

DRAWING NO. 2007243

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
1/11/66	A	25162	3, 6, 8, 13	OK/AC	WK ACM
3/29/66	B	27472	3	OK/AC	WK --
5/3/66	C	28460	3, 13	OK/AC	WK --
5/11/66	D	28705	3	OK/AC	MGM ---
6/8/66	E	29540	14	OK/AC	MGM ---
6/28/66	F	29833	13		MGM ---
7/21/66	G	30245	8	OK/AC	EA --
9/29/66	H	31392	3, 13	OK/AC	MGM EA --

**This specification consists of page 1 to 14 inclusive.**

APPROVALS	NASA/MSC	W. R. / 4-19 Oct 65 L. R. / 19 Oct 65 MIT/IL	D. Grassell R. Muna ACSP
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NOT REQUIRED PER LETTER  
NASA PP7-65-612

### 3. REQUIREMENTS

#### 3.1 Performance

3.1.1 Inputs. The assembly shall function as specified herein with the following inputs:

- a.  $28 \pm 4$  vdc
- b. 0-6V rms,  $800 \pm 8$  cps sine wave
- c.  $4.0 \pm 0.1$  vdc,  $4K\Omega \pm 10\%$  source impedance

#### 3.1.2 Characteristics

3.1.2.1 Gain. The gain of each amplifier shall be within  $\pm 0.03$  percent of the nominal values specified in Table I with the exception that the outputs at pins 237 and 229 shall be within  $\pm 5$  percent of the nominal values, the outputs of pins 253 and 218 shall be within  $\pm 0.2$  percent of the nominal values, and the outputs at pins 261, 211, 230 and 238 shall be within  $\pm 0.1$  percent of the nominal values during measurements of zero degrees phase.

3.1.2.2 Gain Stability. The amplifier gains under the conditions specified in Table II shall be within  $\pm 0.5$  percent of the corresponding gain values determined under the conditions specified in Table I when dc supply voltages are  $24.0 \pm 0.5$  vdc and  $32.0 \pm 0.5$  vdc and when the input signal level is  $2.5 \pm 0.1$  V rms.

3.1.2.3 Gain Linearity. The gain linearity of each amplifier input specified in Table II at 1.5, 3.5 and 5.0V rms input shall be within  $\pm 0.05$  percent of the gain obtained at an input of  $2.5 \pm 0.1$  V rms.

3.1.2.4 Phase Shift. The output phase shift of each amplifier at the output levels specified in 3.1.2.3 shall be as specified in Table I.

#### 3.2 PRODUCT CONFIGURATION

3.2.1 Drawings. The configuration of the assembly shall be in accordance with APOLLO G&C Drawings 2007243 and all drawings and engineering data referenced thereon.

3.2.2 Maximum Weight. - The maximum weight of the assembly shall be 0.62 lb.

3.2.3 Standards of Manufacturing, Manufacturing Process and Production

3.2.3.1 Insulation Resistance. The resistance between pin 151 and the remaining assembly pins shall be not less than 100 megohms.

TABLE I (Continued)

INPUT SIGNAL PINS		4. 0±0.1 VDC TO PINS		PINS CONNECTED		OUTPUT			
						Pins		Gain	Phase Shift ("±2")
239	250	124 133 138 131	260	234 226 238 232 235	228 233 217 225 227	227	250	0.830970	180
239	250	133 131 138 127	260	↑ 231 227	↑	225	250	0.830970	180
239	250	133 131 127 134	260	↑	↑	238	250	0.830500	0
219	250	127 134 138 124	260	↑	↑	230	250	0.830500	0
222	250	127 134 124 133	260	↑	↑	238	250	0.980160	180
219	250	127 134 124 133	260	↑	↑	238	250	0.830970	180
220	250	127 134 124 133	260	↑	↑	238	250	0.555200	180
223	250	127 134 124 133	260	↑	↑	238	250	0.195000	180
219	250	127 124 133 138	260	↑	↑	237	250	0.075200	180
219	250	127 124 133 138	260	↑	↑	234	250	0.830970	180
219	250	127 124 138 134	260	234 226 238 232 235	228 233 217 225 227	233	250	0.830970	180

3.2.3.2 Continuity and DC Resistance. Continuity and dc resistance shall be as specified in Table III.

TABLE III  
 DC RESISTANCE

PINS		RESISTANCE (OHMS)
From	To	
151	Chassis	$\leq 0.5$
264	163	$\leq 0.5$
207	210	$\leq 0.5$
260	264	$\geq 100$ meg
264	207	$\geq 100$ meg
207	250	$\geq 100$ meg

4.2.3 Insulation Resistance. The insulation resistance between pin 151 and the remaining assembly pins shall be greater than 100 megohms when measured in accordance with Method 302 of Standard MIL-STD-202. The megohmmeter used shall have an output voltage of  $225 \pm 75$  vdc limited to a short circuit current of  $6.0 \mu\text{a}$ .

4.2.4 Continuity and DC Resistance. The DC resistance between the points specified in Table III shall be measured in accordance with Method 303 of Standard MIL-STD-202 and shall be as specified in Table III. To assure a good electrical connection to the chassis, the anodizing may be penetrated.

4.2.5 Gain. With  $28.0 \pm 0.5$  vdc applied to pins 265, 208, 149 and 109 (Hi), and 163, 210, 260, 250 and 140 (Lo), an  $800 \pm 8$  cps input signal adjusted to  $2.5 \pm 0.1$  V rms and a  $4.0 \pm 0.1$  vdc voltage applied and pins connected as specified in Table I, the gain shall be within  $\pm 0.03$  percent of the nominal values specified in Table I with the exception that the gain at pins 237 and 229 shall be within  $\pm 5$  percent of the nominal values, the gain at pins 253 and 218 shall be within  $\pm 0.2$  percent of the nominal values, and the gain at pins 261, 211, 230, and 238 shall be within  $\pm 0.06$  percent of the nominal values during measurements of zero degrees phase. The dc level at the outputs shall not exceed 0.5 vdc.

4.2.6 Gain Stability. With the conditions specified below established, the gains shall be within  $\pm 0.5$  percent of the corresponding gains obtained in 4.2.5. Under these same conditions, except with a supply voltage of  $32.0 \pm 0.5$  vdc, gains shall again be within  $\pm 0.5$  percent of the corresponding gains obtained in 4.2.5.

- a. A supply voltage of  $24.0 \pm 0.5$  vdc applied to pins 265, 208, 149 and 109 (Hi) and 163, 210, 260, 250 and 140 (Lo).
- b.  $4.0 \pm 0.1$  vdc applied to the pins specified in Table II.
- c. An input signal of  $2.5 \pm 0.1$  V rms applied to the inputs as specified in Table II.

4.2.7 Gain Linearity and Phase Shift. With the conditions specified below established, the gain shall be within  $\pm 0.05$  percent of the corresponding gain obtained in 4.2.5 and the phase shift shall be within the corresponding phase tolerance specified in Table I.

- a.  $28.0 \pm 0.5$  vdc applied to pins 265, 208, 149 and 109 (Hi), and 163, 210, 260, 250 and 140 (Lo).
- b.  $4.0 \pm 0.1$  vdc applied to the pins specified in Table II.
- c. An  $800 \pm 8$  cps signal of  $1.50 \pm 0.05$ ,  $3.50 \pm 0.05$ ,  $5.0 \pm 0.1$  V rms applied to the inputs, specified in Table II.

4.2.8 Weight. The assembly shall be weighed to determine that the weight of the assembly is less than 0.62 lb.

5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND1002214.

6. NOTES. None.

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