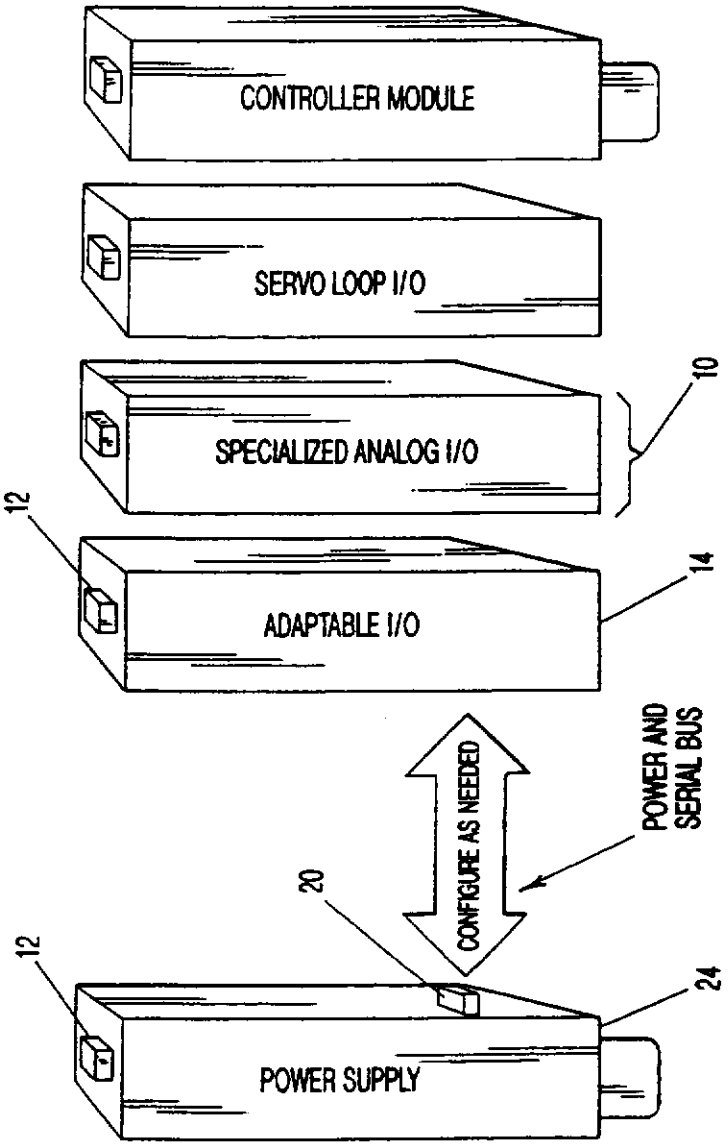

CONTROLLER MODULE
SERVO LOOP I/O
SPECIALIZED ANALOG I/O
ADAPTABLE I/O
POWER SUPPLY
CONFIGURE AS NEEDED
POWER AND SERIAL BUS
10
12
14
20
24

FIG-1

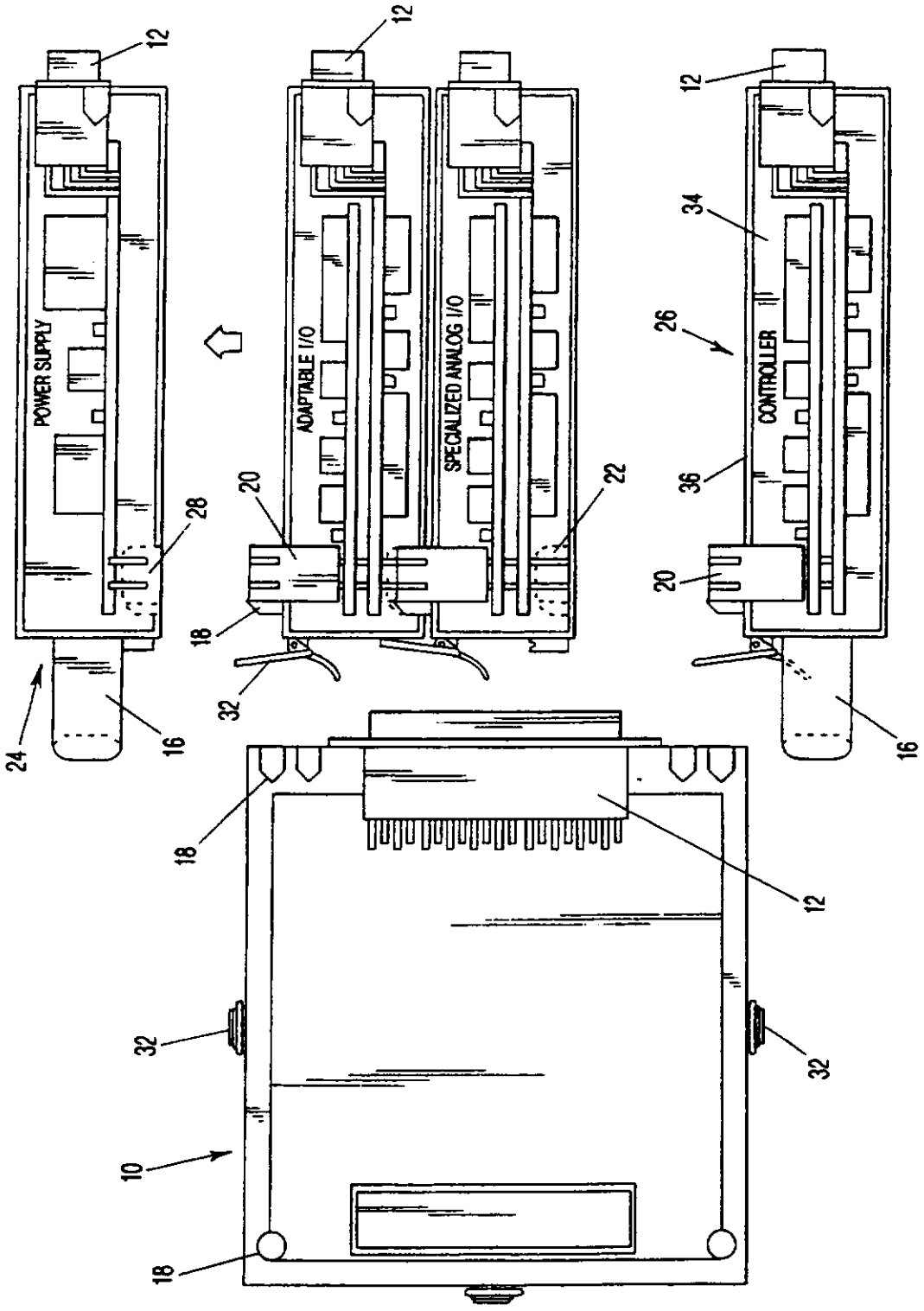
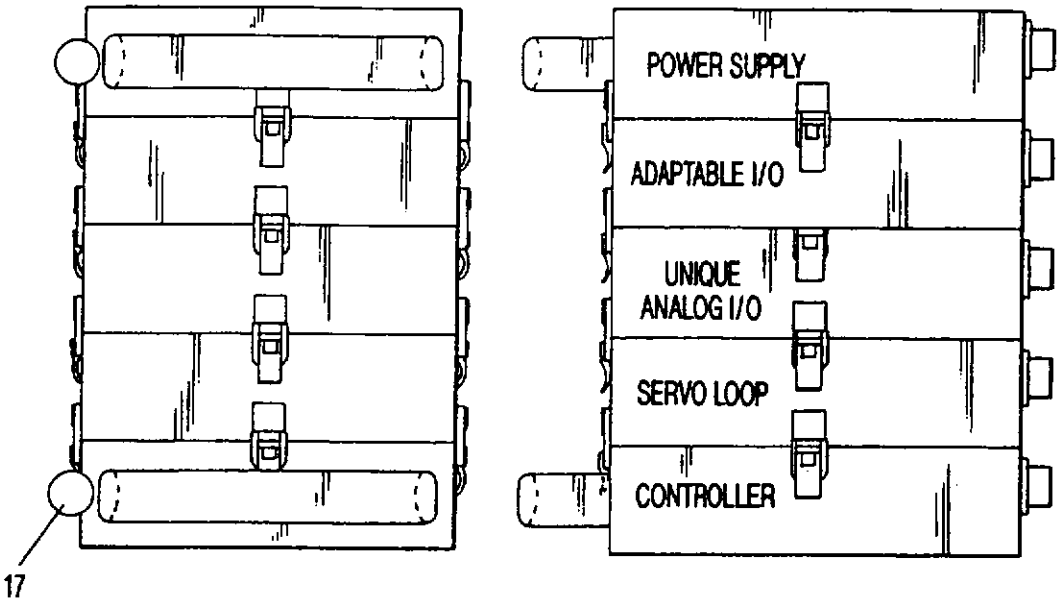

