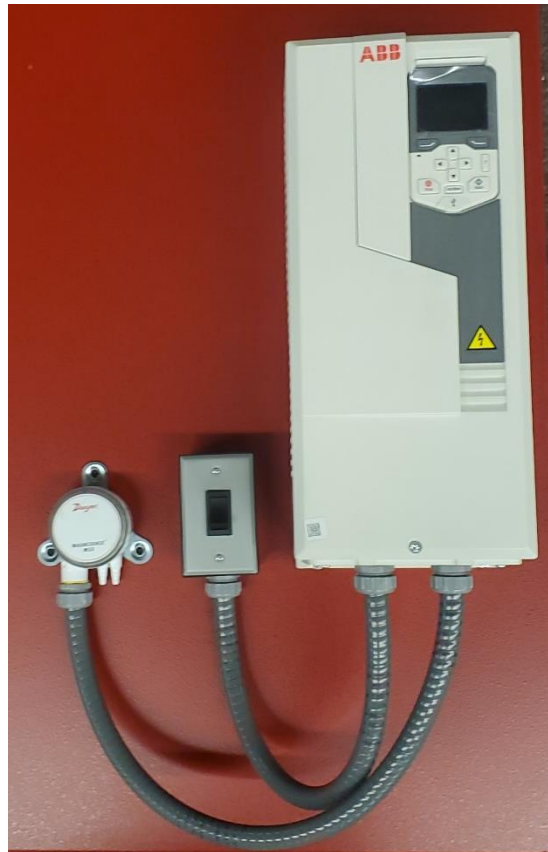




Intelli-Blower Energy Savings System

Installation and Operation manual



Important:

This manual contains specific cautionary statements relative to worker safety. Read this manual thoroughly and follow as directed. It is impossible to list all the hazards of dust control equipment. All persons involved with the equipment or systems should be instructed how to operate in a safe manner.

Warnings:

1. All electrical work must be done by a qualified electrician according to local, state and national codes.
2. Installation can cause exposure to live components. Disconnect electrical power before proceeding with installation. Proper Lock Out / Tag out procedures should be followed.
3. Improper installation or operation of this equipment can cause damage to equipment and/or injury to personnel.
4. Do not install on any surface subject to vibration without vibration isolation.
5. Do not install in any location where the controller is exposed to the elements.
6. Do not install in classified locations
7. The system is not provided with a fused disconnect switch. Confirm with local, state, and national codes requirements for installation of a fused disconnect switch.

Installation:

1. Inspect components for any damage.
2. Select location for installation of Intelli-Blower control system. The location should be in a dry location out of the elements, not subject to vibration, and not in a classified location.
3. Mount the entire control back plate using the provided mounting holes. Uni-strut or similar structure may be required in some instances.
4. Wire the Variable Frequency Drive (VFD):
 - a. Confirm that the nameplate on the side of the VFD matches the voltage to be supplied.
 - b. Remove the VFD covers to expose electrical connection points.
 - c. Connect the output drive terminals (T1, T2, T3) to the motor. See motor wiring plate for details of motor wiring.
 - d. Connect the supply power wires to the input drive terminals (L1, L2, L3).
 - e. Ensure both supply power ground and motor ground wires are landed in the earth ground terminals.
 - f. Re-install VFD covers.
5. Connect the Pressure Transducer to the duct system (See FIG 1.):
 - a. Determine a location in the main trunk line within 50 feet of the control panel that has minimal turbulence (i.e. not in an elbow).
 - b. Drill a hole in the duct halfway up the side to insert a pitot tube or hose barb (customer supplied) capable of accepting 1/4" tubing.
 - c. Install the customer supplied pitot tube or hose barb.
 - d. Connect the supplied 1/4" clear tubing to the low pressure (negative) port on the pressure transducer.
 - e. Trim excess length from the supplied tubing and connect the opposite end of the supplied tubing to the installed pitot tube or hose barb in the duct. CAUTION: when routing and securing the transducer tubing keep the route as short and straight as possible, do not crimp or pinch the transducer tubing in any way.

