



*PRINTED CIRCUIT BOARD SWITCHES*  
**SOLDERING AND CLEANING  
SPECIFICATIONS**

---

***EECO SWITCH WARRANTY***

EECO<sup>®</sup> Switch, a Unit of Transico, Inc. (EECO) hereby warrants standard switch products of our manufacture to be free from defects in materials and workmanship for ONE (1) YEAR from the original date of purchase. If during the stated warranty period a switch fails in normal service due to a defect in materials, workmanship, or packaging, EECO will repair or replace the switch, at our option, free of charge. The cost of installation, removal and transportation of the switch for repair or replacement shall be excluded from this warranty, and shall be the sole responsibility of the customer.

If any switch manufactured by EECO fails in normal service due to any of the above noted causes, EECO's entire responsibility shall be limited to repair or replacement of the defective switch. In no event shall EECO be responsible for any special, incidental or consequential damages, whether caused directly or indirectly by a failure of the switch.

If a failure is determined to be the result of misuse, improper installation, modification, accident or other negligence, or any cause other than listed above, the switch shall be repaired or replaced at the customer's expense. A failure shall be defined as a switch product that operates in a manner other than that described in the current EECO catalog. Determination of the cause of any failure shall be made solely by EECO.

Subject to the above conditions and limitations, EECO warrants the following standard printed circuit board switches to be free of defects in materials and workmanship for the lifetime of the final product:

**2300 Series MICRO-DIP<sup>®</sup>**  
**3500 Series MICRO-DIP<sup>®</sup>**  
**2100 Series STRIPSWITCH<sup>®</sup>**  
**2700 Series STRIPSWITCH<sup>®</sup>**

***RoHS COMPLIANCE***

EECO Switch is fully committed to complying with the impending European Lead-Free and RoHS initiatives. All EECO MICRO-DIP<sup>®</sup> and STRIPSWITCH<sup>®</sup> Series switches identified as "Pb-Free" on the body of the part and/or on the shipping tube are Lead-Free and RoHS compliant.

# MICRO-DIP SOLDERING AND CLEANING RECOMMENDATIONS

## MICRO-DIP®

These instructions pertain to the following MICRO-DIP Series products. Check the exact part number of the products in use to ensure the switch is fully compatible with the process in use. Failure to follow prescribed processing procedures may damage the switch and will void the warranty.

### 2300 Series:

G=Dust seal construction. Hand solder recommended.  
GB=Bottom epoxy seal, no top seal.  
GP=Bottom epoxy seal, removable top process seal.

### 3500 Series:

GS=Bottom epoxy seal, permanent integral O-ring top seal.

### 4500\*/4700\* and 4600/4800 Series:

G=Bottom sonic welded seal, permanent integral top O-ring seal.

## INSTALLATION AND PREPARATION FOR SOLDERING

APPLICABLE TO ALL SERIES EXCEPT AS NOTED.

Engage switch terminal leads in PC mounting holes. Use caution to ensure leads are not bent or damaged during installation.

### WARNING: DO NOT CLINCH THE TERMINAL LEADS ON ANY 2300 OR 3500 SERIES PRODUCTS.

Clinching the terminals may damage the epoxy seal and allow contaminants to enter the switch during processing.

The switch must be set at the "0" position except as noted below. Ensure the switch is not set between detent positions.

**NOTE:** All switches are shipped from EECO on the correct position for soldering.

### 3500 SERIES POSITION SETTINGS

35XX12GS Set at 7  
35XX41GS Set at F

## HAND SOLDERING

APPLICABLE TO ALL SERIES

SOLDERING DEVICE: Soldering pencil, 25 watt maximum

SOLDER: 63/37 tin lead or lead free solder as required.

FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 260°C (500°F) maximum

DWELL TIME: 2 seconds per terminal maximum, 2300 series. 5 seconds maximum 3500, 4600, 4800 series.

PROCEDURE: Apply flux sparingly as necessary. Do not allow flux to enter the switch. An alternating soldering pattern is recommended to avoid excess heat buildup.

## SUGGESTED SOLDERING PATTERN, ALL MICRO-DIP PRODUCTS



## DIP SOLDERING

APPLICABLE TO 2300/3500/4600 SERIES

SOLDERING DEVICE: Soldering pot of appropriate size

SOLDER: 63/37 tin lead or lead free as required.

FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 260°C (500°F) maximum at surface of solder

DWELL TIME: 2 seconds per terminal maximum, 2300 series. 5 seconds maximum 3500, 4600 series.

