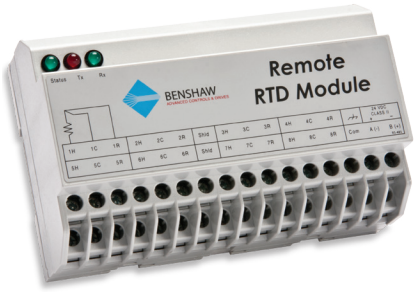
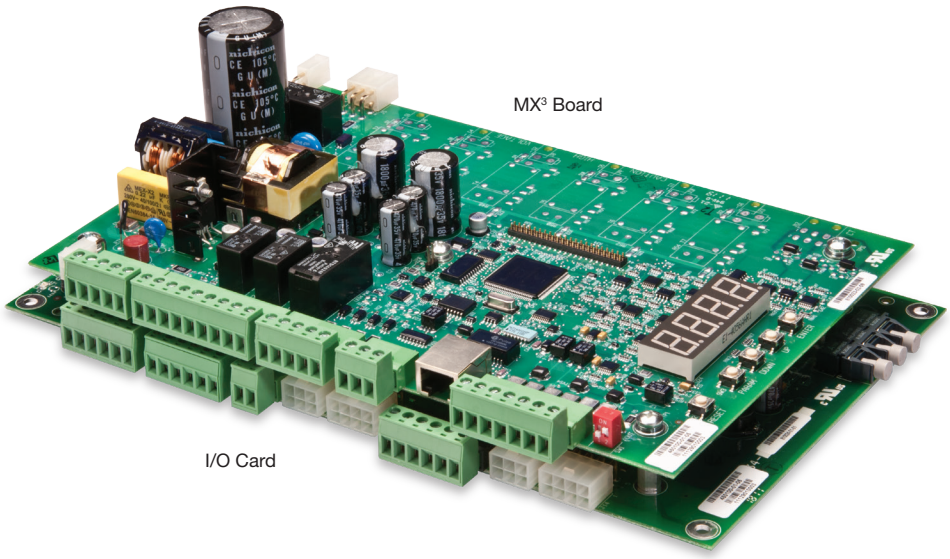
MX³ Control Technology

Next Generation Intelligent Motor Control



Optional RTD modules

Keypad (Included)



MX³ Board

I/O Card

MX³ Control Highlights

Benshaw's next generation MX³ technology propels low voltage motor control to even greater levels of performance and functionality. With its real-time clock, enhanced programming capabilities, ease of use and a unique, flexible architecture—Benshaw's MX³ controller delivers advanced motor control and protection with all of the rugged, dependable performance you've come to expect from a world leader in advanced controls and drives.

MX³ controllers, power components, software and sensors are all designed, built and tested to perform as an integrated control system, eliminating the coordination and performance problems inherent in other forms of reduced voltage starting.

Benshaw's next generation MX³ technology will shorten your commissioning times, improve motor performance and protection, enhance diagnostic capability and streamline electrical system monitoring and maintenance tasks.

Benshaw's MX³ control technology provides all MX² features, plus:

- 8 user configurable inputs
- 2 fixed inputs for start and bypass confirm
- 6 user configurable relay outputs
- 1 fixed output for bypass confirm
- Real-time clock
- Motor PTC input
- Zero Sequence Ground Fault
- RTD module support
- Full DC braking with add-on SCR
- Event log (99 events)
- Start per hour limiter
- Back spin timer
- Time between starts limiter
- Zero speed switch input
- Power outage ride through (PORT)
- Power factor trip
- Patented Cyclo™ control (0-40% speed)

MX³ Control Features

Multiple Starting Modes:

- Voltage ramp
- Current ramp
  - Adjustable initial current
  - Adjustable maximum current
  - Adjustable ramp time
- Torque ramp (TruTorque™)
  - Adjustable initial torque
  - Adjustable maximum torque
  - Adjustable ramp time
- Power ramp
  - Adjustable initial torque
  - Adjustable maximum torque
  - Adjustable ramp time
- Linear/tach feedback control
- Cyclo™ converter control

6 Relay Outputs Configurable to:

- Starter off
- Faulted fail safe and non fail safe
- Running
- Up to speed
- Alarm condition
- Ready condition
- Locked out
- Overcurrent trip
- Undercurrent trip
- OL alarm
- Shunt trip fail safe and non fail safe
- Ground fault
- Energy saver indication
- Heating indication
- Slow speed forward/reverse
- DC braking
- Cooling fan
- 1 fixed bypass

Motor Protection:

- Motor thermal overload
- Independent starting and running OL's
- Up to speed timer exceeded
- Low line voltage
- Low line frequency
- High line frequency
- Phase reversal
- Phase loss
- Instantaneous overcurrent
- Overcurrent
- Undercurrent
- Current imbalance
- Shorted SCR
- Disconnect fault
- Ground fault (residual or zero sequence)
- Inline contactor fault
- Control power low
- Stack over temperature
- Motor PTC input
- RTD modules

1 Analog 4 – 20 mA / 0 – 10 Vdc Input Configurable to:

- Trip high level
- Trip low level

1 Analog 4 – 20 mA / 0 – 10 Vdc Output Configurable to:

- Current (0–200%/0–800%)
- Voltage (0–150%)
- OL (0–150%)
- KW (0–10 KW/0–100 KW)
- MW (0–1 MW)
- Analog input (0–100%)
- Firing (0–100%)
- Calibration

Metering:

- ± 2% accuracy
- Average current
- L1 current
- L2 current
- L3 current
- Current imbalance %
- Ground fault amps/residual
- Average volts
- L1–L2 voltage
- L2–L3 voltage
- L3–L1 voltage
- Overload %
- Power factor
- Watts
- VA
- VARS
- KW hours
- MW hours
- Phase order
- Line frequency
- Analog input
- Analog output
- Run time — days
- Run time — hours
- # of starts
- TruTorque™ %
- Power %
- Peak starting current
- Last starting duration
- Real-time clock

User Interface:

- Standard board-mounted LED interface
- Optional remote mount LCD display
  - Set/examine operating parameters
  - View status information
  - View line current, voltage and frequency in real time
  - Start and stop the solid state starter

1 Communication Port Included:

- Modbus RTU / RS485

Optional with MXDE3:

- DeviceNet
- Ethernet
- Ethernet/IP
- Modbus TCP

6 Digital Inputs Configurable to:

- Stop
- Fault
- Fault reset
- Bypass/confirmation & inline
- OL reset
- Local/remote selection
- Heater enable
- Heater disable
- Dual ramp selection
- 1 dedicated start input
- 1 dedicated bypass

Advanced Functionality:

- Dual ramp selection
- Adjustable kick current
- Programmable decel modes
- LV BIST test (built-in self test)
- Event log (99 events)