



Accutrol 300 High Efficiency Adjustable Frequency Motor Control

General Information

The Westinghouse Accutrol 300 consists of a family of microprocessor-based, digital high efficiency, adjustable frequency motor controllers in the power range from 15 to 500 HP constant torque, 600 HP variable torque designed to operate from a three phase, 460 volt, 50/60 Hz supply to provide continuous speed adjustment of three phase AC motors. The Accutrol 300 is also available at 575 volt ratings from 15 to 125 HP. The use of high performance gate turnoff thyristors allows operating efficiencies to approach 97.6%, substantially higher than competitive units utilizing transistors or thyristors.

The controllers rectify the incoming AC supply voltage to a variable potential DC bus level. The DC voltage is inverted by a three phase inverter section to an adjustable frequency output whose voltage is also adjusted proportionately to the frequency to provide constant volts per hertz excitation to the motor terminals up to 60 Hz. Above 60 Hz the voltage remains constant at 460 volts. In this way energy efficient low loss speed control is obtained in the range from 2 to 120 hertz.

Standard 460 or 575 volt, three phase squirrel cage induction motors can be used when properly selected.

Application

The Accutrol 300 is well suited to most industrial applications where speed control is desired, such as conveyors, machine tools, pumps and air handling systems.

In industries which have environments which are wet, corrosive, or explosive, the Accutrol 300 allows the use of AC motors with their inherent advantages as compared to expensive, hard to maintain DC machines.

Typical examples of this would be food packing plants, dairies, chemical plants, sand and gravel plants, paper mills and cement plants.

Centrifugal pumps and blowers are particularly suited for use with the Accutrol 300 as considerable reduction in energy consumption can be achieved by varying the speed to control the flow of gas or liquid instead of using throttling devices such as valves or dampers.



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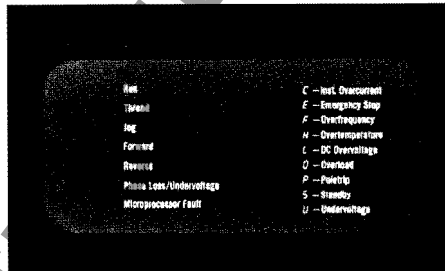
Standard Basic Control Functions

The standard control functions are listed below. In addition to these, an assortment of standard modifications is available to uniquely tailor the control to the application requirements.

- Controller Start, Stop and Power On indicating lights and speed control potentiometer terminations for door or remote operator station mounted devices.
- Unidirectional operation, controlled deceleration upon stop.
- Linear independent timed acceleration and deceleration adjustable from 1.0 to 30 hertz per second (4 to 120 seconds with 120 Hertz top speed setting).
- Torque limit adjustable from 50 to 150% for the constant torque versions, and 50 to 110% for the variable torque (VT) versions.
- High speed microprocessor based logic, control, protective, and regulator functions.
- 2 to 60 hertz constant torque and 60 to 120 hertz constant horsepower ranges with the constant torque segment adjustable up to 120 hertz maximum with a properly selected motor.
- Frequency stability of $\pm 0.5\%$ for 24 hours with voltage regulation of $\pm 2\%$ of maximum rated output voltage.
- Run, Thread, Jog, Forward, and Reverse LED status indication.
- 115 VAC control power for operator devices.
- Motor slip dependent speed regulation, 3% typical for NEMA B induction motor.
- 5 cycle logic power carryover during utility loss.
- Fixed dwell time at start to increase motor starting torque.
- Insensitive to input line phase rotation.

Standard Protective Functions

- Input AC circuit breaker with an interlocked, padlockable handle mechanism.
- AC input line current limiting fuses for fault current protection of AC to DC converter section.
- Electronic overcurrent trip for instantaneous and inverse time overload protection.
- Electronic ground fault protection.
- AC input line undervoltage and phase loss protection.
- Overfrequency protection.
- DC overvoltage protection.
- Overtemperature protection.
- Surge protection from input AC line transients.
- Electrical isolation between the power and logic circuits as well as between the 115 VAC control power and the static digital sequencing.
- Able to withstand output terminal line-to-line short circuits without component failure.
- Seven segment alphanumeric display indication of overfrequency, overcurrent, DC overvoltage, AC undervoltage/loss of phase, emergency stop, overload, and overtemperature, plus board mounted LEDs providing the industry's highest level of self diagnostics.



