

**Application Note**  
Hardware Interface to the CFW-8

This Application Note describes the hardware interface to the CFW-8 for users that may want to use the filter wheel independent of an SBIG camera. The interface to the filter wheel is quite simple, involving power and a pulse width based control signal.

The CFW-8 contains a male DB-9 pin connector. The pinouts of this connector are:

Pin 1	Move Complete
Pin 2	Pulse Input
Pin 8	+12VDC Regulated Input (requires 300mA)
Pin 5	Ground
Shell	Chassis Ground

The other pins are unused on the filter wheel but should be left unconnected. On various SBIG cameras these other pins contain various signals.

The filter wheel requires 12VDC at approximately 300mA for power on pins 8 and 5. When power is applied to the unit the filter wheel will home itself (at the Red filter if using SBIG's filter sequence set).

To position the filter you need to produce a 1 second burst of a TTL level (5V), high-going pulse train of period 18ms (55 Hz) on pin 2 (relative to ground on pin 5). The desired position is programmed by varying the width of the high-going pulse while preserving the pulse period (high time plus low time) of 18ms. Each of the five positions can be set using the following pulse widths:

Position 1 (Home)	500 $\mu$ s $\pm$ 50 $\mu$ s
Position 2	800 $\mu$ s $\pm$ 50 $\mu$ s
Position 3	1100 $\mu$ s $\pm$ 50 $\mu$ s
Position 4	1400 $\mu$ s $\pm$ 50 $\mu$ s
Position 5	1700 $\mu$ s $\pm$ 50 $\mu$ s

Finally, the filter wheel returns a TTL level low-going pulse on pin 1 while it is moving. The output is low while the CFW-8 is moving and returns high when the move is complete. If you don't want to monitor this output the filter wheel should be able to move from any given position to any other position within 4 seconds so a simple timeout could be used.