



MCU1

Motor Control Unit



MCU1 Motor Control Unit Overview

The MCU1 Motor Control Unit, developed by Bradshaw Communication Systems and shown above, provides high power 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 MCU1 allows automatic tracking of satellites in geosynchronous earth orbit (including inclined orbits with proper options). The MCU1 is provided with local simultaneous axes control (at the front panel) independent of an ACU1 being implemented or not. This feature provides both redundancy of control and ease of use when local control for antenna maintenance is required. A typical system configuration is shown in Figure 1 and details interconnection of the MCU1 with the other required system components that comprise a complete antenna control system.

The MCU1 Motor Control Unit has been developed to replace obsolete Electrospace Systems 83MC-4 Motor Controllers. The entire 83MC-4 design has been preserved in the MCU1, while maintaining the same user interface scheme and 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 MCU1 the clear choice when drop in replacement is required. Independent motor protection breakers and relay based safety logic are forefront in the MCU1 design. Packaged in a weatherproof NEMA 4X enclosure, the MCU1 is built to provide years of durability in its outdoor environment. The long established performance and reliability record of the Electrospace Systems 83MC-4 Motor Controller (that are fundamental in the MCU1) provide 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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MCU1 Motor Control Unit Specifications

- **Antenna Control Unit Interface**
 - BCS ACU1 or Electrospace Systems 93C-23
 - **Cable Entry**
 - Supplied with weatherproof cable glands
 - **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
 - **Environmental**
 - -40° F to 122°F, 100% humidity
(-40° C to +50° C, 100% humidity)
 - **Approvals**
 - All MCU1 components designed to meet or exceed UL 508 requirements.
 - **Physical**
 - Enclosure
Wall Mounted Weatherproof NEMA 4X White Painted Steel Enclosure. Pad-Lockable Hinged Cover with Screw Release Latches.
 - Dimensions
27" high x 24" wide x 9" deep
(68.6cm high x 61.0cm wide x 22.9cm deep)
 - Weight
50 LBS (23 Kg)
 - **Power Requirements**
 - Azimuth & Elevation Axes - 3HP *Max.
Polarization Axis - 1 Ø - 0.25HP Max.
3 Ø, 208-380 VAC+/-10%, 50/60Hz+/-5%, 5 Wire WYE
- "*" = Larger Motor Size capability Available.

Stainless Steel Enclosure Available Upon Request.

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

To use the MCU1, 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.

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.

