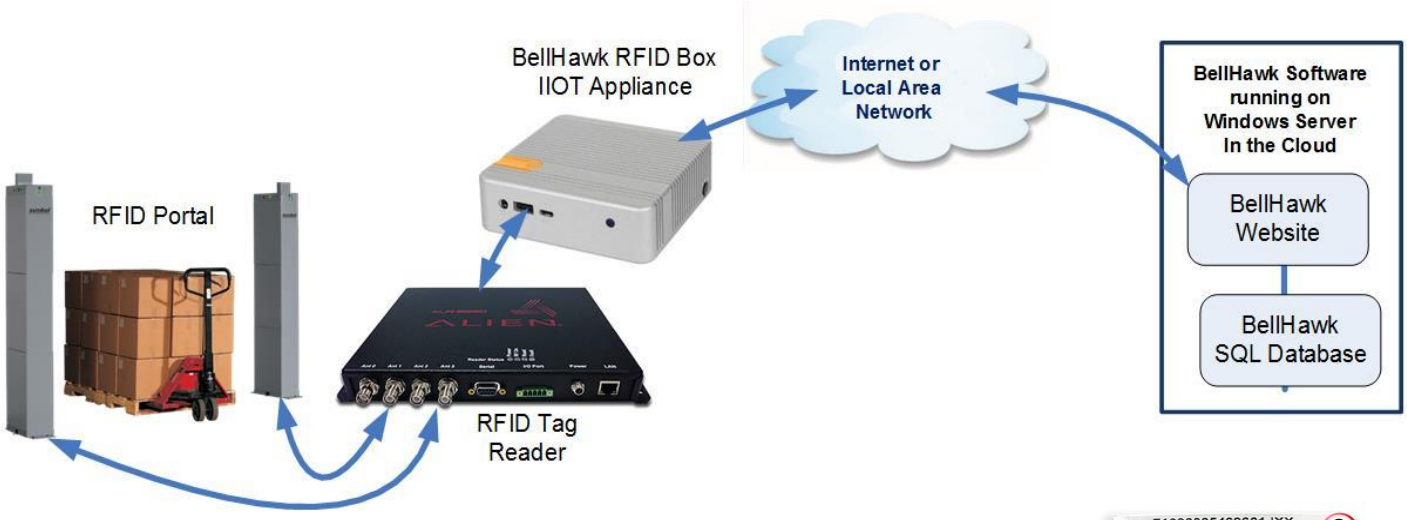
Data Sheet for BellHawk RFID Interface Software



In BellHawk, individual items as well as containers of material can be tracked using "license-plate" RFID tags as well as tracking barcodes. In practice, many such containers may have combination RFID tags (1) embedded in combination barcode labels (2) printed out using the BellHawk Barcode Label Printing (BLPA) IIOT appliance, as shown at right.

Alternately ruggedized RFID tags, such as those shown here, with associated barcode labels, may be attached to pallets, totes, and vats.

When the combination barcode barcode/RFID tag is first attached to a container, its barcode is scanned and associated with the container, when the container is first entered into inventory.

The barcode may contain the same tracking "license-plate" number as the number embedded in the RFID tag, when no further work is required. Alternately the RFID tag may need to be separately read, using a combination RFID and barcode scanning device and recorded in the BellHawk containers tracking table.

Once the tracking barcode and RFID tag codes are stored in BellHawk the location of the container can be recorded using barcode scanning. The movement of the RFID tag through a portal or an area illuminated by an RFID antenna can then be detected by the BellHawk RFID Box and translated into recording the new location of the container in the BellHawk database.

To do such automated movement recording the RFID Box is connected to one or more RFID TAG readers, which are typically attached to a number of antennas.

When an RFID tag is detected by the RFID tag reader on a specific antenna, the tag number and antenna is reported from the RFID tag reader to the RFID box. The RFID box then translates from the RFID tag number to the specific container in BellHawk and translates from the antenna location stored in BellHawk to the new physical location of the container, which the RFID box then records into the BellHawk database through the BellHawk website's web services interface.

In this way, BellHawk is able to automatically track the movement of containers without needing to do barcode scanning.

It should be recognized, however, that RFID has many physics limitations. It is highly accurate when recording the movement of a pallet with a single RFID tag through a portal (such as on a dock door) and can read half a dozen or so tags on parts on a pallet moving at walking pace through a portal with a 98% or so accuracy. But, as the number of tags in the portal at the same time and their speed of motion through increases, then the probability of accurately reading the tags rapidly diminishes below 90%.

For many application, such as recording the put-away locations of inventory, barcode scanning has a far superior accuracy. But for certain applications, such as recording the loading and off-loading of pallets at dock doors, or tracking the location of totes of WIP materials, then RFID has many advantages.

The advantage of the BellHawk license-plate tracking approach is that clients can use both RFID and barcode scanning where they are appropriate without the need to use different systems for barcode and RFID scanning.

The BellHawk RFID interface software is typically run in a Windows Workstation based industrial computer, such as an IIOT (Industrial Internet of Things) appliance, as shown above. This software communicates with an RFID Tag reader, such as shown above, to detect when a new tag is detected within the detection zone of an RFID antenna, connected to the TAG reader.

The BellHawk software then works through the BellHawk web-services interface to translate the RFID tag arrival event into a move transaction for the container to which it is attached.

The BellHawk RFID box software will work with a number of RFID Tag readers, which will themselves work with a number of different antenna configurations. Please note, however, that each different reader typically requires some customization of the RFID reader interface code because of the different protocols each different RFID tag reader uses for communications.

