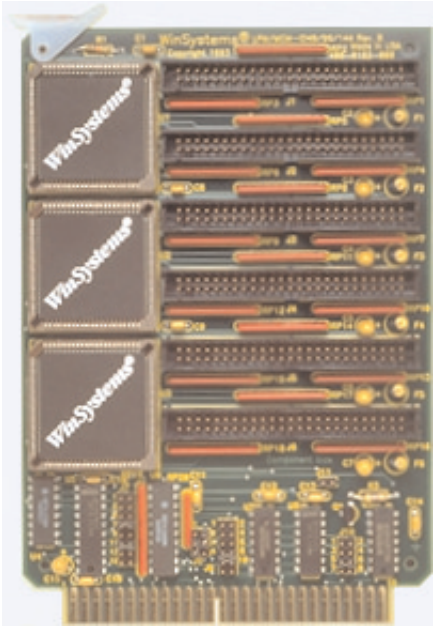
WinSystems®

STD BUS, CMOS STD BUS

LPM-IO144/96/48
MCM-IO144/96/48
144/96/48-Point I/O with Interruptible Event Sense

FEATURES

- Available with either 144, 96 or 48 digital I/O lines
- Each line is capable of:
  - Bidirectional operation
  - Input, output or output with read back
  - 12mA sink current
- Generates an interrupt on signal change-of-state
  - Supports 72 event sense lines for the LPM/MCM-IO144 card, 48 event sense lines for the LPM/MCM-IO96 card, and 24 event sense lines for the LPM/MCM-IO48 card
  - Software selectable edge polarity for each line
  - Software enabled interrupt for each line
  - Change-of-state latched for each line
- Write-protection mask register for each 8-bit port
- Compatible with industry standard I/O racks
- Fused +5V logic supply for I/O modules
- Nearest replacement for ZT88CT72 144-point I/O card
- Replaces up to three MCM-7508 cards
- STD Bus and CMOS STD Bus interface
- +5 volt only operation
- Extended operational temperature range: -40° to +85° Celsius for the LPM-IO144/96/48



The LPM/MCM-IO144/96/48 is a very versatile group of STD Bus cards providing up to 144 lines of digital I/O. Each line can be individually configured for input, output or output with read back. The major feature of this card is its ability to monitor both rising and falling digital edge transitions, latch them and then signal the host processor that a change of input status has occurred.

FUNCTIONAL CAPABILITY

Bus Interface - The MCM-IO144/96/48 is the STD Bus and the LPM-IO144/96/48 is the CMOS STD Bus version of the board. Programming, cable pin-outs, bus pin assignments, and jumper configurations are identical for both cards. The LPM/MCM prefix indicates the card has the same features and functionality but a different bus interface logic, power requirements and operational temperature range.

Configuration - The LPM/MCM-IO144 supports 144-digital I/O signals, and the LPM/MCM-IO96 and LPM/MCM-IO48 support 96 and 48 respectively. The number of lines supported is a function of the population option of WinSystems' 16C48 Universal I/O controller ASIC. One 16C48 will support 48 lines with up to 3 ASICs per board. The 48 lines are addressed through 6 registers. A six bit Write Mask register allows the user to disable writes on a byte basis to configure the group as a "Read Only" port.

Each I/O line is individually programmable for input, output, or output with read back operation. The input lines are connected so the current status of its output port can be read from the corresponding input port (read back). If the port is used as input only, then the corresponding output port bit must be cleared. Each output channel is latched and has an open collector driver (with a pull-up resistor) capable of sinking 12mA of current. This allows direct control of up to 144 opto-isolated signal conditioning modules to a single card for high density I/O support.

Event Sense Operation - Each 16C48 ASIC can support 24 event sense lines to generate an interrupt when an event occurs. This means that 72 lines on the LPM/MCM-IO144, 48 lines on the LPM/MCM-IO96, or 24 lines on the LPM/MCM-IO48 can sense a positive or negative transition on the input. Transition polarity is programmable and enabled on a bit-by-bit basis. Each lines' transition is latched by the event so that even short duration pulses will be recognized. An interrupt ID register is maintained for each line for writing more efficient Interrupt Service Routines. The board can generate system interrupts which are routed through a jumper block to any of the four STD Bus interrupt signals.

Addressing - The LPM/MCM-IO144/96/48 is I/O mapped. The number of contiguous I/O addresses required is a function of the number of 16C48 ASICs onboard and whether event sense is enabled. Each 16C48 requires either 8 ports for the standard mode or 16 ports if the event sense mode is used. This feature reduces the I/O ports required in a system with many I/O cards.

For example, a MCM-IO48 card without event sense requires 8 ports while a MCM-IO144 with event sense enabled will require 48 contiguous ports.

I/O Connectors - The signals are wired to a 50-pin connector. The 24 data lines are alternated with 24 ground lines for reduced noise and crosstalk. Also each connector has 1A fused +5 volts and ground for logic power for I/O modules. The pinout is compatible with the industry standard 4 to 24 position I/O module mounting racks (Opto-22, Crydom, Gordos, etc.) for use with high level AC and DC opto-isolated solid state relays.

Second Source - The LPM-IO144 replaces the Ziatech ZT88CT72. The LPM-IO96 replaces the Ziatech ZT89CT61.

SPECIFICATIONS

Electrical
STD Bus (MCM) and CMOS STD Bus (LPM)

Output:
I_{OH} = -4mA at 3 volts
I_{OL} = 12mA at 0.6 volts

Input:
10K nominal pull-up resistor

Power Requirement
Vcc = +5V, (No rack power or input/output loads)
LPM-IO144 = 14mA typ.; MCM-IO144 = 90mA typ.
LPM-IO96 = 13mA typ.; MCM-IO96 = 89mA typ.
LPM-IO48 = 12mA typ.; MCM-IO48 = 88mA typ.

Mechanical
Dimensions: 4.5" x 6.5"

Connectors
STD Bus: 56-pin dual 0.125 inch centers
Digital I/O: J1 - J6, 50-pin dual 0.100" grid
Jumpers: 0.025" square posts

Environmental
Operating Temperature:
LPM-IO144/96/48: -40° to +85°Celsius
MCM-IO144/96/48: 0 to +65° Celsius
Non-condensing relative humidity: 5% to 95%

ORDERING INFORMATION

MCM-IO144	144-line STD Bus I/O card
MCM-IO96	96-line STD Bus I/O card
MCM-IO48	48-line STD Bus I/O card
LPM-IO144	144-line CMOS STD Bus I/O card
LPM-IO96	96-line CMOS STD Bus I/O card
LPM-IO48	48-line CMOS STD Bus I/O card
CBL-115-4	4 ft. ribbon to Opto module racks
CBL-129-4	4 ft. ribbon cable, 50-pin both ends