



TR1 TR2

Transformer / Relay Adapter

Installation Manual

Rev 1.1 Feb. 22, 2016

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REVISIONS

REV	DESCRIPTION	DATE	APPROVAL
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1.1	Added note about connector pins	Feb 22, 2016	JAD

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Section I General Information

INTRODUCTION

This manual contains information regarding the physical, mechanical, and electrical characteristics, plus, the installation requirements for the TR1 and TR2 series Transformer/Relay adapters.

SCOPE

This manual provides detailed installation instructions for the TR1 and TR2 series Transformer/Relay adapters.

EQUIPMENT DESCRIPTION

The Deklin Technologies, Inc. TR1 and TR2 series Transformer/Relay adapters are a pre-assembled autopilot interface unit following the interconnect specifications and component requirements recommended by the manufacturers of certain PFD systems when interfaced with existing autopilots. It is intended to provide a convenient solution in a single device with multiple variations for installers to use in place of producing the same circuits from discrete components as specific in PFD installation manuals. **The installer is responsible to certify as airworthy and determine eligibility of this product for installation in accordance with FAA Parts 21 and 43, IAW AC20-62E, Section 11, Paragraph a.**

11. ELECTRICAL PARTS AND INSTRUMENTS.

a. Electronic Kits.

Kits assembled by non-certificated individuals are not eligible for installation on TC'd aircraft until the part is certified as airworthy and found eligible for installation in accordance with parts 21 and 43. During and after assembly, these kits should receive documented conformity inspections by properly certificated persons to ensure that they meet all applicable airworthiness requirements for use on the specific aircraft on which they are to be installed. The installation of these approved units should be accomplished by or under the supervision of a properly certificated person or agency in accordance with parts 21 and 43. When the installation is a major alteration, the kit data and the data used for the alteration of the product must be approved by a representative of the Administrator. An appropriately certificated person must complete the maintenance records to ensure that the aircraft is approved and airworthy for return to service.

After inspection the installer should validate they have inspected this device by noting their name on the product label in the appropriate location marked "Installer/Inspector". The absence of a signature does not release the installer from the responsibility of validating this product nor does it place any responsibility on Deklin Technologies, Inc.

The TR1 and TR2 series Transformer/Relay adapters standard features:

- Aspen EA100 to Century series autopilot
- Same pin out configuration
- Small size
- D-Sub connector
- Easily mounted

SPECIFICATIONS

General Specifications

Case Material:	5052H32 Aluminum Chassis and Cover
Dimensions: <i>(not including mating connector)</i>	4.60" (116.8mm) X 2.56" (65.0mm) X 1.50" (38.1mm)
Weight without Relay:	0.38 lbs (0.17 kg)
Weight with Relay	0.60 lbs (0.27 kg)
Connectors:	25 Pin Female D-Sub Connector
Mounting:	Bulkhead, Four 8/32 Screws

Input Specifications

Relay Rated Voltage:	28VDC
Relay Coil Resistance:	320 OHMs +/- 10%
Current Rating:	10 Amps
MIL STD:	M83536/10-027

Component List TR1 (Century 21/31/41/2000/4000)

Housing:	5052H32 Aluminum Chassis and Cover
Resistors:	0 Ohm Jumper
Transformers:	Sp-66 (x3)

Component List TR1R (Century 21/31/41/2000/4000 with Flight Director)

Housing:	5052H32 Aluminum Chassis and Cover
Resistors:	0 Ohm Jumper
Relay 24VDC	FCA-210-1027M
Relay 12VDC	FCA-210-0917M
Transformers:	Sp-66 (x3)

Component List TR2 (Century IIB/III/IV)

Housing:	5052H32 Aluminum Chassis and Cover
Resistors:	2.2k Ohm, 1.2k Ohm, 0 Ohm Jumper
Capacitor:	0.12uF 50V 10%
Transformers:	Sp-20 (x1), SP-69 (x2)

Component List TR2R (Century IIB/III/IV with Flight Director)

