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MD# **UEI-MD-402-R20000610**

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UEI-817 Datasheet

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UEI P/N **UEI-817** Revision **A and I**

The information below is a general specification update for the UEI-817 boards.

DIGITAL I/O FEATURES

- RTI-817 drop-in replacement
- Three 8-bit ports
- Each port can be independently configured as input or output(*)
- External/internal data latch for the each port
- IRQ on digital input change for the port 0
- Read-back feature for the output
- Digital input change auto-latch for the port 0
- Occupies one ISA slot

SPECIFICATIONS

The table below is a specification for the UEI-817 board:

	Features	Specification
Digital I/O	Number of channels	24 channels, selectable in 8-bit ports as inputs or outputs (output polarity is inverted for solid-state relay compatibility)
	I/O type	TTL
	Input Signal Levels	$I_{IL} = -10 \text{ uA}$ maximum $I_{IH} = 10 \text{ uA}$ maximum $V_{IL} = 0.8 \text{ V}$ maximum $V_{IH} = 2.0 \text{ V}$ minimum
	Output Signal Levels	$I_{OL} = 24 \text{ mA}$ maximum $I_{OH} = -3.2 \text{ mA}$ maximum $V_{OL} = 0.5 \text{ V}$ maximum $V_{OH} = 2.4 \text{ V}$ minimum; 3.6 V typical; 4.6V maximum
	Maximum Input Voltage	7V
	Isolation	none
	Static Discharge Voltage	2000 V
	Output Supply Current	250 mA
	Setup Time	10 ns
	Hold Time	10 ns
	External Latch Pulse	10 ns
System	Base Address	4 consecutive byte addresses in the I/O address space, DIP selectable
Connectors/ Dimensions	DIO J1 Connector	50-pin male IDC header
	Dimensions	4.2"x3.63"
Environmental	Operating Temperature Range	0..70 deg C
	Storage Temperature Range	-25 ..85 deg C
	Relative Humidity	0..90% (non-condensing)
Power	Power Consumption	+5VDC 0.5A
	J1 +5V power fuse	250 mA poly-switch resetable fuse

CONFIGURING THE UEI-817

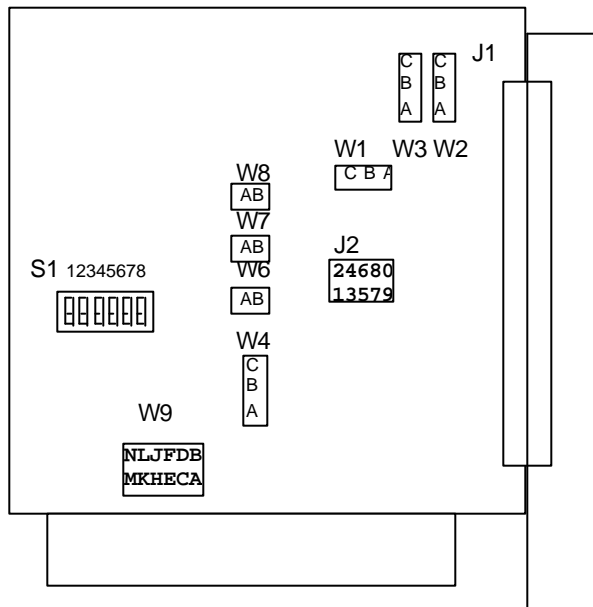
Following items are configurable on the UEI-817

- I/O address
- Input/output mode for the each port
- Interrupt request line selection
- Input latch selection
- Input change-of-state latch for the port 0

The table below shows factory configuration of the UEI-817 board:

Selection	Factory Configuration	Jumper settings
I/O Address	300h	S1 DIP switch : 1-6 ON, 7-8 OFF
I/O mode	Ports 0-2 set as outputs	W6 AB, W7 AB, W8 AB
Input change-of-state latch	Port 0 is set to normal operation – input data is latched by the read data signal from the host PC	W4 BC
Interrupt Request Line	IRQ2	W9 MN
Input Latch Signal Source	Normal operation – port 0-2 input data is latched by the read data signal from the host PC	W1 BC, W2 BC, W3 BC

UEI-817 Jumper locations



I/O Address selection

I/O address configuration is required to select a location for the UEI-817's 4-byte I/O address map in the PC I/O space. A factory default setting is 300h. To select an alternative I/O address use DIP switch S1. This switch contains eight switches. See table below for the address selection settings:

DIP Switch selection								Hex I/O Address
1	2	3	4	5	6	7	8	
-	-	-	-	-	-	ON	OFF	2xx
-	-	-	-	-	-	OFF	OFF	3xx
-	-	ON	ON	ON	ON	-	-	x0x
-	-	OFF	ON	ON	ON	-	-	x1x
-	-	ON	OFF	ON	ON	-	-	x2x
-	-	OFF	OFF	ON	ON	-	-	x3x
-	-	ON	ON	OFF	ON	-	-	x4x
-	-	OFF	ON	OFF	ON	-	-	x5x
-	-	ON	OFF	OFF	ON	-	-	x6x
-	-	OFF	OFF	OFF	ON	-	-	x7x
-	-	ON	ON	ON	OFF	-	-	x8x
-	-	OFF	ON	ON	OFF	-	-	x9x
-	-	ON	OFF	ON	OFF	-	-	xAx
-	-	OFF	OFF	ON	OFF	-	-	xBx
-	-	ON	ON	OFF	OFF	-	-	xCx
-	-	OFF	ON	OFF	OFF	-	-	xDx
-	-	ON	OFF	OFF	OFF	-	-	xEx
-	-	OFF	OFF	OFF	OFF	-	-	xFx
ON	ON	-	-	-	-	-	-	xx0..xx3
OFF	ON	-	-	-	-	-	-	xx4..xx7
ON	OFF	-	-	-	-	-	-	xx8..xxB

Input/Output mode selection

The 24 channels of digital I/O on the UEI-817 are divided into three, byte-wide ports. Each port can be configured as digital input or digital output. When selected all eight channels of that port are configured as either digital inputs or digital outputs. Factory-default configuration for all three ports is digital output

Port	Mode	Jumper settings
Port 0	Input	W6 open
	Output	W6 AB
Port 1	Input	W7 open
	Output	W7 AB
Port 2	Input	W8 open
	Output	W8 AB

Interrupt request line selection

The UEI-817 allows to generate hardware interrupt when the digital input data changes on any channel of the port 0. The UEI-817 is linked to the interrupt structure of the PC and provides following interrupt request line selection : IRQ2, IRQ3, IRQ4, IRQ5, IRQ6, IRQ7. Factory-default configuration is IRQ2. Use W9 jumper to select desired interrupt line.

IRQ line	Jumper settings
None	W9 open
IRQ2	W9 MN
IRQ3	W9 KL
IRQ4	W9 HJ
IRQ5	W9 EF
IRQ6	W9 CD
IRQ7	W9 AB

Input latch selection

There are two ways to latch digital input data for the ports 0..2 : data can be latched by the READ DATA strobe from the host PC(normal operation) or by the TTL input latch source (port 0/channel 0 for the port 0, port 0/channel 1 for the port 1 and port 0/channel 2 for the port 2). Factory-default configuration is a normal operation. Use W1/W2/W3 jumpers to select input latch mode.

Port	Latch Mode	Jumper settings
Port 0	TTL Strobe on Channel 0	W1 AB
	Normal operation	W1 BC
Port 1	TTL Strobe on Channel 1	W2 AB
	Normal operation	W2 BC
Port 2	TTL Strobe on Channel 2	W3 AB
	Normal operation	W3 BC

Input change-of-state latch for the port 0 selection

During the normal operation, digital input data from the port 0 is latched by the READ DATA strobe from the host PC. If you select a change-of-state latch for the port 0, every time the digital input data changes, the data is latched in the input register by the interrupt request line. Factory-default configuration is a normal operation. Use 4 jumper to select input change-of-state latch mode.

Port	Latch Mode	Jumper settings
Port 0	Change-of-state	W4 AB
	Normal operation	W4 BC

J1 Connector Pin Assignments

The J1 connector of the UEI-817 board is identical to the J1 connector of the RTI-817 board

Pin	Function	Pin	Function
1	Port 2 / DIO Channel7	2	Digital Ground
3	Port 2 / DIO Channel6	4	Digital Ground
5	Port 2 / DIO Channel5	6	Digital Ground
7	Port 2 / DIO Channel7	8	Digital Ground
9	Port 2 / DIO Channel3	10	Digital Ground
11	Port 2 / DIO Channel2	12	Digital Ground
13	Port 2 / DIO Channel1	14	Digital Ground
15	Port 2 / DIO Channel0	16	Digital Ground
17	Port 1 / DIO Channel7	18	Digital Ground
19	Port 1 / DIO Channel6	20	Digital Ground
21	Port 1 / DIO Channel5	22	Digital Ground
23	Port 1 / DIO Channel7	24	Digital Ground
25	Port 1 / DIO Channel3	26	Digital Ground
27	Port 1 / DIO Channel2	28	Digital Ground
29	Port 1 / DIO Channel1	30	Digital Ground
31	Port 1 / DIO Channel0	32	Digital Ground
33	Port 0 / DIO Channel7	34	Digital Ground
35	Port 0 / DIO Channel6	36	Digital Ground
37	Port 0 / DIO Channel5	38	Digital Ground
39	Port 0 / DIO Channel7	40	Digital Ground
41	Port 0 / DIO Channel3	42	Digital Ground
43	Port 0 / DIO Channel2	44	Digital Ground
45	Port 0 / DIO Channel1	46	Digital Ground
47	Port 0 / DIO Channel0	48	Digital Ground
49	+5V DC(250mA)	50	Digital Ground

I/O memory map

The UEI-817 is mapped into the computer's I/O memory map as four consecutive bytes. Each byte has a pre-assigned function and the four bytes taken as a whole represent the I/O map of the UEI-817. The first byte (base address+0) is used as interrupt enable/clear byte. Three other locations are assigned to the I/O ports 0, 1 and 2.

Address	MSB							LSB	Description
BASE+3	7	6	5	4	3	2	1	0	Port 2 Digital Out (WRITE)/ Port 2 Digital In/Read-back (READ)
BASE+2	7	6	5	4	3	2	1	0	Port 1 Digital Out (WRITE)/ Port 1 Digital In/Read-back (READ)
BASE+1	7	6	5	4	3	2	1	0	Port 0 Digital Out (WRITE)/ Port 0 Digital In/Read-back (READ)
BASE+0	x	x	x	x	x	x	x	IS	Interrupt Enable(0)/Disable(1) WRITE Interrupt clear (READ)