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SERVICE BULLETIN

**NAVIGATION - KT 74 MODE S TRANSPONDER - KT 74 Mode S Transponder, PN 89000007-000001
- Upgrade to Software Version 3.12**

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Transmittal Information

ATA Number KT 74-34-01 (Publication Number D201407000065)

Summary

This is the INITIAL release.

Refer to Paragraph 1.N. for a list of the acronyms and abbreviations used in this service bulletin.

Revision History

This service bulletin has had no revision(s) as shown in Table 1.

Table 1. Revision History

Revision Number	Revision Date
0	12 Sep 2014

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1. Planning Information

A. Effectivity

- (1) This service bulletin is applicable to the KT 74 Mode S transponder, PN 8900007-000001, SN 00678 and below. Units with serial numbers above those stated have software 3.12 installed during original manufacturing.

B. Concurrent Requirements

- (1) No other modification must be done before the software modification given in this service bulletin.

C. Reason

- (1) Software Version 3.12 provides the following improvements on all KT 74 Mode S transponders:
 - (a) Compatibility with the Garmin GNS 430W/530W and GTN 650/750.
 - (b) The GPS loopback test has been improved to monitor the correct input and to decode the received data.

D. Description

- (1) This modification consists of updating the unit software to version 3.12.
- (2) Verify the software level and remove the KT 74 from the aircraft, if this update is needed.

E. Compliance

- (1) This software modification is optional. The operator can make the decision if this software modification is necessary.

F. Approval

- (1) This service bulletin includes approved software modification instructions from the manufacturer. The configuration created by this software modification is approved by the applicable regulatory agency.

G. Manpower

- (1) This software modification can be completed in the approximate times that follow:
 - 2.0 hour(s) for the labor to do the software modification and to test the KT 74 Mode S transponder.

H. Weight and Balance

- (1) None.

I. Electrical Load Data

- (1) Not changed.

J. Software Accomplishment Summary

- (1) Not applicable.

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K. References

- (1) To find, see, and download Honeywell Technical Publications, go to www.myaerospace.com.
- (2) The document(s) that follow(s) is/are necessary to complete this software modification. Unless specified differently, you can use subsequent revisions.
 - Installation Manual, Publication Number D201308000037, Revision 0, KT 74 Mode S/ADS-B Out Transponder.

NOTE:

L. Other Publications Affected

- (1) This service bulletin has no effect on the test procedure.
- (2) There are no changes to the Pilot's Guide, Publication Number D201308000036, Revision 0, KT 74 ADS-B Out Enabled Mode S Transponder.

M. Interchangeability or Intermixability of Parts

- (1) The installation of software Version 3.12 has an effect on the interchangeability and intermixability of the KT 74 Mode S transponder part number(s) identified in this service bulletin.

NOTE: KT 74 transponders with software versions below 3.12 will not accept the data from GPS sources that use the ADS-B Plus protocol.

N. Acronyms and Abbreviations

- (1) Refer to Table 2 for a list of the acronyms and abbreviations used in this service bulletin.

Table 2. Acronyms and Abbreviations

Term	Full Term
ADS-B	automatic dependent surveillance-broadcast
ATC	Air Traffic Control
ATA	Air Transport Association
CAGE	commercial and government entity
CD-ROM	compact disk read-only memory
CFR	Code of Federal Regulations
COM	communications
Config	configuration
ECCN	Export Control Classification Number
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FTDI	Future Technology Devices International
GPS	Global Positioning System

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Table 2. Acronyms and Abbreviations (Cont)

Term	Full Term
ID	identification
ISFP	in-system-flash-programmer
Mhz	megahertz
NA	not applicable
OKI	OKI Semiconductor
OSHA	Occupational Safety and Health Administration
PC	personal computer
PN	part number
PROM	programmable read-only memory
Qty	quantity
ROM	read-only memory
SFAR	Special Federal Aviation Regulation
SN	serial number
SW	software
TIS	terminal information system
tx	transmit
USB	universal serial bus
VDC	volts, direct current

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2. Material Information

A. Material - Price and Availability

- (1) This software modification can be done at a BendixKing service center or BendixKing-authorized repair location for the price given at the time of the order.
- (2) BendixKing pays only while under warranty if customer requests the modification. The price for parts will be given at the time of the order. When you make an order for parts, send a purchase order that refers to this Service Bulletin, ATA Number KT 74-34-01 (Publication Number D201407000065). The purchase order must include only the applicable parts specified in Table 3 of this service bulletin.

B. Industry Support Information

- (1) Service bulletin will be complied with at a shop location only.

C. Material Necessary for Each Component

- (1) The part identified in Table 3 is necessary to do this service bulletin.

Table 3. Operator-Purchased Material

New PN	Keyword/ Nomenclature	Old PN	Qty	List Price	Instructions/ Disposition Codes
89600007-001	KT74 Software Release V3.12	NA	1		1

NOTE:

- 1. Go to www.BendixKing.com/dealer-portal/Unit-Software.

- (2) The item(s) specified in Table 4 is/are necessary to do this service bulletin. The item(s) is/are available from commercial sources and should not be ordered as part of this service bulletin. Equivalent alternatives are permitted for the materials specified in Table 4.

Table 4. Operator-Supplied Material

Number	Description	Source
	permanent black marking material	commercially available

D. Material Necessary for Each Spare

- (1) Same as Paragraph 2.C.

E. Reidentified Parts

- (1) Not applicable.

F. Tooling - Price and Availability

- (1) In addition to the equipment specified in the document(s) given in Paragraph 1.K.(2) of this service bulletin, the item(s) identified in Table 5 is/are necessary to do this software modification. Equivalent alternatives are permitted for the equipment specified in Table 5.

