

TECHNICAL MANUAL
888-2599-001

3DXD Combiner
ISP Instructions

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T.M. No. 888-2598-001

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Returns And Exchanges

Damaged or undamaged equipment should not be returned unless written approval and a Return Authorization is received from HARRIS Broadcast Communications Division. Special shipping instructions and coding will be provided to assure proper handling. Complete details regarding circumstances and reasons for return are to be included in the request for return. Custom equipment or special order equipment is not returnable. In those instances where return or exchange of equipment is at the request of the customer, or convenience of the customer, a restocking fee will be charged. All returns will be sent freight prepaid and properly insured by the customer. When communicating with HARRIS Broadcast Communications Division, specify the HARRIS Order Number or Invoice Number.

Unpacking

Carefully unpack the equipment and preform a visual inspection to determine that no apparent damage was incurred during shipment. Retain the shipping materials until it has been determined that all received equipment is not damaged. Locate and retain all PACKING CHECK LISTS. Use the PACKING CHECK LIST to help locate and identify any components or assemblies which are removed for shipping and must be reinstalled. Also remove any shipping supports, straps, and packing materials prior to initial turn on.

Technical Assistance

HARRIS Technical and Troubleshooting assistance is available from HARRIS Field Service during normal business hours (8:00 AM - 5:00 PM Central Time). Emergency service is available 24 hours a day. Telephone 217/222-8200 to contact the Field Service Department or address correspondence to Field Service Department, HARRIS Broadcast Communications Division, P.O. Box 4290, Quincy, Illinois 62305-4290, USA. Technical Support by e-mail: *tsupport@harris.com*. The HARRIS factory may also be contacted through a FAX facility (217/221-7096).

Replaceable Parts Service

Replacement parts are available 24 hours a day, seven days a week from the HARRIS Service Parts Department. Telephone 217/222-8200 to contact the service parts department or address correspondence to Service Parts Department, HARRIS CORPORATION, Broadcast Systems Division, P.O. Box 4290, Quincy, Illinois 62305-4290, USA. The HARRIS factory may also be contacted through a FAX facility (217/221-7096).

NOTE:

The # symbol used in the parts list means used with (e.g. #C001 = used with C001).

Manual Revision History

REV.	DATE	ECN	Pages Affected
NEW	10/25/2006	Created	All

Guide to Using Harris Parts List Information

The Harris Replaceable Parts List Index portrays a tree structure with the major items being leftmost in the index. The example below shows the Transmitter as the highest item in the tree structure. If you were to look at the bill of materials table for the Transmitter you would find the Control Cabinet, the PA Cabinet, and the Output Cabinet. In the Replaceable Parts List Index the Control Cabinet, PA Cabinet, and Output Cabinet show up one indentation level below the Transmitter and implies that they are used in the Transmitter. The Controller Board is indented one level below the Control Cabinet so it will show up in the bill of material for the Control Cabinet. The tree structure of this same index is shown to the right of the table and shows indentation level versus tree structure level.

Example of Replaceable Parts List Index and equivalent tree structure:

<u>Replaceable Parts List Index</u>	<u>Part Number</u>	<u>Page</u>	
Table 7-1. Transmitter	994 9283 001	7-2	
Table 7-2. Control Cabinet	992 9244 002	7-3	
Table 7-3. Controller Board	992 8344 002	7-6	
Table 7-4. PA Cabinet	992 9400 002	7-7	
Table 7-5. PA Amplifier	994 7894 002	7-9	
Table 7-6. PA Amplifier Board	992 7904 002	7-10	
Table 7-7. Output Cabinet	992 9450 001	7-12	

The part number of the item is shown to the right of the description as is the page in the manual where the bill for that part number starts. Inside the actual tables, four main headings are used:

- Table #-#. ITEM NAME - HARRIS PART NUMBER - this line gives the information that corresponds to the
- Replaceable Parts List Index entry;
- HARRIS P/N column gives the ten digit Harris part number (usually in ascending order);
- DESCRIPTION column gives a 25 character or less description of the part number;
- REF. SYMBOLS/EXPLANATIONS column 1) gives the reference designators for the item (i.e., C001, R102, etc.) that corresponds to the number found in the schematics (C001 in a bill of material is equivalent to C1 on the schematic) or 2) gives added information or further explanation (i.e., “Used for 208V operation only,” or “Used for HT 10LS only,” etc.).

