

Instruction Sheet 80TK Thermocouple Module

INTRODUCTION

The Fluke 80TK is a thermocouple converter for use with any Ktype thermocouple and a digital multimeter (DMM). The 80TK accepts the output of any K-type thermocouple and converts it to 1 millivolt per degree (Celsius or Fahrenheit).

A three-position switch acts as a power switch as well as selecting Fahrenheit or Celsius scaling for the output. In addition, the OFF position of the power switch allows you to read the battery condition via the external multimeter. The thermocouple input accepts wire leads or standard mini-thermocouple connectors.

Temperature is measured by exposing or attaching the thermocouple to the surface to be measured. The multimeter displays the temperature directly in degrees Fahrenheit or Celsius.

SPECIFICATIONS

ELECTRICAL

Measurement Range: -50 to 1000 degrees Celsius -58 to 1832 degrees Fahrenheit

Resolution:

2000 count display 0.1° C/F in 200 mV range

1.0° C/F in 2V range

3200 count display

0.1° C/F in 300 mV range

1.0° C/F in 3V range

Note: Ignore decimal point on 2V or 3V range.

Maximum Voltage at Thermocouple Input: 60V DC, 24V AC

RF Field Derating: Strong RF fields can adversely affect measurement accuracy.

ENVIRONMENTAL

Ambient Operating Range: 0 to 50°C

Storage Temperature: -40 to 60°C -40 to 140°F

Humidity: 0% to 90% (0 to 35°C) 0% to 70% (35 to 50°C)

Basic Accuracy: (@ 23 ± 5°C Calibration) *

Range Accuracy (% of reading + degrees)

-50 to -21°C 2.5% ± 2°C -58 to -5.8°F 2.5% ± 3.6°F

Temperature Coefficient:

*0°C to 18°C and 28°C to 50°C ambient, multiply the basic accuracy specification by 0.1 for each degree above 28 or below 18.

**For accuracy enhancement between 351°C to 500°C, subtract 3 degrees from the reading, The accuracy is now 0.75% \pm 2°C.

***For accuracy enhancement between 663°F and 932°F, subtract 5.4 degrees from the reading. The accuracy is now 0.75% \pm 3.6°F.

NOTE

The basic accuracy specification does not include the error of the probe or the DMM. Please refer to the probe accuracy specification for additional details.

GENERAL

Weight: 4.5 ounces, 126 grams

Overall length: 4 5/8 inches, 11.75 mm

Battery: Standard 9V Battery (NEDA #1604, 6F22, 006P)

Battery Life: 1600+ hours, 6.5V minimum

Output: 3/4 inch spaced banana plugs.10 megohm minimum load resistance

ACCESSORIES

80PK-1 (included): Bead Probe 4 foot K-type thermocouple bead probe, with Teflon tape insulation. Maximum insulation temperature: 260°C. Accuracy: \pm 2.2°C or \pm 0.75% (whichever is greater) from 0 to 800°C

P/N 735985 February 1985 @1985, John Fluke Mfg. Co., Inc. All rights reserved. Litho in U.S.A.

80PK-2: Immersion Probe (6 inch metal sheath)

80PK-3: Surface Probe (For flat or curved surfaces)

USE AND OPERATION

Thermocouples rely upon the difference in temperature between the measuring junction and a reference junction. Traditionally the reference junction is another thermocouple placed in an ice bath, however, the 80TK uses an electronic reference junction. The converter (80TK) must be operated in a thermal environment consistent with its specifications.

Measuring Technique

Making accurate temperature readings using a thermocouple is a matter of identifying and minimizing the causes of error. The largest contributor to errors is the thermal interface between the measurement surface and the thermocouple. The next largest contributor is the temperature difference between the thermocouple probe and its environment.

Here are some suggestions for improving the accuracy of your temperature measurements:

Ensure that there is a good connection between the probe and the surface you are measuring. You can do this in many ways:

- 1. Increase the mounting pressure
- Use an interface agent (such as silicone grease) between the thermocouple probe and the surface you are measuring.
- 3. Use a thermal epoxy to attach the thermocouple.

When measuring temperatures higher than ambient, adjust the connection of the probe to the surface until you get the highest temperature reading. Use any of the suggestions given above to do so.

When measuring temperatures lower than ambient, adjust the connection of the probe to the surface until you get the lowest temperature reading. Use any of the suggestions given above to do so.

When measuring temperatures near ambient, make the reading when the multimeter display is most stable.

WARNING

TO AVOID ELECTRICAL SHOCK, DO NOT USE THIS INSTRUMENT WHEN VOLTAGES EXCEEDING 24V AC OR 60V DC ARE PRESENT. THE PROBE TIP IS ELECTRICALLY CONNECTED TO THE OUTPUT TERMINALS.

Temperature Measurement

Follow this procedure to correctly use the 80TK.

- Plug the 80TK into the dc volts input of the Multimeter.
 Observe polarity.
- 2. Set the multimeter to the 200 or 300 millivolt range.
- Use the 2V or 3V range for higher temperatures. Ignore the decimal point.
- Plug the thermocouple into the 80TK thermocouple input connector. If the thermocouple does not have a plug attached, connect the thermocouple wires to the thermocouple input screws inside the 80TK.

The yellow coded wire (chromel) connects to the screw marked "+".

5. Turn on the 80TK and the Multimeter.

- Adjust the thermal connection between the measurement surface and the thermocouple as described previously.
- 7. Read the temperature on the Multimeter.

Open Thermocouple Reading

If the thermocouple probe has open circuited (i.e. is broken), the DMM will read a steady, constant voltage. The voltage readings are:

Range	Reading	
OF	≥ 1.1V ≥ 2.3V	

Battery Condition Test

- 1. Set the power switch to the OFF position.
- Connect the 80TK to the DMM.
- 3. Set the DMM to the 200 or 300 mV dc range.
- Read the battery test voltage on the DMM. A minimum reading of 100 mV is acceptable and indicates that approximately 100 hours of battery life remain.

Battery Replacement

WARNING

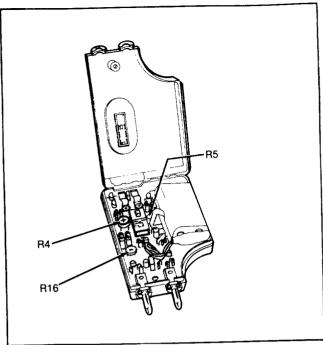
TO AVOID ELECTRICAL SHOCK, REMOVE THE THERMOCOUPLE FROM THE MEASUREMENT SURFACE, OR DISCONNECT THE THERMOCOUPLE FROM THE INSTRUMENT BEFORE OPENING THE CASE. TOTALLY REASSEMBLE THE INSTRUMENT BEFORE ATTEMPTING TO USE IT.

- 1. Set the power switch to the OFF position.
- 2. Disconnect the 80TK from the DMM.
- 3. Unplug or disconnect the thermocouple.
- Turn the 80TK so the power switch is facing down. Remove the single screw located between the banana plugs.
- Grasp one case half in each hand. Pull the two halves apart, beginning at the end with the banana plugs.
- 6. Remove and replace the battery.
- 7. Reassemble the 80TK.
- To reassemble, mate the two case halves at the end with the thermocouple connector, then "hinge" the two halves together.

