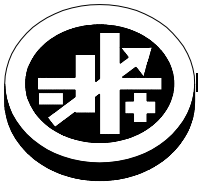


# QUICK START GUIDE



**KEPCO** An ISO 9001 Company.

# BIT 802E

## BIT 802E DIGITAL INTERFACE CARD

### I — INTRODUCTION

**SCOPE OF MANUAL.** This Quick Start Guide covers the installation, checkout and operation of the Kepeco BIT 802E Card installed in a BOP power supply. Full specifications and operating procedures are listed in the Operator Manual that can be downloaded from the Kepeco web site:

- [www.kepcopower.com/support/opmanls.htm#bit](http://www.kepcopower.com/support/opmanls.htm#bit)

**DESCRIPTION.** The Kepeco BIT Card Series were designed as an accessory for the Kepeco BOP series bipolar power supplies. The BIT 802E card acts as an interface between the digital data bus and the BOP, accepting the digital input data and converting it to an analog signal, which in turn, controls the BOP output.

### II — INSTALLATION

**CAUTION:** If the BIT card was not pre-installed in a BOP at Kepeco, you must install and calibrate the card by following the instructions in the Operator Manual which can be downloaded from the Kepeco website (see above). Failure to calibrate the unit could impact the accuracy of settings and readbacks. It will not impact remote operation of the unit.

#### CONNECT BIT 802E CARD TO NETWORK.

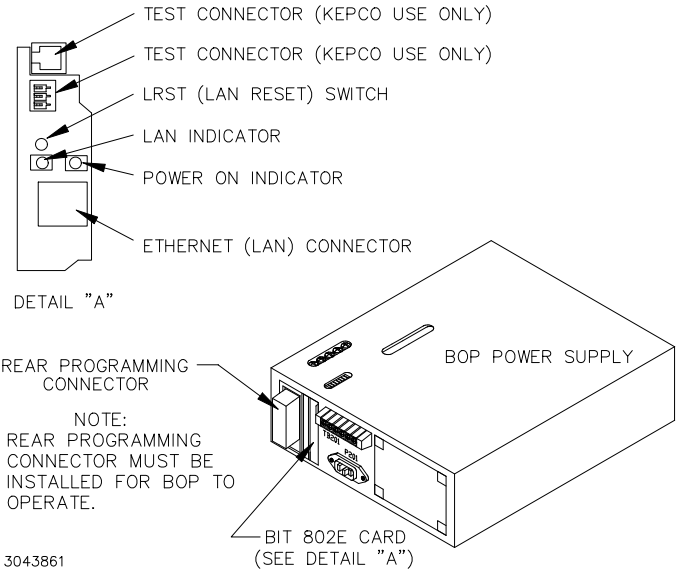
1. Connect the BIT 802E Interface Card to a network via the LAN connector (see Figure 1). Use either a standard ethernet cable if using a HUB, or a crossover LAN cable if connecting the BIT 802E directly to a computer. The BIT 802E is not Auto-MDI-X enabled and requires the crossover cable.
2. Apply power to BOP power supply. The BIT 802E will beep for less than 1 second, then will be ready for use.

#### FINDING KEPCO POWER SUPPLIES ON THE LAN.

The PSfind utility can be downloaded from the Kepeco web site at:

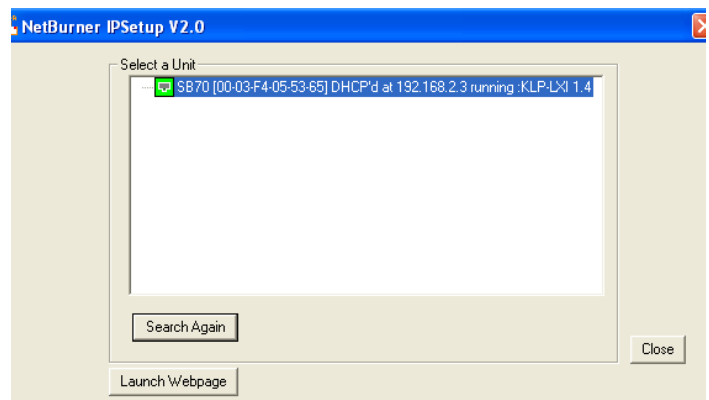
[www.kepcopower.com/drivers/drivers-dl3.htm#klp](http://www.kepcopower.com/drivers/drivers-dl3.htm#klp).

This utility finds all operational Kepeco power supplies connected to the LAN and then shows the MAC and IP addresses of the models found.



