RediStart Solid State
General Purpose Micro Drive
1.0 - 5.0HP, 3 Phase 230/460V

BENSHAW
ADVANCED CONTROLS & DRIVES

RSi GX Series

"Electrical Solutions to Mechanical Problems"

The RSi GX Series VFD is ready to run out of the box for your simple applications or can be custom configured for your most demanding applications and control strategies. It provides sensorless vector control, PID control, and ground-fault protection through powerful built-in functions.

General Purpose Micro Drives

GX SERIES - PROTECTED CHASSIS / NEMA 1
1-5 HP, 230/460V

RATINGS

Constant Torque: 1 to 5HP @ 460V
1 to 5HP @ 230V

Chassis VFD w/optional NEMA 1 kit

RSi GX Series Product Highlights:

The GX series is a compact, economical chassis drive designed for low horsepower applications.

The GX series has a powerful set of parameters with a simple, easy to use keypad. The menu driven programming structure provides quick, simple setup.

Although small in size, the GX series provides a large amount of digital I/O for custom applications.

Key Advantages:

- Small, compact design
- Integral PID control
- Sensorless vector control or V/Hz control
- Adjustable carrier frequency
- Flexible, programmable I/O
- Economical, compact design
- Standard dynamic braking transistor

Guaranteed...for two full years.
Only Benshaw has a two year guarantee.
Every Benshaw Variable Frequency Drive is guaranteed for two full years. Other manufacturers limit their warranties to just one year. At Benshaw, we believe that because we build them better, and we can guarantee them longer. We call that "the Benshaw Promise."

THE BENSHAW PROMISE 2 Year Warranty

Flexible, Configurable Standard Features:

- **Standard I/O:** 8 digital inputs, 2 analog inputs, 1 analog output,1 relay output
- **Digital Metering:**Output current, output frequency, DC link voltage, motor RPM, output power, output torque
- **Protection:** Over current, ground fault, over voltage, current limit, motor overload, output phase loss, over heat, loss of signal, and more
- **Communications:** RS485, ModBus communications
- **Voltage Tolerance:** ± 10%
- **Control Method:** Open loop V/HZ, sensorless vector control
- **V/HZ Patterns:** Linear, quadratic, sensorless vector
- **Analog Output Functions:**
  1 analog output 0-10Vdc
- **Analog Inputs:**
  4-20mA, 0-10Vdc, -10Vdc to +10Vdc
- **Relay Outputs:**
  1 Form C relay output, programmable to run, fault, stop, ready, at speed, high or low frequency levels, loss of signal, and more.
- **Digital Inputs:**
  8 digital inputs configurable to forward run, reverse run, reset, jog, preset speeds, motorized pot function, emergency stop, alternate ramp selections, and more
- **User Interface:**
  4 digit LED Display
- **Braking Functions:**
  Coast, decel, DC injection braking, and optional dynamic braking

Powerful, Compact Easy-to-use Drive

The GX Series is a compact, economical chassis drive designed for low horsepower applications. The GX Series has a powerful set of parameters with a simple, easy to use keypad. The menu driven programming structure provides quick, simple setup. Although small in size, the GX Series provides a large amount of digital I/O for custom applications.

Compact

The compact size provides optimum use of space. It achieves cost-efficiency for various applications.

User Friendly

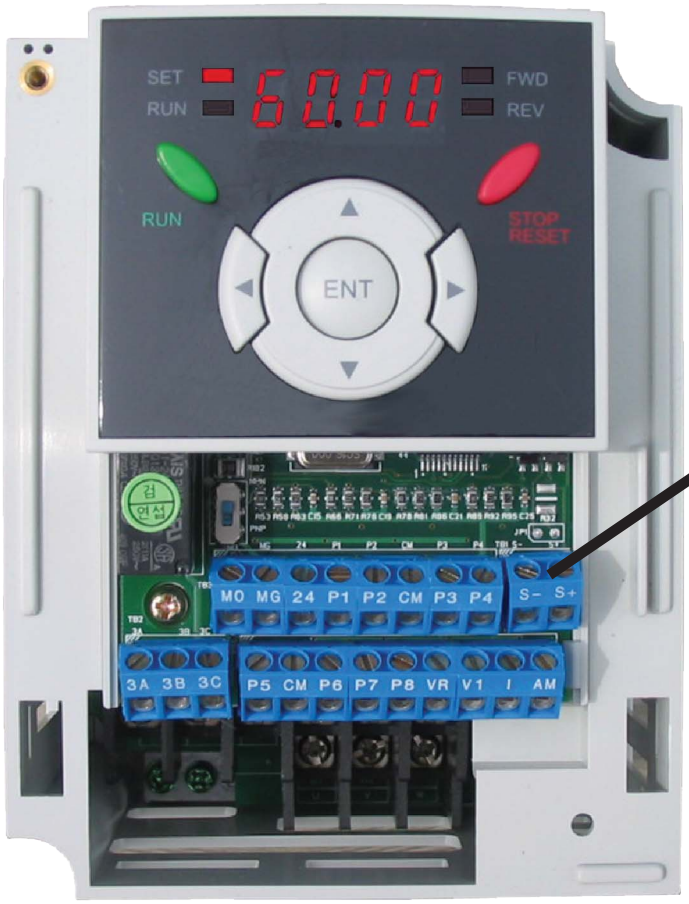
Simple user friendly interface. The 4 direction keys provide easy handling and monitoring.

