User's Manual

BiGEN

Precision Current Regulator Controller/TDK-Lambda Genesys™

Table of Contents:

1.0 Introduction and General Overview

The BiRa Systems Precision Current Regulator Controller (PCRC) was designed to be used with a commercial power supply and DCCT (Direct Current Current Transformer) to enhance the constant current stability and resolution of the Power Supply. The PCRC uses an Ethernet port for remote control of the Power Supply and a serial port for remote programming of the daughtercard, which resides in the PCRC. The PCRC receives input (current) from the DCCT and provides feedback to the Power Supply for control of the Power Supply. See the Block Diagram below for a general overview.

1.1 System Block Diagram

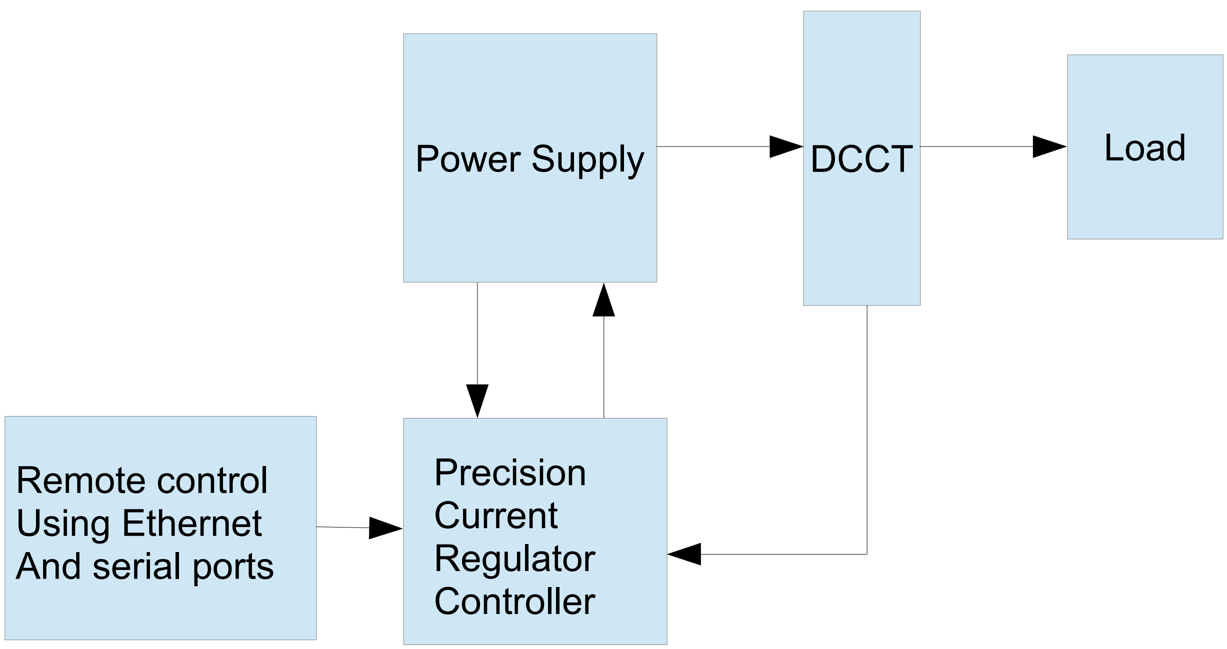


Figure 1- *System Block Diagram*

1.2 General Information

Front and rear panel connections of the PCRC are shown below.

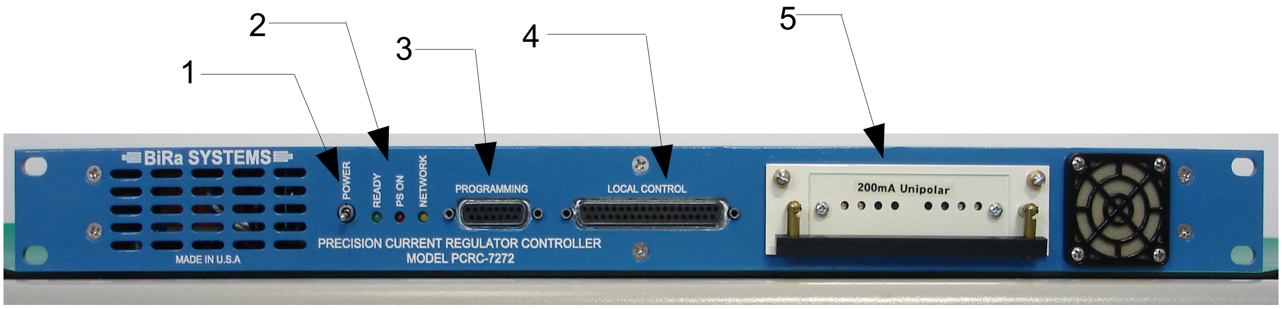


Figure 2- *PCRC Front Panel*

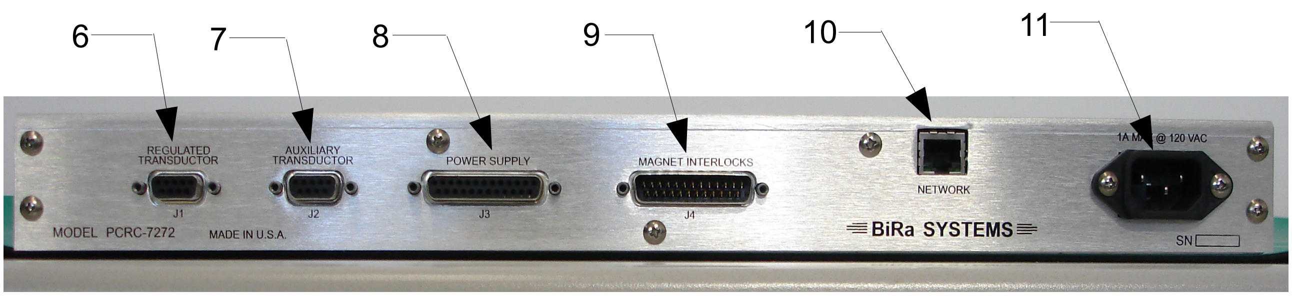


Figure 3- *PCRC Rear Panel*

1. On/Off Power Switch
2. Front Panel Status LEDs (see Table 1)
3. Serial Programming Port
4. Local Control interface
5. Daughtercard connection port
6. Regulated Transductor interface
7. Auxiliary Transductor interface
8. Power Supply interface
9. Magnet Interlock interface
10. Ethernet Port
11. 120/230 Vac 50/60hz power input receptacle

2.0 System Configuration

Figure 4 below is a block diagram of a typical setup configuration. The setup shown is for reference purposes only. Individual user setups may not appear as shown in figure 4.

The example shown in figure 4 uses a computer for remote programming of the daughtercard using the serial 'Programming' port and a terminal emulator. The daughtercard must be programmed prior to use depending on the DCCT used and other factors. The daughtercard may arrive already programmed if the PCRC is delivered as part of a system. Be sure to review programming details in section 3.5 prior to attempting to control the power supply using the PCRC. The Ethernet programming port of the PCRC is used to program the power supply and can also be used for power supply and PCRC status information. UDPWin.exe is an example of a software utility that can be used for programming purposes. UDPWin may be provided by BiRa Systems if requested. See Appendix B for further information and instructions on how to use UDPWin.

The Power Supply does require an interface adapter (as shown in the detailed system diagram) before programming of the power supply can be accomplished. The interface adapter is discussed in further detail in Section 3 below.

The ±15VDC required by the DCCT (Direct Current Current Transformer) to operate are supplied by the Regulated and Aux outputs of the PCRC. See Table 2 and Table 3 below for pin-out connections of the PCRC Regulated Transductor connector (J1) to DCCT, and Auxiliary Transductor (J2) to DCCT. The DCCT outputs are fed back to the PCRC as daughtercard inputs to the Regulated and Aux circuits. The Regulated inputs are used by the PCRC to regulate and control the power supply current while the Aux is used typically as a monitor (use of the DCCT for the Aux input is optional).

The 'Magnet Interlocks' connector (J4) is used as a means of monitoring various interlocks. Magnet Interlocks 0,1,2 and 3 must be configured correctly for proper operation. The correct configuration for these four interlocks would be a closed switch across pins 3 and 16 (Magnet Interlock 0), pins 4 and 17 (Magnet Interlock 1), pins 5 and 18 (Magnet Interlock 2) , and pins 6 and 19 (Magnet Interlock 3). Tables 2-8 below show the pin-out of all the PCRC connectors.
The front panel LEDs may be used to indicate status of the PCRC or for troubleshooting purposes. See Table 1 below for status indication (note that 'X' indicates don't care).

***Table** 1*- Front Panel LED status information

Green	Red	Yellow	Status/Indication
On	Off	X	Standby
Off	On	X	Power Supply On
On	On	X	Power Supply Ramping
X	X	Flash	Network traffic (.2sec/message)
Off	Off	Off	No power or hardware fault
On	On	On	Hardware fault or self test in progress
1Hz	Off	X	Power Supply Off, Hardware fault
Off	1Hz	X	Power Supply On, Hardware fault
2Hz	Off	X	Power Supply Off, Ethernet link down
Off	2Hz	X	Power Supply On, Ethernet link down

2.1 Detailed System Diagram

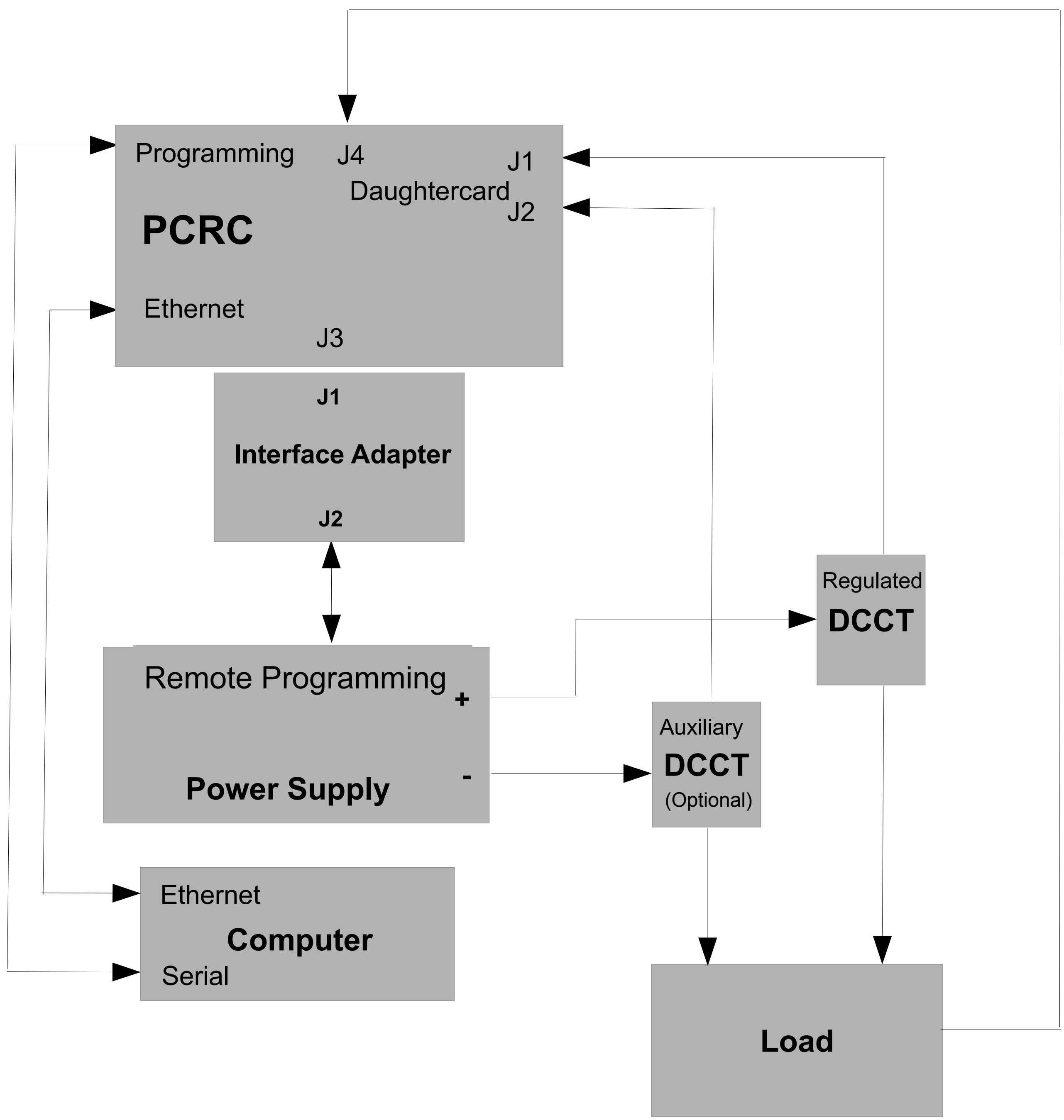


Figure 4- *Typical System Setup Diagram*

2.2 PCRC Connector Pin-Outs

***Table 2-* J1 Regulated Transductor Connections**

Pin	Signal Name	Function
1	N/C	No Connection
6	XDUCT +OUT	Input from DCCT to daughtercard input amplifier (Regulated)
2	XDUCT -OUT	No Connection
7	NC	No Connection
3	GND	GND (Return) connection for DCCT input to daughtercard input amplifier (Regulated)
8	XDUCT OK	Logic input for DCCT status
4	GND	GND (Return) connection
9	+15VDC	+15VDC for DCCT supply
5	-15VDC	-15VDC for DCCT supply

***Table 3-* *J2* Auxiliary Transductor Connections**

Pin	Signal Name	Function
1	N/C	No Connection
6	XDUCT +OUT	Input from DCCT to daughtercard input amplifier (Auxiliary)
2	XDUCT -OUT	No Connection
7	NC	No Connection
3	GND	GND (Return) connection for DCCT input to daughtercard input amplifier (Auxiliary)
8	XDUCT OK	Logic input for DCCT status
4	GND	GND (Return) connection
9	+15VDC	+15VDC for DCCT supply
5	-15VDC	-15VDC for DCCT supply