80TK Self Test

The following test is an easy way to verify proper operation of the 80TK:

- Follow the Battery Replacement Procedure to open the case.
- Using a short piece of bare wire, short the thermocouple input terminals together.
- Plug the 80TK into the DMM.
- 4. Turn the DMM and the 80TK on. Set the DMM to its 200 or 300 mV range.
- 5. The DMM should read the ambient room temperature.



Location of Calibration Adjustments

80TK CALIBRATION PROCEDURE

A calibration cycle of 1 year is recommended to maintain the 80TK within specifications. The required equipment is listed below. Use Calibration Procedure 1 to calibrate the 80TK for use with any K-type thermocouple. Use Calibration Procedure 2 if the 80TK will be used exclusively with one K-type thermocouple. Always calibrate the Celsius function before calibrating the Fahrenheit function.

Calibration Procedure 1.

Use this procedure to calibrate the 80TK:

- Verify the condition of the battery as described above and replace the battery if necessary. Follow the Battery Replacement procedure to disassemble the 80TK, but do not remove the battery or reassemble the 80TK.
- Allow 80TK and the room-temperature water bath to stabilize at room temperature, away from drafts, for at least 30 minutes before proceeding with calibration. Place the reference thermometer into the room temperature water bath. Allow the reading to stabilize.

- Use the shorting bar to short the 80TK thermocouple input terminals.
- Plug the 80TK into the dc volts input of the DMM. Set the DMM to the 300mV or equivalent range.
- 5. Set the switch on the 80TK to CELSIUS position. Adjust R4 to half rotation, then adjust R5 until the reading on the DMM matches the reading on the mercury reference thermometer ± 5.0°C. Now adjust R4 until the two readings are within ± 0.1°C.

NOTE

If the mercury reference thermometer displays °F, use the following conversion to get °C:

5/9[(temp in °F)-32] = (temp in °C)

- Set the switch on the 80TK to the FAHRENHEIT (center) position.
- Adjust R16 until the reading on the DMM matches the reading on the mercury reference thermometer ± 0.2°F

NOTE

If the mercury reference thermometer displays °C, use the following conversion to get °F:

[9/5(temp in °C) + 32] = (temp in °F)

- Set 80TK switch to the OFF postion. Remove 80TK from DMM and remove any connections to the 80TK thermocouple input terminals.
- 9. Reassemble the 80TK.
- 10. The 80TK is now calibrated.

Calibration Procedure 2.

Use this procedure if the 80TK will be used exclusively with one K-type thermocouple:

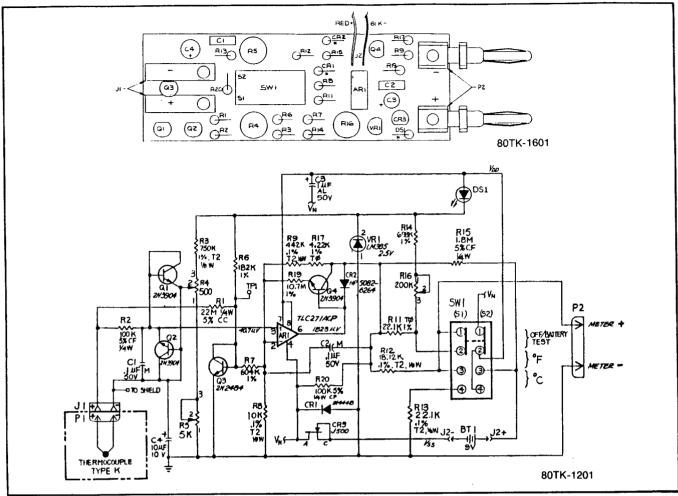
- Perform Calibration Procedure 1. Substitute the following for step 3 in Calibration Procedure 1:
 - Connect the thermocouple to the 80TK thermocouple input, and place the thermocouple into the room temperature bath along with the mercury reference thermometer.

Required Equipment

The following equipment is required to calibrate the 80TK.

Required Equipment

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INSTRUMENT	MINIMUM SPECIFICATION	RECOMMENDED MODEL
Mercury Reference Thermometer	0.1°C resolution	Princo Model SAMA-CP45
Dewar Flask and Cap (water bath)	2 pint capacity, filled with water	Thermos bottle
Digital Voltmeter	300 mV range, 100 μ V resolution, 10 megohm input impedance	Fluke Model 25
Shorting bar	<1 ohm	Wire
OR K-type thermocouple	meets NBS standards (with subminiature K plug)	Fluke 80PK-1



