S/390

IBM

Operator Panel Reference Summary for the 9032 Model 5 Director

Contents

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About This Publication

This publication includes a summary of key user reference material for the IBM 9032 Model 3 Enterprise Systems Connection (ESCON®) Director Console, 9033 Model 4 ESCON Director Console, and 9032 Model 5 Director Console.

Who Should Use This Publication?

This publication is intended as a quick reference summary for Director Console operators and service personnel.

Where to Find More Information

The following publications provide information to help plan for, use, and maintain the Director and Director Console:

- *Using the 9032 Model 3 ESCON Director, 9033 Model 4 ESCON Director, and 9032 Model 5 Director* (SA22-7296).

- *Console Installation and User's Guide: 9032 Model 3 ESCON Director, 9033 Model 4 ESCON Director, 9032 Model 5 Director, and 9037 Model 2 Sysplex Timer* (GA22-7291).

- *Maintenance Information for the 9032 Model 5 Director* (SY28-1158).

- *Planning for the 9032 Model 5 Director with FICON Converter Feature* (SA22-7415).

- *User's Guide Reference Summary for the 9032 Model 3 ESCON Director, 9033 Model 4 ESCON Director, and 9032 Model 5 Director* (SA22-7298).

Introduction to the 9032 Model 5 Director

The 9032-005 Director (Figure 1) provides connectivity and dynamic switching between Enterprise Systems Connection (ESCON) or Fibre Connection (FICON™) channels and ESCON control units and converters.
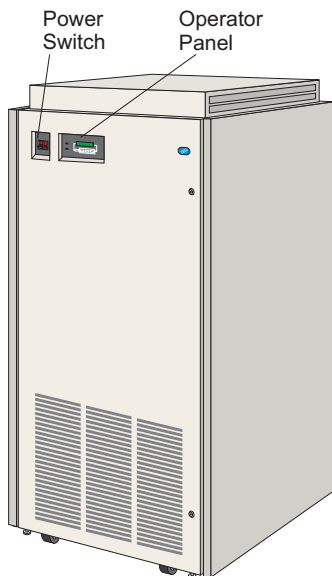
Figure 1. 9032-005 Director

The Director provides:

- Redundant logic cards that allow concurrent maintenance and continued operation if a hardware or software incident occurs.

- Director Console application software that accommodates up to 16 units in a cluster. The units can be a combination of up to 16 Directors or 14 Directors and two 9037 Model 2 Sysplex Timer networks.

- Self-monitoring with a operator panel status display that shows Director operational status and the occurrence of incidents.

ESCON-Only Operation

When configured for ESCON-only operation, the Director contains a minimum of three device port (DVP) cards (24 external ports) and a maximum of 31 DVP cards (248 external ports). Each DVP card provides eight light-emitting diode (LED) ports or eight extended distance feature (XDF) laser ports. Up to 124 simultaneous internal connections (two ports per connection) are possible when each external port attaches to an ESCON channel or control unit, 9034 or 9035 Converter, or another ESCON Director.

FICON Converter Feature

Fibre Channel converter (FCV) port cards can be ordered and installed in the Director as optional FICON converter features. Each FCV port card provides one FICON port connection that provides a link attachment to an IBM System/390® (S/390®) Generation 5 (or later model) Parallel Enterprise Server™.

The Director supports the installation of one to 16 FCV port cards. The remaining port cards must be ESCON DVP cards (LED or XDF laser). An increase in physical FICON connections results in a corresponding decrease in physical ESCON connections. With the minimum or maximum number of FCV port cards installed, the number of connections are as follows:

- If no FCV port cards and 31 DVP cards are installed, the Director supports 248 external ESCON connections.

- If one FCV port card and 30 DVP cards are installed, the Director supports one external FICON connection and 240 external ESCON connections.

- If 16 FCV port cards and 15 DVP cards are installed, the Director supports 16 external FICON connections and 120 external ESCON connections.

