

Introduction:

Mini Circuits manufactures a comprehensive line of connector gauges for measuring the critical interface dimensions of coaxial connectors .Testing the interfaces of connectors on any device at incoming inspection is not only highly recommended, it is definitely a necessity. Interfaces, not meeting the specifications will lead to degraded specification of the components. In addition, these out of specification interfaces may damage the connectors of mating components or ruin the connectors of the test equipment. These connector gauges consist of an exclusively developed dial indicator with appropriate bushings and pins, designed to mate with the specific connector under test. The indicator is set to zero by a calibration block (master).When engaged to a connector, it measures the specific interface dimension from a reference plane.

Purpose of the Document :

This application note AN-40018 is created to document and maintain the Revision control of the User's manual which are furnished with each Interface mating dimension measuring gage kit as one of the items in the kit .

Presentation of User's manual of each type of gage is compiled on attached sheets .

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Interface dimension measuring gage ACUDIAL –BNCTNC

Manual Revision : OR

Date 10.27.17

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02-DG-001 REV OR

BNC-TNC Connector Gage Kit
ACUDIAL - BNCTNC

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02-DG-001 REV OR

Mini-Circuits® BNC-TNC Connector Gage Kit
ACUDIAL - BNCTNC

Features

- Direct reading
- Quick start up
- Self-Calibration
- Dial Indication
- Accurate
- Easy to Use

Product Overview

Mini-Circuits® ACUDIAL-BNCTNC Series connector gage kit is a push on type gage designed to measure the center contact pin and dielectric location of type BNC and TNC female and male connectors per MIL-PRF-39012F Class 2.

The ACUDIAL-BNCTNC gage kit consists of:

- (1) a dial indicator assembly graduated in 0.001 increments with integral female and male measurement bushings.
- (2) female and male master gage

(3) instruction manual all contained in a solid wooden instrument case (12 x 4 x 3.5 inches).

Before checking the interface dimensions of any connector the dial indicator is set to zero by means of a master gage. After zeroing , the connector is engage on the on the male or female bushing of the gage depending upon the gender of connector. The resultant reading is the actual deviation from the nominal (mean) dimension as indicated in following table 1.

Application

All the coaxial connectors mounted on device cables or any test equipment should always be gaged before mating to insure compliance. Such check helps in averting interfered mating and to assure proper electrical performance and produce accurate test data and preventing damage to the device being tested.

The ACUDIAL-BNCTNC gage kit is the right tool for all of these situations, and can also be used for performing production checkout, incoming inspections, routine quality control, and general laboratory operations.

Compliance

Per ASME B89.1.10M-2001, C5.12
Per ASME B89.1.10M-2001, Table 3
Performance standards are in compliance with ANSI/INCSL 2540-1, MIL-STD-45662A and iso 10012-1.

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BNC Contact Pin Location

Mating surface outer conductor (Ref. Plane)

TNC Contact Pin Location

Mating surface outer conductor (Ref. Plane)

Table 1. Contact Pin Location for BNC/TNC Connectors

Specification	FP	FD	MP	MD
MIL-STD-348A CLASS 2	0.206	0.000 -0.020	0.208	0.000 -0.020
	0.210	+0.020 0.000	0.208	+0.020 0.000

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Master Gages

Fig 2. Gaging a Female BNC/TNC Connector

Table 2. Gage Dimensions Female

Specification	Min. "A"	Max. "A"	Mean "A"
0.206	+0.000 -0.001	0.205	0.206
		0.206	0.2055

Fig 3. Gaging a Male BNC/TNC Connector

Table 3. Gage Dimensions Male

Specification	Min. "B"	Max. "B"	Mean "B"
0.210	+0.001 -0.000	0.210	0.211
		0.211	0.2105

Table 4. BNC Connector Gage Specifications

Characteristics	Limits	Comments
Gage Resolution	0.0001	1/5 Least dial graduation
Gauge Calibration Accuracy	0.00075	1 Least dial graduation plus 0.000250 measurement guard band
Gage Repeatability	0.0001	1/5 Least dial graduation
Master Accuracy	0.000125	0.0001 Range

Total Uncertainty

RSS	0.000763319	(Root sum of squares)
Worst Case	0.0009625	(Sum of all units)

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02-DG-001 REV OR

Interface dimension measuring gage ACUDIAL-N

Manual Revision : OR

Date 10.27.17



03-DG-001 REV OR



03-DG-001 REV OR

N-Type Connector Gage Kit ACUDIAL - N

Features

- Direct reading
- Quick start up
- Self-Calibration
- Dial Indication
- Accurate
- Easy to Use

Product Overview

Mini-Circuits' ACUDIAL-N Series connector gage kit is a push on type gage designed to measure the center contact pin location from the outer conductor mating surface of type N female and male connectors per MIL-PRF-39012 class 2. Refer to dimensions A(MP) and B (MF) in Figure 1. A(MP) and B(MF) dimensions are termed as interface mating dimensions.

