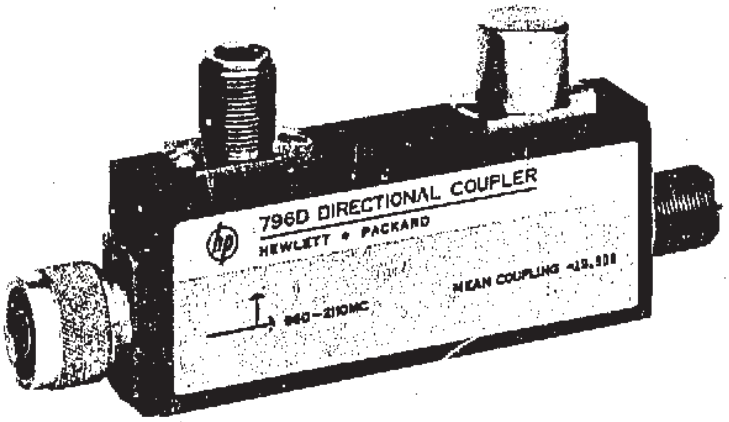
OPERATING NOTE

DIRECTIONAL COUPLERS

796D
797D
798C



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HEWLETT PACKARD

HP 79
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1. INTRODUCTION.

2. The 790 series of directional couplers is useful in any application requiring directional couplers. In these couplers, output coupling (ratio of output power from main line and auxiliary arm) is specified rather than coupling factor. Thus, no correction factor is required to account for insertion and coupling losses in the primary arm. The mean output coupling of each arm coupler is stamped on its nameplate. The variation in output coupling is within ±0.2 dB (±0.3 dB, 798C) of mean value. In addition, the mean output coupling should always be within ±0.5 (±0.3 dB, 798C) of the specified output coupling value. Complete specifications are given in Table 1.

3. Each coupler covers a frequency range of more than 2:1. The units are feed-thru devices capable of handling up to 50 watts (10 watts, 798C) with an insertion loss of less than 0.5 dB (0.8 dB, 798C). Because of the flat frequency-response (output coupling) and high directivity, these couplers are ideal for closed-loop leveling applications.

Table 1. Specifications

Frequency Range:
- 796D: 0.96 to 2.11 GHz
- 797D: 1.9 to 4.1 GHz
- 798C: 3.7 to 8.3 GHz

Mean Output Coupling[1]:
- 796D: 20 dB ±0.5 dB
- 797D: 20 dB ±0.5 dB
- 798C: 10 dB ±0.3 dB

Output Coupling Variation[2]:
- 796D: ±0.2 dB
- 797D: ±0.2 dB
- 798C: ±0.3 dB

Directivity[2]:
- 796D: 30 dB
- 797D: 26 dB
- 798C: 20 dB

Equivalent Source Reflection Coefficient[2,3]:
- 796D: ≤0.06 (1.13 SWR)
- 797D: ≤0.075 (1.16 SWR)
- 798C: ≤0.111 (1.25 SWR)

Maximum Auxiliary Arm SWR:
- 796D: 1.20[2]
- 797D: 1.25[2]
- 798C: 1.20[2]

Maximum Primary Line SWR:
- 796D: 1.15[2]
- 797D: 1.15[2]
- 798C: 1.20[2]

Maximum Input:
- 796D: 50 watts
- 797D: 50 watts
- 798C: 10 watts

Primary Line Insertion Loss Including Loss Due to Coupling:
- 796D: 0.4 dB maximum
- 797D: 0.5 dB maximum
- 798C: 0.8 dB maximum

Connectors:
Type N stainless steel, compatible with connectors whose dimensions conform to MIL-C-39012 or MIL-C-71. Primary line: male input, female output. Auxiliary line: female.

Size:
- 796D: 152 x 29 x 62 mm (6 x 1-1/8 x 2-7/16 in.)
- 797D: 124 x 29 x 62 mm (4-7/8 x 1-1/8 x 2-7/16 in.)
- 798C: 124 x 29 x 99 mm (4-7/8 x 1-1/8 x 3-7/8 in.)

Weight:
- 796D: 0,5 kg (Net, 1 lb)
- 797D: 0,5 kg (Net, 1 lb)
- 798C: 0,5 kg (Net, 1 lb

[1] Difference in dB between power out of main and auxiliary arms.

[2] Swept-frequency tested.

[3] The apparent reflection coefficient at the output port of a directional coupler when it is used in a closed-loop leveling system.