

***tyco***

*Electronics*

Industrial Control Switches

**SWITCHES**

**Alcoswitch**



## INTRODUCTION

The **Alcoswitch** range of modular control switches and indicating units offers many application solutions on low voltage electrical circuits, both in alternating and direct current.

- Actuators are available for  $\varnothing 22\text{mm}$  fixing
- Bodies are in thermoplastic.
- Metal body actuators in round and square are also available.
- Protection class is IP65, which means protection against penetration of solids, dust and liquids.

The control switch range includes:

- Maintained and momentary push-buttons
- Illuminated and non-illuminated versions
- Key and long handle selector switches
- Pilot lights
- Mushroom and emergency stop pushbuttons

In addition a complete range of accessories are built and designed to satisfy application needs.

### Benefits

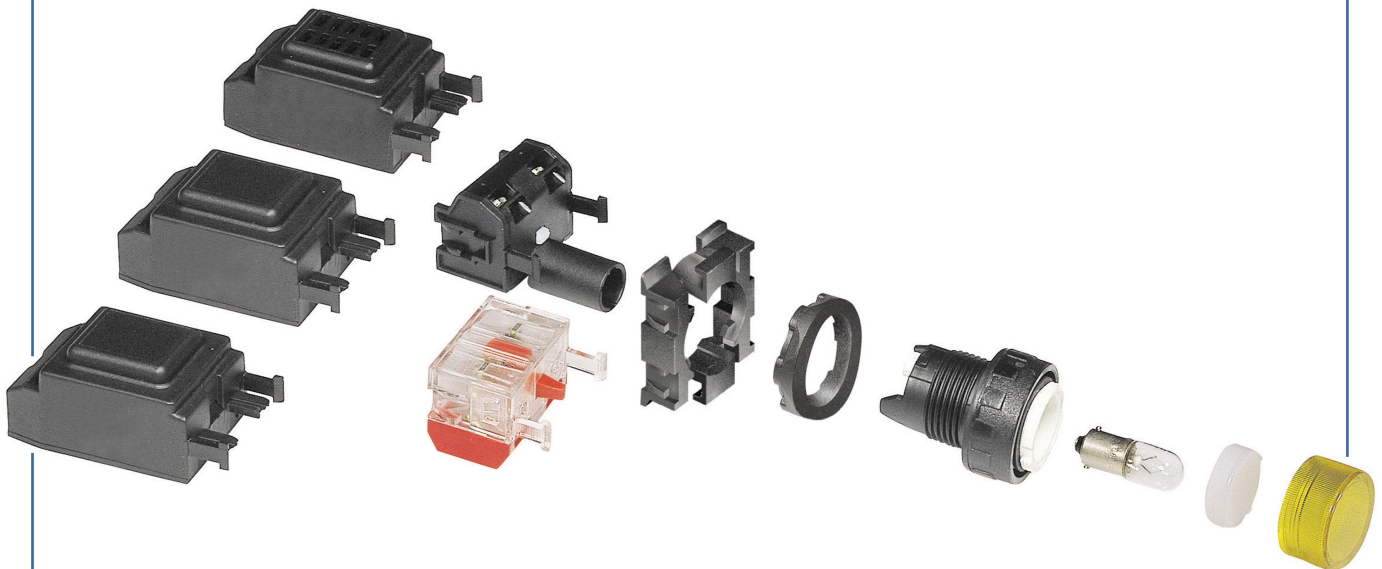
Thermoplastic bodies are centrally fixed by the new ergonomically designed lock nut which can be easily and safely fitted by hand or by using the installation tool, offering faster assembly time to the barrel thread.

Contact blocks and power supplies have a (quick connect) locking system and can be wired independent from the switch body to obtain high flexibility and easy installation/maintenance.








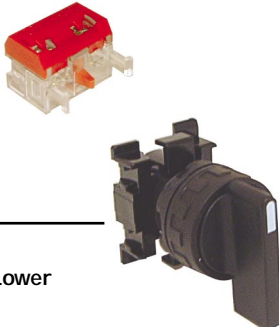









Ingress protection to class IP20 avoids accidental finger contact on electrical parts.







