



# i<sup>4</sup> Series Combination CO/Photoelectric Smoke Detector

*Best-in-class carbon monoxide (CO) and smoke detection technology in a single, system-connected device.*

## Features

- Single device for CO and smoke detection that uses less wiring and fewer junction boxes
- Compatible with a wide range of control panels with the use of the required i<sup>4</sup> Interface Module.
- Sends distinct smoke and CO signals to the panel
- Sounds Temporal 3 for smoke and Temporal 4 for CO
- Built-in 85dB sounder
- LEDs display both CO and smoke status
- External IR LED provides extended range sensitivity testing
- Versatile mounting allows for wall or ceiling placement
- Easily replaceable electrochemical CO cell with 6-year end-of-life timer that signals the panel and chirps to alert the homeowner
- RealTest<sup>®</sup> enables functional test using canned CO
- Drift compensation and smoothing algorithms provide false alarm immunity
- Compatible with SENS-RDR sensitivity tester
- Full agency compliance with UL 268 and UL 2075



**Integration:** The i<sup>4</sup> Series combines CO and smoke detection into one device, requiring less wiring and fewer back boxes than two separate devices. The i<sup>4</sup> Series is compatible with i<sup>3</sup> (2WTA-B or 4WTA-B), so an attractive CO monitoring solution can easily be retrofitted into existing i<sup>3</sup> installations. The i<sup>4</sup> Series CO cell can be easily replaced at end-of-life, resulting in a much lower life cost than having to replace the entire detector.

**Installation ease:** The i<sup>4</sup> Series Combination CO/Smoke detector requires less wiring than two separate CO and smoke devices. Installers can pre-wire its plug-in base, while its large wire-entry port and in-line terminals provide ample room for neatly routing wiring. The base accommodates several back box options and also direct mounts using drywall anchors. The i<sup>4</sup> head plugs into the base with a simple Stop-Drop 'N Lock<sup>™</sup> action. When the detector's CO cell reaches end-of-life, it can be easily replaced in the field without a tool.

**Intelligence:** With the help of the module, the i<sup>4</sup> Series transmits distinct CO and smoke signals, allowing appropriate response from the central monitoring station. Intelligent features, such as drift compensation and smoothing algorithms, reduce nuisance alarms.

**Instant inspection:** The i<sup>4</sup> Series LEDs enable instant inspection of detector status signaling normal/standby condition, alarm condition, maintenance/trouble condition or functional test mode. 2-wire devices allow loop testing via the EZ Walk feature where wiring can easily be verified by checking the LED status at each detector.

Smoke sensitivity can be easily measured using the wireless SENS-RDR device. CO cell functionality can also be quickly validated in the field with canned CO per NFPA 720: 2009 requirements using the detector's RealTest functionality.

## Agency Listings



S268

1653:0227

#### i<sup>4</sup> Series Combination CO/Smoke Detector Specifications

Carbon monoxide (CO)/Smoke detector shall be a System Sensor model number COSMO-2W (2-Wire) / COSMO-4W (4-Wire) listed to UL 268 for Fire Protection Signaling Systems and to UL 2075 for Carbon Monoxide Gas Detection. The detector shall be photoelectric smoke sensing and electrochemical CO sensing and equipped with a sounder capable of Temp 3 and Temp 4 audible signals. The detector shall have nominal sensitivity of 2.5 percent per foot as measured in the UL smoke box. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The detector's base shall be able to mount to a single-gang electrical box or direct (surface mount) to the wall or ceiling. Wiring connections shall be made by means of SEMS screws. The detector shall provide LED indication that blinks to indicate normal standby, smoke alarm, smoke maintenance, CO alarm, CO trouble/end-of-life. When the detector is in CO trouble condition, it shall send a trouble signal to the panel. The detector shall provide a means to test CO gas entry into the CO sensing cell. The detector shall provide this with a test mode that accepts CO gas from a test agent and alarms immediately upon sensing CO entry. The 2-wire model shall include a maintenance signal to indicate the need for maintenance at the alarm control panel and shall provide a loop testing capability to verify the circuit without testing each detector individually. The detector shall have a replaceable CO cell that can be replaced at end of cell life.

