

MAINSTREAM ENGINEERING CORPORATION

60,000 Btu/hr Modular Environmental Control Unit (R-410A, R-290)



Mainstream's Modular Environmental Control Unit (MECU-410) and Hydrocarbon Modular Environmental Control Unit (MECU-290) are designed to provide cooling, heating, ventilation and NBC protection to the Tent Extendable Modular Personnel (TEMPER), Modular General Purpose Tent System (MGPTS) or CP EMEDS shelters.

A single MECU has sufficient capacity to provide thermal control to shelters as large as 1,000 square feet in ambient temperatures as high as 130°F or as low as -40°F. The MECU allows for air plenum configuration and installation without bends in the supply or return ducts. The unit has been designed to replace the FDECU, LECU and the IECU while providing better performance, reduced weight, improved power factor, simplified maintenance and increased reliability.

GSA Contract Number: GS-21F-0021W

P/N: MECU-60-410 5 Ton Modular Environmental Control Unit (w/R-410A Refrigerant)
P/N: MECU-60-290 5 Ton Modular Environmental Control Unit (w/R-290 Refrigerant)

- Designed for military environment
- Simple to operate; easy to maintain
- No training required for basic operation
- Remote provides control of unit from inside building or shelter
- Straightforward and intuitive control panel
- Wire harnesses are plug and play
- Continuous cyclical operation of 15,761 hours without critical failure
- Brazing/soldering not required during any maintenance procedure
- Large internal storage area for easy packing and shipping
- Plumbing runs terminated with O-Ring or RotaLock® fittings
- Designed for maintenance or repair with common tools from standard military tool kits
- Troubleshoot all electronics with multimeter
- Mean Time Between Failure (MTBF) rate of 5,000 hours
- Operational availability greater than 95 percent
- 20-year storage life without performance degradation
- Composite pallet eliminates corrosion or degradation in any environment



MECU/HECU Value-Added Features

Total Unit Modularity

Every component is modular, allowing plug and play replacement with common tools. No brazing, soldering or wire splicing is required.

Size and Weight

MECU is the same size but 32 percent lighter and 15 percent more efficient than the DoD standard FDECU.

Component Access and Component Storage

After disengaging the latches, the hinged top can be opened for full access to the condenser and evaporator sections. When the MECU is not operating, the empty space in the condenser section serves as a storage compartment for the flexible ducts, duct adapters, duct rings, power cable, remote cable, condensate drain hose, fan covers and duct covers. The large storage volume provides easy access to components for maintenance and repair while simplifying coil cleaning.

Watertight Electronics

The control box and wire harness connections are watertight to improve reliability and simplify cleaning. The entire unit can be hosed off to remove dirt and other contaminants.

Flexible Duct

The return and supply air passages are equipped with duct rings to attach the 5-foot-long, 16-inch-diameter flexible ducts provided with the unit. The MECU is compatible with the FDECU NBC adapter ring.

Manual Override

The MECU includes a manual override feature that bypasses the electronics should they fail. In manual override mode, all safety lockouts are maintained.

NBC Compliant

The MECU operates in NBC or non-NBC mode without any degradation in performance. The MECU is compatible with the same NBC hardening kit used with current FDECUs. Components required for mission-essential functions are hardened to ensure that NBC contaminants, decontaminates and standard decontaminating procedures do not degrade protection.

Compatibility with Filtration Units

The MECU can operate with either the FAA 400 filtration unit (400 cfm) or the M28 motor blower units (normally two are used, each providing 200 cfm). Three MS3474W14-S connectors each supply 110 VAC power to the external blowers. By using a combination of the connectors, 208 VAC three-phase power is also available.

Air Filter

Heavy duty aluminum air filter is provided with the MECU. This washable filter is treated with a filter-enhancing electrostatic coating to increase dust collection effectiveness.

MECU Specifications

Physical			
	Dimensions/Weight		Center of Gravity
Width	51.5 inches (130.8 cm)		27.4 inches
Depth	41.6 inches (105.6 cm)		25.0 inches
Height	31.6 inches (80.3 cm)		16.4 inches
Volume	39.2 ft ³ (1.1 m ³)		
Weight	MECU-410	660 lbs (299.4 kg)	
	MECU-290	653 lbs (296.2 kg)	
Electrical Power (208/230VAC, 50/60Hz.)	Cooling Mode (125°F Ambient)		Heating Mode (Electric Heat)
Power Requirements	13 kW		17.5 kW
Max. Running Amperage	40 Amps		45 Amps
Max. Inrush Current	200 Amps		80 Amps
Refrigerant	MECU-410		MECU-290
Refrigerant Type	R-410A		R-290
Refrigerant Capacity	12 lbs		5.5 lbs
Performance			
Cooling Capacity	60,000 Btu/hr @ 125°F d.b. ambient temperature with return temperature of 90°F d.b./75°F w.b.		
Heating Capacity	One-Stage 6 kW (Set-point <80°F and return air temp >70°F) Two-Stage 12 kW (Set-point >80°F or return air temp <70°F)		
Evaporator Blower Capacity	2,000 SCFM airflow at 3 inH ₂ O head pressure		