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CAUTION: THIS CAN BE IDENTIFIED AS A CROSS-OVER CABLE, FILE TRANSFER CABLE, OR NULL MODEM CABLE. ONE BRAND IS CALLED LAPLINK. THE CONNECTIONS ARE GIVEN BELOW:

- Pin 2 connected to Pin 3
- Pin 3 connected to Pin 2
- Pin 5 connected to Pin 5.

NOTE: A cable described as straight through or PC printer cable will not work.

Table 5. Tooling

Number	Description	Source
PN 00749-00 AA	KT 74 software installation cable	Call BendixKing Technical Support Telephone: 855-250-7027 (Toll Free U.S.A./Canada) Telephone: 505-903-6148 (International Direct) or cable can be fabricated using information in Paragraph 4.A.

NOTE:

1. It is recommended that the PC have a 9-pin serial port installed. Problems have been found with some USB serial port adapters. If a serial port adapter is needed, the following have been verified to work:
 - Chipi-X10 from FTDI
 - Keyspan by Tripp Lite USA-19HS.

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3. Accomplishment Instructions

A. General Information

WARNING: TO AVOID INJURY TO PERSONNEL, BE AWARE THAT VOLTAGES ARE PRESENT IN THE KT 74 MODE S TRANSPONDER AND IN THE TEST EQUIPMENT. VOLTAGES AS LOW AS 28 VOLTS CAN CAUSE SERIOUS INJURY UNDER SOME CONDITIONS. DO NOT BE MISLED BY THE TERM "LOW VOLTAGE."

WARNING: BEFORE YOU USE A MATERIAL, REFER TO THE MANUFACTURER'S MATERIAL SAFETY DATA SHEETS. SOME MATERIALS CAN BE DANGEROUS.

CAUTION: DO NOT USE A MATERIAL THAT IS NOT EQUIVALENT TO THE MATERIAL SPECIFIED BY HONEYWELL. A MATERIAL THAT IS NOT EQUIVALENT CAN CAUSE DAMAGE TO THE EQUIPMENT AND CAN MAKE THE WARRANTY NOT APPLICABLE.

CAUTION: THE KT 74 MODE S TRANSPONDER CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE ITEMS. USE INDUSTRY APPROVED PRECAUTIONS.

CAUTION: ONLY SOFTWARE SUPPLIED BY TRIG AVIONICS LIMITED SPECIFICALLY FOR THE KT 74 MODE S TRANSPONDER SHOULD BE INSTALLED IN THE KT 74 MODE S TRANSPONDER. SOFTWARE SHOULD ONLY BE INSTALLED UNDER INSTRUCTION FROM TRIG AVIONICS OR IN RESPONSE TO AN AIRWORTHINESS DIRECTIVE. INSTALLATION OF INCORRECT SOFTWARE MAY RESULT IN PERMANENT DAMAGE TO THE KT 74 MODE S TRANSPONDER.

- (1) Obey the precautions.
- (2) Refer to the KT 74 Mode S/ADS-B Out Transponder Installation Manual, Publication Number D201308000037, for procedures and precautions. Use all CAUTIONS and WARNINGS.
- (3) Obey standard established shop practices during software modification of the KT 74 Mode S transponder unless specified differently.

B. Software Installation

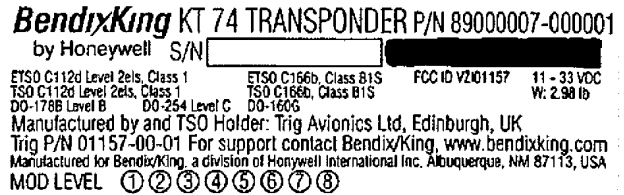
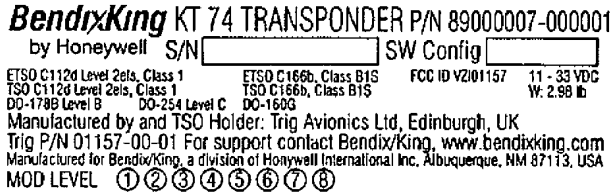
- (1) Verify software level by setting the KT 74 to standby (SBY) and noting the software level on the splash screen. If software level is 3.9 or lower proceed with software update.
- (2) Remove the KT 74 Mode S transponder from the aircraft.
- (3) Use the software identified in Table 3 and the detailed instructions in Paragraph 4.B. to install the software upgrade to the KT 74 Mode S transponder.
- (4) To verify that the software load procedure has been successful, switch the KT 74 Mode S transponder off, and then turn on to standby (SBY). Verify that the splash screen is displayed and note that the software version is correct (Version 3.12 should be displayed).

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- (5) SN 00289 and below have an ID label containing "SW Config" information. Use a permanent black marking material to completely mark out this information as shown in Figure 1.

NOTE: Do not put the permanent black marking material on any of the other data on the ID label and allow the permanent black marking material to completely dry before installing the KT 74 Mode S transponder in the aircraft.



ID-511865

Figure 1. (Sheet 1 of 1) ID Label

- (6) Install the KT 74 Mode S transponder in the aircraft.

NOTE: All configuration data is unchanged by this software modification.
- (7) Enter the maintenance mode by holding down the FUNC button and switch the KT 74 Mode S transponder on. Check that the setup details are correct and configure any additional parameters as required.
- (8) Once the setup is complete, verify software level v3.12 by setting the KT 74 to standby (SBY) and noting the software level on the splash screen. For troubleshooting see Paragraph 4.D..

NOTE: The accomplishment instructions above describe only the process of upgrading the software in the KT 74 Mode S transponder. It is possible that this upgrade is being carried out as part of an ADS-B installation in the aircraft, but the overall ADS-B installation process is beyond the scope of this service bulletin.
- (9) Perform a functional test of the installed KT 74 Mode S transponder in compliance with FAR 91.413, ATC TRANSPONDER TEST AND INSPECTIONS.

