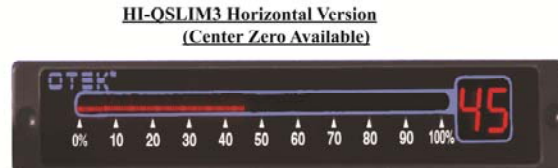


**Low Cost Smart Bargraph-Digital Meters**  
 For V/mADC Input And/Or USB/RS-232C/485, Remote Displays

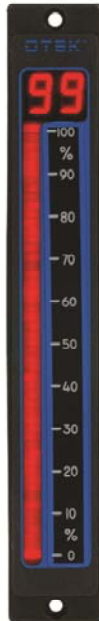
**MODEL  
 HI-QSLIM**



Zero & Span Adjustments Behind Overlay Not Shown

**DESCRIPTION:**  
 OTEK's new HI-QSLIM series of Low Cost Smart Indicators complement the extensive and proven HI-Q line of **Intelligent Programmable Controllers**. We have applied our expertise to bring you the industry's first low cost bargraph, without sacrificing the quality and reputation of our HI-Q line.  
**The HI-QSLIM1** offers eight (8) digits, seven-segment 0.6" display with limited alpha characters and 0-9 numerals plus decimal points.  
**The HI-QSLIM2** has 51 segments (2% resolution & 2 digits(1%).  
**The HI-QSLIM3** gives you 1% resolution with its 101 segment high intensity bargraph & 2 digit display.  
**Whichever** you choose for your application, you can depend on its quality and OTEK's limited lifetime warranty.

HI-QSLIM2



- FEATURES:**
- RS-232C or RS-485 I/O or USB I/O
  - ASCII Characters
  - Stackable on 1 Inch Centers
  - Vertical or Horizontal Viewing (Slim 3)
  - Zero & Span Front Panel Controls
  - Only 2" Deep NEMA3 Housing 6x1x2" (NEMA4X on Request)
  - Max power @5VDC: 1 watt, Universal Power Input
  - Standard Unicolor Red or Custom Multicolor (R,G,Y)
  - Free Custom Software for Minimum Purchases
  - Compatible with Any RS-232/422/485 /USBASCII System
  - Lifetime Warranty (LTD.)

HI-QSLIM3



- APPLICATIONS:**
- Remote Display for RS-232/485/USB
  - Process Meter (4-20mA/0-5VDC)
  - Trend Indicator
  - Counter
  - Timer
  - Inclinometer Indicator
  - Well Depth
  - Distance
  - Position
  - Altitude
  - Temperature
  - Pressure
  - Flow
  - Humidity
  - pH
  - RPM
  - Strokes Per Hour/Per Minute



IF YOU DON'T  
 SEE IT,  
 ASK FOR IT!



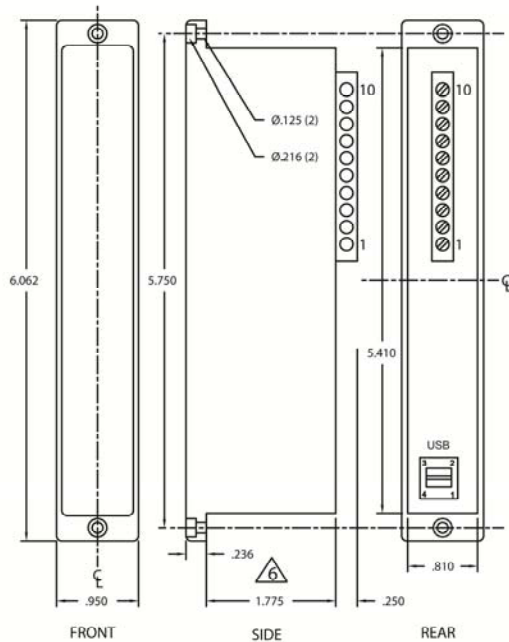
520-748-7900  
 FAX: 520-790-2808  
 E-MAIL:sales@otekcorp.com  
 http://www.otekcorp.com

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 MADE IN USA

# HI-QSLIM 3 USER'S MANUAL

## MECHANICAL INFORMATION



- NOTES:  
 1. RECOMMENDED PANEL CUTOUT: 0.840 x 5.452  
 2. MOUNTING HOLES (2) FOR #4 CLEARANCE HARDWARE SUPPLIED  
 3. WIRE SIZE ACCEPTED > 24 < 16 GA.  
 4. ALL DIM ±0.010"  
 5. FOR STACKED APPLICATIONS MAKE MOUNTING HOLES ON 0.960" CENTERS.  
 6. UNITS W/O POWER SUPPLY ARE ONLY 1.00" DEEP

