SECTION I
GENERAL INFORMATION

1.1 INTRODUCTION

This manual provides operational and maintenance information for the Aeroflex Model 429E ARINC 429 Transmitter/Receiver.

1.2 EQUIPMENT DESCRIPTION

The 429E provides avionics technicians, engineers and line maintenance personnel with a convenient, easy to use tool for testing and trouble-shooting ARINC 429 avionics systems.

Transmitter features:

- Data entry in Hexadecimal or Engineering Units
- Can transmit up to 10 labels simultaneously
- Individual screens for entry of data, rate, SDI and SSM
- Selectable (Lo or Hi speed) bit rate
- Selectable (Odd or Even) word parity
- Selectable (4 to 59998 ms) word rate
- LED display of transmitted word parity

Receiver features:

- Data display in Hexadecimal or Engineering Units
- Individual screens for display of data, rate, SDI and SSM
- Ability to trap and store up to 255 words
- Automatic scrolling of trapped data
- Selectable (Lo or Hi speed) bit rate
- LED display of received word parity

Other features:

- Liquid crystal display
- Portability
- Self-contained, rechargeable NiCad batteries
- "Low Battery" warning
- Available with either 110 V ac or 230 V ac battery charger
- Rugged, compact case
- Optional carrying case

1.3 TECHNICAL CHARACTERISTICS

Specification	Characteristic
ENVIRONMENTAL SPECIFICATIONS:	The environmental specifications are as follows.
OPERATING TEMPERATURE:	5 °C to 40 °C.
RELATIVE HUMIDITY:	Maximum of 80% for temperatures up to 31 °C decreasing linearly to 50% at 40 °C.
OPERATING ALTITUDE:	Up to 2 000 m.

IEC OVERVOLTAGE CATEGORY:	II
POLLUTION DEGREE:	1
SIZE:	18.42 cm H x 11.43 cm W x 6.35 cm D (7.25” H x 4.5” W x 2.5” D)
MASS (Weight)	1.36 kg (3 lbs.)
CABLES AND WIRES	Jumper cable assembly should be fabricated using 2-conductor twisted pair with braided shield. The shield should be folded back onto the insulation and the clamp on the connector should be crimped around the shielding. Also, once the shield is clamped, solder should be added to ensure a stable connection is made between the clamp and wire shield. Refer to figures X and Y.

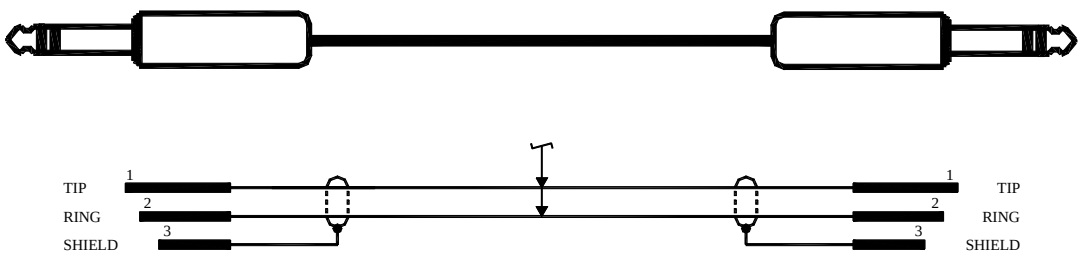

Figure X. Cable Assembly Schematic

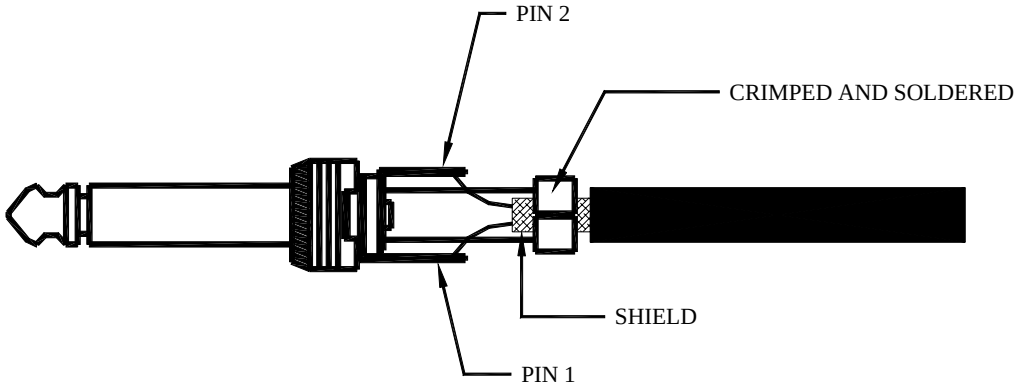

Figure Y. Phone Plug Termination

EQUIPMENT MEETS THESE LISTED STANDARDS

EN 61010-1 (IEC 61010-1)
EN 61326 (IEC 61326)
EN 55011 Class A
EN 50082-1

POWER REQUIREMENTS:

110 V/60 Hz/500 mA 
OR
230 V/50 Hz/300 mA 
OR
Six (6) internally mounted
AA size rechargeable NiCad cells


ARINC SPECIFICATION:

Conforms to Mark 33 Digital Information Transfer System (DITS) Specification 429-9 (Attachment 2) unless otherwise specified.

ARINC 429 TRANSMITTER

Pulse Rise/Fall Times:	Low Speed	10.0 ±5.0 μs
	High Speed	1.5 ±0.5 μs
Voltage Levels (Line A to B):	HI	+10.0 ±1.0 V dc
	NULL	0.0 ±0.5 V dc
	LO	-10.0 ±1.0 V dc
Output Impedance (Line A to B):		75 ±5 Ω
Bit Rate:	Low Speed	12.5 kbps ±0.5%
	High Speed	100.0 kbps ±0.5%
Word Rate:		4 to 59998 ms
Parity:		ODD or EVEN

ARINC 429 RECEIVER

Voltage Levels (Line A to B):	HI	+6.5 to +13.0 V dc
	NULL	+2.5 to - 2.5 V dc
	LO	-6.5 to -13.0 V dc
Bit Rate:	Low Speed	8 to 20 kbps
	High Speed	80 to 125 kbps
Word Rate:		±2 ms average
Input Impedance:		12 kΩ min. (balanced)

1.4 UNITS AND ACCESSORIES SUPPLIED

The Aeroflex Model 429E, PN: 01-1001-00, is supplied with either a 110 V ac battery charger or a 230 V ac battery charger. Two 3-conductor 1/4" phone plugs are included for fabrication of cables to connect to the transmit and receive jacks of the unit. (See Section 1.3 for fabrication instructions.) The accessories provided are as follows:

Aeroflex P/N	DESCRIPTION
15-0009-00	Battery Charger 110 V ac to 9 V dc 500 mA
OR	
15-0009-01	Battery Charger 230 V ac to 9 V dc 300 mA
AND	
33-1032-00	3-Conductor 1/4" Phone Plugs
06-1001-00	429E Maintenance Manual

SECTION II
INSTALLATION

2.1 GENERAL INFORMATION

This section contains information relating to the unpacking and inspection of the unit. Also included is information concerning charging of the internal batteries and an explanation of the unit's self test.

2.2 UNPACKING AND INSPECTING EQUIPMENT

Carefully remove the Aeroflex 429E and accessories from the packing box. Visually inspect the units for any damage incurred during shipment. Should there be damage, save the packing box to show the shipping company when submitting your claim. It is generally a good idea to save the packing box should it become necessary to store or ship the unit.

2.3 EQUIPMENT INSTALLATION

2.3.1 BATTERY CHARGING

The batteries were fully charged when the unit was shipped from the factory. However, if the unit has been stored for an extended period of time, the batteries may have become discharged. Plug the charger into an appropriate voltage outlet (110 & 230 volt chargers are available). A four to five hour charge should refresh the batteries. The 429E may be operated while charging or with the charger disconnected. With fully charged batteries, the unit will operate for approximately four to six hours.

In the event that the batteries become discharged during use to a level approaching unreliable operation, the display will flash the message LOW BATTERY approximately every ten seconds. At this point, the unit should be reconnected to the charger to refresh the batteries.

***** CAUTION *****

To avoid possible damage to the battery charger, it is recommended that you do NOT have the charger connected to the wall outlet when connecting or disconnecting the charging plug to the 429E.

2.3.2 CONNECTION TO USER EQUIPMENT

Connect the Aeroflex 429E TX output jack to the input of the UUT and the Aeroflex 429E RX input jack to the output of the UUT using 3-conductor 1/4 inch phone plugs (see paragraph 1.4).

NOTE

On both the transmitter and receiver port jacks, the tip is the HI (A) side of the bus, the ring is the LO (B) side and the sleeve is GROUND.