**B&K PRECISION** ®

**Model: 9103, 9104**

# Switching DC Power Supplies

## PROGRAMMING MANUAL

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# 1. USB Interface Connection

Users can remotely control the power supply via PC over the USB interface. Upon installation of the USB driver, the PC can control the instrument over virtual COM.

Connecting Instrument to PC

a) Download the USB drivers from www.bkprecision.com .
b) Connect the included USB cable to the power supply and the USB port on the PC.
c) When Windows recognizes the USB connection, do not follow the default Windows driver installation wizard. Simply run the setup file from the downloaded USB drivers and follow the prompt to install drivers.
d) The computer will recognize the instrument as a USB (virtual COM) device, it will be detected as a serial COM port. Windows will automatically assign a COM port to the instrument. Please verify which COM port Windows has assigned by going into Device Manager.

USB (Virtual COM) Configuration

The following serial port settings are used by the power supply.

- Baudrate: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow Control: None

# 2. Command Set

*In order to use remote commands, please make sure to use the following communication settings:*

1. ***Baud rate: 9600***
2. ***Data bits: 8***
3. ***Parity: none***
4. ***Stop bits: 1***

If you are using HyperTerminal, make sure to check your ASCII setup to not append line feeds.

Command line format: **COMMAND<parameter1><parameter2>…[CR]**

| # | Input Command and Return | Description | Example |
|---|---|---|---|
| 1 | SOUT< Output > [CR]<br><br>*Return Value:  [OK] [CR]* | Set Output on/off.<br>Set Output off: < Output > =0<br>Set Output on: < Output > =1 | Input Command: SOUT0[CR]<br>Return Value:  [OK] [CR]<br>Result: Set Output off |
| 2 | GOUT[CR]<br><br>*Return Value:<Output> [CR] [OK] [CR]* | Get Output Status.<br>Output off: < Output > = 0<br>Output on:  < Output > = 1 | Input Command: GOUT [CR]<br>Return Value: 0 [CR] [OK] [CR]<br>Result:  Output is off |
| 3 | VOLT< preset0/1/2/3><Voltage>[CR]<br><br>*Return Value: [OK] [CR]* | Set output Voltage.<br>*Set-Volt value relevance to preset Current value total power<160W .Max-Volt  value refer to product specification | Input Command:<br>VOLT 01000[CR]<br>Return Value: [OK] [CR]<br>Result: Set Memory preset 1 voltage value is 10.00V |
| 4 | CURR< preset0/1/2/3><Current> [CR]<br><br><br>*Return Value: [OK] [CR]* | SET output Current.<br>* Set-Cur value relevance to preset   Volt value total power<160W .Max- Current value refer to product specification | Input Command:<br>CURR 00100[CR]<br>Return Value: [OK] [CR]<br>Result: Set preset 1 Current value is 1.00A |
| 5 | SOVP<voltage >[CR]<br><br>*[Return Value:[OK] [CR]* | Set Over Voltage value.<br><voltage> = ???? | Input Command: SOVP4200[CR]<br>Return Value: [OK] [CR]<br>Result:  Set upper limit of output Voltage 42.00V |
| 6 | GETD[CR]<br><br>*Return Value: <Voltage ><Current> <CV/CC Mode> [CR] [OK] [CR]* | Get Reading Volt & Curr mode.<br><voltage>   =  ????<br>< Current >  =  ????<br><CV Mode> =0  CV Mode<br><CV Mode> =1  CC Mode | Input Command: GETD [CR]<br>Return Value: 050001000[CR] [OK] [CR]<br>Result:  The Display value is 5.00V and 1.00A.<br>It is in CV mode. |
| 7 | SOCP<Current>[CR]<br><br>*Return Value: [OK] [CR]* | Set Over current value.<br>< Current > = ???? | Input Command: SOCP1000[CR]<br>Return Value: [OK] [CR]<br>Result:  Set upper limit of output Current 10.00A |
| 8 | GOVP[CR]<br><br>*Return Value: <Voltage>[CR] [OK] [CR]* | Get upper limit of output Voltage.<br><voltage>=???? | Input Command: GOVP [CR]<br>Return Value:  4220 [CR] [OK] [CR]<br>Result:  upper limit of output Voltage is 42.40V |
| 9 | GOCP[CR]<br><br>*Return Value:<Current>[CR] [OK] [CR]* | Get upper limit of output Current.<br>< Current >=???? | Input Command: GAGA [CR]<br>Return Value:  1020 [CR] [OK] [CR]<br>Result:  upper limit of output Current is 10.20A |

| 10 | SETD<preset0/1/2/3><VOLTAGE> <CURRENT>[CR]  *Return Value: [OK] [CR]* | SET preset0/1/2/3 Voltage and Current. <preset0/1/2/3> =0 preset1 <preset0/1/2/3> =1 preset2 <preset0/1/2/3> =2 preset3 <preset0/1/2/3> =3 Normal Mode <voltage> = ???? < Current > = ???? | Input Command: SETD 005001000 [CR] Return Value: [OK] [CR] Result:  Set preset1 voltage 5.00V Current 10.00A |
|---|---|---|---|
| 11 | GETS<preset0/1/2/3>[CR]  *Return Value: <Voltage><Current>[CR] [OK] [CR]* | Get settings of preset0/1/2/3 Volt & Curr SET preset0/1/2/3 Voltage and Current <preset0/1/2/3> =0 preset1 <preset0/1/2/3> =1 preset2 <preset0/1/2/3> =2 preset3 <preset0/1/2/3> =3 Normal Mode <voltage> = ???? < Current >=???? | Input Command: GETS0[CR] Return Value: 05000100[CR] [OK] [CR] Result:  The Memory preset 1 voltage value is 5.00V and Current is 1.00A. |
| 12 | GABC[CR]  *Return Value: < preset0/1/2/3> [CR] [OK] [CR]* | Get  preset selection < preset0/1/2/3> =0  preset1 < preset0/1/2/3> =1  preset2 < preset0/1/2/3> =2  preset3 < preset0/1/2/3> =3  Normal Mode | Input Command: GABC [CR] Return Value: 0 [CR] [OK] [CR] Result: Preset Mode is Preset1 |
| 13 | SABC< preset0/1/2/3>[CR]  *Return Value: [OK] [CR]* | Set ABC select < preset0/1/2/3>=0  preset1 < preset0/1/2/3>=1  preset2 < preset0/1/2/3>=2  preset3 < preset0/1/2/3>=3  Normal Mode | Input Command: SABC 2[CR] Return Value: [OK] [CR] Result: Preset Mode is set to Preset3 |
| 14 | GDLT<{0-5}>[CR]  *Return Value: delta time [00-20] [CR] [OK] [CR]* | Get delta time setting value  DeltaTime{0} :  Time of  Preset1 to Preset2  DeltaTime{1} :  Time of  Preset2 to Preset1  DeltaTime{2} :  Time of  Preset1 to Preset3  DeltaTime{3} :  Time of  Preset3 to Preset1  DeltaTime{4} :  Time of  Preset2 to Preset3  DeltaTime{5} :  Time of  Preset3 to Preset2 *Set- DeltaTime <=20S | Input Command: GDLT 0[CR] Return Value: 10 [CR] [OK] [CR] Result: DeltaTime[1] is 10S |
| 15 | SDLT <location {0-5}; time {00-20}>[CR]  *Return Value: [OK] [CR]* | Set delta time. *Set- DeltaTime <=20S | Input Command: SDLT 205[CR] Return Value: 1 [CR] [OK] [CR] Result: DeltaTime[3] is set to 20S |
| 16 | GSWT<location {0-2}>[CR]  *Return Value: SW time [000-600] [CR] [OK] [CR]* | Get SW time SwTime[1]:  Time of  Preset1 SwTime[2]:  Time of  Preset2 SwTime[3]:  Time of  Preset3 *Set- SwTime <=600S | Input Command: GSWT [CR] Return Value: 0100 [CR] [OK] [CR] Result: SwTime[1] is 100S |
| 17 | SSWT<location {0-2} time {000-600}> [CR]  *Return Value: [OK] [CR]* | Set SW time *Set- SwTime <=600S | Input Command: SSWT0100[CR] Return Value: [OK] [CR] Result: SwTime[0] is set to 100S |
| 18 | RUNP< first {0-2}; end {0-2}>[CR]  *Return Value: [OK] [CR]* | Run SW running Select what sequence will start running first and which one will be the last one to be run. | Input Command: RUNP 01[CR] Return Value: [OK] [CR] Result: start running SW run A_B |

| 19 | STOP[CR]<br><br>*Return Value: [OK] [CR]* | Stop SW running | Input Command: STOP [CR]<br>Return Value: [OK] [CR]<br>Result: Stop SW running |
|---|---|---|---|
| 20 | SESS[CR]<br><br>*Return Value: [OK] [CR]* | Disable Keyboard | Input Command: SESS [CR]<br>Return Value: [OK] [CR]<br>Result: Disable Keyboard |
| 21 | ENDS[CR]<br><br>*Return Value: [OK] [CR]* | Enable Keyboard | Input Command: ENDS [CR]<br>Return Value: [OK] [CR]<br>Result: Enable Keyboard |
| 22 | GALL[CR]<br><br>*Return Value:*<br>*<AbcSele>*<br>*<Get Channel>*<br>*<Get UVL>*<br>*<Get UCL>*<br>*<Get Output >*<br>*<Swtime[1]>*<br>*<Swtime[2] >*<br>*<Swtime[3] >*<br>*<Deltatime[1-6]>*<br>*<mode>*<br>*<Setv[1]>*<br>*<Seti[1] >*<br>*<Setv[2] >*<br>*<Seti[2] >*<br>*<Setv[3]>*<br>*<Seti[3] >*<br>*<Setv[4] >*<br>*<Seti[4]> [CR] [OK] [CR]* | Get information from Power Supply<br><br><AbcSele>         = ?<br><Get Channel>  = ?<br><Get UVL>        = ????<br><Get UCL>        = ????<br><Get Output >    = ?<br><Swtime[1]>      = ???<br><Swtime[2] >     = ???<br><Swtime[3] >     = ???<br><Deltatime[1-6]>= ????????????<br><mode>            = ????<br><Setv[1]>          = ????<br><Seti[1] >          = ????<br><Setv[2] >          = ????<br><Seti[2] >          = ????<br><Setv[3]>          = ????<br><Seti[3] >          = ????<br><Setv[4] >          = ????<br><Seti[4]>            = ????<br>* Setv[4]   Normal Mode Voltage<br>Seti[4]  Normal Mode Current | Input Command: GALL[CR]<br>Return Value:<br>3<br>0<br>4220<br>1020<br>1<br>350<br>001<br>001<br>00 00 00 00 00 00<br>8160<br>1000<br>0100<br>2000<br>0200<br>3000<br>0300<br>4000<br>0400 [CR]<br>[OK] [CR]<br>Result:<br><AbcSele>  =3  Normal Mode<br><Get Channel> =0<br><Get UVL>  =4220<br><Get UCL>   =1020<br><Get Output > =1<br><Swtime[1]>  = 350<br><Swtime[2] >  = 001<br><Swtime[3] >   =001<br><Deltatime[1]> =00<br><Deltatime[2]> =00<br><Deltatime[3]> =00<br><Deltatime[4]> =00<br><Deltatime[5]> =00<br><Deltatime[6]> =00<br><mode>     = 8160<br><Setv[1]>       = 1000<br><Seti[1] >       =0100<br><Setv[2] >       =2000<br><Seti[2] >       =0200<br><Setv[3]>       =3000<br><Seti[3] >        =0300 |

| | | | <Setv[4] >     =4000 |
| | | | <Seti[4]>      =0400 |
| 23 | SETM[CR]<br><Setv[1] ><Seti[1] ><Swtime[1]><Setv[2] ><Seti[2]><Swtime[2]><Setv[3] ><Seti[3] ><Swtime[3]> [CR]<br><br>*Return Value: [OK] [CR]* | Configure Preset1/2/3<br><Setv[1] >   =????<br><Seti[1] >   =????<br><Swtime[1]>=???<br><Setv[2] >   =????<br><Seti[2] >    =????<br><Swtime[2]>=???<br><Setv[3] >   =????<br><Seti[3] >    =????<br><Swtime[3]>=??? | Input Command: SETM<br>05001000010<br>13801000015<br>40000200020<br> [CR]<br>Return Value: [OK] [CR]<br>Result:<br>preset1voltage is set to 5.00V<br>Current10.00A SwTime 10S<br>preset2voltage is set to 13.80V<br>Current10.0A SwTime 15S<br>preset3voltage is set to 40.00V<br>Current2.0A SwTime 20S |

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