

## JOYSTICK CONTROLLERS SPECIFICATIONS


- |              |   |
|--------------|---|
| 1. Model No. | <b>S50JCK-YO-24R2G-6845</b>   |
| 2. Mechanism | <b>With spring return device<br/>With knob type 102A<br/>With switch potentiometer (Code-pattern switch)<br/>With center position detection microswitch</b> |

### MECHANICAL PERFORMANCES

- |                                    |   |
|------------------------------------|---|
| 3. Outer appearance and dimensions | <b>As per attached drawing No.242-6845-2</b>                      |
| 4. Mechanical operating angle      | <b>X and Y axes : <math>\pm 30^\circ \sim \pm 35^\circ</math></b> |
| 5. Operating force                 | <b>X and Y axes : Abt.1.5N ~ Abt.8N (Abt.150gf ~ Abt.800gf)</b>   |

### ELECTRICAL PERFORMANCES

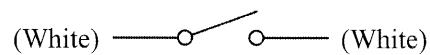
- |  |   |
|--|---|
| 6. Specs. for X and Y axes pots. (Specs. for G1, first ganged pot) |   |
| 1) Model No.   | <b>SFCP22EG</b>                                     |
| 2) Total resistance value  | <b>10k <math>\Omega</math> <math>\pm</math> 15%</b> |
| 3) Independent linearity tolerance                                 | <b><math>\pm</math> 3%</b>                          |
| 4) Electrical rotating angle                                       | <b>60° <math>\pm</math> 5°</b>                      |
| 5) Power rating  | <b>0.2W</b>   |
| 6) Center return accuracy  | <b>50% <math>\pm</math> 1.5%</b>                    |
| 7) Output smoothness   | <b>Below 0.2% against input voltage</b>             |
| 8) Contact resistance variation                                    | <b>Below 5% C.R.V.</b>                              |
| 9) Resolution  | <b>Essentially infinite</b>                         |
| 10) Dielectric strength  | <b>1 minute at 500V A.C.</b>                        |
| 11) Insulation resistance  | <b>Over 1,000M <math>\Omega</math> at 500V D.C.</b> |
| 12) Wiper current  | <b>Below 10 <math>\mu</math> A</b>                  |
| 13) Terminal connection diagram                                    | <b>As per attached drawing No. 242-6845-2</b>       |

SYM.	DATE	DESCRIPTION	APPD.	DESIGNED	DRAWN	CHECKED	APPROVED	TITLE
				Y.L	T.H	M.Y	K.S	MODEL NO. S50JCK-YO-24R2G-6845
				DATE 13. JUN, 2005	3RD ANGLE PROJECTION			DWG. NO. 242-6845-1-1
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7. Specs. for X and Y axes switch pots. (Specs. for G2, 2nd ganged switch pots.) (SW1,SW2)
- 1) Rating **Below 50mA, 24V D.C.**
  - 2) Operating characteristics **“SW-ON” at approx.-3° from center  
 (“SW-ON” between 1 and 2 terminals)  
 (Ratio value of G1 : between 41% ~ 48.5%)  
  
 “SW-ON” at approx.+3° from center  
 (“SW-ON” between 3 and 2 terminals)  
 (Ratio value of G1 : between 51.5% ~ 59%)**
  - 3) Contact resistance **Below 120mΩ**
  - 4) Dielectric strength **1 minute at 500V A.C.**
  - 5) Insulation resistance **Over 1,000MΩ at 500V D.C.**
  - 6) Terminal connection diagrams **As per attached drawing No. 242-6845-2**

8. Specs. for push button switch (SW3)

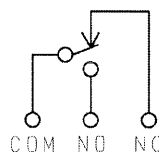
- 1) Model No. **EB-2011 manufactured by NIKKAI**
- 2) Rating **3A, 125V A.C.**
- 3) Operating characteristics **Momentary type (“SW-ON” when pushed)**
- 4) Dielectric strength **1 minute at 1,000V A.C.**
- 5) Insulation resistance **Over 1,000MΩ at 500V D.C.**
- 6) Mechanical durability **Approx. 100,000 operations**
- 7) Electrical durability **Approx. 25,000 operations**
- 8) Circuit diagram