The FCV port card provides a function that multiplexes and converts eight ESCON channels into one FICON channel. Therefore, the single FICON device port on the card maps to eight internal ESCON ports on the same card. The FCV port card is a converter between a FICON server and ESCON peripherals.

Operating Environment

The Director operates in the following physical environment:

- **Temperature:** 4.4° to 40.5°C (40° to 105°F).

- **Humidity (noncondensing):** 10% to 80%.

- **Maximum Wet-Bulb Temperature:** 23°C (73.4°F).

- **Altitude:** up to 3,048 meters (10,000 feet).

- **Voltage:** 180 to 264 volts alternating current (Vac), actual operating voltage.

Operator Panel

The Director operator panel (Figure 2) includes a:

- **Power Indicator** - The Power indicator is an LED that illuminates when power is supplied to the Director.

- **Status Display** - The status display is a liquid-crystal display (LCD) that shows status and event messages on two 16-character lines.

- **IML Button** - Pressing the initial machine load (*IML*) button reloads licensed internal code (LIC) and resets all hardware, except the MXC/MXS and DVP cards. The *IML* button is hidden when the front door is closed.

- **Control Buttons** - Four control buttons (*Advance, Entry, Detail, and Clear)* control information shown on the status display.

- **System Error Indicator** - The System Error indicator is an LED that illuminates when a software or hardware error occurs.

Power Indicator   Status Display   IML Button

System Error Indicator   Control Buttons
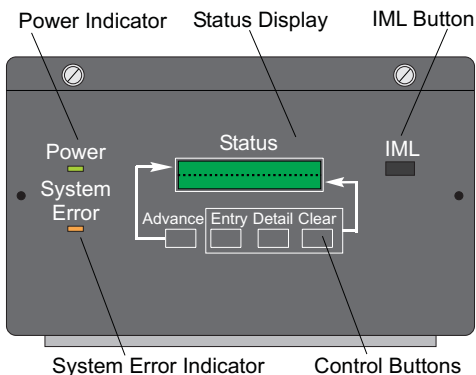
Figure 2. Operator Panel

Status Display

The status display (Figure 3) is an LCD that provides a system Information line (top) and an event Information line (bottom).

System Information Line

ID = TEST

EVENT = 09/0201

Event Information Line
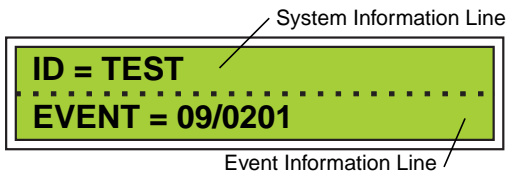
Figure 3. Status Display

System Information Line

Information appearing on the system information line is a function of the Director status. Certain messages appear after completion of power-on self tests (POSTs), and other messages appear during Director operation.

Following Power-On

When the Director successfully completes POSTs, the Director identification (ID) name appears on the system information line as shown in the following example.

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```

If the Director is unable to successfully complete POSTs, indicating failure of a nonredundant field-replaceable unit (FRU), the system Information line displays an event code related to the failure that caused the POSTs to terminate. Refer to "Interpreting an Event Code" on page 12 for additional information.

```
SSP0 P400
. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
IOC0 MEM Error
```

Note: Directors with only one control processor (CTP) card display the message above if the CTP card fails POSTs. For a redundant Director, the message appears only if both CTP cards fail POSTs.

If a redundant Director is unable to successfully complete POSTs using the CTP card in slot **0**, the Director attempts POSTs using the CTP card in slot **1**. If successful, an event code is displayed as shown below.

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
EVENT = 09/1200
```

During Director Operation

During Director operation, event codes appear on the event information line if a FRU fails or an event is reported. The Director name appears on the system information line. If required, use the *Advance* button (Figure 2 on page 9) to scroll through the following system information:

Director ID Name

The Director ID name is used by the Console and assigned to a Director for unique identification. Refer to the Director ID name when discussing Director operations with administrators and service personnel.

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```

IP Address

The Internet Protocol (IP) address allows Director-to-Console communication through a Token Ring local area network (LAN) Up to 16 Directors (each with a unique IP address) can be controlled by a Console.

