

## Appendix A: SIM - Interlock I/O Connector Pinouts and Functions

| Pin # | Function         | Description  | Signal Type | Level when Asserted                          | Level when Deasserted      | Notes   | Applications  |
|-------|------------------|--|-------------|--|----------------------------|---|---|
| 1     | Amplifier Output | Used for driving slave amplifiers; monitoring amplifier output voltage | AC or DC    | Can be greater than $\pm 200V$ peak          | 0V                         | Used for driving slave amplifiers in multi-amp systems. Wired to amplifier output. Do not connect to any impedance of less than 10K ohm.  | Used in multi-amplifier systems.  |
| 2     | Sampled Common   | Load connected here for Current sense                                  | AC or DC    | Up to $\pm 2V$ peak relative to Common       | 0V                         | Used for driving slave amplifiers in multi-amp systems, controlled voltage or controlled current mode.  | <b>Driving Slave Amplifiers:</b> Amplifier External Reference, 2V peak maximum from PIN 14 (Common).  |
| 3     | +1 IN            | Differential Slave input   | AC or DC    | Can be greater than $\pm 200V$ peak          | 0V                         | Only used in multiple amplifier configurations - Series mode.   | Can accept output of PIN 1 (Amplifier Output) OR PIN 2 (Sampled Common) from Master device when in Slave mode.  |
| 4     | Interlock        | Amplifier Interlock input  | DC          | 0V to 8V                                     | 10V to 15V                 | When "low", forces to Standby; when allowed to float, allows Run (if amplifier is "Ready"). IMPORTANT: amplifiers must be configured for Run mode at startup (factory default) or the Run button must be pressed at the amplifier front panel at startup. | <b>Remote to Standby:</b> Short PIN 4 of amplifier to Digital Ground (PIN 17) using dry contact switch or optocoupler. When closed, places amplifier in Standby.<br><b>Multi-amplifier Systems, Simultaneous Enable or Disable of amplifiers:</b> Daisy-chain Interlock (PIN4) across amps (if sharing the same Sampled Common power connections). Optocoupler must be used for multi-amps in series. |
| 5     | Amp Ready        | Ready output of amplifier  | DC          | 0V   | -14V                       | Normally reserved for OPTOC use; not recommended for normal customer use. Line has series resistor and unloaded will go from 0V (not ready) to -15V (ready), with an OPTOC BNC card the signal will go from 0V (not ready) to -1.2Vdc (ready)             | <b>Not recommended for normal customer use.</b>   |
| 6     | I MON +          | Differential Current Monitor +   | AC or DC    | <b>2105:</b> 5A/V<br><b>2110/2120:</b> 20A/V |                            | Output current produced per voltage detect.   | <b>Current Monitoring:</b> Connect a voltage meter to monitor the output current being produced by the amplifier. For unbalanced, for each 1V detected, current output is 5A (2105) or 20A (2110/2120).   |
| 7     | None             | No connection  |             |  |                            |   | <b>Not currently used.</b>  |
| 8     | None             | No connection  |             |  |                            |   | <b>Not currently used.</b>  |
| 9     | Blanking input   | Blanking control   | DC          | 0 - 1Vdc allows normal operation             | 3.5 - 5Vdc output is muted | Used in amplifiers with blanking feature for blanking control.  | <b>Blanking Control:</b> Use an external isolated 5V power supply to mute the output of the amplifier.  |
| 10    | Sampled Common   | Amp Analog Ground; Blanking Ground                                     |             |  |                            | Amplifier ground.   | Can be used as Blanking return or as a reference of the amplifier for status reporting applications. See Over-Temp (PIN 11), Run (PIN 12), Overload (PIN 23), and OverVoltage (PIN 24).   |

