

Serial Communications  
Visual Annunciator Manual



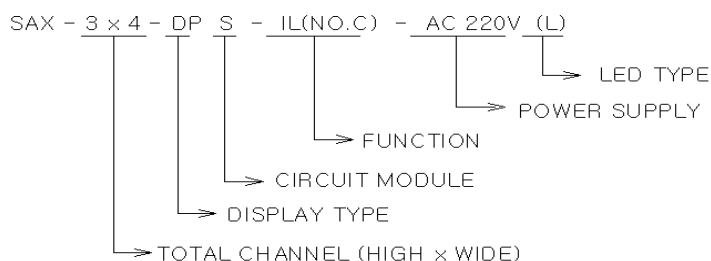
삼인기술주식회사

## DATA SHEET

THIS SPECIFICATION COVERS THE TECHNICAL REQUIREMENT FOR THE **samin** ANNUNCIATOR ASSEMBLY WHICH MAY BE INCLUDED IN THE INSTRUMENT MANUFACTURED BY SAMIN TECHNOLOGY CO., LTD. (HEREINAFTER REFERRED TO AS SAMIN)

### 1. MODEL

#### A) SELECTION OF MODEL NO.



#### B) PURCHASE ORDER OF MODEL NO.

☐

### 2. DISPLAY UNIT TYPE

- |                                                             |                                                    |
|-------------------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> ENGRAVE TYPE (40H x 80W)           | <input type="checkbox"/> LED LAMP TYPE (30H x 30W) |
| <input type="checkbox"/> ENGRAVE DOOR TYPE (40H x 80W)      | <input type="checkbox"/> PILOT TYPE (40H x 40W)    |
| <input type="checkbox"/> WINDOW TYPE (88H x 88W, 44H x 88W) |                                                    |

### 3. CIRCUIT MODULE

- |                                           |                                     |                                   |                                           |
|-------------------------------------------|-------------------------------------|-----------------------------------|-------------------------------------------|
| <input type="checkbox"/> SOLID STATE TYPE | <input type="checkbox"/> RELAY TYPE | <input type="checkbox"/> CPU TYPE | <input type="checkbox"/> CPU TYPE(RS 485) |
|-------------------------------------------|-------------------------------------|-----------------------------------|-------------------------------------------|

### 4. FUNCTION

- |                                               |                                           |                                         |
|-----------------------------------------------|-------------------------------------------|-----------------------------------------|
| A) <input type="checkbox"/> BASIC TYPE        | <input type="checkbox"/> INSPECTION TYPE  | <input type="checkbox"/> RING BACK TYPE |
| <input type="checkbox"/> FIRSTOUT TYPE (F3A)  | <input type="checkbox"/> MO SEQUENCE      | <input type="checkbox"/> MULTIFUNCTION  |
| B) <input type="checkbox"/> LOCK IN TYPE      | <input type="checkbox"/> NON LOCK TYPE    | <input type="checkbox"/>                |
| C) <input type="checkbox"/> NORMAL CLOSE TYPE | <input type="checkbox"/> NORMAL OPEN TYPE | <input type="checkbox"/>                |

### 5. POWER SUPPLY

- |                                  |                                  |                                |                                  |                                  |
|----------------------------------|----------------------------------|--------------------------------|----------------------------------|----------------------------------|
| <input type="checkbox"/> AC 110V | <input type="checkbox"/> AC 220V | <input type="checkbox"/> DC24V | <input type="checkbox"/> DC 110V | <input type="checkbox"/> DC 220V |
|----------------------------------|----------------------------------|--------------------------------|----------------------------------|----------------------------------|

### 6.ANNUNCIATOR COLOR

#### A) CASE

- |                                |                          |                          |
|--------------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> BLACK | <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------------|--------------------------|--------------------------|

#### B) LAMP BODY

- |                                |                              |                                |                                 |                                |
|--------------------------------|------------------------------|--------------------------------|---------------------------------|--------------------------------|
| <input type="checkbox"/> WHITE | <input type="checkbox"/> RED | <input type="checkbox"/> BLACK | <input type="checkbox"/> YELLOW | <input type="checkbox"/> GREEN |
|--------------------------------|------------------------------|--------------------------------|---------------------------------|--------------------------------|

#### C) FILTER

- |                                     |                              |                                |                                 |
|-------------------------------------|------------------------------|--------------------------------|---------------------------------|
| <input type="checkbox"/> MILK WHITE | <input type="checkbox"/> RED | <input type="checkbox"/> GREEN | <input type="checkbox"/> YELLOW |
|-------------------------------------|------------------------------|--------------------------------|---------------------------------|

#### D) LAMP

- |                                                             |                                 |                                |                                 |                                  |                                   |
|-------------------------------------------------------------|---------------------------------|--------------------------------|---------------------------------|----------------------------------|-----------------------------------|
| <input type="checkbox"/> LED ( <input type="checkbox"/> RED | <input type="checkbox"/> YELLOW | <input type="checkbox"/> WHITE | <input type="checkbox"/> ORANGE | <input type="checkbox"/> AMBER ) | <input type="checkbox"/> FILAMENT |
|-------------------------------------------------------------|---------------------------------|--------------------------------|---------------------------------|----------------------------------|-----------------------------------|

### 7. MOUNTING

- |                                  |                               |                                |
|----------------------------------|-------------------------------|--------------------------------|
| <input type="checkbox"/> SURFACE | <input type="checkbox"/> RACK | <input type="checkbox"/> FLUSH |
|----------------------------------|-------------------------------|--------------------------------|

## Serial Communication Annunciator

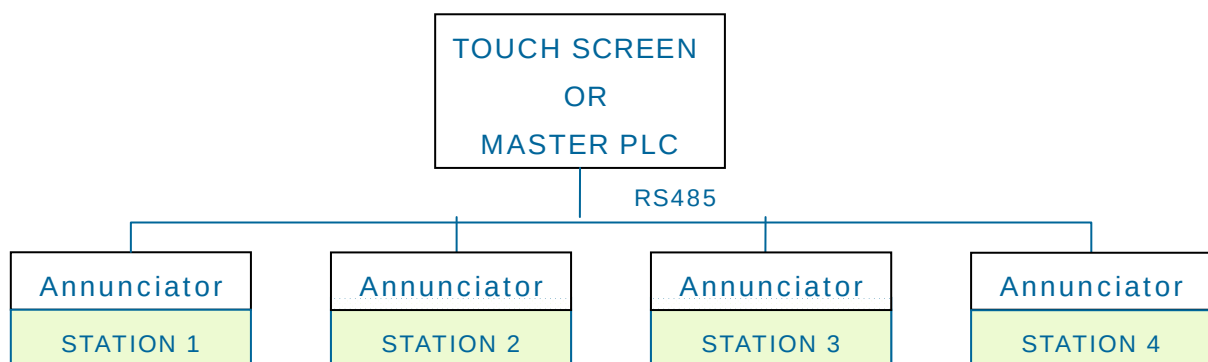
### 1. General

The Samin Technology Co., Ltd. Serial input Annunciator is designed to accept contact status changes from a host via a standard serial communication line for display similar to a conventional window Annunciator.

The host, typically a Samin field multiplexer, sequence of events PLC or DCS. Computer, generates the contact status data to be sent from one of its standard communication ports by hard-wire or fiber-optics connection, the Samin controller

Each Samin controller accepts up to 15 inputs. programmable for single or multiple inputs to any one of the maximum 240 outputs connected to individual windows.

### 2. Serial Communication Annunciator Diagrams



### 3. Specification

- 3.1 Input Power : 24VDC  $\pm 5\%$
- 3.2 Output Driver : 200mA
- 3.3 Operating Temperature :  $-5^{\circ}\text{C}$  to  $60^{\circ}\text{C}$
- 3.4 Storage Temperature :  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- 3.5 Data Transmission/Baud Rates : 9600, 19200, 38400, 57600
- 3.6 Recommended distance(with maximum) : 4000ft/1200m
- 3.7 Communication :
  - Full duplex.
  - 1 stop bits no parity
  - no parity
- 3.8 Protocol : Modbus RTU Protocol
- 3.9 Point Identification : 1~240
- 3.10 Control Identification : 1~15
- 3.11 Audible : Single, dual horn
- 3.12 Output Relay : CTA(common Trouble Alarm 1 SPDT)
- 3.13 Contact Rating : 10A/28VDC, 5A/250VAC
- 3.14 Alarm Sequence : ISA 18.1. A, M, F1A, F1M, F2A, F2M, F3A, F3M, Ring back
- 3.15 Pushbutton : Operational Test, Acknowledge, Reset, Lamp Test, Silence Stop

## 4. DATA Register Table

DATA Register Table (INPUT)

| Register No. | Function                                                                             | DATA |     | Description |     |     |     |      |     |     |     |     |     |
|--------------|--------------------------------------------------------------------------------------|------|-----|-------------|-----|-----|-----|------|-----|-----|-----|-----|-----|
|              |                                                                                      | ON   | OFF | 0           | 1   | 2   | 3   | 4    | 5   | 6   | 7   | 8   | 9   |
| 0            | • Read Coil-R<br>• Force Single Coil-W<br>• Force Multi Coil-W                       | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 10           |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 20           |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 230          |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 240          |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |
| 10000        | • Read Input Status-R                                                                | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 10010        |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 10020        |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 10230        |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 10240        |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |
| 30000        | • Read Input Register-R                                                              | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 30010        |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 30020        |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 30230        |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 30240        |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |
| 40000        | • Read Holding Register-R<br>• Preset single Register-W<br>• Preset Multi Register-W | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 40010        |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 40020        |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 40230        |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 40240        |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |

- If each word is 1 then ON and 0 then off.
  - The Reset, Ack, Test and Buzzer Stop can both communicate with the push button switch
  - channel Input = Read write is write other than write
- (Example 1) Register No. : If 00 Number is 1 , Lamp(L1) is ON  
Register No. : If 01 Number is 1 , Lamp (L2) is ON

DATA Register Table (OUTPUT)

| Register No. | Function                                                                             | DATA |     | Description |     |     |     |      |     |     |     |     |     |
|--------------|--------------------------------------------------------------------------------------|------|-----|-------------|-----|-----|-----|------|-----|-----|-----|-----|-----|
|              |                                                                                      | ON   | OFF | 0           | 1   | 2   | 3   | 4    | 5   | 6   | 7   | 8   | 9   |
| 1000         | • Read Coil-R<br>• Force Single Coil-W<br>• Force Multi Coil-W                       | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 1010         |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 1020         |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 1230         |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 1240         |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |
| 11000        | • Read Input Status-R                                                                | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 11010        |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 11020        |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 11230        |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 11240        |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |
| 31000        | • Read Input Register-R                                                              | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 31010        |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 31020        |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 31230        |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 31240        |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |
| 41000        | • Read Holding Register-R<br>• Preset single Register-W<br>• Preset Multi Register-W | 1    | 0   | L1          | L2  | L3  | L4  | L5   | L6  | L7  | L8  | L9  | L10 |
| 41010        |                                                                                      |      |     | L11         | L12 | L13 | L14 | L15  | L16 | L17 | L18 | L19 | L20 |
| 41020        |                                                                                      |      |     | L21         | L22 | L23 | L24 | L25  | L26 | L27 | L28 | L29 | L30 |
| ~            |                                                                                      |      |     | ~           | ~   | ~   | ~   | ~    | ~   | ~   | ~   | ~   | ~   |
| 41230        |                                                                                      |      |     | 231         | 232 | 233 | 234 | 235  | 236 | 237 | 238 | 239 | 240 |
| 41240        |                                                                                      |      |     | 241         | RES | ACK | TE  | B..S | LT  |     |     |     |     |

- If each word is 1 then ON and 0 then off.
  - The Reset, Ack, Test and Buzzer Stop can both communicate with the push button switch
  - channel Input = Read write is write other than write
- (Example 1) Register No. : If 00 Number is 1 , Lamp(L1) is ON  
Register No. : If 01 Number is 1 , Lamp (L2) is ON

## ■ SELECT THE ANNUNCIATOR FUNCTION

### 1. General

The function of the annunciator can be selected by opening the rear cover and using the dip switch in the module.