Inside the individual tables some standard conventions are used:

- A # symbol in front of a component such as #C001 under the REF. SYMBOLS/EXPLANATIONS column means that this item is used on or with C001 and is not the actual part number for C001.
- In the ten digit part numbers, if the last three numbers are 000, the item is a part that Harris has purchased and has not manufactured or modified. If the last three numbers are other than 000, the item is either manufactured by Harris or is purchased from a vendor and modified for use in the Harris product.
- The first three digits of the ten digit part number tell which family the part number belongs to - for example, all electrolytic (can) capacitors will be in the same family (524 xxxx 000). If an electrolytic (can) capacitor is found to have a 9xx xxxx xxx part number (a number outside of the normal family of numbers), it has probably been modified in some manner at the Harris factory and will therefore show up farther down into the individual parts list (because each table is normally sorted in ascending order). Most Harris made or modified assemblies will have 9xx xxxx xxx numbers associated with them.

The term “SEE HIGHER LEVEL BILL” in the description column implies that the reference designated part number will show up in a bill that is higher in the tree structure. This is often the case for components

⚠ WARNING:
THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS. PERSONNEL MUST AT ALL TIMES OBSERVE SAFETY WARNINGS, INSTRUCTIONS AND REGULATIONS.

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical/electronic circuits. It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care. HARRIS CORPORATION shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks. During installation and operation of this equipment, local building codes and fire protection standards must be observed.

The following National Fire Protection Association (NFPA) standards are recommended as reference:

- Automatic Fire Detectors, No. 72E
- Installation, Maintenance, and Use of Portable Fire Extinguishers, No. 10
- Halogenated Fire Extinguishing Agent Systems, No. 12A

⚠ WARNING:
ALWAYS DISCONNECT POWER BEFORE OPENING COVERS, DOORS, ENCLOSURES, GATES, PANELS OR SHIELDS. ALWAYS USE GROUNDING STICKS AND SHORT OUT HIGH VOLTAGE POINTS BEFORE SERVICING. NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields. Keep away from live circuits, know your equipment and don't take chances.

⚠ WARNING:
IN CASE OF EMERGENCY ENSURE THAT POWER HAS BEEN DISCONNECTED.

⚠ WARNING:
IF OIL FILLED OR ELECTROLYTIC CAPACITORS ARE UTILIZED IN YOUR EQUIPMENT, AND IF A LEAK OR BULGE IS APPARENT ON THE CAPACITOR CASE WHEN THE UNIT IS OPENED FOR SERVICE OR MAINTENANCE, ALLOW THE UNIT TO COOL DOWN BEFORE ATTEMPTING TO REMOVE THE DEFECTIVE CAPACITOR. DO NOT ATTEMPT TO SERVICE A DEFECTIVE CAPACITOR

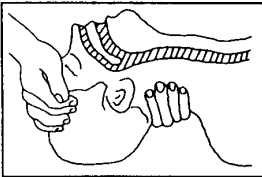
TREATMENT OF ELECTRICAL SHOCK

1. IF VICTIM IS NOT RESPONSIVE FOLLOW THE A-B-C'S OF BASIC LIFE SUPPORT.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