Easy Maintenance

Detachable cooling fan. The GX is designed with a changeable fan structure for ease of maintenance.

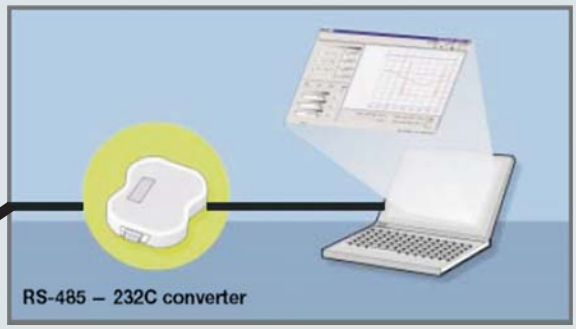
Standard Compliance

Global standard. The GX Series complies with CE and UL (Type 1) standards.



RS-485 Communication

Connected to PC



Monitoring

- Check operation status (Voltage, Current, Frequency, etc.)
- Check modified parameters
- Windows support

Remote Control

- Convenient remote control to modify operation status (Forward/Reverse operation, Frequency, etc.)
- Easy parameter setting
- Available to control up to 31 drives
- RS-485, Modbus communication

GX Functions

Powerful, User Interface

SET LED
Lit during parameter setting

RUN LED
Lit during operation

RUN KEY
Run Command

UP KEY
Used to scroll through codes or increase parameter value

LEFT KEY
Used to jump to other parameter groups or move a cursor to the left to change the parameter value.

ENTER KEY
Used to jump to other parameter groups or move a cursor to the left to change the parameter value.

FWD LED
Lit during forward run

REV LED
Lit during reverse run

STOP/RESET KEY
STOP: Stop command during operation,
RESET: Reset command when a fault occurs.

RIGHT KEY
Used to jump to other parameter groups or move a cursor to the right to change the parameter value.

DOWN KEY
Used to scroll through codes or decrease parameter value

Over 200 Programmable Parameters
Configuration groups in straight line, numerical sequence

DRIVE GROUP

- Set Speed
- Acceleration Time
- Deceleration Time
- Start/Stop Method
- Speed Control Method
- Motor Overload Protection
- Meters
- Preset Speeds
- Fault Indications

FUNCTION GROUP

- Stop Mode Method
- Start Mode Method
- DC Injection Braking
- Minimum Frequency
- Maximum Frequency
- Volts/Hz Pattern
- Motor Amps
- Motor Overload Protection

ADVANCED FUNCTION GROUP

- Fault Log
- Jump Frequencies
- Automatic Restart
- Speed Search
- Carrier Frequency Adjustment
- Sensorless Vector
- Control Selection
- Factory Reset
- Password Lockout
- Phase Loss Protection
- PID Control

I/O GROUP

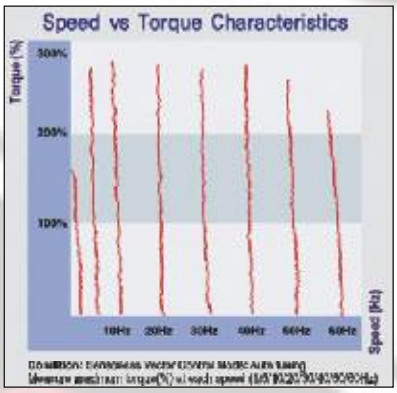
- Analog Input Bias and Gain
- Digital Input Function Selection
- Relay Output Function Selection
- Analog Output Bias and Gain
- Analog Output Function
- Loss of Analog Signal
- Input Signal Communication Options

High Performance Control

Powerful Solutions for Your Application

Sensorless Vector Control

The built-in sensorless vector control provides superb speed control and high starting torque.