### 2. Select Function

#### 2.1 Alarm Sequence (SAX-CPU)

- A (Basic) Sequence : PB S/W COM + RES
- M (Inspection) Sequence : Dip S/W 1. ⑥ ⑦ ⑧ OFF
- F1A (First Out) Sequence : Dip S/W 1. ⑥ ON
- F1M (First Out) Sequence : Dip S/W 1. ⑦ ON
- F2A (First Out) Sequence : Dip S/W 1. ⑥ ⑦ ON
- F2M (First Out) Sequence : Dip S/W 1. ⑧ ON
- F3A (First Out) Sequence : Dip S/W 1. ⑥ ⑧ ON
- F3M (First Out) Sequence : Dip S/W 1. ⑦ ⑧ ON
- Ring Back Sequence : Dip S/W 1. ⑥ ⑦ ⑧ ON

#### 2.2 CTA(Common Trouble Alarm) : SAX-CPU (Option)

- Field ON/OFF ↔ CTA Relay ON/OFF : Dip S/W 1. ③ OFF
- Field ON/OFF ↔ CTA Relay ON/OFF After Reset : Dip S/W 1. ③ ON

#### 2.3 Re-Flashing (SAX-CPU) : Dip S/W 1 ④ ⑤ ON

Abnormal re-alarm after a period of time after confirmation

- 10 minutes : Dip S/W 1. ④ ON
- 30 minutes : Dip S/W 1. ⑤ ON
- 60 minutes : Dip S/W 1. ④ ⑤ ON

#### 2.4 Normal Open/Close Selection (SAX-LOG)

- Normal Open : Dip S/W 1 , 2 OFF
- Normal Close : Dip S/W 1 , 2 ON

#### 2.5 Lock In/Non Lock Selection (SAX-LOG)

- Lock In : Dip S/W 3 ,4 OFF
- Non Lock : Dip S/W 3 ,4 ON

#### 2.6 Select Switch

- CPU(SAX-CPU) Board

Dip S/W 2 ① ② ③ ④ : IN/OUT(SAX-LOG) Board quantity

(예) SAX-LOG 2 quantity : ② ON , 3 quantity : ① ② ON

- IN/OUT(SAX-LOG) Board

Dip S/W 1 (4 pol) : IN/OUT(SAX-LOG) Address

(예) Dip S/W 1 (4 pol) : ① ② ③ ④ OFF → NO. 1

① ON → NO. 2

① ② ON → NO. 4

### 3. Select Communication

3.1 RS 485 : Jumper ① ② Jumper ↔ RS 485

RS 422 : Jumper ② ③ Jumper ↔ RS 422 (Option)

3.2 Data Transmission/Baud Rates : SAX-CPU Board Dip S/W 1. ① ②

- 9600 : Dip S/W 1. ① ② OFF

- 19200 : Dip S/W 1. ① ON

- 38400 : Dip S/W 1. ② ON

- 57600 : Dip S/W 1. ② ON

3.3 Station No : SAX-CPU Board Dip S/W 2. ⑤ ⑥ ⑦ ⑧

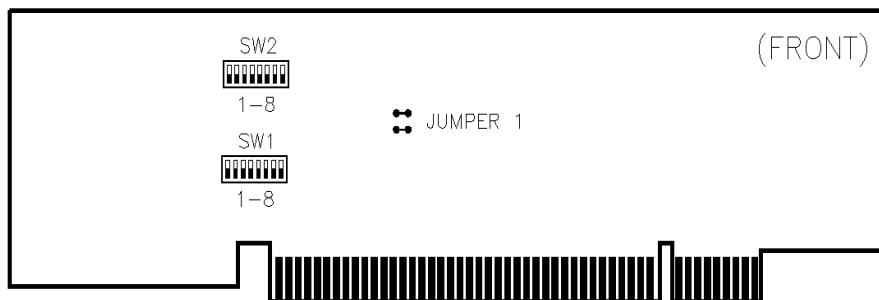
(예) Station No 1 : Dip S/W 2 ⑤ ON

Station No 5 : Dip S/W 2 ⑤ ⑦ ON

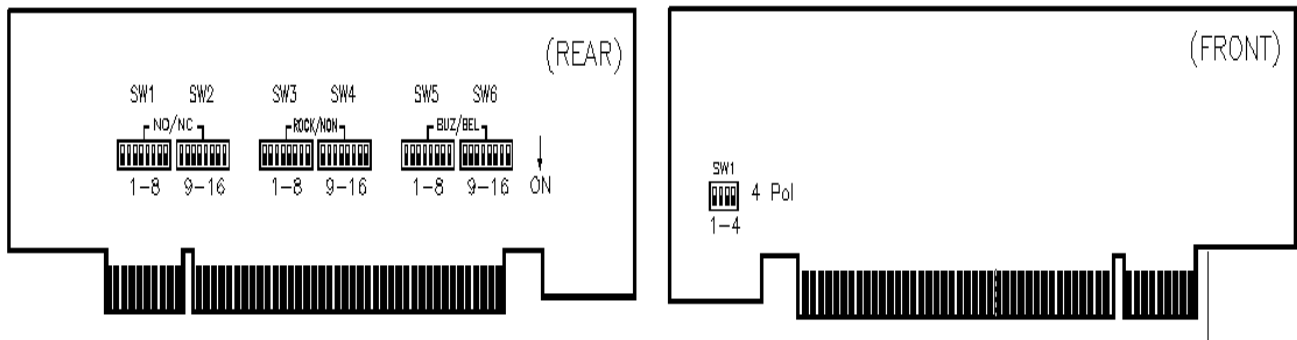
Station No 10 : Dip S/W 2 ⑥ ⑧ ON

### 4. Board (SAX-CPU & SAX-I/O)

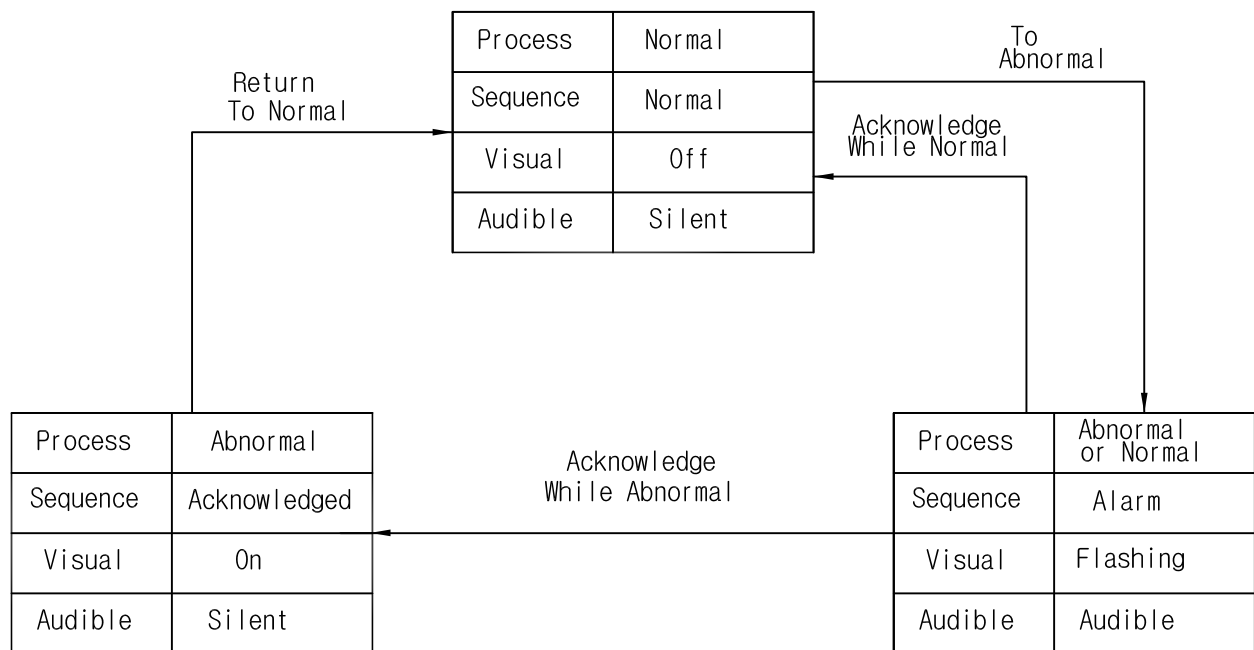
#### 4.1 SAX-CPU BOARD



#### 4.2 LOGIC INPUT/OUTPUT BOARD



■ Sequence A Automatic Reset

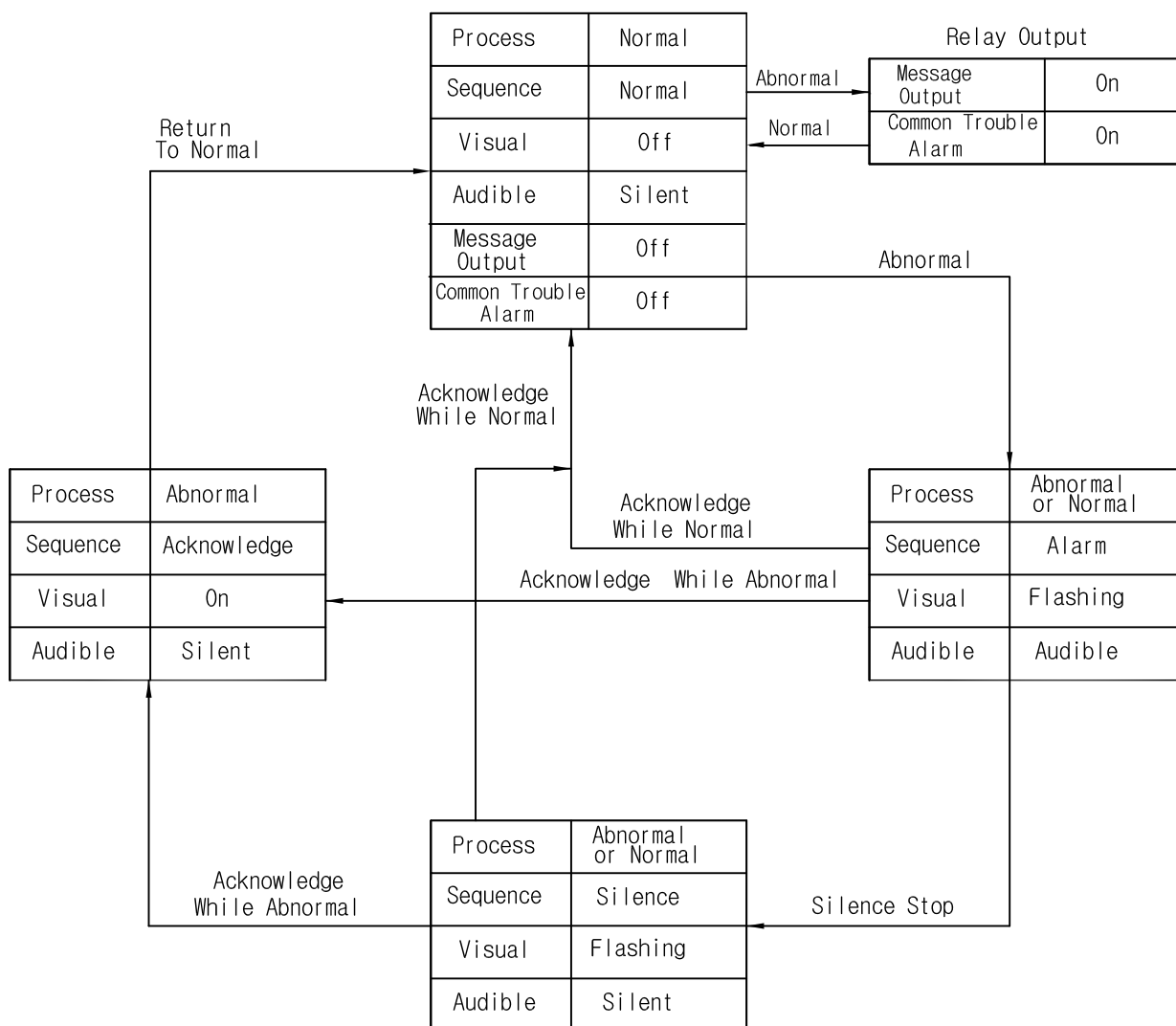


■ Basic Sequence (A)