Modular contact blocks are available with screw or fast-on terminals.







This range of products are based on thermoplastic bodies, a full range of metal bodies are also available from within the Tyco Electronics Alcoswitch range.



## NON-ILLUMINATED SELECTOR SWITCHES

Contact Block Configuration				Positions				
	Tyco Part Number			60°		60°		
	Screw Terminal	Faston Terminal		0	1	1	0	2
								
<b>Upper</b>  	1478337-1	1478338-1	 1 — 2	X		X		
	1478337-2	1478338-2	 3 — 4		X			X
	1478337-3	1478338-3	 5 — 6	X		X	X	
	1478337-4	1478338-4	 3 — 4		X		X	X
<b>Lower</b>  	1478337-1	1478338-1	 1 — 2	X		X		
	1478337-2	1478338-2	 3 — 4		X			X
	1478337-3	1478338-3	 5 — 6	X		X	X	
	1478337-4	1478338-4	 7 — 8		X		X	X












Key Selector Switch			
		1478322-1	
		1478322-2	
			1478322-3
			1478322-4
			1478322-5









Black Long Handle			
		1478323-1	
		1478323-2	
			1478323-3
			1478323-4
			1478323-5








X = Contact closure. Closures to be obtained inserting contact blocks on upper or lower.

• Contact blocks to be ordered separately.


## ILLUMINATED & NON ILLUMINATED MOMENTARY PUSHBUTTONS, ROUND SERIES

		Non Illuminated Push Button									
		Flush Guard					Extended Button				
											
Tyco Part Number	1478324-1	1478325-1	1478325-2	1478325-3	1478325-4	1478325-5	1478326-1	1478326-2	1478326-3	1478326-4	1478326-5



















		Push Button "reset"					Momentary Mushroom Head with Lens
1478375-1 includes lens with 							
Tyco Part Number	1478375-1	1478325-1	1478325-2	1478325-3	1478325-4	1478325-5	1478327-1

		Illuminated Push Button					
		Extended Button			Mushroom Head		
							
Tyco Part Number	1478328-1	1478329-1	1478329-2	1478329-3	1478331-3	1478331-1	1478331-2

## MOMENTARY DUAL OPERATOR PUSHBUTTONS (IP40)

<ul style="list-style-type: none"> <li>• For additional Seal to IP66 see 1478337-1</li> <li>• Direct supply to obtain warning light 1478343-1 (power supply)</li> </ul>	
Tyco Part Number	1478376-1





## CONTACT BLOCKS

	with screw terminals				with faston terminals			
								
Function	 1NC	 1NO	 1NC late break	 1NO early closure	 1NC	 1NO	 1NC late break	 1NO early closure
Diagram								
Tyco Part Number	1478337-1	1478337-2	1478337-3	1478337-4	1478338-1	1478338-2	1478338-3	1478338-4








- Contact blocks to be ordered separately.
- Lenses to be ordered separately
- For lamp (BA 9s) see page 6

• For AMP Faston Terminals contact your local sales office






## POWER SUPPLIES






	Transformer		Resistor	Flasher	Full Voltage Module
					
Voltages	230/6V	230/24V	230/130V	12..130V	Direct supply for modular illuminated control switches (BA 9s)
Lamps	6..7,5V - 0,6..1,2W	24V - 1,2W	130V - 1,2W AC/DC	2..12W AC/DC	
Tyco Part Number	1478339-1	1478339-2	1478340-1	1478341-1	

## MAINTAINED PUSH BUTTONS

	Switch Body push on / push off					
						
						
Tyco Part Number	1478332-1	1478333-1	1478333-2	1478333-3	1478333-4	1478333-5
Operator	Use early closure contact blocks 1478337-4 - 1478338-4					

## PILOT LIGHTS


	Modular Switch Body			
				
				
Tyco Part Number	1478334-1	1478335-1	1478335-2	1478335-3

	Monolithic Pilot Light Thermoplastic Body			
<ul style="list-style-type: none"> <li>• With screw and faston terminals</li> <li>• Contact blocks not required</li> </ul>				
				
Tyco Part Number	1478334-2	1478335-1	1478335-2	1478335-3

- Contact blocks to be ordered separately.
- Lens to be ordered separately
- For lamp (BA 9s) see page 6

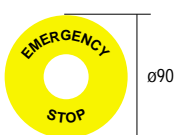
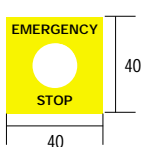
## EMERGENCY STOP MUSHROOM PUSH BUTTONS, TURN TO RESET, ROUND SERIES.

