# GX3756 SERIES

**MARVIN TEST SOLUTIONS**

## 56 CHANNEL TTL I/O FPGA PXI CARD

- (56) Channel TTL Digital I/O card
- Ruggedized / Extended Temperature Option
- PXI hybrid slot compatible

## DESCRIPTION

The GX3756 is a user configurable, FPGA-based, 3U PXI card which offers 56, TTL I/O signals. The module consists of a daughter card and the GX3700 FPGA baseboard which employs the Altera Stratix III FPGA.

## FEATURES

The GX3756's digital I/O signals are 5 V logic compatible. Four of the 56 TTL outputs can be configured to support 30 bit, 1 KHz serial data streams. Each I/O channel can be accessed via read / write register commands and each group of 4 TTL outputs can be enabled or tri-stated. The 56 TTL inputs are overvoltage protected. In addition, there are (3) connector ID bits which can be used for connector / cable identification as well as providing open / short detection. Each TTL output can be readback by the TTL inputs.

The FPGA has access to all of the PXI bus resources including the PXI 10 MHz clock, the local bus, and the PXI triggers; allowing the user to create a custom instrument which incorporates all PXI bus resources. Control and access to the FPGA is provided via the GX3756's driver which includes the ability to download compiled FPGA code as well as register read and write functionality.

## PROGRAMMING AND SOFTWARE

The board is supplied with the GxFPGA library, a software package that includes a virtual instrument panel, and a Windows 32/64-bit DLL driver library and documentation. The virtual panel can be used to interactively program and control the instrument from a window that displays the instrument's current settings and status. In addition, interface files are provided to support access to programming tools and languages such as ATEasy, LabVIEW, LabVIEW/Real-Time, C/C++, Microsoft Visual Basic®, Delphi, and Pascal. An On-Line help file and PDF User's Guide provides documentation that includes instructions for installing, using and programming the board.

## APPLICATIONS

- Automatic Test Equipment (ATE)
- Semiconductor test
- Custom interface emulation
- Custom instrumentation

**FPGA**

## SPECIFICATIONS

### DIGITAL I/O CHANNELS

| | |
|---|---|
| Logic Family | TTL, 5 V compatible |
| Drive Hi | 4 V (min), 5.5 V (max), 5 V nominal |
| Drive Lo | 0V (min), 0.5V (max) |
| Output Current | ±24.0 mA, max |
| Input Hi | 4 V (min), 5.5 V (max), 5 V nominal |
| Input Lo | 0V (min), 0.5 V (max) |
| Number of Channels | 56 TTL I/O,<br>Output enable in groups of 4<br>Group 0 configurable as (4) serial transmitters |
| Connector ID | 3 bits, TTL compatible, detects opens or shorts |
| Serial Data Transmitter | Data rate: 1 kHz<br>Number of bits: 30 |
| Connector | 62 pin, D-sub female |

### TIMING SOURCES

| | |
|---|---|
| PXI Bus | 10 MHz |
| Internal | 80 MHz oscillator, ±20 ppm |

### FPGA AND MEMORY

| | |
|---|---|
| FPGA Type | Altera Stratix III, EP3SL50F780 |
| Number of PLLs | Four |
| Logic Elements | 47.5 k |
| Internal Memory | 1.836 Mb |
| On-Board Memory | 256 K x 32 SSRAM |
| On-Board Flash | 16 MB |

### POWER

| | |
|---|---|
| 3.3 VDC | 1.0 A max. |
| 5 VDC | 0.5 A typical, 1.5 A max. |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temperature Range | GX3756: 0°C to +50°C<br>GX3756-M: 0°C to +83°C; contact factory for extended temperature range specifications |
| Storage Temperature Range | -20°C to +85°C |
| Relative Humidity (operating) | 5% to 85%, temperature range 0°C to 60°C<br>5% to 60% for operating temperatures above 60°C |
| Altitude (operating) | 4600 meters (max) |
| Size | 3U PXI, hybrid slot compatible |
| Weight | 200 g |

Note: Specifications are subject to change without notice

**FPGA**

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## ORDERING INFORMATION

| | |
|---|---|
| **GX3756** | PXI FPGA 56 Channel TTL I/O Card |
| **GX3756-M** | PXI FPGA 56 Channel TTL I/O Card - Ruggedized, Extended Temp |