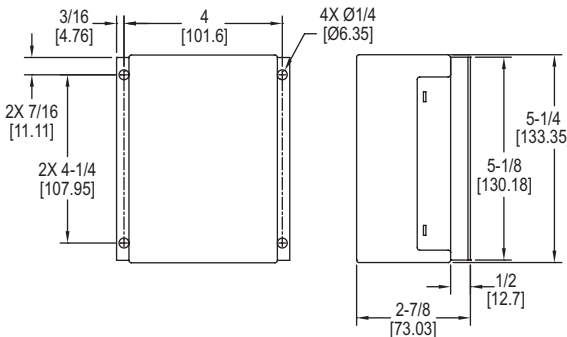
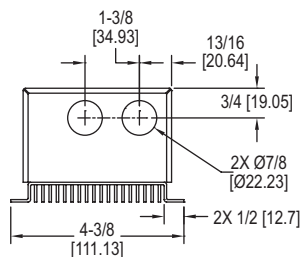




Model FC-1000 Electrical Fan Speed Control

Specifications - Installation and Operating Instructions



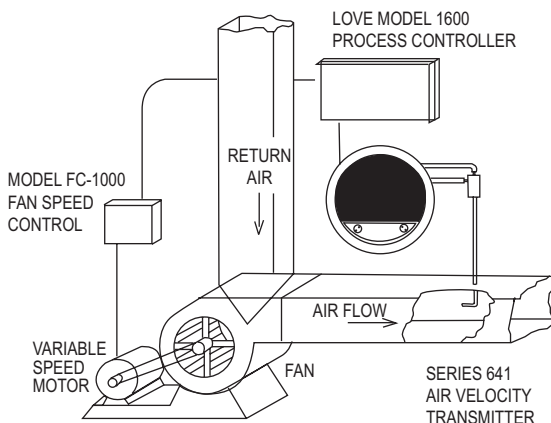
The **Model FC-1000 Electronic Fan Speed Control** is designed to yield precise modulation of the speed of a motor. Popular 0-10 VDC input works with most process controllers eliminating the need for more expensive dampers, damper actuators, and linkages while improving the overall energy efficiency of the system. This compact unit offers a field selectable hard start feature which will initiate hard start of the motor when it receives an input signal of 1.0 VDC or greater for increased application flexibility. To simplify mounting, there are separate conduit openings for the low and high voltage connections. This UL recognized unit offers built in radio frequency interference (RFI) suppression and voltage surge protection exceeding IEEE C62.41 standards. This low cost unit enables variable control of ventilation fans, condenser fan speed control and interface with VAV box controllers. When the fan speed control is combined with any Dwyer® 2-Wire transmitter, Love Model 16A process controller and some single faced motors up to 1 HP approved by the manufacturer for speed control applications, it provides a low cost alternative to many damper actuated systems. Model FC-1000 fan speed controls are designed for use only as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices (safety, limit controls) or systems (alarm, supervisory systems) that protect against, or warn of, control failure. A Dwyer® Series 1900 differential power switch and Series AN14 indicating annunciator are recommended to warn against fan motor burnout or other system failures.

SPECIFICATIONS	
Line Voltage Range:	120 to 277 VAC, 50/60 Hz.
Full Load Amp Rating:	9.8 @120 VAC, 9.3 @ 208 VAC, 8.0 @240 VAC, 6.9 @277 VAC.
Locked Rotor Amp Rating:	24.0.
Low Voltage Input:	24 VAC, Class 2.
Input Signal Voltage:	0 to 10 VDC.
Signal Input Impedance:	10K Ω.
Transient Protection:	320 V surge suppression (exceeds IEEE C62.41 Standards).
Wiring Connections:	Signal and low voltage input: 1/4" quick connects; Line voltage: 10 to 32 screw terminals; Temperature range: -40 to 131°F (-40 to 55°C).
Construction (case):	Cold rolled steel.
Enclosure:	NEMA 1.
Mounting:	Vertical only; four holes for #10 screws.
Weight:	1 lb, 11 oz (.77 kg).
Agency Approvals:	UL.

