SecuriFire fire detection systems

System description

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For your safety

Table of contents

1 The SecuriFire system family

The SecuriFire system family consists of various control panels, devices, map case variants and components which can be combined and coordinated perfectly for any configuration level and system size.

All devices are compatible with each other, work with the same software and the same commissioning tools. The user interface is also identical for all SecuriFire devices. The same external indication and control maps can be connected to all control panels.

Thanks to modular design and networking options, the required devices can be combined in any variation and adapted precisely to the system-specific requirements.

1.1 Fire alarm control panel

SecuriFire FCP 3000 fire alarm control panel
100% redundant system
Modular, decentral design
From individual control panels to large-scale systems can be networked
Up to 16 rings (3,500 elements) per sub-control panel
Internal memory for up to 10,000 events
Ethernet interface (100MBit-TX)

Fig. 1
SecuriFire FCP 3000

SecuriFire FCP 2000 fire alarm control panel
Compact fire alarm control panel
For the connection of more than 500 devices
It can be extended by an extra 2 loop circuits
Decentralized design
It can be networked for solutions ranging from a single control panel to a large system.
Internal memory for up to 10,000 events
Ethernet interface (100MBit-TX)

Fig. 2
SecuriFire FCP 2000

SecuriFire FCP 1000 fire alarm control panel
One-loop system control panel
For the connection of up to 250 elements
Internal memory for up to 10,000 events
Ethernet interface (100MBit-TX)

Fig. 3
SecuriFire FCP 1000

SecuriFire FCP 500 fire alarm control panel
Compact one-loop system control panel
For the connection of up to 250 elements
Ethernet interface (100MBit-TX)
Intuitive operation thanks to integrated SecuriFire MIC
Relay, monitored inputs and outputs on board
Internal memory for up to 10,000 events

Fig. 4
SecuriFire FCP 500

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1.2   Extinguishing control panel

Fig. 5
SecuriFire ECP / FEP 3000

SecuriFire ECP / FEP extinguishing control panel
Automated electrical control and delay device for actuating multi-zone extinguishing systems
Selectable as combined fire alarm control panel + control panel or only as control panel
Up to 32 extinguishing areas
Network capable
Tested and VdS approved in compliance with 12094-1
Internal memory for up to 10,000 events
Ethernet interface (100MBit-TX)

Fig. 6
SecuriFire ECP / FEP 2000

SecuriFire ECP / FEP 2000 extinguishing system control panel
Automatic electronic control and delay unit for controlling single zone extinguishing systems
Which can either be used as a combined SecuriFire ECP / FEP fire alarm control panel/controller unit or exclusively as an SecuriFire1000/2000E controller unit for a single extinguishing zone.
VdS approval conforming to EN12094-1.
Internal memory for up to 10,000 events
Ethernet interface (100MBit-TX)

2 The system concept

A fire detection system is in operation 8,760 operating hours a year: day, night, Sundays and holidays, and often under adverse ambient / weather conditions. The question arises:

What happens if there is a simple fault in the fire alarm system and what are the consequences of this fault?

Fig. 7 System concept

Microprocessors have been used in alarm systems since the mid 1980s. After initial, justified security reservations concerning the reliability of these components, a number of failure philosophies for fire detection systems controlled and monitored by microprocessors have developed in the European market.
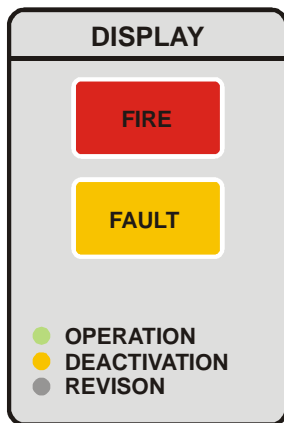

**Fig. 8
1980s display**

The so-called "Bypass" and "Emergency" systems developed in the 1980s for microprocessor-controlled fire alarm control panels (still the standard in many systems on the market) quickly resulted in serious problems for operators and intervention teams.

When the microprocessor fails, a switch is made to a simple emergency system which, in the event of an alarm, is only able to output a buzzer alarm and indicate an alarm.

When the fire brigade arrives at the scene, all important information about the fire event (e.g. detector address and location information) and the fire incident controls, designed to prevent smoke dispersion across sections, are rendered inoperable. Important delay times are no longer maintained, detection zone deactivation is lost, fire protection doors are closed, smoke hatches are closed and more.

The failure philosophy of European Standard EN 54-2

According to European Standard EN 54-2 (pt. 13.7), "… no more than 512 detectors and their assigned binding functions are affected…" in the event of a system malfunction.

Since less than 512 detectors are connected to 80% of all installed fire detection systems, the failure model of EN 54 is rejected by many experts because a single fault in a fire alarm system can result in the complete failure of the system. This means that not a single alarm actuation could take place, all fire incident controls would be rendered inoperable, and the type and cause of the system fault could no longer be determined.

Requirements for the development of the SecuriFire fire detection system

- Fully compatible fire alarm control panels for all system sizes
- Maximum reliability and full redundancy for optimal security
- Modular, decentral design
- Networking for small-scale systems up to large-area networked comprehensive systems
- Well organised and easily understandable display and operation in the language of the country
- Simple, structured configuration with PC software
- Tested and approved in compliance with current standards and directives (e.g. EN 54, VdS)

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2.1.1 What full redundancy means

Securiton relies on fully redundant fire detection systems. The term redundancy (from Latin *redundare:* more than needed is present) refers in general to the multiple presence of functional, content-related and similar objects.

In device and system technology, redundancy specifically means that additional functional and similar resources are present in a technical system when they are in fact not required during normal, trouble-free operation.

For the SecuriFire fire detection system this equates to a second, identical system that is always working in "Hot standby mode" parallel to the operating system. It is not only the microprocessor structure which is duplicated but also all system structures, components and elements in the fire alarm control panel. A fault in an active system causes an automated seamless switch to the second, parallel running system and the indication of a system fault.

All functions (including detecting, alarming, plain text display, and actuation of the fire incident controls etc.) are retained and continue to work without limitation.
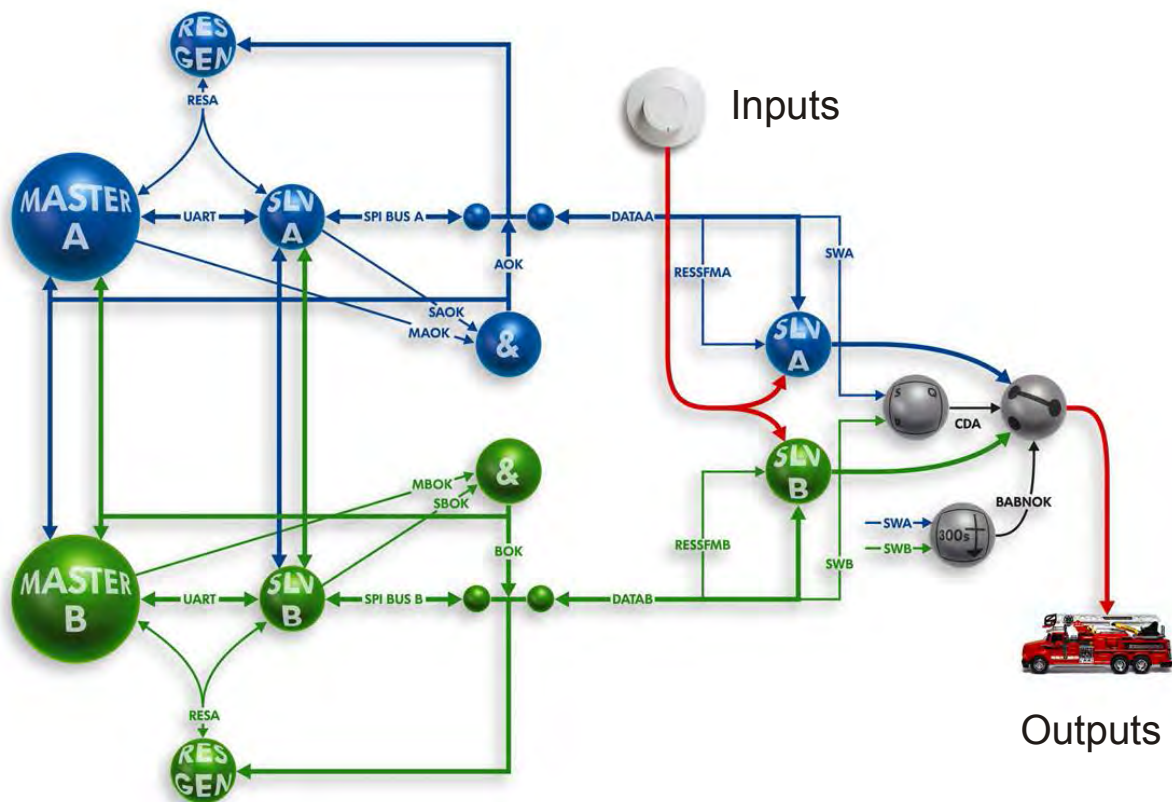

**Fig. 9
B5-MCB15**

Fig. 10 Schematic of a redundant SecuriFire FCP fire alarm control panel design

2.2 Redundant connections

The data lines, too, to the external indication and control maps and connections between control panels are redundant to ensure full functionality of the system in the event of line interruptions or faults.

Fig.11 Redundant design of a SecuriLan

The additional formation of ring circuits means fully functional efficiency of the SecuriFire system even if there are 3 faults. The control panels can also be networked amongst themselves. This provides even greater failure protection of the system.

2.2.1 SecuriFire FCP 3000 fire alarm control panel

SecuriFire 3000 is a fire alarm control panel for large and medium installations; suitable for connecting up to 16 addressable loops with up to 250 participants each. It is also possible to use different LAN networking units and universal interface units to connect various input/output units or modernisation units.

Each control panel forms an autonomous unit with its own power supply and batteries to which not only detection zones and controls can be connected but also external control panels, fire service control panels, printers, etc. If required, the SecuriFire 3000 fire alarm control panel can be incorporated in an Ethernet or mesh network; it is equipped with hardware and software redundancy to ensure the system's reliability.

The SecuriFire 3000 fire alarm control panel is available in different versions – with or without protocol printer or as a black box.

2.2.2 SecuriFire FCP 2000 fire alarm control panel

The SecuriFire 2000 is a cost-optimized fire alarm control panel for small & medium sized systems, with a total of a maximum of 500 participants able to be connected to two loop circuits in its basic version. Additionally, the unit also has an interface to which a LAN networking module can be connected, or two more loop circuits, a universal interface module or an input/output module can be connected.

Each control panel forms an autarchic unit with its own power supply and battery backup supply, to which external operating panels, fire brigade control panels, printers etc. can also be connected as well as detector zones and controllers. The SecuriFire FCP 2000 can be integrated into an Ethernet or mesh network if required, and is fitted with software redundancy to ensure the security of the system.

The SecuriFire FCP 2000 is available with several different types of case - with or without a log printer or as a black box.

2.2.3   SecuriFire FCP 1000 fire alarm control panel.

The SecuriFire FCP 1000 fire alarm control panel is a standalone fire alarm control panel, suitable for connecting a single loop circuit with up to 250 devices. The control panel contains all the necessary interfaces for connection to the fire brigade, as well as relay outputs and connection for the external device bus.

2.2.4   SecuriFire FCP 500 fire alarm control panel

SecuriFire 500 is a stand-alone fire alarm control panel and is suitable for connecting a SecuriLine eXtended addressable loop with up to 250 participants. The control panel is equipped with all the necessary interfaces for connection to the fire brigade. It also has relay outputs and a connection for the external device bus. The multilingual MIC11 operating panel is integrated directly in the door of the control panel.

2.3   Secured data transmission

Securiton's development engineers paid particular attention to ensuring secure data communication. Due to increasing environmental and electromagnetic influences on control panels, detectors, peripheral devices as well as on the line network, a digital data protocol with fault-detecting redundant coding was specially developed for fire alarm control panels.

The continuous, intelligent communication of peripheral elements and subsystems is assured maximum data security (hamming code distance 4). This filters out false alarms caused by electromagnetic interference such as radio emissions, overvoltage, interference impulses etc.