|              | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|--------------|---------------|---|---|--------------|---|---|
| DESCRIPTION  | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT  |               |   |   |              |   |   |
| LAMP VISIBLE |               |   |   |              |   |   |
| BUZZER       |               |   |   |              |   |   |
| ACKNOWLEDGE  |               |   |   |              |   |   |
| TEST         |               |   |   |              |   |   |
| LAMP TEST    |               |   |   |              |   |   |



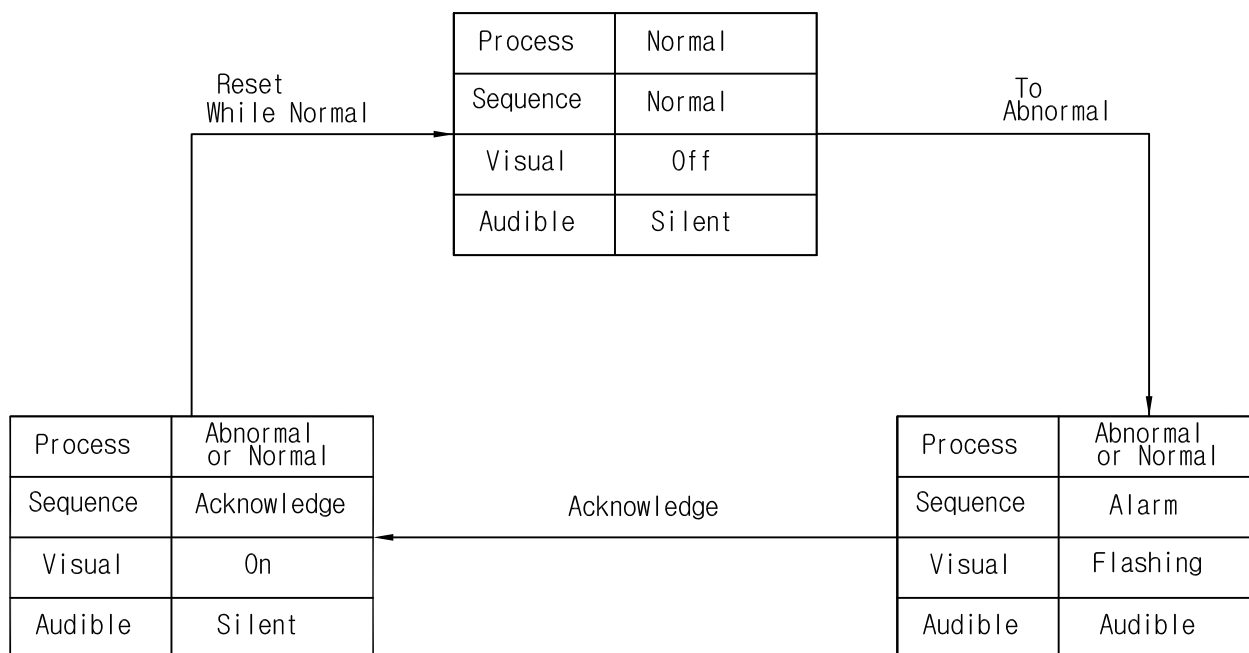
## ■ Sequence A Automatic Reset With Options



## ◎ BASIC SEQUENCE (A) OPTION

|                | NON LOCK TYPE |    |    | LOCK IN TYPE |    |    |
|----------------|---------------|----|----|--------------|----|----|
| DESCRIPTION    | 1             | 2  | 3  | 1            | 2  | 3  |
| ALARM INPUT 1  | ON            | ON | ON | ON           | ON | ON |
| ALARM INPUT 2  | ON            | ON | ON | ON           | ON | ON |
| VISIBLE 1      | ON            | ON | ON | ON           | ON | ON |
| VISIBLE 2      | ON            | ON | ON | ON           | ON | ON |
| BUZZER         | ON            | ON | ON | ON           | ON | ON |
| ACKNOWLEDGE    | ON            | ON | ON | ON           | ON | ON |
| TEST           | ON            | ON | ON | ON           | ON | ON |
| SILENCE STOP   | ON            | ON | ON | ON           | ON | ON |
| RELAY OUTPUT 1 | ON            | ON | ON | ON           | ON | ON |
| RELAY OUTPUT 2 | ON            | ON | ON | ON           | ON | ON |
| C T A          | ON            | ON | ON | ON           | ON | ON |

■ Sequence M Manual Reset



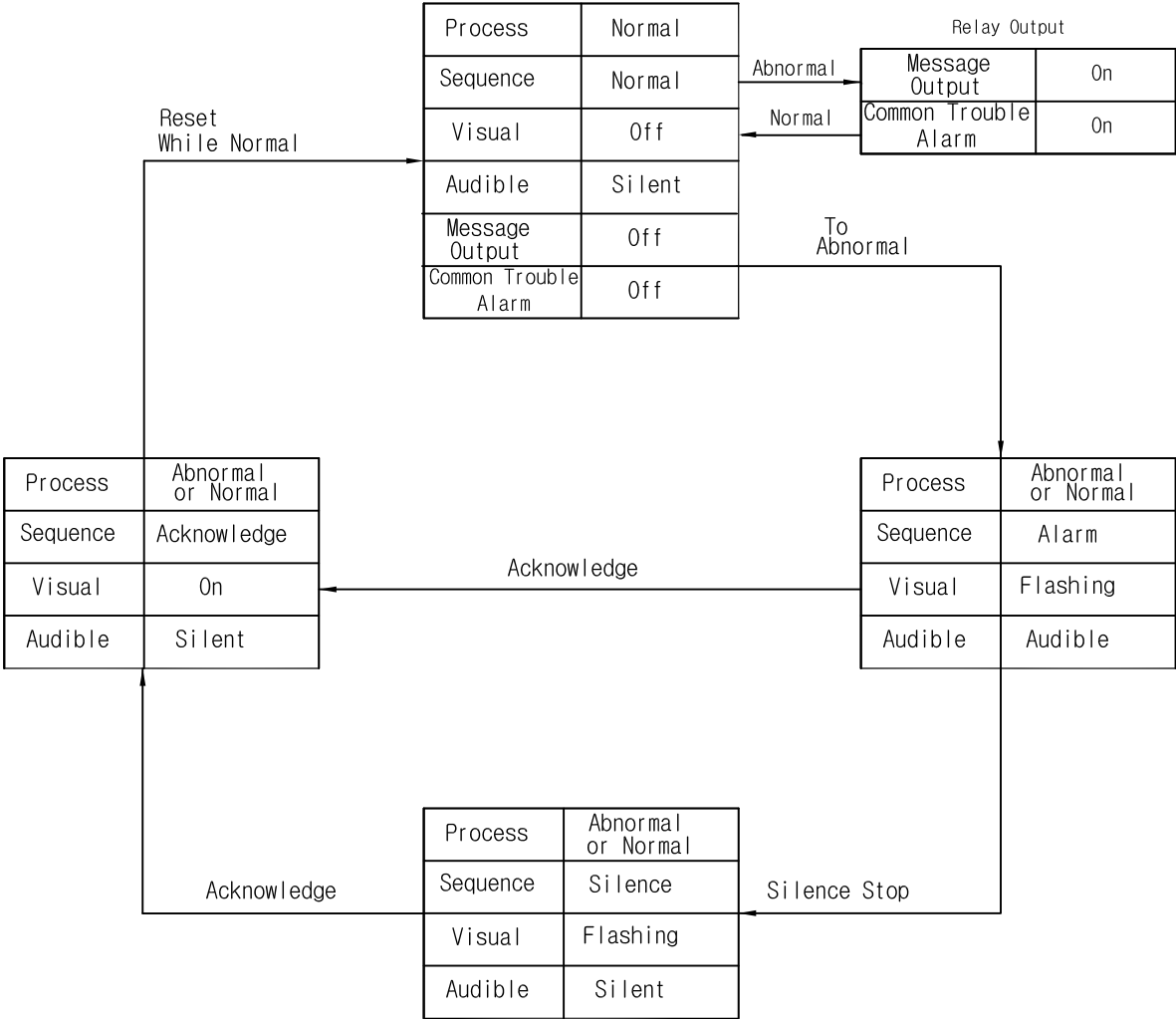
### Sequence Features

1. Acknowledge, Reset and Test Pushbuttons.
2. Alarm Audible Device.
3. Lock-in of Momentary Alarms Until Acknowledged.
4. The Audible Device is Silenced and Flashing Stops When Acknowledged.
5. Manual Reset of Acknowledged Alarm Indications After Process Conditions Return to Normal.
6. Operation Test.

