



DC Surge Protection Device Installation/Replacement in Three Phase Inverters with Synergy Technology P/N: SExxK-xxxxlxxxx



NOTE

There are two types of DC Surge Protection Device (SPD) mounting systems for Synergy Manager, Horizontal and Vertical mounting.

This document describes how to install or replace the Horizontal or Vertical mounted DC (SPD) in a three Phase Inverter with Synergy Technology.

Installing/Replacing Vertical Mounted SPD

Kit Contents

- DC SPD Board (Vertically mounted)
- Spare screws

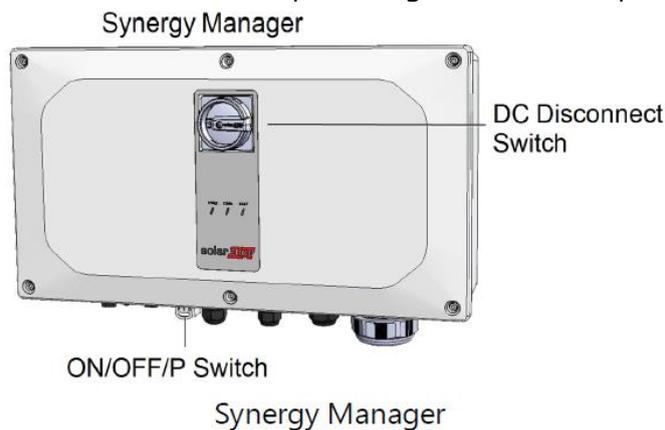
Required Tools

- Torque screwdriver for 1/4" hex bit
- 4 mm Allen hex bit
- PH2 Phillips screwdriver

Removing the Synergy Manager Cover

If the cover of the Synergy Manager is not already removed, use the following procedure for cover removal.

1. Turn the ON/OFF/P Switch of the Synergy Manager to OFF (0). Wait for five minutes for the DC Voltage inside the inverter to drop to a safe level before proceeding to the next step.



**WARNING!**

The inverter cover must be opened only after switching the inverter ON/OFF/P switch located at the bottom of the inverter to OFF. This disables the DC Voltage inside the inverter. Wait five minutes before opening the cover. Otherwise, there is a risk of electric shock from energy stored in the capacitors.

AVERTISSEMENT!

Ne pas ouvrir le couvercle de l'onduleur avant d'avoir coupé l'interrupteur situé en dessous de l'onduleur. Cela supprime les tensions CC et CA de l'onduleur. Attendre cinq minutes avant d'ouvrir le couvercle. Sinon, il y a un risque de choc électrique provenant de l'énergie stockée dans le condensateur.

2. Turn OFF the DC ON/OFF switch of the Synergy Manager.
3. Disconnect AC to the inverter by turning OFF the circuit breakers on the distribution panel.
4. Release the six Allen screws holding the inverter cover and remove the cover.

**CAUTION!**

When removing the inverter cover, make sure not to damage the internal components. SolarEdge will not be held responsible for any components damaged as a result of incautious cover removal.

ATTENTION!

Lors du retrait du couvercle, assurez-vous de ne pas endommager les composants internes. SolarEdge ne peut être tenue pour responsable des composants endommagés à la suite d'une imprudence dans le retrait du couvercle.