```
I1.1.1.2
· · · · · · · · · · · · · · · · · · · · · · · · · · · ·
```

When the Director IP address appears, a Console IP address function is available. This mode allows a user to view the IP address of the active Console. Simultaneously press the *Detail* and *Clear* buttons to view the IP address of the active console (displayed on the event information line).

```
ACTIVE CONSOLE
· · · · · · · · · · · · · · · · · · · · · · · · · · · ·
1.1.1.1
```

Releasing one or both of the buttons causes the status display to show the Director IP address.

MAC Address

A Media Access Control (MAC) address (in 12-character hexadecimal format) is assigned to the Director's Token Ring (TKRG) controller adapter card. The address is used for communicating with the Console over the Token Ring LAN.

```
MAC = 5001108D2B16
· · · · · · · · · · · · · · · · · · · · · · · · · · · ·
```

LIC Version

The LIC version is the current version of code that is stored on the CTP card and enables Director operation. Refer to the LIC version when discussing Director operations with administrators and service personnel.

```
VER = 05.01.00
· · · · · · · · · · · · · · · · · · · · · · · · · · · ·
```

CUP Name

The Control Unit Port (CUP) name is assigned by the Director Console or by System Automation for OS/390™ (SA OS/390™). SA OS/390 communicates with the Director through the CUP using this name. Only the first 12 digits of the CUP name appear on the system information line.

```
CUP = BLDG001
· · · · · · · · · · · · · · · · · · · · · · · · · · · ·
```

Event Information Line

The event Information line displays (in encoded format) faults, failures, or events that impact Director operational status. Events can pertain to:

- Director-to-Console link operation.
- FRUs.
- LIC events.

When an event occurs, the Director reads a set of parameters specific to the event, and constructs a descriptive event code. The event code appears on the event Information line as shown in the example below:

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . .
EVENT = 0E/1701
```
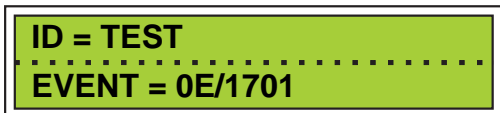
Up to ten events can be stored in the event information queue.

Interpreting an Event Code

Event codes appear as *EVENT = zz/xynn*, where:

- **zz:** Incident code.
- **x:** Severity code that specifies the Director operational level.
- **y:** FRU responsible code.
- **nn:** Position or slot number of the responsible FRU.

For additional information about event codes, refer to Appendix C in *Maintenance Information for the 9032 Model 5 Director* (SY28-1158).

Incident Code

The first two digits of the event code (*zz*) are the incident code in hexadecimal format. Interpreting the code partially qualifies an event. Three types of event qualifications can be represented:

- Hardware.
- Software.
- Director-to-Console link.

Table 1 lists examples of incident codes that can appear, the event types represented, and a description of each event.

Table 1. Incident Codes

Code	Event Type	Description
09	Hardware	CTP card incident.
0A	Hardware	MXC/MXS (or MXC2/MXS) card set incident.
0B	Hardware	Online diagnostics incident.

Code	Event Type	Description
0C	Hardware	TKRG controller adapter card incident.
0D	Hardware	Power supply incident.
0E	Hardware	Fan incident.
0F	Hardware	Operator panel failure.
10	Software	CTP software failure - indicates an unrecoverable software fault. A unique fault code is assigned to each fault condition or point of detection.
11	Software	CTP fault - indicates a corrupted configuration file in nonvolatile RAM was found during initialization sequences.
1B	Hardware	Port card failure (LED, XDF laser, or FCV).

Severity Code

The third digit of the event code (*x*) represents the severity of the event and can be an integer from 0 to 5. Each integer represents a progressive impact to Director operational level as follows:

- **0:** Fully operational.
- **1:** Fully operational with a redundant component failure.
- **2:** Operational with a minor failure.
- **3:** Operational with a major failure.
- **4:** Not operational.
- **5:** Cannot determine operational level.

