

# OSCIPRIME DAGOBERT CPLD FIRMWARE PROTOCOL

**CCPPPPPP**            received Byte over I2C  
CC = command header (2Bit)  
PPPPPP = payload (6Bit)

On power-up, the CPLD uses the default values. Thus, these values do not need to be sent to the device.

**CC=00**                    **Gain/Amplification**  
[00][GainB][GainA]

GainA, GainB =  
000 high gain (default)    used for 1V/div  
001 mid gain                used for 2V/div  
010 low gain                used for 2.5V/div  
011 highest gain            used for 5V/div  
011 no gain                 used for 10V/div

**CC=01**  
01XXEPCM

**Mode**  
X = don't care  
M = Mode  
0 = cont. double channel (default)  
1 = cont. single channel (experimental)  
C = Channel (only used with M = 1)  
0 = Channel A (default)  
1 = Channel B  
P = Polarity (not used anymore)  
E = Output Enable, probe compensation output  
0 = disabled (default)  
1 = enabled

**TriggerLevel**

This was used for the hardware single shot mode, which could only capture post trigger data. This feature is not used anymore, and has been somewhat replaced by the cont. single channel mode.

**CC=10**                    **TriggerLevel, not used anymore**

## SLWR interleave

Internally, both ADC's are clocked at 24Mhz. The SLWR interleave affects which n-th samples are sent to the USB FIFO queue and thus get transferred over USB. For instance, with "11000010" only every 4th samples get transferred, thus we are sampling at  $24/4 = 6\text{Mhz}$ . With two 8bit channels this results in 12MB/s data throughput.

CC=11

### SLWR interleave

11000000	sample @ 24 Mhz
11000001	sample @ 12 Mhz
11000010	sample @ 6 Mhz (default)
11000011	sample @ 3 Mhz
11000100	sample @ 1.5 Mhz
11000101	sample @ 750 Khz
11000110	sample @ 375 Khz
11000111	sample @ 187.5 Khz
11001000	sample @ 93.25 Khz
11001001	sample @ 46.875 Khz
11001010	sample @ 23.4375 Khz
11001011	sample @ 11.718 Khz
11001100	sample @ 5.859 Khz
11001101	sample @ 2.929 Khz
11001110	sample @ 1.465 Khz
11001111	sample @ 732 hz
11010000	sample @ 366 hz
11010001	sample @ 183 hz
11010001	sample @ 91 hz
11010010	sample @ 46 hz
11010100	sample @ 23 hz
11010101	sample @ 12 hz