Allen-Bradley 1746-OW16

01 Establish the SLC output position and load duties

1 Record module and terminal identities

Confirm the 1746-OW16 marking, chassis location and removable terminal-block identity before work. Capture the existing output addresses and the two common-group assignments. Compare the installed wiring with the relay-output diagram, not a semiconductor output card that happens to have a similar point count or a similar removable connector.

2 Assess the actual switching duty

Identify the supply voltage, steady current, starting demand and switching pattern of each load. The permitted operating range is 5-125 V DC or 5-265 V AC, but that range alone does not establish the allowable load current. Evaluate individual contact limits as well as the aggregate limits for each common and the complete module.

3 Plan controlled machine behavior

Identify every actuator or downstream device that can respond to the sixteen outputs. Place the affected circuits in the approved maintenance state and retain the control program and I/O assignment. Agree the test order and expected field actions before using any output forcing or manual command, and track all temporary test controls through release.

Output identity	1746-OW16; sixteen relay points
Grouping	Two commons; eight points per common
Test planning	Expected field action for every output

1746-OW16 / Isolate supplies and install the module correctly

02 Isolate supplies and install the module correctly

1 Disconnect every relevant energy source

Disconnect chassis power before installing, removing or wiring the module. The external field-load supplies are separate from the backplane and must also be isolated before terminal work. Verify the maintenance isolation at the actual circuit locations; a stopped processor or an off command does not prove that the external relay circuit is de-energized.

2 Seat the card in the correct slot

The first chassis slot is reserved for the processor or 1747-ASB. Align the module circuit board with the intended card guide and slide it into position until the retaining tabs lock. Inspect the chassis and connector for damage or contamination. Keep unused slots protected with the specified filler rather than allowing debris into the backplane area.

3 Restore the labeled terminal block

Match the removable terminal block to the correct module and restore the labeled field conductors. Route wires down and away from the module as intended. The terminal-wiring limit is 2 mm2, with a maximum of two wires per terminal and 0.9 N m wiring torque; distinguish terminal wiring from terminal-block retaining hardware.

Chassis	Power disconnected before module handling
Field circuits	External supplies independently isolated
Wiring terminals	2 mm2 maximum; 2 wires; 0.9 N m maximum

1746-OW16 / Review commons, supply budgets and suppression

03 Review commons, supply budgets and suppression

1 Trace the two common groups

Identify which eight output points belong to each common and verify the corresponding load supply. Preserve the exact terminal labels and return paths. The module is not sixteen individually isolated outputs, so do not move a circuit between points without reviewing the common-group implications and the complete wiring design.

2 Budget both backplane rails

Include 170 mA at 5 V DC and 180 mA at 24 V DC in the chassis supply calculation, together with every other installed module. These are module backplane requirements, not available current for external loads. Keep the field-load power calculation separate from the controller chassis calculation so neither supply is sized from the wrong rating.

3 Evaluate aggregate loading and transients

The AC module continuous-current limit is 16 A and the common limit is 8 A. Individual contact ratings still apply, so neither aggregate number can be assigned to every output. Select appropriate suppression for inductive loads and suitable circuit protection. Suppression can reduce switching stress but does not increase the contact or common-current rating.

5 V rail	170 mA module demand
24 V rail	180 mA module demand
Aggregate limits	16 A AC module; 8 A common

1746-OW16 / Test commanded states and real field response

04 Test commanded states and real field response

1 Prove one output path at a time

Use the controlled test plan to compare each commanded state with the actual relay circuit and field-device response. Verify the correct point and common group before moving to the next channel. A program status bit alone does not demonstrate contact continuity, load supply, terminal integrity or correct downstream wiring.

2 Interpret switching delay correctly

Maximum on and off signal delay is 10 ms with a resistive load. Consider the actual load and receiving equipment when assessing observed response; an actuator may have its own delay. Do not qualify this relay card for a high-speed pulse duty solely because a low-frequency test appears successful.

3 Check low-load and off-state behavior

The specified minimum load is 10 mA at 5 V DC and maximum off-state leakage is 0 mA. Confirm the intended small-signal circuit falls within its operating requirements. If a load remains active when the command is off, isolate and investigate the circuit rather than assuming that an off indication proves the field path is open.

Point proof	Command, contact circuit and field response
Timing basis	10 ms maximum on/off; resistive load
Small-load basis	10 mA at 5 V DC minimum

1746-OW16 / Close the intervention and plan future support

05 Close the intervention and plan future support

1 Investigate persistent switching problems

Compare supply voltage, load duty, terminal condition and contact behavior when an output does not follow its command. Inspect for damaged wiring or contact stress under isolation. Do not transfer the fault to another point without assessing the load and common group; doing so can reproduce the same failure while obscuring its original cause.

2 Restore normal program control

Remove temporary forcing and test controls under the site procedure, then verify that the program owns every affected output again. Retain the tested point map, load observations and any corrected wiring labels. Check normal machine sequencing before release so the maintenance test does not become the only evidence of correct operation.

3 Keep migration separate from replacement

Rockwell Automation discontinued 1746-OW16 effective November 24, 2022 and classifies replacement as an engineering replacement. Plan any migration around the controller, I/O platform, wiring and software together. A newer relay-output card is not automatically compatible with the SLC chassis or its existing terminal arrangement.

Technical basis: SLC 500 Digital I/O Modules, 1746-IN027D-EN-P, December 2012.

Related product navigation

- Allen-Bradley 1746-NI8
- Allen-Bradley 1746-NO4I
- Allen-Bradley 1746-OB16

These are related references, not confirmed substitutes or an automatically approved assembly.