

**FISHER-ROSEMOUNT**

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**RS3™**

# **Operator's Guide**

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**Performance Series1, Release 4.0**

**August 1999**

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Components of the RS3 distributed process control system may be protected by U.S. patent Nos. 4,243,931; 4,370,257; 4,581,734. Other Patents Pending.

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**FISHER-ROSEMOUNT**  
**RS3™**  
**Operator's Guide**

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## About This Guide

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This manual is intended as an operator's reference guide to using RS3 consoles. It explains the purpose of operating displays, keyboard functions, and the correct operator response to alarms and system faults.

Section 1	Describes and illustrates the single CRT Multitube Command Console (MTCC) keyboard.
Section 2	Describes the major displays and display elements that are used to operate the RS3 control system. These include controller faceplates, graphic displays, and reports.
Section 3	Describes continuous control terminology and standard continuous operations and the console interface.
Section 4	Describes discrete control terminology and standard continuous operations and the console interface.
Section 5	Describes the use of trending displays.
Section 6	Describes RS3 alarm displays and operator responses to alarms.
Section 7	Describes the MTCC with the enhanced keyboard. Emphasis is on how operator procedures are performed with this MTCC keyboard option, especially using menus.
Appendix A	Describes how to respond to system faults and how to recover from power failures.

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## Changes for This Release

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Changes to this manual were made to incorporate:

- New alarm banner/message functionality
- Keyboard changes to reflect the single CRT MTCC configuration.

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## Revision Level for This Manual

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For This Software Version:	Refer to This Document:		
	Title	Date	Part Number
P1R4.0	Operator's Guide	August 1999	1984-2647-
P1R1.0	Operator's Guide	May 1996	1984-2647-19x1
18R2	Operator's Guide	August 1994	1984-2647-18x1
18R1	Operator's Guide	September 1993	1984-2647-18x1
17	Operator's Guide	August 1992	1984-2647-17x1
16	Operator's Guide	January 1992	1984-2647-16x1
15	Operator's Guide	January 1991	1984-2647-15x1

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## References to Other Manuals

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References to other RS3 user manuals list the manual, chapter, and sometimes the section as shown below.

### Example Entries:

For ..., see CC: 3.

↑ ↑

Manual Title Chapter

For ..., see CC: 1-1.

↑ ↑

Manual Title Chapter-Section

### Abbreviations of Manual Titles

**AL** = Alarm Messages

**BA** = ABC Batch

**CB** = ControlBlock Configuration

**CC** = Console Configuration

**DT** = Disk and Tape Functions

**IO** = I/O Block Configuration

**OP** = Operator's Guide

**OV** = System Overview and Glossary

**PW** = PeerWay Interfaces

**RB** = Rosemount Basic Language

**RI** = RNI Release Notes and Installation Guide

**RP** = RNI Programmer's Reference Manual

**SP** = Site Preparation and Installation

**SV** = Service

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## Reference Documents

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### Prerequisite Documents

You should be familiar with the information in the following documents before using this manual:

<i>System Overview Manual and Glossary</i>	1984-2640-19x1
<i>Software Release Notes, Performance Series 1</i>	1984-2819-01xx
<i>Software Loading and Upgrade Procedure, Including Batch</i>	1984-2819-02x1

### Related Documents

You may find the following documents helpful when using this manual:

<i>ABC Batch Quick Reference Guide</i>	1984-2814-12xx
<i>ABC Batch Software Manual</i>	1984-2654-19x1
<i>Alarm Messages Manual</i>	1984-2657-19x1
<i>Configuration Quick Reference Guide</i>	1984-2812-09xx
<i>Console Configuration Manual</i>	1984-2643-19x1
<i>ControlBlock Configuration Manual</i>	1984-2646-19x1
<i>Disk and Tape Functions Manual</i>	1984-2644-19x1
<i>I/O Block Configuration Manual</i>	1984-2645-19x1
<i>Operator's Guide</i>	1984-2647-19x1
<i>PeerWay Interfaces Manual</i>	1984-2650-19x1
<i>RNI Programmer's Reference Manual</i>	1984-3356-02x1
<i>RNI Release Notes and Installation Guide</i>	1984-3357-02x1
<i>Rosemount Basic Language Manual</i>	1984-2653-19x1
<i>Service Manual, Volume 1</i>	1984-2648-19x1
<i>Service Manual, Volume 2</i>	1984-2648-19x2
<i>Site Preparation and Installation Manual</i>	1984-2642-19x1
<i>Software Discrepancies for Performance Series 1</i>	1984-2819-03xx
<i>User Manual Master Index</i>	1984-2641-19x1

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# Contents

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---

<b>Section 1:</b>	<b>MTCC Keyboards</b> .....	<b>1-1</b>
	MTCC Keyboards .....	1-2
<b>Section 2:</b>	<b>Displays</b> .....	<b>2-1</b>
	Accessing Displays on a Password-Secure System . . . .	2-2
	Logging in to a Password-Secure System .....	2-2
	Changing a Password .....	2-3
	Logging Off the Console .....	2-4
	Controller Displays .....	2-5
	Continuous Displays .....	2-5
	Discrete Displays .....	2-6
	Group Display .....	2-7
	Unit Display .....	2-9
	Overview Display .....	2-10
	Graphics .....	2-11
	Viewing Graphics .....	2-12
	Faceplates .....	2-13
	Direct Discrete or Analog Control .....	2-14
	Reports .....	2-15
	Calling Up Reports .....	2-16
	Report Read Directory .....	2-17
	Report File Contents Screen .....	2-18
	Report Displays .....	2-19
	Using the Display Keys .....	2-20
<b>Section 3:</b>	<b>Continuous Control</b> .....	<b>3-1</b>
	Continuous Control Overview .....	3-2
	Continuous Faceplate .....	3-3
	Continuous Faceplate Symbols .....	3-4
	Selecting the Mode .....	3-7
	Changing the Setpoint .....	3-8
	Changing the Output .....	3-10

Cascade Control .....	3-12
Adjusting a Cascade Loop— Secondary Controller in Remote .....	3-13
Adjusting Setpoint of the Secondary Controller in a Cascade Loop .....	3-14
Adjusting Output of the Secondary Controller in a Cascade Loop .....	3-16
Ratio and Bias Control .....	3-18
Ratio or Bias Control Using a Single Faceplate .....	3-19
Ratio or Bias Control Using Two Faceplates .....	3-20
<b>Section 4: Discrete Control .....</b>	<b>4-1</b>
Discrete Control Overview .....	4-2
Discrete Faceplate .....	4-3
Numerical Entries on a Discrete Faceplate .....	4-4
Motor and Valve Controllers .....	4-5
Motor Controllers .....	4-5
Valve Controllers .....	4-7
Controller Modes .....	4-9
Device State Indicators .....	4-10
Operating Restrictions and Conventions .....	4-11
<b>Section 5: Trending .....</b>	<b>5-1</b>
Trend Displays .....	5-2
Calling up a Trend Display .....	5-3
Calling Up a Controller From a Trend Display .....	5-4
Changing Engineering Units of Measure .....	5-5
Changing the Scaling Limits .....	5-5
Changing the Measurement Scale .....	5-7
Displaying Individual Trends .....	5-8
Viewing Historical Data .....	5-9
Changing the Trend Time Scale .....	5-10
Changing the Trend Start Time .....	5-11
Reading Trend Values at any Point In Time .....	5-13
Changing the Default Time and Measurement Scales ..	5-15
Trend Interruptions .....	5-16



<b>Section 6:</b>	<b>Alarms</b> .....	<b>6-1</b>
	Alarm Annunciation .....	6-2
	Alarm Display Annunciation .....	6-3
	Alarm Banner .....	6-3
	Alarm Summary .....	6-5
	Alarm Priority .....	6-6
	Alarm Colors .....	6-7
	Keyboard Annunciation .....	6-8
	Display Annunciation .....	6-9
	Acknowledging Alarms .....	6-10
	Responding to Alarms .....	6-12
	Controlling Alarm Annunciation .....	6-14
	Suppressing and Unsuppressing Alarms .....	6-14
	Enabling and Disabling Alarm Areas .....	6-16
	Alarm Lists .....	6-17
	Locating a Process Alarm Using the Process Alarm List .....	6-18
	Responding to Hardware Alarms .....	6-20
	Responding to System Status Messages .....	6-21
	Responding to Disk Events .....	6-21
<b>Section 7:</b>	<b>MTCC with Enhanced Keyboard</b> .....	<b>7-1</b>
	MTCC Enhanced Keyboard .....	7-2
	Using the Enhanced Keyboard .....	7-9
	Scrolling Menus .....	7-10
	Changing the Setpoint .....	7-11
	Changing the Output .....	7-14
	Calling Up Graphic Displays .....	7-16
	Selecting the Faceplate Mode .....	7-18
	Menus .....	7-19
<b>Appendix A:</b>	<b>Responding to System Faults</b> .....	<b>A-1</b>
	Faults Affecting Consoles .....	A-2
	Trackball Failure .....	A-3
	Recovery from Power Failure .....	A-4
	Startup After Power Failure .....	A-4
	Resuming Normal Control .....	A-6
	Returning a Controller Processor to Normal Mode ...	A-8
	Checking the Block Status .....	A-10



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## Section 1: MTCC Keyboards

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MTCC Keyboards .....	1-2
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OP: 1-2

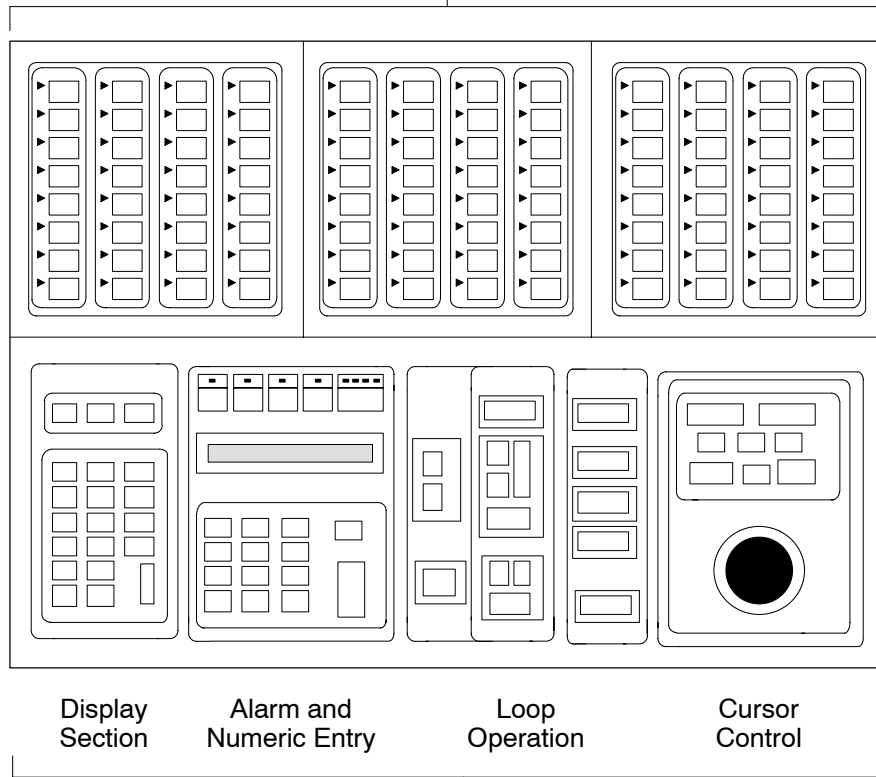
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## **MTCC Keyboards**

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The MTCC has three keyboards: the operator keyboard, the option keyboard, and the configuration keyboard. The operator and option keyboards are shown on page 1-3. The configuration keyboard (which is a standard QWERTY-type keyboard) is not required to operate the RS3. The MTCC keyboards are modular devices that plug into the console CRT. The illustrations on the following pages show the functions of the keys on the operator and option keyboards.

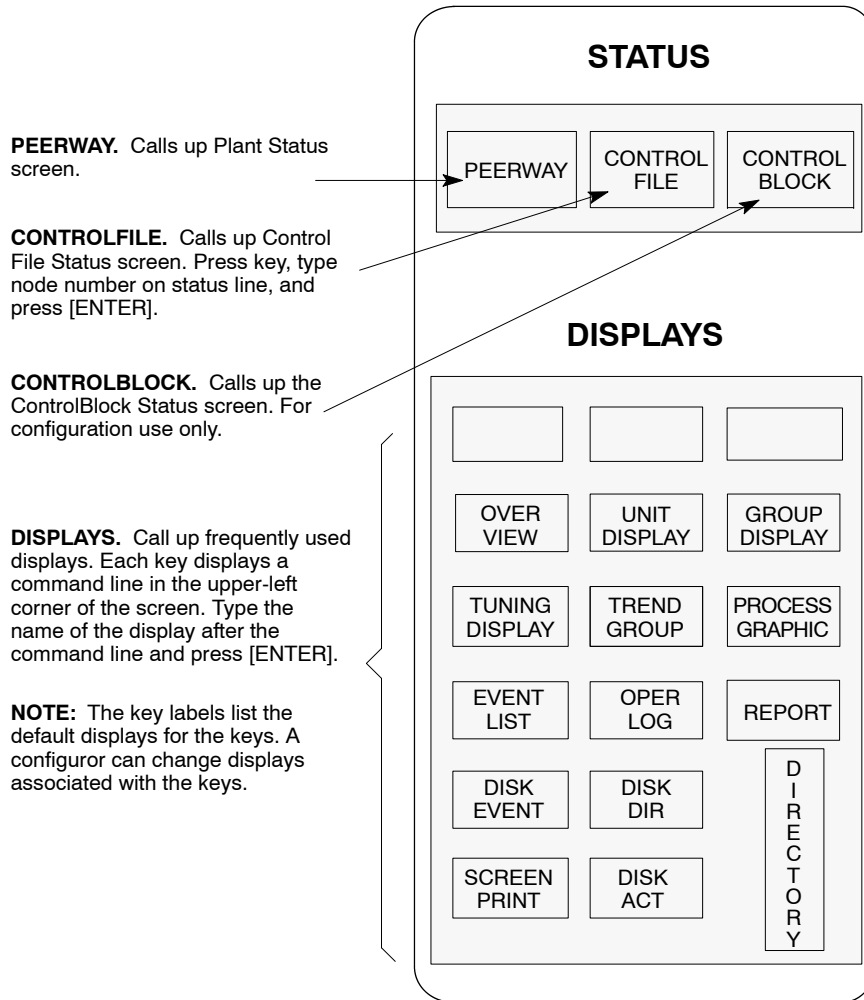
OPTION KEYBOARD



OPERATOR KEYBOARD

**MTCC Keyboards**

OP: 1-4



Operator Keyboard Display Section

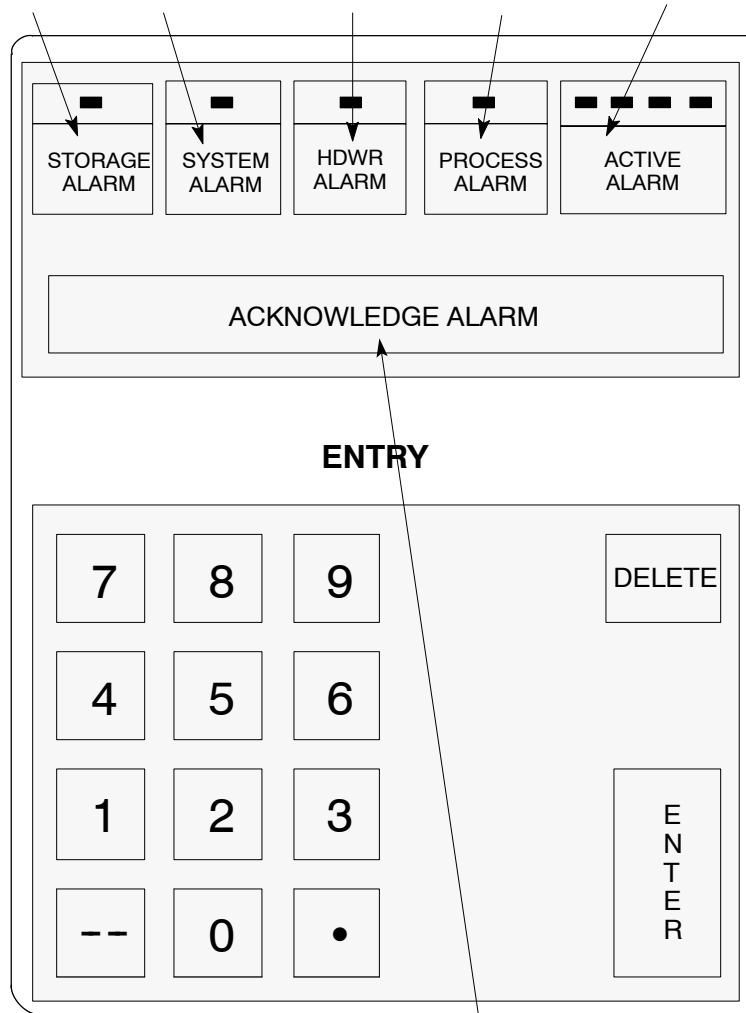
**STORAGE ALARM.**  
Calls up Disk Event List.

**SYSTEM ALARM.**  
Calls up Active System Status screen.

**HDWR ALARM.**  
Calls up Active Hardware Alarm screen.

**PROCESS ALARM.**  
Calls up Active Process Alarm screen.

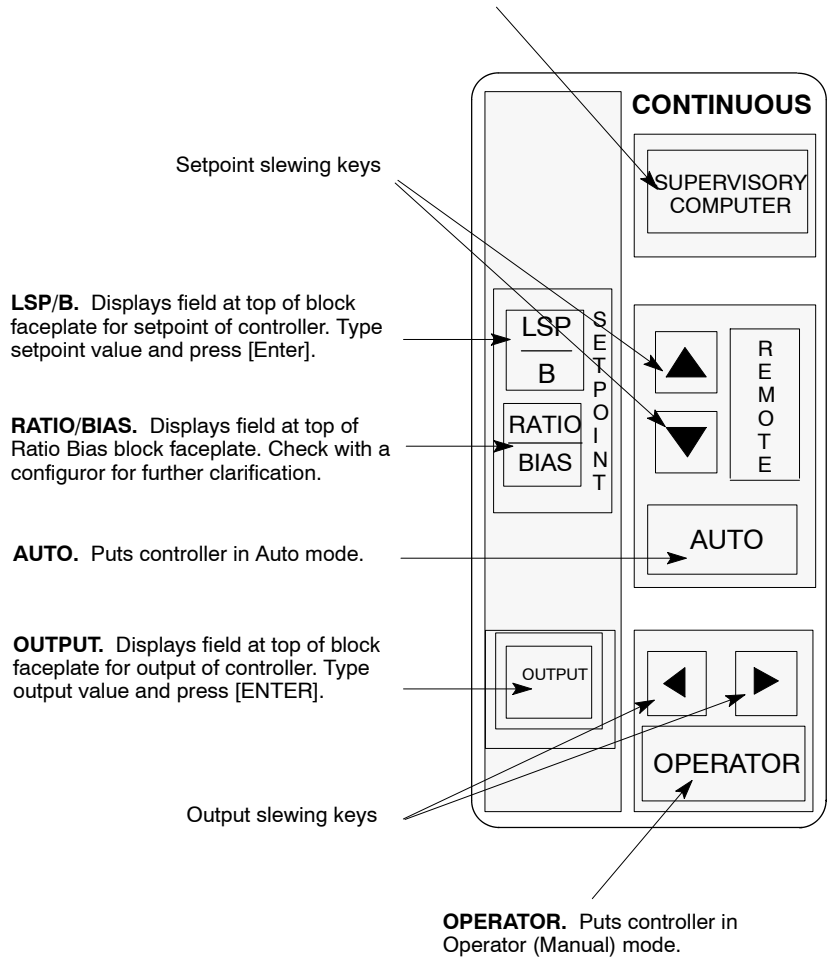
**ACTIVE ALARM.**  
Calls up source of highest priority active alarm.



**ACKNOWLEDGE ALARM.** Acknowledges and clears alarm message from screen.

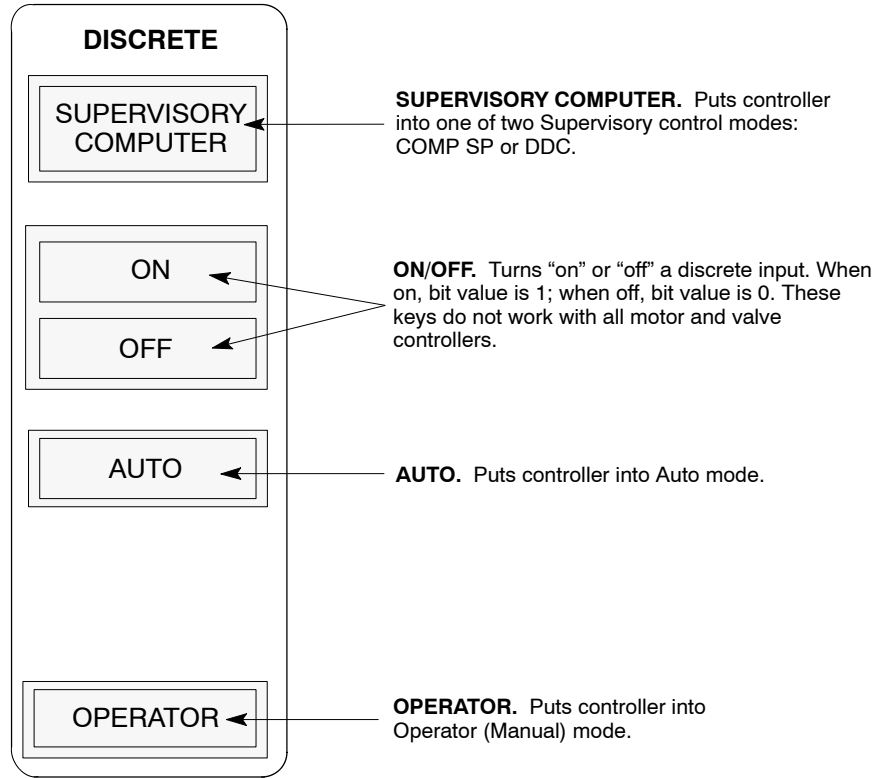
### Operator Keyboard Alarm and Numeric Entry

**SUPERVISORY COMPUTER.** Puts controller block into one of two Supervisory control modes: COMP SP or DDC.



### Operator Keyboard Continuous Loop Operation





**Operator Keyboard Discrete Loop Operation**

**OP: 1-8**

**OPTION.** Calls up the previous or next options among a list of choices. In this manual, the option key is referred to as [NEXT OPTION].

**PAGE.** Moves among multiple pages of a screen.

**RECL.** Recalls the previously displayed screen.

**HOME/MENU.** Moves cursor to the upper-left corner of the screen. If the cursor is already in the home position, this key can call up a user-defined menu.

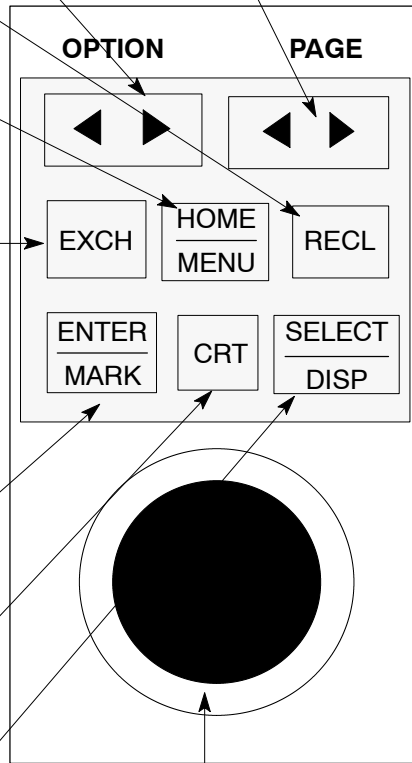
**EXCH.** Exchanges displays. For example:

- Between screens, such as Discrete Faceplate screen and Continuous Faceplate screen.
- Between configuration mode and viewing mode on a Process Graphic screen.

**ENTER/MARK.** Marks screens. The [RECL] key will recall marked screens in the order they are marked and clear the mark. Up to five screens can be marked at one time.

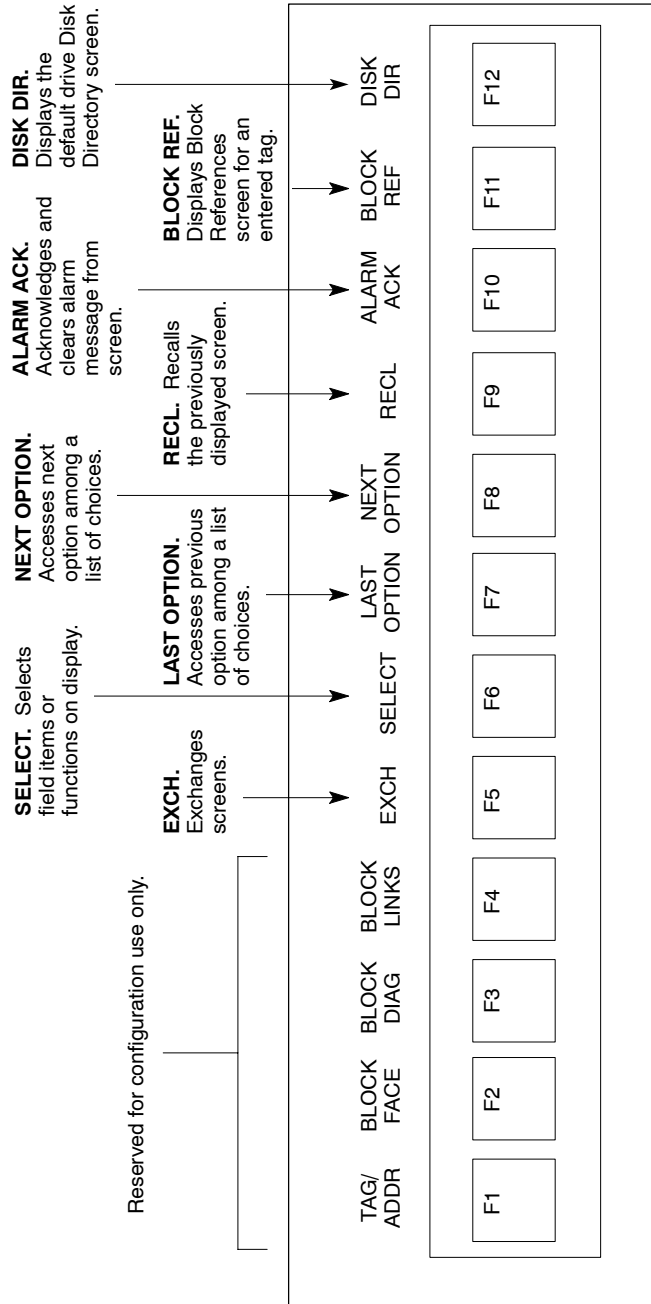
**CRT.** Not functional for single CRT MTCC systems.

**SELECT/DISP.** Selects items or functions on a display.



Trackball

**Cursor Operation**



Function Keys on MTCC Configuration Keyboard

**OP: 1-10**

**RS3: Operator's Guide**

**MTCC Keyboards**

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## Section 2: Displays

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Accessing Displays on a Password-Secure System . . . .	2-2
Logging in to a Password-Secure System . . . . .	2-2
Changing a Password . . . . .	2-3
Logging Off the Console . . . . .	2-4
Controller Displays . . . . .	2-5
Continuous Displays . . . . .	2-5
Discrete Displays . . . . .	2-6
Group Display . . . . .	2-7
Unit Display . . . . .	2-9
Overview Display . . . . .	2-10
Graphics . . . . .	2-11
Viewing Graphics . . . . .	2-12
Faceplates . . . . .	2-13
Direct Discrete or Analog Control . . . . .	2-14
Reports . . . . .	2-15
Calling Up Reports . . . . .	2-16
Report Read Directory . . . . .	2-17
Report File Contents Screen . . . . .	2-18
Report Displays . . . . .	2-19
Using the Display Keys . . . . .	2-20

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## Accessing Displays on a Password-Secure System

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To access any displays on a password-secure RS3, you must log in. Logging in requires a username (login) and a password.