### ⊙ INSPECTION SEQUENCE (M)

|              | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|--------------|---------------|---|---|--------------|---|---|
| DESCRIPTION  | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT  |               | ■ | ■ |              | ■ | ■ |
| LAMP VISIBLE | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER       | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE  |               |   | ■ | ■            | ■ | ■ |
| RESET        |               |   | ■ |              | ■ | ■ |
| TEST         | ■             |   |   | ■            |   |   |
| LAMP TEST    |               | ■ |   |              | ■ |   |

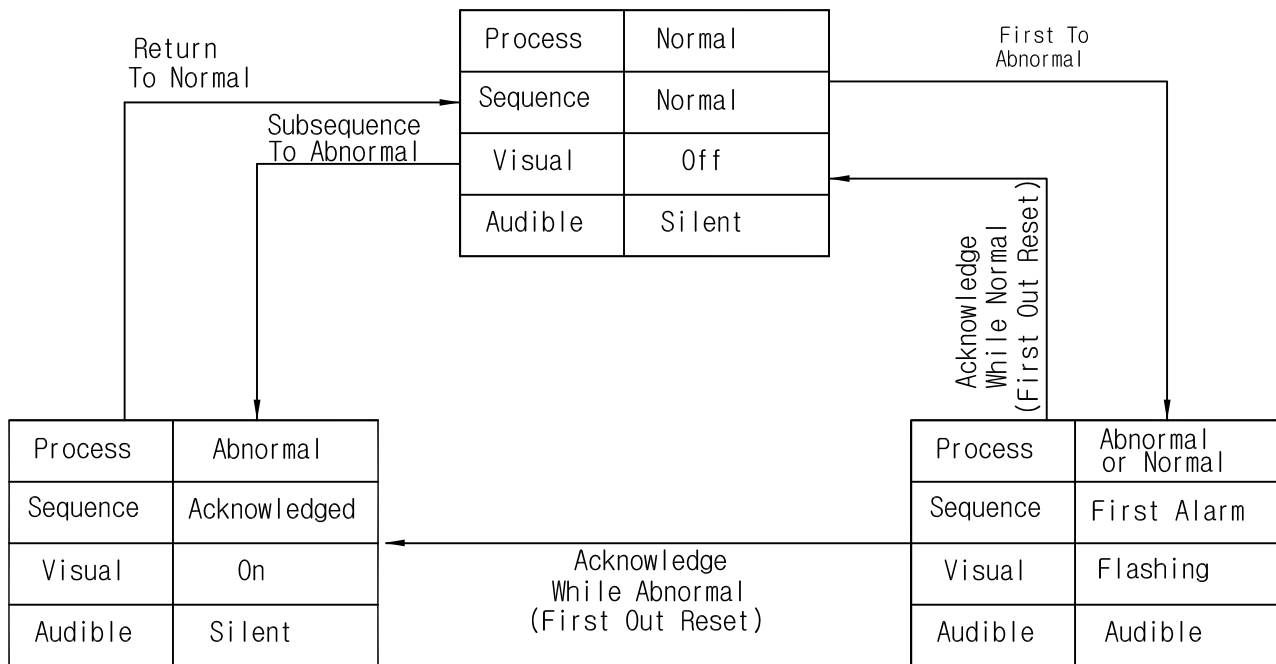
Sequence M Manual Reset With Options



INSPECTION SEQUENCE (M) OPTION

| DESCRIPTION    | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|----------------|---------------|---|---|--------------|---|---|
|                | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1  | 1             | 1 |   | 1            | 1 |   |
| ALARM INPUT 2  | 1             | 1 |   | 1            | 1 |   |
| VISIBLE 1      | 1             | 1 |   | 1            | 1 |   |
| VISIBLE 2      | 1             | 1 |   | 1            | 1 |   |
| BUZZER         | 1             | 1 |   | 1            | 1 |   |
| ACKNOWLEDGE    |               | 1 |   |              | 1 |   |
| RESET          |               |   | 1 |              |   | 1 |
| TEST           |               |   | 1 |              |   | 1 |
| SILENCE STOP   |               | 1 |   |              | 1 |   |
| RELAY OUTPUT 1 | 1             | 1 |   | 1            | 1 |   |
| RELAY OUTPUT 2 | 1             | 1 |   | 1            | 1 |   |
| C T A          | 1             | 1 |   | 1            | 1 |   |

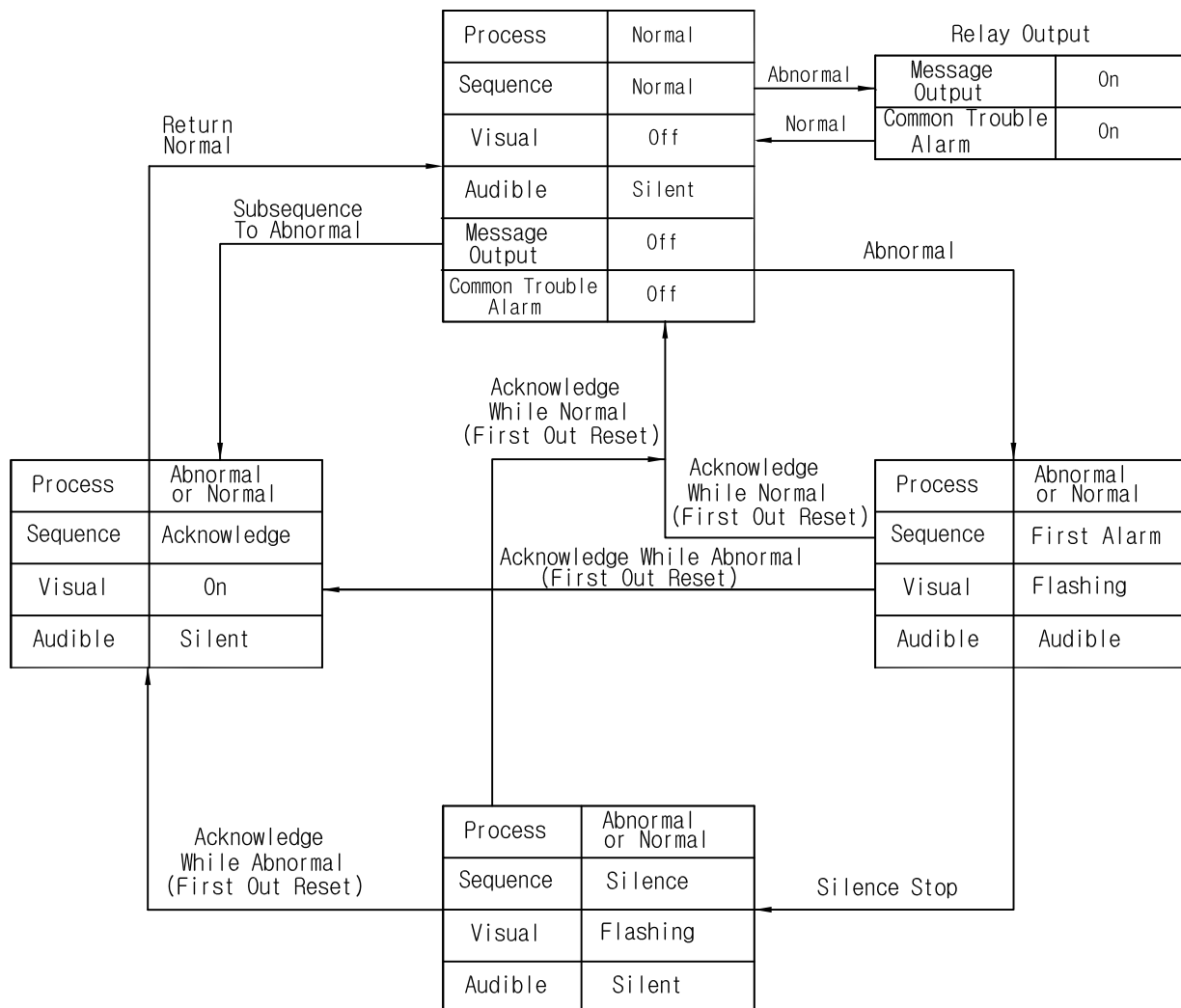
## ■ F1A Sequence Diagram



## ◎ FIRST OUT SEQUENCE (F1A)

| DESCRIPTION   | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|---------------|---------------|---|---|--------------|---|---|
|               | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1 | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 2 | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 3 | ■             | ■ |   | ■            | ■ |   |
| VISIBLE 1     | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2     | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 3     | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER        | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE   |               | ■ |   |              | ■ |   |
| TEST          |               |   | ■ |              |   | ■ |

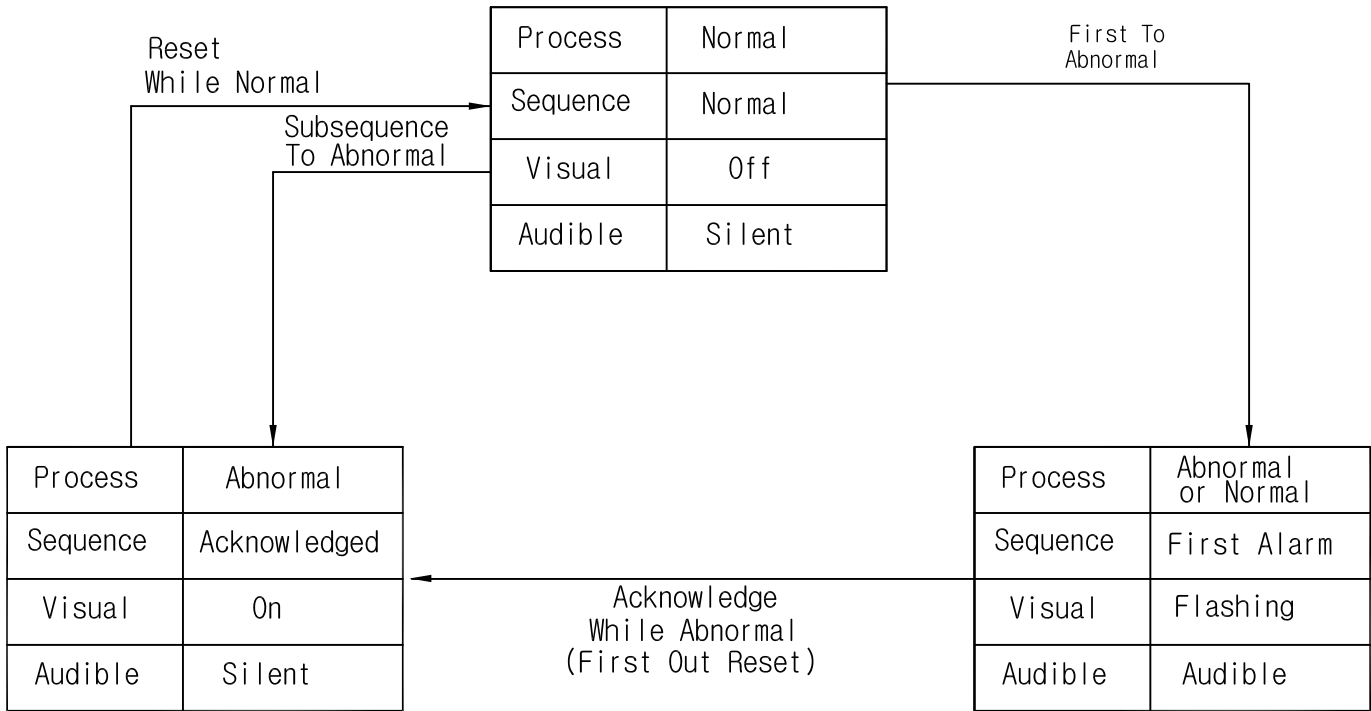
## ■ F1A Sequence With Option



## ◎ FIRST OUT SEQUENCE (F1A) OPTION

| DESCRIPTION    | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|----------------|---------------|---|---|--------------|---|---|
|                | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1  | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 2  | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 3  | ■             | ■ |   | ■            | ■ |   |
| VISIBLE 1      | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2      | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 3      | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER         | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE    |               | ■ |   | ■            | ■ | ■ |
| TEST           |               |   | ■ |              |   | ■ |
| SILENCE STOP   |               | ■ |   |              | ■ | ■ |
| RELAY OUTPUT 1 | ■             | ■ |   | ■            | ■ |   |
| RELAY OUTPUT 2 | ■             | ■ |   | ■            | ■ |   |
| RELAY OUTPUT 3 | ■             | ■ |   | ■            | ■ |   |
| C T A          | ■             | ■ |   | ■            | ■ |   |

