

Electrical and Mechanical Specifications

Physical	SIO-7300 - Aluminum Enclosure 4.45" x 3.08" x 2.0" (Each Unit)	
Temp	Storage(-55°C to + 150°C) Operating(-40°C to +80°C)	
Humidity	95% (non-condensing)	
Power	Input	Unreg Input 8 to 16 VDC* @ 500mA Max
	Output	+5VDC @100mA
Data I/O	Interface	Reader -Wiegand LED - 0 - 30V
Relays	Max Switching	(220Vdc 30W (resistive) 1A)
		(250Vac 37.5VA 1A)
	Running Spec with load	(30Vdc 1A (resistive), 1 x 10
		125Vac .3A (resistive), 1 x 10

Design your own custom access control system

The SIO-7300 is the latest addition to the Cypress Computer Systems family of Access Control building block products.

The SIO-7300 will allow a host computer control program to manage a typical access control point, such as a door or gate entry point. The SIO-7300 provides the application programmer with a robust hardware interface using an open source protocol.

Additionally the SIO-7300 can be utilized as a Panel Interface to allow application programs to send Wiegand data and Digital I/O signals to an Access control panel.

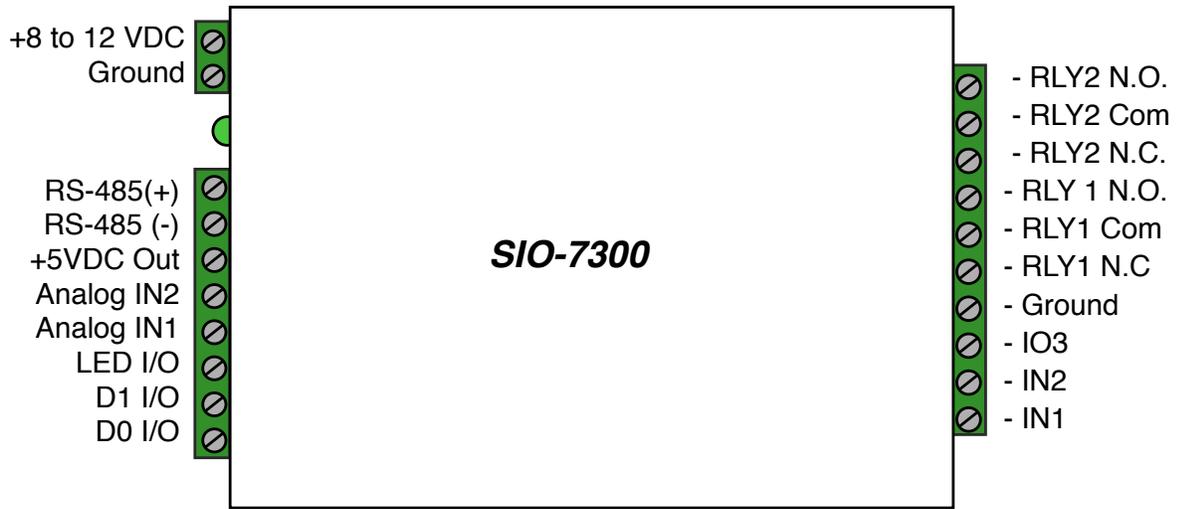
Applications

- Custom Access Control Systems, you determine the functions and features..
- Remote control of doors and gates
- Remote status monitoring
- Automation control
- Any application that requires a host computer to interface with the real world