Application

All the coaxial connectors mounted on device cables or any test equipment should always be gaged before mating to insure compliance. Such check helps in averting interferred mating and to assure proper electrical performance and produce accurate test data and preventing damage to the device being tested.

The ACUDIAL-N gage kit is the right tool for all of these situations, and can also be used for performing production checkout, incoming inspections, routine quality control, and general laboratory operations.

Compliance

- Per ASME B89.1.10M-2001, C5.12
- Per ASME B89.1.10M-2001, Table 3
- Performance standards are in compliance with ANSINCGL Z540-1, MIL-STD-45662A and ISO 10012-1

Table 1. N-Type Contact Pin Location Dimension

Specification	MP	FP
MIL-STD-348A CLASS 2	0.207	0.210

Table 2. N-Type Connector Gage Specifications

Characteristics	Limits	Comments
Gage Resolution	0.0001	1/5 Least dial graduation
Gage Calibration Accuracy	0.00075	1 Least dial graduation plus 0.000250 meas-
Gage Repeatability	0.0001	1/5 Least dial graduation
Master Accuracy	0.000125	0.0001 Range

Total Uncertainty

RSS 0.000763319 (Root sum of squares)
Worst Case 0.0009625 (Sum of all units)

03-DG-001 REV OR

N-Type Contact Pin Location

Table 3. Gage Dimensions Female

Specification	Min. "A"	Max. "A"	Mean "A"
0.207	+0.000	0.206	0.207
	-0.001		0.2065

Table 4. Gage Dimensions Male

Specification	Min. "B"	Max. "B"	Mean "B"
0.210	+0.001	0.210	0.211
	-0.000		0.2105

03-DG-001 REV OR

Master Gages

Fig 2. Gaging a Female N-Type Connector

Fig 3. Gaging a Male N-Type Connector

03-DG-001 REV OR

Interface dimension measuring gage ACUDIAL-SMA

Manual Revision : OR

Date 10.27.17

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04-DG-001 REV OR

SMA Connector Gage Kit ACUDIAL - SMA

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04-DG-001 REV OR

SMA Connector Gage Kit ACUDIAL - SMA

Features

- Direct reading
- Quick start up
- Self-Calibration
- Dial Indication
- Accurate
- Easy to Use

Product Overview

Mini-Circuits' ACUDIAL-SMA Series connector gage kit is a push on type gage designed to measure the center contact pin and dielectric location of type SMA female and male connectors per MIL-STD-348A, Class 2.

The ACUDIAL-SMA gage kit consists of:

- (1) a dial indicator assembly graduated in 0.001 increments with integral female and male measurement bushings.
- (2) female and male master gage
- (3) instruction manual all contained in a solid wooden instrument case (8.5 x 7 x 3.5 inches)

Before checking the interface dimensions of any connector the dial indicator is set to zero by means of a master gage. After zeroing , the connector is engage on the on the male or female bushing of the gage depending upon the gender of connector The resultant reading is the actual deviation from the nominal (mean) dimension as indicated in following table 1.

Application

All the coaxial connectors mounted on device cables or any test equipment should always be gaged before mating to insure compliance. Such check helps in averting interfered matting and to assure proper electrical performance and produce accurate test data and preventing damage to the device being tested.

The ACUDIAL-SMA gage kit is the right tool for all of these situations, and can also be used for performing production checkout, incoming inspection, routine quality control, and general laboratory operations.

Compliance

Per ASME B89.1.10M-2001, C5.12
Per ASME B89.1.10M-2001, Table 3
Performance standards are in compliance with ANSINCSL 2540-1, MIL-STD-45662A and ISO 10012-1

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SMA Contact Pin Location

Figure 1

Specifications

Specification	FP	FD	MP	MD
MIL-STD-348A CLASS 2	0.010	0.000 Max	0.010	0.000 Max
	0.000		0.000	

Characteristics	Limits	Comments
Gage Resolution	0.0001	1/5 Least dial graduation
Gauge Calibration Accuracy	0.00075	1 Least dial graduation plus 0.000250 measurement guard band
Gage Repeatability	0.0001	1/5 Least dial graduation
Master Accuracy	0.0000125	0.0001 Range

Total Uncertainty

RSS	0.000763319	(Root sum of squares)
Worst Case	0.0009625	(Sum of all units)

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