F# 87SLIMME

| TYPICAL CONNECTIONS (All Models)   |                            |   |
|--|----------------------------|---|
| Notes: 1. Refer to your specific model# before making connections<br>2. Always apply power before signal<br>3. 5VDC ±5% (0.25V) at connector<br>4. Notice terminal orientation before connecting |                            |   |
| Terminal #   | Description                | Notes   |
| 10   | Dig. Gnd.                  | RS-232C & Digital Signal Ground               |
| 9  | Int 0                      | Do Not Connect Reserved for Custom            |
| 8  | T 0                        | Default Control                               |
| 7  | RXD/DO                     | Receive Data (RS-232C/485)                    |
| 6  | TXD/DO                     | Transmit Data (RS-232C/485)                   |
| 5  | Hi Pulse In                | +Digital Signal Input or Contact              |
| 4  | +Signal In                 | +Analog Signal Input                          |
| 3  | -Signal In or Low Pulse In | Internal Instrument Ground for Analog, Inputs |
| 2  | +Power In                  | +For VDC or AC High Input                     |
| 1  | -Power In                  | Gnd. for VDC or AC Low Power In               |
| 1  | <b>USB</b><br>VBUS         | <b>TYPE B</b><br>1 Watt Max                   |
| 2  | D+                         | +Data Input                                   |
| 3  | D-                         | -Data Input                                   |
| 4  | GND.                       | Power Ground                                  |

## SPECIFICATIONS

| PARAMETER                | HI-QSLIM-1      | HI-QSLIM-2          | HI-QSLIM-3          |
|--------------------------|-----------------|---------------------|---------------------|
| # Segments               | None            | 51                  | 101                 |
| # Digits                 | Eight (8)       | Two (2)             | Two (2)             |
| Analog Input Accuracy    | (On Request)    | ±1%                 | ±0.1%               |
| Analog Input Resolution  | (On Request)    | 1% (1 in 100)       | ±1% (1 in 100)      |
| Polarity                 | (On Request)    | Unipolar            | Unipolar            |
| Zero & Span              | (On Request)    | Yes                 | Yes                 |
| Input Impedance mA/VDC   | (On Request)    | 200Ω/100KΩ          | 200Ω/100KΩ          |
| Digital Input            |                 | TTL/CMOS            | TTL/CMOS            |
| Multilevel Inputs        |                 | Dry Contact to 250V | Dry Contact to 250V |
| Frequency Response TTL   |                 | 10K Hz              | 10KHz               |
| Serial I/O               | RS-232C/RS485   | RS-232C/RS485       | RS-232C/RS485       |
| Characters               | ASCII           | ASCII               | ASCII               |
| Baud Rate                | 9600 Std.       | 9600 Std.           | 9600 Std.           |
| Address Selection        | Via Serial Port | Via Serial Port     | Via Serial Port     |
| Power Req't @5VDC        | 2W              | 2W                  | 2W                  |
| Power Input Non-isolated | 5VDC±5%/6-32VDC | VDC±5%/6-32VDC      | 5VDC±5%/6-32VDC     |
| Power Input Isolated     | 5-32VDC         | 5-32VDC             | 5-32VDC             |
| Power Input Isolated     | 90-265 VAC      | 90-265 VAC          | 90-265VAC           |
| Operating Temperature    | 0-60°C          | 0-60°C              | 0-60°C              |
| Storage Temperature      | -20 to 70°C     | -20 to 70°C         | -20 to 70°C         |
| Humidity                 | 5-95% N.C.      | 5-95% N.C.          | 5-95% N.C.          |
| MTBF (Calculated)        | 100,000Hrs      | 100,000Hrs          | 100,000Hrs          |
| Front Panel**            | NEMA 3          | NEMA 3              | NEMA 3              |
| Weight                   | 3 oz. (84g.)    | 3 oz. (84g.)        | 3 oz. (84g.)        |

\* Specifications Subject to Change Without Notice! Contact OTEK for Your Custom Needs!!

