OPERATING AND MAINTENANCE MANUAL FOR POWER DIVIDERS

1. INTRODUCTION

This manual describes the 11, K240 and V240 Series Power Dividers (Figure 1). It provides specifications and a list of precautions the user should observe when using them.

Figure 1. Model V240 Series Power Divider

2. DESCRIPTION

ANRITSU precision power dividers are produced in three models:

- 11 Series, DC to 3000 MHz using N connectors
- K240B, DC to 26.5 GHz using K Connectors®
  K240C, DC to 40 GHz using K Connectors
- V240C, dc to 65 GHz using V Connectors®

All models are symmetrical, three-resistor tee designs that can be used in applications where signals must be accurately divided or combined. K Connectors are compatible with GPC–3.5 and SMA. V Connectors are compatible with GPC 2.4 connectors. All three models have exceptional amplitude and tracking characteristics.

3. SPECIFICATIONS

Table 3 provides performance specifications.

4. PRECAUTIONS

ANRITSU precision power dividers 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.

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.)

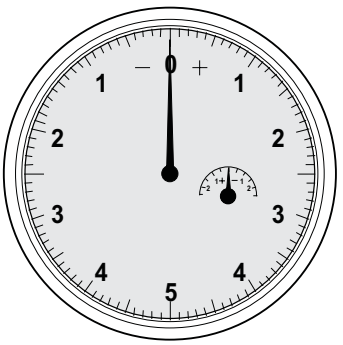

Figure 2. Pin Depth Gauge

Table 1. Available Gauging Sets

Model	Connector Type	Gauging Set Model	Zeroing Block
11 Series	N female	SC6311	SC6312
K240X	K female	SC7738	SC7736
V240C	V female	SC6982	SC7736

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

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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 divider models shown in Table 2.

Table 2. Power Divider Pin Depth Measurements

Model	Pin Depth (Inch)
11 Series	0.207 to 0.187
K240X	0.000 to –0.005
V240C	0.000 to –0.005

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 the next section 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. The cotton swab has a larger diameter than the area between the inner wall and the center pin of the power divider connectors.

ANRITSU still recommends using a cotton swab; however, you need to trim the swab before inserting it into the connector.

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

Some precautions to follow when using the power divider:

- Use either the finger saver that has been provided with the power divider or use an 8 inch-pound torque wrench for V and K connectors or a 12 inch-pound for N connectors when connecting the power divider 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.

Table 3. Performance Specifications

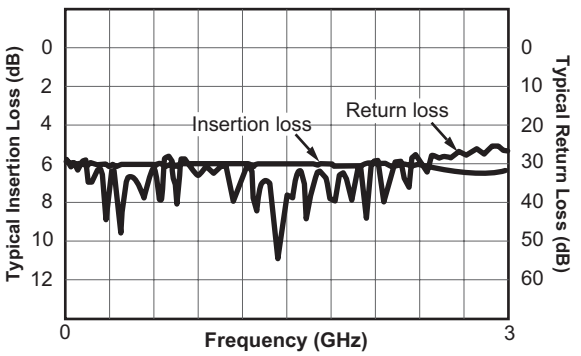
Model	Frequency Range (GHz)	SWR	Insertion Loss (dB max.)	Impedance (Ohms)	Connectors	
					Input	Output
11N50B	DC to 3	< 1.25	7	50	N female	N female
11N75B				75		

Model	Frequency Range (GHz)	Impedance (Ohms)	Connectors	
			Input	Output
K240B	DC to 26.5	50	K female	K female
K240C	DC to 40			
V240C	DC to 65		V female	V female

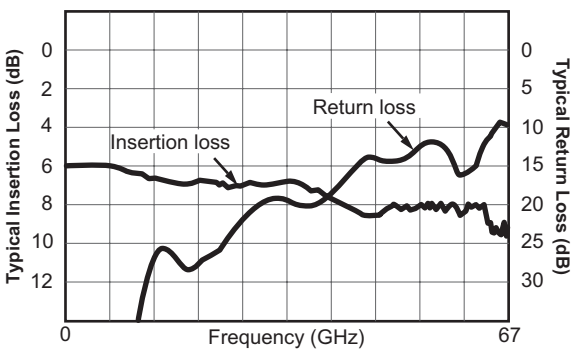
Frequency Range (GHz)	Tracking Outputs		Insertion Loss (dB max.)	SWR
	Amplitude	Phase		
DC to 6	± 0.3 dB	± 2º	7	1.2
6 to 18	± 0.3 dB	± 3º	7.5	1.4
18 to 26.5	± 0.6 dB	± 4º	8	1.5
26.5 to 40	± 0.6 dB	± 6º	8.5	1.7
40 to 65	± 1.5 dB	± 15º	10	2.7

Maximum Input Power: 1 W

Weight: 43 grams (1.5 ounces)



11N50B



V240C

Figure 3. Return Loss and Insertion Loss (Typical)