12
POWER SUPPLY
ADAPTABLE I/O
SPECIALIZED ANALOG I/O
CONTROLLER
26
34
36
20
22
28
18
32
24
16
10

FIG-2


POWER SUPPLY
ADAPTABLE I/O
UNIQUE ANALOG I/O
SERVO LOOP
CONTROLLER
17

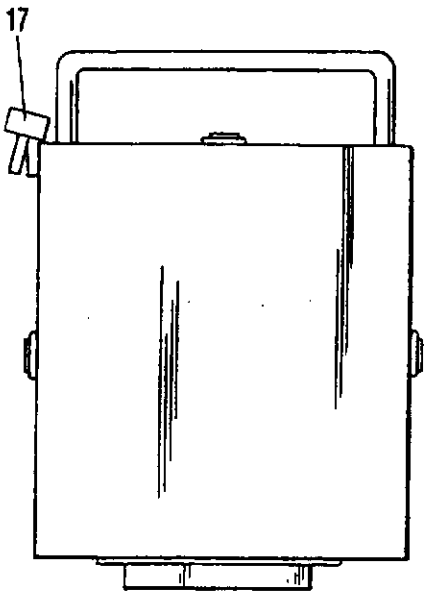

17

FIG-3

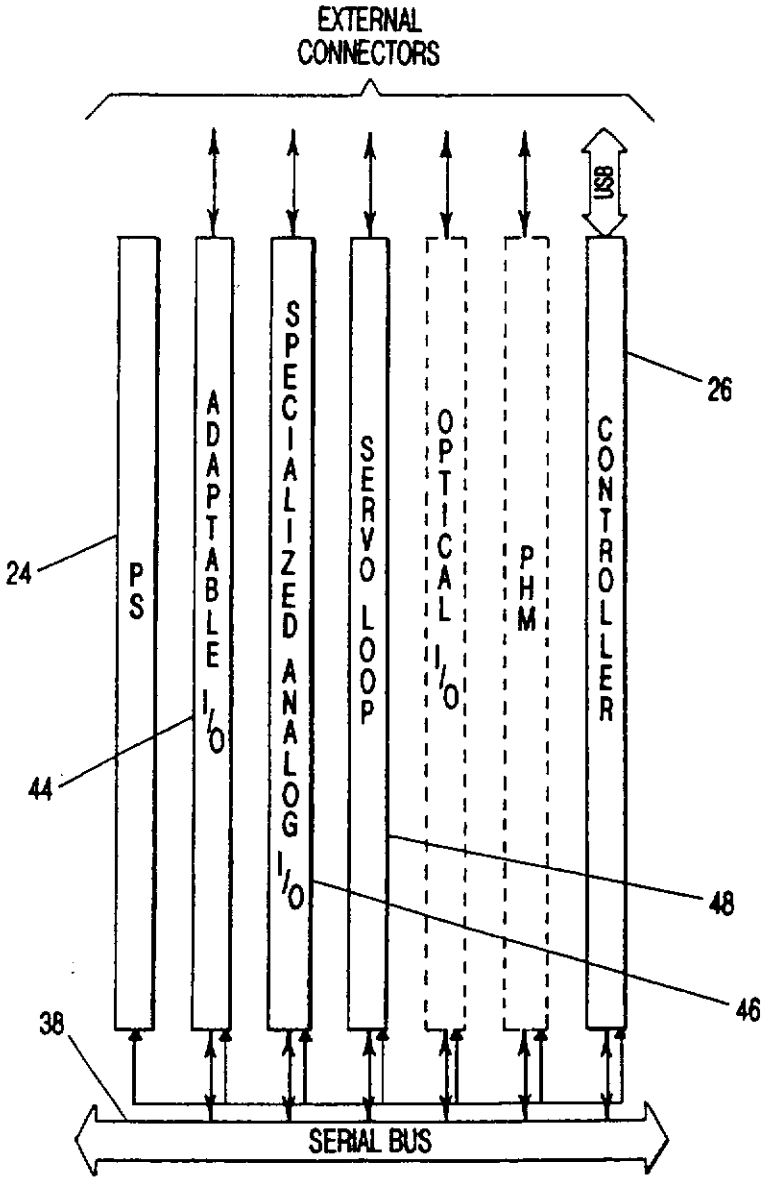

EXTERNAL CONNECTORS
USB
PS
ADAPTABLE I/O
SPECIALIZED ANALOG I/O
SERVO LOOP
OPTICAL I/O
PHM
CONTROLLER
24
44
26
48
46
38
SERIAL BUS