#### Electrical Specifications

<b>Operating Voltage (VDC):</b>	<b>Nominal:</b> 12/24; <b>Minimum:</b> 8.5; <b>Maximum:</b> 35
<b>Maximum Standby Current:</b>	50 µA
<b>Maximum Alarm Current:</b>	2-Wire 50mA; 4-Wire 40mA
<b>Audible Signal:</b>	85 dBA
<b>Maximum Reverse Polarity Current:</b>	20 mA
<b>Maximum Start-up Current:</b>	200uA
<b>Maximum Start-up Capacitance:</b>	.10 µF

#### Physical Specifications

<b>Dimension:</b>	<b>Diameter:</b> 5.5"; <b>Depth:</b> 2.5" (includes base)
<b>Weight:</b>	9.2 oz. (261 g)
<b>Operating Temperature Range:</b>	0 – 50° C (32 – 122° F)
<b>Operating Humidity Range:</b>	20-95% RH
<b>Storage Temperature Range:</b>	-10 – 70° C (14 – 158° F)
<b>Sensitivity:</b>	2.5%/ft nominal
<b>Input Terminals:</b>	14 to 22 AWG
<b>Mounting:</b>	<b>Back boxes:</b> 3.5" and 4" Octagonal; Single-gang; 4" Square; 2 x 4", 3.5" and 4" round ceiling. <b>Direct mount</b> to wall or ceiling.

Operation Modes / LED Status	Green	Red	Blue	Sounder
<b>Alarm Smoke:</b>	Off	On	Off	Temp 3
<b>Alarm CO:</b>	Off	Off	On	Temp 4
<b>Alarm Smoke &amp; CO:</b>	Off	On	On	Temp 3
<b>Power Up:</b>	Blink 5 sec.	Blink 5 sec	Blink 5 sec.	Off
<b>Standby:</b>	Blink 5 sec.	Off	Off	Off
<b>RealTest® Mode (CO):</b>	Off	Off	Blink 1 sec.	Off
<b>After CO is Sprayed:</b>	Off	Off	On	Temp 4
<b>Smoke Maintenance:</b>	Off	Blink 5 sec.	Off	Off
<b>CO Trouble:</b>	Off	Off	Blink 5 sec.	Off
<b>End-of-Life:</b>	Off	Off	Blink 5 sec.	Intermittent

# i<sup>4</sup> Series Interface and Reversing Relay Module

*The i<sup>4</sup> Interface Module connects up to 12 detectors to a wide range of control panels using only 2 to 3 zones. It also interconnects the devices, so when one device alarms, they all sound.*



## Features

- Easily integrates up to 12 compatible detectors to a wide range of control panels
- 2-wire module is compatible with COSMO-2W combination detectors and 2WTA-B smoke detectors.
- 4-wire module is compatible with COSMO-4W combination detectors and 4WTA-B smoke detectors.
- Sends distinct smoke and CO signals from i<sup>4</sup> detectors to the panel
- LED indication shows when a detector on the loop requires cleaning or maintenance (2-wire detectors only)
- Initiates the EZ Walk loop test (2-wire detectors only)
- Module interconnects the sounders of all devices connected to it. No RSS-MOD is required. Optional trigger inputs are provided to sound multiple modules.

**Integration:** The i<sup>4</sup> module allows up to 12 i<sup>4</sup> Series or compatible i<sup>3</sup> Series smoke detector models to be integrated into a fire alarm panel using only 2 to 3 zones: a smoke zone, a CO zone and an optional trouble zone. Detectors sound Temp 3 for smoke and Temp 4 for CO events. The i<sup>4</sup> module can be used to alarm all sounders in compatible detectors for smoke and CO events. When one detector detects smoke or CO and goes into alarm, all connected detectors alarm, offering the highest level of warning to the homeowner.

**Installation ease:** The i<sup>4</sup> Series Interface Module mounts to a 4<sup>11/16</sup>-inch square back box for quick and easy installation. Terminal blocks with durable SEMS screws ensure a reliable connection. It also has pre-drilled holes for easy mounting inside a metal enclosure.

**Intelligence:** The i<sup>4</sup> Interface Module allows i<sup>4</sup> and compatible i<sup>3</sup> smoke detector models (2WTA-B and 4WTA-B) to communicate with any listed fire alarm control panel capable of utilizing this module.

**Instant inspection:** The i<sup>4</sup> Interface Module provides LED status indication for the loop, displaying normal operation, loop wiring fault, smoke events, smoke maintenance (2-wire only), CO events, and CO maintenance/end-of-life.

## Agency Listings



S911



1653:0228

#### i<sup>4</sup> Series Interface Module Specifications

The i<sup>4</sup> module shall be a System Sensor i<sup>4</sup> Series model number COSMOD2W (2-wire) or COSMOD4W (4-wire) listed to UL 864 and UL 985 for Control Units for Fire Protection Signaling Systems. The module shall include provisions for mounting to 4-inch square back box. Wiring connections shall be made by means of SEMS screws. The module shall provide 4 LED indicators that blink or illuminate to indicate communication status, maintenance alert, alarm or freeze trouble conditions, and EZ Walk loop test mode (2-wire module only). The module shall allow communication to i<sup>4</sup> Series and i<sup>3</sup> Series detectors with sounders with any UL 864- and UL 985-listed fire alarm control panel capable of utilizing this module. The 2-wire module shall offer provisions for Style D / Class A wiring on IDC loops and shall provide a loop testing capability (EZ Walk) to verify the initiating loop wiring.

