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3 May 1960



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Attention: 

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Gentlemen:

Enclosed herewith are three copies of Specification No. 60-A-1116-A, dated 29 April 1960, for the design and development of two power supplies designated AP-3 and PS-10. We would be pleased to receive a technical proposal and cost quotation from you on a cost plus fixed fee basis for this project.

It is requested that your proposal and quotation be submitted to the undersigned or his representative not later than 20 May 1960. If it is decided to place this project with your company, a task type contract will be negotiated.

Contract negotiation notification, if any, will be made prior to 17 June 1960. No other notification either written or verbal will be given.

It is requested that this letter, although UNCLASSIFIED, be shown only to personnel cleared with this organization, and contacts between our respective organizations be limited to these same persons.

At the time of submitting the requested proposal, or if you do not elect to submit a proposal, please return this letter and enclosures to the above address.

Very truly yours.



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Enclosures:
Specification No. 60-A-1116-A (3 copies)

ORIGINAL CL BY 235979
 DECL REVW ON 12/03/2010
EXT BYND 8 YRS BY SAME
REASON 3 d (3)

DOC	<u>1</u>	REV DATE	<u>12 MAR 1960</u>	BY	<u>064540</u>
ORIG COMP	<u>056</u>	OPI	<u>56</u>	TYPE	<u>01</u>
ORIG CLASS	<u>M</u>	PAGES	<u>17</u>	REV CLASS	<u>C</u>
JUST	<u>22</u>	NEXT REV	<u>2010</u>	AUTUM	<u>NA TO-2</u>

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CPFF contract for R. + D.

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Complete Price Breakdown
Separate Items 1, 2, 3 and 4
on costs.

~~61A-1120A~~
SPECIFICATION NO. 60-A-1116-A

This does not need to be a
ornate proposal, 3 to 5 pages
plus cost letter.

Return all three Specs with proposal.

If info on acceptance ~~is not~~ is not
received by June 30. consider it lost.

39
DEVELOPMENT SPECIFICATION
47
FOR THE
36
AP-3 AND PS-10 POWER SUPPLIES

20

DATED: 29 April 1960

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1. SCOPE

This specification covers the requirements for two AC power supplies designated AP-3 and PS-10. These power supplies are to be identical in electrical characteristics, but will differ in size and weight.

2. JAN SPECIFICATIONS

The JAN Specifications, of the issue in effect on date of invitation for bids, form a part of this specification. Where the requirements of JAN Specifications and this specification conflict, requirements of this specification shall govern.

2.1. JAN Specification Waiver

The contractor may, due to cost or time, ask for waivers to JAN Specifications. Such specific waivers may be authorized by the Government, but only after review by Government engineers and prior to submission of the prototype model.

3. GENERAL SPECIFICATIONS

3.1. Operating Temperatures

The AP-3 and PS-10 shall be capable of operation without malfunction at ambient temperatures of -20°C to $+50^{\circ}\text{C}$.

3.2. Storage Temperatures

The power supplies shall be capable of being stored for extended periods of time without injurious effects at temperatures of -60°C to $+60^{\circ}\text{C}$.

3.3. Non-Fungus Nutrient Materials

Materials which are used in the AP-3 and PS-10 shall be non-nutrient. If non-nutrient materials are not available, a suitable protection against fungi may be used. However, permission must be granted by the Government prior to using any protecting agent.

3.4. Size and Weight

3.4.1. AP-3

The AP-3 shall be packaged in a metal case with the dimensions of $2\frac{1}{2} \times 5 \times 6$ inches or smaller with self-contained AC power cord. The weight of the AP-3 shall not exceed 8 pounds.

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3.4.2. PS-10

The paramount consideration in the design of the PS-10 shall be minimum unit cost consistent with reliable operation and sound workmanship. The volume of the PS-10 shall not exceed 200 cubic inches and the maximum weight shall not exceed 15 pounds. The PS-10 shall be packaged in a metal protective case with a single handle for ease of transporting.

