**Simplex 4120 Network:**

The Simplex 4120 Network is a microprocessor based fire alarm control panel, which is used to detect the fire location by using the latest in life safety technology. In addition, this system can control up to 512 points. The basic (simplex 4100 microprocessor fire alarm control panel) contains 8 initiating device circuit, 2 indicating appliance circuits, 2 auxiliary alarm relays, remote interface board for local annunciator, trouble relay and a configurable city notification circuit. Also, it contains a master controller board, field wiring termination module, 80 character alphanumeric display, power supply and enclosure. Moreover, the 4120 network communicates information among distributed simplex fire alarm control panel. Each panel maintains the status and control of its own dedicated circuit points while monitoring and controlling activity at other location. System maybe composed of similar capability panels sharing information or specific nodes may be added to perform dedicated network

**The simplex panel consists of:**

- **Operate interface panel:** To indicate the condition of the system and shows various prompts which used to guide the user through a sequenced operation for each abnormal condition (see next page). To add more, this display panel can indicate the abnormal condition by: flashing the alarm, supervisory, trouble LED and sounding the tone-alert. It also provides information as to the point status, and type of alarm

- **24-point Graphic I/O interface module:** It allows up to 24 inputs or outputs to be programmed and connected to the system. It can be split up into any combination of the two I/O to meet customer requirements. In addition, it can be located in either local master panel or any remotely, it also can provides graphic interface for both lamps and switches, and it is originates from 2 to 3-position switches with supervised or unsupervised point-wire

- **(2190-9172) Individual Addressable Module (IAM):** It used to provide location specific address ability to a single initiating device or multiple devices. It has both power and its communication supplied.

- **4100+ Master Controller:** It is basically a re-design of he original master controller. It includes: monitor zone, signal circuit 1 & 2, auxiliary relays, city alarm relay and system trouble relay. It used also a faster micro controller and flash PROM.
- 4100 + UT Master Mother board: it is a 2 inch motherboard that provides two PC sockets (J1, J2) to connect daughter boards, one of which always the master controller card. The second socket used for (2120/Rs232) interface card
- 4100 + UT Power supply: is a switching power supply. It can provide up to 8 amps of power at 24 VDC for loads devices and system operation plus up to 4 amps for battery charging. It also has an address and communicates directly with the master controller
- 4120 Network communication interface card: it is a (4100-slave card), which has two network ports. Each port provides half-duplex communication in a (RS485) format to the adjacent nodes it is connected to. The rate of communication is a 57.6 KBPS
- MAPNET-II: it allows use of addressable devices and True Alarm sensors with the (4100) system. In fact, each map net channel can allow for 127 devices to connect. The addressable device communicates the exact location of an alarm to the system panel which improves recognitions of the condition

**The Node:** in each panel with direct communications into the (4210) network is defined as a node, and it can be a full function 4210 series fire alarm control panel, or 4120 network display unit5. The network information a retransmitted form one node to another, where in each node the message is captured and either retransmitted as. If the node goes off-line, short or open, the nodes will isolate and by bypass that connection.
Area Control Panel 2 (Simplex)

Operate interface panel
trouble LEDs
Device Line Isolator (DLI)

nodes
from Detectors

Marshalling box

to MapNet
Minimax:

The fire fighting control system delivered by Minimax is designed to warn personal and automatic activation of CO2 gas or water spray extinguishing system. It protects the corresponding areas. In addition, these panels are connected to the gas turbine control system, the HVAC (Heat Ventilation AC) control unit and in direct to the main control system. It has the following functions:

- Collective fire alarm transmission
- Transfer of fire alarm signal to the HVAC control unit for shutdown of HVAC and fire dampers
- Actuation of the water spray systems
- Actuation of CO2 extinguishing

The fire detection system (simplex) is provided for early identification of fire and/or fire by – products (smoke, gas). If only a signal alarm from one detector is active, this gives the signal “pre-alarm”. If two detectors “fire” the fire detection system (simplex) sent this signal “fire”. In this case, the fire fighting control system (Minimax) starts extinguishing. This extinguish start also if the manual release (MR) is activated

Minimax modules (see next page):

The central fire detection system (FMZ4100) is a microprocessor-controlled and programmable early warning fire detection system and control groups, as well as for controlling extinguishing systems. The groups are concentrated on line cards. In addition, all plug-in cards have DIN card and connected to the motherboard containing all power supply lines and bus connections. The basic line card contains: 4 groups for connecting fire detectors, 4 groups contacting detectors, 4groups primary control groups.

- Master module: contains 8 subgroup cards, serial interface card and relay control card, process or bus, and detector control. Moreover, the master module is equipped with all the control units necessary for communication with the subgroup modules, these include the central processor; keyboard drive, real timer, and LCD display drive. It can manage up to 32 subgroup modules.

Subgroup module: it’s similarly to the master module, consist of plug-in unit with a motherboard and can equip with 8 lines card. The slots of the
processor bus contain the processor card and the master interface card for communication with the master module

- Subgroup card: it takes over communication between the master module and the subgroup modules. The master module can manage up to 8 subgroup cards and in each subgroup card there is 4 subgroup modules can be connected. Also there are other modules like master interface card, and relay cards.

In the Minimax display panel there are many options for controlling purpose:

- Reset button (by pressing 2 button at the same time)
- Enabling/disenabling Minimax lines
- Buzzer off
- Timer
- Lamp test

**Minimax Interface Connection**

![Minimax Interface Connection Diagram]
Miniplex Panels (see next page):

There are 18 Miniplex panels located throughout the site, which connect directly with an area control panel. It controls the sending and the receiving status between the fire detection (simplex), and the fire extinguishing system (minimax). In addition, the Miniplex panel consists of various numbers of cards such as: power supply unit, which is addressable and intelligent, relay cards, and monitoring cards and others. The most commonly Miniplex card are: Miniplex control card, Auxiliary Relay card, S.ZAM, and zone card address.

Mimic Panels (see next page):

There are three Mimic panels located in the: (UBA), fire station, and gate house building. The central monitor panel controls these panels. It consists of geographic layout of the site above the ground level, and below.