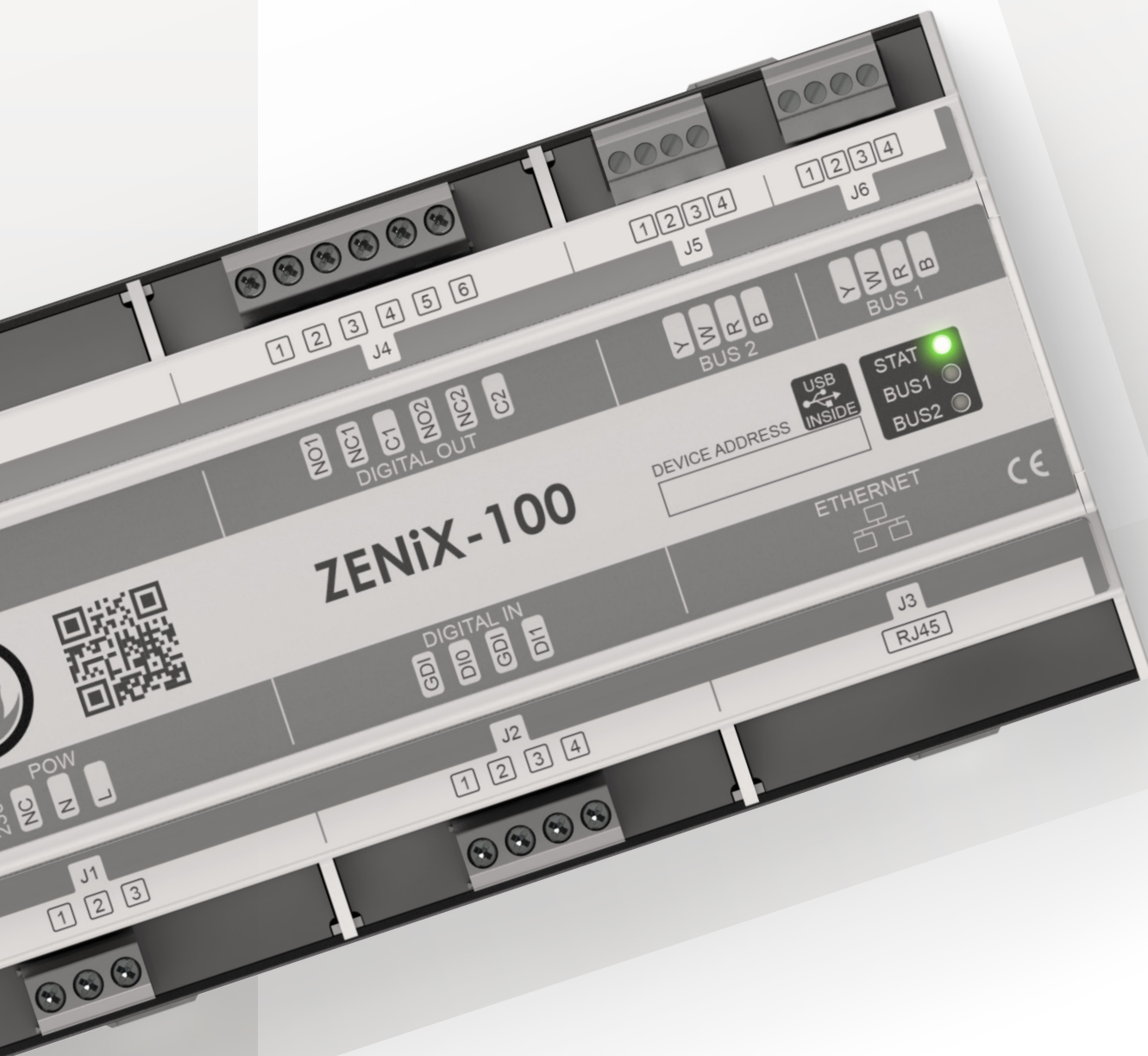


ZENiX

Monitoring and controlling system for fire dampers,
smoke control dampers and shutters



ZENiX System

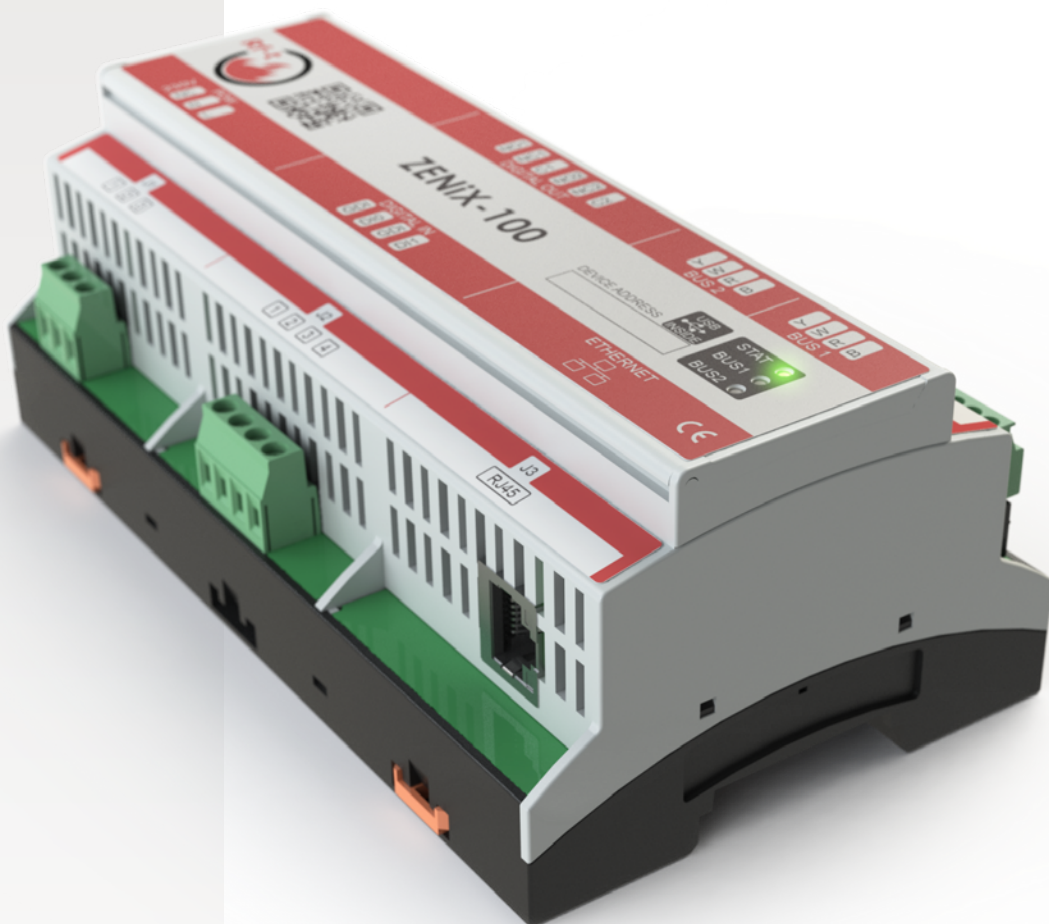
The ZENiX system is a full-fledged monitoring and controlling system for fire dampers, smoke control dampers and shutters, for inputs and outputs. It is permanently monitoring the status of all components in the network, adapting if required. In case of a fire alarm, it will execute defined scenarios and will report changes in various ways.