FIG-4

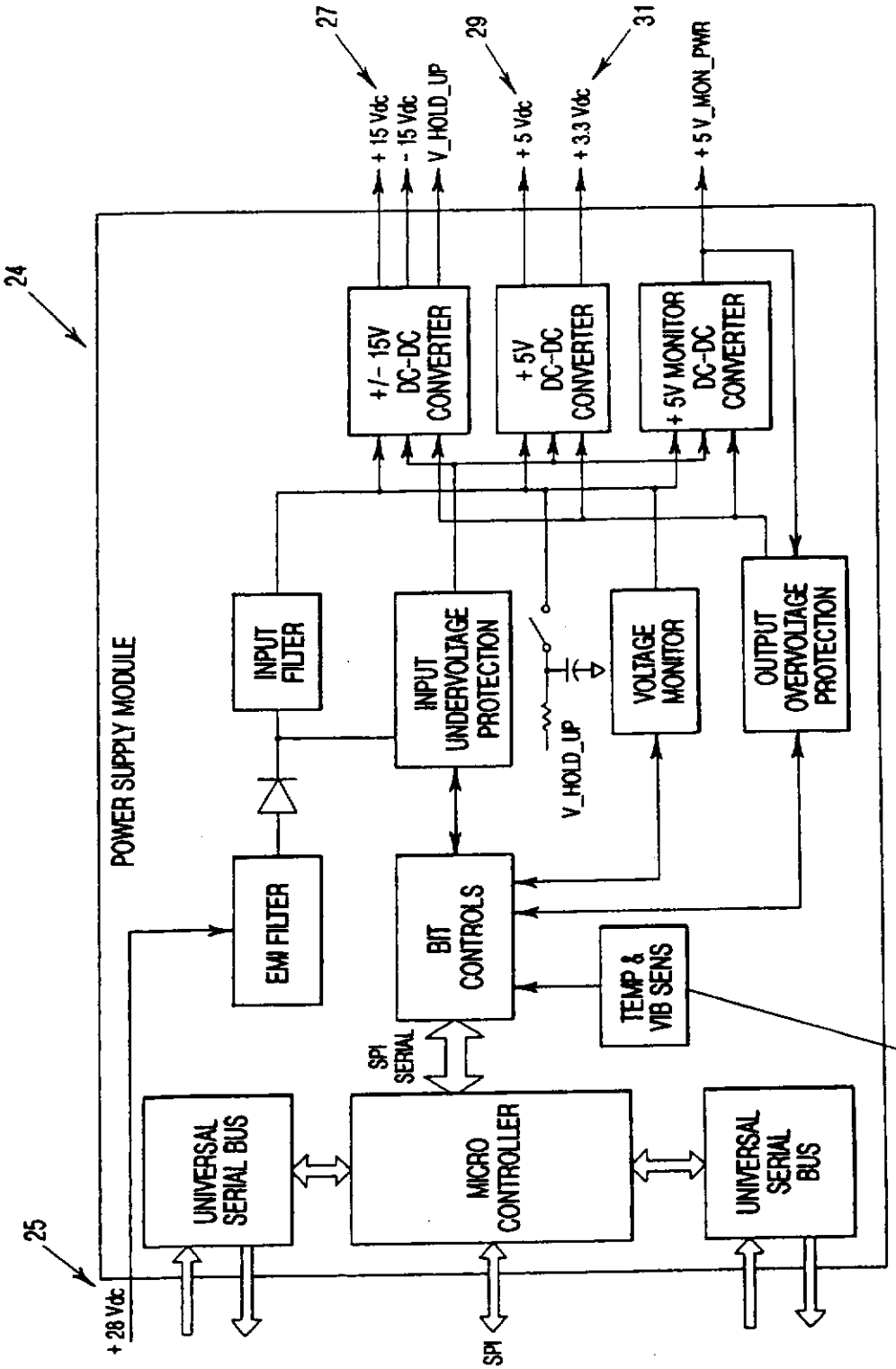

27
29
31
+ 15 Vdc
- 15 Vdc
V_HOLD_UP
+ 5 Vdc
+ 3.3 Vdc
+ 5 V_MON_PWR
24
+/- 15V DC-DC CONVERTER
+ 5V DC-DC CONVERTER
+ 5V MONITOR DC-DC CONVERTER
POWER SUPPLY MODULE
INPUT FILTER
INPUT UNDERVOLTAGE PROTECTION
VOLTAGE MONITOR
OUTPUT OVERVOLTAGE PROTECTION
V_HOLD_UP
EMI FILTER
BIT CONTROLS
TEMP & VIB SENS
39
SPI SERIAL
UNIVERSAL SERIAL BUS
MICRO CONTROLLER
UNIVERSAL SERIAL BUS
25
+ 28 Vdc
SPI

FIG-5

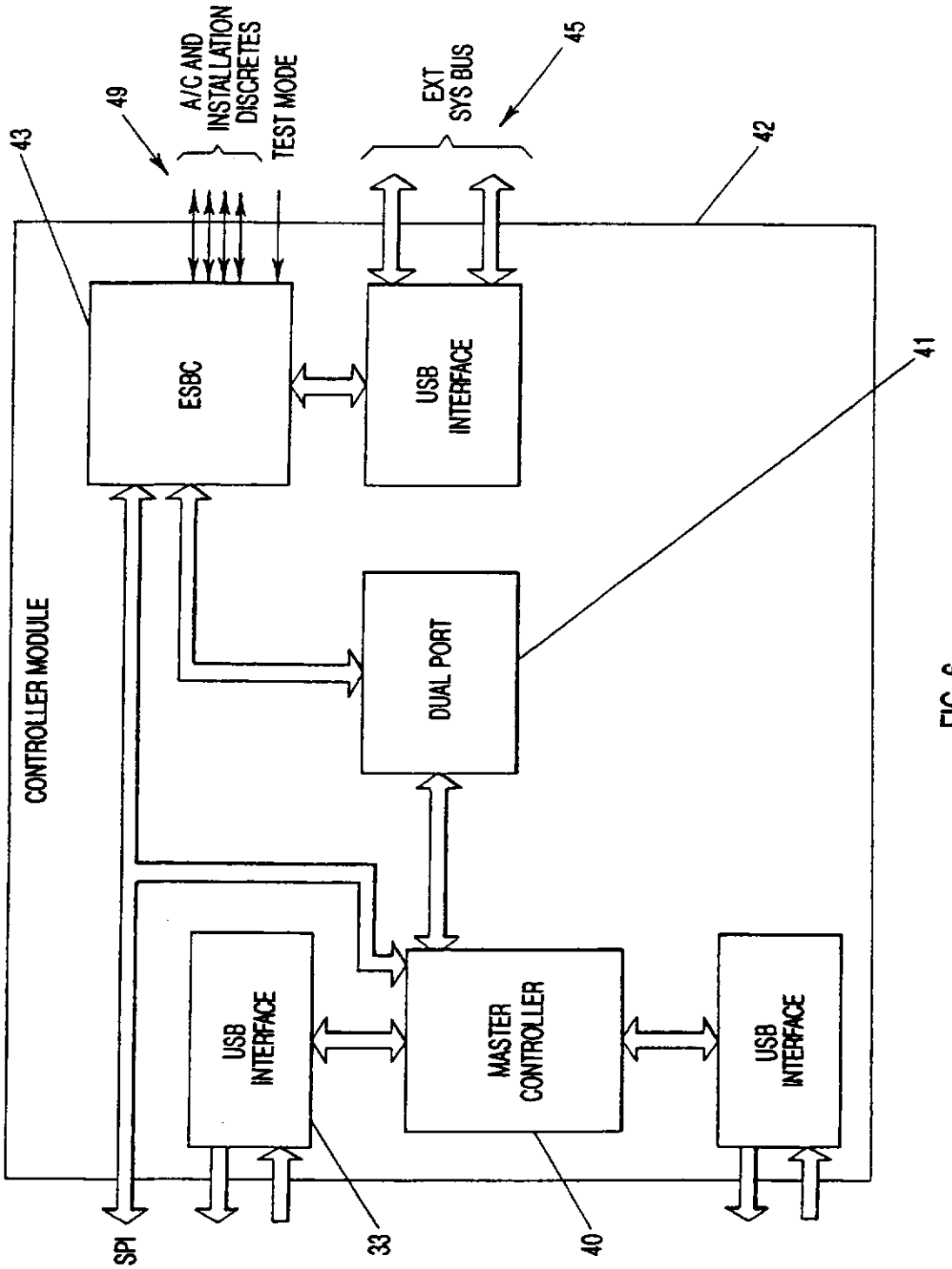

A/C AND INSTALLATION DISCRETES
TEST MODE
EXT SYS BUS
49
45
43
42
41
ESBC
USB INTERFACE
DUAL PORT
CONTROLLER MODULE
USB INTERFACE
MASTER CONTROLLER
USB INTERFACE
SPI
33
40

