

## CHAPTER 5 System Configuring

### 5.1 GENERAL INFORMATION

System programming is accomplished by either using the key pad on the panel or down loading a configuration from the Cheetah Tracker program. To minimize system down time the initiating and indicating circuits remain active during system setup and programming. This section will cover the procedure and selections given while programming the configuration portion on the system. Here is a breakdown of the programming categories:

CONFIG:

Devices: None, Photo, Ion, Heat, FRCM, SRM, SOM, R2M

Zones: Type of Zone, Time delays

System

I/O: Output, Loopckt, Powerin

Message: System Message Screen

Patterns: 15 selections

Time Group: 15 selections

Learn: Loop and Address to look for devices

To Device

All Dev

Mod Dev

Range

Show Mod

Special

Calibrate Sensitivity

Time Out, Password

Error Checking

Device address

Calibration Time

PC TR CC

### 5.2 PROGRAMMING TERMINOLOGY AND SETUP

Before programming the controller and field devices, there are a few concepts and tables that you must use and understand.

#### 5.2.1 Index Positions

The addressable devices have 16 unique index positions which define the device's operational characteristics. Each index position allows selection of these six parameters.

- \* State of operation (Alarm, Pre-discharge, abort, etc.)
- \* Zone of operation (Or selection of multi-zone table)
- \* Pattern pointer To define audible output pattern.
- \* Priority opcode To override index position number priority.
- \* Silenceable bit To define whether index position is silenceable.
- \* Resounding bit To define whether index position allows resounding.

The lowest priority is index position 0 and the highest is index position 15. For a device to respond to only one state (such as alarm), program that state into index position # 0 and do not use the other index positions. For the device to also respond during pre-discharge, program pre-discharge into index position # 1.

The device typically “operates” in the highest index position that has occurred. The device in the above example operates in index position #0 during alarm and index position #1 during pre-discharge (assuming appropriate zone selection).

### 5.2.2 States

One state of operation must be selected for each index position used. Available states include:

None:	None	PROC:	Process Management
TRB:	Trouble	SUPR:	Supervisory
DRILL:	Drill	ABRT:	Abort
PAL1:	Pre-alarm 1 level	PAL2:	Pre-alarm 2 level
ALRM:	Alarm level (active upon immediate manual release)		
PRED:	Pre discharge (active upon immediate manual release)		
RELE:	Release		
WMST:	Watermist		

\* A process management input activates only a process management output.

### 5.2.3 Zones

One Zone of operation must be selected for each index position. For example setup could be:

Index Position # 1	(Alarm, Zone 3)
Index Position # 2	(Alarm, Zone 5)
Index Position # 3	(Alarm, Zone 7)
Index Position # 4	(Release, Zone 5)

Zone allocations:

1-240	Available for typical output module selection.
241-253	Not available
251-252	Internal organizational zones. Not user selected
251	Non zone specific trouble
252	Special panel zone
253	Board level events: Gnd Fault, Loss of AC, Battery trouble, ect....
254	Multi-Zone table, a different table for each device. Selecting zone 254 in an index position enables use of the multi-zone table which allows individual selection of zones from 1-240. Each device can be configured with its own unique multi-zone table. The above example would also be configured as:
Index Position # 1	(Alarm, Zone 254) Press F2 to Device Multi-zone (Select Zone 3, 5 & 7)
Index Position # 2	(Release, Zone 5)
Multi-zone Tabl:	(Select zones 3, 5 & 7)
255	All zone selection, used with output devices only.

### 5.2.4 Priority Opcode

Each used index position requires selection of priority opcode from values 0-3. Opcode 0 is typically used. It defines priority of the index positions in increasing numeric order per above: the highest numbered index position is the active position. The priority op-codes are defined as:

- |    |           |   |
|----|-----------|---|
| 0: | Default   | Normal priority operation per increasing index position order.  |
| 1: | OR        | To announce most recent of this and next index positions.   |
| 2: | AND-end   | Requires this and previous index position to be active prior to announcement. Uses the pattern of this index. |
| 3: | AND-start | To start a sequence of adjacent AND opcodes.  |

The Opcode gives equal priority to two or more adjacent index positions so the most recent of the “OR-ed” index positions is announced. An example would be:

Index Position	State	Zone	Pattern	Op-Code	Note
# 1	Supervisory	5	03-March	0-Normal	
# 2	Alarm	7	05-Custom	1- OR	Guard Station 1
# 3	Alarm	9	06-Custom	0-Normal	Guard Station 2
# 4	Release	12	01-Steady	0-Normal	

Prior to zone 12 release, Pattern 04 or 05 is announced depending if station 1 or 2 was the most recent alarm condition.