Standard Adjustments

- Minimum speed.
- Maximum speed.
- Torque limit.
- Acceleration time.
- Deceleration time.
- Low frequency voltage boost.
- Volts per hertz.

Modifications

- Phase-shifted dual converter line harmonic reduction^①.
- Regenerative option with full power recovery^①.
- Improved speed regulation of $\pm 0.5\%$ of motor base speed (60 hertz base) utilizing slip compensation.
- Electronic reversing.
- AC output contactor.
- Motor overcurrent relay.
- Emergency stop.
- Jog at an independent preset speed.
- Thread at an independent preset speed.
- Dynamic braking for quick slowdown or stop.
- Service analyzer.
- Input isolation transformer.
- Force ventilated enclosure.
- Automatic restart upon return of power following a utility outage.
- Isolated process signal follow.
- Process control output.
- Increased dwell time at start to optimize motor starting torque.
- Additional terminal blocks.
- Bypass starter, manual or automatic.
- Separate mount bypass starter, with or without breaker disconnect
- Manual bypass switch.
- Auxiliary relay.
- Dust tight air conditioned enclosure.
- Extended frequency range.
- Hand/off/auto reference.
- Line reactors.
- Space heaters.
- Line synchronization and transfer.
- Special nameplates.
- Guardstop motor protective relay.
- Critical speed lockout.
- Controller trip contact indication.
- Coasting motor start.
- Up to speed relay.
- Output load ammeter, voltmeter and frequency indicating meters.
- Door or remote NEMA 4/NEMA 12 operator controls featuring Westinghouse type PB2 heavy duty industrial rated devices.
- Special CAD drawings.

^① New feature, see page 3 for description.

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WARNING: This literature is a general description of the equipment only. For proper installation, operation and maintenance of the equipment, consult the Instruction Manual. This should not be considered all inclusive. Improperly installing and maintaining these products can result in death or serious personal injury. Before attempting installation or maintenance, read and understand all instructional materials related to the product. If further information is required, you should consult Westinghouse Electric Corporation.



Accutrol 300 Adjustable Frequency Motor Control

Accutrol 300 Design Features

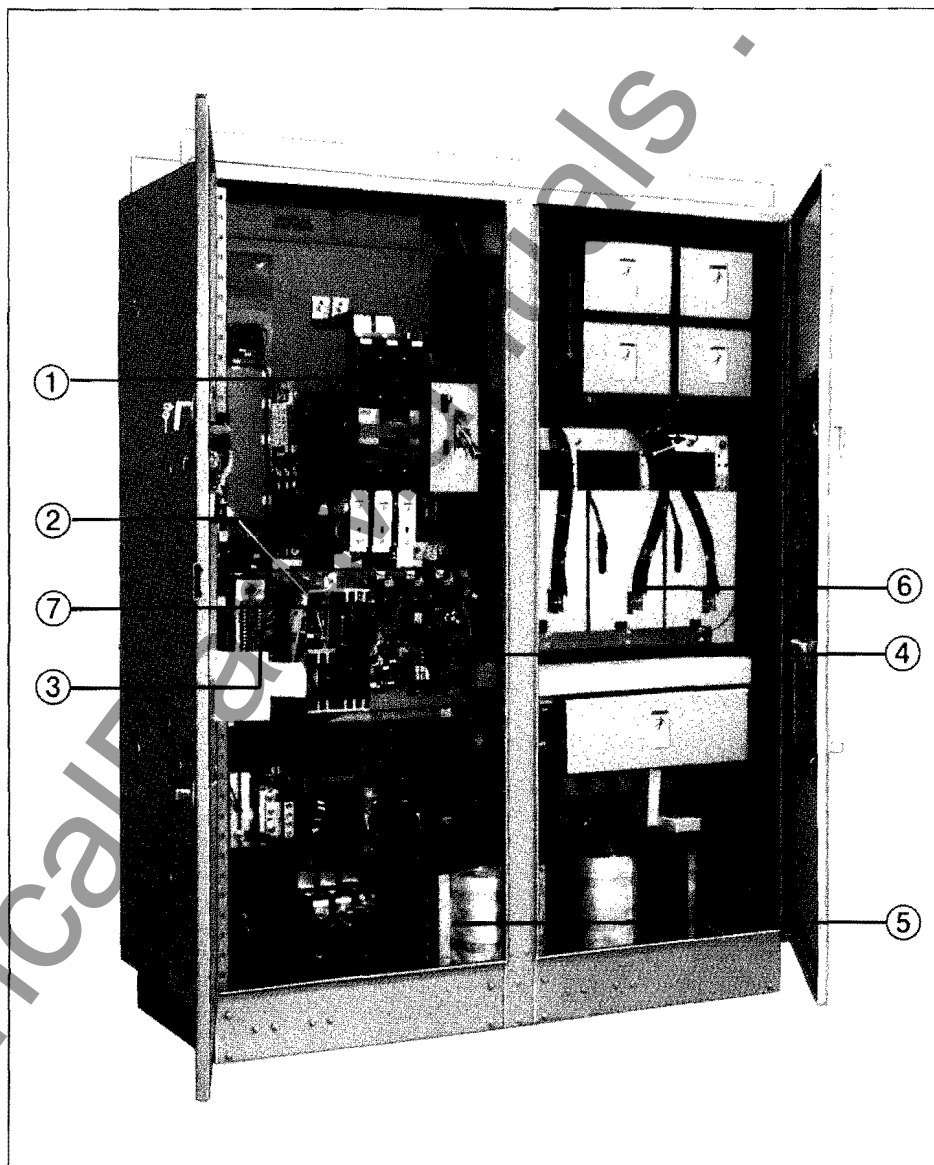
The Westinghouse Accutrol 300 is a micro-processor based, highly space effective, energy conserving adjustable frequency control. It has been designed for complete front accessibility with easily removable assemblies to allow fast, efficient maintainability when required.

