



Installation Manual: Modicon 800-to-1756 I/O Swing-arm Conversion System

(Cat 1492-_)

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I. Conversion Preparation

Prior to actually beginning the removal of the Modicon 800 I/O hardware, it is vital to prepare for the I/O field wire swing-arm conversion by at minimum reviewing the following steps:

- a) Inventory the 1492 swing-arm conversion mounting hardware on site to ensure the correct components are available, before removing any 800 I/O hardware. Refer to Appendix A 800 I/O Housing to 1756 I/O Chassis Conversion System Selection Process for details.

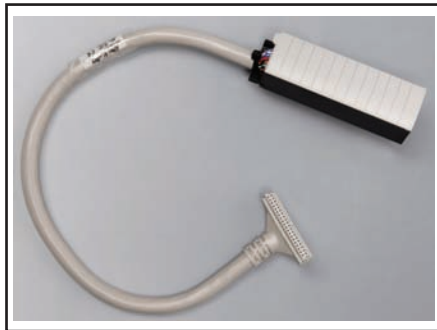


Conversion Base-Plate: To mount conversion modules

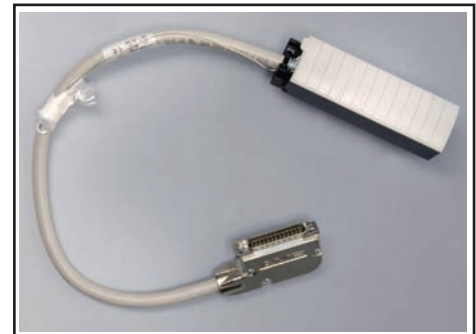


Conversion Cover-Plate: To mount the 1756 Chassis and to protect the conversion modules

- b) Inventory the 1492 swing-arm conversion modules (e.g. 1492-CM800-LD002) and 1492 cables (e.g. 1492-CABLE003X, 1492-ACABLE003UC, etc) to interface the conversion module to the 1756 I/O module. Inventory your 1756 I/O modules, power supply and chassis. Ensure the correct component types and correct number of those components are on site to complete the conversion. Refer to Appendix B Conversion Module Selection Process for details.



1492 Digital Cable



1492 Analog Cable

1492 Cables: Provide interface between conversion module to 1756 I/O module

- c) Review the application considerations in each conversion module's Installation manual to ensure the conversion module or its associated 1492 cable is not being misapplied. A wiring diagram which shows the circuit connections from the 800 I/O swing-arm to the 1756 I/O module is also in the Installation Manual to assist in possible troubleshooting.
- d) Review Rockwell Automation Publication 1770-4.x Industrial Automation Wiring and Grounding Guidelines (available at the Publication Literature Library: <http://www.ab.com/literature>). Ensure to follow these guidelines with particular attention to ground when installing the conversion system.
- e) Obtain current and correct 800 I/O wiring schematics prior to disassembly. Typically this will not be used but should be available in advance for reference.
- f) Tools required: Flat blade and phillips screwdriver, box or socket wrench set (size dependent on original installation), cable ties.



Conversion Modules: Convert 800 I/O module field wire terminations to ones compatible with a 1756 I/O module (refer to Appendix B for compatibility details)

II. Conversion Steps



WARNING

De-energize and lockout any and all power to all I/O field devices connected to the Modicon 800 I/O housing, and the power to the 800 I/O housing itself. Ensure all power is de-energized and locked out to any device in the control cabinet where the conversion is to be performed. Work shall be performed by qualified personnel.

1) Remove the Modicon I/O Hardware from the I/O Housing

- a) Loosen the upper and lower #10-32 x 1.0 in. screws (refer to Figures 1a and 1b) that attach the Modicon 800 I/O module to the I/O housing and remove the module from the housing. Remove the module from the I/O housing using the module's integrated swing-out (refer to Figure 1c) handle assembly. Note: Recommend recording the slot location of the Modicon module should re-assembly be required.

Upper I/O Module Screw

Lower I/O Module Screw



Figure 1a



Figure 1b



Figure 1c

- b) Refer to Figures 1d through 1f. Remove the upper and lower screws that attach the 800 I/O terminal block to the 800 I/O housing. NOTE: Save these screws as they will be used in the installation of the conversion system.

