1. PRODUCT OVERVIEW

Net DAQuiri is a multi-purpose I/O controller for monitoring sensors and controlling equipment remotely over your local area network or off-site over the Internet.

- **Control devices remotely:** Net DAQuiri has relay and discrete outputs (transistor outputs) to control a wide variety of electrical devices and equipment from anywhere by the push of a button from your PC, tablet, or phone.

- **Monitor sensors in real-time:** Net DAQuiri can be used to upgrade ordinary sensors so they can be monitored from any location. Connect analog sensors, switches, or discrete logic signals to inputs on the Net DAQuiri to view the live readings.

- **Access your PC or mobie device:** Net DAQuiri has an internal web server that provides an intuitive graphical interface for configuration, viewing sensors, and controlling outputs. The data can be accessed from a web browser on your PC, or iOS and Android mobile devices.

Figure 1 - Front side view, LAN and USB ports.

Figure 2 - Back side view, terminal blocks.

2. KEY FEATURES

- (1) 10/100 Mbps Ethernet connection
- (1) USB connection
- (1) Relay output (1.2A 600V)
- (3) I/O channels, each of which can be independently configured for any of the following functions:
    - Analog voltage input (0-10V)
    - Analog current input (4-20mA)
    - Discrete input sinking or sourcing
    - Transistor output
    - Logic output
- Dimensions: 2.6" x 2.6" x 1.1"
- Operating Temperature Range: -20°C to +70°C

3. PRODUCT CONTENTS

- Net DAQuiri unit
- USB AC/DC wall adapter 5V 200mA
- USB cable 3ft type-A to mini-B connectors

4. FIRST TIME SETUP

1. Connect the USB cable to the Net DAQuiri to power the unit.

2. Connect an Ethernet cable from the Net DAQuiri to your network or directly to your PC.

3. The Net DAQuiri defaults to a static IP address 192.168.0.200. Open this IP address in your web browser. If your web browser is unable to successfully navigate to this IP address, refer to section 13 - Unable to Access Default IP Address.

4. Log in to the Net DAQuiri using the default username: **admin** and password: **pass**.

Figure 3 - Net DAQuiri login screen.

5. After logging in, the 'Live Data' screen is displayed. By default all of the I/O are disabled. Use the 'I/O Type' drop down boxes to select the desired I/O for your application. Enter a descriptive name for each of your I/O channels so you can identify them later.
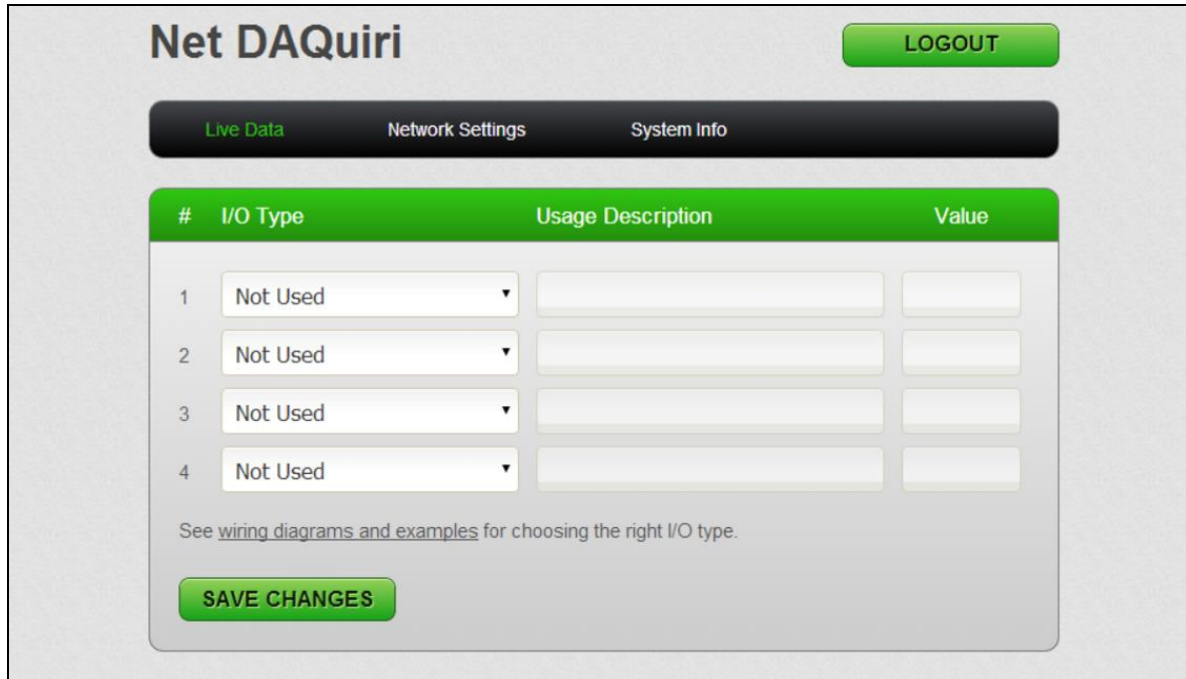
Figure 4 - Live Data screen. Used for viewing and configuring your I/O signals.