Removing the Vertical DC SPD Board

1. Disconnect the plug of the communication cable from the DC SPD Board.

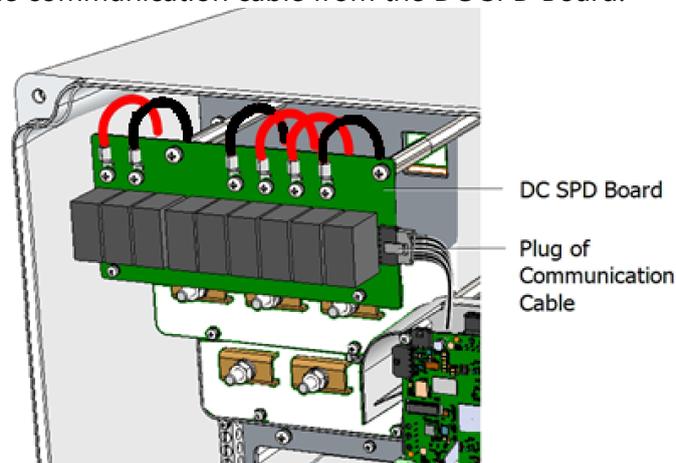


Figure 1: Plug of the Communication Cable of the DC SPD Board

2. Disconnect the lugs of the six power cables from the DC SPD Board.

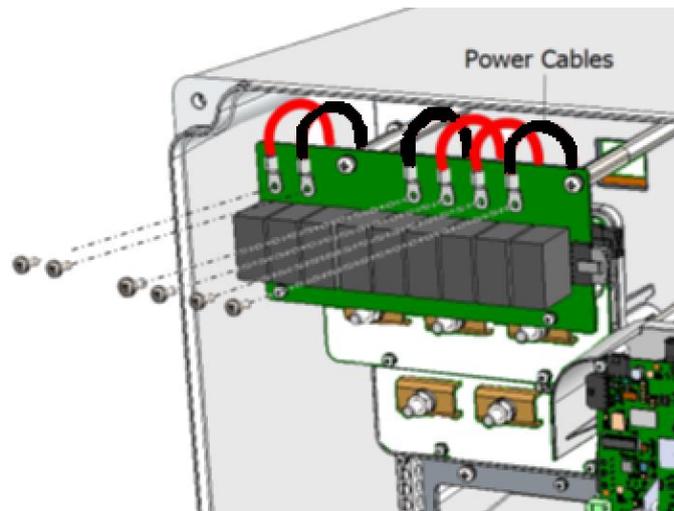


Figure 2: Power Cable of DC SPD Board

3. Release the four screws fastening the DC SPD Board to the standoffs and remove the DC SPD Board.

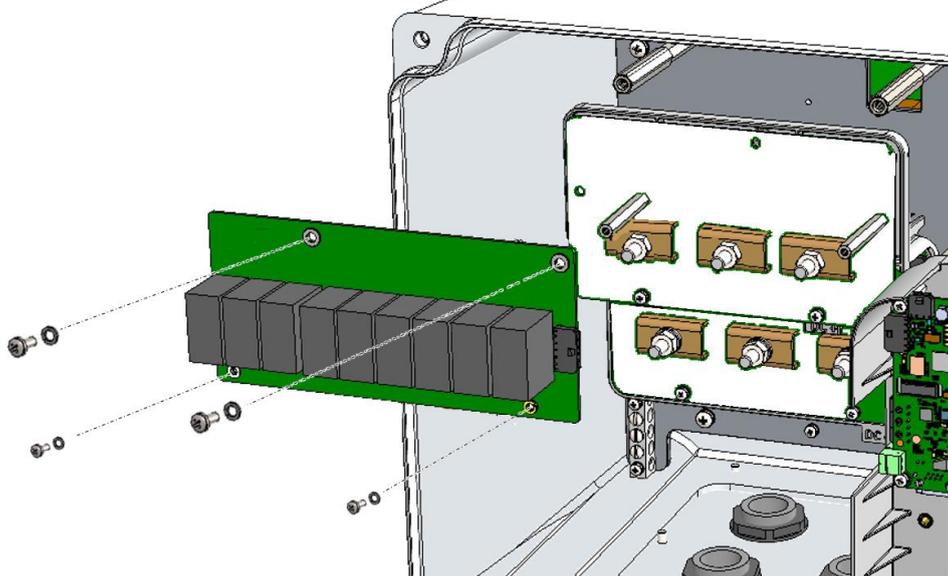
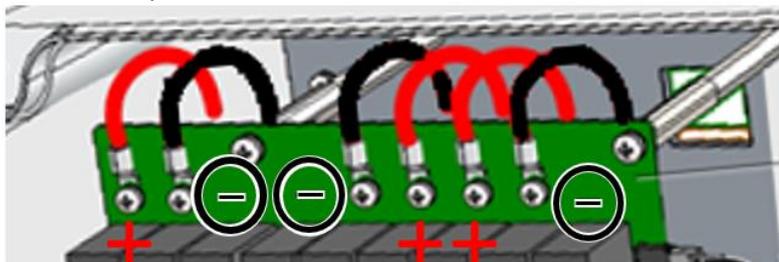


Figure 3: Removal of the DC SPD Board

Installing the Vertical DC SPD Board

1. Place the provided DC SPD Board on the standoffs and fasten the four screws with a torque of 1.3 N*m (0.96 lb*ft).
2. Connect the lugs of the 3 DC+ and 3 DC- power cables to the power board of the provided DC SPD Board and fasten the screws with a torque of 1.3 N*m (0.96 lb*ft).





