BENSHAW®
ADVANCED CONTROLS & DRIVES
*A member of UNICO Technologies Group*

# Benshaw PowerPro™ Drive Series

*Single AC Drives*
*0.5 HP to 700 HP @ 460 V*
*110% Overload and 150% Overload Capabilities*
*Dedicated Fan and Pump Drive and Heavy-Duty Multi-Purpose Vector Control Drive*

Variable Frequency Drives

# Benshaw PowerPro™ Drive Series Multi-Purpose Vector Control Drives

## The next generation in multi-purpose VFD technology.

The Benshaw PowerPro™ High Performance Single AC Drive is a multi-purpose and high-performance current vector AC drive. It is mainly used for controlling and adjusting the speed and torque of three-phase AC asynchronous motors.

Using high-performance vector control technology, the Benshaw PowerPro™ High Performance Single AC Drive features high torque output at a low speed, excellent dynamic characteristics and superior overload capability. It provides user-programmable features and PC monitoring software, and it supports multiple encoder types, delivering rich and powerful combined functions and stable performance. It can be used to drive textile, papermaking, drawing, machine tools, packaging, food, fans, water pumps and other automated production equipment.


### Features

- Wide power range — 0.5 HP to 600 HP @ 460 V
- Compact design — high power density
- Modular construction
- Roll-in inverters for easier installation/service — 250 HP to 600 HP
- Flange mounting for better thermal management — Up to 200 HP
- Supports induction motors and PMAC permanent magnet motors
- Long design life ≥ 80,000 hours; all PCBs conformal coated
- Superior control technology — open loop, closed loop, SVC and FVC
- High accuracy torque and current control
- High starting torque — 150% SVC, 180% FVC
- Auto torque boost for tough applications
- Supports Modbus, Profibus, CAN Open
- UL, cUL, CE Listed
- Easy programming and auto-tune for quick commissioning
- Built-in dynamic brake IGBT — Up to 100 HP
- Built-in DC link reactor compliant with EN61800-3 — 40 HP to 600 HP

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# Benshaw PowerPro™ Drive Series Fan and Pump Drives


## The newest Benshaw fan and pump VFD.

The Benshaw PowerPro™ Fan and Pump Single AC Drive is a dedicated fan and pump drive for diverse variable torque applications such as fans, pumps, blowers and centrifugal compressors. A variable torque application is when the required torque is less at lower motor speeds but greater at higher speeds. A typical variable torque load is proportional to the square of the speed (e.g. fans). When the speed is reduced by ½, the required torque is reduced by ¼ — thus reducing the energy consumed by the load. The drive supports V/F operations with 110% and 150% overloads for 60 seconds and is used primarily for speed control of three-phase AC asynchronous motors. Using high-performance V/F control technology, the Benshaw PowerPro™ Fan and Pump AC Drive delivers excellent dynamic characteristics and superior overload capability. It provides user-programmable features and PC monitoring software, and it supports multiple field buses for communication.

## Features

- Wide power range — 0.5 HP to 700 HP @ 460 V
- Compact design — high power density
- Modular construction
- Roll-in inverters for easier installation/service — 250 HP to 700 HP
- Flange mounting for better thermal management — Up to 250 HP
- Long design life ≥ 80,000 hours; all PCBs conformal coated
- Accurate speed control
- Auto torque boost for tough applications
- Supports Modbus, Profibus, CAN Open
- UL, cUL, CE Listed
- Easy programming and auto-tune for quick commissioning
- Built-in dynamic brake IGBT — Standard up to 25 HP; Optional 30 HP to 125 HP
- Built-in DC link reactor compliant with EN61800-3 — 50 HP to 700 HP

# Benshaw PowerPro™ Drive Series

*High Performance Single AC Drive Controller Option Cards*

### Main control board

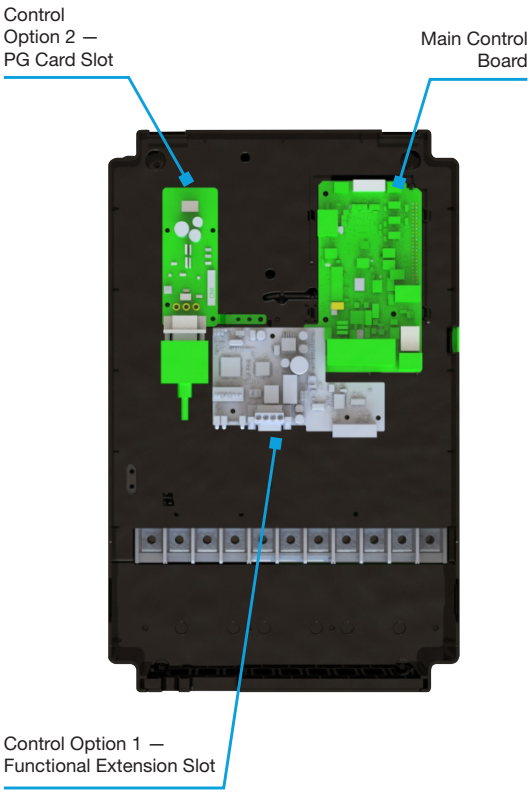
- 2 Analog inputs
- 5 Digital inputs
- 1 Analog output
- 1 Digital output
- 1 Relay

### Function Extension (Optional)

- IO Card 1: 5 DI, 1 AI, 1 DO, 1 AO, 1 relay, Modbus (only for frame sizes T4 and above)
- IO Card 2: 3 DI
- Field Bus: Modbus
- Field Bus: Profibus (only for frame sizes T4 and above)
- Field Bus: CAN Open
- User-Programmable PLC Card: I/O - 5 DI, 1 AI, 1 AO, 2 Relay, Modbus (only for frame sizes T4 and above)

