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**NexSens iSIC Data Loggers
With Expansion
Interface Manual
Revision 08.03.11**

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About NexSens Technology, Inc.

NexSens software and real-time data logging systems are designed to simplify the setup and operation of environmental monitoring networks. NexSens products automate much of the tedious programming, data collection, and manual data processing common with other systems.

iChart is an easy-to-learn, easy-to-use Windows-based software program designed to interface with the industry's most popular environmental monitoring sensors and systems. A large multi-vendor instrument library makes setup quick and easy. iChart automates much of the tedious programming, data collection and manual data processing common with other environmental data collection systems.

The NexSens iSIC (Intelligent Sensor Interface and Control) is a state-of-the-art line of data loggers that simplify the collection of real-time data from environmental sensors and monitoring instruments. The iSIC data logger supports multi-vendor sensor connections and is designed for environmental data monitoring with NexSens communication equipment and software.

Technical

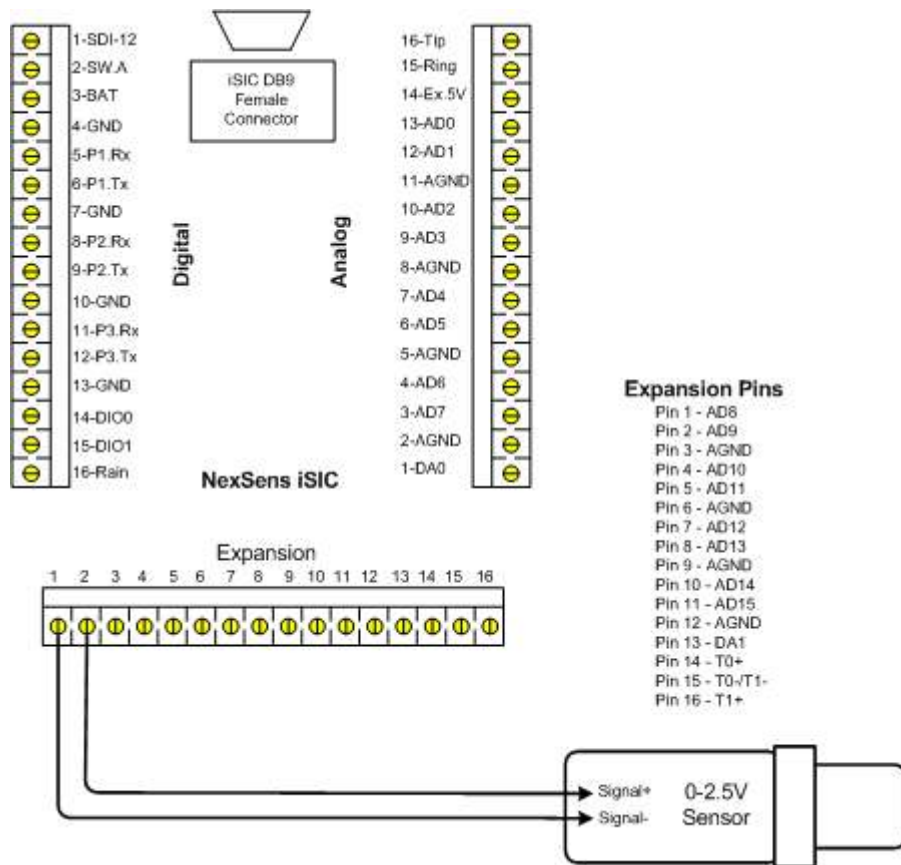
The NexSens iSIC can have factory installed analog, digital, or temperature and dissolved oxygen expansions. Each of these expansions are used to allow the addition of more than the standard amount of sensors into your system. The expansion connector is the same 16-pin green connector used for the digital and analog terminal strips.