ACCORDING TO EN60418 SAFETY REQUIREMENTS

	Emergency Stop (ø40mm) without Contact Block	Emergency Stop in enclosure with Contact Block
		
		Suitable for metric cable glands M16 / M20
Tyco Part Number	1478336-1	1478336-2



- If using Normally Closed (NC) contact blocks use 1478337-1 or 1478338-1
- If using Normally Open (NO) contact blocks use 1478337-4 or 1478338-4

## EMERGENCY STOP

	Self Adhesive legend plate - yellow background	Emergency Stop in Thermoplastic
		
Tyco Part Number	1478383-1	1478383-2

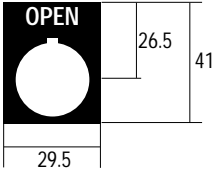
## ACCESSORIES

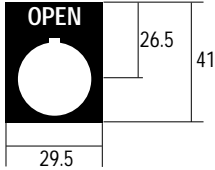
	Installation tool for central fixture nut (ø22mm)	Sealing Cap IP66 (used with 1478376-1)
		
Tyco Part Number	1478342-1	1478377-1

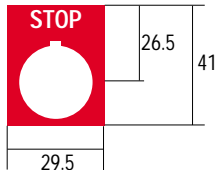
	BA 9s Filament Lamp		BA 9s Neon Lamp
			
Voltages / Watts	24V - 2W	6V - 1,2W	220V
Tyco Part Number	1478378-1	1478378-2	1478378-3

## ACCESSORIES

(CONTINUED)

Thermoplastic Legend Plates For Push Buttons								
								
Description	CLOSE	CLOSED	DOWN	FAST	FORWARD	IN	INCH	OFF
Tyco Part Number	1478381-1	1478381-2	1478381-3	1478381-4	1478381-5	1478381-6	1478381-7	1478381-8
Description	ON	OPEN	OUT	REVERSE	RUN	SLOW	START	STOP
Tyco Part Number	1478381-9	1-1478381-0	1-1478381-1	1-1478381-2	1-1478381-3	1-1478381-4	1-1478381-5	1-1478381-6

Thermoplastic Legend Plates For Selector Switches					
					
Description	MAN/O/AUTO	ON/OFF/AUTO	OPEN/OFF/CLOSED	OFF/ON	BLANK
Tyco Part Number	1-1478381-7	1-1478381-8	1-1478381-9	2-1478381-0	2-1478381-1


Thermoplastic Legend Plates Red Background	
	
Description	STOP
Tyco Part Number	1478382-1
Description	BLANK
Tyco Part Number	1487382-2

## TECHNICAL INFORMATION

ALTERNATING CURRENT (IEC/EN 60947-5-1)	Contact Blocks								
	1478337-1 (2)(3)(4) 1478338-1 (2)(3)(4)								
	(Ø22)								
Rated isolation voltage $U_i$	V	690							
Rated impulse voltage $U_{imp}$	kV	6							
Rated voltage $U_e$	V	24	48	110/120	240	400	500	600	
<b>Rated current <math>I_e</math></b>									
<b>AC-15</b> Electromagnetic loads >72VA	A	10	8.5	6.5	4.5	2.6	2.1	1.6	
<b>AC-12</b> Resistive loads and solid state loads with insulation by opto couplers	A	-	-	-	-	-	-	-	
<b>AC-13</b> Solid state loads with transformer insulation	A	-	-	-	-	-	-	-	
<b>Minimum operating levels</b>		28V DC - 7 mA							
<b>Rated thermal current</b>									
open (IEC) $I_{th}$	A	12							
enclosed (IEC) $I_{the}$	A	10							
<b>Category / Protection class</b>		C Group (VDEO1106) / Class II (CEI 23-11)							
<b>Wasted power at thermal rated current <math>I_{the}</math></b>	W	≤ 0.3							
<b>Short-circuit protection</b>		1 kA (fuse NDZ 10A-500V gL/gG)							

