Taking the Work
Out of Networking
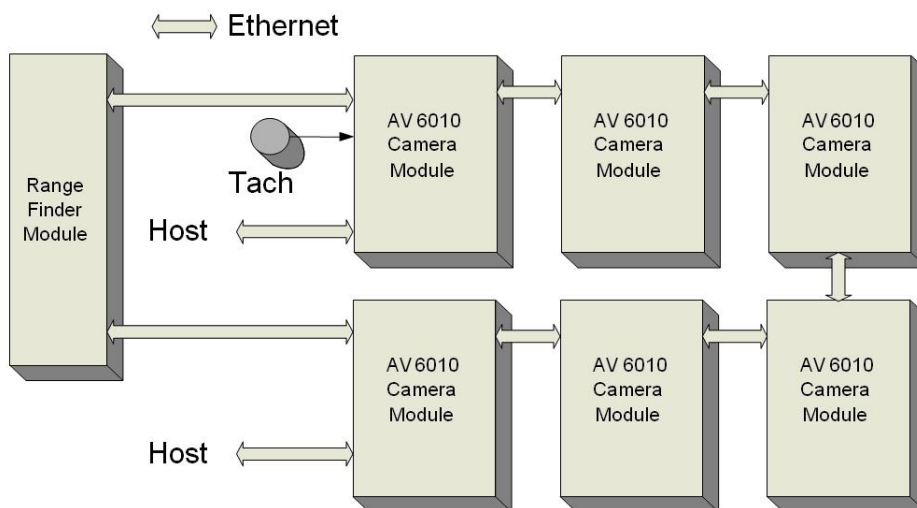
ACCU-SORT® SYSTEMS

Taking The Work Out of Networking

In a high-end camera-based sortation system, multiple cameras are arranged around a conveyor in a "tunnel" configuration. Each camera needs to communicate with all the major system components, and in a traditional system this requires a confusing number of cables. Besides being a burden during installation and troubleshooting, each cable represents a potential point of failure.

Accu-Sort has developed an integrated camera system that reduces cabling in two ways. First, some of the major components have been integrated into a single unit. Second, the system has an internal Ethernet network that allows both synchronization and image data communication over a single cable. As a result, installation time is greatly reduced, and reliability is greatly increased.

In the past, the setup of a fully integrated system took extraordinary time and expertise. Users could do it, of course, but it wasn't easy. The all-new AV6010 reduces installation times from days to hours. The installation of a six-sided tunnel, for example, can be performed in less than 10 hours. The system's unique, user-friendly network plays a big role in this time reduction. It eliminates the need for extra setup software – regardless of operating system. All network controls and components connected to it employ intuitive designs to enhance understanding and simplify tasks – from identifying icons on connector panels and color-coded Ethernet cabling to a browser-based user interface for remote configuration.

Each major component of the AV6010 is linked via an internal network. If the camera providing the host function fails, then another camera can pick up the task of host communication. All "host message" multiplexing capabilities are built into each camera. No external control unit is required.

Network Description

The Accu-Sort AV6010 Long-Range Camera System consists of a RangeFinder and one or more AV6010 Cameras.

The RangeFinder and cameras are connected via a private SYNC cable system. Standard Ethernet network cables are used to connect the units together in a daisy-chain fashion to form a loop or ring. The system tolerates any single break in the loop (such as a broken cable).

The SYNC network carries 160 megabit data communications and tachometer information.

A tachometer (an incremental encoder that outputs pulses at a frequency proportional to the speed of the conveyor) is connected to one of the cameras in the system. The tachometer signal is fed to all the other cameras along with other synchronization information. All of the cameras count tachometer pulses at the same time and their tachometer counts are all kept synchronized.

As a package enters the system, the RangeFinder detects the package, profiles it and streams package profile information to the cameras in the system via the SYNC network. The RangeFinder also assigns a unique token (a number) to each object.

Each camera uses this package profile information to dynamically focus the optics and track the package along the conveyor.

As the package passes through the reading plane of each camera, the camera collects and processes the image of the package. The image data is typically processed to decode any bar code symbols on the package. The image data may also be exported to an external system (for storage or additional processing).

As each camera decodes bar codes, it shares that information (along with the object token) with the other cameras.

Normally, one of the cameras is connected to an external "host" system such as a sortation controller or a transaction tracking/inventory control system. When the package reaches the "transmit point", the camera with the "host" interface combines the package information from the other units in the system and transmits the data to the "host" system.

The AV6010's camera SYNC network arrangement greatly simplifies the system cabling relative to prior camera systems. In the previous generation systems, the tachometer signal was cabled to each camera individually. Likewise, the data from a dimensioning module was sent to individual cameras over individual cables. The cameras did not share decoded bar code information; all of the cameras were connected to a multiplexer, which combined the information. This older system had a large number of cables that increased installation and troubleshooting time. The SYNC network, with a single network cable between units, is much easier to install.

Every camera has the parameter settings for all the other cameras in the system. When a camera is replaced, the user presses a button on the "new" camera. This causes the new camera to get the tunnel parameters (including the parameters for all the other cameras in the tunnel) through the camera SYNC network. By analyzing the parameter file, it figures out what position it is in and uses the settings for that position.

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Every camera has the parameter settings for all the other cameras in the system. When a camera is replaced, the user presses a button on the "new" camera. This causes the new camera to get the tunnel parameters (including the parameters for all the other cameras in the tunnel) from another camera. By analyzing the parameter file, it figures out what position it is in and uses the settings for that position.

About Accu-Sort

Accu-Sort Systems is a pioneer in advanced auto ID systems with more than three decades of experience deploying and supporting scanning, tracking and sortation solutions in various industries including transportation, logistics, industrial/manufacturing, and retail. The company is one of the world's leading providers of high-speed laser and camera-based solutions for barcode reading, convergent RFID solutions, as well as complete turn-key integrated systems solutions.

For more information on Accu-Sort Systems solutions, call 1-800-BAR-CODE or visit www.accusort.com.