

APPLICATION NOTE

# AUTOMATED GUIDE VEHICLES

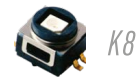


## BACKGROUND

The global automated guided vehicle (AGV) market stands at a bit over \$4 billion today. Ignited by Amazon's purchase of Kiva Systems in 2012, the industry has taken off like a rocket ship. Projections show the market growing at double-digit rates through 2025 and reaching as much \$10 billion by that time.<sup>1</sup> The potential for cost savings, efficiency, and the limiting of human errors rank as the top benefits of AGVs.

The growth of e-commerce has primarily driven the AGV market. Buyers' (both consumer and business) penchant for online shopping has made warehousing a critical component in the supply chain. The volume of purchases and increase in SKUs means warehouses must be better at inventory management, stock picking, and order fulfillment. Unassisted, humans can't keep up. To help, more than 400,000 robots are deployed annually to assist with warehousing and other functions like in-store customer service, deliveries, and other autonomous activities.

<sup>1</sup> <https://www.mordorintelligence.com/industry-reports/automated-guided-vehicles-market-industry>



## SOLUTION

The value of high-performance switches in the operation and control of modern AGV's has never been greater. Since 1928, C&K's product portfolio has focused on a wide range of tact, lighted tact, pushbutton, and anti-vandal switches that maximize the options for AGV designers.

Because AGVs must work in a variety of conditions, C&K offers the K8, a lighted SMT tact switch with a rugged LED mounting process. The unit is perfect for applications that require long-lasting performance in the harshest conditions. It is rated for 300,000 + cycles and operating in -40C to 85C. For less demanding applications, the company has the K5AT series illuminated SMT tact switches that feature bright LED lights and a reduced footprint. These units have excellent ergonomics and haptics, including a tactile feel and audible click. For a sealed, momentary action tact switch, designers will appreciate KSC2, which is IP67 rated and just 3.5mm high.

C&K's AP series of pushbutton switches are found in many industrial applications and can withstand harsh environments as they are IP67 sealed and come with optional illumination. The anti-vandal sealed pushbutton switches, ATP19 and ATP22, add an extra layer of protection against tampering. Both of these switches meet the seal protection and impact resistance ratings of IP67 and IK10 (Stainless steel bushing).

C&K also have a portfolio of robust and well specified detect switches, which are also be used in AGV and robotic applications. Used to determine when trays, or boxes have been lifted, or automated arms are in particular positions, detect switches are an ideal way of identifying when packages have been picked or have been placed in an automated cart, for example. Further details of C&K's range of detect switches can be found here:

<https://www.ckswitches.com/product-selection/detect/>.