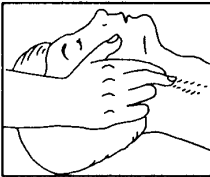
(A) AIRWAY

IF UNCONSCIOUS,
OPEN AIRWAY



LIFT UP NECK
PUSH FOREHEAD BACK
CLEAR OUT MOUTH IF NECESSARY
OBSERVE FOR BREATHING

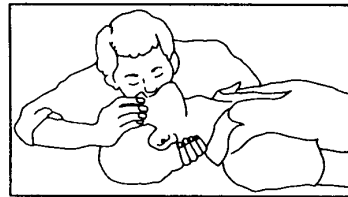
CHECK
CAROTID PULSE



IF PULSE ABSENT,
BEGIN ARTIFICIAL
CIRCULATION

(B) BREATHING

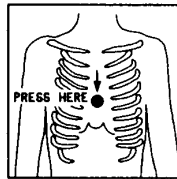
IF NOT BREATHING,
BEGIN ARTIFICIAL BREATHING



TILT HEAD
PINCH NOSTRILS
MAKE AIRTIGHT SEAL
4 QUICK FULL BREATHS
REMEMBER MOUTH TO MOUTH
RESUSCITATION MUST BE
COMMENCED AS SOON AS POSSIBLE

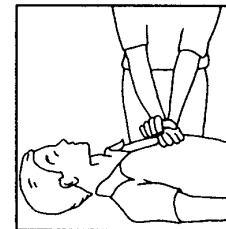
(C) CIRCULATION

DEPRESS STERNUM 1 1/2 TO 2 INCHES



APPROX. RATE
OF COMPRESSIONS { ONE RESCUER
--80 PER MINUTE { 15 COMPRESSIONS
2 QUICK BREATHS

APPROX. RATE
OF COMPRESSIONS { TWO RESCUERS
--60 PER MINUTE { 5 COMPRESSIONS
1 BREATH



NOTE: DO NOT INTERRUPT RHYTHM OF COMPRESSIONS
WHEN SECOND PERSON IS GIVING BREATH

CALL FOR MEDICAL ASSISTANCE AS SOON AS POSSIBLE.

2. IF VICTIM IS RESPONSIVE.

- A. KEEP THEM WARM
- B. KEEP THEM AS QUIET AS POSSIBLE
- C. LOOSEN THEIR CLOTHING
- D. A RECLINING POSITION IS RECOMMENDED

WHILE IT IS HOT DUE TO THE POSSIBILITY OF A CASE RUPTURE AND SUBSEQUENT INJURY.

FIRST-AID

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be complete first-aid procedures, it is a brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and there by prevent avoidable loss of life.

Treatment of Electrical Burns

1. Extensive burned and broken skin
 - a. Cover area with clean sheet or cloth. (Cleanest available cloth article.)
 - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
 - c. Treat victim for shock as required.
 - d. Arrange transportation to a hospital as quickly as possible.
 - e. If arms or legs are affected keep them elevated.

⇒ NOTE:

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (a half of glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs. (Do not give alcohol.)

2. Less severe burns - (1st & 2nd degree)
 - a. Apply cool (not ice cold) compresses using the cleanest available cloth article.
 - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
 - c. Apply clean dry dressing if necessary.
 - d. Treat victim for shock as required.
 - e. Arrange transportation to a hospital as quickly as possible.
 - f. If arms or legs are affected keep them elevated.

REFERENCE:

ILLINOIS HEART ASSOCIATION
AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY
MANUAL (SECOND EDITION)

3DXD COMBINER ISP INSTRUCTIONS

1

1.1 ISP: In-System Programming

This section provides step by step procedures for updating the software loaded onto the controllers in the 3DXD Combiner via the In-System Programming feature (ISP). This allows for software updates without having to change firmware ICs. The ISP program and the software files for the controller is supplied on the CD-ROM which came with the transmitter, along with an acrobat version of the technical manual. The ISP program requires an external Windows PC with an available RS-232 serial port which can be connected to the Main Controller boards.

1.1.1 Installing the ISP Program

The In-System Programming (ISP) application, HarrisISP.exe, is a Windows based software program. The main requirements are a Windows based PC and an open COM port.

To install the HarrisISP.exe program simply double click the Setup.exe program located on the CD-ROM in the directory D:\Firmware\Isp\ as shown in Figure 1-1 or use the RUN command in the START menu. Disregard other files in directory as they may change with later revisions.