FIG-6

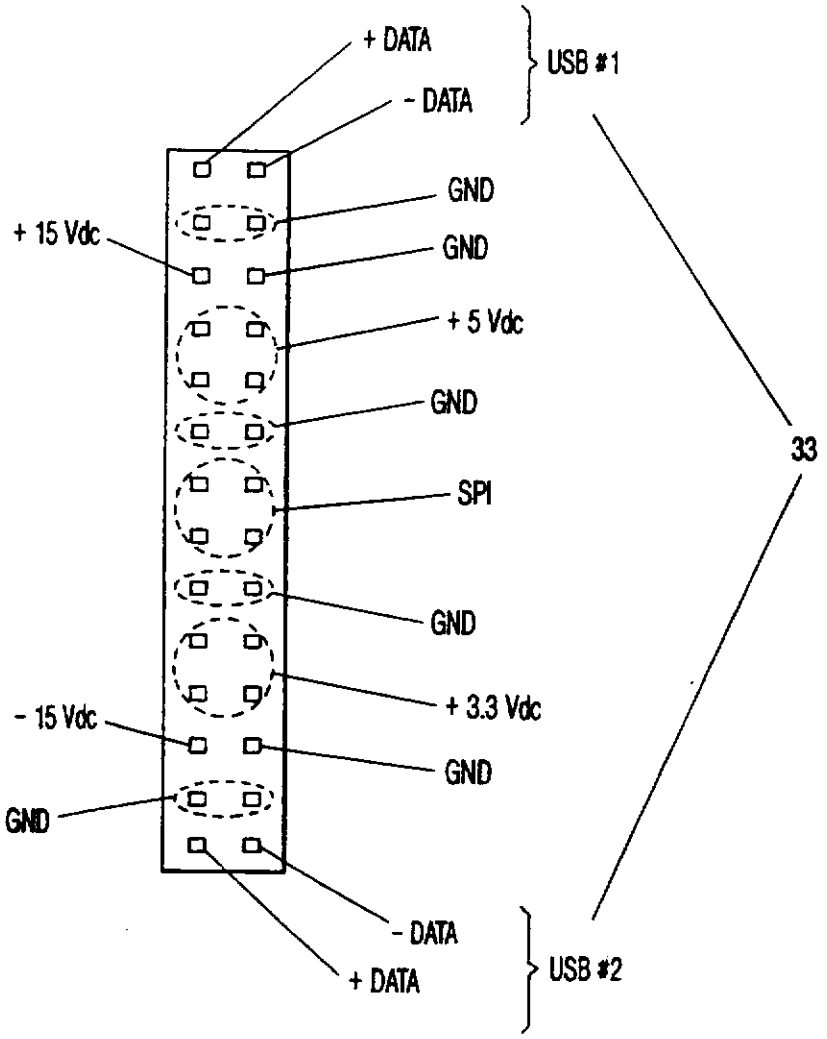

+ DATA
- DATA
USB #1
GND
+ 15 Vdc
GND
+ 5 Vdc
GND
SPI
GND
+ 3.3 Vdc
- 15 Vdc
GND
GND
- DATA
+ DATA
USB #2
33

FIG-7

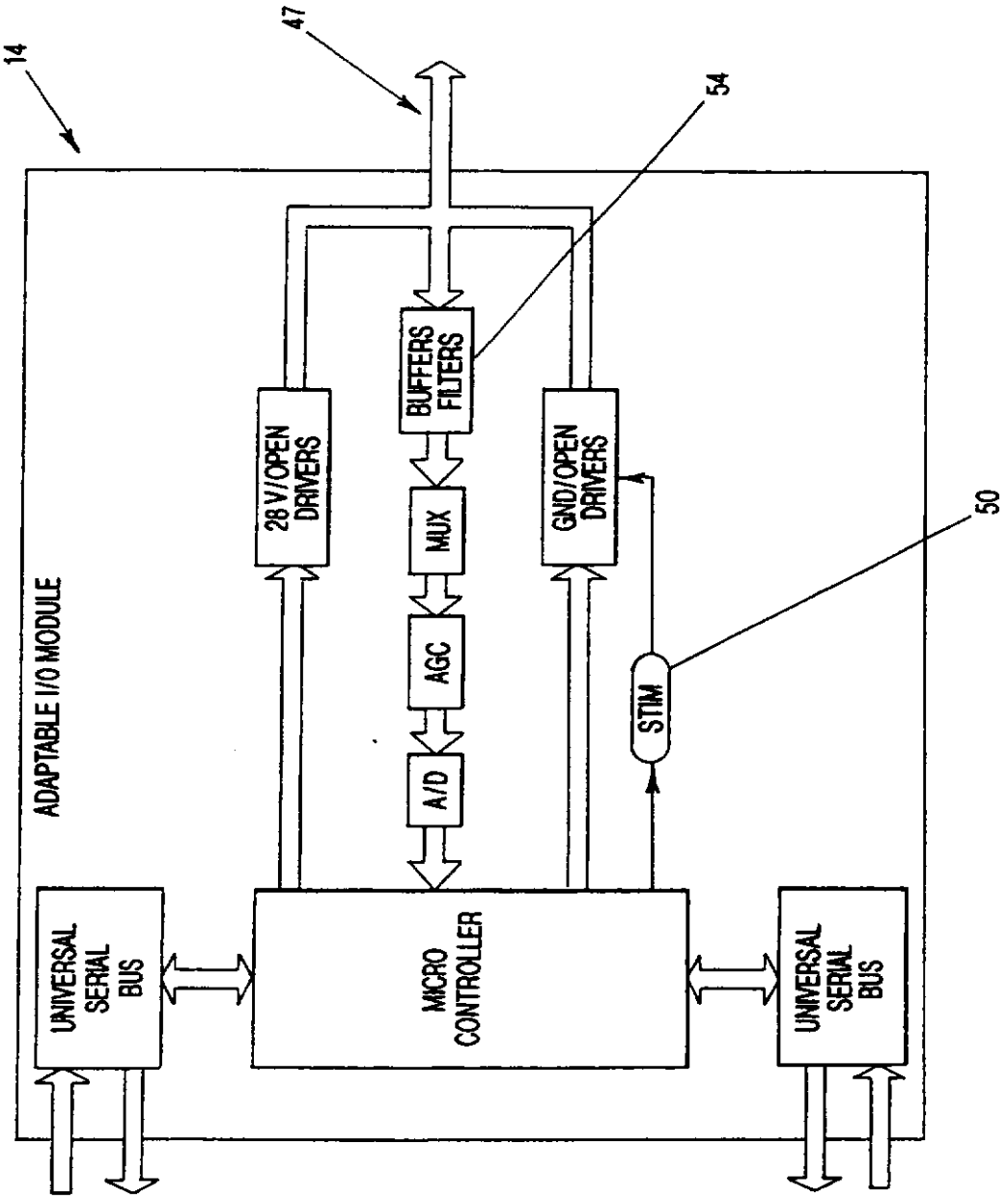

14
47
54
50
ADAPTABLE I/O MODULE
28 V/OPEN DRIVERS
BUFFERS FILTERS
MUX
AGC
A/D
GND/OPEN DRIVERS
STIM
UNIVERSAL SERIAL BUS
MICRO CONTROLLER
UNIVERSAL SERIAL BUS

FIG-8

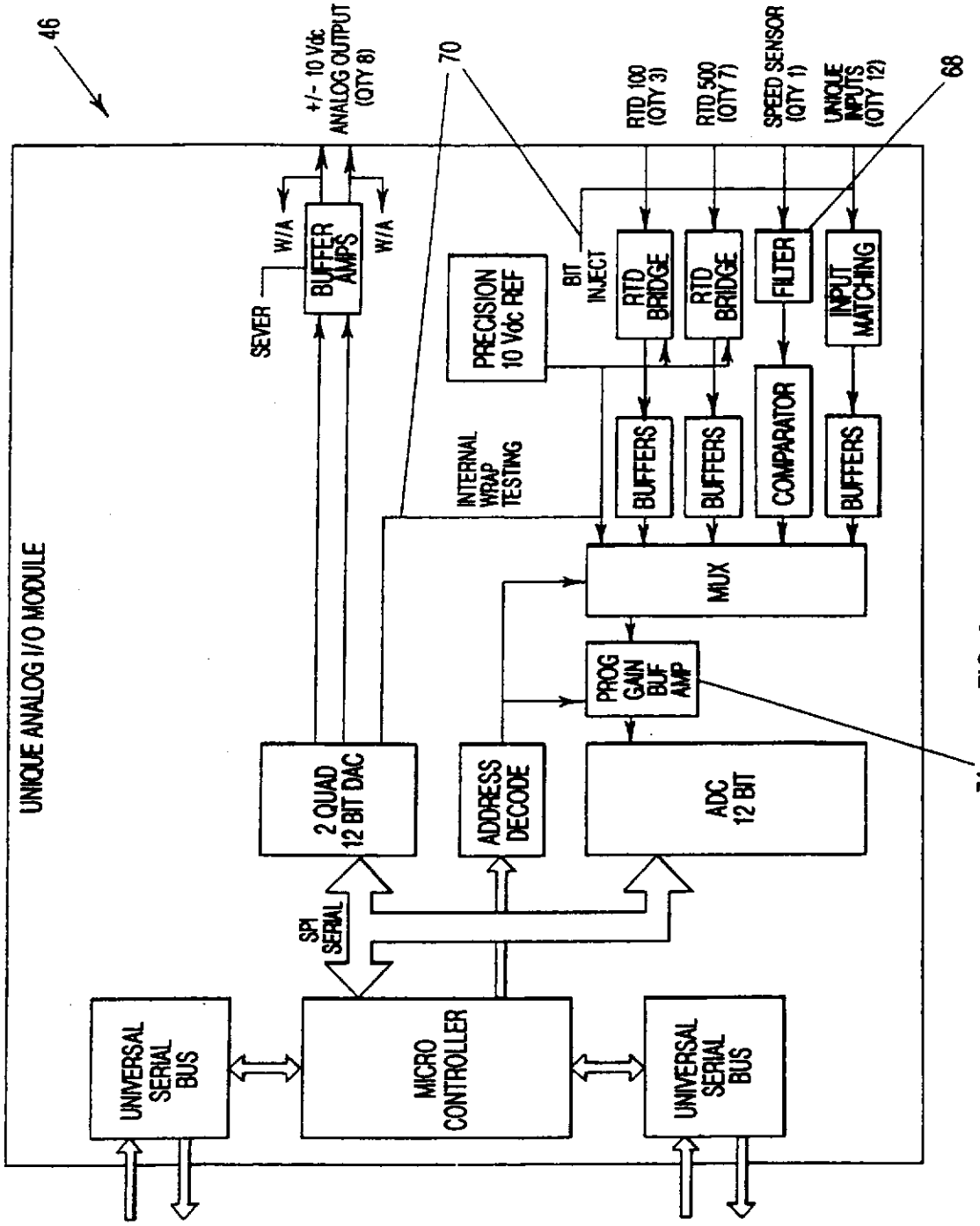

46
UNIQUE ANALOG I/O MODULE
+/- 10 Vdc ANALOG OUTPUT (QTY 8)
70
RTD 100 (QTY 3)
RTD 500 (QTY 7)
SPEED SENSOR (QTY 1)
UNIQUE INPUTS (QTY 12)
68
W/A
W/A
BUFFER AMPS
SEVER
PRECISION 10 Vdc REF
BIT INJECT
RTD BRIDGE
RTD BRIDGE
FILTER
INPUT MATCHING
INTERNAL WRAP TESTING
BUFFERS
BUFFERS
COMPARATOR
BUFFERS
MUX
PROG GAIN BUF AMP
71
2 QUAD 12 BIT DAC
ADDRESS DECODE
ADC 12 BIT
SPI SERIAL
UNIVERSAL SERIAL BUS
MICRO CONTROLLER
UNIVERSAL SERIAL BUS

FIG-9

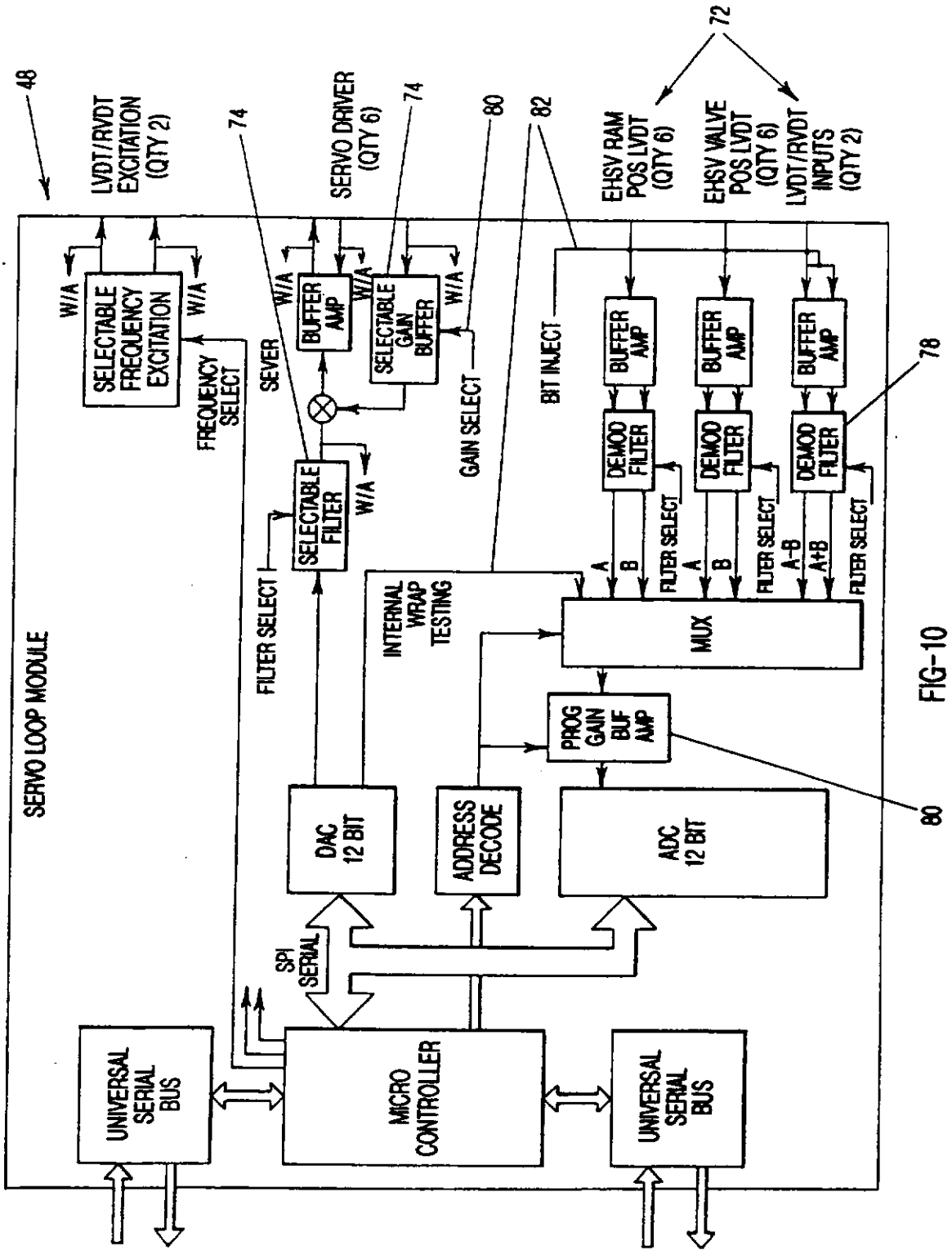

48
LVDT/RVDT EXCITATION (QTY 2)
74
SERVO DRIVER (QTY 6)
74
80
82
72
EHSV RAM POS LVDT (QTY 6)
EHSV VALVE POS LVDT (QTY 6)
LVDT/RVDT INPUTS (QTY 2)
SERVO LOOP MODULE
W/A
SELECTABLE FREQUENCY EXCITATION
FREQUENCY SELECT
SEVER
BUFFER AMP
SELECTABLE GAIN BUFFER
GAIN SELECT
BIT INJECT
BUFFER AMP
BUFFER AMP
BUFFER AMP
78
SELECTABLE FILTER
FILTER SELECT
DEMOD FILTER
DEMOD FILTER
DEMOD FILTER
A
B
A
B
A-B
A+B
FILTER SELECT
INTERNAL WRAP TESTING
MUX
PROG GAIN BUF AMP
80
DAC 12 BIT
ADDRESS DECODE
ADC 12 BIT
SPI SERIAL
UNIVERSAL SERIAL BUS
MICRO CONTROLLER
UNIVERSAL SERIAL BUS

