FIG.1

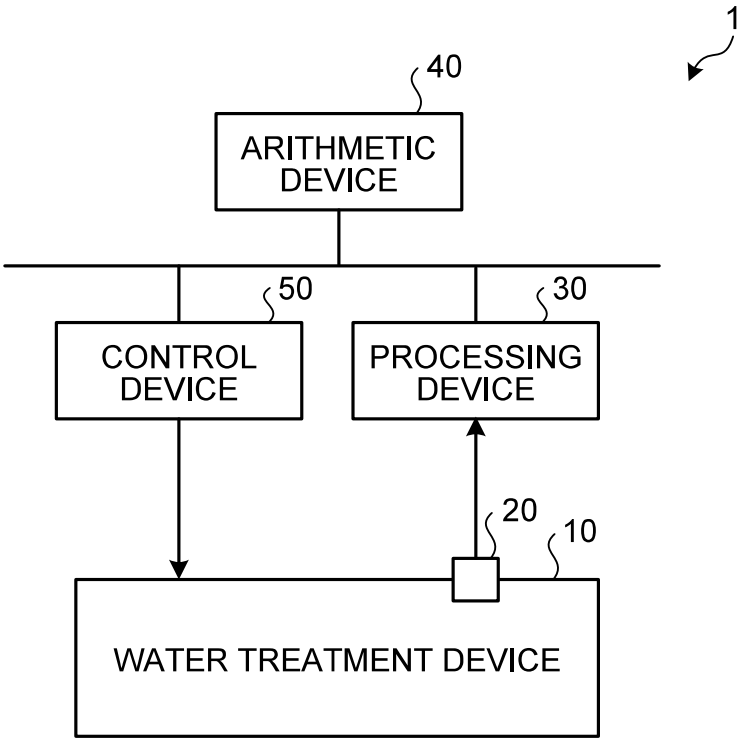

1
40
ARITHMETIC DEVICE
50
30
CONTROL DEVICE
PROCESSING DEVICE
20
10
WATER TREATMENT DEVICE

FIG.2

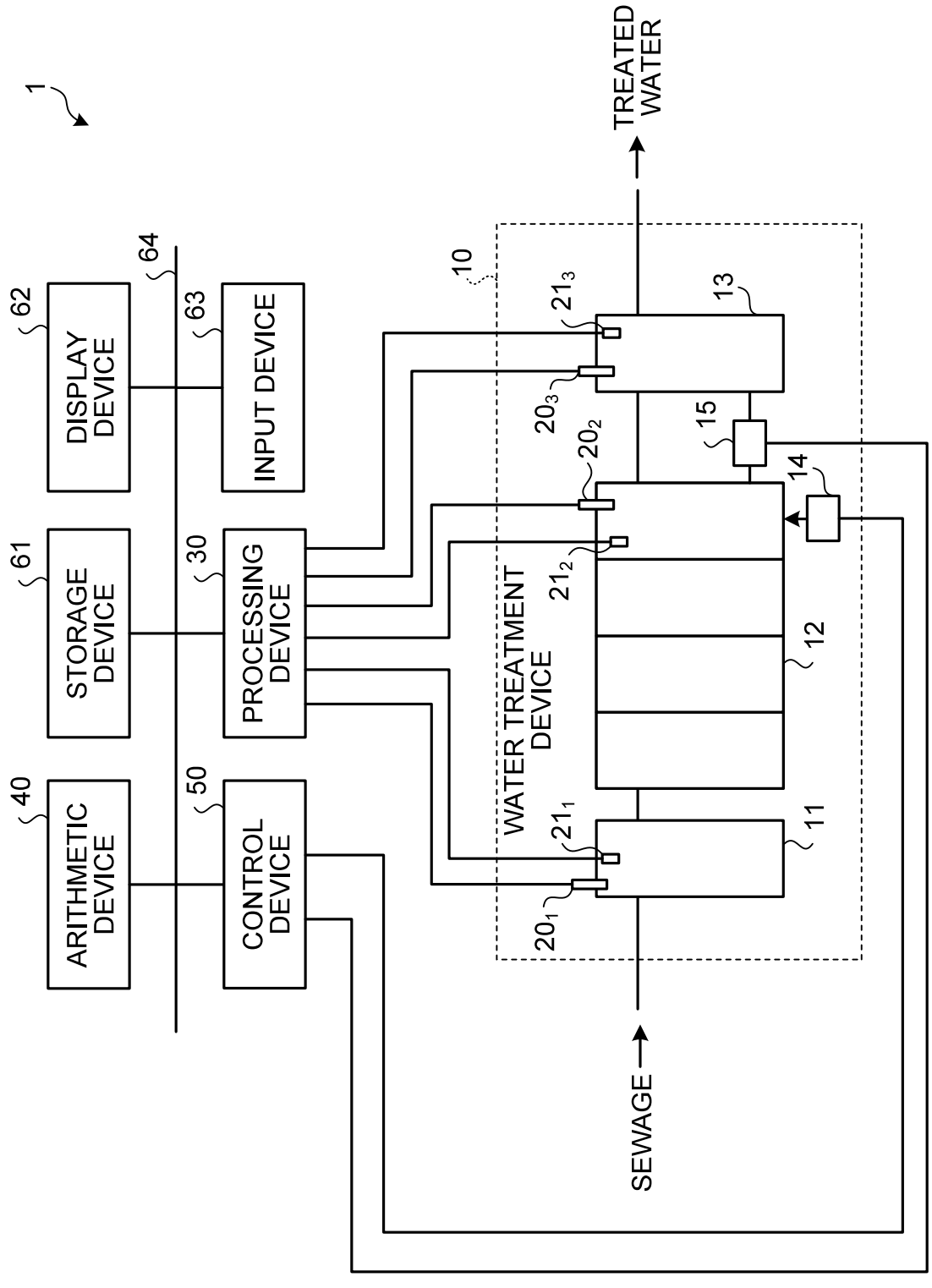

1
TREATED WATER
SEWAGE
10
WATER TREATMENT DEVICE
11
12
13
14
15
20_1
20_2
20_3
21_1
21_2
21_3
40
ARITHMETIC DEVICE
50
CONTROL DEVICE
30
PROCESSING DEVICE
61
STORAGE DEVICE
62
DISPLAY DEVICE
63
INPUT DEVICE
64