3. Connect the plug of the communication cable to the DC SPD Board.
4. Close the Synergy Manager cover and fasten the six Allen screws with a torque of 3.5 N*m (2.6 lb*ft).

Installing/Replacing Horizontal Mounted SPD

Kit Contents

- Synergy Manager DC SPD Board (Horizontally mounted)

Required Tools

- Torque screwdriver for ¼" hex bit
- 4 mm Allen hex bit
- PH2 Philips screwdriver

Removing the Synergy Manager Cover

If the cover of the Synergy Manager is not already removed, use the following procedure for cover removal.

1. Turn the ON/OFF/P Toggle Switch of the Synergy Manager OFF (0).



Figure 4:ON/OFF/P Toggle switch OFF



NOTE

This model of Synergy Manager does not have a DC ON/OFF Switch on the Cover.

2. Disconnect AC power to the inverter by turning OFF the circuit breakers or disconnecting the fuses in the power distribution panel and wait for five minutes for the DC Voltage inside the inverter to drop to a safe level before preceding to the next step. Lock the power distribution panel and keep the key in your pocket.
3. Use a 4 mm hex bit to release the 6 captive screws holding the Synergy Manager cover in place and remove the cover.

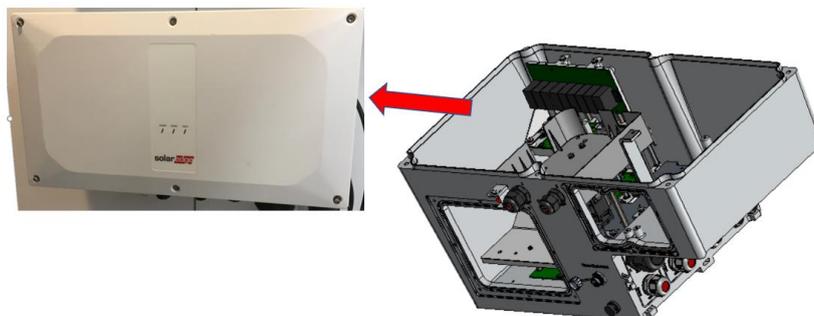


Figure 5: remove Synergy Manager Cover

4. Store the cover in a safe place.

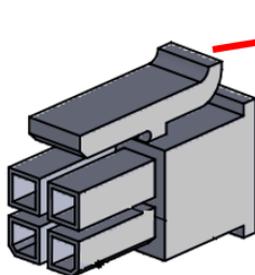
Removing the Horizontal SPD Board

1. Before disconnecting any DC cables, make sure they are properly marked. If not, mark each cable with its position.
2. Use a PH2 Phillips screwdriver to remove the screw holding the PE cable in place. Keep the screw for reassembly. Carefully fold the PE cable and store it in a safe place.
3. Use a PH2 Phillips screwdriver to remove the 6 screws holding the 3 DC+ & 3 DC- cables in place. Keep the screws for reassembly. Carefully fold the cable and store it in a safe place.



Figure 6: remove 6 screws

4. On the right side of the SPD Board, locate the NTC cable socket and disconnect the NTC cable connector from the NTC cable socket. Make sure to release the locking lever before you pull the connector out of the socket. Never grip the wires to remove the connector from the socket.



Press here to release



Figure 7: disconnect NTC cable

5. Carefully fold the NTC cable and store it in a safe place.
6. Use a PH2 Philips screwdriver to release the 4 captive screws holding the GND Bus Bar assembly in place.

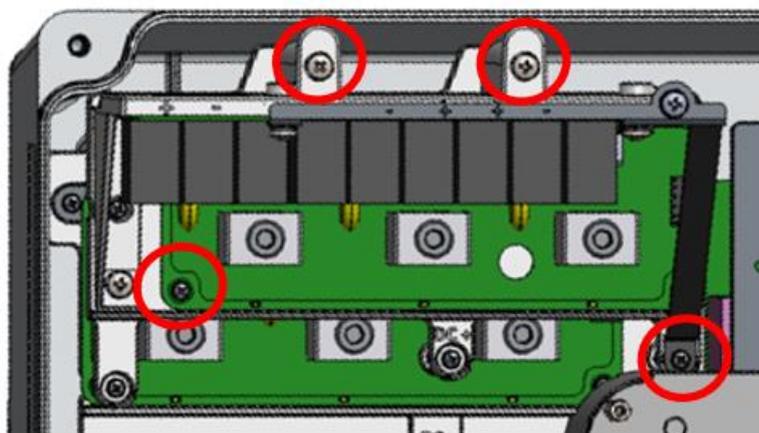


Figure 8: loosen 4 captive screws



NOTE

Do not disconnect any other cables.