Housing:	5052H32 Aluminum Chassis and Cover
Resistors:	0 Ohm Jumper
Capacitor:	0.12uF 50V 10%
Relay:	FCA-210-1027M
Relay 12VDC	FCA-210-0917M
Transformers:	Sp-20 (x1), SP-69 (x2)

EQUIPMENT SUPPLIED

1	each	TR1 or TR1R or TR2 or TR2R
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OPTIONAL PARTS

1	each	AIU-900IK Installation Kit consisting of:
1	each	25 pin Male D-Sub connector w/pins *
1	each	SPC15461 Hood or equivalent
1	each	Screw locking hardware kit

** Note: If you are supplying your own connector and pins you must ensure the pins fit snugly in the sockets of the connector. Some Mil Spec pins, and pins used in high density D-Sub connectors do not fit properly and will cause intermittent connections.*

Section II - Installation

GENERAL INFORMATION

Scope

This section provides detailed installation and interconnection instructions for the TR1 and TR2 series Transformer/Relay adapters. Please read this manual carefully before beginning any installation to prevent damage and post installation problems. Installation of this equipment requires special knowledge and tools.

Installation Requirements

The TR1 and TR2 series Transformer/Relay adapters require specialized knowledge and tools for an effective installation. An appropriately rated Certified Repair Station must install this equipment in accordance with applicable regulations. Deklin Technologies, Inc warranty is not valid unless installed by an authorized FAA approved repair station. Failure to follow any of the installation instructions, or installation by a non-certified individual or agency will void the warranty and may result in a non-airworthy installation.

Unpacking and Inspection

Use care when unpacking the equipment. Inspect the unit and all the parts supplied for visible signs of shipping damage. Examine the unit for loose or broken pieces. Verify the correct quantity of components supplied with the list in Section I. If any claim is to be made, save the shipping material and contact the freight carrier. DO NOT return any items damaged in shipping to Deklin Technologies, Inc. If any items show signs of external shipping damage, contact Deklin Technologies, Inc for a replacement. Do not attempt to install a damaged unit. Equipment returned to Deklin Technologies, Inc for any other reason should be shipped in the original packaging, or other UPS approved packaging.

INSTALLATION PROCEDURES

The following is provided for general reference. Primary instruction for the installation of this product should be from the Installation Manual of the OEM product for which this device will be used with.

Cooling Requirements

Forced air-cooling is not required for the TR1 and TR2 series Transformer/Relay adapters. However, the equipment should be kept away from heat sources without adequate cooling provided. (i.e. defrost or heating ducts, dropping resistors, heat producing avionics.)

Mounting Requirements

The TR1 and TR2 series Transformer/Relay adapters must be mounted inside the pressure vessel in a temperature controlled environment unless the aircraft's service ceiling is less than 25,000 feet.

The TR1 and TR2 series Transformer/Relay adapters must be rigidly mounted to a secure structure in accordance with FAA Advisory Circular AC 43.13-2B. The unit should be mounted in an area with adequate clearance for the unit and associated wiring.

Cable Harness Wiring

Refer to the included wiring diagrams for pin out configurations. All wires must be MIL-SPEC in accordance with current regulations. All shielded wire should be MIL-C-27500 or equivalent (with solder sleeves for shield termination) and must be used where specified. Proper stripping, shielding and soldering techniques must be used at all times.

Refer to FAA Advisory Circular AC 43.13-2B for more information. Failure to use correct techniques may result in improper operation, electrical noise, and/or unit failure. Damage caused by improper installation will void warranty.

Noise

Due to the variety and high power of equipment in today's aircraft, there is a potential for both electrical and conducted noise interference. To minimize the occurrence of noise being introduced into the system, please follow these installation guidelines.

Do not bundle any lines from this unit with transmitter coax lines.

Do not bundle any lines from this unit with any other audio or high voltage power lines.

Do not bundle any lines from this unit with 400 Hz synchro wiring or AC power lines such as strobes or inverters.

