

XRM-DAC-D3/275

Two Channel Data Generation Module

User Guide

Version Draft

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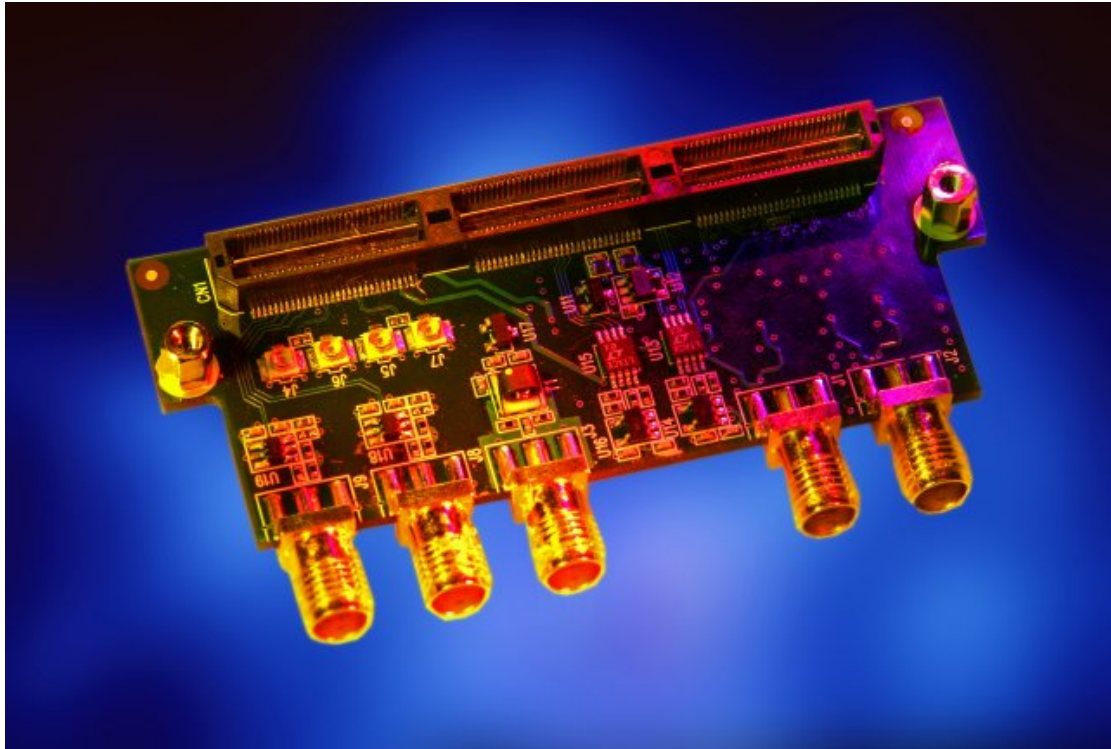
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EMI

This equipment generates, uses and can radiate electromagnetic energy. It may cause or be susceptible to electromagnetic interference if not installed and used with adequate EMI protection for specific applications

