MIXER/ROUTER

MODEL 8220A

Instruction Manual

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WARRANTY

Canberra-Manufactured Equipment

Equipment manufactured by Canberra Industries, Inc. is warranted against defects in materials and workmanship for a period of twelve months from date of shipment, provided that the equipment has been used in a proper manner as detailed in the instruction manuals. Repairs or replacement, at Canberra's option, will be made without charge at the Canberra factory during this warranty period. Except for the case of defects discovered upon initial operation, shipping expense to Canberra is to be paid by the customer; shipping expense to return the repaired equipment will be paid by Canberra.

The customer must obtain shipping instructions, including an *Authorized Return Number* (ARN), before returning any equipment to the Canberra factory. Compliance with this provision by the customer shall be a condition of this warranty. In giving shipping instructions, Canberra shall not, therefore, assume any liability in connection with the shipment. If, upon receipt of the equipment, Canberra determines that such equipment is not defective within the terms of this warranty, the customer shall pay to Canberra upon invoice, the cost of all transportation and cost of repairs at the then prevailing Canberra repair rate.

This warranty shall not apply to equipment that has been modified or serviced by other than Canberra service personnel, or to failures caused by defective equipment not supplied by Canberra.

This warranty applies only to equipment manufactured by Canberra. On other equipment supplied by Canberra, the full warranty, and only that warranty offered by the original manufacturer, will be passed on to the customer.

WARRANTY ON EQUIPMENT NOT MANUFACTURED BY CANBERRA

Canberra's basic one-year warranty applies only to equipment manufactured by Canberra. Although Canberra may frequently supply, as part of systems, equipment manufactured by other companies, the only warranty that shall apply to such non-Canberra equipment is that warranty offered by the original manufacturer.

Canberra will, upon request, state what warranties are offered by the original manufacturers of such items as computers, teletype machines, printers, plotters, and other non-Canberra equipment which may be supplied as part of a Canberra system. In no case, however, will Canberra assume any liability for such equipment other than to pass on to its customer whatever warranty is supplied by the original manufacturer.

WARRANTY ON SOFTWARE

Canberra will warrant system operation with *Canberra Laboratory Automated Software Systems* (CLASS) only. If the customer decides to use software other than CLASS, Canberra assumes *no* responsibility. Engineering assistance, however, for non-CLASS software is available to the user and should be contracted separately if desired.

ON-SITE WARRANTY OPTION

The basic Canberra warranty applies only to equipment manufactured by Canberra which is *returned to the factory.* If equipment must be repaired at the customer's site, the actual repair labor and parts will be provided at no charge during the warranty period. However, travel expenses to and from the customer's site, and living expenses while on site, shall be paid by the customer unless an on-site warranty option has been purchased. This option may only be purchased prior to shipment of the equipment to the customer.

The on-site warranty option provides for free on-site warranty work (Canberra pays all travel and living expenses) within the first 60 days after delivery of equipment to the customer. If installation is ordered from Canberra, the 60 day period commences upon completion of the initial installation. After the 60 day period, labor and materials used on site will still be covered by the basic warranty, but the customer shall pay for all travel and living expenses incurred for any on-site service.

The price of this 60 day on-site warranty option is $300.00 or two percent (2%) of the entire system list price, whichever is greater.

The on-site warranty option is available only within the contiguous forty-eight (48) United States and Canada.

After the 60 day on-site warranty period, or after initial installation of the equipment, a maintenance contract may be purchased. This is to be contracted through Canberra's Customer Engineering Department. Contact the factory for details concerning maintenance contracts.

INSTALLATION

Installation of equipment purchased from Canberra shall be the sole responsibility of the customer unless it is specifically contracted for at the prevailing Canberra field service rates. To insure timely installation after receipt of equipment, it is recommended that installation be contracted for at the time the equipment is ordered.

REPAIRS

Any Canberra-manufactured instrument no longer in its warranty period may be returned, freight prepaid, to our factory for repair and realignment. When returning instruments for repair, contact the factory for shipping instructions and an *Authorized Return Number* (ARN).

All correspondence concerning repairs should include Model Number and a description of the problem observed.

Once repaired, all equipment passes through our normal pre-shipment checkout procedure, and will meet or surpass its original specifications when returned. Return shipping expense on out-of-warranty repairs will be charged to the customer.

For instruments out of warranty, the customer must supply a purchase order number for the repair before the item will be returned.

SHIPPING DAMAGE

Shipments should be carefully examined when received for evidence of damage caused by shipping. If damage is found, immediately notify Canberra and the carrier making delivery, as the carrier is normally responsible for damage caused in shipment. Carefully preserve all documentation to establish your claim. Canberra will provide all possible assistance in damage claims.

WARRANTY

Check-in Warranted Equipment

CANBERRA INDUSTRIES, INC.

May 18, 1973

8220A - Modification for Use with 8100

A. Operation

For two inputs

8220A: Input Select - 2
Inputs - BNC 1 and 2

8100: Memory Control - A/2
Input 1 will be stored in 1/2
Input 2 will be stored in 2/2
Time will be stored in Channel 0

For four inputs

8220A: Input Select - 4
Inputs -BNC 1,2,3 and 4

8100: Memory Control - A/4
Input 1 will be stored in 1/4
Input 2 will be stored in 2/4
Input 3 will be stored in 3/4
Input 4 will be stored in 4/4
Time will be stored in Channel O

For I/O operations of the 8100, the MCA transfers the full memory when the memory control is in A/2 or A/4 position.