Do not position this unit or route wiring from this unit next to any device with a strong alternating magnetic field such as an inverter.

Use shielded wire where shown and ground as indicated.

Post Installation Check

After installation wiring is complete, verify no power is on any pin and airframe ground on pin 5 only.

Operational Checkout

Follow instructions in specific OEM PFD Installation Manuals for check out procedures.

Section IV – Warranty and Service

WARRANTY

Deklin Technologies, Inc. warrants this product to be free from defect in workmanship and material for a period of 24 months from the time of installation or 26 months from the factory shipping date. This warranty is valid only if the equipment is installed in an aircraft by a FAA certified avionics facility (or other ICAO agency).

If during the warranty period this unit should fail it will be at the discretion of Deklin Technologies, Inc to send a replacement unit or repair the original unit. All units must be returned to the factory for repair or replacement.

All shipping and handling charges for the return of a unit to the factory are the responsibility of the purchaser. Domestic UPS Ground shipping charges for sending an exchange or repaired unit to the customer will be the responsibility of Deklin Technologies, Inc. Any additional charges as a result of requested improved delivery time, alternate carrier, insurance, or handling costs are the responsibility of the customer. All freight, handling, insurance, brokerage fees, duties and taxes for shipments outside the continental United States is the responsibility of the customer.

Deklin Technologies, Inc shall not be liable for incidental or consequential damages. This warranty does not cover a defect that has resulted from improper handling, storage or preservation, unreasonable use, or maintenance. This warranty is void if there is any attempt to disassemble this product without factory authorization. This warranty does not cover expenses incurred for the removal and/or installation of this product.

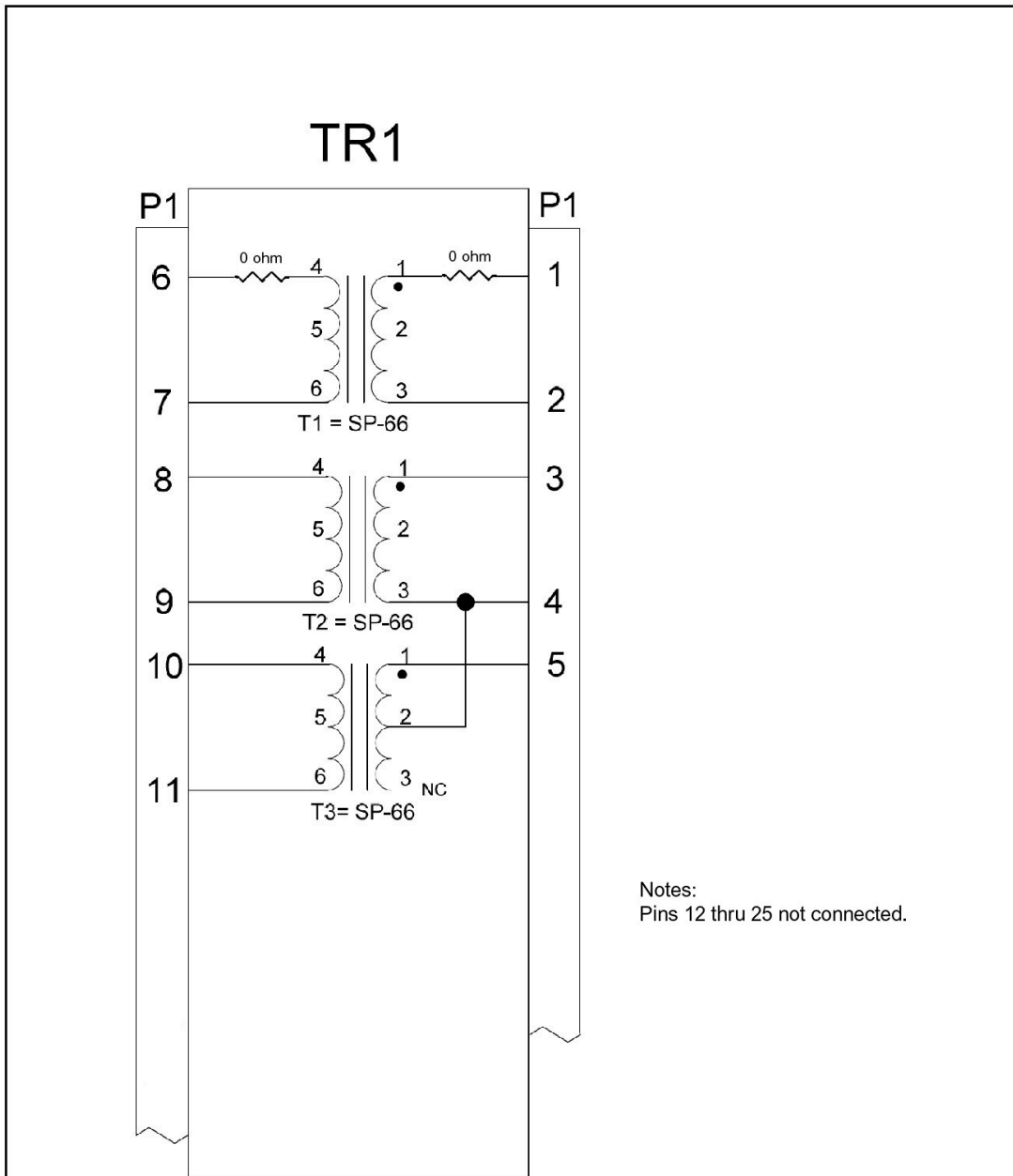
All items repaired or replaced under this warranty are warranted for the remainder of the original warranty period. Deklin Technologies, Inc reserves the rights to make modifications or improvements to the product without obligation to perform like modifications or improvements to previously manufactured products.