80TK Schematic Diagram

Replaceable Parts

Table		Replaceable Falts		
735845 CASE, TOP 735852 CASE, BOTTOM 735910 SHIELD, TOP 735928 CONTACT, SHIELD 735944 SHIELD, BOTTOM 735928 CONTACT, SHIELD 735944 SHIELD, BOTTOM 747501 SCERM, MACH, PHRO, 4-40XL/4, TIN PLATE 871 696534 BATTERY, 9V, 0-15MA C1, C2 649913 CAP, PALLYES, 0.1UF, +-10%, 50V C3 733683 CAP, ALL, 1UF, +-20%, 10V C4 714766 CAP, TA, 10 UF, +-20%, 10V C7 659516 DIODE, SI, BW-75V, 1NM448 C7 753301 DIODE, SI, N-JFET, CURRENT REG, IF=0.24MA, J500 DS1 723486 DIODE, SI, N-JFET, CURRENT REG, IF=0.24MA, J500 DS1 723486 DIODE, LED, RED J1 735993 CONDACT, THERMOCOUPLE CONNECTOR, BATTERY P1 736033 PLUG, BANANA C1, Q2, Q4 698225 SKISTOR, SI, NPN, SMALL SIGNAL, 2N3904 C3 741363 SKISTOR, SI, NPN, SMALL SIGNAL C3 74363 SKISTOR, SI, NPN, SMALL SIGNAL C4 757252 RES, MF, 22.1K, +-1%, 0.125M, 100PPM R12 734020 RES, MF, 18.12K, +-0.1%, 0.125M, 50PPM R14 757252 RES, MF, 698K,1%, 0.125M, 100PPM R15 747790 RES, CP, 1.8M, +-5%, 0.25M R17 746180 RES, MF, 22.1K, +-0.1%, 0.125M, 100PPM R19 756593 RES, MF, 4.22K, +-1%, 0.125M, 100PPM R19 756593 RES, MF, 4.22K, +-1%, 0.125M, 100PPM R20, R2 658963 RES, MF, 10.7M, +-1%, 0.125M, 100PPM R21 733692 RES, MF, 750K, +-1%, 0.125M, 100PPM R22 733692 RES, MF, 750K, +-1%, 0.125M, 100PPM R23 733693 RES, MF, 10K, +-0.1%, 0.125M, 50PPM R24 733694 RES, WF, 750K, +-1%, 0.125M, 100PPM R25 733697 RES, WF, 10K, +-1%, 0.125M, 50PPM R26 733592 RES, WF, 10K, +-1%, 0.125M, 100PPM R27 736697 RES, WF, 10K, +-0.1%, 0.125M, 100PPM R28 733972 RES, WF, 10K, +-0.1%, 0.125M, 100PPM R29 756585 RES, WF, 10K, +-0.1%, 0.125M, 100PPM R20, 12 10K, +-0.1%, 0.125M, 100PPM R20, 12 10K, +-1%, 0.125M, 100PPM R20, 12 10K, +-0.1%, 0.125M, 100PPM R20, 12 10K, +-0.1%		JF P/N	DESCRIPTION	
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735910 SHIELD, TOP 735928 CONTACT, SHIELD 735944 SHIELD, BOTTOM 747501 SCREM, MACH, PHRO, 4-40XL/4, TIN PLATE RT1 753319 IC., OP. AMP, PRGAMARLE LOM FOMER, SELECTED BT1 696534 BATTERY, 9V, 0-15MA C1, C2 649913 CAP, FOLYES, 0.1UP, +-108, 50V C4 714766 CAP, TA, 10 UP, +-208, 150V C4 714766 CAP, TA, 10 UP, +-208, 150V CR1 659516 DIODE, SI, ISH-75V, INA448 CR2 753301 DIODE, SI, ISH-75V, INA448 CR2 753301 DIODE, SI, ISH-75V, INA448 CR3 741512 DIODE, SI, N-JPET, CURRENT REG, IF-0.24MA, J500 DS1 723486 DIODE, SI, N-JPET, SAMLL SIGNAL DS1 73400 RES, M-P, 10, N-DPET, SAMLL SIGNAL DS1				
735928 CONTACT, SHIELD, BOTTOM 747501 SCRM, MACH, PHRO, 4-40XL/4, TIN PLATE 747501 SCRM, MACH, PHRO, 4-40XL/4, TIN PLATE 8CRM, PROSPARELE LON FOWER, SELECTED 8CRI 696534 BATTERY, 9V, 0-15MA C1, C2 649913 CAP, FOLYES, 0.1UP, +-10%, 50V C3 733683 CAP, AL, 1UP, +-20%, 10V CRI 659516 DIODE, SI, BW-75V, 1NM448 CRI 753301 DIODE, SI, SCHOTTRY, SMALL SIG, HP5082-6264 DIODE, SI, SCHOTTRY, SMALL SIG, HP5082-6264 DIODE, SI, N-JPET, CURRENT REG, IP=0.24MA, J500 DIODE, LED, RED J1 73486 DIODE, SI, N-JPET, CURRENT REG, IP=0.24MA, J500 DIODE, LED, RED J2 738179 CONNECTOR, BATTERY P1 736033 PLUG, BANNAM C1, Q2, Q4 698225 XSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 C3 741363 XSISTOR, SI, NPN, SMALL SIGNAL R11 655266 RES, MP, 22.1K, +-1%, 0.125M, 100PPM R12 734020 RES, MP, 18.12K, +-0.1%, 0.125M, 50PPM R13 733998 RES, MP, 22.1K, +-0.1%, 0.125M, 50PPM R14 757252 RES, MP, 698K, +-1%, 0.125M, 100PPM R15 747790 RES, CP, 1.8M, +-5%, 0.25M R17 746180 RES, MP, 4.22K, +-0.1%, 0.125M, 100PPM R19 756593 RES, MP, 4.02K, +-1%, 0.125M, 100PPM R19 756593 RES, MP, 10.7M, +-1%, 0.125M, 100PPM R19 733642 RES, MP, 10.7M, +-1%, 0.125M, 100PPM R20, R2 658963 RES, MP, 10.7M, +-1%, 0.125M, 100PPM R21 733642 RES, WP, 750K, +-1%, 0.125M, 100PPM R22 658963 RES, MP, 10K, +-0.1%, 0.125M, 100PPM R23 73669 RES, WP, 10K, +-0.1%, 0.125M, 100PPM R25 733672 RES, WP, 10K, +-0.1%, 0.125M, 100PPM R27 658978 RES, WP, 10K, +-0.1%, 0.125M, 100PPM R28 733972 RES, WP, 10K, +-0.1%, 0.125M, 100PPM R29 756585 RES, WP, 442K, +-0.1%, 0.125M, 100PPM R29 756585 RES, WP, 442K, +-0.1%, 0.125M, 100PPM R29 756585 RES, WP, 442K, +-0.1%, 0.125M, 50PPM R30 740225 SMTCH, SSLDDE, DETT				