3.4.3. Color

The cases of the AP-3 and PS-10 shall be a non-reflective black.

4. ELECTRICAL SPECIFICATIONS

4.1. Duty Cycle

The AP-3 and PS-10 shall be capable of delivering full power continuously for one hour at a 50% load cycle.

4.2. Input

The input voltages to the AP-3 and PS-10 shall be 70 to 270 volts AC, 50 to 400 cycles. Voltage selection shall be accomplished by a multi-position tap switch or variac which includes an off position.

4.2.1. Variations in Input

The AP-3 and PS-10 shall meet the output requirements listed in 4.3 with a line variation of $\pm 10\%$.

4.2.2. Circuit Breaker Protection

Both power supplies shall have circuit breaker protection.

4.3. Output

The output from the AP-3 and PS-10 shall be 12 volts DC with a voltage regulation of $\pm 5\%$. The total current drain from the power-supplies will be 8 amperes. One ampere shall have a ripple content not to exceed 1%, the remaining 7 amperes shall have a ripple content not to exceed 5%.

4.3.1. Output Connector

The output discussed in 4.3 will be brought out through a recessed Cannon DE-9 connector. Pin connections and location of this connector will be specified after award of contract.

4.4. Battery Charging

In addition to the output discussed in 4.3, the power supplies shall have an output capable of charging a 5 ampere-hour, 12-volt nickel-cadmium battery in a two hour period. It is preferred to have a constant voltage source of 15 volts with a current limiting resistor to limit the initial charging current to ~~8~~⁴ amperes.

4.5. Indicating Meter

Both power supplies shall have a miniature meter to show proper output. The meter face may be painted yellow for too low an output, green for desired output, and red for too high an output for normal operation. For battery charging the meter shall be switched across the current limiting resistor described in 4.4 and the meter may then be used to monitor the state-of-charge of the battery.

4.6. Controls

The AP-3 and PS-10 shall have only the controls necessary to select input voltages, to switch the indicating meter from normal operation to battery charging, and the circuit breaker discussed in 4.2.2.

ATTACHMENT A

DELIVERABLE ITEMS

<u>Item</u>	<u>Item Description</u>	<u>Quantity</u>
1	Prototype AP-3 One prototype shall be delivered for Government inspection and evaluation and after acceptance of this unit the other 9 prototypes shall be fabricated.	10 <i>Test purposes</i>
2	Prototype PS-10 Delivery of the PS-10 prototypes shall be the same as Item 1.	10 <i>Test purposes</i>
3	Engineering Drawings for Items 1 and 2 Reproducible Master Set Copies	1 each 2 each
4	Instruction Manuals The operation of the AP-3 and PS-10 may be combined in a single manual.	25

Production quantities would go out for competitive bid & would run from 100 - 200 per per contract. The no. of contracts could be any number.

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TO

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PARTS LIST

FOR MODEL NO. AP3

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ	DATE DUE	COMP. REQ.		
			PER UNIT	TOTAL REQ.	ISSUED	PRICE	AMOUNT							
	C1	CAPACITOR, ELECTROLYTIC, 5000MFD, 18 volts, computer grade SOURCE SAFE-T-MIKE CHL-186M-TAX	1	12		2.89	34.68	}	chg. to contract					
	C2	CAPACITOR, ELECTROLYTIC, 1500MFD, 28 volts, computer grade SOURCE SAFE-T-MIKE CA-281M5X-LA	1	11		2.26	24.86							
	C3	CAPACITOR, ELECTROLYTIC, 8MFD, 25 volts SOURCE Illinois Condenser Co SMT825	1	7		.59	4.13							
	C4	CAPACITOR, PAPER, 0.02MFD, 200 volts SOURCE Aerovox P123ZP, w/plastic sleeving	1											
	R1	RESISTOR, 36.5K ohms, 1/2W, 2% deposited carbon SOURCE Texas Instruments Co. CD $\frac{1}{2}$ PR(RN15X)	1					}	will advance					
	R2	RESISTOR, CARBON, 1.8K ohms, 1/2W, 10% SOURCE Allen Bradley	1											
	R3	RESISTOR, CARBON, 580 ohms, 1/2W., 10% SOURCE Allen Bradley	1											
	R4	RESISTOR, CARBON, 1 K ohms, 1/2W, 10% SOURCE Allen Bradley	1											
	R5	RESISTOR, WIRE WOUND, 700 ohm, 3W SOURCE Ohmite 4417	1											
	R6	RESISTOR, WIRE WOUND 100 ohms, 3W SOURCE Ohmite 4392	1											50X1

