Anexo 1: Detector de Calor modelo 600, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS

600 SERIES

FIXED TEMPERATURE
AND RATE OF RISE
HEAT DETECTORS

DESCRIPTION

The 600 series heat detectors provide reliable dual-action detection in an attractive low-profile package that protrudes only 1 3/8" from the ceiling surface. Smooth, pleasing contours and an all white finish blend in with most ceiling designs. The rate of rise feature detects fires that grow rapidly in intensity by quickly responding when the rate of temperature rise exceeds 15° F (9° C) per minute.

The fixed temperature element operates independently of the rate of rise feature and uses a fusible alloy. When activated, the external heat collector drops away to provide quick visual confirmation that the element has operated.

A patented reversible mounting plate is supplied with each detector. In one position it attaches to a 3 1/4 or 4-inch octagon box or a plaster ring. In the other position, it can be used for open wiring without junction boxes. The different models are marked with unique paint schemes on the heat collector.

The detector is 4 9/16" diameter by 1 3/8" high flush mounted, and 1 9/16" high surface mounted.

APPROVALS

U.L. (Std 521)	File S2332
F.M.	Approved
C.S.F.M.	7270-0061:005
NYC	BS&A 6-87-SA

FEATURES

- **Attractive Low Silhouette Design**
- **Easy to Install**
- **Dual action - uses Two, Independent Detection Methods**
- **2-circuit Models Available**

APPLICATION INFORMATION

Model	Description	Max. spacing allowed	Marking Code
601, 621	Comb. FT +ROR, 135° F (57° C)	50 x 50 ft (UL)	30 x 30 ft (FM) None
602, 622	Comb. FT +ROR, 200° F (93° C)	50 x 50 ft (UL)	30 x 30 ft (FM) Gray ring
603, 623	Fixed temp. only, 135° F (57° C)	25 x 25 ft (UL)	20 x 20 ft (FM) Gray spot
601R	Fixed temp. only, 140° F (60° C)	25 x 25 ft (UL)	30 x 30 ft (FM) Russian
604, 624	Fixed temp. only, 200° F (93° C)	15 x 15 ft (UL)	15 x 15 ft (FM) Gray spot &ring

ORDERING INFORMATION AND SPECIFICATIONS

Part No.	Model	Description	Contact Type
115-1112C	601	Comb. 135° FT + ROR	SPST
115-1122C	621	Comb. 135° FT + ROR	DPST
115-1412C	602	Comb. 200° FT + ROR	SPST
115-1422C	622	Comb. 200° FT + ROR	DPST
115-90004	601R	FT 140° only	SPST
115-1114C	603	FT 135° only	SPST
115-1124C	623	FT 135° only	DPST
115-1414C	604	FT 200° only	SPST
115-1424C	624	FT 200° only	DPST

All contacts rated 1.0 ampere @ 6-28 VDC (resistive)

301 2nd Ave Waltham, MA 02451-1133 USA TEL: (781) 487-0088 FAX: (781) 370-4132

Anexo 2: Detector de Calor Termovelocimétrico modelo ATD-L2, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS
Building Intelligent Networks

ATD-L2

www.firecontrolinstruments.com

ANALOG ADDRESSABLE THERMAL DETECTOR

GENERAL

The FCI Series intelligent plug-in thermal detectors with integral communication provide features that surpass conventional detectors. Detector sensitivity can be programmed in the control panel software. Sensitivity is continuously monitored and reported to the panel. Point ID capability allows each detector's address to be set with decade address switches, providing exact detector locations for selective maintenance when chamber contamination reaches an unacceptable level. ATD Series thermal detectors use an innovative thermistor sensing circuit to produce 135°F/57°C fixed-temperature (ATD-L2) and rate-of-rise thermal detection (ATD-RL2) in a low-profile package. The ATD-HL2 provides fixed high-temperature detection at 190°F/88°C. These thermal detectors provide cost effective, intelligent property protection in a variety of applications.

INSTALLATION

ATD-L2 plug-in detectors use a separate base to simplify installation, service, and maintenance. A special tool allows maintenance personnel to plug in and remove detectors without using a ladder.

Mount base on a box which is at least 1.5" (3.81 cm) deep. Suitable mounting base boxes include:

- 4.0" (10.16 cm) square box.
- 3.5" (8.89 cm) or 4.0" (10.16 cm) octagonal box.
- Single-gang box *(**except** relay or isolator base).*
- ***With B501BH base,*** use a 4.0" (10.16 cm) square box.
- ***With B224RB or B224BI base,*** use a 3.5" (8.89 cm) octagonal box, or a 4.0" (10.16 cm) octagonal or square box.

NOTE: *Because of the inherent supervision provided by the SLC loop,* ***end-of-line resistors*** *are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class "B") wiring.*

FEATURES

- ***Sleek, low-profile, stylish design.***
- ***State-of-the-art thermistor technology for fast response.***
- ***Rate-of-rise model (ATD-RL2), 15°F (8.3°C) per minute.***
- ***Factory preset at 135°F (57°C); high-temperature model ATD-HL2 at 190°F (88°C).***
- ***Addressable by device.***
- ***Rotary 01 – 99 address switches***
- ***Two-wire loop connection.***
- ***Visible LEDs "blink" every time the unit is polled.***
- ***360°-field viewing angle of the visual alarm indicators (Two red LEDs). LEDs blink in Normal condition and turn on steady in Alarm.***
- ***Integral communications and built-in device-type identification.***
- ***Remote test feature from the panel.***
- ***Built-in functional test switch activated by external magnet.***
- ***Low standby current.***
- ***Listed to UL 521.***
- ***Built-in tamper-resistant feature.***
- ***Designed for direct-surface or electrical-box mounting.***
- ***Sealed against back pressure.***
- ***Plugs into separate base for ease of installation and maintenance. Separate base allows interchange of photoelectric, ionization and thermal sensors.***
- ***SEMS screws for wiring of the separate base.***
- ***94-5V plastic flammability rating.***
- ***Remote LED output connection to optional RA400Z remote LED annunciator.***
- ***Optional sounder, relay, and isolator bases.***

ATD-L2

FM APPROVED

MEA

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A Honeywell Company

FIRE CONTROL INSTRUMENTS
Building Intelligent Networks

ATD-L2

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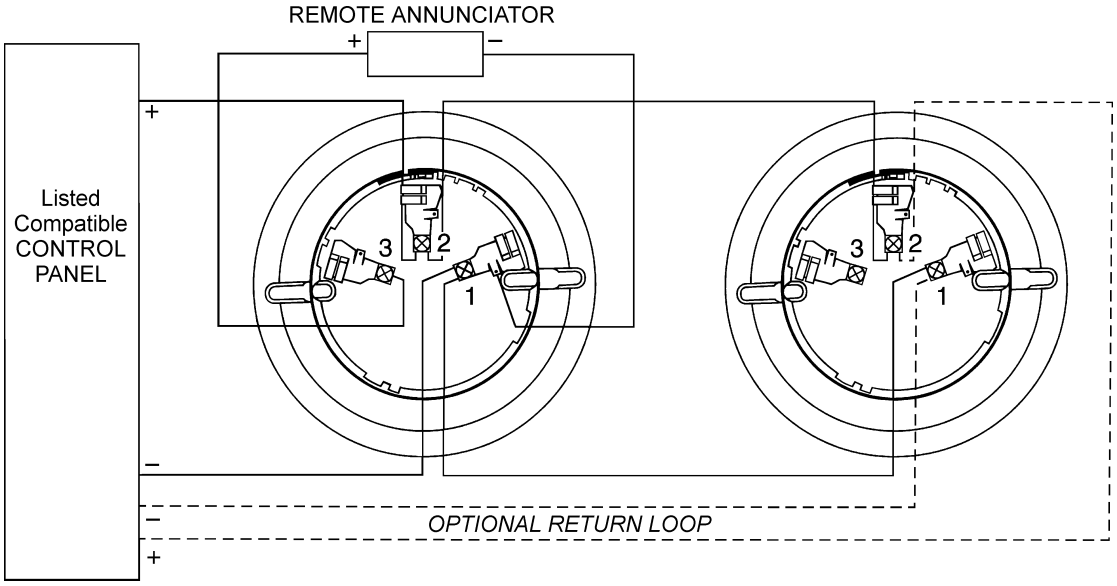


SPECIFICATIONS

Size: 2.1" (5.1 cm) high x 4.1" (10.4 cm) diameter installed in B501 base, 6.1" (15.5 cm) diameter installed in ADB-FL base.
Shipping weight: 4.8 oz. (137 g).
Operating temperature range: ***ATD-L2, ATD-RL2:*** –20°C to 38°C (–4°F to 100°F); ***ATD-HL2:*** –20°C to 66°C (–4°F to 150°F).
Detector spacing: ***UL approved*** for 50 ft. (15.24 m) center to center. ***FM approved*** for 25 x 25 ft. (7.62 x 7.62 m) spacing.
Relative humidity: 10% – 93% noncondensing.
Thermal ratings: fixed-temperature setpoint 135°F (57°C), rate-of-rise detection 15°F (8.3°C) per minute, high temperature heat 190°F (88°C).

ELECTRICAL SPECIFICATIONS

Voltage range: 15 - 32 volts DC peak.
Standby current (max. avg.): 200 µA @ 24VDC (without communication); 300 µA @ 24VDC (one communication every 5 seconds with LED enabled).
LED current (max.): 6.5 mA @ 24VDC ("ON"). **Voltage range:** 15 - 32 volts DC peak.

BASES AVAILABLE

ADB-FL: 6.1" (15.5 cm) diameter.
B501: 4.1" (10.4 cm) diameter.
B501BH or B501BHT: Sounder base assembly (B501BHT produces a Temporal Pattern). Includes B501 base.
B224RB Relay Base: ***Screw terminals:*** up to 14AWG (2.0 mm²). ***Relay type:*** Form-C. ***Rating:*** 2.0A @ 30VDC resistive; 0.3A @ 110VDC inductive; 1.0A @ 30VDC inductive. ***Dimensions:*** 6.2" (15.748 cm) x 1.2" (3.048 cm).
B524BI Isolator Base: ***Dimensions:*** 6.2" (15.748 cm) x 1.2" (3.048 cm). ***Maximum:*** 25 devices between isolator bases.

FIRE CONTROL INSTRUMENTS
16 Southwest Park, Westwood, MA 02090 USA • Tel: 781-471-3000 • Fax: 781-471-3099 • www.firecontrolinstruments.com
A Honeywell Company

Anexo 3: Cámara de Detección Iónica de Humo modelo NIS-09C, marca Nemoto

NIS-09C

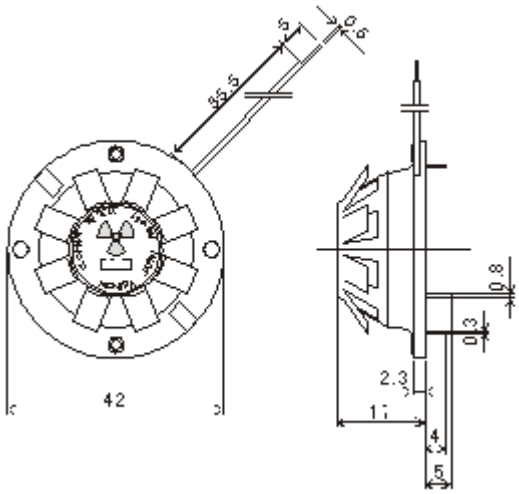
NIS-09C is a ionization type smoke sensor containing a tiny amount of 241Am radioisotope, however, the sensor itself is fully covered by metallic housing so that no radiation leaks outside of the sensor.

