CTI-HSIF & CTI-HSIF-PCI Software Libraries

for Acuity AR4000 Laser Distance Sensors

The Crandun Technologies CTI-HSIF and CTI-HSIF-PCI software libraries provide a high-performance, high-level interface to the Acuity AR4000 series laser distance sensors. All models of sensor, high-speed interface card and line scanner are supported. Whether for "one-off" prototypes, or high-volume, high-performance embedded systems, this is *the* most cost-effective time to market solution for your project.

➢ Rapid Prototyping!

Install the software, then use the provided sample programs or Microsoft Excel to acquire, display and analyze sensor data immediately. No programming required!

➢ Get Up and Running Quickly

The "plug-and-play" functionality, and numerous sample programs, get you up and running quickly, so that you can concentrate on your application functionality, rather than on hardware interfacing or data collection details. The extensive documentation and free support make sure that you are successful.

➢ Windows or Linux – Desktop or Embedded

Available for Windows XP and Linux‡. Whether it's Windows on a desktop PC, or Linux on an embedded PC104, the same extensive functionality is available. Pick the system that suits you best.

➢ High Performance. Versatile.

Carefully tuned for maximum performance. Small memory footprint. Usable from C, C++ and Visual Basic. Multiple sensor support. Full motor/encoder control. Whatever your situation, the libraries support the most demanding applications.

Features

The CTI-HSIF and CTI-HSIF-PCI software libraries have been designed for ease of use, to get your project finished quickly. The libraries' "plug-and-play" functionality handle all the details of data collection from the sensor, allowing you to concentrate on using that data in your specific application. No programming is needed to acquire data directly into a Microsoft Excel spreadsheet. For more complex needs, the comprehensive Programmer's Guide and extensive code samples facilitate the rapid development of custom applications in C, C++ or Visual Basic. A variety of features enhance productivity, and reduce your project timelines:

Flexible Output

The CTI-HSIF and CTI-HSIF-PCI libraries allow the user to select a number of formats for the acquired data. English or metric output, calibrated or un-calibrated data, or both, may be selected. Additional information (signal amplitude, ambient light, temperature) may optionally be collected. When using the Line Scanner, encoder count to angle conversion is done by the libraries, and data may be output in either polar or Cartesian coordinates.

Data Filtering

To reduce application complexity and improve user productivity, the libraries support filtering of the raw data based on any combination of range, encoder angle, amplitude, ambient light and temperature. Only samples within each user-specified range are returned to the application. This is particularly useful when using the Line Scanner, as typically only part of the full 360-degree field of view is of interest. The libraries return to the application program only samples within the desired field of view. Filtering can also be used to discard spurious samples having high ambient light, or low amplitude readings, for example.

‡ Linux is currently supported for the ISA and PC104 high-speed interface cards. Please contact Crandun Technologies for availability of Linux support for the PCI card.

Configurable Data Buffering and Callback Notification

A user configurable buffer within the library is filled as data arrives from the sensor. When a predefined number of samples is available, the library sets a queryable status flag, or calls a user-defined callback function, enabling the application program to easily determine when samples are ready for processing. The library handles all hardware interfacing and data buffering details, while you concentrate on *using* the data.

Performance

Using optimized kernel drivers on each operating system, along with careful tuning, the library provides the highest possible performance, whether using the serial link or high-speed interface card. Internally, each library is fully multi-threaded and interrupt driven for maximum throughput.

Easy Integration

The library makes it easy to collect data from other sensors or external data sources, such as encoders, A-D converters, data loggers, etc., simultaneously with range measurements from the AR4000 sensor, as part of an integrated data acquisition system.

Comprehensive Support

To ensure your success, we provide numerous fully documented examples, complete with source code, to give you a head-start in developing your applications. For questions not answered by the documentation or the sample programs, we provide free email and telephone support.

Code Sample

The Visual Basic® sample below illustrates a very simple example of using the library functions (shown *highlighted in italics*) to acquire and display range data from the AR4000 sensor, using the high-speed interface card.

```
Dim rc As Long, numRead as Long, i as Long
Dim samples(1000) As Double

dim mySensor As CTI_AR4000                  'Declare an AR4000 sensor variable

Set mySensor = New CTI_AR4000               'Create a new instance of the AR4000 sensor class

rc = mySensor.setDriverOpen()               'Open library driver
If (rc < 0) Then MsgBox "Failed to set communications parameters", vbCritical

rc = mySensor.setSamplesPerSec(150)         'Set 150 samples per second
If (rc < 0) Then MsgBox "Failed to set Sample Rate", vbCritical

rc = mySensor.setLaserOn()                  'Turn on the laser
If (rc < 0) Then MsgBox "Failed to turn on Laser", vbCritical

numRead = mySensor.getSamples(samples, 100)  'Read 100 range samples from the laser
If (numRead < 0) Then
        MsgBox "Failed to read data from laser", vbCritical
Else
        MsgBox "Successfully read data from laser", vbInformation
        For i = 1 To numRead
                MsgBox "Sample" + Str(i) + " = " + Str(samples(i)), vbInformation
        Next i
End If
```

For Further Information

For more information, including downloadable user manuals, and answers to frequently asked questions (FAQs), please consult our web site, or contact:

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