

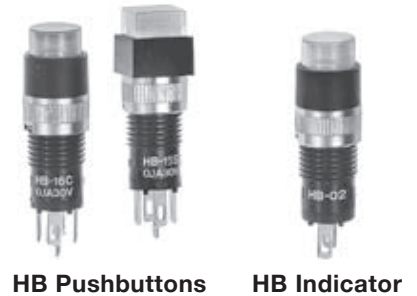
# Change Notice HB Series Illuminated Pushbuttons

## LED Specification Changes for AT633

Type of Change:

- Engineering     Part Number
- Product         Appearance

The HB Series Illuminated Pushbuttons and Indicators will have changes to the bright LEDs. These changes will effect the illumination of all models, both standard and custom. Differences in the LED specification values are outlined in the following table, in addition to a change of dimensions for AT633 LED.



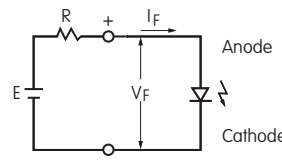
### BRIGHT LED CODES & SPECIFICATIONS

Electrical specifications are determined at a basic temperature of 25 °C.		Before Change			After Change		
		<b>5C</b> Red	<b>5D</b> Amber	<b>5F</b> Green	<b>5C</b> Red	<b>5D</b> Amber	<b>5F</b> Green
Maximum Forward Current	$I_{FM}$	30mA	30mA	25mA	30mA	30mA	<b>30mA</b>
Typical Forward Current	$I_F$	20mA	20mA	20mA	20mA	20mA	20mA
Forward Voltage	$V_F$	1.85V	2.0V	2.2V	<b>1.95V</b>	2.0V	<b>2.1V</b>
		( $I_F = 20$ )mA	( $I_F = 20$ )mA	( $I_F = 20$ )mA	( $I_F = 20$ )mA	( $I_F = 20$ )mA	( $I_F = 20$ )mA
Maximum Reverse Voltage	$V_{RM}$	5V	5V	5V	5V	5V	5V
Current Reduction Rate Above 25 °C	$\Delta I_F$	0.40mA/°C	0.42mA/°C	0.38mA/°C	<b>0.42mA/°C</b>	0.42mA/°C	<b>0.42mA/°C</b>
Ambient Temperature Range		25 °C ~ +50 °C			25 °C ~ +50 °C		
Bright LED AT633 Change to Dimensions Orientation Marking Black Dot Changing to D Flat							

The LED circuit is isolated and requires an external power source. If the source voltage exceeds rated voltage, a ballast resistor is required. The resistor value can be calculated by using the formula shown here.

**Notes:**

The color of the potting material for the Green LED is changing from transparent to green, but it is not visible externally on the switch. There are no changes to external dimensions of switches or indicators. Contact factory if further details are needed.



$$R = \frac{E - V_F}{I_F}$$

Where: R = Resistor Value (Ohms)  
 E = Source Voltage (V)  
 V<sub>F</sub> = Forward Voltage (V)  
 I<sub>F</sub> = Forward Current (A)

**Effective Date**

Changes to AT633 LEDs will be effective February 2015.

**NKK SWITCHES CO., LTD.** <http://www.nkk.com> E-mail: [nkkswitches@nkkswitches.co.jp](mailto:nkkswitches@nkkswitches.co.jp)

715-1 Unane, Takatsu-ku, Kawasaki-shi, 213-8553 Japan TEL: +81 44 813 8001 FAX: +81 44 813 8031

# Change Notice **HB Series Illuminated Pushbuttons**



AT633 LED

The AT633 LEDs will have changes that will effect illumination for Red, Amber and Green. These changes will alter all models, both standard and custom, of HB illuminated pushbuttons and indicators. Standard part numbers effected by these changes are listed in the following table.

<b>BRIGHT LED for HB ILLUMINATED PUSHBUTTONS &amp; INDICATORS</b>		
AT633C Red	AT633D Amber	AT633F Green

<b>HB SERIES PUSHBUTTONS with BRIGHT LED</b>		
HB15CKW01-5C	HB15CKW01-5D	HB15CKW01-5F
HB15SKW01-5C	HB15SKW01-5D	HB15SKW01-5F
HB16CKW01-5C	HB16CKW01-5D	HB16CKW01-5F
HB16SKW01-5C	HB16SKW01-5D	HB16SKW01-5F

<b>HB SERIES INDICATORS with BRIGHT LED</b>		
HB01W01-5C	HB01W01-5D	HB01W01-5F
HB02W01-5C	HB02W01-5D	HB02W01-5F