Table 4- **J3 Power Supply Connections**

Pin	Signal Name	Function
1	PS REF +	0-5V Voltage Programming Output from PCRC (+)
14	PS REF -	0-5V Voltage Programming Output from PCRC (-)
2	PS VOLTS +	0-10V Voltage Monitor Input from Power Supply (+)
15	PS VOLTS -	0-10V Voltage Monitor Input from Power Supply (-)
3	GND CUR +	Ground current monitor input (+)
16	GND CUR -	Ground current monitor input (-)
4	PS READY STATUS	N/C
17	GND	Return connection of PCRC
5	PS ON STATUS	Power Supply On Status monitor input
18	GND	Return connection of PCRC
6	PS STATUS 0	N/C
19	PS STATUS 1	N/C
7	PS STATUS 2	N/C
20	GND	Return connection of PCRC
8	INTERLOCK RESET Out	Interlocks Reset Output
21	INTERLOCKS READY OUT	N/C
9	PS ON OUT	PCRC output for PS Output Control
22	REV POL OUT	N/C
10	GND	Return connection of PCRC
23	PS STATUS 3	N/C
11	NC	N/C
24	NC	N/C
12	+5V POWER	N/C
25	GND	Return connection of PCRC
13	GND	Return connection of PCRC

Table 5- J4 Magnet Interlocks Connections

Pin	Signal Name	Function
1	KLIXON INTERLOCK 0 (+)	Klixon Interlock Input (+)
14	KLIXON INTERLOCK 0 (-)	Klixon Interlock Input (-)
2	KLIXON INTERLOCK 1 (+)	Klixon Interlock Input (+)
15	KLIXON INTERLOCK 1 (-)	Klixon Interlock Input (-)
3	MAGNET INTERLOCK 0 (+)	Magnet Interlock Input (+)
16	MAGNET INTERLOCK 0 (-)	Magnet Interlock Input (-)
4	MAGNET INTERLOCK 1 (+)	Magnet Interlock Input (+)
17	MAGNET INTERLOCK 1 (-)	Magnet Interlock Input (-)
5	MAGNET INTERLOCK 2 (+)	Magnet Interlock Input (+)
18	MAGNET INTERLOCK 2 (-)	Magnet Interlock Input (-)
6	MAGNET INTERLOCK 3 (+)	Magnet Interlock Input (+)
19	MAGNET INTERLOCK 3 (-)	Magnet Interlock Input (-)
7	INTERLOCKS READY OUT	Interlocks Ready Output
20	PS ON OUT	PS On Output
8	INTERLOCK RESET OUT	Interlock Reset Output
21	GND	Return Connection
9	RS485 GLOBAL RAMP (+)	Ramp Input (+)
22	RS485 GLOBAL RAMP (-)	Ramp Input (-)
10	RS485 GLOBAL HOLD (+)	Hold Input (+)
23	RS485 GLOBAL HOLD (-)	Hold Input (-)
11	GROUND CURRENT OUT (+)	Ground current Output (+)
24	GROUND CURRENT OUT (-)	Ground current Output (-)
12	SPARE ADC INPUT (+)	Spare ADC Input (+)
25	SPARE ADC INPUT (-)	Spare ADC Input (-)
13	NC	N/C

Table 6- **J5 Daughtercard Connections**

Pin	Signal Name	Function
1	GND	Daughtercard chassis ground
14	GND	Daughtercard chassis ground
2	+5V	Daughtercard +5V supply
15	EEPROM_CS1	Daughtercard EEPROM CS Input
3	EEPROM_CLK	Daughtercard EEPROM SCLK Input
16	EEPROM_DIN	Daughtercard EEPROM SD Input
4	EEPROM_DOUT	Daughtercard EEPROM SD Output
17	EN_ERR_AMP	Daughtercard Enable Input
5	GND_TRIP_REF	Voltage Ref output to PCRC
18	N/C	No Connection
6	AUX_XDUCT_IN+	Input to Aux Input Amp
19	AUX_XDUCT_IN-	Not used
7	AUX_XDUCT_OUT	Output of Aux Input Amp
20	COM	Daughtercard GND
8	REG_XDUCT_IN+	Input to Reg Input Amp
21	REG_XDUCT_IN-	Not used
9	REG_XDUCT_OUT	Output of Reg Input Amp
22	COM	Daughtercard GND
10	ERR AMP REFERENCE	Input from PCRC
23	COM	Daughtercard GND
11	ERR AMP OUT	Output to PCRC
24	N/C	No Connection
12	V15P	Daughtercard +15V Supply
25	COM	Daughtercard GND
13	V15N	Daughtercard -15V Supply

***Table 7-* J6 Local Connections** used with a Local Control module (not provided) for local control.

Pin	Signal Name	Function
1	GND	Digital Gnd
20	+5V VDD	Digital 5V
2	REGULATED +15V	15V Positive (regulated)
21	REGULATED-15V	15V Negative (regulated)
3	UNREGULATED+15V	15V Positive (unregulated)
22	UNREGULATED -15V	15V negative (unregulated)
4	LOCAL CONTROL REF	Local Reference Voltage
23	REFERENCE GROUND	Return for local Reference
5	AUX TRANSDUCTOR	AUX Transductor Out
24	REG TRANSDUCTOR	REG Transductor Out
6	N/C	No Connection
25	DAC	DAC Output
7	RIPPLE (X100)	Reg XDUCT Out Ripple X100
26	ABSOLUTE RIPPLE	Reg XDUCT Out Absolute Ripple Current
8	ISOLATION AMP INPUT	Iso Amp In
27	ANALOG GROUND	Analog Ground connection
9	TEMPERATURE	Chassis Temperature
28	ABSOLUTE GND CURRENT	Absolute Value of Ground Current
10	GND TRIP REF	Trip point for ground current fault (2.5V)
29	GND CURRENT	Buf_Gnd_Cur
11	PS VOLTS	Buffered Power Supply Voltage monitor
30	REFERENCE CON	ADC Ref gnd
12	REFERENCE REF	ADC Voltage Ref (7.025V)
31	ENABLE LOCAL	Select Local Reference or DAC
13	PS OFF	Local_PS_Off
32	PS ON	Local_PS_On
14	RESET	Processor_Local_Reset
33	VOLTAGE MODE	Loc_Volt_Mode
15	REV POLARITY	Loc_Rev_Pol
34	LOCAL CNTL UART RXD	EXT_URXD2
16	LOCAL CNTL UART TXD	EXT_UTXD2
35	LD	BUF_LOC_LED_LD
17	SERIAL LED DATA CLK	BUF_LOC_LED_CLK
36	SERIAL LED DATA DIN	BUF_LOC_LED_DAT
18	+5V POWER	VDD
37	GND	GND Connection
19	GND	GND Connection

Table 8- **J7 Programming Connections**

Pin	**Signal Name**	**Function**
1	URXD0	UART0 URXD0
9	UTXD0	UART0 UTXD0
2	UCTS0	UART0 UCTS0
10	URTS0	UART0 URTS0
3	URXD1	UART1 URXD1
11	UTXD1	UART1 UTXD1
4	UCTS1	UART1 UCTS1
12	URTS1	UART1 URTS1
5	GND	GND
13	V2D5	JTAG V2D5
6	TDI	JTAG TDI
14	TCK	JTAG TCK
7	TMS	JTAG TMS
15	TD0	JTAG TD0
8	GND	GND

Please note that a special cable is required to connect from a standard 9 pin serial port to the PCRC 15 pin 'Programming' connector as shown in Table 8 above. The pin-out of the cable (required connections) is shown below:

Table 9- *DSUB-9 pin connector to DSUB-15 pin connector*

Signal	9 pin connector	15 pin connector
TX	2	9
RX	3	1
GND	5	5
RTS	6	10
CTS	7	2

All unspecified pins should be open.

3.0- Interface Card General Information

An interface adapter is necessary for power supply control using the PCRC. Interface adapter PCRC-7273-INT is the correct interface adapter for use with the TDK-Lambda Genesys™ supplies. The PCRC-7273-INT is shown below.

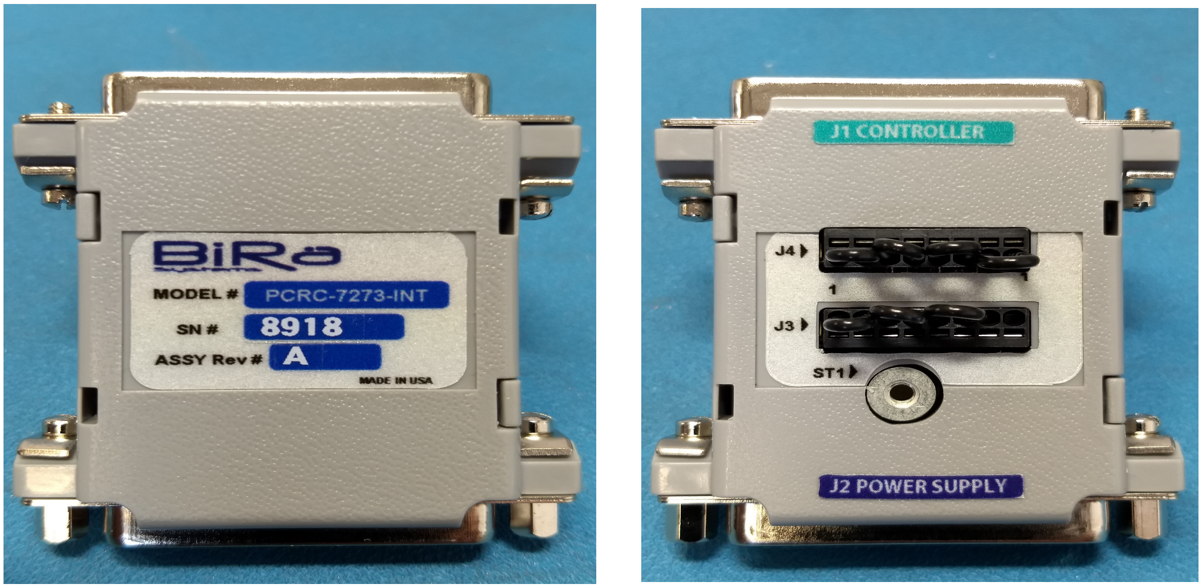


Figure 5- *Interface Adapter (Front/Rear)*

The following discussion involves the PCRC-7273-INT Interface module connections to the TDK-Lambda Genesys™ Power Supplies and the PCRC. Consult the applicable revision operations manual of the power supply in use for additional information.

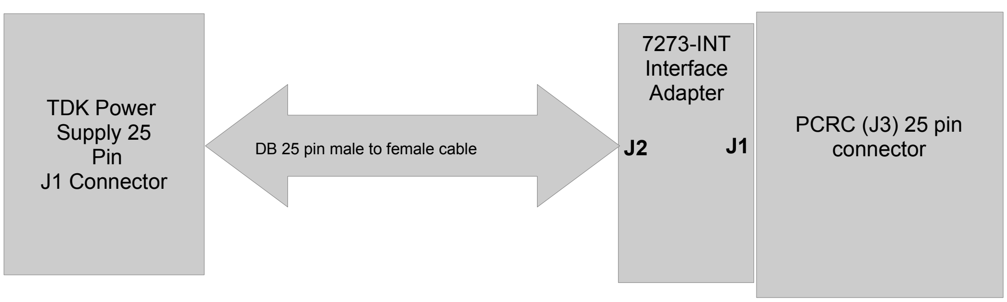


Figure 6- Interface Adapter Connection Diagram

3.1 TDK-Lambda Interface Adapter Information

For a TDK-Lambda\Genesys™ supply, a DB25 male to female cable will be required to connect from the output of the power supply to the input of J2 on the interface adapter. J1 of the interface adapter attaches directly to the J3 connector of the PCRC controller.

Note: The power supply requires some initial settings before programming and control can occur. These steps are detailed below in section 3.2.
Output programming of the power supply may be accomplished either by using the analog remote connector on the power supply or by using the isolated analog connection on the power supply. The user must determine whether to use either the Isolated Analog connections to control, or the Analog Remote connections. Isolated Analog is available as an optional feature (referred to as option IS-510 in the TDK-Lambda operations manual). Isolated Analog programming connections are generally used

when there is a lot of electrical noise in the environment and/or when ground loop currents are an issue. If the control is done by analog remote, connector J4 of the interface card must have jumper wires connecting pins 1 to 2, 3 to 4, 5 to 6 and 7 to 8. To install the jumper wires, strip the insulation away from the wire and insert the wire into the round hole of the connector. To remove the wire from the connectors use a small (2mm blade width) screw driver to push the tab release in the square slot of the connector.

If the Isolated Analog control is being used, the jumpers described above must not be installed. A twisted shielded pair cable will be used to take the "PS_REF_+" (J4-1) and "PS_REF_-" (J4-3) to +VPROG_ISO and GND_ISO, with its shield terminated at pin 1 of the Isolated Programming Connector. Another twisted shielded pair will take "PS_Volts_+" (J4-5) and "PS_Volts_-" (J4 -7) to +VMON_ISO and GND_ISO, with its shield terminated at pin 8 of the Isolated Programming Connector. See **Figure 7** below for the connections required for Isolated Analog connections programming.

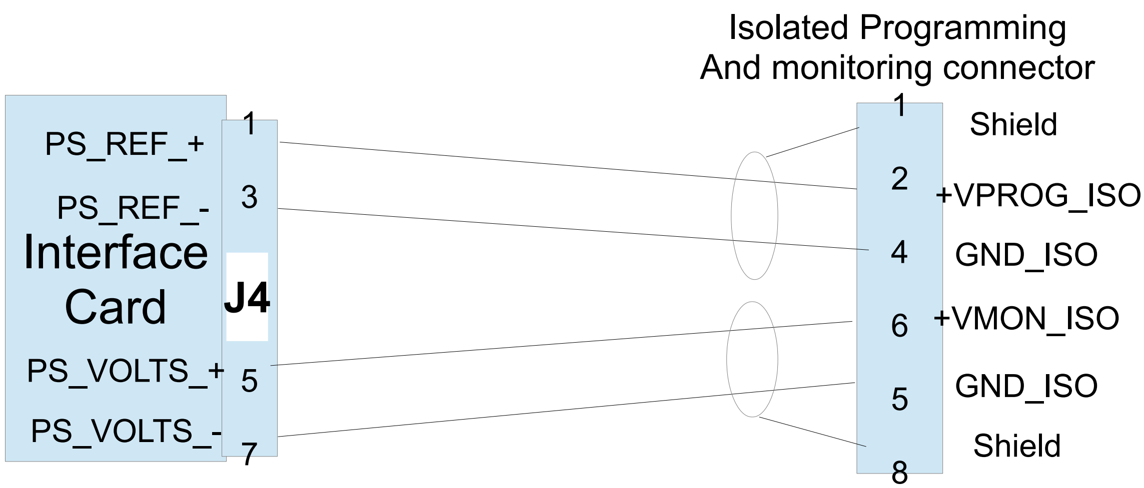


Figure 7- *Isolated Analog Connection Diagram*

Power Supply SW1 dip switch

Regardless of whether the Analog Remote connector or the Isolated Analog connection is used for output programming, SW1 on the power supply rear panel shall be configured with switches SW1-1, SW1-4, and SW1-9 in the Up position with all other SW1 switches in the Down position as shown in Figure 8.

