



## **Data Highway or Data Highway Plus Asynchronous (RS-232-C or RS-422-A) Interface Module** Series C Catalog Number 1770-KF2

Use these Release Notes with the *Data Highway or Data Highway Plus Asynchronous (RS-232-C or RS-422-A) Interface Module User's Manual* (publication 1770-6.5.13-March 1989). These Release Notes supersede the Documentation Update, publication 1770-6.5.13-DUI—January 1992, and all previous documentation updates.

Changes to the 1770-KF2 for Series C, include:

- additional circuit protection on the COMPUTER (ASYNCHRONOUS) connector
- FCC Class A certification
- lower power consumption

### **Applicable Standards and Certifications**

The 1770-KF2 now conforms to:

- CSA C22.2 No. 950 M89
- UL 478
- FCC Part 15, Subpart J, Class A
- DOC R.I.R. SEP. 1988

### **Important User Information**

Because of the variety of uses for this product and because of the differences between solid state products and electromechanical products, those responsible for applying and using this product must satisfy themselves as to the acceptability of each application and use of this product. For more information, refer to publication SGI-1.1 (Safety Guidelines For The Application, Installation and Maintenance of Solid State Control).

The illustrations, charts, and layout examples shown in this manual are intended solely to illustrate the text of this manual. Because of the many variables and requirements associated with any particular installation, Allen-Bradley Company cannot assume responsibility or liability for actual use based upon the illustrative uses and applications.

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### Statement of Compliance with Federal Communications Commission

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### Statement of Compliance with Canadian Department of Communications

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps are necessary to correct the interference.

### Avis de Conformité aux normes du ministère des Communications du Canada

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.



**Warning:** With any complex communication system you need to identify potential application-related communication problems and make provisions in the system design to prevent hazardous or undesired consequences, if a problem occurs. These problems include, but are not limited to, the possibility of:

- unexpected loss of communication
- erroneous or incomplete data being supplied to the network and passed on to your application

### Cabling

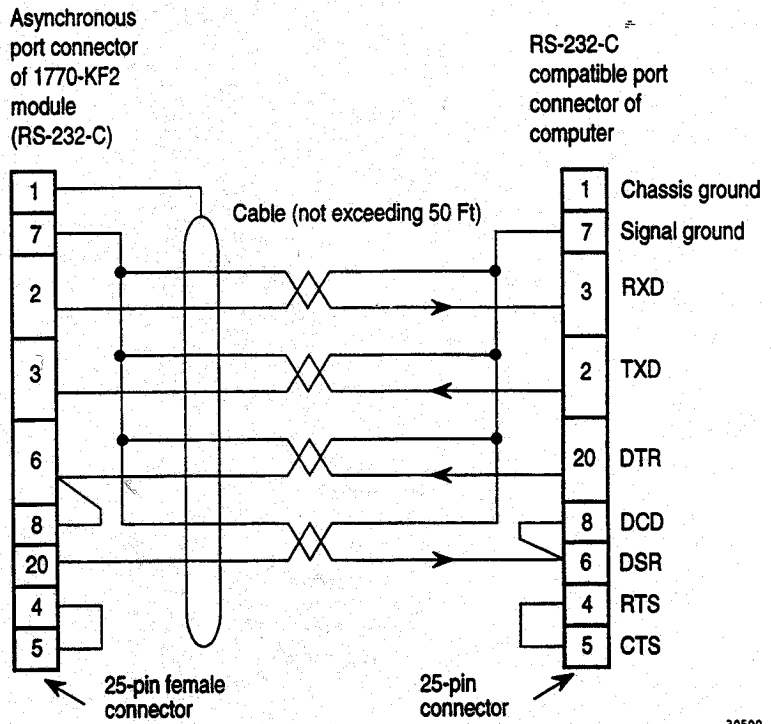
To get the full benefit of the additional circuit protection, your RS-232-C cable must conform to these requirements:

- signal ground (Pin 7) must be isolated from protective ground (Pin 1)
- the cable shield must be connected to protective ground (Pin 1) at one end of the cable only. Leave the other end unconnected

**Important:** Cables using protected ground (Pin 1) rather than signal ground (Pin 7) may have worked with earlier revisions of the KF2, but will not work reliably with Series C.

The Standard 25 pin RS-232-C cable connections shown on the configuration label indicate the minimum cabling requirements for RS-232-C communications between the KF2 and a computer. They are an alternative to the connections shown in Figure 3.6b of the User's Manual, reproduced here as Figure 1.

**Figure 1**  
**Wiring Diagram for RS-232-C Cable**



If you have constructed or purchased a cable that meets the standards in Figure 1 or that matches the Standard 25 pin RS-232-C cable connections on the configuration label, no changes in cabling are required. If your cable does not conform to these specifications, it might communicate correctly, but the effect of the improvements in the Series C hardware will be minimized.

An RS-232 cable conforming to the pinouts shown in Figure 1, but without the twisted pairs, is supplied with the KF2.

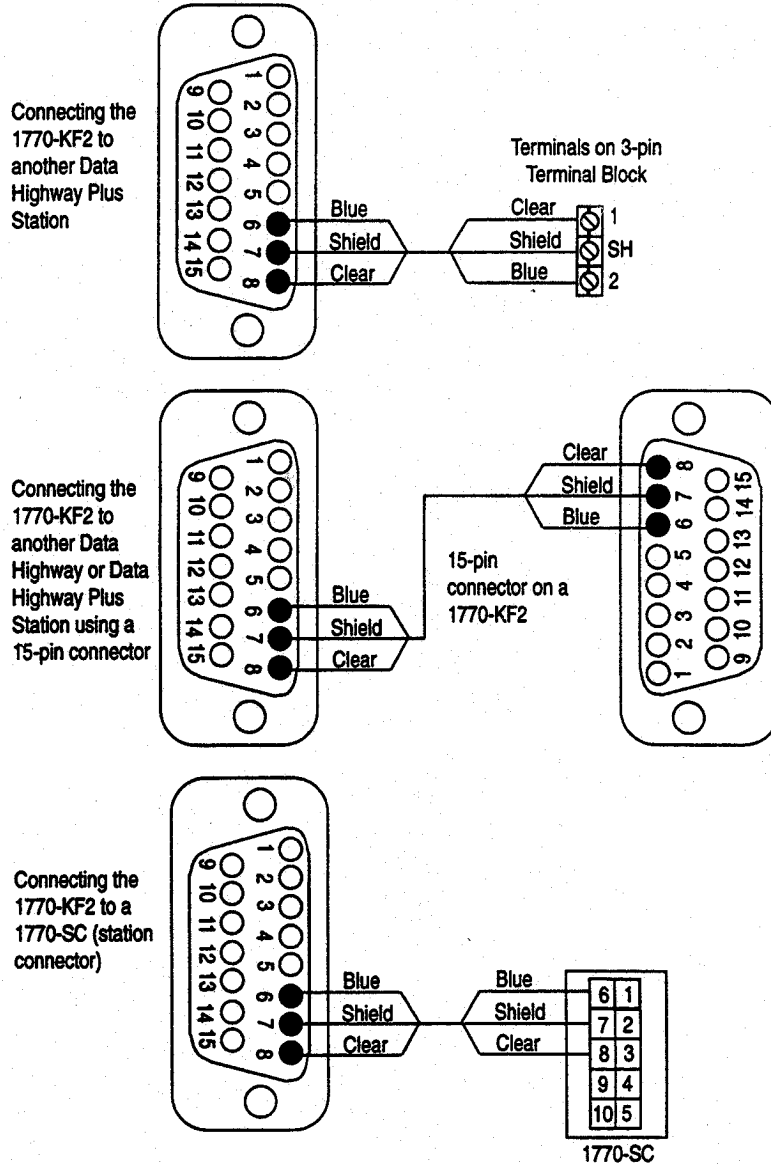
If your computer requires a standard 25 pin to 9 pin adapter or the 6121-CBB combo card adapter, the Allen-Bradley catalog numbers to order are:

- Standard 25 pin to 9 pin adapter      6121-CA2
- 6121-CBB combo card adapter      6120-CA2

**Connecting the 1770-KF2 to a Data Highway or Data Highway+ Network**

To make twinaxial cable connections to the KF2, connect the 1770-CD cable to the 15-pin connector labeled Data Highway (Figure 2).