Static digital logic is the key to high reliability and excellent performance. All external control inputs are 115 VAC from an internal isolated power supply. These inputs are then buffered by optical couplers to provide additional isolation between the control and logic circuitry.

All functional modifications are effected thru the use of printed circuit-board option cards.

Standard design features and layout are described below and illustrated in the adjacent photograph.

1. Accutrol 300 uses Westinghouse circuit breakers for all incoming AC line connections. The breakers provide conventional thermal magnetic protection and power disconnect functions.
2. Current limiting fuses provide short circuit protection for the power converter semiconductors as well as greater interrupting short circuit capability.
3. External control connections are provided by highly accessible terminal blocks.
4. The fixed voltage AC input line power is converted into a variable DC voltage by a six pulse power converter module.
5. The output of the power converter module is smoothed by the DC link filter inductor and capacitor bank.
6. The DC link voltage is converted to the desired AC output frequency by the inverter poles. These poles utilize GTO's for the power conversion process allowing a substantial reduction in pole size and acoustic noise as compared to competitive inverter equipment.
7. The control/regulator section utilizes a high speed digital control logic with simple built-in diagnostics for troubleshooting. The optional service analyzer can be plugged into the main control board for on-line or off-line diagnostics.



New Accutrol 300 Options

Low Harmonic "12 Pulse" Converter

- Phase-shifted dual converter arrangement substantially reduces the most damaging line harmonics.
- Important feature for wastewater treatment and distribution systems containing sensitive electronic equipment or a large number of SCR based equipment.

Regenerative Option

- Replace DC motors in mill applications, e.g., runout tables.
- Quick deceleration of high inertia loads.
- Complete recovery of motor generated power.



Accutrol 300 Adjustable Frequency Motor Control

Controller Ratings

HP ^①	Catalog Numbers		Input Amperes	Output Amperes	
	NEMA 1 Enclosure	Open Chassis	Nominal	Continuous	One Minute
15	A30151	A30150	21	21	32
20	A30201	A30200	27	27	41
25	A30251	A30250	34	34	51
30	A30301	A30300	40	40	60
40	A30401	A30400	52	52	78
50	A30501	A30500	65	65	98
60	A30601	A30600	77	77	116
75VT	A30751VT	A30750VT	96	96	106
75	A30751	A30750	96	96	144
100	A31001	A31000	124	124	186
125	A31251	A31250	156	156	234
150VT	A31501VT	A31500VT	180	180	198
150	A31501	—	180	180	270
200VT	A32001VT	—	240	240	264
200	A32001	—	240	240	360
250	A32501	—	300	300	450
300VT	A33001VT	—	360	360	396
300	A33001	—	360	360	540
350	A33501	—	420	420	630
400	A34001	—	480	480	720
500	A35001	—	600	600	900
600VT	A36001VT	—	720	720	792

① Based on use of NEMA B Squirrel Cage Induction Motor. Load and speed requirements must be considered to properly size the motor and inverter.

Standard Conditions for Application and Services

Humidity: 0 to 95% noncondensing
Altitude: to 3300 feet (1000 meters)
Ambient Temperature: 0 to 40°C. enclosed unit, 0 to 50°C. open panel

AC Incoming Line (Nominal): 460 volts, three phase, 60 hertz

AC Line Voltage Variation: +10%, -5%

AC Line Frequency Variation: ± 2 Hz

Input Short Circuit Interruption Rating:

Input breaker: 15 to 60 hp, 14,000

amperes, 75 to 150VT hp, 22,000

amperes; 150 to 600VT hp, 30,000

amperes.

Input fuses: 200,000 amperes.

Service Factor: 1.0

Overload Capability: 150% of continuous

rating for 60 seconds (110% VT version)

Inverse Time Overcurrent Trip: 60 seconds at 150% of continuous rating. (110% VT version)

Adjustments: Linear acceleration time 4 to 120 seconds after motor start (2 to 120 Hz)

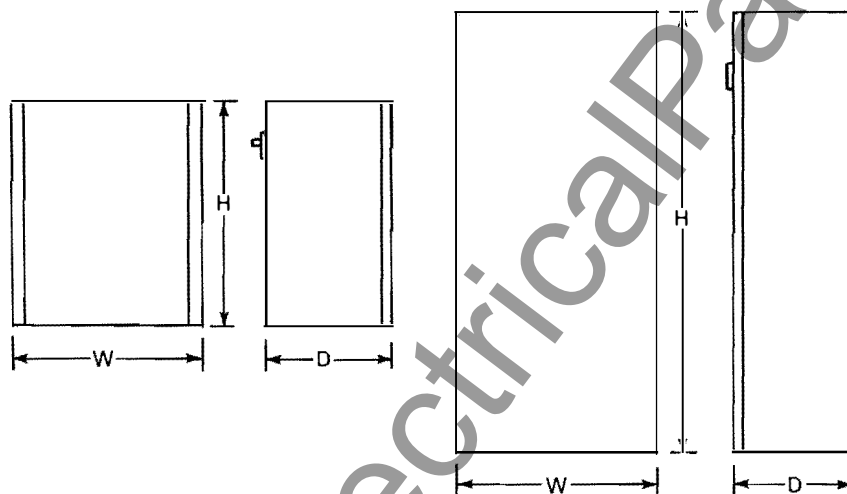
Linear deceleration time 4 to 120 seconds (120 to 2 Hz)

Maximum speed 40 to 120 Hz

Minimum speed 2 to 40 Hz

Torque limit 50 to 150% (50 to 110% VT version)

Voltage boost (2 Hz) 0 to 57 volts



Approximate Mounting Dimensions and Weights, NEMA 1 Enclosed Units

Catalog Number	Type Mounting	Max HP	Inches			Weight Lbs.
			W	D	H	
30151-30201	Floor	20	28.25	16	66	381
30251-30601	Floor	60	28.25	16	66	454
30751VT	Floor	75	36	21.5	90	750
30751-31501VT	Floor	150VT	36	21.5	90	1100
31501-33001VT	Floor	300VT	72	28	90.25	2350
32501-36001VT	Floor	600VT	72	28	90.25	4000



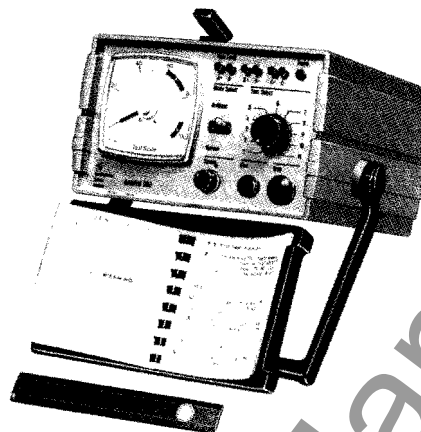
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Service Analyzer

Description

Quick and easy troubleshooting of all Accutrol 300 controllers can be accomplished with the use of a portable Service Analyzer that plugs directly into the controller logic section. The Service Analyzer provides the ability to run, stop and manually control the speed of the Accutrol 300. In addition, a multi-function test selector switch allows measurement of AC control voltage, logic supplies, voltage regulator, output reference voltage, DC link voltage, speed pot reference, frequency reference, and process interface reference.