FRU Responsible Code

The fourth digit of the event code (*y*) indicates the FRU responsible for generating the event. The code can be an alphanumeric value from 0 to 9, or from A to F. Each code represents a particular FRU as follows:

- **0:** No additional FRUs.
- **1:** MXC card (ESCON only).
- **2:** CTP card.
- **3:** MXS card*.
- **4:** LED port card.
- **5:** XDF laser port card.
- **6:** Reserved.
- **7:** Fan.
- **8:** Power supply (ESCON only).
- **9:** Console.
- **A:** TKRG controller adapter card.
- **B:** Operator panel.

C: Spare ports card (4-port LED).

D: Spare ports card (2-port LED, 2-port XDF laser).

E: Logic board assembly.

F: FCV port card.

G: Power supply (FICON capable).

H: MXC2 card (FICON capable).

Note*: The MXS card code (**3**) does not appear as part of the initial event. Either a (**1**) code appears for both the MXC and MXS cards, or an (**H**) code appears for both the MXC2 and MXS cards. The (**3**) code appears when the *Detail* button is pressed to reveal additional sense byte information.

Position of Responsible FRU

The last two digits of the event code (**nn**) indicate the slot location or FRU position in the Director as follows:

Position	FRU
00 or **01**	MXC or MXC2 card
00 or **01**	CTP card
00, **01**, **02**, or **03**	MXS card
00 through **30**	LED port card (port number)
00 through **30**	XDF laser port card (port number)
00 through **30**	FCV port card (port number)
00 or **01**	Fan (not installed to logic board assembly)
00 or **01**	Power supply (not installed to logic board assembly)
00	Console (not installed to logic board assembly)
00 or **01**	TKRG controller adapter card

Operator Panel Buttons

Operator panel buttons (Figure 2 on page 9) include the:

- *IML* button.

- *Advance* button.

- *Entry* button.

- *Detail* button.

- *Clear* button.

Press and hold a button listed above to perform a respective function described in one of the following paragraphs.

IML Button

When the *IML* button is pressed and held for five seconds:

- Both CTP cards (if two are installed) and the active TKRG controller adapter card reset. Pressing the *IML* button does not reset the functional logic of MXC/MXS, MXC2/MXS, or port cards.

- LIC loads from CTP FLASH memory to the central processing unit (CPU) without powering cycling the Director.

- The **Service Required** status for DVP and FCV ports resets.

- Connections between channels and control units through the Director are maintained.

- The current active matrix loads from Director nonvolatile memory.

When the Director successfully initializes (IMLs), the Director ID number appears on the system information line.

Note: Failure of the Director to initialize is due to a component failure or system event. In either case, an event code appears on the event information line.

Advance Button

The *Advance* button scrolls information resident on the system information line. Pressing the *Advance* button once causes the displayed line of system information to advance to the next sequential line of system information. Press the *Advance* button to cycle through the following system information:

- Director ID name.

- CUP Name.

- Director IP address.

- Director MAC address.

- LIC version.

Pressing the *Advance* button while the LIC version appears completes the system information cycle and causes the Director ID name to reappear.

Entry Button

The *Entry* button (used with the *Detail* and *Clear* buttons) displays and acknowledges event information residing in the event information queue.

When the Director detects an event (or multiple events), the operator panel:

- Activates the System Error indicator (Figure 2 on page 9) if the severity code of the event is **1** or greater.

- Displays the event code as shown in the example below.

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . . . . .
EVENT = 09/1201
```
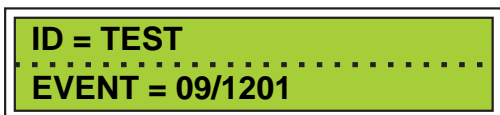
Acknowledge Events

Press the *Entry* button once to acknowledge the event. Acknowledgement changes the event status from **EVENT** to **ACTIVE**.

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . . . . .
ACTIVE = 09/1201
```
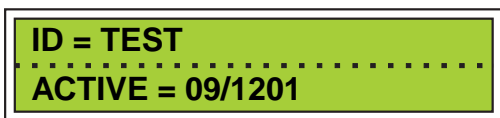
If more than one event exists, pushing the *Entry* button causes the next event to appear while changing the first event's status from **EVENT** to **ACTIVE**.

