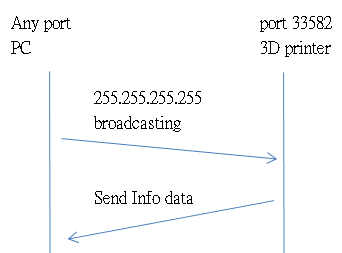
3DP UDP/TCP protocol

UDP

1. Port
   1. 33582
2. IP
   1. 255.255.255.255(broadcast)
3. Send Data
   1. Client send data
      1. NBD?
   2. 3DP response
      1. modelname(XXXXX);Ipaddress(xxx.xxx.xxx.xxx);Mac(xx.xx.xx.xx.xx.xx);printer status(0~3)seed TCP PRS command  
         ex:D3PR0S0H0S000001;172.16.26.155;02:41:0A:41:D4:A5;0  
         

TCP

1. Port 通訊埠
   1. 1024(目前暫訂)
2. IP
   1. 3DP IP address: IP address可以由3DP LCD 畫面得知或由UDP 廣播方式得知.
3. Command

此指令定義當傳送指令後3DP會回傳相同字串來表示傳送完成並依所下指令作動,除了特別有標註會依標註回傳.

* 1. PRS Printer Run Status 獲取目前3DP 執行狀態
     1. Set
        1. N/A
     2. Get
        1. Send  
           PRS ?
        2. Response   
           PRS = 0 (0~2)  
           0: Standby ->機器處於等待,可以做任何指令  
           1:Printing ->機器處於列印物件中…  
           2:Printed ->機器列印物件完成.
  2. PPA(Printer Printing Action)執行列印動作

此動作必須先執行完列印檔案傳輸後才可執行,列印檔案傳輸請參考PFN(列印檔案名稱),PFS(列印檔案大小),PFC(列印檔案Checksum),PFD(列印檔案資料)及PLF (載入列印檔案至buffer).

* + 1. Set
       1. Send  
          PPA = 1
       2. Response  
          PPA = 1 ->OK  
          Unload slice file -> Error  
          Parameter Error -> Error
    2. Get
       1. N/A
  1. FET First Exposure times 主要為設定第一層曝光時間設定range 0 ~ 300000 ms
     1. Set
        1. Send   
           FET = 100
        2. Response  
           FET = 100
     2. Get
        1. Send  
           FET ?
        2. Response  
           FET = 100
  2. EET Each Exposure times 設定每一層曝光時間(除了第一層之外)
     1. Set
        1. Send  
           EET = 100
        2. Response

EET = 100

* + 1. Get
       1. Send  
          EET ?
       2. Response  
          EET = 100
  1. LWT layer waiting time 設定每一層曝光等待時間.
     1. Set
        1. Send  
           LWT = 100
        2. Response  
           LWT = 100
     2. Get
        1. Send  
           LWT ?
        2. Response  
           LWT = 100
  2. EDD Each Depart Distance 每一層脫模距離
     1. Set
        1. Send  
           EDD = 100
        2. Response  
           EDD = 100
     2. Get
        1. Send  
           EDD ?
        2. Response  
           EDD = 100
  3. ZAR Z Axis Resolution Z軸解析度
     1. Set
        1. Send  
           ZAR = 50
        2. Response  
           ZAR = 50
     2. Get
        1. Send  
           ZAR ?
        2. Response  
           ZAR = 50
  4. MUS motor up speed 馬達上升速度
     1. Set
        1. Send  
           MUS = 1000
        2. Response  
           MUS = 1000
     2. Get
        1. Send  
           MUS ?
        2. Response  
           MUS = 1000
  5. MDS motor down speed 馬達下降速度
     1. Set
        1. Send  
           MDS = 1000
        2. Response  
           MDS = 1000
     2. Get
        1. Send  
           MDS ?
        2. Response  
           MDS = 1000
  6. SIX shift image x 偏移x軸影像
     1. Set
        1. Send  
           SIX = 10
        2. Response  
           SIX = 10
     2. Get
        1. Send  
           SIX ?
        2. Response  
           SIX = 10
  7. SIY shift image Y 偏移Y軸影像
     1. Set
        1. Send  
           SIY = 10
        2. Response  
           SIY = 10
     2. Get
        1. Send  
           SIY ?
        2. Response  
           SIY = 10
  8. PFN Printing file name 列印影像檔案名稱
     1. Set
        1. Send  
           PFN = filename.zip
        2. Response  
           PFN = filename.zip
     2. Get
        1. Send  
           PFN ?
        2. Response  
           PFN = filename.zip
  9. PFS Printing file size 列印影像檔案大小
     1. Set
        1. Send  
           PFS = 102400
        2. Response  
           PFS = 102400
     2. Get
        1. Send  
           PFS ?
        2. Response  
           PFS = 102400
  10. PFD Printing file data 進入接收列印檔案row data模式,之後只能傳送檔案資料直到符合file size 才會離開接收模式
      1. Set
         1. Send  
            PFD = 1  
            file data …
         2. Response  
            PFD = 1  
            最後接收完會回覆接收完之checksum (PFC= xxxxxxxxxxx)
  11. PFC printing file checksum 列印檔案checksum
      1. Set
         1. Send  
            **PFC = 89f657698f96660440950463ae753eb4**
         2. Response  
            **PFC = 89f657698f96660440950463ae753eb4**
      2. Get
         1. Send  
            PFC ?
         2. Response  
            **PFC = 89f657698f96660440950463ae753eb4**
  12. PLF Printing load file 依據列印檔案名稱將其檔案載入至記憶體.必須執行此動作才可以執行列印動作.
      1. Set
         1. Send  
            PLF = 1
         2. Response  
            PLF = 1
      2. Get
         1. Send  
            PLF ?
         2. Response  
            PLF = 1
  13. GTL get total layers 獲取列印總層數
      1. Get
         1. Send  
            GTL ?
         2. Response  
            GTL = 300
  14. GPL get printing layer 獲取目前正列印的層數
      1. Get
         1. Send  
            GPL ?
         2. Response  
            GPL = 3