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### Logging in to a Password-Secure System

---

This section explains how to log in to an RS3 password-secure system from your operator keyboard.

**To log in to the console:**

1. From the command line, type

**LI** [ENTER]

**NOTE:** The name of the last person logged in automatically appears in the “Login” field; however, if this person has a time-restricted login, the “Login” field becomes blank.

2. Cursor to the “Login” field; type your login name as defined by the system manager, and press [ENTER].
3. Type your password, and press [ENTER].

## Changing a Password

---

### CAUTION

**If the backup node for the \$\$PASSWD file is down when you change your password, you should contact the system manager to copy the file from the primary to the backup node.**

- ❑ **To change a password while logged on to the console:**
  1. On the command line, type  
**CUP** [ENTER]
  2. Cursor to the "OLD PASSWORD" field; type the current password, and press [ENTER].  
The field changes to "NEW PASSWORD".
  3. Type a new password with 6 to 16 characters, and press [ENTER].  
The field changes to "REPEAT PASSWORD".
  4. Type the new password again, and press [ENTER].  
If both entries (Steps 2 and 3) match, the console recalls the display that was on the screen before you issued the "CUP" command.

❑ **To change a password without first logging on to the console:**

1. On the command line, type

**LI** [ENTER]

The Login screen appears with a message that indicates the password must be updated.

2. Cursor to the “OLD PASSWORD” field; type the current password, and press [ENTER].

The field changes to “NEW PASSWORD”.

3. Type a new password with 6 to 16 characters, and press [ENTER].

The field changes to “REPEAT PASSWORD”.

4. Type the new password again, and press [ENTER].

If both entries (Steps 2 and 3) match, the console recalls the display that was on the screen.

## **Logging Off the Console**

---

Logging off a console can occur in one of two ways:

- If you are assigned an automatic log off, the system logs you off if the console remains untouched for the period of time specified on your User Name Detail screen.
- You can log yourself off the console from the command line.

❑ **To log off the console:**

- From the command line, type

**LO** [ENTER]

The Login screen appears and the user name on the bottom line of the screen is “NO USER”.

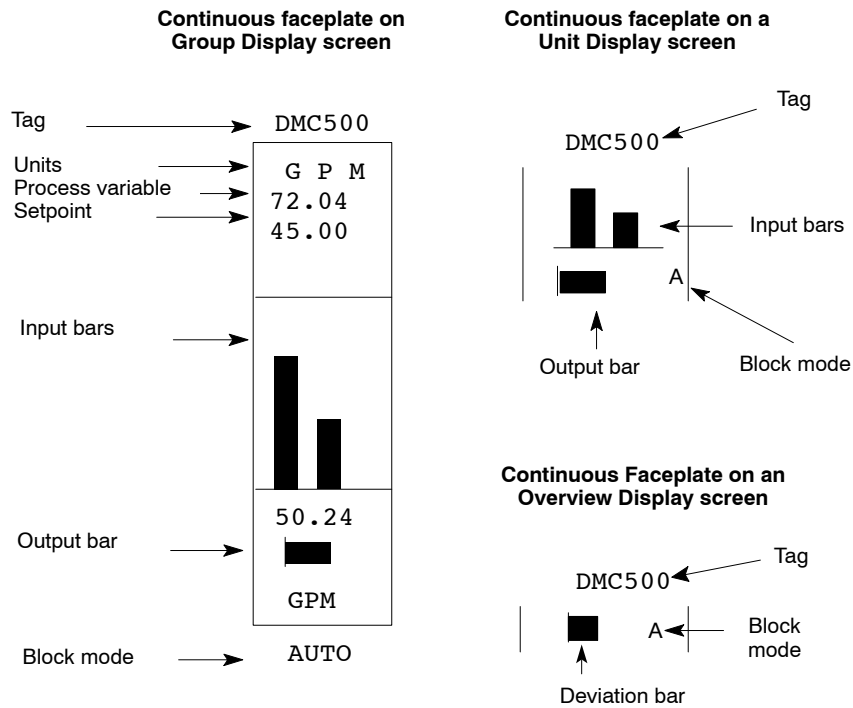


## Controller Displays

You can monitor and control continuous and discrete ControlBlock functions in your plant using special screen displays called faceplates. Faceplates provide prompts and bar graphs to measure and manipulate controller continuous and discrete values. The RS3 system provides several different types of faceplates showing different levels of detail for both continuous and discrete data.

### Continuous Displays

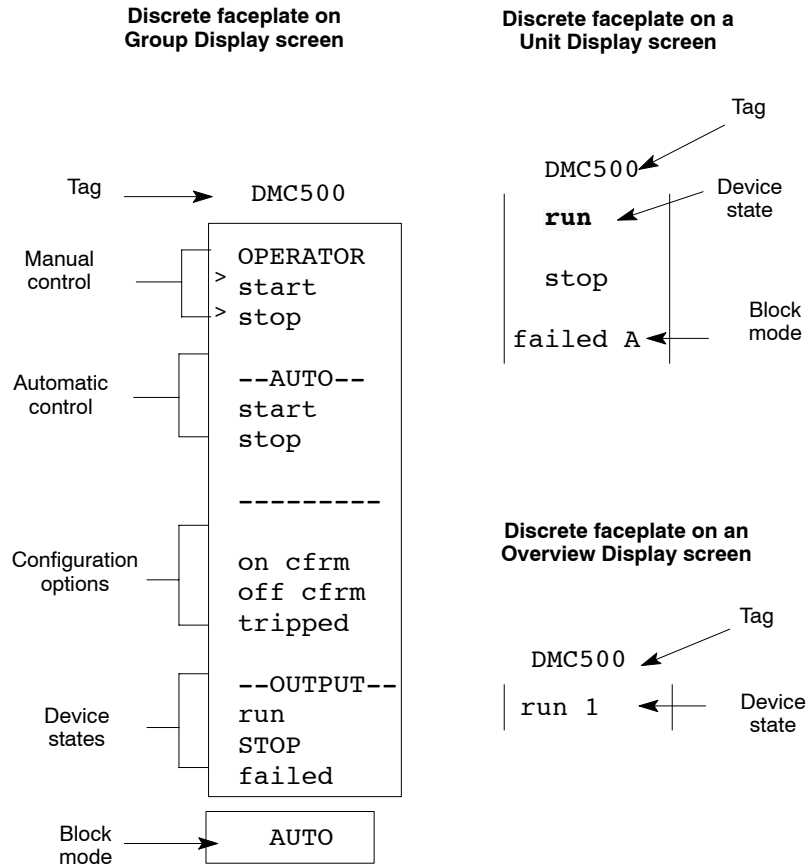
The figure below compares three different ways of displaying continuous data.



**Comparison of Continuous Values on Group, Unit, and Overview Displays**

## Discrete Displays

The figure below compares three different ways of displaying discrete data.

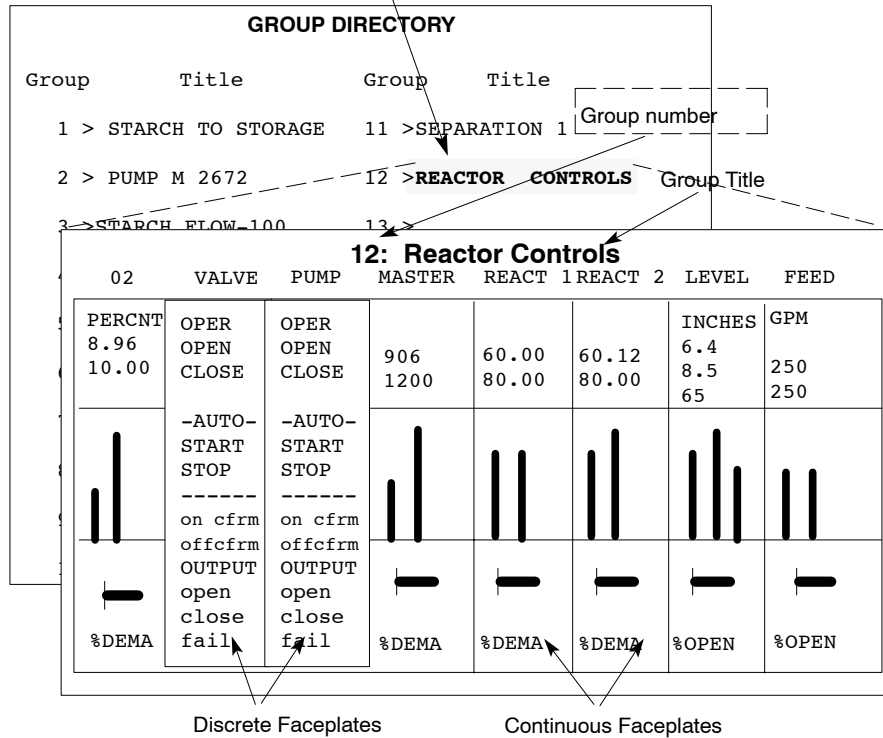


**Comparison of Discrete Values on Group, Unit, and Overview Displays**

## Group Display

A group display may contain up to eight faceplates that are related in some way. You can call up a group display from the Group Directory screen. If callup buttons are designated for group display, you can also call up the display by selecting the appropriate callup button on the Options Keyboard.

- ❑ **To call up a group display from the options keyboard:**
  - Press the callup button configured for the group display.
- ❑ **To call up a group display from the Group Directory screen:**
  1. Type **GD:** [ENTER] to call up the Group Directory screen.
  2. Cursor to the desired group.
  3. Press [SELECT].



### Calling Up a Group Display

**OP: 2-8**

**To call up a ControlBlock:**

1. Cursor to the faceplate tag. The faceplate is highlighted.
2. Press [SELECT]. The faceplate screen for the block appears.

**12: Boiler Controls**

02	VALVE	PUMP	MASTER	REACT 1	REACT 2	LEVEL	FEED
PERCNT	OPER	OPER				INCHES	GPM
8.96	OPEN	OPEN	906	60.00	60.12	6.4	
10.00	CLOSE	CLOSE	1200	80.00	80.00	8.5	250
						65	250
	-AUTO-	-AUTO-					
	START	START					
	STOP	STOP					
	-----	-----					
	on cfrm	on cfrm					

**CB DISCRETE FACEPLATE**

Tag=>PUMP                      Descriptor=>

Addr=01A-01                    Function=>

1	2	3	4	5		1	OPERAT
						2	
						3	OPEN
						4	CLOSE
						5	
						6	-AUTO-
						7	START
						8	STOP
						9	
						10	-----
						11	on cfrm
						12	off cfrm
						13	tripped
						14	
						15	OUTPUT
						16	start
						17	stop

Plant Unit =>0 Alarm Priority=> 0

Unit 1 => 2 => 3 =>

Steps in MANUAL                      Block Mode>AUTO

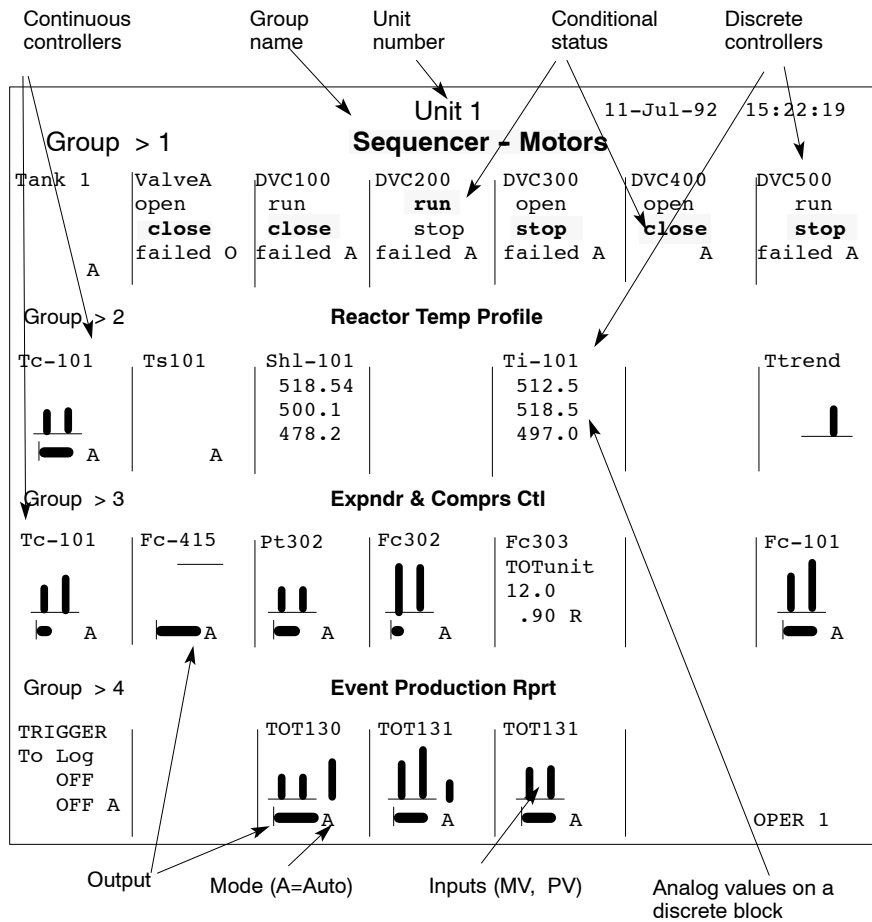
CONFIG 1

**Calling Up a ControlBlock**

## Unit Display

A unit display is condensed information from up to four group displays. Unit displays only provide information; they cannot be used to make control adjustments.

- To call up a unit display:**
  - Type **UD:** [ENTER] to call up the Unit Directory and press [SELECT] on a desired unit name.
- To call up a group display:**
  - Cursor to the desired group name and press [SELECT].

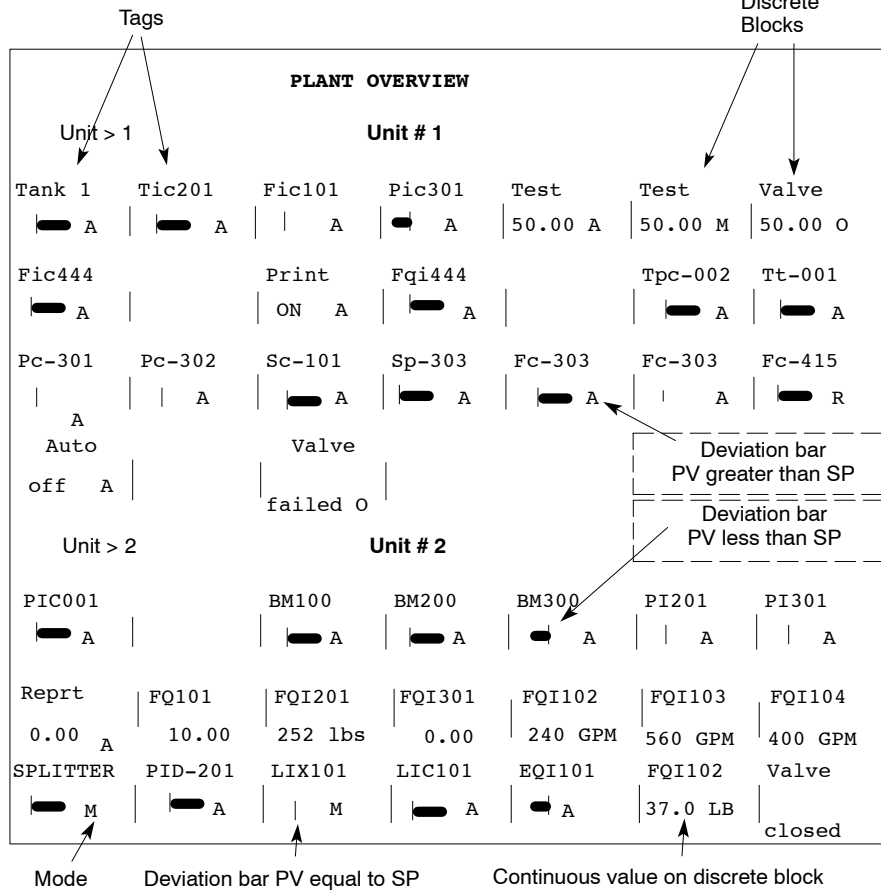


Unit Display

## Overview Display

Overview displays consist of two condensed unit displays. Up to 64 controllers can be represented in an overview display. Overview displays only provide information; they cannot be used to make control adjustments.

- ❑ **To call up an overview display:**
  - Type **OD**: [ENTER] to call up the Overview Directory and press [SELECT] on a desired overview name.
- ❑ **To call up a group display:**
  - Cursor to the desired group and press [SELECT].
- ❑ **To call up a unit display:**
  - Cursor to the desired unit and press [SELECT].



Overview Display

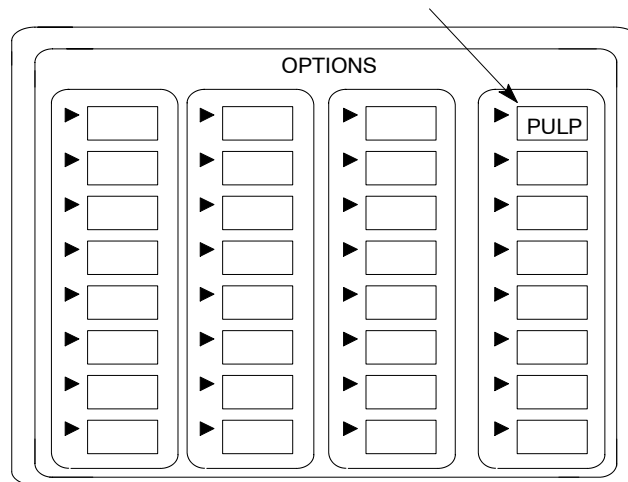
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## Graphics

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Graphic displays are pictorial representations of plant environments that are configured by the user. You can perform control operations on them through permanent faceplates, pop-up faceplates, and direct discrete or analog entries.

- ❑ **To call up a graphic display from the options keyboard:**
  - Press the callup button configured for the display.

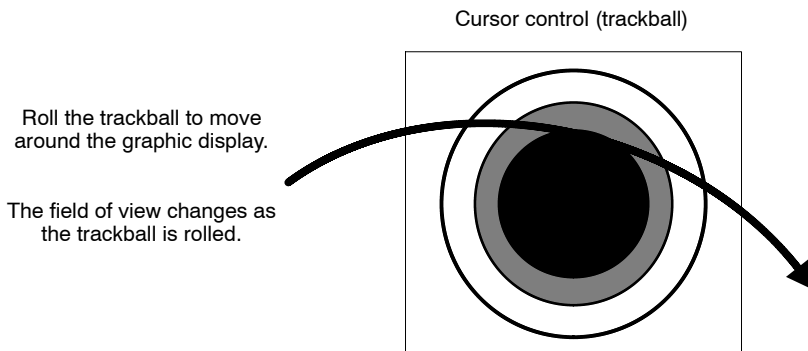
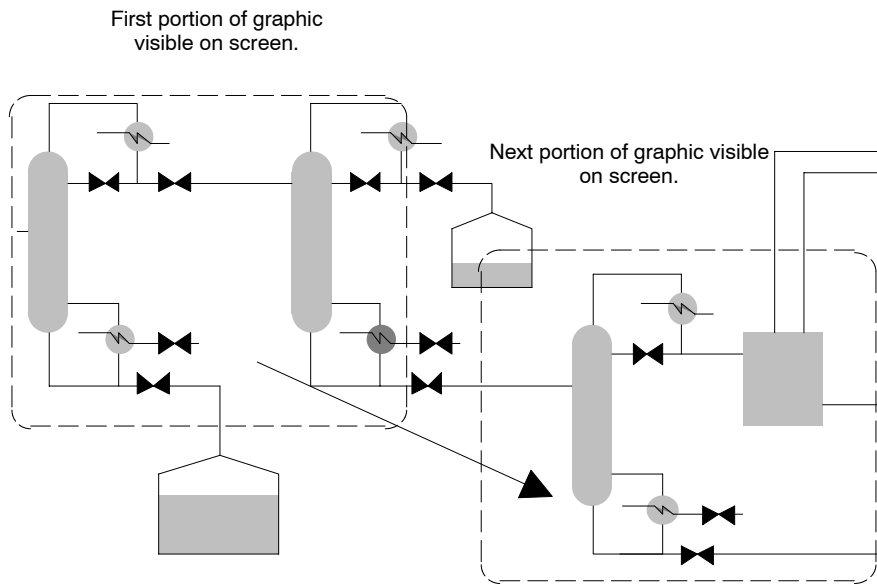


- ❑ **To call up a graphic display using a callup command, type:**
  - PG:** *(volume, filename)* [ENTER]
  - or
  - PG:** *(node #, filename)* [ENTER]

### Calling Up a Graphic Display

## Viewing Graphics

The actual graphic could be larger than what is displayed on the console at any one time. You can view any part of the graphic by rolling the trackball in the desired direction.



### Moving Around a Graphic with the Trackball



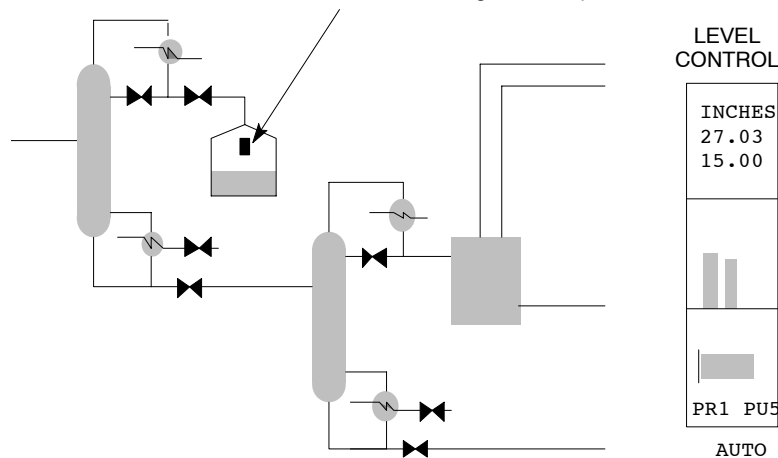
## Faceplates

Graphics can be configured to include pop-up faceplates (and permanent faceplates). You can control plant discrete and analog values from the faceplates.

**NOTE:** Pop-up faceplates display a priority (PR) and plant unit (PU) number below the output bar. These numbers are used for sorting and directing alarms to the console. For more information, see the Console Configuration manual.

**To pop-up a faceplate:**

- Cursor to the device to be operated and press [SELECT]. The faceplate pops up. The device can then be controlled through the faceplate.



**Pop-up Faceplate on a Graphic Display**

## Direct Discrete or Analog Control

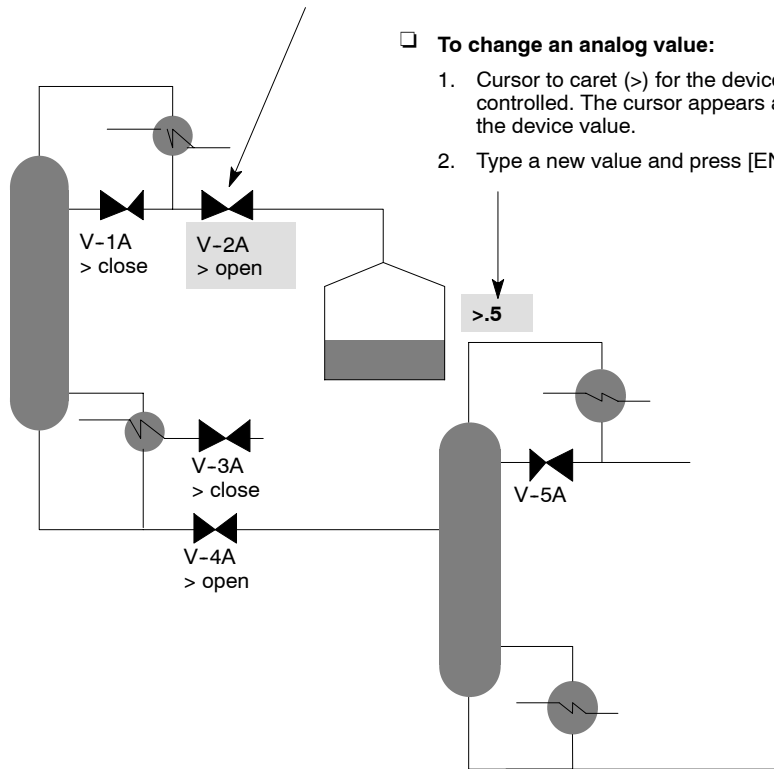
Graphic displays can be designed to enable you to control discrete operations directly without the use of faceplates. A caret (>) symbol followed by a discrete status (e.g., open, start, off, etc.) indicates that you can control discrete functions directly on the graphic display.

☐ **To enter a discrete command:**

- Cursor to the caret (>) for the device to be controlled and press [ENTER]. The discrete state of the device changes.

☐ **To change an analog value:**

1. Cursor to caret (>) for the device to be controlled. The cursor appears above the device value.
2. Type a new value and press [ENTER].



**Direct Discrete Control on a Graphic Display**

## Reports

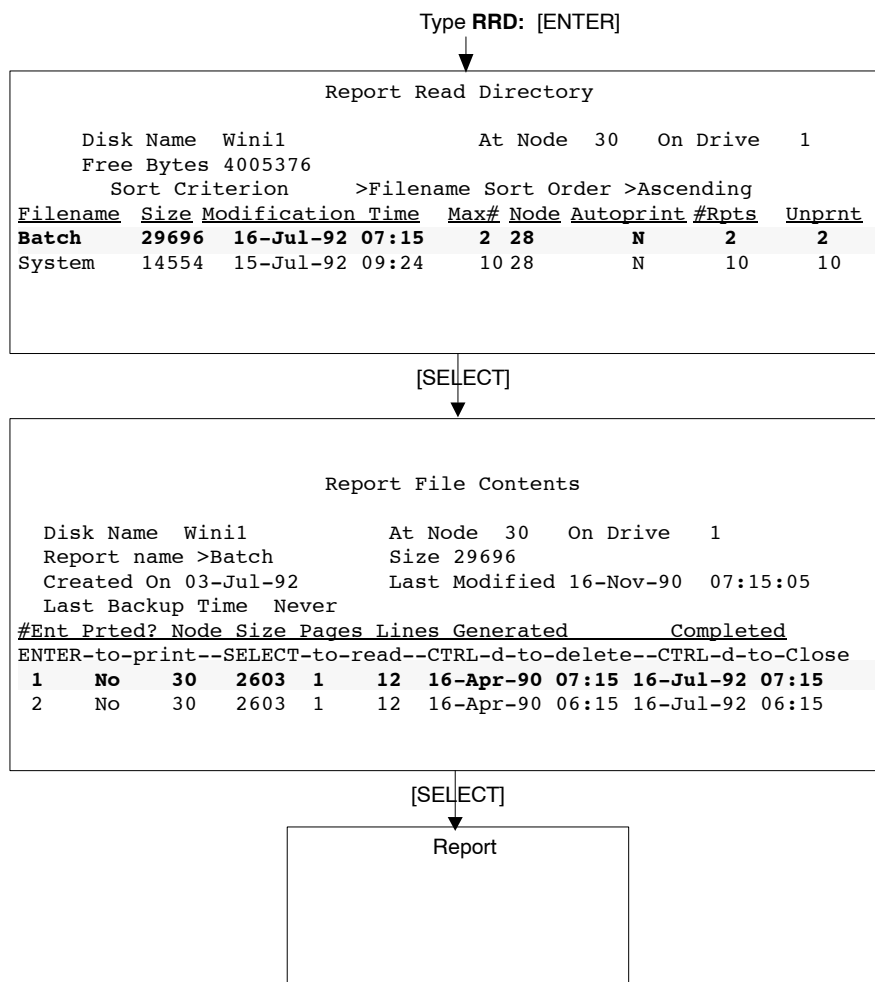
Reports display information about operations. Reports can be printed or viewed on the screen. They can be generated as a result of time events, alarms, and other conditions.