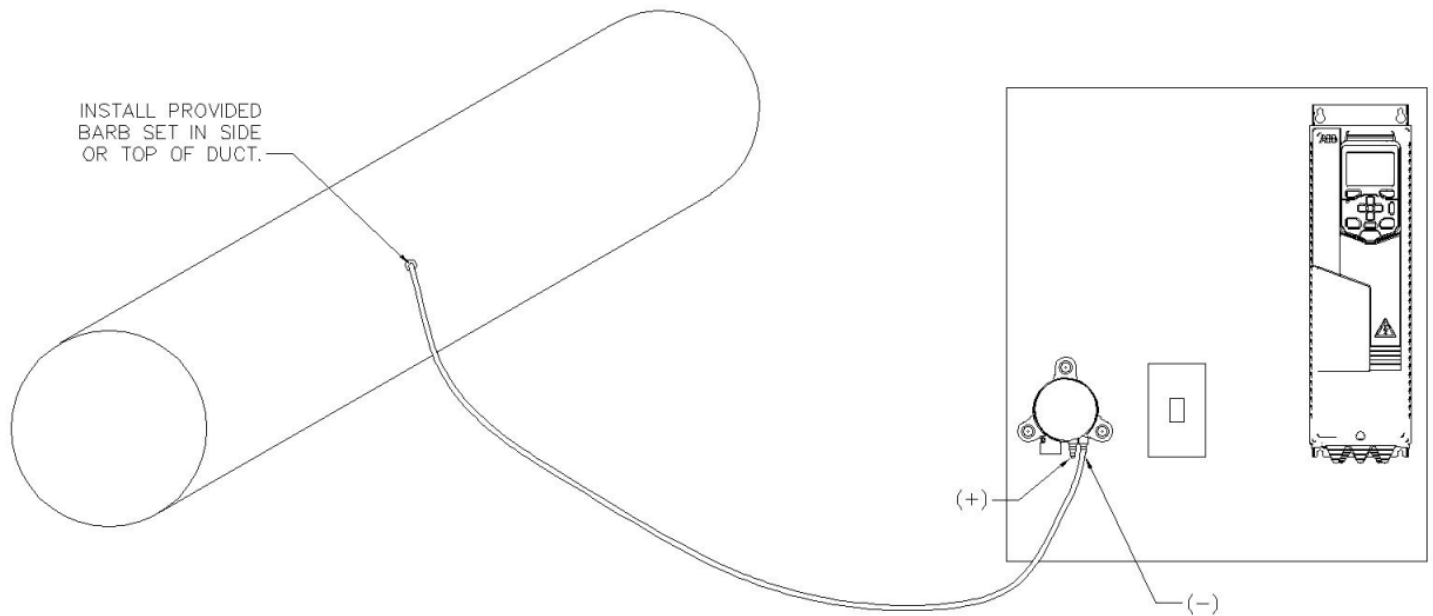


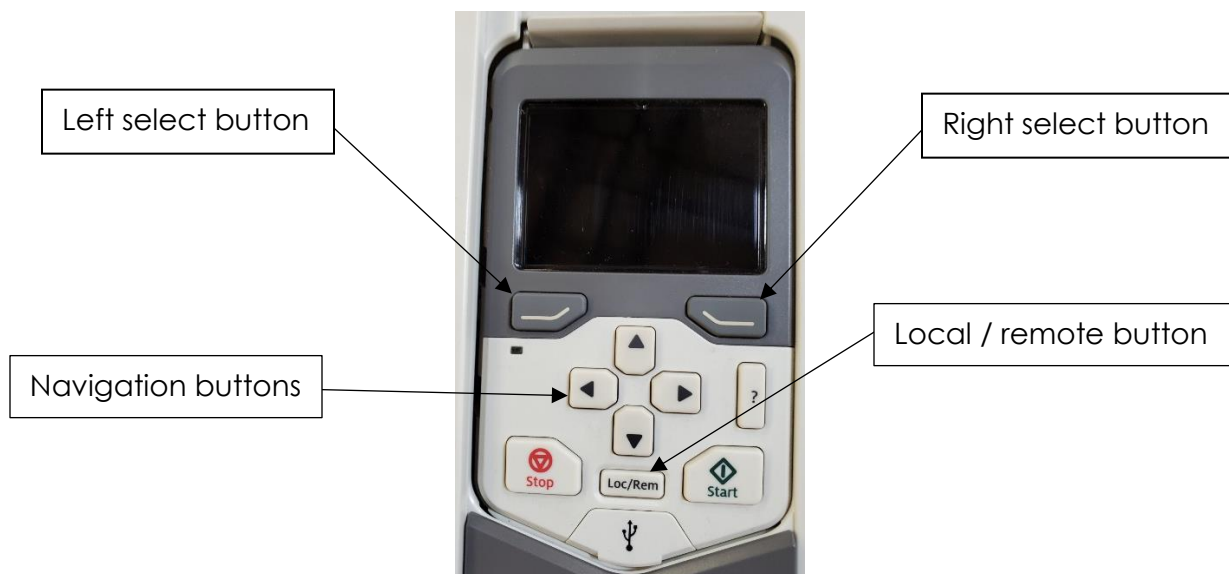
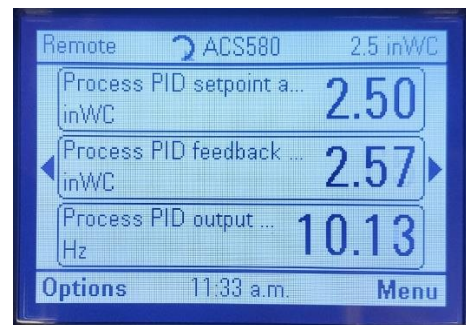
FIG 1.

