

# Push Buttons and Operator Interface Specifier's Guide Printed Circuit Board Components XA2B-XB2B

File 9001



**Merlin Gerin**  
**Modicon**  
**Square D**  
**Telemecanique**  
*Schneider Electric Brands*

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**SQUARE D**  
Schneider Electric

# Push Buttons and Operator Interface Specifiers Guide

## Printed Circuit Board Components XA2B-XB2B

### General Characteristics



#### Environment (typical ZA2B or ZB2B operator)

Compatibility	This method of connection for the XA2B and XB2B uses special electrical blocks, combined with a range of standard operators.
Conformity to standards	IEC 60947-5-1, NF C 63-140, ASE 0119, ASE 1003, BS 4794, VDE 0660 part 200, UL 508, CSA C 22-2 No. 14.
Approvals	UL Recognized, CSA Certified
Protective treatment	"TC" (All climates.)
Ambient air temperature	Storage: from -40 °C to +70 °C (-40 °F to +158 °F). Operation: from -25 °C to +70 °C (-13 °F to +140 °F).
Operating positions	All positions
Resistance to vibration	60 mm mushroom head push buttons: 4 g; Other push buttons: 10 g; Joystick controller: 5 g.
Resistance to shock	Push buttons: 70 g; Mushroom head push buttons: 15 g; Selector switches: 120 g. Conforming to IEC 60068 2-27.
Electric shock protection	Class II, conforming to IEC 60536 and NF C 20-030
Mechanical life	1 million operations (latching mushroom head push buttons: 300,000 operations, illuminated selector switches: 100,000 operations).

#### Setting up characteristics

Printed circuit board assembly	The special sub-bases, type <b>ZA2BZ079</b> or <b>ZB2BZ079</b> , must be used (see page 340)
Printed circuit board	Thickness: from 1.6 to 3.2 mm
Flow soldering	Maximum temperature: 250 °C Speed: 1.2 m/sec.

#### Contact block characteristics

Rated insulation voltage	300 V conforming to UL 508 and CSA C 22-2 No. 14, 250 V conforming to NF C 20-040, VDE 0110.
Insulation category	Group C conforming to NF C 20-040 and VDE 0110.
Contact operation	Slow break (N.C. contact with direct opening operation).
Operating force	Flush and projecting push buttons - with 1 N.O. contact: 2.25 lb - with 1 N.O. contact: 1.8 lb Additional contacts: -N.O.: +1.13 lb, N.C.: +0.7 lb
Terminal referencing	Unmarked
Short circuit protection	10 A cartridge fuses gF.
Rated power conforming to IEC 947-5-1	Utilization category: B300 - Q300



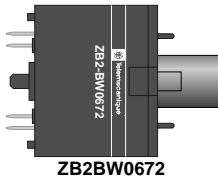
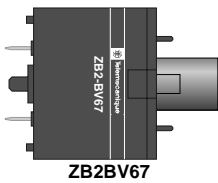
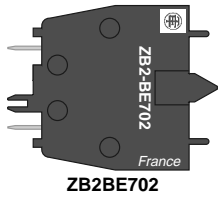
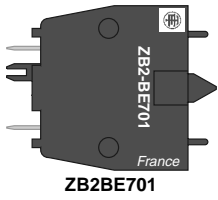
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NKCR2



File LR 44087  
Class 3211 03



**Contact Blocks**



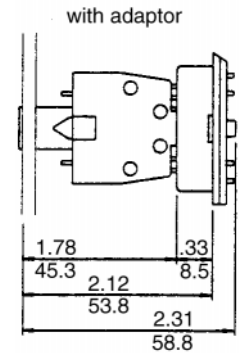
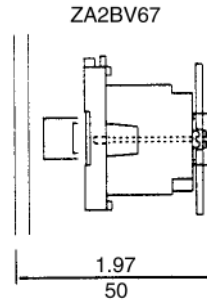
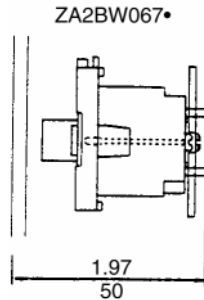
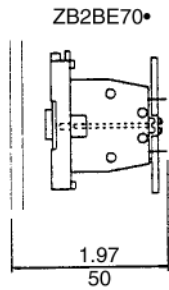
Description		Part Number
Normally Open Contact Block		ZB2BE701
Normally Closed Contact Block		ZB2BE702

