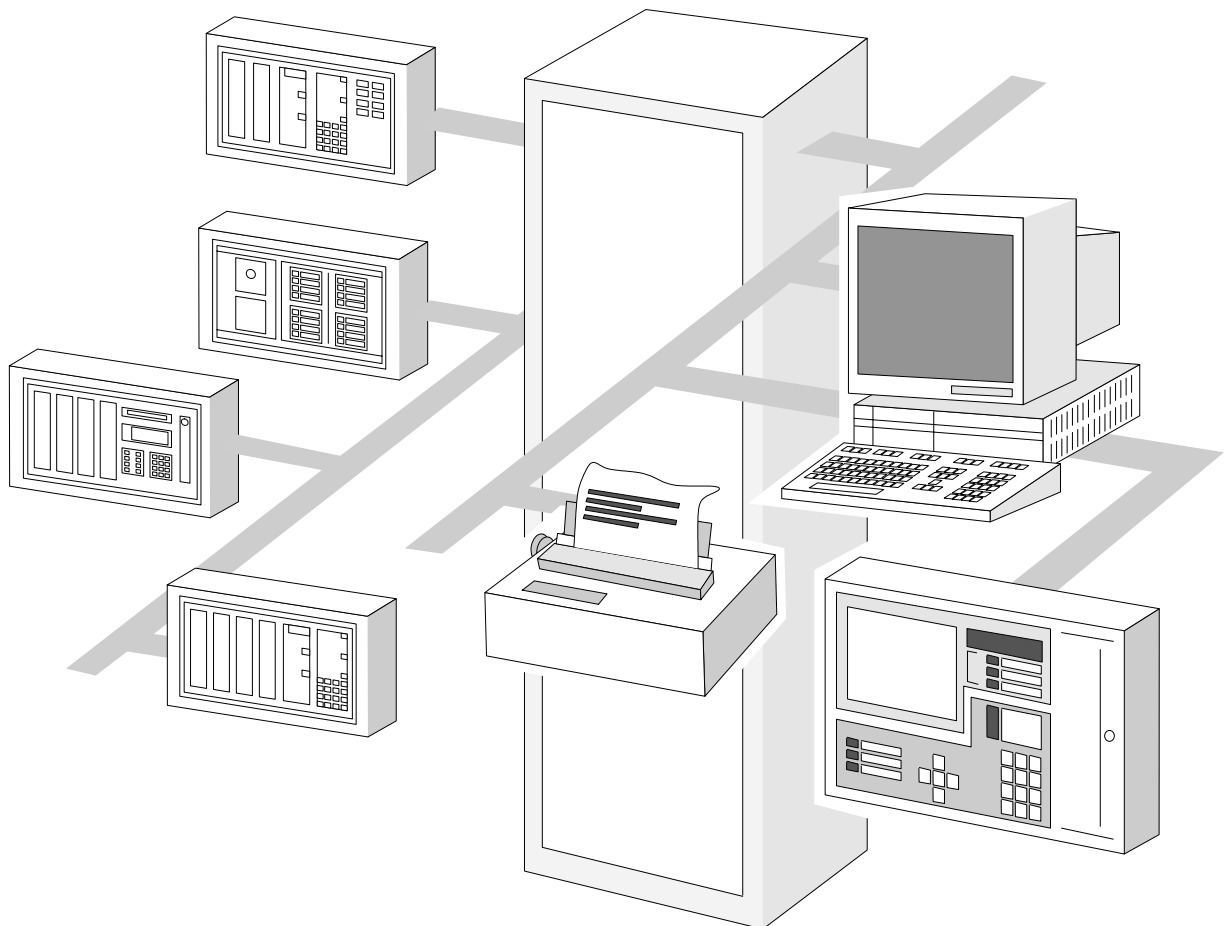


DMS 7000

DANGER MANAGEMENT SYSTEM

System Description



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1. Danger Management System DMS 7000

1.1. System purpose

The **DMS 7000** security system enables optimum danger management in modern buildings with complex structure and/or with a high concentration of people and property. It permits the realization of integral solutions to problems by unifying the various aspects of security and building management in one system. It co-ordinates the flow of data, supplies information according to predetermined priorities and in the event of an emergency, initiates countermeasures while still allowing staff to override automatic procedures.

The following functions are provided:

*** Display of alarm , fault and status messages by monitoring of:**

- detection and control elements
- peripheral devices
- power supply
- network

***Operation**

- acknowledgement and resetting of messages by function keys
- extended operation of specified events (in-depth information retrieval for selected event)
- password access to different operating levels.

