

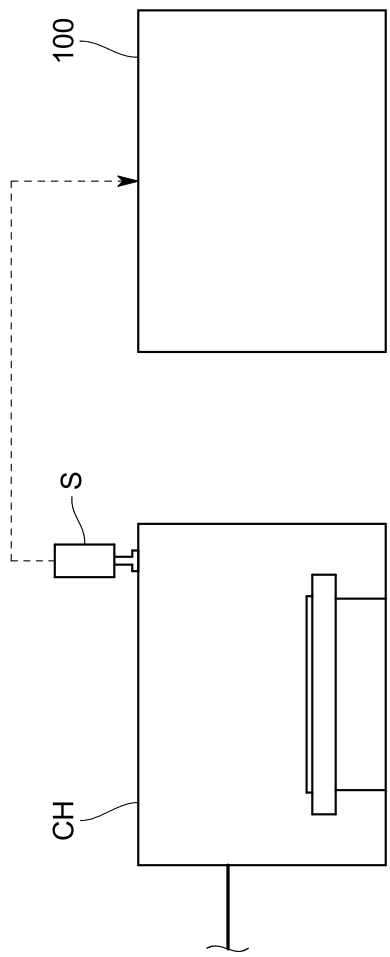


FIG.1

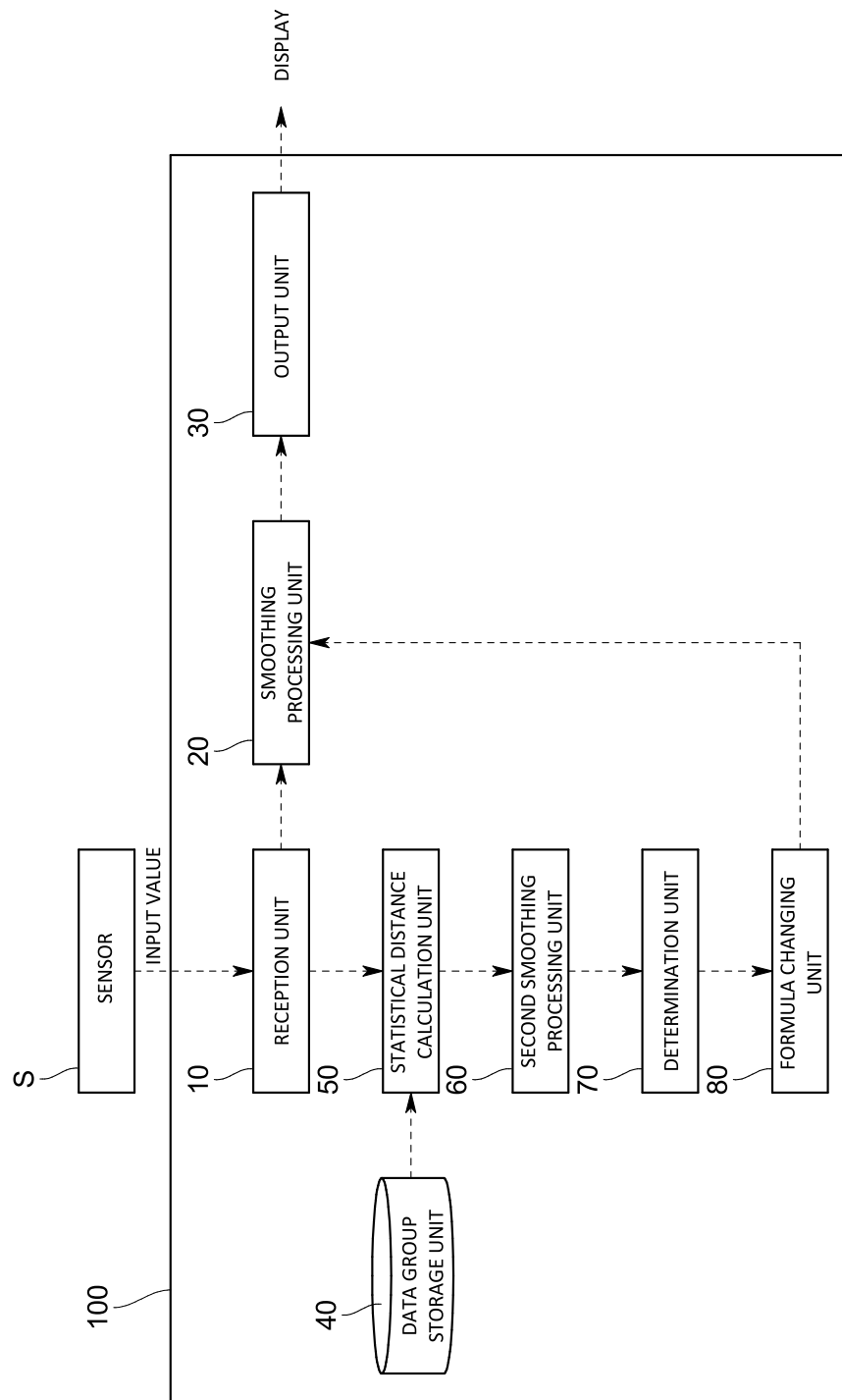


FIG.2

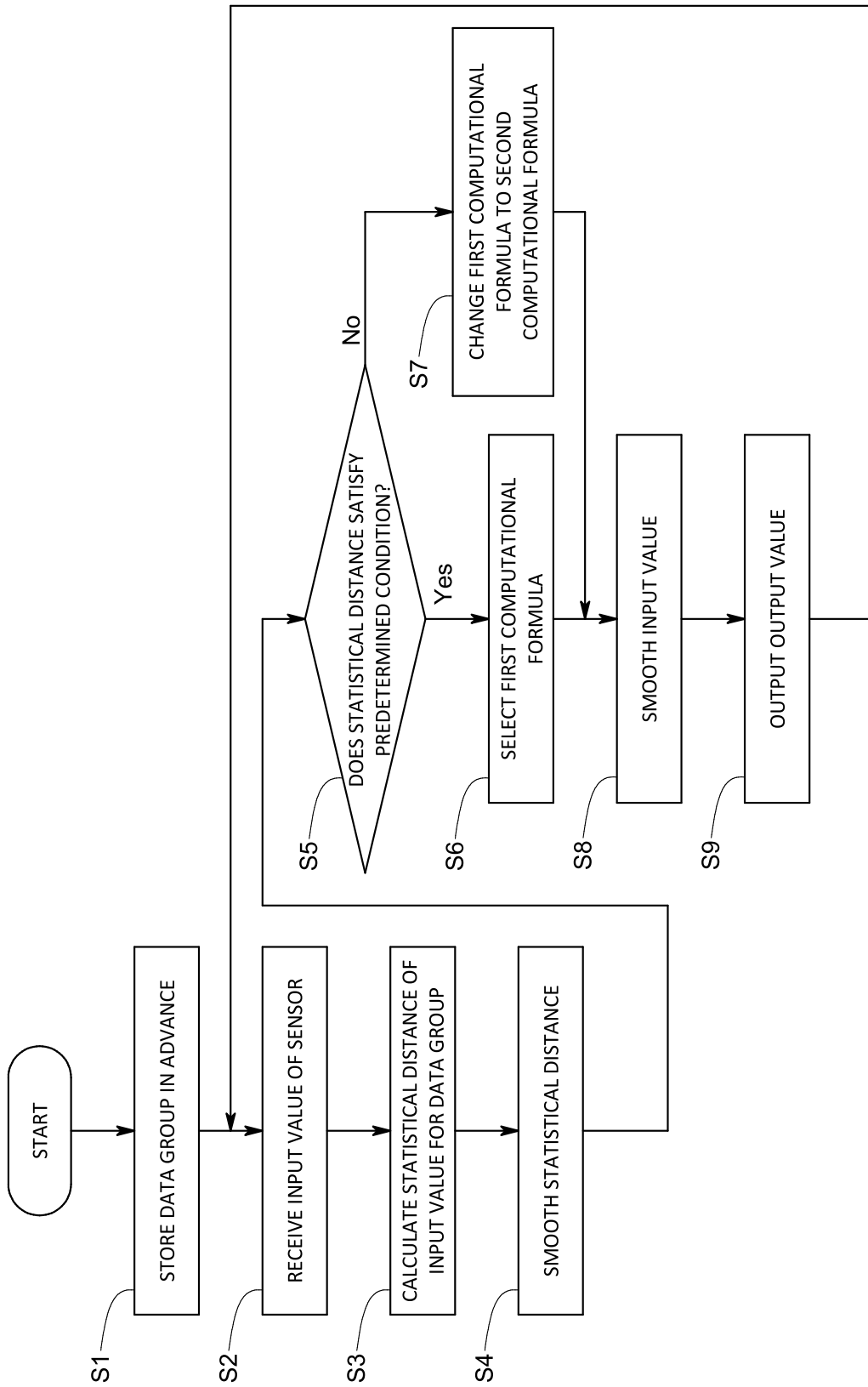


FIG.3

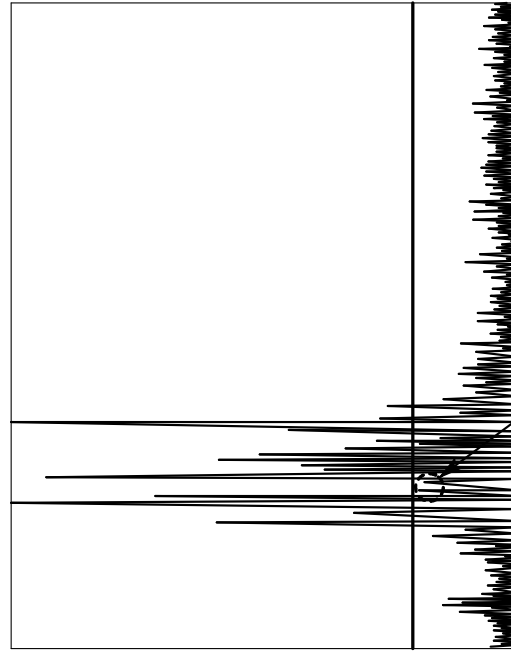
$$D^2 = (\Delta - \mu) \cdot \Sigma^{-1} \cdot (\Delta - \mu)'$$

$$\Delta = y - x$$

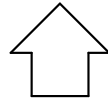