The ZENiX system is very flexible: it can be used for basic fire scenarios using a pre-programmed solution, but also for matrix-based complex fire scenarios.

The ZENiX controlling system allows to:

- monitor both motorised (24 to 230V) and mechanical dampers
- monitor and control fire dampers, smoke control dampers and shutters
- generate outputs to other systems (like f.i. a BMS) and to other HVAC components

The ONE-X is probably the most unique component of the ZENiX system: it is a fire damper actuator with an integrated field module. It is supplied mounted on the fire damper and doesn't need any addressing nor configuration. It is ready to be connected.



WHY A BUS-BASED CONTROLLING SYSTEM?

A bus-based controlling system will drastically reduce the wiring requirements in a building. This is not only a significant reduction of the cable cost and wiring expenses, but also a significant reduction of the fire load in the building.

Continuous network monitoring and smart programming ensure a quick and effective reaction to changes, thus providing a higher level of protection for all HVAC components.

A controlling system can also perform periodic tests automatically, in accordance with legal requirements, and validate the correct long term operation of dampers and shutters.

1. System overview

The ZENiX-100 controller (master) is the core of the ZENiX system: it contains the programming and operation software, and is the starting point of the bus network. It communicates with all field devices on the bus and manages all inputs and outputs. The ZENiX-100 can act as a gateway to a building management system (via BACnet IP), but it can also work independently as a standalone solution.

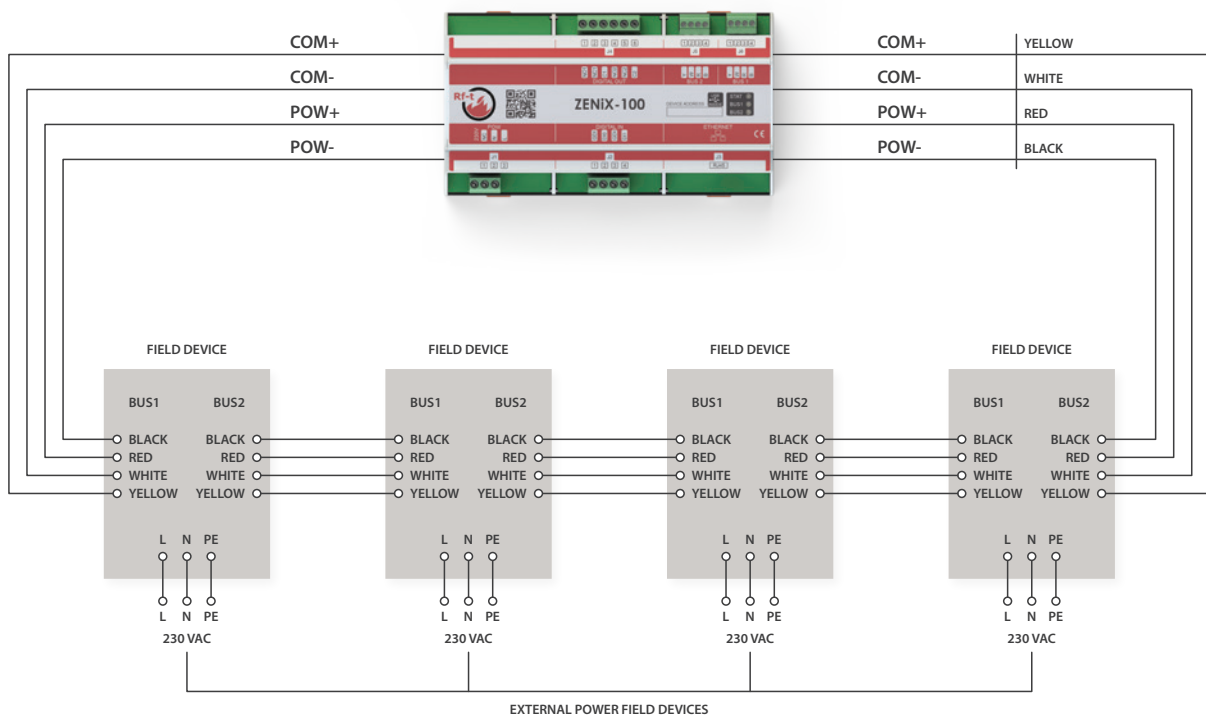
Bus and bus cabling

Master and field devices (participants) are connected via a 4-wire bus cable. This cable provides both bus communication and power supply for the communication system itself. The master is providing the power supply for the bus system. That way the bus monitoring remains active in the event of a power failure at the field devices. It also allows to perform a data point check and validate the bus communication without power on the dampers. You just need to supply 230V to the ZENiX controller.

