The OSM-CPI is an OSDP-Wiegand control panel interface that connects an OSDP reader with a Wiegand panel.

Configuration

The OSM-CPI can be set to Peripheral Device Mode and be configured with any standard OSDP configuration tool. Additionally, there are configuration modes for pairing with a Peripheral Device and resetting to Factory Default parameters.

Device I/O

The OSM-CPI has inputs for controlling the Peripheral Device's LED and buzzer. There is also a tamper output on the OSM-CPI in the event of communication loss with the Peripheral Device.

What is OSDP?

The Open Supervised Device Protocol (OSDP™) is an access control communications standard developed by the Security Industry Association (SIA) to improve interoperability among access control and security products. OSDP v2.1.7 is currently in-process to become a standard recognized by the IEC international standards organization, and OSDP is in constant refinement to retain its industry-leading position.

Why specify or adopt OSDP?

Already in wide use by many leading manufacturers like Cypress, HID Global, Mercury and others, the Security Industry Association encourages broad adoption of this standard and recommends specifying OSDP for any access control installations that require real security and/or will be used in government and other higher security settings. It is particularly valuable for government applications because OSDP meets federal access control requirements like PKI for FICAM.

Source: Security Industry Association
https://www.securityindustry.org/industry-standards/open-supervised-device-protocol

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Cypress OSM-CPI - Product Overview and Specifications

The OSM-CPI is a dedicated OSDP to legacy Wiegand control panel interface. The unit converts credential data from an OSDP reader to Wiegand to direct to the control panel, and converts the controller's signal I/O to an OSDP message to send back to the reader. Credential data is sent over an encrypted OSDP connection.

Specifications		
Physical	Dimensions	2.34 x 1.40 x 0.50 inches (excluding wires), wires are approx. 10 inches long
Environmental	Temperature Range (Storage)	-55°C to +150°C
	Temperature Range (Operating)	-40°C to +80°C
	Humidity	95 percent (non-condensing)
Electrical	Input	Unreg Input 6 to 30 Vdc @ 50mA Typical (200mA max)
Data I/O	Wiegand Output	Maximum 255 bits
	OSDP	Conforms to Open Supervised Device Protocol (OSDP™) v2.2.0 and IEC Committee Draft Version 60839-11-5
Ordering Information	Part Number: OSM-CPI	UPC: 816684002540
Agency Approval	CE Certified: Certified to EN 61000-6-3	

SIA's Open Supervised Device Protocol (OSDP) v2.2.0 communication standard benefits

- **Security:** OSDP Secure Channel halts Wiegand hacking with AES-128 encryption
- **Interoperability:** Mix and match devices to help future-proof systems
- **Functionality:** 2-way communication, access control that withstands the elements, multi-drop installations, 2 wires instead of 10+
- **Communication:** With OSDP's 2-way communication, the panel can query readers to find out capabilities, without physically reconfiguring devices. The panel is alerted if the reader does not answer its query.
- **Savings:** OSDP is scalable. It supports many more devices – and many more types of devices (such as readers, strike sensors and alarms) – than the Wiegand protocol.
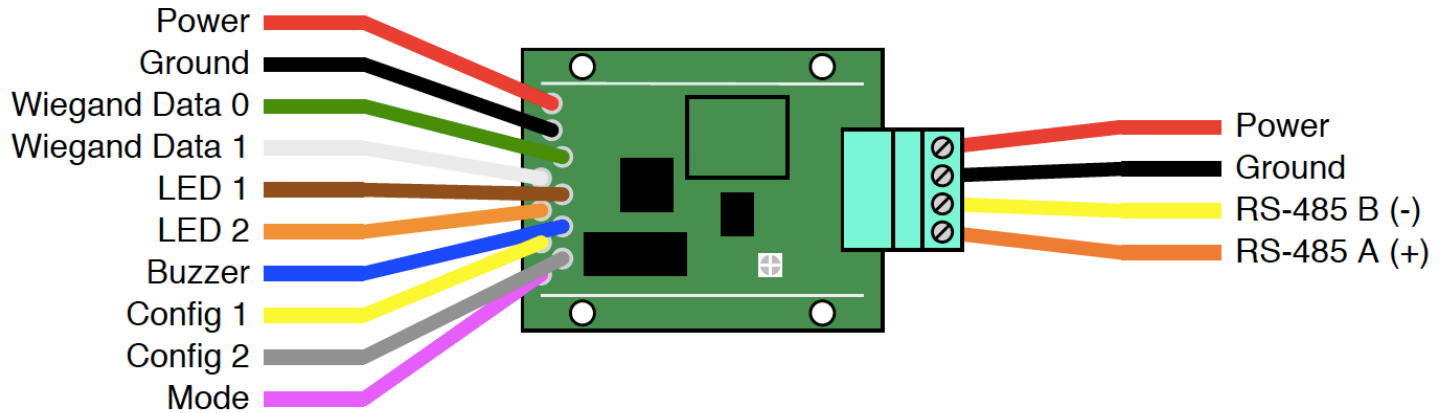
Learn more at OSDP-Connect.com or CypressIntegration.com/OSDP