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4. Appendix

A. Appendix A, KT 74 Software Installation Cable

- (1) Refer to Figure 2 for a picture of the KT74 software installation cable and Figure 3 for the wiring diagram.

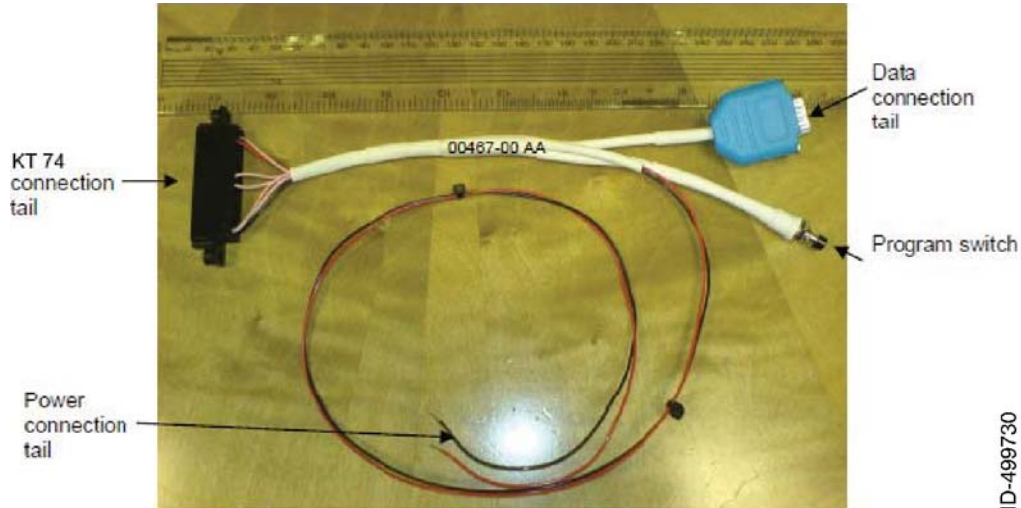
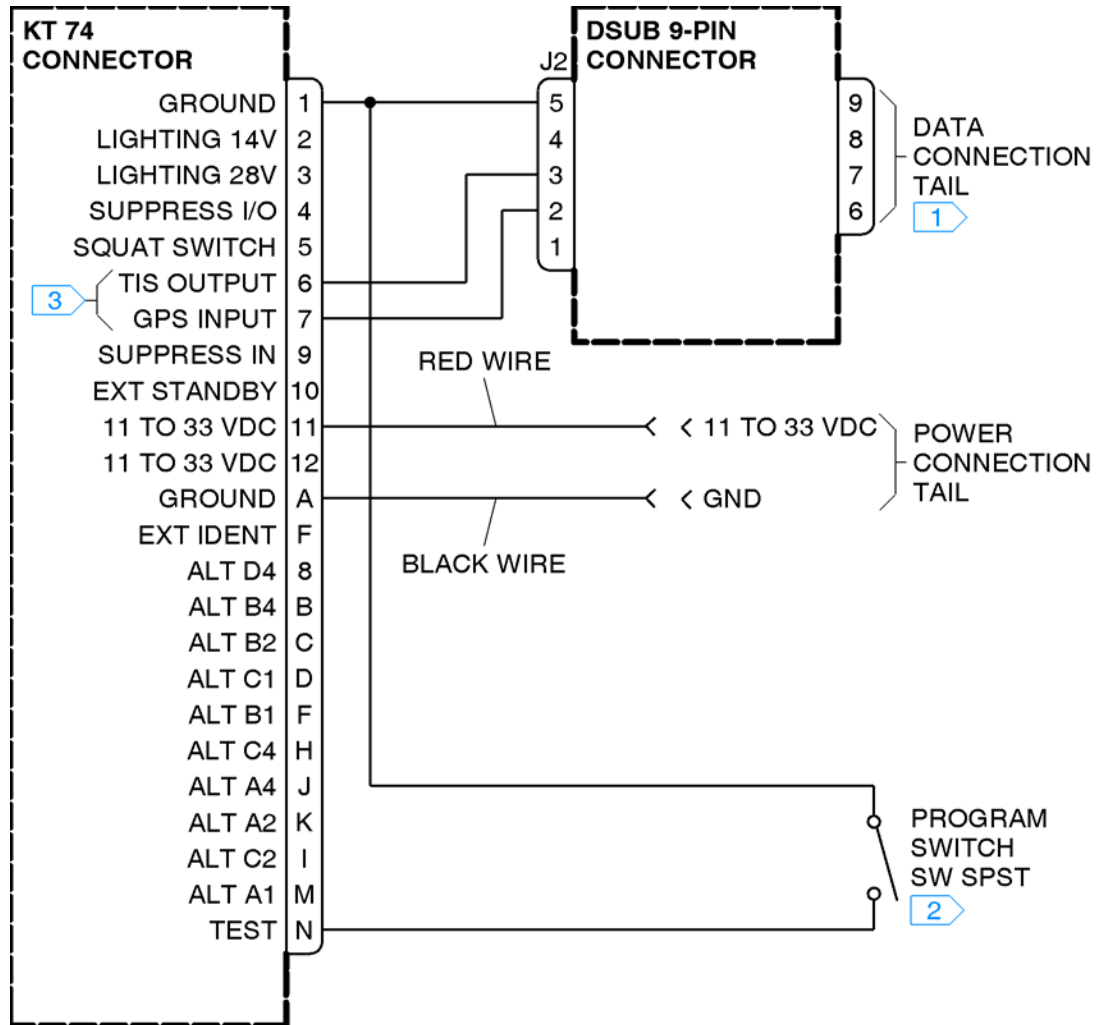


Figure 2. (Sheet 1 of 1) KT 74 Software Installation Cable

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NOTES:

- 1 Pinout compatible with PC to PC serial cable.
- 2 Switch open - normal operation, switch closed - program mode.
- 3 This can be identified as a cross-over cable, file transfer cable, or null modem cable. One brand is called Laplink.