1. Command List

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| •3D Printer Status | CMD | Get | Set | value | units |
| –Printer Run State(PRS) | PRS | v |  |  |  |
| •Standby(Ready) |  |  |  | 0 |  |
| •Printing |  |  |  | 1 |  |
| •Printed(Finish) – (H/W 成型板拆裝偵測新增) |  |  |  | 2 |  |
| •3D Printer Printing Action | PPA |  | v | 1 |  |
| •3D Printer Parameters Setting |  |  |  |  |  |
| –First Exposure times(FET) | FET | v | v | 0~300000 | ms |
| –Each Exposure times(EET) | EET | v | v | 0~300000 | ms |
| –Layer Waiting times(LWT) | LWT | v | v | 0~10000 | ms |
| –Each Depart Distance(EDD) | EDD | v | v | 0~10 | mm |
| –Z Axis Resolution (ZAR) | ZAR | v | v | 10,20,30 ~ 100 | um |
| –Motor Up Speed(MUS) | MUS | v | v | 0 ~ 5000 | us |
| –Motor Down Speed(MDS) | MDS | v | v | 0 ~ 5000 | us |
| –Shift Image x(SIX) | SIX | v | v | 0 ~ 100 | mm |
| –Shift Image y(SIY) | SIY | v | v | 0 ~ 100 | mm |
| •Printer Model File |  |  |  |  |  |
| –Send Slice file |  |  |  |  |  |
| •File Name (PFN) | PFN |  | v |  |  |
| •File Size (PFS) | PFS |  | v |  |  |
| •File Data (PFD) | PFD |  | v | slicer row data(zip) |  |
| •File Checksum(PFC) | PFC |  | v | MD5 |  |
| •Load File(PLF) | PLF |  | v | 0 ~ 1 |  |
| •Clear File(PCF) | PCF |  | v |  |  |
| –Printer Model Layer ( get form printer model file ) |  |  |  |  |  |
| •Printer Total layers(GTL) | GTL |  | v |  |  |
| •Printer Printing layer(GPL) | GPL |  | v |  |  |
| •Calibration Data |  |  |  |  |  |
| –Keystone Calibration Data(KCD) | KCD | v | v |  |  |
| –Distortion Calibration Data(DCD) | DCD | v | v |  |  |
| –Brightness Uniformity Calibration Data(BCD) | BCD | v | v |  |  |

1. Ex: send file sequence

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | |  |  | send cmd | | 1 | file name | PFN = demo2.zip | | 2 | file sizes | PFS = 4081916 | | 3 | file md5 | PFC = 6272a14150b13f01c49667332cccff31 | | 4 | receiver mode | PFD | | 5  6 | row data\*(only file data)  response checksum | Row data  PFC = 6272a14150b13f01c49667332cccff31 | |