PROCEDURE: Apply flux sparingly as necessary. Do not allow flux to enter the switch. Immerse the PCB evenly in the solder pot. Ensure no solder flows over the top of the PCB damaging the switch or other components.

\* 4500 Series is discontinued and replaced by the 4600 series. Follow processing instructions for 4600 series.

\* 4700 Series is discontinued and replaced by the 4800 series. Follow processing instructions for 4800 series.

## WAVE SOLDERING

APPLICABLE TO 2300 GP models; ALL 3500 AND 4600 SERIES  
SOLDER: 63/37 tin lead or lead free solder as required.

FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 260°C (500°F) maximum

DWELL TIME: Total time exposure to the solder wave should not exceed 2 seconds per terminal.

PROCEDURE: Apply flux sparingly as necessary. Do not allow flux to enter the switch. Ensure pre-heat cycles do not induce temperatures over 135°C (275°F) on top surface of PCB. The temperature of the switch should not exceed 100°C (212°F). Ensure no solder flows over the top of the PCB, damaging the switch or other components. The switch should be masked if located on the leading edge of the PC board.

## REFLOW SOLDERING

### APPLICABLE TO 4800 SERIES ONLY

SOLDER: Solder paste, conventional or lead free solder as required.

FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 240°C (460°F) maximum in the reflow zone.

DWELL TIME: 30 seconds maximum exposure in the reflow zone.

PROCEDURE: The 4800 Series is compatible with most surface mount processes. Consult factory for additional information.

## BOARD CLEANING

APPLICABLE TO ALL SERIES

SOLVENTS: Isopropyl is the preferred cleaning solvent for all MICRO-DIP products. Avoid any solvents, temperature or exposure times which could degrade the plastic or other materials in the switch. Avoid the use of chemicals which might damage the environment.

### SOLVENT

### MAXIMUM TEMPERATURE

### MAXIMUM EXPOSURE

Isopropyl Alcohol

38°C (100°F)

5 Minutes

Aqueous Cleaning

74°C (165°F)

5 Minutes

## MANUAL CLEANING

APPLICABLE TO ALL SERIES

SOLVENT: Use an appropriate solvent.

TEMPERATURE: Room temperature preferred.

PROCEDURE: Apply solvent as needed to remove flux. Do not allow solvent to enter the switch.

## MANUAL IMMERSION CLEANING

APPLICABLE TO 2300 SERIES GP MODELS; ALL 3500, 4600 and 4800 SERIES

SOLVENT: Use an appropriate solvent.

TEMPERATURE: Room temperature preferred.

PROCEDURE: Allow the PC board to cool and stabilize before cleaning. DIP and/or agitate the PC board in solvent as necessary. Do not disturb the top process seal (2300 Series GP models) or allow solvent to enter switch. Apply solvent as needed to remove flux. Do not allow solvent to enter the switch. Use caution to ensure solvent does not remove inks on switch or damage plastics.

## MACHINE CLEANING

APPLICABLE TO 2300 SERIES GP MODELS; ALL 3500, 4600, and 4800 SERIES

SOLVENT: Water and/or appropriate cleaning agents.

TEMPERATURE: Refer to manufacturer's instructions or contact EECO for assistance.

PROCEDURE: Allow the PC board to cool and stabilize before cleaning process. Thermal shock may crack the epoxy seal on the switch. Follow manufacturer's instructions or contact EECO for assistance.

**WARNING: HIGH PRESSURE WASH SYSTEMS MAY DISTURB THE TOP SEAL ON 2300 SERIES GP MODELS. AVOID DIRECT HIGH PRESSURE SPRAY.**

## ULTRASONIC CLEANING

Not recommended.

# STRIPSWITCH *SOLDERING AND CLEANING RECOMMENDATIONS*

## STRIPSWITCH®

These instructions pertain to the following STRIPSWITCH Series products. Failure to follow prescribed processing procedures may damage the switch and will void the warranty.

### 2100 Series:

G=Dust seal construction. Hand solder recommended.  
GF=Dust seal construction with additional stabilizing pin. Hand solder recommended.

### 2700 Series:

M=Bottom epoxy seal, permanent integral O-ring top seal.

### INSTALLATION AND PREPARATION FOR SOLDERING

APPLICABLE TO ALL SERIES EXCEPT AS NOTED.

Engage switch terminal leads in PC mounting holes. Use caution to ensure leads are not bent or damaged during installation. The 2100 Series leads may be slightly bent (clinched) to help secure the switch to the PCB on 2100 SERIES MODELS ONLY. DO NOT ATTEMPT TO CLINCH THE F-PIN TERMINAL.