D : MAHALANOBIS DISTANCE
 x : PREVIOUS OUTPUT VALUE
 y : CURRENT INPUT VALUE
 μ : AVERAGE VALUE
 Σ : COVARIANCE MATRIX
 Δ : CORRECTED INPUT VALUE
 NOTE THAT " , " INDICATES TRANSPOSED MATRIX

FIG.4

STATISTICAL DISTANCE OUTPUT FROM STATISTICAL DISTANCE CALCULATION UNIT



LOCATION WHERE STATISTICAL DISTANCE RAPIDLY DECREASES



KALMAN FILTER
PROCESSING
AND
LOGARITHM

STATISTICAL DISTANCE OUTPUT FROM SECOND SMOOTHING PROCESSING UNIT

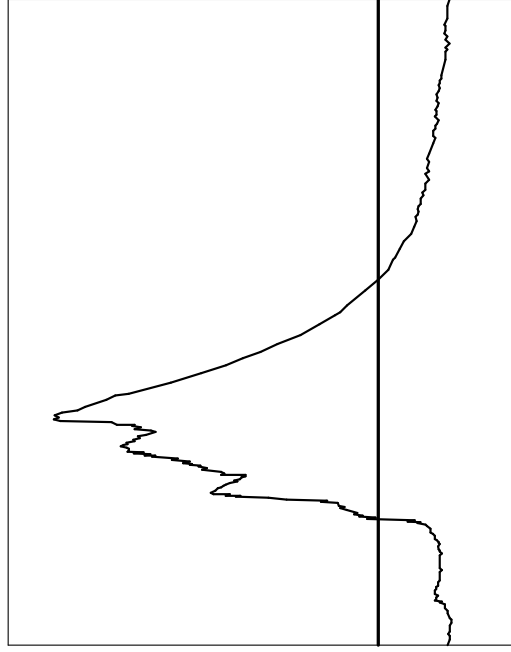


FIG.5

The diagram shows the equation $x_m = Ax + Bu$ with four labels and arrows pointing to the corresponding terms:

- WEIGHTING COEFFICIENT FOR PREVIOUS OUTPUT VALUE** points to x in Ax .
- WEIGHTING COEFFICIENT FOR DIFFERENCE** points to B in Bu .
- PRELIMINARY ESTIMATED VALUE** points to x_m .
- DIFFERENCE BETWEEN CURRENT INPUT VALUE AND PREVIOUS OUTPUT VALUE** points to u in Bu .
- PREVIOUS OUTPUT VALUE** points to x in Ax .

FIG.6

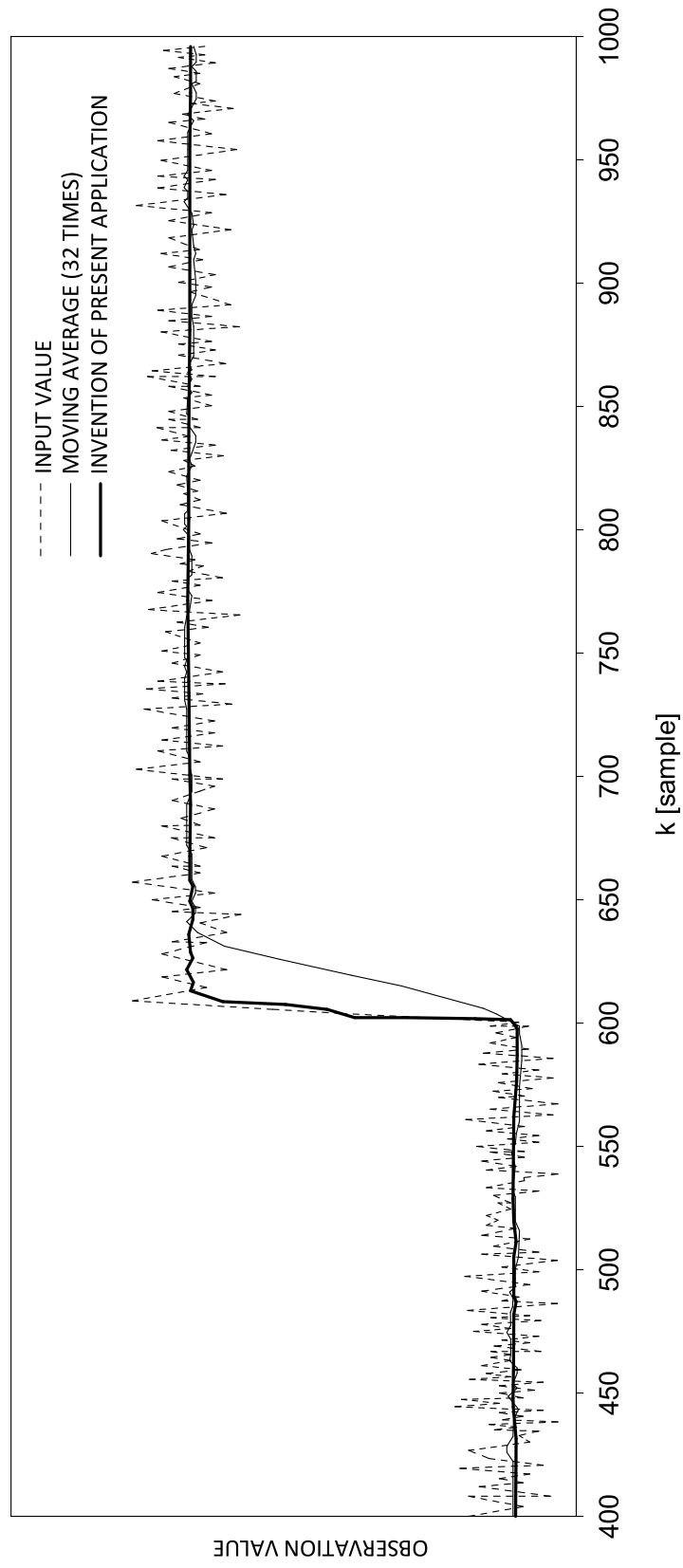


FIG.7

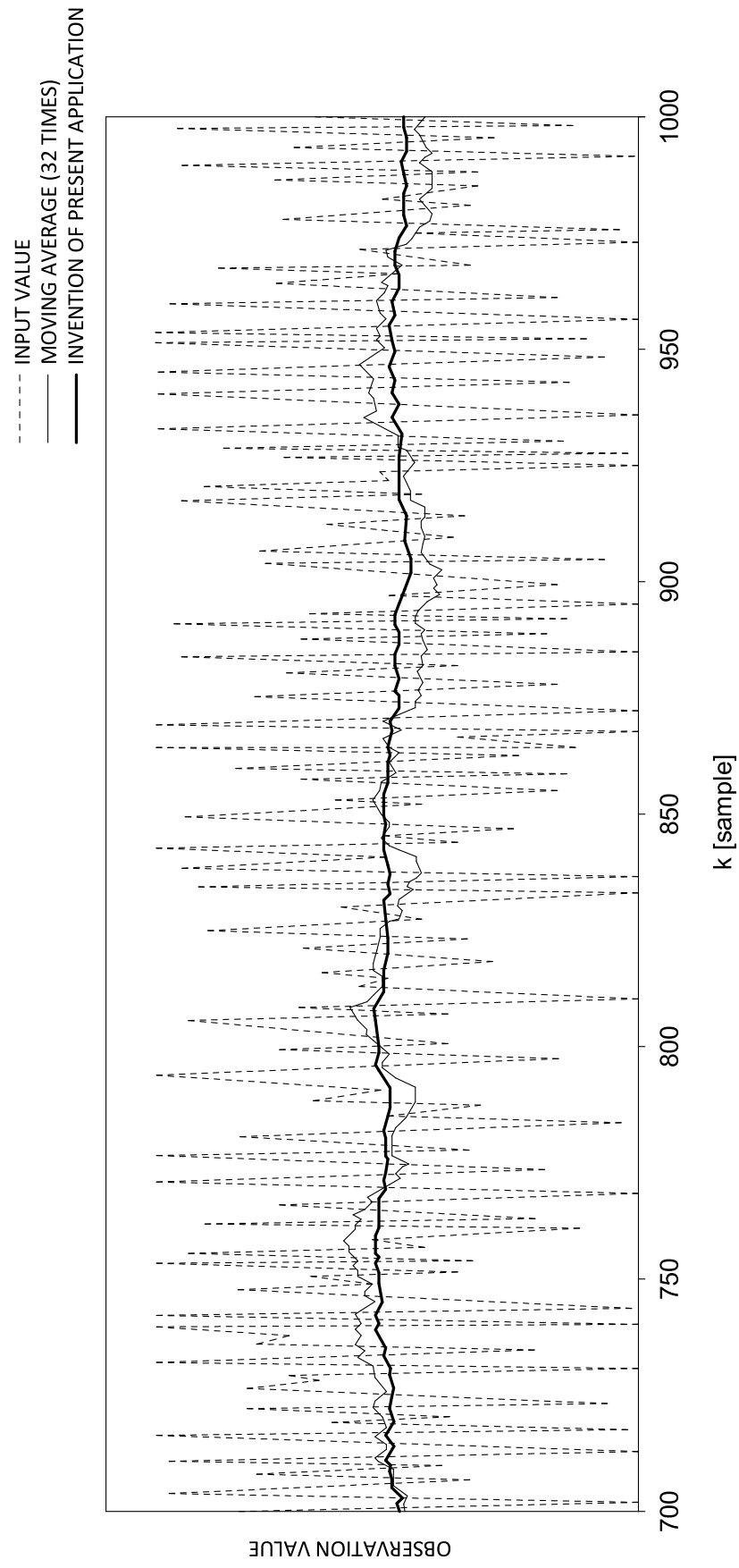


FIG.8