

## Standard Products

# ACT 8616 Triple Output 70 Watt Power Supply Module

## PRELIMINARY DATA SHEET

[www.aeroflex.com/POWER](http://www.aeroflex.com/POWER)

September 4, 2003



### Features

- ❑ -55°C to 85°C Mounting Rail Temperature
- ❑ 70W Power Output, +2.5V, +3.3V, +5V Outputs
- ❑ 28V Input Bus
- ❑ Internal EMI Suppression Circuitry designed to meet the requirements of MIL-STD-461E
- ❑ Short Circuit Protected
- ❑ Output Reset Signal
- ❑ Output Status Signal
- ❑ Packaging – Non-Hermetic COB in a 5.3L" x 6.8W" x 0.6H" housing with D connectors.



**Figure 1 – Package Illustration**

### General Description

Aeroflex's ACT8616 Power Supply Module is a Triple Output 70W unit designed to power the newest generation of 3.3V and 2.5V processors such as the ACT7000ASC-300 for advanced airborne applications used in platforms such as tactical missiles, airborne computers and fighter aircraft. The ACT8616 provides +2.5V at 11A, +3.3V at 10A for the processor and its core and +5V at 2A to operate peripheral logic.

The ACT8616 uses an interleaved forward topology with schottky rectifiers for high efficiency. The +5V output is the primary regulated output and secondary regulation is provided by magnetic amplifiers for the +2.5V and +3.3V outputs. All outputs are tied to a common return, with separate remote sensing provided for the +2.5V and +3.3V outputs and ground sense. No optocouplers are used in the primary feedback path to assure long term total dose hardness.

Internal EMI suppression circuitry is designed to meet the requirements of MIL-STD-461E. Holdup is provided for 10  $\mu$ S bus power dropouts. Reset signals are derived from the +2.5V and +3.3V outputs. When either the 2.5V output is below 2.25V or the 3.3V output is below the 2.97V level the reset signal SYS\_RESET\_N is asserted (low). 40mS after both outputs are above the stated thresholds SYS\_RESET\_N de-asserted (set high) to commence processor operation.

A unique cross conduction circuit is provided in the ACT8616 to detect and prevent improper power sequencing to the core of the processor. The 2.5V is clamped to the 3.3V in the event the 3.3V is ever lower than the 2.5V; and should the 3.3V ever exceed the 2.5V by more than 1V a clamp fixes the 3.3V output to be a maximum of 1.2V above the 2.5V output. The PS\_FAULT\_N signal is asserted (low) when the cross conduction circuit is actuated.

The ACT8616 is fabricated as an encapsulated Chip-On-Board (COB) module in an aluminum housing designed to be conduction cooled to chassis sidewalls and interconnected to the system via D-Connectors. Figure 1 is an illustration of the ACT8616 and Figure 2 is the module outline and dimensions.

**Table 1 – Performance Specifications**  
(T<sub>C</sub> = -55°C to +85°C)

Parameter	Conditions	Limits			Units
		Minimum	Nominal	Maximum	
Input Voltage	-	22	28	34	Volts
Efficiency, at Nominal Load	Nominal Load	75%	-	-	%
Output Voltage	+5V	4.75	5	5.25	Volts
	+3.3V	3.135	3.3	3.465	
	+2.5V	2.375	2.5	2.625	
Output Current	+5V	0.1	1.0	2.0	Amperes
	+3.3V	1.0	6.0	10.0	
	+2.5V	1.0	7.0	11.0	
Output Voltage Ripple	+5V	-	-	50.0	mVp-p
	+3.3V	-	-	33.0	
	+2.5V	-	-	25.0	
Output Response to step line changes (22V to 34V, 10μS rise and fall times)	+5V	-	-	2	%
	+3.3V	-	-	2	
	+2.5V	-	-	2	
Output Response to step load changes (±25% of nominal load)	+5V	-	-	2	%
	+3.3V	-	-	2	
	+2.5V	-	-	2	
Start up Time	+5V	-	-	50.0	mS
	+3.3V	-	-	50.0	
	+2.5V	-	-	50.0	
Load Capacity	+5V	50	100	150	μF
	+3.3V	750	1600	2000	
	+2.5V	950	1900	2200	