A door mounted troubleshooting procedure booklet contains easy to follow pass/fail instructions that quickly identifies the smallest replacement unit.



The service analyzer provides a monitoring system to indicate the performance and operating conditions of the controller. The service analyzer is completely separate from the controller, as it is used to monitor variables during actual operation or when necessary for diagnosing difficulties of faulty operation. The standard Accutrol 300 is equipped with a plug-in connector to accept the Service Analyzer.

The service analyzer can indicate satisfactory operation or it will locate the source of a malfunction to the smallest replaceable unit (SRU) within the controller. A built-in operator control panel allows override, if desired, of the normal start, stop and speed controls to assist in start-up and analysis. A frequency meter, test meter and LED monitoring function are included.

Start-up Technical Assistance

Description

Adjustable frequency controllers (AFC) are quickly becoming the industry standard for industrial and commercial speed control applications. Although AFC's replace older technology, direct current, mechanical and hydraulic methods of adjustable speed or flow, the application considerations are very different than the devices they are replacing.

Westinghouse feels that our **Startup Technical Assistance** program represents a low cost advantage to our customers who want to assure correct application, adjustment, and startup as well as provide invaluable training for plant operations and maintenance personnel in the use and installation of adjustable frequency controllers.

This program has been so successful that Westinghouse offers a free 24 month parts warranty for units ordered with **Startup Technical Assistance**. See Service Guide 8700 for pricing and complete information on this program.

Westinghouse will supply factory trained representatives responsible for performing the following equipment inspections, checks, and adjustments:

A. Physical inspections will include:

- Overall enclosure inspection for structural integrity.
- Verification of proper door swing, hinge operation, latching, and door interlocking.
- Review all power cable terminations for correct phase rotation, cable bending radius, tightness, conductor fraying and clearances.

B. Electrical inspections will include:

- Inspection of control wiring terminations.
- Pull apart terminal blocks engagement.
- Wiring conformance to factory schematics.
- Instrument transformers will be checked for proper polarity of phase rotation.
- Instrument transformer ratios will be compared to meter scales.
- Electrical operation of all components.

C. Conformance to specification;

- Insure physical arrangement conforms to factory drawings.
- Insure supplied features and options conform to factory.

E. Additional service for Accutrol Adjustable Frequency Controllers includes standard as well as optional adjustment settings to tailor the starting, running and stopping characteristics of the AFC for the specific application. The service group representative will assist in finalizing AFC settings such as speed range, acceleration and deceleration times, low voltage boost, volts per hertz ratio, minimum and maximum speed settings and torque limit settings. Operational checks will be performed on purchased options such as emergency stop, dynamic braking, process follow, process output, manual or automatic or synchronized bypass circuits, critical speed lockout, manual speed setting, reversing, automatic restart, service analysis etc. as outlined in the Accutrol instruction manual.



Accutrol 300 Adjustable Frequency Motor Control (Typical Specification)

General

The contractor shall furnish and install a complete Adjustable Frequency Controller (AFC) as described in this specification and as detailed on the applicable drawings.

The contractor shall be responsible for the installation and start-up of the equipment covered by this specification.

The AFC shall be furnished by a single vendor who has actively been manufacturing adjustable frequency controllers for a period of at least ten (10) years.

Complete drawings shall be furnished for approval before proceeding with manufacture. Drawings shall consist of a specific bill of material, connection diagrams and suitable outline drawings showing details necessary to locate conduit stub ups and field wiring.

The AFC shall comply with the latest applicable standards of ANSI, IEEE and NEMA. The controllers shall be rated as shown in the drawings. As a minimum the full load sine wave output current of the controller shall be equal to the equivalent motor horsepower as listed by National Electric Code Table 430-150.

The AFC manufacturer shall maintain, as part of a national network, engineering service facilities within 250 miles of project to provide start-up service, emergency service calls, repair work, service contracts, maintenance and training of customer personnel.

Construction

The AFC shall be rated 460 volts with features and options as specified.

