



TCAS/Transponder Antenna Coupler Instructions

This instruction guide contains basic installation and operating instructions for both the TC-201A and TC-201B TCAS/Transponder Antenna Couplers. See [Figure 1](#).

OVERVIEW

TC-201A/B are designed for temporary coupling to a TCAS or combined TCAS/Transponder antenna to provide an antenna signal connection from the coupler to a test unit.

When installed, the coupler design also provides:

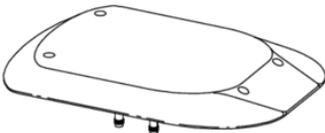
- shielding from outside interference or reflections during testing in a hanger environment.
- attenuation of the transmitted output RF power from the TCAS and Transponder installed on the aircraft being tested to reduce interference to ATC operations or nearby aircraft.

NOTE

Refer to the TC-201A/B Operation Manual for additional details about the device's functions and capabilities.

The TC-201A/B is placed on the top antenna where it is held in place by the weight of the coupler. The coupler can also be fitted to the bottom antenna where it is held in place by its gas-filled shock and pole (accessory).

Table 1 Model-specific Details

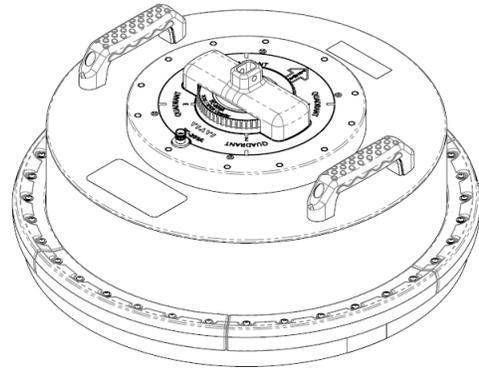
Supported Equipment	TC-201A	TC-201B
 <p>Collins TSA-4100 and Similar</p>	✔	✔
 <p>Honeywell/ACSS AT-910 and Similar</p>	✔	
Minimum Recommended Fuselage Size	106"	92"

PREPARATION FOR USE

Perform the following when the device is received from the factory:

- Verify shipment is complete in accordance with packing list. Report any discrepancies to VIAVI Customer Service.
- Store packing material and shipping container for possible future use.

Figure 1 TC-201A/B



COUPLER KIT CONTENTS

Figure 2

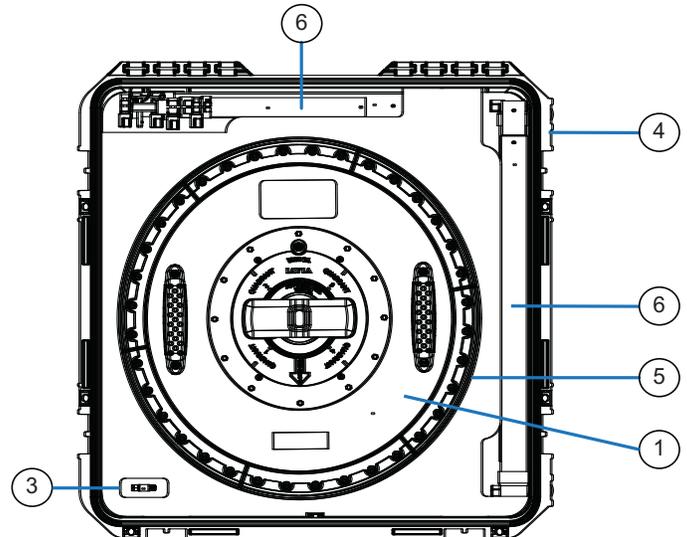


Table 2

Item	Description	Part#
1	TCAS/Transponder Antenna Coupler	
	• TC-201A Kit	140889
	Coupler Only	22130799
	• TC-201B Kit	22163082
	Coupler Only	22163085
2	Transit Case Placard	
	• TC-201A	142840
	• TC-201B	22163111
3	30 dB attenuator	92863
4	Transit Case	142743
5	Coaxial Assembly 50 Ft	142839
6	Extension Pole Kit	142742