7. Carefully remove the whole GND Bus Bar assembly and place it on a sturdy, static free surface.

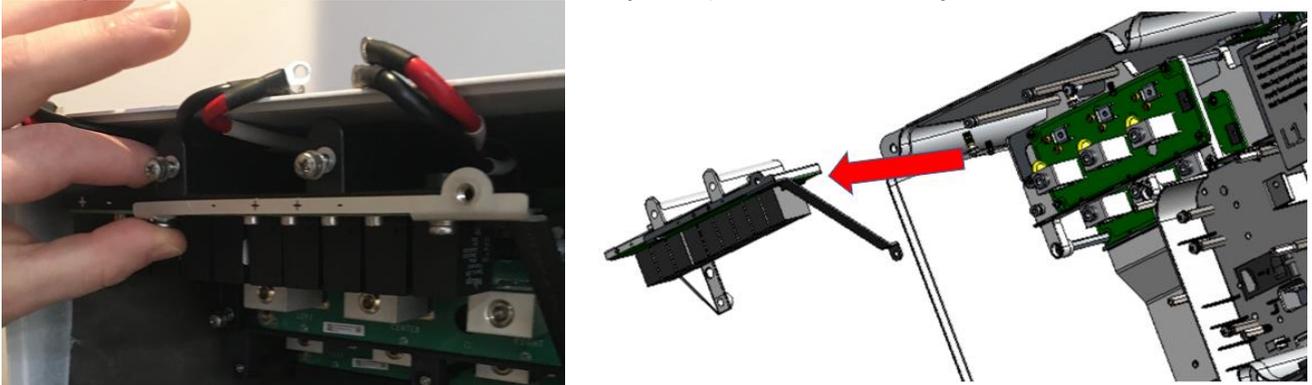


Figure 9: remove GND Bus Bar assembly

8. Use a PH2 Phillips screwdriver to remove the 2 screws holding the SPD Board to the GND Bus Bar. Keep the screws for reassembly.

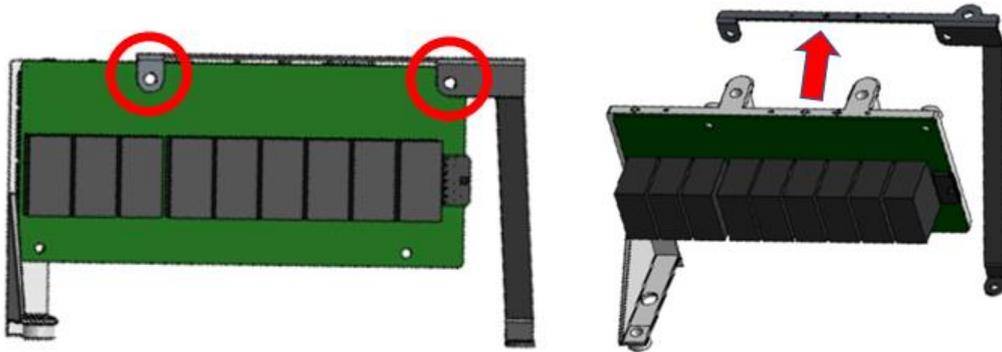


Figure 10: remove GND Bus Bar

9. Use a PH2 Phillips screwdriver to remove the 2 screws holding the SPD Board to the DC SPD holder. Keep the screws for reassembly.

