PIM400-485

Panel Interface Module for RS-485 communication

Overview

The PIM400-485 seamlessly integrates to select access control panels via RS-485, eliminating the need for reader interface modules. Each PIM400-485 supports up to 16 wireless access devices such as AD-400/401 locks.

Reliability

Reliable communications result from several technological advances and incorporated features. 900 MHz spread spectrum technology enables high transmission power in a license-free band. Error detection algorithm maintains data integrity on each transmission, and redundant transmissions ensure communication success. Periodic "heartbeat" signals provide supervision and assure reliable RF communications are maintained. Lastly, dynamic channel switching (DCS) can be enabled to overcome harsh RF environments by automatically changing channels to avoid potential interference.

Security

Used extensively by government and military organizations, spread spectrum technology provides significant security advantages over conventional transmission methods. Wireless access devices utilize spread spectrum transmissions, which are encrypted with AES 128-bit keys, to yield a system that is virtually uncompromisable. In addition, scalability is virtually unlimited as each AD-Series wireless access module has nearly a million addresses to choose from during the linking process.

Centralized lock/unlock command in 10 seconds or less

Patent-pending Wake-Up on Radio (WOR) feature drives communication from the PIM400 to any or all linked wireless devices in 10 seconds or less. This innovative feature works efficiently in parallel with periodic "heartbeat", to maintain up to 2 year battery life on wireless devices such as the AD-400/401 locks. Response rate can be field configured down to 1 second with consideration of battery life. When Wake-Up on Radio is used in critical applications, dynamic channel switching should also be enabled.

Features and benefits

- 900 MHz spread spectrum RF technology for long range, reliable communications
- Automatic linking to remote wireless access points with 10 channel frequencies to select from enables easy commissioning
- AES-128 bit encrypted spread spectrum transmissions
- 5 visual indicators to quickly pinpoint and display status
- Flash memory for easy firmware upgrades
- Certifications: NEMA 1, 4, 4X, 6; UL 294; FCC Part 15; RoHS; Industry Canada (IC)
- Redesigned with smaller footprint

PIM400-485 specifications

Frequency range	902-928 MHz
Modulation	900 MHz spread spectrum, direct sequence, 10 channels
RF interference avoidance	Optional dynamic channel switching
Transmission/encryption	AES-128 bit key (optional)
Credential verification time	< 1 second[1]

Communication range	Up to 200 ft (61 m) with obstructions Up to 1000 ft (305 m) clear line of sight Up to 2000 ft (609 m) line of sight with high gain antenna on PIM400 Up to 4000 ft (1219 m) line of sight with high gain antennas on PIM400 and WRI400
Visual/audible communications	5 LEDs for status indicators
System interface	RS-485
Power supply	12 VDC or 24 VDC
Voltage range	9.5 VDC to 26 VDC
Max current requirement	Up to 250 mA
Operating temperature	-31° to 151°F (-35° to 66°C)
Operating humidity	0% to 100% non-condensing
Dimensions (H x W x D)	6.3" x 3.2" x 2.2" (16.0 cm x 8.13 cm x 5.59 cm)
Weight	1.25 lb (.56 kg)
Cable specifications	DC power Input: 18AWG, 2 conductor (Belden 8760 or equivalent) up to 1000 ft (305 m) PIM400-485 to ACP: 24AWG, 2 or 4 conductor shielded (Belden 9842, 9841 or equivalent) up to 4000 ft (1219 m)
Data rate	RF: 40 kbps; RS-485: 9.6 kbps
Certifications	NEMA 1, 4, 4X, 6; UL 294; FCC Part 15; Industry Canada (IC); RoHS

Ordering information

- **PIM400-485** –Panel Interface Module with outdoor enclosure standard. Supports up to 16 access points via RS-485 with select brands of access control panels.

Optional accessories

- **ANT400-REM-I/O** – Omni-directional remote indoor/ outdoor antenna module. Requires available grounding kit (MGB+MCA5) for outdoor installations
- **ANT400-REM-I/O+6dB** – Directional, flat panel, remote indoor/outdoor antenna with 6dB of gain. Requires available grounding kit (MGB+MCA5) for outdoor installations
- **MGB+MCA5** – Grounding kit for outdoor installations
- **ANT400-REM-CEILING** – Omni-directional ceiling mount indoor remote antenna
- **ANT400-REM-HALL** – Bi-directional indoor hall application remote antenna
- **HHD Kit-USB** – Handheld device with SUS installed and HH-USB cable
- **593PI-12DC** – 12 VDC power supply

1 Dependant on latency time of access control panel.

Additional features

Reliable communications
900 MHz band enables longer transmission ranges. In general, signal propagation with longer wavelengths travel a greater distance and penetrate through, and around objects better than signals with shorter wavelengths.

Online communications (heartbeat) Regular communications between the AD-Series wireless access module and PIM400 monitor transmission presence and integrity. Online communications enable the PIM400 to download information or instructions such as unlock and relock.

Auto addressing (linking)
One of the final steps in the installation process is called “linking”. Linking ties a specific wireless access module to a selected PIM400 and assigns a unique address. There are over 65,000 unique addresses available per channel, providing nearly a million combinations for virtually unlimited scalability.

Assured communications
A Packet-Error-Rate-Test (PERT) is performed during linking at reduced power levels to ensure reliable communication during operation.

Encoded transmissions Each RF transmission is encrypted with AES-128 bit keys to provide virtually uncompromisable security.

Tamper
The PIM400 cover is monitored by an optical tamper switch.

Visual indications
Power on
- Microprocessor running
- Linking status
- PIM receiving RF data
- PIM transmitting RF data
- PIM receiving RS-485 data
- PIM transmitting RS-485 data
- PIM firmware version
- PIM tamper status

Access point status available through RS-485 connection
- Card and keypad data
- Door position
- Loss of RF communication
- Request-to-exit
- Request-to-enter
- Low battery
- PIM tamper
- Mechanical key override
- Deadbolt position
- Interior cover tamper guard
- Lock/unlock status
- Interior push button

Configurable items from PIM400-485 Wake-Up on Radio (WOR)
- Heartbeat frequency
- Relock parameters
- Card data format conversion
- Extended unlock
- Fail safe/fail secure/fail as-is
- Door held pre-alarm
- Cache memory parameters
- Dynamic channel switching (DCS)
- Reader configuration
- Keypad configuration
- Inside pushbutton configuration
- User interface configuration