NOTE : The color of leadwires is shown in parenthesis

9. Specs. of microswitch for center position detection (SW4)


- 1) Model No. **SS-5 manufactured by OMRON**
- 2) Rating **5A, 125V A.C.**
- 3) Operating characteristics **“SW-ON” at X and Y axes center position  
 (“SW-ON” between COM and NO terminals)**
- 4) Dielectric strength **1 minute at 1,000V A.C.**
- 5) Insulation resistance **Over 100MΩ at 500V D.C.**
- 6) Mechanical durability **Approx. 30,000,000 operations**
- 7) Electrical durability **Approx. 200,000 operations**
- 8) Circuit diagram



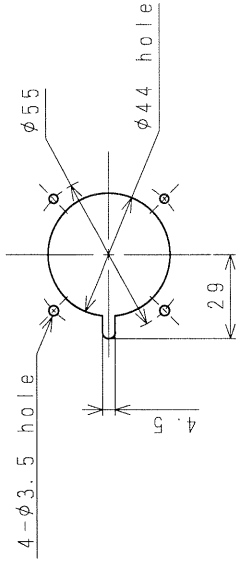
SYM.	DATE	DESCRIPTION	APPD.	DESIGNED	DRAWN	CHECKED	APPROVED	TITLE
				<i>Y.L</i>	<i>T.H</i>	<i>M.Y</i>	<i>K.S</i>	MODEL NO. S50JCK-Y0-24R2G-6845
				DATE 13, JUN, 2005	3RD ANGLE PROJECTION			DWG. NO. 242-6845-1-2
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**OTHERS**

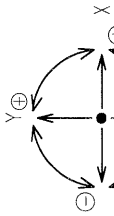
- 10. Operating temperature range -20°C ~ + 65°C
- 11. Vibration **10 ~ 55Hz, 98m/s<sup>2</sup> (10G)**  
(According to MIL-STD-202F-204)
- 12. Shock **294m/s<sup>2</sup> (30G)**  
(According to MIL-STD-202F-213)
- 13. Life expectancy **Approx. 5,000,000 operations**  
*(This item shows life expectancy shall be based on test conditions under which lever shall be moved forward and backward per each operation at the speed of 40 r.p.m. in normal room temperature.)*
- 14. Lever strength **Max.50N (Max.5kgf)**  
*(This value shows the value of static load to the part of knob.)*
- 15. Tensile strength of leadwire **Max.10N (Max.1kgf)**
- 16. Ingress protection **IP=54**  
*(This value shows the value from above panel towards knob only.)*
- 17. How to mount joystick controller **As per attached drawing No. 242-6845-3**
- 18. Important notice for operating joystick controllers
  - 1) Please refer to precautions for using joystick controllers in our joystick controller catalog.
  - 2) In case of with spring return device, when repeating spring return action without gripping with hand, the life expectancy may be shorter than specified, because such operation may bring over worn out the resistive element of the potentiometer at the center position and other damages of inner construction. Lever operation is preferably made as slow and stable as possible.
  - 3) Potentiometer used on these joystick controllers employs precision class conductive plastic resistive elements, and therefore, please make sure that these joystick controllers should always be used with voltage method (Voltage shall be applied between terminal 1 - 3 and output obtained from terminal No. 2.).
  - 4) Please also take care that more than 1mA shall not flow through terminal No. 2 (Movable contact), even though instantaneous, because over current burns out the resistive element and there is possibility that the linearity makes lower, and noise occurs.
  - 5) Please refer to our precision potentiometers catalog respectively, about technical matters of potentiometers used in the joystick controller.

SYM.	DATE	DESCRIPTION	APPD.	DESIGNED	DRAWN	CHECKED	APPROVED	TITLE	
				<i>Y.L</i>	<i>T.H</i>	<i>M.Y</i>	<i>K.S</i>	MODEL NO. S50JCK-Y0-24R2G-6845	
				DATE 13, JUN, 2005	3RD ANGLE PROJECTION			DWG. NO. 242-6845-1-3	
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PANEL ARRANGEMENTS