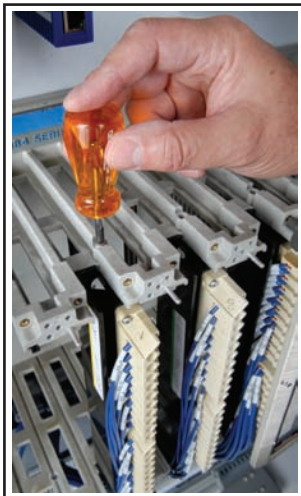


Figure 1d



Figure 1e



Figure 1f

II. Conversion Steps

NOTICE

Refer to Figures 1g and 1h. After each module is removed, label the terminal block as it will be used with the conversion system (example: slot number and 800 module Cat. Number) or mark (example: color code) it to ensure you can correctly match each 800 I/O terminal block with the correct 1492 conversion module and ultimately the 1756 I/O module. NOTE: These labels are not provided with the conversion system.

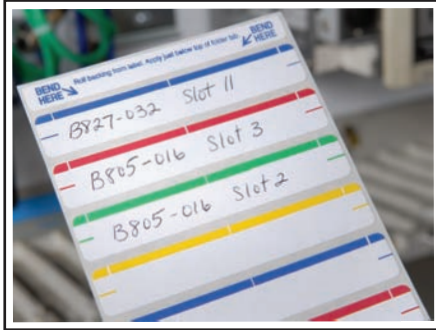


Figure 1g



Figure 1h

- c) Carefully place the labeled 800 I/O terminal block, below the 800 I/O housing (refer to Figure 1i) to ensure it and the associated field wires are not damaged.

NOTICE

Closely inspect the 800 I/O terminal block for any damage (example: broken or cracked mounting screw bracket, stripped terminal block screw, etc.) which may impact the reliability of the conversion. If necessary replace the 800 I/O terminal block. (Modicon part numbers: 20-pin: AS-8534-000; 40-pin: AS-8535-000). Check terminal screw integrity and re-torque if necessary.

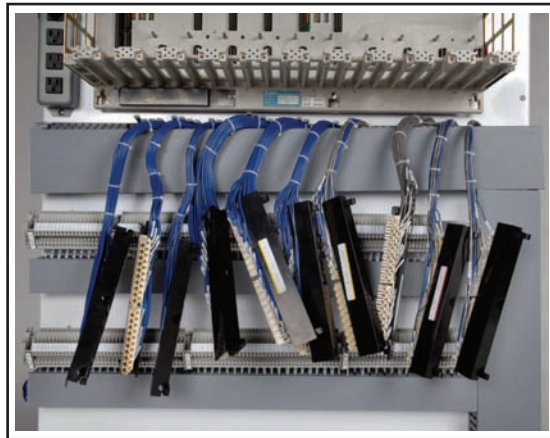


Figure 1i

- d) Repeat the preceding steps a through c until all 800 I/O modules and the associated terminal blocks are removed from the 800 I/O housing.

2) Remove the 800 I/O Housing from the Control Cabinet

- a) Refer to Figures 2a and 2b. Loosen (do not remove) the bolts which attach the 800 I/O Housing to the control cabinet enough to remove the housing. **The bolts will be used to mount the conversion system base plate in Section 3.**



Figure 2a



Figure 2b

II. Conversion Steps

b) Refer to Figures 2c and 2d. Remove the 800 I/O housing from the control cabinet.