FIG.3

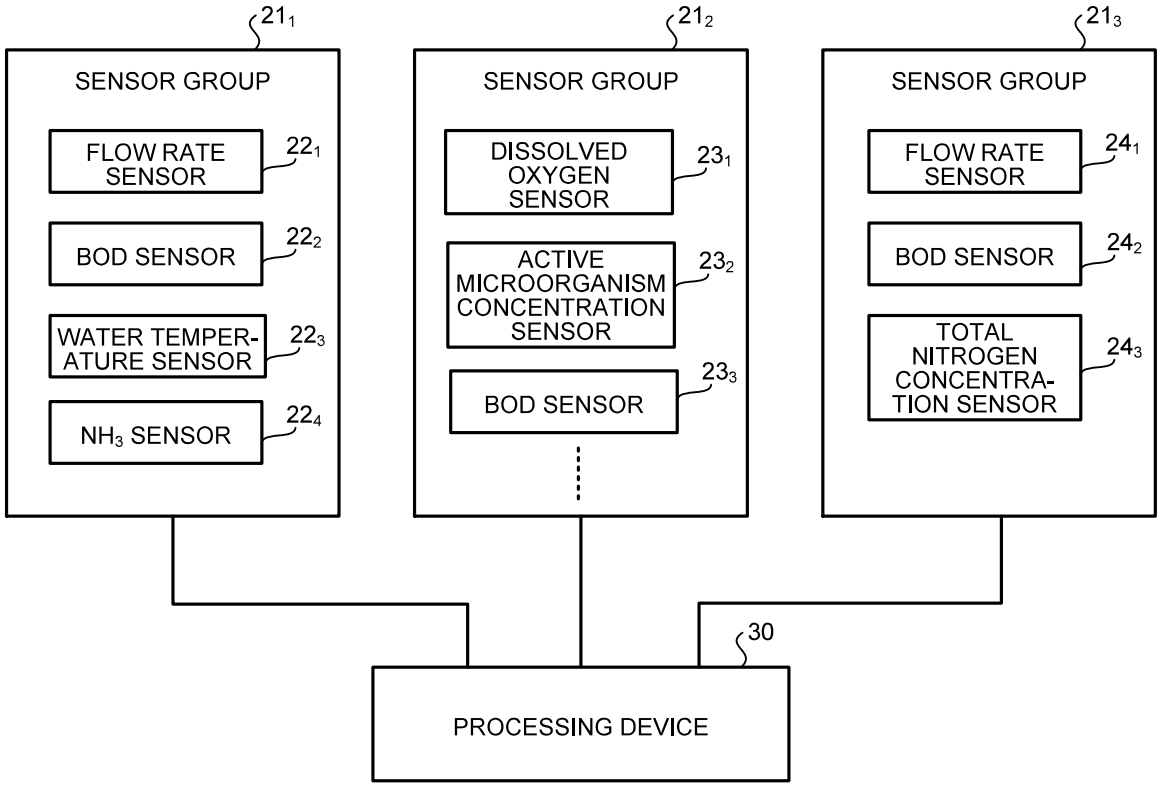

21_1
SENSOR GROUP
FLOW RATE SENSOR
22_1
BOD SENSOR
22_2
WATER TEMPER-ATURE SENSOR
22_3
NH_3 SENSOR
22_4
21_2
SENSOR GROUP
DISSOLVED OXYGEN SENSOR
23_1
ACTIVE MICROORGANISM CONCENTRATION SENSOR
23_2
BOD SENSOR
23_3
21_3
SENSOR GROUP
FLOW RATE SENSOR
24_1
BOD SENSOR
24_2
TOTAL NITROGEN CONCENTRA-TION SENSOR
24_3
30
PROCESSING DEVICE

