



MCU3

Variable Speed Motor Control Unit



MCU3 Motor Control Unit Overview

The MCU3 Motor Control Unit, developed by Bradshaw Communication Systems and shown above, provides variable speed azimuth and elevation motor control as well as 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 MCU3 allows automatic tracking of satellites in geosynchronous earth orbit (including inclined orbits with proper options).

The MCU3 is an antenna mounted Variable Frequency Drive (VFD) based unit responsible for dual speed control of the antenna azimuth and elevation 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 an automatically heated weatherproof enclosure, the MCU3 is ideally suited for the outdoor environment.

The MCU3 provides adjustable and consistent axis motor speed (in both normal and slew speeds) as well as dynamic motor braking allowing for a more precise positioning and better overall tracking performance.

The MCU3 has been designed to replace and upgrade obsolete Electrospace Systems 83MC-4 and 83MC-5 Motor Controllers. The entire 83MC-4 and 83MC-5 interface has been preserved and combined in the MCU3, while maintaining pin for pin connectivity. This feature allows simple plug and play upgrades in existing systems where an 83MC-4 and/or 83MC-5 is currently used. Many advantages (in both installation costs and system down time) make the MCU3 the clear choice when a drop in replacement or upgrade is required. Independent motor protection breakers and relay based safety logic are forefront in the MCU3 design. The long established performance and reliability record of the Electrospace Systems motor controllers (that is fundamental in the design of the MCU3) 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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MCU3 Motor Control Unit Specifications

- **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
- **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**
33 LBS (15.0 Kg)
- **Approvals**
 - All MCU3 components designed to meet or exceed UL 508 requirements.
- **Environmental**
 - -40 °F to 122 °F, 100% humidity
(-40 °C to +50 °C, 100% humidity)
With internal automatic heater operational.
- **Power Requirements**
 - P/N 00-01000-1
MCU3 w/208V VFD AZ/EL 3 Ø - 3HP Max.
POL 1 Ø - 0.25HP Max.
3 Ø, 208 VAC+/-10%, 50/60Hz+/-5%, 35A Max.
OR
1 Ø, 230 VAC+/-10%, 50/60Hz+/-5%, 60A Max.
 - P/N 00-01000-2
MCU3 w/208V VFD AZ/EL 3 Ø - 5HP Max.
POL 1 Ø - 0.25HP Max.
3 Ø, 208 VAC+/-10%, 50/60Hz+/-5%, 53A Max.
 - P/N 00-01000-3
MCU3 w/380V VFD AZ/EL 3 Ø - 3HP Max.
POL 1 Ø - 0.25HP Max.
3 Ø, 380 VAC+/-10%, 50/60Hz+/-5%, 30A Max.
 - P/N 00-01000-4
MCU3 w/380V VFD AZ/EL 3 Ø - 5HP Max.
POL 1 Ø - 0.25HP Max.
3 Ø, 380 VAC+/-10%, 50/60Hz+/-5%, 43A Max.

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

All MCU3 standard part numbers come with the following:

- External Mounted Emergency Stop Button
- External Handheld Controller Connector
- Removable & Replaceable Cable Entry Gland Plate
- Adjustable VFD Drive Parameters
- Independently Adjustable Track & Slew Speeds

Conclusion

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.