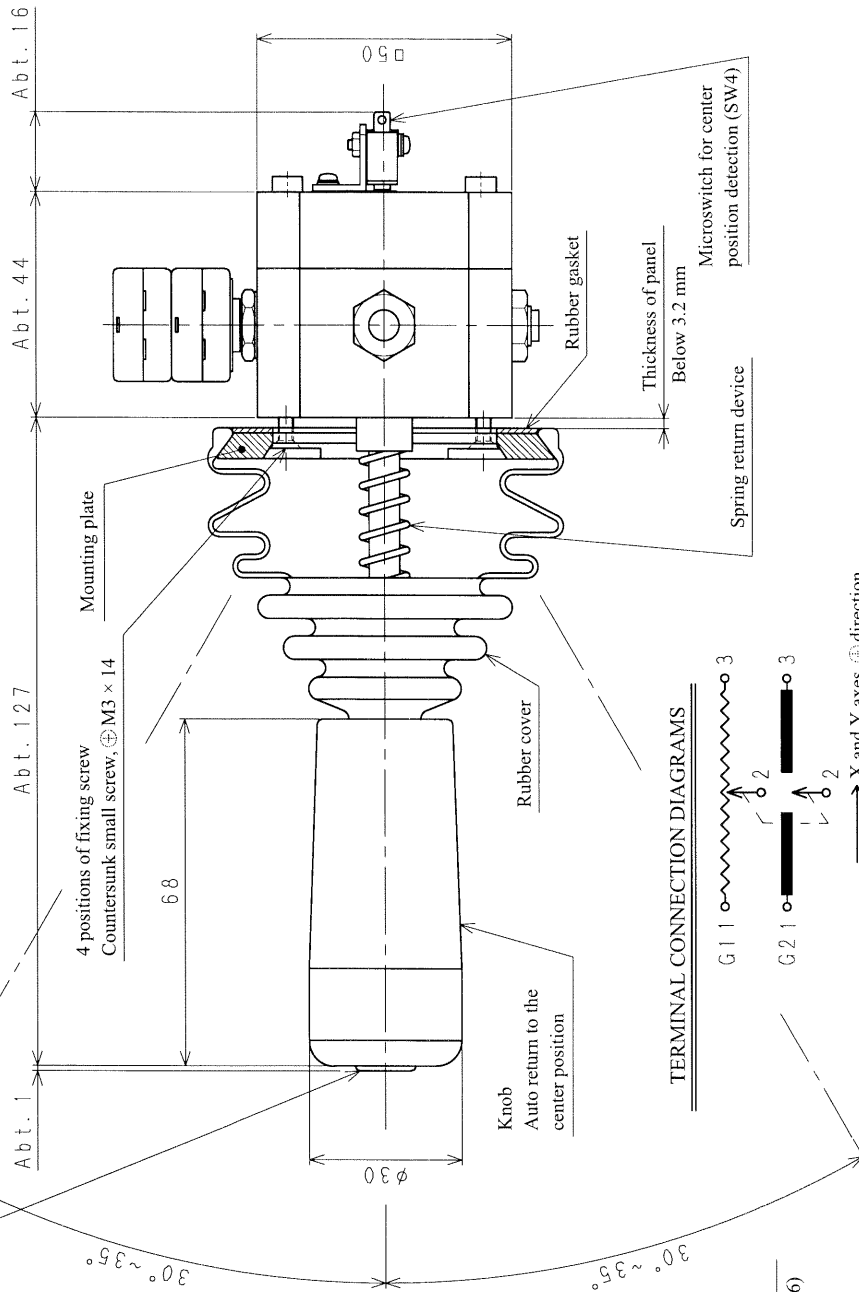


DIRECTION OF LEVER OPERATION (O TYPE)

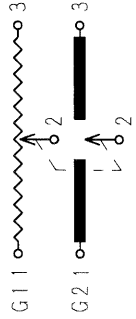


X axis pot.  
G1 = POT  
G2 = SW1

Y axis pot.  
G1 = POT  
G2 = SW2




TERMINAL CONNECTION DIAGRAMS



Leadwires for push button switch  
Length: abt. 300mm (Equivalent to AWG26)