1. Analog Expansion

The analog expansion connector allows for the addition of multiple analog input sensors, such as single and differential 4-20 mA sensors, as well as single and differential analog inputs, analog outputs, and temperature sensors. See the diagrams below for exact signal pins:

Analog Inputs

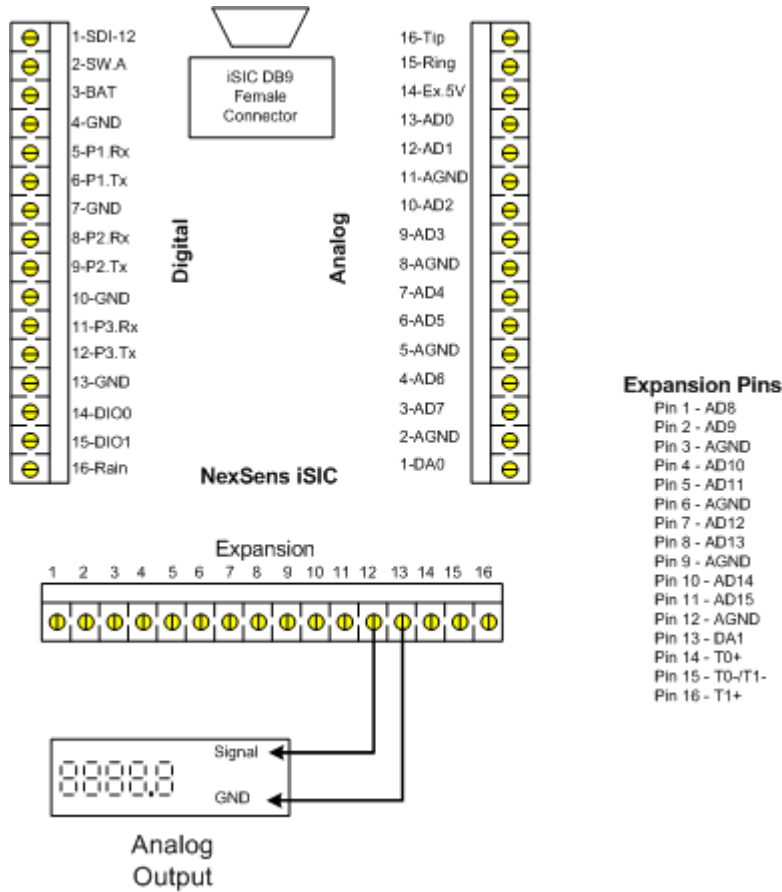
Pins AD8-A15 can all be used to interface with single and differential 4-20 mA sensors, as well as single and differential analog inputs.



The wiring above shows a differential analog input sensor connected to the analog expansion pins AD8 and AD9. AD8-AD15 can also be used, and operate in the same manner as AD0-AD7. Please see *Chapter 3: Connecting Sensors* for a complete description on wiring your specific sensor.

Analog Outputs

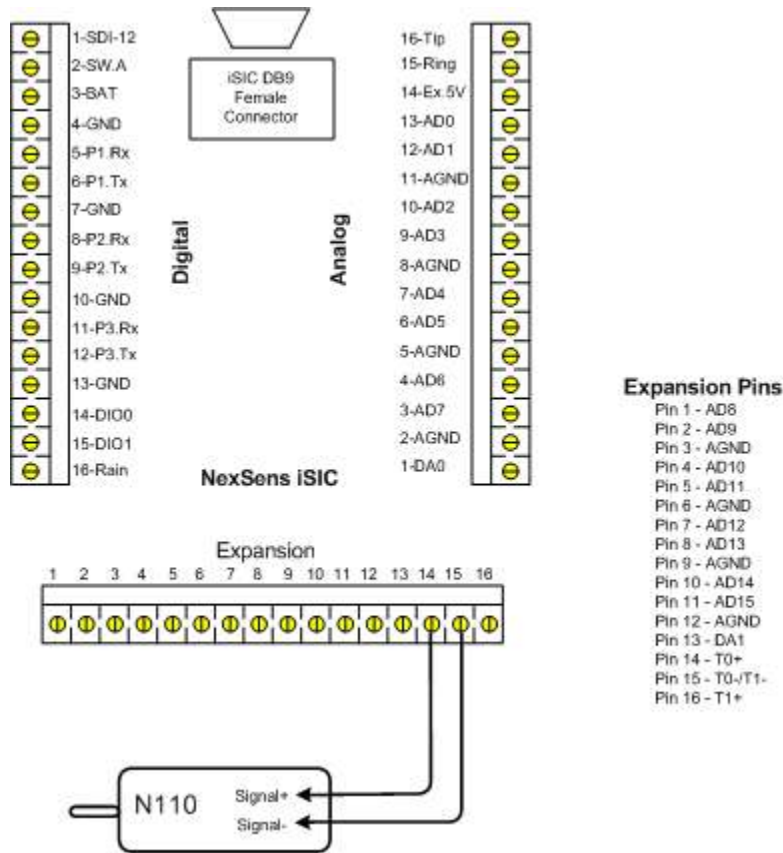
The analog expansion connector also allows the iSIC to interface with an additional analog output device using the DA1 pin.