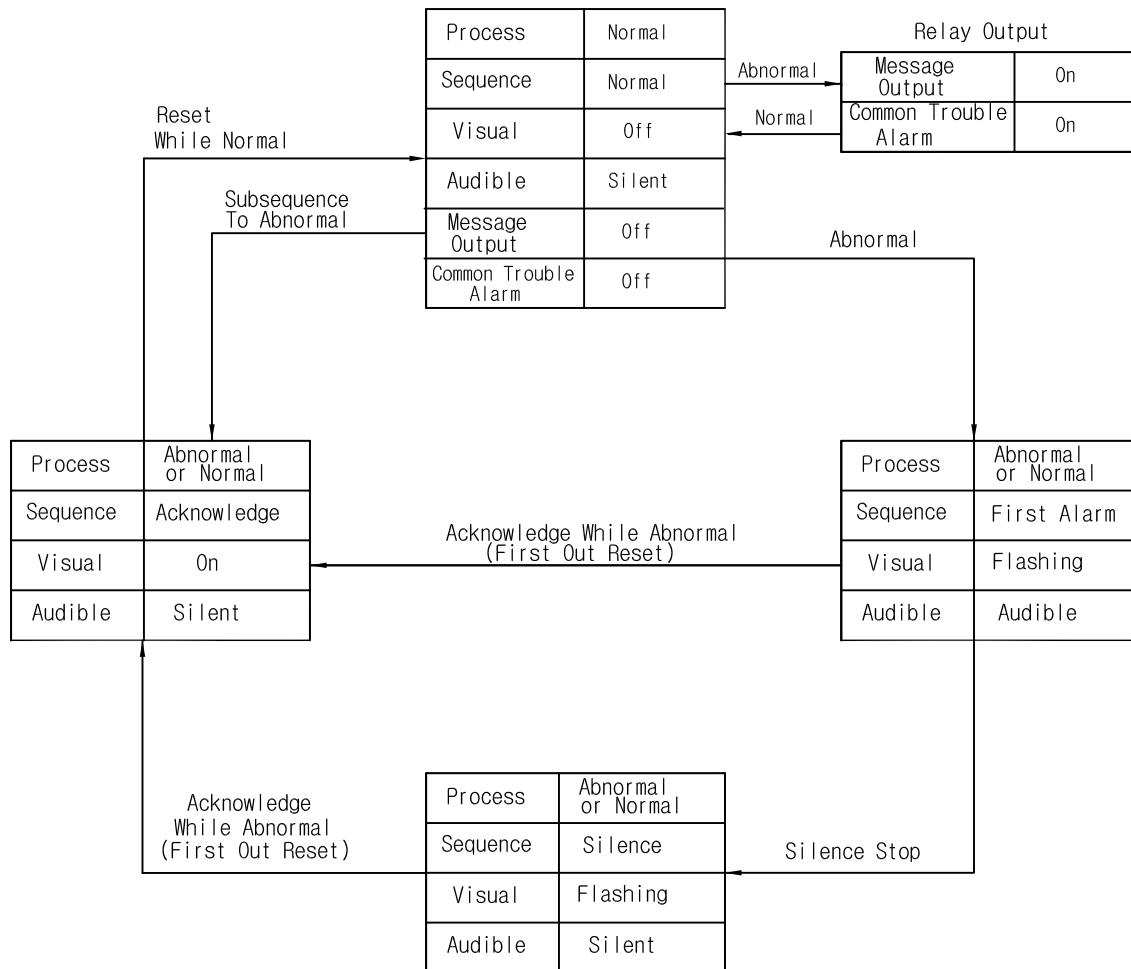
■ F1M Sequence Digram



◎ FIRST OUT SEQUENCE (F1M)

| DESCRIPTION   | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|---------------|---------------|---|---|--------------|---|---|
|               | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1 | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 2 | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 3 | ■             | ■ |   | ■            | ■ |   |
| VISIBLE 1     | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2     | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 3     | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER        | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE   |               | ■ |   |              | ■ |   |
| TEST          |               |   | ■ |              |   | ■ |
| RESET         |               |   | ■ |              |   | ■ |

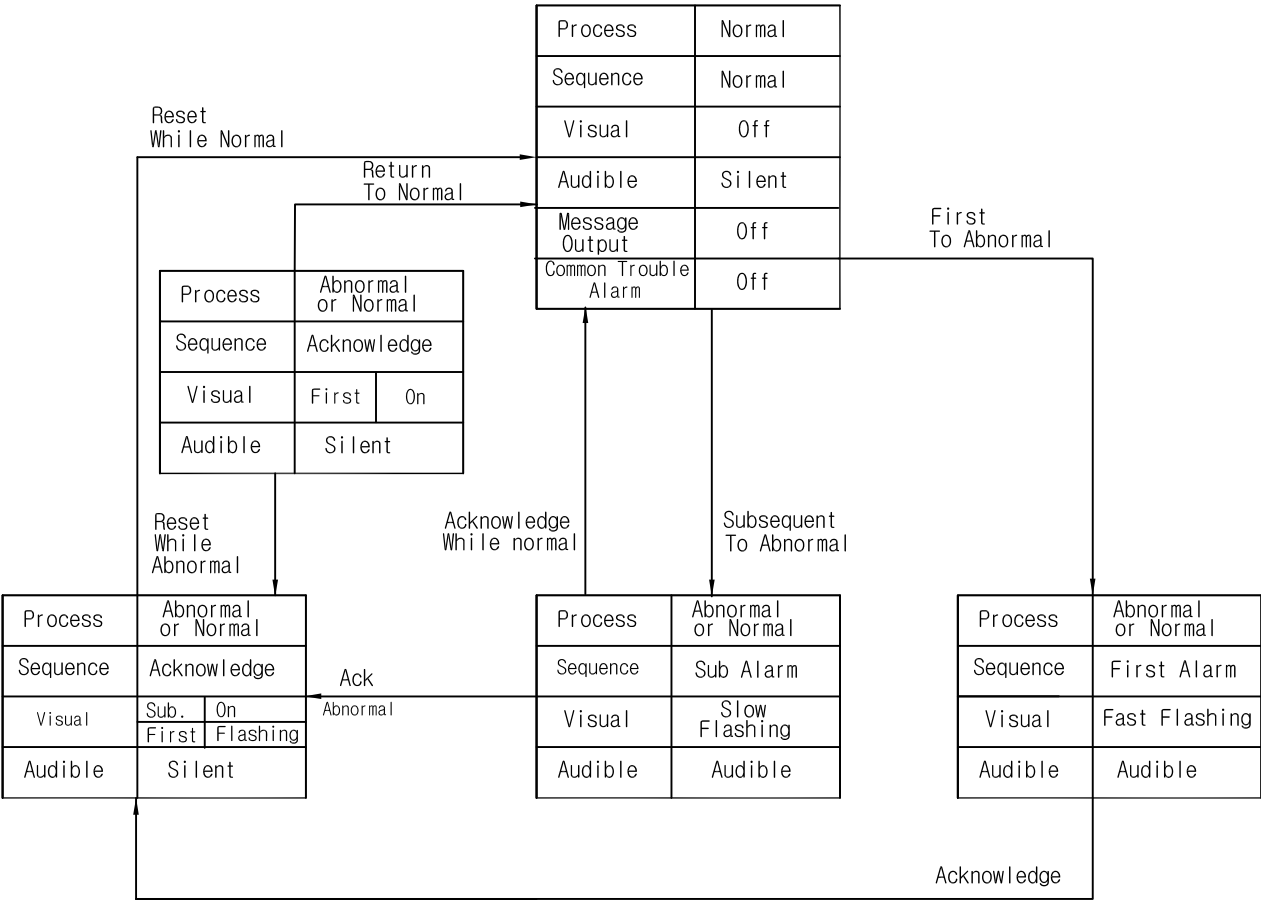
## ■ F1M Sequence With Options



## ◎FIRST OUT SEQUENCE (F1M) OPTION

|                | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|----------------|---------------|---|---|--------------|---|---|
| DESCRIPTION    | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1  | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 2  | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 3  | ■             | ■ |   | ■            | ■ |   |
| VISIBLE 1      | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2      | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 3      | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER         | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE    |               | ■ |   |              | ■ |   |
| TEST           |               |   | ■ |              |   | ■ |
| RESET          |               | ■ |   |              | ■ |   |
| SILENCE STOP   |               | ■ |   |              | ■ |   |
| RELAY OUTPUT 1 | ■             | ■ |   | ■            | ■ |   |
| RELAY OUTPUT 2 | ■             | ■ |   | ■            | ■ |   |
| RELAY OUTPUT 3 | ■             | ■ |   | ■            | ■ |   |
| C T A          | ■             | ■ |   | ■            | ■ |   |

■ F2A Sequence Diagram

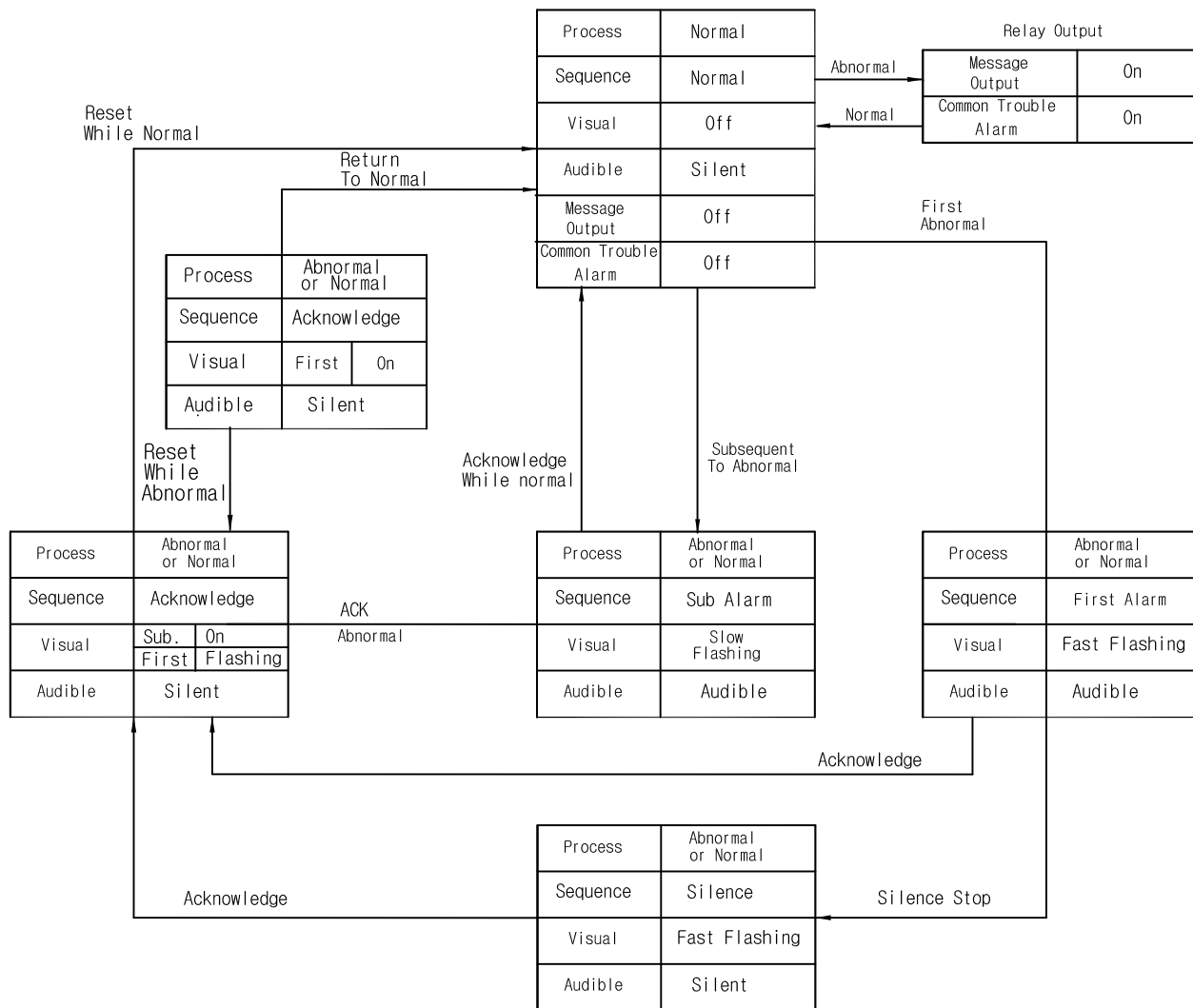


◎ FIRST OUT SEQUENCE (F2A)

|                | NON LOCK TYPE |             |             | LOCK IN TYPE |             |             |
|----------------|---------------|-------------|-------------|--------------|-------------|-------------|
| DESCRIPTION    | 1             | 2           | 3           | 1            | 2           | 3           |
| ALARM INPUT 1  | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| ALARM INPUT 2  | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| ALARM INPUT 3  | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| VISIBLE 1      | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| VISIBLE 2      | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| VISIBLE 3      | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| BUZZER         | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| ACKNOWLEDGE    | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| FIRSTOUT RESET | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |
| TEST           | <div></div>   | <div></div> | <div></div> | <div></div>  | <div></div> | <div></div> |