Data lines to operating devices or connections between subsystems are also redundant (doubled) so that full availability of all system components is always guaranteed in the event of line interruptions and external faults.

All Securiton fire detection systems are equipped with automatic checking cycles, fault-detecting test routines, and measures against electromagnetic interference. But with each new generation of performance features and operational reliability, key improvements have been achieved.

2.4   Overvoltage protection

The SecuriFire system is equipped with a comprehensive and integrated overvoltage protection design which protects all peripheral inputs, including the mains power supply in compliance with EN 50130-4 (EMC) and EN 61000-6-2 (immunity for industrial environments). The EMC protection concept protects the electronics by means of a zone concept, Transzorp diodes, filters and broadband decoupling of the power supply.

Thus when the system is used in buildings with installed installed basic and medium protection (lightning protection, mains overvoltage arresters), no further measures are required (e.g. overvoltage arresters).

Fig. 12 Overvoltage protection

2.5 Modular system design

The SecuriFire fire detection system is a modularly designed, centralised system which consists of individual components and can be adapted to individual system requirements.

This completely modular system approach enables use in nearly all applications, from small systems to large area networked comprehensive systems; it can be expanded and adapted – also in the future – easily and quickly. Even already installed Securiton detectors can be integrated into a SecuriFire system problem-free.

Thanks to the fully redundant system design, SecuriFire is also tested and approved as a control panel for multi-zone extinguishing systems (EN 12094-1 compliant).

The fire alarm control panel is not a single device to which all lines are conveyed, as was formerly the case, but rather consists of up to 16 control panels (FCPs) which can be distributed throughout a building as needed. It is, of course, also possible to use just one control panel (FCP) if the system does not exceed a certain size.

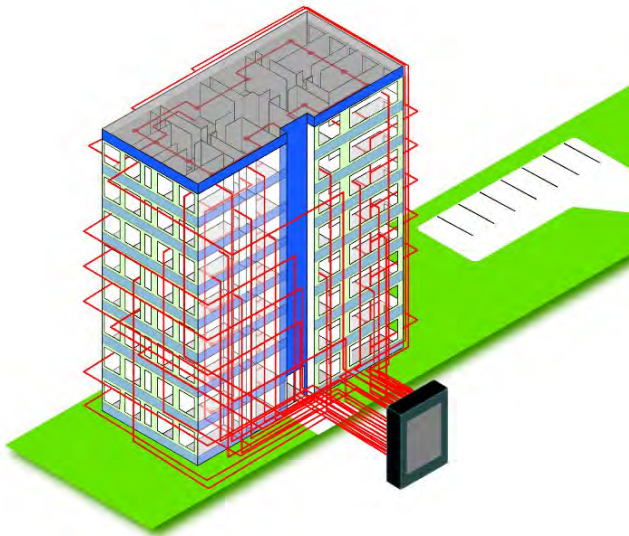**Conventional central fire detection system**

Decentral fire detection system

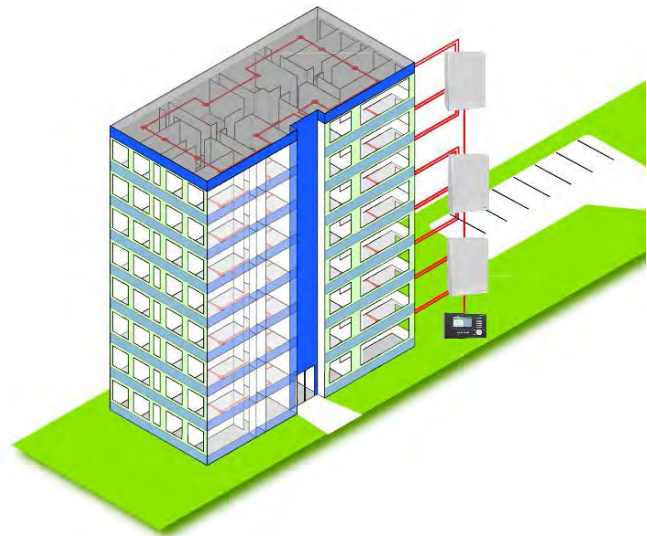Fig. 13 Conventional central fire detection system

Fig. 14 Decentral fire detection system

One of the key advantages of this decentral design is the significantly reduced wiring: each of the control panels is located at the centre of its area of responsibility and the cable lengths can therefore be much shorter. Also, system changes and expansions are easier and less expensive.

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2.5.1   Sub-control panel (SCP)

Each SecuriFire SCP fire alarm control panel is planned and programmed based on its area of use and the requirements. The basic configuration of a control panel consists solely of the main control board (B5-MCB15) and the power supply unit (B5-PSU). All other functions are added customer-specifically by adding the needed boards and loading the necessary programming.

Fig. 15 SecuriFire FCP fire alarm control panel

The system concept

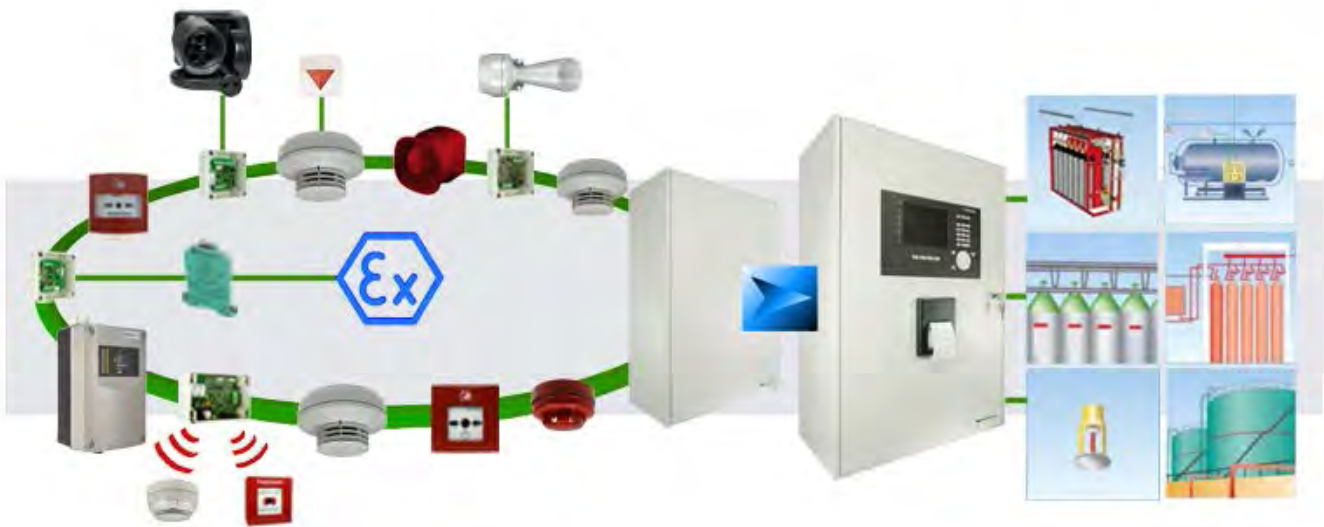**Fig. 16 SecuriFire FEP combined fire alarm / extinguishing control panel**

Fig. 17 Control facility for SecuriFire ECP multi-area extinguishing systems

2.6   SecuriLan

- Up to 16 SecuriFire control panels
- Up to 31 B5-MIC711 main indication and control maps (max. 32 participants)

When several FCP fire alarm control panels are combined, it is called a "SecuriLan". Straightforward operation is provided from one location. Despite its decentral design, from outside the fire detection system appears to behave as if it were a conventional "central" fire alarm control panel. The topology of the SecuriLan is freely selectable; the control panels and indication and control maps can be networked with one another, both as a mesh network with a redundant or single loop and as a stub line.
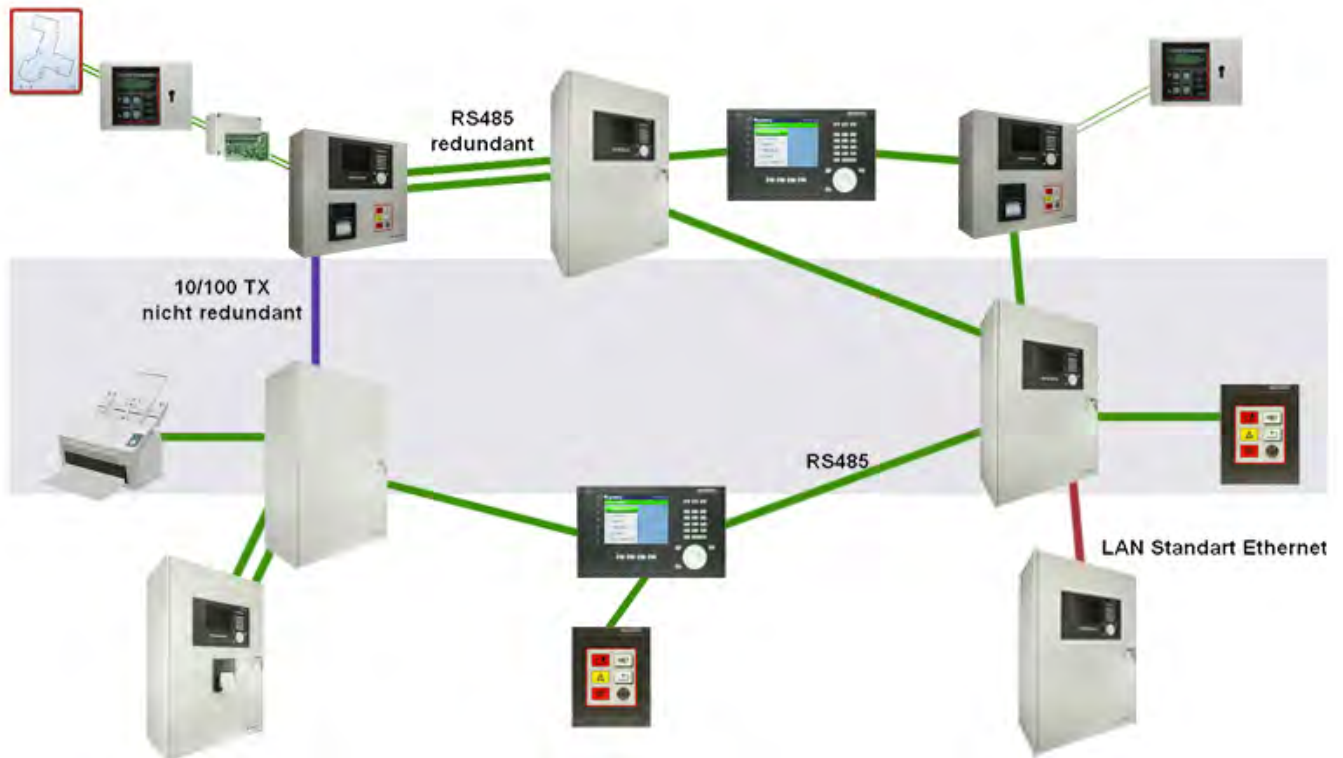

Fig. 18 Topology of a SecuriLan

Detection zones, fire incident controls etc. can be connected to any FCP in the SecuriLan, whereby links between elements of various FCPs are also possible (2-detector dependency, controls etc.).