FIG-10

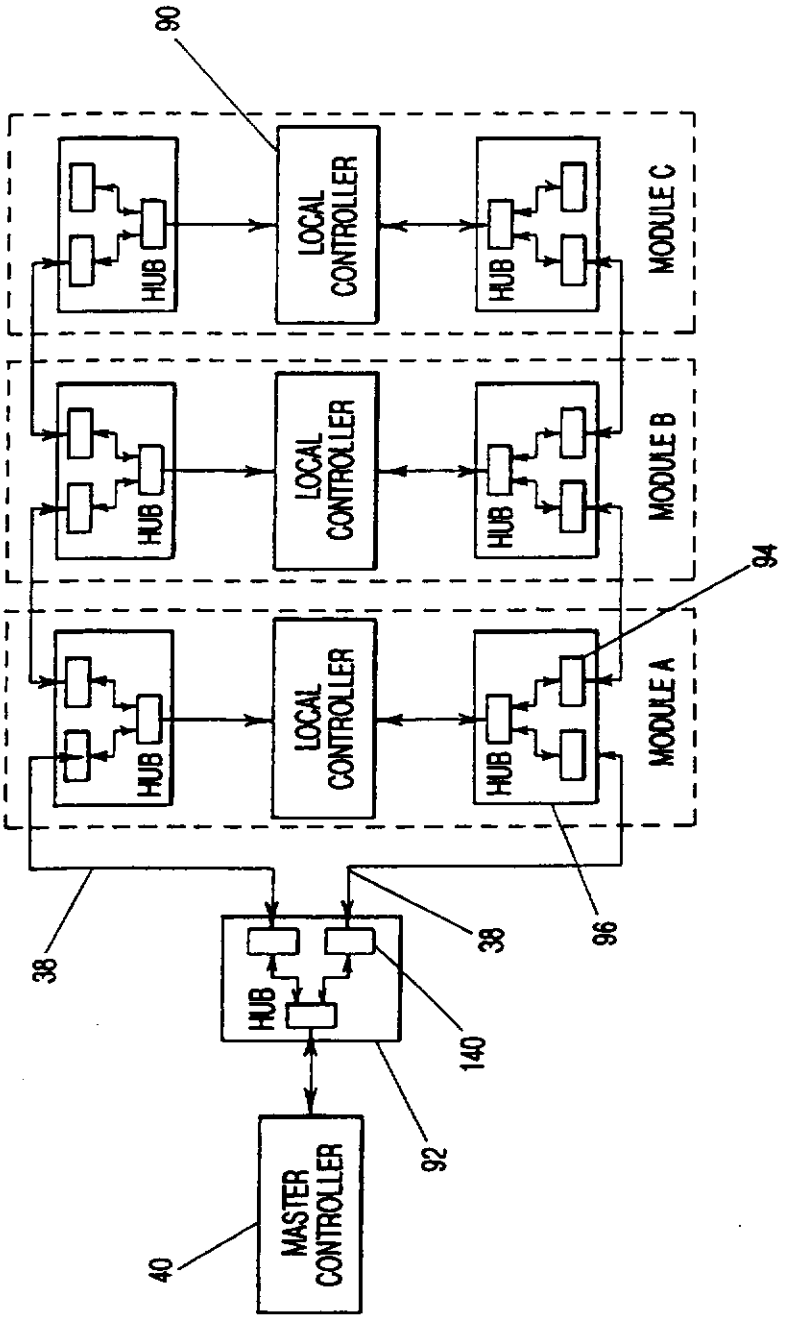

90
LOCAL CONTROLLER
HUB
HUB
MODULE C
LOCAL CONTROLLER
HUB
HUB
MODULE B
94
LOCAL CONTROLLER
HUB
HUB
MODULE A
38
38
96
HUB
140
92
MASTER CONTROLLER
40

FIG-11

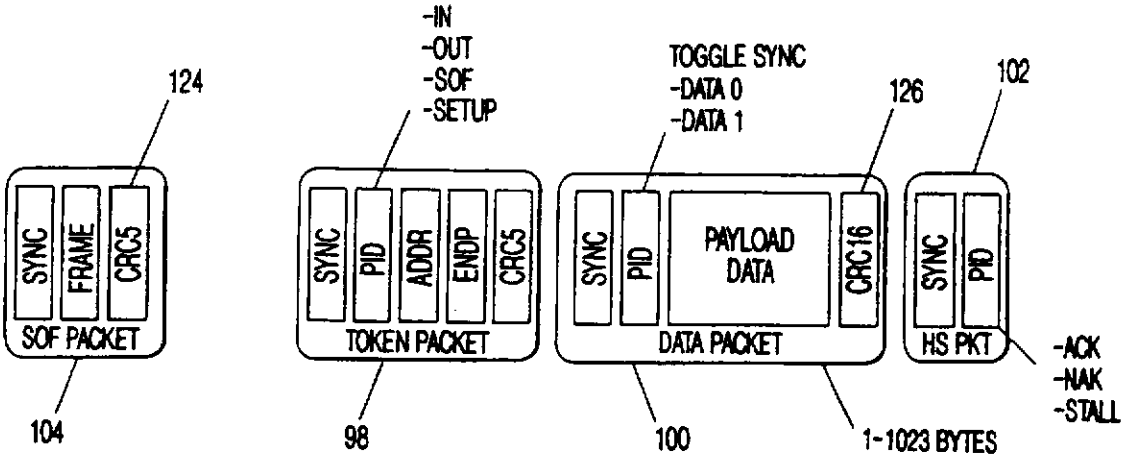

124
-IN
-OUT
-SOF
-SETUP
TOGGLE SYNC
-DATA 0
-DATA 1
126
102
SYNC
FRAME
CRC5
SOF PACKET
SYNC
PID
ADDR
ENDP
CRC5
TOKEN PACKET
SYNC
PID
PAYLOAD DATA
CRC16
DATA PACKET
SYNC
PID
HS PKT
-ACK
-NAK
-STALL
104
98
100
1-1023 BYTES

