Chromation

USB Protocol
20190910

Command Overview

Commands to the unit are divided into a control byte and optional data bytes:

Byte	0	1	2	3
	Command	Optional Data		

The data bytes are dependent on the type of command, some require zero additional data bytes, some an additional three.

Note the Flush command of 0. If the command link is desynchronized at some point due to partial transmissions, send zeroes to flush the feed.

Command Format

Byte	0	1	2	3
	Flush=0	0	0	0
	GetSummingMode=1	(Unused)	(Unused)	(Unused)
	SetSummingMode=2	0=OFF, 1=ON	(Unused)	(Unused)
	GetGain=3	(Unused)	(Unused)	(Unused)
	SetGain=4	*See Gain Section	(Unused)	(Unused)
	GetRow=5	(Unused)	(Unused)	(Unused)
	SetRow=6	*See Row Section	(Unused)	(Unused)
	GetLED=7	LED#(0-4)	(Unused)	(Unused)
	SetLED=8	LED#(0-4)	0=OFF, 1=ON	(Unused)
	GetSpi=9	(Unused)	(Unused)	(Unused)
	SetSpi=10	0=OFF, 1=ON	(Unused)	(Unused)
	GetExposure=11	(Unused)	(Unused)	(Unused)
	SetExposure=12	*See Exposure Section (2 bytes)		(Unused)
	GetSnapshot=13	(Unused)	(Unused)	(Unused)
	AutoExpose=14	(Unused)	(Unused)	(Unused)

Reply Overview

Replies from ay command will differ depending on the command given, and can vary from 0-4 bytes:

Byte	0	1	2	3
	Optional Reply Data			

Note the Flush reply is zero bytes. If the control synchronization fails due to partial transmissions, send zeroes and throw away all reply data. A flush command will not return any data, it will simply force a command failure and consume all command zeroes silently.

Reply Format

Command Sent	Reply Byte 0	1	2	3
Flush=0	(Unused)	(Unused)	(Unused)	(Unused)
GetSummingMode=1	0=OFF, 1=ON	(Unused)	(Unused)	(Unused)
SetSummingMode=2	0=OK, 1=Error	(Unused)	(Unused)	(Unused)
GetGain=3	*See Gain Section	(Unused)	(Unused)	(Unused)
SetGain=4	0=OK, 1=Error	(Unused)	(Unused)	(Unused)
GetRow=5	*See Row Section	(Unused)	(Unused)	(Unused)
SetRow=6	0=OK, 1=Error	(Unused)	(Unused)	(Unused)
GetLED=7	0=OFF, 1=ON	(Unused)	(Unused)	(Unused)
SetLED=8	0=OK, 1=Error	(Unused)	(Unused)	(Unused)
GetSpi=9	0=OFF, 1=ON	(Unused)	(Unused)	(Unused)
SetSpi=10	0=OK, 1=Error	(Unused)	(Unused)	(Unused)
GetExposure=11	*See Exposure Section (2 bytes)		(Unused)	(Unused)
SetExposure=12	0=OK, 1=Error	(Unused)	(Unused)	(Unused)
GetSnapshot=13	*See Snapshot Section (4 bytes)			
AutoExpose=14	0=OK, 1=Error	(Unused)	(Unused)	(Unused)

Sending and Receiving Booleans and Integers

When sending the LED#, or sending or receiving the ON/OFF status of a switch, the values are numeric single-byte unsigned integers.

OFF = 0x00

ON = 0x01

LED#1 = 0x01

LED#3 = 0x03

Addressing the zeroeth LED is an error.

Gain Data

When sending or receiving Gain data, it is represented as a lookup table of the following values:

Value	Meaning
0x00	Error
0x01	1x
0x25	2.5x
0x04	4x
0x05	5x

Row Data

When sending or receiving Row data, it is a 5-bit bitmap of which rows are turned on, with the smallest bit representing row #1.

All rows = 00011111 = 0x1F

Row 1 only = 00000001 = 0x01

Rows 2, 3, and 5 = 00010110 = 0x16

No rows is invalid = 00000000 = 0x00

Exposure Data

(The setting of exposure configurations)

TBD

Snapshot Data

(By this I mean the actual exposure values/voltages)

TBD