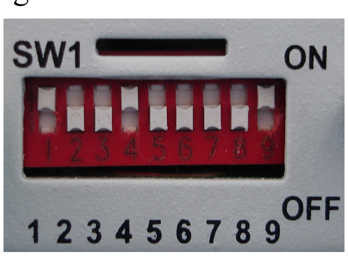


Figure 8- *PS SW1*

SW1-1 sets Remote Analog Programming, SW1-4 sets the output monitoring range to 0-10V, and SW1-9 sets the rear panel enable control.

See Table 10 below for a detailed description of each of the 9 switches and their respective functions.

Table 10- *SW1 Switch Description*

Position	Function	DOWN (Factory default)	UP
SW1-1	Output Voltage Remote Analog Programming	Output Voltage programmed by Front Panel	Output Voltage programmed by remote analog External Voltage or External Resistor
SW1-2	Output Current Remote Analog programming	Output Current programmed by Front Panel	Output Current programmed by remote analog External Voltage or External Resistor
SW1-3	Programming Range Select (Remote voltage/resistive)	0-5V/(0-5Kohm)	0-10V/(0-10Kohm)
SW1-4	Output Voltage and Current Monitoring Range	0-5V	0-10V
SW1-5	Shut-Off Logic select	Off: Low (0-0.6V) or Short On: High (2-15V) or Open	Off: High (2-15V) or Open On: Low (0-0.6V) or Short
SW1-6	RS232/485 select	RS232 interface	RS485 interface
SW1-7	Output Voltage Resistive Programming	Output Voltage programmed by Front Panel	Output Voltage programmed by External resistor
SW1-8	Output Current Resistive Programming	Output Current Programmed by Front Panel	Output Current Programmed by External Resistor
SW1-9	Enable/Disable control	Rear panel Enable/Disable control is not Active	Rear panel Enable/Disable control is Active

Ground Current Monitoring

J3 of the Interface Adapter is used for ground current monitoring.

The ground current is monitored using a 100Ω, 1%, 25W resistor connected between the power supply common and earth ground. This is accomplished by placing jumpers on J3 pins 1 to 2, 3 to 4 and 5 to 6. In addition, pin 4 must be connected to the system earth ground. To do this system earth ground will need to be torqued down to ST1 with a grounding lug and an M3 X M4 screw. The screw should be torqued down to .5Nm. Be sure not to over tighten the screw as this could cause ST1 to tear away the pad from the circuit board.

The ground current may be used to generate a Ground Fault. The trip point (GND TRIP REFERENCE) is 2.5V which corresponds to a 25mA current (2.5V / 100Ω = .025A). If the current flowing between earth ground and the Genesys supply COM is 25mA or greater, an active high Ground Fault will be generated.

Interface Card Connections
Please reference Tables 11-14 below for a pin-out of all PCRC-7273-INT interface connections. Refer to Figure 5 above.

Table 11- Interface Adapter Pin-Out Connections (J4)

Pin	**Signal Name**	**Function**
1	PS_REF_+	0-5V output from PCRC
2	VPGM	0-5V output to PS (when jumpered to pin 1)
3	PS_REF_-	0-5V output from PCRC
4	VPGM_RTN	0-5V output to PS (when jumpered to pin 3)
5	PS_VOLTS_REF	0-10V output to PCRC (when jumpered to pin 6
6	VMON	0-10V input from PS
7	PS_VOLTS_-	Provides PS COM connection to PCRC (when jumpered to pin 8)
8	COM	COM connection from PS

Table 12- Interface Adapter Pin-Out Connections (J3)

Pin	**Signal Name**	**Function**
1	GND_CUR_-	Gnd current monitor - input (common with pin 5)
2	100 ohms to EARTH GND	Gnd current sense resistor
3	GND_CUR_+	Gnd current monitor - input
4	EARTH GND	Earth ground
5	GND_CUR_-	Gnd current monitor - input (common with pin 1)
6	IPGM_RTN	PS current monitor return
7	330 ohms to REV_POL_OUT	Reverse polarity output from PS
8	GNDD	Digital GND connection

Table 13- *Interface Adapter Pin-Out Connections (J1)*

Pin	Signal Name	Function
1	PS_REF_+	0-5V Voltage Programming Output from PCRC (+)
14	PS_REF_-	0-5V Voltage Programming Output from PCRC (-)
2	PS_VOLTS_+	0-10V Voltage Monitor Input from Power Supply (+)
15	PS_VOLTS_-	0-10V Voltage Monitor Input from Power Supply (-)
3	GND_CUR_+	Gnd current monitor input + to PCRC
16	GND_CUR_-	Gnd current monitor input - to PCRC
4	PS_READY_STATUS	Status input to PCRC
17	GND	PCRC GND connection
5	PS_ON_STATUS	Status input to PCRC
18	GND	PCRC GND connection
6	N/C	No connection
19	N/C	No connection
7	N/C	No connection
20	N/C	No connection
8	Interlocks_Reset_Out	Reset Output signal from PCRC
21	N/C	No connection
9	PS_ON_OUT	Signal output from PCRC
22	REV_POL_OUT	Signal output from PCRC
10	GND	PCRC GND connection
23	N/C	No connection
11	N/C	No connection
24	N/C	No connection
12	N/C	No connection
25	GND	PCRC GND connection
13	GND	PCRC GND connection

Table 14- Interface Adapter Pin-Out Connections (J2)

Pin	Signal Name	Function
1	ENA_IN	Input to enable/disable the PS output
14	ENA_OUT	Enable/disable PS output signal
2	IF_COM	Isolated Interface common
15	SO	Shut off input signal to PS
3	IF_COM	Isolated Interface common
16	PS_OK	Output for PS status
4	N/C	No Connection
17	N/C	No Connection
5	N/C	No Connection
18	N/C	No Connection
6	N/C	No Connection
19	N/C	No Connection
7	N/C	No Connection
20	N/C	No Connection
8	COM	Common internally connected to (-S)
21	N/C	No Connection
9	VPGM	Input for remote programming of the PS output voltage
22	VPGM_RTN	Return for VPGM
10	N/C	No Connection
23	IPGM_RTN	Return for IPGM input
11	VMON	Output for monitoring the PS output voltage
24	N/C	No Connection
12	COM	Common connection for VMON, IMON,CV/CC
25	N/C	No Connection
13	N/C	No Connection

3.2 TDK/Lambda Power Supply Setup Instructions

The Power Supply must be properly configured before remote control and programming with the PCRC can be accomplished. Use the following instructions to configure the Power Supply prior to using. Consult the TDK/Lamda user manual for information on connecting AC power to the supply but do not apply power to the supply until all necessary connections between the supply and the load have been made. Connect the PCRC to the DCCT(s) using the cables provided. Use figures 4 and 6 of this document as needed when configuring the system. Review paragraph 2.0 for important information regarding the magnet interlocks before attempting to control with the PCRC.

Caution- make certain that the output is in the disabled state prior to resetting the rear panel SW1 DIP switches. The output of the supply is disabled (off) when the 'Out On' lamp on the front panel of the supply is off.

Note that the Power Supply sense connections must be made (either local or remote) before the Power Supply will properly operate. Consult the Power Supply owner's manual for information regarding output and remote connection details.

Set all SW1 switches to the down position (this sets voltage programming to the front panel and disables rear panel control). If all connections to the supply, DCCT(s), load, and PCRC have been made as required, power on the PCRC and observe that the DCCT power on lamp is lit. Do not attempt to output current from the supply if the DCCT(s) is not powered on.

With the PCRC and the DCCT powered on and daughtercard correctly programmed, apply power to the supply and wait for the power-on cycle to complete. When the power-on cycle has completed, press the 'Prev' button and rotate the voltage knob to 0V. Note that the control will not work if the panel is locked. Set the front panel to the unlocked setting by holding the 'Prev' button on the front panel of the power supply and cycling until 'UFP' has been selected. Release the 'Prev' button when 'UFP' has been selected (UFP represents Unlocked Front Panel). With the front panel unlocked, illuminate the 'Prev' button by pressing and releasing the 'Prev' button, then adjust the current control knob to a level that will ensure that when the power supply is programmed the current will not be exceeded. Failure to set the current to the proper level will cause the power supply to fault if a higher level of current is programmed during operation. Also set the 'OVP' (over voltage protection) setting to a suitably high level that would prevent shutoff during operation (press the 'OVP' button and adjust the voltage control to the desired level). If over-current protection is desired, press the 'Fold' button so that the lamp is illuminated. This indicates that over-current protection is armed and that the supply will shut down when the current limit setting has been reached.

Prior to the performing the following steps, adjust the output voltage of the supply to 0V (if not already done) by rotating the voltage control knob. This will ensure that no current will flow (and no unsafe voltage is present) once the output is enabled.

The Power Supply must be set to 'Auto-restart' in order to ensure that the Power Supply output will turn on when commanded. To accomplish this, press and hold the 'Out' button and cycle between 'SAF' and 'AU7'. Once 'AU7' is highlighted, release the 'Out' button. Once this has been done, turn the output of the Power Supply on by pressing and releasing the 'Out' button. Once all of these steps have been performed, the power supply should then be turned off by turning the power switch on the front panel to the 'Off' position (make sure that the output of the supply is On and illuminated before turning the power switch to Off). The power supply rear panel SW1 (switches SW1-1 SW1-4 and SW1-9) can now be returned to the Up position. This will leave SW1-1,4 and 9 in the up position, and all other switches in the down position, which is the proper configuration for controlling with the PCRC. When the supply is powered on again it will be properly configured for control using the PCRC. Note that when the PCRC is properly controlling, the power supply front panel 'Voltage' lamp will be lit.

With an Ethernet connector attached from the controlling PC to the PCRC, the PCRC should now be ready to remotely control the supply. If it is desired to use UDPWIN to control the PCRC and supply, use the instructions in Appendix B below.

3.3- Using two supplies in Advanced/Basic parallel operation

Advanced Parallel

Use the following instructions if it is desired to use two supplies in parallel controlled by the PCRC. Note that both supplies must be the same model with the same voltage and current ratings.
Establish one of the power supplies as the Master, and the other as the slave. Do not initially connect supplies in parallel. Set all switches on SW1 (Figure 8) on both supplies to the down position initially. SW1 will be reconfigured after both supplies have been properly configured. Setting all switches down initially configures the supplies for local operation. Do not connect the PCRC at this time.
To set the the supply to Master, press the front panel "Fine" button for 3 seconds and then rotate the 'Current' knob until H2 is displayed. Release 'Fine' button when set. Press and hold the 'Prev' button on Master and set to 'UFP' (this sets the front panel of the supply so that it is unlocked). Once the front panel has been unlocked illuminate the 'Prev' button and adjust the 'Current' knob to a level that will not be exceeded during use. Next, make certain that that the supply is in the Autostart mode by pressing and holding the 'Out' button until 'AU7' is highlighted.
At this time go to the other supply and set to Slave by pressing and holding the 'Fine' button and selecting 'S' by rotating the current knob. Turn output On on master supply by pressing the 'Out' button, (which should remain illuminated).
Both power supplies should now be turned off by depressing the 'Off' button on the Power switch.

Once supplies have been configured and turned off, disconnect power cord from rear panels of both supplies and attach the output terminals of both supplies together by attaching the + output terminal of one supply to the + terminal of the other supply, and the - terminal of one supply to the - output terminal of the other supply. Make certain that the jumpers used are capable of handling the amount of current that will be programmed during use (generally when running in a Master/Slave configuration, each supply used will carry half of the total current that is output). Configure the SW1 switches on the master supply so that SW1 position 1, SW1 position 4 and SW1 position 9 are in the 'Up' position, and all other SW1 switches are in the 'Down' position. On the Slave supply set SW1 position 2 and SW1 position 9 in the 'Up' position and all other SW1 switches in the 'Down' position. Figure 10 is a diagram of the parallel set up configuration but does not include the feedback system which is represented in figure 4.

Basic Parallel

Both TDK power supplies will need to be set up as single supplies to run in basic parallel. Before setting anything up be sure that output of the slave supply is not connected to the load or to the master supply. The output of the master supply can be attached to the load.

With the supplies powered off set all of the SW1 positions down. If the unit had been set up as a slave prior, release it from the slave mode by depressing the fine button for 3 seconds until the display indicates “S” then rotate the current encoder knob until the display indicated H1(single supply). If it had not been set up as a slave then check an make sure that it is set to H1 following the same step as described above. Unlock the front panel by depressing and holding the PREV button and waiting for the display to cycle through until it indicates UFP then release the PREV button. This needs to be done on both supplies.

Then illuminate the 'Prev' button by pressing and releasing the 'Prev' button, then adjust the current control knob to a level that will ensure that when the power supply is programmed the current will not be exceeded. Failure to set the current to the proper level will cause the power supply to fault if a

higher level of current is programmed during operation.
Only on the slave supply with the 'Prev' button still illuminated set the output voltage to the level required for the maximum current and load condition of the set up using the voltage control knob.

Also set the 'OVP' (over voltage protection) setting to a suitably high level that would prevent shutoff during operation (press the 'OVP' button and adjust the voltage control to the desired level). Be sure to set the OVP higher on the slave than on the master. If the OVP of the slave unit is set lower than the master then only the slave unit will shut down in an over voltage condition.

The Power Supply must be set to 'Auto-restart' in order to ensure that the Power Supply output will turn on when commanded. To accomplish this, press and hold the 'Out' button and cycle between 'SAF' and 'AU7'. Once 'AU7' is highlighted, release the 'Out' button.
Once this has been done, turn the output of the Power Supplies on by pressing and releasing the 'Out' button. Adjust the output of the Master supply to 0V by rotating the voltage control knob (this is done so that when the supply is remotely turned on, no unsafe voltage will be output). Do not change the voltage control knob for the slave supply. Once all of these steps have been performed, the power supply should then be turned off by turning the power switch on the front panel to the 'Off' position (make sure that the output of the supply is On and illuminated before turning the power switch to Off).
Set master supply SW1 position 1,4,9 to the up position and on the slave set the SW1 position 2,3,9 to the up position.