**Pilot Light Block**

Pilot Light Block Direct Supply		ZB2BV67
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**Combination Blocks Pilot Light + Contact(s)**

Pilot Light Block (Direct Supply) 1 Normally Open Contact		ZB2BW0671
Pilot Light Block (Direct Supply) + 1 Normally Closed Contact		ZB2BW0672
Pilot Light Block (Direct Supply) + 2 Normally Open Contact		ZB2BW0673
Pilot Light Block (Direct Supply) + 1 Normally Open Contact and 1 Normally Closed Contact		ZB2BW0675

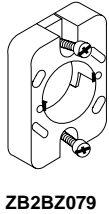
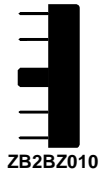


Dual Dimensions  $\frac{\text{inches}}{\text{mm}}$

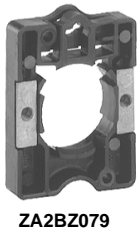
**Push Buttons and Operator Interface Specifiers Guide**  
**Printed Circuit Board Components XA2B-XB2B**  
**Assembly Items, Spare Parts**



**Assembly Items**



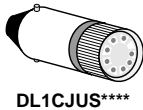
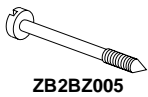
Description	Part Number
Socket Adapter for all Electrical Blocks	ZB2BZ010
Operator Fixing Sub-Base for XB2B	ZB2BZ079
Operator Fixing Sub-Base for XA2B	ZA2BZ079
Screw for Fixing Blocks onto Sub-Base	ZB2BZ005
Screw for Fixing Blocks onto sub-Base with Socket Adapter	ZB2BZ006