After the event is acknowledged, choose one of the following actions:

- Record details regarding the event. Refer to "Detail Button" below.

- Report the event.

- Resolve the event.

- Interpret the event code to resolve or report the event. Refer to "Interpreting an Event Code" on page 12.

Scroll Through Events

After all events in the queue are displayed, pressing the *Entry* button causes an asterisk (*) to appear as shown below. The asterisk signifies the end of the event information queue.

```
ID = TEST
. . . . . . . . . . . . . . . . . . . . . . . . . . .
*
```
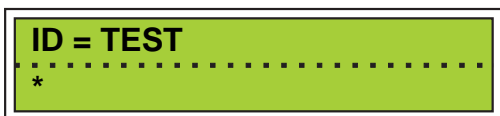
When the asterisk appears, pressing the *Entry* button again causes the first event entry to reappear with an **ACTIVE** status.

Detail Button

The *Detail* button displays specific information associated with the event that appears on the event information line:

Pressing the *Detail* button once displays the first line (date of the event) of nine detail information lines associated with the event.

ID = TEST
. . . .
DATE = 09/03
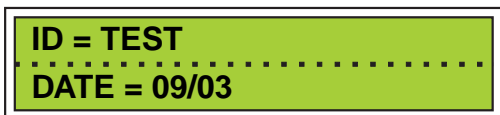
Continue pressing the *Detail* button to cycle through the following event information lines.

- Date of the event (line 1).

- Time of the event (line 2).

- Sense byte data 10 through 31 (lines 3 through 9).

When line nine (the last of the sense byte data) appears, the event information detail cycle is complete. Pressing the *Detail* button again causes the date of the event (line1) to reappear.

Interpreting Sense Byte Data

Sense bytes provide detail about the type and location of an error. For additional information, refer to Appendix A in *Maintenance Information for the 9032 Model 5 Director* (SY28-1158).

Clear Button

The *Clear* button performs the following functions:

- Updates a selected event with an **EVENT** or **ACTIVE** status to **HISTORY** status.

- Deletes a selected event with a **HISTORY** status from the event information queue.

As shown below, if an event marked **ACTIVE** appears on the status display, pressing the *Clear* button causes the event to be marked **HISTORY**.

ID = TEST
. . . .
HISTORY = 09/1201
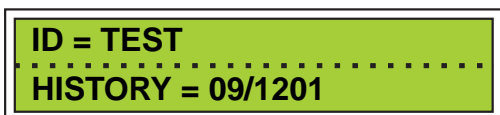
If an event marked **HISTORY** appears on the status display, pressing the *Clear* button causes the event to be deleted from the event information queue.

ID = TEST
. . . .
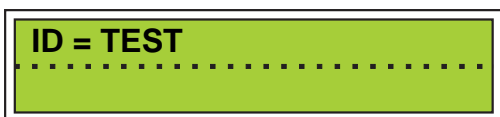
Up to ten events can be stored in the event information queue.

When all **ACTIVE** events of severity code 1 or greater are designated **HISTORY** or deleted, the system error indicator extinguishes.

Operator Assist Mode

When the operator panel is placed in operator assist mode, the *Clear*, *Detail*, and *Entry* buttons are used to modify the Director IP and MAC addresses. Operator assist mode is disabled after an IML until network activation completes (about 15 seconds). Enter operator assist mode by simultaneously pressing the *Advance* and *Entry* buttons. The Director IP address appears:

```
IP ADDRESS
. . . . . . . . . . . . . . . . . . . . . . . . . . . .
1.1.1.2
```

Press the *Advance* button to display the MAC address:

```
MAC ADDRESS
. . . . . . . . . . . . . . . . . . . . . . . . . . . .
5001108D2B16
```
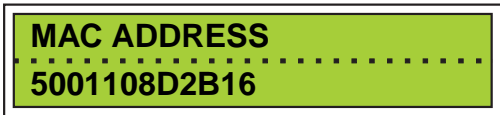
Use the control buttons as described below to change the displayed IP or MAC address.