The SecuriFire FCP 500 / 1000 fire alarm control panel cannot be networked with other control units. Connection to superordinate systems (e.g. management systems) and connection of the virtual MIC is possible with the integrated Ethernet interface.
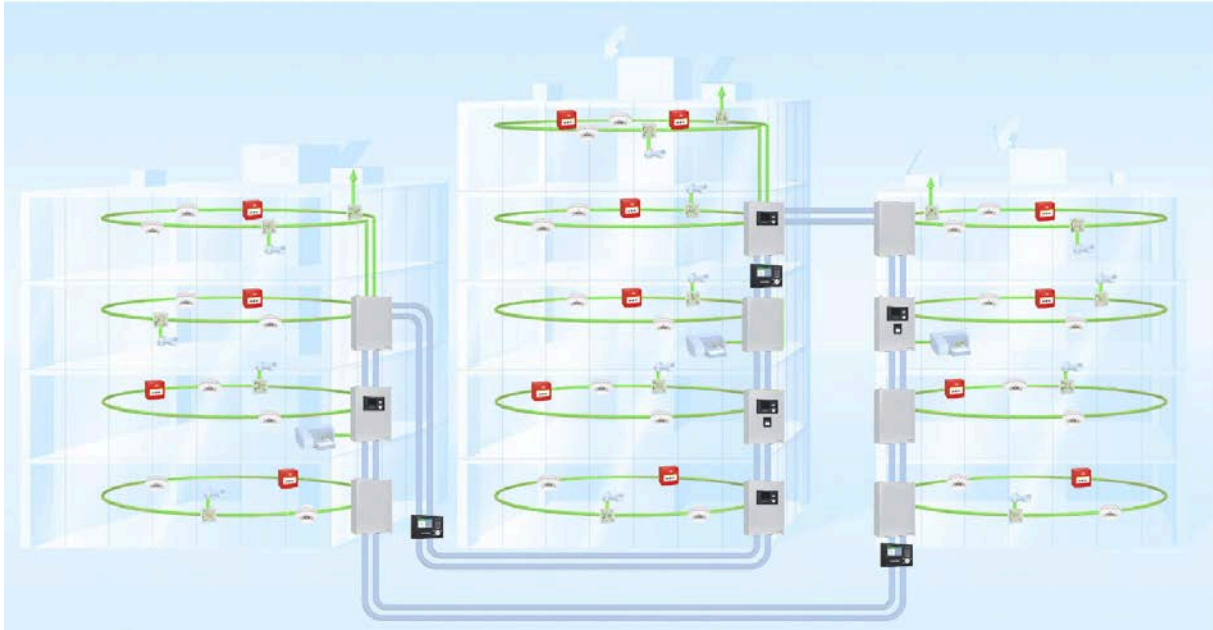
Fig. 19 Schematic of a SecuriLan

Each of these fire alarm control panels (FCPs) is responsible only for its immediate surroundings and communicates with the other fire alarm control panels (FCPs) via a redundant ring circuit which ensures unrestricted functioning of the system (wire breakage, short-circuit etc.) with up to three faults.

2.6.1 Data transmission

So that several devices (control panels and indication and control maps etc.) can be logically grouped to a control panel, it is necessary that they communicate with each other. The continuous intelligent communication between the control panels is achieved with maximum data security via a redundant (doubled) ring circuit. Even under adverse ambient conditions, the digital protocol with fault-detecting redundant coding specially developed for this purpose ensures communication of the subsystems. False alarms caused by electromagnetic interference, such as radio emissions, overvoltage, interference impulse etc., are filtered out.

2.6.2 Line lengths

The maximum distance between two control panels or indication and control maps is 1,200 m. Neither repeaters nor other devices such as modems are necessary. Only cable types and ambient conditions must be taken into consideration. In special cases, if the distance has to be more than 1,200 m, other communication media (fibre-optic cable or modems) can be used.

2.6.3 Central download

The "Central download" function centrally downloads the planning data in a SecuriLan to any FCP. From there the data is distributed throughout the entire SecuriLan. This function saves considerable time and cost when expansions and modifications are the issue, especially when FCPs are far from each other. This distance can be increased to almost any distance using optical fibre cables.

2.6.4 Expanded event memory

The default SecuriFire 3000/2000/1000 event memory is designed for up to 10,000 messages and can be expanded to 65,000 events by using an SD card.
The event memory of the SecuriFire 500 cannot be expanded.

2.6.5 LOCK OUTPUTS

The "LOCK OUTPUTS" function "freezes" all outputs in a defined state in the SecuriLan from a control panel by means of a software command so that they are not unintentionally triggered. This function saves considerable time and cost when service work and maintenance work are performed or when planning software is downloaded, especially when FCPs are far from each other.

2.6.6 Gateway

Every SecuriLan is suitable for connecting to building management systems and field buses.

2.6.7 Remote system diagnosis

Every SecuriFire FCP fire alarm control panel as well as the SecuriLan is pre-equipped for remote system diagnosis (remote polling) of system states (e.g. detector soiling, faults) via modem.

> **Notice**
>
> The remote system diagnosis application of all SecuriFire control panel types is identical.
> Before this function is activated, it is imperative to take note of the relevant country-specific regulations and specifications concerning remote polling and remote planning of security systems.

2.6.8 Protocols

ModBus
- ModBus-RTU
  Serial ModBus-RTU protocol (ModBus Remote Terminal Unit). The interface can be operated either as an RS-232 or RS-422. The parameters can be planned (serial, asynchronous, bit rate, 7 or 8 data bits, parity).
- ModBus-TCP
  Protocol with Ethernet (TCP/IP). Ethernet-TCP/IP packets are used to transmit the data on port 502. The connection to the third-party/management system is continuously monitored and errors appear as faults on the control panel.

ESPA
The interface can be operated either as an RS-232 or RS-422. The parameters can be planned (serial, asynchronous, bit rate, 7 or 8 data bits, parity). The ESPA protocol was implemented as a point-to-point connection between fire alarm control panels and the third-party/management system. The connection to the third-party/management system is continuously monitored and errors appear as faults on the control panel.
- Standard ESPA 4.4.4: Only in the message direction.
- Enhanced ESPA (no ESPA standard): Message and command direction

BACnet
BACnet is a data transmission protocol for sharing information from various systems and devices in building automation (Building Automation and Control Networks).

2.7 SecuriFire FCP 3000

SecuriFire 3000 is a modular, network-compatible fire alarm control panel for large and medium-sized installations.
The SecuriFire 3000 fire alarm control panel is suitable for connecting up to 16 addressable loops with up to 250 participants.
The control panel is equipped with all the necessary interfaces for connection to the fire services, and with relay outputs and a connection for the external device bus.

Features

- Modular fully redundant fire alarm control panel with up to 16 loops
- Networks up to 16 control panels in the SecuriLan
- Intuitive operation thanks to integrated or remote SecuriFire MIC
- Easy to use planning and commissioning tools
- Device bus for connecting remote operating panels, fire brigade control panels and floor plan panels
- Interfaces for transmission and alarm systems, relay outputs, monitored inputs and outputs
- Simple to operate configuration and commissioning tools
- Event memory for 65,000 messages in real time
- Remote system access over TCP/IP
- Can be connected to superordinated computer systems or fire detection management systems over serial data interfaces
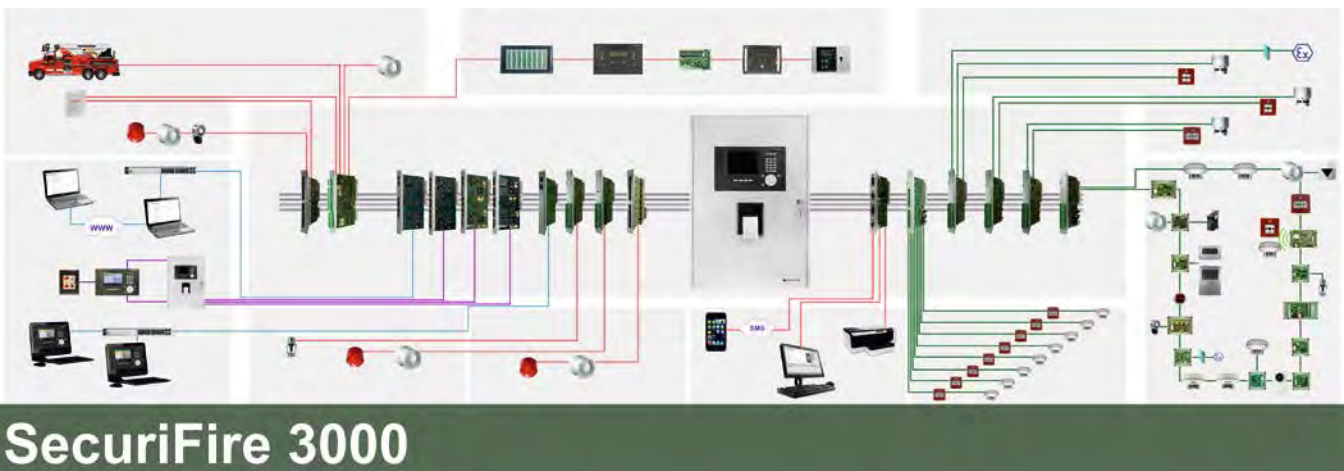- Comprehensive, integrated overvoltage protection concept

Fig. 20 Topology of a SecuriFire 3000 fire alarm control panel

2.8   SecuriFire FCP 2000

The SecuriFire FCP 2000 fire alarm control panel for small & medium sized systems, with a total of a maximum of 500 partici-pants able to be connected to two loop circuits in its basic version. Moreover, they also have another interface, to which either a LAN networking module, two further loop circuits, a universal interface module or an input/output module can be connected.

Features

- 2 loop control unit with optional expansion to 4 loops
- Can be networked as a 2 loop version
- Device bus for connecting remote operating panels, fire brigade control panels and floor plan panels
- Interfaces for transmission and alarm systems, relay outputs, monitored inputs and outputs
- Simple to operate configuration and commissioning tools
- Event memory for 65,000 messages in real time
- Remote system access over TCP/IP
- Can be connected to superordinated computer systems or fire detection management systems over serial data inter-faces
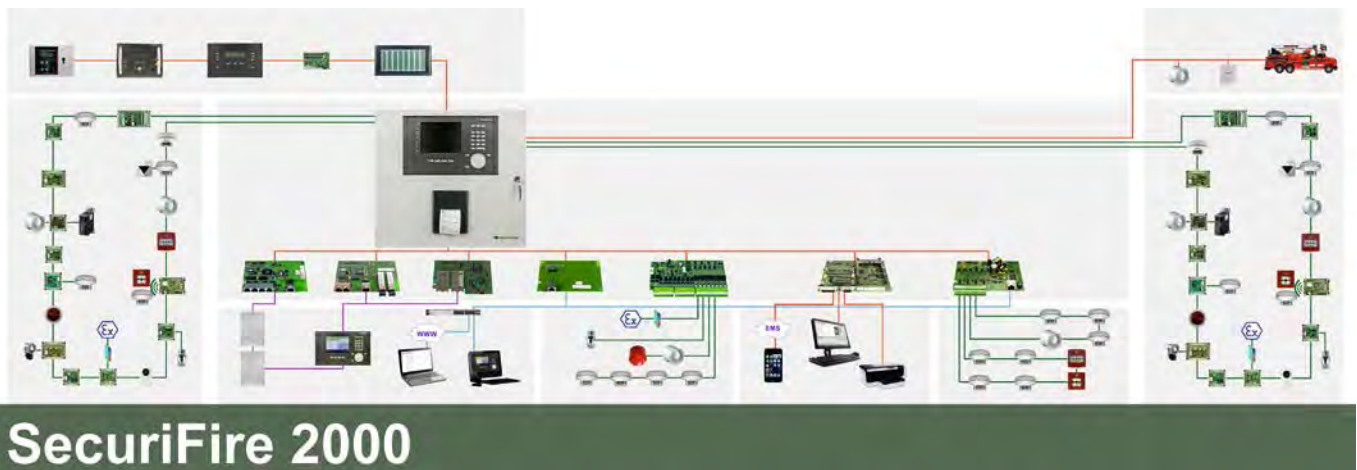- Comprehensive, integrated overvoltage protection concept

Fig. 21 Topology of a SecuriFire 2000 fire alarm control panel

2.9 SecuriFire FCP 1000

The fire detector system SecuriFire FCP 1000 is a cost-optimized single loop fire alarm control panel for the smallest sized systems, suitable for connecting a single loop circuit with a maximum of 250 devices.

The main processor unit contains all necessary interfaces for the connection to the fire brigade (transmission and alarm systems, interface for connecting various types of fire brigade control panels), as well as five 230V / 3A relay outputs and a connection for the external device bus (MMI-BUS).

The SecuriFire FCP 1000 cannot be networked, and can also not be connected to superordinated systems (e.g. management systems).