Upon zone 12 release, the device operated in index position # 4 as it is not logically “Or-ed” with the others.

The AND Opcode requires two or more adjacent index positions to all be active prior to event announcement. An example would be:

Index Position	State	Zone	Pattern	Op-Code	Note
# 1	Supervisory	5	03-March	0-Normal	
# 2	Alarm	7	05-Custom	3-And(start)	Guard Station 1
# 3	Alarm	9	06-Custom	2-And(end)	Guard Station 2
# 4	Release	12	01-Steady	0-Normal	

Prior to zone 12 release, Pattern 05 is announced if both Guard Station 1 (zone 7 and Guard Station 2 (zone 9) had active alarm conditions. Upon zone 12 release, pattern 01 is announced.

**Index positions and Opcode are a powerful programming tool. If used correctly they give the Cheetah a great amount of system flexibility. If used incorrectly, they can be a source of programming difficulty.**

### 5.2.5 Silence Selection

Each used index position requires setting the silencable to Y(Yes) or N(No). This enables operation of silencing for the selected index position per these rules (assuming silencable is enabled with “Y” and silence is for pertinent state):

1. Silencing an index position does not cause the device to revert to a lower unsilenced index position.
2. Silencing commands are ignored prior to receipt of first event.
3. Silence command for any zone in the multi-zone table silences index positions using the MZ table.
4. Silence of any index positions “AND-ed” together silences the output.
5. Silencing of the most recent of “OR-ed” index positions silences the output.

### 5.2.6 Resounding Feature

Each used index position requires setting the resounding bit to Y(Yes) or N(No). This bit enables subsequent resounding of the index position when an event occurs after a silence command. For example, the output for an index position would be “OFF” or “ON” for these sequential events:

Sequence	Event	Resound = N	Resound = Y
1	Alarm Event	ON	ON
2	Alarm Silence	OFF	OFF
3	Alarm Event	OFF	ON

### 5.3 ADDRESSABLE DEVICES

The majority of the initiating and indicating devices will be located on the addressable loop. The device’s address shall be set from a 1-127 with the 55-026 programmer. Addressable devices have a variety of fields that must be set for the unit to operate correctly. This information is downloaded to the device upon configuration and stored in non-volatile memory. Upon event occurrence, the system broadcasts the event on the communication loop and the devices respond appropriately. This allows efficient use of the communication loop and minimizes system response time upon event occurrence.

Below is a list of the compatible addressable devices:

<b>63-1021</b>	<b>Sensor, Photoelectric</b>
<b>67-1032</b>	<b>Sensor, Ionization</b>
<b>60-1028</b>	<b>Sensor, Thermal</b>
<b>55-019, 55-020</b>	<b>Fast Response Contact Monitor, FRCM</b>
<b>55-022</b>	<b>Solenoid Releasing Module, SRM</b>
<b>55-021</b>	<b>Supervised Output Module, SOM</b>
<b>55-023</b>	<b>Relay Dual Module, R2M</b>

The following sections discuss the programming requirements and capabilities of the addressable devices.

#### 5.3.1 FRCM, Fast Response Contact Monitor

The FRCM is an addressable input device that offers the ability monitor normally open or closed contacts. This unit can be programmed for a variety of conditions depending on the application. There is no default setting.

