

A = Arm

ZV = Zone Valid

MZ = Multiple Zones

FSM States - > (IDLE, MONITOR, ALERT, HIGH ALERT)

Current State	A	ZV	MZ	Next State	Explanation
IDLE	0	X	X	IDLE	System disarmed
IDLE	1	0	X	MONITOR	Armed, no intrusion
IDLE	1	1	0	ALERT	Single zone detected
IDLE	1	1	1	HIGH ALERT	Multiple zones
MONITOR	0	X	X	IDLE	Disarmed
MONITOR	1	0	X	MONITOR	Normal monitoring
MONITOR	1	1	0	ALERT	Single zone intrusion
MONITOR	1	1	1	HIGH ALERT	Multiple zones
ALERT	0	X	X	IDLE	Disarmed
ALERT	1	0	X	MONITOR	Intrusion cleared
ALERT	1	1	0	ALERT	Single zone persists
ALERT	1	1	1	HIGH ALERT	Escalation
HIGH ALERT	0	X	X	IDLE	Disarmed
HIGH ALERT	1	0	X	MONITOR	All threats cleared
HIGH ALERT	1	1	0	ALERT	Downgrade to Alert
HIGH ALERT	1	1	1	HIGH ALERT	Threat persists