Features

- 1 loop control unit
- Device bus for connecting remote operating panels, fire brigade control panels and floor plan panels
- Interfaces for transmission and alarm systems, relay outputs, monitored inputs and outputs
- Simple to operate configuration and commissioning tools
- Event memory for 65,000 messages in real time
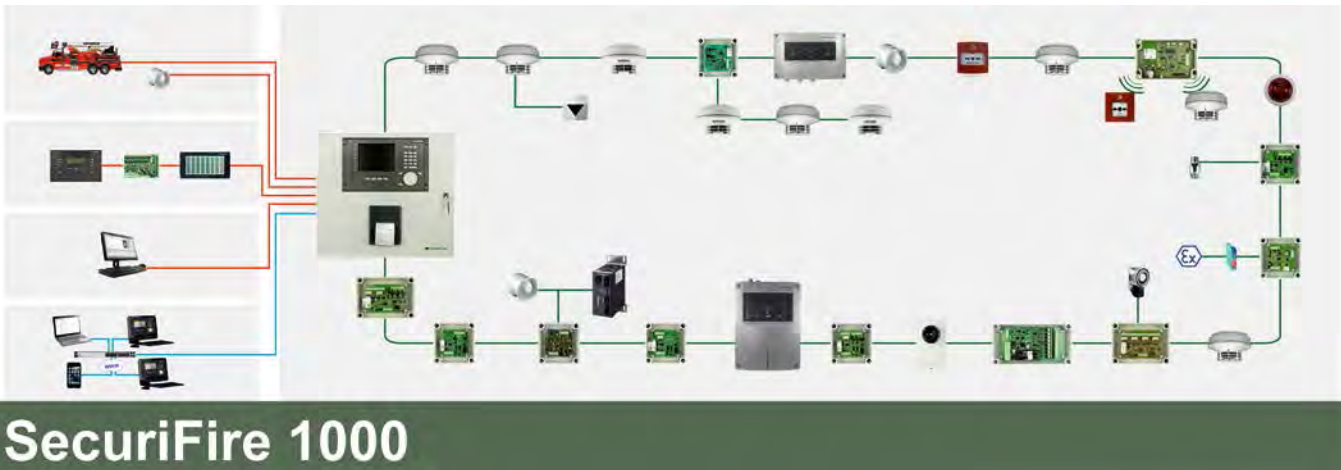- Comprehensive, integrated overvoltage protection concept

SecuriFire 1000

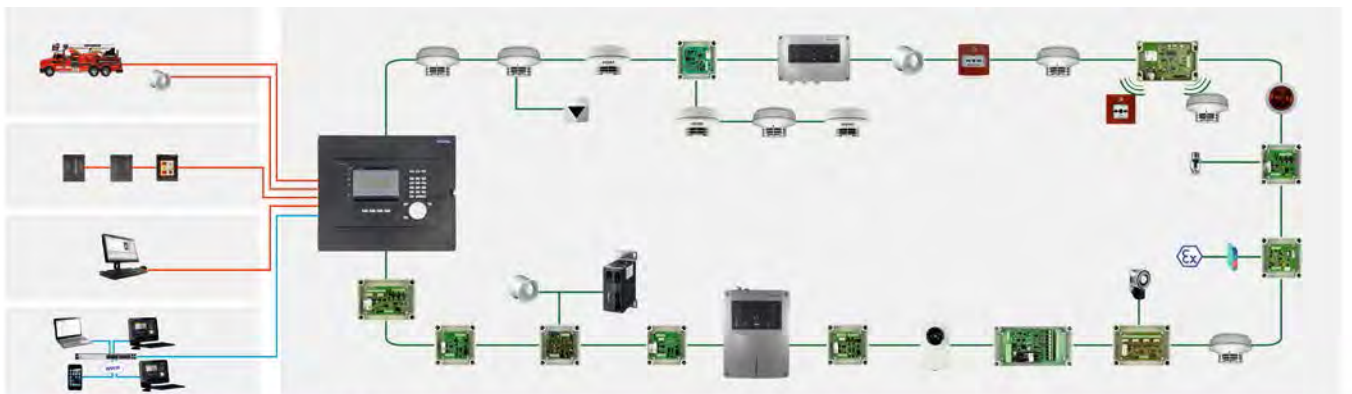**Fig. 22 Topology of a SecuriFire 1000 fire alarm control panel**

2.10 SecuriFire FCP 500

SecuriFire FCP 500 fire alarm control unit is a 1-loop fire alarm control unit for small systems and suitable for connecting an addressable loop with max. 250 participants.

The main processor unit contains all necessary interfaces for the connection to the fire brigade (transmission and alarm systems, interface for connecting various types of fire brigade control panels), as well as three 230V / 3A relay outputs and a connection for the external device bus (EPI-BUS).

Features

- 1 loop control unit
- Device bus for connecting remote indication and fire brigade maps.
- Device bus for connecting display and fire brigade maps.
- Interfaces for transmission and alarm systems, relay outputs, monitored inputs and outputs
- Simple to operate configuration and commissioning tools
- Event memory for 10,000 messages in real time
- Comprehensive, integrated overvoltage protection concept
- System remote access via TCP/IP
-

Fig. 23 Topology of a SecuriFire 500 fire alarm control panel

2.11   SecuriFire ECP / FEP 3000 und 2000

The SecuriFire 2000 system can also be deployed as a SecuriFire 2000 extinguishing system control panel ECP (electronic control and delay unit) or as a combined SecuriFire 2000 fire detector/extinguishing system control panel FEP. There is a separate version of the case available for this purpose, which contains an additional LED parallel indicator tableau for a single extinguishing zone and also contains additional freely programmable inputs and outputs. In this version, the SecuriFire FEP 2000, in accordance with standards and directives EN 12094-1 and VdS 2496, is now suitable and approved for use for controlling and monitoring the following types of fire extinguishing systems:

Features
- CO2 – high and low pressure extinguishing systems where life is or is not endangered.
- Inert gas and argon extinguishing systems where life is or is not endangered.
- Water spray systems
- Pre-action sprinkler systems
- Sprinkler Systems
- Mist water deluge systems
- Chemical extinguishing systems

Fig. 24 Topology of a SecuriFire ECP / FEP 3000

Fig. 25 Topology of a SecuriFire ECP / FEP 2000 control panel

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2.12 Key features at a glance SecuriFire

- Microprocessor controlled and monitored system technology
- Fully redundant system design to ensure unrestricted functioning, even in the event of a fault or failure of a processor or system half.
- Continual, automatic check routines for all system components and programs.
- Easy connection of the units by means of flat plugs.
- FCP 3000 can be built into a 19" rack.
- Up to 31 remote main indication and control maps per SecuriLan with graphic display; up to 4 languages can be toggled during operation.
- Serial data protocol printer with emergency power, event memory and message filters; suitable for connecting to the public alarm system of the fire brigade.
- Intervention switch for checking unwanted alarms.
- 2-detector dependency and operational group dependency etc. freely programmable with software.
- Links and dependencies of fire incident controls and fire hatches freely programmable with software.
- Automatic winter time / summer time changeover.
- 16 day/night levels with automatic on/off switching, date-based controls.
- Can be connected to superordinate computer systems and fire alarm deployment management systems via serial data or IP-interfaces with the full functional scope (alarm/command directions).
- Fully redundant interconnection of up to 16 fire alarm control panels (FCPs) without superordinate central computer, whereby each individual FCP is a self-sufficient unit with its own power supply and batteries; external indication and control maps, fire brigade maps, printers etc. can be connected to the sub-detection-zones and controls.
- The control panel structure permits nearly any number of fire alarm control panels to be networked, even at a later date.
- The communication between the fire alarm control panels SecuriFire 3000 / 2000 (FCPs) is via a redundant (doubled) ring circuit so that the connection remains intact without restrictions even in the event of three simultaneously occurring connection faults.
- Digital communication paths connect main indication and control maps, protocol printers, parallel indicator boards and other system components can be used in any number of combinations independent of location.
- Because of its special redundancy concept, the SecuriFire fire detection system is suitable (standards compliant) for actuation of more than one extinguishing area.
- Compliant with or exceeds the following relevant standards and directives: European standards EN 54, DIN, ÖNORM, ÖVE, VDE, CPR and many more.
- VdS devices and system approval, DoP approval

2.13 Overview of system limits SecuriFire 3000 / 2000 / 1000

	SecuriFire 3000 / 2000		SecuriFire 1000	SecuriFire 500
	per control panel	per SecuriLan	per control panel	per control panel
Control panels	--	max. 16	--	--
Indication and control maps (internal)	max. 1	max. 16	max. 1	max. 1
Indication and control maps (external)	--	max. 31	--	--
Printer (external, internal)	max. 3	max. 16 x 3	max. 3	max. 3
Fire brigade panels / Floor indication panel	1(3) per MIC 15 per MMI-Bus	32x1(3) 16x15 MMI-Bus	1(3) per MIC 15 per MMI-Bus	1(3) per control panel
Detection zones Inputs, outputs, repeat signals	max. 768	max. 16 x 768	max. 768	max. 250
External (e.g. sprinkler systems)	max. 256		max. 256	max. 250
Delay layers	max. 16		max. 16	max. 16
Customer-specific texts	6,500 if average is 25 characters per element		6,500 if average is 25 characters per element	6,500 if average is 25 characters per element

3   Display, operation and indication

3.1   SecuriFire MIC indication and control maps

The SecuriFire standard indication and control maps provide well-organised, convenient, standards-compliant display and operation of a SecuriFire system and can be built into an FCP or separately mounted in their own housings.

Fig. 26 SecuriFire MIC indication and control maps

It contains a 5.7'' TFT colour display showing all alarm system states in plain text and in over 20 languages. No labelling on the front of the housing (only display elements). Intuitive operation with operating elements and SecuriWheel.

3.2 External device bus

3.2.1 EPI-BUS

External devices and indication and control maps can be connected to the "EPI-BUS" on each MIC. A maximum of 3 participants can be connected to this data bus at a distance of up to 1 m from the main indication and control map.

Fig. 27 Schematic of an EPI-BUS

EPI-BUS features
- Available on MIC11, MIC711, and FIP
- Up to 1 m line length
- Up to 3 devices on one EPI-BUS

Display, operation and indication

3.2.1.1 B5-EPI-PIM LED display panel

The B5-EPI-PIM is a LED display panel panel for displaying functions, messages and states. The display consists of 32 LEDs (red and yellow, programmable) and has 1 green operation indicator. The label strips used to label the LEDs can be printed directly from SecuriFire Studio.

Fig. 28
B5-EPI-PIM

3.2.1.2 B5-EPI-PCM Partial indication and control map

The B5-EPI-PIM is an indication and control map for displaying functions, messages and states. The display has 16 LEDs (red and yellow, programmable). The eight function keys are freely programmable. The EPI-PCM also has 1 green operation indicator. The label strips used to label the buttons and LEDs can be printed directly from the SecuriFire Studio.

Fig. 29
B5-EPI-PCM

3.2.1.3 B5-EPI-FPC Swiss fire brigade panel

The B5-EPI-FPC is compliant with Swiss standard SN 054 002, for visually indicating the most important operating states of the fire alarm control panel to facilitate easy and standardised operation of a fire alarm control panel for fire brigade personnel.

Fig. 30
B5-EPI-FPC

3.2.1.4 B5-EPI-FAT Fire brigade indicator board according with DIN 14662

The B5-EPI-FAT is compliant with the requirements of DIN 14662 for visually indicating the most important operating states of the fire alarm control panel to facilitate easy and standardised operation of a fire alarm control panel for fire brigade personnel.

Fig. 31
B5-EPI-FAT

3.2.1.5 B5-EPI-FPD Fire brigade control board according with DIN 14661

The B5-EPI-FPD is compliant with DIN 14661 for indicating operating states and for standardised operation of a fire alarm control panel by fire brigade personnel.

Fig. 32
B5-EPI-FPD

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3.2.1.6   B5-EPI-FPCZ Fire brigade panel for the Czech Republic

The B5-EPI-FPCZ is compliant with the requirements of DIN 14661 for visually indicating the most important operating states of the fire alarm control panel to facilitate easy and standardised operation of a fire alarm control panel for fire brigade personnel.

