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Installation Instructions for Upgrading to the FCwebbox1 Controller
(Doc. Rev. 1.0)

The new FCwebbox1 controller board can replace all older generation Flow Controller electronics. The HPPMC (Panel Mounted Controller) and HPCOMM (Communication Controllers) devices are no longer required when using this controller. Power and all aspects of the operation of the Flow Controller are now managed via Ethernet using HTTP / Telnet / FTP / etc.

Provisions must be made to power the Flow Controller via Ethernet which can be accomplished by plugging the Ethernet cable into an 802.3af compliant switch or, if not available, using a compliant PoE power injector.

Replacing HPFC5C and older controllers

These older controllers did not have indexed gate position encoders, as such, they need to be replaced with a newer indexed version encoders.

The encoder can be identified by the part number printed on the black plastic housing:
Indexed encoder: 'HEDS-5540..'
Non-indexed encoder: 'HEDS-5500..'

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To replace the encoder on a NEMA4 style enclosure (box cover held by 4 screws):

Important: Do NOT attempt to disassemble the encoder as this may damage and/or misalign the assembly.

- unplug the 5-pin cable from the encoder
- loosen the flex coupling on the electrical box side using a 3/32" allen key.
- loosen the large aluminum nut holding the encoder in place located on the back of the electrical box. The nut can not be removed until the encoder is pulled out – save for installation.
- the old encoder can now be removed.
- insert new encoder into mounting hole at the same time place the aluminum nut on the encoder shaft once through the electrical box and then line up shaft with the flex coupling.
- tighten aluminum nut
- tighten the flex coupling on the electrical box side and now loosen flex coupling on the Flow Controller housing side. This is necessary once ready to set/calibrate the gate position.

Note: If the flex coupling is binding, it may be necessary to re-adjust the electrical box position by loosening, position, and re-tightening the (4) ¼-20 nuts located on the inside of the electrical box standoff. These are the nuts that hold the stand-off to the Flow Controller housing and NOT the nuts and bolts that attach the electrical box to the standoff.

Flex Coupling   Aluminum Nut   Encoder Assembly
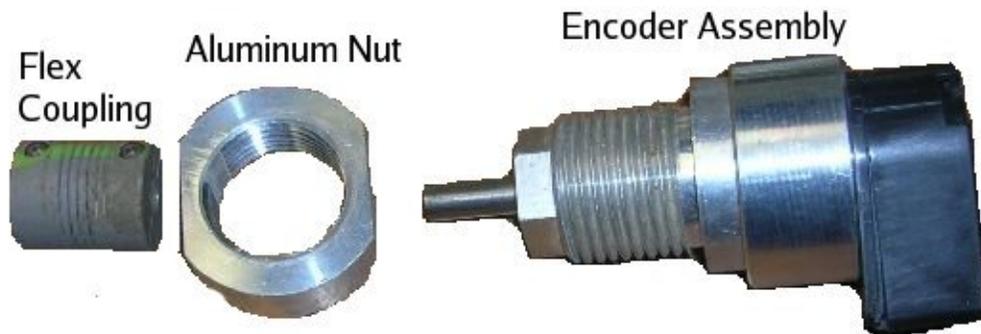
Replacing HPFC-RF1 controllers

These units already have indexed encoders that do NOT need to be replaced. It is advisable to check the gate position/calibration once the new controller is installed. Also check for binding in the flex coupling and adjust as necessary. All that is necessary is to replace the controller electronics and optionally remove the antenna.

Installing the FCwebbox1 controller

Remove the old controller board by unplugging the:
- AC power
- encoder, at the encoder end
- solenoid, remove the connector from the 2 wires
- the Doppler radar (DRP), remove the connector from the 3 wires
Remove the (2) 6-32 screws and un-clip from standoffs.

The new controller board does NOT require any AC power. Therefore all AC wiring should be safely removed from the Flow Controller's electrical box and any unused conduit entries should be suitably plugged.

Remove any RS485 communication wiring and install an Ethernet cable into the box. Ensure that the Ethernet cable is properly terminated with an RJ45 connector and the cable is electrically tested.

Power and data to the controller is now provided via the Ethernet connection from an 802.3af compliant Ethernet switch or an injector. The device will power up as soon as the network cable is plugged in (provided the Ethernet cable is active). Therefore it is important that all other wiring is correct BEFORE connecting the Ethernet cable.

If using the existing bracket, mount the new controller on one of the 6-32 standoffs via one of the mounting holes on the board.

Connect the Solenoid wires as shown. Typically there is no polarity on the solenoid therefore it is not important how the wires are connected.

Connect the DRP Doppler radar head wires as shown. It is VERY important to wire this correctly. Any mistake WILL damage the radar head!

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Pin 1

Encoder
Flex
Cable

Pin 5

DRP T/B
Green
Black
Red

F/C
LED

System
LED

Cfg
Button

Sol

Solenoid T/B

PoE Ethernet Jack
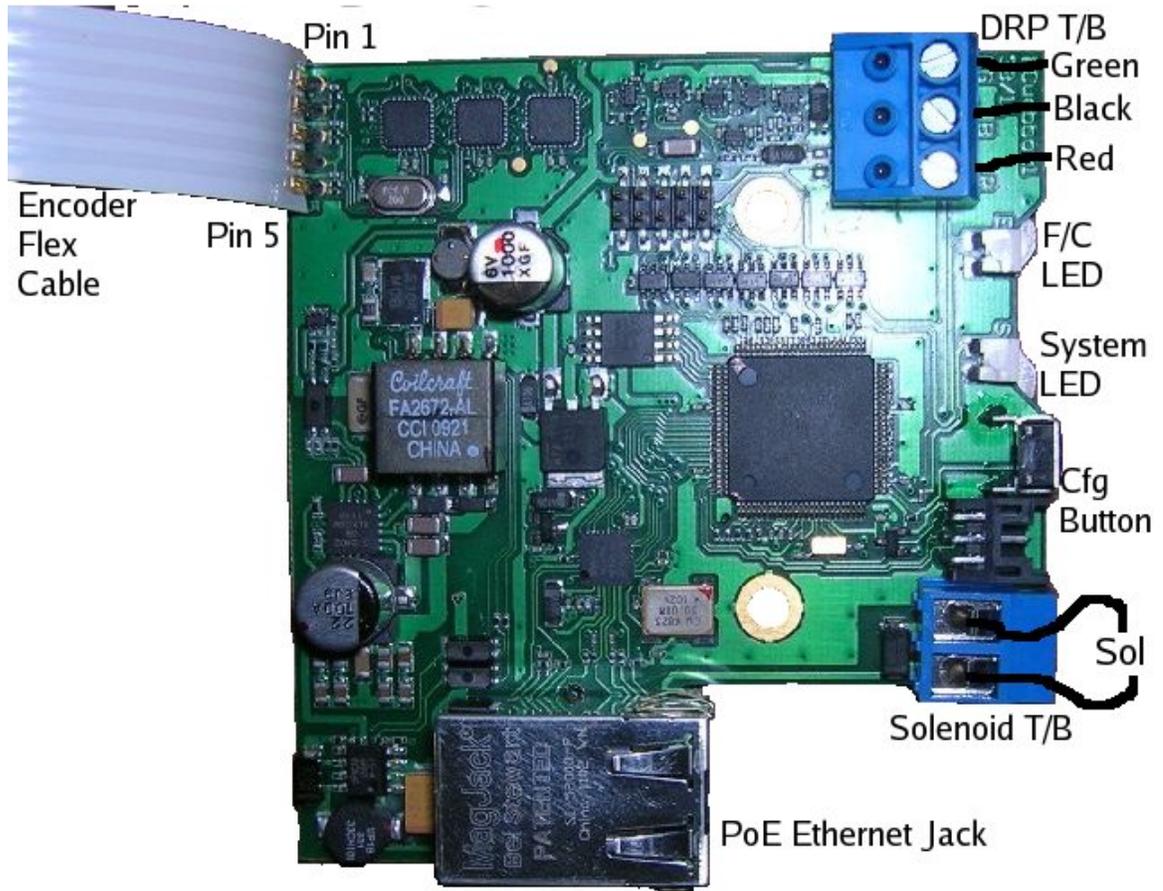
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Plug in the flex cable into the encoder. It is important to ensure that pin#1 of the cable goes to pin#1 on the encoder which is identified by the dot molded into the plastic housing of the encoder. This may require the flex cable to be flipped over before inserting. Refer to pictures.
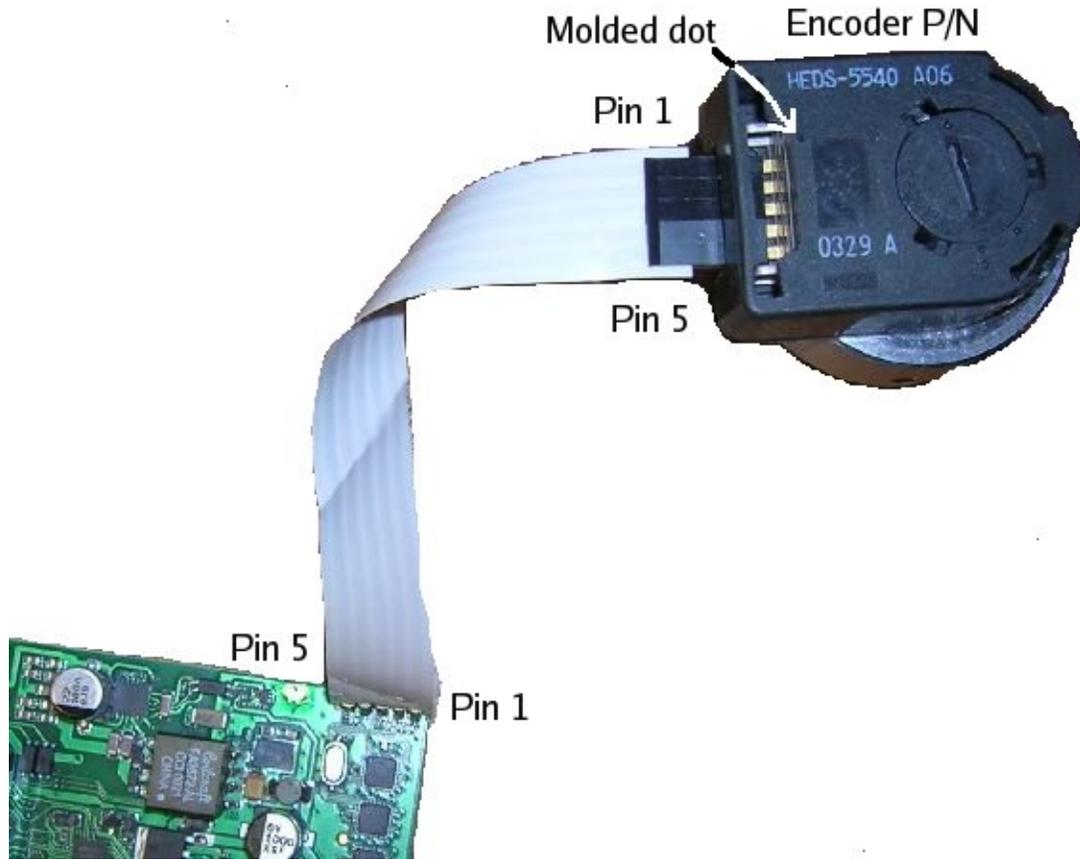
The active Ethernet cable can be plugged in once all wiring has been verified.

Typically the Fcwebbox1 is shipped to look for a DHCP server to get all it's IP setting (e.g. IP address, Mask, Gateway, time server IP, etc...). However, static IP mode can be activated using the Cfg. Button or via a setup web page on the device. Once a DHCP server is found or a static IP configured the System LED will periodically blink (short blink every 1.5 seconds).

A steady blinking F/C LED indicates the index position on the encoder has not yet been found. Once the encoder is rotated past the index position this LED will extinguish. Any time the encoder is exactly at the index position the F/C LED will ON.

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Setting/Calibrating the Flow Controller Gate Position

A 0.50" thick metal gauge block is required to set the proper gate position. The block is captured between the gate tip and housing. This step is designed to hold the gate open exactly 0.5". The air pressure should be lowered to just a few PSI so as not to distort the gate during this process, but enough pressure to hold the block in place.

Once the gate is held open to the 0.5" mark, loosen the flex coupling connecting the encoder with the gate shaft on the Flow Controller housing side (NOT the electrical box side) using a 3/32" allen key. (if not already done)

Rotate the flex coupling (to turn the encoder shaft) until the F/C LED stays ON. This may be challenging because this required the encoder to be in range of aprox. 1/2000 of a revolution. Once the LED is ON then carefully re-tighten the coupling. If the F/C LED blinks steady then rotate the encoder until it stops then set as instructed.

The gate position is now set. Remove the gauge block and reset to operating air pressure.