S H I F T   D A T A						
DATE PRINTED: 4-Jul-92				PAGE 1		
TIME PRINTED: 02:45:53						
WEST PLANT OPERATIONS						
TAG	DESCRIPTOR	TOTAL	UNITS	-----MAXIMUM-----		
				VALUE	UNITS	TIME
TOT130	OXYGEN PROD	37198.	SCUFT	7193.3	SCFM	82830.
TOT131	NITROGEN PROD	31636.	CUFT	10000	SCFM	81555.
TOT132	ARGON PROD	33197.	CUFT	9984.2	SCFM	81541.
TOTAL	PRODUCT VOL.	1.0203	MCFT			
ENERGY CONSUMPTION & PRODUCTION EFFICIENCIES						
JT130	POWER LINE 1	1.78	KW-HR	24.6	KW	85934.
JT131	POWER LINE 2	3.67	KW-HR	254.0	KW	85936.
JT132	POWER LINE 3	5.06	KW-HR	350.0	KW	85937.
***END OF REPORT***						

### Sample Report Display

## Calling Up Reports

You can access reports through the Report Read Directory and the Report File Contents screens. The Report Read Directory lists the report files that you can access. In turn, each report file has a Report File Contents screen that lists the report displays that are available. For each report, it shows PeerWay location, number of generations, and the date of the most recent generation of a report display.



### Calling Up Reports



## Report File Contents Screen

The Report File Contents screen lists the report displays for a report filename. You can select individual report displays to view on the screen or print. Each report file can have up to a maximum of 10 report displays.

- To call up a Report File Contents screen:**
  - From the Report Read Directory, cursor to a report field and press [SELECT].
  - or*
  - From the command line, type:  
**RFC [ENTER]**

- To call up a report display from the report file:**
  - Cursor to the report filename and press [SELECT].
- To print a report display from the report file:**
  - Cursor to the report filename and press [ENTER].

Report File Contents									
Disk Name	Win11	At Node	30	On Drive	1				
Report name	>Batch	Size	29696						
Created On	03-JUL-92	Last Modified	16-Nov-90	07:15:05					
Last Backup Time	Never								
#Ent	Prtd?	Node	Size	Pages	Lines	Generated	Completed		
ENTER-to-print--SELECT-to-read--CTRL-d-to-delete--CTRL-d-to-Close									
1	No	30	2603	1	12	16-Jul-92 07:15	16-Apr-90	07:15	
2	No	30	2603	1	12	16-Jul-92 06:15	16-Apr-90	06:15	

**Sample Report File Contents Screen**

## Report Displays

A new report display is generated each time a report file is opened and new data is written to the report file (for this reason, report displays are sometimes called report generations). Each report file can have a maximum of 10 report displays.

**To call up a report display:**

- From the Report File Contents screen, cursor to a report display field (indicated by entry number) and press [SELECT].

*or*

- From the command line, type:

**RR: ( , filename) [ENTER]**

**To change the report file:**

- Type the report filename in the "Filename" field and press [ENTER].

**To change the report display:**

- Type the report display number in the "Print entry #" field and press [ENTER].

```

Filename: >PLANT Print entry # >1 (1=newest, 99=oldest entry)
Generated on 13-Jul-92, from 15:44:30 to 15:44:32 Lines: 20
WEST PLANT OPERATIONS
-----MAXIMUM-----
TAG      DESCRIPTOR      TOTAL      UNITS      VALUE      UNITS      TIME
TOT130  OXYGEN PROD     37198.     SCUFT      7193.3     SCFM      82830.
TOT131  NITROGEN PROD   31636.     CUFT       10000.     SCFM      81555.
TOT132  ARGON PROD      33197.     CUFT       9984.2     SCFM      81541.
TOTAL   PRODUCT VOL.    1.0203     MCFT
ENERGY CONSUMPTION & PRODUCTION EFFICIENCIES
    
```

### Calling Up a Report Display

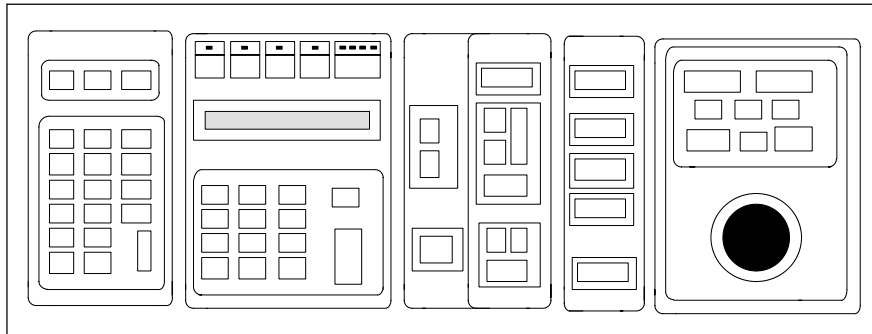
---

## Using the Display Keys

---

The display section of the operator keyboard contains dedicated keys for calling up commonly used displays. The list below shows several keys that call up directories or special screens when used in conjunction with the [DIRECTORY] key.

**NOTE:** The list below shows the default values of the display keys. The configurator can change the key default values to perform functions other than those listed below.



Display  
Section

<input type="checkbox"/> To call up a display	Type:
Group Directory	[GROUP DISPLAY] [DIRECTORY]
Overview Directory	[OVERVIEW] [DIRECTORY]
Process Graphic Directory	[PROCESS GRAPHIC] [DIRECTORY]
Trend Display Menu	[TREND] [DIRECTORY]
Report Read Directory	[REPORT] [DIRECTORY]

### Using the Display Keys



---

## Section 3: Continuous Control

---

Continuous Control Overview .....	3-2
Continuous Faceplate .....	3-3
Continuous Faceplate Symbols .....	3-4
Selecting the Mode .....	3-7
Changing the Setpoint .....	3-8
Changing the Output .....	3-10
Cascade Control .....	3-12
Adjusting a Cascade Loop— Secondary Controller in Remote .....	3-13
Adjusting Setpoint of the Secondary Controller in a Cascade Loop .....	3-14
Adjusting Output of the Secondary Controller in a Cascade Loop .....	3-16
Ratio and Bias Control .....	3-18
Ratio or Bias Control Using a Single Faceplate .....	3-19
Ratio or Bias Control Using Two Faceplates .....	3-20

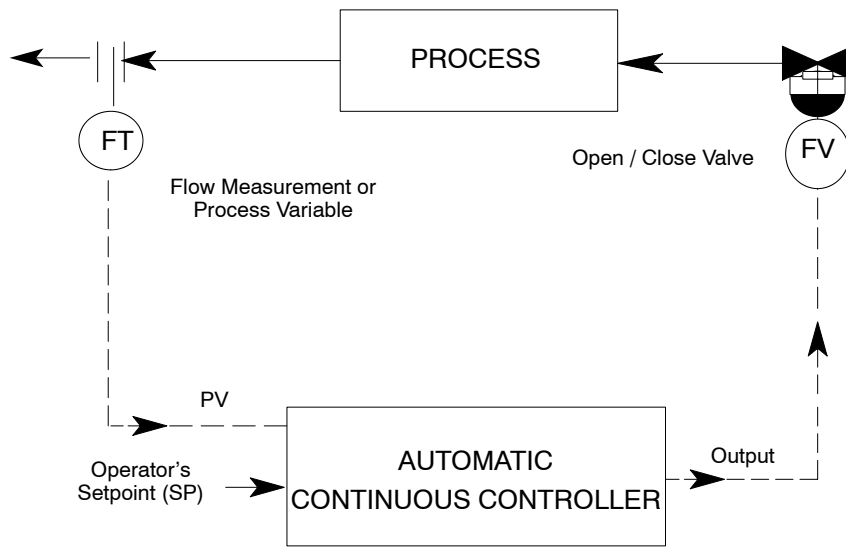
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## Continuous Control Overview

---

Continuous control involves changing the relationship between a measured input signal to a controller and the controller's output signal. An input signal is generated by a measuring device at a specific point in the process. The controller compares the measured value against a reference value called the setpoint. If the controller senses any difference between the two, it sends an output signal to a device such as a valve or motor to make an adjustment in the process.

In the following illustration, a flow transmitter (FT) senses flow through a process and sends a measurement (PV) to the controller. The controller compares the flow measurement with the flow setpoint and sends an output signal to the outflow valve to adjust flow equal to the setpoint.



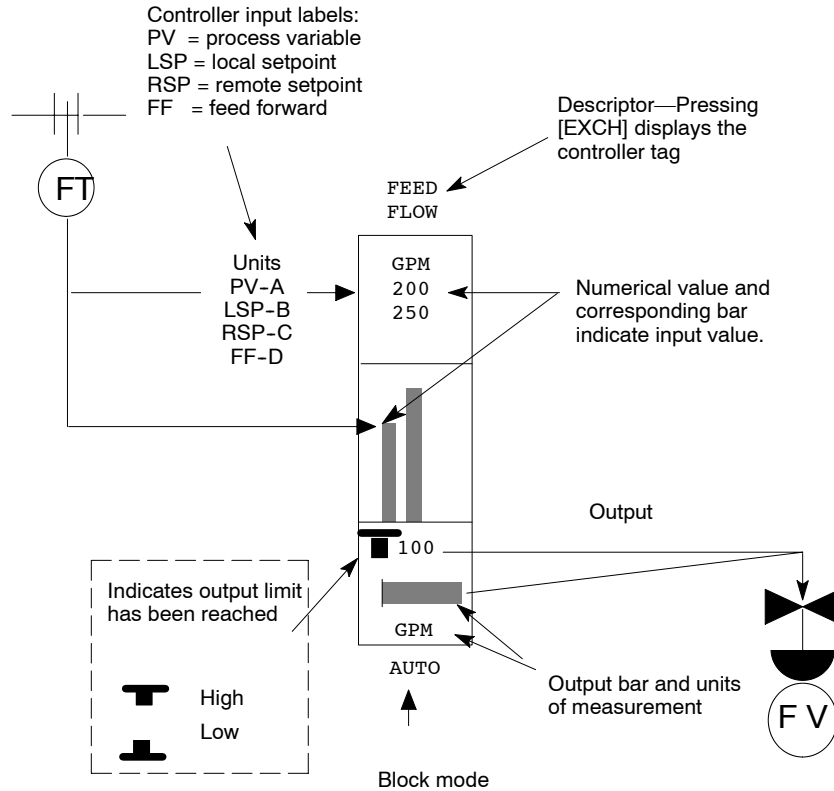
**Typical Continuous Control Loop**

## Continuous Faceplate

The continuous faceplate allows you to view operating conditions for a control loop and to make control adjustments. Continuous variables such as setpoint, ratio, and output can be configured with high, low, and rate of change limits. If the variable reaches one of these limits, the console displays the following message:

Limit has been reached

In addition, in Auto mode the continuous faceplate indicates when an output high or low limit has been reached.



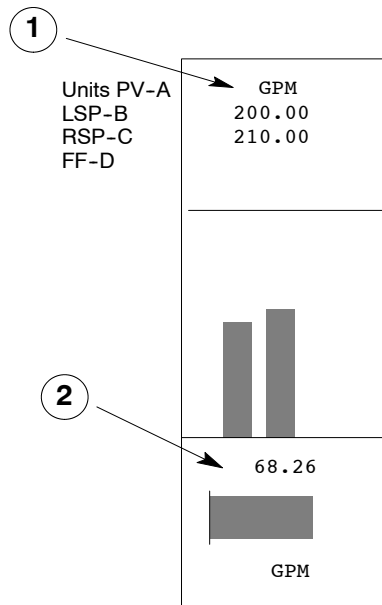
**Typical Continuous Faceplate**

---

## Continuous Faceplate Symbols








---

Symbols can appear on the continuous faceplate display in the following locations.









**Placement of Symbols on a Continuous Faceplate Display**

### Continuous Faceplate Symbols

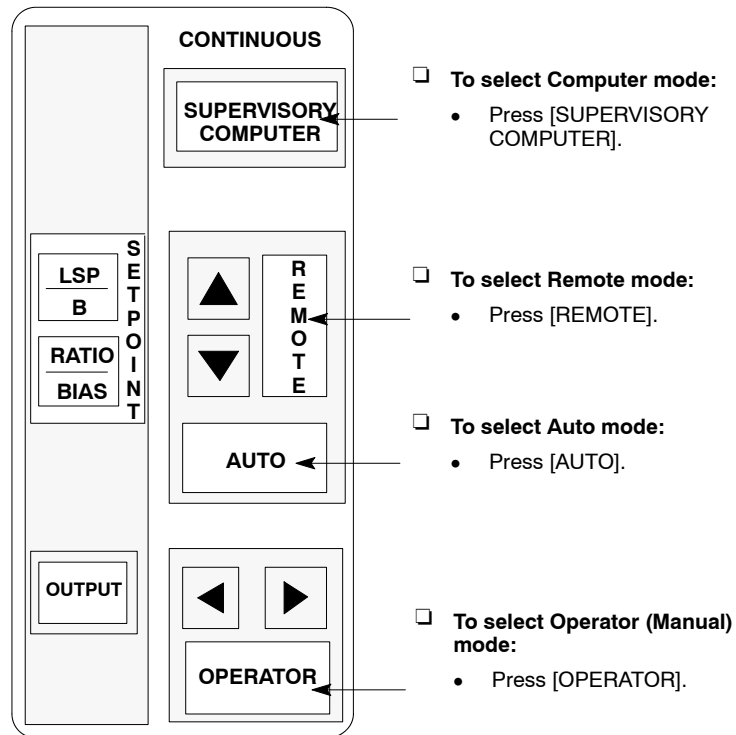
Symbol	Color	Location	Description
	White	①	The input is linked from an input block or from another controller.
	White	①	The value may be adjusted using the slewing keys on the Operator Keyboard.
	White	②	The output has reached its low limit.
	White	②	The output has reached its high limit.
	Yellow	①	Rate limit has been reached.
	Red or Yellow	①	Deviation Alarm. Color indicates alarm state: red = critical; yellow = advisory.
	White	①	Invalid input. Indicates a configuration error (try to link a block with hardware address to nonexistent block).

**Continuous Faceplate Symbols (continued)**

Symbol	Color	Location	Description
	Green	1	The local setpoint (LS) is tracking the process variable (PV) or output (Q). This is an optional feature that can be selected by a configurator on the Continuous Faceplate screen of a controller. When selected, tracking takes place when the controller is in either the Manual or Local mode.
	Green	2	The output is being forced to track another variable. The controller, therefore, is not currently responding to its own setpoint. This commonly occurs at the output of the primary controller in a cascade loop when the secondary is in either the Auto, Manual, or Local modes.
	White	1,2	The output or setpoint is being controlled by a logic function. The controller, therefore, may not currently be responding to its own setpoint.
	Red or Yellow	1,2	An alarm limit has reached the high limit. The color of the arrow indicates whether it is a critical or an advisory alarm.
	Red or Yellow	1,2	An alarm limit has reached the low limit. The color of the arrow indicates whether it is a critical or an advisory alarm.
	Green	1	The signal to the controller is lost because: transmitter or I/O hardware fails, input controller is switched to Manual mode, or a link from input I/O hardware fails.

## Selecting the Mode

You can change the controller mode using the loop operation panel at the MTCCs. The block cannot be changed to Local mode from the MTCC or Hardened Command Console operator keyboard.



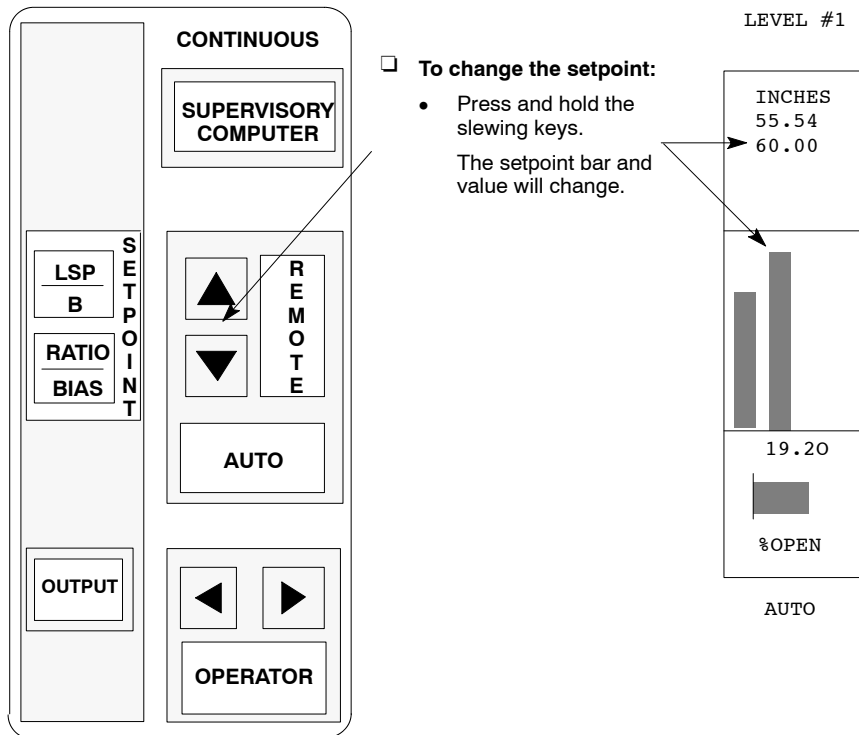
Selecting Controller Modes

## Changing the Setpoint

The setpoint value is indicated by the position of the setpoint bar and the setpoint numerical value. You can change the setpoint from a continuous faceplate by:

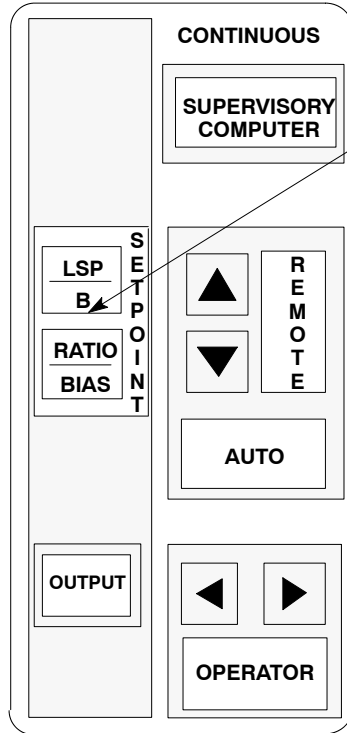
- Pressing and holding the slewing keys on the console.
- or*
- Pressing the setpoint change key and entering the setpoint at the top of the faceplate from the numeric keypad.

**NOTE:** A pop-up faceplate on a process graphic displays both the setpoint and output field at the top of the faceplate in white. Remember which change key you press.

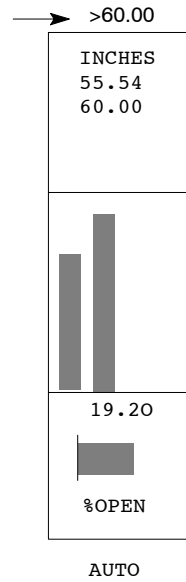


**Changing Setpoint with the Slewing Keys**





- **To change the setpoint by directly entering a value:**
  1. Press [LSP/B].
  2. Enter the new setpoint at the top of the faceplate.



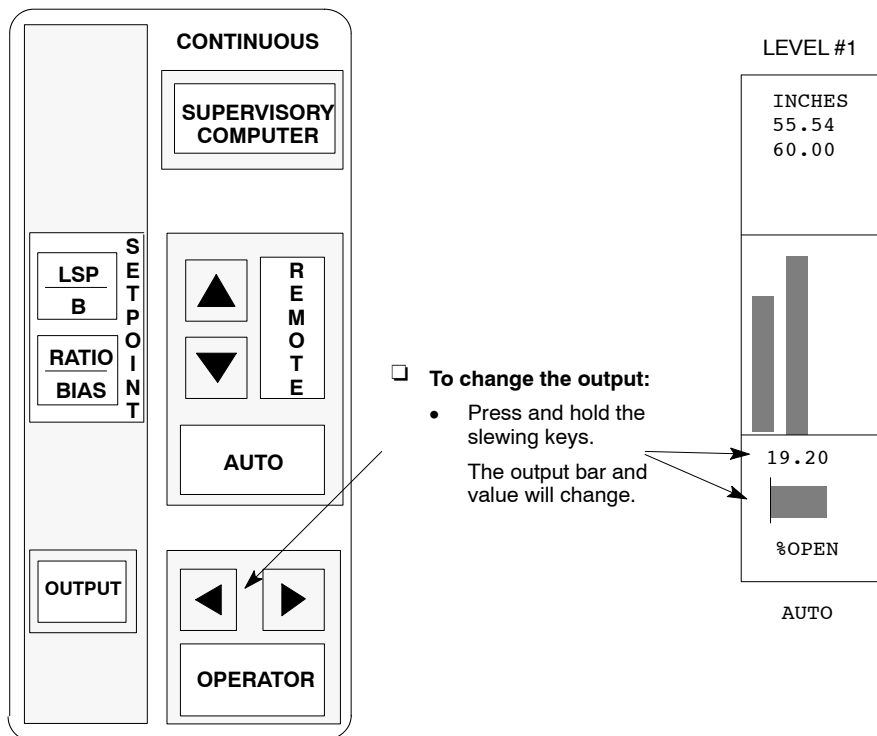
**Changing Setpoint by Directly Entering a Value**

## Changing the Output

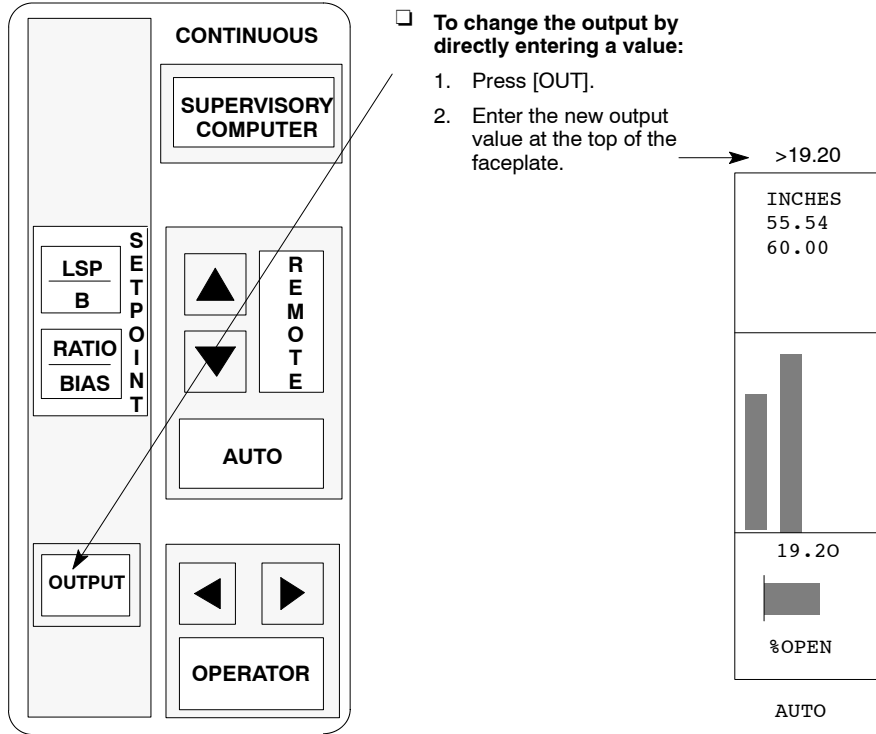
The output value is indicated by the position of the output bar and the output numerical value. You can control the output from a continuous faceplate while it is in Manual or Local mode by:

- Pressing and holding the slewing keys on the console.
- or*
- Pressing the output change key and entering the output at the top of the faceplate from the numeric keypad.

**NOTE:** A pop-up faceplate on a process graphic displays both the output and setpoint field at the top of the faceplate in white. Remember which change key you press.



### Changing Output with the Slewing Keys



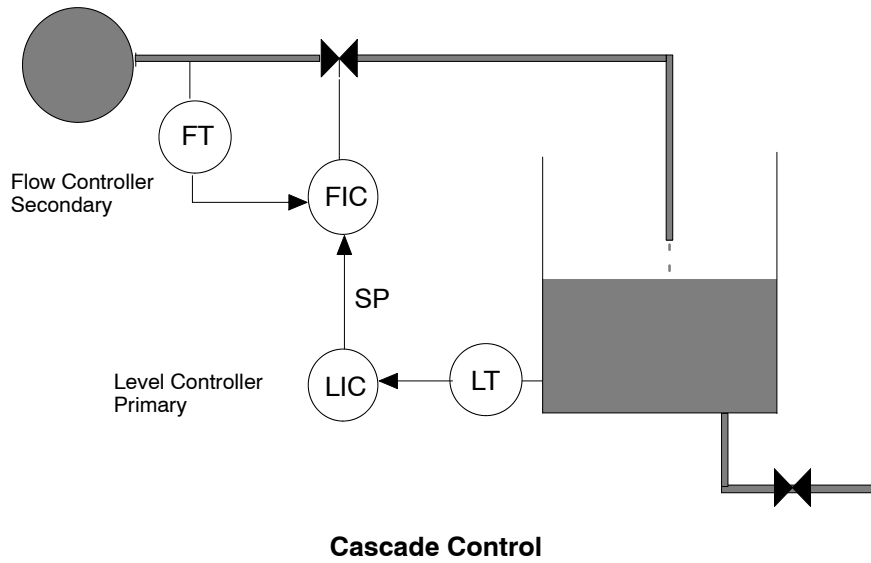
**Changing Output by Directly Entering a Value**

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## Cascade Control

---

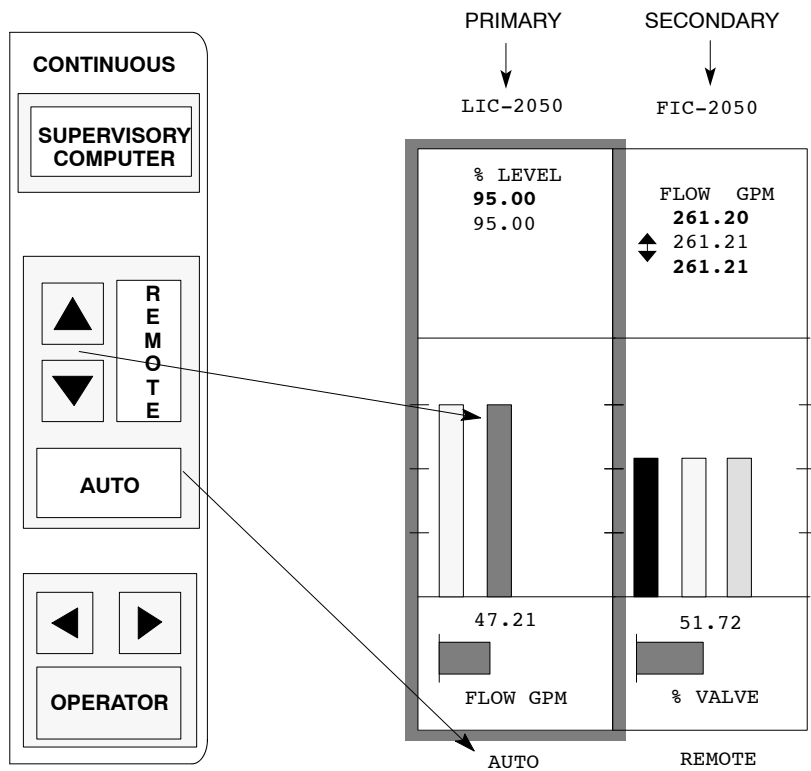
Cascade control consists of two control loops—a primary loop and a secondary loop. The primary loop, which is the slower-acting loop, provides the setpoint for the faster secondary loop.