■ F2A Sequence With Option

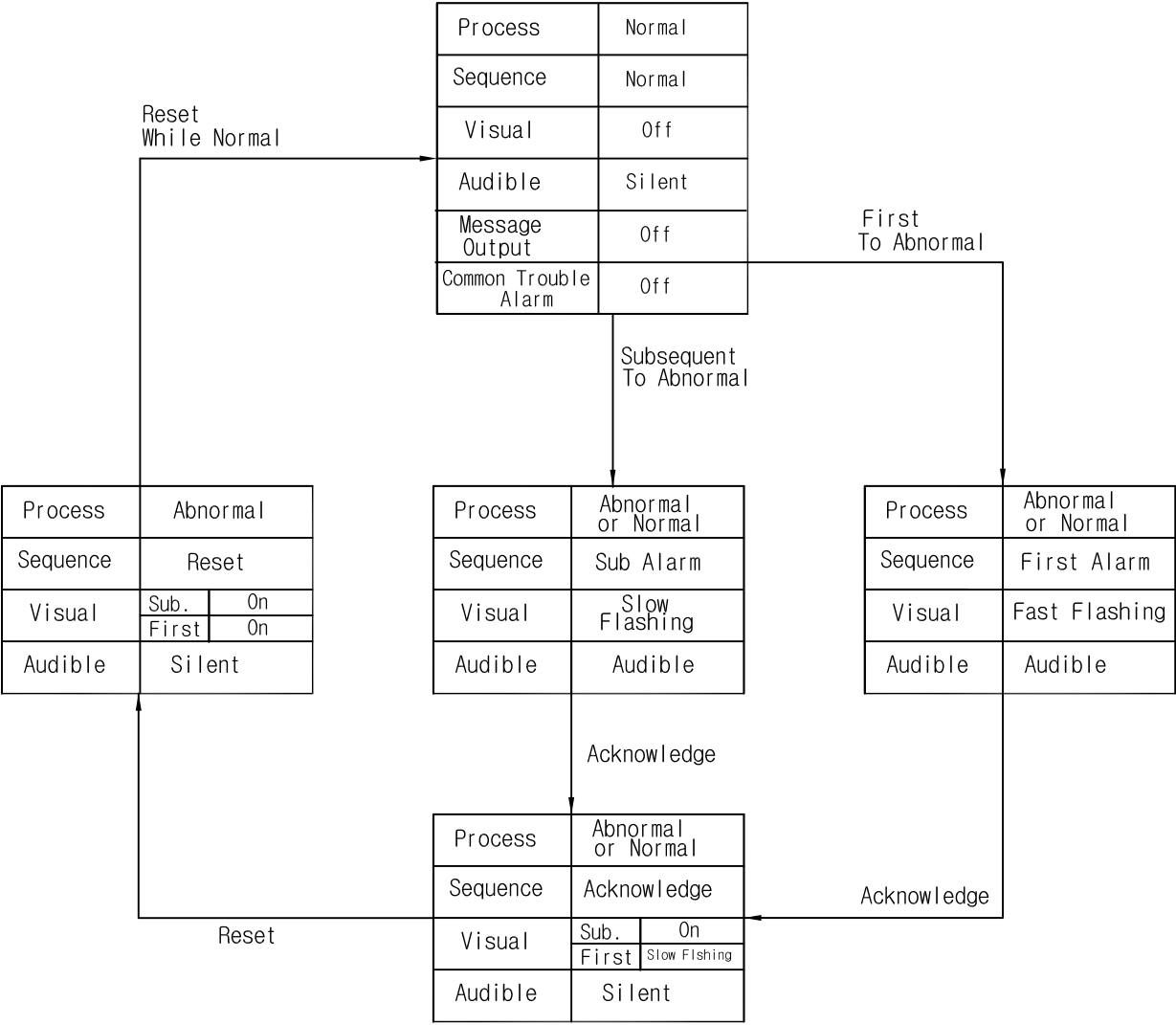


⊙ FIRST OUT SEQUENCE (F2A) OPTION

| DESCRIPTION     | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|-----------------|---------------|---|---|--------------|---|---|
|                 | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1   | ■             | ■ | ■ | ■            | ■ | ■ |
| ALARM INPUT 2   | ■             | ■ | ■ | ■            | ■ | ■ |
| ALARM INPUT 3   | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 1       | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2       | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 3       | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER          | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE     | ■             | ■ | ■ | ■            | ■ | ■ |
| FIRST OUT RESET | ■             | ■ | ■ | ■            | ■ | ■ |
| TEST            | ■             | ■ | ■ | ■            | ■ | ■ |
| SILENCE STOP    | ■             | ■ | ■ | ■            | ■ | ■ |
| RELAY OUTPUT 1  | ■             | ■ | ■ | ■            | ■ | ■ |
| RELAY OUTPUT 2  | ■             | ■ | ■ | ■            | ■ | ■ |
| RELAY OUTPUT 3  | ■             | ■ | ■ | ■            | ■ | ■ |
| C T A           | ■             | ■ | ■ | ■            | ■ | ■ |

■

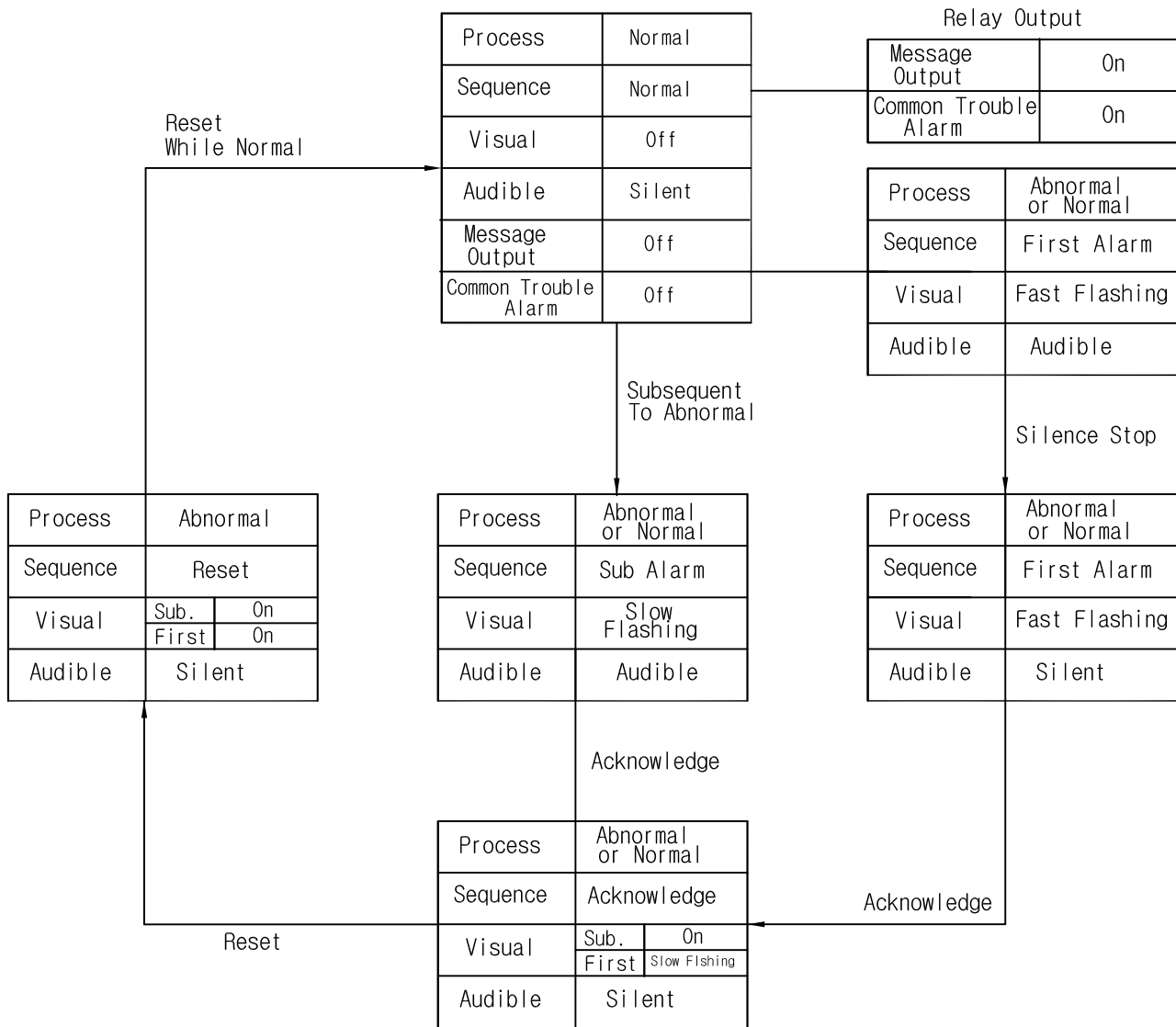
F2M Sequence Diagram



◎FIRST OUT SEQUENCE (F2M)

| DESCRIPTION     | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|-----------------|---------------|---|---|--------------|---|---|
|                 | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1   | 1             | 1 | 1 | 1            | 1 | 1 |
| ALARM INPUT 2   | 1             | 1 | 1 | 1            | 1 | 1 |
| ALARM INPUT 3   | 1             | 1 | 1 | 1            | 1 | 1 |
| VISIBLE 1       | 1             | 1 | 1 | 1            | 1 | 1 |
| VISIBLE 2       | 1             | 1 | 1 | 1            | 1 | 1 |
| VISIBLE 3       | 1             | 1 | 1 | 1            | 1 | 1 |
| BUZZER          | 1             | 1 | 1 | 1            | 1 | 1 |
| ACKNOWLEDGE     | 1             | 1 | 1 | 1            | 1 | 1 |
| FIRST OUT RESET | 1             | 1 | 1 | 1            | 1 | 1 |
| TEST            | 1             | 1 | 1 | 1            | 1 | 1 |