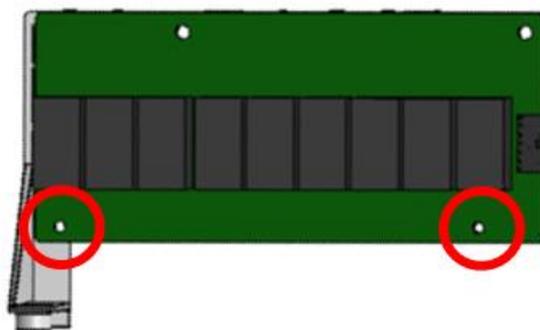


Figure 11: remove DC SPD holder

10. Remove the SPD Board from the DC SPD holder. Take note of the orientation before separating the SPD Board from the DC SPD Holder.

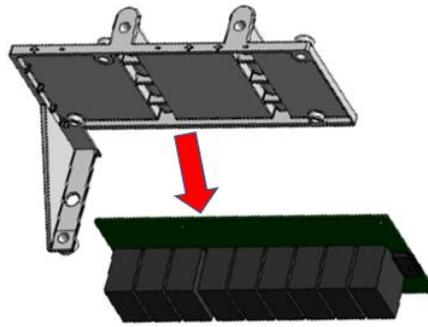


Figure 12: remove SPD Board from the DC SPD Holder

Installing the Horizontal DC SPD Board

1. Remove the new Synergy Manager DC SPD Board from the packaging.
2. Place the Synergy Manager DC SPD Board into position in the correct orientation onto the DC SPD Holder.

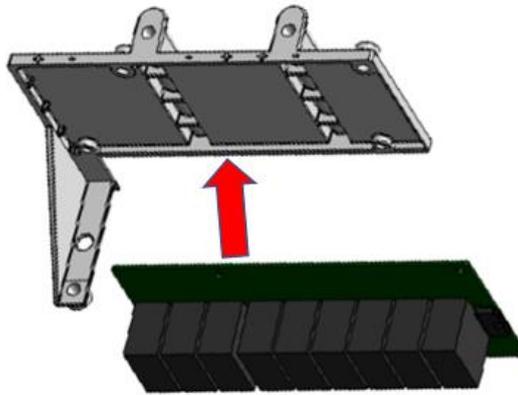


Figure 13: place SPD Board into the DC SPD Holder

3. Place the SPD Board into position on the DC SPD holder, insert the two M3 screws and use a PH2 Philips screwdriver to tighten the screws to a torque of 1.3 N*m / 11.5 lbf*in.

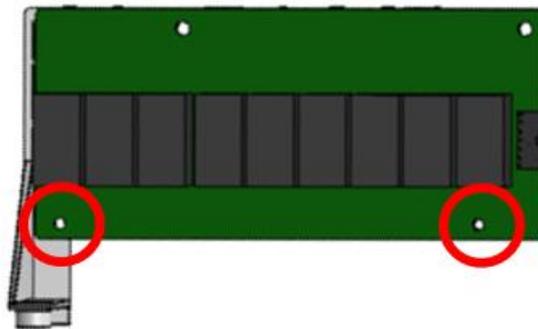


Figure 14: place SPD Board onto DC SPD holder

4. Place the GND Bus Bar into position, insert the two M4 screws and use a PH2 Philips screwdriver to tighten the screws to a torque of 2.6 N*m / 23 lbf*in.

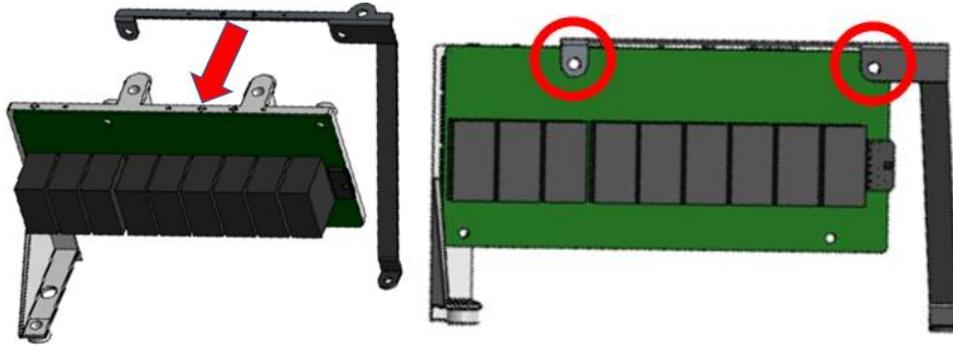


Figure 15: place GND Bus Bar

5. Place the GND Bus Bar assembly into position and use a PH2 Philips screwdriver to tighten the three M4 screws to a torque of 2.6 N*m / 23 lbf*in.