* Ratings

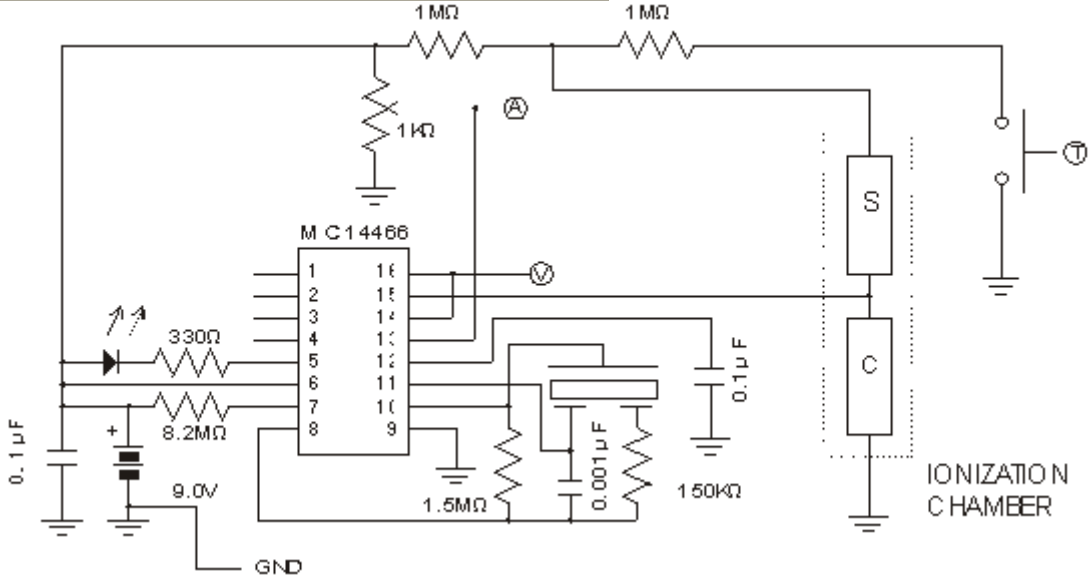
Items	Specifications
Supply voltage	Less than DC7~12V
Current	27±3pA
Radiation source	Americium-241,33.3KBq
Ambient temp.	0-50°C
Ambient humidity	Less than 95%RH

* Characteristics

Items	Specifications
Output in clean air	5.6±0.4V
Smoke sensitivity 2%/foot Cotton thread	0.6±0.1V



Structure



Recommended circuit

Inquiry

For further information, please contact :
International Sales Division, Nemoto & Co., Ltd., Tokyo, Japan

- Phone :+81-3-3392-7181
- FAX :+81-3-3392-7188
- E-mail : mailto:ntsales@nemoto.jp or sensor@nemoto.jp

Anexo 4: Circuito integrado modelo MC14578P, marca Motorola

Micro-Power Comparator plus Voltage Follower

CMOS

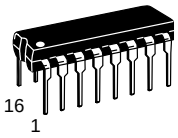
MC14578

The MC14578 is an analog building block consisting of a very–high input impedance comparator. The voltage follower allows monitoring the noninverting input of the comparator without loading.

Four enhancement–mode MOSFETs are also included on chip. These FETs can be externally configured as open–drain or totem–pole outputs. The drains have on–chip static–protecting diodes. Therefore, the output voltage must be maintained between V_{SS} and V_{DD}.

The chip requires one external component. A 3.9 MΩ ±10% resistor must be connected from the R_{bias} pin to V_{DD}.

- Applications:
  - Pulse Shapers
  - Threshold Detectors
  - Low–Battery Detectors
  - Line–Powered Smoke Detectors
  - Liquid/Moisture Sensors
  - CO Detector and Micro Interface
- Operating Voltage Range: 3.5 to 14 V
- Operating Temperature Range: −30° to 70°C
- Input Current (IN + Pin): ±1 pA @ 25°C (DIP Only)
- Quiescent Current: 10 μA @ 25°C
- Electrostatic Discharge (ESD) Protection Circuitry on All Pins
- DIP Complies with the UL217 and UL268 Specifications

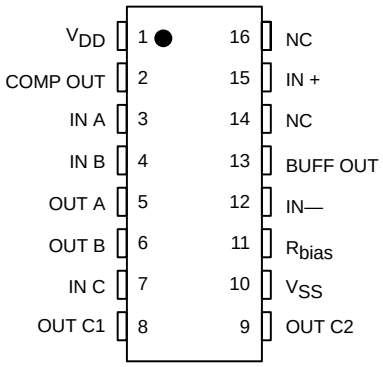


P SUFFIX
PLASTIC DIP
CASE 648–08

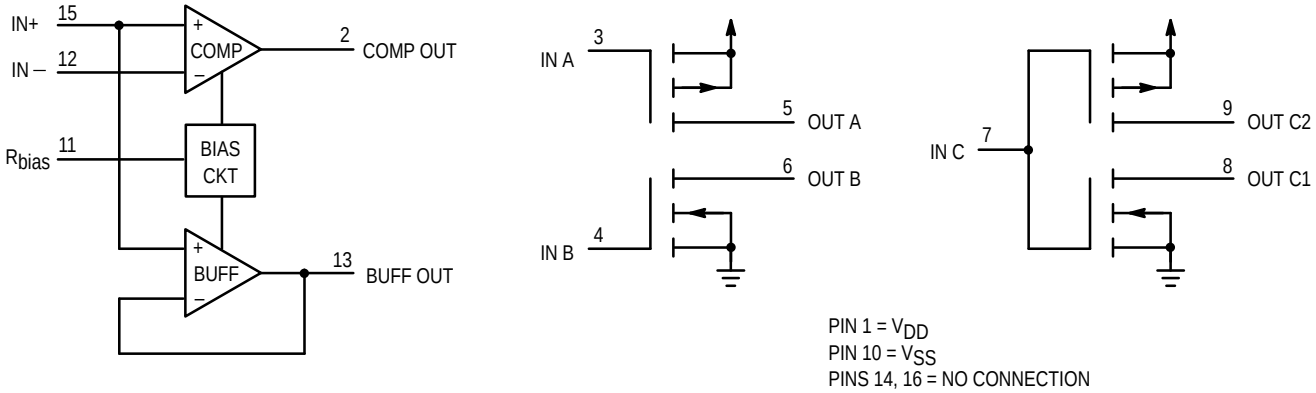
ORDERING INFORMATION

MC14578P	**PLASTIC DIP**

PIN ASSIGNMENT



LOGIC DETAIL



PIN 1 = V_{DD}
PIN 10 = V_{SS}
PINS 14, 16 = NO CONNECTION

MAXIMUM RATINGS* (Voltages Referenced to V_{SS})

Symbol	Parameter	Value	Unit
V_{DD}	DC Supply Voltage	– 0.5 to +14	V
V_{in}	DC Input Voltage	– 0.5 to V_{DD} +0.5	V
V_{out}	DC Output Voltage	– 0.5 to V_{DD} +0.5	V
I_{in}	DC Input Current, Except IN +	± 10	mA
I_{in}	DC Input Current, IN +	± 1.0	mA
I_{out}	DC Output Current, per Pin	± 25	mA
I_{DD}	DC Supply Current, V_{DD} and V_{SS} Pins	± 50	mA
P_D	Power Dissipation, per Package	500	mW
T_{stg}	Storage Temperature	– 65 to +150	°C
T_L	Lead Temperature (10–Second Soldering)	260	°C

*Maximum Ratings are those values beyond which damage to the device may occur.

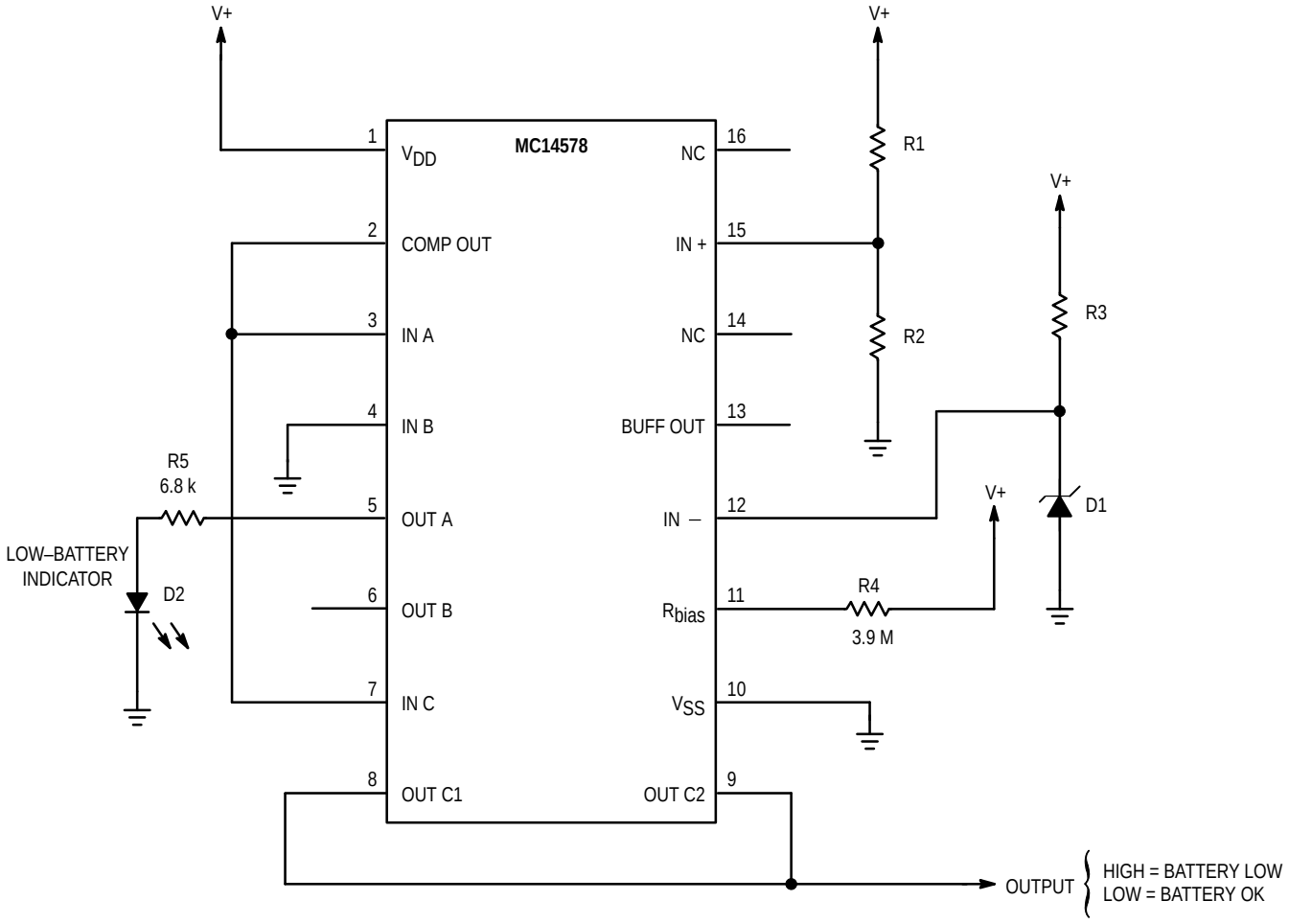
This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high–impedance circuit. For proper operation, V_{in} and V_{out} should be constrained to the range $V_{SS} \le (V_{in}$ or $V_{out}) \le V_{DD}$.

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either V_{SS} or V_{DD}). Unused outputs must be left open.

ELECTRICAL CHARACTERISTICS (Voltages Referenced to V_{SS}, R_{bias} = 3.9 MΩ to V_{DD}, T_A = –30° to 70°C Unless Otherwise Indicated)

Symbol	Parameter	Test Condition	V_{DD} V	Guaranteed Limit	Unit
V_{DD}	Power Supply Voltage Range		—	3.5 to 14.0	V
V_{IL}	Maximum Low–Level Input Voltage, MOSFETs Wired as Inverters; i.e., IN A tied to IN B, OUT A to OUT B, OUT C1 to OUT C2.	V_{out} = 9.0 V, $\|I_{out}\| < 1$ μA	10.0	2.0	V
V_{IH}	Minimum High–Level Input Voltage, MOSFETs Wired as Inverters; i.e., IN A tied to IN B, OUT A to OUT B, OUT C1 to OUT C2.	V_{out} = 1.0 V, $\|I_{out}\| < 1$ μA	10.0	8.0	V
V_{IO}	Comparator Input Offset Voltage	T_A = 25°C, Over Common Mode Range	10.0	±50	mV
		T_A = 0° to 50°C, Over Common Mode Range	3.5 to 14.0	±75	
V_{CM}	Comparator Common Mode Voltage Range		3.5 to 14.0	0.7 to V_{DD} −1.5	V
V_{OL}	Maximum Low–Level Comparator Output Voltage	IN +: $V_{in} = V_{SS}$, IN −: $V_{in} = V_{DD}$, I_{out} = 30 μA	10.0	0.5	V
V_{OH}	Minimum High–Level Comparator Output Voltage	IN +: $V_{in} = V_{DD}$, IN −: $V_{in} = V_{SS}$, I_{out} = −30 μA	10.0	9.5	V
V_{OO}	Buffer Amp Output Offset Voltage	R_{load} = 10 MΩ to V_{DD} or V_{SS}, Over Common Mode Range	—	±100	mV
V_{OL}	Maximum Low–Level Output Voltage, MOSFETs Wired as Inverters; i.e., IN A tied to IN B, OUT A to OUT B, OUT C1 to OUT C2.	OUT C1, OUT C2: I_{out} = 1.1 mA	10.0	0.5	V
		OUT A, OUT B: I_{out} = 270 μA	10.0	0.5	V
V_{OH}	Minimum High–Level Output Voltage, MOSFETs Wired as Inverters; i.e., IN A tied to IN B, OUT A to OUT B, OUT C1 to OUT C2.	OUT C1, OUT C2: I_{out} = −1.1 mA	10.0	9.5	V
		OUT A, OUT B: I_{out} = 270 μA	10.0	9.5	V
I_{in}	Maximum Input Leakage Current — IN + (DIP Only)	T_A = 25°C, 40% R.H., $V_{in} = V_{SS}$ or V_{DD}	10.0	±1.0	pA
	IN + (DIP Only)	T_A = 50°C, $V_{in} = V_{SS}$ or V_{DD}	10.0	±6.0	
	IN + (SOG), IN A, IN B, IN C, IN −	$V_{in} = V_{SS}$ or V_{DD}	10.0	±40	nA
I_{OZ}	Maximum Off–State MOSFET Leakage Current	IN A, IN C: $V_{in} = V_{DD}$, OUT A, OUT C2: $V_{out} = V_{SS}$ or V_{DD}	10.0	±100	nA
		IN B, IN C: $V_{in} = V_{SS}$, OUT B, OUT C1: $V_{out} = V_{SS}$ or V_{DD}	10.0	±100	
I_{DD}	Maximum Quiescent Current	T_A = 25°C IN A, IN B, IN C: $V_{in} = V_{SS}$ or V_{DD}, $\|V_{IN+} - V_{IN-}\|$ = 100 mV, I_{out} = 0 μA	10.0	10	μA
C_{in}	Maximum Input Capacitance — IN +	f = 1 kHz	—	5.0	pF
	Other Inputs		—	15	

APPLICATIONS INFORMATION



NOTE: IN + and IN – have very high input impedance. Interconnect to these pins should be as short as possible.