## Adjusting a Cascade Loop— Secondary Controller in Remote

The following illustration shows two faceplates for a primary and secondary control loop. In a typical cascade control loop, the primary loop output must be in the Auto mode and the secondary loop must be in the Remote mode in order for the secondary loop to respond to changes in the primary setpoint. The output of the primary loop is automatically used as the setpoint of the secondary loop. In this situation you cannot adjust the secondary setpoint.

- **To adjust a cascade loop:**
  1. If necessary, cursor to the faceplate for the primary loop and press [AUTO].
  2. Press and hold slewing keys to adjust the primary loop setpoint.



**Automatic Cascade Control—Secondary Controller in Remote**

## **Adjusting Setpoint of the Secondary Controller in a Cascade Loop**

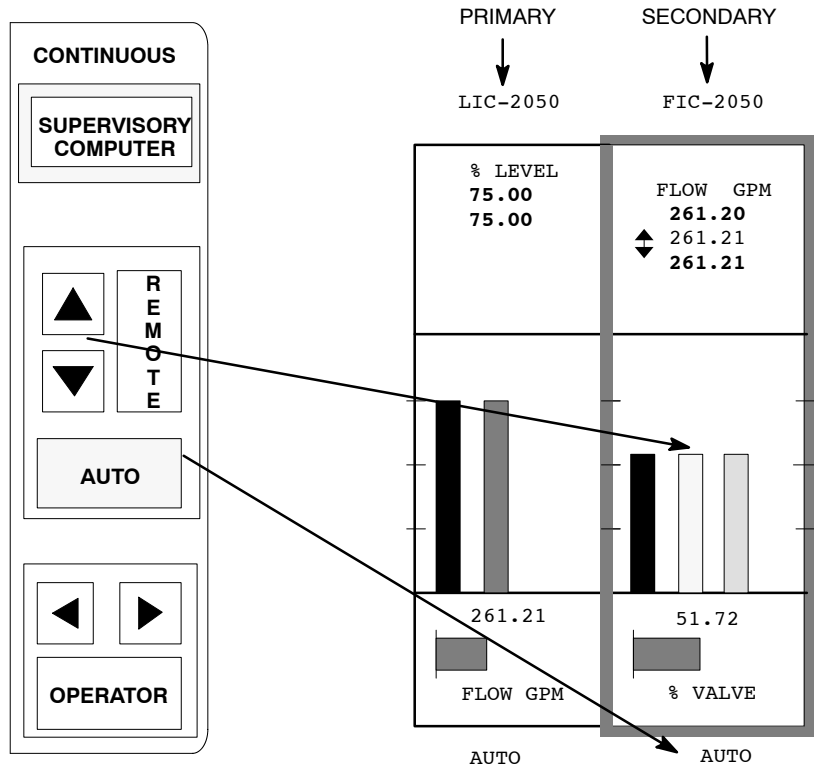
---

To adjust the secondary controller setpoint directly, you must break the cascade control loop. The following illustration shows two faceplates for a primary and secondary control loop that have been broken. If the secondary loop is in Auto, you can adjust the secondary loop setpoint. To resume cascade control of the loop, switch the secondary controller back to the Remote mode.

### **CAUTION**

**If tracking is not configured, the secondary setpoint might change when you switch the secondary controller back to remote.**

- **To adjust the setpoint of the secondary loop:**
  1. Cursor to the faceplate for the secondary loop and press [AUTO].
  2. Press and hold slewing buttons to adjust the secondary loop setpoint.



**Setpoint Control—Secondary Controller in Auto**

## **Adjusting Output of the Secondary Controller in a Cascade Loop**

---

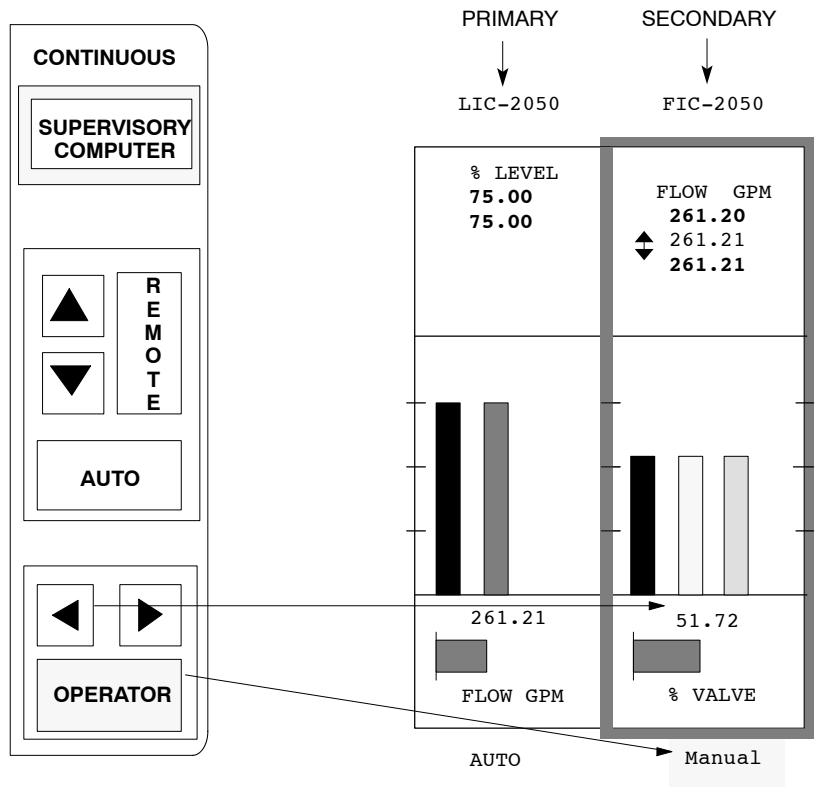
To adjust the secondary controller output directly, you must break the cascade control loop. The following illustration shows two faceplates for a primary and secondary control loop that have been broken. If the secondary loop is in Manual, you can adjust the secondary loop output. To resume cascade control of the loop, switch the secondary controller back to the Remote mode.

### **CAUTION**

**If tracking is not configured, the secondary setpoint might change when you switch the secondary controller back to Remote.**



- To adjust the output of the secondary loop:
  1. Cursor to the faceplate for the secondary loop and press [OPERATOR].
  2. Press and hold slewing buttons to adjust the secondary loop output.



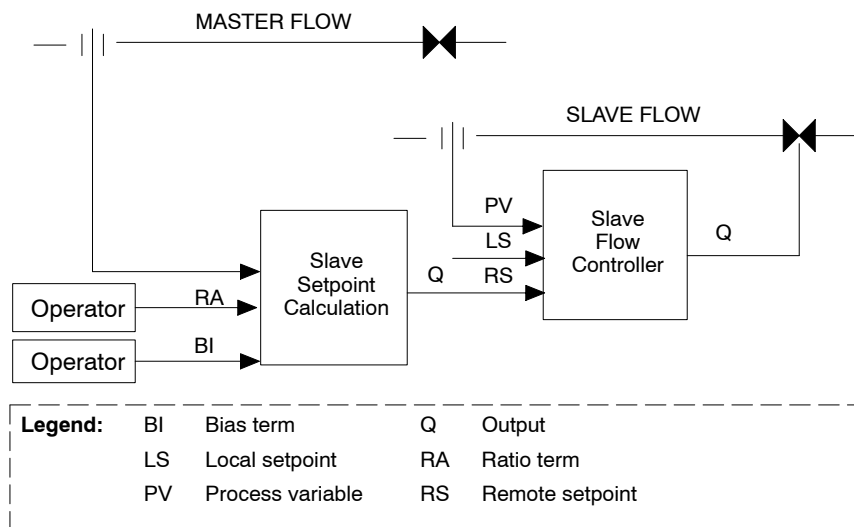
**Setpoint Control—Secondary Controller in Manual**

## Ratio and Bias Control

Ratio control is used to mix two or more flows together continuously in a predetermined fraction or ratio. The master flow measurement is multiplied by the ratio value to determine the setpoint for the slave flow controller. A bias value may also be used in slave setpoint determination to add or subtract a small amount from the master flow value.

There are several ways to configure faceplates to provide for adjustment of the ratio and bias values. In some cases where both ratio and bias values are used, only one, or perhaps neither, are adjustable from an operating display. The following paragraphs describe the most common configurations and show how adjustments are made. These include:

- Ratio or bias only using a single faceplate
- Ratio or bias only using two faceplates
- Ratio and bias, with only one adjustable, using two faceplates
- Ratio and bias, with both adjustable, using two faceplates



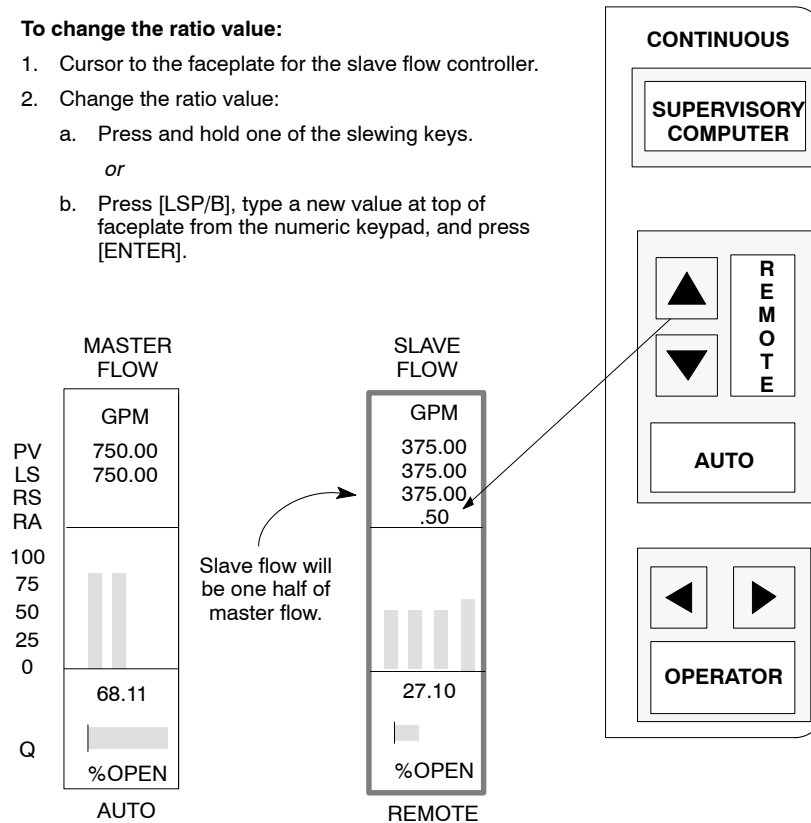
### Calculation of Slave Flow Remote Setpoint

## Ratio or Bias Control Using a Single Faceplate

With this configuration only the ratio value can be adjusted from the faceplate. The setpoint slewing buttons and [LSP/B] act on the ratio value. Therefore, you cannot adjust the Local Setpoint even when the loop is in the AUTO mode.

The same approach can be used for bias control, with the bias value being substituted for the ratio value.

- **To change the ratio value:**
  1. Cursor to the faceplate for the slave flow controller.
  2. Change the ratio value:
    - a. Press and hold one of the slewing keys.  
*or*
    - b. Press [LSP/B], type a new value at top of faceplate from the numeric keypad, and press [ENTER].



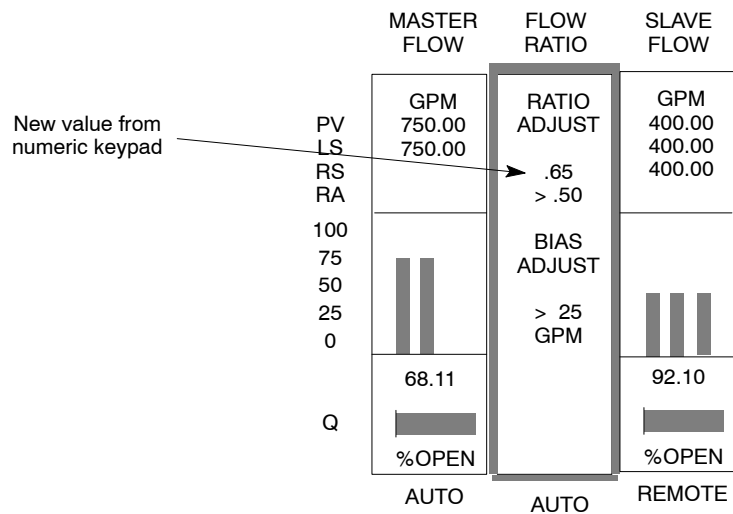
### Ratio Controller with Ratio Adjustment on a Single Faceplate

## Ratio or Bias Control Using Two Faceplates

This configuration allows manual adjustment of the slave flow setpoint with the slave controller in the AUTO mode. This permits independent control of the slave flow during startup, shutdown, or under abnormal conditions.

Ratio, bias, or both may be configured for use in such a case. Either or both may be adjustable through the faceplate by entering a new value from the numeric keypad. A caret (>) symbol will appear to the left of the value if it is adjustable.

- **To change the ratio or bias value:**
  1. Cursor to the faceplate containing the entry field.
  2. Cursor to the space above the present value.
  3. Using the numeric keypad, type in the new value.
  4. Press [ENTER] to complete the change.



**Ratio and Bias Control Using Two Faceplates**

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## Section 4: Discrete Control

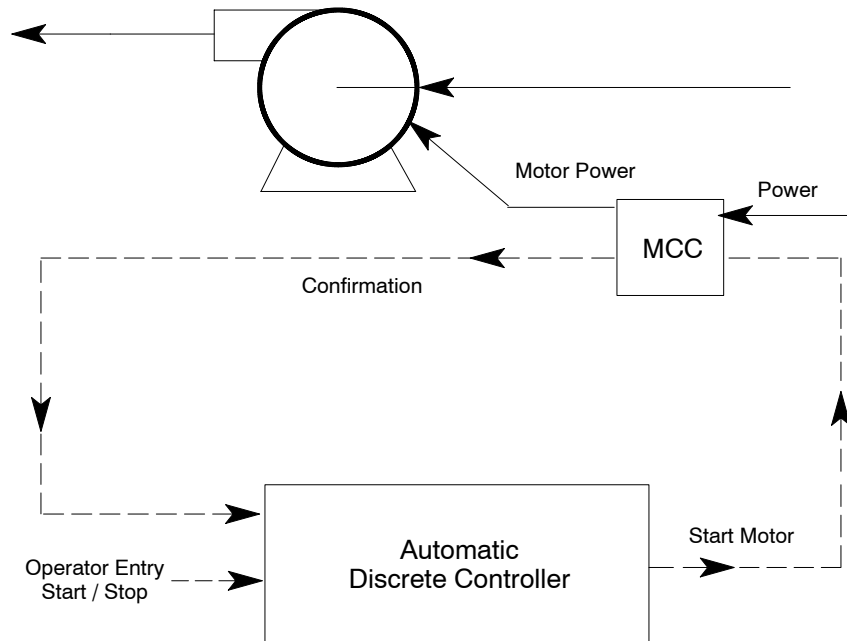
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Discrete Control Overview .....	4-2
Discrete Faceplate .....	4-3
Numerical Entries on a Discrete Faceplate .....	4-4
Motor and Valve Controllers .....	4-5
Motor Controllers .....	4-5
Valve Controllers .....	4-7
Controller Modes .....	4-9
Device State Indicators .....	4-10
Operating Restrictions and Conventions .....	4-11

## Discrete Control Overview

Discrete control is used to position a device in one of two operational states, such as open or closed, on or off, start or stop. In this two-state control action, there is only a maximum or a minimum signal (on or off).

The illustration below shows a discrete control loop. The operator starts the pump with a switch or button and the automatic controller sends a start signal to the Motor Control Center (MCC), which provides the motor power to start the pump. A confirmation signal in the form of a contact closure is then sent from the MCC back to the automatic discrete controller. If the confirmation signal is not received within a preset time, the controller sends a stop signal to the MCC. In the same manner a stop signal is sent from the controller to the motor to shut it off. An automatic start/stop signal can be used instead of the operator entry.



**Typical Discrete Control Loop**

## Discrete Faceplate

Discrete faceplates can display up to 17 lines of information, such as equipment status, continuous variable value, control output confirmation, and various symbols.

The following illustration shows examples of discrete faceplates. You can change fields that start with a caret (>). Discrete fields include on/off, start/stop, etc. The discrete field functions in one of the following ways while under operator control:

- Momentary      Turns on or off for one second.
- Sustained      Turns on or off until changed.
- Select          Only one switch of a group can be on at a time.

Group 2: MOTOR CONTROLS
23-Jul-9211:50:50

Desc	PUMP 1	BLOWER 5	FLOW
1	OPERATOR	OPERATOR	AUTO
2	start	> start	Enter
3	stop	> stop	Dosage
4			Setpoint
5	---AUTO---	---AUTO---	-----
6	start	start	-> 2.11
7	stop	stop	MG / L
8			
9	-----	-----	-----
10	-	ON CFM	
11	on cfm	off cfm	AUTO
12	off cfm	tripped	
13	tripped		
14	--OUTPUT--	--OUTPUT--	--OUTPUT--
15	run	RUN	Flow
16	stop	stop	42.6
17	failed	failed	GPM

OPERATOR

AUTO
OPERATOR
AUTO

**To start a discrete device from a discrete faceplate:**

1. Cursor to > start.
2. Press [ENTER].

Motor starts and the controller receives device confirmation.

Output indicates device state.

**Typical Discrete Faceplate**

## Numerical Entries on a Discrete Faceplate

You can enter a numerical value on discrete faceplates if it starts with a caret (>) symbol. Continuous fields show numeric values for process variables.

Group 2: MOTOR CONTROLS 23-Jul-92 11:50:50

Desc	PUMP 1	BLOWER 5	FLOW
1	OPERATOR	OPERATOR	AUTO
2	start	> start	Enter
3	stop	> stop	Dosage
4			Setpoint
5	---AUTO---	---AUTO---	-----
6	start	start	3.00
7	stop	stop	> 2.11
8			MG / L
9	-----	-----	-----
10	-on cfm	ON CFRM	-----
11	off cfm	off cfm	-----
12	tripped	tripped	
13	---OUTPUT---	---OUTPUT---	---OUTPUT---
14	run	RUN	Flow
15	stop	stop	42.6
16	failed	failed	GPM
17			

**To change a continuous value on a discrete faceplate:**

1. Cursor to the value and type a new value.
2. Press [ENTER]. The new value appears.

AUTO      OPERATOR      AUTO

### Continuous Control from a Discrete Faceplate



## Motor and Valve Controllers

The RS3 has standard functions available to control motors and valves. You can control these motors and valves manually through their faceplates.

### Motor Controllers

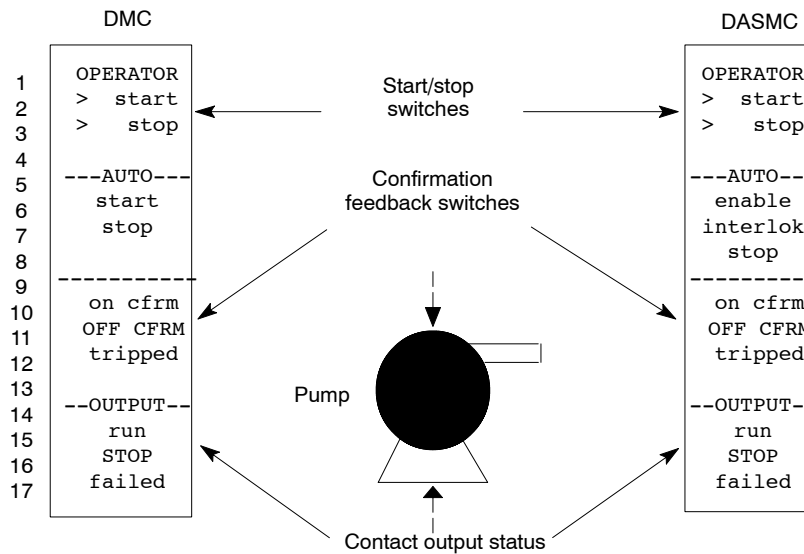
The following illustrations describe the motor controllers and their functions. They also show the motor controller faceplates.

#### Motor Controller (DMC)

A single-speed electric motor.

#### Auto Sequence Motor Controller (DASMC)

A single-speed electric motor which is one of several that must be automatically started in a certain order.

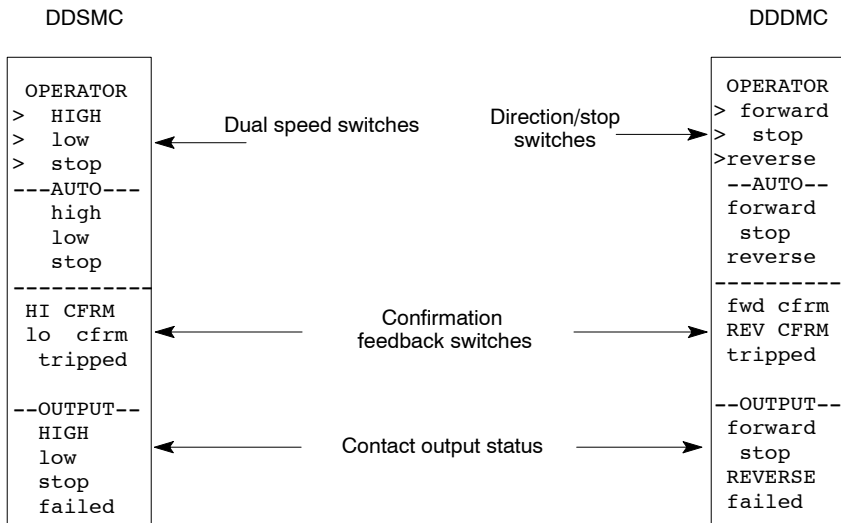


**Motor Controller Faceplates**

OP: 4-6

**Dual Speed Motor Controller (DDSMC)**  
A two-speed electric motor.

**Dual Direction Motor Controller (DDDMC)**  
A reversible electric motor.



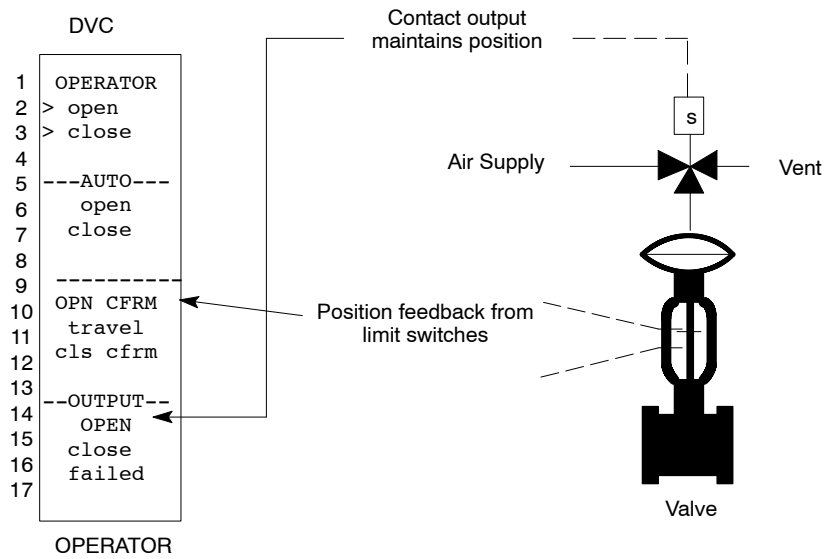
**Motor Controller Faceplates (continued)**

## Valve Controllers

The following illustrations describe the valve controllers and their functions. They also show the valve controller faceplates.

### Valve Controller (DVC)

Any valve, such as a solenoid valve, which requires a contact closure to maintain the open position, closed position, or both.



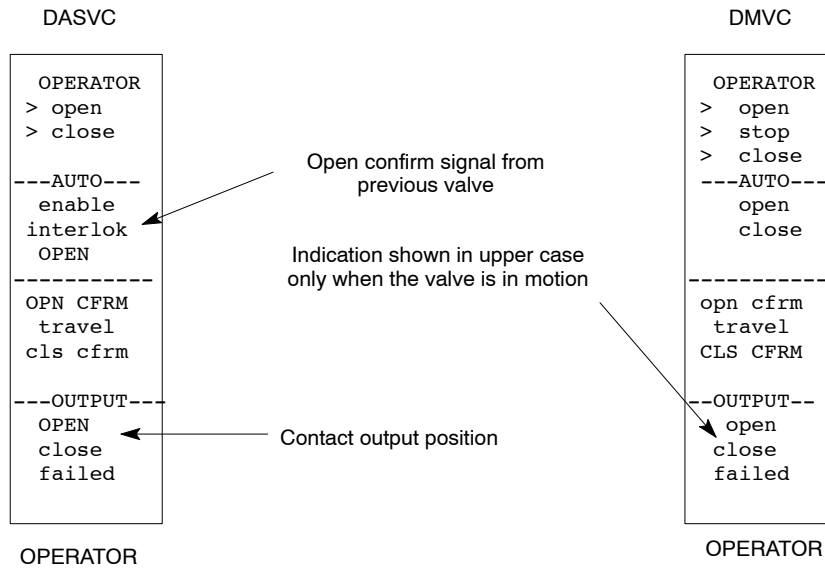
**OP: 4-8**

**Auto Sequence Valve Controller (DASVC)**

Similar to DMC, except the valve is one of several which must be automatically opened in a certain order.

**Motorized Valve Controller (DMVC)**

Motorized valve operators, which require a contact closure to change position but not to maintain position.



**Valve Controller Faceplates (continued)**

## Controller Modes

---

The following table lists the motor and valve controller modes and what actions an operator can take in each mode.

**Motor and Valve Controller Modes**

<b>Controller Mode</b>	<b>Operator Actions Possible</b>
AUTO	Block responds only to Auto commands (e.g., start, stop, open, close, etc.) and ignores commands from the keyboard.
MANUAL or OPERATOR	Block responds only to Manual keyboard (operator-entered) commands and ignores Auto commands. Press the [Operator] key to select the Manual mode.
LOCAL	Local is not a useful operating mode for a motor or valve controller.
COMP SP or DDC	COMP SP and DDC are not used by a motor or valve controller.

## Device State Indicators

---

Motor and valve controllers use several indicators to display device states on the controller faceplate.

**Case letters** Uppercase letters (for example, OPEN) indicate that the device state is active. Lowercase letters (e.g., open) indicate the the device state is not active.

**Backlighting** Some device states are backlit when active.

**Color** Indicates the criticality of the device state:

Green The device state is not critical.

Blue The device state is neutral.

Yellow The device is performing a noncritical action. For example, if the “Travel” state is yellow, the valve stem is in the process of opening or closing.

Red The device state is critical. For example, if the interlock state is red, the interlock condition is false and the device cannot function.

## **Operating Restrictions and Conventions**

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Below are certain operating restrictions and special features that you should be aware of when operating motor or valve controllers.

### **Confirmation Signals**

Confirmation signals are typically found in rows 10 and 11 of the motor controller faceplate and rows 10 and 12 of the valve controller faceplate. Row 10 is the On or Open Confirm and row 11 or 12 is the OFF or Closed Confirm. Under normal operation, an On Confirm is backlit when the motor is started. The Off Confirm is an optional field that indicates when the motor goes off.

### **Interlocks**

Interlocks are an option with most motor and valve controllers. If configured, the interlock sets a condition that must be true in order to start a motor or to keep it running. If the interlock is not true, you will not be able to start a motor; if the motor is on, it shuts off.

### **Retry**

If the retry option is configured, the controller automatically tries to restart the motor a preset number of times after an unsuccessful start. If the motor does not start within the preset number of retries, it goes into a lockout for a preset period of time. No retries can be attempted until that lockout period of time has elapsed.

### **Security Lockup**

The security lockup option prevents restart attempts after a tripped condition. A reset signal has to be received from a source defined by the configurator in order to clear the block for a restart.

### **Tripped Condition**

A motor may be tripped in response to a number of system faults. For example:

- If power temporarily fails.
- If an “On Confirm” disappears
- If a motor does not respond within a set time.

The faceplate shows that the motor has failed.

