Installation procedure for ABB ACS880 demo encoder kit with ABB (blue) motor (Kit PN 3AUA0000234593) Revision C (5/5/2025)

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Purpose

The purpose of this document is to identify how to install an encoder option kit to the ABB ACS880 demo drive. This kit is specifically designed to fit the newer U.S. ACS880 demo drives that utilize an ABB (blue) motor. A different kit and installation document exists for the U.S. ACS880 demo units that utilize the Baldor (grey) motor. Neither of these kits work on ACS880 demos built outside the U.S.
This encoder kit can be used to accurately close the speed loop of the demo drive. The hardware can also be used to demonstrate the N5700 positioning software. The N5700 software is not included with this kit. Please contact your ABB representative to obtain a copy of this software.

Additional references

For more information on the ACS880-01 drive used in the ACS880-01 demo refer to:

- ACS880-01 hardware manual 3AUA0000078093
- ACS880-01 firmware manual 3AUA0000085967
- FEN-01 manual 3AFE68784603
- FETA-01 installation instructions 3AXD50000206063
- The encoder data sheet can be found here: https://www.encoder.com/hubfs/products/Model_260/datasheet_model-260.pdf?hsLang=en

Warning

This drive has hazardous voltages present that could cause injury or even death. If you are not a qualified electrical professional do not perform this work. Only those qualified and competent on working with higher voltages should install this option kit. Refer to the ACS880-01 hardware manual (3AUA0000078093) for further safety information and warnings.

Tools Required

The following tools are required to add the encoder kit to your ACS880 demo:
Standard #2 Phillips screwdriver
T10 Torx driver
T20 Torx driver
ABB flat screwdriver (3.5mm)
2mm Allen Wrench (provided with encoder)
11/32” wrench (open end)

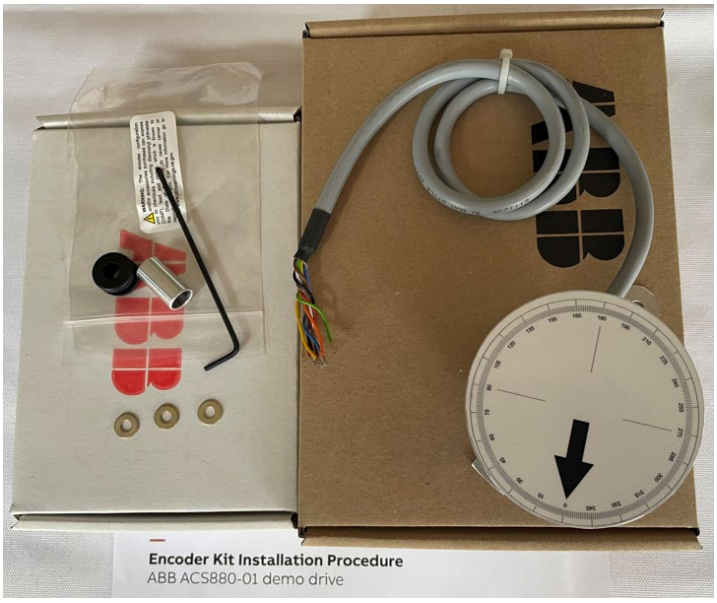
Unpacking

This encoder kit is designed to be used on an ABB ACS880-01 demo case that uses an ABB (blue) motor. If your demo uses an older Baldor (grey) motor, use kit 3AUA0000234592.