CONTROLS AND CONNECTIONS

Figure 3

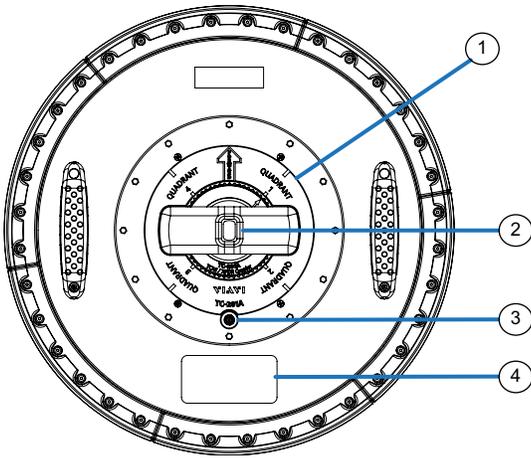


Table 3

Item	Control/Connector
1	Quadrant selection ring
2	Pole Connection Lug
3	RF Connection (TNC)
4	Loss Placard

Figure 4 Loss Placard Example

TCAS		w/30dB Atten	
Antenna	Loss	Distance	Height
ACSS Amplitude	16.8 dB	15 FT	5 FT
Collins Amplitude	16.5 dB	15 FT	2 FT
Collins Phase	19.0 dB	20 FT	3 FT
Honeywell Phase	15.4 dB	13 FT	3 FT
Transponder		w/30dB Atten:	
Antenna	Loss	Distance	Height
ACSS Amplitude	16.1 dB	14 FT	4 FT
Collins Amplitude	18.1 dB	18 FT	2 FT
Serial#:		100000093	

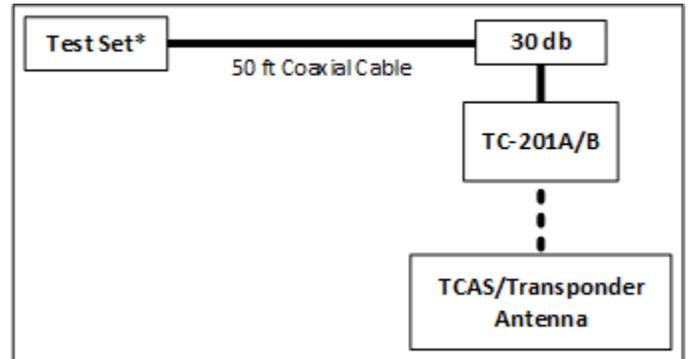
Table 4 Antenna Compatibility Matrix

ACSS Amplitude	LRU Supported	Collins Phase	LRU Supported
AT-910	TCAS II TCAS 2000 TT-950	TRE-920	TTR-920/921 TTR-2100 TTR-4100
Collins Amplitude	LRU Supported	Honeywell Phase	LRU Supported
TSA-4100	TSS-4100	ANT-81A	TPA-81A TPA-100A/B/C

INSTALLATION STEPS

The following diagram shows the hardware configuration used in the following setup procedures:

Figure 5 Setup Diagram



NOTE

Connecting the TC-201A/B coupler to the IFR 6000/6015 or AVX-10K differs from normal "direct with coupler" connection.

In this case, you will be using the ANTENNA port on the test set to connect to the coupler (via the 30 dB attenuator). The antenna port connection provides higher sensitivity to support the TC-201A/B coupler.

Figure 6 AVX-10K Connectors



NOTE

- The TC-201A and TC-201B are designed for compatibility with VIAVI's AVX-10K and IFR-6000 Test Sets.
- Check [Table 4](#) for Antenna Compatibility details.

TCAS TEST SETUP

- 1 Place the Coupler over the Aircraft TCAS/Transponder Antenna.
- 2 Connect the 30 dB attenuator to the Coupler's RF connector.
- 3 Connect the Coupler to the Antenna connector on the Test Set using the 50 ft. TNC Coaxial Cable (supplied with the kit).
- 4 On the Test set, adjust the following settings; see [Table 5](#).

