# Pocket Powerbox **Advance**
# Serial Command Language
Firmware >=v 2.9.x (reviewed Oct 2023)

**Abbreviations used:**
nnnn.. = one or more digits
b = Boolean (0 or 1 digit)

Connection Settings: 9600, 8N1
**(All commands should be terminated by new line /n)**

| Command | Description | Response |
|---|---|---|
| P# | Device Status | PPBA_OK |
| PE:*bb* | Set Power Status on boot. 1st number represents the quad output. 2nd number represents the adjustable out output.<br>(0=OFF, 1=ON). | *PE:1* |
| PE:99 | Report Power Status on boot. Ignore the last 2 numbers. | *PE:nnnn* |
| P1:*b* | ON/OFF Power 4x12V Outputs, (0=OFF, 1=ON) | P1:b |
| P2:n | ON/OFF Adjustable Output, (0=OFF, 1=ON)<br><br>n can also accept values of: **3, 5, 7 ,8, 9, 12** to adjust output to specific voltage (stored in EEPROM and retrieved during boot) | P2:n |
| P3:*nnn* | PWM Duty Cycle Power % (DewA)<br>[n=0-255] (0-100%) | P3:nnn |
| P4:*nnn* | PWM Duty Cycle Power % (DewB)<br>[n=0-255] (0-100%) | P4:nnn |
| PF | Reboot Device, Reload Firmware | [none] |
| PA | Print Power and Sensor Readings | [Check table below] |
| PS | Prints Power Consumption Statistics | PS : averageAmps : ampHours : wattHours : uptime_in_milliseconds |
| PC | Print Power Metrics<br>*Current is represented in Amps and does not require conversion | PC:total_current : current_12V_outputs : current_dewA : current_dewB : uptime_in_ milliseconds |
| PR | Prints discovered I2C devices plugged to EXT port | PR:HDC:DHT:XS<br>**if there is a discovered device command will output its name**<br>HDC = temp/humidity sensor TI HDC1050<br>DHT =stock temp/humidity sensor AM2301<br>XS: eXternal Motor (stepper) Controller |
| DA | Print Auto Dew Aggressiveness.<br>from 0 to 255 (210 default value).<br>A higher value sets higher power to dew heaters when humidity is at x level. | DA:nnn |
| PD:*b* | Enable/Disable Auto Dew Feature (0=OFF, 1 =ON) | PD:b |
| PD:nnn | Set Auto Dew Aggressiveness value [1-254] | PD:nnn |

| | | |
|---|---|---|
| DS:b | If set to 1: Store DewA,B ports current values into EEPROM and set a retrieval value, This value is considered during device boot.<br>If set to 0: disable value retrieval on device boot. | DS:b |
| DS:99 | Read dew ports retrieve flag on device boot. 1= YES, 0 = NO. | DS:1 or DS:0 |
| PV | Firmware Version | n.n.n |
| PU:b | Switch ON /OFF USB2 Hub<br>(Controls dual USB2 ports only on PPBADV Gen2) | PU:b |
| PI | Reset I2C channel | PI:1 |
| CH:nn | Calibrate Humidity Sensor.<br>Set offset value (positive or negative) | CH:nn |
| CT:nn | Calibrate Temperature Sensor.<br>Set offset value (positive or negative) | CT:nn |
| CR | Reads Calibration Offsets | CR:temp_offset:humidity_offset |
| PL:*b* | ON/OFF Led Indicator (0=OFF, 1=ON)<br>value is not stored in memory | PL:b |
| XS | eXternal Motor Controller commands | check table below |

```
Transmit: PA
Receive: PPBA:12.2:0.5.22.2:45:17.2:1:1:120:130:1:0:1
```

Meaning:

```
PPBA:voltage:current_of_12V_outputs_:temp:humidity:dewpoint:quadport_status:adj_out
put_status:dewA_power:dewB_power:autodew_bool:pwr_warn:pwradj
```

| **PPBA** | **Device Name** |
|---|---|
| voltage | Input Voltage in Volts (decimal) e.g 12.2 |
| current | Quad 12V output sens current 0-1024 (need to convert to Amps by dividing by 65<br>`*for compatibility issues with PPB.`<br>**`Better use output from PS command`** |
| temp | Temp in Celsius Degrees (decimal) e.g 23.2 |
| humidity | Relative Humidity in % (integer) e.g 59 |
| dewpoint | Dewpoint in Celsius Degrees (decimal) e.g 14.7 |
| quadport_status | Boolean 0 or 1 (1 means port is ON, 0 means port is OFF) |
| adj_output_status | Adjustable Output. Boolean 0 or 1 (1 means port is ON, 0 means port is OFF) |
| dewA_power | Power of DewA channel - duty cycle 0-255 |
| dewB_power | Power of DewB channel - duty cycle 0-255 |
| autodew_bool | Boolean for autodew function (controls power of both Dew channels): 0 is OFF, 1 is ON |
| pwr_warn | Boolean. 1 means power alert (short wire detection / output overload). This is a generic flag for any 12V and DewA, DewB power outputs. |
| pwradj | Adjustable Output: Selected voltage in EEPROM (3,5,7,8,9,12) |

# eXternal Motor Controller (XMC) Command Set (through powerbox)

Below command language should be given from the USB serial (9600/8N1) of the Powerbox.
The I2C command language is not described here.

**XS:[command number]#value**

| Command | Description | Response |
|---|---|---|
| XS | Status | 200 response = discovered<br>000 response = non present<br>E.g XS:200:0 |
| XS:1 | Motor is running (1) or is idle (0) | XS:1#b |
| XS:2 | Motor current position (long value) | XS:2#nn... |
| XS:3#nn.. | Move to position (long value) | XS:3#nn |
| XS:4#nn.. | Goto +steps from current position (long value) | XS:4#nn.. |
| XS:5#nn.. | Set a new motor position (long value) | XS:5#nn |
| XS:6 | Halt motor | XS:6#1 |
| XS:7#nn.. | Set / Get motor max speed | XS:7#nn.. |
| XS:8#b | Set motor reverse (0 = normal, 1= reverse) | XS:8#b |
| XS:9#n | Set Microstepping drive<br>1 = FULL<br>2 = HALF<br>3 = 1/4<br>4 = 1/8 | XS:9#n |
| XS:10#nn.. | Set Motor Backlash (enables backlash compensation). Set 0 disabled the backlash compensation | XS:10#nn |