DIRECT CURRENT (IEC / EN 60947-5-1)	1478337-1 (2) 1478338-1 (2)								
RATED VOLTAGE $U_e$	V	1478337-4 (3) 1478338-4 (3)			250	440	500	600	
		24	48	125					
<b>DC-12</b> Resistive loads and solid state loads with insulation by opto couplers									
Rated current $I_e$	A	-	-	-	-	-	-	-	
<b>DC-13</b> Control of electromagnets									
Rated current $I_e$	A	4	2	1.1	0.55	0.31	0.27	0.2	
Electrical life in AC with $U_e, I_e$ (operations)		200.000 (AC-15)							
Electrical life in DC with $U_e, I_e$ (operations)		- (DC-13)							

UL / CSA	1478337-1 (2) 1478338-1 (2)	1478337-3 (4) 1478338-3 (4)
<b>General Use</b>	6A-600V AC / 6A-125V DC	6A-600V AC / 4A-125V DC
Heavy Pilot Duty (HD)	code designation A600 (HD)	code designation A600 (HD)
Standard Duty (SD)	code designation P600 (SD)	code designation P150 (SD)

POWER SUPPLIES	Direct Supply				Transformer		Resistor		Flasher	
Rated isolation voltage $U_i$	V	250	-	250	250	250	250	250	250	
Maximum rated voltage $U_{e max}$	V	250	-	250	250	250	250	250	250	
Rated voltage primary circuit	V	-	110/220	220/220/380	110/220	220	-	-	-	
Rated voltage secondary circuit	V	-	6	24	48	130	-	-	-	
Frequency	Hz	-	50/60	50/60	-	-	50/60	50/60	50/60	
Flash frequency at rated voltage (per min.)		-	-	-	-	-	70±10	70±5	70±5	
Flash begins at minute-at rated voltage		-	-	-	-	-	<20 sec	immediate	immediate	
Power supply		AC-DC	AC	AC	AC-DC	AC-DC	AC-DC	AC	AC	
Rated power	W	2	0.6..1	2..3	1,2	2..2,6	2..12	1..2	1..2	
Short-circuit resistant of the secondary circuit for building										
<b>Max. wire gauges</b>										
Terminal sizes according to IEC / EN 60947-5-1		A3	A2	A1	A3	A3	A3	A3	A3	
Rigid and stranded	N. x mm <sup>2</sup>	1 x 0,5..3,3 o 2 x 2,5	1 x 1..2,5 o 2 x 2,5	1 x 0,75..1,5 o 2 x 1,5	1 x 0,5..3,3 o 2x2,5	1 x 0,5..3,3 o 2x2,5	1 x 0,5..3,3 o 2x2,5	1 x 0,5..3,3 o 2x2,5	1 x 0,5..3,3 o 2x2,5	
	N. x AWG	1 x 20..12 o 2 x 14	1 x 14..12 o 2 x 14	1 x 18..16 o 2 x 16	1 x 20..12 o 2x14	1 x 20..12 o 2x14	1 x 20..12 o 2x14	1 x 20..12 o 2x14	1 x 20..12 o 2x14	
<b>Terminals</b>	Type	screw	screw	screw	screw	screw	screw	screw	screw	
	Thread	M3,5	M3,5	M3,5	M3,5	M3,5	M3,5	M3,5	M3,5	
	Screwdriver size	3/2	3/2	2	3/2	3/2	3/2	3/2	3/2	