***Control**

- alarm signals
- actuation of remote transmission of alarm and fault signals
- dampers, ventilation, lifts, video cameras CCTV etc.
- printout of intervention texts / dispatch orders

***Observation**

- system overview
- spontaneous events
- current system status with detailed information

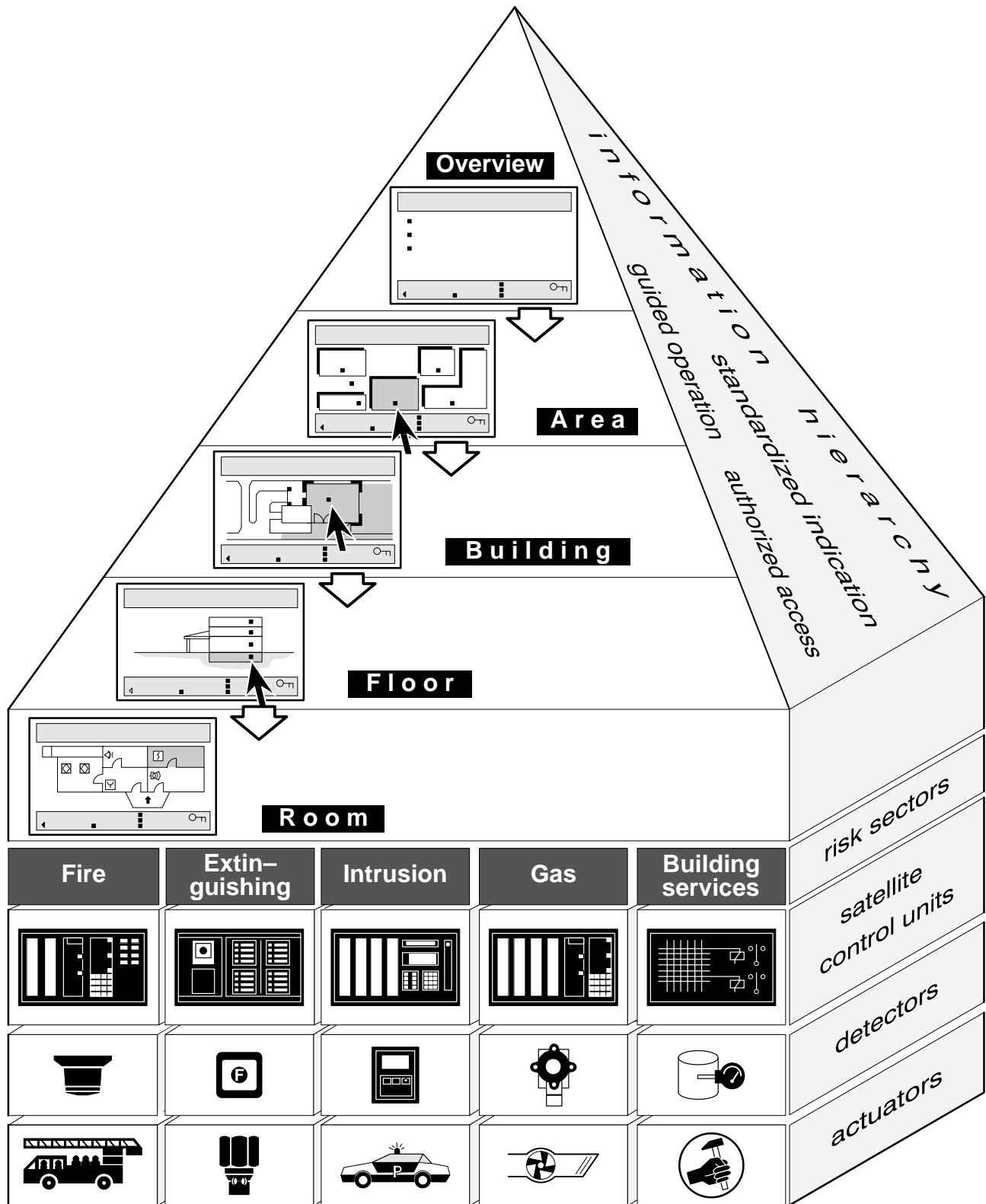
***Filing**

- recording of events
- selecting and evaluating of records

***Logging**

- chronological logging of events
- system status
- alarm causes
- evaluation and printout of recorded data

1.2. System concept



The **DMS 7000** system technology is based on the concept of distributed intelligence, i.e. various autonomous sub-systems (e.g. CZ control units) are connected via a network to the terminal system.

The satellite control units maintain their full autonomy and functional capability, **independent** of any communication network. No actual functional hierarchy exists, i.e. no master slave relationship between the satellite control unit and the terminal system. In effect, it is the satellite control units which control the **DMS 7000** network. It is not the terminal system which scans the control units, but the control units which spontaneously send out their alarm messages.

This complete autonomy of the satellite control units is the foundation stone for the comprehensive security concept within the **DMS 7000**: The local alarm operation and control functions of the control units prevent a total failure of the system, even during breakdown of the transmission lines between the sub-systems and the terminal system.

