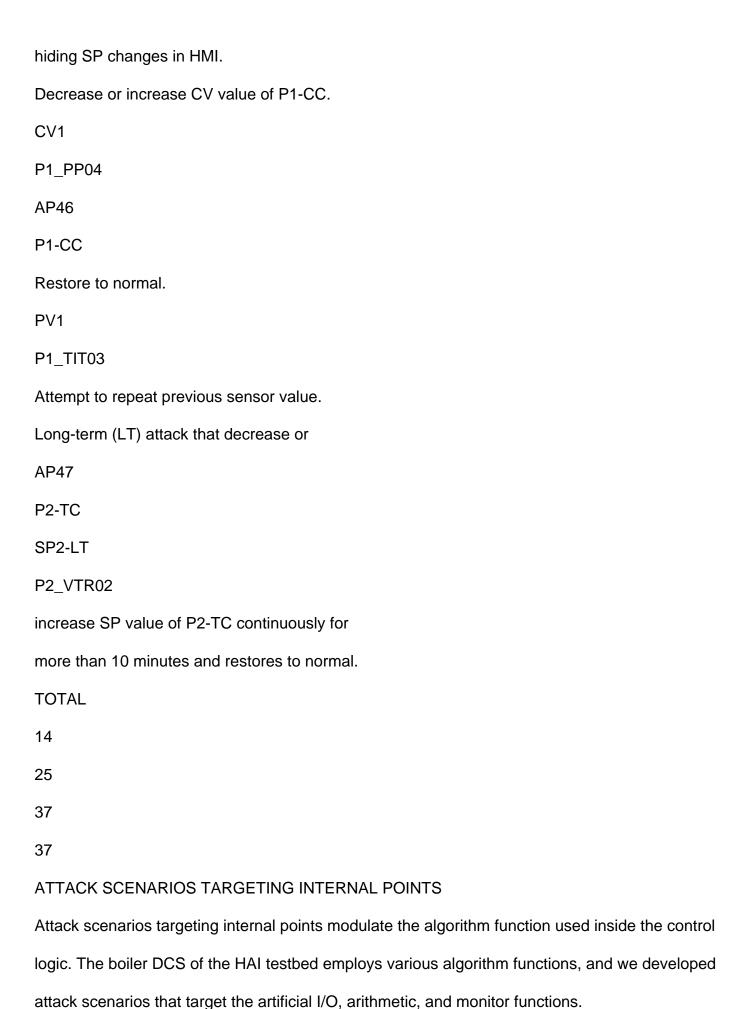


Attempt to repeat previous sensor value.
PV2
P1_FT03
Attempt to maintain previous sensor value.
Long-term (LT) attack that decrease or
AP43
P1-LC
CV1-LT
P1_LCV01D
increase CV value of P1-LC continuously for
more than 10 minutes and restores to normal.
Decrease or increase CV value of P1-LC.
CV1-LT
P1_LCV01D
AP44
P1-LC
Restore to normal.
PV1-LT
P1_LIT01
Attempt to repeat previous sensor value.
Decrease or increase SP value of P1-TC.
AP45
P1-TC
SP1
P1_B4002
Restore as a form of a trapezoidal profile while



Artificial I/O function: This function is used to initialize an algorithm function with internal parameters. An attacker can tamper the output of the algorithm function when the process is initialized by modulating the internal parameters.

Arithmetic function: This function is utilized to generate calibration curves for sensor inputs or control command outputs. An attacker can degrade the performance of a sensor or controller by changing calibration tuning parameters.

Monitor function: This function monitors whether the input signal crosses the high/low threshold. An attacker can change the threshold to cause over-detection or no-detection of anomalies.

A trigger-type attack, in which an attack only occurs in a specific situation, can be implemented if the internal parameters of the algorithm function are changed. The artificial I/O function can modulate the output of the control signal associated with the algorithm function into an arbitrary value at initialization. The arithmetic function triggers an attack only when the input value reaches the area affected by the calibration adjustment parameter. The monitor function triggers an attack only when 28