Along with a paper that includes a link to these installation instructions, this kit contains:

- 260-N-T-09-S-1024-R-HV-1-S/2-SF-1-N-SPEC885 encoder mounted to a bracket with Allen wrench with flywheel with applied degree wheel label.
- 3-Flywheel cover washers
- 1-cable grommet
- FEN-01 encoder module
- FETA-01 termination board for FEN-01
- 11mm OD to 9mm ID motor shaft sleeve

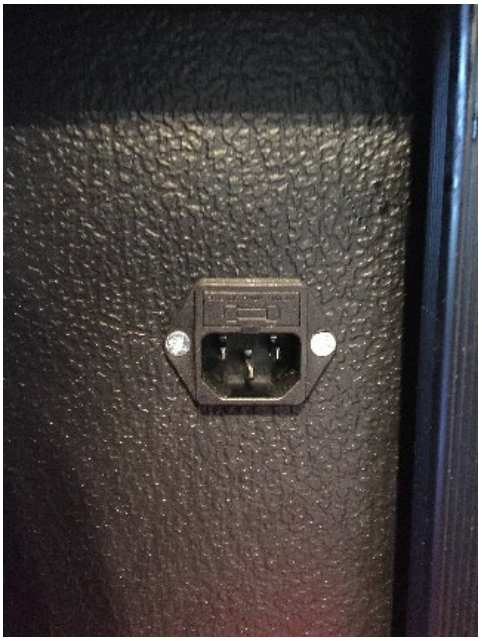
Below is a photo of the components in the encoder kit. The white box contains the FEN-01 module and the brown box contains the FETA-01 termination board.



Installation Process

Remove power to the demo unit

Unplug power to the back of the demo and remove any other remote power source that may be connected to the demo.



Warning: There are dangerous voltages inside the demo and at the drive terminals. Unplug the unit and wait 10 minutes for capacitors to bleed down before you start installing the encoder kit. Consult the ACS880-01 hardware manual (3AUA0000078093).

Remove the drive cover

Using the T20 Torx driver (and following the ACS880-01 hardware manual (3AUA0000078093) if needed), remove the drive cover by loosening the two captive screws and tilting the cover upward.

Remove the flywheel cover

Using the 11/32” wrench remove the four nuts holding the flywheel cover onto the motor. The cover and hardware will be reused.

Remove the flywheel

This flywheel is press fit and should not have any screws securing it to the motor shaft. With the flywheel cover removed, grasp the flywheel securely and pull straight off the motor shaft. The flywheel will not be reused.

Mount the encoder

Warning

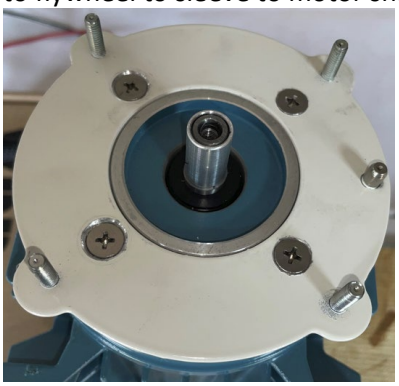
The encoder is robust, as is the spring bracket mounted to its back, however, use caution not to bend or over-stress the spring bracket or cable connection at the encoder or damage could occur. Do not put excessive stress on the encoder bearings or damage to the encoder will occur. Any fit between the encoder flywheel, motor shaft and sleeve must be a slip fit otherwise damage to the encoder bearings could occur.

Determine if a motor sleeve is required

In 2025 the blue ABB motor with an 11mm shaft was discontinued and a smaller motor with a 9mm shaft is being used. To accommodate both the 11mm and 9mm shaft, an aluminum sleeve has been added to the kit to convert the 9mm motor shaft to fit the 11mm flywheel bore. If you have a motor with an 11 mm motor shaft, the adaptive sleeve will not be used.

Installing the motor sleeve

If it is determined that the motor shaft diameter is 9mm nominal, the motor shaft sleeve will be required. This sleeve has a very close slip fit with the motor shaft OD and the flywheel ID. There is also a tight slip fit between the sleeve ID and the motor shaft. Be careful to align the sleeve with the motor shaft, and the encoder flywheel bore with the sleeve. Any misalignment during assembly may result in a sleeve that is no longer useable. Align the sleeve with the motor shaft, and with only your fingers, press the sleeve onto the motor shaft. If the motor shaft is too large, carefully use an emery cloth to remove a small amount of material from the motor shaft until the sleeve slides on the motor shaft snugly. Although there are no slots cut in the sleeve to allow tightening to the motor shaft, with minimal clearance between the motor shaft and the sleeve, the encoder securing screw will secure the encoder to flywheel to sleeve to motor shaft.