The wiring above shows an Analog Output sensor connected to the analog expansion pins DA1 and AGND. DA1 operates in the same way as DA0. Please see *Chapter 3: Connecting Sensors* for a complete description on wiring your specific sensor.

Temperature Sensors

The analog expansion connector also allows the direct interface of the N110 temperature sensor to the iSIC using T0 and T1. Simply connect the sensors positive lead to the +, and negative lead to - pins of the same T channel as shown in the diagram below:



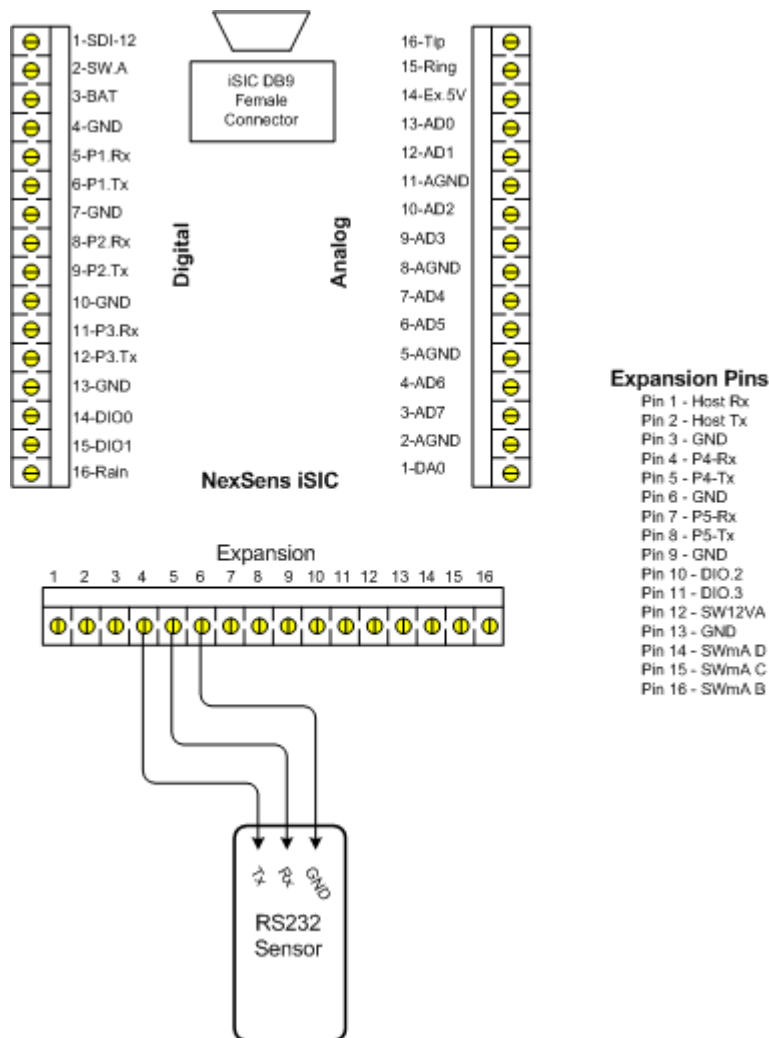
The wiring above shows a N110 sensor connected to pins 14 and 15, temperature channel T0 on the analog expansion. Another N110 may be added to your system by wiring the N110 to pins 16 and 15, temperature channel T1.