6. Wire the I/O signals for your application. Refer to section 11 for wiring diagrams and examples.

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7. Navigate to the 'Network Settings' page. From here you can set a new IP address for the Net DAQuiri or let your router re-assign the IP address using DHCP.


Figure 5 - Network Settings page.

5. NET DAQUIRI NETWORK LOCATOR TOOL

If your router re-assigns the IP address of your Net DAQuiri or if you have forgotten the IP address, a Net DAQuiri Locator Windows tool has been provided to find Net DAQuiris connected to your network.

The software utility can be downloaded from stryker-tech.com/net-daquiri.html under the 'Tools & Additional Software' section.
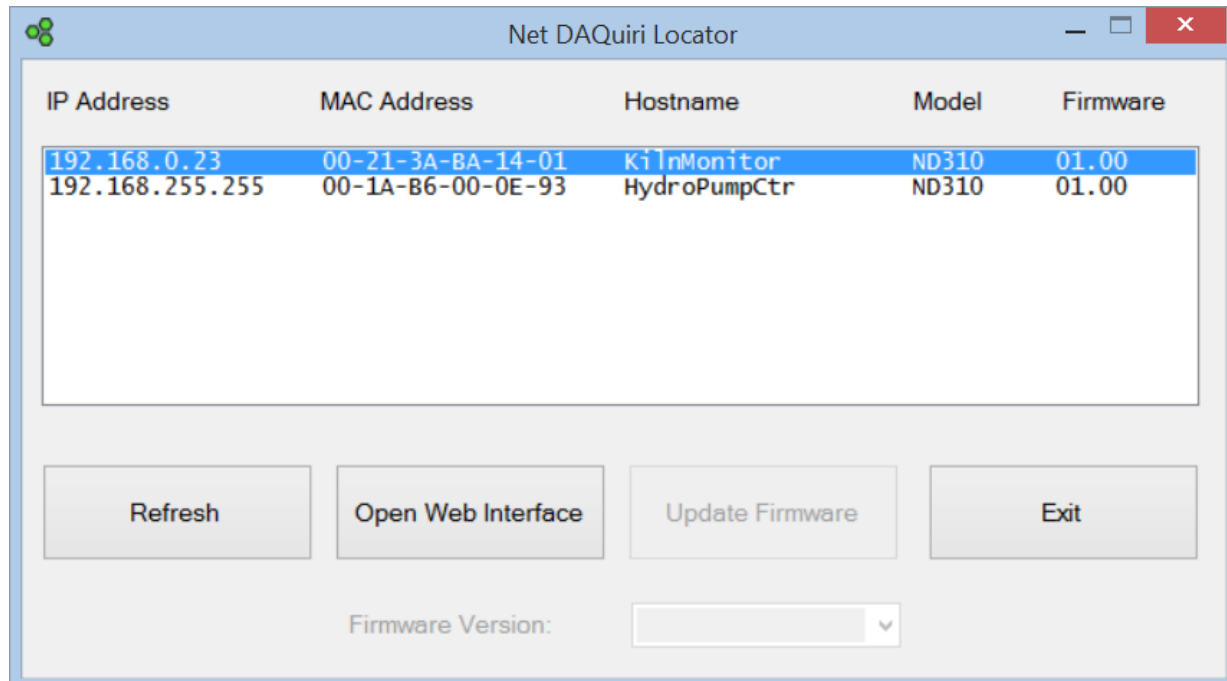
Figure 6 - Net DAQuiri Locator utility for finding Net DAQuiris units on your Local Area Network.

6. MAKING NET DAQUIRI ACCESSIBLE ON THE INTERNET

To view and control the Net DAQuiri from outside of your local area network, port forwarding must be set up. Port forwarding is a method of making a device on your network accessible to computers on the Internet, even though it is behind a router.

Generic setup procedure:

1. Open your web browser to the IP address of your router.

2. Log in and navigate to the port forwarding section.

3. Add a new port forwarding entry for inbound internet connection requests on port 80 to be connect to the private IP address of Net DAQuiri.

For the detailed procedure for your specific network router, visit www.portforward.com, select your router manufacturer and model number, and you will be provided with the specific instructions with screen shots.

7. WARNING

Working in proximity with hazardous voltages can result in death or serious injury to personnel and/or damage to equipment. Qualified personnel must take appropriate precautions when working with hazardous voltages.

8. QUALIFIED PERSONNEL

The product described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

9. NON-ISOLATED INPUTS

The multi-function I/O channels 1,2,3 are non-isolated. External wiring must all be referenced to the same common potential (or ground) and connected to the 'COM' terminal on the Net DAQuiri as shown in the following wiring diagrams. If these I/O channels are connected to equipment operating at different reference potentials unintended current flows will result and may cause damage or unpredictable operation in the Net DAQuiri and connected equipment.

10. REVERSE POLARITY PROTECTION

The Net DAQuiri includes internal protection circuitry if I/O terminal and common are wired in reverse, or if the I/O terminal voltage is externally driven to a negative potential. In this event, internal current limiting circuitry will engage to protect the Net DAQuiri, but the I/O readings will not be valid until the wiring fault is cleared.