Confirm proper alignment with bracket

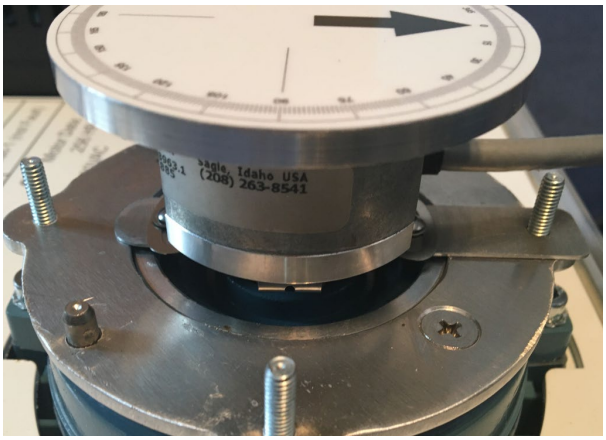
This step should be preset from the factory. Note the rotational orientation between the encoder and its bracket in the photo below. The rotational orientation must be approximately as shown for the flywheel cover cable slot to properly align with the encoder cable. If this orientation is not correct, loosen the encoder mounting screws with the 2mm Allen wrench and rotate the encoder so that it is centered as shown in the photo. Carefully retighten the encoder bracket screws without stripping the bracket. Turn the encoder over and ensure that there will be clearance between the motor shaft and encoder bracket when the encoder is placed on the motor shaft.

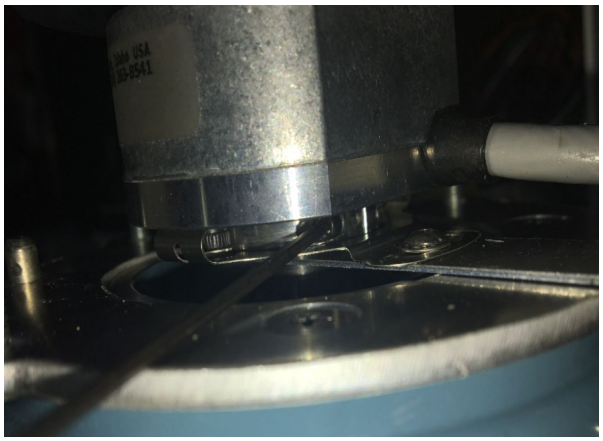
Slip-fit encoder to motor

With the supplied Allen wrench, confirm that the screw for the encoder mounting collar is not tight. Carefully grasp the encoder, flywheel, and bracket combination and ensure there is a slip fit between the encoder and motor shaft (motor sleeve if required). If there is not a slip fit, polish the motor sleeve with emery cloth or for large nicks, a fine file or stone, to obtain a slip fit while ensuring no debris/metal filings go into the motor or demo case. Tip: You may want to set the demo case vertically if you polish the motor shaft to help prevent debris from entering the motor bearing or panel. Do not put excessive stress on the encoder bearings or damage to the encoder will occur.

