Silver TELECOM

EVALAg6400 Evaluation Board User Manual

Rev 2.0 – July 2011

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3   Introduction

This manual is intended to be a guide to using the "EVALAg6400 evaluation board" with Silver Telecom Power Sourcing Equipment (PSE) module.

4 Board Description

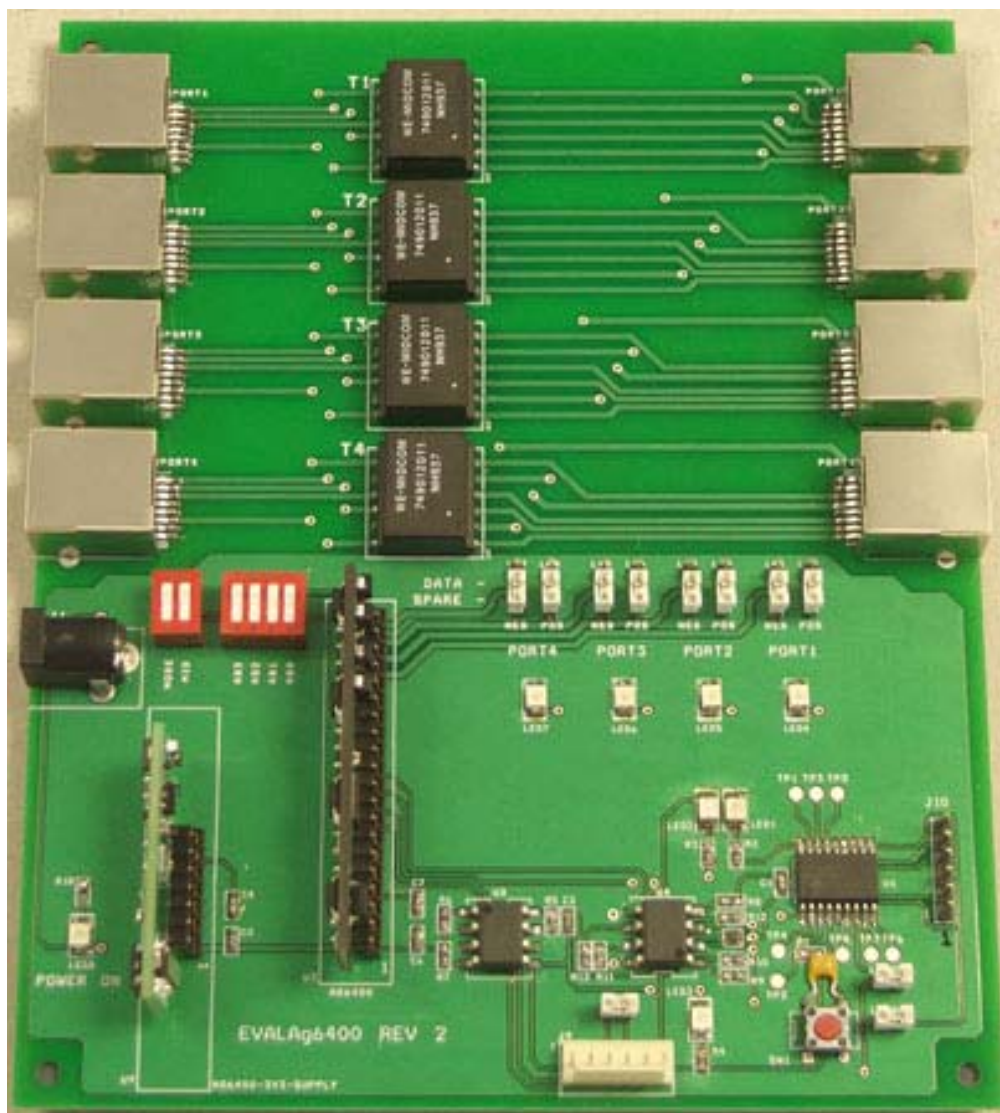The EVALAg6400 evaluation board will work with the Ag6400 only.
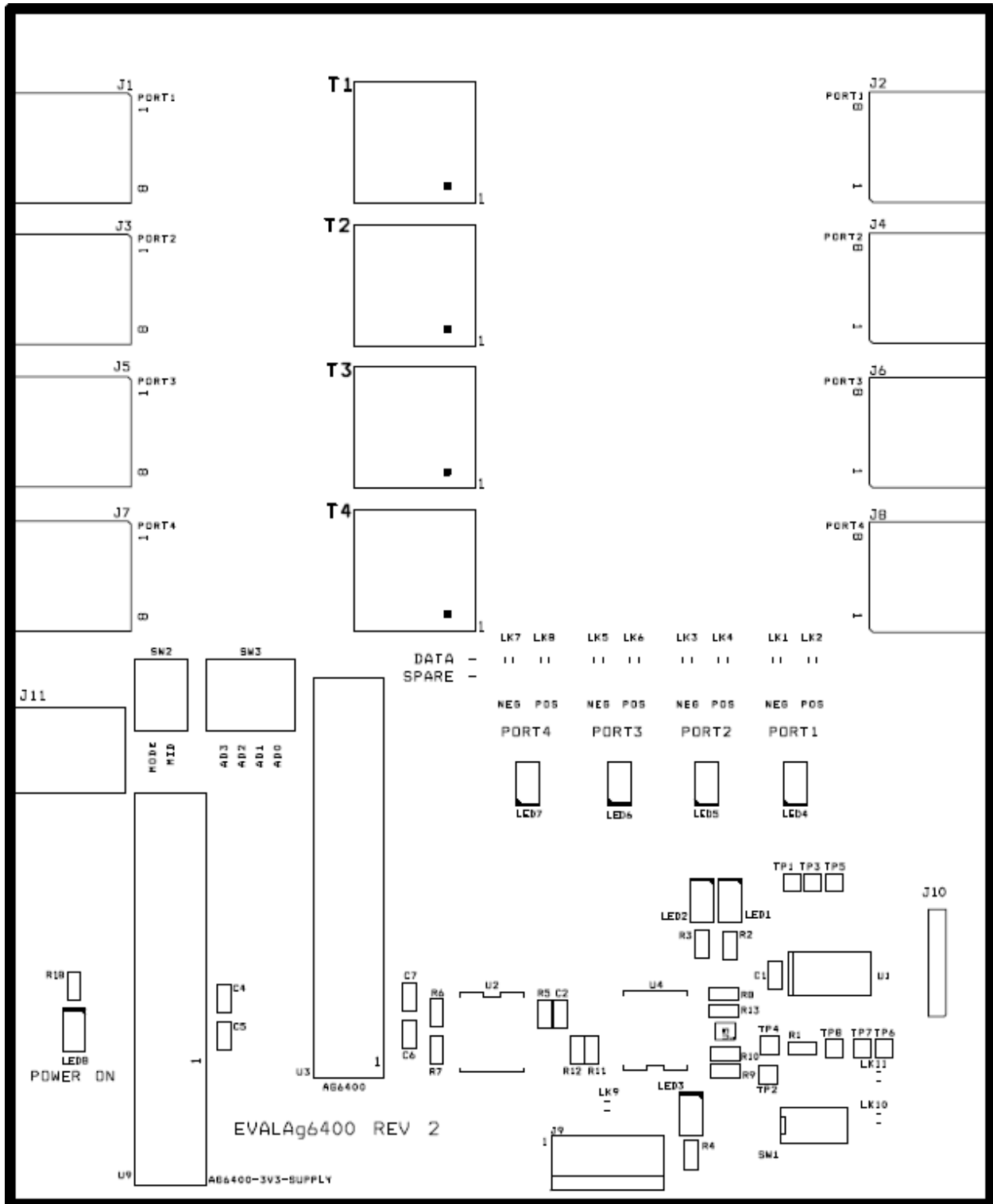

Figure 1: EVALAg6400 Board

Figure 2: Board Layout

4.1 Input Power

Input power for the Ag6400 is supplied through J11, which is a standard DC10 connector with a 2.5mm (Dia) centre pin. For use with IEEE802.3af Powered Devices the input voltage can be between -45V to -57V and for IEEE802.3at PDs the voltage can be between -50V and -57V. It is important that the power supply used has sufficient current capability to handle all four ports at maximum load.

J11 centre pin is +Ve with respect to the outer connection. The EVALAg6400 board does have a protection diode in series with the centre pin, to prevent damage if the polarity is accidentally reversed.

When the Ag6400 is set in hardware mode this is the only power that the board needs.

4.2 Data Inputs

The EVALAg6400 board has four 10/100BASE-T data inputs: -

> PORT 1 – J1
> PORT 2 – J3
> PORT 3 – J5
> PORT 4 – J7

4.3 Data and Power Outputs

The EVALAg6400 board has four 10/100BASE-T outputs: -

> PORT 1 – J2
> PORT 2 – J4
> PORT 3 – J6
> PORT 4 – J8

Power can be applied to either the spare pairs or the data pairs on any port by setting the position of the links LK1 to LK8, as shown below.

With jumper links positioned between the top and centre pins, the power will be supplied on the DATA pairs.

With jumper links positioned between the centre and bottom pins, the power will be supplied on the SPARE pairs.
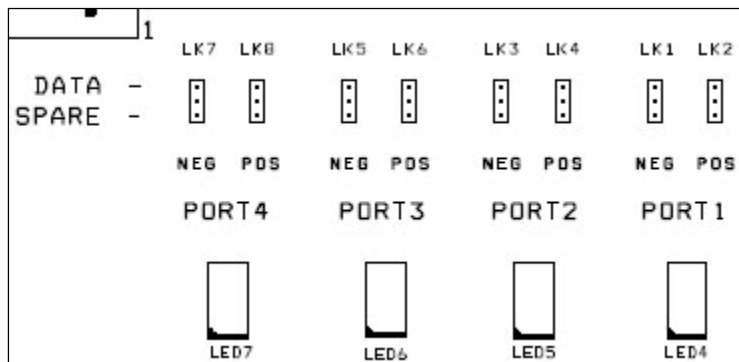

Figure 3: Output Power Selector Links

It is important that these links are in the same position for each output port pair: –

       LK1 & LK2 – Both on DATA or both on SPARE
       LK3 & LK4 – Both on DATA or both on SPARE
       LK5 & LK6 – Both on DATA or both on SPARE
       LK7 & LK8 – Both on DATA or both on SPARE

It is not allowed to have one of the above pairs connected to the DATA pair and the other connected to the SPARE pair (e.g. LK1 – DATA and LK2 – SPARE).

4.4 Ag6400 Power Supplies

The EVALAg6400 board only requires one power supply (as mentioned in Section 4.1), but the AG6400 requires two supplies V_{CC} and V_{EE}. In addition to this the V_{CC} supply to the Ag6400 must power up before the V_{EE} supply.

To make this easier the module U9 take the input voltage from J11 (-45V to -57V) and generates the V_{CC} supply rail (+3.3V). In addition to this is also connects the V_{CC} rail to the Ag6400 before switching the input supply from J11 to the V_{EE} rail.

4.5 Output Status LEDs

When the Ag6400 is operating normally LEDs 4, 5, 6 and 7 will illuminate when power is being applied to that port.

4.6 Selection Switches

SW2 connects to the MID and MODE pins (which have internal pull down resistors), when the switch is closed the pin will be connected to V_{CC} (Logic 1).