FIG.4

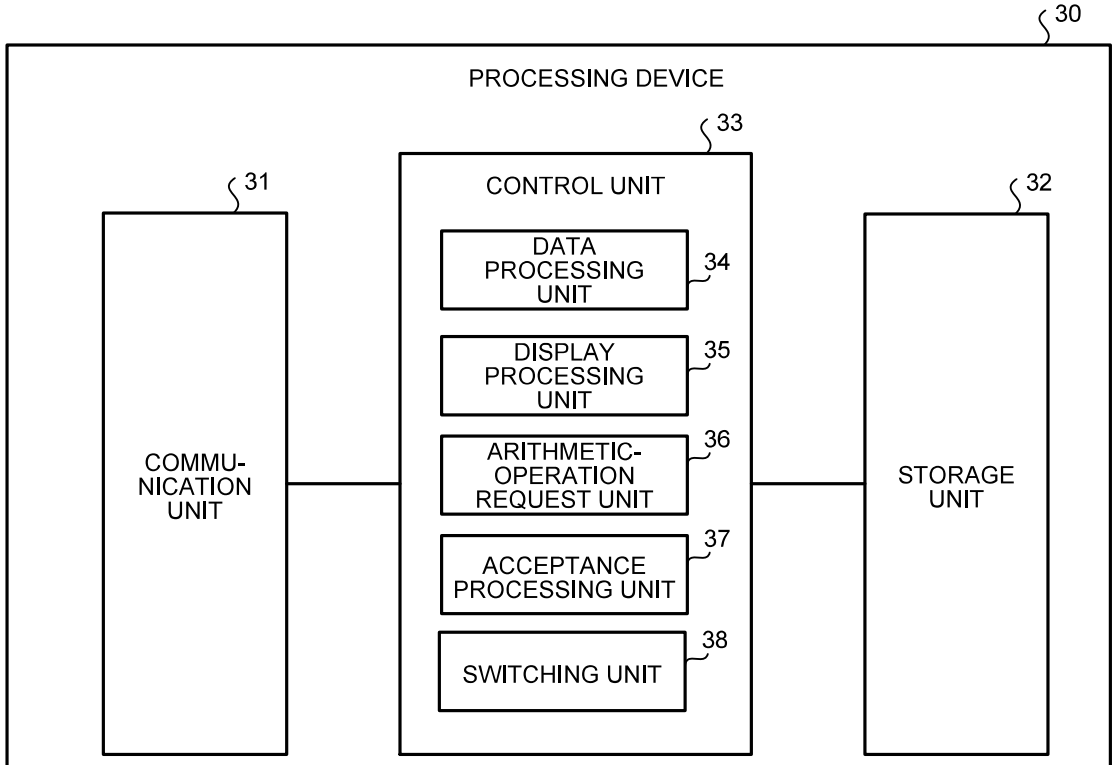

30
PROCESSING DEVICE
33
CONTROL UNIT
DATA PROCESSING UNIT
34
DISPLAY PROCESSING UNIT
35
ARITHMETIC-OPERATION REQUEST UNIT
36
ACCEPTANCE PROCESSING UNIT
37
SWITCHING UNIT
38
31
COMMU-NICATION UNIT
32
STORAGE UNIT

FIG.5

TIME	IMAGE DATA			NUMERICAL DATA		CONTROL TARGET VALUE	
t0	IM1(t0)	IM2(t0)	IM3(t0)	NU1(t0)	···	RV1(t0)	RV2(t0)
t1	IM1(t1)	IM2(t1)	IM3(t1)	NU1(t1)	···	RV1(t1)	RV2(t1)
t2	IM1(t2)	IM2(t2)	IM3(t2)	NU1(t2)	···	RV1(t2)	RV2(t2)
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
tm	IM1(tm)	IM2(tm)	IM3(tm)	NU1(m)	···	RV1(tm)	RV2(tm)
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
tn	IM1(tn)	IM2(tn)	IM3(tn)	NU1(tn)	···	RV1(tn)	RV2(tn)