Figure 1. Low–Battery Detector

EXAMPLE VALUES

Near the switchpoint, the comparator output in the circuit of Figure 1 may chatter or oscillate. This oscillation appears on the signal labelled OUTPUT. In some cases, the oscillation in the transition region will not cause problems. For example, an MPU reading OUTPUT could sample the signal two or three times to ensure a solid level is attained. But, in a low battery detector, this probably is not necessary.

To eliminate comparator chatter, hysteresis can be added as shown in Figure 2. The circuit of Figure 2 requires slightly more operating current than the Figure 1 arrangement.

R1	R2	R3	Nominal Trip Point
470 kΩ	1.3 MΩ	20 kΩ	4.08 V
820 kΩ	1.2 MΩ	39 kΩ	5.05 V
1.2 MΩ	1.2 MΩ	62 kΩ	6.00 V

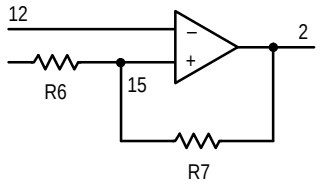
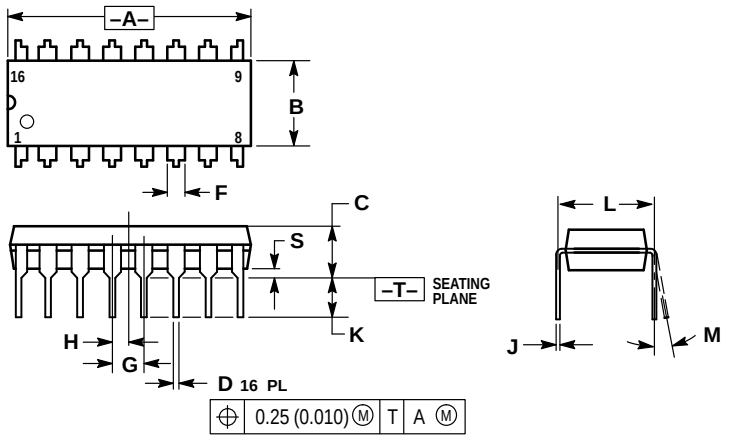


Figure 2. Adding Hysteresis

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0 °	10 °	0 °	10 °
S	0.020	0.040	0.51	1.01

STYLE 1:

PIN 1.	CATHODE
2.	CATHODE
3.	CATHODE
4.	CATHODE
5.	CATHODE
6.	CATHODE
7.	CATHODE
8.	CATHODE
9.	ANODE
10.	ANODE
11.	ANODE
12.	ANODE
13.	ANODE
14.	ANODE
15.	ANODE
16.	ANODE

STYLE 2:

PIN 1.	COMMON DRAIN
2.	COMMON DRAIN
3.	COMMON DRAIN
4.	COMMON DRAIN
5.	COMMON DRAIN
6.	COMMON DRAIN
7.	COMMON DRAIN
8.	COMMON DRAIN
9.	GATE
10.	SOURCE
11.	GATE
12.	SOURCE
13.	GATE
14.	SOURCE
15.	GATE
16.	SOURCE

CASE 648–08
ISSUE R

NOTES

NOTES

How to reach us:

USA / EUROPE / Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1–303–675–2140 or 1–800–441–2447

JAPAN: Motorola Japan Ltd.; SPD, Strategic Planning Office, 141,
4–32–1 Nishi–Gotanda, Shinagawa–ku, Tokyo, Japan. 81–3–5487–8488

Customer Focus Center: 1–800–521–6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1–602–244–6609
Motorola Fax Back System – US & Canada ONLY 1–800–774–1848
– http://sps.motorola.com/mfax/

ASIA / PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,
2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.
852–26668334

HOME PAGE: http://motorola.com/sps/

Anexo 5: Detector Iónico de Humo modelo ASD-IL2, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS
Building Intelligent Networks

ASD-IL2

www.firecontrolinstruments.com

ANALOG ADDRESSABLE IONIZATION SMOKE DETECTOR

GENERAL

The Fire Control Instruments ASD Series intelligent plug-in smoke detectors with integral communication provide features that surpass conventional detectors. Detector sensitivity can be programmed in the control panel software. Sensitivity is continuously monitored and reported to the panel. Point ID capability allows each detector's address to be set with decade address switches, providing exact detector locations for selective maintenance when chamber contamination reaches an unacceptable level. The ASD-IL2 ionization detector incorporates a unique single-source, dual-chamber design to respond quickly and dependably to a broad range of fires.

INSTALLATION

ASD-IL2 plug-in detectors use a separate base to simplify installation, service, and maintenance. A special tool allows maintenance personnel to plug in and remove detectors without using a ladder.

Mount base on a box which is at least 1.5" (3.81 cm) deep. Suitable mounting base boxes include:

- 4.0" (10.16 cm) square box.
- 3.5" (8.89 cm) or 4.0" (10.16 cm) octagonal box.
- Single-gang box *(**except** relay or isolator base).*
- ***With B501BH base,*** use a 4.0" (10.16 cm) square box.
- ***With B224RB or B224BI base,*** use a 3.5" (8.89 cm) octagonal box, or a 4.0" (10.16 cm) octagonal or square box.

NOTE: *Because of the inherent supervision provided by the SLC loop,* ***end-of-line resistors*** *are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class "B") wiring.*

FEATURES

- ***Sleek, low-profile design.***
- ***Addressable-analog communication.***
- ***Stable communication technique with noise immunity.***
- ***Low standby current.***
- ***Rotary 01 to 99 address switches***
- ***Optional remote, single-gang LED accessory (RA400Z).***
- ***Dual LED design provides 360° viewing angle.***
- ***Visible red LEDs blink every time the detector is polled, and illuminate steady on alarm.***
- ***Built-in functional test switch activated by external magnet.***
- ***Optional relay, isolator, or sounder bases.***
- ***Listed to UL 268.***

ASD-IL2

DETECTOR SPACING:

FCI recommends spacing detectors in compliance with NFPA 72. In low airflow applications with smooth ceilings, space detectors 30 feet (9.144 m). For specific information regarding detector spacing, placement, and special applications, refer to NFPA 72. *System Smoke Detector Application Guide,* document A05-1003, is available at **systemsensor.com**.

FM APPROVED

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Building Intelligent Networks

ASD-IL2

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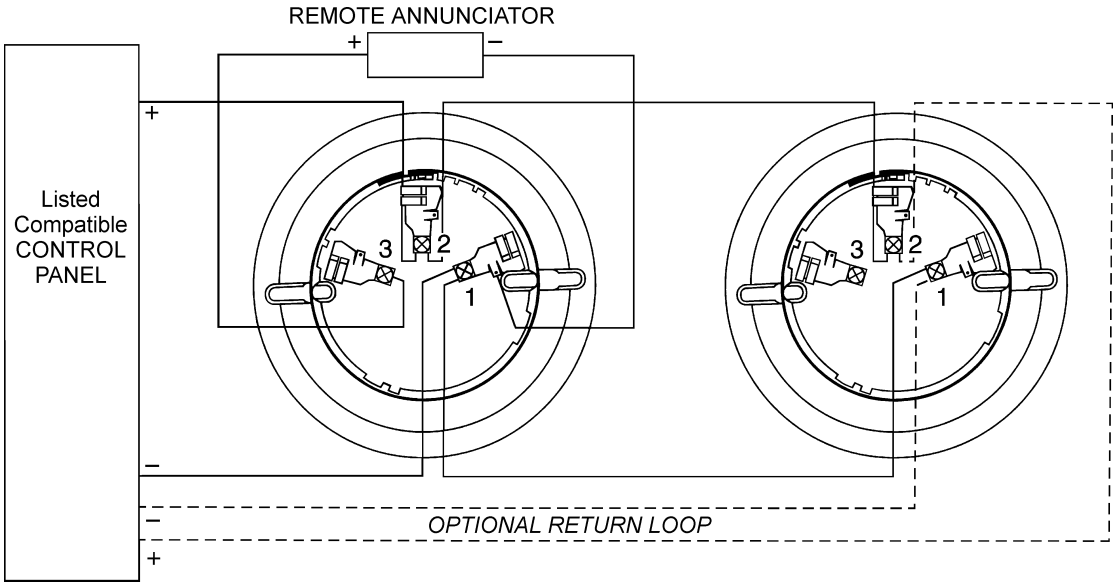

SPECIFICATIONS

Size: 2.1" (5.1 cm) high x 4.1" (10.4 cm) diameter installed in B501 base, 6.1" (15.5 cm) diameter installed in ADB-FL base.
Shipping weight: 5.4 oz. (154 g).
Operating temperature: 0°C to 49°C (32°F to 120°F).
UL-Listed velocity range: ***ION:*** 0 – 1200 ft./min. (365.76 m/min.).
Relative humidity: 10% – 93% noncondensing.

ELECTRICAL SPECIFICATIONS

Voltage range: 15 - 32 volts DC peak.
Standby current (max. avg.): 200 µA @ 24VDC (without communication); 300 µA @ 24VDC (one communication every 5 seconds with LED enabled).
LED current (max.): 6.5 mA @ 24VDC ("ON").

BASES AVAILABLE

ADB-FL: 6.1" (15.5 cm) diameter.
B501: 4.1" (10.4 cm) diameter.
B501BH or B501BHT: Sounder base assembly (B501BHT produces a Temporal Pattern). Includes B501 base.
B224RB Relay Base: ***Screw terminals:*** up to 14AWG (2.0 mm²). ***Relay type:*** Form-C. ***Rating:*** 2.0A @ 30VDC resistive; 0.3A @ 110VDC inductive; 1.0A @ 30VDC inductive. ***Dimensions:*** 6.2" (15.748 cm) x 1.2" (3.048 cm).
B524BI Isolator Base: ***Dimensions:*** 6.2" (15.748 cm) x 1.2" (3.048 cm). ***Maximum:*** 25 devices between isolator bases.

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Anexo 6: Detector Optico de Humo modelo ASD-PL2, marca FCI – Honeywell

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ASD-PL2

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ANALOG ADDRESSABLE PHOTOELECTRONIC SMOKE SENSOR

GENERAL

The FCI Series intelligent plug-in smoke detectors with integral communication provide features that surpass conventional detectors. Detector sensitivity can be programmed in the control panel software. Sensitivity is continuously monitored and reported to the panel. Point ID capability allows each detector's address to be set with decade address switches, providing exact detector locations for selective maintenance when chamber contamination reaches an unacceptable level. The ASD-PL2 photoelectric detector's unique optical sensing chamber is engineered to sense smoke produced by a wide range of combustion sources. Dual electronic thermistors add 135°F (57°C) fixed-temperature thermal sensing on the ASD-PLT2.

INSTALLATION

ASD-PL2 plug-in detectors use a separate base to simplify installation, service, and maintenance. A special tool allows maintenance personnel to plug in and remove detectors without using a ladder.

Mount base on a box which is at least 1.5" (3.81 cm) deep. Suitable mounting base boxes include:

- 4.0" (10.16 cm) square box.
- 3.5" (8.89 cm) or 4.0" (10.16 cm) octagonal box.
- Single-gang box *(**except** relay or isolator base).*
- ***With B501BH base,*** use a 4.0" (10.16 cm) square box.
- ***With B224RB or B224BI base,*** use a 3.5" (8.89 cm) octagonal box, or a 4.0" (10.16 cm) octagonal or square box.