Table 5

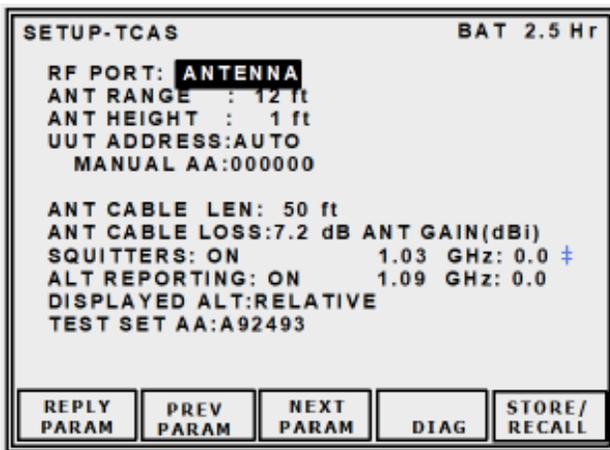
Parameter	Setting
RF PORT	ANTENNA
ANT RANGE	See coupler loss label
ANT HEIGHT	See coupler loss label
ANT CABLE LEN	50 feet
ANT CABLE LOSS	See cable loss label
ANT GAIN (dBi)	1.03 GHz 0.0 ‡ 1.09 GHz 0.0

- For the IFR-6000, go to the SETUP-TCAS screen (see [Figure 7](#)) and select ANTENNA from the RF PORT.
- For the AVX-10K, see [Figure 8](#)

NOTE

Use [Table 4](#) to determine which Distance and Height values from the Loss Placard on your TC-201A/B that you should use when entering ANT RANGE and ANT HEIGHT values in the test set.

Figure 7 IFR-6000 TCAS Screen



- 5 Set the Coupler's quadrant selection ring to QUADRANT 1.
- 6 Determine the manufacturer of the TCAS and refer to the loss label (see [Figure 4](#)) on the Coupler for antenna range and antenna height values.

- 7 On the test set, adjust the following settings:
 - For the 1.03 GHz value, see Antenna Gain table ‡; Refer to [Table 6](#).
- 8 Verify that ANT GAIN values are set as described.
- 9 Proceed with testing for all four quadrant settings.

Figure 8 AVX-10K TCAS Screen; Setup Tab

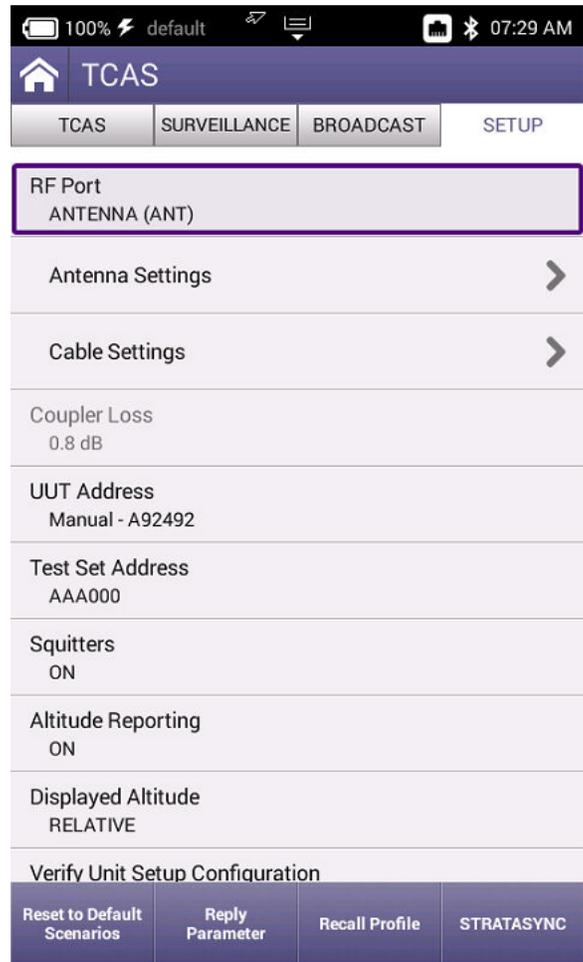


Table 6

Antenna Gain ‡ Value	Condition
1.03 GHz: 0.0	For most cases
1.03 GHz: 2.0	For smaller diameter planes using a TSA-4100 antenna that is not mounted flush against the aircraft.