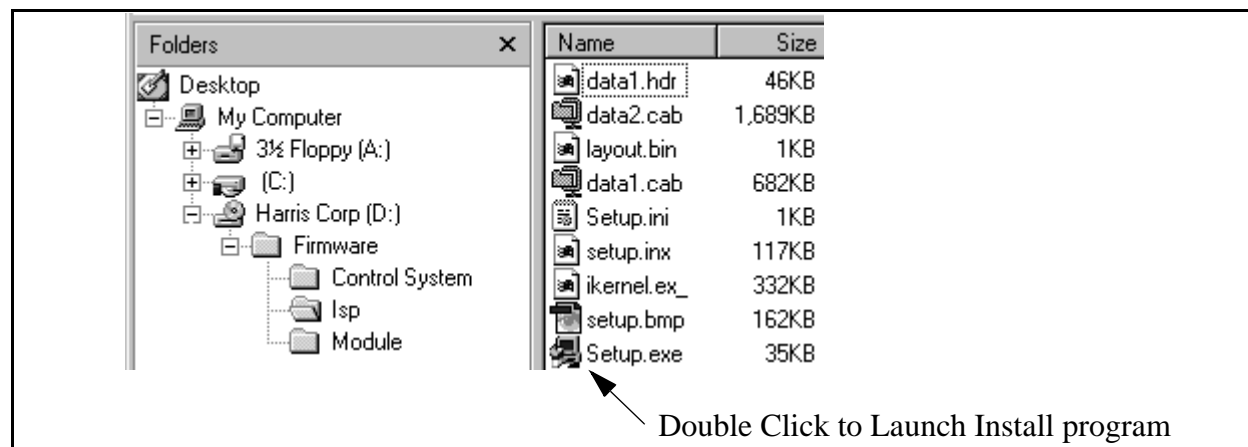


Figure 1-1 CD-ROM ISP Directory

Simply follow the on screen instructions and do not change the paths where the program wants to be installed. When finished you will have a "Harris Micro ISP" group added to your "Program Files". Start the ISP application by clicking on the "Harris Micro ISP" icon. (Start/Programs/Harris Micro ISP/Harris Micro ISP on desktop.)

1.1.2 ISP Procedures

When firmware in the Controller is updated, the firmware revision should be checked and brought up to the revision level on the CD-ROM if not already the same. The .s19 file name for the controller and the modules have the revision number as part of the name.

For example: *CCU_0010.s19* is revision 1.0 CCU Main Controller code.

1.1.2.1 Control System ISP Procedure

The example given here is for updating the Main Controller board.

STEP 1 Insert the CD-ROM into the disk drive.

STEP 2 Locate the VT-100 connection on the TCU or CCU UC2 BOARD(S) J25 of the 3DXD Combiner. Connect a standard RS-232 cable from the serial port on your computer to DB9 VT-100 connector.



NOTE:

TCU connector for updating the TCU Controller and CCU Connector for updating the CCU Controller.

- STEP 3** Run the “Harris ISP.exe” program. The window shown in Figure 1-2 should open.
- STEP 4** Set “Port” to the number of the COM port being used on your computer.
- STEP 5** Set “Baud” to 19200.
- STEP 6** Press Query Micros; wait for system to recognize the controller board as shown in Figure 1-3. If it does not find the micros, press Stop Query, change the COM port and press Query Micros again.