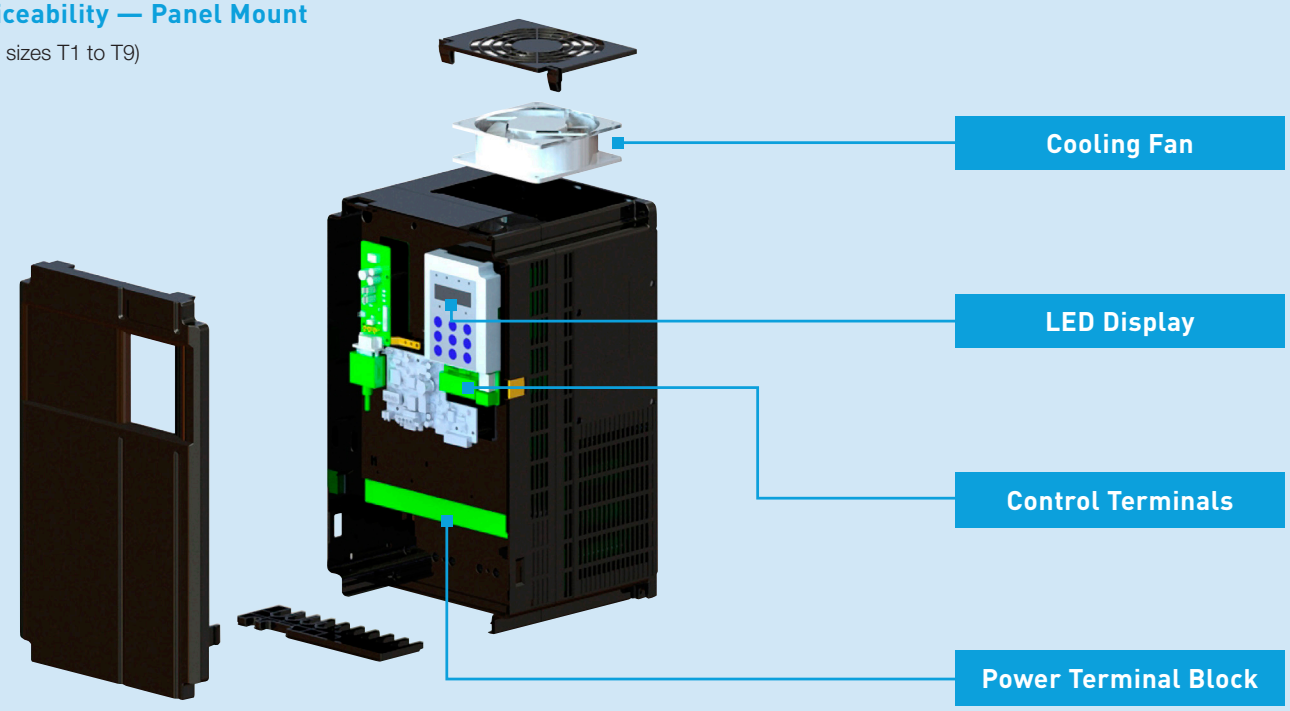
### PG Card (Optional)

- Differential encoder interface card
- Resolver interface card
- Open-collector encoder interface card
- Open-collector encoder interface card with frequency dividing
- Differential encoder interface card
- Differential encoder interface card with frequency dividing
- Multifunctional encoder card




### Modular Design for Easy Serviceability — Panel Mount

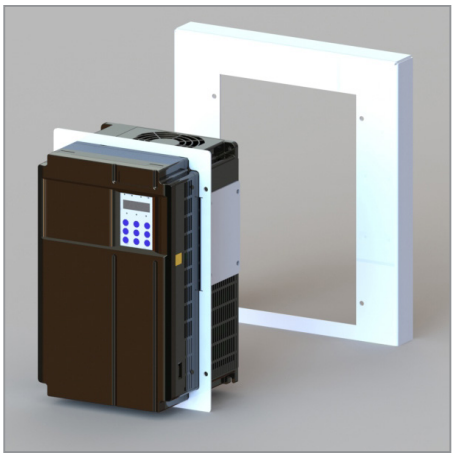
(Frame sizes T1 to T9)



## Roll-in Inverters >250 HP for Easy Serviceability

## Flange Mounting <200 HP for Better Thermal Management

With these flange kits, the drive can be mounted with the heat sink outside of the enclosure. This reduces the heat dissipated within the enclosure. With the reduced air temperature, the enclosure can be smaller and the need for cooling of the enclosure is reduced or even eliminated.

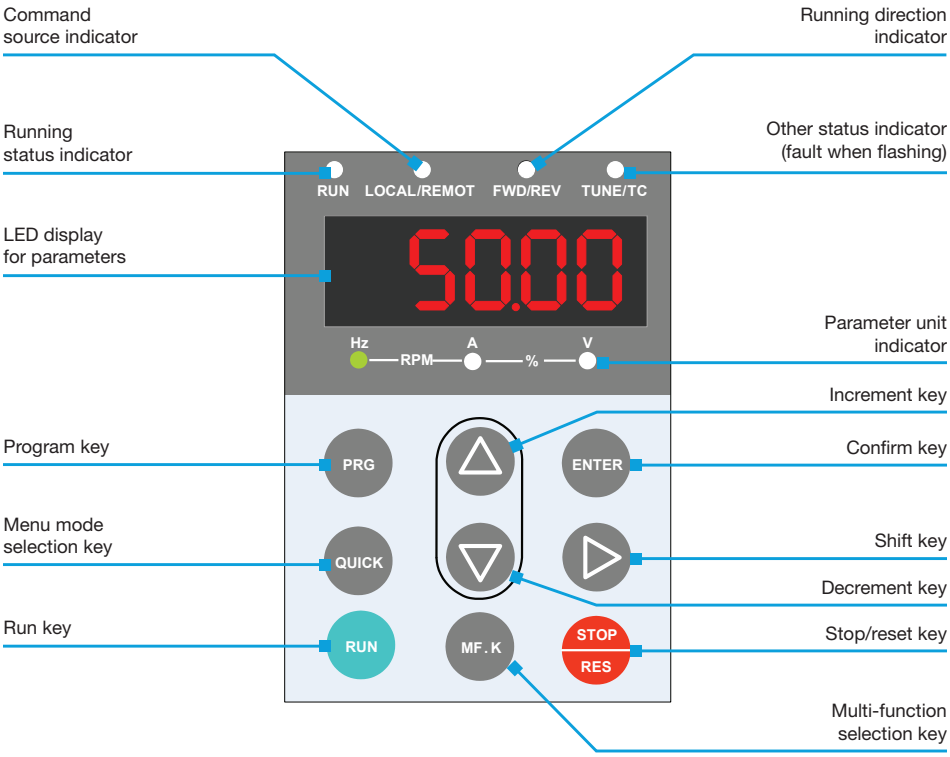


# Benshaw PowerPro™ Drive Series

## *Standard Keypad*

### Features

- Standard LED display
- Multiple status LEDs
- Programmable multi-function key
- Hand run/stop keys
- Quick access key

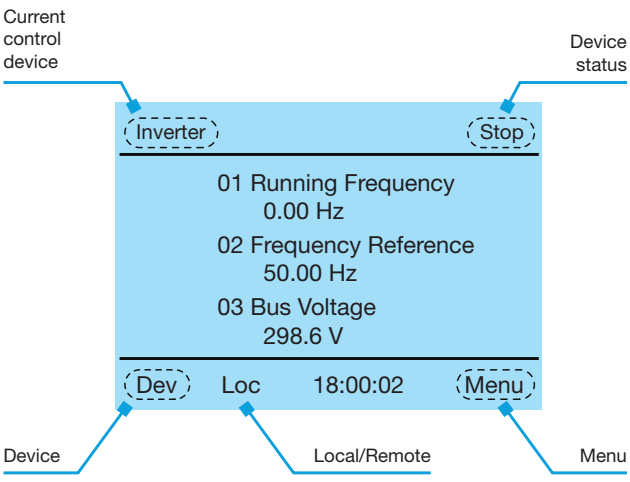



Standard keypad also available as a remote mountable keypad.