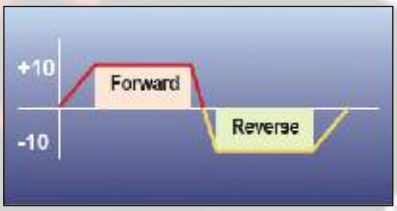


Ground Fault Protection

The GX drive is provided with Ground Fault protection.

Analog Control from -10V to 10V

Analog Input Signals from -10 to 10V for flexible motor control.

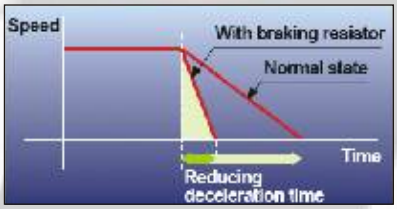


Built-in PID control

The built-in PID function enables the user to control flow pressure, temperature, etc. without any extra controller.

Built-in Dynamic Braking Circuit

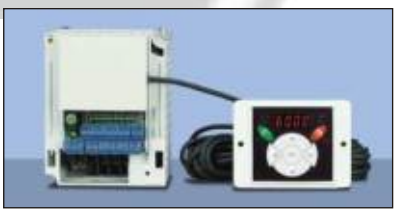
The built-in dynamic braking transistor makes it simple to add an external braking resistor for shorter decel times and regenerative applications.



Optional External Keypad

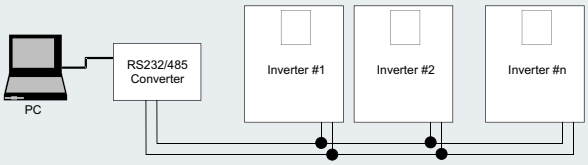
The external keypad away from the panel, enables the user to control and monitor the drive conveniently. The parameters that were made with the external keypad can be copied and applied to other drives.

The GX drive can be supplied with an optinal external keypad for remote mounting. The keypad can also be used for uploading and downloading parameters.



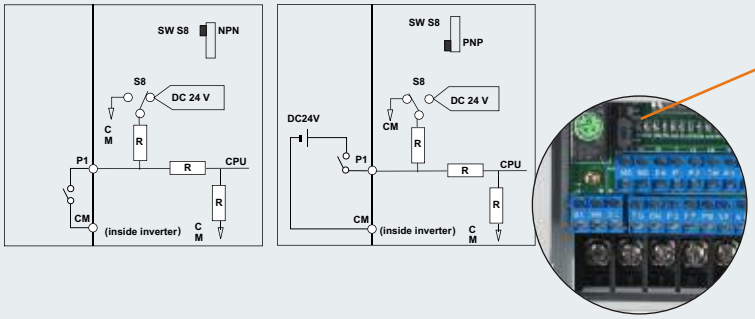
User Friendly Options

Maximum Energy Savings



Built-in RS-485 Communication

The built-in RS-485 communication supports remote control and monitoring between the GX drive and other equipment.



PNP/NPN Input

Both PNP and NPN inputs are possible which allows the user to copy/write parameters from one drive to another making it easy to set-up multiple drives in similar applications.

Easy Replaceable Cooling Fan

The cooling fan is easily replaceable and does not require internal boards to be removed. This significantly reduces maintenance time.

Diagnosis of Output Module

Through easy parameter setting, the GX can diagnose the status of the output module.

Cooling Fan Control

The GX drive provides a virtually quiet environment according to the status of operation, by controlling the cooling fan.

Ask about our NEMA 1 conduit kits!