FIG.6

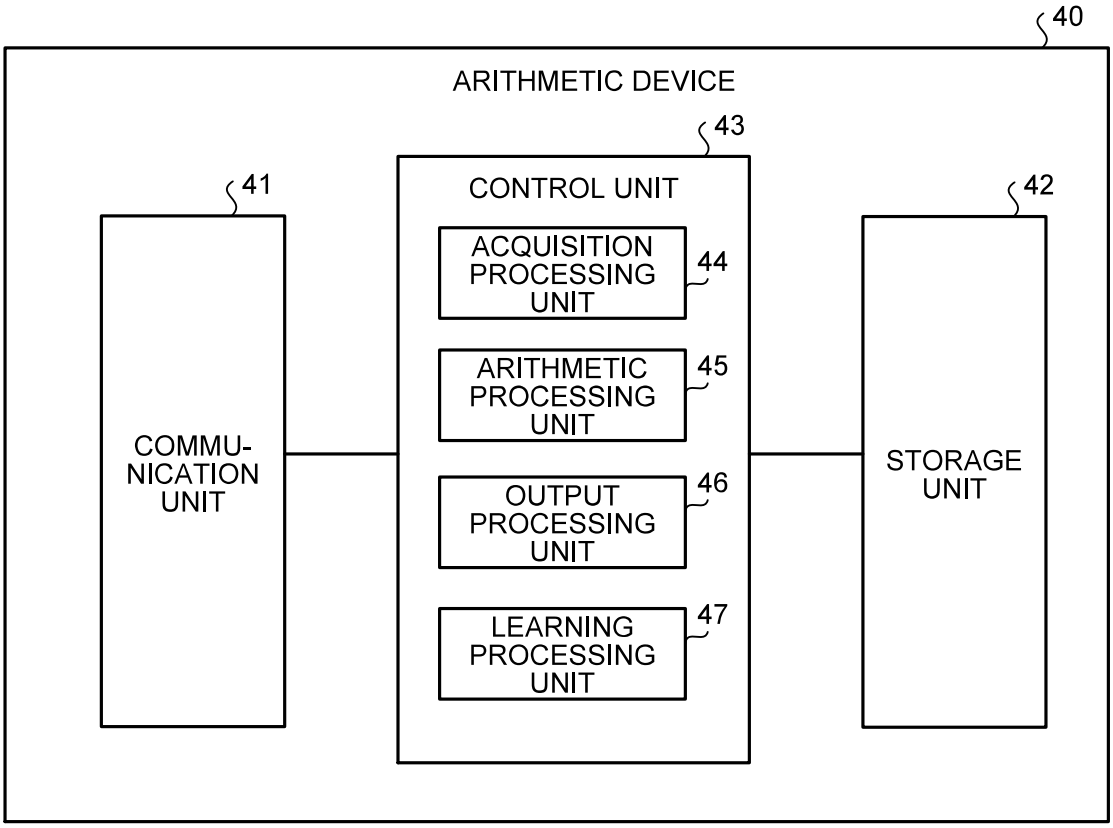


FIG.7

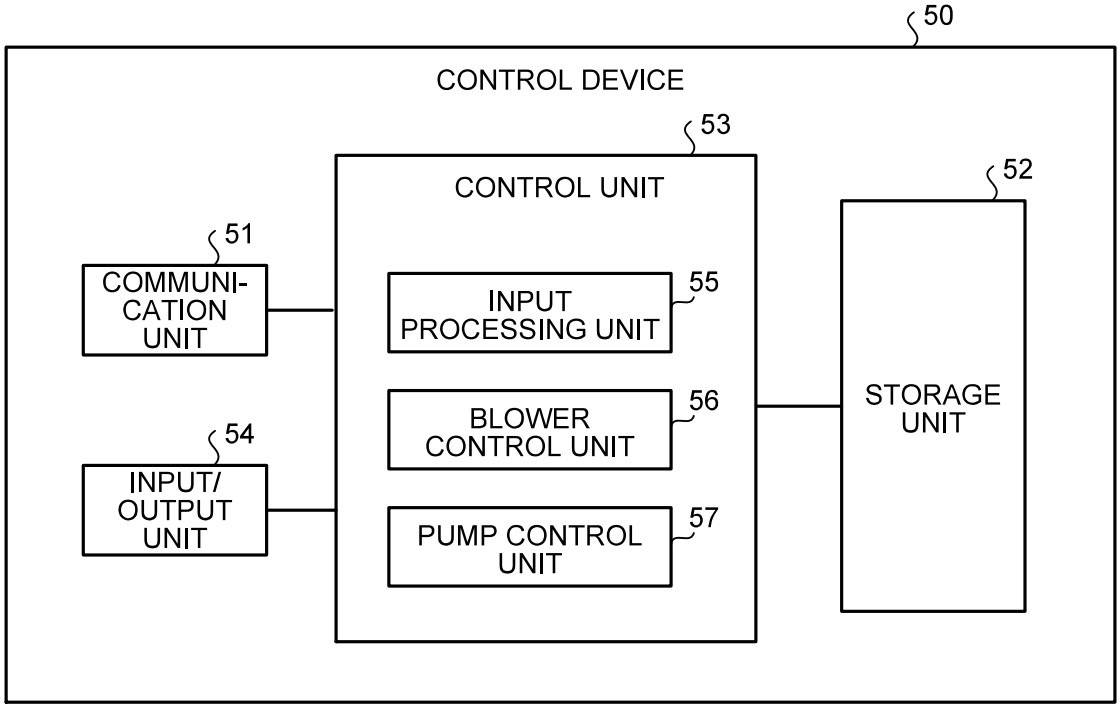

50
CONTROL DEVICE
53
CONTROL UNIT
52
51
COMMUNI-
CATION
UNIT
INPUT
PROCESSING UNIT
55
BLOWER
CONTROL UNIT
56
STORAGE
UNIT
54
INPUT/
OUTPUT
UNIT
PUMP CONTROL
UNIT
57