2. Digital Expansion

The digital expansion connector allows for the addition of multiple RS232, and generic digital I/O sensors, as well as a main communication port. See the diagrams below for exact signal pins:

RS232

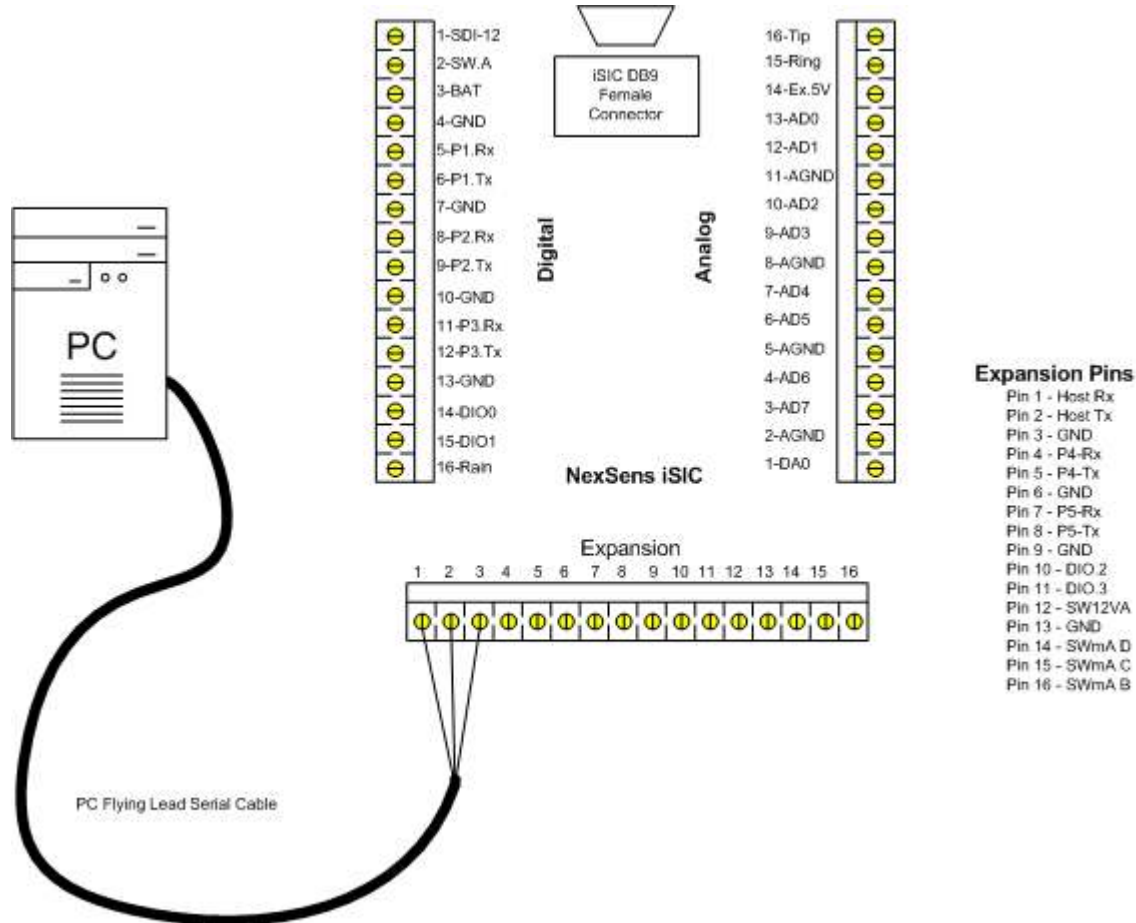
The digital expansion connector allows for two additional RS232 sensors. These ports operate the same as those located on the digital terminal strip. Please see *Chapter 3*, section *RS232* and the diagram below:



The diagram above shows a RS232 sensor connected to port 4 of the digital expansion. You can also connect a RS232 sensor to port 5. Please see *Chapter 3: Connecting Sensors* for a complete description on wiring your specific sensor.

Main Communication Port

Pins 1, 2, and 3 on the digital expansion connector are used for a main communication port and are useful when your system cannot use the DB9 connector for communicating with the iSIC, such as when using a serial-to-flying-lead cable. See the diagram below for wiring connection:



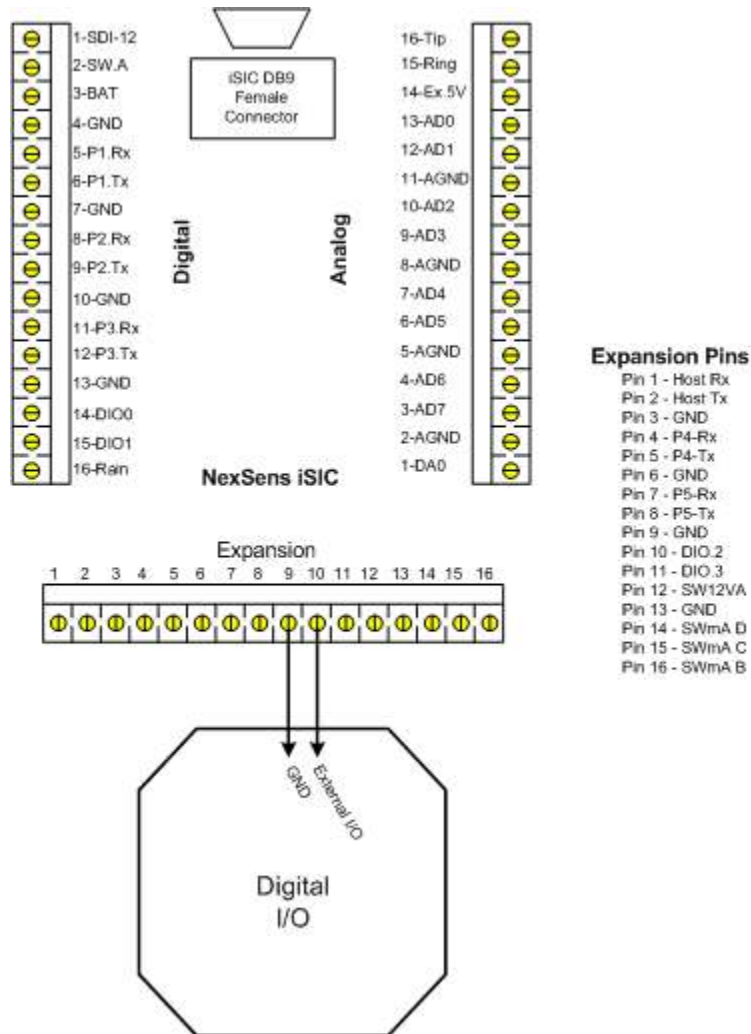
The diagram above shows a PC interfacing with the iSIC using the digital expansion. Connect the Rx wire to pin 1, the Tx wire to pin 2, and GND to pin 3.

If you are using an A60-A64 Direct Connect Cable:

Color	Expansion	Signal
White	Pin 1	Rx
Blue	Pin 2	Tx
Green	Pin 3	GND

Digital I/O

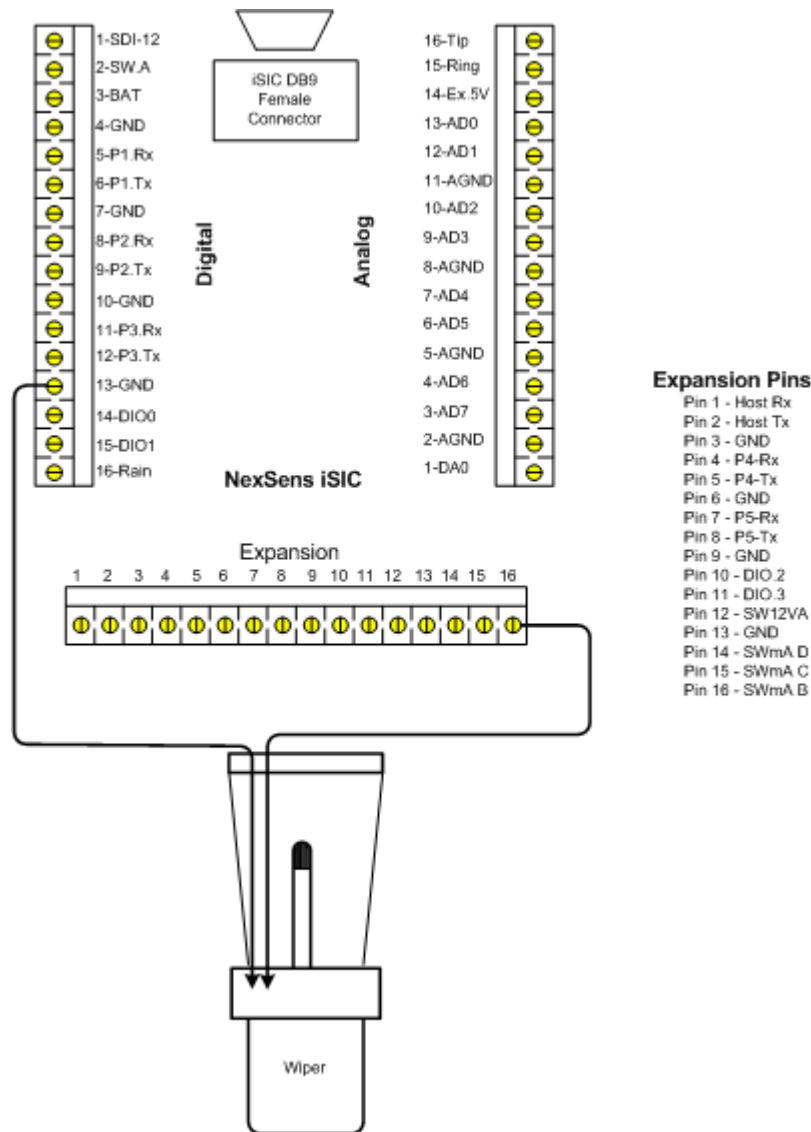
The digital expansion connector also allows for two more additional digital I/O sensors. These additional sensors operate in the same way as those located on the digital terminal strip. Please see *Chapter 3, section Digital I/O*, and the diagram below:



The diagram above shows a digital I/O sensor connected GND, pin 9, and DIO.2, pin 10, on the digital expansion. Another digital I/O sensor can be added using DIO.3, pin 11 and GND. These DIO pins operate the same way as DIO.0 and DIO.1. Please see *Chapter 3: Connecting Sensors* for a complete description on wiring your specific sensor to the expansion connector.

12V Switches

The digital expansion connector also has three 12V 200mA switches and one 12V 1A switch which can be used to power specific devices and sensors, such as probe wipers or cell modems. The switches turn on before a reading is taken and turn off after a reading is taken to conserve battery life. See *Appendix E: Connecting Specific Sensors* and the diagram below:



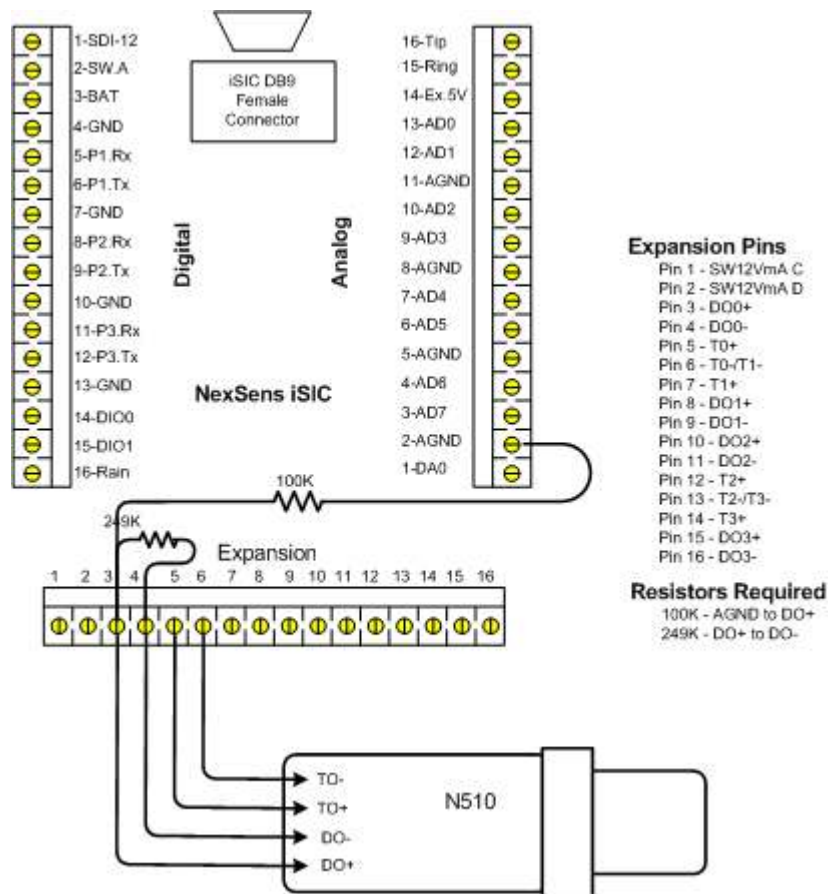
The diagram above shows a probe wiper connected to SWmA B. One wire is connected to the switch pin and the other wire must be connected to a ground on the digital terminal strip. Additional devices can be added using SWmA C and D, and a ground on the digital terminal strip. SW12VA should be used for devices requiring a higher current to operate, such as a cellular modem. Please see *Appendix E: Connecting Specific Sensors* for a complete description on wiring your specific sensor to the expansion connector.

3. Temperature and Oxygen Sensor Expansion

The temperature and dissolved expansion connector allows for the addition of multiple temperature and dissolved oxygen sensors to your system. See the diagrams below for exact signal pins:

Dissolved Oxygen Sensors

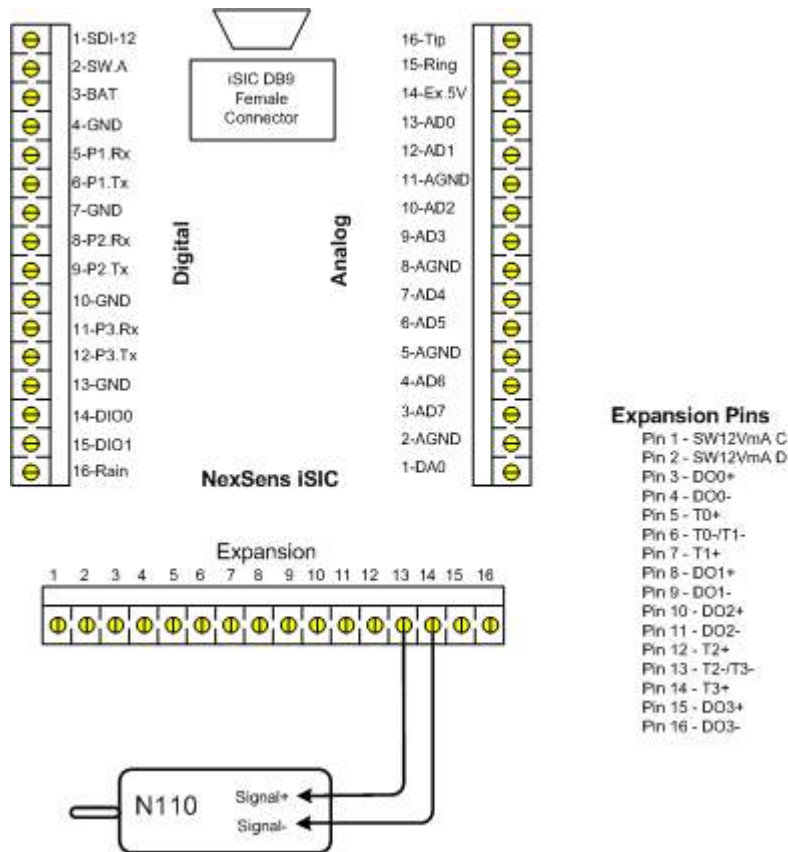
The dissolved oxygen expansion connector allows for four dissolved oxygen sensors to be added to your system. Connect the positive signal wire to the + and the negative wire to the - pin on the expansion connector, see the diagram below:



The diagram above shows a N510 connected to the DO0, and T0 channels on the temperature and dissolved oxygen expansion. Up to four N510's can be added to your system using DO0-DO3, and T0-T3.

