding provisions do not entail any changes to the burden of proof to the disadvantage of the Buyer.

2. Insofar as unforeseeable events in the sense of paragraph V, no. 3 substantially change the economic importance or the content of the shipment or have a substantial impact on the operations of D+H, the contract shall be adapted taking into account the principles of reasonableness and good faith. Insofar as this is economically untenable, D+H has the right to withdraw from the contract. If D+H desires to make use of this right to withdraw from the contract, D+H must, after recognizing the repercussions of the event, immediately inform the Buyer, even if an extension of the delivery time was initially agreed with the Buyer.

#### **XIII. Liability**

1. D+H shall be liable in cases of willful acting or gross negligence by D+H or a representative or persons employed to perform the contract as well as in events of culpably caused loss of life, bodily injury or damage to health according to statutory provisions. Notwithstanding, the liability of D+H in cases of gross negligence shall be limited to the foreseeable damage specified in the contract, insofar as no other exceptions than those listed in sentences 1 or 3 of this no. XIII exist at the same time. Apart from that, D+H is liable only in accordance with the Product Liability Act (Produkthaftungsgesetz), due to the culpable violation of fundamental contractual obligations or insofar as D+H has fraudulently concealed a defect or provided a guarantee for the quality of the delivery item. However, the claim for damages for violation of material contractual obligations shall be limited to the foreseeable damages specified in the contract, if no other exceptions than those listed in sentences 1 or 3 of this no. XIII.1 exist at the same time.
2. The provisions from the preceding no. XIII.1 apply to all claims for damages (particularly for damage compensation in addition to the service and damage compensation instead of the service), regardless of the legal basis, particularly due to defects, violation of obligations of the contract or from unlawful acts. They also apply to the claim for compensation of wasted expenditure. However, liability for delay is determined by paragraph V, numbers 4 to 7 and liability for impossibility by paragraph XII., no. 1.

#### **XIV. Place of Performance, Jurisdiction and Applicable Law**

1. The place of performance for shipments and payments is the registered office of D+H.
2. If the Buyer is a merchant, the sole place of jurisdiction for all disputes indirectly or directly proceeding from the contractual relationship is the registered office of D+H. However, D+H is also authorized to sue at the registered office of the Buyer.
3. The legal relationships in connection with this contract are governed by German law to the exclusion of the United Nations Convention on Contracts for the International Sale of Goods (CISG).
1. Modifications to this contract must be in writing to be effective. This also applies to modification of this requirement of written form.

2. The ineffectiveness of individual provisions in this contract shall not affect the effectiveness of the remaining provisions. In this case, the parties undertake to agree upon effective provisions that come closest to the intended purpose of the ineffective provisions in economic terms. This applies accordingly to the closing of any gaps in this contract. Only the German version of this General Terms and Conditions are legally binding while the English version only serves for the purpose of translation. In case of discrepancies of the contents the German version prevails.

(Status January 2018)

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