FACTORY SERVICE

In the event any unit needs to be returned to the factory, contact Deklin Technologies, Inc for a Return Authorization Number prior to returning.

Units that arrive without a Return Authorization Number, or telephone number, will be returned un-repaired. Deklin Technologies, Inc is not responsible for items returned via Mail.

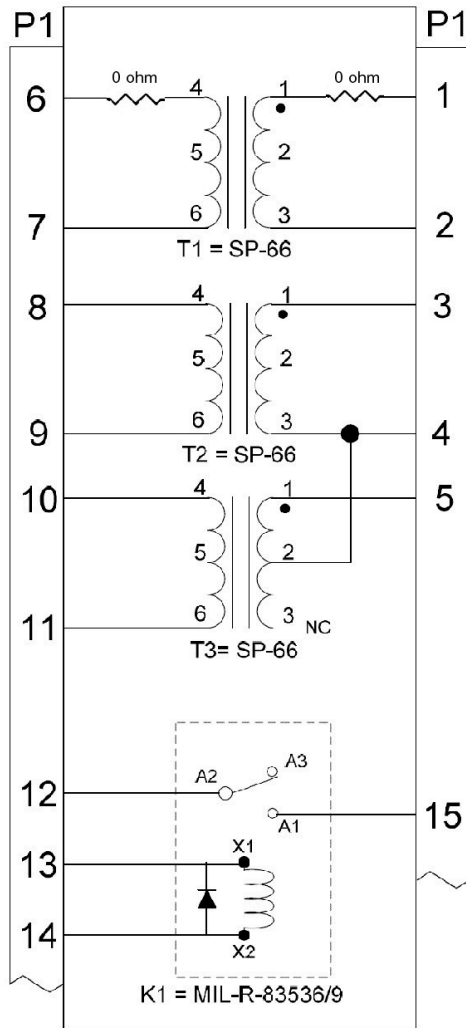
Appendix A - Schematics



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DATE	8/20/14	 Deklin Technologies www.deklintech.com	TITLE TR1 w/o Relay		
DRAWN	JAD				
CHECKED	JAD				
APPROVED	JAD				
PART NO.		SIZE	REV. 1.0	SHEET	
FILE		DWG TYPE		DWG NO.	

