3.5 OPERATION FROM INTERFACE BUS

The interface circuit is designed to accept coded data sent over the bus to actuate the relays. To operate with the bus the scanner must be set to a usable address and must be connected to the controller using a 24 pin IEEE-488 cable (not supplied).

The scanner was set at the factory for bus address 24. All the examples that follow assume 24 as the address. The address can be easily changed if necessary by means of a "DIP" switch on the interface board located under the top cover. Refer to paragraph 3.4 for the procedure to change the bus address.

To actuate a relay the bus interface must first receive the correct address, then a three character ASCII codes designating the relay, and then a carriage return/line feed. For example using an HTBasic computer, use the following statement to clear the A line then close channel 1 on the A Line.

<div align="center">OUTPUT 724;”A01”</div>

In this example

<div align="center">

7   is the controller IO address,
24   is the scanner address and
A01 is the code for relay 1 on line A

</div>

 To clear both lines use the following HTBasic commands:

<div align="center">

OUTPUT 724;”A00”
WAIT .2
OUTPUT 724;”B00”

</div>

NOTE: Each actuation must be a separately addressed statement. The following is not valid:

<div align="center">OUTPUT 724;”A00”,”B00” —NOT VALID—</div>

NOTE: A delay of at least 200 milliseconds must occur between any two actuations to allow the relays to complete their operation.

Using LabView: We have chosen not to use a microprocessor in our interface design to avoid the noise that they can generate. One problem that this creates is that our interface does not complete the end-of-line hand-shake fully as required for the National Instruments software. To solve this problem the interface must be cleared before a second command can be sent. This can be accomplished by sending an IBFIND DEVn statement before each relay command.

<div align="center">

IBFIND DEVn
IBWRT"A01 "
   *200 millisecond delay

IBFIND DEVn
IBWRT"B01 "
   *200 millisecond delay

</div>

Where 'n' is the scanner bus address. A 200 millisecond delay needs to be generated to allow the scanner interface to complete.

NOTE: A blank space after the A01 and B01 is necessary for the scanner interface board rev. A and C. Some LabView commands do not work properly with the scanners. The Data Proof interface boards do not respond to Polling because there is no microprocessor. Also, interface clear commands sent to the scanner can create erratic problems with some boards and should be avoided.

3.6 SAMPLE PROGRAMS

The following program will exercise the scanner relays 1 through 16 and leave both lines clear. This program is for HTBasic computers with the scanner address set to 724.

```
10  ! SCANNER TEST
20  DIM Relay$[32]
30  Relay$="0102030405060708091011121314 1516"
40  FOR I = 1 TO 16
50  OUTPUT 724;"A"&Relay$[2*I-1,2*I]     ! CLOSES A RELAY
60  WAIT .2
70  OUTPUT 724;"B"&Relay$[2*I-1,2*I]     ! CLOSES B RELAY
80  WAIT .2
90  NEXT I
100 OUTPUT 724;"A00"                     ! CLEARS LINE A
110 WAIT .2
120 OUTPUT 724;"B00"                     ! CLEARS LINE B
130 END
```

Note: A Wait of at least 200 milliseconds is required between relay actuations to allow time for the relay circuits to actuate.

The second program example has exactly the same result as the first program listed above but uses string output statements. The formatted output statement is used to assure the first character that the scanner sees (after the address) is the line code and the next two characters are the relay code.

```
10  ! SCANNER TEST
30  FOR I = 1 TO 16
40  OUTPUT Code$ USING "A,ZZ";"A",I     ! SETS CODE
50  OUTPUT 724; Code$                   ! CLOSES A RELAY
60  WAIT .2
70  OUTPUT Code$ USING "A,ZZ";"B",I     ! SETS CODE
80  OUTPUT 724; Code$                   ! CLOSES B RELAY
90  WAIT .2
100 NEXT I
110 PRINT "A00"                         ! CLEARS A RELAY
120 WAIT .2
130 PRINT "B00"                         ! CLEARS B RELAY
140 END
```