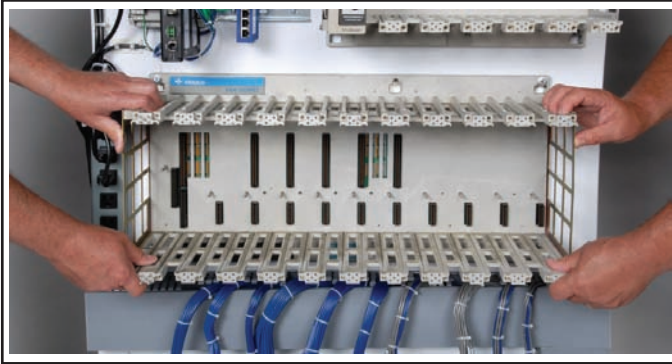


Figure 2c

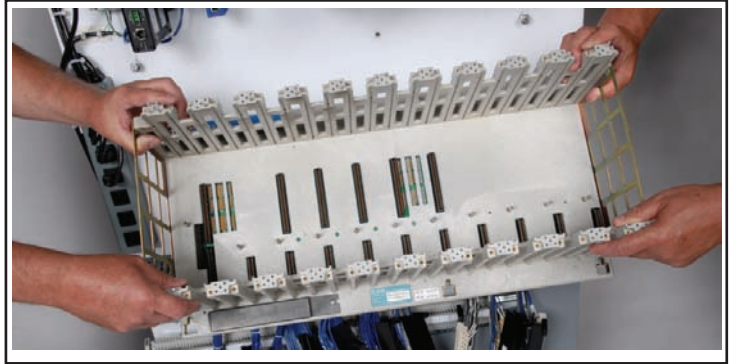


Figure 2d

3) Install the 1492 I/O Conversion System Base-plate in the Control Panel

NOTICE

Before installing the conversion system base-plate into the control panel ensure you follow the system grounding guidelines found in Rockwell Automation Publication 1770-4.x Industrial Automation wiring and Grounding Guidelines. Follow PLC chassis mounting information.

a) Refer to Figure 3a. Place the 1492 conversion base-plate into the control cabinet at the location previously used by the 800 I/O housing. The conversion base-plate panel mounting bolt hole locations match those of the 800 I/O housing.



Figure 3a



Figure 3b

b) Refer to Figure 3b. Securely fasten the base-plate to the control panel so as not to exceed the torque value of the bolts selected. NOTE: The bolts you select will depend on what was used to mount the 800 I/O housing.

4) Install the 800 I/O Swing-arms into the Conversion Modules

a) Remove the appropriate conversion module from its carton. Ensure the functional capability of the 1492 conversion module, as indicated on its label (example: Figure 4A), meets the conversion requirements for the specific I/O slot.

NOTICE

There is a label on the 1492 conversion module to indicate which 800 to 1756 I/O module it is capable to convert. Also refer to Appendix B for a conversion list.

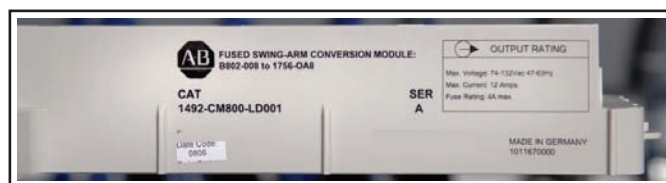


Figure 4a

II. Conversion Steps

- b) Locate the 1492 conversion module that mates to the 800 I/O terminal block and conversion base-plate slot location. Review both conversion module and terminal block labels to ensure a correct match. Refer to Appendix B for additional details.



Figure 4b

- c) Identify the terminal block insertion guides on both ends of the 800 I/O terminal block and the insertion guides of the conversion module. Refer to Figures 4c and 4d.

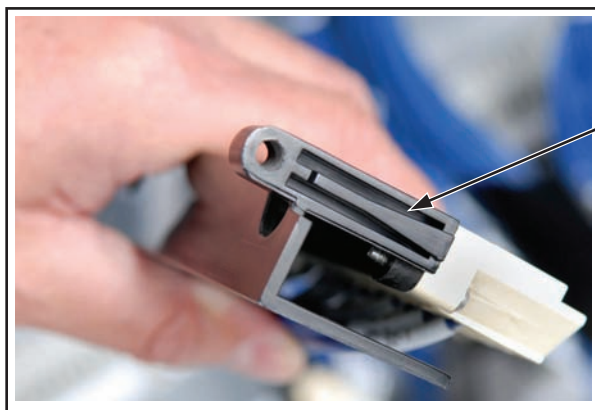


Figure 4c



Figure 4d

NOTICE

Before inserting the 800 I/O terminal block into the conversion module it is recommended that the terminal block contacts be carefully inspected and cleaned if necessary to ensure a good electrical connection with the conversion module. A mild abrasive (e.g. pencil eraser) is recommended. Do not use a solvent.

- d) Refer to Figures 4e and 4f. Using the terminal block guides, carefully slide the 800 I/O terminal block into the mating conversion module slots. Continue sliding the terminal block forward so its field connection (V-shaped slot) slides into the module's circuit board tabs and press the two components together to ensure the mating terminals are fully engaged. When fully engaged the screw hole on the 800 I/O terminal will align with the screw hole on the conversion module (refer to Figure 4g).