**FIGURE 1. BIT 802E CARD, CONTROLS, INDICATORS, AND CONNECTORS**

To run the utility from your PC download the psfind.zip file to your computer. Extract psfind.exe from the zip file to a location of your choice, then double-click psfind.exe to run the application. A separate window opens as shown on Figure 2. Once the search is completed, all found units are displayed in the Select a Unit window (the MAC address appears in parentheses). If you do not see your device in the Select a Unit window or if the icon to the left of the selected instrument is red (not green), make sure it is turned on and connected to the network, then click the Search Again button.



**FIGURE 2. PS FIND SCREEN**

## CHECKOUT PROCEDURE.

1. Connect the unit to a computer as specified in “CONNECT BIT 802E CARD TO NETWORK.” on page 1.
2. Using a thin tool (e.g., the end of a paper clip), press then release the LAN Reset pushbutton switch on the BIT-802E (see Figure 1). The LAN indicator will blink briefly, then remain on.
3. Locate the BOP/BIT 802E using the PS Find utility as specified in “FINDING KEPCO POWER SUPPLIES ON THE LAN.” on page 1
4. From the PS Find screen (Figure 2) click **Launch Webpage** to view the Instrument Home page (Figure 3). Verify the model is correct, matching the voltage and current of the BOP.



FIGURE 3. INSTRUMENT HOME PAGE

5. Click on the **OPERATE INSTRUMENT** tab of the home page. Leave password blank and click **Submit** to access the Operate Instrument page (see Figure 4).

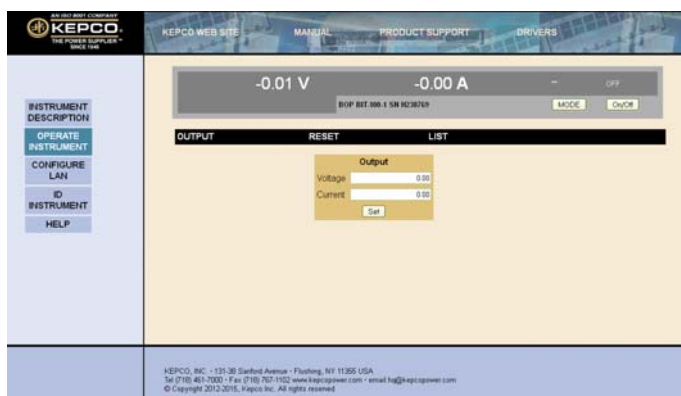


FIGURE 4. OPERATE INSTRUMENT PAGE

6. From the Operate Instrument page, click the Output **ON/OFF** button at the upper right of the web page and verify the OFF indicator above the button changes to ON (green) indicating the output is on.
7. Set the unit to output 8.1V by entering 8.11 in the **VOLTAGE** field, then click **SET**. Verify the output of the BOP changes and the voltage indication is 8.1V on both the web page and the BOP front panel.

## III — OPERATION

The BOP can be controlled from the OPERATE INSTRUMENT web page or by using IEEE 488 and SCPI commands via either Port 5024 (Telnet) or 5025 (SCPI Raw). See Table 1 for control characters.

**PORT 5024.** Telnet sends each character as typed. When using Telnet, CTRL M sends Carriage Return (CR: hex D, decimal 15). CTRL J sends Line Feed (LF: hex A, decimal 10). The ENTER key sends both CR and LF characters.

To use port 5024 send the following command line:

**TELNET** [ip address] 5024  
e.g., **TELNET** 192.168.2.101 5024

**PORT 5025.** SCPI Raw is used for programs that send strings terminated by CR, LF or both. Port 5025 can be accessed via the Telnet utility but data sent is not echoed back to the user and there is no prompt string.

To use port 5025 send the following command line:

**TCPIP0::[ip address]::5025:SOCKET**  
e.g., **TCPIP0::192.168.2.101::5025:SOCKET**

TABLE 1. TELNET PORT 5024 AND SCPI RAW PORT 5025 CONTROL CHARACTERS

HEX	Name	Key	Function
1	SOH	Ctrl A	Terminate connection
2	STX	Ctrl B	Execute Trigger, respond with <TRIGGER>
3	ETX	Ctrl C	Execute Device clear to unit, respond with <DEVICE CLEAR>
A	CR	Ctrl J	Carriage Return (Line Terminator)
D	LF	Ctrl M	Line Feed (Line Terminator)
	CR, LF	Enter	Sends both CR, LF (Line Terminator)
5	ENQ	Ctrl E	Unit will respond with the user description of the device.