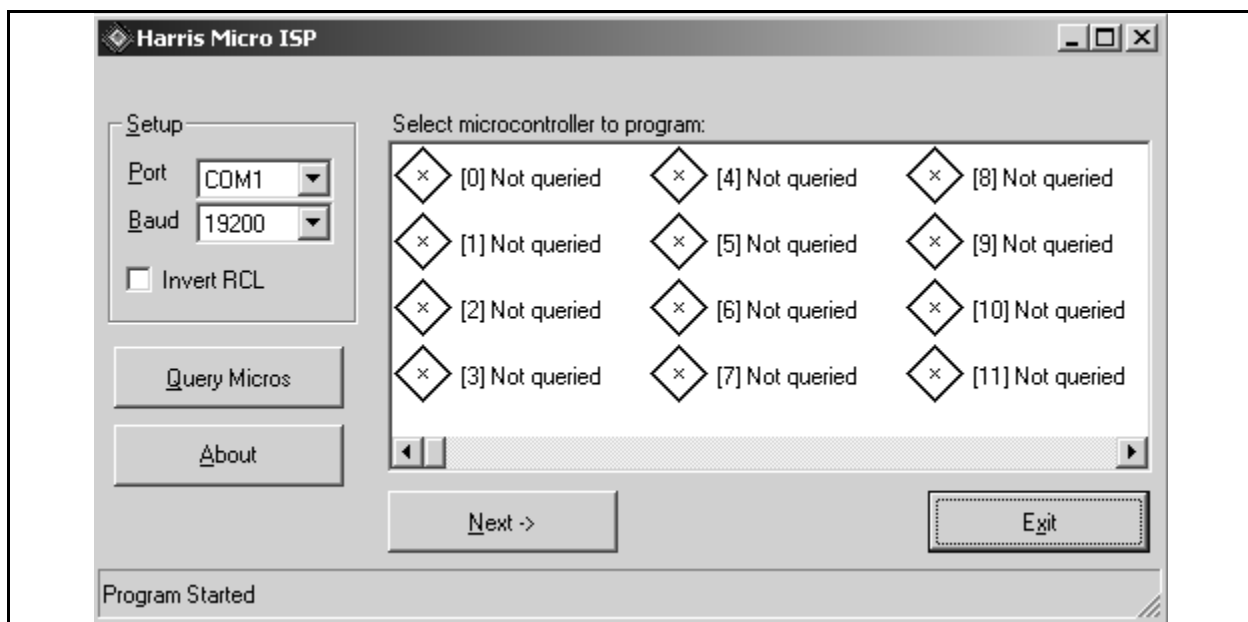


Figure 1-2 ISP Opening Screen

NOTE:
Actual screen views may differ from these shown here.

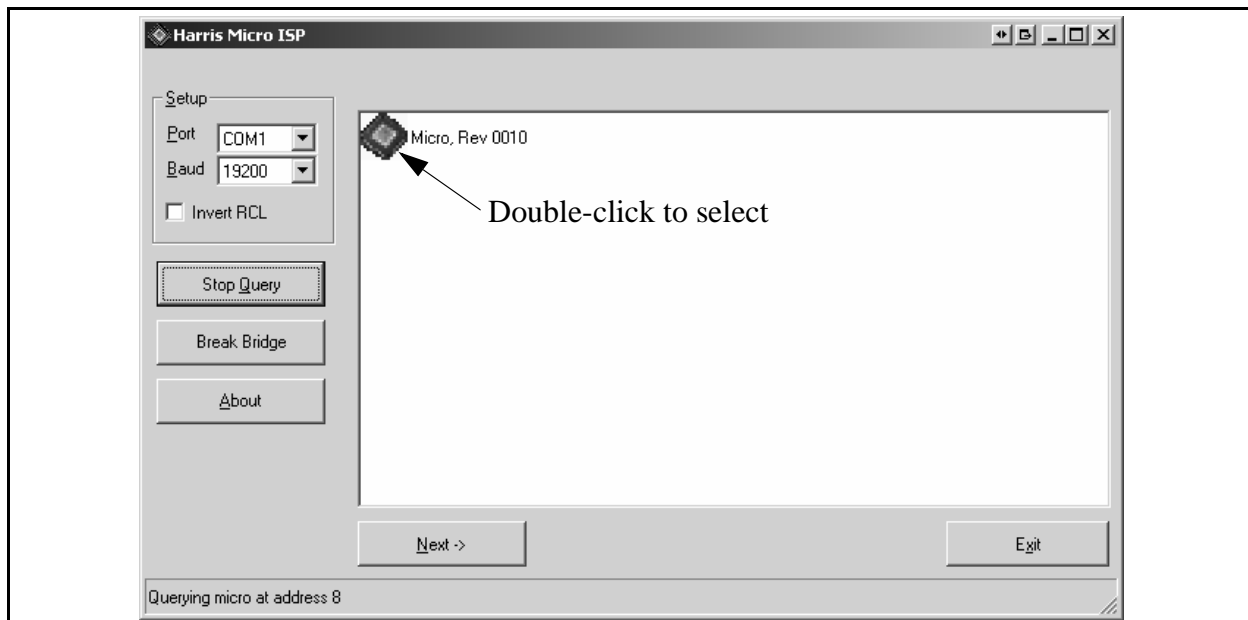


Figure 1-3 Response to “Query Micros”