## TECHNICAL INFORMATION

PILOT LIGHTS		ø22	Monolithic ø22
Connection Lamp holder		BA 9s	BA 9s/E10
Rated voltage	W	2	3
Rated isolation voltage $U_i$	V	250	250
Maximum rated voltage $U_{e\ max}$	V	250	250
Rated impulse voltage $U_{imp}$	kV	4	4
Max. wire gauges			
Terminal sizes according to IEC/EN 60947-1		A3	B1
Stranded/Solid wire	N° x mm <sup>2</sup>	2 x 0.5..1.5	2 x 0.5..1.5
	N° x AWG	2 x 20..16	2 x 20..16
<b>Terminals</b>	Recommended torque Nm	0,8	0,8
	Type	screw	screw
	Thread	M3	M3
	Screwdriver size	2/-	2/-

ENVIRONMENTAL DATA		All ranges
Ambient Temperature	Operation Storage	-25°C to +65°C -40°C to +80°C

MECHANICAL DATA		1478337-1 (2)(3)(4) 1478338-1 (2)(3)(4) (ø22 - Monolithic signal)
<b>Protection class</b> according to IEC/EN60529		
Front		IP65
Base		IP20
<b>Mechanical life</b> (Millions operations)		
Illuminated/non-illuminated momentary pushbuttons		6
Illuminated/non-illuminated maintained pushbuttons		1
Non-illuminated selector switches		1
Illuminated selector switches		0.2
Emergency mushroom pushbutton		0.2
Maintained mushroom pushbuttons		0.2
Maintained push-on/push off pushbuttons		1
Joystick operators		1
Control stations with momentary operators		6
<b>Oscillations resistance</b> (base mounting)		
Frequency	Hz	2..13,2 - 10..100 Hz
Clash/displacement width	mm	±1
Pick-up	g	0.7
<b>Max. wire gauges</b>		
Terminal sizes according to IEC/EN 60947-5-1		A3
Rigid and stranded wire	N. x mm <sup>2</sup>	1 x 0,5..3,3 o 2 x 2,5
	N. x AWG	1 x 20..12 o 2 x 14
<b>Terminals</b>	Type	screw
	Thread	M3,5
	Screwdriver size	3/2
	Type	Clutch 1 x 6,3mm or 2 x 2,8mm
<b>Max. no. of contacts on operators</b>		
non-illuminated / illuminated with direct supply		4 (on 2 levels)
non-illuminated selector switches		4 (on 2 levels)
illuminated with transformer or resistor		2 (on 2 levels)
illuminated / non-illuminated push on / push off		2 (on 1 level)

APPROVALS
CE-Confirnal, CSA (Canada), R.I.Na. Italian Naval Register, UR (USA)

## SPECIFICATIONS

Colours according to IEC/EN 60204-1	
<p>Colours used for starting pushbuttons are white, grey or black, preferably white. Also green is permitted. Red is not to be used. Red must be used for emergency stop pushbuttons.</p> <p>Colours for stop buttons are black, grey or white, preferably black. Also red is permitted. Green is not to be used. White, grey and black are recommended colours for start/stop pushbuttons. Not to be used</p>	<p>colours are red, yellow or green. White, grey and black are recommended colours for maintained pushbuttons. Red, yellow or green are not to be used.</p> <p>Green is the colour reserved to those functions indicating standard or safety conditions. Yellow is the colour reserved to those functions indicating standard or safety conditions. Yellow is the colour reserved for indicating dangerous or</p>
<p>non-standard conditions. Blue is the colour reserved to all compulsory functions. Reset pushbuttons must be blue, white, grey or black. When used as stop/switch off pushbuttons, colours recommended are white, grey or black with a strong preference for black. Green is not to be used.</p>	
PUSH BUTTONS (NON-ILLUMINATED)	PILOT LIGHTS
<ul style="list-style-type: none"> <li><span style="color: red;">●</span> <b>RED</b> Emergency (push in case of danger or emergency)</li> <li><span style="color: yellow;">●</span> <b>YELLOW</b> Non-Standard (push in case of non-standard condition) To stop one non-standard condition or re-start one interrupted automatic cycle</li> <li><span style="color: green;">●</span> <b>GREEN</b> Safety (push in case of safety condition or to prepare one standard condition)</li> <li><span style="color: blue;">●</span> <b>BLUE</b> Compulsory (push when a condition requires one compulsory action). Reset function</li> <li><span style="color: white;">○</span> <b>WHITE</b> No particular meaning For general start of functions excepted emergency stop ①. Start (optional) or stop.</li> <li><span style="color: grey;">●</span> <b>GREY</b> No particular meaning For general start of functions excepted emergency stop ①. Start or stop.</li> <li><span style="color: black;">●</span> <b>BLACK</b> No particular meaning For general start of functions excepted emergency stop ①. Stop (optional) or start.</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: red;">●</span> <b>RED</b> Emergency (dangerous conditions). Immediate action to solve one dangerous situation (es. moving the emergency stop).</li> <li><span style="color: yellow;">●</span> <b>YELLOW</b> Non-standard (non-standard or difficult situation). Control or intervention (es. re-establishing the desired function).</li> <li><span style="color: green;">●</span> <b>GREEN</b> Standard (standard condition). Authorisation to proceed.</li> <li><span style="color: blue;">●</span> <b>BLUE</b> Compulsory (indicates that an operator intervention is needed). Obligation.</li> <li><span style="color: white;">○</span> <b>WHITE</b> Neutral (control and general information). It can be used in any case of doubt as an alternative to red, yellow, green and blue.</li> </ul>