Temperature Sensors

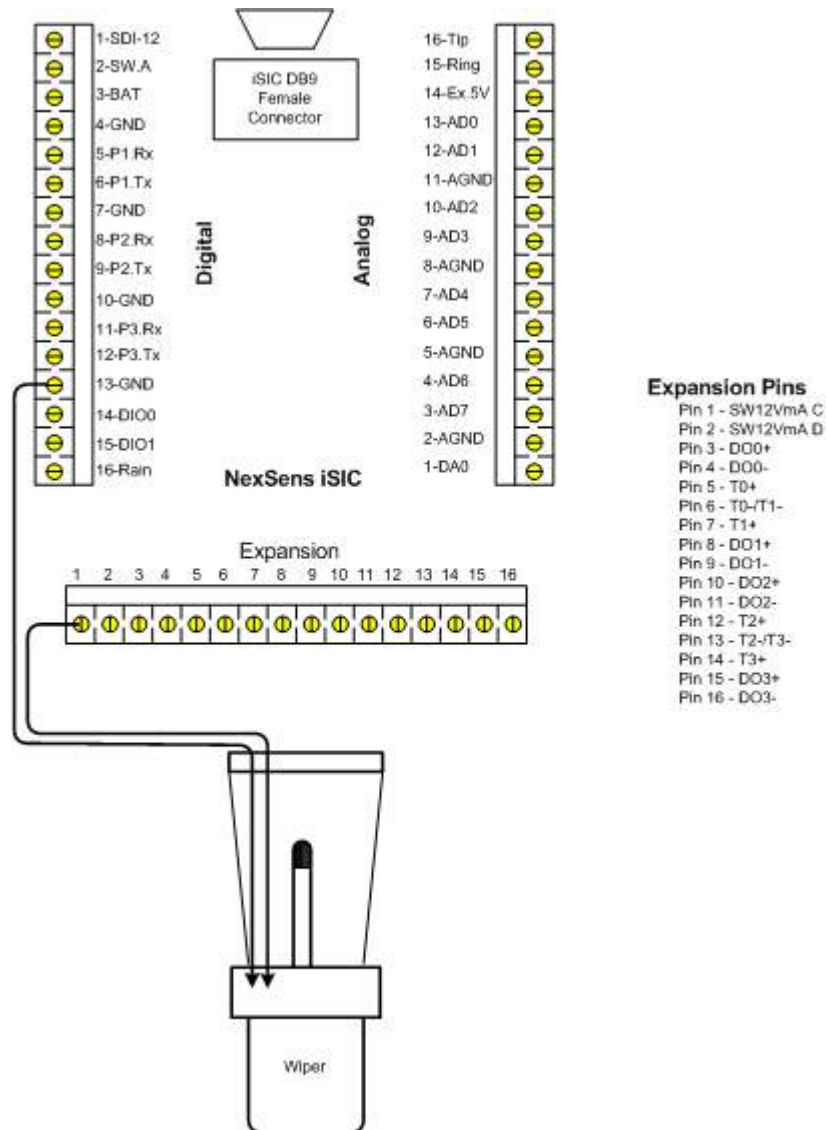
The temperature and dissolved oxygen expansion connector also allows the direct interface of the N110 temperature sensor to the iSIC using T0 -T3. Simply connect the sensors positive lead to the +, and negative lead to - pins of the same T channel as shown in the diagram below:



The wiring above shows a N110 sensor connected to pins 5 and 6, temperature channel T0 on the temperature and dissolved oxygen expansion. Multiple N110 may be added to your system by wiring the N110 to temperature channels T1, T2, and T3.

12V Switches

The dissolved oxygen expansion connector also has two 12V 200mA switches, which can be used to power specific devices and sensors, such as probe wipers or cell modems. The switches turn on before a reading is taken and turn off after a reading is taken to conserve battery life.



The diagram below shows a wiper using SW12VmA C. One wire is connected to the switch pin and the other wire must be connected to a ground on the digital terminal strip. An additional device can be added using SW12VmA D, and a ground on the digital terminal strip. Wipers can be used with the N510 to provide accurate measurements in muddy or stagnant water.