

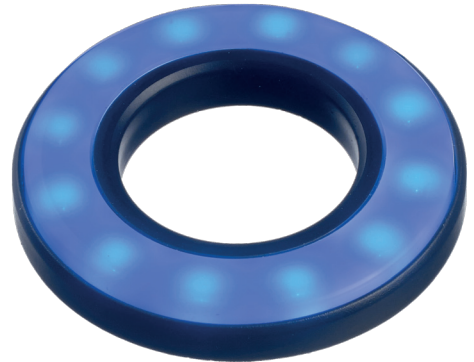
# QH SERIES Surface mount LED halo

## Distinctive Features and Specifications

QH\_VOY1612US

### Features

- Full LED halo illumination
- Single, dual and RGB colors available
- Designed to integrate with Ø16, Ø19 and Ø22mm panel cutout switches and other APEM indicators
- Ø22mm oversized version for integration with APEM's range of Emergency Stop Switches
- Panel sealed up to IP67
- 200mm 26AWG UL1061 wire terminations
- Zero behind panel depth
- Anti rotation pin as standard



### TECHNICAL SPECIFICATIONS

Voltage	Operating Voltage (Min to Max)	Operating Current (Typical All Types)
12VDC	12.0	4.2mA
to	to	
24VDC	26.4	20mA

<b>Max Reverse Voltage</b> : 5VDC
<b>Life Expectancy</b> : 50,000 Hours
<b>Operating Temperature Range</b> : -30 to +70°C
<b>Single color PCB</b> : 12 LED's
<b>Dual color PCB</b> : 12 LED's, 6 of each (alternately placed)
<b>RGB color PCB</b> : 12 LED's

Standard LED	Intensity	Forward Voltage
HE Red	120 mcd	2.0 (typical)
Green	350 mcd	3.1 (typical)
Yellow	90 mcd	2.0 (typical)
Blue	90 mcd	3.1 (typical)
White	350 mcd	3.1 (typical)

<b>Panel seal</b> : IP67 to EN60529 : 1992
<b>EMC Immunity</b> : EN61000-4-3 100V/m, extended to radiated fields in frequency range of 80MHz-2.7GHz, 1kHz 80% sine wave modulation
<b>EMC Emissions</b> : EN61000-6-4 : 2011 Class B 30Mhz-11Ghz
<b>Electrostatic Discharge</b> : EN61000-4-2 up to +/- 15KV
<b>Bezel &amp; Lens Material</b> : PC

RGB	Intensity	Forward Voltage
Red	100 mcd	2.0 (typical)
Green	300 mcd	3.0 (typical)
Blue	90 mcd	3.0 (typical)

Luminous intensity will be reduced with lower operating current.



Dimensions : first dimensions are in mm while inches are shown as bracketed numbers.  
Refer to the following pages for further information



Mounting accessories : Panel seal gasket

Note: The operating voltage must not be exceeded by more than 10% as this will result in reduced life expectancy.

The company reserves the right to change specifications without notice.

\* Customer to supply resistor for desired operating current.

Luminous intensity is measured at 20mA on a discrete LED unless otherwise stated.

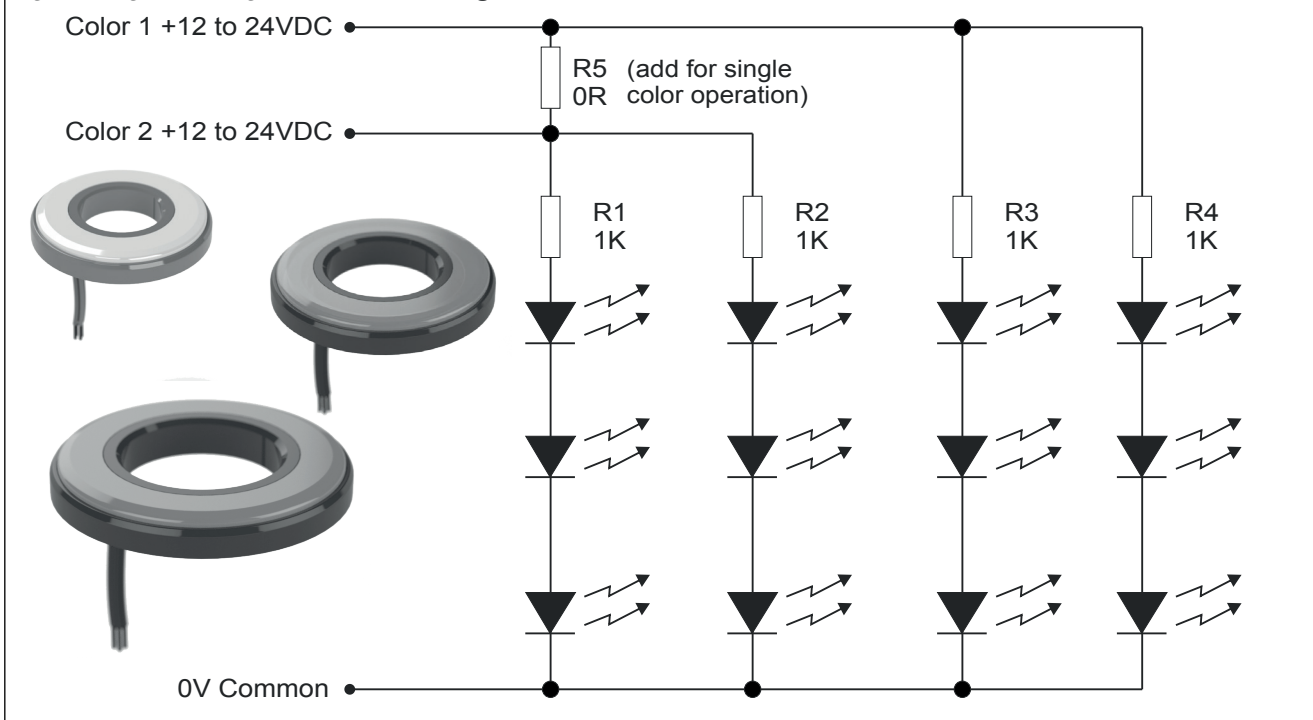
Luminous intensities and color shades of white LEDs may vary within a batch.