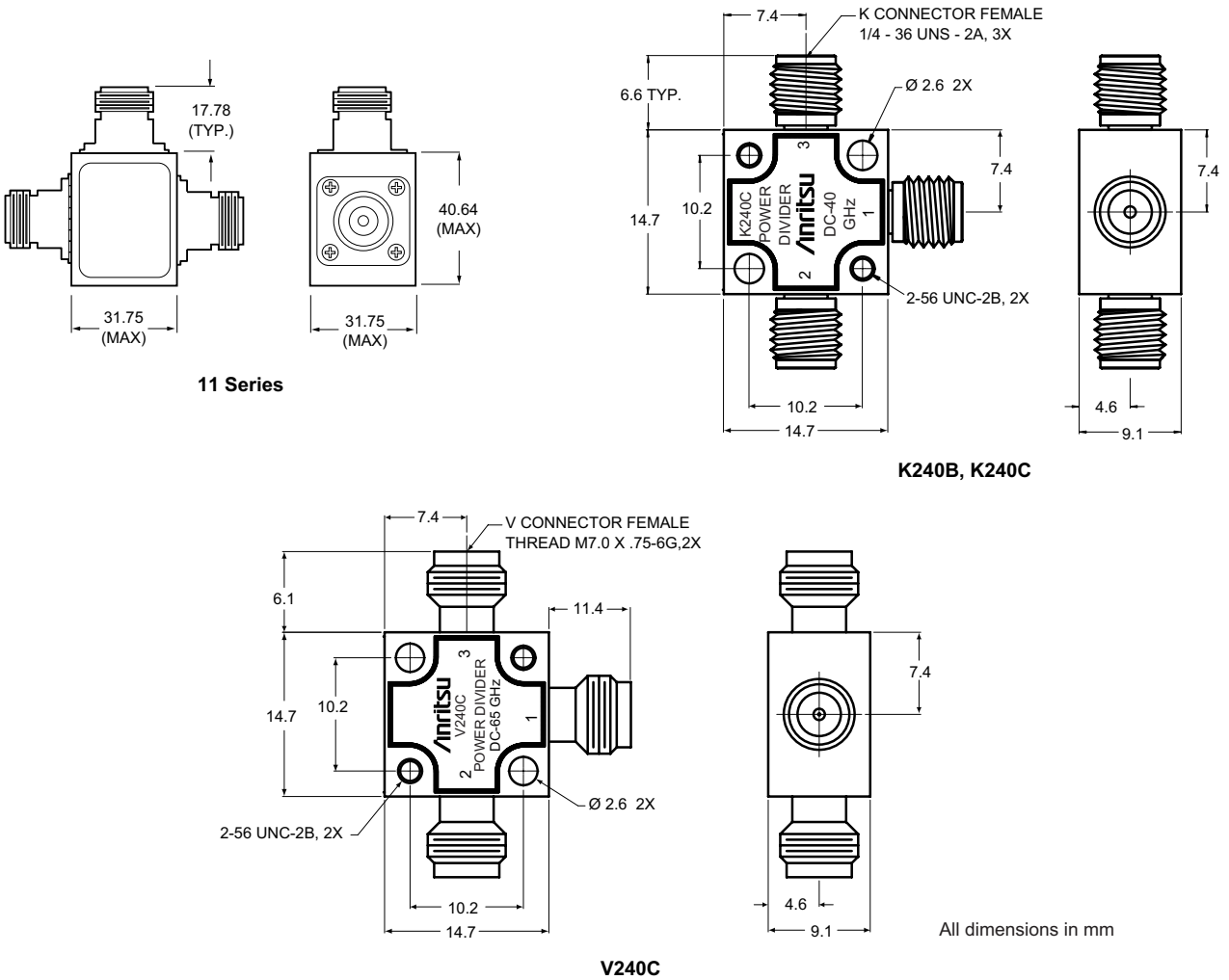


Figure 4. Outline Dimensions

WARRANTY

Anritsu power dividers are warranted against defects in materials and workmanship for one year from the date of shipment. Anritsu's obligation covers repairing or replacing products which prove to be defective during the warranty period. Buyers shall prepay transportation charges for equipment returned to Anritsu for warranty repairs. Obligation is limited to the original purchaser. Anritsu is not liable for consequential damages.

LIMITATION OF WARRANTY

The foregoing warranty does not apply to Anritsu connectors that have failed due to normal wear. Also, the warranty does not apply to defects resulting from improper or inadequate maintenance by the Buyer, unauthorized modification or misuse, or operation outside of the environmental specifications of the product. No other warranty is expressed or implied, and the remedies provided herein are the Buyer's sole and exclusive remedies.

NOTICE

Anritsu Company has prepared this manual for use by Anritsu Company personnel and customers as a guide for the proper installation, operation and maintenance of Anritsu Company equipment and computer programs. The drawings, specifications, and information contained herein are the property of Anritsu Company, and any unauthorized use or disclosure of these drawings, specifications, and information is prohibited; they shall not be reproduced, copied, or used in whole or in part as the basis for manufacture or sale of the equipment or software programs without the prior written consent of Anritsu Company.

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