Connect the interface card assembly PCRC-7273-INT connector labeled “J1 Controller” into rear panel of the PCRC connector J3 labeled “Power Supply”. Pictured below in figure 9 is the cable set that is to be used while running in parallel mode. P1 of the prefabricated parallel cable is a female DB25 and will be attached to the PCRC-7273-INT interface card connector labeled “J2 Power Supply”. P2 of the parallel cable labeled “P2 master” is a male DB25 and will attached to the analog remote connector J1 on the back of the master power supply. P3 of the parallel cable labeled “P3 slave” is a male DB25 and will attached to the analog remote connector J1 on the back of the slave power supply.
The output of the supplies need to be tied together with the plus output of the master tied to the plus of the slave and the negative of the master tied to the negative of the slave.
When both supplies have been powered back On, the PCRC will now be capable of controlling the Master supply.
Figure 10 is a diagram of the parallel set up configuration but does not include the feedback, which is represented in figure 4.

In the basic parallel configuration each supply will display its current contribution separately to the total output unlike advanced parallel which will display the total current only on the master supply.

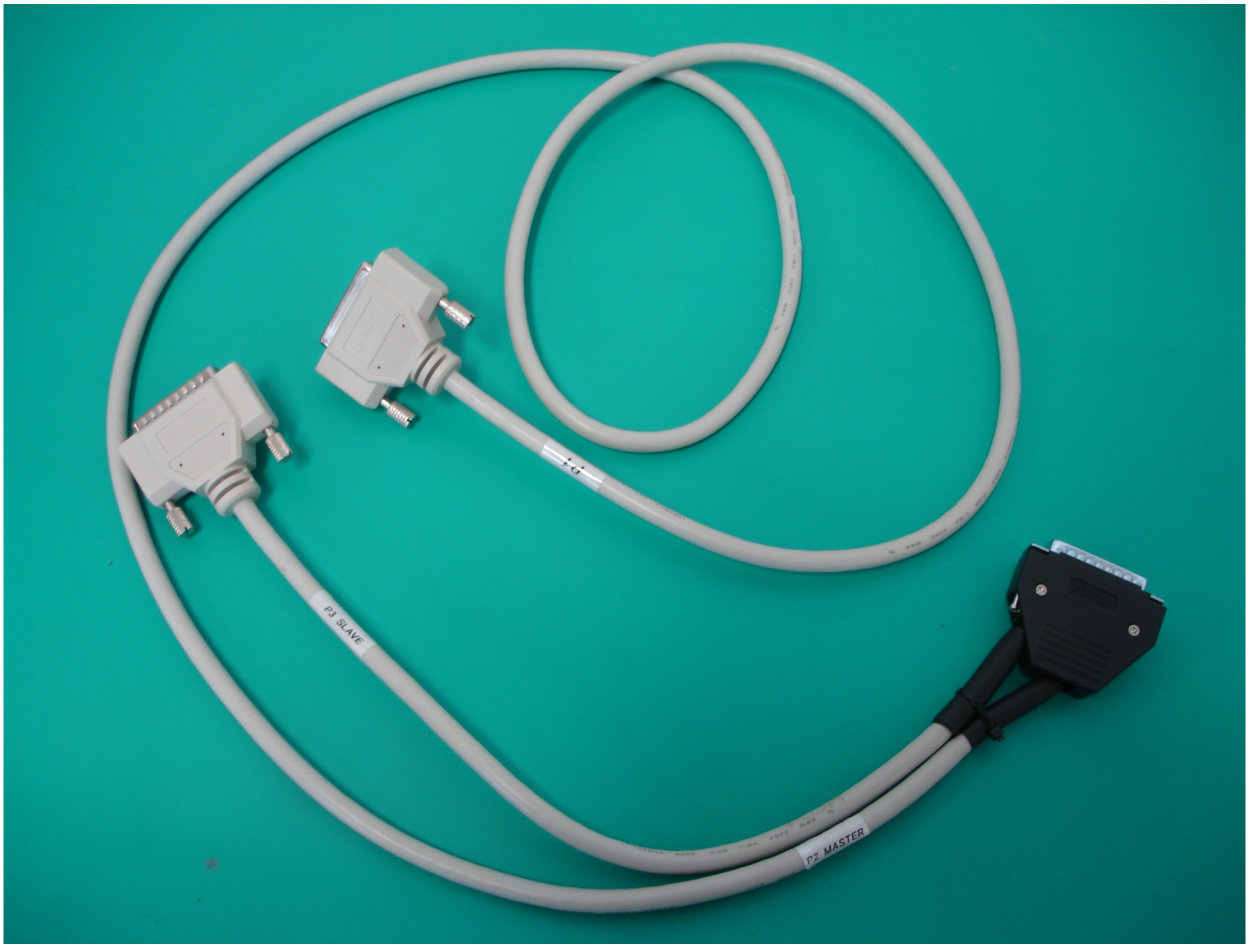


Figure 9- *Cable used during parallel operation*

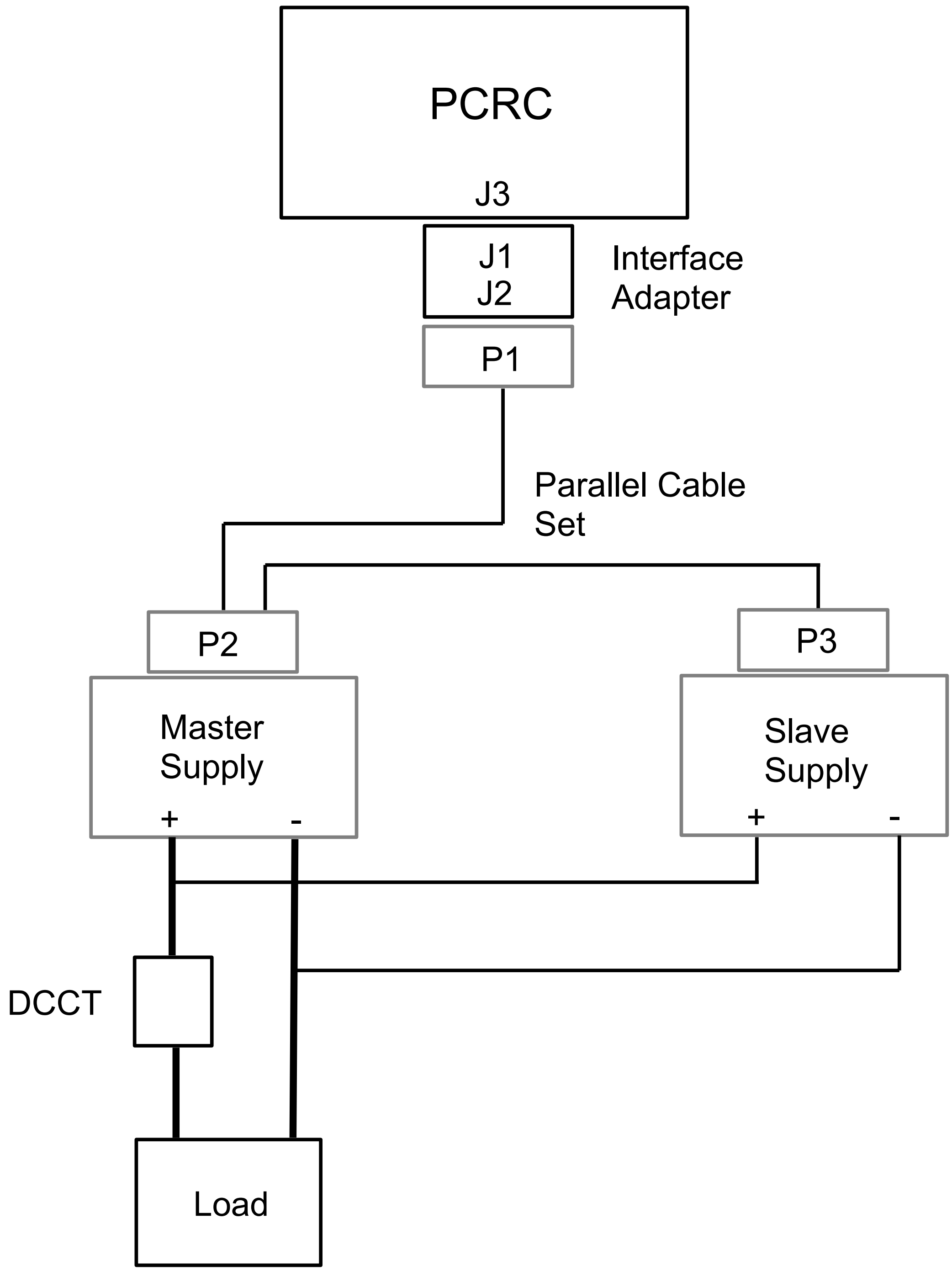


Figure 10- *Parallel Setup Configuration Diagram*

3.4- Typical DCCT to PCRC connections

Caution: It is strongly recommended that no current be applied through the DCCT until the DCCT is powered up, otherwise damage to the DCCT may occur.

Table 15 below shows the connections between the J1 and J2 PCRC connections and a typical DCCT. This pinout allows the use of a straight through D-Sub9 cable. The DCCT pinout is fairly standard, but the specific DCCT user's manual should be referenced to verify the pinout prior to making this connection. A typical DCCT is shown below in Figure 10.

Note: The 'Current output' connection of the DCCT uses Pin 3 (GND) of the PCRC for return.

Table 15- Typical DCCT to PCRC Connections

DCCT Pin	Signal/ Function	PCRC Corresponding J1 Pin	Signal/Function
1	Not used	1	N/C
2	Not used	2	Reg XDUCT – In (not used)
3	Normal Operation Status	3	GND
4	GND	4	GND
5	-15V Supply	5	-15V DC output
6	Current Output	6	Reg XDUCT + In (current input from DCCT)
7	N/C	7	N/C
8	Normal Operation Status	8	Reg XDUCT input status
9	+15V Supply	9	+15V DC output
DCCT Pin	**Signal/Function**	**PCRC Corresponding J2 Pin**	**Signal/Function**
1	Not used	1	N/C
2	Not used	2	Aux XDUCT – In (not used)
3	Normal Operation Status	3	GND
4	GND	4	GND
5	-15V Supply	5	-15V DC output
6	Current Output	6	Aux XDUCT In (current input from DCCT)
7	N/C	7	N/C
8	Normal Operation Status	8	Aux XDUCT input status
9	+15V Supply	9	+15V DC output

Figure 11- *Photo of a typical DCCT*

3.5 Daughtercard Programming and general information

There are 4 types of daughtercards available:

200mA Unipolar
200mA Bipolar
400mA Unipolar
400mA Bipolar

In most cases, a unipolar daughtercard will be used. The bipolar daughtercard is used in systems with a reversing switch, which is used to generate a bipolar output.

The current rating (200mA or 400mA) is the maximum allowable input current to the daughtercard. The input current is the secondary current of the DCCT.

As shown in figure 4 (section 2.1), 2 DCCTs may be used in a system. J1 is associated with the Regulated Transductor, which is a required part of the control loop. J2 is associated with the Auxiliary Transductor, which is an optional independent measurement channel. Each transductor has an Amps/Volt coefficient programmed into the daughtercard. This setting is determined by the maximum system current and the DCCT turns ratio.

The first step is to choose a DCCT. The maximum system current ($\mathbf{I_{MAX}}$) must be less than or equal to the DCCT nominal primary DC current rating ($\mathbf{I_{PN}}$).

$\mathbf{I_{MAX} \leq I_{PN}}$

Next, the daughtercard is selected. The DCCT secondary current ($\mathbf{I_{SEC}}$) is the maximum system current ($\mathbf{I_{MAX}}$) divided by the DCCT turns ratio (**N**). The DCCT secondary current must be less than or equal to the daughtercard current rating ($\mathbf{I_{D}}$).

$\mathbf{I_{SEC} = I_{MAX} / N}$
$\mathbf{I_{SEC} \leq I_{D}}$

Finally, the Amps/Volt ($\mathbf{I_{VA}}$) coefficient is determined by the DCCT turns ratio (**N**) divided by a constant (**K**). K=50 for the 200mA daughtercard, K=25 for the 400mA daughtercard.

$\mathbf{I_{VA} = N/K}$

Example 1:
$I_{MAX} = 100A$
The DS200ID DCCT is selected with $I_{PN} = 300A$ and N = 500.
$I_{SEC} = I_{MAX} / N = 100A/500 = 200mA$
The 200mA daughtercard is selected, K = 50
$I_{VA} = N/K = 500/50 = 10$
The daughtercard is programmed with $I_{VA} = 10$.

Example 2:
$I_{MAX} = 600A$
The DS400ID DCCT is selected with $I_{PN} = 600A$ and N = 2000.
$I_{SEC} = I_{MAX} / N = 600A/2000 = 300mA$
The 400mA daughtercard is selected, K = 25

$I_{VA} = N/K = 2000/25 = 80$
The daughtercard is programmed with $I_{VA} = 80$.

The instructions for programming the Amps/Volt coefficient into the daughtercard are given in **Appendix A** below.