- STEP 7** Once it has found the micro, select the micro by double-clicking the icon to the left of the name. This will open the smaller pop-up window shown in Figure 1-4.
- STEP 8** Select the **Program File** button as shown. This will open the “Select Program Files” window shown in Figure 1-5.

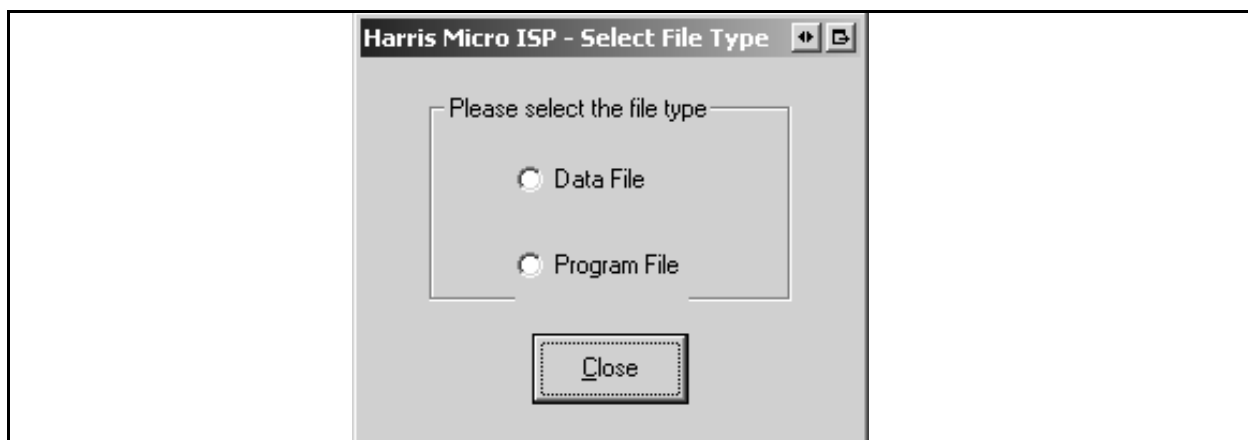


Figure 1-4 Controller Selected for Update, Program File Selected

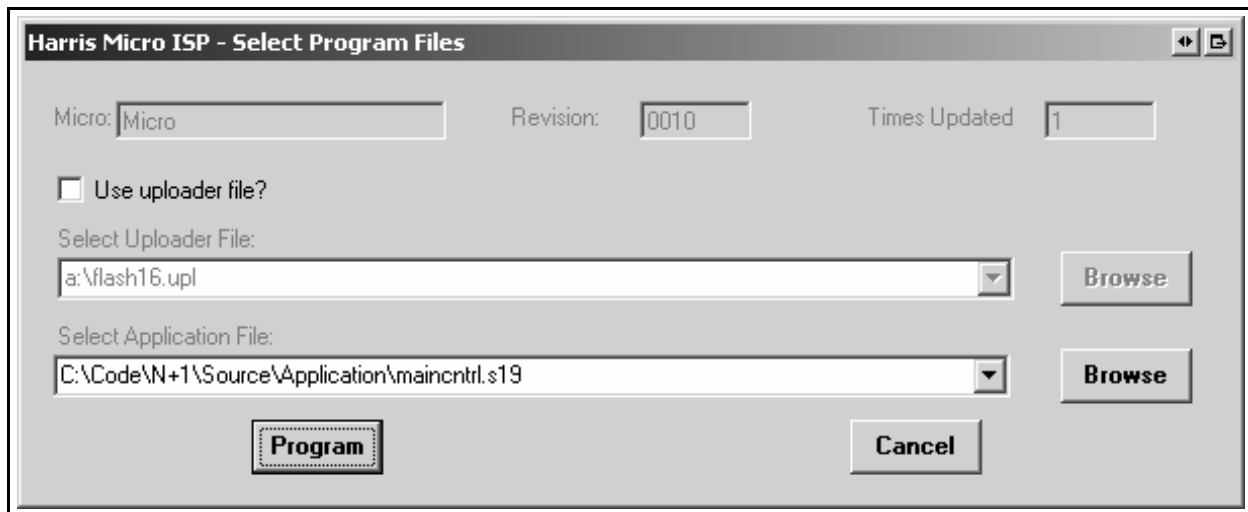


Figure 1-5 Browse the CD for the Desired S19 Application File

STEP 9 Under the “Select Application File” press the browse button and find the appropriate file on the CD-ROM for the board you are updating. The files are located on the cd at (insert your drive letter in place of D):
D:\Firmware\Control System*.s19. The file names are given below.
Note that the numbers to the left of the period are the revision number and may be different than shown here.

- "MAINCNTRL_0010.s19" to update the Main Controller

⇒ NOTE:
Remember to select the correct application file (.s19 file) for the board being updated.

STEP 10 Press Program. This will open the window in Figure 1-6 which monitors the transfer process. This will take several minutes.

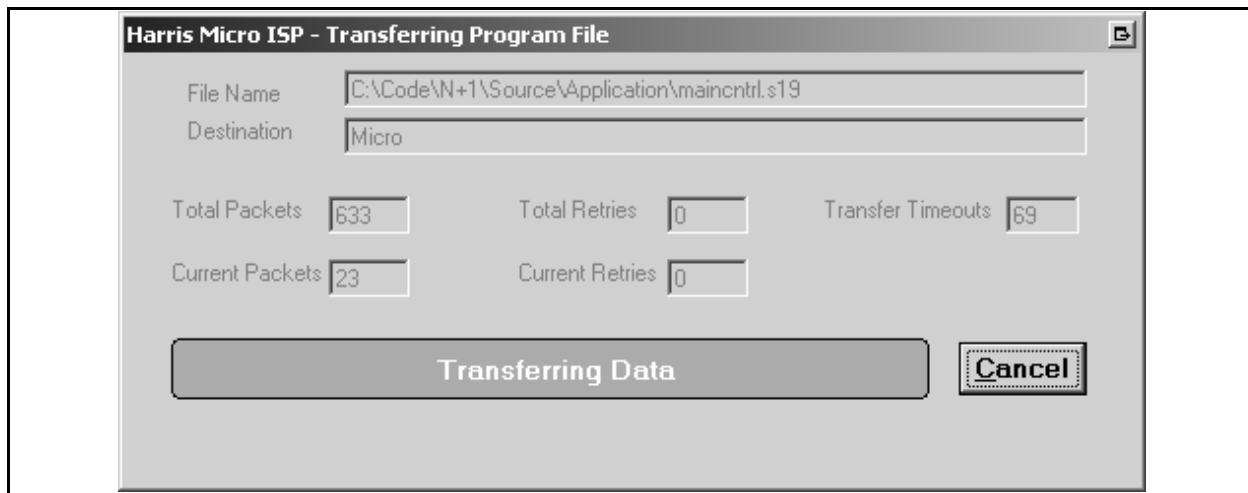


Figure 1-6 Data Being Transferred (will take several minutes)

STEP 11 When it has transferred all of the new programming packets it will then take a couple seconds to program the flash chip as shown in Figure 1-7.

