

## Stop Motion Pro Remote Control Interface

March 24, 2010

### Summary

The Stop Motion Pro Remote Interface provides the following functionality:

- control of Stop Motion Pro from external hardware
- control of external hardware from Stop Motion Pro

Two methods of interface are available and described below:

- parallel port (page 2)
- USB (page 5)

Four general purpose inputs can be allocated to specific functions within Stop Motion Pro.

Outputs provide feedback that the input command has been received and actioned, monitor the capture process and display the current exposure.

This document assumes the developer has a good technical background in hardware interfacing to the PC. Stop Motion Pro can provide consulting in this area. Please email [admin@stopmotionpro.com](mailto:admin@stopmotionpro.com) for assistance.

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## Technical description parallel port

The Stop Motion Pro Remote Interface can use the parallel port on the computer.

The parallel port is used in 'standard mode' so the protocol will work with computers that have EPP and ECP parallel port capability.

## Input control

In the normal state all bits are set to high. To set an input, set that pin to low. Stop Motion Pro will only respond to a high to low transition.

After an input transition is received by Stop Motion Pro, it sets the Actioned flag. (see outputs section below)

The following table gives the input to pin translation.

SMP Input	Parallel port pin
1	15
2	13
3	12
4	10
Reset actioned and capture flags	11

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## Outputs

In the normal state all bits are set to low and set high for the specific output.

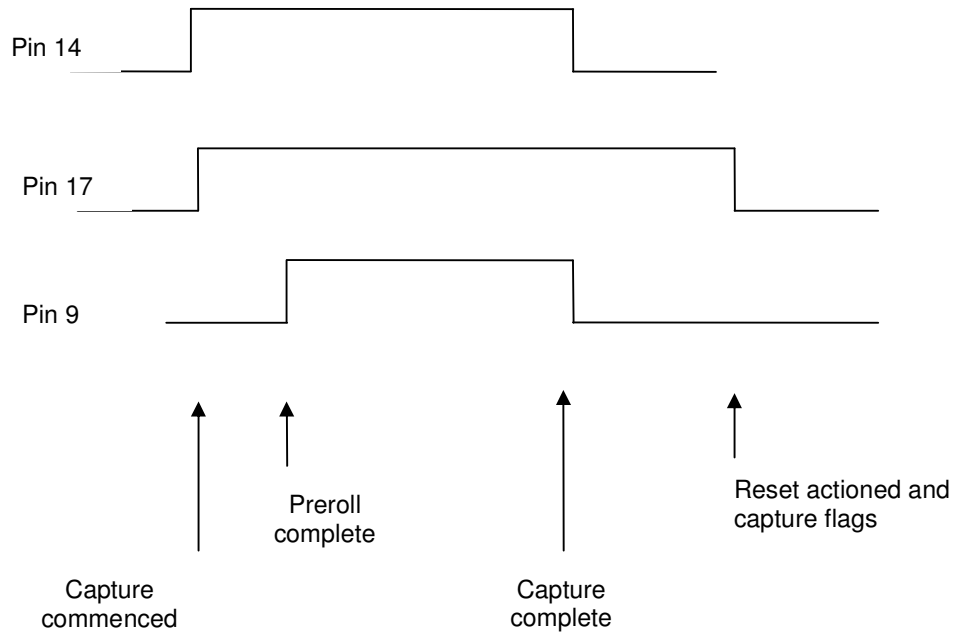
The following table gives the output to pin translation.

<b>SMP Output</b>	<b>Parallel port pin</b>
Input actioned	16
Capture pulse	14
Capture flag	17
High resolution capture after Preroll	9
Current Exposure	2, 3, 4

These outputs occur on the following conditions:

Input actioned	A high to low transition on one of the inputs has been detected. A high indicates a remote trigger was received. This output can be reset by Actioned input.
Capture pulse	The capture process is being performed. A high indicates the capture is in progress. The width of this pulse depends on the capture and computer speed.
Capture flag	The capture process has been started. A high indicates the capture has begun. This output remains high until it has been reset. This output can be reset by Actioned input.
High resolution capture after Preroll	The high resolution capture after the user set preroll time is complete. A high indicates the preroll time has completed and the capture is in progress. The width of this pulse depends on the capture and computer speed.
Current Exposure	The current exposure is indicated in binary. Therefore if it is the first exposure pin 2 will be high. If is the third exposure, pin 2 and pin 3 will be high.