NOTE: *Because of the inherent supervision provided by the SLC loop,* ***end-of-line resistors*** *are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class "B") wiring.*

FEATURES

- ***Sleek, low-profile design.***
- ***Addressable-analog communication.***
- ***Stable communication technique with noise immunity.***
- ***Low standby current.***
- ***Rotary 01 to 99 address switches***
- ***Optional remote, single-gang LED accessory (RA400Z).***
- ***Dual LED design provides 360° viewing angle.***
- ***Visible red LEDs blink every time the detector is polled, and illuminate steady on alarm.***
- ***Built-in functional test switch activated by external magnet.***
- ***Optional relay, isolator, or sounder bases.***
- ***Listed to UL 268.***

ASD-PL2

ASD-PTL2

DETECTOR SPACING:

FCI recommends spacing detectors in compliance with NFPA 72. In low airflow applications with smooth ceilings, space detectors 30 feet (9.144 m). For specific information regarding detector spacing, placement, and special applications, refer to NFPA 72. *System Smoke Detector Application Guide,* document A05-1003, is available at **systemsensor.com**.

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ASD-PL2

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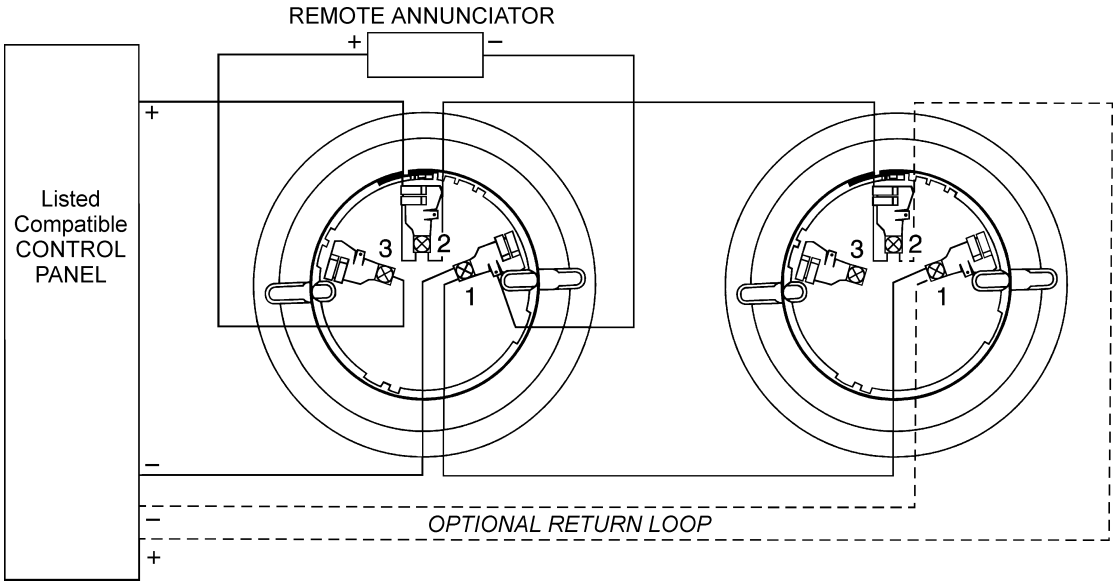

SPECIFICATIONS

Size: 2.1" (5.1 cm) high x 4.1" (10.4 cm) diameter installed in B501 base, 6.1" (15.5 cm) diameter installed in ADB-FL base.
Shipping weight: 5.2 oz. (147 g).
Operating temperature: ASD-PL2- 0°C to 49°C (32°F to 120°F); **ASD-PTL2-** 0°C to 38°C (32°F to 100°F).
Low-temperature signal for ASD-PTL2 at 45°F/7.22°C (+/– 10°F/5.54°C).
UL-Listed velocity range: 0 – 4000 ft./min. (1219.2 m/min.), suitable for installation in ducts.
Relative humidity: 10% – 93% noncondensing.
Thermal ratings: fixed-temperature setpoint 135°F (57°C).

ELECTRICAL SPECIFICATIONS

Voltage range: 15 - 32 volts DC peak.
Standby current (max. avg.): 250 µA @ 24VDC (without communication); 360 µA @ 24VDC (one communication every 5 seconds with LED enabled).
LED current (max.): 6.5 mA @ 24VDC ("ON").

BASES AVAILABLE

ADB-FL: 6.1" (15.5 cm) diameter.
B501: 4.1" (10.4 cm) diameter.
B501BH or B501BHT: Sounder base assembly (B501BHT produces a Temporal Pattern). Includes B501 base.
B224RB Relay Base: ***Screw terminals:*** up to 14AWG (2.0 mm²). ***Relay type:*** Form-C. ***Rating:*** 2.0A @ 30VDC resistive; 0.3A @ 110VDC inductive; 1.0A @ 30VDC inductive. ***Dimensions:*** 6.2" (15.748 cm) x 1.2" (3.048 cm).
B524BI Isolator Base: ***Dimensions:*** 6.2" (15.748 cm) x 1.2" (3.048 cm). ***Maximum:*** 25 devices between isolator bases.

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Anexo 7: Detector de Humo para conductos modelo DH-60, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS

DH-60 SERIES

FOUR-WIRE DUCT
SMOKE DETECTOR HOUSING

DESCRIPTION

The FCI Model DH-60 Series air duct detector housing is intended for use on air handling ducts to sample air flow in the duct and allow for the detection of smoke and combustion particles. The housing is available in a 4-wire detector configuration, and accepts either the CPD-7051D ionization detector or the PSD-7155D photoelectric detector.

Air sampling is accomplished via sampling and return tubes which extend into the ducts.

The DH-60 4-wire detector can operate over a wide range of AC or DC power sources; 24 VAC, 24 VDC, 120 VAC or 240 VAC. It is equipped with alarm relay auxiliary contacts which may be used directly for control applications, and has an integral, normally-energized trouble relay to supervise power and smoke detector head removal.

A transparent inspection port permits viewing of the detector alarm indicator over a wide viewing angle and inspection of the conditions of cleanliness inside the detector mounting area.

The housing can be installed on either rectangular or round ducts ranging from 8 inches to 12 feet in width. The sampling tube must extend over the entire width of the duct, and the unit is equipped with a 4.25 inch exhaust tube.

Optional accessories include remote test stations and annunciators.

CONSTRUCTION

The duct detector housing is of rugged plastic with a clear polycarbonate cover. The housing is capable of mounting on either rectangular or round ducts without adapter brackets. Terminals are suitable for 14-18 AWG wiring.

APPROVALS

UL (Std 268A)	S1064
CSFM	Approved
NYC MEA	MEA 134-95-E Vol. III

FEATURES

- **Accommodates Ionization or Photoelectric Detector Heads**
- **4-wire Configuration**
- **Field Selectable Single Station AC Operation: 24 VAC, 120 VAC or 240 VAC**
- **Air Velocity Ranging from 500 to 4000 FPM**
- **Mounts on Round or Rectangular Ducts from 8 inches to Twelve Feet Wide**
- **Clear Polycarbonate Cover for Visual Inspection**
- **Non-Polarized**
- **Remote Indication, Relay Test and Reset Options**
- **Two (2) Heavy Duty (10 Amp.) Relay Contacts**

GENERAL SPECIFICATIONS

Operating temperature	32 to 100^{o} F (0 to 37^{o} C)
Humidity	10 to 93% RH
Air velocity range	300 to 4000 FPM
Dimensions	14.5 inches L x 5 inches W x 2.5 inches D (37 x 13 x 6.4 cm)
Weight	5.5 lbs. (3.2 kg)

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ELECTRICAL SPECIFICATIONS

Contact ratings				
Alarm initiating contacts:	Form A	2A @ 30 VAC/VDC (resistive)		
Auxiliary alarm contacts:	Form C (2 sets)	10A @ 30 VDC (resistive) 10A @ 277 VAC (resistive) 1/8 HP @ 120 VAC 1/4 HP @ 240 VAC		
Supervisory contacts:	Form B	0.3 A @ 30 VDC (resistive) 0.3 A @ 30 VAC (resistive)		
Power requirements (Using no accessories)	20.4 - 26.4 VAC	102-132 VAC	204-264 VAC	20-29VDC
Max. standby current	.070 A	.030 A	.020 A	.020 A
Max. alarm current	.160 A	.040 A	.025 A	.060 A
(Using max. accessories)				
Max. alarm current	.220 A	.050 A	.035 A	.090 A

TESTING

Functional testing can be performed by one of the following methods:

- Hold a magnet in the slot marked “Test” on the housing until the LED lights. Confirm that the system control unit (if used) alarms properly and performs all auxiliary functions.
  Reset: Place a magnet in the slot marked “Reset”
- Using the RCM-505 or RCM-606 remote test unit - Insert the key and turn clockwise to the “TEST” position and hold until the LED lights.
  Reset: Turn the key counterclockwise to the “Reset” position and hold. The LED will extinguish. Turn the key to the normal position and remove.

ORDERING INFORMATION

Part No.	Model	Description	Shipping Weight (lbs)
119-A0400	DH-60	Duct Housing, 4-wire, less detector head.	5.5
110-38020	CPD-7051D	Ionization Detector head	2.0
112-30080	PSD-7155D	Photoelectric Detector head	2.0
138-02006	RAI-4	Remote Alarm Indicator red LED lights on alarm.	1.0
138-02806	RCM-505	Remote Alarm Indicator/Keyswitch as above except with added remote test and reset keyswitch	1.0
138-02906	RCM-606	Remote Power/Alarm Indicator/Keyswitch - as above except has added green “POWER” LED which is lit during normal conditions.	1.0
252-8GJ2B	FST-2	12-inch Sampling Tube (For ducts less than 1 ft.)	0.6
252-8GK2B	FST-3	24-inch Sampling Tube (For ducts between 1 and 2 ft.)	1.0
252-8GL2B	FST-4	48-inch Sampling Tube (For ducts between 3 and 4 ft.)	1.2
252-8GM2B	FST-6	72-inch Sampling Tube (For ducts between 4 and 6 ft.)	2.0
252-8GN2B	FST-8	96-inch Sampling Tube (For ducts between 6 and 8 ft.)	3.0
252-8GP2B	FST-10	120-inch Sampling Tube (For ducts between 8 and 10 ft.)	3.5

Anexo 8: Detector de Humo por ases infrarrojos modelo SPB-24, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS

SPB-24

PROJECTED BEAM
SMOKE DETECTOR

DESCRIPTION

The FCI Model SPB-24 projected beam smoke detector is a line type of device designed to detect black, gray or white smoke over large, elongated areas. The system consists of an emitter and receiver. The emitter projects a near infrared pulsed beam to a receiver which may be located from 10 up to l00 meters (32.8 to 328 feet) from the emitter. Spacing between units can be as much as 45 feet on centers.

The length of protected path and ability to distinguish between blockage and smoke from fires make the SPB well suited for use in atriums, gymnasiums, theaters, museums, factories, tunnels, churches, cathedrals, anechoic chambers and high air velocity areas.

The detector has three field adjustable sensitivity settings for obscurations of 25%, 50% and 70%. These settings are dependent upon the monitoring distance and ceiling height. Should the smoke from a fire cause a decrease in the signal strength of a magnitude that exceeds the programmed obscuration setting, an alarm signal is generated. An interruption of 90% of the beam within a short period of time will create a trouble condition. Thus the unit can readily distinguish between a high smoke level and a sudden blockage or emitter failure.

Explosive atmospheres may also be protected by locating the transmitter and receiver heads facing each other from behind windows outside the explosive areas. The beam can be projected up to 30 meters (100 feet) in such applications.

Outputs from the receiver are Form “A” alarm contacts and Form “B” trouble contacts. This detector may be used with any UL listed 24 VDC control panel having the proper current capacity.

The receiver contains a microprocessor which automatically makes periodic adjustments to the system to compensate for normal ambient changes that cause contamination of the lenses and for aging components. Since such a change with time appears as a slow change in the beam signal, the microcomputer compensates in such a manner that the signal moves closer to the reference data at a rate of approximately 1% per hour. When this compensating capability reaches a limit, the microprocessor automatically generates a trouble signal.

