

# Keysight 772D, 773D

## Directional Couplers

2 to 18 GHz

Technical Overview



# Introduction

## New Performance Standards in Microwave Couplers

The Keysight Technologies, Inc. 772D dual directional coaxial coupler and 773D directional coupler are high directivity couplers designed for broadband swept reflectometer measurements and leveling applications in the 2 to 18 GHz frequency range. With their wide frequency coverage, one of these couplers can replace several couplers without performance degradation, thus adding convenience and economy by reducing setup and calibration time. The high directivity and low main line SWR make it possible to achieve excellent source match. The smaller size and light weight of the 773D directional coupler make it much easier to use on the bench. The addition of threaded mounting holes makes it an ideal candidate for use inside equipment in leveling loop applications. Low SWR and flat coupling variation from 2 to 18 GHz and high power capability make these couplers ideal for your most demanding measurement needs.

|   | <b>Keysight 772D</b>   | <b>Keysight 773D</b>  |
|---|--|---|
| <b>Description</b>                                    | Dual directional coupler   | Directional coupler   |
| <b>Frequency range</b>                                | 2 to 18 GHz  | 2 to 18 GHz   |
| <b>Minimum directivity</b>                            | 39 dB (0.1 – 2 GHz) typical<br>30 dB (2 – 12.4 GHz)<br>27 dB (12.4 – 18 GHz)<br>20 dB (18 – 20 GHz) typical  | 39 dB (0.1 – 2 GHz) typical<br>30 dB (2 – 12.4 GHz)<br>27 dB (12.4 – 18 GHz)<br>21 dB (18 – 20 GHz) typical               |
| <b>Maximum main line SWR</b>                          | 1.05 (0.1 – 2 GHz) typical<br>1.28 (2 – 12.4 GHz)<br>1.40 (12.4 – 18 GHz)<br>1.29 (18 – 20 GHz) typical  | 1.04 (0.1 – 2 GHz) typical<br>1.21 (2 – 12.4 GHz)<br>1.27 (12.4 – 18 GHz)<br>1.16 (18 – 20 GHz) typical                   |
| <b>Maximum coupled line SWR</b>                       | 1.08 (0.1 – 2 GHz) typical<br>1.30 (2 – 12.4 GHz)<br>1.40 (12.4 – 18 GHz)<br>1.17 (18 – 20 GHz) typical  | 1.07 (0.1 – 2 GHz) typical<br>1.30 (2 – 12.4 GHz)<br>1.40 (12.4 – 18 GHz)<br>1.17 (18 – 20 GHz) typical                   |
| <b>Nominal coupling (dB)<sup>4</sup></b>              | 20 ± 1 dB (2 – 18 GHz)   | 20 ± 1 dB (2 – 18 GHz)  |
| <b>Max. coupling variation with Freq.<sup>4</sup></b> | <±1.0 dB or 2 dB peak-to-peak<br>(2 – 18 GHz)  | <±1.0 dB or 2 dB peak-to-peak<br>(2 – 18 GHz)   |
| <b>Tracking between auxiliary arms</b>                | <±0.7 dB <sup>1,2</sup>  | N/A <sup>2</sup>  |
| <b>Maximum main line residual loss</b>                | <0.26 dB (0.1 – 2GHz) typical<br><1.5 dB (2 – 18 GHz)  | <0.15 dB (0.1 – 2 GHz) typical<br><0.9 dB (2 – 18 GHz)<br><0.9 dB (18 – 20 GHz) typical                                   |
| <b>Main line power handling</b>                       | 0.1–2 GHz 100 W (50 dBm) average typical<br>250 W (54 dBm) peak <sup>3</sup> typical<br>2–18 GHz 50 W (47 dBm) average<br>50 W (47 dBm) average<br>250 W (54 dBm) peak <sup>3</sup><br>18–20 GHz N/A | 100 W (50 dBm) average typical capability<br>250 W (54 dBm) peak <sup>3</sup> typical<br>250 W (54 dBm) peak <sup>3</sup> |
|   | 50 W (47 dBm) average typical<br>N/A   | 250 W (54 dBm) peak <sup>3</sup> typical  |
| <b>Net weight</b>                                     | 2.6 kg   | 0.8 kg  |
| <b>Dimensions (cm)</b>                                | 39.1 (L) x 13.34 (W) x 4.13 (H)  | 18.4 (L) x 10.5 (W) x 3.0 (H)   |