① In case of use of an additional coding (for example body, shape, position) to identify pushbuttons actuators, the same colour white, grey or black can be employed for different functions (for example white for starting or stop actuators).

ILLUMINATED PUSHBUTTONS	
MOUNTING HOLES $\varnothing 22$	

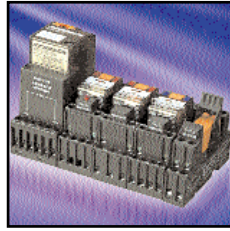
ILLuminated pushbuttons actuators must be coloured according to "Pushbuttons and pilot lights" colour code. When a suitable colour is difficult to be determined, it is necessary to use white.

# Alcoswitch

## ASSOCIATED PRODUCTS



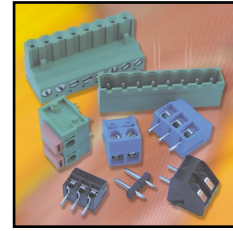
HTS Heavy Duty Connectors



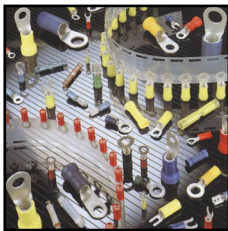
Schrack Relays



CPC/Triad Circular Connectors



Buchanan Terminal Blocks



AMP Terminals and Splices



Alco Microswitches



Alco Illuminated Pushbuttons



Alco Powerswitches

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1478323-4	3	1478332-5	3	1478339-1	5	1-1478381-1	7
1478323-5	3	1478332-1	5	1478339-2	5	1-1478381-2	7
1478324-1	4	1478333-1	5	1478340-1	5	1-1478381-3	7
1478325-1	4	1478333-2	5	1478341-1	5	1-1478381-4	7
1478325-2	4	1478333-3	5	1478342-1	6	1-1478381-5	7
1478325-3	4	1478333-4	5	1478343-1	5	1-1478381-6	7
1478325-4	4	1478333-5	5	1478375-1	4	1-1478381-7	7
1478325-5	4	1478334-1	5	1478376-1	4	1-1478381-8	7
1478326-1	4	1478334-2	5	1478377-1	6	1-1478381-9	7
1478326-2	4	1478335-1	5	1478378-1	6	2-1478381-0	7
1478326-3	4	1478335-2	5	1478378-2	6	2-1478381-1	7
1478326-4	4	1478335-3	5	1478378-3	6	1478382-1	7
1478326-5	4	1478336-1	6	1478381-1	7	1487382-2	7
1478327-1	4	1478336-2	6	1478381-2	7	1478383-1	6
1478328-1	4	1478337-1	3	1478381-3	7	1478383-2	6
1478329-1	4	1478337-2	3	1478381-4	7		

Contact your local Tyco Sales Office for:

- Metal Shell alternatives
- Additional product development information
- Customer special requirements

Specifications are subject to change

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