FEATURES

- **Use with any FCI or Other U.L. Listed Control**
- **Operation Unaffected by Air Velocity**
- **Three Field Adjustable Sensitivity Settings: 25%, 50% and 70%**
- **Form “A” Alarm Contacts**
- **Form “B” Trouble Contacts**
- **Four-wire Configuration**
- **Low Supervisory Current**
- **Calibrated Filters available to Verify Sensitivity**

APPROVALS

U.L. (STD 268)	S1383
Factory Mutual	1Y0A5.AY

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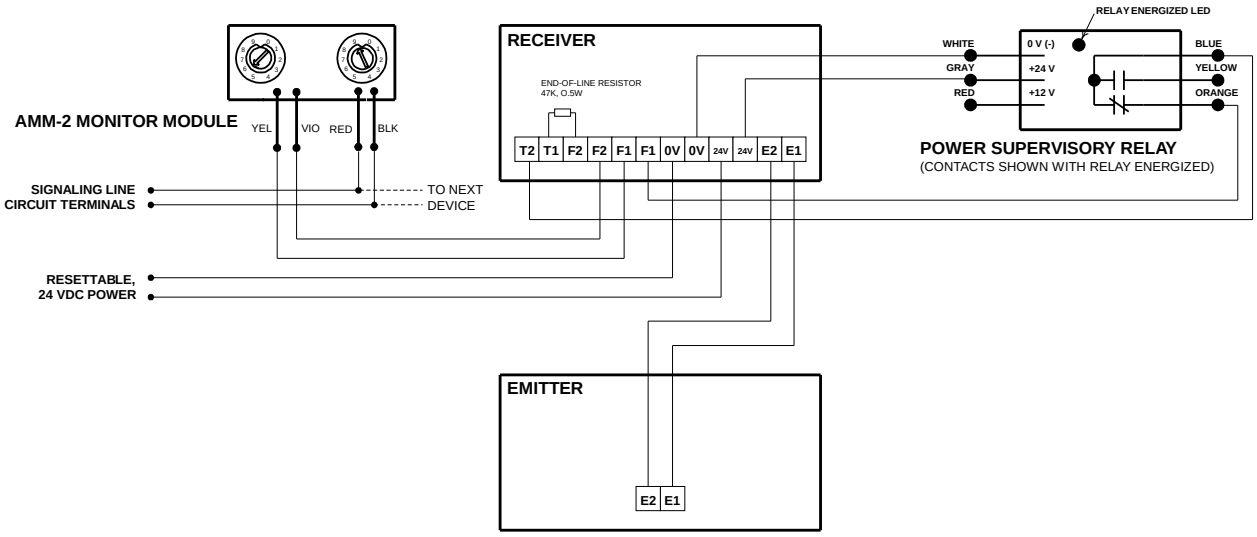

Typical Wiring Diagram

ALIGNMENT

Due to the wide angle of the beam, alignment is usually uncomplicated. The SPB detector employs signal strength indicating LEDs. Alignment is facilitated by turning an alignment adjustment wheel and monitoring the relative signal strength based upon which LED is lit.

MOUNTING

The SPB may be wall mounted on a single gang electrical box.

TECHNICAL INFORMATION

Rated voltage	24 VDC
Operating voltage range	15 - 33 VDC (42 V peak)
Current	
Supervisory	250 uA (average)
Alarm	.020 A
Operating temperature	14^{o} F to 122^{o} F (non-condensing)
Dimensions	3.4" W x 4.0" D x 5.7" H

ORDERING INFORMATION

Part Number	Model	Description
112-90006	SPB-24	Complete system includes emitter and receiver
112-90007		Test filter set

Anexo 9: Sensor de Flujo serie WF, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS

WF SERIES

SYSTEM SENSOR WATER FLOW AND SUPERVISORY SWITCHES

DESCRIPTION

WFDT, WFDTNR T-Tap Waterflow Detectors

The System Sensor WFD (with retard) and WFDTNR (less retard) waterflow detectors are housed in durable, tamper resistant enclosures and are designed for primary signaling in residential and branch line signaling in larger systems.

The units contain a polyethylene vane which is inserted through the tee fitting and connected by a mechanical linkage to the trip mechanism. The detectors have a sensitivity in the range of 4 to 30 gpm and a static pressure rating of 250 psi.

The units fit in any tee that has a 1" NPT branch including: 1", 1 1/4", or 1 1/2" threaded ferrous or brass tee; 1-2" copper sweat tees; 1" CPVC tee; or 1 1/2" polybutylene tee. The detectors come with nine different flexible paddles that fit the specified tees.

The detectors are UL Listed for indoor/outdoor use.

Dual SPDT switches accommodate up to 12 AWG wire.

WFD Series Vane Type Waterflow Detectors

The System Sensor WFD Series waterflow detectors are equipped with a computer designed paddle or vane which fits Schedule 20 through Schedule 40 steel pipe sizes 2" through 8". They are equipped with a pneumatic retard, can be mounted in a vertical or horizontal position and are suitable for UL Listed outdoor wet pipe sprinkler installations. The detectors have a sensitivity in the range of 4 to 30 gpm and a static pressure rating of 250 psi.

Housed in a durable, enclosure with red epoxy painted metal cover secured by self-guiding security screws, the detectors are resistant to tampering.

The WFD Series is UL Listed for indoor/outdoor use.

Dual SPDT switches accommodate up to 12 AWG wire.

EPS10-1, EPS10-2 Alarm Pressure Switches

The System Sensor EPS10-1 and EPS10-2 Alarm Pressure Switches are designed for use in wet, dry, deluge, and pre-action automatic sprinkler systems to indicate a discharge from a sprinkler. The switches feature field adjustable pressure sensitivity to provide an alarm response between 4 and 20 psi. It is factory set to respond at 4-8 psi on rising pressure. The pressure adjustment wheel requires no special tools and does not affect switch synchronization on the EPS10-2.

The EPS10 switches are UL Listed for weatherproof use with a NEMA 4 rating.

A single SPDT switch on the EPS10-1 and dual SPDT switches on the EPS10-2 accommodate up to 12 AWG wire.

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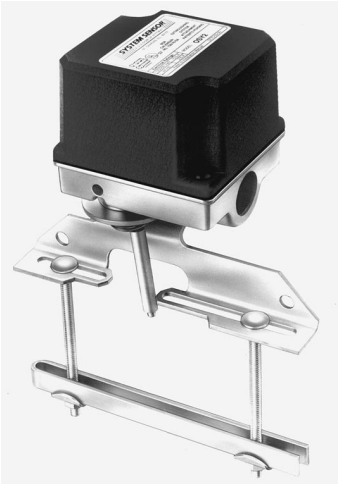
OSY2 Supervisory Switch

The System Sensor OSY2 is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. The switch is designed to mount easily on most OS&Y valves ranging in size from 1" to 12". The OSY2, without its gate valve bracket, can be used to monitor side-bracket style pressure reducing valves. Its three-position switch gives vandal and valve closed signals.

The OSY2 is UL Listed for indoor/outdoor use.

Dual SPDT switches accommodate up to 12 AWG wire.



PIBV2 Supervisory Switch

The System Sensor PIBV2 Supervisory Switch monitors the open position of fire sprinkler control valves of the post indicator, butterfly, or other valves. The PIBV2 is designed to operate when the valve position is altered from an open state. The switch can be used for butterfly valves, post indicator valves, wall post mount (with restrictions) recessed wall post valves and many types of pressure reducing valves.

The PIBV2 is UL Listed for indoor/outdoor use.

Dual SPDT switches accommodate up to 12 AWG wire.

EPS40-1 Low Pressure Supervisory Switch

The System Sensor EPS40-1 Low Pressure Supervisory Switch is designed to detect a 10 psi decrease from normal system pressure in automatic fire protection systems. It is typically used to supervise system air pressure in dry pipe systems or pressure tanks and water pressure supplies of automatic water control valves. It features field adjustable pressure sensitivity between 10 and 100 psi. It is factory set to be used in a nominal 40 psi system with a switch transfer occurring at 30 psi. The pressure adjustment wheel requires no special tools and can be used to adjust the point at which the low switch activates.

The EPS40-1 switch is UL Listed for weatherproof use with a NEMA 4 rating.

The SPDT switch accommodates up to 12 AWG wire.

EPS120-2 High/Low Pressure Supervisory Switch

The System Sensor EPS120-2 High/Low Pressure Supervisory Switch is designed to detect a 10 psi decrease or increase from normal system pressure in automatic fire protection systems. It is typically used to supervise system air pressure in pipes or pressure tanks and water or air pressure supplies of automatic water control valves. It features field adjustable pressure sensitivity between 10 and 200 psi. It is factory set to be used in a nominal 115 psi system with a switch transfer occurring before 105 psi and a second transfer occurring before 125 psi. The pressure adjustment wheel requires no special tools and can be used to adjust the nominal value of the “window” at which the low and high switches activate.

The EPS120-2 switch is UL Listed for weatherproof use with a NEMA 4 rating.

Dual SPDT switches accommodate up to 12 AWG wire.

SPECIFICATIONS

WFD, WFDT, WFDTH, OSY2, PIBV2 Series:

Operating temperature range:		32^{o} F to 120^{o} F	(0^{o} C to 49^{o} C)
Contact ratings:		10 A @ 125/250 VA, 2.5 A @ 24 VDC	
Overall dimensions:			
WFDT		4.5" H x 3.75" W x 6.7" L	(11.4 cm x 9.5 cm x 17 cm)
WFDTNR		3.75" H x 3.25" W x 4.25" L	(9.5 cm x 8.2 cm x 10.8 cm)
PIBV2		4.25" H x 3.5" W x 3.25" D	(10.8 cm x 8.9 cm x 8.2 cm)
OSY2		5.25" H x 3.5" W x 3.25" D	(14.6 cm x 8.9 cm x 8.2 cm)
WFD (switch body)		3" H x 3.75" W x 6.7" L	(8 cm x 9.5 cm x 17 cm)
Over all width:	WFD20, 25	4.6"	(11.7 cm)
	WFD30	5.2"	(13.2 cm)
	WFD35	5.7	(14.5 cm)
	WFD40	6.8"	(17.3 cm)
	WFD50	7.8"	(19.8 cm)
	WFD60	9.0"	(22.9 cm)
	WFD80	10.8"	(27.4 cm)

EPS Series:

Contact ratings:	10.0 A, 1/2 HP @ 125/250 VAC, 2.5 A @ 6/12/24 VDC	
Operating temperature range:	-40^{o} F to 160^{o} F	(-40^{o} C to 71^{o} C)
Dimensions:	5.12" H x 3.325" W x 4.250" L	(13.0 cm x 8.4 cm x 10.8 cm)

PSP-1 Plug-in type switch:

Operating temperature range:	-4^{o} F to 149^{o} F	(-20^{o} C to 65^{o} C)
Dimensions:	4.73" L x 2.94" W x 2.21" D	(12 cm x 7.5 cm x 5.6 cm)

ORDERING INFORMATION

Part No.	Model	Description
117-90000	WFDT	Waterflow Switch, Vane Type, w/retard, for 1, 1 1/4, 1/12" pipe
117-90001	WFDTNR	Waterflow Switch, Vane Type, less retard, for 1, 1/4, 1 1/2" pipe
117-90003	WFD20	Waterflow Switch, Vane Type, w/retard, DPDT, for 2" pipe
117-90004	WFD25	Waterflow Switch, Vane Type, w/retard, DPDT, for 2 1/2" pipe
117-90005	WFD30	Waterflow Switch, Vane Type, w/retard, DPDT, for 3" pipe
117-90006	WFD35	Waterflow Switch, Vane Type, w/retard, DPDT, for 3 1/2" pipe
117-90007	WFD40	Waterflow Switch, Vane Type, w/retard, DPDT, for 4" pipe
117-90008	WFD50	Waterflow Switch, Vane Type, w/retard, DPDT, for 5" pipe
117-90009	WFD60	Waterflow Switch, Vane Type, w/retard, DPDT, for 6" pipe
117-90010	WFD80	Waterflow Switch, Vane Type, w/retard, DPDT, for 8" pipe
117-90011	OSY2	Supervisory Switch, Outside Screw and Yoke
117-90012	PIBV2	Supervisory Switch, Post Indicator/Butterfly valve
117-90013	PSP1	Supervisory Switch, Plug-in (wire leads)
117-90014	EPS10-1	Waterflow Pressure Switch, SPDT, (4-20 psi)
117-90015	EPS10-2	Waterflow Pressure Switch, DPDT, (4-20 psi)
117-90016	EPS40-1	Waterflow Pressure Switch, SPDT, (10-100 psi)
117-90017	EPS40-2	Waterflow Pressure Switch, DPDT, (10-100 psi)
117-90018	EPS120-1	Waterflow Pressure Switch, SPDT, (10-200 psi)
117-90019	EPS120-2	Waterflow Pressure Switch, DPDT, (10-200 psi)

Anexo 10: Modulo digital de entrada modelo AMM-2, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS

AMM-2

ADDRESSABLE MONITOR MODULE

DESCRIPTION

The Addressable Monitor Module AMM-2 features a single Style B, Class B initiating circuit with end of line resistor. This module provides an address for any device or group of devices connected to this circuit. Any alarm initiating devices with normally open (N.O.) dry contacts, such as heat detectors, linear heat detection devices, projected beam smoke detectors, 4-wire smoke detectors, water flow switches, tamper switches, manual stations, etc. may be installed in this circuit.

