



## System 57 5704F Control System

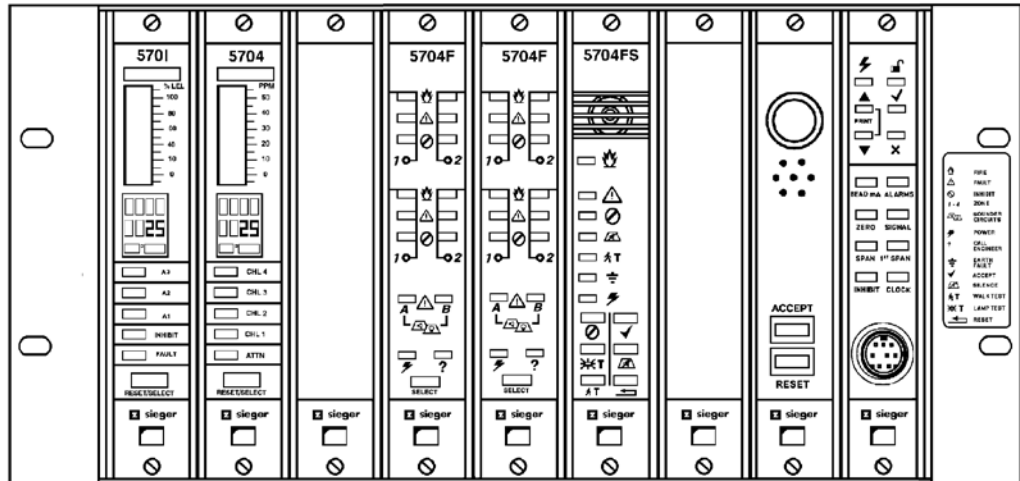
# CHAPTER 2 - SYSTEM DESCRIPTION

## 2. RACKS

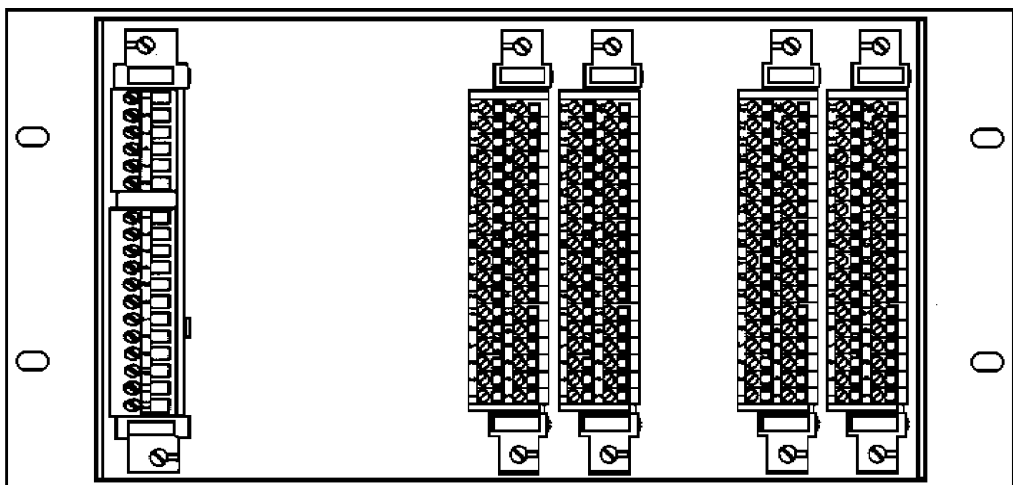
Each rack assembly contains a sub-rack, Engineering Card, DC Input Card, key kit and where necessary an interconnecting cable.

Dependent upon configuration, the control system is housed in one of four standard size sub-racks as follows:

- a. Full 19 inch wide by 3U high - Part Number 05701-A-0511, for rear field wiring connections.
- b. Full 19 inch wide by 6U high - Part Number 05701-A-0501, for front field wiring connections.



