

MODEL 41

OUTPUT REGISTER

12 BIT NIM LEVELS

CAMAC

INSTRUMENTATION FOR
SCIENCE AND INDUSTRY

MODEL 41

OUTPUT REGISTER

12 BIT NIM LEVELS

MANUAL FOR

SERIAL NO. 336

STANDARD WARRANTY

Jorway Corporation, warrants to the original purchaser that equipment of its manufacture is free from defects in material and workmanship. This warranty is effective for a period of one year after shipment of the instrument to the original purchaser.

Liability under this warranty is limited to servicing or adjusting any instrument returned to the Jorway Corporation factory for this purpose. Equipment to be returned for repair under warranty shall be returned transportation charges prepaid. If factory inspection discloses that defect developed under normal and proper use and within the warranty period, repair will be made and equipment returned with transportation charges paid by Jorway. Return shipment will be made via UPS where available or via insured parcel post. Other modes of shipment can be made at the customers request and then only on a collect basis.

If equipment is not covered under the warranty terms, an estimated cost of repair will be submitted to the customer, and upon his authorization, repairs will be accomplished and billed at cost, including U.S. Customs clearance charges and return insured transportation charges, F.O.B. Westbury, New York, U.S.A.

Equipment sold outside the U.S.A. will not be accepted for warranty repair unless prior approval and shipping instructions have been obtained from the Jorway Corporation. If equipment is covered under warranty, shipments will be returned prepaid to the foreign port of entry.

This warranty is expressly in lieu of all other obligations or liabilities on the part of Jorway Corporation. Jorway Corporation does not assume, nor authorize any other person, including representatives of Jorway Corporation to assume for them, any other liabilities in connection with the sale of Jorway instruments.



MODEL 41 OUTPUT REGISTER

The Model 41 12 bit Output Register is a single width Camac compatible module that meets the requirements of EUR4100e. The Model 41 provides up to 12 bits of information to be extracted from the Dataway Write lines. This information is stored and is available at the front panel as fast N.I.M. level signals, or optionally as power drivers. A versatile system of updating the storage registers is offered to provide flexibility of use. Data can be strobed into storage from the write lines by function command F16 or F17. On command F16, data is strobed in at S1 providing D.C. outputs. When pulsed outputs are required, function F17 is used. In response to F17·S1 data will be strobed into storage; at S2, however, all bits in the register will be reset to zero. Each time the register is updated a strobe output signal is generated. In response to F16·S1 it is a 3 μ sec. pulse. The strobe signal generated in response to F17·S1 will last from time S1 to S2, as do the data outputs.

In addition to these modes of operation the register may also be selectively set and reset. In this mode the Dataway Write lines are used as enable lines which select the bits that are to respond to the function requested. Function F20 will set to "1" any bit that has its write input at a logic "1". Function F22 will reset to "0" any bit that has its write input at a logic "1". Both F20 and F22 use strobe S1 to perform the operation.

An N light is provided to visually indicate when the module is addressed.

MODEL 41 SPECIFICATIONS

OUTPUTS:

DATA and STROBE

Fast N.I.M. outputs, current source
Logic "0" I out = 0
Logic "1" I out = -14ma min.
Max. output voltage -2v

Pulse Width:

In response to F16, D.C. Level output
In response to F17, P.W. is time from S1 to S2.

Option 1. Voltage Outputs, Open Collector
Logic "0" +100v max.
Logic "1" +.5v max.
Max. power out 250 mw



MODEL 41 SPECIFICATIONS – Continued

DATAWAY COMMANDS (all fully decoded)

N•F16•AO•S1	Overwrites 12 bit storage register with data from write lines W1-W12, and generates a strobe output signal.
N•F17•AO•S1	Same as N•F16•AO•S1
N•F17•AO•S2	Resets register and strobe output to zero.
N•F20•AO•S1	Sets to "1" the bits of the storage register that have their Write input at logic "1".
N•F22•AO•S1	Resets to "0" the bits of the storage register that have their Write lines at a logic "1".

DATAWAY CONTROLS

Z•S2	Resets storage register and strobe output to zero.
Q	A "Q" signal is generated in response to commands N•(F16+F17+F20+F22)•AO

INDICATORS

An "N" light is provided to visually indicate the module is addressed. The N signal is integrated so that it will respond to a pulse.

POWER REQUIREMENTS

+6v 420 ma nominal
-6v 200 ma nominal

TEMPERATURE RANGE

0°C to 60°C

SIZE

Single Width Camac Module with protective side shields. Output connectors are Lemo RA 00250 or equivalent.

SECTION V

SERVICE

5.1 GENERAL

Jorway instruments are conservatively designed using quality components with high reliability as a prime objective. In addition all units are manufactured to rigid quality control standards and are thoroughly tested and run before shipment. As a result long life and trouble-free operation can be expected. Nevertheless occasional malfunctions may occur necessitating service of the unit.

