PicoPak Clock Measurement Module Commands (Version 2 Draft of 09/16/15)

Cmd	I/O	Description	?	=	↵	Pneumonic	Format	Reset State	Remarks
A	Out	Read PD ADC	√		√	ADC	4 hex chars		mV=val·4096/1023
B	Out	Measure PD Beat Period	√		√	Beat	4 hex chars		T in units of 2x ref period
C	Out	Read Temperature	√		√	°C	4 hex chars		Not fully implemented
E	Out	Reference & Signal Check	√		√	None	2 hex chars		None=00, Ref=01, Sig=02, Both=03
F	I/O	Get/Set DDS Frequency Word	√	√	√	Frequency	8 Hex chars	15555555	32-bit FTW0
H	Out	Measure Signal Frequency	√		√	Hz	8 Hex chars		TMR1 O/Fs & TMR1 1s counts
I	I/O	Get/Set Frequency Step Size	√	√	√	Increment	2 hex chars	1	0-3 allowed
L	Cmd	Flash LED				LED		Flash	Single L entry = 1s flash
M	I/O	Get/Set DDS Clock Mult Factor	√	√	√	Multiplier	2 hex chars	x12 (0C)	x4 to x20 (04-14) allowed, use x12
N	I/O	Get/Set Module Information	√	√	√	Info	3x4 hex chars		Model, S/N & firmware version
O	I/O	Get/Set Frequency Adjust Flag	√	√	√	On/Off	1 hex char	0	0 or 1 (on/off)
P	I/O	Get/Set DDS Phase Word	√	√	√	Phase	2 hex chars		14-bit POW
R	Cmd	Reset PIC				Reset			Same as reset button
S	I/O	Get/Set Data Stream #	√	√	√	Stream	1 hex char	0	0-4 allowed (0=off, see below)
V	Out	Read 5V Supply Voltage	√		√	Voltage	4 hex chars		USB module supply voltage
=	Out	Read Module Status	√		√	Equals	11 hex chars	?00C00?????	Inputs(1),Step(1),Mult(2),Adj(1), Stream(1),Lock(1),Osctune(2), Cal(2)
?	Cmd	Display Command Help				Question			Single ? entry
+	Cmd	Increment DDS Frequency				Plus (+)			Single + entry
-	Cmd	Decrement DDS Frequency				Minus (-)			Single - entry

These commands are recognized and implemented by the PicoPak firmware. Most are issued in two or three forms: X?, X= or X↵, where X is the command character followed by either a question mark, equals sign or enter to get or set a parameter or to display information about it. These comprise two entries, and the firmware blocks (waits) for the 2nd one. Not all characters or combinations are used (see table), and invalid command characters or ↵ entries result in a warning message. The commands may be used by either a PC user interface application or interactively with an ASCII terminal program; the ↵ form is recommended for the latter because it includes text labels and prompts. The L, R, ?, + and – commands do not require a second entry.   Most values are in hex. Five output data stream formats are supported: (0)=None, (1)=Signed decimal integer phase increment, (2)=phase & frequency increments as 2+2 spaced hex chars, (3)=phase increment (PPPP), freq adjustment (FF) & phase correction counts (CC) as 4+2+2 hex chars, (4)= signed binary phase increment as 1 byte, and (5) DDS phase word as 4 hex chars. Streams 3 & 5 are at a 1/s rate and streams 1,2 & 4 are at a 100/s rate. Only one data stream can be selected. The seven unspaced status hex chars are signal and reference input s(1), freq step size (1), DDS clk mult factor (2), freq adj flag (1) and data stream # (1), and lock flag (1).