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ADC and DAC Channel Usage for SQZ

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# Purpose

This document lists the specific ADC and DAC channels used within the SQZ I/O expansion chassis. In the following tables, the entries given in the ‘Signal’ column are *not* meant to be the exact DAQ channel name for that signal (though they may be); rather the entries are intended as descriptors to identify the actual hardware channel that is connected to a given ADC/DAC channel.

The reference document for the actual DAQ channel names is [T1000264](https://dcc.ligo.org/cgi-bin/private/DocDB/ShowDocument?docid=11847), *List of ISC Photodetectors in Advanced LIGO.*

# SQZ-IO I/O Chassis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Card | AA/AI conn. | ADC/DAC Chns. | Signal | | |
| ADC 0 | DB9\_1 | 1 | SQZ-WFS\_A\_RF | Seg 1 | Q-phase |
| 2 | I-phase |
| 3 | Seg 2 | Q-phase |
| 4 | I-phase |
| DB9\_2 | 5 | Seg 3 | Q-phase |
| 6 | I-phase |
| 7 | Seg 4 | Q-phase |
| 8 | I-phase |
| DB9\_3 | 9 | SQZ-WFS\_B\_RF | Seg 1 | Q-phase |
| 10 | I-phase |
| 11 | Seg 2 | Q-phase |
| 12 | I-phase |
| DB9\_4 | 13 | Seg 3 | Q-phase |
| 14 | I-phase |
| 15 | Seg 4 | Q-phase |
| 16 | I-phase |
| DB9\_5 | 17-20 | SQZ-WFS\_A\_DC | Segs 1-4 | DC Outputs of WFS |
| DB9\_6 | 21-24 | SQZ-WFS\_B\_DC | Segs 1-4 |
| DB9\_7 | 25 | Unused | | |
| 26 | Unused | | |
| 27 | Unused | | |
| 28 | Unused | | |
| DB9\_8 | 29-30 | Unused | | |
| 31 | Duotone (DAC) | | |
| 32 | Duotone | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Card | AA/AI conn. | ADC/DAC Chns. | Signal | |
| ADC 1 | DB9\_1 | 1-4 | SQZ TT1 | Tip-Tilt BOSEM sensor signals |
| DB9\_2 | 5-8 | SQZ TT2 |
| DB9\_3 | 9-12 | SQZ TT1 | Tip-Tilt Coil driver readbacks |
| DB9\_4 | 13-16 | SQZ TT1 |
| DB9\_5 | 17 | SQZ-OPO\_SERVO\_ERR, CM Servo, I monitor | |
| 18 | SQZ-OPO \_SERVO\_CTRL, CM Servo, Fast monitor | |
| 19 | SQZ-OPO \_SERVO\_SLOW, CM Servo, Slow monitor | |
| 20 | Unused | |
| DB9\_6 | 21 | SQZ-SHG\_SERVO\_ERR, CM Servo, I monitor | |
| 22 | SQZ-SHG \_SERVO\_CTRL, CM Servo, Fast monitor | |
| 23 | SQZ-SHG \_SERVO\_SLOW, CM Servo, Slow monitor | |
| 24 | Unused | |
| DB9\_7 | 25 | SQZ-SA\_SERVO\_ERR, CM Servo, I monitor | |
| 26 | SQZ-SA \_SERVO\_CTRL, CM Servo, Fast monitor | |
| 27 | SQZ-SA \_SERVO\_SLOW, CM Servo, Slow monitor | |
| 28 | Unused | |
| DB9\_8 | 29 | SQZ-CLF\_SERVO\_ERR, CM Servo, I monitor | |
| 30 | SQZ-CLF \_SERVO\_CTRL, CM Servo, Fast monitor | |
| 31 | SQZ-CLF \_SERVO\_SLOW, CM Servo, Slow monitor | |
| 32 | Unused | |

|  |  |  |  |
| --- | --- | --- | --- |
| Card | AA/AI conn. | ADC/DAC Chs. | Signal |
| DAC 0 | DB9\_1 | 1-4 | SQZ TT1 Coil drives (UL, LL, UR, LR) |
| DB9\_2 | 5-8 | SQZ TT2 Coil drives (UL, LL, UR, LR) |
| DB9\_3 | 9 | MCL PZT Tip-tilt 1: pitch |
| 10 | MCL PZT Tip-tilt 1: yaw |
| 11 | MCL PZT Tip-tilt 2: pitch |
| 12 | MCL PZT Tip-tilt 3: yaw |
| DB9\_4 | 13-15 | Unused |
| 16 | Duotone |

# Summary

Below is a summary of the number of I/O cards, unused channels, and available I/O slots for the SQZ I/O Expansion Chassis. This assumes there are a total of 10 slots available in the I/O chassis for ADC and/or DAC cards. For the unused ADC channel column, the number in parentheses is the subset of these channels that are available Anti-Alias (AA) chassis on free DB9 connectors; the other channels are found on AA DB9 connectors which are only partially used.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **I/O Chassis** | **# ADC cards** | **# DAC cards** | **Unused ADC chans** | **Unused DAC chans** | **Available I/O slots** |
| Vertex: SQZ | 2 | 1 |  |  |  |
| Totals | 2 | 1 |  |  |  |