SW3 connects to the AD0 – AD3 I^2C address inputs (which have internal pull up resistors), when the switch is closed the pin will be connected to 0V (Logic 0).
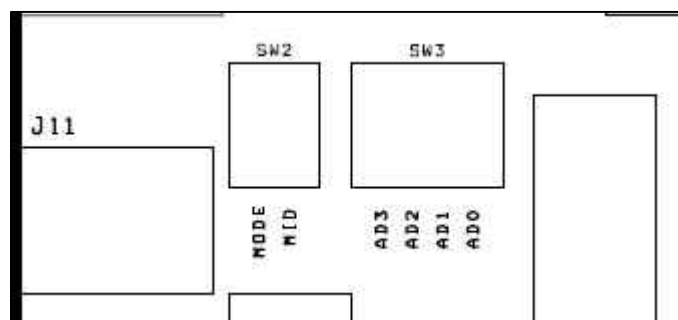

Figure 4: Selection Switches

4.7 Software Interface

By default the EVALAg6400 board operates the Ag6400 in Hardware Mode. But it does have the capably of operating the Ag6400 in Software Mode. To run the board in Software Mode the circuit shown in Figure 5 needs to be powered from an isolated 5V power supply. The circuit is designed to run from an isolated supply with opto-isolators to demonstrate the example shown in the Ag6400 datasheet Figure 8.

The isolated 5V is supplied is connected through J9 -

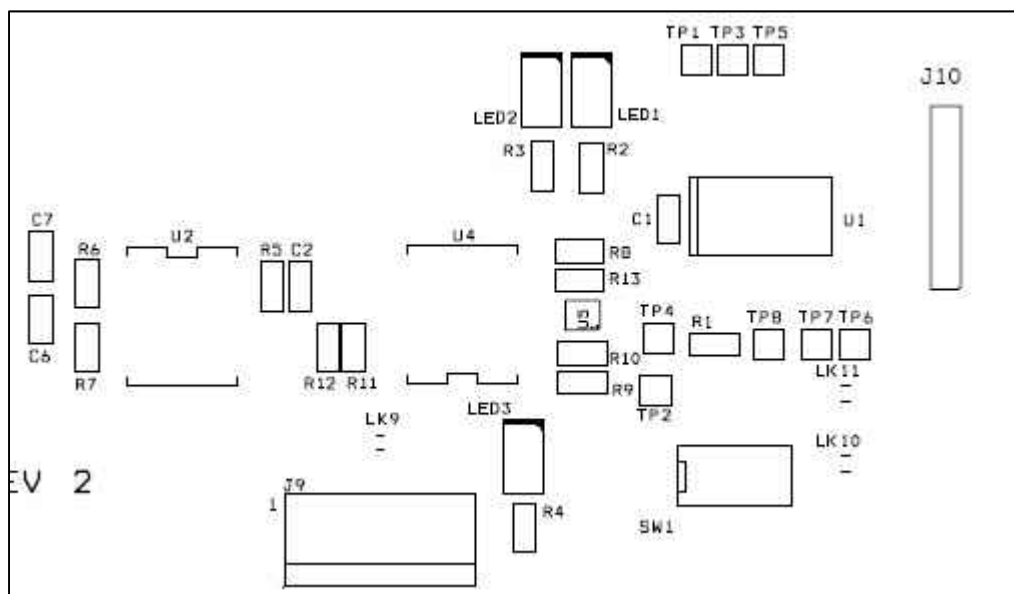Pin 1 is connected to GND and Pin 6 is connected to +5V

Figure 5: I^{2}C Control Circuit

The EVALAg6400 can be used in software mode, either by using the on-board µ-controller (U1), or from an external controller via the I^{2}C port on J9.

To use the on-board µ-controller links LK9 to LK11 must be fitted.

To use an external controller links LK10 and LK11 must be removed (isolating the on-board µ-controller from the I^{2}C bus. LK9 connects SDI and SDO together for SDA, this link can be removed if you want separate control lines.

When using the on-board µ-controller all switches on SW3 (AD0-3) must be closed.

5 Equipment Required

Figure 6 shows a simple set up using the EVALAg6400 board to power 4 x Ethernet Cameras.

