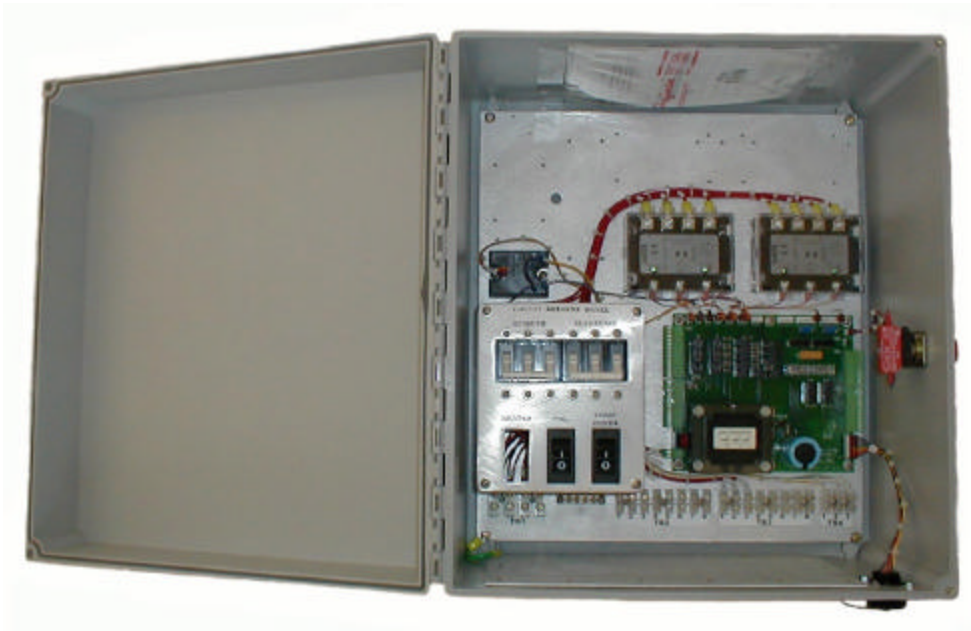




# MCU4

## Motor Control Unit



### MCU4 Motor Control Unit Overview

The MCU4 Motor Control Unit, developed by Bradshaw Communication Systems and shown above, provides motor control and limit switch monitoring for earth station antennas. The earth station antennas are most commonly steerable parabolic reflectors with two axes of motorized control and an optional motorized feed polarization axis. When combined with the ACU1 Antenna Control Unit, the MCU4 allows automatic tracking of satellites in geosynchronous earth orbit (including inclined orbits with proper options).

The MCU4 is an antenna mounted Solid State Relay (SSR) based unit responsible for single or dual speed control of the antenna motors in response to commands issued by either the ACU1 or the optional Handheld Controller. The unit is also responsible for handling antenna limit switch and emergency stop button logic, motor circuit protection, ACU1 / Handheld control logic, as well as providing fault and interlock status to the ACU1. Housed in a weatherproof enclosure, the MCU4 is designed to provide years of durability in its outdoor environment. The MCU4 uses solid state zero crossing technology for controlling axis motors providing for smooth operation and long relay life when compared to conventional reversing contactors.

The MCU4 is the ideal solution where low cost is required over variable speed. The MCU4, when combined with its optional handheld control unit, allows for control of local axes simultaneously whether an antenna control unit is implemented or not. This feature provides both redundancy of control and ease of use when local control for antenna maintenance is required.

The MCU4 has been designed to replace and upgrade obsolete ElectroSpace Systems 83MC-4 Motor Controllers. The entire 83MC-4 design has been preserved and upgraded in the MCU4, while maintaining pin for pin connectivity. This feature allows simple plug and play upgrades in existing systems where an 83MC-4 is currently used. Many advantages (in both installation costs and system down time) make the MCU4 the clear choice when drop in replacement is required. Independent motor protection breakers and relay based safety logic are forefront in the MCU4 design. The long established performance and reliability record of the ElectroSpace Systems 83MC-4 Motor Controller (that is fundamental in the design of the MCU4) provides the system operator with the high level of confidence needed in a new motor control unit from start-up to long term operation.

**BRADSHAW COMMUNICATION SYSTEMS**

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## MCU4 Motor Control Unit Specifications

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- **Antenna Control Unit Interface**
  - BCS ACU1 or Electrospace Systems 93C-23
- **Cable Entry**
  - Supplied with weatherproof cable gland plate.
- **Limit / Interlock Switch Inputs**
  - Azimuth CW & CCW - Normally Closed
  - Elevation Up & Down - Normally Closed
  - Polarization CW & CCW - Normally Closed
  - System Interlock - Normally Closed
  - Azimuth Axis Interlock - Normally Closed
  - Elevation Axis Interlock - Normally Closed
  - Polarization Axis Interlock - Normally Closed
- **Emergency Stop**
  - Large Red Mushroom Style Pushbutton Switch
  - Push To Stop - Pull To Reset
  - Reliable Relay Based Motor Power Removal
- **Physical**
  - Enclosure  
Wall Mounted Weatherproof NEMA 4X Light Gray Fiberglass Polyester Enclosure. Hinged Cover with Pad-Lockable Quick Release Latches.
  - Dimensions  
18" high x 16" wide x 10" deep  
(45.7cm high x 40.6cm wide x 25.4cm deep)
  - Weight  
26.5 LBS (12 Kg)
- **Approvals**
  - All MCU4 components designed to meet or exceed UL 508 requirements.
- **Environmental**
  - -40 °F to 122 °F, 100% humidity  
(-40 °C to +50 °C, 100% humidity)
- **Power Requirements**
  - P/N 02-01000-1  
MCU4 Single Speed AZ/EL 5HP Max. w/o Brake Control  
POL 1 Ø - 0.25HP Max.  
3 Ø, 208-380 VAC+/-10%, 50/60Hz+/-5%, 55A Max
  - P/N 02-01000-2  
MCU4 Dual Speed AZ/EL 5HP Max. w/o Brake Control  
POL 1 Ø - 0.25HP Max.  
3 Ø, 208-380 VAC+/-10%, 50/60Hz+/-5%, 55A Max
  - P/N 02-01000-3  
MCU4 Single Speed AZ/EL 5HP Max. w/Brake Control  
POL 1 Ø - 0.25HP Max.  
3 Ø, 208-380 VAC+/-10%, 50/60Hz+/-5%, 55A Max
  - P/N 02-01000-4  
MCU4 Dual Speed AZ/EL 5HP Max. w/Brake Control  
POL 1 Ø - 0.25HP Max.  
3 Ø, 208-380 VAC+/-10%, 50/60Hz+/-5%, 55A Max

For an exact power analysis for your system requirements please contact Bradshaw Communication Systems directly.

To use the MCU4, the antenna AZ & EL axis velocities in degrees per second must be in the range of  $0.5/(D)(F)$  to  $1.5/(D)(F)$ , where "D" is reflector diameter in meters and "F" is receive frequency in gigahertz.

All MCU4 standard part numbers come with the following:

- External Mounted Emergency Stop Button
- External Handheld Controller Connector
- Removable & Replaceable Cable Entry Gland Plate

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## Conclusion

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With over 40 years of combined experience in the Satellite Communications Industry, Bradshaw Communication Systems (BCS) has the solution to get your job done right and on time. By providing extremely high quality products and services at economical prices, BCS has become a respected name in the industry and the right choice when it comes to satellite earth station antenna products and services. BCS has provided custom solutions for numerous customers and stands ready to provide components, systems, and services to best fit your specific requirements. Please contact BCS today regarding your requirements.