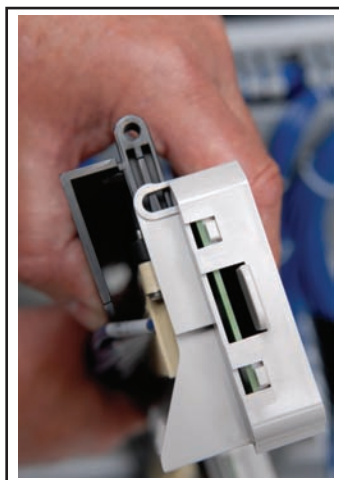


Figure 4e



Figure 4f

II. Conversion Steps

- e) Refer to Figures 4g and 4h. Use the upper and lower #10-32 x 1 inch phillips mounting screws you saved in Step 1b, attach the terminal block to the conversion module. Torque to 10 lb-in.



Figure 4g



Figure 4h

- f) Gently place the completed conversion module and terminal block assembly below the conversion system base-plate. Repeat steps a through e above for all of the remaining terminal block conversions associated with this I/O housing.

5) Install the Conversion Module/Terminal Block Assemblies into the Base-Plate

Begin installing conversion module/terminal block assemblies into the conversion base-plate starting with the right most base-plate slot used in your configuration.

NOTICE

The slot locations of the base-plate should match those used in the previously installed Modicon I/O housing. Refer to wiring schematics to confirm the correct location.

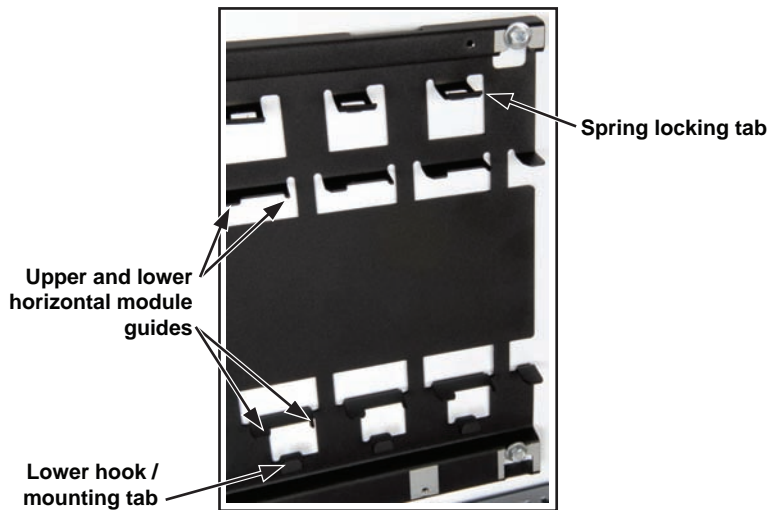


Figure 5a

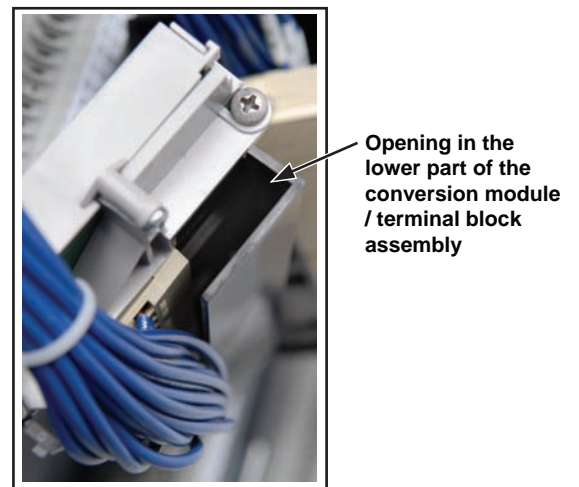


Figure 5b

- a) Refer to Figures 5a through 5d. Refer to the opening at the bottom of the assembly and the hook/mounting tab at the bottom of the base-plate. Also notice the horizontal module guides on the base-plate. Guide the lower part of the conversion module/terminal block assembly into the lower hook/mounting tab of the base-plate. This works best if the module approaches the base-plate at approximately a 60 degree angle from the back of the base-plate.