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**Technical description USB**

The Stop Motion Pro Remote Interface can use a USB port on the computer together with an appropriate external controller.

We have found the Arduino microcontroller to be cost effective and available world wide.

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.

More information can be found here: <http://arduino.cc>

**Input control**

The USB interface specifies a string of characters that correspond to an input.

In the normal state all bits are set to high. To set an input, send the low string. Stop Motion Pro will only respond to a high to low transition.

After an input transition is received by Stop Motion Pro, it sets the Actioned flag. (see outputs section below)

SMP Input	String High	String Low
1	INP1H	INP1L
2	INP2H	INP2L
3	INP3H	INP3L
4	INP4H	INP4L
Reset actioned and capture flags	INP5H	INP5L

**Note:**

All strings must be in capitals

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## Outputs

In the normal state all bits are set to low and set high for the specific output.

The following table gives the output to string translation.

SMP Output	String High	String Low
Input actioned	ACTNH	ACTNL
Capture pulse	CAPPH	CAPPL
Capture flag	CAPSH	CAPSL
High resolution capture after Preroll	CAPHH	CAPHL
No multiple Exposure	EXPS0	
Current Exposure 1	EXPS1	
Current Exposure 2	EXPS2	
Current Exposure 3	EXPS3	
Current Exposure 4	EXPS4	
Current Exposure 5	EXPS5	
Current Exposure 6	EXPS6	
Current Exposure 7	EXPS7	
Current Exposure 8	EXPS8	

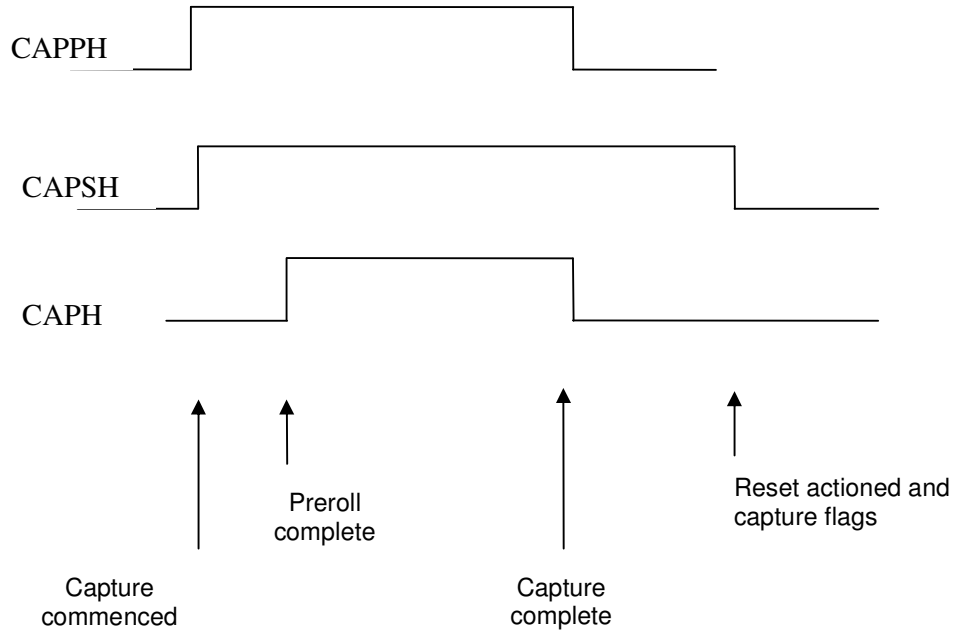
### Note:

All strings must be in capitals

These outputs occur on the following conditions:

Input actioned	A high to low transition on one of the inputs has been received. A high indicates a remote trigger was received. This output can be reset by Actioned input.
Capture pulse	The capture process is being performed. A high indicates the capture is in progress. The width of this pulse depends on the capture and computer speed.
Capture flag	The capture process has been started. A high indicates the capture has begun. This output remains high until it has been reset. This output can be reset by the Actioned input.
High resolution capture after Preroll	The high resolution capture will commence after the user set preroll time has expired. A high indicates the preroll time has completed and the capture is in progress. The width of this pulse depends on the capture and computer speed.
Current Exposure 1- 7	A high indicates the current exposure

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