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MODEL 50X1-

QUANTITY 50X1-

PARTS LIST FOR MODEL NO. 122-0050

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ	ISSUED	PRICE	AMOUNT					
	R7	RESISTOR, WIRE WOUND, 150 ohms, 3 watts SOURCE Ohmite 4396	1									
	R8	RESISTOR, WIRE WOUND, 400 ohms, 3 watts SOURCE Ohmite 4408	1									
	R9	POTENTIOMETER, TRIMPOT, 100 ohms SOURCE Bourns Co. 200L-1-101	1	9		4.50	40.50					
	R9*	POTENTIOMETER, TRIMPOT, 100 ohms SOURCE Bourns Co., 200P-1-101	1	7		4.50	31.50					*USE ON PRINTED CIRCUIT BOARD
	R10	POTENTIOMETER, TRIMPOT, 5000 ohms SOURCE Bourns Co., 200L-1-502	1									
	R10*	POTENTIOMETER, TRIMPOT, 10 K ohms SOURCE Bourns Co., 200L-1-103, 200P-1-103	1	5		4.50	13.50					*USE ON PRINTED CIRCUIT BOARD
	R11	Not used SOURCE										
		SOURCE										
	T1 122-0050	TRANSFORMER, POWER SOURCE	1	10		48.60	486.00					
		CORD & PLUG SET, 2-prong net, 2 by 22AWG, flexible, 4 ft. long SOURCE	1									

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FOR MODEL NO.

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ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ	ISSUED	PRICE	AMOUNT					
	CR1 thru CR4	RECTIFIER DIODE SOURCE Westinghouse 1N1200	4	40		3.60	144.00					
	CR5	ZENER DIODE, 6.8 volts SOURCE Internl. Rectifier Corp. 1N1510	1	3		3.45	10.35					
	CR6	RECTIFIER DIODE SOURCE Pacific Semicond. Corp. PS060	1	4		4.75	19.00					
	Q1	TRANSISTOR, POWER SOURCE Motorola 2N174	1	12		8.60	103.20					
	Q2, Q3	TRANSISTOR SOURCE Motorola 2N1038	2									
	CB1	CIRCUIT BREAKER, THERMAL, 2 AMP SOURCE Klixon 7274-1-2	1	10		9.00	90.00					
	CB2	CIRCUIT BREAKER, THERMAL, 3 AMP SOURCE Klixon 7274-1-3	1	10		8.40	84.00					
	CB3	CIRCUIT BREAKER, THERMAL, 5 AMP SOURCE Klixon 7274-1-5	1	10		8.40	84.00					
	V	VOLTMETER, DC, 0-10 volts, with special dial per dwg. 122-0017 SOURCE DeJur-Amsco, Model 102	1	8		23.55	188.40					
	SW1	SWITCH, S.P., 12-position min., non-shorting, rotary type w/stop SOURCE Janco Co. Series 1905	1	9		5.36	48.24					

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MODEL 50X1-

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PARTS LIST FOR MODEL NO. AF3

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ	ISSUED	PRICE	AMOUNT					
		CONNECTOR, 9-pin socket SOURCE Cannon DE9-S	1									
		WIRE No.18 AWG SOURCE										
		WIRE No. 20 AWG SOURCE										
		WIRE No. 22 AWG SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										