OP: 4-12

### **Failed**

Indicates that a motor has failed. If the tripped motor or stuck valve has caused the motor to fail, perform the following two-step process to start the device again:

**Motor has tripped**

1. Cursor to the “Stop” field on the faceplate and press [ENTER].
2. Cursor to the “Start” field and press [ENTER].

**Valve is stuck open**

1. Cursor to the “Open” field and press [ENTER].
2. Cursor to the “Close” field on the faceplate and press [ENTER].

### **Travel**

Indicates that the valve stem is somewhere between the open and closed positions.

### **Enable**

Indicates that the DASMCM block can start running. Before the DASMCM can be enabled, the following must be true:

- The Interlock condition has been met.
- The DASMCM block time delay has expired.
- The DASMCM block has received an “ON CFRM” message from a previous device in the operation sequence.



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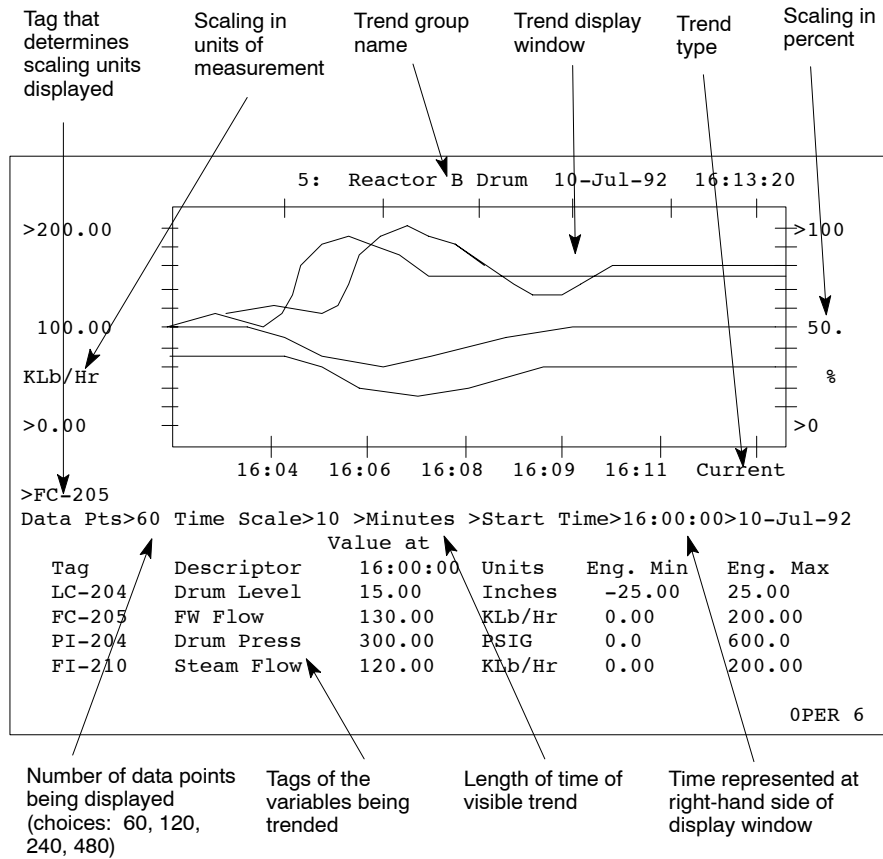
## Section 5: Trending

---

Trend Displays .....	5-2
Calling up a Trend Display .....	5-3
Calling Up a Controller From a Trend Display .....	5-4
Changing Engineering Units of Measure .....	5-5
Changing the Scaling Limits .....	5-5
Changing the Measurement Scale .....	5-7
Displaying Individual Trends .....	5-8
Viewing Historical Data .....	5-9
Changing the Trend Time Scale .....	5-10
Changing the Trend Start Time .....	5-11
Reading Trend Values at any Point In Time .....	5-13
Changing the Default Time and Measurement Scales ...	5-15
Trend Interruptions .....	5-16

## Trend Displays

Trend displays record the value of variables over a period of time, similar to what a chart recorder does. Any variable available from a controller can be trended. A trend display shows data for up to four variables in a trend group. Up to 400 trend groups can be configured for a console.

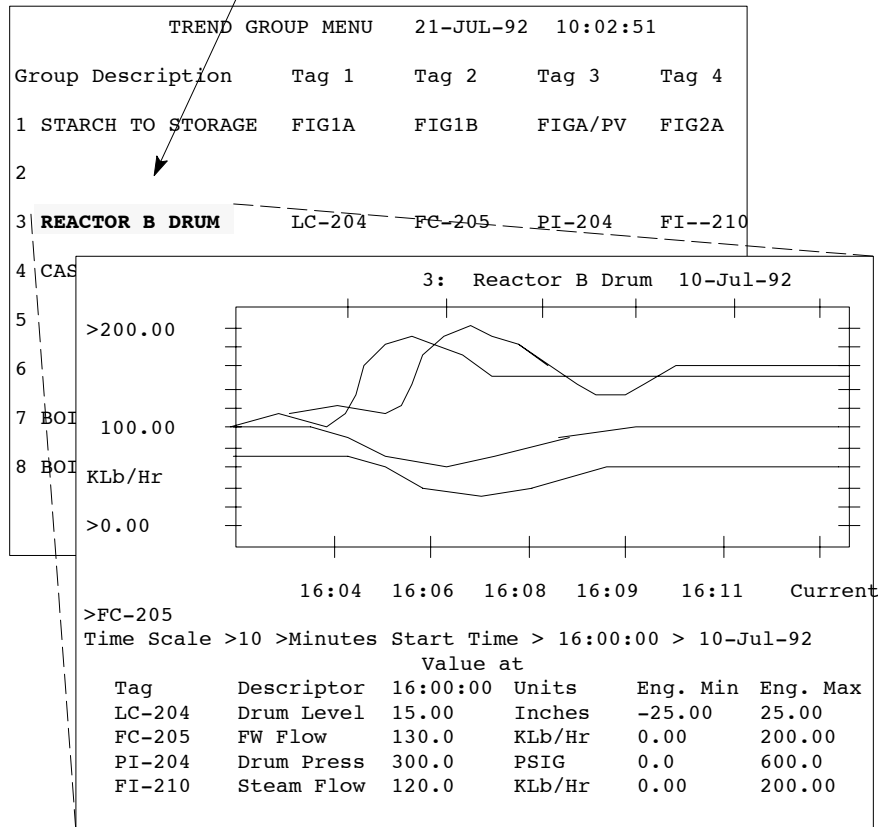


Sample Trend Display

## Calling up a Trend Display

You can call up trend display from the keyboard or from the Trend Group Menu.

- To call up a trend display from a configuration keyboard:**
  - At the display command line, type:  
**TG: (group number) [ENTER]**
- To scroll trend groups:**
  - Press [Page]
- To call up a trend display from the Trend Group Menu:**
  1. Type **TGD: [ENTER]**. The Trend Group Menu appears.
  2. Cursor to the trend group name, and press [SELECT].

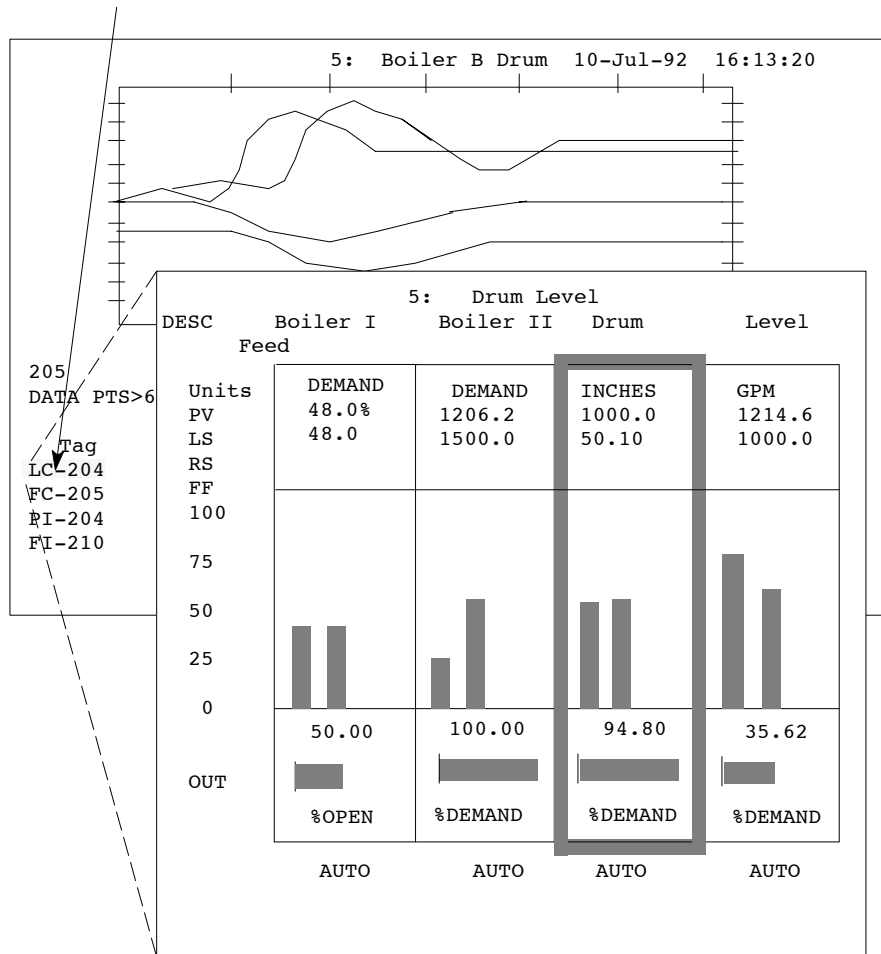


Calling up a Trend Display from Trend Group Menu

## Calling Up a Controller From a Trend Display

You can call up related displays for the controllers represented in a trend display. If the controller is included in a group display, the group display is called up. Otherwise, the controller's configuration screen is called up.

- To call up a group display from a trend display:
  - Cursor to the controller tag and press [SELECT]. On a group display, the controller display appears with a boxed-in faceplate.



Calling Up a Group Display from a Trend Display

## Changing Engineering Units of Measure

Engineering units of measurement are represented by:

- Scaling limits
- The measurement scale

### Changing the Scaling Limits

There are two ways you can change the scaling limits:

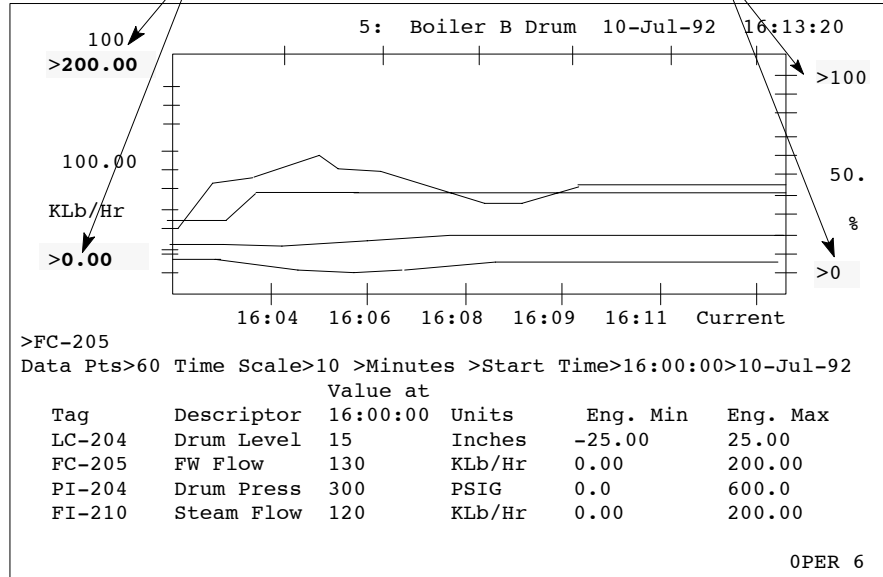
- Change the units of measurement scaling on the left side of the trend. The units of measurement scale is associated with the tag displayed on the left side of the trend below the scale.
- Change the percent scaling on the right side of the trend. The percent scale is a relative value of 0 to 100%.

**To change scaling limits:**

1. Cursor to the scaling limit.
2. Type a value and press [ENTER].

**To change percent scaling:**

1. Cursor to the percent limit.
2. Type a value and press [ENTER].



### Changing Trend Display Scaling Limits—0 to 200 KLb/Hr

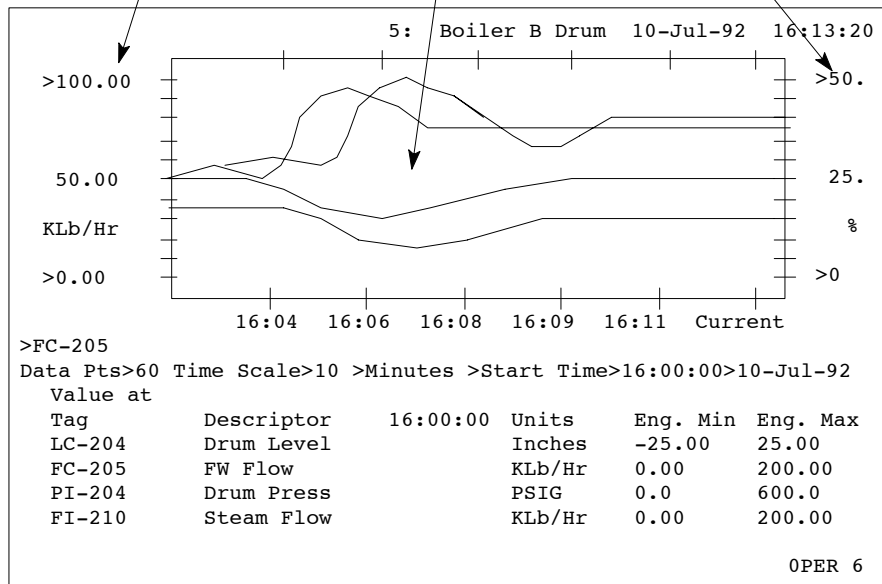
**OP: 5-6**

A change in one scale results in a change in the other scale and in the displayed trend.

Note that the scaling changes to 100.

Note that the graph expands.

Note that the percent scaling changes to 50.

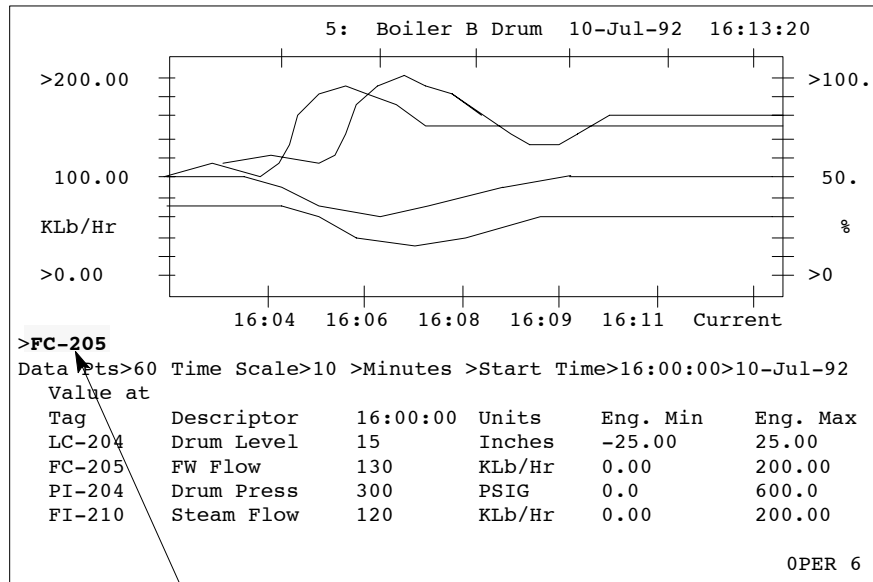


**Changing Trend Display Scaling Limits—0 to 100 KLb/Hr**

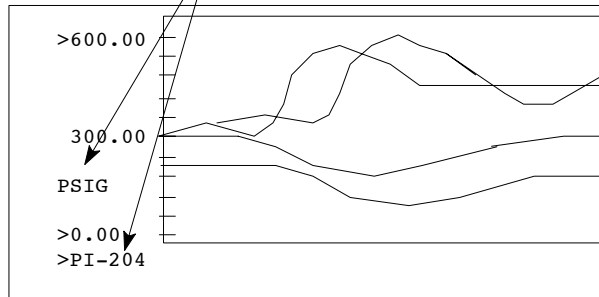
## Changing the Measurement Scale

By changing the tag, you can change the units of measurement used by the trend display. Changing the tag does not change the trend displayed in the window.

- To change the tag that determines the trend scale:



1. Cursor to this tag and press [NEXT OPTION] repeatedly to find the desired tag.
2. When the desired tag is shown in the field, press [ENTER]. New tag and units are displayed in the trend scale.

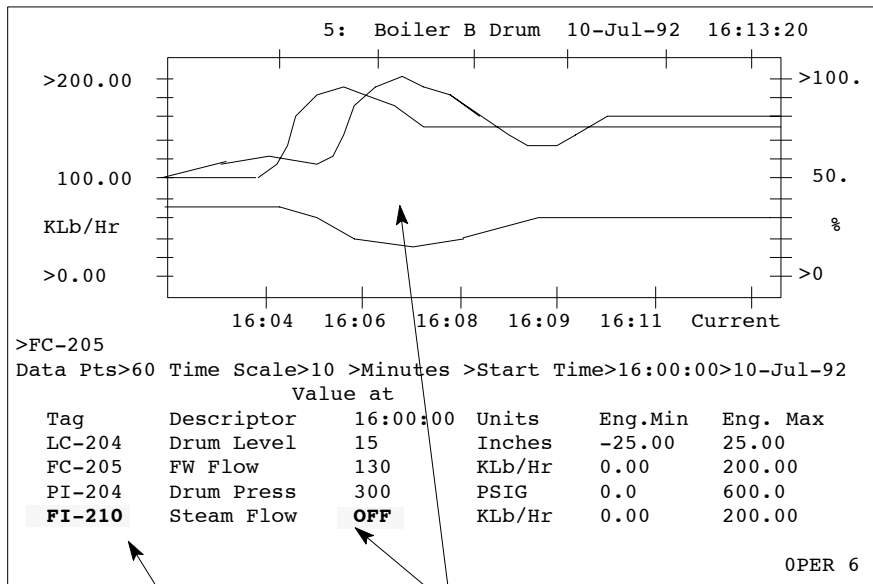


## Changing the Tag Displayed on a Trend

## Displaying Individual Trends

You can toggle the trend display of each variable on or off. When a display is off, the trend data is not discarded; it is simply not shown. This procedure can be done to reduce clutter in a trend display window.

- To toggle the trend display of a variable on or off:



- Cursor to the tag of the trended link and press [ENTER].

The trend display for the tag is no longer shown and "OFF" appears in the "Value at" field.

### Turning Off a Variable on a Trend Display



---

## Viewing Historical Data

---

The trend displays represent variable values over a period of time. You can select the period of time with the following fields:

**Time Scale** The amount of time represented within the display window. The first time scale field can be any number from 1 to 366. The second field indicates units of time in either minutes, hours, or days.

**Start Time** The beginning date and time of day for the trend. The start time is represented on the left side of the display. The most recent data is represented on the right side of the display. Data on the left side is older.

**End Time** The ending date and time of day for the trend. The end time is represented on the right side of the display. Data on the left side is older.

**NOTE:** End Time can only be used with historical data. When you select “End Time”, a current trend is automatically replaced by a historical trend.

**Trend Type** Indicates whether the trend is a current or historical trend.

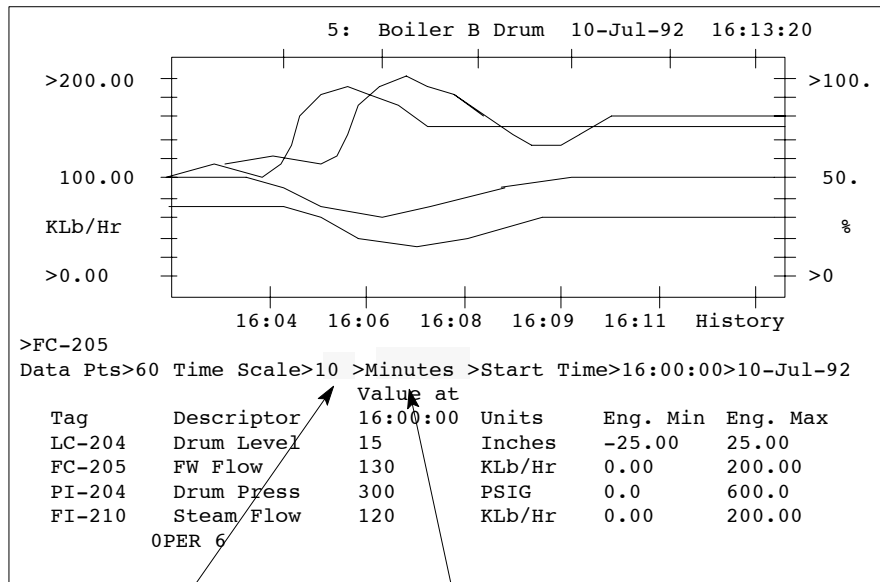
**Current** Indicates that the graph is showing the most current trending data and that the graph is continually updating. When you call up the trend group, the graph always displays current trending.

**History** Indicates that the graph is showing historical data from a previous period of time and that the graph is not updating.

## Changing the Trend Time Scale

You can represent the time scale in minutes, hours, or days.

☐ To change the time scale:



1. Type a value at the "Time Scale" field and press [ENTER].

2. Press [NEXT OPTION] to get minutes, hours, or days, and then press [ENTER]

### Changing Trend Time Scale

## Changing the Trend Start Time

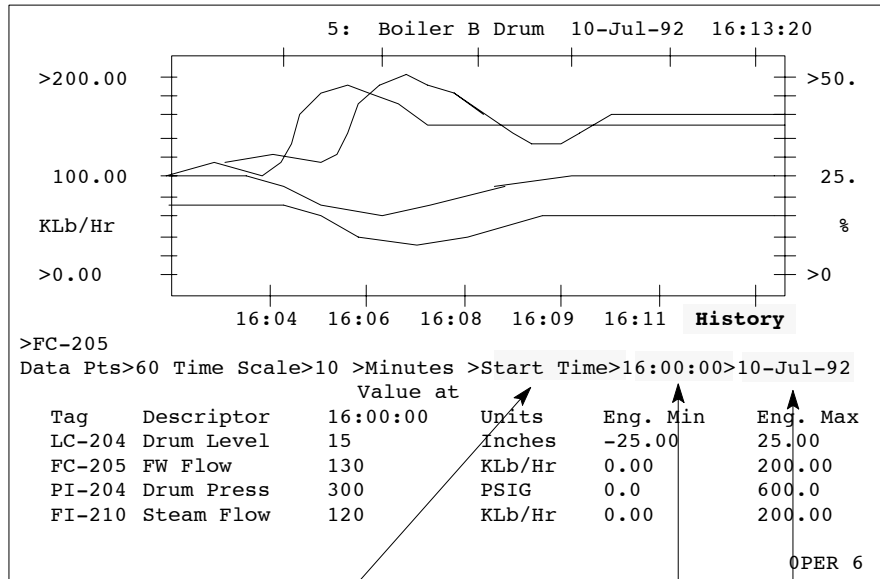
---

Start time is the time of the newest data on the trend graph. If you enter a time in the “Start Time” field, the field displays “History” and the trend display shows historical data.

The format for start time is HH:MM:SS; the format for date is DD-MM-YY.

### NOTE:

- You can substitute a period (.) for a colon (:) in the time field.
- You can substitute a number from 1 to 12 for the month in the date field.
- You must enter a number for each value (hours, minutes, and seconds) in the time field and each value (days, months, and years) in the date field. Zero is an acceptable value.



**To select an end time for a history trend:**

1. Cursor to the "Start Time" field and press [NEXT OPTION]. "End Time" appears above "Start Time".
2. Press [ENTER]. "End Time" replaces "Start Time". If a current trend is displayed, it is automatically replaced by a historical trend.

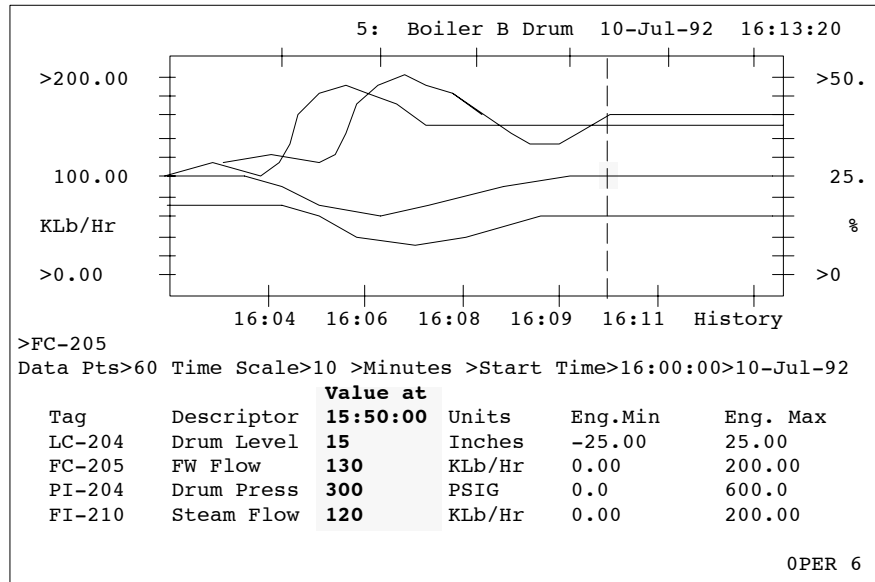
**To select a start time for a historical trend:**

1. Type a start time and press [ENTER].
2. Type a start date and press [ENTER]. The trend type "History" is displayed, indicating that the trend data is from a previous period of time.

**Changing Trend Start Time**

## Reading Trend Values at any Point In Time

You can use a slide wire feature to read precise values at any point on a trend display where you position the cursor.

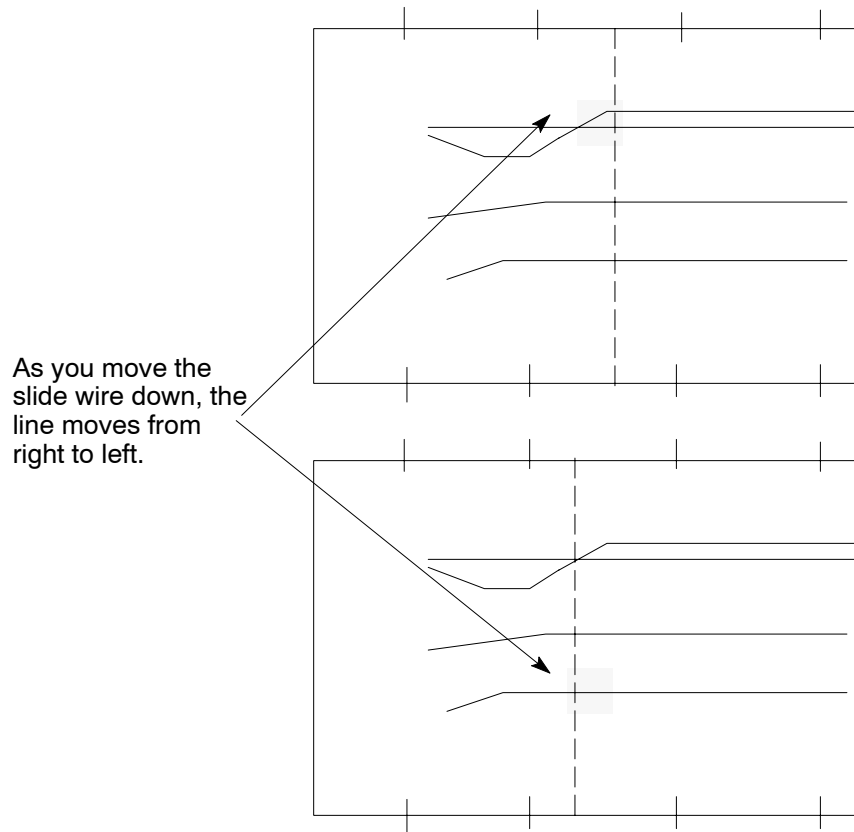


**To read trend values at any point in time:**

- Position the cursor at a desired point inside the trend window.  
A vertical line appears where the cursor is located.  
The exact time at that point and values of the trended variables are displayed under the "Value at" field.