735944 SHIELD, BOTTON ARI 747501 SCREM, MACH, PHPO, 4-40XL/4, TIN PLATE 1, 20 49913 IC, QP AND, PRESHMALE LOW FOWER, SELECTED BT1 696534 BATTERY, 9V, 0-15MA C1, C2 649913 CAP, FOLLYS, 0.1UF, +-10%, 50V C3 733683 CAP, AL, 1UF, +-20%, 150V C4 714766 CAP, TA, 10 UF, +-20%, 10V CRI 659516 DIODE, SI, BW-75V, 1N4448 CR2 753301 DIODE, SI, BW-75V, 1N4448 CR3 741512 DIODE, SI, BW-75V, 1N4448 DIODE, SI, N-JPEF, CURRENT REG, IP-0.24MA, J500 DS1 723486 DIODE, LED, RED J1 735993 COMPACT, THERMOCOUPLE CONNECTOR, BATTERY P1 736033 PLUE, BANANA OL, Q2, Q4 698225 XSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 XSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 R11 655266 RES, NF, 22. IK, +-10, 0.125M, 100PPM R12 734020 RES, MF, 18. 12K, +-0.12, 0.125M, 50PPM R13 733998 RES, MF, 22. IK, +-0.12, 0.125M, 50PPM R14 757252 RES, MF, 698K, +-10, 0.125M, 100PPM R15 747790 RES, C7, 1. 8M, +-54, 0.25M R17 746180 RES, OC, 21, 8M, +-54, 0.25M R19 756593 RES, MF, 760K, +-10, 0.125M, 100PPM R19 756593 RES, MF, 7750K, +-10, 0.125M, 100PPM R20, R2 658963 RES, MF, 7750K, +-10, 0.125M, 100PPM R20, R2 658963 RES, MF, 7750K, +-10, 0.125M, 100PPM R3 733642 RES, WF, 760K, +-10, 0.125M, 50PPM R6 733592 RES, WF, RS, MF, 100K, +-50, 0.3M R6 733592 RES, WF, 100K, +-50, 0.25M R7 6559078 RES, WF, 100K, +-50, 0.125M, 100PPM R8 733972 RES, MF, 100K, +-10, 0.125M, 100PPM R8 733972 RES, MF, 100K, +-01, 0.125M, 100PPM R9 756585 RES, WF, 100K, +-01, 0.125M, 100PPM				
ARI 747501 ARI 753319 CC, PANE, PRIGMABLE LOW FOWER, SELECTED BTI 696534 CI, C2 649913 CAP, FOLYES, 0.1UF, +-10, 50V C3 733683 CAP, FOLYES, 0.1UF, +-208, 50V C4 714766 CAP, TA, 10 UP, +-208, 10V CRI 659516 DIODE, SI, BW-75V, INM448 CR2 753301 DIODE, SI, BW-75V, INM448 CR3 741512 DIODE, SI, SCHOTTKY, SMALL SIG, HP5082-6264 CR3 741512 DIODE, SI, N-JPET, CURRENT REG, IP=0.24MA, J500 DIODE, LED, RED J1 735993 CONNACT, THENNCOUPLE J2 738179 CONNECTOR, BATTERY P1 736033 PLIC, BANANA Q1, Q2, Q4 698225 XSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 XSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 R11 655266 RES, MP, 22, IK, -4-10, 1.25M, J00PPM R12 734020 RES, MP, 18.12K, +-0.1%, 0.125M, J00PPM R14 737725 RES, MP, 698K, +-1%, 0.125M, J00PPM R15 747790 R15 747790 R16 757245 R17 746180 R17 746180 R17 746180 R19 756593 R29, MP, 4.22K, +-1%, 0.125M, J00PPM R19 756593 R20, R2 658963 R3 746164 R2S, MP, 4.22K, +-1%, 0.125M, J00PPM R20, R2 658963 R3 746164 R2S, MP, 7650K, +-1%, 0.125M, J00PPM R20, R2 658963 R3 746164 R2S, MP, 7650K, +-1%, 0.125M, J00PPM R20, R2 658963 R3 746164 R2S, MP, 7650K, +-1%, 0.125M, J00PPM R20, R2 658963 R3 746164 R2S, MP, 7650K, +-1%, 0.125M, J00PPM R20, R2 658963 R3 733972 R2S, MP, 10K, +-0.1%, 0.125M, J00PPM R6S, 733972 R8S, MP, 10K, +-0.1%, 0.125M, J00PPM R8 733972 R8M 740225 SMTCH, SSLDDE, DPTT				
ARI 753319 IC.OP AND, PROMABLE LOW POMER, SELECTED BT1 696534 BATTERY, 9V, 0-15NA C1, C2 649913 CAP, POLYPES, 0.1UF, +-100, 50V C3 733683 CAP, AL, 1UF, +-200, 150V C4 714766 CAP, TA, 10 UF, +-200, 150V CRI 659516 DIODE, SI, BW-75V, 1N4446 CR2 753301 DIODE, SI, SW-75V, 1N4446 CR2 753301 DIODE, SI, SW-75V, 1N4446 SCR2 753301 DIODE, SI, N-JFET, CURRENT REG, IF=0.24MA, J500 DIODE, LED, RED J1 735993 CONDACT, THERMOCOUPLE CONNECTOR, BATTERY P1 736033 PLUG, BANANA C1, GANANA				
BT1 696534 BATTERY, 97, 0-15MA C1, C2 649913 CAP, FOLYES, 0.1UF, +-108, 50V C3 733683 CAP, AL, 1UF, +-208, 150V C4 714766 CAP, TA, 10 UF, +-208, 10V CR1 659516 DIODE, SI, 18H-75Y, 1M448 CR2 753301 DIODE, SI, 18H-75Y, 1M448 CR3 741512 DIODE, SI, 18H-75Y, 1M448 CR3 741512 DIODE, SI, 18H-75Y, 1M448 J1 735993 COMPACT, THERMOCUPLE J1 736033 PLIC, BANANA C1, C2, Q4 698225 XSISTOR, SI, NPN, SMALL SIGMAL, 2M3904 CG 741363 XSISTOR, SI, NPN, SMALL SIGMAL R11 655266 RES, MF, 22.1K, +-18, 0.125M, 100PPM R12 734020 RES, MF, 18, 12K, +-0.18, 0.125M, 50PPM R13 733998 RES, MF, 22.1K, +-0.18, 0.125M, 50PPM R14 757252 RES, MF, 18, 12K, +-0.18, 0.125M, 50PPM R15 74790 RES, C7, 18M, +-58, 0.25M R17 746180 RES, C7, 22K, +-58, 0.25M R17 746180 RES, MF, 4.2ZK, +-18, 0.125M, 100PPM R19 756593 RES, MF, 10.7M, +-18, 0.125M, 100PPM R20, R2 658963 RES, MF, 20, NK, +-18, 0.125M, 100PPM R20, R2 658963 RES, MF, 750K, +-18, 0.125M, 100PPM R5 733659 RES, MF, 750K, +-18, 0.125M, 100PPM R6 733592 RES, MF, 100K, +-50, 0.25M R6 733592 RES, MF, 100K, +-50, 0.25M R6 733592 RES, MF, 100K, +-50, 0.125M, 50PPM R8 733972 RES, MF, 10K, +-0.18, 0.125M, 100PPM R9 756585 RES, MF, 10K, +-0.18, 0.125M, 100PPM R8 733972 RES, MF, 10K, +-0.18, 0.125M, 100PPM R9 756585 RES, MF, 10K, +-0.18, 0.125M, 100PPM R9 756585 RES, MF, 10K, +-0.18, 0.125M, 100PPM R9 756585 RES, MF, 10K, +-0.18, 0.125M, 100PPM	ARI			