Features

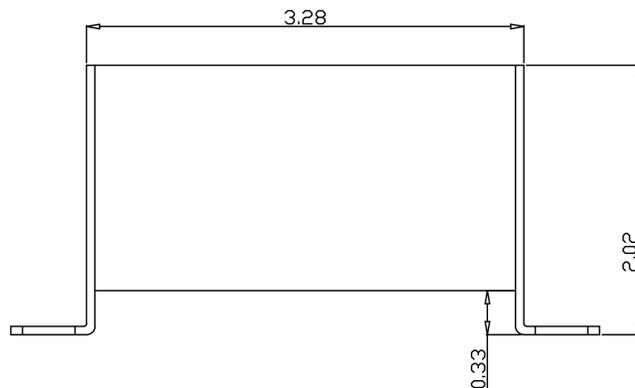
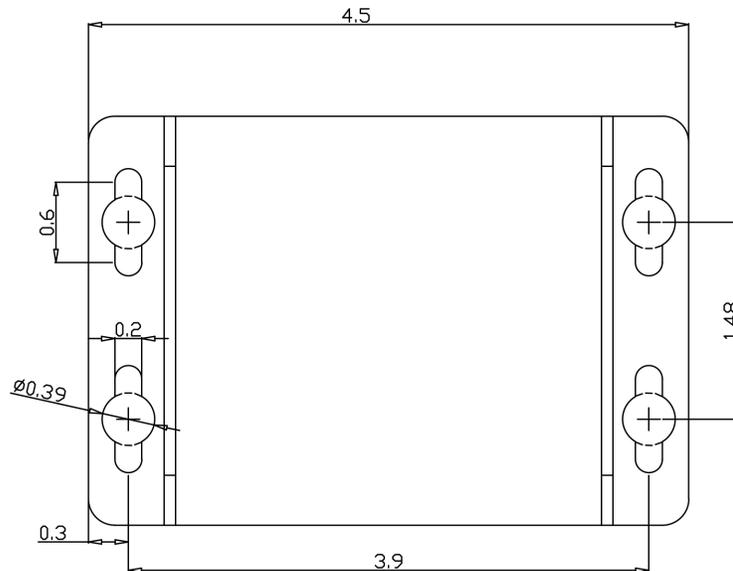
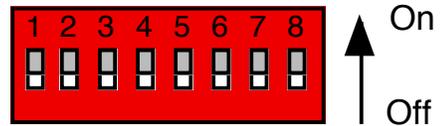
- Reads Wiegand badge data from most card readers.
- Generates Wiegand data streams for direct interface to an Access Control panel Wiegand port.
- Pluggable connectors for easy installation and replacement
- Available with enclosure or OEM PC Boards
- Each control point has relay, analog inputs, and digital I/O
- Built-in Pull-up resistors on reader interface