The applicable commands and queries are listed in Table 2 and 3, respectively. For a full description of all commands as well as remote programming information, refer to the BIT 802E Operator Manual listed on page 1 of this guide.

**TABLE 2. SCPI COMMON COMMANDS/QUERIES**

COMMAND	Function
*CLS	Clear Status Command - clears status data.
*ESE, ?	Standard Event Status Enable Command programs Standard Event Status Enable register, Query returns register mask.
*ESR?	Event Status Register Query returns register contents, then clears register.
*IDN?	Identification Query returns identification character string.
*OPC, ?	Operation Complete Command causes power supply to set status bit 0 (Operation Complete) when pending operations are complete When Query returns "1" operations are complete.
*OPT?	Options Query lists option functionality.
*RCL	Recall Command restores power supply to previously saved settings.
*RST	Rest Command resets power supply to power on default state.
*SAV	Save Command saves present power supply settings for later recall.
*SRE, ?	Service Request Enable Command sets the condition of Service Request Enable register. Query reads register.
*STB	Status Byte Register Query reads Status Byte Register without clearing it.
*TRG	Trigger Command triggers power supply to preprogrammed values of output current and voltage.
*TST?	Self Test Query Initiates power supply self test.
*WAI	Wait-To-Continue Command requires completion of previously issued commands and queries before continuing.

**TABLE 3. SCPI INSTRUMENT COMMANDS/QUERIES**

COMMAND	Function
INIT[:IMM]	INITiate[:IMMEDIATE] Command enables a single trigger.
INIT:CONT, ?	INITiate:CONTinuous Command enables/disables continuous triggers; query shows trigger enabled/disabled status.
MEAS:CURREN?	MEASure[:SCALAR]:CURRENt[:DC]? Query measures actual current.

**TABLE 3. SCPI INSTRUMENT COMMANDS/QUERIES (CONT)**

COMMAND	Function
MEAS:VOLT?	MEASure[:SCALAR]:VOLTage[:DC]? Query measures actual voltage.
OUTP, ?	OUTPut[:STATE] Command enables (1 or ON) or disables (0 or OFF) the power supply output. Query shows if output is on (1) or off (0).
FUNC:MODE, ?	[SOURce:]FUNCtion:MODE Command establishes operating mode of power supply VOLT = voltage, CURR = current. Query shows mode.
FUNC:MODE :TRIG, ?	[SOURce:]FUNCtion:MODE:TRIGger establishes operating mode of power supply when TRIGger command is sent. Query returns mode programmed.
LIST:CLEAR	[SOURce:]LIST:CLEAr Command Clears all list entries by setting all pointers to 0.
LIST:COUN, ?	SOURce:]LIST:COUNT Command establishes how many times the list is executed. Query shows programmed setting.
LIST:COUN :SKIP	[SOURce:]LIST:COUNT:SKIP Command allows beginning steps of list-generated waveform to be run once, then ignored. Query shows how many steps to skip after the first time.
LIST:CURREN?	SOURce:]LIST:CURRENt Command adds current value (in Amps) to list. Query identifies parameters (main channel) entered for list.
LIST:CURREN :POIN?	[SOURce:]LIST:CURRENt:POINts? Query identifies the total number of points in a list and next location to be filled.
LIST:DIR, ?	[SOURce:]LIST:DIRection Command establishes which direction to run list. Query shows programmed direction.
LIST:DWEL, ?	[SOURce:]LIST:DWELI Command determines how long the main channel parameters will be active. Query shows programmed dwell times.
LIST:DWEL :POIN?	[SOURce:]LIST:DWELI:POINts? Query identifies number of locations with dwell times.
LIST:GEN, ?	[SOURce:]LIST:GENeration Command establishes the order for executing the list. Query shows selection of either default or user sequence.
LIST:QUER, ?	[SOURce:]LIST:QUERy Command determines first location to be queried by LIST:SEQ?; Query shows programmed location.
LIST:MODE, ?	[SOURce:]LIST:MODE Command determines dwell time resolution SLOW (default) or FAST. Query shows mode.
LIST:SEQ, ?	[SOURce:]LIST:SEQuence Command determines execution order for list data points (not recommended for new designs). Query shows user execution sequence for list.
LIST:VOLT, ?	SOURce:]LIST:VOLTage Command adds voltage value (in Volts) to list. Query identifies parameters (main channel) entered for list.
LIST:VOLT :POIN?	SOURce:]LIST:VOLTage:POINts? Query identifies total number of points in a list.

