

OPERATION AND MAINTENANCE MANUAL FOR POWER SPLITTERS



Figure 1. ANRITSU Power Splitters, N241A50, K241C, V241C

1. INTRODUCTION

This manual describes the N241, K241 and V241 Series Power Splitters (Figure 1). It provides specifications and a list of precautions the user should observe when using them.

2. DESCRIPTION

These series of precision power splitters are produced in four models:

- N241A, dc to 3000 MHz using N Connectors
- K241B, dc to 26.5 GHz using K Connectors®
- K241C, dc to 40 GHz using K Connectors®
- V241C, dc to 65 GHz using V Connectors®

All models are symmetrical, two-resistor designs that can be used in applications where signals must be accurately divided for ratio measurements. K Connectors are compatible with 3.5 mm and SMA. V Connectors are compatible with 2.4 mm connectors. The N241A Power Splitters are available in 50 or 75

Ohm models and provide excellent flatness and effective output SWR.

3. SPECIFICATIONS

Table 2 provides performance specifications. Figures 2 and 3 provide outline drawings.

4. PRECAUTIONS

ANRITSU precision power splitters are high-quality, precision laboratory components and should receive the same care and respect afforded other such devices. Complying with the following precautionary notes will guarantee longer component life and less equipment downtime due to connector failure. Also, such compliance will ensure that RF component failures are not due to misuse or abuse — two failure modes not covered under the ANRITSU warranty.

The Anritsu logo is displayed in a large, bold, sans-serif font. It is centered between two horizontal lines that extend across the width of the page.

a. Beware of Destructive Pin Depth on Mating Connectors. Measure the pin depth of the connector that mates with the RF component, *before* mating. Use an ANRITSU Pin Depth Gauge (Figure 2, Table 1) or equivalent. Based on RF components returned for repair, destructive pin depth on mating connectors is the major cause of failure in the field. When an RF component connector is mated with a connector having a destructive pin depth, damage will likely occur to the RF component connector. (A destructive pin depth has a center pin that is too long in respect to the connector's reference plane.)

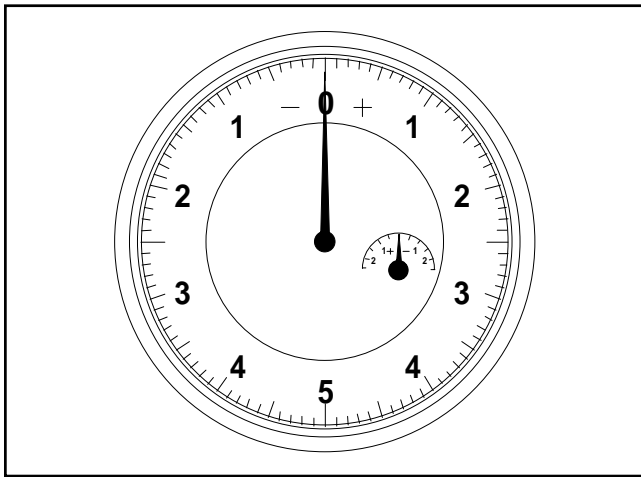


Figure 2. Pin Depth Gauge

Table 1. Available Gauging Sets

Model	Connector Type	Gauging Set Model
N241X	N	01-162
K241X	K	01-162
V241C	V	01-322

The center pin on an RF component connector has a precision tolerance measured in mils (1/1000 inch), whereas connectors on test devices that mate with RF components may not be precision types. Their pins may not have the proper depth. *They must be measured before mating to ensure suitability.* When gauging pin depth, if the test device connector measures out of tolerance in the “+” region, the center pin is too long. Mating under this condition will likely damage the RF component connector. On the other hand, if the test device connector measures out of tolerance in the “-” region, the center pin is too short. While this will not cause any damage, it will

result in a poor connection and a consequent degradation in performance.