LED characteristics are dependent upon environmental conditions. Therefore published data should be considered nominal.

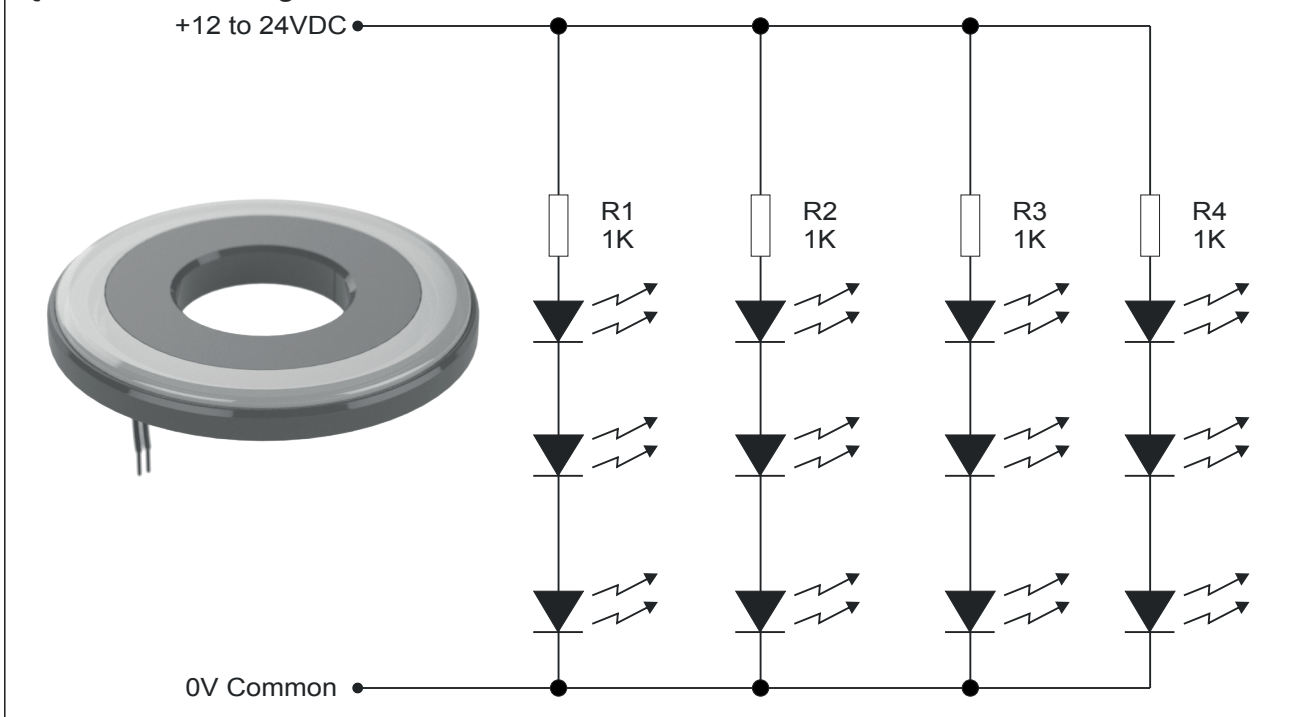
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## Technical Specifications (Cont)

