

Section 3.B.5 Supplement No. 3: Model 10BACI-488

1. Introduction

The **Model 10BACI-488** allows direct connection of a "B-sized" DataPAC to an IEEE-488 bus, thus eliminating the need for an external RS-232 to IEEE-488 adaptor such as the Model 10CIF488A. It is equivalent to a Model 10BACIA with a 24-pin parallel port for standard IEEE-488 TALKER/LISTENER communications (in place of the 10BACIA's standard RS-232-C interface).

NOTE: While the 10BACI-488 conforms to the *hardware* protocol of IEEE-488, it does not adhere to the *software* protocol contained in IEEE-488.2. In addition, the data transfer rate is limited by the rate at which data can be received from the System 10 database (typically 2000 to 3000 channels per second). As a result, the 10BACI-488 transfer rate will be about 15,000 to 17,000 bytes per second.

Note too that the rear connector supplied with the 10BACI-488 covers two "B" SLOTS. The slot at which the card is "located" is the right-hand slot; the left-hand slot is empty.

Everything that is said in Section 3.B.5 (Version SB.3 or higher) about the Model 10BACI Auxiliary Computer Interface Card applies equally to the Model 10BACI-488, *EXCEPT THAT*

- a. Unlike the 10BACI, the 10BACI-488 DOES NOT SUPPORT SERIAL COMMUNICATIONS; therefore, all references to "RS-232-C" interface connections and protocols should be ignored. The 10BACI-488 provides a 24-PIN PARALLEL PORT CONNECTOR (only), as described below.
- b. The 10BACI-488 card has on-board DIP switches for assigning a specific bus address to the System 10.
- c. The **ADDRESS (ADD)** and **END OR IDENTIFY (EOI)** commands have been developed for use with the 10BACI-488. These are given in Section 4, below. In addition, the response of the 10BACI-488 to the **FRAME CHANNELS (FCH)** and **DUMP SYSTEM DATA (DSD)** commands is identical to that of the Model 10BACIA (see **3.B.5 Supplement No. 1**).
- d. The 10BACI's **RTS** and **DTS** front-panel STATUS INDICATORS have been replaced by **LAD** ("Listener Active Device") and **TAD** ("Talker Active Device"), to indicate the System 10's current bus role.

2. Ensuring 10BACI-488 / Central Processor Compatibility: **BCP** Command

To ensure proper operation of the **FRAME CHANNELS (FCH)** command, it is necessary for every 10BACI-488 to know which type of CENTRAL PROCESSOR card is in the DataPAC—a Model 10BCP100/10BCP100A or a Model 10BCP200 (which is used in all "System 10/2000" DataPACs). To inform all 10BACI-488's in the DataPAC that they are being used with a 10BCP100 or 10BCP100A, you should make sure that a command of

BCP = 100 [CR] *

is in effect; to inform all 10BACI-488's that the DataPAC has a 10BCP200, make sure that

BCP = 200 [CR] *

is in effect.

3. Connections

The 10BACI-488's 24-pin PARALLEL PORT connects directly to the IEEE-488 bus, via a cable supplied by the user and conforming to recommended IEEE-488 cable practice. Standard IEEE-488 pinout is employed for this port, as follows:

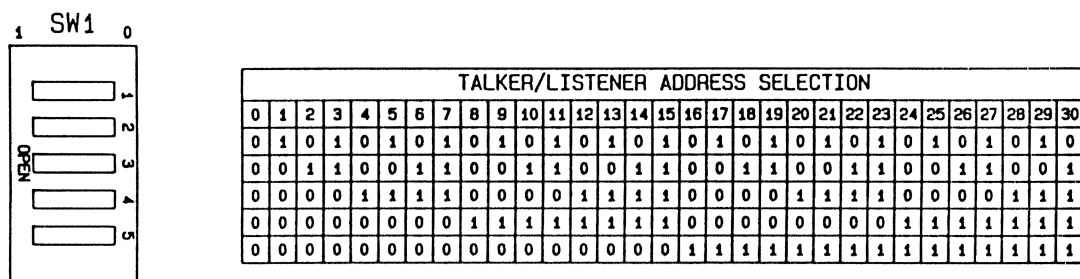
Pin No.	Signal Line	Pin No.	Signal Line
1	DI01 (Data Line)	13	DI05 (Data Line)
2	DI02 (Data Line)	14	DI06 (Data Line)
3	DI03 (Data Line)	15	DI07 (Data Line)
4	DI04 (Data Line)	16	DI08 (Data Line)
5	$\overline{\text{EOI}}$ (End or Identify)	17	$\overline{\text{REN}}$ (Remote Enable)
6	$\overline{\text{DAV}}$ (Data Valid)	18	Ground
7	$\overline{\text{NRFD}}$ (Not Ready For Data)	19	Ground
8	$\overline{\text{NDAC}}$ (Not Data Accepted)	20	Ground
9	$\overline{\text{IFC}}$ (Interface Clear)	21	Ground
10	$\overline{\text{SRQ}}$ (Service Request Line)	22	Ground
11	ATN (Attention)	23	Ground
12	Shield		

4. Setting System 10 IEEE-488 Bus Address

With reference to IEEE-488 bus structure, a System 10 connected via a 10BACI-488 is a "TALKER/LISTENER" device, to which you must assign a specific bus address (any integer from 0 through 30). To do so,

1. Turn OFF mainframe power and remove the 10BACI-488 card from its slot (see Appendix B for card insertion and removal).
2. Locate the ADDRESS SELECTION SWITCHES on the 10BACI-488 card (see Fig. 1, below). Set these five switches as shown in the table to encode, in binary form, the value of the desired bus address. The address can be any integer from 1 through 30 (address "0" is reserved for the controller, and should not be used). For example, to select an address of "21," set Switches 1 through 5 to form a sequential pattern of "10101" (switch depressed to the left for "1"; to the right for "0"). At any time you may use the **ADDRESS (ADD)** command, described in the following section, to check the current setting of the ADDRESS SELECTION SWITCHES.
3. Return the 10BACI-488 card to its slot, and reactivate the mainframe.

Note that, upon system powerup, the System 10 will be at null (i.e., inactive on the bus) until it is told by the bus controller to be a TALKER or LISTENER.



TALKER/LISTENER
ADDRESS SELECTION

Fig. 1 10BACI-488 Address Selection Switches

5. 10BACI-488 Mnemonic Commands

The following two special commands have been developed for use with the 10BACI-488. They can be sent directly to the 10BACI-488 from the IEEE-488 bus or through the DataPAC's keyboard or standard Computer Interface (see Section 3.B.5.d).

ADDRESS (ADD)

To read the current bus address setting, enter

ADD [CR]

The current decimal address value (0 through 30) will be returned.

END OR IDENTIFY (EOI)

By means of the **EOI** command, you can arrange for the IEEE-488 "END OR IDENTIFY" function to be invoked at the end of each output line and/or at the end of each complete output transmission. Note that when large blocks of data are being routinely placed on the bus—as would happen, for instance, in response to a **DUMP (DMP)** command—it would optimize speed to have EOI occur only at the end of every complete transmission, and not at the end of every output line.

The general form of the **EOI** command is

$$\mathbf{EOI = OPT \left\{ \begin{array}{l} \mathbf{ON} \\ \mathbf{OFF} \end{array} \right\} , EOT \left\{ \begin{array}{l} \mathbf{ON} \\ \mathbf{OFF} \end{array} \right\} [CR] *}$$

Thus, if you indicate **OPT = ON**, the last byte of the OUTPUT TERMINATOR will be accompanied by an invocation of the EOI; and if you indicate **EOT = ON**, the last byte of the END-OF-TRANSMISSION TERMINATOR will likewise invoke the EOI. NOTE: This is a SETUP COMMAND, and requires that the EEPROM Write Protect Switch be ON.

6. "FP" (Floating Point) Commands: **FPF** and **FDM**

If the 10BACI-488 is equipped with the "FP" (Floating Point) Option, the **FLOATING POINT FORMAT (FPF)** and **FLOATING POINT DUMP (FDM)** commands are also valid (see 3.B.5 Supplement No. 4 for a description of these commands).