1. With test port shorted and not including source match ripple.
2. Typical relative tracking between 772D and 773D is <±0.7 dB.
3. Peak power duration of 10 μs
4. Nominal coupling = (Max. coupling + Min. coupling)/2

## Connectors

### Keysight 772D

Test port APC-7; input, incident, and reflected ports Type-N (F)

### Keysight 773D

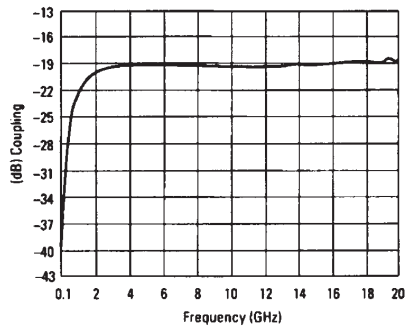
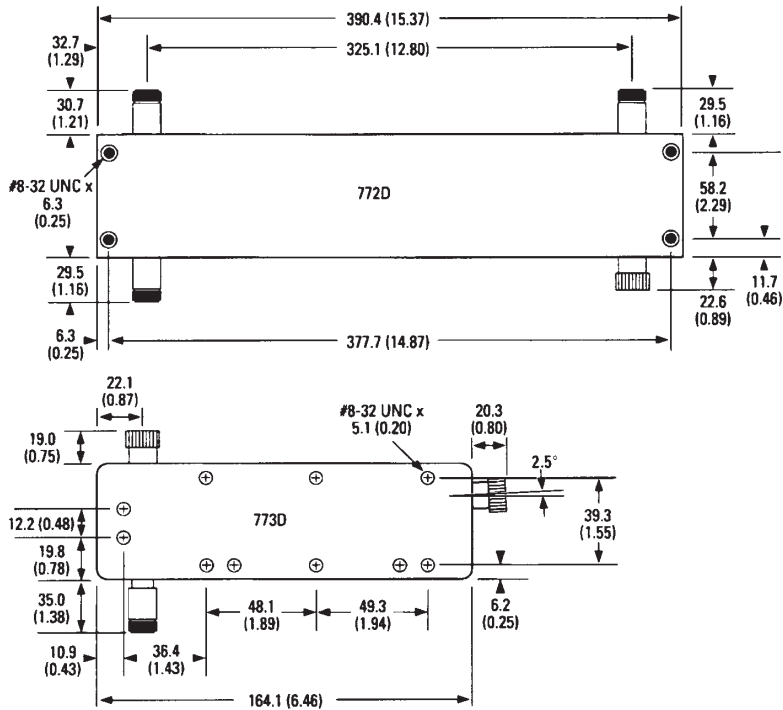
Input and output ports APC-7; coupled port Type-N (F)

### Keysight 772D, 773D Option 001

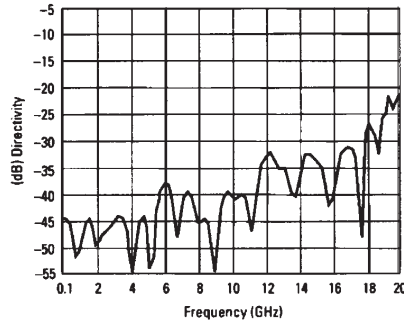
All connectors Type-N (F)

## Outline Drawings

### Dimensions in millimeters (inches)



Typical coupling



Typical directivity

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