Clear Button

With the IP or MAC address displayed, press the *Clear* button once to initiate an edit function. A blinking cursor appears over the rightmost character of the rightmost edit field. Press the *Clear* button again to move the cursor left to the next field. The cursor wraps back to the rightmost field when the leftmost field is passed.

Detail Button

Press the *Detail* button to increment the number displayed in the edit field. Hold the button down for more than three seconds to increment the number quickly. Each edit field for the IP address is a three-digit number ranging from 000 to 255. Each edit field for the MAC address is a two-digit hexadecimal number ranging from 00 to FF. The entire number in the edit field increments when the *Detail* button is pressed.

Entry Button

Press the *Entry* button to disable the cursor and save an edited IP or MAC address. Press the *Entry* button again to exit operator assist mode when **EXIT** appears on the top line of the status display.

Advance Button

Press the Advance button to abort the edit option and advance to the next menu item in operator assist mode (**IP ADDRESS**, **MAC ADDRESS**, or **EXIT**).

When New Addresses Take Effect

A saved MAC address only takes effect after an IML. An asterisk (*) appears to the right of the address until this occurs. A saved IP address takes effect immediately.

Operator Panel LEDs

There are two LEDs on the operator panel (Figure 2 on page 9):

- System error indicator (amber)
- Power indicator (green)

System Error Indicator

The system error indicator illuminates when a severity 1 or higher event occurs. The indicator notifies the operator of an event that requires immediate attention, such as a FRU failure or LIC error.

The system error indicator circuitry deactivates after the severity 1 condition is cleared, and the LED extinguishes when the operator changes the incident from the **EVENT** or **ACTIVE** status to **HISTORY** status, or clears the incident from the operator panel.

Note: Even if the system error indicator is illuminated (indicating a severity 1 or higher event), the Console indicates fully operational Director status.
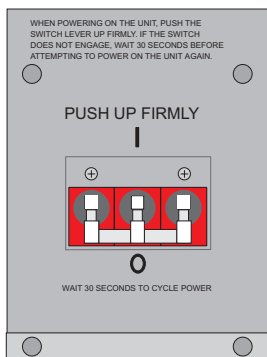
Power Indicator

The power indicator illuminates when the Director is supplied with +3.3 Vdc (FICON operation) or +5 Vdc power. However, an extinguished power indicator *does not* indicate that the Director is not receiving +3.3 or +5 Vdc power (the LED or operator panel may have failed).

Power Switch

Setting the power switch (Figure 4) to the on position (**|**) supplies ac power to the dual power supplies and powers on the Director. Setting the power switch to the off position (**O**) powers off the Director.

WHEN POWERING ON THE UNIT, PUSH THE SWITCH LEVER UP FIRMLY. IF THE SWITCH DOES NOT ENGAGE, WAIT 30 SECONDS BEFORE ATTEMPTING TO POWER ON THE UNIT AGAIN.

PUSH UP FIRMLY

I

O

WAIT 30 SECONDS TO CYCLE POWER

Figure 4. Power Switch

The 15-ampere, single throw, 4-pole switch controls the flow of facility ac power to both power supplies. The power supplies step down and rectify facility input power to generate dc voltages for Director components.

Power on the Director by firmly engaging the switch. If the switch does not engage properly (because it was not pushed firmly) wait 30 seconds before attempting to power on the Director again. If you are cycling power to the Director, wait 30 seconds after power-off before powering on the Director again.

POSTs at Power-On

When the Director is powered on, POSTs automatically run to ensure correct operation of Director logic.

If the Director fails POSTs and does not properly initialize, an event code appears on the status display event information line. If POSTs complete and the Director initializes, the status display system information line displays the Director ID name.