11. SHORT CIRCUIT & OVER CURRENT PROTECTION

The Net DAQuiri includes internal protection circuitry to limit the current in the event that a wiring error causes a short circuit condition. In this event, internal current limiting circuitry will engage to protect the Net DAQuiri, but the I/O readings will not be valid until the wiring fault is cleared.
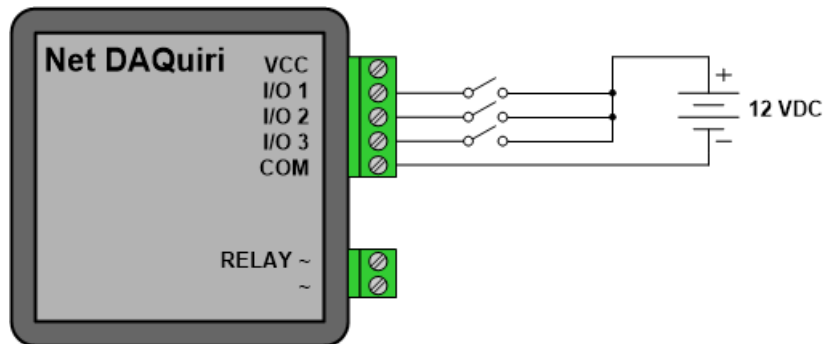
12. WIRING DIAGRAMS

Sinking Discrete Inputs

Sinking discrete inputs are used for unpowered switches or sensors with NPN outputs.
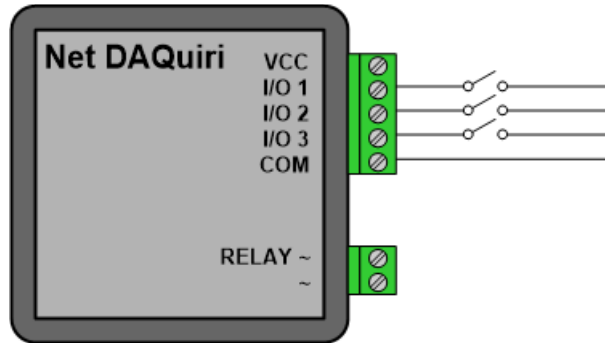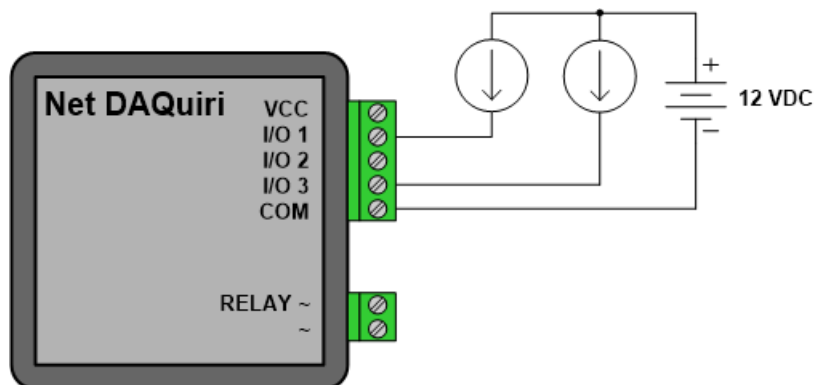
Sourcing Discrete Inputs

Sourcing discrete inputs are used for sensors with PNP outputs or external devices that output TTL logic levels.
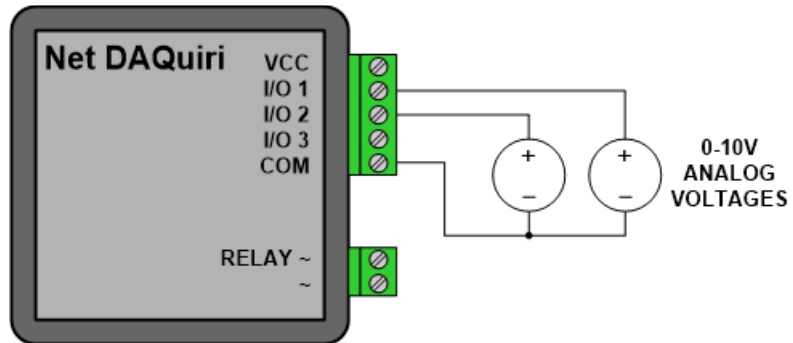
Analog Current Inputs

Analog current inputs are used for sensors with 4-20mA outputs.

Analog Voltage Inputs

Analog voltage inputs are used to monitor voltage signals. The Net DAQuiri can tolerate voltages from 0 to 30V, but the measurable range is limited to 0 to 10V.

Sinking Discrete Outputs (Transistor Outputs)

The NetDAQuiri supports up to 3 sinking transistor outputs for switching DC loads such as solenoids, indicators, or small motors.