Table of Contents

Cypress OSM-CPI - Parts, Wiring, Signals and Pinout

The OSM-CPI has a single 4 position terminal block, and a 10 wire flying lead interface. The signals of the terminal blocks and flying leads are named according to the diagram below.

Power
Ground
Wiegand Data 0
Wiegand Data 1
LED 1
LED 2
Buzzer
Config 1
Config 2
Mode

Power
Ground
RS-485 B (-)
RS-485 A (+)

Cypress OSM-CPI - Physical Dimensions and Mounting Hole Locations

10.00"   1.96"

1.80"

0.60"   1.40"

1.20"

1.20"

Ø 0.125" x4
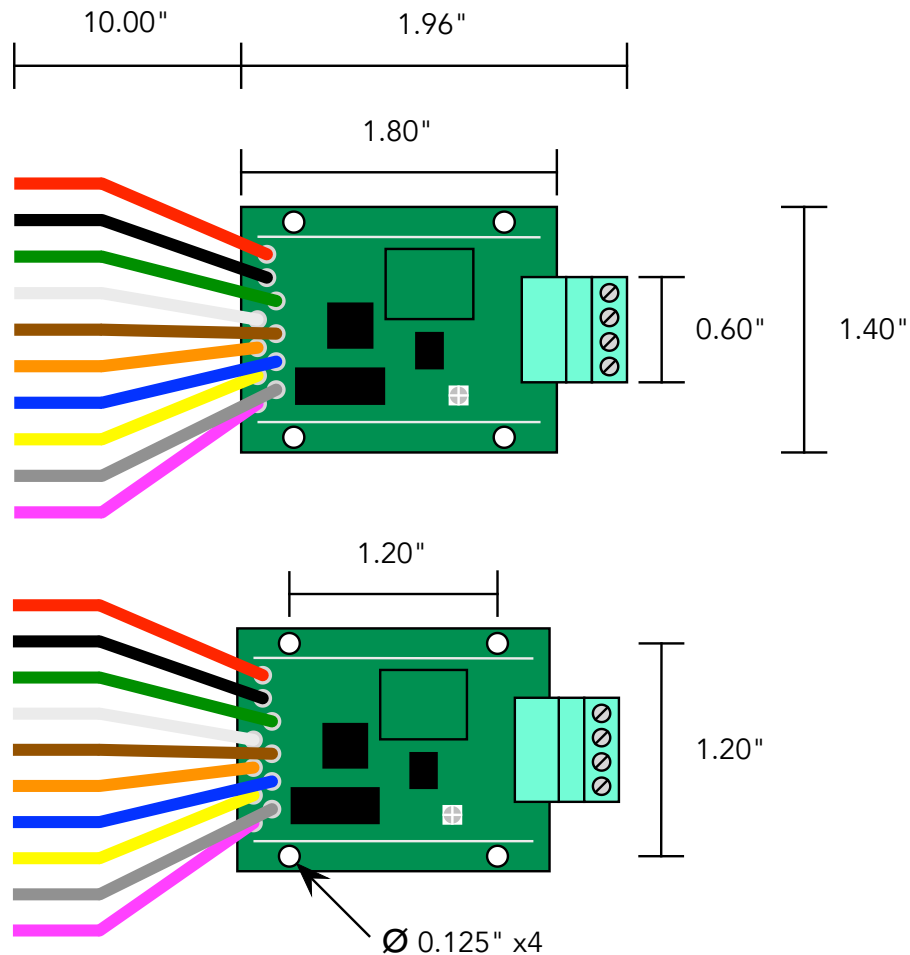
All dimensions are listed in inches

Configuration

The OSM-CPI and compatible attached peripheral devices can be configured in various ways by shorting certain combinations of the flying leads together at power-up.