Electrical Specifications	Module
<b>Operating Voltage (VDC):</b>	<b>Nom.:</b> 12/24; <b>Min.:</b> 8.5 (2-wire), 10 (4-wire, power limited); <b>Max.:</b> 35 VDC (power limited)
<b>Standby Current:</b>	<b>2-Wire:</b> 61mA (max.), 45mA (12V In), 26mA (24V In); <b>4-Wire:</b> 52mA <sup>1</sup> (max.), 37mA <sup>1</sup> (12V In), 22mA <sup>1</sup> (24V In)
<b>Alarm Current<sup>2</sup>:</b>	<b>2-Wire:</b> 181mA (max.), 121mA (12V In), 64mA (24V In); <b>4-Wire:</b> 78mA <sup>1</sup> (max.), 57mA <sup>1</sup> (12V In), 34mA <sup>1</sup> (24V In)
<b>Maximum Ripple Voltage:</b>	30% of applied power
<b>Maximum Alarm Threshold:</b>	9.2 Volts DC
<b>Alarm and Maintenance Contact Rating:</b>	100 mA @ 36 Volts DC, resistive, 25 ohms
<b>Maximum Loop Wiring Resistance:</b>	2-Wire 50 Ohms; 4-Wire 300 Ohms
<b>Trigger inputs:</b>	Min On Voltage: 1.5V; Max.: Vin

<sup>1</sup> Does not include current draw from attached detectors or EOL relay. <sup>2</sup> Does not include reverse polarity current draw from attached detectors.

Physical Specifications	Module
<b>Dimension:</b>	<b>Height:</b> 6.04"; <b>Width:</b> 6.04"; <b>Depth:</b> 1.00"
<b>Weight:</b>	9.6 oz. 272 (g)
<b>Operating Temperature Range:</b>	0 – 50° C (32 – 122° F)
<b>Operating Humidity Range:</b>	5 - 95% RH
<b>Storage Temperature Range:</b>	-20 – 70° C (-4 – 158° F)
<b>Input Terminals:</b>	14 to 22 AWG
<b>Mounting:</b>	4 <sup>1</sup> / <sub>16</sub> " square back box or inside a metal enclosure

Operation Modes / LED Status	Green	Yellow	Red	Blue
<b>Alarm Smoke:</b>	Blink 1 sec.	Off	On	Off
<b>Alarm CO:</b>	Blink 1 sec.	Off	Off	On
<b>Alarm Smoke &amp; CO:</b>	Blink 1 sec.	Off	On	On
<b>No power / No communication:</b>	Off	Off	Off	Off
<b>Loop wiring fault:</b>	Blink 1 sec.	On	Off	Off
<b>EZ Walk Test Mode (2-wire only):</b>	Blink 1 sec.	Blink 5 sec.	Off	Off
<b>Smoke Maintenance (2-wire only):</b>	Blink 1 sec.	Off	Blink 5 sec.	Off
<b>Smoke Freeze Trouble (i<sup>3</sup> 2WTA-B only):</b>	Blink 1 sec.	Off	Blink 10 sec.	Off
<b>CO Trouble:</b>	Blink 1 sec.	Off	Off	Blink 5 sec.

#### Module Power-Up Sequence / LED Status

Condition	Duration
Maintenance/Freeze trouble LED indication	6 minutes
EZ Walk test available	6 minutes after power up or panel reset

#### Ordering Information

Part No.	Description
COSMO-2W	12/24 volt, 2-wire, system-connected, combination carbon monoxide/smoke detector with RealTest technology
COSMO-4W	12/24 volt, 4-wire, system-connected, combination carbon monoxide/smoke detector with RealTest technology
COSMOD2W	2-wire interface module (required to use with COSMO-2W models)
COSMOD4W	4-wire interface module (required to use with COSMO-4W models)
CO-REPL	Replacement CO cell for COSMO-2W and COSMO-4W models
SENS-RDR	Sensitivity reader
EOLR-1	End-of-line relay (required with 4-wire systems)



3825 Ohio Avenue • St. Charles, IL 60174  
Phone: 800-SENSOR2 • Fax: 630-377-6495  
[www.systemsensor.com](http://www.systemsensor.com)

©2013 System Sensor.  
Product specifications subject to change without notice. Visit [systemsensor.com](http://systemsensor.com) for current product information, including the latest version of this data sheet.  
CDS30302 • 11/13