### Reading Trend Display Value with a Slide Wire

**NOTE:** You can position the slide wire more precisely by moving the cursor up or down. As you move the cursor up, the line moves from the left to the right through the cursor; as you move the cursor down, the line moves from right to left through the cursor.



**Slide Wire Fine Adjustment**

## Changing the Default Time and Measurement Scales

You can define default time and measurement scales so that you do not have to reenter these values each time you call up the trend display.

For more information on the Trend Group Configuration screen, see the Console Configuration manual.

- To call up the Trend Group Configuration screen from a trend display:**
  - Press [EXCHANGE] to toggle the screen display between the Trend Group Configuration screen and the trend display.

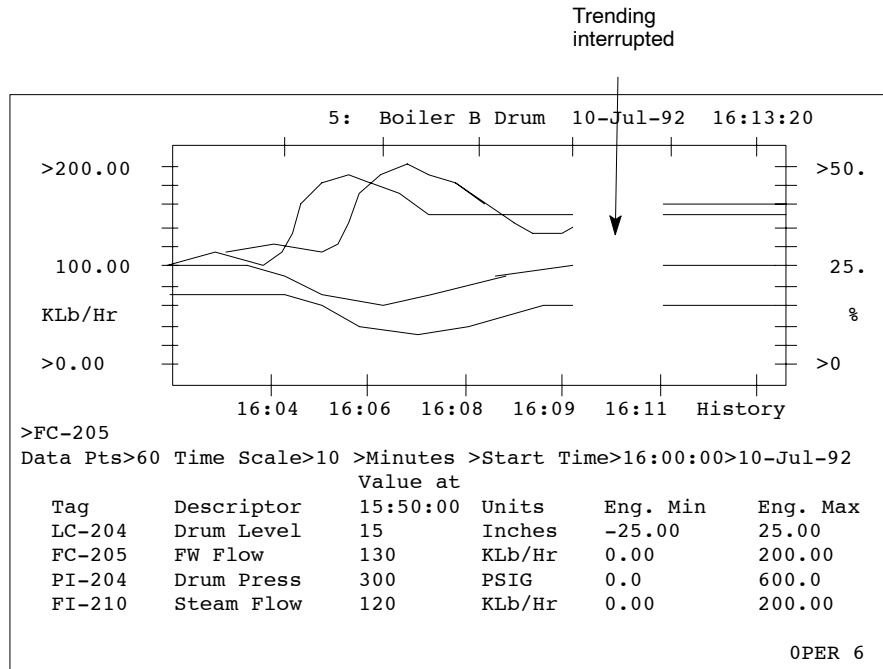
TREND GROUP CONFIGURATION						
Trend Group Number >1						
Group Description > Boiler B Drum						
Tag	Descriptor	Node	File	Freq.	Type	State
1 LC-204	Drum Level	>32	3	10 secs	average	Good
2 LC-205	Drum Level	>32	3	10 secs	average	Good
3 PI-204	Drum Level	>32	3	10 secs	average	Good
4 FI-210	Drum Level	>32	3	10 secs	average	Good
Data Pts>60      Time Scale>10      >Minutes						
Vertical Graph Scaling (default)						
Trend number >1		Min >0. %	Max >100. %			
						OPER 6

- To change the default measurement scale:**
  - Enter a number from 1 to 4 for the tag you want to scale in the "Trend number" field. The trend display will show the measurement scale for that tag.
- To change the default time scale:**
  - Enter a new time scale in the "Time Scale" field. The trend display will show the new time scale.

### Changing the Default Time and Measurement Scales

## Trend Interruptions

You may occasionally see a trend display that appears to be interrupted by blank gaps in the graph. Interruptions typically represent periods of time when trending was disabled or no data was being collected.



**Trend Graph with Interruption**



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## Section 6: Alarms

---

Alarm Annunciation .....	6-2
Alarm Display Annunciation .....	6-3
Alarm Banner .....	6-3
Alarm Summary .....	6-5
Alarm Priority .....	6-6
Alarm Colors .....	6-7
Keyboard Annunciation .....	6-8
Display Annunciation .....	6-9
Acknowledging Alarms .....	6-10
Responding to Alarms .....	6-12
Controlling Alarm Annunciation .....	6-14
Suppressing and Unsuppressing Alarms .....	6-14
Enabling and Disabling Alarm Areas .....	6-16
Alarm Lists .....	6-17
Locating a Process Alarm Using the Process Alarm List .....	6-18
Responding to Hardware Alarms .....	6-20
Responding to System Status Messages .....	6-21
Responding to Disk Events .....	6-21

---

## Alarm Annunciation

---

The RS3 uses alarms to alert users to problems in the system. Alarms can be announced at the console in the following ways:

- |                       |   |
|-----------------------|---|
| Alarm annunciation    | Color-coded alarm banner or alarm summary containing alarm information can appear at the bottom of the screen. The color of the banner indicates the type of alarm. |
| Keyboard annunciation | Keys on the keyboard light or blink. These keys can be used to locate the source of the alarm.  |
| Audio annunciation    | The console beeps.  |

For a complete list of RS3 alarms, see the *Alarm Messages Manual*.

## Alarm Display Annunciation

---

All RS3 alarms are announced with an alarm banner or an alarm summary at the bottom of the screen.

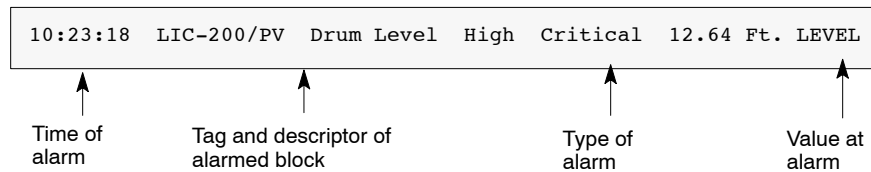
**NOTE:** There are two types of process alarms:

- Critical process alarms      Represent conditions that require immediate action.
  
- Advisory process alarms      Usually represent conditions that require less urgent attention than critical process alarms.

### Alarm Banner

---

The color-coded alarm banner contains alarm information.



**Alarm Banner**

**OP: 6-4**

The alarm banner sometimes contains more information than can be displayed on the screen at one time (primary alarm banner). You can display more of the alarm banner text (alternate alarm banner) by moving the cursor to the banner and pressing [EXCH].

The primary alarm banner will be restored when the cursor is moved from the banner or [EXCH] is pressed again.

```
10:23:18 >=13 Left CP Data Integrity Error HM AC
```

Primary Alarm Banner

```
10:23:18 >=13 Left CP Data Integrity Error (21) 0-0 HM
```

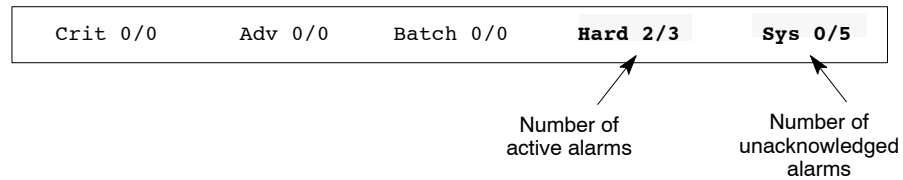
Alternate Alarm Banner

**Primary and Alternate Alarm Banner Formats**

## Alarm Summary

---

The alarm summary displays alarm type information, including the number of active and unacknowledged alarms. Active alarm types are also annunciated.



### Alarm Summary

- To enable the alarm summary mode (disable the alarm banner mode) from the command line:**
  - Type **ASE** [ENTER]
- To disable the alarm summary mode (enable the alarm banner mode) from the command line:**
  - Type **ASD** [ENTER]
- To enable or disable the alarm summary mode from the Alarm Configuration screen:**
  - Cursor to the “Summary” field and press [ENTER] to enable or disable the alarm summary mode.

## **Alarm Priority**

---

Priority determines the order in which alarm types are displayed. Alarm types are prioritized as follows:

- Hardware
- Critical Process
- Advisory Process
- Batch
- System Status
- Disk Event

This is the default priority. However, the relative priority of the hardware alarm in relation to other alarms can be configured.

## Alarm Colors

The color of the alarm banner indicates the type of alarm.

### Standard Alarm Colors

Color	Alarm Type
Red	Critical Process
Yellow	Advisory Process
Magenta	Hardware
White	System Status
Green	Disk Events
Orange	Batch

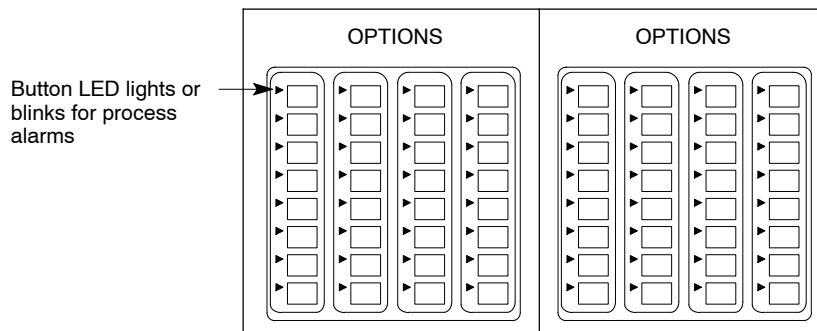
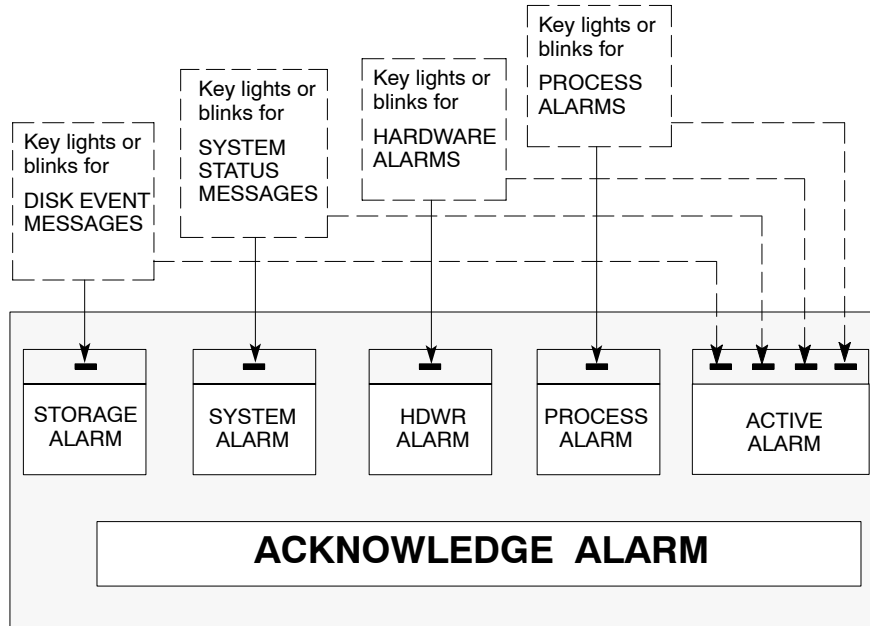
Block tags on graphic displays and group displays can be backlit by the following colors to announce alarms:

### Alarm Colors on Block Tags

Color	Alarm Type	Description
Aqua	Alarm Suppressed	Alarm banners are not displayed on the console screen. Suppressed alarms are recorded in an Active Suppressed Alarms list.
Gray	Alarm Disabled	Alarms associated with a plant area are disabled. The configurator defines the plant equipment and operations that comprise a plant area.
Salmon	Alarm Inhibited	Alarms defined in the ControlBlock are inhibited. The configurator inhibits alarms from a controller on a block-by-block basis.

## Keyboard Annunciation

Keys on the keyboard can light or blink to announce an alarm condition.



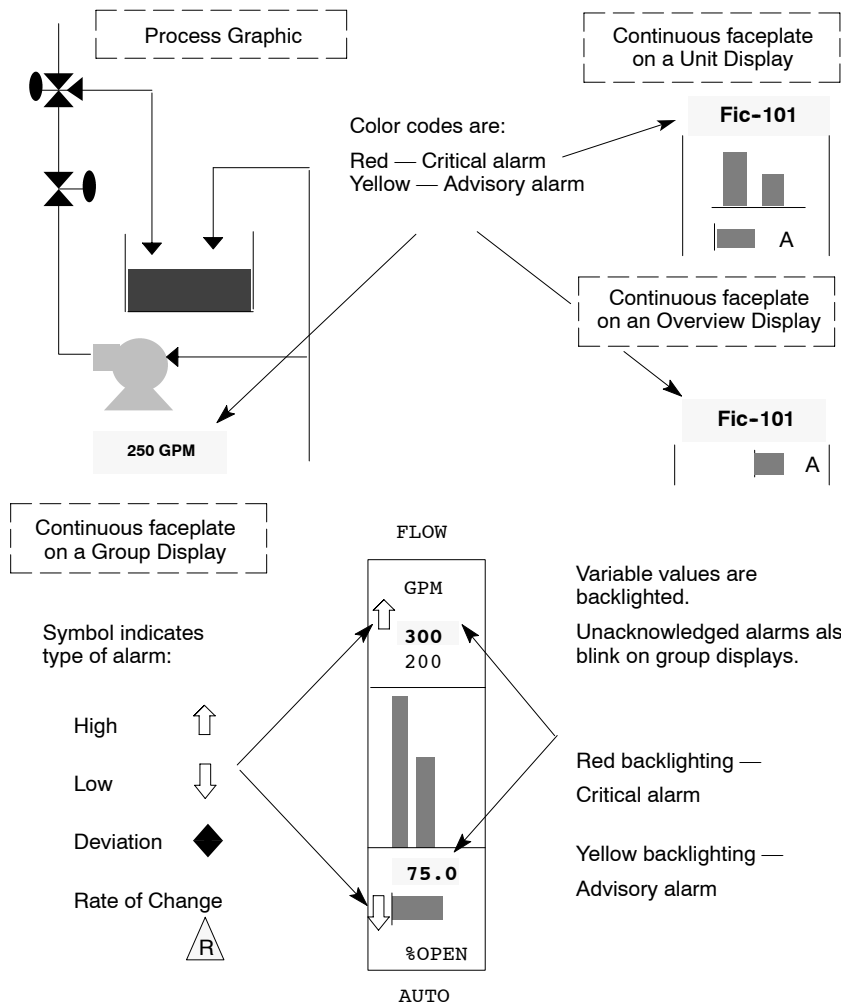
**Alarms Announced on the Keyboard**



## Display Annunciation

Faceplates and objects on process graphics can indicate controller alarms as backlighted symbols and variables. The color and type of symbol indicate the alarm type.

Controller in alarm has symbols and variable backlighted.



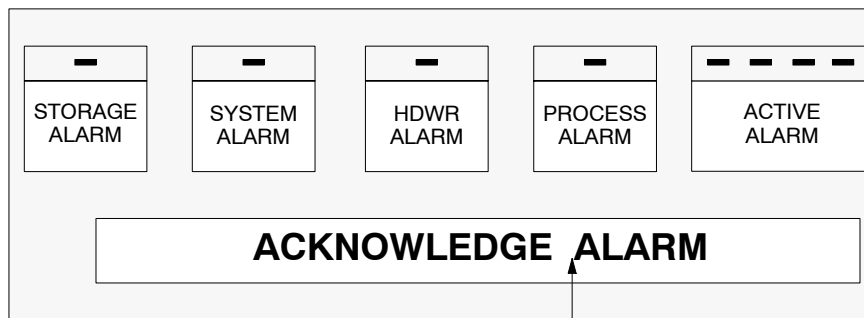
### Alarms on Displays

## Acknowledging Alarms

To acknowledge an alarm, press the [ALARM ACKNOWLEDGE] key at a console. Acknowledging an alarm indicates that you have recognized that the alarm exists.

Results of acknowledging an alarm:

- The alarm banner disappears from the bottom of the screen.
- Any associated variable values on group displays quit blinking. They remain backlit.
- The [PROCESS ALARM] and [ACTIVE ALARM] keys no longer blink. They remain lighted.
- Any associated callup buttons that were lighted and blinking no longer blink.
- Any audible alarm signal ends.



- ❑ **To acknowledge and clear alarm from screen:**
  1. If the horn is enabled, silence the horn. Type:  
**SH [ENTER]**
  2. Press [ACKNOWLEDGE ALARM]

### Acknowledge Alarm Key on Command Consoles

**NOTE:** If the alarm summary is displayed instead of the alarm banner, you can only acknowledge the alarm if the active alarm list is also displayed.

□ **To acknowledge process alarms when the alarm summary is displayed:**

1. Cursor to a blinking alarm in the alarm summary and press [SELECT]. The active alarm list appears.
2. Press the [ALARM ACKNOWLEDGE] key while the active alarm list is displayed to acknowledge the alarm.

When acknowledged, the alarm in the alarm summary stops blinking but will remain backlit until the alarm condition is corrected.

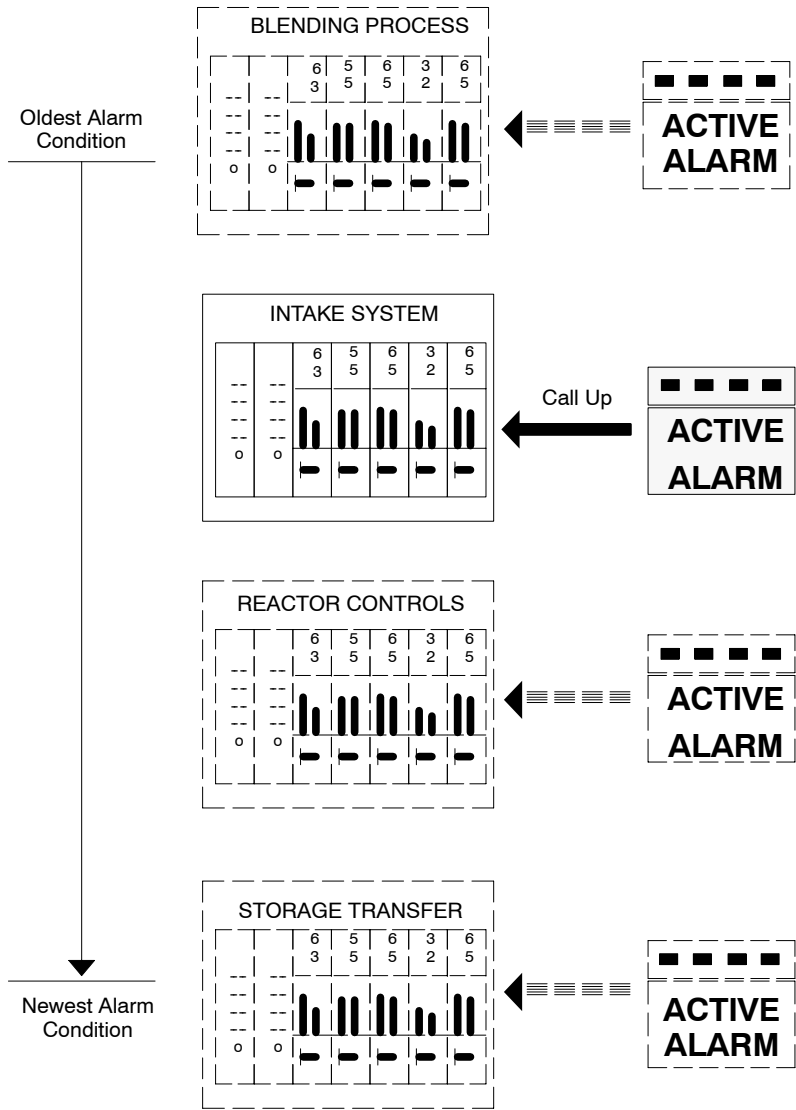
## **Responding to Alarms**

---

To respond to an alarm, press the appropriate alarm key to call up a display for the alarm condition. Pressing the [ACTIVE ALARM] key displays all alarm conditions in the order they are generated (from oldest to the newest). However, if an alarm occurs, the [ACTIVE ALARM] key will again display the oldest alarm condition not the next newest alarm condition. Place the cursor on the caret (>) of a message. Press “a” to acknowledge the alarm, “c” to clear the alarm, “s” to suppress the alarm, or “e” to unsuppress the alarm.

The [Active Alarm] key displays alarm conditions from oldest to newest.

If a hardware alarm occurs, the [Active Alarm] key will redisplay alarm conditions from oldest to newest.



Using [ACTIVE ALARM] Key

---

## Controlling Alarm Annunciation

---

You can limit the alarms displayed at the console by suppressing alarms or disabling alarm areas.

---

### Suppressing and Unsuppressing Alarms

---

If alarms are suppressed, they are not displayed in a banner at the bottom of the screen. ControlBlock tags on group displays and graphic display objects are backlighted in aqua to indicate that alarms for that block are suppressed. All suppressed alarms are saved in the Active Suppressed Alarms list. If assigned permission by a configurator, an operator can suppress and unsuppress alarms.

- To call up Active System Status screen, type:

PA [ENTER]

- To suppress an active alarm:

- Cursor to alarm tag and type: S

ACTIVE PROCESS ALARMS				4-Jul-92	12:25:38
Occur	Source	Description		Summ	
12:23:18	LIC-200/PV	High Critical	12 Ft.		
12:12:09	LIC-201/PV	High Advisory	11 Ft.	?-	
12:11:23	FIC-205/PV	Low Advisory	25 GPM	?-	
12:08:54	PIC-201/PV	Low Critical	13 PSIG		

- To call up Active Suppressed Alarms screen, type:

ASA [ENTER]

- To unsuppress an active alarm:

- Cursor to alarm tag and type: E

ACTIVE SUPPRESSED ALARMS				4-Jul-92	12:25:38
Occur	Source	Description		Summ	
12:23:18	LIC-200/PV	High Critical	12 Ft.		

### Suppressing and Unsuppressing Alarms

## Enabling and Disabling Alarm Areas

The Area Name Configuration screen combines plant operations into alarm areas. The areas allow you to enable or disable alarm annunciation from these plant areas. For example, if you are not using the equipment for an area in your process, you can disable all alarms from these equipment units as a group. ControlBlock tags on group displays and graphic displays are backlighted in grey to indicate that alarms for that block are disabled.

- To call up Active System Status screen, type:

ANC [ENTER]

- To enable or disable alarm areas:

- Press [OPTION] [ENTER].

The area name annunciates alarm conditions.

Plant unit in area with highest priority alarm.

Number of alarms in area.

	AREA NAME CONFIGURATION		4-Jul-92	12:25:38
Area Name:	Status:	Graphic:	+-----Unit Ranges-----+	
1 Boiler	>Enabled	Boiler1	Boiler in main plant	
2 <b>Area 2</b>	<b>8 &gt;Enabled</b>		1-4,6, main plant	
3			1-10	
4				
5				
6	<input type="checkbox"/> <b>To access other screens:</b>			
7	<ul style="list-style-type: none"> <li>• [PAGE AHEAD] and [PAGE BACK] to call up other alarm areas.</li> <li>• [SELECT] on an Area Name entry to see the area alarm list.</li> <li>• [SELECT] on a Graphic entry to see the process graphic.</li> <li>• [SELECT] on Unit Ranges field heading to see Plant Unit Configuration.</li> </ul>			
8			OPER 2	

### Enabling and Disabling Alarm Areas



---

## Alarm Lists

---

The following table shows the alarm lists for the RS3 and the commands to call up the lists. You can use the [PAGE AHEAD] and [PAGE BACK] keys to move from one list to the next and through the different pages of each list.

**Alarm Lists and Callup Commands**

<b>Alarm List</b>	<b>Callup Commands</b>
Active Hardware Alarms	<b>HA</b> [ENTER]
Cleared Hardware Alarms	<b>HC</b> [ENTER]
Active Process Alarms	<b>PA</b> [ENTER]
Cleared Process Alarms	<b>PC</b> [ENTER]
Critical Active Alarms	<b>CRAA</b> [ENTER]
Critical Cleared Alarms	<b>CRCA</b> [ENTER]
Advisory Active Alarms	<b>ADAA</b> [ENTER]
Advisory Cleared Alarms	<b>ADCA</b> [ENTER]
Active Batch Alarms	<b>BAAA</b> [ENTER]
Cleared Batch Alarms	<b>BACA</b> [ENTER]
Active System Status	<b>SSA</b> [ENTER]
Cleared System Status	<b>SSC</b> [ENTER]
Active Suppressed Alarms	<b>ASA</b> [ENTER]
Cleared Suppressed Alarms	<b>ASC</b> [ENTER]
Plant Area (ACTV) <i>area name</i>	<b>AAA</b> ( <i>area</i> ) [ENTER]
Plant Area (CLRD) <i>area name</i>	<b>CAA</b> ( <i>area</i> ) [ENTER]
Disk Event List	<b>DEL</b> [ENTER]
Event List No. #	<b>EL:</b> ( <i>list #</i> ) [ENTER]
Operator Change Log	<b>OL</b> [ENTER]

## Locating a Process Alarm Using the Process Alarm List

The process alarm list contains records of alarms issued by controllers. Each alarm is placed in the alarm list as it occurs. There are two kinds of process alarm lists:

- Active Process Alarms List      Contains process alarms that are currently in an alarm condition.
  
- Cleared Process Alarms List    Contains process alarms that have been cleared--that is, the alarm condition no longer exists.

**To call up the Active Process Alarms list:**

- Press [PROCESS ALARM].

ACTIVE PROCESS ALARMS				4-Jul-92 12:25:38	
Occur	Source	Description	Ack		
12:23:18	LIC-200/PV	High Critical	12 Ft.	12:23	
12:12:09	LIC-201/PV	High Advisory	11 Ft.	12:12	
12:11:23	FIC-205/PV	Low Advisory	25 GPM	12:11	
12:08:54	PIC-201/PV	Low Critical	13 PSIG	12:11:22	

**To call up the Cleared Process Alarms list:**

- Press [PAGE AHEAD]. The [PAGE AHEAD] key scrolls the screen to the Cleared Process Alarm list.

CLEARED PROCESS ALARMS				4-Jul-92 12:30:38	
Occur	Source	Description	Ack	Clear	
12:23:18	LIC-200/PV	High Critical	12 Ft.	12:23	12:25:38
12:12:09	LIC-201/PV	High Advisory	11 Ft.	12:12	12:13:44
12:11:23	FIC-205/PV	Low Advisory	25 GPM	12:11	12:12:02
12:08:54	PIC-201/PV	Low Critical	13 PSIG	12:11:22	12:11:31

### Active Process Alarms and Cleared Process Alarms

☐ To locate the source of an alarm using the Process Alarms list:

1. Press [PROCESS ALARM].
2. Cursor to the alarm. The alarm becomes backlighted.

ACTIVE PROCESS ALARMS					4-Jul-92	12:25:38
Occur	Source	Description		Ack		
12:23:18	LIC-200/PV	High Critical	12 Ft.	12:23		
12:12:09	LIC-201/PV	High Advisory	11 Ft.	12:12		
12:11:23	FIC-205/PV	Low Advisory	25 GPM	12:11		
12:08:54	PIC-201/PV	Low Critical	13 PSIG	12:11:22		

3. Press [SELECT]. The group display that contains the controller in alarm appears. The controller in alarm is backlighted.