| Pin # | Function                | Description  | Signal Type | Level when Asserted                          | Level when Deasserted | Notes  | Applications  |
|-------|-------------------------|--|-------------|--|-----------------------|--|---|
| 11    | OverTemp Out            | Over-temperature output                                      | DC          | -24V   | 0V                    | When amp is normal, this pin is pulled to -24V through a 47.5K-ohm resistor; when amp is in OverTemp state, this pin is grounded. Do not exceed 7 milliamps.   | <b>Remote Signal of Over-Temperature Condition:</b> LED, when lit, signals Over Temperature condition. Use a 6 mA series resistor of 4.7K-ohm for LED or OPTO, tie to -24V source (PIN 13). |
| 12    | Run                     | Amplifier Run output   | DC          | -24V   | 0V                    | When amp is in Standby mode, this pin is pulled to -24V; when amp is in Run mode, this pin is grounded, energizing Mains Relays and allowing drive for an external LED. DO NOT exceed 7mA; DO NOT ground this pin as this will enable Main Power Relays. | <b>Remote Signal of Run Condition:</b> LED, when lit, signals Run state. Use a 6mA series resistor of 4.7K-ohm for LED or OPTO, tie to -24V source (PIN 13).                                |
| 13    | -24V                    | -24V Power Output  | DC          |  |                       | -24V dc, 30 mA max   | Internally tied for use in status reporting applications. See OverTemp (PIN 11), Run (PIN 12), Overload (PIN 23), and OverVoltage (PIN 24).   |
| 14    | Common                  | Ground before Sense Resistors                                |             |  |                       | Current monitor reference. Voltage between Common and Sampled Common is voltage on the Current Sense resistor.   | Possibly series amplifiers will not need current reporting on the High side amp, since its current will be same as Master.  |
| 15    | -1 IN                   | Differential Slave Input                                     | AC or DC    | Up to 200V peak                              | 0V                    | Only used in multiple amplifier configurations, Series mode.   | Can accept output of PIN 1 (Amplifier Output) OR PIN 2 (Sampled Common) from Master device when in Slave mode.  |
| 16    | +24V                    | +24V Power Output  | DC          |  |                       | +24V dc, 30 mA max.  | Used in status reporting applications. See OverTemp (PIN 11), Run (PIN 12), Overload (PIN 23), and OverVoltage (PIN 24).  |
| 17    | Digital Ground          | Digital circuitry ground - Interlock Common                  | DC          | 0V   | 0V                    |  | Used with PIN 25 (Reset) for Remote Reset from Standby or Stop after Error. Used with PIN 4 (Interlock) for simultaneous remote to Standby of all amps in a multi-amplifier system.         |
| 18    | OEM App                 | Input Monitor (OEM only)                                     |             |  |                       | Used to monitor the input signal from an OEM DAC card; this is the actual input signal.  | <b>OEM modification only; normally no connection.</b>   |
| 19    | I MON - (alt.: OEM App) | Differential Current Monitor - ; (- Input Monitor, OEM only) | AC or DC    | <b>2105:</b> 5A/V<br><b>2110/2120:</b> 20A/V |                       | Inverted I MON+ (PIN 6). Output current produced per voltage detect.   | <b>Current Monitoring:</b> Connect a voltage meter to monitor the output current being produced by the amplifier. For each 1V detected, current output is 5A (2105) or 20A (2110/2120).     |
| 20    | I SUM1-                 | Multiple Amplifier Summing, Amplifier 1                      | DC          |  |                       | Planned for use in multiple amplifier configurations - paralleled and running Controlled Current Mode  | <b>Currently not used.</b>  |
| 21    | I SUM2-                 | Multiple Amplifier Summing, Amplifier 2                      | DC          |  |                       | Planned for use in multiple amplifier configurations - paralleled and running Controlled Current Mode  | <b>Currently not used.</b>  |

| Pin #  | Function        | Description                                     | Signal Type | Level when Asserted | Level when Deasserted | Notes   | Applications  |
|--|-----------------|---|-------------|---------------------|-----------------------|---|---|
| 22   | I SUM3-         | Multiple Amplifier Summing, Amplifier 3         | DC          |                     |                       | Planned for use in multiple amplifier configurations - paralleled and running Controlled Current Mode   | Currently not used.   |
| 23   | OverLoad Out    | Overload output (amplifier output is clipping). | DC          | -24V                | 0V                    | When amp is normal, this pin is pulled to -24V through a 47.5K-ohm resistor; when amp is in Overload state, this pin is grounded. Do not exceed 6 milliamps.      | <b>Remote Signal of Overload Condition:</b> LED, when lit, signals Overload condition. Use a 6mA series resistor of 4.7K-ohm for LED or OPTO, tie to -24V source (PIN 13).  |
| 24   | OverVoltage Out | Overvoltage output (High AC line voltage).      | DC          | -24V                | 0V                    | When amp is normal, this pin is pulled to -24V through a 47.5K-ohm resistor; when amp is in Overvoltage state, this pin is grounded. Do not exceed 6 milliamps.   | <b>Remote Signal of Overvoltage Condition:</b> LED, when lit, signals Overvoltage condition. Use a 6mA series resistor of 4.7K-ohm for LED or OPTO, tie to -24V source (PIN 13).  |
| 25   | Reset           | Reset   | DC          | -15V                | 0V                    | Tie to PIN 13 (-24V dc) and create a -15V dc source; <2mA required for reset. Connect the -15V dc source to PIN 25 (Reset) through a 1K buffer resistor to reset. | <b>Reset from Standby:</b> Use a dry contact switch and voltage regulator to return amp to Ready/Run condition after Over-temperature or Overload conditions. Assert -15V for at least 100 ms to clear error condition. |
| Gray shaded areas indicate pin not used / feature not implemented. |                 |   |             |                     |                       | Blue shaded areas indicate used only in multi-amplifier systems.  |   |