FIG-12

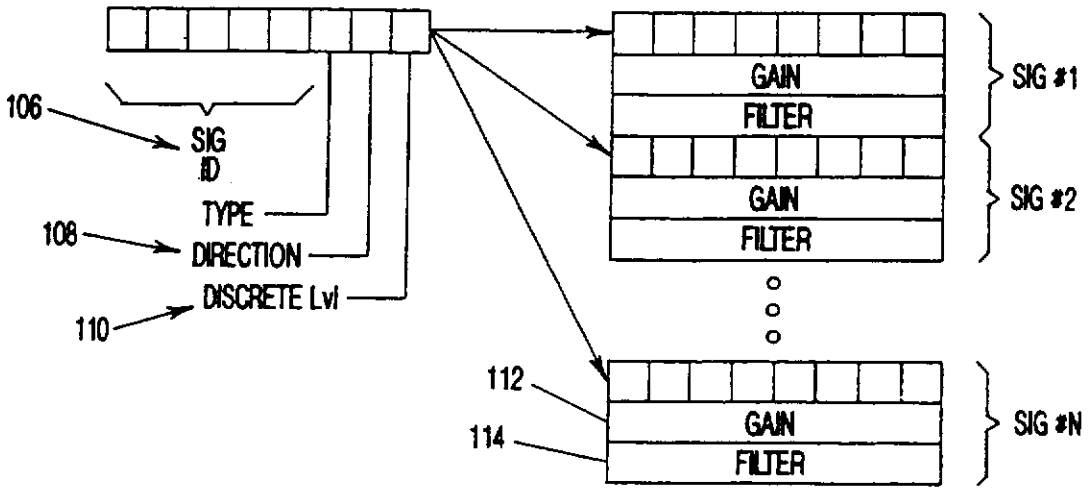

106
SIG ID
TYPE
108
DIRECTION
DISCRETE Lvl
110
GAIN
FILTER
SIG #1
GAIN
FILTER
SIG #2
112
114
GAIN
FILTER
SIG #N

FIG-13

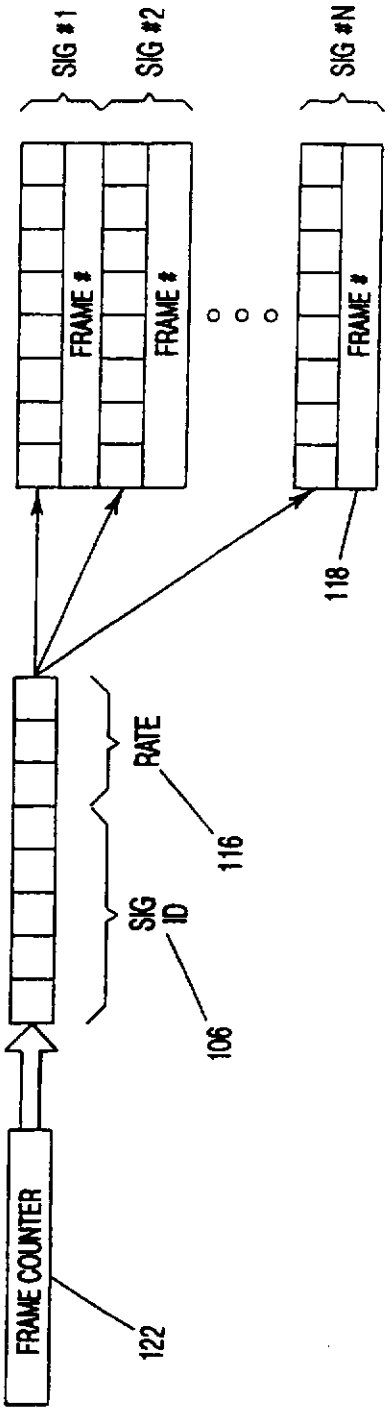

SIG #1
SIG #2
SIG #N
FRAME #
FRAME #
FRAME #
118
RATE
116
SIG ID
106
FRAME COUNTER
122

FIG-14

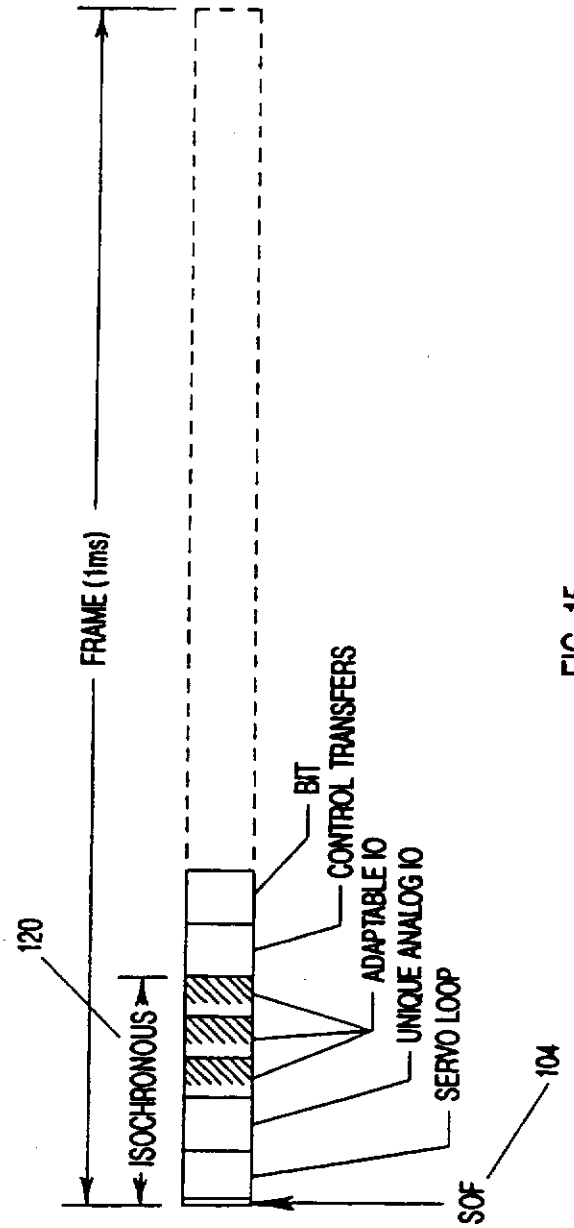

FRAME (1ms)
120
ISOCHRONOUS
BIT
CONTROL TRANSFERS
ADAPTABLE IO
UNIQUE ANALOG IO
SERVO LOOP
SOF
104

FIG-15

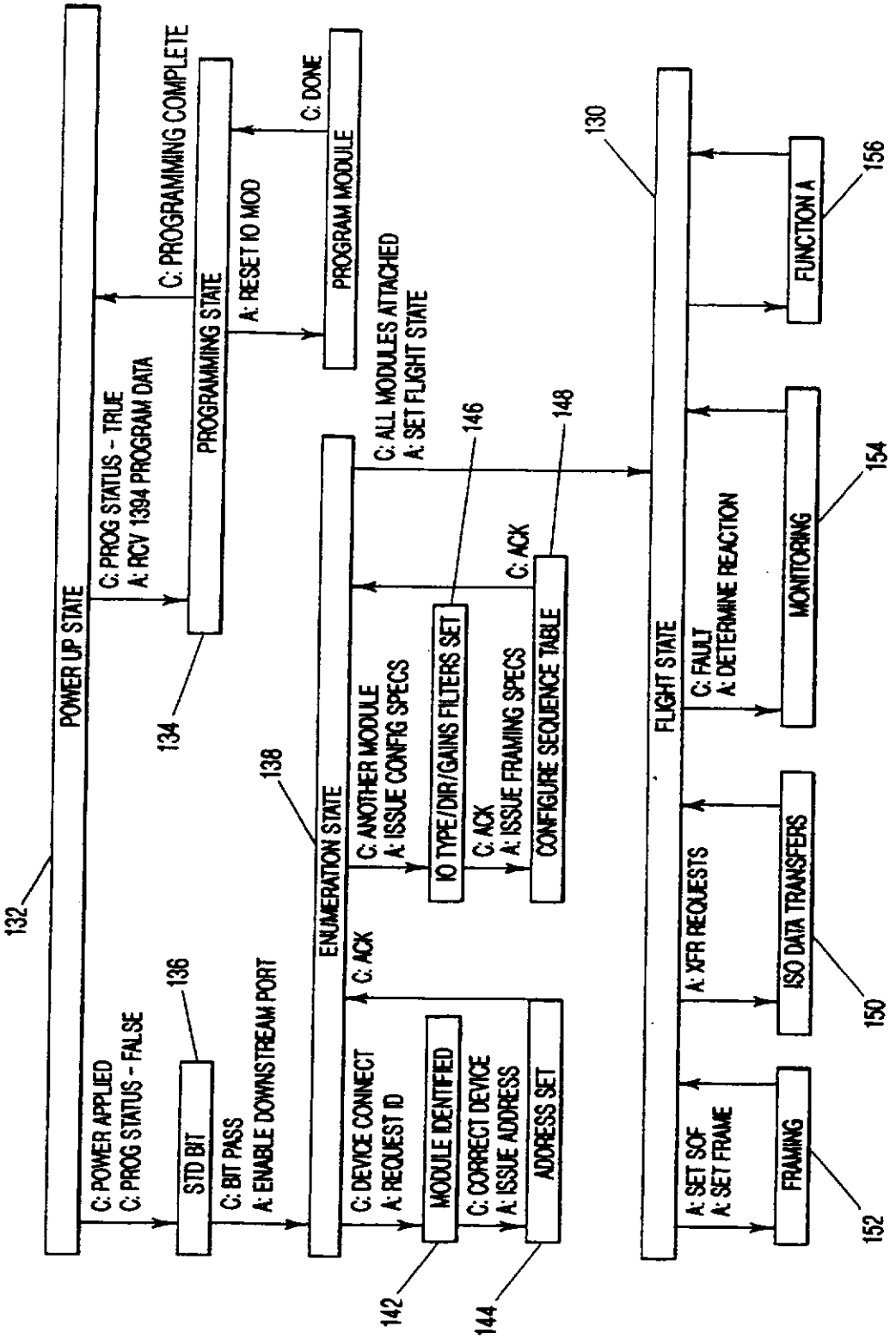

POWER UP STATE
C: POWER APPLIED
C: PROG STATUS - FALSE
C: PROG STATUS - TRUE
A: RCV 1394 PROGRAM DATA
C: PROGRAMMING COMPLETE
PROGRAMMING STATE
A: RESET IO MOD
C: DONE
PROGRAM MODULE
STD BIT
C: BIT PASS
A: ENABLE DOWNSTREAM PORT
ENUMERATION STATE
C: DEVICE CONNECT
A: REQUEST ID
C: ACK
MODULE IDENTIFIED
C: CORRECT DEVICE
A: ISSUE ADDRESS
ADDRESS SET
C: ANOTHER MODULE
A: ISSUE CONFIG SPECS
IO TYPE/DIR/GAINS FILTERS SET
C: ACK
A: ISSUE FRAMING SPECS