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1. Introduction

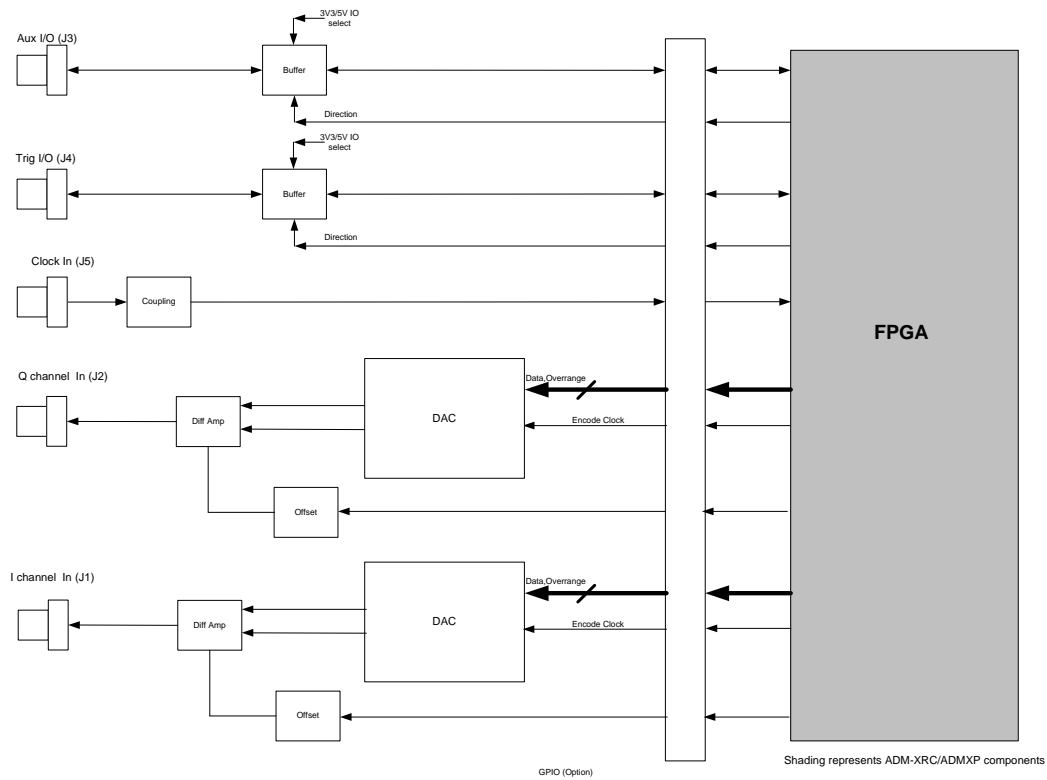
The XRM-DAC-D3/275 is a front panel adapter card designed for use with Alpha Data's ADM-XRCII, ADM-XP, ADM-XRC4 and ADM-XRC5 FPGA-based PMC cards.

The XRM-DAC-D3/275 provides two channels of digital-to-analogue conversion with 14 bit resolution and supports sampling rates in excess of 125 MHz. It is aimed at applications such as IF/Baseband Signal generation.

A number of customisation options are offered with this card.

An external clock source may be used or an internally generated clock can be used to provide the sampling clock.

Two auxiliary I/O ports are provided for use as trigger inputs and general purpose signalling.



2. Installation

The XRM-DAC-D3/275 is designed to plug in to the front panel connector (SAMTEC QSH series) on an XRM-ADC II /XPL PMC card. The retaining screws should be tightened to secure the XRM-DAC-D3/275.

Note: This operation should not be performed while the PMC card is powered up.

2.1. Handling instructions

Observe precautions for preventing damage to components by electrostatic discharge. Personnel handling the board should take SSD precautions. Avoid flexing the board.

3. Specification

3.1. Outputs

3.1.1. I Signal (J2), Q Signal (J1)

Output: 50 Ohms
Bandwidth: DC to 100 MHz
Level: +/- 1V = DAC full scale

3.1.2. Offset

-1 V to +1 V dc, 16 bits resolution each channel.

3.1.3. Sample Rate

1 MHz to 125 MHz

3.2. Clock In (J3)

Input: 50 Ohms, ac coupled
Level: +12 dBm nominal (2.5V pk to pk)

3.3. Input /Output:

3.3.1. Trig IO Port (J9)

User configurable as input or output
Input: 4k7 Ohms, dc coupled
Level: +3V3 LVTTTL or +5V TTL (factory/user selectable¹)

3.3.2. Aux. IO Port (J8)

User configurable as input or output
Input: 4k7 Ohms, dc coupled
Level: +3V3 LVTTTL or +5V TTL (factory/user selectable²)

¹ configured via 0R links

² configured via 0R links

4. Options

4.1. Connector type

- SMA (7 mm, standard)
- Long Barrel SMA (20 mm)
- SMB
- SMC

4.2. Order Code

XRM-DAC-D3/275-[Connector option] -[IO voltage option]

Fields in square brackets may be omitted in order to obtain the standard configuration for that option.