### **WARNING: DO NOT CLINCH THE TERMINAL LEADS ON ANY 2700 SERIES PRODUCTS.**

Clinching the terminals may damage the epoxy seal and allow contaminants to enter the switch during processing.

The switch must be set at the "0" position unless otherwise specifically noted. Ensure the switch is not set between detent positions. **NOTE:** All switches are shipped from EECO on the correct position for soldering.

### HAND SOLDERING

APPLICABLE TO ALL SERIES

SOLDERING DEVICE: Soldering pencil, 25 watt maximum

SOLDER: 63/37 tin lead or lead free solder as required.

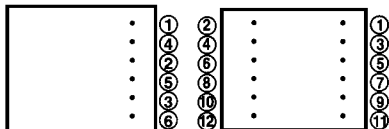
FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 260°C (500°F) maximum

DWELL TIME: 2 seconds per terminal maximum.

PROCEDURE: Apply flux sparingly as necessary. Do not allow flux to enter the switch. An alternating pattern is recommended to avoid excess heat buildup.

### SUGGESTED SOLDERING PATTERN, STRIPSWITCH SERIES



### DIP SOLDERING

APPLICABLE TO ALL SERIES

SOLDERING DEVICE: Soldering pot of appropriate size

SOLDER: 63/37 tin lead or lead free as required.

FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 260°C (500°F) maximum at surface of solder

DWELL TIME: 2 seconds per terminal maximum, 2300 series. 5 seconds maximum 3500, 4600 series.

PROCEDURE: Apply flux sparingly as necessary. Do not allow flux to enter the switch. Immerse the PCB evenly in the solder pot. Ensure no solder flows over the top of the PCB damaging the switch or other components.

### WAVE SOLDERING

APPLICABLE 2700 SERIES ONLY

SOLDER: 63/37 tin lead or lead free solder as required.

FLUX: RA or RMA recommended. Do not use acid based fluxes.

TEMPERATURE: 260°C (500°F) maximum

DWELL TIME: Total time exposure to the solder wave should not exceed 2 seconds per terminal.

PROCEDURE: Apply flux sparingly as necessary. Do not allow flux to enter the switch. Ensure pre-heat cycles do not induce temperatures over 135°C (275°F) on top surface of PCB. The temperature of the switch should not exceed 100°C (212°F). Ensure no solder flows over the top of the PCB, damaging the switch or other components. The switch should be masked if located on the leading edge of the PC board.

### REFLOW SOLDERING

NOT APPLICABLE

SOLDER: Solder paste, conventional or lead free solder as

### BOARD CLEANING

APPLICABLE TO ALL SERIES

SOLVENTS: Isopropyl is the preferred cleaning solvent for all STRIPSWITCH products. Avoid any solvents, temperature or exposure times which could degrade the plastic or other materials in the switch. Avoid the use of chemicals which might damage the environment.

SOLVENT	MAXIMUM TEMPERATURE	MAXIMUM EXPOSURE
Isopropyl Alcohol	38°C (100°F)	5 Minutes
Aqueous Cleaning	74°C (165°F)	5 Minutes

### MANUAL CLEANING

APPLICABLE TO ALL SERIES

SOLVENT: Use an appropriate solvent.

TEMPERATURE: Room temperature preferred.

PROCEDURE: Apply solvent as needed to remove flux. Do not allow solvent to enter the switch.

### MANUAL IMMERSION CLEANING

APPLICABLE TO 2700 SERIES ONLY

SOLVENT: Use an appropriate solvent.

TEMPERATURE: Room temperature preferred.

PROCEDURE: Allow the PC board to cool and stabilize before cleaning. DIP and/or agitate the PC board in solvent as necessary. Do not disturb the top process seal (2300 Series GP models) or allow solvent to enter switch. Apply solvent as needed to remove flux. Do not allow solvent to enter the switch. Use caution to ensure solvent does not remove inks on switch or damage plastics.

### MACHINE CLEANING

APPLICABLE TO 2700 SERIES ONLY

SOLVENT: Water and/or appropriate cleaning agents.

TEMPERATURE: Refer to manufacturer's instructions or contact EECO for assistance.

PROCEDURE: Allow the PC board to cool and stabilize before cleaning process. Thermal shock may crack the epoxy seal on the switch. Follow manufacturer's instructions or contact EECO for assistance.

**WARNING: HIGH PRESSURE WASH SYSTEMS MAY DISLodge THE TOP SEAL OF 2300 SERIES GP MODELS. AVOID DIRECT HIGH PRESSURE SPRAY.**

### ULTRASONIC CLEANING

Not recommended.