Connect the external supply voltage to the VCC terminal as shown to protect the output transistors from voltage spikes that may occur when switching inductive loads.
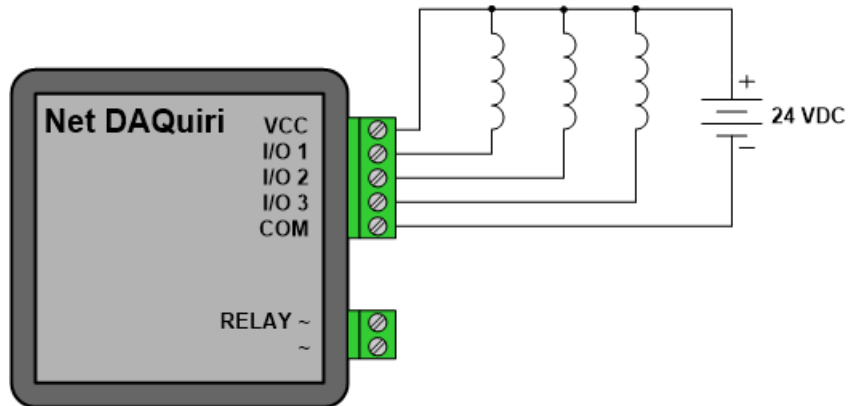
Logic Outputs (0V & 3.3V)

The transistor outputs can be configured as logic outputs. The logic outputs are internally pulled up to 3.3V so that an external pull up is not needed.

Logic outputs are intended for use with high impedance logic inputs. They are not intended to provide 3.3V power to external devices.
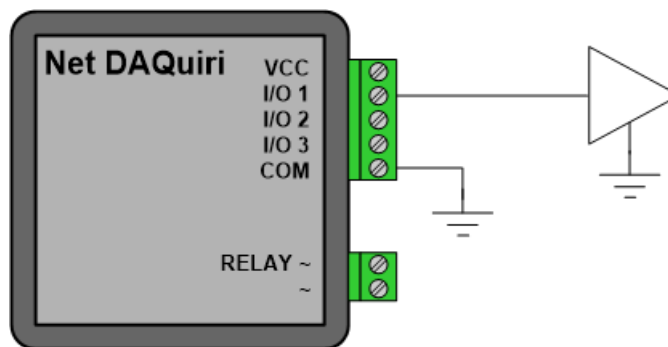
AC voltage input using AC/DC wall adapter

The I/O channels can be used to monitor the on/off state of an AC power source. But the I/O channels need to remain isolated from the AC power source. Typically, the easiest way to accomplish this is to use an external AC/DC power supply or simple wall adapter as shown. Configure the input pin as a sourcing discrete input to monitor the presence of the AC voltage.
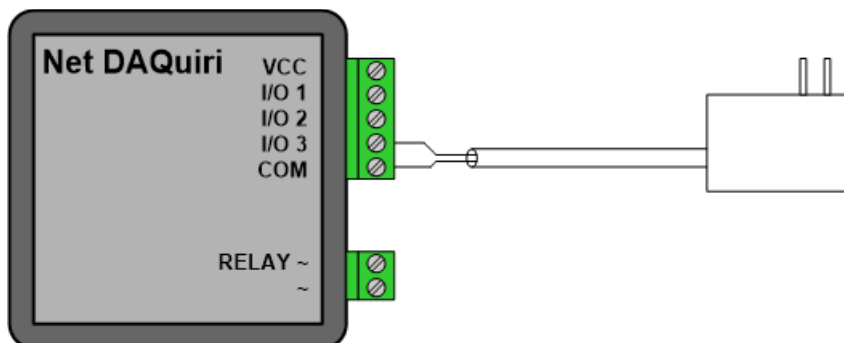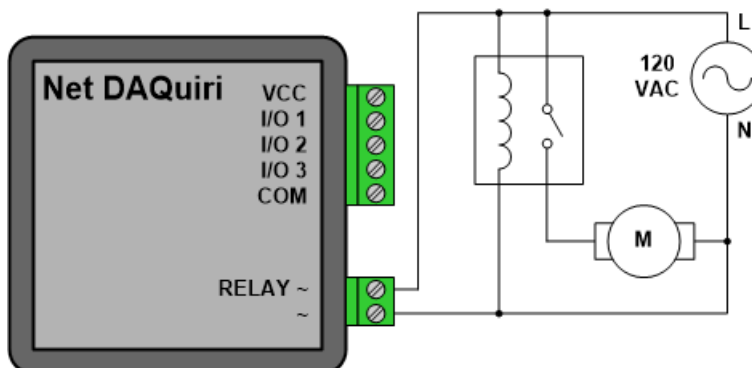

Relay Output

The NetDAQuiri has one relay output. Relay outputs are ideal for switching AC or high voltages. The internal relay on NetDAQuiri supports up to 600V and 1.2A continuous current.
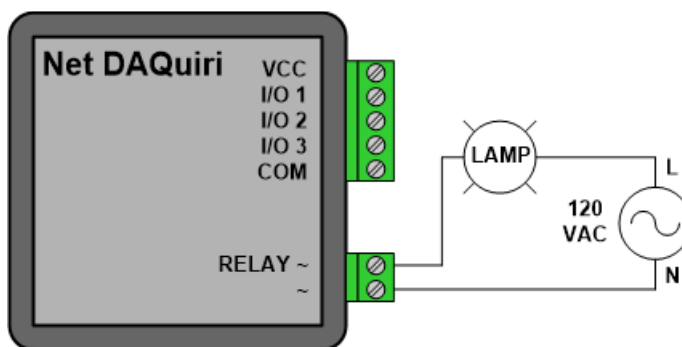
Use external relay for high power load

If the output load requires more than 1.2A (more than 144 Watts at 120 VAC), an external relay can be used as shown to provide greater switching power.