The pin depth for all power splitter models are as shown:

K241: 0.000 to -0.005

V241: 0.000 to -0.004

b. Avoid Over Torquing Connectors. Over torquing connectors is destructive; it may damage the connector center pin. *Never* use pliers to tighten connectors.

c. Avoid Mechanical Shock. RF components are designed to withstand years of normal bench handling. However, do not drop or otherwise treat them roughly. They are laboratory-quality devices and, like other such devices, require careful handling.

d. Keep Power Divider Connectors Clean. The precise geometry that makes the RF component's high performance possible can be easily disturbed by dirt and other contamination adhering to connector interfaces. When not in use, keep the connectors covered. Refer to paragraph 5 for cleaning instructions.

5. MAINTENANCE

ANRITSU recommends that no maintenance other than cleaning be attempted by the customer. The power divider should be returned to ANRITSU for repair and/or service when needed.

The traditional method of cleaning K Connectors with a cotton swab and alcohol can break the connector pin on the precision connector. Reason: The cotton swab has a larger diameter than the connector (that is, the area between the inner wall and the center pin.)

We still recommend using a cotton swab; however, you need to trim the swab before inserting into the connector.

A cotton swab must never be used to clean V Connectors; use a pinch of cotton held with fine-pointed tweezers.

Table 2. Performance Specifications, 1 of 2

Model	N241A50	N241A75
Frequency Range:	DC to 3000 MHz	DC to 3000 MHz
Input SWR	1.3	1.4
Effective Output SWR	1.3	1.4
Insertion Loss	7.5 dB	7.5 dB
Flatness	±1.5 dB	±1.5 dB
Impedance	50 Ohms	75 Ohms
Connectors	Input: N female Output: N female	Input: N female Output: N female

Model	Frequency Range (GHz)	Impedance (Ohms)	Connectors	
			Input	Output
K241B	DC to 26.5	50	K male	K female
K241C	DC to 40	50	K male	K female
V241C	DC to 65	50	V male	V female

Model	Frequency Range (GHz)	Flatness (dB)	Input SWR	Effective Output SWR	Insertion Loss (dB)
K241B	DC to 26.5	2.0	1.45	1.45	7.5
K241C	DC to 26.5	2.0	1.45	1.45	7.5
	26.5 to 40	2.0	1.93	1.70	8.5
V241C	DC to 18	2.0	2.11	2.00	8.5
	18 to 40	2.0	2.33	2.30	9.5
	40 to 65	2.0	2.62	2.60	10.5

Maximum Input Power (All Models): 1 W (10 W maximum)

Weight (K and V Models): 43 grams (1.5 ounces)

Some precautions to follow when using the power divider:

Use either the finger saver that has been provided with the power divider or use a 5

inch-pound torque wrench when connecting to other devices. No other tools are recommended.

Always spin the coupling nut to tighten connections. Spinning the connector body causes premature wear to the connector interface.

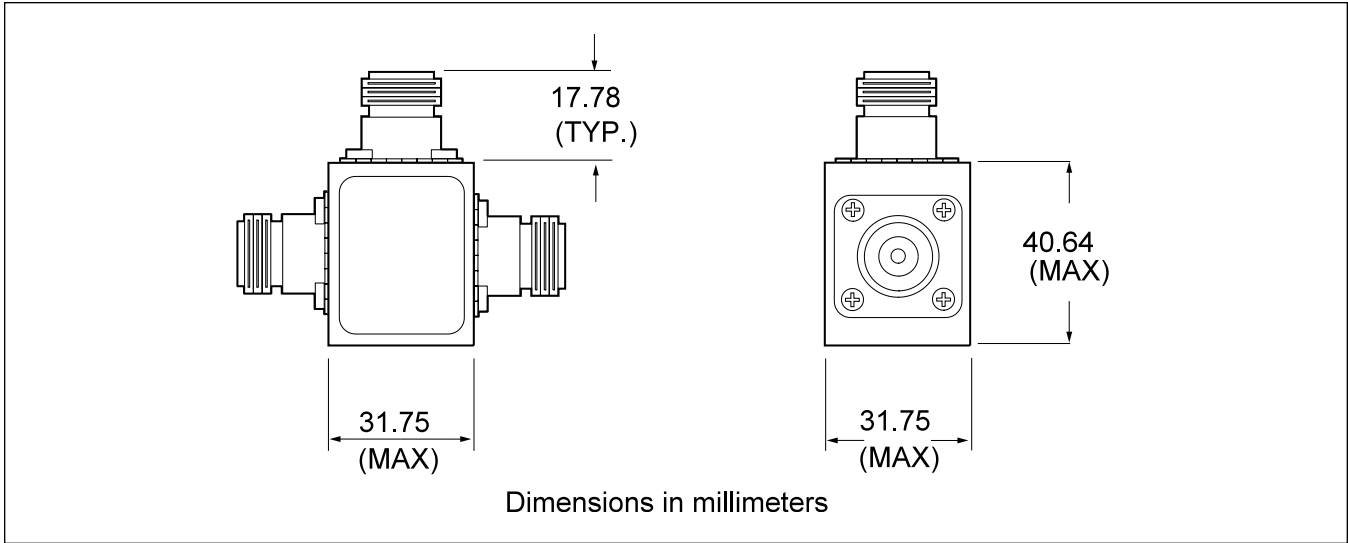


Figure 2. N241A50, N241A75 Outline

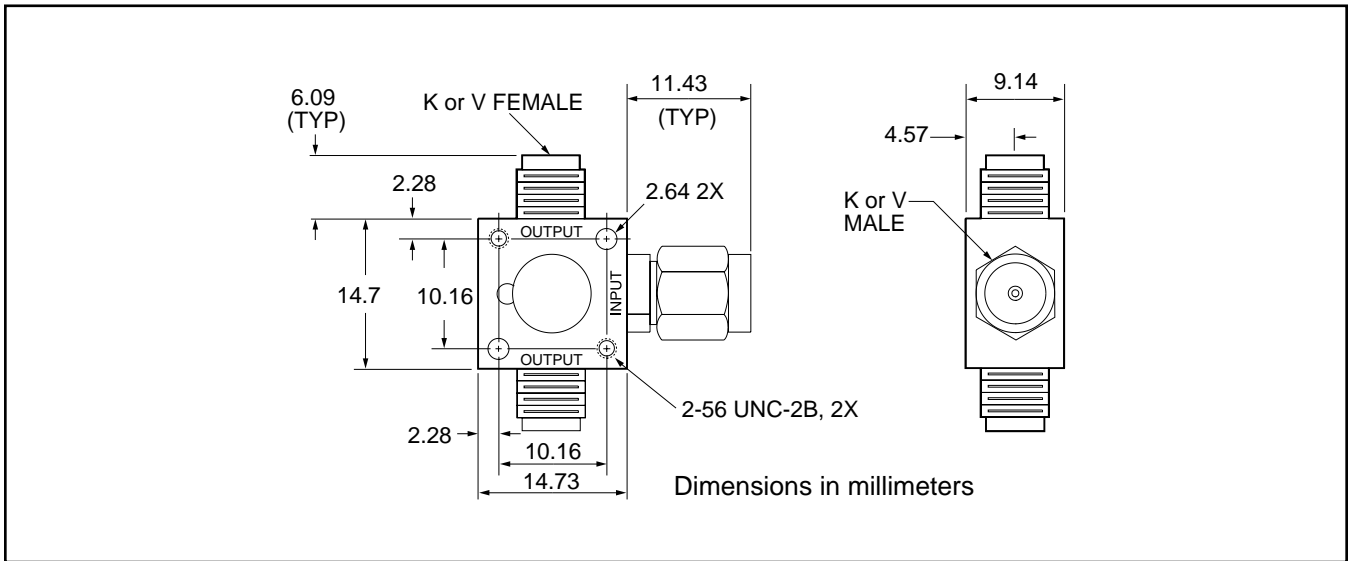


Figure 3. K241X, V241X Outline