The AMM-2 module is designed for installation in the signaling line circuit of any FCI analog addressable control panel. The signaling line circuits of FCI analog addressable panels are designed to accommodate up to 99 monitor modules per circuit.

The initiating circuit of the AMM-2 has a maximum line resistance of 40 ohms, allowing the module to accommodate initiating devices at a distance from the module.

The compact size facilitates the installation of the module inside manual stations, or mounting boxes of various types of alarm initiating devices.

FEATURES

- **Compact Size Allows Easy Installation**
- **Class B, Style B Initiating Circuit**
- **40 Ohm Line Resistance for Initiating Circuit**
- **Accommodates any N/O Dry Contact Device**

AGENCY APPROVALS

UL	S1949
FM	3006398
NYC	MEA 427-91-E Vol. III
CSFM	Approved

TECHNICAL INFORMATION

Supervisory current	.0004 amp.
Alarm current	.0006 amp.
Operating temperature	32 to 120° F (0 to 49° C)
Relative humidity	10 to 93% (non-condensing)
Dimensions	1.3" H x 2.75" W x 0.5" D (3.3 x 5.5 x 1.25 cm)

ORDERING INFORMATION

Part Number	Model	Description
190-00002	AMM-2	Addressable Monitor Module, Single circuit, Style B, Class B

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Anexo 11: Panel contra incendios convencional modelo FC-73, marca FCI – Honeywell

FIRE CONTROL INSTRUMENTS
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FC-73

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CONVENTIONAL FIRE ALARM CONTROL PANEL

DESCRIPTION

The FC-73 Series Fire Alarm Control panel is a proven, versatile conventional zoned unit which meets the requirements of NFPA Standard 72 for Central Station, Protected Premises, Auxiliary, Remote and Proprietary Supervising Station Fire Alarm Systems. It is listed to UL Standard 864; inherently power limited, and has all necessary circuitry to meet the UL transient immunity requirements.

The system is housed in a heavy-duty steel enclosure finished in red, with panels displaying the status of vital functions. The surface mounted enclosure, with its slim appearance (4-inch depth), is designed to blend with any environment. The cabinet can house up to 7AH batteries while the system's power supply can maintain batteries of up to 33 AH batteries (enclosed in the separately available BC-1R, 1100-0654).

The many features of the FC-73 provide a cost effective approach to system design, and allow a great degree of flexibility in one enclosure. The panel provides ten (10) Class "B" (Style B) or five (5) Class "A" (Style D) zones, expandable to twenty (20) Class "B" or ten (10) Class "A" zones with the addition of the ZDM-FC73 Module. The FC-73 also provides four (4) Class "B" (Style Y) or two (2) Class "A" (Style Z) notification appliance circuits.

Standard on all FC-73 control panels are a City Master Box output, Polarity Reversal signaling connections, and Integrated DACT. The combination of a conventional fire alarm control panel with a microprocessor design allows for programming of many unique features such as time limit cutoff, programmed verification, pre-alarm delay, and cross-zoning. Individual zones can be assigned specific outputs and zone types such as alarm, supervisory or waterflow. In addition, up to eight (8) selectable/programmable notification appliance circuit output patterns are available for alternate styles of warnings. Programming is achieved through the LCD-FC73 annunciator module or through the Field Configuration Program (FCP-73).

Supervision of vital components, modules, functional switches, and standby batteries is provided.

The integral Digital Alarm Communicator Transmitter supports all standard reporting formats including:

- 3/1, 1400 Hz
- 3/1, 2300 Hz
- SK 4/2, 1400 Hz
- SIA 8
- SIA 20
- Contact ID

Optional modules include an LCD remote annunciator, a zone expander module used to expand the system and a status display module which provides outputs and control functions for each zone as well as program access.

FEATURES

- ***Individual Zone Disconnect Switches***
- ***Supports up to six (6) Remote LCD Displays***
- ***Supports up to six (6) Remote LED Annunciators***
- ***Integral Digital Communicator Transmitter***
- ***Expandable to Twenty (20) Class B or Ten (10) Class A Zones***
- ***Field Programmable Configuration***
- ***Eight (8) Selectable/Programmable Output Patterns Including Temporal Pattern Output per ANSI S3.41***
- ***"Walk Test" Capability provided by the LCD-FC73 optional Remote Annunciator***
- ***Programmable Alarm Verification and Cross-Zoning***
- ***Four (4) Class B or Two (2) Class A Notification Appliance Circuits***
- ***Six (6) Amp power Supply***
- ***Three integral progammable relays***
- ***Provides Municipal Circuit or Reverse Polarity output***
- ***Reverse Polarity or Municipal Circuit output***

S1869

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FC-73

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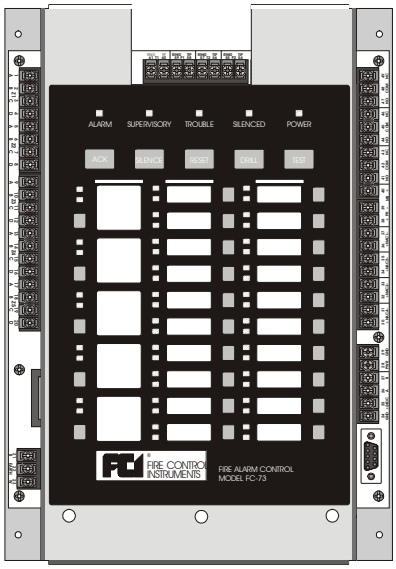
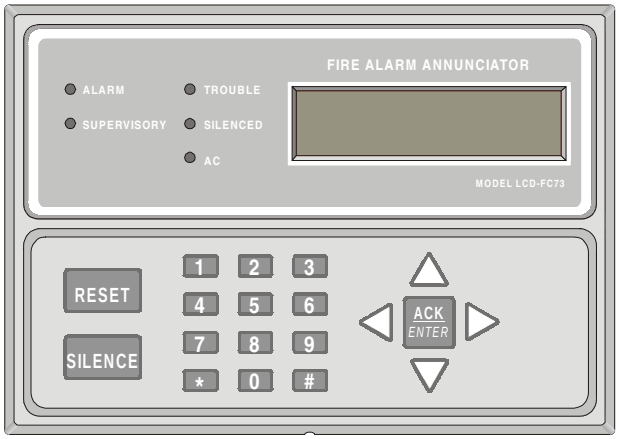
BASIC FC-73 ASSEMBLY



OPTIONAL ACCESSORIES

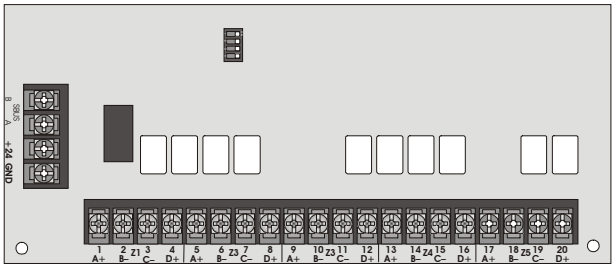
LCD-FC73

The LCD-FC73 supervised remote annunciator performs all system operations. It can be used for programming and provides access to the Walk Test feature and trouble and alarm information. The control panel can support up to six (6) annunciators. Total distance is up to 3000 feet away over two pair of two-conductor wire.



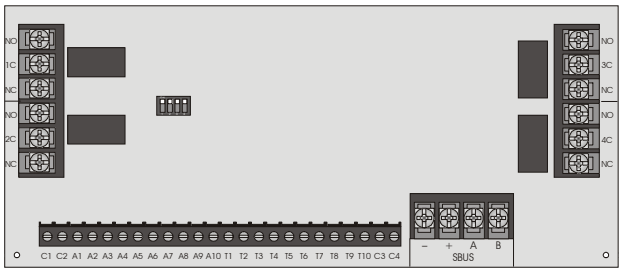
ZONE EXPANDER (ZDM-FC73)

The ZDM-FC73 Zone Expander provides the FC-73 with ten (10) additional Class "B" (Style B) or five (5) Class "A" (Style D) initiating circuits. Mounts in main cabinet or in FC-2190 Accessory Cabinet.



STATUS DISPLAY MODULE (FC-5280)

The FC-5280 Status Display Module provides outputs and control functions for remote annunciation of alarm, trouble, and supervisory indications for each zone. The system can supervise up to eight (8) modules. The FC-5280 has ten (10) outputs for alarm and ten (10) for trouble annunciation. These outputs are "active low" (become negative when activated). Each output can provide up to 0.100 amp current, with a total of 0.700 amp available. The module has four (4), Form "C" relays that can be wired to operate with any of the outputs. The FC-5280 can be used to interface with an LED annunciator. It can be programmed to indicate alarm and trouble status for Zones 1 - 10, 11 - 20, or system status outputs. The FC-5280 mounts inside the FC73 cabinet.



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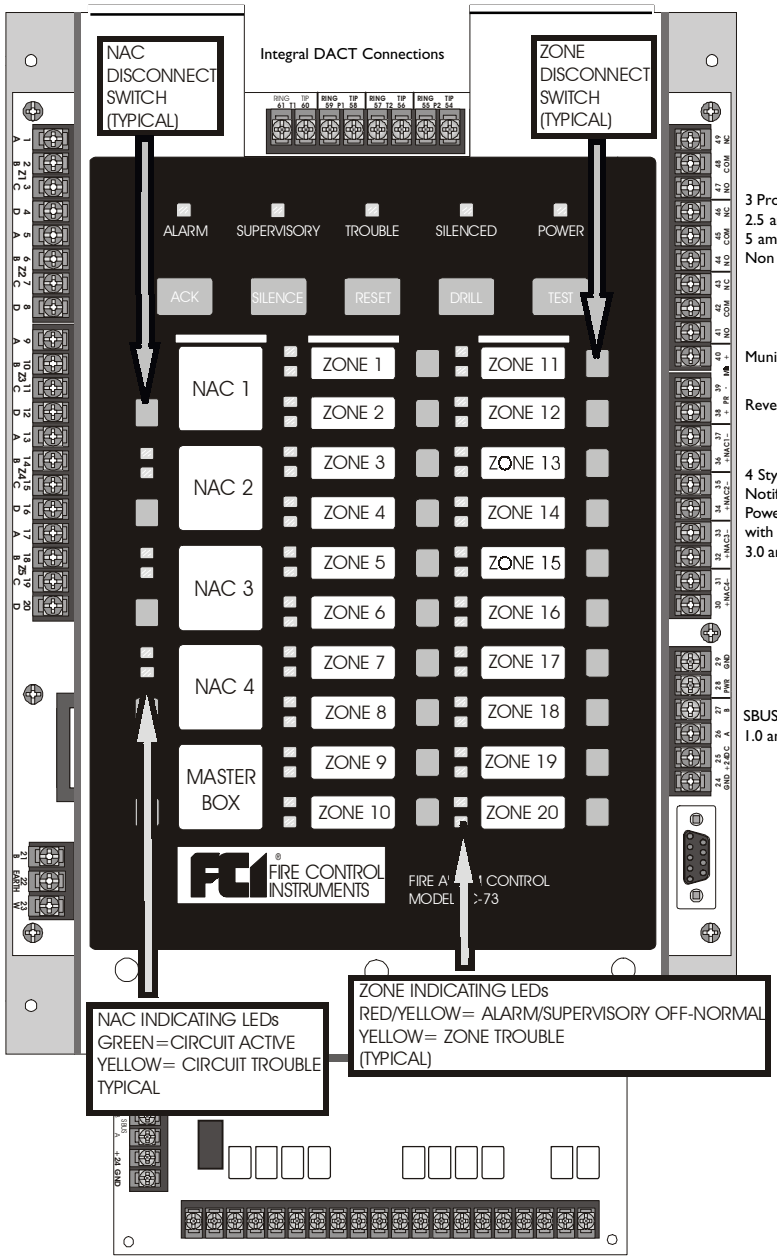

10 Style B or 5 Style D
Initiating Device Circuits
Max. Voltage- 25.5 VDC
Max. Circuit Resistance- 50 Ohms
Total Alarm Current for all Circuits- 1.0 amp.
Supervisory Current per Zone- 0.003 amp.
Alarm Current per Zone- 0.095 amp.
Power-Limited & Supervised with 3.9KΩ EOL
(not required for Style D circuits)

Connection to 120 VAC
3 amps. @ 60 Hz

3 Programmable Form C Relay Outputs
2.5 amps. @ 24 VDC/ 24 VAC (inductive)
5 amps. @ 24 VDC (resistive)
Non power-limited

Municipal Circuit Output

Reverse Polarity Output

4 Style Y or 2 Style Z
Notification Appliance Circuits
Power-limited & Supervised
with 3.9KΩ EOL resistor(Style Y only)
3.0 amps. max. out of any one circuit

SBUS & Auxliary Power
1.0 amp. max. @ 24 VDC

Mounting Location for ZDM-FC73 or FC-5280
(ZDM-FC73 can mount remotely in FC-2190 Accessory Cabinet)

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GENERAL SPECIFICATIONS

Primary AC Voltage	120 Vrms @ 60 Hz, 3A
Total DC Voltage output	6 A
Auxiliary Power output	27.4 VDC @ 1A
Smoke Detector output	27.4 VDC @ 1A
Battery Charging Voltage	27.4 VDC
Battery Charging Current	0.75A max. (33 A/H batteries max.)
Minimum Telephone input sensitivity	35 dB
Minimum Telephone line voltage	3 V
Low Battery Threshold	20.4 VDC
Low AC Brown-out Threshold	98 VAC
Dimensions	16" W x 26.4" H x 4" D (40.64 x 67.06 x 10.16 cm)
Shipping Weight	28 lbs.