The AFC's shall be rated as shown on the drawings. The AFC shall provide a microprocessor-based speed adjustment of three-phase motors. The adjustable frequency and voltage output shall provide constant volts per hertz excitation for the motor up to 60 hertz.

The AFC shall be an adjustable voltage design. The AFC inverter shall use a total of six gate turn-off (GTO) thyristors. Silicon controller rectifiers (SCR's), transistors, current source inverters and paralleling of devices are unacceptable. Controller shall be capable of operating open circuit to facilitate testing across entire frequency range.

The AFC shall be capable of controlling any standard NEMA B, locked rotor code A through G motor, of equivalent or lower horsepower to the original motor installed without field adjustments to the adjustable frequency controller.

Standard operating conditions shall be:

- a) The AFC shall be capable of converting incoming three phase, 460V (+10% to -5%) and 60 hertz (+/- 2 hertz) power to a variable potential DC bus level.
- b) Humidity 0 to 95% (noncondensing and noncorrosive).
- c) Altitude 0 to 3,300 feet above sea level.
- d) Ambient temperature 0 to 40 degrees C.
- e) The AFC shall have a minimum efficiency of 96% at rated load.

The AFC enclosure shall be NEMA 1. The AFC shall have complete front accessibility with easily removable assemblies. AFC units shall be floor mounted.

Note to Spec Writer: In addition to NEMA 1, for dusty environments: "The AFC enclosure shall be floor mounted with ventilation filters and gasketed doors."

All enclosures shall be not less than 16 gauge steel with surfaces thoroughly cleaned and phosphatized prior to painting. They shall be primed with a corrosive-resisting coating. Cabinet finish paint to be ANSI 61 Gray.

Doors shall include plastic device holders for mounting up to 12 operator devices. Factory mounted operator devices shall be wired at the factory.

Input circuit breaker shall be provided as a disconnect. The operator handle shall always remain connected to the breaker and shall not be mounted on the door. The position handle shall indicate On, Off, or Tripped condition of the circuit breaker. The handle shall have provisions for padlocking in the Off position with at least three padlocks. Interlocks prevent unauthorized opening or closing of the AFC door with disconnect handle in the On position.

All printed circuit boards in the regulator section shall be completely interchangeable for any rating of this model with the same set of optional features.

The following control features shall be available with the AFC's:

- a) Start, stop, reset, speed potentiometer, frequency meter and output voltmeter terminations for door or remote mounted devices shall be provided.
- b) Linear, independent acceleration and deceleration adjustments, 1.0 to 30 Hertz per second (4-120 seconds, with 120 Hz top speed).
- c) Controlled deceleration upon stop.
- d) Output frequency range factory set for 2-60 Hertz.
- e) Frequency stability of +/- 0.5% for 24 hours with voltage regulation of +/- 2% of maximum rated output voltage.

- f) 115 VAC isolated control power for operator devices. Low voltage DC control power is not acceptable.
- g) Motor slip dependent speed regulation of 3%.
- h) Five-cycle carryover during utility loss.
- i) Low logic supply protection.
- j) Line-to-line and line-to-ground output short circuit protection.
- k) Overload capability shall be 150% of the motor FLA based on the NEC ratings for 60 seconds, 110% for centrifugal load applications. This rating shall not include harmonic amperes.
- l) A door mounted seven segment alpha display for separate indication of over-frequency, instantaneous overcurrent, DC overvoltage AC undervoltage/loss of phase, emergency stop, overload, over-temperature, inverter pole trip and standby modes.
- m) Additional status indicating LED's for self-diagnostics, including phase loss and microprocessor fault, as well as one for each inverter pole gating signal, each inverter pole status and each logic voltage used.
- n) DV/DT and DI/DT protection for converter semiconductor.
- o) Electronic ground fault protection.
- p) Overtemperature protection.
- q) Electrical isolation between the power and logic circuits, as well as between the 115 VAC control power and the static digital sequencing.

The following standard adjustments shall be provided on the AFC:

- a) Minimum speed 2 to 40 hertz.
- b) Maximum speed 40 to 120 hertz.
- c) Acceleration — 1 to 30 hertz per second, (2-60 seconds for 0-60 Hz).
- d) Deceleration — 1 to 30 hertz per second, (2-60 seconds for 0-60 Hz).
- e) Full time adjustable current limit 50-150% (50-110% for variable torque).
- f) Voltage boost up to 57 volts at 2-15 hertz.
- g) Volts/hertz adjustable from 3.83-11.5 V/Hz.
- h) Stability.