Most Jorway products are covered by our standard one year warranty. Instruments requiring service within the warranty period should be returned to the factory for repair under its terms (see warranty printed elsewhere in this manual). We also strongly recommend that the instruments which are out of warranty be returned to the factory when service is necessary. Jorway personnel being intimately familiar with our products are able to efficiently isolate any problem and restore the unit to proper operating condition.

If, for any reason, the user decides to repair an instrument it should be done by qualified personell experienced in working with this type of equipment. The information contained in this manual should be read and understood before attempting to troubleshoot the unit, since familiarity with the principles of operation and circuitry are essential. Utilizing the schematic diagrams and other material in the manual it should be possible for a skilled technician to determine the cause of a malfunction and effect its repair.

5.2 COMPONENT REPLACEMENT

If it is necessary to replace a component on the circuit boards, extreme care should be exercised so that the board is not damaged. Most important is that excessive heat is not applied to the printed circuitry. Use the minimum amount of heat necessary to melt the solder. Multilead components such as dual in-line integrated circuits are difficult to remove and it is usually better to cut the leads of suspected components and remove the remaining pieces one by one from the component holes. The use of a suitable solder extracting device will greatly aid in the removal of such components. The holes should be thoroughly cleaned out before new component is inserted. Do not use force in either removal or insertion of components as damage to the plated through holes may result.

SECTION VI

OPTIONS

No options other than those user selectable features described in Section II are available for this module at this time.

SECTION VII

PARTS LISTS

7.0 INTRODUCTION

The following lists of replaceable parts are included to permit repairs if it should become necessary. The first sheet shows the final assembly list which includes all major subassemblies. Following are parts lists for the subassemblies. Reference designations for electrical components correspond to those shown on the applicable schematic diagram. In some cases components of a different manufacturer may be used in some instruments, or a part with equivalent performance substituted.

Many components are readily available locally, however if difficulties in securing needed parts are experienced, they may be ordered from the factory using the Jorway stock number. Please include the model and serial number as shown on the nameplate of the instrument when ordering parts. Equivalent parts may be substituted in many instances. If in doubt about a particular replacement, our engineering department should be consulted.

Title: Printed Circuit Board

Reference Drawings: 41-J-001 Last ECD 593

Disc File "A5284B.LIS 27-AUG-87"

REFERENCE	DESIGNATION	QUANTITY	PART NUMBER	DESCRIPTION	MFR.	MFR. PART NUMBER
16		1	C-0102-000	Cap., Ceramic, .001uf, 10%, 1KV, X5F	CRL	CE102
1,2,4 THRU 15,17 THRU 20,24,25		20	C-0104-003	Cap., Ceramic, .1uf, 20%, 50V, 25U	Sprague	1C2525U104M050B
C3,21,22		3	C-0226-000	Cap., Tant., Dipped, 22uf, 20%, 15V	Kemet	T360B226M015AS
R1		1	CR-4001-000	Diode, Silicon, 1A, 50V PRV	Mot	1N4001
C21,23,24,26,27,29,30,32,33,35,36,38		12	IC-7400-000	Integrated Circuit, DIP, Plastic	TI	SN7400N
IC5,8		2	IC-7402-000	Integrated Circuit, DIP, Plastic	TI	SN7402N
IC2,9 THRU 13		6	IC-7404-000	Integrated Circuit, DIP, Plastic	TI	SN7404N
C1		1	IC-7400-000	Integrated Circuit, DIP, Plastic	TI	SN7400N
IC7		1	IC-7420-000	Integrated Circuit, DIP, Plastic	TI	SN7420N
IC6		1	IC-7437-000	Integrated Circuit, DIP, Plastic	TI	SN7437N
C22,25,28,31,34,37		6	IC-7474-000	Integrated Circuit, DIP, Plastic	TI	SN7474N
IC3		1	IC-0121-000	Integrated Circuit, DIP, Plastic	TI	SN74121N
IC14		1	IC-0122-000	Integrated Circuit, DIP, Plastic	TI	SN74122N
C4		1	IC-0155-000	Integrated Circuit, DIP, Plastic	TI	SN74155N
1,2		2	L-0474-000	Inductor, Molded, .47uh	Jeffers	4425-2M
Q1		1	Q-3641-000	Transistor, NPN	FSC	PN3641
2 THRU 30		29	Q-5134-000	Transistor, NPN	NSC	PN5134
15,19,25,31,37,43,49,55,61,68,74,80,86		13	R-0100-101	Resistor, 1/4W. 10 OHM 5%	AB	RC07
R16,20,26,32,38,44,50,56,62,69,75,81,87		13	R-0101-101	Resistor, 1/4W. 100 OHM 5%	AB	RC07
R14,22,28,34,40,46,52,58,64,70,76,82,88		13	R-0101-101	Resistor, 1/4W. 100 OHM 5%	AB	RC07
8		1	R-0221-101	Resistor, 1/4W. 220 OHM 5%	AB	RC07
R1,3,12,13,18,21,24,27,30,33,36,39,42		13	R-0102-101	Resistor, 1/4W. 1K 5%	AB	RC07
R45,48,51,54,57,60,63,65,67,72,73,76,79		13	R-0102-101	Resistor, 1/4W. 1K 5%	AB	RC07
84,85		2	R-0102-101	Resistor, 1/4W. 1K 5%	AB	RC07
17,23,29,35,41,47,53,59,66,71,77,83		12	R-0132-101	Resistor, 1/4W. 1.3K 5%	AB	RC07
R11		1	R-0152-101	Resistor, 1/4W. 1.5K 5%	AB	RC07
2		1	R-0182-101	Resistor, 1/4W. 1.8K 5%	AB	RC07
9,89		2	R-0222-101	Resistor, 1/4W. 2.2K 5%	AB	RC07
R4,5,6		3	R-0472-101	Resistor, 1/4W. 4.7K 5%	AB	RC07
7,10		2	R-0103-101	Resistor, 1/4W. 10K 5%	AB	RC07
		1	TB-0041-003	Printed Circuit Board	Jorway	41-200 Rev. C
A		1	W-0004-040	Jumper, #24 Wht Teflon, 0.400" length	Squires	J 0.400 x 0.250 T24
B, Y		2	W-0004-050	Jumper, #24 Wht Teflon, .500" length	Squires	J 0.500 x 0.250 T24
		1	W-0004-000	Jumper, #24 Wht Teflon, length as reqd	Jorway	none