Typical Eight Card Rear Access Rack - Front View

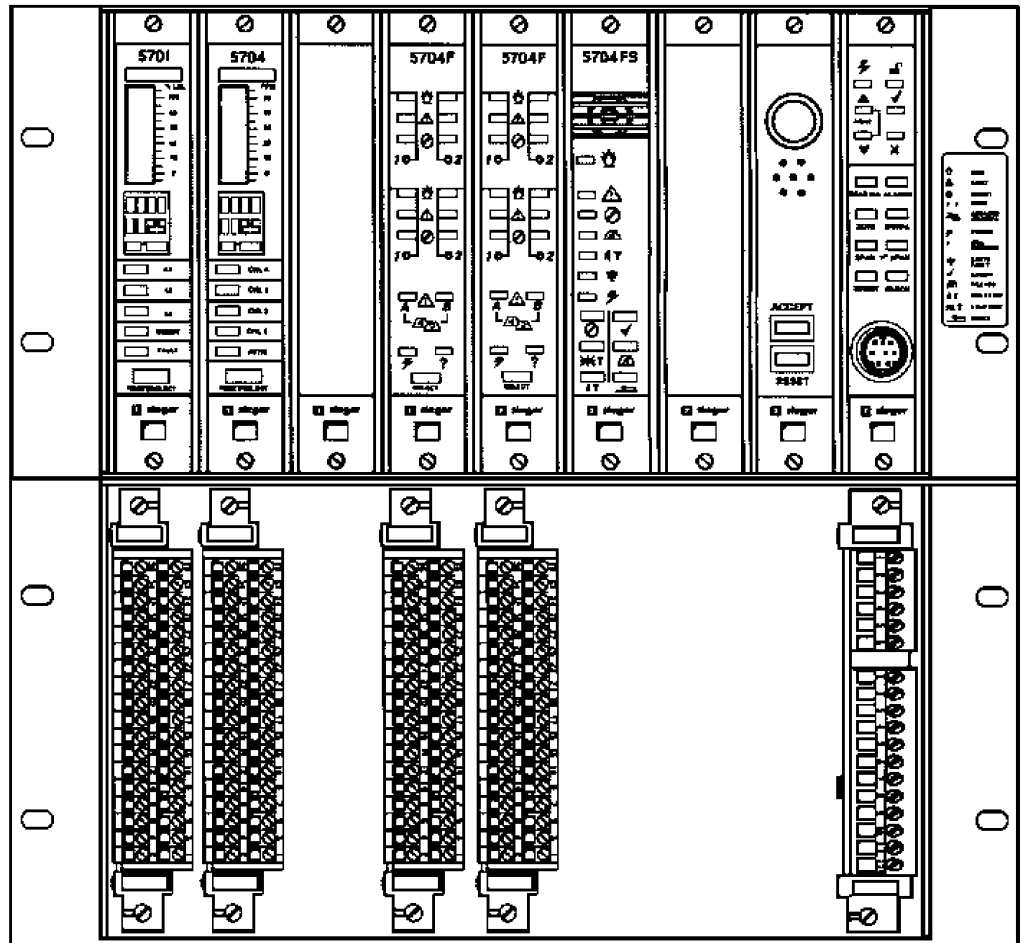


Typical Eight Card Rear Access Rack - Rear View

## CHAPTER 2 - SYSTEM DESCRIPTION

- c. Half 19 inch wide by 3U high - Part Number 05701-A-0512,  
for rear field wiring connections.
- d. Half 19 inch wide by 6U high - Part Number 05701-A-0502,  
for front field wiring connections.

All four versions have two separate chambers. One is sealed against electromagnetic interference and contains the control cards while the other chamber contains the relay interface cards. A backplane between the two chambers provides a path for signal routing between individual control cards and the Engineering Card.