Fig. 33
B5-EPI-FPCZ

3.2.1.7   B5-EPI-FPS-S Fire Brigade Panel for Sweden

The B5-EPI-FPS-S complies with the requirements of SS 3654. The display and LED list of the fire brigade map shows the relevant operating states and guarantees easy operation by the fire brigade.

Fig. 34
B5-EPI-FPS-S

3.2.1.8   Fire Brigade Panel for Finland

The B5-EPI-FPF-S complies with the requirements of SS 3654. The display and LED list of the fire brigade map shows the relevant operating states and guarantees easy operation by the fire brigade.

Fig. 35
B5-EPI-FPF-S

3.2.2   MMI-BUS

External devices and indication and control maps can be connected to the "MMI-BUS" on each MIC. Without additional devices such as repeaters, up to 15 participants can be connected to this data bus and operated up to 1,200 m from a control panel.

Fig. 36 Schematic of MMI-BUS

MMI-BUS features
- Redundant devices bus
- Up to 1,200 m line length
- Up to 15 devices on one MMI-BUS

Data communication via redundant, digital communication lines. The devices can be deployed in any number of combinations with each other independent of location.

> **Notice**
> For security reasons the data line and power supply are redundantly and should be separately conveyed.

3.2.2.1 B3-MMI-UIO universal input/output module

The B3-MMI-UIO is primarily used for controlling layout plan and repeat signal boards of the SecuriFire system. It can also be used by the FCP remote input/output module for polling potential-free contacts and keys and for controlling unmonitored horns, lamps, relays etc. Depending on its use, the B3-MMI-UIO is integrated in the concerned boards or branch sockets and connected to the MMI-BUS. The module is fully redundant to ensure security and reliability. It is designed with the appropriate fastening options and connectors..

Fig. 37
B3-MMI-UIO

3.2.2.2 B5-MMI-FIP Floor indicator panel

The B5-MMI-FIP displays a convenient overview of the SecuriFire system states.
It includes a 6-line monochrome LCD display of all system states in plain text. No labelling on the front of the housing (only display elements). Messages about alarms, faults and disablements can be called up via 3 function keys.

Fig. 38
B5-MMI-FIP

3.2.2.3 B3-MMI-EAT64 Indication map for 64 alarm zones

The B3-MMI-EAT64 has LEDS that indicate the states of the individual detection zones. The "Alarm", "Fault" and "Deactivation" states of a detection zone can be indicated by two LEDs (red and yellow).
The B3-MMI-EAT64 is mounted separately in its own housing. The detection zones are labelled with insertion strips, which can be printed directly from SecuriFire Studio.
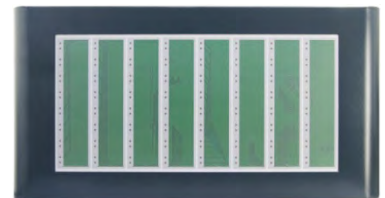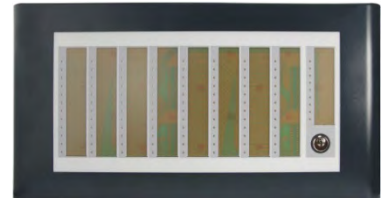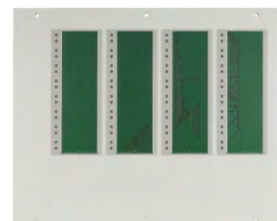

Fig. 39
B3-MMI-EAT64-S

3.2.2.4 B3-MMI-IPEL-S Indication map for 8 extinction areas

The B3-MMI-IPEL-S is a standards-compliant state indicator of connected extinguishing systems.
The B3-MMI-IPEL-S is mounted separately in its own housing. The detection zones are labelled with insertion strips, which can be printed directly from SecuriFire Studio.

Fig. 40
B3-MMI-IPEL-S

3.2.2.5 B3-MMI-EAT32-S Indication map for 32 alarm zones

The B3-MMI-EAT32-S has LEDS that indicate the states of the individual detection zones. The "Alarm", "Fault" and "Deactivation" states of a detection zone can be indicated by two LEDs (red and yellow).
It is integrated in the door of the SecuriFire 3000. The detection zones are labelled with insertion strips, which can be printed directly from SecuriFire Studio.

Fig. 41
B3-MMI-EAT32

Display, operation and indication

3.2.2.6   B3-MMI-IPES Indication map for 4 extinction areas

The B3-MMI-IPEs is a standards-compliant state indicator of connected extinguishing systems. It is integrated in the door of the SecuriFire.

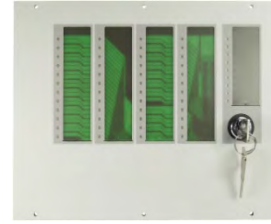The extinguishing areas are labelled with insertion strips, which can printed directly from SecuriFire Studio.

Fig. 42
B3-MMI-IPES

3.2.2.7   B3-MMI-FAT Fire brigade indicator board according DIN 14662

The B3-MMI-FAT is compliant with the requirements of DIN 14662 for visually indicating the most important operating states of the fire alarm control panel to facilitate easy and standardised operation of a fire alarm control panel for fire brigade personnel.

Fig. 43
B3-MMI-FAT

3.2.2.8   B3-MMI-FPD Fire brigade control board according DIN 14661

The B3-MMI-FPD is compliant with DIN 14661 for indicating operating states and for standardised operation of a fire alarm control panel by fire brigade personnel.

Fig. 44
B3-MMI-FPD

3.2.2.9   B5-MMI-IPS-S Intervention panel for Sweden

The B5-MMI-IPS-S provides a convenient overview display of the SecuriFire system. It includes a 6-line monochrome LCD screen for displaying all system states in plain text. No labelling on the front of the housing (only display elements). Messages about alarms, faults and disablements can be called up via 3 function keys.

Fig. 45
B5-MMI-IPS-S

3.2.2.10   B5-MMI-FPS-S Fire brigade panel for Sweden

The B5-MMI-FPS-S complies with the requirements of SS 3654. The display and LED list of the fire brigade map shows the relevant operating states and guarantees easy operation by the fire brigade.

Fig. 46
B5-MMI-FPS-S

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3.3   19'' standing cabinet equipment

3.3.1   B5-STS-BGT-SF

Unit rack SF 3000 for installation in a 19" cabinet. The scope of delivery includes a power supply unit B5-PSU, B5-BUS, the main control board B5-MCB15 and the battery holder B5-STS-AF.

Fig. 47
B5-STS-BGT-SF

3.3.2   B5-STS-MIC

Installation frame for MIC711 or 2 EPI devices for mounting in a 19" free standing cabinet. (5 RU)

Fig. 48
B5-STS-MIC

3.3.3   B5-STS-MIC2

Installation frame for MIC711 and 1 EPI device or 3 EPI devices for mounting in a 19" free standing cabinet. (5 RU)

Fig. 49
B5-STS-MIC2

3.3.4   B5-STS-EAT64-2

The B5-STS-EAT64-2 serves to display the status of individual detection zones by means of LEDs. The "Alarm", "Fault" and "Disablement" states of a detection zone can be indicated using two LEDs (red and yellow).
The detection zones are labelled with insertion strips, which can be printed directly from SecuriFire Studio.
For installation in a 19'' free standing cabinet.

Fig. 50
B5-STS-EAT64-2

3.3.5   B5-STS-IPEL-2

The B3-MMI-IPEL-2 serves to display the non-compliant status of LEDs in connected extinguishing systems. The detection zones are labelled with insertion strips, which can be printed directly from SecuriFire Studio.
For installation in a 19'' free standing cabinet.

Fig. 51
B5-STS-IPEL-2

4 Housing variants and expansion options

4.1 Housing variants

4.1.1 SecuriFire 3000

The basic configuration of every SecuriFire FCP 3000 includes:

- Rear wall with cut-outs for cable entry and battery holder
- Unit rack with bus connection prints for installing 8 freely selectable line boards and input/out boards as well as 3 relay boards
- B5-MCB15 main control board with interface for built-in indication and control map and service PC
- B5-PSU power supply unit
- 2 batteries for emergency power supply
- Mains terminals and battery cable

Fig. 52
Back panel

Fig. 53
Back panel and unit rack

Fig. 54
Main control unit fitted with boards

Fig. 55
SecuriFire 3000 cabinet with operating panel and log printer

4.1.2 SecuriFire 2000 / 1000

The basic configuration of every SecuriFire FCP 1000 / 2000 includes:

- A back wall with cutaways for cable inlets and a battery rack.
- Main processor unit with interfaces for connecting operating panels, peripherals, Service PC etc.
- B6-PSU power supply unit
- 2 emergency power supply batteries
- Power clips and battery cable

Fig. 56
Back panel

Fig. 57
Main processor unit and power supply unit

Fig. 58
Module cover and rechargeable cells

Fig. 59
SecuriFire 2000 / 1000 cabinet with operating panel and log printer

4.1.3 SecuriFire 500

- The basic configuration of every SecuriFire FCP 500 includes:
- Housing with integrated operating panel
- Rear wall with cut-outs for cable entry and battery holder
- Main control panel with interfaces for connecting operating panels, peripherals, service PC etc.
- Power supply unit
- 2 batteries for emergency power supply
- Mains terminals and battery cable

Fig. 60
Basic circuit board with PSU and integrated MIC

Fig. 61
Housing with operating panel

4.2 Fire alarm control panel SecuriFire 3000 / 2000 / 1000 /500

SecuriFire control panel is available in various different versions:

SecuriFire 3000				
Fig. 62 **SCP 3010**	**Fig. 63** **SCP 3020**	**Fig. 64** **SCP 3030**	**Fig. 65** **SCP 3040**	**Fig. 66** **SCP 3050**

SecuriFire 2000				
Fig. 67 **SCP 2010**	**Fig. 68** **SCP 2020**	**Fig. 69** **SCP 2030**	**Fig. 70** **SCP 2040**	**Fig. 71** **SCP 2050**

SecuriFire 1000				
	Fig. 72 **SCP 1020**			

SecuriFire 500				
	Fig. 73 **SCP 1030**			

All other functions are configured individually customized. This is done by inserting the required plug-in module slots of the rack or by equipping the door with the SecuriFire MIC11 in the requested language.
The corresponding custom programming is created using SecuriFire Studio PC software and loaded on the service PC interface in the main control rack.

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4.3   SecuriFire B8-MIC11 mounting main indication and control map

Fig. 74 B5-MIC11

The B8-MIC11 is integrated into the doors of the SecuriFire cabinets. It includes a 5.7'' TFT colour display of all system states in plain text. Operation with function keys and SecuriWheel. No labelling on the front of the housing (only symbols). It is connected to the B5-MCB15A main control board with a ribbon cable. If the FCP has a protocol printer, it is also controlled by the B8-MIC11.

4.4   SecuriFire built-in operating panel B9-MIC11

Fig. 75 B6-MIC11

The B9-MIC11 built-in operating panel is built into the doors of SecuriFire cabinets and contains a 5.7'' TFT-colour display. The operating panel is available in many language variations (both the membrane keypad and the menus on the display) and is connected to the B6-BCB13A main processor unit by means of a ribbon cable. If the subcontrol unit also contains a log printer, it is operated via the The B9-MIC11 built-in operating panel.

4.5   SecuriFire built-in operating panel B7-MIC11

Fig. 76 B7-MIC11

The B7-MIC11 is built into the door of the SecuriFire 500 map case. It includes a 5.7'' TFT colour display of all system states in plain text. Operation with function keys and SecuriWheel. No labelling on the front of the housing (only icons).
It is connected to the B7-CPB11 main control board with a ribbon cable.

4.6   Protocol printer with event memory

Fig. 77 MIC-PPE

The serial data protocol printer is included in several SecuriFire map case variants and in some designs of the external indication and control maps.
Compliant with EN 54-4, the SecuriFire protocol printer is always supplied with emergency power for at least 72 h and saves all fire alarm system changes (e.g. alarms, faults, deactivations, activations, actuations, operation procedures, alarm delays, service notices) in plain text with date, time and other information. The printer includes an event memory which can be printed out any number of times. All information is displayed on the display and output to the protocol printer in clearly understandable plain text.