### QH16, QH19 & QH22 Circuit Diagram



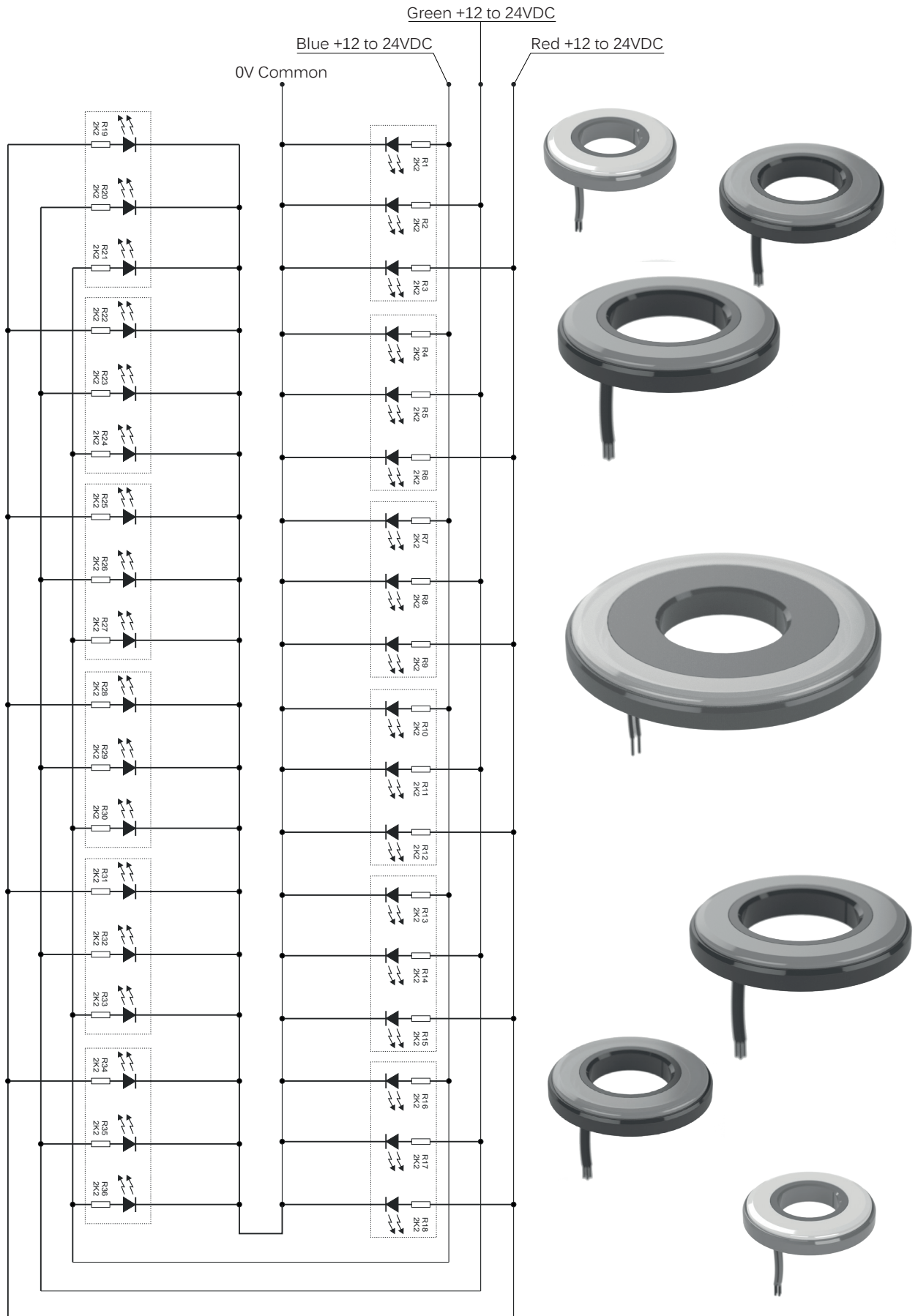
### QH22L Circuit Diagram



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## Technical specifications (Cont)

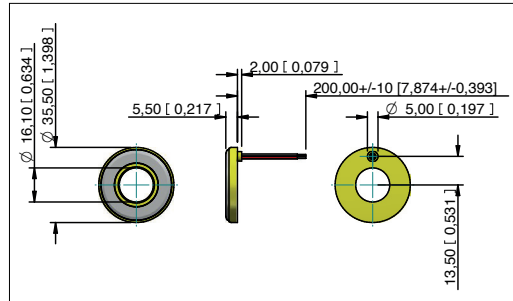
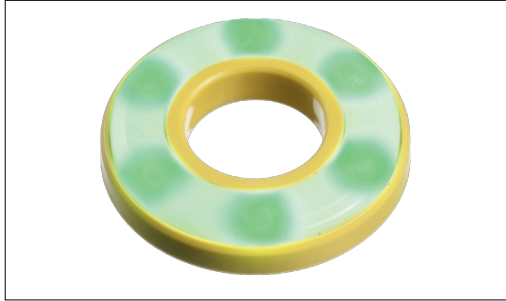
QH16, QH19 & QH22 RGB Circuit Diagram