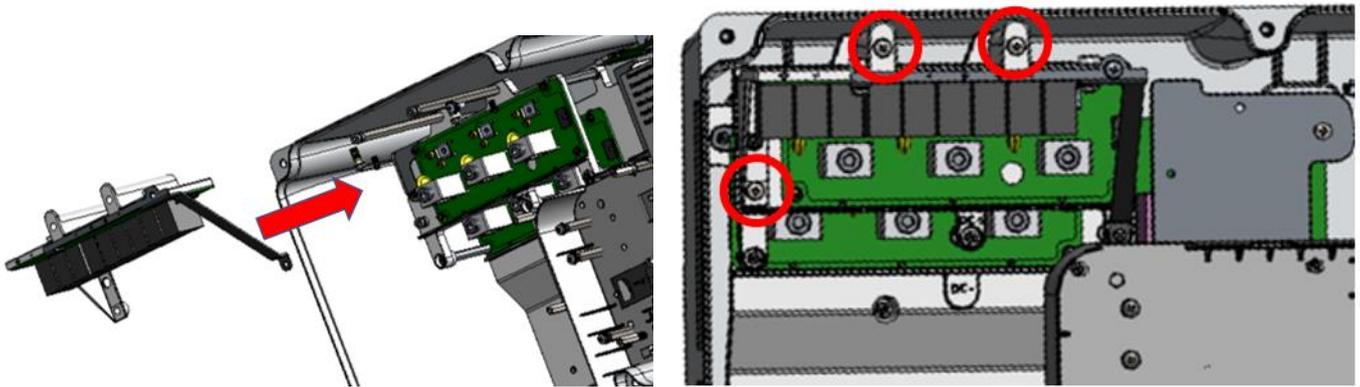


Figure 16: replace GND Bus Bar assembly tighten three M4 screws

6. Use a PH2 Philips screwdriver to tighten the one M3 screw to a torque of 1.3 N*m / 11.5 lbf*in.

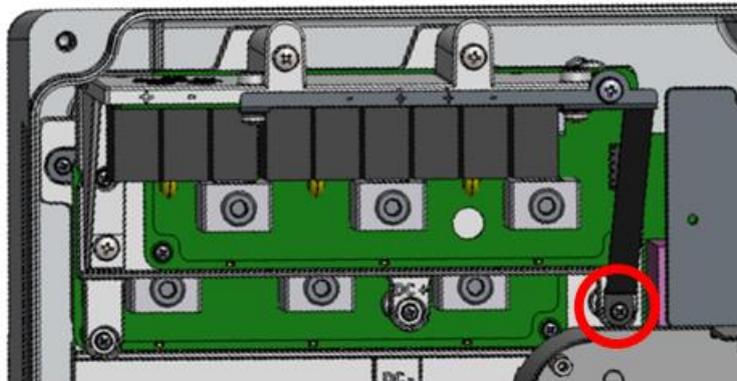


Figure 17: tighten one M3 screw

7. Reconnect the NTC cable into the NTC Cable socket on the CPD Board. Pull gently to make sure the connector is properly inserted into the socket.

**CAUTION!**

Make sure to connect the **RED** cables to the positive (+) terminals and the **BLACK** cables to the Negative (-) terminals.

8. Unfold the 3 DC+ and 3 DC- cables and place them into position.



Figure 18: keep correct polarity

9. Use a PH2 Philips screwdriver to tighten the 6 screws holding 3 DC+ and 3 DC- cables in place to a torque of 1.3 N*m / 11.5 lbf*in.
10. Unfold the PE cable and place it into position.
11. Use a PH2 Philips screwdriver to tighten the screw holding the PE cable in place to a torque of 2.6 N*m / 23 lbf*in.

Remounting the Cover

1. Place the cover in position and insert the 6 screws.
2. Use a 4 mm hex bit and a torque wrench to tighten the six screws to a torque of 3.5 N*m / 31 lbf*in.
3. Tighten the screws in the following sequence:



Figure 19: screw tightening sequence

4. Unlock the power distribution panel and turn ON the AC circuit breakers or connect the fuses.
5. Turn the ON/OFF/P Toggle Switch of the Synergy Manager ON (1).



Figure 20: ON/OFF/P Toggle switch ON