



## Si4Display or SC4DliteA 4 Digits Seven Segment LED Display



- 0.52" Red/Green LED Digits
- RS232 and TTL Interface
- Display ASCII Data
- Display integer & BCD Number
- Addressable and Cascadable
- Non Volatile Memory Storage

### GENERAL DESCRIPTION

SC4DliteA is a serial LED display module that accept serial data from any host device and display the received characters.

Data can be in the form of ASCII, 16 bits short integer and 4 digits Binary Coded Decimal(BCD) Display range -999 to 9999.

The module contain a programmable address and up to 254 modules can be cascaded in daisy chain style.

Serial connection can be TTL or RS232. Baud rate is programmable to 9600 bps, 19200 bps or 38400 bps.

### Key Features

- Individual Segment Control
- ASCII characters mode
- 16 bits Short Integer
- 4 Digits BCD Numbers
- Decimal Point Control
- Save and restore data from memory
- Dimmable LED Brightness
- Addressable and cascadable

### SERIAL COMMAND

#### Individual Segment Control

Each LED segment can be individually turn on or off.

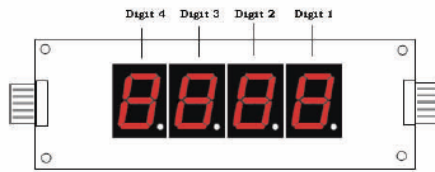
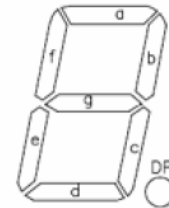
Command format

[uid] [ 'a' ] [ Digit 4 Segment Data ] [ Digit 3 Segment Data ] [ Digit 2 Segment Data ] [ Digit 1 Segment Data ]

Segment Data bit arrangement

e d c g DP f b a

Where segment e is the Most Significant Bit and segment a is the least significant bit



Example :

Character F segment data is

Binary 10010101  
Hexadecimal 0x95

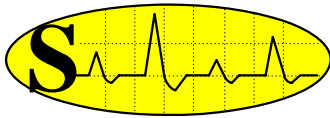


#### Display ASCII characters

Supported characters : -

Numeric 0 to 9

Alphabets A,b,C,c,d,E,F,H,h,I,J,L,n,O,o,P,r,S,t,U,u,y, - ( ° sign is display when ASCII 'T' is send )



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Command format

[uid] [ 'b' ] [ 4 ASCII Characters ]

Note : Sending unsupported character will cause the particular character blanked.

Example:

Show "HELP"

Send uid 0x62 0x48 0x45 0x4C 0x50

Show "25° C"

Send uid 0x62 0x32 0x35 0x54 0x43

## Decimal Points Display Control

Command format

[uid] [ 'c' ] [ dpctl ]

Turn off all decimal points : dpctl = 0x00

Turn on all decimal points : dpctl = 0x0F

Turn on decimal point 1 : dpctl = 0x01

Turn on decimal point 1 & 3 : dpctl = 0x05 ( Note : decimal point can be configured to turn on when power up )

## Display 16 bits Integer Number

Command format

Unsigned integer : [uid] [ 'f' ] [ 16 bits unsigned integer ]

Maximum display value : 9999

Example

To display 1999 ( 0x07CF )

Send uid 0x66 0x07 0xCF

Note : Leading zero is automatically blanked

Signed integer : [uid] [ 'g' ] [ 16 bits signed integer ]

Display range -999 to 9999

Example

To display - 256 ( 0xFF00)

Send uid 0x67 0xFF 0x00

## Display 4 digits BCD Number

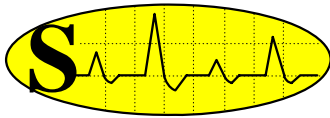
Command Format

[uid] [ 'd' ] [ BCD 1 ] [ BCD 0 ]

Example

To display 9948

Send uid 0x64 0x99 0x48



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## Communication Protocol

Default baud rate is 9600 , 8 data bits , no parity , 1 stop bit  
Default uid is 255

The uid and baud rate is programmable with command \*

[0x1E] [0x1E] [ baud ] [ uid ] [ decimal point 1 ] [ decimal point 2 ] [ decimal point 3 ] [ decimal point 4 ]

Where baud = 36 for 9600 bps                      decimal point x = 0 ( turn off when power on )  
              Baud = 18 for 19200 bps                decimal point x = 8 ( turn on when power on )  
              Baud = 9 for 38400 bps

Display shows " SET" when programming is done. You need to reset the display by turn off then turn on the display module for the changes to takes effect.