Title: Top Assembly

Reference Drawings: 41-J-001 Last ECO 593

Disc File "A2094B.LIS 27-AUG-87"

REFERENCE	DESIGNATION	QUANTITY	PART NUMBER	DESCRIPTION	MFR.	MFR.PART NUMBER
		1	A-5284-005	P.C.Board Assembly	Jorway	A5284E,41-A-701F
CR2		1	CR-0000-109	Diode,Light Emitting,Red	G.I.	MV5075C
		1	H-0000-114	Jackscrew,4mm	Deutsch	F7500-4MM-B-4
		2	H-0000-148	Rail,Camac	PMF	3403 Clr.Alod.
		6	H-0000-230	Standoff,1/4"Hex x 5/16",4-40	RAF	032185-A
		2	H-0000-240	Lug,Solder,7mm	Lemo	RA00.252
		8	H-0403-000	Screw,Pan Hd.,Phillips,Stainless	Any	4-40 X 3/16"
		2	H-0406-000	Screw,Pan Hd.,Phillips,Stainless	Any	4-40 x 3/8"
		6	H-0403-001	Screw,Flat Hd.,Phillips,Stainless	Any	4-40 x 3/16",100 deg
		6	H-0406-001	Screw,Flat Hd.,Phillips,Stainless	Any	4-40 x 3/8"
		10	H-0401-300	Washer,Lock,Med.Split,Stainless	Any	#4
J1 THRU J13		13	J-0001-205	Connector,Coaxial	Lemo	RA00.250
		1	MP-0000-113	FRONT PANEL,ENGRAVED	JORWAY	41-C-400
		2	MP-2257-000	Cover,Aluminum	Jorway	001-A-454

APPENDIX 1

TABLE A1-1 CONTACT ALLOCATION AT A NORMAL STATION
(Viewed from front of crate)

Bus-line Bus-line Individual patch contact Individual patch contact Individual patch contact Bus-line Bus-line Bus-line Individual line Individual line Bus-line Bus-line	Free Bus-line Free Bus-line Command Accepted Inhibit Clear Station Number Look-at-Me Strobe 1 Strobe 2	P1 P2 P3 P4 P5 X I C N L S1 S2	B F16 F8 F4 F2 F1 A8 A4 A2 A1 Z Q	Busy Function Function Function Function Sub-address Sub-address Sub-address Sub-address Initialise Response	Bus-line Bus-line Bus-line Bus-line Bus-line Bus-line Bus-line Bus-line Bus-line Bus-line Bus-line
<p><i>24 Write Bus-lines</i></p> <p>W1 = least significant bit W24 = most significant bit</p>		W24 W22 W20 W18 W16 W14 W12 W10 W8 W6 W4 W2	W23 W21 W19 W17 W15 W13 W11 W9 W7 W5 W3 W1		
<p><i>24 Read Bus-lines</i></p> <p>R1 = least significant bit R24 = most significant bit</p>		R24 R22 R20 R18 R16 R14 R12 R10 R8 R6 R4 R2	R23 R21 R19 R17 R15 R13 R11 R9 R7 R5 R3 R1		
Power Bus-lines	-12V d.c. +200V d.c. 117V a.c. Live Reserved +12V d.c. Reserved 0V (Power Return)	-12 +200 ACL Y1 +12 Y2 0	-24 -6 ACN E +24 +6 0	-24V d.c. -6V d.c. 117V a.c. Neutral Clean Earth +24V d.c. +6V d.c. 0V (Power Return)	Power Bus-lines

SECTION VIII

DRAWINGS

8.0 INTRODUCTION

The following drawings are included as a reference for those reading the principles of operation text presented in Section IV, and as an aid to personnel servicing module.

8.1 Model 41

12 Bit Output Register Component Layout	41-D-350
12 Bit Output Register Schematic	41-J-001