We recommend installing the bus cabling in a ring to ensure redundancy. In that case, the bus cable starts and ends at the controller. In a ring set-up, the controller will communicate with the participants in both directions. If communication is interrupted somewhere along the bus, the controller will reroute the communication so that all components remain operated. However, a line set-up for the bus is also possible. The total length of the bus and the number of participants depends on the chosen controller.

FIREPROOF CABLING?

The bus cabling does not necessarily have to be fire-resistant. The choice of fire-resistant cabling depends on the application (compartmentation, smoke control...), local regulations, and the programming of the system. For example, when the bus signal is interrupted, the dampers will switch to a safety position after a certain amount of time.



TYPE OF BUS CABLING

Because the bus communication is very stable, with a high level of noise immunity, a traditional data cable is sufficient, without specific shielding. We recommend a $2 \times 2 \times 0.8 \text{ mm}^2$ cable, with red, black, yellow, and white wires, e.g. type KNX. These colours correspond to the connectors on the field devices.



Data point check

Once the bus wiring has been completed, the controller can be used to start the data point check: the controller reads out the network, identifies all participants on the bus, checks for cabling errors, and indicates where they are. External power to field modules and dampers is not required. The data point check validates the correct operation of the bus network at an early stage, for the entire building or in phases, for parts of the building.

Field devices and components

Different field modules allow integrating fire and smoke control dampers in the ZENiX system. These modules are automatically recognized, and no addressing or configuration is required. There are modules for fire dampers, for smoke control dampers or shutters, for 24 or 230V actuators, but also for mechanical dampers, for digital inputs and relay outputs (eg. to air handling units).



The ONE-X actuator is unique: it is a fire damper actuator with an integrated field module. The ONE-X spring return actuator can be mounted on all Rf-Technologies fire dampers. Because it is integrated, there is no need to

provide a connection between the actuator and the field module. This saves time and reduces the risk of errors. The IP54 casing of the actuator also protects the integrated field module. 3 LEDs on the casing of the ONE-X indicate the damper's status, the bus communication, and any error messages. The ONE-X comes in 4 versions: a 24V and a 230V, with optional IP68 wire-to-wire connectors pre-assembled.

Standalone or integrated into the BMS

The ZENiX system can work independently with permanent network monitoring and control of components when and where necessary.

The controllers have a built-in BACnet IP connection. This allows the ZENiX controller to be included in a higher-level system, usually the building management system (BMS). The ZENiX software can produce a list of BACnet objects for the different components on the bus that, in turn, can be monitored by the BMS.

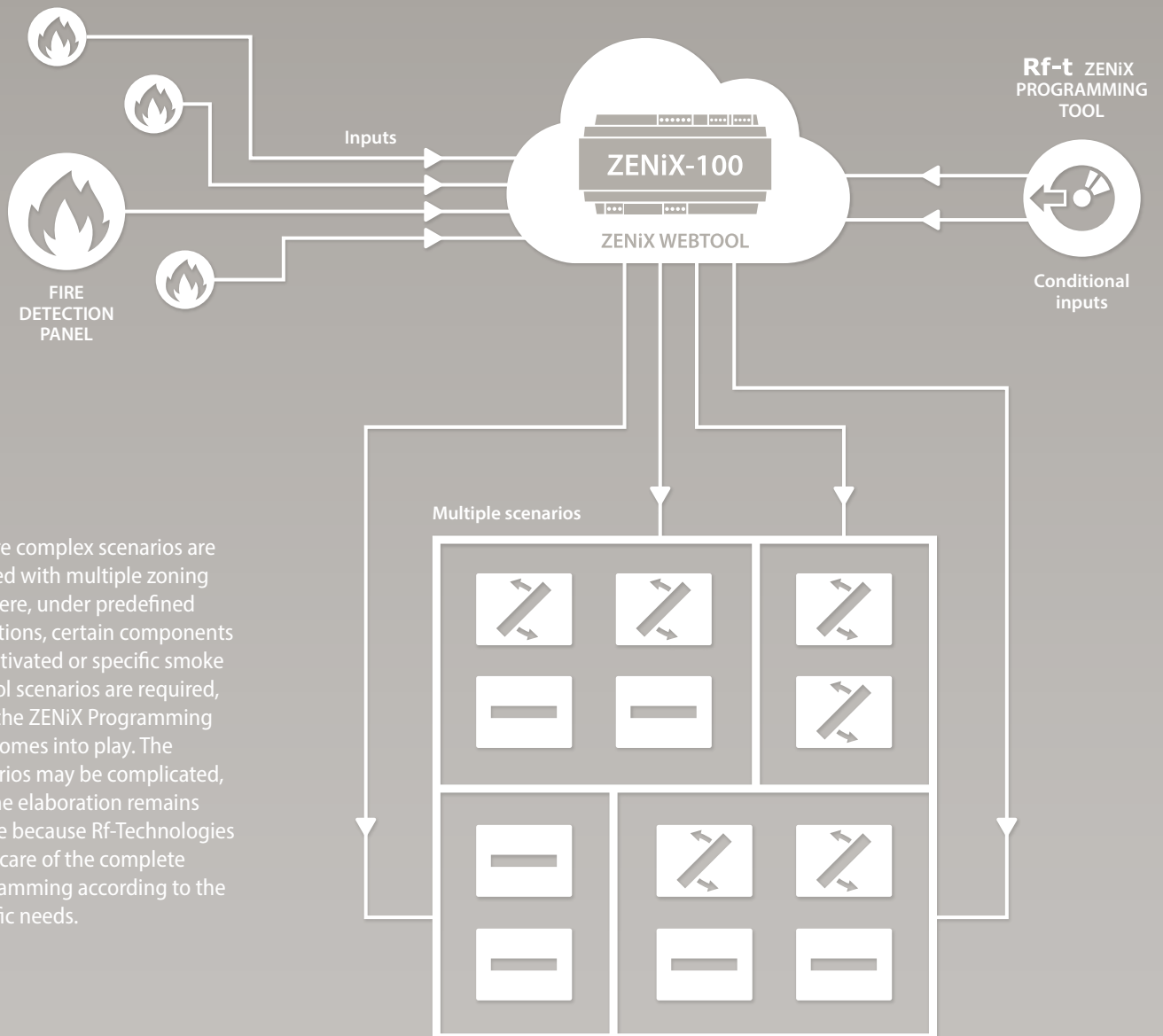
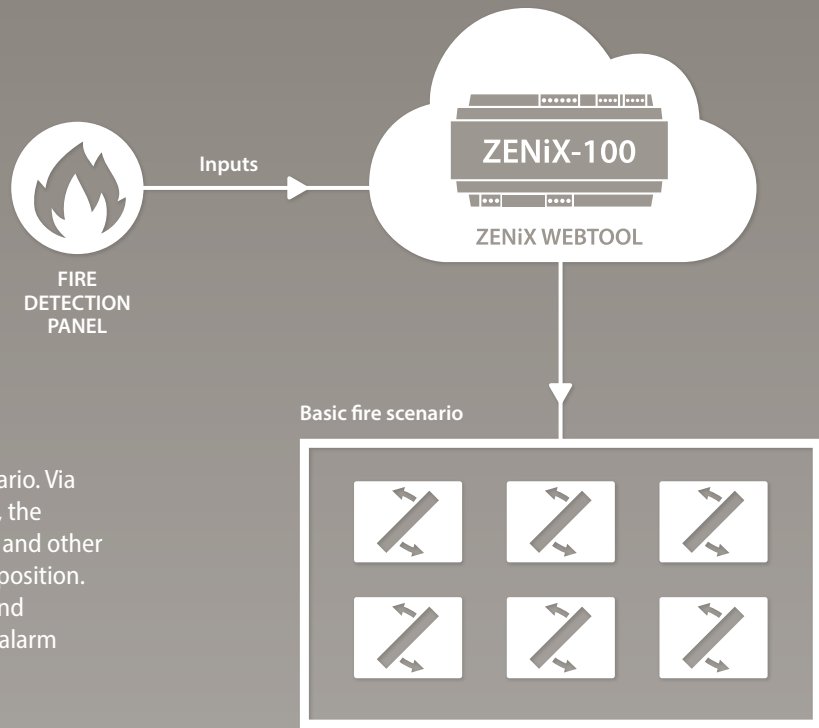
You can, of course, always count on Rf-Technologies: for training and support, to elaborate scenarios or to program a predetermined matrix. With the intuitive software, adjustments can be made quickly and easily, even remotely.