ENVIRONMENTAL SPECIFICATIONS

Recommended Operating Temperature Range	60° to 80° F (15° to 27° C), 32° to 120° F max. (0° to 49° C)
Recommended Operating Humidity Range	not to exceed 85% @ 90°F (32° C), non-condensing

INITIATING DEVICE CIRCUIT SPECIFICATIONS

10 Style B (Class B) or 5 Style D (Class A) IDCs expandable to 20 Style B, 10 Style D withh addition of ZDM-FC73

Maximum Voltage	25.6 VDC
Maximum Circuit Resistance	50 ohms
Maximum Alarm Current for all Zones	1.0 amp.
Supervisory Current (per Zone)	0.003 amp.
Alarm Current (per Zone)	0.095 amp.

Supervised & Power-Limited

NOTIFICATION APPLIANCE CIRCUIT SPECIFICATIONS

4 Style Y (Class B) or 2 Style Z (Class A) NACs rated 3.0 amp. each
(Note: total current draw from NACS, smoke detector power, auxiliary power and main Control Panel not to exceed 6.0 amp.)
Supervised & Power-Limited

APPROVALS

U.L. (Std 864)	S1869
C.S.F.M.	Pending

ORDERING INFORMATION

Part No.	Model	Description
150-00013	FC73-PCB	FC-73 Main Board
150-00014	FC-73	Fire Alarm Control Panel
150-00015	ZDM-FC73	Zone Expander Module
150-00016	LCD-FC73	Remote Annunciator
150-00018	FC-5280	Status Display Module
150-00023	FC-2190	Accessory Cabinet

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Anexo 12: Panel contra incendios direccionable modelo 7100, marca FCI – Honeywell

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7100 SERIES

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COMPACT ANALOG ADDRESSABLE FIRE CONTROL PANEL

DESCRIPTION

The FCI 7100 series fire alarm control panel is a multiprocessor-based, analog addressable system in a compact, yet expandable, platform. Intended for commercial, industrial and institutional installations, it is ideal for life safety and property protection applications.

The basic 7100 series control panel provides two analog addressable signaling line circuits (SLCs). Each SLC supports up to 99 analog addressable sensors, as well as up to 99 addressable monitor modules and/or control points. With 198 addresses available on each SLC, total system capacity reaches 396 addresses. The 7100 uses an advanced protocol that ensures an almost instant response to events while at the same time suppressing nuisance alarms.

The system may be programmed with either the Windows®-based Field Configuration Program (FCP-7100) or through a comprehensive set of intuitive, securely password protected front-panel programming options. This important feature allows the system to quickly adapt to any future requirements brought on by changes in occupancies, building remodels, or other contingencies.

The sophisticated circuitry and powerful analog software enables the 7100 series fire alarm control panel to read the specific sensitivity level of each sensor and compensate for any changes due to age, dust accumulation or other environmental factors. The 7100 incorporates the FCI Listed Integral Sensitivity Testing (LIST) which meets NFPA 72 sensitivity testing and maintenance requirements. The LIST testing allows substantial savings in both maintenance and service while virtually eliminating nuisance alarms.

The Model 7100-2D features an integral Digital Alarm Communicator Transmitter (DACT) with all popular transmission formats and a 16-digit telephone number field. It is 8-digit Carrier Information Code (CIC) compliant and also prevents "dialer-runaway" in the event of intermittent system faults. The 7100-2D is UL Listed for Remote Station, Proprietary, and Central Station fire alarm systems.

The 7100 is housed in an attractive, contemporary styled cabinet. It allows ample space for wiring and room for batteries up to 7A/H capacity.

FEATURES

- ***Integral Digital Alarm Communicator (with the 7100-2D)***
- ***120 or 240VAC (optional) Input Line Voltage***
- ***Intuitive Front Panel Programming***
- ***80-character Alpha-numeric Display***
- ***Two Style 4 (Class "B") Signaling Line Circuits. Style 6 (Class "A") with optional CAOM module***
- ***Two Style Y (Class "B") Regulated Notification Appliance Circuits rated for 1.5 Amp. each. Style Z (Class "A") with optional CAOM module***
- ***Suitable for Pre-Action Deluge applications with optional MCOM module***
- ***Available with Plastic or Metal Door***
- ***Periodic Trouble Reminder***
- ***Individual Sensor Drift Compensation***
- ***Listed Integral Sensitivity Testing (LIST)***
- ***Dual-stage Maintenance alerts ("Dirty" and "Very Dirty")***
- ***Multilevel Sensor Sensitivity Adjustments (Front Panel programmable)***
- ***Day/Night Sensitivity Adjustments (Front Panel programmable)***
- ***Alarm Verification per Individual Sensor***
- ***Positive Alarm Sequence for Sensors or Monitor Modules***
- ***Four Levels of System Access using Six Digit Passwords with up to Five User Passwords per Level***
- ***Duplicate and Extra Address indications***
- ***March Time (60 or 120 BPM)/Temporal Pattern/ Coded Fours/California Code/ User-Defined Zone Coding***
- ***Cross Zoning***
- ***System Configuration Programming and 500 Event Log stored in Non-Volatile Memory***
- ***Fan Restart with Sequential Restart Delay***
- ***Upload/ Download of Panel Configuration between Panel and FCP-7100 program (Password Protected feature)***
- ***Up to 64 7100 panels in NetSOLO® network with optional INI-7100 module***

S1869

FM APPROVED

MEA
307-99-E
307-99-EVol. II

7165-0694:219 (7100)
7300-0694:231 (LCD-7100)
7300-0694:241 (LDM-7100)

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OPTIONAL ACCESSORIES

LCD-7100

The LCD-7100 remote serial display offers an 80-character alphanumeric readout for remote display of all system events. It duplicates all the information on the 7100 series panel display and provides key switch protected functions such as System Reset, Alarm Acknowledge, Trouble Acknowledge, Signal Silence, and Drill Test.

LEDs on the LCD-7100 indicate Alarm, Supervisory, System Trouble, Power Fault, Systems Silenced, NAC#1, and NAC#2 Silenced conditions.

The LCD-7100 can be surface or semi-flush mounted on a standard four-gang electrical box and it can be installed up to 4,000 feet (1,219 m) from the main control panel. The 7100 series fire alarm control panel can support up to five (5) remote LCD-7100 annunciators using one pair of twisted, non-shielded 18AWG min. wire for serial communication and another pair of 16AWG min. for operating voltage. (Refer to 9020-0486)

LDM-7100

The LED Driver module (LDM-7100) is designed to mount in a U.L. Listed remote annunciator and provides outputs for remote panel switches and 33 remote LEDs. Three LDM-7100 modules may be installed in a single annunciator for a total of 99 LEDs per annunciator. This combination may be repeated up to five times for a total of fifteen (15) LDM-7100 at up to five different locations. Maximum distances of up to 4,000 feet (1,219 m) can be achieved using one pair of twisted, non-shielded wire for serial communication and another pair of straight-lay wire. for operating voltage. (Refer to 9020-0519)

CAOM

The Class "A" Optional module (CAOM) allows Style Y and Z (Class "B" and "A") operation for both Notification Appliance Circuits and Style 4 and 6 (Class "B" and "A") for both Signaling Line Circuit.. It also provides disconnect switches for each signaling line circuit and a common disconnect switch for both notification appliance circuits.

MCOM

The Municipal Connection Option Module (MCOM) provides three choices of outputs. It can be configured as a Municipal Circuit (City Box) output at:

- 24VDC nominal voltage
- 0.0018 amp supervisory current
- 0.510 amp maximum alarm current
- 35 ohms maximum line resistance
- 14.5 ohms maximum trip coil resistance

It may also be set to serve as a Reverse Polarity output with a nominal voltage output of 24VDC at 0.012 amp maximum alarm and supervisory current.

The third option the MCOM provides is as a releasing solenoid output rated at:

- 24VDC nominal voltage
- 0.005 amp supervisory current
- 0.710 amp maximum alarm current
- 2 ohms maximum line resistance

It is suitable to be used with:

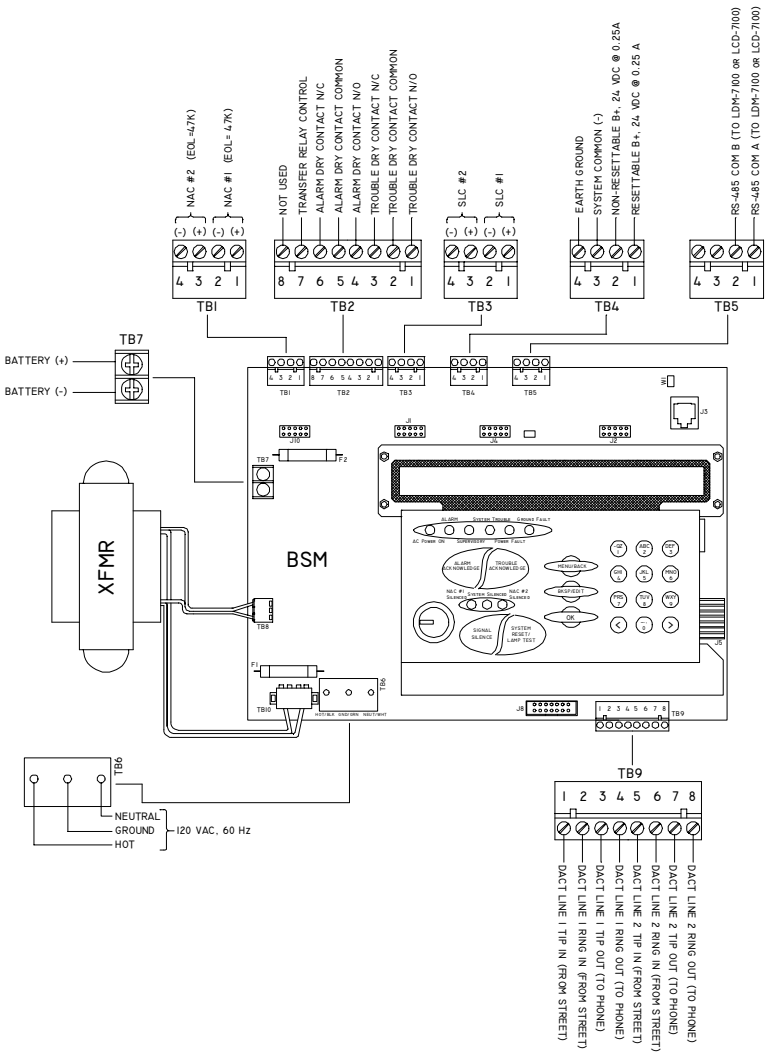
- Skinner LV2LBX25
- Asco T8210A107
- Asco 8210G207
- Skinner 73218BN4UNLVNOC111C2
- Skinner 73212BN4TNLVNOC322C2
- Skinner 71395SN2ENJ1NOH111C2

PTRM

The Printer Transient module (PTRM) provides RS-232 Isolator/Transient protection for the 7100's RS-232 port (BSM connector J2). It is used in conjunction with a serial printer applied to the RS-232 port for permanent record keeping.

INI-7100

The Intelligent Network Interface module allows the 7100 series fire alarm control panel to become the platform of a peer-to-peer, token ring, self regenerative network comprised of up to sixty-four (64) 7100s.