1.2.1. Risk sectors

The **DMS 7000** system is designed to handle the following so called "risk sectors":

- Fire
- Extinguishing
- Intrusion (security)
- Gas
- Building services

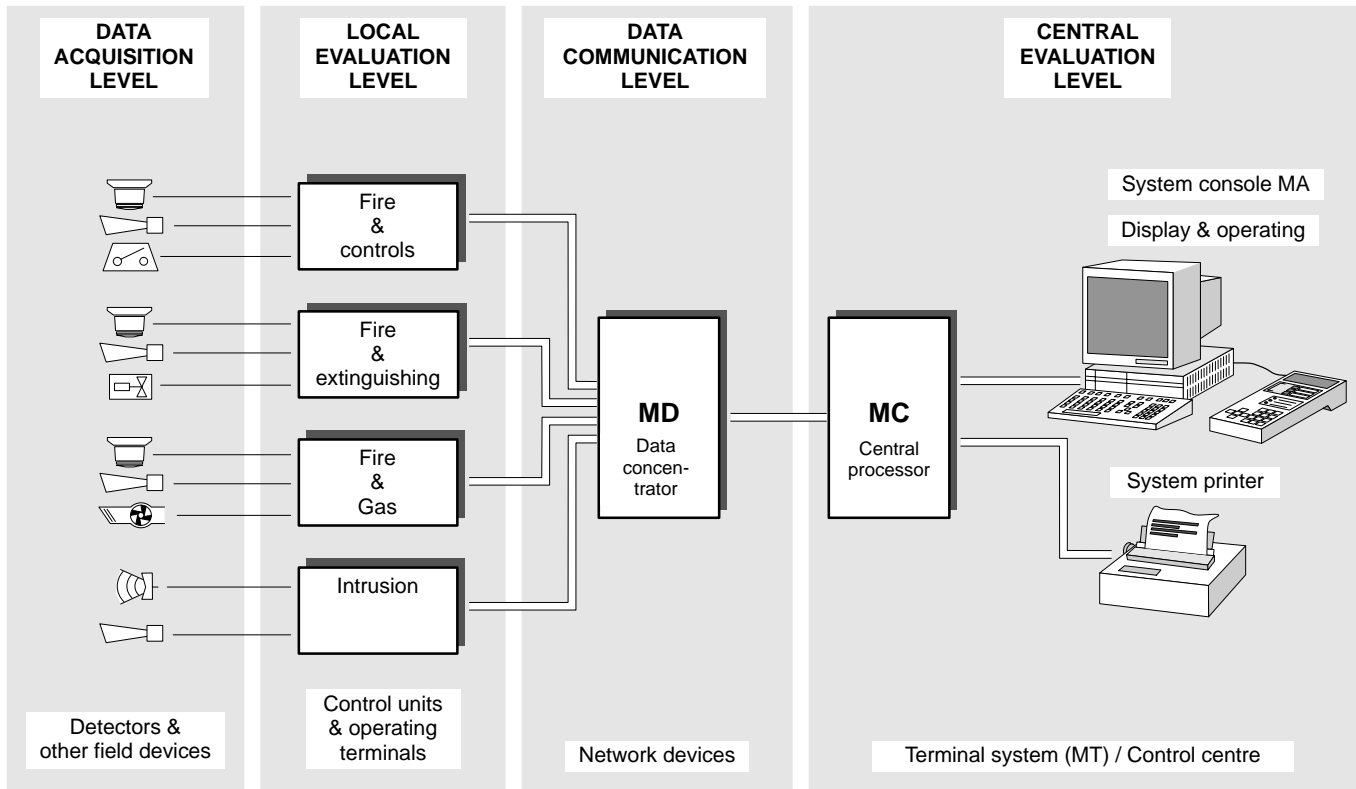
The risk sectors are mainly defined by their kind of detector sensor, by their signal display, operation and control functions and by their alarm organization.

To a certain extent several risk sectors may be combined or integrated in the satellite units. However, all risk sectors are fully integrated in the terminal system.

This fact underlines the suitability of the **DMS 7000** system for handling large and complex installations.

1.2.2. Structure of the DMS 7000 system

The *DMS 7000* system is clearly structured into 4 functional levels



a) Data acquisition level

This functional level consists of:

- automatic detectors
- manual call points
- signalling devices, contacts (signals from important technical installations)
- control elements

The individual sensors, manual call points etc. are combined in alarm zones and are connected to the satellite control unit.

b) Local evaluation level

This functional level consists mainly of the satellite control units. Together with the sensors, they form local independent sub-systems within the *DMS 7000* network.

The control units serve as the local acquisition and evaluation centres for the various sensor signals, displaying them and carrying out the required control functions.

At the same time they transmit all information to the security terminal system *DMS 7000* via their communication interfaces.

c) Data communication level

This functional level consists of the transmission path between the local control units and the terminal system.

In the **DMS 7000** system, 2 basic types of network are possible:

- Communication network **CERBAN**. Point-to-point connections between control units and the terminal system ("star" type cabling).
- Communication network **CERLOOP**. All the network participants (components) are located on a common bus ("ring or "loop" type cabling).

The application of the 2 network types depends mainly on the location and layout of the buildings (topography).

d) Central evaluation level

The terminal system is located in this functional level, with its system console and peripheral equipment for information display and hardcopy output.

The terminal system **MC ... / MA ...** collects and processes, via the communication network **CERBAN** or **CERLOOP**, all messages from the local control units.

The terminal system MT consists of at least 2 computer systems:

- The **MC ...** central processor, which manages the network and system console
- The **MA ...** system console, which controls the function keyboard, the colour monitor and the printer units.

