

**TOSHIBA**

**ADJUSTABLE SPEED DRIVES**



# nC1 Drive

*Reliability in motion®*

# Ultra-Compact Sub-Micro Drive

The nC1 is a sub-micro, or nano-sized drive with a full range of features to meet the needs of nearly any user. The nC1 is designed to be a simple drop in replacement for a starter on an existing project or as a new installation. Either way, the nC1's small size and full featured design make it a perfect choice for your application.

**An Easy Choice**    

The nC1 drive comes with either single-phase or three-phase input with input voltage ratings as low as 120 V. This makes it an excellent choice for small OEM applications. The single-phase input means that the nC1 can be used in applications that were previously too cost-prohibitive to install a three-phase drive. All nC1's have a three-phase 230 V output.

## Models and Applicable Motors

Voltage (Input/Rated Output)	Applicable Motor Capacity (kW)					
	0.1	0.2	0.4	0.75	1.5	2.2
1 $\phi$ 100 V/3 $\phi$ 200 V	■					
1 $\phi$ 200 V/3 $\phi$ 200 V		■				
3 $\phi$ 200 V/3 $\phi$ 200 V	■					
1 $\phi$ 200 V/3 $\phi$ 200 V (built-in EMI noise filter)		■				

## Simple to Install

The nC1 is designed to be a drop-in replacement for a starter. The terminal arrangements for input and output power are even set up like a starter. Side-by-side mounting and the unit's vertical construction allow for a smaller footprint. The nC1 provides better control of your application, more protection for your motor, and more room in your cabinet.

# Easy-to-Use

## Easy To Program

The nC1 uses a simple, straightforward programming menu for quick and easy setup of the drive. There are no complicated sub menus or “hidden” parameters. By using the built-in programming wizards, the nC1 can be programmed for simple operations with the push of a button. Available Windows® programming software makes it a snap to set up the drive.

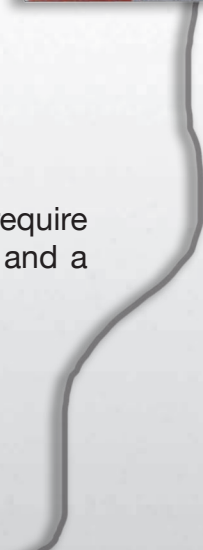
## User-Friendly Operation

The nC1 comes ready to run. Simply mount the drive, run your power connections and you are ready for operation. Many operations require no programming whatsoever. The user-friendly interface is designed to set the speed and start/stop functions of the unit easily. The drive will also operate from nearly any standard industrial control inputs.

## Array of Communications

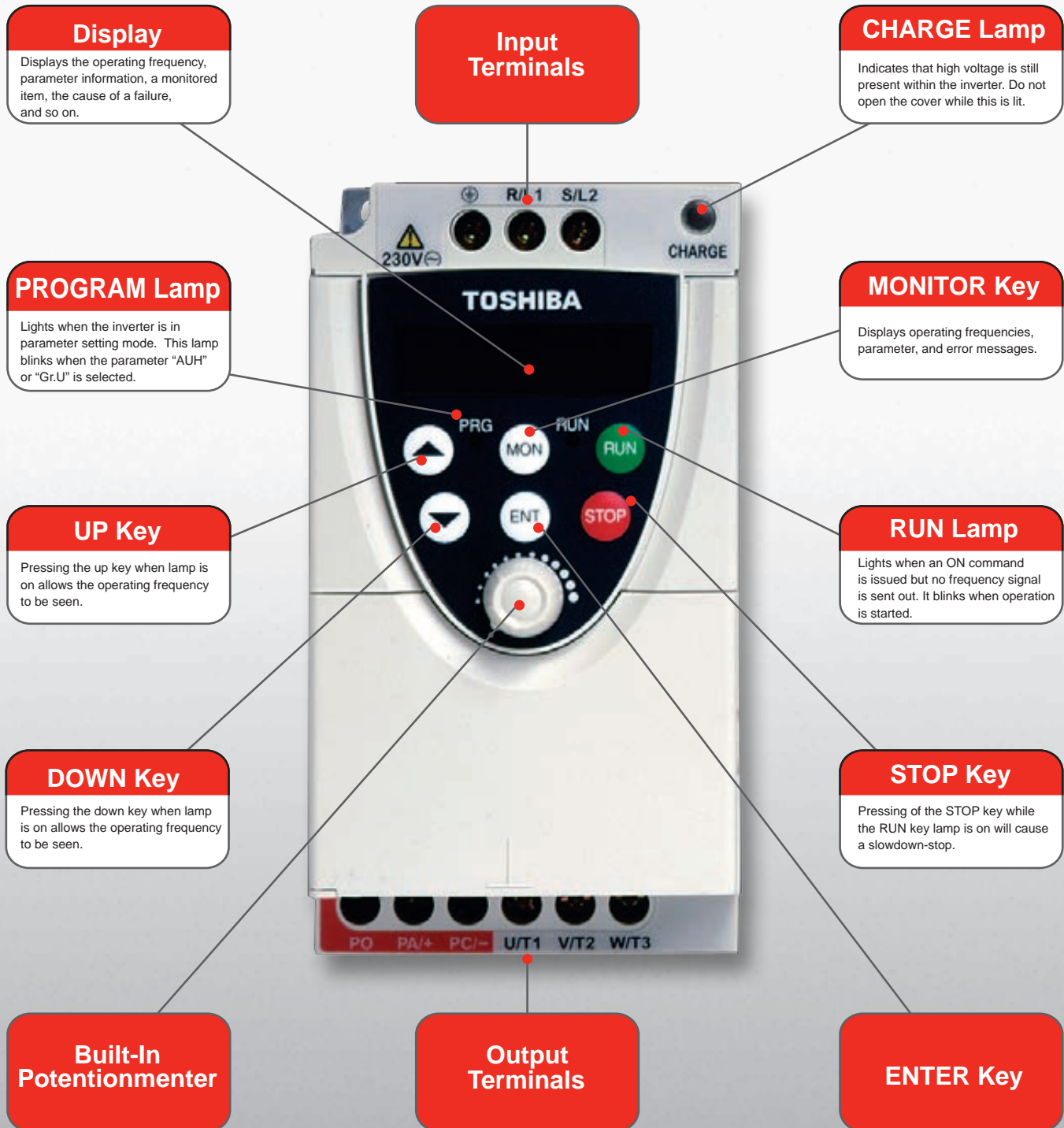
In today’s fast-paced manufacturing world, coordinated systems require communications from drive-to-drive and drive-to-system. A built-in port and a variety of option cards give you versatility in communication selection.