6. Confirm the FLA of the motor. If it is not, change parameter 30.17 “Max current” to match the FLA of the motor.
7. Turn on power to the controller. This will not start the motor.
8. Turn on the blower by depressing the switch so that it is in the on position. Note: the VFD must be in remote mode to run. The motor will slowly start up and slowly get to the factory set point (15%).
9. Turn the blower off by depressing the switch so that it is in the off position. Check and confirm proper blower rotation.
 - a. In the event that the blower is rotating backwards turn off power to the controller.
 - b. Once the VFD has de-energized swap the VFD output to motor wiring for T1 & T2. Changing the power wires on the incoming side of the frequency drive will have no effect. Using the VFD parameters to reverse the direction will cause the controller to operate incorrectly.
 - c. Replace VFD covers, re-energize the controller, and confirm blower rotation is correct.

Start-Up

1. The VFD must be in remote mode. If it is not at startup press the LOC/REM button on the VFD. The mode of operation is displayed in the upper left hand corner of the keypad.
2. Turn the blower on by depressing the switch so that it is in the on position. The blower will start and slowly come up to speed. Monitor the display showing Process PID set point, Process PID feedback, and Process PID output. Once the Process PID set point and feedback are nearly the same the blower is up to speed. If this menu is not displayed at start up use the left or right navigation button to get to it.
3. Monitor the suction at the pickup point(s) of the duct system. If there is not enough suction at the pickup point(s) increase the speed of the blower by increasing the set point.
 - a. With the VFD energized (the blower can still be running) use the right select button to enter the menu.
 - b. Use the up or down navigation buttons to highlight the parameters menu. Press the right select button to select parameters.

- c. Use the down navigation button to navigate through the menu to “40 Process PID set 1”. Press the right select button to select it.
 - d. Use the down navigation button to navigate through the menu to “40.24 Set 1, Internal set point 0”. Press the right select button to select it. Use the navigation buttons to increase the set point. Press the right select button to save the change. Use the left select button to exit out of the menu until the Process PID screen is showing. **CAUTION: DO NOT MAKE LARGE CHANGES TO THE SET POINT. INCREMENTS OF 0.5-1.0 IN. W.C. ARE RECOMMENDED.**
 - e. Once Process PID set point and feedback are nearly the same recheck the suction at the pickup point(s). If suction is still low repeat steps 3.a through 3.e
4. Tune the PID set points as needed to decrease time it takes to get the blower up to speed, or to minimize cycling speeds once at set point when operating. The PID tuning parameters are 40.33 Set 1, Integration time, and 40.34 Set 1, Derivation time. They are accessed in the same way as the PID process set point (see step 3).
- a. To decrease the time it takes for the blower to get up to set point speed; lower parameter 40.33 (integration time) by increments no larger than 0.5 seconds. This will have the adverse effect of making the cycling speeds increase when at set point. Note that in parameter 40.33, 1.0 = 1.0 seconds. Integration time defines the integration time for the process PID controller.
 - b. To fine tune the cycling speed and decrease the time it takes for the blower to get up to set point speed parameter 40.34 derivation time can be increased. Note that a set point of 1000 = 1 second. Very small adjustments in increments of no more than 100 should be used in this parameter. The base sample time for measurement is 2 milliseconds.



Operation:

To turn the blower on, depress the switch to the on position. The system will start running. To turn the blower off, depress the switch to the off position, the blower will coast to a stop.

Parameters:

Number	Description	Set Point	Notes
	Macro	Panel PID	
30.17	Max Current	FLA	Amps, should equal FLA of motor
40.08	Set1, feedback 1 source	AI2 Scaled	
40.16	Set1, set point 1 source	Internal set point	
40.17	Set1, set point 2 source	Not selected	
40.19	Set1, set point sel. 1	Not selected	
40.20	Set1, set point sel. 2	Not selected	
40.24	Set1, Internal set point	2.5	This is the set point for the blower to operate at
40.26	Set1, set point min.	0.0	
40.27	Set1, set point max.	28.0	
40.32	Set1, Gain	1.0	100=1
40.33	Set1, Integration time	2.5	1=1 second
40.34	Set1, Derivation time	0.0	1000=1 second
40.79	Set1, Units	In W.C.	

Highlighted parameters are the only parameters that should be changed, all others are included for reference. For more details on parameters, or a full list the below url has the complete VFD manual.

https://library.e.abb.com/public/052c19b4002f45cf908d536363a39bb4/ASCD2216x_en.pdf

It can be found by searching for ACS580 firmware manual.

Wiring Diagram:

