

The Building Block of Retail Digitalization Electronic Shelf Labels



What is an electronic shelf label?

An electronic shelf label is a battery powered IoT device that replaces paper price tags, displaying product pricing and other information.

Electronic shelf labels, also known as ESL, provide retail stores with a range of features that improve operational efficiency, reduce pricing errors, and reduce labor costs by allowing for remote updates of entire labeling systems from centralized servers.

This digital price tag technology has been around for several decades, with the earliest models using liquid crystal displays, similar to a calculator display. In recent years however, ESLs have evolved into highly efficient, stable, and colorful devices that use electronic e-paper to provide high definition digital displays with minimal power consumption while performing an increasing amount of tasks.

Electronic shelf labels are now driving pricing systems for retailers around the world and Hanshow has become one of the industry's leading developers of this technology with its ESL in over 30,000 stores around the world.



How does an electronic shelf label work in-store?

An electronic shelf label is mounted on a shelf edge just like traditional price tags but is digitally bound to both a product's SKU and the store's backend pricing management system. This allows for full remote management of the price and product display information.

The digital price tags communicate with backend management systems through a specially calibrated wireless signal transmitted through a ceiling-mounted ESL controller (image on the right below).

ESLs are battery powered and their display screen is made of e-paper that maintains a screen display without power consumption, meaning ESL only need to expend energy when changing the screen display or communicating with an ESL controller.

Most ESL feature a simple microprocessor and coin batteries that can be removed by opening the device's plastic casing. Hanshow's next generation ESL Nebular, however, adopts a sturdier design with a reduced sized flexible battery in a full uni-body case that stabilizes internal components and protects the ESL from damaging dust and water intrusion.



ESL – The booster of store operation efficiency

The unassuming electronic shelf label can completely transform a store's operations with an increasing array of benefits for retailers.

The most immediate impact of these electronic shelf tags is that they allow for remote and instant price updates all through a backend system. In a traditional set up, store employees need to print, match, and manually replace paper labels then update that information in the stores ERP system – a highly resource, time, and cost intensive task.

Electronic shelf labels allow this whole process to be completed from a laptop in minutes and can even be done on a scale of entire international networks with hundreds of stores when using a SaaS cloud management approach.

In addition to stores no longer needing to purchase paper, ink, and printers for their price labels as well as freeing up a tremendous amount of staff time from price updates, ESL also offer other increasingly sophisticated benefits as follows.



Backend system of ESL management with real-time monitoring

Benefits of ESL

- 1 Navigation and LED lighting for order picking – The ESL navigation function generates a picking route and this combined different colored flashing lights signal to delivery order pickers exactly where to find their next item. This has shown to dramatically reduce order picking and delivery times.
- 2 More product information for customers can be provided through expanded display options.
- 3 Improves employee well-being by removing menial tasks and allowing staff to engage in more meaningful work.
- 4 Reduces waste by eliminating need for paper labels, and increasingly long ESL product lifecycles now see devices such as Hanshow's Nebular or Stellar Pro series with a lifecycle up to 10 years.
- 5 Improves store appearance by providing a more modern, sleek aesthetic planogram management.
- 6 Eliminates pricing discrepancy between the label and the register (a major headache for both retailers and customers).
- 7 Serves as the building block IoT device for communication with expanded retail digitalization technology.

How long is electronic shelf label's battery life?

The battery life of electronic shelf labels varies depending on the label's make and model, usage intensity, size, battery type, communications signal strength, location temperature, and many other factors.

The more times the digital price tag is updated, the energy it needs to expend and therefore will have a shorter battery life. Industry average coin battery ESL have a lifespan of around 3 to 6 years, but batteries can be replaced to extend the life of the ESL.

Advances in battery design, component composition and wireless communications technology have led to increasing lifespans of ESL on today's market. Hanshow's Stellar Pro series has a battery lifespan of up to 10 years when the ESL is updated two times per day.

Hanshow's Nebular series features a reduced size flexible LiMnO₂ and enhanced internal circuitry that gives it an extended battery life-span compare to regular ESL products.



Easy replacement of battery with up to 10 years of lifespan

How does ESL save money for retail stores?

The biggest cost savings come from significant reductions labor time needed to update price labels.

Paper labels require staff to type, print, and manually replace each individual label each time there is a price change. With ESL this entire process is completed remotely with a few clicks on a laptop, and can be done on the scale of entire store networks when using a cloud-based SaaS system.

ESLs also save money by eliminating the need to purchase paper and printers for paper price tags. Over the course of a roughly 10-year ESL lifespan, these are substantial savings in supplies purchasing.

Operations efficiency is also enhanced through adoption of ESL allowing for more automated management of inventory and stocking.

ESLs – as the building blocks of retail digitalization are paving the road of store transformation towards a more intelligent and automated operation mode, while also providing unique customer shopping experience with up-to-date price display, detailed product information, and point of sale convenience.





About Hanshow

Hanshow is a global leader in developing and manufacturing electronic shelf labels and digital store solutions, offering global customers a series of world-class customized IoT touchpoints and digital store solutions that deliver customer-centric insights. Hanshow's solutions are used by over 30,000 stores in more than 50 countries, helping retailers streamline operations, optimize pricing strategies, and offer consumers a more personalized experience.

Learn more: www.hanshow.com

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