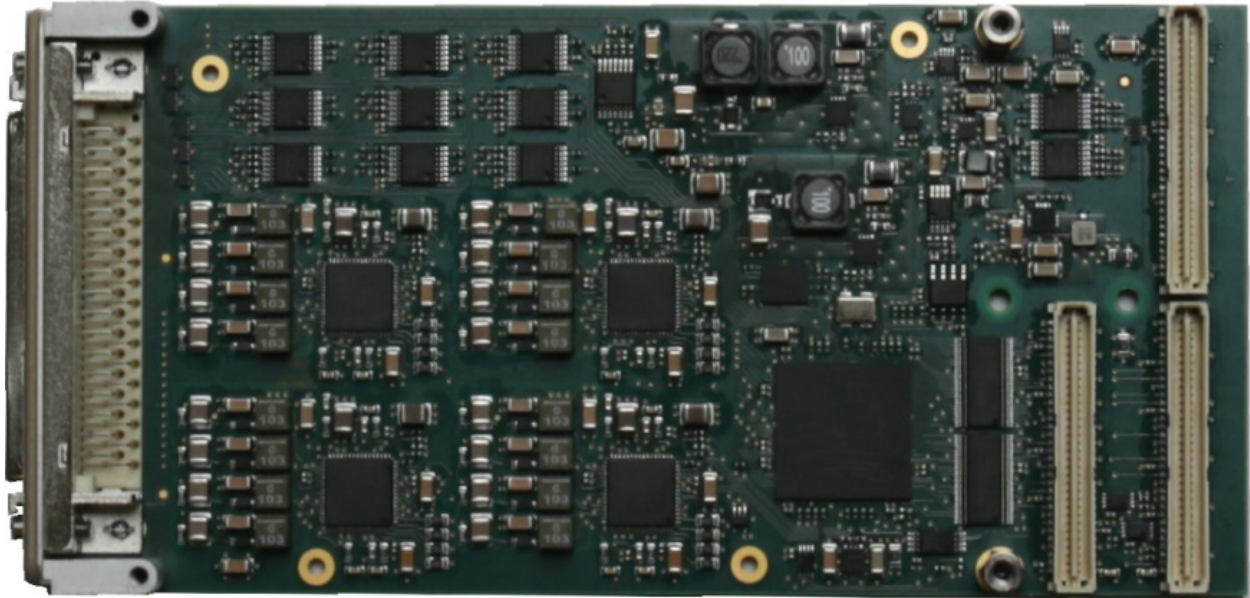# TPMC542   16/8 Channel Voltage & Current Range D/A and  20 Channel LVTTL/TTL Digital I/O



## Application Information

The TPMC542 is a standard single-wide PCI Mezzanine Card (PMC) compatible module providing 16 or 8 channels of simultaneous update single-ended unipolar/bipolar 16bit analog output and 20 channels of tristate capable 5V-tolerant LVTTL/TTL digital input/output.

A 32 bit 33 MHz PCI interface is provided at the PMC P11 and P12 connectors. The digital I/O signals and analog output signals are accessible via a Mini D Ribbon (MDR68) type front I/O connector.

For each individual D/A channel, the following output ranges are configurable:

- 0V to 5V Voltage Range
- 0V to 10V Voltage Range
- ±5V Voltage Range
- ±10V Voltage Range
- 4mA to 20mA Current Range
- 0mA to 20mA Current Range
- 0mA to 24mA Current Range

Additionally, for each Voltage Range a 20% over-range may be enabled.

The TPMC542 provides a D/A Sequencer unit for periodic simultaneous digital to analog conversions at a configurable conversion rate. In sequencer mode, the D/A conversion data is fetched from buffers in host memory by PCI master DMA transfer and is temporarily stored in an on-board data buffer. The Sequencer provides a Frame Mode used for repetitive frames of simultaneous D/A conversions upon an appropriate frame trigger signal event.

Conversion clock (conversion rate) and frame trigger signals may be generated on-board for internal use and may also be driven out on P14 rear I/O if the card is operating as a master card in a Multi-Board configuration. The conversion clock (conversion rate) and frame trigger signals may also be sourced externally via the P14 rear I/O interface if the card is operating as a target card in a Multi-Board configuration.

Each TPMC542 is factory calibrated. The correction data is stored in an on-board serial EEPROM unique to each PMC module. These correction values may be used to perform a hardware correction for every D/A channel and output range.

The digital I/O lines are ESD protected. Each digital I/O line has a dedicated line transmitter with individual output enable control and a dedicated line receiver. The line receivers are always enabled, so the digital I/O line level can always be monitored. Each digital I/O line input is capable of generating an interrupt triggered on rising edge, falling edge or both.