The connections are given below:

- Pin 2 connected to Pin 3.
- Pin 3 connected to Pin 2
- Pin 5 connected to Pin 5.

A cable described as straight through or PC printer cable will not work.

Figure 3. (Sheet 1 of 1) KT 74 Software Installation Cable Wiring Diagram

ID-514429

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B. Appendix B, KT 74 Mode S Transponder Software Installation

CAUTION: ONLY SOFTWARE SUPPLIED BY BENDIXKING SPECIFICALLY FOR THE KT 74 MODE S TRANSPONDER SHOULD BE INSTALLED IN THE KT 74 MODE S TRANSPONDER. SOFTWARE SHOULD ONLY BE INSTALLED UNDER INSTRUCTION FROM BENDIXKING. INSTALLATION OF INCORRECT SOFTWARE MAY RESULT IN PERMANENT DAMAGE TO THE KT 74 MODE S TRANSPONDER.

NOTE: The following instructions are written for an English Language version of Windows XP. Some dialog boxes and other windows will be different when this software is installed on other languages or versions of Windows.

(1) Introduction

- (a) The KT 74 Mode S transponder uses microprocessor software which is stored in a PROM. The PROM in the KT 74 Mode S transponder is a flash memory that can be reprogrammed in the system without needing to remove the covers or remove any components. To achieve this reprogramming, the KT 74 Mode S transponder is switched into a special programming mode. While it is in the programming mode, all the normal KT 74 Mode S transponder functions are suspended. The system will not display anything on the screen, it will not respond to any button pushes or other inputs, and it will not respond to ATC interrogations.
- (b) In the programming mode, the signal lines normally used for GPS input and TIS traffic output are used for the memory programming function. The programming mode itself is enabled by grounding the programming pin on the 24-way Molex connector. This pin is sensed at system power-on to switch the KT 74 Mode S transponder into programming mode rather than operating normally as a KT 74 Mode S transponder. The actual software installation is carried out using a standard desktop or laptop PC with an RS-232 serial interface. For computers without an RS-232 interface, a USB to RS-232 adapter can be used. The FTDI Chipi-X10 adapter has been successfully used. The KT 74 Mode S transponder is removed from the aircraft, connected to the PC, and powered from a bench power supply, using a cable supplied by BendixKing or fabricated according to the drawing in Paragraph 4.A. of this document.
- (c) The flash PROM in the KT 74 Mode S transponder is in a device manufactured by OKI Semiconductor. The KT 74 Mode S transponder is designed so that the standard OKI Semiconductor flash write utility, called OKI ISFP, can be used. This is a software program for Microsoft Windows, and is available at no charge from OKI. We include a copy of the program in the zip file downloaded from BendixKing Dealer Portal. Instructions for installing this software on your PC can be found in Paragraph 4.C. of this document.
- (d) Integrity of the resulting KT 74 Mode S transponder software installation is assured by a software checksum which is computed when the KT 74 Mode S transponder software runs. Any error in data transmission or programming will

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be detected as a fault by the KT 74 Mode S transponder, and an appropriate fault code will be displayed.

(2) OKI ISFP Software Installation Procedure

- (a) The OKI ISFP software must be installed on the PC before KT 74 Mode S transponder software is installed. Follow instructions in Paragraph 4.C. for details on how to install this software onto the PC.

NOTE: This software only needs to be installed once.

(3) KT 74 Mode S Transponder Software Installation Procedure

CAUTION: ENSURE THAT THE CONNECTOR FOR THE KT 74 MODE S TRANSPONDER IS CORRECTLY ORIENTATED. PERMANENT DAMAGE MAY RESULT IF THIS IS FITTED INCORRECTLY. THE CORRECT ORIENTATION HAS THE RED SUPPLY LINE NEAREST TO THE ANTENNA PORT. RED IS THE POSITIVE SUPPLY (+) AND BLACK IS THE NEGATIVE SUPPLY (-).