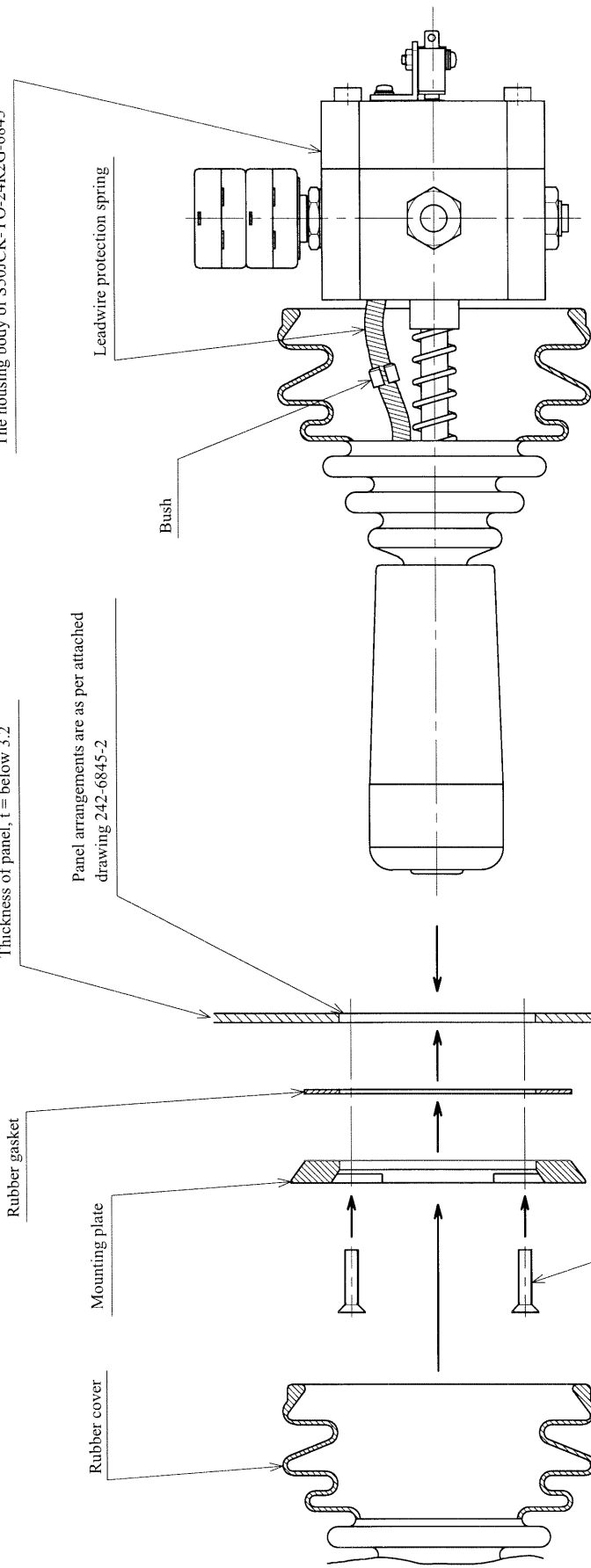
SYM.	DATE	DESCRIPTION	APPROV.	DESIGNED	DRAWN	CHECKED	APPROVED	TITLE
				Y-Q	T.H	M.Y	K.S	
				DATE 13. JUN. 2005	3RD ANGLE PROJECTION			MODEL NO. S50JCK-Y0-24R2C-6845
								ENG. NO. 242-6845-2
								SCALE 1/1 UNITS mm SHEET 4 OF 5

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Mounting panel  
Thickness of panel,  $t =$  below 3.2

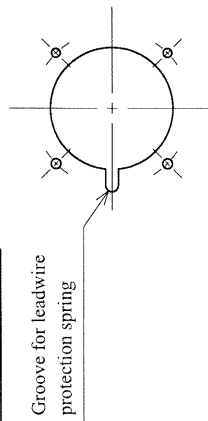
Panel arrangements are as per attached drawing 242-6845-2

The housing body of S50JCK-YO-24R2G-6845



4 positions of fixing screw  
Countersunk small screw,  $\oplus$  M3  $\times$  14


### PANEL ARRANGEMENTS



### HOW TO MOUNT JOYSTICK CONTROLLER

1. You can see the mounting plate when turning up rubber cover.
2. Remove the bush which fixes the mounting plate and spring for leadwire protection.
3. Remove the 4 positions of countersunk small screw, M3  $\times$  14 on mounting plate and mounting panel and rubber cover.
4. As shown in the above illustration, mount them by 4 positions of countersunk small screw, M3  $\times$  14 to the mounting panel of your device, according to the order of joystick mounting panel and rubber gasket, which are aligned to the recessing hole of spring for leadwire protection.
5. The bush is inserted to the mounting panel.
6. Finally, the rubber cover is covered to the mounting panel.

SW	DATE	DESCRIPTION	APPRO.	DESIGNED	DRAWN	CHECKED	APPROVED	TITLE
				ZQ	T.H	M.Y	K.S	
				DATE 13. JUN. 2005 3RD ANGLE PROJECTION				MODEL NO. S50JCK-YO-24R2G-6845
								DWG. NO. 242-6845-3
								SCALE 1/1 UNITS
								SHEET 5 OF 5

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