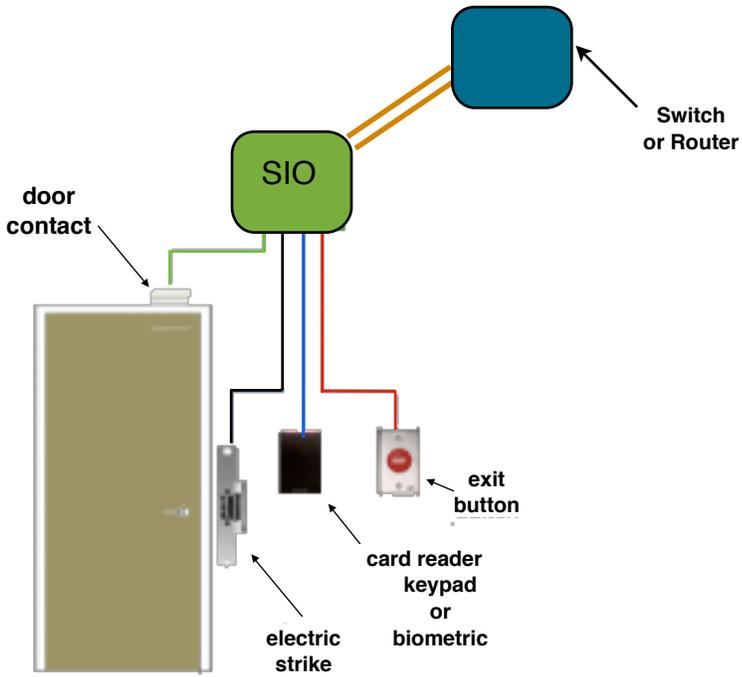
SIO-7300 Electrical Connections



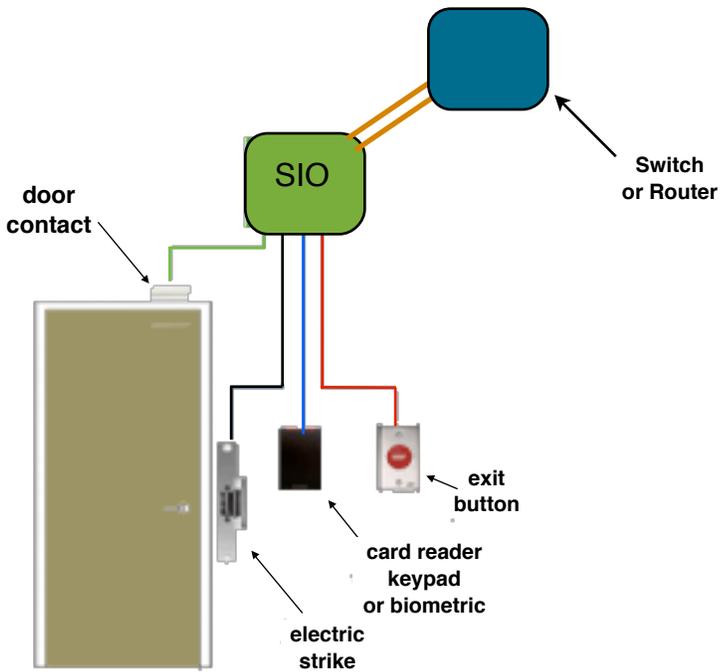
DIP Switch #4 determines Wiegand Direction

Switch #4 OFF - READ Wiegand as Input
 Switch #4 ON - SEND Wiegand as Output





Typical Wiegand readers and door I/O



Description of Operation

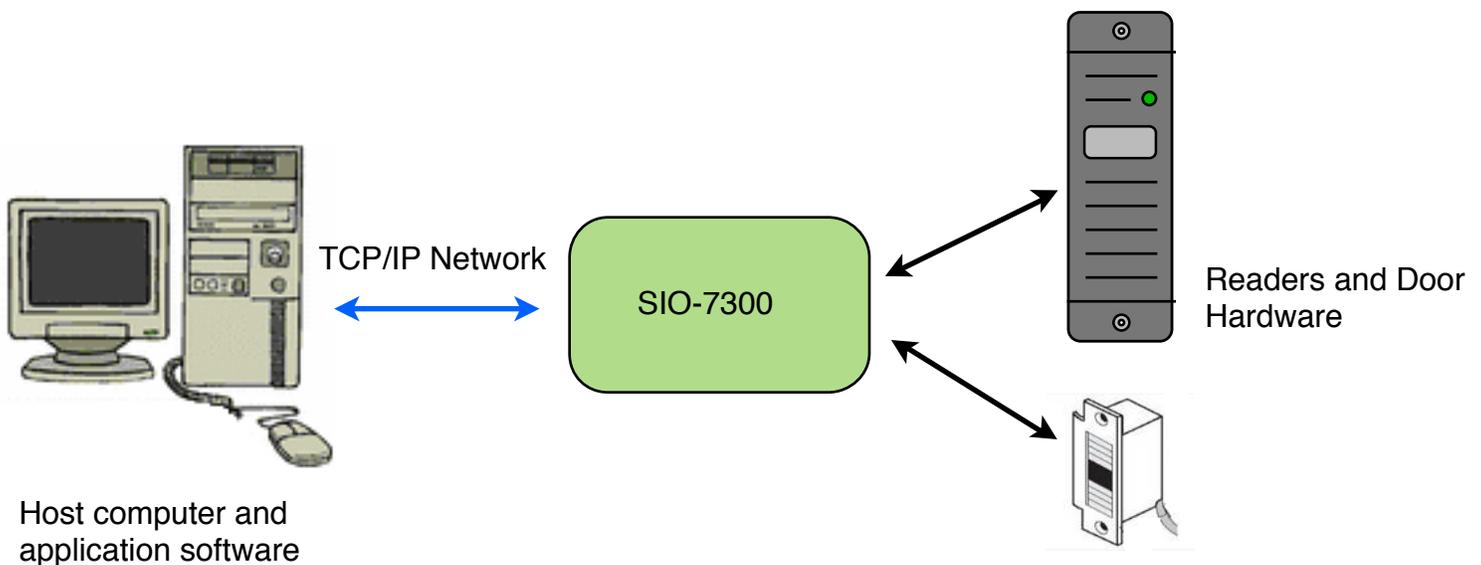
The SIO-7300 is a generic hardware interface component that frees the application programmer from the constraints of proprietary systems. Each unit will support Wiegand data input and output, and control multiple I/O points. Two dry contact relays are also available.