## *External Keypad*

### Features

- External keypad using RJ45 connector with cable up to 3m length
- LCD screen with bright backlight
- USB port for mass storage
- Real-time clock
- Status LED
- Optional cradle for door installation
- Wide temperature range: -20°C to 55°C
- Allows parameter storing/transfer
- Shortcut to favorite parameters
- Supervisory/restricted access

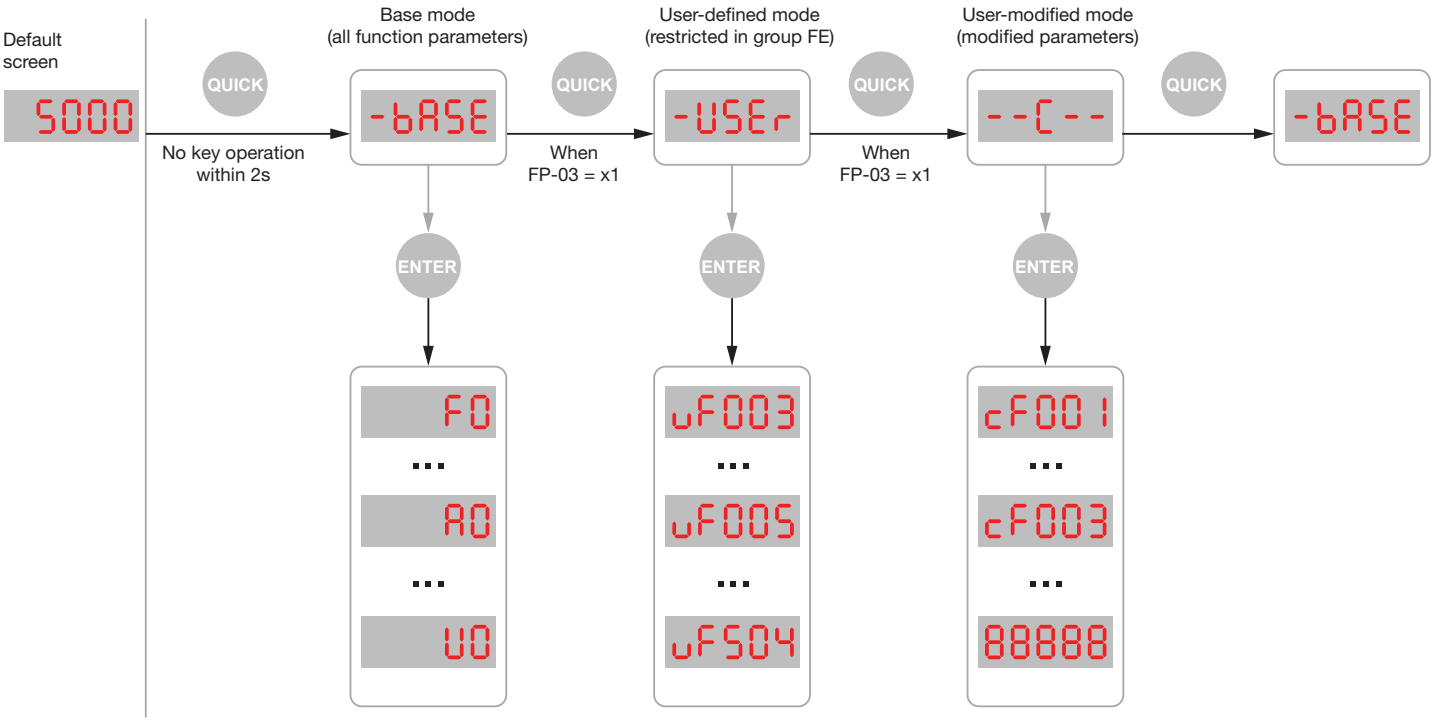



## Easy Parameter Structure

### Features

- Easy-to-use structure
- Logically grouped parameters
- User-configurable parameter settings
- Quick commission step-through sequence
- Detailed diagnostic parameter set
- Application macros
  - Pump applications
  - Fan applications
  - Conveyor applications
  - User-defined


| Function Code Group | Description | Standard Function Parameters |
|---|---|---|
| F0 to FP | Standard Function Code Group | Standard Function Parameters |
| A0 to AC | Advanced Function Code Group | AI/AO Correction |
| U0 to U3 | RUNNING Status Function Code Group | Display of Basic Parameters |



# Benshaw PowerPro™ Drive Series

*Global Monitoring and Control (GMC®)*

## IIOT Ready — Delivering Actual Value

### Varied Communication

- Ethernet
- Serial communication
- Cell modem
- Satellite modems

### Multiple Access Tools

- Web portal
- iPhone app
- Android app

### Rich Data Collection

- Any parameter authorized by user
- Lifetime archive

### Increased Productivity

- Real-time access to multiple VFDs
- Minimize travel
- Automated reports
- Remote diagnostics