12: Boiler Controls							
02	VALVE	PUMP	MASTER	REACT 1	REACT 2	LEVEL	FEED
PERCNT	OPER	OPER				INCHES	GPM
8.96	OPEN	OPEN	906	60.00	60.12	6.4	250
10.00	CLOSE	CLOSE	1200	80.00	80.00	8.5	250
	-AUTO-	-AUTO-				65	
	START	START					
	STOP	STOP					
	-----	-----					
	on cfr	on cfr					
	off cfr	off cf					
	OUTPUT	OUTPUT					
	open	open					
	close	close					
	fail	fail					
%DEMA			%DEMA	%DEMA	%DEMA	%OPEN	%OPEN

Locating the Source of a Process Alarm

---

## Responding to Hardware Alarms

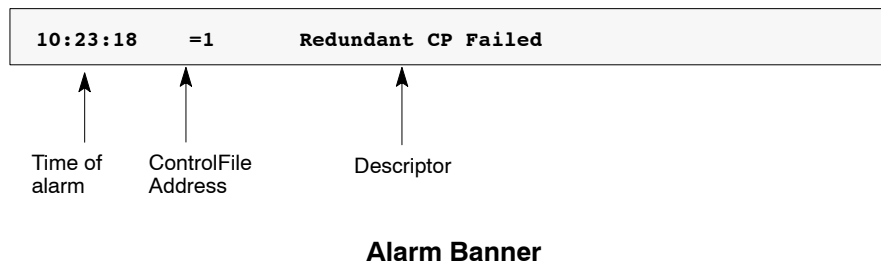
---

Hardware alarms indicate a problem with the RS3 hardware. The hardware alarm banner appears at the bottom of the screen. Magenta is the default color for hardware alarms. Hardware alarms have several causes:

- Faults that require immediate attention.
- Faults that might pose problems if ignored or that occur in conjunction with some other fault.
- Configuration changes or maintenance and troubleshooting activities in progress, such as board replacement or calibration.
- Signal transient communications errors. These alarms usually clear by themselves within a few seconds.

Specific operator procedures for hardware alarms should be developed by your site. If you do not recognize an alarm or know the correct response procedure, you should note the hardware alarm and notify the proper personnel.

**NOTE:** The complete list of hardware alarms is included in the *Alarm Messages Manual*.



---

## Responding to System Status Messages

---

System status messages indicate a change in system operating condition, such as a trending disabled or console restarted condition. System status messages do not represent an alarm condition. You can usually acknowledge the alarm message and take no further action. However, individual installations may have site-specific alarm response procedures.

---

## Responding to Disk Events

---

Disk events indicate events that involve the console disk and tape storage devices. You can acknowledge the event message and take no further action. Individual installations may have site-specific alarm response procedure.

OP: 6-22

RS3: Operator's Guide

Alarms

---

## Section 7: MTCC with Enhanced Keyboard

---

MTCC Enhanced Keyboard .....	7-2
Using the Enhanced Keyboard .....	7-9
Scrolling Menus .....	7-10
Changing the Setpoint .....	7-11
Changing the Output .....	7-14
Calling Up Graphic Displays .....	7-16
Selecting the Faceplate Mode .....	7-18
Menus .....	7-19

---

## **MTCC Enhanced Keyboard**

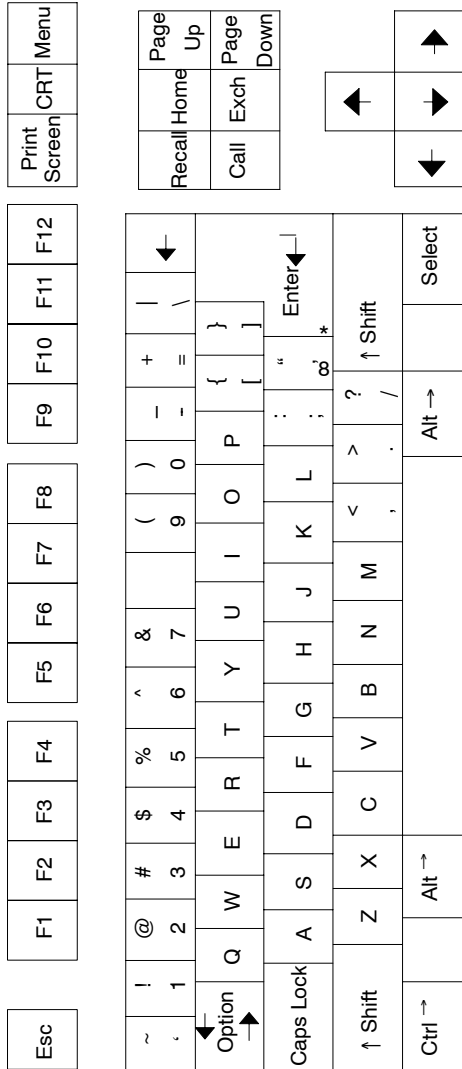
---

The MTCC enhanced keyboard combines IBM-ASCII keyboard design with RS3™ keyboard functions. Commands are executed from the keyboard using function keys (F1 through F12), dedicated keys, or RS3 commands from the monitor command line. Commands call up screens or perform procedures. The commands are grouped into logical task groups so that most commands can be performed with just 12 function keys that work with a new hierarchical set of menus.

Dedicated keys for alarm response, control loop operations, and scrolling are located in function keypads on the right side of the keyboard. These buttons are labeled on the keyboard according to their function.

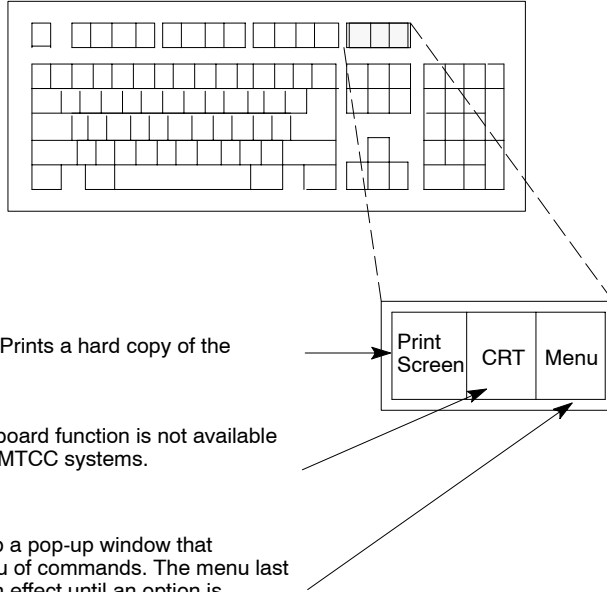
The following pages illustrate the enhanced keyboard design and describe the function of its keys.





**MTCC Enhanced Keyboard Layout**

OP: 7-4

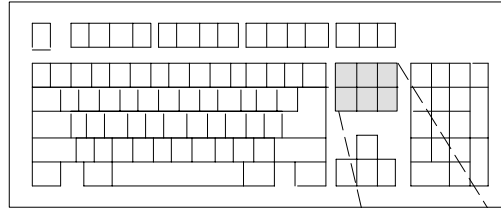


**Print Screen.** Prints a hard copy of the current screen.

**CRT.** This keyboard function is not available on single CRT MTCC systems.

**Menu.** Calls up a pop-up window that displays a menu of commands. The menu last used remains in effect until an option is selected from a different menu.

### Print, CRT, and Menu Keys on the MTCC Enhanced Keyboard



**Page Up.** Moves to the next page of a screen.

**Home.** Moves the cursor to the upper-left corner of the screen. If the cursor is already in the home position, the Home key can call up a user-defined menu.

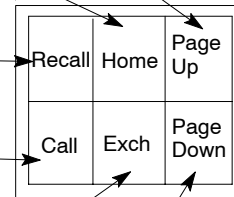
**Recall.** Recalls the previously displayed screen.

**Call.** Displays a "Callup" field in the command line for calling up configured callup button displays. Enter a number corresponding to a configured callup button in the command line field.

**Exch.** Exchanges displays. For example:

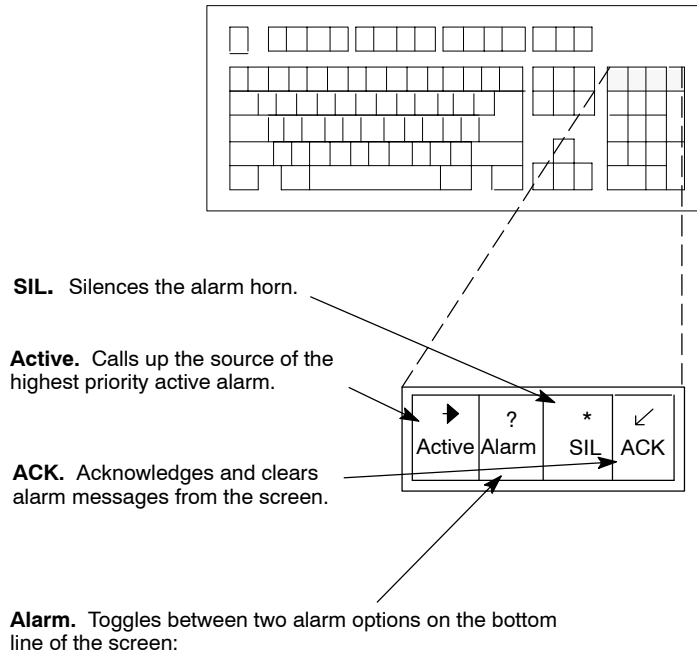
- Between screens, such as the Discrete Faceplate screen and Continuous Faceplate screen.
- Between configuration mode and viewing mode on a Process Graphic screen.
- Between menu positions in the upper-right and lower-left corners of the screen.

**Page Down.** Moves to the previous page of a screen.



### Movement Keys on the MTCC Enhanced Keyboard

OP: 7-6



**SIL.** Silences the alarm horn.

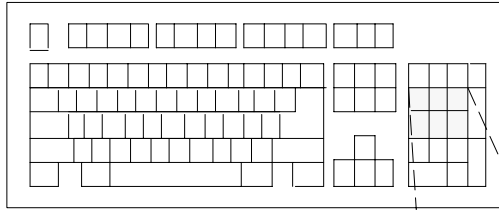
**Active.** Calls up the source of the highest priority active alarm.

**ACK.** Acknowledges and clears alarm messages from the screen.

**Alarm.** Toggles between two alarm options on the bottom line of the screen:

- Alarm Summary of the number of alarms issued for all alarm types. For example:  
Crit 6/417 Adv 5/\*\* Batch 0/0 Hard 0/0 Sys 1/16
- Alarm Banner for the highest priority unacknowledged alarm. For example:  
13:55:42 =7D-72/A High Crit 86.34

### Alarm Keys on the MTCC Enhanced Keyboard



**LSP<sub>B</sub>**. Displays field at top of block faceplate for setpoint of controller. Type setpoint value and press [Enter].

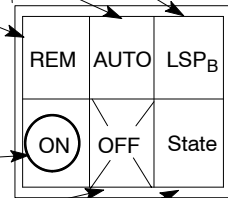
**AUTO**. Puts the controller block into Auto mode.

**REM**. Puts the controller block into Remote mode.

**ON**. Turns on a discrete input (when on, bit value is 1).

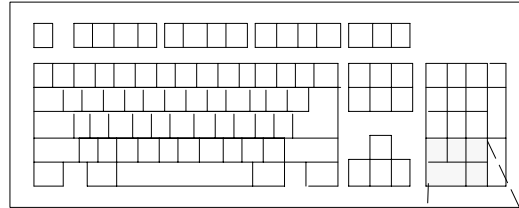
**OFF**. Turns off a discrete input (when off, bit value is 0).

**State**. Toggles between the “on” and “off” states of a discrete value.



### Mode, State, Setpoint Keys on the MTCC Enhanced Keyboard

**OP: 7-8**



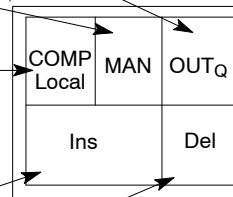
**OUT<sub>Q</sub>**. Allows you to change the output of a ControlBlock. You can change the output by slewing or entering an output value at the top of the block faceplate.

**MAN**. Puts a ControlBlock into Manual mode.

**COMP**. Puts controller block into Supervisory mode. **Local**. Puts the controller block into Local mode. Hold down [ALT] and press [COMP/Local] to select Local mode.

**Ins**. Toggles batch script editor between insert mode and replacement mode.

**Del**. Deletes the last character entered.



**Mode, Insert, and Delete Keys on the MTCC Enhanced Keyboard**

---

## Using the Enhanced Keyboard

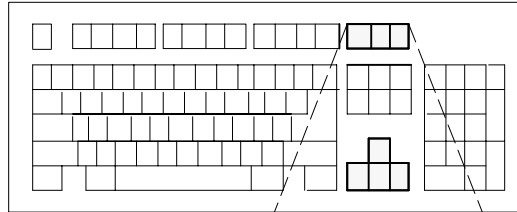
---

The following procedures describe how to use the MTCC enhanced keyboard to perform standard console operations:

- Scrolling menus
- Changing setpoint
- Changing output
- Calling up graphic displays
- Selecting faceplate mode

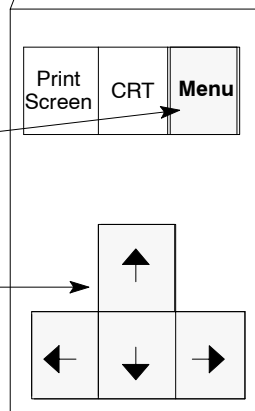
## Scrolling Menus

You can use the four arrow keys in the lower-right function pad to move the cursor or scroll menus. When you press [MENU], the arrows scroll menus.



□ **To scroll screen menus:**

1. Press the [Menu] key to change the function of the arrow keys from cursor control to menu scrolling.
2. Press left or down key to scroll to the previous menu; press the right or up key to scroll to the next menu.
3. To discontinue scrolling and resume cursor control, press any key or move the trackball.



### Menu Scrolling



## Changing the Setpoint

---

The setpoint value is indicated by the position of the setpoint bar and the setpoint numerical value. You can control the setpoint from the continuous faceplate by:

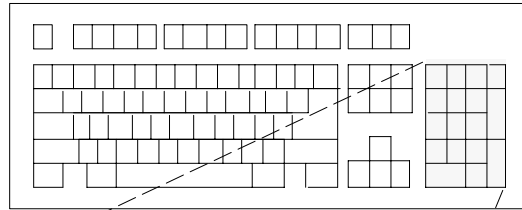
- Pressing and holding the slewing keys on the console.

*or*

- Pressing the setpoint change key and entering the setpoint at the top of the faceplate.

The ControlBlock must be in the Auto mode. The setpoint change results in an immediate output adjustment and a resulting variable change.

**OP: 7-12**



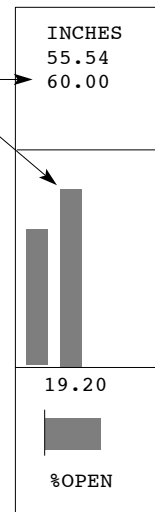
Active	Alarm	SIL	ACK
REM	AUTO	<b>LSP<sub>B</sub></b>	▲
ON	OFF	↓ ↑ State	
COMP Local	MAN	OUT <sub>Q</sub>	▼
Ins	Del		

☐ **To change the setpoint:**

1. Press [LSP/B].
2. Press and hold the slewing keys.

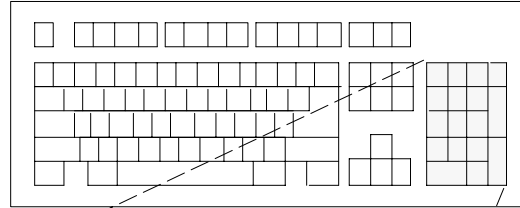
The setpoint bar and value will change.

LEVEL #1



AUTO

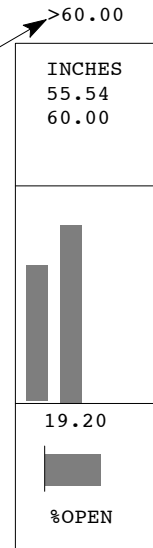
**Changing Setpoint with the Slewing Keys**



Active	Alarm	SIL	ACK
REM	AUTO	<b>LSP<sub>B</sub></b>	▲
ON	OFF	↓ ↑ State	
COMP Local	MAN	OUT <sub>Q</sub>	
Ins		Del	▼

☐ **To change the setpoint by directly entering a value:**

1. Press [LSP/B].
2. Enter the new setpoint at the top of the faceplate.



AUTO

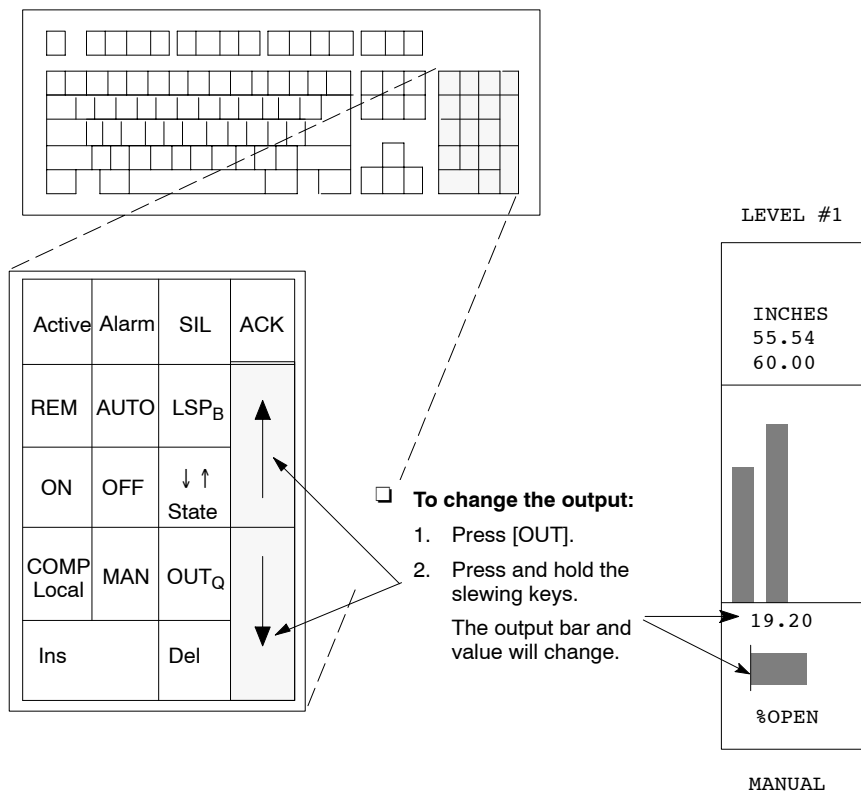
### Changing Setpoint by Directly Entering a Value

## Changing the Output

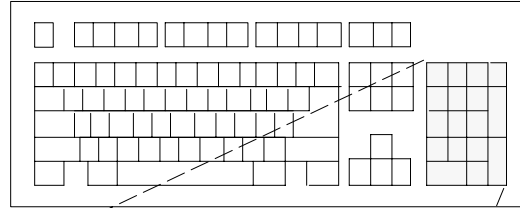
The output value is indicated by the position of the output bar and the output numerical value. You can control the output from a continuous faceplate by:

- Pressing and holding the slewing keys on the console.
- or*
- Pressing the output change key and entering the output at the top of the faceplate from the numeric keypad.

The controller must be in Manual or Local mode.



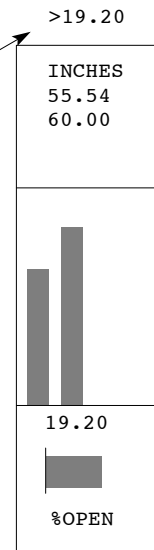
### Changing Output with the Slewing Keys



Active	Alarm	SIL	ACK
REM	AUTO	LSP <sub>B</sub>	▲
ON	OFF	↓ ↑ State	
COMP Local	MAN	OUT <sub>Q</sub>	▼
Ins		Del	

☐ To change the output by directly entering a value:

1. Press [OUT].
2. Enter the new setpoint at the top of the faceplate.



MANUAL

### Changing Output by Directly Entering a Value

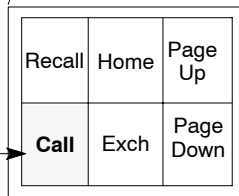
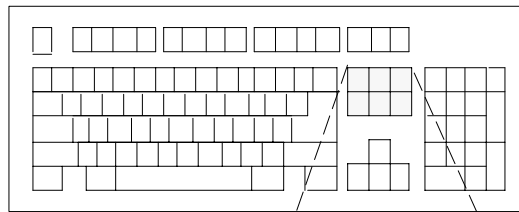
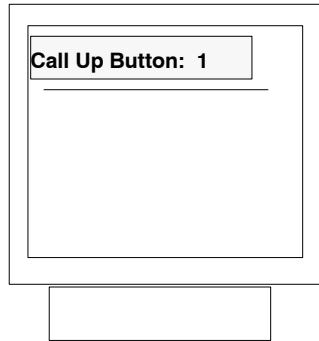
## Calling Up Graphic Displays

---

The [Call] key lets you call up user-defined sets of commands or graphic displays. Each command option is identified by a unique index number corresponding to a callup button on the Options keyboard. However, it is not necessary to have an Options keyboard to use this feature. Pressing [Call] displays a "Call Up Button:" field in the command line in which you enter the number of a callup button.

The MTCC provides interface for 96 callup buttons. Numbers entered in the "Call Up Button:" field correspond to the buttons on the three panels of the Options keyboard:

- Panel 1 Callup buttons 1 to 32
- Panel 2 Callup buttons 33 to 64
- Panel 3 Callup buttons 65 to 96



☐ **To view a callup button display:**

1. Press [Call]. The following command appears on the command line:

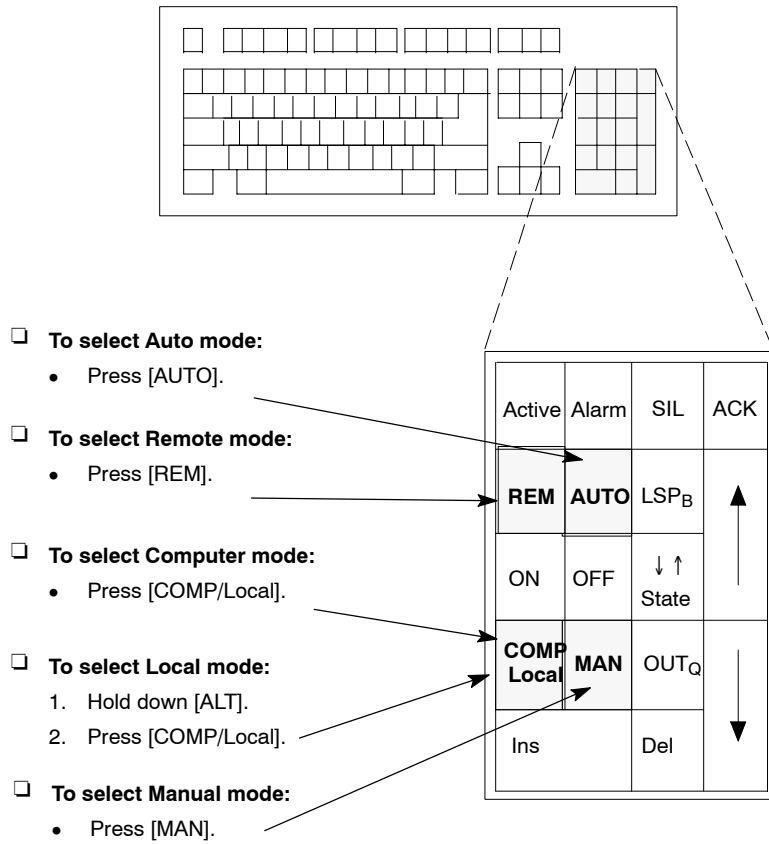
Call Up Button:

2. Type the number of a configured callup button and press [ENTER].

### Viewing Callup Button Displays

## Selecting the Faceplate Mode

Controllers operate in one of several user-selectable modes. You can change the modes by pressing mode selection keys on the key function pad on the right side of the keyboard.



**Mode Selection Keys**



---

## Menus

---

The MTCC software can be configured to provide menus of the major RS3 commands, organized into logical task groups. The menus appear in pop-up windows. Each command task group is represented by a single menu called a submenu. For example, the Batch submenu contains batch commands, the Configuration submenu contains configuration commands, etc. The Main Menu lists the available submenus.

Menu options are selected with keyboard function keys (F1 through F12) in the top row of the keyboard. Each menu lists:

- The name of the menu
- Function keys used by the menu
- Descriptions of the commands associated with each function key

When you press a function key, the menu will disappear from the screen, but the function keys will continue to execute the commands of that menu until you display another menu and select one of its commands.

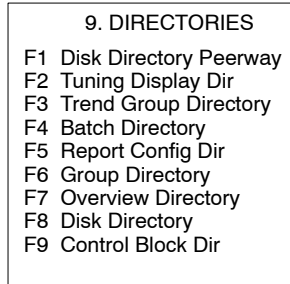
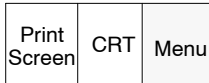
□ **To call up and use menus:**

1. Press the [Menu] key. The menu last used will appear in a pop-up window.
2. Press [Menu] again to call up the Main Menu. The Main Menu lists submenus and function keys for calling up the submenus.
3. Press a function key for a submenu. A pop-up window containing the submenu appears. The submenus list task-related commands and function keys for executing submenu commands.
4. To execute a command, press the function key indicated by the submenu.

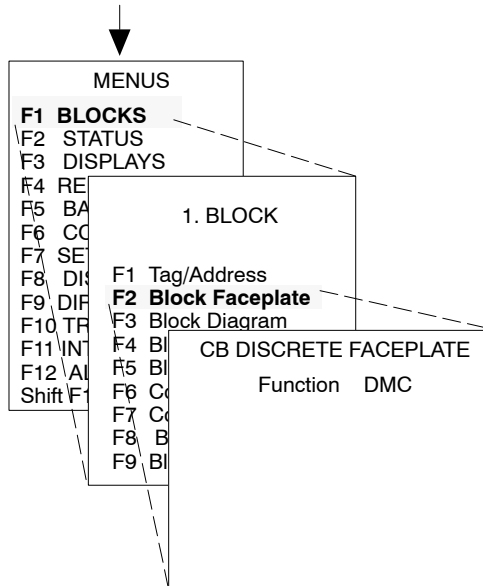
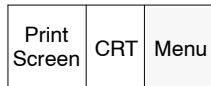
OP: 7-20

□ To call up and use menus:

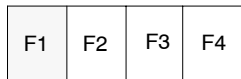
1. Press [Menu] to call up last menu used.



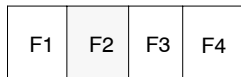
2. Press [Menu] again to call up Main Menu.



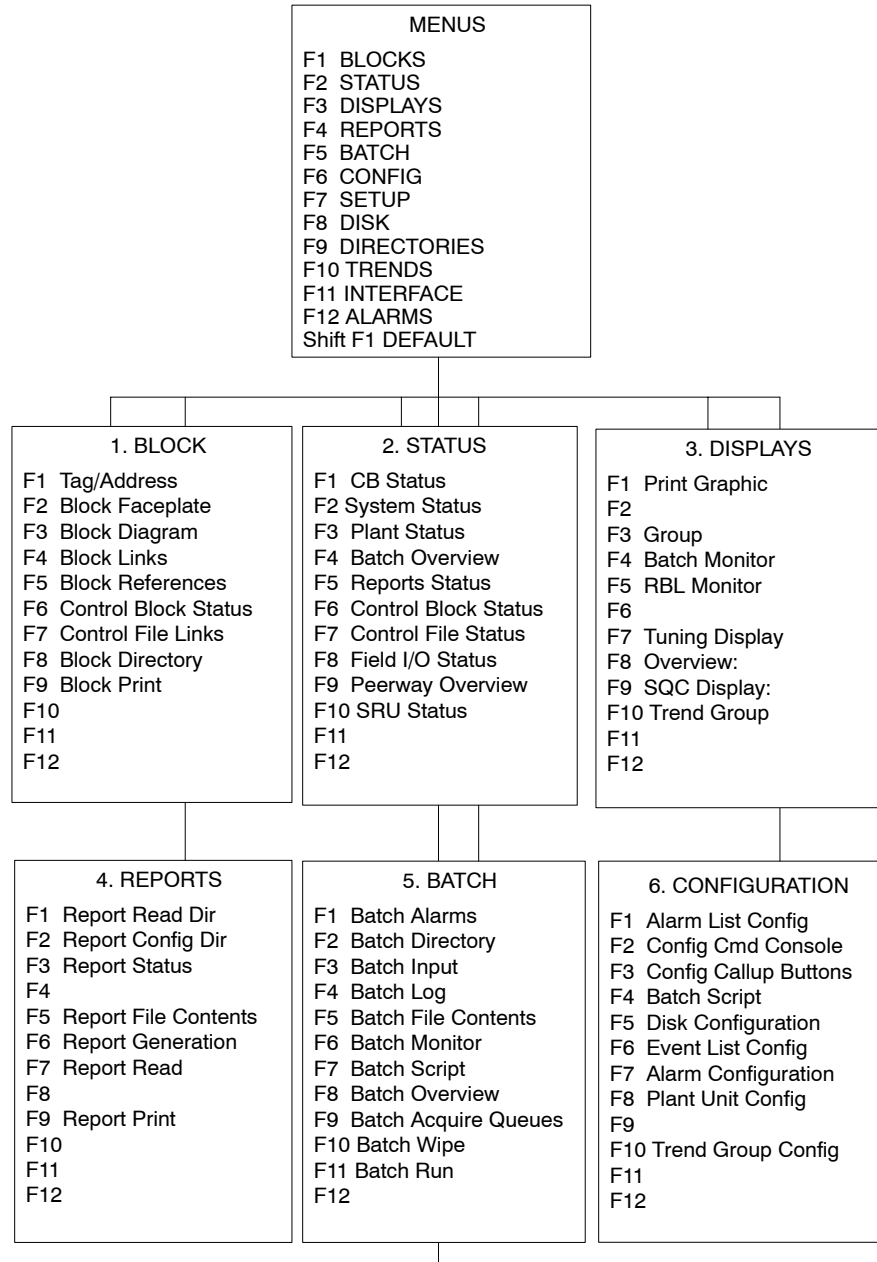
3. Press a function key to call up a submenu.



4. Press a function key to execute a command.

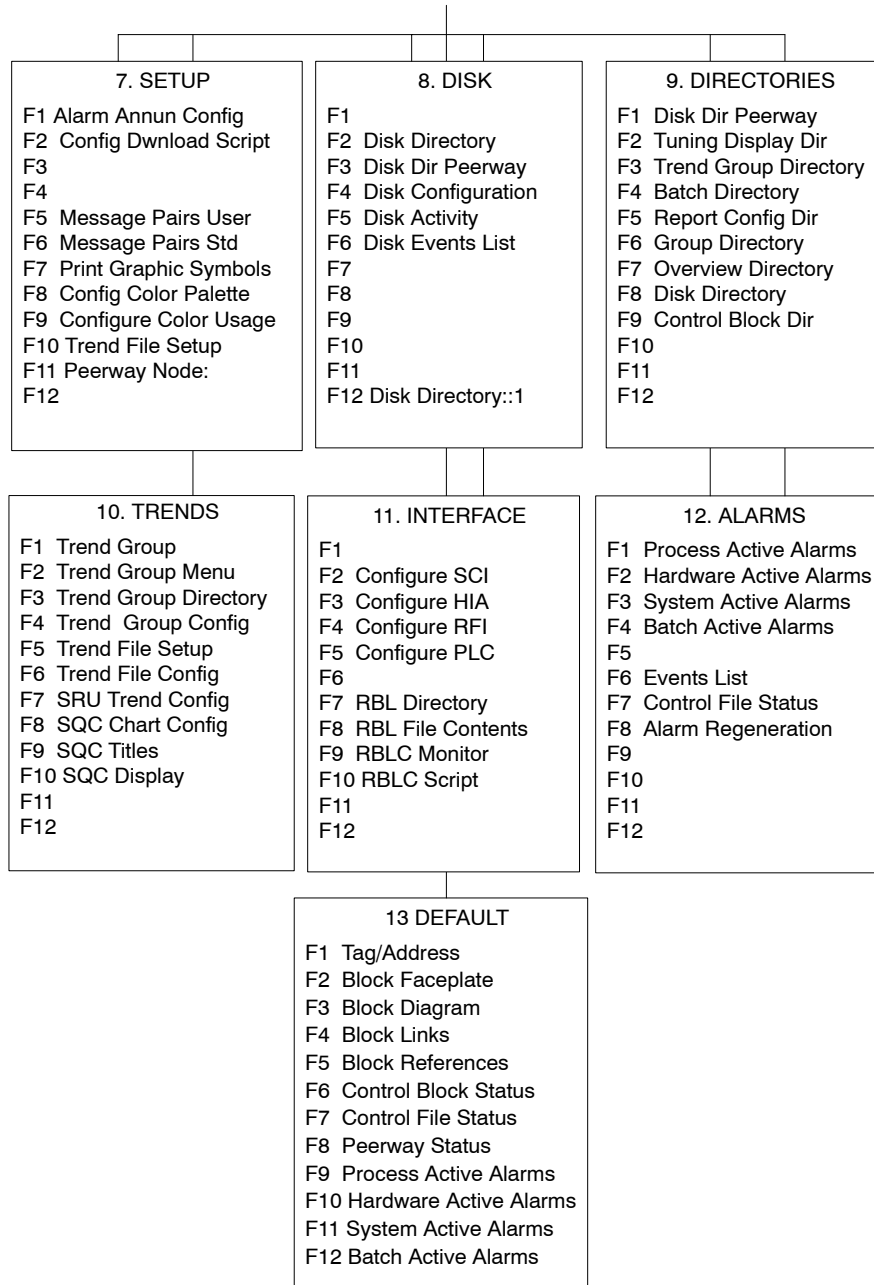


**Using Menus**



**Console Menus**

OP: 7-22



**Console Menus (continued)**

---

## Appendix A: Responding to System Faults

---

This appendix describes how to respond to console faults and how to recover from a power failure.

Faults Affecting Consoles .....	A-2
Trackball Failure .....	A-3
Recovery from Power Failure .....	A-4
Startup After Power Failure .....	A-4
Resuming Normal Control .....	A-6
Returning a Controller Processor to Normal Mode ...	A-8
Checking the Block Status .....	A-10

---

## Faults Affecting Consoles

---

On rare occasions, faults can affect console operation. For example, the screen could display incoherent information or the keyboard might not enter commands correctly. Occasionally, the console might not do anything at all. If the time displayed in the upper-right corner of the screen does not change, the console has become inactive.

If these or similar things happen to the console, the following steps can be taken. These are recommendations only. Individual installations may have site-specific fault recovery procedures.

1. Power down the console, wait 15 seconds, and power up the console. When the console has finished powering up, the system menu appears. Power up should only take a few minutes.

**NOTE:** The Disk Shutdown (DS) command should always be performed before powering down the console. This will purge the cache and prevent possible loss of data.

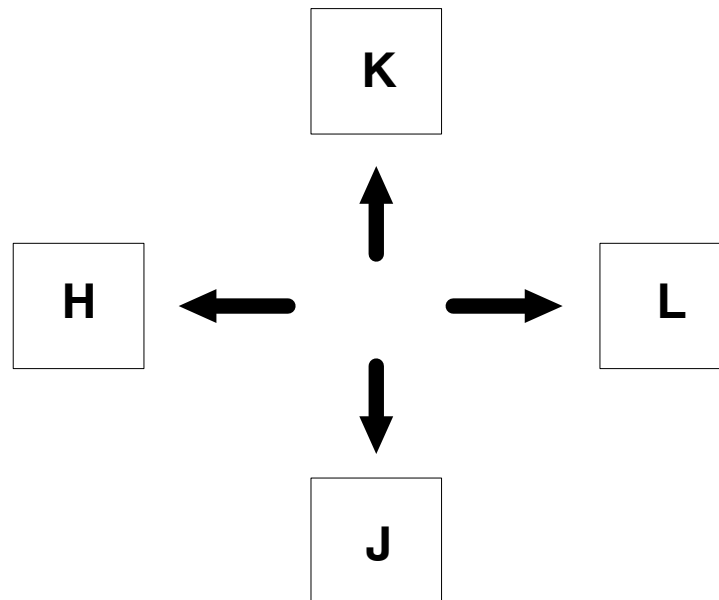
2. If the problem has not been corrected, call maintenance personnel.

## Trackball Failure

---

If the trackball fails, the configuration keyboard can be used to move the cursor. The illustration below shows the keys that can be used to move the cursor in each direction.

- **To move the cursor with the configuration keyboard:**
  - Press and hold [CONTROL] and then press the letter keys as desired.



**Configuration Keyboard Cursor Movement Keys**

---

## Recovery from Power Failure

---

If power to the RS3 fails, a battery backup keeps the ControlFile and the controllers running. However, if power is out long enough to deplete the battery backup, all controllers and the entire ControlFile will power down. The plant configuration is saved under these conditions.

**NOTE:** The procedures described in this section are guidelines only. Individual installations may have site-specific power failure recovery procedures.

---

## Startup After Power Failure

---

When power is restored, the console restarts automatically. The console first performs diagnostics on itself. The results are displayed on the power up diagnostics screen, as shown on the next page. Each diagnostic test is displayed as “PASSED” or “FAILED” as it is completed. If a test fails, the console may not start up successfully.

**NOTE:** If any diagnostics test displays “FAILED”, write down the name of the test and any information that is backlighted. Then press [ALARM ACK] to continue the diagnostics.

If the console startup is successful, the system menu appears on the console in a few minutes. If the startup is not successful, call maintenance personnel.



```

Processor <Boot Version x.xx>..... PASSED
  Instruction Set Test ROM Test RAM Test
  Bus/Interrupt Test Watch Dog Timer EDAC Test

Power Supply.....PASSED
+5+12 A: +30 B: +30
NOTE: either A or B may be backlit

Video Generator.....PASSED
  Refresh RAM Character RAM Attribute RAM
  Horizontal - Vertical Timing Consistency

Trackball.....PASSED
  1.4 Key Inter 41

PeerWay.....PASSED
  Register Check RAM Test #1 RAM Test #2
  Jobber-Halt Local Loop Back

Printer.....PASSED
  RTC Periodic Interrupt NV RAM Test
  RTC Battery Printer Ready
NOTE: If there is no printer, "Printer Ready" is backlit - but not red.

SCSI Board.....PASSED
  DMA Registers RAM Test #1 RAM Test #2 SCSI Master
  SCSI Controller Winchester Tape Drive
  
```

**Powerup Diagnostics Screen**

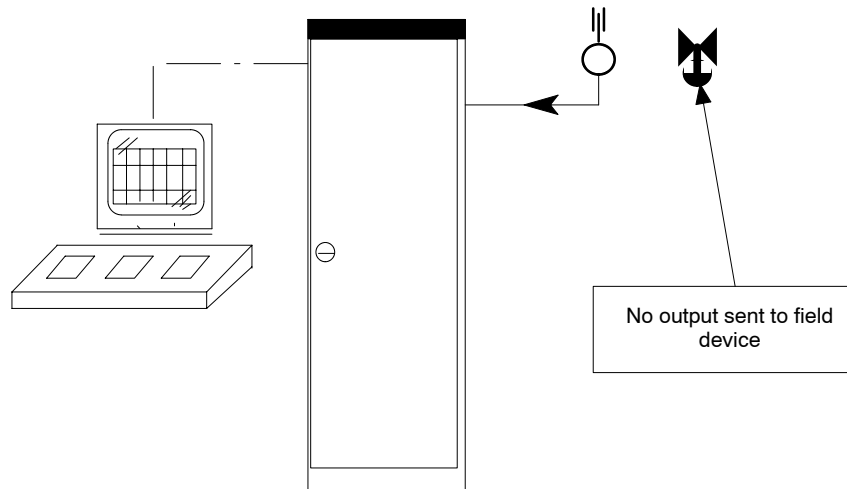
## Resuming Normal Control

---


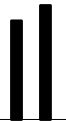










When the console is restarted, most console displays remain as they were before the power failure. However, Controller Processors in the ControlFile will be in Standby mode. As shown below, controllers within Controller Processors in Standby mode continue to function but do not send output to the field. As shown on the next page, when the Controller Processor is in Standby mode, the faceplate modes of the controllers within are backlighted and flashing.

### CAUTION

**When the Controller Processor is returned to Normal mode, the controllers will begin sending output to the field. The operator should determine, for each controller, if any adjustments or mode changes are needed before returning the Controller Processor to Normal mode.**



**Controller Processor in Standby Mode**

12: Reactor Controls							
02	VALVE	PUMP	MASTER	REACT 1	REACT 2	LEVEL	FEED
PERCNT	OPER	OPER				INCHES	GPM
8.96	OPEN	OPEN	906	60.00	60.12	6.4	250
10.00	CLOSE	CLOSE	1200	80.00	80.00	8.5	250
	-AUTO-	-AUTO-				65	
	START	START					
	STOP	STOP					
	-----	-----					
	on cfr	on cfr					
	off cf	off cf					
	OUTPUT	OUTPUT					
	open	open					
%DEMA	close	close	%DEMA	%DEMA	%DEMA	%OPEN	%OPEN
	fail	fail					
<b>AUTO</b>	<b>AUTO</b>	<b>AUTO</b>	<b>AUTO</b>	<b>AUTO</b>	<b>AUTO</b>	<b>AUTO</b>	<b>AUTO</b>

When the Controller Processor that contains the controllers is in Standby mode...

...The controller modes are backlighted and flashing

**Controller Modes When Controller Processor is in Standby Mode**

## Returning a Controller Processor to Normal Mode

□ **To return a Controller Processor to Normal mode:**

1. Call up the Control File Status screen in one of the following ways:
  - Press [CONTROL FILE] or [CONT STATUS] on the Command Console.  
  
*or*
  - Type **CFS** [ENTER] on any configuration keyboard.  
  
*or*
  - Press a callup button that is configured to call up the screen.
2. Cursor to the “Status” field of the desired Controller Processor.
3. Press [ENTER] to change the mode.

1. Call up the Control File Status screen.
2. Cursor to the Controller Processor Status field.
3. Press [ENTER].

15-November-90 09:40:05

CONTROL FILE STATUS

Node Address >2 File Status >Stdby  
 Left Cord Proc : Boot 2.33 Prsm 7.06 Avail Links 40 Idle Time 62. %  
 Right Cord Proc :  
 Left Bubble Memory : Controller Prsm 7.08 Free Space 42. %

	A	B	C	D	E	F	G	H
Card Type	MLC	MLC	MPC	MLC	MPC	MPC		
Boot Rev	5.16	5.16	5.16	5.16	5.16	5.16		
Idle Time	92. %	92. %	92. %	100 %	99. %	99. %		
Free Space	88. %	90. %	90. %	94. %	95. %	95. %		
Avail Links	36	36	36	38	38	38		
Primary								
Status	Norm	Norm	Norm	Norm	Norm	>Stdby		
Alarm Inh	no	no	no	no	no	no		
SC Time out	None	None	None	None	None	None		
Scan Time	.5 S	.5 S	.5 S	.5 S	.5 S	.5 S		

OPER 5

**Responding to System Faults**

## Checking the Block Status

The Block Status screen displays information about the configured I/O blocks and ControlBlocks that are in modes other than Auto or that are in alarm. This screen is for display only; you cannot make entries from it.

- To call up the Block Status screens, type:

**CBS [ENTER]**

The Block Status screen is displayed for card cage A. Use [PAGE AHEAD] to move to the Block Status screen for the next card cage. Press [EXCH] to call up the Block Directory for the Controller Processor.

Below is a sample Block Status screen for Controller Processor =3C. The following table describes the types of information provided in the screen areas.

- To call up a controller faceplate screen:

- Cursor to the tag or address of the desired block and press [SELECT].

Identifies the Controller Processor on which the blocks are configured.

BLOCK STATUS: 3C					01-Oct-90		11:47:12	
Block	Tag	Type	Mode	Alarm	Steps	Plant	Size	
					Manual	Unit	Stat	Dyn Tot1
=3C-06	MANSET	DISC	OPERATOR			2	131	31 162
=3C-43	Valve-1	DISC	AUTO	ALARM		2	210	65 275
=3C-44	Valve-1	DISC	OPERATOR			2	109	119 228
=3C-97	VCC-1	PID	MANUAL		b	2	262	55 317
=3C-98	VCC-1	PID	MANUAL			2	191	75 266
=3C-99	VCC-1	PID	MANUAL			2	241	50 291
*END*								

**Block Status Screen**

**Block Status Screen Fields**

<b>Field</b>	<b>Description</b>
Block	Address of the block.
Tag	User-defined block tag.
Type	Type of block. For ControlBlocks, identifies the ControlBlock function.
Mode	Current block mode.
Alarm	Indicates whether the block is currently in alarm. Not all block alarms trigger an indication.
Steps in Manual	For ControlBlocks only, displays any steps that are currently in manual mode.
Plant Unit	User-defined group to which the block is assigned.
Size	Amount of static and dynamic space used by the block and the total amount of space the block uses. This information is displayed for a configurator only.

OP: A-12

RS3: Appendix

Responding to System Faults



**FISHER-ROSEMOUNT**  
**RS3™**  
**Operator's Guide**

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## Index

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---

### A

ACK key, 7-6  
 acknowledging an alarm, 6-10  
 Active Alarm key, 6-8, 6-12– 6-13  
 Active Hardware Alarms list, 6-17  
 Active key, 7-6  
 Active Process Alarms list, 6-17  
 alarm  
   annunciation alarm banner, 6-3  
   annunciation continuous faceplate, 6-9  
   annunciation keyboard, 6-3  
   operator keyboard, 1-5  
   process, 6-18  
   responding to, 6-12– 6-13  
 alarm annunciation, 6-2– 6-16  
   alarm banner, 6-3  
   continuous faceplate, 6-9  
   enabling and disabling alarm areas, 6-16  
   operator keyboard, 6-8  
   suppressing and unsuppressing alarms, 6-14  
 alarm areas, 6-16  
 alarm banner, 6-3– 6-4, 6-20  
 alarm colors, 6-7  
 alarm display annunciation, 6-3  
 Alarm key, 7-6  
 alarm lists, 6-17  
 alarm priority, 6-6

alarm summary, 6-5  
 arrow keys, 7-10  
 audio annunciation, 6-2  
 AUTO key, 7-7, 7-18

### B

block status, checking, A-10

### C

Call key, 7-5, 7-16– 7-17  
 Call Up button, 7-16  
 calling up  
   controller from a trend display, 5-4  
   graphic directory, 2-11  
   graphic displays, 2-11– 2-17, 7-16  
   group directory, 2-7  
   group displays, 2-7, 2-8  
   menus, 7-19– 7-22  
   report displays, 2-19  
 Report File Contents screen, 2-18  
 Report Read Directory screen, 2-16, 2-17  
 Trend Group Menu screen, 5-3

**OP: Index-2**

- cascade control, 3-12– 3-17
- changing continuous value on discrete faceplate, 4-4
- changing controller output
  - enhanced keyboard, 7-14– 7-15
  - operator keyboard, 3-10– 3-11
- changing controller ratio, 3-18– 3-20
- changing controller setpoint
  - enhanced keyboard, 7-11– 7-12
  - operator keyboard, 3-8– 3-9
- changing password, 2-3– 2-4
- changing tag that determines the trend scale, 5-7
- changing time scale, 5-10– 5-11
- changing trend scale, 5-5
- checking block status, A-10
- Cleared Process Alarms list, 6-17
- COMP/Local key, 7-8, 7-18
- configuration keyboard, 1-2
- confirmation signals, 4-11
- console faults, A-2
- console menus, 7-21– 7-22
- console power up diagnostics screen, A-4
- continuous control, 3-1– 3-17, 4-4
  - overview, 3-2
- continuous control loop, 3-1
- continuous displays, 2-5
- continuous faceplate, 2-5, 3-3– 3-5
  - symbols, 3-4– 3-5
- continuous faceplate alarm, annunciation, 6-9
- continuous loop operation, operator keyboard, 1-6– 1-7
- control
  - cascade, 3-12– 3-17
  - continuous, 3-1– 3-17, 4-4
  - discrete, 2-14, 4-1– 4-10
    - from graphic displays, 2-14
    - ratio, 3-18– 3-20
- control loop
  - continuous, 3-2
  - discrete, 4-1
- control output
  - enhanced keyboard, 7-14– 7-15
  - operator keyboard, 3-10– 3-11
- control setpoint, operator keyboard, 3-8– 3-9
- controller
  - alarms, 6-9
  - displays, 2-5– 2-10
  - modes, 3-7, 4-9– 4-10, 7-18
- controller, returning to Normal mode, A-8
- controller, Standby status, A-6
- controlling alarm annunciation
  - enabling and disabling alarm areas, 6-16
  - suppressing and unsuppressing alarms, 6-14
- CRT key, 7-4
- cursor movement keys, A-3

## D

---

- Del key, 7-8
- Device state indicators, 4-10
- direct discrete control, graphic displays, 2-14
- disabling an alarm area, 6-16
- discrete control, 2-14, 4-1– 4-10
  - overview, 4-2
- discrete displays, 2-6
- discrete faceplate, 2-6– 2-10, 4-3– 4-8
- discrete loop operation, operator keyboard, 1-7– 1-8
- disk events, responding to, 6-21

display annunciation, 6-2, 6-9  
 display keys, 2-20  
 display menus, 7-19– 7-22  
 display overview, 2-10  
 display report, 2-15  
 display trend, 5-8  
 display unit, 2-9  
 displaying individual trends, 5-8  
 displays, 2-1– 2-17  
   accessing on a  
     password-secure system,  
     2-2  
   continuous, 2-5  
   controller, 2-5– 2-10  
   discrete, 2-6  
   graphic, 2-11– 2-12  
   group, 2-5– 2-8  
   operator keyboard, 1-4  
   unit, 2-9– 2-10

## E

---

enabling and disabling alarm  
 areas, 6-16  
 engineering units of measure,  
 changing, 5-5  
 Exch key, 7-5

## F

---

faceplates  
   cascade control, 3-12– 3-17  
   comparison of group, unit and  
   overview displays, 2-5– 2-6  
   continuous, 2-5, 3-3– 3-5  
   discrete, 2-6, 4-3– 4-10  
   fields, 2-5– 2-6  
   graphics, 2-13  
   group, 2-7

modes, 4-9– 4-10  
 motor controllers, 4-5– 4-6  
 overview, 2-10  
 pop-up, 2-13  
 unit, 2-9  
   valve controllers, 4-7– 4-8  
 faults affecting consoles, A-2

## G

---

graphic directory, options  
   keyboard, 2-11  
 graphic displays, 2-11– 2-14  
   control from, 2-13– 2-14  
   direct discrete control, 2-14  
   pop-up faceplate, 2-13  
 graphic displays, calling up  
   enhanced keyboard, 7-16  
   operator keyboard, 2-11  
 group directory, 2-7  
 group displays, 2-7– 2-8  
   calling up, 2-7– 2-8  
   fields, 2-5– 2-6

## H

---

hardware alarms  
   annunciation, 6-8  
   color, 6-7  
   lists, 6-17  
   responding to, 6-20  
 Home key, 7-5

## I

---

Ins key, 7-8  
 interlocks, 4-11

## K

---

keyboard  
annunciation, 6-2, 6-8  
button functions  
    enhanced keyboard, 7-2–  
    7-8  
    operator keyboard, 1-2–  
    1-6  
enhanced keyboard, 7-1– 7-21  
operator, 1-2– 1-7  
operator keyboard, 1-2– 1-10  
option, 1-2

## L

---

logging off console, 2-4  
logging on to console, 2-2  
Login screen, 2-2  
loop operation panel, 1-6– 1-7  
LSP key, 7-7

## M

---

MAN key, 7-8  
master flow, 3-18  
measurement scale, changing,  
    5-7  
Menu key, 7-4, 7-10  
menus, 7-19– 7-22  
    scrolling, 7-10  
modes, controller, 3-7  
motor controllers, 4-5– 4-6  
MTCC  
    Active Alarm key, 1-5, 6-12–  
    6-13  
    alarm acknowledgment, 1-5,  
    6-10  
    keyboard annunciation, 6-8  
MTCC keyboard, 1-2– 1-9

RS3: Operator's Guide

MTCC with enhanced keyboard,  
7-1– 7-22  
    calling up and using menus,  
    7-19– 7-22  
    calling up graphic displays,  
    7-16– 7-17  
    changing the output, 7-14–  
    7-15  
    changing the setpoint, 7-11–  
    7-12  
    scrolling menus, 7-10  
    selecting faceplate mode, 7-18

## N

---

Normal mode, A-6, A-8  
numeric entry, operator keyboard,  
    1-5

## O

---

OFF key, 7-7  
ON key, 7-7  
operating restrictions and  
    conventions, 4-11  
operator keyboard, 1-2  
    alarm, 1-5  
    continuous loop operation,  
    1-6– 1-7  
    discrete loop operation, 1-7–  
    1-8  
    display, 1-4  
    numeric entry, 1-5  
Option Keyboard, 1-2  
OUT key, 7-8  
output control  
    enhanced keyboard, 7-14–  
    7-15  
    operator keyboard, 3-10– 3-11  
overview displays, 2-5– 2-6, 2-10  
    alarm annunciation, 6-9

Index

## P

---

Page Down key, 7-5  
 Page Up key, 7-5  
 password  
     changing, 2-3– 2-4  
     logging in, 2-2  
     logging out, 2-4  
 pop-up faceplates, 2-13  
 power failure recovery, A-4– A-8  
 Print Screen key, 7-4  
 printing a report, 2-19  
 Process Alarm List, 6-17  
 process alarms, 6-18  
     annunciation, 6-8  
     banner, 6-3, 6-20  
     lists, 6-17  
     locating, 6-12– 6-13, 6-18–  
     6-19  
     responding to, 6-12– 6-13  
 process graphics, 2-11– 2-14  
     alarm annunciation, 6-9

## Q

---

QWERTY-type keyboard, 1-2

## R

---

ratio control, 3-18– 3-20  
 Ratio/Bias Controller, 3-18– 3-20  
 Recall key, 7-5  
 recovery from power failure, A-4–  
 A-8  
 REM key, 7-7, 7-18  
 report, calling up, 2-16  
 report displays, 2-19  
 Report File Contents screen, 2-16  
 Report Read Directory screen,  
 2-16– 2-17

responding to alarms, 6-12– 6-13  
 responding to disk events, 6-21  
 responding to hardware alarms,  
 6-20  
 responding to process alarms,  
 6-18  
 responding to system status  
 messages, 6-21  
 resuming normal control, A-8  
 retry, 4-11

## S

---

scaling  
     changing limits, 5-5– 5-6  
     percent, 5-5  
     units of measure, 5-5  
 screen, Login, 2-2  
 scrolling menus, 7-10  
 security lockup, 4-11  
 setpoint control  
     enhanced keyboard, 7-11–  
     7-12  
     operator keyboard, 3-8– 3-9  
 SIL key, 7-6  
 slave flow, 3-18  
 slewing buttons  
     enhanced keyboard, 7-11,  
     7-12, 7-14  
     operator keyboard, 3-8  
 Standby mode, A-6  
 starting a motor, 4-3  
 startup following power failure,  
 A-4– A-5  
 State key, 7-7  
 suppressing and unsuppressing  
 alarms, 6-14  
 symbols, continuous faceplate,  
 3-4– 3-5  
 system status messages  
     annunciation, 6-8  
     color, 6-7  
     lists, 6-17

## T

---

trackball failure, A-3  
trend displays, 5-2  
    adjustments, 5-5– 5-12  
    calling up, 5-3– 5-4  
    changing default time and  
        measurement scales, 5-15  
    changing time scale and start  
        time, 5-10– 5-13  
    controller, 5-4  
    display window, 5-8  
    history, 5-9  
    individual, 5-8  
    scale, 5-5– 5-6

trend values, reading, 5-13– 5-14  
trending, 5-1– 5-12  
    interruptions, 5-16  
tripped condition, 4-11

## U

---

unit displays, 2-5– 2-6, 2-9– 2-10  
    alarm annunciation, 6-9

## V

---

valve controllers, 4-7– 4-8