Drive additional relays using transistor outputs

If the application requires additional relay outputs, up to three additional external relays can be connected as shown using the transistor outputs.
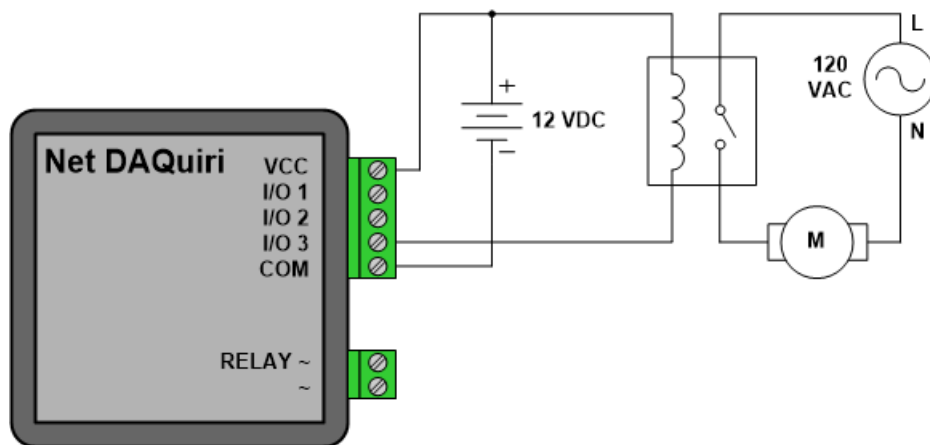
13. CUSTOMIZING MEASUREMENT UNITS

The Net DAQuiri makes it easy to convert generic sensor signals to measurement units and ranges that are meaningful for your application. The following screen shot shows how I/O signals are viewed in a handful of different measurement units (GPM, cm, YES/NO, ON/OFF).
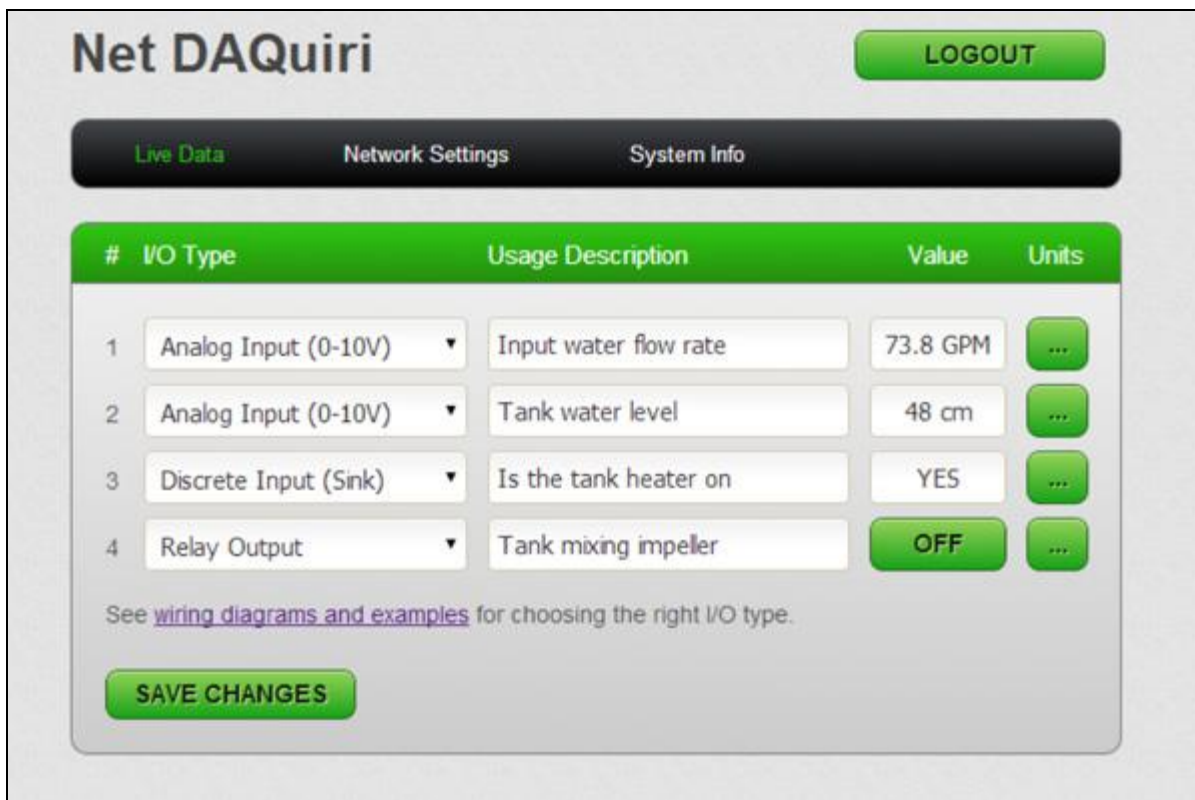
Customizing Units for Analog Voltage Inputs

By default, analog voltage inputs are displayed in Volts. Click on the '...' button for the analog input. A form pops up allowing you to choose from a multitude of units in the drop down box.