**TABLE 3. SCPI INSTRUMENT COMMANDS/QUERIES (CONT)**

COMMAND	Function
CURR, ?	SOURce:]CURRent[:LEVel][:IMMEDIATE][:AMPLitude] Command programs output current (actual current depends on load). Query shows programmed current or maximum/minimum current allowed.
CURR:MODE, ?	SOURce:]CURRent:MODE Command allows user to execute (LIST) or stop (FIX) a list, or to execute a transient (TRAN). Query identifies active current mode.
CURR:RANG, ?	[SOURce:]CURRent[:LEVel]RANGe Command sets output current range, 1 = full scale, 4 = 1/4 scale. Query shows programmed current range.
CURR:RANG :AUTO	[SOURce:]CURRent[:LEVel]RANGe:AUTO Command sets current range to automatic.
CURR:TRIG, ?	SOURce:]CURRent[:LEVel]TRIGgered[:AMPLitude] Command programs current value of trigger. Query shows programmed value.
VOLT, ?	[SOURce:]VOLTag[:LEVel][:IMMEDIATE][:AMPLitude] Command programs output voltage (actual voltage depends on load). Query returns programmed value.
VOLT:MODE	SOURce:]VOLTag:MODE Command allows user to execute (LIST) or stop (FIX) a list, or to execute a transient (TRAN). Query identifies active voltage mode.
VOLT:RANG, ?	[SOURce:]VOLTag[:LEVel]:RANGe Command sets output voltage range, 1 = full scale, 4 = 1/4 scale. Query shows programmed voltage range.
VOLT:RANG :AUTO	[SOURce:]VOLTag[:LEVel]RANGe:AUTO Command sets voltage range to automatic.
VOLT:TRIG, ?	SOURce:]VOLTag[:LEVel]TRIGgered[:AMPLitude] Command programs voltage value of trigger. Query shows programmed value.
STAT:OPER :COND?	STATus:OPERation:CONDition Query returns value of the Operation Condition Register.
STAT:OPER :ENAB	STATus:OPERation:ENABle Command sets Operation Enable Register mask. Query reads register.
STAT:OPER?	STATus:OPERation[:EVENT] Query returns the value of the Operation Event register.
STAT:PRES	STATus:PRESet Command disables reporting of all status events.
STAT:QUES?	STATus:QUEStionable[:EVENT]? Query returns value of Questionable Event register.
STAT:QUES :COND?	STATus:QUEStionable:CONDition? Query returns value of Questionable Condition Register.
STAT:QUES :ENAB, ?	STATus:QUEStionable:ENABle Command programs Questionable Condition Enable register. Query reads register.
SYST:BEEP	SYSTem:BEEP Command causes the unit to emit a brief audible tone.

**TABLE 3. SCPI INSTRUMENT COMMANDS/QUERIES (CONT)**

COMMAND	Function
SYST:COMM :SER:ECHO, ?	SYSTem:COMMunication:SERial:ECHO Command enables (ON) or disables (OFF) echo mode. Query indicates if echo is on or off.
SYST:COMM :SER:PACE, ?	SYSTem:COMMunication:SERial:PACE Command enables (XON) or disables (NONE) data flow control via the serial interface. Query shows enabled or disabled.
SYST:ERR?	SYSTem:ERRor? Query posts error messages to the output queue.
SYST:ERR :CODE?	SYSTem:ERRor:CODE? Query returns 3-character error code without the ASCII definition string.
SYST:ERR :CODE:ALL?	SYSTem:ERRor:CODE:ALL? Query returns a comma-separated list of all error codes.
SYST:PASS :CEN	SYSTem:PASSword:CENable Command Sets password enable if password matches.
SYST:PASS :CDIS	SYSTem:PASSword:CDISable Command disables password access if password matches.
SYST:PASS :NEW	SYSTem:PASSword:NEW Command establishes new password.
SYST:PASS :STAT?	SYSTem:PASSword:STATe? Query shows password state: enabled (1) or disabled (0).
SYST:REM,	SYSTem:REMote Command sets unit to remote (1 or ON) or local (0 or OFF) mode if using RS 232. Query shows programmed mode.
SYST:SEC:IMM	SYSTem:SECurity:IMMEDIATE Command initializes all NVRAM variables to factory defaults.
SYST:SET, ?	SYSTem:SET Command establishes Device Clear, Line Feed, and Reset functions. Query shows programmed functions.
SYST:VERS?	SYSTem:VERSion? Query identifies SCPI Version implemented.