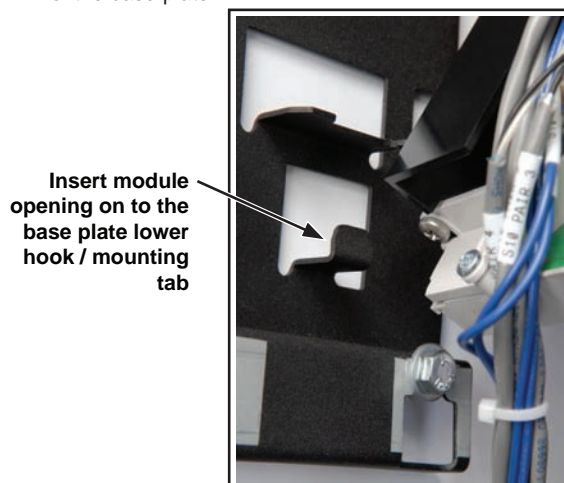


Figure 5c

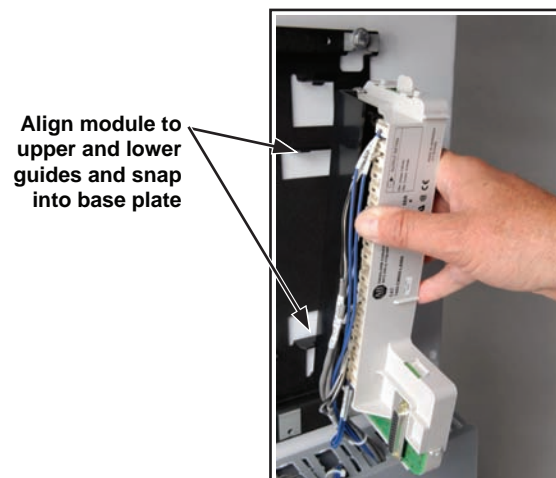


Figure 5d

II. Conversion Steps

- b) With the lower part of the conversion module/terminal block assembly attached to the base-plate's hook/mounting tab, align the module between the lower and upper horizontal module guides and gently push the upper part of the assembly into the spring locking tab until an audible snap is heard. NOTE: It may be necessary to adjust the spring locking tab (bend down when mounted) to ensure it fully engages the module. This can be done using a flat blade screwdriver (refer to Figure 5e).

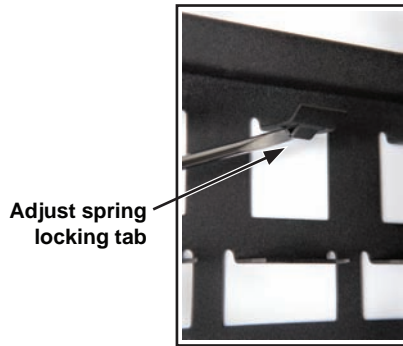


Figure 5e



Figure 5f

6) Attach the 1492 Cables to the Conversion Module

Use the following procedure to attach the 1492 interface cable to the conversion module. The function of this cable is to attach the conversion module to the 1756 I/O module.

- a) Find the appropriate cable for the conversion and 1756 I/O module. Refer to Appendix B for a list of compatible cables.

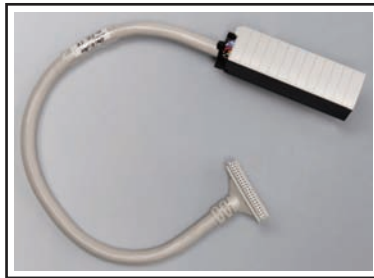


Figure 6a

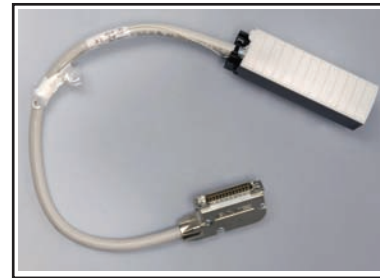


Figure 6b

- b) Find the conversion module compatible end of the cable. NOTE: Digital cables (molded end) have a keyed connector, and analog cables have a metal D-shell and a slide-locking assembly.



Figure 6c

- c) Gently guide the conversion module end of the cable into the conversion module, and firmly press the two components together. Refer to Figures 6c and 6d.