Service

The AFC manufacturer shall provide to the owner, a start-up service package for all AFC's provided. Service shall include inspection, final adjustments, operational checks and final report for record purpose. The service package shall include a two year parts warranty from date of shipment.

Acceptable Manufacturers

Adjustable Frequency Controllers are to be specified on the basis of Westinghouse Accutrol 300 for function and quality. Products which are in compliance with the specification and manufactured by others will be considered only if pre-approved by the engineer ten days prior to bid date.



Accutrol 300 Adjustable Frequency Motor Control (Typical Specification Cont'd.)

Optional Features

Controller status relay with two Form C relay pairs, rated 2 amps resistive at 115 volt AC for indication of running condition.

Contactor bypass which includes an output contactor interlocked with bypass contactor, run relay including control logic, status lights and a motor overcurrent relay. The complete bypass system and Inverter-Off-Bypass selector switch shall be packaged in the AFC's enclosure up through 250 HP. (Note: above 100 HP may also be separately mounted.) The unit may be set up for 1) Manual bypass operation or, 2) Automatic bypass operation upon AFC trip.

Pneumatic process follower allowing motor speed control proportional to a 3-15 PSIG pneumatic signal.

AC output contactor to provide a means for positive disconnection of the controller output from the motor terminals.

Motor overcurrent relay option to provide motor overcurrent sensing of a given level of load current.

Improved speed regulation of $\pm 0.5\%$ of motor base speed (60 hertz base) utilizing slip compensation.

Isolated process follower for 4-20 mA or 0-10 V input speed reference signals which may be grounded.

AC ammeter, voltmeter and speed indicating meters.

Emergency shutdown which immediately disconnects the motor.

Input power line reactors supplied inside the AFC for 200 HP and larger.

Service analyzer to indicate satisfactory operation, or it will isolate the source of a malfunction. A built-in operator control panel allows override, if desired, of the normal start, stop and speed controls to assist in start-up and analysis. A frequency meter, test meter and LED monitoring shall be included.

Jog at independent preset speed.

Fused thermostat-controller space heaters to minimize condensation potential upon controller shutdown.

Output signal of 4-20 mA DC proportional to load current.

Laminated plastic nameplate engraved with customer's identifying name or number for the controller.

Thread at independent preset speed.

Auto restart to automatically restart on undervoltage trips only, time delayed.

Multiple attempt restart for unattended applications, to automatically restart the controller after any type of fault condition.

The number of attempts shall be selectable at 0, 1, 2, 3, 4, 5, and unlimited, in time periods of 20, 40, 60, or 80 minutes and the delay before restarting shall be adjustable up to ten minutes.

Electronic reversing of the phase rotation of the controller output to provide reverse rotation of the driven motor.

Increased dwell time at start to optimize motor starting torque, adjustable from 10 to 50 seconds.

Input isolation transformers, with NEMA 1 enclosure.

NEMA 4/NEMA 12 operator's station for remote mounting of pilot devices.

Line synchronization circuitry to allow transfer of the motor from the AFC to the 460 volt, 60 Hz line or back with no time delay.

Critical speed avoidance circuitry to allow two customer selectable bands of up to 8 Hz of operating frequency at which the AFC will not operate continuously in order to avoid system resonant vibrations.

Manual/Auto reference.

Up to speed indication window detector which closes a relay contact when the unit is within $\pm 5\%$ of the commanded frequency.

Controller trip indication, shall provide an independent Form C contact for each of the following conditions: instantaneous overcurrent trip, emergency stop, overfrequency, overtemperature, overvoltage, overload, pole trip, standby, undervoltage and micro-processor trip.

Spinning motor pickup start provides the capability to restart the motor without bringing it to zero speed.

Extended acceleration/deceleration adjustments allow setting of the ramp rate in the range of .25 to 7.5 hertz per second corresponding to times of 16 to 480 seconds from 0 to 120 hertz.

Signal output to provide a signal indicating the actual output frequency to the motor. This option shall provide a 4-20 mA DC or 0-10 VDC output, jumper selectable proportional to motor controller frequency. Gain and bias potentiometers are provided to adjust the output signal to correspond to the maximum and minimum motor controller speed range.