The equipment required: -

- ➤ EVALAg6400
- ➤ Isolated -50V to -57V Power Supply (Optional 5V power supply for software mode)
- ➤ PC
- ➤ Switch
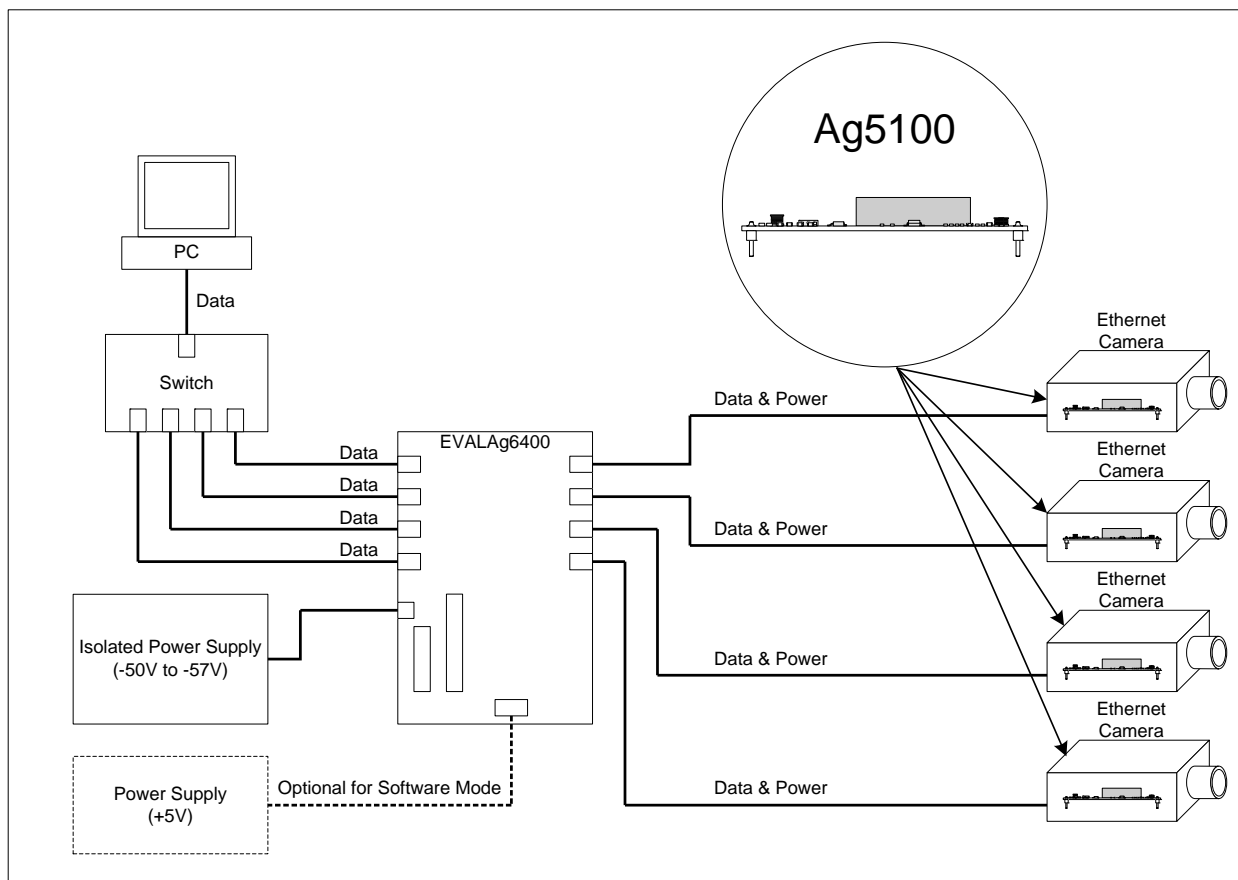- ➤ Ethernet Cameras
- ➤ CAT5e cables

Figure 6: Basic set-up

6 Using the Board

6.1 Hardware Mode

Using the set-up shown in Figure 6; data is connected to the EVALAg6400 board via a switch connected to a PC.

With the EVALAg6400 set in hardware mode (SW2 - MODE switch Closed), it will automatically detect equipment presenting a valid IEEE802.3at (or IEEE802.3af) signature (and classification) connected to an output port.