Slip the encoder onto the motor shaft

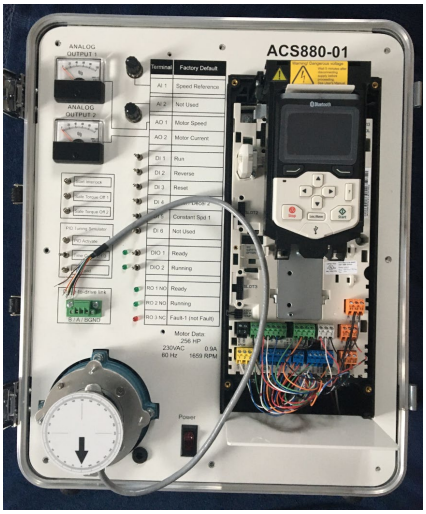
Once you have a slip fit between the encoder and motor shaft (or motor shaft sleeve), and the orientation between the encoder and encoder bracket is correct, slide the encoder and bracket onto the motor shaft (motor sleeve) until the bracket bottoms out against the motor ensuring that the encoder cable is in the approximate 5:00 position. The encoder bracket must be aligned to fit over the cover mounting screw located at the 6:00 position for the 11mm shafted motor, and at the 4:30 position for the 9mm shafted motor. Do not put excessive pressure on the encoder housing while finding this fit as encoder bearing damage could occur. The encoder must easily slide on the shaft while grasping the mounting bracket. Grasp the encoder bracket and not the encoder housing and hold it securely to the motor face while tightening the encoder Allen screw. This assures you have a proper fit without stressing the encoder bearings.





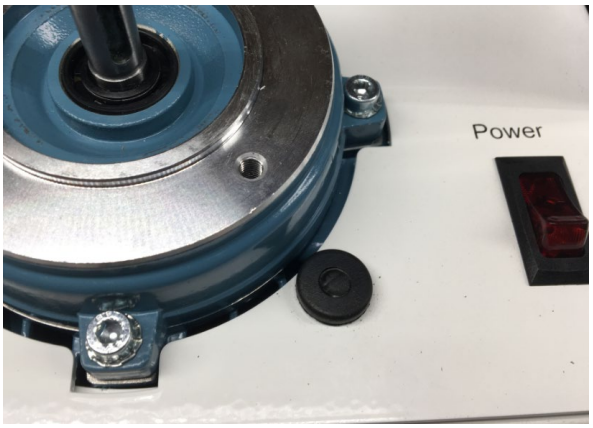
Remove the demo panel

Using the Phillips screwdriver, remove the 8 screws holding the demo panel to the frame. Carefully lift the panel so that the encoder cable can be routed out through the bottom of the drive.

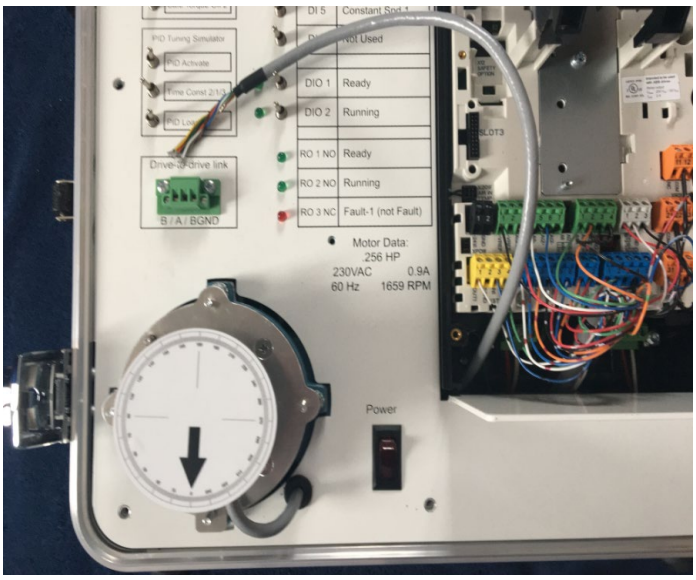


Route the encoder cable

On some of the earliest demo units there is a grommet located below and to the right of the motor was filled with RTV with the intention that the RTV could easily be removed and cable inserted. This is not the case. If your demo case has the grommet filled with RTV, from the back side of the mounting plate cut the grommet off with a knife and replace with the new grommet from the kit. If your kit didn't contain a grommet please contact Technical Support at drivessupportline@us.abb.com or call 1-800-752-0696 option 1, option 1. Provide the demo serial number, confirm you are dealing with a demo that has a blue ABB motor, and an appropriate grommet will be shipped to you. If the grommet is filled with RTV, you will likely need a different flywheel cover discussed in section "Mount the flywheel cover to the motor" below. If your demo case has a plug and not a grommet, remove the plug and discard. Install the grommet.