SPECIFICATIONS

NOTIFICATION APPLIANCE CIRCUITS (TB1)
- Two supervised, regulated, power limited outputs (non-coded)
- Max. alarm load 1.5 amd per circuit
- For use with any Listed appliance w/ operating voltage range 17-26 VDC
- Use UL Listed End of Line resistor EOL-N (47K), P/N 4700-0512

TROUBLE DRY CONTACTS (TB2)
- Form "C"
- Rated for 2 Amps @ 30 VDC

ALARM DRY CONTACTS (TB2)
- Form "C"
- Rated for 2 Amps @ 30 VDC

TRANSFER RELAY CONTROL (TB2)
- Transmits loss or brown out of AC power to DRBC-1 battery charger
- Power Limited
- Unsupervised

SIGNALING LINE CIRCUITS (TB3)
- 24 VDC nominal
- Power Limited & Supervised
- 40 Ohms max. line resistance
- 0.5 uF max. capacitance
- Capacity of 99 analog sensors and 99 addressable devices per circuit

24 VDC EXTERNAL POWER (TB4)
- Resettable & Non-resettable
- Unregulated
- Unsupervised
- 1.0 amp max.from each circuit/ 1.0 amp max. combined

EARTH GROUND CONNECTION (TB4)

AC INPUT (TB6)
- 120 VAC, 60 Hz, 2 Amps
- Non-power Limited

BATTERY CONNECTION (TB7)
- Supervised
- 24 VDC nominal
- Max. battery size 31 A/H
- Non-power limited
- 0.6 Amp max. battery charging current

TELEPHONE REQUIREMENTS (TB9)
- DC Ringer Equivalence Number (REN) = 0.5B
- AC Ringer Equivalence Number = 1.3
- Complies with FCC Part 8

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SPECIFICATIONS

Primary Input Power	120VAC, 50/60 Hz @ 2.0 amps or 240VAC, 50/60 Hz @ 1.0 amp
Output Power	4 amps. @ 24VDC (total)
Non-resettable Power	1.0 amp. max. } 1.0 amp. max. from both circuits
Resettable Power	1.0 amp. max. }
Two (2) Notification Appliance Circuits	1.5 amp. each @ 24VDC

Current	Supervisory	Alarm
7100-2 (Two Loop)	0.065 amp.	0.085 amp.
7100-2D (Two Loop w/Dialer)	0.085 amp.	0.105 amp.
LCD-7100	0.050 amp.	0.075 amp.
LDM-7100	0.035 amp.	0.200 amp. (All LEDs lit)
INI-7100-UTP,-FO	0.040 amp.	0.040 amp.

Operating Temperature	32 - 120° F (0 - 49° C)
Relative Humidity	85 % (non-condensing)
Battery Charger Capacity	31A/H (Cabinet accommodates 7A/H size batteries)
Alarm & Trouble Relay Contacts	Form "C", 2 amps. @ 24VDC (resistive)

Dimensions	
7100	16.9" H x 14.5"W x 3" D (40 x 37 x 7.5 cm)
LCD-7100	4.25 " H x 8.25"W x 1.88" D (11.5 x 20.5 x 4.6 cm)
LDM-7100	6"W x 4 1/2"W (15.24 x 11.5 cm)
Weight (7100)	24 lbs (11 kg)

AGENCY APPROVALS

U. L.	File S1869
FM	Approved
CSFM	307-99-E
	307-99-EVol.II
MEA	7165-0694:219 (7100)
	7300-0694:231 (LCD-7100)
	7300-0694:241 (LDM-7100)

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ORDERING INFORMATION

BASIC KITS

Part Number	Model	Description
1100-1311	BK-7100-2	Basic System Kit, 2 SLC (BSM, Keypad Display, Transformer)
1100-1312	BK-7100-2D	Basic System Kit w/ DACT, 2 SLC
1100-1313	BK-7100-2-240V	Basic System Kit, 2 SLC, 240VAC
1100-1314	BK-7100-2D-240V	Basic System Kit w/ DACT, 2 SLC, 240VAC

CABINETS

1100-1307	7100-ENC-PLASTIC	Enclosure with Plastic Door, standard (16.9" H x 14.4" D x 3" D)
1100-1308	7100-ENC-METAL	Enclosure with Metal Door, standard (16.9" H x 14.4" D x 3" D)
1100-0480	NS-7100B	Enclosure, NetSOLO® Broadband, black (19" H x 19"W x 4" D)
1100-0481	NS-7100R	Enclosure, NetSOLO® Broadband, red (19" H x 19"W x 4" D)

OPTIONAL MODULES

1100-0399	LCD-7100	Remote Serial Annunciator (80-character)
1100-0428	LDM-7100	Remote LED Driver Module
1100-1233	CAOM	Class A Option combination module with disconnect switches for both Signaling Line Circuits and Notification Appliance Circuits
1100-1234	MCOM	Municipal Connection Option Module for Local Energy City Box, Reverse Polarity Signaling, or Releasing Solenoid
1100-1235	PTRM	Printer Transient Module
1100-0440	INI-7100-UTP	Intelligent Network Interface module- Unshielded, Twisted Pair
1100-0439	INI-7100-FO	Intelligent Network Interface module- Fiber Optic

REPLACEMENT PARTS

1420-0429	EN-7100	Enclosure (replacement)
1120-0779	CS-7100	Plastic Door (replacement)
1120-0867	CS-7100M	Metal Door (replacement)
1120-0778	T-7100	Transformer, 120VAC input (replacement)
1120-0801	T-7100-240	Transformer, 240VAC input (replacement)
1120-0781	BSM-2	Basic System Module, 2 SLC (replacement)
1120-0780	BSM-2D	Basic System Module, 2 SLC w/DACT (replacement)
1120-0767		Keypad Assembly (replacement)

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Anexo 13: Cálculos y Definición de tiempos y velocidad sobre los lazos CAM

Bit Time Calculations for the MCP2510 CAN controller

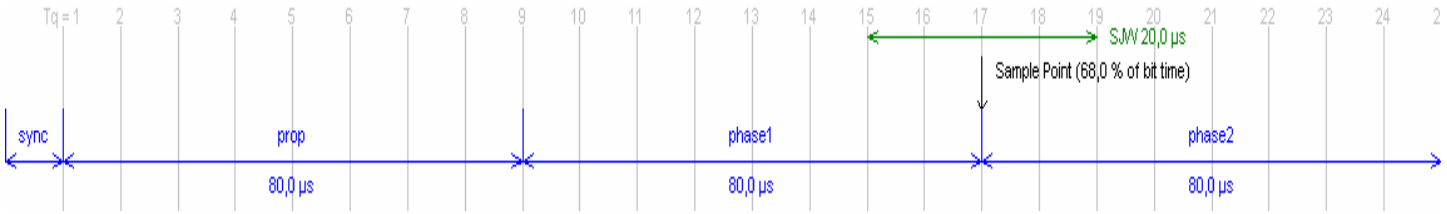
Setup Criteria	
Oscilator Frequency	10,000 MHz
Target CAN Bus Baud Rate	4,000 kbps

Selected Options	
BRP-1 (Baud Rate Prescaler)	49
Tq (Time Quanta)	10,000 µs
Number of Time Quanta	25
% Error of Target Baud Rate	0,0 %

Bit Timing Setup in Tq	
Propagation Delay	8
Phase Segment 1	8
Phase Segment 2	8
Syncronization Jump Width (SJW)	2

Multiple bit sampling is off. Wakeup filter is on.

Bit Timing Diagram



Configuration Register Setup		
Register	Binary	Hexadecimal
CNF1	b'01110001'	0x71
CNF2	b'10111111'	0xBF
CNF3	b'01000111'	0x47

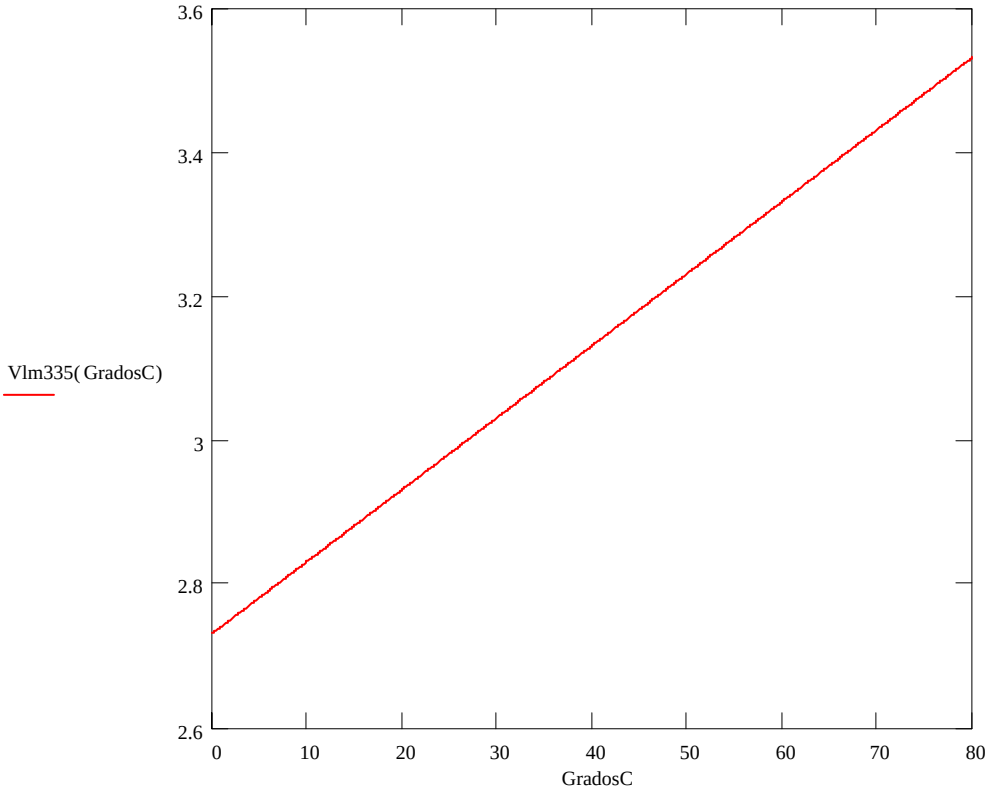
Generated 7:39:41 pm 02/28/2004

Anexo 14: Caracterización del parámetro temperatura sobre el modulo térmico desarrollado

Funcion de Transferencia: Elemento sensor LM335

$GradosC := 0, 0.1 .. 80$

$Vlm335(GradosC) := 0.01 \cdot (273.2 + GradosC)$



Salida de elemento sensor (Vdc) vs temperatura (grados Centigrados)

Funcion de Transferencia: Sistema para medicion de temperatura

$R1 := 2000$

$R3 := 2000$

$R5 := 2000$

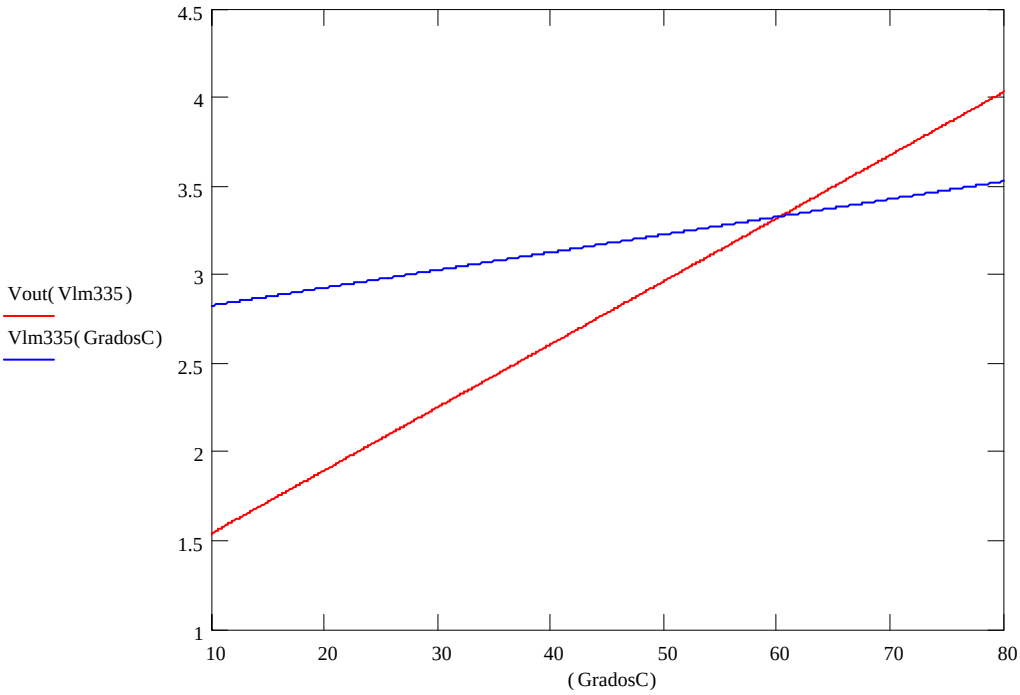
$Ferror := 0.188$

$R2 := 600$

$R4 := 4000$

$Vref := 2.5$

$$Vout(Vlm335) := \left[\left[\left[\frac{R1 \cdot (R2 + R3)}{R2 \cdot R3} \right] + 1 \right] \cdot \frac{(Vlm335(GradosC) \cdot R4)}{R4 + R5} \right] - \frac{R1}{R2} \cdot Vref - Ferror$$



Tension de salida (Vdc) sistema de medicion de temperatura vs temperatura (grados Centigrados)