1.2.3. System console

The system console as (man machine interface) presents the relevant information to the operator and guide him in taking decisions and in operating the system.

In an alarm situation:

- the displayed information is limited and clearly structured according to the actual requirements.
- the system offers the measures to be taken to properly deal with the situation.
- Furthermore the operator is forced to operate the system in a certain sequence by means of specially designed illuminated function keys.

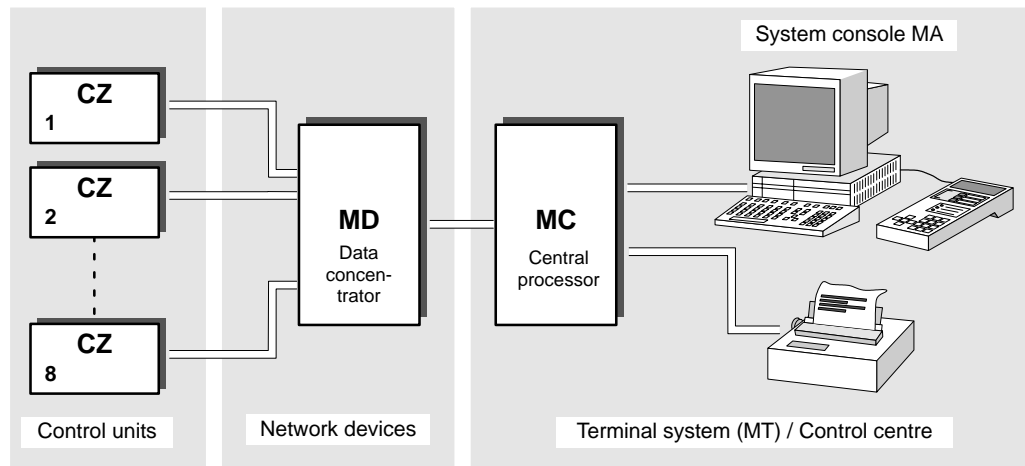
In this way the operator is fully supported by the system, i.e. at any moment he is informed about the current situation, he is supported in taking decisions and he is guided in operating the system, even under severe stress conditions.

1.3. Network configurations

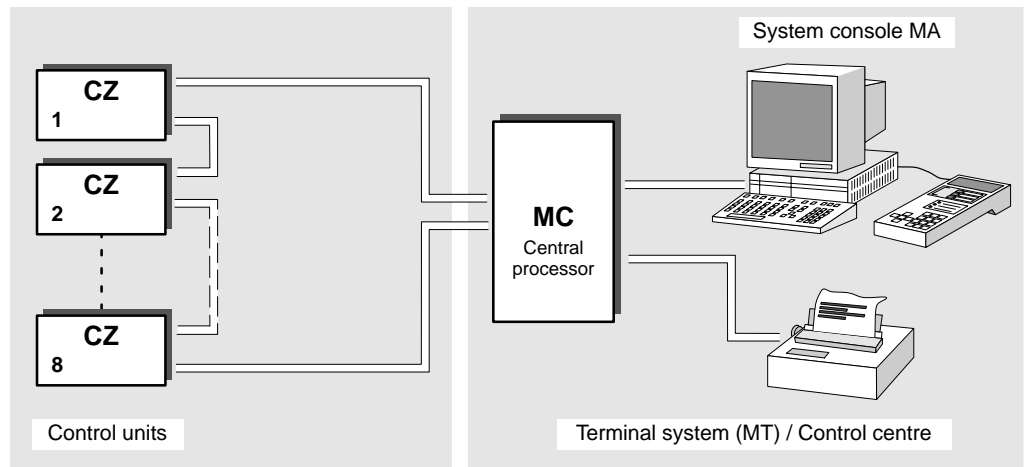
1.3.1. Network types

As already mentioned, 2 basic types of network are possible:

a) Point to point connection (CERBAN)



b) Loop connection (CERLOOP)



Both network types are fully monitored, the loop connection being specially advantageous because of its class-A wiring:

An interruption or a short-circuit of the loop cable leads to a malfunction indication on the terminal system, however through the 2 remaining stub lines the functions of the network are fully maintained.

Some of the criteria for selecting the best network type for the application are:

- Topology of the installation

As a general rule, the point-to-point network CERBAN is more suitable for installations with widely distributed buildings, while the main application of the loop network (CER-LOOP) is in compact installations or high-rise buildings.

- Flexibility of the network required
- Redundancy within the system
- Decentralized controls and display, other than those at the satellite control units
- Cable installation costs
- Existing cable routing

Within certain limits the 2 network types may be combined.

To further enhance the network capabilities, so called "**data-concentrators**" can be used, either locally (for decentralized larger buildings) or centrally, or both.

Also several types of modems are available (V24/28, FSK, PSK) for distances of up to 10km, or more.

