LEM

CES AND AGS

SEPT 1966
INTEGRATED FLIGHT CONTROL SUBSYSTEM
LIMITING ENABLE

ASS (ROLL AND PITCH ONLY)

REGULATED

KEYED DEMODULATOR

FILTER

WIDE BAND

DEAD BAND SWITCH

TRANSLATION SIGNALS FROM TCA

ATTITUDE ERROR FROM ASS

RATE COMMANDS FROM ACA

RATE SIGNAL FROM ESA

FREE COMMANDS FROM ACA

NOTE ONLY THE PITCH ERROR CHANNEL IS SHOWN. THE ROLL AND YAW CHANNELS ARE SIMILAR TO THE PITCH CHANNEL.

POWER SUPPLY

800 CPS

REGULATED DC

+28 VDC PRIMARY POWER

15 KPPS FROM INSTRUMENTATION

ATTITUDE AND TRANSLATION CONTROL ASSEMBLY BLOCK DIAGRAM
TRANSLATION SELECT

VERTICAL JET SELECT LOGIC

- INDICATES INVERTING TERMINAL
+ INDICATES NON-INVERTING TERMINAL

Q PITCH

R ROLL

X TRANS.

S&C CONT. ROTATION SELECT (VERT)

TWO JET TRANSLATION SELECT

TWO JET ASSY.

CONTROL PANEL

I'M + IU

+ IU - D

+ III U - III D

+ II U - D

+ IU - D

- MD

JET + IU U - IV D

K1

K2

CONTROL PANEL

TWO JET TRANSLATION SELECT

T30405-72
SEPT 66
HORIZONTAL JET SELECT LOGIC

P YAW

Y TRANS.

Z TRANS.

- INDICATES INVERTING TERMINAL
+ INDICATES NON-INVERTING TERMINAL

T-0405-71
APRIL 66
MAIN PROPULSION, CONTROL ASSEMBLY LOGIC
DESCENT ENGINE GIMBAL DRIVE ACTUATOR

130405-82
MAY 66
13° ±  PITCH PIVOT

PUSH TO TALK SWITCH

NEUTRAL POSITION OF GRIP ABOUT PITCH AXIS

+ X VEHICLE DIRECTION

- PITCH

+ Z VEHICLE DIRECTION

ROLL AXIS

YAW AXIS

PITCH PIVOT

ACA MANIPULATION

T30405-79
APRIL 66
ACA PROPORTIONAL CONTROL
TTCA THROTTLE TRANSDUCER INTERFACE
1. ALIGNMENT MODE
   a) SUBMODES OF THE ALIGNMENT MODE:
      IMU ALIGN SUBMODE
      LUNAR ALIGN SUBMODE
      ORBITAL ALIGN SUBMODE

2. INERTIAL REFERENCE MODE
   a) SUBMODES OF THE INERTIAL REFERENCE MODE:
      FOLLOW-UP SUBMODE
      ATTITUDE HOLD SUBMODE
      SEMI-AUTOMATIC SUBMODE
      AUTOMATIC SUBMODE
      ACQUISITION SUBMODE

AGS OPERATING MODES
EULER ANGLES
SIMPLIFIED COMPUTER BLOCK DIAGRAM
ABORT ELECTRONICS ASSEMBLY

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AEA INTERFACE

T30405-108
MAY 66
FROM I28-KPPS AEA

T30405-109
MAY 66

ASA BLOCK DIAGRAM

FROM I28-KPPS AEA

FREQUENCY DIVIDER

X-AXIS GYRO LOOP

GYRO OUTPUT SIGNAL

PULSE TORQUE SERVO AMPLIFIER

TORQUE FDBK PULSES

ANGULAR INCREMENTS TO AEA

Y-AXIS GYRO LOOP (SAME AS X-AXIS LOOP)

Z-AXIS GYRO LOOP (SAME AS X-AXIS LOOP)

X-AXIS ACCEL

ACCEL OUTPUT SIGNAL

PULSE TORQUE SERVO AMPLIFIER

TORQUE FDBK PULSES

VELOCITY INCREMENTS TO AEA

Y-AXIS ACCEL (SAME AS X-AXIS ACCEL)

Z-AXIS ACCEL (SAME AS X-AXIS ACCEL)

+28V DC

POWER SUPPLY SUBASSEMBLY

400 AND 8000 CPS TIMING REF.

TEMPERATURE CONTROL

+28V DC

SUBASSEMBLY

OD

V

V

V

V

+28V DC

POWER SUPPLY SUBASSEMBLY

400 AND 8000 CPS TIMING REF.

TEMPERATURE CONTROL

+28V DC

SUBASSEMBLY

OD

V

V

V

V

T30405-109
MAY 66
DATA IN
FROM AEA
SHIFT IN
SHIFT OUT
CLOCK 128 KPPS

DATA STORAGE

DATA IN
SHIFT PULSES
DATA

DATA TRANSFER
CONTROL
LOGIC

PLACE
SELECTION
BLANKING AND
ERROR
DETECTION
LOGIC

12 PUSH
BUTTONS
0-9,+,-

INDICATOR

TO AEA

READ OUT
ENTER
CLEAR
HOLD

4 PUSH
BUTTONS
READ OUT,
ENTER, CLEAR
AND HOLD

OPERATOR
ERROR

DATA DISPLAY

DATA DISPLAY

SIGN DISR

DATA DISPLAY

BLANKING AND
ERROR
DETECTION
LOGIC

DEDA BLOCK DIAGRAM

T30405-110
MAY 66