



Physical Security Communications Protocols White Paper

A current access control industry topic is the insecurity of communications from card readers that support Wiegand connectivity to control panels. This whitepaper will address the different protocols and the benefits they offer.

Wiegand became popular as a connectivity type from HID and became the de facto standard for card and card readers in the 1990s.

HID has now updated to an RS485 protocol that is a published standard and is called Open Supervised Device Protocol (OSDP).

Many manufacturers such as AMAG, who make both control panels and card readers, developed their own communication protocol to provide a better option than Wiegand. They also offered Wiegand connectivity as a compatibility option for those cases where they did not provide the card reader.

AMAG created the MultiNODE Current Loop Protocol (MCLP) between control panels and card readers which used a 20mA electrical connection and a proprietary protocol.

The difference between Wiegand and MCLP are as follows:

- Wiegand has one-way communications and the control panel cannot determine if the reader is online or not. OSDP and MCLP are bidirectional protocols that allow the cardreader to be monitored.

Wiegand has a limited cable run length because the signals are easily corruptible. OSDP increases this short cable limit but is still susceptible to electrical interference and surges affecting the control panel. MCLP can communicate further than OSDP and is much less susceptible to interference or fault as the two items are electrically isolated.

Customers who have Wiegand readers may feel the need to improve their security with an upgrade. To achieve this, they can either install AMAG MCLP readers or OSDP derivatives.

In the past few years, access control readers using the Wiegand protocol have come under heavy criticism for being exceptionally easy to exploit with inexpensive and commonly available tools. This has led to a marketing campaign from many vendors to strongly suggest upgrading to a more secure format.



This push to upgrade to more secure panels and readers may leave current M2150 users concerned about their current level of security. Unlike Wiegand-based solutions AMAG's MCLP communications protocol offers an elevated level of security similar to OSDP which is the new replacement to Wiegand.

MCLP provides the following benefits:

- The MCLP implementation is a two-way protocol and allows the panel to monitor the reader status at all times. This allows the system to notify the operators when a reader is offline, for example, which is not possible in a Wiegand solution.
- The maximum length of the cable from the panel to the reader is up to 3,000 feet versus the Wiegand standard of 450 feet. This is a great advantage when it comes to designing systems.
- The MCLP system provides for encrypted communications between the panel and the reader which eliminates the possibility for replay exploits which are so common in Wiegand systems.

OSDP is a great option if you have an existing Wiegand-based system and would like to upgrade the security while continuing to use the wiring already in the walls. The AMAG Symmetry Blue Bluetooth transition readers offer the capability to move to OSDP utilizing the existing wiring while saving the time and high cost to replace.

Customers currently using AMAG MCLP are already getting the encryption, 2-way communications, and extended cable lengths that OSDP offers. There would be no significant gains in security or capability to offset the expense of buying new panels, readers, and re-wiring each connection that is required in a conversion to OSDP.

For more information, visit www.amag.com.