### Minimize Downtime

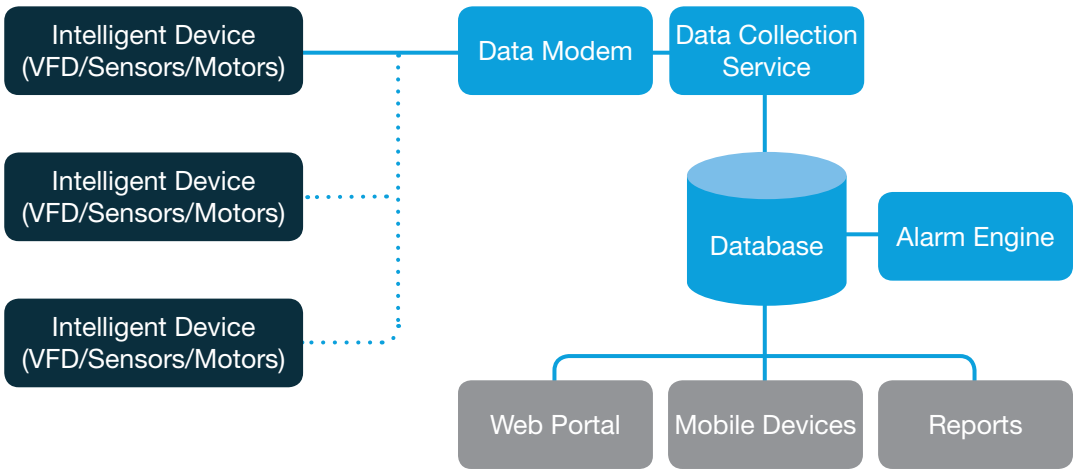
- Monitor device health
- Monitor process health
- Alarm notification via email, text, phone

### Streamlined Maintenance

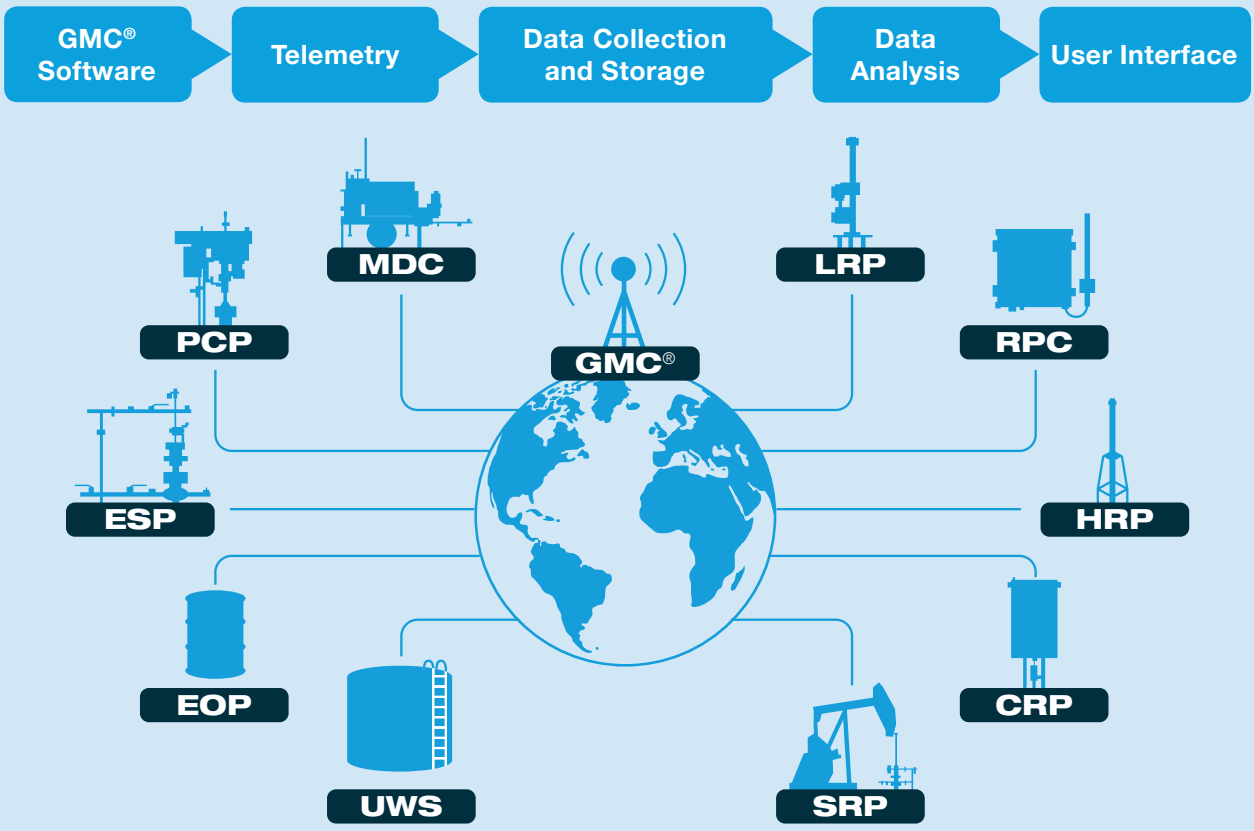
- Predictive maintenance
- Proactive service
- Archived setups

# Global Monitoring and Control (GMC®)

## GMC® Architecture




## GMC® System



# Benshaw PowerPro™ Drive Series Multi-Purpose Vector Control Drives

## *Specifications*

| **Power Specification** | |
|---|---|
| Input Voltage | Three-phase 380 to 480 V (-15% to 10%) |
| Input Frequency | 50/60 Hz (±5%) |
| Power Rating | 0.5 HP–600 HP |
| Current Rating | 1.5 A–809 A |
| Motor Voltage | Three-phase 380 to 480 V (proportional to input voltage) |
| Output Frequency | 0–500 Hz (resolution of 0.01 Hz) |
| Overload Capability | 150% for 60s (130% for 60s for 600 HP model) |
| Braking Torque | 125% Braking torque for 10s |
| **Control Features** | |
| Motor Type | Induction motor/permanent magnet motor |
| Carrier Frequency | 0.8 kHz to 8 kHz |
| Control Mode | Sensorless vector control (SVC), flux (closed loop) vector control (FVC), voltage/frequency (V/F) control |
| V/F Curve | Straight-line V/F curve, multi-point V/F curve, squared curve, complete V/F separation, half V/F separation |
| Speed stability accuracy | ±0.5% (SVC), ±0.02% (FVC) |
| Torque control accuracy | ±3% (FVC); ±5% for 5 Hz above (SVC) |
| Start-up Torque | 0.25 Hz/150% (SVC) 0 Hz/180% (FVC) |
| Torque boost | Customized boost 0.1% to 30.0% |
| Ramp Mode | Linear ramp, S-curve ramp, four separate acceleration/deceleration time settings in the range of 0.0s to 6500.0s |
| Jog | Frequency range of jog running: 0.00 to max. frequency<br>Acceleration/deceleration time of jog running: 0.0s to 6500.0s |
| Running Command | Allows different methods of switching between running commands: Operating panel (keypad and display); terminal I/O control; and serial communication |
| Speed Reference Command | Supports up to 10 frequency reference settings and allows different methods of switching between frequency reference setting channels:<br>Digital setting<br>Analog voltage reference<br>Analog current reference<br>Pulse reference<br>Communication reference |
| Onboard Multiple Preset Speeds | 16 speeds by using simple PLC function or by using digital input signals |
| Onboard PID | The system implements PID function in the closed-loop control |
| Automatic Voltage Regulation (AVR) | The system maintains a constant output voltage automatically when the grid voltage changes through the permissible range. |
| Torque Limit and Control | Limit torque and current in vector control |
| Power Dip Ride-Through | Load inertia used to power through intermittent voltage drops |
| Dual Motor Parameter Setup | Two motor parameter setup for control of two motors |
| DC Injection Braking | DC injection braking frequency: 0 Hz to max. frequency; DC injection braking active time: 0.0s to 36.0s; current level of DC injection braking: 0.0% to 100.0% |
| Input Terminals | **Standard:**<br>5 DI terminals, one of which supports up to 100 kHz high-speed pulse inputs<br>2 AI terminals, one of which supports 0 to 10 V input, and the other supports 0 to 10 V and 0 to 20 mA current input<br>**Extended IO Option:**<br>5 DI, 1AI that supports -10 to 10 V voltage input and PT100/PT1000 motor temperature sensor inputs |

