

RollSCAN-1 Controller
SPECIFICATIONS *(preliminary)*

Analog Front End

Sensor Types Supported:	Linear or Trilinear, CCD or CIS
Pixel Processing Rate:	Up to 6Mpixels/s (2M RGB pixels/sec)
Max. Pixel Count:	5,461 pixels with hardware gain/offset/gamma compensation, 16,383 pixels without
Pixel Depth:	12-bit A/D conversion nominal (x1) signal span = 0-2V. linear 10 and 12-bit output modes 8-bit gamma compensated output mode
Input signal polarity:	positive or negative (programmable)
Static input offset control:	± 0.288 Volts in 62 steps (independent control of each color channel)
Static input gain control:	0.93 to 9.00 in 62 steps (independent control of each color channel)
Correlated Double Sampling:	Optional, programmable timing

Digital Pixel Processor

Pixel-rate gain compensation range:	1024 steps (O/GDF=0) or 256 steps (O/GDF=1) coarse control: 3.0:1 gain range medium control: 2.0:1 gain range fine control: 1.5:1 gain range Note: O/GDF = Offset/Gain Data Format
Pixel-rate offset compensation range:	O/GDF=0: Up to 256 counts in 64 steps O/GDF=1: Up to 1024 counts in 256 steps
Pixel resolution processing:	Sensor's native resolution $\div 1$, $\div 1.5$, $\div 2$, $\div 3$, $\div 4$ and $\div 6$ by hardware-based pixel averaging (equivalent of 300, 200, 150, 100, 75, and 50 dpi when used with a 300 dpi sensor)
Pixel processor data formats:	12 bit linear, 10 bit linear, or 8 bit gamma corrected, all with 12 bit accuracy
Pixel packing:	Reduced pixel depths of 8, 4, 2 and 1 bit per pixel supported for faster scanning of line art or when high pixel depth is not required. 1 bit mode packs 8 pixels into each byte transferred.
Vertical resolution:	microstepping motor controller permits accurate vertical resolution control over at least a 12:1 range in small

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steps. When geared for 300-dpi max resolution, this works out to a range of 25-300 dpi in less than 1dpi steps

CCS/CIS Control Block

CCD/CIS Clock and Timing polarity: Programmable polarity for each clock and timing signal

CCD/CIS Timing Options: Numerous timing options available for compatibility with a wide range of CCD/CIS devices

CCD/CIS Clock Rate: Multiple CCD/CIS clocking rates allows matching of CCD/CIS clock to scan resolution and pixel depth for maximum scan speed.

Stepper Motor Controller

Motor Configuration: Configurable for either Bipolar (2 phase) or Unipolar (4 phase) stepper motors

Drive Current: Up to 1 Ampere per driver

Step Timing: Completely programmable for a wide range of effective vertical resolutions. Stepper motor control tightly coupled with buffer management to maximize data transfer efficiency.

Microstepping: PWM current control permits microstepping of stepper motor for very fine position and speed control. (1 Full Step = 4 Microsteps)

Acceleration/Deceleration: User programmable acceleration and deceleration intervals bring motor gradually up to speed and down to stop

Motor Current Control: Motor current is directly controlled by the RollSCAN-1 to set appropriate drive levels while starting, scanning, stopping and while idle.

PWM Current Control: Optional PWM (Pulse Width Modulation) of motor current increases high speed torque, optimizes efficiency, and allows use of a lower current, less expensive motor.

Illumination Control

Illumination Modes: Continuous (for monochrome scanning or color scanning with tri-linear CCD/CIS. Typically used with CCFL)

Rotating RGB for color scanning with single arrays (e.g., CIS)

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R+G+B (all colors on) for monochrome scanning

Exposure control: PWM modulation of LED illuminators provides fine control over integration time.

Drive capability: Up to 250 ma drive capability for LED illuminators. Jumper selectable on a per-channel basis for common-anode or common-cathode configuration

Host Port Interface:

- Connects directly to PC parallel port
- Configurable for EPP, PS/2 bidirectional, and SPP parallel port modes
- Jumper selection option for microcontroller compatible interface mode