Elapsed time meter five digit, nonresettable meter to indicate hours of adjustable speed operation.

Hand/Off/Auto selector switch is used with process follow when it is desired to operate from either the "Hand" position where the AFC follows the speed setting potentiometer or in the "Auto" position where the AFC will start only after a remote run contact is

closed and follow the process signal. In the "Off" position the AFC will stop.

Installation

Wiring and handling shall be per manufacturer's recommendations.

The Adjustable Frequency Controller shall be protected against damage at all times. The controller shall be stored in a clean, dry environment with temperature and humidity within the range as specified by the controller manufacturer. Space heaters shall be energized during storage, as recommended by the manufacturer.

The manufacturer shall provide one spare of each type of PC card for each rating. In addition to the cards, the manufacturer shall provide one set of fuses and power semiconductors for each rating supplied.

Factory Tests and Checks

Adjustable Frequency Controller power semiconductors and diodes shall be 100% inspected and tested, including load testing.

All integrated circuits shall be 100% tested. Testing shall include pass/fail testing, temperature cycling (-20°C to $+85^{\circ}\text{C}$) and ambient high temperature ($+85^{\circ}\text{C}$) testing.

Small signal semiconductors, resistors, capacitors and diodes shall be lot sampled. Testing will include parameter, as well as functional characteristics.

All printed boards shall be tested under a temperature cycling (0°C to $+65^{\circ}\text{C}$) 24-hour load test and then functionally tested via fault finder bench equipment prior to unit installation.

All final assemblies shall be tested at full load with application of line-to-line and line-to-ground bolted faults. Adjustable Frequency Controller shall trip electronically without device failure.

After all tests have been performed, each AFC shall undergo a 24-hour burn-in test. The controller shall be burned in at 100% inductive or motor load for 24 hours without an unscheduled shutdown.

A factory test report for each AFC shall be provided by the manufacturer upon request.

Field Tests and Checks

Testing, checkout and start-up of the Adjustable Frequency Controller equipment shall be performed under the technical direction of the manufacturer's service representative. Under no circumstances are any portions of the drive system to be energized without authorization from the manufacturer's representative.

A copy of all tests and checks performed in the field, complete with meter readings and recordings, where applicable, shall be submitted to the owner for his records.



Accutrol 300 Adjustable Frequency Motor Control

Reasons for Choosing Westinghouse

- **Modular Design** For ease of manufacture and simplicity of in field maintenance.
- **.95 Power Factor** Westinghouse Accutrol 300 provides a .95 displacement power factor at full speed and load.
- **120 Volt Control Power** Interface with remote operator stations is simple regardless of distance.
- **Efficiency** 97.6% full load efficiency allows greater energy savings on all applications.
- **Enclosures** NEMA 1 and open panel units are available depending on rating with both available from 15 through 150VT HP.
- **Line Fuses** As standard, incoming line power fuses (current limiting type) are included to protect the power electronics.
- **Extensive Options** Wide array of pre-engineered modifications allow the Accutrol 300 to be tailor-made for each application.
- **Circuit Breaker** As standard, provides conventional thermal magnetic protection and power disconnect functions with an interlocked, pad lockable handle mechanism.
- **Interfacing Flexibility** Control connections include provisions for various permissive contacts and allow multiple combinations of operator controls.
- **Door Status Display** Alpha numeric display indicates controller status at glance without having to open door.
- **Quality Assurance** All components and circuits are 100% tested, completed units undergo a 24-hour burn-in test to provide the most reliable unit possible.
- **2 Year Parts Warranty** Parts Warranty is automatically extended to 2 years with the purchase of Westinghouse start-up service.
- **Start-up Service** Westinghouse Service Representatives inspect and adjust units to allow worry free start-ups.
- **Service Analyzer** Portable diagnostic units provide easy monitoring of performance and operating conditions of all controllers.
- **Experience** From the internal Westinghouse contactors and breakers used within the units to incorporating the controllers into a motor control center line up and supplying your total electrical distribution system, Westinghouse has the capabilities to meet your needs.

For information and assistance in applying Accutrols contact your local Westinghouse Distributor

Westinghouse Electric Corporation
Distribution and Control Business Unit
Electrical Components Division
110 Douglas Road, P.O. Box 819
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