5 Unit rack

The unit rack contains the entire electronics of a SecuriFire 3000 FCP except for the indication and control map and protocol printer. It is attached to the rear wall of the SecuriFire map case and contains 13 board slots designed to house flat units. Thanks to this modular design, various line technologies (ring and stub lines) can be connected to a control panel.
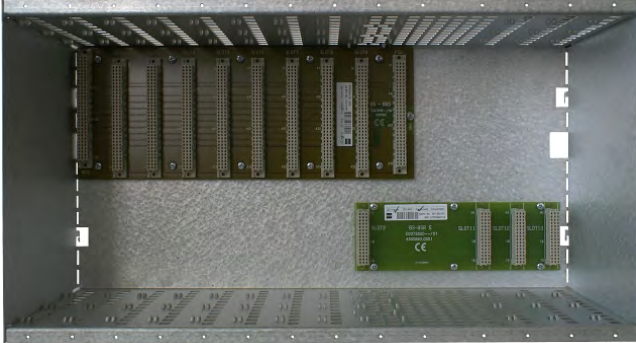
.

Fig. 78
Empty unit rack with bus printed circuit boards

Fig. 79
Unit rack fitted with B8-PSU and B5-MCB15A

The power supply and data communication between the individual boards is by means of the bus printed circuit boards (using connectors) on the rear side of the unit rack.

Slot 1 at the very left is always fitted with the B5-MCB15 main control board. The B5-PSU power supply unit is always on slot 10.

Slots 2 to 9 are freely selectable for all of the boards described below. Only the relay boards must be fitted exclusively on slots 11 to 13 (when using relay boards, a B5-BAF board or B5-MRI board must be on slot 9, since only these two boards are suitable for actuating the relay bus).

6 Boards

6.1 Boards for SecuriFire 3000

6.1.1 B5-MCB15A main control board

The B5-MCB15A is included in every SecuriFire FCP. In conjunction with the B8-BUS and the B8-PSU power supply unit, it forms the basis for the B5 SecuriFire FCP 3000 hardware platform. As the main control board of every SecuriFire FCP, the B5-MCB15A stores all of the prepared data from the other boards. It carries out all processing necessary for the logical behaviour of the system and manages planning data and system time.

The B5-MCB15A is built to be fully redundant to ensure system availability, i.e. all functional blocks are doubled.

Two Flash-Memory elements which can be cleared and written block by block during operation are used for storing the program and planning data. It does not have to be exchanged if there is a program or planning change. Two synchronous, dynamic RAMs (SDRAM) serve as variable memory.

The system time of each SecuriFire FCP is generated with the help of two real-time clocks (RTC) with integrated quartz. In the event of a power failure, the real-time clocks continue to operate up to eight hours thanks to the emergency power supply.

Fig. 80
B5-MCB15A

6.1.2 B8-PSU power supply unit

The B8-PSU is an internal 7 A power supply unit, and together with the B5-MCB15A Main Control Board and the B8-BUS it forms the basis for the B5A hardware platform.

The B8-PSU provides output voltages of 3.3 V, 5 V and 27 V to each FCP 3000. In the event of mains failure, the standards-compliant battery buffered DC voltage for the FCP and peripheral devices must be ensured. This is accomplished by connecting two (or four) batteries of a type which has been tested by VdS and approved by Securiton AG. The batteries are connected on the front side of the B8-PSU with a 2-pin terminal and monitored. The B8-PSU can be operated with 110 V or with 230 V. No other units can be connected.

Fig. 81
B8-PSU

6.1.3 B8-BAF control board

The B8-BAF includes the basic functions of a fire alarm control panel. They comprise two surveyed outputs which are for connecting transmission and alarm units among others. In addition, there is an interface for controlling a parallel FBF in accordance with DIN 14661 and a parallel FBA in accordance with SN 054002 and controlling 3 relay boards (B3-REL10, B3-REL16, B3-REL16E) as well as the interface for the MMI BUS, which is for connecting all external MMI indication and control maps and MMI BUS modules. Communication with the B5-MCB15 main control board is via the B5-BUS.

Fig. 82
B8-BAF

6.1.4 B5-DXI2 SecuriLine eXtended board

The B5-DXI2 is used for power supply and evaluation of two ring circuits with the associated detectors and modules of the SecuriLine eXtended. Alternatively, a ring circuit and two X-LINE stub lines or four stub lines can also be connected. The digitised states of the detectors and modules are further processed by the B5-DXI2 and forwarded via the B5-BUS to the B5-MCB15 Main Control Board.

Fig. 83
B5-DXI2

6.1.5 Alarm lines board for HX 140 B3-LEE23

The B3-LEE23 supplies power to and monitors up to 8 stub lines, each with a maximum of 30 detectors of the HX 140 detector series. Each stub line has its own current-limited output driver which supplies it with power and generates the voltage-modulated telegram.

The purpose of the board is to replace existing fire alarm systems equipped with HX 140 series detectors with SecuriFire 3000 while being able to connect the peripherals unchanged. A maximum of 5 B3-LEE23 boards can be fitted to slots 2 to 9 of the unit rack of an FCP.

Fig. 84
B3-LEE23

6.1.6 Alarm loop board for HX 150 B3-LEE24

The B3-LEE24 supplies power to and monitors up to four addressable loops, each with a maximum of 127 detectors of the HX 150 detector series. Addressable stubs can be installed on the loop without an additional branching module. The maximum number of detectors on the stubs must be taken into account.

Each addressable loop has its own current-limited output driver which supplies it with power and generates the voltage-modulated telegram. The line current is evaluated using an analogue/digital converter.

The purpose of the alarm loop board is to replace existing fire alarm systems equipped with HX 150 series detectors with SecuriFire 3000 while being able to connect the peripherals unchanged. A maximum of 5 B3-LEE24 boards can be fitted to slots 2 to 9 of the unit rack of an FCP.

Fig. 85
B3-LEE24

6.1.7 B3-DCI6 direct current technique board

The B3-DCI6 is for the power supply and evaluation of 6 inputs which are either planned as detection zones in direct current technique or as surveyed inputs (e.g. VdS extinguishing interface, valve monitoring) via jumper and programming. A maximum of 10 detection areas can be differentiated by means of optional 3-wire wiring.

Fig. 86
B3-DCI6

6.1.8 B5-OM8 surveyed output board

The B5-OM8 is for connecting up to 8 peripheral devices (sirens, flashing lights, etc.). It includes 8 quiescent current surveyed control outputs for max. 1.5 A and for loads of 20 Ω to 1,000 Ω in 3 load ranges. It is important to note that the monitored consumers are supplied with power directly from the B5-PSU power supply unit (maximal current 7 A). This must be taken into account when planning the simultaneously actuated surveyed outputs.

Fig. 87
B5-OM8

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6.1.9 B3-IM8 surveyed input board

The B3-IM8 is designed for connecting a total of 8 detection zones or surveyed inputs. Each detection zone or surveyed input connection has its own current-limited output driver which supplies the connected peripheral devices with power.

The B3-IM8 is suitable for combining any surveyed inputs as well as for connecting the SecuriStar detector series 521 / 523 / 563, HX 130, Hochiki Ex-i detectors and the sabotage line technology.

Fig. 88
B3-IM8

6.1.10 B8-SXI8 SecuriLine eXtended board

The B8-SXI8 is used for connecting up to eight stub lines with the associated detectors and modules of SecuriLine eXtended. Up to 32 automatic fire detectors, up to 10 manual call points or up to 10 BX modules can be connected to each of the eight available stub lines. The BX-SXI8 is particularly suitable for modernising existing stub lines in older control panel generations.

Fig. 89
B8-SXI8

6.1.11 B3-USI4 universal interface board

The B3-USI4 is a universal communication board and serves primarily to connect SecuriFire 3000 to management systems and to actuate external printers, pagers, ComBOX, telephone servers, etc. The connection to management systems can be line type or ring, redundant or single. The selection of operation mode of each interface pair is performed by programming.

Fig. 90
B3-USI4

6.1.12 B5-MRI16 relay board with 24 V contacts

The B5-MRI16 has 16 freely programmable bistable 24 V / 3 A relay contacts. The function of working or normally closed contact can be set in the software. Further, for each relay an "Active in Fail-Safe-Position" can be defined for instances in which there is a power failure or the FCP is switched off. In the maximum configuration, an FCP can be equipped with up to 160 (176) relay contacts (excluding ring modules): 8 pcs. B5-MRI16 plus 3 pcs. B3-RELx.

Fig. 91
B5-MRI16

6.1.13 B3-REL10 relay board with 230 V contacts

The B3-REL19 has 10 freely programmable bistable 230 V / 3 A relay contacts. Defining whether the contact is a working or normally closed contact is done with planning software. By programming an "Active in Fail-Safe-Position" the state of each individual relay can be defined for power supply failure or shut down of the FCP. For actuating the relay bus, a B5-BAF or B5-MRI16 board must be fitted to slot 9 of the unit rack.

Fig. 92
B3-REL10

6.1.14 B3-REL16 relay board with 24 V contacts

The B3-REL16 has 16 freely programmable bistable 24 V / 3 A relay contacts and serves to actuate sirens, permanent magnets, relays, etc. Defining whether the contact is a working or normally closed contact is done with planning software. By programming an "Active in Fail-Safe-Position" the state of each individual relay can be defined for power supply failure or shut down of FCP. For actuating the relay bus, a B5-BAF or B5-MRI16 board must be fitted to slot 9 of the unit rack.

Fig. 93
B3-REL16

6.1.15 B3-REL16E relay board with 24 V contacts

The B3-REL16E has 16 freely programmable bistable 24 V / 3 A relay contacts and serves to actuate sirens, permanent magnets, relays, etc. Defining whether the contact is a working or normally closed contact is done with planning software. The contacts are protected against overload with a 3 A fuse. By programming an "Active in Fail-Safe-Position" the state of each individual relay can be defined for power supply failure or shut down of FCP. For actuating the relay bus, a B5-BAF or B5-MRI16 board must be fitted to slot 9 of the unit rack.

Fig. 94
B3-REL16E

6.1.16 B8-NET2-485 network board

The B8-NET2-485 is used for redundant networking of the SecuriFire 3000 and for connecting to PC applications and third-party/management systems. It has two network connections based on the RS485 standard and two 100BASE-TX interfaces.

Fig. 95
B8-NET2 485

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6.1.17   B8-NET4-485 network board

The B8-NET4-485 is used for redundant networking of the SecuriFire 3000 and for connecting to PC applications and third-party/management systems. It has four network connections based on the RS485 standard and two 100BASE-TX interfaces.

Fig. 96
B8-NET4 485

6.1.18   B8-NET2-FX4 network board

The B8-NET2-FX4 network board is for redundant networking of the SecuriFire 3000 and for connecting PC applications. It has two network connections based on the RS485 standard, two 100BASE-TX interfaces and four slots for fitting with plug-in optical SFP modules. These optical network connections can be operated both as a multimode version with a range of up to 2 km and as a singlemode version with a range of up to 10 km.

Fig. 97
B8-NET2-FX4

6.1.19   B8-NET-FX8 network board

The B8-NET-FX8 network board is for redundant networking of the SecuriFire 3000 and for connecting PC applications. It has two 100BASE-TX interfaces and eight slots for fitting with plug-in optical SFP modules. These optical network connections can be operated both as a multimode version with a range of up to 2 km and as a singlemode version with a range of up to 10 km.

Fig. 98
B8-NET-FX8

6.1.20   B5-LAN interface board

The B5-LAN is for non-redundant networking of PC applications and non-redundant networking of SecuriFire 3000. There is the possibility that only the active processor establishes a connection to the Ethernet or both processors at the same time. This mode can be changed using a jumper.

Fig. 99
B5-LAN

6.2 Modules for SecuriFire 2000 / 1000

6.2.1 B6-BCB13A main processor unit

The B6-BCB13A is a component of every SecuriFire FCP/ECP/FEP 2000 fire alarm control panel and contains all the interfaces required for the connection of peripheral devices, relay contacts, the MMI Bus, monitored outputs and the service PC, as well as a connection slot in which an additional module (B4-DAI2, B4-USI, B4-EIO, B6-LAN or B6-NET2-485) can be fitted. Power is supplied by the B9-PSU power supply, with the built-in operating panel being connected via a 34 pole ribbon cable connector.