| **Control Features (continued)** | |
|---|---|
| Output Terminals | **Standard:** |
| | 1 high-speed pulse output terminal (open-collector) for a square wave signal output frequency range 0 to 100 kHz |
| | 1 DO, 1AO that supports either a current output in the range 0 to 20 mA or a voltage output in the range 0 to 10 V, 1 relay |
| | **Extended IO Option:** |
| | 1 DO, 1 AO that supports either a current output in the range 0 to 20 mA or a voltage output in the range 0 to 10 V, 1 relay |
| Field Bus Options | Modbus, PROFIBUS-DP, CANlink and CANopen |
| Motor Encoders | 5 different encoder types: Differential encoder, open-collector encoder and resolver |
| User-Programmable Processor | The optional programming card supports secondary development in a programming environment compatible with a programmable logic controller (PLC) |
| Display | LED and remote LCD display |
| | Upload/download parameters |
| | Partial and complete locking of keys |
| **Protections** | |
| Input Protections | Phase loss |
| | Over voltage |
| | Under voltage |
| Output Protections | Overcurrent |
| | Over temperature |
| | Overload |
| | Brake unit protection |
| | Short circuit |
| | Ground fault |
| | Overvoltage and overcurrent stall protection |
| | Motor temperature protection |
| **Mounting** | |
| Enclosure Option | IP20 from 0.5 HP to 50 HP (NEMA 1 with a kit), NEMA 1 standard 60 HP to 200 HP, chassis greater than 250 HP |
| Flange Mounting | <200 HP |
| Roll-in Inverters | >200 HP |
| **Environmental** | |
| Location | Install the AC drive where it is indoors and protected from direct sunlight, dust, corrosive or combustible gases, oil smoke, vapor, ingress from water or any other liquid, and salt |
| Elevation | 1000m without derating (de-rating by 1% per 100m increase, max. 3000m) |
| Ambient Temperature | -10°C to +40°C. If the ambient temperature is not in this range, de-rating by 1.5% per 1°C increase; max. temperature: 50°C |
| Humidity | Less than 95% RH non-condensing |
| Vibration | Less than 5.9 m/s² (0.6 G) |
| Storage Temperature | -20°C to +60°C |

# Benshaw PowerPro™ Drive Series Fan and Pump Drives

*Specifications*

| | |
|---|---|
| **Power Specification** | |
| Input Voltage | Three-phase 380 to 480 V (-15% to 10%) |
| Input Frequency | 50/60 Hz (±5%) |
| Power Rating | 0.5 HP–700 HP |
| Current Rating | 1.5 A–868 A |
| Motor Voltage | Three-phase 380 to 480 V (proportional to input voltage) |
| Output Frequency | 0–500 Hz (resolution of 0.01 Hz) |
| Overload Capability | 110%/150% for 60s/5mins |
| Braking Torque | 125% Braking torque for 10s |
| **Control Features** | |
| Motor Type | Induction motor |
| Carrier Frequency | 0.8 kHz to 8 kHz |
| Control Mode | Voltage/frequency (V/F) control |
| V/F Curve | Straight-line V/F curve, multi-point V/F curve, squared curve, complete V/F separation, half V/F separation |
| Torque Boost | Customized boost 0.1% to 30.0% |
| Ramp Mode | Linear ramp, S-curve ramp, four separate acceleration/deceleration time settings in the range of 0.0s to 6500.0s |
| Jog | Frequency range of jog running: 0.00 to max. frequency<br>Acceleration/deceleration time of jog running: 0.0s to 6500.0s |
| Running Command | Allows different methods of switching between running commands: Operating panel (keypad and display); terminal I/O control; and serial communication |
| Speed Reference Command | Supports up to 10 frequency reference settings and allows different methods of switching between frequency reference setting channels:<br>Digital setting<br>Analog voltage reference<br>Analog current reference<br>Pulse reference<br>Communication reference |
| Onboard Multiple Preset Speeds | 16 speeds by using simple PLC function or by using digital input signals |
| Onboard PID | The system implements PID function in the closed-loop control |
| Automatic Voltage Regulation (AVR) | The system maintains a constant output voltage automatically when the grid voltage changes through the permissible range |
| Power Dip Ride-Through | Load inertia used to power through intermittent voltage drops |
| Dual Motor Parameter Setup | Two motor parameter setup for control of two motors |
| DC Injection Braking | DC injection braking frequency: 0 Hz to max. frequency; DC injection braking active time: 0.0s to 36.0s; current level of DC injection braking: 0.0% to 100.0% |
| Input Terminals | **Standard:**<br>5 DI terminals, one of which supports up to 100 kHz high-speed pulse inputs<br>2 AI terminals, one of which supports 0 to 10 V input, and the other supports 0 to 10 V and 0 to 20 mA current input<br>**Extended IO Option:**<br>5 DI, 1AI that supports -10 to 10 V voltage input and PT100/PT1000 motor temperature sensor inputs |

