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contraves®

Motion Control Division



NC700 SERIES

DC Servo Controllers

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NC700 Series
DC servo controllers

The NC700 series high-voltage, plug-in, PWM servo controllers are available in four models ranging in output power from about 1.0 kilowatt to almost 5.0 kilowatts continuous. When mated with DC servo motors rated up to 6.0 horsepower, especially those requiring 100 to 150 volts for full-speed operation, the NC700 series provides a high-performance, low-cost solution to your multi-axis servo system applications.

The rugged, reliable NC700 series can be supplied in compact 19-inch rack or panel multi-axis mounting units containing integral power supplies, fusing and bus regulators.

The NC700 series is particularly well-suited for use where precision, high dynamic performance, efficiency and smoothness of operation are criteria:

- Machine tool feed drives
- Robot mechanism drives
- Special machine and process control drives

Use of the PWM technique in the NC700 series provides smooth, non-pulsating and efficient power transfer to the motor. Form factors less than 1.01 are easily achieved with the NC700 series, so no motor derating is necessary and full use of the motor's capability is insured.

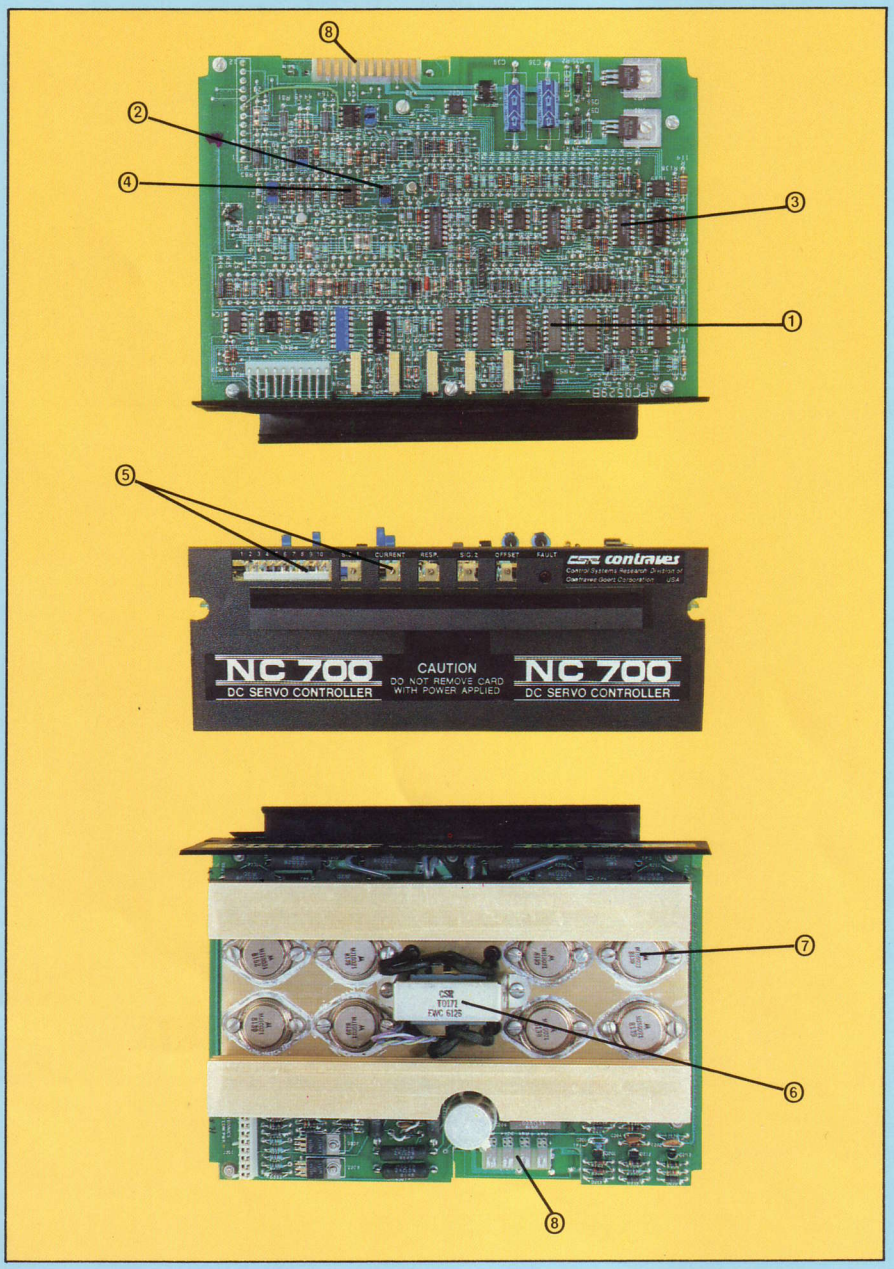
In addition, patented short-circuit fault circuitry, combined with other unique protection features, insures risk-free operation of the NC700 series. Full protection against accidents and abuse is afforded without expensive external protection devices.

Ease of set-up and troubleshooting were prime design considerations for the NC700 series. As a result, set-up for optimum machine performance takes only minutes, and because of the plug-in design an exchange takes only seconds, so machine downtime is virtually eliminated.

The NC700 series: a superb servo controller series designed for excellence in performance, reliability of operation and ease of application—all in a compact, economical package.

Servo controller features

- Highly integrated design for compactness and reliability ①
- Selectable servo compensation ranges mean easy system tuning over a wide range of load inertias ②
- Auto-taper current limiting means optimized motor commutation and increased brush life ③
- Low-drift, filtered, differential input preamplifier means stable, precise velocity loop operation ④
- Accessible test jack and multi-turn potentiometers mean easy, rapid set-up and performance optimization ⑤
- Rugged output devices and patented protection circuitry mean full protection against accidents and misuse ⑥
- Pulse width modulation (PWM) transistor design means extremely smooth, accurate machine control and near-unity form factor means no derating of motor torque ⑦
- True plug-in design means no wiring connection errors and easy troubleshooting ⑧
- High-voltage bus (160VDC) means full utilization of today's high performance servo motors



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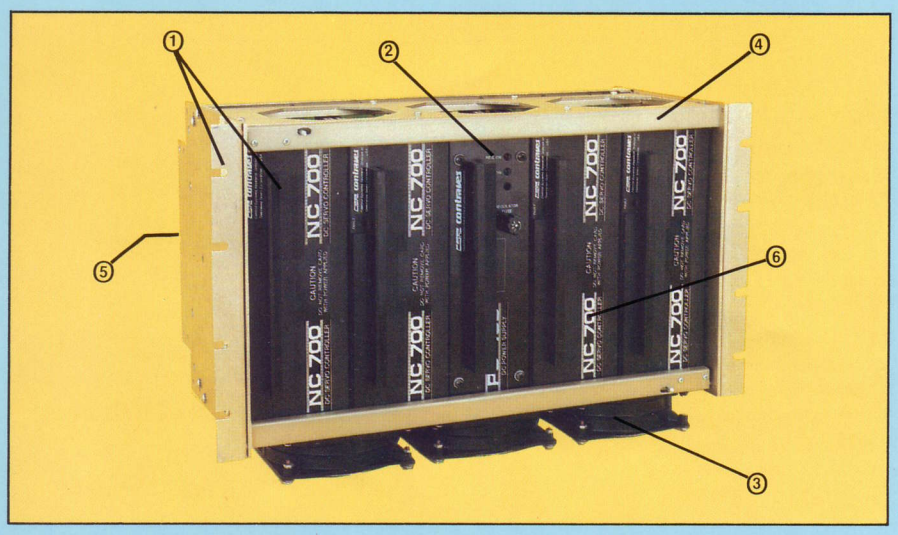
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Specifications