C1,C2 649913 CAP, P.CLYPS, 0.1UF, +-108,50V C3 733683 CAP, AL, 1UF, +-208,50V C4 714766 CAP, TA, 10 UF, +-208,10V CR1 659516 DIODE, SI, BW-75V, INM448 CR2 753301 DIODE, SI, SCHOTTKY, SHALL SIG, HP5082-6264 CR3 741512 DIODE, SI, SCHOTTKY, SHALL SIG, HP5082-6264 DIODE, SI, SCHOTTKY, SHALL SIG, HP5082-6264 DIODE, SI, N-D, FET, CURRENT REG, IP=0.24MA, J500 DIODE, LED, RED CONNECTOR, BATTERY P1 736033 PLUG, BANNAN C1, C2, Q4 698225 XSISTOR, SI, NPN, SHALL SIGNAL, 2N3904 C3 741363 YSISTOR, SI, NPN, SHALL SIGNAL, 2N3904 C3 741363 XSISTOR, SI, NPN, SHALL SIGNAL C1, 2734020 RES, MP, 18.12K, +-0.14, 0.125M, 100PPM R12 734020 RES, MP, 18.12K, +-0.14, 0.125M, 50PPM R13 733998 RES, MP, 22.1K, -6-14, 0.125M, 50PPM R14 757252 RES, MP, 698K, -114, 0.125M, 100PPM R15 747790 RES, CP, 1.8M, -54, 0.25M R16 757245 RES, VRR, CERM, 200K, +-204, 0.3M R17 746180 RES, CP, 22M, +-54, 0.25M R17 746180 RES, MP, 4.22K, +-14, 0.125M, 100PPM R20, R2 658963 RES, MP, 10.7M, +-14, 0.125M, 100PPM R20, R2 658963 RES, MP, 10.7M, +-14, 0.125M, 100PPM R20, R2 658963 RES, MP, 750K, +-14, 0.125M, 100PPM R3 733642 RES, WP, 750K, +-14, 0.125M, 100PPM R6 733592 RES, WP, 10K, +-0.14, 0.125M, 100PPM R7 658078 RES, WP, 10K, +-0.14, 0.125M, 100PPM R8 733972 RES, WP, 10K, +-0.14, 0.125M, 100PPM R9 756585 REP, WP, 10K, +-0.14, 0.125M, 100PPM				
C3 733683 CAP, AL, 1UF, +-20A, 50V C4 714766 CAP, TA, 10 UP, +-20A, 10V CR1 659516 DIODE, SI, BW-75V, 1N4448 CR2 753301 DIODE, SI, BW-75V, 1N4448 DIODE, SI, SCHOTTKY, SWALL SIG, HP5082-6264 DIODE, SI, H-3PEF, CHERRENT REG, IP=0.24MA, J500 DS1 723486 DIODE, LED, RED J1 735993 COMMACT, THERNOCOUPLE CONNECTOR, BATTERY P1 736033 PLIG, BANNNA C1, Q2, Q4 698225 XSISTOR, SI, MPN, SMALL SIGNAL, 2N3904 C3 741363 XSISTOR, SI, MPN, SMALL SIGNAL, 2N3904 C3 741363 XSISTOR, SI, MPN, SMALL SIGNAL, 2N3904 C8 R11 655266 RES, MP, 22.1K, +-18, 0.125M, 100PPM R12 734020 RES, MP, 18.12K, +-0.18, 0.125M, 50PPM R13 733998 RES, MP, 22.1K, +-18, 0.125M, 100PPM R14 757252 RES, MP, 698K, +-18, 0.125M, 100PPM R15 747790 RES, CT, 1.8M, +-58, 0.25M R16 757245 RES, VAR, CERM, 200K, +-20A, 0.3W R17 746180 RES, CT, 1.8M, +-58, 0.25M R19 756593 RES, MP, 4.22K, +-18, 0.125M, 100PPM R19 756593 RES, MP, 7.00K, +-54, 0.25M R3 746164 RES, MP, 7.50K, +-18, 0.125M, 100PPM R5 733659 RES, MP, 7.50K, +-18, 0.125M, 100PPM R6 733592 RES, WP, 100K, +-54, 0.25M R6 733592 RES, WP, 100K, +-54, 0.25M, 100PPM R8 733972 RES, MP, 182K, +-18, 0.125M, 100PPM R8 756585 RES, MP, 182K, +-18, 0.125M, 100PPM R9 756585 RES, MP, 182K, +-18, 0.125M, 100PPM R9 756585 RES, MP, 182K, +-18, 0.125M, 100PPM				
CR1 659516 DIODE, SI, BW-75V, INM448 CR2 753301 DIODE, SI, SCHOTTRY, SHALL SIG, HP5082-6264 CR3 741512 DIODE, SI, N-JPET, CURRENT REG, IP=0.24MA, J500 DS1 723486 DIODE, LED, RED J1 735993 CANRACT, THERNOCOUPLE J2 738179 CONNECTOR, BATTERY P1 73603 PLUG, BANNAN G1, Q2, Q4 698225 XSISTOR, SI, MPN, SMALL SIGMAL, 2R3904 G3 741363 XSISTOR, SI, MPN, SMALL SIGMAL R11 655266 RES, MP, 22.1K, +-18, 0.125M, 100PPM R12 734020 RES, MP, 18.12K, +-0.18, 0.125M, 50PPM R13 733998 RES, MP, 22.1K, +-0.18, 0.125M, 50PPM R14 757252 RES, MP, 698K, +-18, 0.125M, 50PPM R15 747790 RES, CP, 1.8M, +-58, 0.25M R16 757245 RES, MP, 698K, +-18, 0.125M, 100PPM R17 746186 RES, CC, 22.1K, +-54, 0.25M R17 746186 RES, CC, 22.1K, +-18, 0.125M, 100PPM R19 756593 RES, MP, 4.22K, +-18, 0.125M, 100PPM R19 756593 RES, MP, 10.7M, +-18, 0.125M, 100PPM R20, R2 658963 RES, MP, 10.7M, +-18, 0.125M, 100PPM R3 733642 RES, WP, 750K, +-18, 0.125M, 50PPM R4 733642 RES, VAR, CERM, 50M,208, 0.3W R5 733592 RES, WP, 10.7M,18, 0.125M, 50PPM R6 733592 RES, WP, 10.7M,18, 0.125M, 50PPM R7 658078 RES, WP, 10.7M,18, 0.125M, 50PPM R8 733972 RES, WP, 10.7M,18, 0.125M, 100PPM R9 756585 RES, WP, 442K, +-0.18, 0.125M, 100PPM R9 756585 RES, WP, 442K,0.18, 0.125M, 100PPM		733683	CAP, AL, 1UF, +-204,50V	
CR2 753301 DIODE, SI, SCHOTTEY, SHALL SIG, HP5082-6264 CR3 741512 DIODE, SI, N-JFET, CURRENT REG, IF=0.24MA, J500 DS1 723486 J1 735993 COMPACT, THERMOCUPLE J2 738179 CONNECTOR, RATTERY P1 736033 PLUC, BANANA COLOR, CR, RATTERY P1 736034 PLUC, BANANA CR1 658225 SISTOR, SI, NPN, SHALL SIGNAL, 2N3904 SSISTOR, SI, NPN, SHALL SIGNAL R11 655266 RES, MF, 22.1K, +-18, 0.125M, 100PPM R12 734020 RES, MF, 18, 12K, +-0.18, 0.125M, 50PPM R13 733998 RES, MF, 22.1K, +-0.18, 0.125M, 50PPM R14 757252 RES, MF, 658K, +-18, 0.125M, 50PPM R15 74790 RES, CP, 11.8M, +-58, 0.25M R17 746180 RES, CP, 22K, +-58, 0.25M R17 746180 RES, MF, CERM, 200K, +-204, 0.3M R19 756593 RES, MF, 10.7M, +-18, 0.125M, 100PPM R19 756593 RES, MF, 10.7M, +-18, 0.125M, 100PPM R20, R2 658963 RES, MF, 10.7M, +-18, 0.125M, 100PPM R3 746164 RES, MF, 750K, +-18, 0.125M, 100PPM R5 733659 RES, WF, 750K, +-18, 0.125M, 100PPM R6 733592 RES, WF, 10K, +-0.0, 0.25M R6 733592 RES, WF, 10K, +-0.0, 1.25M, 100PPM R8 733972 RES, MF, 10K, +-0.18, 0.125M, 100PPM R9 756585 RES, MF, 10K, +-0.18, 0.125M, 100PPM	CI	714766	CAP,TA,10 UP,+-204,10V	