For example, let's say we were measuring water pressure with a ProSense PTD25-10-0030H pressure transmitter that outputs 0 to 10V for a range of 0 to 30psi.

1. Configure the I/O type as Analog Input (0-10V).

2. Select measurement unit of 'psi' in the drop down.

3. Enter 0 as the '0% Value'

4. Enter 30 as the '100% Value'
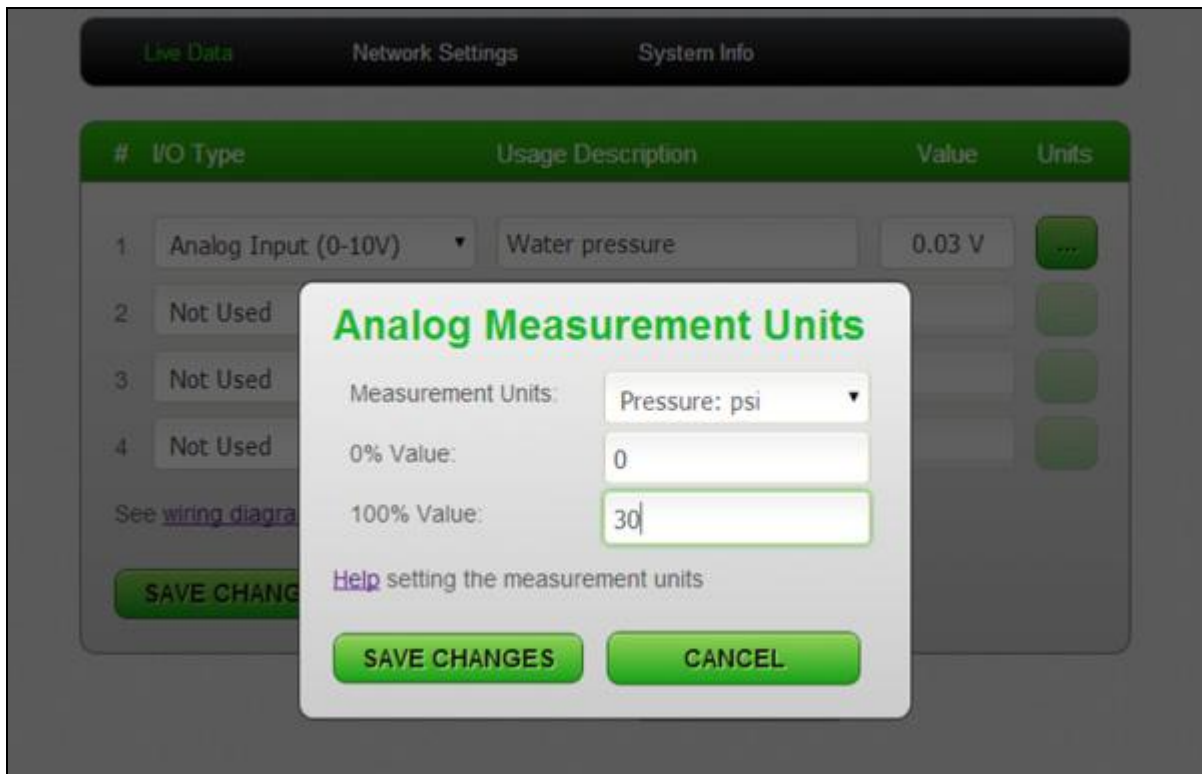
Customizing Units for 4-20mA Inputs

Customizing 4-20mA analog current inputs is done in the same manner as voltage inputs. The only difference is that 4mA is considered the '0% value'.

For example, let's say we want to measure power consumption using AccuAMP ACTR005-42L-F true RMS current sensor that outputs 4 to 20mA for a measured range of 0 to 5 Amps. We can show the power consumption in Watts by entering the following range.