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 FAX: 520-790-2808  
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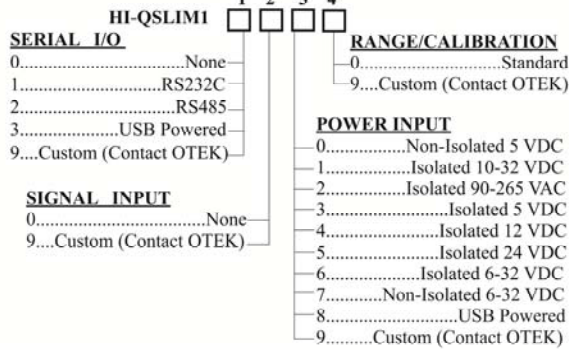


**ORDERING INFORMATION (12-14-11)**

**8 DIGIT LED COUNTER OR 4 DIGIT PROCESS INDICATOR**

**MODEL  
HIQ-SLIM1**

(1) 5½ Digits Only  
(50,000 Counts)  
(2) Event Counter Only.  
Consult OTEK for other  
Functions.  
(3) Consult Factory for  
Availability.

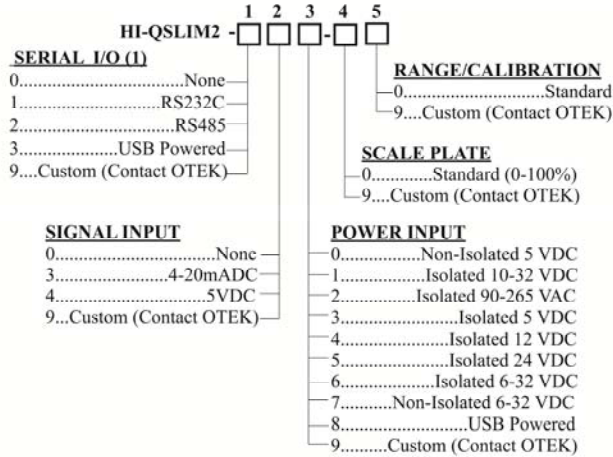


CF: Contact Factory

**51 SEGMENT LED BARGRAPH WITH 2 DIGIT LED DISPLAY**

**MODEL  
HIQ-SLIM2**

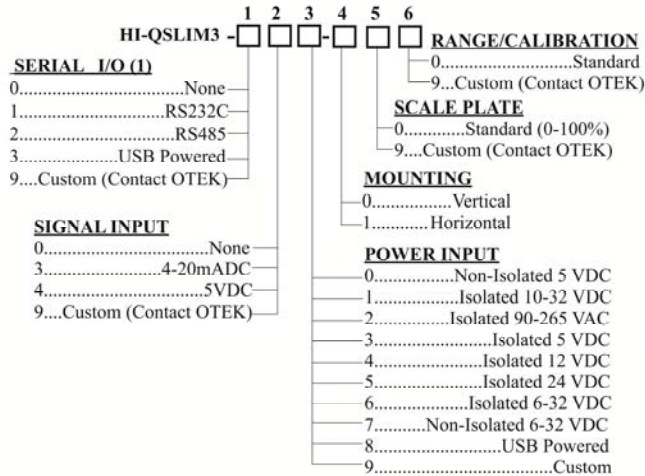
CF: Contact Factory



**101 SEGMENT LED BARGRAPH WITH 2 DIGIT LED DISPLAY**

**MODEL  
HIQ-SLIM3**

CF: Contact Factory



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FAX: 520-790-2808  
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4016 E. TENNESSEE ST.  
TUCSON, AZ. 85714 U.S.A.





4016 E. Tennessee St.  
Tucson, AZ 85714-2130  
Tel: 520-748-7900  
Fax: 520-790-2808

## Serial Communications Protocol for the HIQ-SLIM 2 and SLIM 3 Remote Display (5-2012)

### I. INTRODUCTION

The SLIM 2 and SLIM 3 uses the standard OTEK communication protocol, ASCII S + <ADDRESS> + <COMMAND> + <CR>. The starting character is S followed by the address. The default address is 01. The command follows and must be terminated by a carriage return <CR>. This document applies to firmware release SL2\_R100 and SL3\_R100.

### II. BARGRAPH FOLLOWS DIGITAL MODE

The seven segment digital display is controlled using the “d” command. Sending S01D45 displays 45 on the seven segment display. The BR. and BR\* command sends data for the bargraph display. The serial string S01BR.45 will illuminate 45% of the bottom LED bargraph segments.

### III. DEFAULT AND USER MODES

The SLIM 2 and SLIM 3 have two modes of operation. In DEFAULT mode, the device uses factory set operating parameters defined in section V. In USER mode, address, baud rate, configuration, flashing, and intensity settings revert to the state they were in the last time a WRITE command was issued. Which mode is used is determined on powerup by the position of an external jumper. To enable the factory default settings, jumper terminals 1 and 8 together. Serial commands can also change the operating modes (RST, RST/C).