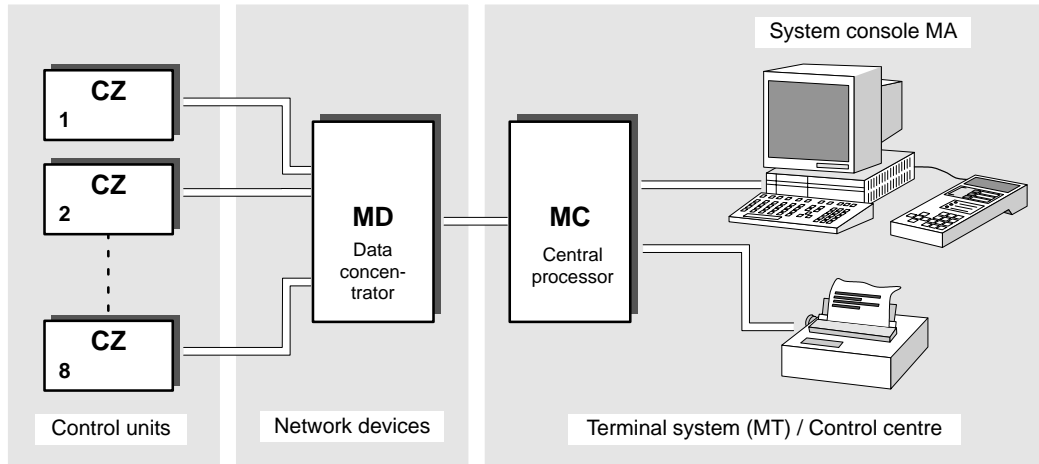
By means of the above possibilities the **DMS 7000**-System can easily be optimized and adapted to the requirement of any project.

1.3.2. Standard configurations

Based on the properties and functions of the **DMS 7000**-system as described in the previous chapters, it is possible to design a considerable number of different configurations. Several typical configurations are shown and described below.

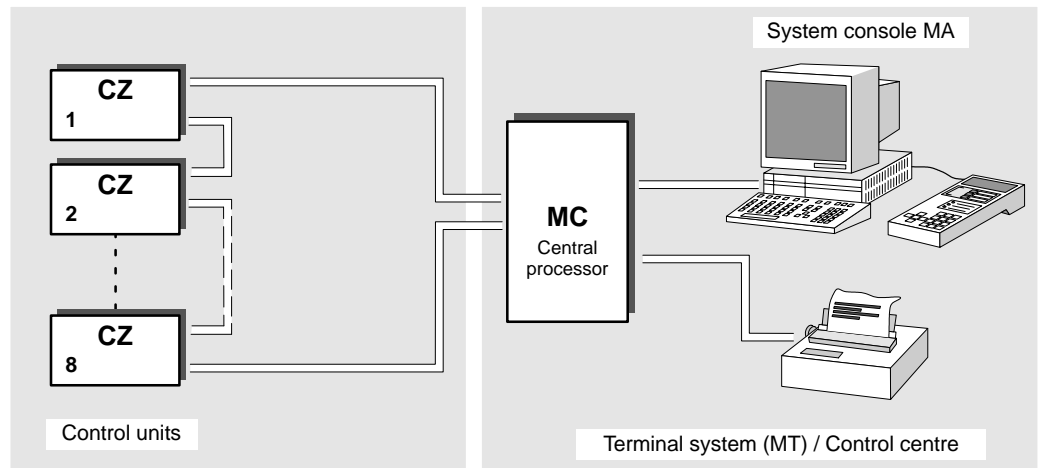
a) System size 08

Point-to-point connection (CERBAN)



Up to 8 control units CZ of any type are connected to the terminal system. This configuration is mainly used for highly decentralized installations.

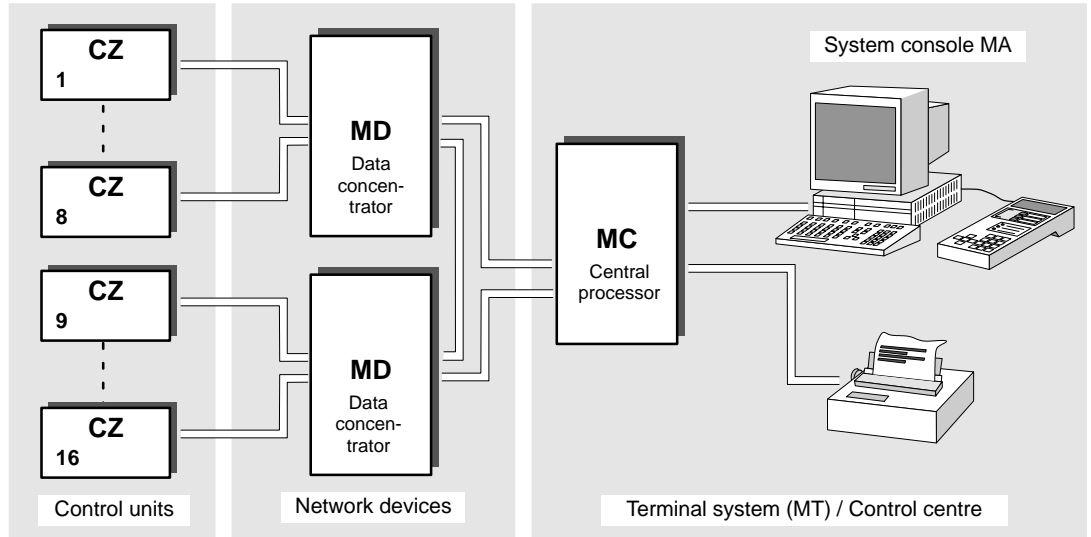
Loop connection (CERLOOP)



Again up to 8 control units CZ of any type are connected to the terminal system. This loop configuration is mainly used for high-rise buildings or other large single buildings.