The User control program will send Enquiry packets to the SIO-7300. The SIO-7300 will change the I/O based on the settings provided by the program and will return I/O status and badge information if a badge has been read by the reader(s). Badge information is stored until polled and cleared by the host computer application program. The SIO-7300 can be DIP switch configured to generate Wiegand output data. Data sent to the SIO-7300 will be sent as output on the Wiegand data port.

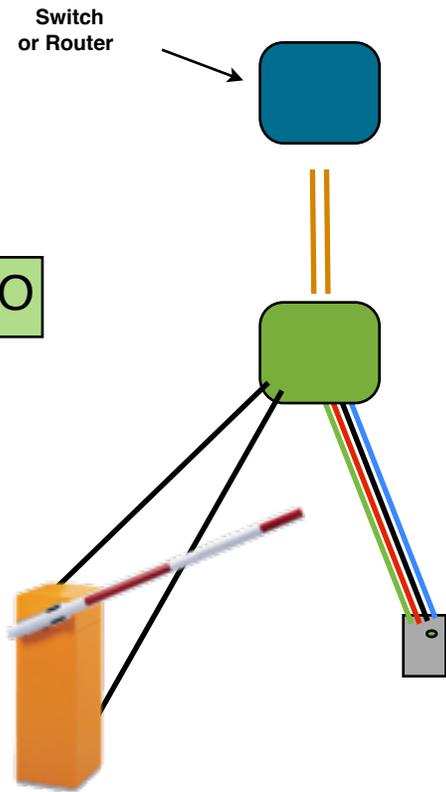
An open protocol provides complete control to a remote access point through a robust Ethernet interface. A simple data packet control structure is used to send control signals to and receive data from the SIO-7300. A complete Access Control system can be built using the SIO-7300 and your computer and application program.

Each reader interface has available: 1 Digital I/O point that can be configured as input or output, 2 digital inputs, 2 analog inputs, 2 Dry Contact relay outputs, and the capability to send or receive Wiegand data.

