
UNIDEX 100

OPTO22 "PB24"

OPTION MANUAL

REFERENCE
DOCUMENT

PN:EDU137



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New Standard For Options Sections

Regular text indicates outline requirements.

Bold text indicates specific information for Unidex 100 PB24 Interface option.

I. Generic Statement

(i. e., Please refer to section I of hardware manual for safety considerations, preliminary troubleshooting, and customer service information.)

II. Product Specific Documents

A. Operating environment for the option
Same as basic system.

B. Operation of the option

1. Necessary connections to the outside world

The INT option can interface to one or two Opto 22 PB8, PB16, or PB24 mounting racks. The mounting rack(s) can house a variety of Opto 22 digital I/O modules. Consult Opto 22 documentation for descriptions of I/O modules. This connection is made via a 50 pin ribbon cable. This cable has a 50 pin connector on one end which plugs into a mating locking header (P2 or P3) on the INT option board. The other end of the cable has a 50 pin card-edge connector on it and plugs onto the 50 contact card-edge connector on the mounting rack.

2. Programming

The INT option board is programmed from the front end of the Unidex 100 using port variables (PV:). This option is a read/write board. The default extension bus beginning address is 0xE000 although, via DIP switch SW1, this can be changed:

ADDRESS	SW1			
	1	2	3	4
0xE000	on	on	on	on
0xE010	off	on	on	on
0xE020	on	off	on	on
0xE030	off	off	on	on
0xE040	on	on	off	on
0xE050	off	on	off	on
0xE060	on	off	off	on
0xE070	off	off	off	on
0xE080	on	on	on	off
0xE090	off	on	on	off
0xE0A0	on	off	on	off

0xE0B0	off	off	on	off
0xE0C0	on	on	off	off
0xE0D0	off	on	off	off
0xE0E0	on	off	off	off
0xE0F0	off	off	off	off

The option itself has three locations which can be addressed. These are as follows:

0xE0x0 - 1st mounting rack
0xE0x1 - 2nd mounting rack
0xE0x2 - reset latch

Note that **0xE0x2** is a special location. The INT interface board incorporates a latch circuit that guarantees all outputs will go to an inactive state upon a system reset or power up condition. Before data can be output to either mounting rack, a write function, using any data must be performed to **0xE0x2** to bring the outputs out of this latched inactive state.

Inputs, however can be read without the reset latch being cleared. Also data can be written to the output latches before the reset latch is cleared but will not appear at the mounting rack until the write is performed to **0xE0x2**.

Addresses **0xE0x0** and **0xE0x1** are used for communicating with the modules installed on the Opto 22 mounting rack(s) connected to the INT interface. Via jumper selections, each group of eight I/O points can be configured as inputs or outputs.

- Examples:
- 1.) On a PB24, modules 0-7 could be configured as inputs with modules 8-23 configured as outputs.
 - 2.) On a PB24, modules 0-7 and modules 16-23 could be configured as outputs with modules 8-15 configured as inputs.

Writing data to outputs is performed as follows:

PV:0xE000 = 0x555555 ;turns on every other output
;starting with module 0.

3. A list of fuse locations and their ratings

Fusing is provided on the Opto 22 mounting rack. Refer to mounting rack documentation.

4. Power requirements

5V, which is obtained through ribbon cable from the U100 control board. The mounting rack can utilize this 5V which is provided to it through the 50 pin ribbon cable. It also has a connection point for an external power supply. If an external power supply is used, connection to the U100 power supply must be removed via a jumper on the mounting rack. refer to mounting rack documentation for further details.

5. Jumper location with standard and non-standard configurations

(Refer to the attached "U100 PB24 Interface Ass'y")

6. LED location with operational description

N/A

7. Pin assignments on connectors with brief operational description

(Refer to the attached OPTO22 "PB24" Connection drawing)

8. Operating parameters of pins

All pins are 5V logic signals except for +/-12V power supply lines which appear on (but are not used) connector P1 (64 pin DIN) on thumbwheel interface board.

9. Testpoints and description of functions

N/A

D. Error messages with typical fault conditions and corrective measures if applicable

N/A

E. Restrictions/Limitations

(i. e., field installable?/Used with other options?/etc.)

Can be field installed, however requires option wiring ES12363-2 if this is the only option or ES12363-3 if two options are going to be used. Unidex 100 control board can mount 2 option boards

Note: When writing data to the INT option, bits that are configured as inputs are not affected and do not need to be masked out of the data being written.

Reading data from the inputs is accomplished as follows:

BV:1=PV:0xE000 ;reads data from modules 0-23

Note that the above statement can be used to read inputs as well as the programmed state of the outputs. If all modules were configured to be inputs, this statement would reflect the 24 bit input data. If all modules were configured to be outputs this statement would reflect the data that was most recently written to the outputs via a port variable. If the 24 modules were divided as inputs and outputs the above statement would reflect the appropriate combination of input data and programmed output data.

Also it is important to consider that mathematical and logical functions can be performed on output data since it can be read back. The following example illustrates this exquisite feature:

PV:0xE001=PV:0xE001 AND 0x0000FF

The above statement turns off the upper sixteen bits of the PB24 interface not disturbing any of the lower eight bits.

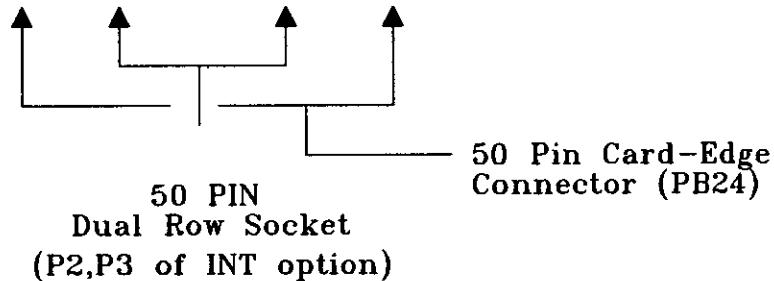
C. Option definition

1. Option location

The U100 INT option board mounts to the U100 control board with four 4-40 x 3/4" standoffs. The male stud end screws into the U100 metalwork female stud, through mounting holes in the control board. Two 4-40 x 1/2" screws go through holes in the DIN connector on the option board and screw into the female end of the standoffs. Two 4-40 x 1/4" screws go through mounting holes on the option board and screw into the female end of the standoffs.

2. Board layout indicating chip location and fundamental description of chips (Refer to the attached "U100 PB24 Interface Ass'y")

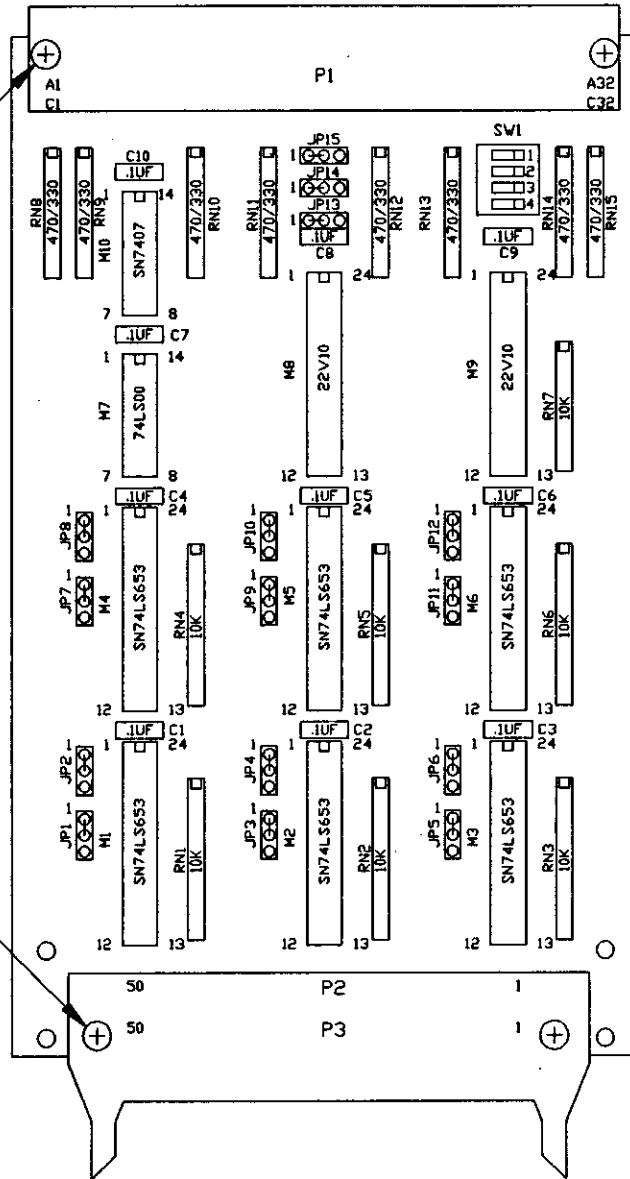
MODULE 23	1 — 1	2 — 26	SIGNAL COMMON
MODULE 22	2 — 3	4 — 27	SIGNAL COMMON
MODULE 21	3 — 5	6 — 28	SIGNAL COMMON
MODULE 20	4 — 7	8 — 29	SIGNAL COMMON
MODULE 19	5 — 9	10 — 30	SIGNAL COMMON
MODULE 18	6 — 11	12 — 31	SIGNAL COMMON
MODULE 17	7 — 13	14 — 32	SIGNAL COMMON
MODULE 16	8 — 15	16 — 33	SIGNAL COMMON
MODULE 15	9 — 17	18 — 34	SIGNAL COMMON
MODULE 14	10 — 19	20 — 35	SIGNAL COMMON
MODULE 13	11 — 21	22 — 36	SIGNAL COMMON
MODULE 12	12 — 23	24 — 37	SIGNAL COMMON
MODULE 11	13 — 25	26 — 38	SIGNAL COMMON
MODULE 10	14 — 27	28 — 39	SIGNAL COMMON
MODULE 9	15 — 29	30 — 40	SIGNAL COMMON
MODULE 8	16 — 31	32 — 41	SIGNAL COMMON
MODULE 7	17 — 33	34 — 42	SIGNAL COMMON
MODULE 6	18 — 35	36 — 43	SIGNAL COMMON
MODULE 5	19 — 37	38 — 44	SIGNAL COMMON
MODULE 4	20 — 39	40 — 45	SIGNAL COMMON
MODULE 3	21 — 41	42 — 46	SIGNAL COMMON
MODULE 2	22 — 43	44 — 47	SIGNAL COMMON
MODULE 1	23 — 45	46 — 48	SIGNAL COMMON
MODULE 0	24 — 47	48 — 49	SIGNAL COMMON
+5 Volts	25 — 49	50 — 50	SIGNAL COMMON



OPT022 "PB24" CONNECTION

2-56 X 1/2 PHILP
STARWASHER, NUT
(TYP. 2 PLS.)

2-56 X 11/16 PHILP
STARWASHER, NUT
(TYP. 2 PLS.)



- 2) MOUNT ALL ICs IN IC SOCKETS
- 1) SCHEMATIC IS B SIZE (5 SHEETS)

U100 PB24 INTERFACE ASS'Y



ENGINEERING SPECIFICATION: ES12370 SHEET: 1 OF: 2
CUSTOMER: ORDER NUMBER:
DATE: 11/4/93 REVISION: - BY: WG CHECKED:
SUBJECT: U100 OPTO 22 PB24 INTERFACE
(PART NO. EFN161) (DWG NO. 690D1479)

On U100 Opto 22 PB24 Interface Board (690D1479), switches and jumpers are to be set as follows.

SWITCH SW1

4	3	2	1	EXTENSION BUS ADDRESS (HEX)	EXTENSION BUS ADDRESS (DEC)	
ON	ON	ON	ON	0xE000	57344	(default)
ON	ON	ON	OFF	0xE010	57360	
ON	ON	OFF	ON	0xE020	57376	
ON	ON	OFF	OFF	0xE030	57392	
ON	OFF	ON	ON	0xE040	57408	
ON	OFF	ON	OFF	0xE050	57424	
ON	OFF	OFF	ON	0xE060	57440	
ON	OFF	OFF	OFF	0xE070	57456	
OFF	ON	ON	ON	0xE080	57472	
OFF	ON	ON	OFF	0xE090	57488	
OFF	ON	OFF	ON	0xE0A0	57504	
OFF	ON	OFF	OFF	0xE0B0	57520	
OFF	OFF	ON	ON	0xE0C0	57536	
OFF	OFF	ON	OFF	0xE0D0	57552	
OFF	OFF	OFF	ON	0xE0E0	57568	
OFF	OFF	OFF	OFF	0xE0F0	57584	

Active polarity of module 0 interrupts:

Active low:

JP13 - 1-2 IN, 2-3 OUT (must be active low)

Interrupt on module 0 of port 1:

Disable:

JP14 - 1-2 IN, 2-3 OUT (default)

Enable:

JP14 - 1-2 OUT, 2-3 IN

Interrupt on module 0 of port 2:

Disable:

JP15 - 1-2 IN, 2-3 OUT (default)

Enable:

JP15 - 1-2 OUT, 2-3 IN

Port 1, low byte:

Output:

JP7 - 1-2 IN, 2-3 OUT

JP8 - 1-2 IN, 2-3 OUT

Input:

JP7 - 1-2 OUT, 2-3 IN (default)

JP8 - 1-2 OUT, 2-3 IN (default)



ENGINEERING SPECIFICATION: ES12370 SHEET: 2 OF: 2
CUSTOMER: ORDER NUMBER:
DATE: 11/4/93 REVISION: - BY: WG CHECKED:
SUBJECT: U100 OPTO 22 PB24 INTERFACE
(PART NO. EFN161) (DWG NO. 690D1479)

Port 1, mid byte:

Output:

JP9 - 1-2 IN, 2-3 OUT
JP10 - 1-2 IN, 2-3 OUT

Input:

JP9 - 1-2 OUT, 2-3 IN (default)
JP10 - 1-2 OUT, 2-3 IN (default)

Port 1, high byte:

Output:

JP11 - 1-2 IN, 2-3 OUT
JP12 - 1-2 IN, 2-3 OUT

Input:

JP11 - 1-2 OUT, 2-3 IN (default)
JP12 - 1-2 OUT, 2-3 IN (default)

Port 2, low byte:

Output:

JP1 - 1-2 IN, 2-3 OUT
JP2 - 1-2 IN, 2-3 OUT

Input:

JP1 - 1-2 OUT, 2-3 IN (default)
JP2 - 1-2 OUT, 2-3 IN (default)

Port 2, mid byte:

Output:

JP3 - 1-2 IN, 2-3 OUT
JP4 - 1-2 IN, 2-3 OUT

Input:

JP3 - 1-2 OUT, 2-3 IN (default)
JP4 - 1-2 OUT, 2-3 IN (default)

Port 2, high byte:

Output:

JP5 - 1-2 IN, 2-3 OUT
JP6 - 1-2 IN, 2-3 OUT

Input:

JP5 - 1-2 OUT, 2-3 IN (default)
JP6 - 1-2 OUT, 2-3 IN (default)