Pairing

An OSM-CPI and a connected peripheral device can be "paired" together, by shorting the purple Mode lead to ground before power up. The OSM-CPI will initiate a secure channel session using SCBK_D , then issue an osdp_KEYSET command with a new random key. From then on, during normal operation, the OSM-CPI will initiate secure channel sessions using only that key.

PD Mode

An OSM-CPI can be configured to emulate a peripheral device for further configuration, by shorting both the purple Mode lead and grey Config 2 lead to ground before power up.

Communication

When power is first applied, the OSM-CPI will indicate that it is powering up by cycling its diagnostic LED through the sequence: off, red, blue, green, and off (about about a half-second per color). The diagnostic LED will then be solid white for about 2.5 seconds, then solid blue again for about a half-second before polling begins.

After powering up, the OSM-CPI will first send an osdp_POLL command. It will continue to send osdp_POLL commands at approximately 1.2 Hz until it receives an osdp_ACK reply. The OSM-CPI will send an osdp_ID command, and will continue to do so at about 1.2 Hz until it receives an osdp_PDID reply. After the first correct reply has been received, the OSM-CPI will send an osdp_CAP command, expecting an osdp_PDCAP reply. If the OSM-CPI receives an incorrect reply or a reply is never received, the unit will restart the connection sequence from the beginning.

At this point, to initiate a secure channel session with the attached PD the OSM-CPI sends the osdp_CHLNG command, receiving and validating the osdp_CCRYPT reply from the PD, sending the osdp_SCRYPT command, and finally receiving and validating the osdp_RMAC_I reply. If the reply to any of these commands is incorrect or never received, the OSM-CPI will restart the connection sequence from the beginning

After communication initialization, the OSM_CPI will begin sending the osdp_POLL command at about 8 Hz until either the PD's reply is not osdp_ACK, or one of the OSM-CPI's digital inputs change state.

If either of the OSM-CPI's LED inputs change state, it will send an osdp_LED command with one of four payloads depending on the states of the two LED inputs after the change. All configurations send a permanent LED command to reader 0, LED 0, with the color of the LED set according to the following table:

LED1	LED2	payload	Color
high	high	0x00000000000000000000101010000	Off
low	high	0x00000000000000000000101010101	Red
high	low	0x00000000000000000000101010202	Green
low	low	0x00000000000000000000101010303	Amber

Cypress OSM-CPI - Indicators and Operating Modes

If the OSM-CPI's Buzzer input changes from high to low, it will send an osdp_BUZ command with the following payload: 0x0002010000 , setting the state of the PD 's reader0's buzzer to continuous default tone.

If the OSM-CPI's Buzzer line changes from low to high, it will send an osdp_BUZ command with the following payload: 0x0001000000 , setting the state of the PD 's reader 0's buzzer to off.

If the OSM-CPI receives an osdp_RAW reply, it will extract and output the reader data from that message using the wiegand interface.

If the OSM-CPI receives an osdp_KEYPAD reply, it will extract and output the keypad data in 8 bit burst mode, detailed in the following Keypad Table.

Keypad Table

Key	Wiegand Sequence
0	11110000
1	11100001
2	11010010
3	11000011
4	10110100
5	10100101
6	10010110
7	10000111
8	01111000
9	01101001
clear/delete/*	01011010
enter/#	00101101

LED Behavior Table

Meaning	Diagnostic LED Behavior
Power-On Sequence	Cycling though various solid colors ~0.5 s / color
ACU Mode, unsuccessfully attempting to poll PD	One solid color, flashing briefly to another color ~0.8 s / cycle
ACU Mode, successfully polling a PD	One solid color, flashing briefly to another color ~0.1 s / cycle
ACU Mode, unsuccessfully attempting to initiate communication with a PD (possible SCBK mismatch)	One solid color, flashing briefly to another color with inconsistent frequency
ACU Mode, poll response contained reader data	One solid color, flashing briefly to another color, then briefly to a third color
PD Mode, having not received a poll in > 8s	One color, growing gradually brighter, then growing gradually dimmer

No Communication

- Power: the unit needs to be powered with between 6 and 30 Vdc (12V nominal @ 50mA)
- RS-485 lines are properly connected (check RS-485 polarity)
- Unit is set up properly with corresponding Access Control Panel or Reader

Factory Default

An OSM-CPI connected to a compatible peripheral device can both be restored to a factory default state, by shorting the purple flying lead to ground, and shorting the green flying lead to the yellow flying lead before power up. The OSM-CPI will send manufacturer specific commands to the peripheral device that will cause it to be restored to a factory default state, then restore itself to a factory default state.