Typical Eight Card Front Access Rack  
(Relay/Interface Chamber Front Cover Removed)

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## CHAPTER 2 - SYSTEM DESCRIPTION

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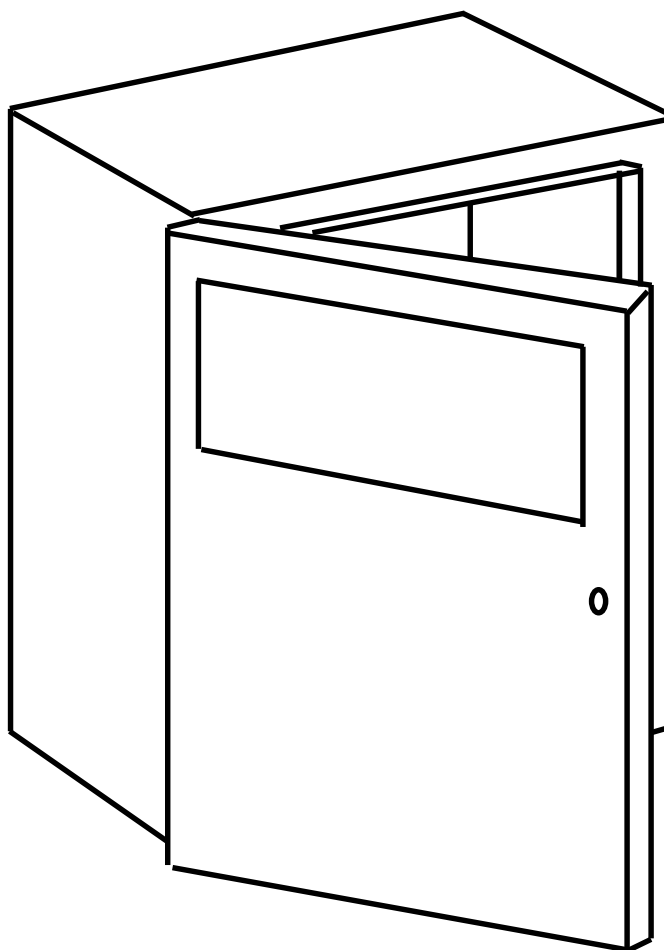
### 3. CABINETS

Two wall mounted cabinets are used to house:

- a. the full width 16 card front access rack,  
(Part Number 05701-A-0451)
- b. or the eight card half width front access rack.  
(Part Number 05701-A-0452)

A front door on each cabinet provides security and dust protection, while a clear panel in the door allows the channel card displays to be viewed when the door is closed. The base of each cabinet contains a selection of preformed knockout cable gland entries. A removable plate is fixed to the inside of the cabinet for mounting accessories.

#### Cabinet



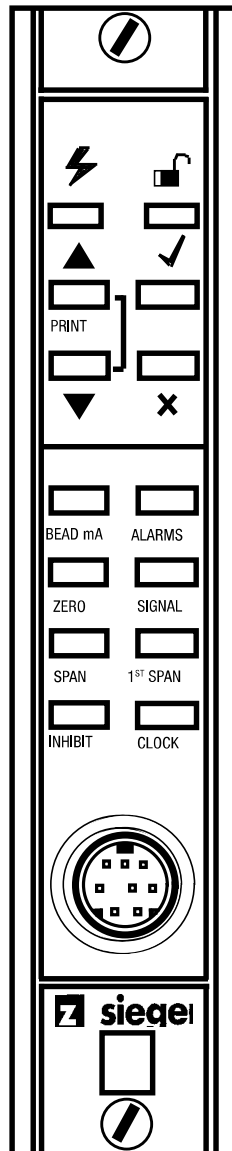
## CHAPTER 2 - SYSTEM DESCRIPTION

### 7. ENGINEERING CARD (PART NUMBER 05701-A-0361)

The Engineering Card is used in conjunction with the Fire Status Panel on a System 57 rack to provide a common interface that enables the user to perform all the required functions to commission and operate each fitted control card.

The front panel is fitted with a series of tactile push-buttons for the operation of various functions, LEDs to provide rack power and communications status and a mini DIN socket for the connection of a serial printer, computer or an engineering key. The Engineering Key is used to unlock functions that can alter the operation of a control card.

The Engineering Card is always fitted into the right-hand slot of the rack and provides:



- a. Routing of the 24V dc input from the DC Input Card to the backplane of the rack.
- b. A backplane serial communications controller and monitor.
- c. A time and date reference.
- d. An RS232 external engineering interface.
- e. Depending upon the security level, the operation of the following rack facilities:
  - Catalytic sensor head current monitoring and adjustment.
  - Alarm set point checking, adjustment and testing.
  - Sensor signal zero adjustment.
  - Sensor signal span adjustment and setting of sensor life monitoring values.
  - Sensor line monitoring.
  - Enabling of control card alarm inhibit.
  - Checking and adjustment of the system clock.
- f. Self validation of the operation of its circuit components, software operation and the backplane communications.
- g. A socket for the addition of special modules that expand the System 57 capabilities.