**Figure 2**  
 Connecting the KF2 to a Data Highway or Data Highway+ Network



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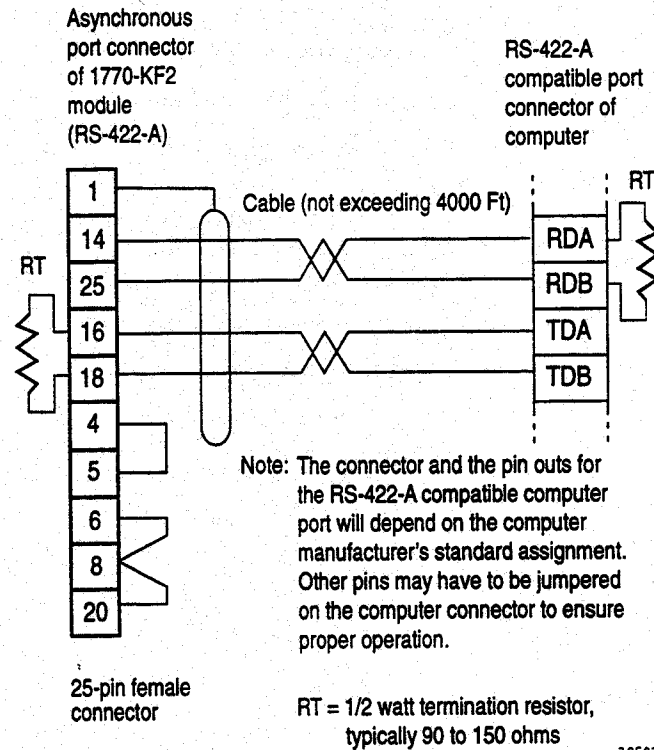
For details on constructing the dropline, refer to the *Data Highway Cable Assembly and Installation Manual*, publication 1770-6.2.1.

**RS-422-A Cable Termination Resistor**

The RS-422-A cable interface as illustrated in Figure 3.6c of the *Data Highway or Data Highway Plus Asynchronous (RS-232-C or RS-422-A) Interface Module User's Manual* (publication 1770-6.5.13-March 1989) may require cable termination resistors, shown in Figure 3, to ensure reliable operation. The optimum value of these resistors ranges from 90 to 150 ohms, depending on the cable type and length. Connect the resistors as close to the receiving ends of the cable as possible.

Some computers' RS-422-A compatible ports may already include this resistor, though pins may have to be jumpered to achieve the desired connections. Refer to your computer's manual for more information. If the resistor already exists on your computer port, attach an external resistor on the KF2 end of the cable only.

**Figure 3**  
**RS-422-A Wiring Diagram with Terminating Resistors**



**Asynchronous Communication Rate (SW-6)**

The KF2 supports a data rate of 19,200 bits per second. Set the communication rate switches as shown in Table 1.

**Table 1**  
**Communication Rate Switch Settings**

Bits per Second:	Set Switch:		
	1	2	3
110	OFF	OFF	OFF
300	ON	OFF	OFF
600	OFF	ON	OFF
1200	ON	ON	OFF
2400	OFF	OFF	ON
4800	ON	OFF	ON
9600	OFF	ON	ON
19200	ON	ON	ON

## Factory Default Switch Settings

All switches are set as shown on the label on the bottom of the unit when the KF2 is shipped.

## Delivery Order of Commands

**Important:** If any node on a Data Highway, Data Highway Plus, or Data Highway II network initiates multiple commands (for example, the initiating node sets multiple bits at any one time), the order in which those commands are executed at the remote node cannot be guaranteed.

The initiating node, the network, and the receiving node execute commands based on network conditions, including but not limited to:

- nodes buffering commands
- retries due to noise on the network

If your application requires that commands be delivered in a specific order, your logic must control the initiation of one command at a time on the network and verify delivery before initiating additional commands. This verification is completed by:

- a done bit or error bit in the PLC
- a reply message in a computer

A done bit or a successful reply should cause the next command to be initiated. If an error bit or a reply with a non-zero status is returned, you must decide the appropriate action based on your application.



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