Upon completion of a valid signature (and classification) the EVALAg6400 board will add power to the data from the PC on that port. The corresponding LED on the EVALAg6400 board will illuminate when power is being applied to a port.

6.2 Software Mode (on-board)

Using the set-up shown in Figure 6; data is connected to the EVALAg6400 board via a switch connected to a PC.

With the EVALAg6400 set in software mode (SW2 - MODE switch Open), it is important that the mode is set before the Ag6400 is powered up.

The (optional) 5V supply can be connected before or after the main (-45V to -57V) supply is connected, it doesn't matter which.

When both supplies have been connected, pressing (and releasing) the push switch SW1 will enable the on-board µ-controller.

The first operation will be to check the mode of the Ag6400: -
    If it is in software mode, then LED2 will be illuminated.
    If it is in hardware mode, then LED1 will be illuminated.

If it is in software mode the µ-controller will continually monitor the status of each output and respond accordingly.

If it is in hardware mode the µ-controller will do nothing and the Ag6400 will be if full control of the outputs.

6.3 Software Mode (external)

Using the set-up shown in Figure 6; but this time J9 is connected to an external I^2C bus. Links LK10 and LK11 must be removed, to isolate the on-board μ-controller from the I^2C bus. If the external I^2C bus uses SDA then LK9 must be fitted, but if the external I^2C bus uses SDI and SDO then the link LK9 must be removed.

Note: external power must also be provided through J9; primarily this is for the on-board opto-isolators; but it will also power the on-board μ-controller (which is why it needs to be disconnected from the I^2C bus).

Data is connected to the EVALAg6400 board via a switch connected to a PC.

With the EVALAg6400 set in software mode (SW2 - MODE switch Open), it is important that the mode is set before the Ag6400 is powered up.

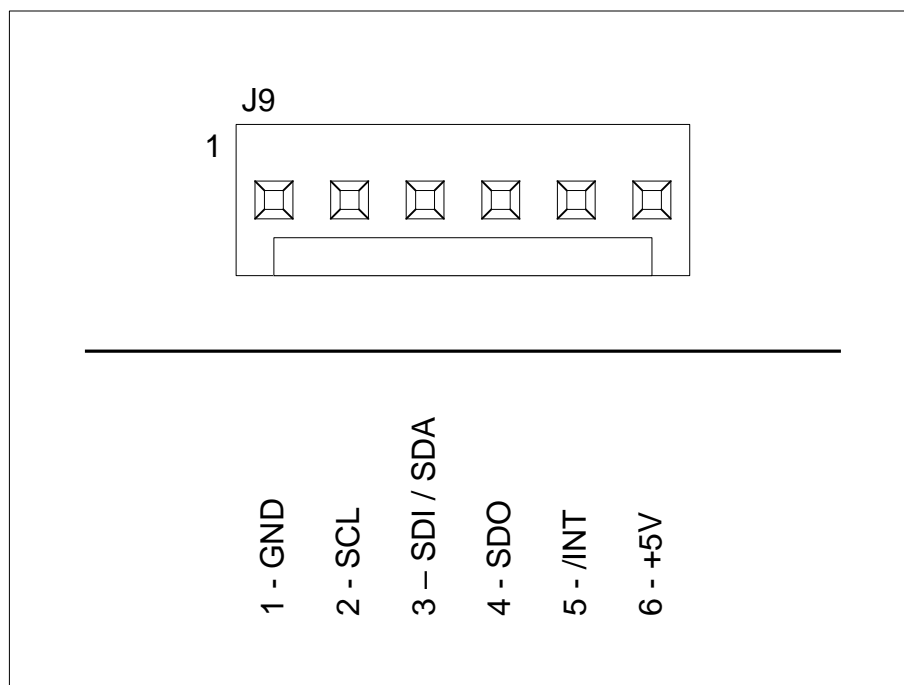Once the EVALAg6400 is powered, the Ag6400 is now controlled externally via the I^2C bus.

J9

1

1 - GND
2 - SCL
3 – SDI / SDA
4 - SDO
5 - /INT
6 - +5V

Figure 7: External I^2C Connections

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