Parameter	Model			
	NC710	NC720	NC730	NC740
Output voltage (max.) (@ 160 VDC nom. bus)	±155 VDC			
Output current:				
Peak (1 sec.)	±25A	±50A	±75A	±100A
RMS (V_o (rms) ≤ 33% bus)	±12.5A	±25A	±37.5A	±50A
Continuous	±10A	±20A	±30A	±40A
Power rating:				
Peak	3.0 kW	6.0 kW	9.0 kW	12.0 kW
Continuous	1.2 kW	2.4 kW	3.6 kW	4.8 kW
Bandwidth: power section (@ RMS, sinewave)	0 to 500 Hz			
Deadband	Zero			
Efficiency (minimum) (@ full continuous power)	85%			
Form factor (max.) (@ continous current and minimum inductance)	1.01			
Min. armature inductance	2.6 mH	1.3 mH	0.9 mH	0.7 mH
Offset	Adjustable to zero			
Drift (referred to input)	10 μV/°C			
Min. input resistance (noise filter @ 1.0 k Hz)	10 K ohms			
Temp. range (operating)	0°C to +50°C			
Size (1 Vol. = 3.42"W x 9.31"H x 6.92"D 87mm W x 237mm H x 175mm D)	1 Vol.	1 Vol.	2 Vol.	2 Vol.
Weight	4.0 lb. 1.8 kg.	4.2 lb. 1.9 kg.	8.2 lb. 3.7 kg.	8.4 lb. 3.8 kg.

Mounting unit features

- Up to 4 axes in a single, compact, rugged mounting frame ①
- Integral DC power supply with built-in bus regulator supplies up to 8 kilowatts ②
- Multiple, integral cooling fans for conservative operation at high ambient temperatures ③
- Easily removed securing bar for trouble-free operation in high vibration environments ④
- Integral fusing of each controller is easily accessible
- Clearly identified terminals for ease of hook-up ⑤
- Dead-front design minimizes shock hazard ⑥
- Alternate versions for panel-mounting of 2, 3 and 4 axes are available



Assembly numbers

The catalog numbers for the various assemblies in the NC700 family are listed below with a brief description of each assembly.

A2271 Model NC710 servo controller, 10A continuous, 25A peak

A2272 Model NC720 servo controller, 20A continuous, 50A peak

A2273 Model NC730 servo controller, 30A continuous, 75A peak. Consists of two plug-in assemblies.

A2274 Model NC740 servo controller, 40A continuous, 100A peak. Consists of two plug-in assemblies.

A2315 Panel mounting unit for one or two axes of NC710 and/or NC720. Has integral, single phase, 4 kW power supply.

A2316 Same as A2315 but with three phase supply

A2317 Rack (19 inch) mounting unit for one or two axes of NC730 and/or NC740. Has integral, three phase, 8 kW power supply.

A2318 Same as A2317 but for panel mounting.

A2319 Rack (19 inch) mounting unit for two NC710 and/or NC720 and one NC730 or NC740. Has integral three phase, 8 kW power supply

A2320 Same as A2319 but for panel mounting

A2321 Rack (19 inch) mounting unit for three or four axes of NC710 and/or NC720. Has integral, three phase, 8 kW power supply.

A2322 Same as A2321 but for panel mounting

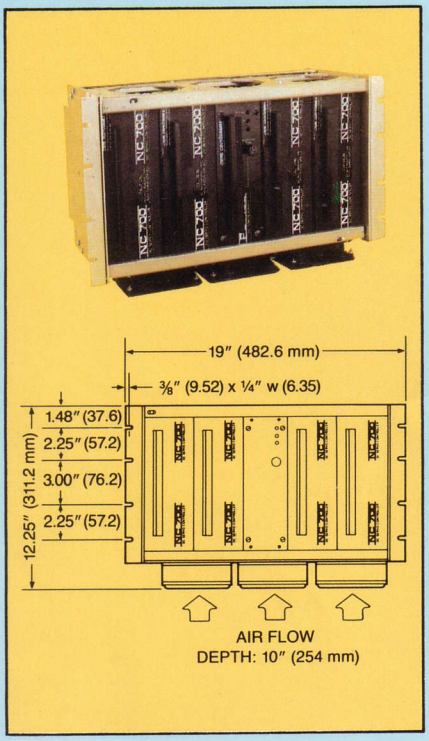
Note: All power supplies include a shunt regulator rated 100W continuous, 2000W peak.