1. Configure the I/O type as Analog Input (4-20mA).

2. Select measurement unit of 'W' in the drop down.

3. Enter 0 as the '0% Value'
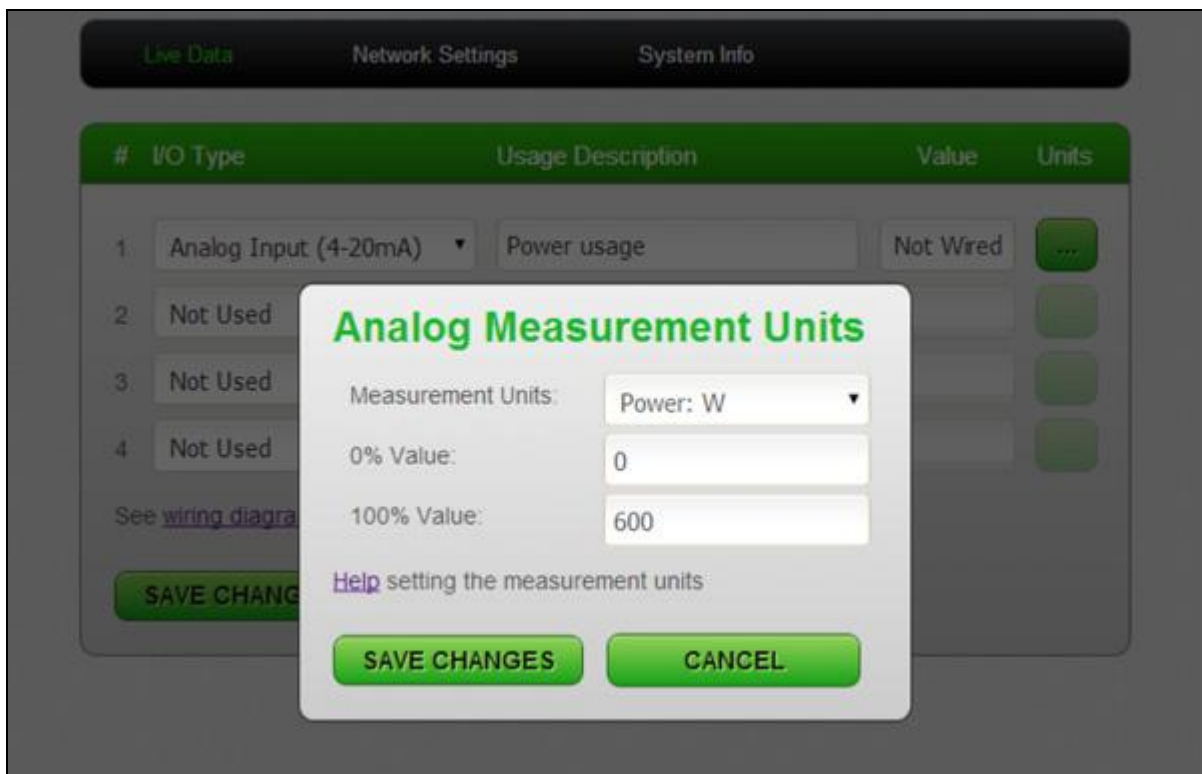
4. Enter 600 as the '100% Value', since 5ARMS x 120VAC = 600W.

Customizing Units for Discrete I/O
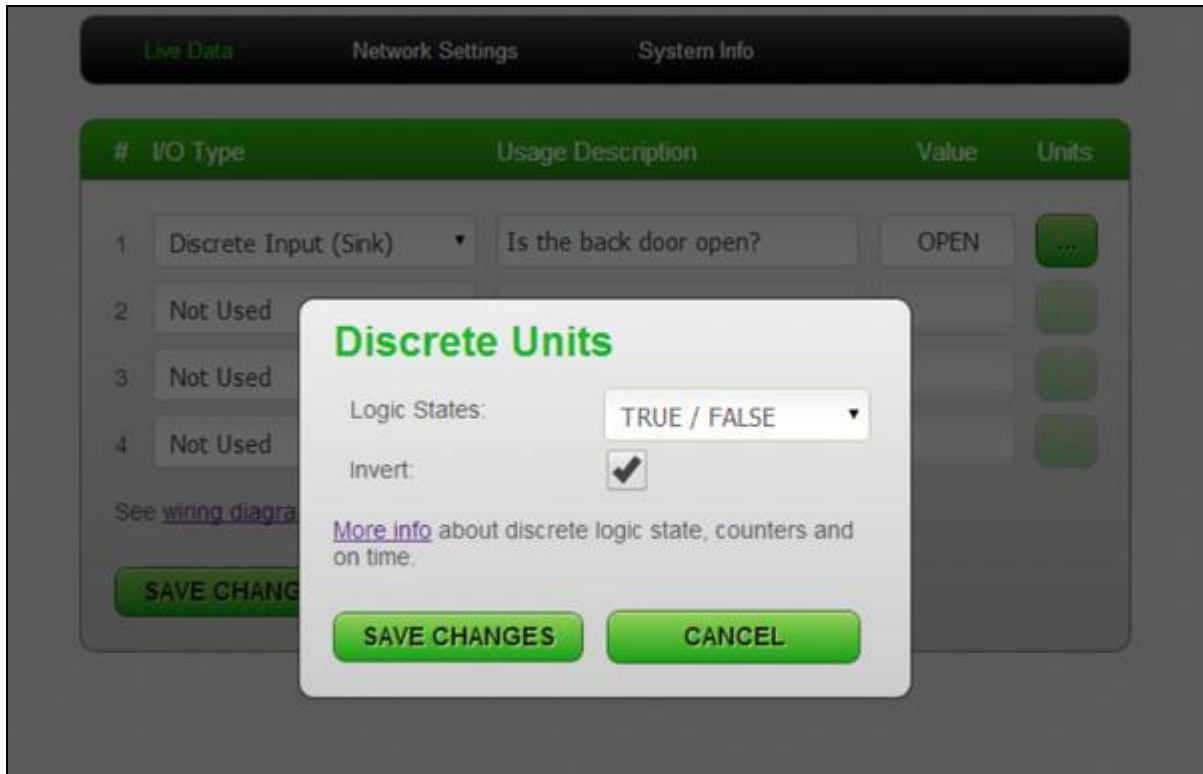
Discrete signals can be one of two states, such as: on/off, true/false, yes/no, high/low, or open/closed. Net DAQuiri allows you to pick the pair of discrete values that are the most descriptive for your application.