- (a) Connect the equipment and cables as shown in Figure 4

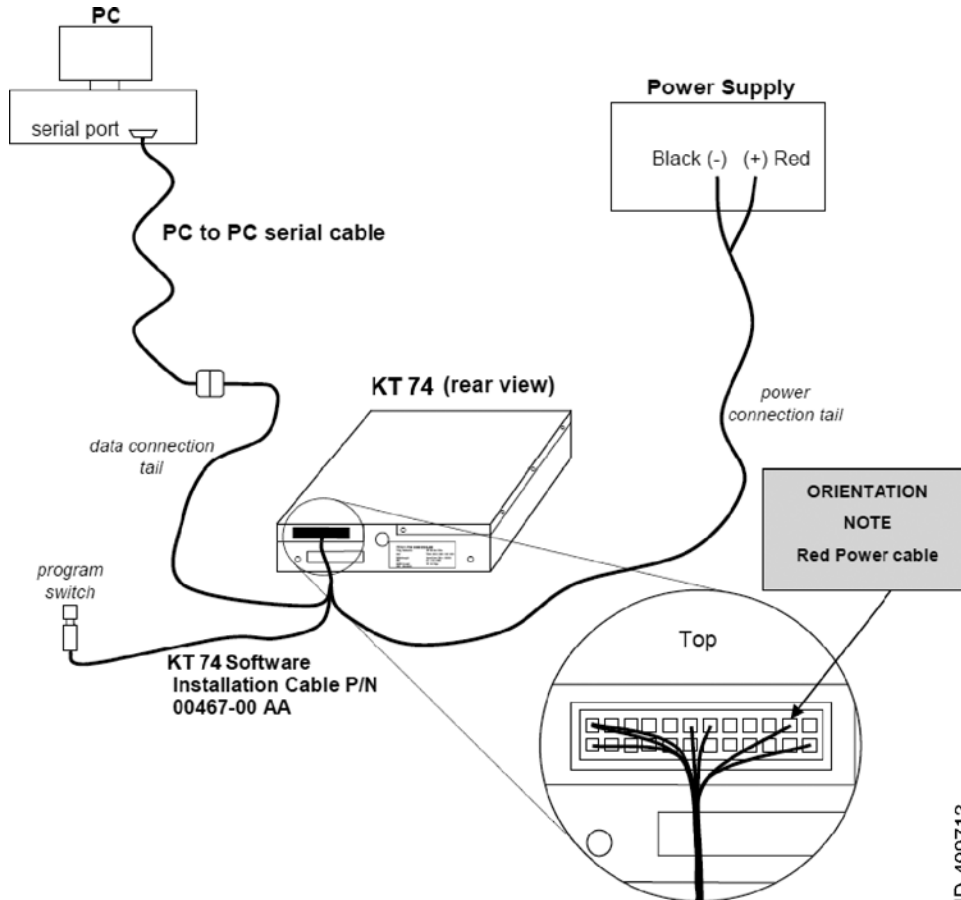


Figure 4. (Sheet 1 of 1) Equipment Connections for KT 74 Software Installation

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- (b) Make a note of which PC serial port (sometimes called a COM port) is used. It is normally labeled COM1, COM2, COM3 or COM4. If it is not labeled, all the 4 port options may have to be tried later in the procedure when selecting the PC port to be used.
- (c) Set the bench power supply voltage to between 14 and 28 VDC. Turn off the power supply.
- (d) Connect the KT 74 Mode S transponder to the bench power supply. Turn on the power supply.
- (e) Hold down the program switch and turn the mode switch from OFF to SBY on the KT 74 Mode S transponder. The KT 74 Mode S transponder screen will remain blank, all controls are ignored, and the KT 74 Mode S transponder will not respond to interrogations. Release the program switch.
- (f) On the PC, run the OKI ISFP utility by navigating to:
 - Start Menu
 - Programs
 - OKI ISFP
 - Oki ISFP Flash Programmer.
- (g) The screen shown in Figure 9 should be displayed.
- (h) Change the settings to the following:

Device ID	ML674002
Frequency	20 Mhz
Port	COMx (x is the number of the COM port recorded in Paragraph 4.B.(3)(b))
Baud Rate	115200
Tx Delay	0

- (i) Push Connect. The dialog box shown in Figure 5 should be displayed. Disregard the instruction to “reset the board” and continue to Paragraph 4.B.(3)(j).



Figure 5. (Sheet 1 of 1) First FlashProgrammer Dialog Box

- (j) Push OK. The dialog box shown in Figure 6 should be displayed.

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Figure 6. (Sheet 1 of 1) Second FlashProgrammer Dialog Box

(k) Push OK. The main menu shown in Figure 7 should be displayed.

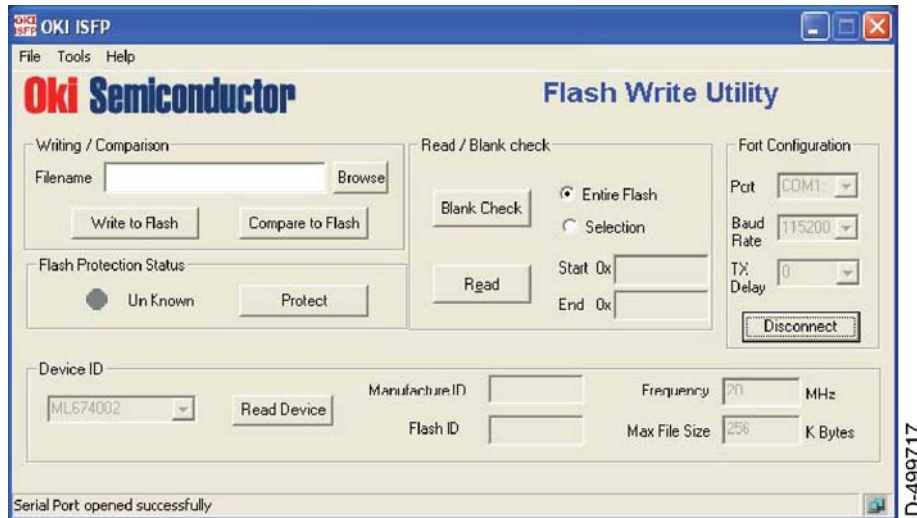


Figure 7. (Sheet 1 of 1) Second OKI ISFP Main Window

(4) The software to download should now be selected. Push the Browse button and navigate to the software (.hex file) to be downloaded. Single left click on the file to be selected and it should become highlighted as shown in Figure 8.