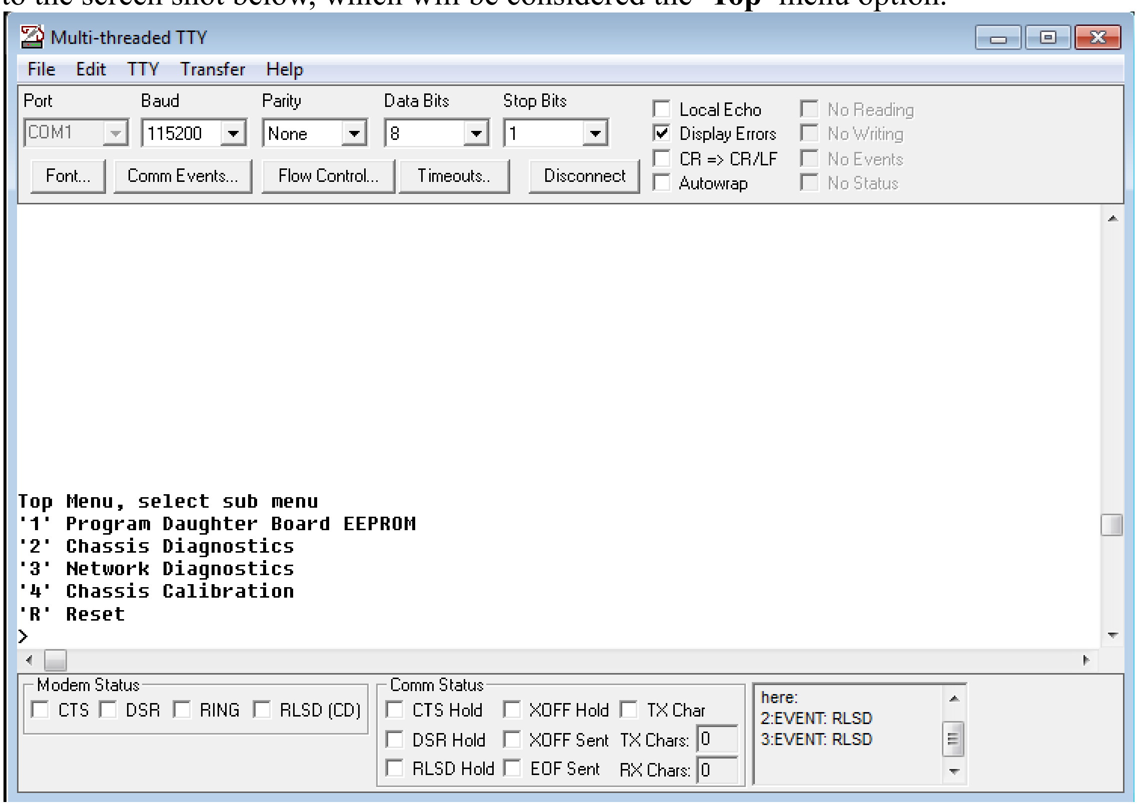
Appendix A- Using MTTTY for Daughtercard Programming

Programming of the daughtercard is performed by using a terminal emulator (such as MTTTY) and using the 'Programming' connector on the PCRC front panel. A special cable provided by BiRa Systems must be used to connect to a serial port connection on the PC or terminal used. Refer to Table 9 in this document for details regarding the programming cable. Connect the cable between the serial port on the PC or terminal device and the PCRC 'Programming' connector on the front panel.

It may not be necessary to program daughtercard settings, however the instructions below should be used in the event new settings on the daughtercard are required, or if it is desired to check the existing settings. When configuring the programming utility, use the following settings:

- Baud rate to '115200'
- Parity to 'None'
- Data bits to '8'
- Stop Bits to '1'

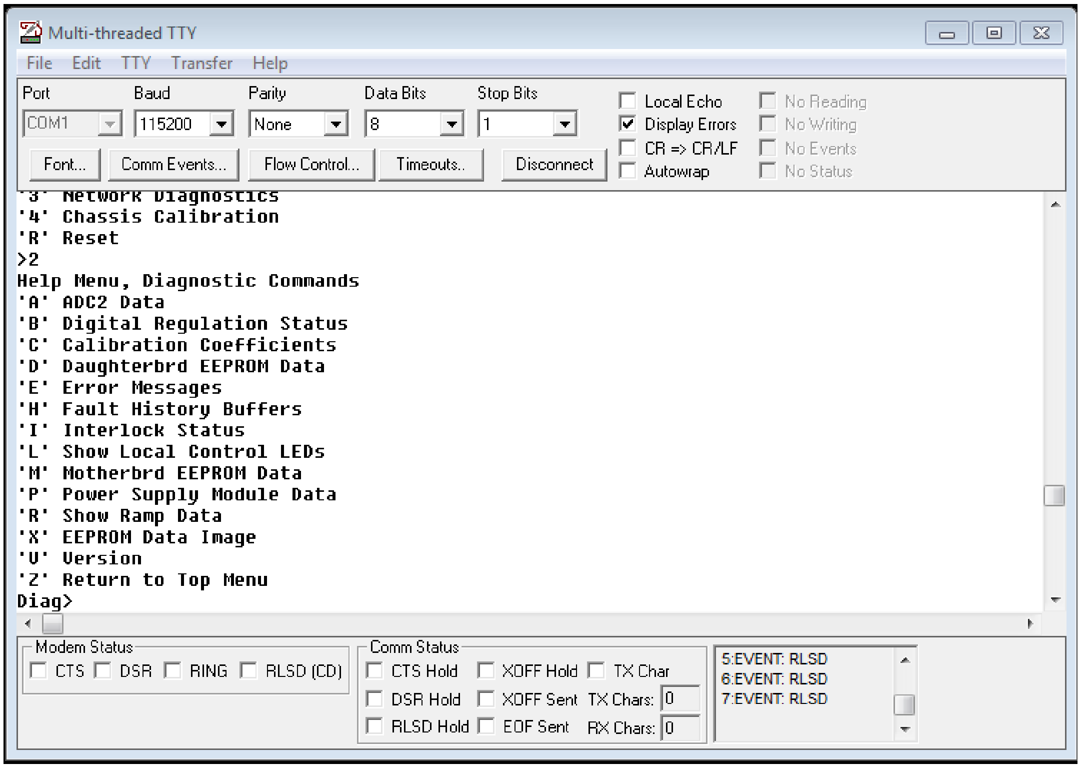
After the above settings have been made, perform a carriage return and observe that the display is similar to the screen shot below, which will be considered the **'Top'** menu option.



Screen Shot 1

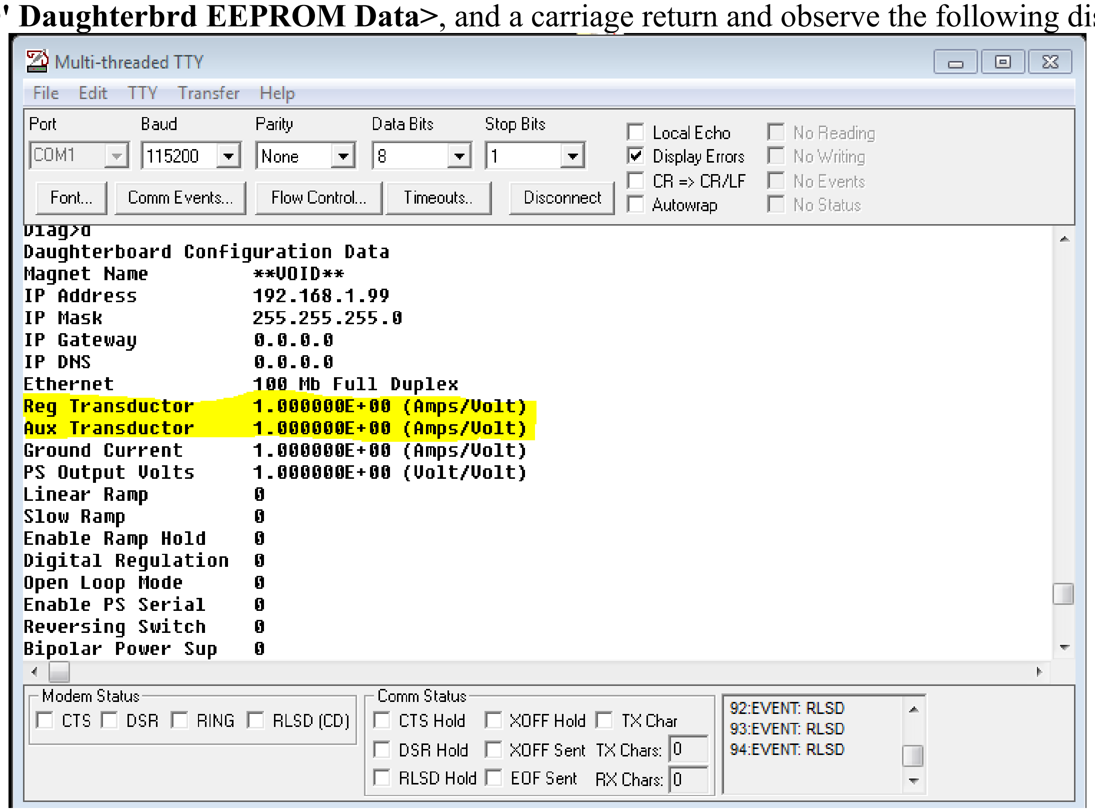
To execute a check of the existing **Amps/Volt** settings on the daughtercard, perform the following:

Enter <**'2' Chassis Diagnostics**> and a carriage return and observe the following display.



Screen Shot 2

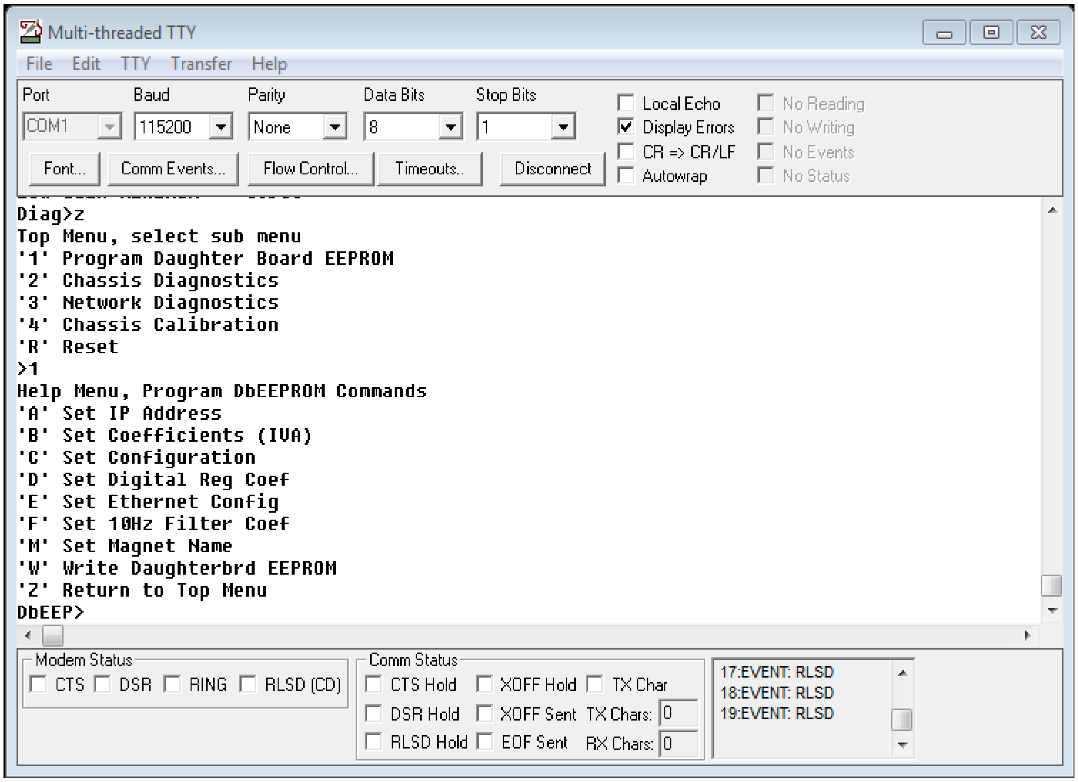
Type <**'D' Daughterbrd EEPROM Data>**, and a carriage return and observe the following display.



Screen Shot 3

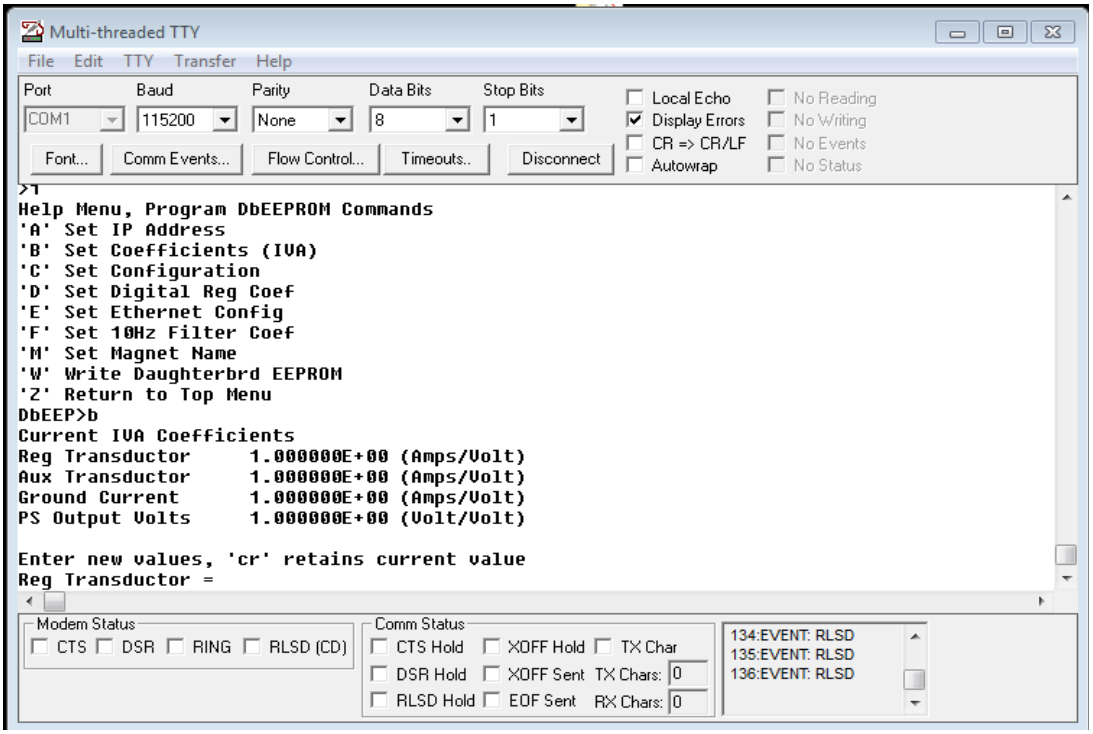
Observe the Amps/Volt settings show in highlight. Note that in the '**Chassis Diagnostics**' mode it is not possible to make changes to the settings- it is just to observe that the settings are as desired. To actually make changes to the daughtercard, perform the following:

Go back to the '**Top'** menu by typing 'Z' and return. (the '**Top**' menu is shown above).
Type <**'1' Program Daughter Board EEPROM**> and then hit return. Observe the screen shown below.



Screen Shot 4

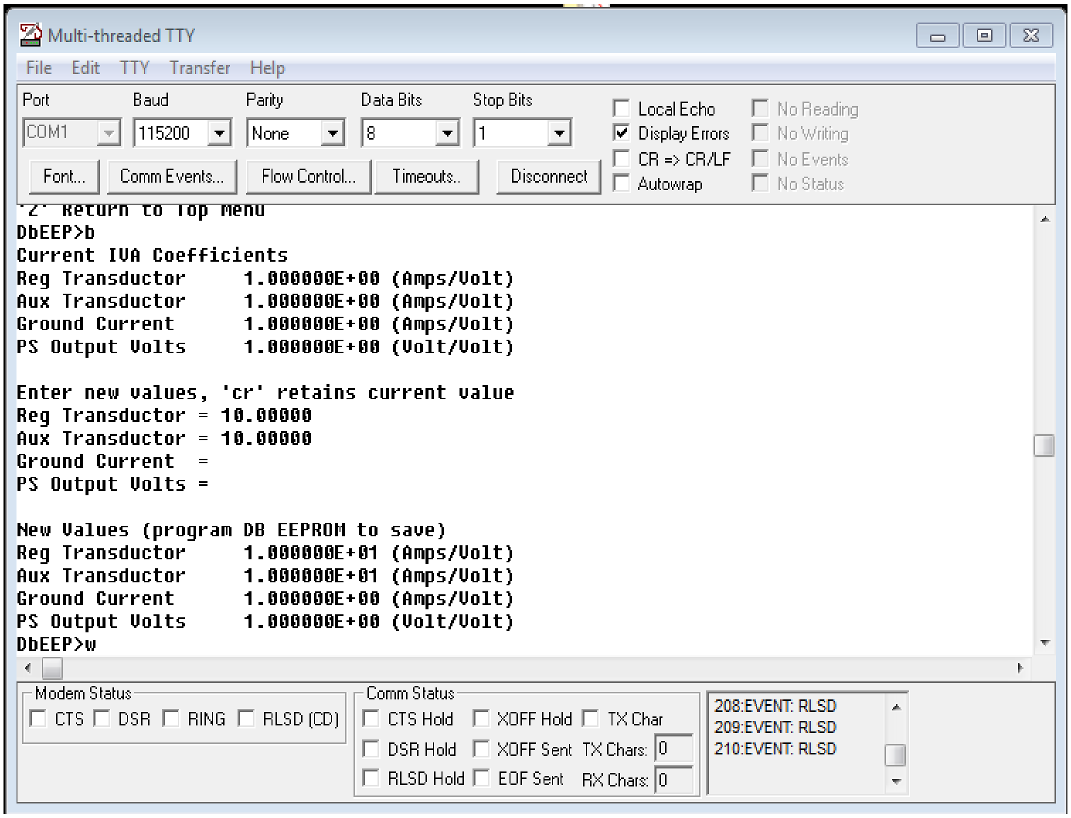
Next type <**'B' Set Coefficients (IVA)**> and hit return. This will give you the following screen and allow you to make Amps/Volt setting changes.



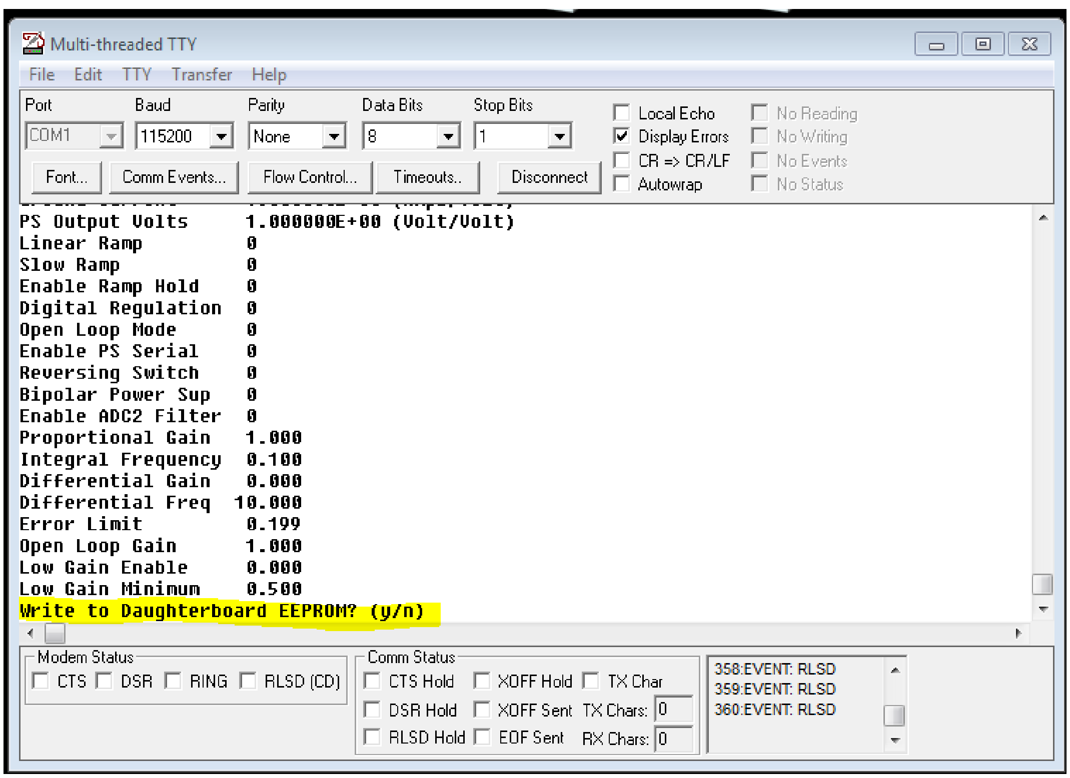
Screen Shot 5

To make **Reg and Aux Amps/Volt** setting changes, begin making the new entry at the '=' sign. As each entry is made and a carriage return is executed, the next item in the list will appear with an '=' sign. It is only necessary to make an entry if the setting needs to be changed. If the setting does not need to be changed, just typing a carriage return will ensure that the setting remains the same. So assuming that the 'Reg Transductor' and 'Aux Transductor' only need to be changed (and not 'Ground Current' and 'PS Output Volts') then make entries for 'Reg Transductor' and 'Aux Transductor' and simply hit Return for 'Ground Current' and 'PS Output Volts' . Once the entries have been made, it is necessary to save the settings by typing a **'W'** and then carriage return at the 'Dbeep' prompt as shown on the screen shot below. After typing a 'W' the screen will ask you if you want to save the changes. Type 'Y' or 'N', depending on whether the changes should be saved or not.
Next it is necessary to type '**Z**' to return to the Top menu, Type '**R**' to reset, and then type '**S**' to perform a Soft Reset. Once the Soft Reset (or Hard Reset) has been performed, the changes have been saved.

It is advisable to go back and confirm that the settings were changed correctly once the changes have been saved. Perform the instructions under screen shot 1 as necessary to accomplish the confirmation.



Screen shot 6

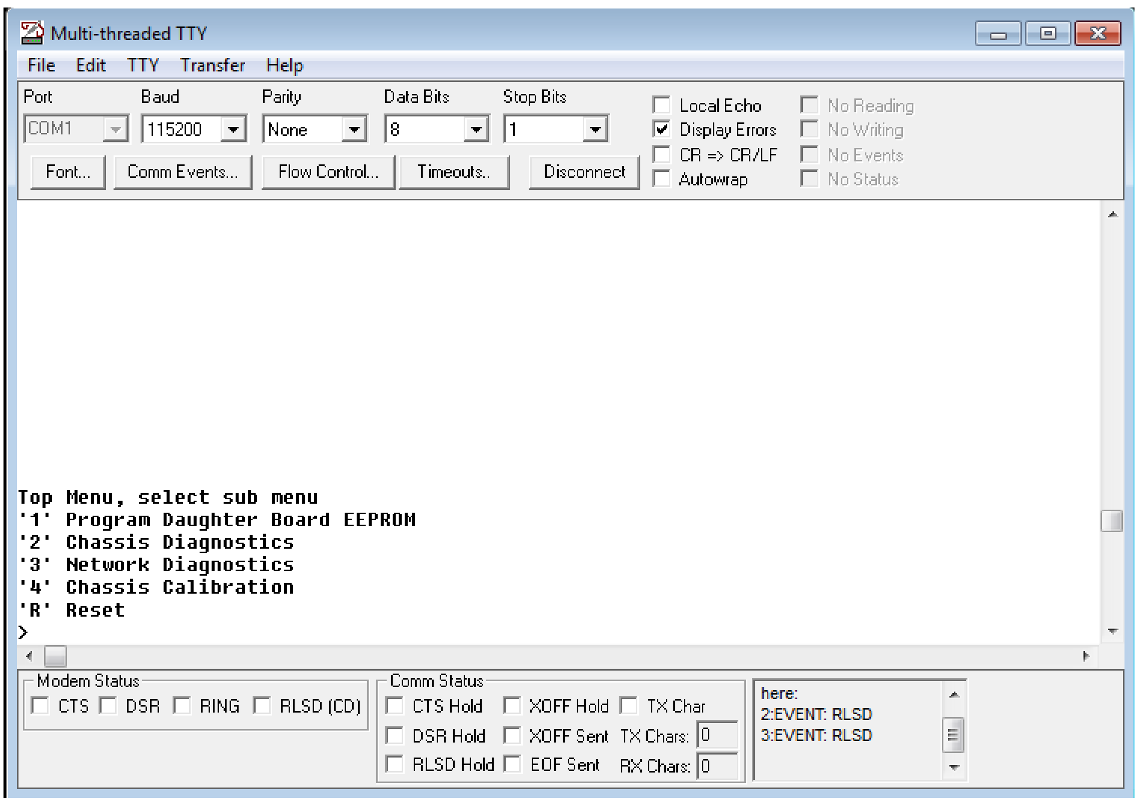


Screen shot 7

Changing the Daughtercard IP Address

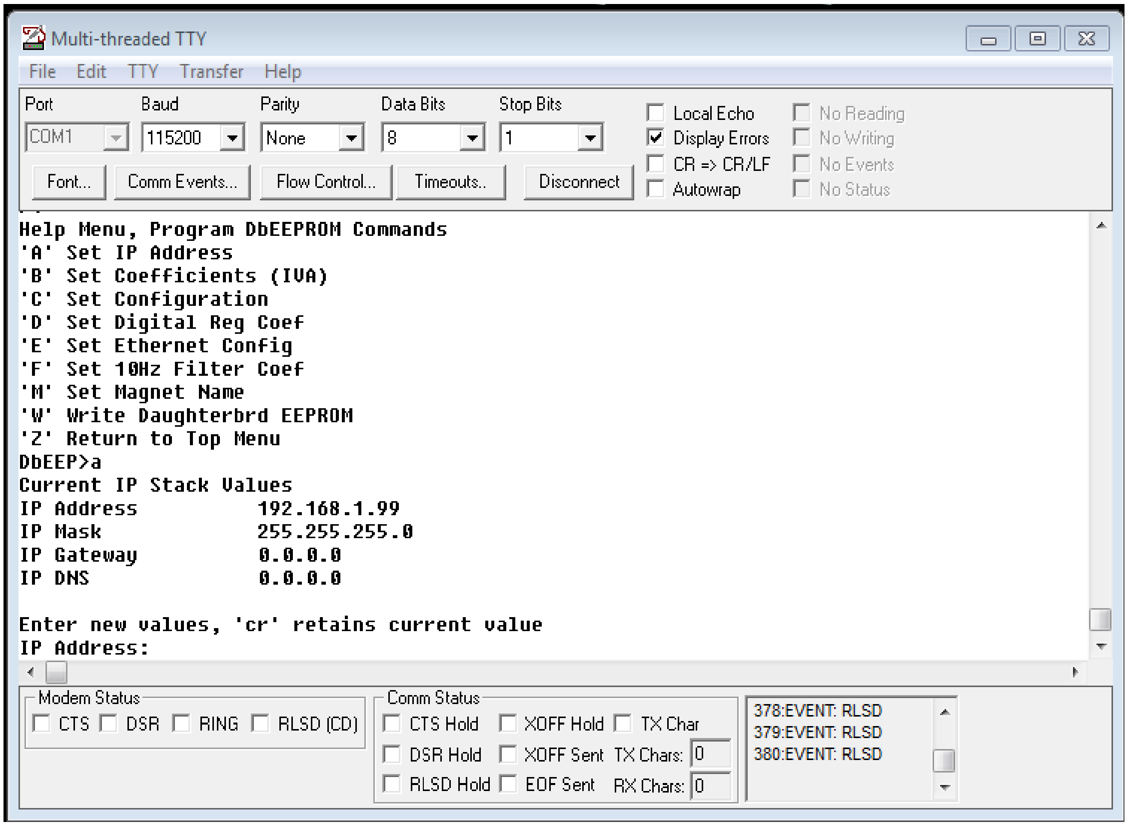
It is possible that the IP address of the daughtercard would need to be changed. In order to perform this function, follow the steps listed below after having made the serial cable connection as described above and powering the PCRC on.

Establish that the connection to the PCRC has been made by performing a carriage return and confirming the screen below, which is the 'Top' menu display.



Screen shot 8

From the 'Top' menu type <**'1' Program Daughter Board EEPROM'>** and return. Then type <**'A' Set IP Address**> and observe that the screen shown below appears.
Enter the new IP address at the prompt and hit return. If necessary also enter the new **IP Mask** setting, the **IP Gateway** setting, and the **IP DNS** setting. If it is not necessary to enter any new values other than the **IP Address**, simply hit return at the prompt and the existing settings will be maintained. Once a carriage return has been entered for all four of the settings, type a '**W**' to write the settings, and at the prompt type either a **'Y' or 'N**' depending on whether the settings should be saved or not. Type '**Z**', then '**R**' for Reset, and then either an '**S' or 'H**' to complete the process.
Once the reset process has completed, it is advisable to go back and confirm that the new settings were made as expected.



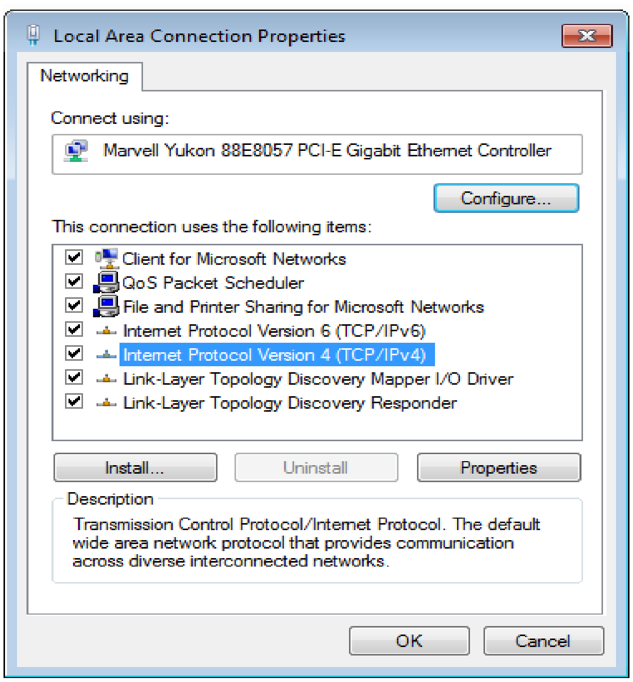
Screen Shot 9

Appendix B- Using UDPwin to control the PCRC

UDPWin.exe is a program that may be used with any PC with an Ethernet port to control the PCRC. With this program (available from BiRa Systems), the supply can be remotely turned on/off, current levels set based on a ramp time, status and error messages displayed. This section gives detailed instructions on how to use this program with the PCRC.
Before the program can be used the PC must be set up or configured with the correct IP address to communicate with the PCRC.
The default IP address of the PCRC is **192.168.1.99**. This IP address may be changed if necessary by following the instructions in Appendix A (Changing the daughtercard IP Address). It should be understood that the IP address of the PC and the IP address of the PCRC cannot be the same. It should also be understood that if more than one PCRC is on the same network, each PCRC must have its own unique IP address. If the PCRC IP address has been changed from the default address, see instructions at the bottom of this Appendix, 'What to do if the PCRC IP address has changed'.
If it is not necessary to change the IP address of the PCRC, continue following the instructions below to configure the PC to communicate with the PCRC. It may be useful to consult with IT before proceeding.

Instructions shown here to change the local IP address are based on a Windows 7 operating system and may need to be adjusted depending on the OS of the computer used.

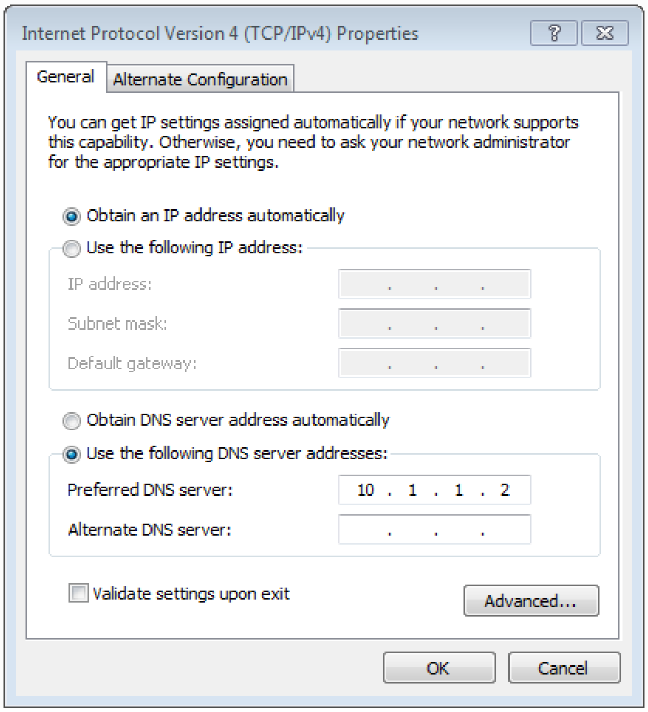
Navigate to the 'Local Area Connection Properties' display panel and select 'Internet Protocol Version 4 (TCP/IPv4)' as shown in the screen shot below.



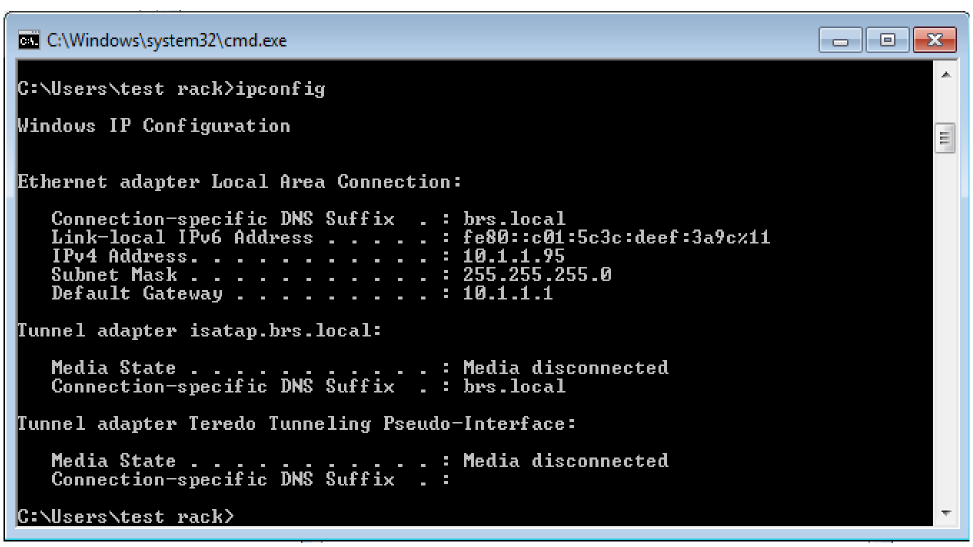
Screen shot 1

Click on the 'Properties' tab and observe the following display panel (Screen Shot 2), which is typical. It will be necessary to enter the actual IP address, Subnet mask, and Default Gateway that the LAN has provided into the display by using the 'Use the following IP address' display. One way to find out those

IP values (assuming they are not already known) is to open up a Windows command window and use the command 'ipconfig'. Using the ipconfig command will display the actual IP values of the PC so that they can be entered. Screen shot 3 is an example of what the display will look like when the 'ipconfig' command has been entered. Note that the IPv4 Address, Subnet Mask, and Default Gateway values are shown and will be entered into the display shown in Screen shot 2 once the 'Use the following IP address' selection has been made. When those values have been entered, click on the 'Advanced..." button and follow the instructions below.



Screen shot 2

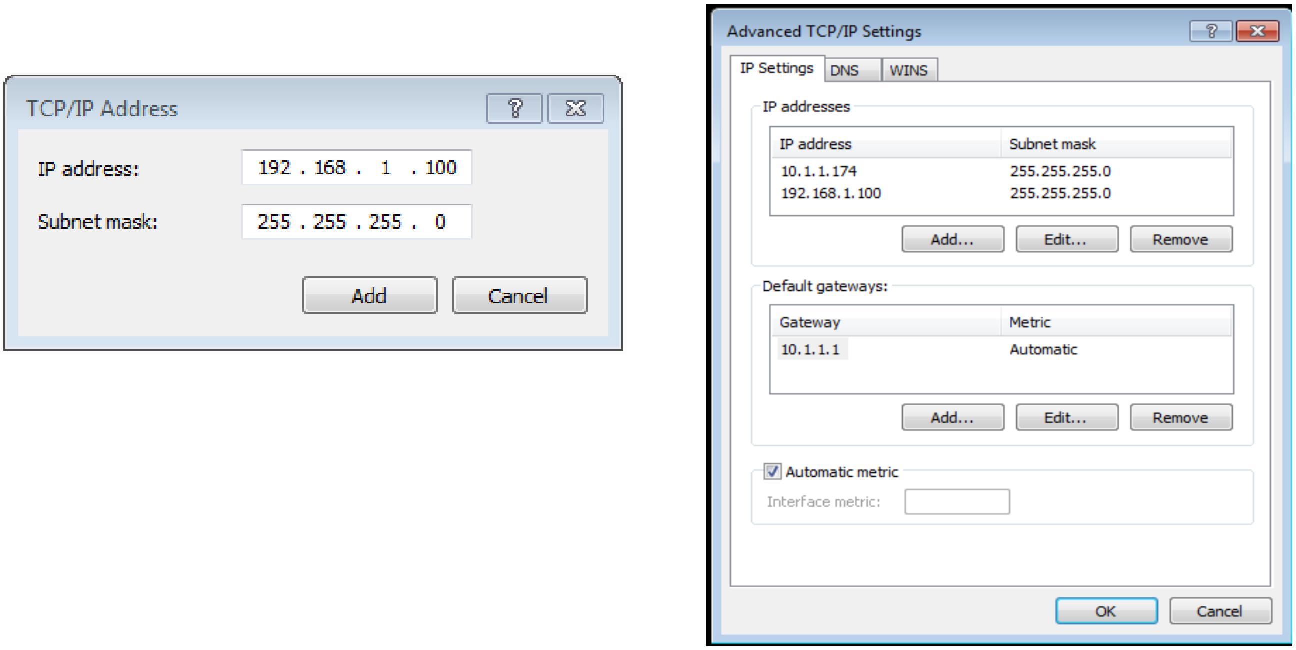


Screen Shot 3- Windows command window after the ipconfig command has been entered.

In the 'Advanced' tab window, click on the 'Add' button, and enter in the IP address window the following as shown in screen shot 4 below. IP address- **192.168.1.100**

Subnet mask- **255.255.255.0**

When done click the 'Add' button, then 'OK' and then 'OK' again to exit the display panel.



***Screen shot 4*-**IP Address and Subnet mask entry panel, and 'Advanced' screen after entries were made.

Once these entries have been made, communication between the PC and the PCRC can now be established. Use the instructions immediately below if it is desired to use a PC not on a LAN to control the PCRC. Otherwise, proceed with the instructions below '**Using UDPwin to control'**.

If the PC used in not on a LAN and is connected directly to the PCRC with an Ethernet cable, enter the IP address and Subnet mask information shown above, directly into the 'Internet Protocol Version 4' panel (screen shot 2) after clicking on the 'Use the following IP address' button. It is not necessary to enter any information into the 'Preferred DNS Server' window if the connection is direct from the controlling PC to the PCRC.
When the IP address and Subnet mask information have been entered correctly the following commands will be used to program the power supply:

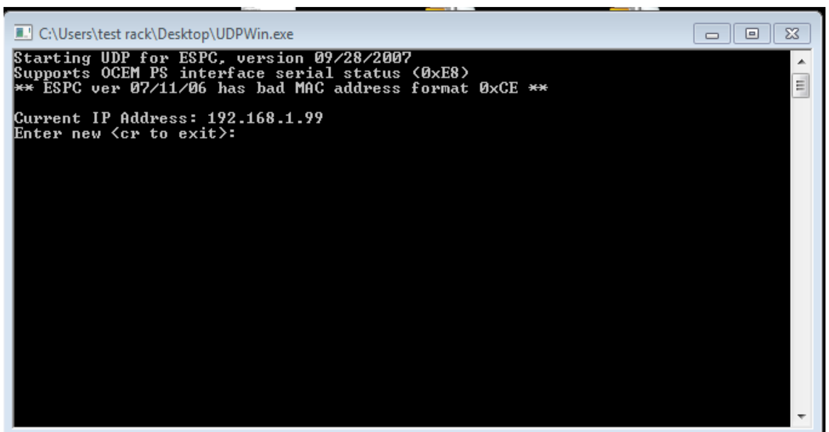
Precision Current Regulator Controller (PCRC) Command Summary

0xC0 Short Status check (wait for current data from ADC)
0xC1 Set Power Supply Current with unsynchronized ramp
0xC2 Set Power Supply Current with synchronized ramp
0xC3 Read ramp setpoints and Times
0xC4 Reset Interlocks
0xC5 Turn OFF Power Supply
0xC6 Turn ON Power Supply
0xC7 Turn ON Power Supply, reverse polarity
0xC8 Read Analog (reads 8 different ADC inputs)
0xC9 Read Error Message
0xCA Diagnostic Message 1

0xCB Diagnostic Message 2
0xCC Diagnostic Message 3
0xCD Short Status check (same as 0xC0 except uses stored ADC data)
0xCE Configuration Summary (new message with all configuration data)
0xCF Dynamic Data Message (new message with all configuration data)
0xE1 Communications Check Message (echo)
0xE3 Reset PCRC
0xE8 PS Serial Status (07-31-07 and later, for OCEM ATF2 modular PS)

Using UDPwin to Control
After ensuring that all connections between the PCRC, Power Supply, DCCT and Load are as described above, power on the PCRC and supply and confirm that the power on LED on the DCCT is lit. Proceed with the instructions below.

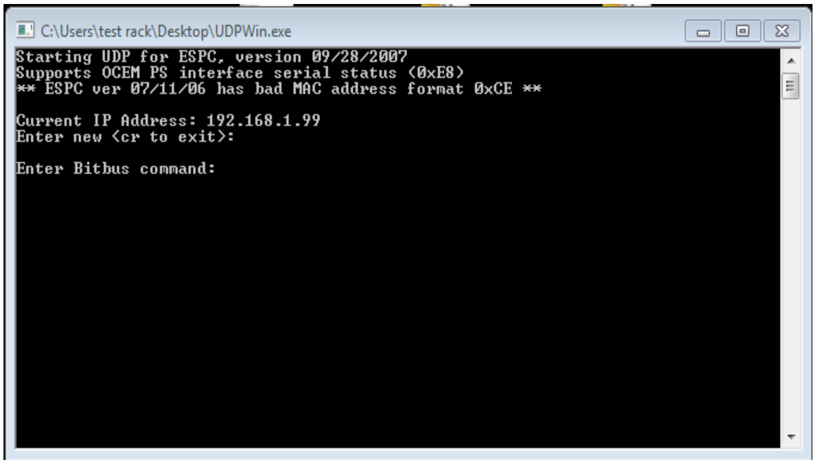
Open the **UDPWin.exe** application and observe the screen shown below.



Screen Shot 5- UDPwin Initial Display

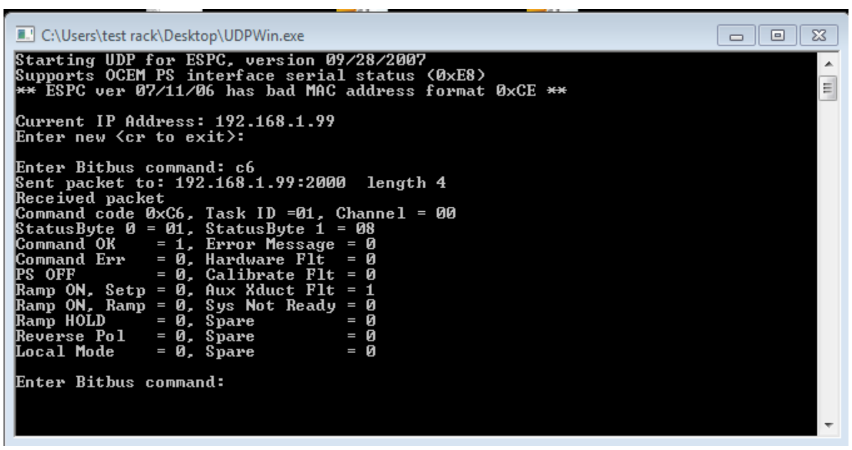
Note that the IP Address of the PCRC is displayed and that it is different than the IP Address that was entered in the instructions above for the 'Advanced' tab.

Hit the Return button on the computer keyboard and observe the 'Enter Bitbus command' prompt. Note that the 'Ready' LED lamp on the PCRC front panel is solid lit and not flashing whenever an Ethernet connection on the PCRC has been installed. Note also that each time that a UDPwin command is given that the 'Network' LED lamp on the PCRC front panel will flash briefly (assuming that proper communication has been established between the PC and PCRC).



Screen Shot 6- Bitbus command prompt

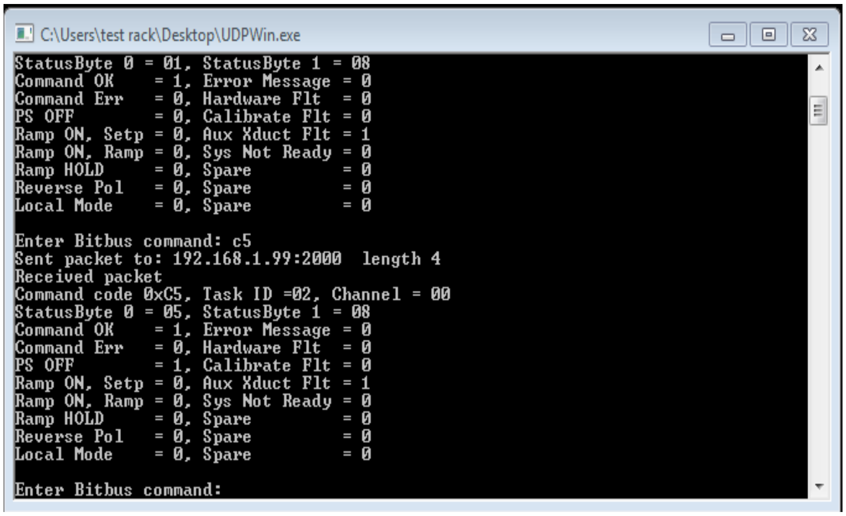
The power supply output can be turned on by entering the command C6 as shown in the screen shot below.



Screen Shot 7- Using the 'C6' command to turn the supply on

The display indicates the command was successful. The 'Output' LED on the front panel of the supply should be lit, and the 'PS On' LED on the PCRC should also be lit. Observe that the display shows "PS OFF   = 0", which indicates that the output of the supply is On.

Turn the power supply output off by entering C5 at the command prompt as shown below.



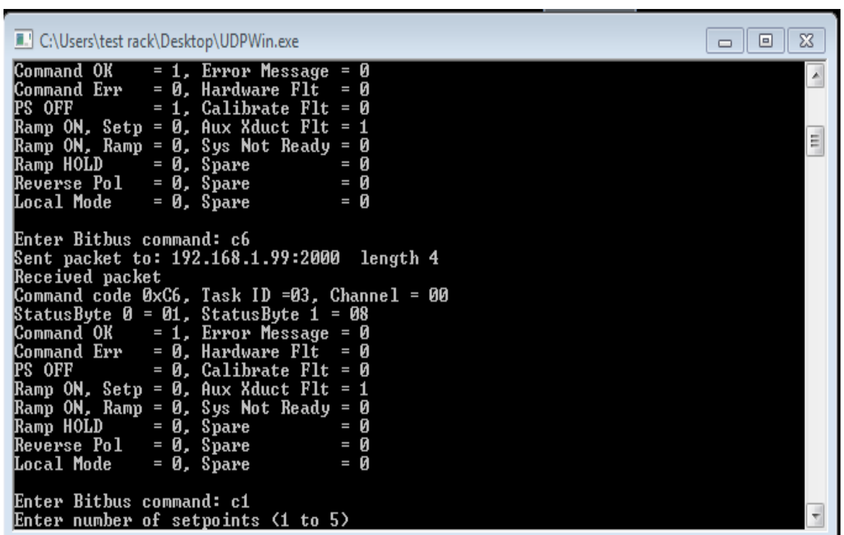
```
C:\Users\test rack\Desktop\UDPWin.exe
StatusByte 0 = 01, StatusByte 1 = 08
Command OK    = 1, Error Message = 0
Command Err   = 0, Hardware Flt  = 0
PS OFF        = 0, Calibrate Flt = 0
Ramp ON, Setp = 0, Aux Xduct Flt = 1
Ramp ON, Ramp = 0, Sys Not Ready = 0
Ramp HOLD     = 0, Spare         = 0
Reverse Pol   = 0, Spare         = 0
Local Mode    = 0, Spare         = 0

Enter Bitbus command: c5
Sent packet to: 192.168.1.99:2000  length 4
Received packet
Command code 0xC5, Task ID =02, Channel = 00
StatusByte 0 = 05, StatusByte 1 = 08
Command OK    = 1, Error Message = 0
Command Err   = 0, Hardware Flt  = 0
PS OFF        = 1, Calibrate Flt = 0
Ramp ON, Setp = 0, Aux Xduct Flt = 1
Ramp ON, Ramp = 0, Sys Not Ready = 0
Ramp HOLD     = 0, Spare         = 0
Reverse Pol   = 0, Spare         = 0
Local Mode    = 0, Spare         = 0

Enter Bitbus command:
```

Screen Shot 8- Using the 'C5' command to turn the supply off

The power supply output is now turned off. Observe that the display indicates "PS OFF = 1" indicating that the output of the supply is off. Note that simply turning the supply output on does not mean there is any output current. The output must first be turned on (by using the C6 command) before the command to set current can be delivered as shown below. First, enter the C6 command, ensure that the output of the supply is on, and then type in the C1 command as seen in screen shot 9. Observe the display is asking for number of setpoints to enter from 1 to 5.



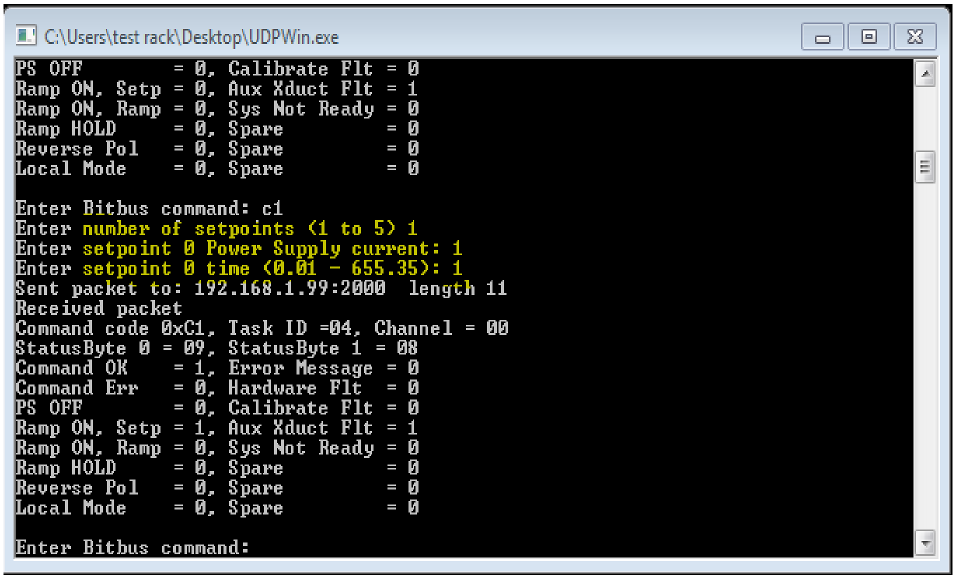
```
C:\Users\test rack\Desktop\UDPWin.exe
Command OK    = 1, Error Message = 0
Command Err   = 0, Hardware Flt  = 0
PS OFF        = 1, Calibrate Flt = 0
Ramp ON, Setp = 0, Aux Xduct Flt = 1
Ramp ON, Ramp = 0, Sys Not Ready = 0
Ramp HOLD     = 0, Spare         = 0
Reverse Pol   = 0, Spare         = 0
Local Mode    = 0, Spare         = 0

Enter Bitbus command: c6
Sent packet to: 192.168.1.99:2000  length 4
Received packet
Command code 0xC6, Task ID =03, Channel = 00
StatusByte 0 = 01, StatusByte 1 = 08
Command OK    = 1, Error Message = 0
Command Err   = 0, Hardware Flt  = 0
PS OFF        = 0, Calibrate Flt = 0
Ramp ON, Setp = 0, Aux Xduct Flt = 1
Ramp ON, Ramp = 0, Sys Not Ready = 0
Ramp HOLD     = 0, Spare         = 0
Reverse Pol   = 0, Spare         = 0
Local Mode    = 0, Spare         = 0

Enter Bitbus command: c1
Enter number of setpoints (1 to 5)
```

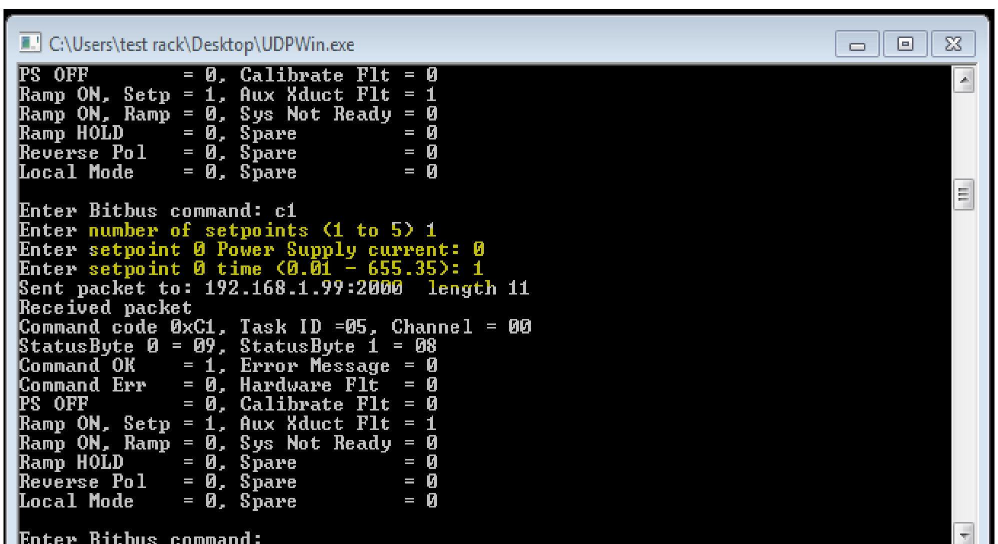
Screen Shot 9- Using the 'C1' command

Enter 1 and hit return. At the prompt shown below enter the level of current desired, and then at the next prompt, the desired time the supply will take to reach the current setpoint. No current will be output until the time to setpoint value has been entered. It is recommended that a reasonable amount of time be allowed for the supply to reach the current output setpoint. 1Amp/second is a reasonable value to start with. For example, if 50 Amps is the current setpoint, then an entry of 50 for the setpoint time would result in the supply reaching 50 Amps in 50 seconds, or 1 Amp/second. An entry of 25 as the setpoint time would result in the output reaching 50 amps in 25 seconds, or 2 Amps/second.



Screen Shot 10- 'C1' command to set the output to 1 Amp

The screen shot above highlights the number of setpoints (1), current setpoint (1 Amp), and the time that the supply took to reach 1 Amp (1 second). Once the supply has reached 1 Amp it will remain there until the next command is given. Note that the power supply front panel current display should indicate 1 Amp. Return the supply to 0 Amps by again entering the C1 command as shown below.



Screen Shot 11- 'C1' command to return the supply to 0 Amps

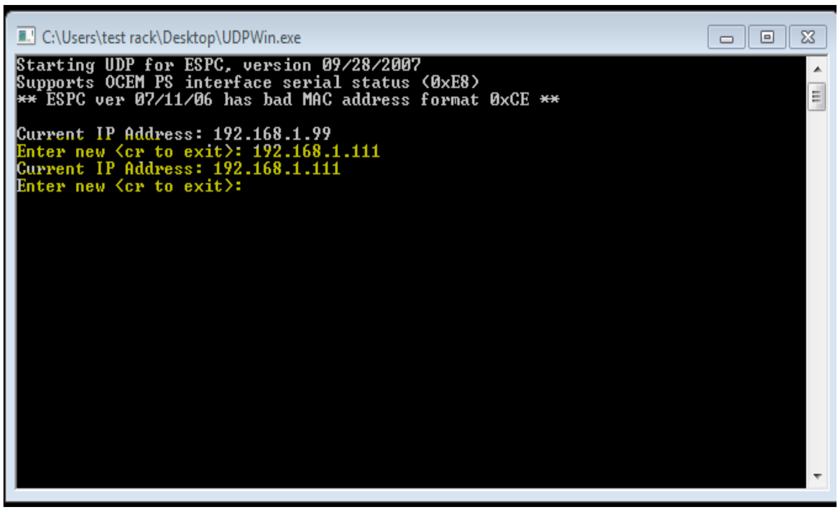
After the C1 command is entered, the highlighted portion above shows 1 setpoint was entered, 0 Amps as the setpoint, and 1 second to return to 0 Amps. Once the supply has been returned to 0 Amps the output can be turned off. Never attempt to turn the supply output off when current is being output. Always return the supply to 0 Amps and then turn the output off.

What to do if the PCRC IP address has been changed

Follow these instructions in the event that a PCRC has had it's IP address changed:

Appendix A has instructions for changing the daughtercard PCRC IP address when that process

becomes necessary, such as if there are two or more PCRCs on the same network. If using UDPWin to communicate with the PCRC, you must change the IP address in UDPWin each time that the application is reopened. Screen Shot 12 shows the application when it is initially opened, and shows the default IP Address (192.168.1.99), not the actual IP address if it was changed. In order to communicate with the PCRC, you must enter the actual IP address at the prompt 'Enter new <cr to exit>:' and then hit the Return button. In the example below the IP address was changed from 192.168.1.99 to 192.168.1.111 as seen in the highlighted portion.
If the IP address has not been changed since the application was last opened, simply hit Return at the prompt.



Screen Shot 12