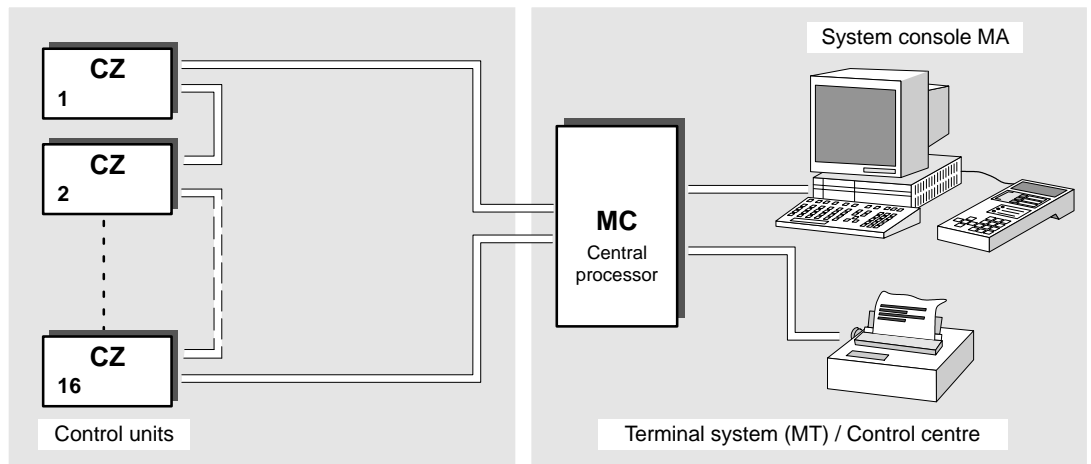
b) System size 16

Point-to-point connection



In this configuration max. 16 satellite control units CZ are connected to the system. Apart from the size, the main difference to system size 08 is the use of 2 data concentrators MD. The network between these 2 data concentrators MD and the terminal system is of the loop-type.

Loop connection (CERLOOP)



In this configuration, up to 16 CZ10 control units can be connected, otherwise it is very similar to system the 08. (Loop connection)

