

When are PIM External Pull-Up Resistors Needed?

Summary

This application note describes how to determine if pull-up resistors are required to interface a PIM to an Access Control Panel (ACP) and if needed how to install them.

This application note is intended to be used in conjunction with the PIM Installation Manual (M053-001-xxx). All Wyreless Access documentation is available on-line: www.recognition-source.com.

Introduction: A Panel Interface Module (PIM) emulates a card reader and generates either Data1/Data0 or Clock & Data signals to an Access Control Panel (ACP). The PIM drives the card reader signals using an open collector driver. Most ACP's have internal pull-up devices that complete this driver circuitry. If an ACP does not have internal pull-ups, then external pull-ups must be installed for the driver circuit to work.

How to tell if external pull-up resistors are needed: Determine if the ACP has an internal option for interfacing with open collector readers. If it does, enable that option and you are done. If it does not, external resistors will have to be installed.

With nothing external connected to the ACP's Data1/Data0 or Clock & Data signals, measure the DC voltage from the ACP's signal ground to either data line. If the voltage is less than 3 VDC, pull-up resistors are most likely required.

How to install external pull-up resistors: For each card reader data signal (2 per reader: Data1, Data0, Clock, or Data), at the ACP, wire a 330 ohm, ¼ W resistor (provided with later versions of the PIM), from the card reader data signal to the appropriate constant DC voltage, most commonly +5VDC (refer to the ACP specifications to determine the data line voltage). Note: each card reader being interfaced will require 2 pull-up resistors.

Later versions of the PIM PCB have internal pull-up resistors. Refer to the PIM Installation Manual (M053-001-xxx) for how to enable or disable these pull-ups. These versions of the PIM PCB are shipped with the pull-up resistors enabled.

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