FIG.8

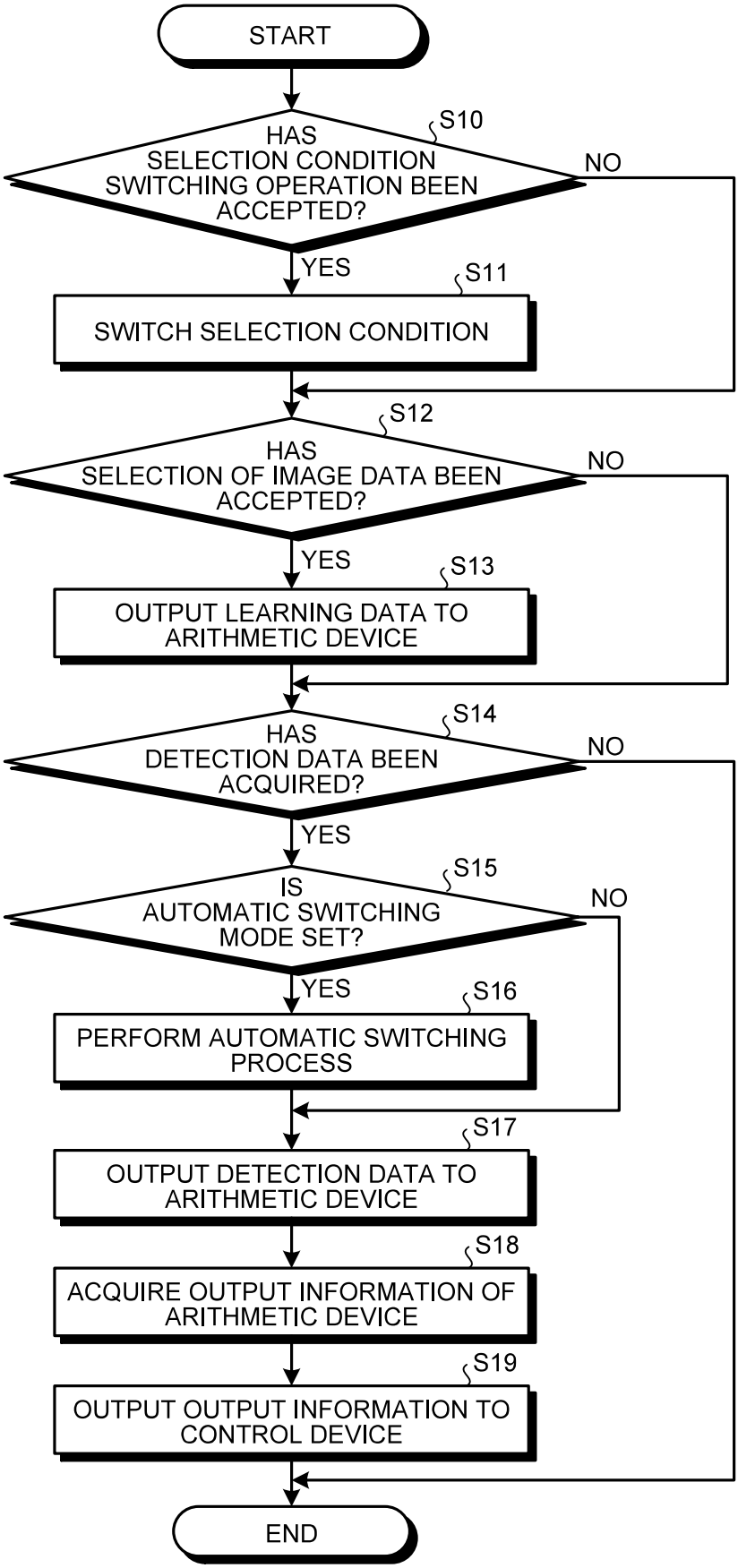

START
S10
HAS SELECTION CONDITION SWITCHING OPERATION BEEN ACCEPTED?
NO
YES
S11
SWITCH SELECTION CONDITION
S12
HAS SELECTION OF IMAGE DATA BEEN ACCEPTED?
NO
YES
S13
OUTPUT LEARNING DATA TO ARITHMETIC DEVICE
S14
HAS DETECTION DATA BEEN ACQUIRED?
NO
YES
S15
IS AUTOMATIC SWITCHING MODE SET?
NO
YES
S16
PERFORM AUTOMATIC SWITCHING PROCESS
S17
OUTPUT DETECTION DATA TO ARITHMETIC DEVICE
S18
ACQUIRE OUTPUT INFORMATION OF ARITHMETIC DEVICE
S19
OUTPUT OUTPUT INFORMATION TO CONTROL DEVICE
END