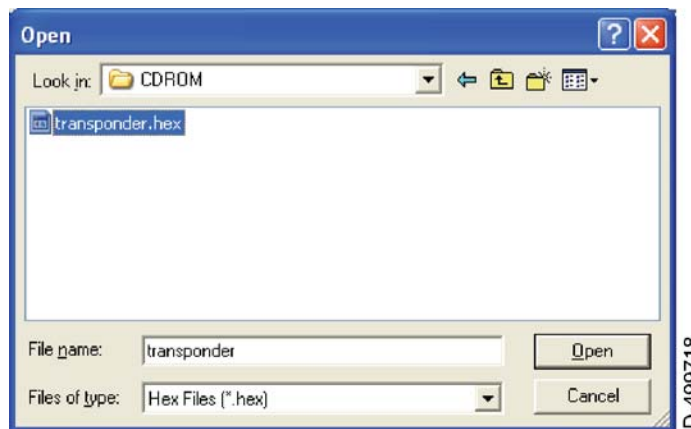
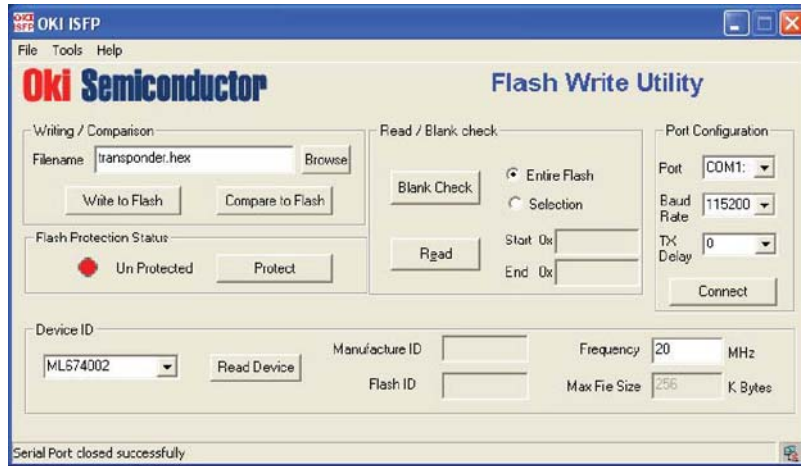


Figure 8. (Sheet 1 of 1) Open Window

(5) Push Open on the browse dialogue. The selected file will appear in the filename box within the Writing / Comparison area of the main OKI ISFP window.

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ID-499714

Figure 9. (Sheet 1 of 1) First OKI ISFP Main Window

- (6) Push Write to Flash in the main OKI ISFP window. The dialogue box shown in Figure 10 should be displayed.



ID-499719

Figure 10. (Sheet 1 of 1) Third FlashProgrammer Window

- (7) Push Yes. The dialogue box shown in Figure 11 should be displayed.



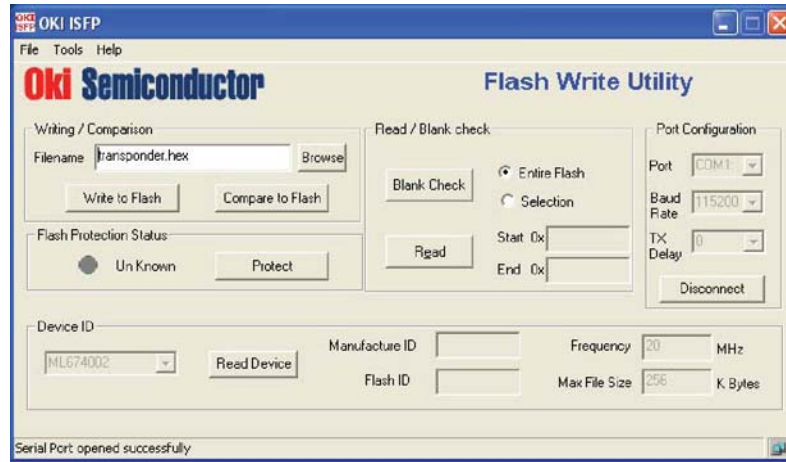
ID-499720

Figure 11. (Sheet 1 of 1) Fourth FlashProgrammer Window

- (8) Push OK. This will start the software upload and programming of the KT 74 Mode S transponder. This will take approximately 1 minute to complete. Refer to Figure 12. The icon at bottom right flashes and the number of bytes displayed at the bottom left increases.

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ID-499721

Figure 12. (Sheet 1 of 1) Third OKI ISFP Main Window

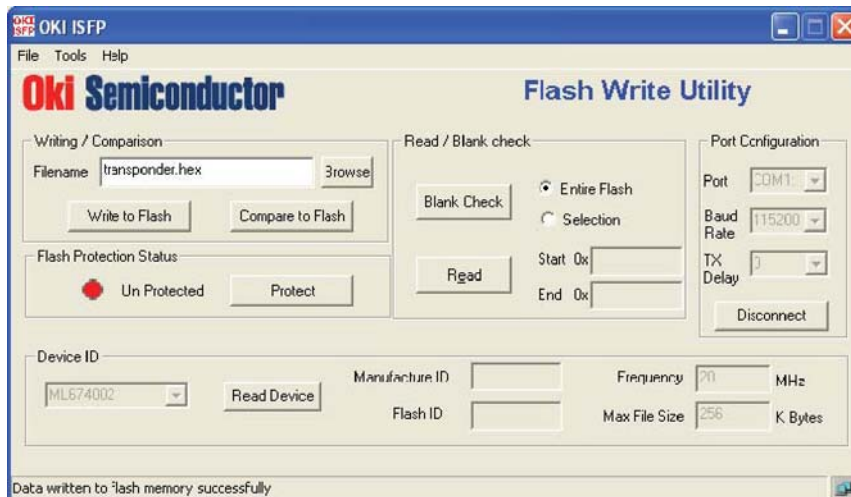
- (9) After programming is complete, the dialogue box shown in Figure 13 is displayed.



ID-499722

Figure 13. (Sheet 1 of 1) Fifth FlashProgrammer Window

- (10) Push OK and the main OKI ISFP window will be displayed as shown in Figure 14.



ID-499723

Figure 14. (Sheet 1 of 1) Fourth OKI ISFP Main Window

- (11) Push Disconnect. The Disconnect button will become a Connect button in the main OKI ISFP window as shown in Figure 15.