### Input J1 Connector Pin Assignments

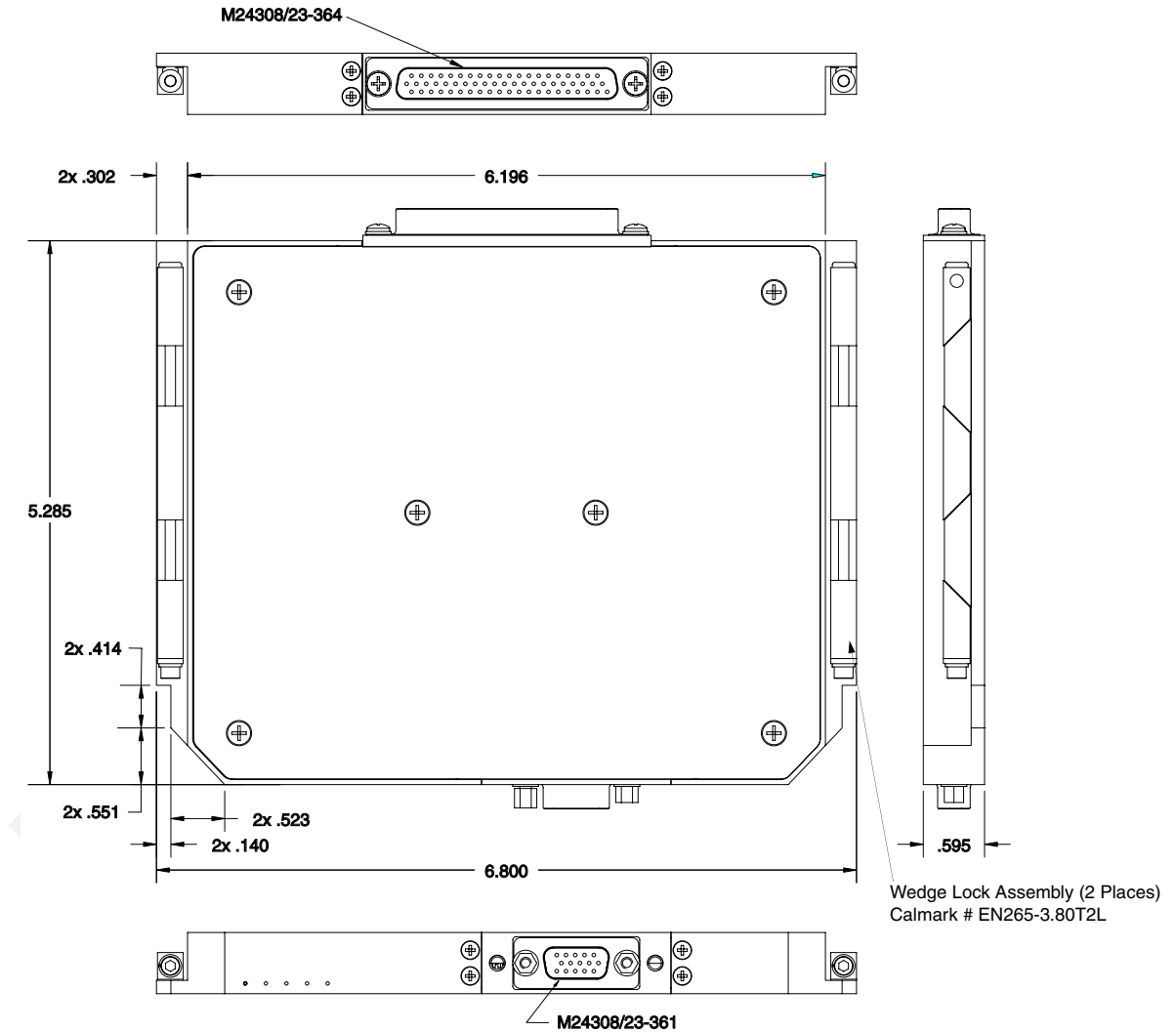
Pin	Signal Name	Pin	Signal Name
1	+28V	9	OVERVOLTAGE
2	RETURN	10	RETURN
3	+28V	11	+28V
4	RETURN	12	RETURN
5	+28V	13	+28V
6	RETURN	14	RETURN
7	SPARE	15	+28V
8	SPARE		