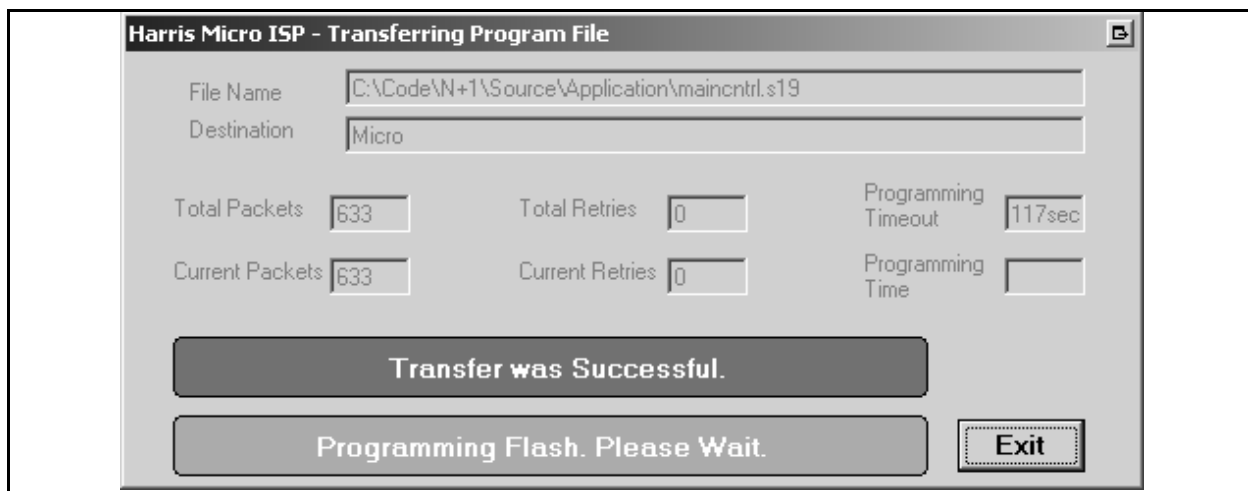


Figure 1-7 Programming Flash

STEP 12 The final screen is shown in Figure 1-8 which shows “Programming Successful”. Press OK to finish the update and get back to the main screen shown in Figure 1-3.

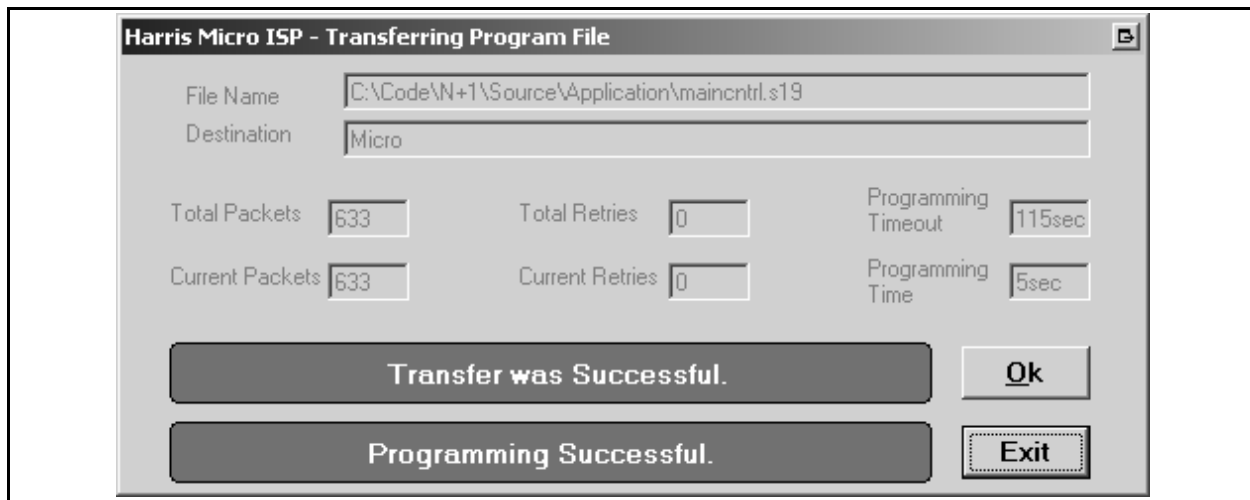


Figure 1-8 Programming Successful

1.1.3 .ISP Errors

If an error is encountered during the ISP process, close the program, check or change the serial cable and try the procedure again. If the problem persists, contact Harris technical support.