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MODEL 50X1

QUANTITY 50X1-

PARTS LIST

FOR MODEL NO. 133

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ.	ISSUED	PRICE	AMOUNT					
	T1 122-0050C	TRANSFORMER, POWER SOURCE	1	10		48.60	486.00					
		CORD & PLUG SET, 2 prong net, 2 by 22AWG, flexible, 4' long SOURCE	1									
	CR1 thru CR4	RECTIFIER DIODE SOURCE Westinghouse 1N1200	4	52		3.60	187.20					
	CR5	ZENER DIODE, 6.8 volts SOURCE I.R.C. 1N1510	1									
	CR6	RECTIFIER DIODE SOURCE Pacific Semicond. Corp. PS060	1									
	Q1	TRANSISTOR, POWER SOURCE Motorola 2N174	1									
	Q2, Q3	TRANSISTOR, SOURCE Motorola 2N1038	2									
	CB1	CIRCUIT BREAKER, THERMAL, 2 AMP SOURCE Klixon 7274-1-2	1	11		9.00	99.00					
	CB2	CIRCUIT BREAKER, THERMAL, 3 AMP SOURCE Klixon 7274-1-3	1	7		9.00	63.00					
	CB3	CIRCUIT BREAKER, THERMAL, 5 AMP SOURCE Klixon 7274-1-5	1	10		9.00	90.00					

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FACTS LIST

FOR MODEL NO. P.S. 10

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ	ISSUED	PRICE	AMOUNT					
	C1	CAPACITOR, ELECTROLYTIC 6000MFD, 18V, computer grade SOURCE SAFE-T-MIKE CHL-186M-TAX	1	12		2.89	34.68					
	C2	CAPACITOR, ELECTROLYTIC 1500MFD, 28V, computer grade SOURCE SAFE-T-MIKE CA-281M5X-LA	1	10		2.26	22.60					
	C3	CAPACITOR, ELECTROLYTIC 8MFD, 25V SOURCE Illinois Condenser Co. SMT825	1									
	C4	CAPACITOR, PAPER, 0.02MFD, 200V SOURCE Aerovox P1232R (w/plastic sleeving)	1									
	R1	RESISTOR, 36.5K ohms, 1/2W, 2% deposited carbon SOURCE Texas Instr. Co.	1									
	R2	RESISTOR, CARBON 1.8K ohms, 1/2W, 10% SOURCE Allen Bradley	1									
	R3	RESISTOR, CARBON 690 ohms, 1/2W, 10% SOURCE Allen Bradley	1									
	R4	RESISTOR, CARBON, 1 K ohms, 1/2W, 10% SOURCE Allen Bradley	1									
	R5	RESISTOR, WIRE WOUND 700 ohms, 3W SOURCE Ohmite 4417	1									
	R6	RESISTOR, WIRE WOUND 100 ohms, 3W SOURCE Ohmite 4392	1									

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FOR MODEL NO. P.S. 10

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ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ	DATE DUE	***** *****	COMP. REQ.
			PER UNIT	TOTAL REQ	ISSUED	PRICE	AMOUNT						
	R7	RESISTOR, WIREWOUND 150 ohms, 3W SOURCE Ohmite 4396	1										
	R8	RESISTOR, WIREWOUND 400 ohms, 3W SOURCE Ohmite 4408	1										
	R9	POTENTIOMETER, TRIMPOT 100 ohms SOURCE Bourns Co. 200L-1-101	1	13		4.50	58.50						
	R9*	POTENTIOMETER, TRIMPOT 100 ohms SOURCE Bourns Co. 200P-1-101	1									*USE ON PRINTED CIRCUIT BOARD	
	R10	POTENTIOMETER, TRIMPOT 5K ohms SOURCE Bourns Co. 200L-1-502	1										
	R10*	POTENTIOMETER, TRIMPOT 10Kohms SOURCE Bourns Co. 200P-1-502	1									*USE ON PRINTED CIRCUIT BOARD	
	R11	SOURCE											
	SW1	SWITCH, SP, 12-position miniature non-shorting, rotary type w/stor SOURCE Janco Co. Series 1905	1	9		5.36	48.24						
		CONNECTOR, 9-pin socket SOURCE Cannon DE9-S	1										
		SOURCE											