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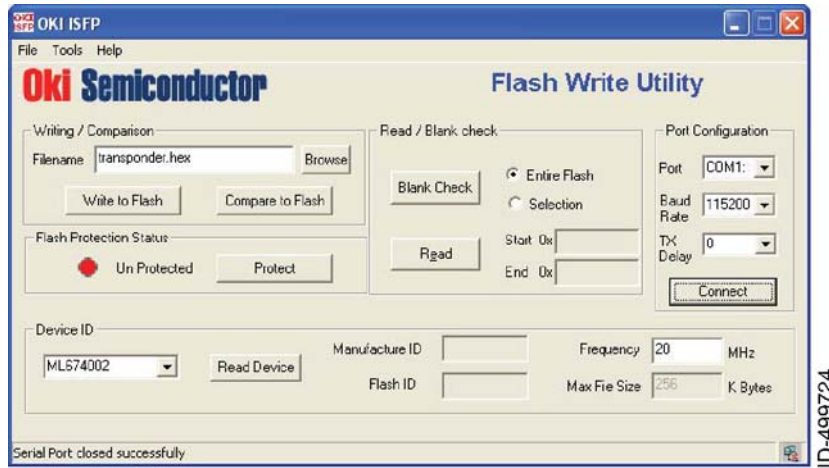


Figure 15. (Sheet 1 of 1) Fifth OKI ISFP Main Window

- (12) Close the OKI ISFP program.
- (13) Turn the KT 74 Mode S transponder mode switch to the OFF position and then back to the SBY position. Verify that the splash screen is displayed and note that the software version is as expected (i.e. Ver 3.12).
- (14) Turn the KT 74 Mode S transponder mode switch to the OFF position. Turn off the bench power supply.
- (15) The software installation procedure is complete.

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C. Appendix C, OKI ISFP Installation

NOTE: The OKI ISFP software is provided in the zip file containing the KT 74 Mode S transponder software update.

- (1) Log into the PC as an administrator.
- (2) Open Windows Explorer and browse to the file identified below:
 - OKI_ISFP_Setup_V1P2.msi.

NOTE: The “.msi” may be not be visible depending on the setup of the computer.

- (3) Double click the left mouse button on this file. This should start the installation process and Figure 16 should be shown.



Figure 16. (Sheet 1 of 1) First OKI ISFP Setup Window

- (4) Push Next and the window in Figure 17 should be shown.

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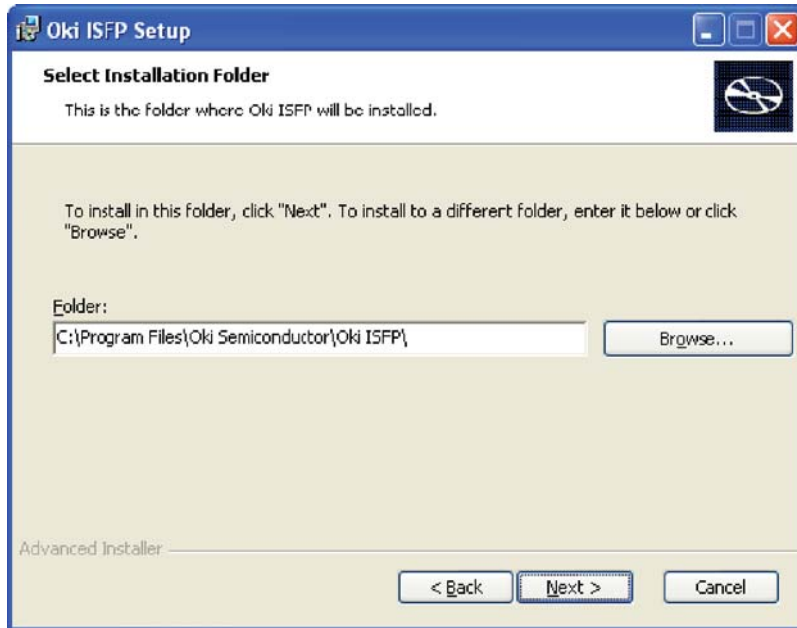


Figure 17. (Sheet 1 of 1) Second OKI ISFP Setup Window

- (5) Push Next and the window in Figure 18 should be shown.

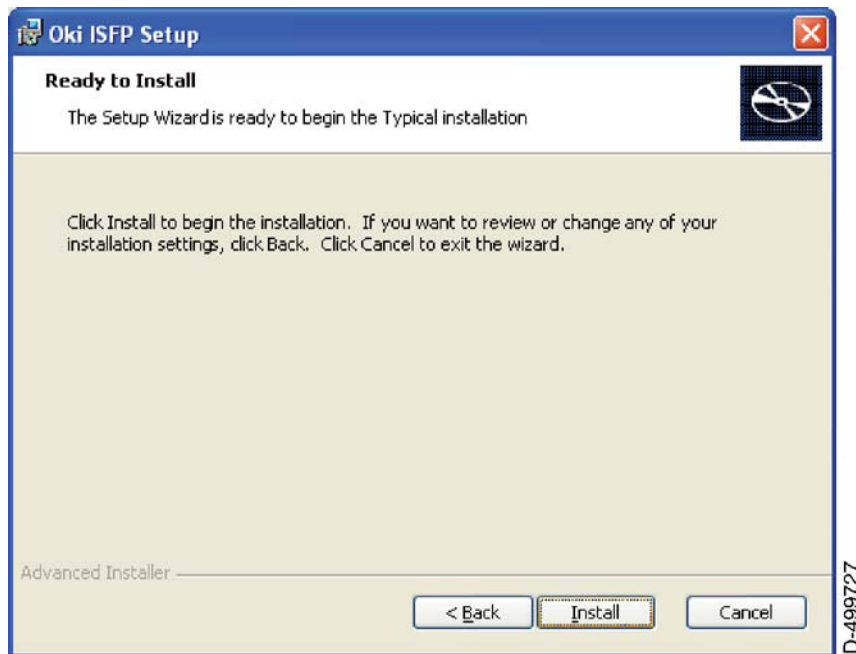


Figure 18. (Sheet 1 of 1) Third OKI ISFP Setup Window

- (6) Push Install and the window in Figure 19 should be shown as the software is installed.

