

SM-0902 – TXS RTE PARAM Change Enable

Overview

Agenda

- > **Hardware specific details of the TXS RTE Parameter Change Enable Keyswitches**

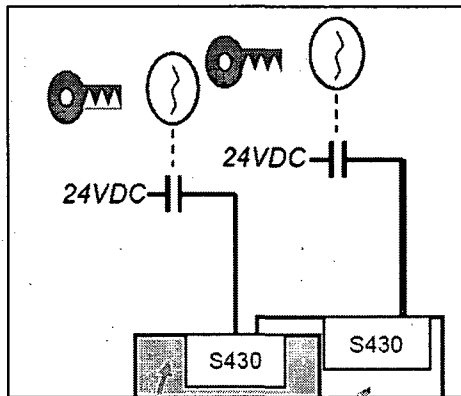
- > **SM-0902 Logic Overview**
 - ◆ **Input Logic**
 - ◆ **Parameter Change Enable Logic**
 - **Latch Logic Illustration for Parameterization**
 - **RTE Modes of Operation**
 - **RTE Mode Change illustration for Test/Diagnosis**
 - ◆ **Output Status Logic**

- > **SM-0902 Failure Modes**
 - ◆ **Failure Modes as described in RAI Response to EICB 106**

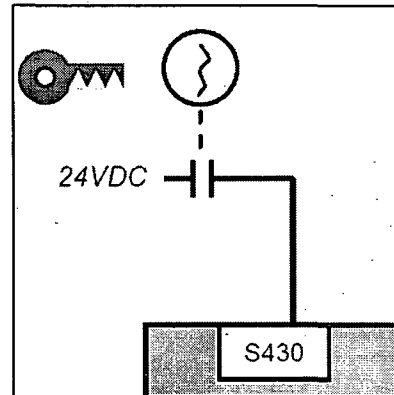
TXS RTE Param Change Enable Keyswitches

- > **Three (3) RPS/ESFAS Parameter Change Enable Keyswitches:
Channels A/A1, B/B1, and C/C1**
- > **Two (2) RPS (only) Parameter Change Enable Keyswitches:
Channels D and E/MSI**
- > **Three (3) ESFAS (only) Parameter Change Enable Keyswitches:
Channels A2, B2, and C2**
- > **One (1) ESFAS ODD Voter/Status Parameter Change Enable
Keyswitch**
- > **One (1) ESFAS EVEN Voter/Status Parameter Change Enable
Keyswitch**
- > **Same key code for a solitary ONS unit, different key codes across
the three ONS units**
- > **Keys are non-removable in the ENABLE position**

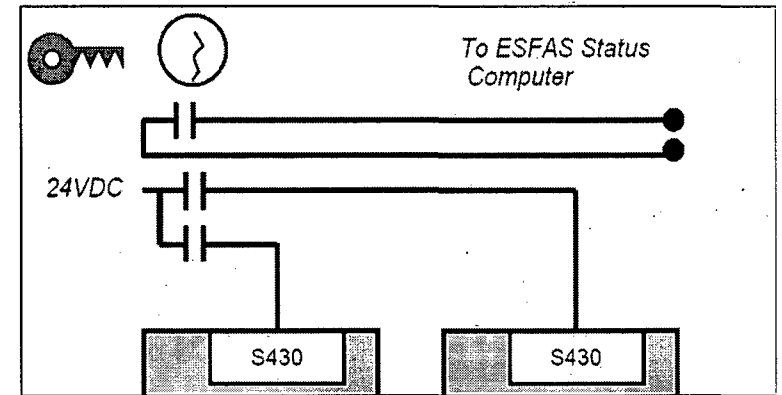
TXS RTE Param Change Enable Keyswitches



RPS/ESFAS
Channel A/A1
or B/B1 or C/C1
and
ESFAS
Channel A2 or
B2 or C2
Keyswitch input
signal to TXS



RPS Channel
D or E/MSI
Keyswitch
input signal to
TXS



ESFAS Voter ODD F1/F2
and ESFAS Voter ODD
Status H Keyswitch input
signal to TXS
or
ESFAS Voter Even G1/G2
and EVEN Status I Keyswitch
input signal to TXS