### IV. DISPLAYED ASCII COMMAND SET

This table shows the decimal ASCII number, the character for that number and the character as displayed on the SLIM 2 AND 3 digital display. Sending ASCII 8 (BS - destructive backspace) will erase the previous character sent to the SLIM 2 AND 3 input buffer. Sending ASCII 27 (ESC) will clear the SLIM 2 AND 3 input buffer.

| Decimal | Char. | Display | Decimal | Char. | Display | Decimal | Char. | Display | Decimal | Char. | Display |
|---------|-------|---------|---------|-------|---------|---------|-------|---------|---------|-------|---------|
| 45      | -     | -       | 56      | 8     | 8       | 67      | C     | c       | 79      | O     | o       |
| 46      | .     | .       | 57      | 9     | 9       | 68      | D     | d       | 80      | P     | P       |
| 47      | /     | -       | 58      | :     | -       | 69      | E     | E       | 81      | Q     | -       |
| 48      | 0     | 0       | 59      | ;     | -       | 70      | F     | F       | 82      | R     | r       |
| 49      | 1     | 1       | 60      | <     | -       | 71      | G     | g       | 83      | S     | S       |
| 50      | 2     | 2       | 61      | =     | =       | 72      | H     | h       | 84      | T     | t       |
| 51      | 3     | 3       | 62      | >     | -       | 73      | I     | i       | 85      | U     | U       |
| 52      | 4     | 4       | 63      | ?     | -       | 74      | J     | j       | 86      | V     | -       |
| 53      | 5     | 5       | 64      | '     | -       | 75      | K     | -       | 87      | W     | -       |
| 54      | 6     | 6       | 65      | A     | A       | 76      | L     | L       | 88      | X     | -       |
| 55      | 7     | 7       | 66      | B     | b       | 77      | M     | -       | 89      | Y     | Y       |
|         |       |         |         |       |         | 78      | N     | n       | 90      | Z     | -       |

V. COMMANDS

| COMMAND | DESCRIPTION  | RANGE   | EXAMPLE   |
|---------|--|---|---|
| ADDRn   | Changes the address.<br>Default is 01.   | n = 0 to 2 ASCII characters.  | S01ADDR99<CR>   |
| BAUDnn  | Changes the baud rate.<br>Default is 9600.   | nn = 12 ⇒ 1200 baud.<br>nn = 24 ⇒ 2400.<br>nn = 48 ⇒ 4800.<br>nn = 96 ⇒ 9600.   | S01BAUD2400<CR>   |
| BR.nn   | Illuminates nn % of the bars from the bottom of the bargraph.                                      | nn = 0 to 100.<br>Non-numeric data is ignored.<br>Only integer values are displayed.  | S01BR.45<CR> 45% of the bottom bars are illuminated.<br><br>S01BR.4.5<CR> 4% of the bottom bars are illuminated |
| BR*nn   | Illuminates nn % of the bars from the top of the bargraph.   | nn = 0 to 100.<br>Non-numeric data is ignored.<br>Only integer values are displayed.  | S01BR* +/-45<CR> 45% of the top bars are illuminated.   |
| CONFn   | Change the SLIM configuration. Default is 4.   | n = (return). Returns current config.<br>0 = no echo of serial input.<br>4 = echo serial inputs.                                  | S01CONF<CR> Shows current configuration.  |
| Dnn     | Displays ASCII characters on 7 segment display. See also section II.                               | nn= ASCII chars.  | S01DHI<CR> display shows HI   |
| FLASHn  | Flashes display  | n = 0 to 1 no flashing.<br>n = 2 to 3 slowest (1.14 S).<br>n = 4 to 5 slow.<br>n = 6 to 7 medium.<br>n = 8 to 9 fastest (142 mS). | S01FLASH0<CR><br>S01FLASH3<CR>  |
| INTn    | Change display Intensity. There are four levels. Default is 9.                                     | n = 0 off.<br>n = 1 to 3 dim.<br>n = 4 to 6 medium.<br>n = 7 to 9 brightest.  | S01INT0<CR> display off<br>S01INT9<CR> display max  |
| PTn     | Light decimal point position. Default is 0.  | n = 0 no decimals on.<br>n = 1 to 2, numbered from left of the display.   | S01PT1<CR> 1st decimal point on.  |
| RST     | Resets SLIM to user values held in EEPROM.   | N/A   | S01RST<CR>  |
| RST/C   | Resets SLIM to factory default values.   | N/A   | S01RST/C<CR>  |
| WRITE   | Saves configuration data to EEPROM. Data saved includes: D+B mode, ADDR, BAUD, CONF, FLASH and INT | N/A   | S01WRITE<CR>  |