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## CHAPTER 2 - SYSTEM DESCRIPTION

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### 8. DC INPUT CARD (PART NUMBER 05701-A-0325)

#### 8.1 General

The dc power to the rack can enter the sub-rack via the DC Input Card. This power may be supplied by the user from an external nominal 24V dc supply. The dc supply is routed through the Engineering Card and sub-rack back plane to all cards in the rack and is protected by a fuse on the DC Input Card. There is a two part terminal block, TB1, to aid removal of the card without disconnecting each of the connected wires.

It is necessary to limit the current flow along the rack backplane to 8A. In installations where large number of cards are used or high power sensors are supplied from the rack, it is recommended that the Control Cards are powered via their associated Relay Interface Cards and the DC Input Card is used to power the Engineering Card only.

If required, a stand-by backup battery supply may also be connected to the auxiliary dc input connections.

The PSU and AUX connections are isolated from each other by diodes.

The DC Input Card also provides RFI filtering and reverse polarity protection.

In addition, the DC Input Card provides an interface to the Engineering Card plug-in modules via TB2. The functions of the six terminals will vary dependent upon the module fitted. For full details refer to:

- a. 05701-M-5006 System 57 Control System  
Modbus Interface Option RS485/422
- b. 05701-M-5007 System 57 Control System  
Event Printing Option RS232
- c. 05701-M-5009 System 57 Control System  
Alarm Update Option

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# CHAPTER 2 - SYSTEM DESCRIPTION

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## 9. AC TO DC POWER SUPPLY UNITS

### 9.1 Types of Power Supply Unit

There are two types of AC to DC power supply units:

a. 8-Way AC to DC Power Supply Unit (Part Number 05701-A-0406)

A 1U high half width 19 inch rack mounted unit that contains a single 50W Switched Mode AC to DC Power Supply Module.

b. 16-Way AC to DC Power Supply Unit (Part Number 05701-A-0405)

A 1U high 19 inch rack mounted unit that contains a single 50W Switched Mode AC to DC Power Supply Module.

Both power supply units will operate from an 85V to 264V, 47Hz to 440Hz ac supply, or a 110V to 340V dc supply (Refer to Zellweger Analytics for information on dc supplies).

### 9.2 Power Supply Unit Upgrades

Both power supply units are provided with internal connections to enable a power upgrade to 100W by the addition of a second 50W Switched Mode AC to DC Power Supply Module (Part Number 05701-A-0440).

A second sub-unit (Part Number 05701-A-0441) can be fitted to the basic 16-way power supply unit if more than 100W is required to operate the system. The additional sub-unit will contain a 50W Switched Mode AC to DC Power Supply Module as standard and will therefore give an additional 50W of available power. If required a further 50W Switched Mode AC to DC Power Supply Module (Part Number 05701-A-0440) can be added to this second sub-unit to bring the power availability up to 200W.

The switched mode power supply modules used are fully overload protected and are designed to be connected together.

### 9.3 Power Supply Connections

The input ac power supply is connected via a three core cable at the rear of each unit.

The nominal 24V dc output supply is connected via a twin core cable at the rear of each unit.

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# CHAPTER 3 CONTROLS AND FACILITIES

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## CAUTION

The card fault LED may indicate a serious fault on the card which should be investigated thoroughly and if necessary the control card should be replaced.

c. Channel De-select

The **SELECT** push-button, when pressed momentarily while any zone of the control card is selected, deselects the control card from the Fire Status and Engineering functions.

### 4.4 Extraction Slot

An extraction tool is used in conjunction with the extraction slot, just below the **SELECT** push-button, to remove the card from the rack. The extraction tool is provided as part of the key kit (05701-A-0550) supplied with each rack assembly.