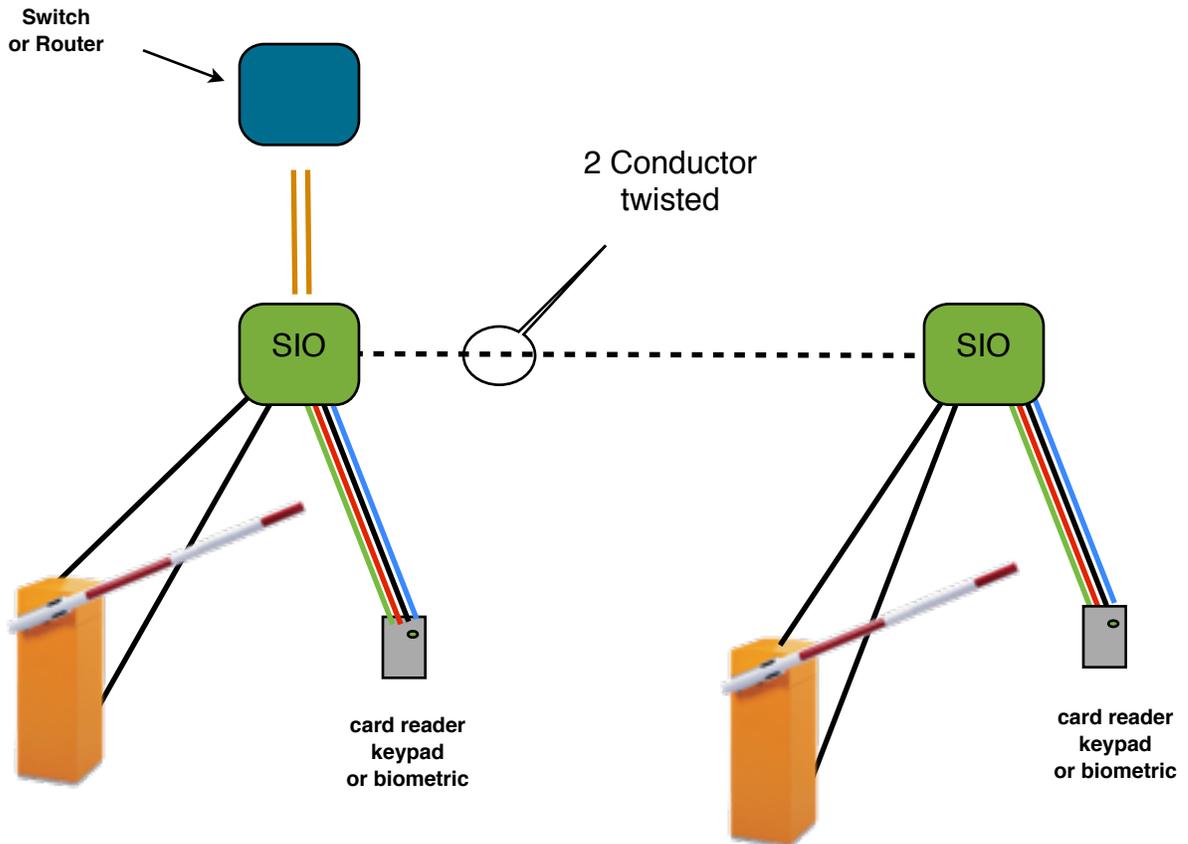
The system can also be EXPANDED by using the SIO-7100 expansion module. Each SIO-7100 module will provide an additional interface point, with the SIO-7300 serving as a network gateway.



Typical Wiegand readers and gate I/O



Typical Wiegand readers and gate I/O using SIO-7100 units

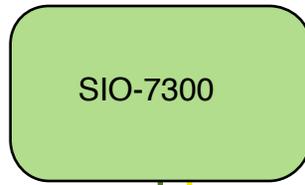


Expansion Module Concept (FUTURE)

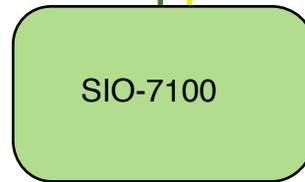
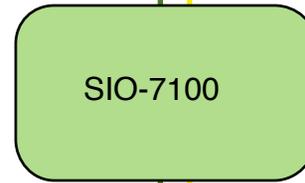


TCP/IP Network

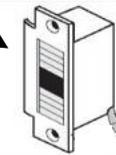
Host computer and application software



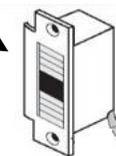
RS-485 Multi-Drop Network



Readers and Door Hardware



Readers and Door Hardware



Readers and Door Hardware



The SIO-7300 allows additional access control points to be added as needed. Addressable expansion modules (SIO-7100) can be controlled by the host computer software using the same protocol as the SIO-7300.

Data packets for the expansion modules are sent over a local RS-485 network from the SIO-7300, which functions as a gateway device.