5. Related Documents

ADM-XRC-II User Manual

ADM-XP User Manual

ADM-XRC4SX/LX User Manuals

ADM-XRC5 User Manual

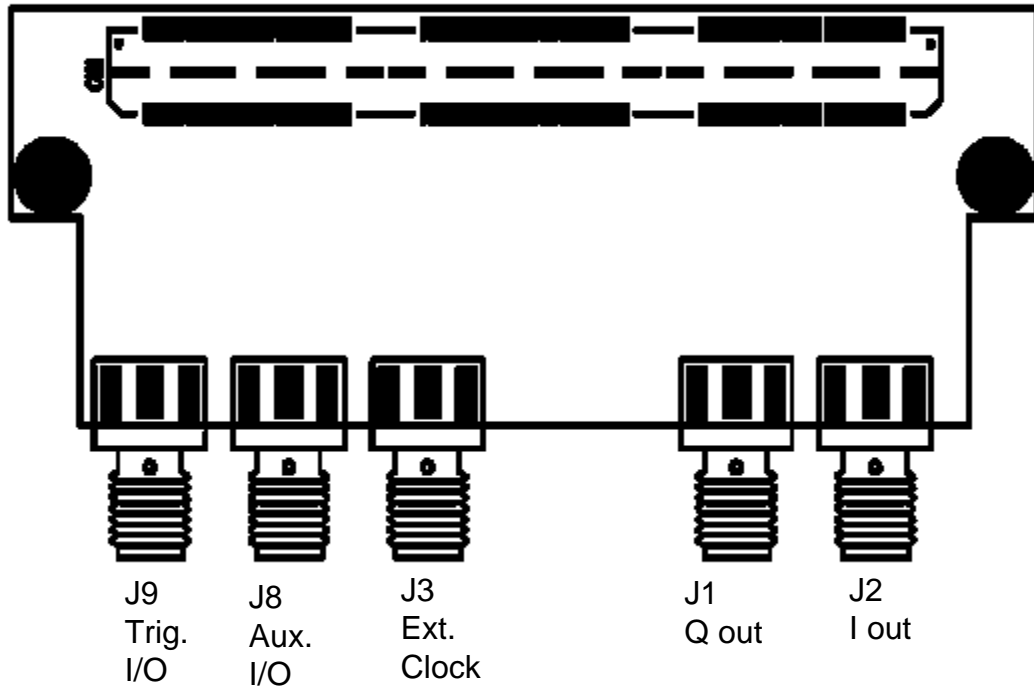
6. Design Examples

Example UCF, HDL files and Application software are available from Alpha Data for purchasers of this card.