### Output J2 Connector Pin Assignments

Pin	Signal Name	Type	Pin	Signal Name	Type	Pin	Signal Name	Type
1	D_RTN	Power	22	D_RTN	Power	43	D_RTN	Power
2	D_RTN	Power	23	P_3.3VDC	Power	44	P_3.3VDC	Power
3	D_RTN	Power	24	P_3.3VDC	Power	45	P_3.3VDC	Power
4	D_RTN	Power	25	P_3.3VDC	Power	46	P_3.3VDC	Power
5	D_RTN	Power	26	P_3.3VDC	Power	47	P_3.3VDC	Power
6	D_RTN	Power	27	D_RTN	Power	48	+3.3V_SENSE	Signal
7	D_RTN	Power	28	D_RTN	Power	49	D_RTN	Power
8	D_RTN	Power	29	SENSE_RTN	Signal	50	D_RTN	Power
9	D_RTN	Power	30	D_RTN	Power	51	P_5.0VDC	Power
10	D_RTN	Power	31	P_5.0VDC	Power	52	P_5.0VDC	Power
11	D_RTN	Power	32	D_RTN	Power	53	D_RTN	Power
12	D_RTN	Power	33	PS_FAULT_N	Signal	54	D_RTN	Power
13	D_RTN	Power	34	D_RTN	Power	55	D_RTN	Power
14	D_RTN	Power	35	SYS_RESET_N	Signal	56	D_RTN	Power
15	D_RTN	Power	36	D_RTN	Power	57	+2.5V_SENSE	Signal
16	D_RTN	Power	37	D_RTN	Power	58	P_2.5VDC	Power
17	D_RTN	Power	38	P_2.5VDC	Power	59	P_2.5VDC	Power
18	D_RTN	Power	39	P_2.5VDC	Power	60	P_2.5VDC	Power
19	D_RTN	Power	40	P_2.5VDC	Power	61	P_2.5VDC	Power
20	D_RTN	Power	41	P_2.5VDC	Power	62	D_RTN	Power
21	D_RTN	Power	42	D_RTN	Power			

## Ordering Information

Model Number	Output Voltages
ACT 8616	+2.5V, +3.3V, +5V



**Figure 2 – Package Outline and Dimensions**

**PLAINVIEW, NEW YORK**  
 Toll Free: 800-THE-1553  
 Fax: 516-694-6715

**INTERNATIONAL**  
 Tel: 805-778-9229  
 Fax: 805-778-1980

**NORTHEAST**  
 Tel: 603-888-3975  
 Fax: 603-888-4585

**SE AND MID-ATLANTIC**  
 Tel: 321-951-4164  
 Fax: 321-951-4254

**WEST COAST**  
 Tel: 949-362-2260  
 Fax: 949-362-2266

**CENTRAL**  
 Tel: 719-594-8017  
 Fax: 719-594-8468

***www.aeroflex.com info-ams@aeroflex.com***



Aeroflex Microelectronic Solutions reserves the right to change at any time without notice the specifications, design, function, or form of its products described herein. All parameters must be validated for each customer's application by engineering. No liability is assumed as a result of use of this product. No patent licenses are implied.



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused