12V AUTO/MARINE

SEALED ILLUMINATED PUSH BUTTON SWITCHES

Tamper proof push button switch mounts in 16.0 mm (5/8") hole in panel up to .50" thick. Bushing & button is made from brass, nickel plated for durability. Features IP67 protection and illuminated ring around actuator. Switches can be used in both illuminated and non-illuminated application (12V DC LED).

SPECIFICATIONS:

Contact Rating:	3A @ 250V AC, 2V @ 24V DC
Electrical Life:	50.000 cycles
Contact Resistance:	50m-ohms max (initial).
Insulation Resistance:	1,000M-ohms min @ 500V DC
Dielectric Strength:	2,000V RMS 50 ~ 60Hz
Operating Temperature:	-20° ~ +70° C
Switching Circuit:	ON - ON (latching)
IP Class:	IP67 protection
Torque:	5 ~ 14Nm max. applied to nut
Operating Force:	5.5N max.

Part No.	Type	Action			Actuator
30-12646	SPDT	(ON)	or	(OFF)	Brass w / Red LED
30-12648	SPDT	(ON)	or	(OFF)	Brass w / Green LED
30-12650	SPDT	(ON)	or	(OFF)	Brass w / Blue LED
30-12652	SPDT	Push ON	-	Push OFF	Brass w / Red LED
30-12654	SPDT	Push ON	-	Push OFF	Brass w / Green LED
30-12656	SPDT	Push ON	-	Push OFF	Brass w / Blue LED

NOTE: ( ) = NOTE:

MATERIALS:

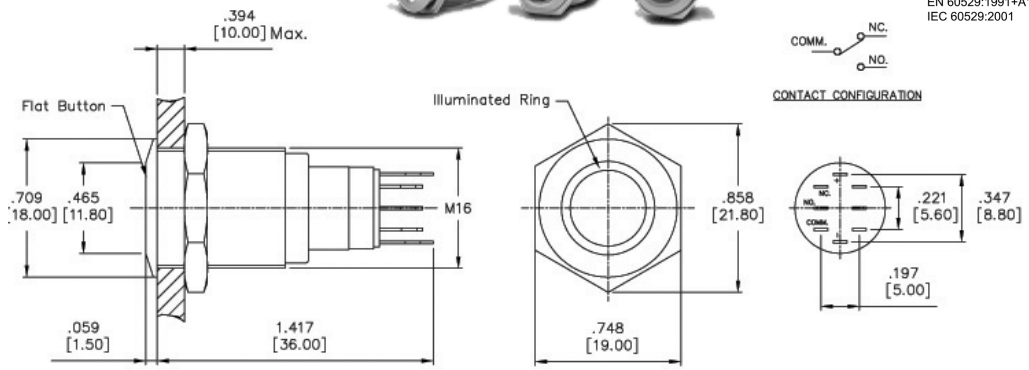
Bushing & Button:	Brass Nickel plated
Contacts:	Silver, alloy
Nut:	Nickel plated Brass
Base:	PBT.

WHAT IS AN IP CODE?
An IP code refers to the different levels of protection an enclosure provides. A worldwide standard has been established by the International Electrotechnical Commission (IEC). The code contains two separate numerals, the first numeral indicates protection against access to hazardous parts and protection of equipment against ingress of solid foreign objects, including dust. The second numeral indicates protection of equipment against harmful ingress of water.

IP67: 6 = complete protection against entry of dust (rating 1 to 6)
7 = protection against temporary immersion (rating 1 to 8)

IP 67
ACCORDING TO
EN 60529:1991+A1:2001
IEC 60529:2001

RoHS compliant



Using an LED

LED wth DC (Direct Current)

An LED (light emitting diode) requires about two volts to operate and twenty milliamps of current. A current limiting resistor must be used in series with an LED to prevent current over 20 mA from flowing; otherwise, your LED will be damaged. You may simply use Ohm's law to calculate the resistor value. Here is an example: We have a circuit operating at 12 volts DC, and need to know the value of a resistor to use. The LED "wants" two volts to operate ; so subtract 2 from the 12 volts which, is of course, ten. Plug the "ten" in at "E" and divide by "I" or .020 amps. The result is 500 ohms for the resistor value

If you forget to subtract the two volts, the resistor value will be 600 and the LED will not be at maximum brightness. However, it will last much longer (about double normal life)!

Another formula you can use is R=50(V-2). The R is for resistor, the V for voltage. We like this one as it is easy to recall and do in your head.

LED with AC (Alternating Current)

When using an LED with AC, a diode must be placed in series with the LED. Because AC will only be flowing 1/2 the time, we use a variation on the easy formula shown to the left(bottom). Use R=25(V2.7), which includes the voltage drop across the diode.

So, if you have a circuit using 28 volts AC, multiply 25.3 (or 28V -2.7), times 25 equals 632 ohms. We need to use a standard value resistor, so use 680 ohms for "R".

Typical voltages used in electronics and resistor values (rounded to nearest standard resistor).

DC Volts	5V	6V	12V	24V
Resistor (ohms)	150	180	470	1200

AC Volts	6V	12V	24V	48V	117V
Resistor (ohms)	82	220	560	1200	3K