c) System size 32

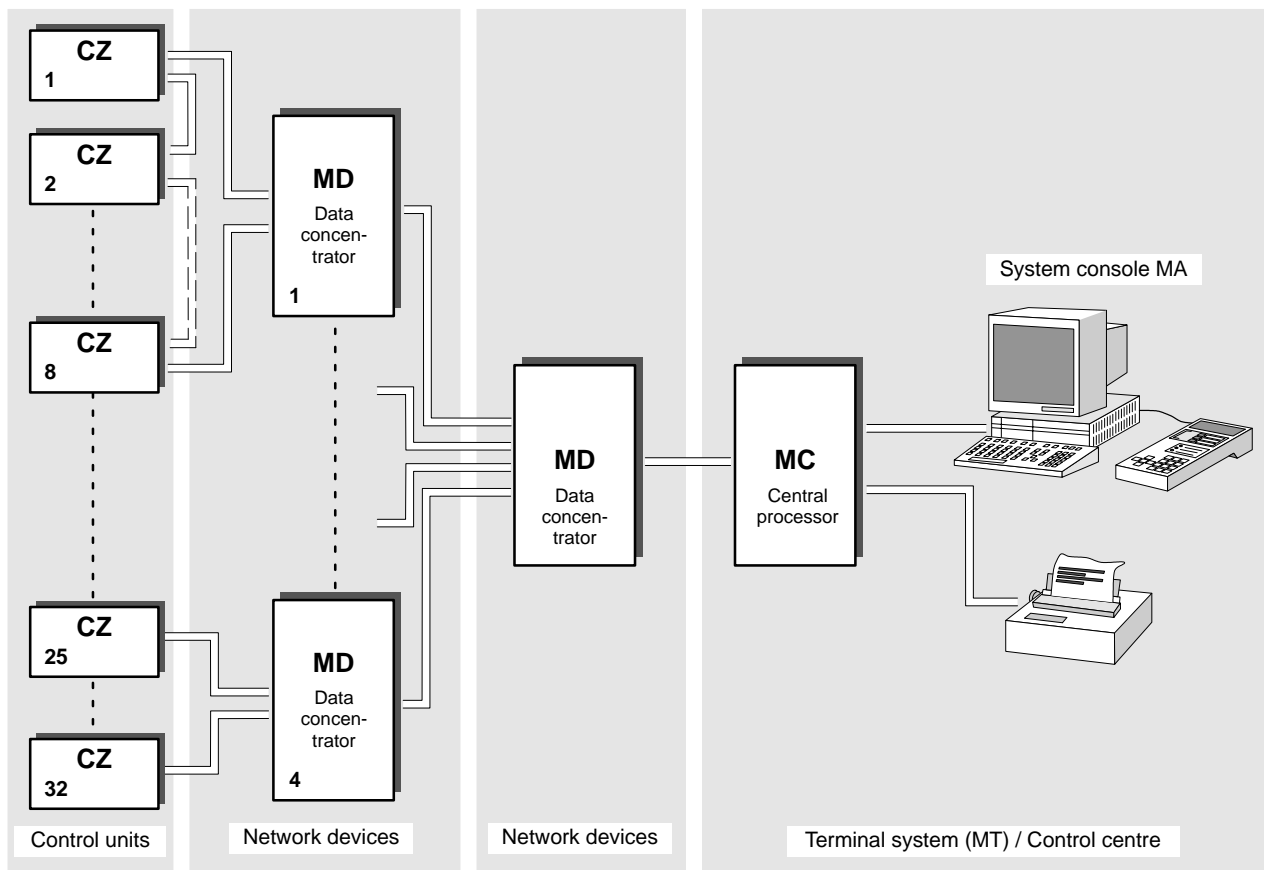
Point-to-point connection

Up to 32 control units CZ are connected to the system. The layout of the network is twice the size of system 16, using a second communication level.

Loop connection

Up to 32 control units CZ are connected to the terminal system MT via a loop network (see also system size 16, "Loop connection").

Combined network type



This is a typical example of a large and complex system, combining the 2 network types. A typical application:

4 widely separated large buildings connected to a common terminal system.

d) System size >32

Larger systems of up to 64 control units are possible, however the design of the network should be done in cooperation with **CERBERUS**.

e) Extended functions within the network

All system components described in chapter 1.4 can be connected to the network

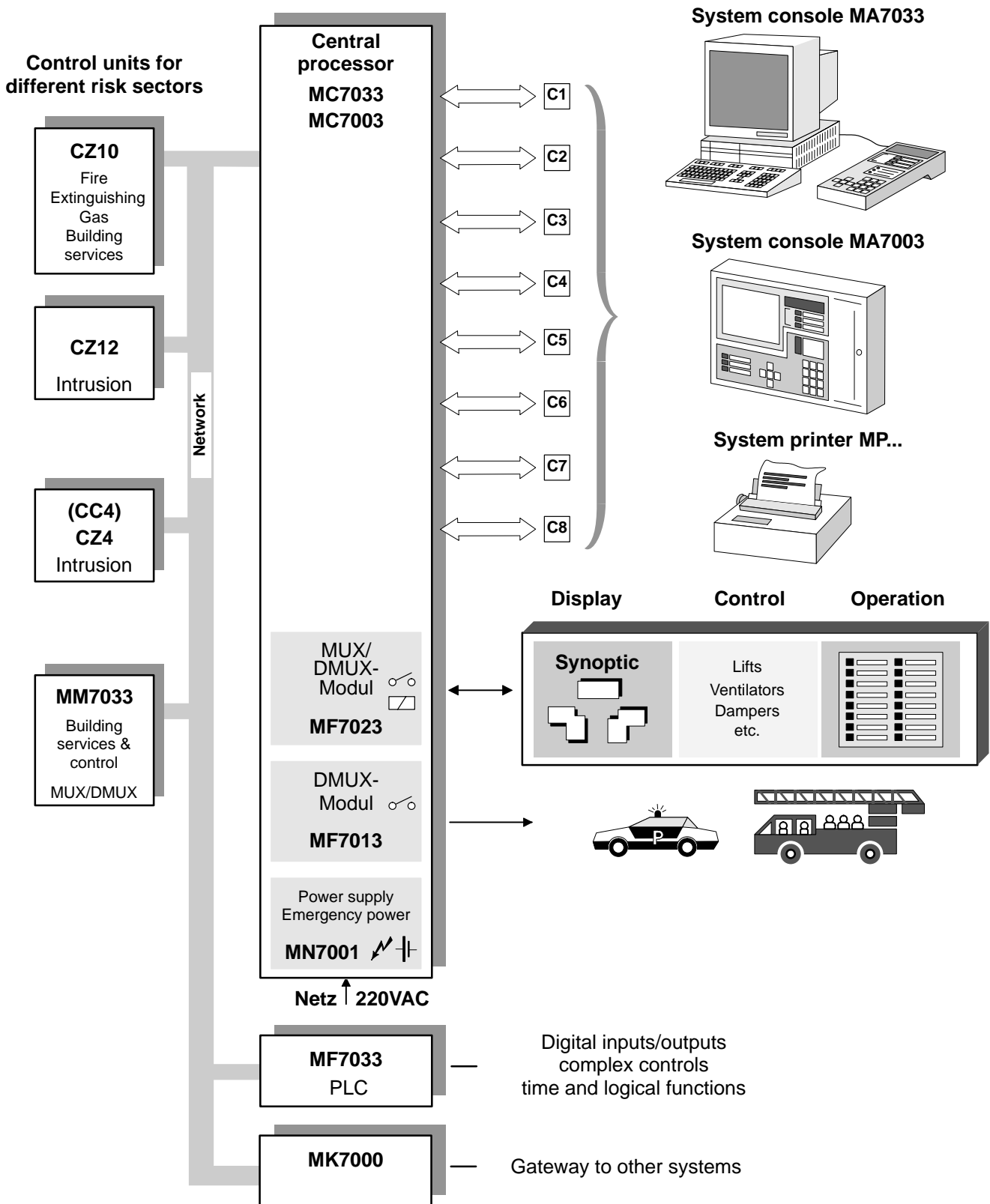
- either via (up to 3) end interfaces of the data concentrators MD (specially available for this purpose).
- or directly into the loop circuit.