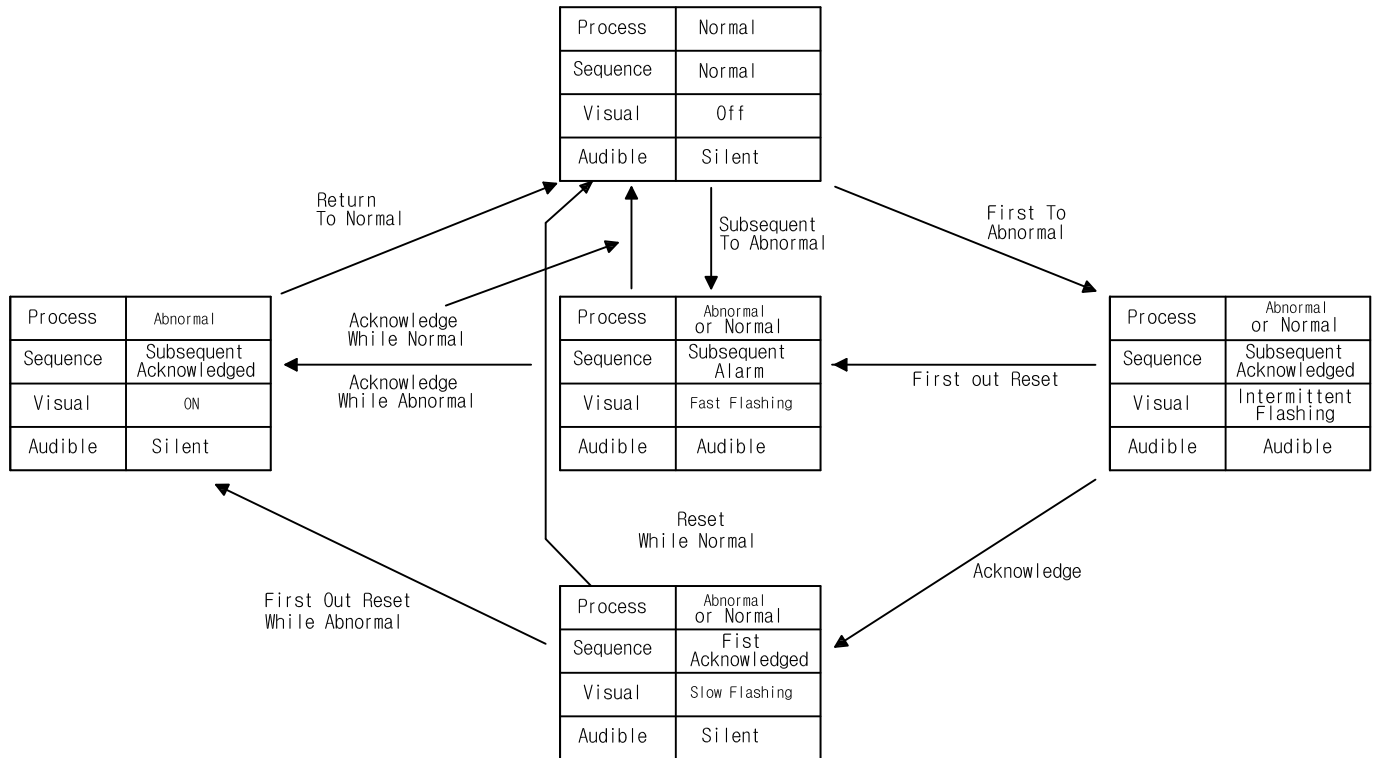
## ■ F2M Sequence With Options



## ◎ FIRST OUT SEQUENCE (F2M) OPTION

| DESCRIPTION     | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|-----------------|---------------|---|---|--------------|---|---|
|                 | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1   | ■             | ■ | ■ | ■            | ■ | ■ |
| ALARM INPUT 2   | ■             | ■ | ■ | ■            | ■ | ■ |
| ALARM INPUT 3   | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 1       | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2       | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 3       | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER          | ■             | ■ | ■ | ■            | ■ | ■ |
| ACKNOWLEDGE     | ■             | ■ | ■ | ■            | ■ | ■ |
| FIRST OUT RESET | ■             | ■ | ■ | ■            | ■ | ■ |
| TEST            | ■             | ■ | ■ | ■            | ■ | ■ |
| SILENCE STOP    | ■             | ■ | ■ | ■            | ■ | ■ |
| RELAY OUTPUT 1  | ■             | ■ | ■ | ■            | ■ | ■ |
| RELAY OUTPUT 2  | ■             | ■ | ■ | ■            | ■ | ■ |
| RELAY OUTPUT 3  | ■             | ■ | ■ | ■            | ■ | ■ |
| C T A           | ■             | ■ | ■ | ■            | ■ | ■ |

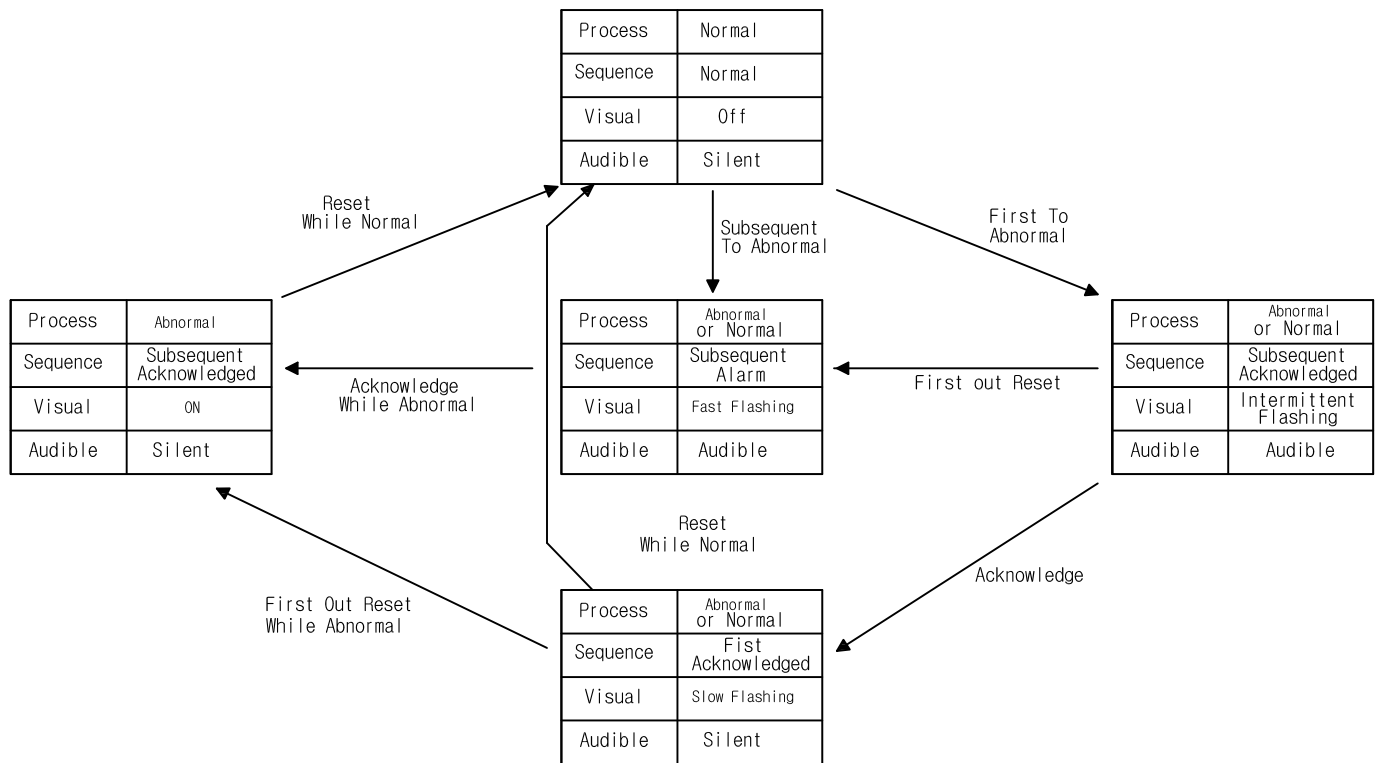
## ■ F3A Sequence Diagram



## ■ Sequence Table

| LINE | PROCSS CONDITIONS |                    | PUSHBUTTON OPERATION               | SEQUENCE STATE     | VISUAL DISPLAY        | ALARM AUDIBLE DEVICE | REMARKS                  |
|------|-------------------|--------------------|------------------------------------|--------------------|-----------------------|----------------------|--------------------------|
| 1    | NORMAL            |                    | —                                  | NORMAL             | OFF                   | SILENT               |                          |
| 2    | FIRST             | ABNORMAL           | —                                  | FIRST ALARM        | INTERMITTENT FLASHING | AUDIBLE              | LOCK IN                  |
| 3    | SUB.              | ABNORMAL           |                                    | SUB. ALARM         | FAST FLASHING         | AUDIBLE              | LOCK IN                  |
| 4    | FIRST             | ABNORMAL OR NORMAL | FIRST OUT RESET BEFORE ACKNOWLEDGE | TO LINE 3          |                       |                      | FIRST OUT RESET          |
| 5    | FIRST             | ABNORMAL OR NORMAL | ACKNOWLEDGE                        | FIRST ACKNOWLEDGED | SLOW FLASHING         | SILENT               | FIRST OUT RESET REQUIRED |
| 6A   | SUB.              | ABNORMAL           |                                    | SUB. ACKNOWLEDGED  | ON                    | SILENT               | MAINTAINED ALARM         |
| 6B   | SUB.              | NORMAL             |                                    | TO LINE 8          |                       |                      | MOMENTARY ALARM          |
| 7A   | FIRST             | ABNORMAL           | FIRST OUT RESET AFTER ACKNOWLEDGE  | TO LINE 6A         |                       |                      | FIRST OUT RESET          |
| 7B   | FIRST             | NORMAL             |                                    | TO LINE 8          |                       |                      | FIRST OUT RESET          |
| 8    | NORMAL            |                    | —                                  | NORMAL             | OFF                   | SILENT               | AUTOMATIC RESET          |