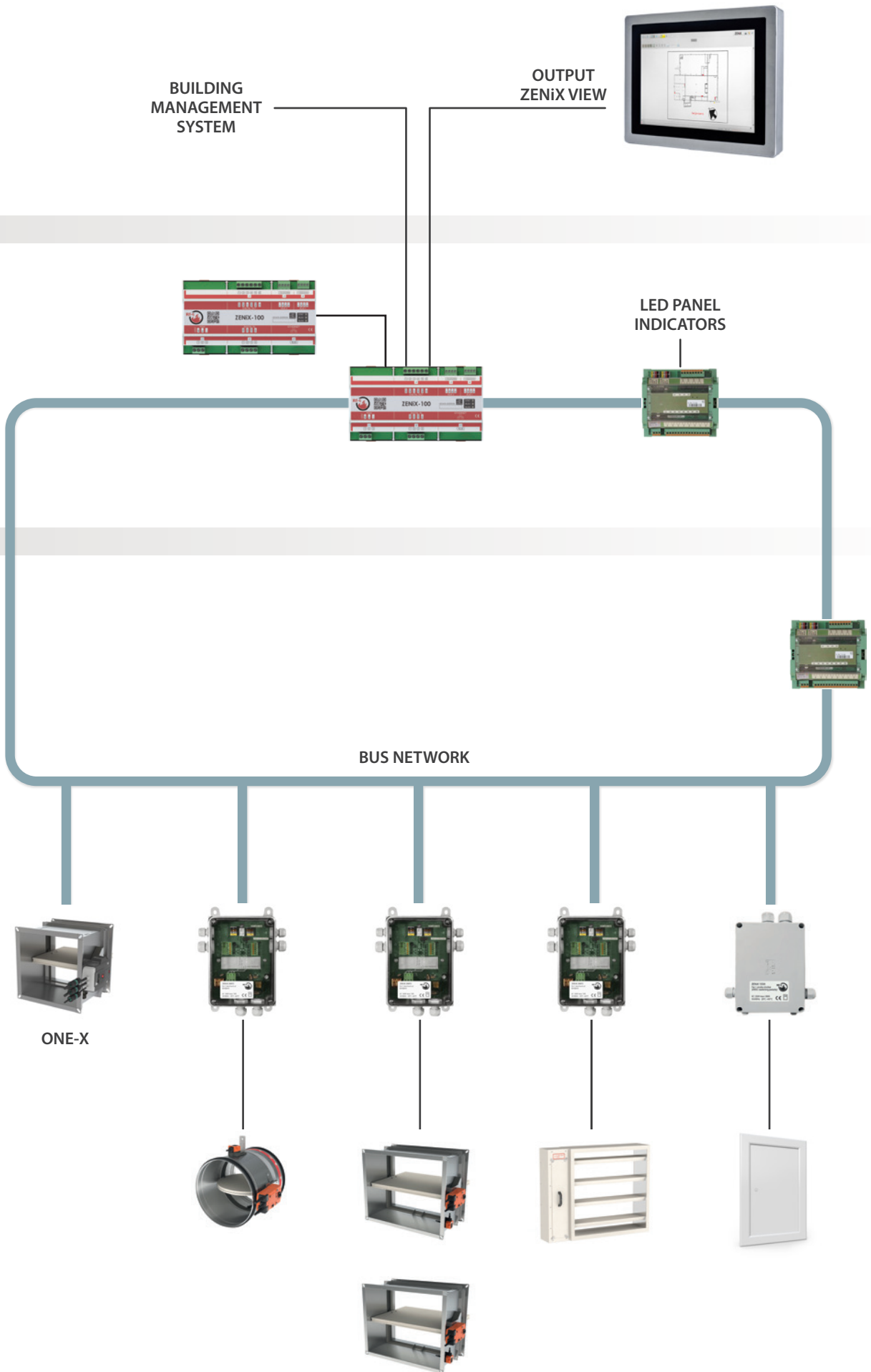
Software and programming

The ZENiX Webtool software is included and pre-installed on the ZENiX-100 controller. The software serves both for the programming of the (fire) scenarios and for monitoring, controlling, and testing components.