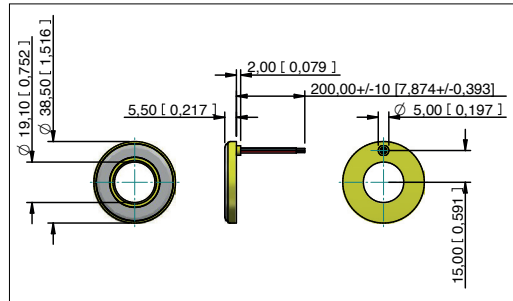
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## Technical Drawings

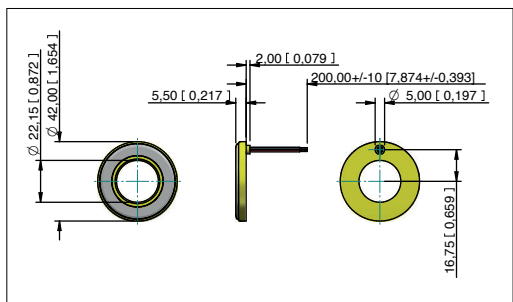
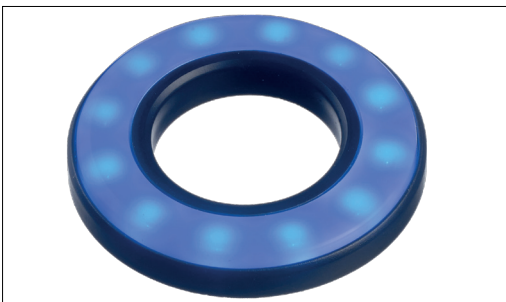
QH16 Ø16mm (.634")



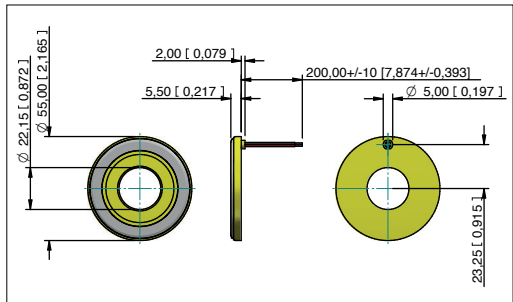
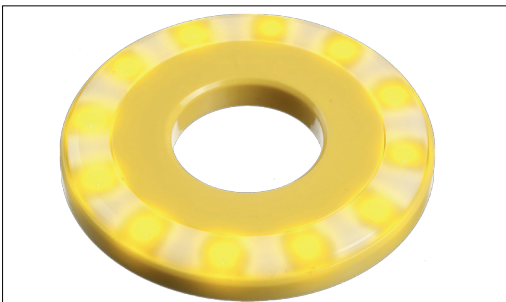
QH19 Ø19mm (.752")



QH22 Ø22mm (.872")



QH22L Ø22mm (.872")  
(oversized)



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## Order Overview

### STANDARD OPTIONS

The QH Series is available with a range of standard options, to specify your LED, simply choose one option from each column. An example is shown below.

<b>QH</b>		<b>22L</b>		<b>5</b>		<b>7</b>		<b>Y</b>		<b>C</b>
<b>SERIES</b>		<b>SIZE</b>		<b>BEZEL COLOR</b>		<b>LENS COLOR</b>		<b>LED COLOR</b>		<b>SEALING</b>
QH		160 = 16mm cutout 190 = 19mm cutout 220 = 22mm cutout 22L = 22mm cutout		1 = Blue 2 = Black 3 = Green 5 = Yellow 6 = Red 7 = White		1 = Blue 3 = Green 5 = Yellow 6 = Red 7 = Frosted White 8 = Tinted 9 = Transparent		<b>Single LED</b> R = Red G = Green Y = Yellow B = Blue W = White (clear) <b>RGB LED</b> RGB = RGB <b>Dual LED</b> RG = Red/Green RY = Red/Yellow BW = Blue/White		U = Unsealed C = IP67 (panel seal)

### Example



- Standard wire length is 200mm, 26AWG UL1061, for other wire lengths please contact APEM
- Colored wire denotes Anode (+), black wire denotes Cathode (-)
- Supply voltage is 12 to 24VDC, for alternative voltages please contact APEM
- Dual color LEDs are alternately placed on the internal PCB, by connecting one colored wire (+) a color is produced, by connecting the other colored wire (+) the second color is produced
- When implementing full-spectrum RGB the customer should supply an external Microcontroller driver