CONFIGURE SEQUENCE TABLE
C: ACK
C: ALL MODULES ATTACHED
A: SET FLIGHT STATE
FLIGHT STATE
A: SET SOF
A: SET FRAME
FRAMING
A: XFR REQUESTS
ISO DATA TRANSFERS
C: FAULT
A: DETERMINE REACTION
MONITORING
FUNCTION A
132
134
136
138
142
144
146
148
130
150
152
154
156

FIG-16

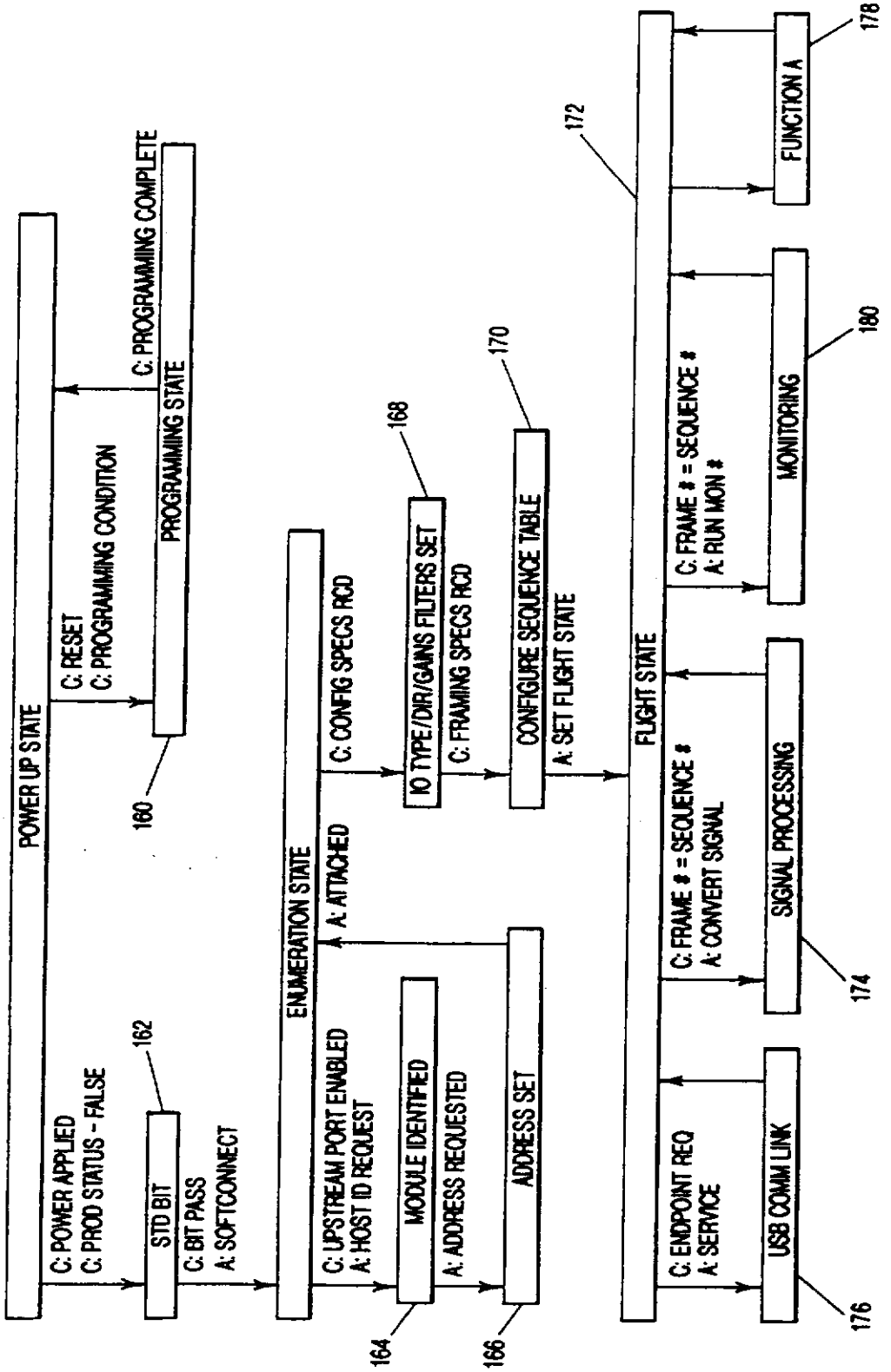

POWER UP STATE
C: POWER APPLIED
C: PROD STATUS - FALSE
STD BIT
C: BIT PASS
A: SOFTCONNECT
C: RESET
C: PROGRAMMING CONDITION
PROGRAMMING STATE
C: PROGRAMMING COMPLETE
ENUMERATION STATE
C: UPSTREAM PORT ENABLED
A: HOST ID REQUEST
A: ATTACHED
C: CONFIG SPECS RCD
NO TYPE/DIR/GAINS FILTERS SET
C: FRAMING SPECS RCD
CONFIGURE SEQUENCE TABLE
A: SET FLIGHT STATE
MODULE IDENTIFIED
A: ADDRESS REQUESTED
ADDRESS SET
FLIGHT STATE
C: ENDPOINT REQ
A: SERVICE
C: FRAME # = SEQUENCE #
A: CONVERT SIGNAL
C: FRAME # = SEQUENCE #
A: RUN MON #
FUNCTION A
MONITORING
SIGNAL PROCESSING
USB COMM LINK
160
162
164
166
168
170
172
174
176
178
180

FIG-17