

Q: What is an optical turnstile?

A: An optical turnstile is a security industry term for a pedestrian monitoring and control system that uses a card access system, infrared sensors, and an intelligent control unit to detect and count persons walking through a lane or passageway.

Q: How does an optical turnstile work?

A: Most large amusement parks, stadiums, and subway systems use physical turnstiles to make sure that only one person enters for each token, payment, or authorization presented. A metal bar is locked into a blocking position to prevent someone from walking through the passageway. When authorization is granted, the bar is released and one person can walk through. The bar is re-locked after a person walks through the passageway.

An optical turnstile uses a card access system to determine when authorization is granted and infrared sensors to detect a person walking through the passageway. No physical barrier is present. If a person walks through the passageway without authorization, an alarm is generated. The sounder is then activated, the card access system is sent an alarm signal, and a guard should respond to the alarm.

Q: Where are optical turnstiles used?

A: Many office buildings, factories, banks, and other businesses already use some type of security system to protect their employees, clients, and assets. Security measures often include some type of identification card. The ID card is shown to a guard when entering a secured area or building. The guard is supposed to make sure that everyone entering the secured area has a valid ID card.

Q: If there is a guard, why use an optical turnstile?

A: If a large number of people have to check with a guard or guards during a brief time frame, such as shift change, the probability of an unauthorized person walking past the guard without being checked increases. The combination of a guard and a set of optical turnstiles significantly reduce the chances of unauthorized entry into a secured area. The card access system checks the ID cards for validity, the optical turnstile ensures that only authorized persons enter the secured area, and the guard responds to alarms. The guard's workload is then reduced from ID verification and security enforcement to security enforcement alone.

Q: If the guard's workload is reduced, does that mean saving money?

A: Yes. The reduced workload means that 1 guard with a set of lanes can provide the same level of security as 3 to 6 guards stationed at the entry to a secured area. The cost of hiring a guard ranges from approximately \$28K to \$60K per year depending on the area of the country, taxes, and benefits.

Q: Are there other reasons to use optical turnstiles?

A: Some facilities use physical barriers such as turnstiles, and interlocking door systems or mantraps to control access into secured areas to prevent unauthorized persons from entering.

Aesthetic concerns often discourage the use of physical barriers at main entry points to secured buildings. The main lobby of an ornate office building is not a likely place for a physical turnstile, even though access control measures are necessary.

CUT SHEET CONTINUED

Q: What kinds of optical turnstiles exist?

A: Optical turnstile housings come in a variety of sizes and materials. They include a very small doorway mounted sensing package, a 4" x 8" x 38" housing, and intermediate sizes up to 8" x 60" x 38". Housings can be made from stainless steel, wood frame with laminate sides, synthetic Corian®, granite, polished brass, and other exotic materials.

Q: How do I decide what type of optical turnstile to use?

A: The location of the lanes is an important consideration. If the optical turnstiles are to be located in the front lobby of a prominent business address, then selecting materials and colors that complement the building's interior design becomes important. Parking garage entryways are not usually as ornate as front lobbies and many times there is limited space.

Q: How do I determine how many optical turnstiles should be used?

A: The first consideration is the number of people that will be using the lanes. Also, will they be all entering and leaving within a short time frame, or will they be spread out over several hours. Optical turnstile systems working with very fast card access systems and well trained people can operate as fast as one person every 2 seconds, or 30 people per minute. However, ergonomic placement of card readers, card access system response time, and normal people movement issues can reduce the throughput to a more realistic 1 person every 3 to 4 seconds, or about 15 to 20 people per minute.

Q: Is there a formula to calculate the number of optical turnstiles needed?

A: An exact formula is not practical, but to get a general idea of how many lanes will be needed, put the following equation into a spreadsheet. Vary the number of people and the number of minutes of high use to get an idea of the load on the turnstiles.

P = number of authorized people using the turnstiles in high use times.

T = duration of time (in minutes) that the turnstiles will be in high use.

R = rate of throughput = people passing through the turnstile each minute.

R = 30 maximum, R = 15 realistic, R can be reduced to eliminate traffic jams at the turnstiles.

$(P / T) / R$ = number of lanes needed (round up any fractions to the next whole number)