Route the cable through the grommet as shown in the photo below and bring it back through the opening in the bottom of the drive. (Note for the 9mm shafted motor, the encoder bracket and cable will be rotated CCW about 45 degrees from what is shown in the photo.) Feed enough cable though the drive so that it can be connected to a FEN-01 module in slot 2.

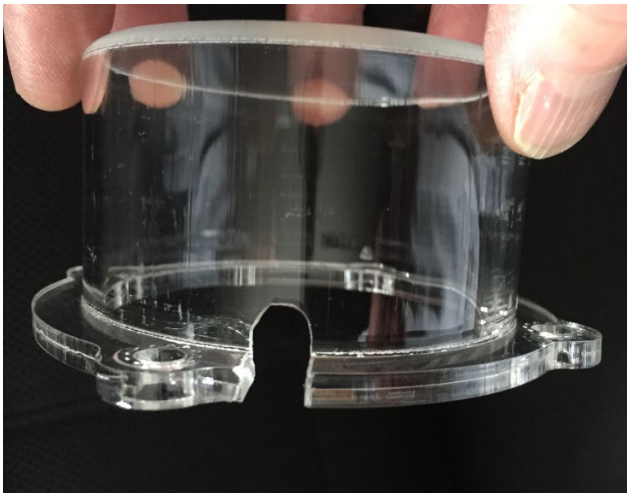


Secure the demo panel

Carefully locate the panel in its original position and secure with 8 screws. Use care when tightening the screws so that you don't strip the threads in the aluminum frame.

Mount the flywheel cover to the motor

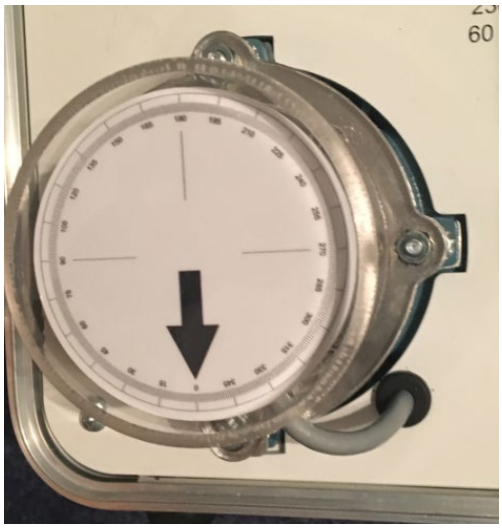
On some of the earliest demo units with the ABB (blue) motor, the flywheel cover did not have a deep enough slot to adequately accommodate the encoder cable. The slot depth shown is adequate.



If the cover that came with the demo has a slot that is 9/16" deep or less, contact Technical Support at drivessupportline@us.abb.com or call 1-800-752-0696 option 1, option 1. Provide the demo serial number, confirm you are dealing with a demo that has a blue ABB motor, and an appropriate cover will be shipped to you. If the cover is not correct you likely have already discovered that you also need a new grommet as described above.

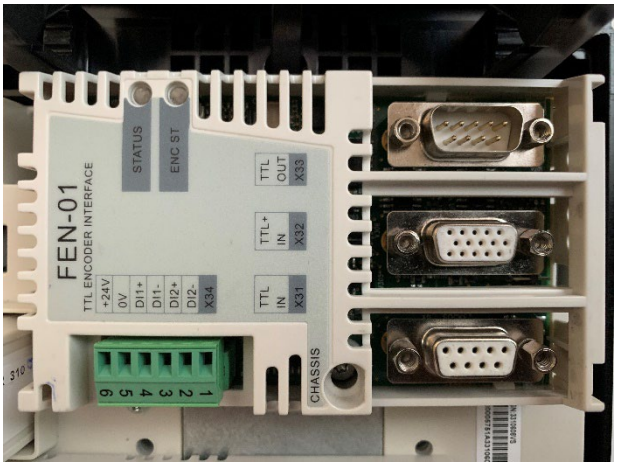
Place the three washers over the three motor screws as shown (not over the encoder bracket screw) and place the flywheel cover over the screws while locating the encoder cable through the slot in the flywheel cover. The washers make up the difference in height for the encoder bracket arm.

Place the four nuts over the screws and tighten with the 11/32” wrench while ensuring the encoder cable fits loose in the flywheel cover. Overtightening could crack the Lexan cover. Below is a finished view.



Mount the FEN-01 module

If you need to, refer to the FEN-01 manual (3AFE68784603) for additional instructions. Mount the FEN module in slot 2 or any other desired slot (parameter list below reflects slot 2 mounting). Secure the module with the push tab and the T10 Torx grounding screw.



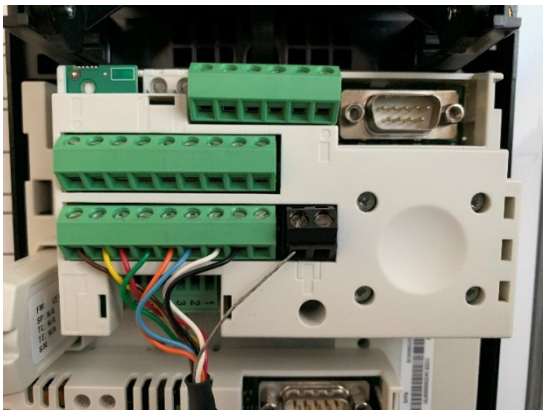
Mount the FETA-01 adapter

Using the installation instructions (3AXD50000206063), secure the FETA-01 adapter card to the FEN-01 module.

Wire the encoder to the FETA-01 module

The encoder module wiring is defined in the table below. Connect the color codes correctly to the FETA-01 using the 3.5mm flat screwdriver. Encoder leads are tinned for your convenience.

Signal	A	A’	B	B’	Z	Z’	+V	Com	Shield
Wire Color	Brown	Yellow	Red	Green	Orange	Blue	White	Black	None
FETA-01 X41Terminal	1	2	3	4	5	6	7	8	Blk term block



Terminal numbers on the FETA-01 are difficult to see. Note that X41 is the terminal wired in the photo and terminal 1 is on the left (brown wire).

Install the drive cover

Wiring is complete and you can install the cover on the drive and secure with two T-20 Torx screws.

Power the drive

Plug the power cable into the back of the demo and turn on power.

Program the FEN-01 module

The following parameters are used to program the FEN-01 module in Slot 2 for the supplied encoder. Set these using the control panel or through Drive Composer.

Parameter	91.11	91.12	92.1	92.10	92.12
Name	Module 1 Type	Module 1 Location	Encoder 1 Type	Pulses per Revolution	Speed Calculation Mode
Value	FEN-01	Slot 2	TTL	1024	A&B all

Refresh the drive parameters using parameter 91.10 Encoder Parameter Refresh or cycle power.

Make sure the motor and encoder electrically are in the same direction

- Run the drive in the positive direction. This should be clockwise as you face the drive shaft end. If turning the opposite, reverse two motor leads. Be careful to pull the power on the drive demo and wait 10 minutes for the bus to discharge before removing the drive cover.
- Observe Parameter 1.04 Encoder 1 speed filtered to see if the encoder speed is positive. If not reverse A and B channels on the encoder.
- Restart the drive and confirm the motor and encoder are both in the same direction.

Close the speed loop on the drive

If at this time you want to close the drive speed loop, set parameter 90.41 to Encoder 1.

Backup drive parameters

Backup the parameters and the installation is complete.