The ZENiX-100 controller is supplied with an onboard pre-programmed fire scenario. Via one or two physical inputs on the controller, the scenario can be triggered, and the dampers and other components can be brought to their safety position. No programming is required, only cabling and connection to the output (alarm) of the fire alarm system.

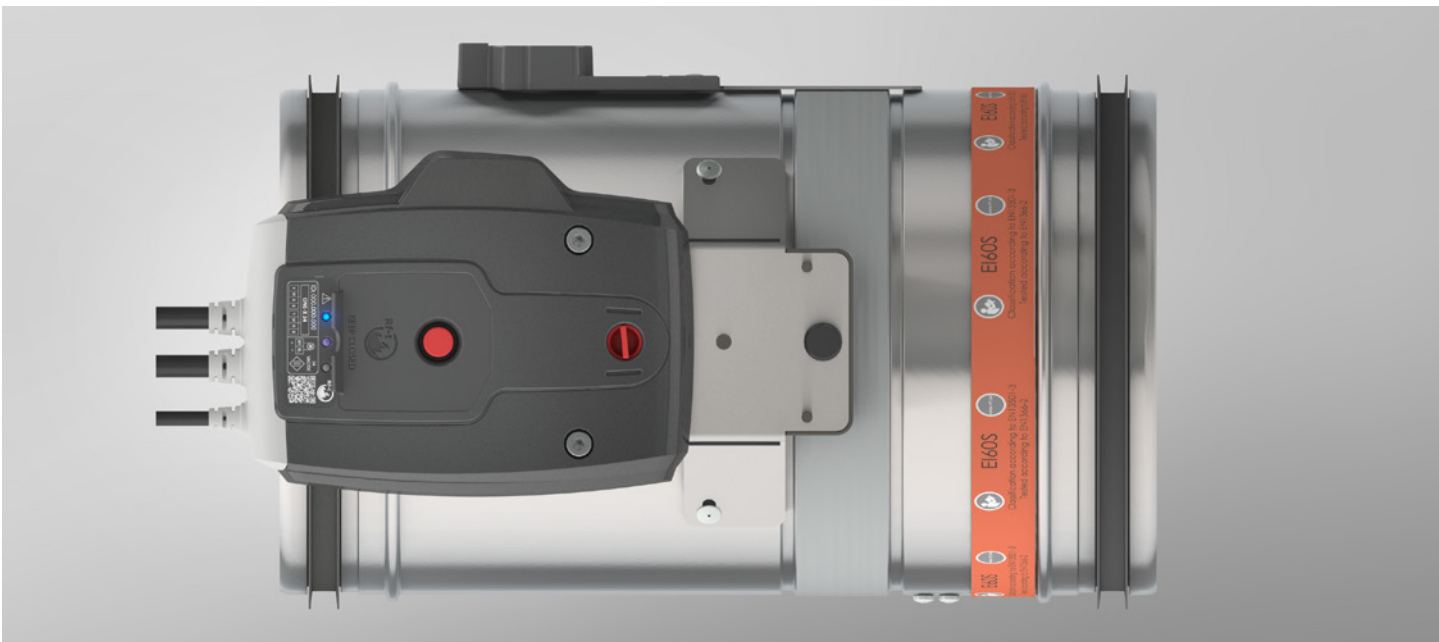


If more complex scenarios are needed with multiple zoning or where, under predefined conditions, certain components are activated or specific smoke control scenarios are required, then the ZENiX Programming Tool comes into play. The scenarios may be complicated, but the elaboration remains simple because Rf-Technologies takes care of the complete programming according to the specific needs.



2. Technical specifications

- Suited for monitoring and controlling a large number of fire safety solutions: fire dampers, smoke control dampers and shutters, to read out digital inputs, controlling through relay outputs
 - Motorized dampers and shutters as well as magnet or remote controlled solutions
 - Monitoring of mechanical (fusible link) dampers
 - A maximum of 100 field devices per ZENiX-100 controller⁽¹⁾
 - Bus line of up to 1000m per ZENiX-100 controller, in ring or line topology
 - For larger projects: possibility to combine several ZENiX-100 controllers on 1 network
 - 4-wire bus cabling (eg. 2x2x0.8mm², type KNX – 4 colours)
 - Controller suited as a standalone solution
 - Built-in BACnet IP gateway in the ZENiX-100 controller allows connecting with the building management system (BMS)
 - Several visualisation possibilities: via the BMS, with LED-panels, or with a dedicated panel PC with touchscreen
 - Control software ZENiX Webtool pre-installed on the ZENiX-100 controller
 - Pre-programmed basic scenario with 1 or 2 zones included in the ZENiX-100: fire dampers are closed automatically and relay outputs are activated upon activation of the digital inputs
 - The ZENiX Programming tool allows for programming matrix-based scenarios. The tool can use physical and conditional (alarm) inputs, define priority levels, define outputs...
 - Report outputs with an overview of test results, alarms...
 - Control software ZENiX Webtool allows defining users and user privileges – can activate functions with specific log-ins and passwords
 - Field devices supplied with removable identification labels
- (1) Up to 500 field devices per ZENiX Modular controller



3. The ONE-X: spring return actuator with integrated communication module

Rf-Technologies innovates with the unique integration of a field module and a fire damper actuator: the ONE-X. It combines all functions of a fire damper actuator, including passive safety based on the spring return principle. The ONE-X retains its fire safety function even without connection to bus or power supply.