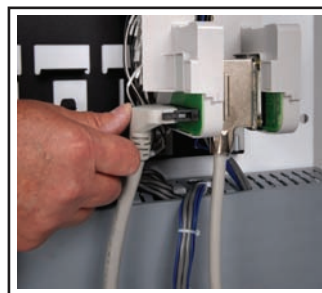


Figure 6d

II. Conversion Steps

- d) Lock the cable into the conversion module. Digital conversion modules have locking fingers on both sides of the digital (with molded end, refer to Figure 6d) cable. These will typically lock in place when the cable is pressed into the module's connector. Analog modules and mating analog cables (metal D-shell, refer to Figure 6e) have a slide-locking assembly to lock the cable to the conversion module. Ensure the two components are locked together.

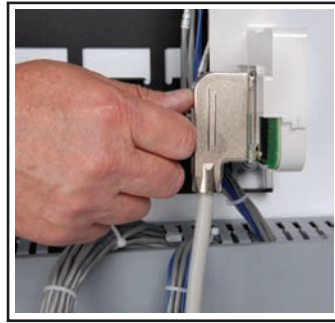


Figure 6e

- e) After the cable is attached to the conversion module, gently lay the opposite end (ControlLogix terminal block) below the module.
f) Repeat steps 5a through 5b and 6a through 6e for the remaining conversion modules.



Figure 6f

7) Install the 1756 Chassis, I/O Modules and Power Supply on the Conversion Cover-plate

The conversion system installation will be faster if it is possible (depends on space available above the base-plate, refer to next step) to attach the 1756 chassis with its integrated components to the conversion system cover-plate, before the cover-plate is attached to the base-plate. Use the following procedure:

- a) Place the cover-plate on a horizontal surface (e.g. table, floor, etc.).



Figure 7a

NOTICE Before attaching the 1756 I/O Chassis to the conversion cover-plate, closely review and follow the Chassis mounting and system GROUNDING directions in the 1756 Chassis Installation Instruction manual (1756-IN080x-EN-P) that shipped with the 1756 Chassis or at www.ab.com/literature.

- b) Using the M5 size screws shipped with the cover-plate and base-plate assembly attach the correct 1756 Chassis (refer to Appendix A) to the conversion system cover plate. Torque screws to 2 Nm. Select the appropriate 1756 I/O modules (refer to Appendix B) and power supply.

NOTICE The decision to install the appropriate 1756 chassis to the cover-plate before or after it is attached to the base-plate is up to the installer. For proper power supply sizing, refer to the 1756 Power Supply Installation manual available with the product or at www.ab.com/literature.

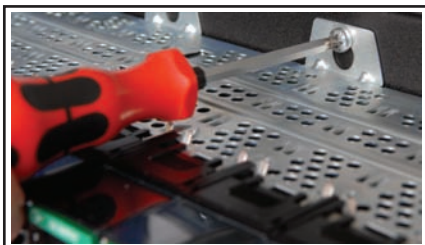


Figure 7b

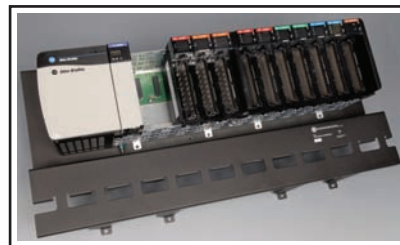


Figure 7c

II. Conversion Steps

8) Attach the Conversion Cover-plate to the Conversion Base-plate

To attach the cover-plate to the base-plate use the following procedure:

- a) Refer to Figure 8a. At the top of the cover-plate are several hinge/pivot brackets. These fit into mating slots at the top of the base-plate (refer to Figure 8b) to attach both of the components together. Locate these component mounting features before assembly.