Settings are stored in the non volatile memory and remains unchanged until next setting.

The baud rate and uid setting is shown briefly during each power up cycle

"b9.6" followed by "Id 255" \* **Note: UID 30 is reserved for programming the Module**

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## Command Delay

A delay of 10ms is required before next command can be send.  
Delay requirement is reduced to 5 ms and 3 ms if the baud rate is changed to 19200 bps and 38400 bps respectively.

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## Save and Restore Display Value

Up to 20 non volatile memory storage space is available. Each is 4 bytes wide

Command [uid] ['s'] [page] save the current display value onto memory location pointer by "page"

These stored value can be restored by command

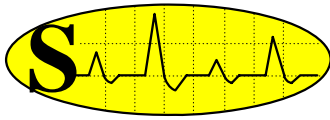
[uid] ['r'] [page]

Data on page 0 will be displayed on power up.

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## Connector Pin Out





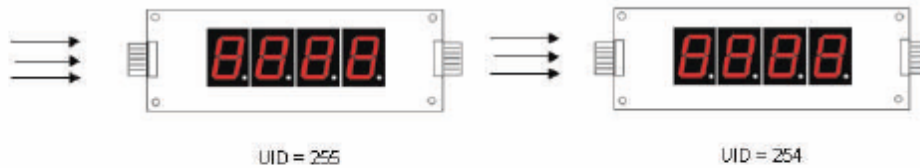
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Connector J1 is the input port. Both TTL and RS232 interface are available. Data from the host device is transmitted to the Receive Pin.

Connector J2 is the output port to the next module in the chain as shown below



Up to 254 modules can be cascaded to form the daisy chain. Each module in the chain must contain an unique uid that can be programmable. ( Note : Use separate power cable for every 5 modules in the chain )

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## Dimming the Display

LED brightness can be dimmed by command [uid][n'] . The brightness is then reduced to 50% of full brightness. To restore to full brightness send command [uid][n'] again.

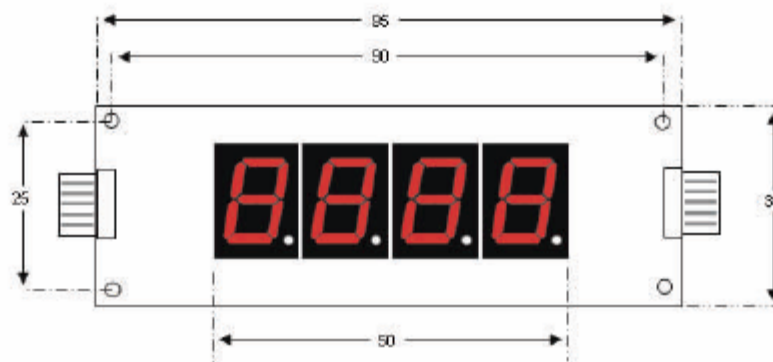
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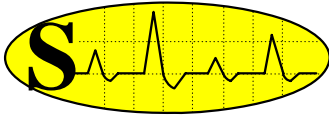
## Electrical Specification

|                                |              |
|--------------------------------|--------------|
| Operating voltage              | 5VDC +/- 10% |
| Average current consumption    | 100mA        |
| Operating Temperature          | 0°C to 70°C  |
| Maximum voltage on TTL input   | 5.5V         |
| TTL output high level voltage  | 3.3V         |
| Maximum cable length for RS232 | 3 meters     |

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## Mechanical Dimension ( mm )



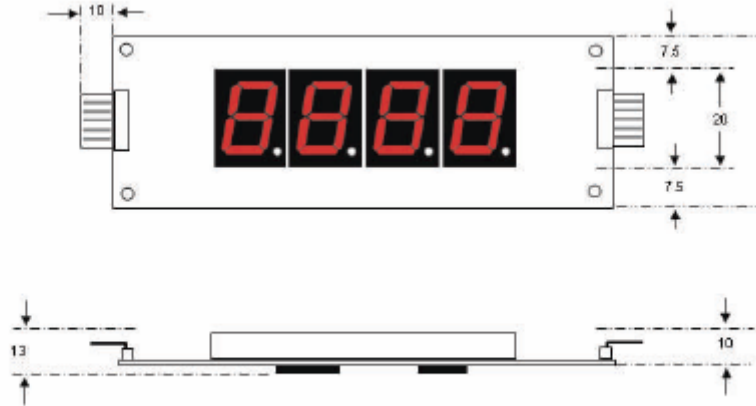


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Mounting Holes Diameter : 3 mm