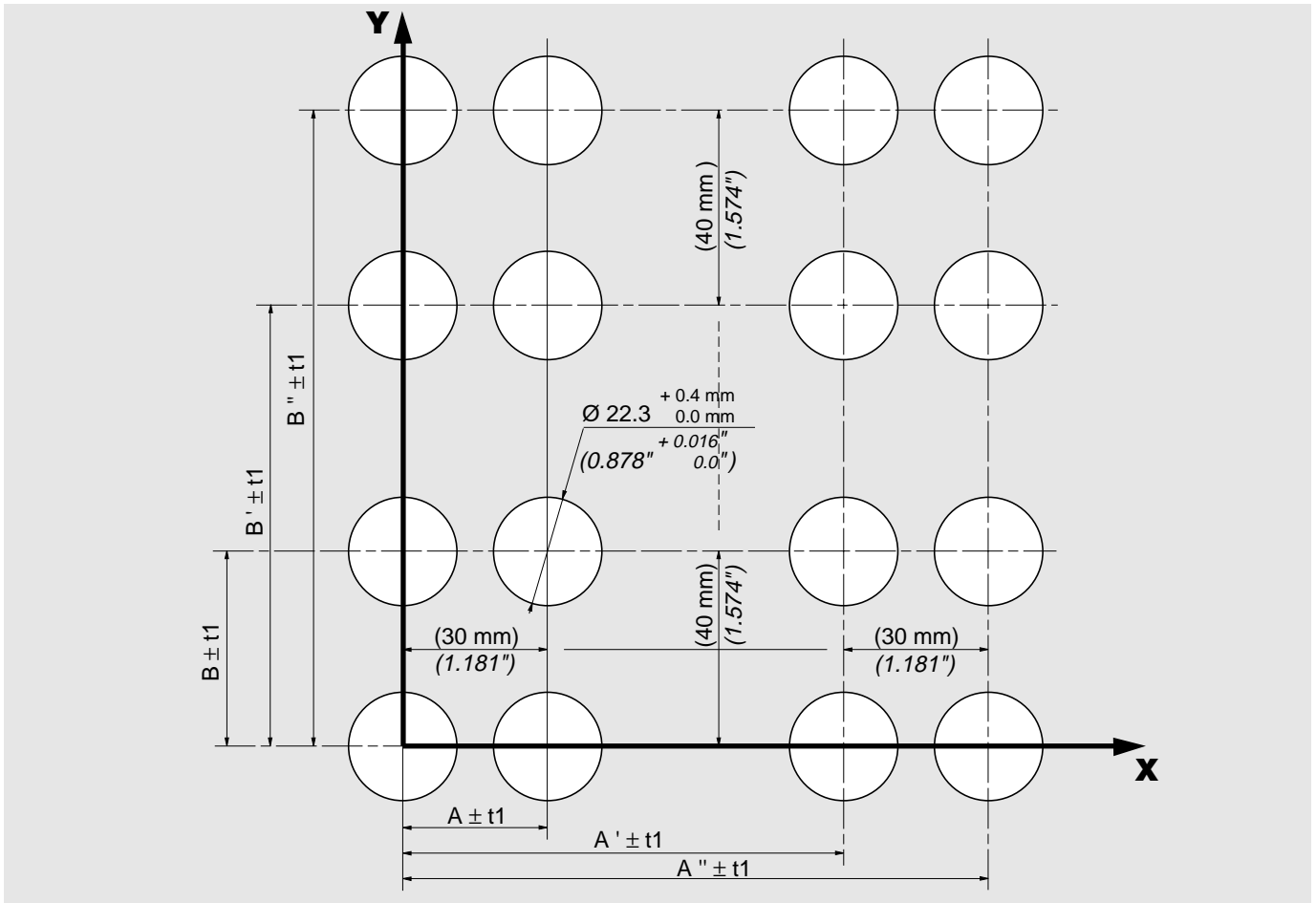
**Lamps**

Type	Voltage AC/DC	Watts	Catalog Number
<b>Incandescent</b> Replacement bulbs (Type BA9s)	6	1.5	DL1CB006
	12	2.0	DL1CE012
	24	2.0	DL1CE024
	48	2.4	DL1CE048
	130	2.6	DL1CE130
<b>Neon</b> (use with direct supply light module)	120	-	NE51HRT120V
	220	-	NE51HRT220V
	380	-	NE51HRT380V
Type	Color	Voltage	Part Number
<b>LED, BA9s base for Direct Supply blocks</b> ♦	Green	6 Vac/dc	DL1CJUS0063
	Red	6 Vac/dc	DL1CJUS0064
	Amber	6 Vac/dc	DL1CJUS0065
	Green	12 Vac/dc	DL1CJUS0123
	Red	12 Vac/dc	DL1CJUS0124
	Amber	12 Vac/dc	DL1CJUS0125
	Green	24 Vac/dc	DL1CJUS0243
	Red	24 Vac/dc	DL1CJUS0244
	Amber	24 Vac/dc	DL1CJUS0245
	Green	120 Vac/dc	DL1CJUS1203
	Red	120 Vac/dc	DL1CJUS1204
	Amber	120 Vac/dc	DL1CJUS1205

♦ For best LED light output, match lamp with lens color and use jeweled style lenses.



**Panel cut-outs**



**Overall tolerances of the panel/printed circuit assembly**

The sum of the absolute values of the drilling tolerance must not exceed 0.5 mm (0.196").

- in the horizontal direction X
- and in the vertical direction Y

- Dimension - A on the panel
- Dimensions - B on the panel
- C on the printed circuit
- D on the printed circuit

i.e.:  $t_1 + t_2 = 0.5 \text{ mm max.}$

**Mounting Precautions**

- a. Panel cut-out diameter: 