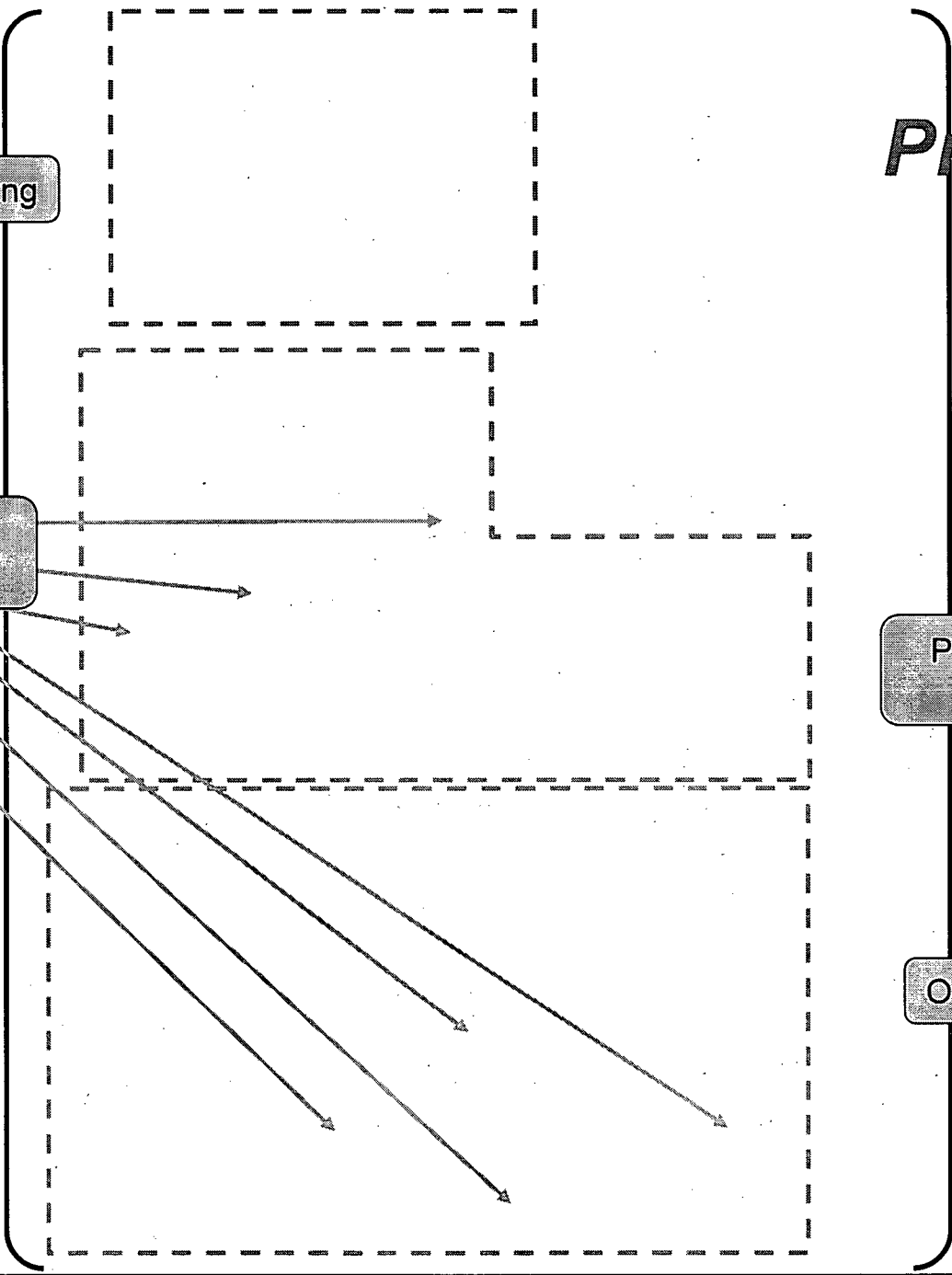
Input Processing

Status and Alarm
Indications

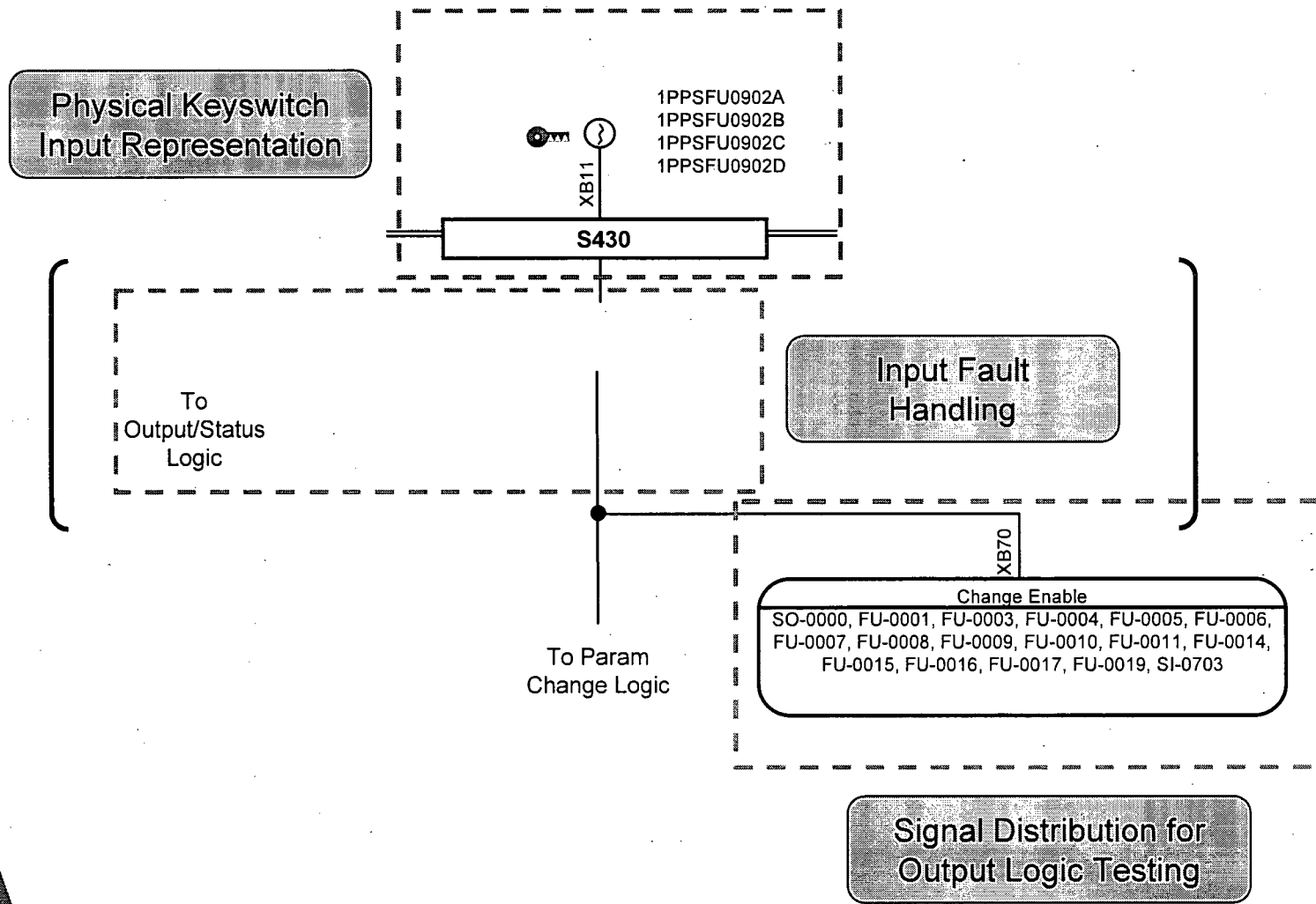
Logic Processing

Parameter Change
Enable Logic

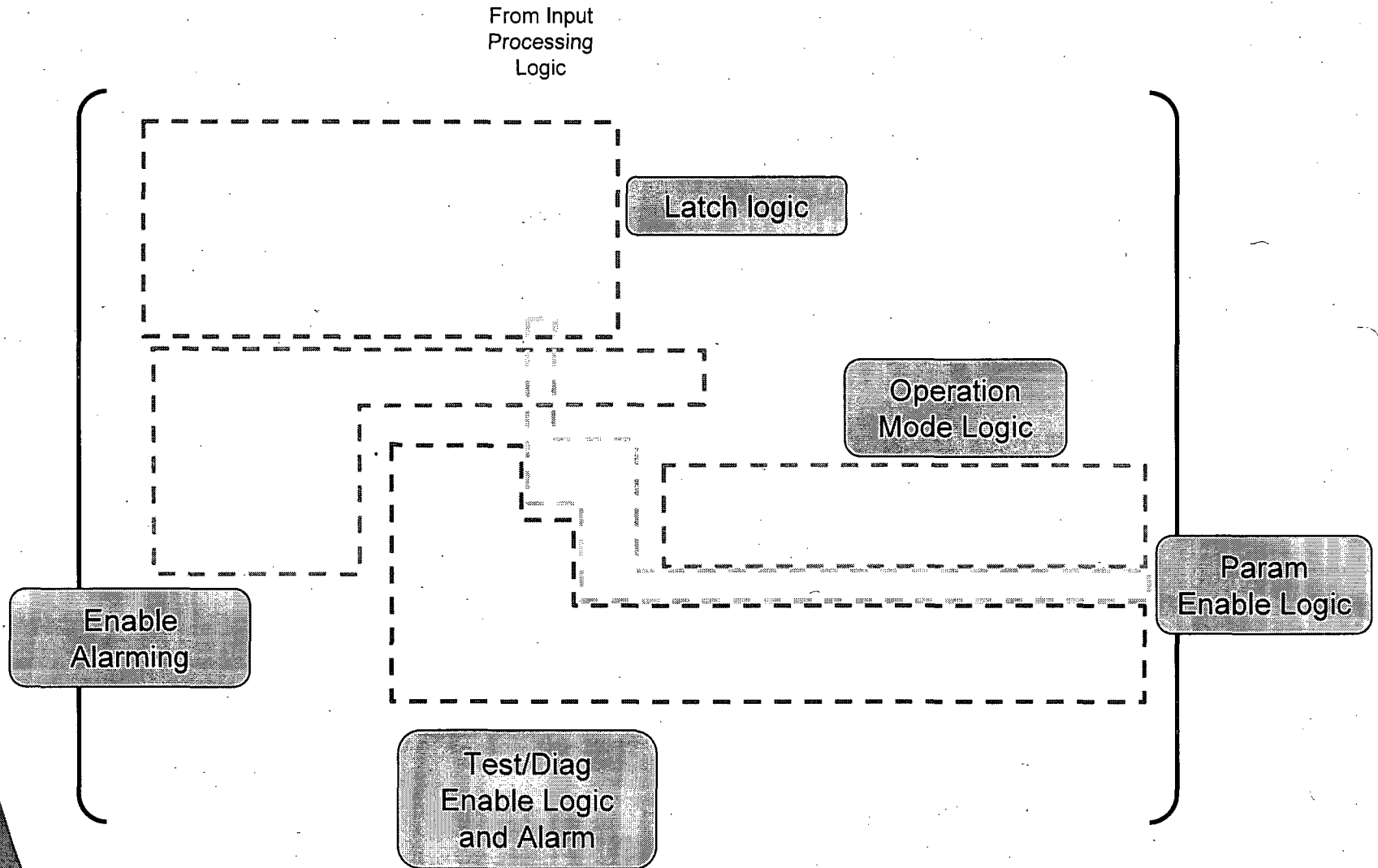