The card is removed by first unscrewing the two securing screws, one at the top of the card and the other at the bottom of the card, and then hooking the extraction tool into the extraction slot and then gently pulling the card out of the rack.

## WARNING

Under certain fault conditions some electrical components on the fire Control Card may become very hot. Take appropriate handling precautions and allow time for the card to cool before packing

### 4.5 Fire Card Facilities

The following paragraphs provide an overview of the various facilities provided by the fire control card.

#### 4.5.1 Fire Zone Inputs

The fire zone inputs generate the necessary signals to drive four independent fire detection circuits. Each zone is powered from the system dc supply but voltage limited to +24V maximum to protect the detectors. The zone supply is not isolated from the system 0V. Depending upon cable length each zone is capable of supporting up to 20 low quiescent detectors and almost unlimited manual call points. Every zone is monitored for four operating conditions and each has a configurable signal band. The zone conditions and default signal bands are as follows:

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# CHAPTER 3 CONTROLS AND FACILITIES

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## WARNING

Fire conditions generated during walk test will cause the switched and voltage free outputs associated with this zone to be activated for at least five seconds.

*Note: The Engineering Key must be fitted before this function can be initiated and is NOT cancelled by removal of the Engineering Key.*

b. Inhibit



When pressed, toggles the selected zone between the non-inhibit state and the inhibit condition. When inhibited, the fire and fault conditions are displayed visually on the individual channel indicators but are suppressed in any local or multi-card output function, and from the common fire status panel indication. When the inhibit condition is switched off an automatic reset condition will occur on the selected zone.

*Note: The Engineering Key must be fitted before this function can be initiated and is NOT cancelled by removal of the Engineering Key.*

c. ▲ or ▼

When used individually, changes the selected zone on the selected fire card.

d. ▲ and ▼

When both ▲ and ▼ are pressed at the same time, prints the selected cards configuration details via the Engineering Card front panel serial port.

A summary of Fire Status Panel controls, maintenance functions and remote inputs is given in Table 1.

### 5.5 Extraction Slot

An extraction tool is provided as part of the Key kit (05701-A-0550) supplied with each rack assembly. This is used in conjunction with the extraction slot, just below the **SELECT** push-button, to remove the card from the rack.

The card is removed by first unscrewing the two securing screws, one at the top of the card and the other at the bottom of the card. The extraction tool is then hooked into the extraction slot and the card gently pulled out of the rack.

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## CHAPTER 4 INSTALLATION INSTRUCTIONS

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- (2) Ensure adequate support at the rear of rear access racks.
- (3) Prepare and connect the cable ends to the Interface Card terminals. For terminal identification see Chapter 2. Where possible keep the detector and sensor cables separate from the other wiring.
- (4) Ensure that the rack is properly earthed by connecting a suitable earth cable to the earth stud located at the rear of the rack.



### CAUTION

Do not apply power to the System 57 until the commissioning procedure has been read and understood. See Chapter 5.

## 11. DETECTOR INSTALLATION

### 11.1 General

Always install the detectors in accordance with the manufacturers instructions.

In general, detectors for smoke and heat should be located at a high level.

Do **NOT** install the detectors:

- a. Where the normal air flow may be impeded.
- b. In corners of rooms where static air pockets may exist.
- c. Near sources of heat such as convector heaters.

**DO** install the detectors:

- a. In accordance with the detector manufacturers instructions.
- b. As close as possible to potential sources of fire in order to give the earliest possible warning.
- c. So that the number of zones and zone size is appropriate for the installation to be protected.
- d. So that they are accessible for maintenance work.

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# CHAPTER 5 COMMISSIONING AND MAINTENANCE INSTRUCTIONS

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## CONTENTS

Section	Page	
1.	General	5-3
2.	Start Up Procedure	5-3
3.	System Check	5-5
4.	Maintenance	5-6
5.	Error Codes	5-8
	5.1 Power Up Self Test Errors	5-8
	5.2 Background Self Test Errors	5-9
	5.3 Input and Output Self Testing	5-10
	5.4 Power up And Self Test Error Summary	5-10
6.	FAULT FINDING	5-20

# CHAPTER 8 ORDERING INFORMATION