# TRUTH TABLES *For Printed Circuit Board Switches*

**A02**

DECIMAL 1 Pole 10 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	3	4	5	6	7	8	9
0	●									
1		●								
2			●							
3				●						
4					●					
5						●				
6							●			
7								●		
8									●	
9										●

**A09**

2 Pole 10 Position

D Common (C) and Common (C) connected to terminals indicated

DIAL	L	1	2	3	4	0	1	2	3	4
0	●									
1		●								
2			●							
3				●						
4					●					
0	●									
1		●								
2			●							
3				●						
4					●					

**B01**

BCO 1 Pole 8 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		

**B02**

BCD 1 Pole 10 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		
8				●	
9					●

**B07**

BCH 1-Pole 16-Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		
8				●	
9					●
A 10	●				
B 11		●			
C 12			●		
D 13				●	
E 14					●
F 15	●				

**C02**

BCD w/Complement 1 Pole 10 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8	1	2	4	8
0	●								
1		●							
2			●						
3				●					
4					●				
5	●								
6		●							
7			●						
8				●					
9					●				

**C06**

BCH w/Complement 1-Pole 16-Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8	1	2	4	8
0	●								
1		●							
2			●						
3				●					
4					●				
5	●								
6		●							
7			●						
8				●					
9					●				
A 10	●								
B 11		●							
C 12			●						
D 13				●					
E 14					●				
F 15	●								

**C12**

BCD Complement Only 1 Pole 10 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		
8				●	
9					●

**C13**

9 s Complement BCD 1 Pole 10 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		
8				●	
9					●

**C15**

Complement of 9 s Complement 1 Pole 10 Position

D Common (C) connected to terminals indicated

DIAL	L	1	2	4	8
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		
8				●	
9					●

**C16**

BCH 1-Pole 16-Position

D Common C connected to terminals indicated

DIAL	L	1	2	4	8
0	●				
1		●			
2			●		
3				●	
4					●
5	●				
6		●			
7			●		
8				●	
9					●
A 10	●				
B 11		●			
C 12			●		
D 13				●	
E 14					●
F 15	●				

**D02**

BCD 2 Pole 10 Position Sep Com to NT Bits

D Common C (●) and C (★) connected to terminals indicated

DIAL	L	1	2	4	8
0	●	★	★	★	★
1	●	★	★	★	★
2	●	★	★	★	★
3	●	★	★	★	★
4	●	★	★	★	★
5	●	★	★	★	★
6	●	★	★	★	★
7	●	★	★	★	★
8	●	★	★	★	★
9	●	★	★	★	★

**D06**

2 Pole BCH with Sep Com to NT Bits

D Common C (●) and C (★) connected to terminals indicated

DIAL	L	1	2	4	8
0	●	★	★	★	★
1	●	★	★	★	★
2	●	★	★	★	★
3	●	★	★	★	★
4	●	★	★	★	★
5	●	★	★	★	★
6	●	★	★	★	★
7	●	★	★	★	★
8	●	★	★	★	★
9	●	★	★	★	★
A 10	●	★	★	★	★
B 11	●	★	★	★	★
C 12	●	★	★	★	★
D 13	●	★	★	★	★
E 14	●	★	★	★	★
F 15	●	★	★	★	★

**S01**

1 or 2 Pole 2 Throw

Common (C1) and (C2) connected to terminals indicated

DIAL	C1	C2
0	+	●
1	-	●
2	+	●
3	-	●
4	+	●
5	-	●
6	+	●
7	-	●
8	+	●
9	-	●

**S24**

1 Pole 5 Position repeating no output on 0

D Common (C) connected to terminals indicated

DIAL	L	1	2	3	4
0	●				
1		●			
2			●		
3				●	
4					●
0	●				
1		●			
2			●		
3				●	
4					●

Truth Table identification codes (e.g. B02) are the same for all EECO Switch products. Availability of output codes varies depending upon the particular series. Consult the appropriate EECO Switch data sheet for output code availability and other product information.

EECO Switch  
880 Columbia St.  
Brea, CA 92821-2916  
Tel: (714) 835-6000  
Fax: (714) 482-9429  
E-Mail: sales@eecoswitch.com



EECO EUROPE  
Unit 5, Hazlewell Court  
Bar Road, Lolworth  
Cambridgeshire, CB23 8DS England  
TEL: +44 (0) 1954-781818  
FAX: +44 (0) 1954-789305  
E-mail: sales@eecoswitch.co.uk