Rf-Technologies supplies the ONE-X mounted on the fire damper. With an integrated field module, you save installation time and reduce the risk of wiring errors. The ONE-X casing guarantees IP54 protection.

Furthermore, the ONE-X has the lowest power consumption of all fire damper actuators on the market. For building owners, this means significant energy and cost savings.

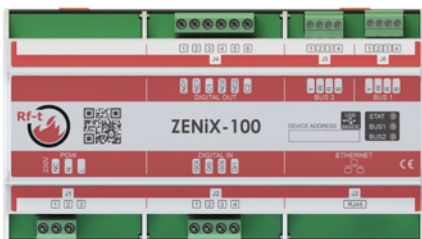
The ONE-X is available in 24V and 230V versions. It is possible, optionally, to get the ONE-X with pre-mounted wire to wire connectors (option CN).



4. System components

TYPE	DESCRIPTION	FUNCTION
ZENiX 100	Controller (master)	Can handle up to 100 field devices
ONE-X	Spring return actuator with integrated communication module	Control 1 fire damper, in 24V or 230V, with or without connectors (option CN)
ZENiX 1FD	Field device for monitoring and controlling 1 fire damper 230V	Suited for BFL(T)230, BFN(T)230...
ZENiX 2FD	Field device for monitoring and controlling up to 2 fire dampers 230V	Suited for BFL(T)230, BFN(T)230...
ZENiX 1FDST	Field device for monitoring and controlling 1 fire damper 24V with ST-connection plug	Suited for BFL(T)24ST, BFN(T)24ST...
ZENiX 2FDST	Field device for monitoring and controlling up to 2 fire dampers 24V with ST-connection plug	Suited for BFL(T)24ST, BFN(T)24ST...
ZENiX 1SD	Field device for monitoring and controlling 1 smoke control damper 230V	Suited for BLE230, BE230, BEN230, BEE230...
ZENiX 1SDST	Field device for monitoring and controlling 1 smoke control damper 24V with ST-connection plug	Suited for BLE24ST, BE24ST, BEN24ST, BEE24ST...
ZENiX 1SSH	Field device for monitoring and controlling 1 smoke control shutter 24V	Suited for a 24 V smoke shutter actuator with 2 wires (switching polarity), such as the KAM MP...
ZENiX 2MFD	Field device for monitoring up to 2 mechanical (fusible link) dampers	Suited for reading out 2 times 2 pairs of switches
ZENiX DI12	Field device with 12 potential free digital inputs	Suited for inputs from the fire alarm panel, reading out switches from mechanical dampers...
ZENiX DI8DO4	Field device with 8 potential free digital inputs and 4 digital relay outputs	Suited for inputs from the fire alarm panel, reading out switches from mechanical dampers...

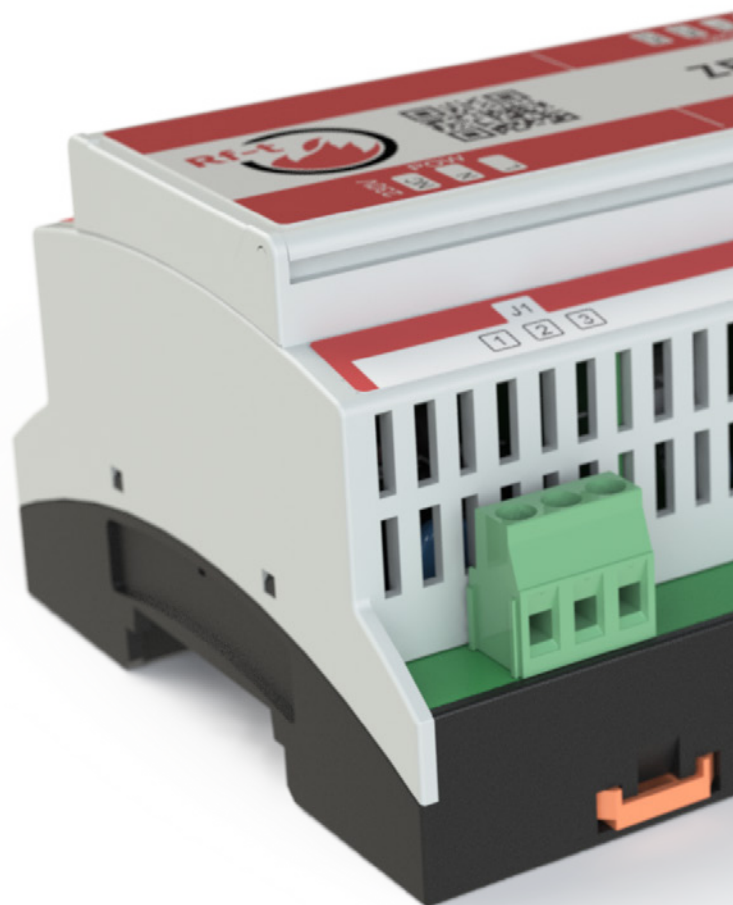
4.1 ZENIX-100



The ZENIX-100 controller (master) monitors and controls fire dampers, smoke control dampers, and smoke shutters, as well as digital inputs and outputs. Each ZENIX-100 controller can handle up to 100 field devices. Several ZENIX-100 controllers can be connected into a single network. The ZENIX-100 can be used with a pre-programmed basic fire scenario, but also to program elaborate multiple scenarios (matrix). It can be used as a stand-alone solution or integrated into a BMS system via a BACnet IP connection.

