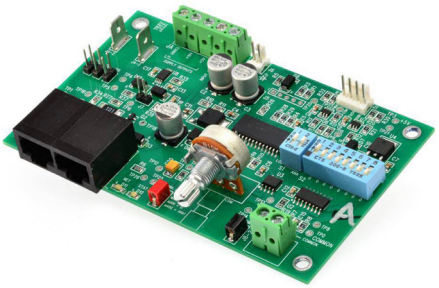
PRODUCT DATA SHEET

Universal Control Card Introduction

The ENVIRCO Universal Control Card is the main control option for electronically commutated motor (ECM) based fan filter units inlcuding the MAC 10® LEDC & IQ. The Universal Control Card allows for 0-10V remote control, on-board manual control, or network control through Modbus RTU. The Universal Control Card can also connect to an ENVIRCO Control Console with connections through a gateway for additional building management system (BMS) communications.



Typically the Universal Control Card (UCC) is powered inside the fan filter unit electrical box and fan filter units are daisy chained with CAT5 cabling. The UCC allows for speed control, RPM monitoring, and monitoring of the two analog inputs if used.

Features & Benefits

- Control interface for ECM based FFUs (MAC 10 IQ® and MAC 10® LEDC)
- Two-position DIP switch configuration sets communication mode, which can be implemented by one of the following:
  - Serial Modbus RTU protocol using balanced RS485 (9600,8,n,1) and supports networking by daisy chained input/output RJ45 connections
  - Analog 0-10V scalable control
  - Manual control using on-board potentiometer
- Supports daisy chained automatic board addressing or manual addressing using an eight position DIP switch
- Serial Modbus RTU control host supported by ENVIRCO controller consoles, which provide automatic speed control capability and other overall control utility functions
- Four-pin MTA100 header is connected to motor for control
- Board is powered by 24VAC input, which also provides three accessory DC outputs: 5V, 10V, and unregulated DC output
- Accessory DC output can support powering an optional pressure sensor for reading continuous plenum pressure
- Supports analog input for connection from an external sensor, and the sensor strike current value is readable through a control register
- Two test probe connections for measuring DC voltage, indicating motor RPM and % of motor torque
- LED diagnostics
  - On-board status green LED for on-board status notification; can be ON, OFF, or short flash
  - Support for external LED output. 5V maximum source and will sink 10mA. Provides remote status via two-pin MTA100. Same function as on-board status for external visibility
  - On-board red LED to indicate network traffic/communication status; can be ON, OFF or flickering

Mechanical & Thermal

- Open frame PCB with corner mounting
- Typically, the UCC2 is connected inside the control box, which is mounted and interconnected to the FFU
- Dimensions: 4.5” x 2.75” x 1.6” (114 x 69.85 x 40.65 mm)
- Operating temperature: 32-122°F (0-50°C)

Modbus Host (Master)

A Modbus network system requires a (single) compatible Modbus host. In most cases, this will be an ENVIRCO Console, but other Modbus devices can be used if configured correctly. Refer to the MAC 10 LEDC & IQ manual for more information.

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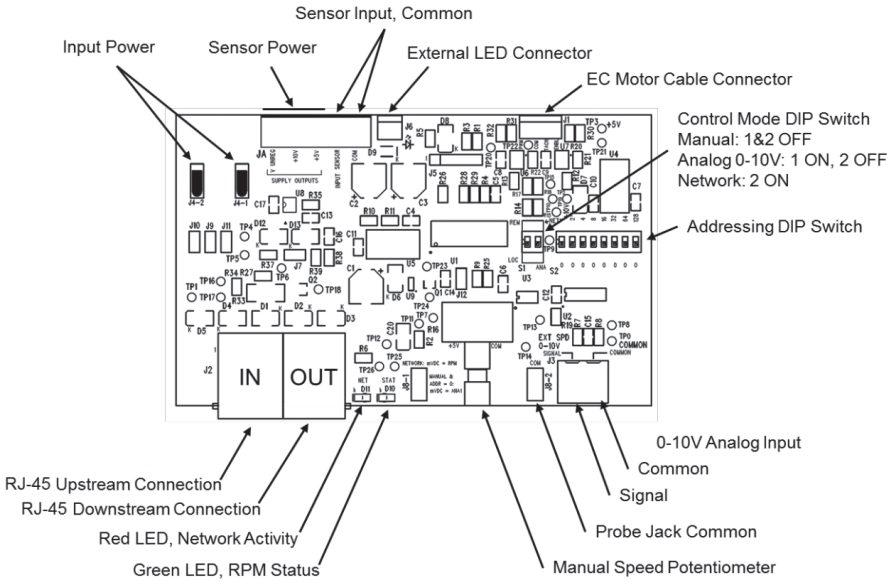
RJ45 Network Cable Connections

1	2	3	4	5	6	7	8
Bus Power Pass Through	0V (GND)	RS485				0V (GND)	Bus Power Pass Through
		+	NC	NC	-		

Modbus Register Specifications

Register	Name	R/W	Values	Default	Origin	Comments
1	RUN/STOP	R,W	0,1	1	RAM	read-only in analog
2	DEMAND SETPOINT	R,W	0-100	50	RAM	read-only in analog
6	SPEED/RPM	R	0,5-2000	-	LIVE	RPM feedback
7	ANALOG_INPUT_1	R	0-1000	-	LIVE	external 0-10V, analog input
8	MINIMUM SETPOINT	R,W	0-100	0	EEPROM	manual & analog only
9	RUNSTOP STATUS	R	0,2	-	RAM	2=Run; 0=Stop
10	NETWORK DEFAULT	R,W	0-100	50	EEPROM	applies in network mode only
12	ACTUAL SETPOINT	R	0-100	-	RAM	value same as Register 2
14	NETWORK RUN-STOP DEFAULT	R,W	0,1,0xAA	1	EEPROM	On startup, 0=Stop, 1=Run, 0XAA=Restart Factory Default
24	ANALOG_INPUT_2	R	0-1023	-	RAM	sensor input (SPSC if applicable)

Universal Control Card Layout



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