Caution: The FC-1000 may be used only with single-phase motors approved by the manufacturer for speed control applications.

COMPATIBLE MOTORS*		
Manufacturer	Mfg. Model No.	Electrical Rating
A.O. Smith	F48SX6V14	1 HP, 200-230/277 VAC
A.O. Smith	F48SX6V18	6/10 HP, 200-230/277 VAC
Century	8-161183-02	1 HP, 200-230/277 VAC
Emerson	K55HXCPT-9963	1/2 HP, 108-230/277 VAC
Fasco	U26BI	1 HP, 200-230/277 VAC
Franklin Electric	1501760400PRI	1 HP, 108-230/277 VAC
G.E.	5KCP39PGC499S	3/4 HP, 230/277 VAC
G.E.	5KCP48GT505	3/4 HP, 230/277 VAC
G.E.	5KCP48TG1505	3/4 HP, 230/277 VAC
G.E.	5KCP49ZG157AS	3/4 HP, 230/277 VAC
G.E.	5KCP39SGH979S	3/4 HP, 230/277 VAC

*This list is intended to be used only as an initial guideline. Final selection will depend upon the equipment's suitability with the Model FC-1000 and the selected motor under load.



INSTALLATION

Maintaining operating temperatures within the listed product ratings is necessary for proper operation. The FC-1000 control should be mounted with the cooling fins in a vertical position without obstructions that may prevent air flow through the fins. Do not mount the FC-1000 where the control is exposed to excessive heat. For maximum ambient temperature ratings, refer to the Temperature Range in the Specifications Section.

1. For maximum heat dissipation, locate the FC-1000 where air passes through the cooling fins.
2. Mount the control where it can be conveniently wired to the power supply and motor.

WIRING

CAUTION: Disconnect the power supply before the wiring connections are made to avoid possible electrical shock or damage to the equipment. Make all wiring connections using copper conductors only. All wiring must be in accordance with the National Electrical Code and local regulations. For maximum electrical ratings, refer to the Specifications Section.

CAUTION: The FC-1000 must be connected to suitable earth ground. Consult wiring diagram (Figure 1) for proper wiring.

ADJUSTMENTS

Model FC-1000 controls come factory set. There are no field adjustments available.

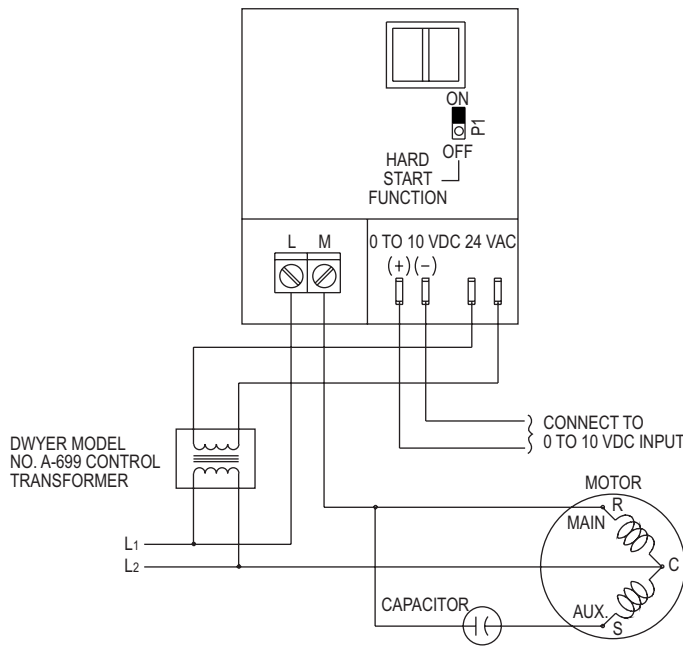


Figure 1: Permanent split-capacitor connections to the Model FC-1000 fan speed control

COMPATIBLE MOTORS	
Voltage Input	Motor Voltage (VAC, TRUE RMS)
Signal input of less than 1.0 VDC	0 volts output to motor.
Signal input of 1.0 VDC	Hard start (if used). 90-100% of line voltage applied for 7 (±3) seconds after which minimum speed will be maintained.
Signal input between 1.0 and 10.0 VDC	Motor voltage varies directly with signal input from minimum speed to 100% of line voltage. See figure 2 for ramp control of output vs signal input.