Output/Status Logic



Input Processing

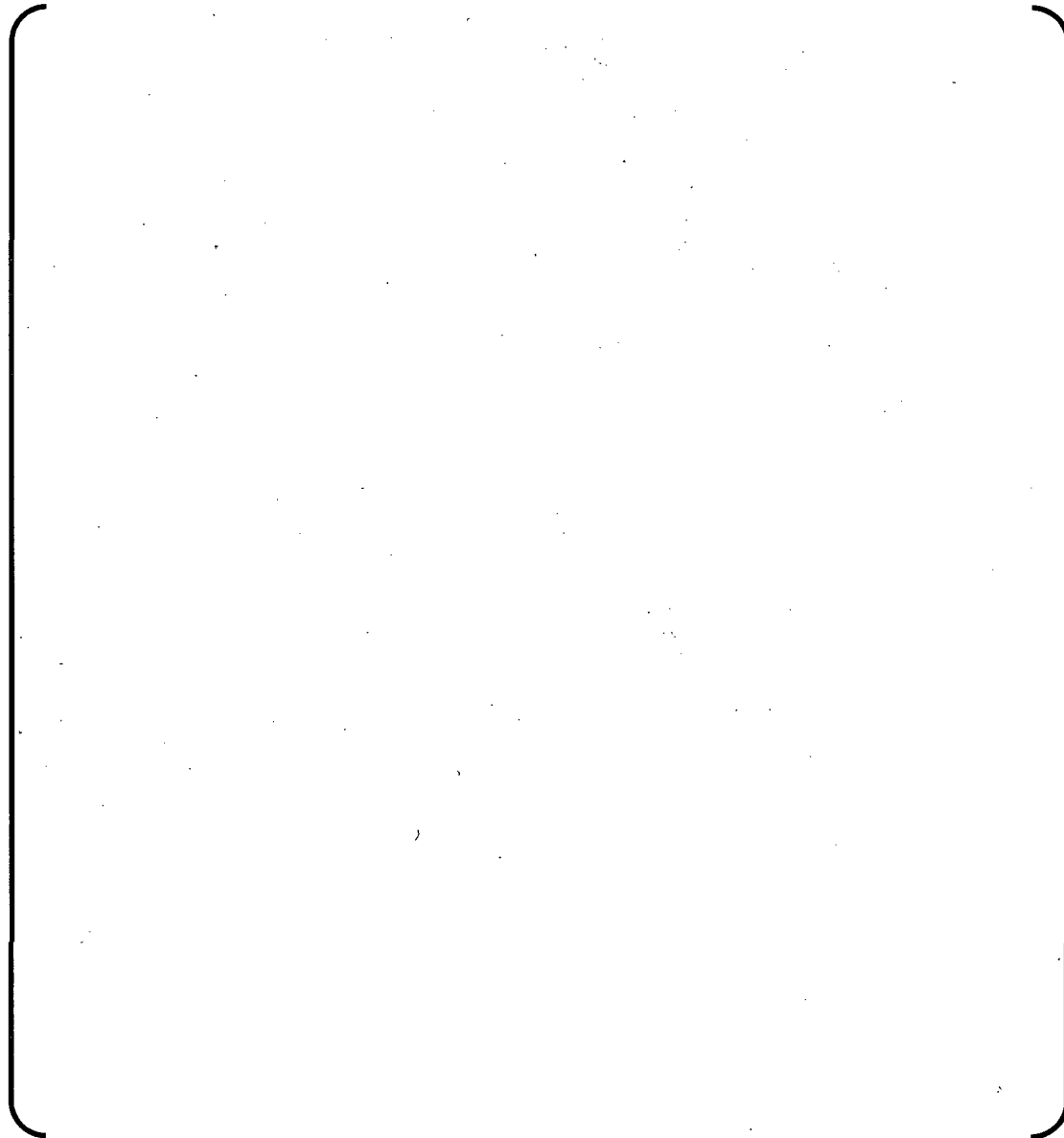


Parameter Change Enable Logic



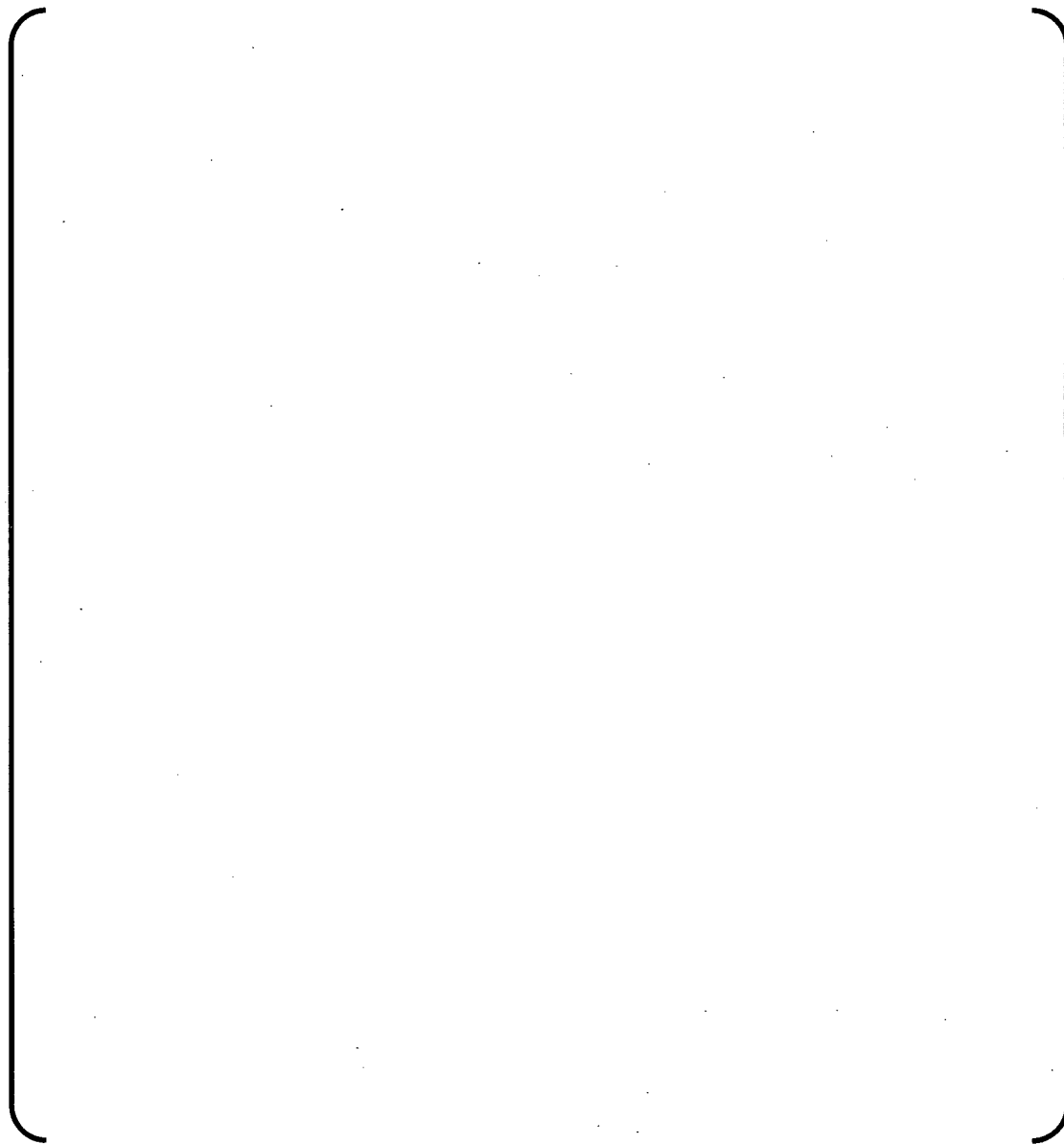
Latch Logic

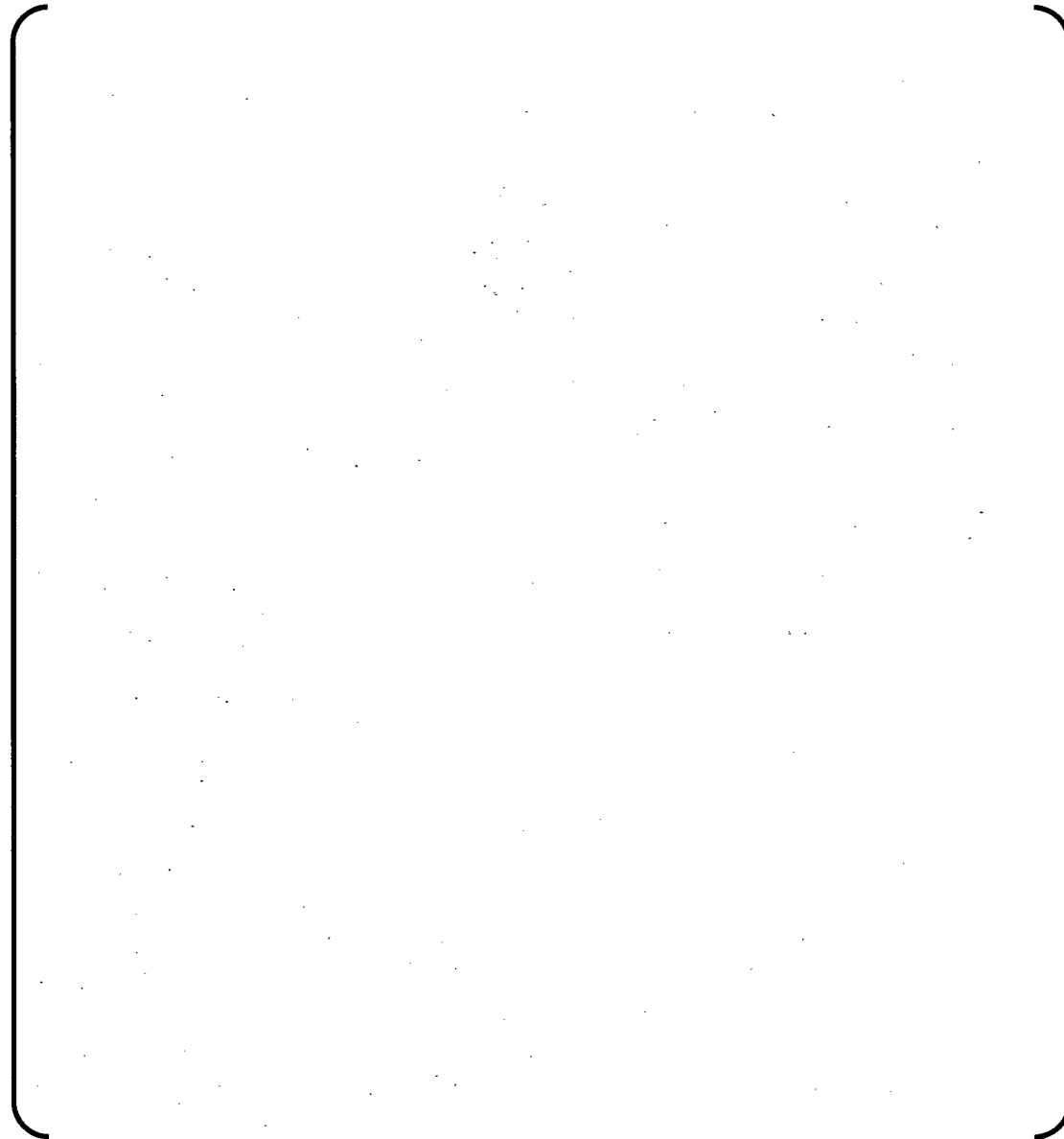
Case 0: Cyclic Operation, Keyswitch OFF



Latch Logic

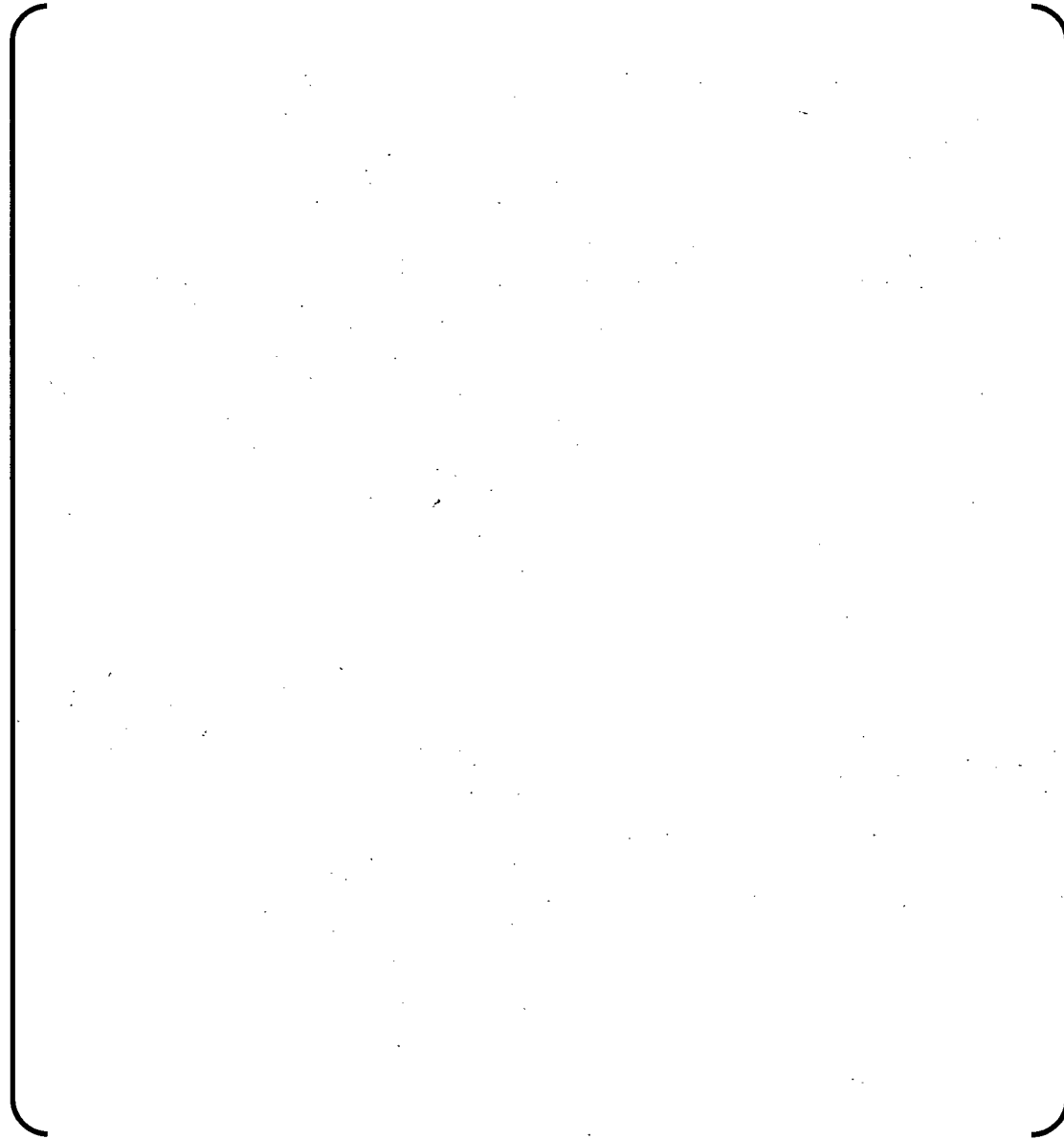
Case 1: Cyclic Operation, Keyswitch ON



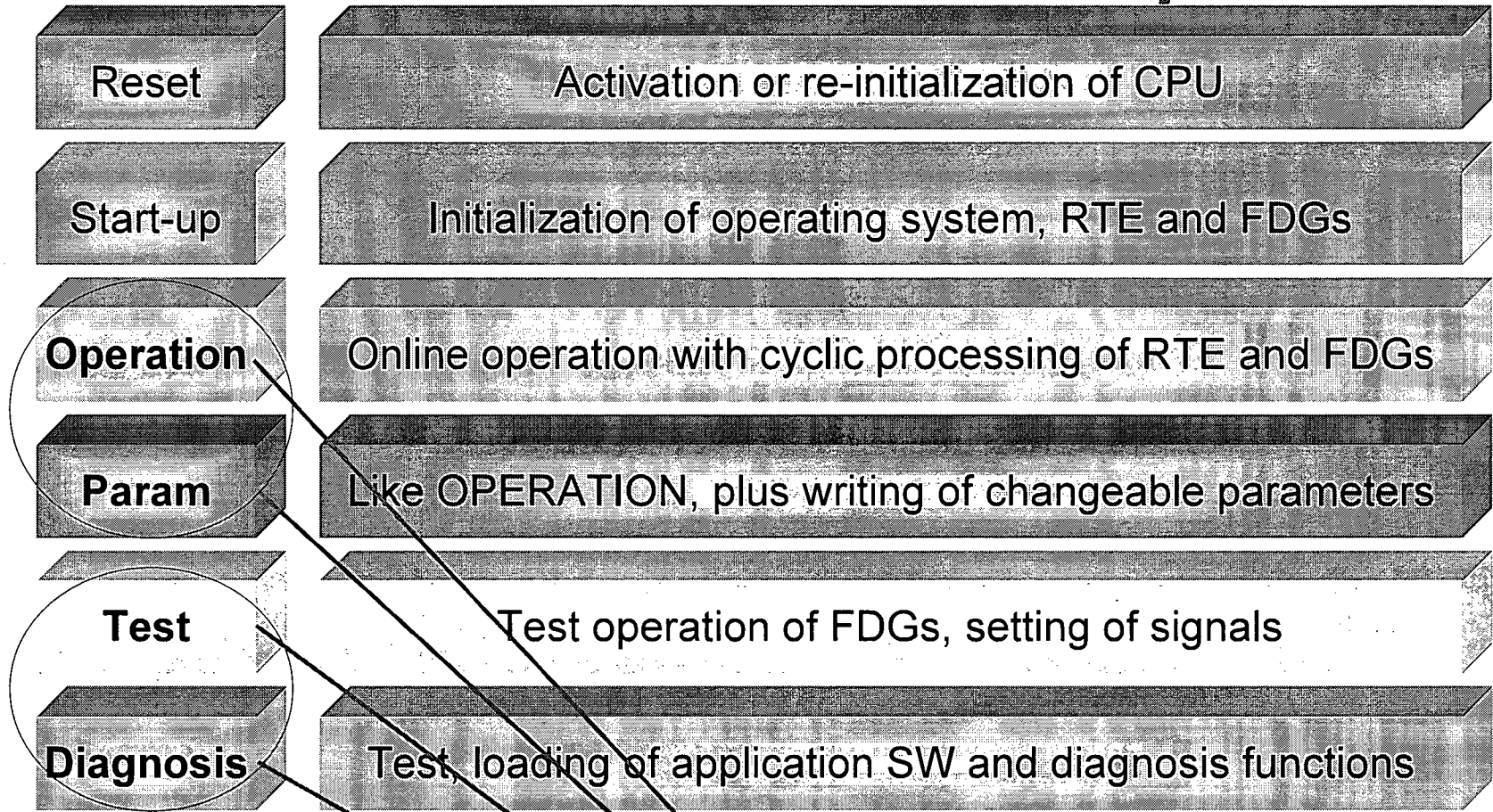


Latch Logic