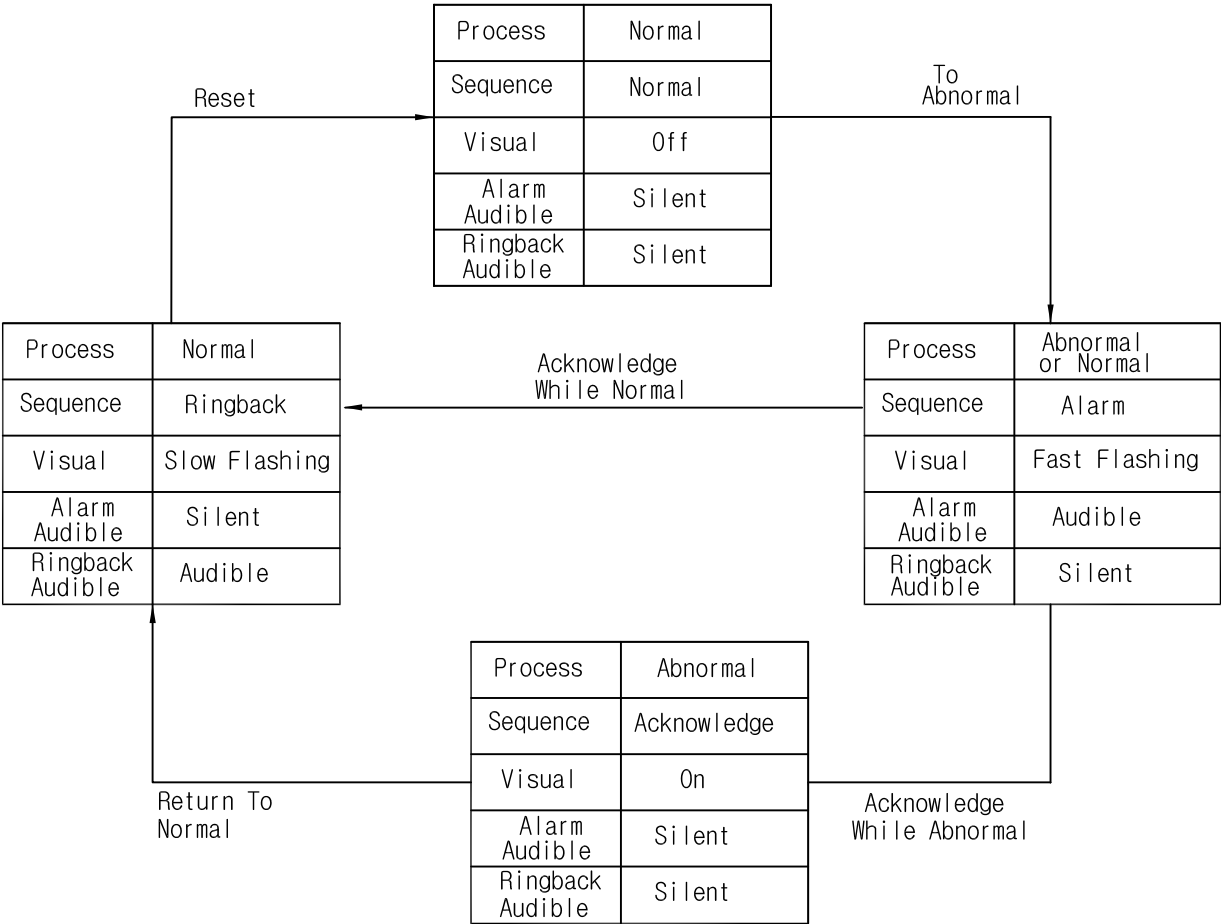
## ■ F3M Sequence Diagram



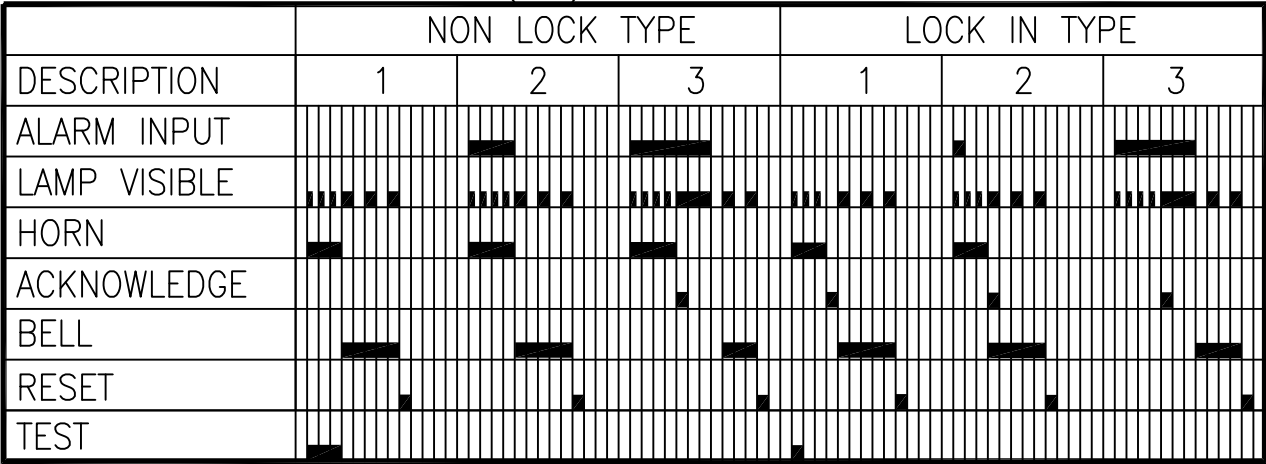
## ■ Sequence Table

| LINE | PROCCS CONDITIONS |                    | PUSHBUTTON OPERATION               | SEQUENCE STATE     | VISUAL DISPLAY        | ALARM AUDIBLE DEVICE | REMARKS                  |
|------|-------------------|--------------------|------------------------------------|--------------------|-----------------------|----------------------|--------------------------|
| 1    | NORMAL            |                    | —                                  | NORMAL             | OFF                   | SILENT               |                          |
| 2    | FIRST             | ABNORMAL           | —                                  | FIRST ALARM        | INTERMITTENT FLASHING | AUDIBLE              | LOCK IN                  |
| 3    | SUB.              | ABNORMAL           |                                    | SUB. ALARM         | FAST FLASHING         | AUDIBLE              | LOCK IN                  |
| 4    | FIRST             | ABNORMAL OR NORMAL | FIRST OUT RESET BEFORE ACKNOWLEDGE | TO LINE 3          |                       |                      | FIRST OUT RESET          |
| 5    | FIRST             | ABNORMAL OR NORMAL | ACKNOWLEDGE                        | FIRST ACKNOWLEDGED | SLOW FLASHING         | SILENT               | FIRST OUT RESET REQUIRED |
| 6A   | SUB.              | ABNORMAL           |                                    | SUB. ACKNOWLEDGED  | ON                    | SILENT               | MAINTAINED ALARM         |
| 6B   | SUB.              | NORMAL             |                                    | TO LINE 8          |                       |                      | MOMENTARY ALARM          |
| 7A   | FIRST             | ABNORMAL           | FIRST OUT RESET AFTER ACKNOWLEDGE  | TO LINE 6A         |                       |                      | FIRST OUT RESET          |
| 7B   | FIRST             | NORMAL             |                                    | TO LINE 8          |                       |                      | FIRST OUT RESET          |
| 8    | NORMAL            |                    | —                                  | RESET              | OFF                   | SILENT               | AUTOMATIC RESET          |

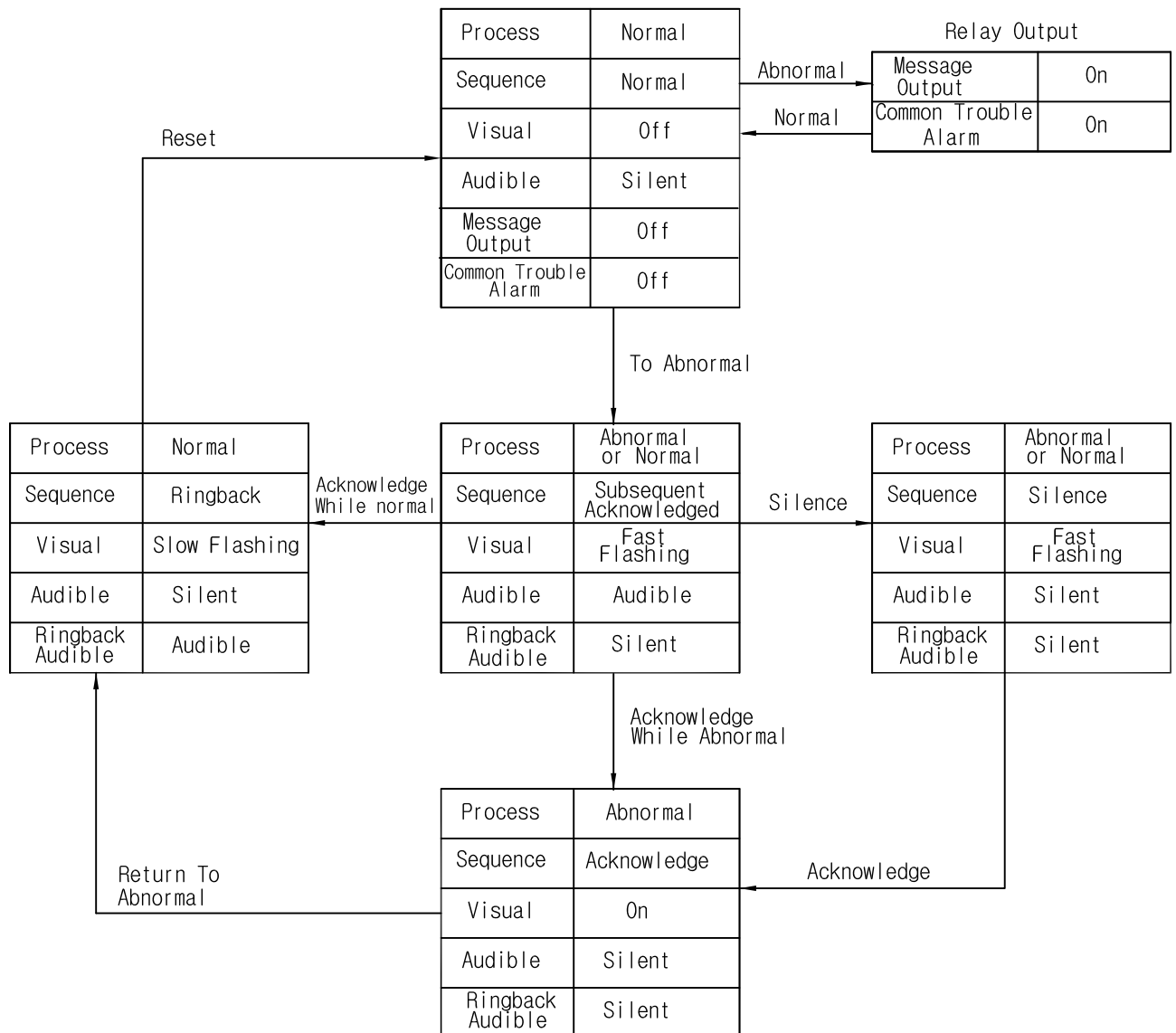
■ Ring Back Sequence



◎ RING BACK SEQUENCE (RB)



## ■ Ring Back Sequence With Options



## ○ RING BACK SEQUENCE (RB) OPTION

| DESCRIPTION    | NON LOCK TYPE |   |   | LOCK IN TYPE |   |   |
|----------------|---------------|---|---|--------------|---|---|
|                | 1             | 2 | 3 | 1            | 2 | 3 |
| ALARM INPUT 1  | ■             | ■ |   | ■            | ■ |   |
| ALARM INPUT 2  | ■             | ■ |   | ■            | ■ |   |
| VISIBLE 1      | ■             | ■ | ■ | ■            | ■ | ■ |
| VISIBLE 2      | ■             | ■ | ■ | ■            | ■ | ■ |
| BUZZER         | ■             | ■ |   | ■            | ■ |   |
| BELL           | ■             | ■ |   | ■            | ■ |   |
| ACKNOWLEDGE    |               | ■ |   |              | ■ |   |
| RESET          |               | ■ |   |              | ■ |   |
| TEST           |               |   | ■ |              |   | ■ |
| SILENCE STOP   |               | ■ |   |              | ■ |   |
| RELAY OUTPUT 1 | ■             | ■ |   | ■            | ■ |   |
| RELAY OUTPUT 2 | ■             | ■ |   | ■            | ■ |   |
| C T A          | ■             | ■ |   | ■            | ■ |   |