TR1R

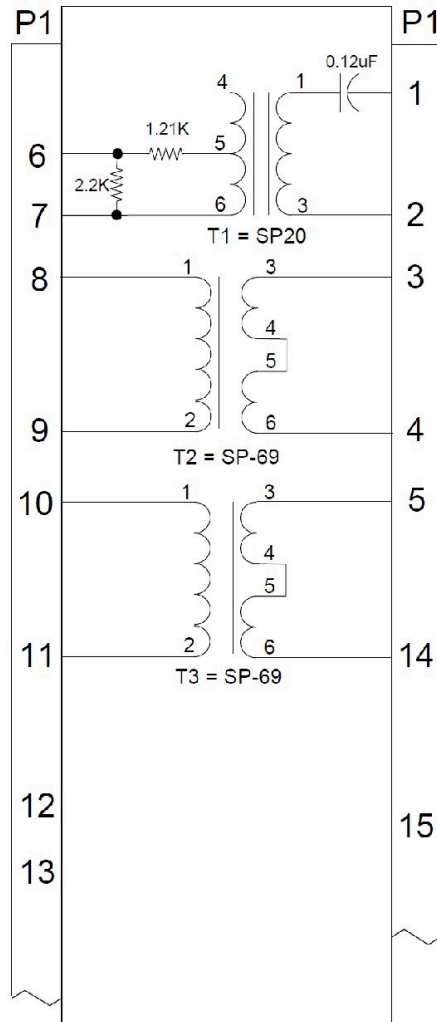


NOTES:
Pins 16 thru 25 not connected.

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DATE	8/20/14	 Deklin Technologies www.deklintech.com			
DRAWN	JAD				
CHECKED	JAD	TITLE TR1 w/Relay			
APPROVED	JAD				
PART NO.		SIZE	REV. 1.0	SHEET	
FILE		DWG TYPE		DWG NO.	

TR2

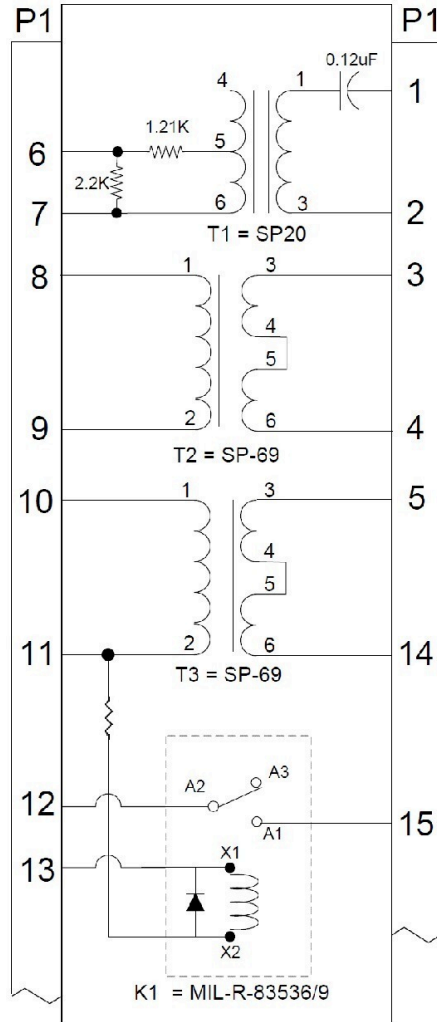


Notes:
Pins 15 thru 25 not connected

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DRAWN	JAD				
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APPROVED	JAD				
PART NO.		SIZE	REV. 1.0	SHEET	
FILE		DWG TYPE		DWG NO.	

TR2R



Notes:
Pins 16-25 not connected

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DRAWN	JAD				
CHECKED	JAD	TITLE TR2 w/Relay			
APPROVED	JAD				
PART NO.		SIZE	REV. 1.0	SHEET	
FILE		DWG TYPE		DWG NO.	

Appendix B - Mechanical