Fig. 100
B6-BCB13A

6.2.2 B6-BCB12A main processor unit

The B6-BCB12A is a component of every SecuriFire FCP 1000 control panel and contains all the interfaces required for connecting peripherals, relay contacts, MMI-BUS, monitored outputs and Service PC. Power is supplied by the B9-PSU power supply, with the built-in operating panel being connected via a 34 pole ribbon cable connector.

Fig. 101
B6-BCB12A

6.2.3 B9-PSU power supply unit

The internal 4A power supply in every SecuriFire1000/2000 control unit supplies the required output voltages of 3.3V, 5V and 27V. It is always fitted in the case of every SecuriFire control panel on the right hand side next to the main processor unit and is always connected to it using a 64 pin multipoint connector. On the bottom side of the power supply unit there is a 2 pole clip for connection to the rechargeable batteries and a 10 pin pluggable screw connector, to which external devices can be connected using five separately fused outputs. The B9-PSU power supply contains a battery monitoring facility, which is controlled and evaluated by the main processor unit. The B9-PSU can be operated with 110 V or with 230 V. No other units can be connected.

Fig. 102
B9-PSU

6.2.4 Addressable loop unit B6-LXI2

For connecting a further two addressable loops with detectors and modules featuring SecuriLine eXtended addressable loop technology to the SecuriFire 2000. Alternatively one addressable loop and two stub lines or four stub lines can also be connected. The unit also has a LAN interface. This means that all the options of a LAN interface can be used even with 4 loops. The unit is fitted to the main control unit B6-BCB13A.

Fig. 103
B6-LXI2

6.2.5 B6-LAN Network module

For non-redundant networking of SecuriFire FCP 2000 control panels for non-redundant connection of PC applications. The module is connected to the B6-BCB13A main processor unit.

Fig. 104
B6-LAN

6.2.6 B6-NET2-485 Network Module

For redundant networking of SecuriFire 2000 control panels or for redundant connection of PC applications. The module consists of 4 network connectors (RS 485 interface) and one 100 Base TX interfaces. The module is connected to the B6-BCB 13 main processor unit.

Fig. 105
B6-NET2-485

6.2.7   B9-NET-FX4 network module

For the redundant networking of SecuriFire FCP 2000 control panels or for the connection of PC applications. The unit has four fibre-optic connections for fitting with plug-in optical SFP modules (multimode version with a range of 2 km or singlemode version with a range of up to 10 km) and a 10/100 Base TX interface with port redundancy. The unit is fitted to the main control unit B6-BCB13A.

Fig. 106
B9-NET-FX4

6.2.8   B6-NET2-FXS network module

For redundant networking of SecuriFire 2000 control panels or for redundant connection of PC applications. The module consists of 4 network connectors (2 x RS 485 interface, 2 x FXS) and one 100 Base TX interface. The module is connected to the B6-BCB13A main processor unit.

Fig. 107
B6-NET2-FXS

6.2.9   B6-NET2-FXM network module

For redundant networking of SecuriFire 2000 control panels or for redundant connection of PC applications. The module consists of 4 network connectors (2 x RS 485 interface, 2 x FXM) and one 100 Base TX interface. The module is connected to the B6-BCB13A main processor unit.

Fig. 108
B6-NET2-FXM

6.2.10   Universal Interface Module B4-USI

For connecting SecuriFire 2000 control panels, to management systems, for controlling external printers, pagers, telephone servers etc. and two serial asynchronous interfaces. The module is connected to the B6-BCB13A main processor unit.

Fig. 109
B4-USI

6.2.11   B6-EIO input/output module

For connection of up to 10 stub lines each with a maximum of 30 detectors from the B6-EIO is suitable for combining any surveyed inputs as well as for connecting the SecuriStar detector series 521 / 523 / 563, HX 130, Hochiki Ex-i detectors and the sabotage line technology. Primary inputs or VdS sprinkler interfaces and eight monitored outputs each with an output current of max. 1.5 A. Furthermore it is suitable for connection from intrinsically safe detectors for use in hazardous areas over a safety barrier. The module is connected to the B6-BCB 13 main processor unit.

Fig. 110
B4-EIO

6.3   Modules for SecuriFire 500

6.3.1   B7-CPB11 main control unit

The B7-CPB11 is a component of every SecuriFire FCP 500 fire alarm control panel and contains all interfaces for connecting peripherals, relay contacts, and service PC.
The internal 75 W power supply unit that supplies the required output voltages is mounted directly on the B7-CPB11. The power supply unit is equipped with battery monitoring that is controlled and evaluated by the main control unit. The B7-PSU can be operated with 110 V or with 230 V. No other units can be connected.

Fig. 111
B7-CPB11

6.4   Mains connection and emergency power supply

The emergency power batteries must be able to maintain the proper functioning of the fire alarm system for a certain length of time in the event of a mains failure, and they must remain fully charged for their entire service life. Due to these high product requirements, the charging and discharging characteristics of the batteries are subject to special requirements, specifications and tests. Also, the charge curves of the batteries must exactly match the power supply unit in use.

If batteries are used whose charging curves and characteristics are other than those specified, proper functioning of the emergency power supply cannot be guaranteed. Moreover, it is possible that the entire system may be damaged as a result. For these reasons, only battery types expressly approved by Securiton and certified by VdS should be used.

The installation location for the batteries is on the housing base of each SecuriFire FCP. Two batteries connected in series are always used.

The country-specific setup regulations, connection conditions of the fire brigade as well as the standards, regulations and directives apply when installing the SecuriFire system. The mains connection must also be implemented in accordance with the relevant country-specific regulations (e.g. DIN, ÖNORM, VDE etc.).

7 SecuriLine eXtended

The SecuriLine eXtended board B5-DXI2 is used for connecting SecuriLine eXtended to a SecuriFire FCP 3000; 2 addressable loops with a maximum of 250 elements each can be connected to the board.

For a SecuriFire FCP 2000 or 1000, the B6-BCB13A / B6-BCB12A board is used directly, connecting 2 addressable loops with a maximum of 250 elements each.

To connect the SecuriLine eXtended to an FCP 500 the C7-CPB11 is used, to which a maximum of 250 elements can be connected.
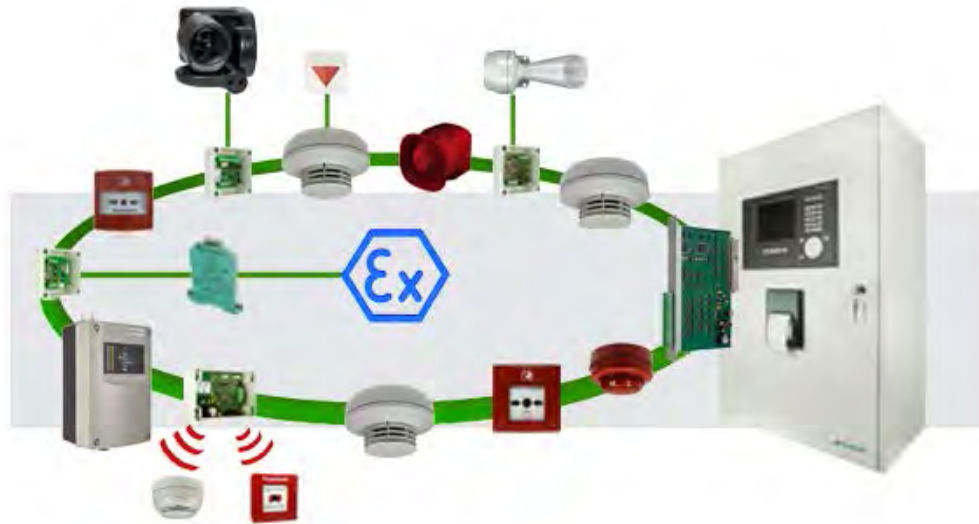
Fig. 112 Schematic of SecuriLine eXtended ring circuit

7.1.1 Maximum transmission security

The continuous, intelligent communication between control panel and detectors (modules) is effected with maximum transmission security and enables seamless monitoring and evaluation of the current actual states. Faults in the line network or false alarms due to electromagnetic interference (e.g. radio emissions, overvoltage, interference impulses) are automatically filtered out and localised by data transmission with fault detecting redundant coding from the control panel.

7.1.2 Integrated short circuit isolator

Thanks to the short-circuit isolator integrated in each detector and in each ring circuit module, the SecuriLine eXtended remains fully functional even in the event of a fault. If a detector fails or in the event of a short-circuit or wire breakage on the line, all other detectors and connected input and output modules remain functional without restriction. The fault is localised and information about its exact position is shown in plain text on the display and printer. This is why cable routing beyond fire sections can be optimised.

7.1.3 Intelligent data communication

Detector zone assignment for the SecuriLine eXtended is performed independently of the wiring, which is optimised and considerably reduced. A detection zone can be divided into various rings (also limited distribution across several FCPs). Inputs and outputs can be freely programmed without additional settings. Further, thanks to the microprocessor integrated in each detector, soiling detection, detector self-tests and detector analyses add to the performance spectrum to prevent false alarms and reduce unwanted alarms.

7.1.4 Programming and commissioning

Programming and commissioning the SecuriLine eXtended is performed exclusively with the SecuriFire Studio software. A calculation program is included for computing the maximum possible ring circuit length based on the connected elements and the wire cross-section in use.

7.2 Key features at a glance

- Digital ring communication and data backup
- Monitoring of all connected detectors and modules
- Integrated short-circuit isolator in each element
- Automatic and non-automatic detectors as well as input and output elements for fire doors, sirens, flashing lights etc. can be connected directly to the ring circuit.
- Alarm and control criteria linking
- Alphanumeric or graphical for individual alarm display and group display of all alarm statuses
- Individually programmable, auxiliary text for alarm, fault, deactivation and activation messages with date and time
- Customer-specific software for freely programmable inputs and outputs
- Individual addressing and deactivation of detectors and control modules as well as transmission and operating groups
- The formation of detection zones is also possible with elements of different ring circuits; detection links can be implemented beyond boards and FCPs.
- Multi-detector and multi-zone dependencies are programmable
- Subsequent additions to a detection zone are easy to implement and do not result in address changes or re-programming of other detectors
- Ex areas monitoring via branching module and stub line
- Evaluation of detector states (detectors which are soiled or needing maintenance) are displayed in plain text in the control panel
-

7.3 System limits

- Max. 7 (8) B5-DXI2 boards per SecuriFire FCP 3000
- Max. 2 ring circuits per B5-DXI2 board
- Max. 4 ring circuits per SecuriFire FCP 2000
- Max. 1 ring circuit per SecuriFire FCP 1000
- Max. 1 ring circuit per SecuriFire FCP 500
- Max. 250 physical elements per SecuriLine eXtended
- Max. 3,500 elements on 16 ring circuits
- Max. 63 detectors per detection zone
- Max. 1 repeat signal per detector
- Max. 3,500 m ring circuit length

SECURITON

8 Components of the SecuriLine eXtended

Standard for all elements of the SecuriLine eXtended are integrated short-circuit isolators, individually deactivated, not sensitive to electromagnetic interference. In addition to automatic and non-automatic fire detectors, ring circuit modules with various functions are also available; these modules can be built into a plastic housing with protection class IP66.

8.1.1 SecuriStar MCD 573X multi-criteria detector

Depending on need and application, the MCD 573 X can be implemented as smoke, temperature or combined detector and is programmed system-specifically and set for its area of use. The detector recognises smouldering fires and open fires early by detecting and evaluating smoke (using the Tyndall principle) and heat (NTC sensor principle) fire characteristics. Thanks to Cubus adaptation, this detector is always optimally adjusted to the ambient conditions.

**Fig. 113
MCD 573X**

8.1.2 Multiple sensor detector CCD 573X

The CCD 573X is a combined smoke/heat and carbon monoxide detector. The detector is capable of detecting smouldering fires and open fires early on by detecting and evaluating fire characteristics such as smoke, heat and carbon monoxide (CO). Smoke and heat are detected using the Tyndall principle and the NTC sensor principle respectively; an electrochemical sensor is used for detecting CO gases. Thanks to Cubus+ adaptation, this detector is always optimally adjusted to the ambient conditions.