To locate the correct screen for editing the default configuration:

    Password (level 3) » F6 (Config) » F1(Devices)

Programming selections:

Address:     Loop (1-4) /Address (1-127)

Input:       MANALRM(Manual Pull), WATERFL(Water Flow), SUPER(Supervisory),  
               PROCESS(Process Management), MANREL(Manual Release), ABORT, RESET,  
               DRILL, TROUBLE, REL-WCT(Release with Count Down), DETECT,  
               ZNE-DIS(zone disable), SUPER-L(latching supervisory), SILENCE

Custom Message: 20 Characters

F2:           Zone selection: *1 to 10 zones can be selected*

Contact: NO (Normally Open), NC (Normally Closed): *Some inputs only allow NO*  
 ENAB:E (Enabled), D (Disabled)

### 5.3.2 SRM, Solenoid Releasing Module

This is an addressable(1-127) device designed to release clean agent systems utilizing solenoids or initiator type components. This output is typically configured to operate upon system release , but can be configured for other states. The controller frequently interrogates the device to verify supervision and communication integrity. When used in the solenoid mode, it is a series firing circuit capable of supplying 2.0 Amps @ 24 VDC. When used with agent it can fire a max. of 6 ARM's (Agent Release Module).

The default setting is:

Address	State	Device	Zone	Time	Enable
1-001	None	24VSOL	001	Contin	Disabled

To locate the correct screen for editing the default configuration:

    Password (level 3) » F6(Config) » F1 (Devices) » “Arrow” past address » F4(+, Until SRM is displayed)

Programming selections:

Address: Loop (1-4) /Address (1-127)  
 State: ALRM(Alarm), PRED(Predischarge), RELE(Release),  
 WMST(Watermist)\_\_(Off)  
 Custom Message: 20 Characters, default is blank  
 F2: Zone selection: *1 to 32 zones can be selected*  
 Device: 24VSOL, ARM, 12VSOL  
 Time: Contin(Continuous), 0-1270 sec.(10 sec. increments)  
 ENAB: E (Enabled), D (Disabled)

**Note: If using a solenoid (rather than the ARM III) remove the EOL from the SRM SQB terminals. Solenoids can be simulated with a 30 ohm high (>20) wattage resistor.**

### 5.3.3 SOM, Supervised Output Module

The SOM is an addressable (1-127) output device that offers many programming features and capabilities. When active this device can supply 2.0 amps of power at 30 VDC max. on a supervised polarity reversing circuit. The controller frequently interrogates the device to verify supervision and communication integrity. To obtain the appropriate initiating to indicating conditions, each of the addressable output devices must be programmed correctly.

The default setting is:

LOOP- ADDRESS	WALK TEST E/D	ENABLE E/D	INDEX # (0LO-15HI)	STATE	ZONE	PATTERN (0-15)	OP CODE (0-3)	SILENCE Y/N	RESOUND Y/N
1-001	E	E	0	ALRM	001	01	0	Y	Y
			1-15	NONE	000	00	0	N	N

To locate the correct screen for editing the default configuration:

    Password (level 3) » F6(Config) » F1 (Devices) » “Arrow” (past address) » F4(+, Until SOM is displayed)

Programming Selections:

Address: Loop (1-4) /Address (1-127)  
 Walk Test: E (Enable), D (Disable)

Enable: E (Enable), D (Disable); *For the device*  
 Index: 0-15; *An index table will be made for each device programmed*  
 Custom Message: Select a zone number to assign a message to this device  
 State: ALARM, PRED(Pre-discharge), RELEASE, WMST, NONE, PROC(Process Management), TROUBLE, SUPR(Supervisory), DRILL, ABORT, PAL1(Pre-Alarm level 1), PAL2(Pre-Alarm level 2)  
 Zone: 1-255; *241-253(Not available), 254,255(Have special use)*  
 Pattern: 0-15(0-4 are factory set, 5-15 programmable for system)  
 Opcode: 0-3(0-Normal, 1-OR, 2-AND end, 3- AND start)  
 Silence: Y(Yes), N(No)  
 Resound: Y(Yes), N(No)

See note in Section 1.6.