- ✓ Onboard pre-programmed basic scenario, activated by digital input
- ✓ Full (matrix) programming possible, including priorities, multiple alarm levels, conditional alarms...
- ✓ System check only requires power on the ZENIX-100 controller
- ✓ ZENIX-100 automatically identifies and addresses all field devices during the data point check
- ✓ Onboard ZENIX Webtool identifies the precise location of possible wiring mistakes
- ✓ Onboard BACnet IP gateway for connection to BMS and other systems
- ✓ LEDs indicate status bus communication, alarms and errors

- 2 digital inputs, potential free
- 2 relay outputs, (NO/NC) - 125 V AC - 60W
- Nominal voltage: 230 V AC
- Power consumption: 24 W
- For wire sizing: 25 VA
- Integrated ethernet port, with RJ45 Connector
- DIN rail mounting
- CE according to EN 50491-5-2
- CE according to 2004/108/EC and 2006/95/C



4.2 ZENIX 1FD



The ZENIX 1FD field device is used to monitor and control 1 motorized fire damper with 230 V actuator. No configuration is required as it has a predefined device address.

- ✓ Suited for a 230 V fire damper actuator, such as a BFL(T)230, BFN(T)230...
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will indicate the current damper position, but will not be able to rearm the damper without power
- ✓ LEDs indicate the position of the damper, bus communication and error status

- Connection to one 230 V spring return fire damper actuator
- Nominal voltage: 230 V AC
- Power consumption: 25 mW + actuator consumption
- For wire sizing: 18 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.3 ZENIX 2FD



The ZENIX 2FD field device is used to monitor and control up to 2 motorized fire dampers with 230 V actuator. No configuration is required as it has a predefined device address.

- ✓ Suited for up to two 230 V fire damper actuators, such as BFL(T)230, BFN(T)230...
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will indicate the current damper positions, but will not be able to rearm the dampers without power
- ✓ LEDs indicate the position of the dampers, bus communication and error status.

- Connections to two 230 V spring return fire damper actuators
- Nominal voltage: 230 V AC
- Power consumption: 50 mW + actuator consumption
- For wire sizing: 24 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.4 ZENIX 1FDST



The ZENIX 1FDST field device is used to monitor and control 1 motorized fire damper with 24 V actuator with ST-connection plugs. No configuration is required as it has a predefined device address.

- ✓ Suited for a 24 V fire damper actuator with ST-plug, such as a BFL(T)24ST, BFN(T)24ST...
- ✓ Predefined address: no need for addressing or configuration of the field device.
- ✓ Functional also without 230 V power on the field device: it will indicate the current damper position, but will not be able to rearm the damper without power
- ✓ Actuator isolated from mains by a transformer
- ✓ LEDs indicate the position of the damper, bus communication and error status.

- Connection to one 24 V spring return fire damper actuator with ST-plug
- Nominal voltage: 230 V AC
- Power consumption: 200 mW + actuator consumption
- For wire sizing: 18 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.5 ZENIX 2FDST



The ZENIX 2FDST field device is used to monitor and control up to 2 motorized fire dampers with 24 V actuator with ST-connection plugs. No configuration is required as it has a predefined device address.

- ✓ Suited for up to two 24 V fire damper actuators with ST-plug, such as BFL(T)24ST, BFN(T)24ST...
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will indicate the current damper positions, but will not be able to rearm the dampers without power
- ✓ Actuator isolated from mains by a transformer
- ✓ LEDs indicate the position of the dampers, bus communication and error status.

- Connections to two 24 V spring return fire damper actuators with ST-plug
- Nominal voltage: 230 V AC
- Power consumption: 300 mW + actuator consumption
- For wire sizing: 24 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.6 ZENIX 1SD



The ZENIX 1SD field device is used to monitor and control 1 motorized smoke control damper with 230 V actuator. No configuration is required as it has a predefined device address.

- ✓ Suited for a 230 V smoke control damper actuator, such as a BLE230, BE230, BEN230, BEE230...
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will send the current damper position, but will not be able to move the damper blade without power
- ✓ LEDs indicate position of the damper, bus communication and error status

- Connection to one 230 V smoke damper actuator
- Nominal voltage: 230 V AC
- Power consumption: 50 mW + actuator consumption
- For wire sizing: 18 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.7 ZENIX 1SDST



The ZENIX 1SDST field device is used to monitor and control 1 motorized smoke control damper with 24 V actuator with ST-connection plugs. No configuration is required as it has a predefined device address.

- ✓ Suited for a 24V actuator for smoke control with ST-plug, such as BLE24ST, BE24ST, BEN24ST, BEE24ST...
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will send the current damper position, but will not be able to move the damper blade without power
- ✓ Actuator isolated from mains by a transformer
- ✓ LEDs indicate the position of the damper, bus communication and error status.

- Connection to one 24 V smoke damper actuator with ST-plug
- Nominal voltage: 230 V AC
- Power consumption: 300 mW + actuator consumption
- For wire sizing: 18 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.8 ZENIX 1SSH



The ZENiX 1SSH field device is used to monitor and control 1 motorized smoke control shutter 24 V. The shutter's actuator is triggered via 2 wires: switching the polarity allows the blade to move in the other direction. The ZENiX 1SSH has 4 digital inputs and 2 relay outputs.

- ✓ Suited for a 24 V smoke shutter actuator with 2 wires (switching polarity), such as the KAM MP
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will send information about the status of the digital inputs.
- ✓ Actuator isolated from mains by a transformer.

- Connection to one 24 V DC actuator with switching polarity (2-wires)
- 4 digital inputs, potential free
- 2 digital outputs, NO relays
- Nominal voltage: 230 V AC
- Power consumption: 200 mW + actuator consumption
- For wire sizing: 18 VA
- IP54 casing
- CE according to 2004/108/EC and 2006/95/C

4.9 ZENIX 2MFD



The ZENiX 2MFD field device is used to monitor up to 2 mechanical (fusible link) dampers. No configuration is required as it has a predefined device address.

- ✓ Suited to monitor up to 2 mechanical (fusible link) dampers (each with 2 position switches)
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ Functional also without 230 V power on the field device: it will send the current damper blade positions, but LEDs will not be active
- ✓ LEDs indicate the position of the damper, bus communication and error status.