This function is entirely transparent to the host computer software. Set the DIP switch address on the SIO-7100, and all packets with that address will be sent and received to and from the module over the TCP/IP Link with the Host Computer.

The RS-485 network can be expanded to up to 16 modules.

SIO-7300 Operation

General description and introduction

The SIO-7300 provides a versatile OEM solution to manage Wiegand interface data and multiple I/O points found in the typical access point such as door and gate entries. The SIO-7300 can both read and generate Wiegand data and provides both input and output control capability.

A simple and robust protocol allows complete control of the device from a user supplied control program. By sending and receiving formatted TCP/IP data packets the control program can generate/read data, activate I/O points, and monitor status at the remote location.

Typical operating system

The typical application will be setup with a host computer running a control program and multiple SIO-7300 devices connected through a TCP/IP network. The SIO-7300 devices operate using a poll/response protocol and must be polled by a master or host device in order to transmit data.

Additional expansion modules can be added to the SIO-7300 to expand the number of doors or gates that can be controlled. The SIO-7300 is always addressed as #1, data sent to addresses 2 - 16 will be routed to the Expansion modules transparently.

The host computer will send Idle packets at a periodic rate polling each device on the network. The Idle packet sets any I/O status as required by the host and tells the SIO-7300 device to generate a response. An SIO-7300 has available Relay outputs, digital outputs and inputs, and can monitor 2 analog inputs of 0-5 volts range.

The device will generate a return packet that contains information about the device status such as Wiegand data that has been read or changes in I/O status. The polling rate will be determined by the application and any network latency in the system.

The SIO-7300 device can be used to generate Wiegand data for applications that require the host computer to interface to or provide data to a conventional access control system. The data sent is provided by the host system as a bit for bit representation of the Wiegand data.

Typical sequence of events

The device is connected and power is applied, the host program is running.

Host computer determines which (if any) I/O needs to be activated on the SIO and formats the status byte in the packet to reflect the I/O status.

Host computer sends the packet

SIO receives the packet and sets/clears I/O as commanded by host computer.

SIO generates return packet:

If no Wiegand data has been received (badges read by reader) then a return packet is sent to host. The return packet will reflect I/O status of the SIO.

If Wiegand data has been received it will be returned in the packet. 26 bit Wiegand data is returned as formatted data, any other bit formats are returned in raw binary for decoding by the host system.

The host must clear the Wiegand read using a clear data command or the Wiegand data will be resent by the SIO on each Idle (Poll) packet.

If the SIO is configured to generate Wiegand data, the host may send Wiegand data to the SIO to generate output. The SIO will generate the Wiegand data at its output port and send a response packet back to the host. The SIO must be setup to send or receive Wiegand data by using the DIP Switch.

SIO-7300 Protocol

Status Byte Reference

Packet contents and commands are Controlled by the Status byte in the Data Structure portion of the packet. The following is a summary of the SIO-7300 Status bytes that are received by the Device and sent back to the Host Computer.

Function/Command	Value (Hexadecimal)
Reset Device	\$14
Idle Packet	\$15
Send Wiegand 26	\$16
Send Wiegand 24-40	\$18
'Send Wiegand 24-248	\$19
Idle Packet Expanded	\$12
Clear Reader	\$09

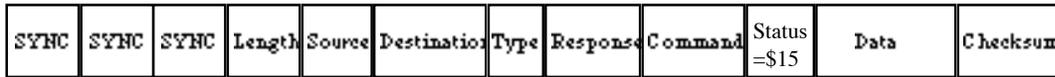
Host packets to Device

Function/Command	Value (Hexadecimal)
Idle Packet Response	\$15
Reader Data Return	\$16