CRS 741512 DIODE, SI, N-JPET, CLERRENT REG, IP=0.24MA, J500 DSI 723486 DIODE, LED, RED J1 735993 DIODE, LED, RED J2 738179 CONNECTOR, RATTERY P1 736033 PLUG, BANANA Q1,Q2,Q4 698225 KSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 KSISTOR, SI, NPN, SMALL SIGNAL, 2N3904 R11 655266 RES, MP, 22.1K, -14, 0.125M, 100PPM R12 734020 RES, MP, 18.12K, +0.14, 0.125M, 100PPM R13 733998 RES, MP, 18.12K, +0.14, 0.125M, 50PPM R14 757252 RES, MP, 698K, -14, 0.125M, 100PPM R15 74790 RES, CP, 1.8M, -54, 0.25M R16 757245 RES, VRR, CERM, 200K, -204, 0.3W R1 746180 RES, CC, 21M, -54, 0.25M R17 746180 RES, CP, 22M, -54, 0.25M R19 756593 RES, MP, 4.22K, -14, 0.125M, 100PPM R20,R2 658963 RES, CP, 100K, +54, 0.25M, 100PPM R20,R2 658963 RES, CP, 100K, +54, 0.25M R3 746164 RES, MP, 750K, +-14, 0.125M, 50PPM R4 733642 RES, VRR, CERM, 50M, -204, 0.3W R5 733659 RES, VRR, CERM, 50M, -204, 0.3W R6 733592 RES, WP, 10K, +0.12, 0.125M, 100PPM R7 659078 RES, MP, 10K, +0.14, 0.125M, 100PPM R8 733972 RES, MP, 10K, +0.14, 0.125M, 50PPM R9 756585 RES, MP, 14K, +0.14, 0.125M, 50PPM R9 756585 RES, MP, 10K, +0.14, 0.125M, 50PPM R9 756585 RES, MP, 10K, +0.14, 0.125M, 50PPM R9 756585 RES, MP, 10K, +0.14, 0.125M, 50PPM		659516		
DS1 723486 DIODE, LED, RED J1 735993 CONTACT, THERNOCOUPLE J2 738179 CONNECTOR, BATTERY P1 736033 PLIG, BANNAN Ol.,02.04 698225 XSISTOR, SI, NPN, SMALL, SIGNAL, 2N3904 G3 741363 XSISTOR, SI, NPN, SMALL, SIGNAL, 2N3904 R11 655266 RES, NP, 22.1K, +-18, 0.125N, 100PPM R12 734020 RES, MP, 18.12K, +-0.18, 0.125N, 50PPM R13 733998 RES, NP, 22.1K, +-0.18, 0.125N, 50PPM R14 757252 RES, MP, 1896K,18, 0.125N, 100PPM R15 747790 RES, CP, 1.8N, +-58, 0.25W R16 757245 RES, VAR, CERN, 200K, +-20, 0.3W R17 746180 RES, CP, 21, NP, +10, 0.125N, 100PPM R19 756593 RES, MP, 4.22K,18, 0.125N, 100PPM R20, R2 658963 RES, MP, 750K, +-18, 0.125N, 100PPM R3 746164 RES, MP, 750K, +-18, 0.125N, 100PPM R4 733642 RES, VAR, CERN, 500, +-208, 0.3W R5 733659 RES, VAR, CERN, 500, +-208, 0.3W R6 733592 RES, NP, 182K, +-18, 0.125N, 100PPM R8 733972 RES, MP, 182K, +-18, 0.125N, 100PPM R8 73972 RES, MP, 182K, +-18, 0.125N, 100PPM R8 73972 RES, MP, 182K, +-18, 0.125N, 100PPM R8 73972 RES, MP, 10K, +-0.18, 0.125N, 50PPM R9 756585 RES, MP, 142K, +-0.18, 0.125N, 50PPM R9 756585 RES, MP, 142K, +-0.18, 0.125N, 50PPM	CR2	753301		
J1 735993 COMPACT, THERMOCOUPLE J2 738179 CONNECTOR, BATTERY P1 736033 PLIG, BANNAN Ol. 02.04 698225 SISTOR, SI, NPN, SHALL, SIGNAL, 2N3904 OB 741363 XSISTOR, SI, NPN, SHALL, SIGNAL, 2N3904 R11 655266 RES, NP, 22.1K, +-11, 0.125W, 100PPM R12 734020 RES, NP, 22.1K, +-11, 0.125W, 100PPM R13 733998 RES, NP, 18.12K, +-0.18, 0.125W, 50PPM R14 757252 RES, NP, 698K, +-18, 0.125W, 100PPM R15 747790 RES, CP, 1.8M, +-58, 0.25W R16 757245 RES, VAR, CERM, 200K, +-208, 0.3W R1 748186 RES, CC, 2.2M, +-58, 0.25W R17 746180 RES, NP, 4.22K, +-18, 0.125W, 100PPM R19 755593 RES, NP, 10.7M, +-18, 0.125W, 100PPM R20, R2 658963 RES, NP, 10.7M, +-18, 0.125W, 100PPM R3 746164 RES, NP, NP, NP, NP, NP, NP, NP, NP, NP, NP	CR3	741512	DIODE, SI, N-JPET, CURRENT REG, IF=0.24MA, J500	
13	DS1	723486		
P1 736033 PLIG, BANANA Q1,Q2,Q4 698225 XSISTOR,SI,NEN,SMALL SIGNAL,2N3904 Q3 741363 XSISTOR,SI,NEN,SMALL SIGNAL R11 655266 RES,NE,22.1K,+-10,0.125N,100PPM R12 734020 RES,NE,18.12K,+-0.14,0.125N,50PPM R13 733998 RES,NE,22.1K,+-0.14,0.125N,50PPM R14 757252 RES,NE,698K,+-10,0.125N,100PPM R15 747790 RES,CZ,1.8M,+-54,0.25M R16 757245 RES,VAR,CERM,200K,+-204,0.3W R17 746180 RES,CZ,2ZN,+-55,0.25M R17 746180 RES,MP,4.2ZK,+-14,0.125M,100PPM R19 756593 RES,NE,10.7M,+-14,0.125M,100PPM R20,R2 658963 RES,NE,10.7M,+-14,0.125M,50PPM R3 746164 RES,NE,750K,+-14,0.125M,50PPM R4 733642 RES,VAR,CERM,500,+-204,0.3W R5 733699 RES,VAR,CERM,500,+-204,0.3W R6 733592 RES,NE,760K,+-14,0.125M,100PPM R8 733972 RES,NE,18ZK,+-14,0.125M,100PPM R8 733972 RES,NE,18ZK,+-14,0.125M,100PPM R8 733972 RES,NE,18ZK,+-14,0.125M,100PPM R8 733972 RES,NE,NE,NE,10K,+-0.14,0.125M,100PPM R8 733972 RES,NE,NE,NE,10K,+-0.14,0.125M,50PPM R8 733972 RES,NE,NE,NE,NE,0C,NE,NE,NE,NE,NE,NE,NE,NE,NE,NE,NE,NE,NE,	Jì	735993		
Q1,Q2,Q4 69825	J2	738179		
741363 XSISTOR, SI, NPN, SMALL SUGAL R11			PLUG, BANANA	