B. Cable

The 25 pin cable connects J104 of the 8220A to J110 of the 8100. The signals carried in the cable are:

Pin Number	8100 Signal
11	ANSB
12	AMSB
14	RDY
16	IAI
17	ADCR
20	INV
21	DT
22	EAD
24	GND

MIXER ROUTER

DATA CONNECTOR (J104)
(24 pin Amphenol)

STANDARD OUTPUTS

(Use interface card in PC11 when these signals are not compatible.)

Pin #	Function	
1	Address Binary 2^0	GND = 1 +5 Volts = 0
2	Address Binary 2^1	
3	Address Binary 2^2	
4	Address Binary 2^3	
5	Address Binary 2^4	
6	Address Binary 2^5	
7	Address Binary 2^6	
8	Address Binary 2^7	
9	Address Binary 2^8	
10	Address Binary 2^9	
11	Address Binary 2^{10}	
12	Address Binary 2^{11}	
13		
14	Data Ready	(GND = 1; +5V = 0)
15	Abort	(GND = 1; +5V = 0)
16	Inhibit Add One	(GND = 1; +5V = 0)
17	Data Accepted	(GND = 1; +5V = 0)
18	Enable Converter	(GND = 0; +5V = 1)
19	Overflow	(GND = 1; +5V = 0)
20	Invalid Data	(GND = 1; +5V = 0)
21	Dead Time	(GND = 0; +5V = 1)
22	Enable Data	(GND = 1; +5V = 0)
23	Intensify	(GND = 1; +5V = 0)
24	Ground	

1. Plug module into Standard NIM Bin with ±12v and +24v.
   Module loading is:

   +24 ≃ 5 ma
   +12 ≃ 400 ma
   -12 ≃ 35 ma

2. Connect ADC to Mixer

   a. Rear Panel ADC J101 to Mixer J103
   b. Front ADC Input to Mixer Output

c. Connect Mixer to Digital Processor

   Rear Panel Mixer J104 to Processor J103

4. Put pulse inputs to input jacks 1 through 4.

5. Put Input Select Switch to 1.

6. Put all Coincidence switches to Anti.

7. Adjust width potentiometer and put scope on the test point. Adjust until pulse is wider than rise time of slowest pulse of inputs 1, 2, 3 or 4. (Another way of adjusting is to look at output of mixer and adjust width until output pulse ends after peak has been reached.

   Correct output: 

8. For storing the signals in the entire memory, turn unwanted signals off by putting corresponding coincidence switch to Coincidence.

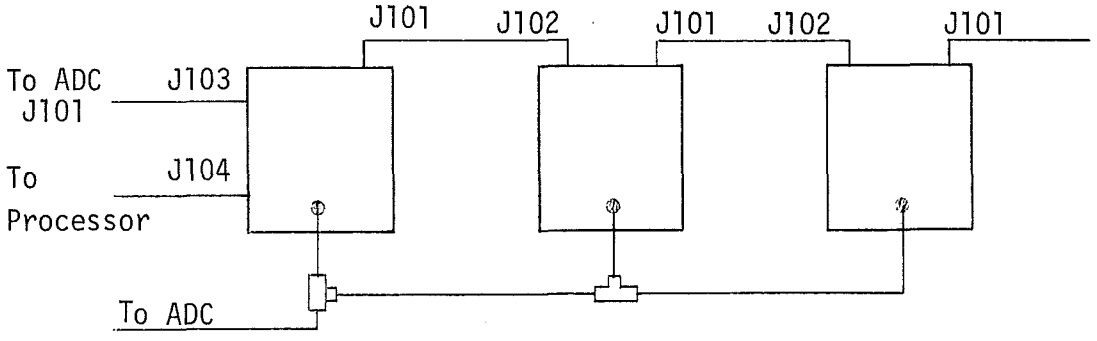
9. The threshold potentiometer of the Mixer-Router is used to prevent triggering of the Mixer by noise.

10. The ADC should be run in Direct and with Lower Level set fairly low.

11. For storing the 4 inputs each in 1/4 of memory, put input select to 4. ADC full scale conversion must correspond to 1/4 of memory. For a 2048 memory, put conversion gain of ADC to 1024 and channel compression to 2-1 and range to 1024.

12. For Multiple Mixer Connection:

   a. Connect J101 to J102 and connect BNC output jacks together.



b. To operate as a Mixer-Router (to store inputs in different sections of memory) put Input Select Switch to number of inputs.

When using 8 inputs, one Mixer must be designated as 8A, the second as 8B. The 4 inputs to 8A will be stored in the first half of the memory; the inputs to 8B will be stored in the second half. When using 16 inputs, the Mixers must be designated as 16A, 16B, 16C, and 16D. The inputs from the corresponding Mixers will be routed to the four quarters of the memory.

LIST OF SCHEMATICS

SKC-418	Routing and Control Logic
SKC-412	Mixer-Router Amplifier Section
B-781	In To Out Jumpers