CHECKOUT PROCEDURE

Before applying power, make sure installation and wiring connections are according to job specifications.

After necessary adjustments and electrical connections have been made, put the system in operation cycle before leaving the installation.

SELECTABLE HARD START/CONTROL OPERATION

Hard start means that the control will apply 90-100% of the line voltage to the motor for a period of 7 (±3) seconds. After the specified time (7 seconds) for the hard start feature has elapsed, the control output will revert to a level relative to the input signal (see Figure 2). If the input signal remains at 1.0 VDC the control output to the motor will remain at minimum speed. If the input signal is less than 1.0 VDC, the control output will be zero (0). A built in time delay of 10 seconds will occur between each hard start. If the Model FC-1000 has an input signal of 1.0 VDC or greater within this 10 second time period, the motor will restart but it will not hard start.

The hard start feature is selected by a movable two pin jumper located in board position P1, directly below the FC-1000's isolation transformer (see Figure 1). As indicated by the markings on the board, the hard start feature is "On" when the connector is placed over the two pins which are closest to the isolation transformer. Likewise, placement of the connector over the two pins farthest away from the isolation transformer will turn the hard start feature "Off." When the hard start feature is "On," the FC-1000 must receive an input signal of 1.0 VDC or greater in order to initiate hard start.

FACTORY REPAIRS

In the unlikely event the Model FC-1000 should fail, the unit can be returned to the factory for warranty repair if the warranty period has not expired. Field repairs should not be attempted. Repairs for th Mode FC-1000 in or out of warranty are done on a repair/exchange basis. Please contact Dwyer Customer Service for a return goods authorization number before returning the unit. All units returned for repair are to be shipped freight prepaid, to:

Dwyer Instruments, Inc.
 102 Highway 212
 Michigan City, IN 46360
 Attention: REPAIR DEPARTMENT

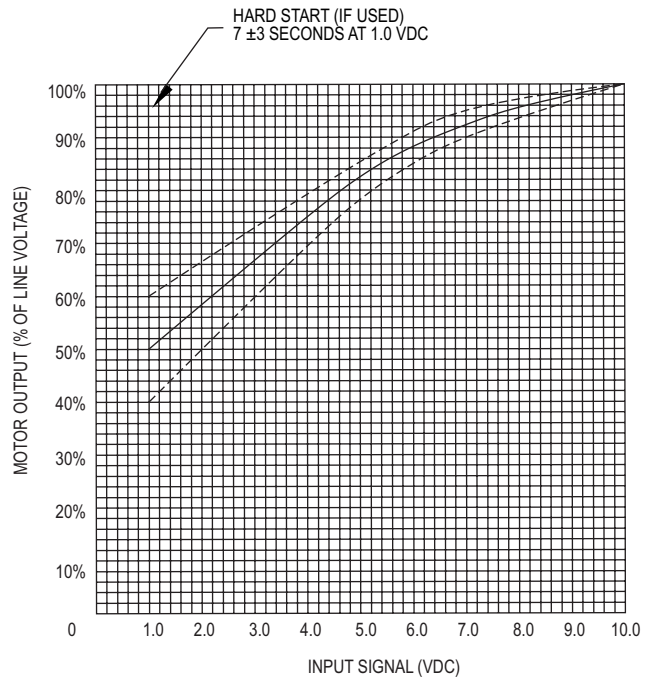


Figure 2: Model FC-1000 input and output curve