| | |
|---|---|
| **Control Features (continued)** | |
| Output Terminals | **Standard:**<br>1 high-speed pulse output terminal (open-collector) for a square wave signal output frequency range 0 to 100 kHz<br>1 DO, 1AO that supports either a current output in the range 0 to 20 mA or a voltage output in the range 0 to 10 V, 1 relay<br>**Extended IO Option:**<br>1 DO, 1 AO that supports either a current output in the range 0 to 20 mA or a voltage output in the range 0 to 10 V, 1 relay |
| Field Bus Options | Modbus, PROFIBUS-DP, CANlink and CANopen |
| User-Programmable Processor | The optional programming card supports secondary development in a programming environment compatible with programmable logic controller (PLC) |
| Display | LED and remote LCD display<br>Upload/download parameters<br>Partial and complete locking of keys |
| **Protections** | |
| Input Protections | Phase loss |
| | Over voltage |
| | Under voltage |
| Output Protections | Overcurrent |
| | Over temperature |
| | Overload |
| | Brake unit protection |
| | Short circuit |
| | Ground fault |
| | Overvoltage and overcurrent stall protection |
| | Motor temperature protection |
| **Mounting** | |
| Enclosure Option | IP20 from 0.5 HP to 50 HP (NEMA 1 with a kit), NEMA 1 standard 60 HP to 200 HP, chassis greater than 250 HP |
| Flange Mounting | <200 HP |
| Roll-in Inverters | >200 HP |
| **Environmental** | |
| Location | Install the AC drive where it is indoors and protected from direct sunlight, dust, corrosive or combustible gases, oil smoke, vapor, ingress from water or any other liquid, and salt |
| Elevation | 1000m without derating (de-rating by 1% for per 100 m increase Max. 3000 m) |
| Ambient Temperature | -10°C to +40°C. If the ambient temperature is not in this range, de-rating by 1.5% per 1°C increase; max. temperature: 50°C |
| Humidity | Less than 95% RH non-condensing |
| Vibration | Less than 5.9 m/s² (0.6 G) |
| Storage Temperature | -20°C to +60°C |

# Benshaw PowerPro™ Drive Series

*High Performance Single AC Drive Part Number Assembler*

**RSI - PPVC - 0125 - 4 - 3 - X - IP00 - IM**

**Prefix**

Ready Start Inverter

**Series**

PPVC = Constant Torque/Heavy Duty (multi-purpose drives)

PPFP = Variable Torque/Standard Duty (fan and pump drives)

| Power Size | HP | Power Size | HP |
|---|---|---|---|
| 00H5 | ½ | 0060 | 60 |
| 0001 | 1 | 0075 | 75 |
| 01H5 | 1½ | 0100 | 100 |
| 0002 | 2 | 0125 | 125 |
| 0003 | 3 | 0150 | 150 |
| 0005 | 5 | 0200 | 200 |
| 07H5 | 7½ | 0250 | 250 |
| 0010 | 10 | 0300 | 300 |
| 0015 | 15 | 0350 | 350 |
| 0020 | 20 | 0400 | 400 |
| 0025 | 25 | 0450 | 450 |
| 0030 | 30 | 0500 | 500 |
| 0040 | 40 | 0600 | 600 |
| 0050 | 50 | 0700 | 700 |

**Voltage Level**

4 = 460 Volt

**Voltage Phase**

3 = Three-phase

**Brake**

X = No Dynamic Brake

B = Dynamic Brake

**Drive Enclosure**

IP00 = Chassis

IP20 = Open Chassis

XN01 = NEMA 1

**Motor Type**

IM = Induction Motor

PM = Permanent Magnet Motor

## *High Performance Single AC Drives*

### 460 V — Variable Torque/Standard Duty (PPFP fan and pump drives)

| | | Light Duty (LD) 110% @ 60s | | | | Heavy Duty (HD) 150% @ 60s | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model Number | Frame Size | KW | HP | Rated Current (A) @ 440 V | Rated Current (A) @ 460 V | KW | HP | Rated Current (A) @ 440 V | Rated Current (A) @ 460 V |
| RSI-PPFP-0001-4-3-B-IP20-IM | T1 | 0.7 | 1 | 2.1 | 2.1 | 0.4 | 0.5 | 1.5 | 1.5 |
| RSI-PPFP-01H5-4-3-B-IP20-IM | T1 | 1.1 | 1.5 | 3.1 | 3.1 | 0.7 | 1 | 2.1 | 2.1 |
| RSI-PPFP-0002-4-3-B-IP20-IM | T1 | 1.5 | 2 | 3.8 | 3.7 | 1.1 | 1.5 | 3.1 | 3.1 |
| RSI-PPFP-0003-4-3-B-IP20-IM | T1 | 2.2 | 3 | 5.1 | 5.0 | 1.5 | 2 | 3.8 | 3.7 |
| RSI-PPFP-0005-4-3-B-IP20-IM | T1 | 3.7 | 5 | 9 | 8.9 | 3 | 4 | 7.2 | 7.1 |
| RSI-PPFP-07H5-4-3-B-IP20-IM | T2 | 5.5 | 7.5 | 13 | 12.8 | 3.7 | 5 | 9 | 8.9 |
| RSI-PPFP-0010-4-3-B-IP20-IM | T2 | 7.5 | 10 | 17 | 16.8 | 5.5 | 7.5 | 13 | 12.8 |
| RSI-PPFP-0015-4-3-B-IP20-IM | T3 | 11 | 15 | 25 | 24.7 | 7.5 | 10 | 17 | 16.8 |
| RSI-PPFP-0020-4-3-B-IP20-IM | T3 | 15 | 20 | 32 | 31.6 | 11 | 15 | 25 | 24.7 |
| RSI-PPFP-0025-4-3-B-IP20-IM | T4 | 18.5 | 25 | 37 | 36.5 | 15 | 20 | 32 | 31.6 |
| RSI-PPFP-0030-4-3-B-IP20-IM | T5 | 22 | 30 | 45 | 44.4 | 18.5 | 25 | 37 | 36.5 |
| RSI-PPFP-0040-4-3-B-IP20-IM | T5 | 30 | 40 | 60 | 59.2 | 22 | 30 | 45 | 44.4 |
| RSI-PPFP-0050-4-3-B-IP20-IM | T6 | 37 | 50 | 75 | 74.0 | 30 | 40 | 60 | 59.2 |
| RSI-PPFP-0060-4-3-B-IP20-IM | T6 | 45 | 60 | 91 | 89.8 | 37 | 50 | 75 | 74.0 |
| RSI-PPFP-0075-4-3-B-XN01-IM | T7 | 55 | 75 | 112 | 110.5 | 45 | 60 | 91 | 89.8 |
| RSI-PPFP-0100-4-3-B-XN01-IM | T7 | 75 | 100 | 150 | 148.0 | 55 | 75 | 112 | 110.5 |
| RSI-PPFP-0125-4-3-B-XN01-IM | T8 | 90 | 125 | 176 | 173.6 | 75 | 100 | 150 | 148.0 |
| RSI-PPFP-0150-4-3-X-XN01-IM | T8 | 110 | 150 | 210 | 207.1 | 90 | 125 | 176 | 173.6 |
| RSI-PPFP-0200-4-3-X-XN01-IM | T9 | 160 | 200 | 304 | 299.9 | 132 | 175 | 253 | 249.6 |
| RSI-PPFP-0250-4-3-X-IP00-IM | T9 | 200 | 250 | 377 | 371.9 | 160 | 200 | 304 | 299.9 |
| RSI-PPFP-0300-4-3-X-IP00-IM | T10 | 220 | 300 | 426 | 458.7 | 200 | 250 | 377 | 371.9 |
| RSI-PPFP-0350-4-3-X-IP00-IM | T10 | 250 | 350 | 465 | 512.9 | 220 | 300 | 426 | 420.2 |
| RSI-PPFP-0400-4-3-X-IP00-IM | T11 | 315 | 400 | 585 | 577.0 | 280 | 375 | 520 | 512.9 |
| RSI-PPFP-0450-4-3-X-IP00-IM | T11 | 355 | 450 | 650 | 641.2 | 315 | 400 | 585 | 577.0 |
| RSI-PPFP-0500-4-3-X-IP00-IM | T12 | 400 | 500 | 725 | 715.1 | 355 | 450 | 650 | 641.2 |
| RSI-PPFP-0600-4-3-X-IP00-IM | T12 | 450 | 600 | 820 | 808.8 | 400 | 500 | 725 | 715.1 |
| RSI-PPFP-0700-4-3-X-IP00-IM | T12 | 500 | 700 | 880 | 868.0 | 450 | 600 | 820 | 808.8 |

# Benshaw PowerPro™ Drive Series

*High Performance Single AC Drives*

### 460 V — Constant Torque/Heavy Duty (PPVC Multi-Purpose Drives)

| | | Heavy Duty (HD) 150% @60s | | | |
|---|---|---|---|---|---|
| Model Number | Frame Size | KW | HP | Rated Current (A) @ 380–440 V | Rated Current (A) @ 440–480 V |
| RSI-PPVC-00H5-4-3-B-IP20-IM | T1 | 0.4 | 0.5 | 1.5 | 1.5 |
| RSI-PPVC-0001-4-3-B-IP20-IM | T1 | 0.7 | 1 | 2.1 | 2.1 |
| RSI-PPVC-01H5-4-3-B-IP20-IM | T1 | 1.1 | 1.5 | 3.1 | 3.1 |
| RSI-PPVC-0002-4-3-B-IP20-IM | T1 | 1.5 | 2 | 3.8 | 3.7 |
| RSI-PPVC-0003-4-3-B-IP20-IM | T1 | 2.2 | 3 | 5.1 | 5.0 |
| RSI-PPVC-0005-4-3-B-IP20-IM | T2 | 3.7 | 5 | 9 | 8.9 |
| RSI-PPVC-07H5-4-3-B-IP20-IM | T2 | 5.5 | 7.5 | 13 | 12.8 |
| RSI-PPVC-0010-4-3-B-IP20-IM | T3 | 7.5 | 10 | 17 | 16.8 |
| RSI-PPVC-0015-4-3-B-IP20-IM | T3 | 11 | 15 | 25 | 24.7 |
| RSI-PPVC-0020-4-3-B-IP20-IM | T4 | 15 | 20 | 32 | 31.6 |
| RSI-PPVC-0025-4-3-B-IP20-IM | T5 | 18.5 | 25 | 37 | 36.5 |
| RSI-PPVC-0030-4-3-B-IP20-IM | T5 | 22 | 30 | 45 | 44.4 |
| RSI-PPVC-0040-4-3-B-IP20-IM | T6 | 30 | 40 | 60 | 59.2 |
| RSI-PPVC-0050-4-3-B-IP20-IM | T6 | 37 | 50 | 75 | 74.0 |
| RSI-PPVC-0060-4-3-B-XN01-IM | T7 | 45 | 60 | 91 | 89.8 |
| RSI-PPVC-0075-4-3-B-XN01-IM | T7 | 55 | 75 | 112 | 110.5 |
| RSI-PPVC-0100-4-3-B-XN01-IM | T8 | 75 | 100 | 150 | 148.0 |
| RSI-PPVC-0125-4-3-X-XN01-IM | T8 | 90 | 125 | 176 | 173.6 |
| RSI-PPVC-0150-4-3-X-XN01-IM | T8 | 110 | 150 | 210 | 207.1 |
| RSI-PPVC-0200-4-3-X-XN01-IM | T9 | 160 | 200 | 304 | 299.9 |
| RSI-PPVC-0250-4-3-X-IP00-IM | T10 | 200 | 250 | 377 | 371.9 |
| RSI-PPVC-0300-4-3-X-IP00-IM | T10 | 220 | 300 | 426 | 420.2 |
| RSI-PPVC-0350-4-3-X-IP00-IM | T11 | 250 | 350 | 465 | 458.7 |
| RSI-PPVC-0400-4-3-X-IP00-IM | T12 | 315 | 400 | 585 | 577.0 |
| RSI-PPVC-0450-4-3-X-IP00-IM | T12 | 355 | 450 | 650 | 641.2 |
| RSI-PPVC-0500-4-3-X-IP00-IM | T12 | 400 | 500 | 725 | 715.1 |
| RSI-PPVC-0600-4-3-X-IP00-IM | T12 | 450 | 600 | 820 | 808.8 |

Models listed above are for use with induction motor. For models used with permanent magnet motor, replace -IM suffix at the end of model number with -PM suffix.