- Built-In RS232/RS485 Port
- Communication Protocol Options
  - Ethernet TCP/IP
  - Ethernet IP
  - DeviceNet
  - Modbus RTU
  - Modbus Plus
  - Johnson Controls Metasys N2
  - Profibus DP



# nC1 Drive

## Full-Scale



# Standard Specifications

nC1 ASD Standard Specifications				
Model Range	1001P-1007P	2002P-2022P	2001PL-2022PL	2002P-2022P
Input Voltage Rating	120 V/Single Phase	230 V/Single Phase	230 V/Three Phase	230 V/Single Phase with RFI / EMI Filter
KW Range	0.1 to 0.75 KW	0.2 to 2.2 KW	0.1 to 2.2 KW	0.2 to 2.2 KW
HP Range	1/8 to 1 HP	1/4 to 3 HP	1/8 to 3 HP	1/4 to 3 HP
Overload Rating	150% for 60 Seconds			
Input Voltage Tolerance	+10%, -15%	+10%, -15%	+10%, -15%	+10%, -15%
Input Frequency Rating	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Input Frequency Tolerance	± 5%	±5%	±5%	±5%
Output Voltage Rating	230 V, Three Phase			
Color	Munsell 5Y8 / 0.5			
Control System	Sinusoidal PWM Control			
Output Voltage Range	Adjustable within a Range of 100 to 120% of Corrected Supply Voltage (200 V), Nonadjustable to any Voltage Higher than the Input Voltage			
Output Frequency Range	0.5 to 200 Hz, Default Setting: 0.5 to 80 Hz, Max Frequency: 30 to 200 Hz			
Minimum Frequency Step	0.1 Hz: Operation Panel Setting, 0.2 Hz: Analog Input (when the Max Frequency is 100 Hz)			
Frequency Accuracy	Digital Setting: within ±0.5% of the Max Frequency (-10 to +50°C) Analog Setting: within ±1.0% of the Max Frequency (25°C ± 10°C )			
V/f Characteristics	V/f, Slip Frequency Compensation, Base Frequency, Base Frequency Voltage and Torque Boost (Adjustable Amount)			
Frequency Setting Signal	Internal Pot on the Front Panel, External Frequency Signal (Connectable to a Volume with a Rated Impedance of 3 to 10 kΩ), VI Terminal (Input Impedance: 42 kΩ (Voltage: 0 to 10 Vdc) or 250 Ω (Current: 4 to 20 mAdc)). Frequency can be Set Arbitrarily Using a Two Point Setting			
Startup & Jump Frequency	Adjustable within a Range of 0.5 to 10 Hz; Up to 1 Frequency can be Adjusted Together with its Widths			
PWM Carrier Frequency	Selectable from among 2, 4, 8, 12, and 16 kHz (Standard Default Setting: 12 kHz or 4 kHz for Models with a Built-In EMI Noise Filter)			
Accel/Decel Time	Two Selectable Accel/Decel Times Adjustable from 0.1 to 3000 seconds			
Retry Operation	Selectable Number of Retries (Maximum 10 Times); If Protection Function is activated, Retry Function restarts after a main circuit check.			
Electric Control	Charging of Capacitor (Deceleration Time can be Shortened by Activating Forced Shortened Deceleration Mode)			
Dynamic Braking	Braking Start Frequency: 0 to Max Frequency; Braking Rate: 0 to 100%; Braking Time: 0 to 20 seconds			
Input Terminal Functions	Forward/Reverse Run Input Signal, Jog Run Input Signal, Standby Signal, Preset-Speed Operation Input Signal, Reset Input Signal, etc.			
Output Terminal Functions	Frequency Lower Limit Output Signal, Frequency Upper Limit Output Signal, Low-Speed Detection Output Signal, Specified Speed Attainment Output Signal, etc., Open Collector, RY Output			
Failure Detection Signal	1 Form C Contact, Rated: 250 Vac, 2A, cosφ = 0.4			
FM/AM Output	PWM Output: (1 mAdc Full-Scale DC Ammeter or 7.5 Vdc Full-Scale DC Ammeter/Rectifier-Type AC Voltmeter, 225% Current Max 1 mAdc, 7.5 Vdc Full-Scale)			
Protective Function	Stall Prevention, Current Limitation, Overcurrent, Output Short Circuit, Overvoltage, Overvoltage Limitation, Undervoltage, Ground Fault, Power Supply Phase Failure, Output Phase Failure Overload Protection by Electronic Thermal Function, Armature Overload at Startup, Load-Side Overtorque at Startup, Overheating Prevention, Detection of Analog Signal Break			
Momentary Power Failure Protection	Auto-Restart Control after Momentary Power Failure			
Electronic Thermal Characteristics	Switching between Standard Motor/Constant- Torque VF Motor, Overload Trip, Overload Stall Selection			
4-Digit, 7-Segment LED	Frequency: Inverter Output Frequency Alarm: Stall Alarm "C," Overvoltage Alarm "P," Overload Alarm "L," Overheat Alarm "H." Status: Inverter Status (Frequency, Cause of Activation of Protective Function, Input / Output Voltage, Output Current, etc.) and Parameter Settings Free-Unit Display: Arbitrary Unit (e.g. Rotating Speed) Corresponding to Output Frequency			
Indicator	Lamps Indicate Inverter Status by Lighting, such as RUN Lamp and PROGRAM Lamp			
Use Environments	Indoor-Altitude: 1000 Meters (Maximum), not Exposed to Direct Sunlight, Corrosive Gas, Explosive Gas or Vibration (Less than 5.9 m <sup>2</sup> ) (10 to 55 Hz)			
Ambient Temperature	-10 to +50°C			
Storage Temperature	-20 to +65°C			
Relative Humidity	20 to 93% Non-Condensing			