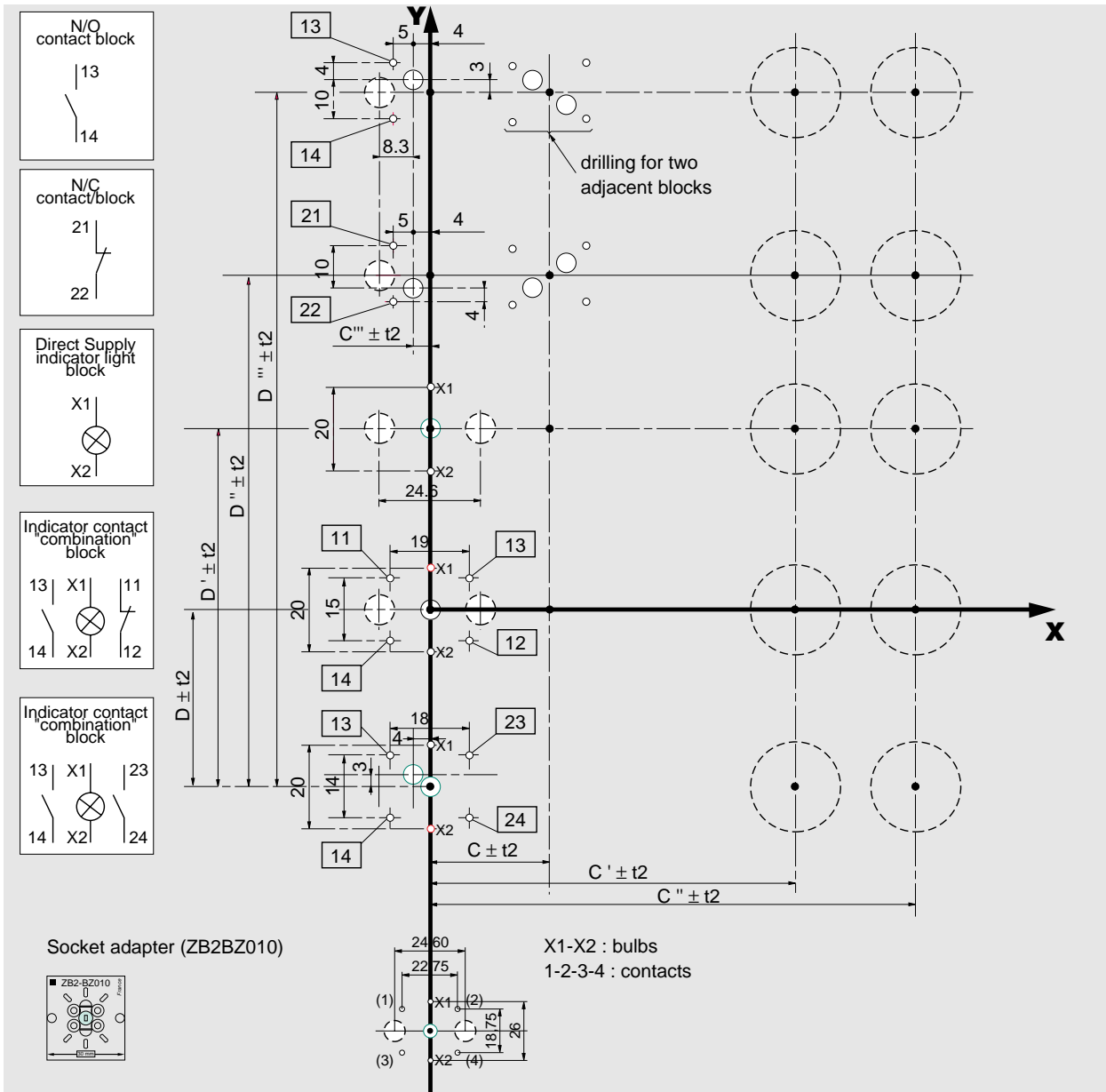
$\text{Ø } 22.3 \text{ mm}$	$\begin{matrix} +0.4 \text{ mm} \\ 0.0 \text{ mm} \end{matrix}$	$0.878''$	$\begin{matrix} +0.016'' \\ 0.0'' \end{matrix}$
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- b. When the head and fixing sub-base assembly are fixed and tightened onto the panel, the sub-base (ZA2BZ079 or ZB2BZ079) must be oriented at a maximum angle  $\pm 5^\circ$ . Fixing sub base screws (ZB2BZ079) must be tightened with same torque value.
- c. If any of the heads are fitted with legend plate carriers, it is essential that **all** the products are fitted with legend plate carriers.
- d. Note: the following heads cannot be used with the electrical blocks on page 339:
  - double headed push button operators with indicator light ZB2BW8
  - ZA2C square head operators

# Push Buttons and Operator Interface Specifiers Guide

## Printed Circuit Board Components XA2B-XB2B

### Printed Circuit Board Drilling

View from the electrical block side: Dimensions in mm.



#### Legends for printed circuit drilling and terminal marking

3 different types of drilling are necessary:

- HOLES FOR CONNECTIONS:  $\varnothing 1.5 \text{ mm} \pm 0.1$  ( $\varnothing 0.059" \pm 0.0039"$ )
- CENTERING HOLE OF THE ELECTRICAL BLOCK:  $\varnothing 4.5 \text{ mm} \pm 0.1$  ( $\varnothing 0.177" \pm 0.0039"$ )
- SCREWDRIVER CLEARANCE HOLE: ( $\varnothing 0.275" \pm 0.0039"$ ) (As Required):  
 for the introduction of an electrical block assembling screw to a sub-base.  
 It is recommended to fit a screw every 90 mm (3.54") horizontally and 120 mm (4.72") vertically

Terminal marking conforming to CENELEC EN 50013.  
 Indicates the function of the electrical block.