# High Performance Single AC Drive Dimensions

## Mechanical Specs

| Frame Size | Enclosure | Integrated DB Brake | Integrated DC Link Choke | Height (in) | Width (in) | Depth (in) | Weight (lbs) |
|---|---|---|---|---|---|---|---|
| T1 | NEMA 1* | Yes | No | 7.9 | 5.1 | 6.0 | 3.5 |
| T2 | NEMA 1* | Yes | No | 7.9 | 5.1 | 6.4 | 4.4 |
| T3 | NEMA 1* | Yes | No | 9.8 | 5.5 | 6.7 | 7.3 |
| T4 | NEMA 1* | Yes | No | 11.0 | 7.1 | 6.7 | 9.5 |
| T5 | NEMA 1* | Yes* | No | 13.8 | 8.3 | 7.6 | 16.7 |
| T6 | NEMA 1* | Yes* | Yes | 15.7 | 9.8 | 8.7 | 38.5 |
| T7 | NEMA 1 | Yes* | Yes | 20.7 | 11.8 | 10.8 | 77.0 |
| T8 | NEMA 1 | Yes* | Yes | 21.8 | 13.3 | 12.4 | 113.3 |
| T8 | NEMA 1 | No | Yes | 21.8 | 13.3 | 12.4 | 113.3 |
| T9 | NEMA 1 | No | Yes | 34.4 | 15.7 | 12.6 | 187.0 |
| T10 | Chassis | No | Yes | 42.8 | 11.8 | 19.7 | 242.0 |
| T11 | Chassis | No | Yes | 49.1 | 13.0 | 21.5 | 341.0 |
| T12 | Chassis | No | Yes | 53.3 | 13.4 | 21.5 | 407.0 |

*NEMA 1: IP20 standard, NEMA 1 with accessory kit

*Yes: Brake IGBT is a configured option

# Benshaw PowerPro™ Drive Series

*High Performance Single AC Drive Option Cards and Accessories*

| Type | Model Number | Description |
|---|---|---|
| Remote Keypad Options | RSI-PPXX-AXRY-RMKP-LED | Remote LED Keypad, for parameter programming and monitoring |
| | RSI-PPXX-AXRY-RMKP-LCD | Remote LCD Keypad, for parameter programming and upload and download of parameters |
| | RSI-PPXX-AXRY-RMKP-MNT | Mounting Base for Remote Keypad for installation on cabinet door |
| I/O Option Cards | RSI-PPXX-AXRY-IOMOD-STD | IO Card, for all series, 3xDIP |
| | RSI-PPXX-AXRY-IOMOD-ADV | IO and Comms Card, for 5 HP and above, 5xDIP, 1DOP, 1 relay, 1 analog IP isolated for ±10 V or PT100 or PT1000 (jumper), CANlink or Modbus (jumper) |
| | RSI-PPXX-AXRY-IOMOD-PLC | PLC IO card, for 5 HP and above, 5xDIP, 2 relay, analog output, 1 analog IP isolated for ±10 V or ±20 mA or PT100 or PTC (jumper), isolated RS485 port |
| Communication Cards | RSI-PPXX-AXRY-COMM-CLNK | CANLink Bus Card, Supports only CANLink |
| | RSI-PPXX-AXRY-COMM-MDBS | RS485 Comms Card, Supports ModBus |
| | RSI-PPXX-AXRY-COMM-CNOP | CANOpen Bus Card, Supports only CANOpen |
| | RSI-PPXX-AXRY-COMM-PFBS | Profibus DP2 Bus Card, Supports Profibus DP2 and CANLink, for 5 HP and above |
| Encoder PG Cards* | RSI-PPXX-AXRY-ENPG-PG1 | PG Card, UVW, 5 V differential, no emulated output, 500 KHz, DB15 connector |
| | RSI-PPXX-AXRY-ENPG-PG2 | PG Card, 5 V differential encoder A+, A-, B+, B-, Z+, Z-, emulated output 1:1, 500 KHz, DB9 connector |
| | RSI-PPXX-AXRY-ENPG-PG3 | PG Card, 5 V open collector/differential encoder A+, A-, B+, B-, Z+, Z-, multi-emulated output, 100 kHz/500 kHz, terminal connect |
| | RSI-PPXX-AXRY-ENPG-PG4 | PG Card, 7 V rms,12 bit, no emulation output,10 KHz, DB9 connector |
| NEMA 1 Kits | RSI-PPXX-AXRY-NEMA1-T2 | NEMA 1 Kit for T1 and T2 |
| | RSI-PPXX-AXRY-NEMA1-T3 | NEMA 1 Kit for T3 |
| | RSI-PPXX-AXRY-NEMA1-T4 | NEMA 1 Kit for T4 |
| | RSI-PPXX-AXRY-NEMA1-T5 | NEMA 1 Kit for T5 |
| | RSI-PPXX-AXRY-NEMA1-T6 | NEMA 1 Kit for T6 |
| Flange Mounting Brackets | RSI-PPXX-AXRY-FLNG-FRA | Flange Mounting Bracket, frame A, for Frame T5 |
| | RSI-PPXX-AXRY-FLNG-FRB | Flange Mounting Bracket, frame B, for Frame T6 |
| | RSI-PPXX-AXRY-FLNG-FRC | Flange Mounting Bracket, frame C, for Frame T7 |
| | RSI-PPXX-AXRY-FLNG-FRD | Flange Mounting Bracket, frame D, for Frame T8 |
| | RSI-PPXX-AXRY-FLNG-FRE | Flange Mounting Bracket, frame E, for Frame T9 |
| | RSI-PPXX-AXRY-FLNG-FRF | Flange Mounting Bracket, frame F, for Frame T1 |
| | RSI-PPXX-AXRY-FLNG-FRG | Flange Mounting Bracket, frame G, for Frame T2 |
| | RSI-PPXX-AXRY-FLNG-FRH | Flange Mounting Bracket, frame H, for Frame T3 |
| | RSI-PPXX-AXRY-FLNG-FRI | Flange Mounting Bracket, frame I, for Frame T4 |
| Dynamic Braking Units | RSI-PPXX-AXRY-DBRK-0200 | Braking Unit, 200 A, 125% Brake Torque, 10% ED, max. 10 secs. |
| Cable Clamps | RSI-PPXX-AXRY-RAIL-T10_T12 | Guide Rails for Roll-In Drives — Frames T10 to T12 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T1 | Cable clamps for Frame T1 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T2 | Cable clamps for Frame T2 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T3 | Cable clamps for Frame T3 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T4 | Cable clamps for Frame T4 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T5 | Cable clamps for Frame T5 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T6 | Cable clamps for Frame T6 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T7 | Cable clamps for Frame T7 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T8 | Cable clamps for Frame T8 |
| | RSI-PPXX-AXRY-RAILCBLCLM-T9 | Cable clamps for Frame T9 |

* PPVC only.

# Notes

## Advanced Controls and Drives

- Full Voltage Controls
- Variable Frequency Drives
- Low Voltage Solid State Starters
- Medium Voltage Drives
- Medium Voltage Controls
- Medium Voltage Switchgear

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**BENSHAW Canada**

550 Bright Street East
Listowel, Ontario N4W 3W3

Phone: 519.291.5112
Fax: 519.291.2595
1-877-291-5112