R11 655266 RES, MF, 22.1K, +-18, 0.125M, 100PEM R12 734020 RES, MF, 22.1K, +-0.18, 0.125M, 50PEM R13 733998 RES, MF, 22.1K, +-0.18, 0.125M, 50PEM R14 757252 RES, MP, 698K, -18, 0.125M, 100PEM R15 747790 RES, CY, 1.8M, +-58, 0.25M R16 757245 RES, VRR, CERM, 200K, +-208, 0.3W R1 748186 RES, CY, 22M, -55, 0.25M R17 746180 RES, MP, 4.22K, +-18, 0.125M, 100PEM R19 756593 RES, MP, 107, 7M, +-18, 0.125M, 100PEM R20, R2 658963 RES, MP, 100K, +-58, 0.25M R3 746164 RES, MP, 750K, +-18, 0.125M, 50PEM R4 733642 RES, VRR, CERM, 500, +-200, 0.3W R5 733659 RES, VRR, CERM, 500, +-200, 0.3W R6 733592 RES, MP, 182K, +-18, 0.125M, 100PEM R7 659078 RES, MP, 182K, +-18, 0.125M, 100PEM R8 733972 RES, MP, 10K, +-0.18, 0.125M, 100PEM R8 733972 RES, MP, 10K, +-0.18, 0.125M, 50PEM R8 733972 RES, MP, 10K, +-0.18, 0.125M, 50PEM R8 75685 RES, MP, 16K, +-0.18, 0.125M, 50PEM R8 75685 RES, MP, 442K, +-0.18, 0.125M, 50PEM R9 756585 RES, MP, 442K, +-0.18, 0.125M, 50PEM R9 756585 RES, MP, 442K, +-0.18, 0.125M, 50PEM R9 756585 RES, MP, 442K, +-0.18, 0.125M, 50PEM	01,02,04			
R12 734020 RES, MP,18.12K,+-0.18,0.125M,50PPM R13 733998 RES, MP,22.1K,+-0.18,0.125M,50PPM R14 757252 RES, MP,698K,+-18,0.125M,100PPM R15 747790 RES, CP,1.8M,+-58,0.25M R16 757245 RES, VAR, CERM, 200K,+-208,0.3W R1 748186 RES, CC,22H,+-58,0.25M R17 746180 RES, MP,4.22K,+-18,0.125M,100PPM R19 756593 RES, MP,4.22K,+-18,0.125M,100PPM R20,R2 658963 RES, MP,4.22K,+-18,0.125M,100PPM R3 746164 RES, MP,750K,+-18,0.125M,50PPM R4 733642 RES, VAR, CERM, 500,+-208,0.3W R5 733659 RES, VAR, CERM, 500,+-208,0.3W R6 733592 RES, MP,182K,+-18,0.125M,100PPM R7 659078 RES, MP,60K,+-18,0.125M,100PPM R8 733972 RES, MP,10K,+-0.18,0.125M,100PPM R8 733972 RES, MP,442K,+-0.18,0.125M,50PPM R8 756585 RES, MP,442K,+-0.18,0.125M,50PPM R9 756585 RES, MP,442K,+-0.18,0.125M,50PPM R9 756585 RES, MP,442K,+-0.18,0.125M,50PPM				
R13 733998 RES.NF.,22.1K, -0.1%,0.125M,50PPM R14 757252 RES.NF.,698K, -1%,0.125M,100PPM R15 747790 RES.CT.1.8M, -5%,0.25M R16 757245 RES.VAR,CERM,200K, -20%,0.3W R1 748186 RES.CT.,22M, -5%,0.25M R17 746180 RES.CT.,22M, -5%,0.25M R19 756593 RES.NF.,10.7M, -1%,0.125M,100PPM R20,R2 658963 RES.NF.,10.7M, -1%,0.125M,100PPM R3 746164 RES.MF.,750K, -1%,0.125M,50PPM R4 733642 RES.VAR,CERM,500, -20%,0.3W R5 733659 RES.VAR,CERM,500, -20%,0.3W R6 733592 RES.NF.,18,0.125M,100PPM R7 655978 RES.NF.,18ZK, -1%,0.125M,100PPM R8 733972 RES.NF.,18ZK, -1%,0.125M,100PPM R8 733972 RES.NF.,10K, -0.1%,0.125M,50PPM R9 756585 RES.NF.,10K, -0.1%,0.125M,50PPM R9 756585 RES.NF.,10K, -0.1%,0.125M,50PPM R9 756585 RES.NF.,42K, -0.1%,0.125M,50PPM R9 756585 RES.NF.,44ZK, -0.1%,0.125M,50PPM				
R14 757252 RES,MP,698K,→18,0.125M,100PPM R15 747750 RES,CP,1.8M,→54,0.25M R16 757245 RES,VRR,CERM,200K, ←208,0.3M R1 748186 RES,VR,26ERM,200K, ←208,0.3M R17 746180 RES,MP,4.22K,→18,0.125M,100PPM R19 756593 RES,MP,4.72K,←18,0.125M,100PPM R20,R2 658963 RES,MP,10.7M,→110,0.125M,100PPM R3 746164 RES,MP,750K,←18,0.125M,50PPM R3 733642 RES,VRR,CERM,500,→204,0.3M R5 733659 RES,VAR,CERM,500,→204,0.3M R6 733592 RES,MP,182K,→18,0.125M,100PPM R7 659078 RES,MP,604K,→18,0.125M,100PPM R8 733972 RES,MP,604K,→18,0.125M,100PPM R8 733972 RES,MP,604K,→0.18,0.125M,50PPM R8 75685 RES,MP,604K,→0.18,0.125M,50PPM R8 75685 RES,MP,442K,→0.18,0.125M,50PPM R8 75685 RES,MP,442K,+0.18,0.125M,50PPM R8 75685 RES,MP,442K,+0.18,0.125M,50PPM R9 756585 RES,MP,442K,+0.18,0.125M,50PPM		734020		
R15 747790 RES, CP,1.8M, -54,0.25W R16 757245 RES, VRR, CERM, 200K, -204,0.3W R1 746186 RES, CC, 22M, +54,0.25M R17 746180 RES, MP, 4.22K, +14,0.125M, 100PPM R19 756593 RES, MP, 10.7M, +-14,0.125M, 100PPM R20, R2 658963 RES, CP, 100K, +-54,0.25M R3 746164 RES, MP, 750K, +-14,0.125M, 50PPM R4 733642 RES, VRR, CERM, 500, -204,0.3W R5 733659 RES, VRR, CERM, 500, -204,0.3W R6 733592 RES, MP, 182K, +-14,0.125M, 100PPM R7 659078 RES, MP, 162K, +-14,0.125M, 100PPM R8 733972 RES, MP, 10K, +-0.14,0.125M, 100PPM R9 756585 RES, MP, 142K, +-0.14,0.125M, 50PPM R9 756585 RES, MP, 442K, +-0.14,0.125M, 50PPM R9 740225 SMITCH, SLIDE, DEPTT	R13			
R16 757245 RES, VAR, CERM, 200K,20%, 0.3W R1 748186 RES, CC, 22H,5%, 0.25M R17 746180 RES, MP, 4.22K,1%, 0.125W, 100PPM R19 756593 RES, MP, 10.7M, +-1%, 0.125W, 100PPM R20, R2 658963 RES, CP, 100K,5%, 0.25M R3 746164 RES, MP, 750K,1%, 0.125W, 50PPM R4 733642 RES, VAR, CERM, 500, +-20%, 0.3W R5 733659 RES, VAR, CERM, 500, +-20%, 0.3W R6 733592 RES, MP, 182K, +-1%, 0.125W, 100PPM R7 659078 RES, MP, 604K, +-1%, 0.125W, 100PPM R8 733972 RES, MP, 10K, +-0.1%, 0.125W, 50PPM R9 756585 RES, MP, 442K, +-0.1%, 0.125W, 50PPM SM1 740225 SMTCH, SLIDE, DETT				