It is therefore possible to have the following functions:

- System console in the terminal system for the display and operation of the whole installation as a **main terminal**
- A second system console in the terminal system working in parallel to the main terminal as a **hot stand by** (redundancy).
- A system console connected to a lower level within the network as a **local area terminal** to cover the related part of the installation.
- Decoder units to drive mimic boards either in parallel with the central station as a **redundant indicator system** or as a local area indicator.
- Multiplexer and demultiplexer units for special push button operation, for monitoring technical installations and for any kind of control functions either centrally or locally.

Danger Management System DMS 7000

System overview



1.4. Description of equipment

Features common to all equipment mentioned are:

- microprocessor technology
- serial interfaces for the communication network **CERBAN/CERLOOP**
- provision for monitoring their own emergency power supply

1.4.1. "Local Evaluation Level" equipment

The following satellite control units form sub-systems within the **Danger Management System** DMS 7000:

CZ10

danger detection system control unit handling the risk sectors:
fire, extinguishing, gas, building services

CZ1-02

multisector-extinguishing control unit offering more extensive operating features for this risk sector. Can only be connected to **DMS 7000** via a **CZ10**.

CZ4 (CC4)

intrusion detection system control unit for medium size security/burglary installations

CZ12

intrusion detection system control unit for large security/burglary installations

MM 7000

MUX/DEMUX satellite control unit for digital monitoring and control of technical or fire protection installations such as: dampers, fire doors, smoke vents, water level monitoring, and as an interface to non-**CERBERUS** control units etc.

- extendable in steps of 48 inputs/outputs up to max. capacity of **528** (or **2500** element definitions)
- logical allocation of inputs/outputs
- risk sector allocation (fire, extinguishing, intrusion, gas, building services) of inputs/outputs

1.4.2. "Data Communication Level" equipment

MD 7000

data concentrator for data acquisition from satellite control units is used upon system extension in the **CERBAN** network configuration and optimisation of the network based on topographical conditions of the buildings to be protected.

- extendable in steps up to 8 front and 4 end interfaces

1.4.3. "Central Evaluation Level" equipment

MF 7000

MUX/DMUX (Digital PLC) programmable logic controller unit offers a wide range of applications:

- indicating panels, synoptical viewboards
- actuation of functions in the control units on the "Local Evaluation Level"
- complex fire control installations
- extendable in steps of 48 inputs/outputs up to max. capacity of **528**; (or **2500** element definitions)
- logical and sequential functions, timer
- event-controlled functions
- risk sector allocation (fire, extinguishing, intrusion, gas, building services) of inputs/outputs

MC 7000

central processor for central monitoring and control of the danger management system. Two different sizes are available :

- a) The **MC 7003** with 4 end interfaces and **4'000** node names
- b) The **MC 7033** with 8 end interfaces and **52'000** node names

- handling of all risk sectors
- processing and monitoring of all signals to and from the satellite control unit as well as to the man-machine interfaces
- preselectable ports (end interface) for different devices and types of information (matrix programming)
- assignment of system consoles, printers, graphic display panels etc. to one or more risk sectors
- event logging and recording
- event-controlled functions
- programmable input/output functions (MUX/DMUX)
- front interface

MA 7000

system console for information display and guided operation of the danger management system. Two system consoles are available:

- a) The **MA 7003** with alpha numeric Liquid Crystal Display (LCD)
 - accurate display of alarm location and operating states in plain language
 - presentation of geographical information in the common way as room, floor, building and immediate location
 - standardized operating sequence and display modes

- dialogue operating by flashing menus and instructions
- cursor control, dedicated function keys for basic operation and numeric key pad
- serial interfaces for logging printer and keyboard for modifying user text

b) The **MA 7033** with the additional features of colour graphics.

- dialogue operating by colour-coded menus and instructions
- graphical presentation of topological information such as location, building and floorplans

1.4.4. High level system interface

MK 7000

interface device for non-**CERBERUS** systems. The gateway **MK 7000** is a "bit serial" device which allows interfacing with any computer by the following features:

- bidirectional connection (full duplex)
- programmable message filter
- standard protocol DIN 66019, ISO 1745

1.4.5. Emergency Power Supply

MN7000

Power supply 220VAC / 24VDC

with integrated battery charging device

- uninterrupted emergency power upon power failure
- monitoring of input/output voltage
- protection against mains faults
- protection against batteries over-discharging