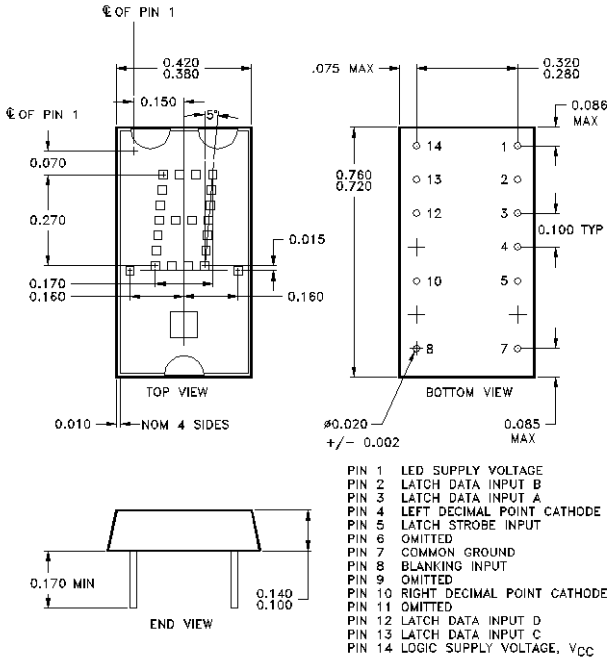
Data sheet for Innocor part number INL0397-1: Solid-state Hexadecimal Display

Physical specifications

The Innocor hexadecimal display uses display and CMOS LSI chips. The chips are mounted on a header board and enclosed in a red, molded-plastic body. The hexadecimal displays can be mounted beside each other using 0.450 inch between vertical centers.



Description

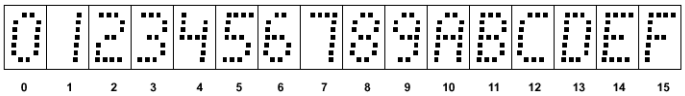
The Innocor hexadecimal display contains a four-bit latch, decoder, driver, and 4 by 7 light-emitting diode (LED) character. The display also uses two externally-driven decimal points. The following table provides a detailed description of the features associated with the hexadecimal display.

Function	Pin #	Description
LED Power Supply	1	LED Power Supply.
Latch Data Inputs (A, B, C, and D)	2, 3, 12, 13	Data on these inputs enter the latches under conditions of *low Latch Strobe Input*. The binary weights of these inputs are 1 for A, 2 for B, 4 for C, and 8 for D.
Decimal Point Cathodes	4, 10	The Decimal Point Cathodes are not connected to the logic chip. Each Decimal Point Cathode must be serially connected to an external resistor or other current-limiting mechanism if the application uses decimal points.
Latch Strobe Input	5	The data in the latches follows the data on the Latch Data Inputs during the condition of *low Latch Strobe Input*. There are no changes to the data in the latches during the condition of *high Latch Strobe Input*.
Common Ground	7	Negative terminal for logic and LED currents, except decimal points.
Blanking Input	8	The hexadecimal display is blank during conditions of *high Blanking Input. (*Regardless of other input levels.) A character based on the data in the latches appears during conditions of *low Blanking Input*. The Blanking Input supports pulse intensity modulation.
Logic Supply Voltage (Vcc)	14	V_{CC} connection for the logic chip.

Features

- CMOS circuit to accept, store, and display 4-bit binary data
- 0.300 inch character height
- High brightness
- Left and right-hand decimals
- Support for separate LED and logic power supplies
- Constant-current drive for hexadecimal characters
- Operates from 5V supply
- Internal CMOS LSI chip with latch, decoder, and driver
- Wide viewing angle
- Easy system interface
- Drop-in replacement for TIL311

The output from the LED driver is designed to maintain a relatively constant on-level current of approximately 1.5 mA through each LED in the hexadecimal display. The current is virtually independent of the LED supply voltage within the recommended operating conditions. The decimal point anodes are connected to the LED supply. The cathodes are connected to external pins. The hexadecimal display must be serially-connected to an external resistor or other current-limiting mechanism if the display uses a decimal point. The following figure shows the equivalent display for the binary data in the latches.



Recommended operating conditions

The following table lists the recommended operating conditions for the Innocor hexadecimal display.

Feature	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}, logic	4.5	5	5.5	V
Supply voltage, V_{LED}, LED	4.0	5	5.5	V
Decimal point current, I_F(DP)	—	1.5	—	mA
Pulse duration, t_w, latch strobe	40	—	—	ns
Setup time, t_{su}	50	—	—	ns
Hold time, t_h	40	—	—	ns

Operating characteristics

The following table lists the operating characteristics for the Innocor hexadecimal display at 25 degrees Celsius.

Parameter	Test conditions	MIN	TYP	MAX	UNIT
IV Luminous intensity[ab]	V_{CC} = 5V, V_{LED} = 5V (average for LEDs)	35	100	—	µcd
	I_F(DP) = 1.5mA (each decimal)	35	100	—	µcd
λp Wavelength at peak emission[c]	V_{CC} = 5V, V_{LED} = 5V	—	660	—	nm
Δλ Spectral bandwidth[c]	I_F(DP) = 1.5mA	—	20	—	nm
V_{IH} High-level input voltage	—	2	—	—	V
V_{IL} Low-level input voltage	—	—	—	0.8	V
V_{IK} Input clamp voltage	V_{CC} = 4.75V, I_I = -12mA	—	—	-1.5	V
I_I Input current	V_{CC} = 5.5V, V_I = 5.5V	—	1	—	µA
I_{IH} High-level input current	V_{CC} = 5.5V, V_I = 2.4V	—	1	—	µA
I_{IL} Low-level input current	V_{CC} = 5.5V, V_I = 0.4V	—	-10	—	µA
I_{CC} Supply current, logic[d]	V_{CC} = 5.5V, V_{LED} = 5.5V	—	3	5	mA
I_{LED} Supply current, LED[d]	I_F(DP) = 1.5mA	—	15	20	mA

a. Luminous intensity measured with a light sensor and filter combination that approximate the International Commission on Illumination (CIE) eye-response curve.
b. Parameter measured with display of **A** and **E**.
c. Parameter measured with display of **B**.
d. All inputs at 0V.

Technical support

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