**Fig. 114
CCD 573X**

8.1.3 SecuriStar MCD573X-S multi-sensor detector with integrated audible alarming

Depending on needs and application, the SecuriStar MCD573X-S can be used as a smoke, temperature or combined detector and is system-specifically programmed and set according to its area of application.The detector recognises smouldering fires and open fires early by detecting and evaluating smoke (using the Tyndall principle) and heat (NTC sensor principle) fire characteristics. The audible alarming integrated in the detector ensures that in the event of an incident crucial seconds are gained. The audible integrated in the MCD 573X-S supports 4 different warning sounds in 3 different volume levels.

The special CT (continuous type) variant fulfils all requirements for uninterruptible alarming. MLAR

**Fig. 115
MCD 573X-S**

8.1.4 SecuriStar MCD573X-S multi-sensor detector with integrated audible alarming and voice playback

Depending on the needs and application, the SecuriStar MCD573X-S can be used as a smoke, temperature or combined detector and is system-specifically programmed and set according to its area of application. The detector recognises smouldering fires and open fires early by detecting and evaluating smoke (using the Tyndall principle) and heat (NTC sensor principle) fire characteristics.

The integrated audible supports 4 different warning sounds in 3 different volume levels as well as 3 different announcements in German, English, French and Italian.

The special CT (continuous type) variant fulfils all requirements for uninterruptible alarming. MLAR

**Fig. 116
MCD 573X-SP**

8.1.5 USB 502 universal base

The USB 502 is used for connecting the SecuriStar detector family and is also available in various special variants for mounting onto hollow and concrete ceilings as well as for use in wet rooms. A parallel indicator can also be connected to the USB 502.

**Fig. 117
USB 502**

8.1.6 USB 502-20 universal base with an illuminated ring

The USB 502-20 is used for connecting the SecuriStar detector family. The integrated illuminated ring which is visible from all sides in the vicinity of the shadow gap area is actuated via the alarm output and flashes red in the event of an alarm.

Fig. 118
USB 502-20

8.1.7 LKM 593X ventilation duct detector

The LKM 593X is suitable for use in locations with high air velocity and strong smoke dilution, e.g. in air-conditioning and ventilation ducts. It consists of a plastic housing with built-in smoke detector and can be used with air velocities of 1 to 20 m/s. The housing is fitted with a clear cover so that the alarm LED of the smoke detector is visible from outside.

Fig. 119
LKM 593X

8.1.8 BX-SOL loop siren

The BX-SOL is for audibly signalling a fire alarm in interior rooms (environmental category type A compliant with EN 54-3) and is available in red or white. Three different sounds can be selected from the control panel (also during operation). The volume can be adjusted with the software.

Fig. 120
BX-SOL

8.1.9 BX-FOL loop flashlight

The BX-FOL is for visually signalling a fire alarm in interior rooms (environmental category type A compliant with EN 54-3) and is available in red or white. The flash rate and light intensity adjustment is done with the software.

Fig. 121
BX-FOL

8.1.10 MCP 545X manual call point

The MCP 545X is for manually triggering a fire alarm. It is tested and approved in compliance with EN 54-11; the MCP 545X is a type A (direct triggering) device. It is available in red and other colours and designs (protection class etc.).

Fig. 122
MCP 545 X N

8.1.11 MCP 535X manual call point

The MCP 535X is for manually triggering a fire alarm. It is tested and approved in compliance with EN 54-11; the MCP 535X is a type B (indirect triggering) device. It is available in red and other colours and designs (protection class etc.).

Fig. 123
MCP 535

8.1.12 Door holding magnet BX-MDH

The BX-MDH door holding magnet with integrated door position monitoring keeps fire protection doors open in the quiescent state and closes them in the event of an alarm. It has a holding force of 200 N.
The BX-MDH does not require a power supply, unlike conventional permanent magnets.

**Fig. 124
BX-MDH**

8.1.13 BX-OI3 output/input module

The BX-OI3 contains an optocoupler input, two primary inputs and a relay output. It can be used either as an O/I module or as a detector/detection zone for connecting special detectors. The "monitored" or "unmonitored" operation mode is separately planned for each input; further; also, each input can be programmed inverted. For each output an "active in fail-safe position" can be programmed in the event of loop voltage failure.

**Fig. 125
BX-OI3**

8.1.14 BX-O2I4 output/input module

The BX-O2I4 contains 4 primary inputs and two relay outputs. It can either be used as an O/I module or as a fire incident control module. The "monitored" or "unmonitored" operation mode is separately planned for each input; further; also, each input can be programmed inverted. For each output an "active in fail-safe position" can be programmed in the event of loop voltage failure.

**Fig. 126
BX-O2I4**

8.1.15 BX-AIM advanced input module

The BX-AIM can be used either as monitored input for polling potential-free contacts or as detection zone for connecting collective detectors. It serves, among other things, to connect intrinsically safe detectors (Ex-i) with intermediate switching of a Zener barrier. An output for a repeat signal is also available.

**Fig. 127
BX-AIM**

8.1.16 BX-IOM input/output module

The BX-IOM has a galvanically isolated output for actuating monitored consumers (e.g. sirens) which are supplied by external voltage sources. The input can be used to scan potential-connected voltage sources. The monitored output is divided into three load ranges and can actuate and monitor a load between 20 Ω and 1 kΩ.

**Fig. 128
BX-IOM**

8.1.17 BX-REL4 relay module

The BX-REL4 consists of four potential-free relay outputs for switching loads of up to 2 A and up to 230 V. All relays are bistable changeover contacts and each one has a screw terminal for the normally closed contact and normally open contact. For each output an "Active in Fail-Safe-Position" can be programmed in the event of ring voltage failure.

**Fig. 129
BX-REL4**

8.1.18   BX-IM4 input module

The BX-IM4 has 4 primary inputs for scanning potential-free contacts. These inputs monitor the lines for creeping wire breakage and short-circuit. The "monitored" or "unmonitored" operation mode is separately planned for each input; further, each input can be programmed inverted.

Fig. 130
BX-IM4

8.1.19   BX-O1 relay output module

The BX-O1 comprises a potential-free relay output for switching loads of up to 2 A and up to 230 V. All the relays are bistable switchover contacts, and each one has a screw terminal for the normally closed contact and the normally open contact. In the event of the loss of loop voltages an "Active in Fail-Safe-Position" can be programmed separately for each output.

Fig. 131
BX-O1

8.1.20   BX-I2 monitored input module

The BX-I2 contains one primary input for polling potential-free contacts and one opto-isolator input, which can be used for monitoring an external voltage if necessary. These inputs monitor the lines for creeping wire breakage and short-circuit. The "monitored" or "unmonitored" operating mode is planned separately for each input; in addition each input can also be programmed inverted.

Fig. 132
BX-I2

8.1.21   BX-ESL end switch module eXtended Line

The BX-ESL (end switch module eXtended Line) determines the position of the activation pin by means of an internal light barrier. The state active/passive is reported to the FAS and indicated on the BX-ESL by means of a LED. It meets the SecuiLine eXtended specification for operation on the addressable loop of the SecuriFire fire detection system.

Fig. 133
BX-ESL

8.1.22   BX-WGW radio module

The BX-WGW (radio module) can be connected to the SecuriLine eXtended addressable loop of the SecuriFire fire alarm system.
The radio module establishes the communication between a fire alarm control panel and the SecuriAIR radio system.
Up to 30 radio detectors can communicate with one gateway, whereby each of these can be individually addressed. The radio system works in a frequency range (SRD band 868–870 MHz) reserved for security technology so that other devices with radio transmission do not cause disturbances for communication between the radio detectors.

Fig. 134
BX-WGW

8.1.23   BX-MDI8 input module

The BX-MDI8 has 8 monitored inputs for connecting detection zones or for polling potential-free contacts. The module requires a redundant, external power supply for operation.
The BX-MDI8 is suitable for connecting SecuriStar 521/523/563 detector series, Hx130 and Ex-i detectors.

Fig. 135
BX-MDI8

8.1.24   BX-SCU input module

With the BX-SCU, stub branches can be installed on the SecuriLine eXtended loop. The BX-SCU can be used for modernisation of the SecuriPro BMA via SecuriFire. The existing SCU81 is replaced by the BX-SCU without changing the cabling topology. Furthermore, the BX-SCU is backwards compatible with the automatic and non-automatic detectors installed with SecuriPro so that these do NOT have to be replaced in the event of a modernisation.

**Fig. 136
BX-SCU**

9 Programming and software

The SecuriFire from Securiton is a modern microprocessor-controlled system equipped with a multitasking-capable real-time operating system.

A functional basic program is downloaded to the system; the program is then configured customer-specifically for the object to be protected while taking into account the relevant standards.

All program components are stored in the B5-MCB15A main control board; during startup they are distributed to all computer components of the SecuriFire units, which then operate independently and are monitored by the B5-MCB15A. All necessary software components are provided in SecuriFire Studio, which contains all of the necessary planning, commissioning, mainte-nance and diagnostic data of the SecuriFire system.

For SecuriFire 500 an easy start up assistant "EasyConfig SF500" is implemented in the Software.

9.1 Projection

The SecuriFire Studio planning software is used for creating the project-specific programming of a fire alarm control panel. This is where the hardware configuration of the control panel is defined, the addresses and parameters of all elements (except for the SecuriFire ring circuit technology) are assigned, and the logical links are created.

This Windows-based program offers easy programming and the use of default programming, libraries, macros and programming by blocks.

The completed program is complied, prepared and transmitted to the B5-MCB15 main control board.

9.2 Loop configuration

With the help of the ring configuration, the complete addressing and parametrization of the SecuriLine eXtended ring circuit technology is centrally performed. The program also includes helpful functions for commissioning and troubleshooting.

9.2.1 Config over Line

With the help of the Config over Line function, it is possible to configure connected special fire detectors such as the ASD and ADW directly via the line. The connection is made via the SecuriFire studio and the fire detector control panel.

9.3 Object texts

The text program offers a graphical user interface for creating customer-specific texts of the individual elements. For each con-trol panel element, defined by type and logical number, any customer-specific text can be specified. The text is converted to a format (compiled) which can then be downloaded to the control panel.

9.4 Download / Upload

These functions download and upload the individual software components which are necessary for the operation of a control panel (operating program, standard text, language, customer program and customer text).

Central downloading makes it possible to download planning data on a SecuriLan via one single control panel and to distribute it throughout the entire network.

9.5 Support Wizard

At the touch of a button, the Support Wizard function enables a full summary of all of required files (project file, logs, system in-formation, licence information, event memory etc.) for 2nd level support.

9.6 Virtual MIC

The SecuriFire VirtualMIC features the same functions, control options and displays as the integrated or remote SecuriFire MIC of the fire alarm control panel. Once installed on a desktop PC or laptop the SecuriFire VirtualMIC can be connected with the fire alarm control panel via an Ethernet-based connection (TCP/IP). That way, operating the fire alarm control panel from a porter's loge or a reception desk ideally complements the existing building services.

SECURITON

10 Service tools

These programs establish an online connection to the fire alarm control panel, whether to a single control panel or a complete SecuriLan.

10.1.1 ServiceMonitor

ServiceMonitor essentially serves service and maintenance purposes as well as system diagnostics. Also, telegram filters that record certain system states can be set. In addition, in the event of a fault the user is shown relevant, comprehensive information and possible causes.

10.1.2 ServiceCenter

In the ServiceCenter you can send various commands to the control panel.

10.1.3 SystemInformation

This is where the hardware and various versions of the software in use are called up and different kinds of lists are generated (e.g. fault counter, alarm counter, fault list etc.).

10.1.4 LoopAnalysis

With LoopAnalysis you can evaluate the data of all detectors present in the system. Recordings from the data logger can also be evaluated.

10.1.5 Element DependencyAnalyser

With the help of the Dependency Analyser function, both actuation processes and activation criteria can be shown in a clear way.

10.1.6 Revisions Assistent

The Revision Wizard supports the checking of detectors and logs each trigger event. Through this, it is possible to generate a log after testing the system.

11   List of figures

SECURITON

List of figures

SECURITON

SecuriFire

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