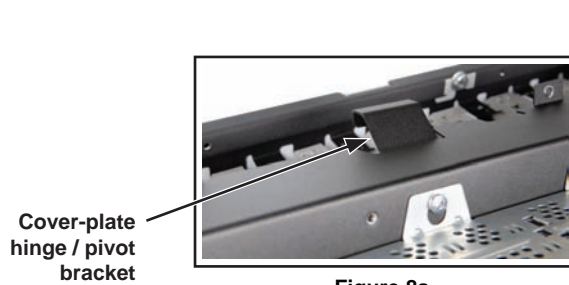


Figure 8a

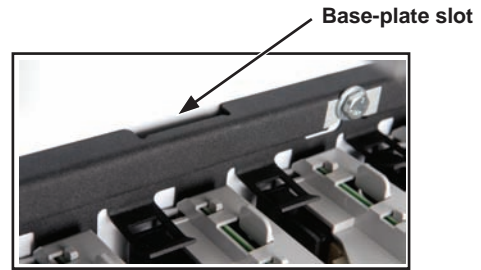


Figure 8b

- b) With the cover-plate at about a 30-45 degree angle from the base-plate, guide the cover-plates hinge / pivot brackets into the mating slots of the base-plate. It may be necessary to move some of the 1492 cables to mate with the cover plate legs to the base plate.



Figure 8c

- c) Slowly lower the bottom part of the cover-plate being careful to guide the lower mounting support legs so as to NOT hit and damage a conversion module. Do not screw the support legs to the base-plate at this time.



Figure 8d

II. Conversion Steps

9) Attach the 1492 Cables with 1756 Swing-Arms to the Appropriate 1756 I/O Module

Use the following procedure:

- Closely review the labels on the conversion modules and the 1492 cables to ensure they are the correct mates for the 1756 I/O module (Refer to Appendix B).
- Making sure you have the correct cable, slowly guide the terminal block end into the mating connector of the 1756 I/O module (Refer to Figure 9a).



Figure 9a

- Refer to Figure 9b. Firmly press the two components together and secure the terminal block to the 1756 I/O module.



Figure 9b

- Repeat steps a through c for all remaining conversion module/cable assemblies until all conversion are complete.
- Recheck that all cables are fully engaged into the mating connectors and that the tabs are locked on the conversion module. Ensure the 1756 terminal blocks are secured to the 1756 I/O module.
- Ensure all analog cable ground wires are secured to a 1756 chassis mounting screw. A lug is provided on each analog cable for this purpose.
- Secure the cover-plate to the base-plate by using the M5 screws supplied with the system (recommended torque 2 Nm)



Figure 9c

System Testing Before Applying Power

Before applying power to the system, check continuity from the field wiring terminal block (typically at the bottom of the control panel) to the 1756 I/O module terminal block. This should be done for several points of each I/O module to ensure connection of the conversion system.

Appendix A

800 I/O Housing to 1756 I/O Chassis Conversion System Selection Process

- 1) Determine the number of 800 I/O modules actually used in the 800 I/O Housing to be converted to 1756.
- 2) Review the data in Column 5 from the below table, and select a 1756 I/O Chassis which meets your conversion needs from Step 1. Ensure the information from the I/O Conversion module table is reviewed first since in some cases, two 1756 modules are needed to replace one 800 I/O module.
- 3) Once the 1756 Chassis is selected, refer to Column 7 and select the Conversion Assembly.

1	2	3	4	5	6	7
Modicon 800 I/O Housing Catalog Number	Max. Number of Slots for I/O	Width Dimension	1756 I/O Chassis Catalog Number	Max. Number of Slots for I/O ^①	1756 I/O Chassis Width ^{③④} Dimension	Conversion Assembly Catalog Number ^②
AS-H810-xxx	3	10.25"	1756-A4	3	10.25"	1492-MUA4-MB3
AS-H819-103	4	17.5"	1756-A7 or 1756-A10	A7 = 6, A10=9	A7 = 14.49" A10 = 19.02" ^④	1492-MUA7-A10- MB4679 ^⑤
AS-H819-209	6	17.5"		A7 = 6, A10=9	A7 = 14.49" A10 = 19.02" ^④	
AS-H819-100	7	17.5"		A7 = 6, A10=9	A7 = 14.49" A10 = 19.02" ^④	
AS-H827-103	8	27.1"	1756-A10 or 1756-A13	A10 = 9, A13=12	A10 = 19.02" A13 = 23.15"	1492-MUA10-A13- MB81011 ^⑥
AS-H827-209	10	27.1"		A10 = 9, A13=12	A10 = 19.02" A13 = 23.15"	
AS-B827-100	11	27.1"		A10 = 9, A13=12	A10 = 19.02" A13 = 23.15"	

- ① One chassis slot required for the ControlLogix processor or a remote I/O adapter type module.
- ② The footprint and mounting dimensions of the 1492 Conversion Assembly (base plate and cover plate) match those of the Modicon I/O Housing.
- ③ Width dimension includes the 1756 Chassis power supply.
- ④ Surplus Chassis width as compared to the 800 I/O Housing is divided equally when mounting it on the Conversion Assembly.
- ⑤ Mounting holes for the 1756-A7 and 1756-A10 Chassis are pre-drilled and tapped in the Conversion Assembly.
- ⑥ Mounting holes for the 1756-A10 and 1756-A13 Chassis are pre-drilled and tapped in the Conversion Assembly.