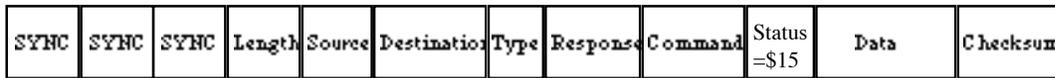
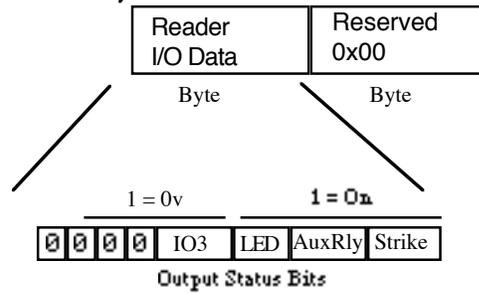
Device packets to Host

SIO-7300 Protocol

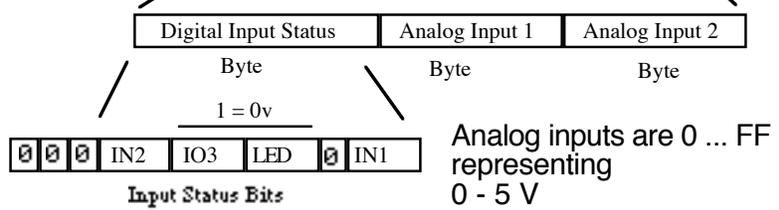
I/O Control Packet Details



Set outputs on Device, Idle packet sent TO Device



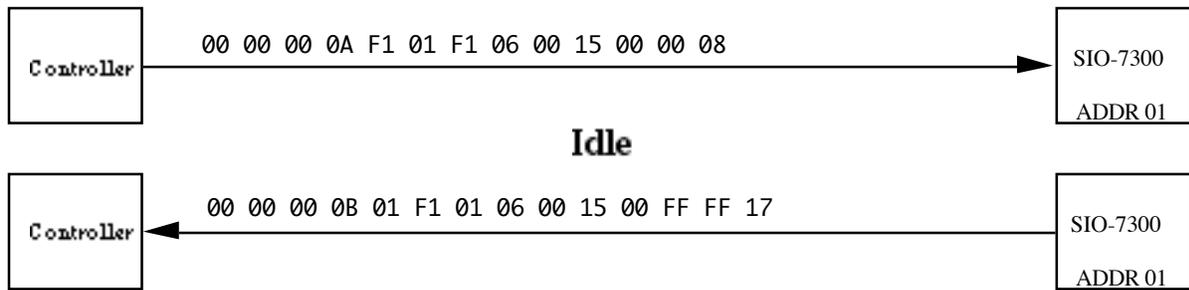
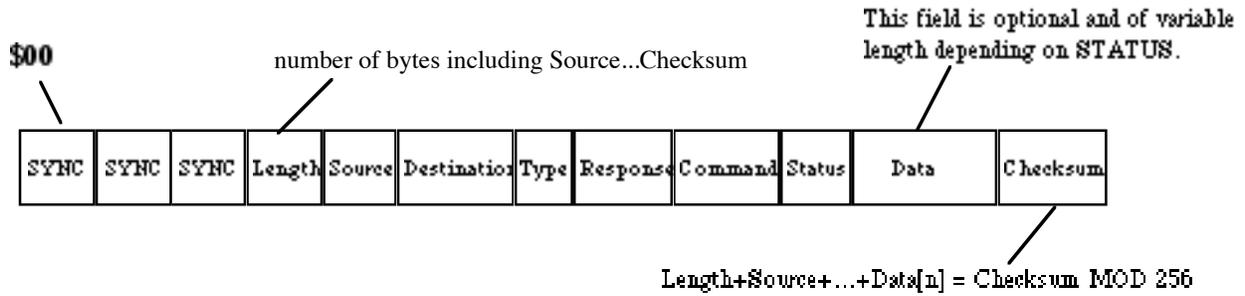
Read inputs, Idle packet returned FROM Device



Inputs are active low
 Input 0v = 1
 Input 5V = 0

SIO-7300 Protocol

Protocol Specifications



Cypress SIO Series - Wiegand Expansion Module Reader/Door "Remote" interface