TRANSPONDER TEST SETUP

- 1 Place the Coupler over the Aircraft TCAS/Transponder Antenna.
- 2 Connect the 30 dB attenuator to the TC-201A/B RF connection.
- 3 Connect the Coupler to the Antenna connector on the Test Set using the 50 ft. TNC Coaxial Cable (supplied with the kit).
- 4 On the Test set, adjust the following settings; see [Table 7](#).

Table 7

Parameter	Setting
ANTENNA	TOP/BOTTOM
RF PORT	ANTENNA
ANT RANGE	See coupler loss label
ANT HEIGHT	See coupler loss label
ANT CABLE LEN	50 feet
ANT CABLE LOSS	See loss on 50' cable label
COUPLER LOSS	0.0 dB
ANT GAIN (dBi)	
0.96 GHz	0.0
1.03 GHz	0.0 ‡
1.09 GHz	0.0
UUT ADDRESS	Auto

- For the IFR-6000, go to the SETUP-XPDR screen ([Figure 9](#)) and select ANTENNA from the RF PORT.
- For the AVX-10K, see [Figure 10](#).

NOTE

Use [Table 4](#) to determine which Distance and Height values from the Loss Placard on your TC-201A/B that you should use when entering ANT RANGE and ANT HEIGHT values in the test set.

- 5 Set the Coupler's quadrant selection ring to QUADRANT 1.
- 6 Determine the manufacturer of the transponder and refer to the loss label on the Coupler (see [Figure 4](#)) for antenna range and antenna height values.

Figure 9 IFR-6000 SETUP-XPDR Screen

SETUP-XPDR		BAT 2.5 Hr	
ANTENNA: BOTTOM RF PORT:ANTENNA			
ANT RANGE		ANT HEIGHT	
TOP:	50.0 FT	10.0 FT	
BOTTOM:	12.0 FT	1.0 FT	
ANT CABLE LEN: 50 FT		ANT GAIN (dBi)	
ANT CABLE LOSS: 7.2 dB		0.96 GHz: 0.0	
COUPLER LOSS: 0.8 dB		1.03 GHz: 0.0 ‡	
UUT ADDRESS:AUTO		1.09 GHz: 0.0	
MANUAL AA:123456		PWR LIM: FAR 43	
DIV TEST:ON		RAD47: OFF	
		CHECK CAP: YES	
ADSB SETUP	PREV PARAM	NEXT PARAM	TEST DATA

Table 8

Antenna Gain ‡ Value	Condition
1.03 GHz: 0.0	For most cases
1.03 GHz: 2.0	For smaller diameter planes using a TSA-4100 antenna that is not mounted flush against the aircraft.

- 7 Verify that ANT GAIN values are set as described.
- 8 Proceed with testing for all four quadrant settings.

Figure 10 AVX-10K XPDR-Auto Screen; Setup Tab

XPDR-Auto	
BOT ANT	SETUP
RF Port	ANTENNA (ANT)
Antenna Settings	>
Cable Settings	>
Coupler Settings	>
UUT Address	AUTO
Diversity Test	Off
Altitude Settings	>
Advanced Settings	>
Recall Data	STRATASYN

TECHNICAL ASSISTANCE

NOTE

Consult the appropriate Test Set Operator's Manual for all other setup parameters.

Contact the Technical Assistance Center (TAC) for technical support or with any questions regarding this or other VIAVI products.

Phone: 1-844-GO-VIAVI
email: AvComm.Service@viavisolutions.com

For the latest TAC information, go to:
<https://www.viavisolutions.com/en/services-and-support/support/technical-assistance>