Click on the '...' button and select the desired units from the dropdown box. You can also check the 'Invert' check box to swap the meaning of the logic states.

14. ELECTRICAL SPECIFICATIONS

GENERAL

Parameter	Min	Typical	Max	Units	Remarks
Supply voltage	3.8	5.0	5.25	V	From the USB connector.
Supply current	-	-	TBD	mA	
Operating temperature range	-20	-	+70	°C	
Storage temperature range	-40	-	+85	°C	
Dimensions	2.6 x 2.6 x 1.1			in.	L x W x H

RELAY OUTPUT

Parameter	Min	Typical	Max	Units	Remarks
Input voltage	0	-	600	V	
Continuous current	0	-	1.2	A_{RMS}	
Non-repetitive surge current	0	-	12	A	
Isolation voltage	5000	-	-	VAC	

SINKING DISCRETE OUTPUT (TRANSISTOR OUTPUT)

Parameter	Min	Typical	Max	Units	Remarks
Operating voltage	0	-	30	V	
Continuous current per channel	-	-	1.0	A	
Continuous current for all channels	1.1	-	2.2	A	
Surge current per channel	-	-	2.0	A	

LOGIC OUTPUT

Parameter	Min	Typical	Max	Units	Remarks
Logic HIGH output voltage	3.0	3.3	3.3	V	
Logic LOW output voltage	0.0	0.0	0.1	V	
Output current per channel	-	-	4.5	µA	

SOURCING DISCRETE INPUT

Parameter	Min	Typical	Max	Units	Remarks
Permissible input voltage	0	-	30	V	
Logic HIGH input voltage	0.8	-	30	V	
Logic HIGH input voltage	0	-	0.8	V	

ANALOG VOLTAGE (0-10V) INPUT

Parameter	Min	Typical	Max	Units	Remarks
Permissible input voltage	0	-	30	V	
Measureable input range	0	-	10	V	
Accuracy	-	±0.03	±0.03	V	
Input impedance	-	67.0	-	kΩ	

ANALOG VOLTAGE (0-3V) INPUT

Parameter	Min	Typical	Max	Units	Remarks
Permissible input voltage	0	-	30	V	
Measureable input range	0	-	3.0	V	
Accuracy	-	±0.01	±0.01	V	
Input impedance	-	1000	-	kΩ	

ANALOG CURRENT INPUT

Parameter	Min	Typical	Max	Units	Remarks
Permissible input current	0	-	20	mA	
Measureable input current	0	-	20	mA	
Accuracy	-	0.03	0.06	mA	
Input impedance	-	150	-	Ω	

TROUBLESHOOTING

15. UNABLE TO ACCESS THE NET DAQUIRI DEFAULT IP ADDRESS

1. Verify that the USB and Ethernet cables are connected. The yellow Link light in the top right corner of the RJ-45 Ethernet port should be illuminated.

2. In Windows operating systems, open **Network Connections** or type **control netconnections** in a command prompt.

3. Right click on the network connection that leads to the Net DAQuiri and select properties.

4. Select **Internet Protocol Version 4 (TPC/IPv4)** in the list and press the **Properties** button.

5. Select **Use the following IP address** and set your IP address to: 192.168.0.201 and Subnet Mask: 255.255.255.0. Press OK and Close.

6. Use your web browser to navigate to the Net DAQuiri at IP address 192.168.0.200. Username is **admin** password is **pass**.

7. From here you can change to network settings for the Net DAQuiri as needed.

ERRATA

Web user interface not available for all versions of Safari web browser

A software issue has been identified where the Net DAQuiri web user interface is not available on Apple iOS devices using the Safari web browser. The Chrome web browser is required for accessibility on Apple handhelds.

No other browser compatibility issues have been observed on any browsers running on PCs or Android mobile devices.

16. CONTACT

For questions or technical support for this product, contact: sales@stryker-tech.com

Main Office:

StrkerTECH LLC
10201 W Lincoln Ave #107
Milwaukee, WI 53227
262-864-1110

17. DOCUMENT REVISION HISTORY

Revision	Date	Description
0	11/15/2013	Initial release
1	3/5/2014	Add section on customizing measurement units.