Conversion Module Selection Process:

- 1) Find the Catalog Number of the 800 I/O modules you are currently using.
- 2) The 3 columns to the right of the 800 I/O module contain the catalog number of the compatible 1756 I/O module, the 1492 Conversion module, and the 1492 cable to connect the conversion module to the 1756 I/O module.
- 3) Review the 800-to-1756 module Application Considerations

Modicon 800 Digital I/O Module Catalog Number	ControlLogix 1756 Digital I/O Replacement Module	1492 I/O Conversion Module Catalog Number	Conv. Module to 1756 Module Cable Catalog Number
AS-B802-008	1756-OA8	1492-CM800-LD001 ②	1492-CABLE①U
AS-B804-116	1756-OA16	1492-CM800-LD002	1492-CABLE①X
AS-B824-016	1756-OB16E	1492-CM800-LD002	1492-CABLE①X
AS-B805-016	1756-IA16	1492-CM800-LD003	1492-CABLE①X
AS-B853-016	1756-IA16	1492-CM800-LD003	1492-CABLE①X
AS-B806-032	1756-OA16 ③	1492-CM800-LD004	1492-CABLE①X
AS-B807-132	1756-IA32	1492-CM800-LD005	1492-CABLE①Z
AS-B820-008	1756-OB8	1492-CM800-LD006 ②	1492-CABLE①U
AS-B820-008	1756-OC8	1492-CM800-LD006 ②	1492-CABLE①U
AS-B821-108	1756-IB16	1492-CM800-LD007	1492-CABLE①X
AS-B821-108	1756-IC16	1492-CM800-LD007	1492-CABLE①X
AS-B825-016	1756-IB16	1492-CM800-LD008	1492-CABLE①X
AS-B826-032	1756-OB32	1492-CM800-LD009 ②	1492-CABLE①Z
AS-B827-032	1756-IB32	1492-CM800-LD010	1492-CABLE①Z
AS-B838-032	1756-OB32	1492-CM800-LD011 ②	1492-CABLE①Z
AS-B838-032	1756-OB16E ③	1492-CM800-LD012	1492-CABLE①X
AS-B802-008	1756-OA8E	1492-CM800-LD013	1492-CABLE①U
AS-B810-008	1756-OA16I	1492-CM800-LD014 ②	1492-CABLE①Y
AS-B814-108	1756-OX8I	1492-CM800-LD015 ②	1492-CABLE①Y
AS-B840-108	1756-OX8I	1492-CM800-LD015 ②	1492-CABLE①Y

Modicon 800 Analog I/O Module Catalog Number	ControlLogix 1756 Analog I/O Replacement Module	1492 I/O Conversion Module Catalog Number	Conv. Module to 1756 Module Cable Catalog Number
AS-B875-111	1756-IF16 (Diff-C)	1492-CM800-LA001	1492-ACABLE①UD
AS-B875-111	1756-IF16 (Diff-V)	1492-CM800-LA001	1492-ACABLE①UC
AS-B877-111	1756-IF16 (S-end-C)	1492-CM800-LA002	1492-ACABLE①UB
AS-B877-111	1756-IF16 (S-end-V)	1492-CM800-LA002	1492-ACABLE①UA
AS-B872-100	1756-OF6CI	1492-CM800-LA003	1492-ACABLE①Y
AS-B872-200	1756-OF6VI	1492-CM800-LA004	1492-ACABLE①Y

- ① 3-digit number to indicate cable length in meters (00.1 to 20.0). Recommended length 0.3m
- ② Conversion module is fused to match Modicon output module functionality
- ③ Two 1756 modules and two 1492 cables are required to match Modicon functionality