R1 748186 RES, CC, 22M, +-5%, 0.25M R17 746180 RES, MF, 4.22K, +-1%, 0.125M, 100PPM R19 756593 RES, MF, 10.7M, +-1%, 0.125M, 100PPM R20, R2 658963 RES, CF, 100K, +-5%, 0.25M R3 746164 RES, MF, 750K, +-1%, 0.125M, 50PPM R4 733642 RES, VAR, CERM, 500, +-20%, 0.3W R5 733659 RES, VAR, CERM, 550, +-20%, 0.3W R6 733592 RES, MF, 182K, +-1%, 0.125M, 100PPM R7 659078 RES, MF, 604K, +-1%, 0.125M, 100PPM R8 733972 RES, MF, 10K, +-0.1%, 0.125M, 100PPM R8 733972 RES, MF, 442K, +-0.1%, 0.125M, 50PPM R9 756585 RES, MF, 442K, +-0.1%, 0.125M, 50PPM SM1 740225 SMTCH, SLIDE, DETT				
R17 746180 RES, MP, 4.22K, +-18, 0.125M, 100PPM R19 756593 RES, MP, 10.7M, +-18, 0.125M, 100PPM R20, R2 658963 RES, CP, 100K, +-58, 0.25M R3 746164 RES, MP, 750K, +-18, 0.125M, 50PPM R4 733642 RES, VPR, CEPM, 500, +-208, 0.3W R5 733659 RES, VAR, CERM, 50K, +-208, 0.3W R6 733592 RES, MP, 182K, +-18, 0.125M, 100PPM R7 659078 RES, MP, 182K, +-18, 0.125M, 100PPM R8 733972 RES, MP, 10K, +-0.18, 0.125M, 50PPM R9 756585 RES, MP, 442K, +-0.18, 0.125M, 50PPM R9 756585 RES, MP, 442K, +-0.18, 0.125M, 50PPM R9 740225 SMITCH, SLIDE, DEPTT				
R19 756593 RES,MP,10.7M,+-1%,0.125M,100PPM R20,R2 658963 RES,CP,100K,+-5%,0.25M R3 746164 RES,MP,750K,+-1%,0.125M,50PPM R4 733642 RES,VAR,CERM,500,+-20%,0.3W R5 733659 RES,VAR,CERM,550,+-20%,0.3W R6 733592 RES,MP,12EK,+-1%,0.125M,100PPM R7 659078 RES,MP,12EK,+-1%,0.125M,100PPM R8 733972 RES,MP,10K,+-0.1%,0.125M,50PPM R8 733972 RES,MP,442K,+-0.1%,0.125M,50PPM R9 756585 RES,MP,442K,+-0.1%,0.125M,50PPM SM1 740225 SMTCH,SLIDE,DPTT				
R20,R2 658963 RES,CF,100K,+-50,0.25M R3 746164 RES,MF,750K,+-18,0.125M,50FPM R4 733642 RES,VAR,CERM,500,+-200,0.3W R5 733659 RES,VAR,CERM,50,-200,0.3W R6 733592 RES,MF,182K,+-18,0.125M,100FPM R7 659078 RES,MF,604K,+-18,0.125M,100FPM R8 733972 RES,MF,10K,+-0.18,0.125M,50FPM R9 756585 RES,MF,442K,+-0.18,0.125M,50FPM SM1 740225 SMTXCH,SLIDE,DETT				
R3 746164 RES, MP,750K, 1—18,0.125M,50FPM R4 733642 RES, VAR, CERM,500, 4—208,0.3W R5 733659 RES, VAR, CERM,55K, 1—208,0.3W R6 733592 RES, MP,182K, 1—18,0.125M,100FPM R7 655078 RES, MP,60K, 1—18,0.125M,100FPM R8 733972 RES, MP,60K, 1—0.18,0.125M,50PPM R9 756585 RES, MP,442K, 1—0.18,0.125M,50PPM S91 740225 SMITCH,5LIDE,DETT				
PM 733642 RES, VAR, CERM, 500, +−20%, 0.3W R5 733659 RES, VAR, CERM, 55, +−20%, 0.3W R6 733592 RES, MP, 128K, +−1%, 0.125W, 100PPM R7 659078 RES, MP, 128K, +−1%, 0.125W, 100PPM R8 733972 RES, MP, 10K, +−0.1%, 0.125W, 50PPM R9 756585 RES, MP, 142K, +−0.1%, 0.125W, 50PPM SM1 740225 SMTCH, SLIDE, DETT	R20,R2			
PS 733659 RES, VAR, CERM, 5K, +-20A, 0.3W R6 733592 RES, NF, 182K, +-18, 0.125M, 100PPM R7 659078 RES, NF, 504K, +-18, 0.125M, 100PPM R8 733972 RES, NF, 504K, +-18, 0.125M, 50PPM R9 756585 RES, NF, 142K, +-0.18, 0.125M, 50PPM SM1 740225 SMITCH, SLIDE, DETT	R3			
R6 733592 RES, NF, 182K, +-10,0.125W, 100PPM R7 659078 RES, NF, 604K, +-10,0.125W, 100PPM R8 733972 RES, NF, 10K, +-0.10,0.125W, 50PPM R9 756585 RES, NF, 442K, +-0.10,0.125W, 50PPM SW1 740225 SWITCH, SLIDE, DPTT				
R7 659078 RES, MF, 604K, +-1%, 0.125W, 100PPM R8 733972 RES, MF, 10K, +-0.1%, 0.125W, 50PPM R9 756585 RES, MF, 442K, +-0.1%, 0.125W, 50PPM SM1 740225 SMTCH, SLIDE, DPTT				
R8 733972 RES,MF,10K,4-0.1%,0.125W,50PPM R9 756585 RES,MF,442K,4-0.1%,0.125W,50PPM SM1 740225 SMITCH,SLIDE,DETT				
R9 756585 RES, MP, 442K, +-0.1%, 0.125W, 50PPM SM1 740225 SWITCH, SLIDE, DPTT				
SW1 740225 SWITCH, SLIDE, DPTT				
VRI 748178 IC, 2.5V,100 PPM T.C., BANKGAP REP				
	VRI	748178	IC, 2.5V, IOU PPR T.C., HARLGAP REF	

WARRANTY

ONE YEAR LIMITED WARRANTY

Fluke warrants your accessory to be free from defects in material and workmanship under normal use and service for 1 YEAR from date of purchase to the original purchaser. It does not apply to batteries or fuses or when the accessory has been misused, altered or damaged by accident or abnormal conditions of operation.

For warranty service, send the accessory, with a description of the difficulty, poetage prepaid, to a Fluke Service Center. Fluke assumes no risk for damage in transit. Fluke will, at our option, repair or replace the defective accessory free of charge. However, if we determine that the failure was caused by misuse, alteration, accident, or abnormal condition of operation, you will be billed for the repair. The repaired accessory will be returned, transportation prepaid.

FLUKE MAKES NO WARRANTY OTHER THAN THE LIMITED WARRANTY STATED ABOVE. ALL WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, ARE LIMITED TO A PERIOD OF 1 YEAR FROM THE DATE OF PURCHASE. FLUKE SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER IN CONTRACT, TORT, OR OTHERWISE.

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