Case 3: Parameterization, Keyswitch OFF

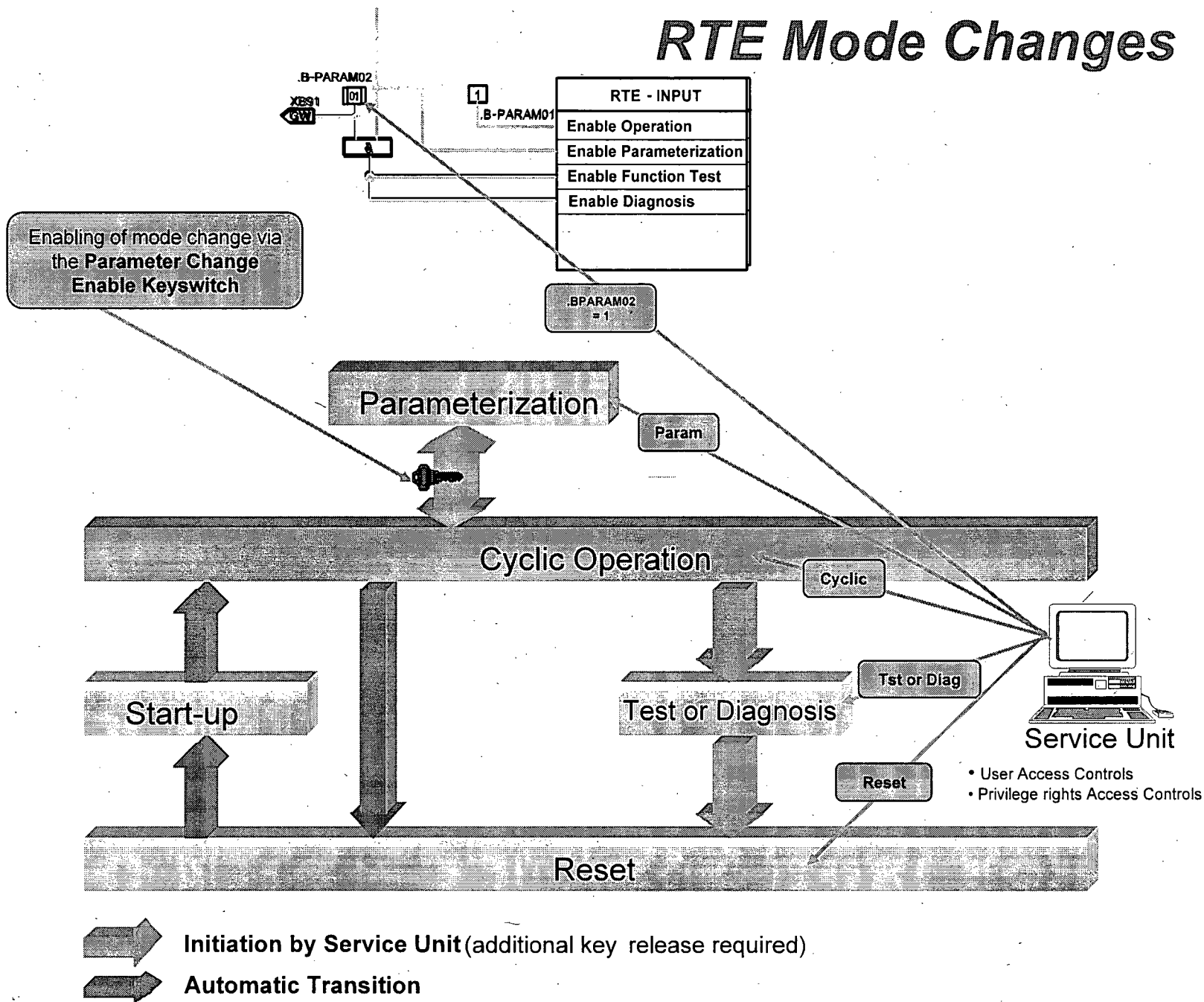


TXS RTE Modes of Operation

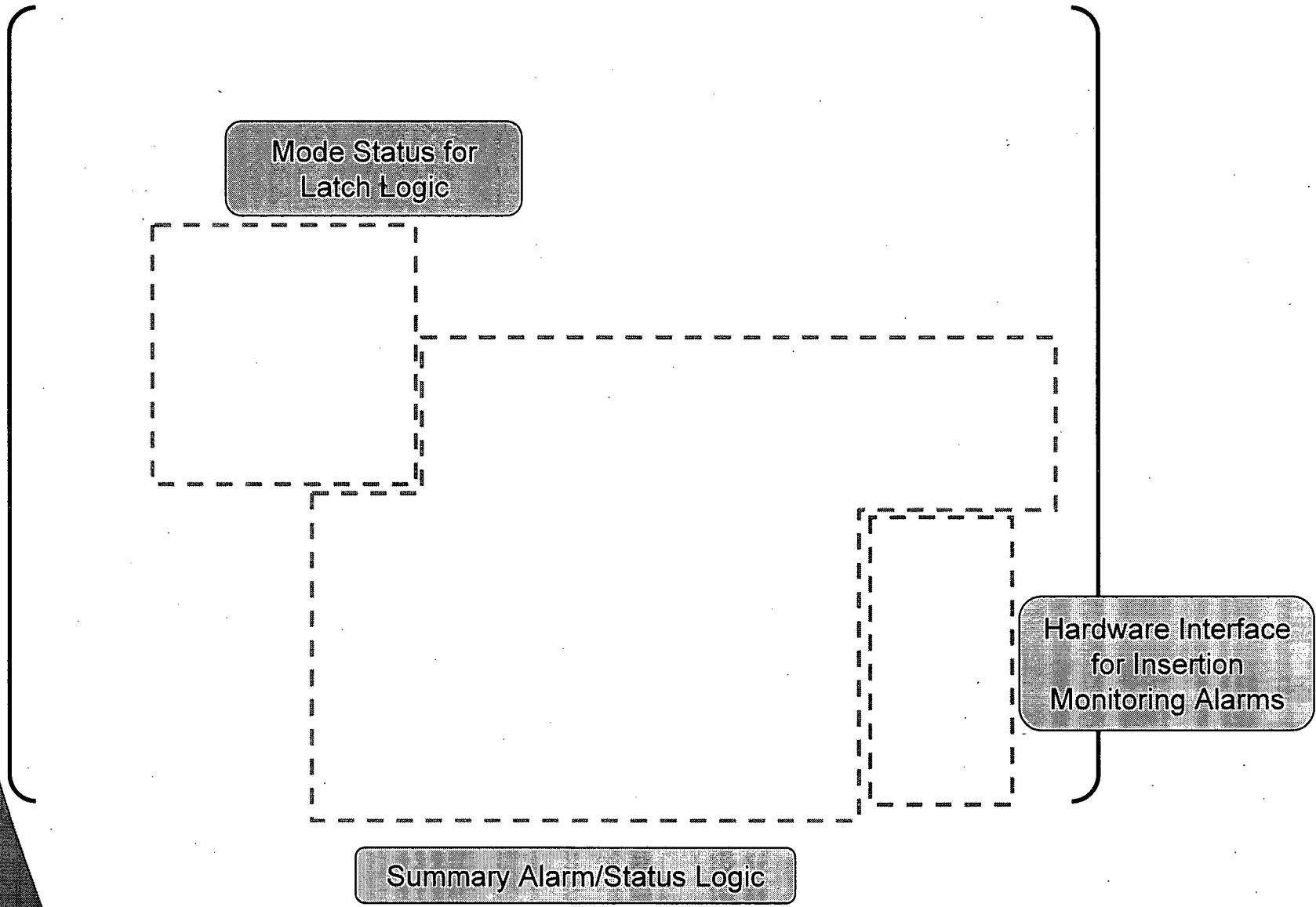


RTE-INPUT
Enable Operation
Enable Parameterization
Enable Function Test
Enable Diagnosis

RTE Mode Changes



Output/Status Logic



Failure Modes

> There are 6 types of Failures that can occur affecting the Safety Channel SM-0902 software or SW Parameters: *This is a summary of the responses to open item 19 evolving into EICB 106*

- ◆ Failure of the Parameter Change Enable Keyswitch
- ◆ S430 Module Failure
- ◆ Random bit error in RAM (Changeable Parameters affecting safety functions)
- ◆ Random Bit error in RAM (affecting Runtime Environment)
- ◆ Stuck bit in RAM
- ◆ Bit error in FEPR0M

┌ No single failure allows undetected access to the safety processors
or undetected changes of processor modes of operation ─┘