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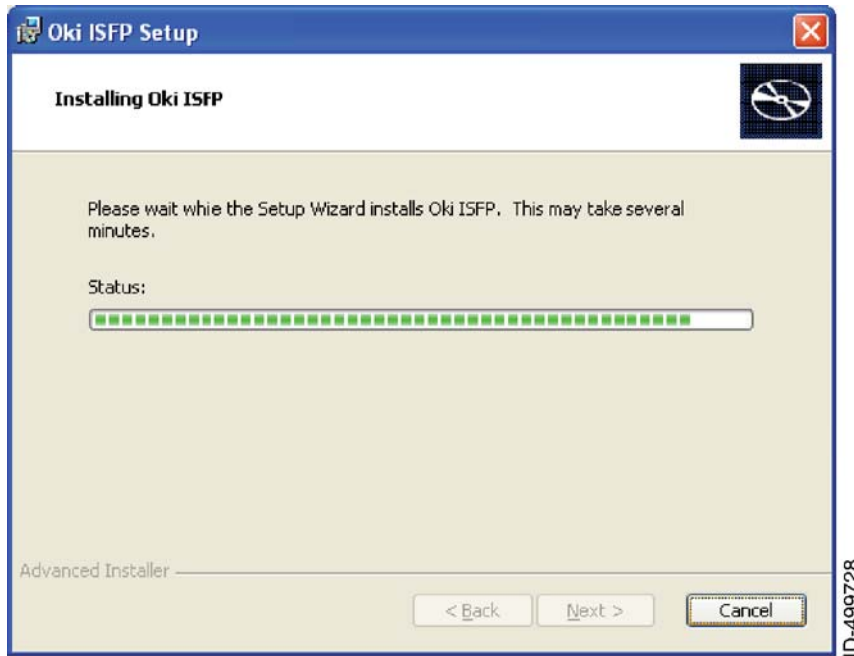


Figure 19. (Sheet 1 of 1) Fourth OKI ISFP Setup Window

- (7) Do not push Cancel. Wait until the window in Figure 20 is shown.

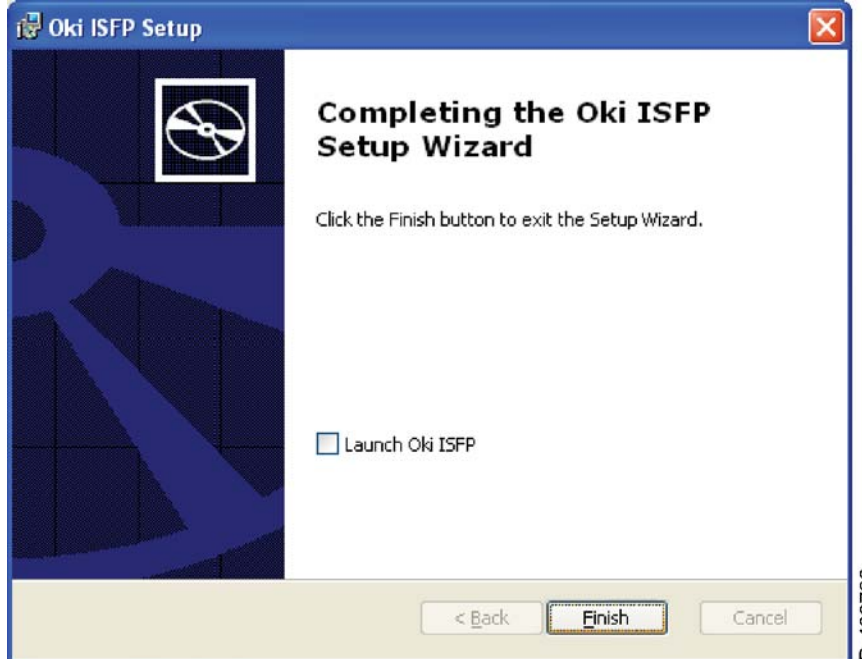


Figure 20. (Sheet 1 of 1) Fifth OKI ISFP Setup Window

- (8) Push Finish. The OKI ISFP software installation is now complete.

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D. Appendix D, Troubleshooting

(1) Refer to Table 6 for troubleshooting data.

Table 6. Troubleshooting Data

Symptom	Possible Cause
The OKI ISFP software crashes when trying to connect to the KT 74 Mode S transponder.	Check that you are a local administrator on the PC. This is required to allow OKI ISFP to access the PC serial hardware.
OKI ISFP gives error message or hangs when trying to connect to the KT 74 Mode S transponder.	Check that the KT 74 Mode S transponder has supply power and was powered up while pushing the program switch. The current draw during the procedure should be around 150 milliamps.
	Check that all cables are securely connected and are not damaged.
	Check that the correct serial port has been selected. Try another serial port if available.
	Check that no other application is running on the PC that may be accessing the serial port.
	Reduce the baud rate on the serial port to 1200. If this is successful, try higher baud rates.
Fault ROM checksum error	Make the tx delay value larger than 0.
	Install the software in the KT 74 Mode S transponder. Check that the installation file has not been corrupted. Copy the installation file from the original folder or other source media.