For further details ask your Contraves sales engineer for the NC700 Series Technical Application Manual.

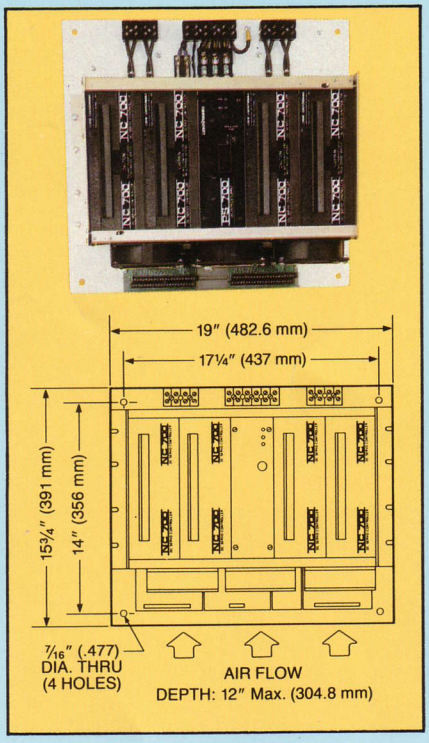
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Mounting unit configurations

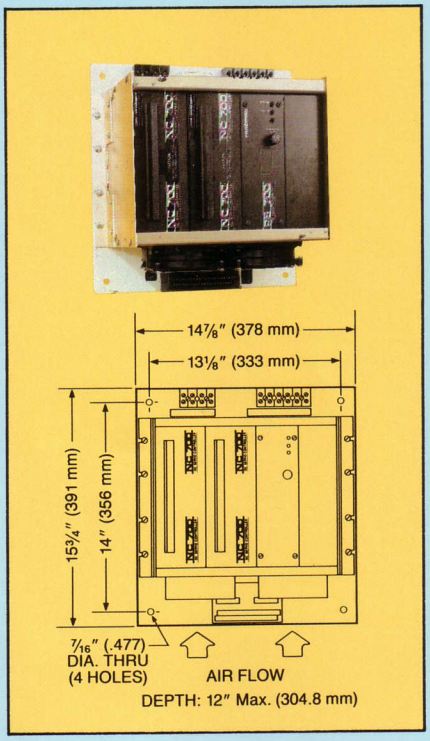
Rack versions (A2317, A2319, A2321)



Panel versions (A2318, A2320, A2322)



Two axis panel versions (A2315, A2316)



Optional equipment

Transformers
Both single- and three-phase, 50- or 60-Hz power transformers, specially designed to mate with the NC700 series servo controllers, are available. These units, ranging in power output from 1 kW to 8 kW, are conservatively rated, are constructed with the highest grade Class F materials and are optimized for efficient use of cabinet space.

Inductors
Power armature inductors in a range of inductance values and current ratings are available for use with motors whose inductance is below the minimum required working inductance for the NC700 series servo controllers.

Special panel designs
Special panel designs to your specifications, containing multiple axes of the NC700 series as well as other drive equipment and electrical devices, can be provided economically. Consult your Contraves sales engineer for details.



DC permanent-magnet servo motors

Other Contraves products

Contraves manufactures a broad range of motion control products. Virtually any application requirement you have can be satisfied by simply specifying Contraves as your supplier. We'll do the rest, from the initial machine analysis to providing service worldwide. Contact your Contraves sales engineer and ask for details on:

- Shunt-wound DC motors to 400 hp
- Permanent-magnet servo motors to 300 lb-in
- 3- and 6-pulse SCR servo and spindle drives
- AC servo and spindle drives and motors
- Positioning systems
- Worldwide service facilities

contraves®

Motion Control Division

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