- Connections for 2 mechanical dampers (two times two position switches)
- Nominal voltage: 230 V AC
- Power consumption: 10 mW
- For wire sizing: 1 VA
- IP54 casing
- CE according to 2004/108/ECG and 2006/95/C

4.10 ZENIX DI12

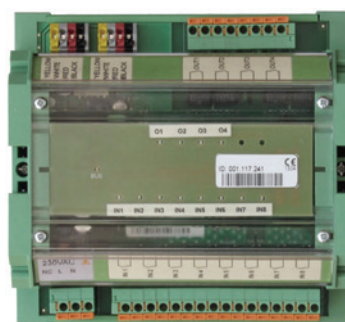


The ZENIX DI12 is a field device with 12 potential free digital inputs. It can be used to connect additional alarm inputs from the fire detection panel (matrix). It can also be used to connect field inputs such as end switches of mechanical dampers, for example.

- ✓ Suited for 12 digital inputs
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ LEDs indicate the status of the inputs
- ✓ Directly mountable on a DIN rail

- 12 digital inputs, potential free
- Nominal voltage: 230 V AC
- Power consumption: 1 W
- For wire sizing: 2 VA
- IP20
- CE according to 2004/108/EC and 2006/95/C

4.11 ZENIX DI8DO4



The ZENIX DI8DO4 is a field device with 8 potential free digital inputs and 4 digital relay outputs. It can be used to connect additional alarm inputs from the fire alarm panel (matrix), for example. Relay outputs can be programmed, and safe states be defined as required.

- ✓ Suited for 8 digital inputs
- ✓ Fitted with 4 digital relay outputs
- ✓ Predefined address: no need for addressing or configuration of the field device
- ✓ LEDs indicate the status of the digital inputs and outputs
- ✓ Directly mountable on a DIN rail

- 8 digital inputs, potential free
- 4 digital outputs, NO relays
- Nominal voltage: 230 V AC
- Power consumption: 1 W
- For wire sizing: 2 VA
- IP20
- CE according to 2004/108/EC and 2006/95/C

5. Software and outputs

5.1 ZENIX WEBTOOL

The ZENiX Webtool is the operating software of the system. It is pre-installed on the ZENiX-100 controller. The ZENiX Webtool can be accessed via, for example, a connected laptop.

The ZENiX Webtool allows to perform a data point check: the controller detects all participants on the bus, identifies them and includes them in the programming. Any wiring errors are indicated, showing which wire the fault is on and where it is situated on the network.

The ZENiX Webtool contains a pre-programmed basic fire scenario in which, by activating digital inputs on the ZENiX-100, the controller will close all fire dampers in a defined zone. The corresponding relay outputs on the ZENiX-100 are also activated. By using this basic fire scenario you do not have to do any programming at all, just take care of the cabling of the ZENiX-100 controller: a simple way to implement a working monitoring and control system in a building.

5.2 ZENIX PROGRAMMING TOOL

With the ZENiX Programming tool, it is possible to program complex scenarios, according to a predefined matrix. The programming tool allows using multiple physical inputs, but also conditional and programmed inputs. The outputs can also be fully programmed to adapt to the requirements. Furthermore, it is possible to define different priority levels and thus create a layered matrix.

MATRIX AND PRIORITY LEVELS

Multiple scenarios can be incorporated into a matrix programming, for example, closing fire dampers only in a specific zone in the building, shutting down specific air handling units, activating a smoke control scenario or controlling a differential pressure system (PDS) ... Scenarios can be defined with different priority levels according to the use: comfort ventilation, fire alarm activation, a fireman override...

The programming itself can be performed by Rf-Technologies and loaded into the ZENiX controller that will be installed in the building. It is always possible to make adjustments to the programming: the new set-up of the matrix is then uploaded to the controller. This can also be done remotely.

The matrix can be exported in an excel file that contains a list of all participants on the bus (the list can be generated

automatically via a data point check, for example) and other items of interest (alarms, zones...).

5.3 ZENIX VIEW: VISUALISATION SOFTWARE & TOUCHSCREENS

ZENiX View is visualisation software that shows the status of the system in the building. Rf-Technologies can deliver the software installed on a panel PC of 15" or 21.5". With ZENiX View, and uploaded building plans, the status of all dampers, shutters, inputs, and outputs can be displayed in real-time on a map of the building. This way, the status of the bus system and all its components becomes apparent at a glance.

The ZENiX View also allows for specific zones to be visualized as a list, showing the current status of participants in that zone.

The panel PC has a resistive touchscreen with which it is



easy to navigate virtually through the building. The panel PC has a full IP65 casing and can easily be placed on a wall, for example, in a technical room.

6. Advantages of the ZENiX System

- ✓ Saving installation time and greater ease of installation thanks to the ONE-X fire damper actuator with integrated field module
- ✓ Stable communication: requirements for the bus cabling are limited thanks to the high noise immunity. No need for expensive braided and shielded cables.
- ✓ Automatic detection by the master of the pre-addressed modules. No addressing or configuration is required.
- ✓ Innovating bus technology:
 - quick and easy data point check on (parts of) the network: devices do not need a power supply to validate the bus communication.
 - the 24V power supply via the bus allows for a permanent monitoring of all participants, even if not powered (anymore)
 - the controller can detect possible wiring mistakes, locate them and specify on which wire it is
- ✓ Low voltage (24V) on the bus: quick and simplified cabling possible
- ✓ Scalable system: from a basic fire scenario to a complete matrix with physical and conditional alarms, multiple priority levels...
- ✓ Flexible solution:
 - it is easy to add, remove or replace a field device thanks to the automatic addressing
 - suited as a standalone solution or integrated into the building management system (BMS)
- ✓ Supports many different visualisation solutions: using a LED-panel, a panel PC with a touchscreen, via the BMS...
- ✓ Rf-Technologies offers support at every step: planning, start-up, data point check, commissioning.

RF-TECHNOLOGIES

Besides supplying hardware and software, Rf-Technologies also provides services such as the data point check, the programming of the controller, the programming of the ZENiX View panel PC, the testing and the (pre-) commissioning of the system...

Our services are available for all your questions, both in design and planning phase, during the installation of the system and afterwards, after commissioning.

For more information, contact Rf-Technologies.



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