FIG.9

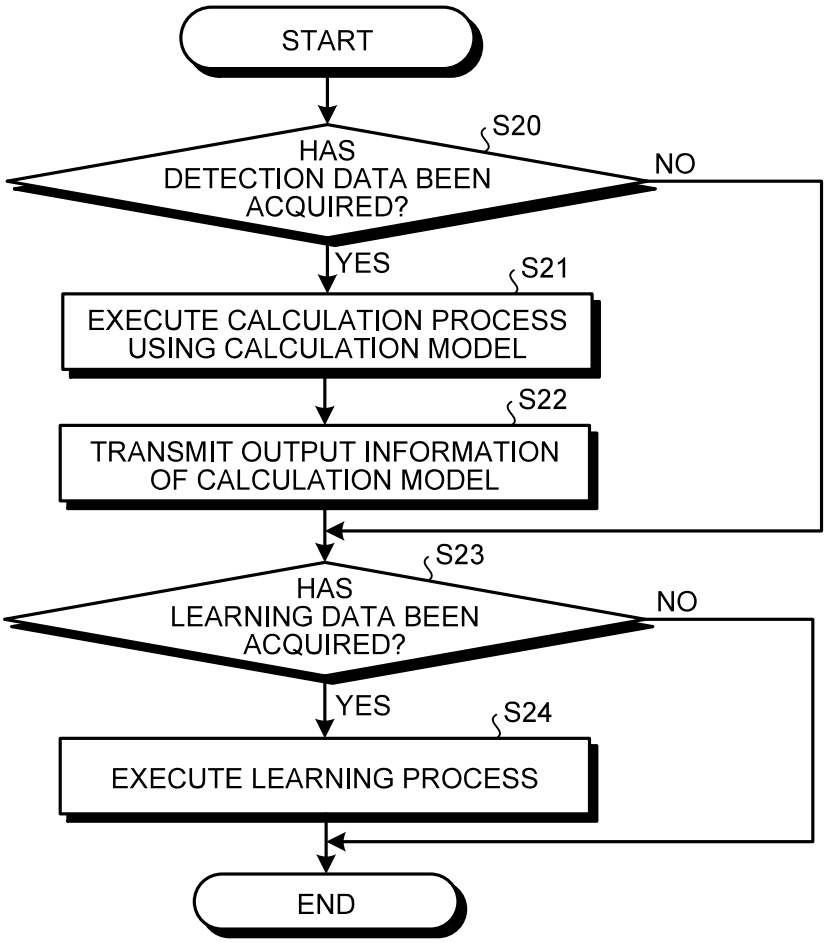

START
S20
HAS DETECTION DATA BEEN ACQUIRED?
NO
YES
S21
EXECUTE CALCULATION PROCESS USING CALCULATION MODEL
S22
TRANSMIT OUTPUT INFORMATION OF CALCULATION MODEL
S23
HAS LEARNING DATA BEEN ACQUIRED?
NO
YES
S24
EXECUTE LEARNING PROCESS
END

FIG.10

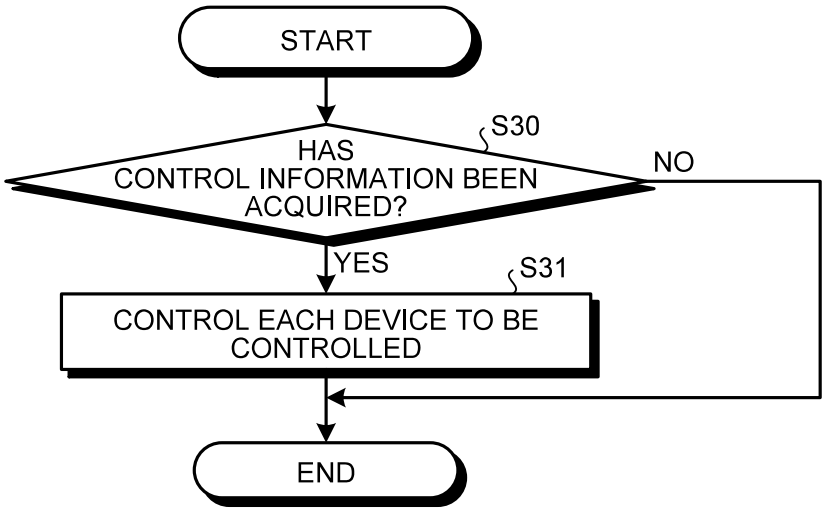

START
S30
HAS CONTROL INFORMATION BEEN ACQUIRED?
NO
YES
S31
CONTROL EACH DEVICE TO BE CONTROLLED
END

FIG.11