RSi GX Variable Frequency Drives

Flexible, Configurable I/O

Model Number

RSi	005	GX	2

Benshaw Drive

Motor Horsepower
For example, 005 = 5HP

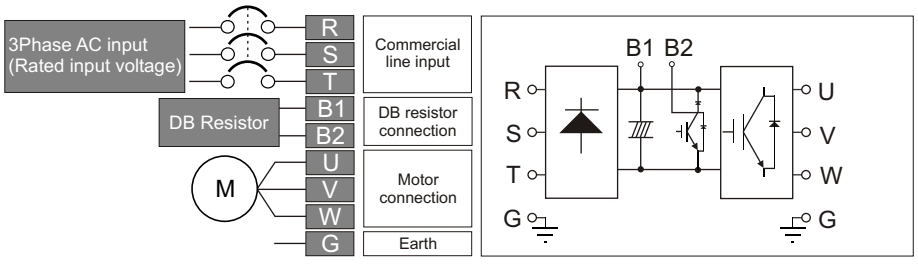
Series name of drive

Input voltage
2 = 230V, three-phase
4 = 460V, three-phase

Control Terminals

Terminal	Function	
MO	Multi-function open-collector output	
MG	MO common	
24	24V output/100mA	
P1	Multi-function input (initial setup)	FX: Forward run command
P2		RX: Reverse run command
CM	Input signal common	
P3	Multi-function input (initial setup)	BX: Emergency stop
P4		JOG: Jog frequency run
P5		RST: Trip release signal
CM	Input signal common	
P6	Multi-function input (initial setup)	Multi step frequency-low
P7		Multi step frequency-middle
P8		Multi step frequency-high
VR	10V output terminal for the volume resistor	
V1	Voltage signal input for frequency setup: -10~+10V	
I	Current signal input for frequency setup: 0~20mA	
AM	Multi-function analog output signal: 0~10V	
3A	Multi-function input (initial setup)	A contact point output
3B		B contact point output
3C		Contact point common
S+	RS485 communication signal connection	
S-		

Power Terminals



Technical Specifications

To Match Your Most Demanding Applications

Control	Control method		V/F, Sensorless vector control	
	Frequency setting resolution		Digital command: 0.01% of Max. output frequency Analog command: 0.1% of Max. output frequency	
	V/F pattern		Linear, Squared, User V/F	
	Overload capacity		150% per 1 min.	
	Torque boost		Manual/Auto torque boost	
	Dynamic braking	Max. braking torque	20% [1]	
		Max. Duty	150% when using optional DB resistor [2]	
Operation	Operation mode		Keypad/ Terminal/ Communication option/ Remote keypad selectable	
	Frequency setting		Analog: 0 to 10V, -10 to 10V, 0 to 20 mA Digital: Keypad	
	Operation features		PID, Up-down, 3-wire	
	Input	Multi-function terminal P1-P8	NPN/PNP selectable	
			FWD/REV RUN, Emergency stop, Fault reset, Jog operation, Multi-step Frequency-High, Mid, Low, Multi-step Accel/Decel-High, Mid, Low, DC braking at stop, 2nd motor select, Frequency UP/Down, 3-wire operation, External trip A, B, PID-Inverter (V/F) operation bypass, Option-inverter (V/F) operation bypass, Analog Hold, Accel/Decel stop	
	Output	Open collector terminal	Fault output and inverter status output	Less than DC 24V, 50mA
		Multi-function relay		(N.O., N.C) Less than AC 250V, 1A; Less than DC 30V, 1A
		Analog output (AM)	0-10Vdc (less than 10mA): Output freq., Output current, Output voltage, DC link selectable	
Protective function	Trip		0.33	
	Alarm		Stall prevention, Overload	
	Momentary power loss		Below 15 msec.: Continuous operation (Should be within rated input voltage, rated output power.) Above 15 msec.: Auto restart enable	
Environ-ment	Protection degree		IP20, NEMA Type 1 (Optional)	
	Ambient temperature		-10°C to 50°C	
	Storage temperature		-20°C to 65°C	
	Humidity		Below 90% RH (No condensation)	
	Altitude/Vibration		Below 1,000m, 5.9m/sec^2 (0.6G)	
	Atmospheric pressure		70 to 106 kPa	
	Location		Protected from corrosive gas, combustible gas, oil mist or dust	

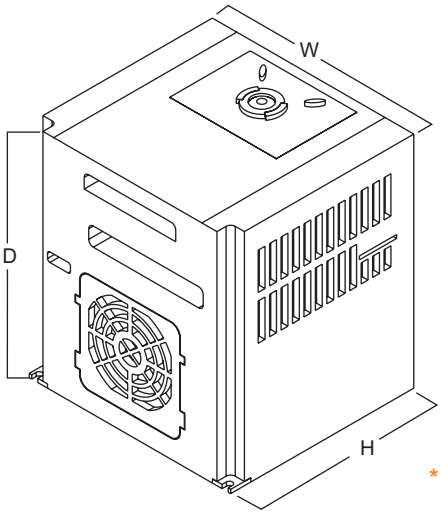
1) Means average braking torque during Decel to stop of a motor.

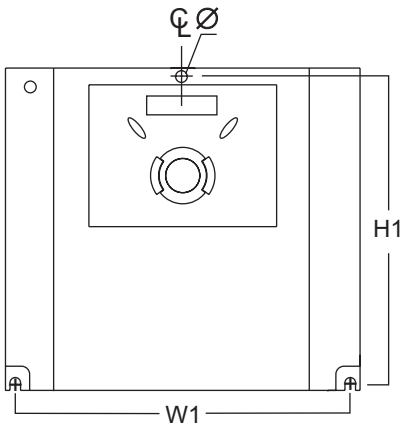
2) Refer to user's manual for DB resistor specification.