7. Pinout

| Samtec Pin No. | UCF Name | XRC2 | XPL | XP | XPI | V4SX | V4LX | V5LX | Comments |
|----------------|-------------|------|------|-----|-----|-----------|-----------|------|----------|
| 1 | SYNTHSEL(3) | C2 | F8 | D10 | D10 | H28 | H28 | AL6 | |
| 3 | SYNTHSEL(2) | B3 | F7 | E10 | E10 | H27 | H27 | AL5 | |
| 6 | TRIG_IO | C9 | D8 | H13 | H13 | N22 | N22 | AP5 | |
| 9 | SYNTHSEL(1) | D6 | F10 | J10 | J10 | H30 | H30 | AM6 | |
| 10 | TRIG_DIRN | B9 | A8 | M19 | M19 | J30 | J30 | AM7 | |
| 11 | SYNTHSEL(0) | C6 | F9 | H10 | H10 | H29 | H29 | AN7 | |
| 13 | SYNTH_OE | H11 | G11 | G10 | G10 | E33 | E33 | AN8 | |
| 14 | AUX_IO | D10 | D10 | L18 | L18 | R21 | R21 | AL10 | |
| 20 | AUX_DIRN | G10 | B9 | F13 | F13 | K29 | K29 | AM11 | |
| 24 | SYNTHREFCK | H9 | E11 | F9 | F9 | L30 | L30 | AP16 | |
| 26 | DEBUG(0) | H12 | C10 | K13 | K13 | M32 | M32 | AM15 | |
| 28 | DEBUG(1) | H13 | C11 | J13 | J13 | M33 | M33 | AM16 | |
| 38 | DEBUG(2) | H16 | C15 | F21 | F21 | F33/D34 | F33/D34 | AP9 | |
| 40 | DEBUG(3) | H17 | B15 | G21 | G21 | F34/E34 | F34/E34 | AP10 | |
| 89 | DEBUG(6) | E16 | G15 | K21 | K21 | AC32/AD34 | R32/P34 | AE8 | |
| 90 | IOFFS_SDI | C16 | H19 | C19 | C19 | AA24 | V34 | AH9 | |
| 91 | SYNTHCK | E17 | F15 | J21 | J21 | AC33/AC34 | R33/R34 | AF8 | |
| 92 | IOFFS_CK | D17 | C23 | D19 | D19 | AA23 | V33 | W7 | |
| 94 | IOFFS_LD | D18 | D23 | E28 | E28 | AD29 | U27 | AE4 | |
| 97 | EXTCK_P | J18 | G22 | G22 | G22 | AK24/AL24 | AG30/AF29 | AA4 | |
| 102 | DEBUG(4) | E18 | C24 | J22 | J22 | AN22/AM21 | AC28/AA25 | AG1 | |
| 103 | QOFFS_SDI | F19 | E24 | G27 | G27 | AJ34 | U32 | Y11 | |
| 104 | DEBUG(5) | E19 | D24 | K22 | K22 | AN23/AM22 | AB28/AA26 | AG2 | |
| 105 | QOFFS_CK | G20 | F23 | J27 | J27 | AC27 | U25 | AH2 | |
| 107 | QOFFS_LD | A28 | E23 | K27 | K27 | AD27 | V25 | AE18 | |
| 122 | DAC_Q(13) | K22 | AF4 | C30 | C30 | AH32 | W32 | V9 | |
| 124 | DAC_Q(12) | K23 | AF3 | D30 | D30 | AH33 | V32 | V8 | |
| 126 | DAC_Q(11) | H20 | AF2 | M26 | M26 | AM32 | Y29 | Y7 | |
| 128 | DAC_Q(10) | H21 | AF1 | M25 | M25 | AM33 | W29 | Y8 | |
| 130 | DAC_Q(9) | J21 | AD4 | J26 | J26 | AL33 | AA33 | AA6 | |
| 132 | DAC_Q(8) | J22 | AD3 | H26 | H26 | AL34 | AA34 | AA5 | |
| 134 | DAC_Q(7) | D20 | AB6 | J24 | J24 | AH30 | Y28 | AC5 | |
| 136 | DAC_Q(6) | D21 | AB5 | K24 | K24 | AJ30 | Y27 | AB6 | |
| 138 | DAC_Q(5) | E21 | AC6 | C23 | C23 | AN27 | AH34 | AE6 | |
| 140 | DAC_Q(4) | E22 | AC5 | D23 | D23 | AP27 | AJ34 | AF5 | |
| 142 | DAC_Q(3) | B21 | J26 | G24 | G24 | AJ29 | AA29 | AG6 | |
| 144 | DAC_Q(2) | B22 | J25 | H24 | H24 | AK29 | AA28 | AF6 | |
| 146 | DAC_Q(1) | H22 | Y23 | K30 | K30 | AF26 | AB30 | W1 | |
| 148 | DAC_Q(0) | H23 | Y24 | J30 | J30 | AE26 | AA30 | V2 | |
| 149 | DACI_CLK | J23 | F28 | C32 | C32 | AK22 | AG32 | V4 | |
| 150 | DACQ_CLK | D22 | H26 | K25 | K25 | AN30 | AC30 | AH5 | |
| 154 | DAC_I(13) | C22 | AB25 | E24 | E24 | AE27 | Y24 | Y1 | |
| 156 | DAC_I(12) | C23 | AB26 | F24 | F24 | AF28 | W24 | W2 | |
| 158 | DAC_I(11) | B23 | E28 | K23 | K23 | AL30 | AD32 | AA3 | |
| 160 | DAC_I(10) | B24 | E27 | L23 | L23 | AM30 | AE32 | AB3 | |
| 162 | DAC_I(9) | F23 | AC25 | G30 | G30 | AH27 | AE31 | AD2 | |
| 164 | DAC_I(8) | F24 | AC26 | H30 | H30 | AJ27 | AF31 | AE2 | |
| 166 | DAC_I(7) | C24 | E30 | G25 | G25 | AL29 | AF34 | AE3 | |
| 168 | DAC_I(6) | D24 | E29 | H25 | H25 | AL28 | AF33 | AF3 | |
| 170 | DAC_I(5) | G24 | AE29 | G31 | G31 | AN24 | AB23 | AH3 | |
| 172 | DAC_I(4) | G25 | AE30 | F31 | F31 | AP24 | AB22 | AG3 | |
| 174 | DAC_I(3) | D25 | AF29 | L30 | L30 | AK26 | AK34 | AP2 | |
| 176 | DAC_I(2) | D26 | AF30 | M30 | M30 | AL26 | AK33 | AN2 | |
| 178 | DAC_I(1) | K21 | H28 | J23 | J23 | AM23 | AL31 | AN3 | |
| 180 | DAC_I(0) | K20 | H27 | H23 | H23 | AL23 | AM31 | AM3 | |
| | | | | | | | | | |

Board Layout



Revision History

| Date | Revision | Nature of Change |
|----------|----------|------------------|
| Nov-2006 | Draft | First draft |