

# About...

## Acquisition Modes

THE GRABLINK ACQUISITION BOARDS SUPPORT VARIOUS AREA-SCAN AND LINE-SCAN ACQUISITION MODES, WHICH MAKE THEM EASY TO INTEGRATE INTO VARIOUS TYPES OF APPLICATIONS. THE GRABLINK BOARDS ARE ABLE TO PRECISELY CONTROL THE CAMERAS. FOR AREA-SCAN APPLICATIONS, THIS INCLUDES ASYNCHRONOUS RESET AS WELL AS EXPOSURE CONTROL. THE ASYNCHRONOUS RESET ALLOWS THE APPLICATION TO PRECISELY CONTROL THE INSTANT OF THE IMAGE CAPTURE. OF COURSE, SYNCHRONOUS OPERATION MODES ARE ALSO SUPPORTED. FOR LINE-SCAN CAMERAS, THIS INCLUDES THE CONTROL OF THE LINE RATE AND OF THE EXPOSURE. FREE-RUNNING MODES ARE ALSO SUPPORTED.



### FLEXIBLE AND RELIABLE AREA-SCAN ACQUISITION MODES

#### TRIGGER

When the part is in front of the camera, a signal, called Trigger, is generated and sent to the Grablink to start the acquisition. This external signal is generated by any type of external hardware device, such as a sensor, which is connected to one of the input lines of the Grablink boards. A "software" trigger signal may also be generated by the host application.

- TRIGGER DELAY: In order to accommodate different positions of the sensor, an optional programmable trigger delay may postpone the start of the acquisition for a given number of microseconds.
- TRIGGER DECIMATION: In order to decrease the acquisition speed, the Grablink may be instructed to skip, at a regular defined rate, some of the pulses sent by the external trigger.

#### EXPOSURE CONTROL

The Grablink acquisition boards are capable of consistently controlling the sensitivity or exposure time of the camera.

#### LIGHT STROBE

When the acquisition starts, at the appropriate timing, the Grablink board is able to generate a signal to control an illumination device connected to one of its output lines.

### HIGH-PERFORMANCE LINE-SCAN ACQUISITION MODES

THE GRABLINK ACQUISITION BOARDS FEATURE SEVERAL ACQUISITION MODES DEDICATED TO LINE-SCAN CAMERAS:

- Continuous web scanning to inspect infinite, continuously moving surfaces without losing a single line.
- Successive object scanning to acquire the image of objects moving in front of the camera. The acquisition starts when each object enters the camera field of view, as signaled by an external trigger.

#### TRIGGER

Typically, a trigger is used to start the acquisition of lines when the part to be inspected is in position. This external signal is generated by any type of external hardware device, such as a sensor, which is connected to one of the input lines of the Grablink boards. A "software" trigger signal may also be generated by the host application.

- Grablink supports start and end triggers. After it is started, the acquisition either
  - Continues indefinitely (for web inspection applications)
  - Continues for a programmable number of lines (to acquire the image of objects with a known length)
  - Continues until an end trigger is received (to acquire the image of objects with a variable length)
- Trigger delay: In order to accommodate different positions of the sensor, an optional programmable trigger delay is able to delay the start of the acquisition of a given number of lines.

#### MOTION ENCODERS

When the speed of the web or part to be inspected is not constant, it is important to properly synchronize the camera line rate with the motion of the object, or this can lead to distortion or non-uniform pixel aspect ratio in the image. This can be done using an incremental motion encoder. In this mode, the Grablink frame grabber controls the camera scanning rate based on the data received from the motion encoder.

- When the part moves faster, the acquisition line rate of the camera increases.
- When the part moves slower, the acquisition line rate of the camera decreases.



## LINE-SCAN ACQUISITION MODES: NEW QUADRATURE MOTION ENCODER SUPPORT

Quadrature motion encoders use two signals (or phases), called A and B (cf. illustration above), that the Grablink board can interpret to know in which direction (forward or backward) the part is moving.

- With the optional direction selector, the user can define which direction is considered as the forward direction for the application, A to B or B to A. Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward, or only when the object is moving backward.
- With the backward motion cancellation, the Grablink is capable of stopping the acquisition when a backward motion is detected. The line acquisition automatically resumes when the motion is again in the forward direction at the exact place where the acquisition was interrupted.

### A UNIQUE RATE CONVERTER

The Grablink boards incorporate a unique device called the rate converter, which works along with the motion encoder. The rate converter allows the camera to acquire lines at any programmable resolution lower or higher than the resolution of the motion encoder. This gives the designer incredible freedom and flexibility during the development of the application.

### RATE DIVIDER

The rate divider allows the camera to acquire lines at a resolution lower than the resolution of the motion encoder. The rate divider divides the incoming encoder signal by a programmable integer.

### EXPOSURE CONTROL

The Grablink acquisition boards are capable of consistently controlling the sensitivity or exposure time of the camera.

### PERIODIC GENERATOR

When the speed of the web or the object to inspect is constant, the Grablink can drive the line scan camera at a constant line rate generated from its programmable internal periodic generator.