RSi GX Specifications

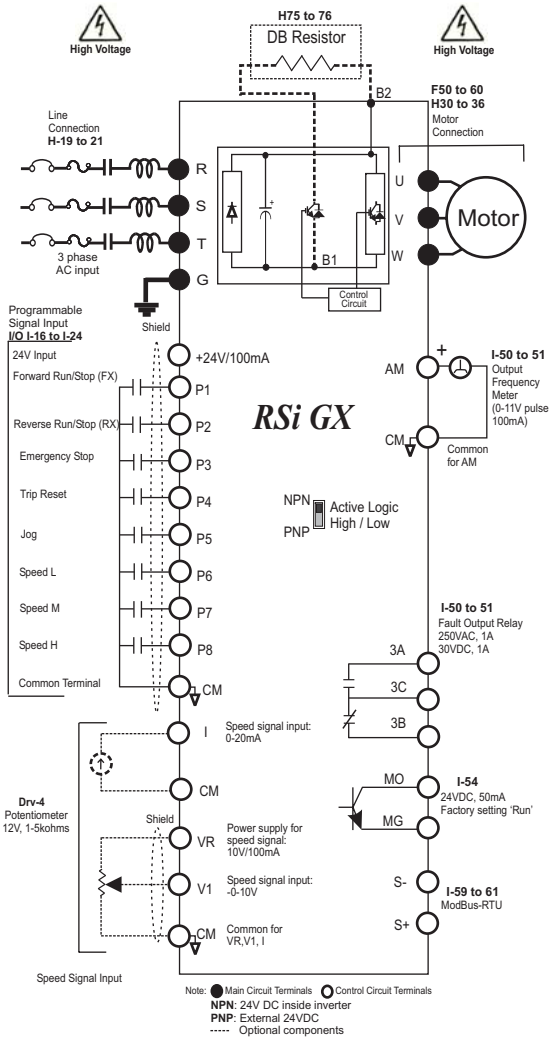
Pick The Drive That Will Satisfy Your Needs

The GX drive has a powerful set of I/O parameters designed to match the most demanding applications. The drive is provided with a full range of analog and digital I/O, all fully configurable and scaleable. The GX power section provides 150% current for 60 secs, providing the user with a heavy duty overload. All this in a small, compact design.





** Ask your Benshaw representative about conduit kits for NEMA 1 package.*



Model Number	Motor Power		Current (FLA)		Dimensions (Inches)					Dimensions (mm)				
	HP	kW	Input	Output	W	W1	H	H1	D	W	W1	H	H1	D
GX2 208 - 230VAC 3 Phase ± 10%														
RSi001GX2	1	.75	5.9	5	2.76	2.58	5.04	4.69	5.12	70	65.5	128	119	130
RSi002GX2	2	1.5	9.3	8	3.94	3.76	5.04	4.72	5.12	100	95.5	128	120	130
RSi003GX2	3	2.2	13.9	12	5.51	5.20	5.04	4.74	6.10	140	132	128	120.5	155
RSi005GX2	5	4.0	18.6	16	5.51	5.20	5.04	4.74	6.10	140	132	128	120.5	155
GX4 380 - 460VAC 3 Phase ± 10%														
RSi001GX4	1	.75	2.9	2.5	2.76	2.58	5.04	4.69	5.12	70	65.5	128	119	130
RSi002GX4	2	1.5	4.6	4	3.94	3.76	5.04	4.72	5.12	100	95.5	128	120	130
RSi003GX4	3	2.2	7.0	6	5.51	5.20	5.04	4.74	6.10	140	132	128	120.5	155
RSi005GX4	5	4.0	9.3	8	5.51	5.20	5.04	4.74	6.10	140	132	128	120.5	155

Applications

Performance and Control for wide variety

Bigger Isn't Better

The RSi GX Series variable frequency drive is designed to satisfy all your needs at five horsepower and below.

Benshaw has soft starters and variable frequency drives that are capable of meeting demands in the following industries:

- ☑ Pumps
- ☑ Fans
- ☑ Conveyors
- ☑ Crushers
- ☑ Cooling Towers
- ☑ Chillers
- ☑ Marine Applications
- ☑ Aggregate
- ☑ Agitators
- ☑ Lumber
- ☑ Mixers
- ☑ Textile / Pulp and Paper
- ☑ Automation
- ☑ Extruders
- ☑ Centrifuges
- ☑ Material Handling
- ☑ Blowers
- ☑ Commercial Laundry
- ☑ Packaging Equipment
- ☑ YOURS!

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