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FOR MODEL NO. P.S. 10

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ.	ISSUED	PRICE	AMOUNT					
	V	VOLTMETER, 0-10V DC, 2 1/2 in. w/ spec dial per dwg. 123-0007 SOURCE Simpson, Model 1227	1	5		2.23	11.15					
		WIRE, No.22 AWG SOURCE					2,506.73					
		WIRE, No.20 AWG SOURCE										
		WIRE, No. 18 AWG SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										
		SOURCE										

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PARTS LIST

FOR MODEL NO. AP-3

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ.	ISSUED	UNIT PRICE	TOTAL AMOUNT					
	122A-0000	Main Assembly SOURCE	Ref									
	122A-0001	Chassis Assembly and Details SOURCE	-	9		10.16	91.44	}				
	122A-0001-2	Block - Heat Sink SOURCE	1									
	122A-0001-3	Rod, Threaded, #6-32 X 1 1/16 Lg. SOURCE	2									
	122A-0001-4	Rod, 3/32 Dia. X 3/8 Lg. SOURCE	2									
	122A-0001-5	Bracket, Cover Mtg. SOURCE	1									
	122A-0001-6	Bracket, Cover Mtg. SOURCE	1									
	122A-0001-7	Bracket, Cover Mtg. SOURCE	1									
	122A-0001-8	Bracket, Cover Mtg. SOURCE	1									
	122A-0001-12	1/2 X 1/2 X 1/16 Angle - 2" Lg. SOURCE Aluminum	1									

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PARTS LIST FOR MODEL NO. AP-3

ITEM	PART NUMBER	DESCRIPTION	QUANTITIES			COST		SHORT	P.O. #	DATE REQ.	DATE DUE	COMP. REQ.
			PER UNIT	TOTAL REQ.	ISSUED	PRICE	AMOUNT					
	122A-0002	Cover, Assembly and Detail SOURCE	-	8		432	34.56					
	122A-0002-1	Cover - Sheet SOURCE	1									
	122A-0002-2	Door Cover - Sheet SOURCE	1									
	122A-0002-3	1/2" Hinge - 4' Lg. SOURCE	1									
	122A-0002-4	Latch SOURCE "DZUS"	1									
	122A-0002-6	Handle SOURCE										
	122A-0002-8	Retaining Ring SOURCE "DZUS"	1									
	122A-0002-9	.312 I.D. X .437 O.D. X .002 Thk., Mica Washer SOURCE	1									
	122A-0003	Box for Input and Output Wires Assembly and Detail SOURCE		20		156	11.20					
	122A-0003-1	Box SOURCE Moorlee Mfg. Co., MT-1125	Half of Box									

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			PER UNIT	TOTAL REQ.	ISSUED	PRICE	AMOUNT					
	122A-0004	Clamp Input Capacitor	-	8		1.56	4.48					
		SOURCE										
	122A-0005	Bracket, C.B. Mtg.	-	9		2.16	19.44					
		SOURCE										
	122A-0006	Plate, Meter	-	11		1.57	5.94					
		SOURCE										
	122A-0007	Bracket - Switch Mtg.	-	9		1.57	4.96					
		SOURCE										
	122A-0008	Heat Sink, AP-3 (Aluminum)	1	11		1.56	17.16					
		SOURCE										
	122A-0010	Chassis - Marking (Outside Face)	-				189.08					
		SOURCE										
	122A-0012	Insulator - Heat Sink, Mica .002 Thk.	1									
		SOURCE										
	122A-0013	Knob, Knurled	1									
		SOURCE										
	122A-0000-11	#2-56 X 3/32 Lg. Cup Point Set Screw, Black Oxide	-									
		SOURCE										
	122A-0017	Dial, for Meter	1									
		SOURCE										

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