Additionally, a debounce filter can be configured to get rid of bouncing on the digital I/O inputs. Each digital I/O line has a 4.7kΩ pull resistor to a common reference. The common pull resistor reference is programmable by software (one setting for all digital I/O lines) to +3.3V, +5V or GND.

## Technical Information

- Standard single-wide PCI Mezzanine Card (PMC)
  - 32bit / 33MHz PCI
  - DMA Master functionality
- 16 or 8 channels of simultaneous update single-ended unipolar/bipolar 16bit analog output
  - Up to 38ksps
  - Settling time: typ. 24µs
- Output voltage ranges:
  - 0-5V, 0-10V, ±5V, ±10V,
  - 0-6V, 0-12V, ±6V, ±12V,
  - Up to 10mA load with a capacitance up to 10nF
- Output current ranges
  - 4-20mA, 0-20mA, 0-24mA

- Hardware Correction
  - Factory calibrated
- Temperature Sensor on-board
- Programmable conversion rates
  - Can be output to other modules
  - Can be input from other modules
- Frame Trigger signal for synchronization purposes
- 20 channels of tristate capable 5V-tolerant TTL digital input/output
  - ESD protection
- Mini D Ribbon (MDR68) type front I/O connector
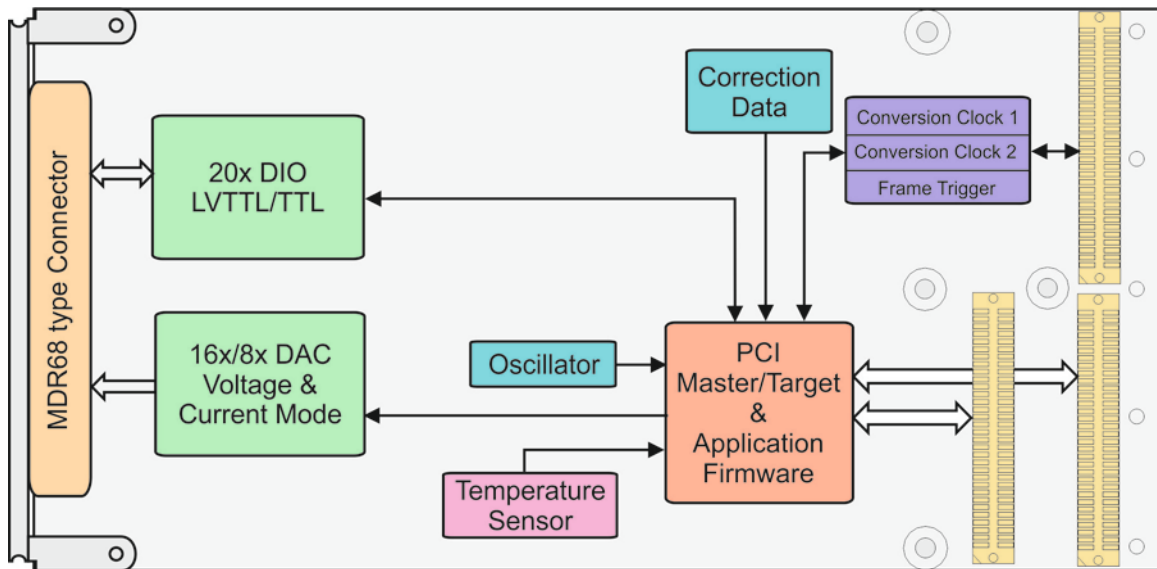


TPMC542 Block Diagram

## Order Information

### RoHS Compliant

**TPMC542-10R**    16 Channels of Simultaneous Update Single-Ended 16 bit Voltage & Current Range D/A and 20 Channels of LVTTL/TTL Digital I/O, with MDR68 front panel I/O

**TPMC542-20R**    8 Channels of Simultaneous Update Single-Ended 16 bit Voltage & Current Range D/A and 20 Channels of LVTTL/TTL Digital I/O, with MDR68 front panel I/O

For the availability of non-RoHS compliant (leaded solder) products please contact TEWS.

### Documentation

**TPMC542-DOC**    User Manual

### Software

**TDRV019-SW-25**    Integrity Software Support
**TDRV019-SW-42**    VxWorks Software Support (Legacy and VxBus-Enabled Software Support)
**TDRV019-SW-65**    Windows Software Support
**TDRV019-SW-82**    Linux Software Support
**TDRV019-SW-95**    QNX Software Support

For other operating systems please contact TEWS.

### Related Products

**TA113**    MDR68 Cable
**TA207**    MDR68 Terminal Block
**TA312**    Cable Kit for Modules with MDR68 Connector