### 5.3.4 R2M

The R2M is an addressable output device that offers remote contact closures. The contacts are rated for 2.0 amps @ 30 VDC or 0.5A @ 110 VAC. To obtain the appropriate initiating to indicating conditions, each of the addressable output devices must be programmed correctly. This unit requires communication wiring only, no additional power wires are required. The default setting is:

LOOP- ADDRESS	WALK TEST E/D	ENABLE E/D	INDEX # (0LO-15HI)	STATE	ZONE	R1	R2	Opcode
1-001	D	E	0	NORM	0	N	N	0

To locate the correct screen for editing the default configuration:

    Password (level 3) » F6(Config) » F1 (Devices) » “Arrow” past address » F4(+, Until R2M is displayed)

Programming Selections:

Address: Loop (1-4) /Address (1-127)  
 Walk Test: E (Enable), D (Disable)  
 Enable: E (Enable), D (Disable); *This device*  
 Index: 0-15; *An index table is made for each device programmed*  
 Custom Message: Select a zone number to assign a message to this device  
 State: ALARM, PRED(Pre-discharge), RELEASE, WMST, NONE, PROC(Process Management), TROUBLE, SUPR(Supervisory), DRILL, ABORT, PAL1(Pre-Alarm level 1), PAL2(Pre-Alarm level 2)  
 Zone: 1-255; *241-253 (Not available), 254, 255 (Have special use)*  
 R1: Y(Yes), N(No); Relay 1  
 R2: Y(Yes), N(No); Relay 2  
 Opcode: 0-3(0-Normal, 1-OR, 2-AND end, 3- AND start)

See note in Section 1.6.

### 5.4 ZONE

Zones 1-240 are user selected and defined. Each zone can be either an Alarm or Suppression.

Alarm default is: (ALRM): blank custom message and zone disabled.

Suppression: Detection types: CROSSZ (Cross Zone), even and odd in same zone, COUNTZ (Counting Zone), any 2 addresses in same zone, SINREL(Single Sensor Release) blank custom

message, MR(Manual Release required): Y(Yes), Delay-Manual=10(0-30), Delay-Auto=30(0-60), Abort 2(1-6), and zone disabled.

## 5.5 SYSTEM CHEETAH BOARD CIRCUITS

### 5.5.1 Output Circuits

The controller supplies two audible circuits for annunciation of panel conditions, AUD1 and AUD2. Two CRM4 relay modules can also be added, for an additional 8 DPDT contacts. Default settings are:

Circuit	State	Silencable	Abort	Enabled	Zone
AUD 1	Alarm	Y	N	Y	All zone
AUD 2	Release	N	N	Y	All zone
CRM4, 1-1	None	N	N	Y	All off
CRM4, 1-2	None	N	N	Y	All off
CRM4, 1-3	None	N	N	Y	All off
CRM4, 1-4	None	N	N	Y	All off
CRM4, 2-1	None	N	N	Y	All off
CRM4, 2-2	None	N	N	Y	All off
CRM4, 2-3	None	N	N	Y	All off
CRM4, 2-4	None	N	N	Y	All off

To locate the correct screen for editing the default configuration enter:

    Password (level 3) » F6 (CONFIG) » F3 (SYSTEM) » F1 (I/O  
    CKT) » F1 (OUTPUTS)

Programming selections:

Circuit:    AUD1, AUD2, P411, P412, P413, P414, P421, P422, P423, P424

State:    ALARM, PRED(Pre-discharge), RELEASE, WMST, NONE, PROC(Process  
Management), TROUBLE, SUPR(Supervisory), DRILL, ABORT, PAL1(Pre-  
Alarm level 1), PAL2(Pre-Alarm level 2)

Abort:    Y (Yes), N (No) *Silence on abort activation in zone in an assigned zone*

Enable:    Y (Yes), N (No)

Zone:    Y(Yes), - (No) Can select 1-240 zones

### Loop Circuits

The Cheetah control system has the ability to control up to four separate loops. Each loop can communicate with 1 to 127 addresses. You can program each loop with regards to Class (A or B) and Enable/Disable ( E or D).

Default setting:	Loop #:	1	2	3	4
Class:		B	B	B	B
Enable:		D	D	D	D

### Power Circuits

This panel has the ability to accept a variety of power sources. The default is 120/240 VAC primary and 24 VDC batteries as secondary. To change the default settings:

    Password(Level 3) » F6(Config) » F3(System) » F1(I/O CKT) » F3 (Powerin)

Selections:

    POWER IN:    AC    24VDC

    Controller    X    YYYY: X = Y(Yes) or N(No), YYYY= Auxin or Batt or None

    SPS-SUPP    X    YYYY: X = Y(Yes) or N(No), YYYY= Auxin or Batt or None

Use arrow key to move the cursor to the correct location (F1 or F4) to change selection.

### 5.5.2 Message, System OK

The LCD allows you to select what you want displayed on the top two lines and the bottom line. The default settings are:

```
CHEETAH CONTROL SYS « (Can be changed, 20 characters)
SYSTEM OK           « (Can be changed, 20 characters)
(time) (date)
FIKE PROTECTION SYS. « (Can be changed, 20 characters)
```

### 5.5.3 Pattern Pointers

Sixteen different pattern cadences can be utilized with one control system. The first five cadences are preselected, the remaining are user programmable. Once the required patterns are programmed into the system, they can be selected for all devices requiring a pattern description. The SOM's use these patterns to provide audible (or visible) pattern outputs.

Each pattern index has a 16 bit pattern with each bit representing a quarter second. The entire pattern repeats itself every 4 seconds. The leftmost bit occurs first.

Pattern Index	Pattern	User
0	0000 0000 0000 0000	Steady Off
1	1111 1111 1111 1111	Steady On
2	1100 1100 1100 0000	Temporal Pattern
3	1100 1100 1100 1100	Chirp Pattern (slow pulse)
4	1010 1010 1010 1010	March Time
5-15	Programmable	

### 5.5.4 Time Group

The panel offers 15 time groups to select from. When programming an input device, you will have an opportunity to select a time group to be associated with that device.

```
Setting: ON- Time    OFF- Time
         S M T W R F S    HOL
         X X X X X X X    Y
```

You will select the alarm level for each day.

“1” means alarm sensitivity (S1)

“2” means alarm sensitivity (S2)

HOL stands for Holiday. You have the option of programming if you want this time group to recognize the holidays that you programmed into your configuration. You can select between Y(Yes) or N(No)

### 5.6 Learn Mode

The learn mode gives the programmer the ability to interrogate various loop/address combinations and automatically defaults program devices to the Cheetah system.

```
Screen display: 1-XXX:YYY 2-XXX:YYY
                3-XXX:YYY 4-XXX:YYY
```

The 1,2, 3 and 4 indicates loop, XXX starting address, YYY ending address.

Learn and calibration must be completed before the panel will run properly.



## 5.7 To Device

When configuring a device such as an SOM, once the “enter” key is pressed, that configuration is downloaded to the device. Some devices (i.e. SOM’s) require several seconds to complete this download. Since this download is occurring in the background (i.e. transparent to the user), the download may be interrupted or corrupted prior to a successful or complete download. If, after programming the Cheetah panel, a “configuration fault” is annunciated, it is suggested to use the “To Dev” function. This function will force another configuration download to all devices, therefore, eliminating any configuration mismatches which might exist between the panel and device(s).

### 5.7.1 All Device, F1

Selecting “All Device” will send the configuration information stored in the controller to all of the addressable output devices. If the configuration is not verified at each addressable device, the panel will display a trouble condition for that device.

### 5.7.2 Mod Device, F2

Selecting “Mod Device” will send the configurations modified since the last reset of the control panel. By selecting the “Mod” over “All” only the devices that have been changed or added will be sent. This saves programming time by only sending the new information and not resending everything.

### 5.7.3 Range, F3

Selecting “Range” allows you to select which loops and address new information will be sent to. Use arrow keys to move around in the screen and the F1 or F4.

Select Config Ranges

1 - XXX:XXX	2 - XXX:XXX
3 - XXX:XXX	4 - XXX:XXX

### 5.7.4 Show Mod, F4

This screen allows you to review what type of devices are at each address. It will also show you if an output device has been modified.

Screen:

MODS	DEV1 - 001-020	(Row 1)
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	(Row 2)
P P I S	P	(Row 3)
		(Row 4)

Row 1: Displays the range of addresses being viewed.

Row 2: Displays the actual address

Row 3: Displays what type of device is at that address: P-Photo, I-Ionization, H-Heat, O-SOM, F-FRCM, S-SRM, R-R2M

Row 4: Displays if the address has been modified since the last reset: M-Modified, U-Unmodified

## 5.8 Special

This section covers a variety of general detector and software changes and checks that are useful in the set-up of a system.

### 5.8.1 Calibrate Sensitivity, F1

F2 to Reset Cleans

F3 to Cal Fire-Level

Under normal conditions the clean level is a running average. It is constantly updated based on each communication. The fire level is updated automatically every Wednesday @ 8:00 am.

Any time a detector is added to the Cheetah, Calibrate Sensitivity (F1) MUST BE RUN.

### 5.8.2 Time Out, Password, F2

To access key portions of the programing you are required to enter a password. The password stays active for 5 minutes and if no actions are initiated during this period, the password will time out.

This time out can be changed using the F1 or F4 key from the default of 5 minutes to 5-250 minutes.

### 5.8.3 Error Checking, F3

Once a configuration is entered or modified it is mandatory that the configuration meet basic system requirements. To verify that these requirements are met you can press F3 for error checking or it is automatically done when you return to the main screen. If errors are found it will display a trouble condition and record the information in the event history buffer. The basic system requirements are:

<b>Message</b>	<b>Problem</b>
CFG ERROR 1:MR -----	Configuration error #1 - suppression zone requires manual release (zone number appended to this message)
CFG RESTO 1:MR -----	Configuration error #1 restored
CONFIG ERROR 2: IN/O	Configuration error #2 - every input needs an associated output
CONFIG RESTO 2: IN/O	Configuration error #2 restored
CONFIG ERROR 3: AL V	Configuration error #3 - no analog device with alarm verification delay can be assigned to a suppression zone
CONFIG RESTO 3: AL V	Configuration error #3 restored
CONFIG ERROR 4:SENS	Configuration error #4 - Photo sensor has too high alarm sensitivity.
CONFIG RESTO 4:SENS	Configuration error #4 restored
CFG ERROR 5: W-----	Configuration error #5 - Watermist zone needs an SRM (zone#)
CFG RESTO 5: W-----	Configuration error #5 restored
CFG ERROR 6: W-----	Configuration error #6 - Watermist zone has an abort (zone#)
CFG RESTO 6: W-----	Configuration error #6 restored
CFG ERROR 7: ON TIME	Configuration error #7 - SRM assigned to Watermist and zone has no "on-time"
CFG RESTO 7: ON TIME	Configuration error #7 restored
CFG ERROR 8: ZN-TYPE	Configuration error #8 - SRM assigned to Watermist and alarm type of zone
CFG RESTO 8: ZN-TYPE	Configuration error #8 restored

### 5.8.4 Device Address, F4

If you need to change a device to a different address, the panel allows you to complete this task at the controller. You are not required to use the portable addressable programmer, 55-026. The screen will ask what the current address is and what would you like the new address to be. All of the program-

ming characteristics associated with that device will be changed to the new address. To find an address, install the device on an empty loop and press F2 while in this screen.

```
LOOP: 1      CHANGE ADDR
CHANGE ADR FROM: 001X
                TO: 001X      where X is device type found at this address
PRESS ENTER TO COPY
```

### **5.8.5 Calibration Time, F5**

The panel has a default setting of Wednesday at 8:00 AM for calibrating the detectors. If this time is not appropriate for a particular application you can change it to what ever time and day is best. It is recommended that you select a time and day that the facility is staffed in case a problem is located. The default settings and screen are:

```
CALIBRATION TIME & DATE
DEFAULT IS 8:00 AM, WEDNESDAY
```

### **5.8.6 PC Trouble Clear, F6**

If, when configuring the Cheetah control panel using the Tracker software a communications error occurs, the Cheetah will display a PC trouble message. This message identifies to the programmer that the download between Tracker and the Cheetah may not have been complete or successful. Only the "CL PC TR" function will clear this trouble indication. At this point it may be necessary to re-download the configuration. It is strongly suggested to do a 100% system checkout after each system configuration.

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