Model FLA & Approximate Dimensions (Inches) & Weight (Lbs)							
VOLTAGE	HP	MODEL NUMBER	FLA	HEIGHT	WIDTH	DEPTH	WEIGHT
110 V Single Phase	0.12	VFNC1S-1001P	0.7	5.6	2.8	3.9	2.2
	0.25	VFNC1S-1002P	1.4	5.6	2.8	3.9	2.2
	0.5	VFNC1S-1004P	2.4	5.6	2.8	3.9	2.2
	1.0	VFNC1S-1007P	4.0	5.6	4.6	4.9	2.2
230 V Single Phase	0.25	VFNC1S-2002P	1.4	5.6	2.8	3.9	2.2
	0.5	VFNC1S-2004P	2.4	5.6	2.8	4.9	2.2
	1.0	VFNC1S-2007P	4.0	5.6	2.8	5.4	2.2
	2.0	VFNC1S-2015P	7.5	5.6	4.6	6.1	3.3
	3.0	VFNC1S-2022P	10	5.6	4.6	6.1	3.3
230 V Three Phase	0.12	VFNC1-2001P	0.7	5.6	2.8	3.9	2.2
	0.25	VFNC1-2002P	1.4	5.6	2.8	3.9	2.2
	0.5	VFNC1-2004P	2.4	5.6	2.8	4.9	2.2
	1.0	VFNC1-2007P	4.0	5.6	2.8	5.4	2.2
	2.0	VFNC1-2015P	7.5	5.6	4.6	6.1	3.3
	3.0	VFNC1-2022P	10	5.6	4.6	6.1	3.3
230 V Single Phase Built-in RFI / EMI Filter	0.25	VFNC1S-2002PL	1.2	5.6	2.8	3.9	2.2
	0.5	VFNC1S-2004PL	2.3	5.6	2.8	4.9	2.2
	1.0	VFNC1S-2007PL	4.0	5.6	2.8	5.4	2.2
	2.0	VFNC1S-2015PL	7.5	5.6	4.6	6.1	3.3
	3.0	VFNC1S-2022PL	10.7	5.6	4.6	6.1	3.3



# TOSHIBA INTERNATIONAL CORPORATION



North America Headquarters & Manufacturing Facilities (Houston, TX)



## **TOSHIBA – Quality by Design**

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**ADJUSTABLE SPEED DRIVES   MOTORS   CONTROLS   UPS   INSTRUMENTATION   PLC**

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